

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED

VIDYUT SOUDHA :: VIJAYAWADA

APTRANSCO – Standard Schedule of Rates for material items for adoption in Construction, RMI and O&M works pertaining to 400kV Transmission lines, Substations and Bay extension works for the year 2023-24 -Communicated – Reg.

T.O.O. No. Chief Engineer (Transmission) Ms.No. 3206

Dt. 19 .03.2024

Read the following: -

Ref :- 1. T.O.O .(CE-Transmission) M.S. No.2538, dated 19.08.2022.

2. TOO Ms.No.2920, Dt.17.08.2023 (220,132kV Material SSR 2023-24)

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APTRANSCO is periodically communicating Standard Schedule of rates for material items for Construction, RMI and O&M works pertaining to 400kV Transmission lines, Substations and Bay extension works for adoption in preparation of estimates. Accordingly, the SSR communicated earlier vide reference (1) is revised for material rates and communicated herewith.

ORDER

Standard Schedule of Rates for material items for Construction, RMI and O&M works pertaining to 400kV Transmission lines, Substations and Bay extension works for the year 2023-24 approved by Transmission Corporation of Andhra Pradesh is communicated herewith for adoption in preparation of estimates.

The standard scheduled of Rates for the year 2023-24 will come into force from the date of issue of this T.O.O and shall be valid till further orders. The SSR 2023-24 (For 400kV Material) is available in the APTRANSCO website. The 400 KV SSR 2023-24 Material shall be read along with TOO Ms.No.2920, Dt.17.08.2023 (220,132kV Material SSR 2023-24) vice versa.

This order is issued in concurrence with the Chairman and the Managing Director/APTRANSCO vide **Computer No: 2319859 File No: ENE51-TRM/4/2024-EE1.**

(BY ORDER AND IN THE NAME OF TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED)

A.K.V.Bhaskar

Director (Grid, Transmission & Management)

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED



**STANDARD SCHEDULE OF RATES OF
MATERIAL RATES FOR 400kV
TRANSMISSION LINES, SUBSTATIONS AND
BAY EXTENSION WORKS
FOR THE YEAR 2023-24**

INDEX

EQUIPMENT/MATERIAL RATES FOR 400KV SUBSTATIONS & LINES WORKS

S.No	Description	Page No
1	PREAMBLE:	4
2	ISOLATORS	5-6
3	CIRCUIT BREAKERS	6-8
4	LIGHTENING ARRESTORS	9
5	BATTERY AND BATTERY CHARGER	9-13
6	INSTRUMENT TRANSFORMERS	13-16
7	EARTHING AND EARTHMAT	16
8	BUSBAR MATERIAL	16-18
9	POWER AND CONTROL CABLES	18-20
10	INDOOR & OUTDOOR ILLUMINATION	20-24
11	AIR CONDITIONING AND VENTILLATION SYSTEM	24-26
12	DIESEL GENERATOR SET	26-27
13	FIRE PROTECTION, DETECTION & ALARM SYSTEMS	27-31
14	33KV STATION POWER SUPPLY FACILITIES	31-33
15	33KV STATION SUPPLY FROM ICT TERTIARY WINDING FOR UTILISATION IN 400KV SUBSTATIONS.	33
16	CONTROL HOUSE FURNITURE AND MONITORING SYSTEM	33-36
17	400KV LINE MATERIALS	36-38
18	INSULATORS	38
19	CONTROL AND RELAY PANELS ALONG WITH SAS EQUIPMENT FOR 400/ 220KV SUBSTATIONS (FOR 400KV PROJECTS ONLY)	38-41
20	VISUAL MONITORING SYSTEM FOR 400KV SS	41
21	GIS EQUIPMENT RATES FOR 400KV, 220KV, 132KV AND 33KV	41-47
22	XLPE POWER CABLE AND ACCESSORRIES RATES FOR 400KV, 220KV AND 132KV	47-48
23	HYBRID GIS	49-52
24	SCIENTIFIC EQUIPMENTS FOR UTILISATION IN 400KV SUBSTATIONS.	52-53

PREAMBLE

1. Steel rates for structural steel and Tower parts are to be taken from monthly steel rates issued by APTRANSCO. The steel rates are without taxes and to be added with transportation charges from Manufacturer (Hyderabad) site to destination site/ store in preparation of estimates.
2. The rates of other material are exclusive of freight and hence 3% Freight shall be added to the material rates in preparation of estimate.
3. The other taxes are applicable as per latest government taxation rules.
4. The SSR 2023-24 Material rates are in force until new SSR for materials issued.
5. The MS and GI flats rates shall be kept as Schedule-A item.
6. The 400 KV SSR 2023-24 Material shall be read along with TOO Ms.No.2920, Dt.17.08.2023 (220,132kV Material SSR 2023-24) vice versa.

EQUIPMENT/MATERIAL RATES FOR 400KV SUBSTATIONS & LINES WORKS				
S. No.	SAP Code	Description	Unit	400KV SSR 2023-24 in Rs.
A)		ISOLATORS		
1		420kV 3 pole outdoor type horizontal centre break Isolators 3 phases 50 c/s of 3150 Amps and fault level of 50/63KA per second A.C. Motor operated with all accessories, auxiliaries marshalling boxes, Terminal Connectors other essentials as specified.		
a)		With single earth switch		
	10002550	(i) Metallics	Sets	8,46,000
	10007507	(ii) Insulators (1 set = 6 Nos. Insulators)	Sets	3,46,221
b)		With double earth switch		
	10002551	(i) Metallics	Sets	11,47,000
	10007507	(ii) Insulators (1 set = 6 Nos Insulators)	Sets	3,46,221
		Without earth switch		
		(i) Metallics	Sets	6,15,000
	10007507	(ii) Insulators (1 set = 6 Nos Insulators)	Sets	3,46,221
2		245 kV 3 pole outdoor type horizontal double break Isolators 3 phases 50 c/s of 1600 Amps and fault level of 40 KA per second A.C. Motor operated with all accessories, auxiliaries marshalling boxes, Terminal connectors other essentials as specified.		
a)		With Double earth switch		
	10002586	Metallics	Sets	5,04,500
b)		With single earth switch		
	10002586	Metallics	Sets	3,98,000
c)		Without earth switch		
	10002590	Metallics	Sets	2,91,500
3		245 KV 3 pole outdoor type horizontal double break Isolators 3 phases 50 c/s of 2500 Amps and fault level of 40 KA per second ,A.C. Motor operated with all accessories, auxiliaries marshalling boxes, Terminal connectors other essentials as specified.		
a)		with Single earth switch		

	10002580	Metallics	Sets	5,21,000
		Insulators		
4		220 KV Solid Core Porcelain insulators (31mm/KV, 1 set = 9 Nos.)	Sets	2,34,000
5	10007517	220 KV Solid Core Porecelain insulators (25mm/KV, 1 set = 9 Nos.)	Sets	1,60,200
6	10002815	Mandatory Spares for 420kV Isolators: Support insulator stack for one phase of Isolator - 1Set Female contact assembly (for main and Earth switch of one isolator) - 1Set Rotary bearings for Isolators (for one phase of Isolator) - 1Set Male contact assembly(for main and Earth switch of one isolator) - 1Set Limit switch and auxiliary switch (for one phase of Isolator) - 3Sets Terminal pad and connectors - 9Nos. Operating mechanism box complete set(for one isolator with one earth switch) - 1Set	Set	63,074
7	10002863	Mandatory Spares for 245kV Isolators: Support insulator stack for one phase of Isolator - 1Set Female contact assembly (for main and Earth switch of one isolator) - 1Set Rotary bearings for Isolators (for one phase of Isolator) - 1Set Male contact assembly(for main and Earth switch of one isolator) - 1Set Limit switch and auxiliary switch (for one phase of Isolator) - 3Sets Terminal pad and connectors - 9Nos. Operating mechanism box complete set(both BOM & MOM boxes for one isolator with one earth switch) - 1Set.	Set	60,179
B)		CIRCUIT BREAKERS		
1	10001370	420kV 3 pole SF6 Gas filled out door circuit breakers without closing resistors of 3 phases 50 c/s of 3150Amps and fault level of 50/63 KA for one second either spring charged motor operated or pneumatically operated with all accessories, auxiliaries including terminal connectors and marshalling boxes and first fill of SF6 Gas with additional 10% gas and others as	Sets	30,86,875

		specified including Support structures complete as specified for the 420kV Circuit Breakers. Without PIR.		
2		420kV 3 pole SF6 Gas filled out door circuit breakers without closing resistors of 3 phases 50 c/s of 3150Amps and fault level of 50/63 KA for one second either spring charged motor operated or pneumatically operated with all accessories, auxiliaries including terminal connectors and marshalling boxes and first fill of SF6 Gas with additional 10% gas and others as specified including Support structures complete as specified for the 420kV Circuit Breakers. With PIR	Sets	40,00,000
3	10001442	In the above breakers, Main and Tie 400kV Circuit Breakers of ICT/ 125 MVAR Bus Reactor shall be supplied with CSDs. The rate for Control Switching Device in CB.	Nos	4,90,777
4	10001500	420kV CB Mandatory Spares:	Set	12,21,246
		a.1.One pole of Circuit Breaker with grading Capacitor (if applicable)complete with pole column and interrupter with M.B but without support structure and operating mechanism	1No	
		SF6 Gas @ 40% of main order	LS	
		Trip coils with resistor	6No.	
		Closing coils with resistor	3No.	
		Terminal pad & connectors	2No.	
		Molecular filter	2No.	
		Density / Pressure monitoring system	1No.	
		Corona rings	1No.	
		Relays, Power contactors, switch fuse units, limit switches, push buttons, timers & MCB etc.(one for each item for control cubicle)	1Set	
		Pressure switches	1Set	
		Pressure Gauges & Coupling.	1Set	
		Aux. Switch assembly.	1Set	
		Operation counter	1No.	
		Magnetic Ventile(if applicable)	1No.	
		Actuator rings (If applicable)	1No.	
Control valves (If applicable)	1No.			
Gas filling nipples with pipe	2Set s			
5	10001969	245kV CB Mandatory Spares :	Set	8,46,000

		Spares for 245kV Circuit Breaker		
		b.1.One pole of Circuit Breaker with grading Capacitor (if applicable)complete with pole column and interrupter with M.B but without support structure and operating mechanism	2No.	
		SF6 Gas @ 40% of main order	LS	
		Trip coils with resistor	12No.	
		Closing coils with resistor	6No.	
		Terminal pad & connectors	4No.	
		Molecular filter	4No.	
		Density / Pressure monitoring system	4No.	
		Corona rings	2No.	
		Relays, Power contactors, switch fuse units, limit switches, push buttons, timers & MCB etc.	2Sets	
		Pressure switches	2Sets	
		Pressure Gauges & Coupling.	2Sets	
		Aux. Switch assembly.	2Sets	
		Operation counter	2No.	
		Magnetic Ventile (If applicable)	2No.	
		Actuator rings (If applicable)	2No.	
		Control valves (If applicable)	2No.	
		Gas filling nipples with pipe	2Sets	
6	10001479	Mandatory Maintenance Equipment for Circuit Breakers :	Set	
		Gas leakage detector	1No.	
		Gas filling and evacuating equipment portable with necessary union couplings, house pipes etc.,	1No.	
		Operation analyser along with Portable Dynamic contact resistance meter	1Set	
		SF6 Gas filtering, drying, storage and recycling plant	1No.	
		Contact Resistance Meter	1No.	
		SF6 Dew point meter	1No.	
C)		Lightening Arrestors		

