


1167431/2022/PS-PEM-EL

	PRE-QUALIFICATION REQUIREMENTS FOR HIGH MASTS FOR NTPC TALCHER STAGE-III (2 X 660 MW)		PE-PQ-497-558-E004
			REVISION NO. 00 DATE 05/11/2022
			SHEET NO. 1 OF 1

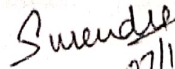

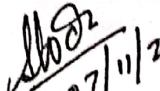
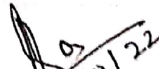
ITEMS : HIGH MASTS

SCOPE : Supply : YES; Erection & Commissioning : NO

1.0	Vendor should be a manufacturer of high masts as per relevant IS. In case the vendor is not a manufacturer, the vendor to furnish the following documents: a) Undertaking / agreement from OEM of offered make for support in design, manufacture, inspection & testing of masts. b) Credentials of the manufacturer of offered make to meet the PQR requirements of S. no. 2.0 to 3.0 below. c) Vendor's Credentials to meet S. no. 4.0.
2.0	Availability of test reports of high masts conducted at Govt. Lab/ Govt. approved Independent lab or witnessed by third party as per relevant IS.
3.0	Manufactured and supplied at least 5 nos. high masts in one or more orders.
4.0	Minimum two (2) nos. purchase orders for high masts shall be submitted which should not be more than five (5) years old from the date of techno- commercial bid opening for establishing continuity in business.

NOTES:

1. Consideration of offer shall be subject to customer's approval of bidders, if applicable.
2. Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self-attested English translated document should also be submitted.
3. Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder/collaborators to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.
4. After satisfactory fulfillment of all the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of the tender.

PREPARED BY  SURENDRA MATHARU (MANAGER-ELECT)	REVIEWED BY  ANKUR ARORA (MANAGER-ELECT)	 SANDEEP LODH (Sr. DGM-ELECT)	APPROVED BY  DEBASISA RATH (AGM & DH-ELECT)
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2x660 MW TALCHER STPP STG-III
BOQ FOR LIGHTING HIGH MAST

SL. NO.	Item code	ITEM DESCRIPTION	UNIT	HSN Code	QTY	UNIT EX- WORKS PRICE (Rs.)	TOTAL EX- WORKS PRICE (Rs.)	FREIGHT %	GST%	TOTAL FOR PRICE (EXW+FRT+ GST)
1.0		High Mast								
1.1	558-14003-A	LIGHTING MAST OCTAGONAL SHAPE, TYPE LM30 (including all other items required for the completeness of the system as per the technical specification requirements (earthing, lightning protection etc.)	Nos.	7308	30					
1.2	-	ASSOCIATED LUMINAIRES (SF 66 - Flood light, heavy duty type LED fixture)	Nos.		480					

NOTES:

- 1 The quantities, which are indicated above shall be released for manufacture & supply along with LOI.
- 2 Manufacturing of above quantities shall be done after the approval of technical & quality documentation, and supply of the same shall be completed as per NIT.
- 3 The Mast shall be supplied alongwith associated luminaires with feeder panel & accessories such as lantern carriage, including the Head Frame, Double Drum Winch, continuous stainless steel wire rope, in built power tool, aviation warning light, earthing and lightning protection arrangement along with necessary power cables within the mast. The mast shall be delivered only in three sections & shall be joined together by slip stressed fit method without carrying out any welding or bolting of joints at site.

NATIONAL THERMAL POWER CORPORATION LIMITED

2 X 660 MW TALCHER TPS

VOLUME – II

TECHNICAL SPECIFICATION FOR

HIGH MAST AND LIGHTING FIXTURES FOR HIGH MAST

BHEL SPECIFICATION NO. : PE-TS-497-558-E001, REV-0



BHARAT HEAVY ELECTRICALS LIMITED

POWER SECTOR

PROJECT ENGINEERING MANAGEMENT

NOIDA – 201301

1167403/2022/PS-PEM-EL



2 x 660MW TALCHER STPP

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MAST AND LIGHTING FIXTURES FOR HIGH
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TOTAL NUMBER OF SHEETS (INCLUDING COVER & SEPARATOR SHEETS): 55

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COMPLIANCE CERTIFICATE

The bidder shall confirm compliance to the following by signing/ stamping this compliance certificate and furnishing same with the offer.

1. The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusion/ deviation with regard to same.
2. There are no deviation with respect to specification other than those furnished in the 'schedule of deviations'.
3. Only those technical submittals which are specifically asked for in NIT to be submitted at tender stage shall be considered as part of offer. Any other submission, even if made, shall not be considered as part of offer.
4. Any comments/ clarifications on technical/ inspection requirements furnished as part of bidder's covering letter shall not be considered by BHEL, and bidder's offer shall be construed to be in conformance with the specification.
5. Any changes made by the bidder in the price schedule with respect to the description/ quantities from those given in BOQ-Cum-Price schedule of the specification shall not be considered (i.e. technical description & quantities as per specification shall prevail).


BIDDER'S STAMP & SIGNATURE

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SECTION-I

SPECIFIC TECHNICAL REQUIREMENTS

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1.0 SCOPE OF SUPPLY AND SERVICES

1.1 SUPPLY:

Design, manufacture, assembly, inspection & testing at vendor's/ sub-vendor's works, proper packing and delivery to site of **HIGH MASTS AND associated LIGHTING FIXTURES suitable for mounting on High Mast** as mentioned in different sections of this specification, complete with all accessories for efficient and trouble-free operation.

1.2 SYSTEM DESIGN ENGINEERING:

The lighting fixture shall be designed on the basis of best engineering practice and shall ensure uniform, reliable, aesthetically pleasing and glare free illumination. The lighting fixtures shall be designed for minimum glare and free from flicker. The finish of the fixtures shall be such that no bright spots are produced either by direct light source or by reflection. The diffusers/ louvers used in fixtures shall be made of impact resistant polystyrene sheet and shall have no yellowing property over a prolonged period. The Lux levels to be adopted are in line with the requirement as indicated elsewhere in this specification.

The lighting fixtures shall be of a proven design for applications in power plant environment and shall be weatherproof type.

1.3 Although Erection and Commissioning (E&C) and Supervision of E&C is not included in vendor's scope, the vendor shall still not be absolved of his responsibility of establishing the correctness of equipment at site.

1.4 Standard technical requirements of the high mast, lighting fixtures, lamps & miscellaneous items and lighting system design requirements are indicated in Section-II. Project specific requirements/changes are listed in Section-I.

1.5 The stipulations of Section-I, followed by those of Data Sheet-A shall prevail and govern in case of conflict between the corresponding requirements of Section-I and Section-II.

1.6 Review of sub-vendor's documents by the purchaser shall not relieve the vendor from the responsibility of design & supply.


1.7 The documents shall be in English language and MKS system of units.

1.8 Make of all equipment and components shall be as per attached Sub-Vendor List enclosed as per Annexure-A to section- I. Makes of sub-vendor and equipment/components (excluding luminaires) mentioned in this list are indicative and shall be subject to NTPC/BHEL approval. The bidder may propose name of additional sub-vendors makes based on their experience, which will be subject to NTPC/BHEL approval.

2.0 BILL OF QUANTITIES:

2.1 Quantity requirements shall be as per BOQ-cum-price schedule as part of NIT.

2.2 The bidder to quote for items as per price schedule attached with NIT. Supplier to also give the following undertaking in the BOM: "The BoM provided herewith completes the scope (in content and intent) of material supply under PO No. -----, dated -----". Any additional material which may become

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necessary for the intended application of the supplied item(s)/package will be supplied free of cost in most reasonable time."

3.0 STATUTORY AND REGULATORY REGULATION

3.1 Statutory and regulatory regulation shall be applicable as per Indian Electricity Rule, 1956 with amendment-3 Rule no. 35, 48, 49, 50, 61 & 64 for illumination & low voltage power services.

4.0 DOCUMENTATION

4.1 Documents required along with the technical offer: -


a) Drawing and document to be submitted as part of the technical offer shall be as per NIT.

4.2 Documents required after award of LOI/PO shall be as per NIT (to be submitted by successful bidder).

5.0 SPECIFIC TECHNICAL REQUIREMENTS

5.1 HIGH MASTS

S. No.	Clause reference of section-II	Project specific requirement (to be read as)
1	3.1.1	<p>Lighting Mast shall be of continuously tapered polygonal cross section hot dip galvanised. The Mast shall be of 30 M or suitable height with lantern carriage to enable raising/lowering for ease of maintenance, including the Head Frame, Double Drum Winch, continuous stainless steel wire rope, in built power tool, luminaires, suitable aviation warning light, lightning along with necessary power cables within the mast. The mast shall be delivered in not more than three sections & shall be joined together by slip stressed fit method at site. No site welding or bolted joints shall be done on the mast</p> <p>The Mast together with the fixtures shall be capable of withstanding the appropriate wind loads as per IS: 875. The Mast shall be fabricated from special steel plates conforming to BS-EN10-025 and folded to form a polygonal section.</p> <p>Carriage shall be provided with JB type M to facilitate interconnection to lighting fixtures.</p>
2	3.1.7	<p>Earthing of High mast shall be done using 2 no. 50X6mm GS which in turn shall be connected to one 40 mm dia MS earth electrode of 3 meter length driven vertically in the ground. The earthing flat and electrode is</p>

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		not in the bidder scope. Mast shall be provided with 1200mm long air termination for the lightning protection. Suitable arrangement for connection of down comer shall be provided. Provision of earth connection of GI strip shall also be kept at a height of one meter from the ground.
3	3.1.8	Types of Lighting Masts LM30 - Lighting Mast with 30 m height
4	4 COMPONENTS OF MAST FEEDER PANEL Feeder pillar shall have provision of receiving 4Cx16 sq mm. cable.....	Provision for cable entry in feeder pillar shall be as per clause 8.0 (c) of Datasheet-A of High Mast.
5	6.1	Bidder shall confirm compliance with the Quality Plan (0000-999-QOE-S-52) included in the specification without any deviations. At contract stage, the successful bidder shall submit the same QP for BHEL/ ultimate customer's approval. There shall be no commercial implication to BHEL on account of any changes in QP during contract stage.

Suitable feeder pillar with TPN MCB, contactors, timer, MCB and other necessary accessories for operation & protection of the mast and fixtures shall be provided.

It shall also include all accessories for high mast including head frame, steel wire rope 6mm dia, trailing cable, double drum winch, galvanized lantern carriage arrangement suitable for 16 nos luminaries and its control gear boxes. The mast shall have an integral power tool installed inside the base compartment for its operation. The mast shall be supplied complete with foundation bolts manufactured from special steel along with nuts, washers and anchor plates. Suitable control panel housing control circuit for operation and control for power tool motor shall be provided with mast. Each Lighting mast shall be supplied along with 16nos. 2x450W (max.) **LED** fixtures and one no. twin dome aviation obstruction **LED** light. The mast with control panel shall be fenced with locking arrangement.

Apart from the standards mentioned in supply & installation part of section-I & following standards shall also be followed:

- i) BS-EN10-025
- ii) IS:280

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- iii) IS : 1255
- iv) BS :6121
- v) BS EN ISO 1461

Lighting mast design shall be suitable for following:

- a) 30M Height of the lighting mast
- b) Maximum number of luminaires as per Data Sheet A.
- c) Additional load of 500 kg towards the weight of maintenance crew.
- d) Permissible design parameters should be according to relevant standard. The deflection under the maximum wind pressure of 150 kg/sq.m shall not exceed 1 in 360.
- e) All steel sections, members and hardware used shall be hot dip galvanized as per applicable standard.
- f) Provision shall be made for supporting cables, down conductors etc. at regular intervals on lighting tower. Hot dip galvanized brackets of required size shall be provided for the same.
- g) Make of all components like: Integral motor, trailing cable, feeder pillar, contactor, MCB shall be of reputed make.
- h) EPR / PCP cable required for lighting mast shall be provided by vendor. Cables from feeder pillar to fixtures shall be supplied by vendor.
- i) Soil bearing capacity for design of foundation for lighting masts shall be considered as 7 T/m²
- j) Wind speed to be considered for lighting mast design shall be 50 m/s.

5.2 LED Luminaires:

S. No.	Clause reference of section-II	Project specific requirement (to be read as)
1	4.1 The luminaire efficacy shall be not less than 70Lm/W.	The luminaire efficacy shall be not less than 100 Lm/W.
2	4.1 The LED used in the luminaires shall have colour rendering index (CRI) of Min 65. Colour designation of LED shall be "cool day light" (min 5700K) type.	The LED used in the luminaires shall have colour rendering index (CRI) of Min 80. Colour designation of LED shall be "cool day light" (min 5700K) type for indoor areas. However, for outdoor areas, the colour temperature of LED shall be min. 4000K, including rough & dust prone areas.
3	<ul style="list-style-type: none"> LED Drivers may have following control & protections: Suitable precision current control of LED.	LED Drivers shall have following control & protections: - 1. Suitable precision current control of LED.

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	Open Circuit Protection Short Circuit Protection Over Temperature Protection Overload Protection	2. Open Circuit Protection 3. Short Circuit Protection 4. Over Temperature Protection 5. Overload Protection 6. Surge Protection
4	7.0 PACKING	Packing shall be as per Annexure-B of the technical specification.
5	9.1	Bidder shall confirm compliance with the Quality Plan (0000-999-QOE-S-062) included in the specification without any deviations. At contract stage, the successful bidder shall submit the same QP for BHEL/ultimate customer's approval. There shall be no commercial implication to BHEL on account of any changes in QP during contract stage.
6	11.2 Documents to be submitted during detailed engineering of contract	Shall be as per clause 4.2 of Section-I
7	5.5 STARTER HOLDERS 5.6 BALLASTS 5.7 STARTERS 5.8 CAPACITORS	These clauses stands deleted

The Lighting Fixture shall be LED Type. The individual lamp wattage for LED shall be upto 3 watt. Fractional wattage LEDs are also acceptable. The LED chip efficacy shall be min 120 Lm/W. Suitable heat sink shall be designed & provided in the luminaire. The LED luminaires shall have a minimum life of 25000 burning hours with 80% of lumen maintenance at the end of the life. LED shall conform to the LM 80 requirements.

The max. junction temperature of LED shall be 85 deg C. Further the lumen maintenance at this temperature shall be min 90%. The THD of LED Luminaires shall be less than 10%. Further the EMC shall be as per IS 14700. The power factor of the luminaire shall not be less than 0.9. The marking on luminaire & safety requirements of luminaire shall be as per IS standards. Suitable heat sink with proper thermal management shall be designed & provided in the luminaire.


The connecting wires used inside the system, shall be low smoke halogen free, fire retardant type and fuse protection shall be provided in input side specifically for LED luminaires.

Care shall be taken in the design that there is no water stagnation anywhere in the housing of luminaire. The entire housing shall be dust and water proof protection as per IS 12063.

Alternatively, vendor may offer technically superior and proven product subject to approval of employer.

The make of luminaires shall be as per Annexure-A (Sub-vendor list) to the technical specification.

Driver Circuit

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LED modules and drivers shall be compatible to each other. The LED module driver's ratings and makes shall be as recommended by corresponding LED chip manufacturer.

Wiring

Lighting wires shall be 1100 V grade, light duty PVC insulated unsheathed, stranded copper/aluminium wire for fixed wiring installation. Colour of the PVC insulation of wires shall be Red, Yellow, Blue and Black for R, Y, B phases & neutral, respectively and white & grey for DC positive & DC negative circuits, respectively. Minimum size of wire shall not be less than 1.5 sq. mm. for copper and 4 sq.mm. for aluminium.

Fixture shall be suitable for termination of the conductor size.


EARTHING & LIGHTNING PROTECTION

Lighting panels, etc. shall be earthed by two separate and distinct connections with earthing system. Switch boxes, junction boxes, lighting fixtures, fans, single phase receptacles etc. shall be earthed by means of separate earth continuity conductor. The earth continuity conductor 14 SWG GI wire shall be run along with each conduit run. Cable armours shall be connected to earthing system at both the ends.

SL. No.	Type of Luminaire	Description	Total Luminous flux (Lumen) of luminaire- Minimum value	Measured Electrical Input Power(Watt)- Maximum value
1	SF66 (LED)	Flood light, heavy duty type LED fixture	45000	450

Notes:

- 1) The Luminaire must comply all the parameters of IS 16106 or IESNA LM-79-08.
- 2) The LED driver should comply to IEC 61347 - 2 - 13, IS 15885: Part 2: Sec 13, IEC 62384, IS 16104 and CISPR 15.
- 3) The luminaire complete with all accessories shall comply to relevant specified standards.
- 4) The values of minimum luminous flux & maximum measured electrical input power are specified above for the luminaire (including any accessories like driver module etc.). These values shall be measured as per IS 16106 & shall not be subject to any further tolerance.

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5.2 TESTS

a) The contractor shall carry out the type tests as listed in this specification on the LED fixtures to be supplied under this contract.

b) The type tests shall be carried out in presence of the employer's representative, for which minimum 15 days' notice shall be given by the contractor. The contractor shall obtain the employer's approval for the type test procedure before conducting the type test. The type test procedure shall clearly specify the test set-up, instruments to be used, procedure, acceptance norms, recording of different parameters, interval of recording, precautions to be taken etc. for the type test(s) to be carried out.

c) In case the contractor has conducted such specified type test(s) within last ten years as on the date of 06.06.2022, he may submit during detailed engineering the type test reports to the owner for waiver of conductance of such type test(s). These reports should be for the tests conducted on the equipment similar to those proposed to be supplied under this contract and test(s) should have been either conducted at an independent laboratory or should have been witnessed by a client. The owner reserves the right to waive conducting of any or all the specified type test(s) under this contract. However, if the contractor is not able to submit report of the type test(s) conducted within last ten years from the date of 06.06.2022, or in case of type test report(s) are not found to be meeting the specification requirements, the contractor shall conduct all such tests under this contract at no additional cost to the owner either at third party lab or in presence of client /owners representative and submit the reports for approval.


d) All acceptance and routine tests as per the specification and relevant standards shall be carried out. Charges for these shall be deemed to be included in the equipment price.

e) Selection of samples for type test, acceptance test & routine test and acceptance criteria for all the items shall be as per relevant I.S

f) Type test reports of the Lighting Fixtures of each type as per technical specification requirements/ standards shall be submitted for approval.

Type test reports for LED as per standards for following shall be submitted for approval.

1. Visual and Dimension check
2. Proof of procurement of LEDs
3. Safety tests
 - a) Marking
 - b) Construction
 - c) Provision for Earthing
 - d) External and Internal wiring
 - e) Protection against electrical shock
 - f) Endurance and Thermal
 - g) Insulation resistance & electrical strength
 - h) Resistance to heat fire & tracking
 - i) Resistance to Humidity
4. Fire Retardant test
5. Performance tests (electrical, Photometric color and Life)
6. Burn-in Test
7. Power Cycling
8. Temperature rise test
9. Emission Tests
 - a) Radiated & conducted emission
 - b) Harmonics & flickers
10. Immunity tests

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In addition, following test reports to be submitted for LED chip/LED luminaire:

- a) LED parameters like Lumen per watt, CRI, Beam angle from manufacturer
- b) LM 80/IS: 16105 report.
- c) LM 79/IS: 16106 report.

5.3 EXCLUSIONS


The scope of civil work such as embedment, RCC pedestal using M-25 grade concrete, for steel shuttering etc. are excluded from the scope of bidder. Bidder shall furnish all inputs for foundation design to BHEL during detailed engineering. However, foundation bolts shall be in the scope of the bidder.

CODES AND STANDARDS

All standards and codes of practice referred to herein shall be the latest edition including all applicable official amendments & revisions as on date of bid opening. In case of conflict between this specification and those (IS codes, standards etc.) referred to herein, the former shall prevail. All work shall be carried out as per the following standards & codes.

