

Project : 220 kV SUBSTATION DAULTABAD

Customer : HARYANA VIDYUT PRASARAN NIGAM LIMITED

Bill of Quantities for ETC Works

S.No.	Description	Unit	Qty. Daultabad	Rate	Amount
	MAIN EQUIPMENT				
1	245KV, 1600 A, SF6, 3 Ph Circuit Breaker along with support structure, Rigid / Expansion type terminal connectors for ACSR Zebra, Breaker Control Cabinets and interpole cabling	nos.	7		
2	245 kV, 1600 A, 3 phase Horizontal Centre break, motor operated (Standard- mechanically ganged) isolator complete with support insulators, Rigid / Expansion type terminal connectors for Al tube / ACSR Zebra, and GS supporting Structure				
2.1	- with one earth switch	nos.	4		
2.2	- without earth switch	nos.	14		
3	198KV, 1 Phase, Gapless Metal Oxide Surge Arrester complete with surge counter, leakage current meter, insulating base, connecting cable, Line terminal connector and GS supporting structure	nos.	18		
4	245KV , CVT/CC, 1 Phase, complete with Line terminal connector and GS supporting structure	nos.	4		
5	220kV PTs, 1 Phase, complete with Line terminal connector and GS supporting structure	nos.	6		
6	245KV, Current Transformer, 1 Phase, complete with Rigid / Expansion type terminal connectors for ACSR Zebra and GS supporting structure. For Bus coupler	nos.	15		
7	245KV, Current Transformer, 1 Phase, complete with Rigid / Expansion type terminal connectors for ACSR Zebra and GS supporting structure for Transformer.		6		
8	220 kV Neutral Current Transformer (NCT) (33 kV) complete with GS supporting structure and terminal connector suitable for ACSR Zebra Conductor.	nos.	2		
9	245KV, 0.5 mH, 1600A, 1 ph Wave Trap complete with support insulators, Rigid / Expansion type terminal connectors for Aluminium tube / ACSR Moose and GS supporting structure	nos.	0		
10	245kV Post Insulators for Bus support complete with corona ring, terminal connector and GS supporting Structure.	nos.	14		
11	100MVA, 220/66kV, outdoor Power transformer complete with terminal connectors, all auxiliaries and internal cabling and termination complete including oil filtration, if necessary	nos.	2		
12	12.5/16 MVA, 66/11kV, outdoor Power transformer complete with terminal connectors, all auxiliaries and internal cabling and termination complete including oil filtration, if necessary	nos.	2		
13	25/31.5MVA, 66/11kV, outdoor Power transformer complete with terminal connectors, all auxiliaries and internal cabling and termination complete including oil filtration, if necessary	nos.			
14	200 KVA, 11/4 kV, outdoor Station transformer complete with terminal connectors, all auxiliaries and internal cabling and termination complete including oil filtration, if necessary	nos.	1		
15	66KV, 1600/2500A, SF6, 3 Ph Circuit Breaker along with support structure, Rigid / Expansion type terminal connectors for Al tube / ACSR Moose, Breaker Control Cabinets and interpole cabling	nos.	15		
16	66 kV, 1600/2500A, 3 phase Horizontal Centre break, motor operated (tandem/Standard- mechanically ganged) isolator complete with support insulators, Rigid / Expansion type terminal connectors for Al tube / ACSR Moose, and GS supporting Structure				
16.1	- with one earth switch	nos.	10		

