other outlets shall be mounted on such boxes as would be approved. The metal box shall be efficiently earthed with conduit by an approved means of earth attachment.

(b) **Surface mounting type** - If surface mounting type outlet box is specified, it shall be of any approved insulating material and outlet mounted in an approved manner.

25.2.5 When crossing through expansion joints in buildings, the conduit sections across the joint may be through flexible conduits of the same size as the rigid conduit.

25.3 Conduit Wiring System with Rigid Non-Metallic Conduits :

Rigid Non-Metallic conduits are used for surface, recessed and concealed conduit wiring.

25.3.1 **Type and size** - All non-metallic conduits used shall conform to IS : 2509-1963 and shall be used with the corresponding accessories (See IS : 3419-1965) specification for Fittings for Rigid Non-Metallic Conduits).

25.3.2 **Bunching off cables** - Conductors of AC supply and DC supply shall be bunched in separate conduits. The number of insulated cables that may be drawn into the conduits are given in Table III. In this table space factor does not exceed 40 percent.

TABLE-III MAXIMUM PERMISSIBLE NUMBER OF 250 VOLTS GRADE SINGLE- CORE CABLE THAT MAY BE DRAWN INTO RIGID NON-METALLIC CONDUITS

Size of cable

Nominal Crossectional area. mm²	No. Diameter in mm of wires	Size of conduit (mm) 16	20	25	32	40	50
		(No. of cable Max)					
1.0	1/1.12*	5	7	13	20	–	–
1.5	1/1.40	4	6	10	14	–	–
2.5	1/1.80 3/1.06*	3	5	10	14	–	–
4	1/1.24 7/0.85*	2	3	6	10	14	–
6	1/2.80 7/1.06*	–	2	5	8	11	–
10	1/3.55+ 7/1.40*–	–	–	4	7	9	–
16	7/1.70	–	–	2	4	5	15
25	7/2.24	–	–	–	2	2	6
35	7/2.50	–	–	–	–	2	5
50	7/3.00+ 19/1.80	–	–	–	–	2	3

* For Cu. Conductors only.

+For Al. Conductors only.

25.3.3 **Conduit joints** - shall be joined by means of screwed or plain couplers depending on wheather the conduits are screwed or plain. Where there are long runs of straight conduit. Inspection type couplers shall be provided at intervals. For conduit fittings and accessories reference may be made to IS : 3419-1965.

25.3.4 **Fixing of conduits** - The provision of 25.1.6 shall apply except that the spacing between saddles or supports is recommended to be 60 cms for rigid non-metallic conduits.

25.3.5 **Bends in conduit** - Wherever necessary, bends or diversions may be achieved by bending the conduits (See 6.5.3.9) or by employing normal bends, inspection bends, insppection boxes, elbows or similar fittings.

25.3.6 Conduit fittings shall be avoided, as far as possible on outdoor system.

25.3.7 **Outlets -** All the outlets for fittings, switches, etc., shall be boxes of substantial construction. In order to minise condensation or sweting inside the conduit, all outlets of conduit system shall be properly drained and vantilated, but in such a manner as to prevent the entry of insects, etc. as far as possible.

25.3.8 For use with recessed conduit wiring system the provisions of 6.5.2.1 to 6.5.2.4 shall apply.

25.3.9 Heat may be used to soften conduit for bending and forming joints in case of plaint conduits. As the material soften when heated, fitting of conduit in close proximity to hot surfaces should be avoided. Caution should be exercised in the use of the conduit in locations where the ambient temperature is 50°C or above Use of such conduits in place where ambient temperature is 60°C or above is prohibited.

PVC INSULATED AND P.V.C. SHEATHED OR T.R.S. WIRING SYSTEM

26.0 GENERAL :

This system of wiring, is suitable for low pressure installation, and shall not be used in places exposed to sun and rain nor in damp places, provided they are sheathed in the special approved protective covering and well protected to withstand dampness.

26.1 Attachment to walls and ceiling :

26.1.1 All cables on brick walls, stone or plastered walls and ceiling shall be run on well seaoned, perfectly straight and well seasoned, perfectly straight and well varnished on four sides, teak wood or any approved hardwood battens not less than 10 mm finished thick, width of which shall be such as to suit total width of cables laid on the batten, prior to election, these shall be painted with one coat of varinish or approved paint of colour to match with surrounding. These battens shall be secured to wall and ceilings by flat head wood screws to raws plug or phill plug at an interval not exceeding 75 cm. Wood plug can be used only with special approval of the Engineer-in-charge. The flat head wood screws shall be counter within wood batten and smoothed down with file.

26.1.2 Where wiring is to be carried out along the face of the rolled steel joints a wooden batten of adequate width shall first be laid on the same and dipped to it as inconspicously as possible. The wiring should then be fixed to this backing shall be suitably bushed to prevent the abrasion of the cables.

26.1.3 Attachment to false ceiling : In no case, the open wiring shall be run above the false ceiling without the approval of Engineer-in-charge.

26.20 **Link dips :** Only aluminium alloy clips/joint clips shall be used. The thickness shall be 0.32 mm (30 SWG) for lengths of 25 mm to 40 mm and 40 mm (28 SWG) for lengths of 50 mm to 80 mm. The width shall not be less than 8 mm in all these cases. Link clips/joint clips shall be so arranged that one single clip shall not hold more than two core or three single core TRS of PVC insulated and PVC sheathed upto 2.5 sq. mm above while a single clip shall hold a single twin core or two single core cables. The clips shall be fixed on varnished wood batten switch iron pins and space at interval of 15 cm both in the case of horizontal and vertical runs.

26.3.0 **Bends in wiring :** The wiring shall not in circumsatnces be bent so as to form an abrupt right angle but must be rounded off at the corners to a radius not less than six times the overall diameter of the cable.

26.4.0 Protection of wiring from Mechanical Damage :

26. 4.1 In cases where there are chances of any damage to wiring, such wiring shall be drawn complying with all the requirements of conduit wiring system.

26.4.2 Such protective covering shall in all cases be fitted on all down drops witin 1.5 m from the floor, or from floor level upto the switch board whichever is less.

26.5.0 **Passing through floors :** All cables taken through floor shall be enclosed in heavy gauge steel conduit extending 1.5 m above the floor or upto the switch board whichever is less and flush with the ceiling below or by means of any approved type of metallic covering. The ends of all conduits or pipes shall be neatly bushed with porcelain wood or other approved material. The conduit pipes, shall be security earthed.

26.6.0 **Passing through walls :** When conductors pass through walls, any one of the following methods shall be employed. Care should be taken to see that wires pass very freely through protective pipe or box and that wires pass

through ina straight line without any twist or cross in wires on either ends of such holes.

(a) A box of teak wood or approved hard wood extending through the hole thickness of the wall shall be buried in the wall and casings or conductors and casing or conductors shall be carried so as to allow 1.3 cm air space on the three sides of the casing or conductor.

(b) The conductors shall be carried in an approved heavy gauge solid drawn or lap weld conduit or in a porcelain tube of such a size that it permits easy drawing in, the ends of conduit shall be neatly bushed with porcelain, wood or other approved material.

26.6.1 Where a wall tube passes outside a building so as to be exposed to weather, the outer end shall be mounted and turned downwards and properly bushed on the open end. The conduit shall be neatly arranged so that the cables enter them withuot bending.

26.7.0 **Buried cables :** The TRS or PVC sheathed cable shall not normally be buried directly in plaster. Where so specified in the special specification they may be taken in teak wood channeling of ample capacity or conduit pipe buried in the wall.

26.8.0 **Stripping of outer covering.** While cutting and stripping of the outer covering of the cable care shall be taken that the sharp edge of the cutting instrument does not touch the inner insulation of the conductors. The protective outer covering of the cables shall be stripped off near connecting terminal and this protective covering shall be maintained upto the close proximity of connecting terminals as far as practicable. Care shall be taken to avoid hammering on link clips with any metal insturment after the cables are laid. Where junction boxes are provided they shall be made moisture proof with a plastic compound.

27.0 PAINTING WORK IN GENERAL :

27.1 **Paints :** paints, oils varnishes, etc. of approved make in original to the satisfaction of the Engineer-in-charge shall only be used.

27.2 **Preparation of surface :** The surface shall be thoroughly cleaned and dusted before painting is started. The proposed surface shall be inspected by Engineer-in-charge or his authorised agent and shall have received the approval before painting is commenced.

27.3 **Application :** Paint shall be applied with brush. The paint shall be spread as smooth & even as possible. Particular care shall be paid to revets, nuts, bolts and cover lapping. Before drawing out, it shall be continuously stirred in the smaller containers with a smooth stick while it is being applied.

Each coat shall be allowed to dry out sufficiently before a subsequent coat is applied.

27.4 **Scope :** Painting on old surface in indoor situations will not include primer coat except where specially mentioned in the schedule of work or special specification. However, where rust has formed on iron and steel surfaces the spots will be painted with one anti-rust primer coat.

27.5 **Precautions :** All furniture fixtures, glazing floors, etc. shall be protected by covering. All stains, smears, oplashings, dropping of every kind shall be removed. While painting of wiring etc. it shall be ensured that painting of wll ceiling etc. is not spoiled in any way.

27.6 **Painting of conduit and accessories :** After installation surface of conduit pipes, fittings switch and regulator boxes, etc. shall be painted with two coats of approved enamel paint or aluminium paint as required to match the finish of surrounding wall, trusser, etc.

28. link clip :

The clip for batten wiring shall be of Aluminium conforming to I.S. specification No. 2415-1975.

APPENDIX - 'A'

Important Clauses of Indian Electricity Rules, 1956. Following clauses of Indian Electricity Rules, 1956 shall in particular be taken care of in the execution of electrical works

Clause No.	Subject
3.	Authorisation :
29.	Construction, installation, protection, operation and maintenance of electric supply lines and apparatues.
31.	Cut-out on consumer's premises.
32.	Identification of earthed and earthed neutral conductors and position of switches and cutous therein.
33.	Earthed terminal on consumer's premises.
34.	Handling of electrict supply lines and appartus.
41.	Distinction of circuits of differents voltages.
42.	Accidental charge.
43.	Provisions applicable to protective equipment.
44.	Instructions for restoration of persons suffering from electric shock.
45.	Precautions to be adopted by consumers, owners, electrical contractors, Electrical workmen and suppliers.
46.	Periodical inspection and testing of consumer's installation.
48.	Precautions against leakage before connection.
50.	Supply to consumers.
51.	Provisions applicable to medium, high volatge installations.
58.	Point of commecement of supply.
59.	Precautions against failure of supply; Notice of failures.
61.	Connection with earth. (low and Medium Voltage system).
64.	Use of energy at high and extra-high voltage system.
67.	Connection with earth. (High & Extra-high voltage systage).
68.	General conditions as to transformation and control of energy.
	All clauses under Chapter VIII on Overhead Lines.
137.	Mode of entry.
138.	Penalty for breaking seal.
139.	Penalty for breach of rule 45.
140.	Penalty for breach of rule 82.
141.	Penalty for breach of rules.

APPENDIX-'B'

Form of Completion Certificate

I/We certify that the installation detailed below has been installed by me/us and tested and that to the best of my/our knowledge and belief, it complies with Indian Electricity Rules, 1956, as well as the C.P.W.D. General Specification for Electrical Works, 1972.

Electrical installation at Voltage and system of supply

(1) Particulars of works :

(a) Internal Electrical Installation — No. Total Load of wiring. — Type or system

(i) Light point

(ii) Fan point

(iii) Plug point

(a) 3 pin 5 Amp.

(b) 3 pin 15 Amp.

(b) Others :

Description — HP/KW

(a) Motars : (i)

(ii)

@X1 = (iii)

(c) Other Plants :

(d) If the work involves installation of over head line/or under ground cable :

(a) (i) Type & Description of overhead line.

(ii) Total length & No. of spans.

(iii) No. of street light & its description

(b) (i) Total length of under ground cable & its size.

(ii) No. of joint.

End joint :

Tee join :

St. through joint :

2) Earthing :

(i) Description of earthing elecrode .

(ii) No. of earth eletrodes :

(iii) Size of main earth lead :

3) Test Results :

(a) Insulation Resistance :

(i) Insulation resistance of the whole system of conductors to earth. — Megohms.

(ii) Insulation resistance between the phase conductors and neutral. — Megohms.

Between phase R and neutral — Megohoms

Between phase Y and neutral Megohoms

Between phase B and neutral Megohoms

(iii) Insulation resistance between the phase conductors in case of polyphase supply.

Between phase R & phase Y Megohoms

Between phase Y & phase B Megohoms

Between phase B & phase R Megohoms

(b) Polarity Test :

Polarity of non linked single pole branch switches.

(c) Earth continuity Test :

Maximum resistance between any point in the earth continuity conductor including metal conduits & main earthing lead.

d) Earth Electrod Resistance :

Resistance of each electrode.

i) ohms

ii) ohms

iii) ohms

iv) ohms

e) Lighting Protective System :

Resistance of the whole of lighting-protective system to earth before any bonding is effected with electrode and metal in/on the structure.

ohms

Signature of Supervisor

Signature of Contractor

Name & Address

Name & Address

SPECIFICATIONS

All Specification, standard, publication etc. specified mean the latest standards, publication etc. pertaining to Electrical Installation and should conform to the following wherever applicable.

1) Indian Electricity Act, 1910 with its amendments.

2) Indian Electricity Rules, 1956 and its amendments.

3) Indian Electricity supply Act, 1948.

4) Regulation for Electrical Equipment in building by I.E.F. Landon.

5) The Factory Act, 1948 and its amendments.

6) I.S.-732-1982 Part-I, II & III code of practice for Electrical wiring and fitings in buildings for low and medium voltages.

7) I.S. 4064-1967 H.D. Air break switches and fuses for Voltages not exceeding 1100 volts.

8) I.S. 3043 - Earthing code of practice for

9) I.S. - 1554 Part-I - 1970 PVC insulated (Heavy duty) Electrical Cables for working voltages upto and including 110 volts.

10) I.S. : 694 - 1964 Part- II - PVC insulated cable with Alluminium conduits (revised) for voltages upto 110 volts.

11) I.S. : 5908-1970 - Electrical installations in buildings, method of measurements of.

12) I.S. : 4237-1967 - General requirement for switchgear and control grear for voltage not exceeding 1000 volts.

13) IS : 1653-1964 - Rigid steel conduits for electrical wiring (revised)

14) IS : 2509-1973 - Rigid steel conduits for electrical installation. (First revision).

15) IS : 1258-1967 - Beyonet lampholders (First revision)

16) IS : 418-1957 - Tungston-Filament General service electric lamps (Third revision).

17) IS : 374-1966 - Fans and Regulators, ceiling type, electric (second revision).

18) IS : 2667-1964 - Fittings for rigid steel conduits for electrical wiring.

19) IS : 3419-1976 - Fitting for rigid non-metallic conduits (First revision).

20) National Electric Code, 1986.

ANNEXURE I

Abstract of the Wiring Rules of the Institution of Electrical Engineer

(referred to in the specification)

DEFINITIONS (See Clause 2 of the Specification)

Systems :

All electrical system in which all the conductor and apparatus are electrically connected to a common source of supply.

1) **Earthed :** Effectually connected to the general mass of the earth. Solidly earthed means earthed without the intervention of a fuse, switch, circuit-breaker, resistor reactor or solenoid.

2) **Uninsulated Conductor :** A conductor without provision, by the interposition of a dieletric or otherwise, for its insulation from earth.

3) **Bare :** Not covered with insulating material.

4) **Diaelectric :** anu material which offers high resistance to the passage of an electric current.

5) **Bunch Conductor :** When more than one conductor is contained within a single duct or groove or when they are run enclosed and not spaced apart from each other.

6) **Points :** In wiring as per IS : 5908-1970-Method of measurements of electrical installation in buildings.

7) **Switch board :** An assemblage pf switchgear with or without instruments, but the term does not apply to a group of local switches in a final sub-circuit where each switch has its own insulating base.

Note : In the electricity (Factories Act) special regulations, 1908 and 1944 the term "Switchborad" includes "Distribution board".

8) **Single pole switch :** A switch suitable for closing and or opening a circuit on one phase or pole only.

9) **Linked switches :** A switch the blades of which are so linked mechanically as to make or break all poles simultaneously or in a definite sequence.

10) **Fuse Switch :** A switch the moving part of which carrels one or more fuses.

11) Three Wire System :

a) Outer Conductor : Those between which there is the greatest difference of potenital. This use of the word outer must not be confused with the use of the work when applied to the external conductor of a concentric main.

b) Neutral Conductors : The term includes the neutural conductor of a 3 phase 4 wire system, the conductor of a single phase or d.c. installation which is earthed by the supply undertaking (or otherwise at the source of the supply) and the middle wire or common return conductor of a 3 wire d.c. or single phase a.c. system.

12) **Semi enclosed machine :** One in which the ventilating openings in the frame are covered with-

a) Grids expanded metal or wire gauge, with openings of less than 1/4 inch so as to obstruct free ventilation.

b) Wire gauge, in which the openings are less than 1/4 linch but not less than 3/32 inch (diameter or width) :

c) Screens with smaller openings than the above.

13) **Totally - enclosed Machine :**

One in which the enclosing case and bearings are dust proof and which does not allow circulation of air between the inside and outside of the case.

14) **Pipe Ventilated Machine :** An enclosed machine in which the frame is so arranged that the ventilating air may be conveyed to it through a pipe attached to the frame, the ventilation opening maintained by the fanning action producted by the machine - itself.

15) **Forced draught machine :** An enclosed machine in which the ventilating air supply is maintained by an independent fan external to the machine itself.

16) **Protected Machine :** One having end shield bearings and in which there is free access to the interior without opening doors or removing covers.

SWITCHES AND CIRCUIT BREAKERS

(See clause II of Specifications)

17) **Switches and Circuit Breakers :**

Switches and circuit breakers (rules 2b. 36 and 37) whether fixed separately or combined with lamps, holders or fittings, must comply with the following requirements :

(a) Overheading must not take place at the point of contact or elsewhere, when the full current flows

continuously.

