

Identify the resources required to construct the detached brick garage referred to in drawing No. YB/01/1 and the management techniques employed to control those resources.

On referring to the drawing no. YB/01/1, we see that a small detached garage of brick construction is required on plot 4.

Before any work can begin on the construction of the garage, an inventory of the materials and plant required to complete the job must be made. This is the responsibility of the Site Director.

First, referring to a schedule of work, the Director must decide how many men he must put on the particular job in order for it to be completed in the allotted time. The Site Director may well have a Personnel Manager working for him, particularly if the project is a large one and it is anticipated that a large workforce will be required. It is the responsibility of the Personnel Manager to employ a suitable workforce. He must endeavour to recruit people who will be worth the money they are going to be paid. Many large building companies have shareholders' interests to consider and productivity and profits will be an important factor for all of the management team to consider.

It is important that care is taken to employ the right number of staff for the particular job in hand; if too many people are on site, wages will be expended needlessly and there will be a lot of people being paid to "swing the lead". On the other hand, if not enough people are employed for a given project, then deadlines and productivity targets may not be met. A lack of manpower on site would also be bad for the morale of the workforce, who may feel that too much is being asked from them. This too could ultimately result in staff taking a poor attitude to their work.

If, in our example, other work around the site has all been completed on schedule and work on the garage on plot 4 is begun on time, then, provided that the meteorological conditions are good and no problems are anticipated, the Director may decide that the garage requires a gang of 2 bricklayers plus a labourer and 2 joiners for the work to be completed according to schedule.

Once manpower requirements have been settled, somebody must decide on what materials should be allotted and in what quantity. The Site Director could do this himself but he is more likely to delegate the task to one of his managers. The job would probably fall to an Estimator. It is this person's job to decide what materials and resources are required for each specific phase of a building project. On a very large job, there may well be a Senior Estimator or an Estimations Director, who may delegate the task again to an Estimator working under himself.

Once it has been decided what materials are going to be required and the amounts thereof, a Buyer may then be tasked with sourcing the required materials for the best price, although in effect, the materials will more likely be requisitioned from the site stores. This must be recorded in a site log so that the materials can be accounted for at a later date and also so they can be replaced as they are used up.

Wastage. It is inevitable that there will be a percentage of materials that are wasted before they can be used. Estimators and Buyers will be aware of this and must therefore order slightly more of the materials than are actually specified in the building plans.

There are a variety of factors that account for this discrepancy; waste occurs during every phase the materials go through from delivery on site to use in the construction process. Some of the many factors that act to diminish the store of materials are:

- Careless handling, either during the delivery of the goods or in transporting them from their storage area to the point of use.
- They may be damaged during storage if the storage facilities are not appropriate or suitable.
- Thirdly, careless use of materials, through a poor attitude to work by a member or members of staff can account for much wastage.

