

Bharat Heavy Electricals Limited
Ramachandrapuram : : Hyderabad – 502032
M&S – DIVISION
SCOPE OF WORK (ANNEXURE-I)

Tender No.: M&S/P&S/2020/96, Dt.: 04.03.2021

Name of Work: Operation and Basic Maintenance of Crawler Cranes.

DESCRIPTION OF WORK:

To support for Fabrication, Blasting, Painting & Movement of Oil Rigs Components, which are primarily used for Manufacturing of Oil Rigs and Rig building for testing in 'Rig up Yard'. Scope of work includes **Operation and Basic Maintenance** of Crawler Cranes.

Details of Crawler Cranes are mentioned below:

Sl.No	Type	Capacity	Year of Mfg.	Remarks
1	TATA 955 Crane/1	80 T	1976	Current status: 1) TWL is working good, 2) TATA 955-1 is working good, 3) TATA 955-2 has Swing problem and working with Finance for funds allocation.
2	TATA 955 Crane/2	80 T	1984	
4	Titagarh Crane	75 T	2010	

I. Operation and Basic Maintenance (OBMC) of Cranes is mainly divided into two categories

- a) **Operation to support Production activities.** Availability of Cranes 95% of time.
- b) **Maintenance** – To carryout basic maintenance of Cranes

A. OPERATION OF CRAWLER CRANES

1. Deploying of manpower in such a way that '**Uptime**' of Mobile Cranes (Crawler Cranes) is **maintained ≥95%** (Fuel/Diesel required for operation of Crawler cranes is in the scope of BHEL)
2. Daily and weekly schedule will be given by RUY – Engineer. Vendor need to carry out Crawler Cranes into operation for manufacturing of Oil Rigs components/Jobs/Materials.
3. Predominantly these Mobile/Crawler Cranes are used by Oil rigs division (RUY) for Fabrication, Blasting, Painting, Loading, Unloading, Rig Building, Rig Dismantling & Movement of Oil Rigs Equipment's/Components /Materials /Jobs such as E760, E1400, E2000, E3000 Land Rigs, Work Over Rigs, Mobile Rigs & Deep depth water Drilling Rigs. Some major components of Oil Rigs are:
 - Mast
 - Sub Structure
 - Draw works
 - Mud handling equipment, Mud System
 - Hoist & Rotating equipment's
 - Rig electrics
 - Others (Ducts of Gas turbines, Heat exchanger components, Pulveriser components) etc.
 - Miscellaneous jobs - as assigned by RUY engineer.
4. Manpower deployed should operate the Mobile crane/s, in such a way that there should not be any damage to Mobile Cranes itself or Jobs being handled due to negligence or mal intention. If any such incident happened, a committee will be formed to ascertain the cause of damage and may recommend penalty.
5. The mobile Crane operator should ensure at all times for the safe operation of crane under his control. He should follow the correct operation of crane in accordance with manufacturer's instructions and within the safe system of work.

6. Deployed manpower should follow Telangana factories act rules and BHEL's safety norms

B. BASIC MAINTENANCE OF CRANES:

Preventive maintenance as well as basic Breakdown maintenance of all cranes mentioned in the 'List of Cranes'. (Providing spares required is in the scope of BHEL)

B.1 MECHANICAL:

1. General checking of the Crane. Checking cranes for any loose fasteners/ bolts etc., vibration, oil leakage and missing parts/ guards during preventive maintenance and rectifying the same.
2. Topping oil in the gear boxes.
3. Checking lubrication of crane. Ensuring good lubrication using grease gun at points specified in manual / PM check sheet.
4. Lubrication of wire ropes (Eg. Dorsa or Vitalife spray etc.)
5. Checking of Linkage chain and rollers of chain and replacing any worn out parts
6. Wire Ropes - Replacement of worn out/broken/crushed/damaged wire ropes, arranging for wire rope clamps.
7. Hook block of hoists - Replacement of damaged / worn out hooks. Replacement of damaged / defective pulleys and any other damaged components of the hook blocks.
8. During Preventive Maintenance, a report of defects / condition requiring repairing/maintenance should be generated. Based on this, suitable action plan should be made for rectification in consultation with Engineer In-charge.
9. If the Crane is not spared for preventive Maintenance by the production as per schedule, contractor should intimate the same to the Engineer In-charge and preventive will be done in next month.
10. Preventive maintenance need to be carried out twice in a year.
11. The contractor shall inform well in advance in writing the requirement of various items which are to be supplied by BHEL.

