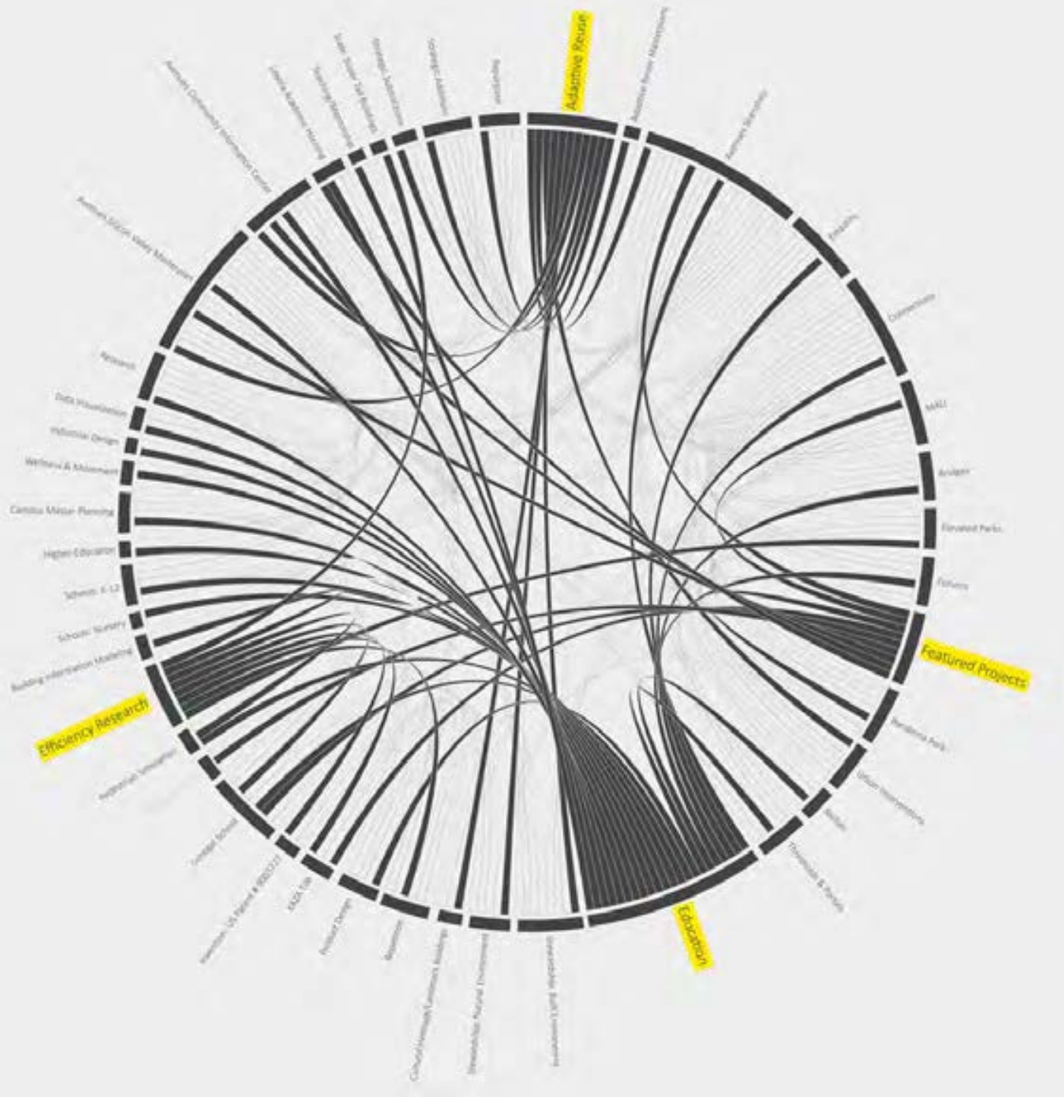
EFFICIENCY LAB FOR ARCHITECTURE

建 筑 效 率 实 验 室



EFFICIENCYLAB.ORG

Efficiency Lab for Architecture is committed to a better understanding of efficiency in the built environment through research and design.
建筑效率实验室致力于通过研究和设计在建筑环境中更好的理解效率。

We are an architectural design firm. Our design approach is rational and rigorous. WE CARE FOR THE ENVIRONMENT. We advocate environmental consciousness at design and policy making platforms. WE INVENT. Aybars Asci holds a U.S. Patent for a highly energy efficient building enclosure system. DATA IS OUR ZEITGEIST. 90% of the data today in the world has been generated in the last two years alone. We believe design process needs to better integrate it. *(X/Y=85%)* WE CAN DO BETTER. We do not evaluate efficiency as a single ratio, but as an ecosystem made up of multiples, each fulfilling their individual mandate to their maximum potential while allowing others to reach theirs. WE TEACH EFFICIENCY. We launched an in-depth study on efficiency, through research seminars and studio projects in academia.

我们是一家建筑设计事务所。我们的设计合理并严谨。**我们关心环境。**在设计和策略指定的平台上，我们提倡环保意识。我们是城市灾害风险降低和恢复中心的一员。**我们创造。**Aybars Asci先生持有一项美国节能建筑外围护系统的专利。**数据是我们的时代精神。**今天世界上90%的数据是在过去两年产生的。我们相信设计过程需要更好地结合数据去设计。（X/Y=85%）**我们能够做的更好。**我们用整个生态系统的倍数来衡量效率，而不是作为单一的比率来计算。每个成员都能够发挥他的最大潜力，并同时帮助他人达到他们的最大潜能。**我们教导如何提高效率。**通过研讨会和设计课程，我们在学术界开展了深入的研究工作。

We believe that;
我们相信：

efficiency is **good business**
efficiency is **sustainable**
efficiency is **beautiful**

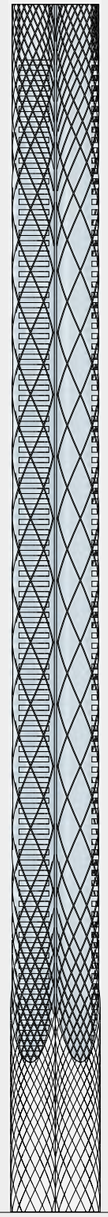
效率是好的业务
效率是可持续的
效率是美丽的

MIXED USE TOWER NEW YORK

综合体塔楼 纽约

Design Proposal: 2016
Client: Confidential

Program: Hotel + Residential
Tower Height: 1,400’
Total Gross Floor Area: 1,000,000 sf



SHUMYIP UPPERHILLS SHENZHEN, PRC

深业上城综合体 深圳

VIDEO

Completion Date: 2020
Program: Office, Hotel, Retail
Environmental: LEED Gold Certified (Tower 1)
Client: Shum Yip Land

Tower 1
Tower Height: 388 meters
Tower Floors: 80
Tower Gross Area (above grade): 228,600 m²
Tower Office Area: 185,880 m²
Tower Hotel Area: 36,500 m²
Typical Floor Gross Area: 2,999 m²
Typical Floor to Floor Height (office): 4,500 mm
Typical Floor to Floor Height (hotel): 4,200 mm
Typical Floor to Ceiling Height: 3,000 mm

Tower 2
Tower Height: 300 meters
Tower Floors: 62
Tower Gross Area (above grade): 155,375 m²
Typical Floor Gross Area: 2,543 m²
Typical Floor to Floor Height: 4,500 mm
Typical Floor to Ceiling Height: 3,000 mm

Mandarin Oriental Ballroom Pavilion
Building Height: 58 meters
Floors: 6
Total Gross Area (above grade): 18,000 m²
Total Hotel Area: 8,000 m²
Typical Floor to Floor Height: 9,500 mm (ballroom levels)

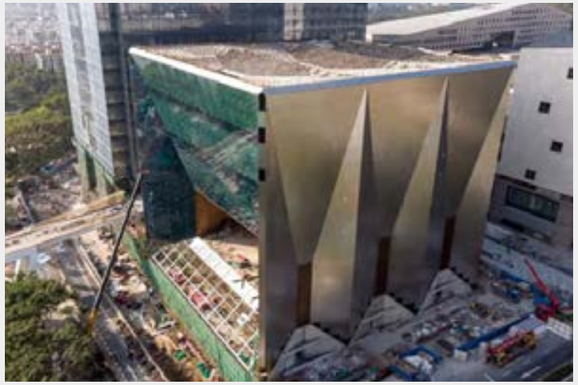
完工日期：2020年
功能：办公，酒店，商业
节能：塔楼 1 LEED金奖
业主：深业置地

塔楼 1:
高度：388米；80层
地上建筑面积：总面积228，600平方米，酒店面积36，500平方米，办公面积185，800平方米
标准层面积：2，999平方米
标准层高：办公4.5米，酒店4.2米，净高3米

塔楼 2:
高度：30米；62层
地上建筑面积：总面积155，375平方米
标准层面积：2，543平方米
标准层高：办公4.5米，净高3米

东方文华酒店宴会厅高度：58米；6层
地上建筑面积：18，000平方米
酒店总面积：8，000平方米
宴会厅层高：9.5米

*Project designed by SOM (**Aybars Asci,** Director-in-Charge of Design)*



AVENUES: THE WORLD SCHOOL - SHENZHEN CAMPUS SHENZHEN, PRC

爱文世界学校深圳校区 深圳

CAMPUS TOUR

Avenues: The World School in Shenzhen is located in the Tanglang Industrial Zone, one of the few remaining underdeveloped areas of Nanshan District. The Tanglang area has been slated for redevelopment as an education and research zone capitalizing on synergies with neighboring institutions – Southern Science University and Shenzhen University Gymnasium. The project envisions a place of learning with welcoming, safe, and sustainable green spaces and connections to the landscape.

Address: Sofunland A, Tangxing Road 133
Shenzhen, Guangdong Province 518000 China
Program: N-12 School. Classrooms, Common Spaces, Support Spaces, Recreation Areas, Offices
Campus Master Plan: 300,000 sqft
Phase 1: 82,000 sqft
Client: Avenues World Holdings + Mingyang Education

Team
Masterplan: Efficiency Lab for Architecture PLLC
Design Architect: Efficiency Lab for Architecture PLLC
Interior Design: Efficiency Lab for Architecture PLLC
Local Design Coordination: WAY Design
Local Design Institute: CCDI
Local Planning Institute: Shenzhen Urban Planning Institute
Structural Design: Skidmore, Owings & Merrill LLP
Landscape Design: Terrain
Lighting Design: Claude Engel
Acoustic: WSDG
Structural Retrofit Contractor: Genzon
General Contractor: EDG

爱文世界学校深圳校区坐落于塘朗工业园区，为南山区几个待发展区域之一。利用毗邻的南方科技大学与深圳大学城的协同作用，塘朗区域已被规划为以教育为核心资本的区域。该项目构想了一个集开放，安全，可持续的绿色空间为一体的宜人的学习场所，并建立起与景观的联系。

位置：广东省深圳市南山区塘兴路13号，集悦城A区
功能：N-12学校。教学区域，公共活动空间，服务空间，休闲区域，办公
校园总面积：300，000平方英尺
一期面积：82，000平方英尺
业主：爱文世界学校 + 铭阳教育

LEARNING PODS ->

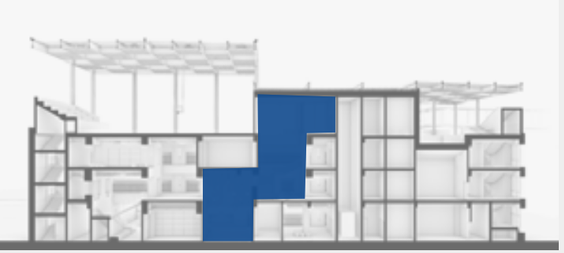
The Pods are organized around the atrium with views across one another. The writable glazing creates a fun and interactive learning surface.

Pods 被设计在环绕中庭的位置，拥有着可以看到彼此的视野。
可书写的玻璃墙创造了具有趣味性和可交互性的学习界面。

INTERCONNECTING ATRIA

The floor slabs of the existing building is carefully cut to create multistory openings, arranged to allow for diagonal views across the three floors

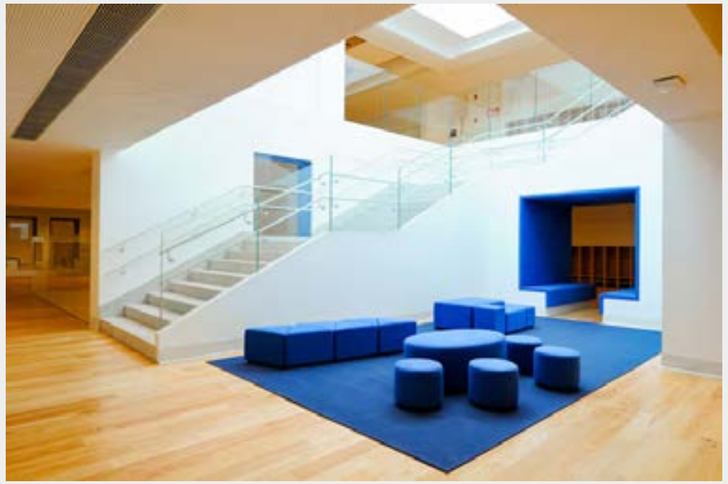
原有建筑的楼板进行了精心的切割，创造了连接多层的开放空间，使之具有了三个楼层之间斜向的视觉联系。



CENTRAL ATRIUM ->

Located at the middle of the floor plate, the central atrium brings in natural light to the spaces below, as well as connecting the building up to the roof playgrounds.

