



INTERNATIONAL JOURNAL OF PURE AND APPLIED RESEARCH IN ENGINEERING AND TECHNOLOGY

A PATH FOR HORIZING YOUR INNOVATIVE WORK



SPECIAL ISSUE FOR NATIONAL LEVEL CONFERENCE "Recent Trends and Development in Civil Engineering"

CONSTRUCTION PROJECT MANAGEMENT USING PRIMAVERA P6

PALAK PATEL¹, J. D. RAOL²

1. PG Student, Department of Civil Engineering, LDRP institute of Technology and Research, Gandhinagar, Gujarat-382015
2. Professor, Department of Civil Engineering, LDRP institute of Technology and Research, Gandhinagar, Gujarat-382015

Accepted Date: 27/01/2018; Published Date: 01/03/2018

Abstract: Although the long Construction industry has promised to solve and improve the current construction method and scenario in our country. In lieu with such scenario, this study conducted to quantify evidence of time and cost saving in Construction Project. Primavera is an amazing project management software tool which is not just used by project managers. Designed to make managing large or complex projects, Primavera is the ideal tool for anyone who is involved in planning, monitoring and reporting on the progress of any big task, development or venture. Primavera allows for top level planning as well as being ideal for managing the intricate details. This enables project managers, planners, planning controllers and other associated professionals to have instant access to all the project information they require at the touch of a button. This study measures the fluctuation in material productivity by collecting data regarding productivity of the Site using Primavera Software. Basically two different sites named New "B" Category Multi-storey Two Tower and Prestige Fintech are selected for data Collection. All data is entered in the Software named Primavera P6 15.2.

Keywords: Construction Management, Building, Material Productivity, Primavera.

Corresponding Author: PALAK PATEL



PAPER-QR CODE

Access Online On:

www.ijpret.com

How to Cite This Article:

Palak Patel, IJPRET, 2018; Volume 6 (7): 77-86

INTRODUCTION

Construction Industry is most ancient and also more developed Industry in all over the world. Construction Industry development is the indication of the country development. Most of construction projects including residential projects, commercial projects, highway projects, fly over's etc are the contribution of the construction industry to the country. This cost should within the budgeted value.

The material and machinery can be arranged easily but arrangement of manpower is difficult the cost of manpower is nearly 30% cost of overall project. Earned Value Analysis is the special technology using in many industry.^[1]

Project monitoring is the process of collecting, recording, and reporting information concerning project performance that project manager and others wish to know. Monitoring involves watching the progress of the project against time, resources and performance schedule during execution of the project and identifying lagging areas requiring timely attention and action whereas project controlling uses data from monitor activity to bring actual performance to planned performance.^[3]

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 construction time, reduced cost overruns and the minimization of disputes.^[2]

Construction projects cost is mainly depending on

- Materials,
- Manpower,
- Machinery.

Material Management

Construction material constitutes a major cost component in any construction project. The total cost of installed material may be 50% or more of the total cost. The goal of material management is to ensure that the materials are available at their point of use when needed hence, efficient procurement of material represents a key role in the successful completion of the work. Materials management is a critical component of the construction industry. As such, organizations need to understand the effects of proper materials management techniques on the effectiveness of project execution. Too often, construction projects suffer from delays, budget overruns, and claims.

“Material management is defined as the process to provide right material at right place at right time in right quantity so as to minimize the cost of project”. Material management is concerned

with the planning, identification, procuring, storage, receiving and distribution of material. The responsibility of Material management department for the flow of material from the time the material is ordered, received, and stored until they are used is the basic responsibility of material management. Materials represent a major expense in construction, so minimizing procurement cost improves opportunities for reducing the overall project cost.^[5]

Purposes of Material Management

The main purposes of Material Management are as below:

- Efficient material planning
- Buying or purchasing
- Procuring and receiving
- Storing and inventory control
- Stock and waste control
- Supply and distribution of material
- Quality assurance
- Good supplier and customer relationship
- Improved departmental efficiency
- Reduce the cost of project
- Time saving
- Achieve economy in project

To fulfil all these purposes, it is necessary to establish harmony and good co-ordination between all the employees of material management department and this department should have good co-ordination with the other departments of the organization to serve all production centres.^[5]

Primavera Software

Project Management software (P6) is a powerful, interlinked software system designed to create and analyze the CPM schedules used in managing construction projects; which allows to link multiple schedules together. Primavera is the industry leading project and program management solution for projects of any size.

