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Practical Analysis of Geotechnical Engineering Geological Conditions in Foundation PIT Support Engineering Design

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Abstract: ***Engineering design is the focus of the whole foundation pit supporting engineering content, the achievement of the project construction work objectives, the project construction work quality assurance, have a great impact and function. Through the analysis and discussion of geotechnical engineering geological conditions in the design of foundation pit supporting engineering application and the final effect, in the verification of the importance of geotechnical engineering geological conditions in the design of foundation pit supporting engineering at the same time, it can provide the corresponding design reference for the foundation pit supporting engineering design, the foundation pit supporting engineering construction development also has the corresponding active role.***

Keywords: foundation pit supporting engineering; Engineering design; Geotechnical engineering; Geological conditions; Practice analysis.

1. INTRODUCTION

During the whole process of foundation pit supporting engineering construction, the quality of engineering design often has a direct impact on the construction quality of foundation pit supporting engineering. In order to strengthen the quality support of foundation pit supporting engineering design, the relevant designers need to pay attention to the quality of engineering design, and the geotechnical engineering geological conditions to be fully and effectively used. The foundation pit support engineering design based on geotechnical engineering geological conditions can better meet the needs of the development of engineering site operations, correct guidance of the development of site engineering construction, but also to maximize the realization of the development goal of economic benefits of the project.

2. ANALYZE AND DISCUSS THE DEVELOPMENT STATUS OF GEOTECHNICAL SOFT FOUNDATION PIT SUPPORT ENGINEERING DESIGN

Geotechnical engineering construction period, soft soil foundation pit construction. Job processing is the key and difficult content, and the quality of this part of the project will often have a greater impact on the construction quality and safety of the whole project. In fact, due to the high water content, poor soil bearing capacity, poor permeability and other characteristics of soft soil foundation, pay attention to the corresponding foundation pit construction design and quality strengthening, can provide a strong guarantee for the subsequent development of the project. The geotechnical designer is organizing the project
In the case of design work, if geotechnical engineering geological conditions are not applied, the final engineering design results will deviate from geotechnical engineering.

Organizing the design of foundation pit supporting engineering is an important way to ensure the design quality of foundation pit supporting engineering. Some practitioners ignore the importance of geotechnical engineering geological conditions to a certain extent, and organize the design of foundation pit supporting engineering from the technical level, which will reduce the level of foundation pit supporting engineering design to a certain extent.

3. CONCRETE CONTENT OF SOFT FOUNDATION PIT SUPPORTING ENGINEERING DESIGN TECHNOLOGY OF GEOTECHNICAL ENGINEERING

In the process of foundation pit engineering design, common operation techniques include The following points:

3.1 Surface treatment technology

During the design of soft foundation pit supporting engineering of geotechnical engineering, due to the characteristics of low bearing capacity of soft soil foundation, in order to ensure the normal and effective development of foundation structure construction, it is of extremely important practical value to pay attention to and actively strengthen the replacement of soft soil, water supply and drainage effectiveness strengthening and other measures. For example, in order to ensure good construction quality of foundation structure and the final construction effect to meet the needs of geotechnical engineering construction and development, operators can actively and effectively carry out excavation activities of ditches on the ground, and actively release water contained in soil through ditches, thus strengthening and improving the overall strength of foundation surface and promoting the subsequent construction and development of engineering.

3.2 Non-uniform settlement treatment technology

In order to avoid uneven settlement of soft soil foundation in geotechnical engineering, Process the actual situation, to the late project construction quality and safety. The processing technology should be taken as follows: first, surface treatment technology. At the current stage, geotechnical engineering designers should make full and effective use of geotechnical engineering geological conditions, and select appropriate supporting methods for soil quality, geological and hydrological conditions and other aspects of foundation pit support. For example, for soft soil, because the foundation soil is mostly saturated soil, with easy deformation, foundation bearing capacity is not strong and permeability is not high, it puts forward higher quality requirements for foundation pit supporting engineering design, designers need to base on this geotechnical geological conditions, scientific and reasonable design of foundation pit engineering. In fact, the geotechnical engineering geological conditions to be applied, advance

In this paper, the uneven settlement of foundation is avoided while the overall bearing capacity of ground is increased by strengthening and improving the quality of infrastructure construction. Second, special treatment method. At the current stage, the occurrence of uneven settlement phenomenon is closely related to the geological conditions of geotechnical engineering. In the process where the local base quality condition is soft soil foundation, the phenomenon of uneven settlement is relatively significant due to the high water content, weak permeability and poor bearing capacity of soft soil foundation, engineering designers can give the soft foundation corresponding technical support through special treatment method The smooth construction development of geotechnical engineering needs, for example, for the soft soil characteristics of soft soil foundation, operators

