VISION
The Arizona State University, Beus Center for Law and Society is a state of the art new home for the prestigious Sandra Day O’Connor College of Law. Part of Arizona State University’s downtown campus, the center is nestled in the legal, political and economic heart of Phoenix. The University sought to use this location to encourage vibrant connections with the surrounding community by creating shared facilities such as a café, library, public plaza and the not-for-profit ASU Alumni Law Group, one of the institutions dedicated to reinforcing the role of law in society.

CHALLENGE
ASU wanted to construct a high-performance building that met the demands of a changing law school program while also increasing engagement between the law school and wider community. With an ambitious fast-track schedule and a firmly fixed budget established by the university, the team adopted a highly integrated approach to design to ensure the project’s success.
**Solution**
The project team worked collaboratively to design and realize standout features such as the dramatic pedestrian ‘canyon’ that bisects the center. Our engineers used advanced energy analysis and modeling tools to evaluate, refine and coordinate structural design, MEP systems, lighting and other strategies that would fulfill ASU’s sustainability goals and deliver a fully integrated, user friendly complex.

**Value**
ASU’s educational and social objectives have been fully realized through thoughtful design and intelligent engineering. Shared amenities and building transparency effortlessly blend university spaces with those for the general public, fostering a new community in the heart of downtown Phoenix. This landmark piece of architecture will also contribute to the long term reinvigoration of the area, serving the educational needs of the university and the social needs of the community for generations to come.
“BuroHappold has delivered a facility that not only meets our goals, but has been instrumental in increasing the engagement between the law school and surrounding community.”

Ed Soltero
Assistant Vice President and University Architect,
Arizona State University
The exterior

The Arizona State University, Beus Center for Law and Society is designed to both serve the needs of its students, and invite the residents of downtown Phoenix inside to share the amenities. Integrated engineering enabled the compelling architecture that draws people inside the center, while also ensuring the openness of the building fabric did not compromise the socially responsible energy goals of the project.
A dramatic 30ft high, V-shaped column supports the building’s northwest corner and creates an inviting public entrance.

A suite of modeling tools were used to consider factors such as site location, solar glare and heat gain when organizing the building’s layout.
The science behind the facade

High performing windows are rhythmically spaced between locally sourced Arizona sandstone panels in a saw-toothed configuration that creates a self-shading facade.

The project team carried out parametric studies evaluating different patterns and rhythms of components, reducing window-to-wall ratio in order to keep internal cooling loads within specific low targets, facilitate low-energy cooling systems and improve interior thermal comfort.

38% Average window to wall ratio

1:2 Shading ratio
The great hall
At the heart of the building is the impressive great hall. Playing host to everything from lectures, to conferences, to performances over the course of each academic year, our engineers employed a number of innovative strategies to ensure this vast space has the flexibility to meet a varied program of events.
Total flexibility

This ingenuity resulted in a space-saving design that integrates MEP systems with furniture.

The custom steel-framed seating system can be retracted, transforming the hall from informal seating to 250-seat auditorium.

Airfloor system was installed: technology combines underfloor ventilation with radiant heating to create a very quiet system that is energy efficient and cost effective.
Bringing the outside in
The 24-foot-high bi-fold glass door blurs the Great Hall’s boundary between indoors and outdoors, opening fully to the canyon on temperate days.

Media mesh
The media mesh, an LED news display that spans multiple floors, engages passersby with event announcements and other news.
The reading room

The expansive, light filled reading room provides students with a tranquil space for study and reflection. Although the space itself may feel effortless, it is the result of careful planning, thoughtful design, and very clever engineering.
Engineered for space
The long-span, steel-frame structure of the building allows for the generous, double height proportions of this reading room.

Engineered for comfort
A combination of dedicated outdoor air systems and fan coil units heat and cool the reading room.

Engineered for light
The lighting design includes daylight and occupancy control for the energy efficient LED system.
As well as forging a physical connection between the east and west buildings, open bridges provide visual transparency across the central courtyard and into other rooms in the center. This encourages engagement and interaction between academic departments, and removes further barriers between the university and local community.
The bridges provide a low energy design solution to improve circulation around the center.