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S.No.	Description	Unit	Qty. Daultabad	Rate	Amount
16.2	- with two earth switches	nos.	0		
16.3	- without earth switch	nos.	30		
17	66KV, 1 Phase, Gapless Metal Oxide Surge Arrester complete with surge counter, leakage current meter, insulating base, connecting cable, Line terminal connector and GS supporting structure	nos.	42		
18	66KV, CVT/CC, 1 Phase, complete with Line terminal connector and GS supporting structure	nos.	10		
19	66KV, PT, 1 Phase, complete with Line terminal connector and GS supporting structure	nos.	6		
20	66KV, Current Transformer, 1 Phase, complete with Rigid / Expansion type terminal connectors for ACSR Zebra and GS supporting structure.				
20.1	66 kV CTs for line	No.	27		
20.2	66 kV CTs for capacitor bank	No.	6		
20.3	66 kV CT for T/F I/C	No.	6		
20.4	66 kV T/F CT (150-75/.0577-1-1)	No.	6		
20.5	66 kV T/F CT (300-150/.0577-1-1)	No.	-		
21	66KV, 0.5 mH, 1600A, 1 ph Wave Trap complete with support insulators, Rigid / Expansion type terminal connectors for Aluminium tube / ACSR Moose and GS supporting structure	nos.	0		
22	66kV Post Insulators for Bus support complete with terminal connector and GS supporting Structure.	nos.	30		
23	20 MVAR 66kV rating capacitor bank with allied equipment like NCT, series reactor and GS Support Structure	nos.	2		
24	66 KV, Neutral Current Transformer (NCT), complete with GS supporting structure and Rigid / Expansion type terminal connectors suitable for ACSR Zebra Conductor.				
24.1	66 kV NCT(150-75/1) (11 kV)	No.	2		
24.2	66 kV NCT(300-150/1) (11 kV)	No.			
24.3	66 kV NCT(1000-500/1) (11 kV)	No.	2		
25	11 kV Surge Arrester	nos.	6		
26	11 kV 14 Panel Board	Set	1		
27	11 kV Capacitor Bank with 2 no. 11kV RVTs and 2 no. 11kV L&E Switch, support structure and Terminal connector	Set	2		
28	11 kV NCT with GS Support Structure				
28.1	11 kV NCT (900- 450/5)	No.	2		
28.2	11 kV NCT (1800- 900/5)	No.			
	BUS BAR MATERIALS				
29	Bolted type 220 kV single tension string assembly with 15 numbers disc insulators (E&M strength 9000 kg) per string with all hardware accessories including ball & socket connection and tension clampsets suitable for Single Zebra ACSR conductor	set	36		
30	Bolted type 220 kV single suspension string assembly with 14 numbers FOG type disc insulators (E&M strength 9000 kg) per string with all hardware accessories including ball & socket connection and tension clamp set suitable for single Zebra ACSR (string)	set	24		
31	Bolted type 220 kV single tension string assembly with 15 numbers disc insulators (E&M strength 9000 kg) per string with hardware accessories including ball & socket connection and tension clamp set suitable for twin Zebra	set	54		

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S.No.	Description	Unit	Qty. Daultabad	Rate	Amount
32	Bolted type 220 kV single suspension string assembly with 14 numbers disc insulators (E&M strength 9000 kg) per string with all hardware accessories including ball & socket connection and tension clamps suitable for twin Zebra ACSR conductor	set	27		
33	Bolted type 66 kV single tension string assembly with 6 numbers disc insulators (E&M strength 9000 kg) per string with all hardware accessories including ball & socket connection and tension clamp set suitable for twin Zebra ACSR (string)	set	102		
34	66 kV Bolted type single tension string assembly with 6 numbers FOG type disc insulators (E&M strength 4500 kg) per string with hardware accessories including ball & socket connection and tension clamp set suitable for single Zebra ACSR	set	72		
35	66 kV Bolted type single suspension string assembly with 5 numbers FOG type disc insulators (E&M strength 4500 kg) per string with hardware accessories including ball & socket connection and tension clamp set suitable for single Zebra ACSR	set	72		
36	66 kV Bolted type single suspension string assembly with 5 numbers FOG type disc insulators (E&M strength 4500 kg) per string with hardware accessories including ball & socket connection and suspension clamp set suitable for twin Zebra ACSR	set	39		
37	11 kV Bolted type single tension string assembly with 3 numbers FOG type disc insulators (E&M strength 9000 kg) per string with hardware accessories including ball & socket connection and suspension clamp set suitable for triple Zebra ACSR	set	-		
38	11 kV Bolted type single tension string assembly with 3 numbers FOG type disc insulators (E&M strength 9000 kg) per string with hardware accessories including ball & socket connection and suspension clamp set suitable for twin Zebra ACSR	set	12		
39	GS Stranded Shield wire, 7/9 SWG, 10.98 mm dia including tension clamp, PG clamp and clamping on structure for down conductor, fixing/bolting with earth strip etc to complete.	m	1800		
40	ACSR "Zebra" conductor complete with tee connectors for droppers to equipment connections, PG clamps for busbar jumpering, Twin / triple bundle spacers etc to complete.	m	11715		
	YARD WORK INCLUDING CABLING, TRENCH & EARTHING.				
41	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.				
41.1	Control cables- PVC insulated , Copper conductor				
41.1.1	4C, 4 sq.mm	m	500		

