

Tender No.: RNSB/2026-27/10

NOTICE INVITING TENDER

1. Tenders are invited on behalf of **RAJKOT NAGARIK SAHAKARI BANK LTD.- RAJKOT** for RETROFITTING AND RENOVATION WORK OF PARABAZAR BRANCH OF RNSB, RAJKOT. Estimated cost is Rs. 404.20 Lacs.

Total Amount = Rs.404.20 lacs

2. The works are required to be completed within **15 (FIFTEEN) Months for work** as per the terms of the contract conditions.
3. Not more than one tender shall be submitted by contractor or by a firm of contractors. Not more than two concerns in which an individual is interested as a Proprietor and/or is a partner shall tender for the execution of the same works. If they do so, all such tenders shall be liable to be rejected.
4. Applications for issue of tender documents shall be submitted not later than 08/09/2026.
5. Copies of other drawings and documents pertaining to the works for the purpose of identification will be open for inspection by tenderers at the following office during working hours between the dates mentioned in Clause - 6 above.
6. Tenderers are advised to visit the site before submission of the tender. A tenderer shall be deemed to have full knowledge of all the relevant documents, samples, site etc. whether he inspects them or not.
7. Submission of a tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specification of the work to be done and or conditions and other factors bearing on the execution of the works.

8. A tenderer should quote in figures as well as in words rate(s) tendered. The amount for each item should be worked out and the requisite total given. Special care shall be taken to write rates in figures as well as in words, and the amounts in figures only in such a way that interpolation is not possible. The total amount shall be written, both in figures and in words in case of figures the words rupees should be written before the figure of rupees and the word 'Paise' after the decimal figure, e.g. Rs. 2-15 Ps. and in case of word 'Paise' should be written at the end. Unless the rate is in whole necessary followed by the word 'ONLY' it should invariably be upto two places of decimal.
9. The tenderer has to fill up the gap regarding percentage reduction, if any, be made in special clause added at the end of Schedule 'B'. If no reduction is to be made, gap should be filled up by the word 'NIL'.
10. The tender for the works shall not be witnessed by a contractor or contractors who himself/themselves has/have tendered for the same works failure to observe this condition/shall render the tender of the contractor tendering as well as of those Witnessing the tender liable to rejections.
11. The tenderer shall have to produce an Income-Tax Clearance Certificate as when required
12. Acceptance of tenders will rest with the competent authority who does not bind itself to accept the lowest tender and reserves the right to reject any or all tenders without assigning any reason thereof.
13. It must be clearly and distinctly understood that the conditions of contract and specifications shall be rigidly enforced and no relaxation on the ground of customs prevailing shall be allowed.
14. . The rates to be quoted by the tenderer shall be inclusive of all taxes, duties etc. and no claim whatsoever in this context shall be entertained. The tenderer is permitted to see plans and estimates in the office of the Project Architect and he is free to discuss any point of doubt.

15. The tenderer shall be considered to have visited the site of work fully acquainted himself with the local situation regarding materials, labor and other factors pertaining to the work and studied the plans and estimates before submitting the tender.
16. The tender for the work shall remain open for a period of 180 days, from the date of opening of the tenders and that the tenderer shall not be allowed to withdraw or modify the offer on his own during this period. If any tenderer withdraws or makes any modifications or additions in the terms and conditions of his tender, not acceptable to the **RAJKOT NAGARIK SAHAKARI BANK LTD.-RAJKOT** then the **BANK** shall without prejudice to any right of remedy be at liberty to forfeit in full the said earnest money absolutely.
17. The contractor shall furnish the project Architect every work, during the progress of the work classified weekly and returns of the number of the people employed on the work during the week.
18. A tenderer shall submit the tender which satisfies each and every condition laid down in this notice and tender documents failing which the tender will be liable to be rejected.
19. The contractor shall strictly observe all the requirements laid down in the Contract Labour (Regulation and Abolition) Act 1970 and the contract (Labour Regulation and Abolition) (Gujarat Rules-1972 and other acts as amended from time to time so far as applicable).
20. **The work is to be completed in all respect within 15 (FIFTEEN) Months reckoned from the date of written order to commence work.**
21. In complete tenders of the tenderers which are not fulfilling any of the above conditions and those stated below shall be liable for rejections
 - a. If the tenderer proposes any alterations in the work specified in the tender or in time allowed in carrying out the work or any other conditions.
 - b. If any of the pages in the tender are removed/replaced.

- c. If in the case of item rate tender the rates are not entered in ink in figures and in grand total are not struck by the tenderer in last column of Schedule-'B' under his signature.
- d. If any erasures are made by him in the tender.
- e. If all corrections and additions or pasted slips are not initialed by the tenderer.
- f. If Earnest Money Challan or Demand Draft for full amount is not attached with the tender.
- g. If in the case of firm each partner there of does not sign of the signature is/are not attested by the Witness in the declaration form of the Printed Tender Form in the space provided for the purpose.
- h. If percentage addition in item rate tender is given.

22 The **RAJKOT NAGARIK SAHAKARI BANK LTD,- RAJKOT** does not bind itself to accept the lowest or any tender or to give any response for this decision.

23. This Notice of tender shall form part of the contract documents.

24. There are 2 parts of Tender A & B. Both the work may/may not be allotted to a single Contractor.

25. The technical bid shall contain,

- 1. Earnest money deposit in demand draft (DD) of bank favored, 'Rajkot Nagarik Sahkari Bank Ltd' payable at Rajkot
- 2. A certificate from the client for satisfactory completion of one single work of similar type and amounting not less than Rs. 404.20 lacs or two similar type and amounting not less than Rs.185 lacs in any government, semi-government, or local self government which is completed in last three years.
- 3. Financial criteria
 - a) An average annual turnover of last three years should not be less than
Rs. 404.20 lacs

b) The minimum working capital should not be less than **Rs. 200 lacks**. A

bank certificate in this connection shall have submitted.

c) G.S.T. registration and PAN no with detail.

26. **All the documents pertaining to this tender such as SPECIAL CONDITION OF CONTRACT & SPECIFICATION BOOKLET has to be strictly followed.**

27. **Prequalification bid will be done on 26/08/2026 Wednesday 12:00 PM.**

Only question given by 21/08/2026 on email will be entertained. For Email id for sending queries are 1)maharshtrivedi@rnsb.bank.in 2)mihirpathak@rnsb.bank.in 3)estate@rnsb.bank.in .

28. **Detailed information regarding this can be obtained from the website <https://tender.nprocure.com> and offline at <https://www.rnsb.bank.in/rnsb/index.php>.**

For , **RAJKOT NAGARIK SAHAKARI BANK LTD,-RAJKOT**

DATE : 01/08/2026

For Rajkot Nagarik Sahakari Bank Ltd.

MEMORANDUM OF WORK

MEMORANDUM OF WORKS IN BRIEF :-

1. Name of the Works : . RETROFITTING AND RENOVATION WORK OF PARABAZAR BRANCH OF RNSB, RAJKOT.
2. Estimated cost is Rs 404.20 Lacs.
3. Estimated Cost : Rs. 404.20 Lacs.
4. Earnest Money : **Rs.3,69,000/-**
5. Validity period of Tender Offered : 180 days from the date of opening of the Tender
6. Cost of offer documents : Rs. 15,000/= in favor of "Rajkot Nagarik Sahkari Bank Ltd. "(Tender fee- nonrefundable) demand draft, payable at Rajkot
- 6A. Earnest money deposit Rs.3,69,000/= in favor of "Rajkot Nagarik Sahkari Bank Ltd. "(E.M.D.) demand draft, payable at Rajkot
7. Security Deposit (10% of amount in dd) : Rs.36,69,000/- in favor of "Rajkot

Nagrik Sahkari Bank Ltd. "(Tender fee- nonrefundable) demand draft, payable at Rajkot

8. Time allowed for Completion of : 15 (FIFTEEN) Months of the work from the date written Order to commence
- 8.A Agreed Liquidated Damages : Rs. 5,000.00 per day
9. Other Details :
- a) Start date for online submission of Price Bid : 07-08-2026
- b) Last date for online submission of Price Bid : 05-09-2026
- c) Last date for submission of Bid : In sealed covers clearly marked "offer of Interior furnishing works for bank building of Rajkot Nagrik Sahkari Bank Ltd., at Dhoraji , Dist: Rajkot". To, The Estate Division, Rajkot Nagrik Sahkari Bank Ltd, Arvindbhai Maniyar Nagrik Sevalaya , Near Raiya Circle,150 feet wide ring road, Rajkot – 360 005 on or before 08-09-2026 up to 4:00p.m. only, Through reg. post/ speed post/by courier.
- d) Date of opening of Technical Bid : 09-09-2026 at 11:00 a.m.
- e) Validity period of the tender : 6 months after receiving to the organization.
- f) Stipulated time for completion of The work : **15 (FIFTEEN) Months**
- g) Contract signing within 10 (ten) days of letter of intent (LOI) from invitee
- h) Mode of sending the Tender : a. In Sealed Cover by Registered Post or in person
- b. Tender sent by Ordinary Post will be outright rejected.
- i) Description essential to be : a. Name of the Made on Sealed Cover
- b. Date of the receiving the Tender
- b. Mode of quoting Rate of : In Figures as well as in Words

Schedule "B"

j) If successful contractor will fail to make "contract agreement "without any particular reasons, his amount of earnest money will be fortified as a penalty of loss & damages. Liquidated damages for delay of work the penalty will be of Rs.5000/day incase if the work not completed in stipulated time.

DATED

SIGNATURE OF THE CONTRACTOR

DATED

SIGNATURE OF THE WITNESS

DECLARATION FORM

1. I have visited the site and fully acquainted myself with local situation regarding materials labour and other factors pertaining to the work and studied the plans and estimates
2. I have carefully studied the conditions of contract specification and other documents of this works and I agree to execute the same accordingly.
3. I do understand that this is a work of **IMPORTANCE**. I, therefore, solemnly pledge that I shall be sincere in discharging my duties as responsible contractor and complete the work within the prescribed time limit. I shall submit detailed construction programme with target dates for various items and stages of work keeping in view the time limit and shall accordingly arrange for necessary labourers, materials and equipments etc. punctually. In case there are deviations from the construction programme, I shall abide by the programme and shall arrange for labours, materials, equipments accordingly.

DATED

SIGNATURE OF THE CONTRACTOR

DATED

SIGNATURE OF THE WITNESS

1. DEFINATION

a. CONTRACT

The contract documents consist of the Invitation to tender, the Agreement, the General Conditions of the Contract, Special Conditions of contract, Specifications, the Drawings, and Schedule of Quantities, including all modifications thereof incorporated in the documents before there of incorporated in the documents before their execution and the drawings prepared by the Architect from time to time. These form the contract.

b. SUB-CONTRACTOR

The term sub-contractor, as employed herein, includes those having a direct contract with the Contractor and it includes those having a direct contract with the contractor and it includes one who furnishes material worked to a special design according to the plans of specifications of this work, but does not include one who merely furnishes material not so worked.

c. NOMINATED SUB-CONTRACTOR

Nominated sub-contractor shall mean all specialists, merchants, tradesmen and other executing any special work or supplying any materials or equipment for which provisional sums are included in the contract, who may have been or be nominated or selected by the Employer and shall be deemed to be employed by the contractor.

d. NOMINATED SUPPLIER

Nominated suppliers shall mean all specialists, merchants, suppliers and others executing any special order for supplying of materials or equipment for which provisional sums are included in the contract, who may have been or be nominated or selected by the Employer and shall be deemed to be employed by the contractor

e. PROVISIONAL SUM

Provisional sum or provisional sum or provisional lump sum shall mean a lump sum included in the tender documents and shall represent the estimated value of the work for which details are not available at the time of issue of tender.

f. WRITTEN NOTICE

Written Notice shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at and written delivery receipt obtained or sent by registered mail to the last business address known to him who gives the notice

g. THE WORKS

"The Works" shall mean the works in respect of which the tender by the contractor has been accepted and which are set out in the conditions of contract, Specifications, schedule of Quantities and Drawings and including all additions, substitutions and variations ordered by the Architect.

h. WORK

The term "Work" of the contractor or sub-contractor includes labour or materials or both.

i. VIRTUAL COMPLETION

"Virtual completion" shall mean that the "works" are ready and fit for occupation in every respect in conformity with the contract Documents and to the full satisfaction of the Architect.

j. WORKING DAY

"Working Day" shall mean any day from Monday to Saturday (both days inclusive) excluding all Public Holidays as notified by the Central Government.

k. NORMAL WORKING HOURS

Normal working hours shall mean ten (10) hours per working day. The specific timings would vary depending upon the season.

l. THE SITE :-

"The Site" shall mean the site of the contract works including any building and erections thereon and any other land allotted by the employer for the contractors use.

m. APPROVED EQUAL

"Approved Equal" shall mean equivalent approved by the Architect.

2. EMPLOYER CONTRACTOR AND ARCHITECT

The Employer, the contractor and the Architect are those mentioned as such in the agreement and shall include their legal representative/s assign/s or successor/s They are treated throughout the contract documents as if each were of the singular number and masculine gender.

3. SCOPE AND INTENT

a. Scope

The general character and the scope of the work is illustrated and defined by the signed Drawings and specifications herewith attached.

b. Extent

The contractor shall carry out and complete the said work in every respect in accordance with the contract, and with the directions of and to the satisfaction of architect.

c. Intent

The Contract Documents are complementary, and what is called for by any one shall be as binding as if called for by all, the intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work.

SPECIAL CONDITIONS

1. GENERAL

These Special Conditions are intended to amplify the specification and conditions of contract and shall be read in connection with the same.

2. ORDER OF PRECEDENCE

If any discrepancy is notice between these special conditions and conditions of contract, the special conditions shall take precedence.

3. EMPLOYER AND ARCHITECT

The name and address of the employer and of the Architects responsible for the preparation of the Contract Agreement documents are as follows

EMPLOYER	MANAGING TRUSTEE, HQ, RAJKOT NAGARIK SAHAKARI BANK LTD-RAJKOT RAJKOT.
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ARCHITECT	KISHORE TRIVEDI 1, RAMKRISHNA NAGAR, DR YAGNIK ROAD RAJKOT – 360 001
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4. SITE

The site is situated at **PARA BAZAR , Rajkot**

5. SCOPE OF WORK

The scope and general character of works to be carried out under this contract comprises of the construction of Retrofitting & Renovation work & the Civil work for the building, civil work for installation of services and site development work as called for in the documents.

5. CONTRACT DRAWINGS

Drawings forming part of the contract are listed under Appendix-III. Other drawings and details issued during the currency of the contract shall also form part of the contract.

Materials or work described in words which so applied have a well know technical or trade meaning shall be held to refer to such recognized standards as applicable.

- d. Architects Instructions : The Architect may from time to time issue further supplementary drawings and/or written instructions, details and directions and explanations which are collectively referred to as Architects Instructions. The Contractor shall for with comply with and duly execute works comprised in such Architects instructions provided always that verbal instructions, directions and explanations given to the contractor or his works representative by the architect shall if involving a variation, be confirmed in writing.
- e. Variations : The Employer reserves the right to increase or decrease the scope of work on any or all items to change the nature of work involved in any or all items of the contract the contractor shall have no claim for loss of anticipated profits or for any other reason whatsoever on account of the variations.

4. SITE ENGINEER

The Employer will be represented at the site by the Site Engineer who will be responsible for the day-to-day supervision of the contract shall act under the orders of the architect and shall supervise the work on behalf of the employer. The contractor shall offered him all necessary facilities for the performance of his duties. Site Engineer / Employer shall have power to give notice to the contractor or his Engineer of non approval of any work or materials and such work shall be suspended or the use of such materials shall be discontinued until the Architects/Employer gives written instruction to recommence the work.

5. SITE

- a. Contractor to satisfy to satisfy himself about Site Conditions :

Before tendering the contractor shall, at his cost visit and examine the site and satisfy himself as to the nature of the existing roads or other means of communication and the character of the soil and of the excavations the correct dimensions of the work and facilities for obtaining the special articles called for in the contract documents and shall obtain generally his own information on all matters affecting the continuation and progress of the

works. No extra charge made in consequence of any misunderstandings or incorrect information of any of these points or on the grounds of insufficient description, will be allowed should the contractor after visiting the site find any discrepancies, omissions, ambiguities or conflicts in or among the contract documents or to be in doubt as to their meaning he shall bring the question to the Architects attention, not later than 10 days before the closing of the tenders.

b. Possession :

The possession of the site shall be given on the date specified in the Appendix i to these conditions the contractor shall thereupon commence the works and regularly and diligently proceed with the same and complete the same on or before the contract date for completion.

- c. Treasures Antiquities-property of owner all fossils, antiquities and other objects of interest of value which may be found on the site or in excavating the same during the progress of the work shall become the property of the employer. The contractor shall carefully take out and preserve all such objects and shall immediately or as soon as conveniently after the discovery of such articles deliver the same into the possession of the Architect uncleaned and as excavated.

6. TYPE OF CONTRACT

The Contract shall be an Item Rate Contract :

The contract the contractor shall be paid at the contract rates, for the actual quantity of work carried out by him in accordance with the contract documents as measured.

Schedule of Quantities :

The quantities given in the schedule of quantities are provisional and are meant to indicate the intent of the work and provide a uniform basis for tendering. The Contractor shall be paid for the actual quantity of work executed by him in accordance with contract Documents at the contract rates. The Employer reserves the right to increase or decrease any of the quantities or to totally omit any items of work and the contractor shall not claim any extra or damages on these grounds. Any error in description or in quantity or

omission of item in the schedule of Quantities shall not vitiate this contract but shall be deemed to be a variation required by the Architect.

7. CONTRACT AGREEMENT

The selected contractor shall enter into a formal contract with the employer for the execution of works within 15 days from the date of a work of contract, failing which his tender may be rejected and the earnest money deposited by him will be forfeited.

8. LICENCES AND PERMITS

Licences and Permits for all materials under Governments control shall be obtained by the Contractor directly. The Employer may assist the contractor in this respect to the extent possible. The contractor shall include in his tender all taxes, transport charges and other expenses that may be incurred in this connection.

9. ROYALTIES AND PATENT RIGHTS

All royalties or other sums payable in respect of the supply and use in carrying out the works as described by or referred to in the contract Drawings, the contract specifications and the contract schedule of Quantities or any patented articles, processes or inventions shall be deemed to have been included in the contract sum, and the contractor shall indemnify the employer in writing form and against all claims, proceedings, damages, costs and expenses which may be brought or made against the Employer or to which he may be put by reason of the contractor infringing or being held to have infringed any patent rights in relation to any such articles, processes and inventions.

10. FIRE AND ACCIDENT INSURANCE

- a. The contractor shall insure the works against loss or damage by fire, accident, riot, civil commotion and/or all acts of God, progressively up to the full amount of the contract. Such insurance is to be effected from time to time in the name of the employer and is to be for the amount of the full value of the work as determined by the supervising officer. All expenses incurred on insuring the works as described above shall be fully borne by the contractor. The contractor shall submit for inspection by the architect the policies and

receipts for the premiums for such insurance and shall maintain such policies in force until the possession of the works is given to the employer, all such policies/premium receipts shall be deposited with the employer after inspection by the Architect.

- b. If the contractor fails to comply with the terms of this condition, the employer may insure the works and may deduct the amount of the premiums paid from any moneys that may be or become payable to the contractor, or may, at his option, refuse payment of any certificate to the contractor until the contractor shall have complied with the terms of this condition.
- c. Such Insurance, whether effected by the Employer or the contractor, is to be no limit or bar to the liability and obligation of the contractor to deliver the works to the employer completed in all respects according to this contract. In case of loss or damage due to any of the aforesaid causes, the moneys payable under any such insurances shall be received and retained by the employer until the works are finally completed and shall then be credited to the contractor in final settlement of accounts in the events of this contract not having been previously canceled under those conditions.

11. SEPARATE CONTRACTS

The employer reserves the right to let other contracts in connection with his work. The contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and co-ordinate his work and theirs. If any part of Contractor work depends for proper execution or results upon the work of any other contractor, the contractor shall inspect and promptly report to the Architect any defects in such work that render it unsuitable for such proper execution and results. His failure to so inspect and report shall constitute an acceptance of the other Contractors works fit and proper for the reception of his work, except as to the defects which may develop in the other contractors work after the execution of the work.

12. TAXES

The contractor shall include in his rates for the various items, the amount of Sales-tax and any other taxes or levies legally payable on the works and/or on materials and equipments forming part of the works.

13. NOTICES AND FEES

The contractor shall comply with all Government Acts including any bye-laws or regulations of local authorities relating to the works, and shall give all notices and pay all fees and charges demandable by law thereunder and indemnify the Employer against the same.

14. WATER FOR CONSTRUCTION

The contractor shall have to make his own arrangements at his cost for water required for the work and nothing extra will be paid for the same. No point of water supply to the site will be given. The contractor shall however make his own arrangements for laying of pipe lines, additional pumping arrangements etc. The contractor shall restore the site in its original condition or as directed after the completion of the work.

15. POWER FOR CONSTRUCTION

The Contractor has to make arrangements to procure power for construction purposes at a suitable point in the construction purposes at a suitable point in the construction site. The contractor shall also make his own arrangements to take metered connection from this point. He shall at his own cost provide and install the meter and all temporary service lines as required for his use on the work. The contractor shall pay all the necessary charges for the power consumed by him to the Employer at the prevailing rates of Electricity Board.

16. OVER TIME

If it is necessary for the contractor or any sub-contractor to work on other than week days or outside normal working hours in order to keep up to the time schedule, the contractor shall give due notice of his intention to do so and obtain prior approval of the Architect/Employer. The additional cost of wages & any other costs caused by overtime or shift work shall be borne in full by the Contractor.

17. TIME OF COMPLETION

- a. All time limits stated in the contract documents shall be the essence of the contract. The contractor obligates himself to complete the work in all respects within the time schedule stipulated in the Agreement subject to any adjustment granted by the Architect in writing under the conditions of contract. He shall submit to the Architect periodic verified progress reports on the first and fifteenth of each and every month.

- b. Should the contractor be delayed or impeded in the execution of works by reason of :
1. Force Majeure (See Clause 47).
 2. By the works or delays of other contractors or tradesmen engaged or nominated by the Employer and not referred to in the Contract Documents.
 3. The non-delivery of delay in the delivery to the contractor, of any materials and equipment which under the contract the Employer is to supply; or
 4. Any cause, whatever, arising out of the acts or defaults of the employer or the Architect; or
 5. Any accident happening to the works during their progress not arising from the neglect, default of the contractor or his workmen or sub-contractors; or
 6. Extras or variations being ordered by the Architect; or the Employer,
 7. Any other cause which in the opinion of the Architect has caused delay, the contractor may from time to time, within 14 working days of the happening of any of aforesaid, apply in writing to the Architect for an extension of time on account thereof, setting forth the cause of such application and duration of Extension.
- c. The Architect shall, if he thinks the cause sufficient but not otherwise, by writing within 14 working days extend the time for completion of the works for such period as he shall think adequate, and the time for completion of the works so extended, shall for all purposes of the contract be deemed the time specified for completion of the works.
- d. Unless the contractor shall apply for an extension of time within the period and the manner aforesaid, and unless and until the Architect shall extend the time as aforesaid, the contractor shall not by reason of any delay arising from cause aforesaid, be relieved in any way or to any extent from his obligations to proceed with, execute and complete the works within the time specified in the contract for the completion of the work.

18. LIQUIDATED DAMAGES

The contractor shall pay the Employer such sums as stipulated under Item 6-A in Appendix-I as ascertained and liquidated damages for each day, Sundays and Holidays inclusive, that the works remain incomplete after the contract date for completion or any extended time as may be granted by the Architect, provided that the total amount payable by way of damages shall not exceed ten percent (10%) of the incomplete work of expiry of time limit.

