CONSTRUCTION PLANNING AND MANAGEMENT OF A (G+2) RESIDENTIAL BUILDING

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Abstract: Construction management plays a vital role in any large-scale building activity all over the world. There is need of many alternative building materials since the conventional materials are supplied and also cause degradation of the environment. In this work, we have done construction management in residential framed structure using project planning and management software primavera. Proper planning and scheduling is very important in construction projects to reduce and control delays in the project. Substantial amounts of time, money, resources are wasted every year in construction industry due to improper planning and scheduling. 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 scope and time to the project. Detailed Estimation has been done to determine the material, man power, money required for the completion of this residential building. In this project, Primavera software helps in planning, scheduling, resource allocation and time management to ensure timely completion of project within estimated budget when compared to conventional methods of management of projects.
Keywords: Scheduling, Microsoft project, resource allocation, time management.

INTRODUCTION

Construction projects are time bound and all project activities are directed towards the achievement of project objectives with respect to time, scope and quality. In a complex project where large number of activities are performed at different places by different agencies and sub organizations, with each having its own scheduled targets, a small delay in the critical activity can affect successor activities in schedule.

Project planning and scheduling aims at timely execution of work according to the project planned schedule and can apply corrective measures in case of any time deviations. In a broader sense, time control implies the control of the entire planning system, as time is directly or in-directly related with all project activities and project functions.

Quality assurance provides protection against quality problems through early warnings of trouble ahead. Such early warnings play an important role in the prevention of both internal and external problems.

The term “Construction Project” refers to a high-value, time bound, and special construction mission with predetermined performance objectives. The project mission is accomplished within complex project environments, by putting together human and non-human resources in to a temporary organization headed by the ‘Project Management’.

Project Management is the Planning, Organizing, Directing and controlling of company resources for a relatively short-term objective that has been established to complete specific goals and objectives.

Due to the resource-driven nature of construction management, the construction manager must develop a plan of action for directing and controlling resources of workers, machines and materials in coordinated and timely fashion in order to deliver a project within the limited

funding and time available. Hence, aside from a technology and process focus, a resource-use focus must be adequately considered in describing a construction method or operation in a project plan.

In general, construction projects are high value, and they employ huge resources of men, materials and machines. Major works involve heavy investments, say from a hundred crores of rupees to a few rupees, require high level of technology and need effective management of resources.

Project is an activity to meet the creation of unique product or service and thus activities are undertaken to accomplish routine activities cannot be considered as project. The completion time for a unique endeavour can vary from a few hours to many years, and the cost can change from low to very high. Each project has a specified mission or a purpose to be achieved. It ceases after the mission is accomplished. A construction project mission is to create desired facilities like a housing complex or a fertilizer plant with predetermined performance objectives defined in terms of quality specification, completion time, budgeted costs and other specified constraints. Project management is the discipline of initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria.

A project is a temporary endeavour designed to produce a unique product, service or result with a defined beginning and end undertaken to meet unique goals and objectives, typically to bring about beneficial change or added value. Construction planning is a fundamental and challenging activity in management and execution of construction projects. It includes the selection of technology, the definition of work task, the estimation of required duration and resources of individual task, and identify the interactions between different work tasks. A good construction plan is the base for developing the schedule and the budget for work. Primavera is the most effective tool for construction management. Primavera is the industry leading project and program management solution for projects any size. Primavera enables to manage time, tasks, costs, resources, contracts, change and risks to consistently execute profitable projects.

Construction industry is one of the largest growing industries in the worlds and India get 2nd place in the race. Effective planning techniques is very important in determining the success of any project. Project cost in the construction industry continually increases up to 30% due to un-organized planning and scheduling techniques. Various construction project deals with major scheduling issues including time management, cost overrun, resources use on daily basis due to lack of proper management.

Basically, by the use of Microsoft Project software. It is one of the latest and the best available tool used by various group of construction industries. It helps to plan, monitor and analyse multiple projects at same time to ensure the timely completion sand per plan and also within budget planned. Primavera is widely used in complex project where large number of activities are performed at different places and different agencies and sub organizations at same time at different levels

The main objectives of this study are basically to plan, schedule, and track a commercial project with help of primavera p6 software, and to study the results generated, the best thing possible to suggest which method is suitable for the selected commercial project. Project Monitoring acts like an advance warning tool; it is the complete process of recording the data,

collecting and reporting the information regarding project performance so that work get done and can be shown to the project manager and others whenever they wish to know. Monitoring phase includes watching the progress of the project against time constrain, performance schedule and resources during actual execution of the project and also helps to identify the lagging areas in the project which require timely attention and actions when needed. Primavera p6 helps to monitor the project and to make a great control over it. Primavera guides the project between the planned progress of construction work to the actual work perform so that work get completed in the desired time.

SCOPE OF WORK

The scope of work is planning the project and define task and activities

- To Schedule activities and task
- To monitor and control the activities
- To check weekly progress activities

LITERATURE REVIEW

P.Thangam (2016) investigated about the construction project which was carried out with lack of planning, scheduling and resource allocation. After using Microsoft Project software in work, it gives improvement in quality of construction with stipulated cost and time. The objectives of their study include,

- Preparing of detailed activity plan and schedule based on construction sequence.
- Working out the practical duration for six lane road construction activities.
- To make schedule and find the critical path using P6 planner software.

T. Subramani (2015) explained about the primavera P6 software and its advantages. He says that primavera P6 is amazing software which is not only used by project planners but also by anyone who involved in project, that is managers, engineers, schedulers can use primavera P6 software, focusing on the comparison of construction estimate methods application in project. It permit user to generate project templates, which can be kept and used for future project, and can also be used to group and view multiple project at the same time.

Andrew Tom (2013) discussed about his study on factory building (G+3) situated in Cochin, Kerala. In this study, the author emphasised on the importance and purpose of monitoring the construction work, perfect scheduling for the factory construction process, layout for updating the calendar, earned cost study and tracking for the standard design factory construction work. The total contract value of project is 7 crores with the build-up area of 5472 sq. m. and expected time of completion is 21 months. His study includes monitoring and controlling of project by means of primavera software. Techniques followed by him are:

- Earned value supervision
- Cost performance baseline
- Work performance supervision.

Y.Umesh (2015) described that the proper planning and scheduling is very essential in projects to find sinking and scheming delays of the project. Extensive amount of time, money resources or wasted each year in construction industry due to improper planning and scheduling. With globalization, the construction project has 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.

E.Sureshkumar (2015) has done scheduling using primavera software which involves estimation, sequencing the activities, resources allocation and timing .The construction scheduling was done to complete the project in time and with available resources in allocated time.

METHODS USED IN STUDY

Pre data collection:
The first stage consists of literature review, setting of objectives, goals and problem statement and based on that selection of research area has been done. For the research purpose, cognizant building is taken under consideration for study.

Data collection:
For proper collection of data continuous site visits were carried out to identify the construction sequence of the project of the desired building. The data required for preparing analysis in the software is collected by the help of different staffs and contractor

Post data collection:
In this stage analysis will be carried out in Microsoft Project software to mark the construction sequence and for tracking, monitoring of the project schedule and all the reports as per planned and results generated from the software will be studied to decide the necessary changes to be brought in the order to speed up the construction work

Contract Document:
The following project Data are furnished from the contract agreement, project report and tender documents. Civil and interior construction work was performed for office building for 150 employees for IXes Technologies, NCR.

Collection of data
A detailed analysis of the materials, man power, machinery, other resources used, and the sequence of activities (dependent or independent) executed from the beginning of the construction to its completion.

The methodology adopted to attain the project objective is as below:

- Inception of ideas.
- Literature study, for this the following sources are explored:

1. Review of past study.
2. Study of published books, technical and research papers, reports, etc.

- Site visit.
- Collection of raw data from visiting various sites.
- Studied the data. On the basis of it, prepared the plan and scheduled manually.

