



# 2. PROJECT SAMPLES

# 2024 OXAGON R&I CAMPUS

Duba\_SA

### **NEWARK T1**

Newark\_NJ

# **MAKER PARK**

Brooklyn\_NY

# **BRONX GENERAL**

Bronx\_NY

# WEI\_WU\_YING BRIDGE

Kaohsiung\_TW

# **MOTION FILTER**

Arlington\_VA

# **SAINT LOUIS PUBLIC RADIO**

Saint Louis\_MO

# **CAPITAL MARKET AUTHORITY**

Riyadh\_SA

# **KAUST\_RESEARCH CAMPUS**

Thuwal\_SA

# **KAUST\_SOLAR CHIMNEYS**

Thuwal\_SA

# 2009

# ST LOUIS AIRPORT EXPERIENCE

Saint Louis\_MO

### horvath.matt@gmail.com

# **MATTHEW HORVATH**

**EDUCATION** 

MASTER OF ARCHITECTURE Washington University. Saint Louis MO. Honors. BS. STRUCTURAL ENGINEERING Lehigh University. Bethlehem PA.

2005 1997

**EXPERTISE** 

Design Theory/Methodology\_Conceptual Development\_Building Performance and Technology\_Structural Engineering\_Sustainable Strategy and Implementation\_Graphics/Presentation\_Project Management\_Construction Administration\_Parametric design\_Industrial Design\_Prototyping and Fabrication\_Wood and Metalworking\_Photography\_Hand Drawing

### **ACADEMIC EXPERIENCE**

ADJUNCT FACULTY Washington University School of Architecture. Saint Louis MO

2010-12

Graduate-Level Design and Thesis Studios; Digital/Physical Representation: Concept and Translation Across Media (Graduate/Undergraduate levels); Various workshops; Career Discovery Program

GUEST CRITIC/LECTURE Washington University School of Architecture. St Louis MO \_ University of Kansas. Kansas City MO \_ Columbia University. New York NY

### PROFESSIONAL EXPERIENCE (AFFILIATED)

ASSOCIATE GRIMSHAW Architects. New York NY. www.grimshaw.global

2018-23

Design Leader and Team/Project Manager of high-profile transport and institutional projects with focus on building performance and innovation, material research, structural conceptualization, sustainable and net-positive carbon agendas. Scope of work from competition, feasibility and conceptual development to management, material research, building materials and methods, and technological integration. Projects include: **Oxagon Research and Innovation Campus**, a 200,000m2 campus near Tabuk, Saudi Arabia focused on development of sustainable technologies; **Newark Airport Terminal 1**, a \$2.7B, 33-gate domestic terminal in Newark NJ; and **D-TEC**, a product line of deployable/ adaptable modular building typologies. Additional studio efforts include: development of **Minoro**, an open-source Net Zero Carbon design platform; firm-wide material and innovation research initiatives; and Future Workplace Design Initiative, a comprehensive analysis and reimagining of the physical-virtual collaborative workspace.

SENIOR DESIGNER Studio V Architecture. New York NY. www.studiov.com

2014-18

Project lead in mid-size design studio specializing in adaptive re-use and urban infrastructure projects. Project efforts include conceptual studies, design development and feasibility studies, project/team management and construction administration. Senior designer for **Maker Park**, a masterplan proposal for the adaptation of a disused oil storage facility in Brooklyn into a NYC Park. Senior designer and project architect for **Bronx General**, the adaptive re-use of WPA-era Bronx Central Post Office into a mixed use retail, office and entertainment facility.

ASSOCIATE Axi:Ome Design. Saint Louis MO. www.axi-ome.net

2009-10

Senior designer in a small design/research firm. Primary role involved design development of **Saint Louis Public Radio** from concept through construction - including masterplan development, massing and spatial studies planning and interior fit-out, site/landscape and construction detailing. Developed renderings, created and organized document set, coordinated design team, interfaced with client and consultants.

ASSOCIATE HOK. Saint Louis MO. www.hok.com

2006-09

Project designer for commercial, institutional, transportation and municipal projects. Developed projects from concept through construction, performed landscape/site design, master planning, cost estimation, environmental analysis/systems integration and construction administration. Significant emphasis on sustainability, emerging technologies and performance-based design. Projects from 25K to 5M sf, design teams from 1 to 300+. Participated in numerous international design competitions. Notable projects include Conoco Phillips Corporate/Research Campus, Boulder CO\_Capital Market Authority (CMA) Tower, Riyadh SA\_King Abdullah University of Science and Technology, Thuwal SA Lambert Airport Experience Project, Saint Louis MO St Louis Animal Control Facility, Saint Louis MO