67,83,525

1		Design, Engineering, manufacture, assembly, shop testing, supply and delivery at site including packing, forwarding, handling at port of disembarkation, transportation to project site, unloading of the following surge arrestors complete with surge counters, insulating bays and all associated accessories and auxiliaries in accordance with specification including terminal connectors.		
i)	10003100	360 / 390kV Lightning Arrestor (Porcelain)	Nos	1,39,627
ii)		360 / 390kV Lightning Arrestor (Polymer)	Nos	1,93,440
D)		Battery and Battery Charger		
1	10005209	220V, 400AH, capacity sealed maintenance free valve regulated lead acid 2 Nos. Battery banks supplied in factory charged condition along with all other required accessories (i.e) connectors etc.	Sets (1 set contains 2Nos)	13,61,364
2	10005318	2 Nos. , 40/100 A FC & Float-Cum-Boost charger with communication interface suitable for SAS IEC 61850 and for SMF VRLA Battery banks along with all required accessories etc. with centre zero DC earth leakage ammeter.	Sets (1 set contains 2Nos)	10,16,954
3		2 Nos. , 60/100 A FC & Float-Cum-Boost charger with communication interface suitable for SAS IEC 61850 and for SMF VRLA Battery banks along with all required accessories etc. with centre zero DC earth leakage ammeter.	Sets (1 set contains 2Nos)	13,11,974
4	10005204	220V, 800AH, capacity sealed maintenance free valve regulated lead acid 2 Nos. Battery banks supplied in factory charged condition along with all other required accessories (i.e) connectors etc.	Sets (1 set contains 2Nos)	35,72,320
5	10005318	2 Nos. , 120/120 A Float -Float-Cum-Boost charger with communication interface suitable for SAS IEC 61850 and for SMF VRLA Battery banks along with all required accessories etc. with centre zero DC earth leakage ammeter.	Sets (1 set contains 2Nos)	8,20,460
6	10005358	Mandatory Spares for Battery and Battery Charger as listed below Battery Battery cells	Sets	3,76,198

		complete with separators, support insulators and connectors and ductable 1 No. battery charger 0-15volts adustable smps charger, batteries - 5 NosThermometer for measuring room temperature (wall mountable type) - 1 NoCell testing voltmeter (3-0-3V) - complete with leads - 2 NosDigital cell testing multimeter- 1 NoTool Box - 1 Set Battery ChargersRectifier fuses - 10 NosFilter condenser fuses - 6 NosControl fuses - 10 NosSCRs - 4 NosDiodes - 4 NosIndicating lamps - 5 Nos for eachCharger blocking diode - 2 NosMCBs- one per model - 1setContactor of each rating & type -one per module- 1 SetSelector switch - 3 NosPotentiometer - 2 NosMicro switches - 2 NosSet of control cards (Firing card,sensing card, AVR card power supply cards, Amplifier card, Earth fault defective card,if any used etc..)- 1 SetShunts for DC Ammeter -1 No. Micro controller Display with modbus RS 485 - 1 No.		
F)		Design, Manufacture, Shop testing, Supply of AC & DC Distribution Boards as per the specification.		
1(a)	10004160	<p>415V AC Main Board (Sub-Boards-I & II) as per Specn. & Drawing as detailed below</p> <p>i) ' I ' Type Module with a rating of 1250 A (ACB) – 2 Nos.</p> <p>ii) ' I (BC) ' Type Module with a rating of 1250 A(ACB) - 1 No.</p> <p>iii)' F1 ' Type Module with a rating of 800 A - 2 Nos.</p> <p>iv)' F1 ' Type Module with a rating of 400 A - 7 Nos.</p> <p>v)' I ' Type Module with a rating of 1250 A (ACB) - 1No</p> <p>vi)' F1' Type Module with a rating of 630 A - 3 Nos.</p> <p>vii) ' E1' Type Module suitable for incoming feeder - 2 Nos.</p> <p>viii) ' V1 ' Type Module with a rating of 0 - 500 V - 2 Nos.</p>	set	18,91,763

		ix) Cost of all Busbars, Cabling, Wiring meters etc. & all other required accessories etc. as per specification - 1 set		
		x) Cost of the panel with all other required accessories etc. as per specification - 1 set		
1(b)	10004167	COMPACT OUT DOOR ACMB incl. disconnecter-1000 amps- 1 Nos,MCCB-630 A- 2 Nos,MCCB-400 A- 2 Nos,MCCB-63 A- 4 Nos	sets	5,64,878
2	10004161	415V AC Distribution Board (Sub-Boards-I & II) as per Specn. & Drawing as detailed below i) ' F1' Type Module with a rating of 800 A - 2 Nos. ii) ' F1 (BC) ' Type Module with a rating of 800 A - 1 No iii) ' DG' Type Module with a rating of 1250 A (ACB) - 1 No. iv) ' F1' Type Module with a rating of 200 A - 4 Nos. v) ' F1' Type Module with a rating of 150 A - 2 Nos. vi) ' F1' Type Module with a rating of 125 A - 4 Nos. vii) ' F1' Type Module with a rating of 63 A - 67 Nos. viii) ' F1' Type Module with a rating of 32 A - 12Nos. ix) ' F1' Type Module with a rating of 16 A - 4 Nos. x) ' V2 ' Type Module with a rating of 0 - 500 V - 2Nos xi) Cost of the panel with all other required accessories etc. as per specification - 1 set xii) Cost of all Busbars, Cabling, Wiring meters etc. & all other required accessories etc. as per specification - 1 set	set	17,11,494
3	10004162	415V AC Lighting Board (Sub-Boards-I & II) & Emergency Lighting Board as per Specn. & Drawing as detailed below. i) ' F1' Type Module with a rating of 63 A - 2 Nos. ii) ' F1 (BC) ' Type Module with a rating of 63 A - 1 No	set	3,69,455

		<p>iii) ' F1' Type Module with a rating of 63 A (ACB) - 16 Nos.</p> <p>iv) ' F1' Type Module with a rating of 125 A - 4 Nos.</p> <p>v) ' V2' Type Module with a rating of 0-500V - 3 Nos.</p> <p>vi) ' F1' Type Module with a rating of 125 A - 1 No.</p> <p>vii) ' F1' Type Module with a rating of 32 A - 4 Nos.</p> <p>viii) Cost of the panel with all other required accessories etc. as per specification - 1 set</p> <p>ix) Cost of all Busbars, Cabling, Wiring meters etc. & all other required accessories etc. as per specification - 1 set</p>		
4	10005702	<p>DC Distribution Board (Sub-Boards-I & II) as per Specn. & Drawing. As detailed below.</p> <p>i) ' DC ' Type Module with a rating of 250 A - 2 Nos.</p> <p>ii) ' DC (BC) ' Type Module with a rating of 250 A - 1 No.</p> <p>iii) ' F2' Type Module with a rating of 20 A (ACB) - 78 Nos.</p> <p>iv) ' F2' Type Module with a rating of 32 A - 10 Nos.</p> <p>v) ' PM' Type Module with a rating of 0-300 V - 2 Nos.</p> <p>vi) Cost of the panel with all other required accessories etc. as per specification-1 set</p> <p>vii) Cost of all Busbars, Cabling, Wiring meters etc. & all other required accessories etc. as per specification - 1 set.</p> <p>viii) Centre zero DC earth leakage ammeter-2nos</p>	set	3,55,699
5	10005867	<p>Mandatory Spares for AC & DC Distribution Boards as listed below- Mandatory spares for 1250A ACB(ACMB).</p> <p>1 No.Air Circuit Breaker 1250A with motor operated mechanism(complete) Control Switch - 1 No over current, earth fault relay - 1 No</p>	set	3,10,375

		<p>MFM/EM- 1 No Voltmeter,ammeter- 1 set transducers- 1 set Closing coil- 1 No Opening Coil - 1 No Busbar seal off insulator as percentage of total quantity -- 5% No Busbar support insulator as percentage of the total quantity - 10% No MANDATORY SPARES FOR 1250A ACBs(DG) Air Circuit Breaker with motor operated mechanism(complete) Control Switch - 1 No over current,earthfault relay - 1 No MFM/EM- 1 No Voltmeter,ammeter- 1 set transducers- 1 set Closing coil - 1 No Opening Coil - 1 No Busbar seal off insulator as percentage of total quantity - 5% Nos Busbar support insulator as percentage of the total quantity- 10% Nos</p>		
6		<p>415V Emergency lighting board including 1No. 100KVA 0.415/0.415kV Lighting Transformer as per specification & Drawing as detailed below</p>	set	81,125
E)		INSTRUMENT TRANSFORMERS		
1	10001158	<p>Design, Engineering, manufacture, assembly, shop testing, supply and delivery at site including packing forwarding handling transportation to project site, unloading, of 420kV, 3000-2000-1000-500/1-1-1-1-1A, Single Phase current Transformers in accordance with specification, including first fill of transformer oil and all accessories, auxiliaries including marshalling boxes and terminal connectors for CTs as specified 400kv technical specification. (Porcelain)</p>	No.	5,49,400
2		<p>Design, Engineering, manufacture, assembly, shop testing, supply and delivery at site including packing forwarding handling transportation to project site, unloading, of 420kV, 3000-2000-1000-500/1-1-1-1-1A, Single Phase current Transformers in accordance with</p>	No.	5,60,000

		specification, including first fill of transformer oil and all accessories, auxiliaries including marshalling boxes and terminal connectors for CTs as specified 400kv technical specification. (Polymer)		
3	10001166	Design, Engineering, manufacture, assembly, shop testing, supply and delivery at site including packing forwarding handling transportation to project site, unloading, of 420kV, 3000 /1A , Single Phase current Transformer for Metering in accordance with specification, including first fill of transformer oil and all accessories, auxiliaries including marshalling boxes and terminal connectors for CTs as specified 400kv technical specification.	No.	5,49,400
4		Design, Engineering, manufacture, assembly, shop testing, supply and delivery at site including packing forwarding handling transportation to project site, unloading, of 420kV, 2000 /1A , Single Phase current Transformer for Metering in accordance with specification, including first fill of transformer oil and all accessories, auxiliaries including marshalling boxes and terminal connectors for CTs as specified 400kv technical specification.		5,49,400
5	10001187	Design, Engineering, manufacture, assembly, shop testing, supply and delivery at site including packing forwarding, handling at port of disembarkation, transportation to project site, unloading, of 245kV, 40kA 1600-1200-800/1-1-1-1A Single Phase Current Transformers in accordance with specification, including first fill of transformer oil and all accessories, auxiliaries including marshaling boxes and terminal connectors for CTs as specified in 400kv technical specification.	No.	3,75,000
6		Design, Engineering, manufacture, assembly, shop testing, supply and delivery at site including packing forwarding, handling at port of disembarkation, transportation to project site, unloading, of 245kV, 40kA 2400-2000-1600/1-1-1-1A Single Phase Current Transformers in	No.	3,75,000

		accordance with specification, including first fill of transformer oil and all accessories, auxiliaries including marshaling boxes and terminal connectors for CTs as specified in 400kv technical specification.		
7	10001300	Design, Engineering, manufacture, assembly, shop testing, supply and delivery at site including packing forwarding handling transportation to project site, unloading, of 420kV Single Phase CVT in accordance with specification, including first fill of transformer oil and all accessories, auxiliaries including marshaling boxes and terminal connectors for CVTs as specified in 400kv technical specification. (25mm/kV Porcelain Insulator)	No.	3,47,290
8	10001306	Design, Engineering, manufacture, assembly, shop testing, supply and delivery at site including packing forwarding handling transportation to project site, unloading, of 420kV Single Phase CVT in accordance with specification, including first fill of transformer oil and all accessories, auxiliaries including marshaling boxes and terminal connectors for CVTs as specified in 400kv technical specification. (31mm/kV Porcelain Insulator)	No.	3,50,000
9		Design, Engineering, manufacture, assembly, shop testing, supply and delivery at site including packing forwarding handling transportation to project site, unloading, of 420kV Single Phase CVT in accordance with specification, including first fill of transformer oil and all accessories, auxiliaries including marshaling boxes and terminal connectors for CVTs as specified in 400kv technical specification. (31mm/kV Polymer Insulator)	No.	4,50,000
10		400kV Inductive Voltage Transformer (IVT) (31mm/kV Polymer Insulator)	No.	9,00,000

11		Supply of 3-ph 4-wire Electronic Trivector meter (ABT Meters) of secure/L&T /equivalent reputed approved meters, make with 15 min. integration 12 previous MD records,0.2S class accuracy with auto reset to 1st 00.00 hrs of every month ,minimum 60 days load survey provision with individual currents and voltages including third party testing in presence of APTRANSCO officials and transportation to site (AS per APCPDCL Specification)	No.	75,209
12		Design, Engineering, manufacture, assembly, shop testing, supply and delivery at site including packing forwarding handling transportation to project site, unloading, of 420kV Single Phase PT (in accordance with specification, including first fill of transformer oil and all accessories, auxiliaries including marshalling boxes and terminal connectors for CVTs as specified in technical specification.	No.	12,60,000
F)		EARTHING AND EARTH MAT		
1	10006901	Discharge rod 10 ft long with suitable screw type clamp suitable for moose conductor & 15 Mtrs long 25 sqmm. Copper lead with heavy duty crocodile clamp.	No.	11,614
2	70004306	Electrical safety hand gloves suitable for the operation in 400/220kV switchyard of ISI Quality.	Set	3,562
3	70004363	2 Mtr x 1 Mtr, 10mm thick Neoprine Rubber mats of ISI Quality.	No.	3,651
4	10000651	Stainless container of 2 litres capacity for collection of oil samples with cock arrangements at both ends.	No.	1,549
5	70004406	Electrical safety Belts, Shoes and Helmets suitable for the operation in 400/220kV switchyard of ISI Quality.	Set	3,826
G)		BUS BAR MATERIAL		
1	10007505	400 kV Bus Post Insulators.	Nos	52,503
2	10008687	220 kV Bus Post Insulators.(31mm/KV)	Nos	26,000
3		220 kV Bus Post Insulators.(25mm/KV)	Nos	17,800