(b) They must be so constructed or arranged that the contracts cannot accidently close when left open.

(c) The basis must be of incombustible, non-conducting and moisture proof material.

(d) Circuit breaker as must be so arranged and placed that no combustible material is endangered by their action.

(e) Unless placed in an engine room or in a compartment especially arranged for the purpose, they must their live parts covered. The coveres must be of incombustible material and must be either non-conducting or of rigid metal and clear of all internal mechanism. For more than 6 amperes, at pressures exeeding 125 Volts metal covers must be lined with insulating material.

(f) In positions where they are liable to injury or come into contrat with goods, they must be futher protected by an open fronted box or other suitable guard.

(g) Handles must be insulated and so arranged that the hand cannot touch live metal, or be injured through and adjacent fuse blowing.

(h) Switches having a handle projecting through an open slot in the cover, must not be used.

Signature of Contractor/s Executive Engineer

SECTION F-1A

GENERAL REQUIREMENTS

1.1 Scope of works :

The work covered by electrical specification consists supplying and installing, electrical wiring system complete in strict accordance with this specification and the applicable drawing and subject to the terms and conditions of the contract. It includes.

(a) Conduit and wiring system for fans, lighting points bells, clocks sockets, etc. including fixing of lighting fixtures and fans etc. and miscellaneous points.

(b) Conduit and wiring system for exhaust fans, power sockets etc.

(c) Panel boards, distribution boards, switch fuse units.

(d) Complete power and lighting cable systems.

(e) Grounding system.

(f) Conduits system.

(g) Street lighting system.

(h) Other miscellaneous electrical work.

1.2 Completness of Contract :

Any work fittings accessories or apparatus which may not have been specifically mentioned in the specification but which are inecessary in the equipment for efficient working of the plant should be deemed to be included in the contract and should be executed and provided by the contractors. All plant and apparatus should be complete in all the details, where such details, are mentioned in the specifications or not.

Three prints and one permanent negative of each of the finally approved drawings incorporating all the modifications proposed by the Department should be submitted. No modifications should be made in a drawing already approved by the Engineer-in-charge without his prior consent.

Approval of the contractor's drawing will not relieve the contractor of any part of his obligation to meet all the requirements of the contract.

1.3 Guarantee :

The performance of all the equipments and the installations should be guranteed at least for a minimum period of one year from the date of taking over the installation by the Department. All equipments must comply with the relevant IS-BS specifications.

1.4 Interchangeability :

All corresponding parts of similar plant and equipment should be interchangeable in every way.

1.5 Tools :

All special tools required for dismentling and assembly of the equipment covered by the contract shall be supplied as obligation under the contract.

A list of items to be supplied by the Contractor should be submitted alongwith the tender.

SECTION F-2A

Specifications for Electrical Installation in Buildings

1. GENERAL :

1.1 These specifications relate to the electrical installations in the buildngs of P.W.D. Electrical. The specifications cover general requirements to be fulfiled. These general specifications are supplemented by the specifications for the particular buildings separately attached.

1.2 These specifications are governed by the General conditions of the contract attached hereto.

1.3 APPLICABLE RULES AND REGULATIONS :

1.3.1 Installation shall be carried out in conformity with the regulations for electrical equipments of buildings, published by the Institute of Electrical Engineers London (14th Edition 1966 and as amended upto date) herein after referred to as the I.E.E. wiring regulations. Where these specifications, or the special specifications for the particular buildng attached hereto are at variance with the I.E.E. regulations these specifications or special specifications as the case may be, shall be followed. The installation shall also comply with the requirements of the Indian Electricity Act, 1910 as amended upto date and rules issued thereunder and also the regulations for the Electrical Association of India. Where not specified othewise, the installation should generally follow the Indian standard codes of practice and in their absence the relevant British Standard of practices. All the materials shall comply with the relevant Indian Standard of British Standard specifications.

1.4 DEFINITIONS :

1.4.1. The definitions of terms in the I.E.E. Regualations shall apply in general.

1.5 DRAWINGS :

1.5.1 The preliminary drawings only indicate the general scheme of requirement. The exact position of all points, control switch boxes, runs of wiring and/or conduits joint boxes, inspection boxes, mains, and sub-distribution boards, mains etc. shall be got approved by the Engineer-in-charge. All circuits shall be clearly numbered in wiring diagrams and building plans. The detailed design of a switch-board, special fixture or any other part of the electrical installation as may be called for by the engineer-in-charge shall also be supplied by the Contractor and should be got approved by the Engineer-in-charge. Three sets of completion drawings and wiring diagrams showing the installations as executed shall be supplied by the contractor alongwith the completion certificate.

1.6 MATERIALS :

All materials shall be new and of the best quality conforming to the relevant I.S.B.S. specifications. They must be the products of reliable manufacturers of many years or standings. All like parts of materials shall be interchangeable. In case of equipments such as circuit breakers, switch fuses etc. a descriptive and illustrated literature shall accompany the tender. The names of manufacturers of various materials shall be furnished in proforma in Appendix-I. Samples of materials wherever required should be approved by the Engineer-in-charge before use in the installation. One set of such approved samples shall be deposited with the Engineer-in-charge. All materials shall be rust-proof or rendered rust proof by application of suitable paints. The supply of all equipments, switchgears etc. shall be complete with accessories, fittings and mountings as may be required for their proper performance, and as specified in the relevant IS-BS Code of Practice and standards.

1.7 WORKMANSHIP :

1.7.1. Good workmanship and neat finished appearance are the prerequisities for complying with the clauses of these specifications. With a view to ensure fine workmanship the tenderers shall employ licenced wiremen, with an experience of not less than 5 years in the type of work they are engaged. The work should be done under supervisions of lincenced Electrical Supervisors with good educational qualifications iand considerable experience.

1.7.2 Tenderers shall furnish the names of Supervisor and their wiremen who will be engaged in this work with details of their experience.

1.8 C0-OPERATIVE WITH CIVIL AND OTHER WORKS CONTRACTORS :

1.8.1. The tenderer, after the award of the contract, shall co-operate with the civil and other contractors and shall co-ordinate his work with the work of other contractors with the least amount of dislocation and inteference to the other works. Tenderers shall go through the drawings carefully and shall furnish the Engineer-in-charge with all the details of openings in the walls etc. they may be required for concealing any of the electrical equipments or accessories. Where the contractor fails to furnish such information as may be required for the purpose of concealing the equipments etc. they shall be made at his (Contractor) cost and expense. Any alteration to parts of the building shall be carried out with prior permission of the competent authority. All chasies of the structural work shall be made good at the contractor's expense and brought to the orignial shape finish and colour.

1.9 TESTING :

The electrical contractor shall be completely responsible fo the testing and commissioning of those installations covered by these specifications in compliance with the standard procedure, in obtaining permission of the Government Electrical Inspector. Any modification which is demanded by Government Electrical Inspector shall

have to be carried out within the scope of the contract. The contractor shall submit four copies of drawings of installations as per regulations for shall be provided by the contractor for carrying out the installatioin work. All tests shall be carried out in the presence of the Engineer-in-charge or his authorised representative and his approval obtained for the test results.

1.10 COMPLETION CERTIFICATE AND MAINTENANCE GUARANTEE :

1.10. 1 After the completion of the installation and testing, the contractor should furnish a certificate in the proforma in Appendix-III, at the time of taking over the installation by the Department. The installation shall be guaranted for period of 12 months from the date of taking over by the Department. During the period of guarantee all defects in material or in workmanship shall be rectified or replaced free of cost to the Department.

1.11 TENDERER'S ABILITY :

1.11.1 In order to enable the Department to asses the ability of the tenderer to execute the work, the tenderer shall furnish evidence of his experience and capacity to carry out the work of the magnitude and nature.

1.12 RATES :

1.12.1 The rates of items shall inculde all taxes, transport, loading and unloading charge and all such charges that may be required to be incurred for the supply and installation of the materials at site. The rates shall be firm and variations in the market are not entertained. Break up figures as required in the schedule of work shall also be furnished. As far as possible indigenous materials only shall be included for supply. Where it is unavoidable, imported items may be included and tenderer should clearly indicate materials, quantity, rate and amount of these items.

1.13 STORAGE SPACE :

No covered storage space will be provided by the Department. The contractor has to make his own arrangement. However, the Department may give an open space near the place of execution where the contractor can build his own stores for executing the work.

1.14 DEPARTURE FROM SPECIFICATIONS :

The tenderer should clearly indicate departure, if any, from the specifications with reasons for the same.

1.15 EXTRA ITEMS :

Rates for extra items shall generally be derived from the rates already available in the schedule. Where it is not possible, the rates shall be mutually agreed upon and the contractor shall furnish a detailed analysis of the rates claimed by him.

2. TECHNICAL SPECIFICATION :

2.1 Supply System :

The wiring installation shall be suitable for 3 phase 4 wire, 400-440 V 50 cycles system of supply. Colour code of different phase shall be followed as per standard.

2.2 Wiring for Lights and Fans :

2.2.1 Looping system of wiring shall be adopted. No joints shall be be made at intermediate runs of cables and where they are unavoidable, such joints shall be through approved mechanical connections.

2.2.2 Point wiring :

Point wiring shall consist of the branch wiring from the switch board together with the controlling switch or push as far as and including the ceiling rose or any other approved connector or socket, outlets. In case of more than one light being controlled by one switch, the wiring upto the ceilling rose of the first light including the switch shall be considered as a 'Primary point. Loop wiring from light shall be considered as a 'Secondary' point and rates shall be quoted separately, including final connections to fixturs land plugs.

2.2.3 Conductors :

No conductor for final sub circuit wiring for light and socket outlets shall have across-section less than that of 2.5 sq. m (aluminium).

2.2.4 Loading :

No final sub-circuit radiating from the fuse board of a sub- distribution board and wires with 25 sq. m. (Al.) cable shall carry more than 10 lights, fans or socket outlets or a connected load of 800 watts whichever is grater. The following wattages may be assumed for estimating the load on each sub-circuit unless otherwise known ior specified.

Incandescent Lampts	100 watts
Ceilling fans	60 watts
5-A Socket Outlets (lighting)	100 watts
4. ft. fluorecent tube.	50 watts
5 ft. flourescent tubes.	100 watts

In each sub-distribution board at least one way preferably two ways shall be left spare for future requirement. A wiring diagram giving the details of the exact utilitization of the ways shall be prepared and fixed in the sub-distribution board itself or any other easily accessible place. The ways of sub-distribution boards shall be accordingly numbererd.

2.2.5 Local Control Switches (General) :

Local control switches for circuit carrying not less than 5-5 shall be piano type and shall conform to relevant I.S. Standards. The switch shall be 'ON' when the knob is in the down position. All local control switches shall be connected in the phase or live conductor only and not in the neutral conductor, switches shall be fixed in iron clad box and shall be so placed that the centre of the switch box is 1.3 mtr. from the finished floor level unless otherwise stated. All switch boxes shall be provided with 1/8" thick prespex cover fixed to the switch box with chromium plated counter sunk screws (brass).

2.2.5A Switches (Two way) :

(a) Two way switches shall be piano type single pole, double throw, 250V, suitable for flush mounting and of 5A capacity as per the drawings. All switches shall be recessed in an embeded metal box.

(b) Each box shall have suitable outlet for fixing conduts directly.

(c) Each box shall have prespex cover paintec inside with the wall colour, if required.

(d) Each switch shall be suitable for the position in a corridor stairway wiring.

2.2.5B Switch Boxes (General) :

Electrical circuits shall be written suitably on the cover of all switche boxes, as approved by the Engineer-in-charge (Elect) whenever different phase are terminated in a switch box bakelite partition shall be provided. Each case shall be provided with a G.I. Earth stud nut and washers for earth connectors.

2.2.6 Ceiling Rose :

Ceiling rose shall be used on circuits having a voltage normally exceeding 200V. Only one flexible cord shall be attached to a ceiling rose. Only 3-pin 5A socket outlet shall be provided in lighting circuits. All socket outlets shall be provided with a control switch and they shall be mounted in switch boxes in an approved manner.

2.2.7 Fittings :

These shall be of approved type as specified in the tender schedule. The subcircuits leads should terminate in a ceiling rose or conductor in the fitting and internal connection made therefrom. Wherever these fitting are suspended they shall be done so through the conduits and ball and socket joints. All fittings shall be grounded iby a G.I. conductor not less than 16 S.W.G.

2.2.8 Flexible wiring :

Flexible cords of not less than 23/0076 size shall be used. The weight of suspension shall be governed by I.E.E. Regulations.

2.2.9. Ceiling Fans :

All ceiling fans shall be wired to ceiling rose and suspended from a hook shackle or clamp and insulated from the same. All joints in the suspension road shall be screwed and secured by means of split pins. The fan clamps supplied by the Contractor shall be suitable for the ceiling or proof member as the case may be. For concrete roofs, fan hooks shall be burried in concrete during construction in an lapproved manner and securely bound to the reinforcement.

2.2.10 Conduits and Earthing :

All conduits feeding lighting and fan circuits shall be provided with earth continuity G.I. conductor as specified for power wiring. All conduits shall be as specified for power wiring.

2.3.1. Point wiring :

Point wiring for power shall be as defined under section 2.2.2 and shall include the switches and sockets.

2.3.2. Loading :

All distribution board for power wiring shall be not less than 15A per way. Loading per way shall not exceed normally 100 watts. The following loads may be assumed if exact figures are not known.

3-Pin 15A Outlets	1,000	Watts
3-Pin 5A Outlets	100	Watts

2.3.3 Wiring for Motors :

2.3.3.1. Final sub-circuits loop in motors shall be connected to separate ways of the Distribution board even if the current in the sub-circuit is less then 15A. No looping is permissible.

2.3.3.2 All wiring shall be carried in H.G. conduit as specified in I.S. specification for gauge for diffrent sizes of conduits. When the motor is resilienly mounted flxible conduit with approved adopters shall be used for the last few feet. Where cables are used sufficient loop shall be left.

2.3.3.3 All switch fuse units controlling circuits feeding motor shall be provided with H.R.C. fuses or as specified.

2.3.3.4 The frame of every motor and its association control gear shall be earthed by two separate and distinct connections to earth connector shall be capable of carrying 3 times the rating of fuse or 1.1/2 time the setting or the circuit breakers but in no case less than No. 8 S.W.G." or 7064" or equivalent cross section of copper. Where practicable, the earth connections shall be visible for periodical inspection. Gas or water pipes shall not be used for earth connections.

2.3.3.5 Socket Outlets and Control Switches 5A and 15A :

All socket outlets shall be of 3 pin type, the third pin being connected to the earth stud of nearest distribution board

by separate earthing wire. The socket shall conform to I.S. : 1293/1938, single pole, piano type. Each socket outlets shall be provided with a control switch of appropriate rating and as specified. The switch and socket shall be mounted inside the iron clad box provided with 1/8" prespex cover as directed by the Engineer-in-charge or as specified in schedule of quantities. Inside switch box ample space shall be available around switches for connecting wires to switches. All socket outlets for power shall be mounted at the skirting level unless otherwise specified or as directed by the Engineer-in-charge.

The three phase plug receptanles shall have their earth terminals connected by independent earth wires to ring main earth strips on the building. In buildings where explosion proof fixtures are installed single phase plug receptanles as well as light points shall be connected to ring main ground bus installed in the building by separate earth wires of approved size.

Socket outlet shall have some provision not to receive the matching plug unless the grounding pin is in correct position. The grounding pin of the plug shall make the contract first and break the contract last at the time of inserting or removing the plug respectively.

The grounding terminal shall be connected to the enclosed metal body by providing G.I. stud. nut washers welded to the box.

Each unit shall be suitable for flush mounting as required and indicated in the applicable drawings.

Combination unit of socket outlet and switch shall be complete with necessary internal wiring. The switch/socket shall be mounted on M.S. bracket enclosed in a box.

2.4 Conduit Wiring :

2.4.1 Where conduit wiring is adopted the type and size of the conduit shall be as indicated in the drawing. The minimum of the conduit shall be 19 mm.

2.4.2 The contractor shall throughly study the structural arrangements of the buildings and wherever, necessary shall in consultation with Department's representatives at site, make suitable adjustments in the cable routings, earthing arrangements, and location boxes, fitting etc. with a view to avoid interference with any part of the building, structure, equipment or any other work in the building or to effect any improvement in the arrangement.

2.4.3 Protection of conduit against rust :

Conduit shall be given two coats of oxide paint before they are placed in position. All exposed conduit shall be planted after installation with the colour as approved by the Engineer-in- charge. This do not apply to galvanised conduit.

2.4.3.A Protection against insects and damp :

In order to minimise cocensation or sweating inside the conduit, system shall be properly drained any ventilated in such a manner as to prevent the entry of insects.

2.4.4 Conduit shall first be installed as a complete system without cables and shall be continuous from outlet to outlet from fitting to fitting and mechanically and electrically connected to all boxes and fittings.

2.5 SPECIFICATION FOR POWER CONTROL AND TELEPHONE CABLES :

1. SCOPE :

i. The specifications cover the supply and installation of meduim voltage power and control cables either n ground or trench depending on the conditions at site including accessories for the same. The work in general, consists of supplying, laying, jointing terminating and connecting all. 1.1. KV APLSTS PVC power and control cables.

ii. The contractor shall supply all accessories including jointing and terminating materials, compound, tapes supporting materials, cleats cables lugs, concrete stabs, bricks sand, cable markers etc. as required to make the installation work including digging and back filling of the trenches as required.

II. SPECIFICATION :

i. All power cables to be supplied mentioned as 'APLSTS' in the Schedule should be mass impregnated, non-draining, paper insulated lead sheathed, double steel tape armoured and must comply with the latest ISI BS specifications.

ii. All cabling materials such as cable compound, cable lugs, tapes shall be of approved quality acceptable to the type recommended by the manufacturer of the cable for which it is used and approved by the Department.

iii. Installation of all equipment shall also conform to the applicable. Codes and practice as per the IS and shall be executed to comply with the lates Indian Electricity rules as regards the safely, earthing of equipments and other essential provisions specified therein.

iv. Only approved make of cable shall be used. ICC and CCI will be preferred.

v. The cables shall generally be laid as per is Code of practice.

