

Integrated Management of Construction Waste for Sme as an Important Business Objective

<Mr. Komal Nagare>Prof.< Mr. S. D. Patil>

ME student, Department of Civil Engineering, TSSM'S BSCOER Narhe Pune

Savitribai Phule Pune University, Pune, India

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I. INTRODUCTION

Due to limited space, reducing the waste going to landfills has become a pressing issue. As most of the solid waste was generated from construction activity,

Government has instituted a number of measures aimed at reducing waste from this source. However, it appears that the application of these measures has been of limited effectiveness. This paper examines the effectiveness of implementing regulatory measures for reducing construction waste.

The data used for the analysis are from a survey to construction professionals in the local industry by means of questionnaire, interview discussions and case studies. The survey examined the commitments and responsibilities imposed on project participants for implementing waste management. The results of the investigation illustrate that legal commitments have been mainly allocated to contractors. Insufficient commitments and responsibilities are allocated to other project participants such as project clients, designers and consultants. The results demonstrate that there is need for a balanced allocation of responsibilities and commitments among all project stakeholders.

To improve any type of management performance, it is necessary to diagnose the current status of the performance level. In this context, this research is aimed to identify important factors in influencing the waste management performance and to develop an evaluation tool for the purpose of assessing the level of the performance for a particular construction site. In this paper, 59 influential factors have been identified and categorized into five classes, i.e., manpower, material, method, management, and policy, in terms of the characteristics of the factors.

II. METHODOLOGY

Indian Economy is growing at a very faster rate and Construction industry plays a major role in economic growth of a nation and occupies a pivotal position in Nation's development plan. But with increase in construction activities Construction waste is increasing and there are no proper measures adopted for minimizing it and that is the reason we opted for doing some research in management of construction waste.

Initially the project started with preliminary discussion related to the topic and reviewing various case studies both global and local. Couple of methodologies are formulated and represented in flow charts drawn below. Quantities of various construction materials under consideration were calculated and obtained results were compared with available statistics. Analyzing the results, the conclusions were drawn which are mentioned in later part of the report.

This study set the Korean representative residence building, i.e. apartment house as its analysis object, and analyzed it by selecting a total of 28 apartment housing complexes which were constructed after 2009.

This study suggested the method that makes it possible to calculate construction wastes generation using the Construction Statements, and the construction wastes generation calculated through the case analysis is as follows;

1) This study constructed Database by calculating the unit price per the unit weight(kg) of 78 sorts related to architecture among the total of 404 sorts in industrial classification suggested in 'Input-Output Table of Korea' on the basis of Construction Statements.

2) This study calculated construction wastes generation consequent on the analysis of Construction Statements of a total of 28 apartment building complexes of Korea by classifying construction wastes into 12 sorts according to their

properties through the application of the constructed DB. As a result of calculation, it was analyzed that the total construction wastes generation per unit area (m^2) was 2.144.9kg to the maximum and 1,462.4kg to the minimum, which explained there was a difference according to the number of floors, structure and sorts of input materials of a building even in case of a building of the Advanced Science and Technology Letters Vol.96 (IRTT 2015) 12 Copyright © 2015 SERSC same use. The average construction wastes generation was found to be 1,739.7kg, among which waste concrete was analyzed to account for about 92%.

III. CONSTRUCTION WASTE MINIMIZATION IN HOUSING

The aim of this study is to promote awareness in the small and medium house construction companies regarding environmental issues, best practice and use of recycled and reclaimed materials. A key concern was to promote on-site awareness and initiatives to minimize waste, and to this end various training tools and checklists of actions were developed. Waste minimization means reducing the amount and environmental impact of waste generated, which can be achieved by reducing the Quantity of materials used (and therefore potential for wastage) or by reusing existing materials. In addition, energy and water use reduction was included in our targets. Ideally, prevention of waste is the target, but once it has been created recycling is the method of managing the waste. Prevention of the waste means the effective use of natural resources; energy needed to manufacture new materials as well as reducing pollution.

Waste minimizations and best practice:

1. 8 out of 10 construction companies implemented or incorporated many of proposed activities to minimize waste. However, segregation of waste, material handling and improved storage methods was the most common initiatives were adopted by companies.
2. It was observed there was quite a prominent reluctance towards sending materials for recycling and reclaiming as because there is lack of market flow for recycled material.
3. Study shows that there is no prominent relationship between company policies or certification to waste minimization on site. This is because many SMEs feel whereas waste minimization on site can provide immediate financial savings that having overall

company policies gives them no real visible benefits.

There are environmental impacts associated with aggregate extraction. The Government has introduced Aggregates Levy to reflect environmental costs of aggregates quarrying and encourage demand for a supply of alternative materials. Climate changes responses a major global environmental challenge. A climate Change levy on business use of energy is also been introduced in 2001. This would particular influence on manufactures of materials for use in construction.

Results show that particular waste streams vary greatly between different construction phases and according to construction method used. However, the main causes of waste were identified as follows:

- Damage by mishandling, weather and inadequate storage
- Vandalism and rework
- Lack of recycling facilities within the studied region.
- Over ordering.

The following factors were identified as influencing waste minimization activities:

- Role of the site manager/contractor
- Lack of partnership along the supply chain
- Casual attitude to jobs undertaken by some sub-contractor.
- Poor information flows between all parties to the contact
- Lack of Market for recycling and reused materials
- Lack of interest of recycling by skip hire companies due to various reasons.
- Design and form of the building

IV. APPLICATIONS:

The applications of developed approach of waste minimization strategies and techniques for housing are being incorporated and tested for other types of Government building projects.

CONCLUSION

- Identification and quantification of the construction waste is possible through the methods discussed.
- Proper site waste management reveal that it is economically viable to do significant cost savings from the whole process. In which total benefits exceeds totals cost by incorporating appropriate methods. And widespread adoption can significantly save huge amount of money

which otherwise goes into landfills in form of waste materials.

- Initial momentum towards seeking various other cost saving measures through waste minimization at source and appropriately managing it on site.
- we were able to adopt a methodology for generating regarding data for the study in Pune Construction Industry to use recycled materials in their construction projects.
- It is the need to generate sufficient Database regarding efficacy and field adoptability of the recycling strategy in the country.

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