

Planning, Scheduling and Allocation of Resources for Multi-storied Structure using Microsoft Project Software

Prof. Dr. Ansari U. S.¹, Mr. Siddhant Suryawanshi², Mr. Abhimanyu Taru²,

Mr. Jitendra Dasnur², Mr. Sanket Sonawane²

Assistant Professor, Department of Civil Engineering¹

Students, Department of Civil Engineering²

SND College of Engineering & Research Centre, Yeola, Nashik, Maharashtra, India

Abstract: *The focus of this work is to study scheduling styles and construction systems for multistorey structures, with the end of applying Microsoft Project software to plan and record a academic RCC domestic G+10 structure construction design. The study compares the traditional approach used by engineers, masterminds, and contractors with the ultramodern software fashion. compliances from the study indicate that Microsoft Project software is an effective tool for generating Gantt maps for construction design schedules. The software also offers the capability to determine the minimal duration of construction time through schedule scraping and design crashing styles. Overall, the study provides precious information on the operation of Microsoft Project software for planning and scheduling structure construction systems. The use of this software can help to streamline the scheduling process, increase effectiveness, and reduce costs associated with construction systems. It's important to note that while technology can be helpful in design planning and operation, it isn't a relief for educated professionals in the field who can give perceptivity and make informed opinions.*

Keywords: Project, Time, Cost, Scheduling, Resource Allocation, construction, Critical Path Method (CPM)

I. INTRODUCTION

The construction assiduity faces colourful challenges related to time operation, cost control, and design detainments. These challenges can be minimized through proper design planning, which involves detailing the strategy that should be followed to complete the design within the defined time, budget, and quality specifications. Effective design planning facilitates communication among stakeholders, documents planning hypotheticals and opinions, and develops approved compass, cost, and schedule nascence's.

Construction design operation is the wisdom and art of managing all aspects of the design to achieve design charge objects, specific time, budget cost, and predefined quality specifications. It involves working efficiently and effectively in a changing design terrain while icing the safety and health of construction workers. The charge of creating a construction installation or services is achieved through destined performance objects defined in terms of quality specifications, completion time, budget cost, and other specified constraints.

The presented work reviewed the generalities of exertion sequencing used in erecting construction, scheduling ways used in Microsoft Project Planner, and the development of construction planning and scheduling. The study provides information about the design from the launch to the end of construction, including what needs to be done before starting the design, during the construction, and after the completion of the design.

Microsoft Project:

Microsoft Project is a design operation software product, developed and vended by Microsoft. It's designed to help a design director in developing a schedule, assigning coffers to tasks, tracking progress, managing the budget, and analyzing workloads.

Microsoft Project is a comprehensive design operation software result that aids design directors in planning and executing their systems. It provides the tools to produce a detailed design plan, including tasks, mileposts, and deliverables. Once the plan is created, coffers can be assigned to each task, and the progress of each task and the overall design can be tracked. In addition, Microsoft Project enables design directors to manage the design budget and workload, icing that the design is on track and within budget. The four primary functions of Microsoft Project are developing a design plan, assigning coffers to tasks, tracking progress, and managing the design budget and workload.

II. LITERATURE REVIEW

Shruti Singh, Shweta Is tape, Amruta Survey, Sahil Pandey, Avinash Singh, Sangram More MGM CET, Kamothe, University of Mumbai, Navi Mumbai, India Project Management is the operation of knowledge, tools, ways and chops to any design conditioning to meet the conditions of the design. generally, numerous construction diligence in India don't exercise the use of design operation duly. inadequately managed systems generally affect in a huge quantum to all stakeholders not just financially but also psychologically and emotionally as well as it also consumes a lot of time. This has greatly motivated us to carry out the working and functioning of a design using ultramodern design operation tool, one of which is MSP (Microsoft Project). This paper consists of planning and scheduling of colorful conditioning involved in a construction design using MSP. The presented work easily gives the difference between carrying out the work using MSP and traditional planning ways.

Subraman i, T.M.Karthic k Managing Director, Priyanka Associates (Civil Engineers and Valuers), Salem, TamilNadu,India. Design Engineer, Indo Builders (Civil Engineers and Valuers), Dharmapuri ,TamilNadu, India The construction design under study aims to achieve a time- certain program performance thing through inordinate stake bid. Without precisely planned and carried coffers, it's insolvable to complete conditioning within a destined schedule. design directors face complex opinions under exceptional scheduling demands and uncertain conditions that occasionally extend beyond design intervals. This design study focuses on resource scheduling for a quick- track design with constrained intervals.

