

ANNEXURE - B (Rev. 01)																		
Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”, “North – South Interlink Package (Phase – I)” & “Thrissivaperur Line Strengthening Package” on turnkey basis.																		
SL. NO.	ITEM DESCRIPTION	BILL OF QUANTITIES - MATERIAL																
		UNIT	Kottayam Line Package								North South Interlink Project				Thrissivaperur Line Strengthening Package			Total Qty - KLP+NSIP+TLSP
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Spares	Total Qty	Project A	Project B	Spare Total Qty	Total Qty	Project A	Spare A	Total Qty	Total Qty - Main+Spare
1	2	3	4	5	6	7	8	9	10	11= 4 to 10	12	13	14	15=12to14	16	17	18	19=11+15+18
1	Towers & Tower accessories																	
1.1	Manufacturing, Testing and Supply of Lattice Type Hot Dip Galvanized Steel Towers and Stub & cleat of various types complete with all tower parts & Extensions, Templates, including bolts & nuts, step bolts, hangers, D-shackles, spring washers, Danger plate, Number plate, Phase plate, Anti Climbing Device, Bird Guard, etc. complete in all respect as per scope & Technical specifications	MT	1350.00	345.00	110.00	680.00	375.00	125.00	0.00	2985.00	1100.00	1340.00	0.00	2440.00	1880.00	0.00	1880.00	7305.00
1.2	Manufacturing, Testing and Supply of Pipe Type Earthing set with 50NB Hot Dip GI Pipe (3000mm long), Set of flat 50x6 (5000mm long) with bolts, nuts & spring washers complete in all respect as per scope & Technical specifications	No	120	30	40	56	30	2	0	278	104	120	0	224	166	0	166	668
1.3	Manufacturing, Testing and Supply of Counter poise Earthing set with following accessories Hot Dip Galvanized Steel Wire 7/3.0mm (120 m long), Legs for Counterpoise compression joints, Any other required groove clamps, connectors etc. complete in all respect as per scope & Technical specifications	No	12	3	4	6	3		0	28	10	12	0	22	17	0	17	67
2	Conductors and Conductor Accessories																	
2.1	Manufacturing, Testing & Supply of following type of Conductors complete in all respect as per scope & technical specifications:																	
2.1.1	ACCC Drake equivalent conductor	km													138.000	0.000	138.000	138.000
2.1.2	ACSR Panther Conductor	km	360.0000	82.0000	29.6640	115.0000			7.000	593.664	218.000	300.000	0.000	518.000				1111.664
2.1.3	ACSR Kundah - Conductor	km					24.0000		1.000	25.000		0.000	0.000					25.000
2.1.4	ACSR Zebra Conductor	km					24.0000		2.400	26.400	0.000	0.000	0.000					26.400
2.1.5	ACSR Moose Conductor	km						5.000	0.500	5.500	0.000	0.000	0.000					5.500
2.1.6	ACSR 30/2.59mm Al 7/2.59mm steel Wolf	km													8.000	0.000	8.000	8.000
2.2	Manufacturing, Testing & Supply of Midspan Compression joint for following type of conductor complete in all respect as per Scope and technical specification																	
2.2.1	ACSR Panther Conductor	No	375	100	35	150			27	687	120	151	15	286				973
2.2.2	ACSR Kundah Conductor	No					30		3	33		0	3	3				36
2.2.3	ACSR Zebra Conductor	No					30		3	33	0	0	0					33
2.2.4	ACSR Moose Conductor	No						14	5	19	0	0	0					19
2.2.5	ACSR Wolf Conductor	No													5	0	5	5
2.2.6	ACCC Drake equivalent conductor	No													25	5	30	30
2.3	Manufacturing, Testing & Supply of Repair Sleeve for following type of conductor complete in all respect as per Scope and technical specification																	
2.3.1	ACSR Panther Conductor	No							24	24	36	45	5	86				110
2.3.2	ACSR Kundah Conductor	No							3	3		0	3	3				6
2.3.3	ACSR Zebra Conductor	No							3	3	0	0	0					3
2.3.4	ACSR Moose Conductor	No							20	20	0	0	0					20
2.3.5	ACSR Wolf Conductor	No													5	0	5	5
2.3.6	ACCC Drake equivalent conductor	No													50	5	55	55
2.4	Manufacturing, Testing & Supply of T-Connector for following type of conductor complete in all respect as per Scope and technical specification																	
2.4.1	ACSR Panther Conductor	No	30	30	10	30			10	110	18	24	2	44				154

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”,
“North – South Interlink Package (Phase – I)” & “Thrissivaperur Line Strengthening Package” on turnkey basis.

SL. NO.	ITEM DESCRIPTION	UNIT	BILL OF QUANTITIES - MATERIAL															Total Qty - KLP+NSIP+TLSP	
			Kottayam Line Package								North South Interlink Project				Thrissivaperur Line Strengthening Package			Total Qty - KLP+NSIP+TLSP	
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Spares	Total Qty	Project A	Project B	Spare Total Qty	Total Qty	Project A	Spare A	Total Qty	Total Qty - Main+Spare	
1	2	3	4	5	6	7	8	9	10	11= 4 to 10	12	13	14	15=12to14	16	17	18	19=11+15+18	
2.4.2	ACSR Kundah Conductor	No					36		3	39		0	2	2				41	
2.4.3	ACSR Zebra Conductor	No					36		3	39	0	0	0					39	
2.4.4	ACSR Moose Conductor	No						60	3	63	0	0	0					63	
2.4.5	ACSR Wolf Conductor	No													6	0	6	6	
2.4.6	ACCC Drake equivalent conductor	No													36	2	38	38	
2.5	Manufacturing, Testing & Supply of Vibration Damper for following type of conductor complete in all respect as per Scope and technical specification																		
2.5.1	ACSR Panther Conductor	No	2160.0000	504	240	936			28	3868	1176	1164	58	2398				6266	
2.5.2	ACSR Kundah Conductor	No					168		6	174		0	126	126				300	
2.5.3	ACSR Zebra Conductor	No					168		6	174	0	0	0					174	
2.5.4	ACSR Moose Conductor	No						96	10	106	0	0	0					106	
2.5.5	ACSR Wolf Conductor	No													50	0	50	50	
2.5.6	ACCC Drake equivalent conductor	No													1100	10	1110	1110	
2.6	Manufacturing, Testing & Supply of Single Tension Hardware Fittings for following type of single conductor complete in all respect as per Scope and technical specification																		
2.6.1	ACSR Panther Conductor (110KV)	No	480	132	192	276			24	1104	402	432	43	877				1981	
2.6.2	ACSR Kundah Conductor (220KV)	No					138		6	144		0	93	93				237	
2.6.3	ACSR Zebra Conductor (220KV)	No					138		6	144	0	0	0					144	
2.6.4	ACSR Wolf Conductor (110KV)	No													50	0	50	50	
2.6.5	ACCC Drake equivalent conductor (220KV)	No													570	12	582	582	
2.7	Manufacturing, Testing & Supply of Single Suspension Hardware Fittings for following type of single conductor complete in all respect as per Scope and technical specification																		
2.7.1	ACSR Panther Conductor (110KV)	No	243	54	39	99			15	450	150	252	14	416				866	
2.7.2	ACSR Kundah Conductor (220KV)	No					51		3	54		0	63	63				117	
2.7.3	ACSR Zebra Conductor (220KV)	No					51		6	57	0	0	0					57	
2.7.4	Quad Bundle ACSR Moose Conductor (For 400 KV Pilot String)	No						6	1	7	0	0	0					7	
2.7.5	ACSR Wolf Conductor (110KV)	No								0					12	0	12	12	
2.8	Manufacturing, Testing & Supply of Double Suspension Hardware Fittings for following type of single conductor complete in all respect as per Scope and technical specification																		
2.8.1	ACSR Panther Conductor (110KV)	No	12	12	6				3	33	30	24	2	56				89	
2.8.2	ACSR Kundah Conductor (220KV)	No					6		1	7			6	6				13	
2.8.3	ACSR Zebra Conductor (220KV)	No					6		1	7	0	0	0					7	
2.8.4	ACSR Wolf Conductor (110KV)	No													0	0			
2.9	Manufacturing, Testing & Supply of Double Tension Hardware Fittings for following type of single conductor complete in all respect as per Scope and technical specification																		
2.9.1	ACSR Panther Conductor (110KV)	No	48	12	48	36			12	156	60	24	2	86			0	242	
2.9.2	ACSR Kundah Conductor (220KV)	No					12		1	13		0	10	10			0	23	
2.9.3	ACSR Zebra Conductor (220KV)	No					12		3	15	0	0	0	0			0	15	
2.9.4	Quad Bundle ACSR Moose Conductor (400KV)	No						36	4	40	0	0	0	0			0	40	
2.9.5	ACSR Wolf Conductor (110KV)	No													0	0			
2.9.6	ACCC Drake equivalent conductor (220KV)	No													36	12	48	48	

