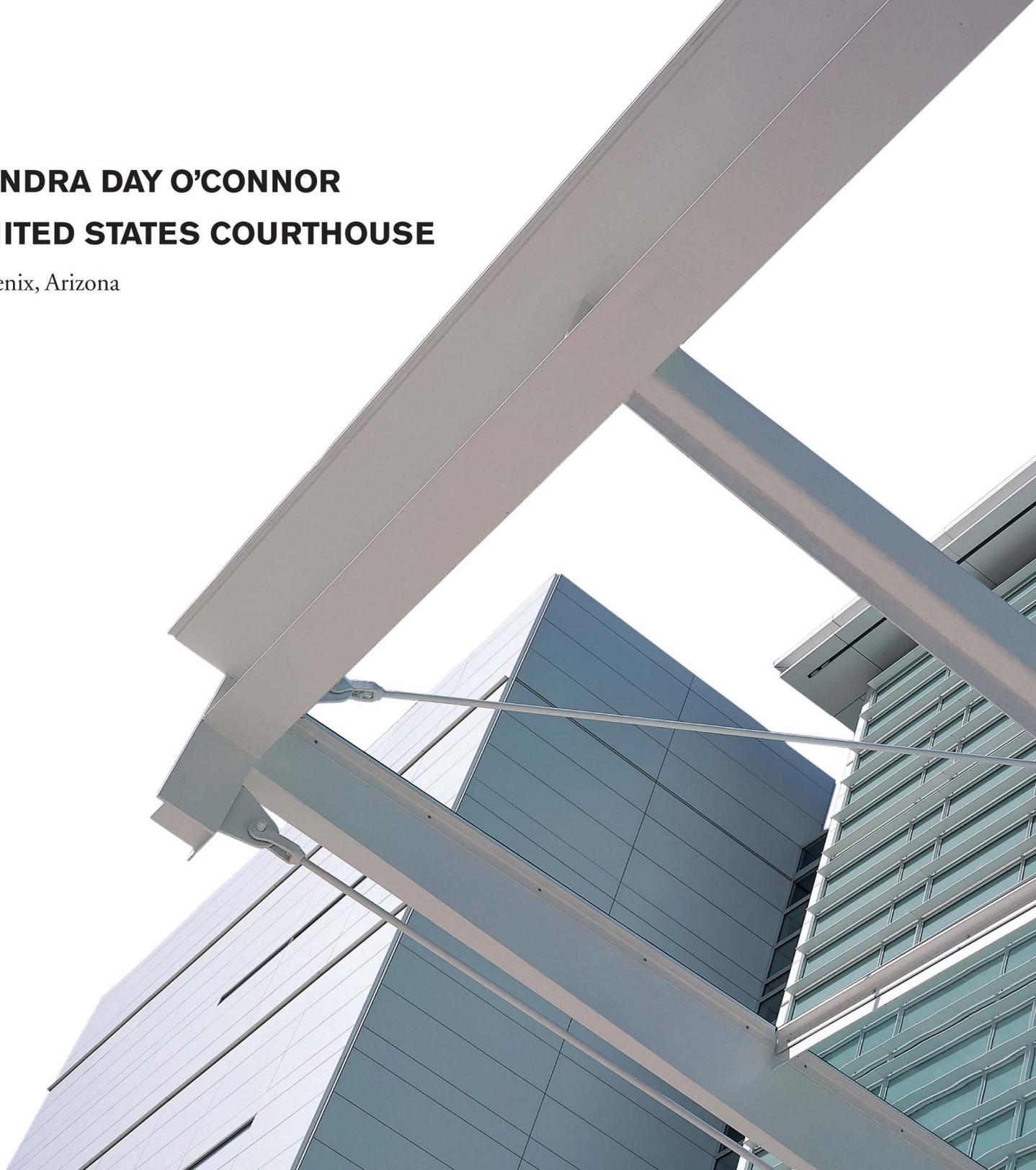


**SANDRA DAY O'CONNOR  
UNITED STATES COURTHOUSE**

Phoenix, Arizona



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- 4 A Room in the City
- 16 An Innovative Response to the Environment
- 18 Art-in-Architecture
- 23 General Facts about the Courthouse
- 29 Profile: Sandra Day O'Connor
- 31 Biographies: The Architect and the Artists
- 32 The Design and Construction Team
- 35 U.S. General Services Administration and the Design Excellence Program

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**The Phoenix courthouse is a great civic hall. In the hierarchy of downtown architecture, it reads like a public building of importance, as a courthouse should. In this case, however, the symbolic functions of the judiciary no longer take place on the courthouse steps but in the atrium – an inspiring space that belongs to the people and to the city.**

Richard Meier  
Architect, Richard Meier & Partners

## A ROOM IN THE CITY

The Sandra Day O'Connor United States Courthouse is an anchor in the development of downtown Phoenix. In a community that is the sixth largest city in the United States and covers an area of 2,000 square miles, establishing this identity and sense of place is a significant achievement. The courthouse is an elegant rectangle with an entry plaza on one side. The building and plaza fill a two-block site and are part of a sequence referred to as the "government mall," an axis that links the state capitol, this Federal courthouse, the Phoenix City Hall, the Maricopa County Complex, and the Arizona State Supreme Court.

The two public sides of the building—one on Washington Street facing north and the other on 4th Avenue facing east—are 120-foot high glass walls, "windows" into a stunning atrium that extends the public space of the entry plaza into the courthouse itself. The long, Washington Street facade runs 350 feet and is marked with six free-standing, "star-shaped" steel columns. These rise the full height of the building and support a series of peeked trusses that are the "vaulting" over the atrium. The 4th Avenue facade, which looks across the entry plaza, is 150-feet long. Its main

feature is a broad, three-story entrance canopy, a light structure of steel masts and cables that is set in front of the glass wall.