Nikhil R. Mahajan and M. V. Bhogone (2017) The methodology acclimated by them was to compare Microsoft Project and Traditional Method. Schedule was prepared for both conventional and prefabrication system. A domestic structure was taken for comparison. The software used was MSP, the duration needed for completion of design was collected from separate company. The comparison was made by comparing the total time needed for completion by using critical path system with MSP design. The result shows that the total duration for both the conventional and prefabrication system and prefab construction for individual house and double story the needed cost is 13 further than conventional but it reduces the design duration by 63 days.

R. Prabhakar and G. Ravichandran (2014) analyzed that; Construction planning is an important part of the overall management process. The planning and management include organizing the work, executing the work, correlating plan and progress information and controlling the work, the three inter-related factors of time, money and quality need to be managed in a proper way. Completion of many of the projects nowadays is not in estimated duration. This will direct to an increase in overheads as well as various other factors. It will not only reduce the expected revenues but also will affect the reputation of the contractor. Scheduling is one of the vital functions in construction project to determine the sequence of activities necessary to complete a project.

III. MODEL APPLICATIONS

MS Project Interface

We can see here interface of MS Project and what kind of options are available on MS Project. Here we can enter our data and can do many activities such as creating Gantt Chart, Resource Allocation, Scheduling, Estimation, Creating Reports and many more. -

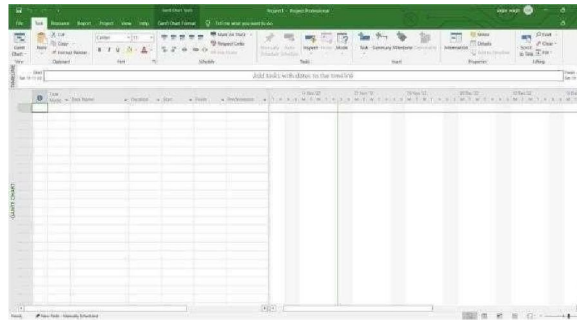


Fig 3.1. Microsoft Project 2021 shows blank project.

Scheduling Activities using network models

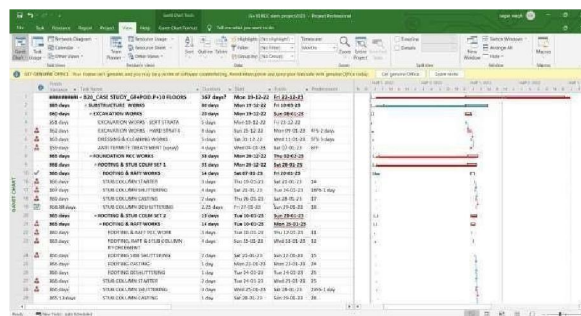


Fig 3.2. Scheduling of Activities

With the help of Microsoft Project, it's easily to understand and visualize the flow and network of the project. Users can also visualize parallel activities, which are activities that can be performed simultaneously, as well as slack or total float, which is the amount of time an activity can be delayed without affecting the overall project completion date. Microsoft Project allows users to create network diagrams that show the relationships between activities and help to identify dependencies and potential bottlenecks in the project schedule. By visualizing these relationships and dependencies, project managers can make informed decisions about scheduling and resource allocation, and can take appropriate action to ensure that the project stays on track.

Scheduling and Tracking Activities with Gantt Charts

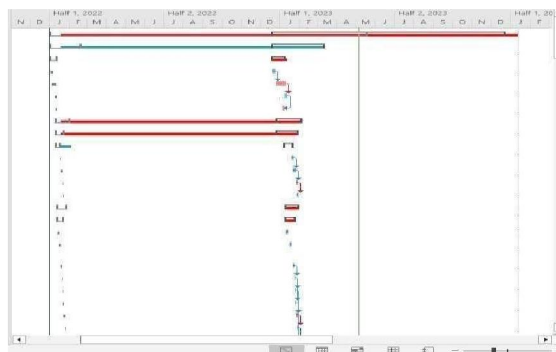


Fig 3.3. Gantt Chart

Gantt charts are a key visualization tool used in project management, and they are extensively used in Microsoft Project (MSP). The left side of the Gantt chart in MSP typically displays a sheet view, which shows information about the tasks and their associated properties, such as start and finish dates, durations, and dependencies. On the right side of the Gantt chart, there is a bar graph that shows the tasks along a timescale.