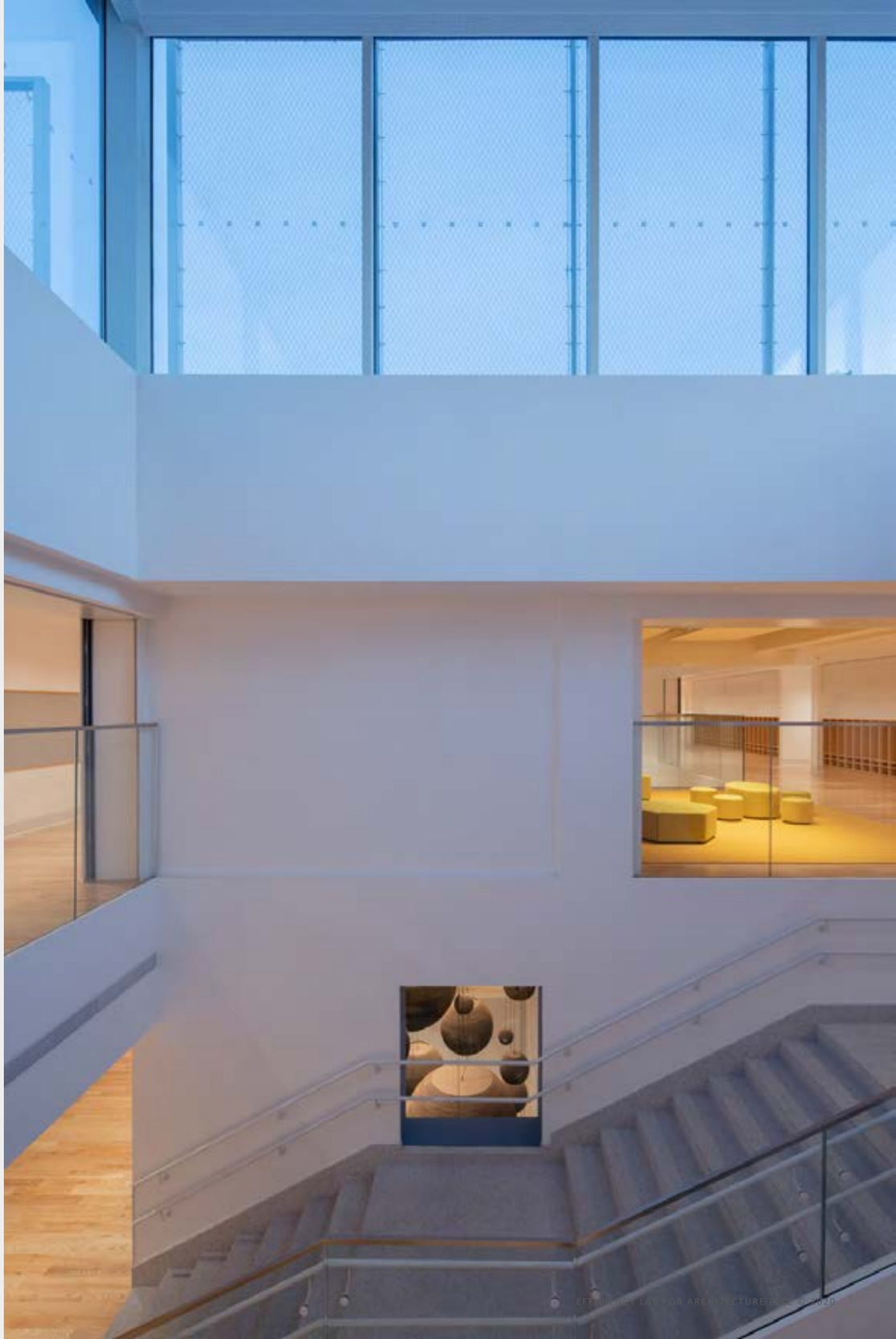
中央中庭位于建筑的中部，将自然光引入了建筑下层，并将建筑物与顶层的活动场所相连。



BLUE KEYHOLE

Next to the Student Commons underneath the clerestory windows, the keyhole acts both as a gateway entry and a fun area to hang-out.

Keyhole位于天窗下方的学生公共活动空间，既作为公共活动区入口，也可作为娱乐的空间。



CAMPUS BRIDGES & VERTICAL PLAYGROUNDS ->

(1)

(2)

(1) View of the Pedestrian Bridge Connecting Early Learning Center to the Administration Building

(2) & (3) Views of the pedestrian bridge perched high up within the canopies of the Banyan Trees

(4) View of the vertical playgrounds. The support of the bridges are designed as vertical playgrounds offering students an immersive experience with nature.

（1） 连接早教中心与学校管理楼的人行天桥
（2） 榕树树冠下高高耸立的人行天桥
（3） 垂直活动场所。桥的结构被设计为纵向展开的游乐场，为学生提供了沉浸式的大自然体验

(3)

(4)

AVENUES: THE WORLD SCHOOL - SAO PAULO CAMPUS BRAZIL

爱文世界学校圣保罗校区 巴西

LOYOLA UNIVERSITY ACADEMIC HOUSING CHICAGO, ILLINOIS

Loyola大学学生公寓 芝加哥

The Loyola University student housing project is a mixed-use project with a retail base, student lounge and common areas on the second level that access an outdoor terrace for student use, and student housing above. The pleated facade provides long vistas for the dwelling units to the nearby waterfront of Lake Michigan.

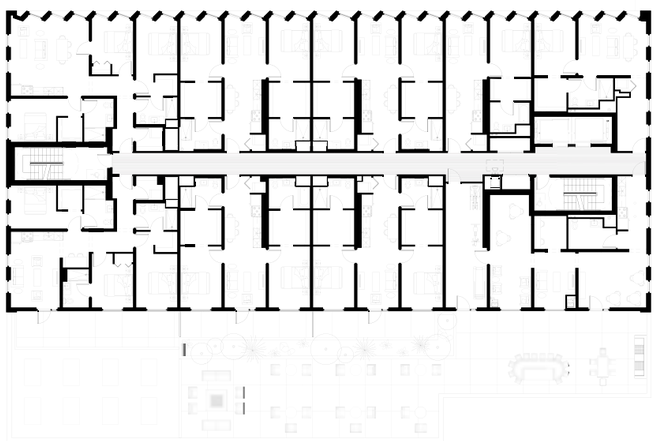
The enclosure design is a combination of stone and glazing components with operable windows. The pleating creates unique qualities of transparency and solidness as you move around the building.

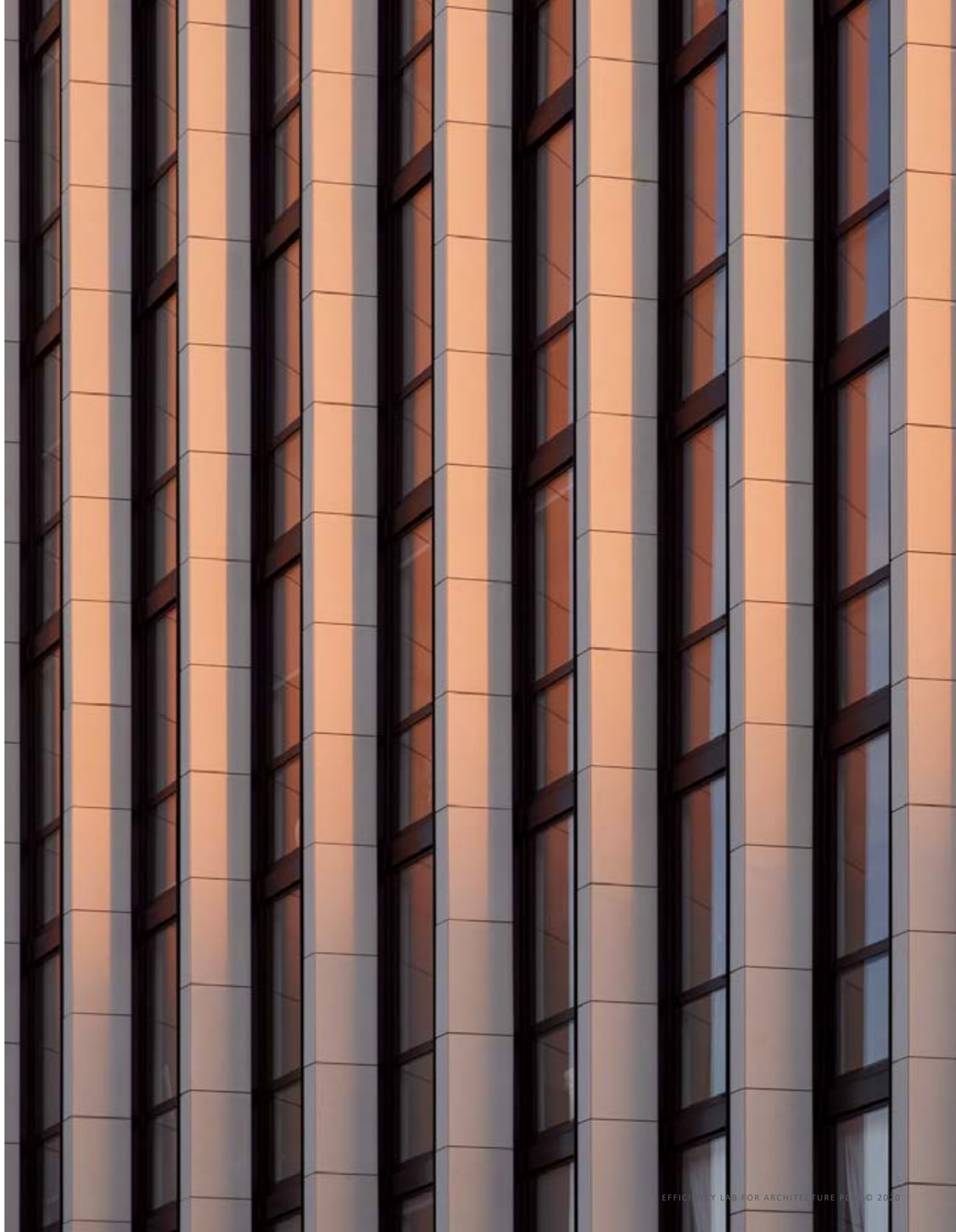
Address: 6351-67 North Broadway, Chicago IL 60660
Program: 58 university student housing units and lounge spaces, 29 parking stalls, ground level retail
Duration: May 2017 – September 2019
(construction complete, building open and occupied)
Area: 105,000sqft
Total Floors: 7 above grade, 1 below grade
Client: Algonquin Venture Real Estate, LLC

TEAM
Design Architect: Efficiency Lab for Architecture PLLC
Architect of Record: Hirsch Asscociates, LLC
Structural Design: Simpson Gumpertz & Heger
MEP Engineer: The Engineering Studio, Inc
Civil Engineer: Eriksson Engineering
Landscape Architect: Daniel Weinbach & Partners, Ltd

Loyola大学学生住房项目是一个混合功能项目。首层为商业零售，学生休息区和公共活动室位于二层，并连接着供学生使用的室外露台。而学生宿舍位于上层。折叠的外墙建筑外表皮则为其中的住宅单元提供了通往密歇根湖岸的远景视野。
外墙的设计是石材与可开启外窗的组合。当在建筑物中穿行时，折叠的建筑外墙创造出了独特的通透感与坚固感。

位置：伊利诺伊州芝加哥 6351-67 North Broadway
功能：学生公寓（58间）及公共活动区域，停车位（29个），零售
总面积：105，000平方英尺
层数：地上7层，地下1层





AVENUES: THE WORLD SCHOOL - SILICON VALLEY CAMPUS SAN JOSE, CA

爱文世界学校硅谷校区 圣何塞

Avenues Silicon Valley is a 12-acre campus located in San Jose, California for 2,744 students. The project consists of the adaptive re-use of two commercial office buildings for academic purposes as well as the construction of five new buildings, inclusive of a Fitness Facility with a natatorium and a Performing Arts Center with a Theatre.

