

OUT SOURCING FOR RIGGING AND OTHER WORKS RELATED TO TOWER TESTING AT TOWER TESTING STATION(TTS), MED, CPRI, BENGALURU

I ELIGIBILITY CRITERIA:

The Firm / agency shall have experience in all the works listed below with respect to transmission line towers, similar structures, line accessories etc., for atleast 10 projects / towers either in tower testing station or at site. The firm shall have experience in stringing of conductors / rigging works at any test station or at site. The proof of similar works carried out shall be produced with satisfactory completion certificate from the agency for whom the works were executed.

II. SCOPE OF WORK:

A. Brief description of Works:

The transmission towers are tested for their mechanical strength. The tower parts as received are assembled and erected/mounted on movable footings on the test bed. The appropriate loading arrangements are made & attached to the test tower. These attachments are pre-tensioned / rigged to the load application winches in all the three directions i.e., vertical, transverse and longitudinal.

The following activities are to be carried out as test arrangements:

1. Movable footing movement, tightening & loosening of bolts for each test tower.
2. Preparation of stubs, stub setting/welding and stub cutting, grinding after test.
3. Pulley mounting on anchor structures (Transverse & Longitudinal).
4. Wire rope Sorting / laying / changing on Anchor structures (Transverse & Longitudinal).
5. Vertical loading (wire rope) arrangements.
6. Calibration of load cells.
7. Pre tensioning / Rigging of wire ropes at transverse and longitudinal directions with load cells and with other load multiplication arrangements if any. Switch gear initializing / monitoring of electrical winches during testing and de-rigging / rigging if any as per the test requirement. After completion of test, de-rigging / detachment of wire ropes from winches, removal of loadcells / cables / removal of Bull dog grips / placing of shackles / hardwares / pulleys to their stock yard / respective places.
8. Testing of hardware / insulator (in door) on Universal Testing Machine (UTM).
9. Testing of hardware / insulators (out door) at Test rig / Hydraulic ram.
10. As part of scope of work (Sl. No. II B 13) wherever applicable general up keep maintenance of Lab / assisting maintenance of load cells, instrument cables, electrical winches, UTM, diesel generator set, drilling/grinding machines, hydraulic ram/control, hand tools/machines etc., are to be carried out as part of day to day routines.

B. Scope of Work (Under Subject Tender):

To provide technical service at Mechanical Engineering Division on a day to day basis for carrying out the work as specified below.

1. Movable footing foundation bolts nuts loosening and tightening using heavy duty spanner (for the four footings) after shifting the footings to the required distance based on Base width of test tower.
 - a. **48 - (12x4) Bolt connection**
 - b. **24 - (6x4) Bolt connection**
 - c. **16 - (4x4) Bolt connection**

Arrangement for shear arresting mechanism for the four footings and other related additional works if any for shear/up lift arrestor. Requisite tools will be provided by CPRI.

Quantity: Average 40 towers per year.

2. Stub setting involving works like grinding of footing. Marking of diagonals & base width, centering, plumb location on diagonals on footings. As per the stub setting details provided by the test engineer, stubs to be marked for the slope cutting and rib height and reference for measurement. Cutting of stubs correct to the slope. Cutting of ribs correct to the size based on stub size. Mounting of stubs on base width markings and setting of stubs correct to slope and square. Checking the leveling of stubs and correcting the length of stub if required. Welding of stubs and ribs as per the welding thickness required as directed by Test Engineer based on the stub size. Cutting of stubs and ribs after dismantling of test tower. Cleaning of welding machines, crimping of welding cables if required, replacement of cutting set hoses, nozzles, regulator etc., whenever necessary. Cleaning of grinding machines & minor electrical works etc.,

Quantity:

- a) **Stub angles upto L130x130x12mm.**
- b) **Stub angles above L130x130x12mm & upto L200x200x20mm.**
- c) **Stub angles above L200x200x20mm or Star Leg combinations (of any size).**

Quantity: Average 40 towers per year.

B. Scope of Work (Under Subject Tender) contd.,:

3. Fabrication of tower parts for the test tower in case of need arises during erection of test tower and premature failure of test tower requiring modification / re fabrication of tower parts involves removal of raw material, marking, punching, drilling, cutting, grinding, bending etc., (all the scarp material shall be sent to scrap yard or the designated place after work) as per the drawing supplied/directed by test engineer. (All the required machines and consumables will be provided by CPRI).

All the tools & equipment used for the above work shall be cleaned and returned back to stores.

The quantity / weight has to be clearly entered and endorsed by test engineer. The payment will be only labour charges.

