

# Enhancing Primavera P6 Scheduling Using Automated Camera Data in Smart Residential Building

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**Abstract**— Planning and Scheduling are very essential in large infrastructure projects like road and bridge construction. These projects have numerous stakeholders and large amounts of money, resources are invested. Improper planning and scheduling leads to loss of resources, increase in project cost and unpleasant delays. But with computer and software evolution, it is now possible to plan these projects using software like Primavera P6 and Microsoft office project. This paper deals with presentation of AwasYojna project in New Market Bhopal comparing the two different blocks namely Block A and Block B. The project stated the advantage and added benefits of web based primavera P6 for planning and scheduling of structures under construction under the government scheme of “AwasYojna” framing the issues and complications faced in the time frame of construction and availability of resources.

**IndexTerms**— Primavera P6 Web, Bhopal AwasYojina, Planning, Scheduling, Monitoring and Tracking.

## I. INTRODUCTION

The project consumes several resources in its life to achieve the desired goal. The increase of cost due to delay in time is in the world. It is now necessary to have specific arrangements and strategies to improve public finances, and associated with resources. For large construction projects with a large budget; it becomes very difficult for the project team to complete tasks in time. It is therefore very important to have a tool in the hands of the project team that can be used to monitor project activities. Primavera Project Planner P6, the Oracle software, is an incredible asset owned by the Venture Group. The product helps in the efficient organization, planning, and control of activities. Construction workers in India are reluctant to use the organizational and business planning processes used around the world and currently serve as a benchmark for the timely completion of tasks. The survey includes discussions/presentations on Primavera P6, an accessible business organization, and planning device. The nature of the planning established by the product requires regular details and why the product improves the business is largely overlooked by customers in India.

Without prejudice to the disclosure of information on various tenders, their interrelation, and the conditions under which it is possible to anticipate the overall duration of the company during the preparatory phase. The planning must be comprehensive enough so that the client can understand in detail the rationale for the various planning exercises. Currently, the development industry is one of the most widespread and rapidly growing realities in our country and their current situation, to cope with the degree of progress in and around metropolitan areas, and the time required to achieve this can be reduced.

## II. LITERATURE REVIEW

Alberto Cerezo-Narváez et al [1] The research report examined whether coordinating a cost allocation structure (CBS) can spark the era of stronger PSPs in development companies. In recent years, some global associations have standardized and adapted various framework conditions for cost agreement (e., ISO 12006-2, 15081346-12, Omni-Class, Co-Class, Uni-Class). These cost data records have also been integrated into Building Data Displaying (BIM) structures. We believe that in BIM terms, when these CBS are used to create Venture PSPs, some preferences are increased, for example. The results showed that the PSP contains a hierarchical structure of the project scope. It is based on services and avoids both duplication and omission of activities.

Ajesh Pilaniya [2] The research aimed to understand the difference between artificial and spring software to estimate the financial and workforce management planning of a project using e.g. References and unique monitoring and control methodology using Primavera software." The planning of various activities during the project would be optimal and thus the management of finances and manpower can be done correctly. Primavera P6 software is a perfect and efficient tool for project management and for proven Decal monitoring and control of various construction projects. Akash Rajkumar Wadhwa [3] The principle of the project resource allocation research used in the present project is to optimize, condense, or avoid waste of all project materials. Resource allocation and optimization were done using project organization software similar to spring p-6. Resource allocation can be optimized without changing the project period. Resource allocation as an optimization can be done for all other resources used in the construction project and can reduce project costs. Overcrowded resources are reduced through activities.

Akshay R. Kohli et al [4] The research paper aimed to identify the most relevant articles with the causes and effects of delays and to develop the DEC database for future critical analysis. The content of the DEC dataset was systematically analyzed using bibliographic, cluster and thematic analyzes. This article presented the DEC literature, including key findings

delayed over the years. This study carefully conducted a systematic content analysis that led to four major overlooked factors and areas of deficiency that should be addressed in future studies.