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”, “North – South Interlink Package (Phase – I)” & “Thrissivaperur Line Strengthening Package” on turnkey basis.																		
SL. NO.	ITEM DESCRIPTION	BILL OF QUANTITIES - MATERIAL																
		UNIT	Kottayam Line Package								North South Interlink Project				Thrissivaperur Line Strengthening Package			Total Qty - KLP+NSIP+TLSP
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Spares	Total Qty	Project A	Project B	Spare Total Qty	Total Qty	Project A	Spare A	Total Qty	Total Qty - Main+Spare
1	2	3	4	5	6	7	8	9	10	11= 4 to 10	12	13	14	15=12to14	16	17	18	19=11+15+18
2.10	Manufacturing, Testing & Supply of Preformed Armour Rod for following type of conductor complete in all respect as per Scope and technical specification																	
2.10.1	ACSR Panther Conductor	No	378	72	24	90			21	585	510	846	40	1396				1981
2.10.2	ACSR Kundah Conductor	No					18		2	20		0	63	63				83
2.10.3	ACSR Zebra Conductor	No					18		6	24	0	0	0					24
2.10.4	ACSR wolf Conductor														12		12	12
2.11	Manufacturing, Testing & Supply of Hardware set for Twin ACSR Panther Conductor for 220KV complete in all respect as per Scope and technical specification																	
2.11.1	Double tension Hardware set	No	480	132		276			24	912	462	432	43	937				1849
2.11.2	Single Suspension Hardware set	No	117	30		63			18	228	114	129	11	254				482
2.11.3	V String Suspension Hardware	No	126	24		30			12	192	66	144	14	224				416
2.12	Spacer Damper suitable for Twin ACSR Panther Conductor	Set	2920	640		740			35	4335	1560	2124	89	3773				8108
2.13	Rigid spacer suitable for ACSR Twin Panther	set	960	240		560			10	1770	468	516	22	1006				2776
2.14	Spacer Damper suitable for ACSR Quad-Moose Conductor	Set						40	4	44	0	0	0					44
2.15	Manufacturing, Testing & Supply of Hardware set for ACCC Drake equivalent Conductor including conductor accessories complete in all respect as per Scope and technical specification																	
2.15.1	V String Suspension Hardware set	Set													200	10	210	210
2.15.2	Single Pilot Suspension Hardware set including PA rod	Set													150	12	162	162
3	Polymeric Insulators																	
3.1	Manufacturing, Testing and Supply of Silicone Rubber Housed Long rod composite polymer Insulator of following items complete in all respect as per scope and technical specifications																	
3.1.1	110kV, 70KN	No	243	54	42	96			24	459	210	252	30	492	12	0	12	963
3.1.2	110kV, 90KN	No	528	144	216	288			51	1227	522	432	48	1002	54	0	54	2283
3.1.3	220kV, 90KN	No	369	78		123	102		30	702	246	417	50	713	546	27	573	1988
3.1.4	220kV, 120KN	No	960	264		516	276		84	2100	924	864	50	1838	636	32	668	4606
3.1.5	400kV, 120KN	No						12	2	14								14
3.1.6	400kV, 160KN	No						120	12	132								132
4	OPGW & Accessories																	
4.1	Manufacturing, Testing & Supply 48 Fiber (DWSM) OPGW Cable	Km	21.40	4.90	5.30	7.20	4.18	1.00	3.60	47.58	12.00	16.00	1.00	29.00	23.00		23.00	99.58
4.2	Manufacturing, Testing & Supply of Hardware set for 48 fibre OPGW OFC including cable fittings and all accessories (per Km rate)	Km	21.40	4.90	5.30	7.20	4.18	1.00	3.60	47.58								47.58
4.3	Manufacturing, Testing & Supply of following OPGW Accessories complete in all respect as per scope and technical specifications																	
4.3.1	Joint Box (48 Fibre)	No	10	3	2	4	3	2	1	25	4	4	2	10	6		6	41

ANNEXURE - B (Rev. 01)																	
Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”, “North – South Interlink Package (Phase – I)” & “Thrissivaperur Line Strengthening Package” on turnkey basis.																	
SL. NO.	ITEM DESCRIPTION	UNIT	BILL OF QUANTITIES - MATERIAL														
			Kottayam Line Package								North South Interlink Project				Thrissivaperur Line Strengthening Package		
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Spares	Total Qty	Project A	Project B	Spare Total Qty	Total Qty	Project A	Spare A	Total Qty
1	2	3	4	5	6	7	8	9	10	11= 4 to 10	12	13	14	15=12to14	16	17	18
4.3.2	Self Supporting Cubicle of Size 1220X600X600 mm suitable for 96 fibre (Fibre Optic Distribution Panel (FODP))	No	2	2	1	2	1	1	1	10	2	2	1	5	2		2
4.3.3	Suspension Assembly for 48 Fibre OPGW - ASLH-D(S)b 48 SMF (A20SA 79-6.4)	No									11	24	4	39	33	3	36
4.3.4	Tension Assembly for 48 Fibre OPGW - ASLH-D(S)b 48 SMF (A20SA 79-6.4)	No									76	72	14	162	84	4	88
4.3.5	Dead end Assembly for 48 Fibre OPGW - ASLH-D(S)b 48 SMF (A20SA 79-6.4)	No									4	8	2	14	4	0	4
4.3.6	Tension Assembly (For Joint Box Locations) for 48 Fibre OPGW - ASLH-D(S)b 48 SMF (A20SA 79-6.4)	No									8	8	2	18	12	1	13
4.3.7	Pass through Assembly for 48 Fibre OPGW - ASLH-D(S)b 48 SMF (A20SA 79-6.4)	No									39	32	5	76	38	4	42
4.3.8	Tension Assembly at Susp. Tower (For Joint Box Locations) for 48 Fibre OPGW - ASLH-D(S)b 48 SMF (A20SA 79-6.4)	No									2	2	2	6	6	1	7
4.3.9	Vibration Damper for 48 Fibre OPGW - ASLH-D(S)b 48 SMF (A20SA 79-6.4)	No									98	120	16	234	166	17	183
4.3.10	Down Lead Clamp Assembly for 48 Fibre OPGW - ASLH-D(S)b 48 SMF (A20SA 79-6.4)	No									8	40	6	54	60	6	66
4.3.11	Flexible aluminium Bond with Y type Clamp	No									60	100	16	176			
4.3.12	Fibre Optic Approach Cable- 48 Fibre	m									400.00	300.00		700.00			
4.3.13	HDPE Pipe 40 mm	m									400.00	300.00		700.00			
4.3.14	GI Cable Tray with clamp, B&N, suitable for Approach cable- 48 Fibre	m									20.00	20.00	4.00	44.00			
4.3.15	Cable loop bracket	No									4.0	4.0	1.0	9.0			
5	Earthwire & Aceessories																
5.1	Manufacturing, Testing and Supply of Earthwire & Accessories complete as per scope and technical specifications																
5.1.1	GI Earthwire 7/9 SWG	km	0.50	0.50	0.50	0.50	0.50	0.50	0.00	3.00							
5.1.2	Single Tension hardware set for 7/9 SWG Earthwire with copper bond	No	10	6	6	6	6	6	0	40							
6	Miscellaneous Accessories																
6.1	Manufacturing, Testing and Supply of Ariel Marker Balls fluroscent complete as per scope & technical specifications:	No	10	10		10			5	35							
6.2	Manufacturing, Testing and Supply of Aviation Warning Lights solar powered complete in all respect as per scope & technical specifications:	No	10	5		5	3		2	25							
7	110KV UG cable - Materials Charge																
7.1	110 kV UG Cable 630 sqmm XLPE Aluminium Cable Aluminim Corrugated Shathed XLPE	km									4.20			4.20			
7.2	110 kV Cable end termination (Heat shrinkable type) suitable for tower cross mounting	No									14			14			
7.3	Supply of Single Phase Link Box without SVL with earth bond cable suitable for 110KV XLPE Cable	No									7			7			
7.4	110kV Surge Arrestor Polymer (Silicon Rubber) with all accessories suitable for mounting in Tower	No									12			12			

