



PROJECT SUMMARY

Organization:

Morphosis

Solution:

Building

Location:

Eugene, Oregon

Project Objective:

Create a courthouse that aesthetically bridges the chasm between citizens and the government

Products used:

GenerativeComponents®

Wayne L. Morse U.S. Courthouse

U.S. Courthouse Visually Marries Design and Respect for the Justice System

FAST FACTS

- 267,000 square feet
- Rating: U.S. Green Building Council LEED-NC, v.2/v.2.1–Level: Gold (39 points)
- Top Ten Green Project for 2007 awarded by AIA Committee on the Environment
- Increased time and cost saving using GenerativeComponents

In recent years, courthouses have become less public symbols of justice and more generic office towers. Courtrooms, typically located at the center of the building while support spaces and circulation radiate outward, have become obscured. The increasing amount of administrative space required to service and support courtroom activities and mounting security requirements have contributed to this approach.

Morphosis decided to challenge the status quo when it designed the Wayne L. Morse U.S. Courthouse by creating a courthouse that would visually bridge the chasm that has developed over the past two centuries between citizens and the government. By focusing on concepts of integrity, vitality, dignity, and substance, Morphosis infused the building with imagery that will beckon citizens to reclaim a relationship with their system of justice.

Instead of stacking the spaces up and around the courtrooms, this courthouse raises the courtrooms and slips support services into a two-story plinth. While the base is monolithic, the courtrooms are expressive, formally articulated, and accessible to the public.

The entry into the building is a large open atrium space framed by the strict grid defining the base and sculpted by the fluid forms radiating above. But unlike the public spaces that achieve their integrity through a perceptible marriage of disparate elements into a harmonious whole, the courtrooms stand in complete isolation. Natural light pours in through two thick-walled, large apertures above the

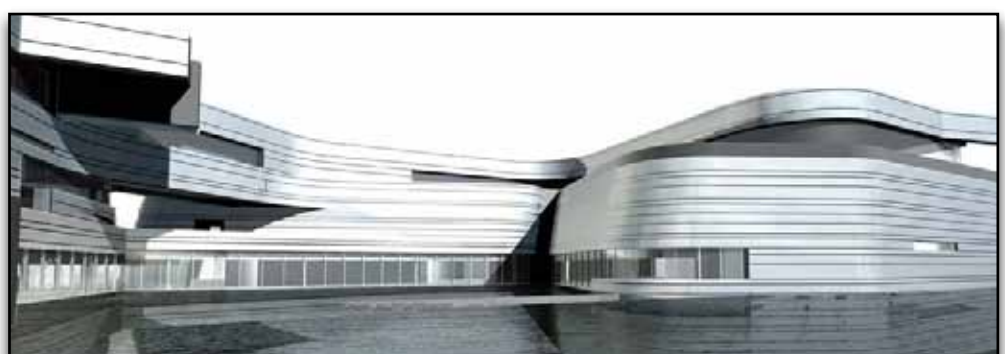


judges' benches and through apertures above the entry doors that capture light from the atrium. The effect is that of a freestanding building, a unique and dignified place in which the court's raison d'être – to provide a place where justice is affirmed and administered – is architecturally recognizable.

REDEFINING THE MODEL

Morphosis relied on Bentley's building information modeling (BIM) products in its project design. "By using a Bentley model-centric approach, Morphosis more efficiently produced construction documents that concisely conveyed the design intent," explained Marty Doscher, Morphosis IT director. By supplying a construction-ready model, which unites the various modeling and detailing platforms, there was a more seamless integration among the design and construction team members."

Bentley software enabled Morphosis to focus much of its design development on the 3D model, which created continuity from the conceptual



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ABOUT BENTLEY

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design models through to the construction documents. The model allowed Morphosis to continue to evolve the design while coordinating between the many consultants on the project (using a myriad of platforms) and also allowed integration between the 2D and 3D work.

On buildings with complex skins, it is often difficult to convey the design intent. Reliance upon tables of XYZ points solves the problem of locating elements in 3D space, but leaves out important issues of how coordinates relate to each other, how to achieve offsets for assemblies with layers of components, and how elements must move in concert in response to detailing issues and field conditions.

The 3D model was developed to record the relationships between complex geometries, and GenerativeComponents helped to formalize the geometric constraints and demonstrate how they operated. With a clear understanding of these constraints, parties new to the team could appreciate the importance of geometric integration with adjoining trades.

"Using Bentley Structural, we were able to model the structural frame quickly and accurately, reducing the margin for error in relatively tight architectural envelopes," said Doscher. "With the varying tolerances of the concrete structure, steel supports, and exterior skin, making sure the steel frame fits within a curving stainless steel skin was of utmost importance. Bentley Structural allowed the architectural/engineering team to locate the steel in 3D by exact offsets from the curving finish surfaces, then export those members via SDNF to the steel detailer."

The detailer's model was then sent back to Morphosis and imported back into the architectural/engineering model, cutting the shop drawing review time to less than half and increasing the precision of the member locations to fractions of a millimeter. These same design and detail models of the steel, concrete, and finish skin were then transmitted to both the exterior wall contractor as well as the exterior metal skin contractor.

