

TABLE QUANTITY OF TOWERS & EXTENSION
132 KV

Total Price USD	Estimate Quantity	Unit Price USD	Unit	Brief Description	No.
	170		Tower	Supply: Tangent type2S2 tower complete with stub angles but excluding extension	1
				(Extension)	
	45		leg extension	0.0 meter leg extension all 4 legs	2-1
	50		leg extension	3 meter leg extension all 4 legs	3-1
	75		leg extension	6.0 meter leg extension all 4 legs	4-1
	40		Tower	Supply: 0° - 45° Angle\ Section type 2T2 tower complete with stub angles but excluding extension	2
				(Extension)	
	10		leg extension	0.0 meter leg extension all 4 legs	2-1
	10		leg extension	3 meter leg extension all 4 legs	2-2
	20		leg extension	6.0 meter leg extension all 4 legs	2-3
	20		Tower	Supply: 0° - 90° Angle\ Section type 2E2 tower complete with stub angles but excluding extension	3
				(Extension)	
	5		leg extension	0.0 meter leg extension all 4 legs	3-1
	5		leg extension	3 meter leg extension all 4 legs	3-2
	10		leg extension	6.0 meter leg extension all 4 legs	3-3
	14		leg extension	Supply: Tangent type 2R2 (Crossing Tower) complete with stub angles but excluding extension	4
				(Extension)	
	1		leg extension	0.0 meter leg extension all 4 legs	4-1
	1		leg extension	3 meter leg extension all 4 legs	4-2
	2		leg extension	6.0 meter leg extension all 4 legs	4-3
	2		leg extension	9.0 meter leg extension all 4 legs	4-4
	2		leg extension	12 meter leg extension all 4 legs	4-5
	6		leg extension	15 meter leg extension all 4 legs	4-6
	8		Tower	Supply: 0° - 60° Angle\ Section type 2K2 (Under Crossing Tower) complete with stub angles but excluding extension	5

				(Extension)	
	2		leg extension	0.0 meter leg extension all 4 legs	5-1

**TABLE QUANTITY OF TOWERS & EXTENSION (1-1)
132 KV**

	2		leg extension	3.0 meter leg extension all 4 legs	5-2
	4		leg extension	6.0 meter leg extension all 4 legs	5-3
	Total Price:				

transmission line twin teal double circuit

(2-1)

ITEM	DESCRIPTION	ESTIMATE QUANTITY	UNIT	UNIT PRICE USD	TOTAL PRICE USD
1	Design ,survey , line route, profile, structure list, soil investigation, for 132kv over head transmission line double circuit , twin teal.	82	Line route Km		
2	Supply ACSR teal conductors all over diameters 25.25mm double circuit twin teal per phase	82	Line route Km		
3	Supply toughened glass insulator disc 132 kv, ball and socket 16 mm , 70 KN ,mechanical strength in crates.	2100	Piece		
4	Supply toughened glass insulator disc 132 kv, ball and socket 16 mm , 120 KN ,mechanical strength in crates.	16500	piece		
5	Supply toughened glass insulator disc 132 kv, ball and socket 20 mm , 160 KN ,mechanical strength in crates.	20500	piece		
6	Single suspension set for ACSR twin teal conductors complete with all fitting including suspension clamps and armour rods etc , , 132kv over head transmission line,	525	set		
7	Double suspension set for ACSR twin teal conductors complete with all fitting including suspension clamps and armour rods ,etc , ,132kv over head transmission line	600	Set		

transmission line twin teal double circuit

(2-2)

8	Double tension set for ACSR twin teal conductors complete with all fitting including dead end joint ,etc , 132kv over head transmission line	850	set		
9	Single vertical jumper , suspension set complet with hardware suspension clamps and (counterweights as required according to technical specification of tension towers)	210	set		
10	Mid span joint for teal conductor dia 25.25 mm	540	No.		
11	Space damper for teal conductor dia 25.25 mm	10000	No.		
12	Vibration damper for teal conductor dia 25.25 mm	10000	No.		
13	Ground rods complete with coupling and joint	1100	set		
14	Ground wire stranded , 3strands each 3.7 mm diameter hard drawn copper	4300	m		

SUPPLY OPGW CONDUCTORS WITH

ACCESSORIES (3-1)

ITEM	DESCRIPTION	ESTIMATE QUANTITY	UNIT	UNIT PRICE I USD	TOTAL PRICE USD
1	Supply earth weirs conductors (OPGW) 16mm diameter 36 fiber .	82	Line route km		
2	OFAC (Optical fiber Approach cable) Duct type with 36 fiber type ITU- T G655 snigle mode none zero dispersion shifted	1000	m		
3	Suspension assembly set passing for OPGW earth wire complete with all fitting including armour rod	190	Set		
4	Splicing tension assembly in suspension tower for OPGW earth wire complete with all fitting including armour rod	18	Set		
5	Tension set for OPGW earth wire complete with all fitting including armour rod	75	Set		
6	Fasting (attachment)clamp for fiber	500	Piece		
7	Parallel groove clamp	250	Piece		
8	Joint boxes for OPGW earth wire	18	Piece		
9	HDPE tube with the following specification outer diameter 40mm inner diameter 33mm	1000	m		
10	Terminal jointing boxes suitable for splicing of OPGW earth wire and optical fiber approach cable (OFAC)	4	Piece		
11	Optical distribution frame (ODF) type cabinet and dust proof	4	Piece		

