

Tracking and Management of Resources for Construction Project Using (3d model)

Mohan M¹, Ravi kumar N²

¹P.G student, Department of civil Engineering, Meenakshi Sundararajan engineering college (MSEC), kodambakkam, Chennai – 24.

²Assistant professor, Department of civil Engineering, Meenakshi Sundararajan engineering college (MSEC), Kodambakkam, Chennai – 24.

Abstract – Tracking is the process of track based on resources, material, labour, time etc. Time management is valuable in the construction process. The basic step in the management are planning. The schedule is important in the construction work with in the time period the work is completed as per schedule. The labour is increase the completion of work is reduced inversely proportional to labour is less the completion work is high based on weather condition, natural occurs in the construction work.

The study deals with planning, scheduling and “Tracking and Management of resources for construction project using 3D Models”. The construction is ongoing process in chennai (alandur). The two apartment consist of Block A and Block B (G+2 Apartments). The tracking is based on the cost and schedule, late task, assignment delay. The customer satisfaction is very important in the construction project to show drawing

Like reality 2D convert to 3D model.

Key Words: Autocad, Revit, MS project, construction delay.

1. INTRODUCTION

Microsoft Project is part of the Microsoft Office family, but has never been included in any of the Office suites. It is available currently in two editions Standard and Professional.

Microsoft project has three versions:

1. Standard which is a desktop application and will only open a standalone file saved locally or on a server in single user mode.
2. Professional which is a desktop application which will either open a single file as the Standard version or download a file from a Microsoft Project Server.
3. Web, this is a browser based application that will open a file from a Microsoft Project Server. Most building and construction companies use the Standard version with their project files saved on a server.
4. The application is designed to assist project managers in developing plans, assigning resources to tasks, tracking progress, managing budgets and analysing workloads.

Microsoft Project creates critical path schedules to minimize the construction project.

2. NEED OF THE PROJECT

1. Tracking progress, managing budgets and analysing workloads of the project.
2. Microsoft Project creates schedule based on resources work.
3. The application is designed to assist construction managers in developing plans, assigning resources to tasks.
4. The scheduling and quantities of construction building will manage the Revit software.

3. OBJECTIVES OF THE PROJECT

1. To represent construction activities for a (G+2) Residential Building construction.
2. To develop planning and scheduling using Microsoft project software.
3. To tracking the progress of the project based on resource and project overview.
4. Preparing 3D model in Revit Autodesk for the construction building.
5. Preparing scheduling and quantities using Revit software.

4. SCOPE OF THE PROJECT

1. The cost of construction can be effectively controlled.
2. Project execution time can be minimized.
3. The critical path techniques used in the Microsoft project to reduce the schedule.
4. The BIM model is used to create visualization that help stake holders understand what the building will look like before it's built.

5. STUDY AREA

1. **Company Name:** sri Krishna construction (G+2).
2. **Address:** palayathan street,alandhur.
3. **Location** - Chennai.
4. Our proposed site is located at alandur, builder (sri Krishna construction)
5. The transport facilities which is near to site leads to railway station.
6. Ground floor (car parking)
7. Block A – 4 houses
8. Block B – 4 houses
9. The residential building consists of two bed room.

6. LITERATURE REVIEW

Gaurav S. Narlawar, (2019) The To complete a project under the complicated situations, it is important to follow effective ways to use available tools and methods, taking into account present technology and management. Also, it is challenging to prepare accurate and achievable plans in large construction projects. Visualizing forms at an early stage in building design improves the ability of designers to deliver ideas and the capability to inspect and assess the methods helps to predict and optimize the actual presentation of the construction project. These different features form the basis for Building Information Modeling (BIM). The archetypal problems like budget overflow, lack of communication, cost overruns, overtime delays, rework can be minimized with the use of Building Information Modeling (BIM) tools for building design & resource management. In this paper, the concept of Building Information Modelling (BIM) is used for 3D modeling, which involves 4th dimension as Time (4D), 5th dimension of Cost (5D) of the project. A case study of G+5 residential apartment is presented for 3D BIM modeling and quantity take-off with the commercial software Autodesk Revit 2019. The 4D BIM carried out using Primavera P6 is explained with methodology for a case study. Further, Autodesk Navisworks Manage 2019 is used for 5D BIM, which includes a graphical presentation of the construction schedule and cost estimation of the case study. [1]