Quantity: Average 2 MT per year.

4. Arranging the pulley mounting assembly of weight approx 150kg to 175kg each on the two anchor structures according to the heights (1m to 45m) of the pull of points (POP) of test tower under the supervision of CPRI staff. The pulley mounting assembly consists of side plates, shaft and pulley (single / double).

Quantity of pulley mountings: from 5 to 10 per tower.

5. Arranging the required fibre core wire ropes of size ranging upto 25mm dia. over the pulley mounting on anchor towers (at height 1m to 45m).

Quantity of fibre core wire ropes: from 5 to 20 per tower.

6. Arranging the required fibre core wire ropes of size ranging above 30mm over the pulley mounting on anchor towers (at height 1m to 45m).

Quantity of fibre core wire ropes: from 5 to 15 per tower.

7. Preparation / Sorting / arranging / making end connections / slings of different lengths of wire ropes of size 16mm to 32mm diameter & accessories like spacers, shifting of load cells & cables from control room to test bed, Load beam arrangements (if any), connecting the load cells, "Tare / Zero" balancing and connecting / Rigging Vertical Winches.

Quantity:

a) S/C tower, 8 to 10 nos. per tower.

b) D/C tower, 10 to 20 nos. per tower.

c) M/C tower, 20 to 30 nos. per tower.

B. Scope of Work (Under Subject Tender) contd.:

8. Pre / Post test verification of load cells required for test tower, involving works like arranging / sorting of load cells, mounting of load cells on UTM, channel changing, balancing of load cell and corresponding load indicator with appropriate instrument cable, dismantling them, labeling them & stacking at appropriate place. Cleaning of UTM / Fixtures / Control Panel / upkeep of UTM room etc., immediately after work.

Quantity:

a) S/C tower, 8 to 15 nos. of load cells & cables per tower.

b) D/C tower, 15 to 25 nos. of load cells & cables per tower.

c) M/C tower, 25 to 45 nos. of load cells & cables per tower.

9. Rigging / pre-tensioning works of fibre core wire ropes above 25 mm to 40 mm diameter:

Shifting of load cells and cables from control room, "Zero/Tare" balancing and attaching them on to the respective pull of points at sheave pulley end along with arrangements for mechanical advantages and accessories like pulleys/shackles if any.

Rigging / pre-tensioning the same to the respective electrical winches with mechanical advantage if any (at transverse and longitudinal winch house) including making end connections (of bull dog grips if required – as majority of ropes are loading eye ferruled), monitoring of winches during testing, unwinding the winches to initial position and de-rigging/detaching fibre core wire ropes/arrangements of mechanical advantages (if any) and accessories like pulleys/shackles if any from the winches (after testing) and removing the end connections and stacking the hardware's/accessories at respective places after test.

Cleaning of all the winches / greasing & gear oil top up if required, control panel etc., immediately after every tower testing.

In case of power failure changing over to diesel generator & vice versa. Top up of distilled water, diesel (supplied by CPRI) etc., before every tower testing pre / dry run of D.G.set and dusting, cleaning etc.,

In the course of testing if it becomes necessary, rigging / de-rigging, changing of load cells and cables, trip set adjustment in panel / starters and to attend any minor electrical, brake adjustment, assisting of changing of brake coil of winches (if required) etc., has to be carried out. Removing the load cells and cables after the test and shifting them back to the control room.

Quantity:

wire ropes upto 25 mm diameter varies from 5 to 30 nos. per tower.

wire ropes from 25 mm to 40 mm diameter varies from 5 to 15 nos. per tower.

B. Scope of Work (Under Subject Tender) contd.:

10. During premature failure of tower necessitating de-rigging of all the ropes & rigging back after modification / re-erection of tower with associated works.

Quantity:

wire ropes upto 25 mm diameter varies from 5 to 30 nos. per tower.

wire ropes from 25 to 40 mm diameter varies from 5 to 15 nos. per tower.

11. Testing of insulators/hardware or other mechanical tests using Universal Testing Machine (UTM) including works like unloading of samples, placing at test site, mounting of test samples & fixtures if any/load cells on UTM, dismantling of test samples & fixtures if any /load cells after test and stacking at stock yard/disposing to scrap yard accordingly.

Quantity: Duration 4 hours per test, 100 tests per Year.

