



Frequently Asked Questions

Building Information Modeling (BIM)

Answers from the PTI DC-110 Building Information Modeling (BIM) Committee

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Q What is BIM?

A The acronym BIM stands for “Building Information Model” or “Building Information Modeling” (it should be noted that BIM is not just for buildings, but is applicable to any structure or transportation, capital building program, or construction project). BIM is a digital representation of the physical and functional characteristics of a facility. As such, it serves as a shared knowledge resource of information about a facility, forming a reliable basis for decisions from inception and through its entire life cycle.

Q What are the structural components of a Building Information Model?

A In addition to the three-dimensional geometry of the individual elements of a structure, BIM may also include information on the overall design, material properties or specifications, performance requirements, surface finishes, quality assurance/quality control requirements, sustainability, and other information. It can also contain information about the means, methods, and temporary structures (such as formwork, shoring, accessories, safety), along with methods and data necessary to construct the building, including but not limited to sequencing, scheduling production rates, and cost data.

Q What is driving the construction industry to Building Information Modeling?

A Increased design and construction productivity made possible by the advancements in affordable BIM technology is allowing project participants to capitalize on the benefits of better coordination, control, and planning, resulting in more reliable information and performance. BIM is replacing CAD as an owner requirement as they begin to realize the many benefits of BIM as a capital projects tool in all venues from design to construction to facilities management.

Q What percentages of projects are currently being delivered using a BIM platform?

A Current estimates vary, but more projects are using BIM at some level. Some surveys show this number reaching 70% of projects with BIM used to some extent. However, its use for PT detailing and installation drawings is still very limited.

Q How are industry professionals affected?

A Knowledge of BIM is essential because it is no longer a trend and is becoming as fundamental to the design and construction of projects as any of the building codes. BIM is not a replacement for experienced, well-trained design and construction professionals. It is a tool to make them more productive and deliver a product that is more reliable and potentially cost-efficient.

Q How can BIM enhance project collaboration?

A One of the primary advantages of BIM is the ability to collaborate in real time by coordinating multiple models among the various design and construction stakeholders. This can be achieved through any number of commercially available file-sharing platforms.

Q How is the information from the BIM model transferred to the field for installation purposes?

A BIM model is not the end result; it is an advanced tool to improve accuracy of placement and installation of all reinforcement. Information can be extracted from the BIM model and conveyed to the field using conventional paper drawings or various electronic means.

Q Who can contribute to the BIM model?

- A**
- Owners
 - Architects
 - Engineers, including specialty engineers
 - Contractors, including specialty contractors
 - Subcontractors
 - Suppliers
 - Manufacturers
 - Testing and Inspection Agencies

Q Who's responsible?

A This can vary significantly from job to job based on the contractual relationships of the stakeholders. Several references are available, such as AIA E202 and E203, which provide additional information.

Q What are the post-tensioning components of a Building Information Model?

- A** Design information (such as number of tendons, tendon forces, non-prestressed reinforcement)
- Physical attributes (such as geometry, material properties)
 - Construction information (such as means and methods, schedule, cost, stressing)
 - Quality assurance/quality control (such as elongation reports, IBC Chapter 17 special inspections, plant inspections, as-built)
 - Facilities management information (such as Construction Operations Building Information Exchange [CoBie])

Q What are current benefits to BIM on post-tensioning projects?

A Currently, the PT industry is behind and has to play catch-up. Benefits of BIM to the PT industry include more accurate information across the border, speed of production of shop drawings, placement, and takeoff of materials. In essence, implementing BIM and PT will benefit the entire industry similarly to how it has benefitted the rest of the industry.

Q What are the current technical obstacles to BIM implementation on post-tensioning projects?

A The development of intelligent post-tensioning BIM components by software vendors is currently a lower priority compared to other BIM improvements. Depending on how you want to use BIM, some workarounds are available until the software companies implement other necessary tools.

Q What are the economic impacts to me?

A An initial investment is required to obtain this technology and train staff. After implementation, BIM projects can realize greater efficiency and increased accuracy during design, preconstruction, construction, and project closeout, resulting in, among other things, less reworking, fewer change orders, more accurate estimates, and shorter construction durations.

Q What are the equipment costs to implement BIM?

A Software costs range from a few hundred dollars to upwards of \$30,000 per license. More powerful computers with increased storage capacity and multiple monitors may be required, depending on the software package, complexity of the model, and user preference. Additional costs may be incurred to facilitate BIM transfer due to the increased size of most BIM files, using tools such as FTP servers and/or sharing files platforms. These solutions vary in price from free to modest annual subscriptions.

Q What staff training investment should I expect?

A Costs associated with training vary with software applications and current staff technological literacy. However, it is generally reasonable to expect a learning curve of a few weeks to attain basic proficiency, with greater time needed for more advanced use. Most software vendors provide on-site, off-site, and/or online training.