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Impact of the Construction Waste on the Cost of the Project

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Abstract : Construction is a vital connection to the infrastructure and growth of industry in India. Building roads, bridges and other constructed facilities play an important role in shaping society's future. Now days the increased economic as well as urbanization in India have lead into extensive construction activities that generate large amount of waste material in construction projects resulted into environmentally unfriendly and costly to project budgets. So the management of construction waste plays important role in the cost of project. This paper aimed to estimate the cost of construction waste and its impact on cost of project and also attempts to suggest recommendations to the construction industry to maximise the profits and minimise the construction waste.

Keywords- Management, Construction, Waste management, Indian construction industry.

I. Introduction

Construction is an important aspect of infrastructure and growth of industry in developing countries. Building roads, bridges, and other infrastructure play an important role in shaping society's future. In this process the construction industry produces a vast quantity of waste which is environmentally unfriendly and costly to project budget.

Now days, the industry faces many challenges with issues related to construction waste. Construction waste has become a serious problem in many countries. Waste which has negative impact on the environment, cost, productivity, time, social and economy. Production of construction waste in huge amount due to increasing demand of infrastructure; commercial buildings and housing development projects which has generated large amount of construction waste. Design, operational, procurement and material handling activities lead to site waste generation. This waste generation activities consume time and effort without adding values to the client thus resulting losses in material, delay in meeting the stipulated time and effort without adding values to client thus resulting losses in material, delay in meeting the stipulated time and execution of unnecessary work. Therefore to avoid overrun the cost of the project it is necessary to avoid the waste generation and proper waste management.

Responsible management of waste is an important facet of property building. In this context, managing waste means that eliminating waste where ever possible minimizing waste whenever feasible and reusing materials which could otherwise become waste. Construction waste management practices have known the reduction, recycling and utilise of wastes as essential for property management of resources.

This paper aimed to find out how much construction waste is costing construction project budgets and attempts to make recommendations to the industry on how profits can be maximized and how waste can be minimized.

II. Problem Statement

India is developing country. In India there are increasing number of construction project these is because of increase in the standard of living, changes in consumption habits as well as increase in population and this activity resulted in increased construction waste.

Construction waste consists of unwanted material produced directly or incidentally by the construction or industries. Construction wastes in any project are in the form of building debris form demolition process, rubble, earth material, concrete waste, steel waste, timber waste, and mixed site clearance construction materials, arising from different construction activities of project including land excavation or formation on site, civil and building construction materials, site clearance waste, demolition activities waste, roadwork waste, and building renovation waste. The various waste materials from excavation, demolition and construction will be assessed to determine whether they should be prioritized for either waste minimization or recycling/re-use.

Material waste has been recognized as a major problem in the construction industry that has important implications both for the efficiency of the industry and for the environmental impact of construction projects. For managing the waste there must be efficient waste management system which can control the waste at source and manage the waste at every stage or phase of construction project. Waste management in construction activities has been promoted for the aim increasing profit from project and protecting the environment

III. Material and Methodology

The methodology includes survey, discussion, interviews and questionnaires. The data and information from interviews and questionnaires will be primary data for study. All information collected from interview and questionnaires is arranged and compounded in well manner before start to analysis.

An analysis is carried in two ways namely quantitative and qualitative analysis. Quantitative analysis is defined as a study into the human or social problem faced by current community. It is based on questioning a hypothesis or a theory comprised of few variables, measured with numbers and analysis with satirical procedures to verify these theories. Qualitative analysis is based on the experience and opinion of the person, description and the meaning of the theory which seem to be very subjective.

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Primarily, the data is collected from site audits, additionally however, procurement inventories are analyzed against design drawings to determine materials purchased for built projects. The data is then collated to the project plan, and 'historical' information to identify any potential trends in wastes arising. Finally, the data is assessed against each stage of the design process, and questions are raised regarding the potential to reduce waste, particularly on the decisions which create waste.

IV. Existing situation of construction waste

Due to least priority given to appropriate site waste minimization and management systems in Indian construction industry leads to generation of huge quantities of material waste every year. At present, private contractors remove this waste to privately owned site, low-lying land for a price purpose, or more commonly dumping it in unauthorized manner along roads or other public land or the region. The research has been carried out in country like United States of America, Japan, United Kingdom, France, Germany, and Denmark etc. for recycling of waste concrete from site, masonry, and bricks, bituminous and other constituents of waste from Construction Industry. These studies have shown possibility of using construction waste to substitute new materials of recycling which may help in reducing cost of the project and avoid sustainable impact on the environment.

V. Control of construction waste

Construction waste can be control by various ways such as practicing attitude towards Zero wastage, proper decisions at design stage, site management, proper standardization of construction materials, and Codification of the same. Construction waste can also be reduced by using waste management system on project. The project activities are to be planned at every stage by every construction personnel, who are involved in minimizing the overall waste generation at project. Concept of 3R and 4R can be also beneficial to reduce the wastage of construction materials, which includes reduce, reuse, recycle, and recovery. The context of production and consumption is very well known. Recycled material can be used in actual practice and can be reduce the use of resources and energy. This can be used during from starting point of construction of project like products and starting from design and extraction of raw material to transport, manufacture, use, dismantling and disposal.

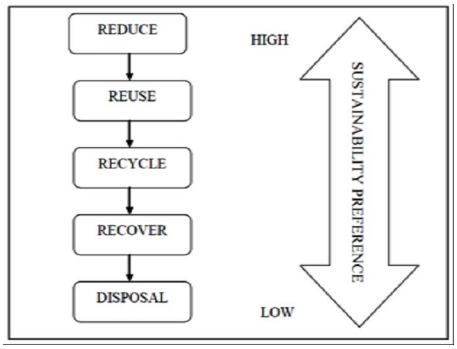

Figure 1: 4Rs Golden Rule of Waste Management Hierarchy

To help reduce amount of construction waste by designing to dimension available in the market that will eliminate cutting and shaping steel frame, plywood and drywall. Significant amount of waste can be eliminated by using smart engineering, standard dimensions, recycled material, metal form work instead of wooden form work for concrete works.

Providing the proper training to the individuals that are performing work on site is definitely additional cost to the project but it will save huge amount of money at the end. Providing different containers and smaller bins for all possible kinds of waste marked clearly and properly to indicate the type of waste that will contain, scheduled waste disposal and replacement of waste containers will be part of the subcontractor's responsibility

Various strategies for Construction and Demolition waste reduction also include standardization of design, stock control for minimization of over ordering, environmental education to workforce etc. Government's interventions like Landfill tax, higher tax for using virgin construction materials, tax credits for recycling etc. can be used on construction site for waste minimization.

VI. Conclusion

Construction industry produces more amount of the construction waste every year. Companies related to the various construction project concentrate on the increasing profit by adopting improved productivity and compressing scheduled of the project without concentrating on management of construction waste.

This is also observed that not only the cost of the project get increased due the construction waste material but also significant amount of valuable land is got occupied with waste generated by construction industry which have negative impact on our environment.

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