4	10010128	4.5" IPS Aluminum tube of electrical grade including welding sleeves	Mtrs	2,979
5	10009058	4" IPS Aluminum tube of electrical grade including welding sleeves.	Mtrs	2,444
6	10009246	Bay Marshalling Boxes for 400KV, 220 and 132 KV Bays with 3mm Aluminum sheet.	Nos.	64,561
7	10007014	400 KV Single suspension hardware suitable for Twin Moose	sets	7,514
8	10007009	400 KV Double Suspension hardware suitable for Quad Moose.	Sets	9,826
9	10007002	400 KV Double Tension hardware suitable for Twin Moose.	Sets	14,664
10	10007005	400 KV Double Tension hardware suitable for Quad Moose	Sets	20,962
11	10007083	220 KV / 132kV Single suspension hardware suitable for Twin Moose.	Sets	4,259
12	10007073	220 KV double suspension hardware suitable for Twin Moose	Sets	6,090
13	10007071	220 KV Double suspension hardware suitable for Quad Moose	Sets	8,490
14	10007021	220 KV / 132kV Double tension hardware suitable for Twin Moose.	Sets	8,152
15	10007020	220 KV Double tension hardware suitable for Quad Moose	Sets	15,509
16	10008085	400 KV Conductor Spacers for Quad moose	Nos	1,572
17	10008086	400 KV Conductor Spacers for Twin moose	Nos	589
18	10008096	220 KV Conductor Spacers for Twin moose	Nos.	589
19	10008095	220 KV Conductor Spacers for Quad moose	Nos.	1,310
20		400 kV clamps & connectors including jumper sleeves		
(a)	10008040	BPI Clamp for Twin moose through/expansion type	Nos.	1,584
(b)	10008698	BPI Clamps for 4.5" IPS Rigid /sliding /expansion type	Nos.	3,096
(c)	10008041	BPI Clamps for 4" IPS Rigid /sliding type/expansion	Nos.	3,019
(d)	10008042	T Connectors SM to SM	Nos.	1,194

(e)	10008043	T Connectors TM to SM	Nos.	2,001
(f)	10008032	Inter connector TM to 4.5" IPS Al. Tube	Nos.	2,445
(g)	10008030	Inter connector QM to 4.5" IPS Al. Tube	Nos	4,889
(h)	10008037	Inter connector TM to 4" IPS Al. Tube	Nos.	806
(i)	10008089	Corona spheroid	Nos.	907
(j)	10008092	PG Clamps Moose to Moose	Nos	669
21		220 kV /132kV Clamps & connectors (for 400kV Works only)		
a)	10008026	BPI Clamp for Single moose	Nos	688
b)	10008097	BPI Clamp for Twin moose through/expansion type	Nos.	1,584
c)	10008098	BPI Clamps for 4" IPS Rigid/sliding/expansion type	Nos.	3,019
d)	10008100	T Connector SM to SM	Nos.	987
e)	10008931	T Connector TM to SM	Nos.	1,682
f)	10008080	Isolator connecting Clamps suitable to Twin Moose	Nos.	2,649
g)	10008102	Corona spheroid	Nos.	725
h)	10008103	PG Clamps Moose to Moose (applicable to Zebra & Panther ACSR also)	Nos.	629
i)	10008101	Inter connector TM to 4" IPS Al. Tube	Nos.	1,473
j)	10008761	Inter connector QM to 4" IPS Al. Tube	Nos.	2,970
22	10008105	Pad type Compressor clamp for GS Earth wire to 75 x 12 Flat	Nos.	105
23	10008106	Cleat type clamp for G.S Earth wire	Nos.	103
24	10008104	T clamp for GS Earth wire with flexible jumpers	Nos.	393
25	10010451	Terminal connector on 400kV SF6 to Air bushing to suit 4.5"IPS AL.Tube -Expansion Type	Nos	2,477
26	10010452	Terminal connector on 220 kV SF6 to Air Bushing to suit 4" IPS Al. Tube Expansion Type	Nos	2,416
H)		POWER AND CONTROL CABLES		
		Design of complete cabling system for the entire substation, preparation of cable scheduling, manufacture, shop testing, packing and forwarding , transportation to		

		site/stores, providing conduits, cable termination kits, cable lugs and glands of the following Power & Control Cables as per requirement.		
1	10003381	Single core, 630 Sq.mm, 1100V XLPE, FRLS insulated PVC sheathed, Aluminium wire/ strip armoured, stranded aluminum conductor cable.	Km	6,37,305
2	10003383	Single core, 300 Sq.mm, 1100V XLPE, FRLS insulated PVC sheathed, Aluminium wire/strip armoured, stranded aluminium conductor cable.	Km	3,85,832
3	10003385	3 ½ core 300 Sq.mm, 1100V XLPE, FRLS insulated PVC sheathed, galvanized steel wire / strip armoured, stranded aluminium conductor cable.	Km	10,94,254
4		1100V, PVC, FRLS insulated PVC sheathed, galvanised steel wire/strip armoured, stranded aluminium conductor cable.		
(a)	10003391	3.5 core, 35 Sq.mm.	Km	1,94,813
(b)	10003392	4 core, 16 Sq.mm.	Km	1,11,743
(c)	10003395	4 core, 6 Sq.mm.	Km	84,552
(d)	10003396	2 core, 6 Sq.mm.	Km	64,429
5		1100 V, PVC, FRLS insulated PVC sheathed, galvanized steel wire / strip armoured, stranded copper conductor cable		
(a)	10003299	3 core 2.5 Sq.mm.	Km	1,03,342
(b)	10003221	5 core 2.5 Sq.mm.	Km	1,21,769
(c)	10003300	7 core 2.5 Sq.mm.	Km	1,58,189
(d)	10003278	10 core 2.5 Sq.mm.	Km	2,15,302
(e)	10003280	14 core 2.5 Sq.mm.	Km	2,88,886
(f)	10003281	19 core 2.5 Sq.mm.	Km	3,76,371
(g)	10003597	27 core 2.5 Sq.mm.	Km	5,18,216
6		Galvanized cable trays with 2mm thick perforated CRC sheet		
(a)	10003603	200 mm size	Mtrs	412
(b)	10003531	450 mm size	Mtrs	691

7		GI Pipe for entry into cable trench		
(a)	10003548	4" Dia 3 mm thick GI Pipe Including Sacial, Bends etc.,	Mtrs	828
(b)	10003549	6" Dia 3 mm thick GI Pipe Including Sacial, Bends etc.,	Mtrs	1,172
8	10003211	2C, 2.5 sq. mm Cu. PVC	Km	62,023
9	10003242	2C, 1.5 sq. mm Cu. PVC	Km	79,133
10	10011946	4C, 0.5 sq. mm Cu. PVC	Km	62,023
11	10003210	50 Sq. mm Multistrand flexible copper cable	Mtrs	187
12	10003364	3.5X70 Sq mm AL conductor cable	Km	1,94,813
I)		INDOOR & OUTDOOR ILLUMINATION		
1		Indoor Lighting Fixtures.		
(a)	10009529	Control room lighting fixtures -make-CGL-LCBOR-40- CDL or equivalent model in Philips/Bajaj.	Nos	5,241
(b)	10009452	Decorative Pendent mounting lighting fixtures make-CGL- LCLR66-60-CDL or equivalent model in Philips/Bajaj.	Nos	7,361
(c)	10009451	Pendent mounting lighting fixtures -make CGL-LCLP54- 36-CDL or equivalent model in Philips/Bajaj.	Nos	5,031
(d)	10009519	Lighting fixtures-make CGL-LHBL-60-CD or equivalent model in Philips/Bajaj.	Nos	6,522
(e)	10009520	Lighting fixtures-make CGL-LPLLA-18-CDL or equivalent model in Philips/Bajaj.	Nos	733
(f)	10009381	1 x 11W CFL lamp Emergency light with Battery operated portable fixtures with built in chargeable batteries and battery charger suitable for a lighting period of six hours of make Bajaj/Philips/CGL/BPL.	Nos	1,179
(g)	10009443	Decorative type lighting fixtures with 4 Nos 18 watts CFL Lamp for Portico, main gate etc, make Bajaj / Philips / CGL are equivalent.	Nos	2,063
(h)	10005051	Wireless Buzzer anchor make or equivalent approved make with ISI mark.	Nos	105
2		Following items for providing and fixing concealed in roof and walls with PVC Conduit piping of ISI standards with		

		necessary GI wire of suitable gauge to draw wires at later date including cost of junction boxes etc.cost and conveyance of all materials.		
a)	10009106	40 mm dia - 2mm thick	Mtrs	100
b)	10011978	32mm dia - 2mm thick	Mtrs	80
c)	10011979	25mm dia - 2mm thick	Mtrs	69
d)	10011982	12mm dia - 1.5mm thick	Mtrs	49
3	10009303	Indoor Modular Main distribution board suitable for wall insert with 1No 63A TP MCB for I/C and 6 Nos 32A SPMCB, 8 Nos 10A SPMCB & 10 Nos 16A SPMCB with neutral link for O/G complete make Havells /LEGRAND or MDS or equivalent.	Nos	11,218
4	10004170	AC Distribution Boards Mains for usage in AC Kiosks for supply (indoor wall inserted/mounted) with SP 16A MCBs - 3 Nos., 6A SP MCBs-2Nos., 2A SP MCBs 3 Nos.	Nos	20,788
5	10009466	Decorative Type Ten panel Switch boards in AC Kiosks with 5A switches - 5/ 7 Nos.& 5/15A plug-1 No with 1 No 15 A Switch.(Anchor/Havells)	Nos	19,014
6		Out Door street Lighting Fixtures		
a)	10009389	Street lighting fixtures -make CGL-LSTN1-150-CDL-A or equivalent model	Nos	9,826
b)	10009427	Decorative Post Lantern-make CGL-LPTO-60-CDL/M or equivalent model	Nos	7,861
c)		Flood Light fixtures make - CGL, Model No. CGL-LSFO-350-CDL/60 (or equivalent model).	Nos	25,154
d)	10009364	Flood lighting fixtures make - CGL, Model No. CGL-LSTN-250-CDL-A (or equivalent model).	Nos	15,722
7		Lighting Masts / Poles with junction boxes, earthing materials and all accessories as per drawing enclosed.		
a)	10009400	Type A1 with junction box	Nos	14,695
b)	10009402	Type E1 with junction box	Nos	8,341
8	10009407	Lighting Panels for Control house I/C 63A TPN SFU - 1 No. O/G 16A-32A SPMCB -	Nos	16,474

		24 Nos.		
9	10009434	Outdoor Junction Box with 32A-SP-MCB-2 Nos, 10A-SP- MCB-4 Nos & terminal blocks (bolt type) for 6 circuits and neutral link.	Nos	5,102
10	10009412	415V, 63A - Interlocked Switch and Socket outdoor Power Receptacle.	Nos	4,344
11	10009465	Decorative Type Six panel Switch boards with 5A Switches - 5 Nos., 5 & 15A plug-2 No with 2 No 15A Switch. (Anchor/Havels).	Nos	1,136
12	10009466	Decorative Type Ten panel Switch boards with 5A switches - 7 Nos., 5 & 15A plug-3 Nos with 3 No 15 A Switch. (Anchor/Havels).	Nos	1,378
13	10009444	Decorative Type Three panel Switch boards with 5A switches - 3 Nos, 5A Plug - 1No(Anchor/Havels)	Nos	596
14	10009445	Decorative Type Three panel Switch boards with 15A switches - 2 Nos.&15A plug-2 No .(Anchor/Havels)	Nos	998
15		Telephone Junction Boxes		
(a)	10010965	MDF box suitable for 50 pair Telephones with crones and surge protection complete.	Nos	2,052
(b)	10010967	MDF box suitable for 10 pair Telephones with crones and surge protection complete.	Nos	1,530
(c)	10011014	Single socket outlet comprising RJ-45 Socket.	Nos	204
(d)	10011015	Dual socket outlet comprising RJ-45 Socket.	Nos	408
16	10009418	1400 mm sweep ceiling fans with Electronic regulator CGL/Bajaj/Usha/Khaitan make.	Nos.	1,416
17	10009346	Wall mounted Fans with 400 mm sweep with Electronic regulator CGL/Bajaj/Usha/Khaitan make.	Nos.	2,250
18	10004152	Outdoor AC Distribution Board with 2 Nos Incomings, 3 Phase, 440V, 300 Amps, with Cu Bar and 300 Amps Fuse units & Neutral link complete and outgoing 2 Nos, 3P, 125A, MCBs including all accessories including CT meter arrangement (200/1 ratio).	Nos.	40,075
19	10009420	Wheel Mounted ladders (10 Mtrs Height)	No.	27,430
20	70000965	Aluminium ladders (12ft Height)	No.	14,072

