

**SCHEDULE OF QUANTITIES FOR INSTALLATION OF EXTERNAL ELECTRICAL**

**WORK FOR PHASE-1 AT IIIT-GUWAHATI**

**Name of the Agency: M/s.**

**NIT NO: HPL/DGM(C)/TC/IIITG/2017-18/57 Dated: 06.10.2017**

S.No.	DESCRIPTION	UNIT	QTY	RATE in Rs.	AMOUNT in Rs.
	<b><u>SUB-HEAD-I :- HT PANELS &amp; TRANSFORMER</u></b>				
1	<p>Supplying, installation, testing &amp; commissioning of powder coated H.V. air insulated distribution switchgear <b>extendable type</b> consisting of <b>Four panel VCB H.T. Board (1I/C +Total 3 O/G - 2will be in future))</b> with <b>power packs</b> suitable for indoor installation for use on 33 KV 50 Hz earthed system having a symmetrical breaking capacity of 1500MVA for 1 sec at 33 KV comprising of 1250A 33 kV vaccum circuit breakers. The panel shall be equipped with following accessories as per SLD compete as required.</p> <p align="center"><b>INCOMING PANEL - 1 No.</b></p> <p>One Air insulated Metal clad 1250 Amp housing A set of three 3 phase PVC insulated 1250 Amps copper busbars. One Triple pole draw out truck mounted 1500 MVA 1250 Amps, Vaccum Circuit breaker fitted with all necessary are control devices &amp; with power pack. One Trip free, motor charged, spring released colsing mechanism fitted with shunt trip suitable for 240 volt AC operation complete with necessary requirements Auxiliary switches, emergency hand trip device and mechanical ON and OFF indicators. Three nos. 200/100/5+5A ratio, 15VA class 1.0 Resin cast Current Transformers for metering purposes. Three nos. 200/100/5+5A ratio, 15 VA Class 5P 10 Resin cast Current Transformers for protection. One three phase horizontal draw out type resin cast line type potential transformer of 33KV / 110 volts with 15 VA burden complete connected star /star on HV and LV sides with HV and LV fuses,isolating plugs ,for HV side and LV connection One strip heater to prevent absorption of moisture.</p> <p align="center"><b>INSTRUMENT PANEL:</b></p> <p>One 144 mm square, scaled 0-33kV flush type Voltmeter with 3 way and OFF selector switch. One 144 mm square, scaled 0-200 amps, flush type ammeter with 3 way and OFF selector switch. One three phase 3 wire KW meter. One static Triple pole very inverse definite mean time over current and earth fault relay with two outer elements connected for over current protection and the middle element for protection with over current setting of 20%-200% ,and earth fault setting10% - 40% Trip circuit supervision relay, trip annunciation &amp; Anti pumping. One set of Red / Green / Indicating lamps for close and open protection. One set of Amber indicating lamp for Trip circuit healthy . One set of white phase indicating lamps for phases.</p> <p align="center"><b>OUTGOING PANEL - 1 No.</b></p> <p>One Air insulated Metal clad 1250 Amp housing. Set of three phase PVC insulated 1250Amps Cu bus bars. One Triple pole draw out truck mounted 1500 MVA 1250 amps, Vaccum Circuit breaker fitted with all necessary are control devices &amp; with power pack. One trip free, motor charged ,spring released closing mechanism fitted with shunt trip suitable for 240 volt AC operation complete with necessary auxiliary switches, emergency hand trip device and mechanical ON and OFF indicators. Three nos. 150/50/5+5A ratio, 15VA class 1.0 Resin cast Current Transformers for metering purposes. Three nos. 150/50/5+5A ratio, 15 VA Class 5P 10 Resin cast Current Transformers for protection purposes. Meter CAG 14 relay protective for TFR feeder One strip heater to prevent absorption of moisture.</p> <p align="center"><b>INSTRUMENT PANEL:</b></p> <p>One no. 144 mm square, scaled 0-33000 volts, flush type voltmeter with 3 way and OFF selector switch. One no. 144 mm square, scaled 0-200 amps, flush type ammeter with 3 way and OFF selector switch.</p>				

