

# **TENDER FOR REFURBISHMENT OF TOILETS & PLUMBING SYSTEMS IN BPCL SOUTHERN REGIONAL OFFICE, CHENNAI**

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**Special terms and conditions, Specifications and scope of work**

**1. INTRODUCTION**

BHARAT PETROLEUM CORPORATION LIMITED proposes to refurbish the Toilets and Plumbing System in Southern Regional Office, Chennai. Brief scope of work involves the following:

- a. Dismantling of Existing toilet and the plumbing lines.
- b. Refurbishment of plumbing system.
- c. Toilet flooring, tiles laying, and wall dadoing, false ceiling, electrical fixtures.
- d. Installation of sanitary wares and toilet cubicles.
- e. False ceiling, mechanical ventilation and other allied Works
- f. Finishing works.

**2. SUBMISSION OF TENDER**

1. **Before submitting the Tender, the Tenderer shall at their own cost and expenses visit the site** and understand the scope of work, examine and satisfy as to the nature of the existing roads, means of communications, the character of the soil, state of land and of the excavations, the correct dimensions of the work facilities for procuring various construction and other material and their availability, and shall obtain information on all matters and conditions as they may feel necessary for the execution of the works as intended by BPCLs and shall also satisfy of the availability of suitable water for construction of civil works and for drinking purpose and power required for fabrication work etc. Tenderer, whose tender may be accepted and with whom the Contract is entered into shall not be eligible and be able to make any claim on any of the said counts in what so ever manner for what so ever reasons at any point of time and such a claim shall not be raised as a dispute and shall not be arbitrable.
2. **The dimensions and quantities given in the BOQ and drawings are indicative only. The actual quantity and dimensions at site may vary. Payment shall be made on the basis of actual work carried out and certified by the joint measurement of the contractor and BPCL officer in charge.**
3. The quantities indicated in the Tender are approximate.
4. BPCL reserves their right to award the contract to any tenderer and their decision in this regard shall be final. They also reserve their right to reject any or all tenders received. No disputes could be raised by any tenderer(s) whose tender has been rejected.
5. The Rates quoted by the Tenderer shall include Costs and expenses on all counts viz. cost of materials, transportation of machine(s), tools, equipments, labour, power, administration charges, price escalations, profits etc. However, water and power shall be provided by BPCL. The description given in the schedule of quantities shall unless otherwise stated be held to include wastage on materials, carriage and cartage, carrying in and return of empties, hoisting, setting, fitting and fixing in position and all other expenses necessarily and for the full and complete execution and completion of works and in accordance with good practice and recognized principles in that regard.

6. In consideration for having a chance to be considered for entering into a contract with BPCL, the Tenderer agrees that the Tender submitted by him shall remain valid for the period prescribed in the tender conditions, from the date of opening of the tender.
7. The works shall be carried out strictly as per approved specifications and drawings. Deviations, if any, shall have to be authorized by BPCL Engineer in writing prior to implementing deviations. The price benefit, if any, arising out of the accepted deviation shall be passed on to BPCL. The decision of Engineer-in-Charge shall be final in this matter.
8. The contractor shall make all arrangements at his own cost to transport the required materials outside and inside the working places and leaving the premises in a neat and tidy condition after completion of the job to the satisfaction of BPCL. All materials shall be supplied by the contractor at his own cost and the rates quoted by the Contractor should be inclusive of all royalties, rents, taxes, duties, octroi, statutory levies, if any, etc.
9. The Contractor shall not carry on any work other than the work under this Contract within BPCLs premises.
10. At any time after acceptance of tender, BPCL reserves the right to add, amend or delete any work item, the bill of quantities at a later date or reduce the scope of work in the overall interest of the work by prior discussion and intimation to the Contractor. The decision of BPCL, with reasons recorded therefore, shall be final and binding on both BPCL and the Contractor. The Contractor shall not have right to claim compensation or damage etc. in that regard. BPCL reserves the right to split the work under this contract between two or more contractors without assigning any reasons.
11. All signatures in tender document shall be dated as well as all the pages of all sections of the tender documents shall be initialed at the lower position and signed, wherever required in the tender papers by the Tenderer or by a person holding Power of Attorney authorizing him to sign on behalf of the tenderer before submission of tender.
12. The Tender submitted by a tenderer if found to be incomplete in any or all manners is liable to be rejected. The decision of BPCL in this regard is final and binding. In case of any error/discrepancy in the amount written in words and figures, the lower amount between the two shall prevail.

