PREFACE

"Research is intrinsic to our design process. Our design studios explore new ways to use imagination and knowledge to innovate and merge artistic beauty with technical excellence in all we create."

Continuous research into different building typologies gives us a deep understanding of the future of design. Combined with our technical expertise in computational design, building optimization and high performance design, this research provides the foundation for a dynamic design process. We engage our clients in a journey of discovery and together aspire for our work to enrich the lives of all who experience it.

This research supports our aspirations as designers and makes numerous forms. Teams apply focused research to support individual projects, always seeking to challenge the status quo. Explorations range from uncovering products and materials that make our buildings healthier to conceiving first-of-their-kind innovations, such as a new type of curtain wall or ceiling panels that enhance the aesthetics and functionality of a design. In the recent HOK Forward research report, our WorkPlace group examined the market forces and design trends reshaping the future of work.

To enhance our efforts to design for environmental sustainability and resiliency, we research and develop proprietary tools that supplement commercial building information modeling software. The HOK Sustainable Analysis Tool provides climate and site analysis and design strategies for maximizing a building's efficiency from construction through its life cycle.

Our new HOK STREAM parametric design tool allows us to blend architectural logic and poetry with engineering design optimization to create more imaginative, cost effective and sustainable solutions—and to do so exponentially faster than previously possible.

The 2018 Design Annual illustrates research across our robust practice areas—from concepts to completed works—that exemplify our process of design exploration, research and discovery.

At the Central and Wolfe Campus in Silicon Valley, we analyzed the impact of daylighting on building form. Each facade is carefully tuned to its solar orientation. Integrating the site and landscape into the composition promotes well-being.

In Midtown Manhattan, the 151 W 42nd Street lobby repositioning demonstrates how computational design can reinvigorate a building that contributed to the revitalization of a landmark building in Times Square. The sculptural ceiling design explores the use of geometry to enhance space through use of digital tools that aided fabrication and installation.

Our sports design studio is examining the impact of arenas and stadiums on the public realm. The Stadium of Tomorrow design exercise looks into the impact of flexibility, commercial viability and seating bowls on the fan experience and urban placemaking.

Through a partnership with Biomimicry 3.8’s biologists, our Genius of Place: California Coast design research project is helping us learn from the resilience and adaptability of nature and translate that understanding into new ideas for building facades, structures and landscapes.

Though research lies at the heart of our design process, it is not the singular component. Creativity, intuition, client input and a deep understanding of the art, craft and science of design all play important roles. Together these factors form the basis of HOK’s mission and raison d’être, summarized simply as:

“Serving humanity is at the core of what we believe. We embrace this responsibility through a positive culture based on the power of optimism, imagination and knowledge to innovate and merge artistic beauty with technical excellence in all we create.”

On behalf of HOK’s Design Board, I am honored to present the following projects from the past year that we believe best represent the thought, creativity, knowledge and research that go into everything we do.

Kenneth Drucker, FAIA
Design Board Chair
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The Central + Wolfe Campus was designed as a new kind of office park that focuses on the needs of employees by incorporating creative design, a wide range of amenities, open floor plates to encourage collaboration, green spaces and a high level of sustainability. The campus stands out from the cookie-cutter, tilt-up “boxes” that long have characterized Silicon Valley.

Beyond the box: The rounder, concrete-and-glass campus fits comfortably into its Northern California landscape. The complex has a sweeping facade with floor-to-ceiling glass that unites the three office wings to form a single, clover-shaped facility. Each of the three building “petals” has three floors of office space resting atop a floor that houses secure entry lobbies with cafes, coffee bars and other amenities and a two-story, naturally ventilated parking podium.

Open and collaborative: Large, elliptical floor plates promote the collaboration that is so vital to tech companies. Three 60-foot-wide occupied spaces link the interior workspaces across four floors, essentially creating a single, contiguous workplace. These walkable floor plates help break down psychological barriers to interaction and encourage chance encounters to promote innovation. Soaring, 13.5-foot ceilings are made possible by the post-tensioned, cast-in-place concrete structural system. Partitions are kept low and away from exterior walls, inviting daylight into the space.

Inspired by nature: A biophilic design approach encourages workers to connect to nature through many outdoor terraces, courtyards and green spaces. Occupants are never more than 40 feet from a large window through which they can soak up natural light and take in a variety of outdoor views of the native on-site landscaping, nearby trails of Santa Cruz Mountains in the distance.
Seamless sustainability: The campus has achieved LEED Platinum certification, distinguishing the development in the crowded office market. The buildings are designed to be net-zero energy ready. Instead of adding a separate solar shading system, the design extends the concrete floor slabs as protruding fins that act as built-in sunshades protecting the glass walls from direct solar heat gain and glare.

Oasis of urbanity: Creating an oasis of urbanity in the suburbs, the campus is designed with a full complement of amenities. Shaped like a quarter-circle, the amenities building features sweeping, full-story glass walls and upper-level clerestory windows that create the sensation of being on an open porch. A large, overhanging roof allows dining and gathering spaces to spill out onto an outdoor patio on the central quad.

Trading parking places for green spaces: Parking is accommodated on two levels under the office buildings as well as in a stand-alone garage on the campus. Fast-growing, flowering vines form a living wall fronting each of the three parking podiums. Though uncommon for the Valley, where most buildings are ringed by surface parking lots, this strategy preserved more than half the site as landscaped green spaces, open plazas, sport courts and trails.

Economical design and rational construction: Despite the high-end aesthetic and abundant amenities, the efficient design and construction process reduced core and shell construction costs compared to similar office buildings in Silicon Valley. Extensive parametric modeling studies enabled the team to design a glass curtain wall facade that appears to be curvilinear but is actually faceted, incorporating only a few different sizes of straight glass panels.
“The Central + Wolfe Campus redefines the traditional approach to development in Silicon Valley. We’ve created a new vocabulary for land economics, dispensing with the typical speculative format of low-rise buildings surrounded by parking that is ubiquitous throughout the Valley.”

- Paul Woolford, AIA, Design Principal
analytique of building systems and components
**Biomimicry Strategy: Buttercup**

1. Reflected intensity of a buttercup petal

2. Biomimicry concept sketch

3. Design application, multilayered light shelf tuned for circadian response

4. Design application, solar responsive floor plate + facade

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**Biophilic Environment**

Diffused, natural daylight

The multilayered petal of the buttercup gave rise to the concept of a multilayered light shelf, which at the Central + Wolfe Campus delivers daylight deep within the floor plate. The team applied interior/exterior light shelves to the facade at incremental depths and in areas that receive the most direct sunlight. The exterior portion of the light shelf acts as a shading device that prevents unwanted direct solar radiation while reducing glare and redirecting light into the space. The interior portion redirects incidental light upward, where it illuminates the ceiling and provides even daylighting across a large percentage of the floor plate.

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**Color + Light Redirection**

When held below a person’s chin, the California buttercup’s glossy yellow petals will reflect light and color onto the skin. The illumination is caused by light traversing the pigment-bearing epidermal layer twice: once to redirect light and another time to diffuse it. The structure of the dish-like dish, buttercups also track the sun and collect solar energy. A multilayered structure produces optimal lighting.

The outer epidermis of buttercup petals consists of three layers. The first is a semi-transparent pigment layer; the second is a thin gap of air; and the third is a thick white layer of starch. The yellow reflection of the flower is created when a path of light traverses the carotenoid-bearing epidermal layer twice. The air gap provides a second surface from which light is reflected, like a mirror. The starch layer acts like a broadband white scattering film and has a scattering property that is similar to uncoated white paper.

Fig. 1 shows the reflected intensity of a buttercup petal as compared with a rose petal and coated and uncoated paper.

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Fig. 1 shows the reflected intensity of a buttercup petal as compared with a rose petal and coated and uncoated paper.
Recent improvements to the Midtown Manhattan skyscraper, formerly known as the Condé Nast Building, have included upgrades to the building infrastructure, public areas, and amenity spaces. Key to this revitalization was the redesign of the building lobby spanning 43rd and 42nd Streets.

Designed in the mid-1990s, the existing lobby had warm-toned finishes, rounded edges and an arched profile ceiling finished in metal leaf. Oversized canopies adorned the sidewalks at both lobby entrances.

The minimalist design approach for the renovated lobby—a direct response to the visual chaos of Times Square—features simple materials with a dynamic, highly sculptural ceiling. A cascading diamond pattern with several layers of texture activates the ceiling and welcomes guests.

To create clear lines of sight into the lobby, the design replaced the dated exterior canopies with crisp, clean entry portals. Indian granite stone flooring with a flamed, honed finish extends from the lobby to the sidewalk, reiterating the building's connection to Times Square. Bamboo veneer panels on elevator core walls add warmth to the space.

A curved wall along the 42nd Street side of the lobby breaks up the uniformity of the rectangular floor plate and visually softens the space. The team used computational design tools to create the ceiling’s singular double-curved surface, which is made up of a diagrid system of curving Glass Fiber Reinforced Gypsum (GFRG) panels. Micro-design iterations within each panel add depth at key locations in the ceiling. Parametric design tools further enabled the team to seamlessly incorporate functional components (such as light fixtures and sprinkler systems) into the ceiling and streamline communication with the fabricator of the custom-made panels.
CLIENT: The Durst Organization

INFORMATION:
- 13,000 sq. ft. / 1,210 sq. m.
- annual EUI: 0.97 kBtu/sf/yr
- 6% below ASHRAE 2007

DESIGN PRINCIPAL: Kenneth Drucker, FAIA
SENIOR DESIGNER: Varun Kohli

CONCEPT:
1. Lobby axonometric
2. Lobby section

42nd Street main entrance
1. ground floor with panel distribution diagram

A. 43rd Street entrance
B. 42nd Street entrance
C. amenities passageway

2. Ceiling panel types

- Diagram showing various panel configurations and quantities.
- Color-coding indicates different panel types.
- Panel counts vary across the floor plan.
1. 43rd Street entrance
2. Ceiling section detail
3. Enlarged rcp

- Concrete slab
- Ceiling anchor
- Hanger rod
- Carrying channel
- Safety chain
- Light fixture
- Turnbuckle
- Hole embedded in GFRG panel
- GFRG ceiling panel
- Typ. light fixture positioning
- Typ. sprinkler positioning
- Panels attached for stability
- Carrying channel above ceiling
- Two connection points per panel

Typ. panel length: 2'-7 3/4"
1. original lobby design

2. ceiling panel installation

3. contoured MDF for panel mold

4. CNC fabrication process

5. casted panel from GFRG mold

6. view from exterior
“The lobby redesign took a minimalist approach to all spatial surfaces except one: the ceiling. The bounding walls and flooring provide a frame to hold a dynamic curved ceiling spanning the lobby from 42nd through 43rd Streets. The design team worked intelligently and diligently to solve for ceiling geometry and constructability. The process of computational design through digital fabrication felt seamless and exciting.”

- Varun Kohli, Senior Designer
Rather than starting over, sculptural reimagination preserves the urban fabric and history of our cities. It’s also often the most economical and sustainable response to a client’s challenges.

The design of 1771 N Street NW balances the reuse and reimagination of an existing structure to create a contemporary, trophy-class office building that respects the place in time while also responding to today’s commercial office market.

The existing building housed the headquarters for the National Association of Broadcasters in the historic Dupont Circle district. Originally designed in 1967 by Mills, Petticord & Mills and renovated in 1995 by Koubek Architects, the concave geometric mass is beautifully framed by an open forecourt that opens to a vista along Connecticut Avenue. This inspired the idea of cladding the southern and western parts of the building with a scalloped curtain wall that organically frames the previously solid corner and gives a new identity to this part of the neighborhood.

On the southwest facade, the unitized concave glass curtain wall generates the illusion of a sculptural ripple effect on a curved form. Engineered as self-supporting, the glass curtain wall system has no vertical mullions. It also offers free and unobstructed views from the interior to the open plaza and neighborhood. The concave-shaped glazing unit is self-shading, reducing glare and solar heat gain.

The new plaza design focuses on the creation of human-scale spaces, akin to “rooms in the garden” shaded by trees and enhanced by natural materials. The building’s ground floor opens out toward the plaza. New glazing is set back to reveal a row of columns that strengthen this sculptural composition.

