

NLC TAMILNADU POWER LIMITED

2x500 MW NEYVELI NEW TPP

TECHNICAL SPECIFICATION FOR FLEXIBLE CONDUIT & JUNCTION BOX

SPECIFICATION NO: *PE-TS-400-558-E001A*

REVISION: 0



**BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, UP (INDIA) – 201301**

117059/2020/PS-PEM-EL



TECHNICAL SPECIFICATION FOR FLEXIBLE CONDUIT & JUNCTION BOX

SPECIFICATION NO. PE-TS-400-558-E001A

VOLUME II

SECTION - I

REVISION 0

DATE: 06.11.2020

SHEET 1 OF 1

CONTENTS

S NO. DESCRIPTION

NO. OF SHEETS

01 SECTION - I

CONTENTS	01
COMPLIANCE CERTIFICATE	01
SPECIFIC TECHNICAL REQUIREMENT	02
DATA SHEET-A	01

02 SECTION - II

QUALITY PLAN	10
PACKING SPECIFICATION	01
ANNEXURE-I (GA DRAWING FOR JUNCTION BOX)	01
ANNEXURE-II (LIST OF APPROVED MAKES)	01

TOTAL NUMBER OF SHEETS (INCLUDING COVER & SEPARATOR SHEETS): 21

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SHEET 1 OF 1

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 is 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).

117059/2020/PS-PEM-EL



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SPECIFIC TECHNICAL REQUIREMENTS

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SHEET 1 OF 2

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 **FLEXIBLE CONDUIT & JUNCTION BOX** as mentioned in different sections of this specification, complete with all accessories for efficient and trouble-free operation.

It is not the intent to specify completely herein all details of the equipment, nevertheless, the equipment shall be complete and operative in all respects and shall conform to the highest standard of engineering, design and workmanship.

2.0 BILL OF QUANTITIES:

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

3.0 DOCUMENTATION

3.1 Documents required along with the technical offer: -

- a) Signed & Stamped copy of Compliance certificate
- b) Signed & stamped copy of unpriced price schedule with "quoted" word indicated against all items.

3.2 Documents required after award of LOI/PO (to be submitted by successful bidder) are as follows:

S. NO.	DRAWING NO.	DRAWING TITLE	PRIMARY/ SECONDARY	REMARKS
1	PE-V0-400-558-E042	GA DRAWING OF JB TYPE- JB-F	PRIMARY	R-0 within 14 days from lot clearance of released items & subsequent revisions within 10 days of comments received from BHEL

4.0 SPECIFIC TECHNICAL REQUIREMENTS

4.1 JUNCTION BOXES

4.1.1 CONSTRUCTION FEATURES

The junction boxes shall be fabricated out of MS sheet of thickness not less than 2.0mm 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.

The junction boxes shall be provided with suitable knock outs/ gland plates for conduit/ cable connection. 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 GI earthing wires.



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SHEET 2 OF 2

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.

The boxes and cover shall be hot dip galvanised.

The junction boxes shall be suitable for mounting on wall, columns, lighting poles, mast structures etc.

4.1.2 TERMINALS

Four (4) way stud type terminal blocks of approved type and make complete with galvanised screws, nuts, washers and marking strips shall be furnished for terminating the lighting wires.

All the terminals blocks shall be of 650V grade one piece construction with insulating barriers.

These terminals shall be made of copper alloy suitable for terminating upto 2Nos. 6 mm² copper conductors, suitable for outdoor installations.

4.1.3 The junction box construction details shall be in line with Annexure-I : GENERAL ARRANGEMENT DRAWING FOR JUNCTION BOX.

4.2 FLEXIBLE CONDUITS

4.2.1 Flexible metallic conduits shall generally conform to the requirements of IS:3480.

4.2.2 Flexible conduits shall be made of strip steel, which shall be of cold rolled mild steel and coated with PVC. The strip shall be of uniform width and thickness throughout.

4.2.3 The strip shall be electro galvanized to a minimum thickness of 25 microns as specified in IS:3480. The surface of the strip shall be thoroughly cleaned before application of protective coating. Pretreatment, before galvanization, shall conform to IS:6005.

4.2.4 The strip for making flexible conduit shall be wound tightly and so overlapped in subsequent helicals that no openings are seen in normal position.

4.2.5 The conduit shall have uniform diameter throughout its length. The internal surface of all conduits shall be smooth and suitable for pulling insulated cables and wires without damage.

