



## Design Technology: Breaking Down the Details Before You Break Ground

### Introduction

You wouldn't buy a car without taking it for a test drive or a home without having it inspected. The design technology implemented by Primus Design Services is like a virtual test drive or walk-through inspection of your building project. It provides answers and insights to your finished facility before construction begins. Design technology is essential, regardless of the scale of your design-build project, and it is a part of every project we do.

### Tools for Success

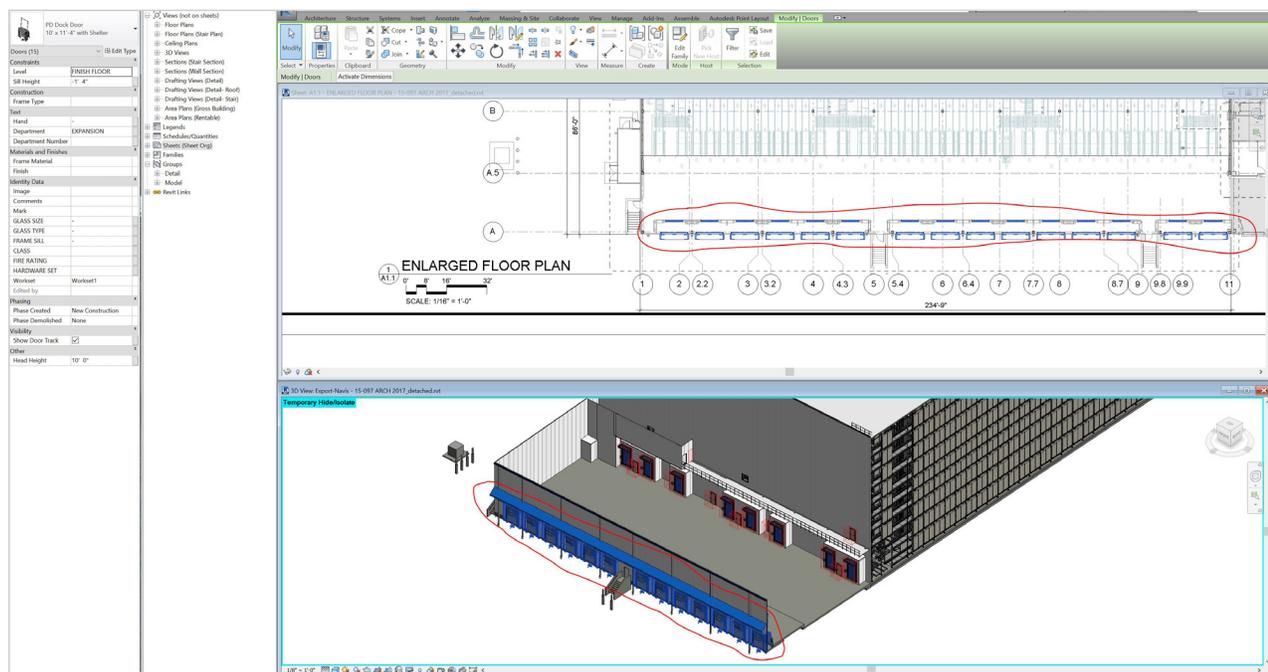
Primus embraces design technology as an extension of our team and our core values. It starts with Building Information Modeling (BIM). BIM is a 3D model-based process that gives our design team the tools to work together and meet the business goals of our clients. It's an essential component of our design-build approach that offers a wide range of benefits from cost and time savings to improved communication and greater control.

Below are some of the BIM technologies Primus is currently implementing in our design-build process.