19. CONTRACTORS LIABILITY REGARDING DAMAGE TO PROPERTY INJURY TO PERSONS

- a. The Employer shall not be liable or responsible for any accident, loss injury resolution in death or damage of any kind whatsoever happening or accruing during the term of performance of the work herein referred to and in connection therewith to persons and/or property, materials and equipment and the contractor shall fully indemnify and protect employer from and against the same. In addition to the liability imposed by upon the contractor for injury (including death) to persons or damage to property by reason of the negligence of the contractor or his agents, which liabilities not impaired or other wise affected hereby, the contractor hereby assumes liability for and agrees to save the Employer harmless and indemnify him from every expense, liability or payment by reason of any injury (including death) to persons or damage to property suffered through any act of omission of the contractor, or any of his sub-contractors, or any person directly or indirectly employed by any of them or from the conditions of the premises or any part of the premises which is the control of the contractor or any of his sub-contractors, or any one directly or indirectly employed by either of them, or arising in any way from the work called for by this contract.

Further, the contractor hereby agrees and undertakes to indemnify the Employer from any loss or damage or death arising out of Architects instructions by ensuring that the insurance policy taken out under this clause covers this contingency.

- b. The Contractor shall submit Certificates to the Architect giving evidence that he is fully insured against claims for death, injury and property damage in connections with his operations under this for any reasons what ever including acts of nature.
- c. The contractor shall obtain written certificates of similar Insurance from all his sub-contractor and hereby assumes responsibility for any claims or losses to the Employer resulting from failure of any of the sub-contractors to

obtain adequate insurance protection in connection with their work on the project.

- d. The Contractor shall not proceed with the work until he has received in writing from the Architects approval of the certificates of insurance required by the preceding paragraph.
- e. This Certificates shall be fully executed and shall state that the policies can not be canceled. All policies shall be with Insurance Companies acceptable to the Employer.
- f. 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 out of and incidental to his carrying out the contract in a negligent or defective manner. He shall also indemnify the Employer in respect of any costs, charges or expenses arising out of any claims of proceedings and also in respect of any Award of or compensation of damage arising there from. The Employer shall be at liberty to and is hereby empowered to deduct cost, charges and expenses arising or accruing from or in respect of any such claim or damage from any sum or sums due to or become due to the contractor.
- g. The Contractor shall continuously maintain adequate protection of all his work, materials and equipment from damage, destruction or loss and shall protect the Employers property from injury arising in connection with this contract. He shall cover up and protect the works from weather conditions which, in the Architects opinion will be detrimental to the works. In Architects opinion will be detrimental to the works. In default, the contractor shall make good any such damage, destruction, loss or injury.
- h. When so ordered by the Architect, the contractor shall suspend any work that may be subjected to damage by climatic conditions.

20. LABOUR REGULATIONS

- a. The contractor shall be wholly and solely responsible for full compliance with the provisions under all Labour Laws and/or Regulations such as Payment of Wages Act 1936. Minimum Wages Act 1948, Employers Liability Act 1938, Workmen's Compensation Act 1923, Industrial Disputes Act 1947 and the Maternity Benefit Act 1961, Contract Labour (Regulation & Abolition) Act 1970 and Central Rules 1971, Apprentice Act 1961 or any modifications

thereof or any other law relating thereto and rules made there under from time to time.

- b. The contractor shall at his own expense comply with or cause to be complied with Model Rules for labour welfare framed by Government or other local bodies from time to time for the protection of health and for making sanitary arrangements for workers employed directly or indirectly on the works and the workers hutment area. In case the contractor fails to make arrangements as aforesaid, the Employer shall be entitled to do so and recover the cost thereof from the contractor.
- c. Safety Code : The contractor shall at his own cost arrange for the safety provisions stipulated by Government or local authorities or as required by the Architect in respect of all labour directly or indirectly employed for performance of the works and shall provide all facilities in connection therewith.

In case the contractor fails to make arrangements and provide necessary facilities as aforesaid, the Employer shall be entitled to do so and recover the cost thereof from the contractor.

- d. The contractor shall not employ any labour is engaged, the contractor shall make necessary provision at his own expense, for safe guarding and card of small children and keeping them clear of the site of operation. No labour shall reside within the site except authorised guards.

21. CONTRACTORS SITE ORGANIZATION AND EQUIPMENT

- a. Engineer-In-Charge :

The contractor shall ensure continued effective supervision with the help of a qualified experienced and competent Engineer assisted by adequate staff as ascertained by the supervising officer, for the entire duration of the works. The Engineer-In-Charge will be responsible for carrying out the work to the true meaning of the Drawings, conditions of contract, specifications, schedule of Quantities and Architects instructions and directions to the satisfaction of the Architect. Any directions or instructions given to him in writing shall be held to have been given to the contractor officially. Attention is called to the importance of requesting written instruction from the Architect before undertaking any work where Architects directions or instructions are required. Any such work done in advance of such instructions will be liable to be removed at the contractors cost. No staff including the

Engineer and technical supervisory staff shall be transferred from the work without the written prior permission from the Architect.

b. Equipment :

The contractor shall provide and install all necessary hoists, ladders, scaffolding, tools, tackles, plants and all transport for labour, materials, and plant necessary for the proper carrying on execution and completion of the work to the satisfaction of the Architect.

c. Security :

The contractor shall provide adequate number of watchmen to guard the site premises, materials and equipment at all times at his expenses.

d. Storage of Materials :

The contractor shall provide and maintain at his expense proper waterproof sheds for the storage and protection of construction materials and equipments, both his own as well as those supplied by the Employer from time to time.

e. Work Sheds :

The contractor shall, at his expense provide, erect and maintain proper weatherproof work sheds for carpentry and joinery work and such other trades which require protection against weather.

f. Sanitary Convenience :

The contractor shall at his expense provide and erect all necessary sanitary conveniences for the site staff and workmen, maintain in a clean orderly condition and clean and deodorise the ground after removal.

g. Scaffolding, Staging, Guard-rails : The contractor shall provide scaffolding, staging, guard rails, temporary stairs and other temporary and temporary stairs shall be strong, adequate for the particular situations, tied together with horizontal pieces and braced properly. The temporary access to the various parts of the building under construction shall be rigid and strong

enough to avoid any chance of mishaps. The entire scaffolding arrangement proposed shall be subject to the approval of the Architect.

h. Temporary Roads :

The contractor shall provide, at his cost, all necessary temporary access, roads, hard standings and the like required for the proper execution of the works.

22. SUB-CONTRACTORS

As soon as practicable and before awarding any sub-contractor, the contractor shall notify the Architect in writing the names of the sub-contractor proposed for the principal parts of the work and for such other parts of the work and for such other parts as the architect may direct for his approval. The contractor shall not employ any sub-contractor to whom the Architect may object.

23. ASSIGNMENT AND SUBLETTING

The contractor shall not, without the written consent, of the Architect assign this contract or sublet any portion of the work. Any permission to sublet parts of the work shall not absolve the contractor from any liability under this contract.

24. CO-ORDINATION OF WORK

At the commencement of work, and from time to time, the contractor shall confer with other contractors sub-contractors, persons engaged on separate contracts in connection with the work, and with the Architects for the purpose of the co-ordination and execution of various phases of work. The contractor shall ascertain from the other contractors, sub-contractors and persons engaged on separate contracts, in connection with the works, the extent of all chasings, cutting and forming of all openings, holes, grooves, etc. as may be required to accommodate the various services. The contractor shall ascertain the routes of all services and the positions of all floors and wall outlets, traps etc. in connection with the installation of plant, services and arrange for the construction work accordingly the breaking and cutting of completed work must not be done unless specifically authorised in writing by the Architect. All breaking shall be done by the contractor for Civil work and

no work shall be done over broken surface is adequately prepared and reinforced to receive and hold the further work.

25. PROGRESS PAYMENT

- a. Unless otherwise provided in the contract and subject to these conditions, the contractor shall from time to time be entitled to receive payment on the basis of the actual work executed, approved and certified by Architect/Employer subject to deductions an hereinafter mentioned. The Architects Certificate shall be final and conclusive. The contractor shall submit 4 copies of bills duly supported by actual measurements (4 copies) and duly verified by the Site Engineer at intervals of not less than 30 days, provided the value of the bill is not less than the minimum value stipulated in Appendix if the bill value is less than the value specify in Appendix such bills will not be considered from every intermediate bill, a sum of three percent 3% of the value of work done shall be retained until the expiry of the defects liability period.

No interest shall be due to the contractor for sums retained by the Employer All intermediate payments shall be regarded as payments only and not as payment only and not as payment for work actually done and complicated. Intermediate payments do not imply acceptance of the work for which payment is made, acceptance and final payment being subject to all clauses of this contract. The Final Bill shall be submitted by the contractor within two months of the date of virtual completion of work failing which the measurements of work taken by the Architect/Employer after due notice to each party shall be considered as final and binding on all parties unless objected to within one month of their being recorded in the measurement books.

Half the amount of retention money and full Security Deposit shall be released to the contractor after the entire work is certified as virtually complete by the Architect. The employer will not accept any performance bond or fixed deposit receipt or any such alternative in lieu of the money to be retained during the course construction or during the defects liability period.

- b. Unfixed materials in their interim bills, the contractor may claim advance against cost of imperishable materials, that have been brought to site and stored permanently for incorporation in work, to the extent of 80% of the invoiced cost of such materials, provided claims for such payments are supported by all relevant voucher, measurement books and receipts. Only such materials as are brought to site in reasonable time for incorporation in

the work shall be recommended for payment under this sub-clause. The amount thus paid shall be treated as advance and adjustable against progress payment covered under clause 25(a). Such materials when paid for becomes the exclusive property of the Employer and shall not be hypothecated to any party or removed from the site regardless of whether accepted or not.

The said materials shall remain in the custody of the contractor until the work is completed and delivered to the employer any loss or damage shall be the sole responsibility of the contractor. An Insurance Policy against theft, loss or damage by fire, accident and all other causes including acts of God to cover the value of all material at site for which the contractor claims payment, shall be taken out by the contractor at his cost in the name of the employer. The policy shall be kept in force till the materials are incorporated in the work. The policy shall be kept in force till the materials are incorporated in the work. The policy and resents for the premiums shall be submitted to the Architect for his inspection and then lodged with the Employer

26. VARIATION IN MATERIALS COST AND WAGE RATE

If during the progress of work, the price of steel and cement (to be taken at site inclusive of all taxes and duties), increase or decrease, than such net increase or decrease shall apply only to those materials procured for permanent incorporation of work. It is further clarified that no adjustment shall be made in respect of cement work or to be use in the manufacture of tile, jalli, grill, pipes and other similar manufactured items. Similarly the adjustment in prices of steel shall be only for steel to be used in RCC & brick partition works and that no adjustment shall be made in respect of items such as steel, grills, doors, partitions, plates for water tanks and other similar manufacturers items, the contractor shall furnish the bills, vouchers payment receipts etc. in original form with two copies from the approved suppliers for cement and steel for verification (Refer Appendix-2) soon after these materials are received at site. The copy duly verified by architects shall be submitted to employer for his record.(no escalation shall be payable other than for cement and steel as indicated above).

27. EXTRAS AND VARIATIONS

If at any time whilst the works are in hand it shall be deemed expedient by the Architect to order material or work of a different description from that specified, led, or to increase the dimensions or extent of the works, or to alter their situation or vary the form or dimensions of the works, or of any parts thereof, or to substitute one class of work for another, he shall have full power

to do so, and to order and direct any such variations and additions, and the work involved in any such variations and additions shall be executed by the Contractor if of the class of work provided for in the documents at the rates set out in the Schedule of Quantities; and no such variations or additions shall in any way annul this contract, or extend the time for in condition 17, but such additions or variations shall be measured and paid for, or deducted from the account of the Contractor, as the case may require according to the rates set out in the Schedule of Quantities.

All the descriptions of items of Retrofitting work has to be strictly followed. All quantities will be given as per the description given in each item. Nothing beyond that will be given. Any extra item (if any) for retrofitting will have to be taken prior permission of Structural Engineer. If extra item has to be executed its rate has to be prior approved with proper rate analysis.

- b. If any portion of the work so ordered to be done shall not be, in the opinion of the Architect of the same value or class of work provided for in the Schedule of Quantities, the same shall be executed by the Contractor at the rates computed in the following manner. The quoted rates of extra items with detailed rate analysis submitted by the contractors will be finalised by the Vigilance Committee in consultation with the Architects before execution of work.
- c. Before any extra work, or work of an altered value or class is undertaken by the Contractor, he shall procure an order in writing from the Architect/Employer for carrying out such extra or variation of work, and the Contractor shall not be entitled to any payment for such extras or variations unless he produces, if required to do so, the written order for the same, as aforesaid, and he shall not be entitled to plead that the Architect omitted to provide such written order, as it is to be distinctly understood that the responsibility for obtaining such order shall be with the Contractor.
- d. The Contractor shall not be entitled to any other rates than the rates set out in the Schedule of Quantities, on any plea that the work was in a different position, or of a different class from, or in a more difficult position than that shown on the plan or described in the Specification or schedule of Quantities, or carried out under circumstances not completed in the Specification or Schedule of Quantities, unless an agreement entitling him to payment at other than the rates set out in the Schedule of Quantities, shall have been previously made and signed by the Architect and the Contractor.

28. OMISSION OF PORTIONS OF WORKS

The Architect shall have the power to direct the omission of carrying out of any part of the works, but not amounting to the omission of the whole; the Contractor shall not be entitled to claim any compensation on this ground.

29. PAYMENTS WITHHOLD

The Architect may withhold or on account of subsequently discovered evidence, nullify the whole or a part of any certificate to such extents as may be necessary to protect, the Employer from loss on account of:

- a. Defective work not remedied
- b. Failure of the contractor to make payments properly to sub-contractors or for materials or labour of equipment.
- c. Damage to another contractor or sub-contractor
- d. A reasonable doubt that the contract can be completed for the balance unpaid.
- e. A reasonable doubt that the contractor intends to leave work items incomplete

30. MATERIALS AND WORKMANSHIP

- a. All materials and equipment to be incorporated in the works shall be new, Materials, equipment and workmanship are to be of the best quality of the specified type and to the entire satisfaction of the Architect/Employer. The contractor shall immediately remove from the premises any materials, equipment and/or workmanship which in the opinion of the Architect/Employer are defective or unsuitable and shall substitute proper materials equipment and/or workmanship for the rejected materials, equipment and workmanship at his own cost. The term approval used in connection with this contract shall mean the approval of the Architect Employer.
- b. The Contractor shall, if required, submit satisfactory evidence as to the kind and quality of materials and equipment.
- c. Where special makes of brands are called for, they are mentioned as a standard. others of equivalent quality may be used, provided that the Architect considers the substitutions are requested by the contractor and approval by the Architect, no deviation from the Specifications will be permitted.

- d. The Contractor shall indicated and submit written evidence of those materials or equipment called for in the specifications that are not obtainable for installation in the building within the time limit of the contract. Failure to indicate the above within 10 days after the signing of the contract, will be deemed sufficient cause for the denial of request for the extension of the contract time because of same. All materials, and equipment shall be delivered so as to cause a speedy and uninterrupted progress of the work. same shall be stored so as to cause no obstruction and so as to prevent overlooking of any portion of the structure, and the contractor shall be entirely responsible for damage or loss to the materials, by weather or other causes.
- f. With in 3 months after shining the contract, the contractor shall submit for approval of the Architect a complete list of all materials and equipment he and his sub-contract propose to use in the work, of definite brand or make, which differs in any respect from those specified; also the particular brand of any article where more than one is specified as a standard. He shall also list items not specifically mentioned in the specifications but which are reasonably inferred and necessary for the completion of the work.
- g. The contractor shall employ the right kind of workmen, jigs, tools and equipment to fabricate and install all materials and equipment, whether locally purchased or imported and whether provided by the Employer of contractor himself. They shall be fabricated and installed with out any damage and in accordance with the manufacturers instructions and manuals. Unless specifically shown otherwise, all items such as doors/window frames suspended and other ceiling, equipments etc. shall be securely fixed to their supports through expansion machine bolts, raw bolts or other approved means. Securing any items through wooden plug shall not be permitted.
- h. Inspection : All materials, equipment and workmanship shall be subject to inspection, examination and test by Architect/Employer at any and all times during manufacture and/or construction. The Architect shall have the right to reject defective material, equipment and workmanship or require its correction. Rejected workmanship shall be satisfactorily corrected and rejected materials and equipment shall be satisfactorily replaced with proper material and equipment shall be satisfactorily replaced it proper material and equipment without charge therefore, and the contractor shall promptly segregate and remove the rejected materials and equipment from the premises. If the contractor fails to proceed at once with the replacement of rejected materials and/or the correction of defective workmanship, the Employer may by contract or otherwise, replace such materials and equipment and/or correct such workmanship and charge the cost thereof to

the contractor of may terminate the right of the contractor to proceed further with the work, The contractor shall furnish promptly, without additional charge all reasonable facilities, labour, materials and equipment necessary for the safe and convenient inspection and test that may be required by the Architect.

- j. Testing : All testes shall be conducted in manner and through an organization selected by the Architect/Employer. The contractor shall arrange for such tests and shall bear all expenses in connection therewith upon prior written approval to the contractor.

31. DEDUCTIONS FOR UNCORRECTED WORK

If the Architect deems it inexpedient to correct work damaged or not done in accordance with the contract, an equitable deduction form the contract price shall be made therefore and the Architect's/Employer decision in this respect shall be final.

32. CORRECTION OF WORK BEFORE FINAL PAYMENT

The Architects/Employer shall conduct a final inspection just before virtual completion of the work and prepare a list of materials, equipment and items of work which fail to conform to the contract specifications. The contractor shall promptly replace and re-execute such items in accordance with the contract and shall bear all expenses of making good all work and the cost of all work of other contractors destroyed or damaged by such replacement or removal. If the contractor fails to remove and replace above reject materials, equipment and/or workmanship within a reasonable time, fixed by written notice, the Employer may employ and pay other persons to amend and make good such defects at the expense of the contractor. All expenses encased by the Employer in rectifying the defects including all damages, loss and expense consequent on the defects shall be recoverable from any amount due or may become due to the contractor.

33. VIRTUAL COMPLETION

The work shall be considered as virtually completed only upon fulfillment of the procedure laid down in clause 32 above and when the Architect has certified in writing that the work has been virtually completed. The defects liability period shall commence from the date of such certificate. Should the Employer decide to occupy any portion of a building or use any part of

any equipment, before the contract is completed same shall not constitute an acceptance of any part of the work unless so stated in writing by the Architect.

34. DEFECTS

- a. The contractor shall make good at his own cost and to the satisfaction of the Architect/Employer all defects, shrinkages, settlement or other faults, arising in the opinion of the Architect from work or materials not being in accordance with Drawings or specifications or schedule of Quantities or the instructions of the Architect, which may appear within one year after completion of work, excepting specialist items such as water proofing, and termite treatment etc. which call for longer guarantee periods.
- b. Such defects, shrinkage, settlement and other faults shall, upon directions in writing of the Architect 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 employer may employ and pay other persons to amend and make good such defects, shrinkages, settlements or other faults and all damages, loss and expense consequent thereon or incidental thereto shall be made good and borne by the contractor and such damage, loss or expensed shall be recoverable from him by the Employer or may be deducted by the Employer upon the Architects Certificate in writing from any amount due to the contractor or the Employer may in lieu of such amending and making good by the contractor deduct from any moneys due to the contractor, a sum to be determined by the Architect equivalent to the cost of amending such work and in the event of the retention amount being insufficient recover the balance from the contractor, together with any expenses the Employer may have incurred in connection therewith.
- c. Maintenance during defects liability period. The contractor shall provide and maintain adequate staff and labour at his own expense to attend to defects arising in the works during the defects liability period. He shall attend to the effects pointed out to him expeditiously.

35. GUARANTEE

- a. Besides guarantees required elsewhere, the contractor shall guarantee the work in general for one year as noted under clause 34 of the general conditions.

- b. All required guarantees shall be submitted to the Architect by the contractor when requesting certification of accounts for payment by the Employer.
- c. All required guarantees shall be submitted to the Architect in the forms given under Appendix as a pre-requisite to acceptance and payment.

36. SETTING OUT SITE SURVEYS

The contractor shall establish, maintain and assume responsibility for grades, lines, levels and bench marks. He shall report any errors or inconsistencies regarding frames, lines, levels and dimensions to the Architect before commencing work, commencement of work will be regarded as the contractors acceptance of such grades, lines, levels and dimension and no claim will be entertained at a later date for any errors found.

Such surveys shall be carried out by a qualified surveyor, all bench marks to be created by the contractor in connection with the work shall be co-related to the permanent bench marks established at the site.

37. DRAWINGS, SPECIFICATIONS ETC.

After the contract is signed, the contractor will be furnished with two copies of the plans, conditions of contract, specifications and schedule of quantities with out cost to him for his own use until the completion of the contract. Additional copies of drawings and other documents will be supplied on payment to the Architect at actual cost.

- b. In general, the drawings shall indicate dimensions, positions and type of construction; the specifications shall indicate the qualities and the methods; and the schedule of Quantities shall indicate the quantities and rate for each item of work. However, the above documents being complementary, what is called for by any one shall be as binding as if called for by all in case of any discrepancies in or among the documents, the most stringent of all shall apply.
- c. Any work indicated on the drawings and not mentioned in the schedule of Quantities or specifications or vice versa, shall be deemed as though fully set forth in each. Work not specifically detailed, called for marked or specified, shall be the same as similar parts that are detailed, marked or specified.

- d. No deviations from the Drawings, Specifications and Schedule of Quantities shall be made. The Architects interpretation of these documents shall be final and without appeal.
- e. Errors or inconsistencies discovered in the Plans and Specifications shall be promptly called to the attention of the Architect through the Site Engineer for interpretation for correction. Local conditions which may affect the work shall like wise be brought to the Architects attention at once. If at any time, it is discovered that work is being done which is not in accordance with the approved plans and specifications, the contractor shall correct the work immediately. Correction of defective work shall not be a basis for any claim for extension of time. The contractor shall not carry on work except with the knowledge of the Site Engineer.
- f. Figured dimension on the scale drawings and large scale details shall govern large scale details shall take precedence over scale drawing. Any work done before receipt of such details if not in occurrence with the same, shall be removed and replaced or adjusted as directed, without expenses to the Employer.
- g. All Drawings, schedule of Quantities and specifications and copies thereof furnished by the architect are his property. They shall not be used on any other work and shall be returned to him at request or at the completion of the contract.

38. SAMPLES AND SHOP DRAWINGS

After the award of the contract, the contractor shall furnish for the approval of the Architect/Employer samples and shop drawings required by the specifications or by the Architect. Samples shall be delivered as directed by the Architect. No extra payment is due to the contractor for preparation of any samples. A schedule giving dates for the submission of samples shall be included in the time schedule described Under Section 39. Unless specifically authorised all samples must be submitted for approval within 60 days of signing the contract or not less than 120 days before the date the particular work involved is scheduled to begin.

39. PROGRAM CHART C P M CHART

The contractor shall prepare integrated CPM charts for the execution of work including detailed charts for individual buildings, showing clearly all activities from start of work to completion, with details of manpower and equipment required for the fulfillment of the program and submit the same for approval to the Architect within one month of the award of the Contract. The chart shall also indicate the scheduling of samples, shop drawings and approvals. Thereafter on the first day of each month, for purposes of comparison the contractor shall submit an identical chart showing the actual rate of progress to date. In the event the actual rate of progress falls behind the scheduled progress as indicated in the charts, the contractor shall accelerate the works to the satisfaction of the Architect.

Daily Progress Report :

The contractor shall submit, in duplicate, on a form to be approved by the architect a daily report giving an accurate record of the progress of the works, the number of men employed in each trade the weather, temperature, visitors to the site and any other events influencing the progress of the works and together with copies of all delivery notes of materials and equipment delivered.

The contractor shall impose a similar requirement on all his sub-contractors and shall incorporate such information in his own report.

40. COVERING UP

The contractor must give at least three working days clear notice to the Architect and the Site Engineer before covering up any of the work in foundation and drains in order that paper measurement may be taken of the work as executed, and in the event of the contractor failing to provide such notice, he is, at his own expense, to uncover as required to allow the measurements to be taken and afterwards to reinstate.

41. COMPLETION DRAWINGS

Upon completion of the whole work the contractor shall furnish the Architect, in triplicate, copies of the final survey showing final position of buildings, roads, services elevations of finished ground floors, and grades at corner of buildings.