SUPPLY OPGW CONDUCTORS WITH
ACCESSORIES (3-2)

12	Vibration damper for OPGW earth wire	500	piece		
Total Price :					

CONSTRUCTION FOUNDATION & ASSEMBLE & ERECTION TOWERS
132 KV(4-1)

Total Price USD	Estimate Quantity	Unit Price USD	Unit	Brief Description	No.
	170		Complete tower foundation	Supply all materials, equipment and laborers required to construct the foundation (either pad &chimney or cast in situ pile foundation) for 2S2 Tower According to the technical conditions and the attached drawings as directed by the supervising engineer	1
	40		Complete tower foundation	Supply all materials, equipment and laborers required to construct the foundation (either pad &chimney or cast in situ pile foundation) for 2T2 Tower According to the technical conditions and the attached drawings as directed by the supervising engineer	2
	20		Complete tower foundation	Supply all materials, equipment and laborers required to construct the foundation (either pad &chimney or cast in situ pile foundation) for 2E2 Tower According to the technical conditions and the attached drawings as directed by the supervising engineer	3
	14		Complete tower foundation	Supply all materials, equipment and laborers required to construct the foundation (either pad &chimney or cast in situ pile foundation) for 2R2 Tower According to the technical conditions and the attached drawings as directed by the supervising engineer	4
	8		Complete tower foundation	Supply all materials, equipment and laborers required to construct the foundation (either pad &chimney or cast in situ pile foundation) for 2K2 Tower According to the technical conditions and the attached drawings as directed by the supervising engineer	5
	170		Complete tower with extension	Assemble & Erection tower type 2S2, the work include supply the equipment, tools, laborers and transport tower component from store to tower site. According to the technical conditions and the attached drawings as directed by the supervising engineer	6
	40		Complete tower with extension	Assemble & Erection tower type 2T2, the work include supply the equipment, tools, laborers and transport tower component from store to tower site. According to the technical conditions and the attached drawings as directed by the supervising engineer	7
	20		Complete tower with extension	Assemble & Erection tower type 2E2, the work include supply the equipment, tools, laborers and transport tower component from store to tower site. According to the technical conditions and the attached drawings as directed by the supervising engineer	8
	14		Complete tower with extension	Assemble & Erection tower type 2R2, the work include supply the equipment, tools, laborers and transport tower component from store to tower site. According to the technical conditions and the attached drawings as directed by the supervising engineer	9
	8		Complete tower with extension	Assemble & Erection tower type 2K2, the work include supply the equipment, tools, laborers and transport tower component from store to tower site. According to the technical conditions and the attached drawings as directed by the supervising engineer	10

CONSTRUCTION FOUNDATION & ASSEMBLE & ERECTION TOWERS
132 KV(4-2)

	82		Line route KM	Stringing work of the line (all the 6 twin Teal phase conductors and 1OPGW earth wires) including all the work required (tests, energization and connection) line with the grid system , as well as transportation the materials from store to site and supply all the equipment , tools, laborers .	11
	Total Price :				

SUPPLY MULTIPLEXER WITH ACCESSORIES (5)

ITEM	DESCRIPTION	QUANTITY ESTIMATED	UNIT PRICE USD	TOTAL PRICE USD
<p>1</p> <p>1.1</p> <p>1.2</p>	<p>Multiplexer : To be used for transmitting:- -speech - data signal - Protection signals of 2 Mbps transmission rate. -The line distance up to120 km -The Multiplexer should have the capability to operate on optical fiber (single mode non-zero dispersion shifted fiber according to ITU-T G655). I.e equipped with all necessary interfaces to be connected to optical fiber and should be integrated with existing network management system (NMS) in National Dispatch Center (NDCC). Each Multiplexer should include the following:</p> <p>SDH (equipment or card with SFP) with STM 1/4/16 (fully capacity) optical interface and 48x2 Mb/s (1PC)</p> <p>Interfaces :</p> <ul style="list-style-type: none"> -16 interfaces 4 wire E&M -12 interfaces 2 wire exchange side - 12 interfaces 2 wire subscriber side <ul style="list-style-type: none"> - 16 interfaces Ethernet / TCP / IP modules - 8 interfaces Data transmission for MUX <ul style="list-style-type: none"> - 8 interfaces E1 (2 Mb/s). - 4 interfaces Ethernet interface - Hot line with telephone 	<p>1 LINK (2PCS)</p>		
<p>1.3</p>	<p>Protection Signaling Equipment's (PSE) Should be internal integrated with MUX (1+1 Path Protection) to be operate with:</p> <ul style="list-style-type: none"> - 1+1 path protection on NX64 kbit/s for symmetrical switching of TX & RX path. 1. 8 port Digital Protection relays, G.703 (64 kbit) 2. 4 port Analog Protection relays,4 teleprotection 			