5.0 The make of items shall be as per as per ANNEXURE-II : LIST OF BHEL APPROVED MAKES.

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SHEET 1 OF 1

DATA SHEET –A

S. No.	Description	Unit	Value
1.0	Junction Box		
a)	Enclosure material		MS sheet
b)	Enclosure thickness	mm	2 (min.)
c)	Galvanized		As per IS: 2629
d)	Degree of protection		IP-55 of IS:2147
e)	Applicable standard		IS: 5133
2.0	Conduit (Flexible)		
a)	Type		Cold rolled annealed and electro galvanised mild steel strips and coated with PVC
b)	Size	mm	20
c)	Standard length	m	10 to 30
d)	Thickness of Galvanization	microns	25 (min.)
e)	Surface treatment		Electro galvanized as per IS: 3480

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SECTION – II

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN				SPEC. NO :		DATE:	
			CUSTOMER :				QP NO.:PE-QP-999-558-E001, R04		DATE: 23.06.2020	
			PROJECT:				PO NO.:		DATE:	
			ITEM: LIGHTING FIXTURES, LAMPS & MISC. ITEMS		SYSTEM:STATION LIGHTING SYSTEM		SECTION: II		SHEET 1 OF 10	
SL NO.	COMPONENT & OPERATIONS	CHARACTERIST ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTAN CE NORMS	FORMAT OF RECORD	AGENCY	REMARKS
1	2	3	4	5	6 M C/ N	7	8	9	* D	** M C N

1.0 CONVENTIONAL TYPE LIGHTING FIXTURES

A	Bought out items / in-process checks									
1.1	Lamps	Make rating & type	Major	Visual	1 sample per type	-	Approved Data Sheet for rating & type , Make to be BIS approved with CML number	Approved Data Sheet for rating & type , Make to be BIS approved with CML number		P/ V * - - Refer note No. 1
1.2	Electronic Ballast (if applicable)	Certificate of compliance	Major	Visual	Mnfr std.	-	Approved Data Sheet	Certificate of compliance by ballast manufacturer /lighting fixture that supplier that ballast meets all Approved Data Sheet requirements.	Certificate of compliance	P/ V * - - Refer note No. 1
		THD and pf check	Major	Electrical	Mnfr std.	-	Approved Data Sheet	THD<=10% , pf>=0.9 for FH type and pf>=0.95 for other type of florescent lighting fixtures	Inspection report	P/ V * - - Refer note No. 1

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:	09.07.2020	MEET SAGAR SINGH RAJPAL	Checked by:	09.07.20	KUNAL GANDHI
Reviewed by:		PRAVEEN DUTTA	Reviewed by:	Digitally signed by JAISWAL	RITESH KUMAR

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Sign & Date	
Seal	

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Approved by:			

Praveen
Dutta

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		PROJECT:		PO NO.:	DATE:
		ITEM: LIGHTING FIXTURES, LAMPS & MISC. ITEMS	SYSTEM:STATION LIGHTING SYSTEM	SECTION: II	SHEET 2 OF 10

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1	2	3	4	5	6		7	8	9	*	**			
					M	C/ N				D	M	C	N	
1.3	Castings	Freedom from defects	Major	Visual	Mnfr std.	-	Approved Data Sheet	Casting shall be free from any defects such as blow holes , surface blisters , cracks and cavities etc.	Inspection report		P/ V *	-	-	Refer note No. 1
1.4	Sheet metal forming and fabrication	Freedom from defects	Major	Visual	Mnfr std.	-	Approved Data Sheet	Sheet metal fabrication / forming etc should be as per manufacturer drgs.	Inspection report		P/ V *	-	-	Refer note No. 1
1.5	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 , Approved Data Sheet	Nominal coating thickness 50 microns or more	Inspection report		P/ V *	-	-	Refer note No. 1
B. ACCEPTANCE TEST														

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:	09.07.2020	MEET SAGAR SINGH RAJPAL	Checked by:	09.07.20	KUNAL GANDHI
Reviewed by:		PRAVEEN DUTTA	Reviewed by:	Digitally signed by RITESH KUMAR JAISWAL	

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

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Doc No:			
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	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN				SPEC. NO :		DATE:	
		CUSTOMER :				QP NO.:PE-QP-999-558-E001, R04		DATE: 23.06.2020	
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		ITEM: LIGHTING FIXTURES, LAMPS & MISC. ITEMS		SYSTEM:STATION LIGHTING SYSTEM		SECTION: II		SHEET 3 OF 10	

