

Project Management by Using Primavera P6 Software

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Abstract – Construction manager faces numbers of challenges, through which some are new to the construction industry and some are many years old. The construction problems like workforce consideration, safety, time constraints, and altering nature of work. To minimize such issues proper project management tool must be taken in account. To achieve the project success effective cost and time management should be taken in account while planning the entire project. This paper is focussing on Bridge-Project scheduled by Oracle's Primavera P6 software.

Keywords- Primavera, Project Planning, Scheduling, Tracking.

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I. INTRODUCTION

The accomplishment of any construction project is judge by meeting the standards of cost, time, safety, resource allocation. The main objective of Project-Management is to achieve goals through the planned expenditure of resources that meet the project's quality, time, cost, scope, and safety requirements. Most of the construction companies in India followed Critical Path Method, Gannt Chart, Milestone Chart, and Precedence network diagram. This paper enlightens the use of Oracle's Primavera P6 software in Project Management and Gives its advantages over the traditional Project Management Methods.

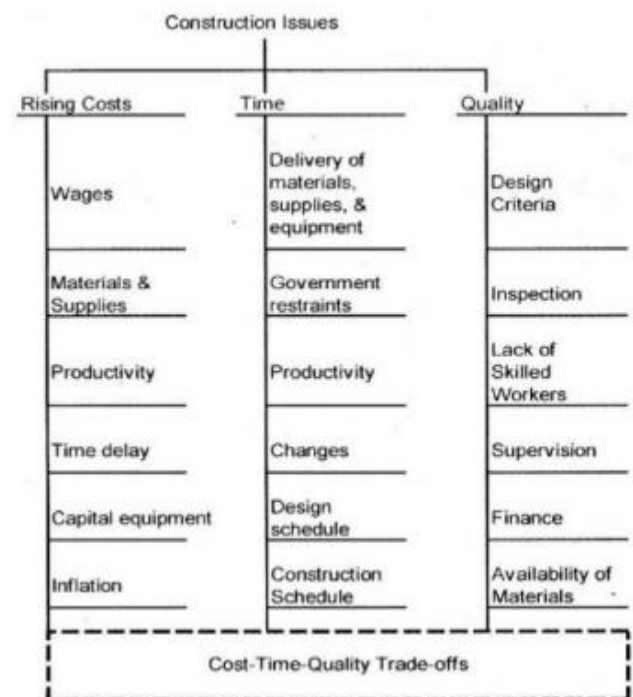


Figure 1.a. Challenges faced by Construction Manager

Above figure shows the various challenges faced by construction manager. The main construction issues are Rising Cost, Time, Quality, and Scope. Increasing in project cost is due to Wages, Material and Supplies, Productivity, Time delay, Capital Equipment and Inflation.

Time/Duration of project plays a vital role in any Construction Project. If there is an increase in time period, this directly affects the overall budget of project. The major factors by which time can be extended are Delivery of materials, supplies and equipment, Government restraints, Productivity, Changes, Design Schedule, and Construction Schedule.

Quality is an important factor through which project can earn maximum profit, if there is a lack in quality, project cannot get maximum profit. Overall, it should be kept in mind for any construction manager that quality of project does not get affected by Time and Cost.

For the success of any project there must be proper balance in Time-Cost-Scope, if any one of these gets affected or imbalanced it directly or indirectly affects the quality of the project. For this purpose proper management tools must be taken in account for scheduling, tracking and resource allocation purpose.



Figure 1. b. Time-Cost-Scope-Quality Diagram

As we all know India is expanding in construction sector very rapidly so we should be familiar with software's like Primavera which are highly advanced management tools. Primavera P6 has a web-accessible function by which we can operate and control the project at any location over the world.

II. LITERATURE REVIEW

Mohammed Zaki Haider, Rajendra.S and Vijay.k (2016) Author worked as an intern in National Construction Company for 4 months. He says that construction work is very complicated work with very much documentation that's why he uses Primavera P6 to simplify the work. Through his ongoing internship he collected data like, drawings from company, abstract of quantities and then he put this all data in Primavera software in proper manner. He created Organizational breakdown structure (OBS), Enterprise Project Structure (EPS), new project, new calendar as per the company schedule date. There are more than 700 activities in the ongoing project that's why he divided activities in Work-breakdown Structure (WBS), assigns relationship to the activities, assigns roles and resources of the project and finally analyzed the resources and leveled the project. For tracking purpose he generated the baseline of the project. Finally, he concluded that Oracle's Primavera P6 web

logic is advanced comparing with Primavera standard Primavera alone P6 for the purpose of site management.

