

DEENDAYAL PORT AUTHORITY

Mechanical Engineering Department Electrical Division



Tel: (02836)220636 / 270184 FAX: (02836) 270184 / 270475 Email :-<u>see@deendayalport.gov.in</u> Office of the Superintending Engineer (E) 1st Floor, Port & Custom Building New Kandla (Kutch), Gujarat 370210

No. EL/AC/2807

Date: 06.09.2023

"EXPRESSION OF INTEREST (EOI)"

Subject – "Maintenance contract of 25T (3 Nos.) & 16T (2 Nos.) capacity MBE make ELL Wharf Cranes Along with grabs for a period of 2 years at inside Cargo Jetty Area"

Sir,

Deendayal Port Authority, an autonomous body under Ministry of Ports, Shipping & Waterways, Govt. of India, intends to carry out the work for "Maintenance contract of 25T (3 Nos.) & 16T (2 Nos.) capacity MBE make ELL Wharf Cranes Along with grabs for a period of 2 years at inside Cargo Jetty Area" as per the Scope of work, Technical specification, Terms &, Conditions stipulated below.

Kindly submit your Expression of interest along with budgetary-offer for the subject workon the basis of the scope of work enclosed herewith. Expression of Interest should include profile of your firm, work experience in similar works, summary of turnover, (if any), on the above mentioned E-mail Ids.

The rates quoted must be inclusive of all costs such as tools, tackles, labour, transportation and other auxiliary charges for successful completion of the work excluding GST. The GST applicable shall be shown separately, which shall not be considered for evaluation purposes

Your EOI with budgetary offers for the above work should reach this office via either courier or email mentioned above, till 20.09.2023 on or before 1530 hours.

Thanking you.

Yours faithfully,

Sd/-Superintending Engineer (Elect.) Deendayal Port Authority

"Schedule B"

Sr				Rate per per Cra	Year ane	Total
No.	Description	Qty.	Unit	In figure	In words	Amount
1	Maintenance contract for MBE Cranes of 16T (2 Nos.) along with grabs as specified in the tender for a period of Two Years at inside cargo jetty area.					
(a)	For I Year	2	No.			
(b)	For II Year	2	No.			
2	Maintenance contract for MBE Cranes of 25T (3 Nos.) along with grabs as specified in the tender for a period of Two Years at inde cargo jetty area.					
(a)	For I Year	3	No.			
(b)	For II Year	3	No.			
Total Amount: Rs.:						

Signature & Seal of Contractor S/d-Superintending Engineer (Elect.) Deendayal Port Authority

SCOPE OF WORK

1. General:

5 Nos. MBE Cranes of 25T (3 Nos.) & 16T (2 Nos.) capacity ELL Cranes were commissioned at Berth Nos. 2, 3 & 4 at inside Cargo Jetty Area, Deendayal Port Authority in the year 2004.

Deendayal Port Authority intends to outsource the Maintenance of 05 Nos. above said Cranes to a resourceful outside agency with sufficient expertise in the field. The main objective of the work "Maintenance Contract of 3 Nos. 25T and 2 Nos. 16T capacity MBE make wharf Cranes for a period of 2 Years" are

- 1 To ensure efficient, safe and reliable maintenance of the Cranes.
- 2 To maintain the Cranes in a healthy and efficient condition.
- 3 To ensure high availability of the Cranes in a consistent manner.
- 4 The Maintenance Contract will be entered for 02 years initially from 15th day from the date of issue of Work Order. However, the same can be extended for any period maximum up to 1 year on the same rates of final year, Terms & Condition and quantity (arrived proportionately).

2. Commencement of AMC Work:

On issuance of Work Order, Contractor shall take over all the five number MBE cranes 'as is where basis' and AMC will commence.

- (a) Full AMC cost will be applicable for respective no. of crane (s) put in traffic operation.
- (b) In case of crane (s) is not traffic operation worthy, reduced rate of 20 % of AMC Cost will be applicable, until the crane (s) are put into traffic operation. However, it will be in scope of AMC Contractor to perform basic maintenance works to upkeep the cranes.

At the time of commencement, due to any reason, if crane is idle / under breakdown for long time, then labour / consumables / spares required to put ELL Cranes into traffic operation for the first time will be in scope of AMC Contractor. However, cost of said spares / consumables will be reimbursed by DPA on actual invoice basis for particular system. The said spares / consumables shall be bought from OEM / authorized dealer on written confirmation of EIC only.

Moreover, after detailed examination, list of critical spares required for un-interrupted operations (i.e. in scope of DPA) as per the OEM maintenance plan along with supporting documents in acc. with procurement manual, valid budgetary offer of OEM etc. shall be provided within a period of 30 days from putting ELL Cranes into traffic operation. In absence of list of critical spares any breakdown shall be treated in contractor's account.

The Maintenance Contract includes all kind of schedule and preventive mitrate (Daily/Weekly/ Monthly/Half yearly/Yearly & also includes Breakdown Maintenance and all other repairing works with all labour and materials). Apart from consumables mentioned as per **ANNEXURE-I**, required materials mentioned as per **ANNEXURE-II** (A) & **ANNEXURE-II** (B) are to be procured by the contractor as and when required and the cost of the same will be reimbursed by DPA on actual basis. However, on entering in contract joint material inspection will be conducted and the materials which are not available with DPA but require on priority for 1st year AMC, such spare parts shall be procured and supplied by the contractor to DPA tits Store in good condition. The spare parts and consumables, procured and supplied to DPA by the contractor will be the property of DPA. In the circumstances, where the contractor fails to identify the requirement of spare parts, DPA will give a written instruction to the contractor to procure the spare parts list and also intimate the quantity, rate and source of procurement of the spare parts to the contractor from the specific source. In any case, the payment to the contractor towards the purchase of spare parts (not consumable) will be reimbursed on actual basis.

The cranes shall be secured, if any forecasting is there or directed by DPA.

Travelling Assembly:

The Maintenance Schedule consists daily cleaning of whole assembly such as Gearbox, motor, coupling, anchoring attachment, thrusters and its travel structure etc. Weekly greasing to all movable parts, pins, hardware's etc with suitable grease gun, if grease is not moving in its periphery area, the same is to be attended, Cleaning of its electrical drive, resistance box cables and its illumination. This also include replacement of old oil from gearbox & to top up with 460 grade new gear oil immediately after awarding of contract and it will be done once in two years and include topping of oil if leaking from any gear box, Replacement of coupling, rubber bush & hardware's, Brake liner, rusted hardware's, if require replacement or if got wear out, same is to be attended by contractor along with requisite original/equivalent material. Similarly, its motor is of 4 KW squirrel cage motor of SEW make, if its winding or parts like brush/rocker/spring/ terminal plate/fan/bearing/fan cover got wear out same is to be attended by contractor.

Note: There is all possibility of damage of LT Geared Motors during the operation by the loader/dozers etc. Hence, the contractor has to monitor the same round the clock and intimate DPA Shift in-charge / Asst Foreman to issue damage memo to the DPA traffic department if any. If not, the contractor has to repair/replace the LT geared Motors in his own irrespective of value

Slew Assembly:

The Maintenance Schedule consists daily cleaning of whole assembly such as gearbox, motor, fluid coupling, thrusters, and SLEWBEARING. Weekly greasing to all movable parts, pins, hardware's etc with suitable grease gun, Grease grade EP2, Cleaning of its electrical drive, resistance box cables. This also includes replacement of fluid coupling oil every year without fail, gear box, replacement. Rubber bush & hardware's, brake liner is in the scope of the contractor & to be attended by contractor along with requisite original/equivalent material, similarly its motor is of 30/37 KW squirrel cage motor of ABB make, except for winding of motor other part like brush/rocker/spring/terminal plate/fan/ bearing/fan cover got wear out same is to be attended by contractor.

Hold/Close Assembly:

The Maintenance Schedule consists daily cleaning of whole assembly such as gearbox, motor, coupling, drum, thruster, encoder and its machine house structure etc. Weekly greasing to all movable parts, pins, hardware's etc with suitable grease gun, if grease is not moving in its periphery area same is to be attended, similarly cleaning of its electrical drive, resistance box cables and its illumination. This also include replacement of old oil from gearbox & to top up 460 grade new gear oil immediately after awarding of contract and it should be done once in two years and include topping of oil if leaking from any gear box, Replacement of oil seal, rubber bush, brake liner, drum coupling, thruster part if got wear out same is to be attended by contractor along with requisite original/equivalent material, this also include its hardware's etc. Similarly, its motor is of 160/250 KW squirrel cage motor of ABB make, except for winding of motor other part like brush/rocker/ spring/terminal plate/ fan/bearing/fan cover got wear out same is to be attended by contractor.

