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PLANNING AND SCHEDULING OF G+3 BUILDING CONSTRUCTION USING PRIMAVERA P6

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Abstract: Scheduling is an effort that requires extensive use and control of data. A project coding system such as a Work Breakdown Structure is a key element in developing and controlling schedule of a project. With the onset of High Rise Buildings in metropolitan cities, planning and scheduling has become a major concept to be considered for a smooth execution of construction works. Oracle's Primavera P6 is a management software which makes use of this Critical Path Method (CPM) logic to Schedule the project and the resources. This project discusses the importance of Scheduling and interrupts the software with the ongoing construction project of a commercial building. On daily basis the activities were observed and monitored through Primavera. All the important steps like creating an EPS, creating a WBS, linking of activities according to their interdependence and availability of resources, reduction of float values, and determination of Critical Path are clearly exhibited in this report.

Key Words: Planning, Scheduling, Primavera, Activity and delay

1. INTRODUCTION

The growth of building construction is increasing day by day. So there is a growing need for project control on today's construction projects. Nowadays many construction projects encounter events and/or changes that affect the original plan of executing a project. This delay in project completion happens due to various reasons such as shortage of labour, materials and also hikes in prices of the equipments. To overcome these types of errors, Construction companies are also narrowing their focus, becoming specialists in certain type of construction projects. This specialization requires more focused project planning and controlling techniques that prove to be better for certain type of projects while providing specialized construction services. The benefits of effective planning, scheduling and control of construction projects are: reduced cost overruns, reduced construction time.

Planning is the process of discovering all the activities necessary to successfully finish the project and it also aims upon the future course of action.

Scheduling is the process of determining the sequential order of the planned activities, assigning realistic durations to each activity and determining the start and finish dates of each activity. A time schedule outlines the project work program, it is a time table of work

1.1 Objectives

The primary objective of this project is

- ✓ To schedule the G+3 building construction project using primavera.
- ✓ To optimize the resources utilized in the project.

1.2 Need for the study

Construction projects have to be performed in complex dynamic environments that are often characterized by uncertainty and risks.

1) The introduction of a user friendly, time saving resources assessment method and resource database can persuade the construction project teams to go for a more quantitative resource assessments and hereby avoid recurring, time consuming efforts.

2) Projects in India are generally scheduled using PERT or CPM at present, but there are certain limitations or disadvantages of using these methods. CPM/PERT assume that unlimited resources exist in the organization so all the activities can be done as planned.

3) These limitations are corrected in the new software created for project management namely Primavera, MS Project and others.

4) Therefore, a detailed study was required for scheduling, with the help of new software like Primavera and hopefully allows the construction companies to reap the benefits of increased stability and performance.

2. METHODOLOGY

To meet the objective the following methodology is adopted and given as a flowchart in Figure 3.1

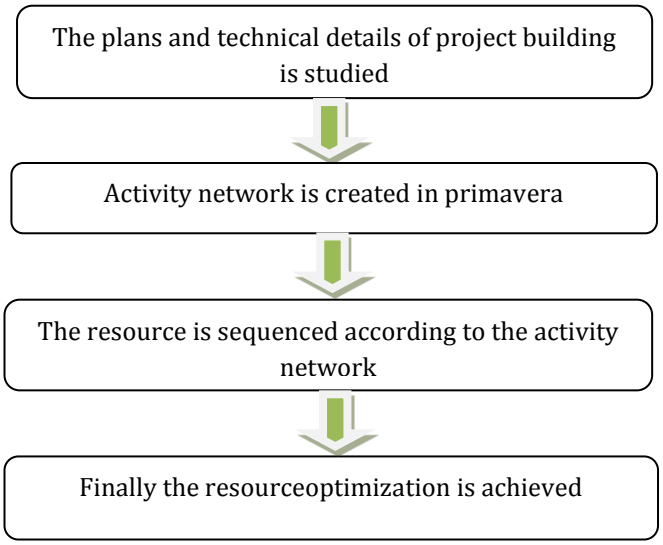

Fig 1 Methodology

3. DATA COLLECTION

This project is based on planning and scheduling of G+3 residential building. The observation gained out of construction scenario going in Tamilnadu Police Housing Corporation Ltd, which is located at Kilpauk, Chennai. Necessary data such as workmen force, labour charges, cost of equipment and materials has been collected for all references. Using these data, the work is scheduled.

Project details	**Data**
Type of project	Residential Building
No of stories	4
Contract period	11 months
Construction start date	30/Dec/2019
Contract value	1.88 crore
Nature of contract	Item Rate Contract
Proposed Builtup Area	940 sq.m

4. PLANNING

Planning is a general term that sets a clear road map that should be followed to reach a destination. The term, therefore, has been used at different levels to mean different things. Planning involves the breakdown of the project into definable, measurable, and identifiable tasks/activities, and then establishes the logical interdependences among them.

