Inspiration & Discourse: The AIA Innovation Awards

Course Number FR111

Friday, June 22, 2018

Learning Units 1.00 LU/RIBA

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Course / Learning Objectives

- This session offers you a front row seat to the cutting-edge advances destined to inform and influence the architectural practice of the future.
- The 2017 AIA Knowledge Communities Innovations Awards jury and Technology in Architectural Practice Knowledge Community leadership share an insider's view of the firms and projects recognized for this achievement. You'll gather with peers and colleagues to consider possible implications, trends, and opportunities for the profession at large, with the field's most remarkable new advances as the backdrop.
- Join this inspired celebration and enlivened discourse on how these innovations can advance the profession and practice of architecture-including your own practice.

Speakers

Robert Yori
Associate AIA

Senior Product Strategist
CRH Americas

Matthew Krissel
AIA

Partner
KieranTimberlake

Natasha Luthra
Associate AIA

Principal, Practice Technology
Jacobs

Cory Brugger
AIA

Chief Information Officer
HKS

Why are we here?

Introduction:

- Innovation in architecture practice today
- The Awards Program
- The Jury

AIA

Innovation Awards

2017 Awards Program:

- Key Themes and Observations from Jury Discussions
- 4 projects - Award recipient overview

Discussion:

- Themes and patterns
- What is up and coming in architecture, near- and long term?
- What do you see as up and coming in your practice?
- What would you like to see?

BY

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

Goal of Innovation Awards

Was getting up for this worth it?

How can these projects inspire me to think about my work differently?

What can I take back to the office?

Goal of Innovation Awards

Mission Statement:

The Innovation Awards recognize the exemplary use and implementation of innovative technologies and progressive practices among architects and designers, their collaborators, and their clients, in support of the design, delivery and operation of buildings or research in practice and academia.

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Intention of Awards

What is innovation in practice today?

How does technology play a role?

How do the Knowledge Communities play a role?

Awards history: from BIM to Technology to Innovation

Intention

Categories:

1. **Stellar Design**
2. **Project Delivery & Construction Administration Excellence**
3. **Project Lifecycle Performance**
4. **Practice-Based or Academic Research, Curriculum or Applied Technology Development**
5. **Exemplary Use In A Small Firm**
6. **People's Choice**

Intention

Categories:

1. **Stellar Design**
2. **Project Delivery & Construction Administration Excellence**
3. **Project Lifecycle Performance**
4. **Practice-Based or Academic Research, Curriculum or Applied Technology Development**
5. **Exemplary Use In A Small Firm**
6. **People's Choice**

Designing the Jury

- Breadth of experience
- Demonstrated innovators
- Architectural roots
- Diverse

Designing the Jury

Matt Krissel, AIA (Chair), Kieran Timberlake, Philadelphia
Tyler Goss, Turner Construction, San Francisco
Paola Moya, Assoc. AIA, Marshall Moya Design, Washington, DC
Jeffrey Pastva, AIA, Davis Architects, Philadelphia
Brian Skripac, Assoc. AIA, CannonDesign, Pittsburgh

2017 Award Recipients

Key Themes and Observations from Jury Discussions

- Broad range of project but there were no submissions in “Project Lifecycle” and there were disqualified and limited ones in “Small Firm”
- Innovation vs New Common Standard and moving from novel to normalized practice
- Pace of Innovation is faster than many projects move from “Mind to Market”. Many would be considered innovative several years ago but are now a better representation of Best Practices.
- Bar is rising of what innovation is within the profession but there still remains a uneven distribution of innovation across the profession.
- Need a cultural shift that moves the understanding away from “just tools” and process, to how technology advances people, processes and the marketplace of ideas

Practice-based or Academic Research, Curriculum or Applied Technology Development

