

| ETC of 400kV Transmission Line at Kirnapur (Balaghat) of MPPTCL project |                                                                                                                                                                                                                                                                                                                                                                      |             |                 |                  |               |
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| <b>Project : Kirnapur( Balaghat)</b>                                    |                                                                                                                                                                                                                                                                                                                                                                      |             |                 |                  |               |
| <b>Customer : MPPTCL</b>                                                |                                                                                                                                                                                                                                                                                                                                                                      |             |                 |                  |               |
| <b>Notes</b>                                                            |                                                                                                                                                                                                                                                                                                                                                                      |             |                 |                  |               |
|                                                                         | The scope in brief is as follows :                                                                                                                                                                                                                                                                                                                                   |             |                 |                  |               |
| 1                                                                       | The scope involves storage, unloading & erection of 400kV S/C (single Circuit) line for LILO of 400kV Seoni -Bhilai lines at Balaghat consisting twin Moose ACSR conductor per phase . The approximate distance between existing lines and 400kV switchyard is 1800 m (approx.). i.e. total route length of the double circuit line to be constructed by the bidder. |             |                 |                  |               |
| 2                                                                       | The quantities mentioned in the BOQ are tentative and may vary to any extent for individual items.                                                                                                                                                                                                                                                                   |             |                 |                  |               |
|                                                                         | Any material/services required for successful completion of the project but not covered in the BOQ shall be deemed to be included in the scope of contractor without any cost implications to BHEL. <b><u>The bidder is advised to visits MPPTCL site before submission of bid.</u></b>                                                                              |             |                 |                  |               |
| 3                                                                       | Make of items to be supplied/used under this contract shall be subject to acceptance by customer/BHEL at contract stage.                                                                                                                                                                                                                                             |             |                 |                  |               |
| 4                                                                       | Unloading & Storage of all items are in the scope of bidder.                                                                                                                                                                                                                                                                                                         |             |                 |                  |               |
| 5                                                                       | Handling, shifting to & from stores at MPPTCL site & proper storage are also included in the scope of the bidder.                                                                                                                                                                                                                                                    |             |                 |                  |               |
| 6                                                                       | Bidder may note that any damage of material at site during erection work shall be avoided. Further, owner (MPPTCL/BHEL) shall not pay any compensation for any loss or damage to the properties during work of execution of transmission line job or for tree cutting due to bidder's work.                                                                          |             |                 |                  |               |
| <b>A</b>                                                                | <b>ETC BOQ FOR 400kV TRANSMISSION LINES</b>                                                                                                                                                                                                                                                                                                                          |             |                 |                  |               |
| <b>S. No.</b>                                                           | <b>Item / Work description</b>                                                                                                                                                                                                                                                                                                                                       | <b>Unit</b> | <b>Quantity</b> | <b>Unit Rate</b> | <b>Amount</b> |
| <b>1</b>                                                                | <b>Supply and erection of tower accessories and earthing material</b>                                                                                                                                                                                                                                                                                                |             |                 |                  |               |
| <b>1.1</b>                                                              | <b>Tower accessories</b>                                                                                                                                                                                                                                                                                                                                             |             |                 |                  |               |
| 1.1.1                                                                   | Danger Plate                                                                                                                                                                                                                                                                                                                                                         | Nos.        | 6               |                  |               |
| 1.1.2                                                                   | Number Plate                                                                                                                                                                                                                                                                                                                                                         | Nos.        | 6               |                  |               |
| 1.1.3                                                                   | Phase Plate (Set of three)                                                                                                                                                                                                                                                                                                                                           | Sets        | 12              |                  |               |
| 1.1.4                                                                   | Circuit Plate (Set of two)                                                                                                                                                                                                                                                                                                                                           | Sets        | 6               |                  |               |
| 1.1.5                                                                   | Anti-Climbing Device including Barbed wire                                                                                                                                                                                                                                                                                                                           | Sets        | 6               |                  |               |
| <b>1.2</b>                                                              | <b>Earthing of towers( see note 9)</b>                                                                                                                                                                                                                                                                                                                               |             |                 |                  |               |
| 1.2.1                                                                   | Earthing set with accessories - 4 sets per tower as per cl. No. 2.13 of section-2                                                                                                                                                                                                                                                                                    | Sets        | 6               |                  |               |
| 1.2.2                                                                   | Counterpoise with its accessories (1 set for 1 tower consist 60 m long galvanized steel stranded wire 7/4.0mm with required accessories as per cl. No. 7.15.2 of section-2 )                                                                                                                                                                                         | Sets        | 2               |                  |               |