To give it an urban presence, the plaza is raised two feet. Along Washington Street, steps bring people into the space, while on 4th Avenue the plaza is landscaped with a grove of flowering orchid trees. The back edge of the plaza is defined by a narrow fountain animated with small jets arranged in a line that parallels the pedestrian axis into the building.

The atrium is the interior counterpart to the plaza. Its scale is inspiring—350 long by 150 feet wide with a roof supported 120 feet above the ground level on 12 giant columns. While its great glass walls and glass ceiling give it boundaries and provide shelter from extreme heat, its size and abundant light create the perception of an exterior environment. Opposite the long glass facade, six courthouse floors have broad open gallery corridors that are like streets overlooking a large square. Inside the atrium near the plaza wall, a glass-enclosed elevator tower with balconies defines the vertical circulation. Beyond the entrance and security, the atrium is an inviting space that

people can enjoy as a special downtown place. This aspect of the courthouse is particularly evident at night when the vast hall glows with light.

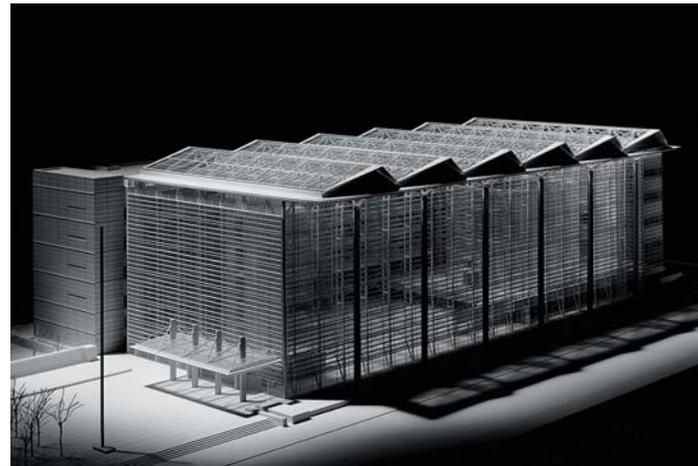
The centerpiece of the atrium is the Special Proceedings Courtroom. It is a glass cylinder elevated on a platform, a jewel inside the courthouse box. A broad staircase provides the formal access to this second-floor platform. At the center base of the cylinder, a two-story portal is the grand entrance to the courtroom. Moving through this threshold, the interior is round, an unusual, striking shape. It is a form amplified by a suspended, convex glass "lens" that is simultaneously the public art and functional ceiling for the courtroom. The round center of the lens diffuses light while its circular edge is clear, a slit offering views to the sky. As is the norm in traditional layouts, the judge's bench is opposite the entry. There is a broad well, and spectator seating is just inside the main door. It is a distinctive and dignified space.

There are 17 additional courtrooms and an equal number of judges' chambers on various floors in the long back wing of the building. The public galleries on these

levels not only look into the atrium but also beyond to the beautiful Camelback and North Mountains. The side wing—just behind the Special Proceedings Courtroom—has judges' chambers for the Court of Appeals, a conference center with double height meeting rooms, a library, and a café.

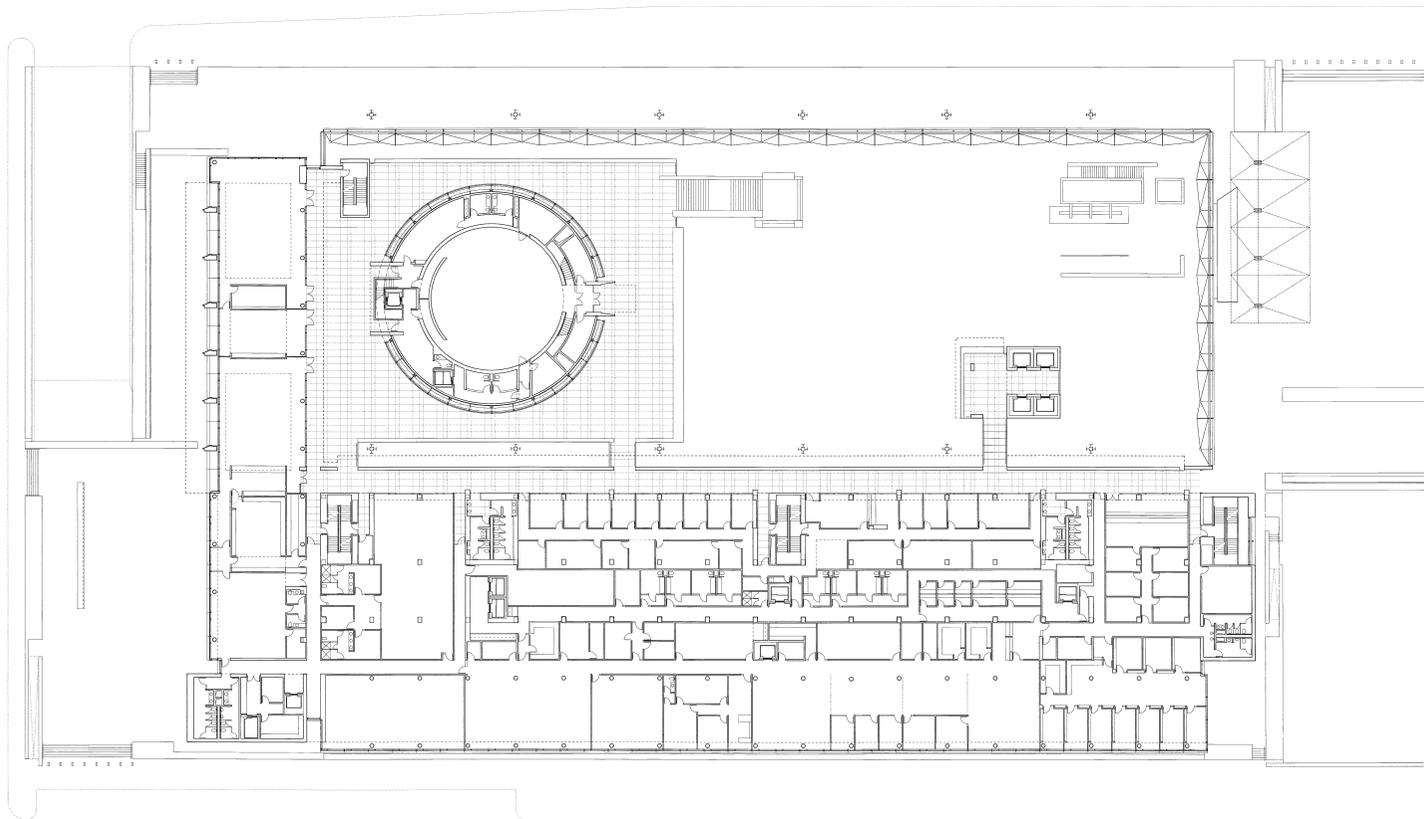
The facades are detailed as sleek horizontal bands, interrupted with piers on the exterior of the courtroom block to indicate special functions such as judges' chambers and a conference center. Both the facades and atrium ceiling have louvers that are sunshades for the building. Exterior glass has a coating of a translucent ceramic material (referred to as frit) to further temper the light. On the interior of the atrium's glass walls, cables stiffen the frame and create an interesting pattern of diagonal lines in an otherwise rectilinear composition. With respect to color, all the walls and metal elements are painted white so that it is the details themselves along with their shadows and reflections that are the source of the building's rich design texture.



