

**LIST OF APPROVED SUB-CONTRACTORS / VENDORS**

- 1.0 The following Sub-Contractors / Vendors are approved for carrying out the item of the Facilities indicated against each of them. Where more than one Sub-Contractor / Vendor is listed, the Contractor is free to choose between them, but it must notify the Employer of its choice well in advance time prior to appointing any selected Sub-Contractor / Vendor. In accordance with the Sub-Clause 19.1 of GCC, the Contractor is free to submit proposals for Sub-Contractors / Vendor for additional items from time to time. No Sub-Contractors / Vendors shall be placed with any such Sub-Contractors / Vendors for additional items until the Sub-Contractors / Vendors have been approved in writing by the Employer and their name have been added to this list of approved Sub-Contractors / Vendors.

**• ELECTRICAL**

| Sl.No.                  | Item Description  | Preferred Makes  |
|-------------------------|---|--|
| <b>1. HV EQUIPMENTS</b> |   |  |
| 1                       | 220 KV & 132 KV Power Transformers up to 160 MVA                                | BHEL, TELK, CGL, EMCO, AREVA, ABB, SIEMENS   |
| 2                       | 33 KV, 11KV, 6.6KV Oil filled / Dry type, distribution / Rectifier Transformers | CGL, AREVA, Transformers & Rectifiers Ltd, KEC, Intra Vidyut, Kanohar, VoltAmp, Bharat Bijlee, Andrew Yule, BHEL, EMCO, ABB, SIEMENS |
| 3                       | 33 KV, 11KV, 6.6KV Oil Filled Furnace Transformers                              | CGL, EMCO, AREVA, BHEL, ABB  |
| 4                       | 220 KV and 132 KV SF6 Circuit Breakers  | ABB, CGL, SIEMENS, AREVA   |
| 5                       | 33 KV, 22 KV, 11 KV, 6.6 KV Vacuum Circuit Breakers                             | SIEMENS, BHEL, CGL, Schneider, AREVA, ABB, Jyoti (Jyoti -upto 11 KV only)  |
| 6                       | 6.6 KV, 11 KV Vacuum Contactors   | BHEL, AREVA, SIEMENS, Andrew Yule, Jyoti, CGL  |
| 7                       | 220 KV and 132 KV Current Transformer (CT)                                      | ABB, TELK, BHEL, CGL, AREVA  |
| 8                       | 33 KV, 22 KV, 11 KV, 6.6 KV Current Transformer (CT)                            | Pragati, Intrans, Prayog, Intravidyut, Insutech Industries, ABB .  |

List of approved vendors

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| 9  | 220 KV and 132 KV Voltage Transformer (PT)                            | ABB, TELK, BHEL, CGL, AREVA  |
| 10 | 33 KV, 22 KV, 11 KV, 6.6 KV Voltage Transformer (PT)                  | ABB, Pragati, Prayog, Intravidyut, Jyoti   |
| 11 | 220 KV and 132 KV Capacitance Voltage Transformer (CVT)               | AREVA, ABB, CGL, BHEL  |
| 12 | 220 KV and 132 KV Lightning Arrestor (LA)                             | OBLUM, Elpro, AREVA, CGL   |
| 13 | 220 KV and 132 KV Isolators   | S&S Pondicherry, Elpro, WS-Insulators, ABB, AREVA, CGL   |
| 14 | 33 KV, 11KV, 6.6KV Isolator, Load Break Switch                        | A-Bond Strands, Drescher & Panicker, ABB, SIEMENS, CGL   |
| 15 | 11 KV Air-Break Switch  | Pactil & Panchkari, Kayal & Co.  |
| 16 | 220 KV and 132 KV Condenser Bushings                                  | BHEL, CGL, AREVA, TELK. The Transformer manufacturers may give their own / any other make with QAP.                  |
| 17 | 33 KV, 11KV and 6.6 KV Capacitors                                     | ABB, Unistar(Universal Cables), BHEL, Meher (Bangalore)  |
| 18 | 33 KV, 11 KV and 6.6 KV Surge Suppressors                             | OBLUM, Elpro, WS-Insulators, Toshiba, SIEMENS  |
| 19 | 33 KV, 22 KV, 11 KV, 6.6KV Cable Jointing Kits (Heat Shrinkable Type) | Raychem, CCI, 3M, M-Seal (M-Seal for 6.6 KV)   |
| 20 | Battery Chargers  | Chhabi Electricals, Standard, Hi-rect, Sherene Electro Control, Amara Raja   |
| 21 | Lead Acid Station Battery   | Exide, AMCO, Amara Raja  |
| 22 | Electronic Energy Meters (Trivector / KWH)                            | SEMS, L&T, SATEC, CONZERVE, Dukati, ABB, SIEMENS, AREVA, Schneider   |
| 23 | Protection and Auxiliary Relays                                       | ABB, SIEMENS, L&T, AREVA, Schneider  |
| 24 | Recorders (Chartless type)  | Chino, Yokogawa India Ltd, Okhura, Fuji, Eurotherm (Chessel), Tata Honeywell, Hioki, Fluke, ABB, Pyrotech (Udaipur). |
| 25 | Annunciators  | Minilec, SPA, Procon, Yashmun,   |

List of approved vendors

|                  |   |  |
|------------------|---|--|
|                  |   | Pyrotech (Udaipur)   |
| 26               | Panel /Indicating meters                        | IMP, AE, MECO, L&T, Motwani, Conzerve  |
| 27               | LT Air Circuit Breakers                         | L&T, SIEMENS, Schneider, ABB, GE Power Control   |
| 28               | EHT/HT Insulators                               |  |
|                  | 1.Porcelain insulator                           | WS-Insulators, Jayashree, BHEL, A-Bond Strand, S&S, AREVA, Oblum   |
|                  | 2. Epoxy insulator                              | A-Bond Strand, Power Cam Electrical Pvt. Ltd., Baroda Bushings, S & C Electric Co.(America), RISHO KOGYO CO. LTD (Japan)                   |
| 29               | HT HRC Fuses                                    | S&S, GE Power Control, Busmann, SIEMENS, ABB, Drescher Paniker   |
| 30               | HV / LV Bus Duct                                | Best & Crompton, ECC (Kolkatta), Star Drive (Chennai), Enpro (Chennai), Advance Power Control (Advance Power Control only for LV Bus Duct) |
| 2. LV Equipments |   |  |
| 31               | Moulded Case Circuit Breaker (MCCB)             | Schneider (CG & MG), L&T, Andrew Yule, ABB, SIEMENS, BCH(BIL), GE POWER CONTROL, MOELLER   |
| 32               | Motor Protection Circuit Breakers. (MPCB)       | Schneider (TELEMECANIQUE), L&T, ABB, SIEMENS, GE POWER CONTROL, MOELLER, Rockwell Automation   |
| 33               | Miniature Circuit Breaker. (MCB)                | SIEMENS, L&T, GE POWER, CONTROL, SCHNEIDER (PROTEC / MG), STANDARD, INDOASIAN, HAVELLS, MDS (LEGRAND), ABB                                 |
| 34               | Earth Leakage Circuit Breaker                   | GE POWER CONTROL, STANDARD, HAVELLS, ABB, SIEMENS, SCHNEIDER   |
| 35               | Switch, fuse Unit / Fuse Disconnecter           | GE POWER CONTROL, L&T, SIEMENS, BASANT PRAN & CO.  |
|                  | (Fuse Switch Unit), Air Break switch            | HAVELLS, STANDARD, INDOASIAN, CONTROL & SWITCH GEAR, ANCHOR  |
| 36               | HRC fuse for LT application                     | GE POWERCONTROL, L&T, SIEMENS, BHARAT LINDER, INDO ASIAN, HAVELLS, STANDARD, BUSSMAN, CONTROL & SWITCH GEAR, ABB                           |
| 37               | Power Contactor for Crane / Mill Duty Operation |  |

List of approved vendors

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|----|---|--|
|    | 1. Box Type (AC/DC)   | ABB, SIEMENS, SCHNEIDER (TELEMECANIQUE), L&T, MOELLER, GE POWER CONTROL, ROCKWELL AUTOMATION                               |
|    | 2. Vacuum Contactor   | SIEMENS, L&T, MOELLER, ABB, SCHNEIDER (TELEMECANIQUE)  |
|    | 3. AC/DC Power Contactor-Clapper Type/ Bar Mounted - Mill Duty / Crane Duty | BCH (BIL), BHEL, L&T, SCHNEIDER(TELEMECANIQUE), GE (USA), ABB, Lenoir Elec (France), Microelectronica Scientifica (Italy)  |
| 38 | Power contactor for General Purpose & Continuous Duty operation             | ABB, SIEMENS, SCHNEIDER, L&T, Rockwell Automation, Andrew Yule, SCHNEIDER (C.G.), BCH (BIL), MOELLER, CONTROL & SWITCHGEAR |
| 39 | Over Load Relays  |  |
|    | 1. Thermal (Bimetallic)   | BCH (BIL), L&T, SEIMENS, SCHNEIDER (TELEMECANIQUE), Andrew Yule, SCHNEIDER (C.G.), Rockwell Automation                     |
|    | 2. Electronic Over Load relays  | SIEMENS, L&T, ROCKWELL AUTOMATION, MOELLER, BCH, SCHNEIDER-SAMWHA  |
|    | 3. Electro magnetic Over Load relay   | BCH, KILBURN, BHEL, Schneider (Telemecanique)  |
| 40 | Aux.Contractors / Control Relays  | OEN, L&T, SCHNEIDER, ANDREW YULE, GE POWER CONTROL, BCH (BIL), EASUN REROLLE, JYOTI, Rockwell Automation.                  |
| 41 | Time Delay Relay  |  |
|    | 1. Electro Pneumatic  | BCH (BIL), SCHNEIDER (TELEMECANIQUE), BHEL, ESAUN REROLLE  |
|    | 2. Electronic Timer   | SELECTRON, SIEMENS, BCH (BIL), ALSTOM, L&T, ROCKWELL AUTOMATION, IFM, SCHNEIDER (TELEMECANIQUE)                            |
|    | 3. Time switches  | L&T, GE POWER CONTROL, EAPL, INDO ASIAN, Schneider (MG)  |
| 42 | Master Controller   | EPCC, INDUSTRIAL SYNDICATE, STROM KRAFT, SCHEIDER, (SQUARE D), SCHNEIDER (TELEMECANIQUE)                                   |
| 43 | Limit Switches  |  |
|    | 1. Crane & Heavy duty Application   | EPCC, SCHNEIDER, INDUSTRIAL SYNDICATE, STROM KRAFT, Jai Balaji   |
|    | 2. Micro & Other Actuating Type   | ESSEN DEINKI, L&T, BCH(BIL), SIEMENS, SCHNEIDER (TELEMECANIQUE), JAI BALIJI  |
| 44 | Resistance Boxes  | EPCC, RSI, KINGS, TALSON   |

