


Rev No. 00	Form No.  HYDERABAD	<b>PRODUCT STANDARD HYDERABAD</b>	<b>Annexure-II to PY55158</b> Rev No. 00 Page 1 of 6
<b>COPYRIGHT AND CONFIDENTIAL</b> 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.	<h1>ANNEXURE –II</h1> <h2>(ILLUMINATION BOM)</h2>		
Ref. Doc			

<b>Project:- ONGC-Hazira</b>		<b>ILLUMINATION BOQ Annexure-II to PY55158</b>		<b>REV00 Date:- 10.08.2015</b>	
<b>SITE CONDITION</b>					
1. Maximum ambient temperature :- 45.6 Degree Celsius					
2. Minimum ambient temperature :-4.4 Degree Celsius					
3. Design ambient temperature:- 50 Degree Celsius					
4. Relative humidity :- Max-70%, Min-18%, Average-60%					
5. Seismic Zone:- Zone III as per IS 1893					
6. Altitude above MSL :- 6.0m above Mean Sea level					
7.Site Location:- ONGC Limited-Hazira					
<b>LIST OF ITEMS FOR ILLUMINATION PACKAGE (MATERIAL CODE - PY9755158014)</b>					
<b>SL NO.</b>	<b>DESCRIPTION (FIXTURES / LAMPS / ACCESSORIES)</b>	<b>UNIT</b>	<b>QTY.</b>		
1	Industrial type Bulk head luminaire with die-cast aluminium LM6 body having stove enamelled finish, with prismatic front glass, wire guard, tropicalised gasket, lamp holder suitable for 10W CFL Lamp and 110V DC Supply. Fixture shall be supplied with suitable DC to AC Converter housed in a weather proof /Dust proof (IP55 Min.) Encloser/Junction Box of suitable size with necessary internal wiring. Junction box/encloser shall have terminal block, cable entries suitable for 3Cx2.5 sqmm cu. cable and shall be supplied with suitable DC Brass cable Gland.	Nos	135		
2	Recess mounted type down light with anodized aluminium reflector and toughened clear glass & lamp holder suitable for 18W CFL Lamp and 110V DC Supply. Fixture shall be supplied with suitable DC to AC Converter housed in a dust proof Encloser of suitable size with necessary internal wiring and terminal block. Encloser shall have mounting lugs suitable for wall/ceiling mounting.	Nos	38		
3	Industrial type Well glass luminaire with cast aluminium alloy mounting piece and sheet steel Al. canopy with stove enamell white inside and grey outside, reflector with heat resistant glass and wire gaurd suitable for 2X18W CFL lamp and 110V DC Supply. Fixture shall be complete with ballast, capacitor and Eyebolt, bracket, pole reduce for suitability of suspension/ceiling/pole mounting. Fixture shall be supplied with suitable DC to AC Converter housed in a weather proof /Dust proof (IP55 Min.) Encloser/Junction Box of suitable size with necessary internal wiring. Junction box/encloser shall have terminal block, cable entries suitable for 3Cx2.5 sqmm cu. cable and shall be supplied with suitable DC Brass cable Gland.	Nos	45		
4	Flame proof Well glass luminaire suitable for 2X18W CFL lamp & 110V DC supply. Fixture shall be suitable for Gas group IIA & IIB and Zone 1&2 and shall be complete with Ballast, capacitor and Eyebolt, bracket, pole reducer for suitability of suspension/ceiling/pole mounting. Fixture shall be supplied with suitable DC to AC Converter housed in a Flame proof CG Box/Junction Box of suitable size with necessary internal wiring. Junction box/encloser shall have terminal block, cable entries suitable for 3Cx2.5 sqmm cu. cable and shall be supplied with suitable Flame proof DC Brass cable Gland.	Nos	8		
5	Industrial type general purpose FTL luminaire suitable for 2X28W T5 Flourescent lamp with high efficiency electronic ballast, MS sheet steel housing(CRCA) and vitreous enamelled/Epoxy powder coated external reflector -Surface /suspension mounted through down conduit.	Nos	260		
6	Industrial corrosion resistant FTL luminaire suitable for 2X28W T5 Flourescent lamp with high efficiency electronic ballast, Polycarbonate body, polycarbonate cover and SS toggles (CGL Model no. T5PFC11228EB or equivalent) -Surface /suspension mounted through down conduit.	Nos	30		
7	Elegantly designed ultraslim light weight recessed mounted decorative mirror optics luminaire suitable for T5HO(High output)/T5HE (High efficiency) 4x14W T5 FTL lamp. Fixture housing made from CRCA MS white epoxy powder coated sheet and perforated CRCA MS panels separating the light source. Mirror assybmly comprises high efficiency bright anodised double parabolic aluminium reflectors and cross louvers for glare free operation. Fixture shall be complete with electronic ballast and power factor improvement capacitor etc.(CGL Model T5CQ12414EB or equivalent)	Nos	125		
8	Integral totally enclosed Industrial High bay fixture with spun aluminium enclosed reflector suitable for 400W HPMV Lamp (IP54 min.). Fixture shall be complete with necessary ballast, ignitor, power factor improvement capacitor etc.	Nos	50		
9	Integral totally enclosed Industrial Medium bay fixture with spun aluminium enclosed reflector suitable for 250W HPMV Lamp (IP54 min.).Fixture shall be complete with necessary ballast, ignitor, power factor improvement capacitor etc.	Nos	32		

10	Industrial type dust proof & vapour proof Integral Well glass luminaire made of die cast aluminium housing with stove enamelled, white inside and grey outside reflector, heat resistant clear toughened glass and galvanised wire gaurd. Fixture shall be suitable for 150W HPSV elliptical lamp and complete with necessary ballast, ignitor, power factor improvement capacitor etc. and eyebolt, bracket, pole reducer etc. for suitability of suspension/ceiling/pole mounting.(CGL Model SWV1715IH/WI or equivalent)	Nos	315
11	Industrial type dust proof & vapour proof Integral Well glass luminaire made of die cast aluminium housing with stove enamelled, white inside and grey outside reflector, heat resistant clear toughened glass and galvanised wire gaurd. Fixture shall be suitable for 125W HPMV elliptical lamp and complete with necessary ballast, ignitor, power factor improvement capacitor etc. and eyebolt, bracket, pole reducer etc. for suitability of suspension/ceiling/pole mounting. (CGL Model IWV1712IH/ES or equivalent).	Nos	230
12	Flame proof Integral Well glass luminaire suitable for 125W HPMV elliptical lamp and Gas group IIA&IIB and Zone 1&2 Fixture shall be complete with necessary ballast, ignitor, power factor improvement capacitor etc. and eyebolt, bracket, pole reducer etc. for suitability of suspension/ceiling/pole mounting. (CGL Model FWL1212IH/B or equivalent).	Nos	48
13	Street Light luminaire with single piece die cast aluminium body , electrochemically brightened and anodised/Glaskote finish aluminium reflector, heat resistant clear toughened front glass cover & Gasket etc. Fitting shall be fully wired complete with copper wound ballast, power factor improvement capacitor, ignitor etc. and shall be suitable for 150W HPSV tubular lamp.	Nos	140
14	Industrial weather proof heavy duty type narrow beam Non-integral Flood Light luminaire made of cast aluminium housing having brightened anodised aluminium reflector with heat resistant toughened front glass cover, neoprene gasket etc. suitable for 2x400W HPSV Tubular lamp. Fitting shall have provision for rotating in both horizontal & vertical plane and supplied with necessary control gear box etc.	Nos	12
15	10W CFL Lamps suitable for Item no. 1	Nos	150
16	18W CFL Lamps suitable for Item no. 2	Nos	50
17	18W CFL Lamps suitable for Item no. 3	Nos	60
18	18W CFL Lamps suitable for Item no. 4	Nos	10
19	28W T5 Fluorescent Lamp suitable for Item no. 5&6.	Nos	650
20	14W T5 FTL Lamp suitable for Item no. 7	Nos	600
21	125W HPMV Eliphtical Lamp suitable for Item no. 11 & 12	Nos	325
22	400W HPSV Tubular Lamp suitable for Item no. 14	Nos	50
23	400W HPMV Eliphtical Lamp suitable for Item no. 8	Nos	70
24	250W HPMV Eliphtical Lamp suitable for Item no. 9	Nos	45
25	150W HPSV Eliphtical lamp suitable for Item no. 10.	Nos	385
26	150W HPSV Tubular lamp suitable for Item no. 13	Nos	170
27	1200mm long 150 deg bend 50NB pipe with 2 nos suitable clamp with base, reducer/nipple etc.	Nos	110
28	2.5 meter pole with swan neck as per drg. in Annexure - 1	Nos	180
29	4.75 meter pole with swan neck as per drg. in Annexure - 1	Nos	75
30	9.5 meter tubular street lighting pole as per drg. in Annexure - 1	Nos	44
31	11 meter tubular Flood Lighting pole as per drg. in Annexure - 1	Nos	6
32	3000mm long 25mm GI conduit (Heavy duty)	Nos	3500
33	25 mm GI conduit bends	Nos	3500
34	25mm GI inspection bends	Nos	2500

