

Application of Inventory Control Technique for construction site- case study

¹Minal Chaudhari, ²Manish Mata, ³Dhanashri Barde

¹Post Graduation Student, ²Assistant Professor, ³Post Graduation Student
Civil Engineering Department,
S.S.B.B.C.O.E.& T. Bhusawal, India

Abstract— Materials constitute a major cost component for any Industry. The total cost of installed material may be 50% or more of the total cost. Materials represent a major expense in construction, so minimizing procurement cost improves opportunities for reducing the overall project cost. Inventory control technique minimize the wastage of material & reduce the cost of project. Construction material constitutes a major cost component in any construction project. ABC analysis is effective technique in material management. ABC analysis minimize the wastage of material and save the time of project.

Index Terms- Inventory management, Inventory control, Cost reduction

I. INTRODUCTION

Materials constitute a major cost component for any Industry. The total cost of installed material may be 50% or more of the total cost. “Material management is defined as the process to provide right material at right place at right time in right quantity so as to minimize the cost of project”. Inventory management deals with the determination of optimal policies and procedures for procurement of commodities. Since it is quite difficult to imagine a real work situation in which the required material will be made available at the point of use instantaneously, hence maintaining, inventories becomes almost necessary. The concept of inventory management has been one of the many analytical aspects of management. It involves optimization of resources available for holding stock of various materials. Inventory management is simply the process by which an organization is supplied with the goods and services that it needs to achieve its objectives of buying, storage and movement of materials. The efficient management of materials plays a key role in the successful completion of a project. The control of materials is a very important and vital subject for every company and should be handled effectively for the successful completion of a project. The responsibility of material management department for the flow of material from the time the material is ordered, received, and stored until they are used is the basic responsibility of material management. Materials represent a major expense in construction, so minimizing procurement cost improves opportunities for reducing the overall project cost.

II. LITERATURE REVIEW

Ashwini R. Patil (2013)

Suggested that the total cost of material may be 50% of total cost; so that it is important for contractor to consider that timely availability of material. Material Manager should maintain reports such as material to order between two dates, material assignments, waste control, when to purchase construction material, when material must be on site, and purchase order between two dates. The responsibility of Material management department for the flow of material from the time the material is ordered, received, and stored until they are used is the basic responsibility of material management. Materials represent a major expense in construction, so minimizing procurement cost improves opportunities for reducing the overall project cost. [1]

T. PhaniMadhavi (2013)

Suggested that, management system that is required in planning and controlling the quality & quantity of the material, punctual equipment placement, good price and the right quantity as required. materials management can be defined as a process of planning, executing, and controlling the right source of materials with the exact quality, at the right time and place suitable for minimum cost construction process. Capability to coordinate and integrate purchasing, shipping and material control from suppliers is required for material cost control. [2]

Aditya Pande, S.Sabihuddin

Suggested that materials management has become a critical component of successful project execution. Moving away from a sheer tactical role, it has earned strategic value, and organizations have become conscious of the many benefits that effective material management practices can drive, including reduced costs, higher productivity, warranted quality, increased reliability, and added the development that is going in the material management on fast track construction. this literature review will help to improve different material management for successful implementation and completion construction project sites. [3]

III. INVENTORY CONTROL TECHNIQUE

Inventory Control is defined as the supervision of supply, storage and accessibility of items in order to ensure an adequate supply without excessive oversupply.

The following are the important tools and technique of inventory management and control.

- A. A.B.C. Analysis.
- B. EOQ Analysis.

A. ABC ANALYSIS

The ABC inventory control technique is based on the principle that a small portion of the items may typically represent the bulk of money value of the total inventory in construction process, while a relatively large number of items may from a small part of the money value of stores. It is also known as Selective Inventory Control Method (SIM).

The items ABC analysis is a method for dividing on-hand inventory into three classifications A, B, C based on annual consumption unit.

- “A” items : money value is highest **70%**, represent only 10% of items
- “B” items : money value is medium **20%**, represent about 20% of items
- “C” items : money value is lowest **10%**, represent about 70% of items.

B. ECONOMIC ORDERING QUANTITY

The EOQ refers to the order size that will result in the lowest total of ordering and carrying costs for an item of inventory. If a firm place unnecessary orders it will incur unneeded order costs. If a firm places too few order, it must maintain large stocks of goods and will have excessive carrying cost. EOQ or Fixed Order Quantity system is the technique of ordering materials whenever stock reaches the reorder point. Economic order quality deals when the cost of procurement and handling of inventory are at optimum level and total cost is minimum. In this technique, the order quantity is larger than a single period's ne requirement so that ordering costs & holding costs balance out.