- Learnt the project management software- Primavera.
- Prepared the plan and scheduled by using various modules of software.

Finally, understood the ease, sufficiency & flexibility that the project management software offers us.

The scheduling techniques include:

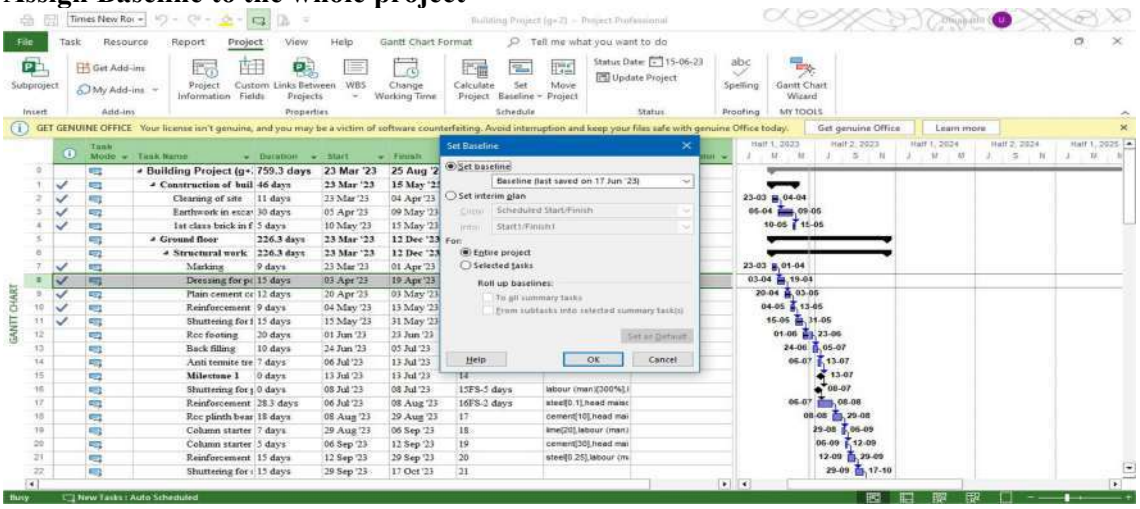
- Bar Chart
- CPM
- Networking scheduling techniques

METHODOLOGY

Baseline Schedule

A Baseline is a complete copy of a project plan that you can compare to the current schedule to evaluate progress. Before updating a schedule for the first time create a baseline. It provides a target against which one can track a project's cost, schedule and performance. Up to 10 baselines can be compared at once. Baseline projects do not exist as separate project to access.

Assign Baseline to the whole project



Compare the Baseline with Current project

Task Name	Start	Baseline Start	Finish	Baseline Finish
Building Project (g+2)	23 Mar '23	23 Mar '23	25 Aug '25	25 Aug '25
Construction of building	23 Mar '23	23 Mar '23	15 May '23	15 May '23
Cleaning of site	23 Mar '23	23 Mar '23	04 Apr '23	04 Apr '23
Earthwork in excavation	05 Apr '23	05 Apr '23	09 May '23	09 May '23
1st class brick in foundation	10 May '23	10 May '23	15 May '23	15 May '23
Ground floor	23 Mar '23	23 Mar '23	12 Dec '23	12 Dec '23
Structural work	23 Mar '23	23 Mar '23	12 Dec '23	12 Dec '23
Marking	23 Mar '23	23 Mar '23	01 Apr '23	01 Apr '23

Dressing for pcc	03 Apr '23	03 Apr '23	19 Apr '23	19 Apr '23
Plain cement concrete (p.c.c)	20 Apr '23	20 Apr '23	03 May '23	03 May '23
Reinforcement for footing	04 May '23	04 May '23	13 May '23	13 May '23
Shuttering for footing	15 May '23	15 May '23	31 May '23	31 May '23
Rcc footing	01 Jun '23	01 Jun '23	23 Jun '23	23 Jun '23
Back filling	24 Jun '23	24 Jun '23	05 Jul '23	05 Jul '23
Anti termite treating	06 Jul '23	06 Jul '23	13 Jul '23	13 Jul '23
Milestone 1	13 Jul '23	13 Jul '23	13 Jul '23	13 Jul '23
Shuttering for plinth beam	08 Jul '23	08 Jul '23	08 Jul '23	08 Jul '23
Reinforcement for plinth beam	06 Jul '23	06 Jul '23	08 Aug '23	08 Aug '23
Rcc plinth beam	08 Aug '23	08 Aug '23	29 Aug '23	29 Aug '23
Column starter marking	29 Aug '23	29 Aug '23	06 Sep '23	06 Sep '23
Column starter concreting	06 Sep '23	06 Sep '23	12 Sep '23	12 Sep '23
Reinforcement for columns	12 Sep '23	12 Sep '23	29 Sep '23	29 Sep '23
Shuttering for columns	29 Sep '23	29 Sep '23	17 Oct '23	17 Oct '23
Rcc for columns	17 Oct '23	17 Oct '23	03 Nov '23	03 Nov '23
Shuttering for slab	03 Nov '23	03 Nov '23	17 Nov '23	17 Nov '23
Reinforcement for slab	17 Nov '23	17 Nov '23	29 Nov '23	29 Nov '23
Electrical conducting	29 Nov '23	29 Nov '23	05 Dec '23	05 Dec '23
Rcc for slab and beam	05 Dec '23	05 Dec '23	11 Dec '23	11 Dec '23
Completion of gf slab	11 Dec '23	11 Dec '23	12 Dec '23	12 Dec '23
Milestone 2	12 Dec '23	12 Dec '23	12 Dec '23	12 Dec '23
First floor	12 Dec '23	12 Dec '23	17 Oct '24	17 Oct '24
Structural work	12 Dec '23	12 Dec '23	17 Apr '24	17 Apr '24
Column starter marking	12 Dec '23	12 Dec '23	15 Dec '23	15 Dec '23
Column starter concreating	15 Dec '23	15 Dec '23	15 Jan '24	15 Jan '24
Reinforcement for columns	20 Jan '24	20 Jan '24	31 Jan '24	31 Jan '24
Shuttering for columns	31 Jan '24	31 Jan '24	12 Feb '24	12 Feb '24
Rcc for columns	12 Feb '24	12 Feb '24	14 Mar '24	14 Mar '24
Reinforcement for slab	14 Mar '24	14 Mar '24	28 Mar '24	28 Mar '24
Shuttering for slab	28 Mar '24	28 Mar '24	11 Apr '24	11 Apr '24
Electrical conducting	11 Apr '24	11 Apr '24	15 Apr '24	15 Apr '24
Rcc for slab and beams	15 Apr '24	15 Apr '24	16 Apr '24	16 Apr '24
Completion of first floor slab	16 Apr '24	16 Apr '24	17 Apr '24	17 Apr '24
Finishing works for both the floors	17 Apr '24	17 Apr '24	17 Oct '24	17 Oct '24
Block work (100 mm thick)	17 Apr '24	17 Apr '24	16 May '24	16 May '24
Block work (50 mm thick)	16 May '24	16 May '24	08 Jun '24	08 Jun '24
Milestone 3	08 Jun '24	08 Jun '24	08 Jun '24	08 Jun '24
Door frame fixing	08 Jun '24	08 Jun '24	02 Jul '24	02 Jul '24
Electrical conducting	02 Jul '24	02 Jul '24	20 Jul '24	20 Jul '24
Plastering -celling	20 Jul '24	20 Jul '24	02 Aug '24	02 Aug '24
Plastering - internal walls	02 Aug '24	02 Aug '24	08 Aug '24	08 Aug '24
Flooring(rooms)	08 Aug '24	08 Aug '24	17 Aug '24	17 Aug '24
Flooring(toilets)	17 Aug '24	17 Aug '24	21 Aug '24	21 Aug '24
Flooring (corridor/lobby area)	21 Aug '24	21 Aug '24	28 Aug '24	28 Aug '24
Flooring(staircase)	28 Aug '24	28 Aug '24	02 Sep '24	02 Sep '24
Railing works(staircase)	02 Sep '24	02 Sep '24	10 Sep '24	10 Sep '24
Railing works(balcony)	10 Sep '24	10 Sep '24	11 Sep '24	11 Sep '24
Fixing of doors window shutters	11 Sep '24	11 Sep '24	19 Sep '24	19 Sep '24
Interior painting	19 Sep '24	19 Sep '24	20 Sep '24	20 Sep '24

