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Planning, Scheduling Costing of G+4 Residential Building by Using Microsoft Project Software

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ABSTRACT: Project management in construction aims to accomplish the precise goals by virtue of perfect planning, scheduling, executing, monitoring, cost optimization, controlling time and resource optimization. It directs the project time to accomplish a project successfully within specified cost as well as time. Improper project management and using traditional practices reduces the efficiency of the construction industry, which affects the project in the form of increasing the duration of the project, this leads to increase in the overhead cost of the project and poor quality of work. In order to eliminate these flaws in construction, an effective Project management tool is introduced in the form of Microsoft Project Software. It is designed for developing the schedule, assigning the resources to tasks, tracking progress and managing the budget. This project aims at planning, scheduling, costing and resource allocation of a residential building(G+4) with various methods such as bar chart and critical path method by using Microsoft Project Software.

KEYWORDS: Microsoft Project, Scheduling, Planning, Costing.

I. INTRODUCTION

The construction industry is an integral part of India's infrastructure and economic development. It faces many challenges, such as time and cost overruns due to poor design, poor planning, lack of commitment, and quality control. Management skills are important to complete the work on time, and there should be some kind of reporting mechanism to remind the organization of its success and failure. Rural areas need tools for economic development, land use, and environmental planning, and the time available to achieve this goal is running out. The solution to this problem can be using newly introduced software to get the work done quickly.

Microsoft Project is a project management software product, developed and sold by Microsoft. It is designed to assist a project manager in developing a schedule, assigning resources to tasks, tracking progress, managing the budget, and analyzing workloads.

Microsoft Project is the most widely used tool for project scheduling and levelling finite resources. It helps the project manager avoid delays caused by resource allocation, and can automatically level resource calendar, tasks, dependencies, constraints, etc. Analyzing activities and their scheduling duration, a material resource procurement sheet is prepared. Microsoft Project is designed to assist a project manager in developing a plan, assigning resources to tasks, tracking progress, managing budgets, and analyzing workloads.

Benefits of Microsoft Project include:

Planning, scheduling, and tracking projects

Levelling over-allocated resources

Generating reports and graphics

Controlling and monitoring costs

Analyzing risks and impacts easily

Comparing project plans with project performance.

II. RELATED WORK

Microsoft Project is a project management software product, developed and sold by Microsoft. It is designed to assist a project manager in developing a schedule, assigning resources to tasks, tracking progress, managing the budget, and analyzing workloads. The construction industry is an integral part of India's infrastructure and economic development. It faces many challenges, such as time and cost overruns due to poor design, poor planning, lack of commitment, and quality control. Management skills are important to complete the work on time, and there should be some kind of reporting mechanism to remind the organization of its success and failure. Rural areas need tools for economic development, land use, and environmental planning, and the time available to achieve this goal is running out. The solution to this problem can be using newly introduced software to get the work done quickly.

Project Planning:

Project planning is the most challenging phase of the project life cycle, as it involves creating plans to manage time, cost, quality, changes, risk, and external suppliers. It involves making an educated guess about the staff, resources, and equipment needed to complete the project. The purpose of the project planning phase is to establish business requirements, cost, schedule, list of deliverables, delivery dates, resources plans, and obtain management approval to proceed to the next phase.

Project Scheduling:

Scheduling is essential for successful project management, determining the timing of activities, deliverables, and milestones. The purpose of project scheduling is to assist with tracking, reporting, and communicating progress, ensure everyone is on the same page with tasks, dependencies, and deadlines, highlight issues and concerns, identify task relationships, and monitor progress to identify issues early.

Project Tracking:

Tracking is essential for construction projects to compare plan to actual progress, manage time and activities, and keep track of the budget. It helps to analyse delays, schedule deviations, and identify necessary preventive measures.

III. METHODOLOGY

Step 1 – Start a new project : Project focuses primarily on time sometimes one might know the expected start date of project the expected finish date or both.

Step 2 – Representing project calendar : Calendars are primarily means by which one control when each task and resource can be schedule for work in project. The project calendar defines the general working and non-working days and time for tasks.