35	25mm GI conduit couplers	Nos	11000
36	4 way conduit branching JB for 25mm GI conduit with flat cover	Nos	1200
37	3000mm long 25mm epoxy coated conduit	Nos	150
38	25 mm epoxy coated conduit bends	Nos	150
39	25mm epoxy coated inspection bends	Nos	150
40	25mm epoxy coated conduit couplers	Nos	300
41	4 way epoxy coated conduit branching JB for 25mm epoxy conduit with flat cover	Nos	100
42	Saddle with saddle bar suitable for 25mm dia conduit with 2nos of 1.5" deep screws along with rawl plug for saddle and 1 No of 1.5" deep screw along with rawl plug for saddle bar	Nos	30000
43	20mm electro galvanised steel stripped PVC coated Flexible conduit	m	700
44	25mm electro galvanised steel stripped PVC coated Flexible conduit	m	900
45	25/20 PVC reducer suitable for 25mm & 20mm Flexible conduit at sl. No. 34&35	Nos	1000
46	3000mm long 25mm PVC conduit	Nos	100
47	25mm PVC conduit bends	Nos	150
48	25mm PVC conduit couplers	Nos	300
49	4 way conduit branching JB for 25mm PVC conduit	Nos	125
50	3000mm long 50mm GI conduit	Nos	10
51	3000mm long 50mm PVC conduit	Nos	10
52	3000mm long 20 mm GI conduit (Heavy duty)	Nos	550
53	METSEC Channel 2.5M Piece	Nos	150
54	GI Clamps with washer, nut and bolt as per drg. in Annexure - 1 for suspension mounting METSEC & FTL Fixture (CL-I)	Nos	900
55	GI Clamps with washer, nut and bolt as per dwg in Annexure - 1 for wall & surface mounting FTL Fixture (CL-III)	Nos	120
56	Check nuts suitable for 20mm GI conduit	Nos	2900
57	6mm dia x 35mm long anchor bolt with nuts and washers - Hook/half ring type	Nos	1900
58	6mm dia x 35mm long anchor bolt with nuts and washers - Bolt type	Nos	4500
59	12.5mm dia x 50mm long anchor bolt with nuts and washers-Bolt type	Nos	1000
60	12.5mm dia x 50mm long anchor bolt with nuts and washers - Hook type	Nos	950
61	Rawl Plug with 1.5" deep screw	Nos	30000
62	S - Hook as per drawing in annexure-1	Nos	800
63	Rubber gromett (20mm)	Nos	750
64	Rubber gromett (25mm)	Nos	250
65	Galvanised steel chain	m	1500


66	Cable clamps with base and hardware(Suitable for 3C X 2.5sqmm Armoured Cable	Nos	25000
67	Cable clamps with base and hardware(Suitable for 4C X 35sqmm Al. Armoured Cable	Nos	8000
68	Double compression nickle plated brass cable glands 3/4" for safe area suitable for 3Cx2.5 sqmm cu. cable	Nos	100
69	Double compression nickle plated brass cable glands for safe area suitable for 4Cx35 sqmm Al. cable	Nos	25
70	FSB-2 Flush mounted switchboard with 2 nos 5A piano type switches and 1no. 5/15A socket with 15A piano type switch (modular type).Switch board shall have necessary conduit entries suitable for 25 sqmm PVC Conduit.	Nos	20
71	FSB-3 Flush mounted switchboard with 2 nos 5A piano type switches and 1no. 5/15A socket with 15A piano type switch (modular type).Switch board shall have necessary conduit entries suitable for 25 sqmm PVC Conduit.	Nos	10
72	5/15A, 230V, Flush mounted decorative type switch socket outlet. Socket outlet shall have necessary conduit entries suitable for 25 sqmm PVC Conduit.	Nos	35
73	20A, 230V,1 ph, Surface/Column mounted indoor type socket outlet with 20A MCB. Socket outlet shall have necessary conduit/cable knock out entries suitable for 3Cx2.5 sqmm Cu. cable.	Nos	50
74	Industrial metal clad type 20A, 240V receptacle with 20A MCB switch & Plug with IP55 protection(Outdoor Type). Socket outlet shall have necessary cable entries suitable for 3CX2.5 sqmm Cu. Cable for loop in/out facilities..	Nos	20
75	Flame proof type 20A, 240V receptacle with interlocked switch & Plug (Outdoor Type). Receptacle shall be suitable for Gas group IIA&IIB and Zone 1&2. Socket outlet shall have necessary cable entries suitable for 3CX2.5 sqmm Cu. Cable for loop in/out facilities..	Nos	5
76	63A TPN welding receptacles with interlocked switch & Plug for safe area with IP55 protection. Receptacle shall have necessary cable entries suitable for 4CX35 sqmm Al.. Cable for loop in/out facilities..	Nos	15
77	63A TPN welding receptacles with interlocked switch & Plug for safe area with IP55 protection (Outdoor type). Receptacle shall have necessary cable entries suitable for 4CX35 sqmm Al.. Cable for loop in/out facilities..	Nos	17
78	Flame proof type 63A, 415V, TPN receptacle with interlocked switch & Plug (Outdoor Type). Receptacle shall be suitable for Gas group IIA&IIB and Zone 1&2. Receptacle shall have necessary cable entries suitable for 4CX35 sqmm Al.. Cable for loop in/out facilities..	Nos	2
79	24V socket module with inbuilt 240/24V, 500VA two winding transformer. Socket module shall have IP55 protection and supplied with hand lamp and cable and shall be designed as per Clause D-XXV of Technical specification (PY55158) .	Nos	6
80	1Cx2.5sq.mm. Red colour 1.1kV PVC insulated Cu flexible wire	m	14000
81	1Cx2.5sq.mm. Yellow colour 1.1kV PVC insulated Cu flexible wire	m	9000
82	1Cx2.5sq.mm. Blue colour 1.1kV PVC insulated Cu flexible wire	m	9000
83	1Cx2.5sq.mm. Black colour 1.1kV PVC insulated Cu flexible wire	m	32000
84	1Cx2.5sq.mm. Green colour 1.1kV PVC insulated Cu flexible wire	m	32000
85	1Cx4.0 sq.mm. Red colour 1.1kV PVC insulated Cu flexible wire	m	100
86	1Cx4.0 sq.mm. Yellow colour 1.1kV PVC insulated Cu flexible wire	m	100
87	1Cx4.0 sq.mm. Blue colour 1.1kV PVC insulated Cu flexible wire	m	100