### 3. EXECUTION OF WORK

1. All the works shall be executed in strict conformity with the provisions of the contract documents and with such explanatory details, drawings, specifications and instructions as may be furnished from time to time to the Contractor by BPCL's Engineer, whether mentioned in the Contract or not.
2. The Contractor shall be responsible for ensuring that works throughout are executed in the most proper and workman- like manner with the quality of material and workmanship in strict accordance with the specifications and to the entire satisfaction of BPCL.
3. For working on Sundays/Holidays, the contractor shall obtain the necessary permission from BPCL engineer in charge in advance. The contractor shall be permitted to work beyond the normal hours with prior approval of Engineer and the contractors quoted rate is inclusive of all such extended hours of working and no extra amount shall be payable by BPCL on this account.

4. The Contractor shall be entirely and exclusively responsible for the horizontal and vertical alignment, the levels and correctness of every part of the work and shall rectify effectually any errors or imperfections therein. Such rectifications shall be carried out by the Contractor, at his own cost.
5. In case any doubts arise in the mind of the Contractor in regard to any expressions, interpretations, statements, calculations of quantities, supply of material rates etc., the contractor shall refer the same to BPCL's Engineer for his clarification, instructions, guidance or clearing of doubts. The decision of BPCL's Engineer shall be final and the contractor shall be bound by such a decision.
6. The Contractor shall take adequate precautions, to ensure that his operations during office hours do not create nuisance or misuse of the work space that shall cause unnecessary disturbance or inconvenience to the staffs and visitors at office and others at the work site. Proper housekeeping of the site shall be done on a regular basis.
7. The contractor shall furnish to BPCL's Engineer for approval when requested or required adequate samples of all materials and finishes to be used in the work.

**4. ALTERATIONS AND ADDITIONS TO SPECIFICATIONS, DESIGNS AND WORKS**

BPCL's Engineer shall have powers to make any alterations, additions and/or substitutions to the schedule of quantities, the original specifications, drawings, designs and instructions that may become necessary or advisable or during the progress of the work and the Contractor shall be bound to carry out such altered/extra/new items of work in accordance with instructions which may be given to him in writing signed by the Engineer-in-Charge. Such alterations, omissions, additions or substitutions shall not invalidate the contract. The altered, additional or substituted work which the Contractor may be directed to carry on in the manner as part of the work shall be carried out by the Contractor on the same conditions in all respects on which he has agreed to do the work.

**5. DEFECT LIABILITY PERIOD**

The contractor shall guarantee the work executed for a period of 12 months from the date of completion of the job. Any damage or defect that may arise or lie undiscovered at the time of completion of the job shall be rectified or replaced by the contractor at his own cost. The decision of BPCL's Engineer shall be the final in deciding whether the defect has to be rectified or replaced. Equipment or spare parts replaced under warranty/guarantees shall have further warranty for a mutually agreed period from the date of acceptance.

BPCL shall intimate the defects noticed in writing and the contractor within 15 days of receipt of the intimation shall start the rectification work and complete within the time specified by BPCL failing which BPCL will get the defects rectified by themselves or by any other contractor and the expenses incurred in getting the same done shall be paid by the Contractor under the provision of the Contract.

Thus, defect liability is applicable in case of job/works contract (civil, mechanical, electrical, sanitary, maintenance etc.) where any damage or defect may arise in future (i.e. within 12 months from the date of completion of job) or lie undiscovered at the time of completion of job.

**6. DAMAGE TO PROPERTY**

Contractor shall be responsible for making good to the satisfaction of BPCL any loss of and any damage to all structures and properties belonging to BPCL or being executed or procured by BPCL or of other agencies within the premises of the work of BPCL, if such loss or damage is due to fault and/or the negligence or willful acts or omission of the Contractor, his employees, agents, representatives or sub-contractors.

