Building Without Waste - Tips

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Introduction

In the construction process, some degree of materials waste is inevitable. In order to reduce waste on a construction site, let us define what is meant by waste. The Oxford dictionary defines waste as “use or be used extravagantly” or “without adequate result.”

Institute of Building (ICB) describes waste as “the difference between the value of those materials delivered and accepted at site and those properly used as specified and accurately measured in the work, after deducting the cost saving of substituted materials and those transferred elsewhere.”

In other words, waste is that left or thrown away because it is not wanted.

Waste and the construction site

The right perception of those responsible from the top level management to low level operative can help in reducing waste on site. Such good practices from all levels will enhance and encourage awareness to every aspect of material usage. This article intends to highlight the basic causes of waste on site and recommend principles to be considered in order to achieve a building without excessive waste.

Not all building materials will end up as building element or components. The materials will be cut and trimmed into required sizes according to the specification. For example, a standard timber size measuring 50 x 100 x 4000 needs to be notched and cut to make a staircases handrail or roof rafter. Similarly, bricks or blocks will be trimmed and cut in order to fix into an architrave wall. Nevertheless, this type of waste can be minimised by using a modular unit which is incorporated into a standard design. As what being practised by the manufacturing industry, defective part is a replaceable and it can be obtained easily from any spare part shops. In simplest terms, roof trusses, or window units come in a standard size and length which fit easily into any modular dwelling. Therefore, cutting and trimming process can be reduced.

Building Research Establishment has defined the main reasons for the waste of materials in construction and they divide it into 4 categories:

1. Design waste
   - Faulty conversion ratios for compaction of bulk items. It is usually necessary to arrive at conversion ratios where material is bought in imperial system yet paid for in metric system.
   - Careless use of materials.
   - Unnecessary cutting instead of looking for a suitable available length. Particularly true of timber.

Causes of waste

In short, waste can be caused by any of the following or a combination of any of them:

1. Unloading, transporting and handling of materials.
2. Poor site stacking and storage.
3. Theft and vandalism.
4. Work place waste such as cutting and mishandling.
5. Misuse and damage by following trades.
7. Training errors.
8. Rejected work.
9. Substitution where goods bought for one purpose are used for another.
12. Non-delivery or delay in delivery of materials.
Minimising waste

Waste which is due to improper storage, defective work, poor handling, misuse etc. Can be reduced substantially by applying the following:

1) Good management and organisation.
2) Proper planning
3) Proper storage
4) Proper handling
5) Clean compound
6) Protection
7) Adequate security
8) Quality Control

i) Management and organisation

Good management techniques and trained technical staff who take into account waste considerations and procedures or standards will help to minimise waste. Prior to the commencement of work, a system of material entry or order must be recorded. The site layout for the material and activities i.e. hoisting, handling as well as security and safety must be fully considered.

ii) Proper planning

The necessary forms, procedures and orders are placed before any plant is hired and material ordered.

iii) Storage

The complexity varies from one site to the other. The layout must be arranged for easy checking and issuing of materials. When the materials are likely to be damaged by building operations, they should be stored in a locked compound for safe keeping. Similarly for materials which are subjected to vandalism, pilfering and damage from weather. The storage of liquids such as oil, petrol and the like must be in accordance with stipulated requirements.

iv) Proper handling

Manual handling is slow and generates waste of materials. However, fragile materials can benefit from careful manual handling. Centralised storage with day to day movement and distribution by machine could improve security and stock control and thus reduce wastage.

v) Protection

The provision of covering to finished work is seldom a waste. It will normally save time and materials. For example, a few strips of hardwood pinned in a position to protect can be less costly compared with replacement of finished products.

vi) Adequate security

Adequate security is provided to limit the flow of pedestrians and vehicles to the site. Regular and careful checking of stock to ensure that losses are quickly discovered.

vii) Quality Control

A person in-charge is responsible to check the quality of materials upon receipt. Proper checking and record of damage should be done upon the receipt of goods.

viii) Clean compound

The following points should be noted:

a) covered working areas, clear from obstructions.
b) Racking requirements, different materials will require different forms, bins or palettes.
c) Areas adequately surfaced.