Road Development Corporation Limited
Republic of Maldives

Terms of Reference for
CONSULTANCY FOR DETAILED SURVEYING OF LH. HINNAVARU
Date: 29th April 2021

1. BACKGROUND

Road Development Corporation Limited, an incorporated limited liability company operating under the registration number C10482019 and having its registered office at MSL Building, First Floor, Malé, Republic of Maldives (herein after called and referred to as "the Employer",) wishes to receive bids for the Consultancy service for detailed surveying of Lh. Hinnavaru Major Roads.

2. SCOPE OF WORK

Detailed Surveys including geotechnical survey & hydrological survey required for the detailed design of the proposed roads and storm water management system.

Geotechnical survey

Geotechnical investigation must be done to determine the following using the following tests

1. Physical properties of soil
    a) Sieve analysis
2. Mechanical properties of soil
    a) Standard Compact test111
    b) California Bearing Ratio test

The tests should be carried out as follows

Physical properties of soil

Sieve tests must be done to determine grain size of soil in an area. At least one sample must be taken from each road proposed for construction and depending on road length, multiple samples should be taken such that distance between the sampling points is not more than 200m. For every sieve test, the gradation curve must be plotted and Coefficient Curvature (Cc) and Coefficient of Uniformity (Cu) must be determined. Well graded soils should show Cc in the range 1 to 3 and Cu higher than 6. All sieve analysis tests can be performed on disturbed samples and soil sample must be taken100mm below the ground surface. If D60 of soil sample is more than 5mm, then the subgrade sand in that area must be sieved to remove all large soil particles, and the area backfilled with sieved sand.

Mechanical properties of soil

Standard Compaction tests and California Bearing Ratio tests must be conducted on soil samples taken from each road proposed for construction and depending on road length, multiple samples should be taken such that distance between the sampling points is not more than 200m. Standard Compaction Tests must be conducted to determine Maximum Dry Density (MDD) of soil and Optimum Moisture Content (OMC) of soil. These tests can be done in the laboratory on disturbed soil samples taken from 100mm below ground surface.

California Bearing Ratio (CBR) tests must be done to determine the stiffness of the subgrade soil. These tests must be done on undisturbed samples on actual ground. CBR tests should be done on every road proposed for construction and depending on road length, multiple samples should be taken such that distance between the sampling points is not more than 200m. The top 100mm soil must be removed prior to performing this test. If the CBR obtained is less than 20%, then a 2nd test must be performed 3m away from the initially tested location. If the 2nd CBR is still less than 20%, then the soil must be considered too soft for pavement construction and a subgrade stabilization method must be proposed. Most common subgrade stabilization method is to remove the soft soil and backfill with a well graded sand.

Hydrological Survey

1- The Contractor shall undertake literature review of existing studies undertaken for the islands inclusive of historical and current rainfall data for the region, any historical and current data on flooding associated with storm surges, any existing hydrological surveys and also carry out studies to determine soil percolation rate and infiltration rate.
2- The Contractor shall develop flood risk maps for the island based on the survey data.
3- The Contractor shall also carry out the assessment of the current groundwater conditions including level and quality of the ground water.

Contractor shall submit a separate report for each of the above survey and must be submitted for approval. Report should be up to an acceptable standard and should include Title Page, Table of Contents, Executive Summary, Background and Objectives, Methodology, Results, Conclusion and Recommendations, Appendices. Report should be accompanied by softcopies of all raw files such as AutoCAD files, high resolution pictures, etc. in a CD.

3. CONSULTANT'S QUALIFICATION & TEAM COMPOSITION

In order to provide for the top-level performance of the assigned task, the Consultant shall utilize the qualified staff (key personnel as well as the support staff), and shall contribute in testing, amendments till the surveys are approved from authorities.

All the specialists shall be certified professionals in their respective fields with at least 3-year experience in the similar work environment. CV's of the team members are to be submitted for approval procedure.

The consultant should Utilize the following personnel:

N	Consultants	Number	Month	Input, person*month
Key Experts				
1	Team Leader/Project Manager	1	1.0	1.0
2	Structural engineer	1	1.0	1.0
3	Geotechnical engineer	1	1.0	1.0
4	Environmental / Hydrological Specialist	1	1.0	1.0
Non-Key Experts				
5	Surveyors, Surveying assistants	1	1.0	1.0

4. EMPLOYER'S CONTRIBUTION

The employer shall grant access to all available materials, which may be required for the Consultant to perform their services.

5. DURATION OF THE ASSIGNMENT

Expected duration of the consultant assignment is **30 days.**

6. CONTRACTOR'S REPORTING OBLIGATIONS:

DELIVERABLES	SUBMISSION DATE	LANGUAGE
Results of survey-investigation works (Geotechnical survey and hydrological survey)	Within 30 calendar days from the commencement date.	English

7. DATES & VENUES FOR THE TENDER:

ACTIVITY	DATE	VENUE
Pre-Bid Meeting	05th May 2021, 10:00hrs	Road Development Corporation Limited. MSL Building. 1st Flr, Orchid Magu Male', Rep. of Maldives
Deadline for Bid Registration	05th May 2021, 14:00hrs	Via Email to tender@rdc.com.mv
Deadline for written inquiry by potential bidders:	09th May 2021, 12:00hrs	Via Email to tender@rdc.com.mv
Deadline for Bid Submission and Opening:	16th May 2021, 10:00hrs	Road Development Corporation Limited. MSL Building. 1st Flr Orchid Magu Male', Rep. of Maldives