

As seen in

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JFK&M puts high-tech laser to the test The Great Hall, Cooper Union

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When JFK&M was retained to upgrade the Foundation Building at Cooper Union, we took a tour of the landmarked 1859 building that included the famous Great Hall where Abraham Lincoln gave his historic campaign speech to abolish slavery.

Last year, Barak Obama went back to the same Great Hall and marked another historic moment with a very moving and emotional campaign speech by the soon to be First African American President.

Hence, we understood the importance and sensitivity of undertaking this project in such a significant structure.

One of our architectural and mechanical/electrical challenges was to maintain the original integrity of the space while improving its overall comfort and performance. We soon realized that the original drawings were inaccurate and walls and columns were not shown correctly so, when we started our work last summer, a team of architects spent many days surveying the space and correcting the dimensions and location of the walls and columns.

However, we also needed to preserve the character of the Great Hall mechanically and electrically while having the ability to copy exactly the location and physical appearance of the air handling diffusers, light fixtures, sprinkler piping, and sprinkler heads (not to mention all architectural details like woodwork and concrete).

To solve this dilemma, we employed a unique service by LaserPlans USA called Scan&Seesm. This service uses the new technology of three dimensional architectural laser scanning, and permits the preparation of electronic replicas of spaces.

In short, the technology scans the area and creates a digital replica of what you can't see such as pipes, plumbing, wiring, and other critical structural issues. The detailed results are delivered in the form of images, scanning data, AutoCAD drawings, Revit models, and other application formats.

In order to accomplish our goal in the Great Hall, LaserPlans completed three dimensional laser scans from 15 different locations.

These scans and the related space images are extremely accurate, about +/- 2 millimeters, and show every detail that we and the architect needed. If we want to duplicate or replicate anything within this hall, it can be dimensioned and replicated by using the laser

scan data.

The entire scanning session required about three hours. The data was then processed overnight and fifteen separate three dimensional space images were produced. You can actually use your computer to simulate standing in each of the fifteen locations and view the Hall from any angle. In addition, LaserPlans USA using their companion service Scan&SeeThrusm can, if we need it, provide a sub-surface model of specific areas showing metal objects embedded in concrete up to 2 feet thick, and tie the data in to the surface data for engineering purposes.

The plans that were produced for us were in standard AutoCAD format, and are in a level of detail unavailable to us in any other way.

By using these lasers, which take up to 500,000 measurements a second, we achieve accuracy and detail that isn't achievable manually.

Further, since plans are accurate within millimeters they are usable for all types of uses throughout the industry. In fact, by adapting this technology of three dimensional laser scanning, one can produce a variety of deliverables for any interior or exterior of a property.

We asked LaserPlans to generate an accurate AutoCAD floor plan of this space.

What we needed was to cut a section at floor level but with these scans, you can actually cut anywhere from the floor to the ceiling.

This then confirmed that some of the walls were not parallel and the columns were not perfectly round, or even perfectly vertical. We also obtained exact detailed copies of the existing diffusers and light fixtures for future use.

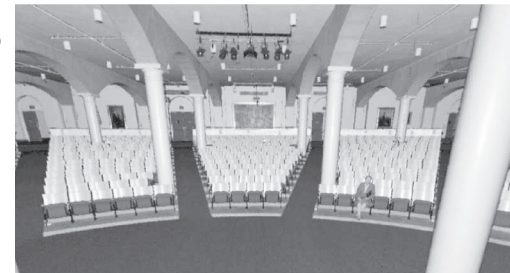
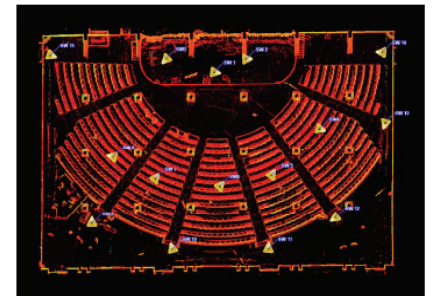
Along with everything else, we managed to capture the exact location of the complete existing mechanical, electrical and plumbing equipment within the space. We are using this information to design the new mechanical distribution system.

The use of such technology is a win-win situation for everyone on a project team especially the owner who benefits from the accuracy of the drawings and images for current as well as any future modifications to the space.

The service that LaserPlans USA, offers to generate three dimensional laser scanning, solves a problem that has always plagued the industry — obtaining quickly, accurately and cost effectively detailed architectural drawings for both existing buildings of any size and shape, and new buildings as they are being

The Great Hall, Cooper Union

Site Map
Indicating
Locations of 360
degree Laser
Camera



Actual
Laser Scans



constructed.

We believe it will soon become a standard approach across the industry.

Owner: Cooper Union
Construction Manager: Source One
General Contractor: F. J. Sciame
Architect: Gruzen Samton Architects
Mechanical, Electrical Plumbing & Fire Protection
Engineer: Jacob Feinberg Katz & Michaeli CG
Laser Scanning: LaserPlans USA