### Revit

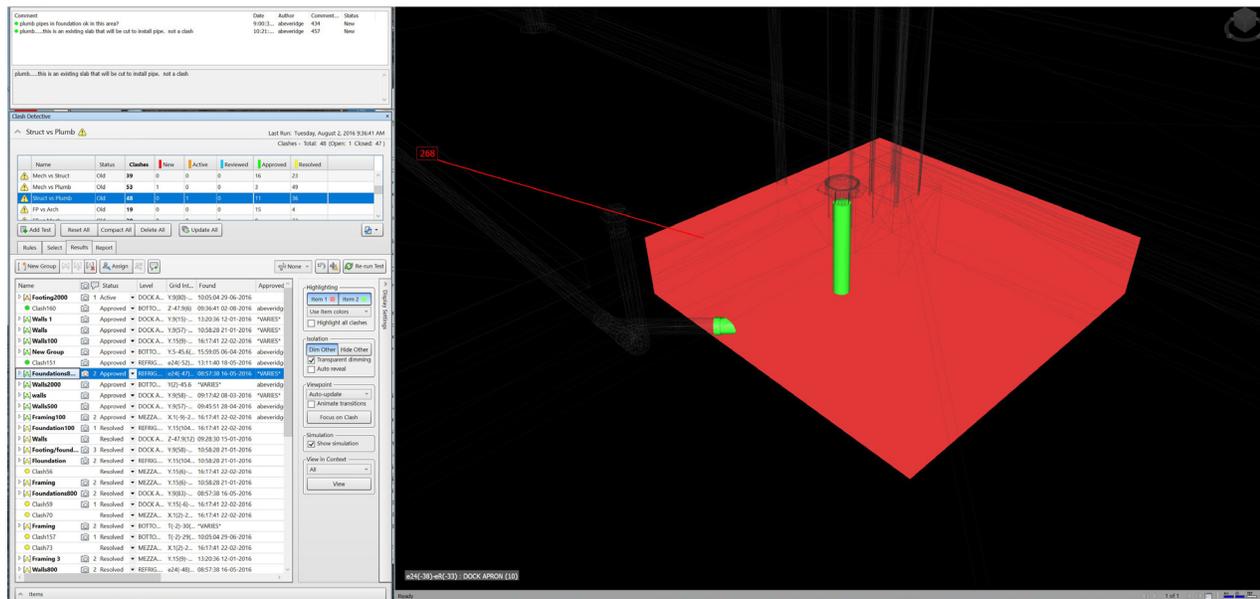
This design software allows our architects and engineers to design your building three-dimensionally. "Primus has moved beyond flat images," said Primus's Vice President of Design Tammi Bailey, AIA. "We can model all the systems now. We can put all the ductwork and fire protection systems exactly where they're supposed to be. We can upload the model to the cloud and show the owner exactly what their building is going to look like and do it in 3D."

Designs created by Primus's in-house disciplines (architecture, structural engineering, mechanical engineering, and automation design), along with those of key subcontractors like refrigeration and racking, are stored in a master model. Any changes to the Revit model are coordinated across the entire project, meaning a change in one discipline is reflected in all views of the model. The model is also loaded with data (building materials, costs, etc.). Changes to the data are automatically updated and available for the owner to approve.



