

(I) STORES MANAGEMENT

After inspection, the purchased materials are taken to store for preservation if they are meant for stock. Non-stock items are directly taken to the assembly lines from the inspection. Preservation or storage is another aspect of materials management. With proper management and co-ordination (particularly with purchasing, receiving, and inspection), storage can contribute to effective operations.

I NATURE OF STORES

Dictionary defines store as building where goods are kept. Stores is defined as supplies of goods. And storage is defined as the act of storing the goods. Some people use the term store-keeping which has the same meaning as storage.

In popular usage the term stores is used to cover all aspects of preservation of goods i.e., building, supplies and the act of storing.

Stores or storage is the function of receiving, storing and issuing materials. It involves supervision or the clearance of incoming supplies, to ensure that they are maintained in good condition, safely and in readiness for use when required while they are in storage and issuing them against authorised requisitions. In short, it is connected with the physical handling and well-being of the stocks.

It should be mentioned that stores is not meant for stocking purchased materials alone. Partly-finished goods, finished goods, spares, and consumables stores are also kept in stores. The emphasis here is on the storing of incoming materials.

Importance

Efficient storage of stores yields the following benefits:

1. Ready accessibility of major materials permitting efficient service to users.
2. Efficient space utilisation and flexibility of arrangement.
3. A reduced need for materials handling equipment.
4. A minimisation of materials deterioration and pilferage.
5. Ease of physical counting.

Functions

The functions of stores may be listed as follows:

1. To receive raw materials and account for them.
2. To provide adequate and proper storage and preservation to the various items.
3. To meet the demands of the consuming departments by proper issues and account for the consumption.
4. To minimise obsolescence, surplus and scrap through proper codification, preservation and handling.
5. To highlight stock accumulation, discrepancies and abnormal consumption and effect control measures.
6. To ensure good housekeeping so that materials handling, materials preservation, stocking, receipt and issue can be done adequately.
7. To assist in verification and provide supporting information for effective purchase action.

Store as building where inventories are kept.

Storage is the function of receiving, storing, and issuing materials.

Stores ensures ready accessibility of major materials there-by efficient service to users.

Minimisation of stores cost, and continuous supply is the prime function of stores.

In some companies, the store-keeping function include salvaging and retrieval of materials, disposal of scrap and surplus. In smaller companies, the store department may be vested with the additional responsibility of inventory control and even purchasing.

STORES LAYOUT

Stores layout is a fundamental factor in determining the efficient performance of the department. The following factors deserve serious consideration, while planning for the stores layout:

Stores layout is a fundamental factor in determining the efficient performance of stores department.

1. Provisions for easy receipt, storage and disbursement of materials, nearness to point of use.
2. Minimum handling and transportation of materials, good accessibility for handling equipment, and personnel.
3. Adequate capacity provision for flexibility for future expansion.
4. Efficient utilisation of floor space and height.
5. Clear identification of materials, quick location of items and ease of physical counting.
6. Protecting against waste, deterioration, damage and pilferage.
7. Design the buildings' physical appearance to create goodwill and to invite business.
8. Arrange storage for fast and easy customer order processing.
9. Use compatible storage or display equipment to create good interior appearances.
10. Install good lighting to prevent theft, parts damage and errors in stocking.
11. Plan storage for easy shelf-life rotation to permit first-in-first-out control.
12. Segregate rebuilt, re-manufactured, used, and new merchandise.
13. Include safety as a part of the facility plan.
14. Maintain a periodic house-keeping and re-arrangement plan.

Two aspects of stores layout are significant, viz., (1) storage system and (2) type of stores layout.

Storage System

Choosing the most suitable storage system means *dealing with a number of interacting, and often conflicting factors*. Inevitably, the degree of mechanisation affects layout while the scarcity of space affects the height to which, racking is erected. The need for rapid, intensive order packing means a need for rapid, and easy access to stock. But accessibility weighs against space economy. A satisfactory storage system is, therefore, a compromise between the use of space and the use of time. The way in which stock is located, helps make the compromise a satisfactory one.

