

# COMPARATIVE STUDY OF PLANNING AND SCHEDULING OF A CONSTRUCTION PROJECT USING MICROSOFT PROJECT

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## Abstract

Project Management is the application of knowledge, tools, techniques and skills to any project activities to meet the requirements of the project. Usually many construction industries in India do not practice the use of project management properly. Poorly managed projects usually result in a huge amount to all stakeholders not just financially but also psychologically and emotionally as well as it also consumes a lot of time. This has greatly motivated us to carry out the working and functioning of a project using modern project management tool, one of which is MSP (Microsoft Project). This paper consists of planning and scheduling of various activities involved in a construction project using MSP. The presented work clearly gives the difference between carrying out the work using MSP and traditional planning techniques. The presented work has been carried out on a residential building in Mumbai and it clearly shows how the use of MSP software can speed up the construction making it cost effective. Methodology for the presented work includes defining the problem statement, collection of data and finally coming to the conclusion.

**Keywords:** - Project Management, Scheduling, Planning, Activities, Microsoft Project.

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## 1. INTRODUCTION

Project management is the planning, monitoring and scheduling of all aspects of a project and the motivation of all those involved in it to achieve the project objectives on time and to the specified cost, quality and performance. Construction project management is the art and science of managing all aspects of the project to achieve the project mission objectives, the specific time, budget cost and predefined quality specifications; working efficiently and effectively in the changing project environment with due regards to construction worker's safety and health. Project management is essentially aimed at producing an end product that will effect some change for the benefit of the organisation that instigated the project. It is the initiation, planning and control of a range of tasks required to deliver this end product.

### 1.1 Importance of Construction Project Planning

- Planning helps to minimize the cost by optimum utilization of available resources.
- Planning reduces irrational approaches, duplication of works and inter departmental conflicts.
- Planning encourages innovation and creativity among the construction managers.
- Planning imparts competitive strength to the enterprise.

### 1.2 Purpose of Scheduling

- A Schedule is the reflection of the plan.
- It is the determination of time and sequence of operation in the project and their assembly to give the overall completion time.
- The process of scheduling uncovers flaws in the plan, leading to easy revision of the plan.

### 1.3 Microsoft Project

Microsoft Project is a project management software product, developed and sold by Microsoft. It is designed to assist a project manager in developing a plan, assigning resources to tasks, tracking progress, managing the budget, and analyzing workloads. MS project can be used as a standalone tool for tracking project progress or it can be used for tracking complex project distributed in many geographical areas and managed by a number of project managers. Microsoft project is designed to assist a project manager in;

- Developing a plan,
- Assigning resources to tasks,
- Tracking progress,
- Managing budget and
- Analysing workloads.

## 2. BRIEF OVERVIEW OF LITERATURE

**Rhuta Joshi and Prof. V.Z. Patil** analysed the project management technique by scheduling various construction activities, allocation of resources and resource leveling using Microsoft Project 2013 for residential building. The study was carried out in two phases. In first phase data was collected from site and quantities were calculated as per drawing and required manpower was calculated. In second phase of construction activities was defined in MSP 2013. The result was as resource decreases duration increased by 10.38% and cost by 0.94%.

**Nikhil R. Mahajan and M. V. Bhogone (2017)** The methodology adapted by them was to compare Microsoft Project and Traditional Method. Schedule was prepared for both conventional and prefabrication method. A residential building was taken for comparison. The software used was MSP, the duration required for completion of project was collected from respective company. The comparison was made by comparing the total time required for completion by using critical path method with MSP project. The result shows that the total duration for both the conventional and prefabrication method and prefab construction for individual house and double story the required cost is 13% more than conventional but it reduces the project duration by 63 days.

**Wallance Agyei** The study was aimed at finding the difference between the cost and minimum expected time that will be required to complete the project. Both CPM and PERT techniques were used for analysis and from the result it was concluded that schedule proposed by bus provides much shorter completion time as compared to the actual time taken by the process.

**Rashmi J.V. and Amey A. Kelkar (2017)** They analysed the planning and scheduling of multi-storeyed building in two phase by conventional execution approach & again analysis of same building was carried out by applying MSP to compare the result for justification. For their study they considered G+3 with basement and the type of RCC frame structure, to estimate the overall cost and time required to execute a multi-storeyed residential building. The result of their study showed that proper manage of project management skills and technique reduces the time by 23.2% and cost by 3.14%.

**E. Suresh kumar and S. Krishnamoorthi (2015)** In their study they focused on the scheduling using MSP and earns value analysis for an apartment building. Thereby time required for the process of cost overrun is avoided. Project schedule is considered as core of the project plan, and the purpose of the project schedule is to show the organization how the work will be performed to uncover the mistakes. After completion of project it has been observed that there is more difference between budget cost and actual cost, cost increases as the material price increases. Earned value analysis is carried out in order to find the variance cost of the project.

## 3. METHODOLOGY USED FOR THE RESEARCH



Fig-1. Research Methodology Flowchart.

