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Research Article

THE ZONING OF NEHBANDAN SOIL SHEAR STRENGTH PARAMETERS USING ARC GIS V.9.3

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ABSTRACT
Geological characteristics can be fertile ground for basic information related to the project land. The purpose of this study, the shear strength parameters of Nehbandan zoning and providing strength parameters, to determine the type of structure due to the resistance of the soil or ground reinforcement for loads greater than the allowable resistance and the meeting has been determined, and the design followed structural constituent layers is due to lithology. In this study, first conducted field studies and laboratory and finally, using the software Arc GIS9.3, processing and classification have been attempted. The purpose of this research is to recognize the shear parameters of the soil at various depths Nehbandan city is, according to the shear strength parameters of the original tissue (normal), foundations, the whole city can be stated, that the main parameters of the supply capacity soil internal friction angle and adhesion factor can be ignored.

Keywords: *Engineering Geological Characteristics, Soil Shear Parameters, Nehbandan Maps*

INTRODUCTION
Quaternary, as the scope and range of human activities, for problems of urban, industrial and agricultural, more than ever, is taken into consideration and the Quaternary, in all fields, especially in matters related to natural hazards and retrofitting structures development and, above all, the protection and management of land and the environment is important and the necessary measures should be linked by organizations and institutions (municipalities, housing and urban development, engineering, etc.), the monitoring of the implementation and construction of the buildings of the same. Determine the characteristics of engineering geological deposits, could be a suitable means of information related to the project land (Bell, 2007).
Geotechnical zoning maps, a map, geological engineering, with special purposes, such as evaluating the bearing capacity, settlement risk, Divergence risk etc. are prepared. In these maps, physical and mechanical properties of soil, the depth of interest on the map is shown. The application of geotechnical maps, estimated allowable bearing capacity of the soil, the estimated amount and type of geotechnical operations needed to develop the site is accurate. Bearing capacity, soil tolerance, the failure of the meeting and the design of foundation structures, which are carried on. Bearing capacity of the foundation can be, depending on the soil properties, especially the cohesion and angle of internal friction (shear parameters of the soil) was determined. These parameters, using field and laboratory tests, such as the page loads, the standard penetration, cone penetration, direct shear and triaxial shear strength determined. Zoning maps of soil bearing capacity, wide range, usually assuming the same conditions, be prepared to find (Bell, 2007). In this study, adherence zoning map (c) and internal friction angle (φ) Nehbandan in soil, with emphasis on the evaluation of allowable bearing capacity, based on 33 geotechnical boreholes, of the city is provided. Firstly, library research, including the collection and study of relevant information, including articles, theses, standards, ASTM and AASHTO and kidney Geology, conducted by the Laboratory of Soil Mechanics and Technical Southern province, field studies and laboratory studies it's done. The purpose of this study is to provide strength parameters, to determine the type of structure, the strength of the soil or ground reinforcement to withstand the loads of authorized and designated the meeting, followed by the design of the structure due to the formation lithology layers is provided. In South Khorasan province, during the last few years, done research in this area, including Jafarzadeh (2013) in Birjand.

Research Article

Nehbandan City, South East, Iran, South Khorasan is located. The total area of the city, 24,478 square kilometers. Its distance from the center of 180 km and a height of 1211 meters above sea level (Figure1).

