

**TENDER DOCUMENT**

*FOR*

**SUPPLY INSTALLATION TESTING AND COMMISSIONING  
OF HT WORKS AND ITS ALLIED EXTERNAL ELECTRICAL  
WORKS AT TERTIARY CANCER CENTRE, KOZHIKKODE**

**PART-III  
PRICE BID**

**TENDER NO. HLL / ID / 16/ 21  
NOVEMBER 2016**

**HLL LIFECARE LIMITED.  
INFRASTRUCTURE DEVELOPMENT DIVISION**

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## **1. COMMERCIAL CONDITIONS**

- 1.1 The tendered rate shall inter alia be deemed to include for the provision of all materials , process, operation and special requirements detailed in the particular specification irrespective of whether these are mentioned in the description of equipment schedule and Bill of quantities or not. It is an express condition of the contract that the tendered rates for various items in the Bill of Quantities shall be deemed to include for the full, entire and final condition of the contractor respective items of the works in accordance with the provision of the contract.
- 1.2 The tendered rate shall include for all taxes, duties, etc. as applicable and shall be quoted on the works contract basis for **Supply Installation Testing And Commissioning Of HT Works And Its Allied External Electrical Works At Teritary Cancer Centre, Kozhikkode**
- 1.3 The tendered rate shall remain firm and free from variation due to rise in the cost of materials/equipment labour or any other reasons whatsoever during the contract period and valid extension.
- 1.4 The quantum of excise duty included in the tendered price, the rate at which they were assumed etc. shall be indicated in the tender.

## **2. UNIT RATES**

- 2.1 Only approved work will be measured on completion and priced as per rates quoted against the respective items.

## **3. BRIEF DESCRIPTION OF PRICING**

- 3.1 The tenderer shall furnish duly certified breakup of material and labour separately for each item of work. The same shall be attached separately along with the price bid.
- 3.2 The quoted price shall be inclusive of all taxes and duties whether payable by the contractor or to be deducted at source. This shall include those applicable among VAT, Sales Tax, Income Tax, Customs Duty, Excise Duty, Turnover Tax,

**Work Contract Tax, Octroi, Labour Welfare Cess or any other Taxes and Duties prevailing in respect of this contract. However, in respect of service tax, same shall be paid by the contractor to the concerned department on demand and it will be reimbursed to the contractor by HLL after satisfying with documentary proof that it has been actually and genuinely paid by the contractor.**

**4. PRO-RATA VALUE**

The detailed break up of prices for various items of equipments and materials of the full system should be provided by successful tenderers within fifteen days from the date of letter of intent to facilitate the Employer for assessment and verification and to certify payment.

**5. INCOME TAX**

Any payment to the contractor as per contract, will be made after deducting income tax as per the rules and regulations.

**6. SALES TAX AND EXCISE DUTY**

The tenderer shall clearly indicate sales tax, Excise and works contract tax and other duties as applicable in his offer for carrying out this work.

**7. SUBMISSION OF BILL**

- 7.1 The contractor shall from time to time prepare and submit interim bills of the work executed and on completion of the contract, he shall prepare and submit the final bill. The measurements sheets in support of the interim and final bills shall be prepared by the contractor on the basis of measurements taken by him jointly with the project engineer and the said measurement sheets shall be submitted by him with the relevant bill.

**8. EXTRA ITEMS**

The contractor is bound to carry out any items of work necessary for the completion of the job even though such items may not have been included in the schedule of probable quantities or rates, such items being necessary or essential for completing the job. Variation order in respect of such additional items and their quantities will be issued in writing by the Employer.

All shavings, cuttings and other rubbish as it accumulates from time to time during the progress of work and on completion including that of the sub-contractors

and special tradesman and all materials condemned by the project engineer shall be cleared and removed from the site by the contractor without any extra charge.

All measuring steel taps, scaffolding, ladders instruments and tools that may be required for taking measurements shall be supplied by the contractor.

## **9. OVER TIME WORK**

If the contractor is required to work night or on holidays in order to maintain the time schedule he shall take prior approval from the Employer. He should also provide and maintain at his own cost sufficient lights as may be necessary to enable the work to proceed satisfactorily during the night.