A satisfactory storage system compromises between the use of space and the use of time.

There are three basic ways of locating stock: fixed location, random location, and zoned location.

Fixed location means that, goods of a particular type have a position in the store assigned to them exclusively. It means that while stock can be found immediately without a complex system for recording its position, there can be considerable waste of space, because when stocks of any one item are low the space left vacant cannot be filled.

The assignment of fixed position to a particular type of goods is made on any one of the following basis:

1. On the basis of supplier.
2. On the basis of similarity of the items.
3. On the basis of the joint issue of the items.
4. On the basis of the size and frequency of use.

Random location means that items can be stored in any storage position which is available.

Random location means that items can be stored in any storage position which is available. Space is thus better utilised but, particularly where there are a large number of product lines, a record has to be kept of where goods are and frequency of when they entered the storage area.

Zoned location means that goods of a particular product group are kept in a given area. They may be randomly stored in a zoned location or stored according to fixed locations.

Types of Stores Layout

Keeping stock on one side of the aisle in which case the layout is called comb type.

Whatever the location followed, stock may be kept on one side of the aisle in which case it is called *comb type layout* (see Exhibit 22.1) or goods may be placed on either side of the aisle in which case the method is called *tree type layout* (See Exhibit 22.2). Selecting a particular type depends on the availability of space and the layout of the building.

Exhibit 22.1 : Comb Type Layout

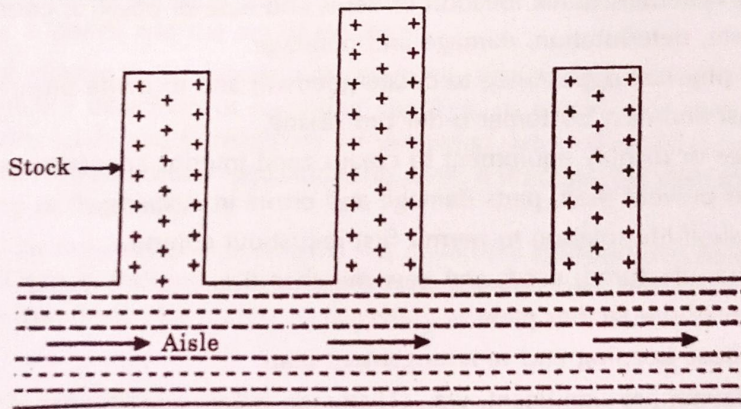
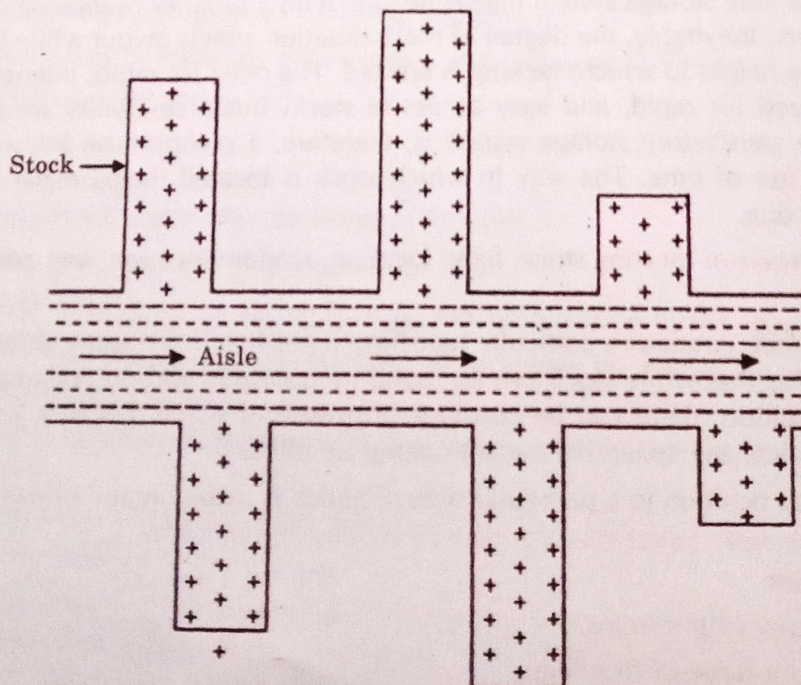


Exhibit 22.2 : Tree Type Layout



Stores Manual

Manual is a written statement of policies and procedures. A manual has several advantages such as spelling out responsibilities and authority of store-keeping, standardising store-keeping activities and stimulating new ideas and suggestions for improving and streamlining storage operations.

