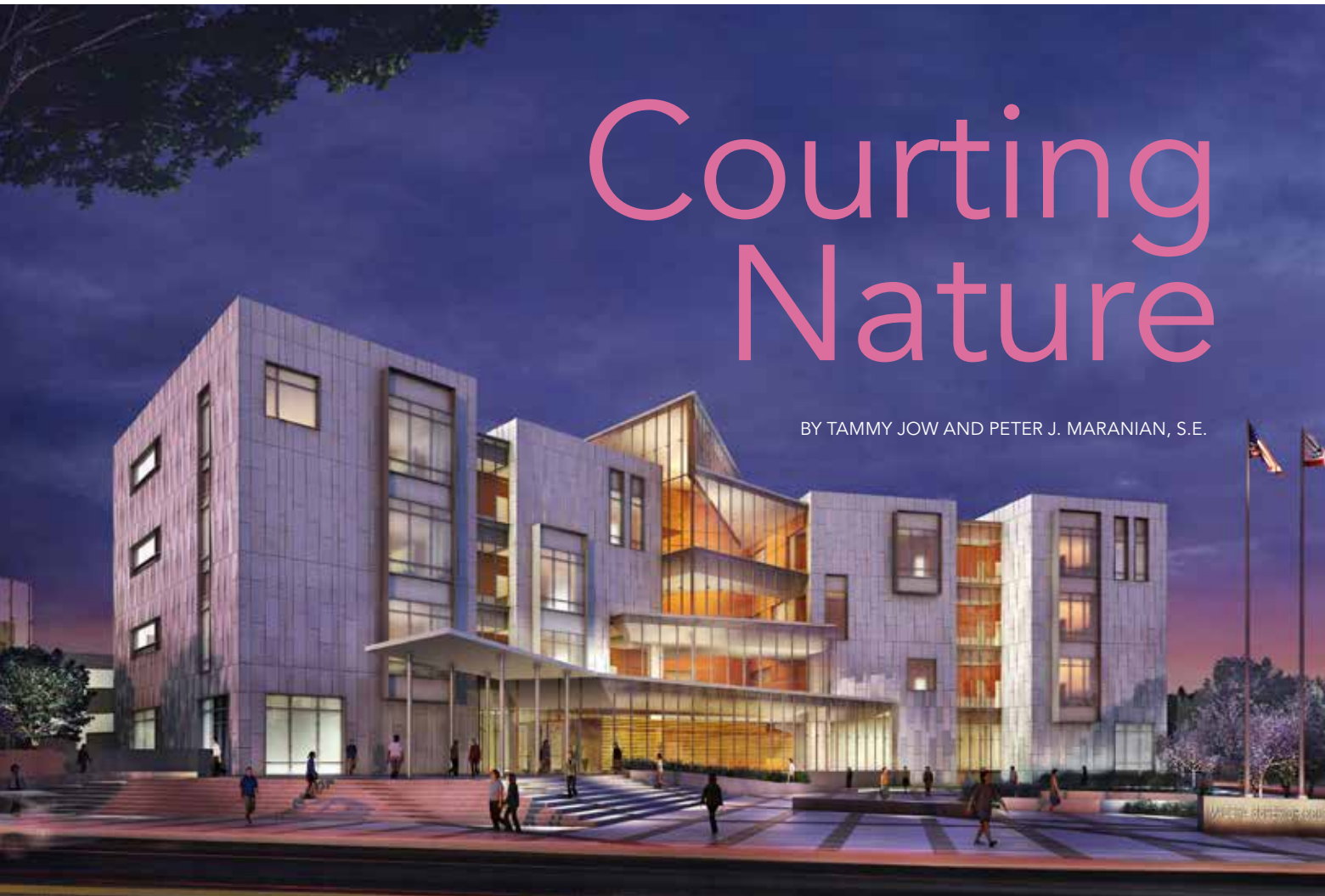


# Courting Nature

BY TAMMY JOW AND PETER J. MARANIAN, S.E.



A new courthouse in the San Joaquin Valley community of Madera looks to the mountains for inspiration.



**Tammy Jow** ([tammy.jow@acmartin.com](mailto:tammy.jow@acmartin.com)) is a senior designer at AC Martin Partners and **Peter J. Maranian** ([pmaranian@bjsce.com](mailto:pmaranian@bjsce.com)) is a principal at Brandow and Johnston, Inc.