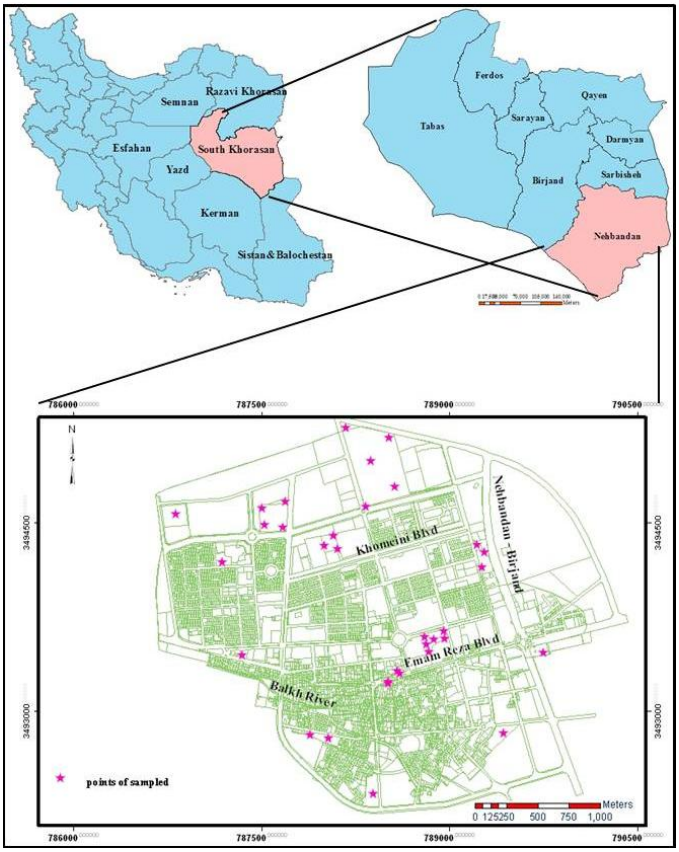

Figure 1: Geographical location of the study of Nehbandan

Geology of the Study Area

At the end of the Middle East, between Nehbandan fault (in the west) and fault Harirood (in east), in a wide range, with an area of 800 km long and 200 km wide, with a thick accumulation of deposits there Filiaşi species, the ophiolitic basement, are related to oceanic crust. Across the development stages of oceanic crust and continental, with a derivation of the Tethys, which is called the zone Nhbndan- Khash is remembered. City Nehbandan significantly affect the performance of fault Nehbandan which is good in terms of seismic activity are significant. Nehbandan 1928 earthquake epicenter, located on the fault. Nehbandan ruined city in 1370, the last step is the fault Nehbandan (Berberian, 1976).

The study area is located in the alluvial sediments. Quaternary deposits are mostly old terraces, alluvial fans, alluvial stones were thrown at the foot of the mountains are new. Zone of clay and sand dunes and alluvial formations present age of the youngest in the range (Aghanabati 2004).

Satellite images, topographic maps, and compared them with field survey, it was concluded, that geomorphological range Nehbandan Nehbandan fault system is closely related to the movement, so that faults Neh East and Neh West, the city is Nehbandan pass controller landforms in this region. These faults and their branches as well as having a negative component of the transition between mountain classified, the height difference between the plain and the surrounding mountains are Nehbandan include (Khatib, 2008).

Zoning Adhesion (c) and Internal Friction Angle (φ)

Shear strength of the soil, the internal resistance of the soil mass that can be used to deal with failure, roll, slide, or comminuted show. Simply, resistance to deformation, the shear strength of the soil (Das and

Braja 1377). Shear strength parameters of the laboratory tests, previous history and current state of tension (arrangement of particles, grain shape, grain size and moisture content) dependent.

To determine the shear strength parameters (Ø and C) boreholes drilled soil, direct shear tests on undisturbed samples (lumps) and reconstructed samples of soil density and natural moisture to a depth of 4 meters has been done the results obtained are as follows (Das, 2006).

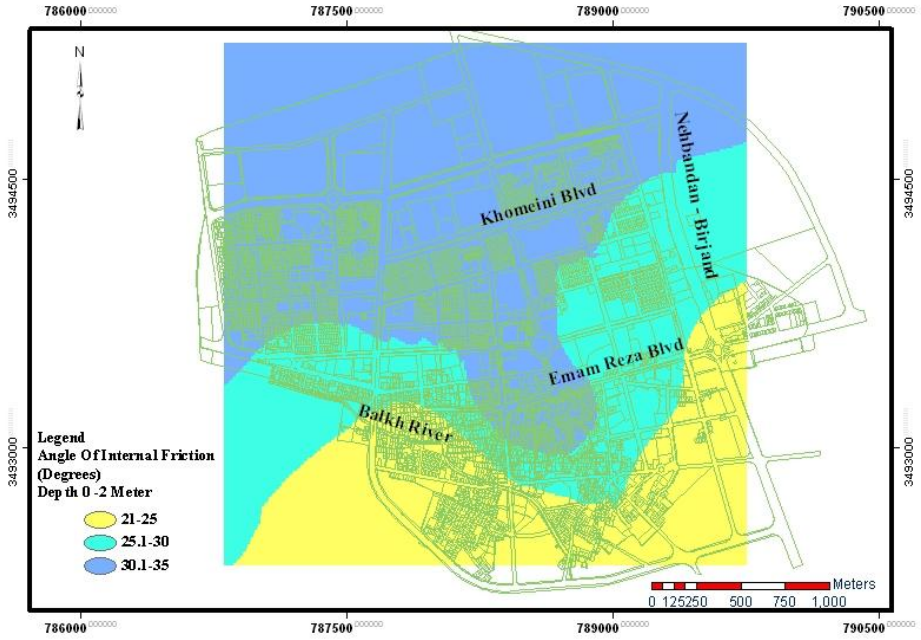

Figure 2: Map of the distribution of values of the angle of internal friction of soil from a depth of 0 to 2 meters