SL NO.	COMPONENT & OPERATIONS	CHARACTERIST ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTAN CE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1	2	3	4	5	6		7	8	9	*	**			
					M	C/ N				D	M	C	N	

CONVENTIONA L TYPE LIGHTING FIXTURES	a) VISUAL	MA	VISUAL	IS 10322 (PART5 SEC1)	IS 10322 (PART 5 SEC1)	IS 10322 / APPD GA	IS 10322 / APPD GA	Inspection report	√	P	W	W	
	b) IR (Dry)	CR	Electrical	IS 10322	IS 10322	IS 10322	IS 10322	Inspection report	√	P	W	W	
	c) HIGH VOLTAGE	CR	Electrical	IS 10322	IS 10322	IS 10322	IS 10322	Inspection report	√	P	W	W	
	d) DUST PROOF	CR	Electrical	IS 10322	IS 10322	IS 10322	IS 10322	Inspection report	√	P	W	W	
	e) PHOTOMETRIC	CR	Electrical	IS-10322	*	IS 10322	IS 10322	Inspection report	√	P	W	W	*: One no.Luminaire of each type to be witnessed by BHEL/ Customer
	2. ROUTINE TEST												
	a) VISUAL	MA	Visual	IS 10322 (PART5 SEC1)	IS 10322 (PART 5 SEC1)	IS 10322 / APPD GA	IS 10322 / APPD GA	Test cert	√	P	V	-	
	b) IR (Dry)	CR	Electrical	IS 10322	IS 10322	IS 10322	IS 10322	Test cert	√	P	V	-	
	c) HIGH VOLTAGE	CR	Electrical	IS 10322	IS 10322	IS 10322	IS 10322	Test cert	√	P	V	-	

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09.07.20 GANDHI

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ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:	09.07.2020	MEET SAGAR SINGH RAJPAL	Checked by:	09.07.20	KUNAL GANDHI
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			ITEM: LIGHTING FIXTURES, LAMPS & MISC. ITEMS			SYSTEM:STATION LIGHTING SYSTEM		SECTION: II		SHEET 4 OF 10		
SL NO.	COMPONENT & OPERATIONS	CHARACTERIST ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY	REMARKS
1	2	3	4	5	6		7	8	9	*	**	
					M	C/ N				D	M	C N

2.0 LED TYPE LIGHTING FIXTURES

A	Bought out items / in-process checks													
1.1	LED chip	LED chip efficacy	Major	Visual	Mnfr. Std.	-	LM 80 report	Appd Data Sheet	LM 80 report	√	P/V	V	V	At the time of final Inspection
		LED chip CRI & CCT	Major	Visual	Mnfr. Std.	-	LM 80 report	Appd Data Sheet	LM 80 report	√	P/V	V	V	At the time of final Inspection
		Reported TM21 (L80) lifetime of LED chip	Major	Visual	Mnfr. Std.	-	LM 80 report	Appd Data Sheet	LM 80 report	√	P/V	V	V	At the time of final Inspection
1.2	LED Driver	Compatibility with LED module / chip, controls & protection features	Major	Visual	Mnfr. Std.	-	Appd Data Sheet	Appd Data Sheet	Certificate of Compliance	√	P/V	V	V	Certificate of Compliance by LED driver manufacturer / lighting fixture supplier that driver meets all specifications requirement
		THD & pf check	Major	Electrical	Mnfr. Std.	-	Appd Data Sheet	THD <10% and pf >=0.9	Inspection report	√	P/V *	-	-	Refer note No. 1

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				ITEM: LIGHTING FIXTURES, LAMPS & MISC. ITEMS		SYSTEM:STATION LIGHTING SYSTEM		SECTION: II		SHEET 5 OF 10				
SL NO.	COMPONENT & OPERATIONS	CHARACTERIST ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTAN CE NORMS	FORMAT OF RECORD		AGENCY	REMARKS		
1	2	3	4	5	6		7	8	9	*	**			
					M	C/ N				D	M	C	N	
1.3	Castings	Freedom from defects	Major	Visual	Mnfr. Std.	-	Mnfr. Std.	Casting shall be free from any defects such as blow holes , surface blisters , cracks and cravities etc.	Inspection report		P/ V *	-	-	Refer note No. 1
1.4	Sheet metal forming and fabrication	Freedom from defects	Major	Visual	Mnfr. Std.	-	Mnfr. Std.	Mnfr. Std.	Inspection report		P/ V *	-	-	Refer note No. 1
1.5	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. Std.	Nominal coating thickness 50 microns or more	Inspection report	√	P/ V *	V	V	Refer note No. 1