List of approved vendors

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|--|---|---|
|  | (Fechral Edge Wound)                      |   |
| 45                                     | Electromagnetic DC Brake assembly         | EPCC, BCH (BIL), INDUSTRIAL SYNDICATE   |
| 3. Power Control and Electronics Items |   |   |
| 46                                     | Thyristor Converters                      |   |
|  | 1. General Purpose up to 1 KA             | BHEL, SIEMENS, SSD Drives, ABB, NELCO, ABIL, Converteam.  |
|  | 2. Critical application up to 1KA         | BHEL, Siemens, ABB.   |
|  | 3. 1 KA to 10 KA                          | BHEL, Siemens, ABB.   |
|  | 4. Main drives, more than 10 KA           | BHEL, Siemens, ABB.   |
| 47                                     | PLC                                       | Rockwell Automation, L&T(Quantam), Siemens, ABB, GE Fanuc, BCH, Schneider   |
| 48                                     | Soft starters (LT motor )                 | ABB, Rockwell Automation, BHEL, Schneider, N. N. Planner, Siemens, Innovative Technomics  |
| 49                                     | Soft starters (For HT Motors)             |   |
|  | 1. With Energy saving mode                | ABB, Rockwell Automation, BHEL, Siemens   |
|  | 2. Without Energy saving mode             | Innovative Technomics, Trial party -SSE, China.   |
| 50                                     | VVVF Drives                               |   |
|  | 1. General Purpose LT motors              | ABB, ABIL, BHEL, Siemens, NELCO (Hitachi), T.B.Wood, Vacon, Schneider, SSD Drives, Jeltron(Toshiba), L&T (Yaskawa), Trial party - Danfoss |
|  | 2. Critical application for LT motors     | ABB, BHEL, Siemens, L&T (Yaskawa), Schneider, Vacon, Rockwell Automation  |
|  | 3. For HT Motors MV Drive/ Hi-Lo-Hi Drive | ABB, Rockwell Automation, BHEL, Siemens, Converteam (UK), TMEIC.  |
| 51                                     | Thyristor devices                         | West Code, ABB, BHEL, EUPEC, Hind Rectifier, Rutton Shaw, Semikron rectifier.   |
| 52                                     | Power Diodes                              | Rutton-Shaw, Usha Rectifier, Hind Rectifier, Insel, Semikron Rectifier, West code, EUPEC.   |
| 53                                     | Control Diodes                            | ECIL, BEL, Hind Rectifier, INSEL.   |

List of approved vendors

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|---|---|---|
| 54  | Semiconductor Fuses   | GE Power Control, Siemens, La-Ferraz, Bussman.  |
| 55  | UPS   | HI-REL, ILK (FUJI), Tata Libert (Emerson), Siemens, APC-MG, TVSE, DB Power Electronics (P) Ltd.   |
| 56  | IGBT  | West Code, FUJI, Eupec.   |
| <b>4. MOTORS</b>                          |   |   |
| 57  | LT Squirrel Cage Motors                                     | ABB, BHARAT BIJLEE, CGL, KEC, LAXMI HYDRAULICS PVT LTD.<br><br>(SOLAPUR), ALSTOM, SIEMENS, ELGI, JYOTI, NGEF, SEW, NORD,<br><br>HINDUSTAN MOTORS, LENZE<br>Trial Party : SIMO |
| 58  | LT Slipring Motors<br>(Crane / Mill Duty)                   | CGL, ALSTOM, KEC, BHARAT BIJLEE   |
| 59  | LT AC Roll Table Motors                                     | KEC, CGL, ALSTOM, ABB, SEW, MARK ELECTRIC, Bauer, LHP   |
| 60  | LT AC Geared Motors   | LAXMI HYDRAULICS PVT LTD.-SOLAPUR, INTERNATIONAL COMBUSTION, RAJENDRA ELECTRICAL INDUSTRIAL LTD.-MUMBAI (REMI), BONFIGLIOLICOIMBATORE, SEW, NORD, Bauer, Power Build.         |
| 61  | HT AC Motors (Squirrel cage, Slipring & Synchronous Motors) | ALSTOM, CGL, KEC, ABB, BHEL, JYOTI, SIEMENS, WEG, TMEIC Trial Party -Simo   |
| 62  | LT Flame Proof Squirrel Cage Motor                          | ALSTOM, BHARAT BIJLEE, CGL, KEC, LAXMI HYDRAULICS PVT LTD. (SOLAPUR)  |
| 63  | Stall Torque Vibrator Motor                                 | DEMAG, ELECTROMAG, INTERNATIONAL COMBUSTION, NORD, ELECTRO MAGNETICS, BOSECO  |
| 64  | Actuator Motors   | AUMA, ROTORK, LIMITORQUE  |
| 65  | DC Motors   | KEC, BHEL, CGL, IECBANGALORE, Trial Party -TRIDENT, BAMULLER  |
| <b>5. Electronic Components / Sensors</b> |   |   |
| 66  | Proximity Switches<br>(Inductive, Capacitive and Magneto)   | IFM, SIEMENS, SICK, ROCKWELL AUTOMATION, PEPPERL + FUCHS, SCHNEIDER   |
| 67  | Encoder   | IFM, HUBNER, HEIDENHAINE, LEONARD, DIPL.ENG.H.WENGORZ.GMBH  |

List of approved vendors

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| 68   | Zero Speed Switch  | Schneider -SAMWHA, IFM, Rockwell Automation, Siemens, Pepperl+Fuchs, Pyrotech   |
| 69   | Sensors / Switches * Light Barriers * Distance * Level           | IFM, SICK, ROCKWELL AUTOMATION, PEPPERL + FUCHS, SIEMENS, Schnieder, Dimetix AG   |
| 70   | Switch Mode Power Supply   | SIEMENS, IFM, Rockwell Automation, BHEL, Schnieder, Honeywell.  |
| 71   | Electronic flow switches for oil / air / water                   | Everly, NELCO, IFM, Schnieder, SIEMENS, Krone, Endress & Hausser (E&H)  |
| 6. Panels & Panel components (Low Voltage) |  |   |
| 72   | Panel Board ( Fire Retardent Board )                             | LAMTUF PLASTIC, Hyderabad   |
| 73   | Panel Enclosures   | EPCC, BCH, RITTAL, TRANSRECT, ADVANCE POWER CONTROL   |
| 74   | Terminal blocks  | EPCC, ELMEX, PHONIX CONTACT, CONNECT WELL, ESSEN DEINKI, WAGO   |
| 75   | Selector Switches & Control Switches                             | ABB, GE POWER CONTROL, BCH, EPCC, KAYCEE, SIEMENS, TEKNIK, L&T, RECOM   |
| 76   | Control Transformers   | AEI, UNITECH, EPI, Power & Communications, TRANSRECT, ADVANCE POWER CONTROL, EEW  |
| 77   | Mimic Panels & Annuciation Panels                                | L&T, ADVANI OERLIKON, GE Power Control, BHEL, BCH, TRANSRECT, MINLEC, Tirupati Electronics, ADVANCE POWER CONTROL   |
| 78   | M.C.C ( Draw Out Type )  | SIEMENS, BCH, L&T, ANDREW YULE, SCHNEIDER ELECTRIC/ CGL, CONTROL & SWITCH GEAR, ABB, ADVANCE POWER CONTROL  |
| 79   | M.C.C ( Non Draw Out Type )                                      | SIEMENS, BCH, MAHESWARI ELECT., L&T / ECC, ANDREW YULE, SCHNEIDER ELECTRIC / CGL, CONTROL & SWITCH GEAR, ABB, GE POWER CONTROL, TRANSRECT, ADVANCE POWER CONTROL. TRIAL PARTIES -MEDITRON, SWITCHING CKT. |
| 80   | Power Distribution Boards (PDB) / Roll Table Distribution Boards | ABB, GE POWER CONTROL, ANDREW YULE, BCH, SCHNEIDER ELECTRIC, MAHESWARI ELECT, SIEMENS, L&T, TRANSRECT, HAVELLS, STANDARD, TRICOLITE, ADVANCE POWER CONTROL  |

List of approved vendors

|                       |  |  |
|-----------------------|--|--|
| 81                    | Power Control Centre (PCC)                         | EPCC, BCH, TRANSRECT Industries, ANDREW YULE, Schneider Elect., CONTROL & SWITCHGEAR, L & T, SIEMENS, Maheshwari Elect, GE POWER CONTROL, ABB, NGEF, ADVANCE POWER CONTROL, TRIAL PARTIESMEDITRON, PECON, SWICHING CKT, HANSU CONTROL, MANJUSHREE  |
| 82                    | Local Control Station (LCS) & Control Desk Station | EPCC, BCH, TRANSRECT Industries, ANDREW YULE, Schneider Elect., CONTROL & SWITCHGEAR, L & T, SIEMENS, Maheshwari Elect, GE POWER CONTROL, ABB, NGEF, ADVANCE POWER CONTROL, EEW (EEW FOR INDOOR APPLICATION ONLY), TRIAL PARTIESMEDITRON, PECON, SWICHING CKT, HANSU CONTROL, MANJUSHREE |
| 83                    | Main Lighting Distribution Board (MLDB)            | SIEMENS, L&T / ECC, TRANSRECT, HAVELLS, STANDARD, SCHNEIDER ELECTRIC, MAHESWARI ELECT., BCH, GE POWER CONTROL, MDS, ADVANCE POWER CONTROL, EEW (EEW for indoor application and up to 200 A only), TRIAL PARTIES -MEDITRON, SWITCHING CKT., S&S   |
| 84                    | Push buttons                                       | GE POWER CONTROL, BCH, CONTROL & SWITCH GEAR, L&T, SIEMENS, TECHNIK, ESSEN, TELEMECHANIQUE, TRIAL PARTIES - VAISHNO, S&S   |
| 85                    | Indicating LED LAMP assembly                       | BINOY, ESSEN DEINKI, SEIEMENS, TECHNIK, BCH, L&T, ALTOS  |
| 86                    | Open Type Panels                                   | EPCC, TRANSRECT, EEW   |
| 87                    | Current Transformer ( LV )                         | ABB, JAYSHREE, PRAGATI, KAPPA, INTRAVIDUT  |
| 88                    | Control Panel                                      | SONITECH, EPCC, TIRUPATI ELECTRONICS, TRANSRECT, ADVANCE POWER CONTROL, EEW  |
| 7. Telecom Equipments |  |  |
| 89                    | C.C.T.V.System                                     |  |
|                       | 1. CAMERA  | PELCO, SANYO, SHARP, SONY, SAMSUNG   |
|                       | 2. MONITOR   | SHARP, HITACHI, PHILIPS, LG, SAMSUNG, SONY, SANYO  |
| 90                    | WALKIE-TALKIE SYSTEM                               |  |

