

# **BILL OF QUANTITIES FOR ERECTION, TESTING AND COMMISSIONING**

**PROJECT : 220/33 KV MASJID MOTH**  
**CUSTOMER : DELHI TRANSCO LIMITED**

Sl. No.	ITEM DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>220 kV EQUIPMENTS</b>				
1	100MVA, 220/66-33/11 kV, 3 phase transformer complete with OLTC with tapping range of +5% - 15% in steps of 1.25%, cooler bank , 17.5 kV neutral CT and associated piping work , terminal connectors , all auxiliaries and internal cabling and termination complete including oil filtration , if necessary to complete.	Nos	2		
2	245kV, 1250 A, SF6, 3 Phase , 40 kA for 3 S, Circuit Breaker alongwith support structure, Rigid / Expansion type terminal connectors for Al tube / ACSR ZEBRA, Breaker Control Cabinets and interpole cabling	Nos	5		
3	220 kV isolator, centre single break, 1250 A, 40 kA for 3 Sec, motor operated, triple pole with manually operated earth switch with set of 6 nos. supporting insulators with terminal connectors	Nos	4		
4	220 kV isolator, centre single break, 1250 A, 40 kA for 3 Sec, motor operated, triple pole without earth switch with set of 6 nos. supporting insulators and terminal connectors	Nos	12		
5	245KV, Current Transformer (800-400/1/1/1/1 A) , 1 - Phase, complete with Rigid / Expansion type terminal connectors for Al. tube / ACSR ZEBRA Conductor.	Nos	15		
6	198 kV 10 kA gapless type lightning arresters with insulating base and surge monitor with current meter and terminal connectors	Nos	12		
7	220 kV capacitor voltage transformer with 3 secondary windings with terminal connectors	Nos	12		
8	220kV control and relay panels comprising 2 nos. transformer feeders, 2 nos. line feeders and 1 no. B/C bay ( all panels equipped with numerical relays)	LOT	1		
9	Bay marshalling kiosk (220 kV)	Nos	5		
10	220kV 16 disc tension insulator string suitable for twin zebra conductor complete with hardware fittings	Nos	42		
11	220kV 15 disc suspension insulator string suitable for twin zebra conductor complete with hardware fittings	Nos	15		
12	220kV 16 disc tension insulator string suitable for single zebra conductor complete with hardware fittings	Nos	24		
13	220kV 15 disc suspension insulator string suitable for single zebra conductor complete with hardware fittings	Nos	15		
14	7/3.15 mm GI shield wire including tension clamp, PG clamp and clamping on structure for down conductor, fixing/bolting with earth strip etc. to complete.	Metre	1800		
15	220 kV, 0.5 mH /1600 A wave trap alongwith terminal connectors	Nos	2		
16	220V 180AH Battery of 110 cells complete with all accessories	Sets	2		
17	Battery charger, 30A, and DCDB switchboard for 220V, 180AH battery	Sets	2		
18	ACSR conductor - zebra	Metre	8500		
	ACSR "Zebra" conductor complete with tee connectors for droppers to equipment connections, PG clamps for busbar jumpering, Twin /Quad bundle spacers etc. to complete.				
19	GI Structure	MT	241		

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19A	Hardware for structure	MT	18		
19B	Foundation Bolts	MT	12		
20	220 KV Post Insulators alongwith terminal connectors	Nos.	8		
	<u>33 kV EQUIPMENTS</u>				
1	33 KV, 2000 A, SF6, 3 Ph Circuit Breaker alongwith support structure, Rigid / Expansion type terminal connectors for Al tube / ACSR ZEBRA, Breaker Control Cabinets and interpole cabling	Nos	3		
2	33 KV, 800 A, Vacuum Circuit Breaker alongwith support structure, Rigid / Expansion type terminal connectors for Al tube / ACSR ZEBRA, Breaker Control Cabinets and interpole cabling	Nos	10		
3	33kV control & relay panels comprising 2 nos. transformer feeders, 10 nos. line feeders, and 1 no. B/C Bay. All panels to be equipped by numerical relays	LOT	1		
4	33 kV isolator, double break, 2000 A, 31.5 kA for 3 sec, triple pole with earth switch with set of 9 nos. supporting insulators with motor operated mechanism with terminal connectors.	Nos	2		
5	33 kV isolator, double break, 2000 A, 31.5 kA for 3 sec, triple pole without earth switch with set of 9 nos. supporting insulators with motor operated mechanism with terminal connectors.	Nos	4		
6	33 kV isolator, double break, 800 A, 25 kA for 3 sec, triple pole with one earth switch with set of 9 nos. supporting insulators and motor operated mechanism with terminal connectors.	Nos	10		
7	33 kV isolator, double break, 800 A, 25 kA for 3 sec, triple pole with out earth switch with set of 9 nos. supporting insulators and motor operated mechanism with terminal connectors	Nos	12		
8	33 kV isolator, <b>Tandem type</b> double break, 2000 A, 31.5 kA for 3 sec, triple pole without earth switch with set of 9 nos. supporting insulators with motor operated mechanism with terminal connectors.	Nos	2		
9	33 kV isolator, <b>Tandem type</b> double break, 800 A, 25 kA for 3 sec, triple pole with out earth switch with set of 9 nos. supporting insulators and motor operated mechanism with terminal connectors	Nos	10		
10	33kV PT's with three secondary windings with terminals	Nos	36		
11	33 kV current transformers (800-400/1/1/1/1 A) with terminal connectors	Nos	30		
12	33 kV current transformers (2000-1000/1/1/1/1 A) with terminal connectors.	Nos	9		
13	30 kV, 10 kA gapless type lightning arresters with terminal connectors.	Nos	36		
14	33kV tension insulator string with 6 discs for quad. zebra conductor with hardware fittings	Nos	66		
15	33kV suspension insulator string with 3 discs for quad zebra conductor with hardware fittings	Nos	3		
16	Bay marshalling kiosk (33 kV)	Nos	10		