Luff Assembly:

The Maintenance Schedule consists daily cleaning of whole assembly such as gearbox, motor, coupling, luff screw, thruster, encoder and its structure etc. Weekly greasing to all movable parts, pins, hardware's etc with suitable grease gun, if grease is not moving in its periphery area same is to be attended, similarly cleaning of its electrical drive, resistance box cables and its "A" frame illumination. This also include topping of recommended oil in central lubrication pump, if leaking from any gear box, Replacement of existing oil with new oil immediately after awarding of contract and it will be done once in two years and include topping of oil if leaking from any gear box. This also include replacement of luff-nut, rubber bush & hardware's, coupling/thrusters/lubrication pump parts if got wear out same is to be attended by contractor along with requisite material, similarly its motor is of 75/90 KW squirrel cage motor of ABB make, if its winding or part like brush/rocker/spring/ terminal plate /fan/bearing/fan cover got wear out same is to be attended by contractor.

Apart from above assembly there are sheaves & pins of main jib/fly jib/A frame which are to be cleaned thoroughly & shall be grease once in a month. Wire ropes of size 28/36 mm. are to be lubricated fortnightly, if got damage during operation, same are to be replaced; complete illumination of crane from inside & outside shall be maintained with proper Industrial illumination fixtures by contractor. This also includes maintenance of Grabs and to attend its leakage from jaws with suitable methods, grabs are of various capacities such as 9 m³, 10 m³, 12 m³ & 16 m³ & Hook blocks.

All cranes shall be washed with sweet water once in a month by high pressure jet pump, sweet water will be supplied by DPA, but water tank of appropriate capacity & jet pump, Hose Pipes etc. shall be arranged by contractor at working site.

Load lifting assembly of Wylie is installed in every crane for its radius & load lifting display & for safety of crane, i.e. Alarm & tripping which is to be calibrated & if found erratic same is to be attended by contractor with necessary materials and necessary certificate shall be submitted to concern officer for record.

The electrical Drive are of ABB, ACS-800 thyristor, up to 400 KVA VFD Drive, its software/Hand tool and related control card & components should be maintained locally by contractor, which shall interface with the existing crane system, for trouble shooting of Drive & PLC, in the tenure of the contract if any up gradation is done by the OEM, same shall be upgraded by the Contractor. Also, existing control builder software for AMC of crane should be maintain by contractor.

Moreover, the record keeping shall be maintained as per ISO Norms, apart from same Site Order Book for instruction is to be maintained.

The contractor shall submit the monthly & yearly report of each crane regarding its availability, utilization to concern officer.

Maintenance / repairing of all the Mechanical, Electrical & Electronics parts / accessories of all the drives (i.e., Hold, Close, Slew, Luff and Long travel), power supply system and other auxiliary systems including repairing and replacement of Thyristor drives, PLC unit, Master controllers, limit switches, motors, gear boxes, CRD, central collector column, power and control contactors, Thyristor fuses, HRC fuses, batteries and other consumables. Moreover, attending the all HT/LT cable fault from Substation to Bellmouth of the cranes is in the scope of contractor.

A radius cum load indicator should be provided in the operator's cabin for the different jib positions.

A well proven lubrication arrangement should be provided for nut-screw system.

Walkways, stairs, ladders and platforms should be provided and located to provide maximum access for operation, inspection and maintenance by personnel.

Drive units

The repairing of drives / PLC is fully under the scope of the Contractor. DPA is not having any software backup for the said Cranes. Hence, bidder has to take support of OEM (ABB) and restore the operations immediately. However, the spare cards / modules will be supplied by DPA at free of cost

3. Contractor's personnel:

The Contractor must engage trained, qualified and experienced staff for smooth, safe & trouble free operation and maintenance of the Cranes. The core personnel of the contractor including engineers so deployed have qualification & relevant experience in the fields of assembly and sub-assembly of the Cranes, Electrical Circuit of Electrical Power/Control System, PLC & ASTAT Drive System, Maintenance of LT Equipment, Lighting System, earthing system, etc. preferably in Cranes and are in a position to rectify defects developed during the operation of the Crane with minimum down time.

The Contractor shall deploy their Service Engineer (Overall in Charge) along with skilled supervisors (Mechanical & Electrical), Technicians (Mechanical, Electrical & Electronics) and unskilled staff such as Oilman, Cleaner, Helper, etc as per Clause 3 of Section-V, during the contract period. In natural calamities such as cyclone, heavy rain, warning situations etc, the Contractor shall plan and make arrangements and bear all the costs associated for arrangements, if any, during that period for Cranes.

The Contractor must remove immediately the workmen in case of indiscipline, misconduct, negligence in duty, suppression of facts, deliberate mishandling of machine & equipment, sabotage, professional in-competency etc.

If any damage caused by the workmen engaged by the Contractor, is noticed by DPA, to any machinery or equipment or installation of DPA due to negligence, ignorance or malafide intention shall be made good at the cost of the Contractor within a reasonable period of time acceptable to DPA, failing which the cost of the damages assessed by DPA shall be deducted from the bill of the Contractor.

All individuals engaged in the performance of the Contractor's obligations under this contract shall be the employees of the Contractor and their working hours, rates of compensation and all other matters relating to their employment shall be determined solely by the Contractor in accordance with the applicable labour laws & regulations. The Contractor shall be solely responsible for employment policies that specify the requirements for staff working under him and such policies are to be consistent & in conjunction with the existing applicable labour laws.

During the period of the Contract, if the Contractor intends to induct new work men or make alterations in their grade, the Contractor shall communicate the same for acknowledge to DPA.

The Contractor shall employ skilled Supervisors (Mechanical & Electrical) in each shift for overall co-ordination of operation and maintenance of the Cranes apart from engineers for different systems/equipments and Overall-in-charge during shifts, who will oversee and be responsible for all the functions of Crane operation and maintenance. The Highly Skilled Supervisors (Mechanical & Electrical) shall co-ordinate with shift –in-charge of DPA posted in each shift or Engineer-in-Charge for smooth execution of the maintenance contract.

The engineers / supervisors attached to maintenance must be conversant with the technology of various systems, equipment, machines and systems and has to co-ordinate with the operating personnel for smooth operation. They have to be vigilant & should promptly respond to any operational requirements.

During operation, if any abnormality, defect / fault are noticed, the same shall be promptly communicated and remedial steps must be taken under intimation to the Shift-in-charge of DPA. The contractor shall place a suitable mechanism for rectification of problems so that delay in operation can be avoided.

The shift in charge/Engineers/Supervisors of the Contractor associated with maintenance shall plan & co-ordinate all the maintenance activities including pre-operational checks. Also, necessary interaction for operational requirements should be done in close co-ordination with Shift-in Charge/Engineer-in-charge of DPA.

The Contractor shall keep and maintain the records of day to day maintenance activities, i.e. material consumption, work carried out, attendance of labour, labour Wages and submission of the same to Engineer-in-charge at the time of RA Bill.

Stoppages during operation, any type of abnormalities including adverse operating condition or characteristics, bypass of safety devices shall be recorded and same shall be intimated to Shift-in Charge / Engineer-in charge with follow–up action.

The Service Engineer (overall-in-charge) of Contractor shall review day-to-day maintenance activities, co-ordinate with the Engineer-in-Charge of DPA & shall handle all administrative matters of his establishment.

4. Submission of Maintenance Schedule:

Maintenance Schedules to be followed during the AMC contract are given at Annexure-V (a) to V (e) of Section-V. Accordingly, contractor shall prepare each substation and equipment wise maintenance schedule i.e. Daily/Weekly/Monthly/Half yearly/Yearly for performing the maintenance work. The Maintenance Schedules are indicative and subject to review by EIC as and when need arises which will be final and binding on the contractor without any financial implication.

So far as activities indicated in the half yearly and yearly maintenance schedule are concerned, the successful bidder will submit a schedule to EIC showing the months in which the activities mentioned in the half yearly and yearly maintenance schedule will be carried out and the preparation to be done by DPA in this regard.

Description	Time line	
1 st year of	AMC contractor	
1) half yearly activities	Within 30 days from the date of issue wok order	
2) 2 nd half year activities	Between 5 th and 6 th month of the contract period	
3) Yearly activities	Within 30 days from the date of issue of wok order	
2nd year of AMC contractor		
1) half yearly activities	Between 11th th and 12 th month of the contract period	

The time lines for submitting above half yearly and yearly activity schedule are as under:

2) 2 nd half year activities	Between 17 th and 18 th month of the
	contract period
3) Yearly activities	Between 11 th and 12 th month of the
	contract period

The EIC can change the month proposed by the contractor for carrying out such activities considering the operational circumstances and other priorities. In this regard, the decision of EIC will be final and binding on the contractor.