Abhishek sharma, et al. (2015) Many project suffers time and cost overruns due to improper planning, scheduling and execution works that results in several issues like delay in providing facilities, development, reduction in quality of construction and making the project more expensive. A little consideration shows that the time required to complete the project is inversely proportional to the supply of manpower. As the manpower is increased, the completion time of the project is decreased and on the other hand if the manpower is decreased, the completion time of the project is increased. The present study deals with the manpower planning, scheduling and tracking of “Construction of a Residential Block at Mahadev Parisar, Bhopal”, a six storied (G+6) building project whose construction is in progress at Shivaji

Nagar, Bhopal, Madhya Pradesh. A comparison between the baseline duration and cost to actual duration and cost of manpower of project is also determined using project management software tool Microsoft Project 2013.[2]

Shabniya, et al. (2017) Construction industry could be considered as a very important sector for development all over the World and the construction cost estimation is the most important element in it. Realistic estimation of construction cost is vital for both successful planning and completion of every construction project. The key factor in a project success is the accurate cost estimation at its early stage. It is difficult to quickly and accurately estimate construction costs at the planning stage itself when project information is limited. This study was carried out to identify the factors affecting construction cost estimation. The factors were identified based on questionnaire survey. Questionnaires were given to 64 experts in the construction industry to determine the importance of construction cost estimation and to determine the score of each factor. Statistical analysis was carried out on the feedback of the respondents of the survey. RII value of the factors was found using Microsoft Excel. The mean score of each factor was determined and the p-value was calculated using the SPSS software. The significance of each factor used in the questionnaire was determined. The significant factors were identified using the mean score and their p value. [3]

Anne Ligorina, et al. (2017) Construction industry is an integral component of a nation infrastructure and industrial growth. Even though construction industry is the second largest industry in India, the growth of this industry has been differential across the nation. Proper planning, scheduling, tracking and application are the major parameters in construction industry. This study involves tracking of the ongoing construction and management of a new building using primavera. The tracking of the project during construction is necessary to control the variance in the project and to know the forecasting cost of the project. Construction planning and scheduling is one of the important tool in construction. In the present study the tracking and forecasting was done by a method called Earned Value Management (EVM). The importance of construction management has been reviewed and the tracking of ongoing residential building as well as the management of new construction of an apartment building has been done.[4]

Prof. R G Rathod, et al. (2016) Planning and scheduling have become an essential part of any project for the timely and economical completion of the project. A proper construction schedule can be used for different purposes. By using construction schedule to predict project completion, contractors can adjust crew size, shifts or equipment to speed or slow the progress. All the construction projects will vary from each other in size. All the projects have time constraint. Delay in completion of project will increase the overall cost of the project. Small projects can be managed efficiently manually; whereas large projects are not so large projects can be better handled by the use of computers. Many types of software are available with the help of which project management can be done easily. Large quantities of different

kinds of resources are also required for execution and the risk is more in the case of projects. So planning and scheduling of activities for construction of big projects is essential. In this study, an effort is made in planning, scheduling and delay analysis updating of various activities, which is done by using MS Project and MS Excel software, manpower of each activity is determined and allocation is done using the software. Labour requirement for each activity is calculated from standards obtained from site. An updated schedule, which helps to finish the project well in time with optimum resources and update helps in delay analysis, is under the scope of this study.[5]

Akshay V. Sagale, et al. (2019) Planning and scheduling are important task in construction projects. In this project, scheduling in Microsoft (MS) Project software, was undertaken. For planning and scheduling work huge amount of paperwork is required, which makes the management very burdensome. These problems can be solved using project management software which helps to give a planned approach to planning. This analysis was done because of their comparable technical features and to evaluate on the basis of the function to manage the project. Each software had many benefits; MS Project also scored best in terms of easy to use. In this study, a case of an apartment building has been taken to display how proper planning and scheduling is done using MS project.[6]