III. GENERAL RULES CABLE LAYING :

i. Installation shall be carried out in a neat, workmen like manner by skilled experienced and competent workmen in accordance with the standard practices.

ii. Cables shall be laid preferebly in one piece length to avoid joins. If straight joints are found necessary, these can be introduced with prior approval of the Engineer-in-charge. The cost of the straight joint however, shall

not be borne by the Department. But in no case joint shall be within the conduit G.I. pipe and duct.

iii. Proper care should be exercised in handling the cable to avoid formation of kind etc. and should it become necessary a cable be bent to a radius not less than 20 times the overall diameter of the cable.

iv. Method of installation, routing of cable etc. shall in every case be subject to the Department's approval and the contractor shall modify and or certify at no extra cost to the Department any portions of the installtion which do not meet with the Department's approval. All damages to the civil and other works on this account shall be made good by the contractor at no extra cost to the Department.

The electrical contractor while notifying the building contractor for such work shall furnish the proper drawins, fully explaining the work involved or indicate at site actual work to be carried out as may be required by the building contractor. The electrical of any such work as soon as the electrical work with respect to the same has been completed.

v. Where cables pass through hume pipes, contractor shall fix hard wood bushed round the cables at the ends of hume pipes. Where the cables pass through the floors or chambers and in such other situations as the Engineer shall require, the contractor shall seal cable holes in a manner approved by Engineer-in- charge. Where cable pass through roads nallahs, etc. cables must be protected by Class 'A' Hume pipe of diameter not less than 6" (15cms.)

vi. The cable route shall be the shortest and these shall be minimum interfernce with built up areas, lawns etc.

vii. Care shall be exercised for providing suitable props for supporting other service lines on earth at the time of excavation. Where cutting of a lawn become inevitable it shoud be with the approval of the Engineer-in-charge.

viii. Excavation of the trenches shall be executed with verticle sides and the trenches shall be kept as straight as possible. The exact location of each trench shall be settled by the Engineer- in-charge. On the site when the contracot is in a position to commence each portion of the work.

The trench shall be not less than 1/2 meter wide and 90 cms deep. If more, cables are to be laid, the width should be suitably increased.

ix. After the cables are laid, the trench shall be filled in layers, the earth in each layer being well rammed by spraying water and consolidated and sufficient allowance made for settlement. The extra earth over the trench should be removed from the place of trench to a place as decided by the Engineer- in-charge at site.

x. Ends of cables shall be properly sealed to prevent entry of moisture prior to installation.

xi. Where it is as specified as 1/2 core cables the 1/2 core shall be a neutral conductor having reduced section.

xii. For all multicore cables each core and tails shall be brought out, marked and or coloured in an approved manner.

xiii. Cables termination shall be done with suitable compression brass glands in the case of PVC cables and cast iron trifurating boxes in the case of APLSTS cables. The armour should be connected to the right main earth in building with duplicate earth wires as per the relevant IS/BS specification.

The core insulation over each conductor shall however be retained through out the run of the conductor upto the end where lugs shall be fitted thereon for connections. The lugs shall be fitted by means of approved solder and flux such as aleap, and Eyre No. 7 liberally used. The joint shall be mechanically strong and pressure tested.

2.6 DISTRIBUTION BOARDS AND PANELS :

General Requirements :

2.6.2 All distribution panels shall comply with I.E.E. Rules 60- 61. A clear distance of 0.91b metre in front of the switch board shall be kept. Where bare connections or attachments are provided at the back of the switch board the space behind the panel shall be either less than 0.299 metre or more than 0.762 main width there shall be a passage way from the furtherest outstanding part of any attachement or conductor. If the space behind the switch board exceeds 0.70 main width there shall be a passage way from either end of the switch borad clear to hight of 1.928 m width 0-299 m. All wiring connection shall be made neatly and securely.

2.6.2 For corciots carrying more than 10 Amps. tinned cable sockets shall be used. All connections shall be so made as to form their own diagram Circuit shall be clearly numbered to correspond to wiring diagram Names of the distribution boards shall be painted as directed by the Engineer-in-charge. All the switch fuse units and isolators D.Bs. shall be complete with earthing studs lugs neutral bar link, H.R.C. fuses and of aproved make.

2.6.3 Skeleton type panels shall have a rigid form work adequately braced and supported. The switch and distribution boards shall be neatly arranged in the frame. The details of the frame work and the arrangement of switches shall be got approved by the Engineer-in-charge before the panel is fabricated.

2.6.4 All cubical type panels shall have rigid supporting frames adequately braced over which sheet metal shall be nearly secured. All switches, distribution boards etc. shall be neatly arranged on the panels and all connections made from the back of switches. The panels shall be rendered dust and vermin-proof. The interior of the panels shall not be accessible to unauthorised persons.

2.6.5 The recess type boards shall be embeded in wall in a cupboard with a metal hinged door with locking arrangement. In all recessed conduit work all distribution boards shall be recessed. Where recessing is not possible, free standing panel may be provided as approved by the Engineer-in-charge.

2.6.6 All individual components i.e. switch fuse units D.Bs. etc. shall be connected by earth continuity wire of appropriate size with the main earth bus of the panel D.B. etc. The panel switches or D.Bs. shall be earthed by the less than 2 distinctive paths to earth. Earthing of metalic parts of exposed metal shall not be effected through any structural metal work which houses the installation. Where metalic parts are not required to be earthed and are liable to become alive should the installation of the

contractor become defective such metalic parts shall be separated by durable non-conducting material from any structual work.

(a) Power panels shall be 3 phase, 4 wire, 400.230 volts for the distribution of 3 phase or single phase power loads. Lighting panels shall be 3 phase 4 wire 400/230 volts for single phase lighting load distribution on all 3 phase.
(b) All panels shall be done or protected front type with no mechanical or electrical defects.
(c) Bus bars shall be of electrolytic copper or aluminium as specified and the properly tinned sizes as indicated on applicable drawings as required.
(d) All knock outs for branch circuits, conduit entries shall be drilled in and filled as required. For lighting panels the top and bottom cover plates shall be removable type.
(e) Main disconnect device for all panel boards shall be of switches of disconnect type and of the size as indicated shall be mounted directly below the panel or through a short thread conduit of required size.
(f) The main disconnect for all panel boards shall have an entry suitable for PVC armoured cable from bottom.
(g) All panel boards shall be provided with an earthing terminal and lug for connection to the grounding system.
(h) Temperature rise of all electrical parts shall not be more than 300° with full load amseres at room temperature
(i) Buses shall be securely supported so that ordinary vibrations will not cause any of the parts to become loose.
(j) All barriers and supports of current carrying parts shall be of moisture resistant insulating material and shall not be adversely affected by arcing.
(k) The locations of panels shown in the drawings are only tentative, Panels nay be located at a place approved by the Engineer-in-charge.
(l) All civil works connected with fixing such as grouting chasing and making good shall be the tenderer's responsibility.
(m) Wires adequate capacity with proper size of lugs shall be used for inter connectios.
(n) Panel should be self supported on angle channel iron frame work. It should be preferably of bolted construction in case of transportation and flexibility. The frames shall be of the required size for the mounting of the equipment on it. It shall be bolted or grouted rigidly after levelling and alignment.
(o) The cupboard and D.B. should be of such size so to be accommodated in the exising room as per I.S. rules and I.S. codes of practice for installations of Meduim voltage switch gear.
(p) Fabrication drawing showing the detailed dimensions and panels and its components indicating the frame work, earthing positioning of switches, D.Bs. cable boxes, adopter chambers etc. shall be furnished to the Engineer-in-charge for his approval. All material to be got approved by the Engineer-in-charge. Panel should be guaranteed for satisfactory operations for a period of one year after handing over.
(q) The panel should be painted with anticorrosive paint suitable for humid and salty atmosphere on two coats of primer.

Switch Gears, Powers Panels D. B. and S. F. Us.

2.6.8 The main busbar shall have continuous current rating as specified with neutral bar having half of full load rating of the phase busbar. The sizes of the bus bars shall be so selected that the current density in bar does not exceed 150 amps. per sq.m. for copper. The length of bus-bar chamber should be as suitable length to fix all the switches etc. as per the prevailing standards, clear spacing of two adjacent buses shall be 1 1/2" minimum bar should be itapted all alongwith colour coated 11KV grade PVC tape. The maximum internal of support for each unsupported length shall exceed 600 mm.

The bus bar shall be of copper/alluminium and fabricated to the relevant standards specification. In case alluminium bus bar is used special with high conductivity alluminium bus bar alloy E 91 C frame conforming to E.S.S. 2898 shall be used. The current density shall not exceed 800A per sq. inch. Hylam barriers will be provided over the joints to prevent any short circuit. The bus enclosings shall be made out not less than 16 gauge M.S. sheet construct on with angle iron support. All interconnections between bus bars S.F. Us. and D. Bs. shall be of adequate size and details of such inter connection shall be furnished to the Engineer-in-charge for his approval.

The bus bar shall be air insulated extensible type rectangular one. The bus bars chamber shall be dust tight by providing gaskets secured properly so as to tender it vermin proof.

The Combination Fuse-switch unit should comply with IS 4064 BS 861 and BBS 2510 wherever applicable. It should be suitable to accommodate High Repturing Capacity Catridge Fuselinks complying with IS 2208 or BS 88 and having a certified rupturing capacity of not less than 35 MVA at 440 volts (AC5 duly). The switch gear (panes. D. Bs. etc.) shall be installed generally as per IS-Part- I 3072 and las specified and shown in drawings.

All fuse switch units shall be provided with non-deteriorating HRC fuse links complying with IS 2208-1962 and having rupturing capacity of 35 MVA at 415 volts or as specified.

All switches above 60 amps. rating shall be provided with suitable size adapted boxes. All switches mounted on the top of the busbars shall be provided with detachable type reverse entry adapter boxes. Suitably engraved labels shall be provided for each circuit as well as for the board.

A meters sector switches and LMH metre shall be provided where specifically mentioned. Small wiring for the inter-connecting shall be colour coded and provided with numbered feuses for easy identification of circuits.

(a) The distribution boards should be totally enclosed metal clad complying with B. S. 214. The M. S. sheet steel enclosures for recessed D. Bs. shall be of not less than 14 guage.
(b) The D. B. shall be with hinded door and the locking arrangements as approved by the Engineer-in-charge.
(c) All the components shall be enclosed in the enclosure. The mounting of D. B. shall be got approved by the Engineer-in-charge before carrying out the installation.
(d) The D. Bs. shall have proper size cut outs for conduits entry or cable entry as required and these shall be made on site.
(e) Adequate spacing shall be provided inside the D. Bs. for easy removal of the fuses and carry out the inter connection.
(f) A set of insulating barriers have to be provided between incoming breakers switches and fuses.

Switchfuse Units :

(a) All the D.P.T.P. and T.P.N. switch fuse units shall be totally enclosed iron clad quick make, quick dreak type to best Indian make conforming to the I.S. or B.S. 3185 specifications. All the switch fuse units shall have mechanical interlock with a door, so that the door cannot be opened when the swithches are in 'ON' position. The switches should be of double break solation type to ensure safely.

(b) Each T.P. & T.P.N. switch fuse unit shall be earthed with two distinct earch connections.

(c) Suitable insulator shall be provided between phase.

(d) There shall be suitable netural link in the fuse box.

(e) All T. P. & T.P.N. switch fuse units shall be rated for 500 volts and D. P. (required for single phase supply) and S.P.N. switches for 250 volts.

(f) The H.R.C. catridge fuse shall conform to H.S. 88 (1952).

The O.C.Bs. ACB shall be suitable for 400/440 volts 3 phase 50 cycle supply capable of interuping a fault MVA of not less than 31. The circuit breaker shall conform to the BSS-936-1940 BSS 3659 with such tripping arrangement as may as required under special specifications for the building. Efficient and fool-proof mechanical interlocking shall be provided for the safe operation and maintenance. The rate shall be inclusive of the first filling of oil.

2.7 Instrumentation :

The instruments and meters wherever necessary shall be housed in special sheet steel box located between switch fuses units and bus bar chambers. The instruments etc. shall be mounted on the hinged cover withheir dial flushed. All instruments shall have protective H. R. C. fuse links. All interconnections and small wiring shall be nealty dressed arranged and duly coloured for easy identification of circuits.

Meters shall be provided as required in the Schedule, Meters shall be dead head and be suitable for 400/440 volt 3 phase 4 wire 50 cycle (inbalanced load) supply.

Each selector switch shall be 3 point and of minimum 250 volts grade with silver tipped contacts suitable for metering circuits, current transformers shall be of 5VA burden and commercial metering accuracy. Indicating lamps shall be penal mounting type preferably of 250V grade. Every unit shall be prewired and interconnected to the system for its required indicating performance. Indicating lamps shall have independent circuit fuse.

2.8 FIXING OF LIGHTING FIXTURES :

1. Location of fixtures their manner of fixing mounting height etc. are indicated in relevant drawing. Actual location and levels shall however be arrived at site in co-ordination with other service etc. and prior approval of the Engineer-in-charge regarding the actual location. Manner of fixing shall be obtained before the work is taken up in hand.
2. In all cases the contractor shall provide necessary interconnection wiring earthing painting etc. all necessary for complete installation. The contractor shall also test and commission the fixtures during completion of the work.
3. General arrangement of fixtures layout is indicated in drawings. Care shall be taken to see that all light fixtures are in a row in a room or particular area, are in absolute line and plump and are symetrically disposed with respect to finished surfaces of walls columns beams etc.
4. The inter-connections wiring from the light outlet point upto the fixture shall be carried out by means of flexible copper wire of section not less than 1.5 mm².
5. All fixtures suspended by means of conduits shall be done with all and socket joints or as per approved design.

2.9 Telephone System :

1. Empty conduiting shall be done, recessed or exposed to surface along with pull boxes, junction boxes and telephone outlet boxes, in areas and location as indicated in the relevant drawing as per materials and methods as described in regard to conduiting under section "Wiring in Conduits" except the G.I. pull wires of guage not less than 20 SWG shall be kept pulled through conduits in all sections so that in future telephone wires can be pulled easily.
2. Location shown on the drawing are approximate and final location shall be decided in the field by the Engineer-in-charge.

SECTION G

SPECIFICATION FOR EARTHING.

1. Installation of Earthing Plates :

All installation of earthing shall conform to Indian Electricity Rules, IS-3043 latest edition and I.E.E. The copper earth plates should be tinned before intallation. The earth plates of copper 60 cm x 60 cm x 3.515 mm thick size as mentioned in the schedule be in separate pits at least 150 cms to 300 cms. away from the building at a depth necessary to reach moist earth surface but with a minimum depth of 2.5 mtr from the finished ground level upto the top vertical dodge of earth electrode. The earth plate shall be throughly cleaned to remove all dirt from the surface and be tinned property for electrical contact with the main ground. Each earth pit should be provided with 38 mm. dia G.I. pipe 2.5 Mts. long or more depending upto the depth of pit, put over the vertical edge of earth plate (with top end of pipe provided with a closed to couyler). Alternative layers of salt and coke shall be provided surrounding the plate. The pits shall be filled when the plates are in position and with the approval of Engineer-in-charge.

To facilitate watering the pit, a concrete compartment should be made with funnel with mesh and cover plate as per rules provided in ISI regulation. The masonary endousures shall be 25 cm x 25 cm x 25 cm (deep) with C. I. lid of 23 cm x 30 cms size. After installation, the earthing resistance of each earth plate should be measured by resistance meggar in the presence of Engineer-in- charge, three days after the completion of earthing work, and the value should conform to regulations.

Signature of contractor/s

Executive Engineer,

Division.

LIST OF THE APPROVED PRODUCTS FOR THE YEAR 2013-2014

CHAPTER - I

WIRING

1.1 SHOCKPROOF ACCESSORIES

(A) Concealed / Surface Type

Any 'I.S.I.' marked Which is Approved by Department

CATEGORY - I

1. **ALLWYN - APPROVED**
   M/s Allwyn Electricals Industire, 78, Kakad Industrial Estate, Lady Jamshedji Road,Mahim - Mumbai - 400016
2. **SAFECON'S**
   M/s KALA ELECTRICAL INDUSTRIES, 12/A, Eagal Market, 90 Feet Road, Saki Naka, Mumbai - 400072
3. **MILLION & MILLTEC**
   M/s. Mutha Electricals
   1940/4, Khadia Cross Road, Gandhi Road, Ahmedabd - 01
4. **LEGEND & WIT**
   M/s. VINAYAK ELECTRICAL INDUSTRIAL, Dal Mill, Opp. Charch, Behind Sonis Wadim SURENDRANAGAR - 363001
5. **VIMAL**
   M/s Solanki Industries, 22/180, Motilalnagar, Opp. Old best colony, Goregaon [W], Mumbai

CATEGORY - II

(1) **VINAY**
M/s Vinay Electricals, 18-A, Singh Industrial, Estate, Bldg. No.1, Rammandir Road, Gorengaon (W),Mumbai - 40014.

