

# STUDY OF MS PROJECT SOFTWARE AND ITS APPLICATION IN CONSTRUCTION PROJECT AND CASE STUDY AT ANAND

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## ABSTRACT

*Construction Industry in India has increased by leaps and bounds in the recent decade. Construction is a complicated activity that involve proper planning and management of resources and capital. The nature of projects these days is becoming complex. The competition in this Industry is become increased day by day and also due to safety concerns need as arise to focus on quality and workmanship. The success of any Project lies in the efficient management of TIME, QUALITY and COST. By experiencing practical knowledge of management on site we had concluded that Resource SCHEDULING of the project is the most important factor of project management. Our project includes SCHEDULING of project with the knowledge of activities and reducing the wasting of TIME, RESOURCES and MONEY.*

**Keyword:** - MSP Software, Gantt chart, Cost, Materials, Quantity and Management.

## 1. INTRODUCTION

Indian industries are facing global competition in an open market. Technology is developing in geometrical progression. The lifespan of any technology has been reduced considerably. Hence, project of any degree of complexity has to be completed within the time and cost parameters. Management of projects are assuming greater and greater importance. Whether a project is small or large, simple or complex of the industrial or service sector, the need to complete them most efficiently and make them operational within set targets is rather critical. The delay means not only greater capital costs but also loss of future gains. In spite of best intentions and efforts in most of the projects in central government, public sectors as well as a few private sectors the magnitude and incidences of cost and time overruns are alarming. The quality of projects in most cases is also poor. Time and Cost are always critical and need special attention. They can be control and monitor through accurate Planning and Scheduling. Research Study of Implementing Project Management Software for Time and Cost Management can be obtain successful Product, Service or Result.

## 1.1 Objectives of Study

- To study total project management and key elements of project management.
- To understand function, process and application of project management software - MS Project.
- To identify the specific area of total project management, where MS Project software should be implement.
- To study construction of Buildings (Villa) in Anand Region.
- To implement MS Project software for construction of Buildings.
- To co-relate modern project management software techniques & construction of Buildings.
- To establish the ease of monitoring & control using software.

## 1.2 Research Methodology

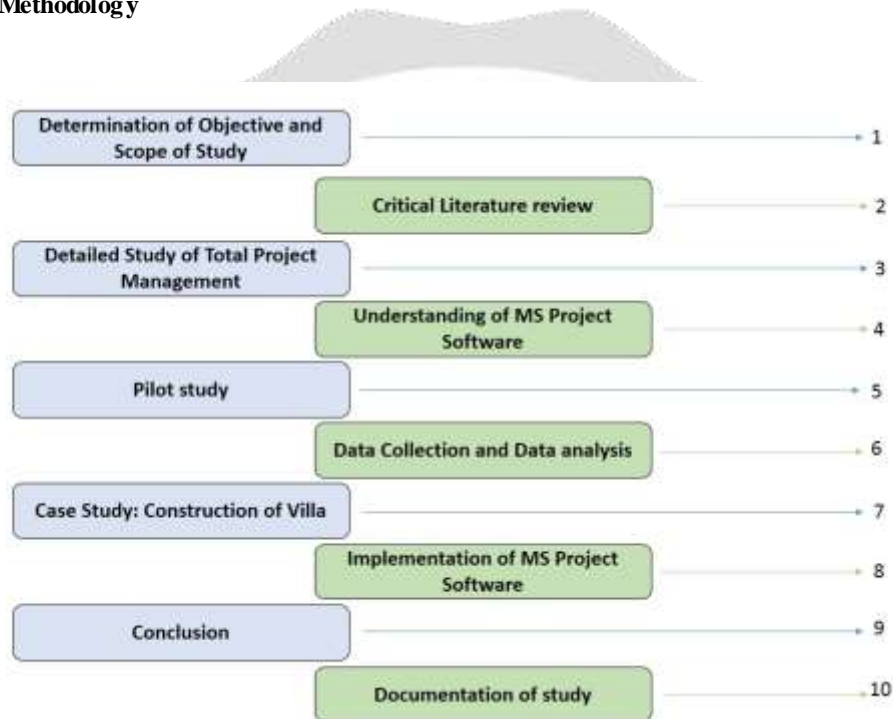


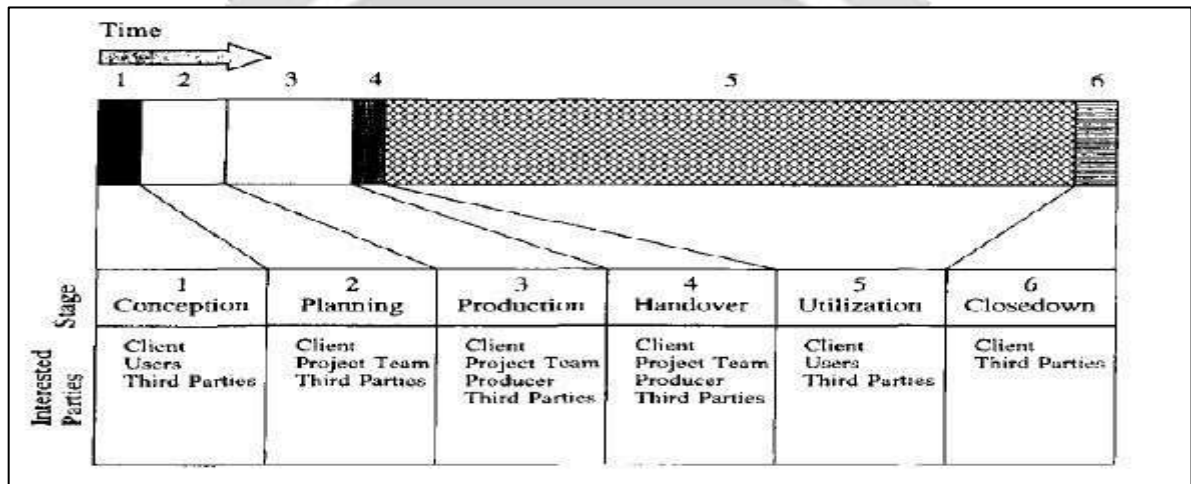
Fig. 1. Work Flow Chart of Research Methodology

## 2. LITERATURE REVIEW

Many author have attempted to define project management. LOCK'S view was that project management had evolved in order to plan, co-ordinate and modern industrial and commercial projects. BURKE considers project management to be specialized management techniques, to plan and control projects under a strong single point of responsibility. TURNER suggested that project management could be described as; the art and science of converting vision into reality. Taylor (1911) & Gantt (1919) were pioneer in the science of project management and they contributed greatly to the practice of modern project management. Although great events of the past suggested the theories of project management, it was only in the early twentieth century that the theories, methodology and framework aimed at project management were in established. Construction of the Pyramids of Egypt, The Great Wall of China and The coliseum in Rome represent examples of man's effort that must have been regimented by principles of project management. A Timeline, as per Carvalho & Rabechini Jr. (2011) present great landmarks of project management from the twentieth century. This is able to present the evolution of project management practice and represents milestones for construction industries as shown in table below:

Period	Event
Post-war	Creation of PERT / CPM net
1960's	Significant associations arise as IPMA and PMI
1970's	Stagnation. Software for Project Management are featured
1980's	Growing practice of Project Management in the World
1990's	Exponential growth in the number of certified publication
2000's	Emphasis on setting the practice of Project Management

**Table 1: Project Management Evolution**



**Fig.2. Project Life Cycle and Parties Interested in Each Other**

**2.2 Project Management Software**

Project defined by their randomness. Miss deadlines, unpleasant surprise and unexpected problems seems to be as unavoidable as the weekly staff meeting. Nevertheless project that goes smoothly from beginning to end is rare. Good communication and planning can go a long way to avoiding a disaster and although no amount of planning can prevent all possible problems. It is important for manager to manage time, cost, resource and efficiency to succeed. Project management software helps to accomplish project goals, objectives and organizational expectation. Project have phases and phases usually have deadlines, during the analysis phase project manager may ask several people to perform different task. By using the project management program's Gantt chart feature, the project manager can view a chart that show each individual's progress during the phase.

**3. SOFTWARE APPLICATION IN PROJECT MANAGEMENT**

Some of the advantages associated with project management software are;

- Speed and accuracy have greatly improved.
- It is not a very costly proposition and even medium and small companies can afford these software.

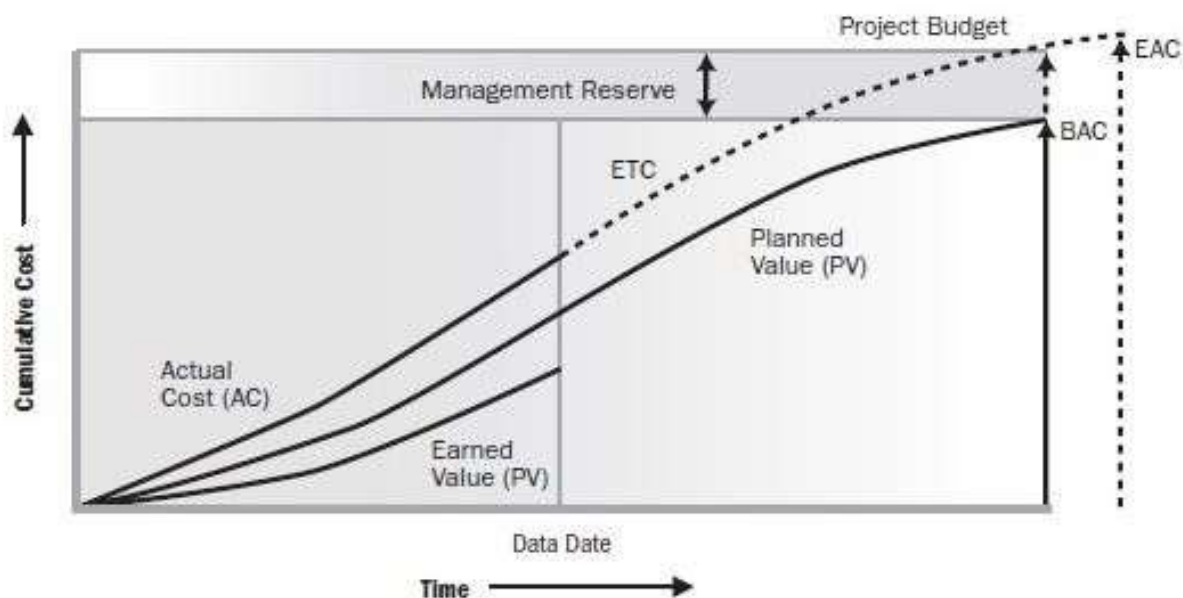
- Most of the software are user-friendly and one can use them quite easily.
- The software can handle complex problems involving multiple stakeholders as well as a number of constraints.
- It is easy to modify the inputs and maintaining the records has also become easier.
- Decision making has become easier. It is possible to try different possible alternatives and select the best alternatives with assistance of what if analysis in project management software.

Microsoft Project supports three type of resources;

- **Work Resources** include the people and equipment needed to complete the task.
- **Cost Resources** represent a financial cost associated with a task that need to account for. Example; Expenses like travel, entertainment and so on.
- **Material Resources** are consumable that use up as the project proceed. Example; a construction project might need to track steel or concrete as it is used throughout the project work.

**Earned Value Management (EVM) or Earned Value Project (EVP) or Earned Value Performance Management (EVPm)** is a project management techniques for measuring project performance and progress in an objective manner.

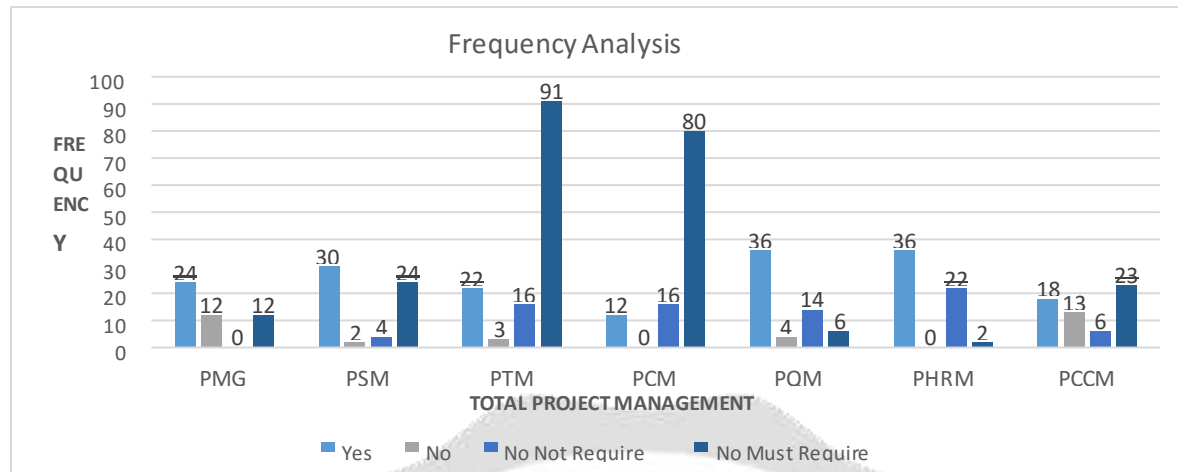
- **Planned Value:** Planned value is the authorized budget assigned to scheduled work.
- **Earned Value:** Earned value is a measure of work performed expressed in terms of the budget authorized for that work.
- **Actual cost:** Actual cost is the realized cost incurred for the work performed on an activity during a specific time period.



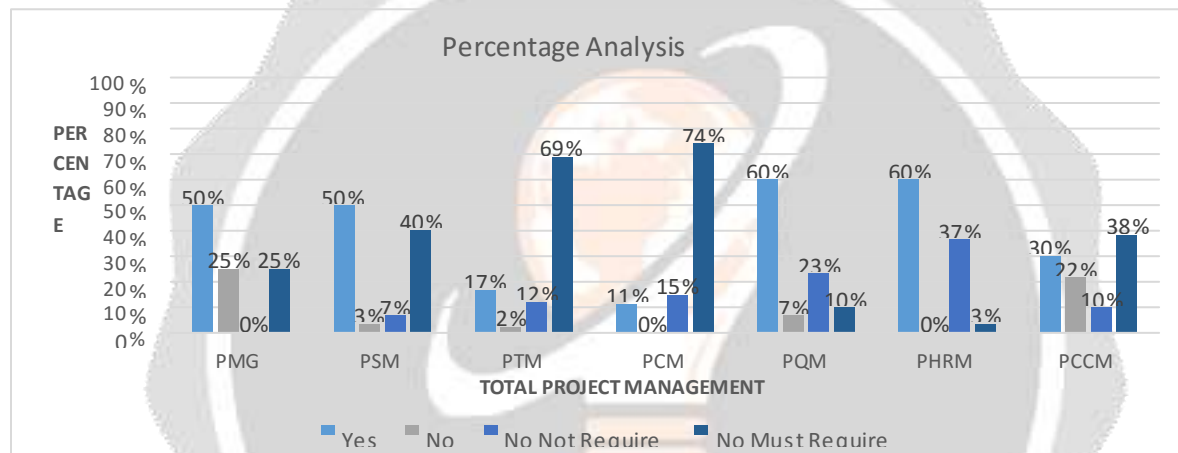
**Graph 1: Earned Value, Planned Value and Actual Costs**

#### 4. IMPLEMENTATION OF SOFTWARE IN PROJECT MANAGEMENT

Frequency Analysis and Percentage Analysis graph suggest that it is must require and most important to Implement MS Project Software for Time Management and Cost Management in Construction of Villa (by svayam symphony, site of our project), or any activities, which provide better monitoring and controlling of project.



**Graph 2: Frequency Analysis**



**Graph 3: Percentage Analysis**

**4.1. Work Break Down Structure of Construction of Villa Type B1**

Before the implementation of our work in the software, a work break down structure of several activities to be perform, is drawn to understand further depth in the implementation process. Work break down structure deals with the upcoming processes to be done in the actual work to be performed. It gives a clear path of activities that are going to perform to be done. It gives the path from starting till the end of project. Producing WBDS of any project is necessary to compare or to see whether it matches along with the software after the implementation.

A work break down structure of our related project site is given below. Here, details such as sub structure and super structure activities are given and the sub division of both are also further classified. It helps to understand the proper scheduling and managing of work and to be completed in the proposed period of time. After the implementation, the work activities of the certain project can be seen on the right side, with a graph show the particular work activities to be done or completed in certain period of time.

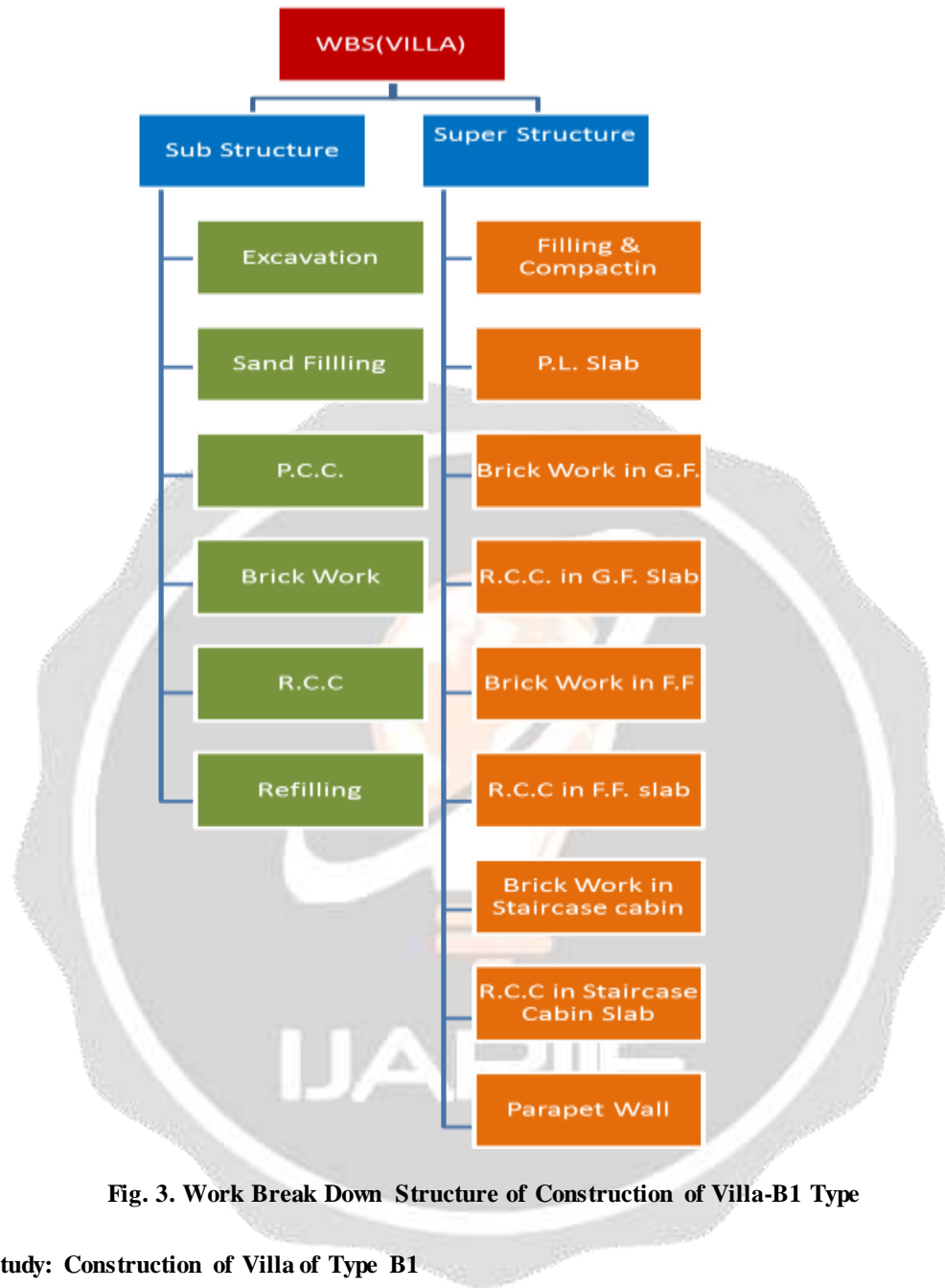


Fig. 3. Work Break Down Structure of Construction of Villa-B1 Type

**4.2. Case study: Construction of Villa of Type B1**

A simple case study performed by collecting certain data, which it is to be implement to the software, for further study of the activities and work performances.

- Project Name:** Svayam Symphony
- Client Name:** Radhe Syam Developers
- Contractor Name:** Rashmi Construction & S.M. Construction
- Consultant Name:** Bhoomi Consultant

**Project Summary:**

<b>DATE</b>			
<b>Start:</b>	10/04/16	<b>Finish:</b>	10/04/19
<b>Baseline Start:</b>	10/10/15	<b>Baseline Finish:</b>	10/10/18
<b>Actual Start:</b>	10/04/16	<b>Actual Finish:</b>	10/04/19
<b>Start Variance:</b>	6 months	<b>Finish Variance:</b>	6 months

<b>DURATION</b>			
<b>Scheduled:</b>	3 years	<b>Remaining:</b>	95%
<b>Baseline:</b>	6 months early	<b>Actual:</b>	10/04/16
<b>Variance:</b>	6 months	<b>Percent Complete:</b>	100%

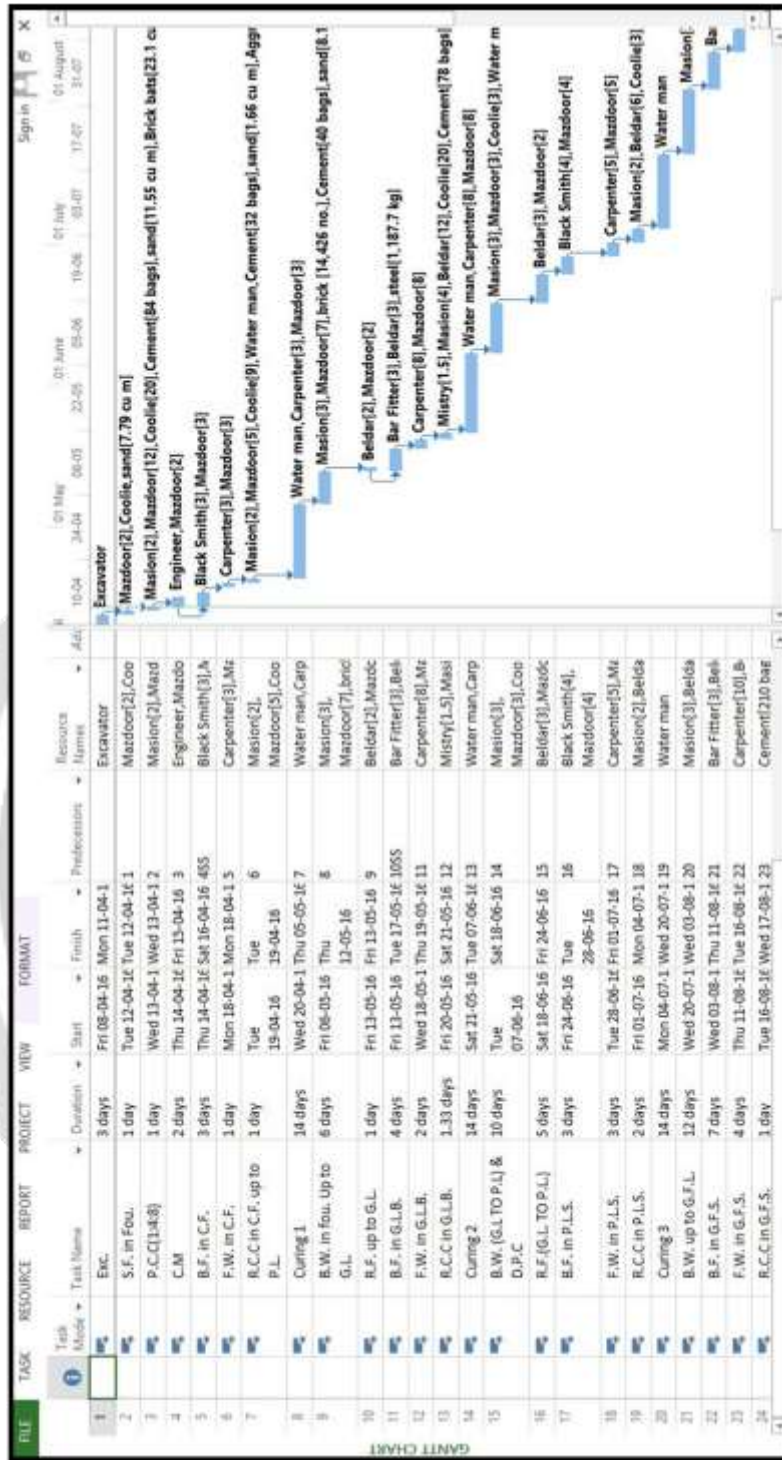
<b>WORK</b>			
<b>Scheduled:</b>	1/02/16	<b>Remaining:</b>	95%
<b>Baseline:</b>	10/10/15	<b>Actual:</b>	10/04/16
<b>Variance:</b>	111 days	<b>Percent Complete:</b>	05%

<b>COST</b>			
<b>Scheduled:</b>	3 years	<b>Remaining:</b>	95%
<b>Baseline:</b>	200 crores	<b>Actual:</b>	5%
<b>Variance:</b>	-		

<b>OVERALL WORK PERFORMENCES</b>			
<b>Tasks no yet done:</b>	28	<b>Work Resources:</b>	client
<b>Tasks in progress:</b>	19	<b>Over allocated Work:</b>	Underground water tank & common area development
<b>Tasks completed:</b>	15	<b>Material Resources:</b>	10
<b>Total Tasks:</b>	43	<b>Total Resources:</b>	19

**Table 2: Schedule: Svayam Symphony (B1 Type Villa)**

Implementations of certain data in the MSP Software, produced a Gantt chart along with a bar graph showing at the right side of the chart, to give a perfect flows in the activities to be performed. The below graph and table showing schedule and the bar chart of the work activities of the construction of the Villa in Anand, Gujarat.



Graph 4: Bar Chart: Svayam Symphony (B1 Type Villa) from the MSP Software Along with Table 3: Schedule: Svayam Symphony (B1 Type Villa)

4.3. Functions of Project Management Software (MS Project)

Project management software – MS Project Software makes an effort to address the key areas;



- Scheduling Function.
- Resource management including labour, equipment and material management.
- Monitoring of a project during execution to assess compliance with schedule and estimated prepared prior to commencement.
- Generation of appropriate progress reports, which could be different depending upon the target reader (audience) – reports for internal circulation within a contractor’s organization could be quite different from those submitted to the client.

## 5. CONCLUSIONS

Based on the project work, “MS PROJECT SOFTWARE AND ITS APPLICATION IN CONSTRUCTION PROJECT AND CASE STUDY AT ANAND” the following conclusions are drawn out:

Practice and Understanding of total project management provides better result, product, and service to the project / organization. Effective project management provides balance between Scope, Time, Cost, Quality, Resource and Communication. Project management Software MS Project provides better planning, scheduling, monitoring and controlling of small as well as large projects. During the execution of a project, software is helpful for promoting effective coordination. Research and Study state that implementation of MS Project software for Time and Cost Management is proven technique. Implementation of MS Project software for construction of Buildings such as Villas, for Time and Cost Management provides effective monitor and control. For infrastructure project like construction of Buildings, implementation of MS Project software gives better schedule to control the project. Time management which gives accurate planning and scheduling of project and Cost management which gives earned value management of project. Earned Value Management gives better financial control of overall cost of the project. It can be used for measuring project performance and progress in an objective manner. Software provides effective Monitoring and Controlling through various Reports.

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