88	1Cx4.0 sq.mm. Black colour 1.1kV PVC insulated Cu flexible wire	m	300
89	1Cx4.0 sq.mm. Green colour 1.1kV PVC insulated Cu flexible wire	m	300
90	6 way AC Indoor type Lighting Panel (Safe area) with incommer 63A TPN RCBO & Outgoing 6 nos. 20A DP RCBO. Panel shall have cable entries suitable for 4CX35 sqmm Al. cable for incommerand 3Cx2.5sqmm Cu. Cable for Outgoing.	Nos	15
91	12 way AC Indoor type Lighting Panel (Safe area) with incommer 63A TPN RCBO & Outgoing 12nos. 20A DP RCBO. Panel shall have cable entries suitable for 4CX35 sqmm Al. cable for incommer and 3Cx2.5sqmm Cu. Cable for Outgoing.	Nos	12
92	18way AC Indoor type Lighting Panel (Safe area) with incommer 63A TPN RCBO & Outgoing 18 nos. 20A DP RCBO. Panel shall have cable entries suitable for 4CX35 sqmm Al. cable for incommer and 3Cx2.5sqmm Cu Cable for Outgoing.	Nos	3
93	6 way DC Indoor type Lighting Panel (Safe area) with incommer 63A DP MCB & Outgoing 6 nos. 10A DP MCB. Panel shall have cable entries suitable for 4CX16sqmm cu. cable for incommer and 3Cx2.5sqmm Cu. Cable for Outgoing.	Nos	9
94	6 way AC outdoor type Lighting Panel (Safe area) with incommer 63A TPN RCBO & Outgoing 6nos. 20A DP RCBO. Panel shall have cable entries suitable for 4CX35 sqmm Al. cable for incommer and 3Cx2.5sqmm Cu. Cable for Outgoing.	Nos	3
95	12 way AC outdoor type Lighting Panel (Safe area) with incommer 63A TPN RCBO & Outgoing 12nos. 20A DP RCBO. Panel shall have cable entries suitable for 4CX35 sqmm Al. cable for incommer and 3Cx2.5sqmm Cu. Cable for Outgoing.	Nos	2
96	18way AC outdoor type Lighting Panel (Safe area) with incommer 63A TPN RCBO & Outgoing 18 nos. 20A DP RCBO. Panel shall have cable entries suitable for 4CX35 sqmm Al. cable for incommer and 3Cx2.5sqmm Cu. Cable for Outgoing.	Nos	4
97	6 way DC outdoor type Lighting Panel (Safe area) with incommer 63A DP MCB & Outgoing 6 nos. 10A DP MCB. Panel shall have cable entries suitable for 4CX16 sqmm cu. cable for incommer and 3Cx2.5sqmm Cu. Cable for Outgoing.	Nos	3
98	200x150x80mm 4 way rectangular cast iron weather proof JB with 6 nos. 2 Pin TB suitable for 6 sqmm wire. JB shall have minimum IP-55 protection and cable entries suitable for 3Cx2.5sqmm Cu. Cable along with its DC Brass cable glands and PVC shroud.	Nos	750
99	4 way 250x200x100mm rectangular cast iron JB with TBs suitable for 4 nos. 50 sq.mm wire & 4 nos. 6sq.mm wire. JB shall have minimum IP-55 protection and cable entries two nos suitable for 4Cx35 sqmm Al. cable and two nos. suitable for 3Cx2.5 sqmm. cu. cable along with DC brass cable glands and PVC shroud.	Nos	100
100	4 way 250x200x100mm rectangular flame proof JB with TBs suitable for 4 nos. 50 sq.mm wire & 4 nos. 6sq.mm wire. JB shall be suitable for Gas group IIA&IIB and zone1 & 2 and shall have minimum IP-65 protection. Also JB shall have cable entries two nos suitable for 4Cx35 sqmm Al. cable and two nos. suitable for 3Cx2.5 sqmm. cu. cable along with Flame proof DC brass cable glands and PVC shroud.	Nos	8
101	4 way 200x150x80mm flame proof JB with 6 nos TBs suitable for . 6sq.mm wire. JB shall be suitable for Gas group IIA&IIB and zone1 & 2 and shall have minimum IP-65 protection. Also JB shall have cable entries suitable for 3Cx2.5 sqmm. cu. cable along with Flame proof DC brass cable glands and PVC shroud.	Nos	60
102	88mm dia GI 4 way Round JB with 3nos. TB suitable for 6sqmm wire & Flat cover. JB should have cable entries suitable for fitting with 25mm GI conduit.	Nos	400
103	88mm dia epoxy coated 4 way Round JB with 3nos. TB suitable for 6sqmm wire & Flat cover. JB should have cable entries suitable for fitting with 25mm epox coated conduit.	Nos	50
104	TPN, 4pole MCCB Box ( indoor type) with 63A TPN, 4pole MCCB.	Nos	3
105	3000mm long 25x3 sqmm Aluminium strip	Nos	130

**NOTE:**

1.) For bid evaluation, items against Sl. No. 1 to 105 above shall be considered on overall package basis.

2.) The quantities given above are subjected to variation based on the actual Illumination Layout Engineering/Detailed Engineering. Vendor has to quote unit prices and in case of change in quantities at a later stage, unit prices will prevail.

Rev No. 00	 <p>Form No.</p>	<p align="center"><b>PRODUCT STANDARD HYDERABAD</b></p>	Annexure-III to PY55158
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# ANNEXURE – III

## (UNPRICED PRICE SCHEDULE)

Ref. Doc


Project:- ONGC-Hazira		PRICE SCHEDULE Annexure-III to PY55158			REV00 Date:- 10.08.2015	
Enq. NO.:-						
Name of the Bidder:-						
Offer Ref. No.:-						
<b>A. NOTE:-</b>						
1. This format details the price schedule for the enquiry. Bidder shall fill up this format only. No other format will be entertained. 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. 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 not submitted in this format or any field is left blank, the offer will be liable for rejection. For discrepencies, if any, in the bid with respect to Quantity, Rates & Totals, etc., BHEL discretion shall be applicable.						
3. Vendor shall fill up prices of various items and submit to BHEL in separate sealed cover as part of commercial offer. The commercial bid shall be submitted as per commercial terms and conditions.						
4. For bid evaluation, items mentioned at C- Sl. No. 1 to 105 below shall be considered on overall package basis.						
5. Bidder to provide list of 2 years recommended O&M spares along with unit price of each item under Price Format Sl. No. D. These prices will not be considered for bid evaluation. BHEL reserves the right to order full/partial quantity of the 2 years recommended O & M spares along with the main equipment or separately or not at all. The bidder will keep their prices valid till execution of order or till 18 months from the date of P.O., whichever is later.						
<b>B. SUPPLY</b>						
SL NO.	DESCRIPTION OF ITEM	UNIT	QTY.	UNIT PRICE (RS.)	TOTAL PRICE (RS.)	QUOTED (YES/NO)
1	ILLUMINATION ITEMS PACKAGE (MATERIAL CODE -PY9755158014)	Set	1	NA		
<b>C. UNIT PRICES OF ILLUMINATION PACKAGE ITEMS</b>						
SL NO.	DESCRIPTION (FIXTURES / LAMPS / ACCESSORIES)	UNIT	QTY.	UNIT PRICE (RS.)	TOTAL PRICE (RS.)	QUOTED (YES/NO)
1	Industrial type Bulk head luminaire with die-cast aluminium LM6 body having stove enamelled finish, with prismatic front glass, wire guard, tropicalised gasket, lamp holder suitable for 10W CFL Lamp and 110V DC Supply. Fixture shall be supplied with suitable DC to AC Convertor housed in a weather proof /Dust proof (IP55 Min.) Encloser/Junction Box of suitable size with necessary internal wiring. Junction box/encloser shall have terminal block, cable entries suitable for 3Cx2.5 sqmm cu. cable and shall be supplied with suitable DC Brass cable Gland.	Nos	135			
2	Recess mounted type down light with anodized aluminium reflector and toughned clear glass & lamp holder suitable for 18W CFL Lamp and 110V DC Supply. Fixture shall be supplied with suitable DC to AC Convertor housed in a dust proof Encloser of suitable size with necessary internal wiring and terminal block. Encloser shall have mounting lugs suitable for wall/ceiling mounting.	Nos	38			
3	Industrial type Well glass luminaire with cast aluminium alloy mounting piece and sheet steel Al. canopy with stove enamell white inside and grey outside, reflector with heat resistant glass and wire gaurd suitable for 2X18W CFL lamp and 110V DC Supply. Fixture shall be complete with ballast, capacitor and Eyebolt, bracket, pole reduce for suitability of suspension/ceiling/pole mounting. Fixture shall be supplied with suitable DC to AC Convertor housed in a weather proof /Dust proof (IP55 Min.) Encloser/Junction Box of suitable size with necessary internal wiring. Junction box/encloser shall have terminal block, cable entries suitable for 3Cx2.5 sqmm cu. cable and shall be supplied with suitable DC Brass cable Gland.	Nos	45			
4	Flame proof Well glass luminaire suitable for 2X18W CFL lamp & 110V DC supply. Fixture shall be suitable for Gas group IIA & IIB and Zone 1&2 and shall be complete with Ballast, capacitor and Eyebolt, bracket, pole reducer for suitability of suspension/ceiling/pole mounting. Fixture shall be supplied with suitable DC to AC Convertor housed in a Flame proof CG Box/Junction Box of suitable size with necessary internal wiring. Junction box/encloser shall have terminal block, cable entries suitable for 3Cx2.5 sqmm cu. cable and shall be supplied with suitable Flame proof DC Brass cable Gland.	Nos	8			
5	Industrial type general purpose FTL luminaire suitable for 2X28W T5 Flourescent lamp with high efficiency electronic ballast, MS sheet steel housing(CRCA) and vitreous enamelled/Epoxy powder coated external reflector -Surface /suspension mounted through down conduit	Nos	260			
6	Industrial corrosion resistant FTL luminaire suitable for 2X28W T5 Flourescent lamp with high efficiency electronic ballast, Polycarbonate body, polycarbonate cover and SS toggles (CGL Model no. T5PFC11228EB or equivalent) -Surface /suspension mounted through down conduit.	Nos	30			

