

ESP-001-2A Rev.00		PROJECT ENGINEERING & SYSTEMS DIVISION (Technical Specification For Illumination Items Package)	Std. / Doc. Number	
			Annexure-III to PY55416	
			Rev. No.	00
			Sheet 1 of 5	

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ANNEXURE – III

(UNPRICED PRICE SCHEDULE)

Project:- RINL REVAMPING OF ESP PRICE BREAKUP Annexure-III to PY55416				REV00 Date:- 05.10.2020			
Enq. NO.:-							
Name of the Bidder:-							
Offer Ref. No.:-							
A. NOTE:-							
1. This format details the price weightage of items for the enquiry. No cognizance will be taken of any change made by bidder with respect to this format issued by BHEL and contents of this format shall prevail.							
2. Bids for Each package of the supply table below shall be evaluated separately on basis of grand total of package price quoted excluding GST. Total package price quoted shall be consist of basic price + packing & forwarding + freight + transit insurance.							
2. Bidder to filled in writing "Quoted" against each item of the package mentined in the format and submit along with technical offer as a token of his concurrence that all items were quoted along with unit prices. If any field is left blank, the offer will be liable for rejection. For discrepancies, if any, in the bid with respect to Quantity, Rates & Totals, etc., BHEL discretion shall be applicable.							
3. Vendor shall also fill up 8digit HSN code against each of the item in the unpriced price format and commercial offer.							
B. SUPPLY							
SL NO.	DESCRIPTION OF ITEM	UNIT	QTY.	TOTAL PRICE	QUOTED (YES/NO)		
A	ILLUMINATION ITEMS PACKAGE-1	Set	1				
B	ILLUMINATION ITEMS PACKAGE-2	Set	1				
C	ILLUMINATION ITEMS PACKAGE-3	Set	1				
D	ILLUMINATION ITEMS PACKAGE-4	Set	1				
E	ILLUMINATION ITEMS PACKAGE-5	Set	1				
C. WEIGHTAGES OF ILLUMINATION PACKAGE ITEMS							
SL NO.	DESCRIPTION (FIXTURES / LAMPS / ACCESSORIES)	HSN CODE (8DIGIT)	UNIT	QTY.	WEIGHT AGE	GST TAX SLAB	QUOTED (YES/NO)
A ILLUMINATION ITEMS PACKAGE-1							
A.1	LED Batten of 40W with Aluminium extruded body & diffuser, complete with integrated driver/convertor, heatsink and shall be supplied with suitable Mounting hardware, Cu. lugs. Fixture shall have minimum 4400 system lumen output. Fixture shall be suitable for surface / suspension mounting through 20mm down conduit and necessary hardware/clamp shall be provided for mounting. (Equivalent of Bajaj make BCLAB SP 44L LED CW)		Nos	225	0.0986		
A.2	600x 600mm Recess mounted decorative LED fixture (36-40W Approx, 230V AC) with IP65 protection & opal diffuser. Fixture shall have total system lumen output of 3600 lumen (min.) and shall be complete with integrated driver, heatsink and shall be supplied with Mounting hardware, Cu. lugs. (Equivalent of Bajaj make BPRF 36W WH SL LED)		Nos	140	0.0754		
A.3	LED Medium bay fixture (80W approx, 230V AC) with IP65 protection & with minimum 8000 lumen total system lumen output. Fixture shall have integrated driver, heatsink. Fixture shall be suitable for Ceiling/Purlin mounted and shall be supplied with Mounting hardware, Cast Aluminium/Galvanised connector/coupler for flexible conduit, Cu. lugs. (Equivalent of Bajaj make TENTO nxt B 88L WH MB)		Nos	180	0.3284		

A.4	LED Well glass fixture (45W approx, 230V AC) of cast aluminum body with Opal diffuser & total system lumen output of 4500 lumen (min.). Fixture shall have integrated driver, heatsink. Fixture shall be suitable for Column/Ceiling and pole mounted and shall be supplied with Mounting hardware, Pole reducer /stud, Cu. lugs, Cast Aluminium/Galvanised connector/coupler for flexible conduit. (Equivalent of Bajaj make BIWDN 45L WH PC SD).		Nos	550	0.4186		
A.5	LED street lighting fixture (60W approx, 230V AC) of Die- Cast aluminium body with minimum 6000 lumen total system lumen output. Fixture shall have integrated driver, heatsink and shall be supplied with Mounting hardware, Cu. lugs. (Equivalent of Bajaj ENXT P 72L WH CR PC SD)		Nos	75	0.0790		
Total					1.0000		
B ILLUMINATION ITEMS PACKAGE-2							
B.1	2.5 meter, GI lighting pole with all accessories as per drg. in Annexure - 1.		Nos	50	0.0566		
B.2	1200mm long 150 deg bend GI pipe with 2 nos suitable clamp with base, reducer/nipple etc as per drg. in Annexure - 1.		Nos	75	0.0298		
B.3	3000mm long, 20mm GI conduit		Nos	2200	0.1985		
B.4	GI Conduit bend suitable for 20mm GI conduit		Nos	1700	0.0254		
B.5	GI Conduit inspection bend suitable for 20mm GI conduit		Nos	700	0.0139		
B.6	GI conduit coupler suitable for 20mm GI conduit		Nos	3000	0.0128		
B.7	Saddle with saddle bar suitable for 20mm dia conduit. Each saddle shall be supplied with 2nos suitable screws for fixing the clamp/saddle to saddle bar and 1 No of 1.5" deep screw along with PVC rawl plug for saddle bar.		Nos	7500	0.0715		
B.8	GI Conduit branching JB with PVC end plugs suitable for 20mm GI conduit		Mtrs	950	0.0279		
B.9	20mm Outer Dia GI Flexible conduit		Nos	3000	0.0502		
B.10	Connector/coupler of Cast Aluminum/galvanised with check nut suitable for connecting GI flexible conduit to GI round Junction box supplied in this project.		Nos	500	0.0054		
B.11	3000mm long 20mm PVC conduit		Nos	75	0.0024		
B.12	PVC Conduit bend suitable for 20mm PVC Conduit		Nos	75	0.0004		
B.13	PVC Conduit coupler suitable for 20mm PVC Conduit		Nos	150	0.0006		
B.14	PVC Conduit branching JB with PVC end plugs for 20mm PVC conduit		Nos	75	0.0008		
B.15	3000mm long 50NB GI conduit		Nos	10	0.0048		
B.16	3000mm long 50NB PVC conduit		Nos	10	0.0019		
B.17	GI check nuts suitable for 20mm conduit		Nos	1500	0.0041		
B.18	Chromium Plated Steel chain		Mtrs	1600	0.0244		
B.19	GI Spring loaded ball socket suitable for conduit branching round JB and round JB with TB.		Nos	450	0.0072		
B.20	Rubber grommet 20mm		Nos	4000	0.0094		
B.21	Stainless steel S hook suitable for fixing recessed mounted fixture.		Nos	500	0.0063		
B.22	Rawl Plug 1.5" with suitable stainless steel screw.		Nos	20000	0.0067		
B.23	6mm dia x 35mm long Galvanised anchor bolt with nuts and washers - Bolt type		Nos	550	0.0109		
B.24	6mm dia x 35mm long Galvanised anchor bolt with nuts and washers - Hook/Half ring type		Nos	600	0.0110		
B.25	10mm dia 68mm long Galvanised anchor bolt with nuts and washers - Bolt type		Nos	150	0.0050		
B.26	GI Cable clamps with base and hardware (Suitable for 3C X 6sqmm Armoured Cable		Nos	16000	0.1450		
B.27	GI Cable clamps with base and hardware (Suitable for 4C X 50sqmm Armoured Cable		Nos	1000	0.0121		
B.28	GI conduit Branching Round JB suitable for 20mm GI conduit with 3nos.terminal block suitable for 4sqmm wire and with PVC end plugs .		Nos	350	0.0459		
B.29	FSB-3 Flush mounted switchboard with 3 nos 5A piano type switches (modular type).Switch board shall have necessary conduit entries suitable for 20 sqmm GI/PVC Conduit.		Nos	18	0.0036		
B.30	FSB-2 flush mounted switchboard with 2 nos 6A piano type switches. Switch board shall have necessary conduit entries suitable for 20 sqmm GI/PVC Conduit.		Nos	10	0.0015		
B.31	SSB-3 Surface mounted switchboard with 3 nos 5A piano type switches (modular type).Switch board shall have necessary conduit entries suitable for 20 sqmm GI/PVC Conduit.		Nos	5	0.0011		

