SECTION VI

4.3. GUARANTEED TECHNICAL PARTICULARS

4.3 GUARANTEED TECHNICAL PARTICULARS FOR MAJOR EQUIPMENTS

4.3.1 Preamble

4.3.1.1 The Guaranteed Technical Schedules MUST be filled in, signed and stamped by the Manufacturer for each of the major equipment, and submitted with the Bidding document. Type test reports and certificate of accreditation for the testing Laboratory MUST be provided for evaluation. Also all relevant manufacturer's technical documents MUST be provided for reference to support the guaranteed values.

4.3.1.2 Bidder shall offer only one type of equipment for each equipment required in the contract, and from one manufacturer only. No more than one type, and from different manufacturers shall be offered. Where the bidder offers more than one equipment/item of each type from different manufacturers contrary to this clause, the employer shall choose only one of the equipment for evaluation. All other equipment shall not be considered.

4.3.1.3 Where parameters/Values of equipment in the attached KPLC equipment specifications differ with those required in the guaranteed technical schedules (GTPs), the guaranteed technical schedules parameters shall prevail. i.e.

4.3.1.4 Only the guaranteed technical schedules provided herein (below) shall be filled (Do not fill technical guarantees in the Annexes of attached KPLC equipment technical specifications).

4.3.1.5 All data entered in the Guaranteed Technical Schedules are guaranteed values by the Bidder/manufacturer and cannot be departed from whatsoever.

SCHEDULE 19: GUARANTEED TECHNICAL PARTICULARS FOR 33KV AUTORECLOSER

GUARANTEES FOR 33KV AUTORECLOSER					
Item	**Particulars**	**Unit**	**Employer's requirement**	**Guar. value**	**Refer. Doc**
1.	Manufacturers name and address		State		
2.	- Model or Type of Autorecloser		State		
3.	Equipment applicable standards		State		
4.	- Minimum autorecloser Manufacturing experience (10 years)		State		
5.	- Minimum years of service outside country of Manufacture (5years)		State		
6.	Autorecloser tank material		State		
7.	Arc interruption and insulation medium		State		
8.	Status Indication		State		
9.	Inbuilt current transformers and ratings (630A and STC of ≥ 16 kA)		Provide		
10.	Material of conductive parts (Copper with the contacts silver-plated)		State		
11.	Local Mechanical trip facility and interlocks.		State		
12.	HV bushing material (HCEP or silicon rubber, UV treated)		State		
13.	Primary terminal clamps (Bimetallic, min. Φ20mm)		State		
14.	- Surge arrestor and earthing points		State		
15.	Operating mechanisms type (Magnetic actuator) and number of trips in a cycle		State		
16	Autorecloser Lockout link , electrical and mechanical interlocks		State		
17	- Manual closing, and Automatic Blocking Device for Manual opening		List		
18	- Visible on the ground reflector mechanical open/closer indicator		State		
19.	Operation counters		State		
20.	Padlocking facility		State		
21.	Number of operations to the first maintenance		State		

22.	Equipment rated Voltage		State		
23.	Rated continuous operating current (minimum)		State		
24.	Minimum Power Frequency Withstand Voltage, rms (50Hz, 60s)		State		
25.	Minimum Lightening Impulse Withstand Voltage, 1.2/50µs, +ve, dry, KVpeak		State		
26.	Minimum rated short time withstand current for symmetrical fault for 3 seconds, kA		State		
	- Design type		State		
27.	Rated short circuit breaking current (kA)		State		
28	Rated peak value withstand current kA(peak)		State		
29	- Opening Time		State		
30.	Closing Time		State		
31.	Interrupting Time		State		
32.	Rated recloser Operating Sequence		State		
	Control enclosure [IP] class of protection		State		
	Min. creepage distance of insulator		State		
	Min. clearance - phase to phase to phase to earth		State		
	Min. number of Mechanical & Full Load Operations in life time		State		
33.	Electronic modules for upgrade and communication		State		
34.	Control and communication cable to Laptop		State		
35.	Communication port USB(latest), RS 232, RS 485 and Ethernet		State		
36.	Control box features		State		
37.	Programmable digital (alphanumerical) keypad		State		
38.	LCD Screen		State		
39.	Control /Functions Keys		State		
40.	Electrical Close and Open Push-button		State		
41.	Indications and Status display		List		
42.	Autoreclosers Control Failure		State		
43.	Autoreclosers Safety Control		State		
44.	Application Software		Provide		

