1. Working title

Loading Response of Onshore Soil Material in Rift Valley Lakes Abaya and Chamo, Ethiopia

2. Abstract

Ethiopia is the one currently succeeding extraordinary construction industry, particularly my birth town Arbaminch is accommodating so many constructions, which is found at the mid of rift valley recurrently facing the failure of structures due to dynamic loading of earth quack and settlement. The circumstances is more sever while construction undertake near toonshore of Lake Abaya and Chamo, hence government municipal and investors are hesitated to construct any onshore structures for tourism; investment; recreation and residence, which ends with high impact on local economic development. The ultimate challenge and hindranceexpected on the study area is frequent recession and topping of the Lake Waterresulting erosion and sedimentation of the onshore, which might have influence on the true result and analysis. The intent of this study is to investigate the sub-soil material characteristics against the response of loading with the affordable financial capacity, field and laboratory procedures.Field and laboratory data Analysis, Parameterization and advanced interpretation is mandatory to solve the unforeseen failure.

3. Hypothesis/aim of project

The main aim of this study is to realize the dreams for development and affluent life through comprehensive investigation of sub soil material against any catastrophic failure. This study will seek to achieve these objectives:

- Identifying the probable failure phenomenon due to any of dynamic loading, settlement, lateral loading…
- Recommendation of all possible geotechnical remedies against all types of failure.
- Economical design of foundation and harbor structures.

4. Project description

Most geotechnical complications bearing capacity failure, failure due to lateral earth pressure, un-stability of slopes and liquefaction are strongly associated with shear strength of the soil material. The shear strength of soil can be related to current stress state of the soil, which has a substantial influence on the study area. The index property of soils are also essential parameters and soil classification as well as for indirect estimation of its potential strength through correlation. The specimen shall be tested at variable sample preparation condition prior to conducting laboratory test and resulted in different end value. The index property investigation includes specific gravity, particle size distribution, Atterberg’s limits and field densities are most critical.

Geophysical methods are becoming increasingly popular in ground investigation as a cost effective and noninvasive way of obtaining information on the shallow and deep sub-surface material.

5. Methodologies

The study will be much of research work with some assisted tutorials from the government Universities and partner faculty members in Small Deformation theory, Finite Element analysis, Fluid& Soil Dynamics and plasticity & Seismic Modeling. In addition, a working visits to collaborative institutions to study software modeling.The general approach is enumerated below:

i. Assessment of existing partial or total failure phenomenon around the rift valley Lakes Abaya and Chamo, which is located at diverse distance from the earth quack epic-center.

ii. Assembly of regional geological, topographic, and hydrologic and soil survey data.

iii. Conducting field tests such as CPT, SPT, VST, VES, bulk density and laboratory tests such as drained and undrained shear test, 1D consolidation, Tri-axial test, and permeability test.

iv. Review reference manuals, manuscripts and software user guides associated with equipment.

v. Data processing, Assimilation, Parameterization Schemes, Correlation and index setting.

vi. Advanced analysis and result interpretation

vii. Test the developed model apparently

viii. Write dissertation report

6. Work plan

The following table summarizes the work plan of the proposed research work.

Table 2. WORK PLAN

	2018	2019	2019	2019/2020
Activities	Jan-Dec	Jan-May	June-Dec	Dec-Jan
Course work				
Literature review				
Experimental set up arrangement and conducting trial experiment				
conducting experiments as per the objective of the research				
Analysis of experimental data and computing the result				
Writing paper				
Thesis work				