

**GOVERNMENT POLYTECHNIC FOR GIRL'S, AHMEDABAD**

**CIVIL ENGINEERING DEPARTMENT**

**“CONSTRUCTION PROJECT MANAGEMENT”**

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**JOB LAYOUT**

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# JOB LAYOUT

## ► Abstract

Due to the complication of the site layout planning problem, construction managers often perform this task of site layout planning by using thumb rule, ad-hoc rules, and firstcome-first-serve approach which leads to confusion and even to inefficiency. In residential project around us there is exact relation between construction resources and the project area. Because of improper planning and management of those resources, it leads to high risk of construction safety, labor safety and increase in cost of the project, the residential construction site whether it is small or large scale needs to be proper planned and shall be execute very seriously. A Job layout planning and optimization on site can reduce the transportation flows, moving, reloading, and enhancing the services of the construction work to improve the work productivity and thus the costs of a project.

# INTRODUCTION

► Job/Site layout can be defined as site space allocation for material storage, working areas, units of accommodation, plant positions, general circulation areas and also access and egress for deliveries and emergency services. It is imperative that every construction project should be organized and executed in the most economical and safest manner. To aid on the smooth execution of the project, a job layout is prepared. This a scaled drawing of the proposed construction site showing all the relevant features such as entry and exit points to the site, storage areas for materials, contractors offices, area keeping for equipments such as mixer, bar bending area, labour housing, toilets etc. It is also necessity that first aid kits are kept in the site engineer's office.

