

KASHIF KHAN.

ID # 7846.

Section # B.

Submitted To # Engr Liaquat Ali

Semester # 8th

Assignment no = 01

Date # 5.7.20.

Q: Write a geotechnical report of any civil engineer project which is close to your hometown

Ans This is the report of BOQ in Peshawar Cantt.

⇒ Introduction :-

This report is carried out for geotechnical investigation of boundary wall BOQ in Peshawar cantt. The purpose of this investigation was to evaluate the subsurface condition on the site in the area of proposed building and to provide geotechnical bearing capacity and recommendation for the construction.

⇒ Project Description :-

The 2331 kanal property is located in under development region of BOQ Peshawar cantt. This project will include construction of new boundary wall occupying the entire property.

## ⇒ Geologic overview: →

The project site is located in the Peshawar road near cantt. It is an alluvial plain of 3000 km<sup>2</sup> and its attachment extent - Khyber range Hindu Kush range. The mountain bordering the alluvial plain are mostly composed of late tertiary age rock. Assumed that these rock extent as basement rock. Sialkic group. ~~During~~ During the upper Pleistocene and Holocene the basin has been filled with silt, clay sand and gravels.

## ⇒ Seismicity: →

The Construction site ~~belong~~ belongs to seismic zone 3A with peak horizontal acceleration varying from 0.07 to 0.14 g.

## ⇒ 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 6' depth and after clayey soil up to 22 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 Moore Sampler. Additionally Atterberg Limit test Sieve analysis moisture content tests were conducted on disturbed samples for classification purpose.

### ⇒ Ground water

ground seepage water table was encountered in borehole no 4 at the depth from ground level.

### ⇒ Conclusion and Recommendations

keeping in view results of the field of ~~soil~~ test and lab. tests it is concluded that bearing capacity of 0.60 TSF may be adopted for strip foundation at 6th depth the construction of boundary wall Bq. Peshwar Cantt.

⇒ Since the Shrinkage. Value of foundation lies between 30-37 which Shows Soil class of very Poor quality It is recommended to replace the foundation Soil well graded 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 masonry will provide. Rec. Column at 10ft interval. and Strap beam at the top of foundation Rec Slab to reduce differential ~~Settlement~~ Settlement

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QUIZ # 01

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

Ans: Following are the different softwares used in geotechnical engineering.

⇒ 3 Deep Virtual Reality software for Deep

Excavations:

This is the 1st 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 ~~num~~ number of excavations.

⇒ multiple stages in some models.

⇒ single button integration from deep

2008

⇒ multiple supports types

⇒ view walls and footings.

⇒ multiple wall types.



## ⇒ ALP - LATERAL - LOADED PILES ANALYSIS software :->

ALP enables you to analyze laterally loaded piles with ease producing outputs such as compressing graphs in mins.

The software predicts that pressure - horizontal moments, shear forces & bending moment included in a pile when subjected to lateral loads, bending moments and imposed soil displaced lateral load and bending moment can be applied at any point down the pile as well as partial or full lateral or bending moment restraints.

## ⇒ AM Retains 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.



⇒ AIM Retain calculation is based on the subgrade reaction calculation method" but also includes 3 checks according to the french standard

NF P 94 - 282.

(i) failure on the passive side.

(ii) Balance of vertical forces

(iii) Krang :

It also enables the calculation of double walls and near walls

S.No	Reference marking	Bulk Density Pcf	M.C (%)	L.L (%)	P.L (%)	Classification of soil (depth of 4ft)	safe bearing capacity Terzaghi (SPT)	(TSF)
1	B.H.1	106.5	11.2	23.7	20.9	ML	0.44	0.8
2)	B.H.2	105.8	10.5	23.5	20.7	M.L	0.49	1.0
3	B.H.3	103.7	11.6	24.9	19.4	M.L	0.47	0.5
4	B.H.4	104.1	8.5	24.9	21.4	M.L	0.43	0.42
5	B.H.5	105.3	12.5	22.5	20.0	M.L	0.43	0.33

BH/TD ID	BH.1	BH.2	BH.3	BH.4	BH.5	TP-1	TP.2	TP.3
W <sub>1</sub> = wt of soil (lbs) core cutter +	1.949	1.895	1.894	1.927	1.916	0.485	0.478	0.481
W <sub>2</sub> = wt of core cutter (lbs)	0.969	0.971	0.941	0.969	0.947	0.195	0.85	0.185
W <sub>3</sub> = wt soil (W <sub>1</sub> - W <sub>2</sub> ) (lbs)	0.980	0.974	0.974	0.958	0.969	0.299	0.293	0.295
Vol of core cutter (cu)	0.0092	0.0092	0.0092	0.0092	0.0092	0.0028	0.0028	0.0028
Density = W <sub>3</sub> /Vol (lb/cu)	106.5	103.8	103.7	104.1	105.3	106.3	104.6	105.4

## FIELD DENSITY TEST