

Construction Waste Management

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ABSTRACT: This research paper tells us about the types of waste generated on a construction site and various methods which can be used to solve the problem. It is expected that the quantification of waste for various stages of construction will contribute additional knowledge on waste generation rate & trend could benefit contractors, property developers, consultants & local authorities in prediction of waste generation & facilitate future planning of waste management. It is observed that due to inadequate and insufficient monitoring system the various problems such as in Physical waste of man-hour, waste of equipment, Financial waste, sudden increase in cost, project delay due to miscommunication, delay in approval of design etc. are studied which are associated with the waste generation on the site. For reduction in these problems analyzed various methods are being practiced and remedial measures are being suggested. The growth of Indian economy has brought with it significant increase in construction activities. These increased construction activities have further highlighted the problem of waste generation on construction sites. The purpose of this paper is to provide important insights and highlight some issues related to the implementation of effective waste management practices on construction sites in India.

I. INTRODUCTION & OBJECTIVES:

Construction waste consists of unwanted material produced directly or incidentally by construction or industries. This includes building materials such as insulation, nails, electrical wiring, shingle, and roofing as well as waste originating from site preparations such as dredging materials, tree stumps, and rubble. Responsible management of waste is an essential aspect of sustainable building. Construction industry professionals and building owners can educate and be educated about issues such as beneficial reuse, effective strategies for identification and separation of wastes, and economically viable means of promoting environmentally and socially appropriate means of reducing total waste disposed. Businesses can create value through the return of wastes back to manufacturing processes, promoting and seeking out opportunities for incorporation of recycled materials into products, and prioritizing reduction of building-related wastes through efficient jobsite practices.

METHODOLOGY: CASE STUDY

1. Data Collection:

The various types of waste control methods are:-

A. ELIMINATING WASTE

Some waste generated in the process of construction can be eliminated. For example, durable modular metal form systems for use in concrete construction may be

selected on the basis of being readily demountable and reusable on other projects, thus eliminating wood waste associated with formwork fabricated of plywood and dimensional lumber. Elimination of waste can be beneficial to reduce impacts on human health and the environment.

B. MINIMIZING WASTE

Some building-related waste can be minimized. For example, construction products can be selected on the basis of their being designed and manufactured to be shipped with minimal packaging. Also consider that selection and use of recyclable materials and products offers potential to minimize waste.

C. REUSING MATERIALS

Some materials can be reused. For example, doors and windows in good, resalable condition might substitute for new products, or be donated and sold for use on another project—a form of beneficial reuse.

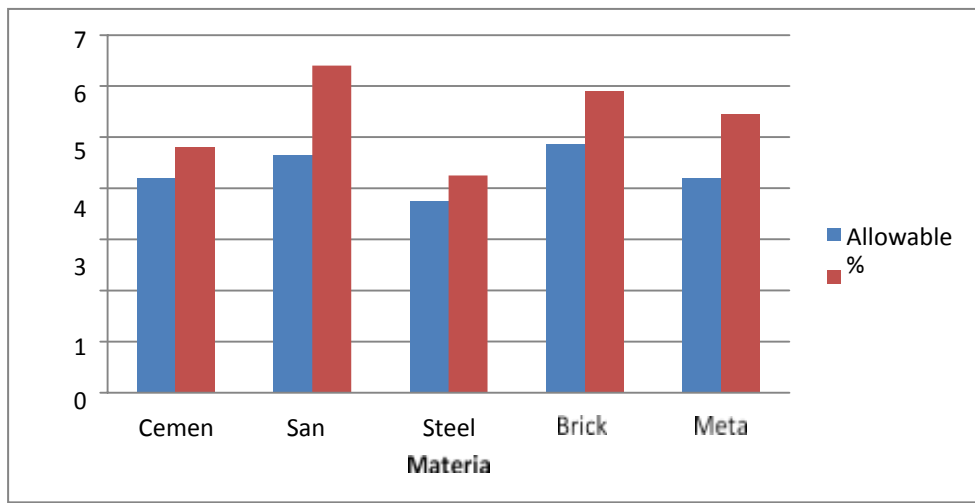
Materials and products which cannot efficiently and effectively be eliminated, minimized or reused ultimately are collected, and unless managed, will probably be disposed at the lowest cost. In many areas of the country, disposal fees at solid waste landfills are substantially higher than the cost of separation and recovery, including the disposal cost for residues.

Depending on the type of site the percentage of waste generated varies-

TYPE OF WORK	PERCENTAGE OF WASTE GENERATED
Renovation	40%
Demolishing	50%
New construction	20%

2. Case study

At this phase, questionnaires were designed to collect data. The questions were created based on the concepts acquired on the literature review.