The Contractors shall indemnify and keep BPCL harmless of all claims for damage to BPCL's property arising

under or by reason of this contract.

**7. EMPLOYMENT LIABILITY TOWARDS WORKERS EMPLOYED BY THE CONTRACTOR**

The Contractor shall be solely and exclusively responsible for engaging or employing persons for the execution of work. All persons engaged by the contractor shall be on Contractor's payroll and paid by Contractor. All disputes or differences between the Contractor and his/their employees shall be settled by Contractor.

**8. SAFETY CODE**

The Contractor shall at his own expenses arrange for the Safety provisions as may be necessary for the execution of the work or as required by the Engineer-in-Charge in respect of all labours directly or indirectly employed for performance of the works and shall provide all facilities in connections therewith. In case the contractor fails to make arrangements and provide necessary facilities as aforesaid, BPCL shall be entitled to do so and recover the cost thereof from the Contractor.

From the commencement to the completion of the works, the contractor shall take full responsibility for the care thereof and of all the temporary works (defined as meaning all temporary works of every kind required in or for the execution, completion or maintenance of the works). In case damage, loss or injury shall happen to the works or to any part thereof or to temporary works or to any cause whatsoever repair at his (Contractor's) own cost and make good the same so that at the time of completion, the works shall be in good order and condition and in conformity in every respect with the requirement of the contract and Engineer-in-Charge's instructions.

The Contractor shall observe and abide by all fire and safety regulations of BPCL. Before starting construction work, the Contractor shall consult with BPCL's Engineer and must make good to the satisfaction of BPCL any loss or damage due to fire to any portion of the work done or to be done under this agreement or to any of BPCL's existing property.

The Contractor will be fully responsible for complying with all relevant provisions of the Contract Labour Act and shall pay rates of Wages and observe hours of work/conditions of employment according to the rules in force from time to time.

**9. DOCUMENTS CONCERNING WORKS**

All documents including drawings, blue prints, tracings, reproducible models, plans, specifications and copies, thereof furnished by BPCL as well as all drawings, tracings, reproducible, plans, specifications design calculations etc. prepared by the contractor for the purpose of execution of works covered in or connected with this contract shall be the property of BPCL and shall not be used by the contractor for any other work but are to be delivered to BPCL at the completion or otherwise of the contract.

**10. MEASUREMENT OF WORKS**

All measurements shall be in metric system. All the works will be jointly measured by the representative of BPCL/ Architect /Consultant / BPCL's Engineer and the Contractor or their authorized agent progressively. Such measurement will be recorded in the Measurement Book/Measurement Sheet.

For the purpose of taking joint measurement, the Contractor/representative shall be bound to be present whenever required by BPCL's Engineer. If, however, they are absent for any reasons whatsoever, the measurement will be taken by BPCL's Engineer or his representative and the same would be deemed to be correct and binding on the Contractor.

In case of any dispute as to the mode of measurement for any item of work, the latest Indian Standard

Specifications / CPWD/ relevant codes of practice shall be followed.

#### **11. BILLING OF WORKS EXECUTED**

The Contractor will submit a bill in approved proforma to BPCL's Engineer of the work giving abstract and detailed measurement for the various items executed with a minimum running bill value of Rs. 3.5 Lakhs.

#### **12. STATUTORY LEVIES**

The Contractor accepts full and exclusive liability for the payment of any and all taxes, duties, octroi, rates, levies and statutory payments payable under all or any of the statutes etc.

Variations of taxes and duties arising out of the amendments to the Central / State enactments, in respect of sale of goods / services covered under this bid shall be to BPCL's account.

They relate to the period after the opening of the price bid, but before the contracted completion period (excluding permitted extensions due to delay on account of the contractors, if any) or the actual completion period, whichever is earlier; and

The vendor furnishes documentary evidence of incurrence of such variations, in addition to the invoices/documents for claiming Cenvat /Input Tax credit, wherever applicable.

#### **13. MATERIALS TO BE SUPPLIED BY CONTRACTOR**

The Contractor shall procure and provide the whole of the materials required for construction including tools, tackles, construction plant and equipment for the completion and maintenance of the works. All materials procured should meet the specifications given in the tender document. The Engineer-in-charge may, at his discretion, ask for samples and test certificates for any batch of any materials procured. Before procuring, the Contractor should get the approval of BPCL's Engineer for any materials to be used for the works.