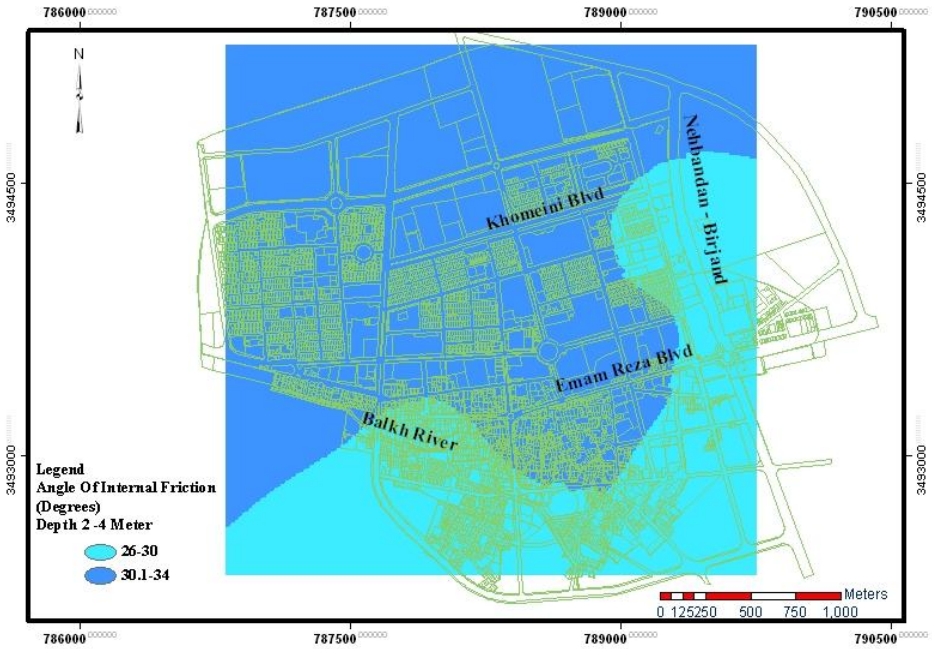

Figure 3: Map of the distribution of values of the angle of internal friction of soil from a depth of 2 to 4 m