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	<p>One set of testing links and terminals for KWH meter.</p> <p>One static Triple pole very IDMT over current and earth fault relay with 2 outer elements connected for overcurrent protection &amp; the middle element for earth fault protection with over current setting of 20% - 200% and earth fault setting 10% - 40%.</p> <p>Trip circuit supervision, relay trip circuit healthy &amp; trip annunciator relay.</p> <p>One set of Red / Green / Indicating lamps for check and open protection.</p> <p>One Amber indicating lamp for Trip circuit healthy</p> <p>One set of white phase indicating lamps for phases.</p> <p>One set of master trip relay.</p> <p>Cable box with single compression brass glands suitable size to receive 33 KV XLPE cable of 3 core 300 sq.mm.</p>	Set	1		
2	<p>Supplying/Instalalation/Testing and commissioning of 2000 KVA, 33000 / 433 volts delta / star, outdoor oil type naturally cooled Transformer(TR) with vector group Dyn II, and Off load tap changer of + 5% to - 15% on HT side in steps of 2.5% to give a constant supply of 433 volts on LT side, TR to be provided with cable box on HT side to receive upto 3 core 185 sq.mm. XPLE cable and <b>LT side bus bar chamber</b> to receive LT side to require 7x3.5x 400sq.mm XLPE cable complete as required and as per specifications and followings with latest IS:1180.</p> <p>Winding Temp. Indication (WTI) with alarm</p> <p>Buchholz relay with releae cock, alarm, contacts for trip and alarm</p> <p>Oil Temp. Indicator (OTI) with alarm</p> <p>Bidirectional rollers</p> <p>First filling of filtered dehydrated oil as per IS : 335 including make up fill during installation</p> <p>Oil conservator with filter cap, drain plug &amp; oil level gauge</p>	Each	1		
3	Supply of following 33 KV grade HT XLPE insulated, PVC sheathed FR cable as required.				
a	3c x 300sq mm	Meter	50		
b	3c x 185sq mm	Meter	20		
4 (DSR-8.5)	Laying of one number PVC insulted andPVC sheathed / XLPE power cable of 33 KV grade of following size direct in trench / gorund including excavation, sand cushioning, protective covering and refilling the trench etc. as required.				

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8.5.2	a. Above 120sq mm and upto 400sq mm	Meter	70		
5	Supplying and making cable end jointing with cast resin compound / heat shrinkable, including lugs and other jointing materials, for following size of 3 core, XLPE aluminium conductor cable of 33 KV grade as required :				
	<b>INDOOR TYPE</b>				
a	300 sq. mm	Each	3		
b	185 sq. mm	Each	1		
	<b>OUTDOOR TYPE</b>				
a	300 sq. mm	Each	1		
b	185 sq. mm	Each	1		
6	Supplying, laying, testing and commissioning of control cable 10 core 2.5 sq.mm. PVC insulated copper conductor 1.1 kV grade, armoured control cable in gorund / trench as required complete in all respect.	Meter	50		
	<b>SUB-HEAD :- TOTAL: Rs.</b>				
	<b>SUB-HEAD-II :- L.T. PANELS</b>				
7	<p>Design, fabrication, assembling, wiring, supplying and erection at site with chanel frame, grouting etc complete in al aspects of following distribution panels fabricated out of 14 gauge CRCA sheet steel in cubicle formation with reinforcement of suitable size angle iron,channels,T irons,flats wherever necessary for large distribution panels. The boards shall be powder coated treated with all anticorrosive process before painting as per standards with 2 coats of red oxide primer and final approved shade of enameled paint , 2 Nos. earthing terminals shall be provided for 3 phase distribution panels. The panels shall be suitable for 415 V ,3 phase ,4 wire , 50 Hz supply system . Lifting hooks shall be fabricated in easily transportable sections &amp; length, height, depth etc to match with site conditons . An approval shall be taken for each panel before final manufacturing.</p> <p>Galvanized hardwares with zinc passivation shall be used in fabrication of boards. Suitable earth bus to be provided throughout length of LT Panels and all panels.</p> <p>All ACB's EDO microprocessor based</p> <p>Incomers shall be Electrically &amp; Mechanically Interlocked with bus coupler &amp; each other. No two supplies should get mixed up</p> <p>Bus bar and interconnections should be of high conductivity electrolytic grade Aluminum.</p> <p>Busbars shall be TPN with Neutral Bus being half the size of phase busbar</p> <p>Busbar shall be PVC sleeved as per IS 375</p> <p>Measuring Instruments-Multifunction Digital Type with LED Display &amp; Selector Switch &amp; shall be provided with RS 485 ports for communicaton. Instruments shall have Class 1 Accuracy as per IS - 1248.</p> <p>Fault withstand capacity of the panels should be 50 KA, Icu=Ics=Icw for 1 second</p> <p><b>THE PANEL SHOULD BE EXTENDABLE TYPE SO THAT FUTURE ADDITION CAN BE DONE WITH THE PANEL THROUGH BUS COUPLER</b></p> <p><b>MAIN LT cum EMG PANEL</b></p> <p><b>INCOMER - 1 (TRANSFORMER - 2000 KVA)</b></p> <p>1 No. 3200A, 4P EDO ACB (50KA) with protections E/F,O/L,S/C release, U/V, shunt release, with NO &amp; NC Auxiliary contacts.</p> <p>Incomer Metering &amp; Protection.</p> <p>1 Set of Multifunction meter (96x96mm) for V/A/PF/Hz/KVAH/KWH with LCD/LED Display as per IS 14697</p> <p>3 Nos. 3200/5A ratio CTs 15 VA class 5P 10</p> <p>3 Nos. phase indicating lights with control fuses.</p> <p>under voltage protection</p> <p>over voltage protection</p> <p>IDMT protection</p> <p>Reverse Power protection</p> <p>Master Trip protection</p> <p>1 Set of control fuses &amp; control terminals.</p>				