STRUCTURAL ENGINEER

AECOM (formerly URS). Baltimore MD. <u>www.aecom.com</u>

1997-02

Structural designer for multi-national design/construction firm. Design development for numerous rail and pedestrian bridges from master planning through construction. Performed static/dynamic analyses, physical condition inspections and construction administration, reviewed shop and contractor drawings, created document sets. Notable projects included: Woodrow Wilson Bridge, Washington DC\_BWI Airport, Baltimore MD\_Pittsburgh Light Rail Transit System, Pittsburgh PA

# PROFESSIONAL EXPERIENCE (INDEPENDENT/COLLABORATIVE)

### PROJECT DESIGNER Taipei TW.

2012-13

Design/project architect for the 600m Wei-Wu-Ying Bridge in Kaohsiung Taiwan. This project was the winning proposal of a 2012 international design competition, developed in collaboration with TH Tsai Engineering Associates. Role as principal/project architect included competition entry, conceptual and schematic/design development, 3d modeling and rendering, client presentations, coordination with engineers and consultants, construction documentation.

### PROJECT DESIGNER

Saint Louis MO. www.benfehrmann.com

2010-12

In collaboration with TwelveMetre, an architecture/public art initiative. Projects from commercial architecture to public art and musical instruments, responsibilities from conceptual design to detailing, documentation and fabrication, 3d modeling, rendering and construction, engineering consultation and team management. Notable projects included schematic design of Novus International Headquarters Expansion and Motion Filter, a commissioned installation at a 1/2 acre electrical substation in Arlington VA

### **RECOGNITION**

PROJECT AWARDS 2023 UNESC	PRO	JECT	AW	ARDS	2023	UNESC
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- 2023 UNESCO Prix Versailles Special Prize (Newark Terminal A)
- 2023 Best New Airport Terminal in the World, Skytrax (Newark Terminal A)
- 2021 Best Tall Building Facade, Council of Tall Buildings and Urban Habitat (CMA Tower)
- 2020 Featured Innovation, NYCxDesign (CBS) (D-TEC mobile laboratory)
- 017 Silver Award, Urban Design, New York Design Awards (Maker Park)
- 2017 Popular Choice, Architecture A+ Award (Maker Park).
- 2017 Merit Award, Urban Design: AIA New York (Maker Park).
- 2015 Honor Award, AIA Saint Louis (Saint Louis Public Radio).
- 2012 First Prize, Kaohsiung Bicycle Bridge Competition (Wei-Wu-Ying Bridge).
- 2010 International Architecture Award, The Chicago Athenaeum: Museum of Architecture and Design (KAUST).
- 2010 Green Good Design Award, Architecture (KAUST)
- 2010 COTE-AIA Top Ten Green Building (King Abdullah University of Science and Technology (KAUST)).
- 2010 Distinguished Award, AIA St Louis (King Abdullah University of Science and Technology (KAUST)).
- 2010 Lab of the Year, R&D Magazine (KAUST)
- 2008 Merit Award, Unbuilt: AIA Saint Louis (Animal House).
- 2006 Merit Award, Unbuilt: AIA Saint Louis (Munich International Airport Competition).
- 2006 Merit Award, Unbuilt: AIA Saint Louis (Architecture as Landscape: A Contemporary Hotel in Moscow).

### **PUBLICATIONS/PRESS**

Architectural Record\_Forbes\_Dezeen\_Architizer\_ArchDaily\_Archinect\_DETAIL\_Curbed\_GreenSource Magazine\_Contract Magazine\_Architect Magazine\_Taiwan Architect Magazine\_Architect's Newspaper\_Civil Engineering Magazine\_NYCxDesign

# **OXAGON R&I CAMPUS**

# 1

# Affiliation: Grimshaw Architects\_ Design/Project Architect (Concept-DD) \_ Under Construction

The Oxagon Research and Innovation Campus (ORIC) was developed as a critical early-stage component of the NEOM future-cities masterplan along the Red Sea in Northwest Saudi Arabia. It is designed to be a central research and innovation incubator - a center of excellence for the development and scaling up of advanced clean-tech industries in the fields of manufacturing, green hydrogen, water, food, robotics AI, and construction. The campus will be a hub for technology commercialization, collaboration and co-working, ideation, knowledge diffusion and up-skilling. The project contains approximately 200,000 m2 of laboratory and workshop space in addition to sporting facilities, amenity and exhibition space.

