

Project : NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU  
 Consultants : LEAD CONSULTANCY & ENGINEERING SERVICES (INDIA) PVT. LTD  
 Subject : SUMMARY FOR ELECTRICAL WORKS  
 Rev No : R0  
 Date :11.02.2025

SL.NO.	WORK DESCRIPTION	SUPPLY AMOUNT (IN INR)	INSTALLATION AMOUNT (IN INR)
1	SECTION I - LT PANELS	-	-
2	SECTION II - LT WORKS	-	-
3	SECTION III - LPS WORKS	-	-
4	SECTION IV - SOLAR WORKS	-	-
	AMOUNT IN INR FOR SUPPLY & INSTALLATION	0.00	0.00
	TOTAL AMOUNT IN INR	0	

## Note :

## Exclusion / Assumptions :

- 1 Cost of bring power to the premises.
- 2 Statutory deposits & service charges.
- 3 Any reworks for existing power supply line is not considered.
- 3 Decorative Light Fixture are not part of this tender same shall be in interior scope of works
- 4 Landscape lighting & street Light Fixture are not part of this tender same shall be in landscape scope of works
- 5 We have not considered any AV related Works same shall be in IT scope of works.
- 6 Cost mentioned here is of excluding GST.

PROJECT : NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU  
CONSULTANTS : LEAD CONSULTANCY & ENGINEERING SERVICES (INDIA) PVT. LTD  
SUBJECT : SUMMARY FOR LT PANELS  
REV NO : R0  
DATE :11.02.2025

GENERAL NOTES							
Note 1	Unless specified all works are for Design, Manufacture, fabrication, loading , unloading, delivery, supply, installation, testing and commissioning to be considered by the panel supplier.						
Note 2	All bill of quantities items are to be read in conjunction with drawings and technical specifications whether specified or not.						
Note 3	Selection of all switchgear components - It is intended to achieve total discrimination and coordination, as such vendor shall justify selection of switchgear from upstream to final circuit components. The Vendor/Fabricator shall understand this from switchgear manufacturer before concluding selection.						
Note 4	Parallel to Annexure Vendor to Refer Single line diagram for details.						
Note 5	Vendors shall submit the technical data sheet duly filled.						
ITEM NO	WORK DESCRIPTION	UNIT	QUANTITY	RATES (IN INR)		TOTAL RATES (IN INR)	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
	SECTION II - LT PANELS						
1	LT PANELS						
	PANEL FABRICATION DETAILS:						
	The cost of panels shall include cost of Supply, installation, commissioning, transportation, safely unloading & installation in identified location, delivered to site.						
	The fabrication shall be made up of CRCA sheet with thickness of 3mm frame, 2.0mm front door with components, 1.6mm all other partition.						
	The surface shall be rigorously treated for derusting in 9 tank process with dephosphating and painting with at least 2 coats of approved paint. The panel shall be totally metal clad type with double gasketing with rubber / resin lining enclosed.						
	The panel shall be mounted on trench and shall have cable entry provision from the top and bottom with suitable alley as the case may be.						
	The panel shall be tested for the same KA rating of the relevant highest rating ACB / MCCB.						
	All components shall be from ISO-9001 companies and shall have relevant IS/IEC approvals without fail. (Fabrication, drawing and list of components and panel detail shall be got approved by consultants before fabrication).						
	All Panels shall compliance to IEC -61403 fully type tested with internal ARC test.						
	The panel shall be fully interlocked as required.						
	The panel shall include base frame channel support of 75x40x6mm thk. (The Single Line Diagram may be closely be followed).						
	Note:-						
1	The Panel shall be fully as per the requirement of Electrical Inspectorate/ CEIG authorities.						
2	Auxiliary contactor to be provided along with auto-manual switch where ever required.						
3	All Breakers both Incoming & Outgoing shall have LED 'ON / OFF / TRIP' indications whether mentioned in as per SLD or Not.						
4	CTs shall be with single / dual ratio as per SLD and cast resin type only.						
5	ACBs earthing shall be carried out with Cu. Bus.						
6	Incoming Feeders will have potential free spare contacts for ON/OFF/TRIP status indication for third party BMS in all Panels.						
7	All starter feeder shall have potential free spare contacts for A/M, ON/OFF, TRIP status indication for third party BMS in all Panels.						
8	For Capacitors earthing shall be provided.						
9	Ventilators with necessary fans shall be provided for Panels liberally with mesh for Capacitor Panels.						
10	Dedicated Ventilation fan shall be provided for VFD feeder in each compartment shall ON when VFD starts & shall OFF with Delay of 1 Minute after VFD is switched off.						
11	Al earthing shall be provided for all panels as per short circuit.						
12	All ACBs shall confirm IS 13947-1/IEC 947-1 for general rules & IS 13947 rules & IS 13947-2/IEC 947-2 for Circuit breakers.						
13	All doors to have double rubber gasket with shutter assembly & door seating frame.						
14	Any panel if more than 1.2mts width, compartment should be made in parts each part not exceeding 1.2 mts or even lesser is acceptable .						
15	The current density for ALU busbars shall be 0.8 A/Sqmm for all panels.						
16	The current density for CU busbars shall be 1.2 A/Sqmm only.						
17	All UPS outgoing panels shall have neutral busbars double the size of phase.						
18	Insulation level shall be 2.5 KV / 1 Min.						
19	TP means three pole.						
20	TPN means 4 pole breaker with 50% neutral						
21	4P means Four Pole breaker with 100% neutral						
22	The degree of ingress protection of indoor panels shall be IP 52.						
23	All breakers to have breaker manufacturer's factory made Spreaders.						
24	In any case Aluminium / copper bus bars should not be connected directly to the breaker without spreaders.						
25	The control wiring has to be in Troughs of appropriate size.						
26	Irrespective of the Ampacity all breakers shall be connected to the breakers using Bus bars only. Only Uninyvin Cables in special cases shall be accepted.						
27	All vertical bus bars in bus bar alley shall have bottom supports.						
28	Panel earthing strip should come out vertically on top of the panel.						
29	Ics should be 100% Icu for service voltage. Any other percentage shall not be accepted.						
30	The Bus bars and connectors should have extruded insulation.						
31	Door earthings shall be provided for all doors using braided copper.						
32	Base frame shall be with each panel. The size will be equal to each section.						
33	Bi-metallic tape / washers to be used where ever copper & Aluminium bus bar are joined.						
34	All incomers & chillers feeders as per single line diagram						
35	All test certificates shall be provided immediately after testing & commissioning.						
36	Potential free contacts in all the panels must be provided on all Breakers - (ON / OFF, Trip) wired upto the common terminal block .						
37	All Energy meters must have RS 485 port and looped internally and wired upto the common terminal block for hooking to third party BMS.						
38	Auto-Manual switch shall be provided for all motorised breakers.						
39	Maximum Operating height of the panel shall be of 1800mm from FFL Minimum Operating height of the panel shall be of 350mm from FFL.						
40	All LT panels will be tested and inspected by client for manufacture process and quality at manufacturers works before dispatching the products to site.						
41	The Controls MCBs shall be of 6A.						
42	All ACB and MCCB to be of compact type as per make list.						
43	MCCB breakers to be provided with Rotary Handle along extended shaft.						
44	The terminal block used in LV switchgear , MCCs, DBs should have fully finger touch proof construction.						
45	Form of Construction shall be 4A for the main panels and 3B for all other panels.						
46	Wherever the PLC is applicable, the vendor / contractor has to make sure that panel is delivered along with the PLC. No additional cost will be entertained after the delivery of panels.						
47	Approval shall be taken for each & every panel including all interlocking schemes proposed in the form of Shop Drawings before fabrication.						
48	The Panel nomenclature (Engraved Metal Labels) Shall be strictly as per SLD & BOQ.						
49	Electrical panel vendor shall ensure sufficient size to be provided for active harmonic filter outgoing feeder. If rating of active harmonic filter is not finalised at the time panel approval, panel vendor shall provide one step higher size compartment size for allocating respective feeder.						
50	Electrical panel vendor shall ensure sufficient size Neutral busbar sizes to be provided for connection Active harmonic filter as per Active harmonics vendor recommendations.						
50	Electrical panel vendor shall ensure sufficient size Neutral busbar sizes to be provided for connection Active harmonic filter as per Active harmonics vendor recommendations.						
1.1	EB & DG CHANGEOVER PANEL IP-55 OUTDOOR PANEL	No.	1			-	-
1.2	MAIN LT PANEL	No.	1			-	-
1.3	125 kVAR APFC PANEL	No.	1			-	-
1.4	MAIN LPDB PANEL	No.	1			-	-
1.5	UTILITY PANEL	No.	1			-	-
1.6	MAIN HVAC PANEL	No.	1			-	-
1.7	UPS OUTPUT PANEL	No.	1			-	-
1.8	LIFT PANEL	Nos.	1			-	-
1.9	LANDSCAPE LIGHTING DB	No.	1			-	-

	TOTAL FOR LT PANELS					-	-
--	---------------------	--	--	--	--	---	---

PROJECT : NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU  
CONSULTANTS : LEAD CONSULTANCY & ENGINEERING SERVICES (INDIA) PVT. LTD  
SUBJECT : SUMMARY FOR LT WORKS  
REV NO : R0  
DATE :11.02.2025