### III. METHODOLOGY

#### Background

The Pradhan Mantri Awas Yojna (Urban) situated in Bhopal Madhya Pradesh is considered in this research. In this project, preparation of scheduling and planning of the two different blocks in the defined project destination are considered in Bhopal and comparing it with present scheduling which is working on the site.

#### Project Data Analysis

This undertaking was planned on 2016. Work week from Monday shall be utilized and units shall be arranged in days. The activities, ID and duration was entered. The aggregate number of exercises of the task is 41.

#### Project Planning and Scheduling

As soon as we create organization, the activity subtle elements are acquired in the bar graph. The equivalent is further visible in PERT view. The perspective demonstrates the action subtle elements which incorporates activity name, term, managing start and completion date and detailing Information segment territory. After recording the initial activities with their start and end dates, one can monitor them throughout the project in the data portion of primavera screen.

Step 1: Selection of Ongoing tasks, for the undertaken. project, considering running a venture named "Pradhan MantriAwas Yojna". Monitoring of the project is run by Nirvana Consultants & Engineers.

Step 2: Obtain point by point illustrations and rates which are fundamental for further analysis.

Step 3: With the assistance of task supervisor and site build set up the venture planning utilizing administration device Primavera P6 V 8.3.

Step 4: Detailed examination is done on asset tasks and leveling utilizing Primavera P6.

Step 5: Assigning Supervisor to every activity, to provide and update the running status of the work on day to day basis according to business sector rates

Step 6: Preparing Gantt chart graph and system models.

Step 7: Prepare planning according to current side conditions

Step 8: Comparing both planning and scheduling to counteract flaws

### IV. PROJECT SCHEDULING

For task Planning, separated the undertaking in various Work Breakdown Structure (WBS) to appoint labor and length of every activity. The work breakdown structure is depicted beneath:

Survey and Preconstruction work which contains every one of the activities and questions to be assembled or taken to the site territory. Like temporary structures namely site office, testing laboratory, Store room, Inventory Room and others. are to be provided to begin working at the site. Such exercises are important to begin another task to oversee the working on site easily.

Step 1- To create enterprise project of a company to execute a company profile.

In this step, creation of the company profile with the division in which the company operates was prepared. These divisions were further subdivided into streams such as Structure Urban and Structure Rural as shown in Figure 1.

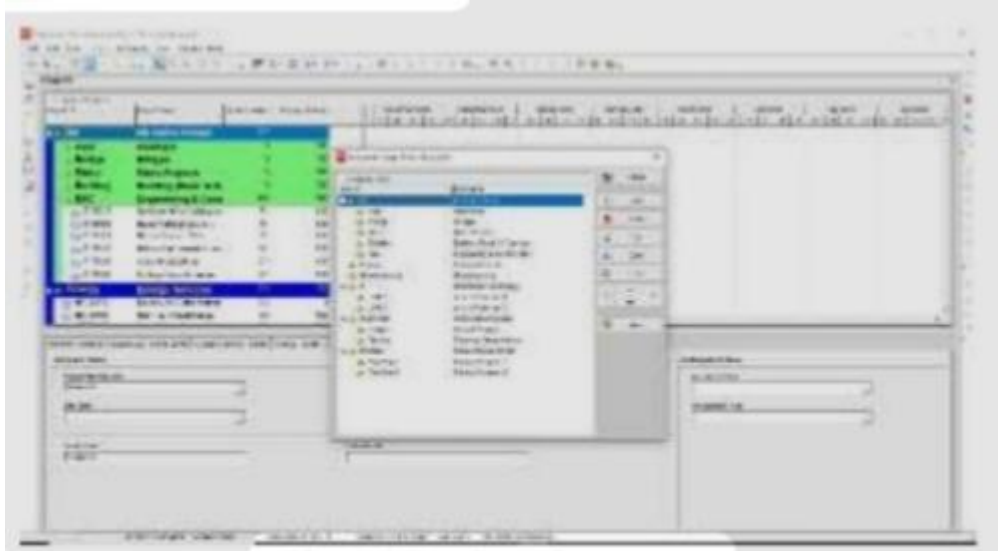


Fig.1 Project Structure

Step 2- Assigning roles and organization structure constituting company management and responsible managers profile.