12. Support for Testing/Field works comprising pre/post test arrangements like movement of footing (if required) & tightening them, arranging steel wire ropes/slings, mounting of samples / assembly of samples, loading arrangements, welding & cutting for anchorage, fabrication of fixtures, assisting calibration of load cell(s), shifting of load cells and cables, "Zero/Tare" balancing, etc., assisting during testing, dismantling of test arrangements after testing & shifting them back to stock yard / stores / control room, dismantling of test samples & stacking/disposing of tested samples for tests carried out on insulators, insulator strings, hard wares & accessories using Hydraulic ram/ Test-rig. Cleaning of Hydraulic power pack, hydraulic ram, minor electrical (related works), control panel, hoses, ram etc., shall be done before and after completion work at Tower Testing Station. Rigging of conductors with insulators at Vibration laboratory / wake Simulation Laboratory.

Quantity: Duration 4 to 8 hours per test, Average 10 tests per Year

B. Scope of Work (Under Subject Tender) contd.,:

13. Maintenance works like periodical, preventive maintenance / general up keep of maintenance of lab. Machines & Equipments, Instruments like loadcells / load indicators, instrument cables, electrical winches, UTM, diesel generator set, drilling/grinding machines, hydraulic ram/control, welding machines, hand tools etc. (All the required machines and consumables will be provided by CPRI).

Periodicity: As and when required.

a) UTM & accessories: Periodical maintenance of UTM and its accessories/fixtures and Cleaning, Greasing/de-greasing of screw shafts, Check oil level and fill up to the mark in oil tank. General housekeeping etc., minor repair works such as replacement of power connectors/ contactors etc.

Quantity: 1 Machine with accessories.

b) Hydraulic ram/control: Periodical maintenance of ram and piston check and Cleaning, Greasing/de-greasing, Check oil level and fill up to the mark in oil tank. Assisting minor repair works such as replacement of power connectors/ contactors etc.

Quantity: 1 Machine each with accessories

OUT SOURCING FOR RIGGING AND OTHER WORKS RELATED TO TOWER TESTING AT TOWER TESTING STATION MED, CPRI, BENGALURU

I. TERMS AND CONDITIONS:

1. The contractor shall carry out the work by deploying experienced manpower for a span of two years from the date of placing order. CPRI reserves the right to extend the work by one more year at the same rates, terms and conditions. The normal working hour is 9.00 a.m to 5.30 p.m (5 days a week).

The assigned works are time bound activities and the test schedules are fixed. Hence completion of subject scope of work within the stipulated period is the responsibility of the contractor.

The contractor shall ensure at least 10 workmen during normal working hours.

The deployed personnel should be prepared to work during extended hours and also on Saturdays / Sundays & Holidays with CPRI's personnel as and when required under exigencies & peak activity periods.

Experienced fitters, qualified welders shall be posted to meet the requirement of scope of work for stub setting work of test towers.

3. The scope of work consists of

RIGGING AND OTHER WORKS RELATED TO TOWER TESTING AT TTS AND FOR TESTING ACTIVITIES AT VIBRATION LABORATORY of MED as detailed in scope of work for which the contractor has to offer his rates item wise as detailed in Annexure – III (Page 01 to 02) 'Schedule of Rates'. It is also to inform that, all the items may not be operated at a time for a given tower/tests. The contractor has to consider this requirement and quote accordingly.

4. If the work of the contractor is found not satisfactory, CPRI reserves the right to cancel the contract/work order at any time without assigning any reasons what so ever. However, seven days notice will be given to the contractor. No compensation shall be payable to the contractor in this regard. The contractor cannot withdraw from the contract without adequately compensating the purchaser. The amount of compensation in such cases shall be decided mutually but limited to 20% of the outstanding contract value, as on the date of closure of contract.

I. TERMS AND CONDITIONS (contd.):

5. The contract personnel will be engaged normally only as and when the necessity arises. i.e., continuous testing work is not assured (However, past two years there is no break in the work and the same is expected to continue).

6. **Tools & Plants:** The contractor shall supply and provide appropriate personnel protective equipments (PPE). The PPE's shall be of ISI mark. No worker will be allowed to work without adequate PPE.

7. **Safety & Insurance:**

The contractor shall at all times indemnify CPRI any claim which may be made under the Workmen's Compensation Act, as applicable and or against any claim which might be made under any other act / law in force from time to time.

The contractor is solely responsible for any accidents / injuries to their personnel during handling of tower parts / materials / test equipments / arrangements during the process of execution of work/testing work. The necessary Insurance mentioning the scope and name of the work place (CPRI) needs to be taken covering the personnel deployed by the contractor. The copy of the policy has to be submitted to CPRI.

The contractor shall give an undertaking in the required format for the provision of safety measures and insurance for his personnel and its renewal as and when required and indemnifying CPRI any claim which may be under the Workmen's Compensation Act in force or against any claim which might be made under any other act / law in force from time to time

The contractor shall at all times abide by the provisions of the contract labours regulations act as amended from time to time and shall keep CPRI posted with such information as may be required in this regard to enable CPRI comply with any statutory requirement under the said act.