- 9.2 The contractor shall give full facilities to all other contractors working on site. He shall also arrange his programme of work so as not hinder the progress of other trades. The decision of the Employers on any point of dispute between the various parties shall be final and binding.
- 9.3 It is specifically pointed out that the contractor shall not be entitled to any compensation whatsoever on account of delay in procurement or supply of controlled materials and the rates quoted in the contract are fixed till the completion of the contract.
- 9.4 The contractor shall co-operate with other agencies appointed by the Employer for the work to proceed smoothly with the least possible delay and to the satisfaction.
- 9.5 The owners shall provide a source for power supply at one convenient point at site. The contractor shall at his own cost install a separate meter at the said source and lay additional cables from the said source also at his own cost. For the electricity consumed by the contractor he shall pay the owner the actual cost at the rate charged by the local authority for power for constructional purposes. The contractor shall also obtain the necessary permit for utilizing power for constructional purposes.

## **10. TERMS OF PAYMENT**

- 10.1 The rate of payment for the contract value under this contract shall be regulated and detailed below:

70% after supply of materials at site in good working condition on pro-rata basis.

20% after completion of installation in all respects.

Balance 10% will be paid after testing, commissioning & handing over to the client, including all required statutory approvals.

## **11.1 EXECUTION WORK**

11.1.1 The whole of the work as described in the contract (including bills of materials, specification and all drawings pertaining thereto) and as advised by the Owners/Employers from time is to be carried out and completed in all parts to the entire satisfaction of the Owners/Employers. Any minor details of construction which are obviously and fairly intended, or which may not have been definitely referred to in this contract, but which are usual construction practice and essential to the work, shall be included in this contract.

## **11.2 MAINTENANCE & TRAINING FOR PERSONNEL**

11.2.1 The contractor shall without any extra cost carry out for a period of 12 months after the installation is taken over by the owners, all routine and special maintenance and attend to any difficulties and defects that may arise in the operation of the system.

11.2.2 The contractor shall associate with the Employers' staff during erection and the maintenance period, in the maintenance/operation of the system..

11.2.3 If required, by the Employers, the contractor shall also train members of the Employers' staff at their works/service station without any extra charge.

## **11.3 CERTIFICATE OF COMPLETION**

11.3.1 The contractor shall intimate to HLL in writing as and when the works are completed and put into beneficial use in order to enable HLL to check certify to the Employer to take over the plants.

11.3.2 The work shall not be considered as completed and put into beneficial use until HLL have certified in writing that the same has been completed and put into beneficial use.

11.3.3 The defects liability period of one year shall commence from date of such completion or any specific date mentioned therein.

#### **11.4 OPERATIONAL AND MAINTENANCE MANUALS**

11.4.1 The contractor shall also furnish the prints of all up-dated handing over along with required set of operating/maintenance manuals/instructions.

#### **11.5 STATUTORY APPROVALS**

All statutory approvals pertaining to the installations including electrical inspector approvals shall be in the scope of the contractor.

#### **LIST OF APPROVED MAKES FOR ELECTRICAL WORKS**

<b>S.NO.</b>	<b>MATERIALS</b>	<b>PREFERED MAKE</b>
1	RMU Unit	ABB, Schneider, Intrans, Siemens.
2	HT Panel	ABB, Schneider, Intrans, Siemens.
3	Dry type Transformer	Intrans / Megawin / Crompton / Resitech
4	HT / LT cables	Gloster / Finolex / Havells / Polycab
5	HT Cable Termination	Raychem / M-seal / 3M.
6	Diesel Generator (Engine)	Kirloskar, Cummins, Perkins, Greaves Cotton
7	Diesel Generator (Alternator)	Stamford, Kirloskar, KEL, Crompton Greaves
8	ACB	L&T / Legrand / Siemens / Schneider.
9	MCCB / SDU / Contactor	L&T / Legrand / Siemens / Schneider
10	Indication lamp, selector switch, push button	Salzer / L&T / Siemens / Schneider
11	Indication and Protection meters	L&T / Siemens / Schneider / Beluk
12	Current / Potential Transformer	Intrans / Resitech / PGR Powertech / Kappa
13	LT cable gland, lugs	Comet / Dowell / Jainson / Hex / Multi-pressing
14	MCBs, DBs, Industrial plugs	Legrand / Havells / Siemens / Hager
15	PVC wires (Copper)	Polycab / Bonton/ Finolex / Havells
16	PVC Conduit & accessories, Casing & capping	Precision / Konseal / Balco