The design concept emerged from the interface between the meandering wadi coastline along the southern site edge and an urban industrial development planned to the north. Three V-shaped promontory buildings mirror the coastline, forming a visual and environmental frontage to the campus while providing channels for views and air movement into the public plazas between. These buildings contain flexible laboratory space, meeting and presentation spaces, theaters and several auxiliary amenities. Bounding the entire northern edge of the site are the tech spine buildings: a series of continuous, high-bay workspaces flanking a shaded pedestrian boulevard. The tech spine is designed as a modular repetitive system, providing maximum flexibility to accommodate both large and small-scale testing, prototyping fabrication. A series of PV-topped structures (e-trees) provide shade along the pedestrian street as part of a comprehensive passive climate strategy.

The campus design was largely driven by an aggressive sustainability/carbon agenda. Through program reduction, low-carbon materials [including mass-timber framing], high efficiency building systems and various carbon reduction strategies, the design is targeted to achieve net-positive carbon by 2035. As part of the core leadership team, my role extended from design and project/team management to carbon strategy, integration of advanced technologies, and procurement/construction methodology.













LEFT to RIGHT: Aerial View from Northwest \_Tech Spine pilot plant \_Tech Spine boulevard with e-tree canopy\_Campus entry from Northern roadway\_Promontory

# **NEWARK T1**

### Affiliation: Grimshaw Architects\_ Design/Project Architect (Schematic-Construction) \_ Completed 2022

The first major project in a long-term vision plan, the new Terminal A at Newark International Airport was designed to replace an outdated and under-served 1973 facility. At 1M square feet and 33 gates, the new terminal accommodates up to 14 million passengers/year.

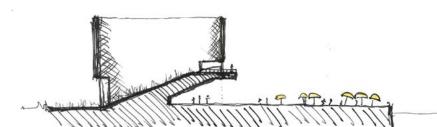
The head house is designed to maximize daylight, openness, and views to the surrounding context. Large roof spans create a column-free interior, while massive skylights deliver diffuse daylight through a permeable, undulating ceiling. The diagrid roof structure and geometry reflect that of the previous terminal, with large cantilevered overhangs to shade glazed curtain walls and provide shelter over the departures curbside. The terminal layout is carefully designed to optimize passenger movement, with intuitive wayfinding, centralized security, and clear sight lines to key areas such as gates, retail, and dining.

The terminal was delivered as a design-build consortium for the Port Authority of New York and New Jersey (PANYNJ) with Grimshaw assuming the role of design architect in partnership with STV as executive architect. My role in the design leadership team extended from schematic design phase through construction and included design development, structural and environmental design integration, daylighting, and team/project management. To date this project has won numerous awards, including Skytrax 'Best New Airport Terminal in the World' and UNESCO Prix Versailles Special Prize.



LEFT to RIGHT: Ticket hall toward security checkpoint \_ Terminal view from departures roadway \_ Study model ticket hall \_ Ticket hall with floor-mounted diffusers. ABOVE: Terminal plan departures level

# **MAKER PARK**



## Affiliation: Studio V / MakerPark \_ Senior Designer (Concept) \_ Unbuilt \_ 2016-7

Winner of NYC Urban Design Award and Architizer A+ Award, Maker Park was a proposal to incorporate the contents of an disused oil supply depot into the masterplan of Bushwick Inlet Park, a 21-acre parcel of land along the East River in Williamsburg Brooklyn. At the time of this proposal, the brownfield site contained a 3-story historic industrial building, 10 oil storage tanks and various ancillary structures. This concept challenged the previously approved masterplan, which targeted all existing historic structures on the property for demolition.

The Brooklyn waterfront, once a particularly vibrant hub of heavy industrial productivity, has gradually been choked out by commercial and residential high rise development. At the same time, a hightech industrial maker culture has emerged in its place. Our plan envisioned the park as an overlay of the new industrial culture onto the physical remnants of industrial past. The building was to be retained as a community center and working laboratory, while the oil tanks were adapted to accommodate a range of programs - from gardens to workshops, exhibition/performance spaces, swimming pools and solar arrays. Landscape was designed to cap sub-grade contaminants and create a dynamic relationship with the structures, re-introducing plant species once native to the local ecosystem.

Despite significant support from the surrounding community, the project remained highly controversial and was ultimately unrealized.

































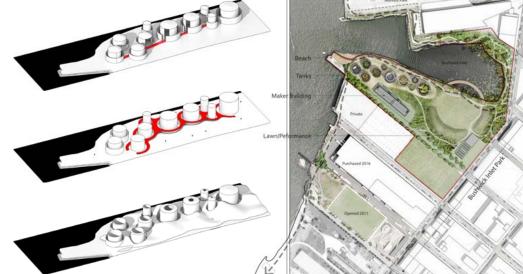














LEFT to RIGHT: Aerial view future park\_Interior Tank with Garden\_Existing view toward Manhattan\_Tank landscape and circulation studies\_Site plan entire park (staged development)\_Future inlet view. ABOVE: Concept sketch and tank modification diagrams.