CATEGORY - III

(1) **TOYAMA**
M/s. Toyama Electric Ltd
36(A), Kiadb Industiral Estate, Hoskote, Banglore - 562114

(2) **ORPAT**
M/s. Ajanta Industrial Estate, Rajkot
Highway Post Box No. 115, Morbi

(B) Mini Modular Type [Approved]

1. **ANCHOR [NOVA / XL]**
   Anchor Elect. P.Ltd., Marathon Innova C Wing, Opp. Penivsula Corporate Park, Opp. G.K.Marg, Lower Parel [W] Mumbai
2. **POINTER**
   H.O. B-15, Atlanta Evershine, Evershine Nagar, Malad [W], Mumbai - 400064
3. **PRISM - POINTER**
   M/s Prism Industires (Refer to Ch.1.1.(B), Cat.-III (2))
4. **ORPAT** (Refer to Ch.1.1.(A), Cat.-III (2))
5. **VIMAL**(Refer to Ch.1.1.(A), Cat.-III (5))
6. **GELCO - Cat. II**
   GELCO ELECTRONICS PVT LTD
   3,7,8 & 16 Amarnath Estate, Nr. Krishna Gopal Estate, Naroda Road, Ahmedabad - 380025

(C) Modular Type APPROVED

1. **L&T ORIS**
   M/s LARSON & TURBRO LIMITED
   501, SAKAR-I, OPP GANDHIGRAM RAILWAY STATION, AHMEDABAD - 380009
2. **LEGEND & WIT** (Refer to Ch.1.1.(A), Cat.-I (4))
3. **INDOSIMON**
   M/s. EON Electric Limited
   B/88, Sector 83, NOIDA - 201305, U.P., INDIA
4. **RANI**
   M/s. Param Switchgear (P.) Ltd.
   11, CSG Anand Niketan New Delhi-110021.

CATEGORY - I

1. **PRECISION**
   M/s Precision Electricals Shiv Sagar estate, A-Block (Basement) Dr. A.B.Road Worli, Mumbai - 400018
2. **POINTER - ITALIA** (Refer to Ch.1.1.(B), Cat.-III (2))
3. **ALEX**
   M/s Alex Industires, 3, Neminath Industrial Estate no.3 Navghar Road,, Vasai [E] Dist. Thane - 401210
4. **PRISM - POINTER** (Refer to Ch.1.1.(B), 3)
5. **VIMAL** (Refer to Ch.1.1.(A), Cat.-I (5))
6. **S.G.**

CATEGORY - II

1. **ANCHOR-RIDER** (Refer to Ch.1.1.(B)-3)
2. **GELCO** (Refer to Ch.1.1.(B)-Cat.III (6))
3. **POINTER - SPECTRA** (Refer to Ch.1.1.(B) Cat.III- (3)
4. **ELLYS**
   M/s ELLE Electrical P.L. ,Cama Industrial Area, Walbhat Road, Next to Rajaram Tarphe, Goregaon (E), Mumbai - 400063
5. **HI-FI**
   M/s Aerolite Industries ,5, Sati Industrial Estate, I.B. Road, Goregaon (E), Mumbai - 400063
6. **WONDER [EVER/PLAYBOY/COOLICY/FORTUNE/DASH/ GOLD]**
   M/s Wonder Industries, G-14, O.I.D.C. Udhyog Nagar Industrial Estate, GIDC, Ringanwada, DAMAN (U.T)
7. **ALLWYN** (Refer to Ch.1.1.(A) Cat. 1 (1))
8. **INDOASIAN**
   M/s Indo Asian Fusegeear Limited, 203-204, Shreedhar Avenue, 11, Sardar Patel Colony, Nr. Sardar Patel Statue, Naranpura, Ahmedabad
9. **VINAY** (Refer to Ch.1.1.(A) Cat.-II (I))
10. **LEADER**
    M/s Leader Electrical P.L., Leader House, 9-B, Mahal Industrial Estate, P.B.No. 9483, Mahakali Caves Road, Andheri (E), Mumbai - 400 093
11. **LK**
    L.K. Switchges, 165, G.I.D.C. Makarpura, Baroda - 390001
12. **NORTHWEST**
    North West Switchgear Ltd.,
    14/3, Mathura Road, Faridabad Haryana - 121003
13. **MK**

CATEGORY - III

1. **HAVELL'S - CRABTREE**
   M/s Havell's India Ltd, 207-205, SHIVALIK II, Nr. Shivranjani Cross Road, Satelite 132 Ft. Ring Road, Ahmedabad - 380015.
2. **TOYAMA** (Refer to Ch.1.1.(A) Cat.-III (I))
3. **ANCHOR [ROMA / WOOD /AVE]** (Refer to Ch.1.1.(B)-I)
4. **PHILIPS**
   M/S. Philips Electronics India Ltd., 7, Justice Chandra Madhab Road, Kolkata-700020.
5. **ABB**
   M/S ABB Limited 2nd Floor, Est Wing, Khanija Bhavan, 49, Race Course Road, Bangalore – 560 001
6. **ORPAT** (Refer to Ch.1.1.(A) Cat.-III-(2))
7. **SALZER**
   M/s SALZER ELECTRONICS LTD, Samichettipalayam, Coimbatore-641047.
8. **C&S GEWISS**
   M/s. Control & Switchgears Contactors LTd. 9th Floor, HERITAGE, Nr. Gujarat Vidyapith, Ashram Road, Ahmedabad - 380 009

1.2 RIGID PVC PIPES / OVAL PIPES & FITTINGS, FIA Approved & ISI marked Which is Approved by Department.

1. **VRAJ**
   M/s VRAJ PLASTIC INDUSTRIES, 41,42&43 Amarnath Estate, Nr. Gokulesh Petrolium, Narol Cross Road, Ahmedabad - 382 405
2. **PRECISION** (Refer to Ch.1.1.(C) Cat-(I)-I)
3. **NIHIR**
   M/s. NIHIR POLYMERS INDUSTRIES, 62, Umed Part Society, Sola Road, Ghatlodia, Ahmedabad - 380 061.
4. **HIMA / AMIT**
   M/s Hima Sales Corporation, Opp. Relish Pharma, Nr. Nilkanth Hotel, Ta. Kalol, Dist. Gandhinagar. RAKANPUR
5. **VINAY** (Refer to Ch.1.1.(A) Cat.-II (I))
6. **POLYCAB**
   M/s Polycab Wires Pvt. Ltd., HICO House, 1st Floor, 771, Pandit Satwalekar Marg, Mahim (W), Mumbai - 400016
7. **BLP**
   M/s. Bhaglaxmi Plastic Industires , 32, Asharva Ind. Estate, Opp. Khodiyar Estate, Narol, Ahmedabad
8. **POWER FLOW INDIA / CROWN PLAST**
   M/s. CROWN INDUSTRIES
   Plot No. 6, Opp. Torrent Power Sub Station B/11, Shahwadi Bus Stop, Narol Ahmedabad-382405
9. **9 - NINE / ADITYA**

M/s. Aaditya Polymake, 550, Rajpur Road, Opp. Volga airtech, Sarkhaj Bavla Highway, changodar, Ahmedabad.

10. MARUTI
    18, Kamal Estate, Bombay Conductors, VATVA, AHMEDABAD
11. PRESTO PLAST
    M/s. HARSH POLYMERS PVT LTD
    1/11C, Proctor Road, Grant Road, [East], MUMBAI - 400007
12. SHRINATH
13. AMIT
    Amit Electro Plast, 431, 4th Floor, Sarvoday Comm. Center Salapas Road, Nr. G.P.O., Ahmedabad.
14. MAXCEL PLAST
    M/s. Maxcel Plast 133, SHREE Ram Ind. Estate, B/h. C.M.C. Anup Eng. Compound, Nr. Soni's Chawl Cross Road, ODHAV, Ahmedabad - 382415.

1.3 OVAL / CASING & CAPING & PVC TRUNKING

1. VRAJ (Refer to Ch.1.2.(1))
2. PRECISION (Refer to Ch.1.1 (C) Cat.-1.(I))
3. NIHIR (Refer to Ch.1.2.(3))
4. HIMA / AMIT (Refer to Ch.1.2.(4))
5. VINAY (Refer to Ch.1.1. (A) Cat.-II (1))
6. POLYCAB (Refer to Ch.1.2.(6))
7. MODI'S
   M/s. Modi's Group of Companies, 34, Palace manor, 31 & 32, BAlfour Road, Kelly's, Chennai - 600010.
8. 9 NINE / AADITYA (Refer to Ch.1.2.(9))
9. MARUTI (Refer to Ch.1.2.(10))
10. PRESTO PLAST (Refer to Ch.1.2.(11))
11. POWER FLOW INDIA / CROWN PLAST [Refer to Ch.1.2.(8))
12. SHRINATH
13. M.K.
14. AMIT (Refer to Ch.1.2 Cat. III (13))
15. MAXCEL PLAST (Refer to Ch.1.2 (14))

LAMPS & FITTINGS

2.1 FILAMENT LAMPS / FLOURESCENT TUBES

(A) CAT.I

ANY ISI MARKED WHICH IS APPROVED BY DEPARTMENT

(B) CATEGORY - II

1. ARYA
   M/s.Arya Filaments P.L., 344, Vishnupuri
   Annex, A.B.Road, Indore - 452 001
2. GE
   M/s GE India Industrial Pvt. LTd., 405, "Kirtiman", Kinariwala House, B/H Citibank, Off. C.G.Road, Ahmedabad - 380 009
3. BAJAJ
   M/S Bajaj Electricals Limited, 106, Ist Fl., Sakar-III, Nr.Ashram Road, Navrangpura, Ahmedabad 380 014
4. OSRAM
   M/s Osram India P.L. Delhi Road, Sonipat - Haryana - 131001
5. ANCHOR (Refer to Ch.1.1.(B) Cat.-III (i))
6. JILCO
   M/S JAIN INDUSTRIAL LIGHTING CORP.
   B-70/22, DSIDC Complex, Lawrence Road, New Delhi - 35
7. INDOASIAN (Refer to Ch.1.1.(C) Cat.-II-8)

CATEGORY - III

1. SURYA
   M/s. Surya Roshni Ltd , (Lighting Division)
   308, Shefali Centre, Nr. Paldi Char Rasta, Ahmedabad - 380006
2. PHILIPS (Refer to Ch.1.1.(C) Cat.-III-(4))
3. CROMPTON
   M/s. Crompton Greeves , C.Q. Hube, 6th Floor, Dr. Annie Besant Road, Worli, Mumbai - 400030
4. HALONIX
   M/s. Halonix Limited, 59A, 59D, Noida Special Economic Zone, Phase - II, Noida, Dist. Gautam Budhnagar - 201305 [UP]
5. WIPRO
   M/s Wipro Ltd , A/210, Fairdeal House, Opp. St. Xavier's Ladies Hostel, Navrangpura, Ahmedabad
6. HPL
   M/s B/707, Premium House, Nr. Gandhi Gram Rly. Station, B/H Natraj Cinema, Ashram Road, Ahmedabad - 380009

2.3 SODIUM WAPOUR LAMPS

CATEGORY - I

ANY ISI MARKED WHICH IS APPROVED BY DEPARTMENT

CATEGORY - II

1. ARYA (Refer to Ch.2.1. Cat.-II(I))
2. ANCHOR (Refer to Ch.1.1.(B) Cat.-III (1))
3. BAJAJ (Refer to Ch.2.1.Cat.-II (3))
4. OSRAM (Refer to Ch.2.1. Cat.-II (4))
5. JILCO (Refer to Ch.2.1. Cat.-II (6))
6. PUSHKAR / AKSHAR
   M/s. Puskhar Industries 87/1, Vilage Shiholdi, Vaso Alindra Road, Ta. Matar, Dist. Kheda - 387380
7. VAPOLITE

CATEGORY - III

1. HAVELLS' (Refer to Ch.1.1. (C) Cat.-III (I))
2. SURYA (Refer to Ch.2.3. Cat.-III (1))
3. G.E. (Refer to Ch.2.1. Cat.-II (2))
4. PHILIPS (Refer to Ch. 1.1. Cat.-III (2))
5. CROMPTON (Refer to Ch.2.1. Cat.-III (3))
6. HALONIX [Refer to Ch.2.1. Cat.-III (4))
7. WIPRO (Refer to Ch.2.1. Cat.-III (5))
8. C&S GEWISS (Refer to Ch.1.1.(C) Cat.-III (8))
9. SHAKTI
   M/s Shakti Fixture Industreis 212/B, Bombay Talkies Compound Malad (W), Mumbai - 400 064

2.4 COMPACT FLOURESCENT LAMPS

CATEGORY - I

1. ANCHOR (Refer to Ch.1.1.(B)-Cat.-III (1))

CATEGORY - II

1. SPANCO
   M/S Spance Semiconductors, 10/11, Bhagat Industrial Estate, Nr. 18No. ESI Hospital, Jay Bharat Rangshala Compound, Saraspur, Ahmedabad - 380018
2. GRE
   M/s. GRE Electronics Pvt.Ltd.,
   Plot No. 423, G.I.D.C.-II, Dediyasan, Mehsana - 384002
3. OSRAM (Refer to Ch.2.1. Cat.-II (4))
4. JILCO (Refer to Ch.2.1. Cat.-II (6))
5. STANDARD
   M/s. Standard Electrical Ltd
   202-205, Shivalik - II, Nr. Shivrangni Cross Road, Satelite, 132 feet Ring Road,Ahmedabad - 15
6. CILVER
7. INDOASIA
8. OREVA
   M/s. Ajanta Manufacturing Ltd.
   8A, National Highway, Morbi-363642.

CATEGORY - III

1. HAVELLS' (Refer to Ch.1.1. (C) Cat.-III (1))
2. SURYA (Refer to Ch.2.1. Cat.-III (1))
3. PHILIPS (Refer to Ch.1.1. (C) Cat.-III (3))
4. CROMPTON (Refer to Ch.2.1. Cat.-III (3))
5. HALONIX [Refer to Ch.2.1. Cat.-III (4))
6. WIPRO (Refer to Ch.2.1. Cat.-III (5))
7. ASIAN
   M/s ASIAN ELECTRONICS LTD, 11-14,
   Tej Complex, Nr. Lions Hall, Opp. Ashoka Chambers, Mithakhali, Ellisbridge, Ahmedabad – 380 006 - India
8. HPL (Refer to Ch.2.1. Cat.-III (6))

2.5 METAL HALIDE LAMPS

CATEGORY - I

ANY ISI MARKED WHICH IS APPROVED BY DEPARTMENT

CATEGORY - II

1. ARYA (Refer to Ch.2.1. Cat.-II (1))
2. ANCHOR (Refer to Ch.1.1. (B) Cat.-III (1))
3. BAJAJ (Refer to Ch.2.1. Cat.-II (3))
4. OSRAM (Refer to Ch.2.1. Cat.-II (4))
5. PUSKHAR / AKSHAR (Refer to Ch.2.3. Cat.-III (6))

CATEGORY - III

1. SURYA (Refer to Ch.2.1. Cat.-III (1))
2. CE (Refer to Ch.2.1. Cat.-II (2))
3. PHILIPS (Refer to Ch.1.1. (C) Cat.-III (2))
4. CROMPTON (Refer to Ch.2.1. Cat.-III (3))

5. HALONIX (Refer to Ch.2.1. Cat.-III (4))
6. WIPRO (Refer to Ch.2.1. Cat.-III (5))
7. HAVELL'S (Refer to Ch.1.1. (A) Cat.-III (1))
8. C&S GEWISS (Refer to Ch.1.1.(C) Cat.-III (8))
9. SHAKTI (Refer to Ch.2.3. Cat.-II (9))

2.6 ENERGY SAVING FLOURESCENT TUBE & CFL FITTINGS (Box Type/Industrial Type/Mirror Optic/Mirror Light/Street Light)

APPROVED

1. FUTURE LIGHTING
   M/S. FUTURE LIGHTING INDIA LTD. 8TH FLOOR, TOWER "C", 247 PARK, L.B.S. MARG, VIKHROLI [W] MUMBAI - 400083
2. CAMAY
   M/S. CAMAY ELECTRONICS, CAMAY HOUSE, CHANDNI CHOWK, FULWADI DHORE, JETPUR - 360370
3. EUROLITE
   M/S. RUBYCON ELECTRICALS & ELECTRONICS INDUSTRIES SURVEY NO 246/4, OPP. G.I.D.C. PHASE-I SIHOR - 364240 BHAVNAGAR - GUJARAT
4. ENERGY VISION
   M/S ENERGY VISION, 38/568, SHASTRINAGAR, KHATODARA COLONY, SURAT - 395002
5. EUROLITE (Refer to Ch.2.6. Approved (3))

CATEGORY - I

1. PULSE
   M/s Pulse Electronics & Control, B/1, Maruti Tenament, Opp. Shriji Bapa Complex, Nr. Rabari Colony, Vastral to Odhav Canal Road, Ahmedabad
2. HAVELL'S (Refer to Ch.1.1. (A) Cat.-III (1))
3. AKHIL
   M/S SATYA ENGINEERING WORKS P.L. A-111, MANGOL PURI IND. AREA PHASE - II, NEW DELHI - 110034
4. Optic Lighting
   M/s Optic Lighting P.L. Rajiv House4, Smritkunj, Nr. Navrangpura Post Office, Navrangpura, Ahmedabad -09
5. Pulse / Nano (Refer to Ch.2.6. Cat.-I (1))
6. Aash Cube
   M/s Aashcube Lighting P.L. C/41.195, Krishna Estate B/h Anuptech, Opp. B.I.D.C. Gorwa, Vadodara - 390016

CATEGORY - II

1. JABLA
   M/S JABLA ELECTRICAL INDUSTRIES, 29 B/C JAY KHODIYAR INDUSTRIAL ESTATE, NR. SUBHASH ESTATE, RAMOL ROAD C.T.M. AMRAIWADI, AHMEDABAD - 380026
2. GELCO (Refer to Ch.1.1. (B) Cat.-III (6))
3. INAVA
   M/s. Inava Instruments International, 94, Ratnajyot Ind. Estate, Irla Lane, Vile Parle (W), Mumbai - 400056
4. PIERLITE
   M/s. Pierlite India P.L. Rakhial Road, Ahmedabad.