Sl. No.	ITEM DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>Other material for 220/33 kV substation at Masjid Moth</b>				
1	Aux. AC distribution board rated 630 A comprising (1) 3 nos. 630 A TPN ACB as incomer (2) 1 no. 630 ACB as bus coupler (3) 16 nos. ,32 A TPN MCB as out going feeders (4) 2 nos.,63 A TPN MCB as outgoing feeders (5) 2 nos. ,100 A TPN MCB as out going feeders	Nos	1		
2	11/0.4KV 400KVA station transformer including all auxiliaries , internal cabling and termination , oil filtration if necessary to complete.	Nos	2		
3	L.T. Cables	LOT	1		
	Cabling including laying, dressing and termination of cables - laying can be either on trays, supports, underground, over ground etc. Glands will be supplied by BHEL and all other erection materials viz. ferrules, lugs, cable ties / straps, markers, etc. included in the quoted rates.				
4	<b>POWER CABLES</b>				
	1CX500 Sq.mm (Al.)	M	750		
	3.5CX25 Sq.mm (Al.)	M	2500		
	3.5CX70 Sq.mm (Al.)	M	500		
	4CX6 Sq.mm (Al.)	M	3500		
5	<b>CONTROL CABLES</b>				
	5CX2.5 Sq.mm (Copper)	M	12000		
	7CX2.5 Sq.mm (Copper)	M	10000		
	10CX2.5 Sq.mm (Copper)	M	20000		
	14CX2.5 Sq.mm (Copper)	M	10000		
	19CX2.5 Sq.mm (Copper)	M	5000		
6	11KV, 3X300MMSQ. XLPE cable with two Nos. cable terminations	M	100		
7	Fire fighting equipment comprises 5 Nos. portable extinguisher only.	LOT	1		
8	Earthing material- GI strip including cutting, bending, welding with 40 dia MS rod and 75x12 mm and 50X6 mm GI Flat riser/earth strip, applying zinc rich paint, clamping to structure/building wall/fence etc. to complete. Laying of 40 mm dia. MS rod will be at a depth of 800 mm.				
A)	75x12 MM Galvanised earthing strip	M	5000		
B)	50x6 MM Galvanised earthing strip	M	2000		
9	Cable trench material includes erected in trench, welding, painting of weld joints, etc. to complete.	MT	6.0		
10	Phase coloured discs and labels	LOT	1		
11	<b>3" IPS Al. Tube</b>				
a)	3 " IPS Al tube including cutting , bending , fixing Corona end bells etc. to complete.	Mtrs.	300		
b)	3 " IPS Al tube , Al welding with sleeves, Radiography testing & D.P.Test of 10% welded joints, etc. to complete.	Nos.	30		
	<b>TOTAL</b>				
<b>Notes for ETC works</b>					
1	Loading / Unloading, handling, shifting to & from stores, proper storage,assembly, installation, pre-commissioning test and commissioning tests are included in the scope.				
2	MS welding - apply red lead paint then aluminium paint then bitumen after welding				
3	GI welding - apply 2 coats of cold galvanising anti corrosive paint after welding				
4	10% welding joints in earthing shall be tested for dye penetration test.				
5	Quoted rates are deemed to be inclusive of miscellaneous works, viz.. Erection of clamps and connectors, phase colour discs etc. <b>Enlosed</b> Layout drawing, Single Line diagram Process specification for equipment earthing (5 sheets)				