ANNEXURE - B (Rev. 01)																		
Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”, “North – South Interlink Package (Phase – I)” & “Thrissivaperur Line Strengthening Package” on turnkey basis.																		
SL. NO.	ITEM DESCRIPTION	BILL OF QUANTITIES - MATERIAL																
		UNIT	Kottayam Line Package								North South Interlink Project				Thrissivaperur Line Strengthening Package			Total Qty - KLP+NSIP+TLSP
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Spares	Total Qty	Project A	Project B	Spare Total Qty	Total Qty	Project A	Spare A	Total Qty	Total Qty - Main+Spare
1	2	3	4	5	6	7	8	9	10	11= 4 to 10	12	13	14	15=12to14	16	17	18	19=11+15+18
7.5	Heavy Duty Non Magnetic materials Aluminium cast cable bracket / clamp with protective sleeve inside with all fixing materials like fasteners etc. suitable for 110kV 630 sq.mm Cable	No									400			400				400
7.6	Hot Dipped GI Angle Ladder trays with all fixing materials like tray jointing angles, plates, B&N, Washers etc for mouting 110KV Cable on tower including support structure for additional fabrication on tower	MT									5.00			5.00				5.00
7.7	Hot Dipped GI Angle Ladder trays with all fixing materials like tray jointing angles, plates, B&N, Washers etc for laying earth strips on tower	MT									2.00			2.00				2.00
7.8	Hot Dipped GI strip Size 50x6mm Size	kg									1000.00			1000.00				1000.00
7.9	Synthetic warning Tape Size 300mm Wide & 1mm Think with printing as per standard	km									1.20			1.20				1.20
8	Supply of 180m Dia HDPE pipe with coupling Collars	m									120.00			120.00				120.00
8.1	Optical Fibre Cable	m									600.00			600.00				600.00
8.2	Splice Box for OFC	No									2			2				2

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”,

SL. NO.	ITEM DESCRIPTION	UNIT	BILL OF QUANTITIES - LABOUR											Total Qty - KLP+NSIP+TLSP
			Kottayam Line Package							North South Interlink Pacakge			Thrissivaperur Line Strengthening Package	
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Total Qty	Project A	Project B	Total Qty	Project A	
1	2	3	4	5	6	7	8	9	10=4 to 9	11	12	13=11+12	14	15=10+13+14
1	Stub setting as per approved schedule including surveying for marking and pegging of tower locations at site, in correct alignment using template or Probe Setting in concrete foundation / rock foundation excluding excavation, concreting and back filling, removing the template after completion etc., complete in all respects as per scope & specification of work for following:													
1.1	220/220kV MC or 220/110 kV MCMV or 220kV DC towers or 400 KV MC/DC tower	each	60	14		25	14	1	114	49	60	109	83	306
1.2	110 kV DC towers	each			20	3			23	0	0	0		23
2	Excavation of earth pit of size 0.3 x 0.3 x 3.6 m (Two Earthing per Location) including over excavation on account of sloping the banks and necessary hire for planks for filling of charcoal, earthing of tower by means of a 50 mm dia, 3 m long pipe and a double run 7/9 S.W.G galvanised steel wire or G.1 tape including cost of charcoal but excluding cost of pipes, steel wire or copper tape with connecting lugs, nuts, etc. including measurement of tower foot resistance by standard egpt, Complete in all respects as per scope & specification of work	each	120	30	40	56	30	2	278	106	120	226	166	670
3	Counter poise earthing excavation for trench for burying the conductor 450mm below ground level, laying and connecting the conductor on to the tower legs, back filling and consolidating the soil after laying the conductor etc. Complete in all respects as per scope & specification of work	m	800.00	200.00	300.00	400.00	200.00		1900.00	600.00	720.00	1320.00	1000.00	4220.00
4	Erection of super structure above ground level, including erection of normal and special hill side extension members, where ever necessary, providing tower accessories like phase, danger and number plates, bird guards, anti climbing devices, etc. complete in all respects as per scope & specification for following:													
4.1	220/220kV MCMV or 220/110 kV MCMV or 220kV DC towers or 400 KV Multicircuit tower	MT	1300.00	330.00		650.00	360.00	120.00	2760.00	1100.00	1340.00	2440.00	1880.00	7080.00
4.2	110 kV DC towers	MT			100.00				100.00			0.00		100.00
5	Stringing of conductors using Tension Puller Machine including attaching Polymer V type Tension/Suspension insulator strings with arcing horns or rings on to the cross arms, clamping conductor to the insulator strings using suspension clamps with armour rods, tension clamps, jumpering at tension points with pilot suspension insulators, wherever necessary, jointing of conductor and pilot wire, wherever necessary, installation of vibration dampers, including dismantling of 33kV or LT lines & re-stringing, whereever required, complete in all respects as per scope & specification of work for the following:													
5.1	Six line Single and Six line Double ACSR Panther conductor for 110 kV/220kV Multi circuit	Km	19.60	2.85		5.70			28.15	11.73	14.00	25.73		53.88
5.2	Six line Double ACSR Panther conductor for 220kV/110kV Multi circuit	Km		1.60		1.02			2.62					2.62
5.3	Six line Single ACSR Panther conductor for 110 kV Double circuit	Km			4.85				4.85		2.00	2.00		6.85
5.4	Six line ACSR Kundah conductors for 220 KV Multicircuit	km					3.838		3.838					3.838
5.5	Six line ACSR Zebra conductor for 220kV Multi circuit	Km					3.838		3.838					3.838
5.6	Six line ACSR Quad-Moose conductor for 400kV Multi circuit	km						0.105	0.105					0.105
5.7	Six line ACSR Wolf conductor for 220kV/110kV Multi circuit	km											1.50	1.50
5.8	Six line ACCC Drake equivalent conductor for 220kV/110kV Multi circuit	km											23.00	23.00
5.9	Stringing of one no. 7/9 SWG stranded steel GI earth wire	km	0.50	0.50	0.50	0.50	0.50	0.50	3.00					3.00

