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MANAGEMENT OF CONSTRUCTION & EMOLITION WASTE

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ABSTRACT

Technological Advancement, & improved management system, bring out the necessity of improvement as well as development in the construction phase. Construction and demolition waste is the today's major problem faced by the developing countries like India. Government is also actively participating in this field to reduce the huge impact of construction and demolition (C&D) waste on environment.The term wastage in case of a construction and demolition refers to the variation between estimated and actual consumption of an individual item and total consumption of the inputs in construction project. It is necessary to bring about a new way of working and thinking in order to reduce the wastage of materials and convert it into another alternative and usable form. So that it requires implanting modern technology to improve productivity in construction waste Management.

Keywords : Construction and Demolition (C & D), Wastage of Materials, Technology, Impact, Input.

I INTRODUCTION

Construction and demolition (C&D) waste is obtained from construction, renovation, repair, and demolition of houses, large building structures, roads, bridges, piers, and dams and other repairing and renovation works. C&D waste is generally consist of wood, steel, concrete, masonry, plaster & metal. The total quantum of C&D waste generated in India is estimated to 11.4 to 14.69 million tonnes per annum (TIFAC, 2000). The concrete, brick and masonry together constitutes more than 50 percent of the total C&D waste. This shows the importance of Management of C&D waste. Excessive production, improper handling, improper storage, manufacturing defects are the main cause of wastage of materials. Many researchers suggested that the main aim of this research work is to improve existing situation of C&D waste and manage it properly,especially in the construction of new residential buildings.

II METHODOLOGY

The methodology that is to be adopted in this work, is to carry out a detailed literature study along with the site observation. Also to study the existing condition, status & management of construction & demolition waste.

III CONSTRUCTION & DEMOLITION WASTE

In addition to this it also includes the materials generated as a result of natural disasters such as flooding, earthquake. Construction and demolition waste can be classified into two components; major components includes cement concrete, bricks, cement plaster, steel from RCC, doors & windows roofing support systems, rubble, stones, timber etc. and minor components includes conduits, GI pipes/Iron pipes/Plastic pipes, electrical fixtures, panels, glass etc. Components of C&D debris include materials such as concrete, wood, brick, metals. Demolition wastes are much larger in volume than the construction wastes. Construction wastes are mainly leftovers from new construction materials like cut-offs, damaged materials, packaging waste, used materials during construction.

IV OVERVIEW OF CONSTRUCTION AND DEMOLITION WASTE

The disposal of C&D wastes is becoming a major concern in the recent years. The wastes are being disposed off improperly and illegally in order to avoid transportation and tipping costs. Farm land, prime residential areas, pits and low lying areas have become disposal sites. These illegal dumping to landfills mainly threats to ground water contamination. It is estimated that the construction industry in India generates about 10-12 million tons of Construction and Demolition (C&D) waste annually. With rapid urbanization the quantum of C&D waste is ever increasing and needs urgent attention.Construction Waste Management is an aspect of Sustainable Development, which is fuelled by the growing concern for the effect of man's activities on the environment. The management of Construction processes to reduce, reuse, recycle and effectively dispose of wastes has a serious bearing on the final cost, quality, time and impact of the project on the environment. poor understanding of waste management leads to the wastage of materials and most companies did not have a policy on Material Waste Management. It also includes incidences of wastages in labour and energy used in construction works. However, material waste has been recognized as a major problem in the construction field that has important implications both for the efficiency and for the environmental impact of construction projects. In an Indian construction industry huge amount of construction and demolition waste is generated due to improper management strategy.

4.1 Benefits of C&D Waste Recycling

C&D waste recycling bring out the necessity of new way of working and thinking. It generates a new employment opportunities in recycling industries and also solve the problem of illegal dumping of such a huge amount of material directly to the landfill. Recycling of C&D waste saves energy and also reduces the environmental impact. A lot of money can be saved by reducing the project disposal costs, transportation costs and the cost of new construction materials by recycling old materials onsite.

4.2 Environmental Benefits of Recycling Construction and Demolition Waste

The environmental benefits of recycling construction and demolition waste are considerable pollutants and contaminating agents which are responsible for ground water contamination and also hazardous to environment are removed and avoided through the process of recycling.

