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Reduction of Wastage Construction Material during Execution Phase

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Abstract – Now days, the increased economic growth as well as urbanization in developing countries have led into extensive construction activities that generate large amounts of wastes. Material wastage in construction projects resulted into huge financial setbacks to builders and contractors. In addition to this, it may also cause significant effects over aesthetics, health, and the general environment. These wastes needs to be managed as well as their impacts needs to be ascertained to pave way for their proper management, however in many cities of India wastes materials management is still a problem. In this research work we are discussing the method for the management and control of waste construction materials. The main objective of this work is present the waste control procedures included as part of particular site management in general based on pull learning process and focusing process transparency principle based on qualitative and quantitative data collection techniques. Additionally we are presenting the literature survey study over waste management system as well as construction waste management

Keywords : Urbanization , Extensive, Transparency, Construction Material

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INTRODUCTION

This analysis work is predicated on material waste management in building construction through the treatise work, try is created to search out reasons of wastage in industry and the way it will be reduced. In construction, 4-M (Material, Manpower, Money and Machine) play crucial role.

Responsible management of waste is an important facet of property building. During this context, managing waste means that eliminating waste wherever possible; minimizing waste wherever feasible; and reusing materials which could otherwise become waste. Solid waste management practices have known the reduction, recycling, and utilize of wastes as essential for property management of resources.

Many opportunities exist for the useful reduction and recovery of materials that will preferably be destined for disposal as waste. Industry professionals and building homeowners will educate and be educated concerning problems like useful utilize, effective methods for identification and separation of wastes, and economically viable means that of promoting environmentally and socially applicable means that of reducing total waste disposed.

Organizations and governments will assume billet responsibilities for the orderly, reasonable, and effective disposal of building-related waste, promotion of public and trade awareness of disposal problems, and providing stable business-friendly environments for collection, processing, and repurposing of wastes. Businesses will produce price through the comeback of wastes back to producing processes, promoting and seeking out opportunities for Incorporation of recycled materials into merchandise, and Prioritizing reduction of building-related wastes through Economical jobsite practices.

OBJECTIVES OF MATERIALS MANAGEMENT

- Efficient materials planning
- Buying or Purchasing
- Procuring and receiving
- Storing and inventory control
- Supply and distribution of materials
- Quality assurance

- Good supplier and customer relationship
- Improved departmental efficiency

To fulfill all these objectives, it is necessary to establish Harmony and good co-ordination between all the employees of material management department and this department Should have good co-ordination with the other departments

WASTES IN CONSTRUCTION

Definition of was waste can be defined as “any inefficiency that results in the Use of equipment, materials, labor or capital in larger quantities than those considered as Necessary in the construction of a building”.

Waste can be classified as unavoidable waste (or natural waste), in which the investment Necessary for its reduction is higher than the economy produced and avoidable waste, in Which the cost of waste is higher than the cost to prevent it. The Percentage of unavoidable waste depends on the technological development level of the Company stated that waste can also be categorized according to its source; namely the stage in which the root causes of waste occurs. Waste may result from the processes preceding construction, Such as materials manufacturing, design, materials supply, and planning, as well as the Construction stage classified the main waste causes in construction into:

- Design
- Procurement
- Materials Handling
- Operation
- Residual

However, for the sake of this study, only materials wasted at the construction stage of Projects would be considered. This is due to two main reasons:

1. Materials account for the largest input into construction activities in the range of 50-60% of the total cost of a project.
2. The raw materials from which construction inputs are derived come from non-Renewable resources. Hence, rarely would these materials be replaced once they are wasted

MATERIAL MANAGEMENT TECHNIQUES

Materials management is categorized to 5 Processes these processes are majorly followed on Construction site they are namely

1. Planning,
2. Procurement,
3. Logistics,
4. Handling
5. Waste Control processes.

Materials planning include Quantifying, ordering and scheduling. Companies May have two major levels in planning- micro and Macro level. Procurement is described as the Purchase of materials and services from outside Organizations. (N. Kais. 2011, C H. Caldas et al. 2014). Purchasing procedure can be described as:

Step 1 – Material Indent,

Step 2 – Enquiry to Vendors,

Step 3 – Vendor Comparison,

Step 4 – Vendor Selection and Negotiations,

Step 5 – Purchase Order,

Step 6 – Vendor Evaluation. Receipt system can be divided into

1. Receipt from outside suppliers
2. Receipts from internal divisions.

Inspection can Happen in two ways

1. Pre- dispatch inspection
2. Inspection on the site.

There are three methods of Inspection

1. Visual
2. Tactile
3. Statistical.

Logistics is a concept that emphasizes movement of materials?

Materials handling encompasses virtually all aspects of all movements of raw materials, work in process, or finished goods within a construction site. (G. Kanimozhi et al. 2014, K V. Patel et al. 2011). For Effective material management the most important Materials management functions are (I) Primary Functions is to meet the primary objectives, the Primary functions of the materials management are Given as materials requirements planning (MRP),

Purchasing, inventory planning and control, Ascertaining and maintaining the flow and supply of Materials, quality control of materials, departmental Efficiency. (II)Secondary functions are Standardization and simplification make and buy Decisions, coding and classification of materials, Forecasting and planning. (K V. Patel et al 2011). Some other functions in context to material Management is: Project Acquisition Strategy, Subcontracting, Expediting, Supplier Quality Management .Site Materials Management, Materials Management for Operations and Maintenance, Implementing Materials Management Programs.

