



**STATE BANK OF INDIA
PREMISES & ESTATE DEPARTMENT
LOCAL HEAD OFFICE, KOLKATA
SAMRIDDHI BHAVAN, BLOCK B, 9TH FLOOR,
1, STRAND ROAD, KOLKATA – 700 001.**

CIVIL / STRUCTURAL WORKS

PERTAINING TO

**EXTERNAL REPAIRING AND RENOVATION INCLUDING PAINTING, WINDOW
MODIFICATION WORK OF BLOCK B2 AT
SBI OFFICERS RESIDENTIAL COMPLEX, 19 CONVENT ROAD , KOLKATA 700014**

CIVIL / STRUCTURAL WORKS

TECHNICAL SPECIFICATION OF WORK

A chart showing the recommended time and quality scheduled for conducting test on various building materials is given. Please ensure that tests are carried out according to the above guidelines. Contractor's rate should include for necessary expenditure for testing of samples of following materials.

Sl. No.	Material	Test	Test Procedure	Minimum Quantity	Frequency
1.	Sand	a) Silt content	Field	20 Cum	20 Cum or part thereof
		b) Bulking	Field	20 Cum	---- do ----
		c) Particle size distribution	Field	40 Cum	Every 40 cum required for RCC work.
2.	Stone	a) Soft and deleterious materials	IS – 2386 Part - II		As required
		b) Particle size distribution	Field	45 Cum	Every 45 Cum of part thereof for RCC work. For rest of work as desired.
3.	Cement concrete or RCC	a) Slump	Field		Once a day or as desired.
		b) Cube Strength	Field	20 Cum slab, beams & connected columns.	Every 20 Cum of a day's concrete.
4.	Steel	a) Tensile Strength	IS - 1529	20 tones	Every 20 tones or part.
		b) Bend Strength	-- do --	--- do ---	----- do -----
5.	Bricks	Dimensions		Designation 100	Every 50,000 or part thereof.
		Water absorption		75) 50) 100000 35)	Every 100000 or part thereof . One test for source of
		Efflorescence		---- do ----	50,000 or part thereof. Two sets for
		Compressive Strength		100 - 50000 75) 50) 100000 35)	1 st lot of 1,00,000 and one test later for every 2,00,000 and part thereof.

TECHNICAL SPECIFICATION

FOR

REPARING / RENOVATION & PAINTING WORKS

TECHNICAL SPECIFICATION FOR CIVIL / PAINTING**1. GENERAL****1.1 Scope of work**

The work contemplated under this contract includes Civil and Sanitary / Plumbing Works for the aforesaid project, all as detailed in the Bill of Quantities, specifications and Drawings.

Such other works which are not included in the aforesaid Bill of Quantities are generally intended to be executed through a separate agency. Notwithstanding the above, Owners reserve the right to order additional works under the same contract. The Owners reserve the right to omit any item of work included in the aforesaid Bill of Quantities and award the same to any other contractor or not perform it at all at their discretion and the contractor shall not have any claim because of the same.

The contractor for this work shall be required to work in co-operation and co-ordination with other agencies on site and give them all reasonable assistance and help for the execution of the work in an efficient manner all directed. The words “approved” or “as directed” shall be deemed to convey approval or the discretion of Architect / Owner.

1.2 Indian Standard Specifications

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

1.3 Quality of materials and General Standards of Work

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

Samples and materials shall be approved before placement of order and approved samples shall be deposited with the Architect / Owner.

If for any material, reference to IS Code is not shown in the specification, then the materials shall be tested in any approved laboratory and the test certificate in original shall be submitted to owners. The entire charges for testing including repeated tests if ordered for shall be borne by the Contractor.

All works shall be of best workmanship and shall be carried out in proper workman like manner and in accordance with sound engineering practice to the satisfaction of the Architect / Owner.

No work shall be considered complete until the Architect / Owner certifies in writing that it has been completed.

1.4 Power for construction

Contractor shall have to arrange for D.G. set at his own cost, risk and responsibility to carryout work, at site, whenever required and asked by the Bank / Architect .