42. METHOD OF MEASUREMENT

Where work done is to be measured, the standard method of measurement in accordance with the standard laid down by the Indian Standard Institute shall be adopted unless otherwise specified. In the event of any dispute with regard to the mode of measurement of the work executed. The decision of the Architect/Employer shall be final and binding.

43. TOLERANCES

The Contractor shall exercise every care to ensure that all structural members are plumb and true to dimensions called for on the drawings, to receive finishing elements such as doors, windows, fitting, fixtures equipment and similar items. The details of the above finishing items are based upon allowing tolerance of +/- 3mm from the given location.

Any variations bend this may require rectification in the structural members or may involve remaking or replacing the finishing elements, fabricated to fit into the openings or spaces, as called for on the drawings. Such rectification shall be carried out by the contractor as directed by the Architect at no extra cost to the Employer. In case of separate contracts, the contractor whose work dose not conform to dimensions called for, shall be liable for all the expenses which may have to be incurred for rectification or replacements as may be required by the Architect for the proper installation of the finishing elements. The Architects decision in this respect shall be final and binding on the contractor.

44. ARCHITECTS STATUS AND DECISIONS

a. Status :

The Architect shall have general supervision and direction of the work. He has authority to stop the work whenever such stoppage may be necessary to ensure the proper execution of the work. As the Architect is in the first instance the interpreter of the Conditions of the Contract and the judge of its performance he shall side neither with the Employer nor with the contractor but shall use his power under the contract to enforce its faithful performance by both.

b. Decisions :

The Architect shall, within a reasonable time, make decisions on all clams of the contractor and on all other matters relating to the execution and progress

of the work or the interpretation of the contract Documents. The decision, opinion, direction of the Architect with respect to all or any of the following matters shall be final and without appeal.

- a. Variations or modifications of the design,
- b. The quality or quantity of works or the additions or omission or substitution of any work,
- c. Any discrepancy in the drawings or between the drawings and/or specifications,
- d. The removal and/or execution of any works executed by the contractor,
- e. The dismissal from the works of any persons employed thereon,
- f. The opening up for inspection of any work covered up,
- g. The amending and making good of any defects under defects liability period,
- h. Materials and workmanship,
- i. The contractor to provide everything necessary for the proper execution of the work,
- j. Assignment and sub-letting,
- k. Delay and extension of time,
- l. Termination of the contract by the owner,
- c. Dismissal :

The contractor shall on the request of the Architect immediately dismiss from the works any person employed thereon by him who may, in the opinion of the Architect, be incompetent or misconducts himself and such persons shall not be re-employed on the works without the permission of the architect.

d. Access for Architect to Works :

The Architect and his representative shall at all reasonable times have access to the works and to the workshops or other places of the contractor where work is being prepared for the contract and when work is to be so prepared in work shops or other places of sub-contractor, the contractor shall by a term in the sub-contractor, the contractor shall by a term in the sub-contract so far as possible secure a similar right of access to those workshops or places for the from all damage of accident by providing temporary roofs, windows, and door covering, boxing or other construction as required by the Architect. This protection shall be provided for all property adjacent to the site as well as on the site.

45. INDIAN STANDARDS

A reference made to any Indian Standard Specifications in these documents, shall imply reference to the latest revision of that standard, including such revisions/amendments as may be issued by the Indian Standards Institution during the currency of the contract and the corresponding clause/s therein shall hold valid in place of those referred to.

46. PROTECTION AND CLEANING

- a. The contractor shall protect and preserve the works from all damage or accident by providing temporary roofs, windows and door covering, boxing or other construction as required by the Architect. This protection shall be provided for all property adjacent to the site as well as on the site.
- b. The contractor shall properly clean the work as it progresses and shall remove all rubbish and debris from the site from time to time as is necessary and as directed. on completion, the contractor shall ensure that the premises and/or site are cleaned, surplus materials debris, sheds etc. removed, areas under floors cleared of rubbish, gutters and drains cleared, doors and sashes cased, locks and fastenings rolled, keys clearly labeled and handed to Site Engineers so that the whole is left fit for immediate occupation or use and to the satisfaction of the Architect.

47. FORCE MAJOR

- a. The right of the contractor to proceed with the work shall not be terminated because of any delay in the completion of the work due to enforceable causes

beyond the control and without the fault or negligence of the contractor, including but not limited to acts of God, or of the public enemy, restraints of a Governing state, fires floods, unusually severe weather.

- b. If the contractor is wholly prevented from performance of the contract for a period in excess of thirty (30) consecutive days because of a force major, the Employer may terminate this contract by fifteen (15) days written notice delivered to the contractor and if the period of the force major exceed ninety (90) consecutive days, the contractor may terminate this contract by fifteen (15) days written notice to Employer. In the event this contract is so terminated, the contractor shall be paid all costs actually incurred (which costs shall not include any other expenses of the contractor such as loss of profits, salaries of contractors Employees, Expenses of contractor towards maintenance of his establishment etc.) for the work executed up to the date of termination. Failure to agree on an equitable adjustment shall be deemed to be dispute.

48. TERMINATION OF THE CONTRACT BY THE EMPLOYER

If the contractor shall be adjudged bankrupt or if he should make a general assignment for the benefit of his creditors, or if a receiver shall be appointed on account of his insolvency or if he sold persistently or repeatedly refuse to carry on the work diligently or shall fail except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper materials or equipment for the progress of the work, or if he should fail to make prompt payments to sub-contractors or for materials or equipment or labour or persistently disregard laws, ordinance, or instruction's of the Architect, or otherwise be guilty of a violation of any provision of the contract, or has abandoned the contract, or has failed to commence the works, or has suspended the work, then the Employer upon the recommendation of the architect that sufficient cause exists to justify such action, may without prejudice to any other right or remedy and after giving the contractor seven days notice in writing, terminate the employment of the contractor and take possession of the premises and of all materials equipment, tools and appliances thereon and finish the work by whatever method he may deem expedient in such case the contractor shall not be entitled to receive any further payment until the work is finished. If the amount due to the contractor for the work including compensation for additional management and administrative services, such excess shall be paid to the corporator. If such expense shall exceed such unpaid balance, the contractor shall pay the difference to the Employer. The expense incurred by the Employer and the damage incurred through the contractors fault, shall be certified by the

Architect and his decision on this matter shall be final and binding on the contractor.

49. TERMINATION OF THE CONTRACT BY THE CONTRACTOR

If the work should be stopped under an order of the court, or other public authority for a period of three months though no act or fault of the contractor or any one employed by him, then the contractor may, upon, fourteen days send written notice to the Employer and submit claim for payment for all work executed including for cost of all material purchased and brought to site.

50. ENTRY TO SITE

It is hereby expressly declared that the entry of the contractor(s) on the site will be merely as a licensee for carrying out the construction of works under this Agreement and they shall, by his/their being allowed such entry on the premises, acquire any right, lien or interest either in the works carried out by them under the Agreement or anything appurtenant or attached thereto and their claim will only be in the nature of money claim found due and payable to them in accordance with the certificates issued by the Architect under the provisions contained hereafter.

51. SETTLEMENT OF DISPUTE

All dispute and differences of any kind whatever arising out of or in connection with the contract or the carrying out of the works (whether during the progress of the works or after their completion, and whether before or after the determination, abandonment or breach of the contract) shall be referred to and settled by the Architect who shall state his decision in writing. Such decisions may be in the form of a final certificate or otherwise. The decisions of the Architect with respect to any or all of the following matters shall be final and without appeal.

- a. The variation or modifications of the design.
- b. The quality or quantity of works or the addition or omission or substitution of any work.
- c. Any discrepancy in the Drawings or between the Drawings and/or Specifications and schedule of Quantities.

- d. The removal and/or re-execution of any works executed by the contractor.
- e. The dismissal from the works of any person employed thereupon.
- f. The opening up for inspection of any work covered up.
- g. The amending and making good of any defects under defects liability period.
- h. Acceptability of materials, equipment and workmanship.
- i. Materials, labour, tools equipment and appurtenances necessary for the proper execution of work.
- j. Assignment and sub-letting.
- k. Delay and extension of work.
- l. Termination of contract by the Employer.

But if either the Employer or the contractor be dissatisfied with the decision of the Architect on any matter, question or dispute of any kind except the matters listed above, then and in any such case, either party (the Employer or the contractor) may within twenty eight days after receiving notice of such decision, give a written notice to the other party through the Architect requiring that such matters which are in dispute or difference of which such written notice has been given and no other shall be and is hereby referred to the arbitration and final decision of a single Arbitrator being a Fellow of the Indian Institute of Architects, to be agreed upon and appointed by both the parties or in the case of disagreement as to the appointment of a single Arbitrator to the arbitration of two Arbitrators both being Fellows of the Indian Institute of Architects, one to be appointed by each party, which Arbitrators shall before taking upon themselves the burden of reference appoint an Umpire, who must also be a Fellow of the said Institute.

The Arbitrator, the Arbitrators or the Umpire shall have the power to open up review and revise any certificate, opinion, decision, requisition or notice pertaining to the matters referred to them, and to determine the same by his/their award. Upon every or any such references the cost of and incidental to the reference and a ward respectively shall be at the discretion of the Arbitrator or Arbitrators or Umpire who may determine the amount thereof, and the same to be taxed as between Attorney and Client or as between party

and party, and shall direct by whom and to whom and in what Manner the same shall be borne and paid. The award of the Arbitrator or Arbitrators or the Umpire shall be final and binding on the parties.¹

1. General :

These special conditions are intends to amplify the general conditions of the contract and shall be,

2. Order of Precedence :

If any discrepancy is noticed between these special conditions and general conditions of contract, the special conditions shall take precedence.

3. Employer and Architects :

The name and address of the Employer and of the architects responsible for the preparation of the contract agreement documents

52. UNIFORM RATE FOR ITEMS SHALL BE PAYABLE FOR ALL LEVELS. NOTHING EXTRA SHALL BE PAID FOR UPPER LEVELS.

53. FOR ANY WORK OF RETROFITTING WORK ALL ITEM DESCRIPTIONS AND ITS SPECIFICATIONS HAS TO BE STRICTLY FOLLOWED.

SPECIFICATIONS FOR CIVIL WORK

EARTH WORK

1. EXTENT AND INTENT

The work under this section covers all operations listed below in connection with building construction and site development work.

- a. Clearing and grubbing
- b. Grading
- c. Excavation including removal of top soil
- d. Filling and Back Filling
- e. Removal and disposal of surplus material
- f. Bringing sweet earth from outside where required
- g. Hard stone soling to floors and paving
- h. Anti-termite treatment to foundations and floors

The contractor shall provide all materials, labour, equipment, operations and incidental necessary and required for the completion of all aspects of work listed above as called for in the drawings and specifications.

2. GENERAL

The contractor shall visit the site, inspect the bore holes and decide for himself the nature of the ground and the subsoil to be excavated. No claim of extras will be entertained in consequence of any misunderstanding or incorrect information or ignorance of existing conditions.

3. ANTIQUITIES

Any ancient carvings, relics, coins or other curiosities discovered during the excavation or other work, remain the property of the Owner and shall be handed over to the Architect as called for under relevant clause of Conditions of Contract.

4. EXCAVATED MATERIALS

Any sand, gravel or similar useful materials obtained from excavation site shall be the property of the Owner and shall not be disposed of or used in the construction of the works without prior written consent of the Architect. It is the intention of this contract that all benefits accruing from materials within the site shall pass to the Owner and the fair market price of any such material disposed of or used shall be alleged to the Owner by the Contractor and the contract sum adjusted accordingly.

Borrow pits shall not be dug on the site without the prior written consent of the Architect.

5. CLEARING

The contractor shall clear the site of all rubbish and buildings, remove all grass and low vegetation only after consultation with the Architect as to which bush, trees and buildings shall be saved. All disused foundations drains or other obstructions met with during excavation shall be dug out and cleared at contractor's own expense.

6. BENCHMARKS

The contractor shall erect sufficient permanent benchmarks in suitable locations for all the buildings before starting work, from which all important levels shall be laid out. Exact levels of all floors shall be set. A qualified surveyor shall be engaged by the contractor to locate all buildings, paths, roads, utility lines, etc. Contractor shall provide all pegs, flags, pillars and labour required for setting out.

7. EXCAVATION

Excavation for foundations, footings, trenches, pavings, walkways, etc., as called for on the drawings shall be generally made to net widths required by the drawings. "Battering" or "Benching" to the sides of excavation shall have prior approval of the Architect. Extra excavations (i.e. excavations beyond

the limits required by the drawings), "Battering" and "Benching" carried out without the prior approval of the Architect will not be measured, and such unauthorised excavations shall be filled up to the proper level with concrete of the same type and mix as for foundations or as ordered by the Architect at contractor's own expense.

All soft spots and loose pockets shall be dug out and filled with cement concrete 1:4:8 well rammed and consolidated. Clear out all sludge and slush before laying foundation.

8. EXCAVATION IN ROCK

All rock excavation shall be carried out by crowbars, chiselling or burning. Blasting shall not be carried out without the written permission of the Architect. Roughly level or shelf bottom as required and avoid shattering or removing rock beyond authorised lines and grades.

9. STACKING OF SPOIL

Excavated materials shall not be placed within 1.5 meters of the edges of trench or half the depth of the trench, whichever is more.

10. WATER IN EXCAVATION

All water which may accumulate in excavation from all causes is to be baled, pumped out or otherwise removed. Adequate pumping or other facilities shall be employed to keep all excavation clear of water constantly. Care shall be taken to see the water is not discharged where it will cause damage to buildings or other property or cause inconvenience in the legitimate use of the property. During excavation inconvenience in the legitimate use of the property. During excavation the contractor shall take particular care to avoid damage to drains, water mains, underground work and services. Should any damage be done, the Architect is to be notified immediately and the damage made good at the contractor's expense. Pipes, cables, etc., met with during the excavation are to be properly slung or otherwise supported.

11. NOTIFICATION TO ARCHITECT

The contractor shall notify the architect when excavation is ready for inspection and no foundation shall be put in before the excavation has been approved by the Architect. He shall give Architect at least one working day's notice.

12. PROTECTION

The contractor shall protect the excavation from the effect of inclement weather or other damage or make good such damages to the satisfaction of the Architect.

13. DRESSING

Pit and trench bottoms shall be smoothed and tightly rammed to a uniform surface.

14. FILL MATERIAL

Fill materials required for fill and back fill shall be subject to the approval of the Architect. Fill materials shall be hard and free from all soft or spongy material. Clods or rocks over 20cm in greatest dimension shall not be placed within 30cm of grade. No material over 8cm in size shall be placed in the upper 15cm of fill. Fill under floors, terraces and concrete beds shall be free of saltpeter, white ants etc.

15. FILL COMPACTION

The fill shall be spread in layers not exceeding 15cm thick and each layer shall be watered and thoroughly consolidated with a ten (10) tonne roller. At locations where rolling is not possible, the filling shall be carried out in layers not exceeding 15cm thick and each layer rammed with heavy rammers till the required level is reached. The fill shall then be flooded with water for at least 24 hours, allowed to dry and then rammed and consolidated again. The finished surfaces shall be formed to correct lines, levels, slopes, shapes etc. as required. Fills at building structures, walks, paths etc. shall not be executed until all foundations, footings etc. have been inspected and approved by the Architect.

Return and fill in around foundations, walls etc., as described above and bring grades upto either original ground levels or as required by the drawings when different from original grades.

16. FINISH GRADING

Finish grading shall be done with fertile top soil over those area noted as 'planting' on the plans. Depths of top soil shall be 15cm minimum. Top soil shall be approved by the Architect before placement.

17. REMOVAL

Removal of excavated materials includes the separation of the useful from the useless portion (what is useful and what is useless is left to the sole discretion of the Architect) and depositing the former in regular heaps and removal of the latter. Surplus earth, if any, and useless spoil shall be carted away from the 'site' and disposed as directed at Contractor's cost. Disposal shall be at authorised dumping grounds only.

18. PLANKING, STRUTTING AND SHORING

The contractor shall be responsible to adopt such measures as may be needed to uphold the sides of excavation and also protect excavation against the sides of public utilities and services and other structures. The rates for excavation shall include use and waste of timber or steel work, as planking and strutting including wales, struts and open or close poling boards as directed by the Architect.

19. HARD-CORE

Hard-core (stone soiling) under floors and other locations where called for, shall be approved hard broken stones 50mm and down. The stones shall be hand packed in position, interstices between stones packed with smaller chips and the surface thoroughly, rolled with a 10 tonne roller, with frequent watering. The surface shall then be blinded with morrum, watered thoroughly and consolidated with a 10 tonne roller to required grade and profiles. Earth shall on no account to be used for making God or blinding purposes. Where rolling as described above is not possible, the consolidation shall be carried out using heavy hand rammers and light manually operated rollers. The consolidated thickness shall be as shown on the drawings.

20. ANTI-TERMITE TREATMENT

Designed Buildings shall be adequately protected against attack by subterranean termites by suitable chemical treatment measures. The work shall be carried out by a specialist pest control agency approved by the Architect. All payment for the treatment shall be borne by the contractor.

The Pest Control Agency to be selected by the Architect shall be a member off the Indian Pest Control Associations.

The work to be carried out by the specialist firm shall carry a guarantee of the satisfactory performance of the treatment for a minimum period of TEN (10) YEARS.

The treatment shall be carried out generally in accordance with the stipulations laid down by IS:6313 (Part II) - 1971 (code of practice for Anti Termite Measures in Buildings - Part II - Pre-constructional Chemical Treatment Measures) subject to the minimum requirements given in this specification.

MINIMUM SPECIFICATION

The earth filling immediately under the stone soling (under floors), bottom and side fills of all foundations (excepting RCC foundations) and soil along external perimeter all buildings shall be chemically treated against termites. The chemicals to be used for the treatment shall be DILDRIN, ALDRIN, HEPTACHLOR or CHLORDANE conforming to the requirements and concentration laid down in IS:6313 (PART-II) - 1971.

APPLICATION

The chemical solution shall be prepared by mixing the chemical with the appropriate quantity of water to obtain a chemical emulsion of the correct concentration as stipulated above. The prepared emulsion shall be applied as described below.

Column Pits, Wall trenches, etc. The both surface and sides of the excavations (upto a height of 30 cm. from the bottom) made for column foundations, wall foundations, etc., (excepting OAK foundations) shall be treated with the chemical emulsion at the rate of 5 litres per sq.m. of surface area.

Treatment to back fill : After the column foundations, wall foundation etc., has come up, the back fill in immediate contact with the foundation structure shall be treated at the rate of 15 litres per sq.m. of the surface of the substructure for each side. If water is used for ramming the earth fill, the chemical treatment shall be done after ramming operation is completed by rodding earth at 15 cm centroids close to the wall face and spraying the chemical with the above dose. The earth is to be returned in layers and the treatment shall also be carried out in similar stages. The chemical emulsion shall be directed out in similar stages. The chemical emulsion shall be directed towards the masonry wall surfaces so that the earth in contact with these surfaces is well treated with the chemical.

In the case of RCC walls and columns, the treatment shall start at the depth of 50cm. below natural ground level. From this depth the back fill around the RCC columns, walls, etc., shall be treated at the rate of 15 liters per sq.m. of the surface.

Top surface of plinth filling :

The top surface of the plinth fill (just below the stone soling) shall be treated with chemical emulsion at the rate of 5 litres per sq.m. of the surface before the stone soling is laid. If the filled earth has been well consolidated and does not permit the emulsion to set through, holes up to 50 to 75 mm deep at 150 mm centers both ways may be made with crow bars to facilitate saturation of the soil with the chemical emulsion.

Junction of wall and Floor :

A channel of size 33 cm x 3 cm shall be made at all the junction of wall and columns with the floor (before laying the soling and rod holes and in the channels up to the ground level at 15 cm centers. The solution is poured in to the channel at the rate of 15 liters per sq.m. of the vertical surface and allowed to soak through the holes so that the soil in contact with the column/wall is fully soaked with the chemical. The soil shall beamped back in channel and consolidated to original.

External perimeter of building : After the building is complete, holes shall be made along the external perimeter of the building at intervals of 15 cm and depths of 30 cm and the emulsion shall be allowed to soak through these holes fully at the rate of 5 litres per running meter of the perimeter wall.

Soil Surrounding Pipes :

Wherever any service pipes enter the soil inside the area of the foundation of any buildings, the soil surrounding the point of entry of each pipe at the foundation, floor, etc., shall be fully soaked with the chemical solution for a distance of at least one meter from the point of such entry.

Expansion Joints :

Soil beneath expansion joints at ground floor level shall be specially treated as directed. The joints itself shall also be create by the Architect.

Treatment under arons :

The soil below the concrete or stone aprons to be provided around the perimeter walls of all buildings shall also be treated with the chemical solution at the rate of 5 litres per sq.m.

Treatment over DPC :

Top concrete damp proof in external and internal walls shall be given a liberal coat of chemical solution when the concrete is till green.

Spraying Equipment :

To facilitate proper penetration of the chemical into the soil. A pressure pump of adequate capacity and sprayers shall be employed to apply the solution.

Payment :

The contractor shall be Paid on the basis of the plinth area of the building at ground floor excluding open courts, aprons (paved or unpaved). For carrying out the work in accordance with his own specifications subject to the minimum requirements described above and in IS:6313 Part II)-1971.

CONCRETE WORK

CONCRETE WORK - PLAIN AND REINFORCED

1. EXTENT AND INTENT

The contractor shall provide all labour, materials, operations, equipment and incidentals necessary and required for the completion of all concrete work called for,

2. GENERAL

It is the intent of this specification of ensure that all concrete placed at various locations on the job, should be durable and strong. It should wear well and be practically impervious to water. It should be free from such defects as shrinkage, cracking honeycombing, and spilling of the surface. Unless otherwise called for in this specification, all plain and reinforced concrete shall conform in all respects to Indian Standard 456-2000.

3. MATERIALS

Cement Ordinary/rapid Hardening Portland Cement conforming to IS:269-1967 or Portland Blast Furnace slag cement conforming to IS:455-1967 shall be used. Cement shall have uniform colour cement shall be fresh when delivered at site. Consignment shall be used in order or delivery.

Water : Water used for mixing concrete shall be in accordance with of IS:456-2000. The contractor shall product Test Results for the mixing of water used on the job.

Aggregates : Aggregates (fine and coarse) should be had and should not contain materials that are likely to decompose or change in volume when exposed to the water or to affect the reinforcement. All aggregates shall be clean and free from organic impurities. The aggregates shall be free from coatings of dust and clay. Coarse aggregates shall be free from coatings of dust an clay. Coarse aggregate shall be machine crushed hard stone and fine aggregate shall be coarse aggregate shall be machine crushed hard stone and fine aggregate shall be coarse river or pit sand, and both obtained from approved source.

And shall be screened and washed by mechanically operated equipment, if the deleterious materials content exceeds 5 percent by volume. All aggregates used shall conform to IS:383-1979. If aggregates are wet, due allowance shall be made for bulking in accordance with IS:2386-1963 (Part III).

Unless otherwise specified, the size of coarse aggregates shall conform to IS : 456-2000.

All aggregates shall be suitably rated from the maximum certified guage to the minimum. The contractor shall submit a sieve analysis of the aggregates to be used on the works and maintain a regular record of sieve analysis during the currency of the work. The grading of the aggregates will be determined from these sieve analysis so as to produce maximum density of concrete. All expenses of sieve analysis, mix design and trial mixes shall be borne by the contractor.

4. STORAGE

Cement shall be stored in accordance with clause 5.1 of IS : 269-1967. Any cement which has become wet, show any sign of caking, or deterioration, or contamination of any kind shall not be used and shall be immediately removed from the site. Fine and coarse aggregates shall be stored in separate open bins scoring to sizes. The bins shall have brick walls of adequate thickness and floor paved with flat bricks.

5. BATCHING

Two categories of concrete are specified under this contract :

Controlled Concrete :

In the case of controlled concrete, the contractor shall design the mix suitable for obtaining the specified strength and required workability. The mix design proposed to be adopted by the contractor shall be submitted to the Architect for his approval. All aggregates and cement shall be measure by weight in approved weigh batching equipment measured by volume recommended in app. design mix. Mixing water shall be measured in graduated litre cans. Trial mixes shall be tested for workability. With each trial mix atleast 3 specimen test cubes should be made and crushed at 7, 14 and 28 days to ensure that the requisite density and strength is obtained. The

cubes strengths obtained from trial sizes, should be the recommended percent higher than the works cube strengths specified for the different categories of controlled concrete. All charges & expenses for mix design shall be borne by the contractor.