7	Elegantly designed ultraslim light weight recessed mounted decorative mirror optics luminaire suitable for T5HO(High output)/T5HE (High efficiency) 4x14W T5 FTL lamp. Fixture housing made from CRCA MS white epoxy powder coated sheet and perforated CRCA MS panels separating the light source. Mirror assembly comprises high efficiency bright anodised double parabolic aluminium reflectors and cross louvers for glare free operation. Fixture shall be complete with electronic ballast and power factor improvement capacitor etc.(CGL Model T5CQ12414EB or equivalent)	Nos	125			
8	Integral totally enclosed Industrial High bay fixture with spun aluminium enclosed reflector suitable for 400W HPMV Lamp (IP54 min.). Fixture shall be complete with necessary ballast, ignitor, power factor improvement capacitor etc.	Nos	50			
9	Integral totally enclosed Industrial Medium bay fixture with spun aluminium enclosed reflector suitable for 250W HPMV Lamp (IP54 min.). Fixture shall be complete with necessary ballast, ignitor, power factor improvement capacitor etc.	Nos	32			
10	Industrial type dust proof & vapour proof Integral Well glass luminaire made of die cast aluminium housing with stove enamelled, white inside and grey outside reflector, heat resistant clear toughened glass and galvanised wire guard. Fixture shall be suitable for 150W HPSV elliptical lamp and complete with necessary ballast, ignitor, power factor improvement capacitor etc. and eyebolt, bracket pole reducer etc. for suitability of suspension/ceiling/pole mounting.(CGL Model SWV1715IH/WI or equivalent)	Nos	315			
11	Industrial type dust proof & vapour proof Integral Well glass luminaire made of die cast aluminium housing with stove enamelled, white inside and grey outside reflector, heat resistant clear toughened glass and galvanised wire guard. Fixture shall be suitable for 125W HPMV elliptical lamp and complete with necessary ballast, ignitor, power factor improvement capacitor etc. and eyebolt, bracket pole reducer etc. for suitability of suspension/ceiling/pole mounting. (CGL Model IWV1712IH/ES or equivalent).	Nos	230			
12	Flame proof Integral Well glass luminaire suitable for 125W HPMV elliptical lamp and Gas group IIA&IIB and Zone 1&2 Fixture shall be complete with necessary ballast, ignitor, power factor improvement capacitor etc. and eyebolt, bracket, pole reducer etc. for suitability of suspension/ceiling/pole mounting. (CGL Model FWL1212IH/B or equivalent).	Nos	48			
13	Street Light luminaire with single piece die cast aluminium body , electrochemically brightened and anodised/Glaskote finish aluminium reflector, heat resistant clear toughened front glass cover & Gasket etc. Fitting shall be fully wired complete with copper wound ballast, power factor improvement capacitor, ignitor etc. and shall be suitable for 150W HPSV tubular lamp.	Nos	140			
14	Industrial weather proof heavy duty type narrow beam Non-integral Flood Light luminaire made of cast aluminium housing having brightened anodised aluminium reflector with heat resistant toughened front glass cover, neoprene gasket etc. suitable for 2x400W HPSV Tubular lamp. Fitting shall have provision for rotating in both horizontal & vertical plane and supplied with necessary control gear box etc.	Nos	12			
15	10W CFL Lamps suitable for Item no. 1	Nos	150			
16	18W CFL Lamps suitable for Item no. 2	Nos	50			
17	18W CFL Lamps suitable for Item no. 3	Nos	60			
18	18W CFL Lamps suitable for Item no. 4	Nos	10			
19	28W T5 Fluorescent Lamp suitable for Item no. 5&6.	Nos	650			
20	14W T5 FTL Lamp suitable for Item no. 7	Nos	600			
21	125W HPMV Elliptical Lamp suitable for Item no. 11 & 12	Nos	325			
22	400W HPSV Tubular Lamp suitable for Item no. 14	Nos	50			
23	400W HPMV Elliptical Lamp suitable for Item no. 8	Nos	70			
24	250W HPMV Elliptical Lamp suitable for Item no. 9	Nos	45			
25	150W HPSV Elliptical lamp suitable for Item no. 10.	Nos	385			
26	150W HPSV Tubular lamp suitable for Item no. 13	Nos	170			
27	1200mm long 150 deg bend 50NB pipe with 2 nos suitable clamp with base, reducer/nipple etc.	Nos	110			
28	2.5 meter pole with swan neck as per drg. in Annexure - 1	Nos	180			
29	4.75 meter pole with swan neck as per drg. in Annexure - 1	Nos	75			
30	9.5 meter tubular street lighting pole as per drg. in Annexure - 1	Nos	44			

31	11 meter tubular Flood Lighting pole as per drg. in Annexure - 1	Nos	6			
32	3000mm long 25mm GI conduit (Heavy duty)	Nos	3500			
33	25 mm GI conduit bends	Nos	3500			
34	25mm GI inspection bends	Nos	2500			
35	25mm GI conduit couplers	Nos	11000			
36	4 way conduit branching JB for 25mm GI conduit with flat cover	Nos	1200			
37	3000mm long 25mm epoxy coated conduit	Nos	150			
38	25 mm epoxy coated conduit bends	Nos	150			
39	25mm epoxy coated inspection bends	Nos	150			
40	25mm epoxy coated conduit couplers	Nos	300			
41	4 way epoxy coated conduit branching JB for 25mm epoxy conduit with flat cover	Nos	100			
42	Saddle with saddle bar suitable for 25mm dia conduit with 2nos of 1.5" deep screws along with rawl plug for saddle and 1 No of 1.5" deep screw along with rawl plug for saddle bar	Nos	30000			
43	20mm electro galvanised steel stripped PVC coated Flexible conduit	m	700			
44	25mm electro galvanised steel stripped PVC coated Flexible conduit	m	900			
45	25/20 PVC reducer suitable for 25mm & 20mm Flexible conduit at sl. No. 34&35	Nos	1000			
46	3000mm long 25mm PVC conduit	Nos	100			
47	25mm PVC conduit bends	Nos	150			
48	25mm PVC conduit couplers	Nos	300			
49	4 way conduit branching JB for 25mm PVC conduit	Nos	125			
50	3000mm long 50mm GI conduit	Nos	10			
51	3000mm long 50mm PVC conduit	Nos	10			
52	3000mm long 20 mm GI conduit (Heavy duty)	Nos	550			
53	METSEC Channel 2.5M Piece	Nos	150			
54	GI Clamps with washer, nut and bolt as per drg. in Annexure - 1 for suspension mounting METSEC & FTL Fixture (CL-I)	Nos	900			
55	GI Clamps with washer, nut and bolt as per dwg in Annexure - 1 for wall & surface mounting FTL Fixture (CL-III)	Nos	120			
56	Check nuts suitable for 20mm GI conduit	Nos	2900			
57	6mm dia x 35mm long anchor bolt with nuts and washers - Hook/half ring type	Nos	1900			

58	6mm dia x 35mm long anchor bolt with nuts and washers - Bolt type	Nos	4500			
59	12.5mm dia x 50mm long anchor bolt with nuts and washers-Bolt type	Nos	1000			
60	12.5mm dia x 50mm long anchor bolt with nuts and washers - Hook type	Nos	950			
61	Rawl Plug with 1.5" deep screw	Nos	30000			
62	S - Hook as per drawing in annexure-1	Nos	800			
63	Rubber gromett (20mm)	Nos	750			
64	Rubber gromett (25mm)	Nos	250			
65	Galvanised steel chain	m	1500			
66	Cable clamps with base and hardware(Suitable for 3C X 2.5sqmm Armoured Cable	Nos	25000			
67	Cable clamps with base and hardware(Suitable for 4C X 35sqmm Al. Armoured Cable	Nos	8000			
68	Double compression nickle plated brass cable glands 3/4" for safe area suitable for 3Cx2.5 sqmm cu. cable	Nos	100			
69	Double compression nickle plated brass cable glands for safe area suitable for 4Cx35 sqmm Al. cable	Nos	25			
70	FSB-2 Flush mounted switchboard with 2 nos 5A piano type switches and 1no. 5/15A socket with 15A piano type switch (modular type).Switch board shall have necessary conduit entries suitable for 25 sqmm PVC Conduit.	Nos	20			
71	FSB-3 Flush mounted switchboard with 2 nos 5A piano type switches and 1no. 5/15A socket with 15A piano type switch (modular type).Switch board shall have necessary conduit entries suitable for 25 sqmm PVC Conduit.	Nos	10			
72	5/15A, 230V, Flush mounted decorative type switch socket outlet. Socket outlet shall have necessary conduit entries suitable for 25 sqmm PVC Conduit.	Nos	35			
73	20A, 230V, 1 ph, Surface/Column mounted indoor type socket outlet with 20A MCB. Socket outlet shall have necessary conduit/cable knock out entries suitable for 3Cx2.5 sqmm Cu. cable.	Nos	50			
74	Industrial metal clad type 20A, 240V receptacle with 20A MCB switch & Plug with IP55 protection(Outdoor Type). Socket outlet shall have necessary cable entries suitable for 3CX2.5 sqmm Cu. Cable for loop in/out facilities..	Nos	20			
75	Flame proof type 20A, 240V receptacle with interlocked switch & Plug (Outdoor Type). Receptacle shall be suitable for Gas group IIA&IIB and Zone 1&2. Socket outlet shall have necessary cable entries suitable for 3CX2.5 sqmm Cu. Cable for loop in/out facilities..	Nos	5			
76	63A TPN welding receptacles with interlocked switch & Plug for safe area with IP55 protection. Receptacle shall have necessary cable entries suitable for 4CX35 sqmm Al.. Cable for loop in/out facilities..	Nos	15			
77	63A TPN welding receptacles with interlocked switch & Plug for safe area with IP55 protection (Outdoor type). Receptacle shall have necessary cable entries suitable for 4CX35 sqmm Al.. Cable for loop in/out facilities..	Nos	17			
78	Flame proof type 63A, 415V, TPN receptacle with interlocked switch & Plug (Outdoor Type). Receptacle shall be suitable for Gas group IIA&IIB and Zone 1&2. Receptacle shall have necessary cable entries suitable for 4CX35 sqmm Al.. Cable for loop in/out facilities..	Nos	2			
79	24V socket module with inbuilt 240/24V, 500VA two winding transformer. Socket module shall have IP55 protection and supplied with hand lamp and cable and shall be designed as per Clause D-XXV of Technical specification (PY55158) .	Nos	6			
80	1Cx2.5sq.mm. Red colour 1.1kV PVC insulated Cu flexible wire	m	14000			



