

RATE CONTRACT FOR
LIGHTING POLES

VOLUME – II

TECHNICAL SPECIFICATION FOR
LIGHTING POLES

SPECIFICATION NO: PE-RC-999-558-E004
REV-0



BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, UTTAR PRADESH, INDIA – 201301



**TECHNICAL SPECIFICATION FOR
LIGHTING POLES**

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VOLUME II

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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 deviations 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).
6. The requirements mentioned in Section-I shall prevail and govern in case of conflict between the same and the corresponding requirements mentioned in the descriptive portion in Section-II

 BIDDER'S STAMP & SIGNATURE



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SECTION – 'I'

SPECIFIC TECHNICAL REQUIREMENTS



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1.0 SCOPE OF ENQUIRY

- 1.1 Design, manufacture, assembly, inspection & testing at manufacturer's works, proper packing and delivery to site of POLES as mentioned in different sections of this specification, complete with all accessories for efficient and trouble-free operation.
- 1.2 Standard technical requirements of the POLES are indicated in Section-II. Project specific requirements/changes are listed in Section-I.
- 1.3 The requirements of Section-I shall prevail and govern in case of conflict between the corresponding requirements of Section-I and Section-II.
- 1.4 Review of sub vendor's documents by the vendor shall not relieve the vendor from the responsibility of design and supply.
- 1.5 The documents shall be in English language and MKS system of units.

2.0 BILL OF QUANTITIES:

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

3.0 SPECIFIC TECHNICAL REQUIREMENTS

<u>S.No.</u>	<i>Reference Clause No. of Section- II</i>	<i>Specific Requirement/ Change</i>
1	General	4 X 16 mm ² cable shall be read as 3.5 X 25 mm ² cable.
2	7.0 (TOOLS & TACKLES)	Following clause is added: Bidder to supply necessary accessories required for installation of its supplied equipment's without any cost implication to BHEL.
3	QUALITY PLAN (ref.no. PE-QP-999-558-E004, REV.0)	Following clause is added: The approval on Quality plan shall be obtained from end customer after award of contract for various projects (as applicable on projects wise purchase orders) & shall be subjected to modification without any commercial implication to BHEL.
4	Sub-vendor list	Following clause is added: The approval on Sub-vendor list shall be obtained from end customer after award of contract for various projects (as applicable on projects wise purchase orders) & same shall be subjected to modification without any commercial implication to BHEL.
5	Vol-II section-II, cl.no. 3.1.9 (f)	Following clause is added: cl.no. 3.1.9 (f): PS-3- street light pole for one luminaire with 1200mm bracket arm.



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3.1 Galvanized Octagonal poles- technical requirements

3.1.1 Scope: The octagonal pole shall be mounted on RCC pedestal as per design & drawing prepared by the vendor, after award of contract. Octagonal lighting pole accessories such as arm/ holding brackets, hold fast, base plate, foundation bolt, junction box, 100 mm dia GI pipes for taking cables shall be supplied by vendor to meet overall system requirements. The other consumable required to complete the job in all respects shall also be in contractor's scope.

3.1.2 Exclusion: The scope of civil work such as embedment, RCC pedestal using M-20 grade concrete, for steel shuttering etc. are excluded from the scope of bidder.

3.1.3 The Octagonal Poles shall be designed to withstand the maximum wind speed of 47 meter/ sec for Udangudi project. The top loading i.e. area and the weight of fixtures are to be considered to calculate maximum deflection of the pole and the same shall meet the requirement of BS: 5649 Part VI 1982/ BSEN 40-3:2000, pr EN-10-3-3.

3.1.4 The pole shaft shall have octagonal cross section and shall be continuously tapered with single longitudinal welding. There shall not be any circumferential welding joint.

3.1.5 The octagonal Poles shall have door of approximate 500 mm length at the elevation of 500 mm from the Base plate. The door shall be vandal resistance and shall be weather proof to ensure safety of inside connections. The door shall be flush with the exterior surface and shall have suitable locking arrangement. There shall also be suitable arrangement for the purpose of earthing. The pole shall be adequately strengthened at the location of the door to compensate for the loss in section. Separate lighting pole junction box shall be provided along with octagonal pole as per customer requirement.

