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San Diego Central Courthouse

Radiant heating and cooling ensure occupant comfort in expansive, multi-use public space.

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San Diego Central Courthouse for a new era features REHAU radiant heating and cooling

They say good things come to those who wait. Judges, prosecutors, law enforcement officials and others who spend their days in and out of courtrooms in San Diego waited more than a decade for a proposed new state courthouse to become reality. Most will agree the 25-story tower at the intersection of Union and C streets, which officially opened in December 2017, was worthy of their patience.

The 370-ft (112-m) tall structure replaces a three-block-long, seven-story county courthouse that opened in 1961. Local and state officials initially proposed the project in 2004, but plans were put on hold until 2010. The new courthouse consolidates San Diego County's criminal trial, family and civil courts into a facility that is loaded with high-tech features, including a radiant heating and cooling system that runs throughout the public corridors on each floor and the expansive, multi-use public space on the building's first three floors.

"The intent was to make this the most sustainable project possible," explains Steve Sobel, FAIA, managing director of Skidmore, Owings & Merrill LLP (SOM), the architectural firm that designed the courthouse. The courthouse earned a LEED® Silver certification.

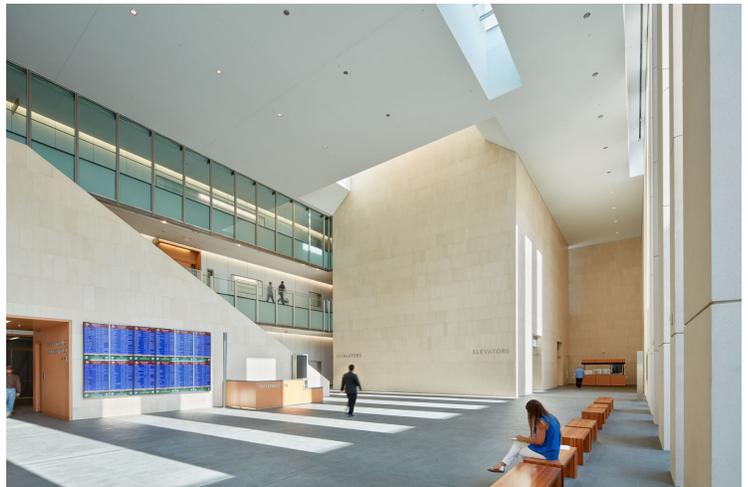
The 704,000 ft² (65,400 m²) courthouse is expected to be used by more than 1.2 million people per year (approximately 4,000 per day). Sobel says the building's transitional spaces – its airy multipurpose spaces on the first few floors, the hallways and elevator areas – are ideal for the energy-efficient REHAU radiant heating and cooling system. The building's courtrooms, offices and other private areas, which are more enclosed and handle widely varying occupant loads, are heated and cooled with a traditional HVAC system.

SOM has used radiant heating in similar public spaces in lobbies, office buildings and other large spaces. The San Diego courthouse is one of the largest SOM projects in which radiant has been used. Approximately 112,000 ft (34,138 m) of 5/8 in. RAUPEX pipe runs through the courthouse carrying temperature-controlled fluid. For the floors that have an identical footprint, the pipe was preassembled on customized RAUMAT that was delivered in rolls, providing significant time and cost savings. Building chilled and hot water are mixed to appropriate temperature, depending on the operation (cooling or heating) of the radiant floors and zones.

"We looked at traditional HVAC systems for these spaces, chilled ceiling elements and chilled beams. In the end, [radiant] was the right system to use in these high-traffic areas," Sobel says. The radiant system reduced the amount of duct space needed in the public areas San Diego Central Courthouse for a New Era Features REHAU Radiant Heating and Cooling. (air ventilation is still preserved) and minimized concerns about coordinating between ducts with electrical and other infrastructure.

"We've done a lot of buildings with radiant floors. In these types of climates, they are really great systems," says Ben Weerts, the lead mechanical engineer for the courthouse project. "Radiant makes the space really comfortable, especially when you're dealing with large volumes of space. You don't have to heat and cool the whole volume. You can just heat and cool the bottom strata where occupants are and it creates a comfortable environment," he explains.

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Project: San Diego Central Courthouse - San Diego, California

Construction type: Municipal building, opened in 2017

Project scope: 112,000 ft (34,138 m) of RAUPEX pipe

Architect: Skidmore, Owings & Merrill LLP (SOM)

Mechanical engineer: WSP

Mechanical contractor: University Mechanical & Engineering Contractors

REHAU systems used: Radiant heating and cooling (RAUMAT™, RAUPEX® O₂ barrier pipe, PRO-BALANCE® manifolds)

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