1.5 Scaffolding

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

1.6 Measurements

The mode of measurements, wherever possible is specifically mentioned in these documents, where it has not been mentioned, it shall be as per the provision of the relevant Indian Standards. All the measuring tapes and other accessories necessary, shall be provided by the Contractor. Any dimension given in F.P.S. system to be converted as follows :

1 foot = 0.3048 metre.

1.7 Tools and Plant

The tenderer along with his tender furnish a list of tools, plant and machinery which he intends to use on the works in Appendix – I of the Bill of Quantities. The list should indicate the exact type of machine, its capacity year if manufacture, kind and capacity of propelling force, spare parts readily available and all other pertinent information. The contractor is obliged to use all the machinery mentioned in his list if Architect considers it necessary.

1.8 Surveying

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

1.9 Dewatering

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

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

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

2. DISMANTLING, REMOVING EXISTING WORK

2.1 Dismantling carefully existing / old / damaged brick work, concrete work, flooring, plastering etc. and removing debris from site in any place and dumping them at any place outside the premises by mechanical transport and serviceable materials stocked at site as per direction. Every precaution should be taken from demolition contractor / agency side to avoid any injury / accident etc. Contractor should consider all costs for scaffolding, propping, staging, lifting, removal, transport etc. in their quoted rate.

3. Concrete work

All concrete works shall be of proportions as specified in the schedule. Cement shall conform to relevant I.S. Code. Crushed stone aggregate shall be properly graded and shall be free from soft, friable, thin, elongated and laminated pieces. Foreign matter including earth or dirt shall be washed away before use in work. Sand shall preferably be obtained from pits, clean, sharp and shall not contain harmful impurities such as Pyrite, coal, lignite, Mica or similar laminated material. Silt contents shall not be more than 8%.

Concrete shall preferably be mixed in a mechanical mixer. Hand mixing may be permitted by addition of 10% extra cement for which no additional cost will be paid. Concrete after mixing shall present a uniform colour of homogeneous mix.

The concrete shall be placed in position within half an hour from adding water to the mix. The concrete after being tamped in position shall be properly vibrated and compacted, special care must be taken regarding the use of water in the mix which should be just sufficient to produce dense concrete of adequate work ability.

The concrete shall be cured for a minimum period of 21 days.

4. Form Work

The form work for all concrete work shall be done with approved materials conforming to the shape, lines, levels and dimensions shown on the drawings. The form work shall be sufficiently rigid and designed with runners, props and boarding material so as to enable withstanding the weight of green concrete, working loads, vibration load or any other imposed loading without causing undue deformation, deflection, distortion, bulging or loosening of its components.

Form work shall be retained in position conforming to relevant I. S. Code and sound engineering practice. De shuttering shall be done in a way so as not to jar the concrete or cause and injury or shock to the same.

5. Reinforcement

All reinforcements for use in work shall be of tested quality obtained from Manufacturers / Dealers and shall be free from loose scale, oil, grease, paints and other harmful matters.

The bars shall be placed in position after bending conforming to the drawings and all intersections shall be properly tied with 16 g. black annealed wire.

Approval of the reinforcement as laid shall be obtained from the Consultant before casting is allowed. Cover for reinforcement is to be provided in conformity with the drawings.

6. Brick Masonry Work

Bricks of strength as specified in the schedule and having generally uniform dimension (+ 8% variation on dimension is tolerable) and water absorption less than 20% and free from other defects shall be used in the work.

a) Solid Masonry Wall

Masonry walls shall be done in English Bond with cement mortar of proportion mentioned in the schedule. Brick work shall be raised uniformly and true to level and plumb. Joints shall be properly raked. The work is to be cured for at least 10 days.

b) Cavity Wall

Cavity walls shall be done in conformity with the drawings. Cross bonding shall be achieved with cut bricks or metal ties as specified in the schedule.

Brickwork shall be done with cement mortar in proportion as specified in the schedule. Sill, jambs for openings shall be done with single thick solid brickwork for which no additional payment will be made. The work is to be cured for 10 days.

