

Bringing Vision to an \$8.5 Billion 14-Acre Air-Rights Development

Documenting As-Built Conditions for a National Architectural Treasure

Project Challenge

John Russo fully expected a challenging assignment, but he didn't know just how challenging his two weeks in Washington, D.C. were about to become.

Russo, a licensed architect, runs an existing conditions building documentation company based in Irvine, California called Architectural Resource Consultants (ARC). ARC specializes in 3D laser scanning services. In early December of 2014, he and two associates climbed aboard a plane bound for Washington, D.C. with a pair of FARO Focus^{3D} Laser Scanners.

The task? Document as-built conditions at Union Station Terminal, a 108-year-old landmark and one of the busiest transit hubs in the nation. The ARC team is the advance guard in a breathtaking \$8.5 billion vision to fully reconstruct the terminal tracks and platforms and create new station concourses and entrances. At the same time, Burnham Place will be built, using 14 acres of air rights above the rail yard. Burnham Place will be one of the largest and most complex developments inside the District, offering more than three million square feet of residential, retail, hospitality, and green space development opportunity.

“You have to put your detective hat on for a project like this,” Russo says. “Building methods were different when Union Station opened in 1908. There isn't a complete set of documentation for the entire structure. Many of the record drawings date back to the 1920s. A



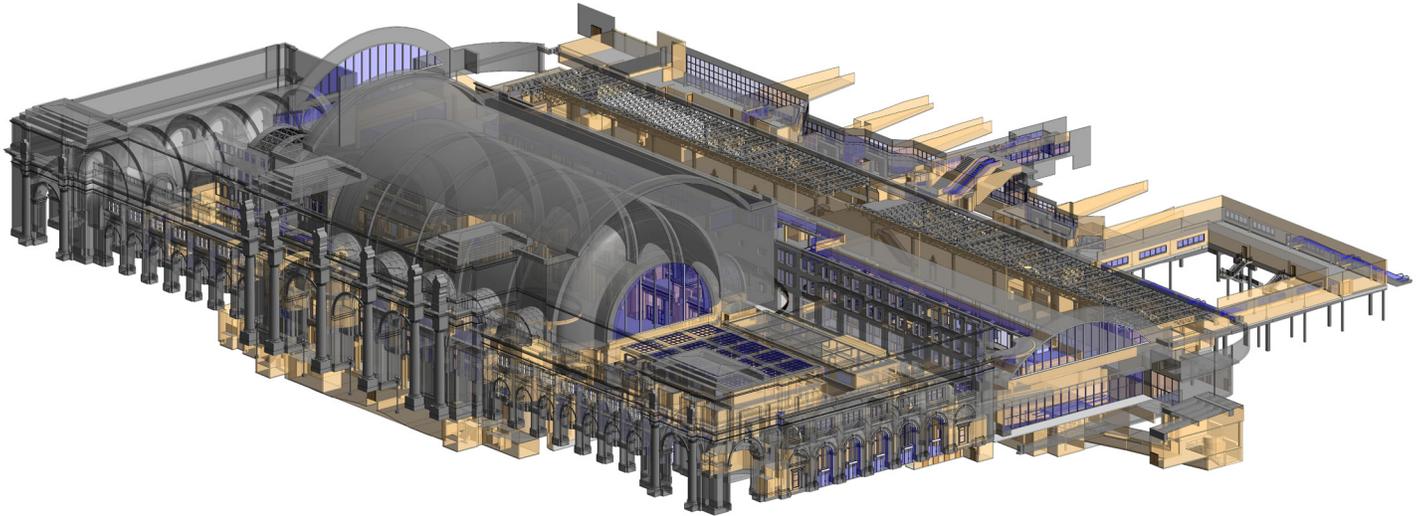
building like this has lots of interesting, sometimes crazy conditions you have to account for.”

Challenges? Russo and his team faced a laundry list of them, from scanning around the holidays (“working the graveyard

shift”) and main hall repair scaffolding to building occupants removing scan targets.

Above: When documenting as-built conditions at Union Station Terminal, one of the busiest transit hubs in the nation, the ARC team had to scan during off-peak times.

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Solution

The RFP originally specified MicroStation modeling software. During the bidding period, the owners decided to switch to AutoCAD® software. Unfortunately, AutoCAD software presented performance issues, so Russo had to quickly improvise a workaround.

“We opted to use Revit® to do the modeling with the scanned data from our FARO Focus^{3D} units,” Russo recounts. “The AutoCAD software had a tough time handling the data load. We built the model in Autodesk® Revit® and exported it in a phased approach to AutoCAD.”

The shining stars throughout the grueling two-week scanning session were the pair of FARO Laser Scanners. “They provided value the moment we left the office,” Russo explains.

“They’re small enough and mobile enough we can stow them in plane overhead bins. That saved us time, money, and worry. On-site, they’re easy for my surveyors to move around with less fatigue. They

worked great in some tight spaces. The photo imagery is fantastic. We produced amazingly complete data with them. It’s just a great instrument to work with.”

In an interesting sidebar project, the laser scan data was repurposed to create orthogonal imagery for an historic preservation consultant also working on Union Station.

Results

The ARC team served as a subcontractor on the project. So while his team wasn’t directly associated with the owners—Union Station Redevelopment Corporation (USRC) and Amtrak—there’s no mistaking the pride in Russo’s voice.

“There were more than 800 scans taken of the building’s interior and exterior,” Russo reports. “Plus USRC contracted with Terrametrix3D out of Omaha to use mobile scanning to document the rail yard and neighboring streets. We registered all our data using FARO SCENE software with control provided by the project’s surveyor, A. Morton Thomas and Associates.

Above: With the help of FARO Laser Scanners, ARC was able to produce “amazingly complete data” in spite of challenging conditions.

“What we did is bring everything together into one model, a clearly huge value and advantage. It came in under budget in spite of the difficulties. We put in some very long days. But we finished within the time frame.

“Our client is very pleased with the results. It’s an honor to be associated with such a fabulous structure.” ●

For More Information

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