

**EXTERNAL HT SERVICE CONNECTION AND GETTING  
APPROVAL FROM CENTRAL ELECTRICITY  
AUTHORITY AND PUDUCHERRY ELECTRICAL  
DEPARTMENT FOR URBAN HEALTH CENTRE AT  
KURUSIKUPPAM, JIPMER, PUDUCHERRY**

**Volume- IV  
BILL OF QUANTITIES**

**Tender No: HLL/IDD/CHN/19-20/031**

**Dated: 13th January 2020**



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**Bill of Quantities**

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**Name of Work: External HT service connection and getting approval from Central Electricity Authority and Puducherry Electrical Department for Urban Health centre at Kurusikuppam, JIPMER, Puducherry**

S.No	Description of works	Unit	Qty	Rate in figs in Rs.	Rate in words	Amount in figs
					In Rupees	In Rs.
1	<b>11KV D.P.Structure (Rail Pole)</b>	Set	1			
	Supply, fabrication, erection, testing & commissioning of 11 KV DP structure (Rail Pole) using required size of 12.8 Mtrs Rail poles and required size cross channel with ISMC for supporting structure for 11 kV components, 11 KV pin, disc and stay insulators, supports, jumpers/ interconnecting conductors with 0'SWG Cu, 25x3mm braided copper earthing for non current moving part like handle of AB switch etc. The item includes erection of DP structure on suitable concrete foundation and painting with one coat of metal primer after fabrication and two coats of aluminium enamel paint after erection complete and consists of the following. The cost of the civil foundation shall be measured along with civil items. The design of the foundation shall be got approved from Engineer-in-charge before execution.					
	11 KV,400A single brake,TP, gang operated AB switch with operating handle & locking mechanism - 1 set					
	11 KV Lighting Arrestors - 1 set					
	11 KV Drop out fuses - 1 set					
	The consumers DP structure shall be braced with state electricity board DP structure if required & interconnection shall be done with 0 SWG Cu wire.					
	The DP structure shall be with all necessary accessories for connecting 11kV cable as per particular specification & drawing. The 11kV DP structure shall be done as per the requirement of statutory authority.					

	<p>1Set - Jumpering wires &amp; necessary tinned copper binding wires complete as required</p> <p>1Set - Stay rods, wires, Guy insulators as required</p> <p>1Set - Connecting all non current carrying metal part of the DP structure, M.S. channels, L.A etc., to earth electrode with 25x3mm of bare copper flats and accessories with 8SWG bare wire. (Interconnections between electrodes measured seperately).</p> <p>The rate shall include required to complete the DP structure.</p> <p>a.All civil works like excavation, concreting, coping for poles</p> <p>b.Painting of DP structure with 1coats of anticorrosive red oxide primer &amp; 2coats of Aluminium enamel paint</p> <p>c.R,Y,B Colouring for all current carrying parts</p> <p>d.Conical insulators for L.A.down conductor</p>					
2	<p>Providing transformer yard fencing arrangement in chain link mesh with opening of 100x100mm fabricated in 12 SWG steel wire to height of 1.8mtrs with suitable GI angle iron frame/GI pipe and with suitable stiffeners for 2 pole structure yard with gate and locking arrangement as per CEIG regulation duly two coats of aluminium paint over a coat of primer.</p> <p>The above scope included side brick wall construction all around substation for the minimum height of 300mm from the filed Ground level</p> <p>The scope of work also included spreading of blue metal in all area of Substation including proper levelling and finishing</p>	Mtrs	30			
3	<p><b>RMG</b> Supply, erection, Testing and Commissioning of Outdoor type weather proof floor mounting type 11 KV 630A Load break switch with EB Meter &amp; busbars, powder coated 2mm thick sheet steel enclosure, shall be suitable for connecting XLPE armoured cable and with suitable 3mm thick gland plate of removable type.</p>	set	1			

