

## Ground-breaking Innovation

Francis Cauffman of Philadelphia, a prestigious architectural firm, currently specializes in the master planning and architecture of major health centers in the Philadelphia area. Richard Beck (Principal Designer) and Michael Roden (Design Architect) utilize the rapid-prototyping services of Solid Technologies as one of its architectural modeling methods.

Architectural models made painstakingly by hand are no longer the primary medium for conveying an architectural vision to potential customers. Such a lengthy process prompted interest for Francis Cauffman to seek innovative rapid prototyping with 3D Printers. Rapid-prototyping translates initial formal concepts into detailed 3D drawings, creating startling models that further enable innovative construction. The result: Francis Cauffman's models communicate a wealth of design information.



## Rapid-Prototyping a Real 'Value' for Philadelphia Architectural Firm

### Francis Cauffman

- Leading Architectural Firm in Philadelphia, New York and Baltimore
- Utilizes a 3D Printer as a strategic tool
- Turns BIM data into physical models
- Shortens design time to better communicate ideas and win more business

*"Design and Architecture firms that use rapid prototyping have the enhanced ability to sell architectural innovations to clients and prospects"*

## Engaging the Client

"We use it primarily as a marketing tool," said Beck, "We have won 3 jobs from using concept models in the face-to-face interview process." It is in the interview process with a prospective client that Beck requires an accurate, eye-catching proposal model. "It quickly, graphically draws people in," said Beck, "It engages the client, grabs their attention, and gives you that extra edge to get them interested or at least remember you."

He demonstrated how a hands-on model is essential, to not only presenting the prospective customer with an overall layout, but also variances in the layout's orientation. Beck showed how separate inserts can be placed in or removed from the model to demonstrate this.

“Two days before the proposal they decided they wanted an addition of a ten story building” said Beck. He then demonstrated how he can quickly add an attachment printed for him to give an existing building more height, making it the desired ten stories. He also showed how pieces can be taken away if the customer decides to “lose” an idea, and what that means as far as a difference in the landscape.

Questions a prospective customer might ask Beck: “Does this building stay?”, “Could we add a parking garage?”, “What would this building look like with an angular side or a smooth curve?” All of these questions can be answered in the interview process, if Beck has with him these innovative models and parts. The parts can be easily used as built-in, separate puzzle-like pieces. They don’t break easily, but they can be modified on a moment’s notice.



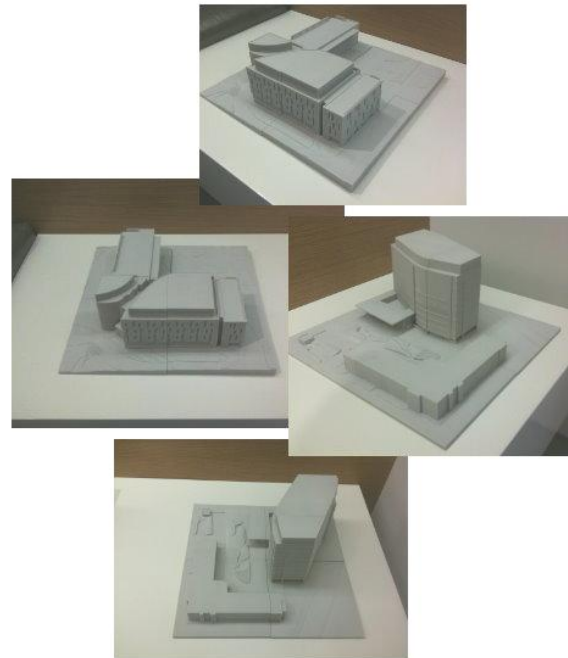
Two clients that Beck met with requested to keep the model. “If a client asks to keep the model that is usually a good sign” said Beck. Two-dimensional renderings typically fail to accurately convey a sense of space, mass or scale for the customer. With many two-dimensional renderings, there is no clear line between landscaping and building. With rapid-prototyping and 3D printing, even designs that are still in the concept stage have the accurate depth, scale and shadow of a finished model. Customers are pleased with even the most no-frills results, as they can already envision using the talents of Francis Cauffman in the future.

It is absolutely necessary that the prospective client comprehend thoroughly the concepts Francis Cauffman present to them. Engaging and capturing a prospective client with a fascinating visual is the best way to go about it. Clients want something they can touch, something they can see at eye level. Design and Architecture firms that use rapid prototyping have the enhanced ability to sell architectural innovations to clients and prospects. Rapid-prototyping makes this possible while still eliminating costly redesigns.

## The Right Choice

Reducing the time needed for redesign is necessary to create models for quick review, presentation, and marketing. Francis Cauffman, a [healthcare architect](#), requires beautiful, higher-quality building designs than the competition, clarified for clients, to speed up the approval process. When Francis Cauffman's principal designers discovered a new ability to print physical 3D models in hours instead of the weeks needed for handcrafting they jumped at the chance. "It was the speed," said Michael Roden, "the ability to do something in a couple of days instead of weeks." STI's Zcorp system prints 1-2 vertical inches an hour. Most modeling is done stacked in an overnight build. Using this method enabled more productive design reviews and accelerated design phases.

