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Research on Construction Safety and Technology of Civil Engineeringin High-Rise Building

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Abstract: *With the continuous development of the global economy, the construction technology is also increasingly mature, high-rise buildings are given a new meaning, which highly represents the economic strength of the country. Construction industry plays an important role in China. It is not only a pillar industry, but also an integral part of the national economy. The construction industry is based on civil engineering. At the same time, the safety of engineering and related technology are also important factors that determine the sustainable development of the construction industry. In this context, this paper attempts to analyze the safety problems and technologies in the construction of civil engineering high-rise buildings. Keywords: Civil Engineering; High-Rise Buildings; Construction Safety; Construction Techniques.*

Keywords: *global economy*

I. INTRODUCTION

In recent years, China's urbanization process is gradually advancing, and there are more andmorehigh-rise buildings, showing a booming trend. In terms of construction technology, it has been relatively mature, but thesafety risk prevention measures need to be further improved. 2. Construction characteristics of high-rise buildings in civil engineering Foundation excavation and treatment is difficult. From the perspective of the characteristics of high-rise buildings themselves, they are high in height and bear a large weight. Compared with other low-rise buildings, they have alarger wind load and are more affected by earthquakes. Both overturning moment and shear force are larger than other low-rise buildings. Therefore, in order to effectively avoid these risks, the embedding depth must be deeper, thus increasing the fixation effect and reducing the impact of the earthquake on it. The construction period is longer. From the current situation of high-rise building construction, most of the high-rise buildings that have just completed construction have more than 20 floors at present, and most of the floorsuse standard floors, which can provide great convenience for construction, not only can there be enough construction space, but also can provide favorable conditions for flow operation. But due to the high floor and high requirements of the indicators, full feasibility study is needed. Therefore, from the initial research to the construction completion, it needs at least three years for each high-rise buildings to complete construction, which will causes more experiences in bad operation environment, like rainy and snowy days, and it further increased the difficulty of construction. High technical difficulty. Due to the particularity of high-rise buildings, it is inevitable to adopt the deep foundation scheme, which has higher requirements on concrete structure, high precision in the operation process, and great difficulty in operation [1].

II. SAFETY AND TECHNICAL PROBLEMS IN THE CONSTRUCTION OF HIGH-RISE BUILDINGS IN CIVIL ENGINEERING

2.1 Material and equipment problems Load bearing is an important factor to determine the safety of high-rise buildings. Load-bearing structure includes two kinds, one is steel reinforcement; the second is concrete. In high-rise buildings, the quality of concrete plays a decisive role in load bearing. The quality of concrete is affected by a variety of factors, including quantity and use time. If the use time is not accurate, its performance will degrade, during the construction process. The above problems occurfrequently, and will have a direct impact on the stability of the building. Therefore, construction units and constructionpersonnel should attach great importance to the quality of concrete [2]. Compared

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with low-rise buildings, high-rise buildings need to use more equipment to assist construction personnel to complete various tasks. High-rise buildings have many floors and high heights, so many projects needtobecompleted with the help of professional equipment. Due to the long construction time, the equipment mayhavetooperate for a long time or be exposed to the outside for a long time, which may cause the equipment to wear out, or theequipment may be corroded due to the weather. Either state will bring safety risks to the construction. If the devicefails, it will not only affect the construction schedule, cause economic losses, and may cause significant safetyaccident, which is a threat to personal safety, especially the large working equipment that will lead to more serious losses. Therefore, whether the construction unit, the usage of the facilities or personnel, should attach great importancetothesafety of the equipment, should regularly inspect equipment, repair, and should machines be replaced when necessary, to ensure the normal operation of construction equipment and the smooth progress of construction. Equipment use problem. Equipment operation will bring continuous noise, not only will cause certainphysical injury to the construction personnel, but also will make them have negative emotions, and they may expressthenegative emotions directly in the work, including cutting corners. In addition, due to the approaching constructionperiod, workers may be forced to work overtime, which double the machine operation time and accelerate the lossofequipment. The normal operation of equipment cannot be guaranteed, increasing the probability of safety incidents.

2.2 Improper arrangement of construction schedule and content Foundation pit construction problem.

Compared with other buildings, high-rise buildings have higher requirementson the foundation, and the foundation construction is more difficult. In addition to requiring the foundation to bear moreweight. Most high-rise buildings require basements, which makes foundation treatment more difficult. Foundationtreatment method adjust measures to local conditions according to the different geological conditions, designdifferent technical process under the condition of complicated geological conditions. Treatment scheme is more complexandincreased uncertainty. The security risk is bigger, which may also cause foundation pit to collapse, have an impact onconstruction of the building, and will be involved the adjacent buildings. Work at high altitude. One of the difficulties in the construction of high-rise buildings is the need for high-altitudeoperations, which greatly tests the physical functions of the construction personnel, but also put forwardhigherrequirements for their psychological quality. As the height of the building continues to increase, the transportationamount of materials required for construction also increases, which leads to a series of safety problems, suchas fallingfrom high places, etc. In addition, due to the particularity of high-rise buildings, it is more difficult to fight andsavefires once they occur.

III. IMPROVE THE CONSTRUCTION OF HIGH-RISE BUILDINGS IN CIVIL ENGINEERING

3.1 Maintenance and supervision of construction equipment

Construction equipment may have different degrees of faults due to high or low temperature and humidity. Therefore, in order to effectively eliminate the safety risks caused by equipment problems, regular maintenanceandeffective supervision must be carried out on the equipment to timely find and solve problems, which can effectivelyreduce the accidents caused by this. In the process of equipment maintenance and supervision, we must pay attentiontotwo aspects of the work. First, we must regularly check and repair the equipment to reduce accidents causedbyweardown of components. The second is to standardize the operation of construction personnel, improve their scientificandrational use of equipment, carry out professional equipment use training, to ensure that construction personnel cancorrectly use related equipment, reduce the wrong operation, non-standard operation, so as to ensure the safetyofconstruction.

3.2 Scientific investigation of surrounding environment of high-rise buildings

Foundation is firm or is not the key to the safety of engineering factors. Therefore, before digging foundation, it isneeded to be prepared for the prophase, including the exploration of geology and groundwater. According to theresult of exploration, and scientific measures should be taken to guarantee the foundation of the firm, general includingdrainage and specific area reinforcement measures, put an end to the instability of foundation problems thoroughly, soas to improve the construction quality, fundamentally solve the problem of the building safety

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IV. CONCLUSION

To sum up, the safety of the high-rise building construction and technical problems appear frequently. Inorderto be able to do prevention beforehand and guarantee the project quality, constructions must unite various forces, let each link of the construction workers to strengthen the safety consciousness, to strengthen the inspection of engineering materials and equipment required. In strict accordance with the safety construction schemes, it is forbiddentocut corners. At the same time, frequent problems should be analyzed and find the key point to solve the problem.

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