List of approved vendors

|  |   |   |
|--|---|---|
|  | 1. Hand Held Sets 2. Fixed Stations   | MOTOROLA, YAESU, VERTEX STANDARD  |
| 91   | Distributed Amplifier System  | BOSCH, MEGA   |
| 92   | Programable Loud Speaking Inter Com System (PROPAM System)  | PHI-AUDIOCOM, BOSCH, MEGA   |
| 93   | Conferencing System 1. Amplifiers 2. Chairman Delegate Unit 3. Speakers<br>Note : All units should be of same make(in set). | BOSCH, AHUJA, MEGA, SHURE, Studio Master  |
| 94   | Despatcher System (EPABX)/ InterCom / Hot-Lines (Only Exchange)   | SIEMENS, ERICSSON, AVAYA GLOBAL CONNECT, ALCATEL Business System, NORTEL, CORAL TELECOM |
| 95   | Batteries (More than 400AH) Lead Acid Batteries / Maintenance Free Batteries  | EXIDE, Amara Raja, AMCO   |
| 96   | Telephone Instrument  | BEETEL, SIEMENS, PANASONIC  |
| 97   | Yard Communication system   | Phi-AUDIO COM, AHUJA, MEGA, BOSCH   |
| 98   | Shop Announcement System Public Address System (PAS)  | AHUJA, PHILIPS, BOSCH, MEGA, STUDIO MASTER, SHURE                                       |
| 99   | Cable Jointing Kits   | RAYCHEM   |
| 100  | Optical Fibre Cable   | MOLEX, LUCENT, FINOLEX, ERICSON, STERLITE, HFCL, OPTEL                                  |
| <b>Cables</b>  |   |   |
| <b>XLPE Cables HT</b>  |   |   |
| Shriram Cables, Crystal Cables, Fort Gloster, Incab, KEI Industries, Fincab Cable, Phelps Dodge Thiland Ltd., Cable Corporation of India, Central Cables, Nagpur, LAPP Cables, Polycab Cables, RPG Cables, Sky Tone Elect., Uniflex Cables, Universal Cables, Gems Cab Industries, Delhi, Hindustan Vidyut Products Ltd., Krishna Elect. Industries. |   |   |
| <b>Rubber Cables ERP/ CSP</b>  |   |   |

List of approved vendors

IMT Cables, Fort Gloster, Incab, Nangalwala Impex, United Cables, Fincab, Bhagwati Cables, Cable Corporation of India, Delton, Friends Cables, KEI Industries, LAPP Cables, NICCO Cables, Prestige Cables, RPG Cables, Shyam Cables, Uniflex Cables, Universal Cables, Servel Cables, KNG Plastic, Mans – Field Cables (For voltage up to 1100 V).

**PVC Cables (Power & Control – Cu & Al – Armoured & Unarmoured).**

Shriram Cables, Ajanta Elect., Fort Gloster, Incab, Prestige Cables, Fincab Cables, Rollex Electro Pvt. Limited, Sight Sound Electronic, Cable Corporation of India, Delton, Elkay, Finolex Cables, Friends Cables, Govind Cables, Insucon Cables, KEI Cables, LAPP Cables, Motherson Cables, NICCO Cables, Polycab Cables, RPG Cables, Reliance Engineers Limited, Shanti Cables, Shyam Cables, Sky Tone Elect., Toshniwal Cables, Uniflex Cables, Universal Cables, Servel Cables, Paramount Cables, GEMs Cab Industrifces, Delhi, Hindustan Vidyut Products Limited, Laxmi Power Cables, Mumbai, KNG Plastic, Rishabh Industries, Krishna Elect. Industries, Mans Field Cables (for voltage up to 1100 V), Pagoda Cables (For IS 694 and voltage up to 1100 V).

**Welding Cable**

IMT Cable Pvt. Limited; KNG Plastic, Nangalwala Impex.

**Telephone Cables.**

Shriram Cables, Phelps Dodge Thiland Limited, Rollex Electro Pvt. Limited, Fincab.

**INSTRUMENTATION ITEM :**

| Sl.No. | Item   | Preferred make  |
|--------|--|---|
| A.     | <b>FIELD INSTRUMENTS</b>                                       |   |
| 1.     | <b>Pressure instruments.</b>                                   |   |
| 1.1    | Pressure/ differential pressure gauge.                         | 1. WIKA<br>2. Ashcroft<br>3. Budenberg.<br>4. Forbes Marshall               |
| 1.2    | A. Pressure/ differential pressure switches (Mech. Type)       | 1. Switzer<br>2. Solon<br>3. Ashcroft<br>4. Budenberg<br>5. Forbes Marshall |
|        | B. Pressure/ differential pressure switches (Electronic type). | 1. IFM<br>2. WIKA<br>3. Kobold  |
| 1.3    | Pressure/ Differential pressure transmitters.                  | 1. Emerson (Rosemount)<br>2. Honeywell<br>3. Yokogawa<br>4. Siemens         |

List of approved vendors

|                                    |   |  |
|------------------------------------|---|--|
|                                    |   | 5. E & H<br>6. ABB   |
| 2.                                 | <b>Temperature Instrument/<br/>Sensors</b>                    |  |
| 2.1                                | Temperature gauges.   | 1. WIKA<br>2. Ashcroft<br>3. Budenberg   |
| 2.2                                | Thermocouple & RTD/<br>thermo well.                           | 1. Tempsens<br>2. Temptech<br>3. Toshniwal Industries<br>4. Detriv                                 |
| 2.3                                | Temperature Switch  | 1. IFM<br>2. WIKA<br>3. Switzer  |
| 2.4                                | Temperature Transmitter.                                      | 1. Emerson (Rosemount)<br>2. Yokogawa<br>3. Honeywell<br>4. MTL<br>5. Phoenix                      |
| 2.5                                | Infrared radiation pyrometer/<br>portable.                    | 1. Land<br>2. Raytek<br>3. Ircon<br>4. Impac<br>5. Keller HCW                                      |
| <b>3. FLOW INSTRUMENT/ SENSORS</b> |   |  |
| 3.1                                | Rotameters  | 1. Forbes-Marshall<br>2. Eureka Instruments<br>3. Chemtrols<br>4. Rota Instruments<br>5. SMC       |
| 3.2                                | Orifice plate & flanges<br>assembly/ venture, flow<br>nozzle. | 1. Engineering Specialties<br>2. Micro-precision.<br>3. Instrumentation Limited.<br>4. Uni-Control |
| 3.3                                | DP type flow/ level<br>transmitters.                          | 1. Emerson (Rosemount)<br>2. Honeywell<br>3. Yokogawa<br>4. Siemens<br>5. E & H<br>6. ABB          |
| 3.4                                | Flow Switch   | 1. IFM<br>2. Kobold<br>3. Mobrey   |
| 3.5                                | Electromagnetic flow meter.                                   | 1. Yokogawa<br>2. Emerson (Rosemount)<br>3. Forbes-Marshall<br>4. Endress & Hauser                 |

List of approved vendors

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|     |   |  |
| 3.6 | Vortex Flow meter.                          | 1. Emerson (Rosemount)<br>2. Forbes-Marshall<br>3. Yokogawa<br>4. Endress & Hauser                                   |
| 3.7 | Mass (coriolis) flow meter.                 | 1. Emerson (Rosemount)<br>2. Forbes-Marshall<br>3. Yokogawa<br>4. Endress & Hauser                                   |
| 4.  | <b>LEVEL INSTRUMENTS</b>                    |  |
| 4.1 | Level gauge (magnetic & reflex type)        | 1. Chemtrol<br>2. Mobrey<br>3. Forbes-Marshall<br>4. Solatron<br>5. Hi-Tech (Levelstat)                              |
| 4.2 | Level switch (conductivity type)            | 1. Vega<br>2. Endress & Hauser<br>3. Pepperal & Fuchs  |
| 4.3 | Level switch (Capacitance/ RF Type)         | 1. Vega<br>2. Endress & Hauser<br>3. EIP Bulk<br>4. Sapcon   |
| 4.4 | Level switch (Turning fork/ rod type).      | 1. Chemtrol (Vega)<br>2. Endress & Hauser<br>3. Pepperal & Fuchs   |
| 4.5 | Level Switch (Float type)                   | 1. Emerson<br>2. Forbes-Marshall<br>3. Mobrey<br>4. V-Automat  |
| 4.6 | Level Switch / Transmitter (Displacer type) | 1. Emerson<br>2. Chemtrols (Eckard)<br>3. Solartron<br>4. Masonielan   |
| 4.7 | Level Switch/ Transmitter (Ultrasonic type) | 1. Sick<br>2. Endress & Hauser<br>3. Forbes-Marshall<br>4. Siemens (Miltronics)<br>5. Pepperal & Fuchs               |
| 4.8 | Level Switch/ Transmitter (Radar type)      | 1. Sick<br>2. Endress & Hauser<br>3. Forbes-Marshall<br>4. Solatron<br>5. Pepperal & Fuchs<br>6. Emerson (Rosemount) |
| 4.9 | Level Switch/ Transmitter (Nucleonic type)  | 1. Concord International (Dr.Berthold)<br>2. Emerson (Kay Ray)   |