3.1.6 Material:	Octagonal Poles	HT Steel Conforming to grade S355JO.
	Base Plate	Fe 410 conforming to IS 226 / IS 2062
	Foundation Bolt	EN.8 grade

3.1.7 The Octagonal Poles shall be in single section (upto 7.5/9/11 Mtr).

3.1.8 The poles shall be hot dip galvanized as per IS 2629 / IS 2633 / IS 4759/ BS EN ISO 1461 standards with average coating thickness of 70 micron. The galvanizing shall be done in single dipping.

3.1.9 The Octagonal Poles shall be bolted on a foundation with a set of four foundation bolts for greater rigidity.

3.1.10 The galvanized mounting bracket shall be supplied along with the Octagonal Poles for installation of the luminaries.

3.1.11 The brackets shall be made of specified size NB G.I heavy duty pipe approx. 1.4 M long, bent at the centre at an angle of 105 degree, with necessary holding brackets, hold fasts etc. with special reducer at end to accommodate type of street light fitting to be fixed. The bracket shall have one coat of anti-corrosion paint before dispatch to site and two coats of approved make and shade of enamel paint. See attached drawing of street light poles.



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- 3.1.12 An indicative QP with basic testing requirement is enclosed with the specification. Successful bidder to furnish the detailed QP after the award of contract, the same shall be subject to customer approval without any commercial implication to BHEL.
- 3.1.13 Section –II, General requirements shall also be applicable to Octagonal galvanized poles in general.

4.0 DOCUMENTATION

- 4.1 Documents required after award of LOI shall be as per attachment-I (to be submitted by successful



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ATTACHMENT – I

DOCUMENTS REQUIRED AFTER AWARD OF LOI **(To be submitted by successful bidder)**

SL. No.	DOCUMENT TITLE	DWG. / DOCUMENT No.	CATEGORY
1	TECHNICAL DATASHEET FOR POLES	PE-V0-XXX-558-E401	APPROVAL
2	GA DRAWING OF POLE-PS1 (Painted)	PE-V0-XXX-558-E402	APPROVAL
3	GA DRAWING OF POLE-PS2 (Painted)	PE-V0-XXX-558-E403	APPROVAL
4	GA DRAWING OF POLE-PS4 (Painted)	PE-V0-XXX-558-E404	APPROVAL
5	GA DRAWING OF POLE-PF1 (Painted)	PE-V0-XXX-558-E405	APPROVAL
6	GA DRAWING OF POLE-PF2 (Painted)	PE-V0-XXX-558-E406	APPROVAL
7	GA DRAWING OF POLE-PS1 (Galvanised)	PE-V0-XXX-558-E407	APPROVAL
8	GA DRAWING OF POLE-PS2 (Galvanised)	PE-V0-XXX-558-E408	APPROVAL
9	GA DRAWING OF POLE-PS4 (Galvanised)	PE-V0-XXX-558-E409	APPROVAL
10	GA DRAWING OF POLE-PF1 (Galvanised)	PE-V0-XXX-558-E410	APPROVAL
11	GA DRAWING OF POLE-PF2 (Galvanised)	PE-V0-XXX-558-E411	APPROVAL
12	GA DRAWING FOR JB(S)	PE-V0-XXX-558-E412	APPROVAL
13	MANUFACTURING QUALITY PLAN FOR PAINTED POLES	PE-V0-XXX-558-E413	APPROVAL
14	MANUFACTURING QUALITY PLAN FOR GALVANISED POLES	PE-V0-XXX-558-E414	APPROVAL
15	MANUFACTURING QUALITY PLAN FOR OCTAGONAL POLES	PE-V0-XXX-558-E415	APPROVAL
16	FIELD QUALITY PLAN FOR POLES	PE-V0-XXX-558-E416	INFORMATION
17	BILL OF MATERIAL FOR POLES	PE-V0-XXX-558-E417	APPROVAL
18	INSTRUCTION FOR ERECTION OF POLES	PE-V0-XXX-558-E418	INFORMATION
19	GA DRAWING OF OCTAGONAL POLE-PS1 (Galvanised)	PE-V0-XXX-558-E419	APPROVAL
20	GA DRAWING OF OCTAGONAL POLE-PS2 (Galvanised)	PE-V0-XXX-558-E420	APPROVAL
21	GA DRAWING OF OCTAGONAL POLE-PS3 (Galvanised)	PE-V0-XXX-558-E421	APPROVAL
22	GA DRAWING OF OCTAGONAL POLE-PS4 (Galvanised)	PE-V0-XXX-558-E422	APPROVAL



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23	GA DRAWING OF OCTAGONAL POLE- PF1 (Galvanised)	PE-V0-XXX-558-E423	APPROVAL
24	GA DRAWING OF OCTAGONAL POLE- PF2 (Galvanised)	PE-V0-XXX-558-E424	APPROVAL

Note: The above list of drawings and documents is indicative.