	<p>commands (PSE should be internal card with MUX and the same of manufacturing of MUX)</p> <p>3. Integrated Teleprotection interfaces for Differential protection (4XSFP) according to IEE C37.94 and 4Xoptical ports 64kbit/s for interconnection</p>			
<p>1.4</p>	<p>Cabinet for Multiplexer should be provided for the Multiplexers in the station as well as in opposite station to accommodate all Multiplexer links.</p> <p>Cabinets could be used fully i.e. commanding two Multiplexers. Cabinet specification: (Internal swing door, Front door should not contain glass, plate thickness is 2 mm , 42 U height, Fan unit, Internal light, AC plug with fuse and Cabinet dimension : 2 mt height , 80 cm width and 60 cm depth .</p>			
<p>1.5</p>	<p>ODF (Optical Distribution Frame) : to distribute and connect the big tails with all connectors required to connect the ODF to the Mux. , each ODF should be equipped with 2 rack , each rack (36 optical interface)</p> <p>Cabinet specifications : (Internal swing door, Front door should not contain glass, plate thickness is 2 mm , 42 U height, Internal light, AC plug with fuse , protection class IP66 .</p> <p>Cabinet dimension : 2 mt height , 80 cm width and 60 cm depth .</p>			

SUPPLY PLC WTTT ACCESSORIES (6)

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE USD	TOTAL PRICE USD
1	<p style="text-align: right;">Wave Traps</p> <ul style="list-style-type: none"> - Hanging or pedestal type To be connected on phase (s) and shall be comply to IEC 60353 - Continuous current =1600 Amp. - Short time current = 40/1 sec. - Inductance at 50 HZ = 0.5 mh. - Bandwidth range = 40-500 KHz. <p style="text-align: center;">Blocking impedance = 800 Ω.</p>	4		
2	<p style="text-align: center;">Line Matching Unit (L.M.U)</p> <p style="text-align: center;">To be connected on phase (S) for each line</p>	4		
3	<p style="text-align: center;">Power Line Carrier (PLC)</p> <ul style="list-style-type: none"> - PLC Frequency Band For :- - TX=8KHZ - RX=8KHZ - To be adjusted as required i.e 2,4 and 8 KHz. - PLC type (to be operated as analogue & digital). - All analogue and digital cards should be provided. - PLC should be used for (telephone , data , teleprotection). - Accordance IEC 60495. <p style="text-align: center;"><u>DPLC:-</u></p> <p style="text-align: center;">Internal MUX card providing:-</p> <ul style="list-style-type: none"> - 2x4W E&M interface. - 1x2W voice interface (for each link, 1side will be exchange side and other will be subscriber side). - 4 RS232 data for IEC 101. <p style="text-align: center;"><u>APLC :-</u></p> <ul style="list-style-type: none"> - 4W with E&M card - Exchange side card & subscriber side card for each PLC link. - 1200 baud RS232 data channel via integrated modem. <p style="text-align: center;"><u>License:-</u></p> <p style="text-align: center;">Free license for all above interfaces and cards.</p>	1LINK (2 PCS)		
4	<p style="text-align: center;">Protection Signaling Equipment (PSE)</p> <ul style="list-style-type: none"> - With at least four independent commands <p style="text-align: center;">PSEs should be the same PLC manufacturing and should be internal with PLC .</p>	2		

5	<p style="text-align: center;">Cabinet for PLC</p> <ul style="list-style-type: none"> - Should be provided for the PLC s and other equipment in the station as well as in opposite stations to accommodate all PLC links. - Cabinets should be used fully i.e. - commanding two PLCs plus two PSEs and should be the same PLC manufacturing. - Cabinet specification: - Internal swing door - Front door should not contain glass. - plate thickness is 2 mm - 42 U height - Fan unit - Internal light - AC plug with fuse . <p style="text-align: center;">Cabinet dimension :(2 m height x 80 cm width x 60 cm depth) and according to IP 54.</p>	2	PRICE INCLUDED	

Factory Acceptance Tests(FAT)

Person to witness all the tests before shipping at manufacturing factory for following :

NO.	Description	unit	Total price
			USD
1	Test of towers: -For suspension tower (with & without ice) --For tension tower (with & without ice)	2 Persons for 5 working days 2 Persons for 5 working days	
2	Test of Conductors(ACSR & OPGW)	2 Persons for 5 working days	
3	Test of Hardware	2 Persons for 5 working days	
4	Test of insulators	2 Persons for 5 working days	
5	Test of Multiplexer	2 Persons for 5 working days	
6	Test of PLC	2 Persons for 5 working days	
Sub-Total for FAT :			

TOTAL PRICE FOR TENDER