GENERAL NOTES								
Note 1	All materials & work shall be as per standards, EB and Inspectorate rules & local practice.							
Note 2	Colour conduits should be used for Data, Raw power, UPS & access control per listed below coding. (Same to verified by Electrical Contractor with Client before execution).							
a)	Data - Gray							
b)	Raw Power and Lighting - BLACK							
c)	UPS - BLACK							
d)	Fire Alarm - Red							
e)	CCTV, Access Control - White							
Note 3	Vendor shall refer technical details .							
Note 4	Vendor shall follow the below colour coding for Modular Switches & Sockets.							
a)	Raw Power Switches & Sockets - Front Plate shall be of white colour & Modular Power Receptacle shall be of White colour.							
b)	UPS Power Switches & Sockets - Front Plate shall be of white colour & Modular Power Receptacle shall be of Black colour .							
SI No	Description	Unit	Quantity	RATE (IN INR)		AMOUNT (IN INR)		Amount
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION	
1.00	SECTION I : MCB DISTIBUTION BOARD.							
	Design, fabrication, supply, installation, testing & commissioning of Per Phase Isolated Ready DBs, made out of CRCA sheet, duly powder coated suitable for wall mounting as required complete with necessary powder coated. DB'S shall be with MCB/RCBO as incomer and MCB's as outgoing, With Double Door Distribution Boards complete with combined bus bar. The cubicle shall be fitted with necessary components of recommended make and as mentioned below complete with copper bus bar(combed bus) & internal wiring. Enough space shall be provided for terminating incoming power cable & DB shall be properly sized to take out multiple circuits through conduits. The GA of DB with necessary components shall be got approved by consultants/Project Managers.							
	Note : 1. All terminations using suitable PIN or eye type tinned copper lug duly crimped. 2. All circuits shall be labelled using ferrules. 3. DB Shall be suitable for housing MCB's, RCCB's, ELCB's, RCBO's & all other accessories mentioned below. 4. Blanking plates shall be used wherever required other than mentioned below. 5.All Enclosure of DB has be of Flexi DB 4 Tier arrangement selected according to the Incomer, Sub Incomer and Number of outgoing shown below for Lighting & Power DB's 6. To achieve Phase segregation PPI conversion kit to be considered. 7. All outgoing shall be laminated. As built drawing (SLD) shall be affixed on inside face of DB door. 8.The rate shall include providing Cu. bus bars, interconnection, common neutral bus for each phases, including necessary connected civil works like chipping, rough plastering etc. 9. Cable termination end box to be considered for all DB's 10. Protection : IP 42 11. Cable Entry : Top & Bottom							
	LPDB							
1.01	12 WAY ETPN DB (COMMON AREA)							
	Incomer - 63A, 4P, 10kA, "C" Curve, MCB - 1 No							
	Sub Incomer - 40A, DP, 30mA, RCCB - 3 Nos							
	Outgoing - 10A, SP, 10kA, "B" Curve, MCB - 16 Nos							
	Outgoing - 16A, SP, 10kA, "B" Curve, MCB - 20 Nos							
	Supply & Installation	Nos.	11			-	-	
1.02	12 WAY ETPN DB (120 SEATER CLASS ROOM)							
	Incomer - 63A, 4P, 10kA, "C" Curve, MCB - 1 No							
	Sub Incomer - 40A, DP, 30mA, RCCB - 3 Nos							
	Outgoing - 10A, SP, 10kA, "B" Curve, MCB - 16 Nos							
	Outgoing - 16A, SP, 10kA, "B" Curve, MCB - 20 Nos							

	Supply & Installation	Nos.	8			-	-	
1.03	<b>8 WAY ETPN DB (60 SEATER CLASS ROOM)</b>							
	Incomer - 40A, 4P, 10kA, "C" Curve, MCB - 1 No							
	Sub Incomer - 25A, DP, 30mA, RCCB - 3 Nos							
	Outgoing - 10A, SP, 10kA, "B" Curve, MCB - 10 Nos							
	Outgoing - 16A, SP, 10kA, "B" Curve, MCB - 14 Nos							
	Supply & Installation	Nos.	13			-	-	
1.04	<b>6 WAY ETPN DB (30 SEATER CLASS ROOM)</b>							
	Incomer - 40A, 4P, 10kA, "C" Curve, MCB - 1 No							
	Sub Incomer - 25A, DP, 30mA, RCCB - 3 Nos							
	Outgoing - 10A, SP, 10kA, "B" Curve, MCB - 10 Nos							
	Outgoing - 16A, SP, 10kA, "B" Curve, MCB - 14 Nos							
	Supply & Installation	Nos.	8			-	-	
	<b>UPSDB</b>							
1.05	<b>8 WAY ETPN DB (COMMON AREA)</b>							
	Incomer - 32A, 4P, 10kA, "C" Curve, MCB - 1 No							
	Sub Incomer - 25A, DP, 30mA, RCCB - 3 Nos							
	Outgoing - 10A, SP, 10kA, "B" Curve, MCB - 10 Nos							
	Outgoing - 16A, SP, 10kA, "B" Curve, MCB - 14 Nos							
	Supply & Installation	Nos.	11			-	-	
	<b>IP66 MCB's IN WEATHER PROOF ENCLOSURE</b>							
1.06	16A, DP, MCB isolator in IP66 Polycarbonate enclosure	Nos.	RO					
1.07	25A, DP, MCB isolator in IP66 Polycarbonate enclosure	Nos.	RO					
1.08	32A, DP, MCB isolator in IP66 Polycarbonate enclosure	Nos.	RO					
1.09	63A, DP, MCB isolator in IP66 Polycarbonate enclosure	Nos.	RO					
1.10	16A, 4P, MCB isolator in IP66 Polycarbonate enclosure	Nos.	RO					
1.11	25A, 4P, MCB isolator in IP66 Polycarbonate enclosure	Nos.	RO					
1.12	32A, 4P, MCB isolator in IP66 Polycarbonate enclosure	Nos.	RO					
1.13	40A, 4P, MCB isolator in IP66 Polycarbonate enclosure	Nos.	5			-	-	
1.14	63A, 4P, MCB isolator in IP66 Polycarbonate enclosure	Nos.	5			-	-	
1.15	Weather Proof / Cable termination Box IP 66 Enclosure (Landscape)	Nos.	50			-	-	
1.16	Weather Proof encloser IP 66 Enclosure for housing 16A Socket with Switch (Terrace)	Nos.	RO					
	<b>IP 43 MCB's IN Metal enclosure</b>							
1.17	16A, DP, MCB isolator in IP43 metal enclosure	Nos.	RO					
1.18	25A, DP, MCB isolator in IP43 metal enclosure	Nos.	RO					
1.19	32A, DP, MCB isolator in IP43 metal enclosure	Nos.	RO					
1.20	63A, DP, MCB isolator in IP43 metal enclosure	Nos.	RO					
1.21	16A, 4P, MCB isolator in IP43 metal enclosure	Nos.	15			-	-	
1.22	25A, 4P, MCB isolator in IP43 metal enclosure	Nos.	RO					
1.23	32A, 4P, MCB isolator in IP43 metal enclosure	Nos.	RO					
1.24	40A, 4P, MCB isolator in IP43 metal enclosure	Nos.	RO					
1.24	63A, 4P, MCB isolator in IP43 metal enclosure	Nos.	RO					
1.25	100A, 4P, MCCB isolator in IP43 metal enclosure	Nos.	RO					
	<b>IP66 MCCB's IN WEATHER PROOF ENCLOSURE</b>							
1.26	100A, 4P, MCCB isolator in IP66 metal enclosure	Nos.	1			-	-	
1.27	125A, 4P, MCCB isolator in IP66 metal enclosure	Nos.	1			-	-	
1.28	160A, 4P, MCCB isolator in IP66 metal enclosure	Nos.	RO					
1.29	200A, 4P, MCCB isolator in IP66 metal enclosure	Nos.	RO					
1.30	250A, 4P, MCCB isolator in IP66 metal enclosure	Nos.	RO					
1.31	400A, 4P, MCCB isolator in IP66 metal enclosure	Nos.	RO					
1.32	800A, 4P, MCCB isolator in IP66 metal enclosure	Nos.	RO					
	<b>IP 43 MCCB's IN Metal enclosure</b>							
1.33	100A, 4P, MCCB isolator in IP43 metal enclosure	Nos.	RO					
1.34	125A, 4P, MCCB isolator in IP43 metal enclosure	Nos.	1			-	-	
1.35	160A, 4P, MCCB isolator in IP43 metal enclosure	Nos.	RO					

