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PROJECT PLANNING USING MICROSOFT PROJECT

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ABSTRACT: In spite of all that is known about project management best practices, they are often absent from typical construction projects in India. Our experience is such that weak project management practices continue to be a common place in construction industry, particularly in developing countries. Poorly managed projects cost all stakeholders a huge amount not just financially but also psychologically and emotionally. It has motivated us to carry out the working and functioning of a project using the modern project management tool available in the market; and then comparing it with the traditional software (Excel) which is being use. We carried on an online survey focusing on all the stakeholders related to the project with a view to obtain an idea of various project management practices in construction industry. Notably, 80% of the total construction industries in India still use traditional software Microsoft Excel for planning, scheduling and controlling of their projects and 86% felt the need for adapting to new software. We then approached a Pune based construction company in which Excel is still the dominant source of managing the projects. We expressed them our visions and desire to work on one of their projects using Microsoft Project. We carried on the planning & scheduling of the building using Microsoft Project tool. The results obtained were considerably positive than those using traditional software.

Keywords: MS Project, Project management, Planning, Scheduling.

Introduction: -

Project Management is the Application of knowledge, skills and Techniques to project activities to meet project requirements. It is a strategic ability to do something successfully for organizations, enabling them to patch the project results to Organizational goals and thus, better compete in their markets. It can be also defined as the process and activity of planning, organizing, inspiring, and controlling resources, procedures and protocols to achieve specific goals in scientific or daily problems. A project is a temporary aim designed to produce a special product, service or result with a defined starting and end (usually time-constrained, and often constrained by funding or deliverables), undertaken to meet eccentric goals and objectives, typically to bring about beneficial change or added value. The temporary nature of projects stands in contrast with business as usual (or operations), which are recurring, permanent, or semi-permanent functional activities to produce products or services. In implementation, the management of these two systems is often quite distinct, and as such requires the development of divergent technical skills and management strategies. It has always been practiced casually, but began to evolve as a prime profession in the mid-20th century.

A project generally starts at right time but as it proceeds, activities get off the schedule due to various tribulations like improper planning, uncertainties, non-delivery of resources at a time, execution delays, environmental factors and other which directly impact the cost of the project. The application of project management in construction aims to accomplish the project goals by virtue of perfect planning, scheduling, executing, monitoring as well as controlling time, utilizing all the resources effectively.

"Project is a unique process consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements including constraints of time, cost and resources." (ISO 10006:2003 - Quality Management Systems - Guidelines for Quality Management in Projects 8)

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.

In other words, Project Management is the Application of knowledge, skills and Techniques to project activities to meet project requirements. It is a strategic ability to do something successfully for organizations, enabling them to patch the project results to Organizational goals and thus, better compete in their markets.

It can be also defined as the process and activity of planning, organizing, inspiring, and controlling resources, procedures and protocols to achieve specific goals in scientific or daily problems.

Importance of Project Management: -

- Organizing Chaos
- Managing Risk
- Managing Quality
- Managing Integration
- Managing Change
- Clearing Issues
- Retaining and Using Knowledge
- Learning from Failure

Traditional Approach to Project Management in Construction Sector: -

It has been found that most of the construction industries in India use Excel for planning, monitoring and controlling of a Project. The entire scheduling is done on Excel and the project is tracked against it.

Literature Review

- Vittal Anantatmula (2010)

He found out that Similar to a traditional project, managing an academic degree is related to the triple constraints of time, cost, and scope. It is concluded that by applying project management concepts, tools, and techniques, undergraduate degree program advising and planning can be improved after comparing the planning aspects of a conventional business project with the planning of an Planning and Scheduling of Project using Microsoft Project… DOI: 10.9790/1684-12335763 www.iosrjournals.org 59 | Page academic degree. Author also helps to explain the application of project planning techniques to manage the multiple constraints and the complexity associated with academic advising and planning.

- Abhishek sharma and k.k. pathak(2011)

As explained above, the management of time and manpower is the prime factor that affect greatly to the efficient and timely completion of the project. This is the management that sets up the relations among various activities and helps Manpower Planning, Scheduling and Tracking of a Construction Project Using Microsoft Project Software 169 the site engineer to fix the priorities of task. Having the information about the availability of the manpower and have those available at right time for the activities plays a vital role in managing the costs and smoothly executing the project activities. The software Microsoft Project 2013 is the popular tool in modern days to manage the project efficiently.

- R. Prabhahar and G. Ravichandran (2014)

  He analyzed that; Construction planning is an important part of the overall management process. The planning and management includes 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.

- Aftab Hameed Memon and Ismail Abdul Rahman (2014)

  He suggested that time is the biggest element that every contractor has to deal with while practicing the construction activities. Variety of approaches and tools has been introduced over the past decades to cherish the management of the projects. Author identified commonly used techniques and software of time management together with their effectiveness level in large construction projects. Data was collected from the construction organization that deals with huge projects. Relative Importance Index calculation was employed to assess the level of effectiveness for time management techniques and software packages adopted in the construction project. The results depicts that most common and effective time management technique and software Package are CPM and Microsoft Project respectively.

About Microsoft Project

Microsoft Project is a project management software program developed and sold by Microsoft, which is designed to assist a project manager in developing a plan, assigning resources to tasks, tracking progress, managing the budget, and analysing workloads. Project creates budgets based on assignment work and resource cost. Resource definitions (Labour, equipment and materials) can be shared between projects using a shared resource pond. Each resource can have its individual calendar, which defines what days and time is resource present. Resource rates are used to calculate resource assignment costs. Each resource can be assigned to multiple tasks in multiple projects and each task can be assigned numerous resources. The execution of the scheduled task work based on the resource availability as defined in the resource calendars. All resources can be defined in Work, Material and Cost.

Schedules can be resource levelled, and task networks are visualized in a Gantt chart. Additionally, Microsoft Project can identify divergent classes of the users. These different classes of users can have differing access levels to projects, views, and other data. Customization of aspects in Microsoft Project such as calendars, views, tables, filters, and fields are stored in an enterprise global which is accessible by all users.

Microsoft project is a project management software program. It is developed by Microsoft, Microsoft project software released in 1998. Microsoft project software is used for planning, scheduling, monitoring, controlling, and resource optimization of the project. It is designed to assist the project manager to track the progress, manage the budget and analyse the workloads data. This Software is applicable to track single project with numerous activities and resources. It comprises of an option to visually choose the resources as per the requirement. Calendars, tables, filters, views and other customization aspects in Microsoft project are stored, which can be accessible to all users. Microsoft project utilizes the team collaboration and accesses the results.

Microsoft project is a software tool that takes a lot of the manual updating and guess work out of managing Projects. We can enter

information about our project's tasks, when they need to happen, Duration and who should be doing the work.

Advantages of Using Microsoft Project

- Maturity: Microsoft Project is a very mature Project Management tool. MS Project was first released in 1984 and over the next 26 years, Microsoft has listened to the increasing number of Project Managers adopting this tool, and added/enhanced a lot of features that are now vital for managing projects. Almost any chart the Project Manager can think of is now available in MS Project. (At the time of writing this article, the current version is MS Project2007).
- Support and Reliability: Contrary to the myriad of the other Project Management tools available on the market, Microsoft Project is developed by the largest and most reputable software company in the world, which offers reliable support of this product. Additionally, the success of MS Project has spurred the growth of third-party support and training services offered for this product.
- Easy Integration with other Microsoft Products: MS Project offers integration with other MS Products that are highly popular, such as MS Word, MS Excel, and MS Outlook.
- Desktop Application: MS Project is a desktop application, which means the
- Project Manager can work on the project schedule even if there is no Internet connection.

Disadvantages of Microsoft Project

- Steep Learning Curve: MS Project is software that needs some considerable training and experience to get knows how to use it. This is a significant setback for the product as there are lots of Project Managers out there who are not technical, and may experience a hard time trying to learn MS Project.
- Generic Focus: MS Project does not focus on any particular industry (though some say it's slightly more inclined to Software Project Management), this results in Project Managers using a tool that is not tailored to their needs.
- No collaboration: This is a major drawback in MS Project because of the importance of communication in Project Management. Online collaboration nowadays is indispensable for easy and accessible updates

by the team members/the Project Manager/the stakeholders on the project. The complete absence of real collaboration in MS Project makes it outdated by the standards of today's connected world. To make things worse, MS Project does not even offer integration with third party collaboration tools, which leaves Project Managers with no choice then to use a separate collaboration platform to ease the communication flow on the project. This adds an unnecessary overhead to the workload of the Project Manager.

