

Subject :: Geotechnical Engineering

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ID :: 7821

Semester :: 6<sup>th</sup>

Section :: A

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# Assignment

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Q1 Write a geotechnical report of any Civil Engineering project which close to your home town.

Ans Geotechnical reports are performed by geotechnical engineers or engineering geologists to obtain information on the physical properties of soil earthwork & foundations for proposed structures, and for repair of distress to earthwork & structure caused by subsurface conditions.

Geotechnical Report on Bannu Division Soil:-

Physico-chemical properties of soil in Bannu district of KPK province. Soil sample were collected from two depths i.e 0-15 & 15-45 cm respectively. Soil sample were analyzed for various soil properties.

Properties of Soil:-

(1) Soil varied from clay to sand loam at both depths with saturation percentage from 25.15 to 71.76 & 16.60 to 82.64% in upper and



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## Sub Surface

- (2) Bulk density of the Soil ranged from 1.10 to  $1.75 \text{ g cm}^{-3}$
- (3) Soil PH was found to be Alkaline.
- (4) Electrical Conductivity of these Soil showed 14% Area as Saline.
- (5) Soil was found to be the Slightly Strongly Calcareous.
- (6) Organic matter Content of the Surface Soil showed that 25% Sample were medium where 75% were low.
- (7) Soil texture ranged from clay to loamy Sand.

## Conclusion:-

- 1) Infiltration of water inside the ground due to defective drainage & over irrigation.

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(2) Soil found to be low plasticity clay which change its behaviour abruptly with increase in moisture content.

(3) The liquid limit  $e_p$  plasticity Index is not that much greater as to cause the hazard of heaving of clays catastrophically.





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Quiz

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Q Write a note on different Software which are used in Geotechnical Engineering:-

Ans A high variety of geotechnical Software can be found in this Category.

Software used in Geotechnical Engineering are as follow.

(1) ACCECALC:-

This program analysis the behaviour of the rock slopes under seismic conditions. It evaluates the displacement of a rock block subject to dynamic forces, on the basis of given acceleration.

(2) ADONIS:-

The goal of the ADONIS is to develop to improve the modeling & computational simulation in geotechnical engineering. ADONIS is easy to use & powerful for geotechnical Engineer.

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(3) AllPile:-

Allpile is a window based Analysis program that handle virtually all type of piles, including Steel pipes, H-piles, pre cast Cement Concrete piles, auger cast piers with bell, multipile.

(4) ALP:-

The easy way to analyse Soil Structure interaction of a laterally loaded pile when it comes to laterally-loaded pile analysis Software model Soils Shear Failure  $E_p$  non linear.

(5) AMRETAIN:-

AMRETAIN is a Software for Checking Single or double retaining walls made of Arcelor Mittal Sheet piles. It has been developed by Texasol for Arcelor Mittal  $E_p$  is based on the Commercial Software.

(6) AXILTR:-

Program AXILTR, Axial Load Transfer consist of a main routine  $E_p$  two Subroutines.



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The main routine feeds in the input data, calculates the effective overburden stress,  $\epsilon_p$  determine whether the load is axial down-directed pullout, or if uplift.

(7) Deep:-

This software is fully integrated with a design software package for automatic model generation. It is a virtually reality software for deep excavation.

(8) RockPlane:-

Rockplane is a software tool for the evaluation of localized instability rocky elements affected by seismic movements or by presence of water pressure within inter surface fractures.