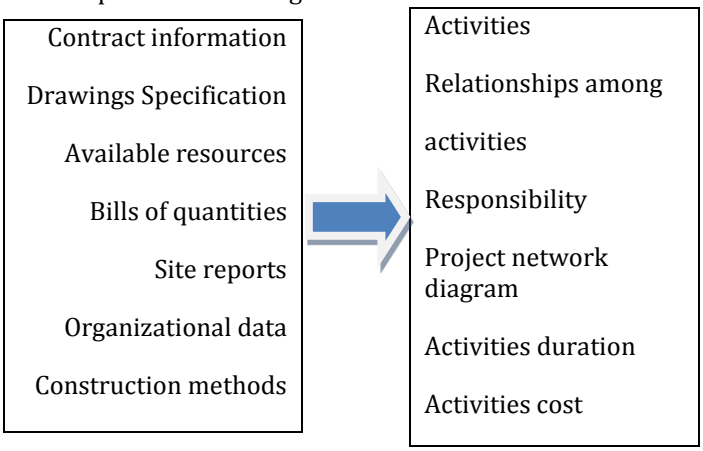

Fig 2 Planning In and Out

5. WORK BREAKDOWN STRUCTURE-WBS

The work breakdown structure (WBS) is a hierarchical system that represents a construction project in increasing levels of detail to define, organize and display the project work in measurable and managerial component. A project work breakdown structure is a deliverable or product oriented grouping of project work elements shown in graphical display to organize and subdivide the total work scope of a project. The WBS is a particularly important project tool.

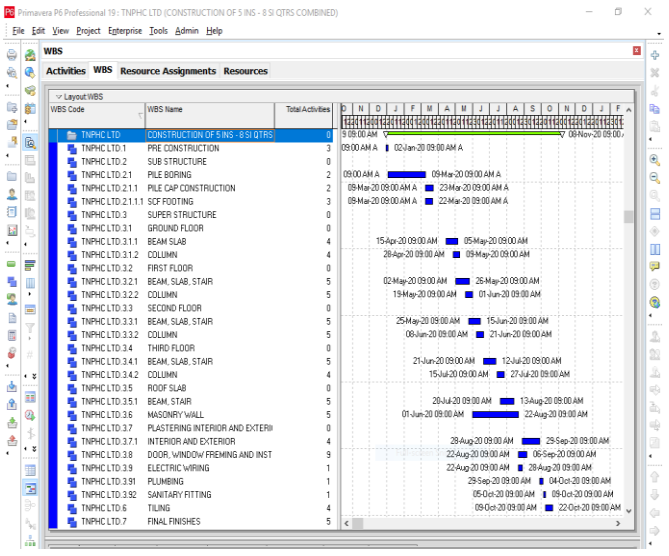

Fig 3 Work Breakdown structure

6. SCHEDULING

A schedule is a work program, set date-wise in a logical sequence. It's a timetable for action. Time scheduling is a process of developing a work program. It implies programming of the chosen work plan on a calendar basis and provides the base against which all progress is measured. The scheduling methodology varies with the planning technique and the nature of task to be performed. Simple projects can be scheduled using "Bar Chart methodology". The line of balance (LOB) technique is widely accepted for scheduling the repetitive work projects while network scheduling is suitable for all types of projects. There are many other scheduling techniques. Method of presentation of a schedule depends upon the scheduling techniques used. Generally all of them use time scale along the horizontal axis. This time scale mostly uses a 'week' as a unit of time.

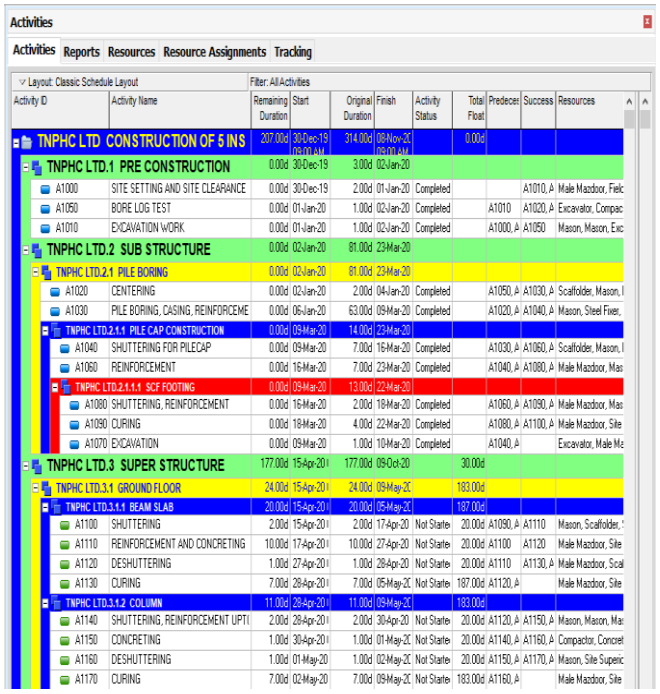

Fig 4 Classic activity for scheduling

7. BAR CHART

In the bar chart method, works are first split into activities. These activities are then listed in order of construction priorities, generally on the left hand side column, while the time scale is plotted horizontally on the top and/or bottom of the chart. The bar against each activity represents its schedule of work. The start of the bar marks the commencement of the activity and the end of the bar, its completion. The length of the bar on the calendar scale represents the duration of the activity. Horizontally, each row depicts the activity description, activity data and rectangular shape bar represents the activity schedule

