CHOICE OF CONSTRUCTION TECHNOLOGY AND CONSTRUCTION METHOD

objectives of planning:

Proper design of each element of the project Proper selection of equipment and machinery in big projects, the use oflarge capacity plants are found economical Procurement of materials well in advance Proper arrangement of repair of equipment and machinery Employment of trained and experienced staff on the project To provide incentive for good workers To arrange constant flow of funds for the completion of project To provide proper safety measures and ventilation, proper arrangement oflight and water.

project plans:

Planning the entire project from its inception to completion requires a vastcoverage, varied skills and different types of plans. The nature of plansencountered in a typical construction project are ndicated belowTypes of project plansDevelopment stage nature of planInception stage project feasibility planEngineering stage project preliminary planImplementation stage project construction plan

work tasks

Work tasks represent the necessary frame work to permit scheduling ofconstruction activities, along with estimating the resources required by theindividual work tasks and a necessary precedence or required sequence amongthe tasks. The terms work tasks or activities are often used interchangeably inconstruction plans to refer to specific defined items of work.

Choice of Construction Technology and Construction method:

As in the development of appropriate alternatives for facility design, choices of appropriate technology and methods for construction are often ill-structured yet critical ingredients in the success of the project. For example, a decision whether to pump or to transport concrete in buckets will directly affect the cost and duration of tasks involved in building construction. A decision between these two alternatives should consider the relative costs, reliabilities, and availability of equipment for the two transport methods.

Unfortunately, the exact implications of different methods depend upon numerous considerations for which information may be sketchy during the planning phase, such as the experience and expertise of workers or the particular underground condition at a site. In selecting among alternative methods and technologies, it may be necessary to formulate a number of construction plans based on alternative methods or assumptions. Once the full plan is available, then the cost, time and reliability impacts of the alternative approaches can be reviewed. This examination of several alternatives is often made explicit in bidding competitions in which several alternative designs may be proposed or value engineering for alternative construction methods may be permitted. In this case, potential constructors may wish to prepare plans for each alternative design using the suggested construction method as well as to prepare plans for alternative construction methods which would be proposed as part of the value engineering process.

In forming a construction plan, a useful approach is to simulate the construction process either in the imagination of the planner or with a formal computer based simulation technique. By observing the result, comparisons among different plans or problems with the existing plan can be identified. For example, a decision to use a particular piece of equipment for an operation immediately leads to the question of whether or not there is sufficient access space for the equipment. Three dimensional geometric models in a computer aided design (CAD) system may be helpful in simulating space requirements for operations and for identifying any interferences. Similarly, problems in resource availability identified during the simulation of the construction process might be effectively forestalled by providing additional resources as part of the construction plan.

Example- Laser Leveling

An example of technology choice is the use of laser leveling equipment to improve the productivity of excavation and grading. In these systems, laser surveying equipment is erected on a site so that the relative height of mobile equipment is known exactly. This height measurement is accomplished by flashing a rotating laser light on a level plane across the construction site and observing exactly where the light shines on receptors on mobile equipment such as graders. Since laser light does not disperse appreciably, the height at which the laser shines anywhere on the construction site gives an accurate indication of the height of a receptor on a piece of mobile equipment. In turn, the receptor height can be used to measure the height of a blade, excavator bucket or other piece of equipment. Combined with electro-hydraulic control systems mounted on mobile equipment such as bulldozers, graders and scrapers, the height of excavation and grading blades can be precisely and automatically controlled in these systems. This automation of blade heights has reduced costs in some cases by over 80% and improved quality in the finished product, as measured by the desired amount of excavation or the extent to which a final grade achieves the desired angle. These systems also permit the use of smaller machines and less skilled operators. However, the use of these semi-automated systems require investments in the laser surveying equipment as well as modification to equipment to permit electronic feedback control units. Still, laser leveling appears to be an excellent technological choice in many instances.