# DEENDAYAL PORT AUTHORITY

**ELECTRICAL DIVISION**

**Office of the**
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**Electrical Division,**
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No.EL/AC/2845 Date: 25/07/2024

**To**

**M/s. _____.,**
_____,
_____,
_____.

## "EXPRESSION OF INTEREST (EOI)"

**Subject – "Maintenance Contract of 25T (3 Nos.) capacity TIL make 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.) capacity TIL make 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 work on 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 forevaluation purposes.

Your EOI with budgetary offers for the above work should reach this office via either courier or email mentioned above, till 08.08.2024on or before 15:30 hours.

**-sd-**
**Superintending Engineer (E)**
**Deendayal Port Authority**

## "Schedule B"

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

(In Word Rs. _____ Inclusive of all taxes but excluding of GST)

Sd/-

Signature & Seal
of Contractor

**Superintending Engineer (E)**
**Deendayal PortAuthority**

## Scope of Work

### 1. General:

3 Nos. TIL Cranes of 25T capacity ELL Cranes were commissioned at Berth Nos. 10 & 11 & inside Cargo Jetty Area, Deendayal Port Authority in the year 2006-07.

Deendayal Port Authority intends to outsource the Maintenance of 3 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 capacities TIL makes wharf Cranes for a period of 2 Years"

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 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 three number of TIL cranes in present condition and commence the AMC work.

(a) Full AMC will be applicable for respective no of crane (s) put in traffic operation.

(b) In case of crane (s) is not worthy for traffic operation payment will be made at 20% reduced rate of the AMC cost will be applicable, until the Crane (s) is put in operation. However, it will be in the scope of AMC contractor to perform the 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 the said 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 and AMC Cost is to be paid 20% till put in to commissioned. 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 beprovided within a period of 30 days from putting ELL Cranes into traffic operation. In absenceof list of critical spares any breakdown shall be treated in contractor's account.

The Maintenance Contract includes all kind of schedule and preventive maintenance as per ANNEXURE's (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, required materials mentioned and updated time to time are to be procured by the contractor as and when required and accordingly, cost 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 atits 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 as mentioned above.

The cranes shall be secured, if any weather 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 year and include topping of oil if leaking from any gear box, Replacement of 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 5.5 KW squirrel cage motor of SEW make, if its parts like spring/ terminal plate/fan/bearing/fan cover got wear out same is to be attended by contractor on their own cost.

**Slew Assembly:**

The Maintenance Schedule consists daily cleaning of whole assembly such as gearbox, motor, fluid coupling, thrusters, and SLEW BEARING. 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 attending of coupling pulley and hardware every year without fail, gear box, replacement. Hardware's, brake liner is to be attended by contractor along with requisite original/equivalent material,

Similarly its motor is of 37 KW squirrel cage motor of Siemens make, if its parts like 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 will be done once in two year 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 250 KW squirrel cage motor of Siemens make, if its parts like 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/grease 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 year 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 45 KW squirrel cage motor of Siemens make, if its parts like 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 32 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 10 $m^3$, 12 $m^3$, 16 $m^3$, 18 $m^3$ & 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. However, if require to replace with new one, same will be replaced by DPA by separate work.

These Cranes were equipped with Siemens (SEMOVERT) drives at the time of inception. At present these drives are phased out by the Siemens and due to that Revamping / retrofit has been done in Crane No. 12 with new version (SINAMICS) drives of M/s. Siemens in the year 2016. The other 2 cranes drives were also retrofit with latest version of (SINAMICS) drives of M/s. Siemens in the year 2021. In case of failure of any driver the spare parts, control cards and its components, same will be provided by DPA. However, as and when required laptop uploaded with software will be provided for trouble shooting only.

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 drives, PLC unit, Master controllers, limit switches, motors, gear boxes, CRD, central collector column, power and control contactors, fuses, HRC fuses, batteries and other consumables. Moreover, attending the H.T fault from substation to the bell-mouth is in the scope of the contractor with the support of the DPA representative.

**2. 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, Siemens PLC & 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, during the contract period.

In natural climates such as cyclone, heavy rain, warning situations the contractor shall be responsible for making arrangements for locking of Cranes, its super structure etc. even after that any damage occurs to Cranes due to negligence of contractor, the contractor shall be responsible for that & damage shall be make good by contractor at his own for which DPA shall not pay.

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/equipment's 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.

**3. 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 the eachsubstation 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.

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

| Description | Time line |
|---|---|
| 1st year of AMC contractor | |
| 1) half yearly activities | Within 30 days from the date of issue of wok order |
| 2) 2nd half year activities | Between 5th and 6th 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 11thth and 12th month of the contract period |
| 2) 2nd half year activities | Between 17th and 18th month of the contract period |
| 3) Yearly activities | Between 11th and 12th month of the contract period |

The Engineer-in-charge 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 Engineer-in-charge will be final and binding on the contractor.

**4. Documentation:**

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

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.