Kanase Swapnali, et al. (2019) Every one of us is a manager of projects of our own life. From a house wife to an employee to money expert, from banker to doctor, from engineer to manager from a teacher to a student, we all work on different tasks with deadlines. our occupation, normal behaviour, or location in an organization, we all work on tasks that are mixed and involve people who do not usually work together. The project may have a simple goals that does not require many people or a great deal of money or it may be quite complex, calling for (many different kind of people or thing) skills and huge amount of useful thing valuable supplies. But the bottom line is that every one of us manages projects. Because of this the purpose of dealing with the project should not be only execution but effective and (producing a lot of waste) execution of project is extremely important. Which is needed to be highlighted? Construction Firms in India, Construct the Projects in a Traditional ways, this sometimes proves Expensive & tiring & Boring too. Traditional way also proves to be Time Using/ Eating/ Drinking, and Confusing.[7]

T.M. Karthick, et al. (2018) This construction project study about excessive stake endeavour aiming at time certain programmed performance goal. Except combine resources are deliberate and procured, no activity may be completed in line with a pre fixed time table. Project managers ought to take complicated choices under exceptional scheduling desires and below situations of uncertainty that every so often expand past assignment intervals. Our project study offers with useful resource scheduling for a quick track project with constrained intervals. The learning has been executed in stages. Inside the first segment, with the useful resource of MS project software task time table for numerous activities for the development of a business constructing

become prepared. Finally, requirements of sources had been attributed to the activities primarily depend on Standard Schedule Rates. The considered necessary necessity information collected from the designated drawings and triumphing site online situations. The analysis was completed with the aid of useful resource levelling for diverse activities by way of reducing resources with accelerated length to observe the time-cost implications.[8]

7. METHODOLOGY OF WORK

The following are the steps involve in our project.

1. Site selection.
2. Data collection.
3. Drawing details.
4. Planning and schedule.
5. Data entry using MSP.
6. 3d models and schedule.
7. Result/Discussion.
8. Conclusion.

8. DISCUSSION

This paper aimed at presenting literature relevant to scheduling of construction project by using Microsoft project software. According to Padma Athani, et al. (2018), The construction project study about excessive stake endeavor aiming at time certain programmed performance goal. Except combine resources are deliberate and procured, no activity may be completed in line with a pre fixed time table.

Abhishek sharma, et al. (2015) Many project suffers time and cost overruns due to improper planning, scheduling and execution works that results in several issues like delay in providing facilities, development, reduction in quality of construction and making the project more expensive. A comparison between the baseline duration and cost to actual duration and cost of manpower of project is also determined using project management software tool Microsoft Project 2013.

Prof. R G Rathod, et al. (2016) All the projects have time constraint. Delay in completion of project will increase the overall cost of the project. Small projects can be managed efficiently manually; whereas large projects are not so large projects can be better handled by the use of computers. Many types of software are available with the help of which project management can be done easily. Large quantities of different kinds of resources are also required for execution and the risk is more in the case of projects. So planning and scheduling of activities for construction of big projects is essential. In this study, an effort is made in planning,

scheduling and delay analysis updating of various activities, which is done by using MS Project and MS Excel software, manpower of each activity is determined and allocation is done using the software.

Akshay V. Sagale, et al. (2019) Planning and scheduling are important task in construction projects. In this project, scheduling in Microsoft (MS) Project software, was undertaken. For planning and scheduling work huge amount of paperwork is required, which makes the management very burdensome. These problems can be solved using project management software which helps to give a planned approach to planning.