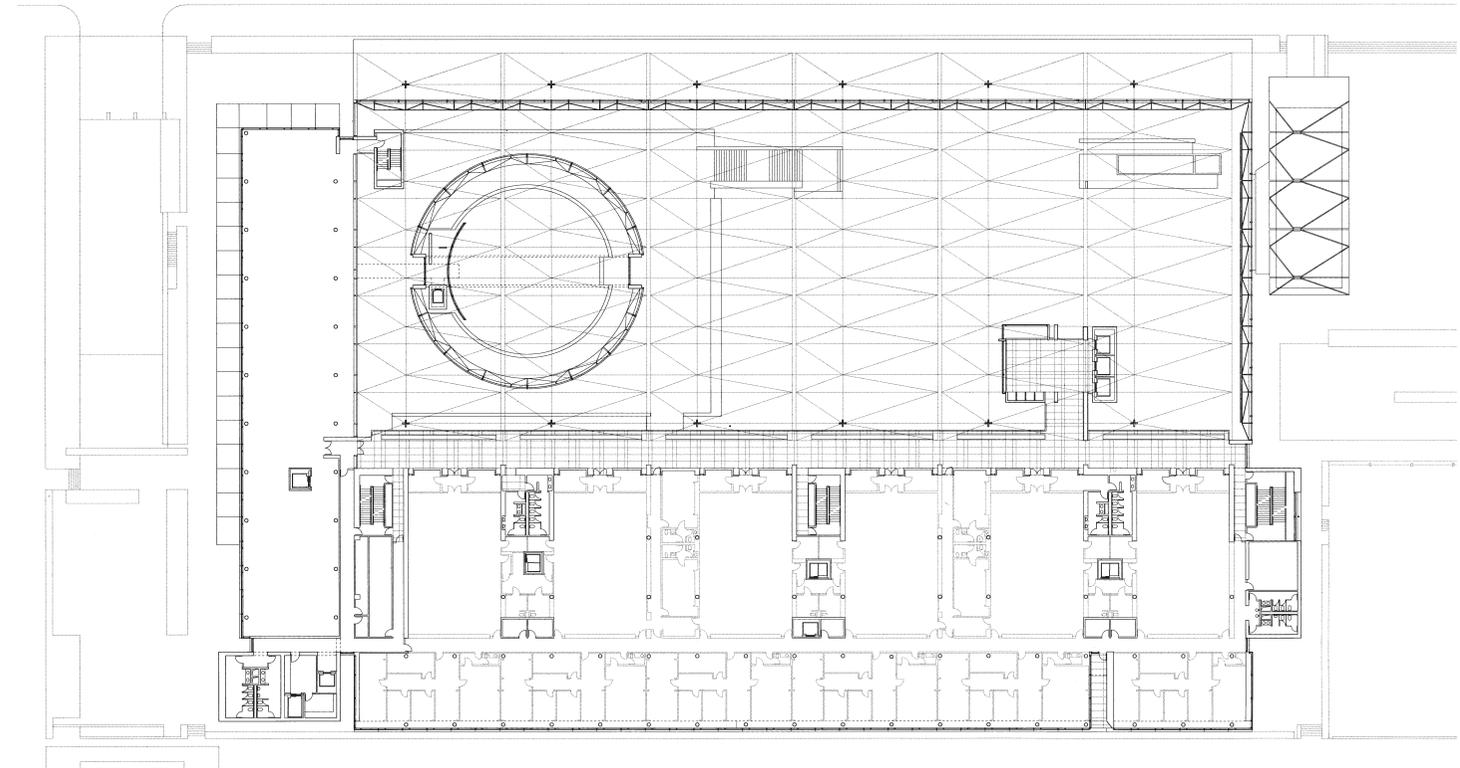


**This building should give the visitor the impression of openness, of access to justice, of a tranquil space in which to resolve the sometimes very difficult issues in our courts. The Federal courts play a vital role in our nation. It is fitting that they be housed in spaces designed to reflect the significance of that role and the sense that justice in our nation is open to all.**

