



# ASSAM ELECTRICITY GRID CORPORATION LIMITED

Regd. Off.: BIJULEE BHAWAN (FIRST FLOOR) PALTANBAZAR; GUWAHATI - 781001  
CIN: U40101AS2003SGC007238

PHONE: 0361-2739520 FAX NO.0361-2739513  
Web: [www.aegcl.co.in](http://www.aegcl.co.in)

No. AEGCL/MD/AIFA/ Tech-489/2011-12/SS&TL/Pt-1/36

Dtd: 20.09.2019

## CORRIGENDUM - II

IFB No. : MD/AEGCL/AIFA/Tech-489/2011-12/SS&TL/IFB  
Bid Identification No. MD/AEGCL/AIFA/Tech-489/2011-12/SS&TL/BID

In relation with the bid identified against the above referred IFB and Bid identification no. the following points may please be noted:

1. The rates to be quoted by the bidders in the BoQ (1-7) in the e-tender portal shall be exclusive of any taxes.
2. *It may however be noted that the Estimated Value of Rs. 45 Crores (approx.) as specified in the Tender is inclusive of all taxes. This is for reference of the Bidders.*
3. The "UoM" for item SI No. 4.04 in BoQ 7 may be read as "cum" instead of "sqm".
4. AEGCL's account details, as sought by the bidders, for submission of Bank Guarantee are attached herewith as **Annexure-I**.
5. The BoQ1 (Schedule No 1: SCHEDULE OF QUANTITY FOR SUBSTATION (SUPPLY)) showing the 'Qty' Column which was hidden in the e-tender portal is again attached herewith as **Annexure-II** for reference of the bidders.
6. The Technical Specification of the Metering Panel are attached herewith as **Annexure-III**.

*All other terms and conditions shall remain same.*

*Banerjee*  
*20/9/19*

**Chief General Manager(PP&D)**  
Assam Electricity Grid Corporation Ltd  
Bijulee Bhawan, Paltanbazar, Guwahati – 1

Memo No : MD/AEGCL/AIFA/Tech-489/2011-12/SS&TL/Pt-1/ 36(a)

dtd: 20.09.2019

Copy to:-

1. The AGM-III, HQ, AEGCL :-for necessary action for uploading on AEGCL's website.

*Banerjee*  
*20/9/19*

**Chief General Manager (PP&D).**

ANNEXURE I

# ASSAM ELECTRICITY GRID CORPORATION LIMITED

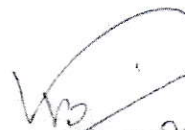
Regd. Office: 1<sup>st</sup> floor, Bijulee Bhawan, Paltan Bazar, Guwahati-781001

CIN: U40101AS2003SGC007238

PHONE: 0361-2739520      FAX: 0361-2739513      WEBSITE: [www.aegcl.co.in](http://www.aegcl.co.in)

BANK DETAIL OF ASSAM ELECTRICITY GRID CORPORATION LIMITED (PRINCIPAL ACCOUNT)

NAME: ASSAM ELECTRICITY GRID CORPORATION LIMITED  
A/C NO: 10566984188  
IFSC: SBIN0000221  
MICR CODE: 781002003  
BRANCH ADDRESS: NEW GUWAHATI BRANCH (00221)

  
29/12/17  
Asst. Manager (F&A)  
AEGCL, Bijulee Bhawan  
Paltanbazar, Ghy-1

Item Rate BoQ

Validate Print Help

Tender Inviting Authority: CGM(PP&D), AEGCL

Name of Work: TURNKEY CONSTRUCTION OF 132/33KV, 2X50 MVA SUB-STATION AT NATHKUCHI ALONG WITH ASSOCIATED TRANSMISSION LINES UNDER AIFA SCHEME

Contract No: Nil

Name of the Bidder/ Bidding Firm / Company :		Schedule No 1: SCHEDULE OF QUANTITY FOR SUBSTATION (SUPPLY)					(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )	
NUMBER #	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #	
Sl. No.	Item Description	Quantity	Units	Unit Price (exclusive of taxes) In Figures To be entered by the Bidder in Rs. P	TOTAL AMOUNT (Without Taxes) in Rs. P	TOTAL AMOUNT In Words	TEXT #	
1	2	4	5	13	53	55		
1.1	Power transformer 40/50 MVA, 132/33 kV, 3-Ph, YNyn0, Z =10 %, ONAN/ONAF with copper wound Power Transformer with OLTC(+5% to -15% in steps of 1.25%) , RTCC panel including all cabling & 10% spare oil. The Transformer shall be suitable for single / twin ACSR MOOSE Conductor termination on HV and twin ACSR MOOSE conductor on LV side. The transformer will be supplied with Bushing mounted NCT on HV & LV side as per the CT ration given in the SLD. The Transformer shall be suitable for outdoor installation & complete with all accessories to meet the technical specification.	2	Nos		0.00	INR Zero Only		
1.2	250 kVA, 33/0.433 kV, Copper Wound, 3ph, Dyn-11, Z=4% outdoor type "Station Transformer" with OFF Circuit Tap Changer , -5% to + 5 % in steps for 2.5 % & including 10 % spare oil.MV connection shall be through single ACSR MOOSE Conductor, LV Side shall be connected through XLPE Insulated LT cable.	2	Nos		0.00	INR Zero Only		
2	132kV Equipment							