6. MIX PROPORTIONS

Controlled Concrete : All controlled concrete wherever specified on the drawings shall be to one of the grades described below and shall meet with the strength requirements laid down in Table II of IS :456 - 2000. The aggregate cement ratio and water cement ratio and water cement ratio and water cement ratio to be used for obtaining the specified test cube strengths given below, shall be determined in accordance with the design of the mix.

All aggregates and cement shall be measured by weight in an approved weigh batching equipment measured by volume recommended in app. design mix and water in graduated litre cans.

Strength of standard 15 cm cube of each type of mix i.e. (M-15, M-20, etc. shall comply with IS-456 - 2000 cube strength criteria.

7. WATER-CEMENT RATIO

Shall be strictly followed as recommended in app. mix design, subject to min - max. limit specified in IS-456 : 2000.

8. MIXING

All concrete, whether plain or reinforced, shall be mixed in a standard type batch mixer, having minimum drum speed of 60 peripheral meters per minute. The cement and aggregates shall be first mixed dry until all particles of aggregate are coated with cement. Mixing water shall be added and mixing continued for at least two minutes to twelve in a concrete of a uniform colour and consistency.

9. TRANSPORTATION

Concrete should be placed in its final position within 20 minutes of mixing. The contractor shall arrange his mixer position and about a method of transportation so as to ensure that this period is not exceeded under any

circumstances. Transportation should be smooth and free from jolting, so that there is no segregation or loss of any of the ingredients.

10. PLACING CONCRETE

The forms shall be well wetted before placing concrete. Concrete should not be dropped from a height greater than 2 meters. Properly constructed chute shall be used in such cases where it is necessary to exceed this height, concrete must be thoroughly worked into the forms so that they are entirely filled, reinforcing bars adequately and tightly surrounded and entrained air released from the mass of concrete. Placing shall be carried out by hand punning as well as vibrators on the manner directed by Architect. Concrete should not be moved any considerable distance in the moulds, being consolidated as nearly as possible in the place where it is dumped. The full depth of any lift shall be replaced at one pouring. In casting beams or other deep sections concrete shall not be placed in layers.

11. CONSOLIDATION

All plain and reinforced concrete shall be consolidated by means of mechanical vibration. Adequate number of vibrators shall be used to ensure full compaction of concrete in about 10 minutes of placing. If immersion vibrators are used, these shall be inserted at places not exceeding half meter apart until it is immersed to the full depth of concrete. Wherever possible shutter vibrators shall be used and the contractor shall design his shuttering so that this can withstand form vibration. That shall be taken to ensure that concrete is not over vibrated so as to cause segregation. In addition to mechanical vibration, sufficient hand tools must be used to ensure full consolidation around reinforcement and at all edges and corners.

12. CONSTRUCTION JOINTS

Construction joints shall be made only where shown in the drawings or approved by the Architect. The procedure given in Clause 20.14.2 of removed from the concrete before it is allowed to fully harden. The removal shall be effected by scrubbing the concrete surface with wire and bristle brushes and washing down to expose the aggregate clearly, care being taken to avoid dislodgment of particles of aggregate.

If the concrete has been allowed to have excessively, the surface shall be chipped over its whole surface to a depth of at least 10mm and thereafter

thoroughly washed before fresh concrete is added on the other side of a construction joint, the surface of the old concrete shall be thoroughly wetted and covered with a thin layer of cement mortar 1:2.

Vertical Joints :

At the ends if any day's work or run of concrete, the concrete should be finished off against temporary shutter stop which should be vertical and securely fixed. The stop should be removed as early as the weather permits.

13. TESTING

- a. Testing of Cubes : Specimens of the concrete used in the work shall be taken at intervals for crushing strength and density measurements. Test cubes shall be made and tested strictly in accordance with IS:456-2000 and IS:516-1964. Three to six cubes should be made for each sampling, subject to minimum requirements specified in IS:456-2000. However, cubes shall be taken for all important structural members as directed by the Architect regardless of the quantity of concrete involved in such members or volume concrete laid on any particular day. They should be taken out of the moulds 24 hours after casting and store in a moist condition until the time of test. The contractor shall carry out the tests as described above under the direction of cubes, testing and other incidentals shall be borne by the contractor.

All concrete, the test results of which fall below the "Acceptance Criteria for Concrete" listed under of IS:456-2000 shall be classified as substandard concrete. All such substandard concrete shall be removed and replaced with concrete of specified strength at the contractor's own cost and risk.

All items of work related to such rejected concrete shall not be paid for.

14. INSERTS

The contractor shall fix all necessary inserts such as steel plates, pipe sleeves, bolts, etc. and make provision for holes, pockets, dowels, etc. in the shuttering of concrete work, to enable subsequent fixing of supports, brackets, ceilings, precast members, etc., as indicated on the drawings or as required by the Architect.

15. CURING OF CONCRETE

All exposed faces of concrete shall be covered with hessian, sand or similar material which shall be kept continuously wet for a period of atleast 15 days after casting. Horizontal surfaces shall be cured by impounding water in cement mortar bunds. After removal of hessian or sand, all concrete surfaces shall be kept well wetted by applying water at intervals for a further period of atleast three weeks.

16. REINFORCEMENT

Steel Reinforcement shall be either mild steel quality conforming to Grade I of IS : 432-1966 or High Yield Strength deformed bars with a guaranteed minimum yield strength of 4250 Kg or 5000 Kg per sq.m as called for on the drawings, confirming to IS:1786-1966 or IS:1139-1966. Fabric reinforcement where called for in topping slab or precast concrete units shall be of hard drawn mild steel wire mesh conforming to IS:1566-1967. Bars shall be free from mill scale, loose rust, oil or paint. The reinforcement bar bending schedule shall be prepared by the contractor and submitted to the Architect for his scrutiny and his concurrence obtained before commencing fabrication. Fabrication shall be accurately done to the dimensions, spacing and minimum cover as down on structural drawings. All steel shall be rigidly held in place with 18 gauge annealed steel wire. Cement mortar (1:2) cover blocks of required shape, MS chairs and spacers bars shall be used in order to ensure accurate positioning of reinforcement. All joints in mild steel reinforcement upto and including 16 mm dia, shall be overlapped. The lengths of overlap for tension and compression joints shall be as indicated on structural drawings. Joints in mild steel reinforcement above 16 mm dia may be welded if permitted by the Architect in writing.

17. COVER TO REINFORCEMENT

Care shall be taken to maintain the correct cover to reinforcement. Unless otherwise specified on the drawings, the following minimum covers (exclusive of rendering or other decorative finish) shall be provided in all reinforce concrete work.

- a. At each end of a reinforcement bar not less than 25 mm nor less than twice the diameter of bar.
- b. For longitudinal reinforcing bar in a beam not less than 35 mm nor less than the diameter of bar.

- c. For longitudinal reinforcing bar in a column not less than 40 mm. In the case of columns less than 250 mm thick minimum cover shall be 25 mm.
- d. For tensile, compressive shear reinforcement in a slab not less than 15 mm nor less than the diameter of bar.
- e. For vertical or horizontal reinforcement in concrete walls for not less than 25 mm nor less than the diameter of bar.
- f. For main or subsidiary reinforcement in concrete footing and pile caps not less than 75 mm.
- g. The minimum cover for any reinforcement steel including stirrups and ties wires shall not be less than 15 mm under any circumstances.

For concrete members exposed to the atmosphere action or harmful chemicals (as in the case of concrete in contact with earth faces contaminated with such chemicals), acid vapor, saline atmosphere, sulphurous smoke, etc., covers given above shall be increased by 25% of above as directed by the Architect. For concrete members of water retaining structures, covers for reinforcement shall be as stipulated in IS:3370 - (Part II) - 1965.

18. FORMWORK - GENERAL

Formwork shall be rightly constructed of minimum 40mm thick wrought, timber planking or steel plates or plywood. Timber used for shuttering shall be free from loose knots. Shuttering faces in contact with concrete shall be free from adhering grout, projecting nails, splits or other defects that may mar the concrete surface. The shuttering shall be erected on battens, beams and steel props properly cross braced so as to make the form work rigid.

Formwork shall be erected to line and levels and to the shapes required in the work and shall carry, without deformation, the full weight of wet concrete and other live loads. It should also withstand the effect of vibration without deflection, bulging, distortion or loosening of its component parts. The contractor shall be responsible for sufficiency and adequacy of all form work, centering and moulds.

Details of centering and form work shall be subject to approval of the Architect. The completed form work shall also be subject to approval by the Architect before placement of reinforcement.

The form work shall be designed so that the soffits of slabs and the sides of beams may be removed first leaving the form work to the soffits of beams and their supports in position. Wedges shall be so provided as to allow accurate adjustment of form works and its easy removal.

All joints shall be sufficiently tight to prevent leakage of grout. Chamfer fillets shall be provided at all corners wherever called for on the drawings. Clean-out holes shall be provided at the bottom of all column and pair form work and care shall be taken to remove any rubbish, wood shavings or any other foreign materials before concreting. Temporary supports shall be provided as required and/or ordered by Architect.

Form work for of water tanks, basements and other locations and facies, parapets and other similar vertical members shall be held together rightly by means of form ties of suitable length. The form ties shall be approve design and type and have a minimum working strength of 1500 Kg. The ties shall be free of lugs, cones, washers, etc., which level a hole larger than 20 mm dia or depressions back of exposed surface of concrete.

19. EXPOSED CONCRETE FORMWORK

Formwork for exposed concrete work shall be of wrought hard wood timber planks, free from loose knots. The planks shall be 40 mm thick, 100mm to 125mm wide with tongue and groove joints, assembled to pattern approved by the Architect, The formwork shall be so constructed, braced and stayed as to remain absolutely rigid and true during and after pouring.

The boards shall planned and thickness in order that the surface against the concrete shall not be broken at joints between boards. Chamfers grooves, drips, mouldings, beveled edges, etc., shall be made in the form itself to the size, profiles and details called for on the drawings.

The contractor shall provide 19mm thick shuttering quality plywood of approved make (Anchor shuttering plywood or equivalent approved by the Architect) in place of timber plank shuttering mentioned above for such locations as called for by the Architect. The joints in the plywood shuttering shall be located as directed by the Architect. The plywood shall be properly cut and adequately framed with timber to produce true surfaces and approved pattern.

20. SURFACE TREATMENT OF SHUTTERING

The surfaces of shuttering coming into contact with concrete shall be coated with shuttering oil of approved manufacture. Shuttering oil shall be applied before placing reinforcement. The shuttering shall be thoroughly cleaned and oiled before each use.

21. REMOVAL OF FORMWORK

All form shall be kept in position until expiry of a minimum period after concreting as specified below :-

- | | | |
|-----|--|---------|
| i | Forms supporting sides of beams, walls and | 2 days |
| ii | Bottom of slab upto 4.50m span | 7 days |
| iii | Bottom of slabs above 4.50m span | 14 days |
| iv | Bottom of beam upto 6.00m span | 14 days |
| v | Bottom of beam above 6.00 span | 21 days |

22. SURFACE FINISH OF CONCRETE

All formwork, centering and shuttering used for used for unexposed concrete work shall be rigid and straight, so as to produce all concrete members true to line level and plumb within a tolerance of +/- 3 mm. Only cement mortar rendering of maximum thickness 6mm may be permitted as finishing to concrete surfaces except where terrazzo, ceramic tile or other finishes are specified. Shuttering centering and formwork to be used for all exposed concrete work (like exposed columns, beams, ribs, slabs, chajjas, facies, etc.) shall be of such finish and rigidly as to produce all faces fair and smooth true to line, level and plumb. No rendering or touching up shall be permitted on these faces.

23. PRECAST CONCRETE

All precast concrete shall be cast vibrating tables or by using form vibration. The concrete mix shall conform in all respects to 'controlled concrete' described in the appropriate paragraph under this section. Exposed surfaces of precise members shall be finished as called for on the drawings.

All surfaces coming in contact with in-site concrete shall be wire brushed and housed down until the aggregate is free from cement slurry.

Castellations shall be provided wherever called for. Leave grouting holes, grooves, inserts, projecting reinforcement. All edges and delicate projections likely to be damaged during erection shall be protected by means of wooden cover fillets, until placed in position.

24. DEFECTS IN CONCRETE

Immediately on removal of formwork, the surface of concrete shall be examined by the contractor and any honeycombs or other imperfections shall be brought to the notice of the Architect. The acceptability or otherwise of such defective concrete shall be at the sole discretion of the Architect who may direct the contractor to repair the defective work or ask for demolition and replacement of such defective work at the risk and cost of the contractor.

25. PROTECTION OF CONCRETE

All concrete shall be protected from damage by workmen, equipment, overload or any other cause for a minimum period of 20 days from the date of casting.

All edges, corners and projections of concrete members likely to be damaged shall be protected by means of wooden cover fillets.

26. ENGINEER

It is essential that the Engineer who is in charge of the construction of all concrete work, whether plain or reinforced shall be well experienced in this class of work and shall superintend personally the whole construction and pay special attention to :

- (a) Quality control in respect of selection of materials, proportioning and mixing, etc.
- (b) Placing and consolidating of concrete;
- (c) Accuracy in cutting, bending, placing and binding of reinforcement.
- (d) Accuracy in fabrication, assembly and erection of formwork.
- (e) Casting, handling, transportation and erection of precast members.

BRICK WORK

1. EXTENT AND INTENT

The contractor shall provide all labour, materials, operations, equipment and incidentals necessary and required for the completion of all brick work called for.

2. GENERAL

Brick and tiles shall be of selected quality, thoroughly burnt without being vitrified, of uniform deep red or copper colour, regular in shape and size and shall have sharp and square sides and edges and parallel faces to ensure uniformity in the thicknesses of the courses of brickwork. They shall be free from cracks, chips, flaws, stone or lumps of any kind.

3. BRICKS

Bricks shall be locally available first class bricks, Bricks shall be of size 9" x 4 3/8" (22.9cm x 7.0cm) unless otherwise specified. In all masonry works of class designation 35 is to be used.

4. SAMPLES

Samples of each type of brick tiles taken at random from the load shall be deposited with the Architect for his approval before being used in the work. All subsequent deliveries shall be upto the standard of the sample approved.

5. SOAKING OF BRICKS AND TILES

If so instructed by the Architect, all bricks and tiles shall be thoroughly soaked before use, in specially prepared vats, tubs or tanks for not less than two hours and until air bubbles stop being given off. The duration of soaking bricks and tiles shall be kept on wooden planks or brick platforms to avoid earth being smeared on them.

6. MORTAR

Mortar for all brickwork shall consist of cement and clean, sharp coarse sand.

7. CEMENT

Portland cement conforming to IS: 269-1967 shall be used, unless otherwise specified, Cement shall be fresh when delivered at site.

8. SAND

Sand shall be clean, not too fine not too coarse and shall fall within the grading zones I to IV given in table III of IS: 383-1963.

9. WATER

Water used for mixing mortar shall be in accordance with Clause 4.3 of IS: 456-1964.

10. MIX PROPORTION

The mortar shall consist of one part cement and 6 parts sand for brickwork and tiles work 240mm thick and above. For brick piers, half brick walls and honey combed brickwork the mortar mix shall consist of one part cement and four parts sand.

11. MORTAR MIXING

Mixing of mortar shall be done in a mechanical mixer. Hand mixing shall be resorted to only when specifically permitted by the Architect. Cement and sand shall be mixed dry thoroughly and then water shall be added gradually. Wet mixing shall be continued till mortar of the consistency of a stiff paste and uniform colour is obtained. Only the quantity of mortar which can be used up within 30 minutes of its mixing shall be prepared at a time.

Mortar shall be used as soon as possible after mixing and before it has begun to set and in any case within 30 minutes after the water is added to the dry mixture. Mortar left unused for more than 30 minutes after mixing shall be rejected and removed from the site of work.

12. LAYING BRICKWORK

All brickwork shall be built in English bond with frog upwards. Each brick shall be set with bed and vertical joints filled thoroughly with mortar. Selected bricks shall be used for the face work. The walls shall be taken up truly plumb. All courses shall be laid truly horizontal and vertical joints shall be truly vertical. Vertical joints in alternate course shall come directly over the other. The thickness of brick courses shall be kept uniform and for this purpose wooden straight edge with graduation giving thickness of each brick course including joint shall be used. Necessary tools comprising of wooden straight edge, mason's spirit level, square, foot rule, plumb line and pins etc. shall be frequently and fully used by the masons to ensure that the walls are taken up true to plumb, line and levels.

Both the faces of walls of thickness greater than 23cm shall be kept in proper plane. All the connected brickwork shall be carried up nearly at one level and no portion of the work shall be raised more than one meter above the rest of the work. Any dislodged brick shall be removed and rest in fresh mortar. Before commencing and brickwork, the contractor shall confer with order trades to ensure that all pipes, conduit, drains, sleeves, bolts hangers, or any other materials necessary to be installed in the brickwork at the time it is built, have been fixed or provided for.

13. JOINTS

Bricks shall be so laid that all joints are full of mortar. The thickness of joints shall be not more than 10mm. The face joints shall be raked to a minimum depth of 12mm by a raking tool during the progress of the work when the mortar is still green, so as to provide proper key for the plaster or pointing to be done. Where plastering or pointing is not of laying. The face of brickwork shall be cleaned daily and mortar droppings removed.

14. REINFORCED BRICKWORK

All brickwork under 23cm thick, shall be reinforced with hoop iron (16 gauge, 25mm wide) at every fourth course. The hoop iron, cleaned of rust and loose flakes with brush shall be embedded thoroughly in cement mortar at every fourth course. It shall be cast in or securely fixed to adjoining columns or walls.

15. CURING

All fresh brickwork shall be protected from the effects of sun, rain etc., by suitable covering. All brick work shall be kept constantly moist on all the faces for atleast ten days.

16. SCAFFOLDING

Unless otherwise instructed by the Architect, double scaffolding having two sets of vertical supports shall be provided for all building work. The supports shall be sound, strong and tied together with horizontal pieces over which the scaffolding planks shall be fixed.

The contractor shall be responsible for providing and maintaining sufficiently strong scaffolding so as to withstand all loads likely to come upon it.

17. OPENINGS

Openings in brickwork for air-conditioning ducts, grills, pipes etc. shall be provided at the time of laying brickwork.

18. CAULKING

After installation of piping, conduits, grilles etc. all openings left around pipes, conduits, grilles etc. shall be checked and caulked with cement mortar to render the whole work vermin proof and tidily finished.

19. TESTING

Compressive strength, water absorption test and dimension test has to be carried out as per the relevant I.S. specifications for purchase of every one lakh bricks or part thereof, at the cost of contractor from the Government approved laboratory as directed by the Architect/Owner.

HOLLOW BLOCK MASONRY

1. HOLLOW CONCRETE BLOCK :

Hollow Concrete Blocks shall conform to I.S. 2185 - Part-I 1979. The blocks shall be hollow, closed, cavity concrete blocks manufactured by 'Minato Shrike' block making machine. These blocks shall be dense concrete closed cavity (D.C.C.) type. The cement mortar mix shall be designed on the basis of grading curves of sand/aggregates. The blocks shall have a crushing strength of 70 Kg/cm x cm after 28 days. Blocks shall be preferably cast at site under covered shed and wet cured for at least 21 days. All blocks shall be completely dry before incorporation in masonry. No wetting of blocks is necessary prior to construction of masonry walls.

The blocks shall be of the following sizes :

- a) 400 x 300 x 200 mm
- b) 400 x 200 x 200 mm
- c) 400 x 200 x 100 mm

The cement, sand, water etc. used for the manufacture of the blocks shall conform to the respective requirements laid down under 'concrete works' in these specifications. The dimensional tolerances and physical requirements of the blocks shall be strictly in accordance with the stipulation laid down in IS 2185 (Part-I) - 1979.

2. TESTS

Tests shall be conducted on samples of blocks selected according to the sampling procedure given in clause 10 of IS:2185-1979 to ensure conformity with the physical requirements laid down in IS:2185-1979. The tests shall be conducted as per IS 2185-1979 and all expenses thereof shall be borne by the contractor.

3. CEMENT MORTAR FOR HOLLOW BLOCK MASONRY

Mix proportion of cement mortar for Hollow concrete block masonry :

- i) In foundation and plinth - 1 cement : 4 coarse sand
- ii) In load bearing walls in superstructure-1 cement : 6 coarse sand
- iii) In construction (100mm thick) wall - 1 cement : 4 coarse sand.

4. OPERATION FOR LAYING BLOCK MASONRY

The construction of Hollow concrete masonry shall be carried out generally as laid down in IS 2572-1963. The more important points are indicated below. However, the requirements laid down in IS 2572-1963 shall be fully applicable.

- 4.1 First Course : The first course of concrete masonry shall be laid with great care, making sure that it is properly aligned, leveled and plumbed, as this will assist the mason in laying succeeding courses to obtain a straight and truly vertical wall.

Before laying the first course, the alignment of the wall shall be marked on the foundation footings. The blocks for this course shall first be laid dry, that is without mortar over the footing, along a string lightly stretched between properly located corners of the wall in order to determine the correct position of the blocks including those of the cross-walls joining it and also adjust their spacing. When the blocks are set in proper position, the two corner blocks shall be removed, a full mortar bed spread on the footing and these blocks laid back in place truly level and plumb. The string shall then be stretched tightly along the faces of the two corner blocks and the faces of the intermediate ones adjusted to coincide with the line. Thereafter each block shall be removed and re-laid over a bed of mortar. After every three or four blocks have been laid, their correct alignment level and verticality shall be carefully checked.

- 4.2 The construction of walls may be started either at the corners first or started from one end proceeding in the other direction. If the wall are built first, they shall be built four or five courses higher than the center of the wall. As each course is laid at the corner, it shall be checked for alignment and level and for being plumb. Each block shall be carefully checked with a level or straight-edge to make certain that the faces of the block are all in the same plane. This precaution is necessary to ensure truly straight and vertical walls.

The use of a story-rod or course-pole, which is simply a board with markings 20 cm apart, provides an accurate method of finding the top of the masonry for each course. All mortar joints shall be one centimeter thick. Each course, in building the corners, shall be stepped back by a half-block and the horizontal spacing of the block shall be checked by placing a mason's level diagonally across the corners of the block.

- 4.3 When filling in the wall between the corners, a mason's line shall be stretched from corner to corner for each course and the top outside edge of each block shall be laid to this line. The manner of handling or gripping the block shall be such as to position the block properly with minimum adjustment.

To assure satisfactory bond, mortar shall be spread too far ahead of actual laying of the block or it will stiffen and lose its plasticity. As each block is laid, excess mortar extruding from the joints shall be cut off with the trowel and thrown back on the mortar board to be reworked into the fresh mortar. If the work is progressing rapidly, the extruded mortar cut from the joints may be applied to the vertical face shall of the block just laid. Should there be any delay long enough for the mortar to stiffen on the block, the mortar shall be removed to the mortar board and reworked. Dead mortar that has been picked up from the scaffold or from the floor shall not be used.

- 4.4 Closure block when installing the closure block, all edges of the opening and all four vertical edges of the closure block shall be buttered with mortar. The closure blocks shall be carefully lowered into place. If any of the mortar falls out leaving an open joint, the closure block shall be removed, fresh mortar applied and the operation repeated.

5. CONCRETE FILLING IN HOLLOWES

The hollows of the concrete block shall be filled with cement 1:2:4 (1 cement : 2 coarse sand : 4 crushed grade stone aggregate 12 mm and down) at locations wherever called for. Reinforcement shall be provided in such fills as directed by the Architect.

6. DOORS/WINDOWS JAMBS

For jambs of doors and windows where called for solid concrete block shall be provided. Alternatively where hollow concrete blocks are used, the hollows shall be filled with cement concrete of mix 1:2:4.