Objectives of the Study

Basically, this thesis will conduct an exploratory study on implementation of Microsoft Project in every aspect of a project which comprise of Planning and Scheduling stage followed by the Monitoring and Controlling stage. In this regard, in terms of construction management, this dissertation is written for the objectives listed below

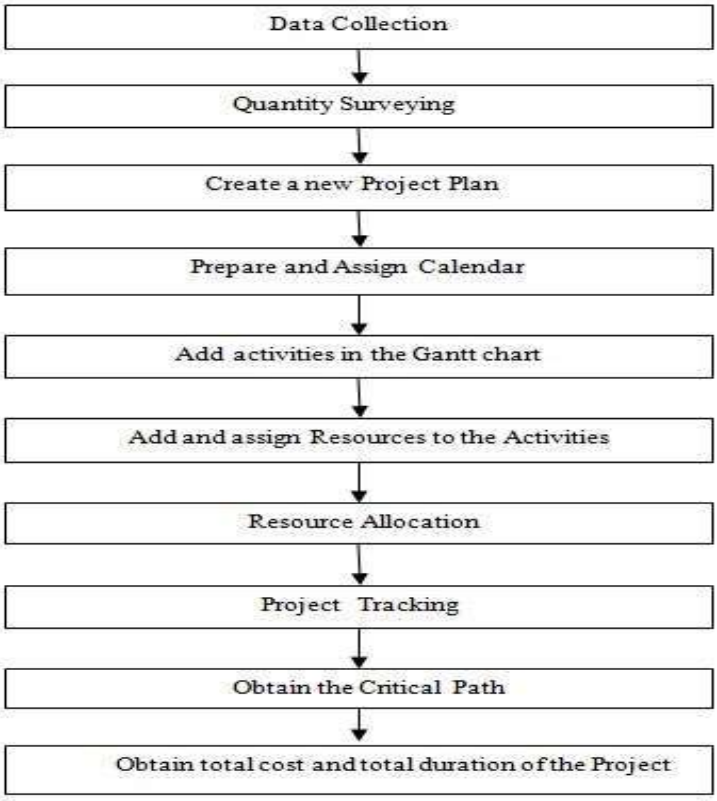
1. To study the scheduling technique using network models (CPM).

2. To reduce the total duration than the actual project's duration.

3. To reduce the cost by proper allocation of resources.

4. The other objective of this project is to use the available resources in a most optimum.

METHODOLOGY



Data collection

Data collection is collecting the required data such as drawings of the plan, resources required for the plan. Resources are how many labourers are required for the entire work and what are the materials and how much amount of the materials that are need for the completion of the project.

Starting a new project

General options

Before starting a new project, we have to change some options in the Gantt chart. In this we have to do some default options before starting the project. Every project should be kept in Gantt with time line for better view and in this we can change the date format. These are the options that are primarily done before starting any project.

Preparing a calendar

Selecting type of calendar

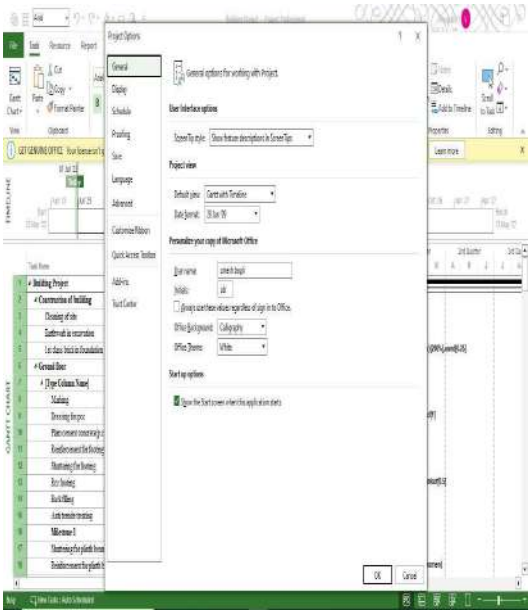
In display options we have to select the suitable type calendar required for the project. There are mainly three types of calendars namely

1.Gregorian

2.Hijri

3.Buddist

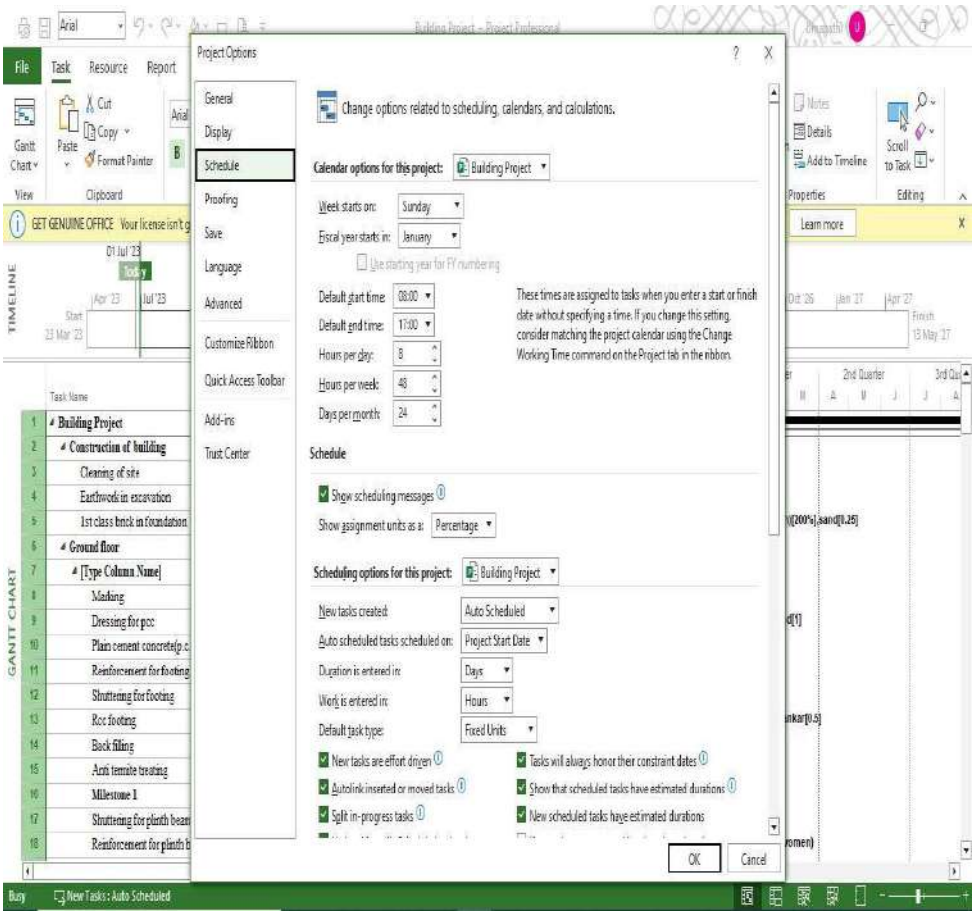
Among the three types of calendars Gregorian type of calendar is used and it is the standard type of calendar.



Default working time

Before entering activities in the Gantt chart, we have to prepare a calendar. In the calendar we have to adjust the number of working days in a week and number of working hours in a day

Tools => change working time => options



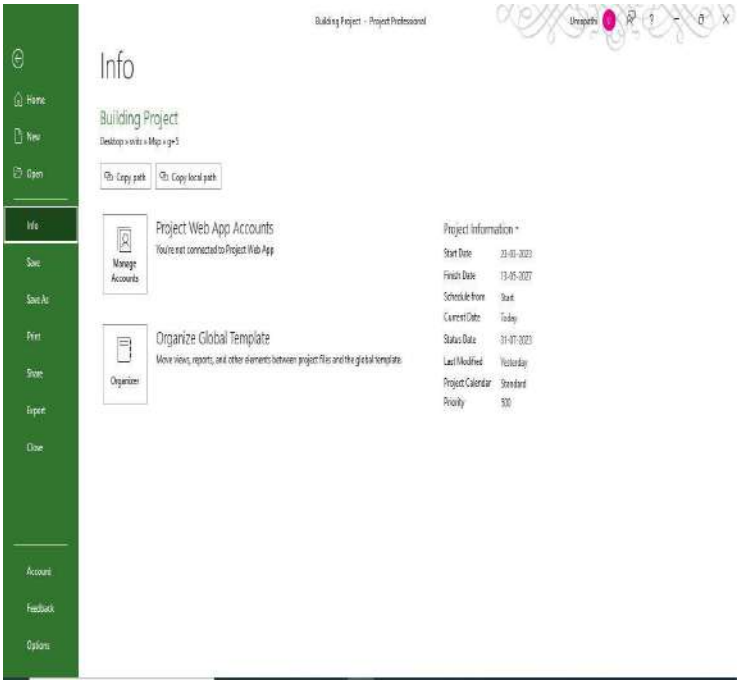
Project calendar

The first thing to do after creating a new project is to create the project calendar. If we do this at any time after resources or tasks have been added then the way MS-project handles time and day will introduce confusion down-stream.