45.	Autoreclosers control and setting software (No expiry license		State		
46.	Manufacturer's warranty (18 month minimum)		State		
47.	Auxiliary DC supply via rechargeable Battery (12/24Vdc)		State		
48.	SCADA communication support via IEC 61850 and IEC 60870-5-101/104 communication protocol.		State		
49.	230Vac/50Hz Auxiliary Power Supply (External VT)		State		
50.	Protection and Control Functions		State		
	a)Three Phase Over-Current Protection		State		
	Relays Operating Characteristics		State		
	Protection Functions Available		State		
	b) Earth Fault Protection Function		State		
	Setting Ranges for Earth Fault Protection (50N/51N)		State		
	Setting Ranges for Sensitive Earth Fault Protection (50N-2/51N-2)		State		
	Sensitive Earth Fault Functions and settings		State		
	Cold load pick up function		State		
	Inrush feature		State		
51.	Auto Reclose Function		State		
	Sequence of trip and auto-reclose characteristics		State		
	Setting Ranges for Auto Reclose Function (1…….4 Shots to Lockout Independently selectable for OC & EF)		State		
52.	Software Functions/Features		State		
	Trips to lock-out		State		
	Operations counters		State		
	Fault and Event Records logging		State		
53.	Energy and Power Measurements		State		
	Measurands displayable on the LCD screen		State		
	Instantaneous values rms (I, V, kW, kVA, kVAR, pf)		State		
	Energy measurements (KW, KVA, I, KVAR kVARh, kWh)		State		
54.	Remote Operation and control Via Scada and Laptop		State		
55.	Events & Fault Records Lists		State		

56.	Battery guarantee and warranty of at least 5 years.		State		
57.	Spare Auxiliary contacts – minimum Nos.		State		
58.	Applicable FAT Routine Tests as per IEC standards		State		
59.	Type Test and Certificates		State		
60.	Accreditation Certificate as per ISO/IEC 17025 of Testing Laboratory		List		
61.	Name plate and marking		List		
62.	Phase Markings/Identification		Provide		

SCHEDULE 20: GUARANTEED TECHNICAL PARTICULARS

66KV SINGLE CORE XLPE CABLE

66KV 400mm^2 SINGLE CORE XLPE COPPER CABLE					
Item	**Particulars**		**Unit**	**Guaranteed Value**	**Refer. doc**
1.	Manufacturer and country of origin				
2.	Minimum manufacturing experience (10 years minimum)		Years		
3.	Years of service outside country of manufacture (5 years minimum)		Years		
4.	Service Condition				
5.	Applicable IEC/BS standard(s)				
6.	Rated Continuous operating temperature		^{O}C		
7.	Short with withstand temperature for 5Secs.		^{O}C		
8.	Conductor material				
9.	Minimum insulation thickness and resistivity at 90°C		mm/Ω		
10.	Insulation	Material (XLPE)			
		Minimum Thickness	mm		
		Screen tape around the conductor			
11.	Water barriers				
12.	Metallic Screen	Type and material			
		Min. Tape/Wires screen area			
		Thickness of separation layer	mm		
		Short time current of tape/Wire screen for 3sec at 90 - 200 ^{O}C	kA/3Sec		
13.	Extruded PVC Over sheath	Withstand power frequency at 90 ^{O}C for 1sec	kVrms		
		Over sheath min. thickness	mm		
		Anti-termite protection			
		Fire resistance			
		Marking			
14.	Wire Armour	Material of armour wire and tape			
		Nominal armour wire diameter	mm		
15.	**Ratings and Characteristics**				
	Conductor nominal cross-sectional area		Sqr mm		
	Voltage rating Uo/U(Um)		kV		
	Conductor shape				
	Maximum conductor DC resistance at 20°C		Ω/km		
	Maximum conductor AC resistance at 90°C		Ω/km		
	Minimum conductor diameter		mm		
16.	Current capacity	Buried underground	A		
		In air (trench)	A		
17.	Power frequency withstand test voltage for 5min		kVrms		
18.	Short Circuit rating of conductor for 3sec at (90-250 ^{O}C)		kA/3Sec		
19.	Maximum Capacitance/km		μF/km		
20.	Impedance @50Hz@90 ^{O}C		Ω/km		
21.	Reactance /km@50Hz		Ω/km		
22.	Inductance/km		mH/km		
23.	Maximum charging current/km		A/km		
24.	Impulse withstand voltage as per IEC60230		kVpk		
25.	Minimum bending radius(Static)		mm		
26.	Weight per Km (kg/km)		Kg/km		

