



Save Time by Eliminating Duplicate Modeling Steps with EdgeWise Building

Under an IDIQ contract with the US General Services Administration's Great Lakes Region, Ghafari was selected to design the restoration of the Chicago Federal Center Plaza. The Federal Center was designed by Mies van der Rohe in the 1960s and is home to Alexander Calder's steel sculpture, "The Flamingo."

At the plaza level, the restoration of the plaza deck/roof required the removal of the existing waterproofing system and the installation of a new system with improved thermal insulating properties to increase energy efficiency. This process also required the removal and reinstallation of approximately 130,000 sq. ft. of granite pavers and a new plaza drainage system. The plaza level work also included the restoration of various plaza

components, such as the Calder sculpture, vehicle ramps, benches, landscaped planters, security bollards, handicapped curb ramps and associated work. Sub-plaza levels also required multi-discipline renovations.

"EdgeWise allowed our team to significantly improve point to Revit workflow efficiencies."

- Bob Mauck, Ghafari Associates

Ghafari's laser scanning teams used a Leica 6000 phase-based scanner to collect 500 scans. This work was carried out over a period of thirty days using teams of two people at a time. The scanning was performed at night to prevent interruption of normal work activity as well as to eliminate as much pedestrian "noise" as possible from the scan data. The data collected from these scans would serve as

the basis for Ghafari's design team to generate Autodesk® Revit® models and drawings for the plaza restoration.

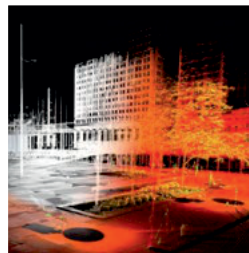
Ghafari Workflow



Leica 6000



Cyclone Register



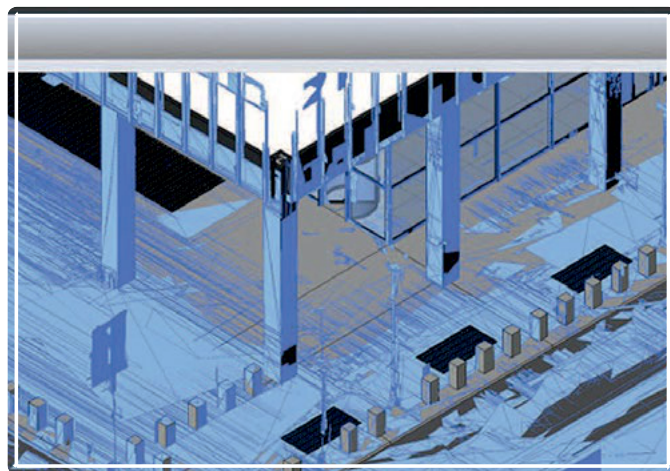
EdgeWise Building



Revit



EdgeWise Building automatically extracted polygons from 500 scans of the Chicago Federal Center.



EdgeWise Building polygons inside Autodesk Revit.

Due to the project's compressed schedule, Ghafari's modeling team began creating the Revit model in parallel with the scanning effort using existing 2D drawings of the plaza and sub-levels. Despite inaccuracies in these older 2D drawings from the 1960's, they still provided a starting point that could be updated by the scan data.

As the scan data came in from the field, it was first registered using Leica Cyclone. Next, EdgeWise™ Building was used to automatically extract rectilinear, Revit-friendly .dxf polygons from the point clouds. These polygons were directly imported directly into Revit, eliminating a very time-consuming, manual modeling step that was traditionally associated with scan-to-Revit modeling. Once these EdgeWise

Building polygons were in Revit, the modelers could then either adjust their existing models (from the 2D plans) or build new features directly on top of the EdgeWise polygons. Finally, Autodesk® NavisWorks® was used to validate the resulting Revit model against the point cloud.

Without EdgeWise, the Ghafari design team would have had to manually model the observed surfaces in the point cloud, take the results into Revit, and model it all over again to create the BIM data. EdgeWise Building allowed Ghafari to eliminate the duplicate modeling effort by automatically creating polygon models that could be used directly within Revit. This gave the Revit design team more efficient data access and minimized the overall modeling effort, significantly reducing scan-to-model costs.



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GHAFARI ■ Ghafari Associates is a leading architecture, engineering, consulting and construction services organization with a long-standing history of client focus, quality design and technological innovation. Their 3D building information modeling (BIM) experience, combined with our expertise in integrated and lean project delivery and high definition laser scanning capabilities, is transforming the industry.

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