Honorable Mention: Reality Capture Workshop

Project Delivery and Construction Administration Excellence

Citation: Garden Village

Stellar Design

Honorable Mention: The Yard at Chicago Shakespeare Theater

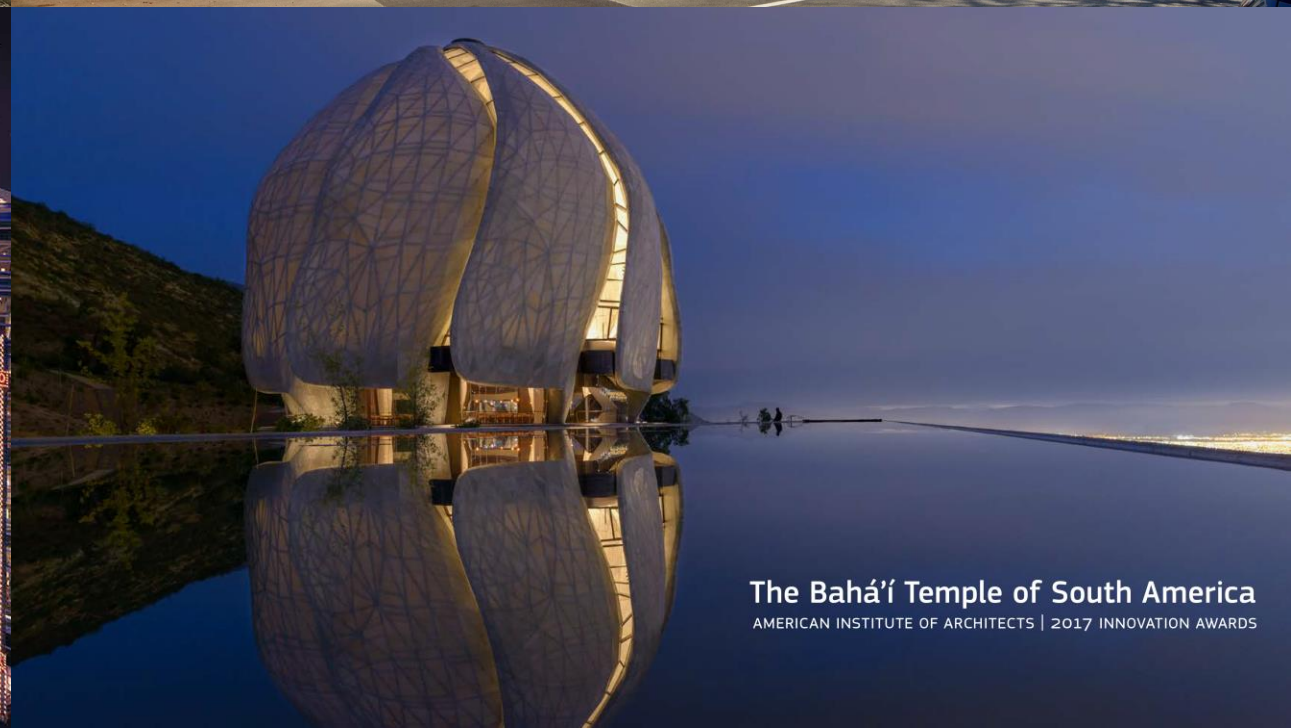
Stellar Design

Citation: Baha'i Temple of South America

REALITY CAPTURE WORKSHOP

GARDEN VILLAGE
A 77-unit student-orientated apartment building located in Berkeley, California completed in August of 2016. Designed to echo the massing and rhythm of the community, the innovative design departs from the standard single-volume building. Instead, 18 distinct building volumes are spread out in a garden and linked by exterior walkways.

THE YARD
AT CHICAGO SHAKESPEARE THEATER
American Institute of Architects
2017 Innovation Award


The Bahá'í Temple of South America
AMERICAN INSTITUTE OF ARCHITECTS | 2017 INNOVATION AWARDS

Practice-based or Academic Research, Curriculum or Applied Technology Development

Honorable Mention

Jury Comments:

This project is extraordinary in its scope and aspiration and a great example of using typical reality capture tools in atypical ways.

The historic preservation advances made by recording and filling in research gaps is admirable, highlighting the need for digital capture in the field.

The team's ability to build necessary local relationships and effectively deliver on the research questions amplifies their contribution.

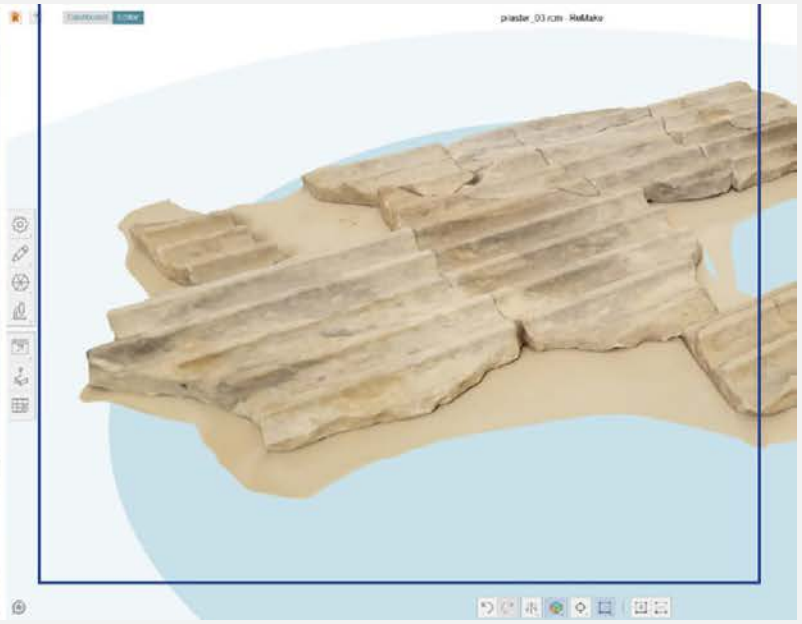
We are excited to see how the project develops, scales, and becomes more accessible.