Electrical fixtures	20 Sep '24	20 Sep '24	01 Oct '24	01 Oct '24
Sanitary& water supply works	01 Oct '24	01 Oct '24	09 Oct '24	09 Oct '24
External plastering	09 Oct '24	09 Oct '24	10 Oct '24	10 Oct '24
Cladding work	10 Oct '24	10 Oct '24	16 Oct '24	16 Oct '24
External painting	16 Oct '24	16 Oct '24	17 Oct '24	17 Oct '24
Second floor	17 Oct '24	17 Oct '24	25 Aug '25	25 Aug '25
Structural work	17 Oct '24	17 Oct '24	22 Feb '25	22 Feb '25
Column starter marking	17 Oct '24	17 Oct '24	21 Oct '24	21 Oct '24
Column starter concreating	21 Oct '24	21 Oct '24	20 Nov '24	20 Nov '24
Reinforcement for columns	26 Nov '24	26 Nov '24	06 Dec '24	06 Dec '24
Shuttering for columns	06 Dec '24	06 Dec '24	18 Dec '24	18 Dec '24
Rcc for columns	18 Dec '24	18 Dec '24	18 Jan '25	18 Jan '25
Reinforcement for slab	18 Jan '25	18 Jan '25	01 Feb '25	01 Feb '25
Shuttering for slab	01 Feb '25	01 Feb '25	15 Feb '25	15 Feb '25
Electrical conducting	15 Feb '25	15 Feb '25	19 Feb '25	19 Feb '25
Rcc for slab and beams	19 Feb '25	19 Feb '25	21 Feb '25	21 Feb '25
Completion of first floor slab	21 Feb '25	21 Feb '25	22 Feb '25	22 Feb '25
Finishing works for both the floors	22 Feb '25	22 Feb '25	25 Aug '25	25 Aug '25
Block work (100 mm thick)	22 Feb '25	22 Feb '25	24 Mar '25	24 Mar '25
Block work (50 mm thick)	24 Mar '25	24 Mar '25	16 Apr '25	16 Apr '25
Milestone 4	16 Apr '25	16 Apr '25	16 Apr '25	16 Apr '25
Door frame fixing	16 Apr '25	16 Apr '25	09 May '25	09 May '25
Electrical conducting	09 May '25	09 May '25	28 May '25	28 May '25
Plastering -celling	28 May '25	28 May '25	10 Jun '25	10 Jun '25
Plastering - internal walls	10 Jun '25	10 Jun '25	16 Jun '25	16 Jun '25
Flooring(rooms)	16 Jun '25	16 Jun '25	25 Jun '25	25 Jun '25
Flooring(toilets)	25 Jun '25	25 Jun '25	28 Jun '25	28 Jun '25
Flooring (corridor/lobby area)	28 Jun '25	28 Jun '25	05 Jul '25	05 Jul '25
Flooring(staircase)	05 Jul '25	05 Jul '25	10 Jul '25	10 Jul '25
Railing works(staircase)	10 Jul '25	10 Jul '25	18 Jul '25	18 Jul '25
Railing works(balcony)	18 Jul '25	18 Jul '25	19 Jul '25	19 Jul '25
Fixing of doors window shutters	19 Jul '25	19 Jul '25	28 Jul '25	28 Jul '25
Interior painting	28 Jul '25	28 Jul '25	29 Jul '25	29 Jul '25
Electrical fixtures	29 Jul '25	29 Jul '25	08 Aug '25	08 Aug '25
Sanitary& water supply works	08 Aug '25	08 Aug '25	16 Aug '25	16 Aug '25
External plastering	16 Aug '25	16 Aug '25	18 Aug '25	18 Aug '25
Cladding work	18 Aug '25	18 Aug '25	23 Aug '25	23 Aug '25
External painting	23 Aug '25	23 Aug '25	25 Aug '25	25 Aug '25

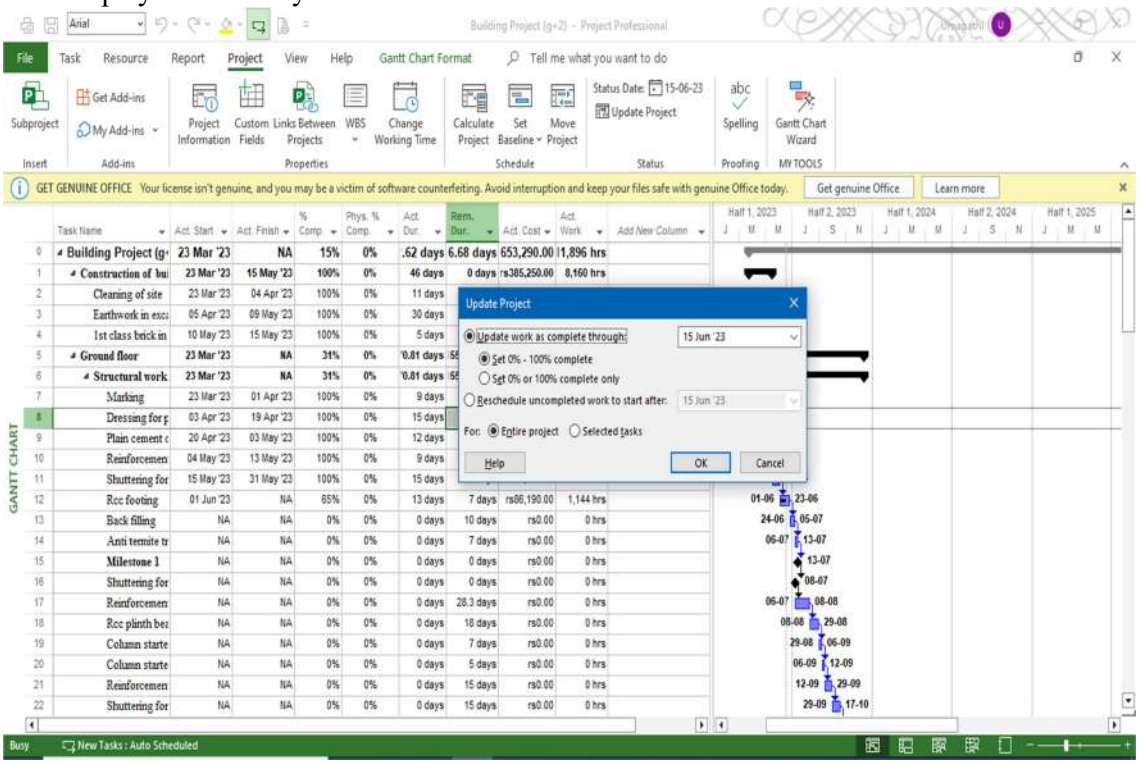
Update and Analysis

When actuals are applied from timesheets, calculate activity remaining durations: Specify whether to recalculate the remaining duration based on the activity duration type or to always recalculate

You can update progress for all activities and resources as a whole; update activities and resources individually; or use a combination of the two methods.

If your project is progressing exactly as planned, or if you only need to estimate progress, simply specify the data date or "as-of" date and allow the module to determine which activities have progressed and how much, calculate the remaining durations of activities that have started, and set the remaining durations of activities that have completed to zero.