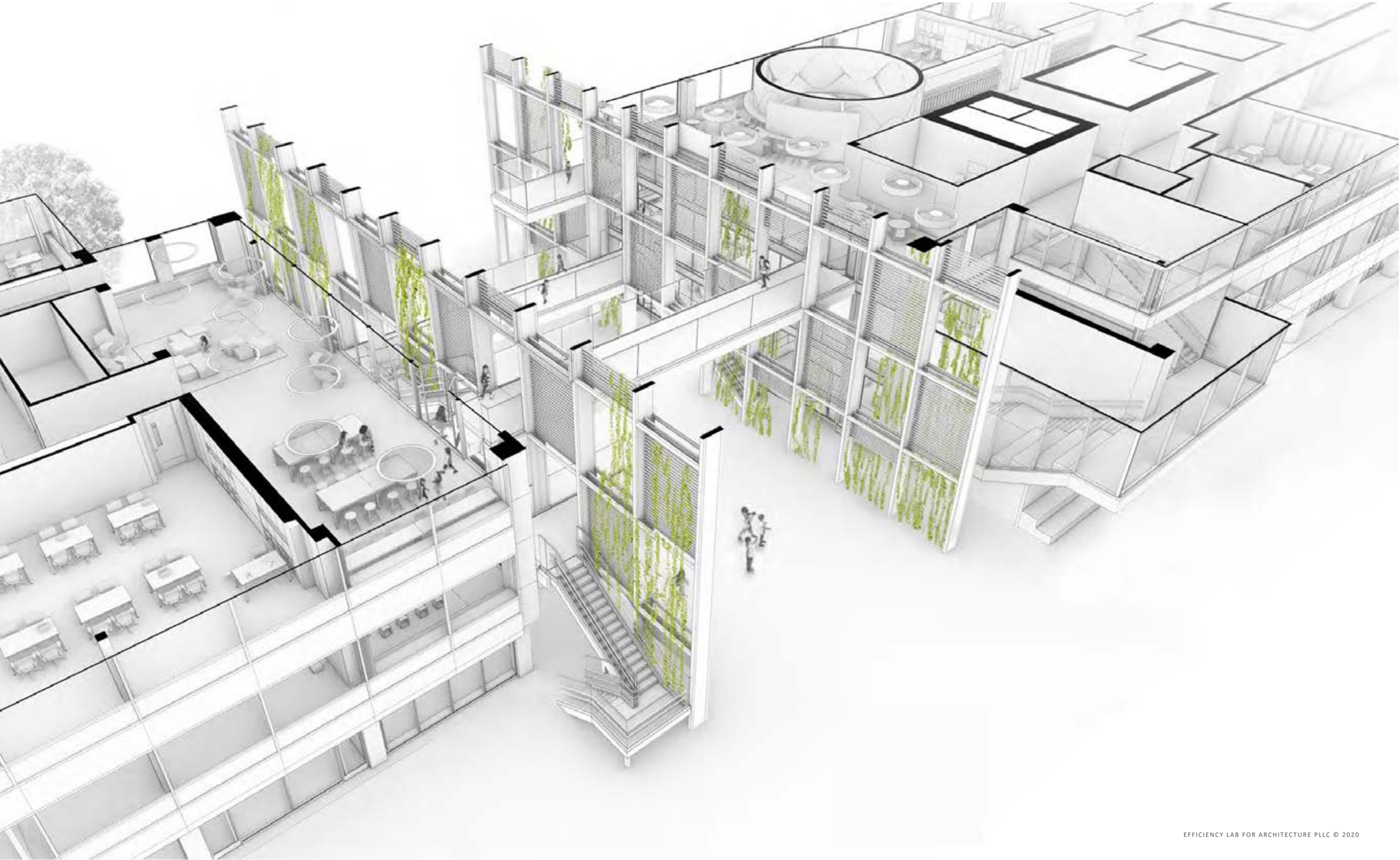
The campus is organized around a central campus pedestrian walk which allows the school to engage the landscape with learning spaces. The primary design feature for the project is a 50' steel portal structure that serves as a centralizing focal point for the school. New student common areas (both inside and outside) engage the portal on both sides with pedestrian bridges linking these spaces through the portal.

Address: 550 Meridian Avenue, San Jose, California 95126
Program: N-12 School. Classrooms, Common Spaces, Support Spaces, Recreation Areas, Offices, Performing Arts Auditorium, Laboratories
Site: 11.87 acres
Area: Campus Master Plan: 550,000 sqft; Phase 1: 183,000sqft
Client: Avenues World Holdings

Team
Masterplan: Efficiency Lab for Architecture PLLC
Design Architect: Efficiency Lab for Architecture PLLC
Interior Design: Efficiency Lab for Architecture PLLC
FF&E: Efficiency Lab for Architecture PLLC
Architect of Record: Adamson Associates
Structural Engineer: SOM
MEP: Syska Hennesy
Civil: Kimley Horn
Lighting Design: Claude Engel
Acoustic: Longman Lindsay

爱文世界学校硅谷校区占地12英亩，位于加利福尼亚州圣何塞，可容纳2744名学生。该项目包括为学术目的对两座商业办公楼进行适应性再利用，以及五座新楼的建设，其中包括带有游泳池的体育活动场馆和带有剧院的表演艺术中心。
校园围绕着中央步行道而组织，这使得学校能够有效地将景观空间与学习空间融合在一起。该项目的主要设计特征为一个50英尺高的钢结构入口，作为校园的集中点。新的学生公共活动区域（包括内部与外部活动区域）在两侧与之相连，穿过入口的人行天桥加强了公共区域之间的联系。

位置：加利福尼亚州圣何塞，550 Meridian Avenue
功能：N-12学校，教学区域，公共活动空间，服务区域，休闲空间，办公，表演艺术厅，实验室
场地总面积：11.87英亩
建筑总面积：550，000平方英尺
一期面积：183，000平方英尺
业主：爱文世界学校



COMMUNITY INFORMATION CENTER SAN JOSE, CA

社区信息中心 圣何塞

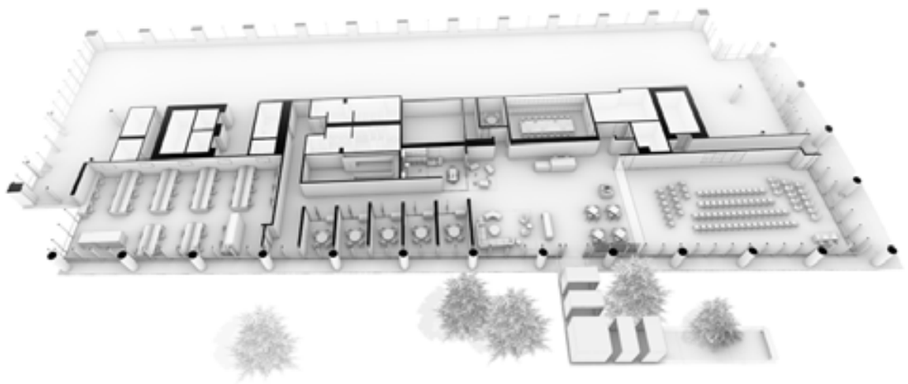
The Community Information Center in San Jose is a 10,000sqft ground level renovation project that creates a reception and lounge area with an adjacent presentation space in an existing commercial office building. Concrete portals located within the immediate landscape at the entrance welcome visitors to the center and serve to reorient their attention from is suburban office park context to a light filled open interiors.

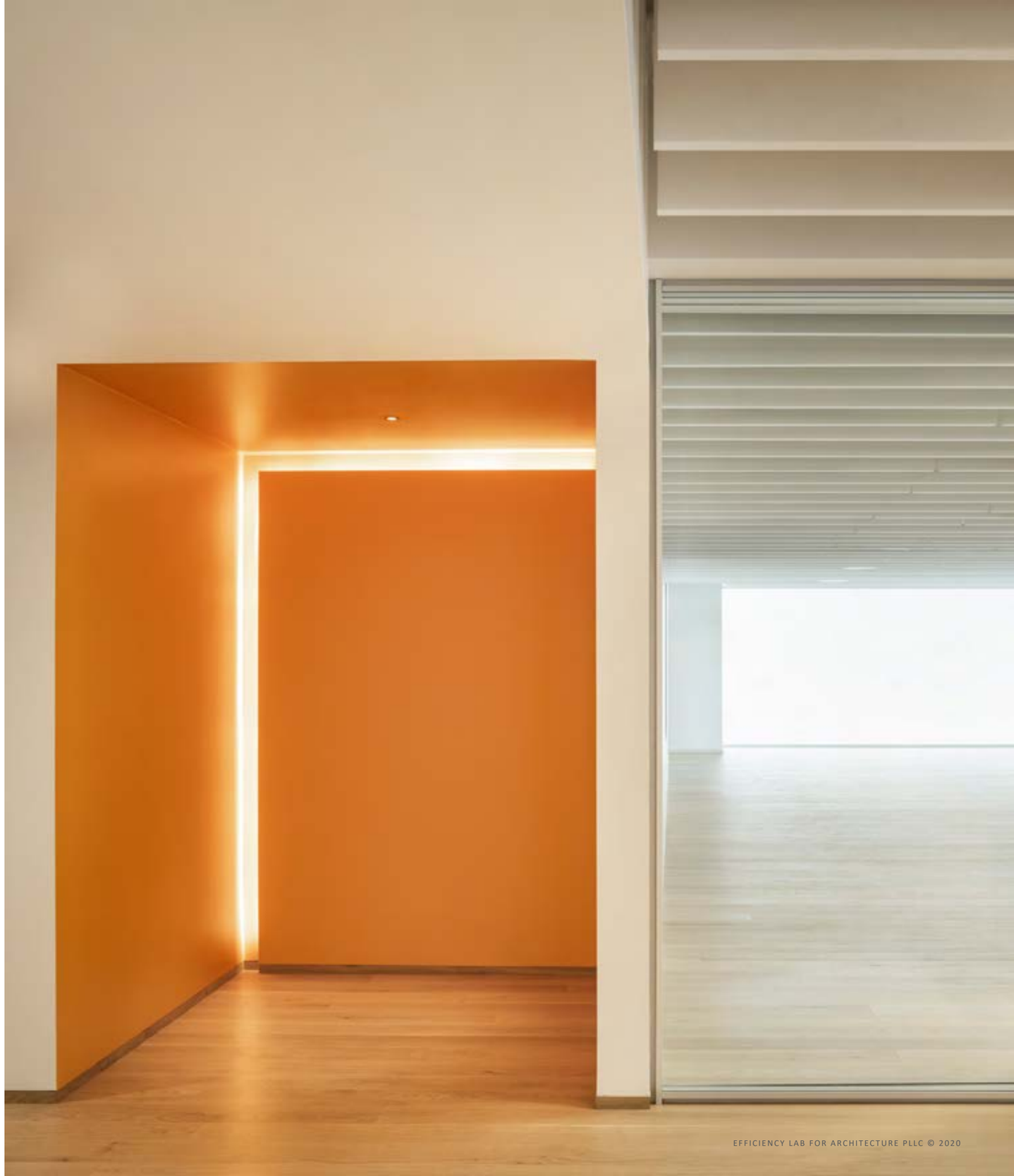
Address: 570 Meridian Avenue, San Jose, California 95126
Program: Presentation Space, Pre-function and lounge space, Offices and Support Spaces
Area: 10,000 sqft

Team
Design Architect: Efficiency Lab for Architecture PLLC
Interior Design: Efficiency Lab for Architecture PLLC
Furniture Design: Efficiency Lab for Architecture PLLC
Architect of Record: Adamson Associates
Structural Engineer: SOM
MEP: Syska Hennesy
Civil: Kimley Horn
Lighting Design: Claude Engel
Acoustic: Longman Lindsay

圣何塞的社区信息中心是一个10，000平方英尺面积的首层改造项目。该项目在现有的商业办公楼中创建了一个接待区与休息区，并带有相邻的展示汇报空间。位于入口附近的混凝土Portals将游客吸引到信息中心，并将人们的关注点从郊区的办公楼周边环境转移到光线充足的开放式室内环境。

位置：加利福尼亚州圣何塞，570 Meridian Avenue
功能：展示空间，前厅及大厅，办公，服务区域
面积：10，000平方英尺





PRIVATE N-12 SCHOOL CAMPUS MIAMI, FL

私立N-12学校校园 迈阿密

Completion: 2022
Client: Confidential

Total Gross Floor Area: 600,000 sf
Program: N-12 School. Classrooms, Support Spaces, Recreation Areas, Offices