5. **Documentation:**

Crane Equipment's parameters should be recorded in daily logbooks. Separate log books will be prepared for separate equipments.

Contractor should maintain individual History Records for all critical equipment's and other safety related items, this history record should have all the details of work carried out on day to day, monthly, quarterly, half yearly and yearly. Detailed inventory records like materials movement, material consumption, materials disposed etc. also should be maintained. In all documents, for each work, contractor should get signature from Engineer in- charge (Electrical) or his nominees.

6. Deployment of Maintenance Staff:

The Contractor shall have to deploy Service engineer/Site Engineer (over all In-Charge) who has to deal with DPA technically and administrative matters. The contractor shall have to deploy at minimum following Engineering staff, skilled staff and supervisory staff & contractor shall submit the Roaster Plan. However, any work arises during maintenance if Contractor feels he may deploy more man power to reduce the down time of Cranes.

Sr. No.	Designation	Qualification	Timings
1	Site Engineer	Degree in Mechanical/Electrical With minimum Seven years' experience in the maintenance bulk handling equipment like ELL Cranes/ Ship- loader/ship-unloader/stackers /reclaimers etc.	1 in Generalshift
2	Mechanical Engineers	Degree/Diploma holder with 3 years relevant experience.	1 in Each shift
3	Electrical /Electronic Engineers	Degree/ Diploma holder with 3 years relevant experience.	1 in Each shift
4	Mechanical Technicians.	Diploma with 3 years ,ITI with 5 years and SSC with 10 years with relevant Experience.	1 in each shift
5	Electrical / Electronics Technician	Diploma with 3 years ,ITI with 5 years and SSC with 10 years with relevant Experience.	2 in each shift
6	Welder Fitter	ITI with 5 years / SSC with 10 years in the trade of Welder.	1 in General shift

7	Fitter	ITI with 5 years / SSC with 10 years in	2 in each shift
		the trade of Fitter.	
8	Cleaner	Having knowledge of Cleaning Of heavy machinery at any workshop.	2 in each shift
9	Helper	Worked as Helper of any artisan at any workshop	2 in each shift

Total 35 staff members.

The normal deployment of Contractor's personnel in each shift shall be on 8 hrs. basis, in exigencies, extended duty may be performed by the Contractor's personnel. Extended duty beyond the shift hour can be adopted only on special requirements and certainly not as a practice. The labour reports fortnightly shall be submitted by contractor with RA Bill every month. Accordingly, the contractor has to arrange leave reliever for the staff who are working in shift duties. The staff working in General shift will take weekly off on Sunday. in case any work is planned or breakdown on Sunday, the relevant staff has to be attend the duty and take weekly off on another day.

Operation:

The Cranes will operate in 3 Shift basis (24 hrs. a day) & 365 days a year.

The normal shift timings are as follows:

1st Shift - 0700 hrs. To 1500 hrs. 2nd Shift-1500 hrs. To 2300 hrs. 3rd Shift -2300 hrs. To 0700 hrs.

Arrival & Departure of staff should be well-planned to up-keep the maintenance requirement in tact round the clock.

7. Meetings with DPA officials:

Overall In- Charge shall interact with DPA or authorized representative of DPA regarding Crane operation and maintenance every day or as desired by DPA. The maintenance activities and also other activities (if any) shall be reviewed/discussed weekly in the review meeting to plan maintenance requirements. The Overall in-charge of the Contractor and Shift-in-charges along with the Engineers from DPA shall attend this meeting.

8. Maintenance:

Maintenance of Cranes primarily aims at keeping the Cranes in efficient and reliable operating conditions, minimizing the downtime during operation so as to ensure their maximum availability and productivity.

The maintenance of Cranes shall be done by the Contractor in accordance with recommendation of Original Equipment Manufacturer and taking into account the current status of Cranes by following sound engineering practice and proper maintenance standards.

The contractor shall carry out the maintenance activities to prevent failures and also execute improvement activities / repair activities for prolong Crane life; reduce maintenance hours in order to ensure maximum availability of the system. The contractor shall follow the maintenance practices/activities as under:

Generally, there are two types of maintenance in use:

9.1 Preventive Maintenance:

The care and servicing for the purpose of maintaining the systems and equipment in satisfactory operating conditions by providing systematic inspection, detection and correction of incipient failures either before they occur or before they develop into major defects.

Maintenance including tests, measurements, calibration and part/component replacement performed specially to prevent occurrence of faults /failures.

Preventive maintenance can be divided into following subgroups

9.1.1 Planned maintenance or Scheduled maintenance.

Maintenance Activities to be done as per Schedule or Plan (Preventive Maintenance Schedule) which may be related to Time like Daily / Weekly/ Monthly /Half Yearly / Yearly basis and so on or equipment running hours or other parameters as per recommendation of OEM. Besides the Preventive Maintenance Schedule shall be reviewed and modified taking into account the aging of Cranes, operational conditions (environment) and operational requirement, etc.

9.2 Breakdown maintenance:

Maintenance which is required when an item has failed or worn out to bring it back to working order i.e. in case failure of Drive Spares, Insulator, motor, gearbox and resistor unit.

During operation abnormalities/ defects/faults are observed and in some cases failures of components occur resulting in breakdown of equipment. Corrective Maintenance is a maintenance activity to identify, isolate and rectify a fault so that the failed component/ equipment/ machine or system can be restored to an operational condition within the tolerances or limits by repairing otherwise by replacement.

9. Based on maintenance practices as mentioned above, following are the gist of the maintenance to be adopted.

The contractor shall take up mechanical maintenance, electrical maintenance, and structural maintenance etc. of Cranes by using preventive maintenance techniques in addition to traditional preventive measures so as to maintain the Cranes in efficient and reliable manner.

The contractor shall strictly follow a routine maintenance plan and ensure timely maintenance of the Cranes as per the plan/Maintenance schedule. However, the schedule may be reviewed and amended from time to time, if necessary and in consultation with the Engineer-in-charge with a view to make it more appropriate to meet the site needs.

The contractor shall properly plan for execution of maintenance activities during nonoperational time of cranes.

10. Routine inspection and Condition monitoring:

Inspection of all Cranes shall be carried out by the Contractor in accordance with maintenance manual of individual equipment / manufacturer's recommendation.

Before and after operation of Cranes, the Contractor shall carry-out careful and detailed inspection of all equipment and its components. An effective maintenance practice should include Condition Monitoring and assessment along with Visual inspection. Most of the tasks associated with Condition Monitoring are generally carried out while the equipment is in service

or when the equipment is shut down for some other reason. Action shall be taken on the observations during inspection and condition monitoring.

11. Lubrication:

Lubrication is an important activity in the system of maintenance. The Contractor shall prepare and implement the lubrication schedule as per the maintenance manual for all Cranes. The Contractor shall supply all type of lubricants recommended by the equipment manufacturer. A well-conceived lubrication schedule should include its application by the right method, at proper frequency, storage, handling and identification.

Contractor shall conduct i) periodic lubrication of wire ropes, handling tackles etc., ii) periodic lubrication of lifting appliances, hoists, and chain pulleys, etc as per the ISO requirement and it shall be his responsibility to make good any defects promptly. However, the required main items, be supplied by DPA.

Lubrication of Slew Bearing: - The Slew Bearing is the highly Critical Part of the Crane. Improper greasing or poor quality grease may lead to failure of Slew Bearing, which will result into major breakdown of cranes for long time. Therefore, after 100 operational hours (Maximum) or before completing 100 operational hours if required the Raceway shall be lubricated. The gear of slew bearing shall be lubricated weekly and gear should always have sufficient grease.

The shorter lubrication periods apart from above mentioned time schedule shall be adopted in case of high amounts of moisture, high dust or dirt Effects and strong temperature changes as well as continues rotation. For Raceway & Gear of Slew bearing the following make & type of Greases to be used as per recommendations of OEM of Slew Bearing i.e. M/s Rothe Erde.

The make & type of Greases for Slew Bearing brought by Contractor during AMC period shall be approved from Engineer-in-Charge, as it is the part of Consumables to be supplied by Contractor

Sr. No.	Part Of Slew Bearing	Make	Туре
01	Raceway	Aral, Castrol, Total, Kluber Iubrication, Mobil, Fuchs Lubricant s, Shell	Aralub HLP 2, Spheerol EPL 2, Multis EP 2, Centoplex EP 2, Mobilux EP 2, Lagermiester EP 2, Alvania Ep (LF) 2. Even latest lubricant manufacturer can also be enlisted, subject to having all the relevant characteristics of existing one.
02	Gear	Aral, Castrol, Total, Kluber lubrication, Mobil, Funch Lubricants, Shell	Aralub MKA –Z 1, Mollub-Alloy 970/2500-1, Ceran AD PLUS, GRAFLOSCON C-SG 0 ultra, Mobilgear OGL 461, Ceplattyn KG 10 HMF, Malleus OGH. Even latest lubricant manufacturer can also be enlisted, subject to having all the relevant characteristics of existing one.