Tools=> change working time=> New

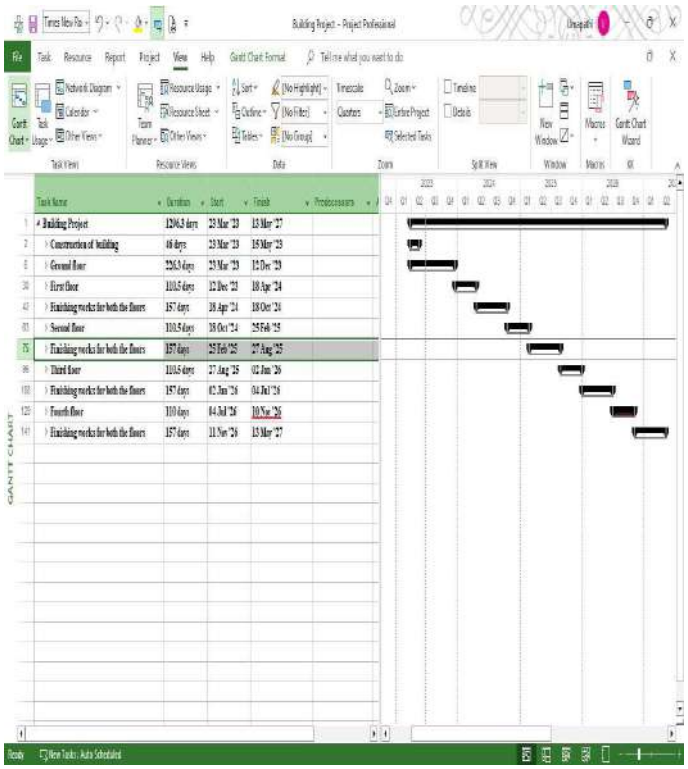
It does not make much difference whether you make a copy of standard or create a brand new one. Enter a name for the calendar

using the project name, for example “my new project” then press OK.



Creating Work Breakdown Structure

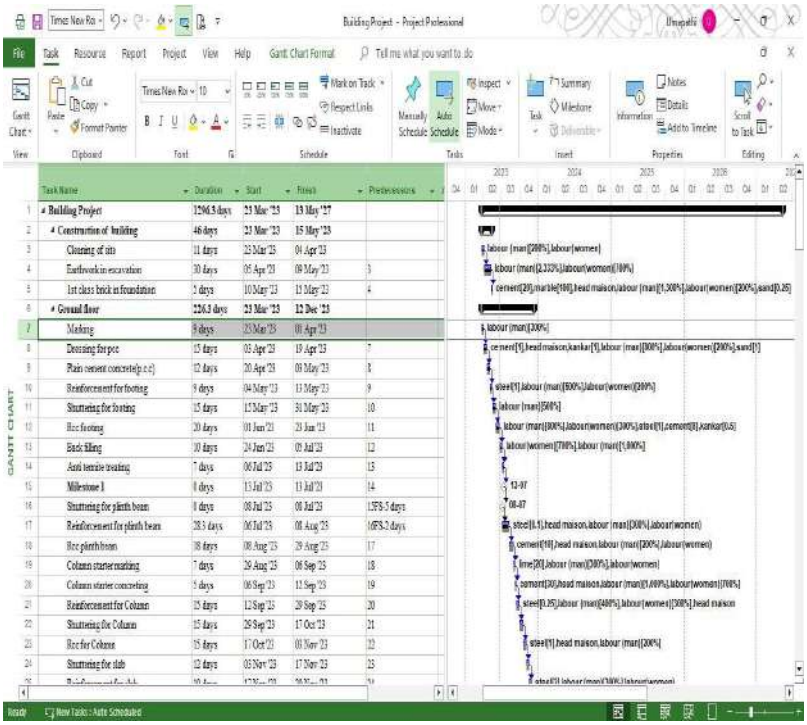
After the complete planning of a project, the next step is to create work breakdown structure (WBS) to define and organize the project elements at different levels. A WBS represents a hierarchical breakdown of a project into elements. At first level of work break down structure, a project with name is created.



Adding activities in the Gantt chart

Gantt chart is a chart in which a series of horizontal lines shows the amount of work done or production completed in certain time in relation to the amount planned for these periods.

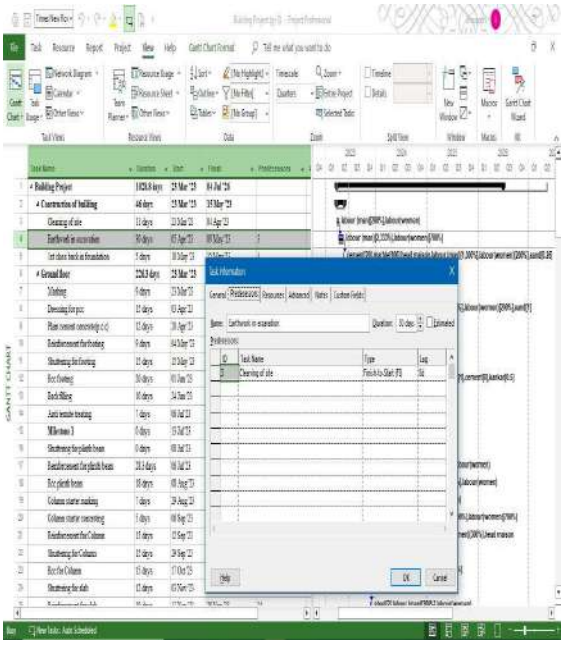
Gantt chart shows the activities involved in the entire project and their series and duration for the each and every particular activity and it shows what are the resources available for each activity and percentage of completion of work of that particular activity.



Scheduling the Project

After all the tasks are entered along with their respective duration, the information of task dependencies is specified by specifying predecessor of each of the task. The information is entered using predecessor column of the software. The four types of task relationships or inter dependency are FS, SS, FF and SF. The default relationship in the software is finish to start with zero lead and lag.
Task Relationships:

- Finish-to-start (FS): The finish date of the predecessor task determines the start date of the successor task.
- Start-to-start (SS): The start date of the predecessor task determines the start date of the successor task.
- Finish-to-finish (FF): The finish date of the predecessor task determines the finish date of the successor task.
- Start-to-finish (SF): The start date of the predecessor task determines the finish date of the successor task.



Definition of a Resource:

The resource has been defined as many ways.

A resource is any entity that contributes to the accomplishment of project activities.

- Personnel
- Equipment
- Contractors
- Spaces
- Materials

A resource is a "physical quantity" such as manpower, material, money, equipment, time or space, which are required for carrying out a project.

The resources may be raw materials, machine, time or people time, money or anything else to maximizing profits, minimizing costs, or achieving the best possible quality.

Importance of Resources in Construction Projects:

The crucial factor in successful implementation of a construction project not only depends on the quality & quantity of work, but also largely depends on availability of resources. All activities involved in the project require certain number of resources to be completed. Each activity is allocated with a specific resource and completed within the time limit, otherwise implication of overall duration of the project.

The best combination of resources to use for performing a construction activity is based on contractor's ability to identify the interdependencies of the various resources. The time and cost directly concern to the availability of resources. The time required may be determined by dividing the productivity associated with the resources used on the activity into the defined quantity of work for the activity.

Classification of Resources:

Resources are responsible for actually completing the tasks in the project. They can be classified in various way based on various factors involved in different projects.

A) Based on nature:

Resources can be classified as follows.

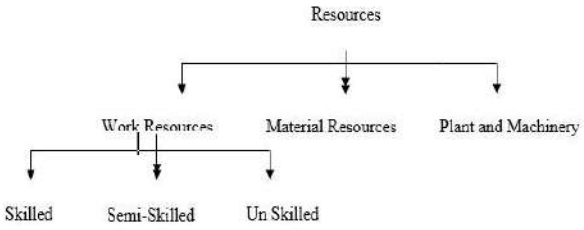


Fig. 1.1 Classification of Resources.