17	Modular Switches	Legrand-Myrius / Anchor-Viola / Havells-Pearlz / MK- Ivory
18	Cat 6 UTP, Telephone, Co-axial cable	Polycab/ Bonton/ Finolex/ Havells
19	Light fitting	Philips / Crompton / Wipro
20	Ceiling, Exhaust fans	Usha / Crompton / Orient/ Vasora
21	Telephone Terminal box	Krone / Connectwell
22	Batten Holder	GM / Anchor / Havells / HPL
23	Capacitor	Sprague/ L&T/ Shreem/ Epcos



**BILL OF QUANTITIES**

**ABSTRACT**

SL. NO	ITEM	AMOUNT (Rs.)
1	Supply Installation Testing and Commissioning HT Works and its Allied External Electrical Works at Tertiary Cancer Centre, Kozhikode.	
	<b>GRAND TOTAL</b>	

**Signature of the Bidder with date**

Item no.	DSR code	Item Description	Unit	Qty	Rate (in words and figures)	Amount (in words and figures)
		DSR item				
<b>1. HT CABLE LAYING</b>						
1.1	8.1.2	Laying of one number PVC insulated and PVC sheathed/ XLPE power cable of 11 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.				
	a	Above 120 sq. mm and upto 400 sq. mm	m	120		
1.2	8.2.2	Laying of one number additional PVC insulated and PVC sheathed/ XLPE power cable of 11 KV grade of following size direct in ground in the same trench in one tier horizontal formation including excavation, sand cushioning, protective covering and refilling the trench etc as required.				
	a	Above 120 sq. mm and upto 400 sq. mm	m	30		
1.3	8.3.2	Laying of one number PVC insulated and PVC sheathed/ XLPE power cable of 11 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.				
	a	Above 120 sq. mm and upto 400 sq. mm	m	10		
1.4	8.4.2	Laying of one number PVC insulated and PVC sheathed/ XLPE power cable of 11 KV grade of following size in the existing masonry open duct/ cable tray etc as required.				

	a	Above 120 sq. mm and upto 400 sq. mm	m	10		
1.5	10.2 (SR civil)	Supply and installing of DG set stack for erecting exhaust pipe from 2 nos DG set, outdoor busduct support, cable tray support etc using structural steel work (riveted, bolted or welded) in built up sections, including angle, channel, I section, necessary nut and bolt and all required accessories including cutting, hoisting, fixing in position and applying 2 coats of primer and 2 coats of enamel paint of approved quality etc as required. The design of the stack with foundation & other structural details shall be got approved before fabrication. The items related to foundation for the stack, support for busduct etc shall be measured separately.	Kg	4000		
<b>2. HT CABLE JOINTING &amp; END TERMINATION</b>						
2.1		Supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required :				
a	10.4.3	150 sq.mm	Each	4		
b	10.4.3	240 sq. mm	Each	2		
c	10.4.4	300 sq. mm	Each	2		

2.2		Supplying and making outdoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required :				
a	10.5.4	300 sq. mm	Each	4		
b	10.5.3	240 sq. mm	Each	2		
c	10.5.2	150 sq. mm	Each	4		
<b>3. CABLE TRAY</b>						
3.1		Supply and installing following size of perforated GI cable trays with perforations not more than 17.5% in convenient sections, jointed with connectors, suspended from the ceiling with GI suspenders/ fixed to walls with suitable GI clamps, including bolts and nuts, bends, reducers, Tees, cross members etc as required.				
a	4.1.6	200 mm width x 50 mm depth x 1.6 mm thickness	m	30		
<b>4. EARTHING</b>						
4.1	5.2	Earthing with G.I. earth pipe 4.5 metre long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal/ coke as required.	Each	2		

4.2	5.4	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke as required.	Set	2		
4.3	5.7	Supplying and laying 6 SWG G.I. wire at 0.50 metre below ground level for conductor earth electrode, including connection/ termination with GI thimble etc. as required.	m	100		
4.4	5.8	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	m	30		
4.5	5.9	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	m	20		
4.6	5.14	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	m	20		
4.7	5.15	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	m	100		

4.8	5.19	Providing and fixing 4 mm dia copper wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/ submain wiring cable as required.	m	20		
4.9	5.20	Providing and fixing earth bus of 50 mm x 5 mm copper strip on surface for connections etc as required.	m	30		
<b>5. MV CABLE LAYING</b>						
5.1		Laying of one number PVC insulated and PVC sheathed/ XLPE power cable of 1.1 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.				
a	7.1.1	Upto 35 sq. mm	m	30		
b	7.1.3	Above 95 sq. mm and upto 185 sq. mm	m	30		
c	7.1.4	Above 185 sq. mm and upto 400 sq. mm	m	60		
5.2		Laying of one number additional PVC insulated and PVC sheathed/ XLPE power cable of 1.1 KV grade of following size direct in ground in the same trench in one tier horizontal formation including excavation and refilling the trench etc as required, but excluding sand cushioning and protective covering.				