12. Major Breakdown:

In case of the major breakdown as per Annexure-III of Section-V, the repair work shall be carried out through AMC contractor/OEM/Any Reputed contractor as per relevant standards on receiving approval from competent authority with the third party inspection arranged by DPA on the particular work. The major break down is not in the scope of AMC contractor. And the TPI inspection cost shall be borne by DPA.

13. Consumables & Spares:

A. CONSUMABLE:

The Contractor shall arrange the consumable as per ANNEXURE-I during the maintenance on monthly basis to the crane store of DPA and material will be issued on production of requisition by Contractor.

B. <u>SPARES</u>

- (a) The contractor, within 30 days of issue of work order, is required to inspect of all 5 Nos. of MBE cranes and submit a list of spare parts for immediate replacement. The list should also consist a technical report, test report (if required), quantity, part nos., description of material. DPA will finalize the list and supply the spares available with them. If such spares are not available with DPA or if DPA is not in a position to supply the spares, then DPA will finalize and intimate the quantity, rate and source of procurement of the spare parts to the contractor. Accordingly, the contractor will procure the spare parts. Once the spare parts is procured and deposited by the contractor in the store of DPA in good condition, the reimbursement will be made by DPA on actual basis. A tentative list of such spare parts (which is not final) is placed at Annexure-II (A) & (B) of Section-V.
- (b) A part from the spares mentioned in Annexure-II (A) & (B) of Section-V, the contractor will responsible for a planning and procurement of spare parts from time to time for effective performance of Daily/Monthly / Half yearly / Yearly Maintenance schedule for smooth running operation of 5 Nos. of MBE cranes without bypassing any system.

Such procurement of spare parts, the contractor will submit a list of such spare parts to DPA containing part no., description of the material, quantity along with a report containing justification for requirement of such spare parts. DPA will finalize the list and intimate the quantity, rate and source of procurement of the spare parts to the contractor. Accordingly, the contractor will procure the spare parts within the time period given by the supplier.

Once the spare parts are procured and deposited by the contractor in the store of DPA in good condition, the reimbursement will be made by DPA on actual basis. The spare parts and consumables procured by the contractor will be the property of DPA.

In the circumstances, where the contractor fails to identify the requirement of spare parts, DPA will give a written instruction to the contractor to procure the spare parts list and also intimate the quantity, rate and source of procurement of the spare parts to the contractor from the specific source.

14. Maintenance of Illumination System:

The contractor shall be responsible for maintenance of illumination system of Cranes for desired illumination level in different areas of Cranes during day and night operation of the Cranes as per requirement which is very much essential from operation and safety point of view.

15. **Safety:**

The Contractor shall observe all applicable regulations regarding safety of man and machine. Necessary safety measures are to be taken for the work by the contractor.

16. Watch & Ward:

During the Maintenance contract watch and ward of consumables and other tools shall be under the scope of the contractor.

17. Availability:

Availability of crane shall be 85% per month after deducting the maintenance period.

18. **Painting work on cranes:**

As and when required, Contractor shall clean the blister formation, rusted surface of crane main structure or secondary structure at any position and to apply the paint as below during the tenure of contract as directed by Engineer- in-charge.

- a. First coat of epoxy primer.
- b. Second coat MIO.
- c. Third coat of Epoxy polyurethane finish paint to safeguard the crane against rusting as per the existing shade.

Note: - Paint shall be supplied by DPA free of cost if available. In case of non- availability of paint with DPA the contractor shall provided the paint with written consent of DPA as mentioned above paras and the payment on expenditure to paint shall reimbursed by DPA on actual basis.

19. HT / LT trailing cable joint:

During loading/unloading of cargo, by any reason if trailing cable of Copper Conductor EPR Cable got damaged, contractor will make heat shrink joint on it, complete with labour & materials.

Note: - Cable Joint kit shall be used from consumables supplied by AMC contractor.

20. Accidental damage:

If Crane stationed at any point and same got damage due to dashing or due to natural calamity, under such circumstance the repairing /re- commissioning will not be in the scope of the AMC contractor. For which the work may be carried out separately.

21. Replacement of Slew bearing:

In case of failure of slew bearing, the replacement work including procurement will be carried out separately by Deendayal Port Authority. The expenditure in this regard will be borne by DPA.

22. Out of Service Securing and Storm Anchors

Hydraulically operated Rail Clamps shall be provided on each legs of the crane to clamp the crane to the rails. The clamps shall be capable of safely holding the crane against movement by wind with 50% of the wheel brakes inoperative. Electric interlocks shall be provided such that the travelling machinery cannot be energized until the clamps have been released. It should be noted that the top of the rails are flush with the surface of the concrete and that the sides/undersides of the rail will be surrounded with concrete and will therefore not be available for clamping. The clamps should have sufficient tangential holding force to safely hold the crane in locking position during non-operating wind conditions. The rail clamps are to be quick acting mechanically operated hydraulically released type. The clamp jaws should grip the rail from top. The jaws should have replaceable hardened steel teeth. When released, the clamps should not drag on the rails. Limit switches should be provided for interlocking the clamps with the long travelling mechanism to ensure that the long travel motors cannot be started with the clamps engaged.

ANNEXURE -I

Consumables: A. <u>MECHANICAL CONSUMABLE ITEM</u>

Sr.	Description	Qty.
No.		
1.	460 / 320/220 GEAR OIL or suitable for drive gears as recommended by OEM for HOLD/CLOSE, Luff, Slew & LT	1 Drums (210 ltrs)of each type of Oil.
2.	EP 2 GREASE. (Lithium saponified mineral oil of NIGI Grade 2 with EP	2 Drums(208 ltrs)
	Additives).	
4.	CARDIUM COMPOUND.	1 Drums(180kg)
5.	GAS (DA)	1 Cylinder
6.	GAS (OXYGEN).	2 Cylinder
7.	WELDING ELECTRODES FOR ALLTYPES OF METALWELDING/FILLING.	Hardox7018 10 Pkt.MS
8.	DIESEL/CLEANING SOLVENT/ THINNER.	40 ltrs.
9.	CONTACT CLEANER SPRAY.	10 Tin (500 ml)
10.	RUST CLEANER SPRAY	10 Tin (500 ml)
11	RESTOLIN	5 Ltr.
12.	HIGH TENSILE NUTS & BOLTS, ALLEN KEY OF ALL SIZE WITH	50 kg.
	FLAT/SPRING WASHER, SPLIT PIN.EXCLUDINGSLEWBEARING HARDWARE.	
13.	CLEANING CLOTH	100 kg.
14.	Araldite /M seal/ Anabond	5 Pkt. each
15.	EPOXY PAINTS MARINE GRADE SUCH AS (JOTUN,	4 Drums (20 ltrs.)
	INTERNATIONAL/CARBOLINE/SIGMA).	
16.	EPOXY METAL REDOXIDE.	4 Drums (20 ltrs.)
17.	LEAD /RESIN COMPOUND.	10 kg.
18.	HYDRAULIC OIL FOR THRUSTERS.	1 Drum (20 ltrs.)
19.	Greasing Nipple.	As per site requirement
20.	OIL SEAL OF ALL SIZES.	As per site requirement
21.	RUBBER BUSH & HARDWARES FOR ALL COUPLINGS.	As per site requirement
22.	EPDM RUBBER BEEDING & TOUGHEND GLASS OF ALL SIZES.	As per site requirement
23.	ALL TYPE OF CLEANING BRUSHES (SOFT/HAIR/COIR/NYLON BRISTLES).	As per site requirement
24.	GI PIPES B GRADE OF SIZES 32 MM DIA. (Length - 5 mtr./per Pipes)	05 Nos.
25.	MS Angle Size 75 x 75 x 6 mm	05 mtr.
26.	MS Channel size 125 x 65 mm	05 mtr.
27.	MS Plate thickness -3 mm size (4 x 8 feet)	01 Nos.
28.	MS Plate thickness -8 mm size (4 x 8 feet)	01 Nos.

