Study on Waste Management and Minimisation In Construction and Demolition Site

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Abstract- *Construction site waste contributes to the large quantities of construction and demolition (C&D) waste that are generated by the construction industry every year. The waste generated on construction sites has been found to result in two cost factors for the builders, i.e. the cost of transporting and disposing of site waste and the material procurement cost. This can have a negative impact on the profit margin of contractors. Reducing construction site waste can reduce both the cost of raw material purchase and the cost of disposing of the waste created on site. It can also reduce wastage due to inefficiency on site e.g. source separation can reduce the amount of waste resulting from commingled disposal. If planned, waste recovery for reuse and recycling can tremendously reduce the amount of waste that is destined for disposal by landfill. This can also open up secondary resource streams of building materials*

Keywords- Construction and demolition (C&D) waste, Metal, Concrete, bricks and masonry

I. INTRODUCTION

Construction site waste can be described as the non-hazardous by-product resulting from activities during new construction and renovation. It is generated during the construction process because of factors such as site preparation, material use, material damage, material non-use, excess procurement and human error. Examples include but are not limited to packaging materials, site clearance, excavation material, building materials such as metals, gypsum, concrete, brick, insulation, wood, plastic, glass, asphalt, composites and site sweepings. Certain types of waste are not included in this definition because of their nature. These materials include hazardous substances such as asbestos and lead, liquid waste such as paint and kerosene, food waste, tyres and containers with residue.

II. LITERATURE REVIEW

2.1 Rawshan Ara Beguma et al. (2007)

Identified some waste minimization factors which are helpful for implementation for construction waste management system in the construction industry.

2.2 Mansi Jain et al. (2012)

Focused on the economical aspects of waste minimization of construction waste materials in terms of cost savings of construction projects of India.

2.3 Job Thomas et al. (2013)

Enlightened the waste minimizations 3R System of reduces, reuse and recycle for the construction waste management in India.

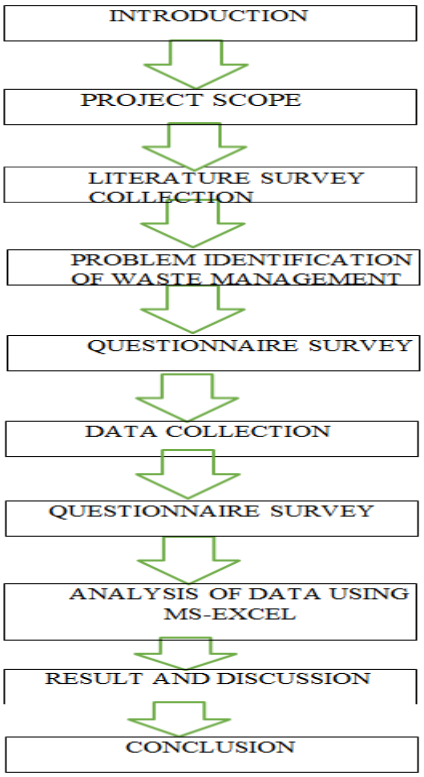
2.4 Thangjam Somchand Singh et al. (2015)

It revealed that minimization of wastage of construction materials during the construction phases is helpful for reduce the cost of the project.

2.5 Harish. P. Gayakwad et al. (2015)

Difficulties to manage Construction and Demolition waste in the future.

III. METHODOLOGY



3.1 PROBLEM IDENTIFICATION

- Construction site waste contributes to the large quantities of construction and demolition (C&D) waste that are generated by the construction industry every year.
- It is estimated that on average C&D waste constitutes 15-30% of the total amount of waste that ends up in landfill sites in many countries.
- At project level, the waste generated on site has been estimated to be about 10% of the materials originally purchased.

Another facet of Quality Planning is decisions on how the individual project under consideration could aid the continuous improvement of company-wide policies and procedures to enhance company-wide quality. Project work related to continuous improvement is addressed by the QA aspects discussed next.

- Many builders realise that many materials that are wasted on the jobsite result in two cost factors i.e.
- The material procurement cost and
- The waste disposal cost.
- Although the waste disposal costs of construction site waste form as little as 0.5% of the total budget of a typical home, contractors realise that this cost can significantly affect their profit since contractors generally operate within a tight 5% profit margin.

3.2 OBJECTIVE

- Reuse of construction waste material on site
- Recovery of construction waste material from site for resale and use elsewhere
- Return of unused construction material to vendors for credit and
- Recycling of construction waste.

3.3 SCOPE

- Waste avoidance on site.
- Waste specification and formalisation in contracts.
- Developing site waste management plans.
- Using recycled content building materials and products.

3.4 MATERIAL SPECIFIC CONSIDERATIONS:

- **Wood** - shuttering, partitioning of storage containers etc
- **Metal** - Metals can be recycled to 100% of their original state
- **Concrete, bricks and masonry** – site levelling, backfill and landscaping
- **Asphalt** - new road surface construction and in road sub layers.
- **Gypsum drywall** - cement manufacture, soil conditioning applications, manure treatment and in the drying of sludge.

3.5 RECYCLED CONTENT MATERIALS AND PRODUCTS

- Recycled content materials and products (RCMPs) contribute to the closure of the flow of materials in construction.
- Through the use of such materials, construction projects can get closer to resource efficiency.

3.6 THE USE OF RCMPS HAS BENEFITS SUCH AS:

- Closing the loop of materials flow in construction thereby contributing to resource efficiency.
- Absorbing the waste material that is diverted from landfill sites.
- Feeding end-markets of secondary construction materials.Expanding secondary industries thus creating opportunities for employment and SMME development.

Conserving the embodied energy of secondary materials.

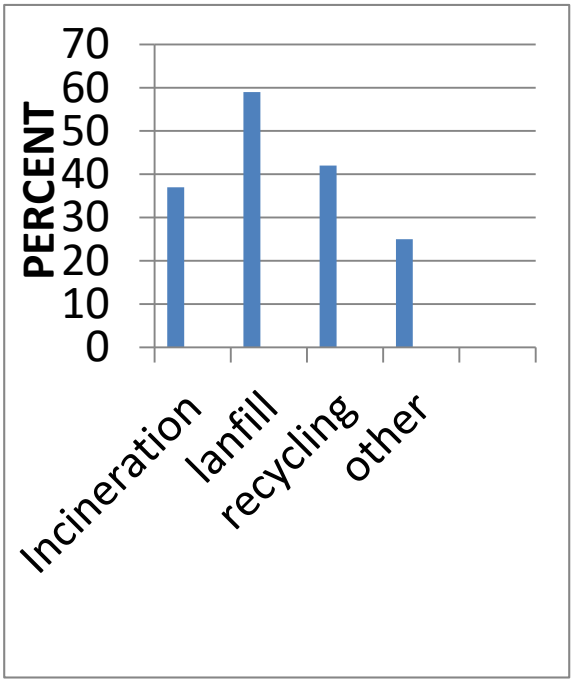


FIG.1 WASTES USED FOR VARIOUS PURPOSES

IV. CONCLUSION

- Improving construction site waste management can contribute to the overall improvement of the performance of the construction industry.
- It will also bring us a step closer to achieving sustainability in construction. The benefits of construction site waste management include:
- The reduction of the generation of avoidable waste on site.
- Preventing site waste from entering the national waste stream and redirecting potential waste from landfills to reuse and recycling applications.
- Improvement of site efficiency and performance.

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