The job roles are assigned (Figure 2) one the expertise of the employee and the tasks are assigned as per their qualifications and their experience in the similar tasks as efficient resources are responsible for completion of any project in right intervals and are important for development ventures.

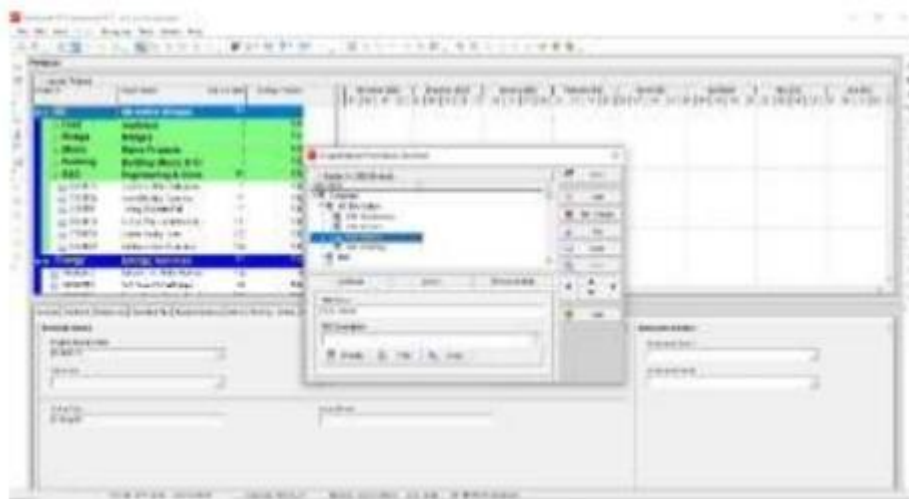


Fig.2 Assigning Job Roles

Step 3- Creating working calendar as per working hours and shifts to be assigned in project:

Before the start of a project, the activity list is entered and the calendar is characterized and utilized to display the working time for every action in the task. Calendars are additionally used to characterize the working and. occurrence design over the length of the task. These are three unique kinds of schedules namely Global, Venture and customized. The working shift is considered as 8 hours and six days working. The point to point working hours are from 08:00 AM to 05:00 PM. Meal break is of an hour from 12:00 PM to 01:00 PM as shown in Figure 3