For that project approximate wastage for two months was calculated with the cost accrued.

	Approx. Qty.	% Waste	Quantity	Rate	Cost
Cement	13000 Bag	5	650	310	201500
Sand	1000 m ³	6	60	4300	258000
Aggregate	1150 m ³	6	24.36	1700	41412
Steel	98000 Kg	4	3940	44	173360
Brick	311000 Nos.	6	18660	4.4	2104
				Total	676376

1. Disposal of waste generated:

The disposal cost primarily consists of two costs,

- Handling Cost
- Transportation cost.

For the waste generated total cost for disposal was calculated as follows.

Sr. No.	Particulars	Cost
1.	Cost of total trip 150x250	37500
2.	Amount to be paid for labour	45000
3.	Hence total cost of disposal	82500

Total cost of waste = cost of purchase + Cost of Disposal

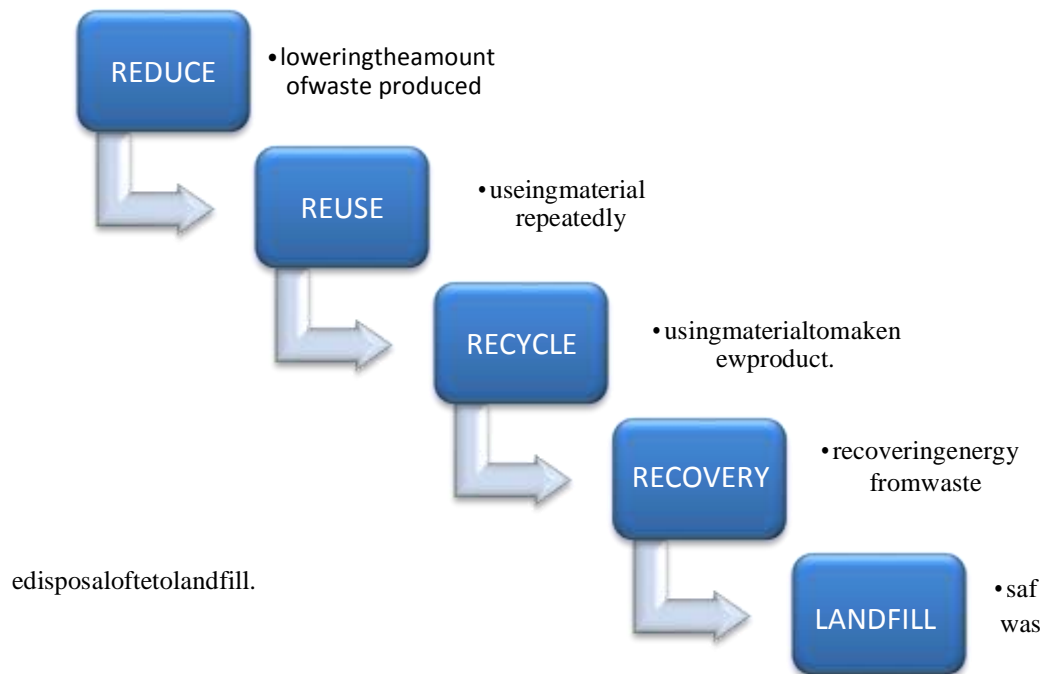
=676379+82500
 =758879/-

According to contractor, 10% of the total cost of project is considered for benefit from that project. As per above mentioned data in table, the total cost of project = **1,16,69,200/-**

Therefore, 10% contractor profit = 11,66,920/ say So, Y is to be the net profit. But due to cost of waste material & its disposal cost, the net profit will get reduced nearly up to 6.5% i.e. 407770.2/-

Here,
 Cost of waste = 758879/-
 So it is necessary to practice CWM in each & every of the project wherever possible.

3. **STEPSTO BETAKEN**
 For controlling waste on construction site and managing the generated waste we must follow the following steps .



disposal of waste to landfill.

II. CONCLUSION

It is apparent from the finding that the losses incurred due to construction waste are enormous & sufficient proactive measures need to be taken to avoid unnecessary cost of construction.

Also from the studied it is noticeable that the construction waste is affecting quality of air, water & land and also affects the health of construction workers.

Waste reduction is the best and usually the economical of the different waste management alternatives. To implement an efficient waste control program in construction projects is necessary to identify what is generating waste and its causes. As established at the beginning of this study, the objectives of this study were to identify the most frequently occurring waste categories affecting the final cost in residential projects, identify the types of waste occurring on the site, and identify the top three waste categories affecting the final cost and determine their possible causes, and recommend guidelines to be applied in construction projects and help to reduce waste.

To accomplish these goals, construction company's responded two questionnaires, the obtained data was analyzed and guidelines to reduce waste were recommended based on these findings.

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