	The Complete board shall be manufactured as per the standard practice & Shall meet the requirements of Local relevant authorities. The rates shall be for the complete board including supply of all components, hardwares, etc 22kV 630A Load Break Switch Comprising of :-					
	i. Mechanically interlocked earth switch.					
	ii. 2 NO + 2 NC Auxiliary Switch					
	iii. Mechanical ON/OFF Indication					
	vi.HT HRC Fuses					
	11 kV Epoxy Resin Cast Single Core Current Transformer					
	Ratio : As per site requirement					
	Core - I : Cl. 0.2S with 15VA burden for Metering					
	11 kV Epoxy Resin Cast Potential Transformer					
	Ratio : 11kV / $\sqrt{3}$ / 110V / $\sqrt{3}$ , Single Phase Fixed type					
	Core - I : Cl.0.2 with 100VA burden for Metering					
	Surge Arrester 18kV,10kA <b>As per PED Standard</b>					
<b>4</b>	Supply and Erection of 11 KV 630A Outdoor load break switch for RMG and Transformer isolation	set	1			
<b>5</b>	Providing and laying Non Pressure NP-4 class (Heavy duty) R.C.C. pipes including collars/spigot jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete					
	300 mm dia RCC pipes.	Mtr.	20			
<b>6</b>	<b>250KVA OLTC Transformer</b>					

	250KVA, Dyn11,ONAN 11KV/433V outdoor transformer with on load tap changer, with cable box on H.T and L.T side for termination and outdoor type RTCC panel located on plinth with necessary foundation arrangements, flat channels to place the wheels and stoppers. Unloading and receiving at site, loading, storing, lifting shall be in contractors accounts only. The trafo shall be supplied with oil temp indicator, winding, temperature indicator, marshelling box in with all accessories terminal blocks.Efficiency of the tranformer shall be of level 1.The OLTC should be having following specifications.	Set	1			
<b>7</b>	<b>Deleted</b>					
<b>8</b>	<b>DG STACKING</b>					
<b>8.1</b>	Initial Charging of Batteries	Nos	1			
<b>8.2</b>	Erection of Residential Silencers	Nos	1			
<b>8.3</b>	Supply and Erection of 6" Dia M.S. B-Class Pipe with all necessary bends, flanges and reducers	Mtrs	12			
<b>8.4</b>	Thermal Insulation for Residential Silencers	Nos	1			
<b>8.5</b>	Thermal Cladding for 6" Dia Piping with 24G Aluminium Sheets.	Mtrs	12			
<b>8.6</b>	Supply and Laying of 25 mm x 3 mm Copper Flat for Lightning Arrestor with supports	Mtrs	30			
<b>8.7</b>	Supply and Installation of Lighting Protective System of Air Terminal with 100Mtr coverage radius of 19mm Solid Copper rod 2 mtr long with ball & Spike arrangement	Nos	1			

9	Supply and erection of 400 A ATS fixed in a powder coated enclosure made up of 2 mm CRCA sheet outdoor type weather proof type with supports	Nos	1			
10	<b>DG Auto start Panel</b> Supply and Erection of Auto changeover ( EB / DG ) Panel made up of 16 SWG C.R. sheet Coated with siemens grey colour RAL 7032 powder coating with all its panel necessary locking accessories including control wiring with multi core armoured cables as per the drawing Specifications. (500H X 350W X 300D X 1.6mm thk.)- Panel consisting of 1) MCB, Lamp, Contactor, LVM - L&T 2) Timer - Selec 3) Selector Switch - Salzer	Nos	1			
11	<b>Main MV Panel :</b>					
	Supply, erection, testing and commissioning of <b>MAIN MV PANEL</b> fully compartmentalized metal clad, floor mounted, both side being made with extensible for 415V, 3 phase 4 wire 50 Hz system, aluminium busbars shall consist with following accessories. Panel being fabricated from 14/16SWG CRCA sheet steel, single fronted, free standing, front hinged, rear removable, extendable on both sides, dust & vermin proof, cubicle type, floor mounted, undrilled gland plates at top/bottom, complete with internal wiring, ferrules, name plates, painting etc., conforming to the technical specification for panels.	No	1			
	<b>TRANSFORMER SOURCE(UTILITY POWER):</b>					
	<b>Main Incomer - 1:-</b>					
	1No 400A, 4-pole, 36kA, MCCB with Thermal Magnetic Release with Rotary handle and Spreader link.					
	<b>Metering for Transformer Incomer(Each Comprising):</b>					
	1 Set - 400 / 5 A CT, class 1.0, 15VA					
	1 No - Demand controller					
	1 Set - RYB Indication lamp					
	1 Set - On / Off Push button					