2.1	145 kV, 3150 A, SCR 40 kA for 1 sec, SF6 Circuit Breaker, outdoor type, 3-Ph gang operated complete with operating mechanism & support structure with 10 % spare SF-6 gas.	7	Set	0.00	INR Zero Only
2.2	145 KV, 1250 A, 40 kA for 1 sec, 3-Ph gang operated Double Break Centre Post rotating , outdoor type , motor operated Disconnector (Isolator) complete without solid core post insulator.				
2.2.1	Without earth switch	6	Set	0.00	INR Zero Only
2.2.2	With one earth switch(manual)	12	Set	0.00	INR Zero Only
2.2.3	With Two earth switch(manual)	8	Set	0.00	INR Zero Only
2.2.4	With one earth switch(manual) Tandem type	6	Set	0.00	INR Zero Only
2.3	145 KV Outdoor type, live tank, single phase Current Transformer as per the details below: The CT shall meet the technical specification & other design requirement as per design requirement.				
2.3.1	Transformer feeder CTR : 600-300/1-1-1-1 A	6	Nos	0.00	INR Zero Only
2.3.2	Line & Bus Coupler CTR: 600-300/1-1-1-1 A	15	Nos	0.00	INR Zero Only
2.4	145 kV, 1-ph, Capacitor Voltage Transformer (CVT) for 132 kV Incoming Line (132kV/√3/110/√3/110/√3V) as per technical specification.	12	Nos	0.00	INR Zero Only
2.5	145 kV, 1-ph, Potential Transformer (PT) on BUS (132kV/√3/110/√3/110/√3V/110/√3V) as per the technical specification.	6	Nos	0.00	INR Zero Only
2.6	120 kV, 10 kA, Metal Oxide type, heavy duty, station class 3, Lightning Arrestor complete with Surge Counter & flexible copper connecting lead.	18	Nos	0.00	INR Zero Only
2.7.1	145kV BPI for Buswork	28	Nos	0.00	INR Zero Only
2.7.2	145kV BPI for Isolators	297	Nos	0.00	INR Zero Only
2.8	CT, CVT & PT JB complete with 30 nos Disconnecting type Terminals Blocks, complete with wiring.	13	Nos	0.00	INR Zero Only
2.9	Bay Marshalling Kiosk, made of 2.5 mm. thick sheet steel, protection class IP 55 complete with 250 TB	7	Nos	0.00	INR Zero Only
3.0	<b>String Insulator Hardware for 132 kV</b>				
3.01	Single Tension Insulator assembly suitable for 11 kV, 90 kN Disc Insulator with all hardwares accessories for twin ACSR MOOSE conductor ( without disc Insulator) with turn buckle.	24	Set	0.00	INR Zero Only
3.02	Single Tension Insulator assembly suitable for 11 kV, 90 kN Disc Insulator with all hardwares accessories for twin ACSR MOOSE conductor ( without disc Insulator) without turn buckle.	24	Set	0.00	INR Zero Only



3.03	Single Suspension Insulator assembly suitable for 11 KV, 70 kN Disc Insulator with all hardwares accessories for twin ACSR MOOSE conductor for through type ( without disc Insulator)	12	Set	0.00	INR Zero Only
3.04	Single Suspension Insulator assembly suitable for 11 KV, 70 kN Disc Insulator with all hardwares accessories for single ACSR MOOSE conductor for through type ( without disc Insulator).	15	Set	0.00	INR Zero Only
3.05	Single Suspension Insulator assembly suitable for 11 KV, 70 kN Disc Insulator with all hardwares accessories for single ACSR MOOSE conductor for Drop type ( without disc Insulator).	27	Set	0.00	INR Zero Only
3.06	Single Tension Insulator assembly suitable for 11 KV, 90 kN Disc Insulator with all hardwares accessories for single ACSR MOOSE conductor ( without disc Insulator) with turn buckle.	39	Set	0.00	INR Zero Only
3.07	Single Tension Insulator assembly suitable for 11 KV, 90 kN Disc Insulator with all hardwares accessories for single ACSR MOOSE conductor ( without disc Insulator ) without turn buckle.	24	Set	0.00	INR Zero Only
3.08	Single Suspension Insulator assembly suitable for 11 KV, 70 kN Disc Insulator with all hardwares accessories for Twin ACSR MOOSE conductor for Drop type	6	Set	0.00	INR Zero Only
3.09	90 KN Disc Insulator , B & S type for the String Insulator (Tension) with 5% spare	1165	Nos	0.00	INR Zero Only
3.1	70 KN Disc Insulator (Suspension) with 5% spare	567	Nos	0.00	INR Zero Only
3.11	ACSR MOOSE conductor	3700	M	0.00	INR Zero Only
4.0	<b>Terminal connectors for 132kV side. The Quantity of Terminal connectors shall be as per substation layout &amp; shall be supplied as per technical specification as per individual equipment requirement</b>				
4.01	Terminal connector for 145kV Isolator to receive single ACSR MOOSE Conductor.	198	Nos	0.00	INR Zero Only
4.02	Terminal connector for 145kV SF6 Circuit Breaker to receive single ACSR MOOSE Conductor	42	Nos	0.00	INR Zero Only
4.03	Terminal connector for 145kV Current Transformer terminal to receive single ACSR MOOSE Conductor	42	Nos	0.00	INR Zero Only
4.04	Terminal connector for 145kV CVT terminal to receive Single ACSR MOOSE Conductor	12	Nos	0.00	INR Zero Only
4.05	Terminal connector for 145kV PT terminal to receive Single ACSR MOOSE Conductor	6	Nos	0.00	INR Zero Only
4.06	Terminal connector for 145kV BPI to receive single ACSR MOOSE Conductor	24	Nos	0.00	INR Zero Only
4.07	Terminal connector for Wave-trap to receive single ACSR MOOSE Conductor	16	Nos	0.00	INR Zero Only
4.08	Terminal connector for 120kV Lightning Arrester to receive Single ACSR MOOSE Conductor	18	Nos	0.00	INR Zero Only
4.09	Transformer Bushing Connector ( 145kV Side )	6	Nos	0.00	INR Zero Only
4.1	Terminal connector for NCT suitable for 50x6 mm CU flat	2	Nos	0.00	INR Zero Only
4.11	Spacer for twin ACSR MOOSE with 250mm sub conductor spacing, rigid	90	Nos	0.00	INR Zero Only