**5. Deployment of Maintenance Staff:**

The Contractor shall have to deploy Service engineer (over all In-Charge) who has 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/Diploma in Mechanical/Electrical Engineer with at least 5-7 years of experience in maintenance bulk handling equipment like ELL Cranes/ Ship-loader/ship unloader/stackers/reclaimers etc. | 1 in General shift |
| 2 | Mechanical Engineers | Degree/ Diploma holder with 3 years relevant experience. | 1 in General shift |

| | | | |
|---|---|---|---|
| 3 | Electrical / Electronic Engineers | Degree/ Diploma holder with 3 years relevant experience. | 1 in General shift |
| 4 | Time office clerk | Higher secondary passed with computer proficiency. | 1 in General shift |
| 5 | Skilled Supervisor (Mechanical) | Diploma holder with 5 years relevant experience. | 1 in each shift |
| 6 | Skilled Supervisor (Electrical) | Diploma holder with 5 years relevant experience. | 1 in each shift |
| 7 | Mechanical Technicians. | ITI Holder with relevant Experience. | 1 in each shift |
| 8 | Electrical / Electronics Technician | ITI Holder with relevant experience. | 2 in each shift |
| 9 | Welder cum fitter | Having knowledge of welding & fitting at any workshop. | 1 in General shift |
| 10 | Cleaner | Having knowledge of cleaning of heavy machinery at any workshop | 1 in each shift |
| 11 | Helper | Worked as Helper / Cleaner of any artisan at any workshop | 2 in each shift |

**Total 29 staff members.**

The normal deployment of Contractor's personnel in each shift shall be on 8hrs. Basis. However, 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 inshift 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.

## 6. 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 - 07:00 hrs. To 15:00 hrs.
2nd Shift - 15:00 hrs. To 23:00 hrs.
3rd Shift - 23:00 hrs. To 07:00 hrs.
General Shift - 08:00 hrs. To 17:00 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 authorised 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:

### 8.1 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

8.1.1 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.

8.2 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, 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 non-operational 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.

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 RotheErde.

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 | Type |
|---|---|---|---|
| 01 | Raceway | Aral, Castrol, Total, Kluber lubrication, Mobil, Fuchs, IOC, BPL, Reliance, Lubricants, Shell | Aralub HLP 2, Spheerol EPL 2, Multis EP 2, Centoplex EP 2, Mobilux EP 2, Lagermiester EP 2, AlvaniaEp (LF) 2. Even if latest lubricant manufacturer can also be enlisted, subject to having all the relevant characteristics / equivalent of existing one to be provided by contractor. |
| 02 | Gear | Aral, Castrol, Total, Kluber lubrication, Mobil, Funch, IOC, BPL, Reliance, Lubricants,, Shell | Aralub MKA –Z 1, Mollub-Alloy 970/2500-1, Ceran AD PLUS, GRAFLOSCON C-SG 0 ultra, Mobile gear OGL 461, Ceplattyn KG 10 HMF, Malleus OGH. Even if latest lubricant manufacturer can also be enlisted, subject to having all the relevant characteristics / equivalent of existing one to be provided by contractor. |

**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. If Major break down/ any Break down is repaired within 10days by the AMC Contractor, the B/D time is in the account of DPA and the TPI inspection cost shall be borne by DPA.

**13. Consumables & Spares:**

A) CONSUMABLE:

The Contractor shall arrange to maintain the consumables as per Annexure-I (A & B) on monthly basis to the crane store of DPA and material will be issued on production of requisition by Contractor. Consumables are to be maintained within 7 days of commencement of every month (monthly billing cycle).

B) SPARES

(a) The contractor, within 30 days of issue of work order, is required to inspect of all 3 Nos. of TIL 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 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) Contractor is responsible for a planning and procurement of spare parts from time to time for effective performance. The contractor shall plan the requirements in Annexure-I & II and submit to DPA along with rates, accordingly DPA shall process the draft supply order which is the part of Tender and after approval of competent authority the contractor shall procure and supply the same to DPAwithin the time period specified in supply order.

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. 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 i.e. inside & outside luminaries fixed at 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.

**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:**

The Contractor have to paint all the Cranes one by one by cleaning of blister formation, rusted surface of crane main structure & secondary structure complete during First / Second year of commencement of AMC Contract. The paint shall be applied as under and 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 and thinner shall be supplied by DPA free of cost if available. In case of non-availability of paint and thinner with DPA the contractor shall provide the paint and thinner with written consent of DPA as mentioned in above paras and the cost of paint and thinner shall be reimbursed by DPA on actual basis. The downtime for painting **shall be considered in DPA account, provided sufficient manpower shall be deployed for painting under time bound period.**

**19. H.T. trailing cable joint:**

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

Description of Trailing Cable: 3C X 25 + 3C X 16/3 sq.mm, 11KV (E) Grade ERP insulated flexible round tailing cable.

Length: 100 Meter for each Crane

**Note: - Cable Joint kit shall be supply by Contractor free of cost (from the consumables they have deposited).**

**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.

**Sd/-**

Seal & Signature
of Contractor

**Superintending Engineer (E)**
**Deendayal Port Authority**

ANNEXURE –I

Consumables:

A. MECHANICAL CONSUMABLE ITEM

| Sr. No. | Description | Qty. |
|---|---|---|
| 1. | 460 / 320/220GEAR OIL or suitable for drive gears as recommended by OEM for HOLD/CLOSE, Luff, Slew & LT | 1 Drums (210ltrs) of each type of Oil. |
| 2. | EP 2 GREASE. (Lithium saponified mineral oil of NIGI Grade 2 with EP Additives). | 1 Drums (180 Kg.) |
| 3. | OIL FOR FLUID COUPLING Servo 32 or 46 or its equivalent. | 20 ltrs. |
| 4. | CARDIUM COMPOUND. | 1 Drums (180 kg) |
| 5. | GAS (DA) | 1 Cylinder |
| 6. | GAS (OXYGEN). | 2 Cylinder |
| 7. | WELDING ELECTRODES FOR ALLTYPES OF METAL WELDING/FILLING. | Hardox 7018 – 10 PktMS 6013 - 10Pkt SS – 10Pkt. |
| 8. | DIESEL/CLEANING SOLVENT. | 40 ltrs. |
| 9. | CONTACT CLEANER SPRAY. | 10 Tin (500 ml) |
| 10. | RUST CLEANER SPRAY. | 10 Tin (500 ml) |
| 11. | HIGH TENSILE NUTS & BOLTS, ALLEN KEY OF ALL SIZE WITH FLAT/SPRING WASHER, SPLIT PIN.EXCLUDING SLEWBEARING HARDWARE. | As per requirement |
| 12. | CLEANING CLOTH | 100 kg. |
| 13. | Araldite /M seal/ Anabond | 5 Pkt. each |
| 14. | EPOXY / ENAMEL PAINTS MARINE GRADE SUCH AS (JOTUN, INTERNATIONAL/CARBOLINE/SIGMA). | 4 Drums (20 ltrs.) |
| 15. | EPOXY METAL / ENAMEL METAL REDOXIDE. | 4 Drums (20 ltrs.) |
| 16. | LEAD /RESIN COMPOUND. | 10 kg. |
| 17. | HYDRAULIC OIL FOR THRUSTERS. | 1 Drum (20 ltrs.) |
| 18. | HYDRAULIC OIL FOR THRUSTERS. | 1 Drum (20 ltrs.) |
| 19. | OIL SEAL OF ALL SIZES. | As per site requirement |
| 20. | RUBBER BUSH & HARDWARES FOR ALL COUPLINGS. | As per site requirement |
| 21. | EPDM RUBBER BEEDING & TOUGHEND GLASS OF ALL SIZES. | As per site requirement |

| | | |
|---|---|---|
| 22. | ALL TYPE OF CLEANING BRUSHES (SOFT HAIR/COIR/NYLON BRISTLES). | As per site requirement |
| 23 | M.S Angle 50 x 50 x 6mm | 05 mtr |
| 24 | M.S Channel Size 150 x 60 x 8 mm | 05 mtr |
| 25 | Square Pipe 25 x 25 mm | 10 mtr |
| 26 | M. S plate 3 mm (of Size 4 x 8 feet) | 01 no |
| 27 | Chequer Plate 5mm x 3600 x 1500 (Approx. 216 Kg) | 1 sheet |
| 28 | 32mm dia G.I Class "B" Grade Pipe (5 mtr length per pipe) | 5 no's |

B. ELECTRICAL CONSUMABLE ITEM

| Sr. No. | Description | Qty. |
|---|---|---|
| 1. | LED fixtures of rating 70 to 250W. INDOOR/OUTDOOR, INDUSTRIAL FIXTURES | As per site requirement |
| 2. | PUSH BOTTON / ACTUATER / CONTACT BLOCK/COILS/MPCB/SMPS | As per site requirement |
| 3. | INDICATION LED LAMP/ KWH/VOLT & AMP METERS CT TYPE | As per site requirement |
| 4. | CONTACTOR KITS OF ALL SIZES ALONG WITH THEIR RATED COIL | As per site requirement |
| 5. | CRIMPING TYPE LUGS & FERRUL OF CU/AL ALL SIZE | As per site requirement |
| 6. | HRC FUSES OF REQUIRED SIZE WITH ITS BASE & CURRENT RATINGS | As per sire requirement |
| 7. | SEMICONDUCTOR FUSES OF REQUIRED RATING. | As per site requirement |
| 8. | ALL REQUIRED SIZES OF RELAYS. | As per site requirement |
| 9. | 1.1 KV EPOXY INSULATOR FOR ALL ELECTRICAL SUPPORT | As per site requirement |
| 10. | H CLASS INSULATION FIBRE TAPE/ SHEETS 2 MM THICKNESS AND ABOVE | 2 Roll |
| 11. | SELF FUSING TAPE OF 50MM WIDTH 1MM THICK & 10/15M LONG | 10 Roll |
| 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. | WALL MOUNTING FAN 18"/450MM, 230V, 50HZ. | 2 Nos. |
| 16. | Exhaust Fan (300m Sweep) Bajaj Maxima DX | 1 Nos |
| 17. | ENCODER COUPLING. | 2 Nos. |
| 18. | End termination cable joint kit | 2 nos |

| | | |
|---|---|---|
| 19. | Straight Through & End termination cable joint kit for trailing cable of size 3C X 25 Sq.mm. suitable for Copper Conductor EPR Cable | 4 Nos. |

ANNEXURE-II(A)