21	70000977	Telescopic aluminium ladder (18feet)	No.	28,860
22	70000966	Aluminium ladders (8ft Height)	No.	10,927
23	10009529	40W LED Light Fixture complete with accessories. Model No. CCR-126-50-40-SL-NWH	No.	5,766
24	10009307	150W LED, High Bay Fixture, Model No.LHBM-150-CDL/60-M	No.	8,539
25	10009320	2X20 W LED type Fixture complete with accessories & suitable for wall mounting, Model No. IPFC122LT8	No.	1,594
26	10009329	1X20 W LED type Fixture complete with accessories & suitable for suspended/wall mounting Model No. IPFC121LT8	No.	1,604
27	10009351	9W Exit lamp	No.	3,271
28	10009364	250W LED Flood Lighting Fixture model Crompton Greaves, Model No. LSFO-250-CDL/60-M	No.	14,824
29	10009529	40W LED Posttop light Fixture model Crompton Greaves, Model No. LPTO-40-CDL-M	No.	6,290
30	10009406	Outdoor AC Lighting Panels, I/C 63A TPN SFU with suitable copper busbar Outgoing 32A SP MCB - 15 Nos with timer arrangement.	No.	33,212
31	10009405	AC Emergency Panel - I/C 32A TPN SFU & O/G 16 A SP MCB - 4 Nos. (Indoor)	No.	27,677
32	10009408	Indoor DC Emergency decorative type wall inserted distribution board with 1No 32A DP MCB for I/C and 6 Nos 10A DPMCB , 4 Nos 6 A DPMCB with neutral link for O/G complete of make Havells/ LEGRAND.	No.	33,212
33	10004159	220V DC Emergency Lighting Panels (Indoor) I/C 32A DP SFU - 1 No. O/G10A BP MCB - 4 Nos.	No.	21,230
34		9W CFL lamp in Bulk head fixtures with cast aluminium alloy body suitable for column, wall and ceiling mounting finished stove enameled silver grey outside white inside to be supplied complete (prisat front glass ,wire guard, tropicalised, gasket,and E.S Porcelain , lamp holder taped 3/4" E.T for conduit entry) similar to Philips Cat. No. FXC 101/ Bajaj Cat. No. BJBE - 19 / Crompton Greaves.		

		Lamps	No.	88
		Fixtures	No.	645
35		1 x 36W flourescent lamp fitting wall mounted or pendent mounted of Philips, Bajaj, CGLmake or equivalent		
		Lamps	No.	97
		Fixtures	No.	1,576
36	10009419	Oscillating air circulator (Pedastal Fan) Telescopically adjustable stand, with electronic regulator with 600 mm sweep CGL/Bajaj/Usha/Khaitan make.	No.	8,405
J)		AIR CONDITIONING AND VENTILLATION SYSTEM		
A		Air Conditioning.		
1	10009818	Wall mounted Split air conditioners 2.0 Ton capacity with cooling capacity of 24000 BTU/Hr & 6000 K.Cal/Hr with stabilisers, receptacles including all support structures and all other accessories with MCB of 25KA--.5 star model	No.	56,686
B		Ventilation		
1		Supply of exhaust fans of propeller type/ axial type, each with a suitable drive motors, DOL starters, vain protection with screen, grouting bolts etc.,.		
a)	10009835	3ph, 24" Sweep 1440 RPM, 3000 cum/hr, exhaust fan or equivalent with 3- ph MCBs.	Nos.	5,600
b)	10009836	3ph, 18" Sweep 960 RPM, 2000 cum/hr, exhaust fan or equivalent with 3- ph MCBs.	Nos.	5,228
c)	10009837	3ph, 12" Sweep 960 RPM, 500 cum/hr, exhaust fan or equivalent with 3- ph MCBs.	Nos.	2,844
		Ventilation units without cabinet		
1		SITC of DIDW backward curved centrifugal fan complete with pressure switch, belt drive, motor complete with all accessories like belt guard, base frame, cushfoot isolators, etc. outlet velocity>10m/s.		
a)	10009806	Ventilation Unit Capacity :49300 CMH @60 mmwg	Nos.	3,34,270
b)	10009807	Ventilation Unit Capacity :57800 CMH @60 mmwg	Nos.	3,92,255
		AIR DISTRIBUTION SYSTEM		

2		AIR DISTRIBUTION SYSTEM consists of sheet metal ducting without powder coating complete with suspenders of GI rods/ISMC, wall brackets, cradles, angle iron supports, GI bolts and nuts, 4mm thk, food grade rubber gasket stiffeners, fixing of anchor grip bolts, zinc chromate painted angle iron flanges. Shall belong to IS:277, Grade-120		
a)	10009884	400kV GIS Room-Ducting	SQM	1,676
b)	10009884	220kV GIS Room-Ducting	SQM	1,645
		GRILLES & DAMPERS		
		GRILLES & DAMPERS		
3	10009885	Size-1200mmx1200mm	Nos.	34,004
4	10009888	Size-800mmx800mm	Nos.	15,113
5		Supply, Installation, Testing & Commissioning of Aluminium motorized damper (at blower mouth) with necessary accessories and position relays. Compatible for 230V		
a)	10009810	400kV GIS Room	Nos.	65,490
b)	10009810	220kV GIS Room	Nos.	87,320
6		Fresh air/extract louver in Aluminium powder coated construction with bird		
a)	10009811	Size-2500mmx2500mm	Nos.	78,863
b)	10009814	Size-3750mmx1900mm	Nos.	89,906
7	10009833	Prefilters with 90% efficiency down to 10 micron (610mmx610mmx50mm) and fine filter with 99% efficiency down to 5 micron filter (610mmx610mmx300mm).	Nos.	6,992
8		Aluminium powder coated pressure relief motorized Exhaust damper with all necessary accessories. Motorised actuator for exhaust damper with differential pressure switch. Compatible for 230V AC. (ED)		
	10009848	Size-600mmx600mm	Nos	55,735
9		Supply, testing, installation and commissioning of Aluminium powder coated Grill complete with VCD and necessary accessories.		
a)	10009855	1450 CFM	Nos	3,669

b)	10009856	1360 CFM	Nos	3,442
10		Supply, installation, testing and commissioning of Fire and Smoke damper in GI construction with control panel(FD)		
a)	10009882	Size-1200mmx1200mm	Nos	36,733
b)	10009887	Size-800mmx800mm	Nos	27,549
11		Electrical works & Other misc. Items		
	10009880	Required panels, cable, LCP etc to complete the electrical works for ventilation unit a. Starter Panels including LCP (1 AHU Panels per Room) - 1 Nos per set b. Cables -10 Mtrs per set.	Set	1,54,703
K)		DIESEL GENERATOR SET		
1	10009973	<p>DG Set 250KVA (with acoustic insulation), 1500RPM, 0.8 PF, 415 V, 3 phase, 50 Hz with the following :-</p> <p>(1) Diesel Engine complete with all accessories as specified.</p> <p>(2) Alternator directly coupled to the engine through coupling complete with all accessories.</p> <p>(3) Automatic voltage Regulator.</p> <p>(4) Complete starting arrangement including two Nos. Batteries & chargers and Power and Control Cables and cable glands and lugs etc.</p> <p>(5) Base Frame and Foundation bolts.</p> <p>(6) Day Tank of 990 litre capacity with all the accessories and fittings.</p> <p>(7) Oil pump for transferring to Day Tank as per specification.</p> <p>(8) Engine cooling and Lubricating system.</p> <p>(9) Engine Air filtering System.</p> <p>(10) Exhaust silencer package with flexible coupling and thermal Insulator.</p> <p>(11) Set of GI Pipes, Valves, Strainers, unloading hose pipes are required.</p> <p>(12) All lubricants, diesel oil, consumables, touch up paints etc, for the first filling, testing & commissioning at site.</p> <p>(13) AMF panel for Control & Metering, and alarm as per specification including all power and control cables, with Cable glands & lugs etc suitable to Substation</p>	set	16,99,153

		Automation System. (14) Acoustic insulation for DG Set as per the norms of Central Pollution Control Board. (15) All the equipment/material required for control /monitoring of DG set through Sub-Station Automation System.		
2	10009973	Mandatory spares : (a) Current Transformers - 1 set. (b)Measuring Instruments on AMF panel - 1 Set. (c) Protection Relays and Timers - 1 Set. (d) Indicating Lamps with Resistors - 2 Sets. (e) Oil Filter packs 1 Set. (f) Fuses - 2 Sets. (g) Diesel filter packs - 1 Set. (h) V - belt for radiator fan - 1 No. (i) Diodes & Diode fuses - 1 Set.	Set	3,30,099
L)		FIRE PROTECTION, DETECTION & ALARM SYSTEMS		
1	10009618	(a)Horizontal centrifugal Electric Driven Hydrant/HVW Spray, pump of capacity 410M3/hr and total dynamic head of 88MWC with all accessories & fittings - 1 No. (b) Electric Induction Motor Squirrel cage type for the above with all accessories & fittings as per specifications - 1 No.	Set	7,80,835
2	10009617	(a) Horizontal centrifugal Diesel Engine Driven Hydrant/HVW spray pump of capacity 410M3/hr and total dynamic head of 88MWC with all accessories and fittings. Both the HVW pumps, one motor driven and one diesel driven shall be of same model and their components interchangeable - 1 No. (b) Diesel Engine, multi cylinder type, four stroke cycle with mechanical airless injection cold starting type for the above with all accessories and fittings as per specification - 1 No. (c) Set of Batteries - 2 Nos. (d) Fuel tank having capacity to hold fuel oil for six hours of full load run - 1 No.	Set	9,62,680
3	10009619	(a) Horizontal centrifugal Electric Driven	Sets	2,36,848

		jockey pump of capacity 10.8 m3/hr and Total dynamic head of 88MWC with all accessories and fittings. (b) Electric Motor for the above with all accessories and fittings as per specification.		
4	10009620	Air vessels with vent valves etc. as per specification and system requirement.	No.	3,57,103
5	10009621	Sump pumps of capacity 10M3 /hr. MWC with motor starter and all accessories.	Nos.	39,967
6	10009629	Basket strainer 300 NB.	Nos.	1,25,248
7	10009605	Control panel equipped with all accessories for motor drives of Fire water pumps and 2 Nos. jockey pumps as per specifications suitable for 2 sources supply and 2 Nos. Battery chargers.	Set	2,05,218
8	10009607	Control Panel for Diesel Engine driven fire water pumps as per specification.	Set	1,97,462
9	10009613	(a) Annunciation panel at fire water pump house as per specification.	Set	1,88,448
	10009614	(b) Annunciation panel in Control Room as per specification.	Set	1,42,739
10		Supply of the following Hydrant and HVWS system Accessories		
a)	10009134	Single headed Hydrants.	Nos.	11,357
b)	10009135	Landing Valves.	No.	4,909
c)	10009033	Hose cabinets.	Nos.	5,679
d)	10009034	Hoses of 15.0m length with coupling.	Nos.	4,796
e)	10009035	Hoses of 7.5m length with coupling.	Nos.	3,655
f)	10009036	Branch pipe with Nozzles.	Nos.	3,197
11		Supply of the following Mild steel black pipes and Mild steel galvanized pipes as per specifications		
a)	10009037	300 NB	Mtrs	4,130
b)	10009038	250 NB	Mtrs	3,527
c)	10009039	200NB	Mtrs	2,618
d)	10006447	150NB	Mtrs	2,398
e)	10009084	100NB	Mtrs	2,016
f)	10009085	80NB	Mtrs	1,403
g)	10009074	50NB	Mtrs	1,101
h)	10009075	25NB	Mtrs	255
i)	10009076	15NB	Mtrs	179