Primavera helps to:

- 1) Obtain early warning of project risks
- 2) Improve visibility into project performance.
- 3) Collaborate with the project team.
- 4) Reduction in manual efforts for planning.
- 5) Reduction in possibility of manual errors.
- 6) Effectively listing the dependent activities for next activity.
- 7) Effectively tracking of execution of activities.
- 8) Proposing solution to minimize the cost variance and schedule delay.^[4]

Construction Company's project monitoring and controlling is very essential process to complete the work in time. But in most of cases work will not running as per plan. Primavera is the software introduced for proper monitoring. Earned value analysis is the tool to check the project progress in time and helps in taking better decision.

The present project work aim is to cost controlling and optimization by earned value analysis for a residential apartment Primavera software can be used in the all over India; it is powerful software to identify the problems and resolving methods. The utilization of software can be helps to proper running of project work.^[1]

Steps involved in Progress of Project by Primavera

Creating a New OBS: In an organization where top level management peoples designation is described under their professional experience is run into hierarchy level.

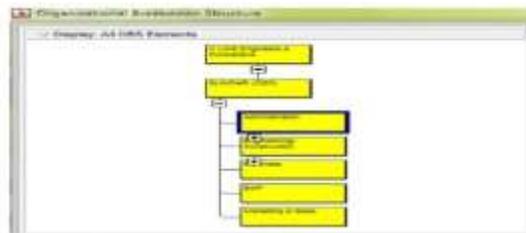


Fig.1 Organization breakdown structure

Creating a New EPS: The Enterprise Project Structure is centralized management of multiple projects categorizes work in the organization, a hierarchical based structure that represents how projects are organized.

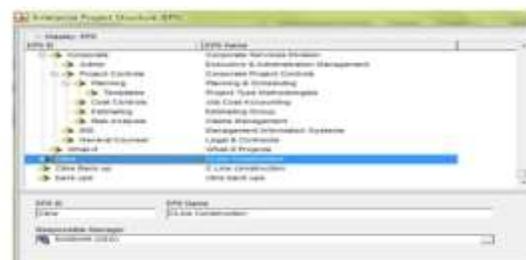


Fig.2 Enterprise Project Structure

Creating a WBS: The group of events and tasks in a project segregating or identifying into small work packages depending upon their merits is assigned in project



Fig.3 Work breakdown structure

Creating Calendars:

- Creating a new calendar or Modify to edit an existing one.
- Choosing the Calendar that we want to use as a template for new Projects.
- Modify the Work Week add work/non-work days.

Check the “Default” Box to make the default Calendar for all future projects

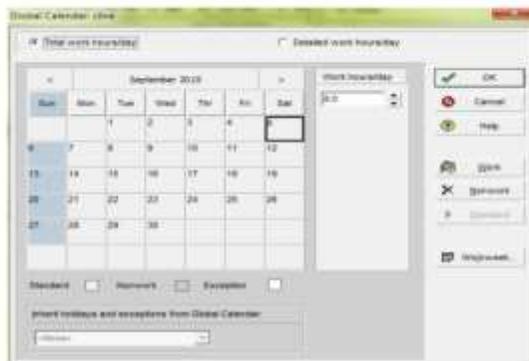


Fig.4 Assigning Calendars

Adding Activities: Activities are the primary work elements of project and they can further divided into steps. Activities are the lowest level of WBS.

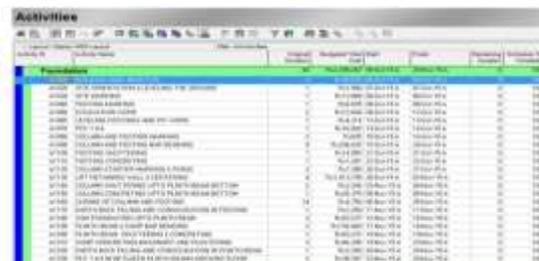


Fig.5 Activities tool bar

Duration: It’s the basis for estimating the selected activity’s completion time which helps to determine whether the schedule, resource availability or cost is most important when updating activities.



