

GENERAL NOTES FOR ETC WORKS

Following also forms the scope of ETC work in addition to above, but not limited to this.	
1	Loading / Unloading, verification, handling, shifting to & from stores, proper storage, assembly, installation, pre-commissioning test and commissioning tests (As per BHEL FQP) are included in the scope.
2	Annexure- B comprising Switchyard Installation notes, site testing & commissioning, cabling, earthing & lightning protection and erection conditions of contract shall be followed for ETC work.
3	All the drawings and documents as per Annexure-1 shall be followed for ETC work.
4	Minor Civil works such as modification of civil foundations (including grouting as per instructions of site incharge), making holes in the trenches/ control room building, grouting, fixing of trench material will be in the scope of ETC contractor.
5	Removal of gravel, if gravelling is done, for connection of Equipment earthing strip to the existing mat (wherever earthing mat is already laid), and after completion of earthing , contractor should place the gravel to bring it in original shape.
6	The quantities given in items mentioned in BOQ may undergo a change to any extent.
7	Quoted rates are deemed to be inclusive of miscellaneous works viz erection of clamps and connectors.
8	All paint , welding electrodes & other consumable by contract supplies shall be part of ETC works. Paint /welding electrode make etc. is subject to BHEL/CUSTOMER site incharge approval.
9	Equipment erection (say Isolator) means complete erection, metallics, post insulator, connectors (expansion/rigid tubular for Al.Tube / single/double/quadruple conductor), connection to the next in line (if connected to overhead busbar or droppers) including PG clamps/Tee connectors etc. This will be clear from the enclosed electrical layout drawings.
10	Equipment and tower erection would include supply and erection of miscellaneous items , viz Phase colour discs , labels painting of equipments , phase colour painting , phase marking , bay identification board , danger plates , rubber mats , device number marking on the equipment, keyboard etc as per site requirements. Supply & Mounting of phase color discs & Danger plates shall be as per IS-2551; 1982 & IS 5; 1978.
11	Welding of Aluminium tubes (supply of welding sleeve excluded) as per Annexure-C is in ETC contractor's scope and joints shall be tested by radiography. Welding and Bending machines and any other equipment will be in ETC Contractor scope.
12	Complete ETC package is under the scope of bidder. All Tools & Plant including oil filterating machine, cranes etc. required to complete the job shall be provided by bidder only.
13	Supervision of erection, Testing & commissioning of one no. Isolator of each type shall be done by supplier. Necessary manpower support, tools, tackles etc shall be in the scope of ETC contractor.
14	For specification of Fire Proof Cable Penetration system refer Annexure-D.
15	For specification of Equipment Fixing Hardware refer Annexure-E.
16	For procedure of N2 purging/ dryout of Reactor refer Annexure-F.
16	Scope for spare items/ maintenance equipment shall include Loading/ Unloading, shifting to and from stores, proper storage and handing over to customer.
17	Testing instruments (dully calibrated) have to be arranged by ETC Contractor at it's own cost (List is only provided for information , if any other instrument not mentioned below but required for sucessful completion of ETC work shall be in ETC contractor's scope) , (However OMICRON or equivalent kit for Numerical relay testing shall be arranged by BHEL.)
17.1	DCRM (OPERATIONAL ANALYZER)
17.2	Contact Resistance Measurement kit (CRM)
17.3	Capacitance and Tan delta measurement Kit
17.4	Dew Point Measurement kit
17.5	5kV/1kV Megger
17.6	Primary current Injection Kit
17.7	Secondary current/Voltgae Injection kit
17.8	1Ph Variac
17.9	Multimeters
17.10	Clamp on meter
17.11	Relay test kit
18	Erection Materials required for ETC work shall be supplied from Customer/ BHEL approved vendors.