12	10006448	Set of GI & MS Piping beyond deluge valves for transformer including detection piping and pipe supports including all accessories complete.	Sets	2,57,728
13		Supply of the following valves :-		
a)	10006450	300 NB Gate	Nos.	37,751
b)	10006451	250 NB Gate	Nos.	36,731
c)	10009136	250 NB Check	Nos.	23,467
d)	10009137	200 NB Gate	Nos.	29,589
e)	10009138	150 NB Gate	Nos.	16,325
f)	10009139	100 NB Gate	Nos.	15,954
g)	10009140	80 NB Gate	Nos.	12,995
h)	10009141	80 NB Check	Nos.	10,699
i)	10009142	50 NB Gate	Nos.	7,451
j)	10009143	50 NB Check	Nos.	4,591
k)	10009144	25 NB Gate	Nos.	2,551
l)	10009009	15 NB Gate	Nos.	1,938
m)	10009145	Float operated valve 100NB	Nos.	23,467
14a)	10009146	Float operated Level guage	Nos	18,953
14b)	10009147	Level switch	Nos	19,830
15	10009148	Pressure Gauge	Nos	2,253
16	10009149	Pressure Switch	Nos	6,423
17	10009150	Differential Pressure Gauge	Nos	4,118
18	10009151	Deluge valve with motor gounge, pr. switch, pr.guage, solenoid valve to drain - size 150 NB	Sets	1,27,537
19	10009615	Local control panel for Deluge valve	Nos.	12,939
20	10009616	Strainer Y type, 150 NB	Nos.	33,823
21	10009622	Quartzoid bulb detectors	Nos	556
22	10009623	HVW spray nozzles	Nos	1,352
23		Supply of Detection and Alarm system including all hardware and all other accessories		
a)	10006637	Multi criteria detectors	Nos	3,051
b)	10009626	Heat detector	Nos	2,586
c)	10009627	Response indicator	Nos	345
d)	10009628	Manual call point	Nos	2,169
e)	10009604	Fire detection & Alarm panel for control room with 2 Nos hooters, 2 Nos. sirens and 2 Nos. relay modules with RS- 485 communication port & all accessories for integrating in SAS.	Set	1,51,224

f)	10010267	Water pressure transducer with input of 0-16 bars and with 2nos ports as output of range 4-20mA for integrating in SAS.	Nos	83,445
g)	10010267	Temperature transducer in control room for measuring ambient temperature with input of 0-75 degree centigrade and with 2nos ports as output of range 4-20mA for integrating in SAS.(CR-1, ACK-10)	Nos	56,858
24		Supply of the following Portable Fire Extinguishers with all accessories as per specification		
a)	10009711	Dry chemical powder type Fire extinguishers of 9 kgs. Capacity.	Nos	2,847
b)	10009712	Dry chemical powder type Fire extinguishers of 25 kgs. Capacity (trolley mounted).	Nos	11,784
c)	10009713	Dry chemical powder type Fire extinguishers of 50 kgs. Capacity (trolley mounted).	Nos	15,815
d)	10009714	Dry chemical powder type Fire extinguishers of 150 kgs. Capacity (trolley mounted).	Nos	51,881
e)	10009726	CO2 type portable Fire extinguishers of 45 kgs. Capacity (trolley mounted).	Nos	36,221
f)	10009725	CO2 type portable Fire extinguishers of 22.5 kgs. Capacity (trolley mounted).	Nos	16,784
g)	10009724	CO2 type portable Fire extinguishers of 9 kgs. Capacity (trolley mounted).	Nos	9,183
h)	10009719	CO2 type portable Fire extinguishers of 2 kgs. Capacity.	Nos	3,776
i)	10009735	9 liters capacity Mechanical foam type fire extinguishers.	Nos	2,959
j)	10009715	Sand / water Buckets 9 liters capacity with stand.	Nos	472
25	10009602	Fire Alarm Panel for the above detectors with 24V (12+12) Batteries for supply to be installed in AC Kiosk	Nos.	4,799
26		Mandatory spares		
a)	10009044	Self starter of HVW Pumps	No	55,659
b)	10009046	Fuel oil filter elements of Diesel engine drive	No	12,595
c)	10009048	Gland packing of jockey pumps	No	6,411
d)	10009622	Quartzoid bulb detector	Nos	556
e)	10009049	Projectors (Nozzles)	Nos	1,352

f)	10009626	Heat detectors	No	2,586
g)	10009149	Pressure switch	No	6,423
h)	10009154	Flaps for check valves 250NB	Nos	14,010
i)	10009153	Flaps for check valves 80NB	Nos	5,301
j)	10009152	Flaps for check valves 50NB	Nos	6,835
k)	70003320	Set of bearings for HVW pumps	Set	11,733
l)	70003321	Set of bearings for Jockey pumps	Set	7,287
m)	10009148	Pressure Gauge	No	2,253
n)	10009043	Gland packing of HVW Pumps	Nos	8,380
o)	10009046	Lubricating oil filter elements of Diesel engine drive	Nos	13,285
p)	10006637	Multicriteria detectors	Nos	3,051
q)	10009625	Beam Detector	Nos	42,523
r)	10009719	CO2 type portable Fire extinguishers of 2 kgs. Capacity for AC Kiosks Wall mounted	Nos	1,218
s)		15NB Check Value for deluge valve	Nos	2,237
M)		33kV STATION POWER SUPPLY FACILITIES		
1	10000702	33kV/433V, 630 KVA Station supply transformers with all accessories and fittings as per 400kV specifications.	Nos.	21,14,800
2	10009247	HT Trivector Meter box.	Nos.	8,028
3	10000712	33 KV 3 Phase HG Fuse sets with Insulators.	Set	9,534
4	10012509	150 x 150 mm RS Joists, MS channels & Misc. Structural Steel for 33KV Switchyard CT`s, LA`s, PT`s, CB`s, Isolators & HG Fuse sets.	MT	As per Steel rates circular
5	10007320	Hard ware, Clamps, connectors, galvanized bolts, nuts and washers and other miscellaneous items required for complete erection and commissioning of 33 KV /433 V facilities as per the specification.	Set	1,16,098
6	10001112	33 kV CTs with junction box and terminal connectors and all accessories as per specification, 25-15/1-1-1A.	Sets	19,300
7		33kV Circuit Breaker	Nos.	2,57,500
8		33kV Twin Feeder C&R panel with BCUs as per BOM	Nos.	11,20,000
9	10001320	33kV Potential Transformer with terminal connectors and all accessories as per specification, $33kV/\sqrt{3}$ / $110-110/\sqrt{3}$ (METERING) 0.2S Class	Nos.	35,750
10	10004517	Spare BCU+Spare Differential over current	Nos.	73,367

		and earth fault relay/BCPU(same type as offered in the tender)		
		Supply of 33 kV Line Material :		
11	10010108	100 Sq mm AAA Conductor	Km	1,02,250
12		4 Bolted Aluminium Pad Clamps suitable for AAA 100 Sq mm Conductor	Nos.	205
13	10007538	33 kV Polymer Pin insulator with pin	Each	882
14		33 kV string insulator sets with metal parts (1 set = 3 Nos. strain insulator with 1 No. metal part and accessories etc.,)	Sets	1,000
15	10012428	9.1 mtrs Prestressed cement concrete (PSCC) poles with base plates, earth coils.	Nos.	4,910
16		Back clamp for 9.1Mtrs. PSCC pole with 75X8mm MS Flat	Each	250
17		Stay clamp for 9.1Mtrs. PSCC pole with 75X8mm MS Flat	Set	250
18		Fabricated, galvanised DP structures, GI Bolts, Nuts and washers, vertical formations, V cross arms, top cleats etc. with channels, angles, flat, rods etc. as per complete requirement.	MT	71,382
19	10007352	Supply of 33kV M+06 towers	MT	As per Steel rates circular
20	10010181	Stay wire as per specification.	MT	1,05,000
21	10007765	Eye bolts and anchor rods etc for complete stay set	Sets	793
22	10007537	Guy insulator sets	Sets	47
23		Danger boards at important locations as directed by the Engineer-in-charge	Nos.	176
24		33 kV PG Clamps	Nos.	350
25	10012429	11/12.5 mtrs Spun Poles including clamps	Nos.	18,400
26	10007536	33KV SRC Pin Insulator with GI Rods	Nos.	659
27		33KV SRC Pin Insulator with metal	Nos.	659
28		33kV Double Tension Hardware for AAA Conductor	sets	4,900
		Mandatory Spares for 33 kV/ 415V Station power supply Transformer.		
29	10000709	Bushings with metal parts set for each rating (HV-1 no. & LV-1 no.)	Sets	18,242
30	10000479	Silica Gel Breather	Nos.	3,545
31		33kV, 800A Isolator with terminal connectors(metalic portion)	Sets	63,900

32		Solid core insulators for the above isolator	Nos.	2,050
33		70kN Composite Polymer insulators	Nos.	650
N)		33kV Station Supply from ICT Tertiary Winding for Utilisation in 400kV Substations		
1		52KV/433V, 630 KVA Station supply transformers with all accessories and fittings as per specifications.	No	21,14,800
2	10002637	72.5KV, 800Amps Isolators with terminal connectors including support insulators complete	No	1,06,246
3		72.5 KV CTs with Junction box and terminal connectors and all accessories as per the specification.25-15/1-1-1 A ,0.2 Class accuracy for metering core	No	98,507
4	10001330	72.5 KV PTs with Junction box and terminal connectors and all accessories as per the specification.33KV/ $\sqrt{3}$ /110V-110/ $\sqrt{3}$ with 0.2 class & 10 VA accuracy for metering core	No	98,507
5		72.5KV VCB with all accessories complete integrated to the substation automation system.	LS	6,32,700
6		33kV Control & relay panel with BCU suitable to SAS Control and Relay with Terminal Connectors and all accessories including. Ammeter, Voltmeter, MW Meter,0.2 Class accuracy Energy Meter / Multi Function meter, TNC Switch, Indication Bulbs,3 Nos Over Current,1 No Earth Fault relay (IDMT Non Directional),Neutral Displacement Relay for tertiary arrangement	No	BOQ considered with 33kV Twin Feeder C&R panel with BCUs as per BOM of 33 KV station Supply
7	10007521	72.5KV Bus Post Insulators (Solid core insulators) required for tertiary arrangement	No	13,919
8		Heat Shrinkable insulation sleeves for ACSR moose conductor(31.77 mm) (RBPM-50)	Mtr	566
O)		CONTROL HOUSE FURNITURE AND MONITORING SYSTEM		
1	70002812	Godrej make Tables (Model EARL Size 200 W x 1900 D x 750H mm) or Wipro make (Model Kingsley Premium Type-A main table).	No.	7,093
2	70002813	Credenzas for above (Make Godrej, Model: EARL Size 2100 W x 350D x	No.	2,091

		1520H) or Wipro make, Model Wudsafe-LHS:size 750Lx425Dx740HT or equivalent as per approval of APTRANSCO M/s. Godrej make with revolving chair.		
3	70002727	Self-Containing 12 Nos Racks with safety locker make Godrej or Wipro or equivalent.	Set	17,352
4	70002591	Junior Executive table (1365 x 680 x 7350) mm with decolam Model No.T-9 make Godrej or Wipro or equivalent.	Nos.	27,769
5	70002589	Steel Table (1199 x 590 x 735) mm with single drawer and Decolam Top Model. T-111 make Godrej or Wipro or equivalent.	Nos.	5,659
6	70002668	Steel revolving chair model No. CH – 1014 with heavy base seat and back in cane make Godrej or Wipro make model: That's it or equivalent.	Nos	11,100
7	70002669	Steel Tubular `S` Type chair (Continuous Arm) Model No. Chr-7 in 1" dia and 14 gauge pipe, cane seat and back in teak wood with quality cane make Godrej or Wipro make model: That's it or equivalent.	Nos	5,550
8	70002666	Steel Tubular `S` Type chair (without arm) Model No. Chr 4 in 1" dia and 14 SWG pipe, cane seat and back in teak wood with quality cane make Godrej Wipro make model: That's it or equivalent.	Nos	4,440
9	70002711	Steel store well plain (900 x 507 x 1950) mm Make Godrej, Model: Slimline 4S Text purple colour or Wipro make model Endura.	Nos	7,798
10	70002787	Plastic file trays (16" x 11"x3")	Nos	348
11	70002703	Steel Stools (15"x15"x18") with MS top sheet thickness 20mm 1" square pipe 16 gauge make Godrej or equivalent.	Nos	2,220
12	70002788	Steel waste paper baskets (12"x10"x10")	Nos	487
13	70002726	Steel rack (6'x3'x16") with 6 shelves making 5 compartments (22 Gauge)	Nos.	13,330
14	70002745	Short bench (4'x14"x1/2') with laminated Top.	Nos.	1,665
15		Display Board for Substation Layout		
a)	70002814	6' x 5' Plywood Novapan finish with suitable border and computerized symbols, labels etc of single line diagram as directed by Site Engineer complete suitable for	No.	6,141