Fig.6 Duration

Assigning Activity logic Relationships:

- Adding the "Relationships "tab.
- Assigning to add Predecessors / Successors.
- Selecting the Predecessor /Successor from the list.

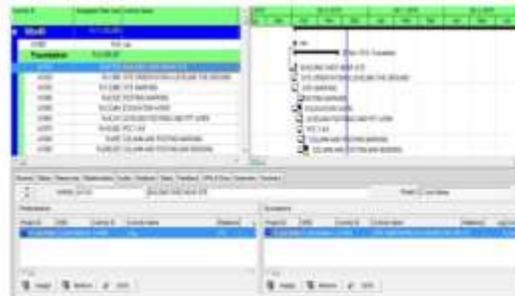


Fig.7 Assigning activity logic relationships

Scheduling: Its determination of timing of events in the project it also provides comparison of actual progress against plan and identifies deviations from the plan.



Fig.8 Scheduling

Resources: Assigning of generic resources to activities is to find out the total labour, material and equipment cost of the project.

Site Details

Project Details of Site-1

Project : Construction of New “B” Category
 Multistory Two Tower at Vastrapur
 Govt. Colony Ahmedabad
 Client : The Executive Engineer (City Division)
 R&B Division
 Project Location : Vastrapur Govt. Colony, Ahmedabad
 Project Cost : Rs. 21,24,97,150.44
 Contractor : M/S. Katira Construction Ltd. Bhuj
 Time Limit : 15 Months
 Physical Progress at Site : Rs. 04,95,00,000.00
 Financial Progress : Rs. 04,54,00,000.00
 Floor : G+7

Project Details of Site-2

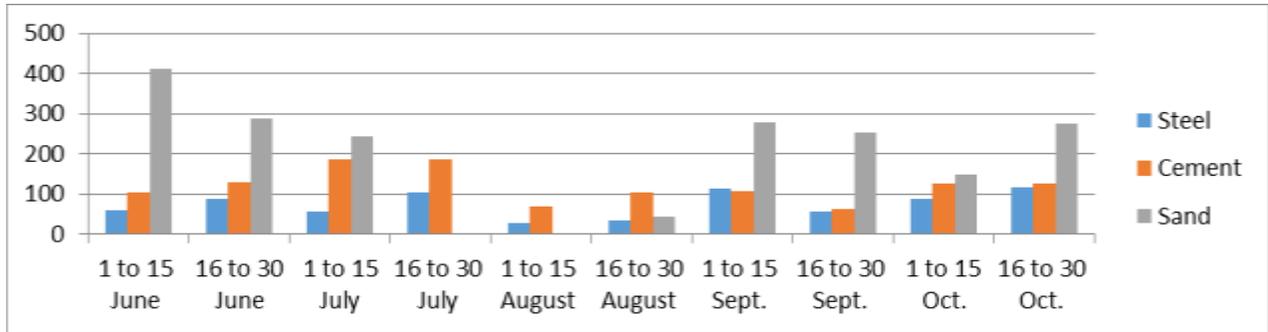
Project : Prestige Fintech
 Client : Prestige Ltd.
 Project Location : 53-C, Gift City, Gandhinagar.
 Project Cost : Rs. 52 Cr
 Contractor : PSP Projects Ltd.
 Time Limit : 1.5 Years
 Physical Progress at Site : Upper Basement Completed
 Financial Progress : Rs. 10 Cr
 Floors : -2+G+20

Material Data Collection

Data Collection from Site-1

	1 to 15 June	16 to 30 June	1 to 15 July	16 to 30 July	1 to 15 August	16 to 30 August	1 to 15 Sept.	16 to 30 Sept.	1 to 15 Oct.	16 to 30 Oct.
Steel	60.27	88.69	56.36	102.74	27.12	33	111.32	56.51	86.38	117.31
Cement	101.7	129.37	186.26	186.44	67.1	104.14	105.14	61.7	126.65	126.12
Sand	410.01	288.45	243.22	0.00	0.00	42.54	278.59	251.44	147.21	275.10

