

Technical Specification for the work of “Operation and maintenance of electrical installations at HWBF, Talcher”

SCOPE OF TECHNICAL SPECIFICATION:

This specification covers the “Operation and maintenance of electrical installations at HWBF, Talcher”.

Scope of work for Sl. No. - 1

The Job covers carrying out maintenance of motor or its respective feeder as per checklist. This job involves, opening of motor terminal box, clean the terminals and windings, check for tightness of terminals, Check of IR value of motor, checking of bearing, cooling fan. If any abnormal is found, like terminal overheating, terminal post damage, then rectification like end termination. Then checking of earthing and closing of motor terminal box. At the feeder, checking the fuse, contactor, overload relay, cleaning the contactor, rectify in case of overheating. replacement of control gears or rerouting/laying upto 300sq.mm Cable on tray / wall surface of length upto 10 meter/ wiring in casing capping/temporary connection upto 15 meter for motor connection (as where required) are also under the scope of contractor.

Termination and testing of cable under this item:

All the cable laid by the contractor will be terminated in breaker/isolator/bus/critical equipment at the cable termination boards as per the instructions of Engineer in charge. The cable shall be tested before laying and after laying and terminations. This test includes insulation resistance measurement (conductor to conductor and conductor to earth) and continuity measurement.

Instruments required for testing shall be arranged by Dept.

Scope of work for Sl. No. - 2

The Job covers removal cooling fan, opening of end cover, checking of bearing and replacement if required, drying of motor if required, blow out windings with air and varnish, if necessary, Check of IR, inductance and resistance of motor. Ensure proper value of insulation resistance should be minimum 1M ohms with 500 V megger

Scope of work for Sl. No. – 3

The Job covers overall maintenance of an individual 2V cell of Class-I &II stationary battery bank. The job involves cleaning of terminals, maintain electrolyte level, measuring cell voltage, specific gravity of each individual cells on monthly basis and pilot cells on weekly basis. Recording the parameters like float voltage, charging current, load current of battery charger and the parameters of UPS. In addition to above

Scope of work for Sl. No. – 4

The scope of work under this item covers execution of following activities by a supervisor in RTC shift:

- i. Receiving of Electrical Work Permit (EWP) or Safety Work Permit (SWP) or IOM for safe de-energisation / energisation of electrical equipments.
- ii. Appropriate operation of switchgears (circuit breaker/ isolator) as per EWP/SWP/IOM by following standard shutdown/isolation procedure given by EIC and subsequent operation of after surrender of permit.
- iii. Recording of electrical parameters of relay panel, power distribution panels of substation, maintaining daily activity of RTC shift in log book.
- iv. Briefing the daily status of electrical system of substation to EIC.
- v. Fault identification and rectification of electrical system of HWBF Talcher in co-ordination with plant process staff and EIC.
- vi. Receiving of spare materials in RTC shift and maintaining all spares, tools, instruments in RTC shift.
- vii. Minor maintenance works involving lugging and end termination of cables, connection / disconnection of cables.

Scope of work for Sl. No. – 5

The scope of work covers surveillance checking and testing of DG sets. No load test which involves only functional checks, running of DG sets by following standard procedure and load test of DG set which involves transfer plant load on to AMF breaker and checking as per checklist are to be done.

Scope of work for Sl. No. – 6

The Earth Tester will be provided by Dept. scope. Cleaning of pit chamber, electrode, painting, measurement of Earth Resistance & Earth Continuity will be done as per EIC's instruction, writing down the Earth Resistance value with date measurement on the cover of earth pit chamber are in the scope of contractor.

Scope of work for Sl. No. – 7

The Job covers overall quarterly cleaning of Transformer Body, on line Sampling of Transformer Oil of transformers at different location in plant and carrying out BDV test at plant substation & also handing over of oil sample to the chemical laboratory at plant for moisture testing.

The scope of above item also includes measurement IR value, Primary & Secondary Terminal tightness checking under shutdown, topping up of Oil (if necessary), Replacement of silica gel (dept. Suply) if required, Cleaning, terminal tightness of Control Circuits of OLTC and its operation of T-10 & T-11.

The shift timings of plant are for A shift: 6:00hr to 14:00hr, for B shift: 14:00hr to 22:00hr and for C shift: 22:00hr to 6:00hr **on all days** and the general shift: 9:20hr to 17:30hr **on all working days**.

For the execution of works from item no. 01 to 07, the minimum work-men deployment level shall be as under: -

(a) One Highly skilled workman in each RTC shift

(b) One skilled workman in each RTC shift and one skilled workman in General shift

The RTC shift staff will report at the starting of each shift and continue till the end of same shift. They have to carry out all activities of the RTC shift as per the guidelines given by EIC. During general shift OFF hours, all activities of the RTC shift may be executed as per direction of Shift Engineer by following the instruction of EIC or of dept. representative. RTC shift activities shall be supervised throughout the shift hours by the personnel engaged by contractor for which the personnel shall have adequate expertise in relevant field. In the absence of any workman in RTC shift, the contractor shall depute suitable substitute with prior approval of EIC.

