

Ref. No : FL/RNC-CERT-002

Date : February 08, 2017

TO WHOM SOEVER IT MAY CONCERN

“JOB COMPLETION CERTIFICATE FOR CONSULTANCY WORK”

This is to certify that M/S SATCON was appointed to provide basic engineering, detail engineering drawings, design calculations, procurement assistance, vendor review, contour survey and geotechnical investigation of 132/33kV, 2x50MVA outdoor switchyard substation at Tamar of JUSNL under our P.O.no. **FL/Ranchi/JSEB Tamar/2013-14/0001 dt 24.09.13.**

The job included the following work in brief:

1. Single line diagrams for 132/33kV Switchyard.
2. SLD of LV Switchgear, ACDB, DCDB and LDB.
3. Site layout plan.
4. Layout plan & elevation drawings of Switchyard, Control building and Switchyard panel rooms.
5. Cable trench and tray layout drawings of Switchyard and Control building.
6. Erection key diagrams, Clearance diagrams, bill of materials for clamps, connectors, insulators, ACSR conductors, Al. tube bus and hardwares.
7. Earthing layout drawings and BOM for Switchyard, Control building and Switchyard panel rooms.
8. Lighting layout drawings, SLD and BOM of Switchyard, Control building and DG building.
9. Lightning protection/DSLIP layout drawings and BOM of Switchyard and Control building.
10. Earthing and DSLIP calculations, Lighting calculations, Battery and battery charger sizing calculations, short circuit force calculations, sag & tension calculations.

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11. Power and control cable schedule and interconnection diagrams, cable estimates for 132kV and 33kV switchyards and LV auxiliary AC/DC system.
12. Overall foundation layout of the Switchyard.
13. Foundation details and design calculations of all switchyard equipment including transformers and gantry towers.
14. Civil drawings and design calculations for construction of control building, DG building, Store, Security Room, Cable trenches, Culverts, Roads, Oil water separator pit, Oil and water Drainage systems.
15. Overall structural layout of the Switchyard.
16. Structural GA drawings and design calculations for all lattice type support structures for switchyard equipment and bus.
17. Procurement assistance by bid evaluations and recommendation reports.
18. Vendor drawing review of all electrical equipment of the substation including Control & Protection panels, SCADA and PLC systems.
19. Topographical contour survey of the substation plot.
20. Geotechnical investigation and soil resistivity test at the substation plot.

This is to certify that M/S SATCON has completed the above works in stipulated time and to the satisfaction of all concerned.

The Grid Sub-Station has been successfully charged on 29/02/2016. I wish all success in their future endeavor.

A handwritten signature in blue ink, appearing to read 'N. K. Ojha', with a long horizontal stroke extending to the right.

(N. K. Ojha)
Vice President