CATEGORY - III

1. SPANCO (Refer to Ch.2.4. Cat.-II (1))
2. HPL
   M/s. HPL Electric & Power Ltd., Plot No. 76-B, Phase-IV, Sec.-57, JSIIDC, Indl. Area, Kundli Dist. Sonipat, (Haryana)-131028.
3. FIXOLITE
   M/s. FIXOLITE INDUSTRIES, Jhon Robert Compound Sewri Fort Road, Sewri (E), Mumbai - 400015
4. PRESTOLITE
   M/s Prestolite Corporation, 57/5, Khalil Sth Compound, Off M.G. Road, Gorgaon [W].
5. SHAKTI (Refer to Ch.2.3. Cat.-III (9))
6. C&S GEWISS (Refer to Ch.1.1. (C) Cat.-III (18))

[ENERGY SAVING T-5 TUBE FITTING / CFL INDOOR TYPE]

CATEGORY - II

1. SPANCO (Refer to Ch.2.4. Cat.-II (1))
2. GELCO (Refer to Ch.1.1. (B) Cat.-III (6))
3. TEKNOLITE
   M/s Teknovision Allied Product P.L. 16, Waman Patil Indistrial Estate, Nr. Dukes Factory, Nr. Chembur, Mumbai-71
4. ARYA (Refer to Ch.2.1. Cat.-II (1))
5. SHAKTI (Refer to Ch.2.5. Cat.-III (9))
6. JILCO (Refer to Ch.2.1. Cat.-II (6))
7. ANCHOR (Refer to Ch.1.1. (B) Cat-III (1))
8. GLOMORE
   M/s Devraj Enterprises (P) Ltd., 401, Sobhna Appartment, 4th Floor, Above Mandavi Bank, Chandravarkar Road, Borivali [W], Mumbai - 400092
9. C&S GEWISS (Refer to Ch.1.1. (C) Cat.-III (8))
10. CILVER (Refer to Ch.2.6. Cat.-II (10))
11. ACON
    M/s. Suvet Electronics "Sorab Villa", Nr. Popular House, Ashram Road, Ahmeabad - 9
12. INAVA (Refer to Ch.2.6. Cat.-II (3))
13. PRESTOLITE (Refer to Ch.2.6. Cat-III (4))
14. INDOASIAN (Refer to Ch.1.1. (C) Cat.-II (8))
15. SHAH
    M/s Shah Electronics, A-3, Manoharvila, New Naroad, Nicol Road, Nr. Naroda Canal, Nicol, Ahmedabad - 382330
16. Pulse / Nano (Refer to Ch.2.6. Cat.-I (1))
17. AKHIL (Refer to Ch.2.6. Cat.-1 (3))

CATEGORY - II

[ENERGY SAVING T-5 TUBE FITTING / CFL OUTDOOR TYPE]

1. GELCO (Refer to Ch.1.1. (B) Cat.-III (6))
2. SHAKTI (Refer to Ch.2.3. Cat.-III (9))
3. JILCO (Refer to Ch.2.1. Cat.-II (6))
4. CILVER (Refer to Ch.2.6. Cat.-II (10))
5. AKHIL (Refer to Ch.2.6. Cat.-1 (3))
6. ACON (Refer to Ch.2.6. Cat.-II (11))

CATEGORY - III

[ENERGY SAVING T-5 TUBE FITTING / CFL INDOOR TYPE]

1. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
2. HALONIX (Refer to Ch.2.1. Cat.-III (5))
3. GRE (Refer to Ch.2.4. Cat.-II (2))
4. WIPRO (Refer to Ch.2.1. Cat.-III (5))
5. THORN
   M/s. Thorn Lighting India P.L. C/o.10 parshwanath Apt., Somnath Park Lane, Opp. Tele. Exchange, Sahibaug, Ahmedabad - 380004
6. SURYA (Refer to Ch.2.1. Cat.-III (1))
7. ASIAN (Refer to Ch.2.6. Cat.-II (4))
8. G.E. (Refer to Ch.2.1. Cat.-II (2))
9. PHILIPS (Refer to Ch.1.1. (C) Cat.-III (4))
10. CROMPTON (Refer to Ch.2.1. Cat.-III (3))
11. BAJAJ (Refer to Ch.2.1.Cat.-II (3))
12. PASOLITE
    M/s. Pasolite Electricals P.L. 7, kilari road, 14th cross, Banglore- 560053
13. PRESTOLITE (Refer to Ch.2.6 Cat.-III (4))
14. HPL (Refer to Ch.2.6 Cat.-III (2))
15. SHAKTI (Refer to Ch.2.3. Cat.-III (9))

ENERGY SAVING T-5 TUBE FITTING / CFL [OUTOOR TYPE]

CATEGORY - III

1. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
2. GRE (Refer to Ch.2.4. Cat.-II (2))
3. SURYA (Refer to Ch.2.1. Cat.-III (1))
4. PIERLITE (Refer to Ch.2.6. Cat.-II (4))
5. PHILIPS (Refer to Ch.1.1. (C) Cat.-III (4))
6. CROMPTON (Refer to Ch.2.1. Cat.-III (3))
7. WIPRO (Refer to Ch.2.1. Cat.-III (5))
8. THORN (Refer to Ch.2.6. Cat.-III (5))
9. BAJAJ (Refer to Ch.2.1.Cat.-II (3))
10. SHAH (Refer to Ch.2.6. Cat.-II (15))
11. PRESTOLITE (Refer to Ch.2.6.Cat.-III (3))
12. HPL (Refer to Ch.2.6.Cat.-III (2))
13. FIXOLITE (Refer to Ch.2.6.Cat.-III (3))
14. SHAKTI (Refer to Ch.2.3. Cat.-III (9))
15. TEKNOLITE (Refer to Ch.2.6. Cat.-III (3))

2.7 FLOURESCENT TUBE FITTINGS [ELECTRONICS BALLAST] (Box Type/Industrial Type/Mirror Optic/Mirror Light/Street Light)

APPROVED

1. ACTION
   M/S. ADHUNIK SWITCHGEARS P.L. UNIT-1, 902/290, SHALIMAR IND. AREA DELHI - 110088

CATEGORY - I

ANY ISI MARKED WHICH IS APPROVED BY DEPARTMENT

1. PULSE (Refer to Ch.2.6. Cat.-I (2))

CATEGORY - II

1. GELCO (Refer to Ch.1.1. (B) Cat.-III (6))
2. PRESTOLITE (Refer to Ch.2.6. Cat.-III (4))
3. GLOMORE (Refer to Ch.2.6. Cat.-II (8))
4. TEKNOLITE (Refer to Ch.2.6. Cat.-II (3))
5. ARYA (Refer to Ch.2.1. Cat.-II (1))
6. INDOASIAN (Refer to Ch.1.1. (C) Cat.-II (8))
7. JILCO (Refer to Ch.2.1. Cat.-II (6))
8. CILVER (Refer to Ch.2.6. Cat.-II (10))
9. ANCHOR (Refer to Ch.1.1. (B) Cat-III)
10. G.E. (Refer to Ch.2.1. Cat.-II (2))
11. PASOLITE (Refer to Ch.2.6. Cat.-II (12))
12. ACON (Refer to Ch.2.6. Cat.-II (11))
13. ACQURATE
    M/S ACQURATE Engitech Limited, Plot No 147/148, GIDC Ankleshwar, Dist. Bharuch Gujarat – 393002
14. BAJAJ (Refer to Ch.2.1. Cat.-II (3))
15. AKHIL (Refer to Ch.2.6. Cat.-I (3))
16. SUNBEAM
    M/s. Sunbeen Electricals, 292/7/B Shastri Laghu Udhyog Nagar, Maheshwari Mill Road, Tavdipura, Shahibaug, Ahmedabad-380004.

CATEGORY - III

1. PHILIPS (Refer to Ch.1.1. (C) Cat.-III (3))
2. CROMPTON (Refer to Ch.2.1. Cat.-III (4))
3. SURYA (Refer to Ch.2.1. Cat.-III (1))
4. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
5. WIPRO (Refer to Ch.2.1. Cat.-III (5))
6. HALONIX (Refer to Ch.2.1. Cat.-III (4))
7. GRE (Refer to Ch.2.4. Cat.-II (2))
8. SHAH (Refer to Ch.2.6. Cat.-II (15))
9. FIXOLITE (Refer to Ch.2.6. Cat.-III (2))
10. HPL (Refer to Ch.2.6.Cat.-III (2))
11. PIERLITE (Refer to Ch.2.6. Cat.-II (4))
12. C&S GEWISS (Refer to Ch.1.1. (C) Cat.-III (8))
13. SHAKTI (Refer to Ch.2.5. Cat.-III (9))

2.9 SODIUM VAPOUR LAMP FITTINGS (POST TOP LANTERN / STREET LIGHTS)

CATEGORY - I

1. GLOMORE (Refer to Ch.2.6. Cat.-II (8))
2. EUROLITE - APPROVED (Refer to Ch.2.6. Cat. Approved (3))
3. SUNBEAM (Refer to Ch.2.7. Cat.-II (16))
4. OPTIC LIGHTING (Refer to Ch.2.6. Cat.-I (4))

CATEGORY - II

1. SPANCO (Refer to Ch.2.4. Cat.-II (1))
2. ARYA (Refer to Ch.2.1. Cat.-II (1))
3. JILCO (Refer to Ch.2.1. Cat.-II (6))
4. CILVER (Refer to Ch.2.6. Cat.-II (10))
5. ANCHOR (Refer to Ch.1.1. (B)-Cat.-III (1))
6. G.E. [COMMON FITTING] (Refer to Ch.2.1. Cat.-II (2))
7. ACQURATE (Refer to Ch.2.7. (18))
8. PULSE/NANO (Refer to Ch.2.6. Cat.-I (1))

CATEGORY - III

1. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
2. PIERLITE (Refer to Ch.2.6. Cat.-II (4))
3. SURYA (Refer to Ch.2.1. Cat.-III (1))
4. G.E. (SR/SPPT/OLYMPIA /RANGER / GEN-X / SKYGEN / MET-40/SPECTRA / QUNA / NOVA T-5 STRECT / OPTYLANE) (Refer to Ch.2.1. Cat.-II (2))
5. PHILIPS (Refer to Ch.1.1. (C) Cat.-III (4))
6. CROMPTON (Refer to Ch.2.1. Cat.-III (3))
7. GRE (Refer to Ch.2.4. Cat.-II (2))
8. HALONIX (Refer to Ch.2.1. Cat.-III (4))
9. WIPRO (Refer to Ch.2.1. Cat.-III (5))
10. THORN (Refer to Ch.2.6. Cat.-III (5))
11. BAJAJ (Refer to Ch.2.1. Cat.-II (3))
12. FIXOLITE (Refer to Ch.2.6. Cat.-II (3))
13. PASOLITE (Refer to Ch.2.6. Cat.-III (13))
14. TRANSRAIL
    A-201/209, Boomerang Complex, Chandivali Farm Road, Andheri [E], Mumbai - 400072
15. PRESTOLITE (Refer to Ch.2.6.Cat.-III (3))
16. HPL (Refer to Ch.2.6.Cat.-III (2))
17. C&S GEWISS (Refer to Ch.1.1. (C) Cat.-III (8))
18. SHAKTI (Refer to Ch.2.3. Cat.-III (9))

2.10 FLOOD LIGHTS WITH BC / ES/ /MV / SV / MH / LAMPS (POST TOP LANTERN / STREET LIGHTS)

CATEGORY - I

ANY ISI MARKED WHICH IS APPROVED BY DEPARTMENT

1. EUROLITE (Refer to Ch.2.6. Cat. Approved (3))
2. SUNBEAM (Refer to Ch.2.9. Cat.-I (3))

CATEGORY - II

1. SPANCO (Refer to Ch.2.4. Cat.-II (1))
2. GLOMORE (Refer to Ch.2.6. Cat.-II (18))
3. ARYA (Refer to Ch.2.1. Cat.-II (1))
4. ANCHOR (Refer to Ch.1.1. (B) Cat.-III (1))
5. G.E. [COMMON FITTING] (Refer to Ch.2.1. Cat.-II (2))

CATEGORY - III

1. SURYA (Refer to Ch.2.1. Cat.-III (1))
2. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
3. GRE (Refer to Ch.2.4. Cat.-II (2))
4. PIERLITE (Refer to Ch.2.6. Cat.-III (8))
5. G.E. (SF / GEMF/BLAZE / ZION / GLANZ / EI-2000+/ CONJA-JR / HELO FLOOD / ARINA) (Refer to Ch.2.1. Cat.-II (2))
6. PHILIPS (Refer to Ch.1.1. (C) Cat.-III (4))
7. CROMPTON (Refer to Ch.2.1. Cat.-III (3))
8. WIPRO (Refer to Ch.2.1. Cat.-III (5))
9. TRANSRAIL (Refer to Ch.2.9. Cat.-III (14))
10. HALONIX (Refer to Ch.2.1. Cat.-III (4))
11. BAJAJ (Refer to Ch.2.1. Cat.-II (3))
12. PRESTOLITE (Refer to Ch.2.6. Cat.-III (4))
13. FIXOLITE (Refer to Ch.2.6. Cat.-III (3))
14. HPL (Refer to Ch.2.6.Cat.-III (2))
15. C&S GEWISS (Refer to Ch.1.1. (C) Cat.-III (8))
16. SHAKTI (Refer to Ch.2.3. Cat.-III (9))

2.11 Halogen Tube Fittings

ANY ISI MARKED WHICH IS APPROVED BY DEPARTMENT

1. EUROLITE (Refer to Ch.2.6. Cat. Approved (3))

Category - II

1. ARYA (Refer to Ch.2.1. Cat.-II (1))
2. PIERLITE (Refer to Ch.2.6. Cat.-II (4))

Category - III

1. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
2. WIPRO (Refer to Ch.2.1. Cat.-II (4))
3. HALONIX (Refer to Ch.2.1. Cat.-III (4))
4. TRANSRAIL (Refer to Ch.2.14 Cat.-III (7))
5. SHAKTI (Refer to Ch.2.3. Cat.-III (9))

2.11 (A) METAL HELIDE LAMP FITTINGS

CATEGORY - I

1. GLOMORE (Refer to Ch.2.6. Cat.-II (8))
2. EUROLITE (Refer to Ch.2.6. Cat. Approved (3))
3. OPTIC LIGHTING (Refer to Ch. 2.6 Cat- I (4))

CATEGORY - II

1. BAJAJ (Refer to Ch.2.1. Cat.-II (3))
2. ARYA (Refer to Ch.2.1. Cat.-II (1))
3. JILCO (Refer to Ch.2.1. Cat.-II (6))
4. PASTOLITE (Refer to Ch.2.6. Cat.-III (13))
5. PIERLITE (Refer to Ch.2.6. Cat.-II (4))

CATEGORY - III

1. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
2. THORN (Refer to Ch.2.6. Cat.-III (5))
3. GRE (Refer to Ch.2.4. Cat.-II (2))
4. TRANSRAIL (Refer to Ch.2.9. Cat.-III (14))
5. SURYA (Refer to Ch.2.1. Cat.-III (1))
6. WIPRO (Refer to Ch.2.1. Cat.-III (7))
7. HALONIX (Refer to Ch.2.1. Cat.-III (5))

2.12 ELECTRONIC BALLAST

CATEGORY - I

1. AMIT (Refer to Ch.1.2. (13))
2. INAVA (Refer to Ch.2.6. Cat.-II (13))
3. ANCHOR - APPROVED (Refer to Ch.1.1. (B) Cat.-III (2))
4. CILVER (Refer to Ch.2.6. Cat.-II (10))
5. PULSE (Refer to Ch.2.6. Cat.-I (1))
6. JILCO (Refer to Ch.2.1. Cat.-II (6))
7. EUROLITE - APPROVED (Refer to Ch.2.6. (3))
8. CAMAY (Refer to Ch.2.6. Approved (2))

CATEGORY - II

1. SPANCO (Refer to Ch.2.4. Cat.-II (1))

2. GLOMORE (Refer to Ch.2.6. Cat.-II (8))
3. TEKNOLITE (Refer to Ch.2.6. Cat.-II (3))
4. GELCO (Refer to Ch.1.1. (B) Cat.-III (6))
5. INDOASIAN (Refer to Ch.1.1. (C) Cat.-II (8))
6. ARYA (Refer to Ch.2.1. Cat.-II (1))
7. ASIAN (Refer to Ch.2.4. Cat.-III (7))
8. OSRAM (Refer to Ch.2.1. Cat.-II (4))
9. ACON (Refer to Ch.2.6. Cat.-II (11))
10. INTELUX
    M/s Intelux Electronics P.L. Unit No 2, Electronics Co.Op. Estate Pune - Satara Road, Pune - 411009
11. OCLEG
    M/s. OCLEG CONTROLS, 93-94, Amar Estate, B/h Lubi Elect., Memco, Naroda Road, Ahmedabad
12. Pulse/Nano (Refer to Ch.2.6. Cat.-I (1))

CATEGORY - III

1. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
2. GRE (Refer to Ch.2.4. Cat.-II (2))
3. PIERLITE (Refer to Ch.2.6. Cat.-II (4))
4. PHILIPS (Refer to Ch.1.1. (C) Cat.-III (3))
5. CROMPTON (Refer to Ch.2.1. Cat.-III (4))
6. WIPRO (Refer to Ch.2.1. Cat.-III (7))
7. HALONIX (Refer to Ch.2.1. Cat.-III (5))
8. SHAH (Refer to Ch.2.6. Cat.-II (15))
9. HPL (Refer to Ch.2.1. Cat.-III (6))
10. FIXOLITE (Refer to Ch.2.6. Cat.-III (3))
11. C&S GEWISS (Refer to Ch.1.1. (C) Cat.-III (8))
12. SHAKTI (Refer to Ch.2.3. Cat.-III (9))

CHAPTER III

SWITCHGEARS & DISTRIBUTION BOARDS

3.1 CAST IRON CLAD SWITCHES WITH REWIREBLE FUSE

CATEGORY - I

ANY ISI MARKED WHICH IS APPROVED BY DEPARTMENT

CATEGORY - II

1. TRISHUL
   M/s Aum Electrical Industries, 1014, GIDC, Waghodia - 391760 Gujarat
2. MODI
   M/S MODI INDUSTRIES, 61, Mahaveer Estate, Nr.Anupam Cinema, Khokhara, Ahmedabad-380008
3. NEW / NILANG
   M/s Nilang Engineerign Works, Plot No. 156/2, A-31 Kailashnagar Estate, Opp. New Tele. Exchange,F Road, G.I.D.C, Vatva, Ahmedabad - 382445
4. PEW
   M/s Patel Engineering Works, 23, Vrundavandham, Society, Opp. P.d. Pandya College,Nr. Smruti Mandir, Ghodasar, Ahmedabad
5. SUPER
   M/S SUPER SWITCHGEARS, SHED - C,5/6, GIDC VITTHAL UDHYOG NAGAR,V.VNAGAR, - 388121
6. AEW
   M/s. Ambica Engineering Works, L-61, G.I.D.C. Estate, Nr. Water Tank, Odhav, Ahmedabad - 382415