List of approved vendors

|     |   |  |
|-----|---|--|
|     |   | 3. E & H   |
| 5.  | <b>CONTROL VALVES AND ACCESSORIES</b>   |  |
| 5.1 | Control Valve                           | 1. Fisher-Xomox<br>2. Instrumentation Ltd.<br>3. Masonelian<br>4. Valflo<br>5. Samson Controls<br>6. Forbes Marshall (Arca)                              |
| 5.2 | Electrical Actuator                     | 1. Auma<br>2. Limitorque<br>3. Instrumentation Ltd. (Bernard)<br>4. Beck   |
| 5.3 | Pneumatic Actuator                      | 1. Fisher-Xomox<br>2. Instrumentation Limited.<br>3. Masonelian<br>4. Valflo<br>5. Samson Controls<br>6. Forbes Marshall (Arca)                          |
| 5.4 | Electro-Hydraulic Actuator              | 1. Reineke<br>2. Voith   |
| 5.5 | Self-regulating pressure control valve. | 1. Samson Controls<br>2. Forbes Marshall<br>3. Instrumentation Limited.<br>4. Fisher-Xomox<br>5. Nirmal Industries.                                      |
| 5.6 | I/P Converters                          | 1. Forbes Marshall (Moore products)<br>2. ABB<br>3. Emerson<br>4. Honeywell<br>5. Bells  |
| 5.7 | Pneumatic Positioner.                   | 1. Instrumentation Limited.<br>2. SMC<br>3. Dresser Industries (Masonelian)<br>4. Samson Controls<br>5. Forbes Marshall (Arca)                           |
| 5.8 | Electro-pneumatic Positioner.           | 1. Fisher-Xomox<br>2. Siemens<br>3. Masoneilan<br>4. Samson Controls<br>5. Instrumentation Limited<br>6. Forbes Marshall (Arca)<br>7. Yamatake<br>8. ABB |
| 5.9 | Solenoid Valve                          | 1. Mac<br>2. Herion, Rotex   |

List of approved vendors

|  |                                      |  |
|--|--------------------------------------|--|
|  |                                      | 3. Schrader-Schovill<br>4. Asco  |
| 5.10                                   | Air Filter Regulator                 | 1. Shavo-Norgen<br>2. Marsh-Bellofram<br>3. Placka<br>4. Schradel-Schovill.                                      |
| <b>6. CABLES</b>                       |                                      |  |
| 6.1                                    | Instrumentation Cables               | 1. Universal Cables<br>2. Delton<br>3. Lapp Cables<br>4. Asian Cables<br>5. Brooks Cables<br>6. Belden<br>7. MEM |
| 6.2                                    | Thermocouple<br>Compensating Cable.  | 1. Toshniwal Cables<br>2. Paramount Cables<br>3. Udey Pyro Cables<br>4. Brooks<br>5. MEM                         |
| <b>B. CONTROL ROOM INSTRUMENTATION</b> |                                      |  |
| 7.1                                    | Distributed Control Systems<br>(DCS) | 1. YOKOGAWA<br>2. Honeywell<br>3. Emerson<br>4. Siemens (TELEPERM ME<br>Plus).<br>5. Toshiba, Japan              |
| 7.2                                    | Programmable Logic<br>Controllers    | 1. ABB<br>2. GE-FANUC<br>3. Rockwell Automation<br>4. Siemens<br>5. L & T (Quantum)<br>6. Schneider              |
| 7.3                                    | Digital Indicator                    | 1. PEPL<br>2. Yokogawa<br>3. ABB<br>4. Micro Controls<br>5. Masibus<br>6. Lectrotek<br>7. Radix<br>8. Honeywell  |
| 7.4                                    | Bar Graph Indicator                  | 1. Masibus Instruments<br>2. ABB<br>3. Bells<br>4. Yokogawa<br>5. Lectrotek                                      |
| 7.5                                    | Recorders (Chart less)               | 1. Eurotherm<br>2. Yokogawa  |

List of approved vendors

|      |  |   |
|------|--|---|
|      |  | 3. Honeywell<br>4. ABB  |
| 7.6  | Microprocessor Based Controller        | 1. Yokogawa<br>2. Siemens<br>3. Honeywell<br>4. Eurotherm<br>5. MTL<br>6. Forbes Marshall<br>7. Toshiba |
| 7.7  | Digital Scanners                       | 1. Radix<br>2. Micro Controls<br>3. Masibus Instruments<br>4. Lectrotek<br>5. PEPL                      |
| 7.8  | DC Power Supply Unit                   | 1. Aplab<br>2. Phoenix<br>3. Schneider<br>4. P&F  |
| 7.9  | IS Interface/ Zenner Barrier           | 1. Pepperl & Fuchs<br>2. MTL<br>3. Stahl  |
| 7.10 | Signal Isolators                       | 1. Pepperl & Fuchs<br>2. MTL<br>3. Yokogawa<br>4. Forbes Marshall (Protech)<br>5. Phoenix               |
| 7.11 | Annunciation System                    | 1. IIC<br>2. Minilec<br>3. Digicont<br>4. MTL<br>5. BETA Instruments<br>6. Procon                       |
| 7.12 | Instrument Panels/ Control Desk        | 1. Rittal<br>2. Pyrotech<br>3. Instrumentation Ltd.   |
| 7.13 | Manual Loaders                         | 1. Masibus<br>2. PEPL<br>3. Lectrotek   |
| 7.14 | Totalizer                              | 1. Masibus<br>2. PEPL<br>3. Lectrotek<br>4. Bivak   |
| C.   | <b>ANALYTICAL/ SPECIAL INSTRUMENTS</b> |   |
| 8.1  | Gas Analysis Instruments               | 1. ABB (H&B)<br>2. Emerson<br>3. Siemens<br>4. Servomax<br>5. Yokogawa                                  |

List of approved vendors

|      |  |   |
|------|--|---|
| 8.2  | Gas Detectors  | 1. Crowcon<br>2. MSA<br>3. Dragger<br>4. BW Technologies<br>5. Reiken-Keiki, Japan                  |
| 8.3  | Calorific Value Analyzers (CV)   | 1. Reineke<br>2. Union<br>3. Yokogawa   |
| 8.4  | Moisture Analyzers (Nucleonic)   | 1. Concord International (Dr.Berthold)<br>2. Emerson (Analytical)<br>3. Sick                        |
| 8.5  | Dissolved Conductivity Transmitter O <sub>2</sub> /PH/meter/           | 1. Emerson (Analytical)<br>2. Forbes Marshall (Polymetron)<br>3. Yokogawa<br>4. ABB<br>5. Honeywell |
| 8.6  | IR type moisture analyzer.   | 1. Moistech<br>2. NDC (EMC)   |
| 8.7  | Flame Detector   | 1. Honeywell<br>2. Durag Instruments<br>3. Yamatake   |
| 8.8  | Vibration sensors & monitors.  |   |
|      | a. For turbines and other high speed critical machines.                | 1. Bentley Nevada<br>2. Shinkawa (Forbes-Marshall)  |
|      | b. For other applications.   | 1. SPM<br>2. Vibro Meter<br>3. Shindawa (Forbes-Marshall)<br>4. Rockwell                            |
| 8.9  | Opacity/ Dust concentration meter.                                     | 1. Codel (Forbes-Marshall)<br>2. Durag<br>3. Emerson<br>4. Land<br>5. GE Sensing<br>6. Chemtrol     |
| 8.10 | Dip lance type molten metal temperature measurement system & T/C tips. | 1. Ardee Busi. (Electronite)<br>2. Sidermes.  |
| 8.11 | SPM analyzer.  | 1. Emerson<br>2. Yokogawa<br>3. Durag<br>4. ABB<br>5. Honeywell<br>6. Forbes Marshall (Codel)       |
| 8.12 | SO x NO x analyzer.  | 1. Emerson<br>2. Yokogawa<br>3. ABB   |

List of approved vendors

|  |                                     |   |
|--|-------------------------------------|---|
|  |                                     | 4. Siemens<br>5. Honeywell<br>6. Forbes Marshall (Codel)  |
| <b>9. INFORMATION &amp; AUTOMATION SYSTEMS</b> |                                     |   |
| 9.1  | Computer (Servers)                  | 1. IBM<br>2. HP<br>3. SUN   |
| 9.2  | Computer (Work Stations/ Laptop)    | 1. IBM<br>2. COMPAQ<br>3. LENOVO<br>4. DELL<br>5. HP  |
| 9.3  | Dot Matrix Printer                  | 1. EPSON<br>2. TVSE   |
| 9.4  | Laser / Inkjet Printer/ Scanners.   | 1. HP   |
| 9.5  | PLC                                 | 1. ABB<br>2. GE-FANUC<br>3. ROCKWELL AUTOMATION<br>4. SIEMENS<br>5. L&T (Quantum)<br>6. SCHNEIDER |
| <b>10. NETWORK EQUIPMENT</b>                   |                                     |   |
| 10.1   | Active Switching & Routing          | 1. CISCO  |
| 10.2   | Active other components.            | 1. Allied Telesys<br>2. RAD<br>3. Xycel   |
| 10.3   | Passive Cabling components.         | 1. Lucent<br>2. AMP<br>3. Systimax<br>4. Molex<br>5. R & M  |
| 10.4   | Passive Racks                       | 1. APW President<br>2. Rittal<br>3. Krone   |
| 10.5   | Industrial Grade Ethernet Switches. | 1. Hirschmann<br>2. Sixnet  |
| 10.6   | LCD Projector.                      | 1. Hitachi<br>2. Canon<br>3. Panasonic<br>4. Soni<br>5. Sharp<br>6. HP                            |
| 10.7   | Computer Furniture                  | 1. Godrej<br>2. Methodex  |