16101:2012	General Lighting. LEDs and LED modules Terms and definitions
16102(Part 1):2012	Self Ballasted LED Lamps for General Lighting Services. Part-1 Safety Requirements.
16102(Part 2):2012	Self Ballasted LED Lamps for General Lighting Services. Part-2 Performance Requirements.
16103(Part I):2012	LED modules for General lighting Safety Requirements.
15885(Part 2/Sec. 13) :2012	Lamp control gear Part 2 particular Requirements Section 13 D.C. or A.C. Supplied Electronic control gear for LED modules
16104:2012	D.C. or A.C. Supplied Electronic control gear for LED modules - Performance Requirements.
16105:2012	Method of Measurement of Lumen maintenance of Solid-state Light (LED) Sources.
16106:2012	Method of Electrical and photometric Measurements of Solid State Lighting (LED) Products
16107:2012	Luminaires Performance
16108:2012	Photo biological safety of Lamps and Lamp Systems
IS 513	Cold rolled low carbon steel sheets and strips
IS 12063	Classification of degree of protection provided by enclosures.
IS 14700	Electromagnetic compatibility (EMC) – Limits (Part 3/Sec. 2) for Harmonic current emission – THD < 15% (equipment, input current < 16 Amps. per phase.
IS 9000 (Part 6)	Environment testing: Test Z – AD: composite temperature/humidity cyclic test.
IS 15885	Lamp control gear: particular requirements for (Part 2/Sec. 13) DC or AC supplied electronic control gear IS 16004 – 1 and 2) for LED modules.
IS 4905	Method for random sampling


LUMINAIRES

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IS 10322	Luminaires
IS 1777	Industrial luminaires with metal reflector
IS 3287	Industrial lighting fittings with plastic reflectors
IS 5077	Decorative lighting outfits
IS 3528	Waterproof electric lighting fittings
IS 3553	Watertight electric lighting fittings
IS 4012	Dust-proof electric lighting fittings
IS 4013	Dust-tight electric lighting fittings
IS 2206	Flameproof electric lighting fittings - well glass & bulk head types
IS 8224	Electric lighting fittings for division 2 areas
IS 1913	General & Safety requirement of Luminaire

Electrical Installation Practices & Miscellaneous

IS:1944	Code of practice for lighting of public thorough fare
IS:3646	Code of practice for interior illumination.
IS:5572	Classification of Hazardous areas (other than Mines) having flammable gases and Vapours for electrical installation
S:6665	Code of practice for industrial lighting. . National Electrical Code - Indian Electricity Rules. Indian Electricity Act
IS:5	Colour for ready mixed paints & enamels
IS:280	Mild steel wires for general engineering purposes
IS:374	Electric ceiling type fans & regulators
IS:732	Code of practice for electrical wiring installations
IS:1255	Code of practice for installation and maintenance of power cables Upto and including 33KV rating
IS:2062	Steel for general structural purposes
IS:2629	Recommended practice for hot-dip galvanizing of iron and steel
IS:2633	Methods for testing uniformity of coating of zinc coated articles
IS:2713	Tubular steel poles for overhead power lines
IS:3043	Code of practice for earthing
IS:5216	Guide for safety procedures and practices in electrical work
IS:5571	Guide for selection of electrical equipment for hazardous areas
BS:6121	Mechanical cable glands

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DATA SHEET –A (HIGH MAST)


1.0 APPLICABLE STANDARDS & CODES

[A] POLES AND HIGH MAST

- | | | |
|-----|---|-----------------|
| 1. | Tubular steel poles for over head power lines | IS 2713 |
| 2. | Code and practice for design loads for structures | IS 875 Part III |
| 3. | Code of practice for general construction in steel | IS 800 |
| 4. | European structural steel standard | BS-EN 10025 |
| 5. | Code of practice for phosphating of iron and steel | IS 6005 |
| 6. | Colour for ready mixed paints & enamels | IS 5 |
| 7. | Recommended practice for hot dip galvanising of iron & steel | IS 2629 |
| 8. | Method of testing uniformity of coating on zinc coated articles | IS 2603 |
| 8. | Method of sampling for steel pipes, tubes & fittings | IS 4711 |
| 10. | Method of chemical analysis of pig iron, cast iron and plain carbon & low alloy steel | IS 228 |
| 11. | Steel tubes for structural purposes | IS 1161 |
| 12. | Mechanical testing of metals-Tensile Testing | IS 1608 |
| 13. | Specification for hot dip zinc coatings on structural steel and allied products | IS 4759 |
| 14. | Method for testing uniformity of coating on zinc coated articles | IS 2633 |

[B] ADDITIONAL STANDARDS FOR MAST

- | | | |
|----|---------|-------------|
| 1. | Welding | BS 5135/AWS |
|----|---------|-------------|

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		VOLUME II	
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- | | | |
|----|--|--------------------|
| 2. | Galvanizing | BS.ISO 1461 |
| 3. | UK Specification for Mast & Foundation | TR No. 7200 of ILE |

[C] ASSEMBLED EQUIPMENT AND COMPONENTS

- | | | |
|----|--|-----------|
| 1. | Low voltage switchgear and control gear | IEC 60947 |
| 2. | General requirements for enclosures for accessories for household and similar fixed electrical installations | IS 14772 |
| 3. | Electrical accessories- Circuit breaker for overcurrent protection for household and similar installations | IEC 60898 |
| 4. | Low voltage Fuses for voltages not exceeding 1100V AC or 1500V DC | IS 13703 |
| 5. | Visual indicator lamps | IS 1901 |

2.0 TECHNICAL DETAILS

S. No.	Description	Unit	Value
1.0	System Design Data		
a	Rated voltage	V	415
b	Rated frequency	Hz	50
c	Voltage and frequency variation (permissible)	%	Voltage: $\pm 10\%$ Frequency: $\pm 5\%$
d	Combined voltage & frequency variation (permissible)	%	10% absolute
e	System fault level & duration	kA, sec	50kA for 1 sec
2.0	Lighting Masts		
a	Number of luminaires on each mast	nos.	[] 12 [✓] 16, [Each Luminaires shall be of 450W (max.) LED type. Fixtures make shall be as per the sub-vendor list in technical specification]
b	Type of design		Telescopic tubular, Polygonal shape
c	Material		GI

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d	Height	meter	<input type="checkbox"/> 20 <input type="checkbox"/> 25 <input checked="" type="checkbox"/> 30
e	Grade of concrete		<input type="checkbox"/> M20 <input checked="" type="checkbox"/> M25 <input type="checkbox"/> M30
f	Galvanisation details		Galvanization <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
i)	Process		Hot dip
ii)	Min weight of zinc coating	gm/m2	610
iii)	Avg. thickness of zinc coating	Microns	86
3.0	Feeder Panel		
a	Enclosure material		<input type="checkbox"/> FRP <input checked="" type="checkbox"/> CRCA Sheet.
b	Enclosure thickness	mm	2
c	Degree of protection		IP-55 (min.) with canopy
d	Paint shade		RAL9002
i)	Paint type		Electrostatic coating/ Powder coating
ii)	Paint thickness	micron	50
5.1	Switch-Fuse Unit		
a	Utilisation category for main contacts		AC23
5.2	Miniature Circuit Breaker		
a	SPN MCB rating (min)	A	20
b	DP MCB rating (min)	A	20
c	TPN MCB rating (min)	A	63
d	Short time rating	kA	10
e	Magnetic short circuit protection required		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
f	Thermal overload protection required		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
5.3	Power Contactors		
a	AC contactors voltage coil rating	V	240
b	DC contactors voltage coil rating	V	220
5.4	Selector switch		
a	Type of selector switch		<input checked="" type="checkbox"/> Stay put <input type="checkbox"/> Wing knob
b	Lockable		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

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5.5	Push Button		
a	Voltage grade	V	500
b	Potential free contacts		2NO+2NC
5.6	Time switch		
a	Type		Digital synchronous
b	Range	Hr	00-24
c	Coil voltage rating	V	240
5.7	Timer		
a	Type		
b	ON delay timer range	Sec	0-5
c	OFF delay timer range	Sec	0-180
d	AC Coil voltage rating	V	240
e	DC Coil voltage rating	V	220
6.0	Cable Glands		By vendor for all incoming and outgoing cables at feeder panel
a	Type		<input checked="" type="checkbox"/> Double compression <input type="checkbox"/> Single compression
b	Material		Brass
c	Nickel Plating provided		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
d	Size		During detailed engineering.
7.0	Cable Lugs		By vendor for all incoming and outgoing cables at feeder panel
a	Type		<input checked="" type="checkbox"/> Crimping type <input type="checkbox"/> Ring type
b	Material		Tinned copper
c	Size		During detailed engineering.
8.0	OTHER DETAILS		
a	Cable Gland of Nickel Plating, Brass, Double Compression Type		YES (Suitable for Cable Size 3.5Cx50 Sq.mm Al) 3
b	Cable lugs of Tinned Copper, Crimping Type		YES (Suitable for Cable Size 3.5Cx50 Sq.mm Al)
c	Supply of 3.5Cx50 sqmm cable (from Feeder pillar to power source i.e.LDB/ MCC)		This cable is excluded from bidder's scope. All other cable/ wires required in lighting high mast shall be in bidder's scope.
d	BIS		YES

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e	Availability of Type Test Reports of the product from Central Govt/NABL accredited Lab showing compliance to the specification		YES
f	Test report and approvals to be furnished to the buyer on demand		YES
g	Drg./Docs w.r.t. GA of mast, feeder pillar, circuit/ wiring diagram including components make & qty., structural design calculation and foundation arrangement of Mast etc. to be furnished for purchaser's approval.		YES

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	2 x 660MW TALCHER STPP	SPECIFICATION NO. PE-TS-497-558-E006	
		VOLUME II	
		SECTION – I	
	TECHNICAL SPECIFICATION FOR HIGH MAST AND LIGHTING FIXTURES FOR HIGH MAST	REVISION 0	DATE: 26.10.2022
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DATA SHEET –A (LIGHTING FIXTURES)

S. No.	Description	Unit	Value
1.0	SYSTEM DESIGN DATA		
1.1	Design ambient	°C	50
1.2	AC Supply		
a)	Rated voltage	V	415
b)	Rated frequency	Hz	50
c)	Voltage variation (permissible)	%	+10% to -10%
d)	Frequency variation (permissible)	%	+5% to -5%
e)	Combined voltage & frequency variation (sum of absolutes permissible)	%	10%
f)	System fault level & duration	kA, sec.	50kA for 1 sec.
2.0	SCOPE OF SYSTEM DESIGN ENGINEERING		Included in vendor's scope
3.0	LUMINAIRES & ACCESSORIES		
4.0	Cable Glands		By vendor for all incoming and outgoing cables
a)	Type		[√] Double compression [] Single compression
b)	Material		Brass
c)	Nickel Plating provided		[√] Yes [] No
d)	Flameproof glands with flameproof equipment		[√] Yes [] No
5.0	Cable Lugs		By vendor for all incoming and outgoing cables
a)	Type		Crimping type/ ring type
b)	Material		Tinned copper

Note:

- Detailed luminaire data shall be placed by vendor after award of contract.
- Galvanization wherever applicable shall be hot dip galvanized with weight of Zinc as 460g/m² (65micron).

SUB-VENDOR DIRECTORY

ITEM CODE	ITEM/SERVICE DESCRIPTION	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES1	AC CONTACTORS	1	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadoria@siemens.com	
	AC CONTACTORS	2	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	AC CONTACTORS	3	E1144	TELEMECHANIQUE/ SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	TAKEN OVER BY SCHNEIDER
	AC CONTACTORS	4	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	AC CONTACTORS	5	B04	BCH	20/4, MATHURA ROAD, FARIDABAD, HARYANA-121006	0129-4293000	
ES2	AC LOAD BREAK SWITCH	1	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	AC LOAD BREAK SWITCH	2	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	AC LOAD BREAK SWITCH	3	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadoria@siemens.com	
	AC LOAD BREAK SWITCH	4	E1076	KAYCEE	KAYCEE INDUSTRIES LTD., C/O-CMS COMPUTERS LTD., 35A, REAR BLDG. NIKOLARI, NEW DELHI-110014	Rajiv Sharma-9312004687	
	AC LOAD BREAK SWITCH	5	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
ES3	AC MCCB	1	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
	AC MCCB	2	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	AC MCCB	3	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadoria@siemens.com	
	AC MCCB	4	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	AC MCCB	5	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	AC MCCB	6	C02	CROMPTON GREAVES	RAIL TRANSPORTATION SYSTEMS,VANDANA BUILDING, 11, TOLSTOY MARG, TOLSTOY MARG, NEW DELHI, DL 110001	011 3041 6300	
ES7	AUXILIARY RELAYS	1	A24	ABB	14, MATHURA ROAD, FARIDABAD, HARYANA-121003	0129-2567580, 09871799449	
	AUXILIARY RELAYS	2	G01	ALSTOM LTD	A-7, SEC-65, NOIDA	0120-479 0000	
	AUXILIARY RELAYS	3	E1075	JYOTI LTD.	JYOTI LIMITED, E&CS DIVISION,3/15, BIDC, GORWA,VADODARA - 390 016, E-MAIL ID: ECS@JYOTI.COM	Ph. No.:+91-265-2281214 , Fax No.:+91-265-2281214	
	AUXILIARY RELAYS	4	E1099	OEN INDIA LTD	29/1479, VYTILLA, COCHIN - 682 019 KERALA, INDIA	Phone : +91 484 2301132, 2303709 Fax : +91 484 2302287, 2302221 sales@oenindia.com	
	AUXILIARY RELAYS	5	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadoria@siemens.com	
ES8	BIMETAL RELAYS	1	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	BIMETAL RELAYS	2	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	BIMETAL RELAYS	3	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadoria@siemens.com	
	BIMETAL RELAYS	4	E1144	TELEMECHANIQUE/ SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	TAKEN OVER BY SCHNEIDER
ES9	BUCHHOLZ RELAY	1	G01	ALSTOM LTD	A-7, SEC-65, NOIDA	0120-479 0000	
	BUCHHOLZ RELAY	2	E1020	ATVUS INDUSTRIES	689, BLOCK 'O', NEW ALIPORE, CALCUTTA-700053	(91)-(33)-2400111 / 9885 sales@atvus.in	
	BUCHHOLZ RELAY	3	E1070	INSTRUMENTS & CONTROLS	146,GIDC IND. ESTATE,MAKARPURA, VADODRA-390010	0265-2642729	
ES10	CABLE CLAMPS & CABLE TIES	1	E1045	ELECTROMAC IND. CORPN.	27/28 AT NEW EMPIRE IND. ESTT., R.KRISHNA MANDIR RD.JB NGR ,ANDHERI(E), MUMBAI-400059	91-22-28324829 / 66919034/ Mr. Devang Patel/ 91-9867074600 devang@electromacglands.com	
	CABLE CLAMPS & CABLE TIES	2	N01	INCAB	HARE STREET,KOLKATA,WEST BENGAL-700001	91-33-2480161/62/63/64 Fax : 91-33-2485766	
	CABLE CLAMPS & CABLE TIES	3	N05	NOVOFLEX MARKETING PVT. LTD.	RAIKVA' - 5TH FLOOR, UNIT-6 3A, RAM MOHAN MULLICK GARDEN LANE KOLKATA - 700 010	Phone: +91 33 2372 0088 Email: sales@novoflex.co.in, novoflexcal@vsnl.net	
	CABLE CLAMPS & CABLE TIES	4	E1201	ALLIED TRADERS & EXPORTERS	C-124 A, SECTOR-2, NOIDA -201 301, UTTAR PRADESH, INDIA	Mr. Vijay Mohan Sood +91(11)-202-325694 +91(11)-202-3052594 +91(11)-23287156 vijay_mohansood@yahoo.com	
ES11	CABLE GLANDS	2	E1017	ARUP ENGG & FOUNDARY WORKS	391/119,PRINCE ANWAR SHAH ROAD, CALCUTTA-700068	033 2473 0850	
	CABLE GLANDS	3	E1206	BALIGA LIGHTING EQPT.PVT.LTD.	63A,CP RAMASWAMY ROAD, ALWARPET,P.B.No 6910, CHENNAI-600018	44-24995505,22680990-4	
	CABLE GLANDS	4	E1036	COMMET BRASS PRODUCTS	MUTAN CHEMICAL COMPOUND, WALBHAT ROAD, GOREGAON, MUMBAI-400063	91-022-26852961/62/63 comet@vsnl.net	
	CABLE GLANDS	5	DW08	DOWELLS	M/S. DOWELLS ELECTRICALS 47/47A, SATGURU INDUSTRIAL ESTATE. OFF AAREY ROAD, GOREGOAN (EAST), MUMBAI 400 063.	CEO : Mr. Jayantibhai S. Patel TEL: 022-32504770./022-29270876/ 022-29270878.	
	CABLE GLANDS	6	E1044	ELECTROMAC INDUSTRIES	27/28AF NEW EMPIRE IND. ESTT., R.KRISHNA MANDIR RD.JB NGR ,ANDHERI(E),MUMBAI-400059	91-22-28324829 / 66919034 devang@electromacglands.com	
	CABLE GLANDS	7	N01	INCAB	HARE STREET,KOLKATA,WEST BENGAL-700001	91-33-2480161/62/63/64 Fax : 91-33-2485766	
	CABLE GLANDS	8	E1040	DOWELLS	M/S. DOWELLS ELECTRICALS 47/47A, SATGURU INDUSTRIAL ESTATE. OFF AAREY ROAD, GOREGOAN (EAST), MUMBAI 400 063.	CEO : Mr. Jayantibhai S. Patel TEL: 022-32504770./022-29270876/ 022-29270878.	
ES12	CABLE LUGS	1	E1040	DOWELLS	M/S. DOWELLS ELECTRICALS 47/47A, SATGURU INDUSTRIAL ESTATE. OFF AAREY ROAD, GOREGOAN (EAST), MUMBAI 400 063.	CEO : Mr. Jayantibhai S. Patel TEL: 022-32504770./022-29270876/ 022-29270878.	
	CABLE LUGS	2	E1149	UNIVERSAL MACHINES LTD.	4,B.B.D.BAG (EAST) 90,STEPHEN HOUSE,5TH FLR CALCUTTA-700001	033 2282 2540	
ES14	EARTH LEAKAGE CB	1	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	EARTH LEAKAGE CB	2	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadoria@siemens.com	
	EARTH LEAKAGE CB	3	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	EARTH LEAKAGE CB	4	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	EARTH LEAKAGE CB	5	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
	EARTH LEAKAGE CB	6	A24	ABB	14, MATHURA ROAD, FARIDABAD, HARYANA-121003	0129-2567580, 09871799449	
	EARTH LEAKAGE CB	7	E1068	INDO ASIAN	B-24, PHASE - II , NOIDA - 201305, U.P.	120-3042222	
	EARTH LEAKAGE CB	8	E1088	MDS SWITCHGEAR LTD	314-317SHAH NAHAR ESTATE	011 - 25793021	
ES15	EARTH LEAKAGE CB	9	E1120	S&S POWER SWITCHGEAR LTD,	NEW NO. 67, OLD NO. 19, DR. RANGA ROAD, MYLAPORE, CHENNAI - 600004	044 - 24988056, 044 - 24988057, 044 - 24988058	
	JELLY FILLED CABLES	1	D01	DELTON SALES LTD.	DELTON HOUSE 4801,BHARAT RAM ROAD,24DARYAGANU N.DELHI-110002	3273905-8,3262517	
	JELLY FILLED CABLES	2	H01	HINDUSTAN CABLES	A-40 ASIAN GAMES VILLAGE RANJIT SINGH BLOCK NEW DELHI-110049	011-26493673	
	JELLY FILLED CABLES	3	E1096	TELELINK-NICCO	NICCO HOUSE 2,HARE STREET,CALCUTTA-700001	91-033-66285000	
ES16	GI CONDUITS	4	E1151	USHA BELTRON LTD.	TATISILWAI , ranchi- 835105	91 651 415 897, 415 816	
ES17	GI CONDUIT (EPOXY PAINTED)				BIS APPROVED MAKE		
ES18	FLEXIBLE CONDUITS (LEAD COATED)	1	P03	PLICA INDIA PVT. LTD.	V.P.AGARWAL MANAGING DIRECTOR, PLICA INDIA PVT. LTD. 149, MODEL TOWN EAST GHAZIABAD - 201009	M - 9810052131 / 0120-4563979 / 9810557567 Mail: agr@plicaindia.com	

SUB-VENDOR DIRECTORY

ITEM CODE	ITEM/SERVICE DESCRIPTION	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES19	FLEXIBLE CONDUIT (PVC COATED)				REPUTED MAKE		
ES21	CONTROL SWITCHES/ SELECTOR SWITCH	1	E1076	KAYCEE	KAYCEE INDUSTRIES LTD., C/O-CMS COMPUTERS LTD., 35A, REAR BLDG. KILOKARI, NEW DELHI-110014	Rajiv Sharma-9312004687	
	CONTROL SWITCHES/ SELECTOR SWITCH	2	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	CONTROL SWITCHES/ SELECTOR SWITCH	3	G01	ALSTOM LTD	A-7, SEC-65, NOIDA	0120-479000	
	CONTROL SWITCHES/ SELECTOR SWITCH	4	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	CONTROL SWITCHES/ SELECTOR SWITCH	5	SR01	M/s Shrenik & Co.	39A/3, PANCHRATNA INDUSTRIAL ESTATE, SARKHEJ-BAVLA ROAD, CHANGODAR, AHMEDABAD - 382 213		
	CONTROL SWITCHES/ SELECTOR SWITCH	6	RE05	RECOM PVT. LTD.	M/S RECOM PVT. LTD., 16A, 2ND FLOOR A, WING RAI INDUSTRIAL COMPLEX, MILITARY ROAD, MAROL ANDHERI (EAST), MUMBAI	Mr. Chandrashekar Kamath (MD) : 09820249503	
ES22	CONTROL TRANSFORMER/ WINDING HEATING TRANSFORMER	1	E1009	AUTOMATIC ELECTRIC LTD.	96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON, LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
	CONTROL TRANSFORMER/ WINDING HEATING TRANSFORMER	2	E1066	INDCOIL	PLOT NO. A- 150/ 151, 23RD U ROAD, WAGLE ESTATE, THANE WEST, CST RD, FRIENDS COLONY, HALLOW PUL, KURLA WEST, MUMBAI, MAHARASHTRA 400070	Phone:022 2583 8305	
	CONTROL TRANSFORMER/ WINDING HEATING TRANSFORMER	3	K18	KAPPA ELECTRICALS	KAPPA ELECTRICALS, KAPPA CONSOLIDATED PVT. LTD., 14, CART TRACK ROAD, MADUVANKARAI, CHENNAI - 600 042, INDIA.	PHONE: +91 - 44 - 22454709, 22454516, 22450794, 22450795 FAX: +91 - 44 - 22351662, 22451693 E-MAIL: mira@kappaelectricals.com sales@kappaelectricals.com	
	CONTROL TRANSFORMER/ WINDING HEATING TRANSFORMER	4	E1082	LOGICSTAT	B-160, INDUSTRIAL AREA, C BLOCK RD, OKHLA I, OKHLA INDUSTRIAL AREA, NEW DELHI, DL 110020	011 2681 0032	
	CONTROL TRANSFORMER/ WINDING HEATING TRANSFORMER	5	E1106	PRECISE ELECTRICALS	47A-49A, CHAKALA ROAD ANDHERI(E), MUMBAI-99 MUMBAI, MAHARASHTRA, INDIA PIN-400 099	022-8323402 / 022-8216433	
	CONTROL TRANSFORMER/ WINDING HEATING TRANSFORMER	6	E1128	UNILEC ENGINEERS PVT. LTD.	PLOT NO: R-247, T.T.C. INDUSTRIAL AREA, M.I.D.C., RABALE, NAVI MUMBAI- 400 701 INDIA	+91-22- 27607787 / 27607927 +91-22- 27607997	
	CONTROL TRANSFORMER/ WINDING HEATING TRANSFORMER	7	NK09	M/s Newtek Electricals	M-90, M.I.D.C., Waluj, Aurangabad 431136, Maharashtra, India	Tel/Fax: +91 240 2551555 E-mail: mkt.north@newtekelectricals.com, sales@newtekelectricals.com Mr Sanjeev Aggarwal (9958897890)	FOR CONTROL TRANSFORMER ONLY
ES23	LT- CURRENT TRANSFORMER	1	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhaduria@siemens.com	
	LT- CURRENT TRANSFORMER	2	E1009	AUTOMATIC ELECTRIC LTD.	96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON, LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
	LT- CURRENT TRANSFORMER	3	E1066	INDCOIL	PLOT NO. A- 150/ 151, 23RD U ROAD, WAGLE ESTATE, THANE WEST, CST RD, FRIENDS COLONY, HALLOW PUL, KURLA WEST, MUMBAI, MAHARASHTRA 400070	Phone:022 2583 8305	
	LT- CURRENT TRANSFORMER	4	K18	KAPPA ELECTRICALS	KAPPA ELECTRICALS, KAPPA CONSOLIDATED PVT. LTD., SOUTHERN ELECTRIKS 14, CART TRACK ROAD, MADUVANKARAI, CHENNAI - 600 042, INDIA.	PHONE: +91 - 44 - 22454709, 22454516, 22450794, 22450795 FAX: +91 - 44 - 22351662, 22451693 E-MAIL: mira@kappaelectricals.com sales@kappaelectricals.com	
	LT- CURRENT TRANSFORMER	5	E1104	PRAGATI ELECTRICALS	280/3, II POKHRAN RD	5341779, 5427041	
	LT- CURRENT TRANSFORMER	6	E1106	PRECISE ELECTRICALS	47A-49A, CHAKALA ROAD ANDHERI(E), MUMBAI-99 MUMBAI, MAHARASHTRA, INDIA PIN-400 099	022-8323402 / 022-8216433	
	LT- CURRENT TRANSFORMER	7	E1128	SILKAANS ELECT.MFG.CO.PVT.LTD	PLOT NO: R-247, T.T.C. INDUSTRIAL AREA, M.I.D.C., RABALE, NAVI MUMBAI- 400 701 INDIA	+91-22- 27607787 / 27607927 +91-22- 27607997	
	LT- CURRENT TRANSFORMER	8	E1111	PRAYOG ELECTRICALS PVT. LTD.	GROUND FLOOR, THAKORE INDUSTRIAL COMPUND, STATION ROAD, VIDYA VIHAR (W), NATHANI ROAD, OPP. AMBIKA TEMPLE, MUMBAI Mumbai - 400086, Maharashtra, India	91-22-25164288/25133146 Mr. P. U. PATWARDHAN (MANAGING DIRECTOR)	
	LT- CURRENT TRANSFORMER	9	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
	LT- CURRENT TRANSFORMER	10	NK09	M/s Newtek Electricals	M-90, M.I.D.C., Waluj, Aurangabad 431136, Maharashtra, India	Tel/Fax: +91 240 2551555 E-mail: mkt.north@newtekelectricals.com, sales@newtekelectricals.com Mr Sanjeev Aggarwal (9958897890)	
ES24	LT- POTENTIAL TRANSFORMER	1	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhaduria@siemens.com	
	LT- POTENTIAL TRANSFORMER	2	E1009	AUTOMATIC ELECTRIC LTD.	96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON, LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
	LT- POTENTIAL TRANSFORMER	3	E1066	INDCOIL	PLOT NO. A- 150/ 151, 23RD U ROAD, WAGLE ESTATE, THANE WEST, CST RD, FRIENDS COLONY, HALLOW PUL, KURLA WEST, MUMBAI, MAHARASHTRA 400070	Phone:022 2583 8305	
	LT- POTENTIAL TRANSFORMER	4	K18	KAPPA ELECTRICALS	KAPPA ELECTRICALS, KAPPA CONSOLIDATED PVT. LTD., SOUTHERN ELECTRIKS 14, CART TRACK ROAD, MADUVANKARAI, CHENNAI - 600 042, INDIA.	PHONE: +91 - 44 - 22454709, 22454516, 22450794, 22450795 FAX: +91 - 44 - 22351662, 22451693 E-MAIL: mira@kappaelectricals.com sales@kappaelectricals.com	
	LT- POTENTIAL TRANSFORMER	5	E1104	PRAGATI ELECTRICALS	280/3, II POKHRAN RD	5341779, 5427041	
	LT- POTENTIAL TRANSFORMER	6	E1106	PRECISE ELECTRICALS	47A-49A, CHAKALA ROAD ANDHERI(E), MUMBAI-99 MUMBAI, MAHARASHTRA, INDIA PIN-400 099	022-8323402 / 022-8216433	
	LT- POTENTIAL TRANSFORMER	7	E1128	SILKAANS ELECT.MFG.CO.PVT.LTD	PLOT NO: R-247, T.T.C. INDUSTRIAL AREA, M.I.D.C., RABALE, NAVI MUMBAI- 400 701 INDIA	+91-22- 27607787 / 27607927 +91-22- 27607997	
	LT- POTENTIAL TRANSFORMER	8	E1111	PRAYOG ELECTRICALS PVT. LTD.	GROUND FLOOR, THAKORE INDUSTRIAL COMPUND, STATION ROAD, VIDYA VIHAR (W), NATHANI ROAD, OPP. AMBIKA TEMPLE, MUMBAI Mumbai - 400086, Maharashtra, India	91-22-25164288/25133146 Mr. P. U. PATWARDHAN (MANAGING DIRECTOR)	
	LT- POTENTIAL TRANSFORMER	9	NK09	M/s Newtek Electricals	M-90, M.I.D.C., Waluj, Aurangabad 431136, Maharashtra, India	Tel/Fax: +91 240 2551555 E-mail: mkt.north@newtekelectricals.com, sales@newtekelectricals.com Mr Sanjeev Aggarwal (9958897890)	
ES25	DC SWITCH	1	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	DC SWITCH	2	E1076	KAYCEE	KAYCEE INDUSTRIES LTD., C/O-CMS COMPUTERS LTD., 35A, REAR BLDG. KILOKARI, NEW DELHI-110014	Rajiv Sharma-9312004687	
	DC SWITCH	3	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhaduria@siemens.com	
ES26	DISTRIBUTION BOX	1	SR01	M/S SHRENIK & CO.	39A/3, PANCHRATNA INDUSTRIAL ESTATE, SARKHEJ-BAVLA ROAD, CHANGODAR, AHMEDABAD - 382 213		

