

PLANT LAYOUT

The management of equipment and facilities specified from process flow sheet considerations is a necessary requirement for accurate pre construction cost estimation or for future design involving piping, structural and electrical facilities. Careful attention to the development of plots and elevation plans will point out unusual plant requirements and therefore, give reliable information about building and site costs required for precise pre – construction cost accounting. Rational design must include arrangements such as processing areas, storage areas and handling areas in efficient coordination and with regards to such factors are given below.

1. New site development or addition to a previously developed site.
2. Future expansion
3. Economic distribution of services – water, process steams power and gas.
4. Weather condition
5. Safety consideration – possible hazards of fire, explosions and fumes
6. building code requirements
7. Waste disposal problems
8. Sensible use of floor and elevation space.

Some points to be considered in plant layout are,

- Effluent plant is located at the end of the premises
- Administration buildings, canteens are located near the entrance of the industry where they will not interfere with production and its is convenient to contact the people outside the industry.
- Laboratory and workshops are placed in the position form where it is easy to communicate with all other departments.

- Location of services like power plant, cooling water, pump house, and switch house are done such that their usage is not hindered and they are easily accessible in case of fire.
- Pipelines laid are minimal and human safety is taken into account.
- Storage layout: storage facilities for raw materials and products may be located in isolated areas or in adjoining areas. Hazardous materials become a decided menace to life and should be isolated when stored. Storage tanks must be separated to facilitate suitable quantity. Process water may be drawn from river, wells or purchased from local authority. Electrical power will be needed at all sites. So plant should be located close to a cheap source of power. A competitively priced fuel must be available for steam and power generation.
- Effluent disposal: Effluent disposal should be according to the Indian standards. The appropriate authorities must be consulted during the initial site survey to determine the standards that must be met.
- Local community considerations: The local community must be able to provide adequate facilities for the plant personnel: schools, banks, housing and recreational cultural facilities etc... Also the plant should be located so that the local community is not harmed. The proposed plant must fit in with and be acceptable to the local community.
- Availability of suitable land: Sufficient suitable land be available for the proposed plant and for future expansion. The land should be ideally flat, well drained and have suitable load bearing capacity. A full site evaluation should be made to determine the need for piling or other special foundations. It should also be available at low cost.
- Political and strategic consideration: Capital grants, tax concessions and other incentives provided by governments to direct new investment to preferred locations, such as areas of high un-employment should be the overriding considerations in the site selection.

- Climate: Adverse climatic conditions at a site will increase costs. Abnormally low temperatures will require the provision of additional insulation & special heating for equipment & pipe runs. Stronger structures will be needed at locations subject to high winds or earthquakes.