7. Plastering

Plastering shall be done with cement mortar in proportion given in the schedule. The plastering should be true to line and plumb. All corners shall be weathered and plumbed. Rounding of corners may be done with approval of the consultant for which no additional payment will be made. The finished plastered surface should be uniform and free from any defects like cracks, waviness etc. The plastering work shall be cured for at least 7 days.

a) General

For any item of work, not covered by the specifications mentioned hereinabove, the instruction and directions of the Architect / Consultant / Banks shall be obtained and work shall be done accordingly.

8. Wood Work

a) Timber

Timber used in wood work shall be of first class quality. All wood shall be thoroughly seasoned, of natured growth, uniform in texture and free from large dead or loose knots, waves, shakes, rot, decay or any other defects. The grains shall be close and reasonably straight. The aggregate area of the knots shall not exceed 0.5% of the area cross section of the place. The timber planks used shall also be of good quality and uniform thickness. They shall have plane surfaces and shall be free from defects as indicated above. Planks shall also be of good quality and uniform thickness. They shall have plane surfaces and shall be free from defects as indicated above.

Planks shall have neat, machine cut edges and the edges shall be straight and at right angles to each other unless otherwise required under specific instances. Machining / sawing shall be in the direction of grains. In general the timber shall conform to Indian Standards IS – 287 – 1960 (latest) or other equivalent standard specifications. The maximum permissible moisture contents of timber used in various situations shall be as per relevant IS Code.

The timber shall be planed smooth to the full dimensions and rebated as shown in the drawing. Patching or plugging of any kind shall not be permitted. Timber shall be treated with an approved anti-termite treatment. All surfaces concealed or facing wall shall be treated with wood preservative of approved quality.

b) Teak Wood

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

c) Veneers and Plywood

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

d) Phenol Bonded Plywood

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

e) Phenol bonded Block Board

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

f) Panel Door

Shutters shall be manufactured from kiln seasoned and chemically treated commercial hardwood of approved quality. Thickness and size of stile, Rail shall be as specified in the Schedule of quantities and or drawings.

Panel shall be of phenol bonded ply wood (BWP) conforming to IS : 303 and IS : 710 of latest edition as specified in the schedule of quantities. Panel shall be in a single width piece. Shutters shall be manufactured confirming to the relevant IS specification and approved sample shall be kept in the site office of the Owner / Architect.

g) Phenol Bonded Wooden Flush Door

Solid ore slush shutter shall be commercial or decorative veneer type as specified in the item manufactured by M/s. Green Ply , M/s. Century Ply , M/s. Sylvan Ply , M/s. Alishan Ply , M/s. Saburi Ply , M/s. Satabdi Ply, M/s. Aeon Ply or other approved manufacturer registered with ISI and shutter shall bear ISI mark. Approved sample shall be deposited at the site office of Owner / Architect. The shutter will be provided with lapping, finished thickness of the shutter shall be as mentioned in the item. Shutter be hot pressed and phenol formaldehyde used as glue.

9. Decorative Laminates

Laminate sheets shall be 1 mm. (as per design requirements) thick with + 0.3 mm tolerance and obtained from any of the following approved manufacturers e.g. Green lam, Century Mica, Formica, Merino, Sunmica & Amulya Mica and samples should have approval of the Architect / Bank.

10. Hardware Fittings

All hardware fittings for doors shall be Oxidised Iron, Brass, Anodised Aluminium or Brass Stainless steel etc. as specified in the Schedule of Quantities. These hardware fittings shall be obtained from approved manufacturers and shall bear ISI mark wherever available. The samples for the fittings shall be submitted to the Bank / Architect for their approval. Hardware fittings for door shutters shall be paid as separate item as given in schedule of quantities. The rate for hardware fittings shall include for supplying, fitting and fixing the fittings with necessary cadmium plated screws, washers, bolts, nuts etc. as required. All locks shall be provided with keys in duplicate and rate shall include for the same. Approved samples of hardware fittings shall be deposited with Bank / Architects for reference.