### 3.1 Problem Statement

Many of the construction industries, nowadays, are facing problems with respect to the time consumed, cost incurred and delays occurring in completing a construction project. Usually these problems occur when a project has not been planned properly. Project planning involves and explains the customers about the detailing strategy that should be followed for the project completion. The primary and important uses of planning the project are to facilitate communication among stakeholders, to plan the documents related to planning assumptions and decisions, and also to develop document approved scope, cost and schedule baselines.

Construction project management is the art and science of managing all aspects of the project to achieve the project mission objectives, the specific time, budget cost and predefined quality specifications; working efficiently and effectively in the changing project environment with due regards to construction worker's safety and health. Mission of creating a construction facility or services, with predetermined performance objectives define in terms of quality specifications, completion time, budget cost and other specified constraints.

The presented work reviewed concepts of activities sequence that are used for construction of buildings, techniques of scheduling used in the Microsoft project planner and the development of construction planning and scheduling of building construction. This project study gives the information about the project from the starting to the end of the project. After the completion of the study, we can able to know that what we have to do on project site before starting the project, in the middle of the project and after completion of the project of construction.

### 3.2 Research Objective

The objective of the research work is to plan and develop construction facilities in such a way that proper systematic planning of construction activities can be achieved. It was also aimed at providing good and proper quality and quantity of machine, men, materials etc., at right stage of the project. And lastly to inform the management, ahead of time, about the difficulties or the various awkward position expected to crop up later in the project.

The following objectives were set for the project: -

1. To identify the sequence of construction activities followed for the construction of the residential building.
2. To determine the technique of planning and scheduling that has been used by the construction company for the completion of the construction work.
3. To develop a module of scheduling using Microsoft Project Software.
4. To identify proper execution of Planning and Scheduling.
5. To know the steps required before and after completion of the project.
6. To try the project and analyse the reason for delays and increase in estimated budget etc.
7. To investigate defects in the planning and scheduling procedure of the organisation and suggest suitable improvements in their methods.

### 3.3 Searching Information

#### 3.3.1 Literature Review

Various literatures were reviewed for the projects explained earlier.

#### 3.3.2 Reference Books

Following books were referred for the presented work: 'Project Management: A systems Approach to Planning, Scheduling and Controlling', 'A Guide to the Project Management Body of Knowledge', 'Brilliant Project Management: What the Best Project Managers know, do and say'.

#### 3.3.3 Journals/Magazines

Some of the International Journals such as Science Direct, Indian Journal of research, IJRET, IOSR for Mechanical and Civil engineering, were also referred to know about the work done related to Microsoft Project software in the past.

### 3.4 Case Study

The case study for the project involves the planning and scheduling of a residential building. For this case G+6 residential building, located at Gundage, Karjat, Maharashtra, India was selected. The site details, plans and drawings etc were utilized to achieve the goals of the project. Type of Structure -Reinforced Cement Concrete Structure (RCC) G + 6 Residential Building.

### 3.4.1 Interview

For the presented work we had scheduled an interview with the Senior Engineer and Project coordinator of the respective construction company in Mumbai, India. The main motive of the interview was to determine the problems that took place during the execution of the project. The problems can be anything related to labour fatigue, duration, delay in project completion, resource under allocation or over allocation, etc. The interview also helped in knowing the sequence of activities planned and followed while execution.

### 3.5 Data Collection

Data collection for any project is very important for correlating the different data and then using in working with Microsoft Project 2010. This data collection can include the starting date of different activities, their finish dates and their delays, relationship between tasks and activities, amount of resources used for different activities.

### 3.6 Data Analysis

The data collected from the company was analysed and divided into activities and sub activities. The activities were analysed using Work Breakdown Structure and proper planning was done using Microsoft Project.

## 4. WORKING WITH MICROSOFT PROJECT AND RESULT

### 4.1 Construction Site Details

**Table-1:** Excavation Quantity.

Sr. No.	Length	Breadth	Height	Quantity	Remarks
1	20	12	3	720	CU.M

1. Material used footing and column below plinth.
2. Grade of concrete = M25(1:1:2)
3. Cement bags for footing = 450
4. Cost of cement per bag = Rs.330
5. Cost of steel per kg = Rs.40
6. Cement used on site = Birla A1 cement (Rs 330 Per bag)
7. Excavation and layout was done in 10 days
8. Dr.fixit WP was used for water proofing of the foundation and lw was used for strength.
9. An estimated 35 days was completely utilized for foundation work

**Table -2:** Manpower associated with footing

Sr. No	Machinery suppliers	No.	Overall cost (in Rs)
1.	JCB	2	750/HR
2.	Poklan	1	1100/HR
3.	Breaker poklan	1	1300/HR

**Table-3:** Steel reinforcement details

Member	Diameter Of Steel Reinforcement Bar	Concrete Quantity CU-M	Steel Quantity Ton
Column	8mm ,12 mm, 16mm	144	18.4
Beam	8mm, 16mm, 20mm	211	22.7
Slab	10mm	110.27	49.5

**Table-4:** Classification of Manpower

Type of workers	No. of labours per slab	Cost in Rupees
Unskilled labour	8	350
Skilled labour	4	500
Carpenter	4	550
Mason	6	1000 per day
Fitter	2	550

