



BILL OF QUANTITIES (420 kV EQUIPMENT)			
SL. NO.	ITEM DESCRIPTION	SYMBOL	QTY.
1	420KV, 2000A, 1-POLE SPRING OPERATED SF6 CIRCUIT BREAKER WITHOUT PIR SUITABLE FOR SINGLE & 3PH OPERATION.		12 NOS.
2	420KV, 2000A, 3-PH. DOUBLE BREAK ISOLATOR (ELECTRICALLY GANGED MOTOR OPERATED) WITH ONE EARTH SWITCH (MANUALLY OPERATED)		06 SET
3	420KV, 2000A, 3-PH. DOUBLE BREAK ISOLATOR (ELECTRICALLY GANGED MOTOR OPERATED) WITH TWO EARTH SWITCH (MANUALLY OPERATED)		04 SET
4	420KV, 1-PH. 5 CORE CURRENT TRANSFORMER (2000-1000-500/1A) CORE 1 TO 3, (2000-1000/1A) CORE 4 & 5		06 NOS.
5	420KV, 1-PH. 6 CORE CURRENT TRANSFORMER (2000-1000-500/1A) CORE 1 TO 6		06 NOS.
6	420KV, 4400F, 400sqm(3)/ 0.110sqm(3)/ 0.110sqm(3), 1-PH CAPACITOR VOLTAGE TRANSFORMER		06 NOS.
7	360KV, 1-PH SURGE ARRESTERS, 20KA, CLASS-4		06 NOS.
8	420KV, 2000A, 0.5mH, 1-PH WAVE TRAP		04 NOS.
9	420KV, 1-PH BUS POST INSULATOR		04 NOS.

LEGEND :-

- PRESENT SCOPE
- EXISTING
- FUTURE
- FENCE
- SHIELD WIRE
- CONNECTION BETWEEN EQPT. BUS TO MAIN BUS/ DROPPER

NOTES:-

1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED.

2. SYSTEM PARAMETERS :

SL. NO.	PARAMETER	VALUE
1	VOLTAGE (NOM. / MAX.) (KV)	400 / 420
2	FREQUENCY (Hz)	50
3	FAULT LEVEL KArms	40
4	SYSTEM EARTHING	EFFECTIVELY EARTHED
5	SHORT TIME CURRENT RATING (FOR ALL CURRENT CARRYING PARTS)	40 KA FOR 1 Sec.
6	LIGHTNING IMPULSE WITH STAND VOLTAGE (KVp)	1425
7	SWITCHING IMPULSE WITH STAND VOLTAGE (KVp)	1050
8	ONE MINUTE POWER FREQUENCY WITHSTAND VOLTAGE (DRY) (KVrms)	630
9	CREEPAGE DISTANCE (MINIMUM) (mm/kV)	31

3. CONDUCTOR DETAIL :-

SL. NOS.	DESCRIPTION	UNIT
1.	MAIN BUS	QUAD MOOSE ACSR
2.	EQUIPMENT INTERCONNECTION	4" IPS AL TUBE / TWIN MOOSE ACSR OD ±14.30 mm. ID ±9.75 mm.
3.	JUMPER / DROPPERS	TWIN MOOSE ACSR
4.	SHIELD WIRE	7/3.66 GALVANISED STEEL (10.88mm DIA)

- ALL THE BUS BARS AND STRUNG BUSES ARE PROTECTED FROM 7/3.66 GALVANISED STEEL WIRE.
- DURING ERECTION 3nos. FOUNDATION FOR WAVE TRAP IN EACH FEEDER BAY TO BE CASTED. ONLY 2nos. WAVE TRAP PER FEEDER BAY WILL BE UTILISED DURING COMMISSIONING AS PER PLCC REQUIREMENT AND AFTER NECESSARY TESTING.
- SUPPLY AND STRING OF LINE CONDUCTOR, SHIELD WIRE, INSULATOR AND HARDWARE BETWEEN DEAD END TOWER AND SUBSTATION TERMINAL GANTRY ARE NOT IN SWPL SCOPE. HOWEVER JUMPING FOR THE RESPECTIVE EQUIPMENT & SHIELDING REQUIREMENT FOR PROTECTION OF LIVE EQUIPMENT AND JUMPER SHALL BE IN SWPL SCOPE.
- FINISHED GROUND LEVEL OF TRANSFORMER YARD AND SWITCHYARD ARE RL±24.0M.