4.12	C-Wedge connector for twin ACSR MOOSE	48	Nos		0.00	INR Zero Only
4.13	C-Wedge connector for single ACSR MOOSE	63	Nos		0.00	INR Zero Only
4.14	T- type connector suitable for single ACSR MOOSE through and same T-off	48	Nos		0.00	INR Zero Only
4.15	<b>Shield Wire &amp; Accessories</b>					
4.15.1	7/3.15 mm GSS wire for shielding	250	M		0.00	INR Zero Only
4.15.2	Tension Fittings for 7/3.15mm Earth wire	28	Nos.		0.00	INR Zero Only
4.15.3	Earth Wire Connector (PG Clamps)	20	Nos.		0.00	INR Zero Only
4.15.4	Cleat Clamp for clamping 7/3.15 mm GSS wire on to the Structure	150	Nos.		0.00	INR Zero Only
4.15.5	Pad Clamp for clamping 7/3.15 mm GSS wire on to the Structure for earthing	30	Nos.		0.00	INR Zero Only
5.0	<b>33 kV Equipment</b> <i>The equipment shall be suitable for outdoor installation and shall meet the technical requirement as per specification for 33 kV, 50 Hz, 31. kA/3 Sec., Creepage as 25 mm / Kv</i>					
5.01	36 kV, 1250 A, SCR 31.5/3sec, SF6, Outdoor type, 3-Ph gang operated complete with operating mechanism & support structure for Incoming Feeders & Bus coupler.	3	Set		0.00	INR Zero Only
5.02	36 kV, 1250 A, SCR 31.5/ 3 sec , SF6, Outdoor type, 3-Ph gang operated complete with operating mechanism & support structure for Outgoing Feeders.	6	Set		0.00	INR Zero Only
5.3						
5.3.1	36 KV,1250 A, 3-Ph gang operated, Outdoor type, Double Break centre Post rotating outdoor type motor operated Disconnector (Isolator) without solid core Post Insulator. Without earth switch for Incomer from Transformer	2	Set		0.00	INR Zero Only
5.3.2	With one earth switch for Bus Coupler	2	Set		0.00	INR Zero Only
5.4	Outdoor type 36 kV, 630 A, 3-Ph gang operated, outdoor type, Double Break centre Post rotating outdoor type motor operated Disconnector (Isolator) with solid core Post Insulator.					
5.4.1	With one earth switch	14	Set		0.00	INR Zero Only
5.4.2	Without earth switch	2	Set		0.00	INR Zero Only
5.5						
5.5.1	36 kV Out door type, live tank, single phase Current Transformers as given below.The CT shall meet the technical specification & other design requirements.					
5.5.2	36 kV Transformer side & Bus Coupler CTR:1200-600/1-1-1 A	9	Nos		0.00	INR Zero Only
5.6	36 kV outgoing Line Feeder CTR:1200-600/1-1-1 A	18	Nos		0.00	INR Zero Only
5.7	15 kV Neutral Current Transformer for 132/33 kV transformer on 33 kV side, CTR1200-600/1 -1A	2	Nos.		0.00	INR Zero Only
5.8	Outdoor type 36 kV , 1-ph, Potential Transformer(PT) (33kV $\sqrt{3}$ /110 $\sqrt{3}$ V) as per technical specification	6	Nos.		0.00	INR Zero Only
	30 kV, 10 kA, Metal Oxide type, heavy duty, station class Lightning Arrestor complete with Surge Counter & copper connecting lead	30	Nos.		0.00	INR Zero Only