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”,

SL. NO.	ITEM DESCRIPTION	UNIT	BILL OF QUANTITIES - LABOUR											Total Qty - KLP+NSIP+TLSP
			Kottayam Line Package							North South Interlink Pacakge			Thrissivaperur Line Strengthening Package	
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Total Qty	Project A	Project B	Total Qty	Project A	
1	2	3	4	5	6	7	8	9	10=4 to 9	11	12	13=11+12	14	15=10+13+14
6	Tension stringing using tension puller machine as per standard of 24/48 pair Optical Ground Wire (OPGW ASLH-D(S)b 24 SMF) including fixing of hardware accessories, fittings including cable fittings and accessories, etc., Pre-installation test (Drum Test), Post installation tes, Splicing and link test (End to End Test) and providing suitable back stays at the time of stringing, complete in all respects as per scope & specification of work	km	21.60	5.10	4.85	7.35	4.18	1.00	44.08	12.00	16.00	28.00	23.00	95.08
7	Dismantling of conductors including detaching insulator strings with arcing horns or rings from the tower cross arms, disconnecting the jumpering at tension points, detaching of vibration dampers, providing suitable back stays at the time of dismantling, etc. complete in all respects as per scope & technical specifications of following types:													
7.1	6 line ACSR DOG / Copper conductors	km			2.500	5.400			7.900					7.900
7.2	3 line ACSR DOG / copper conductors	km	19.400	2.442	2.300				24.142					24.142
7.3	3 line ACSR WOLF/Tiger/Mink conductors	km							0.000				22.000	22.000
7.4	6 line ACSR WOLF/Tiger conductors	km		1.960					1.960	12.000		12.000	1.500	15.460
7.5	6 line ACSR Kundah conductors	km					2.400		2.400					2.400
7.6	Dismantling as per standard of ACSR Quad-Moose conductors	km						0.300	0.300					0.300
7.7	24/48 pair Optical Ground Wire (OPGW ASLH-D(S)b 24 SMF) including hardware, cable fittings and accessories, etc.	km						0.300	0.300					0.300
8	Dismantling one no. 7/9/10 or 7/3.66/3.15 mm stranded steel earth wire from the existing 220kV DC / 110kV SC /66kV DC towers including detaching the tension clamps and suspension clamps, jumpers at tension points, earth bonds, protective trestles and providing suitable back stays complete in all respects as per scope & technical specifications.	km	19.400	4.400	4.800	5.400	2.400		36.400	12.000		12.000	25.000	73.400
9	Dismantling of tower superstructure above ground level including dismantling of tower accessories like phase, danger and number plates, bird guards, anticlimbing devices etc	MT	235.00	80.00	70.00	105.00	60.00		550.00	245.00	0.00	245.00	150.00	945.00
10	Clearing grass and removal of the rubbish upto a distance of 50m outside the periphery of the area cleared less than 1m. Complete in all respects as per scope & specification of work & technical specifications.								0.0000					
10.1	Height of more than 1m above ground level	sqm	359.00	87.00	253.50	39.00	177.45		915.95					915.95
10.2	Less than 1m above ground level	sqm	1014.00	237.00	338.00	101.00	236.60		1926.60					1926.60
11	Felling trees of girth(measured at aheight of 1m above ground level) including cutting of trunks and branches removing the roots and stacking of serviceable material and disposal of unserviceable material. Complete in all respects as per scope & specification of work & technical specifications.								0.0000					
11.1	Beyond 30cm girth upto and including 60cm girth	Each	400	50	100	400	300		1250	100	100	200	75	1525
11.2	Beyond 60cm girth upto and including 120cm girth	Each	600	100	50	600	500		1850	100	100	200	75	2125
11.3	Beyond 120cm girth upto and including 240cm girth	Each	300	100	50	200	500		1150	100	50	150	75	1375
11.4	Above 240cm girth	Each	150	50	20	100	200		520	100	50	150	75	745
12	Detailed Survey of the route along the alignment fixed by KSEBL, preparation of the longitudinal profiles of the route showing all site details of the terrain for the full corridor of the line route, plotting of tower locations with details of types and extensions to towers, preparation of tower schedule, sag and tension calculations of conductors, preparation and supply of one copy of the approved sag templete on transparent acrylic plastic sheet after completion of all the stub setting works, two paper print copies and one tracing cloth copy of the approved profile drawing and route map with the final tower locations marked, complete in all respects as per scope & technical specifications.	km	2.00	0.40		2.00	1.00		5.40		17.00	17.00		22.40

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”,

SL. NO.	ITEM DESCRIPTION	UNIT	BILL OF QUANTITIES - LABOUR											Total Qty - KLP+NSIP+TLSP
			Kottayam Line Package							North South Interlink Pacakge			Thrissivaperur Line Strengthening Package	
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Total Qty 10=4 to 9	Project A	Project B	Total Qty 13=11+12	Project A	
1	2	3	4	5	6	7	8	9	10=4 to 9	11	12	13=11+12	14	15=10+13+14
13	Arranging scaffolding on either sides of the Main road as per the directions of KSEBL officers complete in all respects as per scope & technical specifications.	Loc	24	6	10	20	10	10	80	20	100	120	75	275
14	Labour Charges for Fixing ariel marker balls for very long spans including transportation charges etc complete as directed by depts/officers. Complete in all respects as per scope & specification of work & technical specifications.	Each	10	10		10			30					30
15	Labour Charges for providing Aviation Warning lights at top of specified towers including fixing all accessories such as solar panels, batteries and transportation charges etc. Complete as directed by depts/officers. Complete in all respects as per scope & specification of work & technical specifications.	Each	10	5		5	3		23					23
16	Painting towers with synthetic enamel paint of approved brand and manufacture on new tower (as per IS 5613) complete in all respects as per scope & technical specifications.	sqm	400.00	400.00		400.00	100.00		1300.00					1300.00
17	Design, Proto Fabrication, Assembly and Type Testing (non-destructive type) of new towers including design of tower foundation, complete in all respects as per scope & specification of work & technical specifications.													
17.1	400KV Multi Circuit tower	Each						1	1					1
17.2	400KV Double Circuit tower	Each						1	1					1
17.3	220 Multi Circuit special tower	Each				1			1					1
18	Installation of Emergency Restoration System (ERS) Work in existing 220 KV Double circuit Line Route (ERS Equipment will be supplied by KSEB) complete in all respects as per scope & technical specifications.	Km					2.70		2.70					2.70
19	Soil test, wherever found necessary for ascertaining type of foundation including taking pits/bore holes, collecting soil samples and testing at approved laboratories as per relevant IS codes, including cost of testing, all labour and transportation charges etc. as directed by KSEB Officers complete in all respects as per scope & technical specifications of following types: Except in river/lake													
19.1	Soil test in all kinds of soil except rock	metre	190.00	40.00	130.00	90.00	30.00		480.00	200.00	300.00	500.00	200.00	1180.00
19.2	Soil test in ordinary rock	metre	40.00	10.00	30.00	20.00	10.00		110.00	200.00	150.00	350.00	100.00	560.00
19.3	Soil test in hard rock	metre	20.00	10.00	20.00	10.00	10.00		70.00	50.00	150.00	200.00	100.00	370.00
20	Soil test, wherever found necessary for ascertaining type of foundation including taking pits/bore holes, collecting soil samples and testing at approved laboratories as per relevant IS codes, including cost of testing, all labour and transportation charges etc. as directed by KSEB Officers complete in all respects as per scope & technical specifications of following types: In river/lake													
20.1	Soil test in all kinds of soil except rock	metre		50.00					50.00					50.00
20.2	Soil test in ordinary rock	metre		10.00					10.00					10.00
20.3	Soil test in hard rock	metre		5.00					5.00					5.00
21	Excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, in specified lifts, including disposal of surplus excavated soil as directed, within a lead of 50m including pumping out water from all sources wherever necessary, complete in all respects as per scope & technical specifications in:													
21.1	All kinds of soil excluding rock													
21.1.1	Depth not exceeding 1.5 m.	cum	66.00	66.00	528.00	174.00	66.00		900.00					900.00
21.1.2	Depth exceeding 1.5 m but not exceeding 3 m.	cum	22.00	22.00	176.00	58.00	22.00		300.00					300.00
21.1.3	Depth exceeding 3 m but not exceeding 4.5 m.	cum	22.00	22.00	176.00	58.00	22.00		300.00					300.00
21.2	Ordinary rock													
21.2.1	Depth not exceeding 1.5 m.	cum	1.10	2.00	71.00	3.00	1.00		78.10					78.10
21.2.2	Depth exceeding 1.5 m but not exceeding 3 m.	cum	3.30	6.00	213.00	9.00	3.00		234.30					234.30

