

Planning, Scheduling and Tracking of building Using Primavera P6

Anurag Mahure¹, Amitkumar Ranit²

¹(Civil Engineering, Prof. Ram Meghe College Of Engineering Amravati, India)

²(Civil Engineering, Prof. Ram Meghe College Of Engineering Amravati, India)

Corresponding Author: Anurag Mahure1

Abstract : The wide acceptance of this software, especially in industries of developing cities has made the project managers to easily handle the large projects effectively and also resulted in low cost as when compared to conventional methods of management of project. The results indicate that this management tool has many features and benefits to lead to a successful project completion. It has been studied that professional project schedulers use PRIMAVERA to plan and analyze multiple projects to ensure the timely completions and within budget. In a complex project where large number of activities are performed at different places and different agencies and sub organizations, with each having its own scheduled targets, a small delay in the critical activity can affect many schedules. Delays in contracted projects or construction projected can results in penalties and adversely affect the reputation of the company. Construction project shall employ the latest and the best available project planning and management software Primavera project management, one of the most usable software package employed by a large group of industries. The planning process for a building construction with some alternative schemes such as execution schedule, activities relationship, resource allocation etc. has been attempted to examine the consequence of overall implementation in terms of scope and time to the project. Effective time planning is very important in determining a success of any project, poor planning and controlling of project will causes delay. To overcome this time running problem analysis can be done by using the primavera p6 software. In this project, primavera P6 software help the planning, scheduling, resource allocation and time management. This software gives better quality of construction management process and easily understanding results.

Keywords -planning, scheduling, primavera, monitoring,controlling, building, tracking.

Date of Submission: 06-08-2018

Date of acceptance: 23-08-2018

I. Introduction

The traditional project management system cannot meet the demands of today's projects, as tremendous amount of information and data on a project are always changing. Project managers from construction industry state that their 70-80% time is spent on communication and 70% of project documentation is paper based. The main objectives of this study are to plan, schedule, and track a residential project with help of primavera software, study the results generated, it is possible to suggest which method is suitable for the selected residential project. Project Monitoring acts like a warning mechanism; it is the process of recording, collecting and reporting information regarding project performance that the project manager and others wish to know. Monitoring includes watching the progress of the project against time, performance schedule and resources during actual execution of the project and it identified the lagging areas which require timely attention and actions. It is very common to see project failing to achieve their missions within specified time and budget, the factors causing overrun as stated above inadequate project formulation, poor planning and lack of project management during execution, but the main cause of failure can be attributed to cost estimation failure and management failure. Large projects become more complex and the ability to exchange information on paper within organization on a timely basis gets difficult. Project management software is a process which involves estimation, Rate analysis, sequencing the activities, resources calculation & allocation and allocating duration & relationship. The construction scheduling is to complete the project in time and equal the resources with the allocated time. There are many civil software available in market ,MS project and Primavera are widely used for planning and scheduling.

II. Literature Review

1. **Satinder Chopra:** concluded that the Activity ID and Activity Description both the most unused part can greatly enhance the quality of the schedule if used properly. It is the duty of the planning team to carefully decide the Activity ID structure in advance so, that schedule preparation flows smoothly without any

conflicts. Further research on how other fields like Original duration, Remaining Duration, Tasks bars in the Gantt chart, Start and Finish dates can be presented to give maximum understanding to the user for efficient schedule development.(1)

2. **V.dhanalakshmi (2016)**;.Study deals with the project monitoring process of the economical method of transporting a pipeline construction was completed in Ennore-Trichy-Madurai. Construction work and actual progress is a comparison between the planned progress of performed in this study using project management software Primavera P6. (2)
3. **P. Esaki Thaana**: foundtime management system is considered to perform a key role in organization, which is responsible to complete the project in a specific time, budget cost within a certain period of time. Poor time and cost performance are major problems faced by construction industry. The main objective of this research is to prepare the proper planning and scheduling for the 6 lanes road work construction at VOC PORT TRUST, Tuticorin. Time management and time control are done by primavera P6 software. The main advantage of project was timely execution and completion of the project using primavera P6 software. The road construction project has completed prior to the contract duration.(3)
4. **Y.Umesh(2015)**: Proper planning and scheduling is very essential in projects for sinking and scheming delays of the project. Extensive amounts of time, money, resources are wasted each year in a construction industry due to improper planning and scheduling. With globalization the construction projects have become infinite and complex. Planning of such projects requires huge amount of documentation work, which can be reduced with the help of project planning software. These study are to plan, schedule, and track a residential project with help of primavera software, study the results generated, it is possible to propose which method is suitable for the chosen residential project.(4)
5. **B.S.K.Reddy (2015)**: they did resource optimization exercises on two on-going projects in Dubai, UAE. They individually leveled and then combined option with aggregated and then leveled clearly indicates reduction in demand of resources by 5.65% in later option, which could be best considered for economy. They concluded Resource leveling at project job site and forwarding demand leads a possible sharing of resources among projects. (5)
6. **E. Suresh kumar (2015)**, Scheduling using Primavera Software is a development which involves estimation, sequencing the activities, resources allocation and timing. The construction scheduling is to complete the project in time and equal the resources with the allocated time. Scheduling using primavera Software gives good controlling.(6)