B. ELECTRICAL CONSUMABLE ITEM

Sr.	Description	Qty.
1	a) LED (with Lens) FIXTURES OF VARIOUS RATINGS	As per site requirement
1.		
	35/70/150/250/400W	
	b) IED Tube light Fixture 20-24 Watt	
2.	PUSH BOTTON / ACTUATOR / CONTACT/BLOCK/COILS/MPCB/SMPS	As per site requirement
3.	INDICATION LED LAMP	As per site requirement
4.	CONTACTOR KITS OF ALL SIZES ALONG WITH THEIR	As per site requirement
	RATED COIL/Aux. control contactors	
5.	CRIMPING TYPE LUGS & FERRUL OF CU/AL OF ALL SIZE	As per site requirement
6.	HRC FUSES OF REQUIRED SIZE WITH ITS BASE & CURRENT RATINGS	As per site requirement
7.	SEMICONDUCTOR FUSES OF REQUIRED RATING.	As per site requirement
8.	ALL REQUIRED SIZES OF RELAYS.	As per site requirement
9.	1.1 & 11 KV EPOXY INSULATOR FOR ALL ELECTRICAL SUPPORT	10 Nos. Each
10.	Spray Paint Tin (400 ml)	10 Nos Each
11.	Water Proof Rubber TAPE	02 Nos.
12.	PVC SELF ADHESIVE TAPE (RYBN).	50 Nos.
13.	ELECTRICAL/ELECTRONIC CARD CLEANER.	6 Tin (250 ml.)
14.	CABLE JUNCTION BOXES.	As per site requirement
15	1.1 KV, 4C x 1.5 Sq.mm Flexible Copper cable	200 mtr.
16	1.1 KV, 4C x 2.5 Sq.mm Flexible Copper cable	100 mtr.
17	Siren/Hooter (range - 1km)	3 Nos
18	WALL MOUNTING FAN 18"/450MM, 230V, 50HZ.	1 Nos.
19	Straight Through cable joint kit for LT trailing cable of size 4C X 185	
	Sq.mm. suitable for Copper Conductor EPR Cable	3 Nos.
20	Straight Through cable joint kit for trailing cable of size HT 3C X 70	
	Sq.mm. suitable for Copper Conductor EPR Cable	3 Nos.
21	11 KV H.T END TERMINATION JOINTS KIT, HEAT SHRINK TYPE.	2 Nos.
22	ENCODER COUPLING.	2 Nos.
23	Danger Board	5No's
24	Men at Work Stand along with Barricading Tape	As per site requirement
25	Safety Jackets / Safety Goggles	Each person
26	Helmet	Each Person
27	Safety Shoes	Each person
28	Rain Coat	Each Person

S/d-Superintending Engineer (E) Deendayal Port Authority

ANNEXURE-II(A)

TENTATIVE LIST OF MECHANICAL SPARES

SL.NO.	ITEMS DESCRIPTION	25T (3Nos)	16T (2 Nos.)
	A. HOLD / CLOSE MOTION		
01	Hold /Close Gear Box	6Nos	4Nos
02	Hold /Close Brake Drum Coupling	6Nos	4Nos
03	Hold /Close Brake Drum	6Nos	4Nos
04	Rope Drum Coupling of Hold / Close & motion	6Nos	4Nos
05	Bearing housing assembly of Hold/Close motion	12Nos	8Nos
06	Bearing Support of Hold/Close motion	12Nos	8Nos
07	Hook Block Assembly – 25T/16T	3Nos	2Nos
08	Grab 9,10, 12,16 cubic meter	2 + 2 Nos	2+2 Nos
09	Grab Pulley for above grabs	6Nos	4Nos
10	Grab Balancer for above grabs.	6Nos	4Nos
11	Close Rope Pulley	6Nos	4Nos
12	Hold Rope Pulley	6Nos	4Nos
13	Brake liner	6set	4set
14	Steel wire rope 36 mm dia Steel core (LHS/RHS) 130mtrs. Length	3 length	-
15	Steel wire rope 28 mm dia Steel core (LHS/RHS) 130mtrs. Length	-	2length
16	Steel wire rope 36 mm dia Steel core (LHS/RHS)	3 length	-
17	Steel wire rope 24 mm dia Steel core (LHS/RHS) 15.08mtrs.Length for Grab	-	2 length
18	Rope pear Socket for 16T	-	8Nos
19	Rope pear Socket for 25T	12Nos	-
20	Tacho-coupling	6Nos	4Nos
21	Quick release link	12Nos	8Nos
22	Кеу	3Nos	2Nos
23	Thrust Bearing	6Nos	4Nos
24	Thruster	6Nos	4Nos
	B. SLEW MOTION		
25	Slew Gear Box	3Nos	2Nos
26	Gear Box shaft	3Nos	2Nos
27	Slew Gear fluid Coupling	3Nos	2Nos
28	Slew Brake Drum	3Nos	2Nos
29	Slew Brake shoe	3set	2set
30	Slew wheel	3Nos	2Nos
31	Slew bearing	3Nos	2Nos
32	Slew thruster	3Nos	2Nos
33	Slew Brake assembly	3Nos	2Nos
34	Slew bearing Seal	3Nos	2Nos
35	Fluid coupling	3Nos	2Nos
36	Bearing	3Nos	2Nos

37	Кеу	6Nos	4Nos
38	Coupling Bolt of Brake Drum	H.Tensile	H.Tensile
39	Coupling Bush of Brake Drum	EPDM Rubber	EPDM Rubber
40	Slew Locking Assembly	3Nos	2Nos
	C. LUFF MOTION		
41	Luff Gear Box with screw & Telescopic Cover	3Nos	2Nos
42	Luff Nut for 16 T	3Nos	2Nos
43	Luff gear box for 12/16 T	3Nos	2Nos
44	Brake drum for luff	3Nos	2Nos
45	Lubrication pump	3Nos	2Nos
46	Pump coupling	3Nos	2Nos
47	Luff Drum with Coupling	3Nos	2Nos
48	Axle for Main Jib fitted on Revolving Structure	6Nos	4Nos
49	Tie pin	6Nos	4Nos
50	Axle for Main Jib with Flexible tie, Flexible tie with	3set	2set
	AFM & Itself Flexible tie		
51	Axle Back Stay fitted with Fly Jib	3Nos	2Nos
52	Axle for Fly Jib fitted with Main Jib	3Nos	2Nos
53	Axle for Fly Jib fitted with Bottom Pully	3Nos	2Nos
54	Spherical Roller Bearing for Main Jib	3Nos	2Nos
55	Spherical Roller Bearing for Back Stay & Fly with	Set	Set
56	Spherical Roller Bearing	1Set	1Set
57	Encoder	3Nos	2Nos
58	Radial Oil Seal for Jib, fly jib with back stay & back	set	set
	stay		
	D. TRAVEL MOTION		
59	Long Travel Gear Motor Unit	36Nos	24Nos
60	Driving Bogie Assembly	36Nos	24Nos
61	Trailing Bogie Assembly	36Nos	24Nos
62	Buffer Assembly	36Nos	24Nos
63	Strom assembly	6Nos	4Nos
64	Rail Scraper Arrangement	36Nos	24Nos
65	Travel Wheel for LT motion	36Nos	24Nos
66	Gear for driving & trailing bogie	36Nos	24Nos
67	Grease nipple	90Nos	60Nos
68	Wheel covers	36Nos	24Nos
69	Gear box on Driving Bogie	36Nos	24Nos
70	Coupling fitted in between Gear& motor	36Nos	24Nos
71	Thruster of travel assembly	36Nos	24Nos
72	Travel Wheel motor	36Nos	24Nos
73	Travel gear box	36Nos	24Nos
74	Bearing housing of Gear Wheel Axle	set	set
75	Spherical Roller Bearing for Gear Wheel Axle	set	set
76	Hook Block for 12 /16T	3Nos	2Nos

ANNEXURE-II (B)

TENTATIVE LIST OF ELECTRICAL SPARES

SL.NO.	ITEMS DESCRIPTION	МАКЕ
	A. HOLD & CLOSE DRIVE :	
01	Hold Motor 250/160 KW squirrel cagewith Pulse Encoder	ABB
02	Close 250/160 KW squirrel cage Motorwith Pulse Encoder	ABB
03	Master Controller	SEVA
04	Rotary Limit Switch	Bengal Technocrats
05	3 – Pole Switch Fuse Unit	ABB
06	Semiconductor Fuse 600,250Amps, 690 Volts, DIN 1	- DO -
07	Relay Board	Reputed
08	Fuse Base , 600, 250 Amps	- DO -
09	TWO pole MCB 16Amp, 32 Amp	- DO -
10	THREE pole MCB 16Amp, 32 Amp	- DO -
11	MPCB : 0.6 - 5.0 A	- DO -
12	MCB, Double Pole, 10 Amps	MDS
13	Power Contactor	- ABB -
14	Auxillary Contactor	- DO -
15	Auxillary Contact Block : 1 NC	- DO -
16	Auxillary Contact Block : 1 NO	- DO -
17	Thruster Brake Unit	Bubenzer
	B. LUFF DRIVE :	
18	Luff Motor with Tacho Encoder	ABB
19	Thruster Brake Unit	Bubenzer
20	Master Controller	
21	Push Button	SIEMENS / Bengal Technocrats
	C. <u>SLEW DRIVE :</u>	
22	Slew Motor	ABB
23	Thruster Brake Unit	Bubenzer
24	3 – Pole Switch Fuse Unit , 300 Amps,	ABB / Reputed
25	HRC Fuse, Rating: 2 Amps	- DO -
26	Fuse Base, 20 Amps	- DO -
27	TWO pole MCB 16Amp	- DO -
28	THREE pole MCB 16Amp	- DO -
29	MPCB : 10.0 - 16.0 A	- DO -
30	Control contactor	- DO -
31	MCB , Double Pole , 4Amps	MDS
32	Power Contactor	- DO -
33	Auxillary Contactor	- DO -
34	Auxillary Contact Block : 1 NC	- DO -