1.36	200A, 4P, MCCB isolator in IP43 metal enclosure	Nos.	RO					
1.37	250A, 4P, MCCB isolator in IP43 metal enclosure	Nos.	RO					
1.38	400A, 4P, MCCB isolator in IP43 metal enclosure	Nos.	RO					
1.39	800A, 4P, MCCB isolator in IP43 metal enclosure	Nos.	RO					
	<b>SUB TOTAL</b>					-	-	
<b>2.00</b>	<b>SECTION II - CABLE &amp; TERMINATION.</b>							
<b>A</b>	<b>LT CABLES</b>							
	Supply, laying, end termination, testing and commissioning of following sizes of 1100V Steel/Aluminium and Wire/Strip armoured, unarmoured, sheathed <b>Aluminium / Copper</b> conductor cables of approved make. End termination of cables using brass type cable glands single / double compression with aluminium / copper lugs.							
	<b>Note :</b> a) Hydraulic crimping tool shall be used for making the end terminations. b) Single compression glands - up to 150 sq.mm. c) Double compression glands for sizes > 150 sq.mm shall be used. d) Cable identification shall be made vide details furnished in single line viz., AYFY for PVC insulated, steel strip armoured, aluminium conductor cable and with PVC outer sheath.							
	<b>LT Cables</b>							
2.01	3.5C x 300 Sq.mm Aluminium XLPE Armoured Cable.	Rmt	600			-	-	
	End Termination	Nos	22			-	-	
2.02	3.5C x 240 Sq.mm Aluminium XLPE Armoured Cable.	Rmt	250			-	-	
	End Termination	Nos	4			-	-	
2.03	3.5C x 185 Sq.mm Aluminium XLPE Armoured Cable.	Rmt	40			-	-	
	End Termination	Nos	4			-	-	
2.04	3.5C x 150 Sq.mm Aluminium XLPE Armoured Cable.	Rmt	60			-	-	
	End Termination	Nos	6			-	-	
2.05	3.5C x 120 Sq.mm Aluminium XLPE Armoured Cable.	Rmt	RO					
	End Termination	Nos	RO					
2.06	3.5C x 95 Sq.mm Aluminium XLPE Armoured Cable.	Rmt	40			-	-	
	End Termination	Nos	4			-	-	
2.07	3.5C x 70 Sq.mm Aluminium XLPE Armoured Cable.	Rmt	40			-	-	
	End Termination	Nos	2			-	-	
2.08	3.5C x 50 Sq.mm Aluminium XLPE Armoured Cable.	Rmt	130			-	-	
	End Termination	Nos	2			-	-	
2.09	3.5C x 35 Sq.mm Aluminium XLPE Armoured Cable.	Rmt	40			-	-	
	End Termination	Nos	2			-	-	
2.10	4C x 25 Sq.mm Aluminium XLPE Armoured Cable.	Rmt	1,300			-	-	
	End Termination	Nos	26			-	-	
2.11	4C x 16 Sq.mm Aluminium XLPE Armoured Cable.	Rmt	20			-	-	
	End Termination	Nos	2			-	-	
2.12	4C x 10 Sq.mm Aluminium XLPE Armoured Cable.	Rmt	180			-	-	
	End Termination	Nos	4			-	-	

2.13	3C x 10 Sq.mm Aluminium XLPE Armoured Cable.	Rmt	RO					
	End Termination	Nos	RO					
	<b>LT Cables - Copper as Conductor</b>							
2.14	4C x 16 Sq.mm Copper XLPE Armoured Cable.	Rmt	RO					
	End Termination	Nos	RO					
2.15	4C x 10 Sq.mm Copper XLPE Armoured Cable.	Rmt	RO					
	End Termination	Nos	RO					
2.16	4C x 70 Sq.mm Copper PVC Unarmoured Cable.	Rmt	20			-	-	
	End Termination	Nos	2			-	-	
2.17	4C x 50 Sq.mm Copper PVC Unarmoured Cable.	Rmt	RO					
	End Termination	Nos	RO					
2.18	4C x 16 Sq.mm Copper PVC Unarmoured Cable.	Rmt	RO					
	End Termination	Nos	RO					
2.19	4C x 10 Sq.mm Copper PVC Unarmoured Cable.	Rmt	RO					
	End Termination	Nos	RO					
2.20	4C x 6 Sq.mm Copper PVC Unarmoured Cable.	Rmt	4,100			-	-	
	End Termination	Nos	120			-	-	
2.21	4C x 4 Sq.mm Copper PVC Unarmoured Cable.	Rmt	RO					
	End Termination	Nos	RO					
2.22	3C x 6 Sq.mm Copper PVC Unarmoured Cable.	Rmt	RO					
	End Termination	Nos	RO					
2.23	3C x 2.5 Sq.mm Copper PVC Unarmoured Cable.	Rmt	150			-	-	
	End Termination	Nos	80			-	-	
2.24	1 Core x 70 Sqmm Copper Flexible Cable.	Rmt	60			-	-	
	End Termination	Nos	8			-	-	
2.25	1 Core x 50 Sqmm Copper Flexible Cable.	Rmt	RO					
	End Termination	Nos	RO					
2.26	1 Core x 16 Sqmm Copper Flexible Cable.	Rmt	RO					
	End Termination	Nos	RO					
	<b>SUB TOTAL</b>					-	-	
<b>3.00</b>	<b>SECTION III-Circuit Main / Sub Main / Point Wiring</b>							
<b>A</b>	<b>Circuit Main / Sub Main</b>							
	Submains/Circuit mains using 1100V grade FRLS PVC insulated MSCC copper conductor wires drawn in 2mm thick rigid PVC FRLS conduit in concealed /Surface conduit system. Rate shall include Supply & Installation of conduits, wires & other wiring accessories necessary to carry out the work as per site condition. Rates includes neccessary wall chasing as per site requirement, with plastering as per civil standard and debris removal. <b>NOTE:</b> Different colour conduiting/wiring must be used for normal and emergency power supply.							

3.01	FRLS, 2 runs of 4 sq.mm copper wire + 1 run of 2.5 sq.mm copper wire with 25mm dia. FRLS PVC, RIGID, 2mm thick conduit <b>(Power Circuitmain, from DB to First Power point)</b>	Rmt	7,600			-	-	
3.02	FRLS, 2 runs of 2.5 sq.mm copper wire + 1 run of 1.5 sq.mm copper wire with 20 mm dia. FRLS PVC, RIGID, 2mm thick conduit <b>(Power Circuit Submain loop From First Point to Second Point)</b>	Rmt	5,200			-	-	
3.03	FRLS, 2 runs of 2.5 sq.mm copper wire + 1 run of 1.5 sq.mm copper wire with 20 mm dia. FRLS PVC, RIGID, 2mm thick conduit <b>(Lighting Circuit main, from DB to First switch point)</b>	Rmt	8,600			-	-	
3.04	FRLS, 3 runs of 1.5 sq.mm copper wire with 20 mm dia. FRLS PVC, RIGID, 2mm thick conduit <b>(Lighting Circuit Submain loop From First Point to Second Point)</b>	Rmt	2,000			-	-	
3.05	FRLS, 3 runs of 1.5 sq.mm copper wire with 20 mm dia. FRLS PVC, RIGID, 2mm thick conduit <b>(Lighting Circuit Submain loop From First switch to Sensor Point)</b>	Rmt	1,400			-	-	
3.06	FRLS, 2 runs of 2.5 sq.mm copper wire + 1 run of 1.5 sq.mm copper wire with 20 mm dia. FRLS PVC, RIGID, 2mm thick conduit <b>(Fan Circuit Submain From stepped type electronic regulator Point to fan Point)</b>	Rmt	5,700			-	-	
<b>B</b>	<b>Point wiring / circuit wiring</b>							
	Supply and laying of wiring of light points, fan & exhaust fan points, 10A socket outlets etc using 2 mm thick FRLS PVC conduit complete with all required accessories. The conduit and its accessories shall be concealed in the slab/wall, surface mounted/ above false ceiling. The wiring to be done using 2Rx1.5 Sqmm+1R x1.5 Sqmm FRLS insulated copper wires for phase, neutral & earth with PVC pull Junction boxes, light outlet boxes, specified type switches with PVC boxes and accessories etc., complete .The rate for installation shall include shifting of conduit and conduit accessories to the respective floors to carry out the work in the day and night as per site requirement. No additional rate shall be given for night work. All conduits pipes laid in the wall/slab/floor/false ceiling must be cleaned and nylon thread/ GI wires shall be drawn. Different colour conduits shall be used for Lighting & power circuits for better traceabilitythe rate shall include wall chiiping also							
	Cost to include: 1. Supply & fixing of Conduits, junction boxes, ceiling rose, metal back boxes,tie/GI pull wire, bends, solvent etc. 2. Supply and fixing of switches, sockets, front pate, fixing screws, blank plates to cover switch modules/ ceiling rose/ junction boxes etc. At Light points. 3. The point wiring shall be terminated in a terminal block inside the junction box with Bakelite batten holder. 4. The cost shall also include wiring from first light point and then looping between the points, testing and commissioning, cover for junction box/ceiling rose etc., complete.							
	(Note: The cost of sub circuit main from DB to 1st switch box and sub-circuit main from 1st switch box to subsequent switch boxes in the lighting circuit shall be measured separately and paid under circuit main.							
	<b>Switch Control</b>							
3.07	1 Light controlled by One way 10A switch (avg length 6Mtrs)	Nos	117			-	-	
3.08	2 Light controlled by One 10A switch (avg length 9Mtrs)	Nos	27			-	-	
3.09	3 Light controlled by One 10A switch (avg length 12Mtrs)	Nos	25			-	-	
3.10	4 to 6 Light controlled by One 10A switch (avg length 18Mtrs)	Nos	47			-	-	
3.11	7 to 10 Light controlled by One 10A switch (avg length 25Mtrs)	Nos	68			-	-	
3.12	11 to 14 Light controlled by One 10A switch (avg length 30Mtrs)	Nos	8			-	-	
3.13	16 to 20 Light controlled by One 10A switch (avg length 35Mtrs)	Nos	RO					
3.14	wiring for exhaust fan, wall fan with at socket near fan & switch at different location	Nos	5			-	-	
<b>C</b>	<b>Sensor Control</b>							
	Supply, installation, Testing and Commissioning of point wiring using 3R x 1.5 Sqmm FRLS 1100V PVC insulated flexible wire for Primary & secondary point of approved make drawn in existing raceway/cable tray The wiring shall be complete with ceiling roses and all consumables. (Cost of the Sensor should not be included in the line item)							
	Supply & installation of PRIMARY LIGHT POINT I. Primary light point means extending the wiring from first sensor to the first light outlet with ceiling rose & complete accessories (wiring from the DB to first light is covered under circuit mains) II. Ceiling metal flexible conduit shall be included at the drop of light fixture.							
	Supply & installation of SECONDARY LIGHT POINT I. Secondary light point means extension of light outlet from existing primary point with ceiling rose & complete accessories. Same to be controlled by the existing Sensor in DB II. Ceiling metal flexible conduit shall be included at the drop of light fixture.							
3.15	1L by 1 sensor	Nos	80			-	-	



