



FAQ

5 Questions Contractors Ask When a Project Requires BIM

What is BIM?

BIM, or Building Information Modeling, is a process that gives architecture, engineering, and construction (AEC) professionals greater insight to more efficiently plan, design, construct, and manage buildings. BIM often involves tools including project management software and 3D modeling, but it's important to remember that BIM is a process, not a type of software.

The inspiration for BIM came from scientists, whose informational models were derived from tests, data and research collected over time that further helped them understand their subject. The goal was to apply these concepts to building and construction, and collect the information and data in one place.

The definition of BIM can vary based on the needs and goals of a specific project. BIM could mean a more collaborative way of working together, or it could mean putting together a data-rich, 3D digital model. It's important for the team to determine what BIM means for each stakeholder on each project.

One of the goals of BIM is to have the right information available when you need it so you can make an informed decision at the ideal time — not too early, not too late. The goal is to improve communication between all key project stakeholders. This results in greater insight and better decision making, minimizing errors, improving efficiency, and providing a successful project outcome.

What are the different Levels of Development (LOD) for BIM, and how do contractors determine which level they need?

The Level of Development (LOD) concepts were originally developed by the American Institute of Architects (AIA) as a tool to help clarify the content and reliability of BIM models at various stages in the design and construction process. The definitions are organized by CSI UniFormat and detailed in the Level of Development (LOD) Specification compiled by BIMForum.org. The standards are designed to help participants understand the reliability and the limitations of models they are receiving at each stage of the construction process.

The levels range from 100-500. LOD 100 is the most rudimentary level — a sort of napkin sketch conveying basic intent and listing components but without details such as shape, size, scale, or precise locations. LOD 200 includes more general information, basic

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masses, and approximate locations, and dimensions. In LOD 300, users start to define specific assemblies, including the quantity, size, shape, location, and orientation of elements. LOD 350 details specific assemblies, products, and manufacturers. At LOD 400, trades produce shop drawings used to build the actual systems. LOD 500 is the as-built level, which includes a detailed, field-verified record of the completed project and other information, including warranties, training videos, and maintenance schedules, which can be continuously updated over the building's life cycle.

The LOD for each project can vary depending on the goals of the project and the end use of the model. If a detailed analysis of how the building is going to perform is needed, LOD 500 might be the best route. If the model is used to make sure the systems are compatible and provide layout drawings, LOD 350 or 400 might be optimal. A consultant can help contractors strategically determine which systems need to be designed at which level. In a re-roofing project, for example, the roof system might be designed to LOD 500, but that might not make sense for the rest of the building.

The first step on a project should include a BIM execution planning meeting that defines the objectives on the project and who is going to be responsible for each aspect. Through that process, the team can develop a project-specific definition for BIM.

What are the benefits of BIM model coordination?

Incorporating all of a building's systems and components in an aggregated model has numerous advantages, including improving communication, identifying problems, and making installation more efficient and cost-effective. It mitigates risk at all levels of the process and minimizes legal exposure.

In traditional construction projects, communication is limited and information is easily lost between the architect and the general contractor, and the general contractor and the subcontractors. In the BIM model, information is readily accessible to all stakeholders, giving everyone a voice and minimizing information loss.

Coordination meetings, typically using a 3D model which spatially demonstrates how the systems will be installed and work together, can identify conflicts between systems so they can be rerouted, resized, or redesigned before they are installed. Cloud-based systems can allow all parties to do their own constructability reviews before they have the coordination meetings, which speeds up the process. If there is a conflict, BIM helps identify the simplest, most cost-effective solution to the problem. It also allows more accurate and reliable prefabrication. Using BIM can streamline scheduling and result in fewer change orders. Minimizing conflict on the jobsite has added benefits including fostering teamwork and improving job satisfaction.

How common is BIM, and do I have to use it?

It's difficult to quantify, but use of BIM is becoming increasingly commonplace. There are municipalities including states, cities, and counties, that are requiring it, and that number is only expected to increase. Owners, architects, engineers, and contractors have seen the impact and benefits of BIM, and they are embracing it in larger numbers. Many contracts require it, and that's catching the attention of the industry as well.

Whether using BIM is a requirement or a choice, contractors don't have to go it alone. Consultants can help them identify pain points and challenges and make the most of the efficiencies BIM can deliver. Help can include recommendations about technology, training, and production services.

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Using a 3D model for the first time can be a daunting task. For many trades and smaller companies, hiring third-party companies to model their work for them, sit in on coordination meetings, and help come up with solutions in the event a problem is identified is usually the most effective solution.

What should contractors look for in a BIM software or service provider?

Optimal use of BIM depends on an individualized approach, so contractors should look for leading construction management technology providers and consultants with the ability to work with them according to their needs. Consultants can recommend the right products and provide training, consulting, and other assistance.

If they need a partner to help them do the modeling and participate in coordination to fulfill BIM requirements, contractors should find someone that has the experience to help them successfully implement the project and deliver what they are supposed to deliver. The best consultants understand the construction industry and have backgrounds in architecture, engineering, and general contracting. You want to work with someone who understands the entire construction process and is an expert in the ways BIM can make it more efficient and reliable.

Consultants can help companies decide whether they should develop BIM as an internal capability or rely on an external partner for help with the process. Many companies outsource BIM entirely. Others use consultants to help them choose software products and provide effective and efficient training. The best trainers know that not everyone has to learn everything and tailor their training for each position. The key is to find partners who know what engineers, architects, estimators, and project managers do so they can show them a better, faster way to do their jobs with fewer headaches.

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