FLOOR FINISHES

1. GENERAL

The Contractor shall furnish all labour, materials, operations including fixing devices, equipment and incidentals necessary and required for the completion of all flooring and paving work. The contractor shall pave the areas indicated on the plans and Schedule of finishes with materials therein called for. All flooring shall be laid to the best practice known to the trade. The flooring shall be laid to the level except where slopes are called for on the drawings, in which case the slopes shall be uniform and arranged to drain into the indicated outlets. Particular care shall be exercised to ensure that all flooring, skirting and dados are perfectly matched for colour and finish.

2. SAMPLES

The Contractor shall furnish for approval by Architect samples of each type of floor and dado finish.

3. GRANOLITHIC FLOORING

Granolithic flooring shall consist of an under layer of cement concrete 1:2:4(1 cement:2 coarse sand:4 crushed graded stone aggregate 20mm and down) and a granolithic topping of 12mm thickness to give a total thickness of 50mm or as called for. Granolithic mix shall consist of one part cement and 2 1/2 parts crushed graded stone aggregates of size 3mm to 6mm. The materials namely, cement, sand, aggregates and water shall conform in all respects to the requirements laid down for the same earlier under 'Concrete Work'.

4. WORKMANSHIP

The whole of the work of laying, making and finishing shall be carried out by tradesmen fully experienced in the class of work required. All granolithic shall be finished to true, even plans and the line with abutting edges flush and corner and joints true and square.

5. PANELS

The under layer as well as the topping shall be laid in panels not exceeding 2 sq.m formed by rigidly held strips of wood or flat iron on edge. The panels shall be laid alternately allowing for an interval of 48 hours between the laying of adjacent bays.

6. UNDER LAYER

Before spreading the under layer, the base shall be cleaned of all dirt, laitance, loose material etc. Well wetted and covered to the required thickness, leveled and thoroughly compacted. The surface shall be left rough, cross hacked if necessary to form a good key for the topping layer. The topping shall be laid within about 4 hours after the under layer is laid.

7. TOPPING

The Cement and screened aggregates shall be mixed dry in the operation of 2.5. After they are thoroughly mixed sufficient quantity of washed sand as approved and water shall be added to make a stiff, plastic mix but not flowing. The mixture shall be laid even the layer so that the two layers firmly grip each other. The top layer shall be well tamped, spaded, troweled and brought true to required levels. The junction of the floor and wall dado or skirting shall be rounded off to a uniform radius as shown on the drawings. The finished surface shall be smooth, true, even well connected and free from Transverse waves, hollows or humps. The finished surface shall be subject to the approval of the Architect.

The flooring shall be cured for at least 10 days by allowing water to stand in pools over the floor. The finished floor shall be protected in approved manner against any kind of damage.

8. GRANOLITHIC SKIRTING

GRANOLITHIC skirting to walls shall be 100mm high, recessed from the finished wall surface in accordance with detailed drawings. The skirting shall be 70mm thick, consisting of one part cement and three parts coarse sand, applied to wall face, compacted and troweled smooth with a floating coat of net cement to approved finish to match with the GRANOLITHIC floor. The junction of the skirting with the floor to be neatly rounded to a radius of 20mm.

The surface shall be kept constantly wet for seven days.

9. TERRAZZO IN-SITU

All in-situ terrazzo work shall be composed of 2 parts of well graded marble chips(6mm to 10mm size) and one part of cement. Terrazzo shall be applied as 10mm finishing to cement concrete screeded bed of suitable thickness to give the total thickness of 50mm or more as called for.

10. MATERIALS

Cement :

Ordinary gray Portland cement, white or coloured cement conforming to IS: 269-1967 or blast furnace slag cement conforming to IS: 455-1967.

White Cement :

White cement shall be Vembanad brand manufactured by Messers Travncore Cement, Ottayam, Kerala.

Aggregates :

Coarse and fine aggregate shall conform to the requirements of IS: 383-1963.

Water :

Water tank be clean free from grills, acid, alkyl, soluble salts etc.

Marble Chips :

Marble chips for the terrazzo layer shall be of the colour, grade and size as approved by the architect. They shall be machine crushed free from foreign matter and of approved quality.

Workmanship :

The whole of the work of laying, making, finishing, polishing and setting terrazzo, both in-situ and precast form shall be carried out by tradesman

fully experienced in the class of work required. All terrazzo work shall be finished to true, even plane and line with shutting edge flush and corners and joints true and square.

Samples :

The contractor shall submit samples of the various colours, if any proposed to be used for approval before laying floors. The Architect reserves the right to vary the proportions of materials in terrazzo until a satisfactory sample is submitted.

11. TERRAZZO PANEL SIZE

The floor shall be divided into panel not exceeding 2 sq.m both while laying the under layer as well as the topping, so as to reduce the cracking of floor. The panels shall be separated by means of dividing strips where called for where dividing strips are not used the panels shall be formed by rigidly held strips of wood or flat iron on edge and the bays shall be laid alternately allowing for an interval of at least 48 hours between the laying of adjacent bays.

12. MIXING OF MATERIALS

If the mixing is to be done manually, it shall be done in a trough or tub. The entire quantity of cement and pigment required for an operation shall be dry mixed at the beginning of the work and stored properly.

Where different coloured chips are used, they shall first be mixed in the required proportions. The cement and pigment shall be proportioned as required. Thoroughly dry mixed and sieved before further mixing with marble chips. The cement-pigment mix shall be mixed with the chips dry thoroughly. After they are mixed thoroughly in the dry state, water shall be added in small quantities, preferably in a fine spray. The mixtures shall be plastic but not flowing. The mix shall be used in the work within thirty (30) minutes of the addition of water during preparation.

13. UNDERLAYER

shall be fixed on the base to the exact surface level of floors so as to form panels of required size and pattern. Before spreading the under layer, the base shall be cleaned of all dirt, laitance or loose material and then well wetted

with water. It shall then be covered with cement slurry just before spreading of the under layer.

After application of the cement slurry, the under layer shall be spread, leveled and connected. The surface shall be left rough to form a good key for the terrazzo layer.

14. LAYING TERRAZZO TOPPINGS

Terrazzo layer shall be laid over the under layer while the under layer has hardened sufficiently say within 18 to 24 hours after the under layer has been laid. Cement slurry of the same colour as the topping shall be laid over the surface before laying terrazzo. The entire work of laying the topping shall be complete, in one stretch.

The terrazzo layer shall be compacted thoroughly by tamping or rolling and troweled smooth. The compaction shall ensure that air bubbles are cleared from the mix. The junction of the band wall or dado or skirting shall be rounded off to a uniform radius as shown on the drawings.

The finished surface shall be true to required levels.

15. CURING

The surface shall be left dry for air curing for a duration of 12 to 18 hours depending upon the atmospheric conditions. It shall then be cured for about ten days by allowing water to stand in pools over the floor.

16. GRINDING

The grinding and processing of terrazzo shall be commenced about ten days after the terrazzo is laid. The surface shall be watered and ground evenly with a grinding machine using carborundum stone grade 60. The surface shall then be washed clean and grouted with a grout of cement and pigmented mixed in the same proportion as the topping. It shall then be allowed to dry for 24 hours and wet-cured for 7 days.

The grinding and grouting operation shall be repeated using carborundum stones grade 80 and 120 till a smooth finished surface exposing marble chips evenly, is obtained.

After thoroughly cleaning the surface, grouting and curing as described earlier, the final grinding shall be carried out using Carborundum stone grade 370.

The surface shall again be washed clean. Dusted over with Oxalic acid at 37 gsm. per sq. meter. Sprinkled with water, rubbed hard with cotton waist and wiped clean the following day.

Where use of machine for grindings not feasible, rubbing and polishing shall be done by hand in the same manner as described above.

17. FINAL POLISH

When all constructional and finishing work namely, painting, joinery work, electrical, plumbing work etc. are complete Lighted and just before the area is occupied, the floor shall be worked clean with dilute Oxalic acid solution and dried.

Non-slip wax polish shall then be applied with soft line on the clean and dry surface and polish shall then be applied with soft linen on the clean and dry surface and polishing machine fitted with felt or hessian bobs shall be run over the surface, clean saw dust shall then be spread over the surface, polishing machine again applied, mopping up surplus wax and leaving glossy surface, care shall be taken that the floor is not left slippery and that ordinary wax is not used under any circumstances.

18. PVC DIVIDING STRIPS

PVC Dividing strips where called for on the drawings or schedule of finished shall be "FIXOPAN" rigid PVC strips of approved shade. The strips shall be fixed on the base to the exact surface level of the floor to divide the surface in to the required arrangement of panels. The strips cut to profile of the skirting to the full height.

19. TERRAZZO TO STAIRS

Lay the treads, fibers and landings of the staircase in terrazzo in-situ as described above. Finish neatly around railings to the approval of the Architect. The nosing to treads and junction of treads and risers shall be formed as per drawings. After laying and cleaning, all exposed external surface shall be protected against damage, no patching to

20. TERRAZZO SKIRTING

Terrazzo skirting to walls, columns, cill blocks and other locations as called for shall be generally 100mm high, recessed from the finished wall surface as shown on the drawings and laid simultaneously with the floor. The junction of the skirting with the floor shall be neatly rounded to a radius of 15mm. The terrazzo layer shall be laid-cured, rubbed and polished as described earlier.

21. SPLIT KOTAH STONE PAVING

Paving to areas and locations as called for, shall be of split kotah stone slabs laid with 6mm thick joint as per pattern shown on drawings. The slabs shall be 25 to 30mm thick free, from flanks and other defects and of approved colour. The size of the shall slabs be as shown on drawings to suit the paving pattern. The slabs shall be cut to trapezoidal shapes where required. The slabs shall be chisel dressed on all the sides to the full depth. All angles and edges of the tiles shall be true and free from chippings. The surface of the slabs shall have the natural finish and shall not be dressed or rubbed unless authorised to do so by the Architect.

22. LAYING

Cement mortar 1:6 (1 Cement:6 coarse) sand shall be spread under the area of each slab to 20mm depth. Washed clean slab shall be laid on too, pressed, tapped with wooden mallets and brought to level with adjoining slabs. The joints between slabs shall be 6mm wide. It shall be lifted and lend aside. The top surface of the mortar shall then be corrected bit add a coat of cement slurry shall be spread over the same at the rate of one bag of cement per 10 sq.m. area. The slab shall then be placed back in position and to passed till it is properly bedded in level with adjoining slab. Subsequent slabs are laid in similar manner. After each slab is laid, surplus cement on the surface shall be cleaned off.

The cut slabs end the full slabs, with the sides properly dressed as described above, shall be laid to form a pattern as a known, with continues parallel joints in one direction. The joints in the other direction shall break with the above parallel joints. After the slabs are laid and tapped into their final position, the joints shall be filled with cement mortar 1:3 struck pointed and finished neat. The surface of the finished paying shall be thoroughly cleared of all surplus moral and left cured for a minimum period of seven days.

23. POLISHED KOTAH STONE FLOORING

Lay to areas indicated on plans 25mm to 30mm thick green kotah stone slabs of approved quality free from flakes and other defects. The slabs for polished flooring shall have the top (exposed) face polished before being brought to site.

Before starting the work the contractor shall get samples of slab approved by the Architect.

24. DRESSING OF SLABS

Every slab to be cut to the requires size and shape and fine chisel dressed on the sides to the full depth. The sides shall be table rubbed with coarse sand or machine rubbed before paving. All angles and edges of the tiles shall be true, square and free from clippings and the surface shall be true and plane.

The thickness of the tiles shall be 25 to 30mm or 20mm as specified.

25. LAYING

Cement mortar 1:6 (1 cement : 6 coarse sand) shall be spread under the area of each slab to 20mm depth. Washed clean slab shall be laid on top, pressed, tapped with wooden mallets and brought to level with adjoining slabs. It shall be lifted and laid aside. The top surface of the mortar shall then be corrected by adding fresh mortar at hollows. The mortar is allowed to harden a bit and a coat of cement slurry shall be spread over at the rate of on cq.ft. of cement per 100 sq.ft. of area, the slab shall then be placed back in position and trapped till it is properly bedded in level with adjoining slab with as fine a joint as possible. Subsequent slabs are laid in similar manner. After each slab is laid, surplus cement on the surface shall be cleaned off. The flooring shall be cured for a minimum period of seven days.

26. POLISHING AND FINISHING

Slight unevenness at the meeting edges of slabs shall then be removed by fine chiselling in a slant. The surface shall then be polished and finished in the same manner as specified for "Terrazzo-in-situ floor".

27. TERRAZZO (MOSAIC) TILES

The tiles shall be approximately 20mm thick of approved shade, colour and chips. The tiles shall be pressure made conforming in all respect to IS:1237.

28. LAYING

The bedding for the tiles shall be with either lime mortar 1:2 (1 lime : 2 coarse sand) or cement mortar 1:4 (1 cement : 2 sand) mix as directed by

Engineer-in-charge, the average thickness of bedding mortar shall be 20mm and the thickness at any place shall not be less than 13mm. Lime or cement mortar bedding shall be spread, taped and corrected to proper levels and allowed to harden for a day before the tiles are set.

Over this bedding neat cement slurry of honey like consistency shall be spread at the rate of 5 kg. of cement per square meter. Tiles shall be soaked in water for 20 minutes and allowed to drain out for 20 minutes before laying. Tiles shall be damp but not wet when they are laid. Tile shall be laid in the mortar bedding from center of area outward to obtain a symmetrical pattern, each tile being gently tapped with wooden mallet till it is properly bedded and is in level with adjoining tiles, the surface of the flooring during laying shall be frequently checked with a straight edge at least 2 m long so as to obtain true surface with required slope. When extra space left out is less than 25mm it shall be filled with coloured terrazzo to match the tile pattern and finished to match tiled floor.

29. JOINTS

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

Tiles which are fixed in the floor adjoining the wall shall enter not less than 13mm under the plaster skirting or dado. The junction between wall plaster and tile work shall be finished neatly and without weavings. After the tiles have laid surplus cement grout that may have come out of the joints shall be cleaned off.

30. CURING, POLISHING AND FINISHING

The day after the tiles are laid, all joints shall be cleaned with wire brush to the depth of 5mm and all dust and loose mortar removed. Joints shall then be grouted with gray or white cement, mixed with or without pigment to match

the shade of the topping of the wearing layer of the tiles. Pigment shall conform to IS:459.

The floor shall then be kept wet for minimum period of 7 days. The surface shall thereafter be ground evenly to the satisfaction of Engineer-in-Charge with machine grinders in 3 phase with grade stones from coarse to fine grade. The surface shall receive wash of neat cement mixed with or without pigment and cured before every grinding operation.

After final polish, surface shall be cleaned and oxalic acid shall be dusted over the surface 35 gsm. per Sq.m. sprinkled with soft cloth. Finally the finished terrazzo surface is to be rendered with the wax mixed with turpentine or similar approved material. The surface after polishing shall present a glossy appearance. Where machine polishing cannot be done, because of small area, the surface shall be hand polished. In all other respects the process shall be similar as per machine polishing.

31. MEASUREMENT

The rate shall include the cost of all materials, labour involved, wastage of tiles in cutting and others etc. in all operations described above. Payment shall be made on square meter basis of the finished work.

32. URINAL PARTITION

The partition shall be from 30mm thick best quality green machine cut kotah stone, double polished on all exposed surfaces in required size, shape as per Architectural drawing including chasing, brick work, erecting fixing with c:m 1:2.

33. CERAMIC TILE FLOORING

Flooring to toilet and other areas where called for shall be of non-slip ceramic tiles of Johnson, Bombay potteries or so many as approved by the Architect. The tiles shall be of approved colour, size and shape and shall be of uniform colour, true to size and shape and free from cracks, twists, uneven edges, crazing and other defects.

The tiles shall be laid over a bed of 20mm thick cement mortar 1:3 (1 cement : 3 coarse sand) and leveled to a true surface. The surface of the bedding mortar shall be left rough to provide bond for the tiles. A floating coat of thick cement slurry shall be laid over the screed to proper levels and

the non-slip ceramic tiles set over the same firmly to correct line and levels. The joints shall be filled and finished neat with cement paste pigmented to the shade of the tile. The joints shall be finished neat as directed and shall be straight, regular and uniform. On completion, the surface shall be washed with water, rubbed with fine saw dust and left clean.

The finished floor surface shall be true to required levels.

34. STONE SLAB FLOORING

Stone slabs for flooring, paving treads and risers or steps etc. shall be of selected quality, hard, sound, dense and homogeneous in texture, free from cracks, decay, weathering and flaws. They shall be from an approved quarry and shall be of the finish and color as approved by the Architect. The intent is to use local stone, kotah stone, katni stone Jesalmer Marble and Dholpur stone individual and/or in combination.

WALL FINISHES

1. EXTENT AND INTENT

The contractor shall furnish all materials, labour, scaffolding, equipment, tools, plant and incidentals necessary and required for the completion of all plaster and wall finishes, The contractor shall be responsible to take proper precautions to protect already installed work from damage.

2. GENERAL

Plaster as here in specified shall be applied to all internal and external surfaces where called for. Glazed tile dado, terrazzo dado, and other wall finishes are to be provided where indicated on drawings and schedules. Areas called for on drawings and typical shall be considered to apply to appropriate, adjoining areas whether shown on same drawings or not and whether indicated or not. All plaster work and other wall finishes shall be executed by skilled workmen in a workmanlike manner and shall be of the best workmanship and in strict accordance with the dimensions on drawing.

3. PLASTER WORK

The primary requirements of the plaster work shall be to provide an absolutely water tight enclosure, dense, smooth and hard and devoid of

cracks on the interior and exterior. The contractor shall do all that is necessary to ensure this result. All plastering shall be finished to true plane without imperfections and square with adjoining work and shall form proper foundations for finishing materials such as paint etc.

Masonry and concrete surfaces to which plaster is to be applied shall be clean, free from efflorescence, damp and sufficiently rough and keyed to ensure proper bond.

Wherever directed all joints between concrete frames and masonry in-filling shall be expressed by a groove cut in the plaster. Said groove to exactly coincide with the joint beneath.

Where grooves are not called for the joints between concrete members and masonry in-filling shall be covered by 245 gauge galvanized chicken mesh strips 40mm wide or as shown, installed before plastering.

4. CHASING

All chasing, installation of conduits, boxes etc. to be completed before any plastering or other wall finish is commenced on a surface. Chasing or cutting of plaster or other finish will not be permitted. Broken corners shall be cut back not less than 150mm on both sides and patched with Plaster of Paris as directed. All corners shall be rounded to a radius of 8mm or as directed by the Architect.

5. SAMPLES

Samples of each type of plaster and other wall finish shall be prepared for approval by the Architect

6. MATERIALS

Cement : As specified under concrete work.

Water : As specified under concrete work.

Sand : For internal plaster-Washed fine sand.
For external plaster-Washed fine sand and/or stone aggregate as

called for - sand and stone aggregate
to conform to the requirements given
under "Concrete Work".

Water Proofing Compound : CICO No. 1 or approved equal.

7. PROPORTIONS

The materials used for plastering shall be proportioned by volume by means of gauge boxes.

8. PREPARATION OF SURFACE

The joints in all walls, both existing and freshly built shall be raked into a depth of 15mm, brushed clean with wire brushes dusted and thoroughly washed before starting plaster work. Concrete surfaces shall be roughened by hacking over the entire surface shall be roughened by hacking over the entire surface as approved by the Architect to ensure proper key for the plaster.

9. INTERNAL PLASTER TO WALLS

Plaster to internal faces of walls shall be 15mm/12mm thick as called for, consisting of 1 part cement and 6 parts clean fine sand.

10. MORTAR MIXING

Mortar shall be prepared as specified under 'Brick Work' It shall be made in small quantities only as required and applied within 15 minutes of mixing.

11. APPLIANCES

Plaster application shall be commenced only after the preparatory work is approved by the Architect. Correct thickness of plaster shall be obtained by the Architect. Correct thickness of plaster shall be obtained by laying plaster screeds) gauges) at intervals of 1.50 meters.

Mortar shall be firmly applied, well pressed into the joints, rubbed and finished as approved by the architect to give a smooth and even surface.

12. CURING:-

Finished plaster shall be kept wet for 10 days after completion. In hot weather walls exposed to sun shall be screened with matting kept wet or any other approved means.

13. CEILING PLASTER

Plaster to ceiling, soffits of stair flight slabs and similar locations where called for shall be 6mm thick and consist of 1 cement and 4 parts clean fine sand.

14. PREPARATION OF SURFACE

The surface to be plastered shall be prepared by a close hacking with pointed chisel as directed, to provide necessary bonding for the plaster. the surface shall be brushed, swept clean and thoroughly wetted before plastering.

15. APPLICATION

Mortar shall be applied firmly, pressed to the surface, rubbed and finished to a smooth and even surface.

16. CURING

Finished plaster shall be kept wet for 10 days after completion.

17. CHICKEN MESH TO WALLS

Galvanized chicken mesh (24 gauge, 12mm size) shall be provided at all junctions of concrete members and masonry walls besides other locations as called for, properly stretched and nailed, ensuring equal thickness of plaster on both sides of the mesh.

18. TERRAZZO DADO

Terrazzo dado where called for on the drawings or schedule of finishes shall be 20mm thick, the undercoat being 12mm thick and finishing coat (cement and marble chips) 8mm thick. The undercoat consisting of 1 part cement and 3 parts washed coarse sand shall be applied in the same manner as plaster as described under "Internal Plaster" and brought to a true surface. The

surface shall be kept wet till the finishing coat is applied. The top coat consisting of 1 part white cement and two parts marble chips of selected size and colour shall be applied after the under-coat has sufficiently set but not dried. The mixing of cement, pigment, marble chips etc. shall be as specified under terrazzo flooring. The surface shall be cured grouted, rubbed and finished in the same manner, as specified under terrazzo in-situ floor.

19. CURING:- The finished surface be kept wet for atleast 7 days.

20. V GROOVES

Where called for v Grooves of size as approved shall be formed in the dado and finished neat as directed. The grooves shall be straight, of uniform width and depth and neatly formed.

21. P.V.C. STRIPS

Where called for P.V.C. dividing strips (FIXOPAN or approved equal) shall be provided in the dado, vertically and horizontally. The strips shall be fixed in position before the application of the under-coat.

22. GLAZED TILE DADO

Glazed tile dado where called for on drawings or schedule of finishes shall be of 108mm size, white / coloured glazed tiles manufactured by Messers SOMANY PILINGTON LIMITED, or approved equivalent. The tiles shall be uniform size and colour. The rear face of the tiles shall be grooved and /or recessed to provide an adequate key for the plaster. The tiles shall be laid true and plumb over a cement screed 15mm thick composed of 1 part cement and 3 parts coarse sand. Before laying the tiles the plaster shall be allowed to harden and then roughened with wire brushes. The back of the tiles shall be buttered with a coat of gray cement slurry and set in the bedding mortar. The tiles shall be firmly set in the mortar bedding and tamped and corrected to proper plane and lines. The joints shall be tight, regular, uniform and shall be as fine as possible and finished neat in pigmented white cement slurry. The joint shall be truly vertical and horizontal to form required pattern.

After laying, the tiles shall be thoroughly washed and cleaned to the satisfaction of the Architect.

23. EXPOSED AGGREGATE PLASTER

Exposed aggregate plaster to external wall faces and other locations as called for shall be 30mm thick and applied in two coats. A base coat 15mm thick and a finishing coat 15mm thick, laid panels as called for.

24. BASE COAT

The mortar for the base coat shall consist of one part cement and five parts clean coarse sand. The mixing of mortar, preparation of surface and application shall be as specified earlier under "Internal Plaster" except that the plaster shall not be finished smooth. It shall be finished evenly, combed with wire brushes to provide proper bond for the top coat. It shall be kept damp for 48 hours before the application of the finishing coat.

25. FINISHING COAT

Before applying the finishing coat the surface shall be thoroughly wetted and smeared over with a coat of cement slurry. The finishing coat shall consist of 1 part cement and 1 1/2 parts crushed stone chips of approved quality, shade and size varying between 6mm and 15mm. The stone chips shall be specially selected from the heaps, screened and cleared of all foreign materials. The quality, size and colour of all stone chips shall be subject to the approval of the Architect.

The materials shall be mixed properly to a stiff consistency, applied firmly to the prepared base coat, to the required thickness and compact with a wooden straight edge/trowel in approved manner.