List of approved vendors

|                                 |                                  |   |
|---------------------------------|----------------------------------|---|
|                                 |                                  | 3. Wipro  |
| 10.8                            | UPS                              | 1. APC<br>2. Tata Libert (Emerson)<br>3. Fuji<br>4. GE  |
| <b>11. WEIGH BRIDGE SYSTEMS</b> |                                  |   |
| 11.1                            | Static Rail Weigh Bridge         | 1. M/s Pivotex OY, Finland<br>2. M/s Weighload Technologies, UK<br>3. M/s Procon Engineering Limited, UK<br>4. M/s Carlschenck AG, Germany<br>5. M/s Molen, Sweden<br>6. M/s Elon Engineering Industrial Weighing System Limited, UK.<br>7. M/s ACME Automation Pvt. Limited.   |
| 11.2                            | In-motion Rail Weighing Systems. | 1. M/s Carl Schenck AG, Germany<br>2. M/s AMTAB, Sweden<br>3. M/s Pivotex OY, Finland<br>4. M/s Weighload Technologies, UK<br>5. M/s Procon Engineering Limited, UK<br>6. M/s Eldigi Measurematics Pvt.Ltd., USA<br>7. M/s ACME Automation Pvt. Limited.  |
| 11.3                            | Road Weigh Bridge                | 1. M/s Carl Schenck AG, Germany<br>2. M/s AMTAB, Sweden<br>3. M/s Pivotex OY, Finland<br>4. M/s Weighload Technologies, UK<br>5. M/s Procon Engineering Limited, UK<br>6. M/s Eldigi Measurematics Pvt.Ltd., USA<br>7. M/s Sartorius Mechatronics, Bangalore<br>8. M/s Melter Teledo, UK.<br>9. M/s ACME Automation Pvt. Limited. |
| 11.4                            | Hopper Weighing System.          | 1. M/s Carl Schenck AG, Germany<br>2. M/s Molen, Sweden<br>3. M/s Siemens AG, Germany<br>4. M/s Procon Engineering Limited, UK<br>5. M/s Eldigi Measurematics Pvt.Ltd., USA<br>6. M/s Kistler-Morse Automation Ltd., USA<br>7. M/s Nova<br>8. M/s ACME Automation Pvt. Limited.   |
| 11.5                            | Belt Weigher & Weigh Feeder      | 1. M/s Carl Schenck AG, Germany<br>2. M/s S-E-G Instruments AB, Sweden<br>3. M/s Dosatec SA, Switzerland<br>4. M/s Procon Engineering Ltd., UK<br>5. M/s Kistler-Morse Automation Limited.<br>6. M/s ACME Automation Pvt. Limited.  |
| 11.6                            | Crane Weighing System.           | 1. M/s Technical Weighing Services, USA<br>2. M/s Eldigi Measurematics Pvt.Ltd., USA<br>3. M/s Eilon Engineering Ind. Weighing Systems  |

List of approved vendors

|        |                                 |   |
|--------|---------------------------------|---|
|        |                                 | Limited, UK.<br>4. M/s Carl Schenck AG, Germany<br>5. M/s Tamtron OY, Finland<br>6. M/s Procon Engineering Limited, UK<br>7. M/s EHP Waegeteckhink GmbH, Germany<br>8. M/s Weighload Technologies, UK                                     |
| 11.7   | Load Cell                       | 1. M/s HBM, Germany<br>2. M/s Siemens AG, Germany<br>3. M/s Flintab, Germany<br>4. M/s Sartorius Mechetronics, Germany<br>5. M/s Tedia, Germany<br>6. M/s BLH, UK<br>7. M/s Molen, Sweden   |
| 11.8   | Weight Transmitter              | 1. M/s Sartorius Mechetronics, Bangalore<br>2. M/s Flintak, UK<br>3. M/s Carl Schenck AG, Germany<br>4. M/s Molen, Sweden   |
| 12.0   | SENSORS:                        |   |
| 12.1   | TEMPERATURE SENSORS             |   |
| 12.1.1 | Pt-Rh element                   | M/s Arora Matthey Ltd., Kolkata<br>M/s Hindustan Platinum<br>M/s Parekh Platinum Ltd., Mumbai   |
| 12.1.2 | Contact Thermometers            | M/S A.N. Instruments<br>M/S Detriv Instrumentation & Electronics Pvt. Ltd., Mumbai<br>M/S Waaree Instruments, Mumbai<br>M/S Toshniwal Industries Pvt. Ltd. , Ajmer<br>M/S Wika Instruments India Pvt. Ltd., Pune                          |
| 12.1.3 | Portable / Hand held pyrometers | M/s Tempsens Instruments (i) Pvt. Ltd., Udaipur<br>M/S Toshniwal Industries Pvt. Ltd. , Ajmer<br>M/S Eurotherms Del India Pvt. Ltd., Kolkata<br>M/S Waaree Instruments, Mumbai<br>M/S Nagman Instruments & Electronics Pvt. Ltd., Chennai |

• ACWE EQUIPMENTS

|    |                         |  |
|----|-------------------------|--|
| 1. | AIR WASHING UNITS       | M/s Batliboi, M/s ACCO, M/s ABB FLAKT, M/s F Harley Calcutta, M/s Mesina Bombay,<br>M/s S K Systems Kolkata,<br>M/s Air Technico, Kolkata.<br>M/s Marco Blowers, Kolkata |
| 2. | WINDOW AIR CONDITIONERS | M/s ACCO, M/s VOLTAS, M/s Blue Star, M/s SIEL AIRCON (USHA), M/s Carier Aircon.<br>M/s Videocon  |

List of approved vendors

|     |  |   |
|-----|--|---|
|     |  | M/s Whirlpool   |
| 3.  | Packaged Air Conditioners (With only Open/Semi-Sealed Compressors) | M/s Voltas, M/s Frick, M/s Batliboi, M/s Mesina, M/s Kirloskar, M/s Blue Star, M/s Sulzer Pune. M/s Lintern                     |
| 4.  | Chilled Water Unit   | M/s Frick India, M/s Blue Star, M/s Voltas. M/s Airtic, India ( for all capacities) M/s Mesina (for Capacities up to 3 TR/5TR ) |
| 5.  | Air Handling Units (For A/Cs)                                      | M/s Frick India, M/s Voltas, M/s Batliboi, M/s Airtic India. M/s Blue Star  |
| 6.  | Cooling Towers   | M/s Paharpur , M/s Frick India, M/s Mihir, M/s Mesina, M/s Anil Enterprises.  |
| 7.  | Central A/Cs   | M/s Voltas, M/s Frick, M/s Batliboi, M/s Airtic India, M/s Blue Star* ( * with open compressors)                                |
| 8.  | Water Coolers  | M/s Shriram (Usha), M/s Voltas, M/s Blue Star, M/s ACCO.  |
| 9.  | Refrigerators  | M/s Godrej, M/s Kelvinator, M/s BPL, M/s Videocon, M/s Voltas, M/s Whirlpool  |
| 10. | Refrigerant Compressors  |   |
| a.  | For Room A/Cs  | Shriram AW1500  |
| b.  | For Water Coolers  | Shriram AW1000, Shriram SR412.  |
| c.  | For packaed A/Cs ( Semi Hermetic)                                  | Batliboi, Voltas, Kirlosker Pneumatic.  |
|     | Open type  | Freeze King, KPC, Frick, ACCEL, Alphasel.   |
| d.  | For Central A/Cs   | Frick, Freeze King, ACCEL, Voltas, Batliboi, KPC.   |
| 11. | Split A/Cs   | M/s Voltas, M/s Amtrex, M/s ACCO, M/s Shriram, M/s Blue Star, M/s Videocon.   |

## HYDRAULICS & PNEUMATIC EQUIPMENTS

List of approved vendors

**A) Hydraulic Equipments and Spares**

| S.No. | Spare/ equipment.  | Name of preferred makes.   |
|-------|--|--|
| 1.    | Complete Hydraulic System  |  |
| 1.1   | Complete Hydraulic System with servo control.                          | M/s BOSCH REXROTH<br>M/s EATON VICKERS<br>M/s MOOG   |
| 1.2   | Complete Hydraulic System with proportional and conventional controls. | M/s BOSCH REXROTH<br>M/s EATON VICKERS<br>M/s YUKEN, M/s PARKER                            |
| 2.    | Hydraulic Pumps  |  |
| a.    | Gear Pump  | M/s BOSCH REXROTH<br>M/s EATON VICKERS<br>M/s YUKEN, M/s PARKER                            |
| b.    | Vane Pump  | M/s BOSCH REXROTH<br>M/s EATON VICKERS<br>M/s YUKEN, M/s PARKER                            |
| c.    | Axial Piston Pump  | M/s BOSCH REXROTH<br>M/s EATON VICKERS<br>M/s PARKER                                       |
| d.    | Radial Piston Pump   | M/s BOSCH REXROTH<br>M/s EATON VICKERS<br>M/s YUKEN, M/s PARKER<br>M/s L&T, M/s HAWE       |
| 3.    | Hydraulic Motors   | M/s BOSCH REXROTH<br>M/s EATON VICKERS<br>M/s PARKER, M/s L&T, M/s HAGLUNDS<br>M/s DANFOSS |
| 4.    | Servo Valves   | M/s MOOG, M/S BOSCH REXROTH  |
| 5.    | Proportional Valves  | M/s MOOG, M/S BOSCH REXROTH<br>M/s EATON VICKERS<br>M/s YUKEN, M/s PARKER                  |
| 6.    | Hydraulic Control Valves   |  |
| 6.1   | Directional Control valves   | M/sBOSCH REXROTH<br>M/s EATON VICKERS<br>M/s YUKEN, M/s PARKER                             |
| 6.2   | Pressure Control Valves  | M/s BOSCH REXROTH<br>M/s EATON VICKERS<br>M/s YUKEN, M/s PARKER                            |
| 6.3   | Flow Control Valves  | M/s BOSCH REXROTH<br>M/s EATON VICKERS<br>M/s YUKEN, M/s PARKER                            |
| 7.    | Hydraulic Cylinders  |  |
| 7.1   | a) Critical Application Cylinder – As per drawing.                     | M/s Wipro, M/s Oscar, M/s USHA<br>Telehoist, M/s Veljan                                    |