P. Esakki Thangam, and R. Magdalene Benila (2016) Author says that planning is very significant in determining a success of any project, so without effective time controlling will cause project extension and resulted in cost overrun. In this paper, VOC project of Tuticorin is taken in account for the purpose of six lanes road construction. Scheduling, planning and tracking of six lane road is done by Primavera P6 software. The main objective is to work out the practical duration for activities. To optimize the time by using Primavera P6 software. At last author gives result that the contractors and subcontractors play an important role in the completion of project as per the schedule. The project completed in given contract time duration.

T. Subramani, A. Sarkunam and J. Jayalakshmi (2014) Author says that Industrial Building System (IBS) is oldest method for scheduling, planning and tracking of construction project although there is no improvement occurred in this system, due to lack of research works done to obtain the benefit of IBS in construction field. In this paper author compares the planning of high rise building with IBS method and Primavera Planner software. This study shows the different methods like Gantt Chart method, Critical path method, Network Scheduling Method and also discusses about limitations of this method. The methodology in this paper serves as a reference in achieving the aim of the study and discusses in details the exact procedure from data collection to data procedure to achieve the objective and scope of the studies.

Unmesh. Y. Polekar and Rohit. R. Salgaude (2015) Author says that Construction Project Intensive care acts like a notice mechanism; it is a procedure of collecting, recording and reporting information of the project. The purpose of this paper is to classify construction arrangement for the multi-storey building construction, to classify the scheduling techniques carried by the organization while developing plan and scheduling. And to identify the defects in the planning and scheduling procedure of organization. Organization has changed their weekly targets of contractors instead of monthly targets. Project manager, Engineers and other recruits are trained to use software during planning, tracking and scheduling.

III. Methodology of Work

For the research purpose I chose a bridge project site located in my home town Bhandara, Maharashtra on National Highway No. 6. There are more than 50 activities which give the complete clarity of planning of a project. These 50 activities

are further divided into various work-breakdown structures.

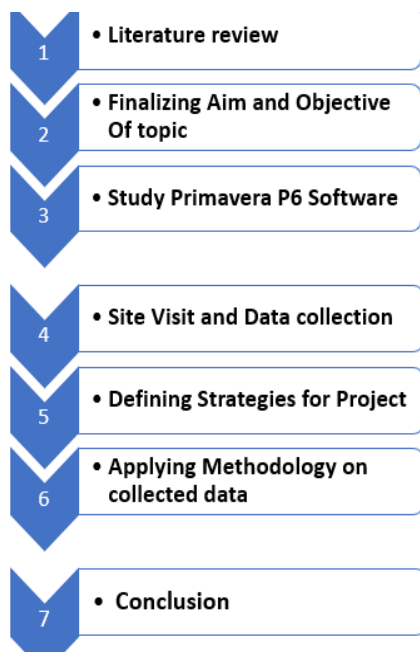


Figure 3 Methodology of work

Following methodology and analysis for steps involved in Primavera P6, Performing Planning and scheduling of the Project,

- Drawings collections from the company.
- Detailed about the quantities.
- Generation of OBS for the project.
- Generating EPS of the project.
- Creation of new project.
- Calendar generating for the project.
- Creation of WBS for the project.
- Creating and defining activities for the project.
- Defining Role and Resources for project.
- Assign Resources to the activities.
- Resource analysis and leveling of the project.

For tracking purpose and application administration of the project, following methodologies are adapted.

- Generating new baseline for the project.

- Updating growth of the project.
- Tracking improvement of the project.
- Budgeting the project.
- Portfolio of the project.
- Dashboard of the project.

IV. RESULT AND DISCUSSION ON THE PROJECT

- There are total 3 types of resources in Primavera P6 viz. Labor, Machineries, Material. All together nearly 65 resources I used in my project to allocate it in proper manner. As per the requirement of construction site all labors are different from each other based on there skills.
- There are 419 days required for construction of bridge.
- There are total 8 WBS or Phases in entire construction work with their duration is mentioned below:

Phase 1 Identify the Problem (28 days)

Phase 2 Determine the Constraints (69 days)

Phase 3 Design Refinement (18 days)

Phase 4 Implement Plan (68 days)

Phase 5 Construction (87 days)

Phase 6 Pre-stressed Concrete (84 days)

Phase 7 Final Step (42 days)

Phase 8 Testing and Inspection (23 days)

Cost of Each Phase:

Phase 1 Identify the Problem – Rs.6240/-

Phase 2 Determine the Constraints – Rs.19965/-

Phase 3 Design Refinement – Rs.5840/-

Phase 4 Implement Plan – Rs.23745/-

Phase 5 Construction – Rs.14797925/-

Phase 6 Pre-stressed Concrete – Rs.2203170/-

Phase 7 Final Step – Rs.95580/-

Phase 8 Testing and Inspection – Rs.6690/-

Total Budgeted Cost= Rs. 17,159,155/-

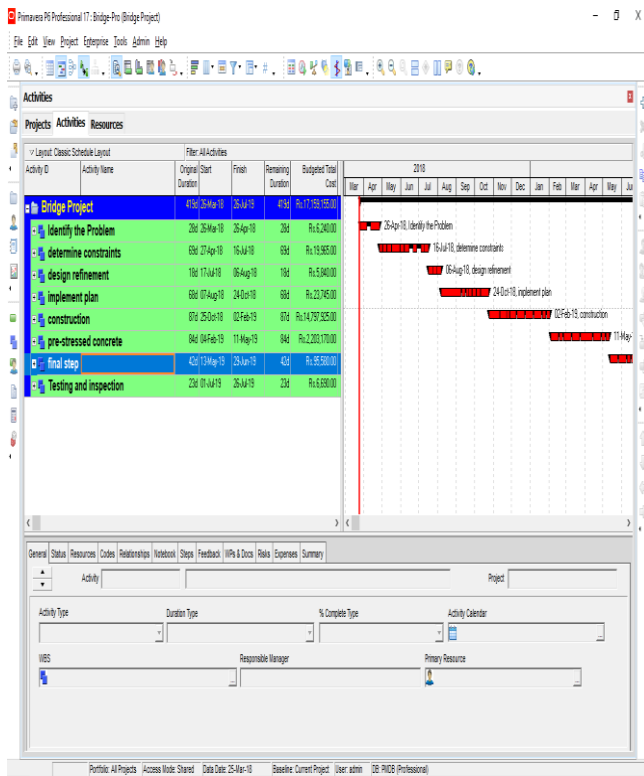


Figure 4 Cost of Each Phases

V. RESOURCES, ALLOCATION AND RESOURCE LEVELLING

The levelling of resources is toughest job in any scheduling software, after properly allocation of resources following graph is obtained: -

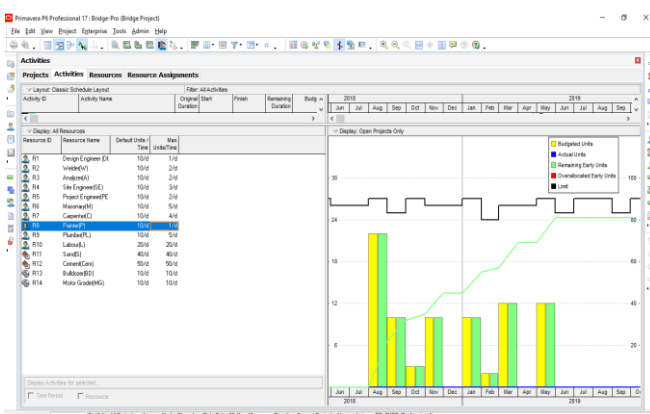


Figure 5.a. Levelled of Painter

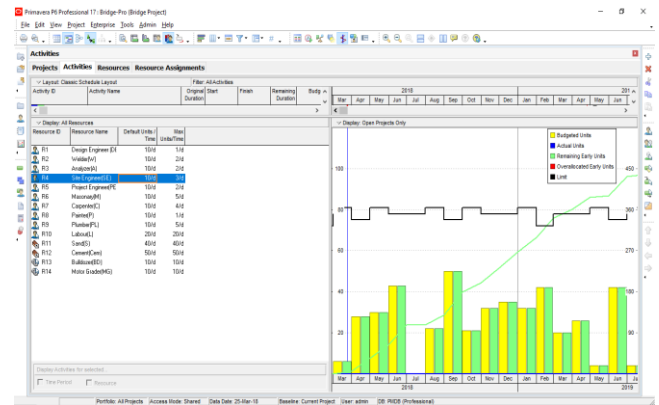


Figure 5. b. Levelled of Site Engineer

VI. CONCLUSION

The Oracle Primavera P6 is highly advanced in comparison with other traditional scheduling methods and software. It has much more advantages than other scheduling software. The web logic function of primavera makes it very advanced, one can operate project from any location of the world.

- ✓ Primavera P6 software is use to analyze the project planning in more accurate manner.
- ✓ Finding obstacles in planning is possible only when activities are clear and are in very detailed.
- ✓ Because of web assess a same project can operated from multiple users from any location of world
- ✓ The security can be maintained by providing login id and password.
- ✓ Control over the cost, management of time, management of working hours, update and monitoring carried out in a proper manner.
- ✓ Paper less project management at site can be done.
- ✓ Comparing multiple project at a same time can be done in primavera very easily at a same window.
- ✓ Proper resource optimization is possible during levelling of resources based on required conditions and constraints

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