	1 Set - ILPB On / Off / Trip indicator				
	1 No - Auto manual selector switch				
	1 No - E/F Relay				
	1 No - MFM				
	1set - T/N/C Switch				
	<b>DG SET BACKUP POWER:</b>				
	<b>Main Incomer - 2:-</b>				
	1No 400 A, 4-pole, 36kA, MCCB with Thermal Magnetic Release with Rotary handle and Spreader link.				
	<b>Metering for Each Incomer:-</b>				
	1 Set - 400 / 5 A CT, class 1.0, 15VA				
	1 No - Load manager				
	1 Set - RYB Indication lamp				
	1 Set - On / Off Push button				
	1 Set - ILPB On / Off / Trip indicator				
	1 No - Digital ammeter				
	1 No - Digital voltmeter				
	1 No - MFM				
	1set - T/N/C Switch				
	<b>Bus coupler:</b>				
	1No 400A, 4-pole, 36kA, MCCB with Thermal Magnetic Release with Rotary handle and Spreader link.				
	1No - Breaker T/N/C Switch				
	1 Set - On / Off Push button				
	Electrical & Mechanical Interlocking between EB, DG Incomers & Bus couplers				
	<b>Outgoing feeders - Both Transformer &amp; DG Sections</b>				
	3 Nos - 250 A TP MCCB with TM with rotary handle and spreader link.				
	1 No - 160 A TP MCCB with TM with rotary handle and spreader link.				
	1 No - 200 A TP MCCB with TM with rotary handle and spreader link.				
	2 Nos - 63A 25kA TPN+TM MCCB with Rotary Handle				
	5 Nos - 40A 25kA TPN+TM MCCB with Rotary Handle				
	6 Nos - 63A 25kA TPN+TM MCCB with Rotary Handle				
	<b>Metering for all Outgoing</b>				

	<b>Feeders(Each Comprising)</b>					
	1 No - MFM					
	1 Set - On / Off / Trip indicator					
	1 Set - CT Coil					
<b>12</b>	<b>APFC Panel 100 KVAR :</b>					
	Supply, erection, testing and commissioning of <b>APFC PANEL</b> fully compartmentalized metal clad, floor mounted, both side being made with extensible for 415V, 3 phase 4 wire 50 Hz system, aluminium busbars shall consist with following accessories. Panel being fabricated from 14/16SWG CRCA sheet steel, single fronted, free standing, front hinged, rear removable, extendable on both sides, dust & vermin proof, cubicle type, floor mounted, undrilled gland plates at top/bottom, complete with internal wiring, ferrules, name plates, painting etc., conforming to the technical specification for panels.	No	1			
	<b>Main Incomer :-</b>					
	1No 250 A, TPN, 25kA, MCCB with Thermal Magnetic Release with Rotary handle and Spreader link.					
	<b>Metering for Each Incomer:-</b>					
	1 Set - RYB Indication lamp					
	1 Set - On / Off / Trip indicator					
	1 Set ON/ OFF push button					
	1 Set - Digital Voltmeter					
	1 Set - Digital Ammeter					
	1 Set - CT Coil					
	1 No 12 Stage Automatic Power factor correction relay					
	<b>Outgoing :-</b>					
	<b>2 set 25KVAR feeder each comprising of:</b>					
	i) 100A 10KA TP MCCB					
	ii) 1 No 25KVAR Cpacitor duty contactor					
	iii) 1 Set ON/ OFF push button					
	iv) 1 No. 25 KVAR Cylindrical Type capacitor with 7% Detuned Reactor					
	v) 1 Set. ON/ OFF Indication lamps					
	<b>2 set 15KVAR feeder each comprising of:</b>					
	i) 63A 10KA TP MCCB					