SUB-VENDOR DIRECTORY

ITEM CODE	ITEM/SERVICE DESCRIPTION	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES27	EMER. PORTABLE LTG. SET	1	B05	BAJAJ ELECTRICALS	BAJAJ ELECTRICALS LTD. ENGINEERING & PROJECTS BU (NORTH) 3rd FLOOR, GULMOHARHOUSE, COMMUNITY CENTRE 161/B-4, GAUTAM NAGAR, YUSUF SARAI NEW DELHI - 110049	CONTACT PERSON : Mr. S. SREEMANY. SR. MANAGER (PROJECTS) CONTACT DETAILS : (+91) 9871025705. MAIL ID : srabans@bajajelectricals.com;	
	EMER. PORTABLE LTG. SET	2	B05	BAJAJ ELECTRICALS	BAJAJ ELECTRICALS LTD. ENGINEERING & PROJECTS BU (NORTH) 3rd FLOOR, GULMOHARHOUSE, COMMUNITY CENTRE 161/B-4, GAUTAM NAGAR, YUSUF SARAI NEW DELHI - 110049	SREEMANY. SR. MANAGER (PROJECTS) CONTACT DETAILS : (+91) 9871025705. MAIL ID : srabans@bajajelectricals.com;	
ES28	FUSE BASE	1	E1068	INDO ASIAN	B-24, PHASE - II , NOIDA - 201305, U.P.	120-3042222	
	FUSE BASE	2	G01	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	FUSE BASE	3	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	FUSE BASE	4	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
	FUSE BASE	5	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-8, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 j. amit.bhadauria@siemens.com	
	FUSE BASE	6	A24	ABB	14, MATHURA ROAD, FARIDABAD, HARYANA-121003	0129-2567580, 09871799449	
	FUSE BASE	7	S02	SPACEAGE SWITCHGEARS LTD.	68 & 13-A INDUSTRIAL DEVELOPMENT COLONY, MEHRAULI ROAD GURGAON, HARYANA-122001	0124-2302711, 4085091	
	FUSE BASE	8	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON- 122002	0124-3940400	
	FUSE BASE	9	G01	ALSTOM LTD	A-7, SEC-65, NOIDA	0120-479 0000	
	FUSE BASE	10	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	
ES29	HRC FUSES	1	E1068	INDO ASIAN	B-24, PHASE - II , NOIDA - 201305, U.P.	120-3042222	
	HRC FUSES	2	G01	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	HRC FUSES	3	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	HRC FUSES	4	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
	HRC FUSES	5	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-8, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 j. amit.bhadauria@siemens.com	
	HRC FUSES	6	A24	ABB	14, MATHURA ROAD, FARIDABAD, HARYANA-121003	0129-2567580, 09871799449	
	HRC FUSES	7	S02	SPACEAGE SWITCHGEARS LTD.	68 & 13-A INDUSTRIAL DEVELOPMENT COLONY, MEHRAULI ROAD GURGAON, HARYANA-122001	0124-2302711, 4085091	
	HRC FUSES	8	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON- 122002	0124-3940400	
	HRC FUSES	9	G01	ALSTOM LTD	A-7, SEC-65, NOIDA	0120-479 0000	
	HRC FUSES	10	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	
ES30	GALVANISING	1		Jenco Industrial Corporation	Chincholi Bunder Khkar Road Near Link Road Devruwadi Malad (W) Mumbai-400064		
	GALVANISING	2		National Galvanizing Company	66, Barrackpore Kamarhatt Trunck Road Calcutta-700058		
	GALVANISING	3		Sigma Galvanising Pvt. Ltd.	Plot No. C-169, TTC, MIDC Ind Area Navin Mumbai-400705	8725402,8725765	
	GALVANISING	4		B.P. Projects PVT LTD	167A, Vivekananda Road Kolkata-700006	033 2553 1254	
	GALVANISING	5		Standard Galvanisers	Makardah Road, Kabar Para, Bankra, Howarah -711403	28756318/28741986/28725402/2 8725765	
	GALVANISING	6		Steel Products	National Highway No. 6, Chamrail, Kona, Howrah-711114		
	GALVANISING	7		Unitech Fabricators & Engineers Pvt. Ltd.	Village- Ajab Nagar, P.O. -Molla Simla, P.S. - Singur, Dist - Hoogly, Pin-712223	022 -27686606/ 1907	
	GALVANISING	8		Shivam Engineers & Fabricators	A0-282-284, Industrial Area, South Side of G.T. Road, Ghaziabad, U.P.		
	GALVANISING	9		B.G. Shirke Construction Technology Pvt. Ltd	72-76, Mundhawa, Pune - 401 036		
	GALVANISING	10		Galbro Ispat Galvanizers Pvt. Ltd.	GUT 11 AND 12, OPP. Kudus Steel,Rolling Mill, Wada, Thane , Mumbai		
	GALVANISING	11		Eros Metals	G-97, MIDC, Bhutibori , Nagpur		
	GALVANISING	12		Industrial Perforation (India) Pvt. Ltd.	Ganganagr, Katakhal, Kolkata-700132		
	GALVANISING	13		Indmark Formtech Pvt. Ltd.	Phase - 3, E - 11 / I, M. I. D. C., Chakan, Pune - 410 501, Maharashtra, India.		
	GALVANISING	14		Namdhari Industrial Traders Pvt. Ltd.	Village Latton Dana, Chandigarh Road, Ludhiana		
	GALVANISING	15					
	GALVANISING			Neha Galvaniser	Jalan Industrial Estate, Gate No-1, 1st Right Choise Lane, Near N.G- 6, Jangalpur, PO Domjur Howrah - 700071, West Bengal, India		
	GALVANISING	16		Patny Systems (P) Ltd.	Unit-IV, Sy No. -228/9, Plot No. 6, IP Kuchavaram, Toopran[M] Dist.- Medak, Telegana - 502336		
	GALVANISING	17		Parmar Metal Company	Survey No.207,Veraval (Shapar) Dist. Rajkot, India.		
	GALVANISING			Rukmani Electrical & Components Pvt Ltd	Urfa Industrial Area, Urfa Sarora Road, Raipur- 493 221 (Chhattisgarh)		
	GALVANISING	18		Rukmani Fab & Gal Pvt Ltd	Shankaridaha Baniyarah, Jalan Industrial Complex, Gate no.3, Lane no. 4, Domjur, Howrah , W.B - 711411		
	GALVANISING	19		DMP Projects Pvt.Ltd.	Dulagarh Industrial Park , PS-Sankrail , Howrah -711302		
	GALVANISING	20		Vinfab Engineers India Private Limited	Gut no. 224/1 &2 Bhiwandi Wada State Highway, Village khupri, Dist. Thane, Maharashtra-421303		
	GALVANISING	21		Saral Projects & Processors	B-1, Industrial Area, Site-II, Amawan Road Rae Bareli		
	GALVANISING	22		Brahampuri Steels Limited	172 (F) Industrial Area ,Jhohwara, Jaipur-302013		
	GALVANISING	23		Indiana Gratings PVT. LTD	F-5, MIDC Jeguri, Pune-412 303		
	GALVANISING	24	AT08	M/s AVAIDS TECHNOVATORS PVT. LTD.	131, MATSYA INDUSTRIAL AREA, ALWAR RAJASTHAN		
	GI WIRE & FLAT	1	I039	INDUSTRIAL PERFORATION (I) PVT.LTD.	MR. A. K. SAHA 327, R.N.GUHA ROAD, DUM DUM KOLKATA-West Bengal-India Phone- 9830241788 Pincode : 700028 Email : ipipi@cal2.vsnl.net.in	011 2737 3579	
	GI WIRE & FLAT	2	I070	INDIA ELECTRICALS SYNDICATE	Mr. Suresh Kumar Agarwal 55, Ezra Street, Kolkata-West Bengal-India Phone- 033-22354047 Pincode : 700001 Email : cabletray@vsnl.com	022-28511704	
	GI WIRE & FLAT	3	I072	INDMARK FORMTECH PVT. LTD.	Mr. Narendra R. Meher J Block, Plot No.-375, MIDC BHOSARI PUNE- MAHARASHTRA-INDIA Phone- 020-27130546 Pincode : 411026 Email : indmarkformtech@vsnl.net		
	GI WIRE & FLAT	4	P039	PREMIER POWER PRODUCTS (CAL) PVT. LTD.	Chatterjee International Centre, 33A, Jawaharlal Nehru Road, 6th Floor, Suit No. - 11A, Kolkata,-West Bengal-India Phone- 9331008739 Pincode : 700071 Email : hemantdaga@dagaventures.com		

SUB-VENDOR DIRECTORY

ITEM CODE	ITEM/SERVICE DESCRIPTION	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES31	GI WIRE & FLAT	5	P050	PATNY SYSTEMS (P) LTD	PATNY PLAZA 160, SARDAR PATEL ROAD SEUNDRABAD SECUNDRABAD TELANGANA-INDIA Phone- 040-27902451 Pincode : 500003 Email : mr.mike@patnysystems.com		
	GI WIRE & FLAT	6	P079	PASSIVE INFRA PROJECTS PVT. LTD.	MR. VARUN AGRAWAL 182, VAISHALI, PITAMPURA Delhi-DELHI-INDIA Phone- 9871183059 Pincode : 110088 Email : ATANU.SAHA@PASSIVEINFRA.COM		
	GI WIRE & FLAT	7	R036	RUKMANI ELECTRICAL & COMPONENTS PVT LTD	11A, MAHARISHI DEBENDRA ROAD 1ST FL., ROOM NO.4 KOLKATA- WEST BENGAL-INDIA Phone- Pincode : 700007 Email : maruthikabra@gmail.com		
	GI WIRE & FLAT	8	R037	RATAN PROJECTS & ENGINEERING CO. PVT.LTD.	MR. G.D. SINGHEE/MR. MAHESH SINGHEE 26, P.K. TAGORE STREET, MAIN BUILDING KOLKATA-WEST BENGAL-INDIA Phone- 9830177331 Pincode : 700006 Email : mahesh@ratans.com		
	GI WIRE & FLAT	9	R041	RABI ENGINEERING WORKS PVT. LTD.	MR. TAPAN KUMAR SEN/MR. SIDDHARTHA 327, R.N. GUHA ROAD, DUM DUM, KOLKATA-WEST BENGAL-INDIA Phone- 9748753002 Pincode : 700028 Email : rabiengineering@gmail.com		
	GI WIRE & FLAT	10	R200	RAJASTHAN METAL SMELTING CO.	Mr. R. K. Tibrewala D-80, Road No. 7, V.K.I.A., Jaipur-Rajasthan-India Phone- 0141-2332269 Pincode : 302013 Email : info@rmscoindia.com		
	GI WIRE & FLAT	11	S210	SARAL INDUSTRIES	Mr. Y.K. Gupta L-1, L-2, Industrial Area-1 Sultanpur Road Rae Bareilly Uttar Pradesh-India Phone- 0535-2702474 Pincode : 229010 Email : saralindustries@gmail.com		
	GI WIRE & FLAT	12		PARCO Engineers Pvt. Ltd.	401, skyline Epithom Building ,Near to Jolly Gym Khana, Kirol Road , Vidhyavihar, MH 400086 India		
	GI WIRE & FLAT	13	U019	UNITECH FABRICATORS and ENGINEERS PVT LTD	INDRAPRASHTHA APARTMENT 24 , M.B.RAO , BIRATI KALABAGAN KOLKATA KOLKATA-WEST BENGAL-INDIA Phone- Pincode : 700051 Email : ufepl@vsnl.net; ufepl@rediffmail.com	022 - 26230814	
ES33	IND.POWER & WLDG SOCKETS	1	C02	CROMPTON GREAVES	3RD FLOOR, EXPRESS BUILDING,9-10, BAHADUR SHAH ZAFAR MARG, NEAR ITO CROSSING,NEW DELHI-110002, INDIA	91 11 23460700 - 999 Sunil.Das@cgglobal.com	
	IND.POWER & WLDG SOCKETS	2	E1207	CYCLO ELECTRIC DEVICE & SERV.CO.	A-3, NEAR ANTHEM BIOSGENCE, KSSDC INDUSTRIAL AREA, BOMMASANDRA, BOMMASANDRA INDUSTRIAL AREA, BANGALORE, KARNATAKA 560099	Mr. H.Jagathaker +919845039081, 080 - 27833102, 080 - 27833103 +91 80 41460985 cycloelectric@gmail.com	
	IND.POWER & WLDG SOCKETS	3	B04	BCH	20/4, MATHURA ROAD, FARIDABAD - 121006, HARYANA, INDIA	0129-4063000, 9015800189(Ramesh Giri) ramesh.giri@bchindia.com	
	IND.POWER & WLDG SOCKETS	4	B02	BEST & CROMPTON	Best & Crompton Engineering Ltd	Ph : +91 44 4551 4724 , MRKT	BEST &
	IND.POWER & WLDG SOCKETS	5	A03	AIMERA INDUSTRIES & ENGG. WORKS	AIMERA INDL AND ENGG. WORKS, AIMERA HOUSE, A-61 / KHAIRANE MIDC , TTC INDL AREA, NAVI MUMBAI - 400705.	Tel : 022 27620299 / 97 / 96 mail@ajmera.net	
ES34	INTERPOSING RELAY	1	A24	AB8	14, MATHURA ROAD, FARIDABAD, HARYANA-121003	0129-2567580, 09871799449	
	INTERPOSING RELAY	2	G01	ALSTOM LTD	A-7, SEC-65, NOIDA	0120-479 0000	
	INTERPOSING RELAY	3	E1075	JYOTI LTD.	JYOTI LIMITED, S&CS DIVISION, 3/15, BIDC, GORWA,VADODARA - 390 016, E-MAIL ID: ECS@JYOTI.COM	Ph. No.:+91-265-2281214 , Fax No.:+91-265-2281214	
	INTERPOSING RELAY	4	E1099	OEN INDIA LTD	29/1479, VYTILLA, COCHIN - 682 019 KERALA, INDIA	Phone : +91 484 2301132, 2303709 Fax : +91 484 2302287, 2302221 sales@oenindia.com	
	INTERPOSING RELAY	5	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
	INTERPOSING RELAY						
ES35	INDICATING LAMPS	1	B04	BCH	20/4, MATHURA ROAD, FARIDABAD, HARYANA-121006	0129-4293000	
	INDICATING LAMPS	2	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	6832259,6918834-37	
	INDICATING LAMPS	3	E1060	ESSEN DEINJI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	
	INDICATING LAMPS	4	E1153	VAISHNO(HOTLINE SWGR.& CONTROL)	G-19, SECTOR -11, NOIDA - 201301, UTTAR PRADESH, INDIA	8377805157 9818338922	
	INDICATING LAMPS	5	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	9818338922	
	INDICATING LAMPS	6	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
	INDICATING LAMPS	7	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON- 122002	0124-3940400	
ES36	JUNCTION BOXES (NON FLAME PROOF)	1	J01	JASPER ENGINEERS PVT. LTD.	A-23, SECTOR - 8, NOIDA-201301	0120-4033520/533	
	JUNCTION BOXES (NON FLAME PROOF)	2	EC05	Electro Controls & Devices	M/S ELECTRO CONTROLS & DEVICES, F-41, SITE-C, SURAJPUR INDUSTRIAL AREA GREATER NOIDA, UTTAR PRADESH -201308	Mr. Sanjay Sharma (Chief Promoter) 0120-2569487, 2560100,2560300	
	JUNCTION BOXES (NON FLAME PROOF)	3	SRC01	M/s Shrenik & Co.	39A/3, PANCHRATNA INDUSTRIAL ESTATE, SARKHEJ-BAVLA ROAD, CHANGODAR, AHMEDABAD - 382 213	020-026708100	
	JUNCTION BOXES (NON FLAME PROOF)	4	PME-01	M/s PHOENIX MECANO LTD.,	388 BHARE, TALUKA MULSHI, POST GHOTAWADE, PIRANGOOT, INDUSTRIAL AREA, PUNE-412115	Awasthi(09971119006) Tel: ++91 20 6674 5103, Mobile: +91 90499 95985, Fax: ++91 20 6674 5126	
	JUNCTION BOXES (NON FLAME PROOF)	5	ACE01	Adroit Control Engineers Pvt.Ltd.	M/S ADROIT CONTROL ENGINEERS PVT.LTD. PLOT-3, KRISHNA INDL. AREA, SECTOR-25 FARIDABAD - 121004	011-47600700, 0129-4251400	
	JUNCTION BOXES (NON FLAME PROOF)	6	PME-01	M/s PHOENIX MECANO LTD.,	388 BHARE, TALUKA MULSHI, POST GHOTAWADE, PIRANGOOT, INDUSTRIAL AREA, PUNE-412115	Awasthi(09971119006) Tel: ++91 20 6674 5103, Mobile: +91 90499 95985, Fax: ++91 20 6674 5126 contact person : Vishwa bandhu E- mail:d.gupta@pmpl-online.com ,admin@pmpl-online.com	
	JUNCTION BOXES (NON FLAME PROOF)	7	MK01	MIKA ENGINEERS	BRANCH OFFICE : 'D'-101, DHEERAJ HERITAGE RESIDENCY II, SHASTRI NAGAR, SANTACRUZ (W), MUMBAI 400 054.	Director : Mr. Asgar Karimi Email: asgar@mikaengineers.com E-mail : mika@mtnl.net.inTelfax : 022-26610081/82/83/84Tel : 02527-249066/70 Cell : 099230 74373	TYPE-S ONLY
	JUNCTION BOXES (NON FLAME PROOF)	8	PME-01	M/s PHOENIX MECANO LTD.,	388 BHARE, TALUKA MULSHI, POST GHOTAWADE, PIRANGOOT, INDUSTRIAL AREA, PUNE-412115	TEL- +912066745000 Awasthi(09971119006) Tel: ++91 20 6674 5103, Mobile: +91 90499 95985, Fax: ++91 20 6674 5126 contact person : Vishwa bandhu E-mail:d.gupta@pmpl-online.com ,admin@pmpl-online.com	