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S.No.	Description	Unit	Qty. Daultabad	Rate	Amount
41.1.2	5C, 4 sq.mm	m	31500		
41.1.3	10C, 4 sq.mm	m	2600		
41.1.4	19C, 2.5 sq.mm	m	7000		
41.1.5	14C, 2.5 sq.mm	m	17000		
41.1.6	10C, 2.5 sq.mm	m	40000		
41.1.7	7C, 2.5 sq.mm	m	0		
41.1.8	5C, 2.5 sq.mm	m	28500		
41.1.9	3C, 2.5 sq.mm	m	0		
41.1.10	2C, 2.5 sq.mm	m	0		
41.1.11	4C, 6 sq.mm	m	0		
41.2	Auxiliary Power cables, XLPE / PVC insulated, Al conductor				
	PVC, armoured, FRLS, Al Cables				
41.2.1	4Cx 10 sq.mm	m	4000		
41.2.2	3.5C x 25 Sq.mm	m	3100		
41.2.3	3.5C x 70 Sq.mm	m	1000		
41.2.4	3.5C x 185 Sq.mm	m	50		
41.2.5	3.5C x 240 Sq.mm	m	60		
41.2.6	3.5C x 35 Sq.mm	m	0		
41.2.7	3.5C x 95 Sq.mm	m	0		
41.2.8	1C x 70 Sq.mm	m	0		
	PVC, armoured, FRLS, Cu Cables				
41.2.9	1 C x 25 Sq.mm Cu	m	275		
41.2.10	1 C x 35 Sq.mm Cu	m	275		
41.2.11	2Cx2.5 Sq.mm Cu	m	475		
41.2.12	2Cx50 Sq.mm Cu	m	125		
41.2.13	4C x 16 Sq.mm Cu	m	525		
41.2.14	2C x 25 Sq.mm Cu	m	0		
41.2.15	1Cx16 sq.mm Cu	m	0		
	XLPE, Al Cables				
42.2.16	1Cx630 sq.mm , XLPE	m	2900		
42.2.17	3 C x 185 sq.mm , XLPE	m	70		
42.2.18	3 C x 50sq.mm , XLPE	m	70		

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S.No.	Description	Unit	Qty. Daultabad	Rate	Amount
42.2.19	3 C x 300sq.mm , XLPE	m	0		
42.2.20	3.5 C, 300 sq.mm, XLPE	m	0		
43	Laying of GI conduits including excavation, backfilling, making and repairing of walls in trenches, cutting, threading, fixing of sockets/bends where required etc. complete (Payment will be made for the as erected pipe length)				
43.1	GI pipe, 50 NB	m	250		
43.2	GI Pipe, 100NB	m	300		
43.3	Marshalling Kiosks & CT / CVT Junction Boxes	nos.	22		
44	Cable trench material				
44.1	Fabrication of Cable Tray supports with 40x40x5 MS Angle by cutting and welding in 200 to 900 mm of cutlengths in trench, including two coats of red oxide primer and two coats of enamel paint.	MT	7.5		
44.2	GI trays including bends, tees, crosses with coupler plates & bolting to tray supports etc. to complete				
44.3	750 mm Wide 2.5 m long, ladder tray	no.	15		
44.4	650 mm 2.5 m long, Wide ladder tray	no.	46		
44.5	300 mm 2.5 m long, Wide ladder tray	no.	14		
44.6	250 mm 2.5 m long, Wide ladder tray	no.	100		
44.7	200 mm 2.5 m long, Wide ladder tray	no.	272		
44.8	100mm wide, 25mm high, galvanised MS sheet perforated type cable trays each 3 m long along with 8 mm dia	no.	94		
45	Earthing material- GS strip including cutting, bending, welding with 40 dia MS rod riser/earth strip, applying zinc rich paint, clamping to structure/building wall etc. to complete.				
45.1	75 x 12 mm GS Flat	m	6700		
45.2	50 x 6 mm GS Flat	m	600		
45.3	50 x 6 mm MS Flat	m	1700		
46	Galvanised steel structures including hardware				
46.1	Lattice Structures for Towers and beams	MT	6.5		
47	CONTROL ROOM EQUIPMENT				
47.1	220 kV T/F C&R Panel	Set	2		
47.2	220 kV Line C&R Panel	Set	4		
47.3	220 kV SYNCHRONISING Panel	No.	1		
47.4	220 kV Bus coupler C&R Panel	No.	1		
47.5	66 Kv T/F I/C C&R PANEL	No.	2		
47.6	66 Kv T/F C&R PANEL	No.	2		
47.7	66 kV LINE C&R Panel	No.	8		
47.8	66 kV Capacitor Panel	No.	2		