B.32	SSB-2 Surface mounted switchboard with 2 nos 6A piano type switches. Switch board shall have necessary conduit entries suitable for 20 sqmm GI/PVC Conduit.		Nos	60	0.0117		
B.33	6/16A, 230V, flush mounted decorative type switch socket outlet (modular type) with 16A piano type switch. Socket outlet shall have necessary conduit entries suitable for 20 sqmm GI/PVC Conduit.		Nos	21	0.0031		
B.34	6/16A, 230V, Surface mounted decorative type switch socket outlet (modular type) with 16A piano type switch. Socket outlet shall have necessary conduit entries suitable for 20 sqmm GI/PVC Conduit.		Nos	30	0.0051		
B.35	6A, 24V, Surface mounted decorative type switch socket outlet (modular type) with 6A piano type switch. Socket outlet shall have necessary conduit entries suitable for 20 sqmm GI/PVC Conduit.		Nos	21	0.0036		
B.36	6A, 24V, flush mounted decorative type switch socket outlet (modular type) with 6A piano type switch. Socket outlet shall have necessary conduit entries suitable for 20 sqmm GI/PVC Conduit.		Nos	9	0.0013		
B.37	10W LED hand lamp with handle, protective cage, fixing hook and connected 25M, 3Cx1.5sqmm Cu. PVC metal braided cable and suitable plug for 24V socket.		Nos	15	0.0405		
B.38	16A, 230V, 1-ph, Surface/Column mounted industrial weather proof metal clad switch socket outlet (outdoor type, IP65) of polycarbonate with canopy & 25A RCCB. Socket outlet shall have necessary cable knock out/gland plate and supplied with suitable WP DC brass Cable gland, mounting hardware, cu. lugs, Al./brass blanking plug.		Nos	55	0.0796		
B.39	6A, 24V, 1 ph, Surface/Column mounted industrial weather proof metal clad switch socket outlet (outdoor type, IP65) of polycarbonate with canopy & 6A RCCB. Socket outlet shall have necessary cable knock out/gland plate and supplied with suitable WP DC brass Cable gland, mounting hardware, cu. lugs, Al./brass blanking plug.		Nos	40	0.0580		
	Total				1.0000		
C ILLUMINATION ITEMS PACKAGE-3							
C.1	4-way 200x150x100mm rectangular weatherproof JB (IP65) of Cast Aluminium/Thermoplastic/FRP. JB shall have Cable entries, two nos. suitable for 3Cx6 sq.mm. armoured cable and two nos suitable for 20mm flexible conduit with connector/coupler. JB shall have Terminal block 6 nos. suitable for 6 sq.mm Cu cable. JB shall be supplied with 2nos. WP DC brass cable gland, 2nos. Cast Aluminium/Galvanised connector for flexible conduit, mounting hardware, suitable Cu. lugs, blanking plug 1 no. for each type of cable entry.		Nos	600	0.6843		
C.2	63A, 415V, 3 ph, Surface/Column mounted welding receptacle (indoor type, IP65) of cast aluminum/ thermoplastic with 63A MCCB. Receptacle outlet shall have necessary cable knock out/gland plate and supplied with suitable WP DC brass Cable gland, mounting hardware, cu. lugs, Al./brass blanking plug.		Nos	10	0.0940		
C.3	63A, 415V, 3 ph, Surface/Column mounted welding receptacle (Outdoor type, IP65) of cast aluminum/ thermoplastic with canopy & 63A MCCB. Receptacle outlet shall have necessary cable knock out/gland plate and supplied with suitable WP DC brass Cable gland, mounting hardware, cu. lugs, Al./brass blanking plug.		Nos	17	0.1989		
C.4	ON-OFF Push button switch box with IP65 Thermoplastic/ Cast Aluminium/FRP housing with canopy, 2 Nos push button (one red and other green). Each push button switch shall have 2 nos. NO and 2nos. NC contacts. Switch box shall have 2 nos. conduit entry suitable 20mm conduit and shall be supplied with Cu. lugs and mounting hardware.		Nos	20	0.0228		
	Total				1.0000		
D ILLUMINATION ITEMS PACKAGE-4							
D.1	6-way AC, SPN type Indoor Lighting Panel with 32A DP MCB & 32A DP RCCB as incomer and 6 nos. 16A DP MCB as outgoing.		Nos	3	0.0620		
D.2	9-way AC TPN Type Indoor Lighting Panel with 63A TPN MCB & 63A TPN RCCB as incomer and 9nos 16A DP MCB as outgoing.		Nos	3	0.0741		
D.3	6-way TPN type AC Indoor Lighting Panel with 415V/24V transformer. Panel shall have 63A TPN MCB & 63A TPN RCCB as incomer and 4nos outgoing of 16A, 230V DP MCB fed from 415/240V bus section and 2nos outgoing of 10A, 24V, DP MCB fed from 24V bus section.		Nos	9	0.2110		

D.4	9-way AC TPN Type Indoor Lighting Panel with remote controlled contactor. Panel shall have 63A TPN MCB & 63A TPN RCCB as incomer & 4 nos 16A DP MCB and 5 nos DP contactor controlled of 16A DP MCB as outgoing (Refer Annexure-1).		Nos	6	0.1529		
D.5	6-way AC SPN Type Indoor Lighting Panel with remote controlled contactor. Panel shall have 32A DP MCB & 32A DP RCCB as incomer & 2 nos 16A DP MCB and 4 Nos DP contactor controlled nos of 16A DP MCB as outgoing (Refer Annexure-1).		Nos	6	0.1314		
D.6	18way AC TPN Type outdoor Lighting Panel with timer controlled contactor. Panel shall have 63A TPN MCB, 63A TPN RCCB & 63A TP contactor as incomer and 18nos 16A DP MCB as outgoing. Panel shall also have necessary time switch, selector switch, ON/OFF push switch for contactor. (Refer Annexure-1).		Nos	4	0.1653		
D.7	9-way AC TPN Type outdoor Lighting Panel with 415V/24V Transformer. Panel shall have 63A TPN MCB & 63A TPN RCCB as incomer and 6nos outgoing of 16A, 230V DP MCB fed from 415/240V bus section and 3nos outgoing of 10A, 24V, DP MCB fed from 24V bus section. (Refer Annexure-1).		Nos	4	0.1180		
D.8	6-way SPN Type AC outdoor Lighting Panel with timer controlled contactor. Panel shall have 32A DP MCB, 32A DP RCCB & 32A DP contactor as incomer and 6nos 16A DP MCB as outgoing. Panel shall also have necessary time switch, selector switch, ON/OFF push switch for contactor.		Nos	4	0.0853		
Total					1.0000		
E ILLUMINATION ITEMS PACKAGE-5							
E.1	1Cx1.5sq.mm. 1.1kV FRLS PVC insulated Cu flexible wire (Segregation of total quantity into Red, Yellow, Blue, Black & Green colour shall be informed during detailed engineering).		Mtrs	18000	0.5594		
E.2	1Cx2.5sq.mm. 1.1kV FRLS PVC insulated Cu flexible wire (Segregation of total quantity into Red, Yellow, Blue, Black & Green colour shall be informed during detailed engineering).		Mtrs	9990	0.4406		
Total					1.0000		

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ANNEXURE – IV

(SUB VENDOR LIST)

	BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD -32	Annexure-IV to PY55416
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SUB VENDOR LIST FOR ILLUMINATION PACKAGE		
PROJECT : RINL REVAMPING OF ESP FOR UNIT-2,3,4&5 (4X330 TPH) AT VIZAG		
S.NO	ITEM DESCRIPTION	VENDORS As per approved Vendor list
1	AC LIGHTING FIXTURES & LUMINIAIRS (SAFE AREA APPLICATIONS)	Bajaj Electricals Limited
		Havells
		Wipro
		Philips India ltd.
		GE
		Crompton Greaves Limited
2	240 V Switch Socket Outlet	INDOASIAN
		HAVELL'S
		BCH
		ABB
		LEGRAND
		SUDHIR
		HANSEL
3	415V Switch Socket Outlet	HANSEL
		RITTAL
		INDO ASIAN
		BCH
		ABB
		LEGRAND
4	Lighting Panel	M/S Havells India Ltd.
		M/s Indo Asian
		M/s ABB
		M/s Hensel
		M/s Merlin Gerin
		M/s HPL
		M/s Siemens
M/S Legrand		
5	Cable glands	ELECTROMAC INDUSTRIES
		FCG FLAMEPROOF CONTROL GEARS
		FLAMEPROOF EQUIPMENTS PVT.LTD.
		PROMPT ENGINEERING WORKS, MUMBAI
		FCG POWER INDUSTRIES
		METAL CRAFT INDUSTRIES
		KEYSONS TECHNO EQUIPMENTS PVT LTD
		FLEXPRO ELECTRICALS PVT. LTD.,
		BRACO Electrical India Pvt Ltd
		ELECTROMAG
		KALTER
		CCI
		COMMET
		PHOENIX
		DOWELLS
		LAPP
HENSEL		
6	Cable Lugs	M/S Automic Electric
		M/S Chetna
		BRACO Electrical India Pvt Ltd
		DOWELLS
		FORWARD
		COMMET
		3D
		KALTER
		M/S Electromac