SUB-VENDOR DIRECTORY

ITEM CODE	ITEM/SERVICE DESCRIPTION	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
	JUNCTION BOXES (NON FLAME PROOF)	9	B05	BAJAJ ELECTRICALS	BAJAJ ELECTRICALS LTD. ENGINEERING & PROJECTS BU (NORTH) 3rd FLOOR, GULMOHARHOUSE, COMMUNITY CENTRE 161/B-4, GAUTAM NAGAR, YUSUF SARAI NEW DELHI – 110049	CONTACT PERSON : Mr. S. SREEMANY. SR. MANAGER (PROJECTS) CONTACT DETAILS : (+91) 9871025705. MAIL ID : srabans@bajajelectricals.com;	
	JUNCTION BOXES (NON FLAME PROOF)	10	A03	AJMER INDUSTRIES & ENGG. WORKS	AJMER IND. AND ENGG. WORKS, AJMER HOUSE, A-61 / KHAIRANE MIDC., TTC IND. AREA, NAVI MUMBAI – 400705.	Tel : 022 27620299 / 97 / 96 mail@ajmer.net	
	JUNCTION BOXES (NON FLAME PROOF)	11	S802	S.B. ELECTRICAL ENGINEERING CORPORATION	03, SARDAR GRIHA BUILDING, LOHAR CHAWAL, MUMBAI-400002	022- 22069831; 022-66637259	
	JUNCTION BOXES (NON FLAME PROOF)	12	RT13	RITTAL INDIA PVT. LTD.	Espire Building ,Level -1 A-41, Mohan Co-Operative Industrial Estate ,Mathura Road, New Delhi -110044	Amit Bansal Phone: 011-42004000, D: 011-42004033 · Mobile: +91 9717772245 · mailto:amit.b@rittal- india.com www.rittal-india.com	
	JUNCTION BOXES (NON FLAME PROOF)	13	HP08	HPL ELECTRIC AND POWER LTD.	Works Address: Village Shavella, POJabli, Teh-Kasauli, Dist-Solan, Himachal Pradesh-173209	Mr. Ashwani Kumar mailto:'ashwani@hplindia.com' M:9971127370	
E537	JUNCTION BOXES (FLAME PROOF)	1	SS01	SUDHIR SWITCHGEAR	305/6, APEEJAY HOUSE, 130, BOMBAY SAMACHAR MARG, MUMBAI - 400 023. INDIA	Telephone Nos. : 40460000 (100 lines) Fax Nos. : +91-22-22049381 Email : md@sudhirschwitchgears.com ; works@sudhirschwitchgears.com ;scud@vsnl.com	
E539	LIGHTING FIXTURES (NON LED)	2	E1206	BALIGA LIGHTING EQPT PVT LTD	63A,CP RAMASWAMY ROAD, PB NO 6910, CHENNAI-600018	44-24995505,22680990-4	
	LIGHTING FIXTURES (NON LED)	3	F04	ELEXPRO ELECTRICALS PVT/ LTD.	C 1/27 & 37 GIDC KABILPORE NAVSARI-396424	02637-265140, Mr. jssk kumar	
	LIGHTING FIXTURES (NON LED)	4	B05	BAJAJ ELECTRICALS	BAJAJ ELECTRICALS LTD. ENGINEERING & PROJECTS BU (NORTH) 3rd FLOOR, GULMOHARHOUSE, COMMUNITY CENTRE 161/B-4, GAUTAM NAGAR, YUSUF SARAI NEW DELHI – 110049	CONTACT PERSON : Mr. S. SREEMANY. SR. MANAGER (PROJECTS) CONTACT DETAILS : (+91) 9871025705. MAIL ID : srabans@bajajelectricals.com;	
	LIGHTING FIXTURES (NON LED)	5	C02	CROMPTON GREAVES	3RD FLOOR, EXPRESS BUILDING,9-10, BAHADUR SHAH ZAFAR MARG, NEAR ITO CROSSING,NEW DELHI-110002, INDIA	91 11 23460700 - 999 Sunil.Das@cgglobal.com, Mr. Prashant Wewhare 9930095703 (0250) 6458250	
	LIGHTING FIXTURES (NON LED)	6	E1051	EVERGREEN ENGG. CO.	EVERGREEN ENGG COMPANY WORKS-5, PLOT NO. 9,10,11,12, SURVEY NO. 242, CHINCH PADA, VASAI EAST-401208	01244606001, Sharad (+919871150447)	
	LIGHTING FIXTURES (NON LED)	7	P01	PHILIPS	9TH FLOOR,DLF 9B, DLF CYBER CITY, DLF PHASE-III,GURGAON-122002	01244606001, Sharad (+919871150447)	
	LIGHTING FIXTURES (NON LED)	8	WP01	WIPRO LTD.	WIPRO CONSUMER CARE AND LIGHTING, 5TH FLOOR, GODREJ ETERNIA C, OLD PUNE-MUMBAI ROAD, SHIVAJINAGAR, PUNE -411005	020-66098700	
	LIGHTING FIXTURES (NON LED)	9	HP01	M/S HPL ELECTRIC & POWER PVT. LTD	M/S HPL ELECTRIC & POWER PVT. LTD. PLOT NO. 76-B, PHASE-IV, SEC-57, HSIDC, IND. AREA, KUNDLI, DIST - SONEPAT (HARYANA) - 131028	mohitsharma@hplindia.com'	
	LIGHTING FIXTURES (NON LED)	10	SR01	SURYA ROSHNI LIMITED	PADMA TOWER, RAJENDRA PLACE, RAJENDRA PLACE NEW DELHI	011-25810093 ; 9810071832 (Akhlesh Agrawal) aagrawal@sroshni.com	
	LIGHTING FIXTURES (NON LED)	11	HI02	HAVELLS INDIA LIMITED	QRG TOWERS , 2D SECTOR-126, NOIDA- 201301	GIRISH KUMAR SHRIVASTAVA +91-9810528922	
	LIGHTING FIXTURES (NON LED)	12	HN13	M/s Halonix Technologies Limited	M/s Halonix Technologies Limited B-31 , Phase –II, Noida Distt. Gautam Budh Nagar (U.P.) Pin- 201305	Mr. Mohit Gautam 'Tel: +919568152111 'mohit.gautam@halonix.co.in'; 'rahul.singh@halonix.co.in'	
E540	LIGHTING FIXTURES (LED)	1	NE01	Neev Luminaries	B-6/3 Okhla Industrial Area Phase-2 New Delhi 110020	Phone: 011 40604830-31, M:8826995888 Fax: +91 11 4060 4831 info@neevenergy.in, Jitendra Sahu <jsahu@neevenergy.com>	
	LIGHTING FIXTURES (LED)	2	HI01	HAVELLS INDIA LIMITED	QRG TOWERS , 2D SECTOR-126, NOIDA- 201301	GIRISH KUMAR SHRIVASTAVA +91-9810528922, girish.srivastava@havelis.com\	
	LIGHTING FIXTURES (LED)	3	B05	BAJAJ ELECTRICALS	BAJAJ ELECTRICALS LTD. ENGINEERING & PROJECTS BU (NORTH) 3rd FLOOR, GULMOHARHOUSE, COMMUNITY CENTRE 161/B-4, GAUTAM NAGAR, YUSUF SARAI NEW DELHI – 110049	CONTACT PERSON : Mr. S. SREEMANY. SR. MANAGER (PROJECTS) CONTACT DETAILS : (+91) 9871025705. MAIL ID : srabans@bajajelectricals.com;	
	LIGHTING FIXTURES (LED)	4	SR01	SURYA ROSHNI LIMITED		1 011-25810093 ; 9810071832 (Akhlesh Agrawal) aagrawal@sroshni.com	
	LIGHTING FIXTURES (LED)	5	P01	PHILIPS	9TH FLOOR,DLF 9B, DLF CYBER CITY, DLF PHASE-III,GURGAON-122002	01244606001, Sharad (+919871150447), Mr. Guruselam M 8939693949, Mr Ashish Sethi 9007077089	
	LIGHTING FIXTURES (LED)	6	HP01	M/S HPL ELECTRIC & POWER PVT. LTD	M/S HPL ELECTRIC & POWER PVT. LTD. PLOT NO. 76-B, PHASE-IV, SEC-57, HSIDC, IND. AREA, KUNDLI, DIST - SONEPAT (HARYANA) - 131028	mohitsharma@hplindia.com, Mr. Nitesh Verma 8851036938, Mr Ajay lakra 9560045423	
	LIGHTING FIXTURES (LED)	7	INS1	INSTA POWER	PLOT NO. - 457 PHASE - V, UDYOG VIHAR, GURGAON - 122016	124-4124000, Mr amit Bhardwar: 8800508090	
	LIGHTING FIXTURES (LED)	8	PT13	Pyrotech Electronics Pvt. Ltd.	M/s Pyrotech Electronics Pvt. Ltd(Unit -1) Led Light, Sensor Division F-16A, Road No.3 Mewar Industrial Area, Madri Udaipur -313003, Rajasthan,	Concern Person – Mr. Praveen sisodiya : 9314310042(psisodiya@pyrotechlig hting.com) Ms Ritika 9509245814	
	LIGHTING FIXTURES (LED)	9	HN13	M/s Halonix Technologies Limited	M/s Halonix Technologies Limited B-31 , Phase –II, Noida Distt. Gautam Budh Nagar (U.P.) Pin- 201305	Mr. Mohit Gautam 'Tel: +919568152111 'mohit.gautam@halonix.co.in'; M: 9891868793'rahul.singh@halonix.c o.in'	
	LIGHTING FIXTURES (LED)	10	JA13	M/s JAQUAR & COMPANY PVT. LTD.	M/s JAQUAR & COMPANY PVT. LTD. Plot No.3 , Sector M-11, IMT Manesar, Gurgaon- 122050 Haryana	Mr. Dhruv Kumar 'Tel: +919350043727 dhruv.kumar@jaquar.com ; gaurav.bhalla@jaquar.com ; 9582950282	

ANNEXURE-A

1167403/2022/PS-PEM-EL

SUB-VENDOR DIRECTORY

ITEM CODE	ITEM/SERVICE DESCRIPTION	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES41	LIGHTING FIXTURES (LED)	11	CR13	M/s CROMPTON GREAVES CONSUMER ELECTRICALS LTD.	M/s CROMPTON GREAVES CONSUMER ELECTRICALS LTD.Tower-3, 1st Floor, East Wing Equinox Business Park LBS Marg, Kurla (West), Mumbai-400070	Mr S L Sivakumar 'Sivakumar L' <sivakumar.sl@crompton.co.in> M: 9176609363	
	LIGHTING FIXTURES (LED)	12	WI13	M/s WIPRO ENTERPRISES PRIVATE LTD.	M/s WIPRO ENTERPRISES PRIVATE LTD. L-8, MIDC Waluj, Aurangabad-431136, Maharashtra, India	Ms Dhanya K K 'dhanya.kk8@wipro.com' M 9891815476, Mr Puneet kalia 'puneet.kalia@wipro.com'	
	LIGHTING FIXTURES (LED)	13	NI13	M/s Nessa Illumination Technologies Pvt. Ltd.	M/s Nessa Illumination Technologies Pvt. Ltd.36/A Devraj Industrial Park, Opp. Sameep Fabrics, Pipalaj Pirana Road, Pipalaj, Ahmedabad	Mr. Dhaval Shah <dhaival@nessa.in> M 9825650354, Mr. Akshat Khare <akshat@nessa.in> M: 9016111723	
	LIGHTING FIXTURES (LED)	14	FE13	M/s. Forus Electric Pvt. Ltd.	M/s. Forus Electric Pvt. Ltd. B-313, Okhla Industrial Area, Phase-1, New delhi-110020	Mr. Amit Bharadwaj <amit.bharadwaj@foruselectric.co.in> M 8800508090, Mr. Uttam Goyal <uttam@foruselectric.com> M: 8527652687	
ES41	LIGHTING FIXTURES (FLAME PROOF)	1	HI01	HAVELLS INDIA LIMITED	QRG TOWERS , 2D SECTOR-126, NOIDA- 201301	GIRISH KUMAR SHRIVASTAVA +91-9810528922	
	LIGHTING FIXTURES (FLAME PROOF)	2	B05	BAJAJ ELECTRICALS	BAJAJ ELECTRICALS LTD. ENGINEERING & PROJECTS BU (NORTH) 3rd FLOOR, GULMOHARHOUSE, COMMUNITY CENTRE 161/B-4, GAUTAM NAGAR, YUSUF SARAI NEW DELHI ~ 110049	CONTACT PERSON : Mr. S. SREEMANY. SR. MANAGER (PROJECTS) CONTACT DETAILS : (+91) 9871025705. MAIL ID : srabans@bajajelectricals.com;	
ES42	LIGHTING FIXTURES (FLAME PROOF)	3	E1206	BALIGA ELECTRICALS	63A,CP RAMASWAMY ROAD, PB NO 6910, CHENNAI-600018	44-24995505,22680990-4	
	LIGHTING LAMP (NON LED)	1	WP01	WIPRO LTD.	WIPRO CONSUMER CARE AND LIGHTING, 5TH FLOOR, GODREJ ETERNIA C, OLD PUNE-MUMBAI ROAD, SHIVAJINAGAR, PUNE -411005	020-66098700	
	LIGHTING LAMP (NON LED)	2	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	9818338922	
	LIGHTING LAMP (NON LED)	3	B05	BAJAJ ELECTRICALS	BAJAJ ELECTRICALS LTD. ENGINEERING & PROJECTS BU (NORTH) 3rd FLOOR, GULMOHARHOUSE, COMMUNITY CENTRE 161/B-4, GAUTAM NAGAR, YUSUF SARAI NEW DELHI ~ 110049	CONTACT PERSON : Mr. S. SREEMANY. SR. MANAGER (PROJECTS) CONTACT DETAILS : (+91) 9871025705. MAIL ID : srabans@bajajelectricals.com;	
	LIGHTING LAMP (NON LED)	4	INS1	INSTA POWER	PLOT NO. - 457 PHASE - V, UDYOG VIHAR, GURGAON - 122016	124-4124000	
	LIGHTING LAMP (NON LED)	5	P01	PHILIPS	9TH FLOOR,DLF 9B, DLF CYBER CITY, DLF PHASE-III,GURGAON-122002	01244606001, Sharad (+919871150447)	
	LIGHTING LAMP (NON LED)	6	HI01	HAVELLS INDIA LIMITED	QRG TOWERS , 2D SECTOR-126, NOIDA- 201301	GIRISH KUMAR SHRIVASTAVA +91-9810528922	
	LIGHTING LAMP (NON LED)	7	HP01	HPL	M/S HPL ELECTRIC & POWER PVT. LTD. PLOT NO. 76-B,PHASE-IV, SEC-57, HSIIDC, INDL AREA , KUNDLI, DIST - SONEPAT (HARYANA) - 131028	mohitsharma@hplindia.com'	
	LIGHTING LAMP (NON LED)	8	SR01	SURYA ROSHNI LIMITED	PADMA TOWER, RAJENDRA PLACE, RAJENDRA PLACE NEW DELHI	011-25810093 ; 9810071832 (Akhlesh Agrawal) aagrawal@rsroshni.com	
	LIGHTING LAMP (NON LED)	9	HN13	M/s Halonix Technologies Limited	M/s Halonix Technologies Limited B-31 , Phase -II, Noida Distt. Gautam Budh Nagar (U.P.) Pin- 201305	Mr. Mohit Gautam 'Tel: +919568152111 'mohit.gautam@halonix.co.in'; 'rahul.singh@halonix.co.in'	
ES43	LIGHTING LAMP (LED)	1	NE01	Neev Luminaries	D-115 , OKHLA INDUSTRIAL AREA, PHASE-1 NEW DELHI ~ 110020	Phone :+91 11 4060 4830 Fax : +91 11 4060 4831 info@neevenergy.in	
	LIGHTING LAMP (LED)	2	HI01	HAVELLS INDIA LIMITED	QRG TOWERS , 2D SECTOR-126, NOIDA- 201301	GIRISH KUMAR SHRIVASTAVA +91-9810528922	
	LIGHTING LAMP (LED)	3	B05	BAJAJ ELECTRICALS	BAJAJ ELECTRICALS LTD. ENGINEERING & PROJECTS BU (NORTH) 3rd FLOOR, GULMOHARHOUSE, COMMUNITY CENTRE 161/B-4, GAUTAM NAGAR, YUSUF SARAI NEW DELHI ~ 110049	CONTACT PERSON : Mr. S. SREEMANY. SR. MANAGER (PROJECTS) CONTACT DETAILS : (+91) 9871025705. MAIL ID : srabans@bajajelectricals.com;	
	LIGHTING LAMP (LED)	4	SR01	SURYA ROSHNI LIMITED	PADMA TOWER, RAJENDRA PLACE, RAJENDRA PLACE NEW DELHI	011-25810093 ; 9810071832 (Akhlesh Agrawal) aagrawal@rsroshni.com	
	LIGHTING LAMP (LED)	5	P01	PHILIPS	9TH FLOOR,DLF 9B, DLF CYBER CITY, DLF PHASE-III,GURGAON-122002	01244606001, Sharad (+919871150447)	
	LIGHTING LAMP (LED)	6	HP01	M/S HPL ELECTRIC & POWER PVT. LTD	M/S HPL ELECTRIC & POWER PVT. LTD. PLOT NO. 76-B,PHASE-IV, SEC-57, HSIIDC, INDL AREA , KUNDLI, DIST - SONEPAT (HARYANA) - 131028	mohitsharma@hplindia.com	
	LIGHTING LAMP (LED)	7	INS1	INSTA POWER	PLOT NO. - 457 PHASE - V, UDYOG VIHAR, GURGAON - 122016	124-4124000	
	LIGHTING LAMP (LED)	8	PT13	Pyrotech Electronics Pvt. Ltd.	M/s Pyrotech Electronics Pvt. Ltd.(Unit -1) Led Light, Sensor Division F-16A, Road No.3 Newar Industrial Area, Madri Udaipur -313003, Rajasthan,	Concern Person ~ Mr. Praveen sisodiya (sisodiya@pyrotechlighting.com) Ankit Kumar Sr. Engineer(North Region -Sales & Marketing) # +91- 7340061769, 8287897309	
	LIGHTING LAMP (LED)	9	HN13	M/s Halonix Technologies Limited	M/s Halonix Technologies Limited B-31 , Phase -II, Noida Distt. Gautam Budh Nagar (U.P.) Pin- 201305	Mr. Mohit Gautam 'Tel: +919568152111 'mohit.gautam@halonix.co.in'; 'rahul.singh@halonix.co.in'	
ES45	LIGHTING SWITCH , SOCKET & S/F UNIT	1	F04	ELEXPRO ELECTRICALS PVT/ LTD.	C 1/27 & 37 GIDC KABILPORE NAVSARI-396424	02637-265140, Mr. jssk kumar	
	LIGHTING SWITCH , SOCKET & S/F UNIT	2	E1012	ANCHOR	STEEL HOUSE, B WING, PLOT NO. 24, MAHAL INDUSTRIAL ESTATE, MAHAKALI CAVES ROAD, NEAR PAPER BOX, ANDHERI (E), MUMBAI, MAHARASHTRA - 400093	022-30418888.	
	LIGHTING SWITCH , SOCKET & S/F UNIT	3	E1076	KAYCEE	KAYCEE INDUSTRIES LTD., C/O-CMS COMPUTERS LTD., 35A, REAR BLDG. KLOKARI, NEW DELHI-110014	Rajiv Sharma-9312004687	
	LIGHTING SWITCH , SOCKET & S/F UNIT	4	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	LIGHTING SWITCH , SOCKET & S/F UNIT	5	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadoria@siemens.com	
	LIGHTING SWITCH , SOCKET & S/F UNIT	6	E1068	INDO ASIAN	B-24, PHASE - II , NOIDA - 201305, U.P.	120-3042222	
	LIGHTING TRANSFORMER	1	E1021	AUTOMATIC ELECTRIC LTD.	ADDRESS : 96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON , LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
	LIGHTING TRANSFORMER	2	E1066	INDCOIL	PLOT NO. A- 150/ 151, 23RD U ROAD, WAGLE ESTATE, THANE WEST, CST RD, FRIENDS COLONY, HALLOW PUL, KURLA WEST, MUMBAI, MAHARASHTRA 400070	Phone:022 2583 8305	