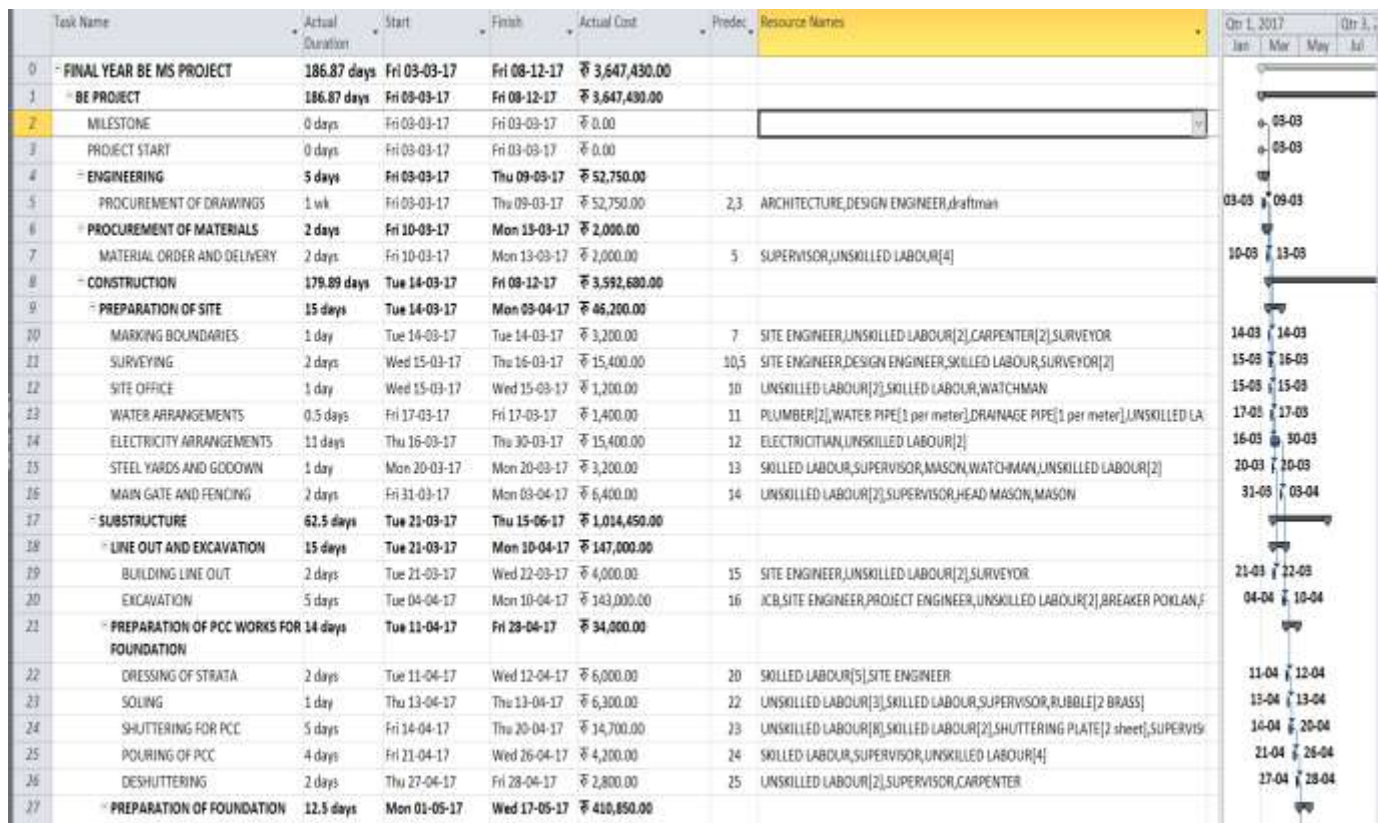
**Table-5:** Material Used

Materials	Cost (in Rs)	Quantity used per slab	Cost per slab(in Rs)
Shuttering plates	50 per plate	330 plates	16500
Sand	7000 per brass	7 brass	49000
Aggregate	2500 per brass	13 brass	32500
Cement bag	330 per bag	650 bags	214500
Water tanker	600 per tanker	3 tankers	1800
Steel	40000 per ton	3 tons	120000

**4.2 Scheduling with Gantt Charts and WBS**

Gantt charts are a special type of view that are used extensively in project management. In MSP, the left side of the gantt chart contains a sheet view, and the right side contains a bar graph along a timescale. In msp, the gantt chart is developed depending upon the duration we enter for respective task and how to efficiently establish task dependencies.

As we refine the durations, link tasks, and possibly enter date constraints or assign recourses, Project 2010 calculate schedule to reflect those controls automatically scheduled task are marked with the gantt bar icon in the task.