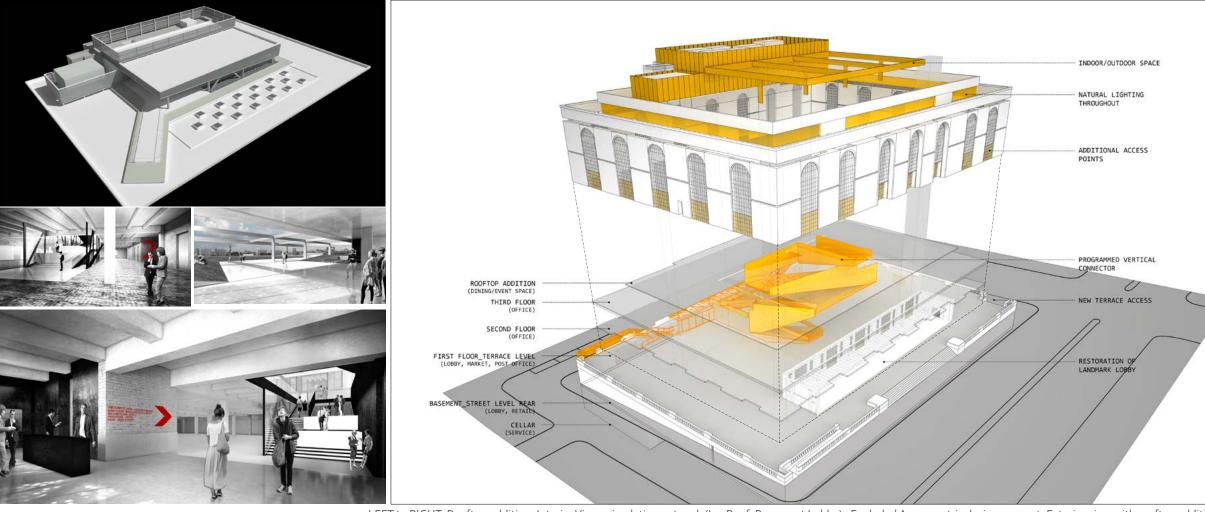
# **BRONX GENERAL**

## Affiliation: Studio V\_Project Architect (Concept-CA) \_ Completed \_ 2015-17

The Bronx General is an adaptive re-use of a WPA-era post office facility into a mixed-use retail, office and entertainment space. The building was constructed in 1935 and since has served as the primary sorting facility for the Bronx and a vital social hub for the area. Our design concept emerged as a way to maintain the character of the Landmarked building while introducing a new level of connectivity, both physically and symbolically, through the building interior and to the surrounding neighborhood. A series of permeations to the building enclosure inserted at street and terrace levels activate the perimeter, while a continuous internal network of programmed ramps was designed to visually and programmatically connects the layers of program within and deliver additional light to the floor plates. A new lobby entrance at the former loading dock further engages the building at street level and connects visitors to the market and office floors above. Atop the building is a small polycarbonate addition serving as an event and entertainment venue. Polycarbonate was chosen for its mildly reflective and ethereal quality - as a way to both complement and distinguish the new element from the solidity of the glazed brick below.

My involvement in the project extended from concept through construction - as senior designer I developed conceptual designs and renderings, organized presentations, navigated numerous bureaucratic approvals processes (including NYC Landmarks Commission and National Park Service), created and maintained all document sets, developed details, coordinated with consultants, contractors, fabricators. The project was completed









LEFT to RIGHT: Rooftop addition\_Interior Views circulation network (L2, Roof, Basement Lobby) \_Exploded Axonometric design concept\_Exterior view with rooftop addition\_Rooftop Addition Interior\_Polycarbonate Enclosure Exterior\_Stair fabrication.

ABOVE: Conceptual section diagram\_Building elevations with street level intervention.

# **WEI-WU-YING BRIDGE**

# Collaboration with: WAO/TH Tsai & Associates Lead Design/Project Architect (Concept-CD) Unbuilt 2012-13

This scheme was the selected entry in an international bridge competition organized by the city of Kaohsiung, Taiwan. The project brief was part of a citywide masterplan to enhance pedestrian and cycling connectivity throughout the downtown district - it included the design of a 600-meter elevated pedestrian/bicycle bridge with the incorporation of an existing highway overpass. The established route began in a public park, extended over local roads and a 6-lane highway before descending into a dense urban block. Our design response was to divide the project into three distinct experiential segments: the park, the highway, and the city. To create a dynamic experience for the user, the geometry of the route changes along its length to reflect the relative visual speed and intensity of the surrounding environment.

Additionally, sectional changes at strategic locations offer moments for pause and reflection. The structural system, cladding and detailing combine to create a distinct visual presence while also providing a sense of transparency and weightlessness.