SUB VENDOR LIST FOR ILLUMINATION PACKAGE		
PROJECT : RINL REVAMPING OF ESP FOR UNIT-2,3,4&5 (4X330 TPH) AT VIZAG		
S.NO	ITEM DESCRIPTION	VENDORS As per approved Vendor list
7	Terminal Block	ELMEX
		ESSEN
		CONNECTWELL
		C&S
		PHOINEX
		HENSEL
		WAGO
8	MCBS	M/S Havells India Ltd.
		M/s Indo Asian
		M/s ABB
		M/s L&T
		M/s Merlin Gerin
		M/s HPL
		M/s Siemens
		M/S Legrand (India) Pvt. Ltd.
9	ELCB/RCCB/RCBO	M/S Standard
		M/S Havells India Ltd.
		M/s Indo Asian
		M/s ABB
		M/s Hager
		M/s Merlin Gerin
		M/s HPL
		M/s Siemens
10	Thermoplastic/ FRP / SMC Junction boxes, switch socket outlets, P. B. stations	M/S Legrand (India) Pvt. Ltd.
		M/s RITTAL
		M/S HENSEL
		M/S SYNTEX
		M/S DEVI POLY MERS
11	Flexible wires	M/S SHRENICK
		DELTON
		Rajnigandha
		Havell's
		FINOLEX CABLES LTD.
		NICCO
		RPG
		FINECAB
		POLYCAB
		LAPP
		UNIFLEX
		KDK
		RADIANT CABLES PVT. LTD HYD
		APAR
		Thermo
		Pagoda
		THERMO PAD

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ANNEXURE – V

(DEVIATION FORMAT)



BHARAT HEAVY ELECTRICALS LIMITED
HYDERABAD -32

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DEVIATION FORMAT

(TO BE FILLED BY BIDDER AND FURNISH ALONGWITH OFFER)

Project Name:-

Enquiry No.:-

Name of Bidder:-

Offer Reference No.:-

Sl.No	Item	Clause No. & Spec. No	Description as per specification	Deviation taken	Nature of Deviation	REMARKS

NOTES

1. Technical offer of the bidder will be evaluated only on the basis of Deviation Schedule
2. Deviation Schedule constitutes this Sheet(with these Notes) duly signed & stamped.
3. Deviations, if any, shall be clearly brought out only in this format. Deviations mentioned / taken elsewhere or in any other format will be ignored.
4. Additional sheets in the same format can be enclosed by the vendor, if necessary.
5. Nature of Deviations shall only be of Design / Manufacturing constraints and non-availability of items / components / makes in market.
6. No price implications shall be entertained for deviations withdrawn during the technical scrutiny. If any deviations are accepted by BHEL during technical scrutiny then also there will be no price implication. Hence, in no case there will be consideration of Price implications.
7. Reasons for the deviations shall be specified in the Remarks column.
8. If there are no deviations from the specifications, bidder still has to submit the Deviation Schedule by writing "NO Deviations" in this format.
9. If the "Deviation Schedule" is not submitted along with the offer, the bidder's offer is likely to be rejected without any further interaction with the bidder.

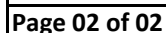
SIGNATURE OF BIDDER WITH SEAL & STAMP

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ANNEXURE – VI

(CHECK LIST OF BIDDER)



(TO BE FILLED BY BIDDER AND SUBMITTED ALONGWITH OFFER)

[illegible]

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ANNEXURE – VII

**(QUALITY SYSTEM, TESTING &
INSPECTION REQUIREMENT)**

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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED . It must not be used directly or indirectly in any way detrimental to the interest of the company.		<u>QUALITY SYSTEM, INSPECTION & TESTING OF EQUIPMENT AT</u> <u>MANUFACTURER'S PREMISES</u> 1. GENERAL:- a) Inspection & testing of equipment shall be carried out by BHEL / CUSTOMER / BHEL appointed third party at the works of Vendor/Sub vendor during manufacturing and/or on final product to ensure conformity of the same with acceptable criteria of technical specifications, approve drawings, manufacturing drawing and acceptable national / international standards. b) Inspection & test carried out by BHEL or BHEL appointed third party shall not absolve the responsibility of the vendor to provide acceptable product as per terms of contract nor shall it preclude subsequent rejection. c) BHEL reserve the right to inspect any product at any stage of manufacturing beyond pre – identified stages & hold points of approve QAP. 2. QUALITY SYSTEM REQUIREMENTS a) The vendor must recognize the importance of quality and follow defined quality program in all stages of manufacturing and quality control activities of the product. Vendor must define and implement the tasks and control that will provide needed assurance for the procured components / items. All the brought out equipment or component shall be procured from vendors which are listed in the sub- vendor list. b) BHEL reserve the right to verify the quality programme of vendor & its sub vendors to ensure effectiveness of program to meet the intended and specified quality of the product. 3. QUALITY ASSURANCE PLAN a) The vendor shall furnish Quality assurance plan (QAP) for respective equipment after completion of detail engineering for BHEL approval. b) QAP shall be prepared & furnish by vendor as per guide lines mentioned at Annexure-XI. c) The vendor shall indicate procurement source and furnish following document to BHEL, during the submission of QAP for scrutiny & final approval by BHEL. i. Copies of PO ii. Technical specification iii. BHEL approved GA drawings/ datasheets iv. Detail manufacturer drawing v. Back up reference materials d) The submission & subsequent approval of QAPs shall be ensured to be restricted to one round only. e) Inspection and test requirements shall be decided with due consideration of factors like safety, duty cycle, operating conditions, equipment life, environmental condition, place of installation and statutory regulation as applicable, for a particular equipment. Any additional type or special tests or routine tests if found necessary to establish the intended quality after detailed engineering then same shall have to be incorporated in the QAPs without any commercial implication.		
Ref. Doc				

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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED . It must not be used directly or indirectly in any way detrimental to the interest of the company .			f) The vendor shall submit documents to demonstrate that the vendor and his sub-vendors follow, QA/QC program meeting the requirements set forth in this section. Typical inspection requirements for some of the critical equipment are appended in this section of the specifications. These indicated requirements are minimum and from the BHEL's perspective. Vendor can review the same and supplement based on their experience and practice for all items. g) Detailed QAP shall be prepared by Vendor in consultation with their sub vendor/manufacturers to avoid any complicity later.		
			4. CALIBRATION OF MEASURING EQUIPMENT a) All the measuring equipment used for inspection & testing shall be calibrate and appropriate accuracy class of measuring equipment shall be used. Calibration standards used for calibration of measuring instrument shall be traceable to national standards of National Physical Laboratory (NP) with unbroken chains of comparison. b) Valid calibration certificates for all measuring instrument used during inspection and testing at manufacturer's works, with traceability to National standards of NPL/NABL accredited laboratories shall be furnished prior to undertaking inspection by BHEL. c) Calibration certificate shall also indicate reference no. of calibration standards calibrated by NPL/NABL accredited laboratories and copies of such calibration certificates of calibration standards shall be included in the complied dossiers of inspection/test result.		
5. TEST CERTIFICATE AND DOCUMENT a) For each items being manufactured as per approved QAP, following test certificates and documents as applicable for each equipment/item, in the requisite copies including original, duly endorsed by the manufacturer/vendor with appropriate linkage to project, purchase order and acceptance criteria etc. shall be submitted to BHEL. i. Raw material identification & physical and chemical test certificates for all material used in manufacture of the equipment/item. ii. WPS, PQR & WPQ documents as per applicable code. iii. Details of stage wise inspection & rectification records of fabricated items, casting, forging and machined items. iv. Control dimension chart with records of alignment, squareness etc. v. Manufacturer's material and performance/ relevant test certificate for all brought out items. vi. Details of heat treatment and stress relieving charts as per specification. vii. Non destructive test reports as per respective code. viii. Hardness test certificates. ix. Pressure/leakage test certificates. x. Weather proof test certificates as per applicable codes. xi. Performance test certificates for all characteristics. xii. Routine/ type /calibration/acceptance/special test (Type test etc.) certificates. xiii. Surface preparation and painting certificates. xiv. Certificates from competent authority for the items coming under statutory regulations.(i.e. CIMFR, PESO, DGMS etc. xv. BIS license certificate. b) Where physical and chemical test certificates of material are not available, the vendor shall arrange to have specimens and test samples of the materials, tested in his own					
Ref. Doc					