3.16	2L by 1 sensor	Nos	5			-	-	
3.17	3L by 1 sensor	Nos	60			-	-	
3.18	4L by 1 sensor	Nos	15			-	-	
3.19	5L by 1 sensor	Nos	15			-	-	
3.20	6L by 1 sensor	Nos	RO					
<b>D</b>	<b>MCB Control Light Point wiring</b>							
	Light Point wiring - MCB control (If the average length of + or - 2 mtrs, it shall be paid under Lighting circuits)							
	Supply and laying of wiring of light points,10/16/25A socket outlets etc using 2 mm thick MS conduit complete with all required accessories. The conduit and its accessories shall be concealed in the slab/wall, surface mounted/ above false ceiling. The wiring to be done using 2R x 1.5 Sqmm +1R x1.5 Sqmm FRLS insulated copper wires for phase, neutral & earth with metal pull Junction boxes, light outlet boxes, specified type switches with <b>18 gauge</b> metal boxes and accessories etc., complete .The rate for installation shall include shifting of conduit and conduit accessories to the respective floors to carry out the work in the day and night as per site requirement. No additional rate shall be given for night work. All conduits pipes laid in the wall/slab/floor/false ceiling must be cleaned and nylon thread/ GI wires shall be drawn. Different colour conduits shall be used for Lighting & power circuits for better traceability .conduit shall 1.6mm thk MS conduit.							
	Cost to include: 1. Supply & fixing of Conduits, junction boxes, ceiling rose, metal back boxes,tie/GI pull wire, bends, solvent etc. 2. Supply and fixing of switches, sockets, front pate, fixing screws, blank plates to cover switch modules/ ceiling rose/ junction boxes etc. At Light points. 3. The point wiring shall be terminated in a terminal block inside the junction box with Bakelite batten holder. 4. The cost shall also include wiring from first light point and then looping between the points, testing and commissioning, cover for junction box/ceiling rose etc., complete.							
	Note:MCB controlled primary light point means extending the wiring till the light fixture with complete accessories (wiring from the DB to first light is covered under circuit mains).							
3.21	3 Light controlled by One 10A MCB (avg length 12Mtrs)	Nos	RO					
3.22	4 to 6 Light controlled by One 10A MCB (avg length 18Mtrs)	Nos	RO					
3.23	7 to 10 Light controlled by One 10A MCB (avg length 25Mtrs)	Nos	RO					
3.24	11 to 15 Light controlled by One 10A MCB (avg length 30Mtrs)	Nos	RO					
<b>E</b>	<b>Power Receptacles</b>							
	Supply, installation, testing and commissioning of Switched socket outlets on workstations / furntiure, on wall, ceiling with necessary mounting boxes, front plate of approved make & along with accessories, all in conformity with specifications, drawings, as required, approved. The cost shall include 1.2mm Thick GI back Box, Front Plate & all required Accessiores. <b>Front plate of rawpower shall be white &amp; UPS shall be grey or block.</b>							
	Unless specified all <b>SO (Socket Outlet )</b> and <b>SSO (Switched Socket Outlet )</b> shall be provided with <b>GI</b> mounting box & front plate.							
	<b>With modular with out back box</b>							
3.25	1 no. 6A Universal socket controlled by 10A switch	Nos.	5			-	-	
3.26	2 no. 6A Universal socket controlled by 16A switch	Nos.	300			-	-	
3.27	3 no. 6A Universal socket controlled by 16A switch	Nos.	750			-	-	
3.28	1 no. 6/16A 5 pin socket controlled by 16A switch	Nos.	5			-	-	
3.29	2 no. 6/16A 5 pin socket controlled by 16A switch	Nos.	2			-	-	
3.30	3 no. 6/16A 5 pin socket controlled by 16A switch	Nos.	RO					
	<b>With modular back box</b>							
3.31	1 no. 6A Universal socket	Nos.	5			-	-	
3.32	1 no. 6A Universal socket controlled by 10A switch	Nos.	120			-	-	
3.33	2 no. 6A Universal socket controlled by 16A switch	Nos.	130			-	-	
3.34	3 no. 6A Universal socket controlled by 16A switch	Nos.	5			-	-	
3.35	1 no. 6/16A 5 pin socket controlled by 16A switch	Nos.	350			-	-	
3.36	2 no. 6/16A 5 pin socket controlled by 16A switch	Nos.	5			-	-	
3.37	3 no. 6/16A 5 pin socket controlled by 16A switch	Nos.	RO					
3.38	SITC of <b>Ceiling fan point</b> controlled by 1 no. of 6A switch and stepped regulator for fan. The rate shall include cost of 6 amps one way switch, stepped regulator, concealed type metal deep junction box / Required supports suitable for Metal Deck Slab, complete with necessary accessories & hook to hang fan. etc., all complete as required.	Nos	500			-	-	
3.39	SITC of capacitor type ceiling fan complete with down rod, blades, shakles, canopies etc. for operation on 230Volts 50 Hz 1Ph supply conforming to ISS-374-1979 and with double ball bearing system. Down rod to be considered mi 1.2Mtrs from true ceiling ( Contractor shall coordinate as per false ceiling height and decide the length of extended mounting rod).	Nos	500			-	-	

<b>F</b>	<b>MS Floor junction boxes with top SS finish:</b>							
	<b>Note : Cost shall include Sockets, Face Plate &amp; required accessories</b>							
3.40	Floor mounted junction box to allocate 2 set of 6/16A intel socket controlled by of 16A switch in 2 rows 1 on raw power other on UPS with 8 module for socket or data ports with HDMI Provision. Cost shall include switches & sockets.	Nos.	30			-	-	
3.41	Furniture mounted junction box to allocate 1 rows of 3 no 6/16A intel socket controlled by of 20A switch 8 module dummy space for 2 data ports + USP with HDMI Provision. Cost shall include switches & sockets. (UPS Netbox Type)	Nos.	15			-	-	
	Occupancy / Sensor with Coverage area as per drawing							
3.42	Standalone 230V, Recess Mounted PIR Occupancy sensor	Nos	25			-	-	
3.43	Standalone 230V, Recess Mounted Day Light sensor with Occupancy sensor	Nos	140			-	-	
	<b>Industrial Sockets (IP 52)</b>							
3.44	16A 3pin 1phase Industrial socket with plug top controlled by 16A DP MCB 10kA	Nos	2			-	-	
3.45	40A 3pin 1phase Industrial socket with plug top controlled by 40A DP RCBO 10kA with Metal Enclosure for Car Charging	Nos	RO					
	<b>Industrial Sockets (IP 65)</b>							
3.46	16A 3pin 1phase Industrial socket with plug top controlled by 16A DP MCB 10kA	Nos	RO					
3.47	25A 3pin 1phase Industrial socket with plug top controlled by 25A DP MCB 10kA	Nos	RO					
3.48	16A 5pin 3phase Industrial socket with plug top controlled by 16A 4P MCB 10kA	Nos	RO					
<b>G</b>	<b>ELECTRICAL &amp; ALLIED WORKS-CONDUITS</b>							
3.49	Supply & Installation & laying of 2mm thick rigid PVC FRLS conduits with necessary accessories, steel pull wires etc. as required for TV, Telephone & Internet (Note : Different Colour Conduits to be used for Power, TV, Telephone & Internet as approved By Client)							
a	20mm dia PVC Conduit	Mtr	1600			-	-	
b	25 mm dia PVC Conduit	Mtr	1200			-	-	
c	32 mm dia PVC Conduit	Mtr	50			-	-	
3.50	<b>Elevator Shaft Lighting : B1+G+4 FLOORS</b>	Set	1			-	-	
	comprising of : -							
	a. Type philips NXC 101 Bulk head light fixture with 9 W LED lamp -6Nos							
	b. 6A 3 Pin switched socket outlet - 6Nos							
	c. Wiring for 6 light points controlled by a 10 A switch.							
	d. Wiring for pit light using 2 Nos10A 2 way switches.							
	e. Wiring for 6 nos of 6 A switched socket outlets.							
	Wire for lighting circuit :FRLS 2 runs of 2.5 sq.mm+ 1x1.5 sqmm wire in 20 mm dia MS Conduit. for power circuit : FRLS 2 runs of 4 sq.mm+ 1 run of 2.5sq.mm , Conduit : 20 mm dia MS Conduit.							
3.51	<b>Elevator Shaft Lighting : G+4 FLOORS</b>	Set	1			-	-	
	comprising of : -							
	a. Type philips NXC 101 Bulk head light fixture with 9 W LED lamp -5 Nos							
	b. 6A 3 Pin switched socket outlet - 5Nos							
	c. Wiring for 5 light points controlled by a 16 A switch.							
	d. Wiring for pit light using 2 Nos16A 2 way switches.							
	e. Wiring for 5 nos of 6 A switched socket outlets.							
	Wire for lighting circuit : FRLS 2 runs of 2.5 sq.mm+ 1x1.5 sqmm wire in 20 mm dia MS Conduit. for power circuit : FRLS 2 runs of 4 sq.mm+ 1 run of 2.5sq.mm , Conduit : 20 mm dia MS Conduit.							
3.52	<b>Stair Case Lighting</b>	Set	3			-	-	
	Set of light points for stair case having Lower, Ground + 4 floors + Terrace and one light points located near each landing/ midlanding using 3R x 2.5 sqmm PVC insulated multi strand flexible copper conductors in 25mm dia PVC conduit including all accessories and controlled by 10A MCB. Each circuit shall have maximum of 6 light fixtures and not more. The complete work shall be treated as single activity. Light fixture cost shall not be part of this line item. The cost shall include wiring from lighting DB and subsequent looping between points.							
	<b>SUB TOTAL</b>					-	-	