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”,														
SL. NO.	ITEM DESCRIPTION	UNIT	BILL OF QUANTITIES - LABOUR											
			Kottayam Line Package							North South Interlink Pacakge			Thrissivaperur Line Strengthening Package	Total Qty - KLP+NSIP+TLSP
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Total Qty	Project A	Project B	Total Qty	Project A	
1	2	3	4	5	6	7	8	9	10=4 to 9	11	12	13=11+12	14	15=10+13+14
21.2.3	Depth exceeding 3 m but not exceeding 4.5 m.	cum	6.60	12.00	426.00	17.00	7.00		468.60					468.60
21.3	Hard rock (requiring blasting)													
21.3.1	Depth not exceeding 1.5 m.	cum	1.00	2.00	4.00	1.00	1.00		9.00					9.00
21.3.2	Depth exceeding 1.5 m but not exceeding 3 m.	cum	2.00	6.00	12.00	4.00	2.00		26.00					26.00
21.3.3	Depth exceeding 3 m but not exceeding 4.5 m.	cum	3.00	12.00	24.00	9.00	3.00		51.00					51.00
21.4	Hard rock (blasting prohibited)													
21.4.1	Depth not exceeding 1.5 m.	cum	1.00	1.00	18.00	1.00	1.00		22.00					22.00
21.4.2	Depth exceeding 1.5 m but not exceeding 3 m.	cum	3.00	3.00	54.00	3.00	3.00		66.00					66.00
21.4.3	Depth exceeding 3 m but not exceeding 4.5 m.	cum	6.00	6.00	108.00	6.00	6.00		132.00					132.00
22	Excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and in specified lift, disposed earth to be levelled and neatly dressed including pumping out water from all sources wherever necessary. complete in all respects as per scope & technical specifications in:													
22.1	All kinds of soil excluding rock													
22.1.1	Depth not exceeding 1.5 m.	cum	3699.00	480.00	1020.00	4920.00	1680.00	540.00	12339.00	12000.00	4194.00	16194.00	10700.00	39233.00
22.1.2	Depth exceeding 1.5 m but not exceeding 3 m.	cum	1233.0000	160.0000	340.0000	1640.0000	560.0000	180.0000	4113.0000	1744.9091	607.0000	2351.9091	3019.0000	9483.9091
22.1.3	Depth exceeding 3 m but not exceeding 4.5 m.	cum	1233.00	160.00	340.00	1640.00	560.00	180.00	4113.00	1000.00	500.00	1500.00	1000.00	6613.00
22.2	Ordinary rock													
22.2.1	Depth not exceeding 1.5 m.	cum	492.00	10.00	134.00	650.00	220.00	70.00	1576.00	300.00	200.00	500.00	2130.00	4206.00
22.2.2	Depth exceeding 1.5 m but not exceeding 3 m.	cum	1476.00	30.00	402.00	1950.00	660.00	210.00	4728.00	163.00	56.00	219.00	218.00	5165.00
22.2.3	Depth exceeding 3 m but not exceeding 4.5 m.	cum	2952.00	60.00	804.00	3900.00	1320.00	420.00	9456.00	150.00	25.00	175.00	100.00	9731.00
22.3	Hard rock (requiring blasting)													
22.3.1	Depth not exceeding 1.5 m.	cum	12.50	1.00	4.00	17.00	6.00	2.00	42.50					42.50
22.3.2	Depth exceeding 1.5 m but not exceeding 3 m.	cum	36.00	1.00	10.00	51.00	18.00	6.00	122.00					122.00
22.3.3	Depth exceeding 3 m but not exceeding 4.5 m.	cum	73.00	2.00	20.00	102.00	36.00	12.00	245.00					245.00
22.4	Hard rock (blasting prohibited)													
22.4.1	Depth not exceeding 1.5 m.	cum	121.00	4.00	34.00	170.00	60.00	20.00	409.00	200.00	200.00	400.00	2130.00	2939.00
22.4.2	Depth exceeding 1.5 m but not exceeding 3 m.	cum	365.00	12.00	102.00	510.00	180.00	60.00	1229.00					1229.00
22.4.3	Depth exceeding 3 m but not exceeding 4.5 m.	cum	729.00	24.00	204.00	1020.00	360.00	120.00	2457.00					2457.00
23	Earth work in excavation in soil (Under water) by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth, 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and neatly dressed, in or under water and/or liquid mud, including pumping out water as required, complete in all respects as per scope & technical specifications:													
23.1	Normal kinds of soil													
23.1.1	Depth not exceeding 1.5 m.	cum	1086.00	99.00	306.00	1500.00	294.00	108.00	3393.00					3393.00
23.1.2	Depth exceeding 1.5 m but not exceeding 3 m	cum	362.00	33.00	102.00	500.00	98.00	36.00	1131.00					1131.00
23.1.3	Depth exceeding 3 m but not exceeding 4.5 m.	cum	362.00	33.00	102.00	500.00	98.00	36.00	1131.00					1131.00
23.2	Ordinary rock													
23.2.1	Depth not exceeding 1.5 m.	cum	19.00	3.00	6.00	30.00	6.00	2.00	66.00					66.00
23.2.2	Depth exceeding 1.5 m but not exceeding 3 m	cum	57.00	11.00	18.00	90.00	18.00	6.00	200.00					200.00
23.2.3	Depth exceeding 3 m but not exceeding 4.5 m.	cum	114.00	21.00	36.00	180.00	36.00	12.00	399.00					399.00
23.3	Hard rock (blasting prohibited)													
23.3.1	Depth not exceeding 1.5 m.	cum	10.00	2.00	3.00	20.00	3.00	1.00	39.00					39.00
23.3.2	Depth exceeding 1.5 m but not exceeding 3 m	cum	30.00	6.00	9.00	60.00	9.00	3.00	117.00					117.00
23.3.3	Depth exceeding 3 m but not exceeding 4.5 m.	cum	60.00	12.00	18.00	120.00	18.00	6.00	234.00					234.00
24	Excavation in hard rock using non explosive agent (Chemical) without resorting to the use of conventional explosive materials etc in all lifts and conveying and depositing the excavated rock etc. at places with in a distance of 50m including pumping out water from all sources wherever necessary as directed by KSEB Engineer complete as per scope & technical specifications in:	cum	65.00	5.00	65.00	105.00	35.00	35.00	310.00	1100.00	20.00	1120.00	425.00	1855.00

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”,														
SL. NO.	ITEM DESCRIPTION	BILL OF QUANTITIES - LABOUR												
		UNIT	Kottayam Line Package							North South Interlink Pacakge			Thrissivaperur Line Strengthening Package	Total Qty - KLP+NSIP+TLSP
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Total Qty	Project A	Project B	Total Qty	Project A	
1	2	3	4	5	6	7	8	9	10=4 to 9	11	12	13=11+12	14	15=10+13+14
25	Close timbering in trenches including strutting, shoring and packing cavities (wherever required) complete. (Measurements to be taken of the face area timbered) complete in all respects as per scope & technical specifications:													
25.1	Depth not exceeding 1.5 m.	sqm	630.00	70.00	170.00	700.00	270.00	60.00	1900.00	3240.00	4000.00	7240.00	5500.00	14640.00
25.2	Depth exceeding 1.5 m but not exceeding 3 m.	sqm	400.00	20.00	150.00	700.00	270.00	60.00	1600.00	1800.00	4000.00	5800.00	5500.00	12900.00
25.3	Depth exceeding 3 m but not exceeding 4.5 m.	sqm	140.00	20.00	10.00	300.00	90.00	30.00	590.00	700.00	900.00	1600.00	1500.00	3690.00
26	Open timbering in trenches including strutting and shoring complete (measurements to be taken of the face area timbered). Complete in all respects as per scope & specification of work & technical specifications.													
26.1	Depth not exceeding 1.5 m.	sqm	630.00	70.00	170.00	700.00	270.00	60.00	1900.00	1800.00	500.00	2300.00	1900.00	6100.00
26.2	Depth exceeding 1.5 m but not exceeding 3 m	sqm	400.00	20.00	150.00	700.00	270.00	60.00	1600.00	1800.00	500.00	2300.00	1900.00	5800.00
26.3	Depth exceeding 3 m but not exceeding 4.5 m.	sqm	140.00	10.00	10.00	300.00	90.00	30.00	580.00	501.00	200.00	701.00	500.00	1781.00
27	Deleted													
28	Providing and laying in position plain/reinforced cement concrete of specified grade excluding the cost of centering and shuttering up to plinth level complete in all respects including dewatering wherever necessary as per scope & specification of work & technical specifications.													
28.1	1:3:6 (1 Cement : 3 coarse sand (zone-III): 6 graded stone/aggregate 40 mm nominal size) (Note :- Cement content considered in this item is @ 220 kg/cum. Excess/less cement used as per design mix is payable/recoverable separately)	cum	280.00	40.00	40.00	300.00	110.00	20.00	790.00					790.00
28.2	1:3:6 (1 Cement : 3 coarse sand (zone-III): 6 graded stone/aggregate 20 mm nominal size) (Note :- Cement content considered in this item is @ 220 kg/cum. Excess/less cement used as per design mix is payable/recoverable separately)	cum								410.00	400.00	810.00	400.00	1210.00
28.3	1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20 mm nominal size) with cement content of 400 kg/m3 (Note :- Excess/less cement used as per design mix is payable/recoverable separately) except for river/lake locations inclusive of dewatering wherever required etc complete in all respects as per scope & technical specifications.	cum	485.00	30.00	35.00	500.00	300.00	78.00	1428.00	800.00	2000.00	2800.00	1200.00	5428.00
28.4	Providing and laying in position machine batched and machine mixed design mix of specified grade concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability including dewatering wherever required as per direction of KSEB coming in various locations except river/lake , complete in all respects as per scope & technical specifications.Engineer-in-charge."(Note :- Cement content considered in this item is @ 330 kg/cum."Excess/ less cement used as per design mix is payable/recoverable separately).	cum	485.00	30.00	15.00	700.00	150.00	40.00	1420.00	2460.00	6000.00	8460.00	3500.00	13380.00