11. Workmanship

- a) The workmanship shall be of first class quality and to the satisfaction and approval of the Bank / Architects. Scantlings and board shall be accurately sawn and shall be of required width and thickness. All carpenter's work shall be wrought except where otherwise described. The workmanship and joinery shall be accurately set out in strict conformity to the drawings and shall be framed together and securely fixed in approved manner and with properly made joints. All work is to be properly tenanted shouldered, wedged, pinned, braced etc. and properly glued with approved quality glue to the satisfaction of the Bank / Architect.
- b) **Screws** : Unless otherwise specified all screws to be used in wood work joinery shall be of oxidised iron or brass or pure brass or stainless steel and of approved quality. The size diameter and length should conform to those specified in hardware schedule.
- c) **Tolerance** : 1.5 mm (1/16") will be allowed for each wrought face sizes specified except where described as finished in which case they shall hold to the full dimensions.
- d) **Protection** : All edges of timber frame etc. shall be protected from being damaged during construction by providing rough timber casing securely fixed and other adequate protective measure. Door / Window frame shall have cut rebate. Planted rebates shall not be permitted. Where door frames are fixed and flush with plaster of wall, teak wood cover mould as per drawings shall be provided all round and shall be painted or polished to match with finished shutters.

14. Rates to Include

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

A. Item of scantling :

- i) All labour, materials and equipment for fixing frame work as per drawing excluding the cost of hold fasts, Rail plugs or other fasteners etc.

B. Item of shutters :

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

15. Mode of Measurement

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

- i) Scantling shall be measured in cum. The sectional areas shall be the area of the least square or rectangles from which the scantling may be cut. The length shall be actual length of timber required for the purposes including the extra portion required for jointing.
- ii) Shuttering shall be measured in square metre for closed door shutters area i.e. rebate to rebate without extra measurement for rebates and / or splayed meeting styles of door.

16. Painting**Paint and White Washing**

White wash shall be prepared from 5 parts of stone lime and 1 part of shell lime. The lime shall be dissolved in a tub with sufficient quantity of water and shall be well mixed to give a creamy consistency. It shall then be screened through a clean coarse cloth and Pidilite dissolved in hot water to be added as per manufacturer's specification to lime and ultramarine blue is added to the mixture in small proportion, just sufficient to give a very light bluish-tint.

Before applying the white wash the surface shall be thoroughly cleaned and brushed and all holes, cracks and patches shall be made good with approved materials.

Rates to Include

Apart from other factors mentioned elsewhere in this contract, the rates for white wash include for the following :-

- i) All labour, materials, equipment required for white washing.
- ii) Scaffolding including erection and removal.
- iii) Providing and preparing the white wash.
- iv) Preparing the surface for white wash including the scaffolding.
- v) Applying the white wash in three coats minimum. If a proper even surface is not obtained to the satisfaction of the Owner / Architects is 3 coats, contractors shall carry out additional costs of white wash to approval at contractor's expense.

Mode of measurement

The measurement shall be in square metre. The mode of measurement shall be as applicable so that for plaster.

17. Plaster of Paris Punning

If the plastered surface is to be finished with plaster of Paris punning, the surface shall be combed slightly with the wire brushes or nails before it is completely set to form key for plaster of Paris punning. The surface shall be only damped but not soaked before the application of Plaster of Paris punning. The Gypsum for preparing punning shall be approved quality. It shall be dry and free from lumps and shall be suitably packed in watertight bags or containers.

Paste shall be prepared by adding required quantum of water and same shall be used before it sets. No dropping paste shall be used in the work.

Punning shall be applied to the prepared surface with steel trowel to a thickness required to make the surface produce perfectly smooth and even surface, working from top to bottom.

The finished surface shall not show any sign of disintegration, topping or pilling. The surface shall be protected from injury and damage.

