**SPECIFICATIONS AND SPECIAL CONDITIONS**

* The conditions of contract of section 1 to 4 (hereinafter called as the General conditions) modified or added to by the following part i.e. Section-5, conditions of particular application which shall be read and construed with the General Conditions as if they were incorporated there within so far as any of the conditions of particular application may conflict or be inconsistent with any of the General Conditions, particular Section-5 shall prevail.

**5.0 Technical Specifications for Tender Item No. 76**

1. **Introduction**

Ro-Ro ferry service between Ghogha and Dahej has reduced the travel time between these two destinations by about 9 hours. This has been achieved by installing the link spans on both ends making the Ro-Ro vessel to come alongside pontoon at any time of the day. Prior installation of Link Spans, the Ro-Ro service was limited due to huge tidal variations. Low water at the jetties prevented Ro-Ro vessels to come alongside. Installation of link span on the floating pontoon (secured by anchors) eliminated the limitations of getting the Ro-Ro vessels alongside only during low tide.

1. **Structure and design of Link Span assembly**

Linkspan necessarily is a bridge between the jetty (fixed) and pontoon (floating), weighing about 900 MT, facilitating the movement of passengers and trucks/trailers from jetty to pontoon to Ro-Ro vessel and from Ro-Ro vessel to jetty. Jetty end of the link span is fulcrumed on the bearing fixed on the jetty. Similarly, pontoon end is fulcrumed on the bearing fixed on the pontoon. This provides freedom for the link span to move up and down with tide variation. Pontoon, having ballast and void tanks, is ballasted as per the calculation to keep it even keel. Pontoon is a structure made up of mild steel with tanks in the nested fashion to keep it buoyant and even keel. Combination of Pontoon (structure), link span and bearings make the Ro-Ro service a reality at all times. These structures are very critical and are required to be maintained at all times.

1. **Maintenance Philosophy**

All the structures are made of Mild Steel and exposed to salty conditions. In order to increase the life and longevity of the link span assembly, it becomes pertinent to have a Planned Maintenance Philosophy in place which maintains, monitors and executes remedial measures so that not only the life of passengers is not put at risk but also the availability of services unhindered.

Majorly, following parameters are to be taken care of in order to achieve above adjective of link span.

* 1. **Maintenance of structure**

Application of proper paint scheme, derusting of exposed spots and application of paint regularly, UTG of the metallic structure especially pontoon and pontoon tanks, regular survey by Class Surveyor, maintenance of bearings (degreasing, regreasing). To carry out regular maintenance on the structure, a skilled team of minimum 2 personnel will be on site to offer 24 x 7.

* 1. **Monitoring of Tanks**

Landing of vehicles and berthing of vessels on the pontoon is a critical activity and water level in the tanks plays a pivotal role in maintaining the even keel during landing and berthing activities. It, thus becomes very important to monitor the tank level at all times without opening the hatches. Tank Level Monitoring system with remote display will have to be in place to monitor the tank level and record the parameters for future use. The system also needs to cater for providing alarms in case the water level is changed drastically due to breach in the tanks.

* 1. **Safe berthing and landing**

The most critical activity on the link span is safe berthing of vessel and landing of heavy vehicles from and to the vessel. All these activities must be monitored and remedial action taken in case of noncompliance so that there is no damage to the structure. In order to have a round the clock monitoring, CCTV with infrared cameras will have to be installed at atleast 4 places so that all the activities are covered. The feed of the cameras will be available in the control station through a Wi-fi link for monitoring at all times. The feed will also be recorded for future use.

* 1. **Maintenance Routines at each site**

A strict maintenance regime needs to be followed and recorded to increase the life of link span assembly and provide long service. As mentioned above, a skilled team of 2-3 personnel will be positioned round the clock during the contracted maintenance period. A regime, as under, will be followed by them and recorded. The recorded log will be put up to the authorities as nominated by the DPA once in 15 days for scrutiny and course correction, if any.

* 1. **Daily maintenance routines**
* Monitoring of water level in tanks
* Monitoring of safe landing of vehicles and berthing
* Physical checks on the link span and pontoon
* Derusting on exposed structures (paint peeled off) and application of approved paint scheme
* Physical checks on hatches, covers, sounding pipes on pontoon
* Physical checks on air vents and ball mechanism
* Physical Checks on bearings (hinges on both ends)
  1. **Weekly routines**
* In addition to Daily maintenance routines, the following checks/actions will be undertaken by team on weekly basis
* Physical checks on internal condition of void spaces
* Physical checks on condition of hatch covers, rubber gasket
* Physical and operational checks on ballast/fire pump
* Physical and operational checks on generator
* Physical checks on Life Saving Appliances and firefighting appliances
* Physical checks on condition of bottom of link span
* Physical checks on link span cross members and repair if any
* Greasing on both end bearings
* Physical checks on dolphin guides
* Physical checks on flaps at both ends
* \*Every two weeks, maintenance and repair records to be submitted for review by DPA nominated authority and authenticated.
  1. **Monthly routines**

In addition, in addition to Daily + weekly maintenance routines, the following checks/actions will be undertaken by team on monthly basis

* Checks on ballast tanks. Routine to be undertaken in a way so as to cover all tanks in the month
* Routines on void spaces
* Physical checks on the anodes (during low waters)
* Physical checks on the fendering system
* Maintenance on air vents and ball mechanism
* Maintenance on flaps on both ends
  1. **Quarterly routines**

In addition to Daily + weekly + monthly maintenance routines, the following checks/actions will be undertaken by team on monthly basis

