

An Analysis of Prefabricated Construction Waste: A Case Study Approach

Authors : H. Hakim, C. Kibert, C. Fabre, S. Monadizadeh

Abstract : Construction industry is an industry saddled with chronic problems of high waste generation. Waste management that is to ensure materials are utilized in an efficient manner would make a major contribution to mitigating the negative environmental impacts of construction waste including finite resources depletion and growing occupied landfill areas to name a few. Furthermore, 'material resource efficiency' has been found an economically smart approach specially when considered during the design phase. One effective strategy is to utilizing off-site construction process which includes a series of prefabricated systems such as mobile, modular, and HUD construction (Department of Housing and Urban Development manufactured buildings). These types of buildings are by nature material and resource-efficient. Despite conventional construction that is exposed to adverse weather conditions, manufactured construction production line is capable of creating repetitive units in a factory controlled environment. A factory can have several parallel projects underway with a high speed and in a timely manner which simplifies the storage of excess materials and re-allocating to the next projects. The literature reports that prefabricated construction significantly helps reduce errors, site theft, rework, and delayed problems and can ultimately lead to a considerable waste reduction. However, there is not sufficient data to quantify this reduction when it comes to a regular modular house in the U.S. Therefore, this manuscript aims to provide an analysis of waste originated from a manufactured factory trend. The analysis was made possible with several visits and data collection of Homes of Merits, a Florida Manufactured and Modular Homebuilder. The results quantify and verify a noticeable construction waste reduction.

Keywords : construction waste, modular construction, prefabricated buildings, waste management

Conference Title : ICPEBE 2015 : International Conference on People, Ecosystems and Built Environment

Conference Location : Paris, France

Conference Dates : December 30-31, 2015