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SL NO.	COMPONENT & OPERATIONS	CHARACTERIST ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTAN CE NORMS	FORMAT OF RECORD	AGENCY	REMARKS
1	2	3	4	5	6		7	8	9	* D	** M C N
					M	C/ N					

B	Acceptance Tests on LED Lighting fixtures													
1	LED Lighting fixture	Details of lot offered and Certificate of Compliance that lighting fixture supplier has inspected the offered lot as per their own standard.	Major	Visual	-	-	Lighting fixtures supplier to submit the details of lot offered for inspection (Type of lighting fixtures, their batch number, sub-vendor , name, quantity)	-	List	√	P	V	V	The list may be used for sample selection.
2		LED chip make	Major	Visual	-		Accepted type test reports (LM80/LM79) report	Certificate of compliance	Certificate of compliance	√	V	V	V	
3		Constructional features including: Internal writing , terminal block, earthing terminal, safety chain (if applicable)	Major	Visual	1 Sample per type	1 Sample per type	Approved data sheet/drg.	Approved data sheet/drg.	Inspection report	√	P	W	W	
4		Resistance to moisture test in	Major	Mechanical	1 Sample	1 Sample	IS 10322 / Approved data	Approved data sheet	Inspection report	√	P	W	W	

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Date: 2020.07.10 20:30:34 +05'30'

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			CUSTOMER :				QP NO.:PE-QP-999-558-E001, R04		DATE: 23.06.2020					
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			ITEM: LIGHTING FIXTURES, LAMPS & MISC. ITEMS		SYSTEM:STATION LIGHTING SYSTEM		SECTION: II		SHEET 7 OF 10					
SL NO.	COMPONENT & OPERATIONS	CHARACTERIST ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTAN CE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1	2	3	4	5	6		7	8	9	*	**			
					M	C/ N				D	M	C	N	
		case of lighting fixtures having IP X4 and above rating.			e per type	e per type	sheet/drg							
5		Resistance to dust (applicable if IP5X and above)	Major	Optical	Mnfr. Std.	-	IS 10322 / Approved data sheet/drg.	Approved data sheet/drg	Certificate of compliance	√	P/ V *	V	V	Refer note No. 1
6		Photometry check	Major	Optical	Mnfr. Std.	-	LM79, IS 16106, IS 16107	Certificate of compliance for the batch: that offered lighting fixture LOR and lighting fixtures efficacy is not be less than 90% (refer IS 16107) with reference to type test reports.	Certificate of compliance	√	P/ V *	V	V	Refer note No. 1
7		Dimensions	Major	Visual	1 Sample per type	1 Sample per type	Approved data sheet/drg.	Approved data sheet/drg.	Inspection report	√	P	W	W	
8		LED driver: THD and pf check	Major	Visual	1 Sample	1 Sample	Approved data sheet	THD<10% and pf >= 0.9	Certificate of	√	P	W	W	At lighting fixtures supplier test lab.

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ENGINEERING			QUALITY		
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Approved by:			

Praveen Dutta

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN					SPEC. NO :		DATE:			
			CUSTOMER :					QP NO.:PE-QP-999-558-E001, R04		DATE: 23.06.2020			
			PROJECT:					PO NO.:		DATE:			
			ITEM: LIGHTING FIXTURES, LAMPS & MISC. ITEMS			SYSTEM:STATION LIGHTING SYSTEM		SECTION: II		SHEET 8 OF 10			
SL NO.	COMPONENT & OPERATIONS	CHARACTERIST ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTAN CE NORMS	FORMAT OF RECORD		AGENCY	REMARKS	
1	2	3	4	5	6		7	8	9	* D	** M C N		
					e per type	e per type			compliance				
9		LED driver: Precision current control check	Major	Electrical	1 Sample per type	1 Sample per type	Approved data sheet	Approved data sheet	Inspection report	√	P	W	W
10		LED driver: Open circuit protection simulation check	Major	Electrical	1 Sample per type	1 Sample per type	Approved data sheet	Approved data sheet	Inspection report	√	P	W	W
11		LED driver: short circuit protection simulation check	Major	Electrical	1 Sample per type	1 Sample per type	Approved data sheet	Approved data sheet	Inspection report	√	P	W	W
12		LED driver: over temperature protection simulation check	Major	Electrical	1 Sample per type	1 Sample per type	Approved data sheet	Approved data sheet	Inspection report	√	P	W	W
13		LED driver: overload protection simulation check	Major	Electrical	1 Sample per type	1 Sample per type	Approved data sheet	Approved data sheet	Inspection report	√	P	W	W
14		LED driver: surge protection compliance check	Major	Electrical	-	-	Approved data sheet	Certificate of compliance that surge protection is provided.	Certificate of compliance	√	V	V	V