CATEGORY - III

1. KEW
   M/s KEW FUSEGEAR PVT. LTD C 1 B/338/38, G.I.D.C. Estate, Makarpura, Vadodara - 390010
2. STENLY

3.2 METAL CLAD SWITCHES WITH REWIREBLE FUSE (63A - 100 A) APPROVED

1. ACTION / ADHUNIK (Refer to 2.7 Approved (1))

CATEGORY - I

1. REIKO
   M/S R.L.Electrical Industries, 8, Sri Ram Marg, Opp. Central Bank, Moujpur Road, Shahdara, Delhi-110053 (INDIA)

CATEGORY - II

1. KEW (Refer to Ch.3.1. Cat.-III (1))
2. TRISHUL (Refer to Ch.2.12. (3.1) Cat.-II (1))
3. MODI (Refer to Ch.2.12.(3.1) Cat.-II (2))
4. PEW (Refer to Ch.2.12. (3.1) Cat.-II (4))
5. SUPER (Refer to Ch.2.12. (3.1) Cat.-II (5))
6. NEW / NILANG (Refer to Ch.2.12. Cat.-II (3))
7. BENTEC
   M/s Bentec Electrical & Electronics P.L. No 7, Maharaja Estate, B/4, Bhagyoday Hotel, Sarkhej - SanND Highway, Sarkhej - Ahmedabad - 382210
8. ACTION (Refer to 2.7 Approved (1))

CATEGORY - III

1. HAVELLS (Refer to Ch.1.1. (A) Cat.-III (1))
2. INDOASIAN (Refer to Ch.1.1. (C) Cat.-II (8))
3. STANDARD (Refer to Ch.2.4. Cat.-II (5))
4. L&T
   M/s L & T House, Ballord Estate, P.O. Box No. 278 Mumbai-01.
5. CROMPTON (Refer to Ch.2.1. Cat.-III (4))
6. C&S (Refer to Ch.1.1. (C) Cat.-III (8))
7. GUTS
   M/s. GUTS CIRCUIT BREAKERS PVT LTD., Manas Anand Bldg No.1, Plot No 804,Dongiri Pada, Godbunder Road, Thane West - 400601
8. HPL (Refer to Ch.2.1. Cat.-III (6))

3.3 METAL CLAD SWITCHES WITH HRC FUSE

CATEGORY - II

1. KEW (Refer to Ch.3.1. Cat.-III (1))
2. PIERLITE [ELECON] (Refer to Ch.2.6. Cat.-II (4))
3. PEW (Refer to Ch.2.12.(3.1) Cat.-II (4))
4. SUPER (Refer to Ch.2.12.(3.1) Cat.-II (5))
5. CROMPTON (Refer to Ch.2.1. Cat.-III (3))
7. NEW / NILANG (Refer to Ch.2.12.(3.1) Cat.-II (3))
8. ELECTRO POWER
   M/s. Electro Power, B-22, Jay Estate, Opp. Keval weigh bridge Rakhial , Ahmedabad - 380023

CATEGORY - III

1. HAVELLS (Refer to Ch.1.1. (A) Cat.-III (1))
2. INDOASIAN (Refer to Ch.1.1. (C) Cat.-II (8))
3. STANDARD (Refer to Ch.2.4. Cat.-II (5))
4. C&S GEWISS (Refer to Ch.1.1. (C) Cat.-III (8))
5. L&T (Refer to Ch.3.2. Cat.-III (4))
6. Siemens
   M/s. Siemens Ltd L.V. Control & Distribution Products Thane Belapur Road, Thane - 601
7. GE. (Refer to Ch.2.1. Cat.-II (2))
8. GUTS (Refer to Ch.3.2. Cat.-III (7))
9. HPL (Refer to Ch.2.1. Cat.-III (6))

3.4 MOULDED CASE CIRCUIT BREAKERS

CATEGORY - I

ANY ISI MARKED WHICH IS APPROVED BY DEPARTMENT

1. L.S. APPROVED
2. ACTION / ADHUNIK (Refer to Ch.2.7 Approved (1))

CATEGORY - II

1. BENTEC (Refer to Ch.3.1. Cat.-II (7))
2. CROMPTON (Refer to Ch.2.1. Cat.-III (3))

CATEGORY - III

1. HAVELLS (Refer to Ch.1.1. (C) Cat.-III (1))
2. STANDARD (Refer to Ch.2.4. Cat.-II (5))
3. BCH
   M/s. BCH Electric Limited 93, City Centre, Nr. Swastik Char Rasta, C.G. Road, Ahmedabad - 380 009
4. C&S GEWISS (Refer to Ch.1.1. (C) Cat.-III (8))
5. INDOASIAN (Refer to Ch.1.1. (C) Cat.-II (8))
6. L & T (Refer to Ch.3.2. Cat.-III (4))
7. SIEMENS (Refer to Ch.3.3. Cat.-III (6))
8. GE. (Refer to Ch.2.1. Cat.-II (2))
9. GUTS (Refer to Ch.3.2. Cat.-III (7))
10. HPL (Refer to Ch.2.6. Cat.-III (3))

3.5 AIR CIRCUIT BREAKERS

APPROVED

ANY ISI MARKED WHICH IS APPROVED BY DEPARTMENT

1. BIECCO
   M/s. Biecco Lawarie Limited, 95, maker tower "F", 9th Floor, Cuffee Parade, Mumbai - 400005
2. HPL (Refer to Ch.2.1. Cat.-III (6))
3. L S

CATEGORY - III

1. C&S (Refer to Ch.1.1. (C) Cat.-III (8))
2. INDOASIAN (Refer to Ch.1.1. (C) Cat.-II (8))
3. G.E. (Refer to Ch.2.1. Cat.-II (2))

4. CROMPTON (Refer to Ch.2.1. Cat.-III (3))
5. L & T (Refer to Ch.3.2. Cat.-III (4))
6. Siemens (Refer to Ch.3.3. Cat.-II (6))
7. HAVELLS (Refer to Ch.1.1. (C) Cat.-III (1))
8. HPL (Refer to Ch.2.6. Cat.-III (2))

3.6 CHANGE OVER SWITCHES

APPROVED

1. ACTION / ADHUNIK (Refer to 2.7 Approved (1))

CATEGORY - I

1. MODI (Refer to Ch.2.12. Cat.-II (2))
2. REIKO (Refer to Ch.3.2. Cat.-I (1))

CATEGORY - II

1. PEW (Refer to Ch.2.12.(3.1) Cat.-II (4))
2. KEW (Refer to Ch.3.1. Cat.-III (1))
3. BENTEC (Refer to Ch.3.1. Cat.-II (7))
4. NEW / NILANG (Refer to Ch.2.12.(3.1) Cat.-II (3))
5. SUPER (Refer to Ch.2.12.(3.1) Cat.-II (5))
6. ANCHOR (Refer to Ch.1.1. (B) Cat.-III (1))
7. ELECTRO POWER (Refer to Ch.3.3. Cat.-II (6))
8. SIGMA
   M/s. MCB Electronic Controles, C-176, Mayapuri Industrial Area, Phase-II, New Delhi-110064.
9. AEW (Refer to Ch.3.1. Cat.-II (6))

CATEGORY - III

1. HAVELLS (Refer to Ch.1.1. (C) Cat.-III (1))
2. STANDARD (Refer to Ch.2.4. Cat.-II (5))
3. C&S GEWISS (Refer to Ch.1.1. (C) Cat.-II (12))
4. INDOASIAN (Refer to Ch.1.1. (C) Cat.-II (8))
5. L & T (Refer to Ch.3.2. Cat.-III (4))
6. Siemens (Refer to Ch.3.3. Cat.-II (6))
7. Crompton (Refer to Ch.2.1. Cat.-III (3))
8. G.E. (Refer to Ch.2.1. Cat.-II (2))
9. GUTS (Refer to Ch.3.2. Cat.-III (7))
10. HPL (Refer to Ch.2.1. Cat.-III (2))
11. PIERLITE - ELCON (Refer to Ch.2.6. Cat.-II (4))

3.7 MCB & MCB DISTRIBUTION BOX APPROVED

1. TOYAMA (Refer to Ch.1.1. (A) Cat.-III (1))
2. MILLION & MILLTEC (Refer to Ch.1.1. (A) Cat.-I (3))
3. BALKAM
   M/s Balkam India Ltd., B-33, Old Vishnu Garden, New Delhi - 110 018
4. ESCO
   M/S ELECTRO SPARES & Co. 1894/A/1 Inside Pade Pole Gandhi Road, Ahmedabad - 380 001
5. SMPL
   M/s SARD METALS P.L. Plot No.45, Sector No.23, Sohna Road, Faridabad - 121005
6. ELLICO
   M/S General Electronics & Controls, C/71, G.I.D.C. Odhav, Ambicanagar Road, Ahmedabad – 382415.
7. ACTION (Refer to 2.7 Approved (1))
8. MAXCELPLAST (Refer to 1.2 (14))

CATEGORY - I

1. VIMAL (Ref. to Ch. 1.1(A) Cat.-1 (5))
2. S.G
3. VINAYAK

CATEGORY - II

1. GELCO (Refer to Ch.1.1. (B) Cat.-III (6))
2. GRE (Refer to Ch.2.4. Cat.-II (2))
3. RANI (Refer to Ch.1. (C). (4))
4. KEW (Refer to Ch.3.1. Cat.-II (1))
5. AECO-MEFA
   M/s Punjab Switchgears P.L. B-30, Phase - V Focal Point, Dhandari Kalan, Ludhiana - 141010
6. NEW / NILANG (Refer to Ch.2.12.(3.1) Cat.-II (3))
7. VINAY (Refer to Ch.1.1. (A) Cat.-II (1))
8. LEADER (Refer to Ch.1.1 (C) Cat.-II (11))
9. SUPER (Refer to Ch.2.12.(3.1) Cat.-II (5))
10. ANCHOR (Refer to Ch.1.1. (B)Cat.-III (1))
11. ELECON-CLIPSAL
    M/s GERARD ELECTRIC INDIA PVT.LTD. Rakhial Road, Ahmedabad -380 023
12. OCLEG (Refer to Ch.2.12. Cat.-II (11))
13. BENTEC (Refer to Ch.3.1. Cat.-II (7))
14. SIGMA (Refer to Ch.3.6. Cat.-II (6))

CATEGORY - III

1. HAVELLS (Refer to Ch.1.1. (C) Cat.-III (1))
2. STANDARD (Refer to Ch.2.4. Cat.-II (5))
3. C&S (Refer to Ch.1.1. (C) Cat.-II (12))
4. INDOASIAN (Refer to Ch.1.1. (C) Cat.-II (8))
5. ABB (Refer to Ch.1.1 (C) Cat.-III (5))
6. L&T (Refer to Ch.3.2. Cat.-III (4))
7. GUTS (Refer to Ch.3.2. Cat.-III (7))
8. G.E (Refer to Ch.2.1. Cat.-II (2))
9. HPL (Refer to Ch.2.1. Cat.-III (6))
10. NANO,
    M/s Ajay Electrical Industries, B-257, naraina ind. area, phase – I, New Delhi
11. MDS
12. PIERLITE SAFETY (Refer to Ch.2.6. Cat.-II (4))

3.8 ELCB & RCCB

APPROVED

1. ACTION / ADHUNIK (Refer to 2.7 Approved (1))

CATEGORY - I

1. PULSE CONTROL (Refer to Ch.2.6. Cat.-I (1))
2. MILLION & MILLTEC (Refer to Ch.1.1. (A) Cat.-I (3))
3. ELLICO (Refer to Ch.3.7. Approved (6))
4. S.G.

CATEGORY - II

1. GELCO (Refer to Ch.1.1. (B) Cat.-III (6))
2. GRE (Refer to Ch.2.4. Cat.-II (2))
3. RANI (Refer to Ch.1. (C) (4))
4. BENTEC (Refer to Ch.3.1. Cat.-II (7))
5. AECO-MEFA (Refer to Ch.3.7. Cat.-II (5))
6. ANCHOR (Refer to Ch.1.1. (B)Cat.-III (1))
7. SUPER (Refer to Ch.2.12.(3.1) Cat.-II (5))
8. ELECON-CLIPSAL (Refer to Ch.3.7. Cat.-II (11))
9. OCLEG (Refer to Ch.2.12. Cat.-II (11))
10. Pulse / Nano (Refer to Ch.2.6. Cat.-I (1))
11. SIGMA (Refer to Ch.3.6. Cat.-II (6))

CATEGORY - III

1. GUTS (Refer to Ch.3.2. Cat.-III (7))
2. STANDARD (Refer to Ch.2.4. Cat.-II (5))
3. C & S (Refer to Ch.1.1. (C) Cat.-III (8))
4. INDOASIAN (Refer to Ch.1.1. (C) Cat.-II (8))
5. ABB (Refer to Ch.1.1. (C) Cat.-III (5))
6. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
7. L&T (Refer to Ch.3.2. Cat.-III (4))
8. HPL (Refer to Ch.2.1. Cat.-III (6))
9. NANO (Refer to Ch.3.7. Cat.-II (10))
10. PIERLITE (Refer to Ch.2.6. Cat.-II (4))
11. MDS

3.9 TIME SWITCHES

1. GELCO (Refer to Ch.1.1. (B) Cat.-III (6))
2. L&T (Refer to Ch.3.2. Cat.-III (4))
3. OCLEG (Refer to Ch.2.12. Cat.-II (11))
4. INDOASIAN (Refer to Ch.1.1. (C) Cat.-II (8))
5. MDS
6. ELLICO

3.10 ENERGY METER

9 NANO Approved (Refer to Ch.3.7. Cat.-III (10))

CATEGORY - I

1. NIPPEN
   M/s NIPPEN ELECTRICAL INSTRUMENTS CO. 12-A, Joy Engg. Compound, Marol Maroshi Road, Andheri (E), Mumbai - 59
2. HPL (Refer to Ch.2.1. Cat.-III (6))
3. L&T (Refer to Ch.3.2. Cat.-III (4))
4. G.E (Refer to Ch.2.1. Cat.-II (2))
5. TRINITY
   119, Trinity Co. Op. Hsg. Soc. 1st Floor, C.H. Street Bhobtalao, Mumbai- 400002
6. NANO, (Refer to Ch.3.7. Cat.-III (10))
7. GELCO (Refer to Ch.1.1. (B) Cat.-III (6))