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1.0 APPLICABLE STANDARDS & CODES

[A] POLES

- | | | |
|-----|---|------------------------|
| 1. | Tubular steel poles for over head power lines | IS 2713 |
| 2. | Code and practice for design loads for structures | IS 875 Part III, 1787 |
| 3. | Code of practice for general construction in steel | IS 800 |
| 4. | European structural steel standard (Grade of M.S. plate) | BS-EN 10025/ DIN 17100 |
| 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 |
| 15. | Specification for structural Steel | IS: 226 |
| 16. | Hot Rolled Medium and High Tensile. Structural Steel | IS 2062 |
| 17. | Method for Verification of Structural Design by Testing | BS 5649 |
| 18. | Lighting columns. Design and verification. | BS EN 40-3-2:2013 |



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[B] ASSEMBLED EQUIPMENT AND COMPONENTS

- | | | |
|----|--|-----------|
| 1. | Low voltage switchgear and controlgear | 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 |



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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 Poles		Swaged As per IS-2713
2.1	Type of Pole		
a	PS-1 (11m), Refer 3.1.9 Section-II		410SP51 as per IS-2713
b	PS-2 (13 m), Refer 3.1.9 Section-II		410SP67 as per IS-2713
c	PS-3 (9 m), Refer 3.0 (5) Section-I		410SP27 as per IS-2713
c	PS-4 (13 m), Refer 3.1.9 Section-II		410SP67 as per IS-2713
d	PF-1 (11m), Refer 3.1.9 Section-II		410SP51 as per IS-2713
e	PF-2 (11m), Refer 3.1.9 Section-II		410SP51 as per IS-2713
2.2	Material		MS
2.3	Tensile Strength	MPa	[☒] 410
2.4	Mounting arrangement		[☒] PCC foundation [] Base plate
2.6	Surface Treatment		[☒] Painted [☐] Galvanized
3.0	Lighting Poles		Hot dip galvanized Octagonal pole
3.1	Type of Pole		



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a	Octagonal pole type PS-1		9 m, Refer 3.1 Section-I
b	Octagonal pole type PS-2		11 m, Refer 3.1 Section-I
c	Octagonal pole type PS-3		7.5 m, Refer 3.1 Section-I
c	Octagonal pole type PS-4		11 m, Refer 3.1 Section-I
d	Octagonal pole type PF-1		9 m, Refer 3.1 Section-I
e	Octagonal pole type PF-2		9 m, Refer 3.1 Section-I
3.2	Material		HT Steel Conforming to grade S355JO
3.3	Tensile Strength	MPa	490-630 N/mm ²
3.4	Mounting arrangement		[] PCC foundation [√] Base plate
3.5	Grade of concrete		[√] M20 [] M25 [] M30
3.6	Surface Treatment		[] Painted [√] Galvanized

3.7 The general dimensions of pole are mentioned below

Sl.no.	Height (meter)	Top Dia A/F (mm) Min.	Bottom Dia A/F (mm) Min.	Sheet thickness (mm) min.	Base plate dim. (LxBxT) mm. min	Foundation bolt				Anchoring plate thickness (mm) min.
						Bolt size (no. x dia.) (mm) min.	PCD (mm)	Bolt length (mm)	Projected Bolt length (mm)	
1	7.5	70	130	3	220x220x12	4x20	205	700	100	3
2	9	70	155	3	260x260x16	4x24	250	750	125	3
3	11	90	210	4	300x300x20	4x24	300	850	125	4

These dimension are subjected to tolerances as per IS-2102 except for bending radius.