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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED . It must not be used directly or indirectly in any way detrimental to the interest of the company .		laboratory at his cost and submit copies of test results in requisite numbers to BHEL for review. Number of test samples against each batch of materials as applicable shall be as per relevant Indian or International standards. c) Where facilities for testing do not exist in the vendor or sub vendor's laboratories or in case of any dispute, samples and test pieces shall be drawn by the vendor in presence of BHEL or BHEL nominated third party and sealed sample shall be sent to any Govt. approve / NABL accredited laboratory for necessary tests at vendor's own cost. d) The BHEL shall have right to be present and witness all tests being carried out by the vendor/sub vendor/manufacturer at their own laboratory or approved laboratories. Also, the inspection team of BHEL shall reserve the right to call for confirmatory test on samples, at his discretion. e) Only latest edition of codes / standards and specification shall be used for materials and testing. The latest revision means the revision whose date of revision is closest to the contract date. 6. INTERNAL INSPECTION BY VENDOR/MANUFACTURER a) Inspection and tests shall be carried out by Vendor/manufacturer in accordance with BHEL approve drawings, Technical specification, PO and approve QAP. They shall maintain records of each inspection and test carried out and signed documents shall be submitted to BHEL for verification. b) The vendor shall carry out internal inspection & obtain clearance from statutory bodies e.g. IBR, CCE, TAC, weight & measures, safety, IE rules etc. prior to offering any equipment for BHEL inspection in accordance with approve QAP. c) The vendor shall identify all inspected equipment/items/raw material and shall maintain the record of status of inspection viz. inspected & found acceptable, require rectification/rework, rejected etc. d) The vendor shall establish and maintain procedures to ensure that the product that does not conform to specified requirements is prevented from inadvertent dispatch. The description of non-conformity that has been accepted subsequently by BHEL by concession and/or repair shall be recorded. e) Repaired and reworked product shall be offered for re-inspection to BHEL along with records of corrective action taken. 7. METHOD OF UNDERTAKING INSPECTION & TESTING BY BHEL a) Inspection call shall be given only on readiness of the equipment/assembly and after approval of all relevant drawings and QAP. b) All documents like test certificates, internal inspection reports, PO, Technical specification, approve QAP, approve GA drawing/ datasheets, Manufacturing drawings, Inspection check list shall be arranged and handed over to inspector before inspection. <u>Inspection without above document shall be treated as incomplete.</u> c) The hard copy of such documents must also accompany a CD (comprising computer readable files) containing the identical documents. d) On receipt of inspection call pertaining to package equipment, QA & inspection group of BHEL shall organize inspection visit or will issue inspection assignment to BHEL approved third party (Based on the nearness to the manufacturer's works). For further inspecting pertaining to the same equipment, vendor may forward the subsequent inspection call to the concern inspection agency with a copy to QA & Inspection section of BHEL Hyderabad.		
	Ref. Doc			

TD-201 Rev No. 00	Form No.	 HYDERABAD	PRODUCT STANDARD PROJECT ENGINEERING HYDERABAD	Annexure-VII to PY55416 Rev No. 00 Page 5 of 11
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED . It must not be used directly or indirectly in any way detrimental to the interest of the company.		8. OBLIGATION OF VENDOR - The vendor shall provide all facilities and ensure full and free access of the inspection Engineer of BHEL to their own or sub vendor's premises to facilitate him carry out inspection and testing of the product during manufacturing of the same. - The vendor shall provide all instruments, tools, necessary testing & other inspection facilities to BHEL inspector free of cost for carrying out inspection. - The vendor shall comply with instructions of BHEL fully and with promptitude. - The cost of testing welds, radiographic and dye penetration tests etc. if applicable, in the fabrication workshop shall be borne by the vendor. - The vendor shall ensure that the equipment/assembly/component require to be inspected, are not dispatched before inspection. - Vendor shall submit Engineering design datasheet with necessary technical details and manufacturer design sketches of all offered items for review by BHEL and obtain approval for the same. It will be vendor's responsibility to revise the design as per the BHEL's observation made on the design datasheet in line with specification requirement till final approval is obtained. Vendor shall not proceed with manufacturing of item unless submitted design is approved by BHEL in all respect. - Vendor may categorize some items for stage inspection with manufacturing of few sample item, if agreed by BHEL for clearance of mass production. After the mass production, vendor shall call BHEL for re- inspecting the lot. It will be vendor's responsibility to manufacture the item in line with inspected sample, BHEL will not be held responsible by anyway if the item is rejected due to deviation from sample item. - For equipment not covered by any other approved standards, the tests to be carried out shall be in accordance with the Vendor's quality assurance program which to be agreed between the Vendor and the BHEL. Vendor shall furnish a comprehensive list of the tests for such items and include the same in the quality plan during offer. - If vendor fails to furnish list of test to be carried out at vendor's works for items not covered by any approved standards, BHEL at his discretion may called for any test to be performed at vendor's works. - Vendor is responsible for providing inspection check list as per attached format at annexure-VIII for each item to be inspected and get it endorsed by the inspector. Vendor shall submit signed copy of inspection check list along with other QAP documents as listed elsewhere to BHEL for their perusal. - Dispatch clearance of any item will not be issued if vendor fails to provide satisfactory inspection checklist & test certificates and other quality related documents.		
	Ref. Doc			

		BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD -32		Annexure-VII to PY55416	
				Rev 00	
				Page 06 of 11	
MINIMUM INSPECTION REQUIREMENT					
FIXTURE					Action by BHEL
1. DOCUMENT		Purchase order, Technical specification of BHEL, BHEL approved drawings/documents/Datasheet,QAP, Consumables certificates and any special requirements			R
2. Materials	Enclosure, reflector, PVC Cables/wires, wire guard, gasket, bracket and brought out items	Material test certificates, Inspection authority stamp correlation with material & TPI stamp verification, manufacturer guarantee certificate and routine test report			R
		If any specific / additional test requirements			R
3. In process inspection	Fabrication of enclosure, reflector, wire guard, bracket	Dimension, Drilling and weld quality			R
	Assembly of fixture	Dimension, cable opening, mounting arrangement			R
	Painting of fixture and finishing	Surface treatment, paint quality, finish colour, shade and thickness			R
	Wiring	Arrangement of terminal blocks, wiring continuity, clamping, Tag provision			R
5. Final inspection	Physical check	Fixture, internal & external reflector, Gasket, wire guard, Glass/acrylic cover, mounting arrangement , cable entries, IP class, Lamp holder type and voltage rating vs approved datasheet.			W
		Name plate for correct entries of Model No. Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc.			W
		Cable entry and terminal block size and type of cable gland used			W
		Make of fixture and accessories			W
		Paint quality, finish colour, shade and thickness			W
	Assembly check	lamp, reflector, cable gland, wire guard for proper fitment to the fixture.			W
	Functional check	Lamp with ballast & Control gear. For Non Integral type Fixture CG box shall be kept 30M away from lamp compartment.			W
		DC fixture with Convertor			W
	Document check	Material test certificate for all type of materials used, Painting quality test certificate, IP class test certificate, Routine test certificate, BIS License copy if applicable, Test certificates from CIMFR or equivalent laboratory certified by NABL & approved from PESO/DGMS for flame proof item, Guarantee/Warranty certificate.			R
6. Packing & dispatch	Packing	Soundness of packing, preservation & documentation as per specification.			V
		Marking of packing for easy identification			V
	Dispatch	Format of Packing slip & quantity as per scope of supply			V
Abbreviations used : R- Review, W- Witness, V- Verify					

	BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD -32		Annexure-VII to PY55416 Rev 00 Page 07 of 11
MINIMUM INSPECTION REQUIREMENT			
PANEL			Action By BHEL
1. DOCUMENT		Purchase order, Technical specification of BHEL, BHEL approved drawings/documents/Datasheet,QAP, Consumables certificates and any special requirements	R
2. Materials	Sheet, PVC cables/ wire, Channels & Frame, Brought out items etc.	Material test certificates, Inspection authority stamp correlation with material & TPI stamp verification, manufacturer guarantee certificate and routine test report	R
		If any specific / additional test requirements	R
3. In process inspection	Fabrication of Panel	Dimension, Straightness, Drilling and weld quality	R
	Assembly of Panel	Dimension, Straightness, opening, Door clearance , mounting arrangement	R
	Painting of Panel and finishing	Surface treatment, paint quality, finish colour, shade and thickness	R
	Wiring	Arrangement of terminal blocks, wiring continuity, clamping, Ferrules terminals and Tag provision	R
5. Final inspection	Physical check	Panel dimension, rating, internal arrangement of components & wiring, mounting arrangement , cable entries, IP class and voltage rating vs approved datasheet, sheet gauge .	W
		Name plate for correct entries of Model No. Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc., Component leveling , circuit diagram, warning label.	W
		Cable entry and terminal block size and type of cable gland used	W
		Make of Panel, sub component and accessories	W
		Paint quality, finish colour, shade and thickness	W
	Functional check	Circuit functional check, Routine test, continuity check.	W
		ELCB/RCCB functional check	W
	Document check	Material test certificate for all type of materials used, Painting quality test certificate, gasket material certificate, IP class test certificate, BIS License copy if applicable, Test certificates from CIMFR or equivalent laboratory certified by NABL & approved from PESO/DGMS for flame proof item, Guarantee/Warranty certificate.	R
		Routine test certificates like HV Test, Insulation measurement before & after HV test, Continuty test, Functional test.	W
6. Packing & dispatch	Packing	Soundness of packing, preservation & documentation as per specification.	V
		Marking of packing for easy identification	V
	Dispatch	Format of Packing slip & quantity as per scope of supply	V
Abbreviations used : R- Review, W- Witness, V- Verify			

		BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD -32		Annexure-VII to PY55416 Rev 00 Page 08 of 11	
MINIMUM INSPECTION REQUIREMENT					
JUNCTION BOXES					Action By BHEL
1. DOCUMENT			Paint quality , finish colour, shade and thickness		R
2. Materials	Sheet, Channels & Frame, Brought out items etc.		Material test certificates, Inspection authority stamp correlation with material & TPI stamp verification, manufacturer guarantee certificate and routine test report		R
			If any specific / additional test requirements		R
3. In process inspection	Fabrication of JB		Dimension, Straightness, Drilling and weld quality		R
	Assembly of JB		Dimension, Straightness, opening, Door clearance , mounting arrangement		R
	Painting of JB and finishing		Surface treatment, paint quality, finish colour, shade and thickness		R
	Wiring		Arrangement of terminal blocks		R
5. Final inspection	Physical check		JB dimension, rating, mounting arrangement , cable entries, IP class and voltage rating vs approved datasheet, Sheet Gauge.		W
			Name plate for correct entries of Model No. Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc.		W
			Cable entry and terminal block size and type of cable gland used		W
			Make of JB, sub component and accessories		W
			Paint quality , finish colour, shade and thickness		W
	Document check		Material test certificate for all type of materials used, Painting quality test certificate, IP class test certificate, gasket certificate, BIS License copy if applicable, Test certificates from CIMFR or equivalent laboratory certified by NABL & approved from PESO/DGMS for flame proof item, Guarantee/Warranty certificate.		R
			Routine test certificates like HV Test, Insulation measurement before & after HV test, Secondary current injection test if applicable.		W
6. Packing & despatch	Packing		Soundness of packing, preservation & documentation as per specification.		V
			Marking of packing for easy identification		V
	Dispatch		Format of Packing slip & quantity as per scope of supply		V
Abbreviations used : R- Review, W- Witness, V- Verify					

		BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD -32		Annexure-VII to PY55416 Rev 00 Page 09 of 11	
MINIMUM INSPECTION REQUIREMENT					
POWER SOCKET					Action By BHEL
1. DOCUMENT			Purchase order, Technical specification of BHEL, BHEL approved drawings/documents/Datasheet,QAP, Consumables certificates and any special requirements		R
2. Materials		Sheet, PVC cables/ wire, Channels & Frame, Brought out items etc.	Material test certificates, Inspection authority stamp correlation with material & TPI stamp verification, manufacturer guarantee certificate and routine test report		R
			If any specific / additional test requirements		R
3. In process inspection		Fabrication of socket	Dimension, Straightness, Drilling and weld quality		R
		Assembly of Socket	Dimension, Straightness, opening, Door clearance , mounting arrangement		R
		Painting of Socket and finishing	Surface treatment, paint quality, finish colour, shade and thickness		R
		Wiring	Arrangement of terminal blocks, wiring continuity, clamping, Ferrules terminals and Tag provision		R
5. Final inspection		Physical check	Socket rating, internal arrangement of components & wiring, mounting arrangement , cable entries, IP class and voltage rating vs approved datasheet.		W
			Name plate for correct entries of Model No. Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc.		W
			Cable entry and terminal block size and type of cable gland used		W
			Make of Socket, sub component and accessories		W
			Paint quality, finish colour, shade and thickness		W
		Functional check	Circuit functional check, continuity check.		W
			Plug & Socket interlocking check		W
		Document check	Material test certificate for all type of materials used, Painting quality test certificate, IP class test certificate, BIS License copy if applicable, Test certificates from CIMFR or equivalent laboratory certified by NABL & approved from PESO/DGMS for flame proof item, Guarantee/Warranty certificate.		R
			Routine test certificates like HV Test, Insulation measurement before & after HV test, Secondary current injection test if applicable.		W
6. Packing & dispatch		Packing	Soundness of packing, preservation & documentation as per specification.		V
			Marking of packing for easy identification		V
		Dispatch	Format of Packing slip & quantity as per scope of supply		V
Abbreviations used : R- Review, W- Witness, V- Verify					



MINIMUM INSPECTION REQUIREMENT

POLES			Action By BHEL
1. DOCUMENT		Purchase order, Technical specification of BHEL, BHEL approved drawings/documents/Datasheet,QAP, Consumables certificates and any special requirements	R
2. Materials	Pipe	Material test certificates, Inspection authority stamp correlation with material & TPI stamp verification, manufacturer guarantee certificate and routine test report	R
		If any specific / additional test requirements	R
3. In process inspection	Fabrication of Pole	Dimension, Straightness, Drilling and weld quality	R
	Assembly of Pole	Dimension, Straightness, Rigidity of different section joint	R
	Painting of Pole and finishing	Surface treatment, paint quality, finish colour, shade and thickness	R
5. Final inspection	Physical check	Dimension, assemble Check of different components, finishing	W
		Sub component like JB/Marshalling box Classification details (i.e. FLP/WP etc.) IP class and voltage range etc.	W
		Marshalling Box/JB Cable entry and terminal block size and type of cable gland used	W
		Make of JB/Marshalling box, sub component and accessories	W
		Paint quality, finish colour, shade and thickness	W
	Document check	Material test certificate for all type of materials used, routine test certificate, Painting quality test certificate. For JB/ Marshalling Box - IP class test certificate, BIS License copy if applicable, Test certificates from CIMFR or equivalent laboratory certified by NABL & approved from PESO/DGMS for flame proof item, Guarantee/Warranty certificate.	R
		For JB/Marshalling box:- Routine test certificates like HV Test, Insulation measurement before & after HV test, Secondary current injection test, if applicable	R
6. Packing & dispatch	Packing	Soundness of packing, preservation & documentation as per specification.	V
		Marking of packing for easy identification	V
	Dispatch	Format of Packing slip & quantity as per scope of supply	V
Abbreviations used : R- Review, W- Witness, V- Verify			

		BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD -32		Annexure-VII to PY55416 Rev 00 Page 11 of 11	
MINIMUM INSPECTION REQUIREMENT					
MISC. ITEM					Action By BHEL
1. DOCUMENT			Purchase order, Technical specification of BHEL, BHEL approved drawings/documents/Datasheet,QAP, Consumables certificates and any special requirements		R
2. Materials			Material test certificates, Inspection authority stamp correlation with material & TPI stamp verification, manufacturer guarantee certificate and routine test report		R
			If any specific / additional test requirements		R
3. In process inspection		Fabrication	Dimension, Straightness, Drilling and weld quality		R
		Assembly	Dimension, Straightness, opening, Door clearance , mounting arrangement		R
		Painting and finishing	Surface treatment, paint quality, finish colour, shade and thickness		R
		Wiring	Arrangement of terminal blocks, wiring continuity, clamping, Ferrules terminals and Tag provision		R
5. Final inspection		Physical check	Rating, internal arrangement of components & wiring, mounting arrangement , cable entries, IP class and voltage rating vs approved datasheet.		W
			Name plate for correct entries of Model No. Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc.		W
			Cable entry and terminal block size and type of cable gland used		W
			Make of main item, sub component and accessories		W
			Paint quality, finish colour, shade and thickness		W
		Functional check	Circuit functional check, continuity check.		W
		Document check	Material test certificate for all type of materials used, Painting quality test certificate, IP class test certificate, BIS License copy if applicable, Test certificates from CIMFR or equivalent laboratory certified by NABL & approved from PESO/DGMS for flame proof item, Guarantee/Warranty certificate.		R
			Routine test certificates like HV Test, Insulation measurement before & after HV test, Secondary current injection test if applicable.		W
6. Packing & dispatch		Packing	Soundness of packing, preservation & documentation as per specification.		V
			Marking of packing for easy identification		V
		Dispatch	Format of Packing slip & quantity as per scope of supply		V
Abbreviations used : R- Review, W- Witness, V- Verify					