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	<p>3 Nos. breaker ON/OFF/TRIP indication lamp with 2A SP MCB.  <b>INCOMER - 2 (DG SYNCH. PANEL)</b></p> <p>1 No. 1600A, 4P EDO ACB (50 KA)with protections E/F,O/L,S/C release, U/V, shunt release, with NO &amp; NC Auxiliary contacts.</p> <p>Incomer Metering &amp; Protection.</p> <p>1 Set of Multifunction meter (96x96mm) for V/A/PF/Hz/KVAH/KWH with LCD/LED Display as per IS 14697</p> <p>3 Nos. 1600/5A ratio CTs 15 VA class 5P 10</p> <p>3 Nos. phase indicating lights with control fuses.  under frequency protection  over frequency protection  under voltage protection  over voltage protection  IDMT protection  Reverse Power protection  Master Trip protection</p> <p>1 Set of control fuses &amp; control terminals.</p> <p>3 Nos. breaker ON/OFF/TRIP indication lamp with 2A SP MCB.  <b>Bus Couplar between Section 1&amp; 2</b></p> <p>3200A, 4P EDO ACB bus couplar with protections.  1 No. U/V release</p> <p>1 Set of control fuses &amp; control terminals  1 Set of ON/OFF/TRIP indication lamp.</p> <p><b>Bus Bar</b></p> <p>4000Amp TPN Aluminium bus bar with heat shrinkable coloured insulated PVC sleeves having a current density of not less than 1.0 Amp sq.mm. and the neutral bus of 50% capacity interconnections between bus bars and breakers shall be through solid strip.</p> <p><b>Outgoings :</b></p> <p>a) Two (2) Nos. 1600 Amp 4P ACB (50KA)  b) One (1) Nos. 1250 Amp 4P ACB (50KA)  c) Three (3) Nos. 630Amp 4P MCCB (35 KA)  d) Two (2) Nos. 400Amp 4P MCCB (35 KA)  e) Two (2) Nos. 320Amp 4P MCCB (35 KA)  f) Three (3) Nos. 200Amp 4P MCCB (25 KA)  g) Two (2) Nos. 100Amp 4P MCCB (16 KA)  h) One (1) Nos. 63Amp 4P MCCB (16 KA)</p>	Set	1		
8	<p>Design, Supplying and erection at site with chanel frmae. grouting etc. complete in all aspects of the following intergrated cubical type indoor automatic switching "ON" and "OFF" control panel with dust vermin proof lined locable doors complete with interconnection stepped relays contractors Push button and CTS complete with a capacitor bank as per specification (suitable for 400/440V 3 phase 50 C/S supply system) as required (capacitor Panel)</p> <p><b>INCOMING</b></p> <p>1250A TP+N ACB -1 No.  PHASE INDICATION lamps each backed up with 5A unit to indicate that the unit is "ON" - 20 Set  Indication lamp to each 100 KVAR capacitor unit to indicate that the unit (MPP type) is "ON" - 02 Nos.  Indication lamp to each 50 KVAR capacitor unit to indicate that the unit (MPP type) is "ON" - 07 Nos.  Indication lamp to each 25 KVAR capacitor unit to indicate that the unit (MPP type) is "ON" - 6 Nos.  Indication lamp to each 15 KVAR capacitor unit to indicate that the unit (MPP type) is "ON" - 2 Nos.  Indication lamp to each 10 KVAR capacitor unit to indicate that the unit (MPP type) is "ON" - 3 Nos.</p> <p>1 Set of MFM (96x96mm) for V/A/PF/Hz/KVAH/KWH with LCD/LED Display as per IS 14697</p> <p>1000/5A CTS Ratio -1 Set.  APFC Relay -1Set.  Power factor meter -1 Set.</p> <p><b>Outgoings</b></p> <p>200A MCCB with contractor to each 100 KVAR capacitor - 02 Nos.  100A MCCB with contractor to each 50 KVAR capacitor - 07 Nos.</p>				