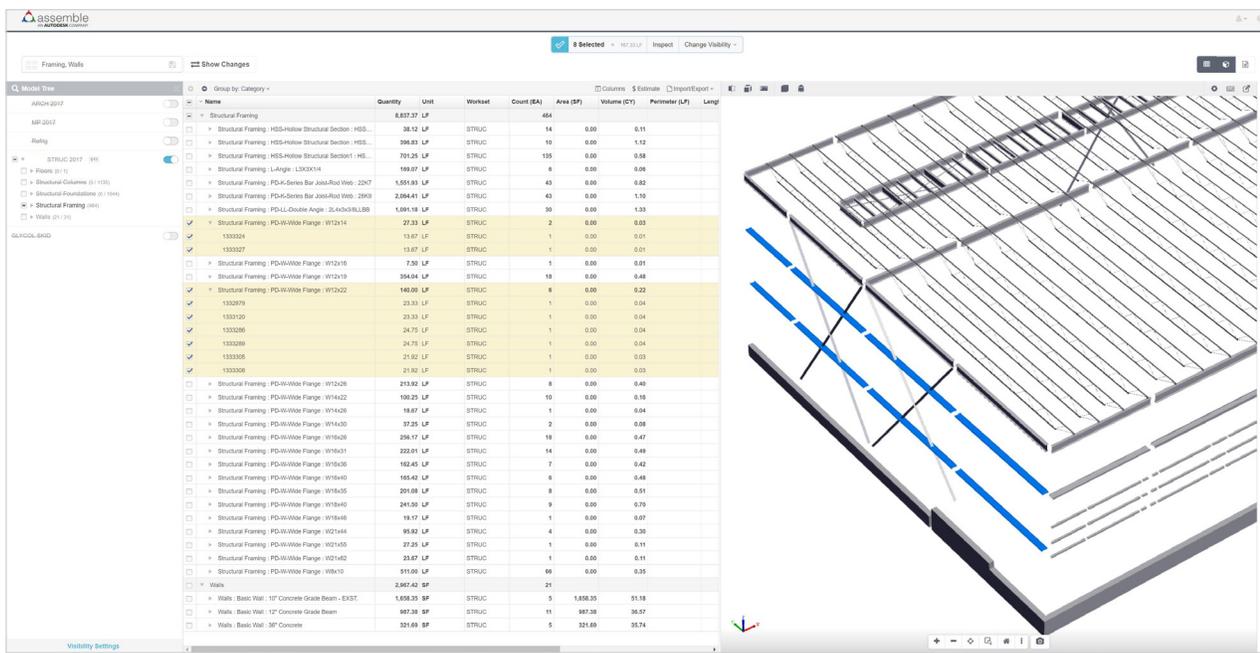
## Navisworks

This project review software allows our design team to identify potential clashes in the Revit model and resolve them before construction begins. Primus's dedicated BIM/VDC Manager, Allen Beveridge runs all design disciplines through Navisworks to detect any interferences. Should any be discovered, the team offers solutions and resolves the problem before breaking ground. This preventative measure minimizes expensive delays and rework.



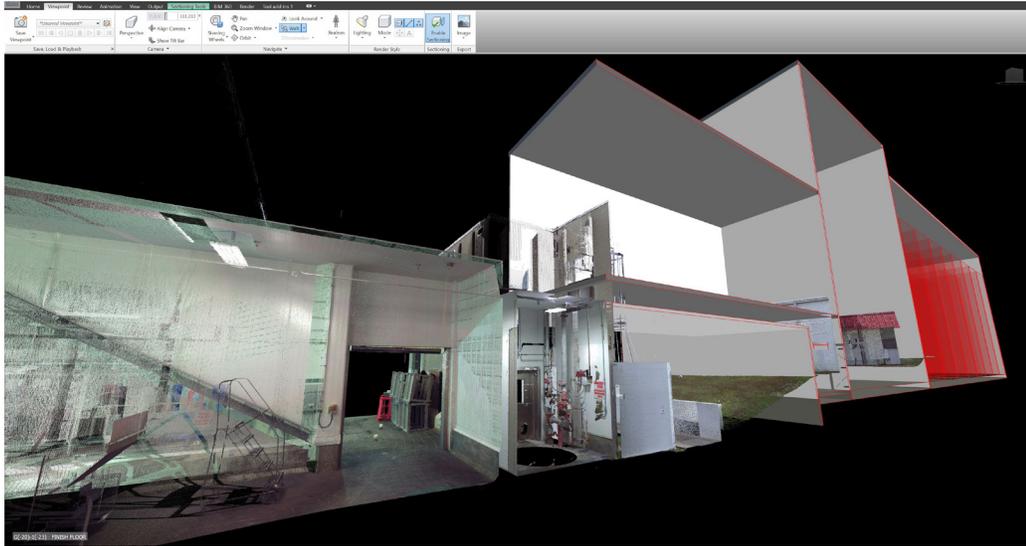
## Assemble

Accurately managing costs is a high priority for our project teams. Assemble software provides a dynamic means of monitoring costs in the project model. The designer assigns material costs to the building's parameters. If changes to the design or materials occur, the model is updated, and the project team can determine where, when and why there was any impact on the budget.



## Point Cloud

This technology is the next step in site surveying and helps our design team determine locations and measurements of components not easily captured in a traditional site survey. First, an existing space or site is surveyed with a 3D scanner. The scanner captures real-world objects and environments within a 3D coordinate system. The designer then overlays the point cloud onto the existing Revit model. The model is automatically enhanced with the point cloud's volumetric information including texture and colors of surfaces. This reduces errors by more precisely reflecting existing conditions.



## Virtual Reality

Virtual reality allows viewers to feel immersed in a Revit design that simulates being in a physical environment. Primus utilizes Google Cardboard to achieve this for our clients. A Revit model is uploaded to a smartphone via a link or QR code. The phone is mounted in the Google Cardboard. The client opens the model and is able to experience being in the facility virtually. "Google Cardboard allows our owners to feel as if they are actually in their new building," said BIM/VDC Manager Allen Beveridge. In fact, the first time Allen tested this with a client, the client found a portion of the design to feel too confined. "To be able to elicit that kind of emotional response from a client at such an early stage of the design is priceless. We were able to make changes that opened up the space long before construction began. That was a much better alternative than having the client stand in his newly constructed building with the same feeling of confinement and disappointment," Allen said.



Primus's in-house design team can implement this design technology to its full potential. Regular training and product testing ensure our team is ahead of the industry curve. We are ready to incorporate new products if they prove to improve efficiency. Stay tuned to [www.primusbuilders.com](http://www.primusbuilders.com) for the latest on how our design team is using design technology to better the design-build process.