



CONSTRUCTION MATERIALS MANAGEMENT (COTM 5293)

1. INTRODUCTION

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Presentation content

- Definition of Materials and Classification of Materials
- What is Materials Management
- Benefit of Materials Management

1. Introduction

- **Definition of Materials**
  - ✓ Materials can be defined as the physical materials that are purchased and used to produce the final product. In other words, materials are the parts used to produce the final product.
- **Classification of Materials**
  - ✓ Construction materials can be classified into different categories depending on their fabrication and in the way that they can be handled on site. Based on this criteria, materials can be classified into five categories,

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1. ***Bulk materials - these are materials that are delivered in mass and are*** deposited in a large container.
2. ***Bagged materials - these are materials delivered in bags for ease of*** handling and controlled use.
3. ***Palleted materials - these are bagged materials that are placed in*** pallets for delivery.

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4. ***Packaged materials- these are materials that are packaged together to*** prevent damage during transportation and deterioration when they are stored.

5. ***Loose materials- these are materials that are partially fabricated and*** that should be handled individually.

Example on Classification of Materials

Material	Bulk	Bagged	Palleted	Packaged	Loose
Sand	X				
Gravel	X				
Topsoil	X				
Paving Slabs					X
Structural Timber					X
Cement	X	X	X		
Concrete	X				
Pipes				X	X
Tiles				X	
Doors			X		
Electrical Fittings				X	

Other Classification

- Some other scholars states that the main categories of materials encountered in a construction project are engineered materials, bulk materials, and fabricated materials.
- ***Bulk materials- these are materials manufactured to standards and are*** purchased in quantity. Examples of such materials include pipes, pipe fittings, wiring, and cables.

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- ***Engineered materials- these materials are specifically fabricated for a*** particular project or are manufactured to an industry specification in a shop away from the site. This includes materials that require detailed engineering data. (Example PEB)
- ***Fabricated materials- these are materials that are assembled together*** to form a finished part or a more complicated part. Examples of such materials include steel beams and columns

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ABC Analysis/clasification

- ✓ Is a basic analytical management tool
- ✓ It enables management to place efforts where the results will be greatest.
- ✓ This technique tries to analyze the distribution of any characteristic by money value of importance in order to determine its priority.

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- **Principles of ABC analysis:**
  - ✓ The analysis does not depend upon the unit cost of the items but only on its annual consumption value.
  - ✓ It is independent of the importance of the item in terms of money
  - ✓ The limits of ABC analysis are not uniform but depend upon the size of the undertaking, its inventory as well as the number of items controlled

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Applications of this technique

- ✓ Inventory Control
- ✓ Criticality of items
- ✓ Obsolete stock control
- ✓ Purchase orders
- ✓ Receipt of materials
- ✓ Inspection
- ✓ Store-keeping
- ✓ Verification of bills

Steps for classifying the items into A,B,C categories.

1. List out all the items in the inventory.

2. Ascertain the unit cost of each of the items.

3. Ascertain the number of units issued in a year.

4. To obtain the annual consumption value multiply the unit cost of each item with the number of units issued in a year.

5. Sort the list of consumption value of each item in the descending order.

6. Starting at the top of the list compute the cumulative total of the money consumption value.

7. Compute for each item the cumulative percentages for the item count and cumulative annual value.

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Then you can categorize

- ✓ About 10 % of materials consume 70 % of resources
- ✓ About 20 % of materials consume 20 % of resources
- ✓ About 70 % of materials consume 10 % of resources

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A" ITEMS
Small in number, but consume large amount of resources

B" ITEMs
Intermediate

C" ITEMS
Larger in number, but consume lesser amount of resources



ITEM	ANNUAL COST [Rs.]	CUMMULATIVE COST [Rs.]	COST %
1	90000	90000	70 %
2	50000	140000	
3	20000	160000	20 %
4	7500	167500	
5	7500	175000	
6	5000	180000	
7	4500	184500	10 %
8	4000	188500	
9	2750	191250	
10	1750	193000	
11	1500	194500	
12	1500	196000	
13	500	196500	
14	500	197000	
15	500	197500	
16	500	198000	
17	500	198500	
18	500	199000	
19	500	199500	
20	500	200000	

F-S-N Classification

Fast Moving – Slow moving – Non-moving

- **Fast Moving items: most inventory models are aimed at managing the fast moving** goods, which exhibit a regular consumption pattern.
- **Slow Moving items: Many spare parts come under this category, they require different** management approach,
- **Non-moving items: Optimal stock disposal rules rather than inventory provisioning.**

What is Materials Management ?

- Materials represent a major expense (60-70%) in construction, so minimizing procurement costs improves opportunities for reducing the overall project costs.
- Poor materials management result in increased costs during construction.
- Efficient management of materials can result in substantial savings in project costs.

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- If materials are purchased too early, capital may be held up and interest charges incurred on the excess inventory of materials.
- Materials may deteriorate during storage or get stolen unless special care is taken. Delays and extras expenses may be incurred if materials required for particular activities are unavailable.

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Therefore, Ensuring a timely flow of materials is an important concern of material management

Definition of Materials Management

- Material management can be defined as a process that coordinates planning, assessing the requirement, sourcing, purchasing, transporting, storing and controlling of materials, minimizing the wastage and optimizing the profitability by reducing cost of material.
- The purpose of material management is to assure that the right materials are in the right place, in the right quantities when needed.

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- In order to better understand materials management lets discuss the following processes planning, procurement, logistics, handling, stock and waste control.

Planning

- *Materials planning includes quantifying, ordering and scheduling. Planning especially in terms of increasing productivity, profit, and facilitating the timely completion of construction projects . Hence, productivity will suffer if the material planning process is not executed properly.*

Procurement

- *Procurement is described as the purchase of materials and services from outside organizations to support the firm's operations from production to marketing, sales and logistics. As such, a detailed material schedule and co-ordination of the procurement and order of material are important in assuring material availability at the right time.*

Logistics

- *Generally, logistics is a concept that emphasizes movement and it may include planning, implementing, and controlling the flow and storage of all goods from raw materials to the finished product to meet customer requirements.*

Handling

- *Handling of materials is the flow component that provides for their movement and placement. Due to the frequency of handling materials there are quality considerations when designing a materials handling system. Materials handling equipment selection is an important function as it can enhance the production process, provide effective utilization of manpower, increase production and improve system flexibility*

Stock and Waste Control

- *Stock control is classified as a technique devised to cover and ensure all items are available when required. Stock control can include raw materials, processed materials, assembly components, consumable stores, general stores, maintenance materials and spares, work in progress and finished products. It is of great importance that the bulk of construction materials delivery requires proper management of stock control.*

Benefit of Materials Management

An effective material management system can bring many benefits for a company, some of these benefits include;

- Reducing the overall costs of materials through
  - ✓ Improvements in labor productivity
  - ✓ Stock reduction
  - ✓ Purchase savings

- Reduce storage of materials on site and reduce material surplus
- Better cash flow management
- Improvements in project schedule

Thank you