

Bullitt Center, PAE honored for engineering excellence

By: Stephanie Basalyga

When it comes to design, engineering and construction, turning a Douglas fir forest into a building isn't that tough. But take that concept and turn it inside out by turning a building into the structural equivalent of a Douglas fir forest, and you're talking about an entirely different challenge.

The project team members tasked with the design, engineering and construction of the Bullitt Center in Seattle believed they were up to performing the latter feat. No matter that they were basically stepping into uncharted engineering territory, with Portland-based PAE Consulting Engineers leading the way in the area of mechanical and electrical design.

In its project packet submitted for consideration in the annual Engineering Excellence Awards run by the American Council of Engineering Companies of Oregon, PAE likened the six-story Bullitt Center to a fir forest. The commercial office building, the company wrote, was designed and built to use "only nature's abundance" in order to provide its tenants with fresh air, light, energy and heating and cooling.

For statisticians and data lovers, that sustainable description can be represented in hard numbers. The building was designed and built, for example, to use 80 percent less water and be 83 percent more energy efficient than typical office buildings constructed in Seattle. Relying on client workstations and laptops instead of traditional desktop computers was calculated to reduce plug loads by 78 percent. And a 56,000-gallon cistern captures rainwater that's filtered for potable uses.

Completing the work that would allow the building to hit those numbers – and operate as a net-zero structure when it came to energy and water use – was sometimes easier said

than done. Obtaining the permits for that potable rainwater system took almost two years to secure, and required the project team to further brainstorm the building's system to add a chlorination injection component.

No part of the building was off limits when it came to finding unique ways to achieve sustainability. In the restrooms, for example, the toilets operate on a "foam flush" principle, which uses less than a cup of water and natural soap. The overall amount of water saved, compared to toilets traditionally used in office buildings: a whopping 96 percent.

Working on the Bullitt Center not only encouraged team members to stretch the way they designed and constructed a building, but also required them to learn new ways of working with each other.

For the architects, it was often like "trying to paint the Mona Lisa with 15 engineers behind you telling you where to put the brush," PAE President Paul Schwer said.

Nevertheless, Schwer said his company appreciated the opportunity to push the building envelope to create a building that some said couldn't be built, especially in Seattle's cloudy climate.

"We're problem solvers," Schwer said. "The most challenges and the bigger the problem, the more we rise to the occasion."

The Oregon ACEC Engineering Excellence Project of the Year title is the latest accolade for the Bullitt Center, which last year garnered the Sustainable Building of the Year award from World Architecture News and a Vision 2013 award for most innovative new construction from the Seattle 2030 District.



PAE/Nic Lehoux
The photovoltaic array at the Bullitt Center contributes to on-site electrical production and helps it meet Living Building Challenge requirements.

Project: The Bullitt Center

Owner: The Bullitt Foundation

Developer: Point32

Mechanical/electrical engineer: PAE

Civil engineer: Springline Design

Structural Engineer: DCI Engineers

Architect: The Miller Hull Partnership

Construction manager/general contractor: Schuchart