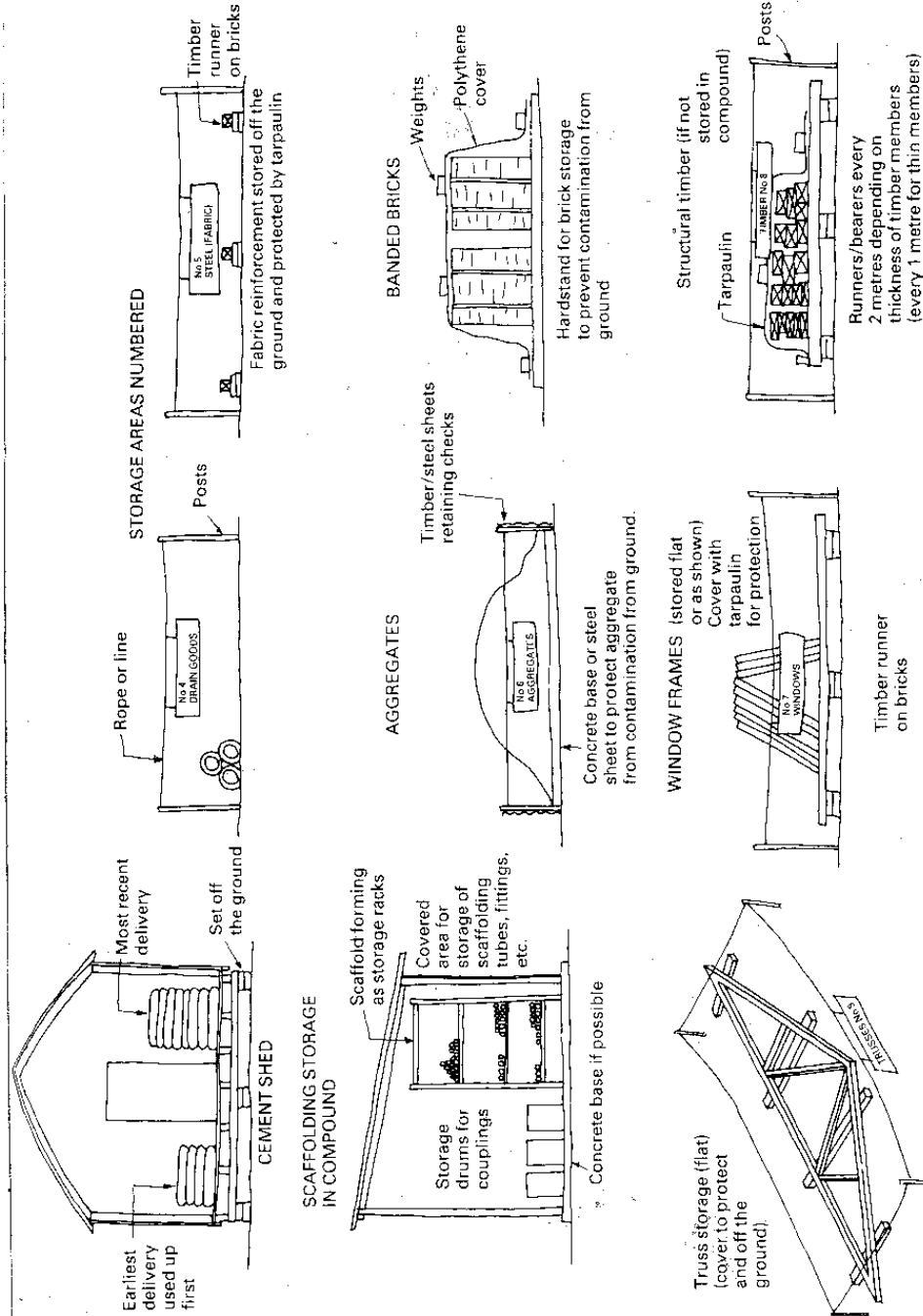
It is up to the management team to ensure that all materials are requisitioned appropriately and used with care and attention. An attitude that there is “plenty more where this came from” can cost the company a great deal of money; this in turn can affect the profits of the company as well as their reputation for professionalism. The Resource Manager must, at all times, be aware of what materials are coming onto the site and what materials are being used on the site. It is important that the materials are available to the workforce as and when they are required; unavailable materials can lead to schedules not being met and men and plant standing idle while waiting for deliveries.

It is just as important that too much material is not ordered. This situation can lead to excessive waste and damage to the materials due to lack of appropriate storage facilities as well as problems caused by materials being piled in unsuitable areas. These situations may also cause problems of access to parts of the site, slowing down work and beginning a “snowball” process whereby the next deliveries are arriving before the previous have been stored properly and so on. When it is perceived by the workforce that little or no care is being taken by the management to monitor materials being delivered to and stored on the site, they may come to believe that a lax attitude is acceptable, and pilfering and theft from site stores may occur.

Deliveries to the site must be checked thoroughly to ensure there are no discrepancies between what was actually ordered and what has been delivered. Examination of goods will also reveal any damage to the materials. Whether this damage has occurred before it has been loaded onto the delivery vehicle, during transit, or while being off-loaded is irrelevant; any damage must be recorded on all parts of the delivery documents.

Once the goods have been accepted and signed for by a member of site staff with the correct authority to do so, it is of the utmost importance that the materials are stored correctly. Storing them correctly in a designated area of the site not only ensures that the materials are not causing a hazard to the workforce, but also that when they are required, they will be in perfect condition.