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”.

SL. NO.	ITEM DESCRIPTION	UNIT	BILL OF QUANTITIES - LABOUR											Total Qty - KLP+NSIP+TLSP
			Kottayam Line Package							North South Interlink Pacakge			Thrissivaperur Line Strengthening Package	
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Total Qty 10=4 to 9	Project A	Project B	Total Qty 13=11+12	Project A	
1	2	3	4	5	6	7	8	9	10=4 to 9	11	12	13=11+12	14	15=10+13+14
28.5	Providing and laying in position ready mixed specified grade concrete for reinforced cement concrete work, using cement content as per approved design mix, manufactured in fully automatic batching plant and transported to site of work in transit mixer for all leads, having continuous agitated mixer, manufactured as per mix design of specified grade for reinforced cement concrete work, including pumping of R.M.C. from transit mixer to site of laying and with necessary arrangements to keep the pipes, excluding the cost of centering, shuttering finishing and reinforcement, including cost of admixtures in recommended proportions as per IS : 9103 to accelerate/ retard setting of concrete,improve workability without impairing strength and durability, dewatering wherever required as per direction of KSEB coming in various locations except river/lake , complete in all respects as per scope & technical specifications.(Note :- Cement content considered in this item is @ 330 kg/cum. Excess/less cement used as per design mix is payable/recoverable separately)	cum	8940.00	2850.00	35.00	515.00	310.00	80.00	12730.00	349.00	700.00	1049.00	672.00	14451.00
29	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete at all levels with Thermo-Mechanically Treated bars complete in all respects as per scope & technical specifications.	kg	630971.57	283866.97	8127.98	145087.15	61059.68	19481.46	1148594.81	130000.00	280000.00	410000.00	304000.00	1862594.81
30	Centering and shuttering including strutting, propping etc. and removal following complete in all respects as per scope & technical specifications:													
30.1	For foundations, footings, bases for columns	sqm	4850.00	1080.00	830.00	2300.00	1140.00	30.00	10230.00	5510.00	9000.00	14510.00	11000.00	35740.00
30.2	For columns, piers, abutments, pillars, posts and struts	sqm	390.00	100.00	520.00	700.00	380.00	20.00	2110.00	2000.00	2000.00	4000.00	3000.00	9110.00
31	Random rubble masonry with hard stone including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20mm nominal size) with cement mortar 1:6 (1 cement : 6 coarse sand) complete in all respects as per scope & technical specifications													
31.1	In foundation and plinth	cum	450.00	110.00	480.00	580.00	270.00	70.00	1960.00	200.00	300.00	500.00		2460.00
31.2	In superstructure above plinth level and upto floor five level	cum	190.00	60.00	190.00	230.00	110.00	25.00	805.00	500.00	300.00	800.00		1605.00
32	12 mm cement plaster of mix 1:4 (1 cement: 4 fine sand)	sqm	270.00	190.00	300.00	400.00	190.00	30.00	1380.00	200.00	200.00	400.00		1780.00
33	Flush/ Ruled pointing on stone work with cement mortar 1:3 (1 cement : 3 fine sand)	sqm	300.00	110.00	650.00	880.00	220.00	30.00	2190.00	800.00	886.00	1686.00		3876.00
34	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and in all lifts complete in all respects as per scope & technical specifications.	cum	7750.00	500.00	2700.00	10600.00	3900.00	1150.00	26600.00	11400.00	3900.00	15300.00	23000.00	64900.00
35	Supplying and Filling good quality earth brought from out side in the revetment and pits of towers in layers for consolidation including stacking for measurements watering, ramming, etc, complete as directed complete in all respects as per scope & technical specifications.	cum	2000.00	200.00	400.00	1320.00	300.00	70.00	4290.00	0.00	1600.00	1600.00	1600.00	7490.00
36	Demolishing stone rubble masonry In cement mortar manually/by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of KSEB engineer complete in all respects as per scope & technical specifications.	cum	90.00	100.00	50.00	200.00	20.00	8.00	468.00					468.00
37	Demolishing R.C.C. work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable material within 50 metres lead as per direction of KSEB	cum	90.00	50.00	25.00	100.00	20.00	8.00	293.00					293.00
38	Deleted	Nil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”,														
SL. NO.	ITEM DESCRIPTION	UNIT	BILL OF QUANTITIES - LABOUR											
			Kottayam Line Package							North South Interlink Pacakge			Thrissivaperur Line Strengthening Package	Total Qty - KLP+NSIP+TLSP
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Total Qty	Project A	Project B	Total Qty	Project A	
1	2	3	4	5	6	7	8	9	10=4 to 9	11	12	13=11+12	14	15=10+13+14
39	Boring and installation bored cast-in-situ reinforced cement concrete piles of specified grade of specified diameter and length below the pile cap, to carry a safe working load not less than specified, excluding the cost of steel reinforcement and cost of concrete but including the cost of boring with bentonite solution and temporary casing of appropriate length for setting out and removal of same and the length of the pile to be embedded in the pile cap etc. by percussion drilling using Direct mud circulation (DMC) or Bailer and chisel technique by tripod and mechanical Winch Machine all complete, including removal of excavated earth with all its lifts and leads (length of pile for payment shall be measured up to bottom of pile cap). Note: Truck Mounted rotary/TMR/Tubewell boring machine shall not be used . For all diameters of pile including charges for structural design of piles and pile cap,all costs towards shifting , making ring bunds, access bunds, dewatering etc complete except for piles in river/lake as per the direction of KSEBL Engineer complete in all respects as per scope & technical specifications.	m	2500.00	800.00					3300.00		10800.00	10800.00	1000.00	15100.00
40	Hire charges for providing floating platform required for piling, concreting etc (Pontoon in steel work using 2 Nos. x 12.00 x 5.55x1.75 meter size one for providing machineries and the other for handling materials for form work etc, fabricating and hoisting in position with MS plate 6mm thick for bottom and sides, 10mm for top and stiffening both ways with 65mm x 65mm x 6mm Ms angle at 50cm c/c supporting over by ISMB - 150 200mm & 3 Nos., 6m long MS pipe is used for supporting the pontoon. 1 meter dia circular barrels having length 6.40 meter and 5.00 meter each is used on either side and 3.75 meter long is used in front side) or of equivalent size and approved materials. Necessary charges are included for sot and hire charges of anchorages, pontoon, mobilization charges including painting with iron primer etc. complete for piling works in river/lake as per the directions of the departmental officers at site	/metre of pile length		730.00					730.00					730.00
41	Fabricating, casing pipe of specified diameter with specified thick MS plate used for cast in situ pile including cost and conveyance of all materials, all related charges for fixing anchorages etc with all leads and lifts etc. complete for piles in river/lake according to the specification and as directed by the departmental officers complete in all respects as per scope & technical specifications.	Kg		28550.00					28550.00					28550.00
42	Conveying pre fabricated, casing pipe of specified diameter with specified thick MS plate used for cast in situ pile and erecting at site in lines and levels and driven down into a required depth including cost and conveyance of all materials, all related charges for anchoring etc with all leads and lifts etc.complete for piles in river/lake as directed by the departmental officers, complete in all respects as per scope & technical specifications.	metre		190.00					190.00					190.00