III. Steps Involved In Monitoring And Control

1. Creating EPS

To create an ideal schedule for any project, first step is to collect data available for the project. The following steps can be followed in Primavera P6 software. Create the complete structure of the company with its branches, which is executing the project using primavera P6. This is known as Enterprise project structure (EPS).

2. Creating new project

The project contains a set of different activities and associated information that constitutes a plan for creating a product or service. The project is created under respective divisions in EPS. The project can be given planned start and finish dates. The project is assigned a calendar which can be global, resource or project calendar.

3. Creating a calendar

The calendar can create and assign it to each activity. These calendars define the available work hours in each calendar days. Also specify national holidays, organizations, and project- specific work/non a workdays and resource vocation days.

4. Work breakdown structure

WBS elements have defined and organize the project elements. It helps to clearly identify the deliverables, report and summarize project schedule and estimated cost data at different levels of detail. WBS is a hierarchy of any project work that must be accomplished to complete a construction project. Each project has its own project WBS hierarchy structure with top level WBS element being equal to that of each EPS node of the project. Each WBS element contains more detailed in WBS levels, activities, or both resources constrains.

5. Defining activity

Activities are the fundamental and key work elements of a project and form the top to lowest level of a WBS and, are the smallest subdivision of a project. A project activity has the following characteristics like activity ID, activity name, start and finish dates, activity calendar, activity codes, activity type, constraints, expenses, predecessor and successor relationships, resources, roles etc.

6. Relationship between activity

To form a network, scheduling the activities should be connected to each other, which is done by assigning succeeding, preceding activities with significant relationship to the overall project activities.

- Finish to start (FS) relationship
- Start to start (SS) relationship
- Finish to finish (FF) relationship
- Start to finish (SF) relationship

7. Activity Duration

When planning the work, the project duration is entered in the original duration field. The actual duration can only be entered for the project activities, which are completed.

8. Activity Dates

The following types of project activity dates available in the primavera; actual start, planned start, actual finish, planned finish.

9. Creating baseline

A simple baseline plan is a complete copy of the original schedule which provides a target against which a project’s performance is tracked. Choose project. Maintain baseline. Then add and save a copy of current project as a new baseline B1. Then choose project baseline as B1 and assign primary baseline as B1. Daily updates to be made.

10. Resource assigning :

The resource allocation window shows all the resources grouped by labour and non labour. An approximate rate analysis was done for rates of individual resource groups, considering the various component resources. Most of the resources are taken as material. Machines are taken as non-labour and human worker is listed as labour.

11. Resource calculation:

For example: Resource calculation for Excavation.

Quantity to be Excavated = 3000 Cum.

No. of Days = 15

We know, the capacity of excavator is near about 240cum/day

No. of excavator require = $(3000/240)/15 = 0.83$ ^say 1 no.

As per CPWD, for 10 cum 2day mazdoor require

No. of mazdoor = $(3000/15)/5 = 40$ no.