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S.No.	Description	Unit	Qty. Daultabad	Rate	Amount
47.9	66 kV Bus coupler .C&R Panel	No.	1		
48	AUXILIARY SUPPLY - (BATTERY/CHARGER/DIST BD)				
48.1	200AH, Lead Acid, Tubular type, High discharge 220V DC Battery Bank	Set	1		
48.2	100AH, Lead Acid, Tubular type, High discharge 220V DC Battery Bank	Set	0		
48.3	220V DC, 10 A / 20 A Float and Boost Charger	Set	1		
48.4	220V DC, 5 A / 10 A Float and Boost Charger	Set	0		
48.5	220 V DCDB (1 set = 1panel)	Set	1		
48.6	220 V DCDB (1 set = 1panel)	Set	0		
48.7	415V ACDB (1 set = 1panel)	Set	1		
48.8	415V Main Lighting Distribution Board (1 set = 1 panel)	Set	1		
48.9	415V Emergency Lighting Distribution Board (1 set = 1panel)	Set	1		
TOTAL AMOUNT :					

Notes for ETC works

- 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 GS 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.
- 6 ETC works shall be done as per **HVPNL Specification** enclosed.

Project : 66 kV SUBSTATION AT GURGAON

Customer : HARYANA VIDYUT PRASARAN NIGAM LIMITED

Bill of Quantities for ETC Works

S.No.	Description	Unit	Qty. Gurgaon	Rate	Amount
	MAIN EQUIPMENT				
1	245KV, 1600 A, SF6, 3 Ph Circuit Breaker along with support structure, Rigid / Expansion type terminal connectors for ACSR Zebra, Breaker Control Cabinets and interpole cabling	nos.	-		
2	245 kV, 1600 A, 3 phase Horizontal Centre break, motor operated (Standard- mechanically ganged) isolator complete with support insulators, Rigid / Expansion type terminal connectors for Al tube / ACSR Zebra, and GS supporting Structure				
2.1	- with one earth switch	nos.	-		
2.2	- without earth switch	nos.	-		
3	198KV, 1 Phase, Gapless Metal Oxide Surge Arrester complete with surge counter, leakage current meter, insulating base, connecting cable, Line terminal connector and GS supporting structure	nos.	-		
4	245KV , CVT/CC, 1 Phase, complete with Line terminal connector and GS supporting structure	nos.	-		
5	220kV PTs, 1 Phase, complete with Line terminal connector and GS supporting structure	nos.	-		
6	245KV, Current Transformer, 1 Phase, complete with Rigid / Expansion type terminal connectors for ACSR Zebra and GS supporting structure. For Bus coupler	nos.	-		
7	245KV, Current Transformer, 1 Phase, complete with Rigid / Expansion type terminal connectors for ACSR Zebra and GS supporting structure for Transformer.		-		
8	220 kV Neutral Current Transformer (NCT) (33 kV) complete with GS supporting structure and terminal connector suitable for ACSR Zebra Conductor.	nos.	-		
9	245KV, 0.5 mH, 1600A, 1 ph Wave Trap complete with support insulators, Rigid / Expansion type terminal connectors for Aluminium tube / ACSR Moose and GS supporting structure	nos.	-		
10	245kV Post Insulators for Bus support complete with corona ring, terminal connector and GS supporting Structure.	nos.	-		
11	100MVA, 220/66kV, outdoor Power transformer complete with terminal connectors, all auxiliaries and internal cabling and termination complete including oil filtration, if necessary	nos.	-		
12	12.5/16 MVA, 66/11kV, outdoor Power transformer complete with terminal connectors, all auxiliaries and internal cabling and termination complete including oil filtration, if necessary	nos.			
13	25/31.5MVA, 66/11kV, outdoor Power transformer complete with terminal connectors, all auxiliaries and internal cabling and termination complete including oil filtration, if necessary	nos.	1		
14	200 KVA, 11/.4 kV, outdoor Station transformer complete with terminal connectors, all auxiliaries and internal cabling and termination complete including oil filtration, if necessary	nos.	1		
15	66KV, 1600/2500A, SF6, 3 Ph Circuit Breaker along with support structure, Rigid / Expansion type terminal connectors for Al tube / ACSR Moose, Breaker Control Cabinets and interpole cabling	nos.	4		
16	66 kV, 1600/2500A, 3 phase Horizontal Centre break, motor operated (tandem/Standard- mechanically ganged) isolator complete with support insulators, Rigid / Expansion type terminal connectors for Al tube / ACSR Moose, and GS supporting Structure				
16.1	- with one earth switch	nos.	2		