3.8	PAINTING details for poles (if applicable)		(AS APPLICABLE)
a	Paint shade as per IS:5		As per project requirement



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b	Paint Thickness	Microns	As per project requirement								
3.9	GALVANISATION details for poles										
a	Process		Hot dip								
b	Min weight of zinc coating	gm/m2	460								
c	Avg. thickness of zinc coating	Microns	70								
4.0	Street Light Junction Box										
a	Enclosure material		[] FRP [✓] CRCA Sheet.								
b	Enclosure thickness	mm	1.6								
c	Galvanisation details										
i)	Process		Hot dip								
ii)	Min weight of zinc coating	gm/m2	460								
iii)	Avg. thickness of zinc coating	Microns	70								
d	Degree of protection		IP-55								
5.0	Cable Glands		By vendor for all incoming and outgoing cables at Pole JB								
a	Type		[✓] Double compression [] Single compression								
b	Material		Brass								
c	Nickel Plating provided		[✓] Yes [] No								
d	Size		Cable Gland shall be suitable for following cable sizes : - <table border="1"> <thead> <tr> <th>Cable Size</th><th>Cable Dia. under armour</th><th>Cable Dia over armour</th><th>Overall dia of cable</th></tr> </thead> <tbody> <tr> <td>3.5C-25sqmm</td><td>18.7 (±1.5mm)</td><td>21.8 (±1.5mm)</td><td>24.9 (±1.5mm)</td></tr> </tbody> </table>	Cable Size	Cable Dia. under armour	Cable Dia over armour	Overall dia of cable	3.5C-25sqmm	18.7 (±1.5mm)	21.8 (±1.5mm)	24.9 (±1.5mm)
Cable Size	Cable Dia. under armour	Cable Dia over armour	Overall dia of cable								
3.5C-25sqmm	18.7 (±1.5mm)	21.8 (±1.5mm)	24.9 (±1.5mm)								
6.0	Cable Lugs		By vendor for all incoming and outgoing cables at Pole JB								
a	Type		[✓] Crimping type [] Ring type								
b	Material		Tinned copper								
c	Size		Suitable for Cable sizes: 3.5C-25sqmm armoured cable.								



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S. No.	Description	Unit	Value
1.0	System Design Data		
a	Rated voltage	V	
b	Rated frequency	Hz	
c	Voltage and frequency variation (permissible)	%	
d	Combined voltage & frequency variation (permissible)	%	
e	System fault level & duration	kA, sec	
2.0	Lighting Poles		
2.1	Type of Pole		
a	PS-1 (11m), Refer 3.1.9 Section-II		
b	PS-2 (12 m), Refer 3.1.9 Section-II		
c	PS-4 (13 m), Refer 3.1.9 Section-II		
d	PF-1 (11m), Refer 3.1.9 Section-II		
e	PF-2 (11m), Refer 3.1.9 Section-II		
2.2	Material		
2.3	Tensile Strength	MPa	
2.4	Mounting arrangement		
2.5	Grade of concrete		
2.6	Surface Treatment		
2.7	PAINTING details for poles (if applicable)		
a	Paint shade as per IS:5		
b	Paint Thickness	Microns	
2.8	GALVANISATION details for poles (if applicable)		



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a	Process		
b	Min weight of zinc coating	gm/m2	
c	Avg thickness of zinc coating	Microns	
Note:	Exterior Aluminium paint specified at 2.7 above is not in vendor's scope and is to be carried out at site after installation. It is specified only for completeness of datasheet. However, black bituminous paint & red oxide primer to be applied by vendor as per clause 3.12 of section II.		
3.0	Street Light Junction Box		
a	Enclosure material		
b	Enclosure thickness	mm	
c	Galvanisation details		
i)	Process		
ii)	Min weight of zinc coating	gm/m2	
iii)	Avg. thickness of zinc coating	Microns	
d	Degree of protection		
4.0	Cable Glands		By vendor for all incoming and outgoing cables at Pole JB and feeder panel
a	Type		
b	Material		
c	Nickel Plating provided		
d	Size		
5.0	Cable Lugs		By vendor for all incoming and outgoing cables at Pole JB and feeder panel
a	Type		
b	Material		
c	Size		