This project was developed in collaboration with THThai & Associates. As the principal designer my involvement began in the early competition phase and extended through construction documentation. My role included conceptual and design development, coordination with engineers and consultants, client presentations, detailing and development/oversight of document sets.









LEFT to RIGHT: Gradient screen over existing overpass\_Concept design gradient screen\_Site plan 3 zones\_ Aerial view integration into park\_Counterbalanced suspensions spans\_View from suspension span. TOP: Structural/assembly model of suspension span\_Concept development: gradient screen over existing bridge.

# **MOTION FILTER**

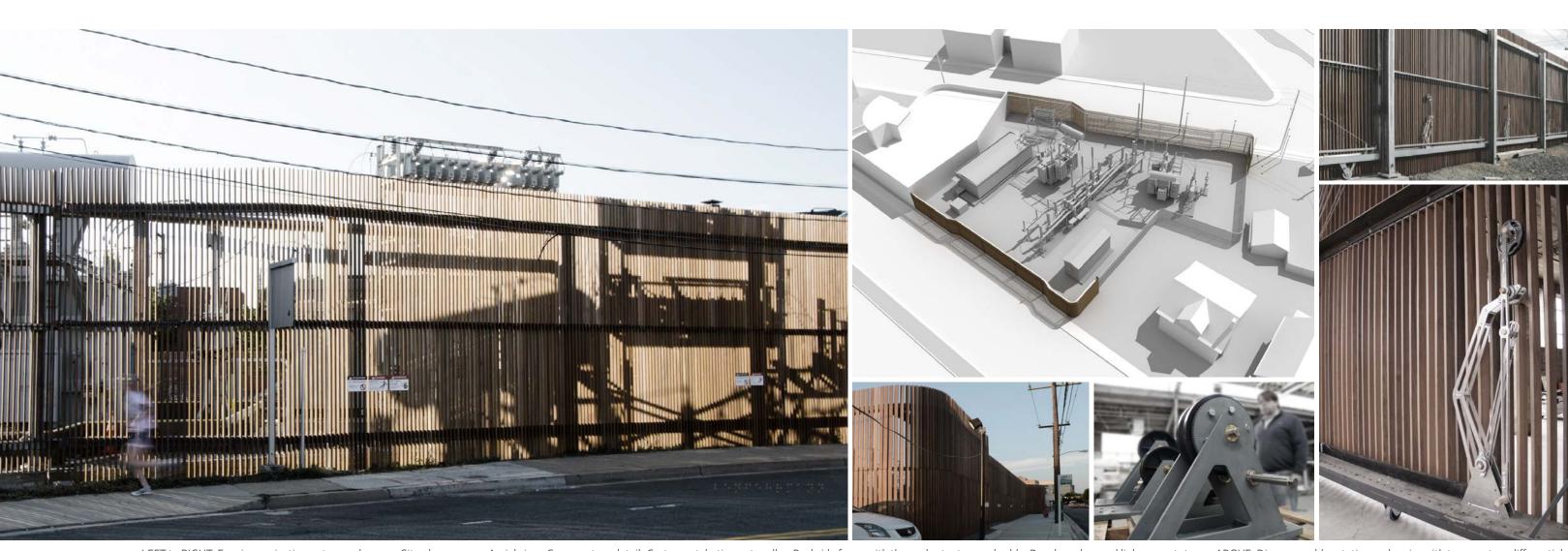
# 0° 60° 120°

# Collaboration with: TwelveMetre \_ Senior Designer (Concept-Install) \_ Completed \_ 2012

This installation was commissioned by Dominion Virginia Power as part of an ongoing public art masterplan. The project brief was to create a high-security enclosure around an electrical substation that would also diffuse its visual impact and enhance the pedestrian experience. The design introduces a field of parallel vertical elements, which establishes an organizational hierarchy to the site and reveals the contents of the substation in a systematic and deliberate way. Views into the site become limited, defined by distance, angle and perspective. Additionally the enclosure acts as a screen onto which the equipment beyond is projected, compacting the information into a 2-dimensional representation.

Behind the primary layer is a system of vertical stainless steel cables exist that, when rotated in-plane, create a moire pattern. This layer is intended to provide an abstract reference to the viewer as to the activity of the substation at any given time. The intensity of the moire corresponds to the amount of electricity being processed and is activated through a mechanical actuator that responds to temperature - as air temperature changes, the rotation of cables changes accordingly.

My work with the commissioned artist ranged from conceptual design and prototyping through construction documentation, fabrication and installation.