Rates to Include

Apart from other factors mentioned elsewhere in this contract, rates for the item of plaster of Paris punning shall include the following :-

- i) Erecting, dismantling and removing the scaffolding.
- ii) Preparing the surface to receive the said finish.
- iii) Providing plaster of Paris punning of the required thickness to make the surface perfect smooth and even including cost of materials.
- iv) Any moulding work if shown in the drawings or as specified.
- v) Finishing in bends, arises, rounded angles, fair edges, narrow returns, quirk, 'V' joints, splays, drip mouldings, making good to metal frames, junctions with skirting or dado's, narrow widths and small quantities, making good round pipes, conduits, timbers, sills, brackets, railings etc. and making good after all the sub-contractor or nominated sub-contractors have done their works.

Mode of Measurement

The measurement shall be in square metre. The mode of measurement shall be as applicable to that for plaster.

18. Synthetic Enamel Paint

- a) Material

Ready mixed oil paints and primer, in general shall be of approved quality, colour and of approved manufacture. These materials shall be in sealed tins and shall be opened in the presence of the Bank / Architects at site.

b) Preparation of Surface

i) Iron and Steel Works

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

ii) Wood Work

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

c) Application

After preparing the surface, a primer coat shall be applied. The primer coat shall be ready mix of approved make dried, all holes, cracks etc. which shall remain, shall be filled and papered smooth. Then a second coat of paint of approved shade and manufacturers shall be evenly applied and allowed to dry.

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

19. Plastic Emulsion paint

The paint and primer shall be of approved quality, colour and shall be obtained from approved manufacturers. These shall be in sealed containers and shall be opened in the presence of the representative of Engineer-in-Charge / Architect / Bank.

The number of coats shall be as specified in the schedule.

Surface to be painted shall be thoroughly cleaned sand cement (Primer & top coat) prepared and / or rubbed with emery cloth. The paints shall be applied with brushes of type and size suitable for the job / or by roller and subsequent coat shall be applied after previous coat has dried and care shall be taken so that dust or other foreign materials do not settle or disfigure the various coats.

The thinning of the emulsion is to be done with water and not with turpentine. Thinning with water will be particularly required for the undercoat which is applied on the absorbent surface. The quality of water to be added shall be as per manufacturer's instructions.

No left over paint shall be put back into the stock tins. When not in use the containers shall be kept properly closed.

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

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

Precautions

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

Brushes should be quickly washed in water immediately after use and kept immersed in water during break periods to prevent the paint from hardening on the brush.
- b) In the preparation of walls for plastic emulsion painting : no oil base putties shall be used in filling cracks, holes etc.
- c) Splashes on floors etc. shall be cleaned out without delay as they will be difficult to remove after hardening.
- d) Washing of surface treated with emulsion paints shall not be done within 3 to 4 weeks of application.

Rate to Include

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

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

Mode of Measurement

The measurement shall be in square metre. The mode of measurement shall as applicable to that for white washing.

Preparatory works for painting etc.

Painting, polishing, plaster or paris work etc. shall not be taken up unless the surfaces to be so treated with are made ready with all related preliminary works and the approval of the Architect / Bank is obtained.

20. Glass

Glass used shall be cleaned and / or tinted as mentioned and of the best quality approved by Architect without any scratches, bubbles, specks, waviness, undulations or any other defects, unless otherwise specified, all glass shall be as shown in the drawings. The tolerance allowed in the weight of glass shall be $\pm 20\%$ per sq.ft. The glass used shall be either sheet or plate / float glass with bevelled edges etchings etc. as per requirement if necessary as indicated on the drawings and BOQ and is to be got approved by Architect. Glass shall be well protected from any damage during transportation, storage and progress of work. Any glass which in the opinion of Architect is not suitable for work shall be rejected and the Contractor shall replace the glass with an approved one.

STANDARD SPECIFICATION

Unless otherwise specified elsewhere in this contract, all work under this contract shall be carried out in accordance with the technical specification and the latest issue of the Indian Standard Specification applicable to the particular class of work, the relevant British Standard Specification shall apply. Relevant issue of I.S. specification applicable to the particular work have been described along with the specification for the respective works. In case of my confusion of dispute regarding the meaning and interpretation of any specification for the respective works, the decision of the Bank / Architects shall be final and binding on the Contractor.
ALL CIVIL WORKS SHOULD BE DONE AS PER RELEVANT IS CODE.