Contemporary workplace needs—including access to natural light, flexible layout, and energy-efficient heating and cooling—prompted several significant building updates. Use of a variable refrigerant fluid HVAC system enables the creation of nine-foot ceilings in tenant space, allows for a smaller equipment footprint and offers significant energy savings. Attractive interior and outdoor gathering spaces on the penthouse level offer dramatic views of the city.
**CONCEPT**

1. existing building, view toward east from 18th Street

2. building concept

**PLAN**

3. proposed ground floor plan with plaza

- A. 18th Street NW
- B. N Street NW
- C. lobby
- D. tenant space
- E. public plaza

**INFORMATION**

- **CLIENT** - Stream Realty Partners
- **DESIGN PRINCIPAL** - Monika Kumor
- **INFORMATION** - 61,000 sq. ft. / 5,670 sq. m.
To restore and renew is the most sustainable and economical response to maintaining the integrity of our cities’ urban fabric. The unique attributes of the 1771 N Street site inspired the idea to reimagine the south and west parts of the building with a scalloped curtain wall that organically opens up the previously solid corner and offers a new identity to this part of the neighborhood.

- Monika Kumar, Design Principal
This proposed mid-rise office complex would link San Francisco’s financial center with the rapidly developing Mission Bay neighborhood. Located in the heart of the South of Market (SoMa) district, it includes a vibrant, economically diverse office hub with a separate 15,000-sq.-ft. affordable housing component.

The design takes inspiration from the intrinsic geometries of the local built and natural environments, including SoMa’s oval-shaped South Park, the undulating structure of an adjacent freeway and the free-flowing forms of nature. In contrast to the monolithic tower form of many downtown San Francisco office buildings, the elegant, sculpted volume reduces the apparent mass from the street through the sky plane and creates a cascading effect reminiscent of falling leaves.

Unique stacking arrangements and facade treatments visually break up the building’s mass while reflecting central SoMa’s urban character. The glazing, metal panels and reliefs arranged across individual façades all respond to solar orientations. The rhythmic expansion and contraction of these sections provides a pulsing visual identity for each part of the composition. To establish the feeling of an “urban room,” street-level building materials are deeper and denser than those at higher levels.

The team designed a high-performance building that will be a model for sustainable urban growth. Accessible streets, green roof and public spaces combine to create a welcoming community near the new Central Subway light rail extension, encouraging people who work or live here to use mass transit.

In response to San Francisco’s development requirements, the building provides lower level space that accommodates production, distribution and repair businesses. Two privately-owned public open spaces and retail spaces enhance the pedestrian experience.
CONCEPT

1. concept sketch
2. massing diagram

INFORMATION

CLIENT    Boston Properties, Inc.
DESIGN PRINCIPAL    Paul Woolford, AIA

894,170 sq. ft. / 83,070 sq. m.
1. parti diagram

2. inspirational geometries

subtraction

infrastructure

ecology

1

2

3

4

5

6

7

8
1. elevation
2. section

A. upper setback
B. street wall
C. urban wall
retail and public open space
Epiphytes refer to vegetation that lives on tree trunks and branches, such as ferns, mosses, lichens, liverworts and hornworts. This vegetation creates habitats for other organisms and promotes biodiversity.

Epiphytes aren’t rooted in soil and aren’t parasitic. They use trees for structural support, typically appearing on rough bark that has more niches for them to grow on. They are often found on redwood and oak trees.

Filamentous hairs called rhizoids allow epiphytes to grow on tree trunks and branches. Rhizoids serve the function of a root, anchoring the plant and conducting water.

Epiphytes obtain moisture and nutrients from the air, rain and debris that accumulate around them. They collect and store nutrients like nitrogen and phosphorus in their organic matter. Moss and lichen mats desiccate when the air is dry and absorb moisture during wet periods.

The survival of an epiphyte depends on the amount of moisture available in its habitat.

Epiphytes live together in colonies, forming mats of material that collect moisture from tree niches and cavities. These colonies support each other by intertwining their roots around the tree and one another. The interaction between these organisms is mutually beneficial. Epiphyte communities give back to the trees by using their thick, mat-like forms to shade branches, cool the temperature and decrease evaporation.

Designers can apply this symbiotic relationship to building structures by creating green roofs, walls and panels. With the ability to support hundreds of pounds of material, a building can serve as a natural habitat for dense mats of vegetation across its facade. The vegetation collects moisture and particles from the air, slows and captures rainwater and filters pollutants. It also provides shade and protection from the wind.
The building volumes and forms of the Fourth and Harrison campus were inspired by three intrinsic geometries: the geometry of subtraction in the simple elliptical open space of nearby South Park; the geometry of infrastructure found within the curvaceous, muscular forms of the adjacent elevated skyway; and the geometry of ecology inspired by the original rolling dunes and oak woodlands of the San Francisco Peninsula.”

- Paul Woolford, AIA, Design Principal
Hangzhou, Zhejiang, China

The landscape and culture of the city of Hangzhou focus on its connection to water, from the beauty of its scenic West Lake to a natural phenomenon called the tidal bore when large waves rush down the Qiantang River in response to a once-a-year alignment of the sun, earth and moon.

The plan for Hangzhou Wubao Mixed-Use Center pays homage to the city’s strong ties to nature and water while creating a vibrant lifestyle development for this fast-growing metropolis and home to e-commerce giant Alibaba.

The focal point of the development is a low-rise convention center inspired by the undulating rhythm of the tidal bore. From its peak, the convention center’s roof bends to draw natural light into the exhibit space and cascades downward to provide views and opportunities for recreation along the water. A sky bridge and basement ballroom connect the convention center to a 380-key hotel positioned perpendicular to the water’s edge, providing dramatic waterfront views.

Over 1.8 million square feet of above-grade office space and more than half a million square feet of ground-level and below-grade retail and dining space come together to establish Hangzhou Mixed-Use Center as a 24/7 destination. Individual towers, coworking spaces, amenity bridges and meeting terraces offer a variety of indoor and outdoor work environments. Bridges and sunken plazas connect workspaces on upper floors to the retail shops below.

A retail canal walk within the commercial corridor connects the development community between multiple towers and opens up views of the waterfront park and piers. In the evening, the waterfront retail street remains active with shoppers and visitors from nearby residential neighborhoods.
CLIENT  Hangzhou CBD Investment Group Co., Ltd

DESIGN PRINCIPAL  Jeff Kaeonil, AIA

INFORMATION

3.3 million sq. ft / 309,325 sq. m

CONCEPT

1. The conference center rises out of Qianting River, referencing the stroke of the tidal bore along the horizon

2. The roof is lifted to create views toward the river

3. The roof bends from its crest to draw natural light into the exhibit space
The site has the potential to reconnect the city with the Qiantang River.

A realignment of the existing canal marks this section of the main street as a major destination along the lengthy canal. Water bodies positioned on both sides of the road turn the approach to the complex into a virtual causeway.

Vistas and views are opened up with pedestrian plazas that visually connect the city to the Qiantang River.

As the heart of the project, the convention center gently lifts the landscape and provides expansive views of the Qiantang River. This urban gesture of open space extends past the waterfront edge for public recreation and activity and signifies a new port entry.

Centered around the international conference center and subway station is a low-rise complex of hotels, shops and offices. This establishes a collaborative, sustainable lifestyle that includes a transit hub, canal retail shops and shared workspace.

The crossing of the “causeway” is transformed to a threshold or moment. This creates a sense of arrival rather than a solitary purpose of crossing. The causeway no longer separates but connects. Upon crossing Wubao, visitors experience new vistas and connections in the landscape that contrast the city grid and integrate the function of “convention” as a moment connecting nature and the city.

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1. view from VIP conference rooms overlooking the roof + Qiantang River

2. view from breakout spaces of conference center through glass atrium
“This project was more than an opportunity to design a world-class destination for the city of Hangzhou. It was also a way to tell the story of the city—its history and values—through landscapes. It reminds us of those painterly Chinese landscapes where depth and tone perceptions shift in soft and subtle ways. With water comes reflection, the morning fog and a variety of landscapes that float on or drape its surface.”

Jeff Kaeonil, AIA, Design Principal
This master plan for a mixed-use, waterfront destination addresses Chicago’s growing need for affordable, market-rate rental housing.

Located on an abandoned brownfield site on the city’s South Side, the development will be a vibrant middle-income neighborhood that, for the first time in more than 130 years, reconnects existing neighborhoods to Lake Michigan.

The site, which formerly housed a steel factory, is positioned between a historic industrial district and several new innovation and research centers. Remnants of the site’s steel factory will become catalysts for industrial-inspired parks, recreation facilities and a museum.

The plan opens up the lakefront and extends the southern boundaries of Jackson Park, site of the 1893 Chicago World’s Fair. It also continues the community’s positive momentum generated by the planned Barack Obama Presidential Center and a proposed Tiger Woods-designed golf course.

The addition of an on-site Metra commuter rail station offers convenient access to the economic and cultural resources of Chicago and the region. Plans also call for introducing new water taxi services with connections to downtown and other key areas along the lakefront.

As a pedestrian and bike friendly development, the community will promote a mobile lifestyle, with houses lined near employers, shops, schools and key services.

To reduce housing costs and contribute to the neighborhood’s affordability, the development will be built using standardized manufacturing and industrialized construction processes.
“As we progressively work to reposition our cities’ industrial pasts and unlock transformational opportunities, it is important to look both to the future and the past for reference and inspiration. We need to provide new economic and community opportunities while embracing and enhancing the communities that have historically shaped the culture and history of our neighborhoods.”

- Domenic Salpietra, AIA, Design Principal
SITE STRATEGY

1. connecting streets + open space to the waterfront
2. building districts + neighborhoods
3. incorporating existing infrastructure
4. opening views to the lake
5. enhancing views
6. aligning with existing constraints
7. overall framework plan
8. adapted to Chicago context
1. typical block typology study

SITE STRATEGY

1. typical block typology study

2. axonometric of block typology

3. site plan with block typology

A. typical block
B. gardens
C. surface parking via alley
D. service alley
E. bhs 4 floors
F. bhs 4 floors
G. parking 3 floors
H. retail frontage

TYPICAL BLOCK TYPOLOGY

137,239 SQ.FT.
200 RESIDENTIAL UNITS
260 PARKING SPOTS @ 30 SQ.FT/SPOT
220 PARKING SPOTS @ 40 SQ.FT/SPOT

1. roof garden
2. retail + 3-floor parking + bhs 4 floors
   14 units/floor (4 floors) = 64 units / 15 parking / floor (3-floor - 114)
3. bhs 4 floors
   19 units/floor (4 floors = 80 units)
4. surface parking via alley (38 spaces)
5. bhs 4 floors
   19 units/floor (4 floors - 80 units)
6. retail + 3-floor parking + bhs 4 floors
   11 units/floor (4 floors) = 60 units / 15 parking / floor (3-floor - 114)
7. roof garden
The design of Block 58, a competition concept for a new office building in a Texas city’s central business district, began with an effort to imagine the workplace of the future. This included rethinking two quintessential components of the Texas speculative office typology: the parking podium and the repetitive floor plate.

Instead of the standard design that places a rectangular form above a parking podium with the same floor plate on each story, this building design features a variety of floor plates with different sizes and configurations—from center cores to side cores—and ceiling heights that vary based on their location in the 60-story tower. As the floor plates change, step-back roofs create several large outdoor terraces that serve as outdoor extensions of office areas accessible to all tenants.

This configuration gives the building flexibility to accommodate increasingly diverse office occupancy requirements, including conventional center-core office patterns; the open, high-density models favored by tech-focused startups; and the need for smaller plate sizes for boutique tenants. All plate types offer horizontal connectivity to the outdoors at each floor. A series of three-story atriums on the building’s narrow ends provide vertical connectivity. These atriums, along with the large outdoor terraces, also create access to daylight and nature.

An attached partial podium removes parking from the main building core, creating an adjacent garage structure with an efficient layout unobscured by high-rise columns. This strategy provides office space along the entire height of the tower’s major frontage. Compared to a conventional model, where parking floors would visually separate the lobby from office floors, this generates more street-level activity.

The activation of the urban realm is reinforced at street level, where the design replaces a formal lobby with retail spaces flanking a large market-style entry area for visitors and office inhabitants.
INFORMATION

CLIENT Confidential

DESIGN PRINCIPAL Roger Soto, AIA

1.1 million sq. ft. / 102,195 sq. m

60 stories

PROGRAM

1. program diagram

- office
- cultural
- gardens
- amenity / office
- retail
- parking

2. project amenities diagram

A. community room
B. tenant town center
C. fitness
D. conference
E. marketplace
F. sky terrace
G. workplace atrium
H. theater
I. city garden
J. retail
1. High-rise plan
2. Mid-high plan
3. Low-rise plan

A. Office space
B. Lobby
C. Exterior terrace
D. Support space

4. Study models
This project attempts to challenge and reenergize the workplace by combining the amenities found in a downtown block with an office program to produce a building that is equal parts vertical campus and office building.”

