

SECTION -1

1.0.0 INTRODUCTION

- 1.1.0 The intent of this specification is to specify all details required by a Transmission Line Survey and Geo-technical investigation for:
- 1.1.1 Conducting transmission line route survey, tower spotting/optimization of tower location, soil resistivity measurements and geotechnical investigation, required for construction of transmission line project being executed by BHEL on turnkey basis for NTPC/MPPTCL
- 1.1.2 Quoting his most competitive rate for items indicated in Annexure I of this specification.

2.0.0 SCOPE

- 2.1.0 The detailed scope of work shall be as per following:
- 2.1.1 Carrying out preliminary/walkover survey using GPS and Topo sheets for three alternative routes, suggesting best optimum route, identifying /fixing points for crossings such as river, railway, power line, telecom, road forest, fixing of angle points & submission of preliminary survey report, profile plotting, sag template preparation, tower spotting, preliminary schedules & other details preparation.
- 2.1.2 Detailed survey including modification in preliminary route alignment, adjustment in section details to achieve better average span, profiling, collecting actual field data along the selected route (enumeration of salient land features like crossing of rivers, nalla, road, railway lines, other transmission / distribution line, nearby habitations, forest land, proximity to airport, etc.), tower spotting & providing tower schedule (**showing nos and type of towers**)with detailed land schedule (Plot No/Khata No, etc) for each tower location, estimation of tower quantities with extension and special tower requirement, sag template, marking on required map and topographical map, tree enumeration, etc. & submission of detailed survey report.
- 2.1.3 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.
- 2.1.4 Performing soil resistivity measurements as per customer specification.

- 2.1.5 Preparation of Bill of quantity in format attached in Annexure-I.
- 2.1.6 Design calculations, drawings & documents are required to be furnished as listed in Annexure-II after successful award of order,
- 2.1.7 Getting all the works mentioned above approved by BHEL/Customer.
- 2.1.8 Visit to Site/BHEL's/Customer's office/Supplier's Works as required for completion of work.
 - The Transmission Line Surveyor 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 site for check surveys also.

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 Surveyor shall interact closely with BHEL engineering group for any input/clarification and finalize 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.
- 3.3.0 The bidder / representatives of bidder may be required to make several visits to site / BHEL office / customer's office depending upon the project requirements. ***No extra claim on account of these visits shall be entertained.***

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 COMPLETION SCHEDULE:

The work under this scope of work must be completed within 3 months after placement of order except check survey.

The check survey shall be done along with civil construction agency after finalization of Civil construction agency by BHEL and intimation by Site in charge. Check survey should be completed within one month.

7.0.0 PAYMENT SCHEDULE:

<u>S.No.</u>	<u>Condition</u>	<u>Payment</u>
(1)	Item no. 1a, 2a, 3a, 3b, After conducting survey/ investigation work, report preparation, submission and approval of reports/ documents/ drawings i) Cat 2 i.e approved with comments) ii) Cat 1 i.e approved	80% of quoted rates Balance 10%
(2)	After completion of activities under scope of works including check survey and BOM as per attached format in Annexure-II, approval of all drawings/documents in Cat-1, submission of all drg/documents in required no. of sets.	Remaining 10% of quoted rates