List of approved vendors

|     |   |   |  |
|-----|---|---|--|
|     | b) Critical Application Cylinder – As per catalogue.            |   | M/s BOSCH Rexroth<br>M/s Eaton Vickers,<br>M/s Parker                                |
| 7.2 | a) General Application Cylinders – As per drawing.              |   | M/s Wipro, M/s Oscar, M/s Veljan,<br>M/s IPH, M/s Salzgitter,<br>M/s USHA-Telehoist. |
|     | b) General Application Cylinders – As per catalogue.            |   | M/s BOSCH Rexroth<br>M/s Eaton Vickers,<br>M/s Parker                                |
| 8.  | Hydraulic Filters   |   |  |
| 8.1 | Filter for systems having servo and proportional control valves |   | M/s Hydac, M/s Pall, M/s Stauff  |
| 8.2 | Filter for systems having conventional control valves.          |   | M/s Hydac, M/s Pall, M/s Stauff<br>M/s EPE, M/s Parker                               |
| 9.  | Seals.  |   |  |
| 9.1 | Seals for critical hydraulic cylinders (**)                     |   | M/s Hunger, M/s Parker, M/s Busak-Shamban, M/s Merkel                                |
| 9.2 | Seals for general purpose hydraulic cylinder                    | Imported  | M/s Hunger, M/s Parker, M/s Busak-Shamban, M/s Merkel                                |
|     |   | Indigenous  | M/s Spareage, M/s Omco, M/s Vako, M/s Softex, M/s Reeco                              |
|     |   | Machined Seals  | M/s Sealjet, M/s Ankseals  |
| 10. | Ball Valves   |   | M/s Stauff, M/s Paker, M/s Hydac   |
| 11. | Accumulators  |   | M/s Hydac, M/s EPE, M/s Fawcet - Christie  |
| 12. | Hydraulic Pipe Clamps   |   | M/s Hyd-Air, M/s Stauff, M/s Parker, M/s Hydac                                       |
| 13. | Bare Hoses  | Sae 100 R1/R2/R9/R10 /R11/R13, EN853 1ST/1SN/2ST/2SN, EN856 4SP/4SH | M/s Dunlop- Hiflex, M/s Aeroquip, M/s Manuli, M/s Gates                              |
|     |   | SAE100R1/R2, EN853 1ST /1SN/ 2 ST/2SN                               | M/s Parker – Markwel, M/s Pix, M/s Superseal   |
| 14. | Pipe fittings   |   | M/s Hyd-Air, M/s Parker, M/s Hyloc-Hydratechnic, M/s Stauff                          |
| 15. | Quick release couplings   |   | M/s Aeroquip, M/s Parker, M/s Stauff, M/s Sterling, M/s Holmbury                     |
| 16. | Pressure gauges   |   | M/s Wika, M/s Parker – UCC   |
| 17. | Minimess hose and couplings                                     |   | M/s Parker, M/s Stauff, M/s Hydratechnic   |

(\*\*) Critical means the items whose failure may cause more than two hours production loss.

## B) Pneumatic Equipments and Spares

List of approved vendors

|    |   |  |
|----|---|--|
| 1. | Air booster pumps/ intensifiers   | M/s Maximator, M/s Haskel  |
| 2. | a) Control valves<br>b) Directional control valves<br>c) Pressure control valves<br>d) Flow control valves<br>e) Logic control valves                           | M/s Parker, M/s Ross, M/s Nucon, M/s Spirax, M/s Martonair, M/s Schrader Bellow, M/s Crouzet<br><br>M/s Telemecanique, M/s Festo |
| 3. | a) Air preparation unit<br>b) Filters<br>c) Regulators<br>d) Lubricators<br>e) Combination units<br>f) Diffusers<br>g) Silencers<br>h) Mufflers<br>i) Breathers | M/s Airmatic, M/s Parker, M/s Veljan – Hydrair, M/s Schrader Bellow, M/s Nucon, M/s Festo, M/s Hydroline                         |
| 4. | Air driers  | M/s Emskay   |
| 5. | Pipe and fittings<br>Various types of pipes fittings, PVC, PU and nylon turbine.  | M/s Mecman. M/s Legris, M/s Parker   |

#### **PUMPS & COOLING TOWERS**

|    |  |  |   |
|----|--|--|---|
| A. | <b>COOLING TOWERS</b>  |  | M/s Shri Ram Tower Tech. Ltd.,<br>M/s Enviro Clean System Ltd.,<br>M/s GEA Cooling Towers Chennai,<br>M/s Engg. Services & Accessories Mumbai,<br>M/s Paharpur Cooling Tower Calcutta,<br>M/s Bridge & Roof Ltd. Calcutta,<br>M/s BSBK Bhilai,<br>M/s DBR Cooling Tower Calcutta. |
| B. | <b>PUMPS</b>   |  |   |
| a) | Horizontal Split Casing Centrifugal Pumps<br>Q = 500 M <sup>3</sup> /Hr. and above<br>H = upto 80 M WC,<br>Direct coupled.<br>RPM =<br>1000/1440/2830<br>Construction - CI, Clear water service. |  | M/s Kirloskar,<br>M/s Jyoti,<br>M/s Mather & Platt,<br>M/s KSB,<br>M/s Beacon Weir,<br>M/s Voltas.  |
| b) | Multi-Stage Centrifugal Pumps for Cold/Hot water service.  |  | M/s Bharat Pumps, M/s KSB, M/s Bareja,<br>M/s Kirloskar, M/s Mather & Platt,<br>M/s Sulzer/ Khimline.   |

List of approved vendors

|    |  |  |   |
|----|--|--|---|
| c) | Vertical Radial/ Mixed flow/ Axial flow/ Turbine Pumps for clear water service upto 300 M <sup>3</sup> / Hr.             |  | M/s Kirloskar, M/s Mcnally, Bangalore, M/s Kishore, M/s Jyoti, M/s KSB.     |
| d) | Vertical Radial/ Mixed flow axial flow/ Turbine Pumps for Clear water service service more than 300 M <sup>3</sup> / hr. |  | M/s Kirloskar, M/s Jyoti, M/s KSB, M/s Voltas.                              |
| e) | Sludge Pumps for pumping sludge from effluent treatment plant.   |  | M/s HIL, M/s Warman Indore, M/s Akay Industries, M/s Beacon.                |
| f) | Slurry Pumps Vertical & Horizontal   |  | M/s Kirloskar, M/s Mcnally, M/s KSB, M/s Kishore, M/s Beacon Weir.          |
| g) | Drainage Pumps for pits, Tunnels Q= 100M <sup>3</sup> /Hr., H= up to 30 M  |  | M/s Kishore, M/s KSB, M/s Kirloskar, M/s Darling, M/s Sam Pumps, M/s Sehra. |
| h) | Dosing Pumps/ Metering Pumps   |  | M/s Shape tool, M/s Ion Exchange, M/s Toshniwal, M/s H-Welore.              |
| i) | Submersible mono-bioc Pumps for special drainage and Lifting Applications.   |  | M/s Kirloskar, M/s Kishore, M/s Darling, M/s Calama, M/s Sehra.             |

• VALVES

|    |   |  |   |
|----|---|--|---|
| A. | For all steam services, feed water to boiler, hot condensate & other critical applications for Pressure 20 Kg/ CM2 (Class 300) and above. |  | M/s BHEL,<br>M/S L & T,<br>M/s KSB,<br>M/s Fouress Engineering Co.,<br>M/s NECO Valves (No subsidiary),<br>M/s Leader Valves Ltd. (Up to Class 300 only)<br>M/s Mehta Nanavati (Up to Class 300 only).<br>M/s Fluide Line Valves Company Pvt., Ltd.,<br>Ahamedabad.<br>M/s Chemtaech Industrial Valves.<br>Note : These parties are eligible for categories (B) & (C) also. |
|----|---|--|---|

List of approved vendors

|   |  |  |   |
|---|--|--|---|
| B.  | For compressed air, water, nitrogen and other medium pressure application (6 to 18 kg/cm <sup>2</sup> ). |  | M/s Kirloskar,<br>M/s Valve India,<br>M/s Globe,<br>M/s Sealmet,<br>M/s Levcon,<br>M/s H. Sarkar & Company<br>M/s VIPJ Industrial Enterprises Pvt. Ltd.<br>M/s Ronex Engineering Company.<br>M/s SPM Engineering<br>M/s OSWAL Industries, Ahmadabad.<br>Note : These parties are eligible for category (C) also.  |
| <b>Note : Vendor listed at (A) are also approved for category (B).</b>              |  |  |   |
| C.  | For low pressure and non-critical application (below 6 kg/cm <sup>2</sup> ) CI gate valves.              |  | M/s Venus Pumps & Engg. Works,<br>M/s Chamunda Valves Mfg. Co. Ahmedabad,<br>M/s Upadhayay Valves Mfg. Pvt. Ltd., 23 NS Road, Kolkata-700 001.<br>M/s MC Mira & Co.<br>M/s BDK Marketing Services Pvt. Ltd. Kolkata.<br>M/s Calsens Pvt., Ltd., Kolkata<br>M/s Trishul Valves,<br>M/s K.B. Engineering & Foundry Works.<br>M/s Swastik Industrial Valve Pvt., Ltd.,<br>M/s J.J. Enterprises,<br>M/s Subhash Engineering, Kolkata.                 |
| <b>Note : Vendor listed at (A) &amp; (B) are also approved for category at (C).</b> |  |  |   |
| D.  | CS Gate/ Globe Valve   |  |   |
|   | A) Non-IBR – for all sizes and ratings.  |  | M/s BDK Engineering Industries Ltd., Hubli<br>M/s BHEL, Tiruchirapalli<br>M/s Fouress Engg (India) Ltd., Aurangabad<br>M/s KSB Pumps Limited, Kolkata<br>M/s Larsen & Toubro Ltd. (Audco), Chennai<br>M/s Leader Valves Ltd., Jalandhar<br>M/s Oswal Industries Limited, Ahmedabad  |
| E.  | Butterfly Valve  |  | M/s Advance Valves Pvt.Ltd., Noida<br>M/s Avcon Control Pvt. Limited, Mumbai (for Actuator Operated Valves).<br>M/s BDK Engg. Industries Ltd., Hubli<br>M/s Crane Process Flow Tech (India) Ltd. Pune<br>M/s Fisher Xomox Sanmar, Trichinapalli<br>M/s Fouress Engg (India) Ltd., Aurangabad<br>M/s Inter Valves Pvt. Limited, Pune<br>M/s Larsen & Toubro Ltd. (Audco), Chennai<br>M/s Tyco Valves, Baroda<br>M/s Virgo Engineers Limited, Pune. |
| F.  | Ball Valves.   |  | M/s BDK Engg. Industries Ltd., Hubli<br>M/s Delval Flow Control Pvt. Ltd., Pune   |