<b>4.00</b>	<b>SECTION IV- LIGHT FIXTURES</b>							
	Supply, installation, testing & commissioning of light fixtures of suitable model numbers. The quoted rate for installation shall include the following, 1. Necessary anchor fasteners, 2. Down rods / Wires / Silk Wires for Suspended lights / chains (galvanized) 3. Ceiling rose/Junction Box with Connectors 4. Assembling of light fixtures 5. Connectivity between ceiling rose and Light fixture using PVC insulated FRLS multistrand copper wires in PVC flexible conduit of suitable size. 6. Connectivity between ceiling rose and Suspended Light fixture using PVC insulated PVC sheathed braided multistrand copper cable (Silk Cable) suitable for Switching. 7. UV rays emitted form Light fixture shall compile to IEC 62471 (2006) 8. BEE 3 star/Labelled fixtures							
	<b>Note :</b> 1. The contractor shall use suitable supporting after going through the light fixture catalogue and understanding weight of the light fixture. 2. Whether explicitly mentioned or not, all light fixtures shall be provided with LED Drivers which provide high power factor > <b>0.90</b> and harmonic distortion < <b>10%</b> . 3. The Light fixture shall be suitable for switchable and Dimmable wherever specified, The Supply of light fixtures shall be with Switchable and Drivers as mentioned in the BOQ. 4. The model Numbers which shown only for reference, contractor can quote equivalent Fixtures from approved makes of materials. 5. Light fixture shall have average rated Life of 50000 burning hours as per L70. 6. The efficiency of Driver shall be more than 85 %. 7. The light fixture diffuser shall be made up of HET Diffuser, Injection moulded polycarbonate diffuser, Polycarbonate (PC) diffuser. 8. Colour Temperature shall be of 5700 Kelvin. All vendors shall match to this requirement. 9. Lamp luminous efficacy shall should be more than 90 lumens/watts. 10. Photo biological Safety Evaluation shall be meet with IEC 62471 (2006)							
4.01	22W LED Suspended Linear Light Fixture (50X1200MM ) (Class room)	Nos	330			-	-	
4.02	22W LED Suspended Dimmable Linear Light Fixture (50X1200MM ) (Class room)	Nos	160			-	-	
4.03	26W LED Recess Mounted Linear Light Fixture (50X1200MM ) (Class room)	Nos	310			-	-	
4.04	26W LED Recess Mounted Dimmable Linear Light Fixture (50X1200MM ) (Class room)	Nos	120			-	-	
4.05	40W LED Suspended Linear Light Fixture (50X1200MM ) (Faculty room)	Nos	160			-	-	
4.06	40W LED Suspended Dimmable Linear Light Fixture (100X1200MM ) (Faculty room)	Nos	70			-	-	
4.07	24W LED Recess Mounted Down Lights Down Lights (Double height area)	Nos	50			-	-	
4.08	30W LED Surface Mounted Down Lights (Common area)	Nos	250			-	-	
4.09	15W LED Recess mounted LED downlighter (Conference Room)	Nos	5			-	-	
4.10	15W LED Surface Mounted Down Lights (Staricases)	Nos	100			-	-	
4.11	18W LED Surface Mounted Down Lights	Nos	RO					
4.12	12W LED Recess Mounted Down Lights (Toilets)	Nos	200			-	-	
4.13	10W LED Wall Mounted mirror light fixture (Toilets Mirror)	Nos	70			-	-	
4.14	40W LED Linear Surface/Suspended type light fixture. (For Service Rooms)	Nos	15			-	-	
4.15	10W LED Bulkhead Light fixture IP65 rated (Terrace)	Nos	50			-	-	
4.16	70W LED wall mounted Focus light fixture	Nos	20			-	-	
4.17	80W LED High bay light fixture	Nos	RO					
4.18	LED Strip Cove light (5Meter Length )	Rmt	RO					
4.19	3W LED step light fixture	Nos	14			-	-	
	<b>SUB TOTAL</b>					-	-	
<b>5.00</b>	<b>Section V - CABLE TRAYS &amp; SUPPORTS</b>							
<b>A</b>	<b>LADDER TYPE CABLE TRAYS</b>							

	Supply & installation of pre fabricated ladder type G.I. cable tray, pre galvanized (65 micron) & (Hot dip galvanized shall be 85 to 120 GSM) made out of folded and slotted M.S.sheet steel as main runners and slotted folded M.S. sheet steel as rungs, complete with suitable suspension arrangement (suspension shall be paid separately). The cable trays shall be as per IEC - 61537. The corrosion protection shall confirm to DIN EN 10346 / ISO 1461.The size of the main runners & Rungs shall be as per technical specification. Cable tray length indicated is inclusive of pre-fabricated clamps, couplers, nuts, bolts , GI fasteners and other accessories complete & as required. (Working Load inclusive of Cable and Cable Tray only and exclusive of supports). Rate shall be inclusive of all necessary bends,reducers etc..to complete as per the technical specifications & drawings . Vendor to co ordinate with site in charge and execute the scope of works as per the instructions of site In charge. Test certificates to be provided by the manufacturer							
	Note: Installation charges shall includes the necessary hardware viz,anchor fasteners, slotted C channel supports. a) Support at an intervals of 1000mm b) Down rod/vertical support as per site conditions approved by project manager c) Slotted channel to suit width of the tray d) Spring and plate washers with locknuts (galvanised).							
	<b>Upto 300mm wide tray</b> <b>L - Angle support ; 40x40x6mm supports (L-Shape)</b> <b>base plate : 75x75x6mm with 4 anchor bolts/Fasteners(M8/75) on one side</b>							
	<b>450mm to 600mm wide tray</b> <b>Angle support ; 40x40x6mm supports (U-Shape)</b> <b>base plate : 100x100x8mm with 4 anchor bolts (M10/100) on both side</b>							
	<b>750mm to 1000mm wide tray</b> <b>Angle support ; 50x50x6mm supports (U-Shape)</b> <b>Base plate : 150x150x10mm with 4 anchor bolts (M12/100) on both side</b>							
	<b>Hot Dip galvanized</b>							
5.01	1000mm(W) x 75mm(H) X 2mm Thick	Rmt	RO					
5.02	750mm(W) x 75mm(H) X 2mm Thick	Rmt	40			-	-	
5.03	600mm(W) x 75mm(H) X 2mm Thick	Rmt	RO					
5.04	450mm(W) x 50mm(H) X 1.6mm Thick	Rmt	150			-	-	
5.05	300mm(W) x 50mm(H) X 1.6mm Thick	Rmt	50			-	-	
5.06	150mm(W) x 50mm(H) X 1.6mm Thick	Rmt	40			-	-	
	<b>LADDER TYPE CABLE TRAYS WITH COVER</b>					-	-	
	<b>Hot Dip galvanized</b>					-	-	
5.07	1000mm(W) x 75mm(H) X 2mm Thick	Rmt	RO					
5.08	750mm(W) x 75mm(H) X 2mm Thick	Rmt	RO					
5.09	600mm(W) x 75mm(H) X 2mm Thick	Rmt	RO					
5.10	450mm(W) x 50mm(H) X 1.6mm Thick	Rmt	RO					
5.11	300mm(W) x 50mm(H) X 1.6mm Thick	Rmt	120			-	-	
5.12	150mm(W) x 50mm(H) X 1.6mm Thick	Rmt	150			-	-	
<b>B</b>	<b>PERFORATED TYPE CABLE TRAYS</b>							
	Supply, fabrication, installation, testing and commissioning of following type galvanised cable trays from specified thickness GI sheets continuously connected including horizontal and vertical bends, reducers, tees and other accessories and duly suspended from the ceiling with min 12mm Dia vertical GI threaded rods supported by 40mm x 40mm x 5 mm Slotted frame etc. (or installed on wall supported on suitable brackets as required) complete as per specifications, as required.							
	Note: Installation charges shall includes the necessary hardware viz,anchor fasteners, full threaded down rods and slotted C channel supports. a) Support at intervals of 1000mm b) Slotted channel to suit width of the tray c) Spring and plate washers with locknuts (galvanised).							
5.13	450mm(W) x 50mm(H) X 1.6mm Thick	Rmt	80			-	-	
5.14	300mm(W) x 50mm(H) X 1.6mm Thick	Rmt	15			-	-	
5.13	200mm(W) x 50mm(H) X 1.6mm Thick	Rmt	RO					
5.15	150mm(W) x 50mm(H) X 1.6mm Thick	Rmt	20			-	-	
5.16	100mm(W) x 50mm(H) X 1.6mm Thick	Rmt	20			-	-	
5.17	50mm(W) x 50mm(H) X 1.6mm Thick	Rmt				-	-	