8. **Income Tax / GST :**

Income tax at source will be recovered as per relevant rules and necessary certificate will be given by Accounts Division of CPRI. The offer should carry contractor's PAN No. and GST Registration Number. GST shall be paid as applicable from time to time.

9. The contractor is held responsible for any theft / pilferage of CPRI material / equipments by the personnel of contractor directly / indirectly. The commensurate amount as decided by CPRI in case of any such events / incidents will be recovered from the contractors' bill(s).

I. TERMS AND CONDITIONS (contd.):

10. TERMS OF PAYMENT:

Monthly bills or after completion of two test towers, whichever is later or as directed by Joint Director (MED).

11. The attendance register for the workmen shall be maintained by the contractor.

12.0 General Instructions:

12.1 The Contractor shall remit 10% of the order value as Security Deposit or the Institute shall recover 10% of the payment made each time towards security deposit.

12.2 The deployed personal shall enter place of their work with proper identity/uniform with PPE's like helmets, belts (full body harness), shoes, badges issued by the contractor and movement of the personal employed by the contractor shall be restricted to the place of their work only.

12.3 The contractor shall submit the name and address of the deployed personnel with two copies of passport size photographs for verification by security.

12.4 The Contractor shall employ only such personnel who are skilled and experienced in the trade and the Institute shall be at liberty to object to or require the Contractor to remove from the works and person employed by the Contractor from the execution of works, who, in the opinion of the Institute, misconducts himself or is incompetent or negligent in the proper performance of his duties and all such persons, shall not again be employed upon the works without the permission of CPRI. The personnel of the contractor who are assigned specific jobs will not be permitted to leave before completion of such jobs.

12.5 The Contractor shall comply with all the provisions of the minimum wages Act 1948 (latest version), Contract labour (regulation and abolition) Act, 1970 (latest version) and rules framed there under and also other labour laws affecting Contractor labour that may be brought into force from time to time. With reference to above, the contractor shall furnish the details of supporting documents mandatorily once in three months to CPRI.

12.6 The Contractor shall not assign or sublet the work without the written approval of the Institute.

I. TERMS AND CONDITIONS (contd.):

- 12.7 If the Contractor or his working personnel or servants shall break, deface, injure or destroy any part of Facility/Equipment/Instrument Including building in which they may be working or any buildings, cables and electric wires, contiguous to the premises on which the work or any part of it, is being executed if and or if nay damage shall happened to the work while in progress from any cause what-so-ever or if any defects or other faults appear in the work executed within the Contract period, after a certificate final or otherwise of its completion shall have been given by the concerned Divisional Head as aforesaid arising out of defective or improper workmanship, the Contractor shall after receipt of notice in writing in that behalf make the same good at his own expense, or in default the Institute may cause the same to be made good by any other agency and deduct the expense (or which the certificate of the Divisional Head concerned shall be final) from any sums that may then or at any time thereafter become due to the Contractor from his security deposit of the proceeds of sale thereof a sufficient portion thereof.
- 12.8 The prospective bidders shall visit the work place (before offering the rates) during office hours to have the 1st hand information about the nature and magnitude of work and for better understanding of the scope of work in detail and Tender schedules.
- 12.9 CPRI will not provide any shelter for the workmen. The contractor has to make his own arrangement for accommodation.
- 12.10 General maintenance and up keeping of all the equipment / instruments / tools/ machine used in testing/ calibration work including test rig/bay are to be kept clean & tidy at all times.
- 12.11 Due to urgency/emergency, if any test required to be taken up on priority, required laborers (additional) shall be provided with in a short notice of intimation of time to the contractor.
- 12.12 In the exigencies of any miscellaneous work like small fabrication/welding during testing work without any extra cost shall also be accommodated.
- 12.13 **If there is any delay in completion of assigned work, a penalty of 10% from the corresponding tower bill will be deducted.**
- 12.14 The Vendor/ Contractor/ Supplier are requested to obtain a clear-cut understanding of the nature and type of the works mentioned above. They shall be required to make a visit well in advance to the laboratories in Mechanical Engineering Division, CPRI, Bengaluru before submitting the quotation.
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**OUT SOURCING FOR RIGGING AND OTHER WORKS RELATED TO
TOWER TESTING AT TOWER TESTING STATION MED, CPRI.
BENGALURU.**

I SCHEDULE OF RATES :