LEFT to RIGHT: Evening projection onto wood screen\_Site plan 3 zones\_Aerial view\_Corner return detail\_Custom ratcheting gate roller\_Backside fence with thermal actuators and cable\_Panel mockup and linkage prototype. ABOVE: Diagram, cable rotation and moire with temperature differential.



# ST LOUIS PUBLIC RADIO





# Affiliation: Axi:Ome \_ Senior Designer (SD/DD) \_ Completed \_ 2009-10

Located in the developing arts district of Saint Louis city, STL Public Radio serves as a nexus between several neighboring points of activity and help to establish a new pedestrian corridor. The building contains office space and broadcast studios on the upper levels and event/classroom space on the ground level. An exterior plaza creates a public link between the new building and the adjacent public television station to the west, providing a venue for jointly sponsored events. A large cantilever at the sidewalk edge both marks the building entry and frames the plaza beyond. Saw-tooth projections along the street facade, while shaped to reflect the program contained within, also serve to engage pedestrians and allow views past adjacent buildings.

As senior designer from schematic through construction, I developed the overall design, massing and planning of the building and adjacent plaza, developed drawings, renderings and document sets, organized the design team, created programming and material studies, designed interiors, furniture and landscape and coordinated with consultants.























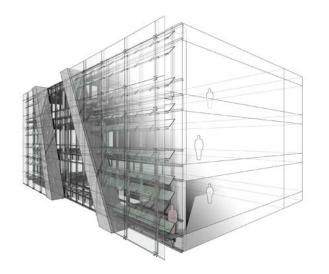




cantilever with plaza beyond. ABOVE: Floor plans\_Evolution/study of massing and facade

Service bar articulated as independent element

# **CMA TOWER**

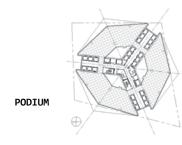


# Affiliation: HOK \_ Associate/Designer (Concept-DD) \_ Completed \_ 2008-9

The Capital Market Authority tower is part of a masterplan developed in 2009 for the King Abdullah Financial District, a ground-up financial center just outside central Riyadh. At 385 meters high (77 floors), this tower is the focal point of the district and one of the tallest buildings in Saudi Arabia. The tower is a slender, faceted glass volume emerging from a compact site. The cross-section undulates to create a faceted surface and to reduce impact of wind loading at higher altitudes. A series of concrete super-columns offers vertical support at the perimeter and, in conjunction with diagonal framing members, creates a rigid structural cage and provides formal definition. The building envelope extends 30 meters beyond the top floor to house a large photovoltaic array. Construction began in 2010 and completed in 2014.

As an intermediate-level designer my involvement extended from early conceptual studies through the end of design development. My primary role involved development of the podium geometry, assembly and interiors. I developed the diagrid structure, facade and solar shading system, performed environmental studies, created drawings, 3d models and renderings, and developed details.



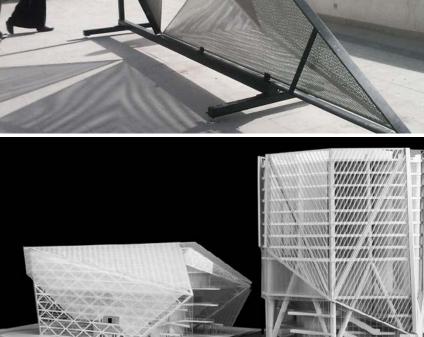


TOWER





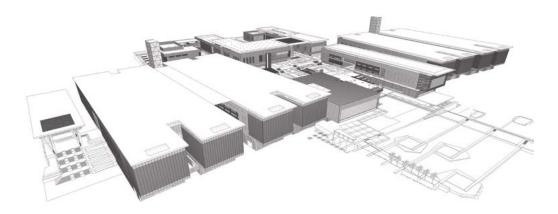




LEFT to RIGHT: Full tower view\_Automated glass louver shading system with integrated PV\_Interior views of rooftop event space and lobby atrium\_Mockup of folded perforated shading component\_Physical model at tower base.

ABOVE: Preliminary double-skin facade concept\_Podium and typical tower plan with radial core.

# **KAUST**



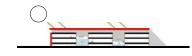
## Affiliation: HOK \_ Associate/Designer (Concept-CD) \_ Completed \_ 2007-9

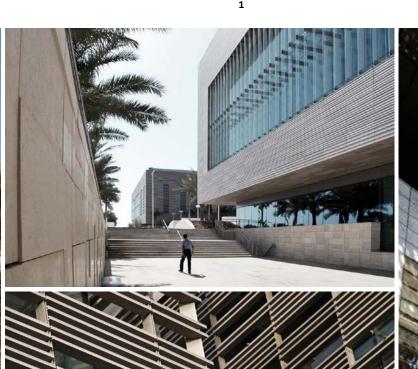
The King Abdullah University of Science and Technology (KAUST) is an advanced research facility and the focal point of a ground-up coastal urban development near Jeddah. KAUST is an international university with a coeducational student body created as an icon of Saudi modernization and of evolving national priorities. As an architectural undertaking it was incredibly ambitious, evolving from concept to completion in just under four years. HOK was awarded the contract to design the entire university, including research laboratories, administrative and common use buildings, parking and ancillary facilities.