In case contractor fails to complete the required jobs from item no. 01 to 07 within the response time of 48hrs, HWBF (Talcher) reserves the right to get it done through alternative sources at contractor's risk and cost and in case of absence of workman in any RTC shift without consent of EIC, then penalty of ₹5000/- computed on per shift basis will be deducted in bills.

Scope of work for Sl. No. – 8 to 28

- i. Prior to supply of items against 8 to 28, the contractor shall obtain approval from EIC. All items shall be of first quality and shall be supplied at plant electrical store.
- ii. The installation/ fixing/use of items are covered in the execution of item no. no. 01 to 07.
- iii. For item no. 26, the minimum Zinc coating on GI nut, bolts shall be 80 microns, confirming to IS 4759 & its latest amendment GI flat, GI nuts, bolts shall be coated with Zn 98 Zinc grade and galvanising of tray as per IS : 2629.

Scope of work for Sl. No. – 28

Earth pit shall be constructed as per IS 3043. Earth resistance of earth pit shall be written on cover with paint after measurement.

Scope of work for Sl. No. – 29

- i. The scope of work covers Clearing of grass, brush wood, trimming of trees and saplings under area covering the 132KV termination bay and along the periphery of 132KV switchyard of 1770 sqm.
- ii. It is required to remove rubbish upto a distance of 50 m outside the periphery of area cleared.
- iii. **In case the contractor fails to execute the required jobs at item no. 29 within a week, HWBF (Talcher) reserves the right to get it done through alternative sources at contractor's risk and cost or recover penalty at rate of 0.8% of total value of work done per month under the item till time of completion will be deducted in bills upto maximum 10% of total work done value.**

The jobs are briefed against all items are given above. Detail checklists are available against each item and compliance of all points is required as per the instruction of EIC.

PREFERRED MAKES OF MATERIALS

1. All materials to be supplied by the contractor shall confirm to the relevant Indian Standard and bear “ISI” marking distinctly. However, for the guidance of the Contractor some of the preferred makes of materials are as follows.
2. All materials shall be of the first quality.
3. Wherever Contractor proposes to use “equivalent” makes (i.e other than specified) the same shall be done only after prior approval from Dept. Any additional expenditure, time due to this will be on Contractor’s account and no claims will be entertained.

Inspection Schedule

Supply Items:

1. All the supply items should be supplied from manufacturer who has a valid test certificate. Before placing of order to authorized Vendor/manufacturer, approval for supply of items should be obtained from EIC.
2. For vendor approvals following documents are to be supplied /arranged.
 - The manufacturing range of entire products.
 - Approval by BIS for manufacturing.

All materials related to all schedule of items against supply should be delivered at HWBF-TALCHER electrical site stores at contractor’s own cost and risk accompanied with tax paid invoice. After inspection, if accepted, contractor may request for secured advanced in accordance with clause no. 10(B) of general condition of contract. The contractor should carry the accepted material to work spot at his own cost and risk. If material(s) is/are rejected by the Engineer-in-charge, contractor should replace the same with appropriate quality at his own cost and risk

ADDITIONAL SPECIFICATION

1. The work shall be done as per current CPWD specifications 2013 for Electrical works and Indian Electricity rules as amended from time to time.
2. The work shall be supervised by a qualified person as provided in CPWD manual.
3. The layout of the work will be given by the Engineer- in – charge or his duly authorized representative at site of work.
4. The following wiring shall be done on separate circuits.
 - a. Power plug wiring.
 - b. Light & Fan point wiring.
5. The earthing sets shall be provided in the presence of the Engineer – in – charge or his authorized representative.
6. The samples of the material i. e. fittings accessories etc. shall be got approved from the Engineer – in charge before using the same on the work. The rejected materials shall be removed immediately from the site of work.
7. The contractor will have to submit the following tests at his cost and intimate test results before final bills are paid. Nothing extra will be paid to him on this account.
 - a. Earth test.
 - b. Polarity test.
 - c. Insulation test.
8. Any damage done to the building by the contractor during the execution of work shall have to be made good at his own cost and risk. If he does not do it himself within a reasonable time determined by the department then the same work will be carried out by other means at cost and risk of contractor.
9. At the time of laying conduit pipe in the slab / wall in recess, the contractor will deep fish wire of 14 SWG wire throughout conduit pipe and will have to take special care so that the conduit is not passed

through air- conditioning ducts, grills, columns, beams etc. if any such necessity is foreseen special written permission of EIC will be obtained before such work is carried out. In case of failure the contractor will be paid on this account. The successful tenderer should recess the conduit in the walls before they are plastered and in collaboration with the building progress of the work. Any damage done will have to be made good at the cost of the contractor. The conduit pipe should be mechanically and electrically continuous.