a	7.2.1	Upto 35 sq. mm	m	30		
b	7.2.3	Above 95 sq. mm and upto 185 sq. mm	m	60		
c	7.2.4	Above 185 sq. mm and upto 400 sq. mm	m	60		
5.3		Laying of one number PVC insulated and PVC sheathed/ XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.				
a	7.5.2	Above 35 sq. mm and upto 95 sq. mm	m	30		
b	7.5.3	Above 95 sq. mm and upto 185 sq. mm	m	60		
c	7.5.4	Above 185 sq. mm and upto 400 sq. mm	m	120		
5.4		Laying and fixing of one number PVC insulated and PVC sheathed/ XLPE power cable of 1.1 KV grade of following size on wall surface as required.				

a	7.7.1	Upto 35 sq. mm (clamped with 1mm thick saddle)	m	30		
b	7.7.3	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)	m	60		
c	7.7.4	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)	m	60		
5.5		Laying and fixing of one number PVC insulated and PVC sheathed/ XLPE power cable of 1.1 KV grade of following size on cable tray as required.				
a	7.8.1	Upto 35 sq. mm (clamped with 1mm thick saddle)	m	30		
b	7.8.3	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)	m	30		
c	7.8.4	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)	m	90		



5.6	7.9	Supplying and making cable route marker with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) of size 60 cm X 60 cm at the bottom and 50 cm X 50 cm at the top with a thickness of 10cm including inscription duly engraved as required.	each	40		
<b>6. MV CABLE JOINTING &amp; END TERMINATION</b>						
6.1		Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed/ XLPE aluminium conductor cable of 1.1 KV grade as required.				
a	9.1.31	3.5 C x 400 sq.mm	Nos	24		
b	9.1.30	3.5 C x 300 sq.mm	Nos	12		
c	9.1.29	3.5 C x 240 sq.mm	Nos	2		
d	9.1.27	3.5 C x 185 sq.mm	Nos	2		
e	9.1.26	3.5 C x 150 sq.mm	Nos	2		
f	9.1.32	4 x 6 sqmm	Nos	10		

g	9.1.32	4 x 4 sqmm	Nos	4		
h	9.1.2	2 x 10 sqmm	Nos	10		
i	9.1.1	2 x 6 sqmm	Nos	10		
<b>7. MISCELLANEOUS CIVIL ITEMS</b>						
7.1		Providing, laying and fixing following dia G.I. pipe (medium class) in ground complete with G.I. fittings including trenching (75 cm deep) and re-filling etc as required				
a	14.13.1	50 mm dia	m	10		
b	14.13.3	100 mm dia	m	30		
c	14.13.4	150 mm dia	m	50		

7.2		Providing, laying and fixing following dia RCC pipe NP2 class (light duty) in ground complete with RCC collars, jointing with cement mortar 1:2 (1 cement : 2 fine sand) including trenching (75 cm deep) and refilling etc as required.				
a	14.13.1	100 mm dia	m	20		
b	14.13.3	150 mm dia	m	30		
c	14.13.4	300 mm dia	m	50		
<b>B</b>		<b>11 kV System</b>				
8	LMR	<b>HT Panel</b>				
8.1		Supply, Installation, Testing & Commissioning of indoor Type IP42, 11kV, 3Ph,3panel extendable type, in metal clad enclosure with min. 2mm thick powder coated CRCA sheet, dynamic mimic etc. Panel consist of 1 no. 11kV, 25kA, 630A, VCB panel, with insulation level 28/75 kVp, short time current for 25kA/ 3sec, intergral earth switch duly interlocked with VCB as incomer and 2 Nos. 630A,350 MVA VCB as per statutory requirement, front operated spring charged mechanism, 230V shunt trip coil, indication lamp, trip push button etc. The outgoing VCB shall be provided with DC Trip with 2 o/c +Earth Fault relay switch.VCB shall be provided with suitable spring mechanism for closing & tripping, all safety interlock,	E	1		