LIST OF MATERIALS FOR APPROVED BRAND AND / OR MANUFACTURER

SLNo	DESCRIPTION	APPROVED BRAND / MANUFACTURER
A.	<u>CIVIL WORK (EXTERNAL)</u>	
1)	Ordinary Portland / Blast Furnace Slag Cement	ACC, L&T, Ambuja, Lafarge, Ultratech of grade 53.
2)	Waterproof Adhesive For Wooden	M/s. Pidilite (Fevicol)
3)	Structural Steel	TATA or SAIL
4)	Alumn. Sliding Window	JINDAL or HINDALCO
5)	PVC (SWR) Pipe	SUPREME / ASTRAL
6)	HARDWARE	
a)	Latches, Hinges etc.	Ebco Earl Behari / Efficient Gadgets / Hafele
b)	Aluminium Channel	M/s.Allen, M/s.Crown, M/s.Hafele or equivalent with ISI mark
c)	Locks & Handles	M/s.Godrej / Efficient Gadget / Hafele / Dorset / Acme / Samet
d)	Screw / Bolts / Nuts & Washers	Nettle fold / GKW / Hafele or approved Brand
7)	Synthetic Enamel Paints / Plastic Emulsion Paints / Distemper / Melamine Coating etc.	ICI Paints / Nerolac Paints / Berger Paints / Asian Paints
8)	Weather Coat Paints / Cement based Paints / Acrylic Emulsion Paints etc.	ICI Paints / Nerolac Paints / Berger Paints / Asian Paints
9)	Glass	Asahi / Saint Gobain /
10)	Door Closer	Garnish / Efficient Gadgets / Hafele / Dorset
11)	Water proofing Compound	M/s. Sika / Dr. Fixit
12)	Bonding Agent	M/s. Sika / Dr. Fixit
13)	Sealant	M/s. Pidilite / Dr. Fixit

Note :-

1) Bank / Architects reserves the right to insist contractor for use of any specific brand / make etc.

2) In case any materials are not available from the above brands, Bank will suggest names of other brands / manufacturers and contractor will have to abide by the same.

TECHNICAL SPECIFICATIONS
FOR SANITARY & PLUMBING WORK

SANITARY INSTALLATION

The following specification are to be read in conjunction with the details given in the Schedule of Quantities:-

1. Standard Specifications

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

2. General Specifications for Sanitary Installations

a) Execution through reputed Sanitary Contractors Firm

All sanitary installation works shall be executed through reputed sanitary contractors. Particulars of the firm viz. Name and address of the firm, registration and license no. etc. (issued by the authorities) shall be furnished along with the tender.

b) Comply with by-laws etc. of Local Authorities

All sanitary installations works shall be carried out by skilled and licensed plumbers / technicians in a workman like manner complying in all respects with the relevant by-laws of the Municipal or of the local authorities under whose jurisdiction the work has to be executed.

c) Contractor's responsibility for sanction from local authorities

For the work undertaken by him and works dependent on his work, the contractor shall prepare plans / drawings as required, including H. D. Plan and get it sanctioned from the Municipal or other Govt. authorities as may be required by rules and regulations and law concerned. The Contractor shall include the cost for the same in this tender rate unless otherwise specified in the Tender Items.

d) Contractor's responsibility to ensure continuance of existing services

During execution of the new works, the Contractor shall ensure that the existing services (viz. Water supply, sewer, drain lines etc.) are not disrupted in any way, in case it happens accidentally the services shall be restored immediately at Contractor's cost.

However, when in the opinion of the Architects / Owner, it is imperative to locally divert / disconnect for a short time / reconnect the existing lines, it shall be done by the contractor as directed the Architects / Owner.

3. List of materials / installations handed over

On completion of works in all respects and satisfactory testing, the Contractor shall prepare and submit a list, along with the final bill of all materials / installations handed over to the authorised representative of the Owner.