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	63A MCB with contractor to each 25 KVAR capacitor - 6 Nos. 40A MCB with contractor to each 15 KVAR capacitor - 2 Nos. 40A MCB with contractor to each 10 KVAR capacitor - 3 Nos. Push button stations "RED" and "GREEN" push button for manual operation of contractor - 20 Set Autonation switching "ON" and "OFF" control panels as described above 100 KVAR capacitor bank - 02 Nos. 50 KVAR capacitor bank - 07 Nos. 25 KVAR capacitor bank - 6 Nos. 15 KVAR capacitor bank - 2 Nos. 10 KVAR capacitor bank - 3 Nos. All interconnections from bus bar to connectors and connectors to terminal	Set	1		
9	Design & Supply of cubicle type, LT outdoor feeder pillar, double door fully compartmentalised, dust and vermin proof, made out of 2 m.m. thick CRCA sheet steel, floor mounted, free standing, lockable, confirming to IP- 55, mounted on finished brick foundation, powder coated/ epoxy painted, cable entry from bottom, with following configuration- <b>(FP)</b> MCCB's shall be Ics = 100% Icu <b>FACULTY RESIDENCES F.P.</b> <b>INCOMER :-</b> 630A 4P MCCB Microprocessor based with protections 3 Nos. breaker ON/OFF/TRIP indication lamp with 2A SP MCB. 800A TPN+E Aluminium bus bar Suitable cable gland for 2nos. x 3.5c x 300 sq. mm. <b>OUTGOING :-</b> 200A 4P MCCB - 03 Nos. 100A 4P MCCB - 01 No.	Set	1		
10	<b>STREET LIGHT</b> <b>INCOMER :-</b> 100A 4P MCCB 150A TPN+E Aluminium bus bar Suitable cable gland for 4.0Cx 50 sq. mm. <b>OUTGOING :-</b> 10A SP MCB - 10 Nos. 40A 4P MCB - 1 Nos. 40A DP MCB - 1 Nos. 63A 4P MCB - 1 Nos. Timer & Contactor - 1 Set	Set	2		

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11	<p>Design,manufacturing,erection,testing &amp; installation of PLC based Auto Synchronization, Auto Load Transfer,Auto Load Sharing,Auto load balancing panel for parallel operation of 2nos. 500 KVA DG sets + 1no. 250KVA (existing) DG Set including interface between PLC (provision for addition of 3 more DG sets in future should be there) &amp; main LT Panel complete as required with following components complete in all aspects,if some component is missing do consider that too required for fully functionality.</p> <p><b>2nos. INCOMERS FOR 2nos. 500KVA</b>  800A 4P ACB with O/L, S/C, E/F + U/V - 1 no.  Breaker Control Switch  Digital MFM with RS-485 port, Acc cl-1  800/5A Metering CT, 15VA, Acc cl-1  800/5A Protection CT, 15VA, Acc cl-5P10</p> <p><b>1no. INCOMER FOR 1no. 250KVA</b>  630A 4P ACB with O/L, S/C, E/F + U/V - 1 no.  Breaker Control Switch  Digital MFM with RS-485 port, Acc cl-1  630/5A Metering CT, 15VA, Acc cl-1  630/5A Protection CT, 15VA, Acc cl-5P10</p> <p><b>Common Requirements</b>  Indicating Lights  Emergency Stop Push Button (Stayput Type)  Trickle/Boost Sel. Sw.1P, 2way,6A  Auto/ Manual Sel. Switch 2P, 3way + off  Idle/Run selector Switch  Load/demand Selector switch  Automatic Battery Charger, I/P-230V AC, O/P-24V DC, 25A with DC ammeter and voltmeter  TP MCB,6A (Motor Duty)  Cranking Relay, 2 C/O, 24V DC  Push Button  Control MCB, 10KA C Curve  Aux. Contactor  Hooter, 96Sq.mm., Electronic Type, 24V DC  Annunciator with T/A/R Push Button with Hooter Contact, 24V DC  On Delay Timer,0-10 Min. 24V DC(Electronic, 2 C/O)  On Delay Timer,0-180 Sec. 24V DC(Electronic, 2 C/O)  Toggle Switch  Voltage Monitoring Relay, 415V AC</p> <p><b>OUTGOINGS - 2000A - 1no.</b>  2000A 4P EDO ACB with O/L, S/C, E/F  Breaker Control Switch,25A  Indicating Lights  Digital Multifunction meter with RS-485 port, Acc cl-1  1600/5A Metering CT, 15VA, Acc cl-1  Control MCB, 10KA C Curve</p>	Set	1.00		

