IMPROVING CONCRETE FORMWORK WITH 3D BIM

Formwork with 3D BIM improves construction planning, detailing, and execution leading to higher accuracy, accelerated productivity, cost and time savings.

Projection of Formwork market by **2028**

$7.48 billion

Challenges in Formwork Planning and Detailing without 3D BIM

- 2D CAD layouts leads to disconnected planning and detailing → Errors, delays, and risk
- 2D workflows lack in-depth information in real-time → Uncoordinated formwork
- Lack of visualization with 2D blueprints → Incorrect formwork material estimates and planning
- Lack of precise takeoffs with CAD-driven processes → Improper material, quantity & cost planning
- Lack of clash identification and resolution with traditional methods → Multiple hiccups onsite
- Inability to effectively communicate information to the field → Inconsistent construction flow

Impact of BIM-based Concrete Formwork

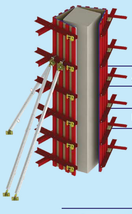
28% Cost savings with BIM-based Formwork planning and detailing

20% Time savings through BIM-based Formwork planning and detailing

5% Manufacture of cement accountable for global CO2 emissions

Benefits of 3D BIM for Concrete Formwork

- Visualization with 3D BIM models during preconstruction → Nullifies errors and lowers construction risks
- QTO's from coordinated BIM models → Accurate quantities available for reporting, management, planning
- Interdisciplinary 3D model clash-detection and resolution → Saving of cost and time
- 3D formwork model as a single source of truth → Precise formwork modulation and sequencing of concrete cast batch
- BIM 360 platform → Fuels productivity with real-time updates, RFI's & keeps stakeholders on the same page



Adoption of BIM generative or outcome-based design in the next 3 years **20%**

Use of model-driven BIM simulation in the next 3 years **18%**

Success story for Concrete Formwork using 3D BIM

Formwork construction with Revit BIM modeling for a commercial office, Netherlands.

BUSINESS NEED

- A clash-free 3D formwork model with shop drawings enriched with complete part count
- Precise material planning and concrete pour cycle

RESULTS

- Time and cost savings for the client with accurate shop drawings
- Smooth and seamless documentation with a complete sheet setup using Dynamo automation and preemptive BIM workflows
- Improved material and budgetary planning
- Reduction in production time by 20% with 100% output quality

Types of Formwork Systems

Slip Form

Jump Form

Vertical Panel

Horizontal Panel

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https://www.hitechcaddservices.com
info@hitechcaddservices.com