Sandra Day O'Connor  
Associate Justice, United States Supreme Court



Second Floor Plan



Fourth Floor Plan



**Using an atrium as the grand public space for a courthouse built in the desert was a bold proposition. Cooling it with traditional systems was environmentally irresponsible. Having no air conditioning at all was not an option. The solution was a passive system that integrates evaporative cooling, natural ventilation, conditioned spill air from balconies, and shading to create an environment that incorporates a high level of human comfort as a facet of its extraordinary design.**

Mahadev Raman  
Principal, Ove Arup & Partners  
Consulting Engineers

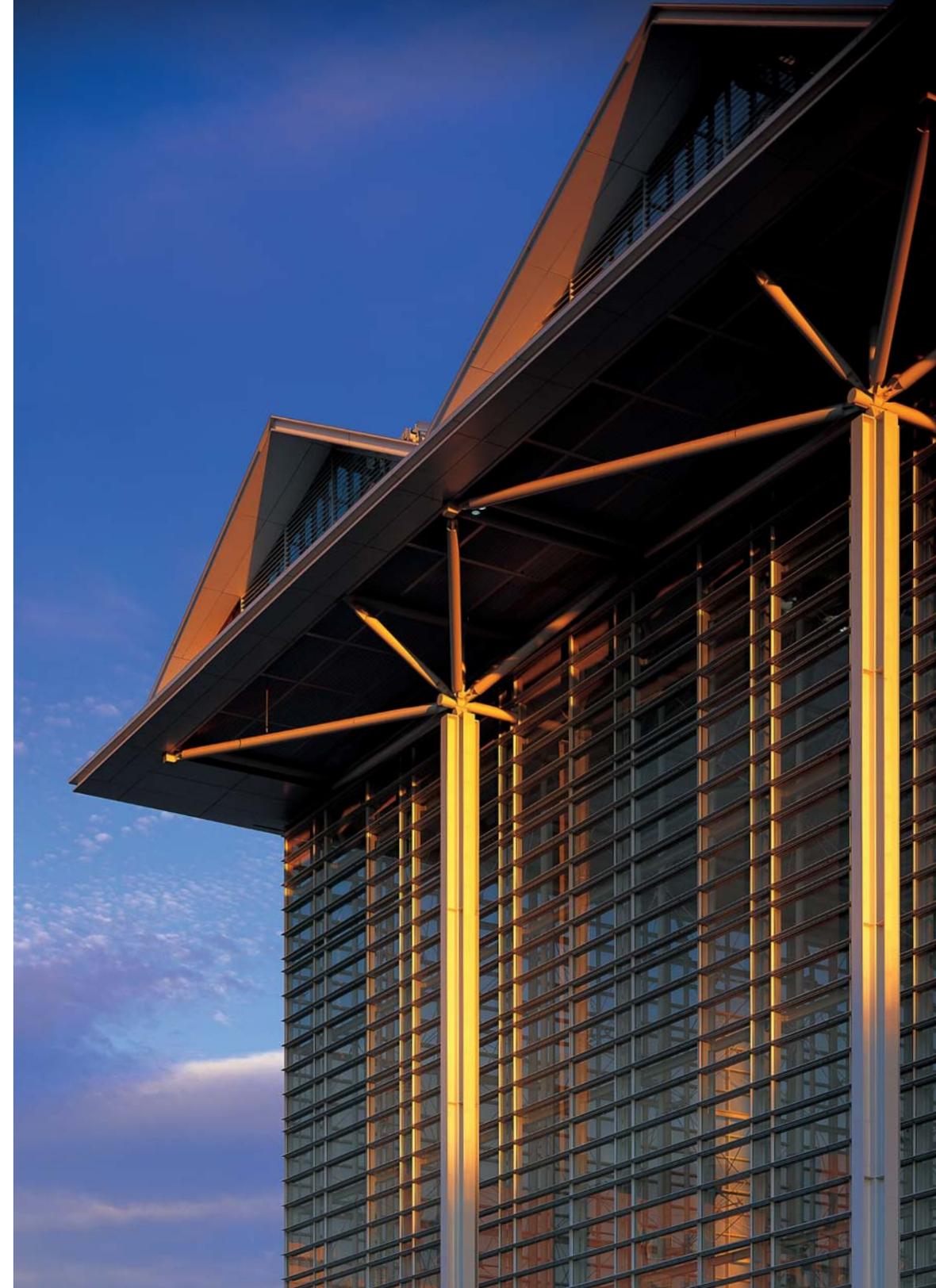
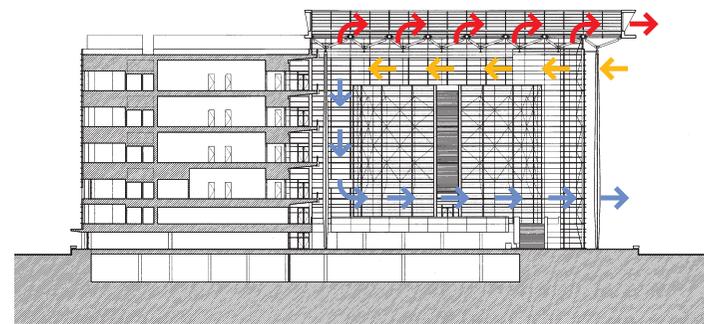