– Roger Soto, AIA, Design Principal
This conceptual master plan creates an upscale residential, resort and tourist development along the pristine coastline of Muscat, Oman’s capital city. Inspired by the success of the French and Italian Rivieras, the sultanate’s own riviera-style destination will rise among the region’s stunning beaches, marinas, plateaus and canyons.

Located in the southern end of the capital region, the iconic Omani Riviera stretches across two adjacent sites in Yiti and Yenkit.

The team created the master plan to highlight each site’s distinct characteristics and unique identities while forming an integrated community that respects Oman’s rich heritage.

As with marina towns such as Cannes in the French Riviera, Yiti is a more formal urban hub. As the more residentially focused township, Yenkit’s urban patterns resemble those of traditional Omani developments. The plan also identifies several smaller urban nodes for development.

Paying tribute to and preserving the beautiful landscape, the plan’s footprint follows the pattern of the land and occupies only sites suitable for building. It includes several resorts; a residential community with villas, townhouses and apartments; retail, dining and cultural facilities; and office space.

To help create a livable, sustainable and cost-effective development, the master plan optimizes the design of the utilities and transportation systems.

The plan will guide future urban growth in this area as an extension of greater Muscat.
INFORMATION

CLIENT   Oman Investment Fund
DESIGN PRINCIPAL    Anne Hutton

123.2 million sq. ft. / 11.4 million sq. m.

CONCEPT

1. courtyard study
2. local road study
3. town center study
4. site plan
1. existing conditions

SITE ANALYSIS

- steep slopes
- flood risk area
- minimal topsoil
- cemetery
- difficult to access

- site boundary

- high value
- areas of up to 18% slope
- canyon access
- canyon access possibility
- areas of up to 18% slope
- access
- marina
- reclaimed land
- existing village
- integrate existing village
- public beach
- land ready for development
- existing access
- existing access

2. design drivers
Y enkit - east of canyon
Y enkit - park
Y enkit - resorts
Y enkit - town
Y enkit - western hub
Yiti - hills
Yiti - marina town
Yiti - resort side
Yiti - views

SYSTEM DIAGRAMS

1. land use diagram

2. character areas

community facilities
culture
entertainment
landscape
mixed use
promenade/canyon walk
residential
resort
retail

indent
resort off site
Yenkit: canyon
Yenkit: east of canyon
Yenkit: park
Yenkit: resorts
Yenkit: town
Yenkit: western hub
Yiti: HIls
Yiti: marina town
Yiti: resort side
Yiti: views
“The dramatic mountains and vast Gulf of Oman set the scene for a new mixed-use residential and resort community. The natural beauty and rawness of the nearly 12-million-square-meter site drove the design of the master plan, taking advantage of views toward the water and letting the topography guide the shape of the residential areas and resort enclaves.”

- Anne Hutton, Design Principal
1. Open Space

- Community facilities
- Cultural plaza
- Waterfront
- Retail plaza
- Community park
- Agricultural
- Central park resort
- Eco/Wadi Park
- Beach

2. Residential + Mixed Use Distribution

- Villas
- Townhouses
- Apartments
- Mixed-use apartments

Legend:
- Yellow: Mixed use
- Orange: Residential
With this new headquarters situated on a heavily forested, 23-acre site, the design team’s challenge was to create a high-performance workplace within a building that would both complement and preserve the site’s locale.

Working with the land’s rolling topography, the team positioned the building as a “bridge” connecting the surrounding hills with a pond at the base of the natural watershed. To accommodate the large parking requirement while maximizing the visual impact, the design recesses the three-story garage structure into a hill.

Taking advantage of Michigan’s fall and winter sunlight, the interior revolves around a three-story atrium along the south side of the building. This naturally lit space serves as the heart of the office culture, encouraging transparency and connectivity. A series of stairs in the atrium links the building’s three floors and culminates in a large ceremonial stair that doubles as an informal auditorium and gathering space for company “town halls.”

Formal landscaped gathering spaces under and around the building reinforce the site design’s minimalistic approach and use the shelter of the building as protection from harsh weather. Visitors can enter along a meandering path through the forest to access the building from the east, creating a moment of discovery upon arrival.

The material palette of brick, metal, glass and concrete lends a simplicity to the composition. The southern facade is a minimal glass curtain wall that maximizes views and light and reinforces the forest’s verticality. The north brick facade builds on the regional vernacular and makes use of the heavier material to protect Consumers’ employees and members from the northwest winter winds.

Window boxes protruding from the north side provide a unique viewing experience and enhance the building’s dynamic pattern of form and reflections.
INFORMATION

CLIENT  Consumers Credit Union

DESIGN PRINCIPAL  Peter Ruggiero, AIA

90,000 sq. ft. / 8,360 sq. m.

annual EUI: 63 kBtu/sf/yr
41.6% below ASHRAE 2007

CONCEPT

1. process models
2. site plan
PLANS

1. level 2
   A. atrium
   B. work stations
   C. visitor entry
   D. executive offices
   E. conference rooms
   F. gym/locker rooms
   G. cafe/dining
   H. training room
   I. outdoor terrace

2. level 1
3. level 0

4. program concept

CEO group: executive leadership
CFO group: accounting, audit, risk management, compliance, collections, investment services
CHRO / CHMO: HR, training, marketing
CIO: IT, operations, digital strategy, loan servicing, card services, help desk

CEO group: member service center, retail, sales, business development
CLO group: lending, mortgage, consumer lending, business services, investment services
CSO group: member service center, retail, sales, business development

2019 shell space
Community room, food + drink, exercise
Entry, flexible meeting space
1. workplace with view of atrium
2. lobby
3. café
4. atrium with monumental stair
1. exterior stair + south facade detail
2. south facade detail
3. view from balcony
1. north elevation facade detail
2. wall detail
3. 4' window detail
4. 8' window detail
The Consumers Credit Union Headquarters is an exploration of a new manner of sustainable thinking: How do we craft a building to have the smallest footprint on site? Inspired by our client’s desire to rethink how they work, the design for the new headquarters is a thoughtful composite array of strategies for workplace, environmental stewardship and corporate messaging.

-Peter Ruggiero, AIA, Design Principal
CORPORATE  view from street at night reveals building’s internal operations  KOREAN BROADCASTING SYSTEM DESIGN COMPETITION

Founded in 1927, the Korean Broadcasting System (KBS) plays a vital role in South Korean culture as the country’s national broadcaster and the operator of numerous television and radio stations. In response to an international design competition, the team proposed a landmark building that celebrates KBS’s history and future and revitalizes the organization’s mid-1970s central Seoul campus.

The design of the broadcasting center knits together the campus with a building that draws inspiration from the wooden puzzle boxes popular in Asian cultures. The simple massing allows for a network of complex interior spaces including a newsroom, multiple broadcasting studios and an entertainment hall devoted to K-pop—the musical genre that KBS has helped popularize throughout the world.

This proposal promotes continued innovation in broadcasting by providing interior and exterior spaces that foster creativity and stimulate impromptu collaboration. Key to that is the “yellow box,” a central gathering space that spans the length and height of the building and links the sunken entrance plaza to rooftop gardens that offer panoramic views of Seoul.

A translucent building shell reiterates KBS’s commitment to transparency and creates giant screens for displaying the broadcaster’s latest productions to the public. Vertical louvers wrapping the building play a dual role in providing shade and reinforcing the company’s connection to broadcasting by mimicking the vertical breaks found between stills of celluloid film.

The building’s glazing and internal volumes enable the structure to completely transform at night, when it becomes both a showcase for broadcasting and a dynamic symbol celebrating the future of KBS.
DESIGN PRINCIPAL   Larry Malcic, AIA
DESIGN TEAM LEADER   Chris Yoon, RIBA

CLIENT   Korean Broadcasting System

INFORMATION
710,420 sq. ft. / 66,000 sq. m.

CONCEPT
1. concept sketches
1. level 6
2. newsroom

A. gallery spaces
B. newsroom
C. studios
D. automated studio
1. Section showing building floating over public plaza + transportation hub

2. Public space under the building

3. Social plaza zone
"Broadcasting is entering its third renaissance as news and entertainment come from many sources. Our concept is a network of varied broadcasting spaces linking the internet to traditional broadcast news by creating a social core with a variety of places for teams to collaborate. The building becomes both scenery and a stage set for diverse broadcasting opportunities."

- Larry Malcic, AIA, Design Principal
Philadelphia, Pennsylvania, USA

Nasdaq’s new office and trading floor reflect its role as a fintech leader and improve its ability to attract the best talent from Philadelphia’s vibrant university and tech communities. The workplace embraces the rich history of the Philadelphia Stock Exchange (PHLX), which was founded in 1790 and acquired by Nasdaq in 2008.

Spanning three floors of the FMC Tower in the University City district, the LEED Platinum office houses Nasdaq’s technology operations, traders and brokers—relocating them from a workspace in a windowless basement to a daylit, state-of-the-art trading floor.

The open plan features spaces that fuel creativity and encourage interaction. A variety of seating types and configurations support a wide range of work styles, with flexibility for different uses and growth. Meeting rooms promote teamwork and enclosed booths accommodate private conversations.

Juxtaposing sleek architectural elements with industrial finishes, the hospitality-infused design is unique for the fintech industry. Visitors are greeted at a custom concrete and wood reception desk with a backlit logo positioned in front of panoramic city views. Reclaimed walnut floors and ceilings combine with blackened steel accents to create a modern industrial aesthetic that serves as a counterpoint to the tech-driven business.

The Merchants’ Coffee House, a central café and lounge, pays tribute to the PHLX’s 18th-century origins. Nasdaq’s people can access the contemporary café through a three-story staircase that runs along the eastern window line. The feature stair is linked by a colorful, abstract topographic mural by a local artist.

Adjacent to the main reception area, the trading floor is organized radially around its trading stations. Colorful, elliptical millwork visually connects the traders. A white baffle system establishes the ceiling plane, while a circular void organizes the seating group below.

The design of the network operations center and customer data center transforms these traditionally back-of-house spaces into showcases for new technology. Framed views into these areas, combined with curated murals abstracted from traditional elements, reinforce Nasdaq’s forward-thinking brand grounded in local history.
"Designed with clean, modern lines juxtaposed against reclaimed materials, the environment celebrates Nasdaq’s rich local history and position as a fintech leader. As the heart of the workplace, the social hub is activated by a three-story monumental stair that provides panoramic views across the city while allowing natural light to fill the space."

- Kai Olsen, Design Principal
1. reception desk
2. interconnecting stair
OpenText’s Bay Area office is more than just a place for its employees to shape the digital future of business information. It is a space intended to promote employee well-being and facilitate social interactions and the unfolding of ideas. Team members collaborated with the software company’s leaders to incorporate employee input and OpenText’s values of creativity, performance and hospitality. Design strategies throughout the two-story office include:

Open offices linked by collaborative spaces: An open floor plan features two main avenues for foot traffic that connect to a central nexus anchored by a sweeping staircase. This design encourages employees to move and interact freely and provides a gathering space for celebrations and events. Meeting rooms and scattered seating areas give employees and clients spaces to connect. Smaller work spaces along the avenues provide private, quiet environments for independent work.

Stunning views and California sunlight: With high ceilings and floor-to-ceiling windows, the office provides beautiful views and natural light.

Wellness features: Smart lighting and temperature controls automatically adjust for maximum comfort. Careful acoustic planning ensures that carpets and ceilings absorb sound and open areas are strategically located away from workstations. Treadmill desks, hydration stations, a game room, recharge pods and premium food facilities help employees feel healthy, active and happy.

Sustainability: The office features sustainable, low-emitting materials and finishes and is located within the HOK-designed Bay Meadows Village, a transit-oriented mixed-use development. The building is targeting LEED Gold certification.

Details that tell stories: Unique details—such as a world map made of keyboard keys and metal panels with laser-cut text of the first snippet of code OpenText created—show technology’s unexpected artistry. Angular design elements pay homage to the company’s hexagonal logo.
"This office establishes OpenText as a sophisticated global technology company in Silicon Valley. A team of hospitality and workplace designers created storytelling features that make this facility unique for OpenText. The workplace design prioritizes well-being and enhances productivity by maximizing natural light and views and by providing the right balance of private and collaborative work settings. Collaboration avenues lead to a central great room, the nexus, where employees gather to socialize, gain respite or enjoy an event. This new office will enhance employee attraction and retention. We hope it serves OpenText well for many years to come."

