

SCHEDULING AND CRITICAL PATH METHOD

object of scheduling:

Scheduling means putting the plan on calendar basis. A project network shows the sequence and interdependencies of activities, their time and their earliest and latest completion time, but these need to be scheduled to determine commencement and termination dates of each activity. Using optimum resources or working within resource constraints, it is a time table of work. A basic distinction exists between resource oriented scheduling techniques. The project is divided into number of operations.

advantages of scheduling:

1. By studying of any work and the many alternative methods of execution, we can choose the best one.
2. It gives a clear idea regarding the required men, materials and equipments at different stages of work.
3. Resource utilization is optimized.
4. Actual progress of the work is monitored with the actual plan. If there is any delay, proper remedial measures can be taken to avoid such delays.

purpose of work scheduling:

The bar – chart type work schedule provides a simplified version of the workplan, which can easily be understood by all concerned with planning, co – ordination, execution and control of the project.

The steps involved in schedule chart:

- (a) Select the EST point of activity layout on the graph, and draw a line sloping equal to its rate of execution i.e., 1 unit per day.

(b) Plot the lowest rate slowing line and mark its intersection with the top to foundation horizontal line.

(c) Starting from the point of intersection, move forward horizontally on the topline and identify latest completion point of subsequent activity as indicated by the setback.

Critical path method with neat sketches.:

The most widely used scheduling technique is the critical path method (CPM) for scheduling, often referred to as critical path scheduling. This method calculates the minimum completion time for a project along with the possible start and finish times for the project activities. Indeed, many texts and managers regard critical path scheduling as the only usable and practical scheduling procedure. Computer programs and algorithms for critical path scheduling are widely available and can efficiently handle projects with thousands of activities.

The critical path itself represents the set or sequence of predecessor/successor activities which will take the longest time to complete. The duration of the critical path is the sum of the activities' durations along the path. Thus, the critical path can be defined as the longest possible path through the "network" of project activities. The duration of the critical path represents the minimum time required to complete a project. Any delays along the critical path would imply that additional time would be required to complete the project.

There may be more than one critical path among all the project activities, so completion of the entire project could be delayed by delaying activities along any one of the critical paths. For example, a project consisting of two activities performed in parallel that each require three days would have each activity critical for a completion in three days.

Formally, critical path scheduling assumes that a project has been divided into activities of fixed duration and well defined predecessor relationships. A predecessor relationship implies that one activity must come before another in the schedule. No resource

constraints other than those implied by precedence relationships are recognized in the simplest form of critical path scheduling.

An Activity-on-Branch Network for Critical Path Scheduling

An Activity-on-Node Network for Critical Path Scheduling

Source : <http://www.nprcet.org/e%20content/Misc/e-Learning/CIVIL/VI%20SEMESTER/10111CE604%20-%20Construction%20planning%20and%20scheduling.pdf>