**AN INNOVATIVE RESPONSE TO THE ENVIRONMENT**

In a part of the country where summer temperatures can reach 122 degrees Fahrenheit, designing a building with a 58,000 square-foot, glass-enclosed atrium would seem to be a problem. Consulting engineers Ove Arup & Partners, however, saw things differently. Using digital modeling, the firm's mechanical engineers were convinced a technique known as "evaporative cooling," augmented with other climate control techniques, could keep the atrium comfortable. In evaporative cooling, a fine mist is sprayed across a current of warm dry air. As the water is absorbed, the air's humidity increases while its temperature decreases.

In the Phoenix courthouse, outside air is pulled in at the top of the atrium's glass facade just below the roof. It moves across the atrium under the roof until it hits the sixth floor wall of the courthouse block. Above the gallery at this level, nozzles spray the air with water. As this moisture is absorbed, the air not only cools down but also becomes heavier and descends to the atrium floor. On the way down, exhaust air from the enclosed courthouse spaces and overflow from the air-conditioned balconies provide further cooling. Finally, completing

the cycle, air flows back outside through openings several feet above the ground floor. Exploiting this low-cost passive technology along with various shading devices, the temperature on the floor of the atrium during hot summer days is generally about 20 degrees cooler than on the street. For the majority of the year, the atrium can be maintained at a very comfortable 73 degrees Fahrenheit, a significant achievement for a large glass-enclosed open space designed for one of the hottest places in the United States.



## ART-IN-ARCHITECTURE

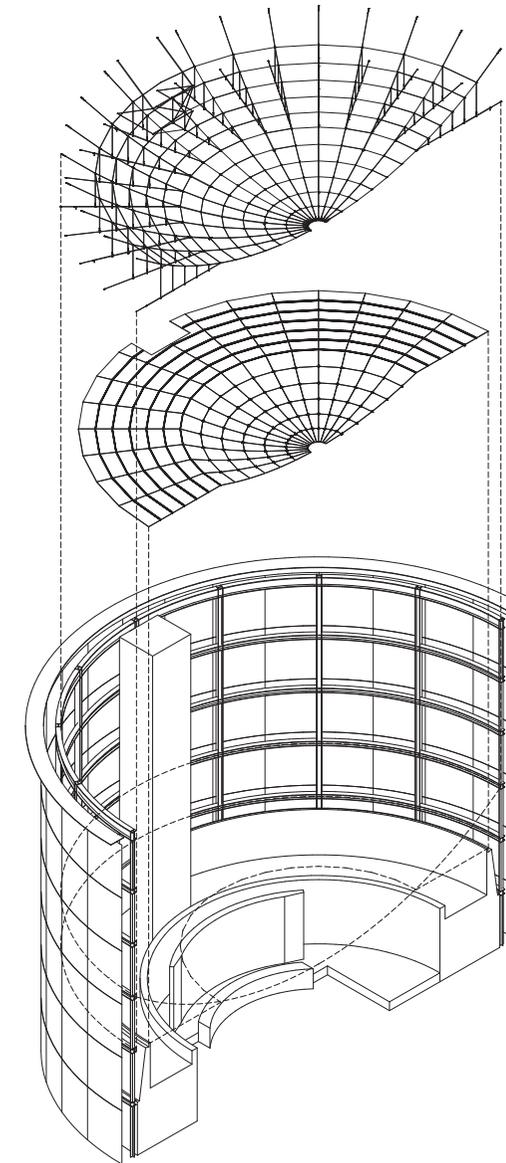
Art has always been an important feature of great architecture. For the Sandra Day O'Connor United States Courthouse in Phoenix, Arizona, James Carpenter Design Associates has created a unique glass ceiling for the Special Proceedings Courtroom.

### Lens Ceiling

*Located in the Special Proceedings Courtroom*  
James Carpenter Design Associates

Lens Ceiling is a fusion of art, architecture, and engineering. It is literally the ceiling of the Special Proceedings Courtroom. It is the medium for diffusing and directing light. It also integrates its own structure with a sprinkler system. As a work of art, however, it transforms these pragmatic functions. The round ceiling is a graceful convex surface of glass surrounded by a horizontal band of glass. From below, the piece suggests the image of a bubble resting gently on water. The curved, "lens" portion of the installation has a subtle pebble-grain pattern rolled into the glass. This diffuses light and transforms the convex portion of the ceiling into a glowing, sparkling surface—an effect that can be manipulated by varying the type, intensity, and location

of light sources. The flat glass ring that surrounds the lens is clear and provides views of the atrium structure and the sky from the courtroom floor. Beyond the edges of this ring, on the upper part of the courtroom drum, spotlights can illuminate the judge's bench and the witness box or other parts of the room when it is used for ceremonial events. The glass is hung from cables suspended between the drum and a tension ring at the center of the lens. Stainless steel ties in a series of concentric circles define the spherical form, and the structure as a whole appears as a geometric pattern of thin lines elegantly etched into the glass. The sprinkler system runs along radial lines as part of the structure, almost undetectable but fully functional. The entire piece has been engineered to accommodate expansion and contraction due to changes in temperature. It can withstand earthquakes and will not fragment upon impact. Ultimately, however, Lens Ceiling is not about being practical. It is about light and lightness, about form and space, about structure and fine materials. In this context, it is the ideal complement to the courthouse architecture.



