TRANSNET NATIONAL PORTS AUTHORITY

PORT OF CAPE TOWN

Caisson groove repairs on Sturrock Dry Dock in the Port of Cape Town

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1 BACKGROUND

The Project Management Office of Transnet National Ports Authority (TNPA) is currently in the process of designing the inner caisson gate for Sturrock Dry Dock. However, there is significant concrete and granite deterioration/edge breaks at the intermediate caisson gate grooves. The cracks in the concrete surface are likely contributing to the dock gate leaks and is ultimately affecting operations of the dock. As part of the quality assurance and compliance, assessments into the caisson grooves is required. The scope outlined below shows the need for assessment of the existing two caisson grooves condition which include a repair specification with testing procedures and proposed execution methodology on how to repair the structure. The supplier is required to provide relevant bill of quantities for caisson groove repair works.

Figure 1-1: cracks showing from the vertical side of caisson groove

Figure 1-2: granite edge breaks showing from the vertical side of caisson groove

Figure 1-3: Sturrock Dry Dock overview

Figure 1-4: caisson gate showing some water leakage

Figure 1-5: planks used as temporary stoppage or seal for caisson gate

Figure 1-6: overview of caisson gate seal against caisson groove

Figure 1-7: granite and concrete deterioration in the caisson gate

Figure 1-8: surface deterioration inside the caisson groove

Figure 1-9: groove filled with water and debris

2 LOCATION OF CAISSON GROOVE

2.1 Sturrock Dry Dock

The SDD was commissioned in 1945, and is one of the two graving dry docks in the port of Cape Town that is used for the repair and maintenance of marine vessels. It is essentially a narrow basin with one end open to the sea. During docking, a vessel is manoeuvred into the basin and the open end closed off by means of a caisson gate. The basin is then dewatered such that the vessel rests on the dry dock floor for repairs to commence. It was of high concern that the existing condition of the caisson groove is not satisfactory. It is leaking due to concrete deterioration and other conditions. This might hinder the operation of the new inner caisson gate. A portion of the caisson groove surface is concrete and granite type. All necessary proposed test should be conducted during assessments. The general layout of the dock and location of the caisson groove is shown in the Figure below.

3 SCOPE OF WORKS

i. Assessment of concrete condition to determine the extent and severity of deterioration for caisson groove and provide technical data and analyses to be shared with employer.
ii. Proposed methodology to execute repairs of (concrete and granite) deterioration, taking the longevity and future maintenance of the repair into consideration.
iii. Conduct all testing procedures (Compression test on concrete cores, pull-out test, rebound hammer, ultrasonic pulsevelocity, combined NDT methods and material bonding test methods etc.)
iv. Make provision and produce of laboratory reports and results to TNPA.
v. Relevant Bill of Quantity estimates for caisson groove repair works prior construction/ rehabilitation.
vi. Issuance of repair methodology to for approval by Engineer (managing consultant) and TNPA.
vii. Conduct repairs/ rehabilitation as per the approved repair methodology.
viii. Conducts tests and issue statutory certificates.
ix. Comply with the Health and Safety requirements and environmental of TNPA and all contractors on site.

4 PRELIMINARY AND GENERAL

4.1 Location and Access

The site is located within the Port of Cape Town, Western Cape, South Africa. The location of the site is at Sturrock Dry Dock. These are operational areas; thus, temporary permits will be provided by TNPA (may be subjected to a fee). The contractor is required to be escorted to site by a TNPA representative. The contractor will also need to attend inductions by companies which are occupying the area at the time.

4.2 Site conditions

The concrete condition in the dry dock has significantly deteriorated resulting in large cracks and concrete/ granite edge break failure. The failing concrete sections poses a serious health and safety risk to everyone working inside the dock. TNPA will not be liable for any incremental weather conditions during operation.

4.3 Working in the Port

The fullest collaboration between the appointed Contractors, the Technical Supervisor of the facility, Port Security and the Project Engineer is essential regarding the working of the port. The site will be in operation during the assessments & as a result there may be obstacles which may obstruct the contractor. The TNPA Technical Supervisor will to the best of his ability assist in moving obstacles for the assessments of both caisson grooves. A comprehensive safety file shall be provided, according to TNPA requirements. Only once the safety file is approved by TNPA, may TNPA give the go ahead for the contractor to establish on site. Therefore, the issuing of a PO does

not mean that the contractor may establish, but shall wait for the go ahead of TNPA to establish. The contractor is also requested to provide schedule to indicate the duration of the assessments.

5 BILL OF QUANTITIES

This Bill of Quantities (BOQ) will serve as a guideline framework and contains the minimum input. NB: The supplier is required to provide price estimates for undertaking the repair works.