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# ANNEXURE –IV

## (SUB VENDOR LIST)

Ref. Doc



**BHARAT HEAVY ELECTRICALS LIMITED**  
**HYDERABAD -32**

**Annexure-IV to PY55158**


**Rev 00**

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**SUB VENDOR LIST FOR ILLUMINATION PACKAGE**

**PROJECT : 1x51MW CCCCPP at ONGC, Hazira**

<b>S.NO</b>	<b>ITEM DESCRIPTION</b>	<b>VENDOR</b>
1	Lighting Fixture,Luminaire (For Safe area Applications)	Bajaj Electricals Limited, Philips,Crompton Greaves Limited
2	Lighting Fixture,Luminaire (Explosion Proof area Applications)	Bajaj Electricals Limited, Philips,Crompton Greaves Limited,Baliga Lighting Equipments (P) Ltd.
3	Lighting & Power Panel	Indo Asian Switchgear Ltd, MDS Switchgear Ltd, GE, Siemens, L&T, Hager, Schneider Electric India limited
4	Weather proof Double Compression Cable Glands	Comet , Power Engg., HMI, Flexpro Electricals Pvt. Ltd., Flame proof Equipments Pvt. Ltd., FCG Power Industries Pvt. Ltd., FCG FlameProof Control Gears Pvt Ltd, Prompt Engg. Works, United Agro Engg Pvt. Limited, Electromac Industries
5	Flexible wires	Thermo Cables Limited, Radiant cable Pvt Ltd Hyd, Techno Cables Pvt Ltd, APAR Industries limited, Finolex Cables Ltd.
6	Weatherproof Junction Box	Panam Controls, Flexpro Electricals Pvt Ltd, Prompt Engineering works Mumbai, Flameproof Equipments Pvt Ltd, FCG Flameproof Control Gears, Electromac Industries
7	Cable Lugs	Automatic Electric, Dowells, Electromac industries, Comet, Jenson
8	Metal clad Plug & sockets (Including Welding receptacles)	Bhartia Cutler Hammer, Best & Crompton, Schneider Electric India Ltd, RB (Ryrol Burn)
9	HRC Fuse/Base	GEC, Alstom, Siemens, L&T, HHElecon
10	Indicating Lamp / Fitting	Telemik, Siemens, L& T, RAS Controls
11	Terminal Block	Elmex, Tousha, Thermoplast, Connect Well
12	All Flameproof equipment/Items except lighting fixtures	FCG, Baliga, Flexproelectricals

Rev No. 00	 <p>Form No.</p>	<p align="center"><b>PRODUCT STANDARD HYDERABAD</b></p>	<p align="center"><b>Annexure-V to PY55158</b></p> <p align="center">Rev No. 00</p> <p align="center">Page 1 of 2</p>
<p align="center"><b>COPYRIGHT AND CONFIDENTIAL</b></p> <p>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.</p>	<p align="center"><b>ANNEXURE – V</b></p> <p align="center"><b>(DEVIATION FORMAT)</b></p>		
Ref. Doc			



**BHARAT HEAVY ELECTRICALS LIMITED  
HYDERABAD -32**

Annexure-V to PY55158

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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.:-**

<b>Sl.No</b>	<b>Item</b>	<b>Clause No. &amp; Spec. No</b>	<b>Description as per specification</b>	<b>Deviation taken</b>	<b>Nature of Deviation</b>	<b>REMARKS</b>


**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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<b>COPYRIGHT AND CONFIDENTIAL</b> 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.	<h1>ANNEXURE – VI</h1> <h2>(CHECK LIST OF BIDDER)</h2>		
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# ANNEXURE –VII


## (QUALITY SYSTEM, TESTING & INSPECTION REQUIREMENT)

Ref. Doc

TD-201 Rev No. 00	 HYDERABAD	<b>PRODUCT STANDARD          PROJECT ENGINEERING          HYDERABAD</b>	<b>Annexure-VII to          PY55158</b>
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<b><u>QUALITY SYSTEM, INSPECTION &amp; TESTING OF EQUIPMENT AT          MANUFACTURER'S PREMISES</u></b>			
<div style="display: flex; justify-content: space-between;"> <div data-bbox="119 627 215 1713" style="writing-mode: vertical-rl; transform: rotate(180deg);"> <p><b>COPYRIGHT AND CONFIDENTIAL</b>            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.</p> </div> <div data-bbox="247 560 1508 2027"> <p><b>1. GENERAL:-</b></p> <ol style="list-style-type: none"> <li>a) Inspection &amp; 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.</li> <li>b) Inspection &amp; 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.</li> <li>c) BHEL reserve the right to inspect any product at any stage of manufacturing beyond pre – identified stages &amp; hold points of approve QAP.</li> </ol> <p><b>2. QUALITY SYSTEM REQUIREMENTS</b></p> <ol style="list-style-type: none"> <li>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.</li> <li>b) BHEL reserve the right to verify the quality programme of vendor &amp; its sub vendors to ensure effectiveness of program to meet the intended and specified quality of the product.</li> </ol> <p><b>3. QUALITY ASSURANCE PLAN</b></p> <ol style="list-style-type: none"> <li>a) The vendor shall furnish Quality assurance plan (QAP) for respective equipment after completion of detail engineering for BHEL approval.</li> <li>b) QAP shall be prepared &amp; furnish by vendor as per guide lines mentioned at Annexure-XI.</li> <li>c) The vendor shall indicate procurement source and furnish following document to BHEL, during the submission of QAP for scrutiny &amp; final approval by BHEL.               <ol style="list-style-type: none"> <li>i. Copies of PO</li> <li>ii. Technical specification</li> <li>iii. BHEL approved GA drawings/ datasheets</li> <li>iv. Detail manufacturer drawing</li> <li>v. Back up reference materials</li> </ol> </li> <li>d) The submission &amp; subsequent approval of QAPs shall be ensured to be restricted to one round only.</li> <li>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.</li> </ol> </div> </div>			
Ref. Doc			

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<p align="center"><b>COPYRIGHT AND CONFIDENTIAL</b></p> <p>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.</p>		<p>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.</p> <p>g) Detailed QAP shall be prepared by Vendor in consultation with their sub vendor/manufacturers to avoid any complicity later.</p> <p><b>4. CALIBRATION OF MEASURING EQUIPMENT</b></p> <p>a) All the measuring equipment used for inspection &amp; 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.</p> <p>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.</p> <p>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.</p> <p><b>5. TEST CERTIFICATE AND DOCUMENT</b></p> <p>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.</p> <ol style="list-style-type: none"> <li>i. Raw material identification &amp; physical and chemical test certificates for all material used in manufacture of the equipment/item.</li> <li>ii. WPS, PQR &amp; WPQ documents as per applicable code.</li> <li>iii. Details of stage wise inspection &amp; rectification records of fabricated items, casting, forging and machined items.</li> <li>iv. Control dimension chart with records of alignment, squareness etc.</li> <li>v. Manufacturer's material and performance/ relevant test certificate for all brought out items.</li> <li>vi. Details of heat treatment and stress relieving charts as per specification.</li> <li>vii. Non destructive test reports as per respective code.</li> <li>viii. Hardness test certificates.</li> <li>ix. Pressure/leakage test certificates.</li> <li>x. Weather proof test certificates as per applicable codes.</li> <li>xi. Performance test certificates for all characteristics.</li> <li>xii. Routine/ type /calibration/acceptance/special test (Type test etc.) certificates.</li> <li>xiii. Surface preparation and painting certificates.</li> <li>xiv. Certificates from competent authority for the items coming under statutory regulations.(i.e. CIMFR, PESO, DGMS etc.</li> <li>xv. BIS license certificate.</li> </ol> <p>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</p>		
	Ref. Doc			