Table -1: Project details:

Project	Sri Krishna construction (Apartment)
Project started	Oct 29-2019
Project completion	June 23-2021
Duration	One year 7 month 25 days
Estimated cost	88,00000/-

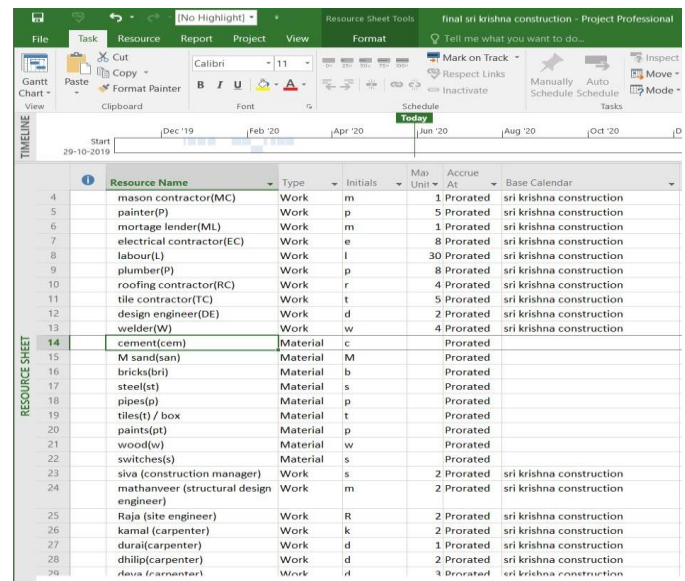


FIG 2: Resource sheet

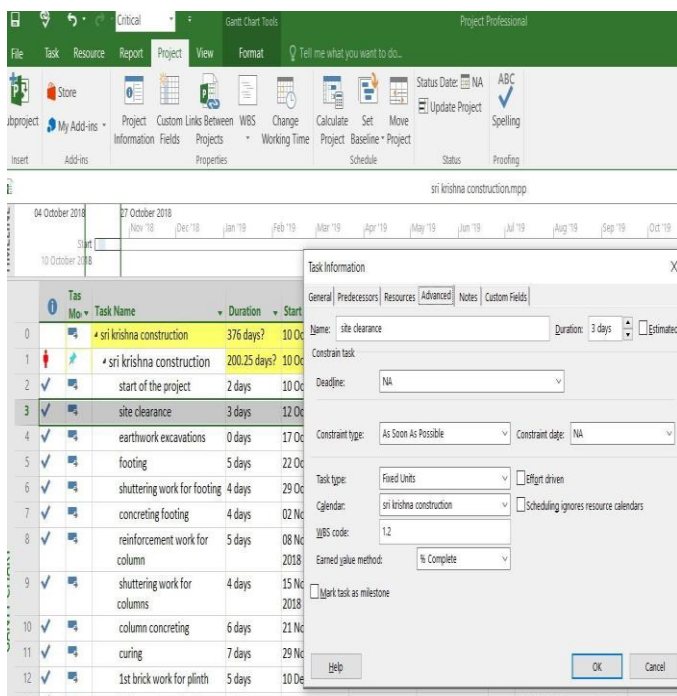


FIG 1 : Task Information

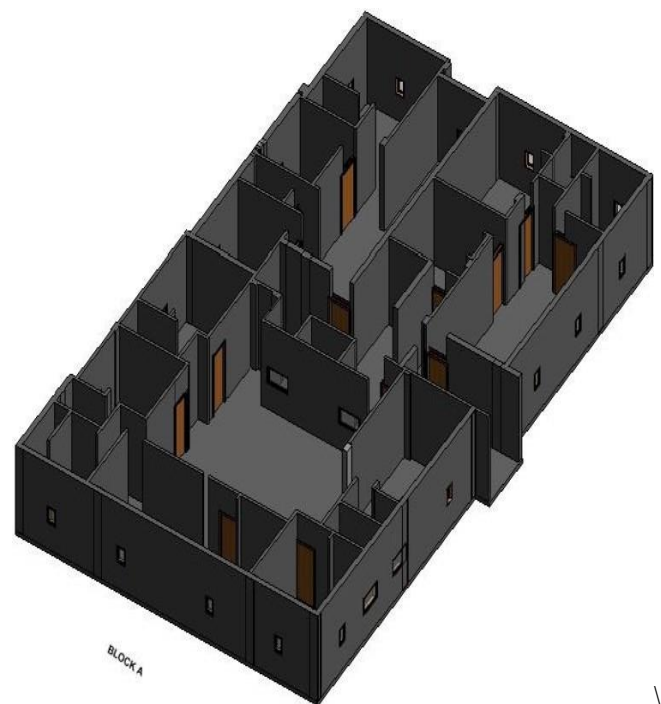


FIG 3: Block A

PROJECT OVERVIEW

29-10-19 - 23-06-2021



% COMPLETE
Status for all top-level tasks. To see the status for subtasks, click on the chart and update the outline level in the Field List.

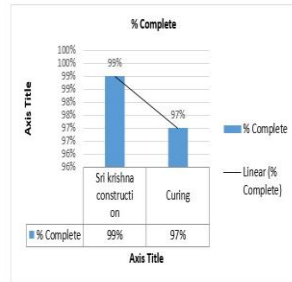


FIG 7 : Project Overview

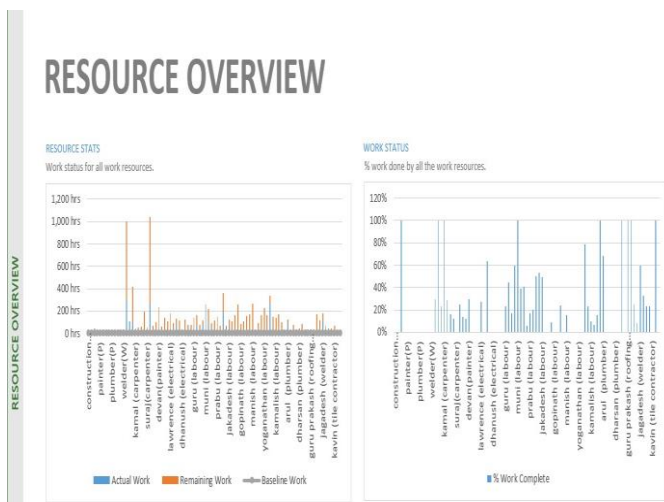


FIG 8 : Resource Overview

9. CONCLUSIONS

From the above literature review it is concluded that , project scheduling which done by using these project management software i.e. The main purpose to complete the project effectively without any delay of construction work. This software has much advantage, like it can be useful for scheduling, costing, allocation of resources, calendar, tracking of project, cost overview, and project overview and updating. Cost and schedule variance, late task, assignment delay. The customer satisfaction is very important in the construction project to show drawing like reality 2D convert to 3D model. By the use of this MSP