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Construction Site Waste Management: A Review

[1]Vaishnavi Ighe,[2]Shubhangi Thakre,[3] Toshmik Rahangdale,
[4]Rani Naitam,[5]Sanchi Meshram,[6] Dr. Mayuri Chandak
[12345]Student of Department of Civil Department, Priyadarshini collage of Engineering, Nagpur, Maharashtra, India
[6]Assistant Professor, Civil Engineering Department, Priyadarshini collage of engineering Nagpur, Maharashtra, India

Abstract: Construction is an integral part of a developing country's infrastructure and growth. Construction waste management is defined as the reduction, recycling, and utilization of waste through resource management. Nature's construction is not an environmentally favourable activity. The construction industry in India is now growing at a rate of 10% per year. In 2012, the housing market is expected to grow at a rapid rate of up to 14%. Construction contributes for over 65 percent of total infrastructure investment, and this trend is expected to continue. Waste of key material arising out of manufacturing, storage and handling on building construction site. By conducting a literature review, we will examine the measure resources of elements that contribute to the generation of building waste in this paper. The outcome is a waste management system that is being used on a building site, as well as factors that are impeding the concept of sustainability in trash management.

Index Terms **- Construction materials, Construction waste Management, Recycling, Reuse**

I. INTRODUCTION

The construction waste minimization project is based on how to decrease or recycle the ever-increasing wastages in the construction business nowadays. Construction plays a vital part in developing the country's infrastructure, yet the industry is troubled with construction waste. Construction generates more garbage than the rest of the industry. Waste is created at several phases during the construction process. Construction waste management is used to avoid materials which are go for landfills when construction is diverting the construction waste. Excess cement mixed process on a concrete materials lift after work process is complete due to changes in design of rework. All the materials are used in the construction activities gets wasted,

II. LITERATURE REVIEW

[1] **Rawshan Ara Beguma et al. (2007**): - The construction sector produce a huge amount of construction waste. Due to demand of impose major project in Malaysia. So the result is waste minimization is very high problem in the impose of construction waste management in Malaysia's construction industry. In this study they develop waste minimization factors (WMF). The study give scientific proof on the contribution and practise among waste minimization theory.

[2] Effie Papargyropoulou et al. (2011): - Focused on the current state of waste management in the Malaysian construction sector and the level of sustainable waste management practises on construction sites, as well as the attitudes and responses of Malaysian contractors to waste management through interviews with Malaysian contractors. The level of industry understanding and commitment to waste management was found to be very low and discouraging.

[3] Al-Hajj A. et al. (2012): - Identified construction waste generation reduction practises in the UAE construction sites based on data gathered from two construction project case studies It came to the conclusion that there is a lack of understanding among the general public, as well as a lack of importance placed on waste management on construction sites, demonstrating that contractors view trash management as an additional project cost. Drawing on statistics gathered from two building project case studies, we identified construction solid waste reduction practises in UAE construction sites. It was determined that there is still a lack of public understanding and a lack of significance placed on management of waste on building sites, trying to suggest that contractors consider rubbish management as an unnecessary project expenditure.

[4] Mansi Jain et al. (2012): - In terms of cost reduction in India's construction projects, the focus was on the financial issue of waste minimization of building waste materials. Furthermore, it was discovered that leading to a shortage of site recycling and reuse and reducing waste awareness, substantial quantities of material waste are produced in the Indian construction industry. As the cost of processing waste materials rises, it does have an effect not only on the ecosystem, but also with the economy. They uncovered a number of causes for waste production, including one with a lack of knowledge among contractors and owners, a shortage of labour comprehension, and a reduction of waste minimization training and education.

[5] **Job Thomas et al. (2013)**: Made waste minimization more enlightening In terms of recycling materials, the 3R Method of reduce, recycles, and reuses. as well as commodities and cement manufacturing (C&D) wastes are also advantage for India's construction industry. Furthermore, it was demonstrated that early-stage design can reduce some wastes. Using proper construction and demolition technology, it is possible to limit the amount of C&D rubbish created.

[6] Manal S. et al. (2014): -Developed a step-by-step method for determining waste generation management strategies. The technique enables managers, including such C&D contracts or transportation corporations, as well as strategic policymakers, to analyse a wide range of influencing factors. Data is provided while developing, changing, or adopting Waste - management systems and procedures. It was also advised that each CDWM system stakeholder do a cost-benefit analysis, evaluating the discussed benefits and drawbacks of each option.

[7] **Shishir Bansal et al. (2014): -** Since green building resources are limited, the construction industry must reduce C&D waste generation and increase reuse/recycling. Fine aggregates can now be employed in construction activities as a result of case studies and the revelation of a scarcity of gravel form plant sources in many sections of the country. To avoid this problem, urban refuse laws must be changed, fabulous must be developed, and strict bylaws must be obeyed. It's also crucial to encourage people to use recycled materials.

[8] Nuria Calvo et al. (2014):- Created a 3Rs approach (Reduction, Restore, Reuse) for integrating institutions in Managing solid waste to save money by developing a rules-based way for defining the important component to monitor. Researchers have found a broad understanding of such social economic factors that affect management of waste over time and practises in the recycled concrete market by concentrating on biggest objectives such as restricting idle waste, minimize unnecessary landfills, and trying to replicate recycled C&D wastes by choosing to focus on primary goals such as limiting inactive waste, reducing unnecessary waste disposal, and trying to replicate recycled C&D wastes.