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<b>COPYRIGHT AND CONFIDENTIAL</b> 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.		<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p><b>6. INTERNAL INSPECTION BY VENDOR/MANUFACTURER</b></p> <p>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.</p> <p>b) The vendor shall carry out internal inspection &amp; obtain clearance from statutory bodies e.g. IBR, CCE, TAC, weight &amp; measures, safety, IE rules etc. prior to offering any equipment for BHEL inspection in accordance with approve QAP.</p> <p>c) The vendor shall identify all inspected equipment/items/raw material and shall maintain the record of status of inspection viz. inspected &amp; found acceptable, require rectification/rework, rejected etc.</p> <p>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.</p> <p>e) Repaired and reworked product shall be offered for re-inspection to BHEL along with records of corrective action taken.</p> <p><b>7. METHOD OF UNDERTAKING INSPECTION &amp; TESTING BY BHEL</b></p> <p>a) Inspection call shall be given only on readiness of the equipment/assembly and after approval of all relevant drawings and QAP.</p> <p>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><b>Inspection without above document shall be treated as incomplete.</b></u></p> <p>c) The hard copy of such documents must also accompany a CD (comprising computer readable files) containing the identical documents.</p> <p>d) On receipt of inspection call pertaining to package equipment, QA &amp; 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 &amp; Inspection section of BHEL Hyderabad.</p>	
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.		<p><b>8. OBLIGATION OF VENDOR</b></p> <ol style="list-style-type: none"> <li>a) 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.</li> <li>b) The vendor shall provide all instruments, tools, necessary testing &amp; other inspection facilities to BHEL inspector free of cost for carrying out inspection.</li> <li>c) The vendor shall comply with instructions of BHEL fully and with promptitude.</li> <li>d) The cost of testing welds, radiographic and dye penetration tests etc. if applicable, in the fabrication workshop shall be borne by the vendor.</li> <li>e) The vendor shall ensure that the equipment/assembly/component require to be inspected, are not dispatched before inspection.</li> <li>f) 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.</li> <li>g) 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.</li> <li>h) 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.</li> <li>i) 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.</li> <li>j) 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.</li> <li>k) Dispatch clearance of any item will not be issued if vendor fails to provide satisfactory inspection checklist &amp; test certificates and other quality related documents.</li> </ol>	
Ref. Doc			



**MINIMUM INSPECTION REQUIREMENT**

FIXTURE			Action by BHEL
<b>1. DOCUMENT</b>		Purchase order, Technical specification of BHEL, BHEL approved drawings/documents/Datasheet,QAP, Consumables certificates and any special requirements	<b>R</b>
<b>2. Materials</b>	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	<b>R</b>
		If any specific / additional test requirements	<b>R</b>
<b>3. In process inspection</b>	Fabrication of enclosure, reflector, wire guard, bracket	Dimension, Drilling and weld quality	<b>R</b>
	Assembly of fixture	Dimension, cable opening, mounting arrangement	<b>R</b>
	Painting of fixture and finishing	Surface treatment, paint quality, finish colour, shade and thickness	<b>R</b>
	Wiring	Arrangement of terminal blocks, wiring continuity, clamping, Tag provision	<b>R</b>
<b>5. Final inspection</b>	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.	<b>W</b>
		Name plate for correct entries of Model No. Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc.	<b>W</b>
		Cable entry and terminal block size and type of cable gland used	<b>W</b>
		Make of fixture and accessories	<b>W</b>
		Paint quality, finish colour, shade and thickness	<b>W</b>
	Assembly check	lamp, reflector, cable gland, wire guard for proper fitment to the fixture.	<b>W</b>
	Functional check	Lamp with ballast & Control gear. For Non Integral type Fixture CG box shall be kept 30M away from lamp compartment.	<b>W</b>
		DC fixture with Convertor	<b>W</b>
	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.	<b>R</b>
	<b>6. Packing &amp; dispatch</b>	Packing	Soundness of packing, preservation & documentation as per specification.
Marking of packing for easy identification			<b>V</b>
Dispatch		Format of Packing slip & quantity as per scope of supply	<b>V</b>

**Abbreviations used : R- Review, W- Witness, V- Verify**



**MINIMUM INSPECTION REQUIREMENT**

PANEL		Action By BHEL
<b>1. DOCUMENT</b>		Purchase order, Technical specification of BHEL, BHEL approved drawings/documents/Datasheet,QAP, Consumables certificates and any special requirements <b>R</b>
<b>2. Materials</b>	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 <b>R</b>
		If any specific / additional test requirements <b>R</b>
<b>3. In process inspection</b>	Fabrication of Panel	Dimension, Straightness, Drilling and weld quality <b>R</b>
	Assembly of Panel	Dimension, Straightness, opening, Door clearance , mounting arrangement <b>R</b>
	Painting of Panel and finishing	Surface treatment, paint quality, finish colour, shade and thickness <b>R</b>
	Wiring	Arrangement of terminal blocks, wiring continuity, clamping, Ferrules terminals and Tag provision <b>R</b>
<b>5. Final inspection</b>	Physical check	Panel dimension, rating, internal arrangement of components & wiring, mounting arrangement , cable entries, IP class and voltage rating vs approved datasheet, sheet gauge . <b>W</b>
		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. <b>W</b>
		Cable entry and terminal block size and type of cable gland used <b>W</b>
		Make of Panel, sub component and accessories <b>W</b>
		Paint quality, finish colour, shade and thickness <b>W</b>
	Functional check	Circuit functional check, Routine test, continuity check. <b>W</b>
		ELCB/RCCB functional check <b>W</b>
	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. <b>R</b>
		Routine test certificates like HV Test, Insulation measurement before & after HV test, Continuity test, Functional test. <b>W</b>
	<b>6. Packing &amp; dispatch</b>	Packing
Marking of packing for easy identification <b>V</b>		
Dispatch		Format of Packing slip & quantity as per scope of supply <b>V</b>

Abbreviations used : R- Review, W- Witness, V- Verify



**MINIMUM INSPECTION REQUIREMENT**

<b>JUNCTION BOXES</b>			<b>Action By BHEL</b>
<b>1. DOCUMENT</b>		Purchase order, Technical specification of BHEL, BHEL approved drawings/documents/Datasheet,QAP, Consumables certificates and any special requirements	<b>R</b>
<b>2. Materials</b>	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	<b>R</b>
		If any specific / additional test requirements	<b>R</b>
<b>3. In process inspection</b>	Fabrication of JB	Dimension, Straightness, Drilling and weld quality	<b>R</b>
	Assembly of JB	Dimension, Straightness, opening, Door clearance , mounting arrangement	<b>R</b>
	Painting of JB and finishing	Surface treatment, paint quality, finish colour, shade and thickness	<b>R</b>
	Wiring	Arrangement of terminal blocks	<b>R</b>
<b>5. Final inspection</b>	Physical check	JB dimension, rating, mounting arrangement , cable entries, IP class and voltage rating vs approved datasheet, Sheet Gauge.	<b>W</b>
		Name plate for correct entries of Model No. Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc.	<b>W</b>
		Cable entry and terminal block size and type of cable gland used	<b>W</b>
		Make of JB, sub component and accessories	<b>W</b>
		Paint quality , finish colour, shade and thickness	<b>W</b>
	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.	<b>R</b>
		Routine test certificates like HV Test, Insulation measurement before & after HV test, Secondary current injection test if applicable.	<b>W</b>
<b>6. Packing &amp; despatch</b>	Packing	Soundness of packing, preservation & documentation as per specification.	<b>V</b>
		Marking of packing for easy identification	<b>V</b>
	Dispatch	Format of Packing slip & quantity as per scope of supply	<b>V</b>