BHEL					
ENGINEERING			QUALITY		
Prepared by:	Sign & Date	Name	Checked by:	Sign & Date	Name
	09.07.2020	MEET SAGAR SINGH RAJPAL		09.07.20	KUNAL GANDHI
Reviewed by:		PRAVEEN DUTTA	Reviewed by:		RITESH KUMAR JAISWAL

Digitally signed by Praveen Dutta
DN: cn=Praveen Dutta, o=BHEL,
ou=PS-PEM, Noida,
email=praveendutta@bhel.in,
c=IN
Date: 2020.07.10 21:31:53 +05'30'

Date: 2020.07.10 20:31:35 +05'30'

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

Dutta

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN					SPEC. NO :		DATE:		
			CUSTOMER :					QP NO.:PE-QP-999-558-E001, R04		DATE: 23.06.2020		
			PROJECT:					PO NO.:		DATE:		
			ITEM: LIGHTING FIXTURES, LAMPS & MISC. ITEMS			SYSTEM:STATION LIGHTING SYSTEM		SECTION: II		SHEET 9 OF 10		
SL NO.	COMPONENT & OPERATIONS	CHARACTERIST ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTAN CE NORMS	FORMAT OF RECORD		AGENCY	REMARKS
1	2	3	4	5	6		7	8	9	* D	** M C N	
					M	C/ N						

3.0 JUNCTION BOXES & RECEPTACLES

A	Acceptance Tests													
1	Acceptance Tests	Dimensions	Major	MEASURE MENT	100%	-	Appd Drawing	Appd Drawing	Inspection report		P	V	-	Components shall be of approved Make
2		Paint Shade/ Thickness	Major	VISUAL/ME AS.	SAMP LE	-	Appd Drawing	Appd Drawing	Inspection report		P	V	-	At the time of final Inspection
3		HV/ IR	Major	ELECT.TES TS	100%	-	2KV AC FOR 1 MINUTE	2KV AC FOR 1 MINUTE	Inspection report		P	V	-	
4		Degree Of Protection	Major	TEST	1/SIZE	-	IS:2147	IS:2147	TEST CERT.	√	P	V	V	
5		Special tests if any, explosion proof etc.	Major	TEST	1/SIZE	-	IS:2148	IS:2148	TEST CERT.	√	P	V	V	
6		Operation Check	Major	TEST	10%	-	Appd Drawing	Appd Drawing	Inspection report		P	V	-	
7		Mechanical Interlock	Major	TEST	10%	-	Appd Drawing	Appd Drawing	Inspection report		P	V	-	

4.0 PACKING

	PACKING	Soundness of Packing against transit damage	Major	Visual	100%	100%	BHEL approved document	BHEL approved document	Inspection report	√	P	W	-	
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BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:	09.07.2020	MEET SAGAR SINGH RAJPAL	Checked by:	09.07.20	KUNAL GANDHI
Reviewed by:	Praveen	Digitally signed by Praveen Dutta DN: cn=Praveen Dutta, o=BHEL, ou=PE&M, Noida, email=praveendutta@bhel.in, c=IN Date: 2020.07.10 21:32:18 +05'30'	Reviewed by:	Digitally signed by RITESH KUMAR JAISWAL Date: 2020.07.10 20:32:09 +05'30'	

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

Dutta

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS		STANDARD QUALITY PLAN					SPEC. NO :		DATE:	
			CUSTOMER :					QP NO.:PE-QP-999-558-E001, R04		DATE: 23.06.2020	
			PROJECT:					PO NO.:		DATE:	
			ITEM: LIGHTING FIXTURES, LAMPS & MISC. ITEMS			SYSTEM:STATION LIGHTING SYSTEM		SECTION: II		SHEET 10 OF 10	
SL NO.	COMPONENT & OPERATIONS	CHARACTERIST ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTAN CE NORMS	FORMAT OF RECORD	AGENCY	REMARKS	
1	2	3	4	5	6	7	8	9	*	**	
					M C/ N				D	M	C N