SUB-VENDOR DIRECTORY

ITEM CODE	ITEM/SERVICE DESCRIPTION	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
E546	LIGHTING TRANSFORMER	3	E1103	POWER PACK ENTERPRISES	POWER PACK ENTERPRISES MR. NEHAL SHAH / MR. SHARAD SHAH (PARTNER) NO. 3, JAYSHREE SADAN, 1ST FLOOR, OLD NAGARDAS ROAD, ANDHERI EAST MUMBAI - 400069, MAHARASHTRA, INDIA	Call Us:08447573761 Mobile: +91-9821787821 +91-9821035604	
	LIGHTING TRANSFORMER	4	E1155	VIJAY ELECTRICALS LTD.	6-3-648/1&2, OFF RAJ BHAVAN ROAD, SOMAIGUDA, HYDERABAD - 500 082. ANDHRA PRADESH, INDIA.	Vijay Electricals Mr. Bharat Giri / Ajay Giri (CEO) B 79, Gali No. 60, Sanjay Colony, Sector- 23 Faridabad - 121005, Haryana, India Call Us: 09953353612 websales@vijajielectricals.com	
	LIGHTING TRANSFORMER	5	E1057	GILBERT & MAXWELL	WORKS PLOT G-28 , M.I.D.C., AMBAD NASHIK - 422010, MAHARASHTRA, INDIA	Mr. Sanjeev Kulkarni, (Marketing Manager) Cell: 9822586724 sanjeevkulkarni@gilbert-maxwell.in Phone : + 91 - 253 - 238 25 51 Fax : + 91 - 253 - 238 25 52	
	LIGHTING TRANSFORMER	6	K18	KAPPA ELECTRICALS	KAPPA ELECTRICALS, KAPPA CONSOLIDATED PVT. LTD., SOUTHERN ELECTRIKS 14, CART TRACK ROAD, MADUVANKARAI, CHENNAI - 600 042, INDIA.	PHONE: +91 - 44 - 22454709, 22454516, 22450794, 22450795 FAX: +91 - 44 - 22351662, 22451693 E-MAIL: mnr@kappaelectricals.com sales@kappaelectricals.com	
	LIGHTING TRANSFORMER	7	AIE01	Ames Impex Electricals Pvt. Ltd	C-18/1207, PHASE IV, GIDC NARODA, AHMEDABAD, GUJARAT 382330	Phone:079 2282 1648	
E547	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	8	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	9	E1019	ASIATIC	A-58 NARAINA IND. AREA, PHASE-I, NEW DELHI 110028	011 - 25796330, 25796617	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	10	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011 - 25793021	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	11	E1051	EVERGREEN ENGG. CO.	EVERGREEN ENGG COMPANY WORKS-5, PLOT NO. 9,10,11,12, SURVEY NO. 242, CHINCH PADA, VASAI EAST-401208	(0250) 6458250	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	12	E1143	TECKNIC CONTROLS	703, MADHAVA, BANDRA, KURLA COMPLEX, BANDRA EAST, MUMBAI, MAHARASHTRA 400051	022-42532507/00 022-24451648	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	13	E1053	EX-PROTECTA LIGHTING EQUIPMENT	305-306, GIDC ESTATE, VITTHAL UDYOGNAGAR - 388121 DIST. ANAND, GUJARAT 388121 INDIA	02692-237823	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	14	E1206	BALIGA ELECTRICALS	63A,CP RAMASWAMY ROAD, PB NO 6910, CHENNAI-600018	44-24995505,22680990-4	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	15	E1210	ENPRO ENGG.	NO.995P, DIAMOND PLAZA, 2ND FLOOR, 12TH MAIN ROAD, ANNA NAGAR, CHENNAI-40	044 - 42611526 / 42170338 / 26262716 enproengg@enproengineering.com	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	16	E1132	STERLING SWGR CONTROL PVT.LTD.	P.O. BOX NO. 17023, SORAB HOUSE, 2ND FLOOR, 555, S.B. MARG, DADAR, MUMBAI - 400028, MAHARASHTRA, INDIA	91-22- 24222297/24222298/24224236	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	17	F04	ELEXPRO ELECTRICALS PVT// LTD.	C 1/27 & 37 GIDC KABILPORE NAVSARI-396424	02637-265140, Mr. jssk kumar	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	18	E1153	VAISHNO(HOTLINE SWGR & CONTROL)	G-19, SECTOR - 11, NOIDA - 201301, UTTAR PRADESH, INDIA	8377805157 981838922	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	19	J01	JASPER ENGINEERES PVT. LTD.	A-23, SECTOR - 8, NOIDA-201301	010-403520/533	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	20	KM1	KMG ATOZ SYSTEMS	C-49, SECTOR-81-NOIDA-201305	120-4207920, 08527897328	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	21	E05	UNILEC ENGINEERS PVT. LTD.	BEHRAMPUR INDUSTRIAL AREA, BEGAMPUR KHATOLA ROAD, GURGAON-122001	0124-4030247,248, 4559700, 9911087173	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	22	B04	BCH	20/4, MATHURA ROAD, FARIDABAD, HARYANA-121006	0129-4293000	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	23	E1035	CANDS	J/202, ANSA INDUSTRIAL ESTATE, SAKI VIHAR ROAD, SAKINAKA, ANDHERI (EAST), MUMBAI-72	022-28570858	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	24	S01	SIEMENS	RC-IN I S NR DELAREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhaduria@siemens.com	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	25	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	26	E1143	TECKNIC CONTROLS	703, MADHAVA, BANDRA, KURLA COMPLEX, BANDRA EAST, MUMBAI, MAHARASHTRA 400051	022-42532507/00 022-24451648	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	27	E1148	UNITED ELECTRIC	97 UDYOG VIHAR PHASE-I, GURGAON 122015, HARYANA	124 4002970 72	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	28	SR01	M/s Shrenik & Co.	39A/3, PANCHRATNA INDUSTRIAL ESTATE, SARKHEJ-BAVLA ROAD, CHANGODAR, AHMEDABAD - 382 213		
E548	LOCAL PUSH BUTTON STATION (FLAME PROOF)						
E549	LIGHTING PANEL (FLAME PROOF)	1	E1206	BALIGA ELECTRICALS	63A,CP RAMASWAMY ROAD, PB NO 6910, CHENNAI-600018	44-24995505,22680990-4	
	LIGHTING PANEL (FLAME PROOF)	2	SS01	SUDHIR SWITCHGEAR	305/6, APEEJAY HOUSE, 130, BOMBAY SAMACHAR MARG, MUMBAI - 400 023. INDIA	Telephone Nos. : 40460000 (100 lines) Fax Nos. : +91-22-22049381 Email : md@sudhirschwitchgears.com ; works@sudhirschwitchgears.com ;scud@vsnl.com	
E550	LIGHTING PANEL (NON FLAME PROOF)	1	E1091	MIKA ENGINEERS	D'-101, DHEERAJ HERITAGE RESIDENCY II, SHASTRI NAGAR, SANTACRUZ (W), MUMBAI 400 054.	Director : Mr. Asgar Karimi E-mail : mika@mtnl.net.inTelfax : 022-26610081/82/83/84Tel : 02527-249066/70 Cell : 099320	
	LIGHTING PANEL (NON FLAME PROOF)	2	F04	ELEXPRO ELECTRICALS PVT// LTD.	C 1/27 & 37 GIDC KABILPORE NAVSARI-396424	02637-265140, Mr. jssk kumar	
	LIGHTING PANEL (NON FLAME PROOF)	3	VC01	Vidhyut Controls (India) Pvt. Ltd.	M/5 VIDHYUT CONTROL (I) PVT.LTD. D-12 & 13, SECTOR-17,KAVI NAGAR INDLAREA,GHAZIABAD - 201002 (DELHI NCR) U.P. INDIA	0120-4186400, 0120-4186423, 8527005590(DK GUPTA)	
	LIGHTING PANEL (NON FLAME PROOF)	4	KM1	KMG ATOZ SYSTEMS	"ATOZ HOUSE" C-49, SECTOR-81, GAUTAM BUDDH NAGAR, NOIDA - 201 305 U. P. (INDIA)	Tel : +91-120-4207920 Fax : +91-120-4207921, 4327958 Phone:098 10 802710	
	LIGHTING PANEL (NON FLAME PROOF)	5	E05	UNILEC ENGINEERS PVT. LTD.	BEHRAMPUR INDUSTRIAL AREA, BEGAMPUR KHATOLA ROAD, GURGAON-122001	0124-4030247,248, 4559700, 9911087173	
	LIGHTING PANEL (NON FLAME PROOF)	6	AVA01	AVAJODS TECHNOVATORS LTD.	PLOT NO.25 ,SECTOR-3,IMT-MANESAR, GURGEON-122050 (HARYANA)	KRISHNA KALRA- 09958096168	
	LIGHTING PANEL (NON FLAME PROOF)	7	ACE01	Adroit Control Engineers Pvt.Ltd.	M/S ADROIT CONTROL ENGINEERS PVT.LTD. PLOT-3, KRISHNA INDL. AREA, SECTOR-25 FARIDABAD - 121004	011-47600700, 0129-4251400	
	LIGHTING PANEL (NON FLAME PROOF)	8	JC01	JACKSON ENGINEERS	A-43, HOSEIRY COMPLEX, OPPOSITE NSEZ, NOIDA-201305	0120-4302600, 2568923,27	
	LIGHTING PANEL (NON FLAME PROOF)	9	MIL01	MILESTONE SWITCHGEARS PVT. LTD.	MILESTONE SWITCHGEARS PVT. LTD. 97, UDYOG VIHAR, PHASE-I, GURGEON HARYANA - 122016	Phone Nos. : 0124-4994900 (30 Lines) Fax: 0124-4002973 Email: jaideep.ahuja@milestonesindia.com URL: www.milestonesindia.com	

SUB-VENDOR DIRECTORY

ITEM CODE	ITEM/SERVICE DESCRIPTION	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
	LIGHTING PANEL (NON FLAME PROOF)	10	PCS01	Positronics Pvt. Ltd.	POSITRONICS HOUSE ,882/ 2, G.I.D.C. MAKARPURA,VADODARA 390010 GUJARAT	+91 265 2642496 Fax: +91 265 264 7033 / 234 0944 E- mail : info@positronicsindia.com Website:www.positronicsindia.co m	
	LIGHTING PANEL (NON FLAME PROOF)	11	PYRE01	Pyrotech Electronics Pvt. Ltd.	M/s Pyrotech Electronics Pvt. Ltd.(Unit -1) Led Light, Sensor Division F-16A, Road No.3 Mewar Industrial Area, Madri Udaipur -313003, Rajasthan,	Concern Person – Mr. Praveen sisodia (psisodia@pyrotechlighting.com) Ankit Kumar Sr. Engineer(North Region -Sales & Marketing) # +91- 7340061769, 8287897309	
ES51	MCB	1	E1088	MDS SWITCHGEAR LTD	314-3175HAH NAHAR ESTATE	011- 25793021	
	MCB	2	E1068	INDO ASIAN	B-24, PHASE - II, NOIDA - 201305, U.P.	120-3042222	
	MCB	3	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	MCB	4	E1120	S&S POWER SWITCHGEAR LTD.	NEW NO. 67, OLD NO. 19, DR. RANGA ROAD, MYLAPORE, CHENNAI - 600004	044 - 24988056, 044 - 24988057, 044 - 24988058	
ES52	MCC (FIXED TYPE)	1	S02	SPACEAGE SWITCHGEARS LTD.	68 & 13-A INDUSTRIAL DEVELOPMENT COLONY, MEHRAULI ROAD GURGAON, HARYANA-122001	0124-2302711, 4085091	
	MCC (FIXED TYPE)	2	A01	ASSOCIATED SWGR & PROJ.LTD.	C-10, UPSIDC, INDUSTRIAL AREA, SITE-IV, KASNA ROAD, GREATER NOIDA 201306	0120-4294618,19,20 Asplho@gmail.com	
	MCC (FIXED TYPE)	3	B04	BCH	20/4, MATHURA ROAD, FARIDABAD, HARYANA-121006	0129-4293000	
ES55	MODULAR SWITCH BOARD	1	E1012	ANCHOR	STEEL HOUSE, 8 WING, PLOT NO. 24, MAHAL INDUSTRIAL ESTATE, MAHAKALI CAVES ROAD, NEAR PAPER BOX, ANDHERI (E), MUMBAI, MAHARASHTRA - 400093	022-30418888.	
	MODULAR SWITCH BOARD	2	F04	ELEXPRO ELECTRICALS PVT/LTD.	C 1/27 & 37 GIDC KABILPORE NAVSARI-396424	02637-265140, Mr. Jssk kumar	
	MODULAR SWITCH BOARD	3	HI01	HAVELLS INDIA LIMITED	ORG TOWERS , 2D SECTOR-126, NOIDA- 201301	GIRISH KUMAR SHRIVASTAVA +91-9810528922	
ES56	OIL TEMP INDICATOR	1	E1101	PERFECT CONTROLS	BLOCK NO. 7, NORTH ROAD,WEST C.I.T. NAGAR,CHENNAI - 600035, INDIA.	Phone: (91-44) 24341043, 24330387, 42867651 Fax: (91-44) 24345075	
	OIL TEMP INDICATOR	2	E1105	PRECIMEASURE	M/S. PRECIMEASURE CONTROLS PVT. LTD. 168/C, INDUSTRIAL SUBURB, PEENYA 3RD PHASE, BANGALORE - 560058. KARNATAKA, INDIA	Phone: EPABX: +91-80-42602702. Fax: +91-80-41552205 E-mail: info@precimeasure.com	
ES57	PROTECTION - RELAYS (PNUEMATIC)	1	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
	PROTECTION - RELAYS (PNUEMATIC)	2	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	PROTECTION - RELAYS (PNUEMATIC)	3	A35	GE-MULTILINE, GE INDIA INDUSTRIAL PVT. LTD.	NO. 90- 8, ELECTRONICS CITY, HOSUR ROAD, BENGALURU - 560016, KARNATAKA	(080) 41314617, 9945478935	
	PROTECTION - RELAYS (PNUEMATIC)	4	SC01	SCHWEITZER ENGG. LAB (SEL)	406, BHIKAJI CAMA BHAVAN, BHIKAJI CAMA PLACE, BHIKAJI CAMA PLACE, MOHAMMADPUR, RK PURAM, NEW DELHI, DL 110066	011 4152 7899	
	PROTECTION - RELAYS (PNUEMATIC)	5	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
	PROTECTION - RELAYS (PNUEMATIC)	6	G01	ALSTOM LTD	A-7, SEC-65, NOIDA	0120-479 0000	
	PROTECTION - RELAYS (PNUEMATIC)	7	A24	ABB	14, MATHURA ROAD, FARIDABAD, HARYANA-121003	0129-2567580, 09871799449	
	PROTECTION - RELAYS (PNUEMATIC)	8	C01	AVK-SEG & CONTROLS(I) LTD	C-60-NOIDA PHASE-II	6918834-37	
ES58	PROTECTION - RELAYS (NUMERICAL)	1	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
	PROTECTION - RELAYS (NUMERICAL)	2	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	PROTECTION - RELAYS (NUMERICAL)	3	A35	GE-MULTILINE, GE INDIA INDUSTRIAL PVT. LTD.	NO. 90- 8, ELECTRONICS CITY, HOSUR ROAD, BENGALURU - 560016, KARNATAKA	(080) 41314617, 9945478935	
	PROTECTION - RELAYS (NUMERICAL)	4	SC01	SCHWEITZER ENGG. LAB (SEL)	406, BHIKAJI CAMA BHAVAN, BHIKAJI CAMA PLACE, BHIKAJI CAMA PLACE, MOHAMMADPUR, RK PURAM, NEW DELHI, DL 110066	011 4152 7899	
	PROTECTION - RELAYS (NUMERICAL)						
ES59	RECEPTACLES - DECORATIVE	1	E1012	ANCHOR	STEEL HOUSE, 8 WING, PLOT NO. 24, MAHAL INDUSTRIAL ESTATE, MAHAKALI CAVES ROAD, NEAR PAPER BOX, ANDHERI (E), MUMBAI, MAHARASHTRA - 400093	022-30418888.	
	RECEPTACLES - DECORATIVE	2	F04	ELEXPRO ELECTRICALS PVT/LTD.	C 1/27 & 37 GIDC KABILPORE NAVSARI-396424	02637-265140, Mr. Jssk kumar	
	RECEPTACLES - DECORATIVE	3	B05	BAJAJ ELECTRICALS	BAJAJ ELECTRICALS LTD. ENGINEERING & PROJECTS BU (NORTH) 3rd FLOOR, GULMOHARHOUSE, COMMUNITY CENTRE 161/B-4, GAUTAM NAGAR, YUSUF SARAI NEW DELHI – 110049	CONTACT PERSON : Mr. S. SREEMANY. SR. MANAGER (PROJECTS) CONTACT DETAILS : (+91) 9871025705. MAIL ID : srabans@bajajelectricals.com;	
	RECEPTACLES - DECORATIVE	4	A03	AJMERIA INDUSTRIES & ENGG. WORKS	AJMERIA INDL AND ENGG. WORKS. AJMERIA HOUSE, A-61 / KHAIRANE MIDC. , TTC INDL. AREA, NAVI MUMBAI – 400705.	Tel : 022 27620299 / 97 / 96 'mail@ajmeria.net	
ES61	SWITCH BOX	1	E1012	ANCHOR	STEEL HOUSE, 8 WING, PLOT NO. 24, MAHAL INDUSTRIAL ESTATE, MAHAKALI CAVES ROAD, NEAR PAPER BOX, ANDHERI (E), MUMBAI, MAHARASHTRA - 400093	022-30418888.	
	SWITCH BOX	2	F04	ELEXPRO ELECTRICALS PVT/LTD.	C 1/27 & 37 GIDC KABILPORE NAVSARI-396424	02637-265140, Mr. Jssk kumar	
	SWITCH BOX	3	B05	BAJAJ ELECTRICALS	BAJAJ ELECTRICALS LTD. ENGINEERING & PROJECTS BU (NORTH) 3rd FLOOR, GULMOHARHOUSE, COMMUNITY CENTRE 161/B-4, GAUTAM NAGAR, YUSUF SARAI NEW DELHI – 110049	CONTACT PERSON : Mr. S. SREEMANY. SR. MANAGER (PROJECTS) CONTACT DETAILS : (+91) 9871025705. MAIL ID : srabans@bajajelectricals.com;	
	SWITCH BOX	4	A03	AJMERIA INDUSTRIES & ENGG. WORKS	AJMERIA INDL AND ENGG. WORKS. AJMERIA HOUSE, A-61 / KHAIRANE MIDC. , TTC INDL. AREA, NAVI MUMBAI – 400705.	Tel : 022 27620299 / 97 / 96 'mail@ajmeria.net	
	SWITCH BOX	5	S802	S.B. ELECTRICAL ENGINEERING CORPORATION	03, SARDAR GRIHA BUILDING, LOHAR CHAWAL, MUMBAI-400002	022- 22069831; 022-66637259	
ES62	TERMINAL BLOCKS	1	C01	WAGO-CONTROLS	C 27, GREATER NOIDA, SECTOR 58, C BLOCK, SECTOR 58, NOIDA, UTTAR PRADESH 201307	0120-2580409/10	
	TERMINAL BLOCKS	2	E1038	CONNECT WELL	309A/4, 3RD FLOOR, KALKAJI, OKHLA IND AREA PH-2, GOVINDPURI, NEW DELHI, DL 110019	9811881085 09871419996 011-65908877	
	TERMINAL BLOCKS	3	E1047	ELMEX CONTROLS PVT. LTD.	12,G.I.D.C. ESTATE,MUKARPURA ROAD,VADODARA-390010	9374631074	
	TERMINAL BLOCKS	4	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	
	TERMINAL BLOCKS	5	E1142	TECHNOPLAST	OPP.I.M.INTER COLLEGE, BEGUM SARAI KHURD ROAD, AMROHA - 244221, U.P.	PH- 05922 264006 CELL NO:- 9012676000, 9319520799, 9319582467	

1167403/2022/PS-PEM-EL

SUB-VENDOR DIRECTORY

ITEM CODE	ITEM/SERVICE DESCRIPTION	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
E563	TERMINAL BLOCKS	6	PME-01	M/s PHOENIX MECANO LTD.,	388 BHARE, TALUKA MULSHI, POST GHOTAWADE, PIRANGOOT, INDUSTRIAL AREA, PUNE-412115	TEL. - +912066745000 Awasthi(09971119006) Tel: +91 20 6674 5103, Mobile: +91 90499 95985, Fax: +91 20 6674 5126 contact person : Vishwa bandhu E-mail:d.gupta@pmpl-online.com ,admin@pmpl-online.com	
	TERMINAL BLOCKS	7	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	
	TIMERS - PNEUMATIC	1	804	BCH	20/4, MATHURA ROAD, FARIDABAD, HARYANA-121006	0129-4293000	
	TIMERS - PNEUMATIC	2	G01	ALSTOM LTD	A-7, SEC-65, Noida	0120-479 0000	
	TIMERS - PNEUMATIC	3	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	TIMERS - PNEUMATIC	4	E1144	TELEMECHANIQUE/ SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	TAKEN OVER BY SCHNEIDER
	TIMERS - PNEUMATIC	5	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
E564	TIMERS - ELECTRONIC	1	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	
	TRANSOUCCERS	1	E1021	AUTOMATIC ELECTRIC LTD.	ADDRESS : 96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON, LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
E565	TRANSOUCCERS	2	E1202	SOUTHERN TRANSOUCCERS	INTERTECH B-83, FLATTED FACTORY COMPLEX, NEAR MODI MILLS, OKHLA, NEW DELHI-110020	Mr. Gurmohit Singh 011-41020365 / 9891402128	
	WINDING TEMP INDICATOR	1	E1101	PERFECT CONTROLS	OFFICE ADDRESS: 7, NORTH ROAD, WEST C.I.T. NAGAR, CHENNAI - 600035, INDIA.	Phone: (91-44) 24341043, 24330387, 42867651; Fax: (91-44) 24345075	
E566	WINDING TEMP INDICATOR	2	E1105	PRECIMEASURE	M/S. PRECIMEASURE CONTROLS PVT. LTD. 168/C, INDUSTRIAL SUBURB, PEENYA 3RD PHASE, BANGALORE - 560058. KARNATAKA, INDIA	Phone EPABX: +91-80-42602702. Fax: +91-80-41552205 E-mail: info@precimeasure.com	
	RECEPTACLE (FLAME PROOF)	1	E1206	BALIGA ELECTRICALS	63A/CP RAMASWAMY ROAD, PB NO 6910, CHENNAI-600018	44-24995505,22680990-4	
E567	RECEPTACLE (FLAME PROOF)	2	S501	SUDHIR SWITCHGEAR	305/6, APEJAY HOUSE, 130, BOMBAY SAMACHAR MARG, MUMBAI - 400 023. INDIA	Telephone Nos. : 40460000 (100 lines) Fax Nos. : ++91-22-22049381 Email : md@sudhirsutchgears.com ; works@sudhirsutchgears.com ; scud@vsnl.com	
	RECEPTACLE (FLAME PROOF)	3	FFP01	FCG FLAME PROOF CONTROL GEAR	A1/53, SHAH & NAHAR INDUSTRIAL ESTATE, SITARAM JADHAV ROAD, LOWER PAREL (W), MUMBAI-400 013	Mr. N. G. Patel CMD Office No: +91-22-43443200 Fax No: +91-22-24960313	
	RECEPTACLE (NON FLAME PROOF)	1	A03	AJIMERA INDUSTRIES & ENGG. WORKS	AJIMERA INDL. AND ENGG. WORKS. AJIMERA HOUSE, A-61 / KHAIRANE MIDC., TTC INDL. AREA, NAVI MUMBAI - 400705.	Tel : 022 27620299 / 97 / 96 mail@ajimera.net	
E568	RECEPTACLE (NON FLAME PROOF)	2	C02	CROMPTON GREAVES	3RD FLOOR, EXPRESS BUILDING,9-10, BAHADUR SHAH ZAFAR MARG, NEAR ITO CROSSING,NEW DELHI-110002, INDIA	91 11 23460700 - 999 Sunil.Das@cgglobal.com	
	RECEPTACLE (NON FLAME PROOF)	3	E1207	CYCLO ELECTRIC DEVICE & SERV.CO.	: A-3, NEAR ANTHEM BIOSCIENCE, KSSIDC INDUSTRIAL AREA, BOMMASANDRA, BOMMASANDRA INDUSTRIAL AREA, BANGALORE, KARNATAKA 560099	Mr. H.Jaishanker +919845039081, 080 - 27833102, 080 - 27833103 : +91 80 41460985 cycloelectric@gmail.com	
	RECEPTACLE (NON FLAME PROOF)	4	804	BCH	20/4, MATHURA ROAD, FARIDABAD - 121006, HARYANA, INDIA	0129-4063000, 9015800189(Ramesh Giri) ramesh.giri@bchindia.com	
	RECEPTACLE (NON FLAME PROOF)	5	802	BEST & CROMPTON	BEST & CROMPTON ENGINEERING LTD 28C, AMBATTUR INDUSTRIAL ESTATE (NORTH) AMBATTUR, CHENNAI - 600 098	Ph : +91 44 4551 4724 , MRKT DGM Mr. VI Raj: 9840593411 bestcromptonvira@gmail.com	
	RECEPTACLE (NON FLAME PROOF)	1	E1103	POWER PACK ENTERPRISES	MR. NEHAL SHAH / MR. SHARAD SHAH (PARTNER) NO. 3, JAYSHREE SADAN, 1ST FLOOR, OLD NAGARDAS ROAD, ANDHERI EAST MUMBAI - 400069, MAHARASHTRA, INDIA	Call Us:08447573761 Mobile: +[91]-9821787821 +[91]-9821035604	
E571	24V SUPPLY MODULE WITH COMPLETE ACCESSORIES	2	E1066	INDCOIL		Phone:022 2583 8305	
	24V SUPPLY MODULE WITH COMPLETE ACCESSORIES	3	AIE01	Ames Impex Electricals Pvt. Ltd	C-18/1207, PHASE IV, GIDC NARODA, AHMEDABAD, GUJARAT 382330	Phone:079 2282 1648	
	24V SUPPLY MODULE WITH COMPLETE ACCESSORIES	1	E1009	AUTOMATIC ELECTRIC LTD.	96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON, LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
E574	AMMETER	2	R01	RISHABH INST.PVT LTD	RISHABH INSTRUMENTS PVT. LTD. F-31, MIDC, SATPUR NASHIK - 422007 MAHARASHTRA INDIA	marketing@rishabh.co.in 91-253 2202202/203 Fax: 91 253 2351064	
	AMMETER	3	NK09	M/s Newtek Electricals	M-90, M.I.D.C, Waluj, Aurangabad 431136, Maharashtra, India	Tel/Fax: +91 240 2551555 E-mail: mkt.north@newtekelectricals.com, sales@newtekelectricals.com Mr Sanjeev Aggarwal (9958897890)	
	AMMETER	1	E1009	AUTOMATIC ELECTRIC LTD.	96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON, LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
E575	VOLTMETER	2	R01	RISHABH INST.PVT LTD	RISHABH INSTRUMENTS PVT. LTD. F-31, MIDC, SATPUR NASHIK - 422007 MAHARASHTRA INDIA	marketing@rishabh.co.in 91-253 2202202/203 Fax: 91 253 2351064	
	VOLTMETER	3	NK09	M/s Newtek Electricals	M-90, M.I.D.C, Waluj, Aurangabad 431136, Maharashtra, India	Tel/Fax: +91 240 2551555 E-mail: mkt.north@newtekelectricals.com, sales@newtekelectricals.com Mr Sanjeev Aggarwal (9958897890)	
	VOLTMETER	1	E1009	AUTOMATIC ELECTRIC LTD.	96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON, LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
E576	MPCB	1	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	MPCB	2	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	MPCB	3	S01	SIEMENS	RC-IN 15 NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhaduria@siemens.com	
	MPCB	4	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	MPCB	5	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	MPCB	6	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
	MPCB	1	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
E576	RCCB	2	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	RCCB	1	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	