After about 6 hours or more, if required, of the laying of the finishing coat, the surface shall be carefully washed down with water and rubbed with jute brushes so that the stone aggregates are completely exposed. The washing down and brushing operation shall be carried out when the plaster has set and hardened just sufficiently but not fully. The washing and brushing operation shall be very cautiously done so as to remove the mortar only but not to dislodge the aggregates. All work shall be done by workmen skilled in this type of work. Any loose particles shall be cleared away and the surface finished neat.

The finished surface shall show very little of matrix and maximum of exposed aggregates. The plaster shall be laid in panels of sizes as called for.

The panels shall be clearly defined by 8mm wide square grooves. The grooves shall be of uniform width, straight and shall have clear, sharp edges as approved. Grooves shall be so formed with slightly sloping Sides that edges are not damaged while removal of forming strips.

The finished surface shall be kept continuously it for ten days.

SAND FACE PLASTER

26. PREPARATION OF SURFACE

The surface to be plastered shall be thoroughly cleared so that it is free from dust, dirt, oil, salts, etc. The joints of brick work shall be raked out to a depth of at least 12mm on cement concrete surfaces, be raked out to a depth of at least 12mm on cement concrete surfaces, the surface shall be cleaned with wire brush and scarified by lines with trowel or hacking done. The surface in both cases shall be washed properly and kept wet 4 hours before plastering is commenced.

Sand faced plaster shall consist of two layers. The first layer generally 12mm average thick cement plaster with cement sand mortar of 1:4 mix (1 cement:4 sand) and shall be rough finished carried out by wire brush scarifying on wet plaster. Over this a second layer of average 6mm thick of cement sand plaster in the proportion of 1:2 mix shall be applied the second layer of plaster shall be laid only after first layer has sufficiently dried.

The surface of sand plaster shall be finished rough with sponge or as directed by the Engineer-in- Charge.

Any cracks which appear in the surface and all portions which sound hollow when tapped, or are found to be soft or otherwise defective, shall be cut out in rectangular shape and redone as directed by the Engineer-In-Charge.

27. RATE

Payment for plastering shall be made on square meter basis. Deduction shall not be made for opening less than 0.5m and Jams, sills and soffits etc. shall not be measured. For opening of area between 0.5 m² and 3.0 m² each, deduction shall be made at 540% of the opening area and no payment made for jambs, soffits, sills etc. for openings of area above 3 m² each, deduction shall be made for full area of opening but jambs, soffits and sills shall be measured.

All measurements shall be separately made for each face. The rate shall include the cost of scaffolding and swing needed for the work with labour and materials and all complete.

HERITAGE FLAKES :

Providing & Lying HERITAGE (BAKELITE HYLAM) surface coating flakes (granite/normal) or shade as approved by the Arch. applied over 12 mm thick first coat of cement plaster as per the specification with an extra coat of protective glossy chemical coat specially supplied by BAKELITE HYLAM. The pattern of plastering should be as per instruction of arch. inclusive of grooves etc.

METAL WORK

1. EXTENT AND INTENT

The contractor shall furnish all materials, labour, operations, equipment, tools, plant and incidentals necessary and required for the completion of all metal work in connection with doors, windows, and other glazing, railings, flashings and other items of metal work as called for in the drawings. The supplying of additional fastenings, major requirements only. The supplying of additional fastenings, accessory, features and other items not mentioned specifically herein but which are necessary to make a complete installation shall be part of this contract.

2. GENERAL

All metal work shall be free from defects impairing strength, durability and appearance and shall be of the best commercial quality for purposes specified. Made with structural properties to withstand safely strains, tresses to which they shall be normally subjected.

3. SHOP DRAWINGS

The contractor shall submit shop drawings and/or samples of each type of doors, windows, railings and other items of metal work to the Architect for his approval. The shop drawings shall show full size selections of doors, windows, etc., thickness of mates, details of constructions, hardware as well as connection of doors, windows and other metal work to adjacent work/supports.

Samples of all joints and methods of fastening and joining shall be submitted to the Architect for approval well in advance of commencing the work.

4. SAMPLES

Samples of all typical metal work, such as doors, windows glazing, flashing railings, etc., shall be fabricated, assembled and erected or submitted to the Architect as directed by him, for his approval.

5. APPROVED MANUFACTURERS

All floors, windows, railings and other metal work shall be manufactured by an approved manufacturer/fabricator. The entire work shall be carried out by workmen skilled in this kind of work in a shop fully equipped to carry out all phases of fabrication in accordance with the best accepted practices.

6. INTERNAL DOORS

Internal door frame where called for shall be mild steel tees/angles of the size and details as shown on drawings, or of pressed M.S. sheets (18 gauge), pressed to required profile and size.

The frame members shall be of one piece and the corners of the frames shall be mitered, electrically welded and ground smooth. They shall fit together may be accepted subject to approval of the jointing arrangement structurally adequate and shall be approved by the Architect. Necessary provisions shall be made in the frames for receiving lock and latch tower bolts, door closers, etc. Slots for receiving lock and latch shall be shop punched and not made at site. The size and the locations of the slots shall match the type of lock specified and at the height shown on the drawing. Hinges of specified type and size shall be fixed that the hinge flange is flush with the face of the frame.

Holdfasts where called for shall be of mild steel of size as shown on the drawings and shall be welded to frames.

The frames shall be given a coat of red oxide primer after phosphating and preparation of surface and enamel painted after installation as specified under "PAINTING".

Base ties of mild steel angles shall be provided for all doors frame to retain the size and shape of the frames during transportation, handling and erection.

7. STEEL WINDOWS AND GLAZING

Steel windows, glazing and other similar items shall be fabricated from rolled mild steel sections manufactured by Messers MAN Industries Jaipur or equivalent approved by the Architect. The sections shall be of the size and thickness shown on the detailed drawings. The frame member and group smooth. All corners shall be true right angles, and the completed frames shall be square and flat.

Where called for windows, glazings, etc., shall be provided with metal beading of size and shape as shown. Other fittings and accessories as called for on the drawings shall be provided as approved by the Architect.

All steel surfaces shall be given a coat of red oxide primer after preparation of surface and phosphating as specified under "Painting" before the assembly of the different components.

8. LOUVERED WINDOWS

Louvered windows where called for shall have pressed mild steel sheet louvers fixed to framework of pressed mild steel sheets with approved special pivoting arrangement. Louvers and frames shall be pressed to correct size and profile out of 18 gauge M.S. sheets in a mechanical press of adequate capacity.

The louvers are connected to a continuous operating a rod ending in a handle which when fixing accessories required for the smooth and efficient operation of the louvers shall be provided as directed by and to the satisfaction of the Architect.

All louvers, frames, etc., shall be given two coats of red oxide paint after phosphating, in the shop itself and enamel painted after installation as per specifications.

9. FITTINGS

Hinges, locks, handles, stays, tower bolts, rubber buffers, door closers and other fittings shall be provided as called for in the schedule of hardware/drawings.

10. FIXING

The contractor shall fix doors, windows, etc., in prepared openings. Steel door frames, wherever possible, shall be fixed in place before erecting partitions. Where this is not possible, prepared openings shall be left for holdfasts. Breaking of partitions or walls for fixed to column/wall faces they shall be fixed with rail bolts/expansions bolts of approved make in approved manner.

The contractor shall be responsible for assembling composites, bedding and pointing with mastic inside and outside at the mullions and transomes, fixing lugs to the frames, placing the doors/windows in their respective opening and bedding with mastic. The contractor shall be responsible for all builders work including all cutting out and making good, forming fixing holes for inserting loose lugs, bolts and clips and for stacking of windows, doors adjacent to the opening for necessary hoisting. The contractor shall be responsible for the doors and windows being set straight, plumb and level and for their satisfactory operation after operation after the fixing is complete.

12. MANUFACTURER'S ATTENDANCE

The manufacturer immediately prior to the commencement of glazing, shall adjust and set all windows and doors and accept responsibility for the satisfactory working of the opening frames. The contractor shall give three days clear notice to the manufacturer that glazing will commence.

13. MASTIC CEMENT

The gaps between frames and support and also any gaps in the door and window section shall be raked out as directed and filled with mastic cement of approved colour and make to ensure complete water lightness. The mastic cement shall be of such colour and composition that it would not stain the masonry/concrete work, shall receive paint without bleeding, will not sag or run and shall not set hard or dry out under any conditions of weather.

14. RAILING

Mild steel and other types of railing called for on the drawings shall be executed by craftsmen specially trained in the trade in a shop fully equipped to carry out all phases of fabrication in accordance with the best accepted practices and as shown on the drawings. All work, as far as possible shall be shop

fabricated and brought on site for erection. The railings shall be assembled square true to proper plan or curved to the radius shown on the drawings. joining methods shall be flush type designed to produce an adequately strong for a particular application, and approved by the Architect.

Welding shall be executed from the non-exposed side, as far as possible and in each case the welds shall be ground smooth and finished with a texture matching the parent metal. All welds shall be finished smooth and square.

15. METAL FLASHING

Metal flashing at gutters glazings, around rain water and other pipes in roof and other locations where called for shall be 20 guage G.I. sheet. The sheet shall be cut and fabricated to the required shape and profile called for in the drawings. All joints shall be welded as approved. The flashing shall be fixed to steel, concrete or other members through M.S. cleats, wooden rough grounds, etc., as called for in the drawings and as directed. Where so called for the grooves in which the flashing is fixed shall be caulked and finished neat with approved mastic compound. The fabricated piece shall be installed in position around hoods, pipes, etc., as shown on drawings. The completed installation shall be absolutely waterproof.

16. PAINTING

All doors, windows, louvers, railing, etc., shall be phosphated and given two coats of red oxide primer in the shop before dispatch and shall be enamel painted as per specifications after installation.

17. TEAKWOOD HANDRAIL & M.S. BALUSTERS

The baluster shall be of 20mm square M.S. bars embedded 150 mm deep in floor or steps and grouted with 1:2 cement mortar. Each shall be provided with one baluster. The top shall be welded to a 25mm x 5mm M.S. flat to which 150 x 50 mm molded teakwood rails shall be tied with flat headed screws. The top of rails shall be 900 mm above finished floor level. Before the baluster is embedded, the steel surface must be filed to obtain proper bend.

Specification for railing and baluster materials shall be as per relevant clauses under wood work and steel work.

The steel work shall be given two coats of approved enamel paint over a coat of red oxide primer. The wood work shall be polished with approved sprit polish to obtain a bright and even surface.

Payment shall be made on running meter basis of finished work. The rate shall include providing all material and labour, breaking and making good the flooring, walls, etc., painting and polishing.

ALUMINUM DOORS AND WINDOWS

1. EXTENT AND INTENT

The Contractor shall furnish all materials, labour, accessories, equipment, tools and plant and incidentals required for providing anodised aluminum doors and windows and other items as called for on the drawings. The drawings and specifications cover the major requirements only. The supplying of additional fastenings, accessory features and other items not mentioned specifically herein, but which are necessary to make a complete installations shall be a part of this contract.

2. GENERAL

Aluminum doors and windows shall be of size, sections and details as shown on drawings. The details shown on the drawings indicate generally the size of the components parts and general standards. These may be varied slightly to suit the standards adopted by the manufacturers of the aluminum work. Before proceeding with any manufacture, the contractor shall prepare and submit complete manufacturing and installation drawings for approval of the Architect and no work shall be performed until the approval of these drawings is obtained.

All aluminum work shall be fabricated by/procured from firms specialised in aluminum fabrication work and approved by the Architect.

3. SHOP DRAWINGS

The contractor shall shop drawings and/or samples of each type of door, window and other aluminum work, to the Architect for his approval. The shop drawings shall show full size sections of doors, windows etc., thickness of metal, details of construction, hardware as well as connection of windows, doors and other metal work to adjacent work. Samples of all joints and

methods of fastening and joining shall be submitted to the Architect for approval well in advance of commencing the work.

4. SAMPLES

Samples of each type of door, window etc. shall be fabricated, assembled and submitted to the Architect for his approval.

5. SECTIONS

Aluminum doors and windows shall be fabricated from extruded sections of profiles as detailed on drawings. The sections shall be extruded by manufacturers approved by the Architect. The sections shall be extruded from aluminum alloy H-9, approved equivalent, of commercial quality and free from all defects impairing appearance, strength and durability. The permissible dimensional tolerances of the extruded sections shall be such as not to impair the proper and smooth function/operating and appearance of doors and windows.

6. FABRICATION

Doors, windows, etc., shall be fabricated by a specialist firm approved by the Architect and shall be of sections, sizes, combinations and details joints. The joints shall be designed to withstand a wind load of 150 kg. per sq-mm. All members shall be accurately machine and fitted to form hairline joints prior to assembly. The jointing accessories such as cleats, brackets etc., shall be of such material as not to cause any bi-metallic action.

The design of joints and accessories shall be such that the accessories are fully concealed. The fabrication of doors and windows shall be done in suitable sections to facilitate easy transportation, handling and installation. Adequate provision shall be made in the door and window members for anchoring to supports and fixing of hardware and other fixtures as approved by the Architect.

7. BRONZE ANODISING

All exposed surfaces of doors and windows including screens and screening shall be colour anodized after fabrication in a manner to conform to IS: 1868-1968 and to approved finish. Anodic coating shall be of a minimum thickness of 0.025 mm. Sulphuric acid shall be used as the electrolyte for the anodic

process. The colour anodizing shall be carried out in an approved manner to achieve the desired colour. Prior to anodizing all aluminium shall be rendered uniform in appearance free from disfiguring scratches, stains or other blemishes and etched in a caustic soda solution.

7(a) POWDER COATING

All exposed surface of doors and windows including screens and screening shall be powder coated. Powder coating shall be of a minimum thickness of 0.05 m.m. The powder coating shall be carried out in an approved manner to achieve the desired colour. Prior to powder coating all aluminum shall be rendered uniform in appearance free from disfiguring scratches, strains or other blemishes and attached in a caustic soda solution.

8. PROTECTION OF ANODIZED FINISH

All aluminum members shall be wrapped with self adhesive non-staining PVC tapes manufactured by M/s BHOR Industries, Bombay or approved equal.

9. HANDLING AND STACKING

Fabricated materials shall be created in an approved manner to protect the material against any damage during transportation. The loading and unloading shall be carried out with utmost care. On receipt of materials at site, they shall be carefully to detect any damaged pieces. Arrangements shall be made for expeditious replacement of damage pieces/parts. Materials found to be acceptable on inspection shall be repacked in crates and stored safely.

10. INSTALLATION

Just prior to installation the doors, windows etc. shall be uncreated and stacked on edge on level bearers and supported evenly. The frames shall be fixed into position true to line and level using adequate number of expansion machine bolts (RAIL BOLTS) of approved size and manufacture and in an approved manner. The holes in concrete/masonry members for housing anchor bolts shall be drilled with an electric drill.

The door/windows assembled as shown on drawings shall be placed in correct final position in the openings and marks made on concrete members at jumps, sills and heads against holes provided in the frames for anchoring.

The frames shall then be removed from the opening and laid aside. Neat holes with parallel sides of appropriate size shall then be drilled in the concrete members with an electric drill at the marking to house the expansion bolts. The expansion bolts shall then be inserted in the holes, struck with a light hammer till the nut is forced into anchor shall. The frames shall then be placed in final position in the openings and anchored size threaded to expansion bolts. The frames shall be set in the openings by using wooden wedges at supports and be plumb in position. The wedges shall invariably be placed the meeting point of blazing bars and frames.

In the case of composite windows and doors, the different units are to be assembled first. The assembled composite units should be checked for line, level and plumb before final fixing is done.

Where aluminum comes into contact with masonry, brickwork, concrete plaster or dissimilar melts, it shall be coated with an approved insulation lacquer, paint or plastic tape to ensure that electrochemical corrosion is avoided. Insulation material shall be trimmed off to a clean flush line on completion.

The contractor shall be responsible for assembling composite, bedding and pointing with mastic inside and outside, at the transoms and millions, placing the doors and windows in their respective openings and bedding with mastic. After the door/windows have been fixed in their correct assigned position, the open hollow sections abuttings masonry/concrete shall be filled with cement grout (1 cement : 3 coarse sand) densely packed and finished neat. Packing grout shall be of the expanding type made by approved additive.

The contractor shall be responsible for the doors and windows being set straight, plumb, level and for their satisfactory operation after fixing is complete.

11. MASTIC CEMENT

The gaps between frames and supports and also any gap in the door and window sections shall be racked out as directed and filled with mastic cement of approved colour and make to ensure complete water-tightness.

The mastic cement shall be of such colour, and composition that it would not stain the masonry/concrete work, shall receive paint without bleeding, will not sag, or run and shall not set hard or dry out under any conditions of weather.

12. FITTINGS

Hinges, stays, handles, tower bolts and other fittings shall be of quality and manufacture are approved by the Architect.

Fitting shall retain the casements rigidly in both the open and closed position. Hinges shall be wrapped and protected until after the completion of the building.

13. FINAL CLEANING

The PVC tape wrapping, protecting the anodized finish shall be retained will the glazing work is commenced. After the glazing and all work connected with installation of doors/windows is complete all aluminum work shall be washed with a suitable thinner and left in a finished condition, in approved uniform appearance and free from all marks and blemishes.

CARPENTRY AND JOINERY

1. EXTENT AND INTENT

It is the intent of this specification to include all carpentry and joinery work in connection with doors, windows, glazing, partitions, ceilings, paneling, cabinets and other items of wood work called for in the drawings.

2. GENERAL

The carpentry and joinery work shall include the furnishing of all labour, materials, equipment, incidentals and appliances required to complete the work including the provision and installation of fastening devices and hardware schedule.

3. TIMBER

Teakwood where called for, shall be of selected best quality Indian teakwood. All timber shall be uniform in texture, free from large, loose, dead or cluster knots, waness, injurious open shaken bore holes, rot, decay discoloration, soft or spongy spots, hollow pockets, pith or center heart and all other defects and blemishes.

4. SAMPLES AND SHOP DRAWINGS

The contractor shall before proceeding with the work, submit to the Architect for his approval complete samples of the various materials including hardware and fastening devices and shop drawings and large scale details covering all joinery work.

5. ROUGH CARPENTRY

Materials unless otherwise called for, all framing and other concealed wood member shall be of first class Indian teakwood and shall be seasoned to a moisture content of not less than 10% or more than 15%. Wood of greater moisture content shall not be used in any part of the structure.

6. WORKMANSHIP

All carpenter's work shall be done by skilled workmen using proper tools. All joints shall as far as possible, be mortised and tenoned and glued with best quality approved waterproof glue. Where mortise tenon joints are not possible, the joints shall be securely nailed with the longest nails that may be used without splitting the wood. Wherever it is necessary or an adequate joints cannot be formed by nailing, the members shall be lapped or jointed by GI straps or extra wood block. All joints shall be done with neatness and as approved and directed by the Architect. Cross bracing, solid blocking and bracing shall be provided according to best practice.

7. JOINERY

Materials : Finished wood work and joinery in teakwood, where called for shall be surfaced with straight grained best quality Indian teakwood free from knots and other blemishes and imperfections. All finished woodwork and joinery shall be seasoned to not less than 10% or more than 12.5% moisture content. All finished woodwork and joinery shall be wrought and planed smooth to the correct dimensions and profiles called for in the drawings.

All joinery work shall be securely mortised and tenoned and glued with best quality waterproof glue. For all joinery work use of nails shall not be permitted, and wood screws of appropriate size and of approved make shall be used. Wherever practicable, means of fastening the various parts together shall be concealed. All work (both carpentry and joinery) shall be to the dimensions shown on the drawings.

All interior wood finish, doors and cabinet work shall be smoothly treated and sanded at the building after erection, until all defects are entirely removed. Any material showing splits, saw, sand paper or other defacing marks or other defects shall be rejected. All exposed wood and plywood shall be straight grained of matched grain and colour and shall be approved by Architect before being fabricated.

Installation Doors, windows, partitions and cabinet work shall be installed in position after the plaster in the section for which it is intended is sufficiently dry. All interior and exterior doors, partitions, glazing cabinet work and other fixed wooden equipment shall be properly installed, level, plumb and true. But joints shall be avoided wherever possible. If unavoidable the joints shall be beveled. All exterior angles shall be mitered. Adjoining interior wood members shall match and harmonies.

8. INTERIOR DOOR SHUTTERS

Interior wood door shutters, unless otherwise noted on specified shall be 40/45mm thick solid core phenol formaldehyde resin bonded, flush shutters, commercial ply faced on both faces. Specification IS : 2202 (Part I) - 1966.

Shutters shall be ordered on the manufacturer to sizes as called for and shall be provided with first class teakwood edging, glued and nailed on the edges of the shutter, as shown on drawings.

Paneled shutters as specified shall be of selected quality first class teakwood properly seasoned as described under joinery.

9. BLOCK BOARD AND PLY

Block boards and ply for partitions, cupboards and all other cabinet work shall be solid core, phenol formaldehyde resin bounded of approved make as called for.

Unless otherwise shown all block boards and ply shall be commercial ply veneered on both faces. Samples of flush doors, ply, block boards, etc., shall be submitted to the Architect for his approval and all shutter boards, etc., to be used in the work shall conform to the approved sample in all respects.

10. PARTITIONS AND CABINET WORK

General : Partitions, cabinets, etc., shall be fabricated and assembled in the workshop as far as practicable and then brought inside the building ready to set in place. The various members shall be worked in the best manner known to the trade, mortised and tenoned, dowelled, blocked and glued together so as to avoid the use of nails as much as possible. The details shall be closely followed, molding clearly cut and miters accurately made. Free edge of shutters, shelves, partitions, sides, etc., shall be provided with first class teakwood edging, glued and nailed in approved manner. Shelves, where shown fixed, shall be supported on aluminum or other cleats or in other manner as approved by the Architect. Adjustable shelves shall have brass sockets and pins as detailed on drawings.

Drawer bottoms shall be of 6mm commercial ply, unless otherwise shown. Drawer front, sides and back shall be of first class teakwood. The drawers shall slide on wooden bearers as shown on drawings.

Timber skirtings where called for shall be of first class teakwood, cut to required sizes, planed smooth on visible faces and fixed in position in approved manner. Cut-outs, openings, etc., shall be provided in the counters and cabinets to accommodate sinks, wash basins, cooking ranges, pipes, etc., as shown on drawings and as required at site.

11. HARDWARE FITTINGS

Hinges, handles, knobs, locks, ball catches, adjustable, shelf fitting, and other hardware fittings for doors and cabinet work shall be of the best quality and specified make as approved by the Architect. The number, size, etc., shall be as per the hardware schedule and as shown on drawings.

12. PRESERVATIVE TREATMENT

All wood work in contact with masonry shall be painted with approved asphalt or bitumen paint before placing. Care shall be taken to keep exposed surfaces clear from tar, etc. The felt shall be used to isolate wood from masonry wherever practicable. All concealed wood etc., shall be treated fully and liberally with selenium before placing in position.

13. A C GRILLES

A.C. Grills wherever shown on drawings shall be of first class, fully seasoned, Indian teakwood, and of sizes and shapes as shown on drawings. The grilles fixed to teakwood framework as shown shall be installed in position true to line and level. Wherever so required, the grill openings shall be blocked by block boards/soft boards painted mat black and placed at the rear of the grill as shown. The grill and the frames shall be wax polished as specified under "Painting".

14. PAINTING AND POLISHING

All exposed teak faces of partitions, glazing, doors, cabinet work etc., shall be painted/polished oiled to approved finish. Door shutters, internal faces of cupboards and cabinets, etc., shall be enamel painted to approved finish. Drawer bottoms, sides of drawers, etc., oiling, etc., shall be carried out as specified under "Painting".

15. PROTECTION OF WORK

The contractor shall be responsible for the temporary doors and closing in opening necessary for the protection of the work during progress. We shall the protection of finished wood work that may be damaged during the progress of the work if left unprotected.

GLASS AND GLAZING

1. EXTENT AND INTENT

The contractor shall furnish all labour, materials, tools, appliances, equipment and incidentals required to completed the installation of all glass and related items.

2. GENERAL

All glass shall be of the type, quality and substance specified.

3. GLASS SIZES

The contractor shall cut glass sizes by filed measurement or dimensionally approved shop drawings. The responsibility for correct glass sizes shall rest

with the contractor. No cracked, chipped or disfigured glass shall be accepted.