Started: Mark to indicate that the selected activity has started. The field beside this checkbox displays the activity's planned start date. If the selected activity has started or is complete, this field displays the activity's actual start date.
Finished: Mark to indicate that the selected activity is complete. The field beside this checkbox displays the activity's remaining finish date. If the selected activity is complete, this field displays the activity's actual finish date.



Projects are a way of organizing activities that can't be addressed within the organization's normal operational limits. Projects are, therefore, often utilized as a way of achieving an organization's strategic plan, whether the project team is used by the organization or may be a contracted service provider. Top quality projects deliver the specified product, service or result within scope, on time, and within budget.

Time Management processes concerning the timely completion of the project. It consists of the Activity Definition, Activity Sequencing, Activity Resource Estimating, Activity Duration Estimating, Schedule Development, and Schedule Control project management processes in this Project by using the project management software "Microsoft project" scheduling is done for
G+2 floors Residential Building. The total construction period is scheduled for 26 months. The schedule result of the project in MSP Gantt chart view is provided above. The results of this study confirm that construction professionals are heavy users of PM software and differ from the respondents in the overall study concerning their usage patterns. In general, construction professionals tend to have more project experience and education than PM professionals as a whole. The construction respondents also spend more time in PM and work on slightly fewer projects than other PM professionals.

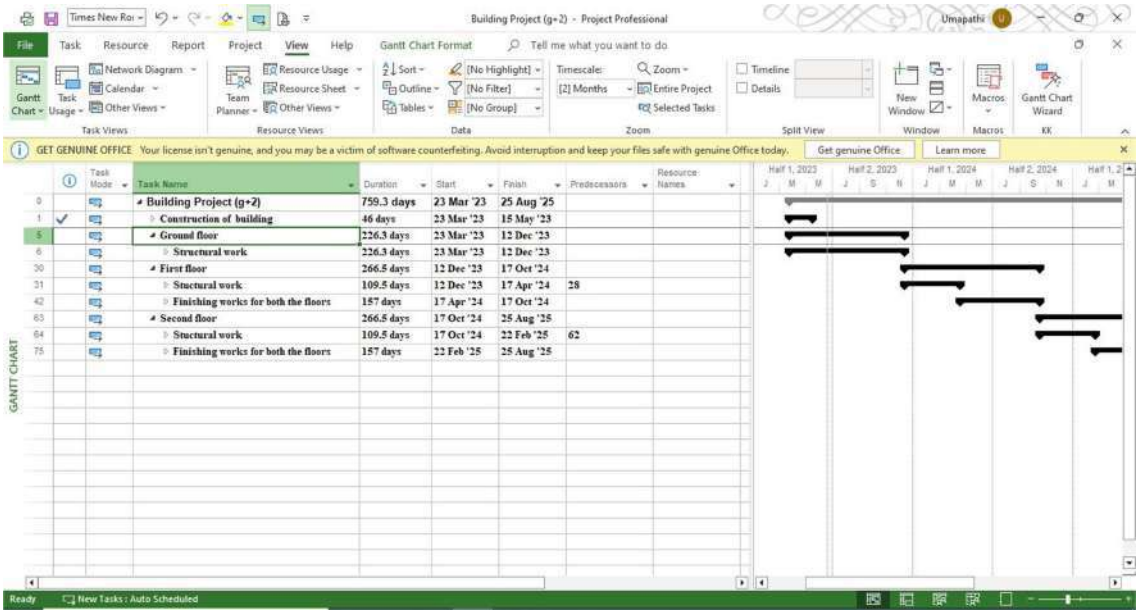
Another distinguishing characteristic is that the construction professionals tend to work on typical projects that have larger numbers of activities and resources. The software package of choice among most construction respondents is Microsoft Project.

Work Breakdown Structure (WBS)

A Coding Structure to permit Reporting for Specific Areas or Trades. Work breakdown structure may be a process of dividing the project task into smaller manageable components for planning purpose. A posh project is formed manageable by first breaking it down into individual component during a hierarchical data structure, referred to as the work breakdown structure (WBS).

The WBS is that the structure which defined task, facilitating resource allocation, assignment of responsibilities and measurement and control the project. The WBS is widely employed by the project manager as a tool within the planning activity for the development project.

WBS(Summary task)



Task Name	Duration	Start	Finish	Predecessors
Building Project (g+2)	759.3 days	23 Mar '23	25 Aug '25	
Construction of building	46 days	23 Mar '23	15 May '23	
Ground floor	226.3 days	23 Mar '23	12 Dec '23	
Structural work	226.3 days	23 Mar '23	12 Dec '23	
First floor	266.5 days	12 Dec '23	17 Oct '24	
Structural work	109.5 days	12 Dec '23	17 Apr '24	28
Finishing works for both the floors	157 days	17 Apr '24	17 Oct '24	
Second floor	266.5 days	17 Oct '24	25 Aug '25	
Structural work	109.5 days	17 Oct '24	22 Feb '25	62
Finishing works for both the floors	157 days	22 Feb '25	25 Aug '25	

SCHEDULE COMPRESSION

Schedule compression shortens the project schedule without changing the project scope, to satisfy schedule constraints, imposed dates, or other schedule objectives. Schedule compression techniques include:

Crashing: - Project crashing may be a method for shortening project duration by reducing one or more critical activities to a time but normal activity time. Crashing achieved by devoting more resources to crashed activities. Schedule compression technique during which cost and schedule trade-offs are analysed to work out the way to obtain the best amount of compression for the smallest amount marginal cost. Crashing doesn't always produce a viable alternative and may end in increased cost.

- Project duration are often reduced by assigning more resources to project activities.
- Doing this however increases project cost.
- Decision is predicated on analysis of trade-off between time and price.

Four Steps to Project Crashing

1. Find the traditional critical path and identify the critical activities
2. Compute the crash cost per week (or other time period) for all activities within the network using the formula.

$$\text{Crash cost/Time period} = \frac{\text{Crash cost} - \text{Normal cost}}{\text{Normal time} - \text{Crash time}}$$

3. Select the activity on the critical path with the littlest crash cost per week and crash this activity to the utmost extent possible or to the purpose at which your required deadline has been reached
4. Check to make certain that the critical path you were crashing remains critical. If the critical path remains the longest path through the network, return to step 3. If not, find the new critical path and return to step 2.

Relationship of Time and Cost:

The project duration effects on the value of the project resources. Reducing the time of the non-critical activities includes the extra float thereupon the value of the project are going to be increase. Explanation of the project cost.

Project Indirect Costs

- Costs that can't be related to any particular work package or project activity.
- Supervision, administration, consultants, and interest
- Costs that change (increase) with time.
- Reducing project time directly reduces indirect costs.

Project Direct Costs:

Normal costs which will be assigned on to a selected work package or project activity

- Labor, materials, equipment, and subcontractors
- Crashing activities increase direct costs.
- Reducing Project Duration to scale back Project cost

Project Crashing and Time-Cost Trade-Off General Relationship of your time and price.