Enhancing
Hung discreetly from roof level, each bridge is suspended from hangers that serve to enhance the overall architectural expression of the building.

Moving
We engineered a 2 inch gap between each bridge and the walls to allow for movement under differing loads.
A NOD TO NATURE

Courtyard
An open air canyon slices through the center of the complex, bringing views of nature into the very heart of the buildings. As well as providing students and staff with a place to meet or relax, this space creates a new public realm that can be enjoyed by the people of Phoenix.
Light penetration
Floor to ceiling windows in the surrounding buildings draw natural light in from this central space.

A walk on the wild side
A pathway from the street leads downtown Phoenix directly into the heart of the center.
The center's bridges and courtyard shading sails provide shelter from the elements and protection against the sun.

Dynamic analysis of courtyard sails sun penetration.
Enlightened study in the library

Skylights in the floor of the courtyard above allow natural light to permeate the library.
Sustainability highlights

Our collaborative working ethos and integrated approach to the design of the Arizona State University, Beus Center for Law and Society generated high value, low impact solutions that are expected to see this project achieve LEED Gold certification.
The center is expected to use **37% less energy** than a similar standard building.

Cement contained **50% recycled materials**.

We used **90% recycled structural steel** where possible.

Daylight, LED lighting and occupancy sensors will reduce power density **10-15% below** the ASHRAE allowance.

Our ongoing air quality and building systems monitoring will safeguard a healthy, high performance environment.

We kept construction practice as clean as possible.

**Environmentally preferable materials** were used throughout.

Over **500 low-energy active chilled beams** keep the building office environments feeling fresh and comfortable.
Arizona State University prides itself on being at the forefront of sustainable design, and the professionals at BuroHappold supported this mission through sophisticated energy simulation and analysis consulting.”

Ed Soltero
Assistant Vice President and University Architect,
Arizona State University
BuroHappold integrate teams of our specialist engineers in a process we call **Enginuity™**. Our Enginuity solution for the Arizona State University, Beus Center for Law and Society focused on **Integrated Design**.

We brought together 5 of our specialist engineering services that worked together to achieve a result much greater than the sum of the parts.
### ARIZONA STATE UNIVERSITY, BEUS CENTER FOR LAW AND SOCIETY

Phoenix, Arizona

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<thead>
<tr>
<th>Role</th>
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ABOUT BUROHAPPOLD ENGINEERING
Founded 40 years ago, BuroHappold Engineering is one of the world’s premier multidisciplinary engineering consultancies. With a global network of 23 offices, including five in the United States, our work spans all sectors and our clients include more than 90% of the world’s leading architectural practices.

BuroHappold’s core offering of structural and MEP services, complemented by our suite of specialisms and strategic urban realm expertise, enables us to inventively integrate sound engineering principles and advance high-performance design in all our projects. At BuroHappold we look beyond engineering to see the bigger picture, combining our knowledge to offer truly holistic design and consultancy services. Which includes offices in New York, Boston, Chicago, Los Angeles and San Francisco has completed a broad range of work—from high-performance renovations to advanced facade design for higher education, cultural, commercial and health-science clients—garnering over 100 awards for design and engineering.

**FACTS**

**5 OFFICES IN NORTH AMERICA:**

**BOSTON**

**CHICAGO**

**LOS ANGELES**

**NEW YORK**

**SAN FRANCISCO**

Projects from top right

**THE TOWER AT PNC PLAZA**

Pittsburgh, PA

Architect Gensler

Image Connie Zhou

**888 BOYLSTON**

Boston, MA

Architect FXFowle

Image FXFowle

**YALE UNIVERSITY SCHOOL OF MANAGEMENT**

New Haven, CT

Architect Foster + Partners

Image Chuck Choi Architectural Photography

**GLAXOSMITHKLINE HEADQUARTERS AT 5 CRESCENT DRIVE**

Philadelphia, PA

Architect Kendall/Heaton Associates and Robert A.M. Stern Architects

Image Francis Dzikowski / Esto
WE MAKE THE VISION VIABLE

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