

Brief Preliminary Technical Specifications for Floating Dock

1. Construction of a Floating Dock incorporates excellent stability & improvements in terms of functionality, maintainability and better ergonomics. It will be able to dock vessels upto 115 m in length. The lifting capacity of dock is 4000T. The dock can be stationed anywhere in shallow water upto depth of 30m or berthed alongside jetty.

Rules and Regulations

2. The Dock including its hull structure and essential machinery shall be built as per reputed Classification Society rules like ABS / LRS / IRS, IACS member societies with experience.

General Particulars

3. The general particulars are as follows :-

Dimension / Parameters	Value
Pontoon Length	Approx. 120m
Beam between outer walls	Approx. 23 m
Beam between inner walls	Approx. 18 m
Moulded depth (To top of walls)	Approx. 13m
Depth (To top of Pontoon) center	Approx. 4.5 m
Max. immersed draft	Approx. 11 m
Max. Draft over Keel Blocks	Approx. 4.5 m
Height of keel Blocks	Approx. 1.5 m

Construction

4. The dock will be constructed in accordance with Maritime Classification Society's rules for Floating Docks. It will be fabricated out of class approved grade of steel. The Ballast space will be subdivided into approx. 12 no of tanks for most efficient dock stability and operation. Frame stations will have deep watertight bulkheads continuing from dock bottom up to safety deck. Further the following areas will also be stiffened longitudinally:-

- (a) Top Deck
- (b) Safety Deck
- (c) Pontoon Deck
- (d) Outer wing wall
- (e) Inner wing wall
- (f) Bottom shell etc. as applicable

5. The dock will be constructed with required number of subdivisions and safety features required by class. Dock will be capable to withstand severe seismic sea waves without any major damage to the ships docked onboard. It will be self sustainable and can be anchored in shallow waters upto depth of approx . 30m. Suitable strengthening of pontoon deck will be catered for off center docking. Dock will be provided with power generation and all services as enumerated below.

Systems

6. All services like power supply, fresh water, LP/HP air, Acetylene, will be provided for self sustenance of the dock. Additionally these services can be availed from the shore. Following systems shall be catered for construction:-

- (a) Ballasting & Pumping System. The Dock will be provided with requisite Ballast Pumps for ballasting and de-ballasting. Facility for interconnection between pumps will be provided. The system will be complete with necessary piping and valves.
- (b) Ballast Control System (BCS). The Ballast Control System will be designed and installed on Dock, to monitor and control the ballasting /de-ballasting operations and ensure stability of dock in all conditions. The BCS will be designed and installed by reputed firms, specializing in marine automation. The Ballast Control Room (BCR) which is the main control station for docking and undocking will be sited on top deck. The main requirement of the control system is to maintain the optimum stability of the dock while filling and pumping out the ballast water of the tanks when the ship enters or leaves the dock. The Ballast Control System will be designed by integrating accurate and reliable gauging systems and stability parameters monitoring system.
- (c) The system will comprise of following subsystems:-
 - (i) Gauging systems - Tank level, Draft and Deflection gauging system. Trim Heel is calculated from draft gauging.
 - (ii) Remote control system for valve operation.
 - (iii) Dual redundant PLC based control.
 - (iv) Loading calculator enabling simulation and stability monitoring.
- (d) Ballast Control Console. The BCC console shall be compact and located in the bridge of the dock. The BCC mimic panels at the centre shall display the following:-
 - i) Digital display of level gauges for all ballast tanks.
 - ii) Suction, Discharge and cross connection remotely operated valve positions indicators.

- (i) Port (forward , mid-ship, aft) and Starboard (fwd, mid-ship and aft) draft indication gauges .
 - (i) Trim and heel indication gauges.
 - (iii) Ballast tank valves open /close switch.
 - (i) Suction, discharge and cross connection valve switches.
 - (i) All ballast tanks valve open/close indication.
 - (i) 24V DC/ 230V AC power available, generator / compressor run indication.
 - (i) Ballast pumps start/ stop push button and run /stop indications.
 - (i) Ballast tank low level alarm, draft alarm, deflection alarm.
 - (i) Ballast tank low level alarm, draft alarm, deflection alarm.
 - (i) Emergency stop push button, auto/manual select switch, general alarm switch. Alarm reset, alarm acknowledge, alarm lamp test, buzzer, etc.
- (e) One UPS of appropriate rating with batteries will be installed in BCC console. The unit will have 30 min standby time for full load, to deliver the power to the system in the event of 223V AC main power supply failure. In addition the BCR will have Colour CCTV monitors which will show the view as seen at Forward, mid-ships, pump room and Aft on both wings on dock.
- (f) Tank Gauging System. T he tank gauging system will utilize level Transmitters, for measuring tank levels.
- (g) Draft Gauging and Heel /Trim Measuring System. The draft gauging system shall be provided which will indicate draft at various locations.
- (h) Deflection Measuring System. The deflection measurement system will be fitted for measurement of deflection in the longitudinal and transverse directions having sensors fitted on both wings for longitudinal and transverse deflections.
- (i) Sea Water System. Following Sea Water systems will be provided on Board.
- (i) Fire main requirements throughout the dock with appropriate no. of hydrants. Foam generating system on top deck.
 - (ii) Cooling water system for all sea water cooled machinery.
 - (iii) Supply to WC.