SCHEDULE 21: GUARANTEED TECHNICAL PARTICULARS

33KV THREE CORE XLPE CABLE

33KV 300mm² THREE CORE XLPE ALUMINIUM CABLE					
Item	**Particulars**		**Unit**	**Guaranteed Value**	**Refer. doc**
1.	Manufacturer and country of origin				
2.	Minimum manufacturing experience (10 years minimum)		Years		
3.	Years of service outside country of manufacture (5 years minimum)		Years		
4.	Service Condition				
5.	Applicable IEC/BS standard(s)				
6.	Rated Continuous operating temperature		^{O}C		
7.	Short with withstand temperature for 5Secs.		^{O}C		
8.	Conductor material				
9.	Minimum insulation thickness and resistivity at 90°C		mm/Ω		
10.	Insulation	Material (XLPE)			
		Minimum Thickness	mm		
		Screen tape around the conductor			
11.	Water barriers				
12.	Metallic Screen	Type and material			
		Min. Tape/Wires screen area			
		Thickness of separation layer	mm		
		Short time current of tape/Wire screen for 3sec at 90 - 200 ^{O}C	kA/3Sec		
13.	Extruded PVC Over sheath	Withstand power frequency at 90 ^{O}C for 1sec	kVrms		
		Over sheath min. thickness	mm		
		Anti-termite protection			
		Fire resistance			
		Marking			
14.	Wire Armour	Material of armour wire and tape			
		Nominal armour wire diameter	mm		
15.	**Ratings and Characteristics**				
	Conductor nominal cross-sectional area		Sqr mm		
	Voltage rating Uo/U(Um)		kV		
	Conductor shape				
	Maximum conductor DC resistance at 20°C		Ω/km		
	Maximum conductor AC resistance at 90°C		Ω/km		
	Minimum conductor diameter		mm		
16.	Current capacity	Buried underground	A		
		In air (trench)	A		
17.	Power frequency withstand test voltage for 5min		kVrms		
18.	Short Circuit rating of conductor for 3sec at (90-250 ^{O}C)		kA/3Sec		
19.	Maximum Capacitance/km		μF/km		
20.	Impedance @50Hz@90 ^{O}C		Ω/km		
21.	Reactance /km@50Hz		Ω/km		
22.	Inductance/km		mH/km		
23.	Maximum charging current/km		A/km		
24.	Impulse withstand voltage as per IEC60230		kVpk		
25.	Minimum bending radius(Static)		mm		
26.	Weight per Km (kg/km)		Kg/km		

SCHEDULE 22: GUARANTEED TECHNICAL PARTICULARS

33KV OUTDOOR CIRCUIT BREAKER

GUARANTEES FOR 33KV CIRCUIT BREAKER					
Item	**Particulars**	**Unit**	**Employer's requirement**	**Guar. value**	**Refer. Doc**
1 2	Circuit Breakers Type (Model)	-	State		
	- Manufacturer and Country	-	State		
3 4	Reference IEC/BS Standards	-	State		
	Year of service outside the country of manufacturer (5 years minimum)	Years	State		
	- Manufacturing experience (10 years minimum)	Years	State		
5	Type test reports	-	State		
6	Arc quenching Medium	-	State		
7	Pole design operation (ganged)	-	State		
8	Tank design type	-	Provide		
9	Highest rated voltage	kV	State		
10	Nominal rated Voltage	kV	State		
11	Rated frequency	Hz	State		
12 13	Rated continuous current at 50degC	A	State		
	Lightning Impulse withstand voltage 1.2/50µs	kVpeak	State		
14	One minute power frequency withstand voltage, dry and wet	kVrms	State		
15	Rated short-time (short circuit) current/3sec.	kArms	State		
	Rated short circuit making current	kApeak	List		
16	Maximum contact resistance of Main Contact	Ohms	State		
17	Rated operation Sequence	-	State		
18	Rated Current Breaking capacity	kApeak	State		
19	Bushing type	-	State		
20	First pole to clear factor	-	State		
21	Minimum creepage distance of insulator	mm	State		
22	Minimum clearance between phases	mm	State		
23	Minimum clearance to earth	mm	State		
24 25	Opening time	ms	State		
	Closing time	ms	State		
26	Operating mechanism type	-	State		
27	Rated control voltage Tripping/Closing coil	Vdc	State		

