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, Primavera, resource allocation, time management.
I. INTRODUCTION

In current scenario, construction industry is one of the rapidly booming industries of our nation and across the world. There is requirement of certain tools and techniques for effective project management in town and urban areas. Every Organization has certain objectives or targets. It keeps working hard to achieve their goals. Planning helps an organization to achieve their aims, but with some easy and promptness. It also helps organizations to avoid doing some random activities. The technologist or drafter uses CADD (Computer aided Design and Drafting) and other technologies to design buildings and other structures. Structural analysis is important because it can evaluate whether a specific structural design will be able to withstand external and internal stresses and forces expected for the design. An independent estimate will provide a benchmark price, which can be used to check the price and material cost quoted by builders. It will help to check the affordability of our building project, and will allow to set a budget which can be scrutinized down to the last nail.

Project consumes several resources in its lifetime to achieve the desired goal. The resources have time dependent, direct or indirect costs related to them. For large Construction Projects with huge budget; it will be very difficult for the project team to handle the tasks. It becomes very necessary to provide a tool in the hand of project team that would help them to keep a track of activities in the project. Primavera software are designed to support the project management needs of organizations that manage large numbers of projects at one time. These integrated application use project portfolio management (PPM) to support the management needs of project teams in different location and at varying levels of the organization. This software helps in planning, scheduling and controlling of projects very efficiently for the completion of projects.

II. LITERATURE REVIEW

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

i. Preparing of detailed activity plan and schedule based on construction sequence.

ii. Working out the practical duration for six lane road construction activities.

iii. 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 buildup 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:
1. Earned value supervision
2. Cost performance baseline

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 have 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.

V. Dhanalakshmi (2016) explained the project monitoring process of transporting a pipeline construction which was completed in Ennore-Trichy-Madurai. Comparison of Construction work and actual progress of construction was performed using project management software primavera P6.

III. METHODOLOGY

LITERATURE REVIEW

DATA COLLECTION OF BUILDING

QUANTITY ANALYSING

STUDY OF PRIMAVERA P6 SOFTWARE

PREPARING DETAIL PLANNING AND SCHEDULING

DEVELOPING SCHEDULE USING PRIMAVERA

OPTIMIZATION OF TIME AND RESOURCES

IV. STEPS INVOLVED IN PROJECT SCHEDULING USING PRIMAVERA
1. Creating EPS: Database of projects is arranged in a hierarchy called the Enterprise Project Structures (EPS). In this project EPS can be subdivided into as many levels or nodes as needed to parallel work in the organization. Nodes at the highest, or root level might represent division within company, project phases, site location, or other major groupings that meet the needs of organization, while project always represent the lowest level of the hierarchy. Every Project in the organization must be included in an EPS node. The number of EPS levels and their structure depend on this scope of projects and we want to summarize data. Fig. 1 shows the creation of EPS.

![Enterprise Project structure (EPS)](image)

“Fig 1. Enterprise Project structure (EPS)”

2. Creating OBS: The Organizational breakdown structure (OBS) is a global hierarchy that represents the managers responsible for the projects in organization. The OBS usually reflects the management structure of organization, from top level person through the various level. Fig. 2 shows the creation of OBS.

![Organizational Breakdown Structure](image)

“Fig 2. Organizational Breakdown Structure (OBS)”

3. Creating Calendar: we can create and assign calendar’s to each resource and each activity. These calendars define the number of available working hours in each calendar day. We can also specify national holidays, organization’s holidays, project-specific work/ non - work days, and tracking vacation days. The module uses calendar assignments for scheduling and tracking activities, and leveling resources. An activity’s type determines whether the activity uses the calendar of an assigned resource or its activity calendar. Fig. 3 shows the creation of calendar.
4. Creating New project: As a project manager who manages one or more higher-level projects in the organization, will probably want to add an EPS node that encompasses these projects. Fig. 4 shows the creation of New Project.

5. Creating WBS: A work Breakdown (WBS) is a hierarchical arrangement of the products and services. When creating a project, the project manager typically develops the WBS first, assign work products and documents to each WBS elements, and then define activities for performing the elements work. Fig. 5 shows the creation of WBS.

6. Defining Activities: Activities represent work that takes place in a determined amount of time. Use the activity table or activity network layouts to add activities and build the projects. Within these layouts, we can define activity information. Fig. 6 shows the Defining activity.
7. Establishing Relationships: Creating relationships between activities indicates whether an activity can begin only after start or finish of other activities. Once we assign relationships, schedule the project to calculate early start and late start dates for each activity.

8. Creating and Adding Resources: We can develop resources that integrate resources, costs, and the schedule so that we can effectively control projects. For each resource, set availability limits, unit prices, and a calendar to define its standard work time and non-work time. Define shifts and apply one or more of the shifts to the resources to whom they apply. Group the resources by broad categories so that we can easily find a specific resource while assigning resources to a project.

9. Activity Duration: When planning the work, the project duration is entered in the original duration field. The actual duration can only be entered for the project activities, which are completed.

10. Creating and maintaining baseline: Before we update a schedule for the first time, we should create a baseline plan. The simplest baseline plan is a complete copy or snapshot of the original schedule. This snapshot provides a target against which we can track a project’s cost, schedule, and
performance. Each baseline can be assigned a type that categorizes its purpose. Fig. 7 shows the creating and maintaining base line.

11. Tracking Projects: The Tracking features enables us to access, display, and manipulate summarized or live projects data in a variety of formats to perform schedule, cost, and resource analyses.

12. Results:

In this Project, planning and scheduling were done using primavera in which the time duration was reduced than actual duration of this project. Hence we can control the project in terms of duration which leads to cost optimization. Fig. 8 shows the activities linked in primavera.

V. CONCLUSION

Due to an increasing competitive environment, construction companies are focused to be more efficient and achieve competitive operational advantages. Companies are always looking for improvements in equipment features, communication tools, efficient management techniques, and training human resources. The benefits of effective planning, scheduling and controlling of construction project reduces construction time, cost over runs and minimizes the disputes. It also helps to avoid the construction interruption, keep the continuity of crew work, and avoid the delay of construction and cost. Primavera P6 in a construction project helps to understand the roll of
monitoring and control the progress and timely completion of a construction project. This objective was achieved through revision of literature and methodologies involved in monitoring and control. This project proves to be a guideline in understanding the progress of construction work.

**REFERENCE**


[4] Y. Umash “Planning, Scheduling and Tracking of residential projects using primavera software” international journal of advances research in computer science and management studies, ISSN:2321-7782, Vol.03,issue 5, may 2015.