**A GROWING POPULATION**, along with the need for more modern facilities, led to the design and construction of a new courthouse in Madera, Calif.

In a unique design process, two local judges were instrumental in guiding the design to reflect the beauty and bounty of the nearby Sierra Nevada Mountains. For example, the granite cladding came from the nearby Raymond Quarry, the wood finishes are reminiscent of the tall trees of the Sierra National Forest and abundant glass evokes images of waterfalls and winter ice formations in Yosemite.

The new facility replaces the existing Madera Superior Courthouse, which was deemed undersized and overcrowded. The facility consisted of a twice-condemned schoolhouse with added modular buildings, and was experiencing operational, security and accessibility problems. Recognizing the need for a new county courthouse capable of servicing the needs of the increasing population, the state approved funding for a replacement in 2008, under California Senate Bill 1732 (which mandates that “each county is responsible for providing necessary and suitable court facilities”) for a new 10-courtroom court-



Craig Shimahara

house. The design process began in 2009 and the preferred site was acquired in the spring of 2011.

### Sierra Connection

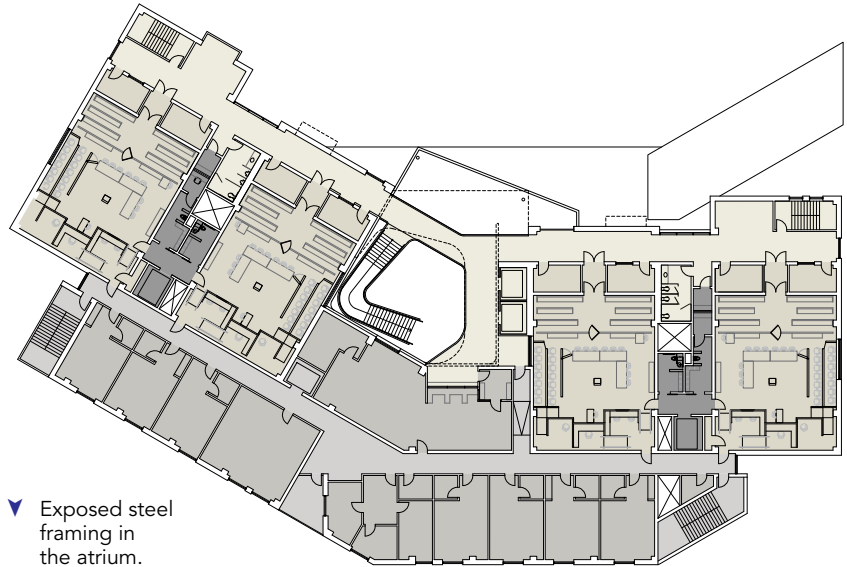
In addition to the judges' verdict to have the new facility embody the local geography, the connection to the Sierras was also important to David Martin, design principal at project architect AC Martin, who grew up spending many summers at his family's ranch in nearby Fish Camp. It was clear from the first meeting that the design team, along with state and courts personnel, wanted to embark on something special.

The resulting design of the New Madera Courthouse is composed of four stone "modules" with a central atrium or "glacier"; a module represents an efficiently planned courtroom size (36 ft by 55 ft) based on standards provided by the *California Trial Courts Facilities Guidelines*. The exterior skin of the modules consists of Sierra White granite in an undulating pattern that gives



AC Martin (Tarmy Jew)

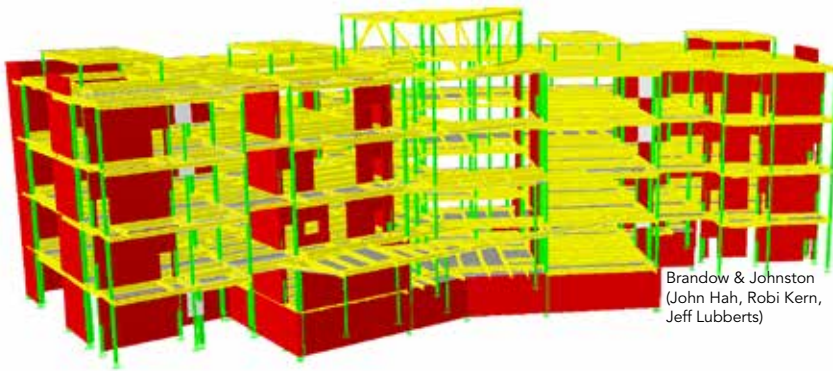
- ▲ Looking up into the atrium.
- ▶ A rendering of the project, which will be completed next year.
- ▼ Second-floor plan.



