

Sandra Day O'Connor Federal Courthouse - Phoenix, Arizona  
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The Sandra Day O'Connor U.S. Federal Courthouse is an ambitious feat of architecture that Richard Meier designed in 2000. Its glassed in atrium and light frame were an attempt to pivot away from the brutalist trend that federal buildings saw in the latter half of the 20th century. It also employs a passive evaporative draught cooling (PEDC) system that cools the "indoor courtyard" using a miniscule amount of energy. While the building was met with many awards and acclaim upon opening, it has since faced a string of criticism based on concerns about the user experience.

Meier is known for his aggressively modern architecture that relies heavily on brilliant white sculptural spaces. While the courthouse deviates some from a typical Meier building, it utilizes many of the modern conventions that he has become known for. Sleek white structural element encase a glass facade to create an outline emblematic of a classic judiciary building. The translucent facade is Meier's attempt to invite the public back into federal buildings that occupy a central place in public life. On architecture alone, the building has many merits. However the most ambitious feat of this building lies in the cooling system employed in the atrium.

The PEDC system used in the atrium works by taking in outside air from louvers placed along the top of the ceiling. These louvers take in fresh air from outside and direct it towards a misting system along the interior corridors facing into the atrium. As the warm air passes through the cool mist, the heat from the air is used to evaporate the mist and thus cools the airstream. It then sinks towards the occupied level and rises as it is again heated by the loads in the space (i.e. occupants or solar heat gain). A diagram of the process can be found in the appendix.

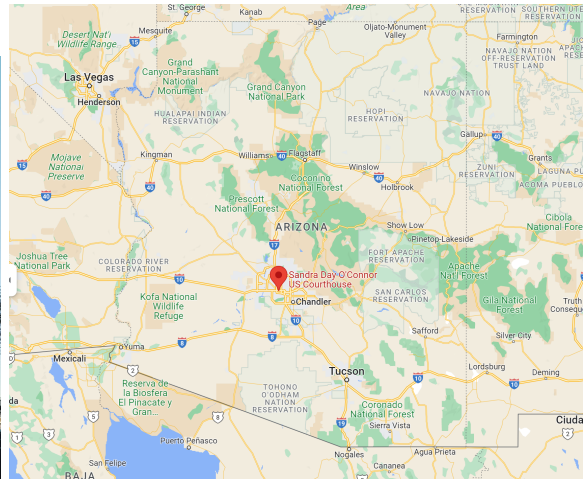
Many think of this system, and atrium, as impractical, and for justified reason. The temperatures within the courtyard routinely skyrocket upwards of 100 degrees fahrenheit during the summer. The fact is, for users accustomed to artificially cooled spaces the system simply cannot provide the thermal comfort demanded of it. At face value it is performing as designed, but it falls short on user experience.

A triumphant success of modern architecture or poorly designed space that disregards the needs of its occupants? This has and will continue to be a topic of debate surrounding the Sandra Day O'Connor Federal Courthouse. Only time will tell if the expanded use of passive strategies shifts the public perception on thermal comfort and expectations of building environmental systems.

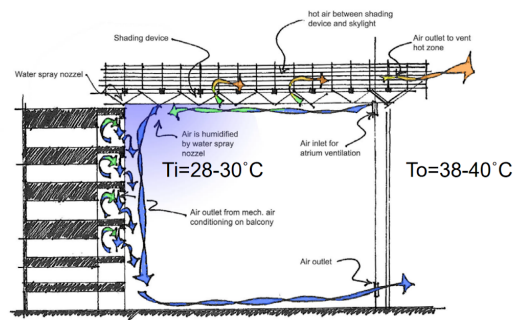
## References

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## Appendix



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