Sl. No	Particulars of work	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1	Footing Movement as per Sl.no. B (1) of scope of work. (Average 40 towers per year)			
	a. 48 - (12x4) Bolt connection	60 towers	Per tower	
	b. 24 - (6x4) Bolt connection	20 towers	Per tower	
	c. 16 - (4x4) Bolt connection	20 towers	Per tower	
2	Preparation for stub & setting as per Sl.no. B (2) of scope of work. (Average 40 towers per year)			
	a) Stub angles upto L130x130x12mm.	20 towers	Per tower	
	b) Stub angles above L130x130x12mm & upto L200x200x20mm.	60 towers	Per tower	
	c) Stub angles above L200x200x20mm or Star Leg combinations (of any size).	20 towers	Per tower	
3	Fabrication / Re-fabrication of tower parts during erection, failures, modifications etc., as per sl. no. B (3) of scope of work.	2 MT	Per MT	
4	Pulley mounting as per Sl.no. B (4) of scope of work. (5 to 10 per tower)	750 nos	Per pulley mounting	
5	Wire rope Changing of size ranging from 12mm to 25mm dia. as per Sl.no. B (5) of scope of work. (5 to 20 fibre core wire ropes per tower)	700 nos	Per rope	
6	Wire rope Changing of size ranging from 30mm to 40mm dia. as per Sl.no. B (6) of scope of work. (5 to 15 fibre core wire ropes per tower)	300 nos	Per rope	
7	Preparation / Sorting / arranging wire ropes / slings & accessories like spacers for Vertical, Transverse and Longitudinal loadings & wind loadings as per Sl.no. B (7) of scope of work.			
	a) S/C tower.	20 towers	Per tower	
	b) D/C tower.	60 towers	Per tower	
	c) M/C tower.	20 towers	Per tower	
8	Assisting in Pre / Post Verification of load cells as per Sl.no. B (8) of scope of work.			
	a) S/C tower.	20 towers	Per tower	
	b) D/C tower.	60 towers	Per tower	
	c) M/C tower.	20 towers	Per tower	

I **SCHEDULE OF RATES (Contd.):**

Sl. No	Particulars of work	Quantity	Unit Rate (Rs.)	Amount (Rs.)
9	Rigging / pre-tensioning of fibre core wire ropes upto 25mm dia. as per Sl.no. B (9) of scope of work. (5 to 30 wire ropes per tower)	1500 nos	Per rope	
10	Rigging / pre-tensioning of fibre core wire ropes from 25mm to 40 mm dia. as per Sl.no. B (9) of scope of work. (5 to 15 wire ropes per tower)	500 nos	Per rope	
11	De- Rigging / pre-tensioning of fibre core wire ropes ranging upto 25mm dia as per Sl.no. B (10) of scope of work. (for re-test towers) (5 to 30 fibre core wire ropes per tower)	250 nos	Per rope	
12	De- Rigging / pre-tensioning of fibre core wire ropes ranging from 25 mm to 40 mm dia as per Sl.no. B (10) of scope of work. (for re-test towers) (5 to 15 fibre core wire ropes per tower)	150 nos	Per rope	
13	Testing of insulators/hardwares or other mechanical tests using Universal Testing Machine (UTM) as per Sl.no. B (11) of scope of work	100 tests	Per test	
14	Support for Testing/Field testing works on insulators, hard wares & accessories for tests on Hydraulic ram/ Test-rig as per Sl.no. B (12) of scope of work	10 tests	Per test	
15	Maintenance Works as per Sl. no. B (13) of scope of work:		L S per time	
a)	Labour Charges	Per Person	Per Day	

Format for Undertaking (on Non Judicial stamp paper)

(Proprietor / Address of firm) _____, hereby undertake to indemnify CPRI for providing support for rigging and other allied works related tower testing and other testing activates at vibration laboratory.

UNDER TAKING

Reference: Quotation No.:
Enquiry No.:

I SAFETY MEASURES:

We shall provide our workmen & supervisors all the required personnel protective equipments such as safety helmets, safety belts, safety shoes, gloves, goggles etc., and any other measures suggested by CPRI from time to time besides the clause No.6 of Terms & conditions of above said Enquiry.

II INSURANCE OF WORKERS:

We will obtain group Insurance towards all liabilities that may arise for payment of compensation to our staff either as a result of injury or deaths in the process of carrying out above said works.

We hereby agree and undertaken to indemnify CPRI for any loss or damage action or proceeding cost of claim that may arise against CPRI in this behalf. In case of any damage or accident to the personnel or equipment, we shall be held responsible.

Authorized Signatory

Place:

Date: