CUTTING CONSTRUCTION WASTES BY PREFABRICATION

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Abstract

Construction wastes have become the major source of solid wastes in Hong Kong. Thousands of tonnes of solid wastes are produced every year from construction and demolition activities. Increasing generation of these wastes has caused significant impacts on the environment and aroused growing public concerns. Therefore, the minimisation of construction wastes has become a pressing issue. This paper aims to: 1) reveal the status of construction wastes; 2) investigate the effectiveness of prefabrication in terms of waste reduction in replacing traditional wet-trade practices; 3) examine the factors that help minimise construction wastes by the adoption of prefabrication; and 4) explore the current waste reduction situations after adoption of prefabrication by comparing with in-situ construction. It investigates wastes generated from various wet-trade construction activities such as in-situ concreting, timber formwork, bricklaying, plastering, screeding, tiling, rebar fixing and bamboo scaffolding. Six major reasons for the excessive construction wastage are known to be: 1) cutting; 2) over ordering; 3) damaging during transportation; 4) losing during installation; 5) poor workmanship; and 6) change of design. From the findings of a structured interview survey of thirty-one construction practitioners, “timber formwork” is found to be having the greatest potential for cutting scrap, and wastes from “poor workmanship” can be greatly reduced by adopting prefabrication in construction. Furthermore, after the adoption of prefabrication, wastage generation can be greatly reduced in various wet-trade activities including concreting, rebar fixing, bricklaying, drywall, plastering, screeding and tiling. Especially in plastering, the waste reduction can be reduced by 100%. It is concluded that prefabrication of building components is one of the effective technologies of waste minimisation.

Keywords

Prefabrication, wastage, waste minimisation, environment, construction, Hong Kong

INTRODUCTION

Advocacy of waste management for construction activities, environmental protection, and the recognition of the contribution of wastes generated from construction and demolition works have recently been strongly promoted in Hong Kong (Shen et al., 2002a). The construction industry plays a vital role in meeting the needs of society and enhancing the quality of life (Tse, 2001; Shen and Tam, 2002). However, the responsibility for ensuring construction activities and products that are consistent with environmental policies needs to be defined and good environmental practices through reduction of wastes need to be promoted (EPD, 2003).

The environmental deterioration resulting from construction in Hong Kong has become a pressing issue. Hong Kong generated as much as 14 million tonnes of construction debris in 2001, of which about 3 million tonnes (21.4%) of construction and demolition (C&D) materials were disposed of at landfills, while the remaining 11 million tonnes (78.6%) of C&D wastes