IV. DETAILS OF CASE STUDY

For the study of, a construction site of “Kiran Sankalp, Pune” which is a reputed construction company in Pune, carrying out various on-going projects in considered. “Kiran Sankalp” IS one of their projects which have great location chosen for this case study. In this work the method of inventory control technique i. e. ABC analysis used.

Name of site - Kiran Sankalp

Site location- Kiran Sankalp building, Susgaon, Pasan road, Pune.

Building for case study- Kiran Sankalp Residential parking building, Susgaon, Pune.

1. ABC ANALYSIS CALCULATIONS FOR KIRAN SANKALP BUILDING, PUNE.

ABC analysis is a basic analytical management tool. This technique, popularly known as “Always Better Control” for the alphabetical approach. This approach helps the material manager to exercise selective control and focus only on a few item.

Table no. 1 A, B, C Type Distribution of Materials of Kiran Sankalp Building Pune.

Sr No	Item Description	Annual usage	Usage %	Cumulative Item %	Value	% Usage Value	Cumulative % Usage Value	Material Type
1	Flooring	3984	1.636319	1.63631935	9115902	29.45179	29.45179	A Type Material
2	Steel	104.479	0.042912	1.67923125	4565732.3	14.75104	44.20283	
3	Cement	15867.03	6.51695	8.196181514	4442768.68	14.35376	58.55659	
4	River sand	819	0.336382	8.532563429	2047500	6.615094	65.17168	
5	Paint	931.95	0.382773	8.915336475	1819893	5.879738	71.05142	B Type Material
6	Electrical	9159	3.761809	12.67714594	18,07,620	5.840086	76.89151	
7	Door	300.96	0.123611	12.80075706	1483568	4.793134	81.68464	
8	6" Fly Ash Brickss	203550	83.60261	96.40336843	1424850	4.603427	86.28807	
9	Crush sand	318.79	0.130934	96.53430272	733217	2.368889	88.65696	C Type Material
10	Sanitary	1410	0.579119	97.11342177	701600	2.26674	90.9237	
11	Aggregate	311.66	0.128006	97.24142762	623320	2.013832	92.93753	
12	Window	196.08	0.080535	97.32196213	622848	2.012307	94.94984	
13	Miscellaneous Work	68	0.027929	97.34989128	557700	1.801826	96.75166	
14	Skirting Work	204.2	0.08387	97.43376086	460646	1.488262	98.23993	
15	Ms Work-grills,Railin g &	471.006	0.193453	97.62721373	311469.8	1.006301	99.24623	

	Miscellaneous Fabrication Work						
16	Murum	314	0.128967	97.75618066	99852	0.322603	99.56883
17	Granite	64.8	0.026615	97.7827955	83656.8	0.27028	99.83911
18	Anti-termite liquid	646	0.265327	98.04812238	25840	0.083484	99.92259
19	Flyash Brick – 4"	4746.7	1.949578	99.99769995	23733.5	0.076679	99.99927
20	Box type waterproofing – lift	5.6	0.0023	100	224	0.000724	100
	TOTAL	243473.26			30951941		

IV. Conclusion

To minimize the construction cost and duration at each phase is important. It is a need to meet the present day requirements and to complete the project within the estimated time, cost, and available resources. Materials management has become a critical component of successful project execution. Inventory control technique minimize the wastage of material & reduce the cost of project. Construction material constitutes a major cost component in any construction project. The total cost of material may be 50% of total cost; so that it is important for contractor to consider that timely availability of material is potential cause of successful completion of project.

V. ACKNOWLEDGMENT

I express my profound gratitude to my project guide Prof. Mr. Manish Mata for his invaluable guidance, encouragement and supervision.

REFERENCES

- [1] Ashwini R. Patil, Smita V. Pataska , “Analyzing Material Management Techniques on Construction Project” International Journal of Engineering and Innovative Technology Volume 3, Issue 4, October 2013.
- [2] T. Phani Madhavi, “Material Management In Construction – “A Case Study” International Journal Of Research In Engineering And Technology, Nov-2013.
- [3] Aditya Pande, “Material Management For Construction Site –A Review” Master Student, (M.E.Const.Engg. & Management) P.R.M.C.E.A.M Badnera, Assistant Professor, Civil Engg.Deptt. P.R.M.C.E.A.M Badnera. Volume 1 Issue 5.