**Fig -2:** Screenshot

Task Mode	Task Name	Actual Duration	Start	Finish	Actual Cost	Prede	Resource Names	Progress
0	PREPARATION OF FOUNDATION	12.5 days	Mon 01-05-17	Wed 17-05-17	₹ 430,850.00			100%
28	LAYOUT MARKING	1 day	Mon 01-05-17	Mon 01-05-17	₹ 3,200.00		26 SITE ENGINEER, UNSKILLED LABOUR[4], SKILLED LABOUR, SUPERVISOR, CARPENTER	100%
29	LAYING OF REINFORCEMENT	1 day	Tue 02-05-17	Tue 02-05-17	₹ 81,450.00		28 STEEL[2 ton], SUPERVISOR, SITE ENGINEER, SKILLED LABOUR[4], FITTER, UNSKILLED LABOUR[2]	100%
30	SHUTTERING FOR FOUNDATION	1.5 days	Wed 03-05-17	Thu 04-05-17	₹ 3,500.00		29 SHUTTERING PLATE[4 sheet], SITE ENGINEER, SUPERVISOR, CARPENTER[4]	100%
31	POURING OF CONCRETE	1 day	Thu 04-05-17	Fri 05-05-17	₹ 133,400.00		30 HEAD MASON, MASON, SUPERVISOR, CEMENT[200 bag], AGGREGATE[8 brass]	100%
32	DESHUTTERING	1 day	Fri 05-05-17	Mon 08-05-17	₹ 1,600.00		31 CARPENTER, UNSKILLED LABOUR[2], SUPERVISOR	100%
33	MARKING FOR COLUMN	1 day	Mon 08-05-17	Tue 09-05-17	₹ 2,000.00		32 SITE ENGINEER, UNSKILLED LABOUR, CARPENTER[2]	100%
34	LAYING OF REINFORCEMENT FOR COLUMN	1 day	Tue 09-05-17	Wed 10-05-17	₹ 83,900.00		33 SITE ENGINEER, UNSKILLED LABOUR[4], SKILLED LABOUR[2], FITTER[2], STEEL	100%
35	SHUTTERING FOR COLUMN	2 days	Wed 10-05-17	Fri 12-05-17	₹ 4,000.00		34 UNSKILLED LABOUR[2], SHUTTERING PLATE[20 sheet], SITE ENGINEER, CARPENTER	100%
36	POURING OF CONCRETE	2 days	Fri 12-05-17	Tue 16-05-17	₹ 94,800.00		35 CEMENT[150 bag], SAND[3 Brass], AGGREGATE[6 brass], SITE ENGINEER, UNSKILLED LABOUR[2]	100%
37	DESHUTTERING	1 day	Tue 16-05-17	Wed 17-05-17	₹ 2,000.00		36 SUPERVISOR, UNSKILLED LABOUR[2], CARPENTER	100%
38	PUNTH WORKS	21 days	Wed 17-05-17	Thu 15-06-17	₹ 422,600.00			100%
39	SETTING UP LEVEL FOR PUNTH	1 day	Wed 17-05-17	Thu 18-05-17	₹ 3,800.00		37 SITE ENGINEER, UNSKILLED LABOUR[4], CARPENTER[2]	100%
40	PUNTH BEAM BOTTOM SHUTTER	2 days	Thu 18-05-17	Mon 22-05-17	₹ 5,500.00		39 SHUTTERING PLATE[20 sheet], SITE ENGINEER, SKILLED LABOUR[2], UNSKILLED LABOUR[2]	100%
41	LAYING OF REINFORCEMENT	2 days	Mon 22-05-17	Wed 24-05-17	₹ 155,200.00		40 STEEL[3.75 ton], UNSKILLED LABOUR[4], FITTER[4]	100%
42	LAYING OF SERVICE LINE	1 day	Wed 24-05-17	Thu 25-05-17	₹ 2,400.00		41 SUPERVISOR, UNSKILLED LABOUR[3], SKILLED LABOUR[2]	100%
43	SIDE SHUTTERING FOR BEAMS	2 days	Thu 25-05-17	Mon 29-05-17	₹ 11,300.00		42 SHUTTERING PLATE[50 sheet], UNSKILLED LABOUR[10], SITE ENGINEER, CARPENTER	100%
44	POURING OF CONCRETE	2 days	Mon 29-05-17	Wed 31-05-17	₹ 157,500.00		43 AGGREGATE[10 brass], CEMENT[250 bag], SAND[5 Brass], SUPERVISOR, SITE ENGINEER	100%
45	DESHUTTERING	2 days	Wed 31-05-17	Fri 02-06-17	₹ 3,200.00		44 UNSKILLED LABOUR[4], SUPERVISOR, CARPENTER	100%
46	BACKFILLING UPTO PUNTH BEAM BOTTOM	1 day	Fri 02-06-17	Mon 05-06-17	₹ 13,400.00		45 SUPERVISOR, UNSKILLED LABOUR[5], JCB[2]	100%
47	COMPACTION OF SOIL	2 days	Mon 05-06-17	Wed 07-06-17	₹ 11,200.00		46 SUPERVISOR, UNSKILLED LABOUR[4], COMPACTOR	100%
48	RUBBLE SOLING	2 days	Wed 07-06-17	Fri 09-06-17	₹ 16,500.00		47 SUPERVISOR, SKILLED LABOUR[3], UNSKILLED LABOUR[5], SITE ENGINEER, MASON	100%
49	LAYING OF MURUM	1 day	Fri 09-06-17	Mon 12-06-17	₹ 6,100.00		48 SKILLED LABOUR, SUPERVISOR, SITE ENGINEER, murum[5 brass]	100%
50	LAYING OF PCC	2 days	Mon 12-06-17	Wed 14-06-17	₹ 31,400.00		49 UNSKILLED LABOUR[8], SKILLED LABOUR[2], SAND[1 Brass], AGGREGATE[1 brass]	100%
51	LAYING OF DPC	1 day	Wed 14-06-17	Thu 15-06-17	₹ 5,900.00		50 SKILLED LABOUR, UNSKILLED LABOUR, SITE ENGINEER, MASON[4]	100%
52	SUPERSTRUCTURE	112 days	Thu 15-06-17	Fri 08-12-17	₹ 2,532,890.00			
53	RCC WORKS	112 days	Thu 15-06-17	Fri 08-12-17	₹ 2,532,890.00			
54	STHT	112 days	Thu 15-06-17	Fri 08-12-17	₹ 2,532,890.00			