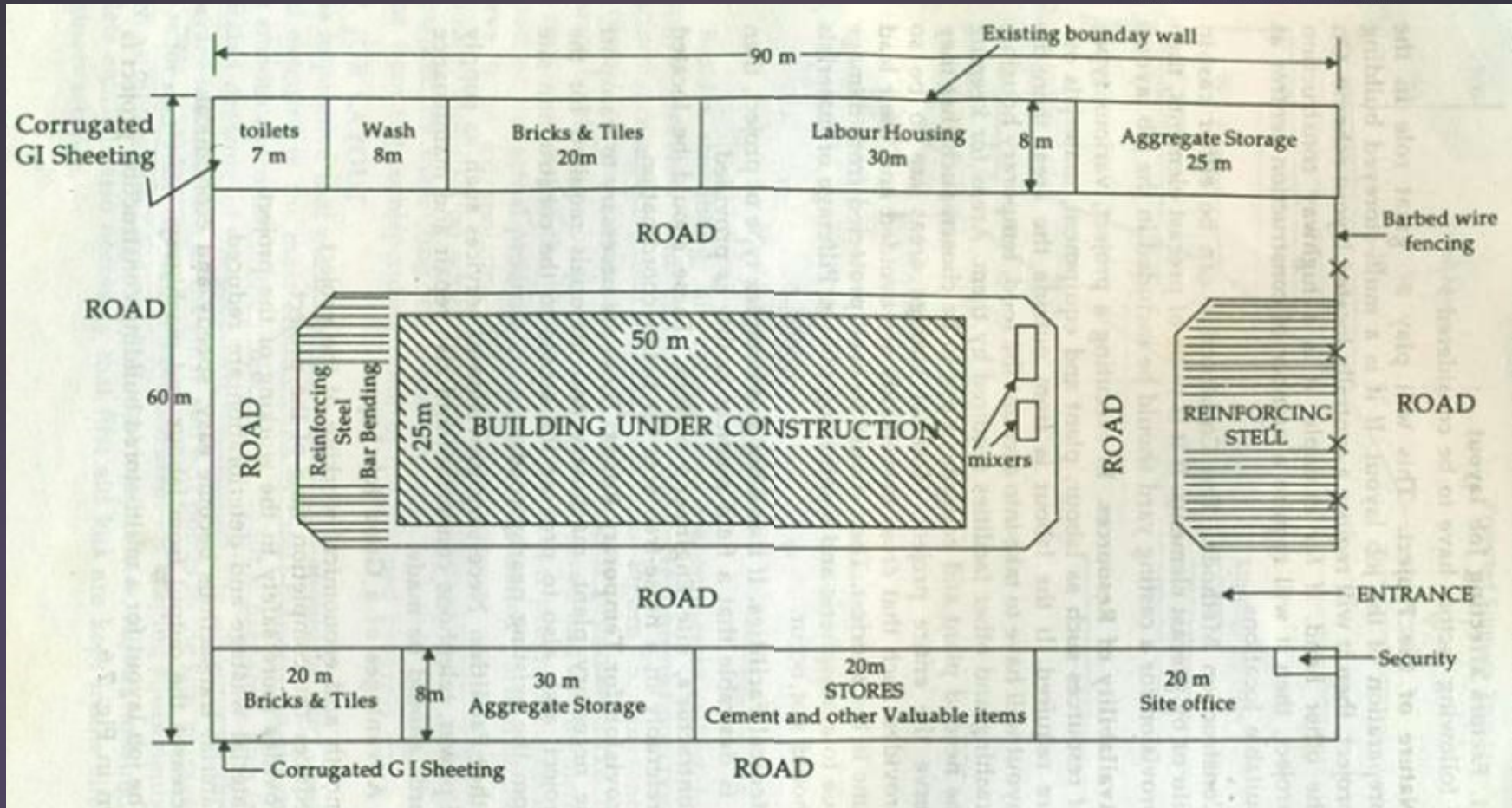
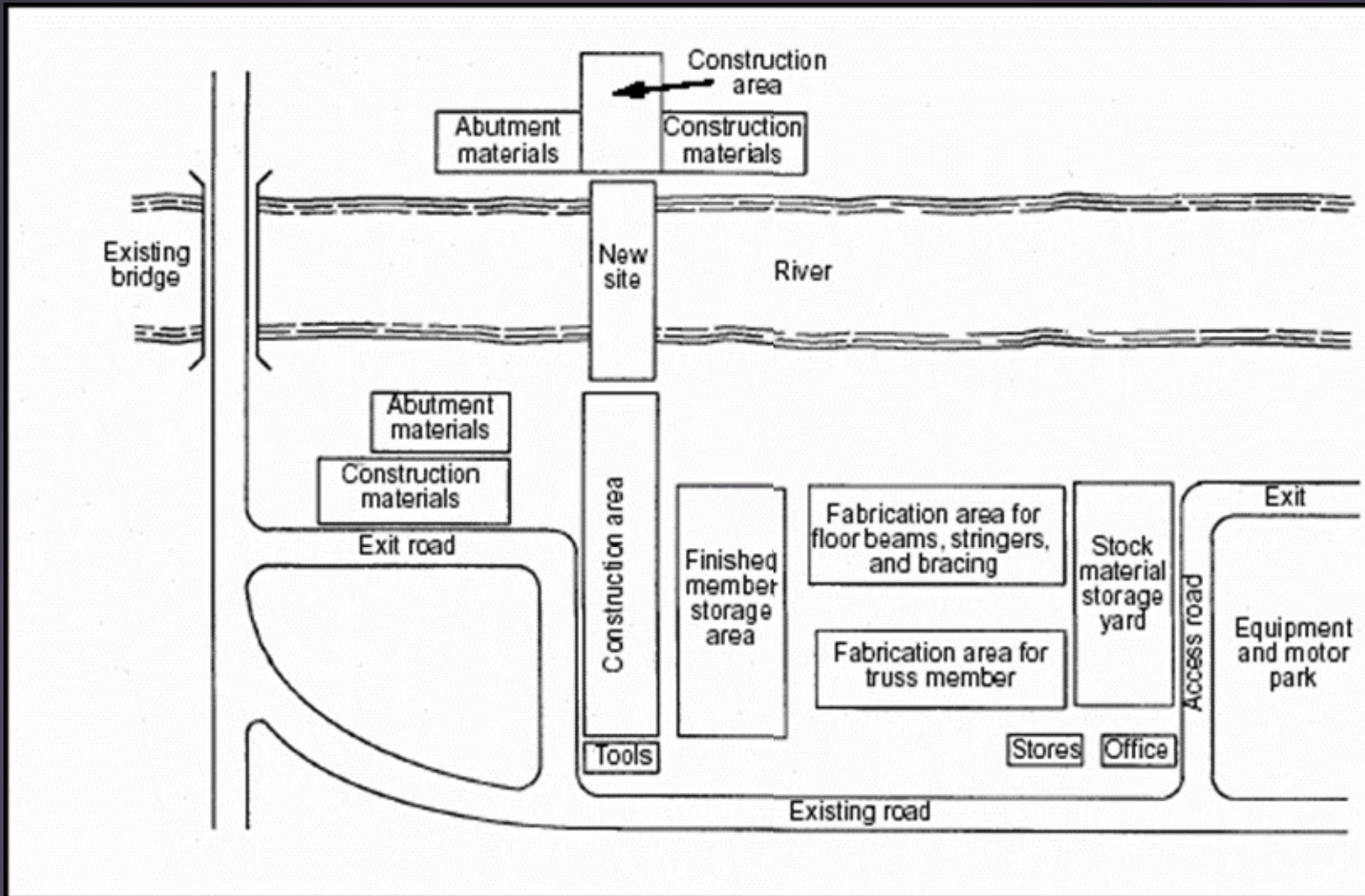


Fig. 1 Job layout for multi storeyed building



**Fig. 2 Job layout for bridge**

- Good site layout planning leads to

1. Provide a uniform flow of material about the site, free from bottlenecks.
2. Provide adequate control on equipment theft.
3. Facilitate movement of equipment on the jobsite.
4. Promote a safe working environment.
5. Provide safe, nondestructive access to the jobsite for visitors.

# The following are the advantages of a good job layout

- ▶ Smooth and economical working of the project
- ▶ Reduces the completion time of the project.
- ▶ Provides more safety in the working of the project.
- ▶ Material wastage and deterioration are reduced.
- ▶ Material transactions become easy, speedy and economical.
- ▶ Increases the output from labour and machinery.

