PROJECT SCHEDULING OF A G+5 BUILDING USING PRIMAVERA P6 SOFTWARE

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Abstract *Now a days, the people from village are coming to towns for employment and educational facilities hence with the limited land available so as to propose the apartment building and individual houses are feasible with each other. The main objective of this project is to construction scheduling of an apartment building (G+5) using Primavera P6 software. First of all, the planning is done using AutoCAD and code refers for this project is IS 456-2000.*

The first and foremost thing which we can get by effectively planning in primavera is start date on 01 April 2025. Primavera P6 helps in effectively scheduling the project by assigning two relationships at a time to each activity and considerably reduces the float. All the important steps like creating an EPS, creating a WBS, linking of activities according to their interdependence and availability of resources and determination of critical path are clearly exhibited in this report.

Keywords - *STAAD Pro, Primavera p6, Auto CAD, Code, planning, scheduling.*

1. INTRODUCTION

Tall buildings throughout the world are becoming popular day by day. With the advent of modern-day construction technology and computers, the basic aim has been to construct safer buildings keeping in view the overall economics of the project. A high- rise building, apartment, office, apartment block, or block of flats, is a tall building or structure used for residential and or office use. Due to an increasingly competitive environment, construction companies are forced to be more efficient and achieve competitive operational advantage. Companies are always looking for improvements in equipment features, communication tools, efficient management techniques, and training human resources. Construction companies are also narrowing their focus, becoming specialists in certain types of construction projects. This specialization requires more focused project planning and controlling techniques that prove to be better for certain types of projects while providing specialized construction services.

The benefits of effective planning scheduling and control of construction projects are reduced construction time and reduced cost overruns. Planning is the process of identifying all the activities necessary to complete the project. Scheduling is the process of determining the sequential order of the planned activities, assigning realistic durations to each activity and determining the start and finish dates of each activity. The process of converting a general or outline plan of a project into a time based graphic presentation gives information on available resources and time constraints. Construction planning is necessary for a runner to schedule also defining work tasks determining general sequence of construction methods assigning responsibility.

1.1 Project planning and scheduling

Time management can be broken down into two major categories: planning and implementation. Proper planning of the project schedule, effective use of team members and resources, and managing risks and delays are crucial to a good outcome. For construction projects, ultimate success depends on the continuous balance of a project's resources, cost, and schedule.

1.2 Project Schedule

The project schedule needs as accurate input as possible representing how the field work will proceed. Identifies interface points between contractors and subcontractors as well as milestones. Represents a work plan in progress, completed, and future in a systematic and coordinated manner. Provides team leaders with an effective tool to manage the project. Schedule management is critical for three main reasons

1. Time has no flexibility; it passes, no matter what.
2. Delivering projects on time is a challenge and a priority.
3. Project claims often center on schedule issues.

1.3 Objectives of the study

The objectives of this study are:

1. To identify construction sequence for a residential building construction.
2. To work out the practical durations required to carry out the activities.
3. To identify scheduling technique used by the organization on developing plan and scheduling.
4. To develop scheduling using primavera project planner's software.
5. To track the project and analyses the reasons for delays, and increase in estimated budget etc.
6. To investigate defects in the planning and scheduling procedure of the organization, and suggest suitable improvements in their methods.

2. LITERATURE REVIEWS

Astha Ramteke, Swapnil Gulab Walde, et al.(2014) The application of Primavera P6 software in organizing and arranging for a G+8 building's construction. A paper discusses methodologies, challenges, and best practices associated with using Primavera P6 in such projects. Through comprehensive reviews of the literature, case studies and expert insights, the paper aims to provide a detailed understanding of how Primavera P6 can effectively facilitate the planning and scheduling process for complex vertical construction projects.

Form this work it was concluded due to Time and cost can be optimized through planning and scheduling, resource allocation, budgeting, and tracking. We may accomplish this by crashing and resource levelling, which changes the schedule between the expected and optimized progress. The schedule can then be changed to complete the project.

Gulam Samdani , Mohammed Samreen ,et al,.(2024)

The main objective of this project is to construction scheduling of an apartment building (G+5) using Primavera P6 software. First of all, the planning is done using AutoCAD and code refers for this project is IS 456-2000. From this work it was concluded Planning and scheduling helps to forecast and understand the progress of a construction project and it also keeps a track on the risks arising during the process. Link all the activities involved in the construction of the project. Determine the total duration required for the project construction. Determine the Critical Path for the project schedule. Keep a track of the scheduled and the on-site construction.

3. SOFTWARE USED

3.1 PRIMAVERA P6

Primavera Systems, Inc. was a privately held company that specialized in Project Portfolio Management (PPM) software, designed to assist organizations with intensive project demands in identifying, prioritizing, and selecting project investments, as well as planning, managing, and controlling projects and project portfolios of varying sizes. On January 1, 2009, Oracle Corporation acquired legal ownership of Primavera. The company was established on May 1, 1983, by Joel Koppelman and Dick Faris, and operated as a private entity in Pennsylvania, USA, focusing on software development for the PPM sector. To enhance its product offerings, Primavera made several strategic acquisitions, including Eagle Ray Software Systems in 1999, Evolve Technologies, a vendor of professional services automation, in 2003, ProSight, an IT portfolio management software provider, in 2006, and Pertmaster, a project risk management

software vendor, in the same year, Pert master (a project risk management software vendor).

In 2008, Oracle announced it was acquiring Primavera, turning it into the Primavera Global Business Unit (PGBU).In 2011, Joel Koppal man announced his retirement and was succeeded by Mike Sicilia, SVP and General Manager. The co- founder, Dick Faris, remains in the PGBU as Sr Vice President, Customers. On 8 April 2013[1] Oracle Corporation announced the release of version 8.3 of Primavera P6 Enterprise Project Portfolio Management. This version was stated to enhance and extend previous work, improved reporting, user experience and application integrations. This version incorporated material from Oracle acquisitions of Skire and Instantis in 2012.

In 2012 Primavera P6 EPPM, upgrade Release 8.2, added capabilities for governance, project-team participation, and project visibility. Mobile PPM was introduced through Primavera‘s P6 Team Member for iPhone and Team Member Web Interface, to streamline communications between project team members in the field and in the office. In addition, Primavera P6 Analytics Release 2.0 gained new enterprise-reporting tools and dashboards for monitoring and analyzing performance data, including geospatial analysis. Organizations could also investigate comparative trends and cause-and effect in multiple projects with Primavera Contract Management Release 14 as it now includes the report-writing capabilities of Oracle Business Intelligence Publisher.

4. PRELIMINARY SURVEY AND DATA

Typical floor plan used in the study

G+5 building model

4.1 Collection of data

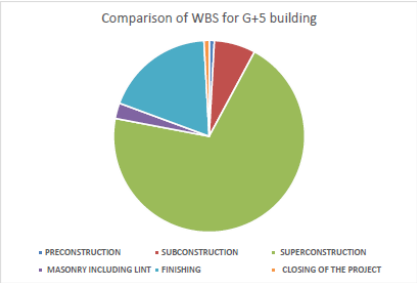
The building data like site dimensions, preliminary data, design considerations, site conditions and soil type are collected initially which are essential measurements for designing of any structural buildings. The data is showing below for G+5 building

1. Utility of Building: Residential Building
2. Area of the site: 28 (m)
3. Building Height: 18m
4. Number of Storey: (G+5)
5. Type of construction: R.C.C Framed Structure
6. Shape of Building: Rectangular
7. Number of staircase: One
8. Number of Lift: One
9. Type of Walls: Brick Wall
10. Grade of concrete: M30
11. Grade of steel: Fe550
12. Beam dimensions: 650X500
13. Column dimensions : 600mmX600mm
14. Slab thickness : 150mm

4.2 G+5 scheduling using Primavera

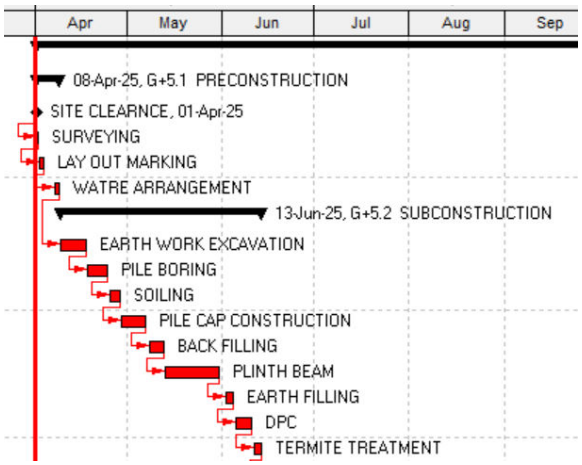
Comparison WBS

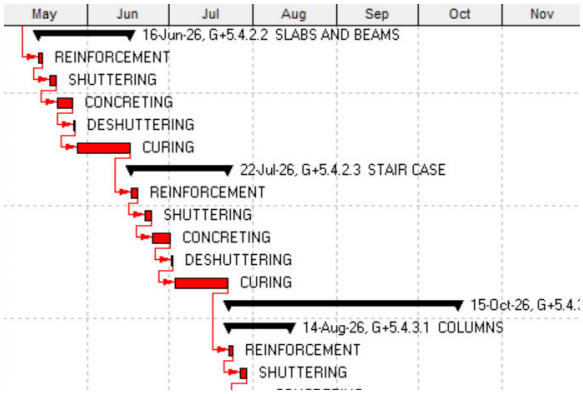
1. PRE CONSTRUCTION - 4days
2. SUB CONSTRUCTION -48days
3. SUPERCONSTRUCTION – 481days
4. MASONRY INCLUDING LINT - 18days
5. FINISHING - 127 days
6. CLOSING OF THE PROJECT - 6 days

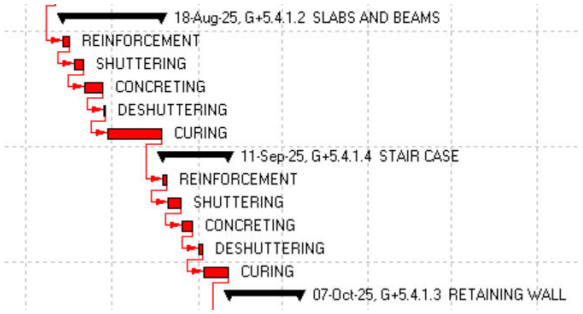


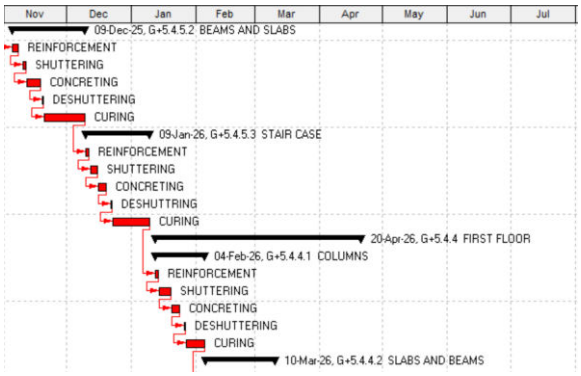
Comparison of WBS for G+5 building

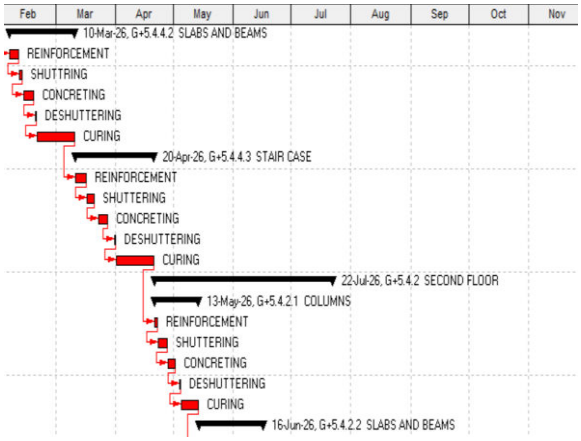
4.3 GANTT CHARTS

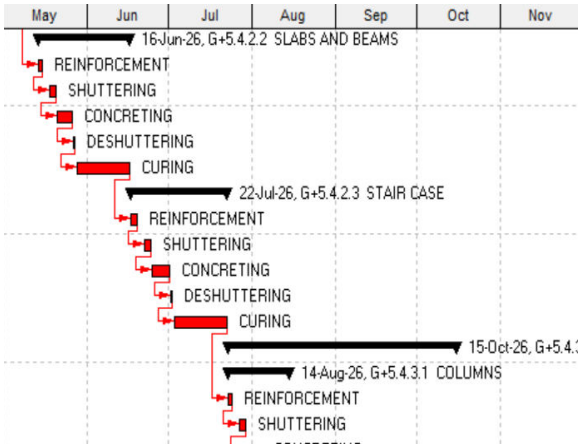


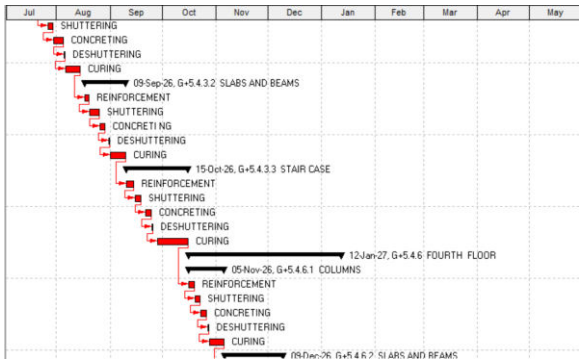


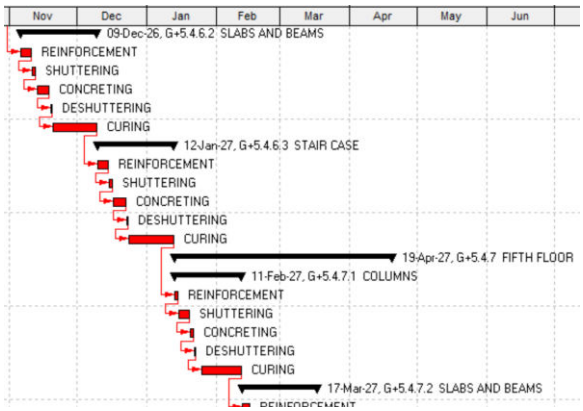


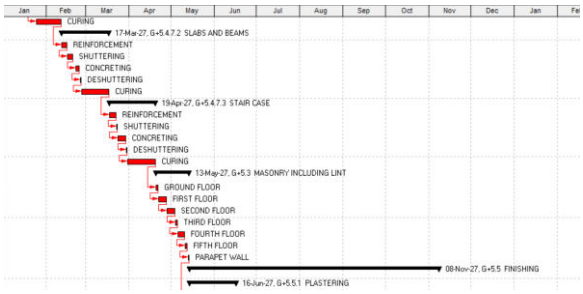


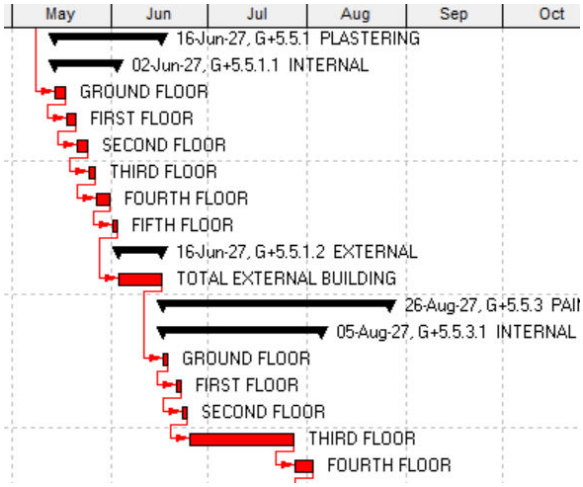


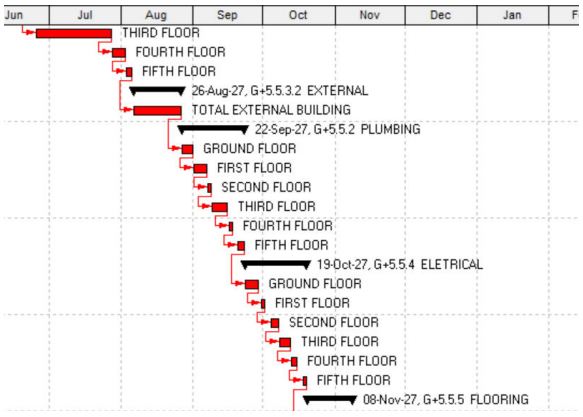












5. CONCLUSIONS

Planning and scheduling helps to forecast and understand the progress of a construction project and it also keeps a track on the risks arising during the process. The methodology to implement construction management of a building can be explained with respect to planning, scheduling, resource allocation and levelling. Proper resource optimization is feasible during levelling of resources based on the required conditions and constraints. Primavera serves as an effective tool for generating Gantt chart for planning and scheduling a real time Multi-storey construction project. With the help of Primavera, the user can effectively:

1. Link all the activities involved in the construction of the project.

2. Determine the total duration required for the project construction.

3. Determine the Critical Path for the project schedule.

4. Monitor both the scheduled and on-site construction activities.

Assign the resources in a way that helps in reducing the time duration and cost of the project that makes it economical. The project

has been Scheduled in an efficient manner with the understanding of proper scheduling using Primavera P6 software.

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