Step 3 – Assign resources to task Resources include the people, equipment and material needed to complete the work of the project.

Step 4 – Gantt chart view: The Gantt chart became a standard way of visualizing schedules. On a Gantt chart, task, summary tasks all appear as Gantt bars.

Step 5 - Critical Path : A critical path is the series of tasks that will push out the plans in date if any of those tasks are delayed.

Step 6 – Creation of Baseline: A base line is a group of nearly 20 primary reference point that one can set to a record to the original project plan when that plan is completed and refined.

Step 7 – Tracking of project : The simplest approach to tracking the progress is to report that The actual work is proceeding exactly as planned.

Step 8 – Result & Discussion: Total cost of project and total duration of project.



IV. EXPERIMENTAL RESULTS

Task ID	Task Name	Duration	Start	Finish	Resource Names	Cost	% Work Comp
1	me proj bmt	491 days	01-06-23	24-12-24	centering & shuttering rate for superstructure[1,050 sqft]	₹ 6,093,270.00	
2	Apply for Permits	11 days	01-06-23	13-06-23		₹ 20,800.00	
3	Document review & plan formation	9 days	01-06-23	10-06-23	architect	₹ 10,800.00	
4	Securing electrical permit	2 days	12-06-23	13-06-23	electric agent	₹ 10,000.00	
5	Secure sanctioning permit	30 days	14-06-23	18-07-23	architect	₹ 36,000.00	
6	Site cleaning	1 day	19-07-23	19-07-23	jcb[1],supervisor	₹ 1,900.00	
7	Layout	1 day	20-07-23	20-07-23	labor[2],supervisor,site engg,lime powder[5 kg]	₹ 3,150.00	
8	Sub structure	31 days	21-07-23	25-08-23		₹ 469,620.00	
9	Excavation	3 days	21-07-23	24-07-23	supervisor,labor[3],jcb 2	₹ 33,300.00	
10	Preparation of steel mesh	2 days	21-07-23	22-07-23	labor[7],steel[700 kg]	₹ 49,000.00	
11	PCC	2 days	25-07-23	26-07-23	karagir[3],labor[6],supervisor,sand[100 cuft],coarse agg[100 cuft],cement [22	₹ 25,800.00	
12	Column line out	4 days	27-07-23	04-08-23	labor[2],karagir,site engg,supervisor	₹ 7,300.00	
13	Footing	2 days	28-07-23	05-08-23	site engg,labor[8],karagir[3],supervisor,cement [182 bags],sand[217 cuft],coar	₹ 95,995.00	
14	Column	4 days	31-07-23	22-08-23	karagir[3],labor[4],supervisor,cement [112 bags],sand[217 cuft],coarse agg[33	₹ 65,295.00	
15	Ground beam	2 days	01-08-23	02-08-23	labor[8],supervisor,site engg,cement [56 bags],coarse agg[250 cuft],sand[250	₹ 38,400.00	
16	Brick work up to plinth level	4 days	01-08-23	25-08-23	mason [2],labor[4],brick[2,040 no.],cement [10 bags]	₹ 31,380.00	
17	Murum filling	1 day	03-08-23	03-08-23	supervisor,jcb 2,murum[2,100 cuft]	₹ 20,100.00	
18	Compaction	2 days	04-08-23	05-08-23	compaction machine	₹ 8,000.00	
19	plinth beam	2 days	07-08-23	08-08-23	karagir[3],labor[5],supervisor,cement [53 bags],coarse agg[200 cuft],sand[200	₹ 41,650.00	
20	Installation of septic tank and plumbing pipe	3 days	09-08-23	11-08-23	plumber,helper[4],pipe fitting[1 no.],septic tank[1 no.]	₹ 21,900.00	
21	Bed concrete for plinth	2 days	12-08-23	14-08-23	karagir[3],labor[6],cement [60 bags]	₹ 31,500.00	
22	Super structure	6 days	15-08-23	21-08-23		₹ 39,550.00	
23	Column line out and column starter	2 days	15-08-23	16-08-23	karagir[3],labor[4],cement [1 bags]	₹ 8,850.00	
24	Column casting up to 7 feet	4 days	17-08-23	21-08-23	karagir[3],labor[4],cement [22 bags],coarse agg[100 cuft],sand[100 cuft]	₹ 30,700.00	

Fig.1

Figures shows the result of the costing of building and days required for it.