ITEM CODE	ITEM 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	
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	
ES11	CABLE GLANDS	1	E1201	ALLIED TRADERS & EXPORTERS	C-124 A, SECTOR-2, NOIDA -201 301, UTTAR PRADESH, INDIA	Mr. Vijay Mohan Sood +(91)-(120)-2525694 +(91)-(120)-3052594 +(91)-(11)-23287156 vijay_mohansood@yahoo.com	
	CABLE GLANDS	2	E1017	ARUP ENGG & FOUNDRY 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	NUTAN 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	I01	INCAB	HARE STREET,KOLKATA,WEST BENGAL-700001	91-33-2480161/62/63/64 Fax : 91-33-2485766	
ES12	CABLE LUGS	1	E1040	DOWELLS	M/S. DOWELLS ELECTRICALS 47/47A, SATGURU INDUSTRIAL ESTATE. OFF AAREY ROAD, GOREGOAN (EAST).	CEO : Mr. Jayantibhai S. Patel TEL: 022-32504770./022- 29270876/	
	CABLE LUGS	2	E1149	UNIVERSAL MACHINES LTD.	4,B.B.D.BAG (EAST) 90,STEPHEN HOUSE,5TH FLR CALCUTTA-700001	033 2282 2540	
ES13	D.C. MCCB	1	C02	CROMPTON GREAVES	RAIL TRANSPORTATION SYSTEMS,VANDANA BUILDING, 11, TOLSTOY MARG, TOLSTOY MARG, NEW DELHI, DL 110001	011 3041 6300	
	D.C. MCCB	2	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	D.C. MCCB	3	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL,	044-49681447	

ITEM CODE	ITEM DESCRIPTION	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
	D.C. MCCB	4	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	
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	
	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	
ES20	DC CONTACTORS	1	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	DC CONTACTORS	2	E1030	BHEL (BHOPAL)	HEAVY ELECTRICAL PLANT		
	DC CONTACTORS	3	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	
	DC CONTACTORS	4	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	DC CONTACTORS	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	
	DC CONTACTORS	6	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
	DC CONTACTORS	7	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
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	0120-4790000	
	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,		
	CONTROL SWITCHES/ SELECTOR SWITCH	6	RE05	RECOM PVT. LTD.	M/S RECOM PVT. LTD.,16A , 2ND FLOOR A, WING RAJ INDUSTRIAL COMPLEX, MILITARY	Mr. Chandrashekar Kamath (MD) : 09820249503	
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.bhadoria@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. AMIBIKA 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	

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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.bhadoria@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. AMIBIKA TEMPLE,MUMBAI Mumbai - 400086, Maharashtra, India	91-22-25164288/25133146 Mr. P. U. PATWARDHAN (MANAGING DIRECTOR)	
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.bhadoria@siemens.com	
ES26	DISTRIBUTION BOX	1	SRC01	M/S SHRENIK & CO.	39A/3, PANCHRATNA INDUSTRIAL ESTATE, SARKHEJ-BAVLA ROAD, CHANGODAR, AHMEDABAD – 382 213		
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-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 ;amit.bhadoria@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-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 ;amit.bhadoria@siemens.com	
	HRC FUSES	6	A24	ABB	14, MATHURA ROAD, FARIDABAD, HARYANA-121003	0129-2567580, 09871799449	

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	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	
ES31	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 : ipipl@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		
	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.mkt@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 Epitom 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.RAOD , BIRATI KALABAGAN KOLKATA KOLKATA-WEST BENGAL-INDIA Phone- Pincode : 700051 Email : ufepl@vsnl.net; ufepl@rediffmail.com	022 - 26230814	
ES32	HIGH MAST	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	SREEMANY. SR. MANAGER (PROJECTS) CONTACT DETAILS : (+91) 9871025705. MAIL ID :rabans@bajaelectricals.com;	
	HIGH MAST	2	TL01	M/S TRANSRAIL LIGHTING LIMITED (TLL)	M/S TRANSRAIL LIGHTING LIMITED (TLL), GAMMON INDIA LIMITED 2ND FLOOR , CENTRIC PLAZA, PLOT NO.8 POCKET-4, SECTOR-11 DWARKA , NEW DELHI -110075	hemant.jain@transrailtld.com'	
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	E1050	ESSEN DEINKI	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	

