



10—*Tier*: Any one separate part of a column, or a horizontal row of a stack. Tiers are numbered in the order of their stowing—from the bottom up.

5 tiers of 1 each in a column.



Front view—

5 tiers of 2 each in a cubical stack.



Front view—

4 tiers of 4, 3, 2, and 1 respectively in a pyramidal stack.

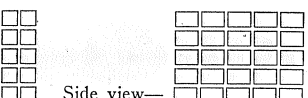
Front view—



11—*Course*: A horizontal layer of a block (cf. the *courses* of a brick wall). Courses are numbered from the bottom up.

e.g. 5 courses of 10 each in a cubical block of 50.

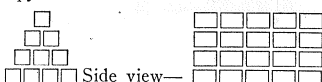
End view—



Side view—

4 courses of 20, 15, 10, and 5 respectively in a pyramidal block of 50.

End view—



Side view—

## PART II.—FUNDAMENTALS.

"A place for everything, and everything properly in place."

1—*Definite spaces*, preferably marked, reserved exclusively for

a. Moving.

Aisles should preferably be straight, and only wide enough for actual requirements.

b. Stowing.

c. Receiving.

When necessary to hold material awaiting disposition.

d. Assembling.

When necessary to hold material awaiting delivery.

e. Shipping.

When necessary to hold material awaiting shipment.

2—*Identification*, clear and complete, of every item.

a. A tag for each lot.

b. A label on each unit or package, preferably on the end.

3—*Location* of an item governed by

a. Difficulty of handling.

b. Quantity to be carried.

c. Frequency of use.

d. Special considerations, as of sensitiveness, perishability or peculiar similarity to other items.

e. Safety (floor strength, fire hazard).

4—*Immediate accessibility* of items, lots, and units, without rehandling.

This means

a. Goods will be stowed in issuable units.

b. Each item (and each lot where practicable) will be kept distinct. Therefore a unit of one item or lot will not be stowed on top of or in front of a unit of a different item or lot.

c. Goods will be placed so that the greatest number of individual units or packages will show. This facilitates counting, as well as accessibility.

5—*Standard methods*, defined in written instructions, of *placing and removing* various classes of items.

a. Uniformity—always piling the same item the same way, and in such a way that each full column, stack or block will contain the same quantity as each other full column, stack or block.

b. Distinct separation of each lot, so that old lot may be used first.

6—*Flexibility*, in arrangement.

This is secured by having storage spaces rectangular, and in area whole multiples of a standard rectangular unit. Bins, platforms, and floor spaces will then be interchangeable.

## PART III.—DISCUSSION.

### 1—Definite Spaces.

*Aisles must be kept clear.*

The real reason for taking pains that stowing of stores shall be orderly and systematic is to be able to get at what is wanted when it is wanted, with the least possible expenditure of time and effort. This involves having what you want on hand in sufficient quantities and knowing where it is. The only way of getting at what is wanted is by means of the aisles and passageways provided for the purpose. It is axiomatic, therefore, that the aisles should be of only such width as is required for the necessary passing and handling of the goods to be stored. It is equally fundamental that they cannot be obstructed by things left standing in them or by the projection of things stored along their margins. The delay caused by unexpectedly encountering a blocked aisle is always wasteful,—likewise, the danger of damage to goods projecting from the proper bounds of either storage spaces or conveyors is obvious.

#### *Aisle widths.*

Aisles should be planned according to their use and the size of conveyors or materials to be handled in them. Main aisles for two-way passing of trucks may need to be six or eight feet, or even more in width, according to conditions. Side, connecting aisles, or those straight through the building, for one-way passing, need be only comfortably wider than the trucks to pass through. Blind, side aisles, ending in a wall, if for trucking, normally should be wide enough to allow the truck to safely turn around. This is especially true where four wheel or elevating platform trucks are to be used. Thirty inches is a standard width for aisles between bins or shelves where the contents are package goods carried by hand.

#### *Boundary lines.*

Showing the boundary lines of aisles and likewise of storage, receiving, assembling, and shipping places is important in order that there may be no vagueness about the limits of the spaces required for each. The more permanent and conspicuous these boundary lines are made, the better. In buildings, lines two inches wide, of black or red paint, or of strips of zinc tacked to the floor, have been used effectively. The right amount of space in a well planned stores layout is essential. More than this amount is wasteful, whereas less than this amount for each particular purpose leads inevitably to congestion, and congestion must be avoided.

### 2—Identification.

*Symbols.*

The clear and complete identification of each item is equally important. The same item must not be called by different names at different times; furthermore, the name of each item must be so distinctive that it cannot be confused with any other. This leads in many cases to the careful classification and symbolization of all items in stores. The symbol, being short, distinct, and standing for only one thing, is a convenient means for the accurate identification of stores.

#### *Marks face out.*

Identification marks on packages should preferably face out, or be conspicuous. Therefore the end of the package is usually the best place so that when stacked the largest number of labels will show, and furnish a check against packages being misplaced. This is especially important where goods are not tagged. The labelling of individual packages is not so necessary when lots are systematically tagged and placed in definite locations indicated by symbol both on the identification tag and on the balance records.

### 3—Location.

*General considerations.*

The elements determining the location of an item are sometimes conflicting. Of course, a large, heavy item, difficult to handle, should be given the shortest possible haul. Similarly, an item easy to handle but carried in large quantities and very frequently used, should be in a convenient location with short haul. The same is true of items which, when issued, have to be specially measured, such as bar-stock, or syrup in barrels.

*Special considerations.*

There may be, of course, special considerations such as the sensitiveness of explosives, the perishability of meat or other food stuff, or peculiar similarity such as of pipe and bar stock which would clearly point to the necessity of stowing those items together. Whether the location under those circumstances is most convenient is generally secondary to the particular equipment necessary for their proper care. It is sometimes found economical to stow near each other special parts or articles of equipment which are regularly issued together in a group. It is also desirable to keep unserviceable articles separated from serviceable.