

Construction Management of A G+10 Residential Building Using Primavera P6

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ABSTRACT

Planning and scheduling are central to the successful execution of high-rise residential projects. This paper presents a publication-style analysis of a G+10 residential building project developed in Primavera P6, using the uploaded baseline programme, floor plan, and project report as the primary inputs. The study organizes the project into deliverable groups such as civil works, MEP works, joinery, aluminium and glazing, sanitaryware, and handover activities. The baseline schedule is examined in terms of start and finish dates, overlapping activity logic, major milestones, and float distribution. Visual evidence from the baseline programme is included to show the overall schedule structure and selected work packages. The study also summarizes the project data collected for the building, including site area, building height, structural system, and design specifications. The final paper format is intended to read like a short civil engineering publication rather than a raw report, with concise technical sections, figures, tables, and references.

Keywords: construction management, Primavera P6, scheduling, baseline programme, residential building, critical path.

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I. INTRODUCTION

High-rise residential construction depends on clear planning, realistic activity sequencing, and consistent monitoring of time and resources. When the project size increases, the number of interfaces between structural work, finishes, MEP systems, procurement, and authority approvals also increases. Primavera P6 is widely used in such projects because it converts a long list of construction tasks into a time-based logic network that can be checked, compared, and updated during execution.

The uploaded project report focuses on construction management for a G+10 residential building, while the baseline programme provides the activity-level schedule for the same type of residential development. Together, these documents make it possible to study how the building is organized from a planning point of view and how the schedule is distributed over the life of the project. The baseline programme shows that the work is not limited to civil structure alone; it also includes mobilization, approvals, procurement, specialist packages, finishing works, testing, and handover milestones.

II. PROJECT INFORMATION AND DATA COLLECTION

The project report gives the key building data used for scheduling and management. The building is described as a residential structure with a rectangular shape and an RCC framed system. The collected information was used as the basis for schedule preparation and sequence identification.

Project Particulars	Details
Utility of building	Residential building
Site area	180 m ²
Building height	34 m
Storey configuration	B+G+P+8
Structural system	R.C.C framed structure
Shape of building	Rectangular
Staircases	Two
Lifts	Two
Wall type	Brick wall

Grade of concrete	M30
Grade of steel	Fe550
Beam size	300 x 500 mm
Column size	600 x 600 mm
Slab thickness	150 mm

The floor plan attached with the project shows the repeated apartment arrangement around a central circulation core. The plan reinforces the need for careful sequencing of structure, services, and finishing activities because the same unit layout is repeated across the height of the building.

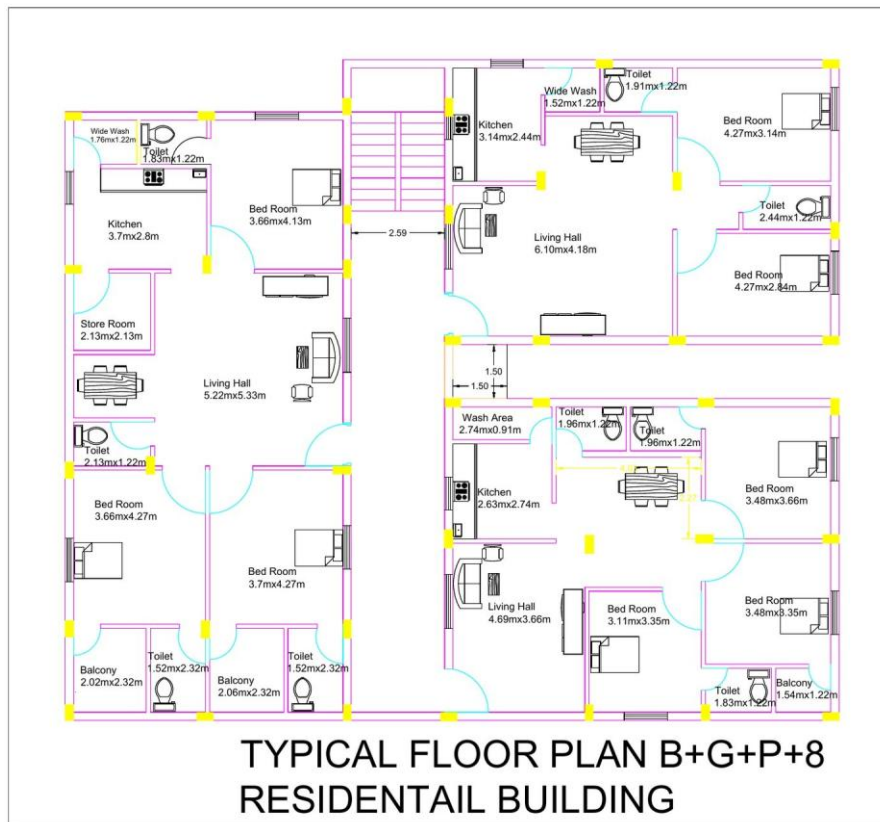


Fig-1: Typical floor plan of the B+G+P+8 residential building.