Personnel can promote the development of infrastructure construction through the use of stronger materials, in the case of mixed use of lime materials and cement materials for foundation treatment, the overall bearing capacity of the foundation structure will be strengthened accordingly, to better meet the needs of subsequent geotechnical engineering construction and development; Third, the use of materials for soft foundation curing treatment, in the case of continuous development of engineering construction materials industry, more and more construction materials can be used to meet the needs of the development of soft foundation strengthening treatment operations, the technical support brought by materials, promote the strengthening and improvement of the comprehensive quality level of engineering design, for example, in fact, operators can use cement and other curing agents In addition, the organization of soft foundation reinforcement treatment, while improving soil quality, can better meet the needs of geotechnical construction and development.

It leads to the occurrence of foundation plate phenomenon, which brings corresponding risks and hidden dangers to the foundation treatment quality. In this regard, engineering designers should avoid the use of unqualified materials as far as possible when organizing the design of foundation pit support engineering, especially the strict quality control of the main construction materials such as gravel.

4. MOISTURE CONTENT CONTROL

In the design of foundation pit supporting engineering of soft foundation engineering, it is extremely necessary to strictly control soil moisture content in order to make full and effective use of displacement method and meet the needs of quality development of foundation pit construction work. The specific measures are as follows: in the case of soft soil foundation construction treatment organized by replacement method, the sand layer watering operation is extremely necessary, but the water content in the material sand is too large

4.1 Load to improve strength technology

In order to reduce the probability of foundation damage phenomenon as much as possible. Sand will be mixed with other materials, which will not only adversely affect the foundation structure, but also hinder the achievement of engineering operation objectives. Therefore, The water pressure filling operation can reduce the damage caused by settlement to the foundation structure while applying the filling water pressure gap. During the whole process of the design and implementation of foundation pit supporting engineering, it is extremely important to properly reduce the water content of groundwater, which can not only reduce the possibility of uneven settlement phenomenon as far as possible, but also timely reduce the adverse impact of uneven settlement phenomenon on the quality of geotechnical engineering construction.

4.2 Key points of quality control in geotechnical foundation pit supporting engineering design

During the whole process of the design and implementation of geotechnical foundation pit supporting engineering, the more common quality control points include the following aspects: In fact, geotechnical engineering geological conditions will have a great impact on the design of foundation pit supporting engineering. In the case that relevant personnel make full and effective use of geotechnical engineering geological conditions and organize the design of foundation pit supporting engineering, the engineering design will be more targeted and better meet the needs of geotechnical engineering construction and development. In daily life, during the engineering design work, the key contents of quality control should be clearly defined as: material

quality control. Taking the construction treatment of soft soil foundation as an example, sand and mud content will bring a great impact on foundation treatment. In the case of excessive mud content, once the submergence phenomenon occurs, it will often Engineering designers should pay attention to the content of the key level, during the process of organizing moisture content measurement work, in a better way to meet the requirements of construction, while strengthening the overall quality of engineering design.

5. ADDITIVE CONTROL

In the process of foundation pit engineering support, appropriate addition of some chemical substances will often increase the durability and practicability of foundation pit supporting materials. In the process of better meeting the development needs of foundation pit engineering support operations, it has a key impact on the achievement of geotechnical engineering objectives. Engineering designers shall, based on the geotechnical engineering geological conditions, conduct qualified control of additives, select the types and quantities of additives according to the actual construction needs, so as to ensure the project quality level and the economic benefits of engineering operations.

6. CONCLUSION

In summary, through the analysis and discussion in this paper, it can be seen that at the current stage, it is of extremely important practical value to pay attention to and do a good job in the design of foundation pit supporting engineering. To make full and effective use of geotechnical engineering geological conditions, and to organize corresponding engineering design activities on the basis of ensuring that the engineering design requirements are consistent with the content of geotechnical engineering geological conditions can not only strengthen and improve Engineering design quality level, but also promote the achievement of engineering operation objectives.

REFERENCES

[1] FAN Xiaofeng. Application Analysis of geotechnical engineering geological conditions in the design of foundation pit support engineering [J]. China Construction Engineering,2019(09):156-157.
[2] Yao Xianrui, Zhao Shuaiquan. Research on design and Application of foundation pit support in geotechnical engineering [J]. World Nonferrous Metals,2019(03):201+203.
[3] Zhao Jun. Discussion on the application of geotechnical engineering geological conditions in the design of foundation pit support engineering [J]. Urban Construction Theory Research (Electronic edition), 2019, (02):54-5.
[4] Yang L. Application analysis of geotechnical engineering geological conditions in the design of foundation pit support engineering [J]. House and Real Estate,2018(25):82.