



Dow Performance Silicones

Integrating Design and Construction with BIM is Transforming the Industry

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Architects and engineers use building information modeling (BIM) to optimize design, by iterating more fluidly, analyzing multiple options more objectively, communicating design intent more clearly, and producing more reliable and constructible documentation. Contractors use BIM to optimize the estimating, detailing, fabrication, installation and handover processes. And when all parties collaborate with BIM it can effectively integrate the complete design-construction workflow, maximizing efficiency and productivity for everyone.

Dodge Data & Analytics recently published a landmark research study called “Connecting Design & Construction,” sponsored by Autodesk. It examines the multiple benefits experienced by architects, engineers and contractors who are deploying this type of integrated digital workflow.

Impact on Design, Detailing and Fabrication

Before construction, designers use BIM to perform code check and various performance analyses to achieve an optimized, coordinated design, then

share the model with fabrication detailers who generate shop drawings, erection/installation plans, etc.

Practitioners rated the positive impact of this integrated process. (The following percentages assigned high or very high levels of impact, versus none, low or medium):

- 3/4 say it **Enables Better Communications During Design, Detailing and Fabrication.**
- 3/5 report it **Produces Better Coordinated Designs and Shop Drawings in Less Time.**
- About half (53%) find it **Reduces Duplication of Tasks and Provides More Accurate Estimates.**
- More than 40% cite it **Requires Fewer Design Iterations** between architects and engineers, and it also **Minimizes the Impact of Design Changes on Detailing Work.**

Impact On Installation and Handover

For construction, the shop drawings, etc. are digitally transferred into fabricators’ material information systems for production, and the detailed information is integrated back into the design model

used by installers at the job site to validate accuracy and confirm installation activities.

Users cite high or very high levels of these positive impacts:

- 58% report **Reduced Errors in Field Installation**, decreasing rework and material waste, and improving productivity and schedule compliance.
- More than a third (36%) **Track Material Status in the Field and Document As-Built for Handover.**
- While only 24% currently say it **Improves Safety**, that should increase as the practice matures and its safety impact can be measured more explicitly.

Impact On Project Performance and Outcomes

Evaluating completed projects, practitioners assign high or very high levels of positive impact to several key metrics:

- More than half report it **Improves Schedule Performance** (61%) and **Delivers Better Quality** (59%).
- 44% say it **Reduces Material Waste**, which supports sustainability initiatives.
- 2/5 find that it both **Improves Company Profitability** and **Reduces Costs.**

Future

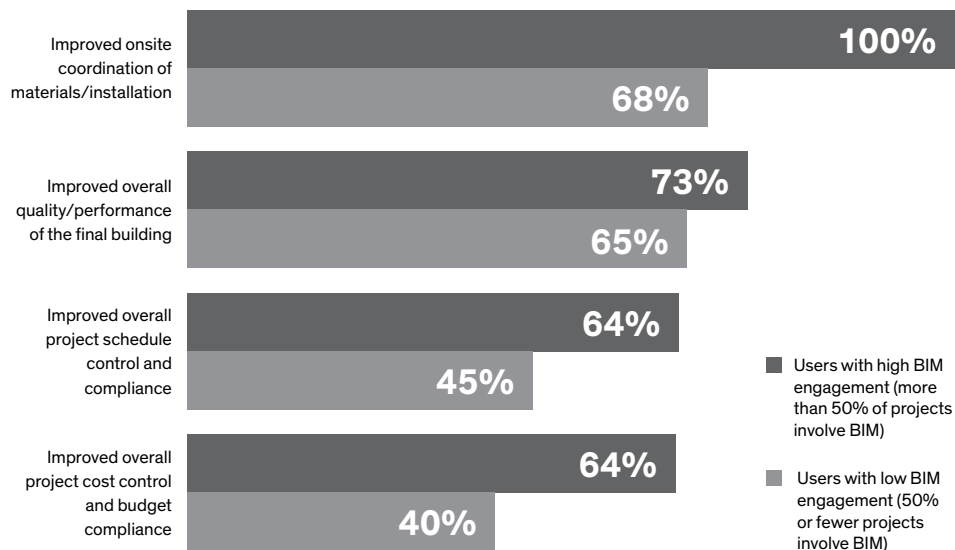
Although fewer than half of the companies surveyed for this study are currently practicing the fully integrated digital workflow described above, almost all reported doing some of the individual activities and express interest in expanding their participation. They believe it will generate several high or very high levels of positive impact in the future, including:

- 3/4 believe it will **Improve Collaboration Across Distributed Geographies** and help teams more successfully **Realize Design Intent**.
- 2/3 predict it will **Increase Owner Confidence During Design and Construction**.
- More than 50% expect it will help them **Attract and Retain Technology-Savvy Staff** and **Complete More Work with Less Labor**.

The full Connecting Design & Construction report is available for free at <https://www.construction.com/toolkit/briefs/connecting-design-construction>.

Benefits of Full-Team BIM Use

Percentage citing high or very high level of benefit when other key team members also use BIM



Projects go better when all key team members use BIM. And the architects and contractors who are heavily involved with BIM (i.e. use it on more than half of their projects) report even higher levels of benefit than their peers who are less engaged with BIM.

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