CATEGORY - II

1. BENTEC (Refer to Ch.3.1. Cat.-II (7))
2. ANCHOR (Refer to Ch.1.1. (B) -Cat.-III(1))

3. HPL (Refer to Ch.2.6.Cat.-III (2))

3.11 BUSBAR CHAMBER

CATEGORY - I

1. PEW - APPROVED (Refer to Ch.3.1. Cat.-II (4))
2. REIKO - (Refer to Ch.3.2. Cat.-I (1))

CATEGORY - II

1. NEW / NILANG (Refer to Ch.2.12.(3.1) Cat.-II (3))
2. AEW

CHAPTER - IV

CABLES & WIRES

4.1 ALLUMINIUM & COPPER XLPE CABLES(ALL Type)

1. UPTO 35 SQ.MM ANY ISI MARKED WHICH IS APPROVED BY DEPARTMENT

1. L & T
2. ALLCAB
   M/s. ALLWIN INDUSTIRES, Serve No. 251, Plot No.7, B/h. Devsaon Ceramic, Shapar - Veraval Dist. Rajkot
3. GELCO (Refer to Ch.1.1. (B) Cat.-III (6))
4. AVOCAB
   M/s Chandresh Cables Ltd. 1108, Village Chhatral, Ta. Kalol Dist. Gandhinagar, North Gujarat
5. KUNTH CAB
   M/s ORBIT POWER & CONTROL CABLES (I) 56 A, Dilshad Garden Industries Area, Shahdara, Delhi - 110095
6. JEELEX
   46/02, New Ahmedabad Industrial Estate, Nova Petrol Chem, Moraiya, SAnand, Ahmedabad
7. WINFLEX & WINCAB
   K.P.Industires, 53,54, Krishna Estate, Panna Estate Road, B/h. BOC Gases, Nr. Soni's Chal Rakhial Ahmedabad - 380023
8. VARSHA
   M/s VARSHA CABLES PVT LTD. Plot No.65, A-2, Hootagalli Industiral Area, DIC Layout, Mysore - 570018
9. KATARIA
   M/s. KATARIA INDUSTRIES PVT LTD
   Off-34-44, Industrial Area, Ratlam - 457001, M.P. [INDIA]
10. ZENIUM CABLES
    M/s ZENIUM CABLES LTD 118, GAurav Garden, Opp. Bharat Petrol Pump, Mira Bhayander Road, Mira Road, Mumba- 401107
11. BONTON
    M/s Bonton Cables (INDIA) P.L. A-114-115, RICO Industrial Area, Phase - I, Bhiwadi, Rajasthan
12. HAVELLS (Refer to Ch.1.1. (C) Cat.-III (1))
13. NIKI
    M/s NIKI Cables Industries, E/9 B Panchratna Appt. Opp. Sunview Tower, Memnagar, Ahmedabad-52
14. LEADER (Refer to Ch.1 (C) Cat.-II (10))
15. FINOLEX
    M/s Finolex Cables India 108, Mahakant Building, Opp. V.S. Hospital, Ashram Road, Ahmedabad - 380 006
16. SHREEJI
    Cali Plast Processor, 47, Narayan Estate, Near Raipur Mills, Saraspur, Ahmedabad - 380 018.
17. SONA GOLD
    Cali Plast Processor, 47, Narayan Estate, Near Raipur Mills, Saraspur, Ahmedabad - 380 018.
18. HITEX PLUS
    M/s. Jay Cable Industries, Plot No. 80, Tribhuvan Industrial Estate, Opp. Road No. 11, Kathwada GIDC, Kathwada, Ahmedabad - 382430.
19. KAMALEX
    M/s. Bhumi Cables & Wires Pvt. Ltd. Plot No. D-101/102, Road-C, Lodhika G.I.D.C., (Metoda) Kalaward Road, Rajkot.
20. CABCOM
    M/s. CabCom India, 304, 3rd Floor, Aggarwal Citi Mall (Opp. M2K Pitam Pura Multiplex), Road No. 44, Pitampura, Delhi - 110034
21. DICAB
    M/S DIMOND POWER INFRA LTD.
    PHASE II, VILLAGE VADALA, TA.SAVLI, VADODARA
22. JAINFLEX
    M/s. Jainflex Cables P.L. , A-2/1, Sabarmati Industiral Society, Sabarmati, Ahmedabad - 380005
23. KEI
    M/s KEI INDUSTRIES LIMITED 803, Siddharth Complex, Nr. Hotel Express, R.C.Dutt Road, Baroda- 390007
24. MECAB
    M/s MECAB Cables P.L. 635/A, Phase IV, GIDC, VATVA, Ahmedabad - 382445
25. LOOKMAN
    M/S ODIAN INDUSTRIES, Opp. Ravi Vidhyalaya, Nr. Gandhi Society, Jamnagar Road, Madhapar, Rajkot - 360 006
26. PRIMECAB
    M/s. Ravin Cables Limtied, 302, Akruti Trade Centre, 3rd Floor, Road No. 7, MIDC., Marol Andheri (E), Mumbai-400 093.
27. RALLISION
    M/s RALLISON ELECTRICAL P.L. 205, Shreyas Complex, Opp. Jain Derasar Navrangpura, Ahmedabad - 380009
28. BINTEX
    M/s Jay Industires , Bintex House, Bhavnagar Road, Nr. Rajmoti Ind. Rajkot
29. EKTA
    M/s Scot Innovation Wires & Cables P.L., 195/1,197/1, Jharmajri Baddi, Dist. Solan (M.P.)
30. TEREXEL
    M/s Teracom Limited , "Teracom House, B-84, Sector No 60, Noida - 201301 U.P. (India)
31. MITUSHI
    M/s Sight Sound Electronic (I) P.L.
    A-128, Wazirpur Industrial Area, Delhi-110052.
32. TERACAB INDIA
    M/S TERA CABLES & IND.P.L., VILLAGE - KALANA, PO. CHHARODI FARM, SANAND, AHMEDABAD
33. HI-FLEX
    M/S Helly Plast Industries, 17/18, Nirman Industries Estate, Fupadia. Opp. Samshan Gruh, A.K. Road, Surat-8.
34. BHARAT CAB
    M/S Vardhman Cables & Controls, Belgaum.
35. CORE CABLE
    M/S Core Cables Pvt. Ltd. 202, arpan Complex, Opp. Swaminarayan Mandir, Kalawad Road, Rajkot-360001.
36. RRKABEL
    M/S R R Kabel Limited, 305/A, Windsor Plaza, R.C. Dutta Road, Alkapuri, Vadodara-390007.
37. ADCAB
    M/S Atlas Cables & Accessories P.L. Plot No. D/2, Sector No. 12, Heavy Ind. Area, Gandhidham Gujarat.
38. POPULAR
    M/S Popular Industries, 12, Sudama Estate, B/h. Calico Nagar, Narol-sarkhej Road, Narol, Ahmedabad.

ALLUMINIUM & COPPER XLPE CABLES (ALL Type)

ABOVE 35 SQ.MM & UP TO 185 SQ.MM

1. ALLCAB (Refer to Ch.4.1. (2))
2. VARSHA (Refer to Ch.4.1. (8))
3. KUNTHCAB (Refer to Ch.4.1. (5))
4. MITUSHI (Refer to Ch.4.1. (31))
5. RALLISION (Refer to Ch.4.1. (27))
6. LOOKMAN (Refer to Ch.4.1. (25))
7. NIKI (Refer to Ch.4.1. (13))
8. KEI (Refer to Ch.4.1. (23))
9. FINOLEX (Refer to Ch.4.1. (15))
10. CABCOM (Refer to Ch.4.1. (20))
11. KAMALEX (Refer to Ch.4.1. (19))
12. MECAB (Refer to Ch.4.1. (24))
13. DICAB (Refer to Ch.4.1. (21))
14. HAVELLS (Refer to Ch.1.1. (C) Cat.-III (1))
15. BONTON (Refer to Ch.-4.1 (11))
16. SONAL GOLD (Refer to Ch.4.1. (17))
17. SHREEJI (Refer to Ch.4.1. (16))
18. WINFLEX (Refer to Ch.4 (7))
19. HI-FLEX (Refer to Ch.4.1. (33))
20. CORE CABLE (Refer to Ch.4.1. (35))
21. HITEX PLUS (Refer to Ch.4.1. (18))
22. JAINFLEX (Refer to Ch.4.1. (22))

23. PRIMCAB (Refer to Ch.4.1. (26))
24. TERACAB INDIA (Refer to Ch.4.1. (32))
25. L&T
26. AVOCAB (Refer to Ch.4.1 (4))
27. TEREXEL (Refer to Ch.4.1. (30))
28. BHARATCAB (Refer to Ch.4.1. (34))
29. ZENIUM CABLES (Refer to Ch.4.1 (10))
30. RRKABLE (Refer to Ch.4.1. (36))
31. WINFLEX & WINCAB (Refer to Ch.4.1. (7))
32. ADCAB (Refer to Ch.4.1. (37))
33. POPULAR (Refer to Ch.4.1. (38))

ALLUMINIUM & COPPER XLPE CABLES (ALL Type) ABOVE 185 SQ.MM

1. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
2. ALLCAB (Refer to Ch.4.1. (2))
3. KUNTHCAB (Refer to Ch.4.1. (5))
4. TEREXEL (Refer to Ch.4.1. (30))
5. TERACAB INDIA (Refer to Ch.4.1. (32))
7. AVOCAB (Refer to Ch.-4.1 (4))
8. GEMSCAB
   M/S GEMSAB IND. LTD. PREM SADAN - 11, RAJENDRA PLACE NEW DELHI - 110008
9. PRIMECAB
   M/s Ravin Cables Limited, 302, Akruti Trade Centre, 3rd Floor, Road No.7, MIDC, Marol Andheri (E), Mumbai - 400 093
10. PELEC
    43, Sudama Estate, B/h. Swastik Bansidhar Mills, Narol Cross Road, Ahmedabad - 382405
11. HITEX PLUS (Refer to Ch.4.1. (16))
12. POPULAR (Refer to Ch.4.1. (38))
13. LOOKMAN (Refer to Ch.4.1. (25))
14. KEI (Refer to Ch.4.1. (28))
15. RALLISON (Refer to Ch.4.1. (27))
16. CORE CABLE (Refer to Ch.4.1. (35))
17. POWER CAB
    M/s. SMRUTI CABLES PVT. LTD. Plot No 2, Block No 243, Nr. Ramdev Exports, Santej Vadsar Road, Ta. Kalo. Dist 7Gandhinagar - 382721
18. ZENIUM CABLES (Refer to Ch.-4 (10))
19. RRKABLE (Refer to Ch.4.1. (36))
20. ADCAB (Refer to Ch.4.1. (37))

FLEXIBLE WIRES & CABLES / INDUSTIRES WIRES / FRLS WIRES/ PVC WIRES / CO-AXIAL CABLE, SUBMERSIBLE CABLE / ZHFR CABLE ETC

ANY ISI MARKED WHICH IS APPROVED BY DEPARTMENT

1. ALLCAB (Refer to Ch.4.1.(2))
2. AVOCAB (Refer to Ch.4.1 (4))
3. HAVELLS (Refer to Ch.1.1. (C) Cat.-III (1))
4. KONARK
   M/s. Servo Cable Industries 90/5, Mandir Marg, Indl. Complex, Haiderpur, New Delhi-110052.
5. KUNTHCAB (Refer to Ch.4.1. (5))
6. BHARAT CAB (Refer to Ch.4 (3))
7. VINAY (Refer to Ch.1.1. (A) Cat.-II (1))
8. EKTA
   M/s Scot Innovation Wires & Cables P.L., 195/1,197/1, Jharmajri Baddi, Dist. Solan (M.P.)
9. TERA-CAB-INDIA (Refer to Ch.4.1 (4))
10. EcoTEK ZHFR
    M/s SHAKUN POLYMERS LIMITED , 501/502, IVORY TERRACE, R.C.DUTT ROAD, ALKAPURI, VADODARA - 390007
11. NIKI (Refer to Ch.4.1 (13))
12. JAINFLEX (Refer to Ch.4.1 (22))
13. BINTEX (Refer to Ch.4.1 (26))
14. DARSHAN PLUS
    M/S DARSHAN CABLE INDUSTIRES C/1 135/A, PHASE - I, VATVA GIDC ESTATE NR PUSHPAK ESTATE, AHMEDABAD
15. INDOASIAN (Refer to Ch.1.1. (C) Cat.-II (8))
16. LEADER (Refer to Ch.1.1. (C) Cat.-II (10))
17. GEMSCAB (Refer to Ch.-4.2 (3))
18. ACTION / ADHUNIK (Refer to 2.7 Approved (1))
19. ANCHOR (Refer to Ch.1.1. (B)Cat.-III (I))
20. BONTON (Refer to Ch.-4. (11))
21. POPULAR (Refer to Ch.-4. (38))
22. NEOCAB
    M/s R.S. Industires, Anand Industria Estate, Borsad Chokdi, Anand - 388001
23. CAPTON & Aromac
    M/s. MILAN INDUSTIRES, Plot No 12, Sarthi Complex, Opp. G.V.M.M., ODHAV, Ahmedabad
24. RUBICON
    M/s. RUBICON CABLES INDUSTIES, C-1/89/6, Nr. Pushpak Estate Cross Road, G.I.D.C. Phase - 1, VATVA, Ahmedabad - 382445
25 EON
    M/s. Eon Electric Limited
    B-88, Sector 83, Noida -201305, U.P., INDIA
26. VIMAL, (Refer to Ch.-1.1(A) Cat. - I (5))
27. HPL (Refer to Ch.2.1. Cat.-III (6))
28. NANO, (Refer to Ch.3.7. Cat.-II (14))
29. ZENIUM CABLES (Refer to Ch.-4 (10))
30. CORE CABLE (Refer to Ch.4.1 (35))
31. KAMALEX (Refer to Ch.4.1 (19))
32. CABCOM (Refer to Ch.4.1 (20))
33. MECAB (Refer to Ch.4.1 (24))
34. RALLISON (Refer to Ch.4.1 (27))
35. SHREEJI (Refer to Ch.4.1 (16))
36. SONA GOLD (Refer to Ch.4.1 (17))
47. HITEX PLUS (Refer to Ch.4.1 (18))
38. VARSHA (Refer to Ch.4.1 (8))
39. L & T
40. FINOLEX (Refer to Ch.4.1 (15))
41. RRKABLE (Refer to Ch.4.1. (36))
42. ADCAB (Refer to Ch.4.1. (37))
43. WINFLEX & WINCAB (Refer to Ch.4.1. (7))
44. JAINSON
    M/s. Jainson Cables India P.L. Surve No. 16, Plot No. 16A & B Ahmedabad Mehsana Highway Village Chandarda Post Ghumasan, Ta. Kadi, Dist. Mehdanad-382718
45. GELCO - SUBMERSIBLE CABLE (Refer to Ch.4.1. (3))

CHAPTER - V

FANS

5.1 CEILING FANS & TABLE FANS

1. ORPAT - APPROVED (Refer to Ch.1.1. (A) Cat.-III (2))
2. USHA
   M/S. USHA INTERNATIONAL LTD 1st Floor, Super Market, Nr. Natraj Cinema, Ashmram Road, Ahmedabad - 380 009
3. ANCHOR (Refer to Ch.1.1. (B)Cat.-III (1))
4. CROMPTON (Refer to Ch.2.1. Cat.-III (4))
5. BAJAJ (Refer to Ch.2.1. Cat.-II (3))
6. Philips (Refer to Ch.1.1. (C) Cat.-III (4))
7. KHAITAN
   M/s Khaitan Electricals , 101/102, Mahakant Complex, Opp. V.S.Hospital, Ashram Road, Ahmedabad - 380 006.
8 DECON
   M/s Decon Lighting , Y-43, Okhak Phase - II New Delhi-110023
9. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
10. ALMONDARD
11. CINNI
12. REMI
13. KEDIA
14. NOVA
15. GEC
16. ORIENT
17. INDO PLUS
    M/s.The Universal Appliances (India) Nalagarh Dist. Sona (H.P.)

ENERGY SAVING 50 WATT CEILING FAN

1. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
2. CROMPTON (Refer to Ch.2.1. Cat.-III (4))
3. BAJAJ (Refer to Ch.2.1. Cat.-II (3))
4. USHA (Refer to Ch.-5. (2))
5. ORIENT
6. SATYA
7. KELTRON

8. RIDER
9. OCLEG
10. ELLICO
11. PULSE

EXHAUST FANS, BRACKET FANS & PEDESTAL FANS

(A).CATEGORY - I

1. ANCHOR (Refer to Ch.1.1. (B)Cat.-III (1))
2. ORPAT (Refer to Ch.1.1. (A) Cat.-III (2))
3. ANSU
4. NOVA
5. EPC
6. REMI
7. KHAITAN
8. INDOPLUS (Refer to Ch.5.1. (17))

CATEGORY - II

1. USHA (Refer to Ch.5 (2))
2. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
3. CROMPTON (Refer to Ch.2.1. Cat.-III (4))
4. BAJAJ (Refer to Ch.2.1. Cat.-II (3))
5. ALMONARD
6. ORIENT
7. SATYA
8. G.E.C.

CHAPTER - VI

SMC PRESS MOULDED BOX FOR STREET LIGHTS

1. SINTEX - APPROVED
   M/S SINTEX INDUSTRIES LTD KALOL
   (NORTH GUJARAT) PIN - 382 721
2. EVEREST - APPROVED
   M/S EVEREST ELECTRICALS 133, PRINCESS STREET, GOPAL NIWAS,1ST FLOOR, ROOM NO 9/10/11, MUMBAI - 400002
3. ESCO - APPROVED (Refer to Ch.3.7. Approved (4))
4. NATIONAL
   M/s. R.M.Enterprise 203/B, Gurukul Tower, Jaywant Sawant Road, Dahisar [W] Mumbai - 400068
5. EPP
   M/s. EP Composites P.L. Plot No. 2646, Kranti Gate Main Road, GIDC Lodhika Ind. Estate, Kalawad Road, Metoda, Rajkot-360021.

AIRCONDITIONERS, WATER COOLERS APPROVED

1. DIAKIN
   M/s. Daikin Airconditioning India P.L. 12th Floor, Building No. 9, Tower A, DLF Phase III, Gurgaon-122022. Haryana.
2. MISHIBISHU ELECTRIC
   M/s. Mitsubishi Electric India P.L., Primate 303/A, 3rd Floor, Judges Bungalow Cross Road, Bodakedev, Ahmedabad.
3. ONIDA,
   MIRC Electronics, ONIDA House, G-1, MIDC
   Mahakali Caves Road, Andheri [E] Mumbai - 400093
4. OGENRAL
5. BLUE SATAR
6. PANOSONIC
7. VOLTAS
8. CARRIERS
9. AMTREX

SERVO CONTROLLED VOLTAGE STABILIZER& ELECTRONICS POWER CONDITIONERS

1. GRE (Refer to Ch.2.4. Cat.-II (2))
2. GELCO (Refer to Ch.1.1. (B) Cat.-III (6))
3. SUVIK
   M/S SUVIK ELECTRONICS P.L. SECTOR NO. 28, INDUSTRIAL ESTATE, GANDHINAGAR.
4. KEPREJ
   M/S KEPREJ ELECTRONICS, SECTOR NO. 28, INDUSTRIAL ESTATE, GANDHINAGAR.
5. SERVOTECH
   M/s. SERVOTECH POWER SYSTEM PVT LTD. D-212, Sector -2, DSIDC, Bawana Indl. Area, Delhi.
6. CONSUL
   CONSUL CONSOLIDATED PVT LTD 4/329A, Old Mahabalipuram Road,Chennai - 600041
7. Pulse / Nano (Refer to Ch.2.6 Cat.-I (1))

CAPACITOR

1. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
2. MATRIX
   M/s Matrix Control & Engineering P.L., E-725, DSIDC Industrial Complex, Narela, Delhi-110040
3. PMX
   M/s. Power Matrix Solution P.L. 4018 & 4019, Bhandup Ind. Estate, Pannalal Compound, Off. LBS Road, Bhandup [W], Mumbai
4. JILCO (Refer to Ch.2.1. Cat.-II (6))
5. UNIVERSAL
   M/s. Care Enterprise FF-9, Shalimar Complex, Mahalaxmi Five Road, Paldi, Ahmedabad-380007.