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	<b>*SPACE PROVISION SHOULD BE THERE IN THE PANEL TO ADD ON OF ONE BUS COUPLER FOR FUTURE.</b>				
		<b>SUB-HEAD III TOTAL: Rs.</b>			
	<b>SUB-HEAD III : EARTHING ON DSR-2016</b>				
12	Earthing with <b>G.I. earth plate</b> 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 and salt as required. (DSR - 5.4)	Set	20.00		
13	Earthing with <b>copper earth plate</b> 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 metre long etc. with charcoal/ coke and salt as required. (DSR - 5.6)	Set	6.00		
14	Providing and fixing 25mm x 5mm copper strip in 40mm dia GI pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc as required. (DSR-5.10)	Meter	100.00		
15	Providing and fixing 25mm x 5mm GI strip in 40mm dia GI pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc as required. (DSR-5.11)	Meter	350.00		
16	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required. (DSR - 5.14)	Meter	150.00		
17	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required. (DSR - 5.15)	Meter	400.00		
18	Providing and fixing 6 SWG dia GI wire on surface or in recess for loop earthing as required. (DSR-5.16)	Meter	1500.00		
		<b>SUB-HEAD III TOTAL: Rs.</b>			
	<b>SUB HEAD IV : L.T. CABLES XLPE (IS:7098)</b>				
19	Supplying of following sizes of XLPE PVC insulated PVC sheathed armoured alminum conductor power cable of 1.1 KV grade as required				
a	3-5 x 400 sq.mm	Meter	900		
b	3-5 x 300 sq.mm	Meter	2995		
c	3-5 x 185 sq.mm	Meter	240		
d	3-5 x 150 sq.mm	Meter	565		
e	3-5 x 70 sq.mm	Meter	50		
f	4 x 50 sq.mm	Meter	150		
g	4x16 sq mm	Meter	400		
h	4 x 6 sq.mm	Meter	2215		
i	4 x 4 sq.mm	Meter	50		
				<b>Total =</b>	