TEAM

Masterplan: Efficiency Lab for Architecture PLLC
Design Architect: Efficiency Lab for Architecture PLLC
Interior Design: Efficiency Lab for Architecture PLLC
FF &E: Efficiency Lab for Architecture PLLC
Traffic: Langan
Civil: Langan

THE LIMA ART MUSEUM - NEW CONTEMPORARY ART WING LIMA, PERU

利马艺术博物馆 – 新当代艺术展馆　利马，秘鲁

获得2017年度AIA纽约设计大奖
获得2016年度世界建筑设计奖

WINNER OF 2017 AIA NY DESIGN AWARD
WINNER OF 2016 WORLD ARCHITECTURE DESIGN AWARD

Design Competition Entry: 2016
Client: Lima Museum

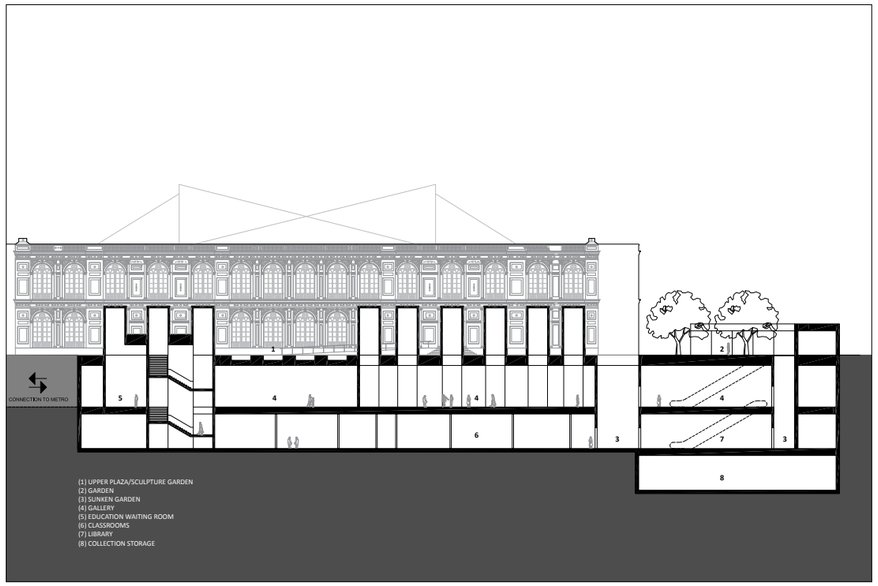
Site Area: 3,500 m²
Total Gross Floor Area: 7,000 m²
Program: Art Galleries, Education Center, Library

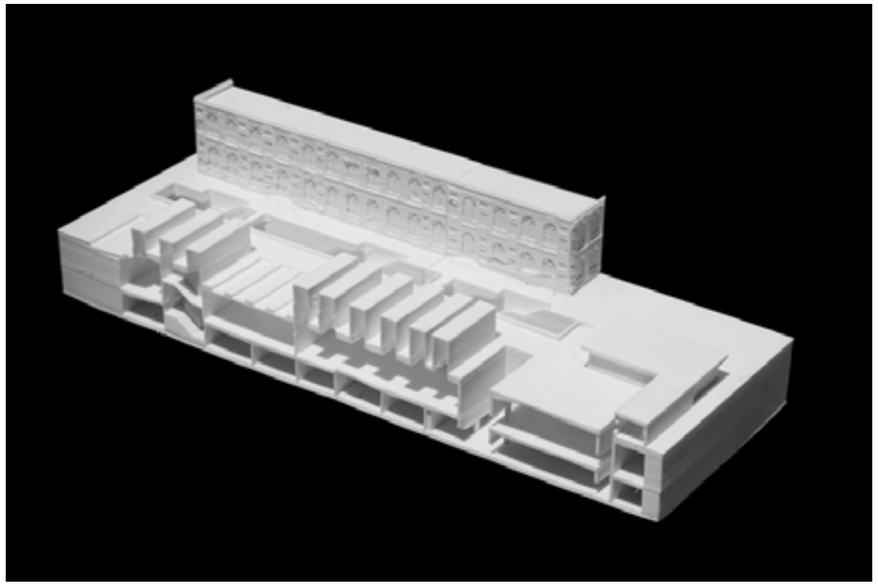
PROJECT DESCRIPTION

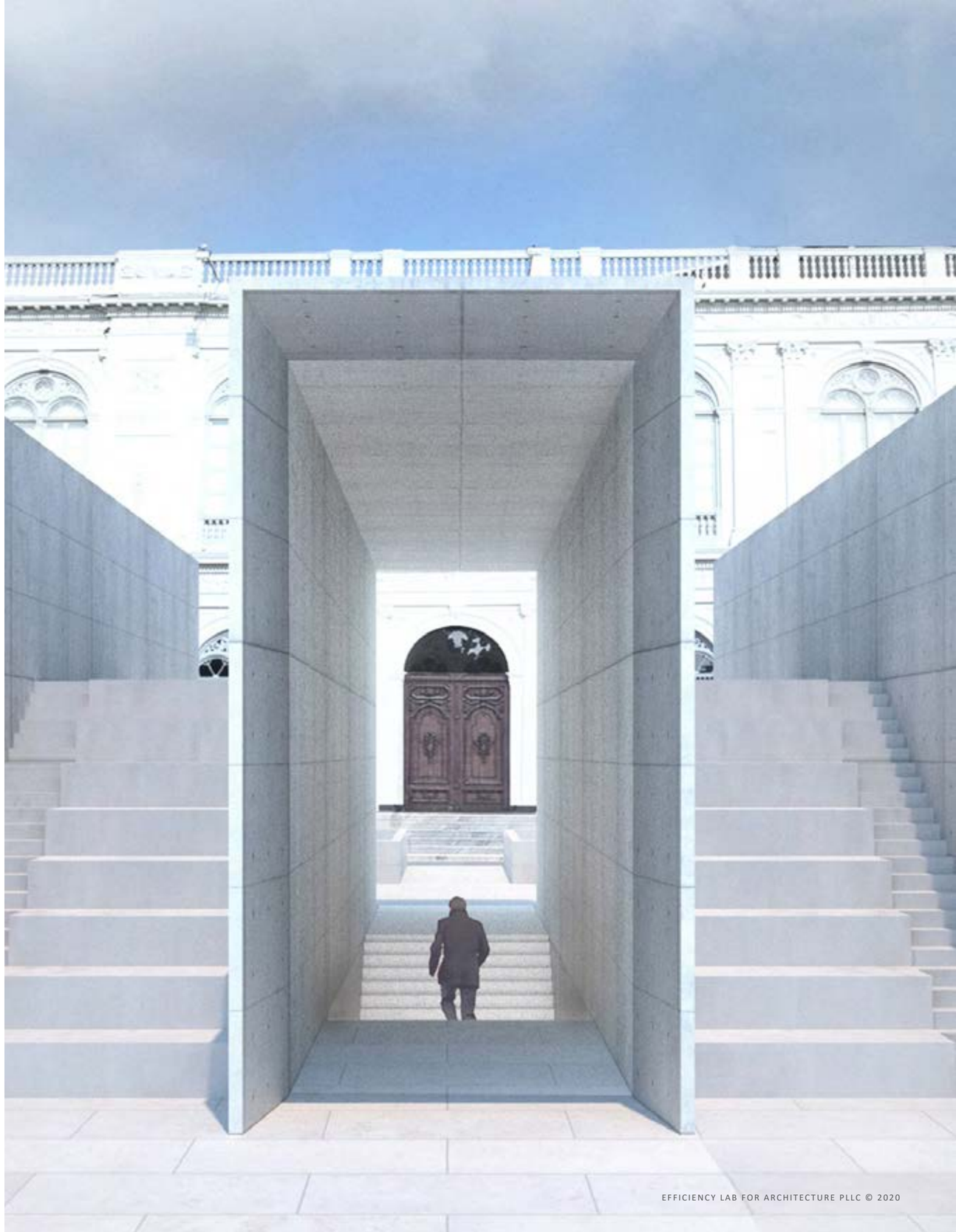
The New Contemporary Art Wing Expansion to the Lima Art Museum located in the 19th century Exposition Palace, creates a strong architectural dialogue between the historical structure and the new expansion; they connect without touching. The project requirement to create a below grade expansion to the current museum without touching the historical structure below or above grade, resulted in a careful exploration of how to spatially connect these two buildings that cannot physically connect. The new expansion is conceived as an architectural counterpoint to the historical museum, by creating echoes of the historical structure throughout the project. While establishing a respectful relationship to the historical context of the site, the proposed new expansion creates a strong architectural presence that augments the experience of the historical context and offers a rich series of spatial interventions to engage the urban context.

利马艺术博物馆的现代艺术展馆位于19世纪博览会宫，在历史建筑与新的扩建建筑之间展开了强烈的建筑对话；它们联系而不碰触。该项目要求在不触及地下和地上的历史结构的情况下为博物馆创建一个地下的新展馆，这带来了对如何在空间上将这两个无法物理连接的建筑物之间建立联系的深入研究。通过在整个项目中创造对历史结构的呼应，扩建部分被认为是历史建筑的对立面。在与场地的历史背景建立尊重的关系的同时，新扩建区域创造了鲜明的建筑风格，增强了历史背景的体验并提供了一系列丰富的空间干预来参与到城市背景中。

位置：利马，秘鲁
场地面积：3，500平方米
建筑总面积：7，000平方米
功能：展厅，教育中心，图书馆







KAUNAS M.K. ČIURLIONIS CONCERT CENTRE KAUNAS, LITHUANIA

考纳斯音乐中心 考纳斯，立陶宛

Design Competition Entry: 2017

Site Area: 48,000 m²
Total Gross Floor Area: 11,500 m²
Program: Concert Halls, Multi-Functional Spaces, Restaurants

PROJECT DESCRIPTION

Polyphonic Projections - an ensemble of cellular structures, each designed specifically to enrich the audial, visual, tactile and environmental experience, form a series of unique spaces to house the Kaunos M.K. Čiurlionis Concert Centre. Inspired by the remarkable life & work of Ciurlionis, the phenomenological architectural approach of the proposed scheme emanates the Renaissance spirit of bridging different art forms.

The field condition created by the polyphonic projections - a silhouette of tapered forms - create a dialogue with the historical city fabric of Kaunos. The multiplicity of scales generated by the building massing and corresponding public spaces creates a permeable and active edge along the Nemunas River, forming an engaging civic space that will be a catalyst of activity for Aleksotas neighborhood.

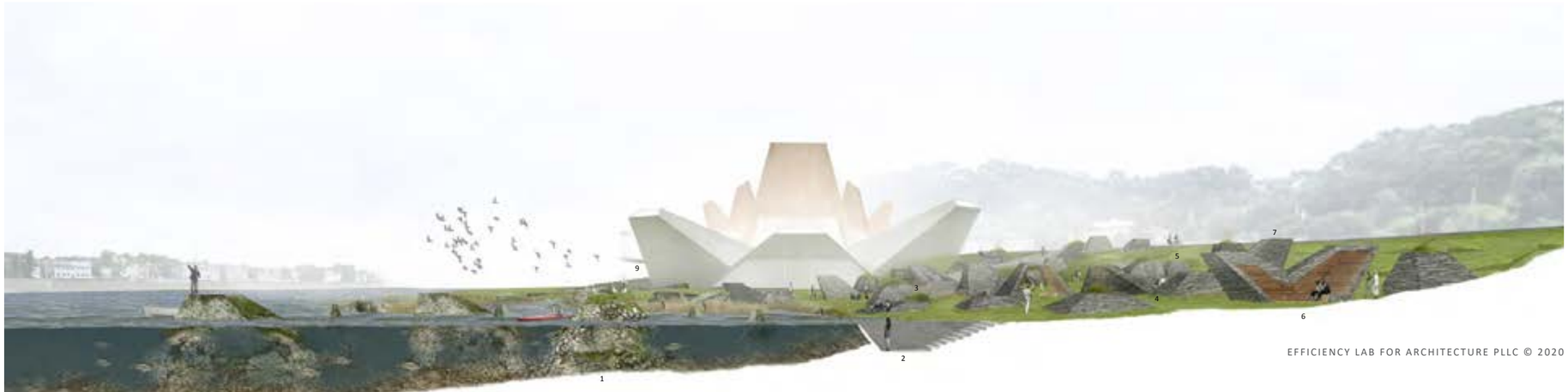
Polyphonic projections spread out towards the park to create an active landscape/ a multi-faceted embankment which will create a unique park experience while forming sanctuaries of bio-diversity along the ebb and flow of the river's tidal reach.