10. The smallest size of conductor for lighting circuit shall have a nominal cross- section area not less than 1.5 sqmm. The minimum size of conductor for power wiring shall be 4 sqmm/specified.
11. 'B' type MCB shall be used for normal lighting circuits .The short circuit breaking capacity shall be as specified.
12. All the main distribution board panel, sub – main board and sub- distribution boards and their complete fittings shall be sign written clearly indication the number of distribution board, incomer, the type of load it is serving, the number of circuits contained in the type of load it is serving and the number of circuits contained in the distribution box shall be pasted/painted in a tabular form on the resource of the cover of distribution box.
13. Underground cables 1.1 KV grade should be subjected to pressure, insulation test, before and after laying the same in the ducts and in case of unsatisfactory test and cost of all repairs and replacements and all extra work of removal and relaying will have to be made good by the contractor at his cost and risk.
14. Termination of all connections on main board and sub-main distribution board will be done by crimping and nothing extra will be paid on this account.
15. There shall be no joint in the through – runs of cables.
16. All instruments shall be arranged by the contractor, No Departmental instruments will be issued
17. All cable having more than one strand should invariably crimped with dowels lugs / ferrules of appropriate size crimping tool is to be arranged by the contractor at no extra cost.

Special condition for work supervision and safety supervision

1. All the works covered in this tender shall be strictly supervised by experienced personnel.
2. All the material to be used in this contract will be supplied by the Dept. except the materials at item no. 8 to 28. Only works involved manpower, tools tackles, job conducting will be the contractor's scope.
3. Safety during work execution is of highest importance and a qualified safety supervisor shall be available all the time during currency of work.
4. Worker employed in this work may have to work during any period in 24hrs of the day.
5. For the execution of works from item no. 01 to 07, the minimum work-men deployment level shall be as under: -(a) One no. High skilled workman in each RTC shift
(b) One no. skilled workman in each RTC shift and One skilled General shift
6. All manpower supplied at (a) should have Diploma / degree in Electrical Engineering & the manpower at (b) should have electrical technician license with sufficient work experience in relevant field as desired by EIC and an Universal Account Number (UAN) for contribution of PF.
7. Muster details of the deployed manpower shall be submitted to the EIC of the work on daily basis. All person deployed by the contractor may undergo medical examination for fitness check by departmental medical officer of HWBF, Talcher as desired by EIC
8. Any additional workmen required for completion of work within stipulated time as per plant emergency shall be intimated by EIC of the work, which shall be complied as per the said response time.
9. The job is essentially "as and when required basis" and the bidder cannot claim for continuous release of jobs.

10. **Contractor is required to make payment of wages in bank account, EPF and ESI to the workmen on or before 10th of every month without fail and submit the proof of payment on or before 15th of every month. If contractor failed to comply above even for a single workman within the stipulated given time as above, than he has to pay penalty of Rs.100/- per day per workman basis up to number of days delayed. This penalty will be recovered by the department at the time of passing of Running Account/ Final Bill. If contractor fails to comply with any of the above for consecutive 03 Months (Three Months), then Department will have rights to take action as per Clause No. 3(iv) of GCC and the penalty will be in addition to any penalty on account of liquidated damages due to delay in execution of work.**
11. The person deployed for the work shall subject themselves to safety training, on successful completion of which they will be permitted to work.

Note:

1. Rates should be inclusive of GST @ 18%.
2. Contractor shall make payment to workmen at present minimum wages as per the rates fixed by Ministry of Labour & Employment, Government of India for employees employed in Construction or Maintenance of roads or runways or in building operation including laying down underground electric, wireless, radio, television, telephone, telegraph and overseas communication cables and similar other underground cabling work, electric lines water supply lines and sewerage pipe lines of 'C' Area.
3. The contractor shall comply with all the provisions of the minimum wages act, 1948, and Contract Labour (regulation and abolition) Act, 1970, amended from time to time and rules framed there under and other labour laws affecting contract labour that may be brought into force from time to time. Contractor has to ensure to pay the minimum wages to deployed workers as amended from time to time at their offer price.
4. The contractor shall ensure that persons to be deployed are not alcoholic, drug addict and not indulge in any activity prejudicial to the interest of the HWBF, Talcher. The Contractor shall ensure to get the Police Verification for all the manpower deployed by them and the contractor should ensure that the manpower deputed should bear good moral character.
5. In case of two or more contractors quoting same financial bid (i.e in case of Tie), the award of contract will be decided by lottery system. The decision in the lottery system will be final and binding.

Duration of work:

The duration of the work shall be One Year from the date of commencement of work and the work shall be carried out on all days, as and when required basis.

Department scope:

1. For HT equipments, isolation of equipments and issue of Permit to Work will be done by dept. and HT work supervision by dept. supervisor.
2. Special tools and tackles required for the work shall be provided by the department.
3. Spare parts, lubricants, fasteners, gaskets etc. shall be supplied by the department.
4. Air, water, electricity at available sources. Further extension from the available source shall be in the scope of the contractor.

Contractor's scope:

Safety shoe and helmet for the deployed man power shall be provided by the contractor.