NOTES:

1. P/V*- means test will be performed either by lighting fixture supplier or their sub-vendor and verified by lighting fixture supplier.
2. Project specific QP shall be based on customer requirement. In case, any changes in QP commented by customer at contract stage shall be carried out by bidder without any implication to BHEL/ Customer.
3. For export jobs, BHEL technical specification for seaworthy packing for export jobs is to be followed.
4. Packing shall be suitable for storage at site in tropical climatic conditions.
5. Latest revision/ year of issue of all the standards (IS/ ASME/ IEC etc.) Indicated in QP shall be referred.
6. BHEL reserves the right for conducting repeat test if required.
7. Items like ceiling fans, emergency lighting unit, flexible conduit, 24V supply module, ladders, hume pipe, switchboxes, exit signs etc. Will be cleared based on COC (certificate of compliance).
8. After packing and prior to issue MDCC, photographs of items to be dispatched shall be sent to BHEL purchase group for review.

LEGENDS:

*Records, identified with "Tick"(✓) shall be essentially included by supplier in QA Documentation,
 ** **M:** Supplier/ Manufacturer/ Sub-Supplier, **C:** Main supplier/ BHEL/ Third Party Inspection Agency, **N:** Customer,
P: Perform, **W:** Witness, **V:** Verification, as appropriate
MA: Major, **MI:** Minor, **CR:** Critical, **D:** Documentation

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:	09.07.2020	MEET SAGAR SINGH RAJPAL	Checked by:	09.07.20	KUNAL GANDHI
Reviewed by:		PRAVEEN DUTTA	Reviewed by:		JAISWAL

Praveen
Dutta

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 ou=PS-PEM, Noida,
 email=praveendutta@bhel.in, c=IN
 Date: 2020.07.10 21:32:56 +05'30'

Date: 2020.07.10 20:32:46 +05'30'

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

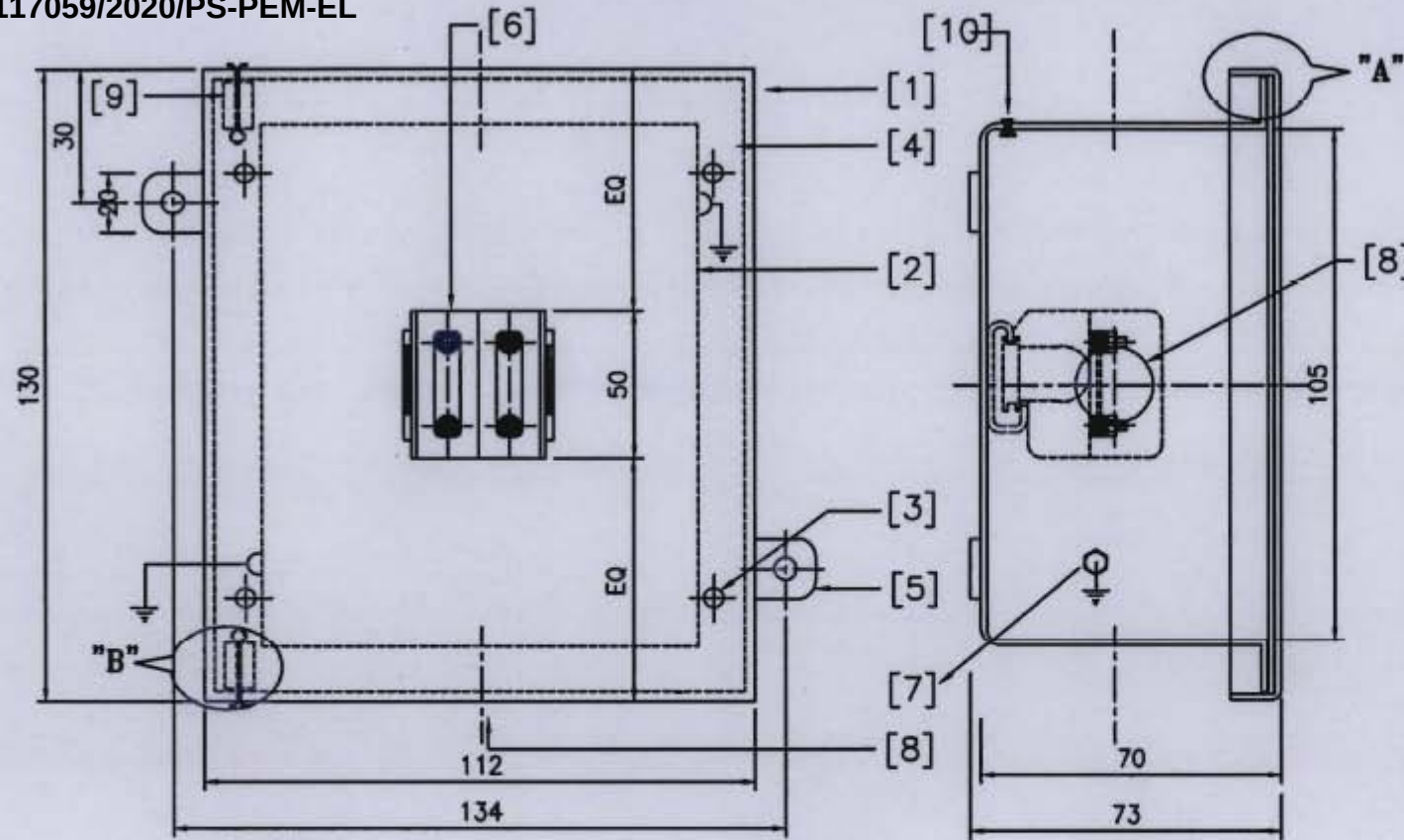
FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