		Wall/Floor stand mounted.		
b)	70002815	Aluminium Floor stand for the above.	No.	11,335
16	70002816	3' x 2' Wooden key board suitable for holding 30 Nos Key chains	No.	1,416
17	70001850	Brother P-Touch Sticker lable printer with Software and all accessories (Model PT-2700) / Latest Model.	No.	19,111
18		Sticker lables, printer cartridges suitable for (Brother P make) Touch sticker Lables, Printer.		
a)	70001851	24 mm size.	No.	519
b)	70001852	18 mm size.	No.	426
c)	70001853	12 mm size.	No.	330
19	70004318	Supply and fixing of teak wood name boards with enamel painting letters of size 12"x4" for rooms in control room.	Nos.	4,159
20	70002817	Supply and fixing of Bay Indicator boards of thickness 18" with MS sheet and MS angles of size 10"x26" including cost of letters.	Nos.	2,402
21	70004411	Supply and fixing of name board indicating 400/220kV SS, APTRANSCO, XXXXXXXXXX, XXXXXXXXXX Dist. Of size 4x8 feet with MS 18gauge sheet MS 1.5"angles.1.5"pipes and concreting foundation including cost of painting letters(1no. In English & 1no. In Telugu).	Nos.	25,715
22	70004412	Supply and fixing of notice board of size 2x2.5feet.	No.	949
23	70004414	Pictograph of size 2x4feet with letters.	No.	7,112
24		Personal computer (with the following configuration)		
a)	70001915	Intel core i-7-3920XM Process 512KB level-8M cache upto 3.80 GHz, 8GB RAM , 128bit graphic accelerator with 4MB SG RAM,160GB Ultra DMA-HDD,1.44MB FDD,52X Creative DVD-ROM,1x16550 fast serial ports & IEPP ECP parallel ports , 4X, universal serial bus (USB) ports, PS/2 compatible key board/mouse ports, 19" colour monitor, Internet ready multimedia key board, Optical scroll mouse and built in modem 128KBPS along with telephone instrument	Nos.	70,969

		& other accessories and complete installation of the system, DVD writer with latest software. (HP / ACER make or equivalent reputed make		
b)	70001867	10/100 MBPS Ethernet Card	Nos.	25,625
c)	70005269	Windows-10 or later version of OS and latest MS OFFICE software - preloaded along with Media & Manuals, Power management software, ACPI and windows 10 / Latest.	Nos.	42,695
d)	70005258	Latest updated versions of Antivirus software kit - Norton, macfee, hill view etc alongwith Media & Manuals	Nos.	11,094
25	70002246	HP laser jet printer 101 0 to 1015 series. (1020 series)		14,646
26	70002240	Laser Jet Printer with Fax, Scan, and Photostat along with 2sets of Spare cartridges and Scanner.	Nos.	29,128
27	70002092	2 kVA inverter (input 220V DC, output 220V AC)	Nos.	19,090
28	70001712	Laptop of latest version with all software, multimedia and manuals of make Dell or equivalent etc.	Nos.	64,153
29	70005310	Latest AutoCAD software licensed copy	No.	45,760
30	70000505	Binoculars(latest version)	No.	5,454
31	70001856	Xerox Machine (RICOH /Canon / Brother Digital Multi Functional Network Device Model MP 2001 SP / Latest model with RADF Network, Printer, Scanner, Fax Option (LP Printer latest version with 2Nos Spare cartridges)	Nos.	1,10,051
32	70004448	Water -Purifier ISI standard make.	Nos.	10,207
33	70002502	Furniture consisting of a table and revolving chair for PC and a table for printer	Nos.	7,138
34	70000505	Binoculars(latest version with night vision)	No.	5,204
35		Supply of GPS(Garmin GPS 72H)/ Latest Model	No.	15,635
P)		400KV LINE MATERIALS		
1	67500060	Number plates with Bolts &Nuts and Washers	No	198
2	67500052	Danger plates with Bolts &Nuts and Washers	No	220
3	67500058	Phase plates with Bolts &Nuts and Washers(Set of Three)	Sets	261

4	67500055	Circuit plates with Bolts &Nuts and Washers (Set of Two)	Sets	314
5		Anti climbing devices		
a)	67500033	Tangent towers	Nos	5,136
b)	67500034	Small angle towers	Nos	6,848
c)	67500035	Medium angle towers	Nos	8,559
d)	67500036	Large angle towers	Nos	8,559
6	67500042	Bird guards(saw tooth)	Nos	262
7		Earthing of the towers		
a)	10006927	Pipe type Earthing Sets	Sets	1,665
b)	10003006	Counter poise earthing	Sets	3,995
8		Insulator Hardware & Accessories for conductor and earth wire.		
(a)		For Quad Moose ACSR conductor		
i)	10007009	Double Suspension Hardware for Quad ACSR Moose Conductor	Sets	12,371
ii)	10007001	Quadruple tension Hardware for ACSR Moose conductor	Sets	46,250
iii)	10007011	Pilot string Hardware for Quad ACSR Moose conductor	Sets	12,866
iv)	10007274	Quadruple spacer dampers for ACSR Moose Conductor	No.	1,716
v)	10008111	Bundle spacers for ACSR Moose conductor	No.	346
vi)	10007319	Rigid spacers (Quadruple ACSR Moose conductor) for jumpers.	No.	1,284
vii)	10007201	Mid span compression joints for ACSR Moose conductor	No.	1,135
viii)	10007218	Repair Sleeves	No.	443
(b)		For Twin Moose ACSR conductor		
i)	10007027	Double tension Hardware for ACSR Moose conductor	Sets	13,127
ii)	10007010	Double 'T' Suspension Hardware for ACSR/ INVAR Moose Conductor	Sets	13,839
iii)	10007083	Single Suspension Hardware for ACSR/ INVAR Moose Conductor	Sets	7,500
iv)	10007501	Single Suspension Pilot string Insulator	Sets	13,485

		Hardware for Twin Moose ACSR Conductor complete		
v)	10007276	Vibration dampers for ACSR Moose Conductor	No.	1,183
vi)	10008569	Rigid spacers (Twin ACSR Moose conductor) for jumpers.	No.	926
vii)	10007275	Spacer Dampers for ACSR Moose conductor	No.	1,172
(c)		For 7/3.66 mm GSS Earth wire		
(i)	10007112	Suspension clamps for HTGS Earth Wire	Sets	555
(ii)	10007063	Tension clamps for HTGS Earth Wire	Sets	554
(iii)	10007279	Vibration dampers for HTGS Earth wire	Nos	442
(iv)	10007210	Mid span compression joints for earth wire	Nos	114
(v)	10006923	Flexible copper bonds for earth wire.	Nos	531
(vi)	10007228	Repair Sleeves	Nos	195
9	10010175	High Tension Galvanized Stranded Steel Earth wire 7/3.66 mm	KM	35,063
Q)		INSULATORS		
(a).i	10007510	120KN Disc Insulators (Antifog type with Zinc Sleeve) 460mm creepage	No.	701
ii.	10007523	120kN Long Rod Insulators(one set= 23 No.s Disc insulators)	Set	20,423
iii.	10007601	120KN SRC Insulators -13020mm creepage	No.	6,600
(b).i	10007508	160KN Disc Insulators (Antifog type with Zinc Sleeve) 470mm creepage	No.	1,288
ii.	10007524	160kN Long Rod Insulators(one set= 24 No.s Disc insulators)	Set	23,024
iii.	10007600	160KN SRC Insulators -13020mm creepage	No.	7,647
R)		Control and Relay Panels along with SAS equipment for 400/ 220KV SUBSTATIONS (for 400kV Projects only)		

		Design, engineering, manufacture, assembly, shop testing, supply and delivery at sites including packing forwarding handling and unloading at site of complete set of the following control and relay and protection panels and other equipment with all equipment accessories and others as per APTRANSCO specification.		
400kV Voltage Level				
1	10004002	Common Control and Busbar Protection Panels for 400kV side As per 400KV Specification for Control & Relay Panels.- 24 bays Distributed	Set	1,27,33,333
2	10004003	Common Control and Busbar Protection Panels for 220kV side As per 400KV Specification for Control & Relay Panels.- 24 Bays Distributed	Set	1,27,33,333
3	10004004	400kV Line CB Control and Relay Panels As per 400KV Specification for Control& Relay Panels	Nos	21,33,333
4	10004005	400kV Line Protection Panels As per 400KV Specification.	Nos	22,50,000
5	10004007	400kV Tie CB Control and Relay panels As per 400KV Specification for Control & Relay Panels.	Nos	19,16,667
6	10004013	400kV side of 400/220kV 500/315 MVA ICT CB Control and Relay Panels as per 400KV Specification for Control & Relay Panels.	Nos	18,66,667
7	10004014	400/220kV 500/315MVA ICT Protection Panels As per 400KV Specification for Control & Relay Panels.	Nos	15,66,667
8	10010251	Sub-Station Automation System as per 400KV Specification including Software for complete Sub-Station Automation System along with Visual monitoring system.	Nos	1,59,46,043
9	10010313	Integration and Installation, Testing & Commissioning of ICT/feeder Bay to the existing Substation Automation System (including Hardware and Software)	Nos	26,27,723
10	70001502	Relay Test kit and Testing Instruments as per 400KV Specification for Control& Relay Panels.	Nos	29,70,000
11	10004011	125MVAR Bus Reactor Main CB Control & Relay Panel as per 400KV Specification.	Nos	18,50,000

12	10004009	125MVAR Bus Reactor CB Protection Panel as per 400KV Specification.	Nos	20,50,000
13	10004253	Mandatory Spares for Control and Relay Panels as per 400KV Specification.	Lot	55,45,000
For 220KV Voltage Level				
14	10004013	220kV side of 400/220kV 500/315 MVA ICT CB Control and Relay Panels as per 400KV Specification for Control & Relay Panels.	Nos	18,66,667
15	10004004	220kV Line CB Control and Relay Panels As per 400KV Specification for Control & Relay Panels.	Nos	20,33,333
16	10004022	220kV Line Protection Panels As per 400KV Specification for Control & Relay Panels.	Nos	23,50,000
17	10004023	220kV Bus Coupler Control, Relay and Protection Panels As per 400KV Specification for Control & Relay Panels.	Nos	14,16,667
18	10004024	220kV Transfer Bus Coupler Control, Relay and Protection Panels 400KV Specification for Control & Relay Panels.	Nos	14,16,667
19	10004035	220 kV Feeder Control & Relay Panels with BCUs suitable for SAS Integration including Protection Panel complete set as per specification.	Nos	35,50,000
20	10004037	220/132kV Power Transformer Control & Relay Panels with BCUs suitable for SAS Integration including Protection Panel complete set as per specification.	Nos	25,83,333
21	10004027	220kV Bus Bar Scheme Panel (for 16 Bays) for double bus system	Nos	67,16,667
22	10004023	220kV Bus Coupler Panel with BCUs as per specification.	Nos	13,00,000
23	10010303	Industrial grade desktop PC with 24" (TFT) Monitor with software & furniture as per APTRANSCO Spec.	SET	9,50,000
24	70002326	A4 Laser color printer with furniture.	Nos	1,47,500
25	10010292	GPS clock, antenna along with Associated equipment for time synchronization with existing relays.	SET	2,62,500
26	70002094	3 KVA Inverters, Cabling & Installation as per Aprtransco Specification.	SET	2,97,500
27	10012127	Data Concentrator for Energy Meters interface with IEC61850.	SET	4,50,000

28	10011651	REMOTE Gateway consists of chassis, mother board, power supply, processor with communication ports: a) IEC 60870-5-101 and b) IEC 60870-5-104. (Suitable for 400kvSS, 220kv SS , 132 kV SS).	SET	7,50,000
29	10011665	Industrial grade Ethernet Switches & Accessories.	Nos	2,72,500
30	10011302	Remote terminal unit along with interface cabinet, Relays, Transducers, Cabling, Switches etc., and necessary spares to provide data acquisition from 220kV & 132kV Substations	Nos	7,73,541
S)		Visual Monitoring System for 400kV SS		
1	70002228	4MP IP Bullet Cameras, IP 66, 50Mtrs IR, Day & Night with 16x Digital Zoom	Nos	8,138
2	70002230	4MP PTZ Cameras with 45x200 (100Mtrs), IR, IP 66 with 30x Digital Zoom IP 66, 50Mtrs IR, Day & Night with 16x Digital Zoom	Nos	99,820
3	10011677	64 Channel Network video recorder with 4 Sata cable & adopter	Nos	81,918
4		8TB Surveillance Hard disc	Nos	21,157
5	10011641	VMS metal surface boxes with power manager and termination box for OFC splicing and MCB connection with 1KVA Surge protection	Nos	7,052
6	10011784	Fiber Duplex patch card LC-LC or LC-SC as per the LIU functionality	Nos	1,085
7		6 PORT loaded LIU with Fiber Pigtails and adapters	Nos	3,798
8	10011628	6 Core Single mode armoured OFC Cable	Mtrs	46
9		32mm HDPE for ducting purpose with anti redundant and suitable T Junctions/ C sections, reducers & Couplers etc	Mtrs	56
10	10011950	Power Cables 2 Core, 2.5 Sqmm	Mtrs	44
11		HDMI Cable	Nos	922
T)		GIS EQUIPMENT RATES FOR 400KV, 220KV, 132KV and 33KV		
1	10010469	420kV SF6 GIS Feeder Bay Module (without PIR)	SET	3,46,46,302
2	10010511	420kV SF6 GIS Line feeder bay module (with PIR).	SET	4,45,57,000
3	10010470	420kV SF6 GIS ICT Bay Module(with CSD)	SET	4,03,63,400
4		420kV SF6 GIS ICT Bay Module(without	SET	3,18,86,033