		required nos of auxillary contacts. Sleeved busbar of 630A aluminium to be provided,power pack for auxiliary supply shall be included in the price with all required accessories. The panel shall meet the requirement as per IE, CEIG, electricity board rules and regulation complete.				
		<b>RMU unit</b>				
8.2	LMR	Supply, erection, testing and commissioning of compact outdoor cubicle,motor operated comprising of two loop in 11 kV, 630amps 350MVA LBS with earth switch as incomer & One loop out 11 kV, 630A VCB as outgoings, which are manually operated type with OC/EF protection outdoor type with provision for future DAS compatability. The panel shall be suitable for expansion on either side,HT HRC fuse price shall be inclusive of the cost . The RMU shall in all respects fulfil the requirements of KSEB at no extra cost to the owner. The Panel shall be made out of 14G MS sheet & shall confirm to IP67 classification the unit should be mounted on PCC pedestral, rate shall include cost of PCC pedestral,battery and its charger.RMU ahall be having the provision for potential free contact for SCADA operation.Note: Busbar should be Extendable type	E	1		
8.3	LMR	Supply, Installation, testing and commissioning of out door type 11KV Metering Panel consist of CT Ratio **/5A, 15VA, Cl:0.2S - 3 Nos, Fixed Type PT of ratio : 11KV/110V, 25VA, Cl:0.2 - 1 No, TOD Meter of Class 0.2s - 1No as per KSEB recquirement.All necessary control wire for connection is inclusive in the item.	E	1		
8.4	LMR	<b>630kVA Dry Type Tansformer</b>				

		Supply, Installation, testing and commissioning of 630 kVA indoor type, 11 kV/ 433 V, 3 phase, Vector DYn-11, Copper wound, resin cast transformer with off load tap changer from +5% to -10% in steps of 2.5%. The HV side shall be Cable Box suitable for connecting HT Cable and LV box suitable for connecting cables of suitable size with spreader. The transformer shall be provided with 2 set O/C with high set element, one Inst. E/F relay, U/V & O/V protection on HV side, winding temperature indicator, winding temperature alarm & trip and all other standard fittings and accessories conforming to IS 11171/85 and IS2026/1975. The low set earth fault relay with neutral CT 200/5A, class 5P10, 15VA shall be provided, power pack for auxiliary supply shall be included in the price. The Transformer shall meet the ECBC requirements.	E	2		
8.3	LMR	<b>HT CABLE</b>				
		Supply of following 11kV (E) grade XLPE insulated PVC sheathed compact circular armoured aluminium conductor HT power cable, insulation screened with extruded semi conducting compound in combination with copper tape suitable for 11kV earthed system conforming to relevant standard.				
a	LMR	3C x 300 sq.mm	m	90		
b	LMR	3C x 240 sq.mm	m	20		

c	LMR	3C x150 sq.mm	m	180		
<b>9 DG SET &amp; LT PANELS</b>						
9.1	LMR	<b>DG SET-500 kva</b>				
		Supply, Installation, Testing and Commissioning of 500 KVA, silent type, water cooled, radiator type, four stroke, electric start D.G Set with acoustic enclosure and standard control panel for housing necessary engine controls. The engine shall be capable of taking 10% overload for one hour after 12 hours of continuous operation. The DG shall be suitable for AMF operation. The alternator shall be brushless, self excited, self regulated, SPD enclosure, class F/H insulation, suitable for continuous operation at 1500 rpm, generating 415 V +/- 5% at 0.8 p.f, 50Hz, 0.85 load factor, 3 phase, 4 wire system generally conforming to BS: 2613 & IS: 4722.				
		The control panel shall be provided with all engine protection equipments, indications etc The DG set shall be suitable for AMF operation and include all necessary control cabling from DG set to AMF panel and Main LT panel for AMF. The item also include supply and installation of diesel 990 ltr day tank with all necessary fuel piping, fittings etc from the day tank to engine for each DG set.				
		Both Engine and Alternator shall be mounted on common channel iron base frame, and with standard accessories such as antivibration pad, lead acid batteries (as specified by engine manufacturer) and engine driven battery charger along with leads, battery stand, fuel piping from fuel tank to Engine, electronic governor, Residential silencer, suitable size termination box for bus duct, external battery charger with float &	Nos	1		