Work resources:

People and equipment resources that perform work to accomplish a task. Work resources consume time (hours or days) to accomplish tasks.

Material resources:

The supplies or other consumable items used to complete tasks in a project.

B) Based on their Attributes:

Generally, resources in a construction project may be categorized into two groups- namely,

- Simple resources
- Complex Resources

All resources can be classified as either simple resources or complex resources. Each resource has its own attributes, such as quantity and capacity. For example, in an earth moving operation, earth could have quantity and density as its attributes, while truck not only has number and capacity as its attributes, but also has loading, moving to dump, dumping, and moving load as its methods. In this example, earth is a simple resource, and truck is a complex resource.

Based on Category:

Skilled: Experts in performing their jobs are called skilled. E.g., Carpenter, Bar bender, Masons, Electrician, and Plumber. They cannot involve or perform many activities.

Unskilled: All helpers come under this category. They can help anybody in various activities of construction. These labour which are not involved in the skilled work. E.g., Earth labor, concreting labour.

Semi-Skilled: Person who is not as expert as skilled labour, but can perform the same job in more duration.

Quantification of Resources:

Resources can be quantified as follows.

One way is to use some measure of resource usage – Output

- Staff hours
- Equipment hours

Another way is to indicate the number of units of resource assigned

- Numbers of staff
- Number of Equipment's

Factors Affecting the Number of Resources:

- Skill or expertise – workmanship
- Site conditions
- Nature of work
- Quantity of work
- Continuation of work

Resolving Workload/Resource Imbalances:

- Request additional resources

- Plan to work overtime
- Contract out work
- Delay start or extend durations of non-critical activities
- Change the approach used to perform the work
- Reduce project scope or extend project deadline

Need for This Study:

Resources required for the construction industry are:

Men: For skilled and unskilled work men, supervision and management.

Materials: Such as cement, bricks, aggregates, reinforcement, fittings and fixtures, and consumable items like petrol, lubricants, etc.

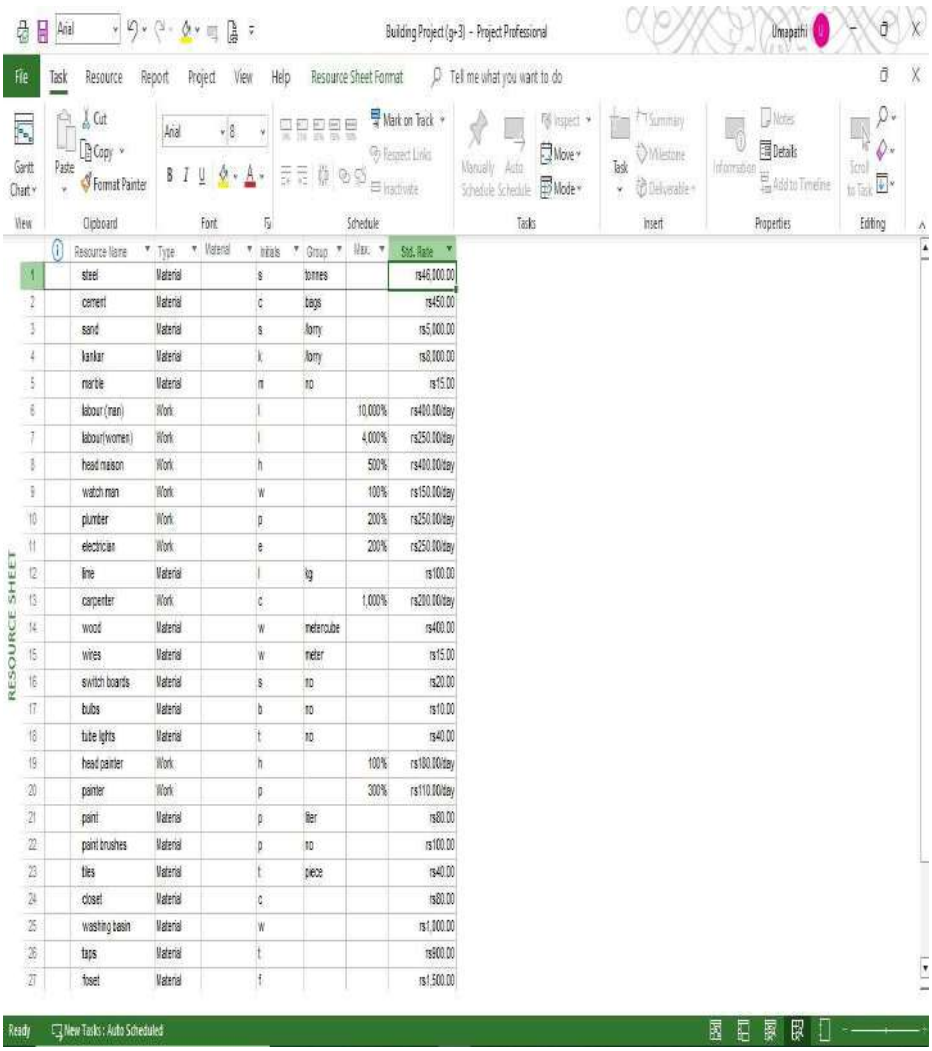
Machines: To facilitate construction, such as trucks, earth moving equipment, pile drivers, etc., together with repair and maintenance facilities.

The deployment of above resources involves money. Since for any given work, money available is limited, there is always a limitation on the available resources and these must be utilized in a planned and efficient manner so as to extract maximum benefits. Further, there are a number of uncertainties in the actual availability of resources. The right type of labor may not be available at the specified time due to seasonal variations in the supply, labor unrest, etc. There could be difficulties in the procurement of scarce materials, breakdowns in machines cause delays. Unexpected site conditions may also affect the progress of the work. The delays result in increase in costs and time, but these can be brought within reasonable limits by proper management of works.

While developing CPM and PERT networks, it is generally assumed that required sufficient resources are allocated to perform all the activities and complete the project. But in real practice, resources are always limited and limitation on resources can significantly affect the initiation, performance and completion of activities on scheduled time and can cause the project to be extended beyond the scheduled duration. Therefore, various activities of the project are to be scheduled in such a manner that there should be best possible utilization of available resources.

Certain type of resources may fluctuate from very high at one time to very low at other time. If it is an easily available material or unskilled labour, which has to be procured or hired from time to time, the fluctuation in demand will not have much effect on cost of the project. But if it is rare equipment or skilled workmen, which are needed for the project and cannot be made available or deployed easily, then, they have to be hired or employed on a permanent or semi-permanent basis. This will affect the cost of the project due to high idle time. Therefore, the fluctuation of the resources should be utilized in an optimal way.

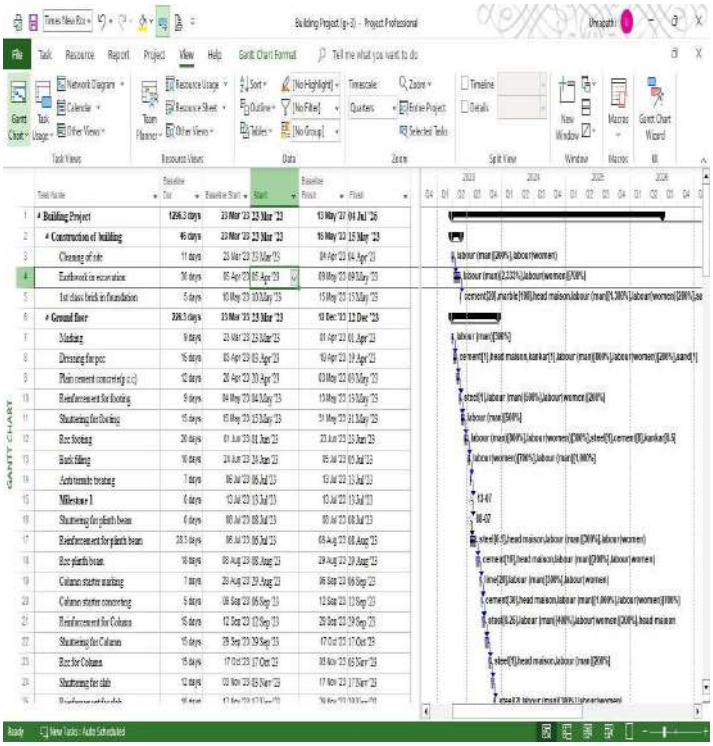
In fast-track construction projects, the importance of resource management need not be further emphasized the various implications of possible resource constraints on the schedule and cost of the project needs to be analysed before the actual start of the project. Normally such analysis is not carried out by the stakeholders in the medium sized fast track construction projects. This study is an attempt to make such analysis.