REALITY CAPTURE WORKSHOP

LASER SCANNING

AERIAL PHOTOGRAMMETRY

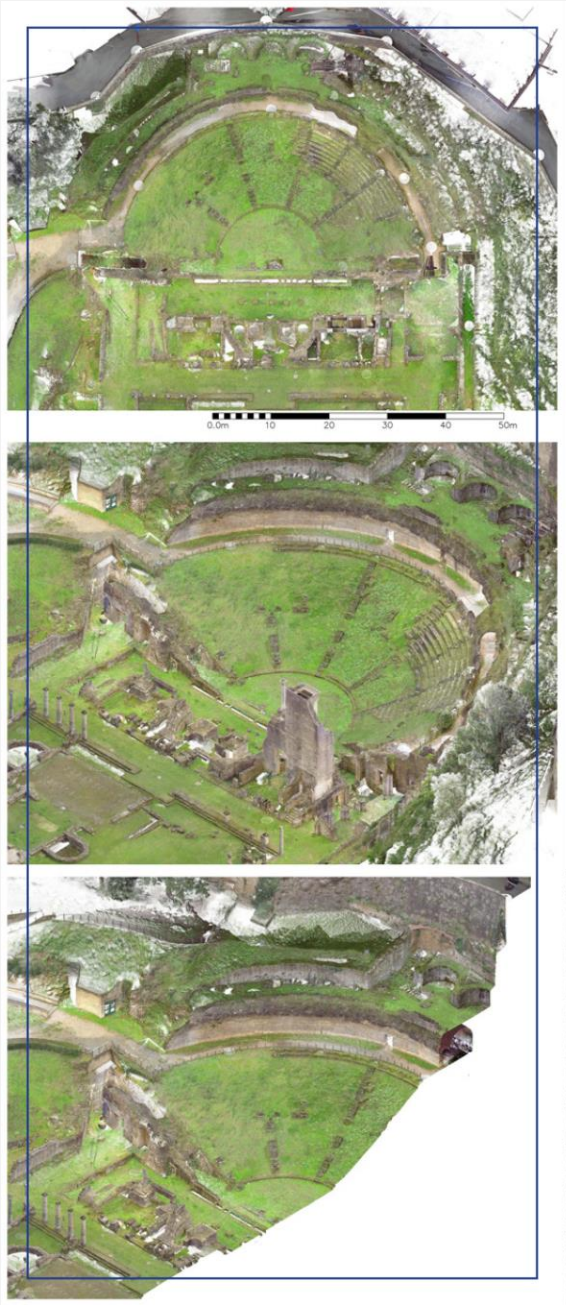
PHOTOGRAMMETRY

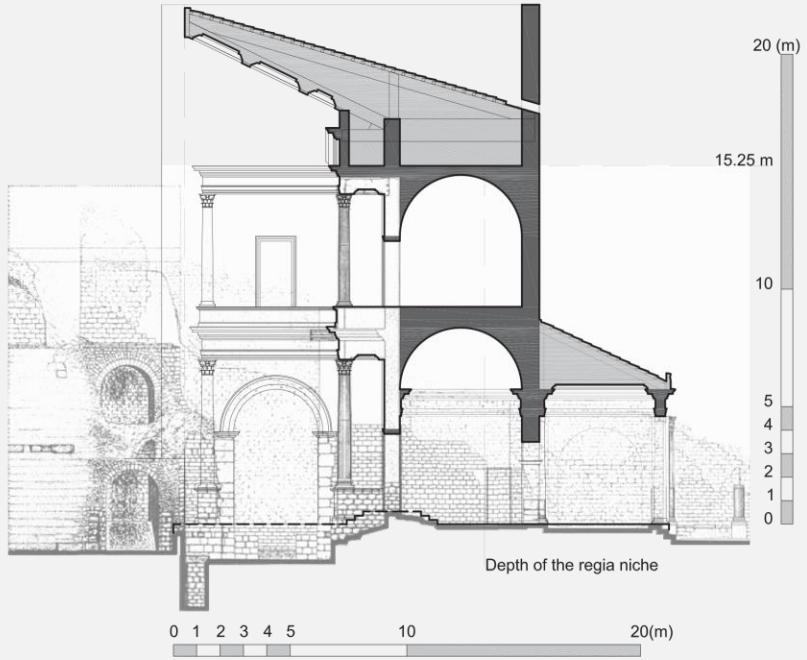


DOCUMENTATION and PRESENTATION

VOLTERRA

Original 3d laser scan and the documentation and interpretation drawings, cross section of the restored *scaenae* building, and the 3D model superimposed over the 3D point cloud.





RESEARCH

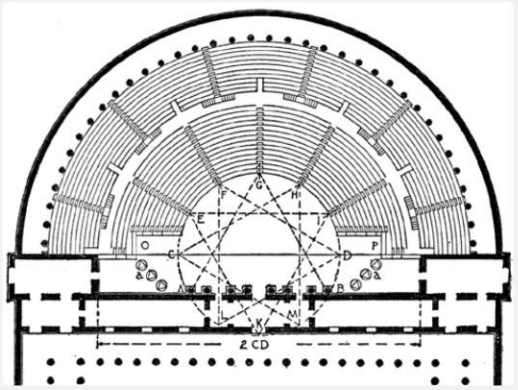
ROMAN THEATER DESIGN METHODOLOGY

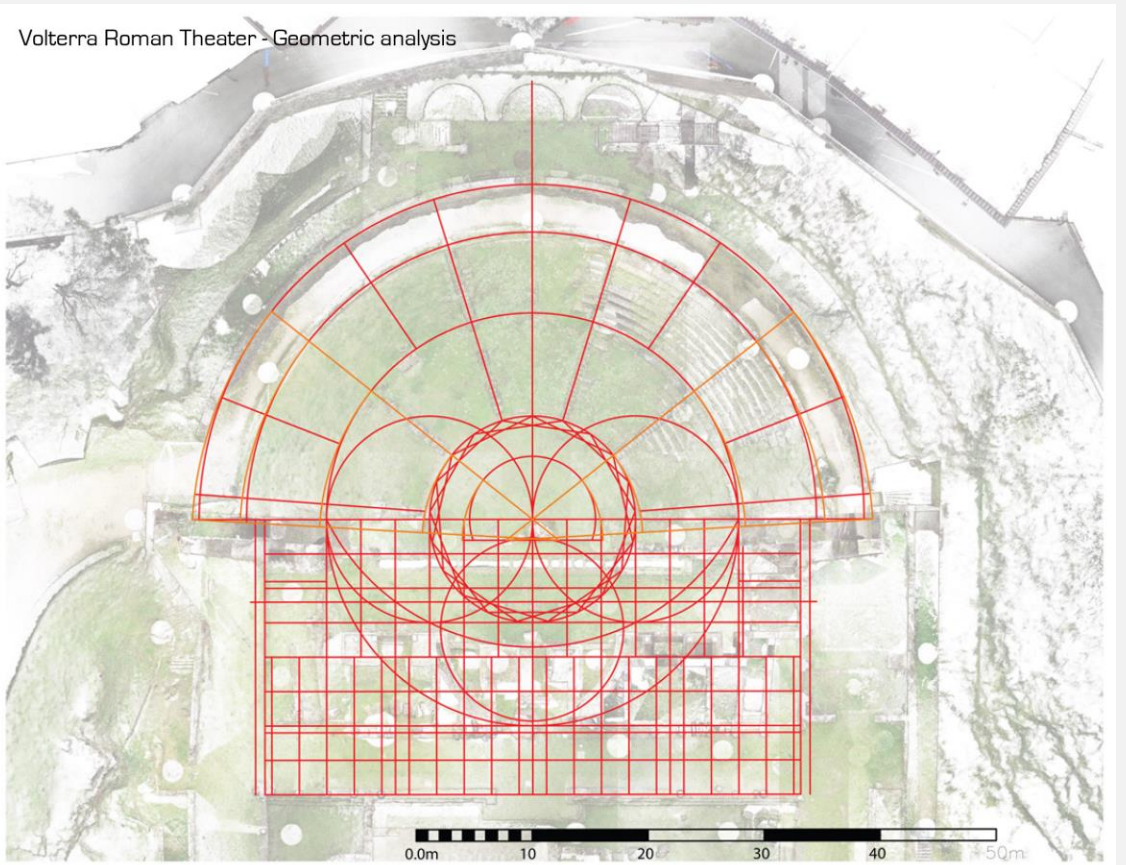
The simplicity and elegance of the Vitruvian geometric system of the Roman-style theater was for centuries one of the primary examples of the Roman architectural design methodology. The 12-pointed star inscribed in the circle of the orchestra became an icon of the modern knowledge of the classical architecture.