The project required collaboration between several hundred designers, consultants and technicians throughout multiple locations. Involvement extended from concept design through construction documentation and administration. Although my role was multi-faceted, the majority of my focus was devoted to the development of a passive cooling strategy within the laboratory buildings and the design of associated architectural elements such as the roof system, building envelope, courtyards and solar towers. This project is the largest LEED Platinum project in the world and has received numerous design awards, including the 2010 COTE-AIA Top Ten Green Buildings award.







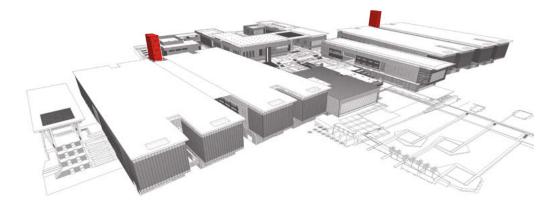






LEFT to RIGHT: Campus library with translucent stone facade panels (labs beyond\_Glass shading fins\_Terra cotta shading on laboratories\_Interior courtyard with perforated roof. ABOVE: Axonometric Campus\_Conceptual evolution of site massing.

# KAUST SOLAR CHIMNEYS



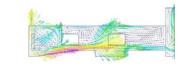
## Affiliation: HOK \_ Associate/Designer (Concept-CD) \_ Completed \_ 2007-9

The solar towers at KAUST are significant contributors to the passive climate control strategy and the defining architectural elements of the laboratory campus. I was the primary designer for the solar towers from concept through construction and collaborated extensively with climate and structural engineers to develop an iconic tower that could produce the required airflow in the courtyards, be constructed quickly and withstand the harsh marine environment.

Each tower consists of a precast concrete diagrid structure with a double-glazed skin. The diagrid provides sufficient thermal mass to retain heat, lacking in vertical structural elements, softens the perimeter and adds a visual lightness to the design. The outer glazing is clear to allow radiation to penetrate into the cavity, where it is absorbed and held by the tinted inner glazing. As hot air is released it rises upward through the shaft, creating a negative pressure at the base and pulling air from the courtyards. Stainless steel service access platforms double as vertical support hangers for the exterior glazing. The penthouse contains operable dampers, facade access equipment and auxiliary fans. As the primary designer for the solar towers and adjacent pedestrian bridges I was responsible for all facets of the design, from conceptual development through detailing and construction documentation.



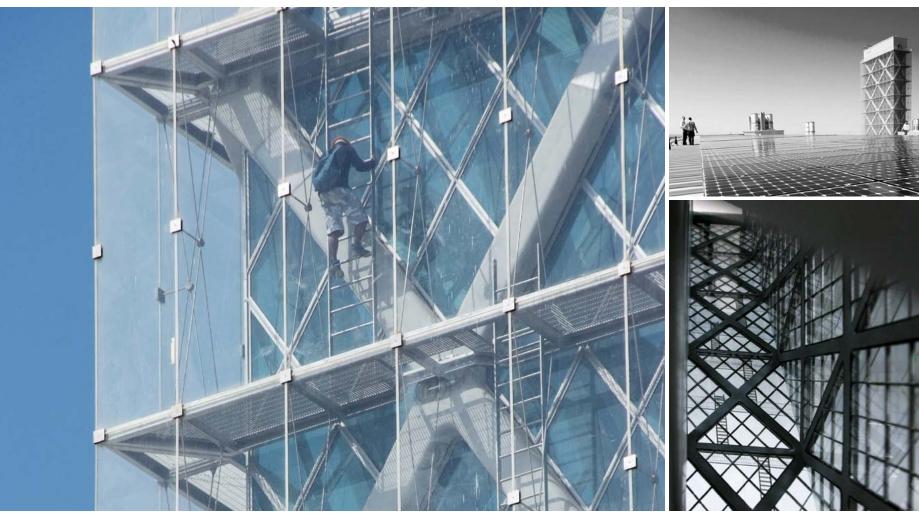






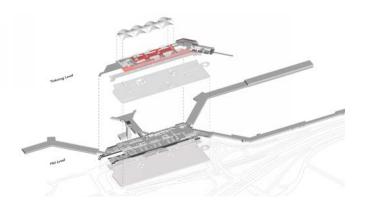






LEFT to RIGHT: Tower embedded into bldg massing\_Assembly of prestressed concrete elements\_Conceptual design diagram with airflow\_Double-glazed assembly traps heat in cavity\_\_PV array on rooftops\_Model view from interior. ABOVE: Heat and air flow simulations in courtyard.