- ▼ Exposed steel framing in the atrium.



AC Martin (Tarmy Jew)



Brandow & Johnston  
(John Hah, Robi Kern,  
Jeff Lubberts)

- ▲ A building analysis/ETABS Model.
- ▼ A long-span truss at the atrium roof.



AC Martin (Tammy Jow)



reference to the natural striations seen at Half Dome in the nearby Yosemite Valley. The glacier is organized in a series of cascading geometric angles and forms with a skin of ultra-clear glass, reminiscent of ice and water.

The project consists of three separate structures: the courthouse, sally port and parking structure. The courthouse is a four-story, steel-framed structure with a single partial subterranean level. Its basic plan configuration is an “L” shape with a central atrium and stepped internal terraces. The five-story glacier or central atrium is also framed in steel, with some exposed structural elements. Glazing occurs at the vertical surfaces to provide natural daylight in the public spaces, and the building itself is positioned to align with the historic Madera Courthouse (now a museum) and Courthouse Park to create a “town square.” Oriented toward true north, the monumental public façade reveals itself toward the Park and the greater downtown Madera area.

### Court Support

At 111,500 sq. ft, the main building consists of ten courtrooms and ten judicial chambers with clerical support for traffic, criminal, juvenile, family and civil divisions; it also includes five elevators, four stairs and several file storage rooms. The subterranean level provides in-custody holding

spaces as well as parking for judges and key courts personnel. The structural design that evolved for the main courthouse focused on the architectural goals as well as local seismic requirements. The focus also included ensuring sufficient space in the courts and public spaces while at the same time providing for the control of floor vibrations within acceptable limits. The final building system was designed and detailed to meet the specific requirements of the 2010 edition of the *California Building Code* and the *California Trial Court Facilities Guidelines*.

Several structural framing systems were initially considered, including both steel and concrete ductile moment frames, various steel braced frames and concrete and steel framing with concrete shear walls. All of these systems were considered in terms of column sizes, bay sizes, conflicts between the structural system and program requirements, control of floor vibrations and control of inter-story floor displacements. Another goal was to limit the amount of lateral movement of the building to minimize damage to structural and non-structural components in the event of a severe earthquake.

Both ductile moment frame options were determined to allow too much lateral movement, and buckling restrained braced frames, which perform well and would normally



AC Martin (Tammy Jow)

- ▲ A northwest perspective view of the steel framing.
- ◀ Cantilevers and long-span members supporting the interior bridges.
- ▶ A *Way of Thinking* watercolor sketch by the architect, who used the area's spectacular geography as inspiration for the project.

*Vision of plan and materials*



have been an appropriate lateral resisting system for such a project, were found—in this particular building layout—to encroach into various rooms in the building, thus reducing efficiency. That left two structural framing schemes that met the building's demands: Option 1 (concrete shear walls with concrete-framed floors) and Option 2 (concrete shear walls with steel framing, steel deck and concrete floors). Cost estimates were developed and it was determined that Option 2 was appreciably less expensive than Option 1. Thus the schematic design proceeded with Option 2, using concrete shear walls and steel framing.

A significant structural challenge was the design of the open-space glacier combined with an architectural goal to minimize the number of columns. This was met with a combination of cantilevers and long-span members supporting the bridges at the second, third and fourth levels, each with a different configuration. A long-span truss supports the roof and the high roof over the glacier and also provides lateral resistance to the high roof. When it came to the design of the diaphragm for the glacier, the designers saw the opportunity to reinforce the idea of the cascading geometric angles through the placement of the beams.

The courthouse, which uses 1,168 tons of structural steel, is currently under construction and is scheduled to be completed

in the second quarter of 2014. Paying homage to its natural surroundings, the new facility will demonstrate the transparency and dignity of the democratic process, structurally and metaphorically, and provide an inviting space in which to facilitate the workings of the American ideals of justice. **MSC**

**Owner**

Judicial Council of California  
Administrative Office of the Courts

**Architect**

AC Martin Partners, Los Angeles

**Structural Engineer**

Brandow and Johnston, Inc., Los Angeles

**General Contractor**

Gilbane Building Company, San Diego

**Steel Team**

**Fabricator**

Gayle Manufacturing, Woodland, Calif. (AISC Member/  
AISC Certified Fabricator)

**Detailer**

A.D.S. Engineering, Inc., Carlsbad, Calif. (AISC Member)