5.18	Supply, fabricating and Erection of CABLE TRAY SUPPORTS using MS structural steel items like MS angle iron, bolts, nuts, anchor fasteners etc., required for the work, cut to the size bent to shape, welding, grounding etc., complete. The rate quoted shall include 2 coats of Zinc chromate primer and 2 coats of approved Enamel paint.	kg	5,000			-	-	
<b>C</b>	<b>Raceways for Power with cover</b>							
	<p>Supply &amp; Installation of following size GI raceway / wire way with cover, made out of 14 SWG GI for body and 14 SWG GI for cover.</p> <p>Junction boxes to be provided with enough supports inside the box.</p> <p>Raceway installed below floor shall include necessary mounting supports, junction boxes and accessories to fix it firmly to the ground.</p> <p>The raceways shall be fixed to the floor with GI strips so that there is no movement of the channels when civil work (pouring of cement concrete) is being done.</p> <p>All edges, cut faces shall be free of burrs &amp; shall be smooth.</p> <p>Chipping of floor for laying floor raceway and filling the gaps with Cement concrete, chicken wire mesh, making it for floor finishing level cost to be considered.</p> <p>The channels shall be earthed at the boxes and at the joints with 14 SWG bare copper wire with screws so that earth is continuous.</p> <p>Jointing of the race ways to be done using fisher plates</p> <p>ALL RACEWAY TO BE PROVIDED WITH BIFURCATION WALL BETWEEN POWER AND NETWORK CABLES ,60% AREA WILL FOR POWER &amp; 40 % FOR NETWORK</p>							
	<b>Floor raceways for 14 Guage</b>							
5.19	450 x 40 mm	Rmt	179			-	-	
5.20	300 x 40 mm	Rmt	68			-	-	
5.21	250 x 40 mm	Rmt	126			-	-	
5.22	150 x 40 mm	Rmt	465			-	-	
5.23	100 x 40 mm	Rmt	79			-	-	
5.24	50 x 40 mm	Rmt	1,041			-	-	
	<b>GI Floor Junction boxes 14swg</b>							
5.25	410 x 410 x 50mm size	Nos	22			-	-	
5.26	310 x 310 x 50mm size	Nos	31			-	-	
5.27	260 x 260 x 50mm size	Nos	36			-	-	
5.28	160 x 160 x 50mm size	Nos	285			-	-	
5.29	110 x 110 x 50mm size	Nos	8			-	-	
5.30	60 x 60 x 50mm size	Nos	923			-	-	
<b>D</b>	<b>Ceiling raceways with cover</b>							
	<p>Supply &amp; Installation of following size GI raceway / wire way with cover, made out of 16 SWG GI for body and 16 SWG GI for cover.</p> <p>Junction boxes to be provided with enough supports inside the box.</p> <p>Raceway installed above false ceiling shall include necessary mounting supports, junction boxes and accessories to fix it firmly to the ceiling.</p> <p>All edges, cut faces shall be free of burrs &amp; shall be smooth.</p> <p>The channels shall be earthed at the boxes and at the joints with 14 SWG bare copper wire with screws so that earth is continuous.</p> <p>Jointing of the race ways to be done using fisher plates &amp; 'Slotted Channel' angle supports @ 1000mm interval etc., to suit site conditions.</p>							
5.31	450 x 40 mm	Rmt	RO					
5.32	300 x 40 mm	Rmt	RO					
5.33	250 x 40 mm	Rmt	RO					
5.34	150 x 40 mm	Rmt	550			-	-	
5.35	100 x 40 mm	Rmt	76			-	-	
	Supply & Installation of Wedge type support with required accessories & supporting rod of required sizes as per selected cable tray at every 1Mtr	Nos						
	GI Ceiling Junction boxes							
5.36	410 x 410 x 50mm size	Nos	RO					
5.37	310 x 310 x 50mm size	Nos	RO					

5.38	260 x 260 x 50mm size	Nos	RO					
5.39	210 x 210 x 50mm size	Nos	RO					
5.40	160 x 160 x 50mm size	Nos	230			-	-	
5.41	110 x 110 x 50mm size	Nos	10			-	-	
5.42	90 x 90 x 50mm size							
	Supply & Laying of following size Raceway. Supports shall be powder coated with same colour of DB. Raceway 1.6mm thick, raceway cover 1.2mm thick. For DB Drops & DB Niches							
5.43	100(W) mm x 110 (D)mm ( Depth D To be equal as per Electrical DB depth)	Rmt	300			-	-	
5.44	150(W) mm x 110 (D)mm ( Depth D To be equal as per Electrical DB depth)	Rmt	450			-	-	
5.45	200(W) mm x 110 (D)mm ( Depth D To be equal as per Electrical DB depth)	Rmt	80			-	-	
	Supply & Laying of following size 2mm thick FRLS PVC conduits in floor/Wall. Rate shall include wall chasing & rough plastering, clamping / fixing arrangement.							
5.46	32mm dia	Rmt	50			-	-	
5.47	25mm dia	Rmt	600			-	-	
	Supply & Laying of following size MS conduits in floor/Wall. Rate shall include wall chasing & rough plastering, clamping / fixing arrangement.							
5.48	32mm dia	Rmt	5			-	-	
5.49	25mm dia	Rmt	5			-	-	
	Cutting of floor granite/screeding for accommodating the floor race ways or conduits for the raceways junction boxes or conduit .The rate shall include closing of the raceway/conduits with cement plastering & amiing good finish to the original level.							
5.50	450 x 40 mm	Rmt	10			-	-	
5.51	300 x 40 mm	Rmt	10			-	-	
5.52	250 x 40 mm	Rmt	10			-	-	
5.53	150 x 40 mm	Rmt	10			-	-	
5.54	100 x 40 mm	Rmt	10			-	-	
5.55	80 x 40 mm	Rmt	10			-	-	
	<b>SUB TOTAL</b>					-	-	
<b>6.00</b>	<b>SECTION VI - Earth Electrodes and Earth Strips</b>							
<b>A</b>	<b>EARTH ELECTRODES</b>							
	<b>Body earthing</b>							
6.01	Supply, earth excavation, back filling, chamber and fixing of 100mm DIA GI Pipe earth station in conformity with IS 3043. 2 no's of 50x6 GI strip, CI funnel of 20 gauge, block masonry chamber of 450mm(L)x 450mm(B)x 300mm(H) (clear space), concrete base CI Man hole cover with frame painted with bitumastic paint and packing with mixture of charcoal and salt around the pipe electrode including digging upto permanent water level but not less than 3mtr back filling as required. The earth resistance shall be less than 4 ohms. All work shall be carried out in conformity with specifications, standards & Codes. Refer Single line diagram, earthing schematic diagram and fault level calculations. Rate Shall include the labelling of the earth pits as per project manager's instructions.	Nos	10			-	-	
	<b>Neutral earthing</b>							
6.02	Supply, earth excavation, back filling, chamber and fixing of 0.6m x 0.6m x 4mm CU Plate earth station in conformity with IS 3043. 2 no's of 50x6 Cu strip, CI funnel of 20 gauge, block masonry chamber of 450mm (L)x 450mm(B) x 300mm(H) (clear space), concrete base CI Man hole cover with frame painted with bitumastic paint and packing with mixture of charcoal and salt around the plate electrode including digging upto permanent moisture level but not less than 3mtr back filling as required. The earth resistance shall be less than 4 ohms. All work shall be carried out in conformity with specifications, standards & Codes. Refer Single line diagram, earthing schematic diagram and fault level calculations. Rate Shall include the labelling of the earth pits as per project manager's instructions.	Nos	4			-	-	
	<b>Maintenance Free Earthing</b>							