28	Spring charging motor/Control voltage	Vdc	State		
29	Main contact material		State		
30	Charging spring status indication		State		
31	Terminal connector material (Tinned Bi-metallic)		State		
32	Number of Auxiliary contacts (NO and NC)		State		
33	Minimum Operations permissible before maintenance		State		
34	Manual ON and OFF operation Switch		State		
35	Anti-Pumping device		State		
36	Auxiliary supply (Single phase)		State		
37	Circuit Breaker Position Indication		State		
38	Heaters and Hygrometer		State		
39	Mechanical Trip/Close device		State		
40	Control cubicle IP Class		State		
41	Control cubicle powder coating colour shade		State		

SCHEDULE 23: GUARANTEES TECHNICAL PARTICULARS
COMPOSITE 33KV POST INSULATORS (VERTIVAL AND HORIZONTAL)

33KV COMPOSITE POST INSULATORS					
Item	**Particulars Specifications**	**Unit**	**Guaranteed Value**		**Refer Doc.**
			Vertical	**Horizontal**	
1.	Insulator Type (Polymeric)				
2.	Design type				
3.	Manufacturer and Country				
4.	Reference IEC/BS Standards				
5.	Manufacturing experience (10 years minimum)	Years			
6.	Year of service outside the country of manufacture (5 years minimum)	Year			
7.	Type test reports	Provide			
8.	Rated Highest Voltage (kV)	kV			
9.	Nominal Voltage	kV			
10.	Minimum failing Load	KN			
11.	Pollution Category				
12.	Dielectric material(Silicon rubber)				
13.	One-minute power frequency withstand voltage, 50 Hz, wet and dry	kV_{rms}			
14.	Lighting impulse withstand voltage, 1.2/50µs	kV_{peak}			
15.	Minimum creepage distance	mm			
16.	Nominal total height	mm			
17.	Short circuit withstand current/3sec	KA			
18.	Housing shield resistance	KΩ			
19.	Shed spacing –projection ratio				
	Minimum distance between sheds	mm			
20.	Creepage clearance ratio				
21.	Specified mechanical load, tension (Minimum)	kN			
22.	Material of fittings				
23.	Minimum sheath thickness	mm			
24.	Material of housing and sheds (HTV silicon)				
25.	Minimum distance between sheds				
26.	Zinc coating thickness on ferrous parts				
27.	Colour of final insulator housing				
28.	Minimum sheath thickness of Silicon				
29.	Number of units	no			
30.	Mounting brackets				

SCHEDULE 24: GUARANTEES TECHNICAL PARTICULARS
- 33KV COMPOSITE INSULATORS (TENSION AND SUSPENSION)

33 KV COMPOSITE INSULATORS					
Item	**Particulars Specifications**	**Unit**	**Guaranteed Value**		**Refer Doc.**
			Suspension	**Tension**	
1.	Insulator type (Polymeric)				
2.	Design type				
3.	Manufacturer and Country				
4.	Reference IEC/BS Standards				
5.	Manufacturing experience (10 years minimum)	years			
6.	Year of service outside the country of manufacture (5 years minimum)	year			
7.	Type test reports	provide			
8.	Rated Highest Voltage (kV)	kV			
9.	Nominal Voltage	kV			
10.	Minimum failing Load	KN			
11.	Pollution Category				
12.	Dielectric material				
13.	One-minute power frequency withstand voltage, 50 Hz, wet and dry	kV_{rms}			
14.	Lighting impulse withstand voltage, 1.2/50µs	kV_{peak}			
15.	Minimum creepage distance	mm			
16.	Nominal Total Height	mm			
17.	Short circuit withstand current / 3sec	kA			
18.	Housing shield resistance	kΩ			
19.	Shed spacing projection ratio				
	Minimum distance between sheds	mm			
20.	Creepage clearance ratio				
21.	Material of fittings				
22.	Material of housing and sheds (HTV silicon)				
23.	Minimum distance between sheds				
24.	Zinc coating thickness of ferrous parts				
25.	Colour of final insulator housing				
26.	Minimum sheath thickness of Silicon				
27.	Mounting brackets				