5.9.1	33 kV, 8 kN Post Insulator (Bus works)	33	Nos.		0.00	INR Zero Only
5.9.2	33 kV, 6 kN Post Insulator (Isolators)	29	Nos.		0.00	INR Zero Only
5.10	100Amp, Horn gap fuse	2	Set		0.00	INR Zero Only
5.11	CT & PT JB complete with 30 nos Disconnecting type Terminal Blocks, complete with wiring.	11	Nos.		0.00	INR Zero Only
5.12	Bay Marshalling Kiosk, made of 2.5 mm. thick sheet steel, protection class IP 55 complete with 200 TB.	9	Nos.			
6.0	<b>Terminal connectors _ 33 kV side. The quantity of Terminal connectors shall be as per substation layout &amp; shall b supplied as per technical specification as per individual equipment requirement</b>					
6.01	Terminal Connector for 36 kV Isolator to receive twin ACSR MOOSE Conductor	24	Nos.		0.00	INR Zero Only
6.02	Terminal Connector for 36 kV Isolator to receive Single ACSR MOOSE Conductor	96	Nos.		0.00	INR Zero Only
6.03	Terminal Connector for 36 kV SF6 Circuit Breaker to receive twin ACSR MOOSE Conductor	18	Nos.		0.00	INR Zero Only
6.04	Terminal Connector for 36 kV SF6 Circuit Breaker to receive Single ACSR MOOSE Conductor	36	Nos.		0.00	INR Zero Only
6.05	Terminal Connector for 36kV Current Transformer to receive twin ACSR MOOSE Conductor	18	Nos.		0.00	INR Zero Only
6.06	Terminal Connector for 36kV Current Transformer to receive Single ACSR MOOSE Conductor	36	Nos.		0.00	INR Zero Only
6.07	Terminal Connector for NCT suitable for 50x6 mm CU flat	2	Nos.		0.00	INR Zero Only
6.08	Terminal Connector for 30 kV Lightning Arrester to receive Single ACSR MOOSE Conductor	30	Nos.		0.00	INR Zero Only
6.09	Terminal Connector for 36 kV PT Connector to receive Single ACSR MOOSE Conductor	6	Nos.		0.00	INR Zero Only
6.10	Transformer LV side Bushing Clamp (40/50 MVA Trafo)	6	Nos.		0.00	INR Zero Only
6.11	Transformer MV side Bushing Clamp (250 kVA Trafo)	680	Kg		0.00	INR Zero Only
6.12	3 Inch IPS AL Tube for 33kV bus	21	Nos.		0.00	INR Zero Only
6.13	Terminal connector for Bus PI suitable for 3 Inch IPS AL Tube	2	Nos.		0.00	INR Zero Only
6.14	Terminal connector for Bus PI suitable for twin ACSR moose conductor	9	Nos.		0.00	INR Zero Only
6.15	Terminal connector for Bus PI suitable for single ACSR moose conductor	6	Nos.		0.00	INR Zero Only
6.16	Tee connector suitable for interconnection of twin ACSR moose conductor to Al tube.	21	Nos.		0.00	INR Zero Only
6.17	Tee connector suitable for interconnection of Single ACSR moose conductor to Al tube.	20	Nos.		0.00	INR Zero Only
6.18	Spacer for twin ACSR MOOSE with 250 mm sub conductor spacing, rigid	29	Nos.		0.00	INR Zero Only
6.19	Terminal connector for Bus PI suitable for single ACSR moose conductor					

	End Caps and couplers/bends for 3Inch IPS AL Tube	7.5	Kg	0.00	INR Zero Only
6.2	Shield Wire Accessories				
6.2.1	Lightning mast with spike (Tubular pole)	2	Nos.	0.00	INR Zero Only
7.0	Control , Protection & Metering equipment				
7.1	Control and Relay Panel				
7.1.0	Indoor floor mounted, simplex type Control and Relay Panels, with mimic & annunciation panel for 132kV system as per specification comprising of the C & R Panels shall be complete with Numerical Relays and ABT Meters as per the Technical specifications & shall be compatible for SCADA/ SAS as open protocol.				
7.1.1	132 kV Line Protection & control Panel	4	Nos.	0.00	INR Zero Only
7.1.2	132/33 kV Transformer Protection & Control Panel	2	Nos.	0.00	INR Zero Only
7.1.3	132 kV Bus Coupler Protection & Control Panel	1	Nos.	0.00	INR Zero Only
7.1.4	Metering Panel for Lines	2	Nos.	0.00	INR Zero Only
7.2	Indoor floor mounted, simplex type control and relay panels, with mimic & annunciation panel with ABT Meters for 33kV system as per specification and data sheet comprising of				
7.2.1	33KV Line Protection & Control Panel	6	Nos.	0.00	INR Zero Only
7.2.2	33KV Transformer I/C Protection & Control Panel on 33 k V side of Power Transformer	2	Nos.	0.00	INR Zero Only
7.2.3	33KV Protection & Control Panel for Bus Section The control, metering & protection system shall be complete with Numerical relays & compatible for performing the functions as per the electrical specifications & shall be fully compatible with substation automation /SCADA.	1	Nos.	0.00	INR Zero Only
8.0	PLCC Equipment				
8.1	EPAX(8x24) with 24 nos. telephone, cable etc	1	Nos	0.00	INR Zero Only
8.2	Digital Protection Coupler with PLC Terminal	4	Nos	0.00	INR Zero Only
8.3	LMU / LMDU	4	Nos	0.00	INR Zero Only
8.4	HF Cable 75 ohms(balanced)	1.2	Km	0.00	INR Zero Only
8.5	132 kV, 800A wave trap for 40 kA for 1 sec. Wave trap will be CVT mounted.	8	No.	0.00	INR Zero Only
9.0	Substation Automation				