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”,

SL. NO.	ITEM DESCRIPTION	UNIT	BILL OF QUANTITIES - LABOUR											Total Qty - KLP+NSIP+TLSP
			Kottayam Line Package							North South Interlink Pacakge			Thrissivaperur Line Strengthening Package	
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Total Qty	Project A	Project B	Total Qty	Project A	
1	2	3	4	5	6	7	8	9	10=4 to 9	11	12	13=11+12	14	15=10+13+14
43	Boring and installation of cast-in-situ reinforced cement concrete piles of specified grade of specified diameter and length below the pile cap, to carry a safe working load not less than specified, excluding the cost of steel reinforcement and cost of concrete but including the cost of boring with bentonite solution and the length of the pile to be embedded in the pile cap etc. by percussion drilling using Direct mud circulation (DMC) or Bailer and chisel technique by tripod and mechanical Winch Machine all complete, including removal of excavated earth with all its lifts and leads and disposal of earth as per local regulations for Piles coming in river/lake(away from water bodies) (length of pile for payment shall be measured up to bottom of pile cap). Note: Truck Mounted rotary/TMR/Tubewell boring machine shall not be used . For all diameters of pile including charges for structural design of piles and pile cap,all costs towards shifting , making ring bunds, access bunds, dewatering etc complete as per the direction of KSEBL Engineer complete in all respects as per scope & technical specifications.	metre		730.00					730.00					730.00
44	Conveyance to site and Driving precast vertical specified grade R.C.C. Piles (Guard piles) excluding cost of cement concrete and Reinforcement complete as per Drawing and & Technical Specification Size of pile - as specified in river/lake. For all diameters / size of pile including charges for structural design of piles, all costs towards shifting , driving, jointing wherever required, etc complete as per the direction of KSEBL Engineer complete in all respects as per scope & technical specifications.	metre		270.00					270.00					270.00
45	Providing and laying in position ready mixed specified grade concrete for reinforced cement concrete work, using cement content as per approved design mix, manufactured in fully automatic batching plant and transported to site of work in transit mixer for all leads, having continuous agitated mixer, manufactured as per mix design of specified grade for reinforced cement concrete work, including pumping of R.M.C. from transit mixer to site of laying and with necessary floating arrangements to keep the pipes floating , excluding the cost of centering, shuttering finishing and reinforcement, including cost of admixtures in recommended proportions as per IS : 9103 to accelerate/ retard setting of concrete,improve workability without impairing strength and durability as per direction of KSEB for Piles and pile cap coming in river/lake, complete in all respects as per scope & technical specifications.(Note :- Cement content considered in this item is @ 400 kg/cum. Excess/less cement used as per design mix is payable/recoverable separately)	cum		695.00					695.00					695.00
46	Add for using extra cement in the items of design mix over and above the specified cement content therein.(This rate will be used for making deductions in case of usage of lesser cement content as directed)	quintal	6258.00	1995.00	7.00	100.00	60.00	16.00	8436.00	517.00	5000.00	5517.00	3000.00	16953.00

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”,

SL. NO.	ITEM DESCRIPTION	UNIT	BILL OF QUANTITIES - LABOUR											Total Qty - KLP+NSIP+TLSP
			Kottayam Line Package							North South Interlink Pacakge			Thrissivaperur Line Strengthening Package	
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Total Qty 10=4 to 9	Project A	Project B	Total Qty 13=11+12	Project A	
1	2	3	4	5	6	7	8	9	10=4 to 9	11	12	13=11+12	14	15=10+13+14
47	Boring with hydraulic piling rigs with power units, and installing cast in situ single under reamed piles of specified diameter and length below pile cap in cement concrete, to carry a safe working load not less than specified, excluding the cost of steel reinforcement and concrete but including the cost of boring with bentonite solution and the length of the pile to be embedded in pile cap etc. (Length of pile for payment shall be measured upto to the bottom of pile cap) For all diameters of pile including charges for structural design of piles,all costs towards shifting , making ring bunds, access bunds, dewatering etc complete as per the direction of KSEBL Engineer complete in all respects as per scope & technical specifications.	m	240.00						240.00					240.00
48	Extra for providing additional bulb in under reamed piles.	each	24						24					24
49	Vertical load testing of piles in accordance with IS 2911 (Part IV) including installation of loading platform by Kentledge/Anchor piles method and preparation of pile head or construction of test cap and dismantling of test cap after test etc. complete as per specification & the direction of Engineer in-charge for Single pile of various tone capacities. Initial test (Test Load 2.5 times the Safe capacity) except for river/lake locations Note: 1. Initial and Routine Load Test shall not be carried out by Dynamic method of testing. Note: 2. Testing agency shall submit the design of loading platform for KSEB approval complete in all respects as per scope & technical specifications:													
49.1	Initial test Single pile upto 50 MT Safe capacity	per test	1						1					1
49.2	Initial test Single pile above 50 MT and upto 100 MT Safe capacity	per test	1						1					1
49.3	Single pile upto 50 MT Safe capacity, Routine test (Test Load 1.5 times the Safe capacity)	per test	2	1					3					3
49.4	Single pile above 50 MT and upto 100 tonne Safe capacity, Routine test (Test Load 1.5 times the Safe capacity)	per test	2	1					3					3
50	Integrity testing of Pile using Low Strain/ Sonic Integrity Test/ Sonic Echo Test method in accordance with IS 14893 including surface preparation of pile top by removing soil, mud, dust & chipping lean concrete lumps etc. and use of computerised equipment and high skill trained personal for conducting the test & submission of results, all complete at all locations as per direction of Engineer-in-charge.	per test	10	3					13					13
51	High-Strain Dynamic Testing of pile using method in accordance with ASTM D 4945 including surface preparation of pile top by removing soil, mud, dust & chipping lean concrete lumps etc. and use of computerised equipment and high skill trained personal for conducting the test & submission of results, except in river/lake all complete as per direction of Engineer-in-charge.	per test	2	1					3					3
52	High-Strain Dynamic Testing of pile using method in accordance with ASTM D 4945 including surface preparation of pile top by removing soil, mud, dust & chipping lean concrete lumps etc. and use of computerised equipment and high skill trained personal for conducting the test & submission of results, in river/lake all complete as per direction of Engineer-in-charge.	per test		1					1					1
53	Boring holes of dia 100mm or nearest size dia on hard rock where anchoring is found necessary to accommodate anchor bars/stubs including hire charges of machinery, T&P, pilot vehicle to carry other materials, grouting charges etc. Complete in all respects as per scope & technical specifications	m	80.00		80.00	80.00	20.00		260.00	1065.00	50.00	1115.00		1375.00
54	Transport of dismantled materials such as tower , extensions, conductor, earthwire, insulators, hardware etc. Including loading and unloading charges (for an average distance of 25km)	MT	350.00	100.00	85.00	130.00	80.00	10.00	755.00					755.00