The dramatic reduction in the time and labor was the draw of rapid-prototyping for Beck and Roden. Solid Technologies uses a 3D printer to generate those 3D physical models, from three-dimensional CAD or computer-aided design data, provided by Francis Cauffman. Beck and Roden found very few growing pains and absolutely no issues with the prep-work that goes into creating a model in CAD. Since designers think in 3D they are no longer hindered by traditional 2D plans and sketches. Qualifications and flat drawings become 3D perspective dimension studies. "Printed models from CAD are really effective," says Roden, "It takes less time than doing a physical model, scaling down or beefing up according to the customer's wishes can be done quickly and easily."

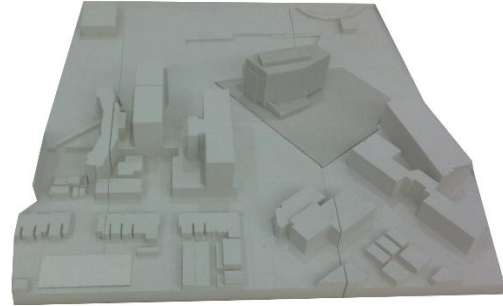


Francis Cauffman also uses build information modeling or BIM software as a quick design tool. A finished version of the model is then exported for printing after appropriate scaling, detailing, and removing of mullions. "The process can take about five minutes, depending on the size and shape of the design," says Roden. In the design phase the model can be viewed from wide angles, telescoped perspectives and altered shapes. Turning BIM data into physical models shortens design time, better communicates ideas, and wins more business. Coupling with 3D Modeling is all the more effective. If you have detailed 3D models throughout the entire design phase of a new project, it is incredibly easy to detect and correct engineering problems early on.

## Rapid Prototyping Futures

Francis Cauffman projects continuing their use of STI's rapid-prototyping services in the future! Solid Technologies uses a ZPrinter® 450 [3D printer](#) from Z Corporation to create models for Francis Cauffman, and with this technology. The ZPrinter® 450 has been created for the office environment. The ZPrinter®450 delivers has an output speed of five times the competition. User-friendly functions also include automated setup, self monitoring, and automated powder loading and recycling.

Beck and Roden definitely showed an interest in using colored models in the future. Beck explained that when it comes to showing interiors to prospective customers, realism is key, which would require color made possible by the ZPrinter® 450 and 650 Printers. Roden was keen on the enhancement in textures such as tile, stucco and brick. STI has previously printed hollowed out level terrain models for Francis Cauffman used from Google Earth Pro satellite imagery.



Beck considers 3D printing services to be “a real value, cheaper than hand developing and worth the money spent.” Francis Cauffman understands the value of printed parts as well as a finished product. As skilled architects the associates at Francis Cauffman find great ideas as tangible and useful objects invaluable. AEC professionals that discover the benefits of 3D printing are the most competitive in the field. With 3D printing more creativity is unleashed, costs are lowered, communication is improved, project timelines are shortened, and proposals are quickly secured.

AEC professionals are always looking for economical and cutting edge ways to improve designs and to better market their services. 3D models produced with design and printing enhances collaboration. This helps architects and engineers create accurate models that excite clients, win proposals, and emphasize the tangible aspect of innovation. Z Corporation and Solid Technologies understand the futures of AEC and rapid prototyping. 3D printing technology is now being used as a strategic tool enhancing visualization and modeling methods. 3D printing is guaranteed to yield great designs, and drive innovation.



### About Francis Cauffman

“Francis Cauffman has broad expertise in our core disciplines, deep industry resources, and top talent. We provide architecture, interior design, and planning services in four major areas of focus: Healthcare, Corporate, Science & Technology, and Government & Justice. Our professionals are constantly exploring new ideas about design as they are applied to office environments, healthcare, teaching and research. We also offer design-related services to support our clients' businesses, including information technology and medical equipment planning. The firm is a national and international practice with offices in New York, Philadelphia, and Baltimore.” <http://FrancisCauffman.com>

### About Solid Technologies, Inc.

STI's strength is in developing strong relationships and communication with our customers, which allow them to choose the right business partner they need to implement profitable, productive corporate-wide solutions. We provide systems and superior solutions that grow with customer's needs and empowers our customers to develop better products, more rapidly and more cost effectively. Our team includes an outstanding experienced technical team that provides unprecedented service. STI was founded with an eye on the forefront of technology. It is our mission to provide high end solutions alongside the most advanced technology to the engineering market. We strive to afford companies the ability to efficiently and cost-effectively go from concept to fabrication. Our company headquarters is located just outside Philadelphia in Blue Bell, PA. On the web at <http://sldtech.com>