Manufacturer's certificate shall be submitted for all materials supplied by the Contractor. If, however, in the opinion of BPCL's Engineer any tests are required to be conducted on the material supplied by the Contractor, these will be arranged by the Contractor promptly at his own cost.

#### **14. SCOPE OF WORK**

1. Dismantling of Existing Building, Construction with Cubical Partition, lying of pipelines, Sanitary & Fittings, Fresh Air & Ventilation and false ceiling.
2. Electrical Works such as supplying and lying cables, internal wiring etc.
3. Image up-gradation works like UPVC glazing, UPVC Windows and Ventilators etc.

The following shall be the specifications for the items used in the contract:-

##### **a. TECHNICAL SPECIFICATION-CIVIL WORK**

1. All materials to be used in the execution of Civil & structural works shall be governed by the requirements of this specification.
2. Whenever any reference to IS codes is made, the same shall be taken as the latest revision (with all amendments issued) as on the date of submission of the bid.
3. In case of any variation/ contradiction in provisions between IS codes and this specification, the provisions given in this specification shall be followed with the approval of the Engineer in Charge.
4. All materials shall be of standard quality and shall be procured from renowned sources/ manufactures approved by the Engineer Incharge. It shall be the responsibility of the Contractor, to get all materials prior to procurement and placement of order.

5. Quality and acceptability of materials not covered under this specification shall be governed by the relevant IS codes. In case IS code is not available for the particular material, other codes e.g. BS or DIN or ASTM shall be considered. The decision of the Engineer-in-Charge in this regard shall be final and binding on the contractor.
6. The quality of all materials once approved shall be maintained throughout the period of construction and periodical tests shall be carried out to ensure that it is maintained. Such routine tests shall be listed under the different materials and/or as may be ordered by the Engineer from time to time.
7. Where a particular "Brand" or "Make" of material is specified in the Schedule of Items or Technical Specifications, such "Brand" or "Make" of material alone shall be used on the work. Should it become necessary for any reason such as non-availability, to use any material other than the specified "Brand" or "Make", the Contractor shall submit sample of the same to the Engineer for approval together with test certificates and other documents necessary for examining and giving approval thereof before using the material.

### **SPECIFICATIONS FOR THE MATERIALS USED**

1. Cement used shall be of Grade 43 Ordinary Portland Cement conforming to IS: 8112. Grade 53 Ordinary Portland Cement conforming to IS : 12269. The cement used shall conform to the IS standards, of best quality.
2. Aggregates for concrete shall be produced from approved source conforming to the specifications of IS:383 and shall be chemically inert, clean, strong, durable, with limited porosity and free from deleterious materials which cause corrosion of reinforcement or may impair the strength and durability of concrete.
3. Steel reinforcement for concrete shall be round/ ribbed bars (TMT), unless otherwise specified and shall comply with IS 1786.
4. Kota/ Shabad/ Cuddapah / Granite stone blocks / slabs/ tiles to be used for flooring, stairs, dados, skirting, lining, veneering etc. shall conform to the requirements specified in the schedule of items/ relevant codes.
5. Bricks for masonry in foundation, walls and other locations shall be hand or machine moulded and made from suitable soil and kiln burnt. They shall have regular and uniform size and colour, sharp, strength and right angled edges and deep cherry red and copper colour, uniformity well burnt throughout but not over-burnt. They shall have smooth rectangular faces with parallel sides and sharp corners. Bricks shall be of class designation 75 unless otherwise stated. Generally, they shall conform to IS:1077.
6. The cubicles shall be of 12 mm thick compact grade laminate compressed with Deco papers and covered with melamine resin treated sheets passing international fire and safety security standards, bearing impact of crash and collision, scratch proof and graffiti resistant and inert to chemical reactions, insect and vermin proof with accessories of grade 304 stainless steel.
7. **Floor tiles** : These tiles should have high strength, good resistance to wear and tear, low water absorption and sufficient anti-skid properties and all shall conform to IS: 13755. Based on the properties of the glaze and hardness, floor tiles are categorized abrasion resistant-wise as group I TO V. According to the intensity of foot traffic the tile group shall be selected and used as per the specifications in the BOQ.
8. **Wall tiles** : These tiles shall be single fast fired having medium water absorption and high strength characteristics. These tiles shall have high glaze and better adhesion to wall and shall conform to IS : 13753. Wall tiles shall be glossy/ semi-glossy, matt glaze finish, white or coloured, plain or printed special printed and premium printed as per the specifications in the BOQ.
9. **Vitrified ceramic unpolished/ polished tiles**:. The tiles shall be homogeneous and compact through out the entire body with very high strength, low porosity and extreme surface hardness, high resistance to abrasion by chemicals and shall conform to IS:4457.
10. **Enamel paint**: Paint and enamel shall be of approved quality Colour for enamels shall conform to IS:5. These shall always meet the requirements (colour and space) of BPCL.