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	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@pmipl-online.com ;admin@pmipl-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@pmipl-online.com ;admin@pmipl-online.com	
	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 : srbans@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 INDL. AREA, NAVI MUMBAI – 400705.	Tel : 022 27620299 / 97 / 96 'mail@ajmera.net	
	JUNCTION BOXES (NON FLAME PROOF)	11	SB02	S.B. ELECTRICAL ENGINEERING CORPORATION	03, SARDAR GRIHA BUILDING, LOHAR CHAWAL, MUMBAI-400002	022- 22069831; 022-66637259	
ES44	LIGHTING POLES	1	E1033	BOMBAY TUBE & POLES CO.	BOMBAY TUBES & POLES CO. 2ND LANE, DARUKHANA, PLOT NO. 100, MAZGAON, MUMBAI - 10	Tel. : +91 22 23729802, email ID: btpc1954@hotmail.com	
	LIGHTING POLES	2	E1118	RIDHDHI POLES	4/5 INDUSTRIAL ESTATE, GORWA, VADODRA-390016	0265 - 2283768	
	LIGHTING POLES	3	MK01	MIKA ENGINEERS	BRANCH OFFICE : 'D'-101, DHEERAJ HERITAGE RESIDENCY II, SHASTRI NAGAR, SANTACRUZ (W), MUMBAI 400 054. WORKS : AT POST AGHAI, SHED NO. 2, VILLAGE AGHAI JILLA, SHAHPUR, DIST. THANE 421 601 TEL : 02527-249066/70 CELL : 099230 74373	Director : Mr. Asgar Karimi Email: asgar@mikaengineers.com;mika@mtnl.net.in Telfax : 022-26610081/82/83/84 Tel : 02527-249066/70 Cell : 099230 74373	
	LIGHTING POLES	4	K02	KL INDUSTRIES	B1 1001 LOK GAURAV, LBS MARG, VIKHROLI WEST, MUMBAI - 400083	(91)-9821013736 (91)-22-25774272	

ITEM CODE	ITEM DESCRIPTION	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
	LIGHTING POLES	5	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 POLES	6	TL01	TLL	M/S TRANSRAIL LIGHTING LIMITED (TLL), GAMMON INDIA LIMITED 2ND FLOOR , CENTRIC PLAZA, PLOT NO.8 POCKET-4, SECTOR-11 DWARKA , NEW DELHI -110075	hemant.jain@transrailttd.com'	
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., KILOKARI, 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.bhadauria@siemens.com	
	LIGHTING SWITCH , SOCKET & S/F UNIT	6	E1068	INDO ASIAN	B-24, PHASE - II , NOIDA - 201305, U.P.	120-3042222	
ES47	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, VITHAL 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 9818338922	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	19	J01	JASPER ENGINEERS PVT. LTD.	A-23, SECTOR - 8, NOIDA-201301	0120-4033520/533	
	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 DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@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	

ITEM CODE	ITEM DESCRIPTION	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	28	SRC01	M/s Shrenik & Co.	39A/3, PANCHRATNA INDUSTRIAL ESTATE, SARKHEJ-BAVLA ROAD, CHANGODAR, AHMEDABAD – 382 213		
ES48	LOCAL PUSH BUTTON STATION (FLAME PROOF)						
ES51	MCB	1	E1088	MDS SWITCHGEAR LTD	314-317SHAH 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	
ES61	SWITCH BOX	1	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.	
	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	AJMER INDUSTRIES & ENGG. WORKS	AJMER INDL. AND ENGG. WORKS. AJMER HOUSE, A-61 / KHAIRANE MIDC. , TTC INDL. AREA, NAVI MUMBAI – 400705.	Tel : 022 27620299 / 97 / 96 'mail@ajmera.net	
	SWITCH BOX	5	SB02	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	
	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@pmipl-online.com ;admin@pmipl-online.com	
	TERMINAL BLOCKS	7	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	
ES64	TIMERS - ELECTRONIC	1	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	
ES74	AMMETER	1	E1009	AUTOMATIC ELECTRIC LTD.	96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON, LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
	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	
ES75	VOLTMETER	1	E1009	AUTOMATIC ELECTRIC LTD.	96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON, LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
	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	
ES80	PVC WIRES				BIS APPROVED MAKE		
ES85	HUME PIPE				REPUTED MAKE		
ES86	PHOTOELECTRIC SWITCH				REPUTED MAKE		



TECHNICAL SPECIFICATION FOR LIGHTING POLES

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SECTION-II

GENERAL REQUIREMENTS



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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 POLES

- 3.1.1 Lighting poles as required for street lighting and flood lighting shall be of swaged/stepped tubular steel of swan neck construction as per applicable standard.
- 3.1.2 Where painted type of poles is specified (to be done at vendor’s works);
- The poles shall be coated with black bituminous paint, conforming to applicable standard, throughout on the inside surface and on the outside surface up to the level which is embedded in ground.
 - Exposed outside surface shall be painted with two coats of red oxide and zinc chromate in synthetic compound primer.
 - Final painting shall be done at site after installation. Same is not in vendor’s scope.
- 3.1.3 Where galvanization of poles is specified;
- All inside and outside surfaces of the pole and base plate shall be hot dip galvanised as per manufacturer’s practice.
 - Base plate shall be galvanised after welding to the pole base.
 - Weight and thickness of zinc coating shall be as per Datasheet-A.



