

# **Employer's Requirements**

## **SCOPE OF WORKS**

The Project is initiated by the Government of Maldives as an emergency measure to protect the eroding areas at AA.Himandhoo. The works entails design and construction of geobag/geotube revetment as per the drawings and specification approved by the Employer.

The scope of works of the project includes (but not limited to):

1. Detailed surveys including bathymetry and topography survey to determine the volume of sand required for backfilling and also to determine the volume of sand available from the island, and scaled aerial photograph of the entire island.
2. Construction of coastal protection structures as per the detailed design and specifications. If required by the work methodology proposed by the contractor, the scope of works should include removal/demolition, transportation and disposal of existing structures.
3. Study the existing water, sewerage & stormwater drainage network, and identify the location of their outfalls. If any outfall is located in the proposed coastal protection area, the Contractor should allow for this in his work methodology and if required, should allow for the possible diversion of the outfall. This may be included as a Provisional Sum in the Contract Price.
4. Final report providing final volume calculations, borrow area(s) and dredging and construction methodology, for the design option selected by the Client.

## **DESIGN CRITERIA**

1. The toe of the coastal protection structure should be sufficiently embedded in the seabed to avoid toe scouring.
2. Crest height should be maintained to avoid any over topping. The height of the coastal protection structure's crest shall be at least +1.4m above mean sea level.
3. Stone sizing should be selected based on incoming significant wave height. Armour stone median weight should not be less than 600 Kg.
4. Geotextile layer should be placed to avoid loss of sand through the boulders. Minimum weight of the geotextile layer should be 400 GSM and should have 90% UV resistance rating.
5. Layout of the coastal protection structure should be determined giving due concern to the movement of plant and machinery during construction.
6. Design life of the coastal protection structure should be 30 years.
7. Unless substantiated with relevant data, soil properties shall be assumed as

below.

- a. Angle of friction of sand not greater than  $32^\circ$
  - b. Allowable Bearing capacity of sand not greater than  $100 \text{ KN/m}^2$
8. Coral stone should not be used in any part of the coastal protection structures.
  9. If construction of the coastal protection structure should affect natural drainage in the areas, provision should be made in the structure to drain flooding created in the area by pluvial & coastal flooding.

**The contractor shall submit the following with the tender.**

1. Proposed equipment's to carry out the works, including the proposed work methodology.
2. Project costing

The project is a lump sum contract, with bill of quantities. Provide linear meter or cubic metre rates for the individual components as given below. Any cost not detailed on the cost sheets (bill of quantities) shall be deemed covered by other rates and prices in the bill of quantities. The costing sheet shall show costs for the following major components (All costs related to these activities shall be included in the rate).

The contractor shall provide costing as per the unit rates given below (refer to BOQ).

- a) Dredging (dredging and backfill) as a **cubic metre rate**
  - b) Revetment (including supply and installation of material and including labour cost of all components) as a **linear metre rate**
  - c) Breakwater both above water level and submerged (including supply and installation of material and including labour cost of all components) as a **linear metre rate**
  - d) Total cost of the project
3. Work schedule

The contractor shall submit proposed work schedule. The work schedule shall indicate the major works to be carried out under the scope of the project. Following points shall be taken into consideration when preparing the work schedule.

- a. The total duration of the project shall not be more than 90 days.

**CONTRACTOR'S DOCUMENTS**

The following documents shall be submitted by the contractor to the Employer:

1. Submit revised work schedule within 7 days from signing the contract.
2. In-survey of the shoreline and eroded area: Report providing final volume calculations, borrow area(s) and dredging and construction methodology shall be submitted prior to mobilization.
3. Detail design drawings
  - a. All drawings in (.dwg) format

- b. All drawings in (.pdf) format
4. Provide weekly progress reports and monthly progress reports during the implementation period.
5. Provide Out-Survey Report and as-built drawings upon completion of Project.  
The following should be submitted:
  - a. Survey report
  - b. Raw data
  - c. Aerial survey map(s)
  - d. Survey data in (.dwg) format
  - e. All drawings in (.dwg and .pdf) format

#### OTHER INFORMATION

1. Ground water shall not be used for any construction. Coral sand shall not be used for any concrete works. Sand shall not be taken from the island or the island lagoon except as specified under the scope of the project.
2. Electricity and water required for the project shall be supplied by the contractor at his expense.
3. All designs shall be to the relevant and latest British Standards or an equivalent standard.
4. Quality of construction and materials shall be as specified in the technical specifications. Contractor shall submit manufacturers and / or suppliers' specifications for any materials or works not covered in the technical specifications.
5. The contractor shall have his quality control measures in place and submit quality reports regularly. Apart from this the employer may at any time without notice carry out independent quality assurance tests to verify the quality of materials and works. If the quality of materials or works is below the specified standard the contractor shall rectify the situation to the satisfaction of the employer at his own expense.
6. The contractor shall provide the testing results provided by an independent third party.
7. Confirmation of the ground conditions is the responsibility of the contractor. The contractor shall allow for the possible use of drop hammer or any other means to remove the hard strata, if encountered, in his dredging and reclamation rate. Hence the cost of any such work would be deemed to have been covered in the contract price.
8. It is contractors' responsibility to obtain all the permits required (from regulatory authorities, service providers etc.) for the designs, and for construction.
9. The metric system of units shall be used throughout.