S.No.	DESCRIPTION	UNIT	QTY	RATE in Rs.	AMOUNT in Rs.
	<b>MV CABLE LAYING (DSR-2016)</b>				
20	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in gorund including excavation sand cushioning, protective covering, and refillingthe trench as required.				
7.1.1	Upto 35 sq. mm	Meter	2995		
7.1.2	Above 35 sq. mm and upto 95 sq. mm	Meter	200		
7.1.3	Above 95 sq. mm and upto 185 sq. mm	Meter	805		
7.1.4	Above 185 sq. mm and upto 400 sq. mm	Meter	3860		
	<b>MV CABLE JOINTING &amp; END TERMINATION</b>				
21.0	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.				
9.1.31	a) 3-5 x 400 sq.mm	Each	46		
9.1.30	b) 3-5 x 300 sq.mm	Each	20		
9.1.27	c) 3-5 x 185 sq.mm	Each	8		
9.1.26	d) 3-5 x 150 sq.mm	Each	8		
9.1.23	d) 3-5 x 70 sq.mm	Each	2		
9.1.36	e) 4 x 50 sq.mm	Each	2		
9.1.33	f) 4x16 sq mm	Each	8		
	g) 4 x 6 sq.mm	Each	132		
	h) 4 x 4 sq mm	Each	10		
21 A DSR item No.7.10	Supplying and fixing cable route marker with 10 cm X 10 cm X 5 mm thick G.I. plate with inscription there on, bolted /welded to 35 mm X 35 mm X 6 mm angle iron, 60 cm long and fixing the same in ground as required.	Each	80		
		<b>SUB-HEAD IV TOTAL: Rs.</b>			
	<b>SUB-HEAD V: MISCELLANEOUS ITEMS</b>				
22	Supplying of non-skid rubber mat 12mm thick and 1000mm width as required including cutting to required lengths of approved make with test certificates for 440 V L.T. switchgears conforming to IS/IE code..	Meter	20		
23	Supplying of fire bucket 9 Litre Capacity with sand, painted red and approved quality conforming to IS : 2546/1974.	Each	4		
24	Supplying of MS stand duly painted suitable for supporting two buckets ( Pedestal type )	Each	2		
25	Supplying and fixing carbon dioxide fire extinguisher type 4 .5 Kgs capacity of approved make with wall mounting bracket as required conforming to IS : 2878/1976.	Each	3		
26	Supplying of first aid box as approved complete with standard kit as prescribed by Indian Red cross.	Each	1		
27	S/F of <b>shock treatment chart</b> (prescribed under I.E.rules) duly framed with glass and supported from back with hard board with supply of all material labour T & P etc for proper completion of work.	Each	1		
28	Providing and fixing <b>M.V. danger notice</b> plate of 200 mm x 150 mm made of mild steel, at least 2 mm thick and vitreous enamelled white on both sides, and with inscription in single red colour on front side as required .	Each	1		
	<b>SUB HEAD V TOTAL Rs.</b>				



S.No.	DESCRIPTION	UNIT	QTY	RATE in Rs.	AMOUNT in Rs.
	<b>SUB-HEAD VI : STREET LIGHTING</b>				
29	Supplying and fixing of 6M (1m in & 5m out) GI Poles as per IS-1161 with latest amendment complete with top section suitable with 1.5mtr single arm Bracket with 250x250x12mm MS base plate including PU paint after chemical treatment and CKT marking as per drawing. The pole to be erected on cement concrete foundation of 1:2:4 with collar including 16A DP MCB & Busbar & excavation in all type of soil as required & as per drawing.	Each	30		
30	Supplying and fixing of 4M (1m in & 3m out) GI Poles as per IS-1161 with latest amendment complete with 200x200x12mm MS base plate including PU paint after chemical treatment and CKT marking as per drawing. The pole to be erected on cement concrete foundation of 1:2:4 with collar including 16A DP MCB & Busbar & excavation in all type of soil as required & as per drawing.	Each	12		
31	Supplying and fixing of integrated street light fitting with 60W LED lamp complete including supply, wiring and connection with 3x2.5sq.mm. PVC insulated stranded copper conductor and for earthing as required.	Each	30		
32	Supplying and fixing of Post Top street light fitting with 25W LED lamp complete including supply, wiring and connection with 3x2.5sq.mm. PVC insulated stranded copper conductor and for earthing as required.	Each	10		
33 DSR item 5.2	Earthing with 4.5M long 'B' class 40mm dia GI pipe including all accessories and providing cover plate complete with hinges locking arrangement at the top with salt and charcoal etc. complete as required.	Set	2		
34	Supplying & fixing in position 0.5 M long 50 mm class - B GI pipe suitable for mounting 18W GATE light luminaries as received and complete in all aspects as required.	Each	4		
35	Supplying and fixing Gate light 18W Lamp, complete including supply, wiring and connection . PVC insulated stranded copper conductor and for earthing complete as required.	Each	4		
36	Supplying, testing & Commissioning of IP66 rating 24W LED Solar Street Light with Tubular pole 6 M long with 1475x655x35 mm MS base plate including light fixture, one coat of red oxide and two coat of aluminium paint. The pole to be erected on cement concrete foundation of 1:2:4 with collar excavation in all type of soil as required. Also with 100 AH Solar Battery with charger in acid proof powder coated battery box. Solar street lighting system shall complete with all accessories etc as required to complete the job & shall follow IEC 61215, IEC61730, IEC61701 standard & have TUV & CE certified.	Each	25		
		<b>SUB-HEAD VII TOTAL:</b>			