IV. FIGURES

Activity ID	Activity Name	Activity Type	Original Duration
A1000	Award of contract	Start Milestone	0
A1010	Effective Date of contract	Task Dependent	1
A1020	Advanced payment	Task Dependent	1
A1030	commencement date	Task Dependent	1
A1040	Meeting	Task Dependent	1
A1050	Site establishment	Task Dependent	5
A1060	Mobilization of Labor	Task Dependent	8
A1070	Mobilization Of Machinery	Task Dependent	3
A1080	Basic engineering	Task Dependent	10
A1090	Architectural input	Task Dependent	5
A1100	Plumbing	Task Dependent	10
A1110	Electrical	Task Dependent	10
A1120	Detail Engineering	Task Dependent	15
A1130	Approved Drawings	Task Dependent	30
A1140	Site preparation and Leveling	Task Dependent	5
A1150	Surveying	Task Dependent	2
A1160	Excavation	Task Dependent	45
A1170	PCC	Task Dependent	15
A1180	Raft/Foundation	Task Dependent	25
A1190	Column Upto 0L	Task Dependent	20

Fig. 1: primavera report 1

Activity ID	Activity Name	Predecessor
A1000	Award of contract	
A1010	Effective Date of contract	A1000
A1020	Advanced payment	A1010
A1030	commencement date	A1020
A1040	Meeting	A1030
A1050	Site establishment	A1040
A1060	Mobilization of Labor	A1040
A1070	Mobilization Of Machinery	A1040
A1080	Basic engineering	A1030
A1090	Architectural input	A1080
A1100	Plumbing	A1090
A1110	Electrical	A1090
A1120	Detail Engineering	A1090 A1100 A1110
A1130	Approved Drawings	A1120
A1140	Site preparation and Levelling	A1040 A1050 A1060 A1070
A1150	Surveying	A1140
A1160	Excavation	A1140 A1150
A1170	PCC	A1160
A1180	Raft/Foundation	A1170
A1190	Column Upto GL	A1180
A1200	Ground Beam and Plinth Beam	A1190
A1210	Brick work Upto plinth	A1200
A1220	Bed Flooring	A1210
A1230	Column Ground floor	A1220
A1240	Beam & Slab Ground floor	A1230