List of approved vendors

|    |  |  |  |
|----|--|--|--|
|    |  |  | <p>M/s Fisher Xomox Sanmar, Trichinapalli<br/> M/s Flowchem Industries, Ahmedabad.<br/> M/s Fouress Engg (India) Ltd., Aurangabad<br/> M/s Habonim Vaas Automation Pvt. Ltd., Chennai.<br/> M/s Inter Valves, Pune<br/> M/s Larsen &amp; Toubro Ltd. (Audco), Chennai<br/> M/s Oswal Industries Ltd., Ahmedabad.<br/> M/s Virgo Engineers Ltd., Pune.</p>                |
| G. | Sluice/ CI Gate Valves.                      |  |  |
|    | A) For all sizes and ratings.                |  | <p>M/s BDK Engg. Industries Ltd., Hubli<br/> M/s Calsens Private Ltd., Kolkata<br/> M/s GM Dalui &amp; Sons, Howrah<br/> M/s H.Sarker &amp; Co., Kolkata.<br/> M/s Hawa Engineers Ltd., Ahmedabad<br/> M/s Kirloskar Brothers, Nagpur<br/> M/s Leader Valves Ltd., Jalandhar<br/> M/s Venus Pump &amp; Engg. Works, Howrah<br/> M/s Neta Valves Pvt. Ltd., Jalandhar</p> |
|    | B) For sizes up to NB 100 mm & PN 10 rating. |  | <p>M/s Ronex Engg. Company, Kolkata<br/> M/s Upadhyaya Valve Man. Pvt. Ltd., Kolkata<br/> M/s Steam &amp; Mining Industries, Kolkata.</p> <p>(* Vendors appearing under 'A' shall be eligible for 'B' also.</p>  |
| H. | Plug Valve.                                  |  | <p>M/s BDK Engg. Industries Limited, Hubli<br/> M/s Fisher Xomox Sanmar Ltd., Chennai<br/> M/s Larsen &amp; Toubro Limited (Audco), Chennai<br/> M/s Habonim Vaas Automation Pvt. Ltd., Chennai</p>  |
| I. | Cock Valve for Gas applications.             |  | <p>M/s Larsen &amp; Toubro Limited, Chennai (Audco)</p>  |
| J. | Check Valve / Non-return valve.              |  | <p>M/s Advance Valves Pvt. Ltd., Noida<br/> M/s BDK Engg. Industries Ltd., Hubli<br/> M/s Fouress Engg. (India) Ltd., Aurangabad<br/> M/s Inter Valves (Pvt) Limited, Pune<br/> M/s KSB Pumps Limited, Kolkata<br/> M/s Larsen &amp; Toubro Limited (Audco), Chennai.<br/> M/s Leader Valves Pvt. Ltd., Jalandhar<br/> M/s Oswal Industries Ltd., Ahmedabad</p>          |
| K. | Fabricated Gate Valve.                       |  | <p>M/s Fouress Engg. (India) Ltd., Aurangabad.<br/> M/s Larsen &amp; Toubro Limited, Chennai (Audco)<br/> M/s Zimmermann &amp; Janseen, Duren, Germany.</p>  |

List of approved vendors

|    |   |  |  |
|----|---|--|--|
| L. | Piston Valve.                                       |  | M/s Uni-Klinger Limited, Pune.<br>M/s Spirax Marshall Limited, Nagpur.   |
| M. | Valves for Steam Application.                       |  |  |
|    | A. For all sizes and ratings.                       |  | M/s BDK Engg. Industries Limited, Hubli.<br>M/s Oswal Industries Ltd., Ahmedabad.<br>M/s Larsen & Toubro Limited, Chennai (Audco)<br>M/s Fouress Engg. (India) Ltd., Aurangabad.<br>M/s KSB Pumps Limited, Kolkata.<br>M/s BHEL, Trichurapalli.<br>M/s Leader Valves Pvt. Limited, Jalandhar |
|    | B. For sizes up to 50 mm and Class No. 150 ratings. |  | M/s Neta Valves Pvt.Ltd., Jalandhar<br>M/s Hawa Valves (India) Pvt.Ltd., Mumbai<br>M/s MH Valves Pvt. Ltd., Ahmedabad.<br><br>(* Vendors appearing under 'A' shall be eligible for 'B' also).  |
| N. | Knife Edge Gate Valve.                              |  | M/s Orbinox India Pvt. Limited, Coimbatore.<br>M/s Fouress Engg. (India) Ltd., Aurangabad.<br>M/s Vass Ind. Pvt. Limited, Chennai.<br>M/s Energo Engg., Delhi.   |
| O. | Non-Ferrous Valve.                                  |  | M/s Leader Valves Limited, Jalandhar.<br>M/s Zoloto Industries, Jalandhar.<br>M/s Neta Valves Pvt. Ltd., Jalandhar.<br>M/s Sant Valves Pvt. Ltd., Jalandhar.   |

• **MECHANICAL EQUIPMENT :**

|    |                                 |  |   |
|----|---------------------------------|--|---|
| 1. | Gear Box                        |  | M/s Elecon, M/s NAW, M/s FMG<br>M/s Shanthi, M/s Greaves.   |
| 2. | Geared Coupling                 |  | M/s NAW, M/s HICLIFF, M/s Concord,<br>M/s FMG, M/s Roma Mechanical Works,<br>M/s Elecon, M/s David Brown, M/s Greaves.  |
| 3. | Fluid Coupling                  |  | M/s Voith India, M/s Pembrill, M/s Fluidrive,<br>M/s Fluidomat Ltd.   |
| 4. | Resilient Coupling              |  | M/s Wellman (Bibby).  |
| 5. | Conveyor Idler                  |  | M/s Elecon, M/s TRF, M/s Conveyor System,<br>M/s IGP Engineering, M/s Indiana,<br>M/s Roll Well Conveyor Components,<br>M/s Kali Handling Equipment, M/s Radiant.<br>M/s Golden Engineering Industries, Bhilai. |
| 6. | Electro Mechanical Vibro Feeder |  | M/s IC/ Electromag.   |
| 7. | Vibrating Screen                |  | M/s IC, M/s Electromag, M/s HIL.  |

List of approved vendors

|    |         |  |   |
|----|---------|--|---|
| 8. | Bearing |  | M/s SKF, M/s Norma, M/s FAG, M/s GPZ, M/s Koyo, M/s Tata Timken, M/s Nei (NBC). |
|----|---------|--|---|

**Paint**

|     |  |   |   |
|-----|--|---|---|
| 9.1 | <b>Category (A) – Critical Application</b><br>Enamel Paint Gray, Yellow, White, Signal Red, Aluminium – ordinary, Red Oxide, Zinc Chromate and Heat Resistant Aluminium Paint                                      |   | M/s Asian Paints, M/s Jenson & Nicolson, M/s Berger Paints, M/s Shalimar, M/s ICI, M/s Bombay Paints & Allied Products, M/s Arcoy Industries, M/s Kansal Nerolac Paints Ltd., |
| 9.2 | <b>Category (B) – Critical Applications for Automobiles’ Body Painting</b><br>Duco Paint (Black, White, PO Red)<br>Dulex Paints (Black, Pale Cream, Bus Green, DA Grey, Signal Red, PO Red, White, Golden, Yellow) | } | M/s ICI Paints  |
| 9.3 | <b>Category – Non Critical Application</b><br>Enamel Paint, Black, Blue, Green, PO Red   |   |   |

**COMPRESSORS**

|    |             |  |   |
|----|-------------|--|---|
| 1. | Compressors |  | M/s ELGI, M/s Ingersoll, M/s Consolidated Pneumatics, M/s Khosla, M/s Kirloskar, M/s Kay International (P) Ltd.*<br>(*Only for Twin Lobe) |
|----|-------------|--|---|

**• PIPES  
SEAMLESS PIPES**

| Sl.No. | Item | Preferred make |
|--------|------|----------------|
|--------|------|----------------|

List of approved vendors

|  |                |  |
|--|----------------|--|
|  | Seamless Pipes | Manufactures :<br>M/s Maharashtra Seamless, Gurgaon<br>M/s BHEL, Trichi<br>M/s Heavy Metals & Tubes, Mumbai<br>M/s ISMT, Kolkata<br>Traders :<br>M/s MJ Patel, Mumbai<br>M/s Sunil Kumar Ramesh Kumar, Jamshedpur<br>M/s MICCO Metal Industries, Mumbai<br>M/s Jayant Metals, Mumbai<br>M/s Asian Metals, Mumbai |
|--|----------------|--|

**ERW PIPES**

| Sl.No. | Item      | Preferred make   |
|--------|-----------|--|
|        | ERW Pipes | Manufactures :<br>M/s Bhilai Auxiliaries, Bhilai<br>M/s Precision Pipes, Kolkata<br>M/s PS Steel Tubes, Bhilai<br>M/s Feedback Steel Tubes, Gaziabad<br>M/s Surya Roshni Limited, Haryana<br><b>Traders :</b><br>M/s MJ Patel, Mumbai<br>M/s Sunil Kumar Ramesh Kumar, Jamshedpur<br>M/s MICCO Metal Industries, Mumbai<br>M/s Jayant Metals, Mumbai<br>M/s Asian Metals, Mumbai |

Note : For ERW pipes dia 219 and above – M/s Rourkela Steel Plant.