ESP-001-2A Rev.00		PROJECT ENGINEERING & SYSTEMS DIVISION (Technical Specification For Illumination Items Package)		Std. / Doc. Number	
				Annexure-VIII to PY55416	
				Rev. No.	00
				Sheet 01 of 07	

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ANNEXURE – VIII

(INSPECTION CHECK LIST FORMAT)

		BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD -32								Annexure-VIII to PY55416 Rev 00 Page 02 of 07	
INSPECTION CHECK LIST FOR LIGHTING FIXTURE											
BHEL PO NO :											
Item PO.SL.No.											
PROJECT											
Description of Item											
Qty											
Referred BHEL Spec. NO.											
Referred Approved datasheet No.											
Name of the inspector											
Date of Inspection											
	Points to check during Inspection in addition to applicable QAP/ IS requirements :						Inspector remarks			Inspector signature/date	
I	Physical Checks :										
1	Check availability of applicable spec. & approved datasheet (Approved as Code 1 or Code-2 by BHEL). Please note that item not to be inspected without stamped and signed approved datasheet from BHEL.										
2	Physical check of Fixture along with all components like internal & external reflector, Gasket, wire guard, Glass/acrylic cover, mounting arrangement , cable entries, IP class, and voltage range etc. as per approved datasheet. Check the lamp holder type(i.e. Bi pin or screw type) is as per approved datasheet and suitable for lamp.										
3	Check the paint shed of fixture including accessories and quality of painting as per approved datasheet.										
4	Physical check of Material composition, dimension and thickness of enclosure, reflector etc. as mentioned in the datasheet. Also check finishing of end product.										
5	Physical check that accessories like cable glands are of approved make as per sub vendor list or BHEL. Spec.										
6	Physical verification of name plate for correct entries of Model No. Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc.										
7	Suitability check of lamp for proper fitment to the fixture.										
8	Quantity check for loose accessories to be supplied along with fixture as per supply BOQ listed in datasheet.										
9	Check the size and type of Cable gland as per approved datasheet if applicable (i.e. FLP or safe area DC Brass suitable for 3Cx2.5 sqmm cu. Armoured cable)										
10	Suitability check of Cable gland with fixture cable entry if applicable										
11	Physical Check of DC to AC convertor along with it's enclosure for proper fitment and internal wiring(Applicable for DC Fixture with CFL Lamp)										
12	Suitability check of cable gland with Converter enclosure cable entry (Applicable for DC Fixture with CFL Lamp)										
13	Physical Check of Control gear box for proper type suitable for fixture (Applicable for Non integral type fixture)										
14	Suitability check of cable gland with CG box cable entry (Applicable for Non integral type fixture)										
15	Physical check of blanking plug (Aluminum) for proper fitment with Fixture enclosure, CG box cable entry if applicable.										
16	Physical check of terminal block for proper size suitable for terminating of two nos. 2.5 sqmm cu. Wire.										
17	Review of test certificate from CIMFR or equivalent laboratory, certified by NABL & approved from PESO/DGMS(details as mentioned in approved data sheet), for fixture, CG box and enclosure of converter as applicable(Applicable for Flame proof items only).										
18	Review of test certification for weather proof fixture, CG box and enclosure of converter as applicable(Applicable for weather proof items only with minimum IP52 protection).										
19	Physical verification of packing slip (For all line items including accessories to be supplied in loose.).										
20	Physical check of packing of all items including accessories are as per packing method mentioned in the illumination spec.										
II	Functional checks :										
1	Functional check on suitability of fixture and lamp for rated Supply voltage along with accessories like ballast CG box etc. .										
2	Functional check on suitability of DC convertor for rated DC voltage of project and lamp .(Applicable for DC Fixture with CFL Lamp)										

		BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD -32								Annexure-VIII to PY55416 Rev 00 Page 03 of 07	
INSPECTION CHECK LIST FOR LIGHTING PANEL											
BHEL PO NO :											
Item PO.SL.No.											
PROJECT											
Description of Item											
Qty											
Referred BHEL Spec. NO.											
Referred Approved datasheet No.											
Name of the inspector											
Date of Inspection											
Points to check during inspection in addition to applicable QAP/ IS requirements :						Inspector remarks			Inspector signature/date		
I		Physical Checks :									
1		Check availability of applicable spec. & approved datasheet (Approved as Code 1 or Code-2 by BHEL). Please note that item not to be inspected without stamped and signed approved datasheet from BHEL.									
2		Physical check of lighting panels alongwith all components like MCB, RCCB, Bus bars, external canopy(if applicable), Gasket etc. as per approved datasheet.									
3		Physical check of mounting arrangement , cable entries, IP class, and voltage range, etc. as per approved datasheet.									
4		Physical check of Material composition, dimension and thickness of enclosure, canopy(if applicable) etc. as mentioned in the datasheet. Also check finishing of end product.									
5		Check that all components are leveled and outgoing and incoming circuits are numbered at terminal blocks.									
6		Check the paint shed of Lighting panel including accessories and quality of painting as per approved datasheet.									
7		Physical verification of availability of name plate for correct entries of Model No. manufacturer name, Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc.									
8		Physical verification of availability of circuit diagram inside the front cover as per internal wiring of lighting panel. Also check that caution plate is available on front cover.									
9		Physical verification of availability of external canopy for outdoor type panel and its assymble check with lighting panel.(Applicable for outdoor type panel only).									
10		Quantity check for loose accessories to be supplied along with lighting panel as per supply BOQ listed in datasheet.									
11		Check the make, size and type of Cable gland (i.e. FLP, Double compression brass)as per approved datasheet. Please note Cable gland shall be of approved make as per sub vendor list or as mentioned in the Illumination spec.									
12		Suitability check of Cable gland with lighting panel cable entry									
13		Physical check of Make, type & rating of MCB/MCCB/RCCB etc. as per approved datasheet. Please note MCB/RCCB/MCCB etc. shall be of approved make as per sub vendor list or as mentioned in the Illumination spec.									
14		Physical check of blanking plug (Aluminum) for proper fitment with lighting panel cable entry.									
15		Physical check of Make, type & size of terminal block as per approved datasheet. Please note terminal block shall be of approved make as per sub vendor list or as mentioned in the Illumination spec.									
16		Review of test certificate from CIMFR or equivalent laboratory certified by NABL & approved from PESO/DGMS(details as mentioned in approved data sheet) (Applicable for Flame proof items only).									
17		Review of IP class test certification (Applicable for item with minimum IP42 and higher protection).									
18		Physical verification of packing slip (For all line items including accessories to be supplied in loose.).									
19		Physical check of packing of all items including accessories are as per packing method mentioned in the illumination spec.									

		BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD -32								Annexure-VIII to PY55416 Rev 00 Page 04 of 07	
INSPECTION CHECK LIST FOR POWER SOCKET AND RECEPTACLE											
BHEL PO NO :											
Item PO.SL.No.											
PROJECT											
Description of Item											
Qty											
Referred BHEL Spec. NO.											
Referred Approved datasheet No.											
Name of the inspector											
Date of Inspection											
Points to check during Inspection in addition to applicable QAP/IS requirements :						Inspector remarks				Inspector signature/date	
I		Physical Checks :									
1		Check availability of applicable spec. & approved datasheet (Approved as Code 1 or Code-2 by BHEL). Please note that item not to be inspected without stamped and signed approved datasheet from BHEL.									
2		Physical check of Power sockets along with all components like MCB, Plug assembly, external canopy(if applicable), Gasket etc. as per approved datasheet.									
3		Physical check of mounting arrangement , cable entries, IP class, and voltage range, etc. as per approved datasheet.									
4		Physical check of Material composition, dimension and thickness of enclosure, canopy(if applicable) etc. as mentioned in the datasheet. Also check finishing of end product.									
5		Check the paint shed of Socket/Receptacle including accessories and quality of painting as per approved datasheet.									
6		Physical verification of availability of name plate for correct entries of Model No. manufacturer name, Type, Classification details (i.e. FLP/WP etc.) IP class and voltage /Current rating etc. as per spec.									
7		Physical verification of availability of external canopy for outdoor type Socket/Receptacle (If asked in Datasheet) and its assembly check with Socket enclosure.(Applicable for outdoor type Socket/Receptacle only).									
8		Quantity check for loose accessories to be supplied along with Socket/Receptacle as per supply BOQ listed in datasheet.									
9		Check the make, size and type of Cable gland (i.e. FLP, Double compression brass)as per approved datasheet. Please note that Cable gland shall be of approved make as per sub vendor list or as mentioned in the vendor list/Illumination spec.									
10		Suitability check of Cable gland with Socket/Receptacle cable entry for proper fitment.									
11		Check interlocking arrangement of plug & socket (If asked in the data sheet).									
12		Physical check of blanking plug (Aluminum) for proper fitment with Socket/receptacle cable entry.									
13		Physical check of size of terminal block as per approved datasheet.									
14		Review of test certificate from CIMFR or equivalent laboratory certified by NABL & approved from PESO/DGMS (details as mentioned in approved data sheet) (Applicable for Flame proof items only).									
15		Review of IP class test certification for weather proof outdoor type Socket/Receptacle(Applicable for weather proof items only with minimum IP52 protection).									
16		Physical verification of packing slip (For all line items including accessories to be supplied in loose.).									
17		Physical check of packing of all items including accessories are as per packing method mentioned in the illumination spec.									

		BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD -32								Annexure-VIII to PY55416 Rev 00 Page 05 of 07	
INSPECTION CHECK LIST FOR LIGHTING POLE											
BHEL PO NO :											
Item PO.SL.No.											
PROJECT											
Description of Item											
Qty											
Referred BHEL Spec. NO.											
Referred Approved datasheet No.											
Name of the inspector											
Date of Inspection											
Points to check during Inspection in addition to applicable QAP/ IS requirements :						Inspector remarks			Inspector signature/date		
I	Physical Checks :										
1	Check availability of applicable spec. & approved datasheet (Approved as Code 1 or Code-2 by BHEL). Please note that item not to be inspected without stamped and signed approved datasheet from BHEL.										
2	Physical check of Poles along with all components like GI Pipe, Marshalling/Junction Box, arm, Swan neck, reducer, coupler etc. as per approved datasheet.										
3	Physical check of mounting arrangement , cable entries, IP class of marshalling /Junction box (for Street/Flood lighting pole) as per approved datasheet.										
4	Physical check of Material composition, dimension and thickness of different section of poles, accessories (as applicable) etc. as mentioned in the datasheet. Also check finishing of end product.										
	Physical check of availability of cable entry holes at different locations in the poles as per approved data sheet. Also check the size of holes for their suitability of required usage.										
5	Check the painting of poles and Marshalling box/ junction box including canopy(if applicable) and quality of painting as per approved datasheet or Illumination spec.										
6	Physical verification of availability of name plate in the Marshalling box/Junction box for correct entries of Model No. manufacturer name, Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc (Applicable for street & Flood lighting poles)										
7	Physical verification of availability of external canopy for marshalling box/ JB (if asked in data sheet)(Applicable for street & Flood lighting poles).										
8	Quantity check for loose accessories to be supplied along with Poles as per supply BOQ listed in datasheet.										
9	Check the make, size and type of Cable gland (i.e. FLP, Double compression brass) to be supplied along with marshalling box/Junction box as per approved datasheet(Applicable for street & Flood lighting poles). Please note Cable gland shall be of approved make as per sub vendor list or as mentioned in the Illumination spec.										
10	Suitability check of Cable gland with cable entries at Marshalling/Junction box (Applicable for street & Flood lighting poles).										
11	Physical check of blanking plug (Aluminum) for proper fitment with Marshalling/Junction box cable entry (Applicable for street & Flood lighting poles).										
12	Physical check of Make, type & size of terminal block in the marshalling/Junction box as per approved datasheet (Applicable for street & Flood lighting poles).Please note terminal block shall be of approved make as per sub vendor list or as mentioned in the Illumination spec.										
13	Review of test certificate from CIMFR or equivalent laboratory certified by NABL & approved from PESO/DGMS (details as mentioned in approved data sheet) (Applicable for Flame proof items only).										
14	Review of test certification for weather proof Marshalling/ Junction box (Applicable for street & Flood lighting poles).										
15	Physical verification of packing slip (For all line items including accessories to be supplied in loose.).										
16	Physical check of packing of all items including accessories are as per packing method mentioned in the illumination spec.										
II	Assembly checks :										
1	Assemble the different part of poles and check for alignment and suitability of each parts of pole as per approved datasheet.										
2	Check for suitability of fitment different type of reducer (to be supplied against different type of fixture) to lighting pole Swan neck end (reducer 50/20). (Applicable for 2M, 3.75 & 4.75M pole with swan neck).										

		BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD -32							Annexure-VIII to PY55416 Rev 00 Page 06 of 07	
INSPECTION CHECK LIST FOR MISC. ITEMS										
BHEL PO NO :										
Item PO.SL.No.										
PROJECT										
Description of Item										
Qty										
Referred BHEL Spec. NO.										
Referred Approved datasheet No.										
Name of the inspector										
Date of Inspection										
	Points to check during inspection in addition to applicable QAP/ IS requirements :					Inspector remarks				Inspector signature/date
I	Physical Checks :									
1	Check availability of applicable spec. & approved datasheet (Approved as Code 1 or Code-2 by BHEL).									
2	Physical check the items alongwith all components for technical compatibility as per approved datasheet and Illumination spec.									
3	Physical check of Material composition, thickness, dimension, shape etc. as mentioned in the datasheet. Also check finishing of end product.									
4	Check the paint shed of items (if applicable) and quality of painting as per approved datasheet.									
5	Physical verification of availability of name plate for correct entries of Model No. manufacturer name, Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc (If applicable).									
6	Suitability check of all sub component of the item (If applicable).									
7	Quantity check for loose accessories to be supplied along with the item as per supply BOQ listed in datasheet.									
8	Check the make, size and type of Cable gland (i.e. FLP, Double compression brass) if supplied as per approved datasheet. Please note Cable gland shall be of approved make as per sub vendor list or as mentioned in the Illumination spec.									
9	Suitability check of Cable gland with cable entries of equipment (If applicable).									
10	Physical check of Make, type & size of terminal block as per approved datasheet. Please note terminal block shall be of approved make as per sub vendor list or as mentioned in the Illumination spec.									
11	Review of test certificate from CIMFR or equivalent laboratory certified by NABL & approved from PESO/DGMS(details as mentioned in approved data sheet) (Applicable for Flame proof items only).									
12	Review of test certification for weather proof (Applicable for weather proof items only with minimum IP52 protection).									
13	Physical verification of packing slip (For all line items including accessories to be supplied in loose.).									
14	Physical check of packing of all items including accessories are as per packing method mentioned in the illumination spec.									
II	Functional checks :									
1	Functional check to be carried out on items like 24V Module & Hand lamp, Remote Emergency light etc. to ascertain their suitability of intend use.									
II	Assembly checks :									
1	Assembly check to be carried out on items like METSEC channel to ascertain the alignment and suitability of different component/accessories for intend use.									

		BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD -32								Annexure-VIII to PY55416 Rev 00 Page 07 of 07	
INSPECTION CHECK LIST FOR JUNCTION BOX											
BHEL PO NO :											
Item PO.SL.No.											
PROJECT											
Description of Item											
Qty											
Referred BHEL Spec. NO.											
Referred Approved datasheet No.											
Name of the inspector											
Date of Inspection											
	Points to check during inspection in addition to applicable QAP/ IS requirements :						Inspector remarks			Inspector signature/date	
I	Physical Checks :										
1	Check availability of applicable spec. & approved datasheet (Approved as Code 1 or Code-2 by BHEL). Please note that item not to be inspected without stamped and signed approved datasheet from BHEL.										
2	Physical check of Junction box along with all components like terminal blocks, external canopy(if applicable), Gasket etc. as per approved datasheet.										
3	Physical check of mounting arrangement , cable entries, IP class, and voltage range, etc. as per approved datasheet.										
4	Physical check of Material composition, dimension and thickness of enclosure, canopy(if applicable) etc. as mentioned in the datasheet. Also check finishing of end product.										
5	Check the paint shed of junction box including canopy(if applicable) and quality of painting as per approved datasheet.										
6	Physical verification of availability of name plate for correct entries of Model No. manufacturer name, Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc as per approved datasheet.										
7	Physical verification of availability of external canopy for outdoor type JB and its assemble check with JB(Applicable for outdoor type JB only).										
8	Quantity check for loose accessories to be supplied along with lighting JB as per supply BOQ listed in datasheet.										
9	Check the make, size and type of Cable gland (i.e. FLP, Double compression brass)as per approved datasheet. Please note Cable gland shall be of approved make as per sub vendor list or as mentioned in the Illumination spec.										
10	Suitability check of Cable gland with cable entries at Junction box.										
11	Physical check of blanking plug (Aluminum) for proper fitment with Junction box cable entry.										
12	Physical check of Make, type & size of terminal block as per approved datasheet. Please note terminal block shall be of approved make as per sub vendor list or as mentioned in the Illumination spec.										
13	Review of test certificate from CIMFR or equivalent laboratory certified by NABL & approved from PESO/DGMS(details as mentioned in approved data sheet) (Applicable for Flame proof items only).										
14	Review of test certification for weather proof outdoor type JB (Applicable for weather proof items only with minimum IP52 protection).										
15	Physical verification of packing slip (For all line items including accessories to be supplied in loose.).										
16	Physical check of packing of all items including accessories are as per packing method mentioned in the illumination spec.										

