



Technical Evaluation of Integrated Wall and Roof Formwork System and Its Comparison with Ordinary Concrete Building Construction Method

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Received 09 December 2017; Accepted 21 February 2018

Abstract

Nowadays, the development of construction industry is one of the development indices of countries. On the other hand, development of construction industry is more urgent than ever with increased population and consequently, increased desire for urbanization. Considering the inadequacy of traditional and conventional systems for mass housing production, the approach to use modern industrial methods of building along with new technology and observance of the latest technical standards is critical. Therefore, the present study aimed to investigate and compare construction method of reinforced concrete cast in-situ walls and slabs with the conventional method of constructing concrete structures using MSP software. Studies show that the integrated wall and ceiling molding technique has been used since the late 1970s in the construction of high-rise residential towers. Currently, integrated wall and ceiling molding system is used as one of the methods in the construction of buildings with load-bearing wall and concrete ceiling. This method brings about improvements in quality, earthquake resistance, reduced run-time, reduced cost, quick return on investment, saving on materials consumption, reduced labor, eco-friendliness, sustainability and longer durability, reduced resource consumption, integrated structure, fire resistance, high flexibility, and employee safety.

Keywords: Monolithic Concrete System; Modern Technology; MSP Software.

1. Introduction

With the end of the WWII, the first problem countries faced war devastations. The extent of the destruction was so high that it was not possible to provide the housing needed by the war-torn and homeless people easily. At this time, industrial countries thought of producing housing as well as other industrial goods in a massive and industrial manner, a method that could help countries pass from the housing crisis [1].

As one of the pioneers of industrialization, Japan was the first country to manufacture housing in an industrial way. According to the US Department of Housing and Urban Development, at the end of the twentieth century, Japan was qualitatively and sometimes quantitatively the world's first-grade industrial country. Of course, Japan has made several plans to achieve its goals in the field of housing industrialization, one of the most interesting of which was the reduction of units' size by construction of units of 20 square meters in the years after WWII. The infrastructure of the units gradually increased proportionately with the improvement of the economic situation. In addition, Japan provided the context for massive housing companies with long-term bank loans. By developing comprehensive plans, it managed to construct 30 million residential units in 1965 [1].

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<http://dx.doi.org/10.28991/cej-0309102>

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