



# International Journal for Innovative Engineering and Management Research

A Peer Reviewed Open Access International Journal

[www.ijiemr.org](http://www.ijiemr.org)

## COPY RIGHT



**ELSEVIER**  
**SSRN**

**2023 IJIEMR.** Personal use of this material is permitted. Permission from IJIEMR must be obtained for all other uses, in any current or future media, including reprinting/republishing this material for advertising or promotional purposes, creating new collective works, for resale or redistribution to servers or lists, or reuse of any copyrighted component of this work in other works. No Reprint should be done to this paper, all copy right is authenticated to Paper Authors

IJIEMR Transactions, online available on 26<sup>th</sup> Feb 2022. Link

[:http://www.ijiemr.org/downloads.php?vol=Volume-12&issue=Issue 02](http://www.ijiemr.org/downloads.php?vol=Volume-12&issue=Issue 02)

**DOI: 10.48047/IJIEMR/V12/ISSUE 02/78**

Title A HIGHER LEVEL OF QUALITY IN ASSEMBLY CONSTRUCTION AND CONSTRUCTION

Volume 12, ISSUE 02, Pages: 512-516

Paper Authors

**Yassamin Mudhafar Abdulsahib**



USE THIS BARCODE TO ACCESS YOUR ONLINE PAPER

To Secure Your Paper As Per **UGC Guidelines** We Are Providing A Electronic Bar Code

## A HIGHER LEVEL OF QUALITY IN ASSEMBLY CONSTRUCTION AND CONSTRUCTION

Yassamin Mudhafar Abdulsahib,

Al-Benian Co.Construction Contracts Ltd.

amertopy2003@yahoo.com

### Abstract:

As urbanization accelerates and the quality of life of residents improves, the construction of buildings is increasing at an increasing rate. For the construction industry to improve efficiency, quality, and meet the needs of the time, new technologies must be utilized. In China, engineering construction units are currently implementing a project to enhance Assemblage-type construction technology results in a steady improvement in production efficiency while reducing low-level, time-consuming construction issues. In this paper, we analyze the quality problems associated with the construction process and the meaning of the assembly structure. It is the purpose of this paper to provide improvements to building quality and construction speed. Based on the design and structural system of prefabricated buildings, this paper analyzes them

### 1. Introduction

In recent years, the construction industry in China has experienced a tremendous amount of growth as a result of the prosperous social economy in China, as well as improvement in the living standards of the people in the social communities as a result of this growth in the construction industry. For this reason, Building design must be strengthened, promoted, so as to further benefit our construction industry's quality, efficiency, and quality of our constructions. At the moment, the technology is mainly used to construct high-rise buildings and small villas attached to them. The construction teams should work on strengthening the construction quality of the grasp during the construction phase of a project and take active steps to resolve the issue. The benefits of construction should be maintained throughout the construction process in order to maximize their application as efficiently as possible.

It must be understood that a building is a prefabricated component that is assembled on a construction site using prefabricated components at this point in the development of China's construction industry. There are many advantages and disadvantages to using this type of construction; however, here are a few of the most significant advantages and disadvantages of using this type of construction that I believe are worth mentioning.

#### 1.1 The advantages of fabricated construction

Building assembly structures can solve problems such as cracks in the walls, leaks, and other quality problems as well as increase the building's safety, fire resistance, and durability. Prefabricated components are brought to the construction site for assembly, which reduces project duration, costs, and environmental impact.

#### 1.2 An analysis of the construction's shortcomings

In addition to the limitations of the actual construction mode, the assembly has encountered many difficulties. By using prefabricated components for construction sites, manufacturers have been able to increase component production efficiency, mode of transportation, and many other factors. The construction schedule has been delayed due to reserved parts associated with the project. As previously manufactured components will have to be re-produced, construction costs and duration will increase. As well as incorrect, incomplete, lost, or otherwise unsatisfactory installation processes. As a result of the lack of relevant professionals during the installation of the production, technical guidance and professionalism were lacking..

## **2 An analysis of the quality of assembler-built buildings**

In the construction process, the assembly of the building generally offers a number of advantages, which have caused it to gain popularity among construction units. The construction project was significantly hindered by a variety of quality problems that developed during the project. Specifically, the article summarizes the following problems associated with building quality.

### **2.1 Quality problems with bed mortar**

Chinese buildings are currently assembled during construction to obtain the bed mortar needed to construct them. Although construction is a process that involves some quality and safety risks because of improper construction operations by the construction staff. Construction personnel cannot effectively manage both construction machinery and quality inspection work because they lack the

ability to effectively manage both. Due to this, the bed mortar was unevenly thickened, which reduced the quality of the pump and hindered construction efficiency. Consequently, the construction team was unable to arrange the bed mortar's material in a scientific manner, and did not adhere to the principle of "less mix" and "ground mixing", resulting in poor workmanship. In addition, a lack of skills training among the construction staff prevented them from performing a reasonable control of the bed mortar's material. The lack of control over the bed mortar resulted in a lower quality project. In addition, it is important to note that since the construction unit must have equipment to determine the thickness of the bed mortar, this results in migration of the bed mortar layer during maintenance, which causes gaps and other problems that prevent construction from being carried out effectively.

### **2.2 A problem with installation size deviation**

Moreover, the installation of stitching will often cause problems during the process of installation and installation, resulting in a reduction in the quality of the construction project. The main manifestations of this type of deviation are the cracks in the wall board splicings that are not smooth, uneven, and so on.

There are four types of bias problems: First, inadequate size measurement and control result in large patchwork errors that adversely affect design objectives, and these buildings appear to shake when components are lifted. Therefore, precision control is difficult to install. Because the assembly project is smaller, the relevant workers lack the experience to understand

the installation process. Also, the staff is unable to determine the magnitude of component errors, resulting in cracks. The elevation of the line was incorrectly constructed as a fourth problem.

### 2.3 Post-pouring concrete quality problems

Unequal pulp, uneven roots, and unequal heights are common problems when pouring and using post-pour concrete. These problems are usually caused by the lack of a template tool by the construction team. Furthermore, the construction staff cannot determine the ratio by using scientific methods, resulting in excessive coarse aggregates, which can rot concrete. As a result of non-compliance with design and construction standards, the construction staff violated template deviations and incorrect steel bar installation. Besides vibrations of concrete, pulp leaks, and timber rot, the construction workers should be held accountable.

### 2.4 Protection of the final product

Installation and construction of buildings in China often require the advance processing of building components, followed by the installation of semi-finished products. During stacking, finished prefabricated components are often damaged in varying degrees, which adversely affects the building's durability. It is generally found that this type of problem arises due to three factors: First, construction technology is unavailable, and second, managers are unable to follow construction requirements to re-inspect the work. Additionally, non-load-bearing elements have a low design strength, which can lead to thin thickness problems. During component transportation,

improper management led to a variety of quality problems resulting from hoisting.

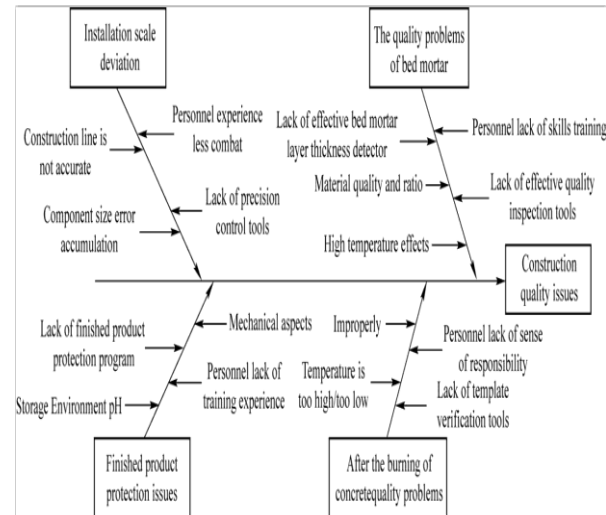


Figure 1 Flowchart of assembly quality problems

### 3. Improvements in the quality of fabrications

A variety of measures must be taken by construction units in China to enhance construction quality during the construction process in order to improve the assembly construction and construction of the benefits. According to the author, the following measures should be taken to improve assembly-building construction quality:

#### 3.1 High-tech usage in a rational manner

The construction industry should use high-tech applications rationally during relevant operations to improve the quality of assembly construction production. As a result of the use of technology such as BIM and RFID, construction workers are able to perform their duties more efficiently today. Assemblage buildings can be constructed using BIM technology in three ways.

This study creates a database by combining the components of the

information set; it gathers information about building elements, and it captures model information about interrelated, dynamic changes. It is possible to facilitate the management and visualization of construction sites by promoting and applying technology.

Implement RFID technology into the production process, transportation, storage, and hoisting processes. Using technology, such as chips, it is possible to rationalize assembly road transportation routes, reducing transportation time and costs.

The technology can enhance the lifting process and increase the efficiency of lifting work, as well as optimize the management and application of assembly construction so it is effective, in addition to helping construction workers understand assembly structure components in a timely manner.

### **3.2 Strengthening training for construction workers**

As a result of the analysis of the factors influencing the assembly building's quality, it was concluded that the construction personnel's quality and their capacity have a significant impact on the construction project, which is why construction companies need to conduct the construction project during the training phase.

The assembly of construction enterprises must conduct construction worker training to ensure that construction workers are proficient in advanced construction technology, facilitate a smooth development of work in order to avoid construction errors, and promote construction efficiency.

Moreover, construction companies are required to develop a high level of professional quality among their workers so that the construction process is in compliance

with the construction requirements, design programs for construction operations, and ensure the safety and quality of prefabricated constructions.

### **3.3 Establish a retrofit mechanism for assembly quality improvement**

The construction problems encountered during the assembly building's construction are often caused by improper construction operations, which lead to different levels of architectural design problems, which may further reduce the quality of the construction. To prevent this problem and improve construction efficiency, it is imperative that the construction industry strengthens retrofit mechanisms for ensuring the quality of assembly structures. A timely detection of the emerging root cause of the problem is guaranteed, and the quality of prefabricated building products is improved.

### **3.4 Establish a quality management system**

Automation equipment and equipment for collecting and analyzing quality data can often be used to establish a collaborative management platform for quality construction. Construction workers must transfer these data to a BIM management platform in order to construct models and conduct analyses in order to promote the acquisition of various benefits, improve the efficiency and quality of quality management, and improve quality consistently.

Building units should optimize assembly-style building designs to improve their operational efficiency in order to improve assembly-type construction quality. The surface of prefabricated frame construction systems should align with the center line

of the beam and column. As part of the design process, the beam and column of the junction, as well as the solid level framework must be considered.

It is important to consider several factors when designing a shear wall structure, including the forces acting on the internal and external walls.

#### **4. Conclusion**

As part of the efforts to meet the needs of the Chinese people, Chinese construction companies are improving the quality of their assembly processes. Additionally, they analyze and process production and construction quality. Chinese construction units are working to improve the assembly during its construction so that it may better serve the demands of the Chinese people. They also do analysis and processing of manufacturing and construction quality actively. In this study, we take a close look at the process of assembling products and the problems that can arise from poor assembly quality (such as bed mortar issues). Establishing a quality management platform, optimising the design of assembly-style structures, and enhancing the education of construction workers are all topics to be discussed as part of developing construction quality measures (installation size deviation, concrete quality after pouring, protection of finished product). As a result of new policies and developments in technology, the Chinese assembly-style building industry is expected to expand fast. As a result of the implementation of relevant measures and the advancement of technology, China's assembly-style construction sector is expected to grow rapidly in the near future.