# LAMBERT AIRPORT EXPERIENCE



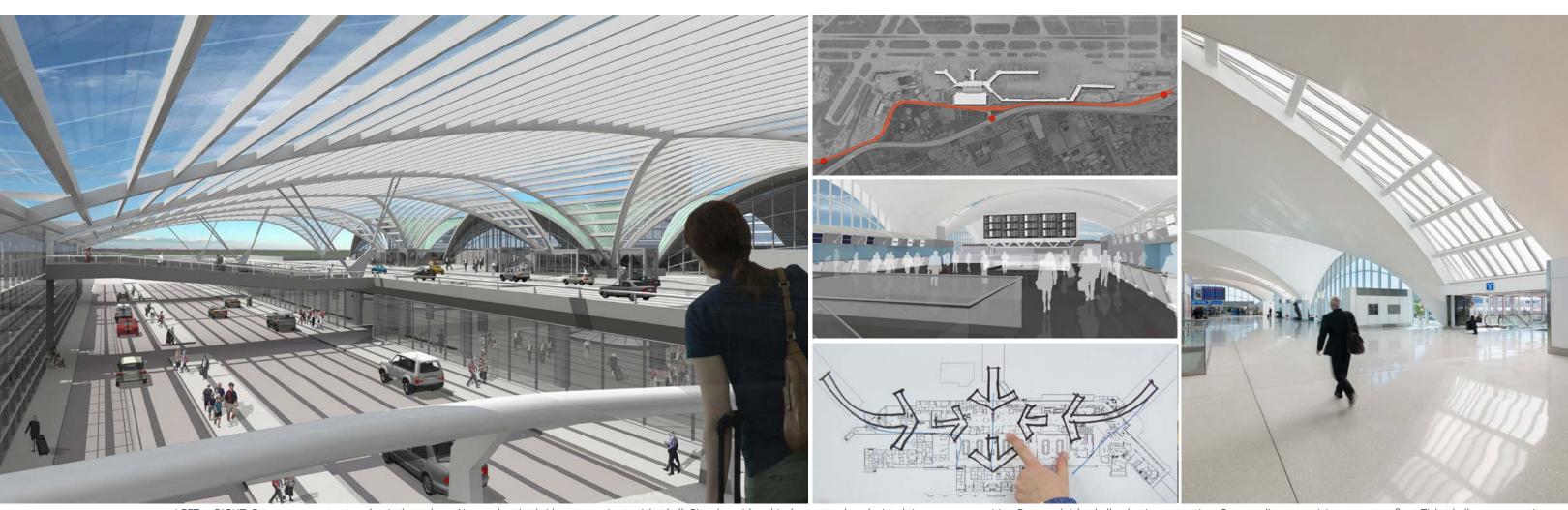
### Affiliation: HOK \_ Associate (Concept-CD) \_ Completed 2010

The Lambert Airport Experience Project was a comprehensive masterplan to modify and upgrade the existing historic St Louis International Airport and restore a sense of functional, aesthetic and experiential clarity. The original terminal, a series of cast-in-place concrete vaults designed by Minoru Yamasaki in 1953, was instrumental in defining the vocabulary of the modern airport.

In 2000 the airport served 30 million passengers annually, by 2005 this number had reduced to 15 million. Aside from attracting new airlines, the aim of the Experience Project had several main objectives: to redefine the airport as a public space and a gateway to the region; to clarify and simplify wayfinding; to technically upgrade the facility; and to integrate post-9/11 security standards. Through a series of large-scale reductive interventions - most significantly the introduction of a large opening in the ticket hall floor and lowering of the arrivals level roadway - the space is visually expanded to introduce natural light, orient passengers and allow for intuitive wayfinding. Departing and arriving passengers are collected and disbursed from a single central point. A glazed canopy over the arrival and departure-level roadways reflects the language of the original domes and extends the public space beyond the terminal.

As project designer my involvement extended from conceptual initiation through final delivery and included design and coordination, passenger/traffic flow analyses, preparation of document sets, presentations, marketing materials and





LEFT to RIGHT: Canopy over restructured arrivals roadway. New pedestrian bridge connection to ticket hall\_Site plan with vehicular approach and critical signage opportunities\_Proposed ticket hall reductive renovation\_Concept diagram arriving passenger flow\_Ticket hall post renovation.

ABOVE: Terminal/concourse axonometric\_Proposed section through main terminal