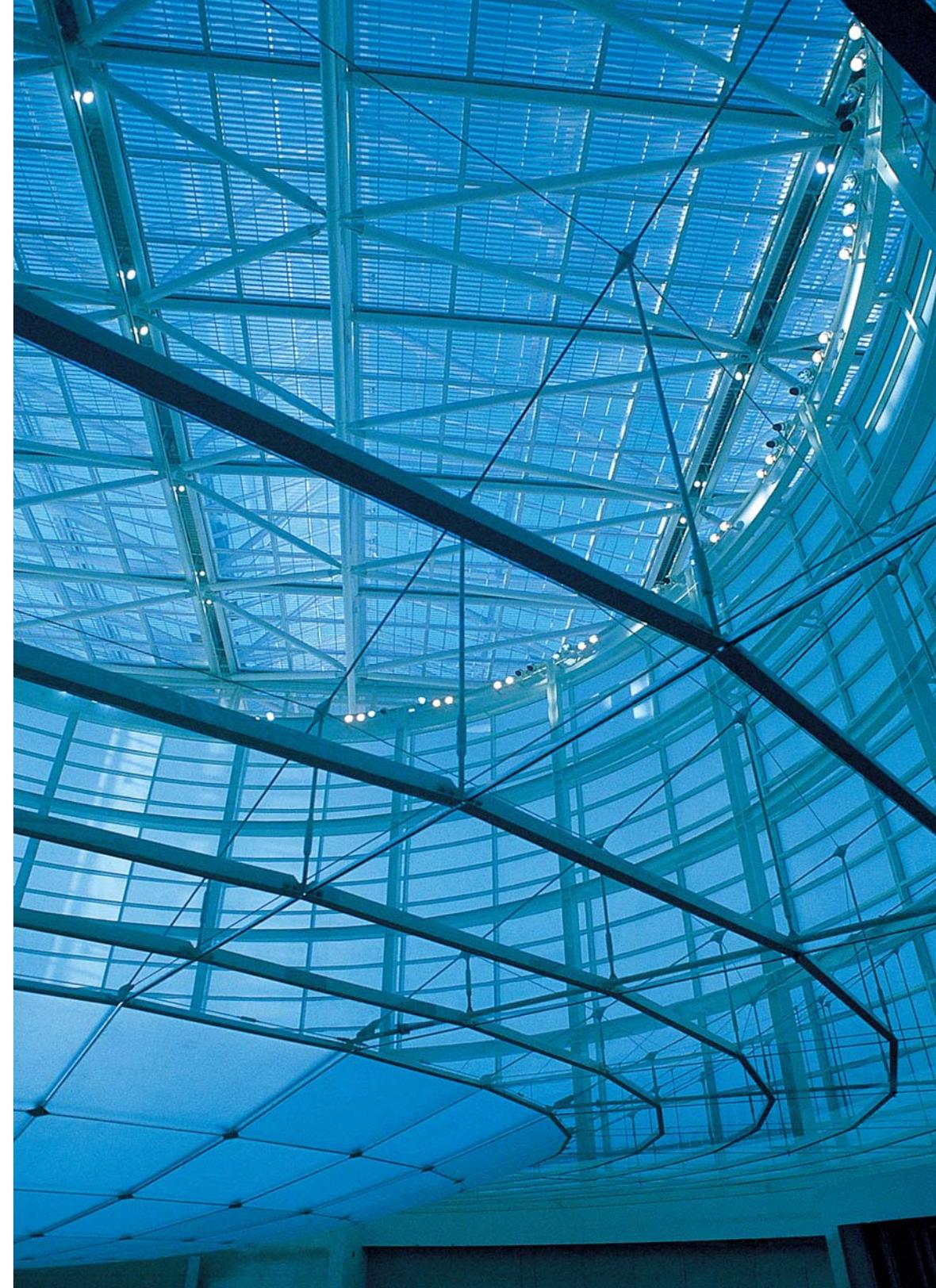
### Art-in-Architecture Program

GSA's Art-in-Architecture Program commissions artists, working in close consultation with project design teams, to create artwork that is appropriate to the diverse uses and architectural vocabularies of new Federal buildings. These permanent installations of contemporary art for the nation's civic buildings afford unique opportunities for exploring the integration of art and architecture, and facilitate a meaningful cultural dialogue between the American people and their government. A panel that includes the project architect, art professionals, the Federal client, and representatives of the community advises GSA in selecting the most suitable artist for each Art-in-Architecture commission.



**The goal of the studio is to design projects that speak to a shared human experience of delight and wonder through an understanding of structure, materials, and light. We hope to make spaces in which people become more aware of the fleeting sensations that connect us to the world.**

James Carpenter, Artist  
Luke Lowings, Architect  
James Carpenter Design Associates





#### GENERAL FACTS ABOUT THE COURTHOUSE

The Sandra Day O'Connor United States Courthouse is on a 4.85-acre site in downtown Phoenix, Arizona, between Washington and Jefferson Streets and 4th and 6th Avenues. The two blocks defined by these boundaries are centrally located within the city's civic, business, and cultural districts.

The 571,000 square foot facility is six stories tall, and rises 134 feet. It includes 18 courtrooms: one Special Proceedings Courtroom, 13 District, and four Magistrate courtrooms. There are also judges' chambers, a court library, office space for several Federal agencies, and a cafeteria. Over the next 30 years, as the needs of the courts grow, spaces in the building can be converted to accommodate up to 26 courtrooms and 30 judges' chambers.