III. METHODOLOGY

The study followed a document-based planning workflow. First, the project report was reviewed to identify the building parameters and the stated construction management objectives. Second, the baseline programme was examined to understand the schedule logic, main deliverables, and major activity groups. Third, the floor plan was used as a graphical reference for the residential layout. Finally, selected screenshots from the baseline programme were inserted into the paper to document the schedule structure visually.

The practical workflow can be summarized as: (1) collect project inputs, (2) identify the work packages, (3) group activities under civil works, MEP, joinery, finishes, and handover, (4) read the planned start and finish dates, (5) assess float and criticality, and (6) present the results in publication format. This approach is useful because it turns raw Primavera output into a readable paper that communicates both the design intent and the schedule story.

IV. BASELINE PROGRAMME ANALYSIS

The baseline programme is a landscape-style schedule prepared by Al Habbai Contracting for the project shown in the uploaded file. It starts on 22-Oct-18 and finishes on 21-May-20. The schedule is organized into deliverables, milestones, civil works, MEP works, joinery works, aluminium and glazing works, sanitaryware, and handover items. The major schedule blocks show considerable overlap, which is typical for a multi-storey residential project where procurement and finishing activities run in parallel with structural work.

Table 2 below captures a selected set of activities and float values from the programme, showing how

the work package hierarchy moves from structure to services and finally to handover.

Activity group	Activity	Duration / float	Schedule insight
Milestone	Commencement Date / Project Completion	0 days	Defines the project window from 22-Oct-18 to 21-May-20
Civil works	Mobilization Works	30 days / 35 float	Early project setup with moderate flexibility
Civil works	Sub structure Duration	164 days / 36 float	Foundation and underground works remain schedule drivers
Civil works	Super structure	167 days / 8 float	High-rise frame progresses with limited float
Civil works	Block works	147 days / 45 float	Masonry starts after structural progress
Finishes	Internal Plaster Works	181 days / 175 float	Long-duration finishing package with large float
Finishes	Painting Works	283 days / 33 float	Parallel finishing activity spanning much of the project
Finishes	Tiles Finishes Works	212 days / 40 float	Typical overlap with plaster and ceiling works
MEP	MEP Works	534 days / 10 float	Longest service package and near-critical chain
MEP	HVAC Works	314 days / 10 float	Strong coordination with finishes and procurement
MEP	Elevators System	275 days / 8 float	Specialist package with low float
Handover	Building Handing Over to DEWA	57 days / 0 float	Critical close-out milestone

Figure 2 shows the overall baseline programme. The chart makes the sequencing clear: mobilization is followed by substructure, superstructure, block work, finishing, MEP installation, and specialist trade packages. The schedule also reveals that several activities overlap heavily, which is a normal strategy to reduce idle time in a multi-storey residential project.

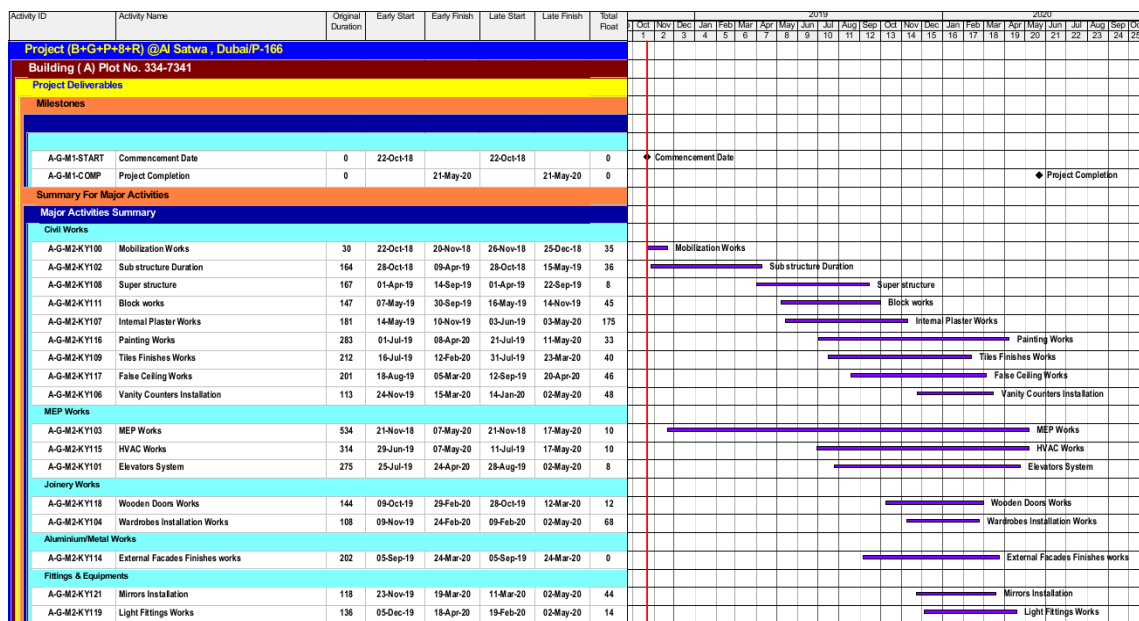


Fig-2: Baseline programme overview showing major civil, MEP, joinery, and finishing activities.

