

1.0.0 INTRODUCTION

1.1.0 The intent of this specification is to specify all details required by a Transmission Line Consultant for:

1.1.1 Conducting transmission line route survey, tower spotting/optimization of tower location, soil resistivity measurements and geotechnical investigation, preparing designs & drawings of transmission tower & their foundations and preparing bill of quantities for all other transmission line materials required for construction of transmission line projects being executed or likely to be executed in 2 years by BHEL on turnkey basis for NTPC, NPCIL, NHPC, SEBs and other Customers.

1.1.2 Quoting his most competitive rate for items indicated in Annexure I of this specification for entering into a rate contract with BHEL for 2 years.

2.0.0 SCOPE

2.1.0 The detailed scope of work shall be as per following:

2.1.1 Carrying out preliminary/detailed survey including route marking, profile plotting, sag template preparation, tower spotting, preliminary schedules & other details preparation.

2.1.2 Conducting detailed soil investigation at various tower locations and at other locations as necessary including mobilization of necessary equipment, providing necessary engineering supervision and technical personnel, carrying out field investigation and tests, laboratory tests, analysis and interpretation of data and results, collecting data regarding change of course of rivers from local sources, velocity, scour, etc., giving flood details of the area (past history), preparations for the type of foundations and the safe bearing capacity for different sizes of foundations, different founding strata for the various locations along the transmission lines.

2.1.3 Performing soil resistivity measurements.

2.1.4 Preparation & submission of design documents of towers and their foundations, fabrication drawings including stub, template and tower extension drawings, civil foundation drawings, bill of materials of all members/hardwares, etc. The detailed design & drawing work shall include, but not limited to:

- Verification of all data, criteria and information contained in the contract documents.
- Generation of all data, criteria and information required for the completion of work including liaison and interfaces with BHEL/Customer.
- Analysis and design on standard software like STAADpro, etc., and/or in house generated EXCEL or other programs by qualified and experienced personnel. All calculations shall be prepared in a neat, sequential, comprehensive form and properly checked to ensure their correctness and completeness.
- Preparation of construction drawings with sufficient detailing so that no difficulty is faced by site engineers during execution.

- 2.1.5 Preparation & submission of bill of materials for all transmission line materials like earth wires, earth wire accessories, conductors, conductor accessories, hardware fittings, insulators, etc.
- 2.1.6 Getting all the works mentioned above approved by BHEL/Owner.
- 2.1.7 Visit to Site/BHEL's/Customer's office/Supplier's Works.
 - The Transmission Line Consultant shall depute his engineer(s) to Site or BHEL's/Customer's office for any clarification etc. as required by BHEL/Customer. He shall also depute his engineer(s) to supplier's works for witnessing & approving proto-assembly/proto-testing of towers.

3.0.0 SPECIFIC TECHNICAL REQUIREMENTS

- 3.1.0 The specific technical requirements shall be as per project specific input provided by BHEL from time to time after award of work.
- 3.2.0 The Transmission Line Consultant shall interact closely with BHEL engineering group for any input/clarification and finalise details across the table. There may be certain cases when on account of revision or change of inputs certain design/ drawing may be required to be redone. ***No claim on account of this shall be entertained.*** Only suitable time extension shall be granted on account of above.

4.0.0 SCHEDULE/BOQ OF ITEMS

- 4.1.0 The Schedule/BOQ of Items shall be as per Annexure I. The Transmission Line Consultant is required to quote his most competitive rate for these items.

5.0.0 DOCUMENTATION

- 5.1.0 All design documents including computer outputs shall be neatly typed, produced on A4 size paper and shall have a 'Cover Sheet' (To be provided later).
- 5.1.2 All drawings shall be prepared in Autocad as per standard sizes (viz. A0, A1, A2, A3 & A4) and shall have a 'Title Block' (To be provided later).
- 5.1.3 The number of copies of design documents & drawings required to be submitted shall be as follows:
 - A. *At each stage of approval.*
 - i) Reports/Design Documents 04 sets.
 - ii) Drawings 04 sets.
 - B. *After Final approval.*
 - i) Reports/Design Documents 04 sets.
 - ii) Drawings 04 sets.
 - iii) CDs (containing reports, design & drawings) 01 set.

6.0.0 TIME SCHEDULE:

6.1.0 The successful bidder shall be issued project specific work orders including project specific BOQ and time of completion during the rate contract period.
After receipt of each such project specific work orders, a detailed schedule giving list of documents and drawings and their submission dates shall be prepared jointly by BHEL & Transmission Line Consultant based on concurrent working meeting the construction schedule. This detailed schedule shall be the time schedule of the contract.

7.0.0 PAYMENT SCHEDULE:

| <u>S.No.</u> | <u>Condition</u> | <u>Payment</u> |
|--|--|-----------------------|
| Item Nos A – 1, 2 & 3 of Sch./BOQ of Items (AnnexureI) Item Nos A – 1, 2, 3, 4, 5, 6 & 7 of Sch./BOQ of Items (AnnexureI) | | |
| (a) | On approval of reports/ documents/drawings (at least Cat 2 i.e approved with comments) | 95% of quoted rate |
| (b) | On submission of documents as per 5.1.3 B. i), ii) & iii) | 5% of quoted rate. |
| Item No 8 of Sch./BOQ of Items (AnnexureI) | | |
| (e) | On submission of claim after completion of visit. | 100 % of quoted rate. |