

No. CIV/061/2005/DGM (CE)

23/ 06 / 2010

NOTICE INVITING EXPRESSION OF INTEREST

Cochin Shipyard Limited intends to engage contractors/firms for the work of replacing the Flap Gate of Dock 1. "Expression of interest" is invited from reputed contractors/firms with previous experience in similar works/salvage works, if any, during the past 7 years.

A brief data of the gate is given below:

The gate was designed by Mitsubishi heavy industries limited Japan and the same was fabricated and erected in 1980. The gate is 30 years old and at some locations thickness reduction of plates due to corrosion has been noticed. Hence CSL intends to replace the gate and would like to engage contractors/firms for undertaking the work. The date of execution of work is first quarter of 2011.

The scope of work will be the following.

1. Removal of the existing Flap Gate in Dock No: I from the 3 hinges provided at the bottom, towing and berthing the same to Dock I (Repair Dock) or Dock II (Building dock) or to Quay side.
2. Floating of the newly fabricated dock gate (which will be made ready by CSL in Dock II/Dock I/floating pontoon), towing the same to the required position in Dock I, lowering the gate to the required position, fixing to the existing hinges at bottom of Dock etc.
3. All under water services required during the operation at 1 & 2 above and ascertaining the exact location / dimension of the upper hinges in the existing flap gate and transferring the dimension to the new gate.

The principal dimensions of Flap gate are:

Length - 47.50 m  
Width - 4.00 m (at the platform level)  
Depth - 11.40 m

The steel weight of the existing gate structure alone is approximately 360 tonne and steel weight of the New gate structure alone is approximately 400 tonne. The total weight of the existing gate structure including other components and dead weight is approximately 500 tonnes and the total weight

of the New Gate structure including other components and dead weight is approximately 540 tonnes.

The gate is hinged at bottom of the dock. The distance between the Dock I and Dock II is approximately 210m.

The drawings and photographs showing details of the existing flap gate can be downloaded from the web site [www.cochinshipyard.com](http://www.cochinshipyard.com).

The EOI should be submitted in sealed cover superscribed "EXPRESSION OF INTEREST FOR THE WORK OF REPLACING FLAP GATE OF DOCK- I"

EOI is to be submitted at the earliest but not later than 31.07.2010.

A pre bid meeting is scheduled on 20.07.2010 at 14:00 Hrs. For any Clarifications, the same will be obtained from the Asst: General Manager (Civil) during the pre bid meeting. Specific points that require clarification should be submitted to AGM (Civil) on or before 16:30 Hrs on 19.07.2010

Please feel free to contact us for any clarification.

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## UNSTEPPING METHODOLOGY FOR EXISTING GATE

### **1. General**

This document should be read in conjunction with drawings 9T9758/04 and 9T9758/05. All the operations have to be executed in consultation with Engineers of Royal Haskoning made available at site by CSL.

### **2. Use of a buoyancy tank attached to the top of the gate structure**

This method can be carried out under any tidal conditions.

#### **2.1. Preparatory Work - 9T9758/05 Stage 1**

- A) Fabricate all components indicated on the drawing and transport to site i.e. 46.4m long watertight 1500x9.5 thk tube; 16 No. sets of tube fixing brackets; 14 No. lower ballast tank panels, 4 No. filling valves, 2 No. air valves and their corresponding pipe work.(Scope of CSL)
- B) Dewater the dry dock completely. (Scope of CSL)
- C) Install the 2 No. 20t-pulling eyes if required for handling - subject to confirmation that there are no pulling eyes fixed to the lower part of the gate. (Scope of CSL)
- D) Install the 46.4m long watertight tube using the 16 No. sets of fixing brackets. (Scope of CSL)
- E) Cut holes in frames 2, 2', 3, 3', 4, 4', 5, 5', 6, 6' and 8. (Scope of CSL)
- F) Weld on 14 No. lower ballast tank panels to form buoyancy tanks. (Scope of CSL)
- G) After installation, all lower buoyancy tanks are to be leak tested. Any air leaks are to be located and welded watertight. The integrity of these repairs are to be confirmed by a further leak test. (Scope of CSL)
- H) Remove all non-permanent fixings from the gate (hand-railing etc). (Scope of CSL)

#### **2.2. Initial Unstepping Procedure - 9T9758/05 Stage 2**

This procedure can be carried out during any tidal conditions. Ensure that there are no objects within 20m of the gate in the river. During the procedure, use handling ropes attached to dock side bollards/capstans to maintain the position of the lower part of the gate against the meeting face. (Scope of Contractor)

- A) Conduct a trial operation of the gate to record the tensile forces applied to each winch/winch chain during the operation. (Scope of Contractor). Necessary flooding and dewatering required for the same shall be arranged by CSL.