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”,														
SL. NO.	ITEM DESCRIPTION	UNIT	BILL OF QUANTITIES - LABOUR											
			Kottayam Line Package							North South Interlink Pacakge			Thrissivaperur Line Strengthening Package	Total Qty - KLP+NSIP+TLSP
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Total Qty	Project A	Project B	Total Qty	Project A	
1	2	3	4	5	6	7	8	9	10=4 to 9	11	12	13=11+12	14	15=10+13+14
55	Supplying , stacking, handling and spreading River sand for sand bedding and sand covering over the 110kV cable in cable trench	Cub.metre								270.00		270.00		270.00
56	Transportation of 1C x 630 q.mm XLPE 110kV Cable including loading and unloading from the storage location to work site without any damage to the cable including making it ready for laying/erection works	Drum								9		9		9
57	Uncoiling and laying of 110kV XLPE Cable - 3 run for each circuit in separate trefoil formation in cable trenches and tying together with high quality cable ties at an interval of 1m as per the drawing along the excavated trenches and sand bed formed, looping of the cables through various types of pipes already laid including all charges for handling, uncoiling and paving of cables in trenches using standard cable installation equipments after providing all necessary precautions to be followed as per IS specifications without damaging the existin pipe lines, cables, water lines etc. and rectifying the damges occured, if any to the existing insallations, providing aluminium sheet identification tags 150x50mm size and 1mm think embeded with the mark showing the 'Feeder Name , Phase at every 3m interval of each cable circuit, stacking the ballance cable bits safely etc. complete.	Mtr							0.00	1100.00		1100.00		1100.00
58	Uncoiling and laying of 110kV XLPE Cable - 1 run in horizontal formation as per drawing along the already exavated trenches and tying together with high quality cable ties at an interval of 1m as per the drawing along the excavated trenches and sand bed formed, looping of the cables through various types of pipes already laid including all charges for handling, uncoiling and paving of cables in trenches using standard cable installation equipments after providing all necessary precautions to be followed as per IS specifications without damaging the existin pipe lines, cables, water lines etc. and rectifying the damges occured, if any to the existing insallations, providing aluminium sheet identification tags 150x50mm size and 1mm think embeded with the mark showing the 'Feeder Name , Phase at every 3m interval of each cable circuit, stacking the ballance cable bits safely etc. complete.	metre								900.00		900.00		900.00
59	Laying 180mm dia HDPE pipe with coupling collars for 630 sq.mm 110KV UG cable as per drawing in the existing trench for the road crossing, tower bottom /yard structure etc. for protection of the open cables as per the direction of the department	metre								120.00		120.00		120.00
60	Lifting of 1 Core 630 sq.mm XLPE 110kV Cable, which was laid on the ground, to the tower top by using pulley, rope etc and giving necessary fixing arrangement and conneciton as per the direction of the department	Nos								12		12		12
61	Clamping of 1 core 630 sq.mm cable with supporting structure / cable tray/ ladder using heay duty non-magnetic materials Aluminium cast cable bracket / clamp set at an interval of 750mm, providing suitable holes in the plates, racket, structure, fixing the same the bracket / structure etc. complete	Nos								400		400		400
62	Carrying out the outdoor end cable termination work in tower/yard struchure for 1 Core 630 sq.mm XLPE 110kV cable including earth bonding , all charges for the termination of cables as per standard specifications, assisting the termination works, cutting the cable, supplying all the tools and plants and other accessories and all other sundry expenditures etc. as per the directions of the departmental officers at site	No								14		14		14

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”,														
SL. NO.	ITEM DESCRIPTION	BILL OF QUANTITIES - LABOUR												
		UNIT	Kottayam Line Package							North South Interlink Pacakge			Thrissivaperur Line Strengthening Package	Total Qty - KLP+NSIP+TLSP
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Total Qty	Project A	Project B	Total Qty	Project A	
1	2	3	4	5	6	7	8	9	10=4 to 9	11	12	13=11+12	14	15=10+13+14
63	Casting, curing and stacking 40x50 cm RCC protection slabs having the thinkness 7.5cm at centre and 5cm sides (6mm bars, 70mm c/c bothways marking CAUTION 110KV' in storage yard, transporting and placing the slab above sand cushion bed including all the charges for charged for materilas, labour for casting slabs, curing, stacking, loading and unloading from stock yard upto a distance of 1km (average), placing, fixing stables as per drawing and direction of the deparment	No								2200		2200		2200
64	Filling available exavated earth (excluding rock) in trenches, plinth, sides of the foundation etc. in layers not excedding 20cm in depth, consolidating each deposited earth by ramming and watering, lea up to 50m and lieft upto 1.5m as per the direction of the deparment	Cub. Metre								701.00		701.00		701.00
65	Laying synthetic warning tape of size 300mm wide and 1mm think with printing of danger' 110KV CABLE, KSEBL (FEEDER NAME) in black letters of size 200mmx5mm and laying in the cable trench during back filling as directed by the department	Metre								1100.00		1100.00		1100.00
66	Providing CC BLOCK 400x250x100mm route marker / joint marker as per standard specifications and drawing at locations as directed by the deparment inclduing all charges for fixing using cement concrete 1:3:6 using 20mm brocken stone, finishing the surface and embedding the letters at top " 110KV CABLE / 110KV CABLE JOINT / FEEDER NAME" etc. as directed by department	No								12		12		12
67	Erection of hot dipped GI angles cable support and termination structure at yard, cable and Earth Strip ladder trays on 110KV tower as per the drawing	MT								7.00		7.00		7.00
68	Erathing with hot dipped GI pipe 4.5 m long, 40mm dia including accessories and providing masonay enclosure with cover plate having locking arrangement and watering pipes etc. with charcoal/coak required as per the direction of the department	Set								6		6		6
69	Laying hot dipped GI strip of 50x6 mm size through GI Cable ladders on outdoor open busbar supports in the 110kV tower including cleaning and neatly bending of strips, cutting and clamping , bolting and connecting to earth pit bus by welding or bolt and nuts, removing of earth in the tower footing and burying the earth strip to the required depth as per the direction of the department	Meter								400.00		400.00		400.00
70	Fixing of 110kV polymer (Silcon Rubber) type Surge Arrestor on the 110KV tower cross arm after opening of crates at the place of storage leading to site carefully keeping and lines and levels as per the department	No								12		12		12
71	Fabricating, supplying and fixing danger Board along the cable route as per the drawing cindluing all charges for supplying and fixing 600x500mm sign board using aluminium composite panel sheet mounted on MS angles 60x60x6mm at a hight of 2.75 metre (including the cost of fittings) embeded in cement concrete block 30x30x45cm of CC 1:2:6 using 20mm brocken stone and all form work, painting both sides of the board and angle iron with tow coats of synttic enamel paint over a primer coat and lettering 2.5 to 4cm etc. complete as per the directions of the department	No								12		12		12
72	Cement solid / hollow block of size 300x200x150 mm work in cement mortal 1: 6 for foundation and basement including the cost of all materials, conveyance and labour charges etc complete as per specification	Cub. Metre								25.00		25.00		25.00
73	Supplying , stacking, handling and spreading 20mm brocken stone for required thickness min 10cm alying to levels as per the drawing and specifications	Cub. Metre								25.00		25.00		25.00

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”,														
SL. NO.	ITEM DESCRIPTION	BILL OF QUANTITIES - LABOUR												
		UNIT	Kottayam Line Package							North South Interlink Pacakge			Thrissivaperur Line Strengthening Package	Total Qty - KLP+NSIP+TLSP
			Project A1	Project A2	Project A3	Project B	Project C	Project D	Total Qty	Project A	Project B	Total Qty	Project A	
1	2	3	4	5	6	7	8	9	10=4 to 9	11	12	13=11+12	14	15=10+13+14
74	Erection of 110kV cable termination set on the already erected tower after opening of cates at the place of storage leading to the site carefully keeping lines and levels as per the direction for department	No								14		14		14

Construction/Up-gradation of 220/110kV line using Narrow base MCMV Towers of “Kottayam Line Package (KLP)”, “North – South Interlink Package (Phase – I)” & “Thrissivaperur Line Strengthening Package” on turnkey basis.

Bill of Quantities for Dismantled items

[illegible]