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Bill of Quantities for ETC Works

S.No.	Description	Unit	Qty. Gurgaon	Rate	Amount
16.2	- with two earth switches	nos.	-		
16.3	- without earth switch	nos.	8		
17	66KV, 1 Phase, Gapless Metal Oxide Surge Arrester complete with surge counter, leakage current meter, insulating base, connecting cable, Line terminal connector and GS supporting structure	nos.	9		
18	66KV, CVT/CC, 1 Phase, complete with Line terminal connector and GS supporting structure	nos.	2		
19	66KV, PT, 1 Phase, complete with Line terminal connector and GS supporting structure	nos.	6		
20	66KV, Current Transformer, 1 Phase, complete with Rigid / Expansion type terminal connectors for ACSR Zebra and GS supporting structure.				
20.1	66 kV CTs for line	No.	9		
20.2	66 kV CTs for capacitor bank	No.			
20.3	66 kV CT for T/F I/C	No.			
20.4	66 kV T/F CT (150-75/.0577-1-1)	No.			
20.5	66 kV T/F CT (300-150/.0577-1-1)	No.	3		
21	66KV, 0.5 mH, 1600A, 1 ph Wave Trap complete with support insulators, Rigid / Expansion type terminal connectors for Aluminium tube / ACSR Moose and GS supporting structure	nos.			
22	66kV Post Insulators for Bus support complete with terminal connector and GS supporting Structure.	nos.	8		
23	20 MVAR 66kV rating capacitor bank with allied equipment like NCT, series reactor and GS Support Structure	nos.			
24	66 KV, Neutral Current Transformer (NCT), complete with GS supporting structure and Rigid / Expansion type terminal connectors suitable for ACSR Zebra Conductor.				
24.1	66 kV NCT(150-75/1) (11 kV)	No.			
24.2	66 kV NCT(300-150/1) (11 kV)	No.	1		
24.3	66 kV NCT(1000-500/1) (11 kV)	No.			
25	11 kV Surge Arrester	nos.	3		
26	11 kV 14 Panel Board	Set	1		
27	11 kV Capacitor Bank with 2 no. 11kV RVTs and 2 no. 11kV L&E Switch, support structure and Terminal connector	Set	2		
28	11 kV NCT with GS Support Structure				
28.1	11 kV NCT (900- 450/5)	No.			
28.2	11 kV NCT (1800- 900/5)	No.	1		
	BUS BAR MATERIALS				
29	Bolted type 220 kV single tension string assembly with 15 numbers disc insulators (E&M strength 9000 kg) per string with all hardware accessories including ball & socket connection and tension clampsets suitable for Single Zebra ACSR conductor	set	0		
30	Bolted type 220 kV single suspension string assembly with 14 numbers FOG type disc insulators (E&M strength 9000 kg) per string with all hardware accessories including ball & socket connection and tension clamp set suitable for single Zebra ACSR (string)	set	0		
31	Bolted type 220 kV single tension string assembly with 15 numbers disc insulators (E&M strength 9000 kg) per string with hardware accessories including ball & socket connection and tension clamp set suitable for twin Zebra	set	0		