# Factors affecting job layout

- ▶ **Nature of the project** : It plays an important role. If it is a multi-storeyed building project, then it will require a centrally located layout scheme. On other hand if it is a highway construction project, then it will require a number of construction centres at suitable locations.
- ▶ **Construction methods**: Construction can be either cast in-situ or by precast elements. If it is to be of precast elements then provision for casting yard should be included in the job layout.
- ▶ **Availability of resources**: Various types of resources are used in executing a project such as labour, plant and equipment material etc. If labour is from outside area , temporary housing will be taken into account and other facilities required by them. Material storage areas are to be so provided such that cross movements are avoided and their lead time is shortest.



- ▶ **Medical Facilities** : If it is a big and complex type of project then it is desirable that a field medical facility is provided.
- ▶ **Contractors and Site engineer's offices**: These should be located preferably in a noise free area for better co-ordination.
- ▶ **Provision for temporary roads.**
- ▶ **Other facilities** : Services such as supply of power , water, telephone connection and also repair and maintenance yards should be made.

# Principles of Job layout

The following are the principles of job layout they promote economy, efficiency tidiness and safety.

- ▶ The site should have preferably two openings, one for entry and the other for exit. It promotes flow of traffic. If there is only one gate then it is preferable to provide a cross-over near the gate.
- ▶ The general office should be located near the main gate. This avoids confusion at construction site.
- ▶ The godown should be located just behind the general office. It facilitates delivery of the material to be stored in it. It also permits a closer supervision of the stores.

- ▶ Temporary roads may be constructed around the operation area. It promotes the flow of material and movement of equipment. In fact, if such roads are required to be constructed in the project, It is better to construct them first so that these can be used during the construction proper.
- ▶ The workshops for joiner, filter, electrician etc. should be decided and located by balancing easy and short access routes
- ▶ Staff accommodation should be away from noise. It should be concentrated in one area to promote communication and reduce the cost of facilities and services
- ▶ The existing services should be used to the maximum extent.

# History of Job Layout

- ▶ Static models can not consider the changes in facility location that occur on construction sites onto the progress of time. These models assume that all facilities exist on the site for the entire duration of the project. Static models can be conformable for projects where space is plenteous, having large construction sites with short durations and for project where there are not many changes in the layout of the construction site over the course of time. However, where number of facilities to come and leave the project site over the course of construction in more complicated projects, static model are not practical with longer durations. Static models do not allow reusing the space occupied by facility which is no longer required on the site. project.

# The following factors should be considered in preparing of site layout

- ▶ **Nature, Scope and Type of work:** - The nature of site layout depends majorly on the type of work to be carried out. E.g. the site layout for a dam would be much more complicated and extensive as compared to that of a residential building.

**Topography of the site:** - the topography of the site i.e. location, size, nature of terrain etc. of the site also effect the site layout. E.g. the site layout in case of rocky mountains terrain would be vastly different from that in case of a plain terrain

## Identification of facility The Following are the temporary facilities are identified to be constructed on site

- ▶ Site Office
- ▶ Booking office
- ▶ Subcontractor's office
- ▶ First Aid and Medical Room
- ▶ Guard Room
- ▶ Toilet on Site
- ▶ Engineer and Staff quarters
- ▶ Labor quarters
- ▶ Equipment Maintenance room
- Equipment Maintenance room
- Parking for machines
- Bar bending shop
- Fabricated rebar storage yard
- Carpentry shop
- Cement warehouse
- Batching plant and aggregates storage
- Testing Lab
- Material storage lab
- Water tank
- Scaffolding storage
- Canteen.

# Importance Of Job Layout

- ▶ Work that needs to be executed for each type of tasks requires the necessary equipment within the allotted space. The office layout has to be designed in such a way that it is comfortable as well as functional. Lot of money and time is invested in designing those layouts. There are various reasons behind the need of having a proper office design layout.
- 1. **Impacts morale** : Studies have shown that layout of office impacts the employee morale which affects the functioning. When we say layout, it does not imply only the décor and facilities , but the relationships between people who work there and the general environment. Often this is referred as ergonomics.

- ▶ **Impacts business:** As layout has impact on the morale, it directly impacts the efficiency and thereby the business success rate. The more the people working there are happy, the better is the output. This is direct link to the business success factor.
- ▶ **Way the work is done:** The traditional style of work like working at one desk or work executed by only one person has been replaced by re-engineered organizational structure. The work or task at this modern age has changed due to globalization that is governed by the use of information technology. The tremendous developments in this technology has impacted the office working hours and way to perform the tasks.



- ▶ **Manage changes:** Businesses are prone to manage the pressure of the market needs. To keep up with it, layouts are effective only when the changes can be accommodated within.
- ▶ **Increase productivity:** Using the office space effectively is important while designing office layouts . It should be such a way that it does not delay the work and job gets done quicker consuming less time. In other words, the flow of work is not interrupted
- ▶ **Facilitate supervision:** When office layouts are designed to place managers or supervisor closer to their teams , they can meet or discuss issues immediately and get solutions. The communication gets smoother and quicker. How ? There would be reduced number of internal memos or email or movement of staff. The working conditions would be better as their workstations are placed in relation to their work needs.
- ▶ **Effective use of equipment:** Designing office equipment's properly is indeed very important so that it is not underused or overused.

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THANK YOU