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Section A

Program BSc Civil Eng

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Assignment

Pg 1

Write a geotechnical report on any civil engineering project which is close to your home town?

Geotechnical Report of Double storey houses:-

General Background:-

The study area, Hamza Town Ring Road is site for proposed construction of double storey houses. This site is on a gentle slope of about 20° and for this reason cut & fill embankment will be made accordingly. The major problem with cut and fill embankments is that they possess varying degree of stability. The shear strength and consolidation characteristics of cut embankment will never be exactly the same as that of fill embankment, from this arises problem of different settlement. It is required that shear strength test be carried at loads for greater than total load of proposed structure.

Aims and Objectives:-

The aim of this study is to successfully characterize the site as either suitable or not suitable for proposed construction.

The objective is to

- Collect representative sample on proposed site
- Undertake in situ test & soil profiling.
- Carry laboratory test.

Test to be performed:-

- Soil Profiling & Sampling.
- Sieve Analysis
- Dynamic Cone Penetrometer
- Bearing capacity
- Moisture content

- Atterberg limit Test
- California Bearing ratio Test.
- Compaction test.

Particle size Analysis

Index	IP.5	IP.7	IP.9	IP.11	IP.18	IP.23
Gravel	0.2	2.4	0.0	0.0	0.0	0.0
Sand	69.3	89.7	57.4	92.2	59.7	76.0
Silt	8.5	7.3	11.7	7.2	10.1	12.3

Test	IP.5	IP.7	IP.9	IP.11	IP.18	IP.23
Liquid limit	21	30.3	27.5	22.3	27.3	17.7
Plastic limit	15.9	-	19.6	-	17.9	-
Linear Shrinkage Plastic Index	2.7	0	2	0	4.5	0
ASSHTO Classification	A-2-4	A-3(0)	A-4(0)	A-3(0)	A-4(1)	(A-2-4)

Write a note on different software used in Geotechnical Engineering?

Software is designed to make work easier, and is a great tool for presenting laboratory result or using output to bulk up that geotechnical report.

Following are software used in geotechnical engineering.

Earth work volume:-

AEC cutfill is a powerful and flexible earthwork cut and fill calculation software program.

DAN-W:-

It is a window based geotechnical software tool used for dynamic runout analysis of rapid landslides and rock avalanches. The program accept user input data in form of path slopes and initial sliding mass geometries and material properties.

AMRETAIN:-

Amretain is a software for checking single or double retaining wall made of ArcelorMittal, sheet piles. It has been developed by Texasol for ArcelorMittal.

APILE:-

APILE is used to compute the axial capacity, as a function of depth, of a driven pile in clay, sand or mixed soil profiles.

CADS Reslope:-

CADS Reslope is a leading slope stability software package for calculating factor of safety of earth slopes.

CAPWAP:-

It is a software program that estimates the total bearing capacity of pile or shaft.

Allpile:-

It is a software used for pile foundation analysis includes uplift, axial, lateral & group piles. Pg 4

DynaN:-

DynaN can be used for dynamic analysis under transient and random loading in the time domain. It also can be used for harmonic loading in frequency domain.

D-MOD 2000:-

A computer program for Non-linear Seismic Response analysis of Horizontally layered soil deposits, Earth fill Dams, and solid waste landfills.

D-MOD 2000 is a one-dimensional non-linear effective stress site response analysis computer program.

Ce. Ca. P:-

Ce. Ca. P is a complete package for analysis and designs of foundation; because of its completeness flexibility and user-friendliness. It is a fundamental instrument for any kind of geotechnical project.

GE05 Abutment

This program is used to design abutments including wing walls. It allows to check the abutment for overturning, translation, bearing capacity of foundation soil and dimensioning of device.

GE05 Beam:-

This program provides the analysis of foundation beam resting on elastic subsoil.

GGU - AXPILE:-

The program allows calculation of drilled piles or driven piles and graphical presentation of result.

Tension piles can also be calculated.