3.1. Transfer of manufacturer's guarantee

When manufacturer's guarantee period for any material / installation expires at a later date than the expiry date of the defect liability period of the Contractor, the contractor shall transfer the guarantee in the name of the Owner. This transfer should be made at the time of submitting the Contractor's bill for release of retention money.

4. Cement

The cement must be kept in a dry place under cover. Samples of cement may be taken by the Architects / Owner from time to time for testing at any approved laboratory whose reports shall be accepted by both parties.

5. Sand

Sand is to be clean, coarse and sharp and is to be washed, if so directed.

6. Bricks

Bricks shall be of the best quality well burnt sound, hard and giving clear ringing tone of sound when struck against each other and well shaped bricks having crushing strength 100 Kg./Sq.cm unless stated otherwise in the respective schedule of items, of standard dimensions and to be soaked for at least six hours in water before use.

7. Brick Work

The brick work shall be in English bond, and shall be laid in cement sand mortar in the proportion stated in schedule of quantities, if not mentioned otherwise. Where corbelling is necessary, projection in each course shall not exceed (2 ¼") 57 mm. All brick work must be kept wet till the mortar has fully set.

II. G.I. SOIL, WASTE AND VENT PIPES AND FITTINGS

C.I. Pipes and Fittings

Cast iron soil, waste and vent pipes and fittings shall be of heavy quality conforming to IS : 3989 of spun pipes which is preferred to sand cast soil pipes conforming to IS : 1729. The standard weight and thickness of pipes are given below and a tolerance upto 4% may however be allowed against these standard weights.

(IS : 3989 – 1967 for centrifugal spun soil pipe)

Nominal Dia		Thickness	Overall Weight 1.83 m length (six feet)	Internal dia of socket
In mm	in mm	in mm	In Kgs.	in mm
50	2	3.5	8.5	73
75	3	3.5	12.7	99
100	4	4.0	19.2	126
150	6	5.0	35.5	179

(IS : 1789 – 1964 for sand cast soil pipe)

Nominal Dia		Thickness	Overall Weight 1.83 m length (six feet)	Internal dia of socket
In mm	in mm	in mm	In Kgs.	in mm
50	2	5	11.41	76
75	3	5	16.52	101
100	4	5	21.07	129
150	6	5	31.92	181

Laying

The pipes will be laid as described in the Schedule of Quantities and as shown on the Architects' drawings.

Fixing

The pipes and fittings shall be fixed to walls by using proper holder-bat clamps, if directed. The pipes shall be fixed perfectly vertical or in an approved alignment. The spigot end shall abut the shoulder of the socket and leave no annular space in between. All soil and waste water pipes shall be carried up above the roof parapet wall and shall have A. C. Vent cowl.

Connection between main pipe and the branch pipes shall be made by using appropriate branches and bends invariably with access doors for cleaning.

Lead caulked joints

The annular space between the socket and spigot will be first well packed in with spun yarn soaked in bitumen and dried, leaving 25 mm from the lip of the socket for lead for pipes upto 100 mm dia and 38 mm depth for pipes of 150 mm dia. The joints may be leaded by using proper leading rings or if they are not available by wrapping a ring of hemp rope covered with clay round the pipe at the end of socket, leaving a hole through which molten lead shall be poured in.

Molten lead free from size or tin and thoroughly fluid shall be poured and each joint filled in one pouring. Before caulking, the projecting lead shall be removed by flat chisels and then the joint caulked round with proper caulking tools and a hammer of 1 to 1-1/2" Kg. In weight in such a manner as to make the joint quite sound. The joint shall be left flush neat and even with the socket.

Testing

All C. I. pipes and fittings including joints shall be tested by smoke test and left in working order after completion.

Painting

All exposed C. I. pipes and fittings shall be painted to match the colour on the surroundings with two coats of flat / enamel paint over a coat of approved primer. If directed, additional coats shall be given at no extra cost.