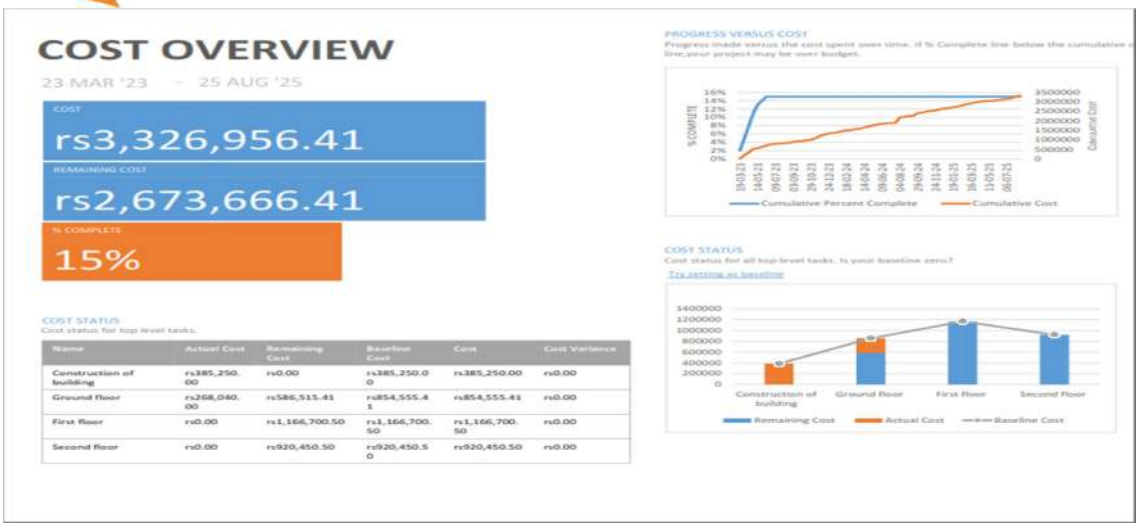
- Project crashing costs and indirect costs have an inverse relationship.
- Crashing costs are highest when the project is shortened.
- Indirect costs increase because the project duration increases.
- Optimal project time is at minimum point on the entire cost curve.

REPORTS

COST OVERVIEW

PROGRESS VERSUS COST

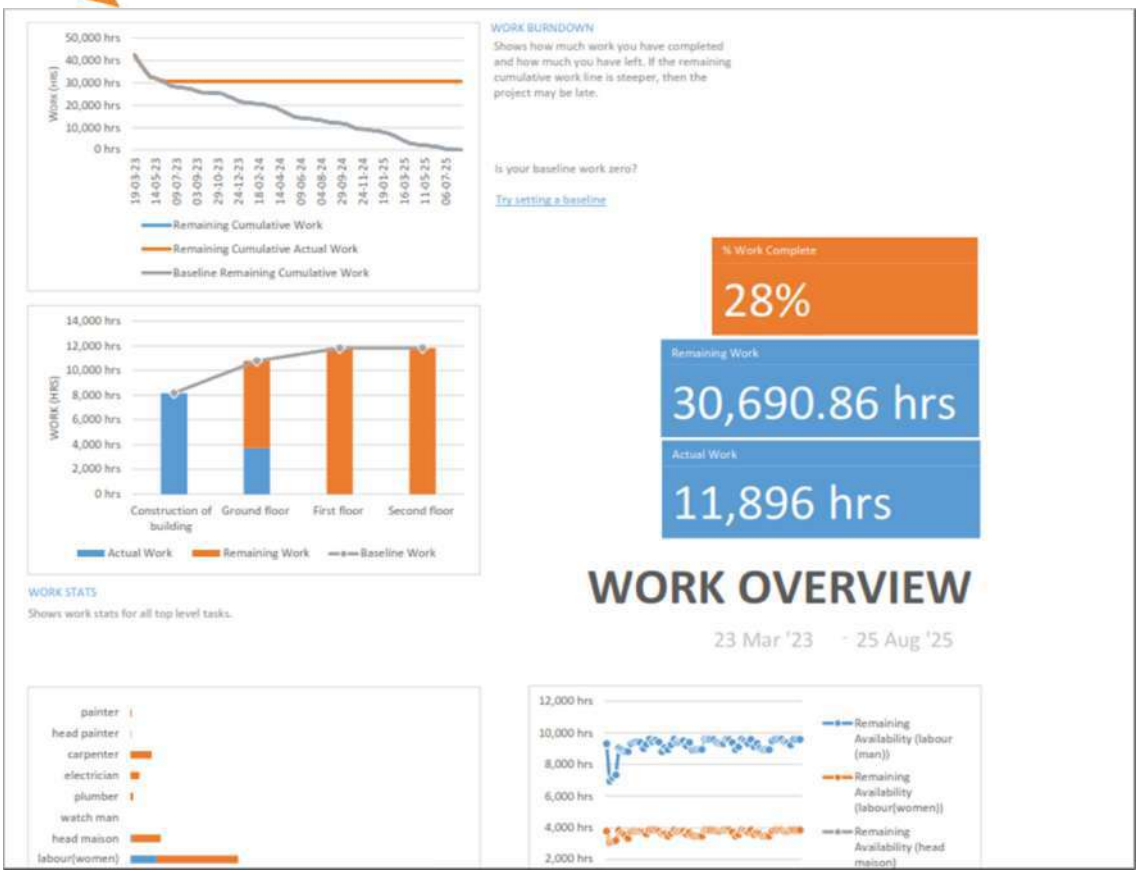
Progress made versus the cost spent over time. If % Complete line below the cumulative cost line, your project may be over budget.



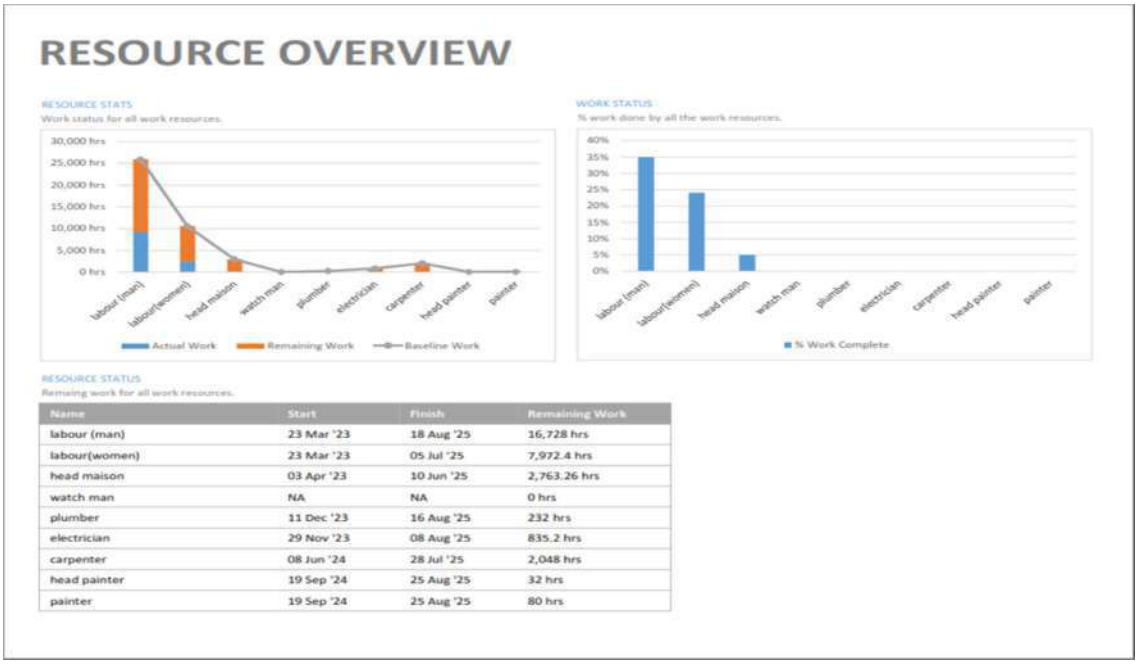
PROJECT OVERVIEW

% 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.

