SHANE CARR LTD

MARINE-I 113

REQUEST FOR QUOTATION

MODULAR DRY DOCK (MDD)
PROFESSIONAL ENGINEERING SERVICE

TENDER REF: 002a

DATE ISSUED: 9TH OCTOBER 2018

1.0 Introduction

Shane Carr Ltd is progressing a research and development project to design and develop a prototype of an innovative Modular Dry Dock (MDD) that will be easily transportable worldwide in conventional ISO shipping containers and must be capable of rapid assembly for quick deployment.

2.0 Background

Floating dry docks are presently built to a box steel design which uses sea water to ballast down in order to dry dock vessels etc. The build specification of these docks is generally to 'Lloyds Rules and Regulations for the Construction and Classification of Floating Docks', or DNV/GL and similar equivalent.

Shane Carr, MD of Marine Design & Construction, is the Inventor and Patent Application holder of a novel floating dry dock system, the Modular Dry Dock. The novel **M**odular **D**ry **D**ock (**MDD**) design will be designed, built and tested to the same Lloyds (or similar classification society's) specification but uses a 'space frame' design and air filled buoyancy bags to achieve the vessel lift from the water.

In order to achieve the efficient and rapid use of the MDD anywhere in the world, these air bags must be quickly, easily and economically available for sale or hire worldwide. The space frame design must include a fabricated 'Strut and Node' connection, the principle of which is partly designed by Shane Carr Ltd at present but must be checked and changed where needed to accept the agreed loads. The Strut and Node system should also have a minimum 20-year lifespan with minimum maintenance and be designed in steel with a view to add (in a future phase) an Aluminium version.

3.0 Scope of Works

Shane Carr Ltd wish to procure the services of a **Professional Engineering Service** to help design the prototype for our novel MDD system. The prototype must ideally fit into either four 6-metre ISO containers or two 12-metre ISO High Cube containers for transportation (note, these containers may be fabricated open frame type that are capable of being used as part of the MDD structure).

There are two phases to the project:

Phase 1 – Prototype design

Phase 2 – Prototype build & test

The specific works required in this commission are:

1. Studies of alternative frame geometries based on a fabricated Strut and Node space frame system

2. Interpretation and application of loading requirements for different vessels and operational conditions
3. Structural analysis and component sizing of alternative frames
4. Development of deck construction solutions for different MDD uses and distributions of vessel support loads
5. Integration of air supply lines and wash down provision in the deck design
6. Supply of typical General Arrangement drawings including welding and bolting details
7. Co-ordination of design submission with the appointed Naval Architect

4.0 Appointment of Naval Architects

In parallel to this commission Shane Carr Ltd has appointed Naval Architects to undertake the following scope of works in order to check the design:

Phase 1:

Specific phase 1 works will include:

1. Review Classification Society requirements (such as DNV/GL Rules or similar equivalent) and determine design loads
2. Create OrcaFlex model (or similar equivalent)of Modular Dry Dock and assuming space frame structure is a single rigid object.
3. Perform hydrostatic analysis at various stages of immersion from submerged to surfaced to determine stability, damaged stability, design wave and inform design changes
4. Update the OrcaFlex model with subsequent design iteration (there might be a couple of iterations here to arrive at a feasible solution)
5. Document results in a technical note

Phase 2:

Specific Phase 2 works will include:

1. Perform additional calculation as required by Classification Society requirements (DNV/GL or equivalent)
2. Perform additional stability analysis such as damaged stability

3. Increase level of detail within OrcaFlex model of Modular Dry Dock if required to determine forces with structure
4. Grillage vessel load spreading structure to provide interface between vessel and MDD. This ideally uses the ISO delivery containers as the main component
5. Update the OrcaFlex model with subsequent design iterations
6. Document results in a format to be agreed

At all times the appointed Naval Architects will communicate effectively and

efficiently with the appointed Structural Engineers

5.0 Contract Deliverables

The key deliverables from this commission are:

1. General arrangement drawings of the completed design, including welding and bolting details.

6.0 Submissions

Please provide the following cost information:

- Total cost to complete the scope of works, excluding VAT

Please also provide the following company information:

- VAT Number if available
- Company Number if available

Please submit your quote to shane@marinedesignconstruction.com by 15th October 2018.