SUB-VENDOR DIRECTORY

ITEM CODE	ITEM/SERVICE DESCRIPTION	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES79	RCCB	3	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-8, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadoria@siemens.com	
	RCCB	4	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	RCCB	5	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	RCCB	6	C02	CROMPTON GREAVES	RAIL TRANSPORTATION SYSTEMS,VANDANA BUILDING, 11, TOLSTOY MARG, TOLSTOY MARG, NEW DELHI, DL-110001	011 3041 6300	
ES80	PVC WIRES				BIS APPROVED MAKE		
ES81	PEDESTAL FAN & CEILING FAN				REPUTED MAKE		
ES82	EXIT SIGN (FLAME PROOF)				REPUTED MAKE		
ES83	EXIT SIGN (NON FLAME PROOF)				REPUTED MAKE		
ES84	LADDER				REPUTED MAKE		
ES85	HUME PIPE				REPUTED MAKE		
ES86	PHOTOELECTRIC SWITCH				REPUTED MAKE		
ES87	DICHORIC SPOT LIGHTING FIXTURE				REPUTED MAKE		
ES88	HAND LAMP UNIT				REPUTED MAKE		
ES90	VAF METER (DIGITAL)	1	NK09	M/s Newtek Electricals	M-90, M.I.D.C, Waluj, Aurangabad 431136, Maharashtra, India	Tel/Fax: +91 240 2551555 E-mail: mkt.north@newtelectricals.com, sales@newtelectricals.com Mr Sanjeev Aggarwal (9958897890)	
	LED BASED HIGH INTENSITY AVIATION WARNING LIGHTS	1	INS1	M/s INSTA POWER LIMITED	Correspondence Address: M/s Insta Power Limited, S-19, Panch Shila Park, New-Delhi-110017 Manufacturing Unit: M/s Insta Power Limited, Khasra No. 103M, Raipur Industrial Area, Raipur, Bhagwanpur, Roorkee, Uttarakhand-247661	Manu Thakur (electrical1@instapower.com) Deepak Gupta (deepak.gupta@instapower.com) Abhijit R Vaish (abhijit.ra@instapower.com) Satyajit R Vaish (satyajit@instapower.com)	
ES91							

Makes of sub-vendor and equipment/components (excluding luminaires) mentioned in this list are indicative and shall be subject to NTPC/BHEL approval. The bidder may propose name of additional sub-vendors makes based on their experience, which will be subject to NTPC/BHEL approval.

PACKING SPECIFICATIONS- LIGHTING FIXTURES, LAMPS & MISC. ITEMS

PACKING

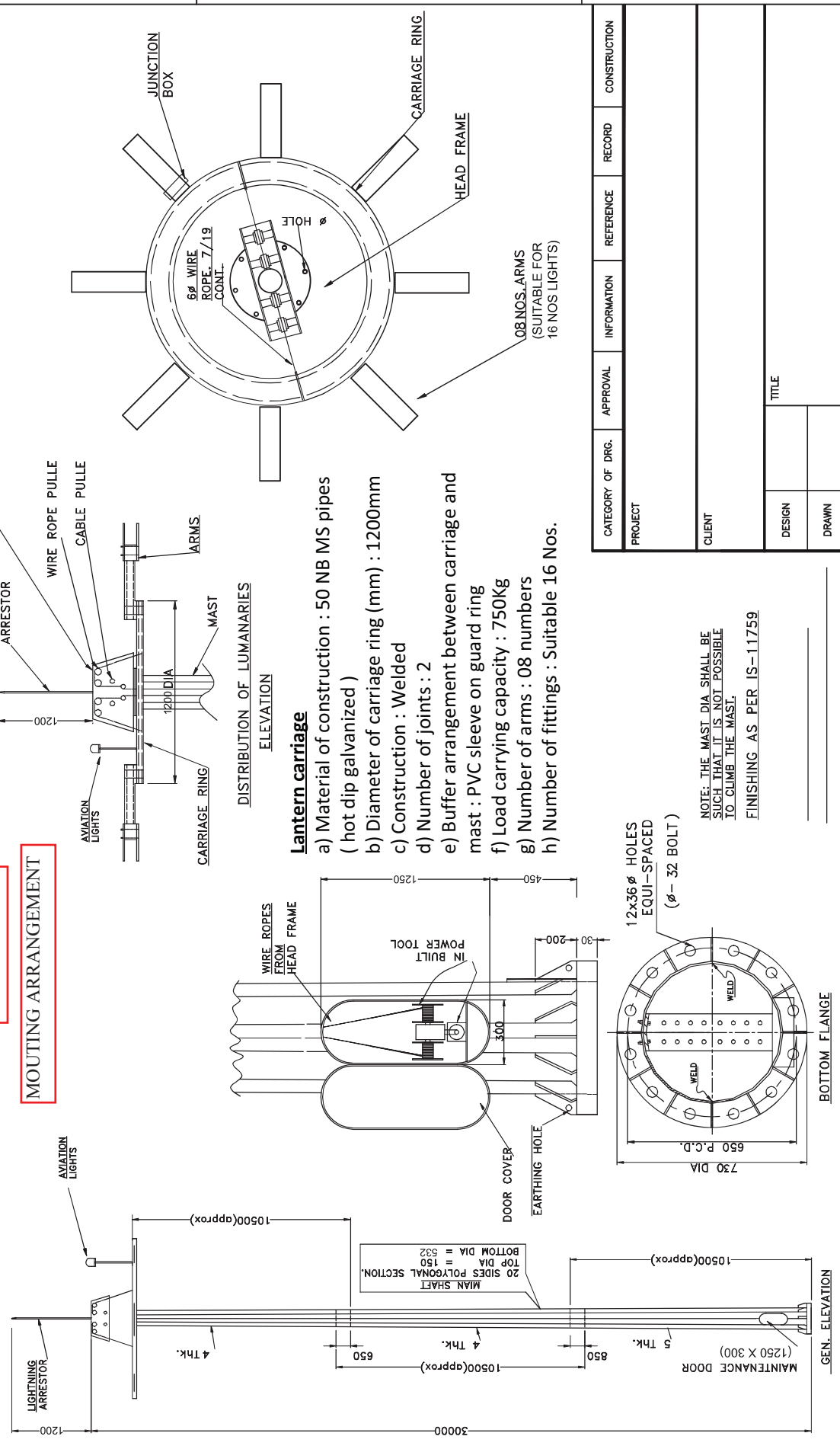
1. The material shall be packed to ensure protection against damage during transit, storage for prolonged periods and handling.
2. Lighting Fixtures, Lamps shall be clean and dry prior to packaging.
3. All items specified at sl. No.2 above shall be supplied in packed cartons. The tapes used for packing shall not bleed, leave residue, or damage the item when removed.
4. Fixtures & other lighting material shall be wrapped in weather proof material such as polythene sheets, air bubble sheets/ thermocol etc. The lighting fixtures shall be placed in a corrugated paperboard/ fibreboard container/ mono carton.
5. The mono cartons shall be wrapped or bagged or tied in place in master cartons. The master carton shall be taped and then wrapped with cushioning material.
6. The dimensions of cartons shall be as per manufacturer's recommendations.

Note: In case Manufacturer has a different packing standard which is **equivalent or better** same to be submitted for approval during contract stage.

THIS IS A GA DWG/ DETAILS OF HIGH MAST FOR GUIDANCE ONLY. LIGHTING FIXTURES SHALL BE MOUNTED ON THE LIGHTING MAST. IT IS TO BE NOTED THAT ALL ACCESSORIES CLAMPS / CHANNEL/ BASE PLATE/ BASE FRAME/ CHAINS / CLIPS / STEEL ROPE / PINS ETC. REQUIRED FOR MOUNTING OF FIXTURE ON THE LIGHTING MAST AS PER GA DWG OF LIGHTING MAST SHALL BE PART OF FIXTURES ONLY AND SHALL BE PROVIDED BY THE BIDDERS.

ANNEXURE-C

MOUNTING ARRANGEMENT



DRAWING IS CONFIDENTIAL & SHOULD NOT BE DISCLOSED, COPIED OR LENT TO A THIRD PARTY WITHOUT WRITTEN CONSENT OF ASSOCIATES EXCEPT FOR THE PURPOSE OF CONSTRUCTION, OPERATION AND MAINTENANCE OF THE SYSTEM FOR WHICH THE DRAWING IS MEANT.									
S.NO.		DRG.NO.		TITLE		REFERENCES			
NOTES						REVISIONS			
1. MANUAL HANDEL FOR WHICH SHALL BE PROVIDED. 2. DOOR SHALL BE VANDAL PROOF AND WEATHER PROTECTED. IPS5 WITH NEOPRENE GASKET SHALL BE PROVIDED TO DOOR						NO.	DATE	DESCRIPTION	BY
						APPD			

1167403/2022/PS-PEM-EL

**TECHNICAL SPECIFICATION FOR
HIGH MAST**

SPECIFICATION NO. PE-RC-999-558-E005

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SECTION-II**GENERAL REQUIREMENTS**



TECHNICAL SPECIFICATION FOR HIGH MAST

SPECIFICATION NO. PE-RC-999-558-E005

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1.0 INTENT OF SPECIFICATION

- 1.1 The requirement of this specification shall be fully complied with.
- 1.2 The “design” shall broadly cover the selection of components, materials, sizes etc. for the equipment of supply in vendor’s scope. Complete responsibility of establishing the correctness of equipment design rests with the vendor.
- 1.3 It is not the intent to specify here all the details of design and manufacture. However, the equipment shall conform in all respects to high standards of design, engineering and workmanship, and shall be capable of performing the required duties in a manner acceptable to Engineer / purchaser, who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material, which in his judgement is not in full accordance herewith.
- 1.4 Make of all equipment and components shall be as per sub vendor list (Section I) and subjected to the approval of BHEL/BHEL’s customer without any commercial implication.

2.0 CODES & STANDARDS

- 2.1 The material shall comply with all currently applicable safety codes and statutory regulations of India as well of the locality where the material is to be installed.
- 2.2 The material, construction, manufacture, inspection and testing shall conform to the latest revisions of standards as specified in Datasheet-A.
- 2.3 In case of conflict between the applicable reference standard and this specification, stringent requirement shall govern.

3 DESIGN REQUIREMENTS

3.1 LIGHTING MASTS

- 3.1.1 Lighting mast shall be continuously tapered polygonal cross section hot dip galvanised. The Mast shall be of height as specified in Datasheet-A with lantern carriage to enable raising/lowering for ease of maintenance, including the Head Frame, Double Drum Winch, continuous stainless steel wire rope, in built power tool, aviation warning light, lightning protection arrangement along with necessary power cables within the mast. The mast shall be delivered only in three sections & shall be joined together by slip stressed fit method without carrying out any welding or bolting of joints at site. Lantern carriage shall be suitable for mounting flood light fixtures, numbers as specified in Datasheet-A (fixture details shall be provided during detailed engineering). Carriage shall be provided with JB type M to facilitate interconnection to lighting fixtures.
- 3.1.2 Permissible design parameters should be according to relevant standard. The deflection under the maximum wind pressure of 150 kg/sq.m shall not exceed 1 in 360. The Mast together with the fixtures shall be capable of withstanding the appropriate wind loads as per IS: 875 Part III.
- 3.1.3 The Mast shall be fabricated from special steel plates conforming to BS-EN10-025 and folded to form a polygonal section.



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- 3.1.4 A suitable winch arrangement shall be provided to lower & raise the Lantern Carriage Assembly. Winch shall be of completely self-sustaining type without the need for brake shoe, springs or clutches. The min. working load shall not be less than 750 kg. The winch drum shall be grooved to ensure perfect seat for stable and tidy rope lay with no chances for slippage. Winch shall be operated by an internally mounted three phase motor/power tool with necessary reduction gear mechanism. A handle for manual operation of winch shall also be provided. An adequate door opening shall be provided at the base of the Mast.
- 3.1.5 All surfaces (inside & outside) of steel sections, members and hardware used shall be hot dip galvanised as per applicable standard.
- 3.1.6 Necessary mounting facilities for mounting of luminaires and control gear boxes shall be provided at top platform. This shall include provision of holes in the fixing bracket for movable fixing plate. Adequate number of movable plates affixed to the bracket shall also be provided. Size of movable plates and the position of holes shall match with the luminaire fixing arrangement.
- 3.1.7 Mast shall be provided with 1200mm long air termination for the lightning protection (at top of the mast as per IS-2309). Suitable arrangement for connection of down conductor (not in the scope of vendor) shall be provided. Provision of earth connection of GI strip shall also be kept at a height of one metre from the ground (conductor size shall be informed during detailed engineering).
- 3.1.8 Types of Lighting Masts
- a) LM20 - Lighting Mast with 20 m height
 - b) LM25 - Lighting Mast with 25 m height
 - c) LM30 - Lighting Mast with 30 m height

4 COMPONENTS OF MAST FEEDER PANEL

Lighting mast shall be complete in all respect and shall be provided with feeder panel complete with power/control circuit along with 63A TPN MCB, contactors, timers, photocell, MCB's, motor protections (O/L & single phase), start/stop PB with indication lamps. Feeder pillar shall have provision of receiving 4Cx16 sq mm. cable. All necessary cables between feeder panel & JB-M and between JB-M & fixtures are also included in the scope of mast and same shall be of proven design.

4.1 SWITCH-FUSE UNITS

- 4.1.1 These units shall preferably comprise of switches having integral fuses, called composite units. Alternatively, combination units of separate switch and fuse may also be acceptable.
- 4.1.2 These units shall be provided for general purpose i.e. incoming or outgoing units.
- 4.1.3 The units shall be of the air break air insulated type and designed to ensure safety to operating personnel.
- 4.1.4 Composite units shall have integral fuses i.e. fuse carrier with fuse link (fuse link forming the moving contact). The design shall ensure that the moving contact is not live when switch is open i.e. in OFF position, so as to facilitate removal of fuse.



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- 4.1.5 The switch shall be capable making and carrying the system prospective fault current, but limited in magnitude and duration by the cut off characteristics of the largest HRC fuse link that may be fitted to that unit.
- 4.1.6 The fixed contact shall be so shrouded that maintenance of the unit can be carried out in safety with the busbars live.
- 4.1.7 Where one isolating switch is used as the incoming device, the incoming side fixed contacts shall be shrouded to ensure that maintenance can be carried out with the remote fuse and switch closed.
- 4.1.8 Composite switch-fuse or the combination of switch and fuse shall meet the requirements of its components as follows:
- 4.1.8.1 Isolating Switch
- Switches shall be air-break, quick make, and quick break heavy duty type conforming to applicable standard.
 - All switches shall have visible ON / OFF position indication and shall be padlockable in any (ON / OFF) position.
 - Switches shall be door interlocked such that it shall not be possible to gain access to inside the unit unless the isolating switch is in OFF position.
 - The switches shall be suitable for independent manual operation.
 - The switch contacts shall be of silver alloy or silver plated copper and springs of non-corrosive material.
 - Inter-phase barriers shall be provided to prevent possibilities of phase to phase fault in the switch. The switch shall also be shrouded from all sides to prevent access to live parts on the switch after opening the unit door. The barriers and shrouding shall extend upto the height of switch to fully enclose both side terminals of the device. The arrangement shall permit easy maintenance.
- 4.1.8.2 High Rupturing Capacity (HRC) Fuses
- The fuse serving as the short-circuit protective device in isolating fuse-switch units shall be of HRC cartridge, current limiting and plug-in non-deteriorating type.
 - The fuse carriers shall be easily withdrawable for replacement of fuse. Insulated fuse pullers shall be provided where fuses are not mounted in insulating carriers to remove and replace fuses in live conditions.
 - Fuses shall preferably be fitted with a device to indicate operation (i.e. when the fuse has blown).
 - Live terminals of fuse bases shall be shrouded to prevent contact with personnel where fuse links are not mounted in carriers and are directly plugged into the fuse base. Inter-phase barriers extending throughout the length of the fuse base shall be provided to prevent inter-phase short circuit. They shall be shrouded from all sides to prevent accidental contact.
 - Fuse carriers and bases shall be of good quality moulded insulating material. Porcelain fuse bases and carriers will not be accepted.
 - The rating and characteristics of fuse links shall be chosen appropriately for short circuit protection of circuits down stream.



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4.2 CONTACTORS

- 4.2.1 Contactors shall be of the air break type fitted with arc shields.
- 4.2.2 The operating coil shall be suitable for satisfactory operation in the range of 85% - 110% of nominal voltage, as specified in Datasheet-A. The coil shall be tropicalized having insulation not less than class 'E'.
- 4.2.3 Electrically independent auxiliary contacts not less than 2NO + 2NC for interlocking and indication shall be fitted to individual power contactor.
- 4.2.4 All springs shall be made out of a corrosion proof material.

4.3 MINIATURE CIRCUIT BREAKERS

- 4.3.1 The use of miniature circuit breakers (MCBs) combining thermal overload and magnetic short circuit protection shall be application for the outgoing circuits.
- 4.3.2 MCBs shall have suitable rating but not less than 20A, 10kA.
- 4.3.3 MCBs shall be suitable for housing in the panel and for connection of copper link bus bar at the incoming and copper lugs at the outgoing ends.
- 4.3.4 The terminals of MCB and ON / OFF positions shall be clearly and indelibly marked.

4.4 SELECTOR SWITCHES

- 4.4.1 The rating and other features of the switches shall be suitable for the application. The number of positions and the number of contacts required for each switch shall be as required.
- 4.4.2 Selector switches shall be stay put type, provided with properly designated escutcheon plates clearly marked to show operating position.
- 4.4.3 Terminals carrying potential above 120 Volts shall be shrouded to prevent accidental contact with personnel.
- 4.4.4 Ammeter selector switches shall have make before break contacts.
- 4.4.5 The switches shall be suitable for semi-flush mounting with the front plate and operating handle projecting out. All connection to the switches shall be from the back.
- 4.4.6 The arrangement for front mounting of these devices shall be such as to make them reasonably dust free so as not to interfere with normal operation.

4.5 INDICATION LAMPS

- 4.5.1 Indication lamps shall be complete with lens covers and holders.
- 4.5.2 Each lamp shall be fitted with a durable resistance integrally wired in series with the lamp. Alternatively, lamps with built in transformers are acceptable.
- 4.5.3 The lamp cover (lens) shall be translucent of appropriate colour.
- 4.5.4 Bulbs and covers shall be interchangeable, easily replaceable from the front without the need for any special means.
- 4.5.5 Terminals having potential above 120V shall be shrouded to prevent contact with personnel.

4.6 PUSH BUTTONS

- 4.6.1 Push button shall be heavy duty, flush mounted suitable for the application.



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- 4.6.2 Push button shall be provided with integral escutcheon plates marked with its function identified as per schemes.
- 4.6.3 Colour shall be appropriate to the function.
- 4.6.4 Minimum number of contacts shall be 1 NO + 1 NC or as per the requirements of control scheme.
- 4.7 TERMINALS
- 4.7.1 Terminals shall be stud type of copper material.
- 4.7.2 Terminals shall be provided with transparent cover(s).
- 4.7.3 Separate terminals shall be available for each termination of loop-in and loop-out power connections.
- 4.7.4 Terminals shall be suitable for ring type copper cable lugs of size depending upon the circuit rating.
- 4.8 CABLE GLANDS
- 4.8.1 Whether specifically mentioned or not, cable glands of suitable sizes shall be supplied along with each equipment for power and control cables.
- 4.8.2 Rubber components used in the gland shall be of neoprene.
- 4.8.3 Name / trade name of manufacturer, type no. and applicable range of outer diameter of cable shall be engraved / indelibly printed on the cable gland.
- 4.9 CABLE LUGS
- 4.9.1 All equipment shall be supplied with the power and control cable lugs of suitable size, whether specifically mentioned or not.
- 4.9.2 Name / trade name and size of lug shall be engraved/ indelibly printed on each cable lug.
- 4.10 TIMERS
- 4.10.1 Time Switch
- Time switch shall be suitable for automatic switching ON and OFF of street lighting / flood lighting circuits.
 - Time switch have 00 - 24 hrs clock base.
 - Time switch shall indicate actual time and shall permit accurate time setting.
 - Time switch shall be rugged, independent of normal fluctuations of voltage / frequency and free from maintenance.
 - Contact rating, clock accuracy, rated voltage rating and frequency rating of timer shall be suitable to its application.
 - Time switch shall be provided with Ni-Cd battery.
 - Time switch shall be suitable for mounting inside the panel.
- 4.10.2 On Delay Timer



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- (a) Timer shall be fully static and suitable for operation on normal frequency and system voltage.
- (b) Timer shall have high setting accuracy, high repeat accuracy, low reset time and low power consumption.
- (c) Timer shall have the time setting range of 24 - 240 seconds, unless mentioned otherwise in Data Sheet A.
- (d) Timer shall be suitable for mounting inside the panel.

4.11 CIRCUIT DIAGRAM / DIRECTORY PLATE

- 4.11.1 A diagram is to be prepared for fixing to the inside cover of every mast feeder panel giving details of the points controlled by each circuit.