| <b>2</b>                                                                | <b>ETC (Erection , Testing and Commissioning )</b>                                                                                                                                                                                                                                                                                                                   |             |                 |                  |               |
| 2.1                                                                     | Erection of various type of tower angles , tower parts and tower body / leg (equal & unequal) extensions (complete) including bolts and nuts, step bolts, hangers, D-Shackles, tower accessories etc., including welding and supply and application of zinc rich paint for both Tension and Suspension type towers Double Circuit Transmission Line                  | MT          | 105             |                  |               |
| 2.2                                                                     | ACSR Moose Conductor complete with rigid/flexible spacers, pre formed armour rod, Mid span compression joint, Repair sleeves , vibration dampers , Tee clamp, central hanger anchor shackle, etc. to complete (for entire route length of lines )                                                                                                                    | kM          | 24              |                  |               |
| 2.3                                                                     | Shield Wires(7/3.66) with Tension Clamps, Down lead clamp,Suspension clamp, PG clamp, flexible copper bond , GI earth bond , Mid span compression joint, Repair sleeves, vibration dampers , etc to complete for entire route length of lines                                                                                                                        | m           | 4               |                  |               |
| 2.4                                                                     | Double tension string hardware with 2X24 nos. 160 kN disc insulators in each string, etc. to complete suitable for twin moose conductor.                                                                                                                                                                                                                             | Nos         | 30              |                  |               |
| 2.5                                                                     | single tension string hardware with 1X24 nos. 160 kN disc insulators in each string, etc. to complete suitable for twin moose conductor.                                                                                                                                                                                                                             | Nos         | 3               |                  |               |
| 2.6                                                                     | Double suspension string hardware with 2X23 nos. 120 kN disc insulators in each string, etc. to complete suitable for twin moose conductor.                                                                                                                                                                                                                          | Nos         | 3               |                  |               |
| 2.7                                                                     | Single suspension string hardware for Pilot string with 1X23 nos. 120 kN disc insulators in each string suitable for twin moose conductor                                                                                                                                                                                                                            | Nos         | 22              |                  |               |
| <b>3</b>                                                                | <b>Dismantaling of existing Transmission lines material and shifting / handing over to customer</b>                                                                                                                                                                                                                                                                  |             |                 |                  |               |

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| <b>Project : Kirnapur( Balaghat)</b>                                    |                                                                                                                                                                                                                                                                                                                                                                                   |      |      |  |  |
| <b>Customer : MPPTCL</b>                                                |                                                                                                                                                                                                                                                                                                                                                                                   |      |      |  |  |
| 3.1                                                                     | Transmission line tower                                                                                                                                                                                                                                                                                                                                                           | Nos. | 2    |  |  |
| 3.2                                                                     | ACSR Moose Conductor along with hardware and its accessories                                                                                                                                                                                                                                                                                                                      | m    | 2100 |  |  |
| 3.3                                                                     | Shield wire along with hardware and its accessories                                                                                                                                                                                                                                                                                                                               | m    | 350  |  |  |
|                                                                         | <b>Total Amount (Rs.)</b>                                                                                                                                                                                                                                                                                                                                                         |      |      |  |  |
| <b>Notes :</b>                                                          |                                                                                                                                                                                                                                                                                                                                                                                   |      |      |  |  |
| 1                                                                       | MS welding - apply red oxide lead paint then aluminium paint then bitumen after welding.                                                                                                                                                                                                                                                                                          |      |      |  |  |
| 2                                                                       | GI welding - apply 2 coats of cold galvanising anti corrosive paint after welding.                                                                                                                                                                                                                                                                                                |      |      |  |  |
| 3                                                                       | 10% welding joints in earthing shall be tested for dye penetration test.                                                                                                                                                                                                                                                                                                          |      |      |  |  |
| 4                                                                       | Equipment labels to be painted as per requirement.                                                                                                                                                                                                                                                                                                                                |      |      |  |  |
| 5                                                                       | Quoted rates are deemed to be inclusive of miscellaneous works, viz.. erection of clamps and connectors, phase colour discs etc.                                                                                                                                                                                                                                                  |      |      |  |  |
| 6                                                                       | Right of way is not in scope but tree cutting (if any) is in the scope of bidder.                                                                                                                                                                                                                                                                                                 |      |      |  |  |
| 7                                                                       | All associated items, though specifically not mentioned but required for safe and satisfactory execution and commissioning of transmission line will also be treated as included and same shall be supplied, ETC to be done at no extra cost to BHEL/ MPPTCL.                                                                                                                     |      |      |  |  |
| 8                                                                       | Supply of transmission line tower material , transmission line stringing hardware, disc insulators, ACSR Moose conductor, Earth wire and accessories of earth wire/conductor are in BHEL scope. However, shifting of material from BHEL stores to tower & erection of same is in bidder's scope.                                                                                  |      |      |  |  |
| 9                                                                       | Complete earthing of all towers shall be as per approved drawings (Scope includes complete work including testing to show that the tower resistance meets the acceptable limits.). It may be noted that four sets of earthing material is required per tower . All required earthing material per set as per cl. no. 2.13 of section-2 shall be included in ETC contractor scope. |      |      |  |  |
| 10                                                                      | <b>For scope of supply items in ETC contractor scope following should be followed .</b><br>(1) The approval of makes shall be obtained from BHEL/Customer .<br>(2) Drawings and MQP shall be submitted for approval in line with specification and relevant IS.<br>(3) Quality -Inspection & dispatch clearance shall be given by BHEL/Customer.                                  |      |      |  |  |