The courtrooms themselves have been designed elegantly but simply. They are paneled with anigre wood and have ceilings more than 15 feet high. Their layout is traditional. The bench is elevated and on axis with the entrance. The jury box is to one side, and the spectator area is at the back. Perhaps the most modern element is the lighting, which is articulated as a series

of recessed metal and glass linear fixtures providing both direct and indirect light. All courtrooms integrate the latest audio-visual and digital technologies.

The exterior of the building is glass with sunscreens and other shading devices. The atrium has its own structural system with 100-foot steel columns and a trussed roof. The atrium floor is terrazzo.

There is modest parking on the site—264 spaces. Public and staff both enter through a single security checkpoint, and there is separate circulation systems for the public, judges and their staff, and prisoners.



**Location**

Central Phoenix, between Washington and Jefferson Streets and 4th and 6th Avenues.

**Size**

571,000 Gross Square Feet  
134 Feet High  
Six Stories plus Basement

**Time Frame**

Design Awarded: December 1994  
Construction Starts: September 1997  
Occupancy: Fall 2000

**Major Building Components**

U.S. Courts	174,000 Square Feet
Tenant Office Space	143,000 Square Feet
GSA/Joint Use	33,000 Square Feet
Occupiable Area	350,000 Square Feet

**Parking**

Interior	211 Spaces
Outside	53 Spaces
Total	264 Spaces

**Structure**

Reinforced Concrete Frame Building on Concrete Caissons

**Mechanical**

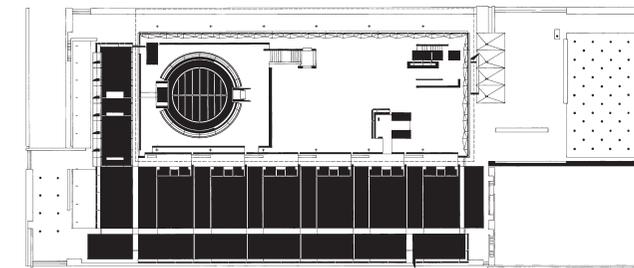
Variable Air Volume, Multi-Zone System with Three 600 Ton Chillers, Fan Coil Units and Cooling Towers

**Exterior Wall**

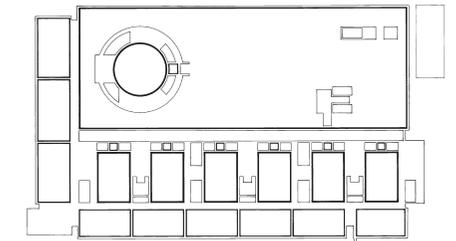
Glass and Aluminum Frame Curtain Wall Incorporating Laminated Glass, Frit Glass Panels, and Painted Steel Panels

**Interior Public Space Finishes**

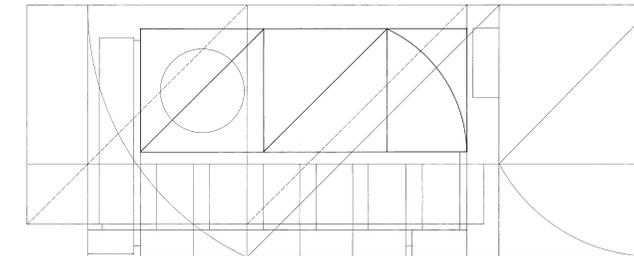
**Atrium:** Glass and Aluminum Curtain Wall, Steel Trusses with Louvers on the Skylight, Terrazzo Floors, Glass and Steel Handrails, Painted Wallboard  
**Corridors:** Glass and Steel Handrails, Painted Wallboard  
**Courtrooms:** Anigre Wood Paneling  
**Chambers:** Wood Shelving, Painted Wallboard



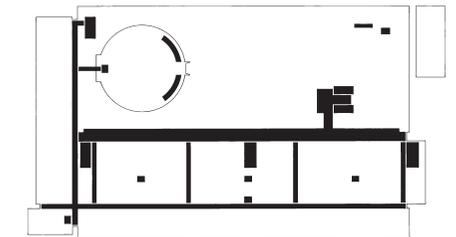
Figure/Ground



Program



Geometry



Circulation



#### PROFILE: SANDRA DAY O'CONNOR

Sandra Day O'Connor took her oath of office as the first woman Associate Justice of the United States Supreme Court on September 25, 1981. Born in El Paso, Texas, on March 26, 1930, her early years were spent on the family cattle ranch. She received her undergraduate and law degrees from Stanford University in 1950 and 1952 respectively. As a law student, she was honored with membership in the Order of the Coif and served on the Board of Editors of the Stanford Law Review. Justice O'Connor has held several legal, legislative, and judicial offices. She was Deputy County Attorney for San Mateo County, California, from 1952 to 1953. She was a civilian attorney for the U.S. Army in Frankfurt, Germany, from 1954 to 1957, and she was an Assistant Attorney General for the State of Arizona from 1965 to 1969. From 1969 through 1975, she was a State Senator, and in 1972, was the first woman in any state elected to be State Senate Majority Leader. She also served on the Legislative Council, on the Probate Code Commission, and on the Arizona Advisory Council on Intergovernmental Relations. In 1975 she was elected judge of the Maricopa County Superior Court in

Phoenix, Arizona. Governor Bruce Babbitt appointed her to the Arizona Court of Appeals in 1979, and in 1981, President Reagan nominated her to the Supreme Court. Civic activities include being a member of the National Board of the Smithsonian Associates, a member of the Board of Trustees of The Heard Museum, and member of the Board of Directors of the Arizona Academy. She has served on many state and local law-related commissions and committees. She is a member of the American Bar Association, the State Bar of Arizona, the State Bar of California, the National Association of Women Judges, and the Arizona Women Lawyer's Association.