[9] Abhijit Harikumare al. (2014): -Reusing wastage is quite beneficial, particularly in terms of reducing the damage of either the atmosphere's limestone foundation or evergreen forestation in the cause of reduced mining. If these waste items are properly removed, reused, and recycled, they would never be added to putting and disposal sites. The construction industry has shown that encouraging the use of concrete mixtures stones and bricks can help. In order to keep its pledge to protect the environment.

[10] Sumit Arora et al. (2015): - Genetic time is limited and will be depleted over time. Unnecessary use of ecological services should be controlled and regulated in order to conserve natural resources. C&D waste can be reduced by creating and following a good waste management plan throughout the project's life cycle. Most building and deconstruction resources are renewable and repurposed, and a holistic and long-term management strategy can help protect natural resources for future. Recycling requires education and information, as well as judicial guidelines from the appropriate regulatory authorities.

[11] Harish. P. Gayakwad et al. (2015): - In 2015 Harish Gayakwad written the journal on topic Construction site waste management and focused the very important point on waste management that is Construction and Demolition is highly difficult to manage in future. They also support to reuse and recycling the waste material on construction site to reduce C & D cost for generation to generation. Also says that the method of collection of construction waste should be advertising for better future.

[12] Sawant Surendra B. et al. (2016): - In 2016, According to Sawant Surendra claimed that construction waste is very important element on increasing the project cost. According to him, cut out building waste the cost of project also be reduced. The project cost not only single problem creating by construction waste. Second major problem is our valuable land engaged by construction waste. So this is very big issue for our country and as well as environment.

[13] Saadi, and Alias (2016):- In 2016 Saadi and Alias write in their journal the amount of construction waste generated by humans increases day by day. They say amount of waste in environment increases very fastly so it is very dangerous for our environment in future. Most of land already fulfil by garbage produce by construction industry. If we end up the production of garbage in high amount we successes to maintain all this construction waste production.

[14] Wahi et al. (2016):- Waste minimization is really the most economically efficient waste management technique because it uses fewer resources. It's vital to understand the various factors that contribute to trash production on construction sites before implementing any waste reduction strategy.

[15] Bosch-Sijtsema & Buser (2017):- Their study focused on a comprehensive analysis of existing studies on the CDWM approach of solid waste management. Priority was given to papers that dealt directly with the management, investigation, management, and removal of destruction and construction refuse at construction sites.

[16] Banihashemi, Saeed (2017):- During this time, special attention should be paid to the creation of a sustainable built environment. The goal of this research is to introduce a method for reducing construction waste while also boosting the sustainability of the environment. When it comes to offshore building, modular coordination is crucial. The encourages the use of a process that leads to manufacturing in order to obtain an integrated design based on a fundamental piece or component parties engaged in the construction of buildings Major advantages to increase productivity and decrease productivity. The MC results algorithm was designed centred on minimising environmental consequences such as project transfer. Standards for parametric design and modular coordination**.**

[17] Esa (2017): -Esa saying in this study reduce waste in construction management achieved by avoiding or restricting processes and that activities they can lead to waste store. Ergo reduce the waste in construction and arranging the stage by collecting waste decrease with contrivance into the systematically and applying the strategy is construction of waste decrease throughout the life cycle of project.

[18] Ruane Fernandes de Magalhaes (2017):- The building industry is well-known for causing severe environmental effects by emitting pollution into the environment, and its effects have gotten worse as cities have grown. The need to reduce the environmental and economic implications of material waste prompted the development of this study. In urban infrastructure projects, there is a lot of trash. The study's main goal was to identify best practises for supporting the during the design stage, waste should be kept to a minimum.

[19] Gaurav at al (2019):- The CDW stream is complex because that just consists a wide range of materials generated by numerous operations including such constructing upgrades, road construction, construction methods, soil structure and reconstructions, and construction/renovation. Waste generation also includes electricity and labour waste generated throughout the construction process.

[20] Hasmori et al, 2020):- Hasmori's saying in this study the many educators are have recommended the 3R criteria. The 3R criteria means Reduce, Reuse and Recycle. as the using with contrivance option of solid waste construction and the transaction of dumping waste in landfills expectation to avoided whenever exhausted until all other options. They say also the lawness dumping expectation brought to the fore through regulatory enforcement and industrial self- regulation.

III. CONCLUSION

Based on the literature review some points can be concluded.

[1] In India, a separate legal regulatory framework for communicating to industrial waste must be established.

[2] The study also identified last minute client requirement, errors by tradesmen or operative, purchased products that do not comply with specification and lack of onsite materials control as the main causes of material waste.

[3] To ensure efficient and effective recycling, recyclable and non-recyclable Construction wastes waste must be kept separate at the source of origin.

[4] Cost of project value will be reducing 10-15% due to minimization of material waste. Minimizing material waste would improve project performances, enhance value for individual customers and have a positive impact on the national economy.

[5] Lack of awareness and importance among the society towards waste management on sites that concludes the extra cost of project due to waste management.

[6] Builders and developers must sign a contract for the transmission of Waste materials.

[7] The government supported the concept that Slum development is done from zero waste concept is a solution for the development of slum and waste problem.

[8] The waste depositing into the landfill, the contractors first reduce the amount of waste generated, then reuse it, and then recycle it.

[9] The Reduce, Reuse and Recycle the 3R strategy has been recommended as as environmental sustainable approach on site for solid waste management.

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