S.No.	DESCRIPTION	UNIT	QTY	RATE in Rs.	AMOUNT in Rs.
	<b>SUB-HEAD VII:- DG SET</b>				
37	<p>Supply, Fixing, testing and Commissioning of <b>following KVA Rating Silent type Diesel Generating Set</b> at 0.8 PF, 415 Volts, 50 cycles per second, 1500 rpm, 3 phase, with AMF Control, 0.85 load factor including sound proof acoustic and weather proof enclosure, residential type silencer (as per CPCB-II norms) fabricated out of CRCA sheet of 14 / 16 SWG thickness with min. 9 tank pretreated before powder coating with ventilation system complete in all respects comprising of the following. Should be synchronize compatable (Testing of DG sets should be done as per specified in Technical specification).</p> <p>The canopy should be designed in such a way that the Noise level is not more than 75 DB level at a distance of 1 meter away from the DG set as per Indian standards.</p> <p><b>500 KVA</b> <b>Diesel Engine -</b></p> <p>Diesel Engine suitable for driving alternator of above rating, compression ignition, 4 stroke cycle, Radiator cooled, turbo charged, battery starting, 1500 RPM, suitable for above output of alternator at 40°C, 50% RH &amp; at 1000 M MSL and confirming to BS 5514, BS 649, IS 10000, capable of taking 10% overloading for one hour after 12 hrs of continuous loading, complete with all the accessories i.e. tachometer with hour meter, flexible coupling with guard, crank case of steel, crank shaft, connecting rods, electronic governing system, dynamically balanced flywheel, air intake manifold, Air cleaner, anti vibration pads, starter motor, including all other accessories required to complete the system.</p> <p><b>Instrument Panel -</b> Engine mounted Instrument Panel fitted with and having digital display for followings :</p> <ul style="list-style-type: none"> <li>Start stop switch with key</li> <li>Water temperature indication</li> <li>Lubrication oil pressure indication.</li> <li>Lubrication oil temperature indication.</li> <li>Battery charging indication</li> <li>RPM indication</li> <li>Over speed indication</li> <li>Low Lube oil trip indication</li> <li>Engine hours indication</li> </ul> <p>The DG set should be supplied with cable end box to terminate 2x3.5x400sq mm size of cables on alternator complete as required.</p> <p><b>Alternator -</b></p> <p>Synchronous Alternator of above capacity at 0.8 PF, 3 phase, 415 volts, 50 cycles, 4 wire, 1500 RPM, suitable for operation at 40 deg C, 50% RH &amp; at 1000 meter above MSL, capable of taking 10% overloading for one hour after 12 hrs of continuous loading, brushless, self excited, self regulated through AVR, continuous duty confirming to IS 4722, BS 2613 suitable for tropical conditions, class H insulation, including terminal box suitable for cable termination as required.</p> <p><b>Base Frame -</b> Both the engine and alternator shall be mounted on suitable base frame made of MS channel which shall be installed on cement concrete foundation and vibration isolating arrangement as per recommendations of manufacturer.</p> <p>The DG set is to be installed on the ground floor on by making the foundation. Unloading , loading , and installation shall be in the scope of contractor.</p> <p><b>Inbuilt Fuel tank</b> of standard capacity complete with inlet and outlet connections, oil indication gauge, drain plug, air breather, fuel transfer system for automatic fuel refilling system with pump, piping, valves, level indicators etc. complete. Apart from inbuilt tank 990 liters day tanks treated with anti corrosive treatment to be provided with each DG set</p> <p>Fuel oil required for testing the DG set as per IS Shall be supplied by the contractor.</p> <p>Tank shall be Provided with Low/High level sensor and alarm indication.</p> <p><b>Exhaust System -</b> Exhaust manifold with silencer complete with mineral wool / rock wool insulation on all sides, with chicken mesh wrapping and aluminium sheet cladding complete as required.(Minimum Height : 15 meter)</p>				

