NAME: MUHAMMAD MUSTAFA [محمد مصطفیٰ]

ID #: 7866

SECTION#: B

SEMESTER #: 6th

Subject # Geotechnical Engineering

Assignment NO# 01

Submitted To: Engr Liaqat Bacha

Dated 4/07/2020

Q1 Write a geotechnical Report of any Civil Civil engineering project which is close to your home Town.

ANS: This is the Geotechnical Report of PAK Army Cantt D.I.Khan.

Introduction: This Report is carried out for PAK ARMY D.I.Khan. The purpose of this Investigation was to evaluate the subsurface conditions on the site in the area of the proposed buildings and the provide geotechnical bearing capacity and recommendation for the ~~conditions~~ construction.

Project Description: The 2274 Canal property is located in a under developed region of PAK ARMY Cantt D.I.Khan. The project will Include construction of a new boundary wall occupying the entire property.

Geologic overview: The project site is located in the tank road D.I.Khan basin D.I.Khan basin geologically lies b/w Sali ranges and northeastern Balochistan. It is an

alluvial plane of 7000 Km² and its attachment extent to Sulamian, Bittani, Marwat, and Khaisor ranges. The mountain bordering the alluvial plain are mostly composed of late tertiary age Hood, assumed that these rock extent as basement rock saiwalic group. During the upper Pleistocence and Holocence the basin has been filled with silty clay, sand and gravels.

Seismicity: Dera-Ismail Khan 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 2A with peak horizental acceleration varying from 0.08 to 0.16 g.

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

Soil upto 20 ft 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 Limits Test, sieve analysis, moisture content Test were conducted on disturbed sample for classification purpose.

Ground water:

Ground Seepage water Table was encountered in borehole, NO 2 and 3 at 11 ft depth from ground level.

Conclusion and Recommendation:

Keeping in View results of the field and lab Tests, it is conducted that bearing capacity of 0.50 TSF may be adopted for strip foundation at 5 ft depth for the construction of boundary wall

PAK- ARMY Cantt D.I.Khan

P.T.O

- Since the Shrinkage value of foundation lies between 20-27, which shows soil class of every 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 internal and sirap beam at the top of foundation RCC slab to reduce dizzevential settlement.

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Quiz ⇒

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Dated, is 4/07/2020

1 Write a note on different software which are used in Geotechnical Engineering?

ANS: Following are the different softwares of used in geotechnical Engineering.

1 3 DEEP VERTICAL REALITY Software for Deep Excavation:

This is the first software fully Integrated with a design software package for automatic model generation.

For the 1st 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 DEEP 2008.
- Multiple Support types.
- View walls and footing.

· Multiple wall types.

2 ALP - LATERAL - LOADED PILES ANALYSIS Software:

ALP enables you to Analyze laterally loaded pies with ease, producing out put such as comparison graphs in mins. The software predicts the pressures horizontal moments, shear forces and bending moments included in a pile when subjected to lateral loads, bending moment and Imposed soil displacements. Lateral Loads and bendings 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 a single or double retaining walls made of Arcelor Mittal, Sheet piles.

P.T.O

It has been developed by Terrasol for ArcelorMittal and is based on commerical 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) Kranz.
- It also enables the calculation of double walls and rear walls.