11. **Primer** : Primer shall be Zinc Phosphate.
12. **Plastic emulsion paint**: Plastic emulsion paint for interior and exterior use shall conform to IS:5411 (parts-1& 2) respectively.
13. **Acrylic emulsion paint**: It shall be water based acrylic Co-polymer emulsion with rutile titanium-dia-oxide and other selected pigment and fungicide. It shall exhibit excellent adhesion to plaster and cement surface and shall resist deterioration by alkalis salts. The paint film shall allow the moisture in the wall to escape without any deterioration in colour or without showing flaking, blistering or peeling.
14. **False ceiling** : The ceiling boards shall conform to the requirements specified in the schedule of items or in the drawings. They shall be strong and with uniform texture without cracks, holes or any other defects. Gypsum Board Tiles with Seamless Joins. The above shall be of the best quality from India Gypsum or equivalent as approve by the architect. It shall be formed by enclosing and bonding together a core of set gypsum plaster by two sheets of heavy paper. It shall offer high standards of safety, thermal efficiency and aesthetics. It shall be light weight, offer good fire resistance. It shall be a non-resonant material, rendering sound insulation. It shall be strong, durable and dimensionally stable. It shall offer a smooth surface which can be painted, tiled or wall-papered. It shall block this passage of heat and shall retard the spread of fire. It shall reduce upto 60 db of sound. Gypsum boards shall conform to IS:2095-1982 & IS:2542-1981.

15. **WATER PROOFING MATERIALS**

**Integral Cement Waterproofing Compounds**

Integral cement waterproofing compounds, i.e. admixture for waterproofing purposes shall fully comply with the requirements of IS: 2645. Properties like permeability, setting time, compressive strength shall be in accordance with the requirements of this code when tested as per procedure laid therein. Calcium chloride content of the product used shall be made known to Engineer before use.

**Surface Application Materials**

Waterproofing material for application on mortar or concrete surface shall conform to IS: 9862. The primer shall be suitable for spray or brush application. It shall have properties enabling it to penetrate through pores or cracks and fill them up, making the surface impervious.

16. **DRAINAGE & SANITATION (INTERNAL)**

All materials, pipes, specials, fittings, fixtures etc., to be used in the works shall be of best quality and class specified in relevant IS Code. Where specified these shall be of specific manufacture and quality and shall be procured from manufacturer or their accredited stock lists and be marked with manufacturers' names and trade mark.

**PVC /UPVC Pipe**

This shall conform to relevant IS unless otherwise specified. Polythene unplasticised pipes be procured from reputed and approved manufacturer in accordance with relevant Indian Standards

**Gully Trap**

Each gully trap shall have one C.I. grating 150 mm x 150 mm and one water tight precast R.C. cover 300 x 300 x 40 mm thick with 1:1 1/2:3 mix concrete (one cement: one and half sand : 3 stone chips 20 mm down) including neat cement finish.

**GI Manhole Cover**

Manhole cover shall be GI type 450mm dia (internal) light duty 25 kg weight (cover and frame), heavy duty 128kg weight (cover & frame), 560 mm dia (internal) and shall be either single seal or double seal as specified in the Schedule of Items.