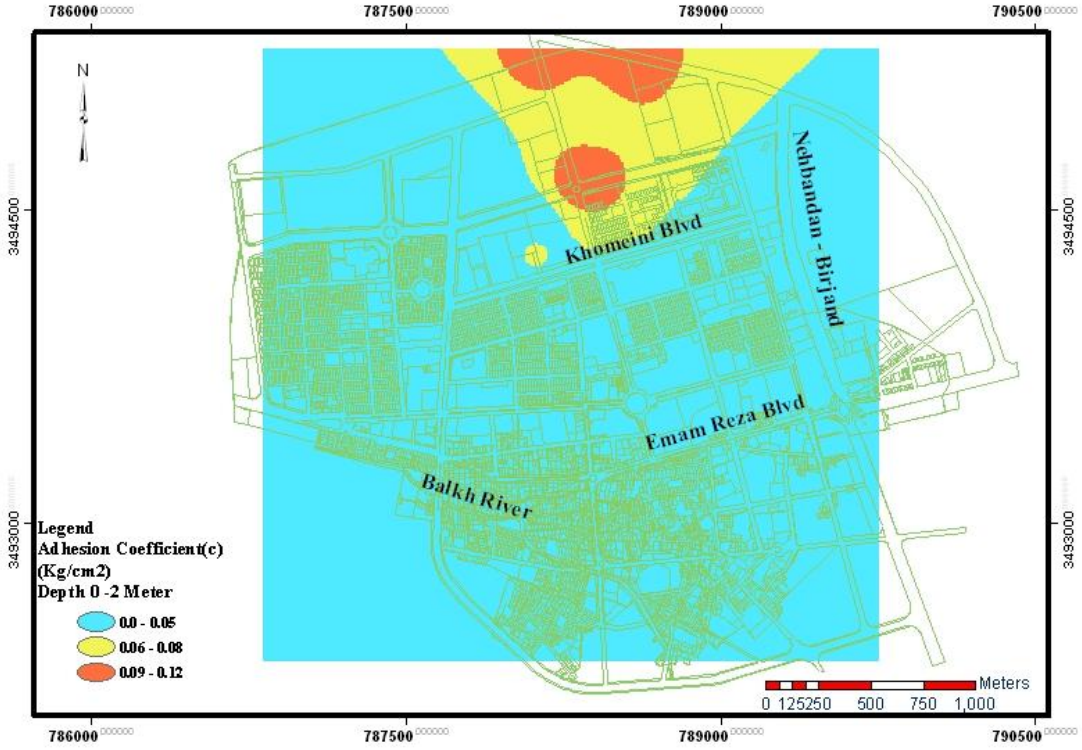

Figure 4: Map of the distribution of the values of the coefficient of adhesion of soil from a depth of 0 to 2 meters

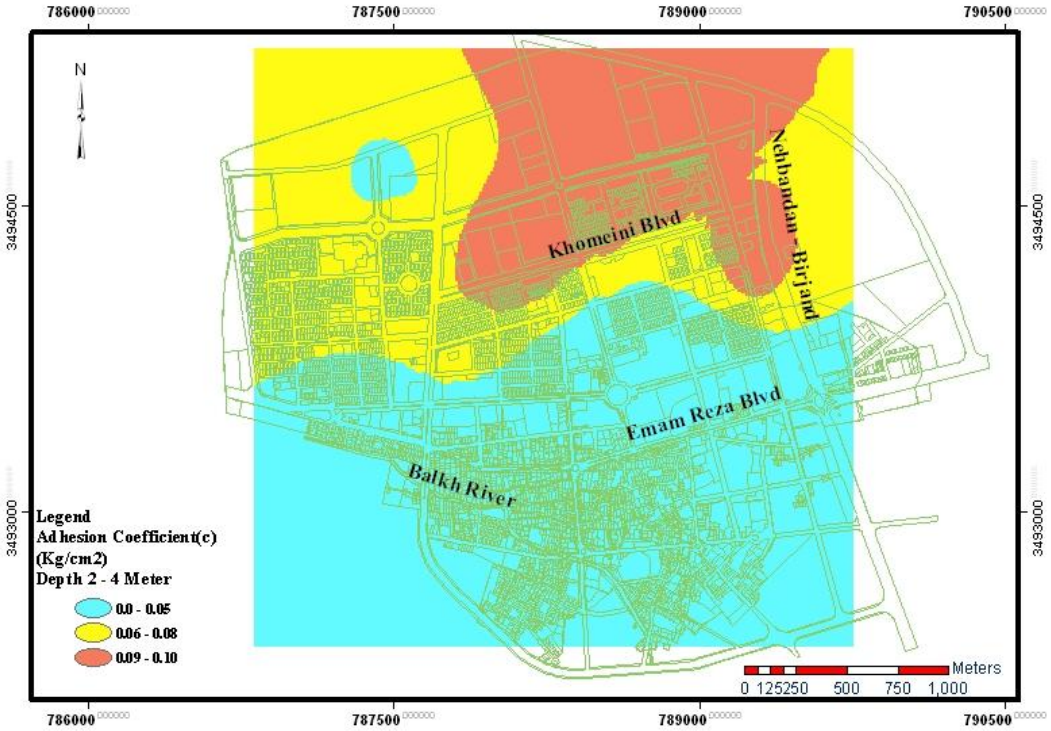

Figure 5: Map of the distribution of the values of the coefficient of adhesion of soil from a depth of 2 to 4 m

Based on the results obtained and the texture of natural soil layers can be stated that the supply of bearing capacity of soil parameters, angle of internal friction.
These images will be determined according to generally Soils a low shear strength parameters (29ϕ≤0) is limited to down town area (vertical streets of the west and east, near the Balkh River and Pine Square) is.

CONCLUSION

1 soil internal friction angle (ϕ), from south to north due to the coarse and dense, rises.
2. The soils generally have a low shear strength parameters (°29ϕ≤) is restricted to a neighborhood south of the city (vertical streets east and west, and the Balkh River near Pine) is.
3. According to the engineering parameters of the soil and the natural soil under the foundation, the whole town can be stated, that the main parameter, the supply of bearing capacity of soil, angle of internal friction and the coefficient of adhesion should be regardless.
4 shear strength of soil settlement, subject to certain conditions in place, such as normal or increased moisture, for other reasons, so the details provided for each zone, a place of natural conditions, which should be considered.

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