9.1	Substation Automation & SCADA system (as per the technical specification) along with Ethernet, Data Concentrator/ BCU , communication & data server, local work station with necessary accessories, hardware /software, fiber optic cabling & time synchronization equipment. Substation automation system of 132/33kV substations including hardware for present bays (132KV 8 Nos. bays , 33kV 10 no bays,) and software (for present bays and 132KV 3 no & 33kv 2 no future bays) along with associated equipment for each bay  The system shall be complete with Numerical Relay compatible with substation automation for 132 kV & 33 kV system. The numerical relays along with other measuring / indicating Instruments shall be part of the integrated SCADA system. The complete system of this Substation shall be integrated on SCADA which shall be further the communicable to Master control center & further communicate to RLDC.	1	Nos.		0.00	INR Zero Only
10.0	<b>Earthing and Lightning protection material</b>					
10.01	65 x 12 mm MS flat for Main Earth mat & Auxiliary Mat	6500	Mtr.		0.00	INR Zero Only
10.02	75 x 12 mm GI Flat for Equipment Earthing like CT,CB, Isolator , LA, BPI & Tower Earthing, riser below ground etc. (3.53kg/m)	4200	Mtr.		0.00	INR Zero Only
10.03	75 x 12 GI Flat for earthing of Transformer body	70	Mtr.		0.00	INR Zero Only
10.04	50 x 6 mm GI Flat for earthing of Marshalling Boxes, Panel, Junction boxes, Distribution Board, Battery Charger etc. (2.36kg/m)	1100	Mtr.		0.00	INR Zero Only
10.05	50x6 mm MS flat for cable trench earthing.	500	Mtr		0.00	INR Zero Only
10.06	50 x 6 mm Copper flat for earthing of Transformer Neutral on HV as well LV Side. (2.69kg/m)	100	Mtr.		0.00	INR Zero Only
10.07	40 mm Dia, 6.5 mtr long GI rod earth electrode (perforated) for earthing of LA, CVT, Lightning Mast, Shield Wire Transformer Neutral	110	Nos.		0.00	INR Zero Only
10.08	40 mm Dia 6.5 mtr long GI. Rod Earth Electrode at corners of Main Earth Mat , Gate & control room Earthing	18	Nos.		0.00	INR Zero Only
10.09	Lightning spikes for building which 100 mm dia GI Pipe, 1.5 mtr to be mounted on insulated base on building top and connected with 50x6 mm GI Flat.	56	Nos.		0.00	INR Zero Only
10.10	50x6 mm GI flat for all building spikes	1040	Mtr.		0.00	INR Zero Only
10.11	40 mm Dia 6.5 mtr long GI. Rod Earth Electrode for building spikes earthing	56	Nos.		0.00	INR Zero Only
10.12	Electrolytic grade copper plate 600mmx600mmx6mm for Transformer Neutral earthing to be provided in 6.5 mtr deep earth pit to be filled with salt & charcoal (as per standard earthing Practices)(Power trafo and aux. trafo)	12	Nos.		0.00	INR Zero Only
11.0	Note: The quantity of GI Flat/MS rod for earthing & lightning protection is approximate. The exact quantity to be arranged as per GFC drawing and as per site requirement					
11.1	<b>Lattice type Structural Steel</b>					
11.2	<b>Tower and Beams</b>					
11.3	Structural steel for Tower and beams (50% of MS and 50% of HT)	63.38	MT		0.00	INR Zero Only
12.0	Hardwares, nuts, bolts and spring washer	4.39	MT		0.00	INR Zero Only
12.1	Foundation Nuts and bolts	4.05	MT		0.00	INR Zero Only



14.2	Termination with double compression Gland and lugs for 2core x 16 sqmm. Cu cable	1	Lot	0.00	INR Zero Only
14.21	Termination with double compression Gland and lugs for 2core x 35 sqmm. Cu cable	1	Lot	0.00	INR Zero Only
14.22	Termination with double compression Gland and lugs for 1 core x 70 sqmm. Crucible	1	Lot	0.00	INR Zero Only
14.23	Termination with double compression Gland and lugs for 3 core x 2.5 sqmm. Cu cable	1	Lot	0.00	INR Zero Only
15	<b>Copper Control Cable</b>				
15.01	1100 V grade, PVC Insulated, PVC sheathed, steel round wire armoured, stranded control cables of the following sizes:				
15.02	2 core 2.5 sqmm.	700	Mtr	0.00	INR Zero Only
15.03	2 core 4 sqmm.	270	Mtr	0.00	INR Zero Only
15.04	2 Core 6 sqmm.	200	Mtr	0.00	INR Zero Only
15.05	4Core 4 sqmm.	4200	Mtr	0.00	INR Zero Only
15.06	4 core 2.5 sqmm.	7100	Mtr	0.00	INR Zero Only
15.07	7 core 2.5 sqmm.	2900	Mtr	0.00	INR Zero Only
15.08	12 core 2.5 sqmm.	7900	Mtr	0.00	INR Zero Only
15.09	19 Core 2.5 sqmm.	6500	Mtr	0.00	INR Zero Only
15.1	Double compression Glands and terminations (including ferruling, suitable Cu Lugs to meet the system requirements) for 1100 V grade PVC Insulated multicore Copper stranded conductor control cables of sizes: (2 core 2.5 sqmm., 2 core 4 sqmm., 2 Core 6 sqmm., 4Core 4 sqmm., 4Core 2.5 sqmm., 7 core 2.5 sqmm., 12 core 2.5 sqmm. & 19 Core 2.5 sqmm.)	1	Lot	0.00	INR Zero Only
16	<b>Cable Support &amp; Cable Trays</b>				
16.1	<b>Ladder type Cable Trays for outdoor</b>				
16.2	450 mm wide	980	Mtrs	0.00	INR Zero Only
16.3	300 mm wide	825	Mtrs	0.00	INR Zero Only
16.4	<b>Perforated Cable Trays inside the Control Building</b>				
16.5	450 mm wide	200	Mtrs	0.00	INR Zero Only
16.6	300 mm wide	60	Mtrs	0.00	INR Zero Only
16.7	HDD/PVC pipe for laying cable from Trench to equipment	1	Lot	0.00	INR Zero Only
16.8	63 mm Dia				
16.9	100 mm Dia				
17	<b>AC Distribution Board</b>				
17.1	AC 415V, 500A, 3-Ph cubicle type Indoor, floor mounted, auxiliary service board as per specification comprising of : (LVAC Board will have 2 sections , each section will be fed from independent Aux. transformer ( 250 KVA, 33/0.433 k V ). Busbar rating 600 A, 25 k A for 1 sec, Copper , IP 54 , 2 mm COLD ROLLED / 3 MM HOT ROLLED as aper specification )	1	Set	0.00	INR Zero Only
18	<b>DC Distribution Board ( 220 V DC &amp; 48 VDC)</b>				