TENTATIVE LIST OF MECHANICAL SPARES

| S/N | Item Description | Part No. | Qty. |
|---|---|---|---|
| | **A. HOLD / CLOSE MOTION** | | |
| 01 | Hold /Close Gear Box | X 4119300129/130 | 02 |
| 02 | Hold /Close Brake Drum with Coupling | Z 4119300132 | 02 |
| 03 | Hold /Close Brake Drum | Z 4119300133 | 02 |
| 04 | Rope Drum Coupling of Hold / Close & motion | Z 7364000075 | 02 |
| 05 | Bearing housing assembly of Hold/Close motion | Z 2119300046 | 02 |
| 06 | Bearing Support of Hold/Close motion | V 4119300084 | 02 |
| 07 | Hook Block Assembly – 25 T | U 21193001103 | 01 |
| 08 | Grab 16 M – CU | | 01 |
| 09 | Grab Pulley | | 04 |
| 10 | Grab Balancer | | 01 |
| 11 | Close Rope Pulley :i) 900 mm dia | | 06 |
| 12 | Hold Rope Pulley : i) 900 mm dia<br>ii) 850 mm dia | | 04<br>02 |
| | | | |
| 13 | Steel wire rope 32 mm dia 6/36 construction Steel core (LHS) 125mtrs. Length | X 4119300146 | 02 |
| 14 | Steel wire rope 32 mm dia 6/36 construction Steel core (RHS) 125mtrs. Length | X 4119300147 | 02 |
| 15 | Steel wire rope 32 mm dia 6/36 construction Steel core (LHS) 15.08mtrs. Length for Grab | Z 2119300143 | 01 |
| 16 | Steel wire rope 32 mm dia 6/36 construction Steel core (RHS) 15.08mtrs. Length for Grab | Z 2119300144 | 01 |
| 17 | Rope pear Socket – SIZE 10 | X 4119300110 | 04 |
| 18 | Quick release link | X 4119300109 | 04 |
| 19 | Rope press unit | U 2119300122 | 01 |
| 20 | Spherical Roller Bearing ( No: 23236 CC / W 33 ) | Z 7069000069 | 02 |
| 21 | Flexible Support ( K 100 ZAP ) | V4119300086 | 08 |
| | | | |
| | **B. SLEW MOTION** | | |

| | | | |
|---|---|---|---|
| 22 | Slew Gear Box | W 4119200026 | 02 |
| 23 | Gear Box Support | V 2119200014 | 02 |
| 24 | Slew Gear Coupling | W 7364000074 | 02 |
| 25 | Slew Brake Drum | Z 4119200029 | 02 |
| 26 | Slew Pinion | U 4119200038 | 02 |
| 27 | Ring Type Oil Seal No: 220 x 250 x15 | Z 7794000057 | 02 |
| 28 | Ring Type Oil Seal No: 220 x 250 x15 | Z 7794000055 | 02 |
| 29 | Ring Type Oil Seal No: 220 x 250 x15 | Z 7794000054 | 04 |
| 30 | Bearing Mounting ( Below Gear Coupling ) | V 4119200033 | 02 |
| 31 | Bearing Mounting ( Above Pinion ) | W 4119200039 | 02 |
| 32 | Bearing Cap – 1 | W 4119200011 | 02 |
| 33 | Bearing Cap – 2 | W 4119200012 | 02 |
| 34 | Spherical Roller Bearing for Pinion Shaft | Z 7069000062 | 02 |
| 35 | Spherical Roller Bearing for Pinion Shaft | Z 7069000053 | 02 |
| 36 | Coupling Bolt of Brake Drum | Z 4119200030 | 16 |
| 37 | Coupling Bush of Brake Drum | X 4119200025 | 16 |
| 38 | Slew Locking Assembly | U 2119200006 | 01 |
| 39 | Roller Bearing of Slewing Ring | X 2119200001 | 01 |
| | | | |
| | **C. LUFF MOTION** | | |
| 40 | Luff Gear Box with screw &Telescopic Cover | | 01 |
| 41 | Luff Brake Drum with Coupling | | 01 |
| 42 | Axle for Main Jib fitted on Revolving Structure | X 4119300044 | 02 |
| 43 | Axle for Main Jib with Flexible tie, Flexible tie with AFM & Itself Flexible tie | X 4119300046 | 06 |
| 44 | Axle Back Stay fitted with AFM & Fly Jib | W 4119300047 | 02 |
| 45 | Axle for Fly Jib fitted with Main Jib | W 4119300054 | 01 |
| 46 | Axle for Fly Jib fitted with Bottom Pulley | Z 4119300063 | 02 |
| 47 | Axle for AFM pulley& Fly Jib Top pulley | Z 4119300064 | 04 |
| 48 | Spherical Roller Bearing for Main Jib | Z 7069000052 | 02 |
| 49 | Spherical Roller Bearing for Back Stay & Fly with with Main Jib | Z 7069000053 | 04 |
| 50 | Spherical Roller Bearing for Main Jib withFlexible tie, Flexible tie with AFM &It self Flexible tie | Z 7069000054 | 06 |
| 51 | Radial Oil Seal fitted on main jib axle bearing | Z 7794000050 | 04 |