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- 3.1.4 Each street lighting pole shall be supplied with necessary pipe-reducer / fixing-bracket for fixing the luminaire.
- 3.1.5 Each street lighting pole shall be suitably provided with weather proof, galvanised steel junction box and two numbers fixing brackets suiting the diameter of the pole. The requirements of junction box are stipulated elsewhere. The fixing brackets shall be supplied loose.
- 3.1.6 Street lighting pole shall be provided with wiring hole. The location shall be coordinated with mounting position of street lighting pole JB. The diameter of hole shall be 20 mm. The hole shall be provided with a rubber / PVC grommet.
- 3.1.7 Flood lighting pole shall be provided with painted MS plate and shall be suitable for the number of flood lighting luminaires and controlgear boxes.
- 3.1.8 Provision for earthing shall be provided for flood / street lighting poles at a height 1 metre above the ground (MS flat size shall be informed during detailed engineering). The pole shall be earthed at two points.
- 3.1.9 Types of Lighting Poles

Exact type and designation of lighting pole is as given in Data Sheet A. Basic types are as follows:

- a) PS1 - Street Lighting Pole for one luminaire with 1200mm bracket arm.
- b) PS2 - Street Lighting Pole for one luminaire with 1800mm bracket arm.
- c) PS4 - Street Lighting Pole for two luminaires with 1800mm bracket arm each.
- d) PF1 - Flood Lighting Pole for one luminaire.
- e) PF2 - Flood Lighting Pole for two luminaires.

Details of luminaire shall be provided during detailed engineering.

3.2 POLE JUNCTION BOXES JB(S)

- 3.2.1 Junction boxes with terminals shall be supplied for branching and terminating lighting wires/cables.
- 3.2.2 Construction Features
- (a) The junction boxes shall be fabricated out of material specified in Datasheet-A and shall be of rectangular shape. The cover shall be hinged or bolted with captive nuts and bolts and shall be provided with neoprene gasket lining all over.
 - (b) The junction boxes shall be provided with suitable knock outs/ gland plates for conduit/ cable connection. The conduit connection shall be properly sealed. The junction boxes meant for cable connection shall be complete with removable gland plates, glands and cable lugs, as required. The junction boxes shall be provided with two earthing terminals suitable for 14SWG GI earthing wires.



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- (c) The junction boxes shall be weather proof type conforming to IP-55 of IS:2147. Junction boxes for street light poles and lighting/lightning masts shall be provided with hinged doors and allen keys with bolts as locking arrangement.
- (d) The boxes and cover shall be hot dip galvanised.
- (e) The junction boxes shall be suitable for mounting on lighting poles, mast etc. The brackets, bolts, nuts, screws and any other erection accessories required for erection shall be provided along with the junction box.

3.2.3 Terminals

- (a) Multiway terminal blocks of approved type and make complete with galvanised screws, nuts, washers and marking strips shall be furnished for terminating the lighting wires.
- (b) All the terminals blocks shall be of 650V grade one piece construction with insulating barriers. These terminals shall be made of copper alloy and shall be stud type. Each terminal provided on junction box shall be suitable for terminating two numbers of aluminium conductors of the size as specified without any damage to the conductors or looseness.

3.2.4 The junction boxes shall be of following types:

Type	Description
JB-S	Provided with four (4) way stud type terminals, each terminal suitable for terminating upto two nos. of 3.5Cx50 mm ² stranded aluminium conductors & with one no.6A HRC fuse and link.
JB-M	Provided with four (4) way stud type terminals, each terminal suitable for terminating upto two nos. of 4Cx16 mm ² stranded aluminium conductors & tap off of 3 nos. 2C x 2.5 sq. mm. Cu cable.

3.3 CABLE GLANDS

- 3.3.1 Whether specifically mentioned or not, cable glands of suitable sizes shall be supplied along with each equipment for power and control cables.
- 3.3.2 Rubber components used in the gland shall be of neoprene.
- 3.3.3 Name / trade name of manufacturer, type no. and applicable range of outer diameter of cable shall be engraved / indelibly printed on the cable gland.