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, Receptacles, Switchboards, 24V Supply modules, 24V sockets, Junction Boxes, Exit signs 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.
7. For items like step ladder, wheel mounted ladder and flexible conduits, packing shall be as per manufacturer standard.

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

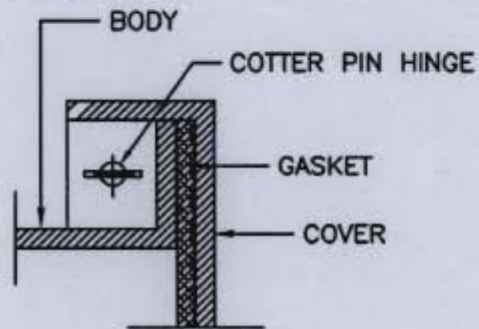
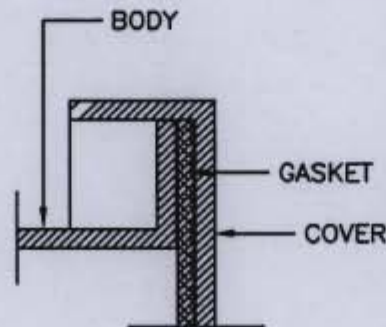
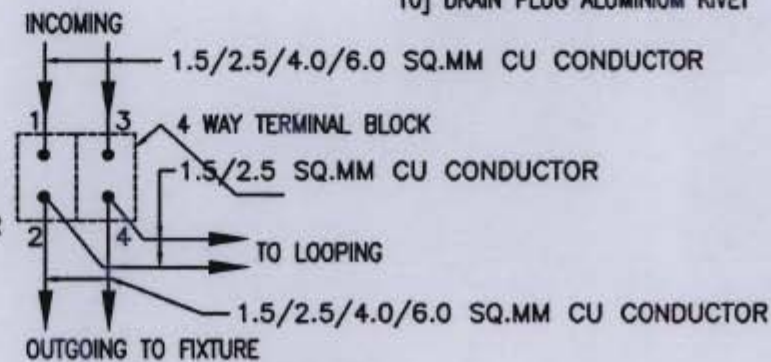
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**NOTES :**

- 1] DIMENSIONS ARE IN MM & SUBJECT TO TOLERANCE OF ± 3 MM.
- 2] J.B SHALL BE WEATHER PROOF - IP 55 DEGREE OF PROTECTION.
- 3] THE J.B SHALL BE FABRICATED OUT OF 2.0 MM THICK CRCA SHEET STEEL WITH HOT DIP GALVANISED & SURFACE MOUNTED TYPE.
- 4] 4 NOS KNOCKOUT OF 20 MM ϕ SHALL BE PROVIDED.
- 5] TERMINALS SHALL BE SUITABLE FOR LOOP-IN LOOP-OUT CONNECTION
2 Nos. 6 sq.mm. Cu. CONDUCTOR
STUD TYPE CONNECTWELL/ELMEX/WAGO/PHOENIX MAKE.
- 6] TERMINALS SHALL BE MOUNTED ON TERMINAL MOUNTING CHANNEL.
- 7] THE COVER SHALL HAVE HINGE ARRANGEMENT WITH NEOPRENE GASKET.
- 8] EARTHING TO BE DONE BY 16 SWG GI WIRE.
- 9] MAKE - APPROVED VENDOR LIST.