6.03	Supply, installation, testing & commissioning of MAINTENANCE FREE chemical earthing system in 150mm dia 3mtr bore hole with Single Earthing Electrode consist of 3mtr long 25mm dia Copper earth electrode, Brass clamp terminal flat of 175 x 50 x 3 mm , the entire construction processed with Hot Dip Galvanization, outer surface up to 250-300 microns. The entire bore area shall be filled with highly conductive and non-corrosive nature crystalline material, along with electrode Moisture Booster compound of 3 x 25 Kg bags to fill surround the electrode at the time of installation or equivalent maintenance free earthing. (Moisture Booster having its property of moisture retention, conduction and non-corrosive nature). The cost shall include RCC chamber & CI cover. The resistance to be measured & witnessed by the client/consultant less than 1 ohm. The cost of Boring 150mm dia 3mtr long in hard rock area to be considered in the installation scope. For All equipment earthing	Nos	RO					
<b>B</b>	<b>EARTH STRIPS</b>							
	Supply, laying, testing and commissioning of following sizes of GI/Cu earth continuity conductor (strips/ stranded wires) for interconnection between the earthing stations, panels, DB's & equipments etc on walls/ceiling, Corrosion protection for buried, Joints, conductors with bituminous coating and covered with PVC tapes etc all in conformity with the specifications as required, approved and directed. Note : Earth Strips laid in earth shall have sleeves. The rate shall include cost of laying Earth strip in floor with PVC sleeves. Rate shall include wall / floor chasing, rough plastering, clamping, Sleeve including End termination for Cables.							
6.04	50 x 10 mm Hot dip galvanised GI strips	Rmt	300			-	-	
6.05	50 x 6 mm Hot dip galvanised GI strips	Rmt	400			-	-	
6.06	40 x 10 mm Hot dip galvanised GI strips	Rmt	RO					
6.07	40 x 6 mm Hot dip galvanised GI strips	Rmt	RO					
6.08	25 x 6 mm Hot dip galvanised GI strips	Rmt	650			-	-	
6.09	25 x 3 mm Hot dip galvanised GI strips	Rmt	RO					
6.10	40 x 6 mm CU strips	Rmt	RO					
6.11	25mm x 6mm CU strips	Rmt	200			-	-	
6.12	25mm x 3mm CU strips	Rmt	RO					
6.13	1C x 10 Sqmm Copper Earthing Cable	Rmt	50			-	-	
6.14	1C x 6 Sqmm Copper Earthing Cable	Rmt	50			-	-	
6.15	1C x 4 Sqmm Copper Earthing Cable	Rmt	800			-	-	
6.16	1C x 2.5 Sqmm Copper Earthing Cable	Rmt	50			-	-	
6.17	Busbar of 0.5 Mtr length made out of 25x6 mm CU strip with drill holes of M8 at 25mm interval mounted on insulators.	Nos	2			-	-	
6.18	Busbar of 0.5 Mtr length made out of 50x10 mm GI strip with drill holes of M8 at 25mm interval mounted on insulators.	Nos	10			-	-	
	<b>SUB TOTAL</b>					-	-	
<b>7.00</b>	<b>SECTION VII - Miscellaneous items.</b>							
7.01	supply and installation Shock treatment chart with teak wood frame and glass cover as approved	Nos	1			-	-	
7.02	supply and installtion Rubber mat 1100V grade ISI approved, size- 1.8 m x 0.9m	Nos	10			-	-	
7.03	supply and installation First aid kit	Nos	1			-	-	
7.04	supply and installtion Laminated Schematic with glass frame	Nos	1			-	-	
7.05	supply and installtion LT tool kit.	Nos	1			-	-	
7.06	6mm thick MS chequered plates with 2 coats of primer and final enamel paint for electrical shaft. The Cost shall include MS support required for supporting Checker plate.	Kgs	600			-	-	
7.07	Supply & installation of sealing the portion left between cables and chequered fire barrier mortar of 63mm thickness (HILTI or approved equivalent) with minimum 2hours fire rating when tested in accordance with UL 1479 standards, for fire rated vertical openings in floors or slabs & floors made of concrete, masonry, metal, gypsum partition, after passing service lines like cable, cable trays, metal pipes. Mortar shall be a light weight cementations product and shall carry test certificate in accordance with IEC 60068-2-57:1999-11 (environmental testing) as per part 2-57: Test for Vibration-Time-history method & VERTEQII for seismic zone 4. Products shall carry test certificate for mould resistance rating determined by ASTM G21-96. It shall be UL listed. Rate shall include the mineral wool & miscellaneous items etc., (Ratio of Mortar to foam can be assumed as 80% & 20% respectively)	Bags	2			-	-	
7.08	Supply & installation of Acrylic fire stop sealant (HILTI or approved equivalent) with minimum 2 hours fire rating when tested in accordance with UL 1479 standards, shall be used along periphery of Cable trays, Conduits , Cut-outs without insulation passing through fire rated walls & floors made of concrete, masonry, metal, gypsum construction to provide up to 2 hours insulation & integrity when subject to the test conditions of UL 1479 standards. Product should be tested for mould resistance as determined by ASTM G21-96 & shall have a VOC content of approx. 75 g/l as per LEED 2009. All installations to be in full accordance with the manufacturer. The sealant should be tested in accordance with IEC 60068-2-57:1999-11 (Environmental Testing) as per Part 2-57: Test for Vibration-Time-history method and VERTEQII for seismic zone 4. Product shall bear the UL & FM approval. Rate shall include the mineral wool backing material and other miscellaneous items etc.,	Nos	4			-	-	

7.09	Supplying and laying of R.C.C NP2 class Hume pipe laid to the required level and grade with collars joining in CM 1:3, Cost to invclude Excavation and filling the excavated area with approved quality soil on sides, bottom and top surface of pipe with all leads and lifts, making necessary connections as required etc.,complete.							
7.10	300 mm Dia RCC Hume pipe	Rmt	130			-	-	
7.11	200 mm Dia RCC Hume pipe	Rmt	RO					
7.12	150 mm Dia RCC Hume pipe	Rmt	10			-	-	
7.13	Supply and laying of heavy duty 100mm Dia HDPE pipe for road crossing. Cost to invclude Excavation and filling the excavated area with approved quality soil on sides, bottom and top surface of pipe with all leads and lifts, making necessary connections as required etc.,complete.	Rmt	5			-	-	
7.14	Supply and laying of heavy duty 50mm Dia HDPE pipe for road crossing. Cost to invclude Excavation and filling the excavated area with approved quality soil on sides, bottom and top surface of pipe with all leads and lifts, making necessary connections as required etc.,complete.	Rmt	5			-	-	
7.15	Supply and laying of heavy duty 32mm Dia HDPE pipe for road crossing. Cost to invclude Excavation and filling the excavated area with approved quality soil on sides, bottom and top surface of pipe with all leads and lifts, making necessary connections as required etc.,complete.	Rmt	5			-	-	
	Construction of RCC pull chamber of M20grade of size mentioned below with 150mm thick walls and 125mm thick bottom slab/top slab, including the cost of 75mm thk PCC 1:2:4, Shuttering, cost of Reinforcement steel, curing, internal walls plastered smooth in CM 1:3 and external walls plastered in 1:6 with sponge finish, backfilling, ramming, removal of surplus soil with all leads and lifts, materials, labour, transportation etc., complete. Supply and Fixing RCC heavy duty Cover with frame and grating up to 20 tons on top surface flushed to the finished floor level with necessary excavation, back filling the selected excavated earth with all leads and lifts etc., complete.							
7.16	1.0M x 1.0M x 1.2M Cable Pull Chamber with Cover	Nos	10			-	-	
7.17	0.75M x 0.75M x 0.75M Cable Pull Chamber with Cover	Nos	RO					
7.18	0.6M x 0.6M x 0.9M Cable Pull Chamber with Cover	Nos	RO					
	<b>CEIG</b>							
7.19	Professional charges towards filing application, following & arranging approval of drawings / scheme of both external and internal works by Electrical Inspectorate, obtaining clearance from Electrical Inspectorate for the installation & commissioning of entire electrical works arranging service of the installation including necessary charges to be paid towards approval.	GRO	1			-	-	
	<b>Shop drawings</b>							
	Preparation and submission of Shop drawings of the Complete Electrical Installation LT Related works-3 sets							
7.20	Service Charges	GRO	1			-	-	
	<b>As Built drawings</b>							
	Preparation and submission of As built drawings of the Complete Electrical Installation LT Related works-5 sets							
7.21	Service Charges	GRO	1			-	-	
	<b>SUB TOTAL</b>					-	-	
	<b>GRAND TOTAL EXCLUDING GST</b>					-	-	



# CAPE electric pvt ltd,

A-41(B), SIPCOT, Oragadam, Kancheepuram - 602 105.

Email : sales@capeindia.net Tel : +91 44 7101 8121

GSTIN :33AAFCC0665D125



**PROJECT : NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU**  
**CONSULT : LEAD CONSULTANCY & ENGINEERING SERVICES (INDIA) PVT. LTD**  
**SUBJECT : SUMMARY FOR LPS WORKS**  
**REV NO : R0**  
**DATE :11.02.2025**

SL.NO	Description	Unit	Total Qty	Unit Rate (INR)	Unit Rate (INR)	Total Price (INR)	Total Price (INR)
<b>A</b>	<b>EXTERNAL LIGHTNING PROTECTION SYSTEM-LPL-IV</b>			<b>Supply</b>	<b>Instn</b>	<b>Supply</b>	<b>Instn</b>
<b>I</b>	<b>AIR TERMINATION</b>						
1	Supply and Installation of 8mm dia Aluminium alloy Solid Round Conductor of material AlMgSi used in air termination system . Cross sectional area of conductor should be 50 mm <sup>2</sup> . <b>Test Parameter:</b> a.Lightning impulse current of 100kA for 10/350 $\mu$ s b.Electrical resistivity - 0.034 $\mu\Omega$ m, c.Tensile strength - 178 MPa or N/mm <sup>2</sup> d. Salt spray - No Sign of Corrosion. Tested as per IEC 62561-2.	Mtr	525				
2	Supply and Installation of Nylon Conductor Holder for Parapet wall for holding 8 mm dia Aluminium alloy round Conductor.	Nos	516				
3	Supply and Installation of Nylon roof conductor holder for flat roof with concrete block for fixing 8 mm dia Aluminium alloy Solid Round Conductor in the terrace flat surface at every 1 mtr.	Nos	9				
4	Supply and Installation of Stainless steel 304 Grade Cross Connector for 8 mm dia Aluminium alloy round conductor at cross/Tee junction. Test Parameter a) Mechanical Load b) Electrical Test c) ENvironmental Test Tested for IEC 62561-1	Nos	40				
5	Supply and Installation of Expansion Joint with connector to compensate the expansion and contraction of Solid Round Al. Conductor during temperature variations. Expansion Joint should be consider at every 20 mtr length of straight horizontal air termination and connected at both the end with use of straight connector conductor.	Nos	26				
6	Supply and Installation of Aluminium Straight conductor connector for interconnecting 8mm Aluminium conductor to meets the requirement of IS/IEC 62305. Test Parametres: a) Mechanical Load b) Electrical Resistivity c) Environmental Test Tested as per IEC 62561-1	Nos	52				
7	Supply of air termination rod of 2mtr length of material AlMgSi of diametre $\phi$ 16/10 mm crimped on both the ends (Tapped Type). The rod shall be mounted with stainless steel clamp and fixing accessories . Test Parameter for 2 mtr vertical air terminal a)Electrical Resistivity b) Tensile Strength c) Condition of Salt Mist Tested as per IEC 62561-2. Test Parametrer for Wall clamp a) Mechanical load as per IEC 62561-1	Nos	5				

# CAPE electric pvt ltd,

A-41(B), SIPCOT, Oragadam, Kancheepuram - 602 105.