35	Auxillary Contact Block : 1 NO	- DO -	
36	24 V DC Relay 1 C / O	BOOST	
37	Power Supply, Input:110/230 V AC,	SIEMENS / PHONIX	
	Output : 24 V DC, Rating : 5 AMP		
38	Panel Cooling Fan,230 V AC, 50 Hz(Ex)	ABB / NA	ADI
39	Panel Space Heater	GIRISH EGO /	Reputed
40	Thermal overload relays Range 185 – 300 A.	ABB	
41	OLR 129 5-185A,690v-1000v,TA 450Du185	- ABB·	-
42	Socket 10Amp,3pin+1switch	Repute	d
43	CFL 11W,110v,CFL	Repute	d
44	Bimetal O / L Relays : 57 – 70 Amps	- ABB·	
	D. LONG TRAVEL DRIVE :		
45	LT Motor	SEW	
46	3 – Pole Switch Fuse Unit , 200 Amps,	ABB / Rep	uted
47	HRC Fuse, Rating: 2 Amps	- DO -	
48	Fuse Base , 20 Amps	- DO -	
49	TWO pole MCB 16Amp	- DO -	
50	THREE pole MCB 16Amp	- DO -	
51	THREE pole MCCB 100Amp	- DO -	-
52	MPCB : 1.0 – 5.0 A	- DO -	
53	MCB, Double Pole, 4Amps		
54	Power Contactor	- DO -	
55	Auxillary Contactor	- DO -	
56	Auxillary Contact Block : 1 NC	- DO -	
57	Auxillary Contact Block : 1 NO	- DO -	
58	24 V DC Relay 1 C / O	BOOST	
59	Panel Space Heater	GIRISH EGO /	Reputed
60	Panel meters	Repute	d
61	24V BCH relay board		
62	Bimetal O / L Relays : 8 – 12.5 Amps		
63	Lever type limit switch	Bengal Tech	nocrats
64	Lever type limit switch (Heavy duty)	Bengal Tech	nocrats
	E. COMMON ITEMS :		
65	1.1 KV. EPR Insulated copper Cable (4x240 sq-	Nicco	
	mm) & 11KV 25 sq. mm		
66	ELCB Double 15 to 32 Amps	ABB / Rep	uted
67	MCB Double 6 to 50 Amps	- DO -	
	List of Drive Components for MBE cranes :		
69	Description	Туре	Make
00	Drive (ACS 800- 04-0400-3 + D150 +L501	400 KVA	ABB
	+ L502 + N652)		
69	Drive (ACS 800- 04-0260-3 + D150 +	260 KVA	- DO -
70	$L_{201} + L_{202} + NO22$ Drive (ACS 800- 01-0120-3 + D150 + 1501 +		
	L502 + N652)	120 KVA	- DO -
1			

71	BR. Copper Contra SP Kit	Copper Contra SP Kit ABRC-01C		
72	Analog Input 1 X 8Ch.	AI801		
73	Input Bridge Prot SP Kit	AIBP-51	- DO -	
74	Input Bridge Cont	AINP-01		
75	Main Circ Interfa SP Kit	SP Kit AINT-02C		
76	EL Capacitor	ALS30C1023NP	- DO-	
77	Analog Output 1 X 8Ch.	AO801	- DO-	
78	Power Supply Boar	APOW-01C	- DO-	
79	EL Capacitor	B43586-S9418-	- DO-	
		Q1	20	
80	Redundant Profibus DP-V1 Comm, Interface	C1840A	- DO -	
81	Dual RS 232-C Interface	C1853K01	- DO-	
82	Profibus DP-V1 Interface	C1854AK01	- DO-	
83	Digital Input 24V DC	DI801	- DO-	
84	Digital Output 16Ch.	DO801	- DO-	
85	Current Transduce	LF 1005-S/SP16	- DO-	
86	Current Transduce	LF 305-S/SP11	- DO-	
87	Current Transduce	LF 505-S/SP13	- DO-	
88	DDCS Braching Unit	NDBU-95C	- DO-	
89	Discharging Resis, 7K 50W	NXBU 3X4	- DO-	
90	Redundant Processor Unit	PM861AKO2	- DO-	
91	Fan & Capacitor	RB4C-355/170K – 9207RH3	- DO -	
92	Choke	RCH05631	- DO-	
93	With Crane Software ACXR7010	RDCU-12C	- DO-	
94	With Crane Software ACXR7200	RDCU-12C	- DO-	
95	DDCS Common, Option / SP Kit	RDCO-01C	- DO -	
96	Digital I/O Exten	RDIO-01	- DO -	
97	Reference Setting Board 6 step	REFERENCE SETTING BOARD	- DO -	
98	Relay Board, 16 Ch with Fuse	RELAY BOARD	-DO -	
99	Main Circuit Inter	RINT6611C	- DO -	
100	Control Board with Crane Software ACXR7010	RMIO-11C	- DO -	
101	Pulse Encoder INT Option / SP Kit	RTAC-01	- DO -	
102	Varistor Board	RVAR5612	- DO -	
103	Module Bus Terminator	TB807	- DO -	
104	Bus Outlet	TB805	- DO -	
105	Termination Unit	TU847		
			- DO -	

106	Power Resistor	VHPR 80HX 3R3 K+SKN	- DO -	
107	Thyristor / Diode M SP Kit for 400KVA Drives	SKKH570/16E	- DO -	
108	IGBT-Module SP Kit for 400 KVA Drive	FS450R12KE3 / AGDR-61C	- DO -	
109	IGBT-Module	SKM400GAL124D	- DO -	
110	Gate Drive Board IGBT, SP Kit forFS300R12KE3 /260KVA DriveAGDR-81C		- DO -	
111	Thyristor / Diode M / 3PCS SP Kit	- DO -		
112	IGBT-Module 3PCS SP Kit	FF200R12KE3	- DO -	
113	IGBT-Module 3PCS SP Kit FF300R12K		-DO-	
114	Thyristor / Diode Module of 3PCS SP Kit	TD162N16K	-DO-	
115	Voting Unit	SS822Z	- DO -	
116	Battery Unit	SD821	- DO-	
117	Power Supply Device, 5A	SD822Z	- DO -	
118	Lithum Battery 3.6V L.S. 33600	SAFT	- DO -	
	G. COMMON H.T. ITEMS			
	LIGHT FITTINGS			
119	35/70 W LED Flood Light Fitting	BAJAJ/CG/Philips/Surya		
120	250 W LED Flood Light Fitting	- DO -		
121	400 W LED Flood Light Fitting	- DO -		
122	LED TUBE Light Fitting	- DO -		

MAJOR REPAIR WORKS

MECHANICAL

- 1. Repair/ Replacement of Fly Jib, Main jib & Portal body.
- 2. Replacement of Slew Bearing.
- 3. Replacement of Luff Nut & Telescopic cover.
- 4. Replacement of bearing of all ties, main boom, backstay, A frame.
- 5. Replacement/ Major fabrication of Operator Cabin.
- 6. Replacement/Repair to Gear Box.

ELECTRICAL

- 1. Fabrication & installation of CRD Assembly.
- 2. Rewinding of Motor & Transformer except LT Motors.
- 3. Revamping of Drives.

NOTE: THE MAJOR REPAIR WILL BE CARRIED OUT BY DEENDAYAL PORT AUTHORITY SEPARATELY WHICH IS NOT COMING UNDER THE SCOPE OF CONTRACTOR.