复调的投影 - 一个蜂窝结构的集合，每一个部分都专门设计用于丰富听觉，视觉，触觉和环境的体验，形成了一系列独特的空间来容纳 Kaunos M.K. Čiurlionis 音乐中心。受Ciurlionis杰出生活和工作的启发，拟议方案的现象学建筑设计方法散发出了融合不同艺术形式的文艺复兴时期精神。

由复调的投影创建的现场环境 - 锥形形式的轮廓，与考纳斯的历史城市肌理展开了对话。建筑规模和相应的公共空间所产生的多重尺度，沿着尼蒙纳斯和创造了通透而活跃的边缘，形成了一个引人入胜的市政空间，并将成为社区活动的催化剂。

复调的投影延伸向公园，形成了活跃的景观带与多面体的河堤，将创造独特的公园体验，同时在潮起潮落下沿河形成生物多样性保护区。

位置：考纳斯，立陶宛
场地面积：48，000平方米
总建筑面积：11，500平方米
功能：音乐厅，多功能空间，餐厅



AVALANCHE HOUSE TELLURIDE, COLORADO

雪崩住宅 科罗拉多

获得2017年度世界建筑设计奖

WINNER OF 2017 WORLD ARCHITECTURE DESIGN AWARD

Completion: 2020 (under construction)
Client: Confidential

Total Gross Floor Area: 7,500 sf
Program: Private Residence
Open Living, Dining & Kitchen, 5 Bedrooms, Media Room, Library, Mud Room, 2 Car Garage

Number of Floors: 3
Floor to Floor Height: 12’-6”
Floor to Ceiling Height: 10’-0”

TEAM

Design Architect: Efficiency Lab for Architecture PLLC
AOR: Tommy Hein Architects
Interior Design: Gachot Studios
Structural Design: Skidmore, Owings & Merrill LLP
MEP: Bighorn Consulting Engineers
Civil Engineer: Uncompahgre Engineering
Geo-Hazard Engineer: Trautner Geotech
Avalanche Diversion Wall: Gordon Geotechnical Engineering
Landscape Design: Caribou Design Associates
Pre-Construction: Gerber Construction

总建筑面积：7，500平方英尺
功能：私人住宅。开放式厨房，餐厅，客厅，卧室，多媒体室，阅读室，车库
层数：3层

Construction Photo (Winter 2020)

LIQUID FORMS BY AYBARS ASCI - KAZA CONCRETE

流动的形体

获得2016年WALKER ZANGER KAZA设计奖

WINNER OF WALKER ZANGER KAZA DESIGN COMPETITION - 2016

Commercially available in 2017

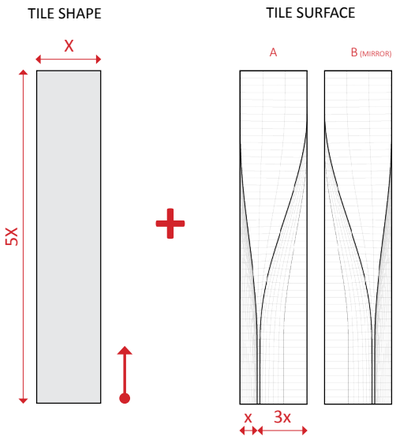
“The nature of concrete as a material has always been very inspiring to me - it is poured in a liquid state, and it takes its ultimate form as it cures. There is poetry in a material that finds its form as it changes phases. When I see a concrete surface, I always imagine its liquid state, its movement as it is poured. The concept I explored for this design was the expression of flow and movement in a solid form.

And perhaps the best examples of this phenomena manifests itself in the mastery of Baroque sculptors - chiseled into marble. The ephemeral qualities of capturing movement in stone in Bernini’s masterpieces has been an inspiration for me
.
And how does the idea of capturing movement translate itself into tiling?

Tiling by nature is about repetition. And repetition can be a powerful design tool. Imagine the music of Steve Reich or Philip Glass.
Creating a single tile design that can generate multiple patterns was very important to the ethos of this idea. ‘Liquid forms’ tile is aesthetically versatile. All the different patterns it generates have unique visual qualities that will give architects and interior designers a rich palette to work with.”

AYBARS ASCI

ONE TILE - MULTIPLE PATTERNS

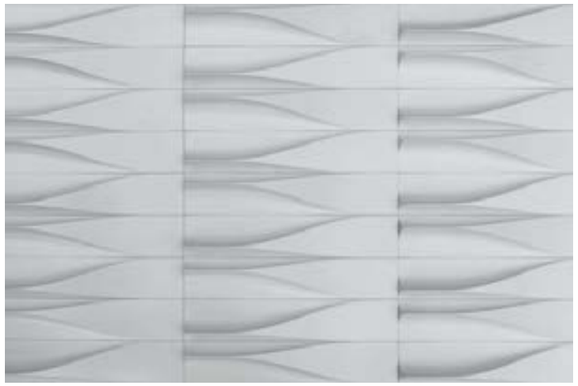


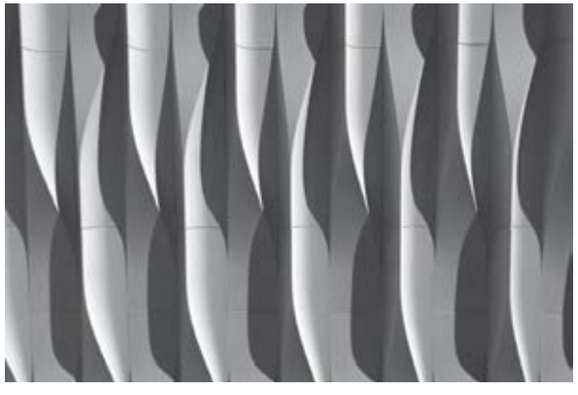
DIRECTION / GRAIN

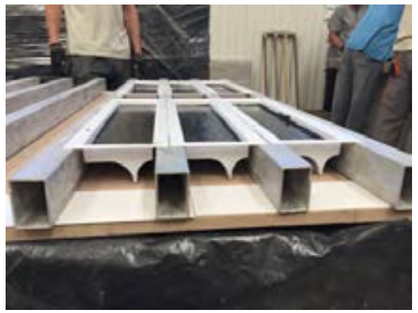
The proportion of the tile gives a directionality to the pattern.

ASYMMETRY

The asymmetric surface texture allows the same individual tile to generate a variety of patterns.







Fabrication Photos (December 2017)

VACUUM INSULATED TUBES INVENTION

真空绝热管 专利发明

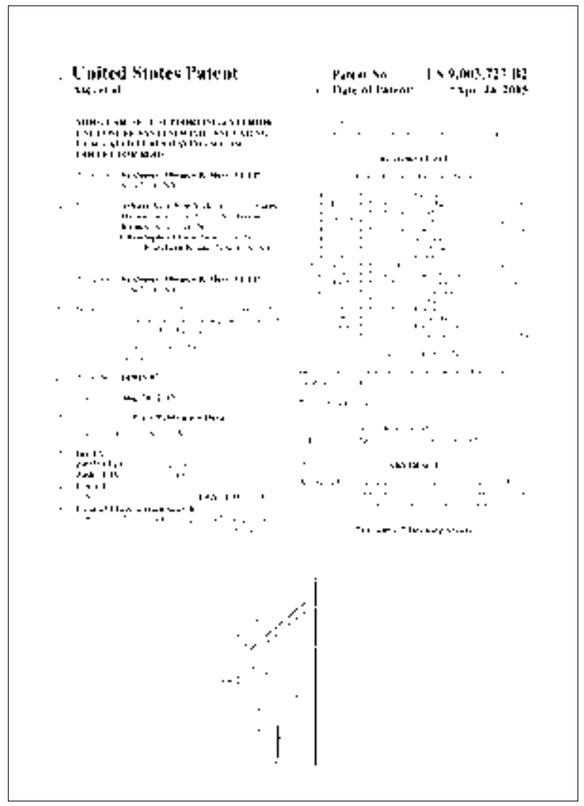
U.S. Patent Awarded: 4-14-2015
Aybars Asci, Inventor

Tube Assembly: Two uniform-radiused-curved pieces of laminated glass forming an evacuated chamber. The system is assembled by thermally broken aluminum extrusion and plate framing.

Claims Summary: Superior thermal performance due to evacuated chamber*; modular assembly; self supporting due to system cross section depth

** 0.06 Btu/hr-ft²-ºf for a 100% window to wall ratio (desktop study results)*

美国专利奖： 4-14-2015 发明者：Aybars Asci
管组件：两均匀半径曲面夹胶玻璃组成真空圆管，该系统由绝热铝合金框架组装完成。
声明：由于真空内腔提供了优越的绝热性能；模块化组件；因系统截面深度形成自支撑系统。
* 0.06 Btu/hr-ft2-0f是100%的窗墙比（基于实验研究结果）


United States Patent

EFFICIENCY RESEARCH

效率研究

Efficiency & Building Enclosures. The Bernard and Anne Spitzer School of Architecture, CCNY. 2015-2018

效率：建筑外围护系统。纽约城市大学，2015-2018

Efficiency & Understanding Thermal Comfort. Cornell University. Spring 2015.

效率：对热舒适性的理解。康奈尔大学，2015年春

Efficiency: An analytical Approach to Tall Residential Buildings. Pratt Institute. Fall 2014

效率：高层住宅建筑的分析方法。普拉特艺术学院，2014年秋

Efficiency: An analytical Approach to Tall Office Buildings. Northeastern University. Fall 2013 and Spring 2014

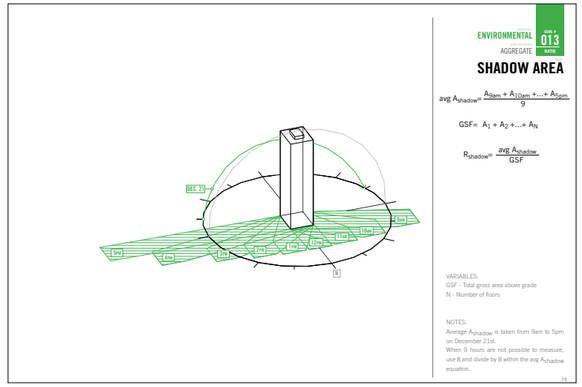
效率：高层办公建筑的分析方法。东北大学，2013年秋，2014年春

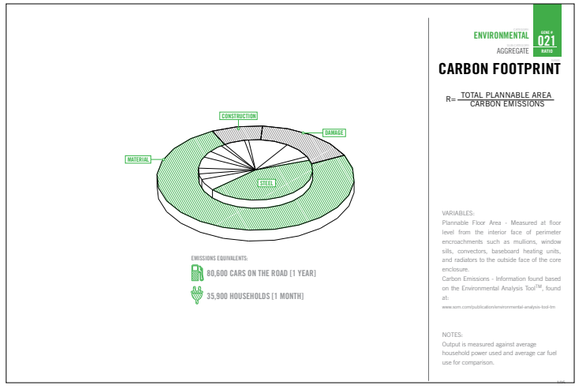
In architectural discourse, the use of efficiency oscillates between loosely-defined anecdotal claims of *'buildings being highly efficient'* and the short-sighted analytical approach of simple ratios, usually reported in a single percentage like sellable-to-gross floor area. There is a lack of a cohesive discussion on efficiency that takes into account the complexity of various building attributes and how they relate to each other. Moreover, there is an urgent need to begin an analytical discourse that demystifies some of the metaphorical claims of efficiency, and build a real foundation that can be used as a tangible model. This research study on tall towers is an attempt to formulate one. Tall tower typology is chosen as a case study because of its following characteristics: a) large scale b) repetition and c) extremeness. Even though these characteristics are intrinsic to tall buildings they are not exclusive to them. That is why the research for these three characteristics took a broader perspective. For each of these, the students looked at natural and manufactured landscapes, works of art, utilitarian objects, highly engineered products, work processes, behavioral patterns, etc. The class also surveyed efficiency concepts in other fields, such as *'pareto efficiency'* to understand their applicability to the built environment.

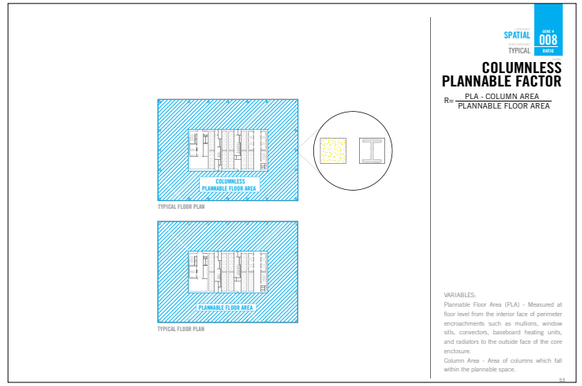
The tall buildings were studied under three categories; spatial, structural and environmental. The spatial efficiency category covered topics like floor plate size, core configuration, planning module and vertical stack. The structural efficiency category covered forces, structural systems, placement of material, form-finding algorithms and structural optimization. The environmental efficiency category covered building systems, enclosure design, thermal comfort, energy and life-cycle analysis. Each student were given a case study, and they analyzed these buildings with the measuring eye of the surveyor, cataloging them diligently to create a data base of information.