S.No.	DESCRIPTION	UNIT	QTY	RATE in Rs.	AMOUNT in Rs.
	The D G set should be supplied with required hardware for external PLC based auto load management system. <b>Starting system</b> - 24 Volt DC starting system comprising of starter motors : voltage regulator and arrangement for initial excitation complete with 12/24 Volts suitable nos. lead acid type batteries of suitable AH. <b>Ventillation System</b> - Arrangement for fresh air intake for cooling of the engine & alternator, extraction, discharging hot air into the atmosphere as per standard specifications.	Set	2		
38	Deassembling & Carraige of exiting DG Set complete from IITG Ambari to IITG Permanent Campus at Mirza, Installation, testing and Commissioning of <b>existing 250 KVA DG Set</b> including construction of foundation, cable connections etc. complete as required.	Set	1		
		<b>SUB-HEAD VII TOTAL:</b>			
	<b><u>SUB-HEAD IX:- METERING SYSTEM - WI-FI ENABLED</u></b>				
39	SITC of Digital 1 phase 2 wire , 50 Hz, 5-30A KWH Energy meter with display, class 1.0 Accuracy with Wi-Fi module & all necessary control circuits. Display all energy parameters like Voltage, Current, KW& KWH complete is all aspects to check the data remotely.	Each	48		
40	SITC of Digital 3 phase 4 wire , 50 Hz, 10-60A KWH Energy meter with display, class 1.0 Accuracy with Wi-Fi module & all necessary control circuits. Display all energy parameters like Voltage, Current, KW& KWH complete is all aspects to check the data remotely.	Each	2		
41	SITC of Digital 3 phase 4 wire , 50 Hz, of following CT operated KWH Energy meter with display, class 1.0 Accuracy, with RS485 port for communication & all necessary control circuits. Display all energy parameters like Voltage, Current, KW& KWH complete is all aspects to check the data remotely.				
	1600/5 Amp	Each	1		
	630/5 Amp	Each	1		
	400/5Amp	Each	2		
42 (DSR - 1.53.1)	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed steel/ PVC conduit as required.	Meter	100		
43 (DSR - 1.21.2)	Supplying and fixing of 25mm of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.	Meter	100		
		<b>SUB HEAD TOTAL</b>			
	<b><u>SUB-HEAD VIII:- 33KV MISC. ITEMS</u></b>				
44	Supply, erection, testing and commisioning of following items as per specifications & as per the direction of Engineer - in - charge.				
a)	33KV XLPE Cable 1-core 120sq mm	Mtr.	20		
b)	33KV CTPT set combined 50/5A (To be procured from APDCL)	No.	1		
c)	HT Static trivector energy meter only Instalation (Meter wiil be Suplied by IITG/APDCL)	No.	1		
d)	AMR with accessories (To be procured from APDCL)	No.	1		
e)	GI steel tublar pole SP-76	No.	4		
f)	GI Ch cross arm (100x50x6x3200 mm)	No.	12		
g)	33KV DO fuse 150A	Set	1		
h)	GI wire 6 SWG	KG	100		
i)	33KV polymeric disc insulator 90 KN	Set	6		
j)	33KV polymeric pin insulator	No.	12		
k)	AAA wolf conductor	Km	0.1		
l)	33KV LA line type	Set	1		
m)	Control cable 2.5sq mm 10 core	Mtr.	15		
n)	Angle (50x50x6) galv	Mtr.	60		
o)	Barbed wire	KG	60		
p)	GI earth pipe 1.8m length	No.	10		
q)	GI nuts & bolts with washers (assorted)	KG	50		
r)	Bi-mettalic lug (assorted)	No.	12		
s)	HT Danger Plate	No.	4		
t)	Pole clamp, GI Flat 50x6mm	No.	24		
u)	HT Tape	No.	10		
v)	PG Clamp	No.	12		
x)	Grouting of 4nos. poles	Set	4		

S.No.	DESCRIPTION	UNIT	QTY	RATE in Rs.	AMOUNT in Rs.
		SUB HEAD TOTAL			
NOTE:-THE SUBSTATION WORK TO BE GOT APPROVED FROM APDCL.					
IIIT-GUWAHATI - PHASE 1					
EXTERNAL ELECTRICAL WORKS					
SUMMARY OF COST					
S.NO	DESCRIPTION OF ITEM	Rs.	AMOUNT		
I	SUB HEAD I:- HT PANEL & TRANSFORMERS	Rs.			
II	SUB HEAD II:- LT PANELS	Rs.			
III	SUB HEAD III:- EARTHING	Rs.			
IV	SUB HEAD IV:- LT CABLES	Rs.			
V	SUB HEAD V:- MISC. ITEMS	Rs.			
VI	SUB HEAD VI:- STREET LIGHT	Rs.			
VII	SUB HEAD VII:- DG SET	Rs.			
VIII	SUB HEAD VIII:- 33KV MISC. ITEMS	Rs.			
IX	SUB HEAD IX:- METERING SYSTEM	Rs.			
	TOTAL:-	Rs.			