- B) Remove each stopper pin and set pin from its corresponding hinge with divers. (Scope of Contractor)
- C) Setup an air compressor on the dock side at each end of the gate or ensure a nearby supply with sufficient hosing to reach the gate afloat in the dock entrance. (Scope of Contractor)
- D) Ensure valves 2 No. BW1, 2 No. BW2, and 2 No. BA are in the open position. (Scope of Contractor)
- E) Fill the dry dock to sea level; allowing tanks B to fill with the dock. (Scope of CSL)

### **2.3. Winch Chain Removal Procedure - 9T9758/05 Stage 3**

- A) Lower/open the gate on the gate winch. (Scope of CSL)
- B) At approximately 30° to vertical (depending on tide level) the winch chain will go slack as the newly installed top air tank becomes buoyant. Once the winch rope has become slack the gate should be secured on handling ropes and the winch chain removed. Note: the gate will rotate slightly as the tide rises and falls. (Scope of Contractor)
- C) Once the winch chain is removed ropes should be attached in readiness for handling of the gate once it is afloat. (Scope of Contractor)

### **2.4. Final Unstepping Procedure - 9T9758/05 Stage 4 & 5**

- A) Ensure valves 2 No. BW1, and 2 No. BA are in the open position. (Scope of Contractor)
- B) Close valves 2 No. BW2. (Scope of Contractor)
- C) Connect the compressed air supply to the 2 No. BA air valves and start to empty tanks B by blowing air into the tanks. (Scope of Contractor)
- D) As the tanks B are empty, the gate will lift out of its hinges. This will be signalled by a change in the behaviour of the gate. (Scope of Contractor)
- E) To maintain control of the pitch of the gate, the rates of emptying the tanks should be controlled to ensure level floating. (Scope of Contractor)
- F) As the gate approaches horizontal and no longer continues to rise, valves BW1 should be closed and valves BW2 opened to finish dewatering tanks B. (Scope of Contractor)
- G) Once the tanks B are empty all valves should be closed and compressor equipment removed. (Scope of Contractor)
- H) The gate is now ready for maneuvering out of the dock entrance. (Scope of Contractor)
- I) Maneuver the gate to the required position in Quay side/Dock No: I/ Dock No: II (Scope of Contractor)
- J) Determine the exact locations/dimensions of hinges in the existing gate and transferring the dimension to the new gate. (Scope of Contractor).  
The service of Yard crane will be made available by CSL free of cost.

## STEPPING METHODOLOGY FOR NEW GATE

### 1 STRUCTURAL AND SITE-SPECIFIC DATA

The following levels describe the operational conditions of the dock gate in the vertical closed position:

	Level (m CD)
Pivot Point	-9.0
Base of Gate	-8.4
Sill	-8.0
Top of Gate	+3.0

The following levels describe the tidal conditions within Cochin Port:

Status	Tide Level (m CD)
High Water Level (HWL)	+1.40
Low Water Level (LWL)	+0.3

### 2 GATE STEPPING INSTRUCTIONS

It is possible to complete this procedure during any tidal cycle provided the high tide level does not exceed +1m Chart datum (corresponding to the tide levels defined in Section 1) and provided the water around the dry dock is relatively calm.

This section should be read in conjunction with drawing 9T9758/01 and 9T9758/02. All references to views within this section refer to these drawings. All the operations have to be executed in consultation with Engineers of Royal Haskoning made available at site by CSL.