	ii) 1 No 15KVAR Capacitor duty contactor					
	iii) 1 Set ON/ OFF push button					
	iv) 1 No. 15 KVAR Cylindrical Type capacitor with 7% Detuned Reactor					
	<b>2 set 10KVAR feeder each comprising of:</b>					
	i) 63A 10KA TP MCCB					
	ii) 1 No 10KVAR Capacitor duty contactor					
	iii) 1 Set ON/ OFF push button					
	iv) 1 No. 10 KVAR Cylindrical Type capacitor with 7% Detuned Reactor					
	<b>2 set 5 KVAR feeder each comprising of:</b>					
	i) 32A 10KA TP MCCB					
	ii) 1 No 5 KVAR Capacitor duty contactor					
	iii) 1 Set ON/ OFF push button					
	iv) 1 No. 5 KVAR Cylindrical Type capacitor with 7% Detuned Reactor					
	250 A TPN Aluminium bus bars, aluminium interconnections and earthing with connecting flat and powder coated painting etc., with color coded heat shrinkable sleeves and SMC Bus bar supports.					
	<b>HT CABLE</b>					
<b>13</b>	Supply of one number PVC insulated and PVC sheathed / XLPE power cable of 11 KV grade of following size					
	3CX95Sq.mm.Al.Ar.Cable	Mtrs	120			
	<b>LT CABLE</b>					
<b>14</b>	Supplying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size					
<b>14.1</b>	3.5C x 300 Sq.mm Al.Ar. Cable	Mtrs	100			
<b>14.2</b>	3.5C x 240 Sq.mm Al.Ar. Cable	Mtrs	40			

<b>14.3</b>	3.5C x 185 Sq.mm Al.Ar. Cable	Mtrs	120			
<b>14.4</b>	4 c x 2.5 sq.mm cu. Arm.cable	Mtrs	60			
<b>14.5</b>	3 c x 2.5 sq.mm cu. Arm.cable	Mtrs	50			
<b>14.6</b>	12c x2.5 sq.mm cu. Arm. Cable	Mtrs	20			
<b>14.7</b>	4C x 25 Sq.mm Al.Ar. Cable	Mtrs	200			
<b>14.8</b>	4C x 16 Sq.mm Al.Ar. Cable	Mtrs	200			
	<b>TERMINATIONS</b>					
<b>15</b>	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					
<b>15.1</b>	4 c x 2.5 sq.mm cu. Arm.cable	Each	6			
<b>15.2</b>	3 c x 2.5 sq.mm cu. Arm.cable	Each	4			
<b>15.3</b>	12c x2.5 sq.mm cu. Arm. Cable	Each	2			
	<b>SAFETY ITEMS</b>					
<b>16</b>	Supplying, erecton of 4.5 KG Co2 FIRE EXTINGUISHER properly fixed on the wall with necessary clamps, screws, bolts and nuts etc. The extinguisher shall be suitable for all types of fires (A, B & C).	Nos	2			
<b>17</b>	Supplying, erecting and connecting 4 Nos. 10 Ltrs. capacity Fire Bucket painted with Red oxide outside and White inside with handle at the bottom in a floor mounted angle iron frame with necessary clamps, screws etc. The	Nos	1			