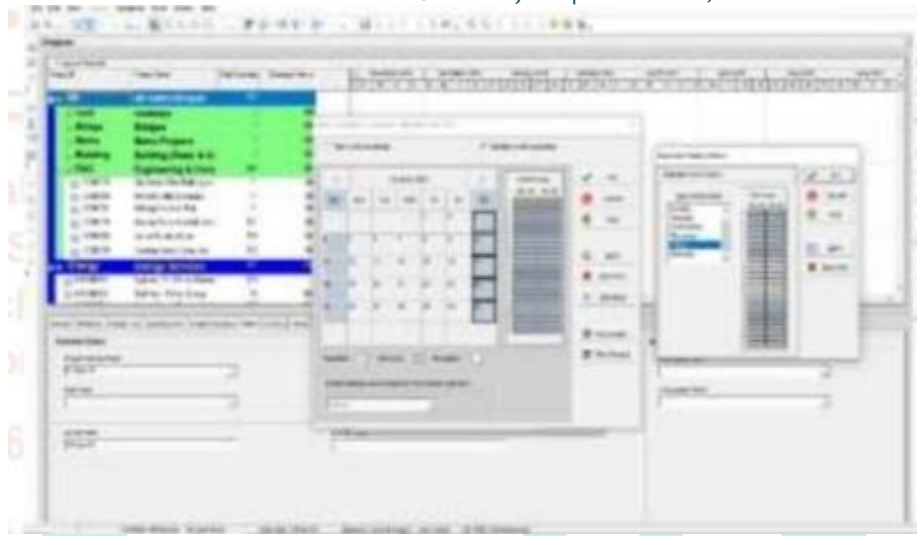


Fig.3 Global Calendar

Step 4- Preparing Work Breakdown Structure

A WBS is the progression of work used to achieve the project to finish a task. WBS is organized in levels of work point by point starting with the final task and later formation of different forms into identifiable work components (figure 4). WBS is based on the individual sub venture and the undertaken WBS is figured beneath:



Fig.4 WBS Structure

Step 5- Assigning activities of each WBS as per scheduling data with links in between activities using Gantt chart.

Figure 5 & 6 shows the Critical advance in the undertaking arranging is to distinguish the activities to finish the task and furthermore anticipate or valuate the number of days required in completion of the project. The term of exercises is evaluated based on meetings, research, estimation and strategies of costing. These lengths are relegated in every activity. As the undertaking is of tedious kind, in order to identify the approach connected by utilizing CPM as PP apparatus.

