

# Structural Construction Problems and Countermeasures of House Construction Engineering

Dongming Zhao<sup>1</sup>, Enjing Su<sup>2,3</sup>, Longxiang Zhang<sup>4</sup>, Li Li<sup>4</sup>, Yingying Lin<sup>4</sup>

<sup>1</sup>Department of Architectural Engineering, Liaocheng Vocational & Technical College, Liaocheng, 252000, China

<sup>2</sup>Shandong Liaojian Group Co., Ltd, Liaocheng, 252000, China

<sup>3</sup>Liaocheng Mingxin Construction Co., Ltd, Liaocheng, 252000, China

<sup>4</sup>Liaocheng. Baofeng Electromechanical Technology Company Limited, Liaocheng, 252001, China

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**Abstract:** The problems in building structure construction often lead to the safety of building structure. After the development of domestic real estate market, the problems in building structure construction have attracted enough attention. Concrete is the main raw material in the construction of most housing construction projects in China at this stage, and the process of pouring concrete can be completed smoothly and scientifically with the help of formwork, which makes the formwork construction technology have a very wide range of applications in housing construction projects and have a significant impact on the quality of housing construction engineering structures. Once there are any problems in the construction of the building structure, it will inevitably seriously affect the building quality of the house. Improving the quality of housing construction is an important task for builders. It is of great safety and economic significance for both the construction unit and the owner to find out the problems existing in the building structure construction and summarize these problems. In this paper, through an in-depth understanding of housing construction, the structural construction problems are comprehensively studied, and some common problems existing in the construction process are analyzed.

## 1. Introduction

Only in the process of construction for the engineering structure, the common problems can be avoided, and the quality of the mechanical engineering can be improved on the whole of the building construction project[1]. It seems that the engineering structure plays an absolute pillar role in the entire building construction project[2]. The huge scale of my country's real estate market is due to, on the one hand, the long-term backwardness of China's real estate industry, and on the other hand, the special significance of housing to the Chinese people[3]. As the top priority of housing construction, the quality problem and its existing problems and corresponding control measures are worthy of our constant thinking and discussion. Only by ensuring the construction, the whole house construction project has the premise of high quality. In this case, it is necessary to deeply analyze the common problems in this link and formulate targeted solutions[4].

With the continuous development and progress of society, in recent years, with the support of relevant policies and the influx of domestic and foreign funds, China's real estate industry has become extremely popular, and people have paid more and more attention to the quality of houses. However, because some construction enterprises still don't know the construction technology clearly, it is difficult to apply it flexibly and scientifically in the structural construction of housing construction projects[5]. Therefore, it is difficult to significantly improve the application effect in the application process, which restricts the improvement of the structural construction quality of housing construction projects[6]. Therefore, it is of great safety and economic significance for both the construction unit and the owner to find out the problems existing in the building structure construction and summarize these problems[7].

## **2. Common problems in structural construction**

### **2.1. Cast in situ Reinforcement**

The cast-in-place steel bar in the construction of the dry project has been used for a long time and has strong technical advantages. The operation process is relatively simple, and it can also promote the rapid construction. Under these advantages, the cast-in-place steel bar has The application of this method in construction is relatively extensive[8]. In modern buildings, the use of steel bars has almost penetrated into various projects, and the quality of buildings has a great relationship with the use of steel bars. There are many common problems in steel bar engineering, such as: the quality of steel bars is too poor; the quality assurance materials and certificates of qualification of steel bars are incomplete; the production and binding of steel bars are not standardized; the hook angle does not meet the requirements; Offsets, undersized rebars, or flaws in rebar joints, etc. In the specific construction of the reinforced concrete structure, if there are problems and deviations in the formwork operation, the beam and column will be necked at the node position. In this process, the overall bearing capacity and strength of the node concrete play the most important role. direct impact.

### **2.2. Brick-concrete structure**

Brick-concrete structure is a very common form in the whole structural system of building engineering. There are no special requirements for related materials, and the overall technological process is relatively simple, which is very easy to operate. However, in the process of concrete construction, we still need to pay special attention to some problems. Brick-concrete structure is one of the most common building structures in rural areas. Its requirements for materials are not high and its construction technology is relatively simple. However, attention should be paid to many details in the construction. In the construction process, for the bricklaying project, it is necessary to ensure that the project construction and quality acceptance can meet the standards and specifications at the same time\_ It is also necessary to clarify the standards of relevant mortar materials, so that the mortar grade can be tested in the early stage on the basis of meeting the design standards. The cast-in-place brick test shows that the shear strength of clay brick masonry increases with the increase of brick moisture content. When dry bricks are used, the shear radian of masonry decreases obviously[9]. Therefore, dry bricks should be resolutely prohibited. When batching, it shall be measured accurately and mixed evenly, and the consistency and water retention of mortar shall also meet the regulations.