**Abbreviations used : R- Review, W- Witness, V- Verify**



**MINIMUM INSPECTION REQUIREMENT**

<b>POWER SOCKET</b>			<b>Action By BHEL</b>
<b>1. DOCUMENT</b>		Purchase order, Technical specification of BHEL, BHEL approved drawings/documents/Datasheet,QAP, Consumables certificates and any special requirements	<b>R</b>
<b>2. Materials</b>	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	<b>R</b>
		If any specific / additional test requirements	<b>R</b>
<b>3. In process inspection</b>	Fabrication of socket	Dimension, Straightness, Drilling and weld quality	<b>R</b>
	Assembly of Socket	Dimension, Straightness, opening, Door clearance , mounting arrangement	<b>R</b>
	Painting of Socket and finishing	Surface treatment, paint quality, finish colour, shade and thickness	<b>R</b>
	Wiring	Arrangement of terminal blocks, wiring continuity, clamping, Ferrules terminals and Tag provision	<b>R</b>
<b>5. Final inspection</b>	Physical check	Socket rating, internal arrangement of components & wiring, mounting arrangement , cable entries, IP class and voltage rating vs approved datasheet.	<b>W</b>
		Name plate for correct entries of Model No. Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc.	<b>W</b>
		Cable entry and terminal block size and type of cable gland used	<b>W</b>
		Make of Socket, sub component and accessories	<b>W</b>
		Paint quality, finish colour, shade and thickness	<b>W</b>
	Functional check	Circuit functional check, continuity check.	<b>W</b>
		Plug & Socket interlocking check	<b>W</b>
	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.	<b>R</b>
Routine test certificates like HV Test, Insulation measurement before & after HV test, Secondary current injection test if applicable.		<b>W</b>	
<b>6. Packing &amp; dispatch</b>	Packing	Soundness of packing, preservation & documentation as per specification.	<b>V</b>
		Marking of packing for easy identification	<b>V</b>
	Dispatch	Format of Packing slip & quantity as per scope of supply	<b>V</b>
<b>Abbreviations used : R- Review, W- Witness, V- Verify</b>			



**MINIMUM INSPECTION REQUIREMENT**


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



**MINIMUM INSPECTION REQUIREMENT**

<b>MISC. ITEM</b>			<b>Action By BHEL</b>
<b>1. DOCUMENT</b>		Purchase order, Technical specification of BHEL, BHEL approved drawings/documents/Datasheet,QAP, Consumables certificates and any special requirements	<b>R</b>
<b>2. Materials</b>		Material test certificates, Inspection authority stamp correlation with material & TPI stamp verification, manufacturer guarantee certificate and routine test report	<b>R</b>
		If any specific / additional test requirements	<b>R</b>
<b>3. In process inspection</b>	Fabrication	Dimension, Straightness, Drilling and weld quality	<b>R</b>
	Assembly	Dimension, Straightness, opening, Door clearance , mounting arrangement	<b>R</b>
	Painting and finishing	Surface treatment, paint quality, finish colour, shade and thickness	<b>R</b>
	Wiring	Arrangement of terminal blocks, wiring continuity, clamping, Ferrules terminals and Tag provision	<b>R</b>
<b>5. Final inspection</b>	Physical check	Rating, internal arrangement of components & wiring, mounting arrangement , cable entries, IP class and voltage rating vs approved datasheet.	<b>W</b>
		Name plate for correct entries of Model No. Type, Classification details (i.e. FLP/WP etc.) IP class and voltage range etc.	<b>W</b>
		Cable entry and terminal block size and type of cable gland used	<b>W</b>
		Make of main item, sub component and accessories	<b>W</b>
		Paint quality, finish colour, shade and thickness	<b>W</b>
	Functional check	Circuit functional check, continuity check.	<b>W</b>
	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.	<b>R</b>
		Routine test certificates like HV Test, Insulation measurement before & after HV test, Secondary current injection test if applicable.	<b>W</b>
<b>6. Packing &amp; dispatch</b>	Packing	Soundness of packing, preservation & documentation as per specification.	<b>V</b>
		Marking of packing for easy identification	<b>V</b>
	Dispatch	Format of Packing slip & quantity as per scope of supply	<b>V</b>

**Abbreviations used : R- Review, W- Witness, V- Verify**

Rev No. 00	 <p>Form No.</p>	<p><b>PRODUCT STANDARD HYDERABAD</b></p>	<p><b>Annexure-VIII to PY55158</b></p> <p>Rev No. 00</p> <p>Page 01 of 07</p>
<p><b>COPYRIGHT AND CONFIDENTIAL</b></p> <p>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.</p>	<h1>ANNEXURE – VIII</h1> <h2>(INSPECTION CHECK LIST FORMAT)</h2>		
Ref. Doc			



**INSPECTION CHECK LIST FOR LIGHTING FIXTURE**

BHEL PO NO :																				
Item P.O.SL.No.																				
PROJECT																				
Description of Item																				
Qty																				
Referred BHEL Spec. NO.																				
Referred Approved datasheet No.																				
Name of the inspector																				
Date of inspection																				
	<b>Points to check during Inspection in addition to applicable QAP/ IS requirements :</b>										<b>Inspector remarks</b>					<b>Inspector signature/date</b>				
<b>I</b>	<b>Physical Checks :</b>																			
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 datash eet.																			
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 dat asheet.																			
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 p roper 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 loos e.).																			
20	Physical check of packing of all items including accessories are as per packing method mentioned in the illumination spec.																			
<b>II</b>	<b>Functional checks :</b>																			
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)																			



**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													
	<b>Points to check during inspection in addition to applicable QAP/ IS requirements :</b>						<b>Inspector remarks</b>				<b>Inspector signature/date</b>		
<b>I</b>	<b>Physical Checks :</b>												
<b>1</b>	<b>Check availability of applicable spec. &amp; 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.</b>												
<b>2</b>	Physical check of lighting panels alongwith all components like MCB, RCCB, Bus bars, external canopy(if applicable), Gasket etc. as per approved datasheet.												
<b>3</b>	Physical check of mounting arrangement , cable entries, IP class, and voltage range, etc. as per approved datasheet.												
<b>4</b>	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.												
<b>5</b>	Check that all components are leveled and outgoing and incoming circuits are numbered at terminal blocks.												
<b>6</b>	Check the paint shed of Lighting panel including accessories and quality of painting as per approved datasheet.												
<b>7</b>	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.												
<b>8</b>	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.												
<b>9</b>	Physical verification of availability of external canopy for outdoor type panel and its assembly check with lighting panel.(Applicable for outdoor type panel only).												
<b>10</b>	Quantity check for loose accessories to be supplied along with lighting panel as per supply BOQ listed in datasheet.												
<b>11</b>	Check the make, size and type of Cable gland (i.e. FLP, Double compression brass) as per approved data sheet. Please note Cable gland shall be of approved make as per sub vendor list or as mentioned in the Illumination spec.												
<b>12</b>	Suitability check of Cable gland with lighting panel cable entry												
<b>13</b>	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.												
<b>14</b>	Physical check of blanking plug (Aluminum) for proper fitment with lighting panel cable entry.												
<b>15</b>	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.												
<b>16</b>	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).												
<b>17</b>	Review of IP class test certification (Applicable for item with minimum IP42 and higher protection).												
<b>18</b>	Physical verification of packing slip (For all line items including accessories to be supplied in loose.).												
<b>19</b>	Physical check of packing of all items including accessories are as per packing method mentioned in the illumination spec.												



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**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
<b>I</b>	<b>Physical Checks :</b>		
<b>1</b>	<b>Check availability of applicable spec. &amp; 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.</b>		
<b>2</b>	Physical check of Power sockets along with all components like MCB, Plug assembly, external canopy(if applicable), Gasket etc. as per approved datasheet.		
<b>3</b>	Physical check of mounting arrangement , cable entries, IP class, and voltage range, etc. as per approved datasheet.		
<b>4</b>	Physical check of Material composition, dimension and thickness of enclosure, canopy(if applicable) et c. as mentioned in the datasheet. Also check finishing of end product.		
<b>5</b>	Check the paint shed of Socket/Receptacle including accessories and quality of painting as per approved datasheet.		
<b>6</b>	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.		
<b>7</b>	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).		
<b>8</b>	Quantity check for loose accessories to be supplied along with Socket/Receptacle as per supply BOQ listed in datasheet.		
<b>9</b>	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.		
<b>10</b>	Suitability check of Cable gland with Socket/Receptacle cable entry for proper fitment.		
<b>11</b>	Check interlocking arrangement of plug & socket (If asked in the data sheet).		
<b>12</b>	Physical check of blanking plug (Aluminum ) for proper fitment with Socket/receptacle cable entry.		
<b>13</b>	Physical check of size of terminal block as per approved datasheet.		
<b>14</b>	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).		
<b>15</b>	Review of IP class test certification for weather proof outdoor type Socket/Receptacle(Applicable for weather proof items only with minimum IP52 protection).		
<b>16</b>	Physical verification of packing slip (For all line items including accessories to be supplied in loose.).		
<b>17</b>	Physical check of packing of all items including accessories are as per packing method mentioned in the illumination spec.		