#### 2.1 Preparatory Work - before float out

- A) All non-permanent fixings on the gate (hand-railing etc) are to be removed. Any fendering (or similar obstruction) that may interfere with the stepping procedure are also to be removed from the gate and entrance dock. (Scope of CSL)
- B) All watertight hatches (28 No. large and 8 No. small), 8 No. filling valves, 5 No. air valves and their corresponding pipe work need to be fitted. (Scope of CSL)
- C) All buoyancy tanks are to be leak tested to the water inlet/outlet pipes sealed. Any air leaks are to be located and welded watertight. The integrity of these repairs are to be confirmed by a further leak test. (Scope of CSL)
- D) All valves need to be clearly labelled. (Scope of Contractor)

- E) Ensure all valves are closed. (Scope of Contractor)
- F) All sheaves and corners of the gate are to be protected against damage during manoeuvring with temporary fendering. (Scope of Contractor)
- G) The gate is to be floated towards the dock entrance with all of its buoyancy tanks empty and all valves closed to create the additional 5 No. watertight tanks required. (Scope of Contractor)
- H) Flooding of dock for floating new gate. (Scope of CSL)

## 2.2 Stepping Procedure

### 9T9758/02 - Stage 1

- A) Float the newly fabricated dock gate with upper hinges welded and hinge pin in position (which will be made ready by CSL in Dock II/Dock I/floating pontoon), towing the same to the required position in Dock I. (Scope of Contractor)
- B) Align the gate with dock entrance and leave approximately 1m space between the dry dock quoins and the gate meeting face.(Scope of Contractor)
- C) Attach handling ropes from the quay side to the gate. (Scope of Contractor)

### 9T9758/02 - Stage 2

- D) Open the filling valve CW2 and air valve CA which control the water flow into tank C. Initially it will be necessary to use a pump to pump water into tank C. As the water level rises above the valve CW2 the valve should be closed and any pumps or other redundant equipment should be removed from the gate. Once all equipments has been removed from the gate valve CW2 can be re opened and the flooding of tank C continued. (Scope of Contractor)

### 9T9758/02 - Stage 3

- E) Tanks B are next to be filled by opening the 2 No, filling valves BW1 and the 2 No, air valves BA. During the flooding of tanks B the bottom of the gate should be held tight against the meeting face to ensure that the hinges connect with their bearings. To ensure level sinking of the gate the rates of flooding into each of the tanks B can be varied. The behaviour of the gate will change as the trunnions sit into the bearings. (Scope of Contractor)
- F) Once Tanks B and C are full, close the air inlet valves BA and CA and the water inlet valves BW1 and CW2. (Scope of Contractor)

#### 9T9758/02 - Stage 4

G) As tanks B fill with water, the gate will rotate towards a stable floating position at approximately 20° to the vertical. Whilst holding the gate on the handling ropes that gate can now have its winch rope attached.

Note: The gate will slightly rotate as the tide rises and falls. (Scope of Contractor)

H) Once the winch rope is attached the gate can be pulled closed. (Scope of Contractor)

#### 9T9758/02 - Stage 5

I) Open all valves on tanks A (2 No. filling valves AW and 2 No. air valves AA) flooding tank A. (Scope of Contractor)

J) Once tank A is at the same level as the sea, remove watertight hatches to tanks A by diver. (Scope of Contractor)

K) Close valves AW and AA. (Scope of Contractor)

L) Open valves BW1 BW2 BA CW1 CW2 and CA. (Scope of Contractor)

M) Dewater dry dock. (Scope of CSL)

### 2.3 Post-Stepping Procedure 9T9758/02 - Stage 6

A) Reinstall all non-permanent fixings (handrails etc) and any fendering that was removed. (Scope of CSL)

B) Remove remaining watertight hatches. (Scope of Contractor)

C) Insert each stopper pin and locking pin (set pin) to its corresponding hinge by diver. (Scope of Contractor)

D) Inspect the gate and hinge structure for any signs of damage that have occurred as a result of the stepping operation. (Scope of Contractor)

E) Inspection of gate and hinge structure by external agency (Scope of CSL)

F) Carry out any maintenance on the gate and hinge structures as identified in the inspection. (Scope of Contractor)

G) Fill the dry dock to sea level. (Scope of CSL)

H) A trial lowering and raising of the gate should be carried out. Check the alignment of the gate in its vertical position once the test has been carried out. (Scope of Contractor with the help of CSL)

I) Record the tensile forces applied to each winch/winch chain during the trial and make note of any significant variations that occur between these values and those which typically occurred with the previous gate. (Scope of Contractor)

J) Remove all contractors' equipment from site. (Scope of Contractor)

**3. Supply of service facilities during Stepping and Un-Stepping operations.**

- A) CSL yard crane, transporter, trailer, forklift etc will be provided free of cost.
- B) Compressed air, oxygen, acetylene, water and electricity will be provided free and within a distance of 100m from work site.