* IRS Visit for general examination and remedial measures if any observations are recorded.
* Cleaning of sea growth if any during low water using wire brush ensuring that the paint is not peeled off.
* Inspection by the paint representative for condition of paint. DFT would be recorded.
  1. **Half Yearly routines**

In addition to Daily + weekly + monthly + quarterly maintenance routines, the following checks/actions will be undertaken by team on monthly basis

* Maintenance of ballast pump
* Maintenance of generator on pontoon
* Replacement of anodes if consumed more than 50%
* Check of Paint condition in tanks by Paint representative in presence of surveyor and touch up scheme to be applied if required
* Maintenance and painting of dolphin guides
* UTG of pontoon deck and link span. Repair if any to be carried out as per surveyor's recommendation
  1. **Yearly routines**

In addition to Daily + weekly + monthly + quarterly +yearly maintenance routines, the following checks/actions will be undertaken by team on monthly basis

Annual survey which will encompass

* UTG of entire structure
* Inspection of underwater area using underwater camera
* Application of paint scheme as per paint representative recommendation
* Service of LSA and Firefighting equipments

\*\* Prior to commencement of contract, all the existing Maintenance and inspection records are to be shared with the AMC Contractor for reference.

* 1. **Maintenance Routines at each site**

A strict maintenance regime needs to be followed and recorded to increase the life of link span assembly and provide long service. As mentioned above, a skilled team of 3 personnel will be positioned round the clock.

If the contractor does not engage the above manpower, then penalty for skilled labour- Rs. 1500/- per no. per day will be imposed.

* 1. **Scope of work of agency for Linkspan and Pontoon at Ghogha**

Operation and Maintenance Philosophy: to keep Operational Ropax equipment at all the time that enable to provide uninterrupted services. It broadly includes monitoring/ checking/ maintain/ preventive measures/ action and maintenance/ repairs activities under different schedule/ time line as per below:

| **Sr. No.** | **Scope of Work** |
| --- | --- |
| **(A)** | **Linkspan-Pontoon:** |
| 1 | Provide competent technical supervisors round the clock. |
| 2 | Water levels in the tanks and accordingly Ballasting/ De-ballasting of pontoon including fresh water supply, fuel supply to keep Pontoon clean. |
| 3 | Draft and free board of Pontoon. |
| 4 | Void and free conditions. |
| 5 | Crash barriers with their fastenings. |
| 6 | Greasing/painting dolphin guide structure. |
| 7 | Yoke assembly with their fasteners and weld joints, Bank seat bearings and tighten/replace the same as and when required. |
| 8 | Fender systems of pontoon. |
| 9 | Flaps at both ends with their bearings. |
| 10 | Lifesaving appliance on Pontoon and Linkspan. |
| 11 | Monitoring of Vehicular movements on Linkspan. |
| 12 | Installation and surveillance of CCTV cameras on Linkspan/ Pontoon and Mooring dolphin to cover activities on and around them. |
| 13 | Ballast pumps, generator to keep operations all times. |
| 14 | Monitoring and movement of YIKE structure assembly complete in all respect including their Rubber pads, bolts, weld joints etc., and replace/take corrective measures in advance to continue unhindered operation. |
| 15 | NDT of Pontoon and Linkspan weld joints other vulnerable areas. Repairs to be carried out under Surveyor's requirements. |
| 16 | Painting of Ro-Ro equipment as and when required. |
| 17 | Manhole covers, air events, soundings plugs and pipes etc. |
| 18 | Greasing and oiling all moving parts of Linkspan and Pontoon and their flap pins/ bearings complete in all respect such as YOKE pads and piles, bank seat bearing. |
| 19 | Providing skilled/ Semi-skilled/unskilled workers. |
| 20 | Providing tools, tackles, and necessary jigs and fixtures. |
| 21 | Providing cranes of capacity as per job requirements. |
| 22 | Providing spares, hardware, steel plates and other material. |
| 23 | Logistic support for the above work |
| 24 | Consumables grease, oil etc. |
| 25(a) | Monitoring Linkspan and Pontoon Operation:  i. Under different Loading Conditions.  ii. Environmental factors such as tides, waves, winds, etc. |
| 25(b) | Monitoring water depth in and around Pontoon areas. |
| 25(c) | Implementation of damage control plan |
| 25(c) | i. Rescue of Pontoon by sling wires or any other means. |
| 25(c) | ii. Ballasting/ De-ballasting of Pontoon in case of water ingress in Pontoon due to any damages. |
| 25(c) | Conducting mock drill for damage control-quarterly. |
| 25(d) | Hiring of floating crane barge of require capacity |
| 25(e) | Hiring of Hydra Crane/other shore crane of suitable capacity. |
| 25(f) | Hiring of drivers. |
| 25(g) | Under water inspection of pontoon |
| 26 | Daily/weekly/monthly operation and maintenance report. |
| 27 | 1. Review of Present Ro-Ro equipment system- Brand Marine Consultant. 2. Study of motions of Ropax Equipment-M/S SIRI Marine. 3. Design modification of pontoon and its |
| **B)** | **Fire Fighting System:**  It broadly includes various monitoring/checking/maintain/preventive measure/action and maintenance/repairs activities under different schedule/time line.   1. Diesel Fire pump, Electrical Pump and jockey Pumps.   2. Checking Water in Water Sump for fire frightening.  3. Maintain adequate diesel storage.  4. Servicing of All Valves, i.e. fire Hydrant, 4-way valves, NRVs etc.  5. Dry batteries.  6. Flexible Hoses and Hose Box.  7. All pressure gauges.  8. Fire Detectors and their alarms in MTB and admin Building.  9. Servicing of Fire Extinguishers |
| 28 | Conducting Mock Drill-Quarterly |