Stores manual is a written statement of policies, and procedures.

Measurement of Stores Efficiency

Like any other department dealing with materials, stores needs evaluation of its performance. Stores is the *repository of inventory worth crores of rupees*. How well the materials and other items of stock are handled, should be judged by measuring the performance of the store-keeper.

The store-keeper's performance can be measured objectively through quantitative techniques. It may be done through qualitative aspects also, though the measurement is subjective. A few quantitative techniques normally used are:

- (a) Stores efficiency index = $\frac{\text{No. of requisitions delivered on time}}{\text{Total number of requirements}}$
- (b) Storage loss index = $\frac{\text{Value of inventory lost due to deterioration, obsolescences and pilferage}}{\text{Average value of inventory}}$
- (c) Obsolescence index = $\frac{\text{Value of non - moving items}}{\text{Total inventory value}}$
- (d) Space utilisation index = $\frac{\text{Area used for storage}}{\text{Total storage area available}}$

Subjective measurement is done through such factors as stock-out situation, reducing non-moving items, checking of records maintained, house-keeping, handling, and the like.

I STOCK VERIFICATION

No matter how diligently a store-keeper performs the custodial job or how carefully a ledger clerk maintains records (computerised or manual), some discrepancy between the actual and book balances of inventory is bound to occur. The system is operated by people, and people do commit mistakes. For this reason, every inventory item should be physically counted and checked against its book balance at least once in a year. The books are subsequently adjusted to match the actual count. Most companies create an 'inventory discrepancy' or 'inventory short and over' account to absorb such discrepancies. This account is eventually closed by transferring the balance to manufacturing overhead account.

Stock verification can be conducted in one of the three ways:

1. Periodic verification or fixed annual inventory.
2. Perpetual or continuous inventory.
3. Low point inventory.

Under the **low point inventory** method companies take physical inventory when the stock is the lowest, irrespective of the period. Stock taking is naturally irregular. The low point approach minimises the time required for actual inventory work because of the small quantities of materials involved. However, it has the disadvantage of producing an irregular inventory schedule which tends to peak the work load for stores personnel.

Periodic, continuous and low point inventory are three ways of stock verification.

Verification of stock when the stock is the lowest is known as low point inventory verification.

Every effort should be made to reduce materials handling costs, particularly because they do not add any value to a product. The product will not be worth any more to the consumer simply because it was moved, but it will cost the customer more.

How to reduce handling costs? There are three fundamental ways of minimising the costs.

- (a) Eliminating the handling itself whenever and wherever possible.
- (b) Mechanising, largely by conveyors and power driven trucks, whatever handling still remains.
- (c) Making the necessary handling more efficient.

Primary requisite for any action to be taken towards minimising handling costs is to have a record maintained for them. It is here that majority of the companies are not doing the right thing.

I ORGANISATION FOR MATERIALS HANDLING

Materials handling is a job that directly affects each area in a plant, and as such requires a carefully planned organisational structure. The structure varies with the industry, the type of manufacturing process, the product manufactured, its bulk, and its value. Emphasis depends on the amount of handling required in the manufacturing process. In small firms, for example, the materials handling function may be one of several duties assigned to the plant engineer, the purchasing manager, or the production manager. As firms grow in size, however, an increase in specialisation is usually manifest in this area until a stage is reached where a separate department is developed to study procedures and devise better materials handling techniques. When thus organised, materials handling is a function and is often a part of the industrial engineering section. In some organisations, however, materials handling is subordinated to materials management, production, purchasing, storing or maintenance. Irrespective of which department it is subordinated to, materials handling should be centralised under one head so that an overall co-ordinated approach is possible.