**BIOGRAPHIES:  
THE ARCHITECT AND THE ARTISTS**

**Richard Meier** received his architectural training at Cornell University and established his own office in New York City in 1963. Since that time, his firm's practice has encompassed major civic commissions such as courthouses and city halls in the United States and Europe, museums, corporate headquarters, and housing and private residences. He has received the highest honors in the field including the Pritzker Prize for Architecture, the Gold Medals of the American Institute of Architects and the Royal Institute of British Architects as well as the Praemium Imperiale from the Japan Art Association. Among his most well-known projects are the acclaimed Getty Center in Los Angeles, the Church of the Year 2000 in Rome, the High Museum in Atlanta, the Barcelona Museum of Contemporary Art, the Frankfurt Museum for Decorative Arts, Canal+ Television Headquarters in Paris, and the City Hall and Central Library in The Hague. In addition to the Sandra Day O'Connor United States Courthouse in Phoenix, Arizona, Mr. Meier is also the architect of the United States Courthouse and Federal Building in Central Islip on Long Island, New York.

**James Carpenter Design Associates (JCDA)** is a collaborative studio that encourages the exchange of ideas and skills among artists, architects, engineers, and fabricators. Since winning a 1991 competition with a highly acclaimed design for a cable-stayed bridge for Wabasha Street in St. Paul, Minnesota, JCDA has focused on landscape and infrastructure projects. The studio has developed unique designs employing glass, steel, and aluminum for a variety of commissions that include curtain walls, floors, roofing systems, bridges, and sculptures. Fine detailing is a hallmark of this work. Thematically, there is an emphasis on the reflection and transmission of light, the physical forces of tension and compression, human perception, and the creation of pieces that heighten the experience of a particular site or context. The two key collaborators in the development of Lens Ceiling are James Carpenter, a sculptor with a strong interest in glass and material technologies, and Luke Lowings, a British architect whose JCDA projects include the curtain wall for Jazz@Lincoln Center in New York and the Plantation Place Galleria in London.

## THE DESIGN AND CONSTRUCTION TEAM

### Owner

U.S. General Services Administration  
Regional Office: San Francisco, CA

### Architects

Richard Meier & Partners  
New York, NY

Langdon Wilson Architecture  
Phoenix, AZ

### Construction Manager

O'Brien-Kreitzberg, Inc  
Los Angeles, CA

### General Contractor

Dick Corporation  
Large, PA

### Structural Engineers

Paragon  
Phoenix, AZ

### Electrical Engineers

Grommes-Meade Engineering  
Scottsdale, AZ

### Mechanical Engineers

Baltes Valentino  
Phoenix, AZ

### Civil Engineers

Wood Patel  
Phoenix, AZ

### Geotechnical

SHB AGRA, Inc  
Phoenix, AZ

### Lighting Consultant

Fisher Marantz Stone Partners  
New York, NY

### Vertical Transportation

Lerch Bates & Associates  
Littleton, CO

### Curtain Wall Design Consultant

R.A. Heintges  
New York, NY

### Acoustics, Audiovisual,

### Telecommunications

Shen Milsom Wilke  
New York, NY

### Atrium Cooling Design

Ove Arup & Partners  
New York, NY

### Energy Consultants

Energy Simulation Specialists  
Tempe, AZ

### Landscape

E Group  
Phoenix, AZ

### Security

Schatz Consulting Group  
Newport Beach, CA

### Fire and Life Safety

Rolf Jensen & Associates  
Yorba Linda, CA

### Signage/Graphics

Vignelli Associates  
New York, NY

### Cost Consultant

Construction Cost Consultants  
Phoenix, AZ

### Specifications

SASC, Inc  
Phoenix, AZ

### Architectural Concrete Consultant

Reg Hough  
New York, NY



**U.S. GENERAL SERVICES ADMINISTRATION  
AND THE DESIGN EXCELLENCE PROGRAM**

*Public buildings are part of a nation's legacy. They are symbolic of what Government is about, not just places where public business is conducted.*

The U.S. General Services Administration (GSA) is responsible for providing work environments and all the products and services necessary to make these environments healthy and productive for Federal employees and cost-effective for the American taxpayers. As builder for the Federal civilian Government and steward of many of our nation's most valued architectural treasures that house Federal employees, GSA is committed to preserving and adding to America's architectural and artistic legacy.

GSA established the Design Excellence Program in 1994 to change the course of public architecture in the Federal Government. Under this program, administered by the Office of the Chief Architect, GSA has engaged many of the finest architects, designers, engineers, and artists working in America today to design the future landmarks of our nation. Through collaborative partnerships, GSA is implementing the goals of the 1962 Guiding

Principles for Federal Architecture: (1) producing facilities that reflect the dignity, enterprise, vigor, and stability of the Federal Government, emphasizing designs that embody the finest contemporary architectural thought; (2) avoiding an official style; and (3) incorporating the work of living artists in public buildings. In this effort, each building is to be both an individual expression of design excellence and part of a larger body of work representing the best that America's designers and artists can leave to later generations.

To find the best, most creative talent, the Design Excellence Program has simplified the way GSA selects architects and engineers for construction and major renovation projects and opened up opportunities for emerging talent, small, small disadvantaged, and women-owned businesses. The Program recognizes and celebrates the creativity and diversity of the American people.

The Sandra Day O'Connor United States Courthouse in Phoenix, Arizona, was designed and constructed under the GSA Design Excellence Program.