

220KV GIS and Pothead yard of 240 MW Heo Hydro Electric Project, Arunachal Pradesh.		Schedule of Requirements
		Volume II Section-II
		SOR

Volume II

Section II

Schedule of Requirements (SOR)

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1. INTRODUCTION

Broad schedule of requirements is furnished herewith for price schedule as mentioned in Section IX, Vol-I of the Bid Documents. The schedule of requirements is indicative of requirements of GIS & GIB, Pothead yard & PLCC equipment and essential services. The scope of supplies and services shall be as per various clauses in the different volumes of this Package and the tenderer shall be responsible to ensure completeness of supplies and services even though these are not fully covered in this volume. The switchyard layout shall be designed to accommodate future extension, including space provision, for one 50 MVA reactor bay and two future outgoing feeder bays.

Any item of supply not explicitly listed but otherwise either evident by the contents of the specifications or essential for smooth operation of the equipment shall be construed as forming part of the supply and no additional charges shall be payable for the same.

If any particular items which were not explicitly listed are found to be essential, the tenderer / contractor shall affirm the inclusion of the same in the scope of supply without any extra charge on the contrary if any items reflected in this Schedule of Requirement is not required; the tenderer shall exclude such items. However, such inclusion / exclusion shall be brought out in the Schedule of Deviation with justification for consideration of the purchaser.

Tenderer shall have to quote as per list of items / equipment detailed in this section as well as taking Technical Specifications & drawings into consideration.

The schedule of requirement given below may under-go a change during detail engineering.

Mandatory special tools, tackles & slings etc. if in two different sections, the same shall be considered only once for procurement and it shall be brought-out in the schedule of deviation.

Tenderers have liberty to include / delete the items suiting to their plants & equipment but such inclusion / deletion shall be clearly reflected in schedule of deviation with proper justification subject to acceptance of the purchaser. The spare parts shall be interchangeable with and shall be of the same or higher quality than the original component.

Tenderers shall have to quote for each individual mandatory spare.

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2. SWITCHYARD EQUIPMENT

Sl.No.	Brief Description	Quantity
A.	220kV GAS INSULATED SWITCHGEAR (GIS)	
1.	245 kV, 3150A, 50kA, 3 Ph, 50Hz, Gas Insulated metal enclosed Switchgear (GIS) having double bus and with the following arrangement of bays and other details as per technical specification and enclosed SLD & Layout drawings.	
1.1	245kV, 3 Ph units, SF6 gas insulated, metal enclosed 3150A bus bars running along the length of the switchgear to interconnect the envisaged circuit breaker bay modules. Each bus bar set shall be complete with voltage transformers, safety grounding switch, bay marshalling box, support structure, SF6 gas monitoring system LCC etc. and suitable for future extension (if any) at both ends.	2 Nos.
1.2	245kV, 3150A Generator Transformer bay module complete with bus isolators & Earth switch, CB, 6 core CTs, Earth switch, Line side isolator, high speed earth switch, surge arrestor with surge counter, marshalling box, SF6 gas monitoring system for complete bay, LCC etc as required.	3 Sets
1.3	245kV, 3150A Station Service Transformer (SST) bay module complete with bus isolators & Earth switch, CB, 6 core CTs, Earth switch, Line side isolator, high speed earth switch, surge arrestor	1 Set

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	with surge counter, marshalling box, SF6 gas monitoring system for complete bay, LCC etc as required.	
1.4	A set of GIB connections between GIS module and associated three numbers single-phase step-up transformers for each Generator Transformer bay, SST, each GIB is rated for 245kV 3150A as per Layout Drawings attached with the tender document. Each set of Gas Insulated Busbars (GIB) shall be complete with required gas monitoring system, safety grounding, flexible bellows/expansion joints, bends/elbows, non-magnetic support structures etc. as required to complete the installation and for its safe working.	4 Sets
1.5	245kV, 3150A Bus coupler bay module complete with Bus isolators and earthing switches, CB, 6 core CTs, SF6 gas monitoring system, marshalling box, LCC etc. in line with Technical specification.	1 Set
1.6	245kV, 3150A Line Bay modules complete with Bus Isolators & Earthing switch, CB, 6 core CTs, earthing switch, line side isolator with high speed E/S, marshalling box, SF6 gas monitoring system, LCC etc. for complete bay.	2 Sets
1.7	245kV, a set of 3 single phase (Isolated) Gas Insulated metal enclosed 3150A Busbars (GIB) each enclosed in bus enclosures and connecting the line bay module to respective SF6 to AIS bushing as per layout drawing attached with the tender document. SF6 to AIS Bushing also forms part of this item. Each set of Gas Insulated Bus bars (GIB) shall be complete with required gas monitoring system,	2 Sets