**Turbines & Blowers:**

| Sl.No. | Item    | Preferred make   |
|--------|---------|--|
| 1.     | Boiler  | M/s BHEL, M/s Thermax Babcock Wilcox,<br>M/s Alsthom               |
| 2.     | Turbine | M/s BHEL, M/s Alsthom, M/s Novosky,<br>M/s Siemens, M/s Kaluga     |
| 3.     | Blower  | M/s BHEL, M/s Novosky, M/s Mann Turbo,<br>M/s Siemens, M/s Alsthom |

**Portable Maintenance Tools**

|                          |
|--------------------------|
| List of approved vendors |
| Page 29 of 29            |

**A. Electrical equipment.**

| Items  | Preferred makes   |
|--|---|
| 1. St.Grinder<br>2. Angle Grinders<br>3. Drilling Machines<br>4. Bench Grinders 6"<br>5. Sanders/ Polishers<br>6. Sander | M/s Ralli Wolf<br>M/s Bosch Power Tools<br>M/s Kulkarni Power Tools<br>M/s Black & Decker |

**B. Lifting / Pulling Equipments.**

| Items  | Preferred makes  |
|--|--|
| 1. Pulling and lifting machines<br>2. Hand Operated chain pulley block.<br>3. Hand operated gear traveling trolleys.<br>4. Hydraulic Jacks<br>a. Remote Controlled type (operating pressure + 700 bar)<br>b. Elect. Hydraulic. Power pack (operating pressure + 700 bar)<br>5. Hyd. Bearing pullers. | M/s Tirfor, M/s Max Pul, M/s Indef<br>M/s Indef<br>M/s Indef<br>M/s OEW, M/s Orione, M/s Enerpack<br>M/s OEW, M/s Orione, M/s Enerpack<br>M/s Super Unique, M/s Omar Star, M/s Power Ram |

**C. Pneumatic Tools**

| Items  | Preferred makes          |
|--|--------------------------|
| 1. Chipping Hammer<br>2. St.Grinder<br>3. Angle Grinders<br>4. Drilling Machine<br>5. Die Grinders<br>6. Impact Wrenches | M/s CPT<br>M/s Pne-Tech. |

**D. Miscellaneous Tools**

| Items  | Preferred makes  |
|--|--|
| 1. Die less hyd. Crimping tools (6-500 sq.mm size)<br>2. Ring Spanners of asserted sizes.<br>3. Socket spanners. | M/s Ismal make<br><br>M/s Taparia, M/s Jhalani<br>M/s Evarest, M/s Mekaster<br>M/s Taparia, M/s Mekaster |

### Bearings.

| S.N. | Category  | Suppliers   | Remarks  |
|------|---|---|--|
| 1    | Category (Supercritical)(*)                           | SKF, FAG & TIMKEN (Overseas manufacturers only)   | Bearings whose country of origin is China are not acceptable.              |
| 2    | Category II (Critical)(*)                             | SKF, FAG, TIMKEN, NSK, SNR, NTN, KOYO (Overseas/Indigenous manufacturers)   | Bearings whose country of origin is China are not acceptable.              |
| 3    | Category III (General) (*)                            | SKF, FAG, TIMKEN, NTN. NSK, SNR, KOYO, ZKL, GPZ, MPZ, SPZ, URB, ZWZ, INA, NBC, AEC, ABL, JMC, NRB, ARB (Overseas / Indigenous manufacturers)  |  |
| 4    | Non standard Russian origin (*)                       | SPZ, MPZ, GPZ, & ZKL, NTN, NSK, KOYO, URB (who have already developed certain Russian bearings )  |  |
| 5    | Uncommon, Non-standard bearings of other origins: (*) | IKO, NACHI, ELGES, ASAHI, FAFNIR , TORRINGTON, UKF, NADELA, RBC, UNIMAC, McGILL, HOFFMAN, MRC, NDH, OILITE, MATHWS, HOESCH ROTHE ERDE, ROLLWAY, GAMET, POLLARD, HYATT, EICH, RHP and COOPER |  |
| 6    | Sleeves   | SKF, FAG, TIMKEN, NTN. NSK, SNR, KOYO, for cat-I and Cat.-II. MIDHA & MIDHA, SIBCO  | If bearing manufacturers recommend and stand guarantee for their bearings. |

List of approved vendors

(\*)

**Supercritical :**

Bearings whose failure can result in stoppage of either upstream or downstream process or require more than 8 hrs. for restoration of the equipment and the process of the department is stopped during this period or can result in huge consequential losses are classified as supercritical bearings. Based on this, 206 sizes are classified as supercritical bearings.

**Critical :**

Bearings whose failure can result into a stoppage of the process of the shop for less than 8 hours but more than 2 hours or affects downstream or upstream units to some extent are classified as critical bearings. Based on this, 595 sizes are classified as Critical bearings.

**General :**

Bearings whose failure can result in stoppage of process for less than 2 hours and sometimes no process stoppage is required immediately and standby or alternative arrangements can be made to maintain process continuity are classified as General purpose bearings. Based on this, 1882 sizes are classified as general purpose bearings.

**Non standard Russian origin:**

Bearings of supercritical / critical / general nature application supplied alongwith OEMs of Russian, CIS, or former East Block countries, whose substitutes are not available from other manufacturers are grouped under this category. 231 sizes are classified in this category.

**Uncommon, Non-standard bearings of other origins:**

The varieties of bearings whose consumption pattern is so low that no other manufacturer is ready to develop alternatives are classified as uncommon, non-standard of other origin. 127 sizes are classified in this category.

**Sleeves :**

Sleeves are to be procured from bearing manufacturers only for their bearings or from sources recommended by bearing manufacturers so that performance of bearing is guaranteed.

**Chemicals / Special Material**

| S.No. | Type        | Standard/<br>Specification | Preferred manufacturers                     |
|-------|-------------|----------------------------|---|
| 1.    | Admixtures  |                            |   |
| a.    | Plasticizer | IS 9103                    | FOSROC, STP, SIKA, PIDILITE, CICO, MC, BECK |

List of approved vendors

|    |                                     |                   |   |
|----|-------------------------------------|-------------------|---|
| b. | Super Plasticizer                   | IS 9103           | FOSROC, STP, SIKA, PIDILITE, CICO, MC, BECK       |
| c. | Water proofing admixtures           | IS 2645           |   |
| d. | Accelerating admixtures             | IS 9103           | FOSROC, PIDILITE, CICO, MC                        |
| e. | Shotereing admixtures               |                   | FOSROC, STP, SIKA PIDILITE, CICO, MC              |
| 2. | Grouts                              |                   |   |
| a. | Cementitious, freeflow, non-shrink. | ASTMC C 1107      | FOSROC, STP, SIKA, PIDLILITE, CICO, MC, BECK, ACC |
|    | Minimum compressive strength.       |                   | 1 day : 250 kg/ sq.cm<br>28 days : 600 kg/ sq.cm  |
| b. | Epoxy based.                        | ASTM C 881        | FOSROC, STP, SIKA, PIDILITE, CICO, MC, BECK, ATUL |
|    | Minimum compressive strength.       |                   | 7 days : 150 kg/ sq.cm                            |
|    | Minimum flexural strength           |                   | 7 days : 250 kg/ sq.cm                            |
| 3. | Floor hardeners.                    |                   |   |
| a. | Metallic                            |                   | FOSROC, STP, PIDILITE, CICO, BECK                 |
|    | Minimum compressive strength.       |                   | 28 days : 700 kg/ sq.cm.                          |
| b. | Non-metallic                        |                   | FOSROC, STP, SIKA, PIDILITE, CICO, MC, BECK       |
|    | Minimum compressive strength.       |                   | 28 days : 600 kg/ sq.cm                           |
| 4. | Curing and sealing compounds.       |                   |   |
| a. | Polymer based.                      | ASTMC 309 Type-2  | STP, PIDILITE, CICO, MC                           |
| b. | Wax based                           | ASTM C 309 Type-1 | FOSROC, STP, SIKA, CICO, MC                       |
| 5. | Repair compounds.                   |                   |   |
| a. | Quick setting cementations.         |                   | FOSROC, STP, SIKA, PIDILITE, CICO, MC             |
|    | Initial set time.                   |                   | 2 minutes – max.                                  |
|    | Minimum compressed strength         |                   | 28 days : 250 kg/ sq.mm                           |
| b. | SBR Latex                           |                   | FOSROC, STP, SIKA, PIDILITE, MC                   |

List of approved vendors

|    |                                      |                                      |  |
|----|--------------------------------------|--------------------------------------|--|
|    | Solid content                        |                                      | Not less than 42%  |
|    | pH value                             |                                      | Not less than 10   |
|    | Density                              |                                      | More than 1 kg/ litre.   |
| c. | Epoxy bond coat                      | ASTM C 881, Type-2                   | FOSROC, STP, SIKA, CICO, MC, BECK, PRODORITE                   |
| d. | SFMC                                 |                                      | FOSROC, STP, SIKA, PIDILITE, BECK                              |
|    | Minimum compressive strength.        |                                      | 1 day : 100 kg/ sq.cm<br>28 days : 500 kg/ sq.cm               |
| 6. | Epoxy floorings/ coatings.           |                                      |  |
| a. | Screed (*)                           |                                      | FOSROC, STP, SIKA, PIDILITE, MC, BECK                          |
| b. | Self leveling (*)                    |                                      | FOSROC, STP, SIKA, PIDILITE, CICO, MC, BECK, APURVA            |
| c. | Epoxy floor coating (*)              |                                      | FOSROC, STP, SIKA, PIDILITE, MC                                |
| 7. | Protective and water proof coatings. |                                      |  |
| a. | Epoxy based.                         | ASTM C 881, Type-3, Gr.2 Class-B & C | FOSROC, STP, SIKA, PIDILITE, CICO, MC, BECK, APURVA            |
| b. | Polymer modified cementations.       | ASTM C 309                           | FOSROC, STP, SIKA, PIDILITE, CICO, MC, BECK, PRODORITE, APURVA |
| 8. | Joint sealments (Polysulphide) (*)   | IS 12118                             | FOSROC, STP, SIKA, PIDILITE, CICO                              |

(\*) Not recommended for Purchase. Can be applied through contracts including supply and application of materials as per requirements and manufacturer's specifications.

#### Fire Fighting Equipment.

|    |                                  |                 |  |
|----|----------------------------------|-----------------|--|
| 1. | Fire Extinguishers and Modulars. | ISO – 9001-2000 | M/s Kanadia Fyr Fyter Pvt.Ltd. Mumbai. |
|----|----------------------------------|-----------------|--|

#### Polymer Chute Liner.

|    |                      |   |                                    |
|----|----------------------|---|------------------------------------|
| 1. | Polymer Chute Liner. | - | M/s Jyoti Cero Rubber, Jamshedpur. |
|----|----------------------|---|------------------------------------|

List of approved vendors

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