VIRTUAL DESIGN AND CONSTRUCTION
Harnessing the Power of 3-D Modeling to Save Time and Cost

Virtual Design and Construction (VDC) encompasses all the tools that Pond’s design and construction staff use to create project solutions in a digital environment. The advent of 3-dimensional modeling has improved the capabilities of our staff to resolve coordination issues that were not easily discoverable when reviewing 2-dimensional design and construction documents. Since 2008 Pond has been using Building Information Modeling (BIM) software to develop building models with extractable Facility/Site Data to support Facility Life Cycle Sustainment from early conceptual design to building disposal.

At Pond, we use BIM and VDC technology to help us plan, design, coordinate, construct and manage our buildings and infrastructures in the most innovative, cost-effective and sustainable fashion. BIM is now part of our standard design workflow and quality control process, providing benefits of design authoring, interference management (clash detection), 3D coordination, quantity and cost estimates, progress reviews, visualization animations and rapid ease of design changes. BIM is invaluable in terms of its ability to provide our customers with a visual understanding of what our work will look like and how it will function once constructed.

USACE CAD/BIM policies and procedures.

Pond has implemented the DoD Quality Control Parameters into its routine QA/QC Process and has reduced potential RFI’s and Construction Change Orders by executing the following in all our projects: Model Standards Checks, Facility Data Matrix Reviews, CAD Standard Checks, Design and Construction Reviews, Visual Checks, Interference Management Clash Detection Checks, and Over the Shoulder Progress Reviews.

IMPLEMENTING DIGITAL RESOURCES DURING PRE-CONSTRUCTION

More and more projects are implementing digital resources during pre-construction services to improve the quality of the finished product. 3D services include 3-dimensional geometries of design components along with data embedded in these geometries that describe the characteristics of these elements. For example, a light fixture would be modeled to represent the actual 3-dimensional shape of the fixture and the manufacturer and model number.

Industry terminology:

3D Coordination
3D Clash Resolution
4D Construction Scheduling
5D Cost Estimating
6D As-Built & Facility Management

The accurate capture of existing conditions also opens the door to prefabricating items such as pipe and ductwork to be shipped to the jobsite for renovation projects. This drastically reduces cost and time. This process is also the most accurate and complete way to document as-builts.

The industry is moving away from boxes upon boxes of record drawings, owner and operations manuals. Electronic storage of information is becoming the preferred method of storing a record of the building construction. With the advent of facility management software, building users can now track maintenance and usage information. The data used to implement this software can include all the virtual information provided during design and construction of the facility. Pond’s VDC Department will continue to expand our Virtual Design capabilities and provide all these levels of services to our clients. •

Bryan Schroeder | Director of Virtual Design and Construction

Once a scan has been done, measurements can easily be taken of any item in the building.

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