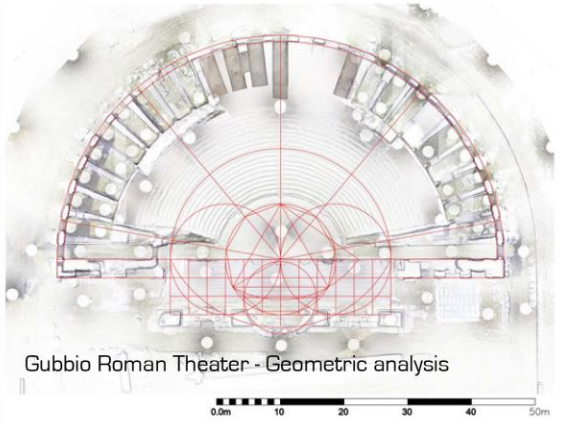
The theater archetype is clearly recognizable in all extant structures of this type, though their layouts vary significantly. However, the geometric model described by Vitruvius fails to explain all of them. It has been believed nevertheless that the ancient architects generally followed the Vitruvian principles, adjusting them where needed.

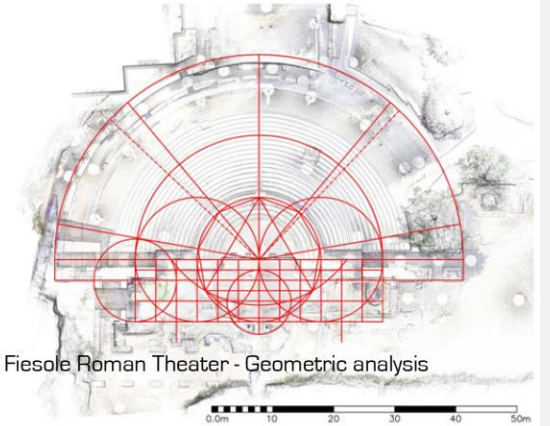
The three-dimensional laser scans and thus obtained data of unprecedented precision show that Roman architects in fact did not use the Vitruvius guidelines, but utilized in the design process a much more flexible and adaptable geometric system.

Below: Vitruvian diagram of the geometric system of the Roman Theater design.