Email : sales@capeindia.net Tel : +91 44 7101 8121

GSTIN :33AAFCC0665D125



SL.NO	Description	Unit	Total Qty	Unit Rate (INR)	Unit Rate (INR)	Total Price (INR)	Total Price (INR)
8	Supply of air termination rod of 3mtr length of material AlMgSi of diameter $\phi$ 16/10 mm crimped on both the ends (Tapered Type). The rod shall be mounted with stainless steel clamp and fixing accessories . Test Parameter for 3 mtr vertical air terminal a)Electrical Resistivity b) Tensile Strength c) Condition of Salt Mist Tested as per IEC 62561-2. Test Parametrer for Wall clamp a) Mechanical load as per IEC 62561-1	Nos	6				
9	Supply of Stainless steel SS 304 Grade Folding Clamp as per sheet profile for 8 mm dia Aluminium alloy Solid Round Conductor for horizontal Air terminal above metal sheet to meet the requirements for IS/IEC 62305. Test Parameter: a) Mechanical Load b) Environmental Test Tested as per IEC 62561-4 <b>CAPE Type: FSCH 14-8</b>	Nos	5				
II	<b>DOWN CONDUCTOR</b>						
10	Supply of 8mm dia Aluminium alloy Solid Round Conductor of material AlMgSi used in down conductor system . Cross sectional area of conductor should be 50 mm <sup>2</sup> . <b>Test Parameter:</b> a.Lightning impulse current of 100kA for 10/350 $\mu$ s b.Electrical resistivity - 0.034 $\mu\Omega$ m, c.Tensile strength - 178 MPa or N/mm <sup>2</sup> d. Salt spray - No Sign of Corrosion. Tested as per IEC 62561-2.	Mtr	320				
11	Supply of Nylon Conductor Holder for side wall for holding 8 mm dia Aluminium alloy round Conductor.	Nos	320				
12	Supply of Aluminium Straight conductor connector for interconnecting 8mm Aluminium conductor to meets the requirement of IS/IEC 62305. Test Parametres: a) Mechanical Load b) Electrical Resistivity c) Environmental Test Tested as per IEC 62561-1	Nos	21				
13	Supply of Lightning counter - LCD screen shows the number of lightning strikes, hour and date of lightning events Buttons enable TIME/DATE setting and log viewing. Replaceable battery, working life minimum five years, Complies with IEC/EN 62561-6.	Nos	1				
14	Supply of Stainless Steel 304 grade Test Joint with enclosure to interconnect between 8 mm Al. round conductor to 10 mm copper round conductor. Test Parameter: Salt Spray Test for test joint plate -No sign of Corrosion Tested as per IEC 62561-1	Nos	12				
III	<b>EARTHING SYSTEM</b>						

# CAPE electric pvt ltd,

A-41(B), SIPCOT, Oragadam, Kancheepuram - 602 105.

Email : sales@capeindia.net Tel : +91 44 7101 8121

GSTIN :33AAFCC0665D1Z5



SL.NO	Description	Unit	Total Qty	Unit Rate (INR)	Unit Rate (INR)	Total Price (INR)	Total Price (INR)
15	Supply and Installation of Rust resistant non corrosive 10 mm dia Copper Bonded Steel round conductor used for Earth termination in the soil. Test parameter: a) Short circuit current test for copper bonded conductor:Test 6 kA ratings, as per cross sectional area for 1 sec (IS3043/IEEE80); b)Electrical Resistivity before & after salt mist spray test: 0.25μΩm max. c)Tensile Test 290 to 510 N/mm². d)Adhesion no peel or crack & Bend test no seperation of Cu, e)Cu Coating thickness min. 70μm. Tested as per IEC 62561-2.	Mtr	360				
16	Supply and Installation of stainless steel Straight Connector for interconnecting 10 mm dia copper bonded round conductor at straight connection Test Parametres: a) Static Mechanical Test b) Environmental Test Tested as per IEC 62561-1	Nos	22				
17	Supply & Installation of <b>Stainless steel Conductor Holder</b> for fixing the 10mm dia round conductor on the side wall . Test Parameter:Salt Spray Test - No Sign of CorrosionTested as per IEC 62561-1	Nos	12				
18	Supply & Installation of <b>Stainless steel 304 Grade Cross Connector</b> for 10 mm dia copper bonded solid round conductor at cross/Tee junction. Test Parameter a) Mechanical Load, b) Electrical Test, c) ENvironmental Test Tested for IEC 62561-1	Nos	20				
<b>TOTAL FOR FOR LPS</b>						-	-
<b>GRAND TOTAL FOR LPS(SUPPLY+INSTALLATION) excel gst</b>							-

## Note

- a Quantity may vary according to the actual site conditions or subjected to any architectural changes by client/architect/consultant/civil
- b BOM/BOQ may varies based on Final approved shop drawings subjected to any changes observed at site.

PROJECT : NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU  
CONSULTY : LEAD CONSULTANCY & ENGINEERING SERVICES (INDIA) PVT. LTD  
SUBJECT : SUMMARY FOR LPS WORKS  
REV NO : R0  
DATE :11.02.2025

Sl. No.	Item Description	Units	Quantity	Supply Rate	Installation Rate	Total Amount	Remarks
1.00	<b>Design, Supply, Loading, Unloading, Installation, Testing &amp; Commissioning of 65kW SOLAR ROOFTOP SYSTEM meeting the requirements of MNRE Standards and consisting of:</b>	<b>Job</b>	<b>1.00</b>				
1.01	Design, Supply, Loading, Unloading, Installation, Testing & Commissioning of ALMM approved - Solar PV Modules of Minimum 550 Wp. Monocrystalline with efficiency > 21% - Total Capacity: 65kWp						
1.02	Design, Supply, Loading, Unloading, Installation, Testing & Commissioning of Solar generation meter - (Unidirectional type, Immediate to LT panel) as per BESCOM norms						
1.03	Design, Supply, Loading, Unloading, Installation, Testing & Commissioning of Remote Monitoring system of Solar PV Power plant (provided by the Inverter Manufacturer) with necessary communication system setup (Internet Access shall be provided by the Client nearer to the Communication System)						
1.04	Design, Supply, Loading, Unloading, Installation, Testing & Commissioning of Inverter- Three Phase, BIS approved - String Inverter, 65kW (Combination of single or multiple Inverters)						
1.05	Design, Supply, Loading, Unloading, Installation Commissioning of Module Mounting Structure (MMS)-Front and Back post type alongwith HDGI type with GI (Minimum 85 Micros) ,SS fasteners, uPVC Conduit pipes, Cable Tray , MC4 Connectors (pair set) and others like DC+AC Consumables ( Earthing Cables, Cable tie, markers, MC4 Crimping tool, Ferrules etc), Anti corrosion material should be used.						
1.06	Design, Supply, Loading, Unloading, Installation, Testing & Commissioning of String Cable - DC - 4 sqmm cable as required (Inverter shall be installed at the Terrace Floor)						
1.07	Design, Supply, Loading, Unloading, Installation, Testing & Commissioning of DC Distribution Board /Panel - Based on design, DC Fuse and SPD Type II						
1.08	Design, Supply, Loading, Unloading, Installation, Testing & Commissioning of AC Distribution Board /Panel - as per design topology, with SPD-AC - Indoor type						
1.09	Design, Supply, Loading, Unloading, Installation, Testing & Commissioning of Earthing system as required						
1.10	Design, Supply, Loading, Unloading, Installation, Testing & Commissioning ofAC cable FRLS -3-Core cable of required size to Connect the Inverters with the AC Distribution Board						
1.11	Design, Supply, Loading, Unloading, Installation, Testing & Commissioning of End termination glands as required as per design						
1.12	Design, Supply, Loading, Unloading, Commissioning of Civil work for MMS as required as per Site conditions						
1.13	Design, Supply, Loading, Unloading, Installation, Testing & Commissioning of Zero Export Controller Device to prevent excess power being fed into BESCOM Grid						
1.14	Safety Items, First Aid Box and Posters						
1.15	Co-Ordination for CEIG approval for Solar system (All statutory fees paid shall be reimbursed by the Customer)						
1.16	Feasibility, Statuary approvals and Coordination with BESCOM for Solar PV plant till commissioning as required (All statutory fees paid shall be reimbursed by the Customer)						
<b>Total fot Solar PV System</b>				-	-	-	