3.4 CABLE LUGS

- 3.4.1 All equipment shall be supplied with the power and control cable lugs of suitable size, whether specifically mentioned or not.
- 3.4.2 Name / trade name and size of lug shall be engraved/ indelibly printed on each cable lug.

3.5 TIMERS

3.5.1 Time Switch

- (a) Time switch shall be suitable for automatic switching ON and OFF of street lighting / flood lighting circuits.
- b) Time switch have 00 - 24 hrs clock base.



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- c) Time switch shall indicate actual time and shall permit accurate time setting.
- d) Time switch shall be rugged, independent of normal fluctuations of voltage / frequency and free from maintenance.
- e) Contact rating, clock accuracy, rated voltage rating and frequency rating of timer shall be suitable to its application.
- f) Time switch shall be provided with Ni-Cd battery.
- g) Time switch shall be suitable for mounting inside the panel.

3.5.2 On Delay Timer

- (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.

3.6 CIRCUIT DIAGRAM / DIRECTORY PLATE

- 3.6.1 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.

4 PACKING



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- 4.1 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.
- 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.

		QUALITY PLAN		CUSTOMER :		PROJECT TITLE : RATE CONTRACT		SPECIFICATION NO. : PE-RC-999-558-E413,R0				
				BIDDER/ VENDOR :		STANDARD QP NO. : PE-QP-999-558-E004, REV.0		SPECIFICATION TITLE : TECHNICAL SPECIFICATION FOR POLES & HIGH MASTS				
		SHEET 1 OF 1		SYSTEM		ITEM : POLES & HIGH MASTS		DOC. NO. :				
SL. NO.	COMPONENT/OPERATION	CHARACTERISTIC CHECK	CAT.	TYPE/ METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY			REMARKS
1	2	3	4	5	6	7	8	9	P	W	V	11
1	LIGHTING POLES											
1.1	MATERIAL	1.CHEMICAL COMP.	MA	CHEM. ANALYSIS	SAMPLE : IS-4711, Annex-A	IS-2713., IS : 228,	IS-2713, IS : 228	INSPN REPORT, TEST CERTIFICATES	M/C	-	C,B	
		2.PHYSICAL PROP.	MA	PHY.TESTS	SAMPLE: IS 4711, Table-2	IS- 2713, IS : 1161 & IS : 1608	IS- 2713, IS : 1161 & IS : 1608	-DO-	M/C	-	C,B	COLD BEND TEST NEED NOT BE CARRIED OUT.
1.2	FINAL INSPECTION	1. WORKMANSHIP & FINISH	MA	VISUAL	SAMPLE : 20%	APPD. DRG./ IS:2713, IS 1161	APPD. DRG./ IS:2713, IS 1161	INSPN REPORT	M	C,B	-	
		2.DIMENSIONS	MA	VISUAL & MEASUREMENT	-DO-	APPD DRG/ APPD DATASHEET/ IS-2713	APPD DRG/ APPD DATASHEET/ IS-2713	-DO-	M	C,B	-	
		3.WEIGHT	MA	MEASUREMENT	-DO-	-DO-	-DO-	-DO-	M	C,B	-	
		4.TESTS AS PER IS-2713 CL . NO 10.0	CR	PHY TESTS	SAMPLE:IS-2713	IS-2713	IS-2713	-DO-	M	C,B	-	FOR DEFLECTION & DROP TEST, TC VERIFICATION BY BHEL
		5. PAINTING (as applicable)	MA	VISUAL	SAMPLE : 20%	BHEL SPEC	BHEL SPEC	-DO-	M	C,B	-	
		6. GALVANISING (as applicable)	MA	MEASUREMENT	SAMPLE: IS4759 (Table-2)	APPD DATASHEET/APPD DRG/IS2629,2633,4759	APPD DATASHEET/APPD DRG/IS2629,2633,4759	-DO-	M	C,B	-	
		6. MARKING	MA	VISUAL	SAMPLE : 20%	IS:2713	IS:2713	-DO-	M	C	B	
BHEL			PARTICULARS			BIDDER/VENDOR						
			NAME									
			SIGNATURE									
			DATE									
BIDDER'S/VENDORS COMPANY SEAL												
LEGEND : B - BHEL/ CUSTOMER C - CONTRACTOR M - MANUFACTURER P - PERFORM W - WITNESS V - VERIFICATION												