B.2 ELECTRICAL:

1. Attending breakdown of electrical nature.
2. Replacement / minor repair of motors (Rewinding is in BHEL's scope)
3. Replacement of fuses / fuse holders in electrical panels.
4. Replacement of contactors or contact points, if necessary.
5. Replacement of cables (for small lengths of less than 10m)
6. Repair / replacement of incoming mains switches on panel.
7. Tightening loose connection on terminal boards.

B.3 EXECUTION OF WORK:

1. Contractor has to deploy manpower in such a way that breakdown percentage is maintained less than 5% always and meet all other requirements specified in the scope of work.
2. Contractor will receive breakdown through phone / in person/ online from Production Departments located across the plant. It should be attended promptly.
3. Efforts shall be made for promptly attending all types of breakdowns.

B.4 SKILL SET REQUIRED:

The job requires the following skills

1. Engineers: Engineering degree with 1 year work experience in Machine Tools / Cranes maintenance or Diploma with 5 Year work experience in Machine Tools / Cranes maintenance (or) ITI with 10 year experience in Cranes maintenance.
2. Supervisors: Diploma with 1 year work experience or ITI with 3year work experience in cranes maintenance or Machine tool maintenance
3. Fitters & Electrician (Skilled Worker): ITI with work 1 year experience or with 3 year work experience in Mobile Cranes operation
4. Unskilled Workers / Helpers: Able male person of 18 years and above who can read and write.

Note: Supporting documents need to be submitted as part of Technical verification in tendering process.

II. OTHERS:

1. A daily breakdown and monthly breakdown report (including downtime data of each crane) and report OF major work shall be submitted to the In-charge of Cranes section after endorsement from concerned block maintenance In-charge. For every complaint received a registration number (in the form of running serial number) shall be clearly mentioned in daily log-book or online system by the supervisor of Vendor.
2. The contractor shall adhere to the priority fixed by the RUY-Engineer for taking urgent repair work. Critical cranes/ emergency requests shall be attended timely by redirecting manpower as per priority and instructions of the Engineer In-charge Crane Maintenance.
3. Emergency breakdown during the third shift of all working days and second shift of Sundays shall also be attended, for which skeleton staff shall be available in the factory premises.
4. Preventive Maintenance work of the cranes shall be done once in a year as per the Checklist provided by BHEL. PM Check sheets prepared by BHEL-Cranes incharge / RUY engineer has to be followed and filled up while carrying out PM. Completed forms need to be submitted in-time to Supervisor in-charge.
5. When repair/ maintenance/ modification work gets completed, the actual time (in hours), material consumed, total down time and other information shall be reported to the Engineer In-charge crane maintenance in the daily report.
6. As BHEL has been accorded with ISO-9001, ISO-14000, OHSAS 18001, ISO-50001 and API certification, the Contractor shall carry out qualitative work to meet these standards. Necessary documentation / paper work shall also be maintained. Future standards acquired by BHEL need to be adhered.
7. Contractor shall arrange his own tools for removal, dismantling, assembling and re installation of hoist/motors/gearboxes, etc. However, all spares including consumables like gear oil, grease, cotton waste, etc., and facilities like gas cutting, welding, machining facility, repair, rewinding of motors, coils etc., and fuel for operation of Crawler cranes shall be provided by BHEL free of cost at ground level. However, to minimize the break-down time, the contractor, shall adopt vigilant action for better parts / methods voluntarily.
8. Contractor shall maintain all records like breakdown forms, spares list, all other records pertaining to his work, and should be shown to Cranes Engineer in charge.
9. For working at heights, Work Permit System as prescribed by BHEL-Safety dept. shall be followed and records maintained, to meet HSE audits / guidelines.
10. Medical fitness certificates of all workmen (fit to work at ground and heights) should be submitted as per HSE dept. guidelines.
11. All used/worn out/scrapped/ replaced spares/ parts shall remain the property of BHEL.
12. The contractor and their employees will observe all the laws/enactments, rules and regulations of BHEL and also the statutory and legal requirements of Central and State government.
13. Utmost care should be taken by the contractor to repair the cranes in a proper way and with quality workmanship so as to adhere to the safety requirements as per the latest revision of Factories Act and Telangana state rules.
14. All the contractor's personnel shall use PPEs (Personnel Protection Equipment).
15. The contractor shall engage experienced personnel for the maintenance of cranes as per the job requirement as indicated below.
16. Collection of spares/ material from various stores and blocks to work place/ site shall be carried out by contractor.
17. Cleaning, stacking, sorting, handling and upkeep of crane maintenance stores, work center stores (including 5S activities) shall be carried out by contractor.
18. Salvaging/repair work of crane spares & other crane items shall be carried out by contractor.
19. Drawing for major assemblies & component shall be prepared by the drawing section of BHEL or shall be arranged by Dept. However in case of emergency and for small jobs, hand sketch shall be prepared by the contractor.