	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate
1	steel	Material		s	tonnes		rs46,000.00
2	cement	Material		c	bags		rs450.00
3	sand	Material		s	lorry		rs5,000.00
4	kankar	Material		k	lorry		rs8,000.00
5	marble	Material		m	no		rs15.00
6	labour (man)	Work		l		10,000%	rs400.00/day
7	labour(women)	Work		l		4,000%	rs250.00/day
8	head maison	Work		h		500%	rs400.00/day
9	watch man	Work		w		100%	rs150.00/day
10	plumber	Work		p		200%	rs250.00/day
11	electrician	Work		e		200%	rs250.00/day
12	line	Material		l	kg		rs100.00
13	carpenter	Work		c		1,000%	rs200.00/day
14	wood	Material		w	metercube		rs400.00
15	wires	Material		w	meter		rs15.00
16	switch boards	Material		s	no		rs20.00
17	bulbs	Material		b	no		rs10.00
18	tube lights	Material		t	no		rs40.00
19	head painter	Work		h		100%	rs180.00/day
20	painter	Work		p		300%	rs110.00/day
21	paint	Material		p	liter		rs80.00
22	paint brushes	Material		p	no		rs100.00
23	tiles	Material		t	piece		rs40.00
24	closet	Material		c			rs80.00
25	washing basin	Material		w			rs1,000.00
26	taps	Material		t			rs900.00
27	foset	Material		f			rs1,500.00

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 three baselines can be compared at once. Baseline projects do not exist as separate project to access.



Task Name	Baseline Dur.	Baseline Start	Start	Baseline Finish	Finish
Building Project	**1296.3 days**	**23 Mar '23**	**23 Mar '23**	**13 May '27**	**04 Jul '26**
Construction of building	**46 days**	**23 Mar '23**	**23 Mar '23**	**15 May '23**	**15 May '23**
Cleaning of site	11 days	23 Mar '23	23 Mar '23	04 Apr '23	04 Apr '23
Earthwork in excavation	30 days	05 Apr '23	05 Apr '23	09 May '23	09 May '23
1st class brick in foundation	5 days	10 May '23	10 May '23	15 May '23	15 May '23
Ground floor	**226.3 days**	**23 Mar '23**	**23 Mar '23**	**12 Dec '23**	**12 Dec '23**
Marking	9 days	23 Mar '23	23 Mar '23	01 Apr '23	01 Apr '23
Dressing for pcc	15 days	03 Apr '23	03 Apr '23	19 Apr '23	19 Apr '23
Plain cement concrete (p.c.c)	12 days	20 Apr '23	20 Apr '23	03 May '23	03 May '23
Reinforcement for footing	9 days	04 May '23	04 May '23	13 May '23	13 May '23
Shuttering for footing	15 days	15 May '23	15 May '23	31 May '23	31 May '23
Rcc footing	20 days	01 Jun '23	01 Jun '23	23 Jun '23	23 Jun '23
Back filling	10 days	24 Jun '23	24 Jun '23	05 Jul '23	05 Jul '23
Anti termite treating	7 days	06 Jul '23	06 Jul '23	13 Jul '23	13 Jul '23
Milestone 1	0 days	13 Jul '23	13 Jul '23	13 Jul '23	13 Jul '23
Shuttering for plinth beam	0 days	08 Jul '23	08 Jul '23	08 Jul '23	08 Jul '23
Reinforcement for plinth beam	28.3 days	06 Jul '23	06 Jul '23	08 Aug '23	08 Aug '23
Rcc plinth beam	18 days	08 Aug '23	08 Aug '23	29 Aug '23	29 Aug '23
Column starter marking	7 days	29 Aug '23	29 Aug '23	06 Sep '23	06 Sep '23
Column starter concreting	5 days	06 Sep '23	06 Sep '23	12 Sep '23	12 Sep '23
Reinforcement for Column	15 days	12 Sep '23	12 Sep '23	29 Sep '23	29 Sep '23
Shuttering for Column	15 days	29 Sep '23	29 Sep '23	17 Oct '23	17 Oct '23
Rcc for Column	15 days	17 Oct '23	17 Oct '23	03 Nov '23	03 Nov '23
Shuttering for slab	12 days	03 Nov '23	03 Nov '23	17 Nov '23	17 Nov '23
Reinforcement for slab	10 days	17 Nov '23	17 Nov '23	29 Nov '23	29 Nov '23
Electrical conducting	5 days	29 Nov '23	29 Nov '23	05 Dec '23	05 Dec '23
Rcc for slab and beam	5 days	05 Dec '23	05 Dec '23	11 Dec '23	11 Dec '23
Completion of gf slab	1 day	11 Dec '23	11 Dec '23	12 Dec '23	12 Dec '23
Milestone 2	0 days	12 Dec '23	12 Dec '23	12 Dec '23	12 Dec '23

First floor	**110.5 days**	**12 Dec '23**	**12 Dec '23**	**18 Apr '24**	**18 Apr '24**
Structural work	1 day	12 Dec '23	12 Dec '23	13 Dec '23	13 Dec '23
Column starter marking	3 days	13 Dec '23	13 Dec '23	16 Dec '23	16 Dec '23
Column starter concreating	26 days	16 Dec '23	16 Dec '23	16 Jan '24	16 Jan '24
Reinforcement for Columns	9 days	22 Jan '24	22 Jan '24	01 Feb '24	01 Feb '24
Shuttering for Columns	10 days	01 Feb '24	01 Feb '24	13 Feb '24	13 Feb '24
Rcc for Columns	26.9 days	13 Feb '24	13 Feb '24	15 Mar '24	15 Mar '24
Reinforcement for slab	12 days	15 Mar '24	15 Mar '24	29 Mar '24	29 Mar '24
Shuttering for slab	12 days	29 Mar '24	29 Mar '24	12 Apr '24	12 Apr '24
Electrical conducting	3 days	12 Apr '24	12 Apr '24	16 Apr '24	16 Apr '24
Rcc for slab and beams	1.6 days	16 Apr '24	16 Apr '24	17 Apr '24	17 Apr '24
Completion of first floor slab	1 day	17 Apr '24	17 Apr '24	18 Apr '24	18 Apr '24
Finishing works for both the floors	**157 days**	**18 Apr '24**	**18 Apr '24**	**18 Oct '24**	**18 Oct '24**
Block work (100 mm thick)	25 days	18 Apr '24	18 Apr '24	17 May '24	17 May '24
Block work (50 mm thick)	20 days	17 May '24	17 May '24	10 Jun '24	10 Jun '24
Milestone 3	0 days	10 Jun '24	10 Jun '24	10 Jun '24	10 Jun '24
Door frame fixing	20 days	10 Jun '24	10 Jun '24	03 Jul '24	03 Jul '24
Electrical conducting	16 days	03 Jul '24	03 Jul '24	22 Jul '24	22 Jul '24
Plastering -celling	11 days	22 Jul '24	22 Jul '24	03 Aug '24	03 Aug '24
Plastering - internal walls	5 days	03 Aug '24	03 Aug '24	09 Aug '24	09 Aug '24
Flooring(rooms)	8 days	09 Aug '24	09 Aug '24	19 Aug '24	19 Aug '24
Flooring(toilets)	3 days	19 Aug '24	19 Aug '24	22 Aug '24	22 Aug '24
Flooring (corridor/lobby area)	6 days	22 Aug '24	22 Aug '24	29 Aug '24	29 Aug '24
Flooring(staircase)	4 days	29 Aug '24	29 Aug '24	03 Sep '24	03 Sep '24
Railing works(staircase)	7 days	03 Sep '24	03 Sep '24	11 Sep '24	11 Sep '24
Railing works(balcony)	1 day	11 Sep '24	11 Sep '24	12 Sep '24	12 Sep '24
Fixing of doors window shutters	7 days	12 Sep '24	12 Sep '24	20 Sep '24	20 Sep '24
Interior painting	1 day	20 Sep '24	20 Sep '24	21 Sep '24	21 Sep '24
Electrical fixtures	9 days	21 Sep '24	21 Sep '24	02 Oct '24	02 Oct '24
Sanitary& water supply works	7 days	02 Oct '24	02 Oct '24	10 Oct '24	10 Oct '24
External plastering	1 day	10 Oct '24	10 Oct '24	11 Oct '24	11 Oct '24
Cladding work	5 days	11 Oct '24	11 Oct '24	17 Oct '24	17 Oct '24
External painting	1 day	17 Oct '24	17 Oct '24	18 Oct '24	18 Oct '24
Second floor	**110.5 days**	**18 Oct '24**	**18 Oct '24**	**25 Feb '25**	**25 Feb '25**
Structural work	1 day	18 Oct '24	18 Oct '24	19 Oct '24	19 Oct '24
Column starter marking	3 days	19 Oct '24	19 Oct '24	23 Oct '24	23 Oct '24
Column starter concreating	26 days	23 Oct '24	23 Oct '24	22 Nov '24	22 Nov '24
Reinforcement for Column	9 days	28 Nov '24	28 Nov '24	09 Dec '24	09 Dec '24
Shuttering for Columns	10 days	09 Dec '24	09 Dec '24	20 Dec '24	20 Dec '24
Rcc for Columns	26.9 days	20 Dec '24	20 Dec '24	21 Jan '25	21 Jan '25
Reinforcement for slab	12 days	21 Jan '25	21 Jan '25	04 Feb '25	04 Feb '25
Shuttering for slab	12 days	04 Feb '25	04 Feb '25	18 Feb '25	18 Feb '25
Electrical conducting	3 days	18 Feb '25	18 Feb '25	21 Feb '25	21 Feb '25
Rcc for slab and beams	1.6 days	21 Feb '25	21 Feb '25	24 Feb '25	24 Feb '25
Completion of first floor slab	1 day	24 Feb '25	24 Feb '25	25 Feb '25	25 Feb '25