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S.No.	Description	Unit	Qty. Gurgaon	Rate	Amount
32	Bolted type 220 kV single suspension string assembly with 14 numbers disc insulators (E&M strength 9000 kg) per string with all hardware accessories including ball & socket connection and tension clampsets suitable for twin Zebra ACSR conductor	set	0		
33	Bolted type 66 kV single tension string assembly with 6 numbers disc insulators (E&M strength 9000 kg) per string with all hardware accessories including ball & socket connection and tension clamp set suitable for twin Zebra ACSR (string)	set	0		
34	66 kV Bolted type single tension string assembly with 6 numbers FOG type disc insulators (E&M strength 4500 kg) per string with hardware accessories including ball & socket connection and tension clamp set suitable for single Zebra ACSR	set	48		
35	66 kV Bolted type single suspension string assembly with 5 numbers FOG type disc insulators (E&M strength 4500 kg) per string with hardware accessories including ball & socket connection and tension clamp set suitable for single Zebra ACSR	set	27		
36	66 kV Bolted type single suspension string assembly with 5 numbers FOG type disc insulators (E&M strength 4500 kg) per string with hardware accessories including ball & socket connection and suspension clamp set suitable for twin Zebra ACSR	set	-		
37	11 kV Bolted type single tension string assembly with 3 numbers FOG type disc insulators (E&M strength 9000 kg) per string with hardware accessories including ball & socket connection and suspension clamp set suitable for triple Zebra ACSR	set	6		
38	11 kV Bolted type single tension string assembly with 3 numbers FOG type disc insulators (E&M strength 9000 kg) per string with hardware accessories including ball & socket connection and suspension clamp set suitable for twin Zebra ACSR	set	-		
39	GS Stranded Shield wire, 7/9 SWG, 10.98 mm dia including tension clamp, PG clamp and clamping on structure for down conductor, fixing/bolting with earth strip etc to complete.	m	450		
40	ACSR "Zebra" conductor complete with tee connectors for droppers to equipment connections, PG clamps for busbar jumpering, Twin / triple bundle spacers etc to complete.	m	1345		
	YARD WORK INCLUDING CABLING, TRENCH & EARTHING.				
41	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.				
41.1	Control cables- PVC insulated , Copper conductor				
41.1.1	4C, 4 sq.mm	m	150		

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S.No.	Description	Unit	Qty. Gurgaon	Rate	Amount
41.1.2	5C, 4 sq.mm	m	2450		
41.1.3	10C, 4 sq.mm	m	550		
41.1.4	19C, 2.5 sq.mm	m	150		
41.1.5	14C, 2.5 sq.mm	m	600		
41.1.6	10C, 2.5 sq.mm	m	5200		
41.1.7	7C, 2.5 sq.mm	m	400		
41.1.8	5C, 2.5 sq.mm	m	4450		
41.1.9	3C, 2.5 sq.mm	m	0		
41.1.10	2C, 2.5 sq.mm	m	0		
41.1.11	4C, 6 sq.mm	m	0		
41.2	Auxiliary Power cables, XLPE / PVC insulated, Al conductor				
	PVC, armoured, FRLS, Al Cables				
41.2.1	4Cx 10 sq.mm	m	550		
41.2.2	3.5C x 25 Sq.mm	m	1150		
41.2.3	3.5C x 70 Sq.mm	m	125		
41.2.4	3.5C x 185 Sq.mm	m	50		
41.2.5	3.5C x 240 Sq.mm	m	75		
41.2.6	3.5C x 35 Sq.mm	m	0		
41.2.7	3.5C x 95 Sq.mm	m	0		
41.2.8	1C x 70 Sq.mm	m	0		
	PVC, armoured, FRLS, Cu Cables				
41.2.9	1 C x 25 Sq.mm Cu	m	0		
41.2.10	1 C x 35 Sq.mm Cu	m	0		
41.2.11	2Cx2.5 Sq.mm Cu	m	400		
41.2.12	2Cx50 Sq.mm Cu	m	0		
41.2.13	4C x 16 Sq.mm Cu	m	225		
41.2.14	2C x 25 Sq.mm Cu	m	75		
41.2.15	1Cx16 sq.mm Cu	m	350		
	XLPE, Al Cables				
42.2.16	1Cx630 sq.mm , XLPE	m	800		
42.2.17	3 C x 185 sq.mm , XLPE	m	70		
42.2.18	3 C x 50sq.mm , XLPE	m	70		