20. Contractor shall carry out the work at his own risk, finance, human resources and supervision.
21. Payment of work shall be made to the contractor on the basis of work carried out on measurement basis.
22. Contractor shall have supervision on the conduct of his employees. Any violation of safety norms and misconduct by any of his employees/contractor may result in cancellation of Gate pass of that employee/contractor.
23. Parties may visit the site for actual site conditions, and all other relevant details related to Cranes.
24. Contractor should take feedback from supervisor on work performed, taking corrective/preventive measures and reporting status to Engineer/ In-charge crane maintenance.
25. All the information (About cranes, Check sheets, Data on cranes etc.) is the sole property of BHEL and no such information is taken out by contractor or his workmen.
26. Check list need to be filled up at Crane itself while carrying out Preventive Maintenance and submit such filled in check list to Supervisor.
27. BHEL reserves the right to cancel the tender at any stage of tendering till signing of agreement without assigning any reason(s) thereof. The tender cost in that event shall not be refunded.
28. Contract is extendable for one more year on mutually agreeable terms and conditions and performance of first year.

III. DEFINITION OF ONE OPERATION:

OMC of Mobile Cranes (Crawler Cranes): Carrying out Operation and Breakdown maintenance of Crawler Cranes specified in 'List of Mobile Cranes' in such a way that uptime of >95% is maintained in a month. There will be 12 such operations in a year.

- Cause of Breakdown which is not assignable to contractor or his workmen in carrying out maintenance. (Eg. Time taken in procuring spare) is not counted in breakdown time.

IV. PENALTY CLAUSE:

1. As this contract is Works Contract, Supplier's Performance is measured based on uptime of Cranes.

Parameter	Criteria	Penalty
OMC of all Cranes – Uptime of all Mobile Cranes calculated on monthly basis	Should be more than or equal to 95%. If Uptime is less than 95%, Penalty will be imposed.	If Uptime is less than 95% - 5% of contract value as penalty will be applied. After 94% - for every decrease of 'Uptime' percentage by 1%, Penalty of 1% will be increased up to max of 10% of overall contract value

2. Breakdown time for the reason not attributable to contractor (Eg. non availability of spare) will not be included while calculating break down time, break down percentage or Penalty.
3. Contractor should deploy manpower within 10 days (max) on receipt of work order/ PO. Otherwise EMD will be forfeited.

Example of Penalty Calculations:

Contract Value	: 10.0 L
No. of months in a year	: 12
Monthly cost of OMC of Cranes	: Rs 83,333/-
Penalty in case uptime is 94%	
Value of Penalty	: 5% of monthly value = 5% of Rs83,333/- = Rs4167/-
Penalty in case uptime is 93%	
Value of Penalty	: 6% of monthly value = 6% of Rs83,333/- = Rs5000/-