(Carlos H. Caldas et al. 2014). For effective Execution of material management following process Can be followed first of all material need generated From site, then material ordered in store after that Indent is generated, then check availability in the Store after that check for the balance Items after that Vendor selection from the approved list then Material Inspection from received stock at last issue of Material to the department. (Ashbin R. Patil et al.2013). Implementation of IT in materials management could facilitate the effective and efficient control of materials on site reducing the human efforts. Implementation of IT includes construction materials planning system, material handling equipment selection advisor, construction materials exchange, and bar-code system (N.B.Kasimet al.2005, 2014).

Experimental methodologies which can also be adopted for management of construction materials are analysis of site and management, analysis on inventory controlling, analysis on purchasing procedures, analysis on procurement and tracking, analysis on costs. (T. Phani Madhavi et al. 2013.

MATERIALS CONTROL ON SITE

Materials control includes those activities that ensure materials availability in the required quantity, at the proper time, considering the minimum feasible cost to satisfy production needs and corporate objectives. Materials control activities include determining materials needs, requisitioning the purchase or fabrication of components based on make or buy economics, record keeping, requisitioning for production and status reporting procedures (Manteau, 2010).

Control of the materials used on site begins at the time the contractor is handed over the site. All materials delivered to site must be compared with the relevant standards. Besides the general waste of materials on site, there is a lot of damage, and this is often due to Lack of proper supervision. Responsibility for materials control must begin with the Person handling them. Many foremen and supervisors see their main function as that of Materials supplier to the group they are responsible for, hence, ignoring materials handling. If a materials controller is appointed to anticipate materials requirement and distribute supplies, trades foremen will have enough time to do their job properly. Site management is ultimately responsible for materials use and handling. However, materials may be kept on site over long or short period of time until they are needed (Johnston, 1981).

CONCLUSIONS

Material wastage occurs more in architectural work as compared to structure works, which is evident by the most wasteful materials being bricks, tiles, plaster, paints, and wood. On the other hand, diesel, anti-termites, and water proofers are the least wasteful. The factors behind this waste generation are flaws in management, material handling, and operation, which are rooted into improper worker's skill, poor supervision, and lack of management in building construction industry of Pakistan.

Material type and their percentage wastage and causes vary with types of building projects. Not every type is responsible for same amount of waste generation. Building types rich in architectural details account for more waste. It is evident from 30/PENERBIT UNIVERSITI SAINS MALAYSIA Material Wastage in Pakistan's Construction Industry the collected data, highlighted in Table 4, that most waste is generated due to improper skills of workers (labourers and masons), along with poor site supervision by foremen and lack of waste management planning by engineers. It also suggests that procurement officers contribute in the cause by procuring faulty equipment increasing the overall waste generation. Clients and consultants have substantial influence on waste generation as improper design and specifications, change orders, and rework are major causes of material wastage. Finally, the size of contracting firms does influence waste generation.

REFERENCES

Abd. Majid, M. Z. and McCafer R. (1997). Discussion of Assessment of labor Performance of Maintenance Contractors in Asian nation. Journal of Management in Engineering, ASCE. Vol. 13, No. 5, pp. 91

Addis, B. Talbot, R (2002). Property Construction procural : A Guide to Delivering Environmentally responsible comes. CIRIA, London, CIRIA C571

Azizi Yahya, Shahrin Hashim, Jamaludin Ramli, Yusof Boon, Abd. Rahim Hamdan (2007). Menuasai Penyelidikan Dalam Pendidikan. PTS delicate

Christini G., Micheal F., Chris H (2004).Environmental Management systems and ISO 14001 Certification for Construction corporations. Journal of Construction Engineering and Management. pp. 330 – 336

CIRIA (1994). Environmental reference for Building and technology Projects- Construction section. London: CIRIA Special Publication.

City of Burnaby (n.d.). Management and disposal of construction waste. out there at: www.city.burnaby.bc.cacityhalldepartmentsdepartments_buildingbldng_artclsbldng_artcls_mnmnt.html. (Accessed01/08/08)

Conway H. (1990). setting ought to modification the angle. Transport

Department of setting (1987). Environmental Impact Assessment (EIA), Procedure and requirements in Asian country. Minister of Science, Technology and conjointly the setting.

Electrical and Mechanical Services Department (2006). observe Agreement No. CAOL013 – observe Study on Life Cycle Energy Analysis of Building Construction : Final Report. Ove Arup & Partners metropolis Ltd.

Formoso, C.T., Isatto, E.L., Hirota, E.H. (1999). technique for Waste management at intervals the Building business. Proceedings IGLC-7, seventh Conference of the International cluster for Lean Construction, Berkeley, CA, 26-28 July.

Hired Institute of Building (CIOB) (1989). Project Management in Building. hired Institute of Building.

Leased Institute of Building (CIOB) (1989). Decide to Reducing Building Waste. UK: hired Institute of Building.

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