**Valves**

Unless otherwise mentioned in the Schedule of Quantities these shall be of gun metal fullway valves of



medium type and shall be of approved manufacture. These shall conform to relevant Indian Standard specifications.

**Washers**

Spring washers conforming to latest edition of IS: 3063 shall be used near the pumps to take care of vibration. In other places plain washers conforming to IS: 2016 shall be used.

**b. TECHNICAL SPECIFICATIONS – ELECTRICAL SYSTEM**

All equipments their installation, testing and commissioning shall conform latest IS specifications in all respects. Indian Standard Code of Practice for Electrical Wiring Installation IS:732-1989. It shall also be in conformity with Indian electricity Rules and the Regulations, National Electric Code, National Building Code, amended up to date and requirements of the Local Electric Supply Authority. In general, all materials equipment and workmanship shall conform to the Indian Standards specifications and code.

**SCOPE OF WORK**

The scope of work covered by this specification shall include supply and installation of all electrical equipment and materials including testing and commissioning.

The Engineer reserves the right to specify electrical materials and equipment of a particular make for the purpose of standardisation and the tenderer shall agree to supply the materials of the make specified, if so required.

The electrical contractor executing this work shall have a valid licence issued by the State Government for carrying out installation work of the voltage class involved under the direct supervision of a person holding a certificate of competence for the same voltage classes, issued or recognised by the State Government.

The DBs shall be provided with two nos. brass earthing stud terminals with suitable nuts., washers etc. for connection to earth bus outside the DB to ensure safe and proper earthing as required.

**SPECIFICATION FOR ELECTRICAL PANEL**

1. The switch Board shall be suitable for operation on 3 phase, 4 wire, 415/433v, 50 cycles. The design, manufacturing of the various equipment covered by this specification shall comply with the latest edition of the relevant Indian Standard and Indian Electricity Rules and Regulation. The switch board shall be cubicle type and fabricated out of 16SWG CRCA sheet steel. Switch boards for fans shall be of 5 Amps SP Switch, for lighting, it shall be of 5 Amps SP Switch and for power plugs of 5 Amps 3 pin Plug combined SS type. The base frame shall be made out of ISMC 100/75. The Board shall be totally enclosed design, completely dust tight and vermin proof. Soft compressible gasket shall be provided between all metal joints, doors and covers to ensure the switch board as dust and vermin proof. Separate cable compartment shall be provided for incoming /outgoing cable.
2. All metallic parts of the switch board other than the current carrying parts shall be connected to the earth bus of size 25X3 mm copper flat or suitable size.
3. Electrical installation shall be as per IS 732-1989 and IE rules. Internal and external wiring in buildings shall be carried out in concealed PVC conduit of minimum 2mm thickness. These PVC conduits shall be laid canting concrete or by making chases in the brick wall and making good the wall after fixing of conduits at no extra cost.
4. Wiring for power and light/ fan circuits shall be separate. Entire wiring shall be done by flexible PVC insulated copper conductors of specified (in the job schedule) size.
5. **WIRES** : PVC insulated multistranded copper wires of 1100V grade as per IS:694 and ISI Certification shall be used. The following shall be deemed to be included in light / Ceiling Fan / Exhaust fan / socket points:
  - a. Conduit & Conduit accessories (bends, tee, deep junction boxes, fan book boxes) from switch box to