18.1	DC Distribution Board will have 2 sections , each section will be fed from independent Battery charger. Busbar rating 200 A FOR 220 V DC, 16 k A / FOR 1 SEC , AL or Copper , IP 54 , 2 mm COLD ROLLED / 3 MM HOT ROLLED) as per specification	1	Set		0.00	INR Zero Only
18.2	DC Distribution Board will have 2 sections , each section will be fed from independent Battery charger. Busbar rating 200 A FOR 48 V DC, 16 k A / FOR 1 SEC , AL or Copper , IP 54 , 2 mm COLD ROLLED / 3 MM HOT ROLLED) as per specification	1	Set		0.00	INR Zero Only
19	<b>Battery and Battery charger</b>					
19.1	<b>Battery set ( 220 V DC )</b>					
19.2	220V DC, 300 AH lead acid battery of VRLA type complete with accessories as per specification with 10% spare acid in non- returnable container (In tier arrangement).	1	Set		0.00	INR Zero Only
19.3	<b>Battery set ( 48 V DC )</b>					
19.4	48V DC, 200 AH lead acid battery of VRLA type complete with accessories as per specification with 10% spare acid in non- returnable container (In tier arrangement).	1	Set		0.00	INR Zero Only
19.5	<b>Battery charger ( 220 V DC )</b>					
19.6	Automatic float and Float cum boost charger 60 A suitable for 220 V 300 AH VRLA battery & charger shall be as per specification	1	Set		0.00	INR Zero Only
19.7	<b>Battery charger ( 48 V DC )</b>					
19.8	Automatic float and Float cum boost charger 50 A suitable for 48 V 200 AH VRLA battery & charger shall be as per specification	1	Set		0.00	INR Zero Only
20	<b>Fire fighting</b>					
20.1	NIFPS _ Nitrogen Injection Fire Fighting System System for Transformer	2	Set		0.00	INR Zero Only
20.2	Fire Fighting equipment as per section-6 22.5 Kg capacity FE CO2 type, Trolley Mounted	4	Nos.		0.00	INR Zero Only
20.3	25 Kg Capacity FE DCP type, Trolley Mounted	4	Nos.		0.00	INR Zero Only
20.4	DCP 10 Kg Capacity, Wall mounted	6	Nos.		0.00	INR Zero Only
20.5	FE CO2 6.5 Kg capacity, Wall mounted	4	Nos.		0.00	INR Zero Only
20.6	DCP 5 Kg Capacity, Wall mounted	3	Nos.		0.00	INR Zero Only
20.7	Foam Type 9 liter Capacity, Wall mounted	4	Nos.		0.00	INR Zero Only
20.8	Water CO2 9 liter, Wall mounted	4	Nos.		0.00	INR Zero Only
20.9	Fire Buckets (12 Nos. with stand in one set)	2	set		0.00	INR Zero Only
21	<b>Outdoor illumination</b>					
21.1	LED flood light fitting with 250W led with all accessories control gear for Yard Lighting ( to be mounted on Gantry Tower )	22	Nos.		0.00	INR Zero Only
21.2	LED flood light fitting with 250W led with all accessories control gear near boundary( to be mounted on 10 mtr. Pole)	16	Nos.		0.00	INR Zero Only
21.3	LED street light fitting with 150W led with all accessories control gear on sirect ( to be mounted on 10 mtr. Pole)	36	Nos.		0.00	INR Zero Only
21.4	70W LED lights post lantern light mounted on 2.5 mtr. P-type pole	10	Nos.		0.00	INR Zero Only

21.5	10 Mtr. MS Tubular poles 540SP-72	52	Nos.	0.00	INR Zero Only
21.6	2.5 Mtr. P-type pole made of 100mm Dia GI Pipe	10	Nos.	0.00	INR Zero Only
21.7	Lighting junction box for Light suitable for out door Installation comprising of 4 Nos. CBT M 4 type terminal connector for light connections Max size 150 x150x100mm	84	Nos.	0.00	INR Zero Only
21.8	AC 415V,50 kA for 1 Sec cubicle type Outdoor, Plinth mounted, Outdoor yard lighting panel as per specification comprising of Incomer 100A TPN MCCB - (1 No.), light. (1 Nos), 70A 4P CONTACTOR 1 NOS,24 Hr timer for auto Operation,Auto manual selector switch , 1 set push button for on/off operation.,Outgoing feeder 63A TPNMCCB (4 nos)	3	Nos.	0.00	INR Zero Only
22	<b>Air conditioning</b>				
22.1	Split unit for Control room (capacity 2 TR)	7	Nos.	0.00	INR Zero Only
23	<b>Measuring Instruments</b>				
23.1	Digital earth resistance meter	1	Nos	0.00	INR Zero Only
23.2	5 kV automated Insulation resistance meter	1	Nos	0.00	INR Zero Only
23.4	Earthing stick	1	Nos	0.00	INR Zero Only
24	<b>Furniture</b>				
24.1	Executive Table :(1800mmX900mm)(Wooden)	2	Nos	0.00	INR Zero Only
24.2	Executive Chair:(Revolving mid back type)	3	Nos	0.00	INR Zero Only
24.3	Visitor's Chair with hand rest	6	Nos	0.00	INR Zero Only
24.4	Computer Room Executive Chair (Revolving mid back type)	1	Nos	0.00	INR Zero Only
24.5	2 nos. of Steel Almirah LengthXWidthXHeight in mm(1016X560X1980)	2	No	0.00	INR Zero Only
24.6	1 Nos. of Recta work station of size 1200mmX600mm,25 mm thick work top with 3 drawer pedestal along with keyboard tray and CPU trolley and partitions of thickness 53 mm and of height 1200 mm.	1	No	0.00	INR Zero Only
25	Miscellaneous items (First Aid box -2 nos ,Accident prevention chart - 2nos, Aluminum alloy ladder - 2 nos , Safety belt 6nos , Earthing stick -3 nos , Helmet - 10 nos))	1	Lot	0.00	INR Zero Only
<b>Total in Figures</b>				<b>0.00</b>	<b>INR Zero Only</b>
<b>Quoted Rate in Words</b>		<b>INR Zero Only</b>			