4.12 SURFACE TREATMENT FOR PANEL

- 4.12.1 All metal parts and the surfaces (exterior & interior) of equipment shall be degreased by dipping in hot alkaline solution and rubbed with wire brush to remove oil & scale from them & then rinsed in water. Alternatively, they may be shot / sand blasted.
- 4.12.2 Parts shall be pickled by dipping in hydrochloric acid tank to remove the rust from the surfaces formed during storage of sheets & then rinsed to remove traces of the acid. The cleaning and pretreatment of all metal parts shall be as per applicable standard.
- 4.12.3 The surfaces to be painted shall then be prepared by phosphatizing to protect them from further rusting & to create a good bond with the paint. The pretreatment shall conform to the applicable standard.
- 4.12.4 All parts shall then be subjected to a coat of red oxide primer paint.
- 4.12.5 All inside and outside surfaces of panel shall be spray painted with synthetic enamel of the shade as per Data Sheet A.
- 4.12.6 Electrostatic or powder coating painting shall be done as specified in Data Sheet A.
- 4.12.7 Wherever possible, finished parts shall be coated with peelable compound by spraying method to protect the finished product from scratches, grease, dirty and oily spots during handling and transportation.

5 PACKING

- 5.1 Loose items shall be packed, duly labelled in a box and sealed properly to avoid damage during transportation. Packing list shall be pasted on every box, listing the contents of the box.

6.0 INSPECTION & TESTING

- 6.1 Bidder shall confirm compliance with the BHEL Standard Quality Plan (PE-QP-999-558-E004) without any deviations. At contract stage, the successful bidder shall submit the same QP for BHEL/ ultimate customer's approval. In case bidder has reference QP agreed with ultimate customer, same can be submitted for specific project after award of contract for BHEL/ ultimate customer's approval. There shall be no commercial implication to BHEL on account of any changes in QP during contract stage.



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- 6.2 All the components and completely assembled equipment shall be tested as per the latest edition of standards. Any charges for these shall be deemed to be included in equipment price.
- 6.3 All the specified tests shall be carried out to verify the rating and performance of the equipment.
- 6.4 All manufacturing processes viz. machining, sheet forming, electroplating, wire routing, cleating & crimping, assembly, surface preparation shall conform to good manufacturing practices.
- 7.0 TOOLS AND TACKLE
- 7.1 Tools & tackle which are essential to facilitate assembly, adjustments, erection, maintenance & dismantling of equipment shall be provided as part of equipment supplied.
- 7.2 The above tools shall be supplied along with the initial consignment of equipment so as to be available prior to erection but may not be used for erection purposes.
- 7.3 Vendor shall also submit a list of recommended tools and tackle. Acceptance of these tools and tackle shall not be a binding on the purchaser.
- 7.4 Schedule of tools & tackle shall be filled up by bidder.
- 8.0 SPARES
- 8.1 Mandatory spares (if applicable) are indicated in BOQ-cum-price schedule.
- 8.2 Erection & commissioning spares are included in the bidder's scope of supply. Bidder to furnish list of E&C spares in the relevant schedules of the Bid Form and Price Schedules.

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Technical Specification
For
**TECHNICAL SPECIFICATION FOR
LIGHTING FIXTURES, LAMPS &
MISCELLANEOUS ITEMS**

SPECIFICATION NO. PE-SS-999-558-E006

VOLUME II

SECTION II

REV 0 DATE 08.09.2016

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**TECHNICAL SPECIFICATION FOR
LIGHTING FIXTURES, LAMPS & MISCELLANEOUS ITEMS**



Technical Specification
For
**TECHNICAL SPECIFICATION FOR
LIGHTING FIXTURES, LAMPS &
MISCELLANEOUS ITEMS**

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4.0	GENERAL REQUIREMENTS OF LUMINAIRES
4.1	LUMINAIRE & OTHER ITEMS
5.3	CONTROLGEAR BOX (NON-INTEGRAL TYPE)
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Technical Specification
For
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INTENT OF SPECIFICATION

1.1 The requirements given in specification for supply of equipment shall be fully complied with.

1.2 For the equipment of supply in vendor's scope, the "design" shall broadly cover the selection of components, materials, sizes etc. and complete responsibility of establishing the correctness of equipment design rests with the vendor.

1.3 It is not the intent to specify herein all the details of design and manufacture. However, the equipment shall conform in all respects to high standards of design, engineering and workmanship, and shall be capable of performing required function in a manner acceptable to Purchaser, who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material, which in his judgement is not in full accordance herewith.

1.4 Make of all equipment and components shall be to the approval of Purchaser. Bidder to comply to Sub-vendor list enclosed as Annexure to Section I, however same shall be subjected to end client approval without any commercial implication.

2.0 CODES & STANDARDS

2.1 The material shall comply with all currently applicable safety codes and statutory regulations of India as well as of the locality where the material is to be installed.

2.2 The material, construction, manufacture, inspection and testing shall conform to the latest revisions of standards as specified in Data Sheet-A.

2.3 In case of conflict between the applicable reference standard and this specification, stringent requirement shall govern.

3.0 DESIGN CRITERIA:

3.0.1 General Requirements of Design

a) Lighting system shall be provided to ensure adequate visual performance, safety and reliability and shall be free from excessive glare and flicker from discharge lamps.

3.0.2 Sources of Power Supply

Normal AC Lighting System

Normal AC lighting system 415V, 3 phase, 4 wire, will be fed from lighting panels (LPs) which in turn will be fed from the lighting distribution boards (LDBs). Street lights/ flood lights shall be fed from Street Lighting Panel (SLP), Welding receptacles shall be fed from Welding DB/ MCC in offsite areas.

4 LUMINAIRES, ACCESSORIES AND LAMPS

4.0 GENERAL REQUIREMENTS OF LUMINAIRES

a) All luminaires and accessories shall be designed for continuous operation and shall be suitable for the system design data given in Data Sheet A.

b) Luminaires shall be complete with accessories mounted inside the luminaire assembly.



Technical Specification
For
**TECHNICAL SPECIFICATION FOR
LIGHTING FIXTURES, LAMPS &
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c) All luminaires and accessories shall be suitable for operation in the atmospheric conditions prevailing at site.

d) Luminaires shall be designed for minimum glare. No bright spots should appear from the lamp or from the reflectors.

e) All accessories shall be wired upto a terminal block or a separate weather proof metallic terminal box suitable for 2.5 sq. mm. copper wire termination.

f) All internal wiring shall be of PVC or silicon rubber insulation, capable of withstanding the maximum temperature to which it will be subjected under specified service conditions without deterioration.

g) All luminaires and accessories including the breathing holes shall be vermin proof.

h) Surface Treatment:

- All surfaces after manufacture shall be thoroughly cleaned and degreased. Pre-treatment of surfaces shall be as per the applicable standard. Pretreated surfaces shall be free from rust, sharp edges, scales and burrs.
- Finish of surfaces shall be non-porous, smooth and unfaded.

i) All metal parts of the luminaires shall be bonded and connected to the earthing terminal. Earthing terminal shall be suitable for connecting 14 SWG GI wire.

j) Flood lights shall be provided with base frame / base plate for mounting on structural steel arm/member of High Mast (Refer GA DWG of High Mast).

k) All weather proof luminaires shall have the control gear housed in a weather proof enclosure with necessary gaskets, mounting bracket, locking screws etc.

4.1 LUMINAIRE TYPES & OTHER ITEMS

General requirements depending upon type of luminaire are listed below.

a) Flood Lighting Luminaires

Flood light lamp housing and reflector shall be separate from controlgear box. Requirements of controlgear box are specified elsewhere.

Lamp reflectors shall be of high purity spun aluminium attached to the cast aluminium lamp holder housing at the rear. Lamp holder housing shall be provided with cooling fins.

Reflector shall be closed from the front by heat resistant toughened glass and synthetic "S" type weather proof gasket.

- Luminaire shall be provided with special lamp centering and focussing device ensuring good beam control.
- MS mounting bracket shall allow fixation of the flood light in any position in a horizontal plane and the flood light can be locked in at any set angle in the vertical plane. Cast iron base and / or two protector scales shall also be provided where specified in "Luminaire Details"

b) LED type Luminaires:

- LED Luminaires shall be used for the lighting if specified in BOQ as part of NIT.
- In false ceiling area LED luminaires shall be recessed mounting type & in nonfalse ceiling area the LED luminaires shall be surface mounting type.
- The individual lamp wattage for LED shall be upto 3 watt.



Technical Specification
For
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- The LED chip efficacy shall be min 120 Lm/W. The luminaire efficacy shall be not less than 70Lm/W.
- The LED used in the luminaires shall have colour rendering index (CRI) of Min 65. Colour designation of LED shall be “cool day light” (min 5700K) type.
- The LED luminaire shall have minimum life of 25,000 burning hours with 80% of lumen maintenance at the end of the life.
- The beam angle for LED chip shall be 120 degrees.
- The max. junction temperature of LED shall be 85 deg C, further the lumen maintenance at this temperature shall be min 90%.
- The THD of LED Luminaires shall be less than 10%. Further the EMC shall be as per IS 14700. The power factor of the luminaire shall not be less than 0.9.
- The marking on luminaire & safety requirements of luminaire shall be as per IS standards.
- Suitable heat sink with proper thermal management shall be designed & provided in the luminaire.
- The connecting wires used inside the system, shall be low smoke halogen free, fire retardant PTFE cable.
- Fuse protection shall be provided in input side specifically for LED luminaires.
- Care shall be taken in the design that there is no water stagnation anywhere. The entire housing shall be dust and water proof protection as per IS 12063.
- Driver Circuit: LED modules and drivers shall be compatible to each other. The LED module driver's ratings and makes shall be as recommended by corresponding LED manufacturer.
- LED Drivers may have following control & protections:
 - Suitable precision current control of LED.
 - Open Circuit Protection
 - Short Circuit Protection
 - Over Temperature Protection
 - Overload Protection

5.3 CONTROLGEAR BOX (NON-INTEGRAL TYPE) (IF APPLICABLE)

- a) Boxes shall have weatherproof construction and shall be provided with one piece neoprene gasket.
- b) Boxes shall be provided with HRC fuse mounted on a removable tray. Boxes shall be provided with all necessary components having a neat layout arrangement such that it is possible to test, inspect or replace any component without difficulty.
- c) Boxes shall be suitable for mounting on structures, walls and columns.
- d) Suitable number of terminals shall be provided for looping-in and looping-out of cable connections and also connections to the luminaire(s).
- e) Cable / conduit knock-outs shall be for each loop-in and loop-out connection and also connection to the luminaire(s).

5.4 REFLECTORS

- a) Reflectors shall be made of sheet steel or aluminium as applicable.
- b) The aluminium reflectors shall be made of high purity aluminium sheet. Sheet will be polished, electrochemically brightened and anodised.



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c) Wherever reflectors are separate from housing, they shall be securely attached to the luminaire by means of easily accessible fastening devices such that they are readily removable from the housing for maintenance.

5.5 STARTER HOLDERS

a) Starter holders shall be designed and manufactured as per the applicable standard.

5.6 BALLASTS

a) Fluorescent fixtures shall have electronic ballasts. Ballasts shall be totally enclosed type.

b) Ballasts shall be easily removable type.

c) Core shall be made of low loss, electrical grading stampings.

d) End connections shall be made available in a terminal block, rigidly fixed to the ballast enclosure.

e) Ballasts shall be free from humming.

f) Ballast shall be provided separately for each lamp in a multi-lamp luminaire.

g) Tappings shall be provided to set the voltage within range for HPMV & HPSV luminaires.

5.7 STARTERS

a) Starters shall be made of aluminium material. Plastic or any other material if used shall be subject to purchaser's approval.

b) Starters shall have bi-metal electrodes.

c) Starter shall be replaceable without the use of any tool and without disturbing any accessory or lamp.

d) Starters shall have high mechanical strength.

e) Starters shall be provided with radio interference suppressing capacitors.

f) Starters shall have brass contacts.

5.8 CAPACITORS

a) Capacitors shall have constant value of capacitance, suitable for operation at supply voltage.

b) Capacitors shall be hermetically sealed, preferably in a metal enclosure to prevent seepage of impregnant and ingress of moisture.

5.9 CABLE GLANDS

a) Whether specifically mentioned or not, cable glands of suitable sizes shall be supplied along with each equipment for power and control cables.



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b) Rubber components used in the gland shall be of neoprene.

c) Name / trade name of manufacturer, type no. and applicable range of outer diameter of cable shall be engraved / indelibly printed on the cable gland.

5.10 CABLE LUGS

d) All equipment shall be supplied with the power and control cable lugs of suitable size, whether specifically mentioned or not.

e) Name / trade name and size of lug shall be engraved/ indelibly printed on each cable lug.

6.0 SURFACE TREATMENT

6.1 All metal parts and the surfaces (exterior & interior) of equipment, unless stated otherwise in case of reflectors, shall be degreased by dipping in hot alkaline solution and rubbed with wire brush to remove oil & scale from them & then rinsed in water. Alternatively, they may be shot / sand blasted.

6.2 Parts shall be pickled by dipping in hydrochloric acid tank to remove the rust from the surfaces formed during storage of sheets & then rinsed to remove traces of the acid. The cleaning and pretreatment of all metal parts shall be as per applicable standard.

6.3 The surfaces to be painted shall then be prepared by phosphatizing to protect them from further rusting & to create a good bond with the paint. The pretreatment shall conform to the applicable standard.

6.4 All parts shall then be subjected to a coat of red oxide primer paint.

6.5 All inside and outside surfaces of panel shall be spray painted with synthetic enamel of the shade as per Data Sheet A.

6.6 Electrostatic or powder painting shall be acceptable subject to purchaser's approval.

6.7 Wherever possible, finished parts shall be coated with peelable compound by spraying method to protect the finished product from scratches, grease, dirty and oily spots during handling and transportation.

7.0 PACKING

7.1 Vendor shall furnish packing procedure along with packing drawing at contract stage for applicable items for purchaser approval.

7.2 Containers adequate for storing 70% of P.O. quantity material at site are to be supplied. Vendor shall furnish suitable justification to purchaser during detailed engineering for the number and size of containers being supplied.

7.3 Specification for the sea worthy packing, if enclosed, for the export jobs shall form part of the specification.

8.0 GUARANTEED PERFORMANCE REQUIREMENTS



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8.1 The vendor shall guarantee satisfactory performance of the equipment supplied under all conditions and requirement as laid down by this specification.

8.2 Vendor shall ensure satisfactory performance for lighting system designed by them at site.

9.0 INSPECTION & TESTING

9.1 Bidder shall confirm compliance with the BHEL Standard Quality Plan (PE-QP-999- 558-E006) without any deviations. The equipment which are not covered in the Quality Plan shall be tested as per the QP to be submitted by bidder. In case bidder has reference QP agreed with ultimate customer, same can be submitted for specific project after award of contract for BHEL/ ultimate customer's approval. There shall be no commercial implication to BHEL on account of any changes in QP during contract stage.

9.2 All the components and completely assembled equipment shall be tested as per the latest edition of standards. Charges for these tests shall be deemed to be included in equipment price.

9.3 All the specified type and routine tests shall be carried out to verify the rating and performance of the equipment. Where valid type test certificates in evidence of equipment performance claimed are available & approved by purchaser, the requirements for conducting type tests may be waived. The general arrangement of object under test shall be to purchaser's approval.

9.4 All manufacturing processes viz. machining, sheet forming, electroplating, wire routing, cleating & crimping, assembly, surface preparation shall conform to good manufacturing practices.

9.5 Inspection for dimensional & visual checks especially of the following, with respect to contract drawings, documents & standards shall be conducted:

- a) General sturdiness & rigidity of equipment
- b) Surface finishing
- c) Gasketting
- d) Inter-changeability
- e) Constructional features viz. location, accessibility & marking of components, segregation, accessibility to live parts (shrouding) etc.
- f) Completeness of scope

9.6 Equipment shall be liable for rejection if tolerances on the values of dimensions, power consumption, impedances, temperature rise etc. exceed the specified values by purchaser and / or standards.

10.0 SPARES

10.1 Mandatory spares (if applicable) are indicated in BOQ-cum-price schedule.

10.2 Erection & commissioning spares are included in the bidder's scope of supply. BE&C spares are indicated in BOQ-cum-price schedule.

10.3 A list of recommended O&M spares quantities for a duration of 3 years A shall be filled up in the applicable schedule / format and submitted by bidder along with offer. However, the acceptance of the same shall not be binding on purchaser.

11.0 DOCUMENTATION

1167403/2022/PS-PEM-EL

PEM-6666-0



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**TECHNICAL SPECIFICATION FOR
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11.1 Documents to be submitted by the vendor immediately after award of contract

- a) Bar chart of activities of manufacture, testing, inspection and despatch.

11.2 Documents to be submitted during detailed engineering of contract

Engineering documents (refer clause 4.3) to be generated by the vendor,

- Final Quality Plans
- Technical data sheet
- Polar curves, zonal flux diagram and CoU charts of luminaires.
- Complete design calculations for arriving at number of luminaires.
- Fixing / mounting details of luminaires and other items.
- General arrangement drawings of Luminaire/ Fixture
- Field Quality Plan as per General Technical Conditions.
- Control Scheme
- Type test certificates.
- Catalogues / leaflets
- Master Bill of Material.
- Packing Procedure & drawing.
- Calculation for selection of no. & size of container

11.3 Operation and Maintenance (O&M) manual :

The document shall comprise of installation, operating and maintenance instructions for various items / components. The O&M manual shall include the following :

- Write ups / instructions / procedures for
 - Storage at site.
 - Unpacking.
 - Handling at site.
 - Erection.
 - Pre-commissioning / commissioning tests.
 - Operating procedures.
 - Maintenance procedures.
 - Precautions to be taken during operation and maintenance work.
 - Trouble shooting charts covering problems, cause and solution.
- Approved Technical Data Sheets.
- Technical leaflet of various items / components.
- Copies of the type, acceptance and routine test certificates in bound volume.
- Details of all components liable to be replaced during the life of the equipment.
- List of maintenance tools required.
- List of testing equipment required.

ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC.) LIGHTING MAST WITH BASIC & LOWER TYPE LANTERN		STANDARD QUALITY PLAN CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION										QIP-NO:0000-9999-QOE-S-52		REVIEWED BY D.E. Datta		APPROVED BY S. Talwar													
CARRIAGE		CLASS		TYPE OF CHECK		QUANTUM OF CHECK		REFERENCE DOCUMENT		ACCEPTANCE NORMS		FORMAT OF RECORD		AGENCY		REMARKS													
CHARACTERISTICS		3		5		6 M		7		8		9		M C N		11													
1	Steel for mast shaft / gusset / Head Frame	Chemical composition Mechanical properties	Major	Chemical & Mechanical	Sample as per mfr std	Same as 6 M	NTPC Specification / Manufacturer's plant standard	NTPC Specification / Manufacturer's plant standard	TC	✓	P	V	V	11															
																		Thickness	Major	Measurement	Sample as per mfr std	Same as 6 M	NTPC Specification / Manufacturer's plant standard	NTPC Specification / Manufacturer's plant standard	TC	✓	P	V	V
2	High Mast continuously tapered, polygonal cross section	Galvanisation checks (Thickness, uniformity of coating & adhesion)	Critical	Visual	Sample as per mfr std	Same as 6 M	NTPC approved Drawing/ Data sheet / Manufacturer Standard	Single defect free longitudinal weld	Internal Inspection Report	P	V	V																	
																Weld Joint	Major	Visual	Sample as per mfr std	Same as 6 M	NTPC approved Drawing/ Data sheet / Manufacturer Standard	NTPC approved Drawing/ Data sheet / Manufacturer Standard	Internal Inspection Report	P	V	V			
																											Pulley Block-Material & Smooth Rotation	Critical	Verify
3	Luminaire Carriage, Head Frame, Pulley Block	Dimension, Mat of inner Lining with PVC sleeve	Major	Measurement / verify	100%	Same as 6 M	NTPC approved Drawing/ Data sheet / Manufacturer Standard	NTPC approved Drawing/ Data sheet / Manufacturer Standard	Internal Inspection Report	P	V	V																	
																	Weld Joint	Major	Visual	Sample as per mfr std	Same as 6 M	NTPC approved Drawing/ Data sheet / Manufacturer Standard	NTPC approved Drawing/ Data sheet / Manufacturer Standard	Internal Inspection Report	P	V	V		
																												Pulley Block-Material & Smooth Rotation	Critical

LEGEND * RECORDS, IDENTIFIED WITH "TICK" SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. * M : MANUFACTURER/SUB SUPPLIER; C: MAIN CONTRACTOR
N: NTPC; P: PERFORM; W: WITNESS; V: VERIFICATION. CHP: CUSTOMER HOLD POINT BY NTPC SHALL BE IDENTIFIED UNDER AGENCY COLUMN "N" AS "W"
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ENGG DIV QAS1

ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC.): LIGHTING MAST WITH RASIE & LOWER TYPE LANTERN CARRIAGE		STANDARD QUALITY PLAN										Q.No: 0000-999-QOE-S-52		REVIEWED BY	APPROVED BY
CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION												Rev No.: 0		B.R. Dikid	
												Date: 31-01-13		V. Talwar	
												VALID UPTO: 30.01.2016		Suall Mahapatra	J. Gowerthumar
Sl No	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD			AGENCY			REMARKS
					5M	6 CN			9	D*	IO	M	C	N	
4	Raising / Lowering Mechanism	a Type & rating check on Winch, lower tool & torque limiter	4	5	100%	Same as 6 M	NTPC approved Datasheet/ Drg.	NTPC approved Datasheet/ Drg.	Internal Inspection Report	✓	✓	✓	✓	✓	CoC of motor manufacturer shall be submitted for NTPC's review
		b Load testing on winches	Major	Mechanical	Sample as per minfr and	Same as 6 M	Manufacturer Standard	Manufacturer Standard	TC	✓	✓	✓	✓	✓	
		c Functional testing on Load Limiter	Major	Mechanical	Sample as per minfr and	Same as 6 M	Manufacturer Standard	Manufacturer Standard	TC	✓	✓	✓	✓	✓	
		d Functional & Assembly Check - manual & motorised	Major	Mechanical	100%	Same as 6 M	Manufacturer Standard	Manufacturer Standard	Internal Inspection Report	✓	✓	✓	✓	✓	
5	Stainless Steel Wire Rope	a Mechanical Properties including breaking load	Major	Mechanical	Sample as per minfr and	Same as 6 M	NTPC approved Datasheet/ Drawing	NTPC approved Datasheet/ Drawing	TC	✓	✓	✓	✓	✓	
		b Continuous rope without any joint	Major	Visual	100%	Same as 6 M	NTPC approved Datasheet/ Drawing	NTPC approved Datasheet/ Drawing	Internal Inspection Report	✓	✓	✓	✓	✓	
		c Dimension Construction	Major	Measurement	100%	Same as 6 M	NTPC approved Datasheet/ Drawing	NTPC approved Datasheet/ Drawing	Internal Inspection Report	✓	✓	✓	✓	✓	
6	Foundation Bolt	a Mechanical Properties	Major	Mechanical	Sample as per minfr and	Same as 6 M	NTPC approved Datasheet/ Drawing / IS 1367	NTPC approved Datasheet/ Drawing / IS 1367	TC	✓	✓	✓	✓	✓	
		b Dimensions	Major	Measurement	Sample as per minfr and	Same as 6 M	NTPC approved Drg./ Manufacturer drg.	NTPC approved Drg./ Manufacturer drg.	TC	✓	✓	✓	✓	✓	
7	Power Cable & Connector	a Size, rating & Type	Major	Visual	100%	-	NTPC approved Datasheet/ Drg	NTPC approved Datasheet/ Drg	Internal Inspection Report	✓	✓	✓	✓	✓	
		b Routine Test Reports (for cable only)	Major	Visual	100%	-	IS 9668	IS 9668	TC	✓	✓	✓	✓	✓	BIS mark cable