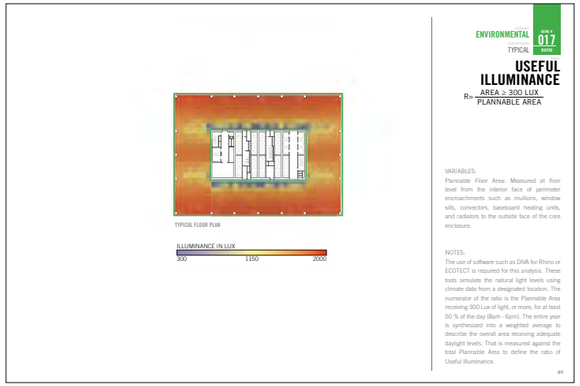
在建筑学的论述中，效率的使用在松散定义的"高效的建筑"的坊间说法和简单的比率的短视分析方法下，常以单一的售建面积比来衡量。关于建筑效率，我们一直缺乏考虑了建筑的各种复杂属性以及它们之间相互关系的统一讨论。因此，如何将效率通过一种有形的模型进行测量变成了迫切的需要。使用在高层建筑师是一次尝试性的研究。选择高层建筑作为案例研究是因为其具有以下特征：a）大规模b）重复性和c）极端性。尽管这些特征是高层建筑所固有的特点，但并不仅有这些特点。这就是为什么对这三个特征进行更广泛的研究的原因。对于每一个特点，学生们都研究了自然景观和人造景观，艺术品，实用工具，高度设计的产品，工作流程，行为模式等。课程还调查了其他领域的效率概念，例如"有效效率"。了解它们对建筑环境的适用性。

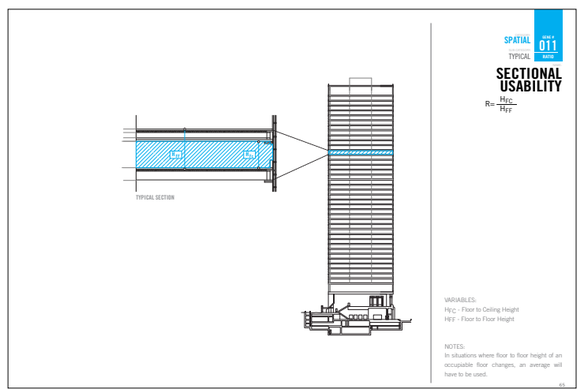
高层建筑的研究分为了三类：空间，结构和环境。空间效率类别涵盖了诸如楼面尺寸，核心筒配置，规划模块和竖向叠加之类的主题。结构效率类别包括覆盖受力，结构体系，材料布局，查找算法和结构优化。环境效率类别包括建筑系统，外围护系统，热舒适性，节能和使用周期分析。每个学生均进行了案例研究，他们站在测绘人员的角度对这些建筑物进行了分析，并对其进行了认真的分类，以创建一个信息数据库。

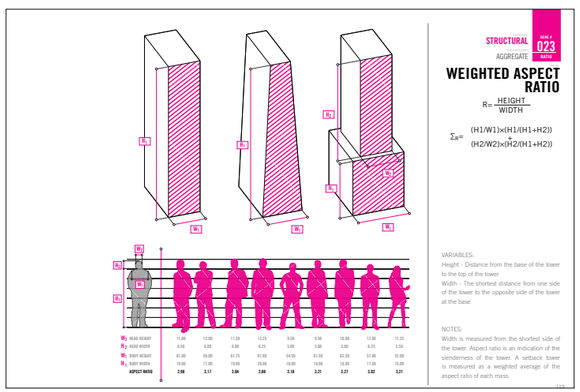












TOWERS NEW YORK

高层建筑 纽约

BACCARAT TOWER NEW YORK

Baccarat酒店 纽约

Completed: 2015
Program: Hotel, Residential, Library, Amenities
Tower Height: 605’- 4”
Tower Floors: 46 floors
Total Gross Floor Area: 346,702 sf
Gross Area (above grade): 296,953 sf
Total Residential Gross Area: 171,827 sf
Total Hotel Gross Area: 146,802 sf

完成时间：2015年
功能：酒店，公寓，图书馆及配套设施
建筑高度：605英尺，46层
建筑面积：总面积346，702平方英尺，地上建筑面积296，953平方英尺

SW RESIDENTIAL TOWER NEW YORK

西南住宅塔楼 纽约

Design Date: 2013 (SOM scheme, not built)
Program: Residential, Amenities
Tower Height: 910’
Tower Floors: 80 floors
Total Gross Floor Area: 930,000 sf
Typical Residential Floor Area: 11,480 sf
Total Number of Units: 983
Amenities: 23,000 sf

完成时间：2013年设计，未建
功能：公寓及配套设施
建筑高度：910英尺，80层
建筑面积：总面积930，000平方英尺

35 HUDSON YARDS NEW YORK

哈德逊码头35号 纽约

Completion Date: 2019
Program: Residential, Hotel, Office, Health Club
Environmental: LEED Gold
Tower Height: 1020’
Tower Floors: 72 floors
Total Gross Floor Area: 1,090,000 sf

完成时间：2019
功能：公寓，酒店，办公及健身会所
建筑高度：1020英尺，72层
建筑面积：总面积1，090，000平方英尺

3CC NEW YORK

3CC塔楼 纽约

Winning Competition Entry: 2010
Program: Residential, Department Store
Tower Height: 1000’
Tower Floors: 70 floors
Total Gross Floor Area: 750,000 sf
Total Residential Gross Floor Area: 414,000 sf
Typical Residential Floor Area: 4,000 sf- 8,000 sf

竞赛头等奖，2010年
功能：公寓，酒店，办公及健身会所
建筑高度：1000英尺，70层
建筑面积：总面积750，000平方英尺

*Project designed by SOM (**Aybars Asci**, Director-in-Charge of Design)*

SHUMYIP TOWERS SHENZHEN, PRC
深业上城 深圳

Program: Office, Hotel, Retail
Completion Date: 2020
Environmental: LEED Gold (Tower 1 only)
Tower 1
Tower Height: 388 meters (80 floors)
Tower Office Gross Area: 230,000 m²
Tower 2
Tower Height: 300 meters (61 floors)
Tower Gross Area: 155,000 m²

完成时间：2020年
功能：酒店，公寓，办公
建筑高度：388米，80层；300米，61层
建筑面积：230，000平方米；155，000平方米

*Project designed by SOM (**Aybars Asci,** Director-in-Charge of Design)*

TAIYUAN TOWER TAIYUAN, PRC
长风商务区 太原

Designed: 2014 Completion Date: 2018
Program: Office, Hotel, Residential, Retail
Tower Height: 270 meters
Total Tower + Podium Gross Floor Area: 220,000 m²
Total Office Floor Area: 60,000 m²
Total Hotel Floor Area: 60,000 m²
Total Residential Floor Area: 60,000 m²
Total Retail Floor Area: 40,000 m²

完成时间：2014年设计，2018年完工
功能：办公，酒店，公寓，商业零售
建筑高度：270米
建筑面积：220，000平方米

QINGDAO HAITIAN TOWER QINGDAO, PRC
海天中心 青岛

Designed: 2010
Program: Residential, Hotel and Retail
Tower Height: 350 meters
Total Tower + Podium Gross Floor Area: 360,000 m²
Total Hotel Floor Area: 110,000 m²
Total Residential Floor Area: 180,000 m²
Total Retail Floor Area: 70,000 m²

设计时间：2010
功能：公寓，酒店及商业
建筑高度：350米
建筑面积：360，000平方米

HANGZHOU OLYMPIC TOWERS HANGZHOU, PRC
杭州之门 杭州

Designed: 2012 Completion Date: 2022
Program: Office, Retail
Tower Height: 320 meters
Total Tower + Podium Gross Floor Area: 260,000 m²
Total Office Floor Area: 120,000 m²
Total Hotel Floor Area: 60,000 m²
Total Retail Floor Area: 80,000 m²

设计时间：2012年，预计完成时间：2022
功能：办公，商业
建筑高度：320米
建筑面积：260，000平方米

AL HAMRA TOWER KUWAIT CITY, KUWAIT
阿尔 - 哈姆拉大厦 科威特

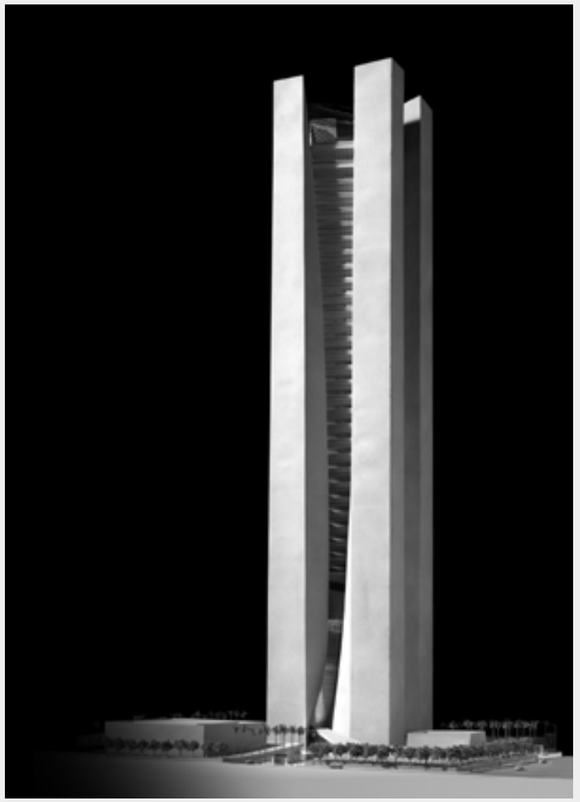
Completed: 2011
Program: Office Tower and Retail podium
Tower Height: 412.6 m
Tower Floors: 74 floors
Tower Gross Construction Area: 186,381 m²
Typical Floor Gross Area: 2,280 sm - 2,450 m²

完成时间：2011年
功能：办公，商业
建筑高度：412.6米，74层
建筑面积：186，381平方米

OIL COMPANY HQ DOHA, QATAR
卡塔尔石油总部 多哈

Designed: 2006-2009
Program: Office
Tower Height: 150 meters
Tower Floors: 13 floors
Total Gross Floor Area: 29,000 m²
Typical Floor Gross Area: 1,600- 1,900 m²
Typical Floor to Floor Height: 5,500 mm

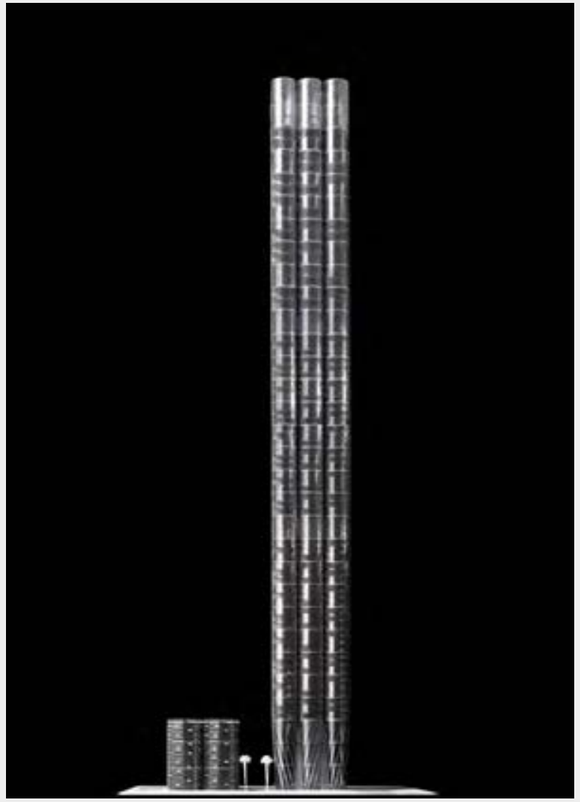
设计时间：2006 - 2009
功能：办公
建筑高度：150米，13层
建筑面积：29，000平方米



AL RAJHI BANK TOWER RIYADH, SA
阿尔 - 拉吉哈银行总部 沙特阿拉伯

Designed: 2004
Program: Office, auditorium, parking and amenities
Tower Height: 257 m
Tower Floors: 30 floors
Gross Construction Area: 130,026 m²
Typical Floor Gross Area: 2,185 m²
Typical Floor to Floor Height: 5,500 mm

设计时间：2004年
功能：办公，会议厅，停车及配套设施
建筑高度：257米，30层
建筑面积：130，026平方米



AL SHARQ TOWER DUBAI, UAE
阿尔 - 沙克大厦 迪拜 阿联酋

Designed: 2005
Program: Residential, Automated Parking
Tower Height: 360 m
Tower Floors: 100 floors
Total Gross Construction Area: 142,000 m²
Typical Floor Gross Area: 1,370 m²
Typical Floor to Floor Height: 3,300 mm

设计时间：2005年
功能：住宅，停车及配套设施
建筑高度：360米，100层
建筑面积：142，000平方米

*Project designed by SOM (**Aybars Asci**, Director-in-Charge of Design)*

AL HAMRA TOWER KUWAIT CITY, KUWAIT

阿尔-哈姆拉大厦 科威特

DISCOVERY CHANNEL VIDEO

Completed: 2011
Program: Commercial office tower with retail podium
Client: Al Hamra Real Estate Co.