**TECHNICAL SPECIFICATION FOR METERING PANEL**

**1. SCOPE:**

This specification covers the design, manufacture, testing and supply of floor mounting indoor type metering cubicle having energy meter/ ABT meter/TVM as per the client specification. Metering cubicles shall be of the relevant design conforming to relevant IS Standard respectively and have obtained type test certificates.

**2. STANDARD:**

The equipment offered shall conform to latest relevant Indian Standards listed hereunder or equivalent IEC :-

Sr. No.	Standard	Title
1.	IS: 5	Colour for ready mix paints.
2.	IS: 375	Marking & arrangements for switchgear, bus bars, main connections & auxiliary wiring.
3.	IS: 694	PVC insulated cable for working voltage upto and including 1100 V.
4.	IS: 722	AC Electricity meters.
5.	IS: 1248 Part-I& IV	Direct acting indicating analogue electrical measuring instruments & their accessories.
6.	IS: 2419	Dimensions for panel mounted indicating & recording electrical instruments.
7.	IS :2147	Degree of protection provided by enclosures for low voltage switchgear & control gear.

**3. Service Conditions:**

Equipment to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions:

i)	Temperature	
	a) Maximum	45 <sup>0</sup> C
	b) Minimum	5 <sup>0</sup> C
ii)	Relative Humidity	92%
iii)	Average rain fall/year	1744 mm
iv)	Altitude above mean sea level	Below 1000 meters
v)	Wind pressure	925 N./m <sup>2</sup>
vi)	Average number of dust storm days per annum	83.2

**4. AUX. POWER SUPPLY :**

- i) A.C. Supply : 415/240 Volts, 3-phase, 4-wire, 50 Hz  
Voltage variation :  $\pm 10\%$   
Frequency variation :  $\pm 3\%$
- ii) D C Supply : 220 Volts, 2 wire available from S/St  
Variation:  $\pm 10\%$ .

**5. DESIGN:**

- a) The equipment shall be designed to ensure satisfactory operation under all conditions of service to facilitate easy inspection, cleaning and repairs.
- b) The design shall incorporate every reasonable precaution and provisions for safety of all those concerned in the operation and maintenance of the equipment.
- c) All connections and terminals shall be of sufficient size for carrying the specified currents continuously without undue heating.
- d) All bolts, nuts, washers in contact with non-ferrous parts shall be of brass.
- e) All ferrous parts including bolts & nuts liable to corrosion, forming integral part of the equipment shall be smoothly and continuously hot dip galvanized.
- f) The secondary terminal box, inspection cover and oil gauge shall be arranged with MU.

**6. Construction**

The metering panel shall be fabricated with 2.5 mm MS plate and shall have external dimensions of 1100x600x500mm (height x width x depth) (approx) or as per site requirement. Height of panel is fixed but width & depth is minimum and may be increased suitably to accommodate CTs/PTs, if required, however in this case only CT & PT /CVT output shall be wired on the metering panel. Thus, total height including base channel will be 1200mm. The panel should be provided with 4 Nos. lifting hooks.

The panel shall be dust and vermin proof and totally enclosed and IP54. The panel shall have two separate compartments. The upper one shall house trivector meter, energy meter and check energy meter with associated wiring and shall be termed as "Meter compartment".

The Metering cubicle shall be totally enclosed and shall be provided with one no. hinged door made of MS sheet which shall rest on the collar along sides of cubicle so that the doors remain flushed with body of the cubicle.

The door shall be provided with a handle and two nos sealing arrangement. There shall be one fixed (non-openable) window (approximate size 300x200mm) fitted with transparent acrylic glass to enable the meter reader to note down the reading without opening the door of the panel. The glass shall be fitted /tightened with MS Frame from inside of window.

The metering panel shall be provided with two Nos. MS channels of size 100x50mm of 600mm length on the front and rear sides duly welded at the bottom of the panel. These shall



have 4 holes of 16mm for foundation bolts at both the ends of each channel. All the joints of the metering panel shall be welded to provide strong mechanical construction both for transportation as well as during its use. The metering panel shall have arrangement to connect it will earth at two independent points. One earthing knob/bolt shall also be provided in the "Meter compartment" for connection to star point of wiring. All the three earthing bolts shall be provided with nuts and washer.

The metering panel shall be cleaned suitably and will go through phosphating using seven tank dipping procedure and its surface shall be made smooth. It shall be powder coated as per relevant IS specification. The colour of paint shall be decided at the event of order.

All the moving/mating edges shall be provided with synthetic/semi synthetic gasket firmly glued to surface, to make the metering panel dust & vermin proof.

The meter compartment shall contain hanger arrangement of slotted angle for mounting main meter and check meter having flexibility for moving meters vertically or horizontally. Clearances between all parts and components of panel should comply with relevant IS Standard, which shall be checked by AEGCL.