ON LINE UPS

1. GRE (Refer to Ch.2.4. Cat.-II (2))
2. SUVIK (Refer to Ch.-6 (3))
3. KEPREJ (Refer to Ch.-6 (4))
4. OCLEG (Refer to Ch.2.12. Cat.-II (11))
5. CONSUL (Refer to Ch.-6 (6))
6. SERVOTECH (Refer to Ch.-6 (5))
7. NUMERICUPS
   M/s. Numeric Power System Limited umeric House No. 5 Sir P.Si Sivasamy Salai, Mylapore, Chennai-600004. India
8. KELTRON

WATER HEATERS

CATEGORY - I

1. BAJAJ (Refer to Ch.2.1. Cat.-II (3))
2. USHA (Refer to Ch.-5 (2))
3. INDO PLUS (Refer to Ch.5.1. (17))

CATEGORY - II

1. JILCO 2. SPHEREHOT 3. RECOLD 4. VENUS

MOTOR PUMPS

MOTOR PUMP STARTERS & STARTER ACCESSORIES

APPROVED

1. GELCO (Refer to Ch.1.1. (B) Cat.-III (5))
2. OCLEC
3. PULSE
4. ELLICO
5. L.S.

CATEGORY - II

1. CROMPTON (Refer to Ch.2.3. Cat.-III (4))
2. JYOTI
3. AEW
4. PECO
   M/s. Peco Industries Estate, Nr. Gota Flyover, Gota Road, Ahmedabad-382481

CATEGORY - III

1. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
2. BCH (Refer to Ch.3.4. Cat.-III (3))
3. C&S GEWISS (Refer to Ch.1.1. (C) Cat.-III (8))
4. L & T (Refer to Ch.3.2. Cat.-III (4))
5. Siemens (Refer to Ch.3.3. Cat.-II (6))
6. ALSTHOM
7. SUECO

POWER AND CONTROL PANEL / PANEL ACCESSORIES

1. C&S GEWISS (Refer to Ch.1.1. (C) Cat.-III (8))
2. GELCO (Refer to Ch.1.1. (B) Cat.-II (9))
3. TRINITY (Refer to Ch.3.10. Cat.-I (5))
4. NIPPEN (Refer to Ch.3.10. Cat.-I (1))
5. STANDARD (Refer to Ch.2.4. Cat.-II (5))
6. L&T (Refer to Ch.3.2. Cat.-III (4))
7. OCLEG (Refer to Ch.2.12. Cat.-II (11)
8. ELICO - APPROVED
9. L.S. - APPROVED
10. PRATHAM - APPROVED
11. SAHIL - APPROVED
12. MEGAWIN - APPROVED
13. ACTION / ADHUNIK (Refer to Ch. -2.7 Approved (1))
14. SKY
    M/s. Sky Control System 160, Vikas Estate, Opp. Anil Starch Mill

Road, Nr. Vima Yojna Hospital Bapunagar, Ahmedabad-380025.

SINGLE PHASE MONO BLOCK PUMPS

CATEGORY - II

1. AMIT (Refer to Ch.1.2. (13))
2. LUBI
   B/h Lubi Elect., Memco, Naroda Road, Ahmedabad
3. UNEEL
   M/s UNNATI INDUSTIRAL COPORATION , D-61, Diamond Park, G.I.D.C. Nr. Nana Chiloda, N.H.No.8, Naroda - Ahmedabad - 382330
4. PRIMA
   M/s. Prima Pumps P.L. 34, G.V.M. Au. Vasahat, Odhav, Ahmedabad - 382410
5. SABAR
   M/s. SABAR PUMP PVT LTD, 3704/A, G.I.D.C. Estate, Phave - IV, B/h. New Nirma Chemicals, Vatva Ahmedabad - 382445

CATEGORY III

1. CROMPTON (Refer to Ch.2.1. Cat.-III (4))
2. SIEMENS (Refer to Ch.2.3. Cat.-III (6))
3. KIRLOSKAR

OPEN WELL TYPE HORIZONTAL MONO BLOCK PUMPS

CATEGORY - I

1. PRIME
2. SABAR

CATEGORY - II

1. UNEEL (Refer to Ch.9 (3))
2. AMRUT
   M/s Amrit Engineering P.L. , P.O. No. 4141, 2nd Floor, Motilal Centre, Nr. Dinesh Hall, Ashram Road, Ahmedabad - 3800009
3. AMIT (Refer to Ch.1.2. (13))
4. LUBI (Refer to Ch.9. (2))
5. CROMPTON (Refer to Ch.2.3. Cat.-III (4))
6. DUKE
7. PRIMA
8. KIRLOSKAR

STARTER PANELS [APPROVED]

1. GELCO (Refer to Ch.1.1. (B) Cat.-III (6))
2. SAHIL
   M/s SAHIL ELECTRO SYSTEM , 163, Vikas Industrial Estate, Opp. Anil Starch Mills, Nr. Vimayojna Hospital, Nutan Mills Road, Ahmedabad - 380025
3. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
4. OCLEG (Refer to Ch.2.12. Cat.-II (11))
5. L& T (Refer to Ch.3.2. Cat.-III (4))
6. SAMUDRA
   M/s Samudra Power Products , Plot No. 32, Road No. 5/A, G.I.D.C. Kathawada, Ahmedabad - 380415
7. SUECO
   M/s. SHREE UMIYA ELECTRICAL CO. 304, SHAILLY HOUSE, HARIHAR PARK SOCIETY Nr. OLD HIGH COURT, RAILWAY UNDERBRIDGE, NAVRANGPURA, AHMEDABAD - 380009
8. ELLICO

CATEGORY - III

1. C&S GEWISS (Refer to Ch.1.1. (C) Cat.-III (8))
2. BCH (Refer to Ch.3.4. Cat.-III (3))

SUBMERSIBLE PUMPS

CATEGORY - I

1. AROMA
   M/s ARIHANT PUMPS PVT. LTD. , Near Ladbi Nala, Deesa Highway, Palanpur - 385 001
2. PLUGA - APPROVED
   M/S Shroffs Engineering Limited , 850/2, G.I.D.C. Estate Makarpura, Vadodara - 390 010
3. JEE-APPROVED
   M/s. Jee Pumps (Guj.) P.L. Plot No L1 & 2, G.I.D.C. Nr. Water Tank, Odhav - Ahmedabad - 382415
4. FALCON - APPROVED
   M/s. Falcon Submersible P.L. Survey No 39/4, Vavdi Industiral area, Gondal Road, Rajkot - 360004

CATEGORY - II

1. CROMPTON (Refer to Ch.2.1. Cat.-III (4))
2. DUKE
   M/s. Duke Plasto Technique P.L. N.H. 14, Deesa Highway Opp. Hotel Green Wood, Badarpura, Palanpur - 385511
3. SABAR (Refer to Ch.9. (5))
4. JASCO
   M/s. JASCO PUMPS PVT LTD 47, Phase - I, G.I.D.C., Mangal Estate, Naroda, Ahmedabad - 382330

CATEGORY - III

1. UNEEL (Refer to Ch.9 (3))
2. AMRUT (Refer to Ch.9 (2))
3. LUBI. (Refer to Ch.9 (2))
4. DUKE (Refer to Ch.9 Cat.-II (2))
5. KSB
6. KIRLOSKAR

CHAPTER - X

SUBSTATION EQUIPMENTS

APPROVED

1. BIECCO (Refer to Ch.3.5. (Approved)-I)
2. HAVELL'S (Refer to Ch.1.1. (C) Cat.-III (1))
3. VOLTAMP
4. MATRIX
5. MEGHAWIN
6. PMX

CATEGORY - II

1. UNIVERSAL
   M/s Universal Power Xmer Ltd. 26/A, 2nd Phase, Peenya Industrial Area, Bangalore - 560058
2. SKP

CATEGORY - III

1. CROMPTON (Refer to Ch.2.3. Cat.-III (4))
2. L& T (Refer to Ch.3.2. Cat.-III (4))
3. KIRLOSKAR
4. ALSTOM
5. C&S EFACCCE

TRANSFORMER

TRANSFORMER SHOULD COMPLY E.C.B.C. CODE CRITERIA

1. TRANSFORMER - APPROVED
   M/s. Danke Electricals Ltd, 778/780, G.I.D.C. Estate, Waghodia - 391760, Baroda - Gujarat

CATEGORY - I

1. POWERLITE
2. INSTA POWER
3. SHILCHAR
4. VARDHMAN ELECTRO-MECH

CATEGORY - II

1. UNIVERSAL
2. DICAB
3. KOKILA
   M/s. Kokila Electricals T.B. Hospital Road, Vijapur-382770 Dist. Mehsana
4. ARYA-ELECTRONICS (AE)
   Plot No. 198/1, GIDC-IV Sihor Ghanghali Road, B/h. Sitaram weight Bridge, Sihor Dist. Bhavnagar.
5. RAYCHEM RPG
   Raychem, RPG House, 463, Dr. Annie Basant Road, Worli, Mumbai-400039.

CATEGORY - III

1. VOLTAMP
2. POWERLITE
   M/s. Powerlite Electricals, Plot No 627, Nr. Gayatri Temple, Phase - 4, G.I.D.C. Estate, Naroda, Ahmeabad - 382330
3. CROMPTON
4. L & T
5. SIEMENS
6. G.E.
7. KILOASKAR
8. ALSTHOM
9. SKP

Note : Other products are supposed to be included, as per latest approval of Superintending Engineer, Electrical (R. & B.) Circle, Gandhinagar as on or before last date of submission of tender.

CHAPTER - 11 NEW ITEMS APPROVED

No.	Name of Company	Brand Name	Description of Make	Remarks
1	M/s Vijayshree Electromech (p) Ltd 103, vedant complex, 7 Kalpana Society, B/h. N.V.P.P.O off C.G. Road, Navrangpura, Ahmedabad - 009	WELLTECH	1. Swaged Steel Tubular pol / Stel Octagonal pole / Steel conical pole/ GRP / FRP Pole 2. SMC/DMC Junction box/G.I. Race way -Trunking/GRP Cable Tray/G.I. Cable Tray	Cat.II Approved
2	M/s Bajaj Electricals Limited Ahmedabad	BAJAJ	1. High Mast / Octagonal pole / GRP poles / Decorative Poles/ Conical G.I. Pole	Cat.III
3	M/s Jay Copper & Alloys P.L. Plot No 2219, Nr. Shah Alloys Ltd., Science City To Khatraj Road, Village - Santeh - 382721	ELECTRO-EARTH	1 Galvanizing Earthing [Chemical Earthing - 1/2/3 Mtr 2 Copper Earthing [Chemical Earthing - 1/2/3 Mtr	Approved Approved
4	M/s Prestolite Corporation (Refer. Ch.2.6 Cat.-III (3)	PRESOLITE	1 High Mast pole upto 30 Mtr.	Approved
5	M/s Surya Roshni Ltd Ahmedabad	SURYA	1 High Mast / Octagonal Pole	Cat. III
6	M/s. Kemrook India	KEMROK	1 FRP Lighting pole	Approved
7	M/s. Accurate Eng. LTd.	ACCURATE	1 High Mast / Tower	Approved
8	M/s. Sumip Composites Pvt.Ltd	SUMIP	1 FRP Light Pole / FRP Cable Tray / Trefoil Clamp / Luminaries / FRP Leader	Approved
9	M/s.Aster	ASTER	HIGH Mast Pole	Cat. II
10	M/s. Ammini Eng. System P.L.	AMMINI	Out Door Street Light	Approved
11	M/s GELCO ELECTRONICS P.L. (Refer. Ch.1.1 Cat.-III (B) (6))	GELCO	Motor control cubical panel , Electrical Starter for A.C. etc.	Approved
12	Transrail Lighting Ltd A-201/209, Boomerang Complex, Chandivali Farm Road, Andheri [E], Mumbai - 400072	TRANSRAIL	1 High mast Pole 2 Street Light Pole (Conical / Hexagonal / Octagonal / swaged pole)	Cat. III Cat III
13	M/s. Halonix (Refer. Ch.2.1 Cat.-III (4))	HALONIX	1 Land Scape & Garden Light / High Mast / All type luminers	III
14	M/s. Megawin	MEGAWIN	# United Sub-Station upto 12kw # Control relay panels custom built # SF 6 Ring main units upto 36 kv # Auto reclosers & capacitor switch upto 36 kv # Air insulated load break switchgear upto 36 kv # Metal porcelain clad VCB switchgear upto 36 kv	Approved
15	M/s. THRON LIGHTING C/o. 10, Parshwanath Aptt. Somnath Park Lane, Opp. Tele Exchange Sahibaug, Ahmedabad-380004.	THRON	Street Light / Landscape & Garden Light	III
16	M/s. Control & Switchgears Contractors Ltd. 9th Floor, HERITAGE, Nr. Guj. University, Ashram Road, Ahmedabad-380009.	C & S	# Indoor Air insulated Metal Clad Switchgear with VCB # Compact SF6 insulated Ring main units for Indoor & Outdoor installation	III
18	M/s. Keselec Schreder Pvt.LTd. 69 Friends Colony, West, New Delhi - 110065	SCHREDER	# Indoor & Outdoor Decorative Pole & Bracket # Premium Light Fixture # Furyol - 140 W compolis with dimmable electronics ballast # Contemporary / classic / Traditional City Lighting # Urban Lighting	III
19	M/s. RegentBeleuchtungs Korper AG Dornacherstrasse 390 P O Box 246 OH 4018 Basel Swizerland C/o Bharat Elect. Corporation, 3, Abhigam , Opp Dr. House, Nr. Parimal Rly. Crossing, Ahmedabad	REGENT	# Indirect / direct lighting / free standing up lighters # Compact recessed & surface mounted luminaries # Modular recessed & surface mounted luminaries # Wall - ceiling & pendent mounted luminaries # Row lighting system # Spot Lighting & track system #Luminaires with increased IP rating & special luminaries # Emergency Luminaries / Outdoor luminaries # Access-ories & light sources	III

No.	Name of Company	Brand Name	Description of Make	Remarks
20	M/s. Sylvania India Ltd ORG Towers, 2D Sector 126, Expressway, Noida [U.P.] - 201304	SYLVANIA	# Down lighter # Fluorescent Recessed # Florescent surface mounted/suspended # Spot Lights # Track # Ambient/Decorative # Pendants # Battens / Trunking system # High protection # High Bay / Low Bay # Amenity / Bollard # In Ground / wall lights # Flood light # Pole top	III
20	M/s. Ligman Lighting India. Pvt. Ltd. Plot No. 4th Floor, Gulmohar Plaza, Gulmohar park, ITI Road, Aundh Pune-411007.	LIGMA	# Architeural Outdoor Lighting	III
21	M/s. Philips India Ltd M/s. Philips Electronics India Ltd	PHILIPS	# Indoor Lighting # Public Lighting System # Sports Lighting # Urban Decorative Lighting # Landscape Lighting # Special Application Lighting # Lighting Control for Indoor & Outdoor Lighting system	III
22	M/s. ABB (Refer. Ch.1.1 (C) Cat.-III (4)	ABB	# Composed Substation # Ring Main unit	III
23	M/s WIPRO (Refer. Ch.2.1 (C) Cat.-III (5)	WIPRO	# High Mast Motorized & Not Motorized # Pole - Octagonal , Decorative, Swaged and All type of tubular pole	III
24	M/s. Aspire Composites, Survey No 172, Plot No 27, Opp. Reliance Petrol Pump, Madhapur-Anjar Highway Village Madhapur, Bhuj-Kutch	ASPIRE	FRP Industrial Lighting Products	Approved
25	M/s. REX POLYEXTRUSION LTD, Kumar Plaza, 1st Floor, 1077, North Shivajinagar, Opp. K.W.C. College, Sangli - 416416	REX	# DOUBLE WALL CORRUGATED PIPE # NON THREADABLE COMMUNICATION & ELECT. INST. CONDUIT PIPES	Approved
26	M/s DURA-LINE INDIA PVT LTD, Plot No. 24-25, Verna Electronics City Phase-IIA, Verna Salcete GOA-403722 (North Goa)	DURA-GUARD	# Conduit Systems for Electrical Installation & Communication Installation Non Threadable of size upto 200mm OD	Approved
27	M/s Trupati Plastomatice Pvt. Ltd F-543 Road, No 6 D VKI Area, Jaipur - 302013	GEMINI	# HDPE Corrugated Sheathing Ducts & HDPE Double Wall Corrugated Pipe (DWC)	Approved
28	M/s Aashcube Lightng P.L. (Refer. Ch.2.6 Cat.-I (7))	Aash Cube	# Gate / Bollard Light	Cat.I
29	M/s Havell's India Ltd, (Refer to Ch. 1.1 (C) Cat.-III (1))	HAVELL's	# Hume Free Electronics Regulator	Approved
30	M/s. GRE Electronics Pvt.Ltd. Plot No. 423, G.I.D.C.II, Dediyasan Mehsana-384002	GRE	# Hume Free Electronics Regulator	Approved
31	M/s GELCO ELECTRONICS PVT LTD (Refer to Ch. 1.1 (B) Cat.-III (6))	GELCO	# Hume Free Electronics Regulator	Approved
32	M/s.VALMONT STRUCTURES P.L. 909/910, FILIX LBS Marg, Bhandup (w) Mumbai-400078.	VALMONT	# High Mast, Octagonal Pole, Conical Pole, decorative Pole, Stadium Mast	Cat.III
33	M/s.MAXCEL PLAST 133, Shree Ram Ind. Estate, B/h. C.M.C. Anum Eng. Compound, Nr. Soni's Chawl Cross Road, ODHAV, Ahmedabad-382415.	MAXCEL PLAST	# YUVA Gang Box, Modular Box, Mudlar Plastic, Concealed Box, G.I. Metal Modular Box, Plastic Fan Box, Point Box, Polycarbonate Lamp Holder, Nice Holder Plate / Fan Plate, Pipe Fitings Accessories.	Approved
34	M/s.THE UNIVERSAL APPLIANCE (India) Nalagarh Dist.Sona (H.P.)	INDO PLUS	# Geyser ISI [Geyuser Metal 1,6,10,15,25,Ltr.] # [Geyser ABS 5 Star Rating-15, 25 ltr] [Geyser ABS [1,6,10, LTdr,50 Ltd. Powder Coated] # Immersion Heater ISI [1.5,2.0 KW] # Heat Convertor ISI [Super ISI, Super Dlx ISI, U Type (HOT AIR ISI)	Approved Approved Approved Approved
35	M/s PECO Industries, , (Refer to Ch. 9 Cat.-II (4))	PECO	# HRC Fuse & Fuse Link	

: Also Available at :

Gujarat Book Stores Private Limited

B-20, District Shopping Centre, Sector-21, Gandhinagar-382021. Ph. : 23221195

: Also Available at :

Gujarat Book Stores Private Limited
B-20, District Shopping Centre, Sector-21, Gandhinagar-382021. Ph. : 23221195