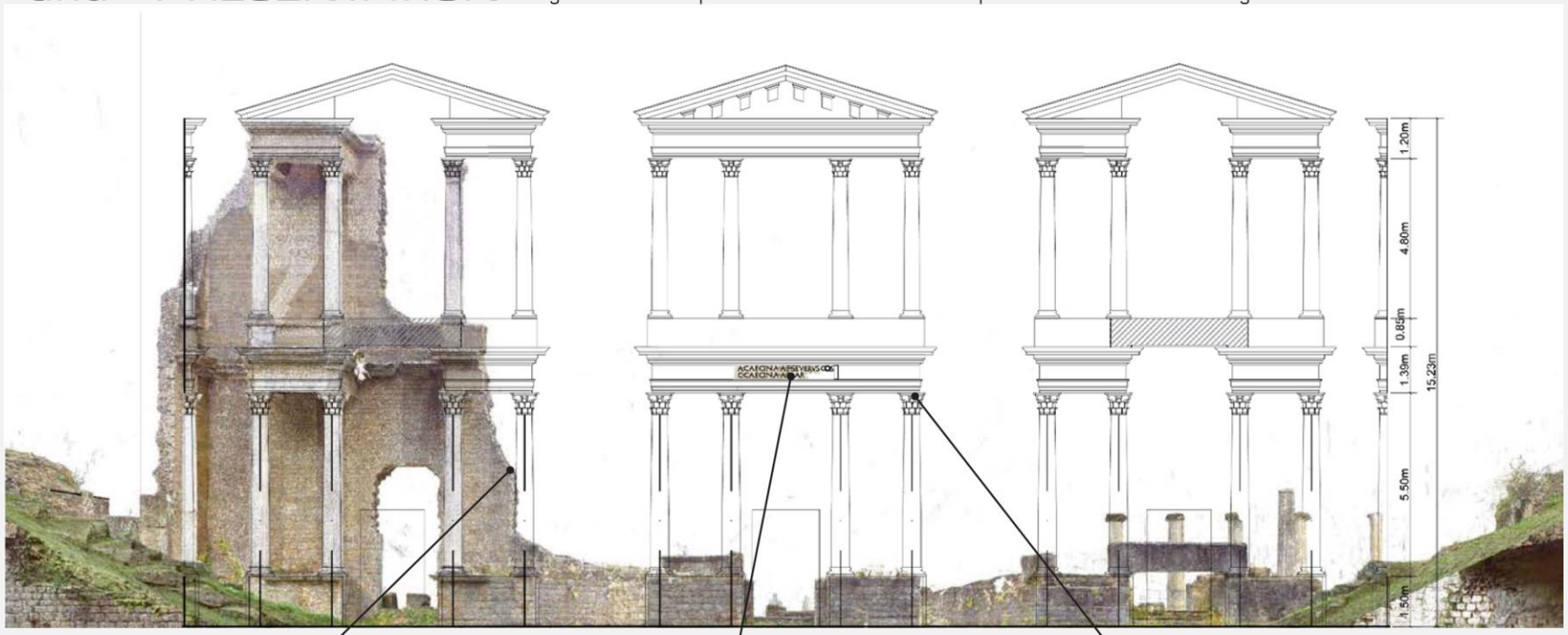






DOCUMENTATION and PRESENTATION

ROMAN THEATER in VOLTERRA Individual pieces of the marble decoration of the Roman theater, found in various locations and often in multiple pieces, are being recorded in 3D with use of photogrammetry. They are being virtually restored to their original location in the 3D model of the structure. The complete catalog of the decoration fragments is developed in collaboration with the Sopraintendenza della Archeologia in Florence.



Pilaster fragment (in 7 pieces), Tunisian marble (yellow), Current location: Museo Guarnaci

Plaque fragment (in 4 pieces), Carrara marble (white), Current location: Archeological storage

Corinthian capitel (built into a wall), Carrara marble (white), Current location: Pieve Corbano

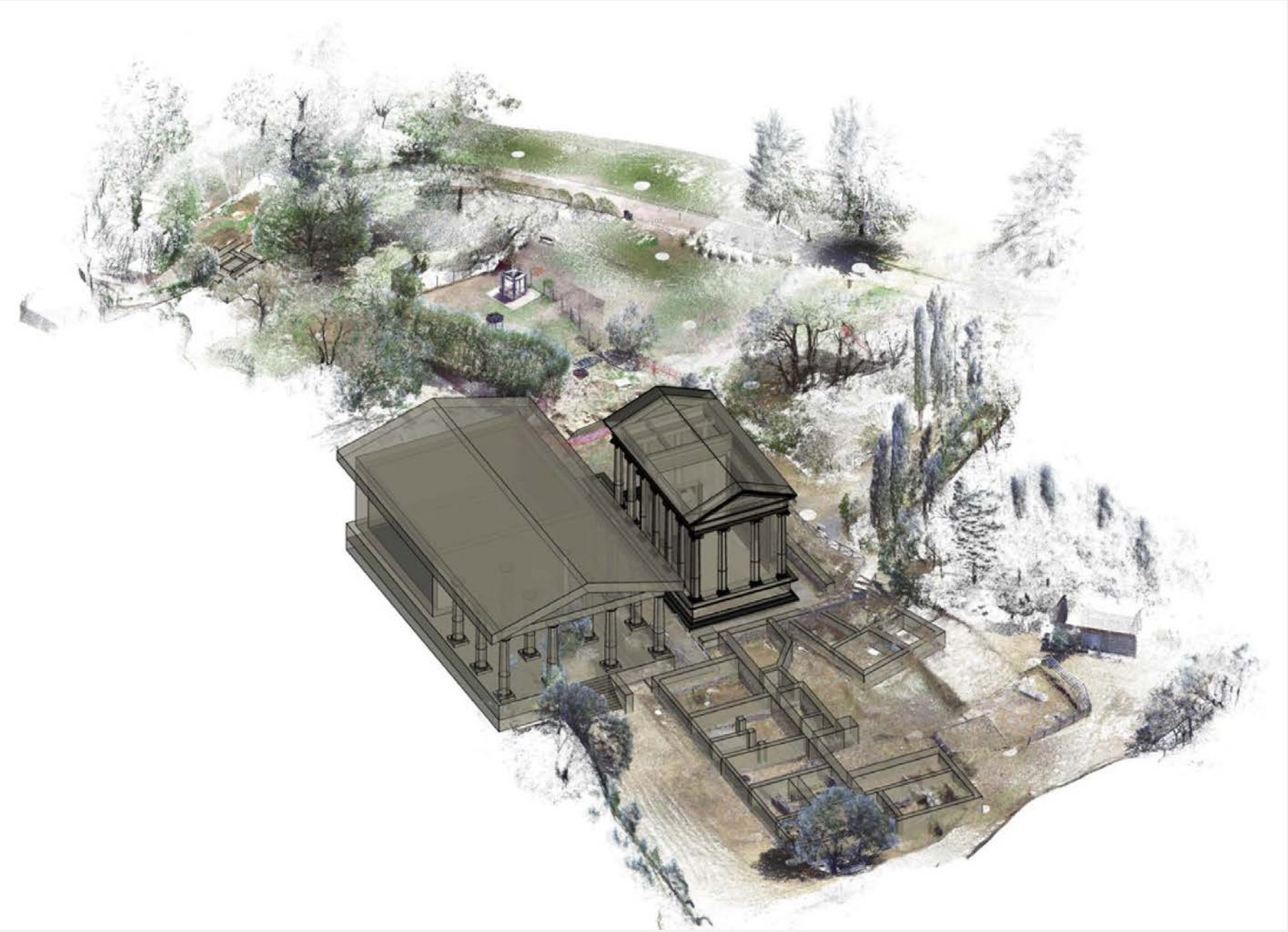
DOCUMENTATION and PRESENTATION

ROMAN THEATER in VOLTERRA For the purpose of presentation, the digital 3D model of the reconstruction Roman Theater was rendered in 3DS MAX as well as processed in Revit Live and Stingray software, to create a Virtual Reality experience of the original structure.