Tower Height: 412.6 m
Tower Floors: 74 floors
Site Area: 10,480 m²

Tower Gross Construction Area: 186,381 m²
Tower Gross Area (above grade): 178,061 m²
Typical Floor Gross Area: 2,280 sm - 2,450 m²
Typical Floor Lease Span: 12,000 mm
Typical Floor to Floor Height: 4200 mm
Typical Floor to Ceiling Height: 2700 mm
Ground Floor Lobby Area: 1,200 m²
Retail Podium: 34,000 m²
Total MEP Area: 15,500 m² (8,100 m² above grade)

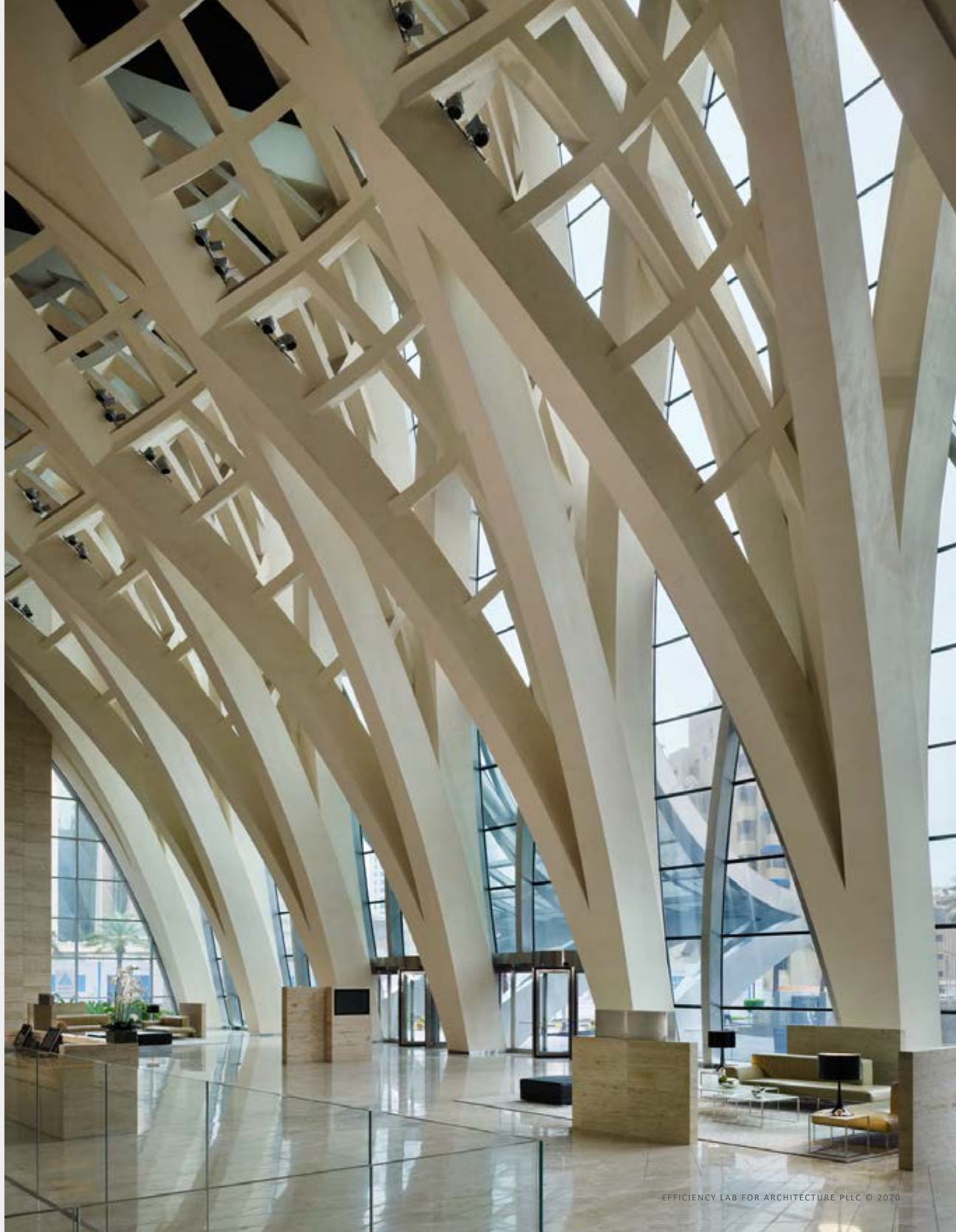
Building Envelope
Total External Surface Area: 101,675 m²
Total External Surface Glass: 60,680 m²
Total External Stone/Trencadis Cladding: 40,995 m²

Glass
External Surface Area (Flat Glazing): 42,520 m² (70.0%)
External Surface Area (Curved Glazing): 18,160 m² (30.0%)

Stone/Trencadis
External Surface Area (Stone): 12,445 m²
External Surface Area (Trencadis): 28,550 m²

完成时间： 2011年
功能： 办公，商业
高度：412.6米，74层
场地面积：10，480平方米
塔楼总建筑面积：186，381平方米
地上建筑面积：178，061平方米
标准层面积：2，280-2，450平方米
标准跨度：12米
标准层高：4.2米
标准净高：2.7米

*Project designed by SOM (**Aybars Asci,** Director-in-Charge of Design)*



BACCARAT HOTEL & RESIDENCES NEW YORK

Baccarat 酒店&公寓 纽约

Completed: 2015
Program: Hotel, Residential, Restaurant, Library, Amenities
Environmental: LEED certified
Client: Starwood Capital + Tribeca Associates

Tower Height: 605’- 4”
Tower Floors: 46 floors
Total Gross Floor Area: 346,702 sf
Gross Area (above grade): 296,953 sf
Total Residential Gross Area: 171,827 sf
Total Hotel Gross Area: 146,802 sf
Total Restaurant Gross Area: 4,486 Ssf
Total Library Gross Area: 28,073 sf

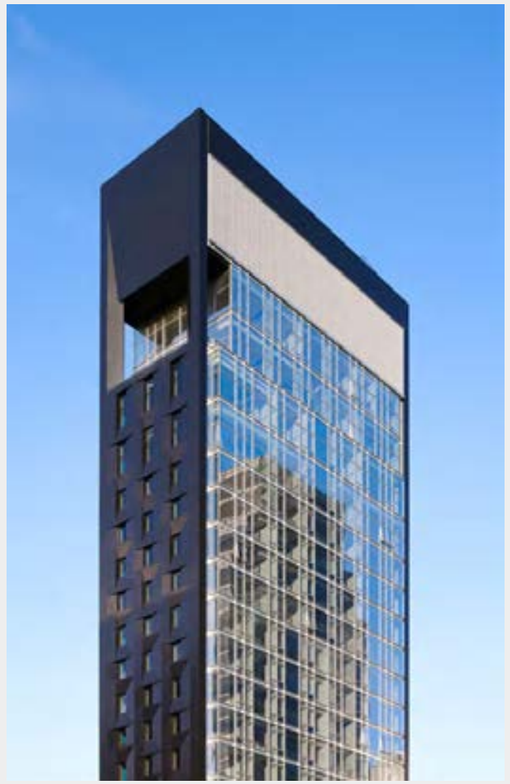
RESIDENTIAL
Residential Floors: 32 (Floors 14-45)
Floor to Floor Height: 11’-8” (typ.) 16’-8” (penthouse floors)
Typical Residential Floor Area: 5,042 SF (110’-0” x 46’-2”)
Total Number of Units: 59

HOTEL
Hotel Keys: 114 (23% Suites); 435 SF typ. bay size
Typical Hotel Fl. to Fl.: 10’-8”
Typical Floor Plate Size: 9,500 sf (139’-8” x 70’-5”)
Amenities: 12,000 sf
Pool (14’x65’), Spa (3,500 sf), Fitness Center (1,200 sf)

BUILDING ENVELOPE
Total Exterior Wall Area: 196,992 sf
North-South Curtain Wall: 131,532 sf
East-West Metal Panel: 56,007 sf
Prismatic Storefront Area: 6,782 sf
B-Bar Terrace Curtain Wall Area: 1,219 sf
New York Library Storefront Area: 1,452 sf

完成时间：2015年
功能：酒店，餐厅，图书馆及配套设施
高度：605英尺，46层
塔楼总建筑面积：346，702平方英尺
地上建筑面积：296，653平方英尺
公寓总建筑面积：171，827平方英尺
酒店总建筑面积：146，802平方英尺
餐厅面积：4，486平方英尺
图书馆面积：28，073平方英尺
公寓层数：32层
标准层高：11英尺8英寸
公寓标准层面积：5，042平方英尺
酒店标准层高：10英尺8英寸
酒店标准层面积：9500平方英尺

*Project designed by SOM (**Aybars Asci**, Director-in-Charge of Design)*



PROJECTS / RECOGNITIONS

项目/成就

LIST OF PROJECTS 项目列表

2023 Avenues World School Campus, Miami, FL

2021 Avenues Sao Paulo, Brazil

2021 Avenues World School Campus, Silicon Valley, San Jose, CA

2019 Avenues World School Campus, Shenzhen, PRC

2019 Student Housing, Loyola University, Chicago, IL, USA

2019 Single Family Residence (under construction), Telluride, CO, USA

2019 35 Hudson Yards, New York City, NY, USA

2018 Four Seasons Jeddah (under construction), Jeddah, Saudi Arabia

2018 Shum Yip Upper Hills, Shenzhen, PRC

2015 Baccarat Hotel & Residences design competition, Doha, Qatar

2015 Baccarat Hotel & Residences, New York City, NY, USA

2014 Financial City, Taiyuan, PRC

2014 Midtown Masterplan, Shenzhen, PRC

2012 Central Park Masterplan, Xian, PRC

2011 Al Hamra Tower, Kuwait City, Kuwait

2010 3 Columbus Circle design competition, New York City, NY, USA

2010 Haitian Center, Qingdao, PRC

2011 Anida Tower, Mexico City, Mexico

2011 Zhaorui Plaza Masterplan, Tansghan, PRC

2010 Guan Yin Temple, Tianjin, PRC

2010 K1+K2 Towers design competition, Jeddah, Saudi Arabia

2009 Qatar Petroleum Headquarters, Doha, Qatar

2009 twofour54 Media City design competition, Abu Dhabi, UAE

2008 Wood Wharf Towers, London, UK

2007 Warwick Road Residential Towers, London, UK

2007 U.S. Census Bureau Headquarters, Suitland, Maryland, USA

2006 City Santa Fe Towers, Santa Fe, Mexico

2005 Al Sharq Tower, Dubai, UAE

2004 Al Rajhi Bank Headquarters, Riyadh, Saudi Arabia

2004 400 Fifth Avenue, New York City, New York

2003 Bahrain Waterfront, Manama, Bahrain

2003 Central Bank of Kuwait design competition, Kuwait City, Kuwait

2003 U.S. Border Crossing Stations, various locations, USA

2002 Fuller Building, New York City, NY, USA

2001 New York Stock Exchange, New York City, NY, USA

PRESENTATIONS 讲座

2020, December 8. Zhulong Lecture Series. 'Efficiency is Beautiful'.

2017, September 20. London Design Festival. DOMUS Clerkenwell. 'Liquid Forms'

2017, June 15. FUGA: Budapest Center of Architecture. 'Concrete Stories'

2017, April 14. Bilkent University, Ankara. 'Bandirma Park'.

2016, November 30. Rensselaer Polytechnic Institute. 'Efficieny Lab for Architecture'.

2016, March 31. School of Visual Arts, New York. 'Understanding Efficiency in Architecture'.

2015, November 10. The Bernard and Anne Spitzer School of Architecture, The City College of New York. 'Understanding Efficiency in Architecture'.

2015, September 9. The Pennsylvania State University. 'Understanding Efficiency in the Built Environment'.