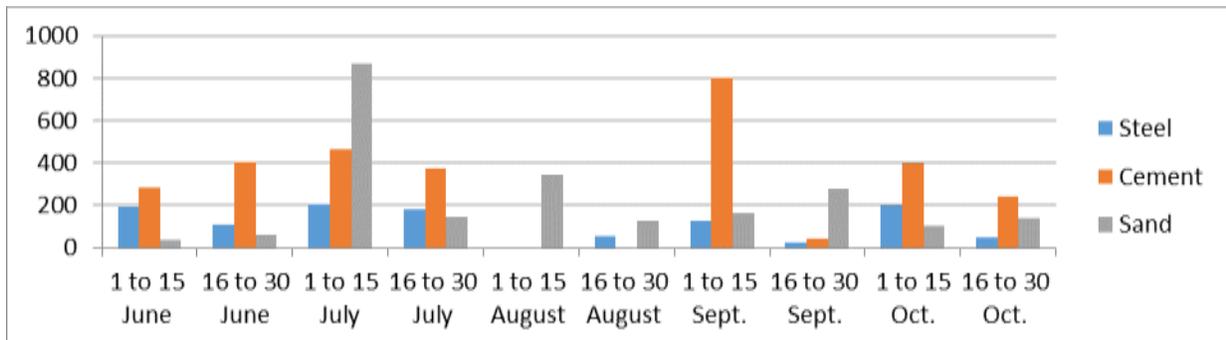
Table.1 Material data of Site-1



Data Collection from Site-2

	1 to 15 June	16 to 30 June	1 to 15 July	16 to 30 July	1 to 15 August	16 to 30 August	1 to 15 Sept.	16 to 30 Sept.	1 to 15 Oct.	16 to 30 Oct.
Steel	193.1	110.3	204.03	182.08	0	52.32	126.01	24.7	198.89	50.976
Cement	281.29	405.51	464.9	373.04	0	0	802.06	44.6	398.25	239.67
Sand	35.41	60.84	868.34	146.60	342.17	125.94	166.40	275.95	103.75	137.56

Table.2 Material data of Site-2



CONCLUSION

As seen from Graph of Site-1 for steel there is not much supply gap but for cement and sand there are considerable gap. For effectiveness of productivity, there is heavy monsoon in end of July-16 and Aug-16 so it can be arrange the material stock such that there is no requirement in Aug-16. As seen from Graph of Site-2 for steel and sand there is major supply gap. Because of heavy rain fall in Aug-17 they are unable to receive the cement bags. So, this type of supply gap makes less progress of work. So the final conclusion come up that Proper Material Management is necessary to overcome the problem of delay in Project work, for that the Primavera software is used for better Planning and Management of the Project.

ACKNOWLEDGEMENT

Apart from the efforts of me, the success of any project depends largely on the encouragement and guidelines of many others. I take this opportunity to express my gratitude to the people who have been instrumental in the successful completion of this project. I wish to express my deep sense of gratitude to my guide, Mr. J.D.Raol for their able guidance and useful suggestions. Words are inadequate in offering my thanks to the Mr. Kuldip Brahmabhatt for their encouragement and corporation in carried out the project work. Finally, yet importantly, I would like to express heartfelt thanks to my beloved parents for their blessings, my friends for their help and wishes for the project.

REFERENCES

1. Base Line Fixing and Earned Value Analysis in Construction Industry using Primavera by Suhas K B, Prof Vijay K, International Journal of Engineering Research & Technology, Vol. 5 Issue 08, August-2016.
2. Planning and Scheduling of High Rise Building Using Primavera By T. Subramani, A. Sarkunam, J. Jayalakshmi, International Journal of Engineering Research and Applications, ISSN : 2248-9622, Vol. 4, Issue 6(Version 5), June 2014.
3. Project Monitoring and Control using Primavera by Andrew Fernans Tom, Sachin Paul, International Journal of Innovative Research in Science, Engineering and Technology, Vol. 2, Issue 3, March 2013.
4. Schedule Variation and Cost in Project Management A Case study of Residential G+4 Apartment Bengaluru by Anudeep R, Akshay N K, International Journal of Engineering Research & Technology, Vol. 5 Issue 05, May-2016.
5. Study of Material Management Techniques on Construction Project by Aditya A. Pande, S. Sabihuddin, International Journal of Informative & Futuristic Research, Volume 2, Issue 9, May 2015.