Finishing works for both the floors	**157 days**	**25 Feb '25**	**25 Feb '25**	**27 Aug '25**	**27 Aug '25**
Block work (100 mm thick)	25 days	25 Feb '25	25 Feb '25	26 Mar '25	26 Mar '25
Block work (50 mm thick)	20 days	26 Mar '25	26 Mar '25	18 Apr '25	18 Apr '25
Milestone 4	0 days	18 Apr '25	18 Apr '25	18 Apr '25	18 Apr '25
Door frame fixing	20 days	18 Apr '25	18 Apr '25	12 May '25	12 May '25
Electrical conducting	16 days	12 May '25	12 May '25	30 May '25	30 May '25
Plastering -celling	11 days	30 May '25	30 May '25	12 Jun '25	12 Jun '25
Plastering - internal walls	5 days	12 Jun '25	12 Jun '25	18 Jun '25	18 Jun '25
Flooring(rooms)	8 days	18 Jun '25	18 Jun '25	27 Jun '25	27 Jun '25
Flooring(toilets)	3 days	27 Jun '25	27 Jun '25	01 Jul '25	01 Jul '25
Flooring (corridor/lobby area)	6 days	01 Jul '25	01 Jul '25	08 Jul '25	08 Jul '25
Flooring(staircase)	4 days	08 Jul '25	08 Jul '25	12 Jul '25	12 Jul '25
Railing works(staircase)	7 days	12 Jul '25	12 Jul '25	21 Jul '25	21 Jul '25
Railing works(balcony)	1 day	21 Jul '25	21 Jul '25	22 Jul '25	22 Jul '25
Fixing of doors window shutters	7 days	22 Jul '25	22 Jul '25	30 Jul '25	30 Jul '25
Interior painting	1 day	30 Jul '25	30 Jul '25	31 Jul '25	31 Jul '25
Electrical fixtures	9 days	31 Jul '25	31 Jul '25	11 Aug '25	11 Aug '25
Sanitary& water supply works	7 days	11 Aug '25	11 Aug '25	19 Aug '25	19 Aug '25
External plastering	1 day	19 Aug '25	19 Aug '25	20 Aug '25	20 Aug '25
Cladding work	5 days	20 Aug '25	20 Aug '25	26 Aug '25	26 Aug '25

Task Name	Total Cost	Baseline	Variance	Actual	Remaining
Building Project	**rs4,247,406.91**	**rs5,167,857.41**	**-rs920,450.50**	**rs802,425.20**	**rs3,444,981.71**
Construction of building	**rs385,250.00**	**rs385,250.00**	**rs0.00**	**rs385,250.00**	**rs0.00**
Cleaning of site	rs10,500.00	rs10,500.00	rs0.00	rs10,500.00	rs0.00
Earthwork in excavation	rs332,500.00	rs332,500.00	rs0.00	rs332,500.00	rs0.00
1st class brick in foundation	rs42,250.00	rs42,250.00	rs0.00	rs42,250.00	rs0.00
Ground floor	**rs854,555.41**	**rs854,555.41**	**rs0.00**	**rs417,175.20**	**rs437,380.21**
Marking	rs8,400.00	rs8,400.00	rs0.00	rs8,400.00	rs0.00
Dressing for pcc	rs74,950.00	rs74,950.00	rs0.00	rs74,950.00	rs0.00
Plain cement concrete(p.c.c)	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00
Reinforcement for footing	rs68,500.00	rs68,500.00	rs0.00	rs68,500.00	rs0.00
Shuttering for footing	rs30,000.00	rs30,000.00	rs0.00	rs30,000.00	rs0.00
Rcc footing	rs132,600.00	rs132,600.00	rs0.00	rs132,600.00	rs0.00
Back filling	rs57,500.00	rs57,500.00	rs0.00	rs57,500.00	rs0.00
Anti termite treating	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00
Milestone 1	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00
Shuttering for plinth beam	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00
Reinforcement for plinth beam	rs46,225.00	rs46,225.00	rs0.00	rs45,225.20	rs999.80
Rcc plinth beam	rs30,600.00	rs30,600.00	rs0.00	rs0.00	rs30,600.00
Column starter marking	rs12,150.00	rs12,150.00	rs0.00	rs0.00	rs12,150.00
Column starter concreting	rs33,730.41	rs33,730.41	rs0.00	rs0.00	rs33,730.41
Reinforcement for Column	rs52,750.00	rs52,750.00	rs0.00	rs0.00	rs52,750.00
Shuttering for Column	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00
Rcc for Column	rs64,000.00	rs64,000.00	rs0.00	rs0.00	rs64,000.00
Shuttering for slab	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00
Reinforcement for slab	rs106,500.00	rs106,500.00	rs0.00	rs0.00	rs106,500.00
Electrical conducting	rs2,500.00	rs2,500.00	rs0.00	rs0.00	rs2,500.00
Rcc for slab and beam	rs104,950.00	rs104,950.00	rs0.00	rs0.00	rs104,950.00
Completion of gf slab	rs29,200.00	rs29,200.00	rs0.00	rs0.00	rs29,200.00
Milestone 2	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00

First floor	**rs376,683.00**	**rs376,683.00**	**rs0.00**	**rs0.00**	**rs376,683.00**
Structural work	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00
Column starter marking	rs3,762.50	rs3,762.50	rs0.00	rs0.00	rs3,762.50
Column starter concreating	rs117,300.00	rs117,300.00	rs0.00	rs0.00	rs117,300.00
Reinforcement for Columns	rs13,720.50	rs13,720.50	rs0.00	rs0.00	rs13,720.50
Shuttering for Columns	rs49,000.00	rs49,000.00	rs0.00	rs0.00	rs49,000.00
Rcc for Columns	rs70,490.00	rs70,490.00	rs0.00	rs0.00	rs70,490.00
Reinforcement for slab	rs67,420.00	rs67,420.00	rs0.00	rs0.00	rs67,420.00
Shuttering for slab	rs20,400.00	rs20,400.00	rs0.00	rs0.00	rs20,400.00
Electrical conducting	rs1,500.00	rs1,500.00	rs0.00	rs0.00	rs1,500.00
Rcc for slab and beams	rs33,090.00	rs33,090.00	rs0.00	rs0.00	rs33,090.00
Completion of first floor slab	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00
Finishing works for both the floors	**rs790,017.50**	**rs790,017.50**	**rs0.00**	**rs0.00**	**rs790,017.50**
Block work(100 mm thick)	rs109,350.00	rs109,350.00	rs0.00	rs0.00	rs109,350.00
Block work(50 mm thick)	rs88,350.00	rs88,350.00	rs0.00	rs0.00	rs88,350.00
Milestone 3	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00
Door frame fixing	rs52,000.00	rs52,000.00	rs0.00	rs0.00	rs52,000.00
Electrical conducting	rs10,380.00	rs10,380.00	rs0.00	rs0.00	rs10,380.00