| | | | |
|---|---|---|---|
| 52 | Radial Oil Seal fitted on axle of main jib with fly<br>Jib, fly jib with back stay & back stay with AFM | Z 7794000051 | 06 |
| 53 | Radial Oil Seal fitted on 6 nos. axle of flexible tie | Z 7794000052 | 12 |
| | | | |
| | **D. TRAVEL MOTION** | | |
| 54 | Long Travel Gear Motor Unit | X 7632000047/48 | 08 |
| 55 | Driving Bogie Assembly | T 2119100089 | 08 |
| 56 | Trailing Bogie Assembly | V 2119100090 | 08 |
| 57 | Buffer Assembly | V 2119100101 | 04 |
| 58 | Rail Clamp Arrangement | U 2119100092 | 04 |
| 59 | Rail Scraper Arrangement | V 2119100102 | 04 |
| 60 | Travel Wheel for LT motion | W 4119100055 | 16 |
| 61 | Axle of joint 1 for driving & trailing bogie | W 4119100048 | 16 |
| 62 | Axle of joint 2 for Rocker – 1 & 2 | W 4119100049 | 08 |
| 63 | Axle of joint 3 for Rocker – 2 with pedestal | W 4119100050 | 04 |
| 64 | Rocker – 1 | T 2119100032 | 08 |
| 65 | Rocker – 2 | T 2119100091 | 04 |
| 66 | Gear Wheel fitted on Driving Bogie | V 4119100004 | 16 |
| 67 | Gear Wheel fitted in between Gear Wheel of<br>Driving Bogie | U 2119100038 | 08 |
| 68 | Gear Wheel fitted on Driving shaft | V 4119100005 | 08 |
| 69 | Axle of Gear Wheel | W 4119100056 | 16 |
| 70 | Axle of Travel Wheel | W 4119100059 | 16 |
| 71 | Drive Shaft | V 4119100007 | 08 |
| 72 | Bearing housing of Gear Wheel Axle | Z 4119100023 | 16 |
| 73 | Bearing housing of Gear Wheel Axle | Z 4119100024 | 16 |
| 74 | Bearing Cover – 1 of Gear Wheel Axle | W 4119100021 | 16 |
| 75 | Bearing Cover – 2 of Gear Wheel Axle | W 4119100022 | 16 |
| 76 | Spherical Roller Bearing for Gear Wheel Axle | Z 7069000049 | 32 |
| 77 | Bearing housing of Drive Shaft | Z 4119100060 | 08 |
| 78 | Bearing housing of Drive Shaft | Z 4119100061 | 08 |
| 79 | Spherical Roller Bearing for Drive Shaft | Z 7069000050 | 16 |
| 80 | Bearing housing of Travel Wheel Axle | Z 4119100023 | 16 |
| 81 | Bearing housing of Travel Wheel Axle | Z 4119100024 | 16 |
| 82 | Bearing Cover – 1 of Gear Wheel Axle | W 4119100021 | 16 |
| 83 | Bearing Cover – 2 of Gear Wheel Axle | W 4119100022 | 16 |
| 84 | Spherical Roller Bearing for Gear Wheel Axle | Z 7069000049 | 32 |

| | | | |
|---|---|---|---|
| 85 | Oil Seal of Gear Motor Unit ( 95 X170 X13) | | 16 |

ANNEXURE-II(B)

TENTATIVE LIST OF ELECTRICAL SPARES

| S/N | Item Description | Make | Identification Data | Qty. |
|---|---|---|---|---|
| | A. HOLD & CLOSE DRIVE : For Cr. No.10 & 11 | | | |
| 1 | Hold Motor with Pulse Encoder | SIEMENS | - | 4 |
| 2 | Close Motor with Pulse Encoder | - DO - | - | 4 |
| 3 | Thruster Brake Unit | | - | 8 |
| 4 | Master Controller | SB | - | 2 |
| 5 | Rotary Limit Switch | STROMAG | - | 4 |
| 6 | Single Motor Module | SIEMENS | SINEMIC 450KW | 4 |
| 7 | Braking Resistor ( DBR ) : 2.35 Ohm | Maharashtra ELN/EQUI | BR-R002-P170-MD -- 600 | 4 |
| 8 | Braking Resistor ( DBR ) : 4.00 Ohm | - DO - | BR-R004-P100-MD -- 600 | 4 |
| 9 | Sensor Module | SIEMENS | SMC30 | 4 |
| 10 | Braking Unit ( DBU ) : 170 kw , 560 to 650 V DC | SIEMENS | 6SE7032-7EB87 – - 2DA1 | 4 |
| 11 | Braking Unit ( DBU ) : 100 kw , 560 to 650 V DC | - DO - | 6SE7031-7EB87 – - 2DA0 | 4 |
| | | | | |
| | B.BASIC LINE MODULE FOR CR. No. 10 & 11 | | | |
| 12 | S120 BLM | | RATING : 900KW | 2 |
| 13 | SIMOTION – D | SIEMENS | D 435-2 DP/PN | 2 |
| 14 | Power Supply | SIEMENS | PSU300S 40A | 2 |
| 15 | CF Card for Si motion | | | 2 |
| | | | | |
| | C. HOLD & CLOSE DRIVE : For Cr. No.12 | | | |
| 16 | Motor Module 315KW | SIEMENS | 6SL-3320-1TE-36-IAA3 | 2 |
| 17 | Sensor Module | SIEMENS | SMC30 | 2 |
| 18 | Braking Unit ( DBU ) : 170 kw , | SIEMENS | 6SE7032-7EB87 – - 2DA1 | 2 |