2015, March 4. Buffalo School of Architecture & Planning. Symposium. Facade: Phenomenon, Memory, Identity. Speaker

2015, February 25. Northeastern University. Symposium. Export Agendas: The Global Transfer & Translation of Architectural Expertise. Speaker.

2014, October 11. Pratt Institute. Symposium. City By Numbers: Big Data and the Urban Future. Respondent. WW

2013, December 26. TED University, Ankara. 'SOM: Stereotomic Works'

2012, October 18. CTBUH, Award Ceremony, Chicago. 'Al Hamra Tower'. co-presented with Mark Sarkisian

2011, October 10. CTBUH 2011 World Conference, Seoul. 'Al Hamra Firdous Tower'. co-presented with Mark Sarkisian

2011, October 1. The Architecture League, New York. 'Annual Student Event Presentation'

2011, March 27. China Architecture Design & Research Group, Beijing. 'Al Hamra Tower'

2011, March 22. The 4th Annual Ultra-High Rise Building Summit, Shanghai. 'SOM Legacy + Innovation: the Iconic Skyline'

2010, December 17. Tsinghua Design Institute, Beijing. 'Algorithmic Design at SOM'

2010, February 16. MIT. 'Design In-Formation: The DP Experience at SOM'- co-presented with Tobias Schwinn

2009, February 17. MIT. 'Variations Under Control'- co-presented with Tobias Schwinn

2008, February 15. MIT. 'Qatar Petroleum Complex'- co-presented with Tobias Schwinn

2007, December 6. Oxford Brookes, UK. 'London Experiment'

2007, May 5. ASA, Thailand. 'Performative Design'- co-presented with Noppon Pisutharnon

2007, November 7. Architecture Association, London. 'Designing in Extreme Climates'

2006, November 15. Digital Project Conference, London. 'Analysis & Performance in Design Process'- co-presentor

AWARDS 奖项

The Lima Art Museum - New Contemporary Art Wing

2017, AIA New York Design Award

2016, World Architecture Design Award

Bandirma Park Masterplan

2017, International Design Competition, Honorable Mention Award

Kaza Concrete Tile

2016, Walker Zanger Kaza Design Competition Winner

Brodsky Residence

2017, World Architecture Design Award

Al Hamra Tower

2014, Middle East Architecture Awards, Commercial Project of the Year

2013, Architizer, Architizer A+ Award: Office Building High Rise, Finalist

2013, Structural Engineers Association of Illinois, Best International Project Over $150 Million

2013, AIA- New York City Chapter, Design Award

2012, Institution of Structural Engineers, Award for Commercial or Retail Structure

2012, Structural Engineers Association of Northern California, Award of Excellence: Landmark Structures

2012, Popular Science Magazine, Best of What's New

2012, CTBUH, Best Tall Building Middle East & Africa: Finalist

2012, National Council of Structural Engineers Association, Excellence in Structural Engineering

2012, National Council of Structural Engineers Association, International Structures over $100 Million

2011, Emporis, Skyscraper Award: Silver Medal

2010, Cityscape, Commercial / Mixed Use Built

2008. MIPIM Future Project Award: Tall Buildings

2008. International Architecture Award. Chicago Athenaeum

Al Rajhi Bank HQ

2011, Boston Society of Architects, Unbuilt Architecture Award

2008. Design Award. AIA- New York City Chapter

2007. International Architecture Award. Chicago Athenaeum

2005. Miami Bienal Grand Award

Al Sharq Tower

2009, Chicago Athenaeum, American Architecture Award

2009, MIPIM/Architectural Review, MIPIM Future Project Award: Commended Tall Building

2008. P/A Award: Architectural Design Progressive Architecture

2008. International Architecture Award. Chicago Athenaeum

Qatar Petroleum

2009, MIPIM Architectural Review Future Project Awards, Mixed-Use- commended

U.S. Census Bureau

2012, AIA Washington, D.C. Chapter Award of Excellence in Architecture

2009, The Chicago Athenaeum, Green Good Design

2007. Design Award. AIA- New York City Chapter

2007. Design Award. Institutional, Award of Excellence. AIA- New York State

2007. Sustainibility/Workplace Environment Citation. U.S. GSA

2007. Smart Environments Award. Metropolis

PATENTS 专利

2015, April 14. Patent Number: 9,003,727. Modular, Self Supporting Exterior Enclosure System with Insulating, Evacuated Tubes Having Solar Collector Rods. Aybars Asci, co-inventor

SELECTED PUBLICATIONS 发表

Efficiency & Tall Buildings: Understanding the Typical Conditions. Spring 2016. The Bernard and Anne Spitzer School of Architecture.

Efficiency & Building Enclosures. Fall 2015. The Bernard and Anne Spitzer School of Architecture.

EFFICIENCY: An Analytical Approach to Tall Residential Buildings. Fall 2014. PRATT Institute.

EFFICIENCY: An Analytical Approach to Tall Office Buildings FALL 2013. Northeastern University

Casabella. Baccarat Hotel. Issue 849. March 2015. pp 116-127

Archicreation. Feature Issue on Four SOM Projects (Gary Haney + Aybars Asci). April 2015

Arredamento Mimarlik. Interview: Aybars Asci and Esra Akcan. December 2013. pp 40-50.

Architectural Record. Gonchar, Joann. 'Sculpting the Skyline' (featuring Al Hamra Tower). May 2012. pp 148-155

Metropolis. Hockenberry, John. 'Cities of the Imagination' (featuring Al Hamra Tower). May 2012. pp 80-87

MARK. April/May 2012. 'SOM vs. the Sun' (featuring Al Hamra Tower). pp 50-51

TIME 'The Invention Issue'. The Sculpted Skyscraper- The 50 Best Inventions of the Year November 2011. p 82

Asci, Aybars. 'Al Hamra Firdous Tower'. Architecture Technique. May 2011. pp 78-90

Asci, Aybars. 'SOM Legacy + Innovation: The Iconic Skyline'. Architecture Technique. May 2011. pp 62-67

Asci, Aybars; Song, Kanda. 'Algorithmic Design at SOM: A Diaologue between Aybars Asci & Kanda Song'. Area China. Issue 11, Feb. 2011.

The Economist. June7-13, 2008. 'From Blueprint to Database' (featuring QP) p. 15

Asci Aybars. 'The high Concept: ARB Bank Headquarters, Riyadh'. The Leaf Review. No.4, 2008, pp 66-69

Eastman; Teicholz; Sacks; Liston. 'BIM Handbook: A Guide to Information Modeling' (featuring Al Hamra Tower) John Wiley & Sons, Inc. 2008, pp 177-179.

Asci, Aybars; Schwinn, Tobias. 'Algorithmic Design at SOM'. World Architecture, Vol. 215, May 2008, pp. 34-53

Lerner, Nick. 'Changing the Rules of Design'. The Structural Engineer. Vol 85, No. 13, July 2007, pp. 26-27

Lerner, Nick. 'Digital Project at SOM'. AEC Magazine. Vol 31. May/June 2007, pp. 20-21

AYBARS ASCI AIA LEED BD+C PHc

Founder

建筑效率实验室创始人

Aybars Asci, president and founder of *Efficiency Lab for Architecture*, is an advocate of research driven design that combines conceptual clarity with analytical processes such as the use of algorithmic tools and building performance modeling.

Aybars Asci，建筑效率实验室的总裁和创始人。他提倡研究导向的设计方法，并使其与参数化设计工具和建筑性能建模结合来提供清晰的概念设计。

As a **practicing architect** he has over 20 years of experience, working in New York and London, on projects located in North America, Central America, Middle East and Asia.

作为一个执业建筑师，他在纽约和伦敦有着超过20年的工作经验。由他主导设计的项目位于北美，中美洲，中东和亚洲等地。

As an **inventor**, he holds a U.S. patent for a high performance enclosure system *(Patent # 9003727; approved 4-14-2015).*

作为一个发明家，他拥有美国一个高性能围护系统的专利版权（专利#9003727；批准于4-14-20150)。

As an **educator**, he has taught seminars and studios on efficiency, high rise design and environmental systems at The City College of New York, Cornell University, Pratt Institute and Northeastern University.

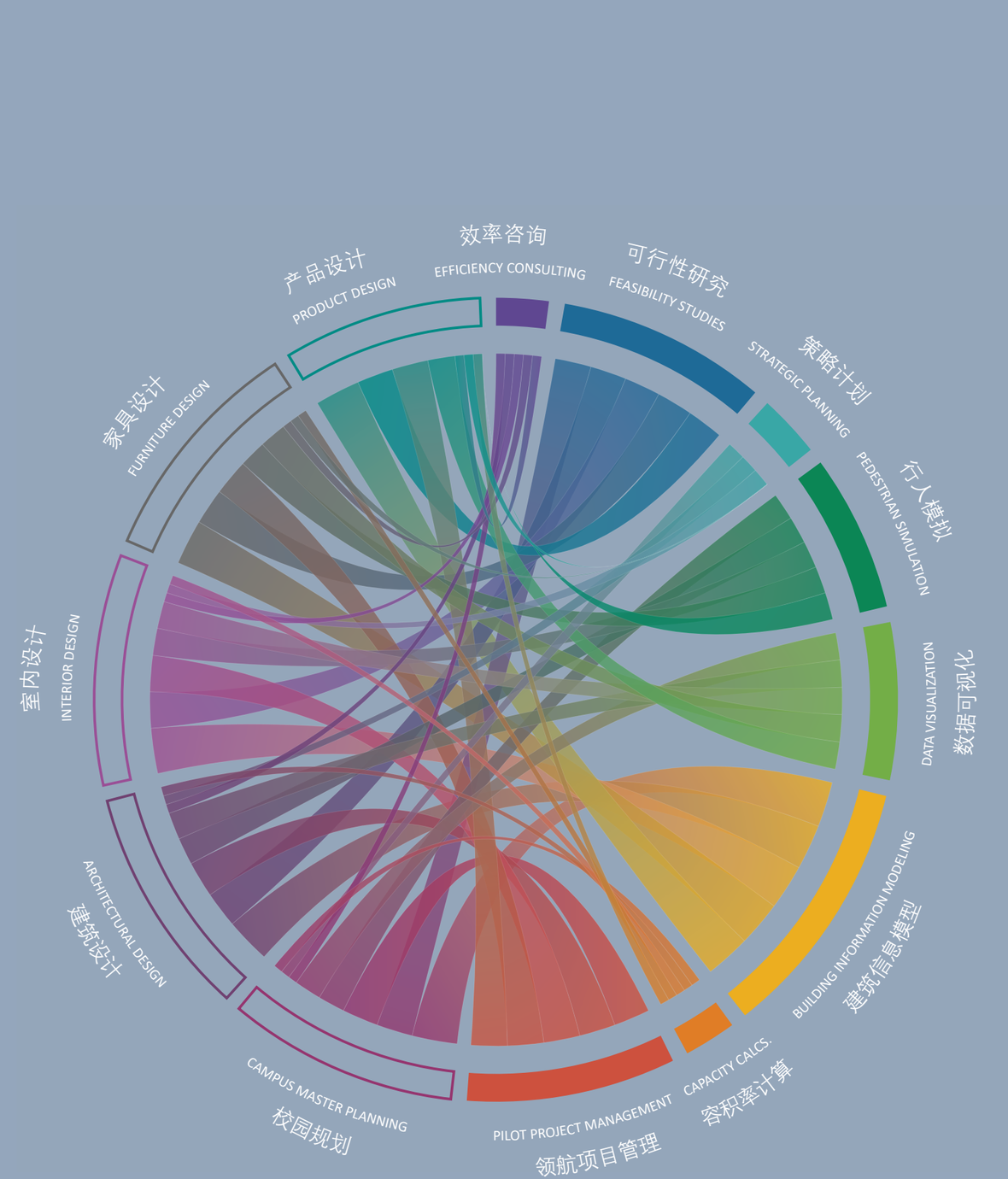
作为教育者，他在纽约城市学院，康奈尔大学，普拉特艺术学院和东北大学开设了关于高效率设计在高层建筑和环境系统中的应用的课程。

As an **environmentalist**, he has advocated environmental consciousness at design and policy making platforms. He is a certified Passive House Designer and a certified LEED AP BD+C professional.

作为一个环保主义者，他主张在设计和决策平台保持环保意识。他是城市灾害与恢复中心的成员。

Aybars holds a Master of Science in Advanced Architectural Design degree from *Columbia University.*

Aybars先生持有于哥伦比亚大学建筑系研究生学位。



ZHENG YIN
PRACTICE LEADER- CHINA

尹峥
实践负责人 中国

EFFICIENCY LAB FOR ARCHITECTURE PLLC
81 PROSPECT STREET
BROOKLYN, NY 11201
ZY@EFFICIENCYLAB.ORG

WWW.EFFICIENCYLAB.ORG