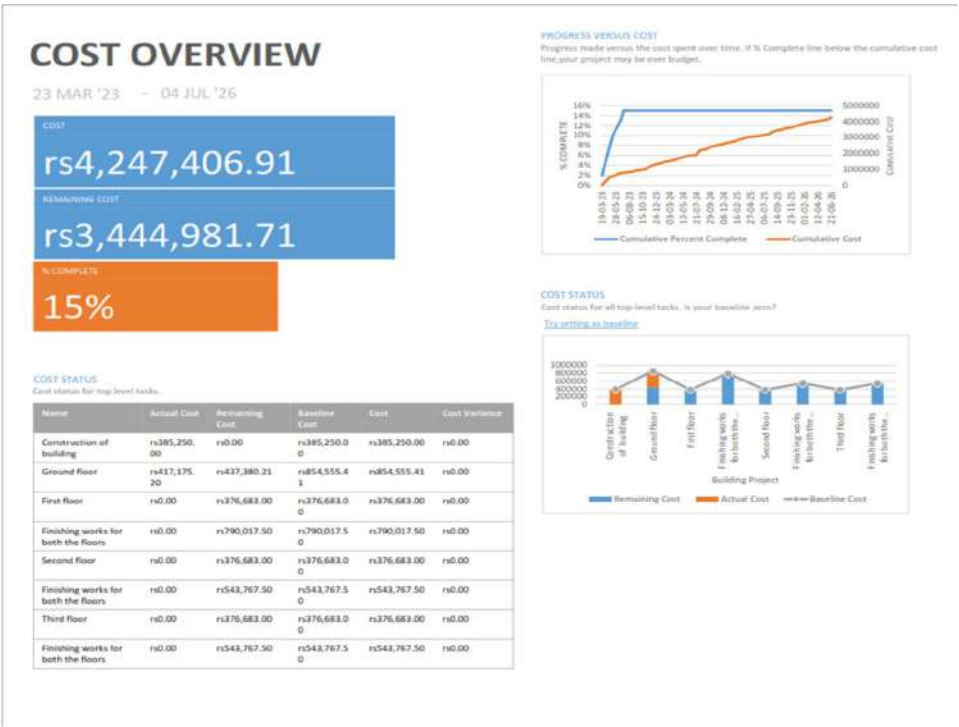
Plastering -celling	rs16,050.00	rs16,050.00	rs0.00	rs0.00	rs16,050.00
Plastering - internal walls	rs21,000.00	rs21,000.00	rs0.00	rs0.00	rs21,000.00
Flooring(rooms)	rs266,100.00	rs266,100.00	rs0.00	rs0.00	rs266,100.00
Flooring(toilets)	rs13,475.00	rs13,475.00	rs0.00	rs0.00	rs13,475.00
Flooring(corridor/lobby area)	rs8,685.00	rs8,685.00	rs0.00	rs0.00	rs8,685.00
Flooring(staircase)	rs18,000.00	rs18,000.00	rs0.00	rs0.00	rs18,000.00
Railing works(staircase)	rs11,480.00	rs11,480.00	rs0.00	rs0.00	rs11,480.00
Railing works(balcony)	rs1,880.00	rs1,880.00	rs0.00	rs0.00	rs1,880.00
Fixing of doors&window shutters	rs23,600.00	rs23,600.00	rs0.00	rs0.00	rs23,600.00
Interior painting	rs4,700.00	rs4,700.00	rs0.00	rs0.00	rs4,700.00
Electrical fixtures	rs3,090.00	rs3,090.00	rs0.00	rs0.00	rs3,090.00
Sanitary& water supply works	rs12,360.00	rs12,360.00	rs0.00	rs0.00	rs12,360.00
External plastering	rs126,607.50	rs126,607.50	rs0.00	rs0.00	rs126,607.50
Cladding work	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00
External painting	rs2,910.00	rs2,910.00	rs0.00	rs0.00	rs2,910.00
Second floor	**rs376,683.00**	**rs376,683.00**	**rs0.00**	**rs0.00**	**rs376,683.00**
Structural work	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00
Column starter marking	rs3,762.50	rs3,762.50	rs0.00	rs0.00	rs3,762.50
Column starter concreating	rs117,300.00	rs117,300.00	rs0.00	rs0.00	rs117,300.00
Reinforcement for Column	rs13,720.50	rs13,720.50	rs0.00	rs0.00	rs13,720.50
Shuttering for Columns	rs49,000.00	rs49,000.00	rs0.00	rs0.00	rs49,000.00
Rcc for Columns	rs70,490.00	rs70,490.00	rs0.00	rs0.00	rs70,490.00
Reinforcement for slab	rs67,420.00	rs67,420.00	rs0.00	rs0.00	rs67,420.00
Shuttering for slab	rs20,400.00	rs20,400.00	rs0.00	rs0.00	rs20,400.00
Electrical conducting	rs1,500.00	rs1,500.00	rs0.00	rs0.00	rs1,500.00
Rcc for slab and beams	rs33,090.00	rs33,090.00	rs0.00	rs0.00	rs33,090.00
Completion of first floor slab	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00

Finishing works for both the floors	rs543,767.50	rs543,767.50	rs0.00	rs0.00	rs543,767.50
Block work(100 mm thick)	rs109,350.00	rs109,350.00	rs0.00	rs0.00	rs109,350.00
Block work(50 mm thick)	rs88,350.00	rs88,350.00	rs0.00	rs0.00	rs88,350.00
Milestone 4	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00
Door frame fixing	rs52,000.00	rs52,000.00	rs0.00	rs0.00	rs52,000.00
Electrical conducting	rs10,380.00	rs10,380.00	rs0.00	rs0.00	rs10,380.00
Plastering -ceiling	rs16,050.00	rs16,050.00	rs0.00	rs0.00	rs16,050.00
Plastering - internal walls	rs21,000.00	rs21,000.00	rs0.00	rs0.00	rs21,000.00
Flooring(rooms)	rs19,850.00	rs19,850.00	rs0.00	rs0.00	rs19,850.00
Flooring(toilets)	rs13,475.00	rs13,475.00	rs0.00	rs0.00	rs13,475.00
Flooring(corridor/lobby area)	rs8,685.00	rs8,685.00	rs0.00	rs0.00	rs8,685.00
Flooring(staircase)	rs18,000.00	rs18,000.00	rs0.00	rs0.00	rs18,000.00
Railing works(staircase)	rs11,480.00	rs11,480.00	rs0.00	rs0.00	rs11,480.00
Railing works(balcony)	rs1,880.00	rs1,880.00	rs0.00	rs0.00	rs1,880.00
Fixing of doors&windows shutters	rs23,600.00	rs23,600.00	rs0.00	rs0.00	rs23,600.00
Interior painting	rs4,700.00	rs4,700.00	rs0.00	rs0.00	rs4,700.00
Electrical fixtures	rs3,090.00	rs3,090.00	rs0.00	rs0.00	rs3,090.00
Sanitary& water supply works	rs12,360.00	rs12,360.00	rs0.00	rs0.00	rs12,360.00
External plastering	rs126,607.50	rs126,607.50	rs0.00	rs0.00	rs126,607.50
Cladding work	rs0.00	rs0.00	rs0.00	rs0.00	rs0.00
External painting	rs2,910.00	rs2,910.00	rs0.00	rs0.00	rs2,910.00
Third floor	rs376,683.00	rs376,683.00	rs0.00	rs0.00	rs376,683.00