| | | | | |
|---|---|---|---|---|
| | 560 to 650 V DC | | | |
| 19 | Braking Unit ( DBU ) : 100 kw , 560 to 650 V DC | - DO - | 6SE7031-7EB87 – - 2DA0 | 2 |
| 20 | Braking Resistor ( DBR ) : 2.35 Ohm | Maharashtra ELN/EQUI | BR-R002-P170-MD -- 600 | 2 |
| 21 | Braking Resistor ( DBR ) : 4.00 Ohm | - DO - | BR-R004-P100-MD -- 600 | 2 |
| 22 | Power Supply , Input:110/230 V AC, Output : 24 V DC, Rating : 5 AMP | SIEMENS | 6SEP01333AA000AA3 | 1 |
| 23 | Panel Cooling Fan,230 V AC, 50 Hz(Ex) | ebm - NADI | W2E250 CE65 02 | 2 |
| 24 | Panel Space Heater | GIRISH EGO | 415 V AC , 150 W | 3 |
| 25 | Thermistor Motor Protection Unit Short Circuit Detection, 2W.24.240 V AC | SIEMENS | 3RN10131BW10 | 2 |
| 26 | Thermistor Motor Protection Unit , 1 NO + 1 NC , 230 V AC , Screw Terminals | - DO - | 3RN10101CM00 | 2 |
| 27 | Profibus Connector without PG Port | - DO - | 6SE7-972-0BA41 - 0XA0 | 2 |
| | | | | |
| | D.BASIC LINE MODULE FOR CR. No. 12 | | | |
| 28 | S120 BLM 710KW | SIEMENS | 6SL-3330-1TE 41-5AA3 | 2 |
| 29 | SIMOTION – D | SIEMENS | 6AU-1435-2AA00-0AA0 | 2 |
| 30 | Power Supply | SIEMENS | PSU300S 40A | 2 |
| 31 | CF Card for Simotion | | 6AV-1400-2PA 23-OAAO | 1 |
| | | | | |
| | E .LUFF DRIVE : For Cr. No. 10 & 11 | | | |
| 32 | LuffMotor with Pulse Encoder | SIEMENS | 72119000089 | 2 |
| 33 | Thruster Brake Unit | | | 2 |
| 34 | G120 Power Module | SIEMENS | PM240-2, 55KW | 2 |
| 35 | G120 Basic Operator Panel | SIEMENS | BOP - 2 | 2 |
| 36 | G120 Control Unit | SIEMENS | CU250S-2 DP | 2 |

| | | | | |
|---|---|---|---|---|
| 37 | Master Controller | SB | | 2 |
| 38 | Rotary Limit Switch | STROMAG | | 2 |
| 39 | Braking Unit ( DBU ) : 50 kw ,<br>510 to 650 V DC | SIEMENS | 6SE7028-OES87 – - 2DA1 | 2 |
| 40 | Braking Resistor ( DBR ) : 8.0 Ohm | Maharashtra ELN/EQUI | BR-R008-P050-MD -- 600 | 2 |
| 41 | Power Supply ,<br>Input:110/230 V AC,<br>Output : 24 V DC, Rating : 5 AMP | SIEMENS | 6SEP01333AA000AA3 | 2 |
| 42 | Panel Cooling Fan,230 V AC, 50 Hz(Ex) | ebm - NADI | W2E250 CE65 02 | 2 |
| 43 | Panel Space Heater | GIRISH EGO | 415 V AC , 150 W | 2 |
| 44 | Thermistor Motor Protection Unit Short Circuit Detection,2W.24.240 V AC | SIEMENS | 3RN10131BW10 | 2 |
| 45 | Profibus Connector without PG Port | - DO - | 6SE7-972-0BA41 - 0XA0 | 2 |
| | | | | |
| | F.LUFF DRIVE : For Cr. No. 12 | | | |
| 46 | Luff Motor with Pulse Encoder | SIEMENS | 72119000089 | 1 |
| 47 | Thruster Brake Unit | | | 1 |
| 48 | G120 Power Module | SIEMENS | PM240-2, 55KW | 1 |
| 49 | G120 Basic Operator Panel | SIEMENS | BOP - 2 | 1 |
| 50 | G120 Control Unit | SIEMENS | CU250S-2 DP | 1 |
| 51 | Master Controller | SB | | 1 |
| 52 | Rotary Limit Switch | STROMAG | | 1 |
| 53 | Braking Unit ( DBU ) : 50 kw ,<br>510 to 650 V DC | SIEMENS | 6SE7028-OES87 – - 2DA1 | 1 |
| 54 | Braking Resistor ( DBR ) : 8.0 Ohm | Maharashtra ELN/EQUI | BR-R008-P050-MD -- 600 | 1 |
| 55 | Power Supply ,<br>Input:110/230 V AC, | SIEMENS | 6SEP01333AA000AA3 | 1 |

| | | | | |
|---|---|---|---|---|
| | Output : 24 V DC, Rating : 5 AMP | | | |
| 56 | Panel Cooling Fan,230 V AC, 50 Hz(Ex) | ebm - NADI | W2E250 CE65 | 1 |
| 57 | Panel Space Heater | GIRISH EGO | 415 V AC , 150 W | 1 |
| 58 | Thermistor Motor Protection Unit Short Circuit Detection,2W.24.240 V AC | SIEMENS | 3RN10131BW10 | 1 |
| 59 | Profibus Connector without PG Port | - DO - | 6SE7-972-0BA41 - 0XA0 | 1 |
| | | | | |
| | G.SLEW DRIVE :For Cr No. 10 & 11 | | | |
| 60 | Slew Motor 37KW | SIEMENS | | 4 |
| 61 | Thruster Brake Unit | | | 4 |
| 62 | Master Controller | | | 2 |
| 63 | G120 Power Module | SIEMENS | PM 250 | 2 |
| 64 | G120 Basic Operator Panel | SIEMENS | 6SL-3255-OAAOO-4CAI | 2 |
| 65 | G120 Control Unit | SIEMENS | CU250S-2 DP 6SL3246-OBA 22-1PAO | 2 |
| 66 | Power Supply , Input:110/230 V AC, Output : 24 V DC, Rating : 5 AMP | SIEMENS | 6SEP01333AA000AA3 | 2 |
| 67 | Panel Cooling Fan,230 V AC, 50 Hz(Ex) | ebm - NADI | W2E250 CE65 02 | 2 |
| 68 | Panel Space Heater | GIRISH EGO | 415 V AC , 150 W | 2 |
| 69 | Thermistor Motor Protection Unit Short Circuit Detection, 2W.24.240 V AC | SIEMENS | 3RN10131BW10 | 4 |
| 70 | Profibus Connector without PG Port | - DO - | 6SE7-972-0BA41 - 0XA0 | 2 |
| | | | | |
| | H.SLEW DRIVE :For Cr No. 12 | | | |
| 71 | Slew Motor 37KW | SIEMENS | | 2 |
| 72 | Thruster Brake Unit | | | 2 |
| 73 | Master Controller | SB | | 2 |
| 74 | G120 Power Module | SIEMENS | PM240-75KW 6EP-1437-2BA20 | 1 |