		boost charger etc as required. Rate shall be inclusive of all lift, lead charges. The work should be as per Electrical Inspectorate/ Pollution control board norms.				
9.2	LMR	<b>DG SET-320 Kva</b>				
		Supply, Installation, Testing and Commissioning of 320 KVA, silent type, water cooled, radiator type, four stroke, electric start D.G Set with acoustic enclosure and standard control panel for housing necessary engine controls. The engine shall be capable of taking 10% overload for one hour after 12 hours of continuous operation. The DG shall be suitable for AMF operation. The alternator shall be brushless, self excited, self regulated, SPDP enclosure, class F/H insulation, suitable for continuous operation at 1500 rpm, generating 415 V +/- 5% at 0.8 p.f, 50Hz, 0.85 load factor, 3 phase, 4 wire system generally conforming to BS: 2613 & IS: 4722.				
		The control panel shall be provided with all engine protection equipments, indications etc The DG set shall be suitable for AMF operation and include all necessary control cabling from DG set to AMF panel and Main LT panel for AMF. The item also include supply and installation of diesel 990 ltr day tank with all necessary fuel piping, fittings etc from the day tank to engine for each DG set.				
		Both Engine and Alternator shall be mounted on common channel iron base frame, and with standard accessories such as antivibration pad, lead acid batteries (as specified by engine manufacturer) and engine driven battery charger along with leads, battery stand, fuel piping from fuel tank to Engine, electronic governor, Residential silencer, suitable size termination box for bus duct, external battery charger with float & boost charger etc as required. Rate	Nos	1		

		shall be inclusive of all lift, lead charges. The work should be as per Electrical Inspectorate/ Pollution control board norms.				
9.3		Supply & installation of exhaust gas piping of suitable diameter as per manufactures standard, welded black MS, B class pipe confirming to IS:3589 cut to required lengths and installed with necessary bends, supports and clamps, anti- vibration mountings, insulation of exhaust system with mineral wool/ Rockwool, 50mm thick wire mesh & aluminum cladding etc.	m	55		
		<b>LT PANELS</b>				
9.4	LMR	Supply, Installation, Testing & Commissioning of Main panel, cubicle type, made out of min 2mm thick CRCA sheet (load bearing), totally enclosed, IP42, free standing, floor mounting, dust and vermin proof, powder coated, indoor, compartmentalised, suitable for operation on 3 phase and neutral, 415 V, 50Hz AC system with busbars extendable on both sides, including internal wiring with suitable size wires, rotary handle, spreaders, 3mm thick gland plate, hinged type door with neoprene/ PU gasket etc. The panel shall include supply & installation of following switchgears, metering instruments and accessories as per specification. The panel shall be suitable for receiving 1600A and 1250A Bus duct to the incomer ACB.				
		<b>Incomer</b>				
		1000A, FP, 50kA, microprocessor based ACB electrical operated, drawout type, motorised, with overload, instantaneous SC, delayed SC, and ground fault protection with necessary communication port, shunt trip coil, U/V release etc - 2 nos.				



		800A, FP, 50kA, microprocessor based ACB electrical operated, drawout type, motorised, with overload, instantaneous SC, delayed SC, and ground fault protection with necessary communication port, shunt trip coil, U/V release etc - 1 no.				
		630A, FP, 50kA, microprocessor based MCCB with 630A FP AC3 Duty Power Contactor - 1 no.				
		Suitable for AMF operation between the DG and EB incomers and buscouplers with PLC logic controllers.				
		<b>Bus Coupler</b>				
		1000A, FP, 50kA, microprocessor based ACB electrical operated, drawout type, motorised with out protection with necessary communication port, shunt trip coil etc - 1 no.				
		<b>Busbar</b>				
		1 Set of 1000 A TPN busbars of high conductivity electrolytic quality copper conductor and suitable size earthing conductor through out the panel for its earthing.				
		<b>Instruments</b>				
		2A, C curve SP MCB - 4 set				
		RYB indication lamp, LED type - 4 set				
		On/Off, Trip indication lamp, LED type - 4 set				
		(0-500)V voltmeter, Digital type - 4 set				
		(0-1600)A ammeter, Digital type - 2 set				
		(0-1250)A ammeter, Digital type - 2 set				
		4 set 3 phase Digital Multi function meter to read V, A, F, kW, PF, kWh, Acc class 1 and with necessary communication port for BMS compactibility.				
		Low set earth fault relay using CT of 200/5A 15VA Cl. 5P10 with necessary control cable from CT at transformer neutral relay in MSB panel- 2 set				
		1000/5A 15VA class 1 resin cast CT - 2 set				
		800/5A 15VA class 1 resin cast CT - 1 set				
		630/5A 15VA class 1 resin cast CT - 1				