V C&DWASTE MANAGEMENT INCLUDES FOLLOWING STEPS.

1. Storage and segregation: C&D wastes should be deposited/collected at source or place of generation. If they are Separation can be carried out at source during C&D activities or it can be achieved by processing the mixed material to remove the solid wastes. Separation at source is most efficient in terms of energy utilization, cost and time.

2. Collection and transportation: The time taken for handling (loading and unloading) large volumes of wastes should be kept to minimum by using front-end loaders and trucks.

3. Recycling and reuse: The growing population and requirement of land has reduced the availability of land for C&D waste disposal. Reuse and recycling are important strategies for management of waste. Other reasons that support the adoption of these strategies are reduced extraction of raw materials, reduced transportation cost, improved profits and reduced environmental impact. To conserve the conventional natural aggregate for other important works, all fast exhausting sources of conventional natural aggregate has demanded the use of recycling/ reuse technology.

4 Disposal: These material can be used for filling or levelling of low-lying areas. In the developed countries, special landfills are created for inert waste, which are normally located in abandoned areas. Construction & Demolition (C&D) Waste Management Plan should identify the construction and demolition waste materials that will likely be generated on a building site; the procedures that will be used to collect and sort the waste materials on site; how will the waste material be transported from site; the location to which the materials will be hauled; how the materials will be reused or recycled.

VI C&D MANAGEMENT PRACTICES FOLLOWED IN INDIA: DELHI (INDIA'S FIRST CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLANT).

It is India's first large scale operational C&D recycling facility. Delhi Government take an initiative to manage the construction and demolition waste This Plant was set up in 2009 by Municipal Corporation of Delhi (MCD) through PPP in collaboration with IL&FS Environmental Infrastructure & Services Ltd. As Delhi grows, the infrastructure projects like construction of roads, flyovers, metro routes generate large quantities of Construction & Demolition (C&D) waste. This increases further due to the vertical growth in the residential. The city of Delhi itself generates 4000 to 5000 Tons Per Day (TPD) of C&D waste.

1. The plant produces fine sand, dust and other building construction materials like pavement blocks and curbs stones. The land for establishing the plant is provided by MCD in Burari, North of Delhi for a period of ten years.
2. The processing fee for C&D Waste is about INR 205 per ton. The city has been divided into three zones for collection of waste- Karol Bagh, Sadar-Paharganj and the City zone.
3. All vehicles used for the facility have been equipped with GPS. IEISL commitment to the project is about INR 23 crore inclusive of INR 8 crore capital investments. The capital expenditure incurred by the project is proposed to be covered over a period of 10 years by deriving value from the processed C&D Waste.

VII CONCLUSION

- The Proposed site is located in the Pune City which involves a demolition of residential house&construction of new structure on the same place that is redevelopment work.
- From the site observation it is clear that, the waste prevention and minimization should be the first priority, because at present, no such a management practices followed inorder to reduce the impact of such a huge amount of waste arises in the construction field.
- The amount of Demolished materials such as concrete, bricks, reinforcement that is arises on site is generally dumped or sold on the lump sum basis & no one is carried out a proper demolition plan for the wastage of such a material.Therefore it is a necessary to adopt the best practices so as to reuse and recycling of the demolition materials for example, use of recycled materials for site clearance, use of waste debris for plinth filling,road construction works etc.
- Use of recycled materials reduces the quantities of waste which ultimately needs to be land filled. The effort should be to prevent waste generation and also to reduce the amount of waste generated during the construction.
- The contractors should plan the construction process to eliminate or reduce waste.
- They should be responsible to minimize the volume arising in the site, use the reclaimed materials in the works and influence wastage caused by poor materials handling.
- Management Practices should be followed before the actual commencement and execution of the work at site, this may leads to proper and effective completion of project with less distraction of unwanted construction waste.

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Fig 1: Demolition of Slab on Site

Fig 2: Demolished Material of Staircase

Fig 3: Central portion of Slab weakening due to Demolition

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