#### **7. METERS & METERING ACCESSORIES:**

Ammeter : Three nos. Ammeter 96 mm. sq. 90 deg scale, flush type shall be provided in the upper most position of the panel. The Ammeter shall be suitable for direct reading and shall be suitably calibrated according to current transformer. Ammeter shall be connected from the metering cores of outdoor 132 kV current transformer secondary.

Test Terminal Block : Standard Test Terminal Block with cover having Sealing Arrangement shall be provided in metering circuit of equipment panel for connection to 3 phase 4 wire Energy Meter. TTB to be placed beneath the Energy Meter. 15 slot TB's to receive control cable from outdoor 132 KV CT secondary and 15 slot TB's to receive control cable from outdoor 132 KV CVT secondary.

Space & Wiring for Energy Meter : Necessary space shall be provided in man height position of the equipment panel for housing projected type Energy Meter. Space is to be provided for fixing of Energy Meter of dimension as per Standard meter. Necessary wiring shall be drawn from Test Terminal Block for connection of Energy Meter.

The Energy meter/ABT/TVM shall be as per the AEGCL specification and shall be properly secured in the specified chamber of metering panel.

#### **8. SPACE HEATER AND CUBICLE PLUG & SWITCH :**

60W 230V A.C. Space Heater with thermostat and toggle switch shall be provided in the cubicle close to interrupting chamber.

A 230 Volts A.C. operated 6 amps. 3-Pin Plug & Toggle Switch shall be provided inside the instrument chamber of panel for working in the panel.

External 230 Volts A.C. supply shall be arranged in the multi core cable box by the user.

Necessary wiring shall be provided for cubicle plug and switch circuit from the multi core cable end box through a set of fuse and link.

#### **9. BOARD TERMINAL BLOCKS :**

Multiway Terminal Blocks complete with necessary binding screws and washers for wiring connections shall be provided for terminating cubicle wiring. The Terminal Blocks shall have at least 25% spare terminals.

The Terminal shall be bolted type, robust, rust free and suitable for connection of at least 2 nos. 4 sq.mm. copper wires per terminal. Disconnecting type terminals is to be used in CT Circuit.

**10. SECONDARY & SMALL WIRING :**

- 1 The manufacturer shall furnish and install all wiring for the equipment and devices located at the Panel Board and Wiring shall be completed in all respect so as to ensure proper functioning of control, protection, metering and indications.
- 2 Fuses shall be provided to enable individual circuit to be isolated from bus wire without disturbing the other circuits.
- 3 All wiring shall be done with flexible heat resistant Switch Board coloured wires P.V.C. insulated with standard copper conductor suitable for 1100 volts service.
- 4 Minimum permissible size of wire for different circuits shall be 4 sq.mm. for C.T. Circuit and
- 5 2.5 sq.mm for all other Circuits.
- 6 The colour scheme of wires shall be as per provision in the I.S.
- 7 Each wire shall be identified at both ends with wire designation in accordance with stipulation in I.S. Inter Locking type plastic ferrules shall be used for identification.
- 8 The wires shall be suitably grouped in bunches by non-metallic wiring cleats or bands with each bunch adequately supported along its run to prevent sagging due to flexibility or vibration conforming to I.S.
- 9 All wiring shall be done in such a way that it will have sufficient clearance from H.V. System.
- 10 Other than L.T. PT Fuse, no Fuse shall be provided in energy metering circuit carrying voltage source from P.T. Secondary.

**11. SEALING:**

Sealing bolts for sealing at 4 points on the secondary terminal box (both inner & outer door), inspection cover, the top cover of the tank shall be provided. This may be made by providing

a hole on tail of corner bolts of adequate size to pass the sealing wire or above 13 SWG.

**12. FLUCTUATION IN VOLTAGE AND FREQUENCY :**

For continuous operation, entire equipment shall be subjected to variation of voltage up to plus 20 minus 30 percent and frequency of plus or minus 3 percent.

**13. EARTHING:**

- a) Two earthing terminals shall be adequate size protected against corrosion and metallicly clean and identified by means of the sign marked in a legible and indelible



manner on or adjacent to the terminals.

b) All bolts should be provided with 2 flat washers and a spring washer with a nut.

**14. GUARANTEED TECHNICAL PARTICULARS:**

The Technical Particulars as specified in IS shall be guaranteed. Bidder should furnish the particulars required and guarantee the values so furnished for the supplies.

**15. Test**

Following tests shall be carried out at the manufacturer's works after complete assembly of panel and the test reports of such tests supplied in quadruplicate for approval of AGECL

- i) Checking and verification of the dimensions, gauge of the stainless steel, angle-iron frame work, terminal block connector and its components etc. viz-a-viz the respective approved drawings(s).
- ii) Checking wiring of circuits and their continuity.
- iii) One minute applied voltage tests for illumination/heater wiring in the marshalling kiosks.
- iv) Insulation resistance of complete wiring, circuit by circuit, with the lamp/heater mounted in the marshalling kiosks.

**16. INSPECTION :** As per the requirement of the bid document.

**17. DOCUMENTATION :**

All drawings shall conform to international standards organisation (ISO) 'A' series of drawing sheet/Indian Standards Specification IS:11065. All drawings shall be in ink and suitable for microfilming / digitization / scanning, etc for archive purposes. If drawings are computerized then all drawings shall be nicely printed. All dimensions and data shall be in S.I. Units.

**18. PACKING AND FORWARDING :**

The Metering panel shall be securely packed to avoid scratches on the stainless steel & transit damage to various components constituting the marshalling kiosks. The bidder/supplier shall be responsible for any damage to the equipment during transit due to improper & inadequate packing. The easily damageable material shall be carefully packed & marked with the appropriate symbols.