Signature & Seal of Contractor S/d-Superintending Engineer (E) Deendayal Port Authority

ANNEXURE-IV

List of Tools & Tackles

Sr.	Description	Qty.
No.		
1.	BOX SPANNER SET UPTO 50MM	1 Set
2.	FIX SPANNER SET	1 Set
3.	RING SPANNER SET	1 Set
4.	HAMMER DRILL M/c	1 Set
5.	HOT AIR GUN	1 No
6.	HIGH TORISSION RACHET FOR TIGHTINING OF SLEW HARDWARE	1 No
7.	HAND OPERATED GREASE GUN 10-15 KG CAPACITY	1 No
8.	HIGH PRESSURE JET PUMP 15-20 BAR CAPACITY	1 No
9.	AIR COMPRESSOR 10 BAR	1 No
10.	CHAIN BLOCK 5 TON	1 No
11.	CHAIN BLOCK 10 TON	1 No
12.	HAMMER / SLEDGE	1 No
13.	PLIER OF ALL TYPES	1 No
14.	CROWBAR	1 No
15.	LIFTING BELT 4/6/10 TON	1 No
16.	SHACKLES OF ALL REQUIRED CAPACITY	As per sire requirement
17.	ELECTRICAL MEGGER 1000V HAND OPERATED	1 No
18.	HAND GRINDER	1 No
19.	WIRE ROPE CUTTER	1 No
20.	CRIMPING TOOL (HEAVY DUTY) UPTO 300SQMM	1 No
21.	CRIMPING TOOL (LIGHT DUTY) UPTO 50SQMM	1 No
22.	COMPLETE SET OF SCREW DRIVER	1 Set
23.	MANILA ROPES 25-50MM	130 MTR X 2 LENGTH
24.	INDUSTRIAL VACCUM CLEANER	1 Set
25.	GAS HOSES WITH CUTTING SET, REGULATOR	1 Set
26.	GUN DRILL UPTO 10MM	1 No
27	RCC Demolition Beaker Machine of Boss/ JPT make	1 No
27.	DIGITAL MULTIMETER	1 No
28.	TONG METER	1 No
29.	FOLDABLE LADDER UPTO 4Mtr HEIGHT	1 No

Signature & Seal of Contractor S/d-Superintending Engineer (E) Deendayal Port Authority

GENERAL TERMS AND CONDITION.

- 1. The work shall be carried out inside Cargo Jetty Area. Necessary entry permit is to be arranged by Contractor.
- 2. The Contractor shall ensure not to cause any damage to the Port properties in the vicinity of work site during the execution of work including new slew bearing. If any damage occurs due to workmen of contractor, the contractor shall have to make good the loss of damage at his own cost and risk all damages caused by his workmen to the Port property or Port equipment and no any extra payment shall be made to him on that account.
- 3. The Contractor shall arrange all Tools and Tackles for execution of work.
- 4. D.P.A shall arrange power supply, fire watch, free of cost to the contractor.
- 5. D.P.A shall provide required space for storage of dismantled items of cranes / other materials free of cost.
- 6. D.P.A shall provide required weights along with slings for load testing of cranes.
- 7. The contractor shall have the full knowledge of the site of the work and local conditions before commencing the work and no claim whatsoever will be entertained for any nature of work arising out of local conditions.
- 8. Necessary Indian Dock Safety regulation for safety purpose shall be adhered by the contractor and he will be held responsible for any violation of the same and contractor has to supply all required PPE to his workman.
- 9. The Contractor will ensure that his labour shall strictly adhere to all safety measures during the execution of work so as to avoid any accident.
- 10. The steel supplied should as per original as per IS.
- 11. The work includes all material & labour as directed by Engineer-In-Charge.
- 12. Force Majeure. this will be restricted to natural calamities and acts of God only.
- 13. An adjustable anemometer should be provided at the top of the crane. It should continuously monitor wind velocity and should give out an alarm when wind velocity exceeds 72 kmph (20m/s) limit. It should also have a visual display inside the crane operator's cabin to read the wind velocity.

14. Terms of Payment

All payment shall be made in Indian rupees unless specifically mentioned.

- a) On successful completion of one-month Maintenance contract work for all cranes, the Contractor shall submit the bill along with that month's maintenance schedule filled up and complete in all respect, labor Report, Staff Profile & TPIA certification for that month and payment shall be released to the contractor for satisfactory working of cranes and documentation maintained by the contractor as per tender Conditions.
 - (i) In the first year of contract, in order to release 7th and subsequent running account bill, the contractor is required to successfully complete the maintenance work mentioned in half yearly Maintenance schedule.

- (ii) In the second year of contract, in order to release 13th and subsequent running account bill, the contractor is required to successfully carry out maintenance work mentioned in half yearly (2nd half) and Yearly Maintenance schedule of first year.
- (iii) In the second year of contract, in order to release 19th and subsequent running account bill, the contractor is required to successfully complete the maintenance work mentioned in half yearly Maintenance schedule of second year.
- (iv) In the second year of contract, in order to release 24th running account bill, the contractor is required to successfully carry out maintenance work mentioned in half yearly (2nd half) and Yearly Maintenance schedule of second year.
- (v) Regarding above, if any activities mentioned in the Maintenance Schedules could not be performed by the contractor for the reason attributable to DPA or the reasons beyond the control of the contractor, the payment monthly payment will be released by the DPA. However, said activities are required to be successfully completed by the contractor with in time period stipulated by the CME. In this regard, the contractor is required to give a written submission narrating the circumstances which lead to nonexecution of activities mentioned in the Maintenance Schedules. In this regard, the decision of CME will be final and binding on the contractor.

The payment will be made through RTGS.

- b) In order to get the reimbursement of the cost of spare parts procured by the contractor as per Scope of work, the contractor is required to submit the following documents:
 - 1) Certificate of being OEM or authorized dealership certificate.
 - 2) Price list of OEMs/Authorize Dealer.
 - 3) A certificate from OEM/authorized dealer that the rate quoted by them is same as being quoted to other government agencies.
 - 4) A report containing justification for requirement of such spare parts.
- c) The reimbursement of the spare parts mentioned in Scope of work will made by DPA on actual basis after receipt of the material in good conditio
- **15.** Income Tax shall be deducted at source from the payment of bill as applicable.
- **16.** <u>Time Schedule:</u>

The contract shall be effective from the date of issue of Work Order and the work shall remain in force for 24 (Twenty-Four) Months. However, the same can be extended for any period maximum up to 1 years on the same rates of final year, term & condition and quantity (arrived proportionately) on mutual consent.

17. Insurance:

The contract shall provide in the joint names of the employer and the contractor, insurance cover from the start date to the end of guarantee period for the following events which are due to the contractor risk:

a) Personal injury or death.

The contractor shall obtain necessary licence for engaging workers from labour commissioner as may be stipulated by the labour Commissioner. The contractor shall arrange insurance coverage for the workmen to be engaged by them at their cost

18. Liquidated Damages:

(I) The Contractor shall ensure that every Crane is always ready for operation on demand. Each Crane will be allowed for eight hours shift, per month for planned/ preventive maintenance. Each Crane should be available minimum 85% of total hour per month, deducting one 8 Hrs shift of maintenance.

Availability calculation shall compute as under.

Let (A) = Number of possible cranes hour in a month (24 hours may be taken if the Port operation in 3 shifts.)

B= Number of hour the Crane are available under maintenance.

- C= Net hour of Crane after planned or preventive maintenance in a month.
- D= 85% of hour the Cranes should work in a month.
- E= Net availability of crane.
- F= Availability maintain or not if any.
- G= Penalty @Rs: 1000/- per hour

The above penalty is applicable if the materials are provided from DPA side. If the requisite materials are not available penalty will not be imposed.

Penalty calculation of MBE cranes on monthly basis.

Period*	Total	Allowed**	Actual	85 %	Availabilit	Short	Penalt	Out
(Monthly)	hour	Planned	Hour	hours	y of	fall	у @	of
	in	/preventiv	In a	of Sr.	Cranes in	hours	1000/-	orde
	mont	е	month	No. (C)	hours	if any	per	rs
	h	Maintenan	(A-B)			i.e.	hour	
		ce for each				(D-E)	per	
		crane					crane	
	Α	В	С	D	E	F	G	Н

(II) SHORTFALL OF STAFF:

In case of any shortfall in deployment of maintenance staff as per Clause 5 of Section-V, penalty as under per shift per staff will be levied:

- (i) Service Engineer Rs. 2000/-
- (ii) Mechanical/Electrical Engineer Rs. 1500/-.
- (iii) Skilled Supervisor (Mechanical/Electrical) Rs. 1000/-
- (iv) Time Office Clerk/Mechanical/Electrical Technician/ welder cum fitter Rs. 800/-
- (v) Helper/Cleaner Rs. 500/-

(III) SHORTFALL OF CONSUMABLES:

In case the contractor fails to maintain requisite quantity of consumables as mentioned in ANNEXURE-I, penalty at the rate of Rs. 2000/- per day and part thereof basis will be recovered from the payment of contractor till the materials is deposited by the contractor.