		set				
		1000/5A 15VA class 1 resin cast CT for connection to APFC panel - 2 set				
		All necessary accessories for BMS compactibility shall be provided in all the circuit breaker, multi-function meter etc as required.				
		Outgoing.				
		630A TPN 35kA MCCB with thermal magnetic release with adjustable OL, SC protection - 4 nos.				
		400A TPN 35kA MCCB with thermal magnetic release with adjustable OL, SC protection -4nos.				
		315A TPN 35kA MCCB with thermal magnetic release with adjustable OL, SC protection - 2 nos.				
		250A TPN 35kA MCCB with thermal magnetic release with adjustable OL, SC protection - 1 nos.				
		250A, TPN, switch disconnecter unit (Isolator), AC23, 415V, 50Hz, complete with handle assembly having door interlock - 1 no.				
		12 Nos 3 phase Digital Multi function meter to read V, A, F, kW, kWh with Acc class 1 including respective feeder rating CT on the outgoing feeders with necessary communication port for BMS compatibility.	Each	1		
9.5	LMR	Supply, Installation, Testing & Commissioning of 150kVAR APFC panel, cubicle type, made out of min 2mm thick CRCA sheet (load bearing), totally enclosed, IP42, free standing, floor mounting, dust and vermin proof, powder coated, indoor, compartmentalized, suitable for operation on 3 phase and neutral, 415 V, 50Hz AC system, including internal wiring with suitable size wires, rotary handle, spreaders 3mm thick gland plate, hinged type door with neoprene/ PU gasket etc. The panel shall include supply & installation of following switchgears, metering instruments and accessories as per				

		specification. Required nos. of louvers and panel mounted cooling fans with auto/ manual control shall be provided.				
		Incomer				
		1 No 400A, TPN, 35kA, MCCB with Thermal Magnetic release, having adjustable OL & SC protection.				
		Busbar				
		1 Set of 400 Amp TPN busbars of high conductivity electrolytic quality Aluminium alloy and suitable size earthing conductor through out the panel for its earthing.				
		<b>Instruments</b>				
		1 No 3 phase Digital Multi function meter to read V, A, F, PF with Acc class 1.				
		1 Set of phase indicating lamps, LED type, RYB.				
		1 Set of 2A 10kA C curve SP control MCB				
		1 Set of 600/5A, Class 1.0, 15VA, Cast Resin CT for metering.				
		1 no. 12 stage APFC relay				
		11 set On, Off push button				
		11 set On, Off LED type indication lamp				
		1 set Auto / manual selector switch.				
		<b>Outgoing.</b>				
		2 Nos 100A, TPN, 16kA, MCCB with Thermal Magnetic release, having adjustable OL protection.				
		2 Nos 63A, TPN, 16kA, MCCB with Thermal Magnetic release, having adjustable OL protection.				
		2 Nos. 12.5kVAR MPP heavy duty capacitor with capacitor duty contactor & 7% detuned harmonic filter copper wound.				
		2 Nos. 25kVAR MPP heavy duty capacitor with capacitor duty contactor & 7% detuned harmonic filter copper wound.				
		1 Nos. 50kVAR MPP heavy duty capacitor with capacitor duty contactor & 7% detuned harmonic filter copper				

		wound.				
		1 No. 12.5kVAR MPP heavy duty capacitor with 7% detuned harmonic filter copper wound directly connected.	Each	2		
9.6	LMR	Supply, Installation, Testing & Commissioning of Equipment Panel-1, cubicle type, made out of min 2mm thick CRCA sheet (load bearing), totally enclosed, IP42, free standing, floor mounting, dust and vermin proof, powder coated, indoor, compartmentalised, suitable for operation on 3 phase and neutral, 415 V, 50Hz AC system, including internal wiring with suitable size wires, rotary handle, spreaders, 3mm thick gland plate, hinged type door with neoprene gasket / PU etc. The panel shall include supply & installation of following switchgears, metering instruments and accessories as per specification.				
		<b>Incomer</b>				
		400A, FP, On-load changeover switch with extended rotory handle - 1 no.				
		400A, TPN, switch disconnector unit (Isolator), AC23, 415V, 50Hz, complete with handle assembly having door interlock - 1 no.				
		<b>Busbar</b>				
		1 Set of 450 A TPN busbars of high conductivity electrolytic quality Aluminium alloy and suitable size earthing conductor through out the panel for its earthing.				
		<b>Instruments</b>				
		2A, C curve SP MCB - 3 nos.				
		RYB indication lamp, LED type - 3 nos.				
		1 No 3 phase Digital Multi function meter to read V, A, F, PF, kW, kWh Acc class 1.				
		250/5A, 10VA, class 1, resin cast CT - 1 set				
		<b>Outgoing.</b>				