Fig -3: Contd. MSP Screenshot

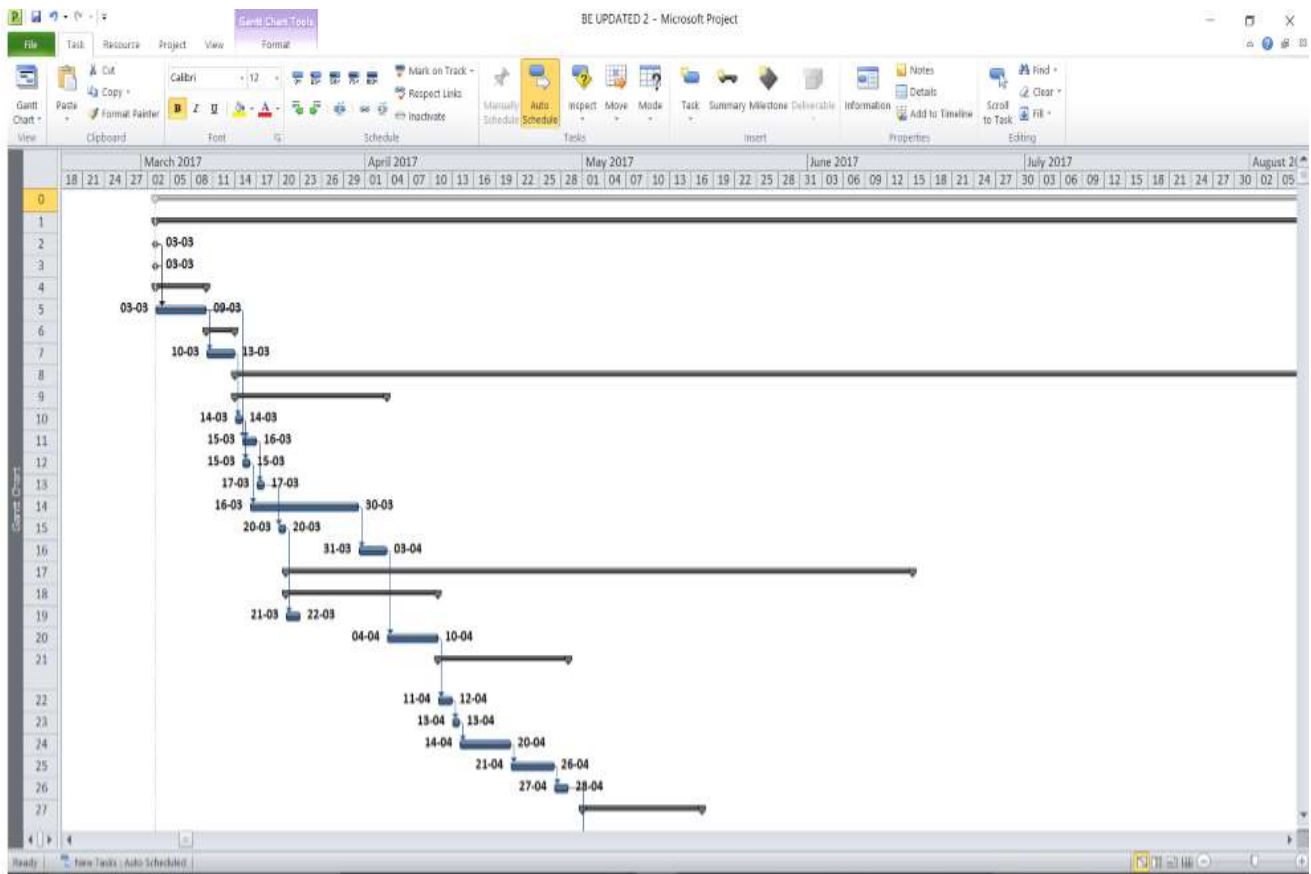


Fig -4: Gantt Chart

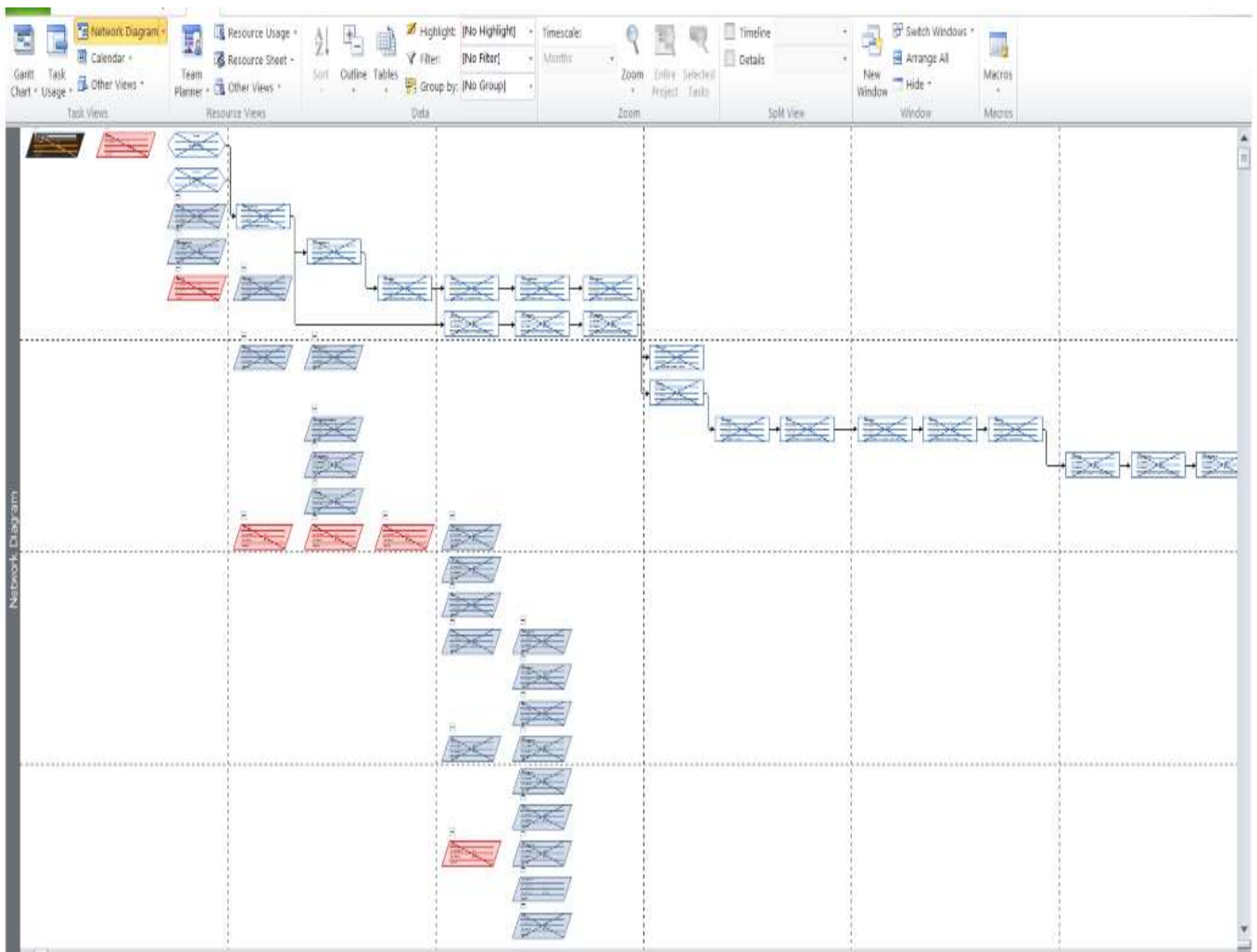


Fig -5: Network Diagram

### 4.3 Calendar

The Project calendar is basically used to establish the days and time for which the project will running. It also helps in establishing and assigning tasks to particular days. It also helps in assigning in resources to particular tasks for the respective days. So, by looking at the project calendar, one can clearly tell that on which days the organization or the construction company will be working on its project and on which day no work will be going on. MS Project 2010 has basically three base calendars. So for setting a base calendar for any project, either of the three base calendar decided by MSP 2010 can be chosen or own base calendar can also be created. A base calendar can be defined as a calendar template that can be applied to a set of resources, a set of tasks, or the project as a whole.

Following are the three base calendars that are defined by the MS Project 2010:

1. Standard base calendar: According to this base calendar, working days are from Monday to Friday and timing followed is 9 am to 6 pm. According to this calendar, lunch timing will be from 12 noon to 1 pm. This is the default base calendar used for the project, for task, and for resources.

2. Night shift base calendar: According to this calendar, working days will be from Monday to Friday and working timing will be from 11:00 pm to 8 pm with one hour off from 3 am to 4 am. It is basically used to work for the projects that will be carried on at night shifts.

3. 24 hours base calendar: According to this calendar, one has to work from midnight to midnight for seven days a week. This base calendar is usually practiced by manufacturing companies.

Any of the three above mentioned base calendars can be used as resource calendar or project calendar or task calendar or all the three calendars can be used at a time.

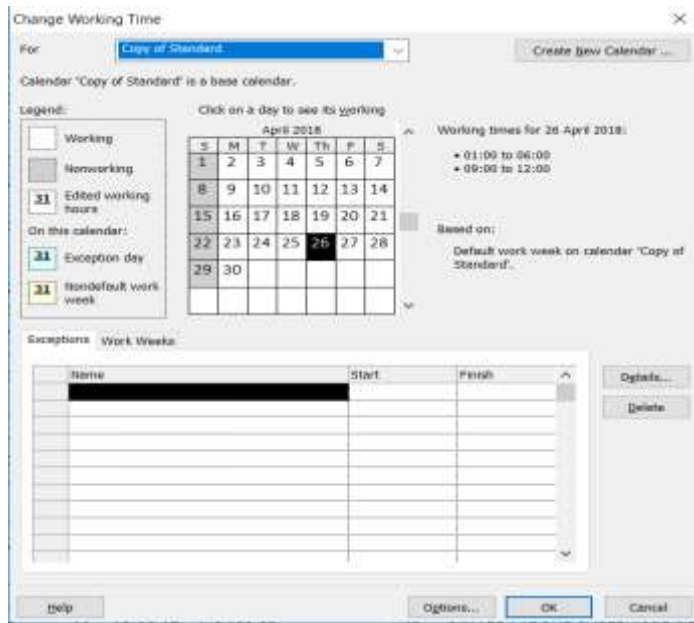


Fig -6: Creating Calendar

4.4 Resources

Resources are the materials or consumables or labors that are used to complete the tasks allocated to the project. These also define the expenditure or cost that will be incurred for the materials used in the project. Resources can help in following way:

- It helps in increasing the accuracy of a project. In case of ‘Automatic Scheduling’ selected, MSP 2010 will take into account the project calendar, task dependencies and duration and an accurate model of the project will be ready. After assigning resources to the project, MSP 2010 adds working time and availability of resources to the scheduled planned.
- It also helps in letting us to know, well ahead of time, the overloading of the resources at any stage of the project as well if there are any tasks that are under allocated. Later, at the time of work progress, information regarding task progress can be generated and the requirement of any new under allocation or over allocation can be identified.
- It can also help in tracking progress of the project according to resource work. It can also indicate how much time have been spent by a resource or how much time will be needed by it, this will be helpful in making any necessary adjustments so that the project can keep moving in the right direction. It will also be helpful in capturing actual progress data that can be used as historical information for the future projects.
- It helps in recording the cost, amount of materials consumed and also their use in the project. This will be beneficial for the well monitoring of the budget performance and also about the requirement of the record supplies well in advance.
- It is helpful in tracking some of the largest expenses in project such as labor cost, material cost, equipment cost, transportation cost etc.

- It will assure that proper resource allocation is followed and nothing is slipped through the cracks.

The following types of resources can be assigned to the tasks:

1. Work Resources: this includes equipment or people.
2. Material Resources: these include consumable materials.
3. Cost Resources: these include cost of the items or consumables incurred in performing a task.

ID	Resource Name	Type	Material Label	Initials	Max. Units	Std. Rate
1	JCB	Work		J	2	₹ 750.00/hr
2	UNSKILLED LABOUR	Work		U	12	₹ 400.00/day
3	SKILLED LABOUR	Work		S	8	₹ 500.00/day
4	CARPENTER	Work		C	5	₹ 600.00/day
5	FITTER	Work		F	4	₹ 550.00/day
6	ELECTRICIAN	Work		E	2	₹ 1,000.00/day
7	MASON	Work		M	8	₹ 1,000.00/day
8	HEAD MASON	Work		H	6	₹ 1,200.00/day
9	SITE ENGINEER	Work		S	1	₹ 1,000.00/day
10	SUPERVISOR	Work		S	1	₹ 600.00/day
11	SAND	Material	Brass	S		₹ 7,000.00
12	AGGREGATE	Material	brass	A		₹ 3,500.00
13	CEMENT	Material	bag	C		₹ 500.00
14	STEEL	Material	ton	S		₹ 40,000.00
15	ARCHITECTURE	Work		A	1	₹ 5,000.00/day
16	DESIGN ENGINEER	Work		D	1	₹ 5,000.00/day
17	PROJECT ENGINEER	Work		P	1	₹ 2,000.00/day
18	WATCHMAN	Work		W	2	₹ 300.00/day
19	WHITE CEMENT	Material		W		₹ 120.00
20	PLUMBER	Work		P	2	₹ 500.00/day
21	SHUTTERING PLATE	Material	sheet	S		₹ 50.00
22	DRAINAGE PIPE	Material	per meter	D		₹ 300.00
23	WATER PIPE	Material	per meter	W		₹ 200.00
24	FORKLIFT	Work		F	1	₹ 1,300.00/hr
25	BREAKER FORKLIFT	Work		B	1	₹ 1,300.00/hr
26	draughtman	Work		d	1	₹ 550.00/day
27	SURVEYOR	Work		S	2	₹ 600.00/day
28	COMPACTOR	Work		C	1	₹ 600.00/hr
29	ironium	Material	brass	in		₹ 800.00
30	RUBBLE	Material	BRASS	R		₹ 2,000.00

Fig -7: Resource Sheet

4.5 Critical Path and Critical tasks

Determination of critical path is very important for the optimization of the project plan. It is well known that any kind of adjustments to the critical path can lead to the change of project’s finish date resulting in changes in the resources, budget and scope of the project. So it becomes very important to determine the critical path as well as the critical tasks of every project using appropriate and proper methods. Here, in this project we have used CPM and PERT methods for the determination of critical path.

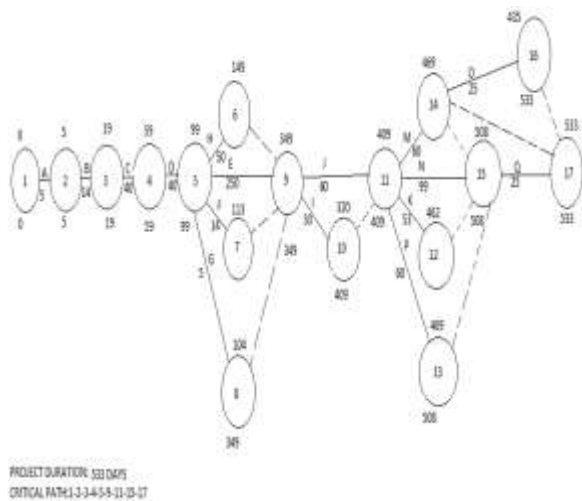


Fig -8: CPM Network

Table -6: CPM Chart

	ACTIVITY	DURATION
A	Document review	5
B	Study of plan	14
C	Site work	40
D	Excavation work	40
E	RCC frame work	250
F	Underground water tank	14
G	Septic tank	5
H	Brick work	50
I	Internal plastering	30
J	External plastering	60
K	Walls and floor tiles	53
M	Electrical wiring	60
N	Painting	99
O	Fixing doors & windows	25
P	Plumbing	60
Q	Finishing	25

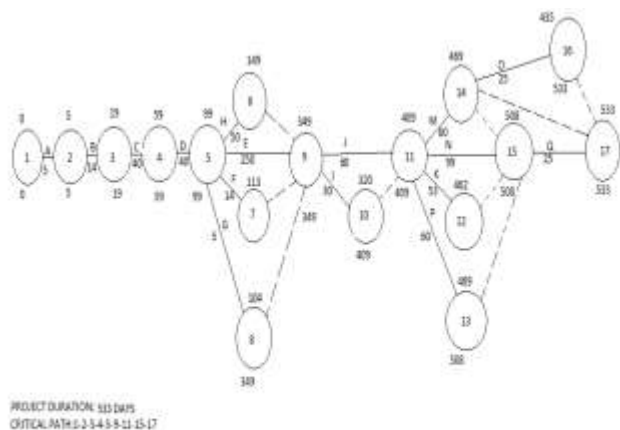


Fig -9: PERT Network

Table -6: PERT Chart

Activity	To	Tp	Tm	Te	s.d=(tp-to)/6	Variance
A	4	5	6	5	0.1667	0.0277
B	13	14	15	14	0.1667	0.0277
C	39	40	41	40	0.1667	0.0277
D	39	40	41	40	0.1667	0.0277
E	249	250	251	250	0.1667	0.0277
F	13	14	15	14	0.1667	
G	4	5	6	5	0.1667	
H	49	50	52	50	0.1667	0.0277
I	29	30	31	30	0.1667	
J	59	60	61	60	0.1667	
K	52	53	54	53	0.1667	
M	59	60	61	60	0.1667	0.0277
N	98	99	100	99	0.1667	
O	24	25	26	25	0.1667	
P	59	60	61	60	0.1667	
Q	24	25	26	25	0.1667	0.0277
						0.2216

$X = \sqrt{\text{variance}} = 0.471$

- Expected days 533 days  
 $Z = (te - tp) / x = (533 - 535) / 0.471 = -4.252$   
 Probability = 0.3%
- Probability of completion of project in 692 days  
 $Z = (te - tp) / x = (537 - 535) / 0.47 = 4.252$   
 Probability = 98.3%
- If probability is 90%, what is the project duration  
 $Z = (te - tp) / x, 1.5 = (te - tp) / 0.471 = 530$  days

**5. CONCLUSION**

In the project of planning and scheduling we had selected the site located near Karjat, Mumbai, India. The building is under construction. The estimated time required to complete this building as per their planning is 20 months. We intended to make the study of this project as the case study of our project work. Hence attempt is made for planning and scheduling as a case study of our project.

We had used MS software for planning and scheduling of material as well as labour, which gives us brief information about the activities in construction project, showing their start and finish time, and material and labour requirement as well as project duration.

We have done CPM and PERT analysis for Planning. The result obtained by our planning shows that the estimated time of completion of this project is 18 months, highlighting the critical activities and critical path duration required for completion for some activities are more than software result

which indicate that some activities are delayed by 4 months. We have done resource allocation for those labour, material and activities which are delaying the project, then we calculated the time required for completing the project using software. Then the comparison between the result obtained by the software and on actual site was done.

Hence, it was concluded that time required for completing the project as per our planning and scheduling is 4 months prior to their planning and scheduling. Hence our method of planning and scheduling is more scientific.

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