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S.No.	Description	Unit	Qty. Gurgaon	Rate	Amount
42.2.19	3 C x 300sq.mm , XLPE	m	0		
42.2.20	3.5 C, 300 sq.mm, XLPE	m	0		
43	Laying of GI conduits including excavation, backfilling, making and repairing of walls in trenches, cutting, threading, fixing of sockets/bends where required etc. complete (Payment will be made for the as erected pipe length)				
43.1	GI pipe, 50 NB	m	50		
43.2	GI Pipe, 100NB	m	75		
43.3	Marshalling Kiosks & CT / CVT Junction Boxes	nos.	4		
44	Cable trench material				
44.1	Fabrication of Cable Tray supports with 40x40x5 MS Angle by cutting and welding in 200 to 900 mm of cutlengths in trench, including two coats of red oxide primer and two coats of enamel paint.	MT	1.5		
44.2	GI trays including bends, tees, crosses with coupler plates & bolting to tray supports etc. to complete				
44.3	750 mm Wide 2.5 m long, ladder tray	no.	12		
44.4	650 mm 2.5 m long, Wide ladder tray	no.	21		
44.5	300 mm 2.5 m long, Wide ladder tray	no.	6		
44.6	250 mm 2.5 m long, Wide ladder tray	no.	90		
44.7	200 mm 2.5 m long, Wide ladder tray	no.	125		
44.8	100mm wide, 25mm high, galvanised MS sheet perforated type cable trays each 3 m long along with 8 mm dia	no.	17		
45	Earthing material- GS strip including cutting, bending, welding with 40 dia MS rod riser/earth strip, applying zinc rich paint, clamping to structure/building wall etc. to complete.				
45.1	75 x 12 mm GS Flat	m	1300		
45.2	50 x 6 mm GS Flat	m	100		
45.3	50 x 6 mm MS Flat	m	350		
46	Galvanised steel structures including hardware				
46.1	Lattice Structures for Towers and beams	MT	1.5		
47	CONTROL ROOM EQUIPMENT				
47.1	220 kV T/F C&R Panel	Set	0		
47.2	220 kV Line C&R Panel	Set	0		
47.3	220 kV SYNCHORINISING Panel	No.	0		
47.4	220 kV Bus coupler C&R Panel	No.	0		
47.5	66 Kv T/F I/C C&R PANEL	No.	0		
47.6	66 Kv T/F C&R PANEL	No.	1		
47.7	66 kV LINE C&R Panel	No.	2		
47.8	66 kV Capacitor Panel	No.	0		

Project : 66 kV SUBSTATION AT GURGAON

Customer : HARYANA VIDYUT PRASARAN NIGAM LIMITED

Bill of Quantities for ETC Works

S.No.	Description	Unit	Qty. Gurgaon	Rate	Amount
47.9	66 kV Bus coupler .C&R Panel	No.	1		
48	AUXILIARY SUPPLY - (BATTERY/CHARGER/DIST BD)				
48.1	200AH, Lead Acid, Tubular type, High discharge 220V DC Battery Bank	Set	0		
48.2	100AH, Lead Acid, Tubular type, High discharge 220V DC Battery Bank	Set	1		
48.3	220V DC, 10 A / 20 A Float and Boost Charger	Set	0		
48.4	220V DC, 5 A / 10 A Float and Boost Charger	Set	1		
48.5	220 V DCDB (1 set = 1panel)	Set	0		
48.6	220 V DCDB (1 set = 1panel)	Set	1		
48.7	415V ACDB (1 set = 1panel)	Set	1		
48.8	415V Main Lighting Distribution Board (1 set = 1 panel)	Set	1		
48.9	415V Emergency Lighting Distribution Board (1 set = 1panel)	Set	1		
TOTAL AMOUNT :					

Notes for ETC works

- 1 Loading / Unloading, handling, shifting to & from stores, proper storage, assembly, installation, pre-sommissioning test and commissioning tests are included in the scope.
- 2 MS welding - apply red lead paint then aluminium paint then bitumen after welding
- 3 GS 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.
- 6 ETC works shall be done as per **HVPNL Specification** enclosed.