		160A, TPN, 16kA, MCCB, thermal magnetic having adjustable O/L protection - 3 nos.				
		63A, TPN, 16kA, MCCB, thermal magnetic having adjustable O/L protection - 3 nos.	Each	1		
9.7	LMR	Supply, Installation, Testing & Commissioning of Street lighting panel, cubicle type, made out of 2mm thick CRCA sheet, totally enclosed, free standing, floor mounting, dust and vermin proof, powder coated, outdoor type, compartmentalised, suitable for operation on 3 phase and neutral, 415 V, 50Hz AC system, including internal wiring with suitable size wires, rotary handle, spreaders, 3mm thick gland plate, hinged type door with neoprene gasket etc. The panel shall include supply & installation of following switchgears, metering instruments and accessories as per specification.				
		<b>Incomer</b>				
		63A, TPN, switch disconnecter unit (Isolator), AC23, 415V, 50Hz, complete with handle assembly having door interlock - 1 no.				
		<b>Busbar</b>				
		1 Set of 100 A TPN busbars of high conductivity electrolytic quality Aluminium alloy.				
		<b>Instruments</b>				
		2A, C curve SP MCB - 3 nos.				
		RYB indication lamp, LED type - 3 nos.				
		1 No 3 phase Digital Multi function meter to read V, A, F, PF, kW, kWh Acc class 1.				
		60/5A 5VA class 1 resin cast CT - 1 set				
		<b>Outgoing.</b>				
		16A TP+NL C curve MCB - 3 nos.				
		16A SP+NL C curve MCB - 9 nos.				

		25A AC1 duty 4P Power contactor - 3 nos.				
		Necessary space provision and control wiring for satisfactory operation of Astronomical time switch for automatic switching ON & OFF of street lights.	Each	1		
		17. LT CABLES				
9.8	LMR	Supply of the following size 1.1kV grade XLPE insulated PVC sheathed, armoured Aluminium conductor power cable confirming to IS 7098 (part 1) ammended upto date.				
a	LMR	3.5 C x 400 sq.mm	m	260		
b	LMR	3.5 C x 300 sq.mm	m	200		
c	LMR	3.5 C x 240 sq.mm	m	30		
d	LMR	3.5 C x 185 sq.mm	m	30		
e	LMR	3.5 C x 150 sq.mm	m	20		

f	LMR	3.5 C x 120 sq.mm	m	20		
g	LMR	4 x 6 sqmm	m	50		
h	LMR	4 x 4 sqmm	m	30		
i	LMR	2 x 10 sqmm	m	10		
j	LMR	2 x 6 sqmm	m	10		
<b>10. MISCELLANEOUS</b>						
10.1	LMR	Earthing with GI earth plate 1200 mm X 1200 mm X 12 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke as required.	Each	10		
10.2	LMR	Supply and laying 50mm x 8 mm GI strip at 0.5m below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc as required (Jointing shall be done by overlapping and with 2 sets of GI nut bolt & spring washer spaced 50mm).	m	10		

10.3	LMR	Providing and fixing 50mm X10 mm GI strip on surface or in recess for connections etc. as required.	m	180		
10.4	LMR	Supply and laying 32mm x6mm copper strip at 0.5m below ground as strip earth electrode, including connection / terminating with nut, bolt, spring, washer etc as required (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced 50mm).	m	20		
10.5	LMR	Supplying and fixing 40A/ 63A, TP/ TPN MCB, 415 Volts, "C" curve, miniature circuit breaker in the existing MCB DB complete with connections, testing and commissioning etc as required.	Each	20		
10.6	LMR	Supply & laying ISI marked following electrical grade chequered type rubber insulation mat as per IS 15652.				
a	LMR	2m x 1m x 6 mm for 415 V grade	Nos	10		
b	LMR	2m x 1m x 12 mm for 11 kV grade	Nos	2		
10.7	LMR	Supply and providing First Aid Chart duly framed and placed in a conspicuous location for clear vision.	Each	10		



10.8		Supply andfixing Emergency Push button switch with box.	Each	1		
10.9	LMR	Supply and providing Electrical main single line Diagram duly framed and placed in a conspicuous location for clear vision.	Each	3		
		<b>Grant Total</b>				

The quoted rate should be inclusive of all applicable taxes including the work contract tax but excluding service tax which shall be reimbursed at actuals.