

ETC of 400kV & 11kV DC Transmission Line at 2X660MW Super –Critical Thermal Power Station, Stage –V, Unit 7 & 8-400kV Switchyard at Suratgarh

SECTION-1 : SCOPE, SPECIFIC TECHNICAL REQUIREMENTS & QUANTITIES	
Project	2X660MW Super –Critical Thermal Power Station, Stage –V, Unit 7 & 8-400kV Switchyard at Suratgarh
Customer	Rajasthan Rajya Vidyut Utpadan Nigam Ltd. , Jaipur.
Consultant	Tata consulting Engineer Ltd. , Bangalore

Notes

- 1 The scope in brief is as follows :
 - 1a The scope involves storage, unloading & erection of 400kV D/C (Double Circuit) line consisting Quad Moose ACSR conductor per phase between Unit 7 & 8 switchyard and unit -6 extension switchyard at Suratgarh . The approximate distance between two substation is 2000 m (approx.). i.e. total route length of the double circuit line to be constructed by the bidder.
 - 1b The scope involves storage, unloading & erection of 11kV D/C (Double Circuit) line consisting Single Zebra conductor per phase between 11kV switchyard at unit 7 & 8 power plant side and 11kV switchyard at river water side . The approximate distance between two 11kV substation is 5700 m (approx.). i.e. total route length of the double circuit line to be constructed by the bidder.
- 2 The quantities mentioned in the BOQ are tentative and may vary to any extent for individual items.

Any material/services required for successful completion of the project but not covered in the BOQ shall be deemed to be included in the scope of contractor without any cost implications to BHEL. **The bidder is advised to visit Suratgarh site before submission of bid.**
- 3 Make of items to be supplied/used under this contract shall be subject to acceptance by customer/BHEL at contract stage.
- 4 Unloading & Storage of all items are in the scope of bidder.
- 5 Handling, shifting to & from stores at Suratgarh TPP proper storage are also included in the scope of the bidder.
- 6 Bidder may note that any damage of material at site during erection work shall be avoided. Further, owner (RRVUNL/BHEL) shall not pay any compensation for any loss or damage to the properties during work of execution of transmission line job or for tree cutting due to bidder's work.

ETC BOQ FOR 400kV TRANSMISSION LINES				
A	S. No.	Item / Work description	Unit	Quantity
	1	Supply and erection of tower accessories and earthing material		
	1.1	Tower accessories		
	1.1.1	Danger Plate	Nos.	7
	1.1.2	Number Plate	Nos.	7
	1.1.3	Phase Plate (Set of three)	Sets	14
	1.1.4	Circuit Plate (Set of two)	Sets	7
	1.1.5	Anti-Climbing Device	Nos.	7
	1.2	Earthing of towers(see note 9)		
	1.2.1	3 m, 40 NB pipe electrode as per IS	Nos.	14
	1.2.2	Counterpoise with its accessories (1 set consist 120 m long) as per specification section-2	Sets	2
	2	Survey		
	2.1	Check survey of D/C transmission line	m	2000
	3	ETC (Erection , Testing and Commissioning)		
	3.1	Erection of various type of tower angles , tower parts and tower body / leg (equal & unequal) extensions (complete) including bolts and nuts, step bolts, hangers, D-Shackles, tower accessories etc., including welding and supply and application of zinc rich paint for both Tension and Suspension type towers Double Circuit Transmission Line	MT	200.00
	3.2	ACSR Moose Conductor complete with rigid/flexible spacers, pre formed armour rod, Mid span compression joint, Repair sleeves , vibration dampers , etc. to complete (for entire route length of lines)	kM	50

3.3	Shield Wires(7/4.06) with Tension Clamps, Down lead clamp, Suspension clamp, PG clamp, flexible copper bond, Mid span compression joint, Repair sleeves, vibration dampers , etc to complete for entire route length of lines	m	2000
3.4	Quad tension string hardware with 4X28 nos. 160 kN disc insulators in each string, etc. to complete suitable for Quad moose conductor.	Nos	72
3.5	Double suspension string hardware with 2X28 nos. 160 kN disc insulators in each string, etc. to complete suitable for Quad moose conductor.	Nos	12
3.6	Single suspension string hardware for Pilot string with 1X31 nos. 120 kN disc insulators in each string suitable for Quad moose conductor	Nos	15
3.7	For OPGW earth wire and accessories		
3.7.1	OPGW earth wire	m	2000
3.7.2	Cleat type clamp for fixing of OPGW on structure	Nos.	50
3.7.3	Suspension clamp for OPGW	Nos.	2
3.7.4	Tension clamp for OPGW	Nos.	12
3.7.5	Vibration dampers for OPGW	Nos.	12
3.7.6	X way joint box for OPGW	Nos.	2
3.7.7	Armour rod for OPGW	Nos.	2

B	ETC BOQ FOR 11KV TRANSMISSION LINES		
S. No.	Item / Work description	Unit	Quantity
1	Supply and erection of tower accessories , cables accessories, Pipes and earthing material		
1.1	Tower accessories		
1.1.1	Danger Plate	Nos.	58
1.1.2	Number Plate	Nos.	58
1.1.3	Phase Plate (Set of three)	Sets	116
1.1.4	Circuit Plate (Set of two)	Sets	58
1.1.5	Anti-Climbing Device	Nos.	58
1.2	Earthing of towers(see note 9)		
1.2.1	3 m, 40 NB pipe electrode as per IS	Nos.	58
1.2.2	Counterpoise with its accessories (1 set consist 50 m long) as per specification section-2	Sets	10
1.3	Cables accessories & Pipes		
1.3.1	Cable termination suitable for 11kV 3C X240 sq mm AL/XLPE	Nos.	8
1.3.2	Connector for termination of 11kV cable termination with single ACSR Zebra conductor	Nos.	24
1.3.3	250mm dia. PVC pipes alongwith socket (class -4)	m	300
1.3.4	250mm dia. GI conduit alongwith socket (Medium class)	m	300
3	Survey		
3.1	Check survey of D/C transmission line	m	5700
4	ETC (Erection , Testing and Commissioning)		
4.1	Erection of various type of tower angles , tower parts and tower body / leg (equal & unequal) extensions (complete) including bolts and nuts, step bolts, hangers, D-Shackles, tower accessories etc., including welding and supply and application of zinc rich paint for both Tension and Suspension type towers Double Circuit Transmission Line	MT	300.00
4.2	ACSR Zebra Conductor complete with pre formed armour rod, Mid span compression joint, Repair sleeves , vibration dampers , etc. to complete (for entire route length of lines)	kM	32
4.3	Shield Wires(7/3.66) with Tension Clamps, Down lead clamp, Suspension clamp, PG clamp, flexible copper bond , Mid span compression joint, Repair sleeves, vibration dampers , etc to complete for entire route length of lines	m	5100
4.4	Single tension string hardware with 1no. 120 kN disc insulators in each string, etc. to complete suitable for single Zebra conductor.	Nos	504
4.5	Single suspension string hardware with 1no. 120 kN disc insulators in each string, etc. to complete suitable for single Zebra conductor.	Nos	102

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4.6	Laying of 11kV 3C X240 sq mm AL/XLPE (Conduit)	m	600
4.7	Laying of 11kV 3C X240 sq mm AL/XLPE (Buried)	m	600
4.8	Laying of 11kV 3C X240 sq mm AL/XLPE (Trench)	m	100
Notes :			
1	MS welding - apply red oxide lead paint then aluminium paint then bitumen after welding.		
2	GI welding - apply 2 coats of cold galvanising anti corrosive paint after welding.		
3	10% welding joints in earthing shall be tested for dye penetration test.		
4	Equipment labels to be painted as per requirement.		
5	Quoted rates are deemed to be inclusive of miscellaneous works, viz.. erection of clamps and connectors, phase colour discs etc.		
6	Right of way is not in scope but tree cutting (if any) is in the scope of bidder.		
7	All associated items, though specifically not mentioned but required for safe and satisfactory execution and commissioning of transmission line will also be treated as included and same shall be supplied, ETC to be done at no extra cost to BHEL/ RRVUNL.		
8	Supply of transmission line tower material , transmission line stringing hardware, disc insulators, ACSR Moose/Zebra conductor, 11kV cables , Earth wire and OPGW earth wire with accessories are in BHEL scope. However, shifting of material from BHEL stores to tower & erection of same is in bidder's scope. Type testing of transmission line tower are in BHEL scope.		
9	Complete earthing of all towers shall be as per approved drawings (Scope includes complete work including testing to show that the tower resistance meets the acceptable limits.)		
10	For scope of supply items in ETC contractor scope following should be followed . (1)The approval of makes shall be obtained from BHEL/Customer . (2)Drawings and MQP shall be submitted for approval in line with specification and relevant IS. (3) Quality -Inspection & dispatch clearance shall be given by BHEL/Customer.		
11	Laying of 11kV cables work also includes complete dragging of cables etc. Required clamps for fixing of 11kV cables on lattice type tower shall be in ETC contractor scope .		