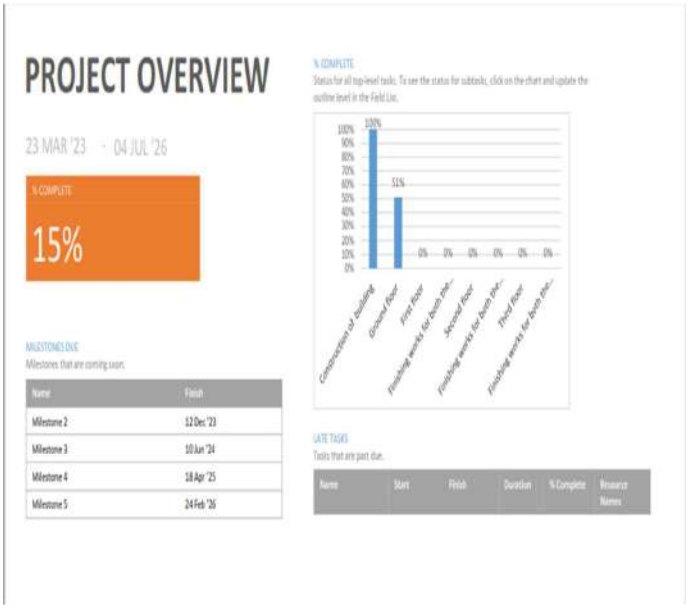
RESULTS

REPORTS

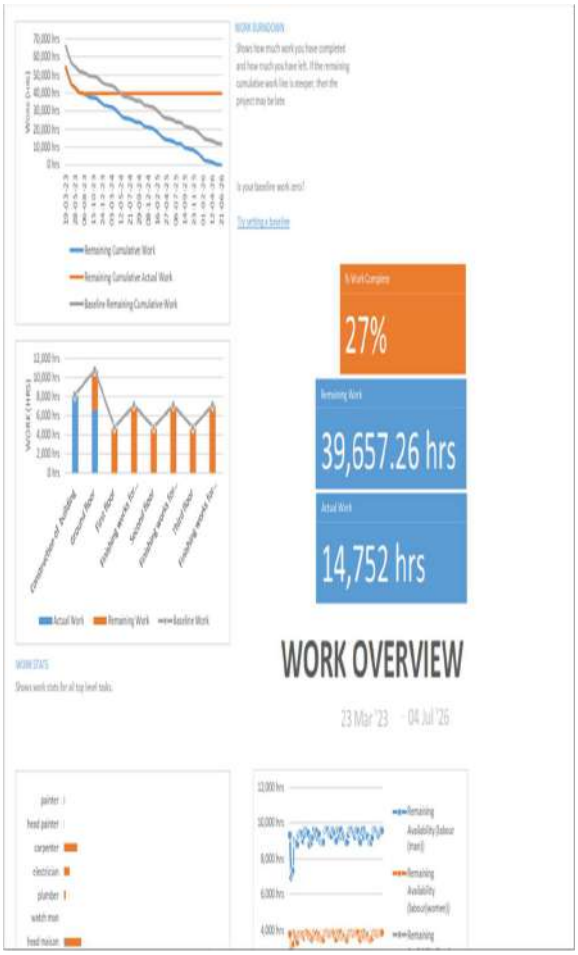
COST OVERVIEW



PROJECT OVERVIEW

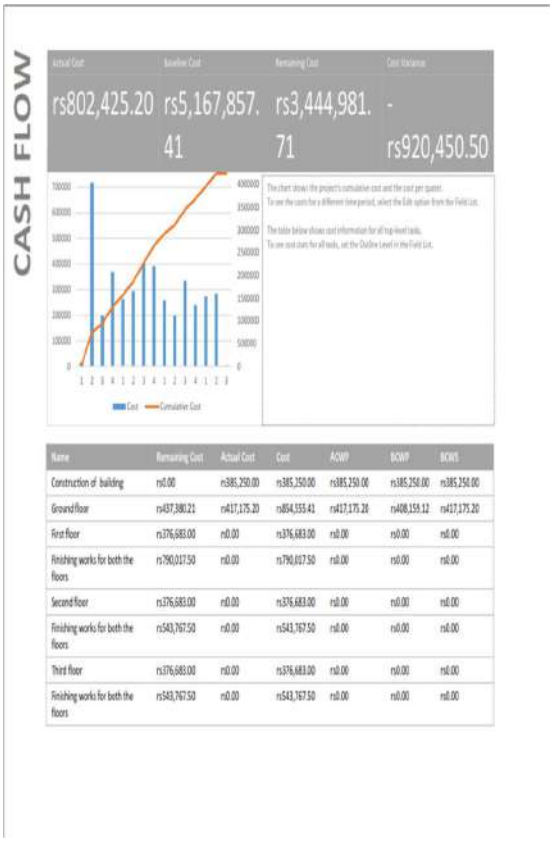


WORK OVERVIEW



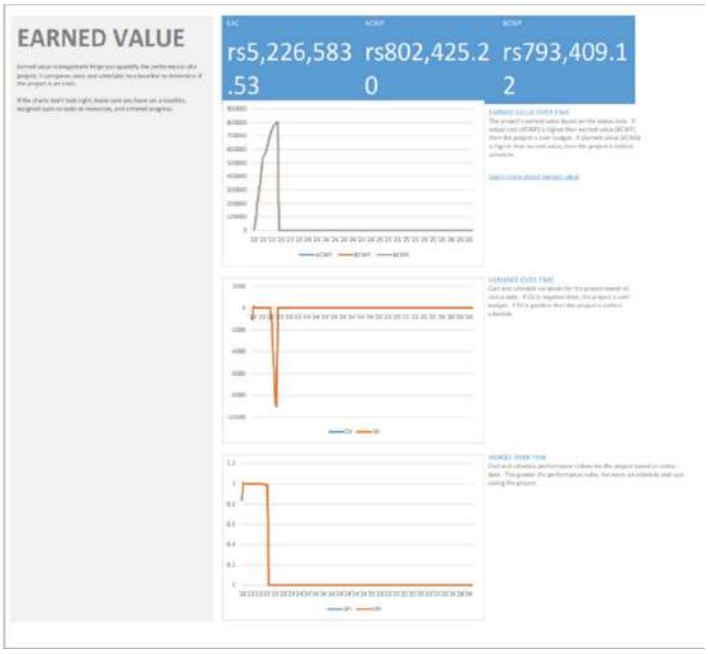
RESOURCE OVERVIEW

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	rs437,380.21	rs417,175.20	rs854,555.41	rs417,175.20	rs408,159.12	rs417,175.20
First floor	rs376,683.00	rs0.00	rs376,683.00	rs0.00	rs0.00	rs0.00
Finishing works for both the floors	rs790,017.50	rs0.00	rs790,017.50	rs0.00	rs0.00	rs0.00
Second floor	rs376,683.00	rs0.00	rs376,683.00	rs0.00	rs0.00	rs0.00
Finishing works for both the floors	rs543,767.50	rs0.00	rs543,767.50	rs0.00	rs0.00	rs0.00
Third floor	rs376,683.00	rs0.00	rs376,683.00	rs0.00	rs0.00	rs0.00
Finishing works for both the floors	rs543,767.50	rs0.00	rs543,767.50	rs0.00	rs0.00	rs0.00

EARNED VALUE



RESOURCE COST OVERVIEW

Name	Actual Work	Actual Cost	Standard Rate
labour (man)	10,976 hrs	rs548,800.00	rs400.00/day
labour(women)	3,440 hrs	rs107,500.00	rs250.00/day
head maison	336 hrs	rs16,800.00	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	rs417,175.20	rs437,380.21	rs854,555.41	rs854,555.41	rs0.00
First floor	rs0.00	rs0.00	rs376,683.00	rs376,683.00	rs376,683.00	rs0.00
Finishing works for both the floors	rs0.00	rs0.00	rs790,017.50	rs790,017.50	rs790,017.50	rs0.00
Second floor	rs0.00	rs0.00	rs376,683.00	rs376,683.00	rs376,683.00	rs0.00
Finishing works for both the floors	rs0.00	rs0.00	rs543,767.50	rs543,767.50	rs543,767.50	rs0.00
Third floor	rs0.00	rs0.00	rs376,683.00	rs376,683.00	rs376,683.00	rs0.00
Finishing works for both the floors	rs0.00	rs0.00	rs543,767.50	rs543,767.50	rs543,767.50	rs0.00

CONCLUSION

The use of project management technique in a proper way reduces the cost and time of construction, without affecting the quality and performance.

Use of Microsoft project software gives a proper schedule path which helps in setting a track of all activities, to check if there is deviation from planned cost and schedule.

Application of proper Management helps Project Manager to achieve efficient project performance by waste minimization and resource optimization along with proper planning scheduling and controlling activities during Construction process.

Time management and resource management are considered as leading factors which highly affect the competent and timely completion of project within the schedule.

Construction of building using Traditional way proves to be uneconomical and consumes more time with many complexibility 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.

Construction of building using Traditional way proves to be uneconomical and consumes more time with many complexities 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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