FIG.2

RESOURCE OVERVIEW

RESOURCE STATS

Work status for all work resources.

WORK STATUS

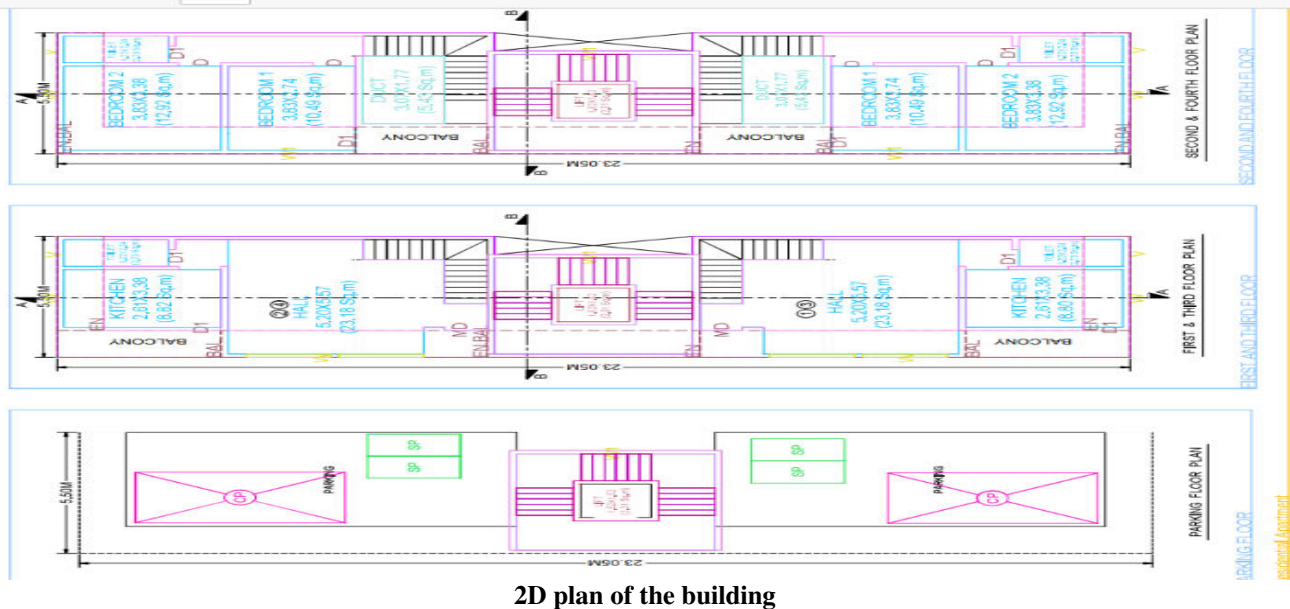
% work done by all the work resources.

RESOURCE STATUS

Remaining work for all work resources.

Name	Start	Finish	Remaining Work
architect	01-06-23	18-07-23	0 hrs
site engg	20-07-23	17-09-24	0 hrs
supervisor	19-07-23	13-09-24	0 hrs
mason	01-08-23	24-12-24	0 hrs
labor	20-07-23	21-12-24	0 hrs
plumber	09-08-23	28-10-24	0 hrs
electrician	01-12-23	28-10-24	0 hrs
painter	06-12-24	12-12-24	0 hrs

FIG.3



V. CONCLUSION

From above we concluded that estimation in Microsoft project is fast, automatic, easy, efficient and have less chances of error. It was used to plan and schedule labor activities in construction project. Estimated time of completion was 491 days. And costing of this project (labor cost+material cost) is RS. 6,093,270.

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