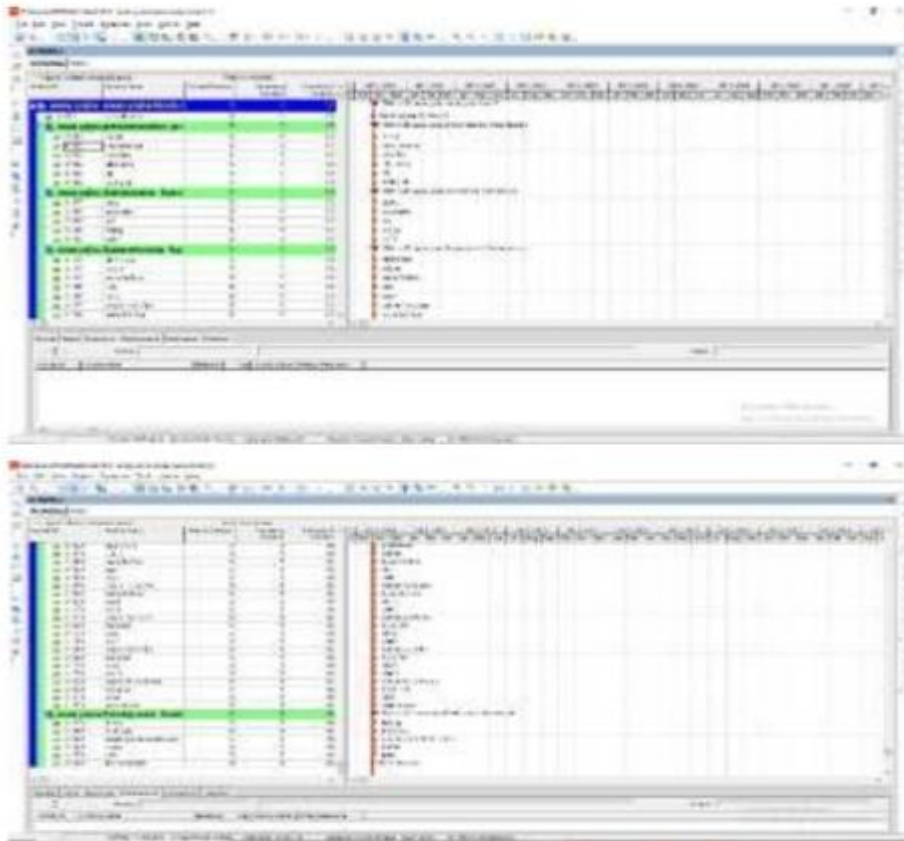


Fig.5 Activity Details For Block A

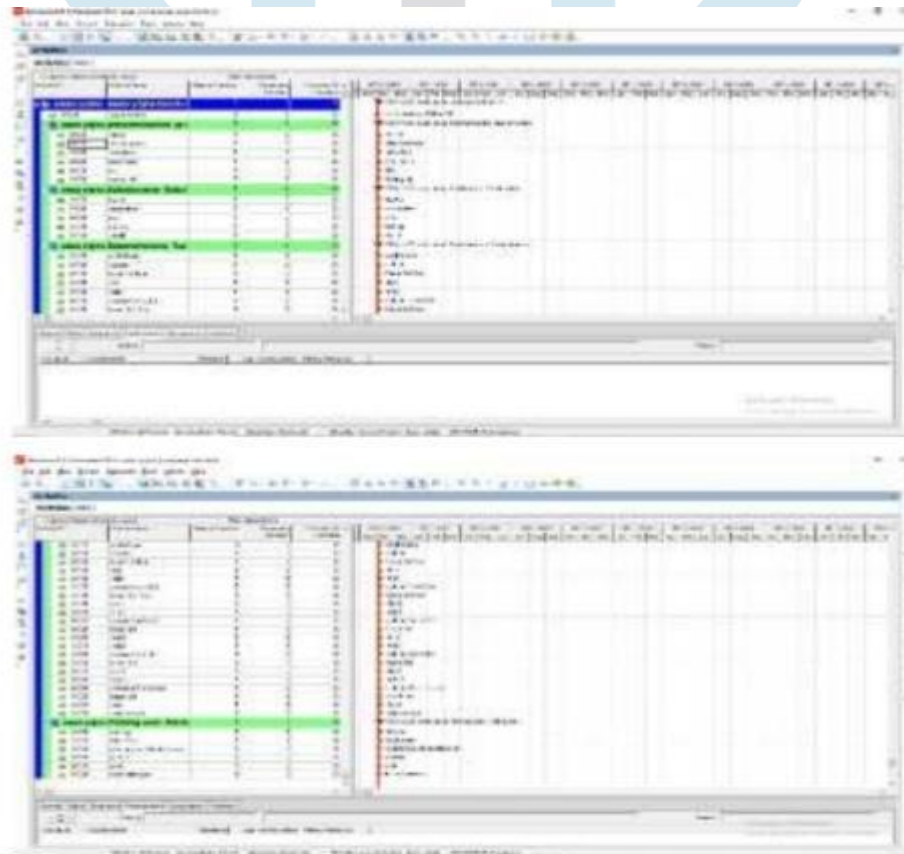


Fig.6 Activity Details For Block B

Step 6 :

Creating Resources such as Manpower, Machinery and Material are prepared using big business assets, where an option is received to get the choice of including new assets. Cost of assets relies on its unit as cost of work is on daily wages, material relies on their weight and machinery relies on its working hours along with its maintenance (figure 7).

Resource ID	Resource Name	Resource Type	Unit of Measure	Primary Role	Default Units / Time
8-1	Concrete	Material	cubic meter		80
7-2	cb	Material			80
7-3	Iron	Material	Ton		80
7-4	Welding	Labour			80
7-5	Field Eng	Labour		Engineer	80
7-6	ACBDD	Material	Each		80
7-7	Mou	Labour			80

Fig.7 Resource Analysis

Step 7-Assigning Resources in each activity as per 15. 7272

IS 7272 provides inexact necessity of labour according to the assigned activity. It provides consistent working labour according to the sort of work, this code depends on the prerequisite of work for exercises relying on the jobs required for usage.

Step 8- Comparison of scheduling proposed as per site scheduling using Primavera P6.

Primavera provides another instrument to correlation of standard versus current advancement of the task known as Project Scheduling. It furnishes legitimate booking and checking of every last exercise managing and investigating different parameters.

## V. PROJECT TRACKING, MONITORING AND CONTROLLING

Creating Target Projects

Our baseline is an entire duplicate venture plan that can be utilised to contrast with the present calendar to access advance. And before refreshing the calendar out of the blue dependable benchmark, the baseline is placed as a benchmark for considering the deadlines, assets and expenses to those for the present calendar.

