

ABSTRACT

Construction industry in Malaysia is still in high demand due to the development and urbanization of Malaysia. Therefore, a lot of commercial and residential buildings are being developed. The increasing number of construction projects in Malaysia indirectly will contribute to the increase of construction waste. Thus, waste minimization is an important area of concern in the implementation of the construction waste management in the construction industry of Malaysia. This study examines the wastage level, waste index and sources of construction waste generated from construction activities. Data collection was conducted at three construction projects; two ongoing commercial building at Project A and Project C and one ongoing residential building project at Project B in Klang Valley. These projects adopt two different construction methods; conventional and prefabrication (PERI formwork) method. Project activities, truck volume and number of trip for waste disposal data were collected from those sites. Methods for the calculation of the construction waste generated are adopted from Poon et al., (2001). Result shows that, three main materials which contribute to construction waste are concrete, steel reinforcement and timber. Comparison between both methods of construction showed that prefabrication (PERI formwork) is more efficient than conventional method in minimizing construction waste. Waste index (debris) for Project A is the highest ($0.4702 \text{ m}^3/\text{m}^2 \text{ GFA}$) followed by Project B ($0.2479 \text{ m}^3/\text{m}^2 \text{ GFA}$) and Project C ($0.1494 \text{ m}^3/\text{m}^2 \text{ GFA}$). However, material wastage level (steel and concrete) generated at Project C adopting conventional method is higher compared to the other two sites. Construction method, size of projects, type of building, construction activities, storage method system, human error and technical problem are the factors that can affect the amount of waste index (debris) and amount of wastage level generated at construction sites.

ABSTRAK

Industri pembinaan di Malaysia masih mempunyai permintaan yang tinggi disebabkan oleh pembangunan dan kemajuan Malaysia kini. Disebabkan itu, banyak bangunan kediaman dan komersial sedang dibina. Peningkatan bilangan projek pembinaan di Malaysia secara tidak langsung telah meningkatkan bilangan sisa binaan. Dengan yang demikian, pengurangan sisa merupakan perkara yang penting dan perlu dititikberatkan di dalam melaksanakan pengurusan sisa binaan bagi industri pembinaan di Malaysia. Kajian ini akan meneliti tahap sisa binaan yang dihasilkan, indeks sisa dan juga sumber sisa binaan terhasil. Pengumpulan data dilakukan di tiga buah tapak projek sekitar lembah Klang di mana dua projek bangunan komersial iaitu Projek A dan Projek C manakala satu projek bangunan kediaman di Projek B. Projek-projek tersebut menggunakan dua jenis kaedah pembinaan iaitu kaedah “conventional” dan “prefabrication” (PERI Formwork). Data-data bagi aktiviti pembinaan, isipadu trak dan bilangan perjalanan bagi pembuangan sisa di setiap projek direkod. Kaedah pengiraan bagi pengiraan sisa binaan di ambil dari Poon et al., (2001). Keputusan menunjukkan tiga bahan utama yang terhasil adalah konkrit, besi dan juga kayu. Perbandingan kaedah binaan menunjukkan kaedah “prefabrification” adalah lebih cekap berbanding kaedah “conventional” bagi mengurangkan sisa binaan. Indeks sisa bagi Projek A adalah yang tertinggi ($0.4702 \text{ m}^3/\text{m}^2 \text{ GFA}$) diikuti Projek B ($0.2479 \text{ m}^3/\text{m}^2 \text{ GFA}$) dan Projek C ($0.1494 \text{ m}^3/\text{m}^2 \text{ GFA}$). Namun begitu, tahap sisa binaan bagi besi dan konkrit yang dihasilkan di Projek C merupakan penghasilan tertinggi berbanding Projek A dan Projek B. Kaedah pembinaan, saiz (keluasan) projek, aktiviti binaan, sistem penyimpanan bahan binaan, kesilapan manusia dan masalah teknikal merupakan antara faktor yang mempengaruhi jumlah sisa binaan di tapak projek.

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