8. MINIMUM CLEARANCE TABLE (IN AIR)

SL. NOS.	DESCRIPTION	UNIT	400
1.	PHASE TO PHASE	mm.	4100
2.	PHASE TO EARTH	mm.	3500
3.	MINIMUM DISTANCE OF THE LOWEST EARTH PART OF INSULATOR SUPPORTING LIVE CONDUCTORS FROM GROUND	mm.	2440
4.	SECTION CLEARANCE	mm.	6500
5.	HIGHT OF TUBECOND. CENTER LINE OF FIRST LEVEL FROM GROUND LEVEL	mm.	8000
6.	HEIGHT OF MAIN BUS FROM PLINTH LEVEL	mm.	15500
7.	HEIGHT OF JACK BUS FROM PLINTH LEVEL	mm.	22500
8.	HEIGHT OF SHIELD WIRE FROM PLINTH LEVEL	mm.	30000
9.	PLINTH HEIGHT FROM GROUNDLEVEL	mm.	300
10.	SUB CONDUCTOR SPACING	mm.	450

9. INSULATOR DATA :

- 400KV DOUBLE TENSION STRING = 31nos. ANTI FOG TYPE DISC.
- 400KV SINGLE SUSPENSION STRING = 31nos. ANTI FOG TYPE DISC.
- CREEPAGE DISTANCE PER DISC = 430 mm.

10. WAVE TRAP LOCATIONS ARE TENTATIVE. FINAL TWO PHASES IN WHICH WT ARE TO BE ERECTED SHALL BE DECIDED, BASED ON LEAST ATTENUATION.

REFERENCE :-

- 400KV SWITCHYARD BAY EXTENSION LAYOUT PLAN DWG. NO. FCE-1117163-EL-DWG-LAY-2100-003, Rev - 1
- 400KV SWITCHYARD BAY EXTENSION SECTION ELEVATION DWG. NO. FCE-1117163-EL-DWG-LAY-2100-004, Rev - 1
- 400KV SWITCHYARD BAY EXTENSION KEY SINGLE LINE DIAGRAM DWG. NO. FCE-1117163-EL-DWG-LAY-2100-001, Rev - 1
- 400KV SWITCHYARD BAY EXTENSION SINGLE LINE DIAGRAM DWG. NO. SWPL0TPC/SLD042, Rev - 2

FICTHNER Consulting Engineers (India) Private Limited

VENDOR DOCUMENT REVIEW STATUS

Action - 1 Approved

Action - 2 Approved except as noted. Review and resubmit for final approval

Action - 3 Rejected with Comments. Review and resubmit

Action - 4 Not approved. Review and resubmit for review

Action - 5 Rejected for Information, Reference & Records

Action - 6 Rejected without review

Action - 7 Documents reviewed only against our previous comments and other reasons highlighted and identified by the Contractor/Vendor

Action - 8 Drawn

For use of documents for the general compliance with the Contract does not constitute a blanket approval of the content of documents. The Vendor / Contractor is responsible for correctness of design and details. Approval of documents does not release the Vendor / Contractor of his responsibility in carrying out the work properly and fulfilling the complete requirements of the contract, stated or implied, nor does it limit the Purchaser's rights under the Contract.

Fl Letter Ref. No. 1117163/EL/VDT/2100/003 Date: 30/10/2018

Signature

KVR

Initials