IV. RESULTS AND DISCUSSION

Using this software we got result about G+10 building and this result is very satisfactory such result are as follows.

Resource Overview



Fig 4.1. Resource Overview

Microsoft Project, resources are defined as people, equipment, or materials required to complete a project task. The Resource Overview provides an essential summary of the resources assigned to a project, their availability, and their workloads. It is a valuable tool for identifying resource conflicts, balancing workloads, and ensuring the effective use of resources in a project. Microsoft Project's Resource Sheet view displays a table of resources, including their names, types, and costs. This view can be customized by adding or removing columns based on the project's requirements. Additionally, the Resource Usage view provides a calendar-based view of resource allocation over time.

Resource Cost Overview

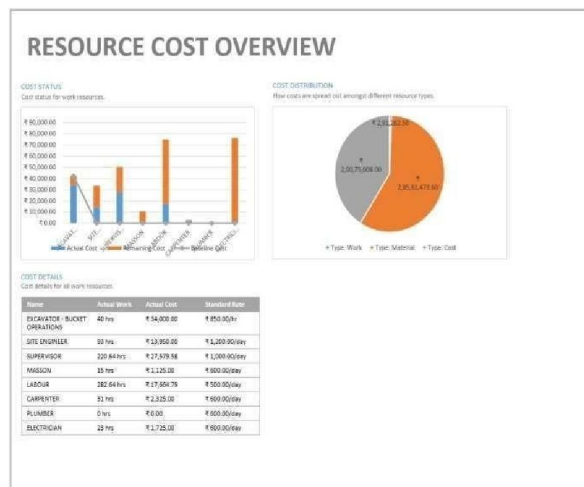


Fig 4.2. Resource Cost Overview

In Microsoft Project's Resource Cost Overview summarizes the costs associated with each resource in a project, including hourly rates, total costs, and any assignments or completed work.

This feature is an effective tool for monitoring and managing resource costs. It enables project managers to optimize resource allocation, identify cost overruns, and ensure the effective and efficient use of resources. Besides the Resource Cost Overview, Microsoft Project offers a variety of resource cost reports that help project managers analyze and manage

the costs associated with their project's resources. Some of these reports include the Resource Cost Summary, Resource Cost by Type, and Resource Cost by Assignment reports

Cost Overview

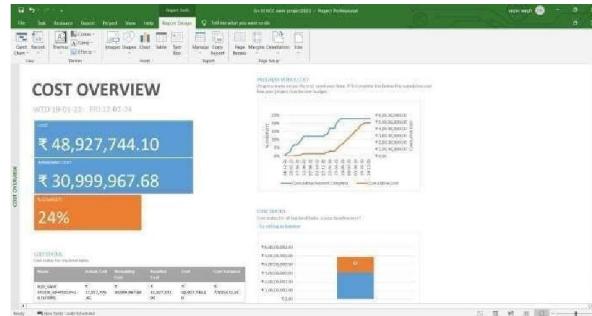


Fig 4.3. Cost Overview

The Cost Overview feature in Microsoft Project provides a concise summary of the costs associated with each task and resource in your project, which includes the total cost, actual cost, remaining cost, and cost variance. It is an invaluable tool for project managers to monitor and manage the costs associated with their project's tasks and resources. By using the Cost Overview, project managers can efficiently optimize resource allocation, identify cost overruns, and ensure effective use of resources.

Cost Overruns



Fig 4.4. Cost Overruns

A cost overrun happens when the actual cost of a project surpasses its planned or budgeted cost. Cost overruns can significantly affect a project's timeline, quality, and success. In Microsoft Project, the Cost Overview and other cost-related reports are valuable tools for project managers to identify cost overruns and take appropriate steps to address them.

Task cost overview

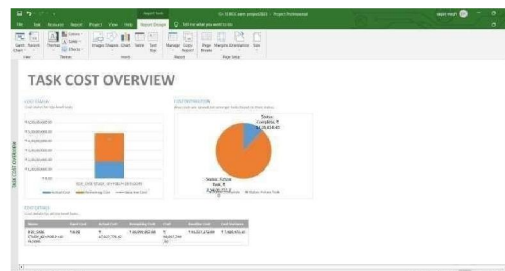


Fig 4.5. Task Cost Overview

The Task Cost Overview feature in Microsoft Project provides a comprehensive summary of the costs associated with each task in your project. It includes the total cost, actual cost, remaining cost, and cost variance. This tool is useful in tracking and managing task costs and ensuring that the project remains within budget and on track. Monitoring actual costs, analyzing variances, and adjusting the project plan as needed are crucial steps in achieving this goal.