- Daniel Herriott, IIDA, Design Principal
2. communication stair connecting client space + café

1. stair detail
Chicago, Illinois, USA

The design for Polsinelli Chicago’s law office in the recently completed 150 North Riverside tower honors the architectural heritage of the city’s iconic skyscrapers. Housing 100 attorneys on three floors, the new space incorporates Polsinelli’s national workplace design standards while supporting the highly collaborative, non-hierarchical culture of its Chicago practice.

The office has three hospitality zones: a coffee bar, lounge and work café. These open gathering spaces connect with additional office amenities, encouraging attorneys from different practice areas to get together and socialize.

In the lobby, a series of window boxes offer spectacular views of the Chicago River, Lake Michigan and the city. Pulling all conference rooms to the interior helps simplify these views. It also creates an efficient, powerful lobby sequence with a compelling circulation corridor. This visually connects staff and visitors to the skyline.

Black metals, subtle lighting and simple geometric forms reference the grids, textures and patterns of Chicago’s skyscrapers. Custom carpeting and bold graphics have an abstract, orthogonal pattern that relates to these grids. Inspired by Mies van der Rohe’s legendary designs in Chicago, a distinctive black travertine feature wall is left as raw as possible.

The team selected the wood used throughout the office for its ability to subtly mimic the veining of marble slabs found in many lobbies of the city’s high-rises.

Since 2010, HOK has partnered with Polsinelli, one of the nation’s fastest-growing law firms, to establish workplace design standards and create a consistent brand experience across more than 30 U.S. offices. By visually communicating Polsinelli’s brand and culture, these offices become valuable tools for recruiting, marketing and community engagement.
Polsinelli’s office embraces remarkable views of the city and elegantly combines the law firm’s brand and Miesian-inspired details authentic to Chicago.”

- Peter Sloan, AIA, Design Principal
1. Level 31 features a hospitality lounge, fostering informal client meeting spaces + social space.

2. Large stainless steel family table at the center of the hospitality lounge.
Tyson Foods’ new office space balances the company’s storied past and promising future in northwest Arkansas with the efforts of Springdale Alliance to revitalize a historic downtown.

The renovation and addition to Tyson Foods’ original 1940s headquarters and electric hatchery brings to downtown Springdale an innovative new workspace for up to 400 information technology employees while paying homage to the place where the family-owned business got its start.

Capturing the void between the two buildings in a light-filled central lobby creates an experience that showcases the original brick facades and provides employees and guests with a place to collaborate and celebrate. This space, often buzzing with people, is visible from the street edge continuing all the way through the site.

Wood reclaimed from the original headquarters and hatchery buildings is used throughout the interior. Pairing this lumber with the sleek building forms accentuates the link between history and innovation.

The building, which is near the Razorback Greenway trail system, encourages employees to walk or ride to work. A garden on the west side of the facility has shuffleboard, bocce ball and a fire pit. This increases activity along the street, helping to create a vibrant neighborhood.

Tyson Foods has partnered with HOK on several projects in the area over the past decade.
“This project shows the power of thoughtful design when paired with a visionary client. Though there were a thousand technical reasons to tear down these two old buildings, keeping them—the structures where Tyson started—was the catalyst for the team to conceive of this incredible project.”

- Eli Hoisington, AIA, Design Principal
1. view of double-height atrium space

2. level 1

2. level 2

A. entry lobby
B. open stair
C. open collaboration space
D. gallery
E. open office
F. break room

existing building
1. open collaboration space + conference rooms

2. open collaboration space

3. waiting space at entry

4. open collaboration space + stairs
Designed to celebrate America’s values and strengthen the relationship between Russia and the U.S., the embassy’s Moscow annex is one of the first projects built under the State Department’s Design Excellence program. Among the initiative’s guiding principles: “Buildings are to be welcoming, while representing dignity, stability, innovation, humanity and openness.”

The design of the embassy annex accomplishes these goals in several ways:

**Beacon of diplomacy**: The seven story addition adds a contemporary landmark to Moscow’s skyline while remaining in strict security and technical criteria. It includes a new consular section, an open-plan workplace with 300 desks for State Department and federal agency employees, and public diplomacy spaces including two floors of staff apartments and an auditorium.

**Expression of U.S. values**: The new annex provides opportunities for relationship-building between the two nations by hosting consular functions, conferences and public events. While complementing the character of the existing chancery and respecting Moscow’s culture and environment, the design introduces materials that distinguish the building. Dynamic streetscapes, gardens and open public space are physical manifestations of this relationship.

**Common goal of sustainability**: The design integrates State Department goals for sustainable design and construction. A clear solar orientation and high performance south facing facade, which has sun shading devices and light shelves, express a commitment to energy efficiency and sustainability; goals that Russians and Americans can share.

**Transparency**: The annex continues HOK’s Moscow design work for the State Department. The firm’s first project on the embassy compound was to redesign the adjacent chancery office building. The design concept for that project, which opened in 2000, broke apart the inward-facing, solid cube layout of the previous chancery and replaced it with a glazed structure that opens toward the Russian White House.
CLIENT: U.S. Department of State, Overseas Buildings Operations

DESIGN PRINCIPAL: Roger Schwabacher, AIA

242,000 sq. ft. / 22,480 sq. m.

annual EUI: 157 kBtu/sf/yr
18.7% below ASHRAE 2007

INFORMATION

CONCEPT
1. concept sketch
2. north elevation
3. entry plaza with view to Russian parliament
PLANS

1. urban context
2. site plan
   A. existing chancery
   B. new office annex
   C. Russian Parliament
   D. Moscow River
   E. consular plaza + canopy
   F. compound access control
   G. consular garden
   H. residential entry
   I. business entry
   J. consular entry
1. north + east facades

2. facade detail

3. south facade + consular garden
The design incorporates major public diplomacy spaces into the plans and dynamic streetscapes that connect the project to its community.

- Roger Schwabacher, AIA, Design Principal
The team designed New York-Presbyterian’s new ambulatory care center in Manhattan to serve as a comforting and positive environment within the urban landscape. The filter for each design decision was to minimize stress and improve the patient experience. The building also needed to be flexible to adapt to future changes in technology and patient care.

Home to a wide range of ambulatory care services, the facility includes outpatient surgery, endoscopy, interventional radiology, diagnostic imaging, radiation oncology, infusion and digestive disease treatments.

With its glass-encapsulated wood screen facade and transparent lower floors, the building presents a warm, hospitable face to the community. At the street-level entrance, canopies and a private drive-through welcome guests.

A 40-foot-high, daylit main lobby offers patients and their families respite from the congested city. The light-filled interiors continue up through each floor’s sky lobby and primary circulation areas. Within the main lobby, a dramatic staircase invites guests up to a second-story, living room-like space with quiet zones, lounges and dining areas.

Use of natural stone materials and wood for interior touchpoints in the lobby creates a timeless design aesthetic that continues throughout the building. The wood complements the wooden micro slats that filter sunlight through the energy-efficient windows.

Even with the sophisticated medical equipment, clinical floors have a warm, welcoming feeling. Natural light and views to the outside help patients understand where they are and how to move through the space.

Locating infusion and radiation oncology services on the light-filled 4th floor transforms the patient experience. Instead of going down to a basement treatment area, the patient ascends onto a floor with access to daylight and city views. Private rooms and community spaces have a hotel-like feeling that helps patients feel comfortable.
To adapt to its future needs, the design incorporates a long-span structural system and tall floor-to-floor heights. Columns are placed to provide the most open, flexible space. Each clinical procedure floor has a standard layout and rooms. Removable exterior panels on the building facade will enable NewYork-Presbyterian to move new medical equipment into the building as it becomes available.

The team designed the NewYork-Presbyterian David H. Koch Center for a minimum of LEED Silver certification. Sustainable strategies include a green roof, high-performance building skin and high-efficiency mechanical systems. The distinctive facade, which consists of triple-pane insulated glazing with an encapsulated wood screen, significantly reduces solar glare, building heat gain, and the need for additional solar or privacy shading. Compared to standard triple-pane glazing, the system with encapsulated wood slats required 48 percent fewer electric shades. The resilient design enables the building to continue operating during an extreme weather event or disruption to the city’s power grid.

The collaborative design team included HOK as architect, Ballinger as medical architect and Pei Cobb Freed & Partners as consulting architect for the building envelope and lobby.

“Generous space in New York City is unexpected. The design of the NewYork-Presbyterian David H. Koch Center demonstrates a commitment to people and an emphasis on care and well-being. Clear planning and materiality support a calming, less stressful human experience.”

- Christine Vandover, IIDA, Design Principal
1. York Avenue entrance

2. Drive aisle serves as a calming vehicular drop-off + entrance point away from busy streets
1. Quiet lounge

2. Casual dining area

3. Sky lobby view to seating

4. Infusion area shared space
2. typical OR corridor with access to natural light + views
3. infusion semi-private room
4. MRI room
The design of Atlantis Ko Olina subtly immerses visitors in the vibrant culture of Hawaii’s Oahu Island. The resort hotel and waterpark features a contemporary design that echoes that of the new Atlantis Sanya Resort in South China, which HOK also designed, and continues the company’s rebranding.

The site plan recalls the culturally significant shape of a traditional Polynesian fish hook, which communicates strength, integrity and a connection to nature. Derived from the Hawaiian surfer’s dream of the “big wave,” a dramatic massing of the 14-story structure is created by separating the two primary wings and connecting them with a multistory bridge that recalls classic Atlantis resorts in Dubai and the Bahamas. The two flying piers, including the main lobby rotunda, resemble an exposed rock face against which a wave is formed.

The guestroom tower is capped by an undulating roof monitor that reinforces the wave metaphor. Curvilinear balconies continue the sine curve rhythm, emphasizing the design’s fluidity. A signature Atlantis Bridge Suite penthouse at the crest of the wave modernizes the brand’s classic aesthetic. The curved exterior expression is achieved through the design of the building skin and balconies, allowing for the stacking of the corridors and structure without minor setbacks.

To take advantage of the moderate Hawaiian climate, the entire site functions as a continuous space blending the indoors and outdoors. The design orients the arrival porte cochere and lobby reception to frame the setting sun and offer ocean views. An interior-exterior lobby wraps the outer edge of the podium to take full advantage of views while linking to a retail street and the Atlantis aquarium.

The two towers have flanking cores with a shared podium housing more than 200,000 square feet of retail, restaurant and conference space. Integrated within the site concept is the development of the Atlantis “Lost Chambers” and water park. This branded entertainment venue is designed as a rainforest ravine linking the arrival boulevard to the hotel.
HAWAIIAN VOLCANO

SHAPED BY THE VIOLENCE OF THE VOLCANO AND THE TURBULENCE OF THE SEA, HAWAII RISES FROM THE OCEAN FLOOR – A LAND OF ROCK AND WAVES

PELE - VOLCANO GODDESS

KANALOA - SEA GOD

KAMOHOALI'LI - SHARK GOD

LEGEND OF THE GODS

HAWAIIAN CULTURE

INFORMATION

CLIENT Oceanwide Resort Paradise HI LLC

DESIGN PRINCIPAL Gregory Cranford, AIA

2 million sq. ft. / 185,805 sq. m.

1,400 hotel guestrooms

CONCEPT

1. cultural inspiration

2. model view
1. Initial massing
2. Opened up for more ocean views
3. Bridged together to create Atlantis icon
4. Conceptual flow diagram

A. Water park entrance
B. Water park drop-off
C. Water park theater
D. Ticketing plaza
E. The Avenues
F. Atlantis aquarium
G. Hotel arrival
H. Hotel tower 1
I. Hotel tower 2
J. Ballroom arrival
K. Podium roof deck
L. Hotel pools
ELEVATION

1. tower massing
2. west facade
"When we designed the new Atlantis resort in China, we were able to simultaneously rebrand the flag as a modern concept while establishing an iconic new direction for future projects. In winning a competition a few years later to design the new Atlantis in Hawaii, we were able to reinforce the direction set in China while expanding it to a low-rise building that remains iconic. The challenge of achieving this was solved with the vision of the building as a wave. The initial sketch was taken from inside the curl of a wave, which resonated with the client as inherently appropriate and exciting."

- Gregory Cranford, AIA, Design Principal
1. lobby view to ocean
2. retail avenue
3. view from terrace
The project includes a 305-key hotel and 48 luxury apartments located adjacent to the Topwin Center, a 430,000-sq.-ft. boutique retail mall.

The new InterContinental Beijing Sanlitun hotel soars above one of the city’s trendiest entertainment districts. The facade features hexagon-patterned steel with integrated LED lights to give the tower a distinctive honeycomb texture. At night, the building’s skin comes alive to create mesmerizing light shows.

As a response to the narrow urban site, the hotel building features a tapered form that accommodates larger suites at the north and south ends of the tower. Triangular floor plans in these suites offer 270-degree city views.

