



# TECHNOLOGY/INNOVATION

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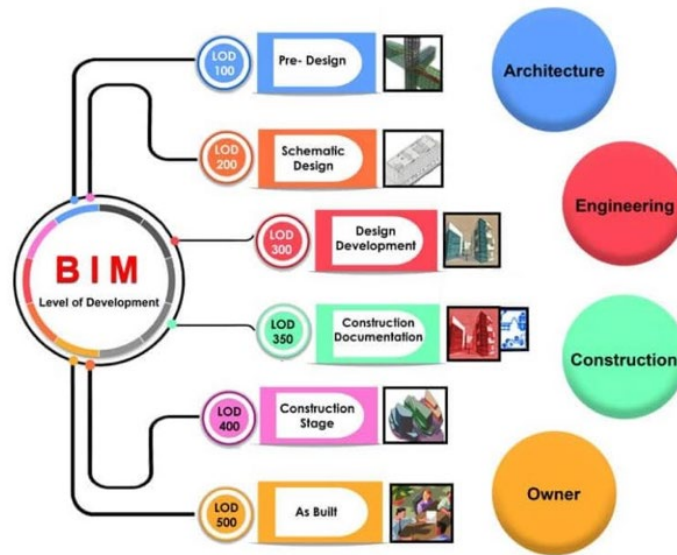
## Demystifying BIM: Levels of Development

The term Building Information Modeling (BIM) has become ubiquitous with construction technology and innovation. However, there is still a fair amount of confusion around BIM, when to utilize BIM practices, and how to determine the extent of BIM investment necessary on a project. One term that is often associated with BIM best-practices is Level of Development (LOD).

BIM LOD specifications are industry standards defining the development stages and maturity of different modeling systems. By using LOD, professionals within the architecture, engineering, and construction industry can articulate, document, and outline the content and reliability of their BIM efforts through design and construction. LOD is not just about visual representation, it is focused on the information within the design. As a result, BIM LOD includes geometric and non-geometric components and considerations. LOD specifications allow for an efficient deployment of resources at all levels of design and construction.

### LOD vs. LOD

Although some may use “Level of Development” and “Level of Detail” interchangeably, they are different. Level of Detail is the visual detail included in the object, whereas the Level of Development highlights the extent of an object’s geometry, specification and attached information that has been designed and articulated. In short, consider the Level of Detail as a criterion of the Level of Development.



## Level of Development

Below are the Levels of Development that define and illustrate the characteristics of model elements. Throughout each level, the depth of articulation differs. This empowers industry professionals to define the use of a system while providing a better understanding of the functionality and reliability of the product.

**LOD 100 – Concept/Pre-Design:** The most basic of definitions and used early in the project. A conceptual model that derives information from other model elements. This is the pre-design stage; the model consists of 2D symbols and the masses to signify an element's existence.

**LOD 200 – Schematic Design:** The information about the object becomes more detailed, but this is still early in the project. The elements within the schematic layout are partially defined by outlining its approximate quantity, size, shape, and location.

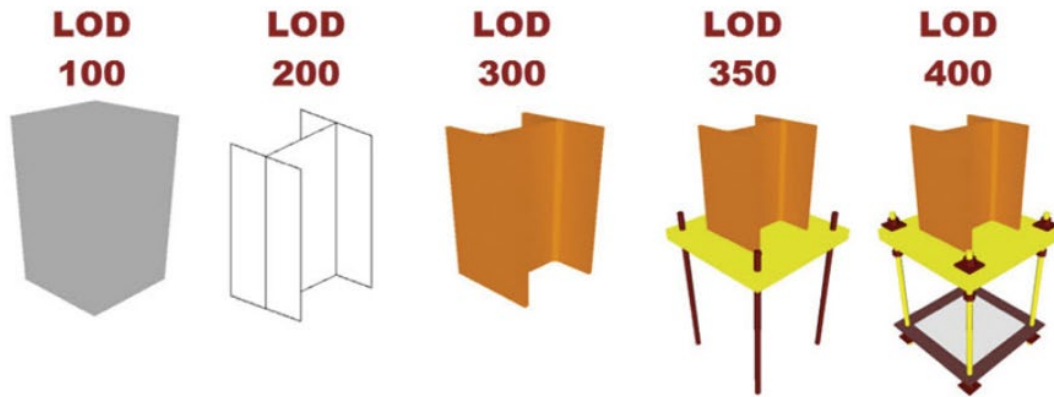
**LOD 300 – Detailed Design:** Features such as size, shape, orientation, etc. can be measured directly from the model. Modeled as design-specified, the elements are defined with exact dimensions, spacing and relative positions.

**LOD 350 – Construction Documentation:** The element is graphically represented within the model as a specific system, object, or assembly in terms of quantity, size, shape, location, and orientation. This describes the information about an element precisely and outlines an element's relation and connection with other components.

**LOD 400 – Fabrication & Assembly:** The information added can have quantity, size, shape, orientation, and location. Model elements are modeled as specific assemblies, with complete fabrication, assembly, and detailed information. These details can be used by the suppliers to manufacture the components being represented.

**LOD 500 – As-Built:** A fully verified model of the project. Elements are modeled as

constructed assemblies for operations and maintenance. Building components at this level are precise and accurate in size, shape, location, quantity, and orientation.



By using LOD, teams across multiple trades can communicate with each other with clarity and eliminate discrepancies in getting a project completed. Handling and interpreting a BIM model can be challenging, especially since it is easy to interpret the definition of details and completion on a project differently. LOD enhances clarity and serves to help improve understanding and communication on the scope of the final BIM deliverable.

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## NECA Innovation Overload Podcast

The NECA Innovation Overload Podcast helps contractors make sense of industry tools and decide what is right for their business. Each week, the NECA Innovation Team and a weekly guest discuss and tackle problems contractors across the country are facing.



These podcasts were produced to inform and excite NECA members across the country about new industry developments and tools, critical industry issues, and the latest labor relations and safety guidance.

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