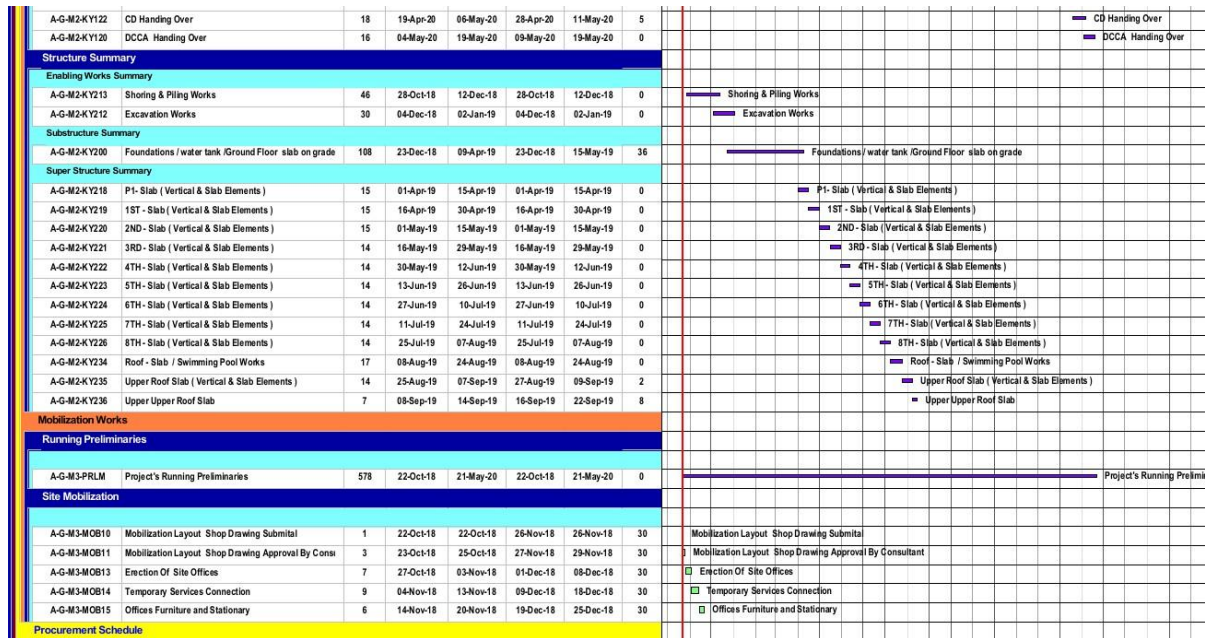


Fig-3: Structure summary and mobilization works from the baseline programme.

V.RESULTS AND DISCUSSION

The project documentation provides a clear picture of how the residential building is intended to move from concept to execution. From the report, the most important management benefits are the reduction of scheduling ambiguity, the ability to identify work packages, and the possibility of comparing planned and actual performance. The baseline programme itself is detailed enough to show how the contractor has split the work into meaningful control packages.

One important observation is that the schedule is not linear. The mobilization, approval, procurement, and specialist subcontractor activities begin early and continue alongside structural execution. This is visible in the overlap between MEP works, aluminium and glazing, sanitaryware, and finishing packages. Such overlap reduces waiting time, but it also increases coordination risk. That is why Primavera schedules are especially valuable: they help the planner see which packages are driving the finish date and which ones can absorb delay.

The floor plan provides an additional design-level explanation for the schedule. The repeated apartment arrangement, stair and lift core, and service spaces indicate that floor-by-floor repetition would influence how structural slabs, brickwork, MEP risers, and interior finishes are organized. In other words, the geometry of the building and the sequencing of the programme are linked. A regular plan makes repetitive work easier to manage, but it still requires careful control at the interfaces between trades.

The project report also emphasizes that planning and scheduling help to forecast progress, monitor risks, and track delays. In practical terms, this means that the baseline programme becomes a control document: once the site work begins, actual progress can be compared against the planned dates, and corrective action can be taken whenever critical activities slip.

VI.CONCLUSION

The uploaded documents are enough to produce a coherent paper publication on construction management for a G+10 residential building. The project data, floor plan, and baseline programme together show how Primavera P6 can be used to organize a multi-storey residential project into clear work packages and milestone-driven phases. The baseline schedule spans from 22-Oct-18 to 21-May-20 and includes the full chain of civil works, MEP works, specialist installations, and handover activities.

The main value of the exercise is that the schedule is no longer just a Gantt chart; it becomes a technical narrative of the project. When the activity groups are read alongside the building data and plan, the logic of the construction sequence becomes much easier to understand. For a final publication, this structure is strong enough to present as a civil engineering paper.

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