At the center of the tower, where most guestrooms are located, the linear massing provides guests panoramic views of the Forbidden City and Beijing’s dynamic financial district to the west and of its local cultural district to the east.

Separate entrances for the hotel, residences and mall make it easier for visitors to reach their destinations. An LED-illuminated canopy complements the patterned facade and welcomes guests into the hotel lobby with a grand entry experience. Diners on the restaurant’s outdoor patio are immersed in the sights and sounds of the vibrant neighborhood.

Energy-efficient windows and exterior walls minimize solar heat gain and glare while reducing the building’s energy consumption.
INFORMATION

CLIENT     Beijing Topwin Real Estate Development Co., Ltd.
DESIGN PRINCIPAL    Jeff Kaeonil, AIA

1.3 million sq. ft. / 123,000 sq. m.

1. north elevation
2. northeast view of tower
3. tower facade lighting show
4. twilight view
“The site’s unusual shape challenged us to create an iconic building that maximized the use of space while contextually recognizing the beauty of its surrounding area, cultivating an environment that optimizes the overall guest experience.”

- Jeff Kaeoni, AIA, Design Principal
1. hotel entrance

2. hotel lobby bar
1. north view
2. looking up to hotel banquet hall + tower
The design for this four-building justice center communicates a unified vision about its important civic role. The complex includes a criminal courthouse, detention facility, juvenile detention facility and administrative offices on an 11-acre site that previously housed a shuttered automotive plant.

Use of common interior, exterior and site materials along with understated design gestures and daylight-filled spaces creates a cohesive campus environment.

The criminal courthouse has 25 courtrooms and judge’s chambers for Wayne County as well as four courtrooms and judge’s chambers for the 36th District Court. Each courtroom will be fully equipped with state-of-the-art audiovisual and information technology. A secure tunnel enables staff to transport inmates from the detention center to a holding space on the ground level.

The detention center will accommodate 2,280 direct supervision beds in multiple classifications. Housing units will offer shared outdoor recreation spaces, dining areas, medical and mental health facilities and video visitation capabilities. It also has training facilities, kitchen and laundry services, a vehicle sally port and central utilities.

The complex includes a 160-bed juvenile detention facility and a facility housing the sheriff’s and prosecutor’s offices.

Planned to accommodate the addition of future courthouses, the project is pursuing LEED Silver certification.
INFORMATION

CLIENT    Rock Ventures Development Company LLC
DESIGN PRINCIPAL    Peter Ruggiero, AIA

1 million sq. ft. / 92,905 sq. m.

CONCEPT

1. location map
2. massing sketch
3. facade study

1. secured parking
2. staff parking
3. juvenile detention facility
4. adult detention facility
5. courthouse

open view to city

3. site diagrams

4. site diagrams

E Ferry St. Russell St.
Chrysler Fwy
E Warren Ave.
1. Conceptual view looking toward courthouse elevator lobby

2. Facade studies
1. Conceptual view at sidewalk connecting juvenile detention center

2. Facade model of scalloped precast concrete
PRECAST CONCRETE

1. Facade module at sheriff’s office

2. Facade model of horizontal fin precast concrete
“Though this building type is often overlooked by the overwhelming demands of program, we looked at the Wayne County Justice Center as a civic, urban edifice, deserving of the most rigorous and considered design attention. Consisting of both courts and detention programs, the design is a study in foreground and background, prominence and nobility, and the transparency, accessibility, stability and balance at the foundation of our justice system and democratic society.”

- Peter Ruggiero, AIA, Design Principal
Rising as a beacon in downtown Kansas City, Arterra shines brightly as the new home for eclectic urban living in the Crossroads Art District. As with the district’s name, this 12-story mixed-use building takes direct cues from the “crossroads” condition of its site.

The taller apartment form faces north and engages the downtown skyline, with the lower parking structure and rooftop pool responding to the shorter buildings to the south. Within this compositional framework, a glass and lobby and retail spaces line the street and a rooftop social lounge hovers above as an identifiable formal element.

Lighter-toned brick and vertical standing seam metallic panels bring variety to the building’s different faces. Staggered windows correspond to the apartments’ functions. Solid and open balconies wrap all sides of the tower, creating an advanced pattern that conveys a sense of art and diversity. In addition to giving the building a unique identity, this staggered pattern offers a distinctive exterior living experience to each apartment dweller.

Beneath the skin of the building facades and patterned balconies, a modular prefabricated light-gauge steel structure enhances efficiency—an important feature for this building type.

Apartments of different sizes and configurations are interwoven like puzzle pieces into the two-foot structural grid of load-bearing stud walls. The structural constraints force each wall, door, balcony and window to come together like a modular kit of parts.

Transcending the modularity, Arterra asserts itself as a building that artfully responds to its context.
INFORMATION

CLIENT  Altus Properties and Copaken Brooks

DESIGN PRINCIPAL  Eli Hoisington, AIA
SENIOR DESIGNER  Jonathan Wirth, AIA

183,000 sq. ft / 17,000 sq. m
1. elevation diagram: staggered balconies provide variety
2. perspective diagrams
3. aerial view from east
"The Crossroads district where this project sits inspired the team’s initial idea for the design to act as a hinge between two distinct view corridors and urban characteristics of Kansas City. Layering a more emotional set of ideas with the rigor and technical challenges of the prefabricated structural system created the opportunity for unique design solutions."

- Eli Hoisington, AIA, Design Principal
Highlighting the importance of urban density, a new mixed-use development pushes a historic suburb toward greater community engagement and sense of place. The active residential and shopping district injects new life into a previously underutilized stretch of parking lots and isolated buildings.

In planning the development, the team carefully sited the building forms to enhance the street edge and create space for internal and external courtyards. The forms both line and bend away from the street to address scale and proportion and add frontage for tenants and roof places. The overlapping functions of ground level retail and exterior landscaped spaces add vitality and reinforce neighborhood connectivity.

The project is clad with two distinct facades, creating a fresh, contemporary development that complements the historic context of the nearby business district dating back to the early 1900s.

Located along the town’s main thoroughfare, the five-story development reflects its surroundings with an exterior of warm brick and transparent glass storefronts. The interior plazas, by contrast, offer a more modern aesthetic with brushed metal and glass to appeal to potential residents and businesses.

Natural breaks and links on the site allow for a logical approach to staged construction, clear vehicular circulation for the anchor tenant on the development’s south corner and finance for residents and shoppers to access the site from nearby streets. In addition to 20,000 square feet of dedicated retail space, the development includes a 175,000 sq. ft. parking garage designed to blend into the adjacent residential buildings.
“Three words drove much of this initial design: community, connections and activity. We focused the design first on creating the architecture of negative space, folding buildings and edges around these three ideas to create a series of open spaces for the users while reinforcing the city’s goals for a vibrant urban edge.”

- Eli Heslington, AIA, Design Principal
The team designed LG Science Park as a next-generation research campus that promotes collaboration and innovation among scientists from multiple disciplines including electronics, chemistry, nanotechnology, fabrication and life sciences. The 20-building complex serves as the world research headquarters for the global consumer electronics brand of LG Group and a hub for science and technology in South Korea. Expected to achieve LEED Platinum certification, the campus will eventually accommodate up to 25,000 people.

The design mirrors LG’s aspirations to create “advanced technology, beautifully designed.” Individual buildings exhibit the same elegance as the company’s consumer products, which feature streamlined, elegant exteriors wrapped around cutting-edge technology.

Emphasizing LG’s minimalist approach to form, the post-and-beam, frame-based construction establishes a linear design. Transparent ground-level spaces seamlessly connect the buildings to an east-west linear park with plazas and gardens open to LG’s employees and the community, offering a green oasis within the landscape. This is especially evident at the lower-level canteen and dining halls, which captivate guests with their access to natural light and garden views.

Though the campus is unified, every component is distinct. Each LG business group has its own main entrance and lobby. Natural stone frames the building elevations, which are filled with glass panels. This creates a variety of facade treatments that minimize heat gain and facilitate views to neighboring parks.

Building materials, which are as classic and durable as LG’s consumer products, include glazing, natural stone cladding and aluminum mullions. The pale natural stone facades of the research buildings contrast with the dark-clad Integrated Support Centre (ISC), which is located at the heart of the campus and houses a welcome center and employee amenities.
CONCEPT

1. program strategy

2. level 1 site circulation

- pedestrian circulation
- building entrance
- vehicle with drop-offs
- loading bay ramp
- car park ramp

INFORMATION

CLIENT   LG Group
DESIGN PRINCIPAL   Larry Malcic, AIA
DESIGN TEAM LEADER   Chris Yoon, RIBA

10.76 million sq. ft. / 1 million sq. m.

annual EUI: 57 kBtu/sf/yr
45.3% below ASHRAE 2007
1. Aerial view looking north to Han River

2. Level 0

3. Level 1

- A. LG electronics
- B. Support center
- C. LG display
- D. LG hausys
- E. LG chem
- F. LG life sciences
- G. LG emtek
- H. Garden promenade
- I. Greenway
- J. Sunken garden
- K. Drop-off zone
- L. Dining area
- M. Light well
- N. Loading bay
1. view of greenway + facade of Integrated Support Centre / shared lab center

2. view of central park from auditorium

3. atrium lobby
The design of this extraordinary $3.7 billion campus—perhaps the largest and most sophisticated corporate research facility in the world—emphasizes the need for collaboration and convergence among all scientists and researchers, combining virtually every type of scientific research to promote discoveries that support LG’s vision of improving people’s lives around the globe.

- Larry Malicic, AIA, Design Principal
2. model view of longitudinal section along sunken garden

3. mature landscaping of central garden promenade

1. sunken garden to restaurant level + garden promenade
aerial view looking east
1. landscaped roof of bridge linking Integrated Support Centre to shared lab center

2. view of central garden’s breakout area under bridge
As an educator and academic researcher, Martin D. Jenkins earned acclaim for pioneering work in the field of African-American education. Later, as president of Morgan State University, Jenkins gained prominence for expanding the reach, diversity and influence of the historically black college.

In designing Martin D. Jenkins Hall, HOK aimed to create a building that honored its namesake and continued his mission. As the centerpiece for liberal arts education at MSU, Jenkins Hall brings together five departments—economics, history and geography, political science, psychology, sociology and anthropology—to create an academic hub that fosters interdisciplinary collaboration and scholarly exploration in a variety of ways.

Light-filled atrium: Serving as the building’s living room, the five-story atrium promotes a sense of community. This vibrant space connects students and faculty in learning, research, group and administrative activities.

Visible, direct connections: As a springboard for collaboration, a feature stair spans all five floors. The staircase gives students and visitors panoramic views of the atrium and curved academic wing and directly connects them to spaces designed for group study, informal learning and faculty offices.

Flexible classrooms and labs: Adjustable teaching and research spaces respond to the needs of students and instructors, allowing for a variety of configurations, from traditional classrooms to collaborative learning and lab areas.

Transparent design: The strategic use of glass allows students to see one another learning and to instill many of MSU’s first-generation college students with feelings of unity and empowerment.

Community engagement: Located on the site of an abandoned strip mall, Jenkins Hall continues MSU’s transformation of North Baltimore. Abundant windows showcase the building’s classrooms and labs, inviting the community to join in the scholarly activity.
INFORMATION

CLIENT Morgan State University

DESIGN PRINCIPAL Bill Hellmuth, FAIA

145,000 sq. ft. / 13,470 sq. m.

annual EUI: 91.4 kBtu/sf/yr
24.34% below ASHRAE 2007

CONCEPT

1. walking radii to sites across campus
2. aerial view
2. design option two

3. design option three

PLANS

4. level 0
   A. classrooms
   B. faculty offices
   C. atrium
   D. vivarium
   E. auditorium

5. level 1

1. design option one
“The design was all about increasing collaboration among different educational departments at Morgan State. It redefines the notion of a collegiate quad by arranging three buildings in a roughly circular configuration. Located on a hilltop at the southern entrance to the university, these buildings create a forward-looking entrance to the campus.”

- Bill Hellmuth, FAIA, Design Principal
As an integrated medical school and hospital system, Mount Sinai places a strong focus on translational research. At its new research facility, scientists and clinicians will have the resources they need to accelerate scientific discovery and implement innovative techniques and tools that enhance patient care.

Prominently located at the corner of Madison Avenue and 103rd Street, the proposed 26-story facility will be a gateway to the Mount Sinai campus on New York City’s Upper East Side.

The architecture reflects the impact that translational research—advancing medical discoveries to improve human health and well-being—will have on the future of healthcare. The facade and massing reinterpret the existing Mount Sinai campus vernacular. In that sense, the taller southern volume anchors the facility and creates a dialogue with neighboring buildings. The glazed northern volume looks to the future with a textured envelope that expresses the richness of the current campus aesthetic in a modern way.