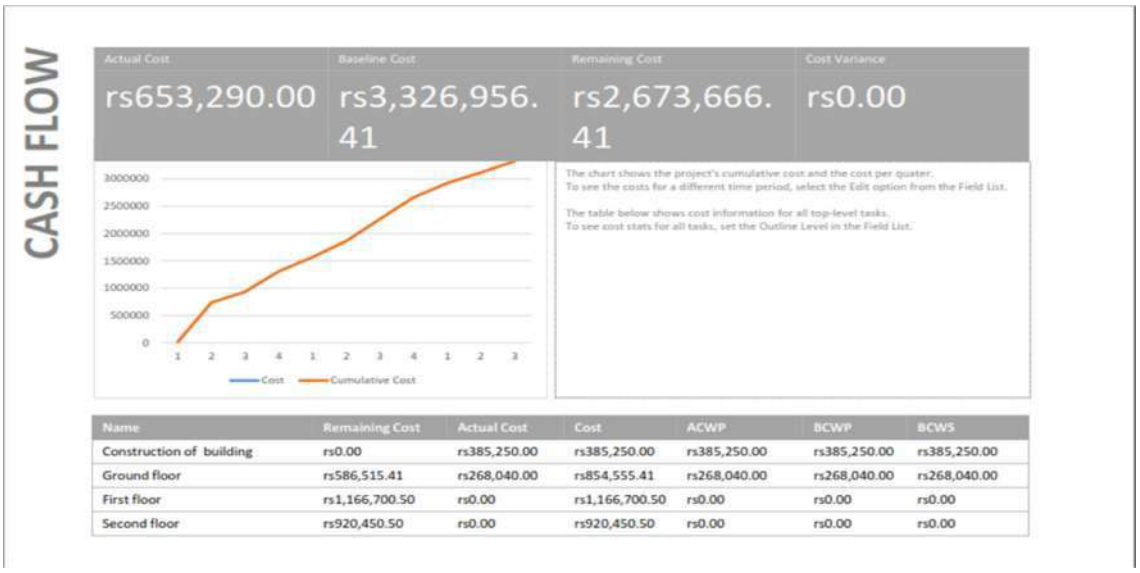
WORK OVERVIEW



Resource Overview

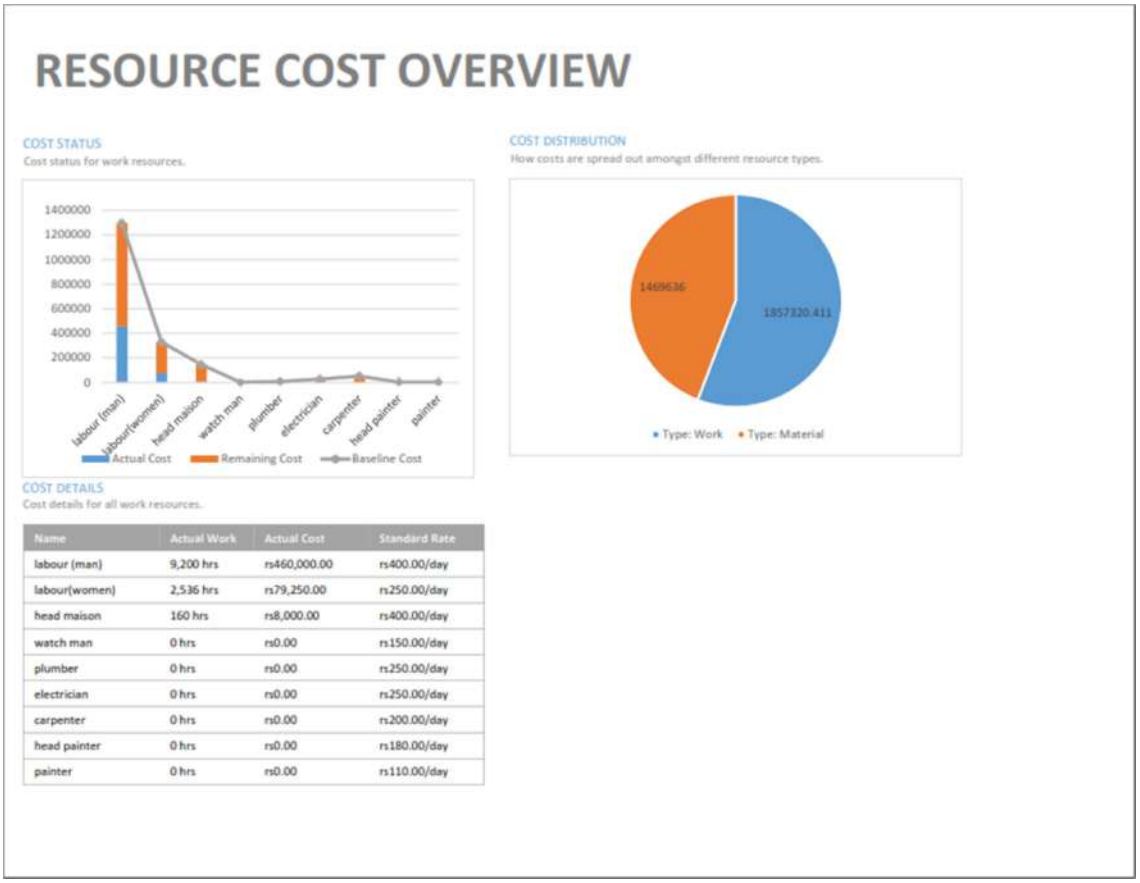


Cash Flow



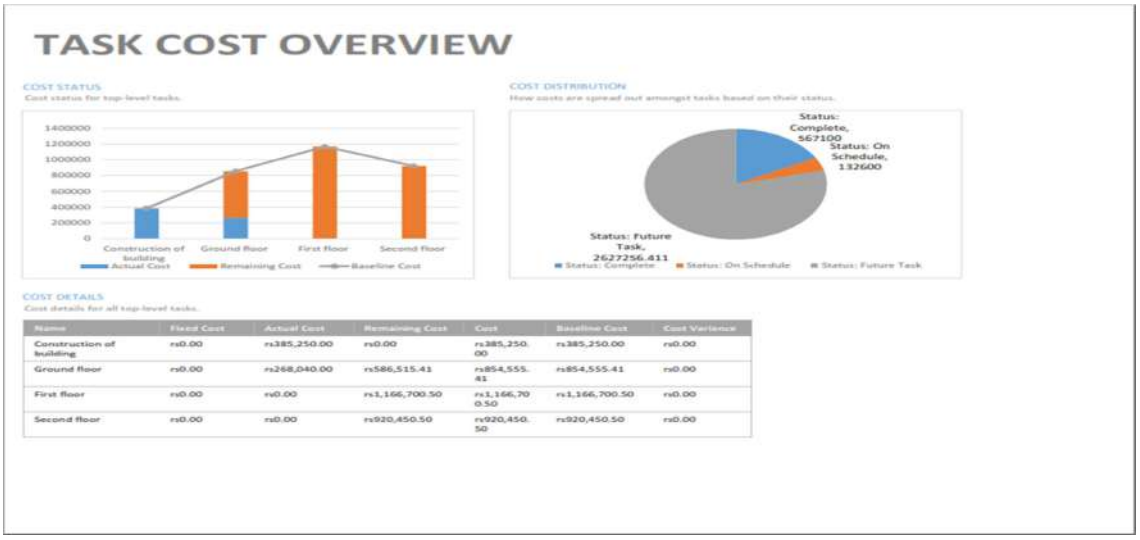
Name	Remaining Cost	Actual Cost	Cost	ACWP	BCWP	BCWS
Construction of building	rs0.00	rs385,250.00	rs385,250.00	rs385,250.00	rs385,250.00	rs385,250.00
Ground floor	rs586,515.41	rs268,040.00	rs854,555.41	rs268,040.00	rs268,040.00	rs268,040.00
First floor	rs1,166,700.50	rs0.00	rs1,166,700.50	rs0.00	rs0.00	rs0.00
Second floor	rs920,450.50	rs0.00	rs920,450.50	rs0.00	rs0.00	rs0.00