| | | | | |
|---|---|---|---|---|
| 75 | G120 Basic Operator Panel | SIEMENS | 6SL-3255-OAAOO-4CAI | 1 |
| 76 | G120 Control Unit | SIEMENS | CU250S-2 DP 6SL3246-OBA 22-1PAO | 1 |
| 78 | Thermistor Motor Protection Unit Short Circuit Detection,2W.24.240 V AC | SIEMENS | 3RN10131BW10 | 1 |
| 79 | Profibus Connector without PG Port | - DO - | 6SE7-972-0BA41 - 0XA0 | 1 |
| 80 | Braking Unit ( DBU ) : 50 kw , 510 to 650 V DC | SIEMENS | 6SE7028-OES87 – - 2DA1 | 1 |
| 81 | Braking Resistor ( DBR ) : 8.0 Ohm | Maharashtra ELN/EQUI | BR-R008-P050-MD -- 600 | 1 |
| | | | | |
| | I.LONG TRAVEL DRIVE : For Cr. No.10,11 & 12 | | | |
| 82 | LT Motor with Brake Unit | SEW | | 24 |
| 83 | Master Controller | | | 3 |
| 84 | G120 Power Module | SIEMENS | PM240-2, 55KW | 3 |
| 85 | G120 Basic Operator Panel | SIEMENS | BOP - 2 | 3 |
| 86 | G120 Control Unit | SIEMENS | CU250S-2 DP | 3 |
| 87 | Braking Unit ( DBU ) : 50 kw , 510 to 650 V DC | SIEMENS | 6SE7028- 0ES87 – - 2DA1 | 3 |
| 88 | Braking Resistor ( DBR ) : 8.0 Ohm | Maharashtra ELN/EQUI | BR-R008-P050-MD -- 600 | 3 |
| 89 | Power Supply , Input:110/230 V AC, Output : 24 V DC, Rating : 5 AMP | SIEMENS | 6SEP01333AA000AA3 | 3 |
| 90 | Panel Cooling Fan,230 V AC, 50 Hz(Ex) | ebm - NADI | W2E250 CE65 02 | 3 |
| 91 | Panel Space Heater | GIRISH EGO | 415V AC,150W | 3 |
| 92 | Profibus Connector without PG Port | SIEMENS | 6SE7-972-0BA41 - 0XA0 | 3 |
| 93 | Bimetal O / L Relays : 8 – 12.5 Amps | SIEMENS | 3UA50 00 – 1K | 24 |

| | | | | |
|---|---|---|---|---|
| 94 | Liver type limit switch | SIEMENS | | 12 |
| 95 | Liver type limit switch ( Heavy duty 0 | BTPL | | 24 |
| | J. P L C : For Crane No.10 & 11 | | | |
| 96 | Profibus bundle IM | SIEMENS | IM 155-6DP HF | 2 |
| 97 | Digital input module | SIEMENS | DI 16x24 V DC | 18 |
| 98 | Digital output module | SIEMENS | DQ 16x24V DC/0,5A | 8 |
| 99 | ET200M | SIEMENS | IM 153-2 HF | 2 |
| 100 | CPU | SIEMENS | 313C-2 DP | 2 |
| 101 | Power Supply | SIEMENS | PSU100D 12.5A | 2 |
| | K. P L C : For Crane No. 12 | | | |
| 102 | Power Supply , Input:110/230 V AC, Output : 24 V DC, Rating : 20 AMP | SIEMENS | 6SEP1 – 336 – 2BA00 | 1 |
| 103 | Power Supply , Input:110/230 V AC, Output : 24 V DC, Rating : 2 AMP | - DO - | 6EP01331AA00 0AA0 | 3 |
| 104 | MCB , Double Pole , 2Amps | - DO - | 5 SQ2210-7YA02 | 1 |
| 105 | MCB , Double Pole , 4Amps | - DO - | 5 SQ2210-7YA04 | 3 |
| 106 | MCB , Double Pole , 20Amps | - DO - | 5 SQ2210-7YA20 | 1 |
| 107 | S7 – 300 CPU 313C – 2DP , 32 KB , 16 DI / 16 DO , 3 X 30 KHZ HSC | - DO - | 6ES7-313-6CE01-0AB0 | 3 |
| 108 | Memory Card – 64 KB | - DO - | 6ES7-953-8LF11- - 0AA0 | 3 |
| 109 | Profibus Connector without PG Port | - DO - | 6ES7-972-0BA41 - 0XA0 | 3 |
| 110 | Simatic DP , Bus Connector For Profibus Up to 12 MBIT / S with tilted outgoing cable | - DO - | 6ES7 972-0BA41 - 0XA0 | 3 |
| 111 | OP7 / DP Operator Panel 1.5 MBPS | - DO - | 6AV3-607-1JC20-0AX1 | 1 |
| 112 | Profibus Fast Connector | - DO - | 6GK1500-0EA02 | 1 |
| 113 | 32 CH. , 24 V DC , Digital Input Module | - DO - | 6ES7-321-1BL00-0AA0 | 5 |