4. GLASS BREAKAGE

The contractor shall replace all broken or damaged or disfigured glass caused in executing the work or by faulty installation, before acceptance of the building, without cost to the Owner.

5. MATERIALS

Glass for all glazing work shall be plain sheet glass as called for in the drawings and schedules. Sheet Glass for windows shall be 4mm/5.5mm thick special selected quality glass as called for, manufactured by Messers Triveni Glass / Hindusthan Safely Glass Works, Calcutta or other equivalent approved by the Architect. Glass for North Light or other equivalent approved by the Architect. Glass for North Light glazing shall be 6mm thick wired glass manufactured by Vallabh Glass Works, Anand, Hindusthan Safely Glass Works Ltd., Calcutta.

6. GLAZING COMPOUND

Glazing putty for setting glass shall be of approved quality (Shalimar or approved equivalent) suitable for use in metal windows and conforming to IS:420-1953.

7. PREPARATION OF FRAMES AND GLASS

Before installation the contractor shall ensure that :

- a) All glazing rebates are square, plumb and true in plane, clear, dry and dust free;
- b) All frame adjustments are made prior to glazing;
- c) All glass edges, are clean cut to exact sizes, allowing expansion tolerance as recommended by the glass manufacturer;
- d) All sashes shall be glazed in the closed position and shall not be opened until the compound is set;

- e) All materials are used in strict accordance with the manufacturer's instructions.
- f) Glass shall not be forced into place;

8. INSTALLATION

The glass shall be set on neoprene glazing block on all sides (at least two per side) as directed. Glass shall be bedded, back and face glazed and so installed as to achieve a completely water tight and rattle-free installation. The obscure glass where called for shall be set with smooth surface outside.

9. COMPLETION

Upon the completion of the work all glass shall be thoroughly cleaned, paint or other marks removed. Any cracked, scratched, chipped or other defective glass shall be removed and replaced without cost to Owner. Any loose glass shall be set to the satisfaction of the Architect.

HARDWARE

1. EXTENT AND INTENT

The intention of the concrete is that the building as shown shall be completely equipped with required hardware. Any required item not noted or listed shall be finished in a grade equal to and in harmony with similar item listed.

The contractor shall furnish all labour, materials, tools, appliances and incidentals required to complete the hardware work specified herein or listed in the schedule of hardware, or as may be required by the actual conditions at the building. Include the necessary screws, special screws, bolts, expansion bolts and other devices necessary shall be of sufficient size to securely and permanently fix the hardware in place. No steel or iron screws shall be used. Screws match material and finish of article being fastened.

2. GENERAL

All hardware shall be of the best quality of its type and strictly in conformity with the materials and finish described in schedule of hardware. If called upon to do so the contractor shall arrange to get hardware specially manufactured to the design, requirements and standards laid down by the Architect.

3. SAMPLES

Samples of each different item of hardware including screws or any particular item of hardware shall be submitted to the Architect for approval.

4. QUALITY

All hardware shall be of perfect fir, uniform in finish and free from imperfections that affect serviceability or mar the appearance.

5. INSTALLATION

All hardware shall be installed by skilled workmen, equipped with proper and adequate tools. The hardware shall be installed true, plumb and square in accordance with the hardware schedule and the manufacturer's instructions.

6. PROTECTION

Hardware shall not be installed earlier than necessary and it shall be the responsibility of the contractor to protect all hardware, removing some when necessary for protection and deliver all in good working order and unblemished. Any defective or marred items shall be made good to the satisfaction of the Architect without additional cost to the Owner.

7. GUARANTEE

The contractor shall be responsible for the proper working of all hardware, for a period of one year from the date completion and acceptance of the building.

PAINTING

1. EXTENT AND INTENT

The contractor shall supply all materials, labour, tools, ladders, scaffolding and other equipment necessary for the completion and protection of all painting work. Painting, as herein specified shall be applied to all surfaces requiring painting throughout the interior and exterior of the buildings as given in the schedule of finishes or elsewhere. The painting shall be carried out by a specialist subcontractor, approved by the Architect.

2. STORAGE

Storage of materials to be used on the job shall be only in a single place approved by the Architect. Such storage place, shall not be located within any of the buildings included in the contract.

3. MATERIALS

Materials used in the work shall be of manufacture approved by the Architect. Ready mixed paints, varnishes, enamels, lacquers, stains, paste fillers, distempers and other materials must be delivered to the job site in the original containers, with the seals unbroken and labels intact. Each container shall give the manufacturer's name, type of paint, colour of paint and instructions for reducing. Thinning shall be done only in accordance with directions. Remove rejected materials immediately from the premises.

4. COLOUR

All colours, as provided in the colour schedule, shall be approved by the Architect. The contractor shall as far as possible use pre-mixed manufacturer's colours and shall prepare painted samples of the colours selected and submit same for approval by the Architect. No work is to proceed until the Architect has given his approval, preferably in writing, of the colour samples.

5. COMMENCEMENT OF WORK

Painting shall not be started until the surfaces to be painted are in a condition fit to receive painting and so certified by the Architect.

Painting work shall be taken in hand only after all other builders work is completed.

Buildings where painting work is to commenced shall be thoroughly swept and cleaned up before commencement of painting.

6. SCAFFOLDING

Only double scaffolding having two sets of vertical supports shall be provided for all painting work. The supports shall be tied together with horizontal pieces over which the scaffolding planks shall be fixed.

All the vertical and horizontal members of the scaffolding shall be placed sufficiently away from the surfaces to be painted to ensure proper and uninterrupted application.

7. WORKMANSHIP

The workmanship shall be of the very best, all materials evenly spread and smoothly flowed as without runner sags, using good quality tools, brushes, etc., as required. Only skilled painters shall be employed. A properly qualified foreman shall be constantly on the job whilst the work is proceeding. All surfaces to be painted shall be cleaned free of all loose dirt and dust before painting is started. All work where a coat of material has been applied must be inspected and approved before application of the succeeding specified coat. Each undercoat shall be distinct shade of the approved colour. Before painting, remove hardware, accessories, plates and similar items or provide sample protection to all such items. Upon completion of each space, replace all fixtures removed. Remove doors if necessary to paint bottom edge. Use only skilled mechanics for the removal and replacement of above items.

8. CONCEALED SURFACES

All interior and exterior trim, door frames, doors, shelving, cabinet work shall be thoroughly and carefully back painted as all surfaces and edges which will be concealed when installed. Such surfaces shall be clean, dry, sanded and properly prepared to receive the paint. Tops, bottom and edges of doors shall be finished same as the rest of the door.

9. PROTECT AND CLEAN

Contractor shall protect not only his own work at all times, but shall also protect all adjacent work and materials by suitable covering during progress

of his work. Upon completion of his work, he shall remove all paint and varnish spots from floors, glass and other surfaces. Any defaced surfaces shall be cleaned and the original finish restored. He shall remove from the premises all rubbish and accumulated material and shall leave the work in clean, orderly and acceptable conditions.

10. PREPARATION OF SURFACES

WOOD :

Sand paper to a smooth even surface and then dust off and wipe clean. Touch up all knots and pit pockets with shellac on interior wood and without distiller on exterior work. After priming coat has been applied thoroughly fill all nail holes, irregularities and cracks. Use plaster wood filler for stained or natural finish and putty for painted work.

PLASTER WORK :

Fill all holes, cracks and abrasions with plaster of paris, properly prepared and applied and smoothed off to match adjoining surfaces. Do not use sand paper on plaster surfaces. Plaster shall be allowed to dry for atleast 12 (twelve) weeks before the application of paint.

STEEL AND IRON :

All surfaces shall be washed with mineral spirits to remove any dirt or grease before applying paint. Where rust or scale is present, it shall be wire brushed and sand papered clean. All cleaned surfaces shall be given one coat of approved phosphate before prime coat in accordance with the manufacturer's instructions. Shop coats of paint that have become marred shall be cleaned off, wire brushed, and spot primed over the affected areas.

GALVANISED METAL :

Galvanised metal shall be thoroughly cleaned with neptha and treated with a solution consisting of 5 gallons of 36% acetic acid, 1.36 kg. of blue vitriol and 1.36 kg. of powdered alum dissolved in 225 litres of water, prepared in a wooden container and applied with a brush. Allow to dry thoroughly and brush off before applying paint.

11. APPLICATION

The paint shall be continuously stirred in the container so that its consistency is kept uniform throughout.

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

Where so stipulated, the painting shall be carried out using spray machines suited for the nature and location of the work to be carried out. Only skilled and experienced workmen shall be employed for this class of work. Paints used shall be brought to the requisite consistency by adding a suitable thinner. Spraying shall be carried out only in dry conditions. No exterior painting shall be done in damp foggy or rainy weather. Surface to be painted shall be clean, dry, smooth and adequately protected from dampness. Each coat shall be applied in sufficient quantity to obtain complete coverage, shall be well brushed and evenly worked out over the entire surface and into all corners, angles and crevices allowed to thoroughly dry. Second coat shall be of suitable shade to match final colour, and shall be approved by the Architect before final coat is started. Allow at least 48 hours drying time between coats for interior and 7 days for exterior work, and if in the judgment of the Architect more time is required it shall be allowed. Finished surfaces shall be protected from dampness and dust until completely dry. Finished work shall be uniform of approved colour, smooth and free from runs, sags, defective brushing and clogging. Make edges of paints adjoining materials of colours sharp and clean, without overlapping.

In order to achieve a superior finished surface, putty paste fillers shall be used on, all surfaces to be painted. To fill pores, dents, etc. The putty/paste fillers shall be approved quality and manufacture and shall be applied to the surface with a knife or other sharp edged tools after the priming coat as well as after each undercoat. The surface, after filling with putty/paste filler, shall be rubbed down with fine sand paper and dusted off before the application of the subsequent coat.

Paste wood filler when set shall be wiped across the grains of the wood and then with the grain to secure a clean surface. Surface to be stained shall be covered with a uniform coat of stain wiped off if required.

FINISH : The painted surfaces shall be finished to required texture. Matt finish shall be achieved by use of sponge rollers or stippling brushes as called for.

12. TYPES OF PAINT FINISHES

Enamel Paint :

- a) Wood or Plastered Surfaces : Pigmented priming coat followed by one undercoat and two more finishing coats of enamel paint. Paste filler to be applied after every coat excepting the final finishing coat and sanded.
- b) Non-Galvanized Steel Surfaces : Coat of red oxide primer after phosphating followed by the three or more coats of synthetic enamel paint. Paste filler to be applied after every coat excepting final finishing coat and sanded.
- c) Galvanized Steel Surfaces : Priming coat of galvanized metal primer after washing with galvanized metal cleaner, followed by three or more coats of synthetic enamel paint. Paste filler to be applied after every coat excepting final finishing coat and sanded.

Plastic Emulsion Paint :

Pigmented priming coat (emulsion thinned with water) followed by three or more finishing coats of plastic emulsion paint. Paste filler to be applied after every coat excepting the final finishing coat and sanded.

Oil Bounded Distemper :

Pigmented primer (cement primer) coat followed by three or more finishing coats of oil bound distemper. Paste filler to be applied after every coat excepting the final finishing coat and sanded.

Oiling :

Three coats of linseed oil (conforming to IS:75-1950) applied with dried. Grains to be filled with approved power and surface rubbed smooth before oiling.

13. SPIRIT POLISHING

Polish :

Polishing material shall be prepared by dissolving pure shellac, varying in shade from pale orange to lemon yellow, free from dirt and other materials, in methylated spirit at the rate of 0.15 kg. shellac to 1 liters of spirit. Suitable pigment to achieve the required shade of polish shall be added as directed by the Architect.

Preparation of Surface :

The surface, cleaned of all dirt, etc., shall be rubbed down smooth with sand paper and well dusted. Knots if visible shall be covered with a preparation of red lead and glue size laid on while hot. Holes and indentations shall be stopped with glazier's putty. The surface shall then be given a coat of wood filler made by mixing whiting (ground chalk) in methylated spirit at the rate of 1.5 kg. of whiting to one litre of spirit. The surface shall again be rubbed down perfectly smooth with fine sand paper and wiped clean.

Application :

Three or more coats of polish shall be applied over the above surface, to achieve a finish as approved by the Architect. The polish shall be applied with a pad of woolen cloth covered by a fine cloth. The pad moistened with polish shall be rubbed hard on the wood surface in a series of overlapping movements, applying the material uniformly over the entire area to give an even finish. Subsequent coats shall be applied in a similar manner after the previous coat is allowed to dry. The finishing shall be done with a fresh piece of clean fine cloth, dampened with methylated spirit and applied by light rubbing. The finished surface shall have a uniform texture and high gloss.

14. WAX POLISHING

Wax polishing shall be done with ready made wax polish of approved brand and manufacture.

Preparation of Surface :

The surface to be polished shall have been finished smooth. Knots, cracks and holes on the surface shall be cleaned and filled with wood putty (fine saw dust mixed with bees wax). The fittings when dry shall be rubbed down with a carpenter's file and then the entire surface shall be rubbed down perfectly

smooth and wiped clean. In no case shall sand papers be rubbed across the grains so that even fine marks are not seen on the surface.

Application :

The polish shall be applied evenly with a clean soft pad of cotton cloth in such a way that the surface is completely and fully covered. The surface is then continuously rubbed for half an hour. When the surface is quite dry a second and third coat shall be applied in the same manner and rubbed continuously until the surface is dry.

The final coat shall then be applied and rubbed for two hours more until the surface has assumed a uniform gloss and is dry, showing no sign of stickiness. The finished surface shall have a uniform glossy finish as approved by the Architect.

15. PAINTING OF PLUMBING, HEATING AND ELECTRICAL EQUIPMENT

All exposed unfinished plumbing, heating, electrical equipment shall receive a painted finish as specified above. None of these items shall be painted without prior approval of the Architect.

16. CLEANING

All rubbish waste or surplus material shall be removed from time to time, and all wood work, hardware, floors, or other adjacent work shall be cleaned upto the satisfaction of the Architect.

All glass throughout shall have all paint or varnish spots and brush marks removed and upon completion of the painting work, shall be washed and polished on both sides. All glass that is scratched and damaged by contractor's work, or while cleaning off the paint from the glass shall be replaced by the contractor at his cost.

Hardware and other unpainted surface shall be cleaned using lacquer thinner or paint remover.

The contractor shall apply the final coat of paint to all internal walls and other surfaces just before the expiry of the defects liability period as directed by the Architect.

SITE DEVELOPMENT

1. INTENT AND EXTEND

The Contractor shall provide all materials, labour, equipment, tools, appliance, operations and incidentals required for the completion of all site development work called for the drawings.

2. GENERAL

The specification clauses included in this section are supplementary to and shall be read in conjunction with relevant sections covered earlier in this specifications.

Items of work such as excavation, filling, soling, brick masonry, concrete work, stonework, floor and other finishes, gates, fencing etc. involved in site development shall be carried out strictly in accordance with the requirements laid down earlier under their respective sections in this specifications.

3. WORKMANSHIP

All work shall be carried out in accordance with the drawings and specifications and in a manner which will ensure accuracy in preserving lines and levels as shown on the drawings.

4. BRINGING AREAS TO REQUIRED LEVELS

The entire defined in the site plan shall be brought to the required finished ground levels shown on the drawings, by cutting/filling. The required finished ground levels shall be carefully ascertained and the cutting/filling carried out accordingly. Where filling is called for it shall be done approved fill material, filled in layers, watered and consolidated by rollers. To slopes shall be in the right directions and uniform.

Areas marked "Lawns", "Plantings" shall have at least 30 cm thick top soil suitable for growth of plants, lawns, etc. and shall be brought from a source approved by the Architect.

Any surplus soil shall be carted away from the site and disposed of as directed by the Architect.

5. ROADS AND FOOTPATHS

All roads, footpaths, pavings, etc. shall be constructed to widths, alignments, cambers, super elevations and gradients specified or shown on drawings, Side drains, catch water drains, cross drainages, etc. shall be provided at locations and as called for on the drawings.

6. PREPARING FORMATION

The ground, cleared of all vegetation, shrubs etc. shall be found to the proper levels, gradient etc. corresponding to the specified finished surface by cutting/filling as required at site. Where so ordered all soft pockets shall be excavated and filled with approved soil and thoroughly rammed. The soil for filling shall be from an approved source, and shall be filled in layers not exceeding 15 cm thick, well watered and consolidated. The formation under roads, parking etc. shall be watered and rolled by 10 ton rollers.

Surplus soil (if any) shall be carted away or spread at low level areas within site as directed and dressed neat.

7. STONE SOILING

Stones used for soiling below roads, etc., shall be from an approved source and size 50mm and down well graded.

The materials shall be carefully packed with all interstices in the upper surface filled in solidly with hard spells before rolling. The upper surface shall be formed to such gradients and cambers as may be directed gauge pegs being driven in to indicate the thickness of soiling to be laid.

The surface shall then be rolled, with light sprinkling of water, with a 10 ton roller. Hollows which appear during rolling shall be made good with spells and rolling and making good shall continue till a closely knit compacted surface conforming to required levels and gradient is obtained. Earth shall on no account be used for making good or blinding purposes. Water shall be lightly sprinkled if required and ordered.

The finished (consolidated) thickness of the soling shall not be less than 150mm at any place.

Soiling below pavings at various levels shall be from an approved source and of size 50mm down well graded.

The materials shall be carefully packed and blinded with sand and consolidated with steel rammers of minimum 10 kg weight.

The finished work shall have a closely knit compacted surface true to required levels and gradients.

8. CEMENT CONCRETE ROADS AND PAVING

Cement concrete roads / pavings where called for shall be 10mm thick 2 layers of 50 mm each laid monolithic cover a base of 150 mm thick hard stone soling.

The bottom layer of 50mm thickness shall be of cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregates 200mm and down gauge) and reinforced with for steel bars of 8mm dia placed at 200mm centers both ways.

As soon as the bottom layer of concrete has acquired the initial setting, the surface shall be roughened and top layer laid over it. The concrete in the top 50mm thick layer shall be laid in proportion of 1:1:1:4 (1 cement : 1 coarse sand : 1 surkhi : 4 mixture of Delhi Quartzite stone chips and Agra sand stone aggregates in equal part of size 20mm surface shall be scrubbed with brushes and washed down water, thoroughly to clearly expose the stone aggregates.

The materials for cement concrete and mixing, transporting, placing consolidation and curing of concrete shall conform to the requirements stipulated earlier under "Cement Concrete Work-Plain and Reinforced". The concrete for roads and paving shall be of grade M 150 and shall be minimum 100mm thick.

9. LAYING

Preparation of surface: Immediately prior to placing the concrete, the soling levels shall be checked by means of an approved scratch template resting on the side forms and moved along the forms. All high places indicated by the scratch points shall be removed to true grade and any low places filled with

suitable material, watered rolled and consolidated until even and firm. The sub-grade (soling) shall be checked and brought to true grade in advance of the concrete. No concrete shall be laid on the soling until the soling has been approved by the Architect.

10. STEEL FORMS

Formwork for the concrete shall be shaped steel sections such as channels in length of 5 meters or more except at curves where the length may be suitably reduced. The sections must have a depth equal to the thickness of the slab. The formwork shall be well braced and supported to resist the pressure of the concrete and consolidation without any displacement.

Forms be set to exact grade and alignment well in advance of the concreting. Before setting, the forms must be thoroughly cleaned and firmly anchored to prevent displacement due to placing and consolidation of concrete. After setting, the working faces shall be thoroughly oiled before concrete is placed against them.

After setting, the working faces shall be thoroughly oiled before concrete is placed against them. Forms be got approved by the Architect before placing concrete. Forms shall be removed only after a minimum lapse of 24 hours after placing concrete.

Concrete shall be laid in alternate panels of sizes as called for in the drawings. The concrete placed inside the forms shall be consolidated by mechanical vibrators as well as hand tampers especially near the forms. The concrete, thoroughly consolidated shall be finished to a surface approved by the Architect.

Kerbs to roads and parking shall be made of the same material and in the same manner as described for roads. The kerbs shall be concreted monolithic with described of roads and the junction between road and kerbs shall be rounded as shown.

11. JOINTS

Expansion joints called for shall be plain joints 12mm wide extending the full depth of the slab. The joint shall be filled with approved pre-molded bituminous filler, SHALITEX or equivalent approved by the Architect extending to about 10mm short of the top of the slab. The top or so of the gap shall be

filled with approved bitumen filler consisting of straight-run between (30/40 penetration 40% by weight, asbestos fiber 5% by weight and clean fine sand. The material shall be prepared by heating the sand and bitumen separately to a temperature of 350 f, mixing the two thoroughly, adding asbestos fiber in required quantities and again mixing the whole thoroughly. The prepared material shall be filled in the gap, thoroughly caulked and finished neat as directed.

Expansion joints, as described above, shall be provided wherever called for on the drawings. Intersections of expansion joints and/or construction joints shall be as detailed.

12. PARKING AREA

The vehicle parking area shall have the same surfacing, base and soling as stipulated for roads. The materials, workmanship etc., shall be the same as specified earlier under "Roads".

The parking area shall be laid to the required levels and slopes as called for in the drawings.

13. SPLIT KOTAH STONE PAVING

Paving to inner courtyard and other locations where called for, shall be of split kotah stone slabs shall be 25 to 30mm thick free from flakes and other defects and green in colour. The slabs be cut to trapezoidal shapes where required and chisel dressed on all the sides to the full depth. All angles and edges of the tile shall be true and free from chippings. The surface of the slabs shall have the natural finish and shall not be dressed or rubbed unless authorised to do so by the Architect.

14. LAYINGS

Cement mortar 1:6 (1 cement : 6 coarse sand) shall be spread under the area of each slab to 20mm depth. Washed clean slab shall be laid on top, pressed, trapped with wooden mallets to level with adjoining slabs. The joints between slabs shall be 6mm wide. It shall be lifted and laid aside. The top surface of the mortar shall then be corrected by editing fresh mortar at hollows. The mortar is allowed to harden a bit and a coat of cement slurry shall be spread over the same at the rate of one bag of cement per 10 m x m area. The slab shall then be placed back in position and tapped till it is properly bedded in level with

adjoining slab. Subsequent slabs are laid in similar manner. After each slab is laid, surplus cement on the surface shall be cleaned off.

The cut slabs and the full slabs, with the sides properly dressed as described above, shall be laid to form a pattern as shown, with continues parallel joints in one direction. The joints in the other direction shall break and be skew with the above parallel joints. After the slabs are laid and tamped into their final position, the joints shall be filled with cement mortar 1:3, struck pointed and finished neat. The surface of the finished paving shall be thoroughly cleared of all surplus mortar and left cured for a minimum period of seven days.

Stone steps in external areas shall be of Kotah stone as specified under section "Floor Finishes".

16. STONE KERBS -

Kerbs to paving in courtyard shall be of Kotah stone of approved shade. The stones shall be of sizes called for and of lengths not less than 600mm. They shall be rough dressed to shape and finish approved by the Architect.

The stone kerbs shall be laid in cement mortar 1:6 (1 cement: 6 coarse sand) over consolidated hard core as called for on the drawings. The joints between kerbs shall be pointed with cement mortar 1:3 pigmented to match the shade of the stone kerb. The completed kerbs shall be true to levels, lines, and curvature called for on the drawings.

17. COPING

Coping to cooling pond shall be of rough split kotah stone 40mm thick. The sizes and shape of coping shall be as shown on the drawings. The coping shall be laid over and joints filled with cement mortar 1:6. All stone and finished neat.

The completed work shall be true to line and level and square at corners.

18. SAMPLES

Samples of stone work and finishes shall be provided for approval of the Architect within 12 weeks of commencement of work.

19. COMPOUND WALLS

Compound walls shall be first class brick work laid in cement mortar and exposed stone masonry work laid in cement mortar.

The foundation, height of wall, thickness etc. shall be as shown on the drawings.

20. FENCING AND GATES

Fencing and shall be of rolled mild steel sections fabricated on specifications called for under "Metal Work". The shape and size of fencing and gates shall be shown on the drawings.