Fig. 2: primavera report 2

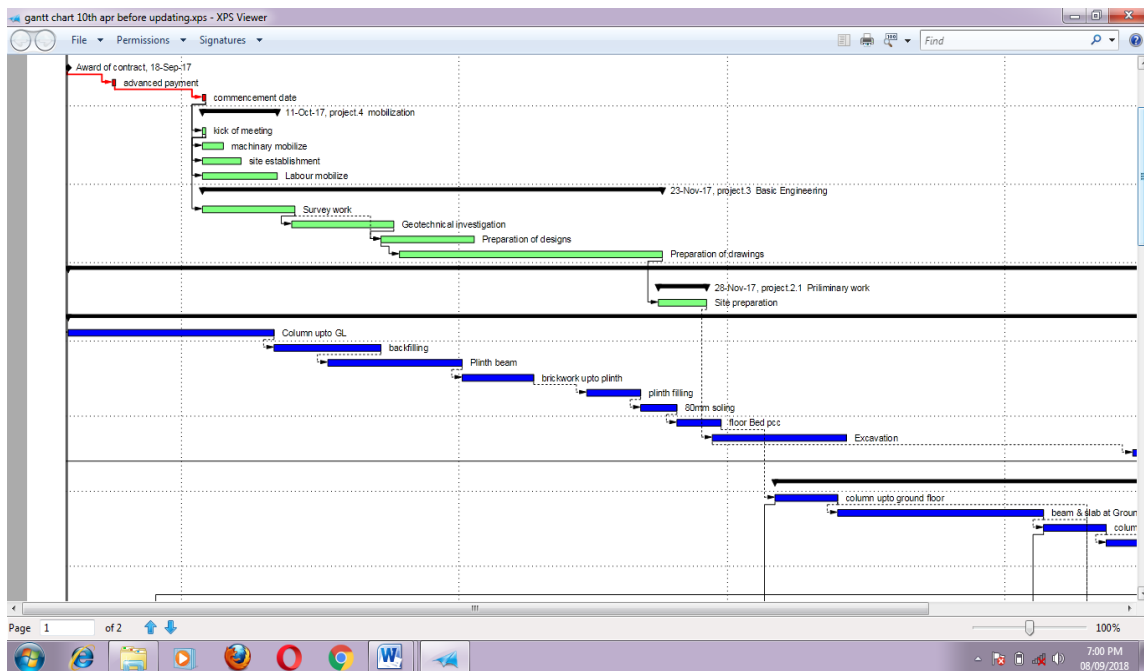


Fig. 3: Gantt chart

V. Further Scope And Conclusion

Due to an increasing competitive environment, construction companies are forced to be more efficient and achieve competitive operational advantage. Companies are always looking for improvements in equipment features, communication tools, efficient management techniques, and training human resources. Construction companies are also narrowing their focus, becoming specialists in certain types of construction projects. This specialization requires more focused on project planning and monitoring 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 construction time, reduced cost overruns and the minimization of disputes. It helps to avoid the construction interruption, keep the continuity of crew work, and avoid the delay of construction and cost overruns. Planning, monitoring and controlling, as well as the need and effectiveness of project management software like Primavera P6 in a construction project of this study was to understand the role of monitoring and control in the progress and timely completion of a construction project. This objective was achieved through revision of literatures and methodologies involved in monitoring and control. The study proved to be a guideline in understanding the progress of construction work.. Results of this

study show the drawbacks of the present project management system in running project and the importance efficient. An efficient and cost effective new project management plan is brought to conclusion.

References

- [1]. Satinder Chopra, Arvind Dewangan, Developing an Efficient Schedule in Primavera P6: Significance of Activity ID & Descriptions, International Journal of Innovative Research in Science, Engineering and Technology(An ISO 3297: 2007 Certified Organization) Vol. 3, Issue 7, July 2014
- [2]. V.dhanalakshmi, high cost infrastructure report monitoring by p6 software, international conference on engineering innovations and solutions(ICEIS – 2016)
- [3]. P. Esakki Thangam, R. Magdalene Benila, Planning, Scheduling and Time Management of Six Lanes Road Construction Work at V.O.C Port Trust using Primavera P6 Software IJSTE - International Journal of Science Technology & Engineering, Volume 2 , Issue 11 , May 2016
- [4]. Unmesh. Y. Polekar, Rohit. R. Salgude Planning, Scheduling and Tracking of a residential Project using Primavera Software, International Journal of Advance Research in Computer Science and Management Studies, Volume 3, Issue 5, May 2015
- [5]. T. Subramani, A. Sarkunam, J. Jayalakshmi, Planning and Scheduling of High Rise Building Using Primavera, T. Subramani et al Int. Journal of Engineering Research and Applications www.ijera.com ISSN : 2248-9622, Vol. 4, Issue 6(Version 5), June 2014, pp.134-144
- [6]. Vishal Annappa Nimbale, Prof. Balasaheb Jamadar, Planning, Scheduling and Allocation of Resources for multi-storied Structure using Oracle's Primavera p6 software, International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 04 Issue: 07 | July -2017
- [7]. Ms. Deepika Kand Mrs. Suchithra S, Study on effective scheduling and cost management of a project, International Journal of Modern Trends in Engineering and Research (IJMTER) Volume 03, Issue 03, [March – 2016]
- [8]. P Raghunath Reddy, B. Harish Naik Planning and Resource Scheduling of Residential (G+7) Project Using Primavera International Journal of Innovative Research in Science, Engineering and Technology(An ISO 3297: 2007 Certified Organization) Vol. 5, Issue 10, October 2016
- [9]. Vipin Kumar Dr. Shreenivasreddy Shahpur Maneeth P. D. Brijbhushan S., Analysis of Academic Building by Planning, Scheduling & Resource Allocation Using Oracle® Primavera P6, © 2017 IJSRST Volume 3 Issue 6
- [10]. Mr. akash rajkumar wadhwa, mr. dattatray santram shinde, project management using primavera p68.2 international journal of innovations in engineering research and technology [ijert] novateur publications, volume 3, issue 11, nov.-2016
- [11]. Chidambarakumar.M.G & Gomathi Sankar.G, Construction Scheduling Using Project Management Software, SSRG International journal of pf civil Engineering (ICRTCETM-2017)- Special issue-April 2017
- [12]. Hitanshu Saini, Khushpreet Singh, Uma Malik, Project Management Using Primavera International Journal of Civil Engineering and Technology (IJCIET) Volume 8, Issue 8, August 2017
- [13]. T.Siva NAGARAJU, Sri Lakshmana Kumar, Schedule and Resources Optimization Using Primavera in Metro Rail Project, International Journal of Mechanical And Production Engineering, ISSN: 2320-2092, Volume- 4, Issue-7, Jul.-2016

Anurag Mahure¹ “Planning, Scheduling and Tracking of building Using Primavera P6 International Journal of Engineering Science Invention(IJESI), vol. 7, No 8, 2018, pp. 60-64