

Typical Construction Program





In modular construction projects, the time allocation for each phase differs significantly from traditional construction, with the core advantage lying in parallel operations between factory production and on-site work. Below is a timeline framework for each phase (using a typical multi-story modular building as an example, with a total duration of 6–12 months, depending on project scale and complexity):

Pre-Project Phase



1. Pre-Project Phase

Time Allocation: 15%–25% (Approx. 1–3 months)

A. Feasibility Study & Planning (2–4 weeks):

Needs analysis, modular suitability assessment, preliminary cost estimation.

B. Design & Approvals (4–8 weeks):

Modular design (including BIM modeling) requires greater precision than traditional design (due to module splitting and interface planning).

Approval timelines may vary based on local regulations

C. Key Variables:

Design iterations (rational module splitting impacts subsequent phases).

Efficiency of local approval processes (some regions require additional modular certifications).

Modular Production Phase



Time Allocation: 20%–30% (Approx. 2–4 months)

A. Factory Prefabrication (8–15 weeks):

Each module typically takes 2–4 weeks to produce (including structure, MEP systems, and interior finishes).

Production batches align with on-site foundation progress (e.g., 10 modules/week).

B. Transportation & Storage (4–6 weeks):

Modules are delivered in installation sequence to minimize on-site storage.

C. Key Variables:

Factory capacity (automated production lines can reduce time by 1/3).

Module complexity (fully finished modules take 30%–50% longer than bare modules).

On-Site Construction Phase



Time Allocation: 15%–25% (Approx. 1.5–3 months)

A. Site Preparation (2–4 weeks):

Foundation work (requires precise alignment with module bases), faster than traditional methods (no on-site formwork).

B. Module Installation (1–2 weeks per floor):

Average daily installation rate: 4–8 modules (e.g., 20 modules per floor for a hotel project, completed in 3–5 days).

High-rise projects require optimized crane operations (tower cranes vs. mobile cranes).

C. On-Site Completion (2–4 weeks): Exterior cladding integration, non-modular areas (staircases, elevators).

D. Key Variables:

Weather impacts (rainy seasons may delay exterior work).

Installation precision (errors >5mm may cause interface issues).

Testing & Commissioning Phase



Time Allocation: 10%–15% (Approx. 2–4 weeks)

A. Systems Integration Testing (1–2 weeks):

MEP and fire safety systems (20% faster due to pre-integrated modular utilities).

B. Regulatory Inspections (1–2 weeks):

Some regions require modular-specific certifications (e.g., UK's BS 3632).

Handover & Operations Phase

Time Allocation: 5%–10% (Approx. 1–2 weeks)

Client training, document handover, and final cleaning.

Timeline Comparison by Project Type

Project Type Total Duration Time Saved vs. Traditional

Small Modular Housing	4–6 months	40%–50%
Mid-Scale Hotel	8–10 months	30%–40%
High-Rise Apartment	10–12 months	25%–35%



Key Time-Saving Strategies

Parallel Operations: Synchronize factory production with on-site groundwork (saves 20%–30% time).

Standardized Design: Fewer module types accelerate production (5%–10% speed gain per reduced type).

Digital Management: Use BIM and IoT for real-time progress tracking (e.g., 1-day factory delay may cause 3-day on-site stall).



Risks & Buffer Recommendations

Design Freeze: Finalize designs before factory production (allow a 2-week buffer).

Supply Chain Delays: Stock critical materials (e.g., steel) with 10% redundancy.

Weather Contingency: Reserve 10%–15% time buffer for on-site work.



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