NOTES

1. All items of work in this contract shall be executed in accordance with the description of the items in the Bill of Quantities, read in conjunction with drawings and specifications.
2. The quantities given in this bill are provisional. The owner reserves the right to increase or decrease the quantities of work or to totally omit any items of work. The Contractor shall not be entitled to claim any extra or damages on these grounds.
3. Unless otherwise stated all measurements shall be taken in accordance with Indian Standard Method of Measurements of building and Civil Engineer in Works-IS:1200-1970.
4. The contractor shall be paid for the actual quantity of work executed by him in accordance with the drawings at the contract rates.
5. The rate for each item of work in this Bill shall include supply of all materials, (other than those supplied by the owner), labour, tools and plant, transport and incidentals required for the full execution, testing, commissioning and completion of the installation as per specification and drawings. The rate shall also include all waste on materials, hoisting, lowering and fixing in position.
6. In the event of an error occurring in the amount column of the Bill, as a result of wrong extensions of unit rate and quantity, the unit rate quoted by the tenderer shall be regarded as firm and the extensions shall be amended accordingly.
7. All errors in totaling in the amount column and in carrying forward totals shall be corrected.
8. The work shall be installed, tested and commissioned so as to fully comply with all relevant regulations of the concerned local Municipal, Public Health Inspector and other authorities. The rates quoted in this Bill shall be deemed to have incorporated all cost, rates, duties and other

expenses in connection with obtaining approvals from local authorities to test and commission and operate the Plumbing Services.

9. Only new materials of approved manufacture shall be incorporated in the works. Materials supplied to site shall be free from defects.
10. Piping systems installed at site shall be leak proof. In this connection, contractor shall arrange and pay for suitable test as required by Architect. Defective piping shall be removed and new leak proof piping installed in its place to the satisfaction of Architects.
11. The contractor shall arrange and pay for all expenses required to obtain N.O.C. and connection certificates from all relevant authorities to commission the installation.

CIVIL WORK

BASIC RATES OF MATERIALS

Sr. No.	Materials	Unit	Basic Rate Rs
01.	Cement	Bag	
02.	Kota stone	Sq.Mt.	
03.	Vitrified Tiles	Sq.Mt.	
04.	Glaze Tiles	Sq.Mt.	
05.	Ceramic Tiles	Sq.Mt.	
06.	Cladding stone	Sq.Mt.	
07.	Granite	Sq.Mt.	
08.	Steel	M.T.	
09.	Flammed Granite	Sq. mt.	

Notes :-

1. The purchase of material baring basic rates from open market will be subject to clients/architects prior consent.

MAIN SUMMARY – CIVIL WORK

Item No.	Description of Item	Amount
A.	Earth Work	
B.	Concrete Work (Plain & Reinforced)	
C.	Masonry Work	
D.	Floor Finishes	
E.	Plastering & Wall Finishes	
F.	Doors & Windows	
G.	Miscellaneous Works	
H.	Water Supply & Sanitation	
GROUND TOTAL		

CIVIL WORK

EARTHWORK

The rates for all items include :

1. Setting out the work, profiles etc.
2. Site clearance such as clearing of shrubs, brush wood, undergrowth roots and trees existing site earmarked for removal.
3. Excavation either straight or curved in plan or to any desired shape.
4. Provision of adequate barrier, lighting, gangways across open trenches etc. for protection of workmen & public.
5. Protection of site by shoring and strutting or any other method but adequate ,safe and sound and as approved by the architect.
6. Getting out & throwing soil clear off the area being excavated or depositing clear of edge of excavation to avoid falling, as directed by architect.
7. Trimming all sides, plumb and square, leveling all bottoms and cleaning out all loose earth, slopes or falls from excavation concreting.
8. Work at all depths and location unless otherwise specified.
9. Pumping out or otherwise removing all water which may accumulate in excavation from all cause excepting river seepage, broken water mains and the like.

MEMORANDUM SHOWING ITEM OF WORKS

TO BE CARRIED OUT

CONCRETE WORK - PLAIN & REINFORCED

The rates for all items include :

1. All necessary operations for the proper weighing, mixing, handing, transporting, placing and vibration of concrete as directed including preparation of test cubes and all testing.
2. Approved form of ties for walls, facials and other concrete members as called for.
3. Necessary and adequate scaffolding and gangways for work at heights and depths.
4. Finishing the exposed surface of concrete to a fair and even surface as directed.
5. Small liner labours including moldings, chamfers, splays, rounded or curved angles, chases beads, grooves, rebates, etc.
6. Incidental labour (i.e. stops, meters, returns, rounded ends, junctions, dishing etc.) in connection with linear or super labours.
7. Providing holes and pockets, for bolts, balustrades and other inserts (for fixing precast units etc.) as per details.
8. Forming joints of any kind (plain rebated, locking, tongued and grooved, etc.)
9. Leaving construction joints, expansion joints dummy joints wherever directed.
10. Building in or embedding ends of precast joints and other units as shown.
11. In the case of precast concrete all operations like handling, hoisting, holding in position, leveling aligning adequate temporary supports and stiffening as directed, roughening of contact surface at construction joints, effecting the various connections as per details, bolting, setting in cement mortar, grouting with cement mortar etc. as per drawings.

12. Adequate protection of edges and corners from damage during construction in approved manner.
13. Work either straight or curved, plain or regular or of any shape, unless otherwise provided for.
14. Keeping the work well wetted for at least 14 days after casting.
15. The rates for all reinforcement work (mild steel and high yield strength bars) include holding and fixing in any position as may be required and for bracing, supporting or otherwise holding firmly in position so that the placing and ramming of concrete will not disturb it. The rate shall include the cost of binding wire and cover blocks. In case of welded mesh, the rate shall include lap length to be considered as 50 times the wire diameter.
16. Work at all heights, depths, and locations, unless otherwise mentioned.
17. No additional amount shall be payable for upper floors rates quoted shall be uniform for all levels.
18. All concrete work rate includes mix-design cost.
19. All concrete work rate includes soil test cost.
20. All mix design shall subject to minimum cement ratio as specified in IS:456:2000.

MASONRY

The rate shall include :

1. All scaffolding, ladders, platform, staging and plant in the execution of work to any height or depth.
2. Hacking and roughening of concrete or other surface on contact with masonry for bondage.
3. Rough cutting and waste.
4. Raking out joints to specified depth either for plaster or painting or finishing the joints flush as the work proceeds, as directed.

5. Keeping the work wetted for ten days.
6. Leveling up and preparing tops of walls for damp proof courses pre-cast units etc.
7. Bedding and pointing wall plates, lintels, cills etc. in or on walls, bedding and pointing doors, windows and the like in cement mortar.
8. Holes for fixing pipes, bolts and other inserts including making good grouting if necessary.
9. Forming chases for edges of concrete floors or other units, for sealing in waterproofing layers etc.
10. Work in pillars and also in circular work.
11. Work at all heights, depths and location unless otherwise mentioned.

FLOORING AND PAVING

PREAMBLE

The rates for all items all items include:

1. Use and waste of all temporary fillers, side forms templates, moulds, straight edges etc.
2. Final preparation of the base, sub-grade or sub-floor including minor trimming of the base to remove slight undulations, only if necessary.
3. Cleaning and watering the immediately before laying the floor it directed.
4. Providing bedding layer of mortar as specified, in the case of slabs, tiles, etc. to correct levels or slopes as called for.
5. Cutting, rubbing and polishing where applicable.
6. Rounding of course, edges, and junctions of floors with skirting or dado.

7. Providing grooves where shown in drawings.
8. Work in narrow widths and bands and at all heights and locations unless otherwise mentioned.
9. Curing, protecting and cleaning all finished surfaces as specified.

All relevant points specified under "Concrete Work - Plain and Reinforced" shall be applicable to all Cement concrete work occurring under - "Flooring and Paving".

WALL FINISHES

P R E A M B L E

The rates includes :-

1. Work is narrow width, bands, cornices & small quantities unless mentioned.
2. Work on any surfaces such as masonry, concrete etc.
3. Preparation of surfaces by hacking, racking out joints, wetting the surfaces etc.
4. The thickness of plaster key in joints etc.
5. Arises, drains, grooves, chambers of any width and depth, internal rounded angles, external rounded angles, rounding off corners etc.
6. Providing grooves at the junction of plaster with other finishes as called for.
7. Scoring surface of plaster for key where the surface is not required to be finished fair.
8. Keeping the work well wetted for atleast 10 days.
9. Work at all heights, depths and locations unless otherwise mentioned.

PAINTING AND OTHER FINISHES

The rates include :

1. Work at all heights and use of all scaffolding, trestless, ladders, cradles etc. necessary for execution of work and for inspection.
2. Preparing surfaces to receive finishing coats, such as brushing, sand-papering, screening, washing and rubbing etc.
3. Putting, sand-papering and dusting of surfaces in between coats where applicable.
4. Work on cornices, narrow widths, hands etc.
5. Finishing to approved matt texture and/or stipple finish as called for.
6. Spreading and removing covering to doors, windows, floors, fittings etc. to protect them from splashes.
7. Washing floors, cleaning glass, joinery, electric fittings etc. of drops and splashes and leaving premises clean and tidy.

DOORS AND WINDOWS

P R E A M B L E

The rates for all items under this section includes :-

1. All fiber plugs, screws, nails, pins, key and such other fixing accessories.
2. Mild steel holdfasts/Cleats welded or screwed to frame as shown including embedding/anchoring the same in concrete.
3. Expansion holds/rail bolts and machines screws for fixing to RCC/stone Masonary supports.
4. First class teakwood edding to all edges of flush shutters, as shown.
5. Rebates as shown for double lea shutters.
6. Filling and finishing neat gapes around frames of doors, windows, etc. with approved mastic.
7. Glazing with PVC/Neoprene glazing blocks, putt and clips as specified.
8. Providing and fixing Neoprene gaskets, heads etc. as called for.
9. Hardware for doors and windows as called for.
10. Painting or polishing to frames and shutters as called for and as per relevant specification.
11. Work at all heights and locations.

NOTES :

Teakwood wherever called for shall be of superior quality Burma teakwood fully seasoned and free from any defects. All teakwood sizes mentioned under this section and in drawings are finished sizes.

Clear sheet glass wherever called for shall mean special selected quality glass manufacture by Triveni Sheet Glass Company, or approved by the Architect.

SPECIFICATION

M-56 GALVANISED IRON PIPES AND FITTINGS

- 56.1 Galvanised iron pipe shall be of the medium, type and of required diameter and shall comply with I.S. 1239-1979. The specified diameter of the pipes shall refer to the inside diameter of the bore. Clamp, screw and all galvanised iron fittings shall be of the standard 'R' or equivalent make.

M-57 BIB COCK AND STOP COCK

- 57.1 A bib cock is a draw off tap with a horizontal inter and free outer. A stop cock is a valve with a suitable means of connection for insertion in a pipe line for controlling or stopping the flow.
- 57.2 They shall be of screw down type and or brass chromium plated and of diameter as specified in the description of the item. They shall conform to I.S. 781-1977 and they shall be of best Indian make. They shall be polished bright.
- 57.3 The minimum finished weight of bib cock and stop cock shall be as given below :

<u>Diameter</u>	<u>Bib Cock</u>	<u>Stop Cock</u>
8 mm	0.25 Kg.	0.25 Kg.
10 mm	0.30 Kg.	0.30 Kg.
15 mm	0.40 Kg.	0.40 Kg.
20 mm	0.75 Kg.	0.75 Kg.

M-58 GUN METAL WHEEL VALVE

The gunmetal wheel valve shall be of approved quality. These shall be of gunmetal fitted with wheel and shall be of gate valve opening full way and of the size as specified. These shall conform to I.S. 771-1971.

M-59 WHITE GLAZED PORCELAIN WASH BASIN

- 59.1 Wash basin shall be of white porcelain first quality best Indian Make and it shall conform to I.S. 2556 (Part-IV) 1972 and I.S. 771-1979. The size of the wash basin shall be as specified in the time. Wash basin shall be of one piece construction with continued over-flow arrangements. All internal angles shall be designed so as to facilitate cleaning. Wash basin shall have single tap hole or two holes as specified. Each basin shall have a circulate waste hole which is either rebated or bevelled internally with 65 mm. diameter at top and 10 mm. depth to suit the waste fitting. The necessary stud slot to receive the bracket on the under side of the basin shall be provided. Basin shall have an internal soap holder recess which shall fully drain into the bowl.
- 59.2 While glazed pedestal of the quality and colour as that of the basin shall be provided where specified in the item. It shall be completely recessed at the back for reception of supply and with pipe. It shall be capable of supporting the basin rigidly and adequately and shall be so designed as to make the height from the floor to top of the rim of basin 750 mm. to 800 mm. as directed.

M-60 EUROPEAN TYPE WATER CLOSET/WITH LOW LEVEL FLUSHING

- 60.1 The European type water closet shall be white glazed porcelain first quality and shall be of wash down type conforming to I.S. 2256-1973 and I.S. : 771-1979.
- 60.2 'S' trap shall be provided as required with water seal not less than 50 mm. The solid plastic seat and cover shall be of the best Indian make conforming to I.S. 2548- 1980. They shall be made of moulded synthetic materials which shall be tough and hard with high resistance to solvents and shall be free from blisters and other surface defect and shall have chromium plated brass things and rubber buffer of suitable size.

M-61 ORISEN TYPE WATER CLOSET

The specification of Orissa type white glazed water closet of first quality shall conform to I.S. 2556 (Part- II) 1981 and relevant specification of Indian type water closet except that pan will be with the integral squatting pan of size 580 mm x 440 mm with raised footrest.

M-62 INDIAN TYPE WATER CLOSET

- 62.1 The Indian type white glazed water closet of first quality shall be of size as specified in the item and conforming to I.S. 771-1979 and I.S. 2556 (Part-II) 1981. Each pan shall have integral flushing ring of suitable type with adequate number of holes around as directed to have

satisfactory flushing. It shall also have an inlet at back or front, for connecting flush pipe as directed.

The inside of the bottom of the pan shall have sufficient slope from the front towards the outlet and surface shall be uniform and smooth.

Pan shall be provided with 100 mm. diameter 'P' or 'S' trap with approximately 50 mm water seal size 250 mm x 130 mm x 20 mm shall be provided with the water closet.

M-62A ROOF RESTS

62A.1 A pair of white glazed earthen ware rectangular foot rests of minimum size 250 mm x 130 mm x 20 mm shall be provided with the water closet.

63.1 The glazed earthen-ware sink shall be specified size, colour and quality. The sink shall conform to I.S. 771 Part-II-1979. The brackets for sinks shall conform to I.S. 775-1970.

63.2 The pipes shall conform to I.S. 1239-Part-I 1973 and I.S. 404-1962 for steel and lead pipes respectively. 32 mm brass waste coupling of standard pattern with brass chain and rubber plug shall be provided with sink.

M-64 GLAZED EARTHEN-WARE LIPPED TYPE FLAT BACK URINAL / CORNER

TYPE URINAL

The lipped type urinal shall be flat back or corner type as specified in the item and shall conform to I.S. 771-1979. It shall be of best Indian make and size as specified and approved by the Engineer-in-charge. The flat back or corner type urinal must be of 1st quality free from any defects, cracks etc.

M-65 LOW LEVEL ENAMEL FLUSHING TANK

The low level enamel flushing tank shall be of 15 litres capacity. It shall conform to I.S. 774-1971. The flushing cistern shall be of best quality and free from any defects. The flushing tank shall have outlet 32 mm. diameter. The outlet shall be connected with W.C. Pan by lead pipe or P.V.C. pipe as specified. The flushing tank shall be provided with inlet and outlet for fixing G.I. inlet pipes and over-flow pipes. The flushing cistern shall be provided with chromium plated handle for flushing. The flushing tank shall be provided with bracket of cast iron so that it

can be fixed on wall at specified height. The brackets shall conform to I.S. 775-1970.

M-66 CAST IRON FLUSHING CISTERN

The cast iron flushing cistern shall be of 15 Liters capacity. It shall conform to I.S. 774-1971. The flushing cistern shall be of best quality free from any defects.

The flushing cistern shall have outlet of 32 mm. diameter. The outlet shall be connected to lead pipe of 32 mm. diameter. The lead pipe shall conform to I.S. 404 (Part-I) 1962. For fixing G.I. inlet pipes and overflow pipe 20 mm. dia. inlet and outlet shall be provided. The flushing cistern shall be provided with galvanised iron chain and pull of sufficient length and shall be got approved from the Engineer-in-charge. The cast iron flushing cistern shall be painted with one coat of anticorrosive paint and two coats of paints. the flushing cistern shall be fixed on two C.I. brackets.

The C.I. brackets shall conform to I.S. 775-1970.

M-67 FLUSH COCK

Half turn flush cock (Heavy weight) shall be of gun metal chromium plated of diameter as specified in the description of the item. The flush cock shall conform to relevant Indian Standard.

M-68 CAST IRON PIPES AND FITTINGS

68.1 All soil, waste, vent and antisiphonage pipes and fittings shall conform to I.S. 1729-1964. The pipes shall have spigot and socket ends with head on spigot end. The pipes and fittings shall be true to shape, smooth, cylindrical, their inner and outer surfaces being as nearly as practicable concentric. They shall be sound and nicely cast and shall be free from cracks, laps, pinholes or other imperfection and shall be neatly dressed and carefully fettled.

68.2 The end of pipes and fittings shall be reasonable square to their axis.

68.3 The sand cast iron pipes shall be of the diameter as specified in the description and shall be in lengths of 1.5 M. including socket ends of the pipe unless shorter lengths are either specified or required at junctions etc. The pipes and fittings shall be supplied without ears unless specified or directed otherwise.

TOLERANCES

- 68.4.1 The standard weights and thickness of pipes shall be as shown in the following table : A tolerance upto minus 10 percent may however be allowed against these standard weights.

Sr. No.	Nominal	Thickness dia of bore	Overall excluding	Weight of Pipe		
				ears		
				1.5 m. long	1.8 m.long	2 m. long
1.	75 mm	5.0 mm	12.83 Kg.	16.52 Kg.	18.37 Kg.	
2.	100 mm	5.0 mm	18.14 Kg.	21.67 Kg.	24.15 Kg.	

- 68.4.2 A tolerance upto minus 15 percent in thickness and 20 mm. in length will be allowed. For fittings tolerance in lengths shall be plus 25 mm. and minus 10 mm.

The thickness of fittings and their socket and spigot dimensions shall conform to the thickness and dimensions specified for the corresponding sizes of straight pipes.

The tolerances in weights and thickness shall be the same as for straight pipes.

M-69 NAHNI TRAP

- 69.1 Nahni trap shall be of cast iron and shall be sound and free from porosity or other defects which affect serviceability. The thickness of the base metal shall not be less than 6.5 mm. The surface shall be smooth and free from crase, chips and other flaws or any other king of defects which affect serviceability. The size of nahni trap shall be as specified and shall be of self cleaning design.
- 69.2 The nahni trap shall be of quality approved by the Engineer-in-charge and shall generally conform to the relevant Indian Standards.
- 69.3 The Nahni Trap provided shall be with deep seal, minimum 50 mm. except at places where trap with deep seal can not be accommodated.

The cover shall be cast iron. Perforated cover shall be provided on the trap of appropriate size.

M-70 GULLY TRAP

- 70.1 Gully trap shall conform to I.S. 651-1980. It shall be sound, free from defects such as fire crack or hair cracks. The glaze of the traps shall be free from crazing. They shall give a sharp clear note when struck with light hammer. There shall be no broken blisters.
- 70.2 The size of the gully trap shall be as specified in the item.
- 70.3 Each gully trap shall have one C.I. grating of square size corresponding to the dimensions of inlet of gully trap. It will also have a water tight C.I. cover with frame inside dimension 300 mm x 300 mm the cover with the cover weighing not less than 4.53 Kg. and the frame not less than 2.72 Kg. The grating cover and frame shall be of sound and good casting and shall have truly square machined seating faces.

M-71 GLAZED STONE WARE-PIPE AND FITTINGS

- 71.1 The pipes and fittings shall be of best quality as approved by the Engineer-in-charge. The pipe shall be of best quality manufactured from stone-ware of fire clay, salt glazed thoroughly burnt throughout the whole thickness of a close even texture, free from air blows, fire blisters, cracks and other imperfections, which affect the serviceability. The inner and outer surfaces shall be smooth and perfectly glazed. The pipe shall be capable to withstand pressure of 1.5 m. lead without showing sign of leakage. The thickness of the wall shall not be less than 1/12th of the internal dia. The depth of socket shall not be less than 38 mm. The socket shall be sufficiently large to allow a joint of 6 mm. around the pipe.
- 71.2 The pipes shall generally conform to relevant I.S. 651-1980.

M-72 WALL PEG RAIL

- 72.1 The aluminium wall peg rail shall have three aluminium pegs of approved quality and size. IT shall be fixed on teakwood plank of size 450 mm x 75 mm x 20 mm. The teakwood shall be french polished or oil painted as specified.

M-73 G.I. WATER SPOUT

- 73.1 The G.I. pipes of 40 mm. dia. shall be of medium quality and specials shall be of 'R' brand or equivalent brand of best approved quality.

- 73.2 The pipe shall have length as required for the thickness of wall in which it is fixed, and at the outside end tee and bend cut at half the length shall be provided and at other end coupling shall be provided to have better fixing. The water spout shall be provided as per detailed drawing or as directed.

M-74 ASBESTOS CEMENT PIPE (A.C. PIPE)

- 74.1 The asbestos cement pipe of diameter as specified in the description of the item shall conform to I.S. 1626-1980. Specials like bends, shoes cowl, etc. shall conform to relevant Indian Standards. The interior of pipe shall have a smooth finish, regular surface and regular internal diameter. The tolerance in all dimensions shall be as per I.S. 1626-Part-I 1980.

M-75 CRYDON BALL VALVE

- 75.1 Ball Valve of screwed type including polythylene float and necessary lever etc. shall be of the size as mentioned in the description of item and shall conform to I.S. 1703-1977.

M-76 BITUMEN FELT FOR WATER PROOFING AND DAMP PROOFING

- 76.1 Bitumen felt shall be on the fiber bases and shall be of type 2, self finished felt grade-2 and shall conform to I.S. 1322-1970.

M-77 SELECTED EARTH

- 77.1 The selected earth shall be that obtained from excavated material or shall have to be brought from outside as indicated in the item. If item does not indicate anything, the selected earth shall have to be brought from outside.

- 77.2 The selected earth shall be good yellow soil and shall be got approved from the Engineer-in-charge. In no case black cotton soil or similar expensive and shrinkable soil shall be used. It shall be clean and free from all rubbish and perishable materials, stones or brick bats.

The clods shall be broken to a size of 50 mm or less. Contractor shall make his own arrangement at his own cost for land for borrowing selected earth. The stacking of material shall be done as directed by the Engineer-in-charge in such a way as not to interfere with any constructional activities and in proper stacks.

- 77.3 When excavated material is to be used, only selected stuff got approved from the Engineer-in-charge shall be used. It shall be stacked separately and shall comply with all the requirements of selected earth mentioned above.

M-78 BARBED WIRE

- 78.1 The barbed wire shall be of galvanised steel and it shall generally conform to I.S. 278-1978. The barbed wire shall be of Type-I whose nominal diameter for line wire shall be 2.5 mm and point wire 2.24 mm. The nominal distance between two barbs shall be 75 mm. unless otherwise specified in the item. The barbed wire shall be formed by twisting together two line wires, one containing the barbs. The size of the line and point wires and barb spacings shall be as specified above. The permissible deviation from the nominal diameter of the line wire and point wire shall not exceed 0.08 mm.
- 78.2 The barbs shall carry four points and shall be formed by twisting two point wires, each two turns, lightly round one line wire, making altogether four complete turns. The barbs shall be so finished that the four points are set and locked at right angles to each other. The barbs shall have a length of not less than 13 mm. and not more than 18 mm. The point shall be sharp and cut at an angle not greater than 35 degree of the axis of the wire forming the barbs.
- 78.3 The line and point wires shall be circular in section, free from scale and other defects and shall be uniformly galvanised. The line wire shall be in continuous length and shall not contain any welds other than those in the rod before it is drawn. The distance between two successive splices shall not be less than 15 meters.
- 78.4 The length per 100 Kg. of barbed wire I.S. Type-I shall be as under :
- Nominal 1000 Meter
- Minimum 934 Meter
- Maximum 1066 Meter