(IV) TOOLS & TACKLES:

In case the contractor does not keep required tools & tackles as per ANNEXURE-VI, penalty at the rate of Rs. 1000/- per day and part thereof basis will be recovered from the payment due to the contractor till the required consumables are deposited by the contractor.

(V) DELAY IN PROCUREMENT OF SPARES:

In case the contractor fails to procure the material within the time limit mentioned in the offer of the supplier which will be obtained by the DPA, penalty at ½% of the "Supply Order Value" (Annexure-IV) per week and part thereof will be recovered till procurement of the same. There is no maximum limit of imposition penalty.

(VI) DELAY IN SUBMITTING MAINTENANCE SCHEDULE:

In case there is a delay in submitting the maintenance schedules, penalty at the rate of Rs. 1000/- per day and part thereof basis will be recovered from the payment due to the contractor till the schedule is submitted by the contractor.

(VII) DELAY IN COMPLETION ACTIVITIES AS PER MAINTENANCE SCHEDULE:

In case the contractor failed to execute any activities mentioned in the Maintenance Schedules or failed to execute it within the extended period allowed by DPA, penalty at Rs. 1000/- per activity per month and part thereof basis will be recovered from the payment due to the contractor till the activity is successfully completed by the contractor.

(VIII) REGISTER UPDATE:

In case the contractor does not maintain or update any log book or register, penalty at Rs. 1000/- per register or log book on per day and part thereof basis will be recovered from the payment due to the contractor till the same is maintained or updated by the contractor.

(IX) DELAY IN ASSESSING THE REQUIREMENT OF SPARES:

In case the contractor fails to submit the list of spare parts as mentioned in the of scope of work within 30 days from the date of issue of work order, penalty at the rate of Rs. 2000/- per day and part thereof basis will be recovered from the payment due to the contractor till the list is submitted by the contractor.

(X) DELAY IN ATTENDING BREAKDOWN:

For any breakdown (except major breakdown) during operation of the crane, Staff has to instantly attend and rectify the breakdown within 60 minutes, exceeding which, an amount of Rs.600/- will be charged or levied as penalty for every hour or part thereof for the first 2 hours. After which, the penalty will be levied at double the rate per hour or part thereof. However, in case of change of Wire Ropes/Drives failure/Repair/Motor Failure will be given to 8 Hrs.

19. Guarantee:

The guarantee period shall be valid up to 18 (Eighteen) months with effect from the date of acceptance of the spares by DPA or 12 (twelve) months from the date of installation, whichever is earlier in case of Contractor supply the spares as per the scope of work against supply order.

The Contractor shall give guarantee to the Board that the goods and services under this contract will comply strictly with the contract, shall be first class in every particular case and, shall be free from defects. The Contractor shall further give guarantee to the Board that all materials, equipment and the supplies furnished by him will be new and fit for their intended purposes.

The Board shall promptly notify the Contractor in writing of any claim arising under this guarantee. Upon receipt of such notice, the Contractor shall promptly repair or replace the defective goods and/or services at no cost to the Board

If the Contractor, having been notified, fails to rectify the defects in accordance with the contract, the Board may proceed to take such remedial action as may be necessary, at the Contractor's risk and cost.

20. Employer's Obligation:

(i) Two quarter will be allotted, if required, by contractor if available at DPA Kandla Colony, on chargeable bases as per prevailing rate & rent as per DPA Norms during the tenure of contract and the same shall be handed over by contractor on completion of contract to DPA, failing which standard rent as per prevailing DPA norms will be deducted & stern action will be initiated. Last month's payment towards AMC charges will released after deduction of all kind of dues arise out of anything and subject to handing over the Quarter/Quarters, Office Rooms allotted to the contractor.

For office premises room will be allotted, if available & for staff/store additional room will be allotted on chargeable bases and its electricity bill is also to be borne by contractor as per DPA Norms.

21. Third Party Inspection:

DPA shall appoint the TPIA for monitoring the AMC work, if any observations/queries are made by Third Party Inspection Agency; the same shall be complied by Contractor before the next schedule visit. The TPIA will check and certify the same. Payment for subsequent month may withhold if any quarries raised by TPIA are not complied by AMC Contractor (under the scope of AMC works). The charges incurred for Third Party Inspection Agency will be borne by DPA.

22. Registers to be maintained at site:

1. Site order Book:

A site order book is to be maintained by the contractor at the site. The work orders and instructions written in the site order book shall be deemed to have been legally issued to the contractor shall sign each entry in the site order book as a token of his having seen the same. The site order book shall be property of the Board and shall be handed over to the Engineer-in-charge of the work in good condition on the completion of the work or whenever required by the Engineer-in-charge or his authorized representative.

2. Hindrance Register

Every type of hindrance arising during the execution of work should be invariably recorded in the hindrance register. The Hindrance Register is to be maintained by the Engineer In Charge at the site. The contractor shall sign each entry in the hindrance Register as a token of his having seen the same. The Hindrance Register shall be property of the Board.

3. Material accepts & issue register

A Material accepts and issue register is to be maintained by the contractor at the site. The consumable material received at site and issue of the same to be noted in the register and said record to be maintain during the tenure of Contract. The Material accepts and issue register shall be property of the Board and shall be maintained at Crane Store.

In addition to above registers maintained, the contractor is required to maintain the following registers:

- 1. MUSTER FORM XVI
- 2. REGISTER OF FINES FORM XXI
- 3. REGISTER OF DEDUCTION FOR DAMAGE OR LOSS FORM XX
- 4. REGISTER OF WAGES FORM XVII
- 5. REGISTER OF ACCIDENT, MAJOR ACCIDENT FORM No 29
- 6. REISTER OF WORKMEN EMPLOYED BY CONTRACTOR FORM13
- 7. REGISTER OF ADVANCE FORM XXII
- 8. REGISTER OF OVERTIME FORM XXIII
- 9. Profile of staff personnel for posted staff during AMC period.
- 10. Consumable, Tools and Plants.

Following statements in the prescribed format shall be produced at the end of every month to the department

- a. Availability statement
- b. Manpower attendance
- c. Status of safety items in the crane.
- d. Preventive maintenance schedule
- e. Consumable statement
- f. Break down details
- g. Documentary evidence for complying with ESI & EPF ACT, insurance coverage.

All the documents prepared by the contractor will be the property of DPA. The contractor will not share the information contained in the above said log books registers with any outside person without written permission of EIC.

The contractor will hand over the logs and registers to DPA at the time of completion of contract period.

23. Tools & Tackles:

All the tools and tackles as per **ANNEXURE-IV** of scope of work, will have to be arranged by the contractor at his own cost for executing the work. Arrangement for storing the materials, tools etc. will also have to be made by him. The EMPLOYER shall not be responsible for any theft/loss of any materials, tools, etc. stored/brought by the contractor for execution of work within the Port area.

24. Valid Electrical Contractor License and Electrical Supervisor Certificate: (For Electrical Work Only)

While carrying out of electrical work, contractor will have to provide a person having Electrical Supervisory Certificate issued by Competent Authority. The electrical works shall be carried out as per IER. The Crane Manufacturers are exempted to submit Valid Electrical Contractors License issued by Competent Authority.

25. Rejection:

Substitution, changes or delays shall not be accepted unless confirmed by us. Rejected materials, if any, shall have to be collected from site within two weeks after receipt of intimation.

26. Reduced Rates during Major Repairs:

If any crane is withdrawn from operation by DPA due to poor maintenance or owing to insufficient spare or consumables for more than 10 days, the payment towards AMC will be made at reduced rate of 20% of the AMC cost of that particular crane from the date of withdrawn of the crane till it put into operation. However, AMC Contractor has to maintain cleaning of complete crane, maintenance of power supply travelling operation, greasing of travelling bogies, maintain on operation condition of working drives, lighting of cranes and maintenance of Air Conditioners.

However, at the time of issuing the work order, if any crane is under major repair, the Contractor shall take over the working cranes and proportionately deploy the Labour and the payment for cranes taken over by contractor shall be made to contractor, but the payment of crane which is under major repairs shall be given to contractor only after taken over by contractor after major repairs and increase the man power proportionately which reduced during non-working of cranes under major repairs.

27. All major/minor repairs, (exclusion - replacement of structures and slew bearing etc.) preventive maintenance and periodical maintenance shall be attended by the contractor. All Spares (Mechanical, Electrical and Electronics) will be supplied by the Port.

S/d-Superintending Engineer (E) Deendayal Port Authority

Signature & Seal of Contractor