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				Rev. No.	00
				Sheet 1 of 2	

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ANNEXURE – IX

(TYPICAL PACKING SLIP FORMAT)

	BHARAT HEAVY ELECTRICALS LIMITED HYDERABAD -32					Annexure-IX to PY55416	
						Rev 00	
	PACKING SLIP FORMAT						
Project Name							
PO No. & Date :-							
Consignment No. & Date :-							
1	2	3	4	5	6	7	8
PO SL NO	ITEM DESCRIPTION	TYPE OF PACKING	Identification No. Of the Packing	Qty/pack	Total Qty supplied	NO Of Packet	Remarks
SUMMERY							
NO. OF CARTON BOX							
NO. OF GUNNY BAG							
NO. OF BUNDLE OF POLES/CONDUIT							
NOTE:							
1. In packing detail at column 3 write type of the Packing used (i.e.Cartoon box, Gunney Bag, Bundle.etc.).							
2. In packing detail at column 4 write identification nos. of the Packing (i.e. PO NO/1,2,3....etc.).							
3. If item supplied as loose write only Identification no. assign to whole lot at column - 4 and write"loose supplied" in remarks column.							
4. Write qty of item packed in a Packet at column 5.							Vendor's sign with stamp
5. Write total qty. of item supplied at column 6.							
6. Write total no. of packet used for packing the supplied item at column 7.							
7. Write any special remarks in the remarks column at 8 (i.e. Acesories of item etc.)							

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				Rev. No.	00
				Sheet 1 of 4	

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ANNEXURE – X

(GUIDE LINES FOR PREPARATION OF QUALITY ASSURANCE PLAN)

TD-201 Rev No. 00 Form No.	 HYDERABAD	PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	ANNEXURE-X to PY 55416 Rev No. 00 Page 2 of 4
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company. QAP GUIDELINES & FORMAT (ANNEXURE-X TO SPECIFICATION PY 55416) The QAP format and Guidelines for filling up the format shall be used by vendor for preparation and submission of QAP after order placement.			

Form No.	 HYDERABAD	PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	ANNEXURE-XI to PY 55416
	Rev No. 00		
	Page 3 of 4		
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED . It must not be used directly or indirectly in any way detrimental to the interest of the company.		<u>GUIDELINES TO VENDORS FOR PREPARATION OF QUALITY ASSURANCE PLAN</u> - QAP shall be made in landscape mode on A4 size paper as per the format enclosed. Font size shall be minimum 10. - Each page of QAP shall contain the following information. - Vendor's name & address. - Customer: BHEL, Hyderabad. - Project. - BHEL Product Standard Number/revision number as referred in P.O. - BHEL Purchase Order Number & Date. - Product as per P.O. description. - QAP Number (unique and shall not repeat)/revision number/date. - Page number and number of pages - QAP shall contain four parts / stages as follows. - Raw materials and bought out items. - In process Control / Inspection. - Final assembly, Inspection & Testing. - Painting, preservation & packing. - Under 'Component', indicate name of the component (say casing, rotor, pressure gauge, etc). - Under 'Characteristics', indicate appropriately (say chemical analysis, mechanical properties, NDT (UT,DP etc.), hydrostatic test, calibration check etc.) - Under 'Class', indicate minor, major or critical depending on the importance of characteristic. - Under 'Type of check', indicate appropriately (say chemical, mechanical, UT, DP etc.) - Under 'Quantum of check', indicate appropriately (say 100%, 10%, sample, per melt, per heat, all pieces etc.) - Under 'Reference document' and 'Acceptance norms', appropriate National & International standards, BHEL standards, approved drawing references etc. should be indicated. It is not correct to mention as "Vendor's internal standards or Vendor's standard practice etc.". If vendors' internal standards are referred, same shall be in line with BHEL Spec. indicated in the P.O. These may require review & approval by our Engineering dept. - Under 'Format of record', indicate appropriately supplier's test certificate, calibration certificate, lab report, inspection report etc.	
		Ref. Doc	

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11. Please refer 'Agency' in QAP format.
Under P: Perform, W: Witness, V: Verify
Indicate against each characteristic 1: (BHEL CQS/Nominated inspection agency), OR
2: (Vendor / Sub vendor)
Note: Performing agency is normally vendor or his sub vendor (Legend 2). Where
witness points are indicated in specification, P.O., Drawing etc., for such operations,
under Witness (W) column use 1. Under 'Verify' column, use code 1.
12. Under 'D' please put (☐ Tick) against each characteristic where vendor proposes to
submit test certificate/report etc. OR as required as per BHEL Specification.
13. Vendor's signature & stamp should be available on each page of QAP.
14. Vendor should read the BHEL Product Standard thoroughly and QAP should be made
only inline and relevant to the Specification & Approved Drawings.
15. The following operations/characteristics/check points may be included (AS
APPROPRIATE)
 - a) Visual check
 - b) Dimensional check
 - c) Mechanical and Chemical properties.
 - d) Surface preparation before painting (by chemical cleaning, sand blasting, shot blasting
etc. as the case may be.)
 - e) Painting check for shade, Dry Film Thickness (DFT), Adhesion/ peel off test etc.
 - f) Check for correctness for all components mounted as per General arrangement
Drawing, Bill Of Materials (BOM), etc. for range, rating, make, color, size, location
as per GA, quantity, label description including tag nos., annunciator facia, loose
components, accessories, spares etc.
 - g) Verification of test certificate for protection class for the enclosures.
 - h) Mechanical functioning of switches.
 - i) Continuity of earthing and provision of earth points.
 - j) Colour coding of wiring, size, tightness & dressing of wiring.
 - k) Review of test certificates of assembled items, raw materials, internal test reports etc.
 - l) Witness of functional checks, which may include mechanical run & electrical run,
H.V.test, IR measurement, Electrical and Mechanical tests etc.
 - m) PQR, WPS, Welder Qualification Record, welding records (fit up, DP) etc.
 - n) Material identification (for punch marks of serial numbers, Heat No, Melt No,
Inspector's stamp etc.)
 - o) Hydraulic Pressure Test, Pneumatic Pressure Test, Liquid Penetration Examination and
other Non Destructive Tests.
 - p) Tests on Galvanised items (Visual, Hammer Test, Knife Test, Thickness, Pierce Test
(Copper sulphate test), Hydrogen evaluation test, Stripping test (for Mass of Zinc
coating)
 - q) All tests as per BHEL Product Standard & approved drawings including Type tests and
Routine tests on individual items and on System as a whole.
 - r) Packing and Preservation.

16. **QAP Format enclosed.**

VENDOR'S NAME & ADDRESS:			MANUFACTURING QUALITY PLAN						QP. NO.:				
			CUSTOMER: BHEL, HYDERABAD – 32.			BHEL P.O.NO.:			REV NO:		DATE:		
			PROJECT: PRODUCT:			P.O.DATE: BHEL SPEC:			REV:		PAGE 1 OF 1		
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
										P	W	V	
1.0	RAW MATERIALS & BOUGHT OUT ITEMS												
2.0	INPROCESS INSPECTION												
3.0	FINAL INSPECTION & TESTING												
4.0	PRESERVATION & PACKING												

VENDOR TO NOTE: THIS FORMAT IS IN MICROSOFT WORD. HEADER & FOOTER SHALL BE AVAILABLE IN EACH PAGE OF QP. QP SHALL BE IN LANDSCAPE & A4 SIZE ONLY. FONT SIZE SHALL BE MIN 10. VENDOR SHALL SIGN & STAMP IN EACH PAGE OF QP. LOI REF. & DATE ARE NOT ACCEPTABLE. P.O.NO. & DATE SHALL BE INDICATED. QP NO. SHOULD BE UNIQUE AND SHALL NOT REPEAT. ALL THE TESTS / CHECKS INDICATED IN THE BHEL SPEC. SHALL BE INDICATED IN THE QP.

LEGEND: P: PERFORM, W: WITNESS, V: VERIFICATION. INDICATE 1 FOR BHEL CQS (OR BHEL NOMINATED INSPECTION AGENCY) & 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W & V COLUMNS. * FOR ITEMS MARKED ✓ (TICK) IN COLUMN 'D', TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.	PREPARED BY	APPROVED BY	APPROVED BY
	VENDOR'S SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP