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Planning and Scheduling of High-Rise Building using Primavera

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Abstract: High rise building is commonly constructed in crowded areas where population is more or in urban areas. The advantages of building Highrise building is to give people their desired lifestyle as well for project planning. A warning mechanism must be present, which can alert the organization about its possible success and failures throughout the project. Today the demand for high rise building is increasing drastically. Because of this the main challenge for completion of any project is to know the approximate estimate time, project scheduling and planning of entire project.

The purpose of this paper is to present the construction of Highrise building using primavera P6 professional. Firstly, proper planning is very essential part of construction project for reducing and controlling delays of the project. Additionally, project planning software helps to reduce the paper work and time. Secondly, the main objective of this study is to plan, schedule and track a residential project with the help of primavera P6.

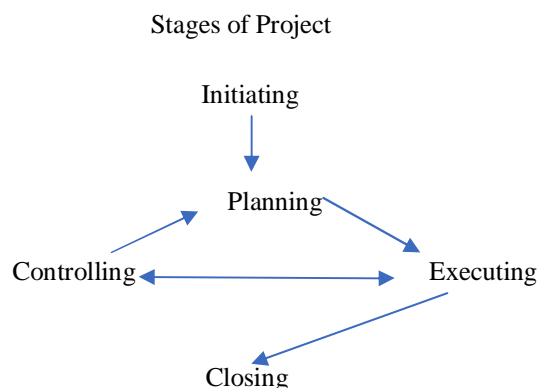
Keywords: Highrise, Primavera P6, Controlling delays of project, Project planning, Warning mechanism.

I. INTRODUCTION

The demand for taller buildings is becoming popular day by day. With the increase of modern-day equipment's and technologies, the basic aim of constructing any buildings is to make it safer and considering economics of project. A high-rise building can be a residential, commercial. In India, a building than 75 Feet's (23 m) i.e. 7 to 11 stories are generally considered as a high-rise building. Also, a building is considered as a high-rise building when the maximum reach of the fire fighters is more than the height if the building. According to the building code of India, a high-rise building is the one with four floor or more. The Mumbai Municipal Corporation (BMC) considers a building of 30m height as a high-rise building. Due to drift increase in urbanization, construction companies are forced to work more effectively and achieve the target in desired time. Companies are always looking for improvement of technologies with will be used in effective working. Also, construction companies are more focusing on skill development and believe in specialisation in construction services. The specialisation requires more controlling techniques which will reduce time as compare to standard technologies. The advantages of planning and controlling of any project are

- A. Less construction time.
- B. Estimated approx. cost and overruns
- C. Keep a track of project

The process of converting a general or outline plan for a project into a time-based graphics presentation given information on available resource and time constraints.



II. SCOPE

Looking at the current scenario of Mumbai, the percentage of slums is slightly more than high-rise building

It is recommended to go in a vertical these days as developers argue that high rises are the sole answer to housing problems. Old structures are being pulled down and replaced with skyscrapers.

III. METHODOLOGY

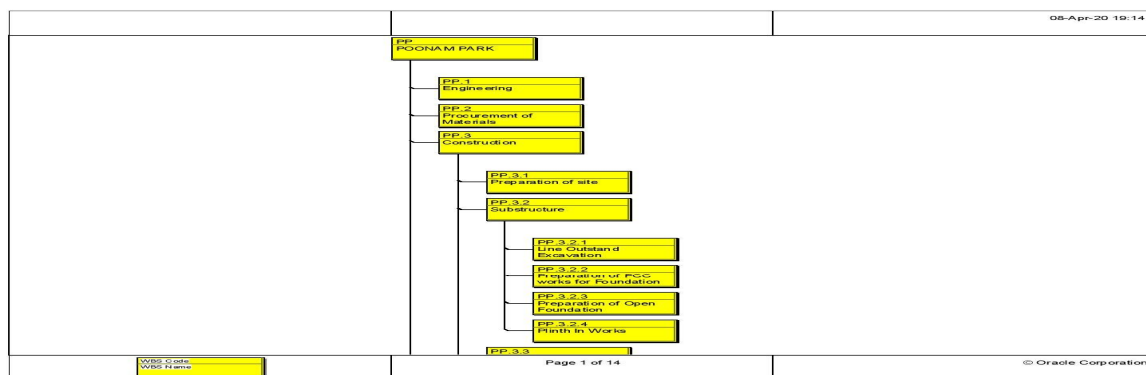
Collection of data – A detailed analysis of the materials, man power, machinery, other resources used, and the sequence of activities (dependent or independent) executed from the beginning of the construction to its completion. The methodology adopted to attain the project objective is as below:

- A. Inception of ideas.
- B. Literature study, for this the following sources are explored:
 - 1) Review of past study
 - 2) Study of published books, technical and research papers, reports, etc.
- C. Site visit.
- D. Collection of raw data from visiting various sites.
- E. Studied the data. On the basis of it, prepared the plan and scheduled manually. • Learnt the project management software- Primavera.
- F. Prepared the plan and scheduled by using various modules of software.
- G. Finally, understood the ease, sufficiency & flexibility that the project management software offers us. The scheduling techniques include:
 - H. Bar Chart
 - I. CPM
 - J. Networking scheduling techniques

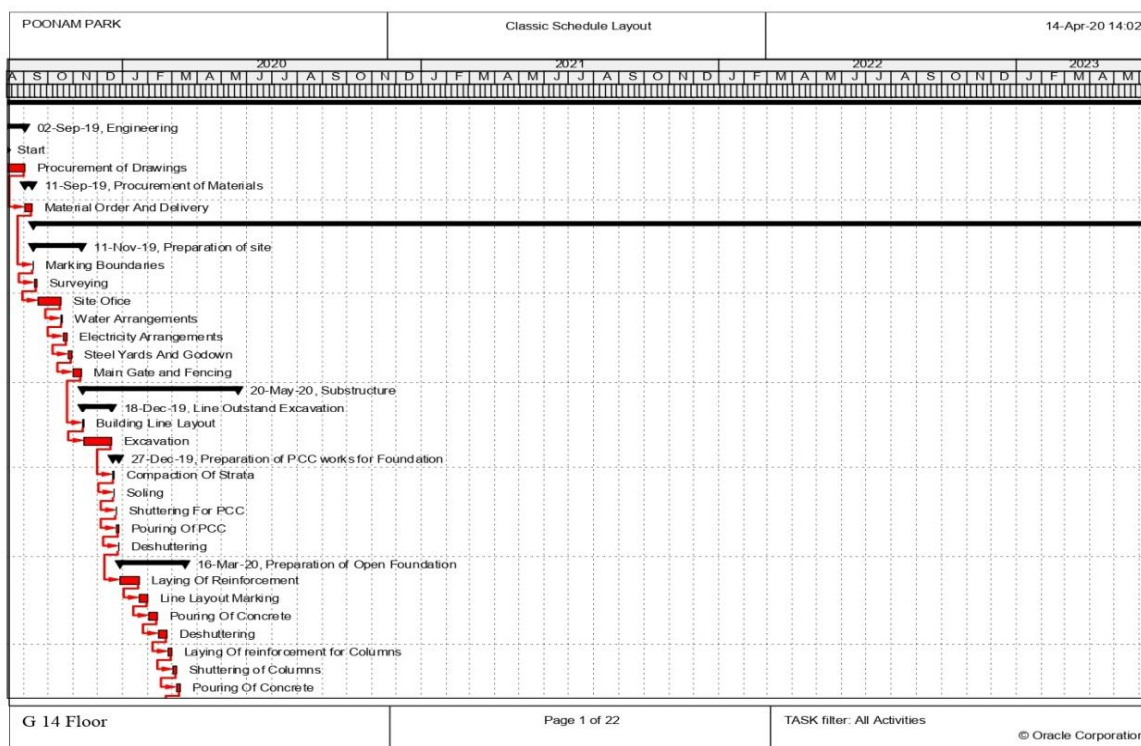
IV. CASE STUDY

In this we have presented the study of the schedule generated for the construction of a high-rise Residential building located in Waliv, Vasai. The project is a Residential building for the People of that area as the crowd was growing day by day at that place. The case study was used primarily to assist in Planning and test and validate the system and its function.

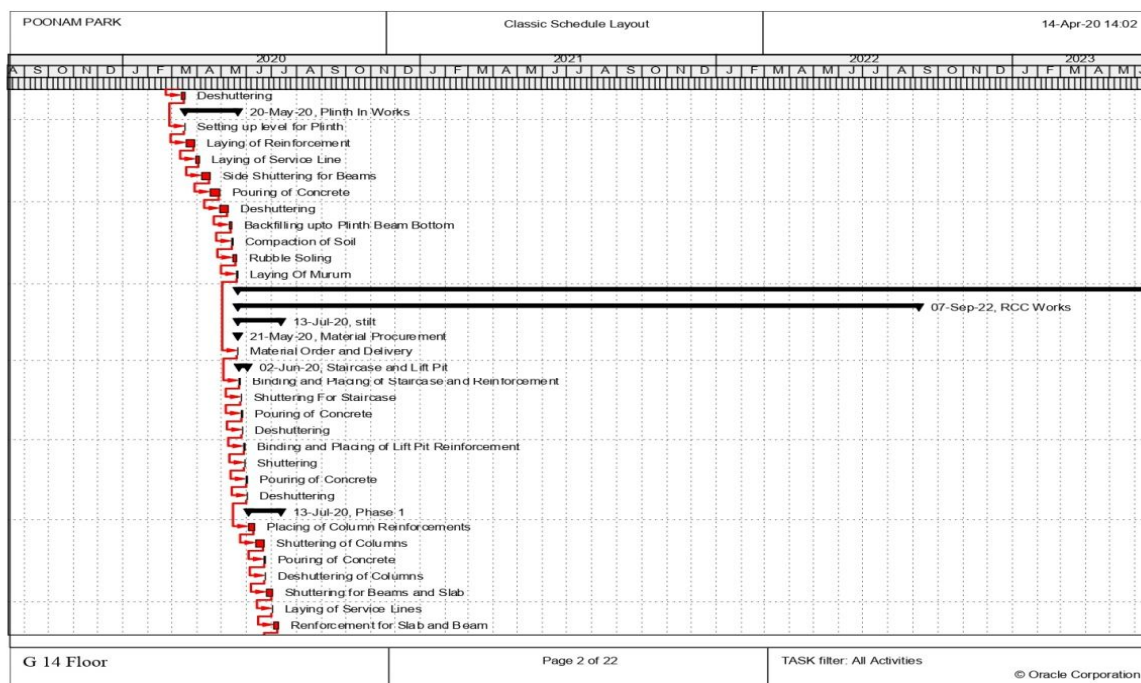
The case study is of newly constructed residential building engineered by Poonam developers Started on Aug 19 located in Waliv, Vasai. The interesting aspect about this building is that the location is just 10 mins from the vasai station and 5 mins from the main western express highway. The location has more accessible reach such as school, hospitals etc. Firstly, the important features of the building are as follows. The building has 3 wings and the case study is done on (wing A) of G+14 with FSI of 1 Also, the concrete used for this residential building is M30. The columns used from Ground floor to 14th floor are 32, 18, 16 12. The area Waliv is away from coastal side and has a soil of hard rock, keeping this in mind the excavation done for the foundation is of 3 meters. Additionally, the foundation is done by open foundation. The built-up area of this building is 3370 sq. Meters and the carpet area of 2700 sq. Meters



WBS of Project G + 14 storey structure



Gantt Bar Chart of Project G + 14 storey structure



Gantt Bar Chart of Project G + 14 storey structure

V. RESULT AND DISCUSSION

The Report Wizard in Primavera P6 allows for the inclusion of detailed information about the schedule. This data can be organized in columns, which may then be further sorted and filtered. Both simple and complex filters may be created to display the activities of interest, such as Completed or In Progress activities. In this project, we have done planning and scheduling with the help of primavera P6 of G + 14 High rise building in the area waliv , vasai. By this project we were able to track the day to day process of high-rise building. Also, then we have scheduled and planned all the activities of the building. By scheduling we got the proper Timing and days for the completion of our Project. With the help of primavera we are able to track the effective completion time in given period.

Additionally, we were able to

- 1) Optimize management of resources
- 2) Easily prepare and control things.
- 3) Monitor progress along with view past period efficiency
- 4) Generate, manage, and knowledge of schedule, cost.
- 5) Easily breakdown projects along with activities structure
- 6) Collaborate between all assignment's users.
- 7) Manage budgets and expenses

VI. CONCLUSION

- A. Due to wide spreading of COVID-19 causing since Jan-20 in India most of the construction business are causing delay. Also, the construction work (physical) has been stopped by the Poonam developers as per government norms/rules until further notice.
- B. Consideration of risk management in this outbreak is necessary.
- C. The bearing of any such materials or any such type will be considered and controlled in a written contract.
- D. "Force majeure clause" should be brought into account, these clauses include epidemics and pandemics.
- E. A revised plan is under process and it will be updated once the lockdown is over.
- F. Due to coronavirus arrival there is shortage of workers which will result in delay for completion of project. Being said that date of completion will be extended further.

VII. SCOPE OF FUTURE STUDY

- A. Estimation of quantities of material like concrete, steel, bricks, paints, tiling, and sanitary fixtures can be determined according to the given plan.
- B. Estimation of the required manpower and machinery can be carried out for further ease in scheduling.
- C. Keeping the resource as time as a constraint, manpower, machinery, and money can be optimized so as to achieve a quality product that is also economical.
- D. Through Primavera, Resource Allocation and Resource levelling techniques can be applied for calculating the total budget of the project.

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