| | | | | |
|---|---|---|---|---|
| 114 | 40 Pin Front Connector | - DO - | 6ES7392-1AM00-0AA0 | 5 |
| 115 | 32 CH , 24 V DC, Digital output Module<br>24 V DC, 0.5 Amps | - DO - | 6ES7-322-1BL00-0AA0 | 2 |
| 116 | 40 Pin Front Connector | - DO - | 6ES7392-1AM00-0AA0 | 2 |
| 117 | 24 V DC Relay 1 C / O, 8 Channel | BOOST | RP 24 D08-1CO-M | 7 |
| | L.COMMON ITEMS :For Cr. No. 10,11 & 12 | | | |
| 118 | EF ACB 2000A,3P | SIEMENS | ETU37WT | 2 |
| 119 | Transformer 415/230 | | 500VA | 3 |
| 120 | Transformer 415/230 | | 5KVA | 3 |
| 121 | Transformer 415/230 | | 2.5KVA | 3 |
| 122 | 11 KV. EPR Insulated Brutal Cable<br>( 3 x 25 + 3 x 16 sq-mm ) | | | |
| 123 | HT Slipring Carbon Brush & Holder | BTPL | - | 5 |
| 124 | Centre Column Carbon Brush | - DO - | - | - |
| | | | | |
| | M. COMMON ITEMS FOR DRIVES : | | | |
| 125 | Power Supply Unit ( Luff , Slew & LT ) | - DO - | 6SE7031-7HG84-1JA1 | 2 |
| | | | | |
| | N. COMMON H.T. ITEMS | | | |
| 126 | TP Load Break Switch, TKL-3, 12 KV,<br>630 Amps, 31.5 KA / 1 SEC | ABSP | TKL3 | 2 |
| 127 | Epoxy Resin Cast 3 – phase PT with Bushing Arrgmt. CL – 1.0 | KAPPA | 11 KV / 110 V, 100 VA | 1 |
| 128 | H.T.HRC Fuse, 63 Amps, 11 KV | BUSSMAN | BFGHD | 3 |
| 129 | H.T.HRC Fuse, 10 Amps, 11 KV | - DO - | BDGHC | 3 |
| 130 | P T Primary HRC Fuse, 11 KV, 3 Amps | - DO - | | 3 |
| 131 | Single Pole Single Core Epoxy Resin Cast | KAPPA | CW3 | 3 |

| | | | | |
|---|---|---|---|---|
| | Current Transformer 11 KV grade, 15 VA, CL – 1.0 | | | |

**Sd/-**
**Superintending Engineer (E)**
**Deendayal Port Authority**

ANNEXURE-III

## MAJOR REPAIR WORKS

### MECHANICAL

1. Repair/ Replacement of Fly Jib, Main jib & Portal body.
2. Replacement of Slew Bearing.
3. Replacement of Bearings of ties, main boom, backstay bearing, 'A' frame bearing.
4. Major repairs to operator's cabin.
5. Replacement / Repairs to Gear Box.
6. Replacement of Hoist/Close Gear Drum Coupling.

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### ELECTRICAL

**1.** Fabrication & installation of CRD Assembly.
**2.** Rewinding of Motors & Transformer.
**3.** Revamping of Drives

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

**Sd/-**
**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. The contractor has to take necessary arrangements for power supply from nearest substation or Isolation room, till location of ELL cranes, any damage happened to cable or power loss has to be taken care by 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 should besupplied 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. <u>Terms of Payment</u>

    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 non-execution of activities mentioned in the Maintenance Schedules. In this regard, the decision of CME will be final and binding on the contractor.

(vi) The payment will be made through RTGS.

(vii) In order to get the reimbursement of the cost of spare parts procured by the contractor as per clause No. 13 (B) of 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.

(viii) The reimbursement of the spare parts mentioned in clause No.13 (B) of Scope of work will made by DPA on actual basis after receipt of the material in good condition.

15. Income Tax shall be deducted at source from the payment of bill as applicable.

16. Time Schedule:
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.

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 TIL cranes on monthly basis.

| Period* (Monthly) | Total hour in month | Allowed** Planned /preventive Maintenance for each crane | Actual Hour In a month (A-B) | 85 % hours of Sr. No. (C) | Availability of Cranes in hours | Short fall hours if any i.e. (D-E) | Penalty @ 1000/- per hour per crane | Out of orders |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|

**(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 shft 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 of Section V, 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 of Section V, 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 as per clause no. 13(B) of section V, 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 mentioned in Clause No. 3 of Section-V, 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 as per Clause No. 15 of Section-III, 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 clause no. 13(B) 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 DPAKandla 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 free of cost with electricity & 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 queries 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. Profile of staff personnel for posted staff during AMC period.
2. Consumable, Tools and Plants.

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.

**Sd/-**

Signature & Seal
of Contractor

**Superintending Engineer(E)**
**Deendayal Port Authority**