Upcoming Tasks

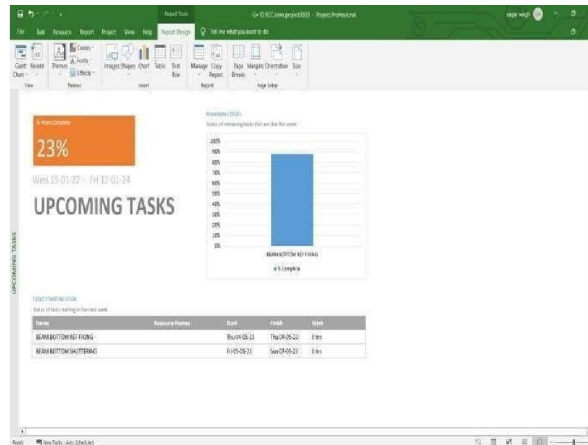


Fig 4.6. Upcoming Tasks

Microsoft Project offers two views to visualize upcoming tasks: the Timeline view and the Gantt Chart view. Once you have identified the upcoming tasks in your project, you can take essential steps to prepare for them. This may include allocating resources, reviewing task dependencies, and adjusting the project schedule as necessary

Network Diagram

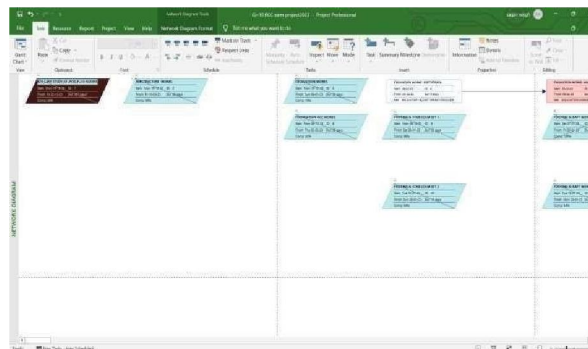


Fig 4.7. Network Diagram

Microsoft Project offers the Network Diagram view feature, which allows you to create a visual representation of the project's tasks and their dependencies. This diagram can help you identify the critical path of your project and any scheduling conflicts. Utilizing the Network Diagram view in Microsoft Project can provide you with a better understanding of the interconnections between project tasks and help you to identify any potential scheduling issues, which in turn can enable you to make necessary adjustments to your project plan and ensure that your project remains on track.

IV. CONCLUSION

Microsoft Project helps for scheduling, planning. Using this software we plan G+10 building, their schedule and their allocating. Using this software we plan easily, it reduce less time for planning, scheduling and allocation. We

used this software for reducing time and proper management of labor, and all resources in time. We experienced that this software is very useful for now days in construction field.

REFERENCES

- [1]. Shruti Singh, Shweta Istape, Amruta Surve, Sahil Pandey, Avinash Singh, Sangram More MGM CET, Kamothe, University of Mumbai, Navi Mumbai, India “Comparative study of planning and scheduling of a construction project using Microsoft project” International Journal of Research in Engineering and Technology (IJRET) 23- 05-2018
- [2]. Mr. Dipesh R. Wallecha, Prof. Manish D. Mata, Civil Engineering Department SSGBCOE T, Bhusawal” A Review on Application of Microsoft Project Software in Multi- Storeyed Buildings” International Journal for Research in Applied Science & Engineering Technology (IJRASET) May 2020
- [3]. Shubham Laddha , Prerna Chanda and Sneha Khedekar. Student (BE Civil, AISSMS COE, Pune, India). Assistant Professor (AISSMS COE, Pune, India).” PLANNING AND SCHEDULING OF A PROJECT USING MICROSOFT PROJECT(MSP)” International journal of Advanced research (IJAR) June 2017
- [4]. Nikhil R. Mahajan and M. V. Bhogone (2017) The methodology adapted by them was to compare Microsoft Project and Traditional Method
- [5]. R. Prabhakar and G. Ravichandran (2014) analysed that; Construction planning is an important part of the overall management process