Resource Cost Overview



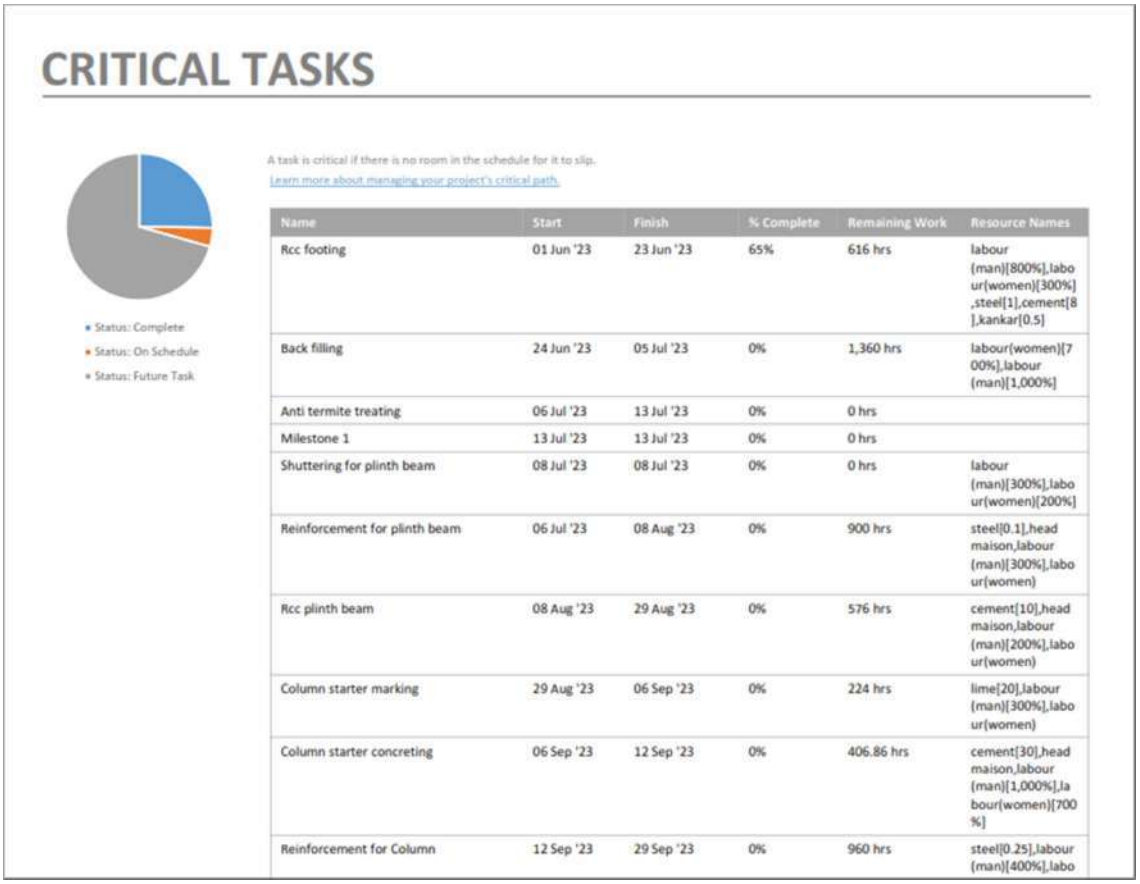
Name	Actual Work	Actual Cost	Standard Rate
labour (man)	9,200 hrs	rs460,000.00	rs400.00/day
labour(women)	2,536 hrs	rs79,250.00	rs250.00/day
head maison	160 hrs	rs8,000.00	rs400.00/day
watch man	0 hrs	rs0.00	rs150.00/day
plumber	0 hrs	rs0.00	rs250.00/day
electrician	0 hrs	rs0.00	rs250.00/day
carpenter	0 hrs	rs0.00	rs200.00/day
head painter	0 hrs	rs0.00	rs180.00/day
painter	0 hrs	rs0.00	rs110.00/day

Task Cost Overview



Name	Fixed Cost	Actual Cost	Remaining Cost	Cost	Baseline Cost	Cost Variance
Construction of building	rs0.00	rs385,250.00	rs0.00	rs385,250.00	rs385,250.00	rs0.00
Ground floor	rs0.00	rs268,040.00	rs586,515.41	rs854,555.41	rs854,555.41	rs0.00
First floor	rs0.00	rs0.00	rs1,166,700.50	rs1,166,700.50	rs1,166,700.50	rs0.00
Second floor	rs0.00	rs0.00	rs920,450.50	rs920,450.50	rs920,450.50	rs0.00

Critical Tasks



Name	Start	Finish	% Complete	Remaining Work	Resource Names
Rcc footing	01 Jun '23	23 Jun '23	65%	616 hrs	labour (man)[800%],labour(women)[300%],steel[1],cement[8],kankar[0.5]
Back filling	24 Jun '23	05 Jul '23	0%	1,360 hrs	labour(women)[700%],labour (man)[1,000%]
Anti termite treating	06 Jul '23	13 Jul '23	0%	0 hrs	
Milestone 1	13 Jul '23	13 Jul '23	0%	0 hrs	
Shuttering for plinth beam	08 Jul '23	08 Jul '23	0%	0 hrs	labour (man)[300%],labour(women)[200%]
Reinforcement for plinth beam	06 Jul '23	08 Aug '23	0%	900 hrs	steel[0.1],headmaison,labour (man)[300%],labour(women)
Rcc plinth beam	08 Aug '23	29 Aug '23	0%	576 hrs	cement[10],headmaison,labour (man)[200%],labour(women)
Column starter marking	29 Aug '23	06 Sep '23	0%	224 hrs	lime[20],labour (man)[300%],labour(women)
Column starter concreting	06 Sep '23	12 Sep '23	0%	406.86 hrs	cement[30],headmaison,labour (man)[1,000%],labour(women)[700%]
Reinforcement for Column	12 Sep '23	29 Sep '23	0%	960 hrs	steel[0.25],labour (man)[400%],labo

					ur[women][300%],head maison
Shuttering for Column	29 Sep '23	17 Oct '23	0%	0 hrs	
Rcc for Column	17 Oct '23	03 Nov '23	0%	360 hrs	steel[1],head maison,labour (man)[200%]
Shuttering for slab	03 Nov '23	17 Nov '23	0%	0 hrs	
Reinforcement for slab	17 Nov '23	29 Nov '23	0%	320 hrs	steel[2],labour (man)[300%],labour[women]
Electrical conducting	29 Nov '23	05 Dec '23	0%	80 hrs	electrician[200%]
Rcc for slab and beam	05 Dec '23	11 Dec '23	0%	1,080 hrs	cement[65],head maison,kankar[0.4],labour (man)[2,000%],labour(women)[600%],steel[0.5]
Completion of gf slab	11 Dec '23	12 Dec '23	0%	163.2 hrs	cement[40],head maison,labour (man)[1,300%],labour(women)[500%],sand[0.8],electrician[40%],plumber
Column starter marking	12 Dec '23	15 Dec '23	0%	72 hrs	lime[5],labour (man)[225%],labour(women)[75%]
Column starter concreating	15 Dec '23	15 Jan '24	0%	2,304 hrs	cement[10],head maison,kankar[1.5],labour (man)[700%],labour(women)[400%]
Reinforcement for Column	20 Jan '24	31 Jan '24	0%	72 hrs	cement[18],head maison,kankar[0.21],marble[24.3]
Shuttering for Column	31 Jan '24	12 Feb '24	0%	80 hrs	cement[100],head maison
Rcc for Column	12 Feb '24	14 Mar '24	0%	640 hrs	cement[89],head maison,kankar[0.18],labour (man)[500%],labour(women)[200%]
Reinforcement for slab	14 Mar '24	28 Mar '24	0%	282.4 hrs	steel[0.15],cement