### **2.3. Build material strength**

During the construction of the building structure, the deviation of the axis of the building components occurs frequently due to the misoperation of the workers. The most common is that the lay-out is not rigorous, which will eventually lead to the deviation of the force of the building. The engineering components can maintain a certain degree of uniformity and symmetry in the overall structure, so that the cross-section of the steel bar can remain uniform in the structural stress, and on this basis, the flat section can be formed[10]. The principle of material consistency should be followed. If the materials or materials with inconsistent properties are used, it will lead to unpredictable changes in the performance and quality of the building structure, and there are certain safety hazards, such as changes in the bearing capacity of the building's load-bearing structure. In the process of structural configuration, if the main reinforcement falls off, the stress of the whole reinforced structure will be out of balance, which will exceed the stress limit of the reinforcement and affect the whole reinforced system. In this case, the stirrup that constrains the concrete will be destroyed by this imbalance, and it will be difficult to continue to restrain the concrete, and at the same time, it will be difficult to form a strong support for the main reinforcement.

### **3. Problem solving strategies**

#### **3.1. Countermeasures for concrete structures**

In terms of engineering architecture, concrete is mainly divided into three types, first plain concrete, then reinforced concrete, and finally prestressed concrete. Compared with enterprise material structure, concrete structure has very obvious advantages, can not show good integrity, can form a complete overall structure through pouring, and has strong plasticity, Through manual processing to meet the needs of various forms, it can also show excellent overall durability, not fire-resistant, but also durable, and the overall cost performance is also very reasonable. Reinforced concrete ring beam the setting of reinforced concrete ring beam plays a great role in strengthening the overall stiffness of the floor, enhancing the connection of internal and external walls, strengthening the integrity of the structure and improving its shear strength.

In the process of concrete hardening and setting, due to the influence of cement hydration, the new and old concrete will be bonded to form a relatively stable integral structure, which can strengthen the concrete structure locally and restore the bearing capacity of the structure. For the use of some raw materials such as steel bars, we should follow the principle of current processing to ensure the full use of materials. During concrete pouring, first check to ensure the accuracy and integrity of the support and formwork, and ensure that the overall condition of the formwork and reinforcement can be clean and tidy, and there is no sewage retention. Secondly, when pouring concrete, firmly avoid loosening, control the position of reinforcement and formwork, and avoid dislocation. Finally, intermittent construction should be carried out. Only in this way can cracks be avoided at the connection point of the whole wall.

#### **3.2. Countermeasures for brick masonry structures**

Brick body engineering includes several aspects, including clay bricks and fly ash bricks, autoclaved lime-sand bricks, and clay hollow bricks, which have different uses. Generally speaking, masonry mortar has low strength and low plumpness; unreasonable masonry assembly, irregular brick joints, and through joints; poor flatness, irregular rubbing, and improper handling of rubbing; leakage of tie bars. The hollow brick, small block wall surface with arbitrary indwelling grooves, and local cracks in the wall will affect the quality of the masonry work of the wall. Before the concrete wall construction, it is necessary to conduct a comprehensive inspection on the material quality to ensure that the overall strength of bricklaying and mortar can meet the design requirements of the project, strictly control the moisture content of bricks, and at the same time ensure the overall silt content of mortar, both of which must be within the standard range.

#### **3.3. Steel structure countermeasures**

Firstly, the production and installation of steel will have a decisive impact on the overall quality level of steel. In this case, it is necessary to ensure the manufacturing professional level of relevant manufacturers, meet relevant professional standards in terms of technology and qualification, and the overall production situation should meet the standard production requirements. When the steel bar is broken, it must be checked according to the specifications with reference to the drawings, and the specification, quantity and position of the steel bar used in the binding of the steel bar must be strictly checked, and the anchorage length and joint position of the steel bar must be checked for correctness. Corroded and oily steel bars cannot be used. Steel welding, this link is related to the forming of steel, and is directly related to the specific engineering construction. Only by doing strict control can the quality be ensured. For the main reinforcement, ensuring uniform stress is the most basic requirement, and it is also the basis for the conduction of the support surface of the whole building structure. Once the configuration of the main reinforcement is unbalanced and deviates to one side, it will lead to the deviation of the actual bearing capacity. In the presence of external destructive force, it will lead to the force imbalance and terrible consequences.

#### 4. Conclusions

In the construction of building structure, we should not only pay attention to the construction steps, but also attach great importance to the design. The safety of the building structure of a house is related to many aspects, from material selection to construction technology, many factors will affect the final safety performance. As a construction unit, we should actively study the problems that are easy to occur in the construction structure, and discuss the countermeasures to solve the problems, as a basis for the quality assurance of construction, and provide help for future construction. In housing construction, a lot of content is involved and a lot of work needs to be carried out. In this case, the root cause of the quality problem can only be found through careful observation and research, and on the basis of summarizing the relevant reasons, formulate a formula Scientific solutions with targeted implementation at the same time.

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