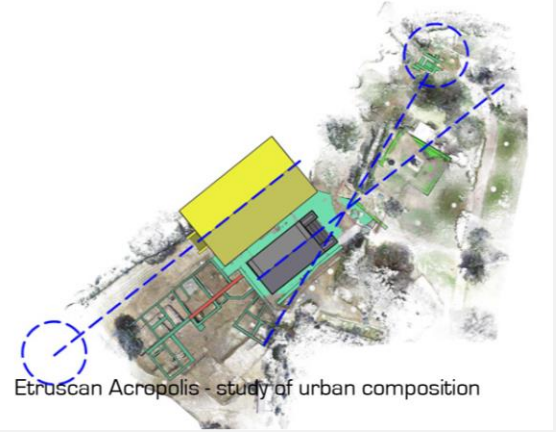
Volterra Roman Theater - 3D digital reconstruction

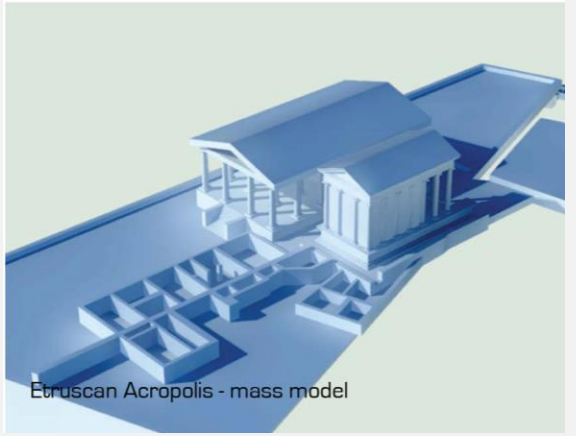
Virtual Reality system in Volterra - July 2017

Volterra Roman Theater - Virtual Reality model and rendering



Etruscan Acropolis - Point Cloud over base map.


Etruscan Acropolis - study of urban composition


Etruscan Acropolis - mass model

GARDEN VILLAGE

A 77-unit student-orientated apartment building located in Berkeley, California completed in August of 2016. Designed to echo the massing and rhythm of the community, the innovative design departs from the standard single-volume building. Instead, 18 distinct building volumes are spread out in a garden and linked by exterior walkways.

Project Delivery and Construction Administration Excellence

Citation: Garden Village

Jury Comments:

This project exemplifies the critical role of innovation in design, construction, and project delivery to meet the significant housing challenges of today.

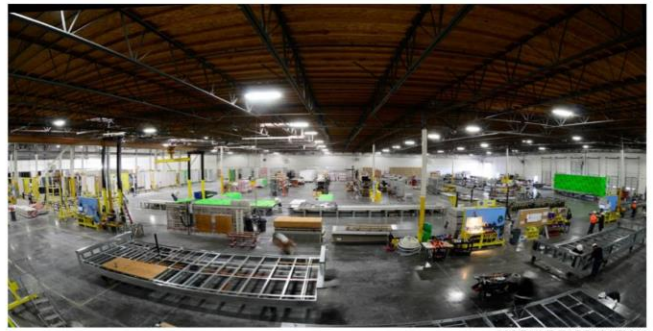
A model of doing more with less, the team created a high-density housing project that is desirable and sets a new bar for off-site construction at this scale, while also being sustainable and economical.

The innovative fabrication and modular construction process combined with design, attention to daylight, and access to the outside makes for a meaningful, elegant, and holistic solution to the housing crisis.

We are excited about the precedent this sets for the design and construction industry.