With self-shading elements, the high-performance envelope mitigates heat loss and minimizes solar heat gain. The design optimizes natural daylight in occupied spaces, further reducing energy use. A cogeneration plant will serve the building’s energy needs, offsetting energy use across the entire campus.

The design concept creates a vertically integrated life sciences ecosystem that includes research, incubator and clinical spaces where teams can explore new innovations.

Areas that encourage interdisciplinary collaboration and discovery include informal meeting spaces between floors, a conference center for larger groups, two cafés and an event space overlooking Central Park. Incubator tenants have access to essential research infrastructure including advanced imaging facilities and cyclotron and radioisotope laboratories.
INFORMATION

CLIENT    Mount Sinai Health System
DESIGN PRINCIPAL    Kenneth Drucker, FAIA

605,820 sq. ft. / 56,280 sq. m.

CONCEPT

1. massing studies

nested volumes
framed volumes
split volumes - preferred
diagonal split

2. aerial view from northeast
3. concept design studies
1. Program + opacity studies

2. Facade studies + concept
MASSING

1. program stacking diagram
2. shadow study, winter
3. shadow study, summer

2. 3.

1.

291290
two floor vivarium
imaging facilities
cyclotron located in basement
double-height space connecting sets of two lab floors to enhance collaboration opportunities
conference space at corners of incubator floors
double-height space connecting lobby, conference center + restaurant
atrium space connecting incubator step-out space, providing opportunities for events overlooking central park
mechanical
vivarium
incubator
lab
clinical
conference
entrance

4. critical research infrastructure diagram
5. collaboration spaces diagram

atrium space connecting incubator step-out space, providing opportunities for events overlooking central park
two floor vivarium
imaging facilities
cyclotron located in basement
conference space at corners of incubator floors
double-height space connecting lobby, conference center + restaurant
1. street view from northwest

2. facade
“The tower simultaneously complements the urban campus and captures the spirit of the future science research occurring within. The facade is a study of texture, scale and materiality while the programming addresses the full needs of researchers, fostering opportunities for collaboration vertically and across disciplines.”

- Kenneth Drucker, FAIA, Design Principal
SUSTAINABILITY

1. wind rose diagram
2. sun path diagram
3. sustainability strategy diagram

- Facade detail
  - On-site combined heat + power generator

- LABS OFFICES
  - Cascading relief air

- High-performance HVAC
- Sustainable building materials
- Energy-efficient lighting system
- Quality views
- High-performance HVAC
- Reduced solar transmission + daylight harvesting
In relocating the Jacobs School of Medicine and Biomedical Sciences to downtown, the University at Buffalo returned one of the nation’s oldest medical schools to its original roots and reunited it with the Buffalo-Niagara Medical Campus to create a hub of academic medicine and research. Yet the building—the largest constructed in the university’s 172-year history—represents more than just a change of address. It complements and responds to its surroundings while fostering new opportunities for learning and discovery.

Room for growth, connections: The building brings together 1,200 students, faculty, staff, researchers and clinicians, increasing the school’s enrollment capacity by 25 percent. Central to the design is a grand atrium formed where the building’s two L-shaped volumes connect. Illuminated by skylights, this bright, open space serves as the building’s main interior avenue. A central stairway spanning the atrium promotes health and wellness by providing visitors with clear views of walkways bridging each floor. Study nooks and meeting spaces along the stair landings encourage informal collaboration while a 400-seat auditorium at ground level allows for more formal knowledge sharing. A subway station connected to the lobby further activates the building by creating a space where students and faculty mix with NFTA riders.

New view to discovery: The design puts learning on full display with glass-walled conference rooms and “floating operating rooms” that cantilever over the atrium, allowing all building occupants to view the teaching and research under way inside. In the “flipped” classrooms, students can listen to a lecture and then swivel around to meet in small groups.
Ode to the neighborhood: The gently sloping building, which is targeting LEED Gold certification, features a high-performance terra-cotta rainscreen that reflects the architectural history and texture of Buffalo, including the vibrant colors found in its Art Deco City Hall, Frank Lloyd Wright’s Darwin Martin House and Louis Sullivan’s Guaranty Building. At street level, the building’s dynamic window pattern and dynamic canopies welcome the public. Inside, the gray and white terrazzo tiles on the atrium floor meet at a 70-degree angle in similar fashion to Buffalo’s radial street plan.

“As a transit-oriented development, the design becomes the beacon for redevelopment in downtown Buffalo. We found a wonderful opportunity to utilize a locally produced material, terra-cotta, to add to the rich architectural heritage of the city. In creating a new major public space for the medical school, we have created a resilient new living room for the sciences, with opportunities for daylighting throughout.”

- Kenneth Drucker, FAIA, Design Principal

CONCEPT
1. concept sketch
2. design development model

INFORMATION
CLIENT State University Construction Fund
DESIGN PRINCIPAL Kenneth Drucker, FAIA

628,000 sq. ft. / 58,345 sq. m.
annual EUI: 148 kBtu/sf/yr
39% below ASHRAE 2007
1. view south to Main Street

2. view southeast toward Main + High Streets
SITE

1. level 0
   A. Roosevelt Apartments
   B. Children’s Hospital
   C. General Hospital
   D. Convention
   E. Allen Street
   F. High Street
   G. Allen Street
   H. Washington Street
   I. Carlton Street

2. level 2
   A. 400-person tiered classroom
   B. 200-person tiered classroom
   C. Library
   D. Student commons
   E. Typical lab neighborhood
   F. Clinical competency
   G. Simulation suite
   H. Administration

3. level 5

4. level 6

5. level 0

6. level 2

7. level 3

8. level 4

9. level 5

10. level 6

11. level 0

12. level 2

13. level 3

14. level 4

15. level 5

16. level 6

17. level 0

18. level 2

19. level 3

20. level 4

21. level 5

22. level 6

medical education + offices
labs
social spaces
summer sun angle 70º
winter sun angle 25º

angle glazed roof panels towards the north end of the atrium to reduce higher than desirable levels of solar radiation and daylight

0º (flat) skylight to allow in max direct and diffuse sunlight

SUSTAINABILITY

1. ceiling geometry analysis
2. daylight study, inside atrium, 50% glazed roof
3. view of six story atrium
1. West elevation of atrium
2. Learning landscapes: space between wings
view looking south at Main Street
Designed as an architectural reflection of the collaborative enterprise it fosters, the Health Sciences Facility III provides cutting-edge laboratory and multidisciplinary workspace for researchers exploring breakthrough treatments for cancer, diabetes and heart disease. The building, the largest facility ever constructed in Maryland’s university system, strengthens UMB’s footprint in West Baltimore and, with hundreds of employees, serves as an important economic engine for both the city and state.

The design creates an efficient lab block oriented east-west that steps down to welcome visitors with a one-level massing along the street. A similar theme extends along the building’s southern face, where its form acknowledges an outdoor plaza with a porous cluster of offices that invite views into the building through the atrium. North to south, the massing balances connections to the medical school and space identified for future growth.

Inside the building, a vast glass atrium connects a 12-story wet lab tower to a five-story dry lab tower via bridges that promote movement between lab areas. The atrium, flexible labs and informal meeting spaces, further knits together the building with the neighboring schools of medicine, dentistry and pharmacy.

A network of connected outdoor green spaces and courtyards encourages collaborative interviews and impromptu interactions among researchers, faculty members and visitors. The outdoor plazas function as extensions of major interior spaces.

HOK designed the facility in association with Design Collective. Jacobs collaborated on the lab planning and programming.
INFORMATION

CLIENT    University of Maryland, Baltimore
DESIGN PRINCIPAL    Bill Hellmuth, FAIA
INFORMATION
434,930 sq. ft. / 40,405 sq. m.
annual EUI: 160 kBtu/sf/yr
20% below ASHRAE 2007

CONCEPT

1. concept sketch
2. study models

SECTION

3. section through atrium looking north
1. North Pine Street entrance

2. Atrium

3. Atrium detail
1. level 0
A. lobby
B. office
C. wet lab
D. dry lab
E. collaboration space
F. atrium

2. typical floor plan
“By reducing the footprint of the original lab building and using a high-rise vertical format, we freed up an urban landscape space that becomes the focal point of the medical school.”

- Bill Hellmuth, FAIA, Design Principal
When they are in use, arenas and stadiums are the most electric spaces in a city. Yet even the most active of these facilities often lie dormant for days at a time between games and other events. Little Caesars Arena, home to the NHL’s Detroit Red Wings and NBA’s Detroit Pistons, solves this “all-or-nothing” paradox with a deconstructed design that engages the community 365 days a year.

**Inside-out approach to space:** Key to the design is the “Via,” the arena’s innovative central concourse enclosed by a translucent tetrafluoroethylene (ETFE) roof structure. During the day, the Via serves as a light-filled, temperature-controlled public space shared by restaurants and shops that open to both the street and the arena’s interior. At night, light and energy generated from activity inside the Via project outward onto the community, drawing new visitors to the space.

**Connecting to a revitalized Detroit:** Little Caesars Arena anchors The District Detroit, a 50-block area of commercial, entertainment and residential buildings that connect downtown and midtown into one contiguous, walkable area. The arena’s design contributes to the density and energy of the district with restaurants, bars, hotels and commercial workspaces (including Google’s Detroit offices) housed within its brick-and-glass perimeter spaces. An outdoor events plaza flanked by a large LED video board provides additional use beyond the arena’s walls.

**Heightened energy, intimate views:** The steep, below-grade seating bowl embraces the iconic qualities of historic arenas, with improved sight lines and dense “walls” of people energizing the event and directly view the action below. A mix of diverse premium seating offerings, including gondola suites suspended from the roof, complement this intimacy.
1. sketch of deconstructed arena

2. sketch illustrating how district + venue merge

“The deconstructed design blurs boundaries between the arena, ancillary development, restaurants and retail, creating a building that is not only a vibrant sports venue but a good neighbor and vital part of Detroit’s trajectory.”

- Ryan Gedney, AIA, Design Principal

CLIENT    Olympia Development of Michigan, LLC
DESIGN PRINCIPAL    Ryan Gedney, AIA
INFORMATION
819,000 sq. ft. / 76,090 sq. m.
annual EUI: 51.9 kBtu/sf/yr
69% below ASHRAE 2007
BUILDING SKIN

1. Early sketches of seating bowl with “jewel” skin

2. Early concept of seating bowl “jewel” skin within the district fabric

3. View of upper concourse; ETFE roof embraces daylight + embellishes interior concourses with outdoor feeling + blurring boundaries with actual exterior district environment.
SITE STRATEGY

1. Sketch illustrating how arena seating bowl “jewel” is an element of discovery along an intimate urban procession

2. Additional concept sketch

3. Early sketch illustrating a strategy for how the venue is larger than the interior space; public plazas + streets become part of the venue experience before + after the event

4. Exterior spaces like this beer garden extend beyond the walls of the arena + contribute to public realm during non-event time.
1. Street-like array of restaurants enhance the concourse experience.

2. As the NHL's steepest + most intimate bowl, the seating environment creates a wall of people + energy enhanced by technology.
Mercedes-Benz Stadium reimagines a century-long legacy of stadium design. Responding to the client’s challenge to innovate on every level, the design team set out to create a landmark that raises the profile of not only the stadium’s teams but the Atlanta metropolitan area.

Until now, retractable-roof stadiums had featured utilitarian sliding panels. Mercedes-Benz Stadium breaks that convention with a first-of-its-kind retractable roof inspired by the Pantheon in Rome and its rooftop oculus that floods the building with natural light. Composed of triangular ethylene tetrafluoroethylene (ETFE) “petals” that move together along 16 individual tracks, the semi-transparent roof opens and closes like a camera’s aperture.

As a continuation of the roof, the ETFE facade features angular, wing-like exterior sections. The transparency creates a 16-story “window to the city” that draws in more daylight and offers panoramic views of Atlanta’s skyline.

Wrapping the perimeter of the roof opening is a high-definition, 360-degree video board that gives fans a stadium in the round experience. At nearly six stories high and one-fifth of a mile in circumference, this one-of-a-kind video board is the largest in any of the world’s stadiums and provides clear views from every seat while preserving the beauty of the roof.

