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SECTION B

SUBJECT Geotechnical Engineering

ASSIGNMENT 2ND

SUBMITTED TO Sir Liaqat Ali

SUBMITTED BY 7835

1. Write a note on different software which are used in geotechnical engineering :-

Following are the different softwares used in geotechnical engineering:-

## 3DEEP VIRTUAL REALITY SOFTWARE FOR DEEP EXCAVATION :-

This is the first software fully integrated with a design software package for automatic model generation. For the first time, you can easily demonstrate to your clients what your work is all about before putting a single shovel in the ground.

- Unlimited walls and number of excavations.
- Multiple stages in same model.
- Single button integration from dDeep 2008.
- Multiple support types.
- View walls and footings
- Multiple wall types.

## 2. ALP- LATERAL - LOADED PILES ANALYSIS SOFTWARE:-

ALP enables you to analyze laterally loaded pies with ease, producing outputs such as comparison graphs in mins. The software predicts the pressures, horizontal moments, shear forces and bending moments induced in a pile

when subjected to lateral loads, bending moments and imposed soil displacements. Lateral loads and bending moments can be applied at any point down the pile, as well as partial or full, lateral or bending moment restraints.

## 3. AMRETAIN SOFTWARE :-

It is a software for checking single or double retaining walls made of Arcelor mittal, sheet piles. It has been developed by terrasol for Arcelor Mittal and is based on commercial software K-Rea.

- Amretain calculation is based on the "subgrade reaction calculation method" but also includes 3 checks according to the French standard NF P94-282:

i) Failure on the passive side.

ii) Balance of vertical forces.

(iii) Krang.

- It also enables the calculation of double walls and rear walls.

1. Write a geotechnical report of any civil engineering project which is close to your hometown.

This is the geotechnical report of MDA & AHQ's Peshawar.

## INTRODUCTION:-

This report is carried out for geotechnical investigation of boundary wall AHQ peshawar. The purpose of this investigation was to evaluate the subsurface conditions on the site in the area of the proposed building and to provide geotechnical bearing capacity and recommendations for the construction.

## PROJECT DISCRIPTION:-

The 1204 kanal property is located in a developed region of AHQ peshawar. The project will include construction of a new boundary wall occupying the entire property.

## GEOLOGIL OVERVIEW:-

The project site is located in the mattani road. geologically lies across the orbab road, peshawar. It is an alluvial plane of 1174 km and its catchment extent to Dera Adam khel, kohat, ranges. The Alluvian plane are mostly composed of late tertiary age hood; assumed that these rock extend as basement rock. During the upper piestocene and Holocene the basin was been filled with silty clay, sand and gravels

## SEISMICITY:-

Peshawar district lies in the seismically active zone, which is evident from the earthquake catalogue map, indicating the magnitude of past earthquake events. This construction site belongs to seismic zone with peak horizontal acceleration varying from 0.08 to 0.16g.

## SUBSURFACE:-

Five exploratory borings and three pits were excavated in the area of the proposed boundary wall. In general, our exploratory borings encountered predominantly silt upto 5ft depth and after clayey soil upto 30ft depth.

## LABORATORY TEST:-

Unconfined compression Tests, Direct Shear Test and consolidation Test were performed on undisturbed soil specimens obtained from boreholes and test pits using shelby tube and block sampler. Additionally Atterberg limit Test. Sieve Analysis, moisture content Tests were conducted on disturbed samples for classified purpose.

## GROUND WATER:-

Ground seepage water table was encountered in borehole No 2 & 3 at 11ft depth from ground level.

## CONCLUSION & RECOMMENDATION:-

Keeping in view results of the field and lab Test, it is conducted that bearing capacity of 0.50 TSF may be adopted for

Strip foundation at 5ft depth for the construction of boundary wall, [redacted] AHQ Peshawar.

- Since the shrinkage value of foundation lies between 20-27, which shows soil class of very poor quality. It is recommended to replace the foundation soil with well graded gravel and properly compact it.
- There is no risk of chemical attack on concrete as the chemical content of soil is in permissible range.
- In case of missionary wall provide RCC column at 10ft interval and strap beam at the top of foundation RCC slabs to reduce differential settlement.