LEGEND :

- 1] COVER
- 2] JUNCTION BOX
- 3] 3/16" SCREWS - CHROME PLATED WITH WASHER
- 4] FLANGE OF BOX
- 5] 20 X 3 MM FIXING PATTY WITH 1/4" HOLES.
- 6] STUD - CLIPON TYPE TERMINALS - 4 NOS.
- 7] EARTHING BOLTS 3/16" - 2 NOS - BRASS WITH NUT
- 8] 20 MM DIA KNOCKOUTS 4 NOS [ONE ON EACH SIDES]
- 9] HINGES
- 10] DRAIN PLUG ALUMINIUM RIVET

**DETAIL "B"****DETAIL "A"****WIRING DIAGRAM**

ANNEXURE-II

2x500 MW NEW NEYVELI TPP (TG)

LIST OF APPROVED MAKES

SL NO.	ITEM DESCRIPTION	VENDOR NAME	ADDRESS	REMARKS
1	FLEXIBLE CONDUIT (PVC COATED)	REPUTED MAKE		
2	JUNCTION BOXES (NON FLAME PROOF)	JASPER ENGINEERS PVT. LTD.	A-23, SECTOR - 8, NOIDA-201301	
3	JUNCTION BOXES (NON FLAME PROOF)	Electro Controls & Devices	M/S ELECTRO CONTROLS & DEVICES, F-41, SITE-C, SURAJPUR INDUSTRIAL AREA GREATER NOIDA, UTTAR PRADESH :201308	
4	JUNCTION BOXES (NON FLAME PROOF)	M/s Shrenik & Co.	39A/3, PANCHRATNA INDUSTRIAL ESTATE, SARKHEJ- BAVLA ROAD, CHANGODAR, AHMEDABAD – 382 213	
5	JUNCTION BOXES (NON FLAME PROOF)	M/s PHOENIX MECANO LTD.,	388 BHARE, TALUKA MULSHI, POST GHOTAWADE, PIRANGOOT, INDUSTRIAL AREA, PUNE-412115	
6	JUNCTION BOXES (NON FLAME PROOF)	Adroit Control Engineers Pvt.Ltd.	M/S ADROIT CONTROL ENGINEERS PVT.LTD. PLOT-3, KRISHNA INDL. AREA, SECTOR-25 FARIDABAD – 121004	
7	JUNCTION BOXES (NON FLAME PROOF)	M/s PHOENIX MECANO LTD.,	388 BHARE, TALUKA MULSHI, POST GHOTAWADE, PIRANGOOT, INDUSTRIAL AREA, PUNE-412115	
8	JUNCTION BOXES (NON FLAME PROOF)	M/s PHOENIX MECANO LTD.,	388 BHARE, TALUKA MULSHI, POST GHOTAWADE, PIRANGOOT, INDUSTRIAL AREA, PUNE-412115	
9	JUNCTION BOXES (NON FLAME PROOF)	BAJAJ ELECTRICALS	BAJAJ ELECTRICALS LTD. ENGINEERING & PROJECTS BU (NORTH) 3rd FLOOR, GULMOHARHOUSE, COMMUNITY CENTRE 161/B-4, GAUTAM NAGAR, YUSUF SARAI NEW DELHI – 110049	
10	JUNCTION BOXES (NON FLAME PROOF)	AJMERIA INDUSTRIES & ENGG. WORKS	AJMERIA INDL. AND ENGG. WORKS. AJMERIA HOUSE, A-61 / KHAIRANE MIDC. , TTC INDL. AREA, NAVI MUMBAI – 400705.	
11	JUNCTION BOXES (NON FLAME PROOF)	S.B. ELECTRICAL ENGINEERING CORPORATION	03, SARDAR GRIHA BUILDING, LOHAR CHAWAL, MUMBAI-400002	
12	JUNCTION BOXES (NON FLAME PROOF)	RITTAL INDIA PVT. LTD.	Espire Building ,Level -1 A-41, Mohan Co-Operative Industrial Estate ,Mathura Road, New Delhi -110044	