Unit Load Concept

One of the basic requirements of efficient materials handling is observance of the Unit Load Principle, which implies that the larger the load handled, the lower the cost per unit handled.

A unit load is understood as a number of items, or bulk material, so arranged that the mass can be picked up and moved as a single object, too large for manual handling. It is implied that any single object too large for manual handling is a unit load.

Simply stated, the unit load principle means that it is quicker to move a lot of items as a unit than it is to move each one of them individually. With machines at our disposal, these units can be made for machine size rather than man size.

In grouping materials into units many companies use skids, or pallets so that mechanical trucks can be employed to lift and move the unit. Not only do skids and pallets save time in handling materials, but goods so handled are more compact and require less floor space because they can be stacked.

The use of the principle of unit load has been so effective that many firms today are insisting that materials which they buy be supplied on a unit load basis (palletised, for example,) rather than in individual units or packages.

Despite the obvious advantages, unit load has specific disadvantages which should not be ignored.

Organisation of materials handling vary with the industry, manufacturing process, product manufactured, its bulk and its value.

Unit load refers to a number of items arranged that the mass can be picked up and moved as a single object.

Unit load concept helps reduce or lower the cost per unit handled.

The disadvantages are:

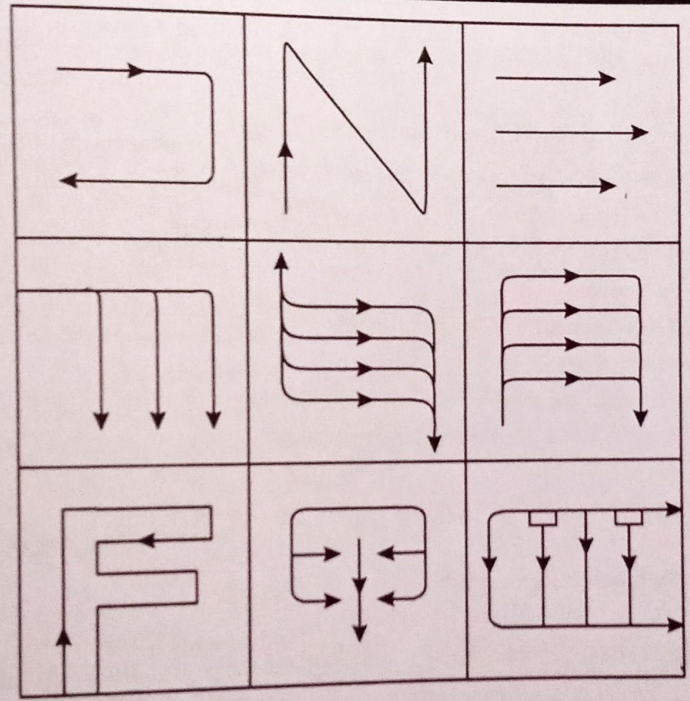
1. Cost of unitising and de-unitising.
2. Equipment and space requirements.
3. Bare weight of unitising medium.
4. Problem of returning empty pallets or containers.
5. Transfer equipment often not available on both ends of the move.

Flow Pattern

Another basic requirement of effective materials handling is the planned material flow. When drawn on paper the flow pattern becomes flow chart which will help locate needless, crisscrossing and back-tracking of material movements. Once areas of unwanted movement are known, steps can be taken to eliminate or reduce such moves. A typical flow chart is shown in Exhibit 22.3.

Material flow pattern will help efficient movement of materials at best cost.

Exhibit 22.3 : Typical Flow Pattern of Materials



A well conceived and carefully planned material flow pattern will have many advantages.

Some of the advantages are as follows:

1. Increased efficiency of production.
2. Better utilisation of floor space.
3. Simplified handling activities.
4. Better equipment utilisation, less idle time.
5. Reduced in-process time.
6. Reduced in-process inventory.
7. More efficient utilisation of work force.
8. Reduced product damage.
9. Reduced walking distances.
10. Minimal accident hazards.
11. Basis for an efficient layout.
12. Faster supervision.
13. Simplified production control.
14. Minimal back tracking.