Updating the Current Projects

Prerecorded advancement of information is recorded whenever project management records advances on the present information date. It reconsiders a timetable dependent on the appropriate Date difference and different changes are simply recorded. There are a very few different ways to replace the timetable which includes exercises and assets which can be refreshed separately and can likewise be utilized. This will enable to conjecture the 6/11 unexpected conditions. as to create the m restoratives milestone. t of able

Tracking of the Project

Undertaking administration following the manner in which effective task general managers managing directors and other ventures are considered. This is likewise where they provide details regarding how the real outcomes contrast with the first arrangement. Task administration following a certificate not in mechanical information dump where one can simply recount information. The task administration following procedure frequently decides your validity as a venture director. One should stay ready with planned remedial activities intended to settle the fluctuations to the task arrangement and calendar. Introducing those alternators will console the officials and investors responsible for the venture (Figure.8).

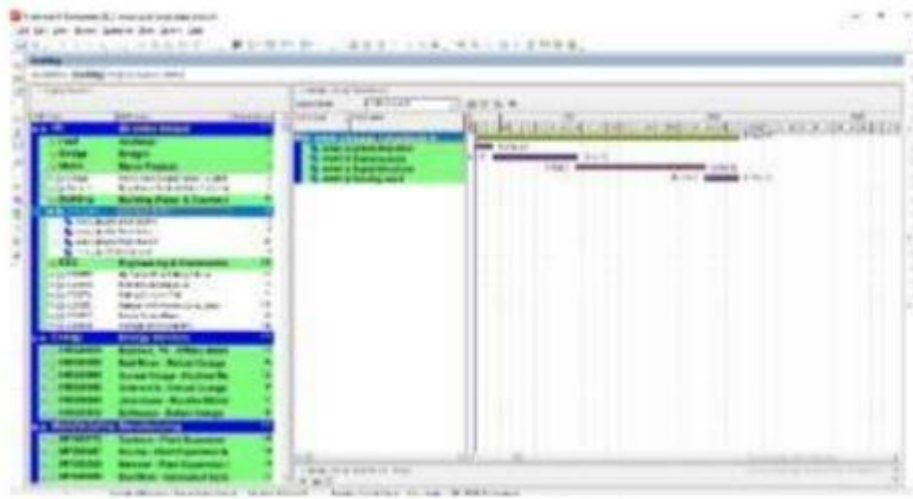


Fig.8 Tracking of Project

## VI. CONCLUSION

The project was presented to develop scheduling and planning using Primavera P6 V8.3 for Pradhan Mantri Awas Project and prepare construction sequence and comparative analysis in between two blocks and identification of reasons for delay. Conducting Financial Risk analysis using Primavera P6. Financial Risk analysis using Gantt chart in Primavera P6 and assigning proper sequence and links between different activities for early finish.

The observation stated the drawbacks which ultimately became the reasons for delay of the project and compared the schedule of the two blocks of PMAY Urban. In this study, minimization of delay was done by allocating resources as per demand of activity based on availability of resources and uncertainties like lockdown due to COVID 19. The study elaborated work breakdown structure to activity level to provide proper lagging of project management as per scheduling. Here results concluded that using project management tool Primavera P6 assigning and monitoring each activity as per running conditions the project may be completed in time and cost may be saved. Besides, further water logging was analyzed in excavation activity due to the environment (rain water) which was resolved to save 5 days. Observations stated that the process of preconstruction was managed equally by linking all such activities namely preparing site office, Labour room, and laboratory setup. By linking the activities, the time lapse reduces simultaneously. Overall it is observed in the running project that management of all the activities and observations on their previous and next activity is necessary to run activities simultaneously, so as to optimize the time and cost.

## VII. ACKNOWLEDGMENT

We sincerely thank all those who supported and contributed to the successful completion of this manuscript. Special appreciation is extended to our mentors and reviewers for their valuable guidance and insightful feedback.

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