SITE PLAN

WEST ELEVATION

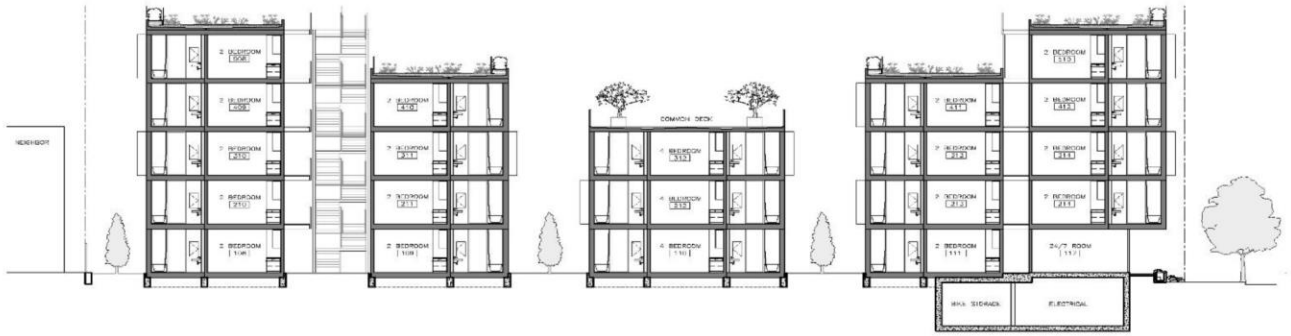


MODULE FABRICATION

FOUNDATION PREPPING

MODULETRANSPORTATION

TYPICAL FLOOR PLAN

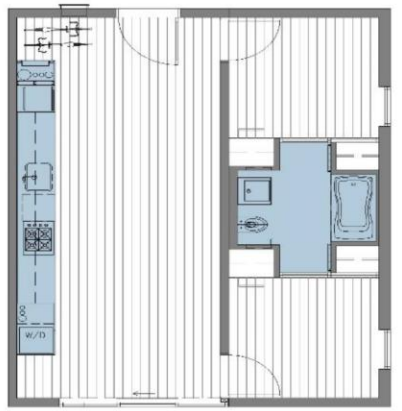


BUILDING SECTION

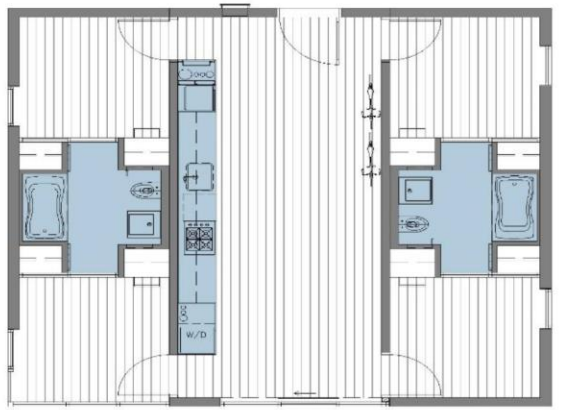
MODULE STAGING