	angle iron frame shall also be painted with Red paint.					
18	Supplying, erecting and connecting Treatment Chart in English and Tamil directly fixed on to the wall with necessary screws etc.	Nos	1			
19	Supplying of 11 KV Gloves as per norms	Nos	1			
20	Supplying of 440 V Gloves as per norms	Nos	1			
21	Supplying and laying 1800 mm. x 1200 mm x 3mm thick ISI Marked Rubber mats to be laid in Front of the Panel Boards as per norms.	Nos	5			
22	Supplying and fixing of 11 KV Danger Boards as per norms and Enigneer-in-charge direction	Nos	4			
23	Supplying and fixing of 440 V Danger Boards as per norms and Enigneer-in-charge direction.	Nos	4			
24	Supply & Fixing of of First Aid Box	No	1			
	<b>ELECTRICAL INSPECTOR APPROVAL</b>					
25	<b>CEA Approval</b> - Towards Preparation of Drawings, Getting Approval Arranging Inspection and Obtaining Safety Certificate from Local Electrical Inspectorate Authorities inclusive of all incidental charges.	Job	1			
26	<b>PED Approval works</b> - Co ordinate with the EB dept for Drawing .submitting HT application , Inspection arrangements, Co ordination with MRT team to get the Getting power etc.	Job	1			

27	Providing and fixing 25x3mm CU strip on surface or in recess for connection etc as required	Mtrs	100			
28	Providing and fixing 25x6mm CU strip on surface or in recess for connection etc as required	Mtrs	100			
29	Providing and fixing 25x6mm G.I strip on surface or in recess for connection etc as required	Mtrs	250			
30	Providing and laying Non Pressure NP-4 class (Heavy duty) R.C.C. pipes including collars/spigot jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete					
	450 mm dia RCC pipes.	Mtr.	20			
31	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	Kgs	1250			
	<b>HT Cable</b>					
32	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.					
	Upto 120 sq. mm	Mtrs	120			
	<b>LT CABLE</b>					
33	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.					

<b>33.1</b>	Upto 35 sq. mm	Mtrs	530			
<b>33.2</b>	Above 95 sq. mm and upto 185 sq. mm	Mtrs	120			
<b>33.3</b>	Above 185 sq. mm and upto 400 sq. mm	Mtrs	140			
	<b>TERMINATIONS</b>					
<b>34</b>	Supplying and making outdoor end termination with cast resin compound including aluminium lugs and other jointing materials for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 kV grade as required.					
	3 X 95 sq. mm	Each	2			
<b>35</b>	Supplying and making straight through joint with heat shrinkable kit including ferrules and other jointing materials for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 kV grade as required.					
	3 X 95 sq. mm	Each	2			
<b>36</b>	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					
<b>36.1</b>	3½ X 300 sq. mm (70 mm)	Each	6			

<b>36.2</b>	3½ X 240 sq. mm (62mm)	Each	4			
<b>36.3</b>	3½ X 185 sq. mm (57mm)	Each	8			
<b>36.4</b>	4 X 25 sq. mm (28mm)	Each	10			
<b>36.5</b>	4 X 16 sq. mm (28mm)	Each	10			
<b>36.6</b>	3 X 95 sq. mm	Each	4			
	<b>EARTHING</b>					
<b>37</b>	Earthing with G.I. earth pipe 4.5 meter long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal/ coke and salt as required.	Job	9			
<b>38</b>	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 meter long etc. with charcoal/ coke and salt as required.	Set	4			
<b>39</b>	Providing and fixing 4.00 mm dia copper wire on surface or in recess for loop earthing as required.	Mtrs	60			
<b>40</b>	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement :					

	1:1.5:3 (1 cement : 1.5 coarse sand(zone-III) : 3 graded stone aggregate 20 mm nominal size)	Cum	15.5			
<b>41</b>	Centering and shuttering including strutting, propping etc. and removal of form for all heights :					
	Columns, Pillars, Piers, Abutments, Posts and Struts	Sqm	35			
<b>42</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level.					
	Thermo-Mechanically Treated bars of grade Fe-500 D or more.	Kgs	1550			
<b>Total Amount</b>						
<b>Add GST</b>						
<b>Grand Total Amount incl. of GST in Figures</b>						
<b>Grand total amount in words: Rupees</b>						

**END OF VOLUME - IV**