

of the girder truss at the roof. At the second floor, where the manufactured joists cantilever through the window wall, a continuous steel tube was welded to the bottom chord of the joist (aligning with the joist panel point) to support the glazing above and below. A vertical tube section was seal-welded at each joist since the glazing could not continue through the joist, but stopped at each side. To seal the building exterior, the steel channel between the underside of the metal decking and the top

Project Breakdown

● **Construction Cost** \$19,600,000

● **Total Area** 70,000 sf

● **Quantity of Steel**

Structural Steel, 5176 tons;
Steel joists, 149.5 tons

● **Savings**

Close collaboration between architect, engineer, and design team members reduced cost and allowed 26 percent of the money to remain in Pittsburg.

● **Owner**

City of Pittsburg.

● **Architect**

Fani Danadjieva Hansen, Hansen Associates Architects (Tiburon, Calif.).

● **Structural Engineer**

Robin Wendler, ZFA Structural Engineers (Santa Rosa, Calif.).

● **Contractor**

Project manager, Dan Warren.
Lathrop Construction (Benicia, Calif.).

● **Steel Detailer**

David Mays, Universal Detailing Co. (Fremont, Calif.).

● **Steel Erector/Fabricator**

Concord Iron Works (Pittsburg, Calif.).

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of the truss provided both shear transfer and weather closure, with continuous welding sealing the inside space.

To form enclosed offices, steel ceiling framing is suspended one foot from the bottom of the floor joists above and braced to the floor above for lateral support. This also minimized the interruption of the flow of natural light. The plywood ceilings' "lids" are painted with a reflective paint to increase the natural light illumination from the exterior windows at the interior common space. The open office space design formed through the exposed structure not only created an enviable working environment; it produced a savings of about 70 percent of normal lighting expense.

A successful learning curve

The design of the Pittsburg Civic Center leans heavily on structure for its architectural expression and dramatic image. Careful planning during design development was essential to ensuring that the structure worked with other systems. It was critical that the engineer and architect worked closely on every detail to ensure that the building would perform as intended while retaining the architect's



An inverted chevron braced frame is blended into a typical girder truss.

aesthetic vision. While this level of scrutiny can be difficult, the success of the project was dependent upon completing the design process thoroughly and accurately.

This project exerted greater demands than normal on the structural engineering team, yet the rewards were greater as well. Seeing the beauty of the structural elements expressed — and sharing it with a community — is a rare pleasure for a structural engineer. ■