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FORMAT NO. QS-01-QAL-P-10 / F 3 RO

ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE, ETC.) LIGHTING MAST WITH RASIE & LOWER TYPE LANTERN CARRIAGE		STANDARD QUALITY PLAN										REVIEWED BY		
COMPONENT & OPERATIONS		CHARACTERISTICS		CLASS	QUANTUM OF CHECK		TYPE OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY		REVIEWED BY	
S/No		3	4	5	6M	6CN		7	8	9	D*	M	C	N
CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION														
QF-AG-0000-999-QOE-S-52 Rev No: 0 Date 31-01-13 VALID UPTO: 30.03.2016 V. Talwar NTPC S. M. Malani NTPC I. Govindhakar														
8	Feeder Pillar Panel	Pre-treatment chemical regime verification	critical	Verification	Sample as per mfr. std	Same as 6 M	Chemical regime supplier recommendations & Manufacturer Standard	Chemical regime supplier recommendations & Manufacturer Standard	Internal Inspection Report	✓	V	V	V	Records of chemical concentration of pre-treatment tanks to be verified
		Dimensions, Degree of protection check by paper insertion method	Major	Measurement & Test	100%	Same as 6 M	NTPC approved datasheet / Drg.	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	
		Powder coating thickness check	Major	Mechanical check	Random sample	Same as 6 M	NTPC approved datasheet / Drg.	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	
		Powder coating adhesion check by cross hatch method using packing tape	Major	Mechanical check	Random sample	Same as 6 M	NTPC approved datasheet / Drg.	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	
		Make, type & rating check of components mounted in feeder pillar	Major	Visual	100%	Same as 6 M	NTPC approved datasheet / Drg. / IS	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	
		HV & IR check	Major	Electrical	100%	Same as 6 M	NTPC approved datasheet / Drg. / IS	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	
		Functional testing	Major	Electrical	100%	Same as 6 M	NTPC approved datasheet / Drg. / IS	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	
9	Luminaires with controlgear and Aviation Obstruction light	Make, type & rating check	critical	Visual	100%	100%	NTPC approved datasheet / Drg.	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	Make shall be indicated in the proj-pkg specific endorsement sheet and shall be subject to NTPC approval
		Outline & batch Test Certificates	Major	Verification	100%	100%	NTPC approved datasheet / Drg. / IS	NTPC approved datasheet / Drg.	TC	✓	V	V	V	Mfr's CoC for aviation obstruction light

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FORMAT NO. QS-01-QAI-P-10 / F 3 RO
ENGG DIV QA&I

ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC.)		STANDARD QUALITY PLAN										REVIEW/DATE		APPROVED BY	
LIGHTING MAST WITH BASE & LOWER TYPE LANTERN		CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION										Rev No.: 0		D.K. Didi	
CARRIAGE												Date: 31-01-13		V. Talwar	
CHARACTERISTICS		CLASS		TYPE OF CHECK		QUANTUM OF CHECK		REFERENCE DOCUMENT		ACCEPTANCE NORMS		FORMAT OF RECORD		AGENCY	
3		4		5		6 M / 6 C/N		7		8		9		10	
1		2		3		4		5		6		7		8	
COMPONENT & OPERATIONS		CHARACTERISTICS		CLASS		TYPE OF CHECK		QUANTUM OF CHECK		REFERENCE DOCUMENT		ACCEPTANCE NORMS		FORMAT OF RECORD	
1		2		3		4		5		6		7		8	
10 Final test	a	High Mast Structure Cross section and Dimension Measurement		Major		Measurement		100%		NTPC approved Drawing		NTPC approved Drawing		Internal Inspection Report	
	b	Galvanizing Coating Thickness, uniformity of coating & adhesion		Major		Measurement		1 sample per shaft		NTPC approved Drawing / Drawing IS 2629/IS 2631 / ISO : 1461		NTPC approved Drawing		Internal Inspection Report	
	c	Feeder Pillar Dimensions check		Major		Measurement		Same as 6		NTPC approved drawing / Drg.		NTPC approved drawing / Drg.		Internal Inspection Report	
	d	Feeder Pillar Powder coating shade & thickness check		Major		Mechanical check		Same as 6		NTPC approved drawing / Drg.		NTPC approved drawing / Drg.		Internal Inspection Report	
	e	Feeder Pillar powder coating adhesion check by cross hatch method using packing tape		Major		Mechanical check		Same as 6		NTPC approved drawing / Drg.		NTPC approved drawing / Drg.		Internal Inspection Report	
	f	Feeder Pillar make, type & rating check of components mounted in feeder pillar		Major		Visual		Same as 6		NTPC approved drawing / Drg. / IS		NTPC approved drawing / Drg.		Internal Inspection Report	
	g	Feeder Pillar Functional Test		Major		Electrical		100%		NTPC Specification/ Approved Drawing		NTPC Specification/ Approved Drawing		Internal Inspection Report	
	h	Feeder Pillar IR test before & after HV		Major		Electrical		100%		As per IS 8623		As per IS 8624		Internal Inspection Report	
	i	Feeder Pillar HV test		Major		Measurement		100%		As per IS 8623		As per IS 8624		Internal Inspection Report	
	j	Completeness of lighting mast components		Major		Visual		100%		NTPC Specification/ Approved Drawing		NTPC Specification/ Approved Drawing		Internal Inspection Report	

ITEM : LIGHTING FIXTURES (Conventional and LED type)		STANDARD QUALITY PLAN					REVIEWED BY		APPROVED BY	
COMPONENT & OPERATIONS	CHARACTERISTICS / INSTRUMENTS	CLASS OF CHECK	CONFORMING TO CODE : As applicable		REFERENCE DOCUMENT	ACCEPTANCE NORMS	REVIEWED BY		FORMAT OF RECORD	REMARKS
			TYPE OF CHECK	QUANTUM OF CHECK						
				6 M	6 CN					
2	3	4	5		7	8			9	11
LED type Lighting fixture										
Bought out items / in-process checks										
LED Chip	LED chip efficacy	Major	Visual	Mnfr Std.	Mnfr Std.	NTPC Spec/ Appd Data sheet/ LM 80 report	NTPC Spec/ Appd Data sheet	LM 80 report	V V	At the time of final inspection
	LED chip CRI and CCT	Major	Visual	Mnfr Std.	Mnfr Std.	NTPC Spec/ Appd Data sheet/ LM 80 report	NTPC Spec/ Appd Data sheet	LM 80 report	V V	At the time of final inspection
	Reported TM21 (L80) lifetime of LED chip	Major	Visual	Mnfr Std.	Mnfr Std.	NTPC Spec/ Appd Data sheet/ LM 80 report	NTPC Spec/ Appd Data sheet	LM 80 report	V V	At the time of final inspection
1 LED Driver	Compatibility with LED module/chip, controls & protection features as per NTPC spec	Major	Visual	-	-	NTPC spec requirements	Certificate of compliance by LED driver manufacturer / lighting fixture supplier that driver meets all NTPC specification requirements	Certificate of compliance	V V	
	THD and pf check	Major	Electrical	Mnfr std.	-	NTPC specification	THD < 10% and pf >= 0.9	Inspection report	P/ V *	P/V * - means test will be performed either by lighting fixture supplier or their sub-vendor and Verified by lighting fixture supplier
Castings	Freedom from defects	Major	Visual	Mnfr std.	-	NTPC specification requirements	Castings shall be free from any defects such as blow holes, surface blisters, cracks and cavities etc.	Inspection report	P/ V *	P/V * - means test will be performed either by lighting fixture supplier or their sub-vendor and Verified by lighting fixture supplier
Sheet metal forming and fabrication	Freedom from defects	Major	Visual	Mnfr std.	-	NTPC specification requirements	sheet metal fabrication / forming etc should be as per manufacturer standards and good engg practices	Inspection report	P/ V *	P/V * - means test will be performed either by lighting fixture supplier or their sub-vendor and Verified by lighting fixture supplier
Pre-treatment and powder coating	Pre-treatment process checks, Powder coating finish, thickness, uniformity of coating and adhesion	major	Visual, chemical & mech	Mnfr std.	-	Mnfr standard, NTPC specification requirements	Nominal coating thickness 50 microns or more	Inspection report	P/ V *	P/V * - means test will be performed either by lighting fixture supplier or their sub-vendor and Verified by lighting fixture supplier

LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/ SUB-SUPPLIER: C: MAIN SUPPLIER, N: NTPC
P: PERFORM W: WITNESS AND V: VERIFICATION. CHP: CUSTOMER HOLD POINT BY NTPC SHALL BE IDENTIFIED UNDER AGENCY COLUMN "N" AS "W".
Format No.: QS-01-QAI-P-10/F3-R0 Engg. Div./QA&I

ITEM : LIGHTING FIXTURES (Conventional and LED type)		STANDARD QUALITY PLAN				REVIEWED BY		APPROVED BY	
Sl No	COMPONENT & OPERATIONS	CHARACTERISTICS / INSTRUMENTS	CLASS OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD
					6.M	6.ON			
1	2	3	4	5	6	7	8	9	10
B	Acceptance Tests on LED Lighting fixture	a	Details of lot offered and Certificate of compliance that lighting fixture supplier has inspected the offered lot as per their own standard	Major	-	-	lighting fixture supplier to submit the details of lot offered for NTPC inspection (Type of lighting fixtures, their batch number, sub-vendor name, quantity)	List	P
		b	LED chip make	Major	-	-	NTPC accepted type test reports (LM80/LM79) reports	Certificate of compliance	V
		c	Constructional features including: Internal wiring, terminal block, earthing terminal, safety chain (if applicable)	Major	1 sample per type	1 sample per type	NTPC specification and NTPC approved data sheet/drg.	Inspection report	W
		e	Resistance to moisture test in case of lighting fixtures having IP X4 and above rating	Major	1 sample per type	1 sample per type	NTPC approved data Sheet	Inspection report	W
		f	Resistance to dust (applicable if IP5X and above)	Major	Mnfr std.	Mnfr std	NTPC accepted type test reports \$	Certificate of compliance	P/V * - means test will be performed either by lighting fixture supplier or their sub-vendor and Verified by lighting fixture supplier
		f	Photometry check	Major	Mnfr std.	Mnfr std	NTPC accepted type test reports, LM 79, IS 16106, IS 16107	Certificate of compliance for the batch: that offered lighting fixture LOR and lighting fixture efficacy is not be less than 90% (refer IS 16107) with reference to type test reports	P/V * - means test will be performed either by lighting fixture supplier or their sub-vendor and Verified by lighting fixture supplier




The list may be used by NTPC for sample selection
Fixture shall be suitable for mounting on High Mast as per Annexure-C of Technical Specification

LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M- MANUFACTURER/ SUB-SUPPLIER: C: MAINS SUPPLIER, N: NTPC
P: PERFORM W: WITNESS AND V: VERIFICATION. CHP: CUSTOMER HOLD POINT BY NTPC SHALL BE IDENTIFIED UNDER AGENCY COLUMN "N" AS "W".
Format No.: QS-01-QAI-P-10/F3-R0
Engg. Div./QA&I


ITEM: LIGHTING FIXTURES (Conventional and LED type)		STANDARD QUALITY PLAN						REVIEWED BY			APPROVED BY		
S/N	COMPONENT & OPERATIONS	CHARACTERISTICS / INSTRUMENTS	CLASS OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD			REVIEWED BY	APPROVED BY
					G.M	G.C/N			D*	M	C		
1	2	3	4	5	6	7	8	9	10	11			
		g Dimensions	Major	Visual	1 sample per type	1 sample per type	NTPC specification and approved data sheet/drg.	Inspection report	P	W	W		
		i LED driver: THD and pf check	Major	Electrical	1 sample per type	1 sample per type	NTPC specification	Inspection report	P	W	W	At lighting fixture supplier test lab	
		j LED driver: Precision current control check	Major	Electrical	1 sample per type	1 sample per type	NTPC specification	Inspection report	P	W	W		
		k LED driver: Open circuit protection simulation check	Major	Electrical	1 sample per type	1 sample per type	NTPC specification	Inspection report	P	W	W		
		l LED driver: Short circuit protection simulation check	Major	Electrical	1 sample per type	1 sample per type	NTPC specification	Inspection report	P	W	W		
		m LED driver: Over temperature protection simulation check	Major	Electrical	1 sample per type	1 sample per type	NTPC specification	Inspection report	P	W	W		
		n LED driver: Overload protection simulation check	Major	Electrical	1 sample per type	1 sample per type	NTPC specification	Inspection report	P	W	W		
		o LED driver: Surge protection compliance check	Major	Electrical	-	-	NTPC specification	Certificate of compliance that surge protection is provided	V	V	V		

T PE TEST SHALL BE AS PER TECHNICAL SPECIFICATION SECTION-I CL. 5.2
ii) PACKING SHALL BE WITNESSED AS PER TECHNICAL SPECIFICATION SECTION-I ANNEXURE-B


LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/ SUB-SUPPLIER: C: MAIN SUPPLIER, N: NTPC
P: PERFORM W: WITNESS AND V: VERIFICATION. CHP: CUSTOMER HOLD POINT BY NTPC SHALL BE IDENTIFIED UNDER AGENCY COLUMN "N" AS "W".
Format No.: QS-01-QAI-P-10/F3-R0
Engg. Div./QA&I

	CORPORATE QUALITY ASSURANCE/ कॉर्पोरेट गुणवत्ता आश्वासन SUB-VENDOR QUESTIONNAIRE/ सब-वेंडर प्रश्नावली
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i.	Item/Scope of Sub-contracting उप-संविदा(अनुबंध) का मद/ दायरा		
ii.	Address of the registered office पंजीकृत कार्यालय का पता	Details of Contact Person संपर्क व्यक्ति का विवरण (Name, Designation, Mobile, Email) (नाम, पदनाम, मोबाइल, ईमेल)	
iii.	Name and Address of the proposed Sub-vendor's works where item is being manufactured प्रस्तावित उप-विक्रेता के कार्यों का नाम और पता, जहां मद का निर्माण किया जा रहा है	Details of Contact Person: संपर्क व्यक्ति का विवरण (Name, Designation, Mobile, Email) (नाम, पदनाम, मोबाइल, ईमेल)	
iv.	Annual Production Capacity for proposed item/scope of sub-contracting उप-संविदा(अनुबंध) के प्रस्तावित मद / दायरे के लिए वार्षिक उत्पादन क्षमता		
v.	Annual production for last 3 years for proposed item/scope of sub-contracting उप-संविदा(अनुबंध) के प्रस्तावित मद / दायरे के लिए पिछले 3 वर्षों का वार्षिक उत्पादन		
vi.	Details of proposed works प्रस्तावित कार्यों का विवरण		
1.	Year of establishment of present works वर्तमान फैक्टरी की स्थापना का वर्ष		
2.	Year of commencement of manufacturing at above works उपरोक्त फैक्टरी में निर्माण कार्य शुरू होने का वर्ष		
3.	Details of change in Works address in past (if any) पूर्व में फैक्टरी स्थल में परिवर्तन का विवरण (यदि कोई हो)		
4.	Total Area कुल क्षेत्र		
	Covered Area शामिल क्षेत्र		
5.	Factory Registration Certificate फैक्टरी पंजीकरण प्रमाण पत्र		Details attached at Annexure – F2.1 विवरण अनुलग्नक- एफ 2.1 पर संलग्न है
6.	Design/ Research & development set-up डिजाइन / अनुसंधान और विकास सेटअप (No. of manpower, their qualification, machines & tools employed etc.) (श्रमिकों की		Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design) विवरण अनुलग्नक – F2.2

	<p align="center">CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन</p> <p align="center">SUB-VENDOR QUESTIONNAIRE/ सब-वेंडर प्रश्नावली</p>
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	संख्या, उनकी योग्यता, मशीन और उपलब्ध उपकरण आदि)	(if applicable) लागू / लागू नहीं, अगर विनिर्माण मुख्य संविदाकार / खरीददार के डिजाइन के अनुसार है) विवरण अनुलग्नक -एफ 2.2 पर संलग्न है। (यदि लागू हो)
7.	Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc) मैनपावर विवरण के साथ समग्र संगठन का चार्ट(डिजाइन / विनिर्माण / गुणवत्ता आदि)	Details attached at Annexure – F2.3 विवरण अनुलग्नक – F2.3 में संलग्न है।
8.	After sales service set up in India, in case of foreign sub-vendor(Location, Contact Person, Contact details etc.) भारत में बिक्री सेवा की स्थापना के बाद, विदेशी उप-विक्रेता के मामले में(स्थल, संपर्क व्यक्ति, संपर्क विवरण आदि)	Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure – F2.4 विवरण अनुलग्नक -2.4 पर संलग्न है।
9.	Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any फ्लोचार्ट सहित विनिर्माण प्रक्रिया निष्पादन योजना, जिसमें आउटसोर्स प्रक्रिया, यदि कोई हो, सहित कच्चे माल से तैयार उत्पाद तक विनिर्माण के विभिन्न चरणों को दर्शाया गया हो,	Details attached at Annexure – F2.5 विवरण अनुलग्नक - F2.5में संलग्न है।
10.	Sources of Raw Material/Major Bought Out Item कच्चे माल के स्रोत / खरीदे हुए मुख्य मद	Details attached at Annexure – F2.6 विवरण अनुलग्नक - F2.6में संलग्न है।
11.	Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing कच्चे माल / खरीदे हुए मद, प्रक्रियाबद्ध, अंतिम परीक्षण, पैकिंग करते समय गुणवत्ता नियंत्रण	Details attached at Annexure – F2.7 विवरण अनुलग्नक - F2.7 पर संलग्न है
12.	Manufacturing facilities (List of machines, special process facilities, material handling etc.) विनिर्माण सुविधा(मशीनों की सूची, विशेष प्रक्रिया सुविधाएं, सामग्री रख-रखाव आदि)	Details attached at Annexure – F2.8 विवरण अनुलग्नक - F2.8में संलग्न है।
13.	Testing facilities (List of testing equipment) परीक्षण सुविधाएं(परीक्षण उपकरण की सूची)	Details attached at Annexure – F2.9 विवरण अनुलग्नक – F2. 9 में संलग्न है।
14.	If manufacturing process involves fabrication then- यदि निर्माण प्रक्रिया में फेब्रिकेशन की गई है तो- List of qualified Welders पात्र वेल्डर की सूची	Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure – F2.10 विवरण अनुलग्नक - F2.10में संलग्न है।

	CORPORATE QUALITY ASSURANCE/ कॉर्पोरेट गुणवत्ता आश्वासन SUB-VENDOR QUESTIONNAIRE/ सब-वेंडर प्रश्नावली
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	<i>List of qualified NDT personnel with area of specialization</i> विशेषज्ञता के क्षेत्र सहित पात्र एनडीटी कार्मिकों की सूची	(if applicable) लागू / लागू नहीं			
15.	<i>List of out-sourced manufacturing processes with Sub-Vendors' names & addresses</i> सब-वेंडर द्वारा बाह्य स्रोतों (उनके नाम और पते सहित) से करवाएं गए निर्माण प्रक्रियाओं की सूची	Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure. – F2.11 विवरण अनुलग्नक - F2.10 में संलग्न है। (if applicable) (यदि लागू हो)			
16.	<i>Supply reference list including recent supplies</i> नवीनतम आपूर्ति सहित आपूर्ति संदर्भ सूची	Details attached at Annexure – F2.12 विवरण अनुलग्नक - F2.12 में संलग्न है। (as per format given below) (नीचे दिए गए प्रारूप के अनुसार)			
Project/ package परियोजना / पैकेज	Customer Name ग्राहक का नाम	Supplied Item (Type/Rating/Model /Capacity/Size etc) आपूर्ति की गई वस्तु (प्रकार / रेटिंग / मॉडल / क्षमता / आकार आदि)	PO ref no/date पीओ संदर्भ सं. / तिथि	Supplied Quantity आपूर्ति की मात्रा	Date of Supply आपूर्ति की तारीख
17.	<i>Product satisfactory performance feedback letter/certificates/End User Feedback</i> उत्पाद के संतोषजनक प्रदर्शन संबंधी फीडबैक पत्र / प्रमाण पत्र / अंतिम उपयोगकर्ता फीडबैक	Attached at annexure - F2.13 अनुलग्नक F2.13 पर संलग्न है			
18.	<i>Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating)</i> प्रस्तावित उत्पाद (एक समान या उच्च रेटिंग वाले) के लिए टाइप टेस्ट रिपोर्ट (टाइप टेस्ट विवरण, रिपोर्ट संख्या, एजेंसी, जांच की तारीख) का सारांश नोट: - रिपोर्ट प्रस्तुत करने की आवश्यकता नहीं है Note:- Reports need not to be submitted	Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure – F2.14 विवरण अनुलग्नक - F2.14 में संलग्न है (if applicable) (यदि लागू हो)			
19.	<i>Statutory / mandatory certification for the proposed product</i> प्रस्तावित उत्पाद के लिए वैधानिक / अनिवार्य प्रमाणीकरण	Applicable / Not applicable लागू / लागू नहीं Details attached at Annexure – F2.15 (if applicable) (यदि लागू हो)			
20.	<i>Copy of ISO 9001 certificate</i> आईएसओ 9001 प्रमाण पत्र की प्रति (if available) (यदि उपलब्ध हो)	Attached at Annexure – F2.16 अनुलग्नक में संलग्न - F2.16 है			
21.	<i>Product technical catalogues for proposed item (if available)</i> प्रस्तावित मद के लिए उत्पाद तकनीकी कैटलॉग (यदि उपलब्ध हो)	Details attached at Annexure – F2.17 विवरण अनुलग्नक - F2.17 में संलग्न है			

	CORPORATE QUALITY ASSURANCE/ कॉर्पोरेट गुणवत्ता आश्वासन	
	SUB-VENDOR QUESTIONNAIRE/ सब-वेंडर प्रश्नावली	

<i>Name:</i> नाम:		<i>Desig:</i> पद:		<i>Sign:</i> हस्ता क्षर:		<i>Date:</i> तिथि :	
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Company's Seal/Stamp:- कंपनी की मुहर / मोहर: -