- point.
  - b. Wiring of point from switch to point.
  - c. Earth wiring of each point from switch to point.
  - d. Fixing accessories such as clips, nails, screws, phil plug, rent plug etc. as required
  - e. Modular range of plate type cover plate, control switch, box etc.
  - f. Junction boxes, pull boxes etc.
  - g. Connectors for termination of point.
  - h. Ceiling rose / Angles holder / Battern holder for light points.
  - i. Cutting and chasing the wall for conduit & boxes installation and making good the same in original finish after installation complete as required.
  - j. All accessories required for termination.
6. **ERECTION AND EARTHING:**The conduit of each circuit or section shall be completed before conductors are drawn in. The entire system of conduct after erection shall be tested for mechanical and electrical continuity throughout and permanently connected to the earthing conforming to the requirements by means of special approved type of earthing clamps efficiently fastened to conduit pipe in the workman like manner for a perfect continuity between earth wire and conduit.
7. **JOIN AND LOOPING PACK:** Phase or live conductors shall be looped at the switch box and neutral conductor can be looped either from the switch box or from the light fan or socket outlet. In both systems of wiring, no bare or twist joints shall be made at intermediate points in the through run of cables, unless the length of final sub-circuit of sub-main is more than the length of the standard coil, as given by the manufacture of the cable.
8. **WIRING TERMINATION:** All terminations must be mechanically and electrically sound. There should be maximum surface contact between the terminal and conductor and such contacts shall be light since loose contact results in high resistance and overheating at the point.
9. **IDENTIFICATION OF WIRES :** The phase conductors shall be of any of the RYB colours and the neutral conductor shall be of black colour. Further the phase conductors in one line shall be of only one colour i.e. either red blue or yellow. Earthing conductor shall be green.All earthing circuits shall be checked for continuity. The earth resistance of all identifiable electrical equipment shall be measured and recorded.

**Annexure B****LIST OF APPROVED MAKE/BRAND FOR CIVIL WORKS**

Sl.no	Name of material	Approved make
1	Cement	Ultratech, Birla, RAMCO,CC,Chettinad,Coromondol,Zuari
2	Reinforcement Steel/structural steel	TISCO, SAIL, ,VIZAG STEEL (RINL), JSW,JISCO, JVSL, ESSAR
3	Water Proofing Compound	Pidilite/ Sika/ Fosroc
4	Ceramic floor tile/wall tile	Somany/ Johnson/ Kajaria
5	Polished vitrified ceramic tile	Marbonite/Granamite/Diamontile
6	UPVC door/window	Jindal/Indal, Fenesta
7	Floorspring/doorcloser	Dorma/ Sondhu
8	Acrylicemulsion Paints/ Distempers/syntheticenamel paint	ICI/Asian paint/Berger/Nerolac, Asian, Dulux
9	Glazing/glass	Indo-asadi /Modi float/Saint Gobain
10	Water closet/wash basin/urinal/flushingcistern/WC cover	Hindustan sanitaryware/ Parryware/ Cera/Jaquar/Toto
11	Health Faucet with long body Tap	Parryware, Hindware & Jaquar
12	CP brass fittings like bib cock, stop cock, pillar cock, bottle trap , waste coupling	Jaquar/Parko/Plumber
13	PVC pipe	Supreme/Prince/Finolex/Oriplast
14	GI pipe/MS pipe	Tata/Zenith/GST/Jindal
15	Gun metal gate valve/check valve	Leader/GG

## Annexure C

### LIST OF APPROVED MAKE/BRAND FOR ELECTRICAL WORKS

Sl.no	MATERIAL	APPROVED MAKES
1	MCCB	L&T/Havells/MDS/ Indo Asian
2	SFU/ FSU/ HRC fuses/MCCB	L&T/Havells/ Alsthom/ standard
3	MCB Distribution Boards	MDS/ Havells/ Indo Asian/ Hager/ MK SENTRY
4	MCB/ELCB	MDS/ Havells/ Indo Asian/ Hager/MK SENTRY/Indokopp
5	PVC Conduits and accessories	ISI/ FIA approved make
6	PVC Insulated FRLS copper wire	V plast/ Finolex/Polycab/Havells
7	Switch/ sockets	Anchor Roma/ MK India/Havells
8	Angle holder/ batten holder/ ceiling rose	Anchor/approved equivalent
11	LT cables	POLYCAB/UNIVERSAL/NICCO/FINOLEX/GLOSTER/OMEGA/CCI
12	Light fittings/ballast/ lamps	PHILIPS/BAJAJ/CROMPTON/WIPRO
13	Exhaust fans	Crompton/ Usha/ Khaitan/Havells
14	Emergency light	BPL/approved equivalent
15	KWH meter	BHEL/ SIMCO/India Meter
16	Ammeter/Voltmeter	L&T/ AE/ IMP/MECO
17	Indicating lamps(LED type)	Siemens/ Technic/ISI Approved Make
18	GI pipes/MS Pipe	Jindal/GST/Tata/Zenith