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**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
<b>I</b>	<b>Physical Checks :</b>		
<b>1</b>	<b>Check availability of applicable spec. &amp; 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.</b>		
<b>2</b>	Physical check of Poles along with all components like GI Pipe, Marshalling/Junction Box, arm, Swan neck, reducer, coupler etc. as per approved datasheet.		
<b>3</b>	Physical check of mounting arrangement , cable entries, IP class of marshalling /Junction box (for Street/Flood lighting pole) as per approved datasheet.		
<b>4</b>	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.		
<b>5</b>	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.		
<b>6</b>	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)		
<b>7</b>	Physical verification of availability of external canopy for marshalling box/ JB ( if asked in data sheet)(Applicable for street & Flood lighting poles).		
<b>8</b>	Quantity check for loose accessories to be supplied along with Poles as per supply BOQ listed in datasheet.		
<b>9</b>	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.		
<b>10</b>	Suitability check of Cable gland with cable entries at Marshalling/Junction box (Applicable for street & Flood lighting poles).		
<b>11</b>	Physical check of blanking plug (Aluminum ) for proper fitment with Marshalling/Junction box cable entry (Applicable for street & Flood lighting poles).		
<b>12</b>	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.		
<b>13</b>	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).		
<b>14</b>	Review of test certification for weather proof Marshalling/ Junction box (Applicable for street & Flood lighting poles).		
<b>15</b>	Physical verification of packing slip (For all line items including accessories to be supplied in loose.).		
<b>16</b>	Physical check of packing of all items including accessories are as per packing method mentioned in the illumination spec.		
<b>II</b>	<b>Assembly checks :</b>		
<b>1</b>	Assemble the different part of poles and check for alignment and suitability of each parts of pole as per approved datasheet.		
<b>2</b>	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).		



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**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
<b>I</b>	<b>Physical Checks :</b>		
<b>1</b>	<b>Check availability of applicable spec. &amp; 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.</b>		
<b>2</b>	Physical check of Junction box along with all components like terminal blocks, external canopy(if applicable), Gasket etc. as per approved datasheet.		
<b>3</b>	Physical check of mounting arrangement , cable entries, IP class, and voltage range, etc. as per approved datasheet.		
<b>4</b>	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.		
<b>5</b>	Check the paint shed of junction box including canopy(if applicable) and quality of painting as per approved datasheet.		
<b>6</b>	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.		
<b>7</b>	Physical verification of availability of external canopy for outdoor type JB and its assemble check with JB( Applicable for outdoor type JB only).		
<b>8</b>	Quantity check for loose accessories to be supplied along with lighting JB as per supply BOQ listed in datasheet.		
<b>9</b>	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.		
<b>10</b>	Suitability check of Cable gland with cable entries at Junction box.		
<b>11</b>	Physical check of blanking plug (Aluminum ) for proper fitment with Junction box cable entry.		
<b>12</b>	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.		
<b>13</b>	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).		
<b>14</b>	Review of test certification for weather proof outdoor type JB (Applicable for weather proof items only with minimum IP52 protection).		
<b>15</b>	Physical verification of packing slip (For all line items including accessories to be supplied in loose.).		
<b>16</b>	Physical check of packing of all items including accessories are as per packing method mentioned in the illumination spec.		



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HYDERABAD -32**

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**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
<b>I</b>	<b>Physical Checks :</b>		
<b>1</b>	<b>Check availability of applicable spec. &amp; approved datasheet (Approved as Code 1 or Code-2 by BHEL).</b>		
<b>2</b>	Physical check the items alongwith all components for technical compatibility as per approved datasheet and Illumination spec.		
<b>3</b>	Physical check of Material composition, thickness, dimension, shape etc. as mentioned in the datasheet. Also check finishing of end product.		
<b>4</b>	Check the paint shed of items (if applicable) and quality of painting as per approved datasheet.		
<b>5</b>	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).		
<b>6</b>	Suitability check of all sub component of the item (If applicable).		
<b>7</b>	Quantity check for loose accessories to be supplied along with the item as per supply BOQ listed in da tasheet.		
<b>8</b>	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 Illumi nation spec.		
<b>9</b>	Suitability check of Cable gland with cable entries of equipment (If applicable).		
<b>10</b>	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.		
<b>11</b>	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).		
<b>12</b>	Review of test certification for weather proof (Applicable for weather proof items only with minimum IP52 protection).		
<b>13</b>	Physical verification of packing slip (For all line items including accessories to be supplied in loos e.).		
<b>14</b>	Physical check of packing of all items including accessories are as per packing method mentioned in the illumination spec.		
<b>II</b>	<b>Functional checks :</b>		
<b>1</b>	Functional check to be carried out on items like 24V Module & Hand lamp, Remote Emergency light etc. to ascertain their suitability of intend use.		
<b>II</b>	<b>Assembly checks :</b>		
<b>1</b>	Assembly check to be carried out on items like METSEC channel to ascertain the alignment and suitability of different component/accessories for intend use.		

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# ANNEXURE –IX

## (TYPICAL PACKING SLIP FORMAT)

Ref. Doc



**BHARAT HEAVY ELECTRICALS LIMITED  
HYDERABAD -32**

Annexure-IX to PY55158

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**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.

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. Accessories of item etc.)

Vendor's sign with stamp

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# ANNEXURE – X

## (GUIDE LINES FOR PREPARATION OF QUALITY ASSURANCE PLAN)

Ref. Doc

TD-201  
Rev No. 00

Form No.



**PRODUCT STANDARD**  
PROJECT ENGINEERING & SYSTEMS DIVISION  
HYDERABAD

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## QAP GUIDELINES & FORMAT

(ANNEXURE-X TO SPECIFICATION PY 55158)

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The QAP format and Guidelines for filling up the format shall be used by vendor for preparation and submission of QAP after order placement.



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**GUIDELINES TO VENDORS FOR  
PREPARATION OF QUALITY ASSURANCE PLAN**

1. QAP shall be made in landscape mode on A4 size paper as per the format enclosed. Font size shall be minimum 10.
2. Each page of QAP shall contain the following information.
  - a) Vendor's name & address.
  - b) Customer: BHEL, Hyderabad.
  - c) Project.
  - d) BHEL Product Standard Number/revision number as referred in P.O.
  - e) BHEL Purchase Order Number & Date.
  - f) Product as per P.O. description.
  - g) QAP Number (unique and shall not repeat)/revision number/date.
  - h) Page number and number of pages
3. QAP shall contain four parts / stages as follows.
  - a) Raw materials and bought out items.
  - b) In process Control / Inspection.
  - c) Final assembly, Inspection & Testing.
  - d) Painting, preservation & packing.
4. Under 'Component', indicate name of the component (say casing, rotor, pressure gauge, etc).
5. Under 'Characteristics', indicate appropriately (say chemical analysis, mechanical properties, NDT (UT,DP etc.), hydrostatic test, calibration check etc.)
6. Under 'Class', indicate minor, major or critical depending on the importance of characteristic.
7. Under 'Type of check', indicate appropriately (say chemical, mechanical, UT, DP etc.)
8. Under 'Quantum of check', indicate appropriately (say 100%, 10%, sample, per melt, per heat, all pieces etc.)
9. 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.
10. Under 'Format of record', indicate appropriately supplier's test certificate, calibration certificate, lab report, inspection report etc.

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<b>COPYRIGHT AND CONFIDENTIAL</b> 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.	<p>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.</p> <p>12. Under 'D' please put (<input type="checkbox"/> Tick) against each characteristic where vendor proposes to submit test certificate/report etc. OR as required as per BHEL Specification.</p> <p>13. Vendor's signature &amp; stamp should be available on each page of QAP.</p> <p>14. Vendor should read the BHEL Product Standard thoroughly and QAP should be made only inline and relevant to the Specification &amp; Approved Drawings.</p> <p>15. The following operations/characteristics/check points may be included (AS APPROPRIATE)</p> <ol style="list-style-type: none"> <li>a) Visual check</li> <li>b) Dimensional check</li> <li>c) Mechanical and Chemical properties.</li> <li>d) Surface preparation before painting (by chemical cleaning, sand blasting, shot blasting etc. as the case may be.)</li> <li>e) Painting check for shade, Dry Film Thickness (DFT), Adhesion/ peel off test etc.</li> <li>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.</li> <li>g) Verification of test certificate for protection class for the enclosures.</li> <li>h) Mechanical functioning of switches.</li> <li>i) Continuity of earthing and provision of earth points.</li> <li>j) Colour coding of wiring, size, tightness &amp; dressing of wiring.</li> <li>k) Review of test certificates of assembled items, raw materials, internal test reports etc.</li> <li>l) Witness of functional checks, which may include mechanical run &amp; electrical run, H.V.test, IR measurement, Electrical and Mechanical tests etc.</li> <li>m) PQR, WPS, Welder Qualification Record, welding records (fit up, DP) etc.</li> <li>n) Material identification ( for punch marks of serial numbers, Heat No, Melt No, Inspector's stamp etc.)</li> <li>o) Hydraulic Pressure Test, Pneumatic Pressure Test, Liquid Penetration Examination and other Non Destructive Tests.</li> <li>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)</li> <li>q) All tests as per BHEL Product Standard &amp; approved drawings including Type tests and Routine tests on individual items and on System as a whole.</li> <li>r) Packing and Preservation.</li> </ol> <p>16. <b><u>QAP Format enclosed.</u></b></p>		
Ref. Doc			