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	safety grounding, bends/elbows, non-magnetic support structures, flexible bellows/ expansion joints (if required).	
B.	POTHEAD YARD EQUIPMENT	
	245 kV Pothead yard consisting of the following equipment	
2.1	212kV, 216kV MCOV, Class 4, 20kA rated discharge, single phase station class, ZnO surge arrestor complete with surge counter/ leakage meter, terminal connector, mounting structure etc.	6 Nos.
2.2	245 kV, 3150A, 3 phase gang operated, Disconnecter along with live side Earth switch, support insulators, terminal connectors, support structure & operating mechanism as per technical specifications	2 Sets
2.3	245kV, Bus Post Insulator with Al pipe holding clamp, mounting structure etc.	As per requirement
2.4	245kV, 1200A, 0.625mH, single phase Line Traps complete with pedestal, support insulators and mounting structure etc.	4 Sets
2.5	245kV, 4400pF, 3 core single phase line capacitive voltage transformers, ratio 220/ $\sqrt{3}$ kV- 110/ $\sqrt{3}$ V- 110/ $\sqrt{3}$ V- 110/ $\sqrt{3}$ V complete with mounting structures, marshalling box, terminal box etc. as per tender specification. Insulator shall be rated for 1050kVp BIL as per IEC.	6 Sets

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2.6	GI Structure for the termination gantries, lightening protection, earthing, busbar/al tube etc. as required	1 Lot
C.	PLCC SYSTEM	
3.1	PLCC equipment for both ends inclusive of the following	
3.2	PLCC Boards consisting of line coupling filters, Redundant PLCC system, Tele protection device, Digital Multiplexer, Data Modem, 75-ohm HF cable, space heaters, exchange, telephones etc.	1 Set

3. OTHER

a)	Special Erection/Maintenance Tools and Tackles	As Required
b)	Mandatory Spare Parts – Switchyard Equipment (as per Technical Specifications);	As specified
c)	Any Additional Spares required for 5-year trouble free operation period as recommended by Bidder over and above Mandatory Spares. List to be furnished along with price for consideration of the Employer.	As recommended (Optional)
d)	Storage, Transportation to place of erection, Erection, Testing and Commissioning of all equipment;	As required
e)	Training of Employer's Personnel	As required
f)	As-built drawings & documents for various Systems/Equipment.	As required

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g)	Part Manufacturing Drawings for relevant components;	As required
h)	Instruction Manuals for Operation & Maintenance.	As required
i)	Commissioning Procedures and Reports	As required
j)	Grounding conductor/Cable/wire along with associated accessories for grounding of all non-current carrying items of equipment, transformer neutrals, Gen neutrals etc.	As required

4. NOTES

- 1) The specifications and accompanying drawings are intended to describe and provide a finished piece of work. It is to be understood and agreed by Contractor, that the work desired shall be complete in detail, even though every item involved is not particularly mentioned. Contractor shall be required to provide all materials, equipment, labour, etc. necessary for the entire completion of the work described and shall not avail himself of any manifesting unintentional error, omission or inconsistency that may exist. The contractor shall carry out and complete the work in every respect to the satisfaction of Employer. The work shall meet the requirements laid down by the Employer/Engineer, latest local regulations of state, safety codes, fire and general insurance regulations and all other standards accepted practices.
- 2) This specification calls for execution of the Work in the most expeditious manner to ensure successful and timely commercial operation of the equipment installed. It is essential that Contractor has adequate experience for supply/erection/commissioning of similar equipment under his direct responsibility and supervision. It must have in its possession, adequate quantity of precision tools and erection/installation aids and must have on its direct roll, adequately qualified and experienced supervisory staff and craftsmen.
- 3) The contractor shall supply the equipment from reputed and experienced manufacturers.
- 4) The Bidder shall furnish the main offer as per details, for the purpose of evaluation. However, the Bidder can make an alternative, if desired, for consideration of owner along with all the required information.