		CSD)		
5	10010468	420kV SF6 GIS Bus Bar module for Spare Transformer/feeder.	SET	1,93,95,400
6	10010471	420kV SF6 GIS Line/Bus Reactor bay module (with CSD).	SET	3,77,42,400
7		420kV SF6 GIS Bus Sectionalizer module.	SET	5,49,24,550
8	10010512	420kV SF6 GIS Tie bay module(with PIR).	SET	3,77,42,400
9	10010472	420kV SF6 GIS Tie bay module (without PIR).	SET	3,35,48,800
10	10010451	420kV, SF6/Air Bushing for connecting GIS to AIS	SET	5,24,200
11	10010473	420kV Single phase, SF6 Gas Insulated Bus Duct (GIB) outside GIS Hall along with associated support structure.	Mtrs	73,388
12		SF6 Gas processing Unit.	SET	50,84,432
13	70001118	Supply and Erection of EOT Crane for GIS Building.(400 KV)	SET	27,25,840
14	10010467	Online Partial Discharge Monitoring System for 400kV GIS station.	SET	2,62,10,000
15		400kv bus VT/CVT module.	SET	35,00,000
16	10010402/ 10010401	245kV SF6 GIS transformer/ feeder bay module.	SET	2,09,68,000
17	10010513	245kV SF6 GIS Bus bar module suitable for double bus arrangement.	SET	1,57,26,000
18	10010403	245kV SF6 GIS Bus coupler bay module suitable for double bus arrangement.	SET	1,99,19,600
19	10010442	245kV SF6/Air Bushing for connecting GIS to AIS.	SET	12,58,080
20	10010441	245kV Single phase, SF6 Gas Insulated Bus Duct (GIB) outside GIS Hall along with associated support structure.	Mtrs	75,484
21	10010440	245kV SF6 GIS Bus Sectionalizer bay Module	SET	93,78,178
22	70001119	Supply and Erection of EOT Crane for GIS Building (220 KV)	SET	22,01,640
23	10010467	Partial Discharge Monitor (220kV &132 KV GIS) - OFFLINE.	SET	62,90,400
24		245kv bus VT/CVT module.	SET	15,50,000
25		145kV SF6 GIS Line feeder/PTR bay module.	SET	81,39,339
26		145kV SF6 GIS Bus bar module.	SET	60,00,000

27		145kV SF6 GIS Bus coupler bay module as per Section-Project, Technical specification.	SET	90,00,000
28		145kV SF6 TO AIR BUSHING.	SET	3,85,000
29		145kV, 3 Phase, SF6 Gas Insulated Bus duct (GIB) outside GIS Hall along with associated support structure.	Mtrs	1,05,000
30		132kv VT/CVT module	SET	50,00,000
31		SF6 Gas Processing Unit for 145kV GIS Station	SET	84,00,000
32		Supply and Erection of EOT Crane for GIS Building (132kV GIS station).	SET	17,00,000
33		36kV, 2500A, 25KA for 1 second, SF6 GAS- Insulated metal enclosed bus bar module.	SET	30,00,000
34		36kV GIS transformer/ feeder bay module.	SET	35,00,000
35		36kV, 3 - phase, 2500A, 25KA SF6 for 1 second, 33kV SF6 GAS Insulated metal enclosed bus section bay module.	SET	35,00,000
		SPARES		
1	10001551	Dew Point Meter for 400kV & 220kV GIS	One No.	7,17,802
2	10001599	SF6 Gas Leakage Detector for 400kV & 220kV GIS System	One No.	1,94,405
3	10001971	SF6 Gas Analyser	One No.	14,95,421
4		<u>SPARES FOR 420kV GIS</u>	One No.	
(i)		General	One No.	
a.	10000186	SF6 gas Pressure Relief Devices, 1Nos. of each type	One No.	59,817
b.	10001983	SF6 Pressure gauge cum switch OR Density monitors and pressure switch as applicable (1 no. of each type)	One No.	47,255
c.	10006050	Coupling device for pressure gauge cum switch for connecting Gas handling plant	One No.	19,142
d.	70003269	Rubber Gaskets, "O" Rings and Seals for SF6 gas of each type	One No.	4,187
e.	10006533	Molecular filter for SF6 gas with filter bags(20% of total weight)	One No.	1,59,113
f.	10006096	All types of Control Valves for SF6 gas of each type	One No.	5,982
g.		SF6 gas Cylinder 50 Kgs	One No.	52,000
h.	10006096	All types of coupling for SF6 gas (1 no. of	One	6,580

		each type)	No.	
j.2	10010474	For Single phase enclosure if applicable	One No.	17,347
k	10002873	Locking device to keep the Dis-connectors (Isolators) and Earthing switches in close or open position in case of removal of the driving Mechanism	One No.	10,169
l	10007505	Bus Support insulator of each type for 3 phase/single phase enclosure.	One No.	3,26,002
m	10010451	SF6 to air bushing (400kV) each type as applicable	One No.	7,77,620
(ii)		420 KV SF6 CIRCUIT BREAKER:	One No.	
a.	10001402	Complete Circuit Breaker pole of each type & rating complete with interrupter, main circuit enclosure and Marshalling Box with operating mechanism	One No.	22,79,022
b.	70003269	Rubber gaskets, 'O' rings and seals for SF6 gas (1 No. of each type)	One No.	2,393
c.	10002159	Trip coil assembly with resistor as applicable	One No.	38,881
d.	10002345	Closing coil assembly with resistor as applicable.	One No.	38,881
e.	10006098	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)	One No.	11,963
f.	10002194	Closing coil assembly (including valve, if applicable)	One No.	1,16,045
g.	10002195	Trip coil assembly (including valve, if applicable)	One No.	1,16,045
h.	70003970	Auxiliary switch assembly of each type	One No.	17,945
(iii)		420 KV ISOLATORS :	One No.	
a.	10002812	Complete set of 3-phase dis-connector (one no. of each type) including main circuit, enclosure, driving mechanism	One No.	34,09,560
b.	10003025	Single Phase/ 3-phase Earthing switch (one no. of each type) including main circuit, enclosure, driving mechanism.	One No.	10,94,468
c.	10003026	Copper contact fingers for dis-connector male & female contact for one complete (3-phase) dis-connector of each type and rating	One No.	2,23,715
d.	10003027	Copper contact fingers for earthing switch male & female contacts, for one complete(3-phase) earthing switch of each type and rating	One No.	2,46,446

e.	10003028	Open / Close contactor assembly, timers, key interlock for one complete (3 phase) dis-connector and (3 phase) earthing switch (1 No. of each type and rating)	One No.	8,374
g.1	10002831	For isolator	One No.	11,365
g.2	10003029	For earth switch	One No.	22,132
iv)		420 KV CURRENT TRANSFORMER	One No.	
a.	10010475	Gas insulated complete CT of each type and rating with enclosure.	One No.	7,17,802
b.	10010476	Secondary bushing of each type	One No.	25,722
v)		420 kV VOLTAGE TRANSFORMER	One No.	
a.	10010477	Gas insulated complete PT of each type and rating with enclosure.	One No.	8,97,253
5		SPARES FOR 245kV GIS	One No.	
(i)		General	One No.	
a.	10000186	SF6 gas Pressure Relief Devices, 1Nos. of each type	One No.	39,283
b.	10001983	SF6 Pressure gauge cum switch OR Density monitors and pressure switch as applicable (1 no. of each type)	One No.	31,510
c.	10006050	Coupling device for pressure gauge cum switch for connecting Gas handling plant	One No.	9,512
d.	10006263	Rubber Gaskets, "O" Rings and Seals for SF6 gas of each type	One No.	7,728
e.	10006533	Molecular filter for SF6 gas with filter bags(20% of total weight)	One No.	7,18,181
f.	10006096	All types of Control Valves for SF6 gas of each type	One No.	18,430
g.	10001935	SF6 gas (20 % of total gas quantity)	One No.	21,61,677
h.	10006097	All types of coupling for SF6 gas (1 no. of each type)	One No.	9,512
j.2	10010479	For Single phase enclosure if applicable	One No.	1,04,635
k	10002873	Locking device to keep the Dis-connectors (Isolators) and Earthing switches in close or open position in case of removal of the driving Mechanism	One No.	7,728
l	10007505	Bus Support insulator of each type for 3 phase/single phase enclosure.	One No.	8,75,135
m	10010442	SF6 to air bushing (245kV) as applicable	One	3,09,745

			No.	
(ii)		245 KV SF6 CIRCUIT BREAKER:	One No.	
a.	10001406	Complete Circuit Breaker pole of each type & rating complete with interrupter, main circuit enclosure and Marshalling Box with operating mechanism	One No.	9,94,633
b.	10001476	Rubber gaskets, 'O' rings and seals for SF6 gas (1 No. of each type)	One No.	4,162
c.	10002159	Trip coil assembly with resistor as applicable	One No.	23,127
d.	10002345	Closing coil assembly with resistor as applicable.	One No.	26,219
e.	10006098	Relays, Power contactors, push buttons, timers & MCBs etc (1 No. of each type & rating)	One No.	7,728
f.	10002194	Closing coil assembly (including valve, if applicable)	One No.	99,880
g.	10002195	Trip coil assembly (including valve, if applicable)	One No.	99,880
h.	70003970	Auxiliary switch assembly of each type	One No.	17,241
(iii)		245 KV ISOLATORS :	One No.	
a.	10003030	Complete set of 3-phase dis-connector (one no. of each type) including main circuit, enclosure, driving mechanism	One No.	29,46,445
b.	10003031	Single Phase/ 3-phase Earthing switch (one no. of each type) including main circuit, enclosure, driving mechanism.	One No.	6,92,023
c.	10003026	Copper contact fingers for dis-connector male & female contact for one complete (3-phase) dis-connector of each type and rating	One No.	1,93,219
d.	10003027	Copper contact fingers for earthing switch male & female contacts, for one complete(3-phase) earthing switch of each type and rating	One No.	1,71,816
e.	10003028	Open / Close contactor assembly, timers, key interlock for one complete (3 phase) dis-connector and (3 phase) earthing switch (1 No. of each type and rating)	One No.	59,452
g.1	10003036	For isolator	One No.	7,728
g.2	10003035	For earth switch	One No.	7,728
(iv)		245 KV CURRENT TRANSFORMER	One No.	
a.	10010480	Gas insulated complete CT of each type and	One	5,46,959

		rating with enclosure.	No.	
b.	10010481	Secondary bushing of each type	One No.	22,843
(v)		245 kV VOLTAGE TRANSFORMER	One No.	
a.	10010482	Gas insulated complete PT of each type and rating with enclosure.	One No.	5,95,710
		Testing & Maintenance Equipment for GIS		
b.	10006527	SF6 Gas filling & evacuating plant	No	50,84,432
c.	10001599	SF6 Gas Leakage Detector for 400kV & 220kV GIS System	No	1,94,405
d.	70000959	Self support Aluminum Ladder	No	9,958
e.	70000962	Cart Wheel mounted Aluminum Ladder	No	92,587
f.	10009339	Outdoor Power Receptacle for Oil Filtration Unit (400A)	No	9,958
U)	XLPE POWER CABLE AND ACCESSORRIES RATES FOR 400KV, 220KV and 132KV			
		400KV		
1		Supply of 400 KV XLPE Underground Single Core 2500 Sq.mm. Copper Cable.	KM	3,97,33,009
2		400kV 2500Sq.mm Pre moulded joints without cross bonding arrangements with copper casing and coffin box.	Nos	20,48,148
3		400kV 2500Sq.mm Pre moulded joints with cross bonding arrangements (Insulated joints) with copper casing and coffin box.	Nos	20,48,148
4		Design, Supply of 400KV, 2500 Sq.mm outdoor type cable end terminations (sealing ends) with all materials complete in all respects.	Nos	24,85,000
5		Design, supply of 400KV, 2500Sqmm cable end terminations complete in all respects (SF6 type cable terminations).	Nos	18,17,000
6	10003662	3 Phase Link boxes With SVL to cross bond the sheath suitable for 400kV XLP UG cable.	Nos.	1,31,917
7	10003663	3 Phase Link boxes Without SVL to cross bond the sheath suitable for 400kV XLP UG cable.	Nos.	59,568
8	10003665	1 phase Link boxes without SVL suitable for 400kV XLP UG cable.	Nos.	26,900