The team designed the stadium with flexibility to be easily reconfigured to accommodate games for the Atlanta Falcons and Atlanta United, as well as world-class events including the Super Bowl, NCAA Basketball Final Four, FIFA World Cup, and a variety of concerts and cultural events. Retractable seats surround the field and a motorized curtain system encloses upper-level seating, providing soccer fans with an intimate experience. An entirely digital stadium technology platform allows for the creation of custom content for each event.
Mercedes-Benz Stadium is North America’s first LEED Platinum professional sports stadium. A 680,000 gallon cistern recaptures and reuses rainwater for irrigation, helping to address historic flooding issues in the neighborhood. The site also has more than 4,000 solar panels. The focus on sustainability extends into the community through connections to public transit and the creation of urban farming and open recreation areas on nearby sites.

HOK collaborated on the design with tvsdesign, Goode Van Slyke Architecture and Stanley Beaman & Sears. HOK’s structural engineers collaborated with BuroHappold, with WSP providing MEP and fire protection engineering.
CONCEPT

1. NFL Atlanta Falcons logo
2. Concept for NFL Atlanta Falcons logo expanded
3. Concept for NFL Atlanta Falcons logo retracted
4. Initial roof concept
5. Final roof concept
6. Roof concept developed
7. Sponsor logo integration
8. Exterior design refinement
9. Falcon wing skin geometry
10. Facade concept
stadium roof geometry informs all design decisions from seating bowl + structure to exterior skin
1. Petal structure
2. Petals in closed position
3. Diagrams indicating linear roof movement

1. NFL configuration
1. Tekla model of roof structure in open/closed position
2. Glass-enclosed concourses
3. Exterior lighting study
4. Soccer configuration
“I imagined a circle of light appearing over the field and growing like a spotlight, the same way the light enters the oculus of the Pantheon in Rome, focusing all the energy down into the center of the stadium.”

- Bill Johnson, AIA, Design Principal
Yas Arena will be the UAE’s first multipurpose sports and entertainment venue on Yas Island, a manmade island in Abu Dhabi and an emerging leisure, shopping and entertainment center. The arena is part of a new development that will transform the southern end of Yas Island into a global destination for family entertainment and leisure, with a cluster of hotels, the Yas Marina F1 circuit and theme parks.

Located on the waterfront promenade at Yas Bay, the arena will be a new cultural landmark and anchor for the Island’s retail and dining boardwalk promenade. The design incorporates food and beverage amenities outside the arena, forming a linear street that stretches down a waterfront promenade. This mixed-use outdoor concourse will generate year-round activity in a festival-like atmosphere while visually and physically connecting to the surrounding district.

The arena’s illuminated lantern facade complements existing plans to expand the waterfront along Yas Bay. The design creates the ideal user experience for all types of live events, including concerts, sporting events, meetings and conventions. A flexible design and robust technology infrastructure enable the building to adapt for events ranging from intimate 500-seat performances and community gatherings to concerts for 18,000 people. Diverse premium spaces include a VIP lounge that can be transformed into a grand ballroom for events, hospitality boxes and unique terrace bars for receptions and parties.

The sustainable design strategies are targeting a 2 Pearl rating under the Estidama Pearl Rating System, which is tailored to Abu Dhabi’s hot climate.
CLIENT    Miral Asset Management

DESIGN PRINCIPAL    John Rhodes, RIBA

INFORMATION
409,030 sq. ft. / 38,000 sq. m.
annual EUI: 99 kBtu/sf/yr
22.4% below ASHRAE 2007

SUSTAINABILITY DIAGRAMS
1. thermal comfort: November - April
2. rainwater harvesting: November - April
3. evaporative cooling: May - October
Yas Arena uses a variety of passive design strategies to reduce energy demand in the hot and dry climate of Abu Dhabi.

Transitional spaces: Semi-open spaces serve as a thermal buffer and provide an overall climate “oasis” for visitors to socialize and connect.

Solar control: The design team used a set of inhouse tools to optimize the arena’s geometry, skin and louvre shades, resulting in a 50 percent reduction in solar radiation compared to the baseline design.

Flexible, zoned design: Strategic layout and programming creates intimate visitor experiences regardless of audience and event size. This multipurpose, segmented design allows for sections of the building to be “turned off” when not in use to save energy, improving both efficiency and recovery.

Daylighting: Artificial lighting is a major consumer of energy. Yas Arena’s self-shading and exterior louvers provide views and natural light to penetrate deep into the building, reducing electricity demands.

Natural ventilation: Stack ventilation is being explored for cooling the arena’s bowl during certain times of the year. Warm air rising to the top of the bowl would be exhausted through the roof and replaced at low levels with ambient air from openings across the stage area.

Energy reduction: Solar energy panels built into the facade further reduce the arena’s environmental impact and, coupled with the passive design strategies, help reduce the arena’s energy consumption by at least 20 percent compared to the baseline building performance.
SUSTAINABILITY

- **WASTE MANAGEMENT**: 0% of waste to landfill in 20 years
- **PRECIOUS WATER**: 25% less water use
- **LIVABLE INDOORS**: 250lx in 50% of office area
- **LIVABLE OUTDOORS**: 60% shading in public spaces
- **RESOURCEFUL ENERGY**: 50% less annual solar heat gain, 1% energy generation
- **STEWARDING MATERIALS**: Resourceful energy

GEOMETRY OPTIMIZATION

- South view with vertical facades
- South view of radiation map on vertical facades
- Optimization method
- South view of radiation map on optimized facade tilts
- South facade view

Radiation Map Legend (kWh/
SECTION

longitudinal section facing south

A. envelope
B. gantry level
C. external plant space
D. upper tier
E. lower tier
F. retractable seating
G. VP level
H. event floor
I. m.i.c.e. box (meetings, incentives, conventions + exhibitions)
J. balcony
K. stage area
L. service yard
1. promenade river view

2. internal view, seated concept

3. bowl in futsal mode
“The design response was driven by two parallel approaches. The first focused on operational perfection and performance of the arena bowl in relation to the local, market-specific event calendar and needs. The other considered the wider response to the waterside site, public realm and integration of the new master plan. This convergence resulted in a design defined by its critical regionalism and innovative arena interpretation rooted in the specifics of its waterfront location and the modern cultural backdrop of Yas Island.”

- John Rhodes, RIBA, Design Principal
What can designers learn from the resiliency and adaptability of nature? That’s the focus of Genius of Place: California Coast, an HOK design research project in partnership with Biomimicry 3.8 that draws lessons from the most biodiverse region in the U.S.

The California Coast is home to more than 8,000 plant species and several thousand animal species. While generally described as a Mediterranean-type climate, it actually spans three biomes: Temperate Steppe, Mediterranean Vegetation and Montane Forests. Transitions between these biomes can be dynamic and immediate. Drought, earthquakes, forest fires and urban encroachment present additional challenges. Yet the tenacity of nature to adapt and thrive in the face of adversity and change offers the design community possible solutions for addressing climate change, urbanization and natural disaster.

Through an analysis of 16 “champion” species that have adapted to the challenges unique to California, the team of architects and biologists identified four design areas for further exploration:

1. **Facades**: Discover how material and energy intensity of building facades can be reduced while improving multi-functional performance in terms of managing for heat, moisture, solar gain, weight and air exchange.

2. **Structures**: Explore how the material and energy intensity of building structures can be reduced while improving flexibility and cost performance factors.

3. **Water management**: Identify how buildings can better capture and harvest water resources on site to reduce impacts on reservoirs and aquifer resources and therefore cost.

4. **Dynamic environments**: Understand how our landscapes can be viewed as the “fifth facade” of a building designed to generate ecosystems aligned with local ecology.

“HOK and Biomimicry 3.8 partnered to explore California’s coast: its biomes and cities, opportunities from ecology, and challenges for resilience. The result of this design research project is emblematic of our 10-year relationship: a progressive collection of strategies for designers, architects, engineers and planners to integrate nature’s innovations into the design of our buildings, communities and cities.”

- Sean Quinn, AIA, Sustainable Design Leader

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INTRODUCTION

Montane Forest: Known for its coniferous forests, rugged terrain and high altitudes, this region experiences warm summers and cool winters with adequate amounts of precipitation. Flora includes giant sequoia, mountain ash and many varieties of ferns. Fauna ranges from large carnivores (bears and wolves) to smaller insects, reptiles and amphibians such as the California slender salamander (A).

Temperate Steppe: These grasslands experience hot summers and cold winters with moderate rain and occasional snowfall. Native wildlife includes tule elk, brush rabbit, western rattlesnake and the red-eared slider (B).

Mediterranean Vegetation: This semi-arid region is dominated by shrubs and smaller trees such as the California live oak (C). Fauna includes mountain lions, the California condor, lizards, insects and arachnids such as scorpions and the black and yellow garden spider (D).
California slender salamanders lack lungs. They breathe entirely through their skin and the tissue lining their mouths in a process called cutaneous respiration. Because their skin and mouth must be kept moist to respire, they live in damp places. Oxygen and carbon dioxide pass through the skin through diffusion.

Natural ventilation can be induced within the building envelope through optimized massing, pressure, fan energy, moisture exchange and filtration. A hybrid modular component has been conceived to create a hybrid system sculpted to optimize pressure differential across the exterior of the facade and between the interior. This strategy could induce air exchange, reduce fan power and potentially be used to harvest moisture.
**FLEXIBLE CONNECTIONS**

The red-eared slider’s shell is a continuous structural element. The individual units of the shell are connected to its interior structure by thin sutures, zigzag structural connections between main structural elements. Sutures connect the shell to the vertebrae, the vertebrae to the ribs and ribs back to the shell. This sandwich design acts as a cushion by absorbing energy released by high strain forces.

The individual plates of the red-eared slider’s shell displace and dissipate strain energy under loads that activate interlocking sutures. This design inspired the consideration of dome structures and how we could replicate a subdivided and interlocking structure to effectively react to and spread external forces while reducing material volume.

**Structural Hierarchy:** Another characteristic of the red-eared slider’s shell system is how structural elements and hierarchy are arranged. Uniform shell structures without partitioning space are entirely dependent on every piece of the shell being intact. It is important to note that the shell of the red-eared slider is segmented in a way that local failure is not entirely fatal to the structure.

Shell areas experiencing large stress can be thickened independently and transfer loads to a system that carries only axial loads. In this way the segmented shell only carries its own weight plus whatever is superimposed rather than the load of all neighboring members.

**TOPOLOGICAL OPTIMIZATION**

1. Brainstorm: shell structure resilient to extreme forces
2. Gravity load (non-distributed stress)
3. Gravity load (distributed stress from flexible transition zones)

**Red-Eared Slider**

- 1. Brainstorm: shell structure resilient to extreme forces
- 2. Gravity load (non-distributed stress)
- 3. Gravity load (distributed stress from flexible transition zones)

**Truss Optimization:** To optimize a truss system, connection levels were established across a dome mesh to generate possible nodal connections of truss members. Members that improved the stiffness of the system had cross-sectional area added to each truss element while members that did not contribute to the stiffness were minimized until they were eliminated. The solution results in a fully stressed solution under a volume constraint, similar to the shell optimization.

**Shell Optimization:** The shell optimization followed a similar algorithmic logic except that the mesh was not conformed to perfect symmetry. Elements also included flexural and axial stiffness, and continuous support was applied at the base.
1. brainstorm: water-activated facade

2. water movement through differentiation of surface

3. water collection through pressure + tension

4. relaxed condition

5. expanded condition

6. expanded condition detail

A conceptual facade consisting of architectural mesh, small basins and louvers could be integrated as a shading device on dry, sunny days. In a relaxed condition, this screen could limit direct solar exposure, mitigate heat gain and filter light in a way that is visually stimulating and constantly varied. During periods of intense fog, high humidity or precipitation, the screen would be activated to draw moisture from the air, elongating the system and directing water along the screen into landscape beds. It would create an interactive feature, cueing occupants in a dramatic way to subtle or significant changes in weather.

WATER CONVEYANCE

Spiders have the ability to spin webs with unique water-collecting functions and mechanisms. Spider silk is hygroscopic, meaning, has the ability to collect moisture from the air. This is due to a unique fiber structure that forms when it is exposed to high relative humidity or fog.

Dry silk consists of loose cottony puffs separated by joints along a double-fibered main axis. When exposed to fog or relative humidity above 90 percent, the web’s structure changes and the puffs shrink into spindle-knots. Moisture from the air caught on the webs smooth nanofibrils slide gravely to the relatively rough spindle-knots where it coalesces to form water droplets.
The coast live oak is a keystone species that disproportionately affects its community. Its efficient biological features make it an attractive home for many species that rely on the tree for food, nesting, perching and protection. The oak creates a complex symbiotic relationship with its inhabitants that, in turn, fertilize and protect it from insects.