software we can complete project successfully and at required time and budget. The BIM model is used to create visualizations that help stake holders understand what the building will look like before it's built.

ACKNOWLEDGEMENT

I would also like to thank Mr.N.Ravi Kumar, department of civil engineering for guiding me project work. I would like to thank all the staff and heads of MSEC (Meenakshi Sundararajan Engineering College),the ideas and valuable guidance.

REFERENCES

- [1] Padma Athani,etal.(2018)'Planning,Scheduling and Tracking Of Residential Building Using Microsoft Project' International Research Journal of Engineering and Technology vol- 5 Issue 7.
- [2] Abhishek Sharma et.al 'Manpower planning, scheduling and tracking of construction project by using MSP'. Journal of Today's Ideas- Tomorrow's Technologies, Vol. 3, No. 2, December 2015 pp. 161-169.
- [3] Ahmad Jrade, et al. (2015) 'An Integrated BIM System to Track the Time and Cost of Construction Projects' A Case Study, Journal of Construction Engineering.
- [4] Rathod Raj shekhar Gopal 'Planning,scheduling and delay analysis-case study' IARJSET ISSN 2393-8021,Vol. 3, Issue 6, June 2016.
- [5] Anne Ligorina,et al. (2017) 'Tracking and Management of Construction Projects Using Primavera' International Research Journal of Engineering and Technology vol- 4 Issue7.