III. INTERNAL WATER SUPPLY

G. I. Pipes and Fittings

The pipes shall be of the class specified in the Schedule of Quantities and shall be of galvanised steel, welded or seamless, screwed and socket and shall conform to IS : 1239. They shall be manufactured by a firm of repute. All fittings shall be malleable iron galvanised fittings of approved best Indian make

The details of pipes regarding nominal bore thickness and weight are given below :

Approx. outside dia	Nominal bore		Screwed and socket weight Per metre			Screwed and socket metre per 1000 Kgs.			
	in mm	in mm	in nearest inch.	Light Kgs.	Medium Kgs.	Heavy Kgs.	Light Kgs.	Medium Kgs.	Heavy Kgs.
10.2	6		1/8	0.364	0.410	0.496	2724	2439	2016
13.5	8		¼	0.521	0.654	0.773	1919	1529	1294
17.2	10		3/8	0.680	0.858	1.03	1470	1166	971
21.3	15		½	0.961	1.23	1.46	1040	813	685
26.9	20		¾	1.42	1.59	1.91	704	629	524
33.7	25		1	2.03	2.46	2.99	493	407	334
42.4	32		1-1/4	2.61	3.17	3.87	383	316	258
48.3	40		1-1/2	3.29	3.65	4.47	304	274	224
60.3	50		2	4.18	5.17	6.24	239	193	160
76.1	65		2-1/2	5.92	6.63	8.02	169	151	125
88.9	80		3	6.98	8.64	10.3	143	116	98
101.6	90		3-1/2	8.92	9.90	11.8	112	101	84.7
114.3	100		4	10.2	12.4	14.7	98	80.6	68
139.7	125		5	---	16.7	18.3	---	59.9	54.6
165.1	150		6	---	19.8	21.8	---	50.5	45.9

Note : The above weights are for black pipe and theoretical weight of galvanised pipes are 6% higher.

Laying and Fixing

Where pipes have to be cut or re-threaded ends shall be carefully filed out so that no obstruction to bore is offered.

For internal work all pipes and fittings shall be fixed truly vertical and horizontal either by means of standard pattern hold-bat clamps keeping the pipes 12 mm (1/2") clear of the wall everywhere or concealed as directed.

For external work G. I. pipes and fittings shall be laid in trenches. The width of the trench shall be the minimum width required for the working. The pipes laid underground shall not be less than 60 cm. (2 ft.) from the ground level. They shall be painted with hot asphalt and wrapped with Hessian cloth and again painted with two coats of hot asphalt (pipes embedded in masonry / concrete shall be treated similarly). They shall be surrounded with 15 cm thick sand of approved quality all round. The work of excavation and refilling shall be done as directed.

Painting

All exposed pipes and fittings shall be painted with two coats of approved shade of flat enamel paint over a coat of approved primer and if directed, additional coat of paint shall be given without any extra cost.

Testing

All G. I. pipes and fittings shall be tested in an approved manner to ensure that pipes have proper threads and that proper materials such as white lead and hemp have been used in jointing. All leaky joints must be made leak proof by tightening or redoing at contractor's expenses.

Brass water fittings

All brass water fittings shall be of approved design and shall generally comply with the latest I. S. Specifications. They shall be fixed in the pipeline in a workmanlike manner and care shall be taken to see that joints between fittings and pipes are made leak proof. The fittings and joints shall be tested in an approved manner to ensure that the joints are leak proof. The defective fittings and the joints shall be repaired to redone / replace at contractor's expense.

LIST OF APPROVED MATERIALS

The Contractor shall use materials in their works subject to inspection prior to despatch by Owner or his authorised representative of any materials, as deemed necessary in accordance with the following list. All materials not otherwise specified shall be in accordance with the latest Indian Standard Specification. Where such exists and prior approval of Owner / Architect. The Contractor shall be bound to offer sample of materials, which are claimed to be conforming to I. S. Specifications for testing at an approved test laboratory.

Contractor shall purchase all materials from the makers or their authorised stockiest only. Necessary documentary evidence must be produced to the Owner or their authorised representative on demand.

Contractor shall be bound to supply items of any make of the items as per the choice of the Owner.