It only remains to see that an efficient system of storekeeping is in place where issuing of materials from the stores is concerned. This will both ensure that all stock is accounted for as it is requisitioned by the employees and that the workforce takes extra care with the materials as they use them: If a particular operative has signed for an item from the site stores, he will then realise that he is accountable for that item if it is misused, wasted or taken off-site.



Correct storage methods for various materials.

Plant requirements.

It must also be decided what plant is going to be required during the construction of the brick garage. This task may be delegated to a Plant Manager on a large site. It is important that this is planned in advance, as plant often needs to be hired or plant owned by the construction company may already be in use on another part of the site. There should be reference made to plant requirements in the schedule of work to ensure that the required plant is available at the correct time.

Plant and equipment falls into three main categories:

Small plant. This can be divided into 2 types; mechanical and non-mechanical.

Mechanical small plant includes hand-held power tools such as electric drills, sanders, screwdrivers, power saws and routers.

Non-mechanical small plant covers a wide variety of hand held tools. Some of these are hammers, chisels, trowels, screwdrivers and saws, sweeping brushes, hods, spades or wheelbarrows.

Large plant. Again this category can be sub-divided into mechanical and non-mechanical plant.

Mechanical large plant includes everything from JCB's and dump trucks to fork lift trucks and cement mixers.

Non-mechanical large plant may be scaffolding equipment, gantries, shoring etc.

Administrative and sundry plant. This is everything else that is used on site that is not specifically a tool or machine. This category includes fencing, lighting and heating equipment, tables and chairs or safety equipment such as boots, gloves, helmets etc.

When there is a need for plant to be brought onto the site, it may be obtained in one of the following ways:

1. Hiring from a plant company. This may be an attractive option, as it does not necessitate the creation of an expensive plant department within the company. Also, any mechanical problems will be dealt with by the plant owners, therefore a minimum amount of time will be lost due to carrying out repairs.
2. Hiring or requisitioning plant from the company plant department. This option may only be available to very large companies who can afford to keep and maintain their own plant. If this is available, however, it should be the priority means of obtaining plant.
3. Buying plant when it is required. This option has its advantages, but these are possibly outweighed by the disadvantages of high cost of some equipment and expensive maintenance and running costs. The plant may be sold on after the contract is completed without too much loss of value if it has been well maintained.

Care and maintenance of plant to be used on site is essential if delays due to mechanical failure are to be avoided. All plant must be regularly inspected to ensure that it is in good working order and not liable to cause a safety risk to operatives or others working nearby. This is ultimately the responsibility of the site supervisor, although he may delegate these tasks to the charge hand or foreman of the gang using that particular item of plant. Some groups of workers, scaffolders for instance, will probably bring their own plant onto the site with them. This does not absolve the site supervisor of any responsibility to see that the plant is being used safely however.



An all-wheel-drive fork truck may prove to be worth its weight in gold on a busy site!

Some plant, such as a JCB may also need an operator. This must be taken into account during the allocation of manpower for the job. If hired plant, a crane for instance, which needs a qualified operator is to be used on the site, then the building company will be charged for the services of the operator as well as for the actual hire of the crane. This must be taken into account and budgeted for accordingly.

This covers the three main elements of any stage of construction on the site:

- Manpower
- Materials
- Plant

The Site Director, working closely with his Foreman or Contracts Manager to fulfil the manpower requirements, with his Estimators and Buyers to calculate what materials are needed and from where they will be sourced and with his Plant Manager to provide tools and machines, will then have brought together all the elements required to successfully complete the job in hand.

Now the actual physical construction can begin on the garage at plot 4.

Materials required for 7x3.6m detached brick garage.

Approximately 2000 bricks
10 sheets of 18mm plywood
21m of 8 x 1" PSE
1 x 'up and over' garage door
1 x door and frame
1 x 1220mm x 1220mm window and frame
14 x 150mm x 50mm joists (plus fairings)
21.2m of softwood fascia board
Approximately 80 x 292mm footing blocks
Damp proof membrane
Hardcore (type 1)

Labour.

2 plus 1 brick gang
2 joiners
JCB operator

Plant.

JCB
Cement mixer