Additional arrangements will be made for supply to docked ships. Two sea water pumps will be installed onboard dock and connected to fire main for self sustainability of the dock in the case shore connection is not available.

Additional connection for supply of to Fire main from ashore / Support ship will also be provided.

- (j) Domestic Fresh Water System. Fresh water supply will be provided from ashore for docked ships and other requirements. To maintain sufficient pressure fresh water hydrophore system will be provided in the dock.
- (k) Ventilation system. To prevent formation of condensed moisture and to ensure sufficient ventilation of the rooms on the safety deck , electrically operated trunk fans will be mounted on the upper decks.
- (l) Air conditioning system. Air conditioning system of adequate capacity will be provided in the following places:-
 - (i) Ballast control /Machinery control /Switch board room
 - (ii) Office /Living places.
- (m) Impressed Current Cathodic Protection System. The entire hull will be protected with suitable ICCP system in addition to Sacrificial Zinc anodes as applicable.
- (n) Winches and Traveling Blocks. The dock will be fitted with 06 winches (04 main winches and 02 auxiliary winches) , of adequate capacity for the purpose of hauling-in and hauling-out of ships during docking / undocking. Four Traveling blocks will be provided which move on the inner side of wing wall for hauling in/ out ships.
- (o) Gangway. Gangways shall be provided for both wingwalls.
- (p) Generator sets. 2 in number Diesel Generator sets of 250 KW each will be provided.
- (q) Firefighting System. Automated integral firefighting system including sufficient fire hydrants throughout the deck, fixed foam firefighting system will be provided for firefighting requirements.
- (r) Portable Firefighting facilities. Adequate Portable firefighting appliances will be provided and stowed on board at various places.
- (s) Cranes. Level luffing tower cranes (P & S) on top decks with a lifting capacity of approx. 10 tons each will be provided. The equipment shall be automated with safety features and features for precise crane usage will be incorporated

- (t) Fire Alarm system:- Fire alarm system will be fitted on board with remote information panels, cater for fitment of smoke detectors, thermal sensors, call points etc as required so that all parts of the dock are covered.
- (u) MB/SRE: 01 PA system with 03 microphones and required no of speakers to cover the entire dock and various manned compartments will be provided.
- (v) Telephone. Appropriate Telephone connectivity on the dock will be provided.
- (w) Machinery Intercom: Single channel 2 way Communication system on audio basis at key locations will be provided.
- (x) CCTV Cameras: Appropriate CCTV cameras will be positioned for monitoring security and safety.
- (y) Sewage Treatment: The sewage from sanitary facilities will be led to STPs. Post treatment, effluents will be discharged overboard.
- (z) Power Supply on dock:
The following AC supplies will be provided:-
 - (i) 415 v, 50Hz, 3 phase (generator main supply)
 - (i) 230 v, 50Hz, 3 phase- transformer (415v/230v)
- (aa) Switch boards: 1 main switch board (port side) and 01 auxiliary switch board (stbd side) will be provided.
- (bb) Workshop Facilities Workshop with the following facilities will be provided
 - (i) Lathe Machine
 - (ii) Bench Vice
 - (iii) Portable welding machine
 - (iv) Drilling Machine of approx 1 inch

Accommodation and Offices

7. The following facilities will be provided:-

- (a) Control house: Ballast Control Room for accommodating the BCS will be provided on upper decks. BCR will have facilities like air conditioner, furniture and computer.

- (b) Inventory and spares Stores : Provision will made for storage rooms each having enlarged hatchway on upper deck.
- (c) Offices: There will be separate office for dock master facing the dock area with all controls and facilities. Sufficient no. of offices will be provided for various other departments.
- (d) Wash Room: The wash room facilities for officers and dock master shall be provided attached bathroom and WC.
- (e) Galley. Recreation cum Dining Hall: Recreation cum dining hall for Officers, Sailors and personnel on board will be provided.

Paint Scheme for Floating Dock

8. Durable and low maintenance paints having long life will be applied on the dock with guarantee of 10 years.