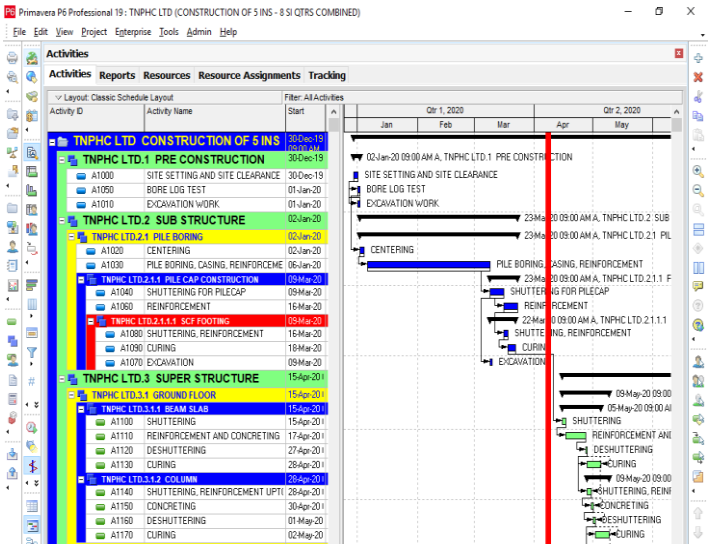

Fig 5 Gantt Chart for activity

8. RESOURCES LEVELLING

The resources required for the execution of each activity is classified under three categories namely labour, non-labourand material. The manpower assigned for the activity is categorized under labour, equipment that are used for execution is categorized under non-labour, materials like cement, bricks, steel etc. are categorized under the Material. In dealing with project resources, two main types of techniques have been used: resource allocation and resource leveling. Figure: 7.1Table displaying the list of all the resources divided into Management and executives, labour, machinery and materials involved in the project.

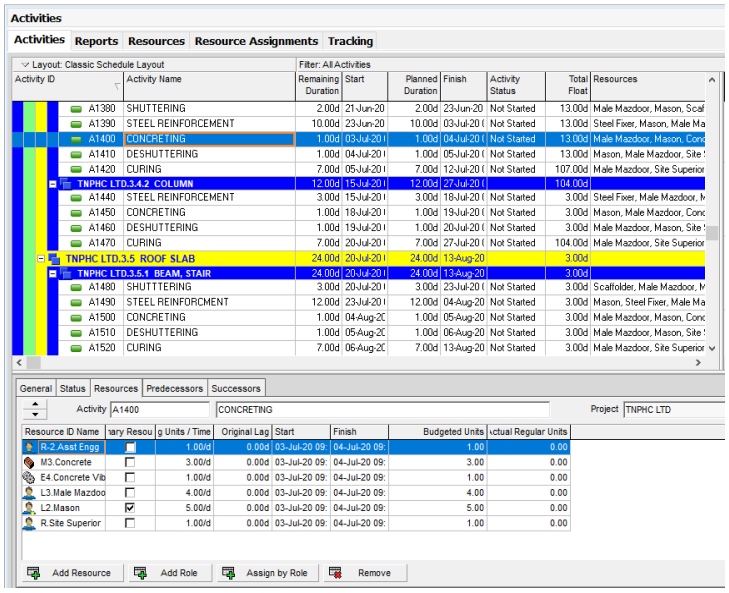

Fig 6 Resources allocation details

9. RESULT AND DISCUSSION

After analysis on Primavera P6, It was observed that after planning and scheduling, the time duration of the building completion was reduced by nearly 1 month. Hence after careful studying this software one can control the project in terms of duration hence leading to cost optimization.

10. CONCLUSIONS

Primavera is an ideal tool for anyone who is involved in planning, monitoring and reporting on the progress of projects both large and small. It also means that all parties can be kept updated within one system, reducing duplicate information and keeping everyone in the loop. This project emphasizes the use of project management software precisely primavera on construction. By tracking a stimulating project, the various interpretations of activities and resource relation using software were explained in detail.

Primavera software helped us in Fast tracking of each activity in the project and there by reducing the time consumption as compared to manual scheduling.We could sort the exact activity or sub-activity that caused delay in the project and we could optimizethe durationwith respect to it .When compared to manual scheduling this was very useful for us to optimize and allocate the resources which was time saving and accurate.

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