					t[50],marble[200],labour (man)[500%],labour(women)[300%],sand[0.26],head maison[15%]
Shuttering for slab	28 Mar '24	11 Apr '24	0%	480 hrs	labour (man)[300%],labour(women)[200%]
Electrical conducting	11 Apr '24	15 Apr '24	0%	48 hrs	electrician[200%]
Rcc for slab and beams	15 Apr '24	16 Apr '24	0%	256 hrs	cement[45],labour (man)[1,500%],sand[0.2],head maison,labour(women)[400%]
Completion of first floor slab	16 Apr '24	17 Apr '24	0%	0 hrs	
Block work(100 mm thick)	17 Apr '24	16 May '24	0%	2,400 hrs	marble[50],head maison,labour (man)[700%],labour(women)[400%],kankar[0.2],sand[0.4]
Block work(50 mm thick)	16 May '24	08 Jun '24	0%	1,920 hrs	marble[50],head maison,labour (man)[700%],labour(women)[400%],kankar[0.2],sand[0.4]
Milestone 3	08 Jun '24	08 Jun '24	0%	0 hrs	
Door frame fixing	08 Jun '24	02 Jul '24	0%	480 hrs	wood[100],carpenter[300%]
Electrical conducting	02 Jul '24	20 Jul '24	0%	256 hrs	bulbs[6],electrician[200%],switch boards[25],tube lights[8],wires[100]
Plastering -celling	20 Jul '24	02 Aug '24	0%	264 hrs	cement[5],sand[0.12],head maison[300%]
Plastering - internal walls	02 Aug '24	08 Aug '24	0%	200 hrs	labour (man)[300%],cement[25],labour(wo

					men)[200%],sand[0.25]
Flooring(rooms)	08 Aug '24	17 Aug '24	0%	128 hrs	labour (man)[200%],cement[20],marble[250],sand[0.14]
Flooring(toilets)	17 Aug '24	21 Aug '24	0%	96 hrs	washing basin[2],marble[25],cement[15],labour (man)[300%],labour(women)
Flooring(corridor/lobby area)	21 Aug '24	28 Aug '24	0%	144 hrs	marble[9],cement[5],labour (man)[200%],labour(women)
Flooring(staircase)	28 Aug '24	02 Sep '24	0%	448 hrs	labour (man)[400%],carpenter[1,000%],cement[8]
Railing works(staircase)	02 Sep '24	10 Sep '24	0%	224 hrs	railing[4],labour (man)[400%]
Railing works(balcony)	10 Sep '24	11 Sep '24	0%	32 hrs	railing[4],labour (man)[400%]
Fixing of doors&window shutters	11 Sep '24	19 Sep '24	0%	224 hrs	carpenter[400%],wood[45]
Interior painting	19 Sep '24	20 Sep '24	0%	24 hrs	head painter,paint brushes[3],painter[200%],paint[50]
Electrical fixtures	20 Sep '24	01 Oct '24	0%	72 hrs	electrician,wires[40],tube lights[4],switch boards[2],bulbs[4]
Sanitary& water supply works	01 Oct '24	09 Oct '24	0%	112 hrs	showers[4],plumber[200%],foset[3],washing basin[4]
External plastering	09 Oct '24	10 Oct '24	0%	32 hrs	sand[25],cement[0.02],labour (man)[400%]
Cladding work	10 Oct '24	16 Oct '24	0%	0 hrs	
External painting	16 Oct '24	17 Oct '24	0%	32 hrs	head

					painter,paint brushes[4],paint[25],painter[300%]
Column starter marking	17 Oct '24	21 Oct '24	0%	72 hrs	lime[5],labour (man)[225%],labour(women)[75%]
Column starter concreating	21 Oct '24	20 Nov '24	0%	2,304 hrs	cement[10],head maison,kankar[1.5],labour (man)[700%],labour(women)[400%]
Reinforcement for Column	26 Nov '24	06 Dec '24	0%	72 hrs	cement[18],head maison,kankar[0.21],marble[24.3]
Shuttering for Column	06 Dec '24	18 Dec '24	0%	80 hrs	cement[100],head maison
Rcc for columns	18 Dec '24	18 Jan '25	0%	640 hrs	cement[89],head maison,kankar[0.18],labour (man)[500%],labour(women)[200%]
Reinforcement for slab	18 Jan '25	01 Feb '25	0%	782.4 hrs	steel[0.15],cement[50],marble[200],labour (man)[500%],labour(women)[300%],sand[0.26],head maison[15%]
Shuttering for slab	01 Feb '25	15 Feb '25	0%	480 hrs	labour (man)[300%],labour(women)[200%]
Electrical conducting	15 Feb '25	19 Feb '25	0%	48 hrs	electrician[200%]
Rcc for slab and beams	19 Feb '25	21 Feb '25	0%	256 hrs	cement[45],labour (man)[1,500%],sand[0.2],head maison,labour(women)[400%]
Completion of first floor slab	21 Feb '25	22 Feb '25	0%	0 hrs	
Block work(100 mm thick)	22 Feb '25	24 Mar '25	0%	2,400 hrs	marble[50],head maison,labour (man)[700%],labour(women)[400%]

					,kankar[0.2],sand[0.4]
Block work(50 mm thick)	24 Mar '25	16 Apr '25	0%	1,920 hrs	marble[50],head maison,labour (man)[700%],labour(women)[400%],kankar[0.2],sand[0.4]
Milestone 4	16 Apr '25	16 Apr '25	0%	0 hrs	
Door frame fixing	16 Apr '25	09 May '25	0%	480 hrs	wood[100],carpenter[300%]
Electrical conduting	09 May '25	28 May '25	0%	256 hrs	bulbs[6],electrician[200%],switch boards[25],tube lights[8],wires[100]
Plastering -celling	28 May '25	10 Jun '25	0%	264 hrs	cement[5],sand[0.12],head maison[300%]
Plastering - internal walls	10 Jun '25	16 Jun '25	0%	200 hrs	labour (man)[300%],cement[25],labour(women)[200%],sand[0.25]
Flooring(rooms)	16 Jun '25	25 Jun '25	0%	128 hrs	labour (man)[200%],cement[20],marble[250],sand[0.14]
Flooring(toilets)	25 Jun '25	28 Jun '25	0%	96 hrs	washing basin[2],marble[25],cement[15],labour (man)[300%],labour(women)
Flooring(corridor/lobby area)	28 Jun '25	05 Jul '25	0%	144 hrs	marble[9],cement[5],labour (man)[200%],labour(women)
Flooring(staircase)	05 Jul '25	10 Jul '25	0%	448 hrs	labour (man)[400%],carpenter[1,000%],cement[8]
Railing works(staircase)	10 Jul '25	18 Jul '25	0%	224 hrs	railing[4],labour (man)[400%]

CONCLUSIONS

We can conclude that there is difference between the theoretical and practical work done. As the scope of understanding will be much more when practical work is done. As we get more knowledge in such a situation where we have great experience doing the practical work. Construction projects are, by nature, difficult to regulate due to their dynamic and sophisticated environment, leading to frequent changes, delays, and price overruns. The power to assess the impact of site events on construction projects is significant within the preparation and settlement of claims.

Knowing the Estimated quantity of work, we have designed the time schedule depending upon the time duration method – Optimistic time (To) Most likely time (Tm) and Pessimistic time. In project Management time, cost and scope are most important aspects which called triple constraint. Effective time schedule optimizes the resources in the project. Construction contractors control their contracts' detailed schedule progress. The project manager focus is the big picture, the master schedule, to manage interfaces between contractor third party, and Agency construction activities. Your approach to master schedule control depends on the project's size and complexity. To complete a project successfully with in time and without increase in cost, sound scheduling system is needed.

Construction of building using Traditional way proves to be uneconomical and consumes more time with many compellability and enormous error which actual execution of the Project. Traditional way of planning doesn't sub divide the main task which future gets the hurdle of over allocation of resources, improper judgment of resources for particular

activities etc. Microsoft Project is the modern tool of Project Management that aid to overcome the obstacles faced owing to traditional way of Planning and Management. It helps for the optimum and effective organization of activities which helps to give the vision to complete the project in planned duration and within the Economy.

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