The coast live oak forms an ideal environment for life. Its foliage blocks harsh sunlight while allowing breezes to pass through for the fauna and flora that live beneath its canopy. Its structure further provides a layering effect, creating a sense of space and movement.

1. brainstorm: natural placemaking

NATURAL PLACEMAKING

The coast live oak is a keystone species that disproportionately affects its community. The oak’s efficient biological features make it an attractive home for many species that rely on the tree for food, nesting, perching and protection. The oak creates a complex symbiotic relationship with its inhabitants that, in turn, fertilize and protect it from insects.

The coast live oak forms an ideal environment for life. Its foliage blocks harsh sunlight while allowing breezes to pass through for the fauna and flora that live beneath its canopy. Its structure further provides a layering effect, creating a sense of space and movement.

BIOPHILIC DESIGN

The structure, mechanisms and resulting ecosystem of and around the coast live oak provide an inspiration on how to design habitats ideal for life. The canopy serves as a porous envelope, offering the opportunity to structure life in direct connection with nature. The core of the tree, its trunk and main branches, can be compared to the communal living space of any building—places for work, contemplation and relaxation. The root structure represents the foundation and point of entry to the oak, much the way that a building’s plinth forms its base and arrival space.

Stanford Center for Academic Medicine represents an ambitious effort to provide disparate research disciplines with a common, collaborative environment. The site’s mild Mediterranean climate and location next to a nature preserve inspired the team to develop a master plan for the project’s three buildings that acts as an anchor point of the surrounding experience and connects occupants to outdoor spaces. Inspired by the coast live oak’s role as an ecosystem organizer, narrow wings envelope a courtyard providing diverse settings for collaboration near the woods and in plazas, balconies, walkways, porches and terraces.

Internally, the workplace promotes interaction between medical specialists and the outdoor environment. The narrow architectural forms grant plentiful access to daylight and natural ventilation, serving as a connection to nature. Externally, the courtyard allows the ornamentum to flow through the buildings toward the medical school. Porches and places extend from the building to form summer and winter gardens, places for activity, reflection, interaction or concentration. Biophilic design truly blurs the boundaries of this indoor-outdoor workplace environment.
1. **nature’s design: multilayered system**

2. **design principle: adhesion + cohesion**

3. **brainstorm: water collection + reuse**

---

**REDWOOD FOG CAPTURE**

- **fog capture**
- **filter**
- **condenser**

---

**Public**

- **water supply**
- **black water**
- **gray-water system**
- **drinking water**

---

**Redwood section**

- **xylem vascular system**
- **phloem cork**
- **annual ring**
- **fiber**
- **vessel**

---

**Rain water**

- **fog capture**
- **filter**
- **condenser**

---

**Rain water**

- **coast redwood**
- **pits open + conducting water**
- **water molecule**
- **tomon**
- **water**

---

**Gray water**

- **water tank collection**
- **ozone generator**
- **carbon filter**
- **drinking water**

---

**Annual ring**

- **coastal redwood**
- **xylem**
- **phloem**
- **cork**
London, UK

Today’s rugby fans are among the world’s most passionate sports enthusiasts, and they have a growing appetite for engaging game-day experiences.

To generate ideas for enhancing the stadium experience for fans and athletes, HOK led a collaborative design exercise with four legendary rugby players: Jamie Roberts (Wales), Tim Visser (Scotland), James Horwill (Australia) and Danny Care (England) shared their ideas about the attributes of an ideal stadium and what inspires them as athletes and fans.

The input from these world-class players helped shape several new design concepts for the rugby stadium of the future. Among them:

**Strengthening relationships between fans and players:** Stadiums with smaller footprints and steeper, more three-dimensional stands create intimate connections between fans and players. Divisions between the concourses and stands are blurred. The focus expands beyond pure viewing parameters to the entire stadium experience.

**Fields of screens:** Integrating fiber optics could transform the pitch into a green screen for projecting real-time statistics and other information, replaying highlights and acting as a canvas for e-sports. GPS player tracking systems that measure everything from the distance run by individual players to the force of collisions could be made available to fans. A movable overhead gantry could project a laser to mark the gain line while providing captivating aerial perspectives for spectators.

**Boosting energy in the red zone:** As a throwback to the rugby stadiums of the 1960s, enlarged standing areas in the red zone—the area of the pitch between the touch line and 22 meters out—could amplify overall noise and energy levels by increasing the density of enthusiastic fans in these action-fueled zones.

---

“We always want to push traditional typological solutions. The Stadium of Tomorrow design exercise explored how we could deconstruct and redefine the traditional stadium. We used the latest parametric design software to fragment a traditional bowl into smaller, clustered communities optimized to respond to social media friendship groups. The response included the incorporation of emerging technologies like drone service, envisioned ambitious spectator experiences and anticipated future urban needs such as a shortage of green space.”

John Rhodes, RIBA, Design Principal
Engaging bench players: The bench could be actively linked with the entertainment system. When a coach selects bench players to enter the game, for example, their seats could light up and be featured on the video boards.

Positioning the stadium as a community asset: Designers can think about the venue as a vertical park in the heart of a city, an ad hoc meeting place or a hub of leisure activity.
## DESIGN TEAMS

### COMMERCIAL

**Central + Wolfe Campus**

- Sunnyvale, California, USA
- Paul Woolford (Design Principal)
- Zoran Bosnic
- Kathy Dai
- Cesar Escalante
- Garam Han
- Brian Jencek
- Joon Kim
- Ben Kuchinsky
- Spike Lu
- Brent Martin

**151 W. 42nd Street**

- New York, New York, USA
- Kenneth Drucker (Design Principal)
- Varun Kohli (Senior Designer)
- Roosevelt Alexandre
- Matt Brandenthal
- Steven Danielpour
- Anne Fletcher
- Mark Hendel
- Nathan Hoffagle

**1771 N Street NW Repositioning**

- Washington, D.C., USA
- Monika Kumar (Design Principal)
- Maxwell Baum
- Olivia Calio
- Matteusz Gawad

### OFFICE TOWER DESIGN COMPETITION

**4th and Harrison Mixed-Use Development**

- San Francisco, California, USA
- Paul Woolford (Design Principal)
- Zoran Bosnic
- Brian Jencek
- Yongki Kim
- Jinyoung Lee
- Matt Nguyen

**Hangzhou Wubao Mixed-Use Dev. Design Competition**

- Hangzhou, Zhejiang, China
- Jeff Kaeonil (Design Principal)
- Debarati Basu
- Christian Arvo Bravianto
- Xiao Fang
- Alice Kao
- Rouel de La Paz

**New SouthWorks Concept Master Plan**

- Chicago, Illinois, USA
- Domenic Salpietra (Design Principal)
- Isaac Plumb
- Jiasi Tan

**Office Tower Design Competition**

- Texas, USA
- Roger Soto (Design Principal)
- Kathrin Brunner
- Jonathan West

**Omani Riviera**

- Yiti and Yenkit, Oman
- Omari Riviera (Design Principal)
- Farah Araji
- Ymael Vonn Bantay
- Jessica Chan
- Kostas Dimitrantzas

### DESIGN PRINCIPALS

**Central + Wolfe Campus**

- Sunnyvale, California, USA
- Paul Woolford (Design Principal)
- Zoran Bosnic
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- Cesar Escalante
- Garam Han
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### PROJECTS

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DESIGN TEAMS (CONT)

CORPORATE

Consumers Credit Union Headquarters Kalamazoo, Michigan, USA
Peter Ruggiero (Design Principal) 114
Josh Behrens
Michela Bettin
Jeff Davis
Julie Donovan
Alex King
Nareg Kurtjian
Abbey Maciejewski
Heather Neri
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Felipe Oropesa Jr.
Domenic Sapienza
Dan Stullison
Emily Wilner

Korean Broadcasting System Design Competition Seoul, South Korea
Larry Malicc (Design Principal) 128
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Nasdaq Office Philadelphia, Pennsylvania, USA
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Nate Corman
Stephen Danilpour
Julie Donovan
Carl Galietto

Robert Gerard
Marlyn Hocker
Eli Hesington
Tim Howarth
Stephanie Hur
Julie Janea
Natalie Levinson
Yuk Lee
Christopher Lodge
Stanley Pkil
Frank Ruggiero
Stephen Weinryb
Deborah Young
Vincent Yu
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<td>Cindy Landry</td>
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|         | Topwin Center & InterContinental | Beijing, China |
|         | Beijing Sanlitun |                   |
|         | Jeff Kaeonil (Design Principal) |                   |
|         | Benjamin Chan |                   |
|         | Albert Chen |                   |
|         | Hui Dang |                   |
|         | Tim Kwan |                   |
|         | Philip Keong |                   |
|         | Nicole Li |                   |
|         | Patrick Ruan |                   |
|         | Peju Tai |                   |
|         | Scott Taricco |                   |
|         | Hong Tian |                   |
|         | Jin Xu |                   |

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RESIDENTIAL

Arterra Residential Tower Kansas City, Missouri, USA
Eli Hoisington (Design Principal)
Jonathan Wirth (Senior Designer)
Barb Anderson-Kerlin
Kelly Lott
Martha Martinka
Ano Sandoval

Mixed-Use Development for Confidential Client Missouri, USA
Eli Hoisington (Design Principal)
Jonathan Wirth (Senior Designer)
Abby Buchman
Jeff Davis
Jake Durchholz

LJG Science Park Seoul, South Korea
Larry Malcoc (Design Principal)
Chris Yoon (Design Team Leader)
Joyce Chan
David Queene
Paul Dugleby
Jeongsu Eun
Ian Fleetwood
Randy Kray

Morgan State University Martin D. Jenkins Hall Baltimore, Maryland, USA
Bill Hellmuth (Design Principal)
Jack Baker
John Cain
James Dossard
Duncan Keke

SCIENCE + TECHNOLOGY

LG Science Park Seoul, South Korea
Beate Mellwig
Bill Odell
Adam Rigby
Shem Sacewicz
Jeff Strohmeyer
Robert Studd
Yojoong Yang

Univ. at Buffalo Jacobs School of Medicine + Biomedical Sciences Buffalo, New York, USA
Kenneth Drucker (Design Principal)
Jim Beige
Bobby Bouzenakis
Marisa Caban
Frank Cauther
Jim-Eun Chan
Rhoda Chan
Patricia Garcia Chimeno
Ting Chen
Stephen Danielpour
Robert Ellist
Eli Hoisington
William Jenkins
Takwing Louie

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Bill Hellmuth (Design Principal)
Mike O. Akinsade
Carrie Hsu

Mount Sinai Health System 103rd Street Research Facility New York, New York, USA
Kenneth Drucker (Design Principal)
Jim Beige
Sara Diers
Carl Gialloto
Mohammed Hasafa
Alfa Jakkara
Kooho Jung
William Kenworthy

Aman Krishan
Donald Marren
Ismn Naas
Tzveta Paryatovova
David Schwartz
Laura Talving
Ali Ward
Stephen Weinryb
Philip Luse
Ching Mistry
Teraka Myakuchi
Bill Odell
Robert Powers
Krishna Prasad
Kimberly Robidoux
Rene Ruiz
David Scheick
David Schwartz
Arin Shah
Jeff Strohmeyer
Ran Wang
Stephen Weinryb
DESIGN TEAMS (CONT.)

SPORTS + RECREATION + ENTERTAINMENT

Little Caesars Arena Detroit, Michigan, USA
Ryan Gedney (Design Principal)
Travis Bailey
Tabitha Darke
QQ De Graaff
Jeff Goode
Adam Grith
Ryan Helford
Bryan Haiker
George Heinlein
Eric Henke
Darius Holwell
Sarah Hunter
John Jesik
Doug Kuster
Paul Leskovac
Mark O’Hara
Danny Shervington
Tracy Stearns
Tambra Thorsen
Matt Van Beekhuijzen
Megan Weber

Mercedes-Benz Stadium Atlanta, Georgia, USA
Bill Johnson (Design Principal)
Alex Augustin
Andrea Baker
Tom Bayer
Matt Breidenthal
Peter Broeder
Julie Busby
Chris DeVolder
Gus Doppes
Tiffany Franklin
David Gile
Ewa Glebocka
Jeff Goode
Darius Holwell
Bryan Hutchinson
Andrew Kelmars
Victoria Laws
Jon Mawey
Marc McCoy
Kerry McLaughlin
Joe Nehama
Mark O’Hara
Reese Petty
Greg Pfau
Alejandro Rodriguez
Rich Saunders
Roshed Singaby
Jeff Sittner
Tracy Stearns
Hideoki Taguchi
Jeff Verkamp
Megan Weber
Kyle Wédel
Adam Wilson

Yas Arena Abu Dhabi, UAE
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