9		1 phase Link boxes with SVL suitable for 400kV XLP UG cable.	Nos.	40,675
		220KV		
10	10003701	Supply of 220 KV XLPE Underground Single Core 1000 Sq.mm. Copper Cable.	KM	1,53,39,981
11	10003705	220kV 1000 Sq.mm Pre moulded joints without cross bonding arrangements with copper casing and coffin box.	Nos	8,10,544
12	10003707	220kV 1000Sq.mm Pre moulded joints with cross bonding arrangements (Insulated joints) with copper casing and coffin box.	Nos	9,05,674
13	10003709	Design, Supply of 220KV, 1000 Sq.mm outdoor type cable end terminations (sealing ends) with all materials complete in all respects.	Nos	12,00,000
14	10010457	Design, supply of 220 kV 1000Sqmm cable end terminations complete in all respects (SF6 type cable terminations).	Nos	8,59,700
15	10003662	3 Phase Link boxes With SVL to cross bond the sheath suitable for 220kV XLP UG cable.	Nos	1,25,000
16	10003663	3 Phase Link boxes Without SVL to cross bond the sheath suitable for 220kV XLP UG cable.	Nos	59,568
17	10003664	1 phase Link boxes with SVL suitable for 220kV XLP UG cable.	Nos	34,440
18	10003665	1 phase Link boxes without SVL suitable for 220kV XLP UG cable.	Nos	26,900
		132kV		
19	10003713	Supply of 132 KV XLPE Under ground Single Core 630 Sq.mm. Copper Cable.	KM	92,73,323
20	10003721	132kV 630 Sq.mm Pre moulded joints without cross bonding arrangements with copper casing and coffin box.	Nos	6,59,500
21	10003720	132kV 630 Sq.mm Pre moulded joints with cross bonding arrangements (Insulated joints) with copper casing and coffin box.	Nos	7,23,456
22	10003722	Design, Supply of 132 KV, 630 Sq.mm outdoor type cable end terminations (sealing ends) with all materials complete in all respects.	Nos	4,95,343

23	10010456	Design, supply of 132 KV 630Sqmm cable end terminations complete in all respects (SF6 type cable terminations).	Nos	5,57,432
24	10003662	3 Phase Link boxes With SVL to cross bond the sheath.	Nos.	1,25,000
25	10003663	3 Phase Link boxes Without SVL to cross bond the sheath.	Nos.	59,568
26	10003665	1 phase Link boxes without SVL.	Nos.	26,900
27	10003664	1 phase Link boxes with SVL.	Nos	40,675
28	10003206	Supply of 240 sqmm coaxial copper cable conductor PVC insulated 6.6 KV grade with suitable lugs and glands for joint bays.	KM	50,00,000
29	10003209	Supply of 240 sqmm coaxial copper cable conductor PVC insulated 6.6 KV grade with sheath bonding without cross bonding joints to link box.	KM	29,14,799
30		33KV 400Sqmm 1 core copper XLPE cable	KM	39,84,280
31	10003361	33KV 400Sqmm 3core Al XLPE cable	KM	26,32,375
32		33kV, 3 core 300 Sqmm Aluminium XLPE Armoured Cable	Mtr	1,740
33		33kV Jointing kits (3C x 300sqmm Terminal type)	No	10,593
34	10003376	11kV, 3 Core 185 Sqmm Aluminium XLPE Armoured Cable	Mtr	949
35	10003584	11kV Jointing kits (3C x 185sqmm Terminal type)	No.	2,993
36	10003377	3.5 core 185 Sqmm Aluminium XLPE Armoured Cable	Mtr	338
V)		Hybrid GIS		
A.		With creepage 31mm/kV		
1		Design, Manufacture and Supply of 145kV Single Bus Bar Hybrid GIS Module as a Line Bay consists of 1set of CTs, CB, Bus Isolator, Line Isolator with Earth Switch, Without VT	Set	1,66,95,000
2		Design, Manufacture and Supply of 145kV Single Bus Bar Hybrid GIS Module as a Line Bay consists of 1set of CTs, CB, Bus Isolator, Line Isolator with Earth Switch, With VT	Set	1,72,20,000

3		Design, Manufacture and Supply of 145kV Single Bus Bar Hybrid GIS Module as a Transformer Bay consists of 1set of CTs, CB, Bus Isolator, Transformer side Isolator with Earth Switch, Without VT	Set	1,61,70,000
4		Design, Manufacture and Supply of 145kV Single Bus Bar Hybrid GIS Module as a Transformer Bay consists of 1set of CTs, CB, Bus Isolator, Transformer side Isolator with Earth Switch, With VT	Set	1,66,95,000
5		Design, Manufacture and Supply of 145kV Single Bus Bar Hybrid GIS Module as a Bus Sectionalizer Bay consists of 1set of CTs, CB, Bus 1side Isolator, Bus 2 side Isolator Line Isolator with Earth Switch	Set	1,68,00,000
6		Design, Manufacture and Supply of 145kV Single Bus Bar Hybrid GIS Module as a Bus Sectionalizer Bay consists of 1set of CTs, CB, Bus 1side Isolator, Bus 2 side Isolator Line Isolator with Earth Switch	Set	1,68,00,000
7		Design, Manufacture and Supply of 245kV Single Bus Bar Hybrid GIS Module as a Line Bay consists of 1set of CTs, CB, Bus Isolator, Line Isolator with Earth Switch, Without VT	Set	2,04,75,000
8		Design, Manufacture and Supply of 245kV Single Bus Bar Hybrid GIS Module as a Line Bay consists of 1set of CTs, CB, Bus Isolator, Line Isolator with Earth Switch, With VT	Set	2,24,75,000
9		Design, Manufacture and Supply of 245kV Single Bus Bar Hybrid GIS Module as a Transformer Bay consists of 1set of CTs, CB, Bus Isolator, Transformer side Isolator with Earth Switch, With VT	Set	2,03,70,000
10		Design, Manufacture and Supply of 245kV Single Bus Bar Hybrid GIS Module as a Transformer Bay consists of 1set of CTs, CB, Bus Isolator, Transformer side Isolator with Earth Switch, Without VT	Set	2,23,70,000
11		Design, Manufacture and Supply of 245kV Single Bus Bar Hybrid GIS Module as a Bus Sectionalizer Bay consists of 1set of CTs, CB, Bus 1side Isolator, Bus 2 side Isolator Line Isolator	Set	2,31,00,000

12		Design, Manufacture and Supply of 245kV Single Bus Bar Hybrid GIS Module as a Bus Sectionalizer Bay consists of 1set of CTs, CB, Bus 1side Isolator, Bus 2 side Isolator Line Isolator	Set	2,31,00,000
B.		With creepage 31mm/kV	Set	
1		Design, Manufacture and Supply of 145kV Single Bus Bar Hybrid GIS Module as a Line Bay consists of 1set of CTs, CB, Bus Isolator, Line Isolator with Earth Switch, Without VT	Set	1,59,00,000
2		Design, Manufacture and Supply of 145kV Single Bus Bar Hybrid GIS Module as a Line Bay consists of 1set of CTs, CB, Bus Isolator, Line Isolator with Earth Switch, With VT	Set	1,64,00,000
3		Design, Manufacture and Supply of 145kV Single Bus Bar Hybrid GIS Module as a Transformer Bay consists of 1set of CTs, CB, Bus Isolator, Transformer side Isolator with Earth Switch, Without VT	Set	1,54,00,000
4		Design, Manufacture and Supply of 145kV Single Bus Bar Hybrid GIS Module as a Transformer Bay consists of 1set of CTs, CB, Bus Isolator, Transformer side Isolator with Earth Switch, With VT	Set	1,59,00,000
5		Design, Manufacture and Supply of 145kV Single Bus Bar Hybrid GIS Module as a Bus Sectionalizer Bay consists of 1set of CTs, CB, Bus 1side Isolator, Bus 2 side Isolator Line Isolator	Set	1,60,00,000
6		Design, Manufacture and Supply of 145kV Single Bus Bar Hybrid GIS Module as a Bus Sectionalizer Bay consists of 1set of CTs, CB, Bus 1side Isolator, Bus 2 side Isolator Line Isolator	Set	1,60,00,000
7		Design, Manufacture and Supply of 245kV Single Bus Bar Hybrid GIS Module as a Line Bay consists of 1set of CTs, CB, Bus Isolator, Line Isolator with Earth Switch, Without VT	Set	1,95,00,000
8		Design, Manufacture and Supply of 245kV Single Bus Bar Hybrid GIS Module as a Line Bay consists of 1set of CTs, CB, Bus Isolator, Line Isolator with Earth Switch, With VT	Set	2,15,00,000

9		Design, Manufacture and Supply of 245kV Single Bus Bar Hybrid GIS Module as a Transformer Bay consists of 1set of CTs, CB, Bus Isolator, Transformer side Isolator with Earth Switch, With VT	Set	1,94,00,000
10		Design, Manufacture and Supply of 245kV Single Bus Bar Hybrid GIS Module as a Transformer Bay consists of 1set of CTs, CB, Bus Isolator, Transformer side Isolator with Earth Switch, Without VT	Set	2,14,00,000
11		Design, Manufacture and Supply of 245kV Single Bus Bar Hybrid GIS Module as a Bus Sectionalizer Bay consists of 1set of CTs, CB, Bus 1side Isolator, Bus 2 side Isolator Line Isolator	Set	2,20,00,000
12		Design, Manufacture and Supply of 245kV Single Bus Bar Hybrid GIS Module as a Bus Sectionalizer Bay consists of 1set of CTs, CB, Bus 1side Isolator, Bus 2 side Isolator Line Isolator	Set	2,20,00,000
W)		Scientific Equipments for Utilisation in 400kV Substations.		
1		Relay Test Kit and Testing Equipment		
		Microprocessor Based Universal Relay Test Kit with necessary accessories, Software, adv. Features compatible to IEC 61850 and associated Laptop (latest features) & as per 400 KV specification	No	29,70,000
2		Relay Test Plug	No	12,000
3		Digital Multimeter	No	17,000
4		Digital low range Tong Tester	No	68,000
5		Digital High Range Tong Tester, Fluke make	No	47,000
6		Phase sequence indicator	No	12,000
7		Relay Tool Kit	No	45,000
		Scientific Equipments		
8	10000621	Transformer oil Breakdown voltage test kit(reputed make)	No.	9,30,000
9	70001542	10 kV Heavy duty Mains-cum-Battery operated Insulators tester(Induction compensated in 400kv Switchyard)	No.	6,00,000
10	70001533	12kV Fully Automatic capacitance & Tandelata Test equipment with Industrial Laptop(with latest features) and other accessories (Megger/Dobble/Omicron)	No.	29,50,000

11	70001505	3 Phase Transformer Turns ratio test kit (Megger/Omicron)	No.	12,00,000
12		Screw Guage: Reputed Make		10,000
13	70000303	Vernier Callipers : Reputed Make		10,800
14	70001504	CT Primary Current Injection test kit Programa Megger make	No.	22,50,000
15	70001548	Battery AH Capacity meters	No.	17,50,000
16	10005416	Battery Discharge Resistor	No.	7,00,000
17	70001526	Earth Tester Meggar Make	No.	1,35,000
18	70001541	Third Harmonic Resistive Current Measurement test kit (Doble/Scope make)	No.	12,90,000
19	70001574	CT,PT Analyser (Megger/Omicron make) with Industrial Laptop(with Latest Features) and other Accessories	No.	25,70,000
20	10012211	Hand held Walky talky with charger and accessories: Reputed Make	No.	15,000
21	70001503	Secondary Injection kits	No.	9,70,000
22	70001573	Sweep Frequency Response Analysis Test Kit, Megger make with Industrial Laptop(with latest features) and other accessories	No.	18,50,000
23	10004921	Transformer Winding Resistance Kit Megger make - MTO-210 or better features / Omicron)	No.	12,50,000
24	70001965	Infrared Thermo vision camera	No	11,50,000
25		Insulation, Diagnostic Analyser	No	36,00,000
26		AC High Voltage kit, 35kV rms, 50mA	No	8,00,000
27		High Voltage kit for VCB	No	9,00,000


A.K.V. Bhaskar
 Director (Grid, Transmission & Management)