LIFTING A BEDROOM MODULE

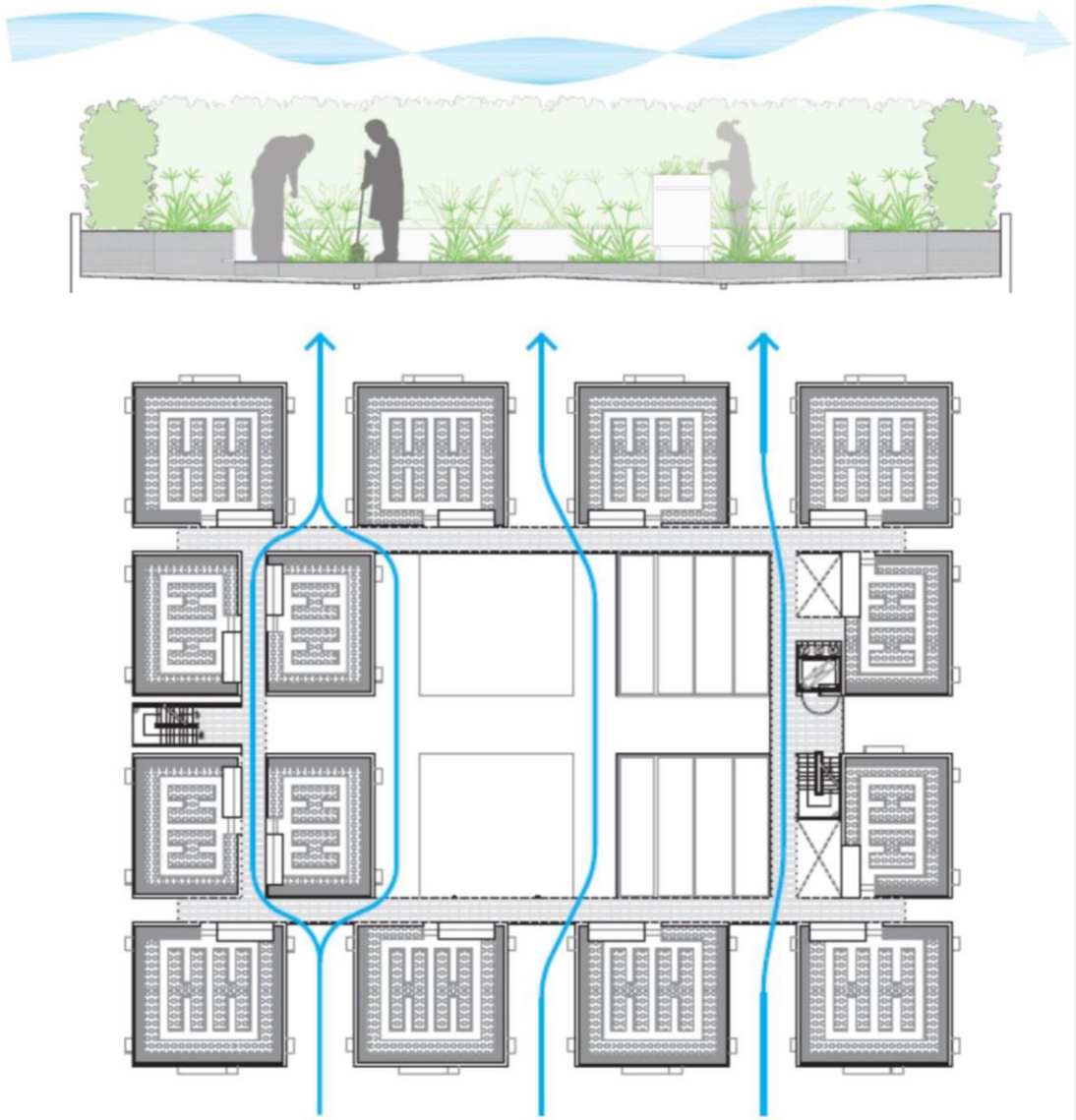
SETTING LIVING ROOM MODULE

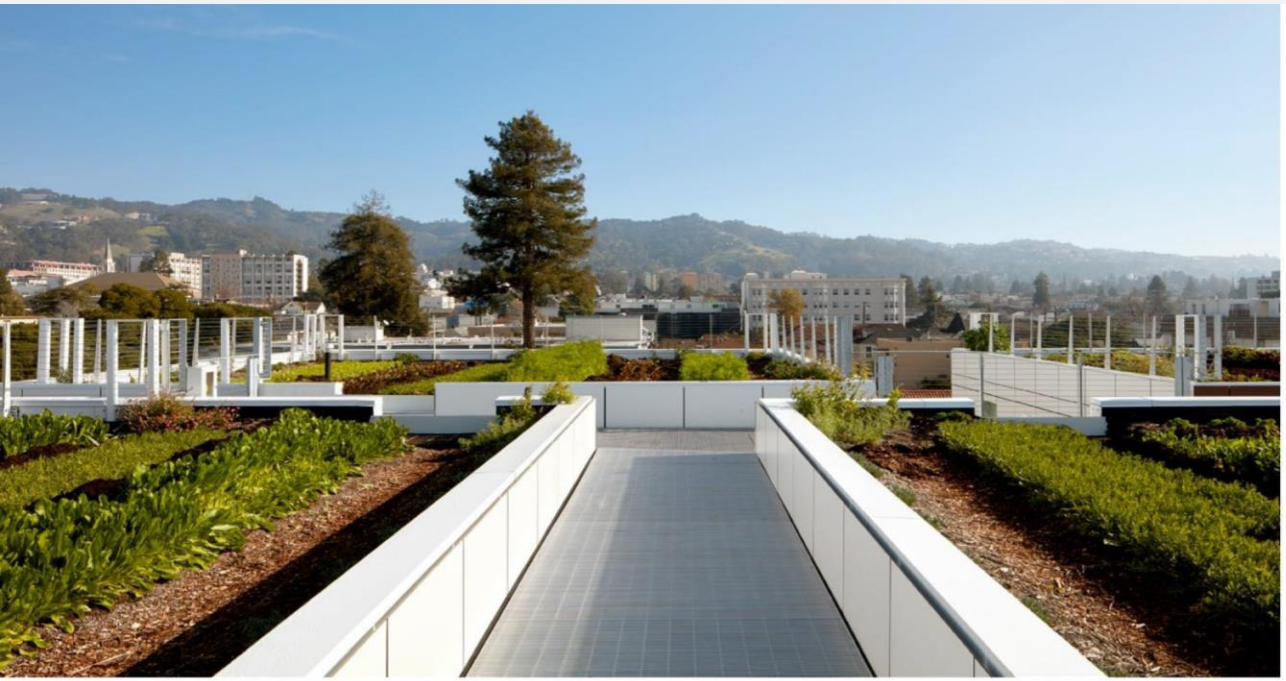


TWO BEDROOM UNIT PLAN

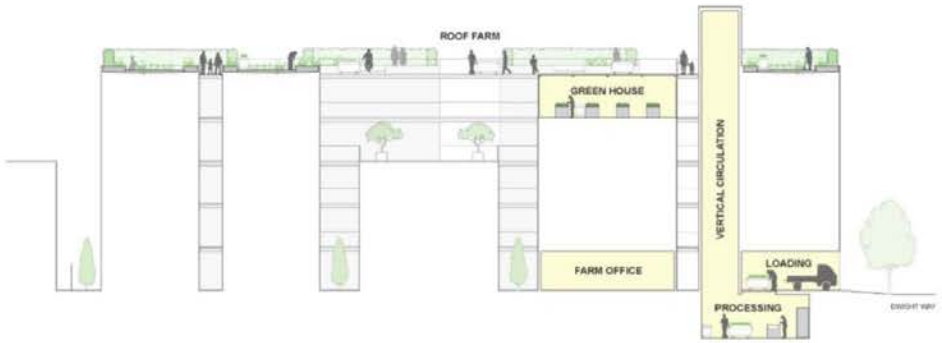


FOUR BEDROOM UNIT PLAN

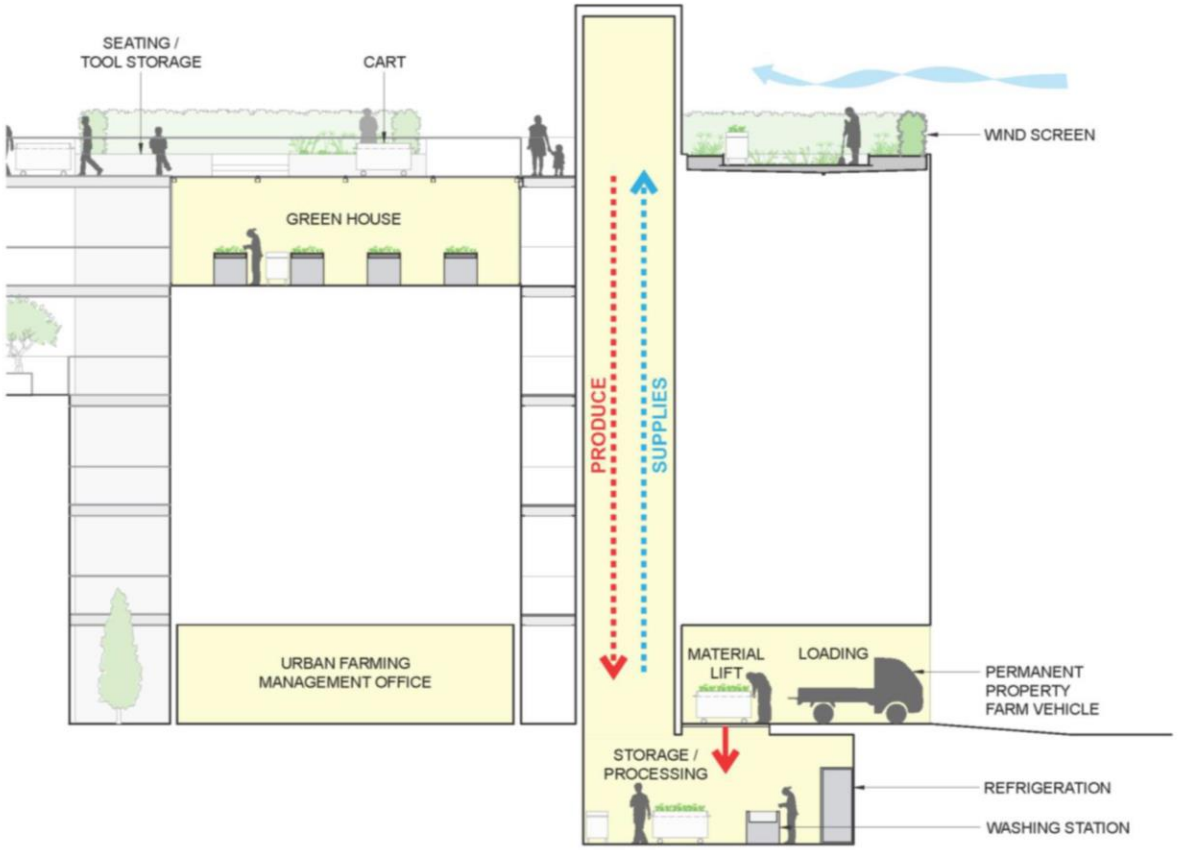


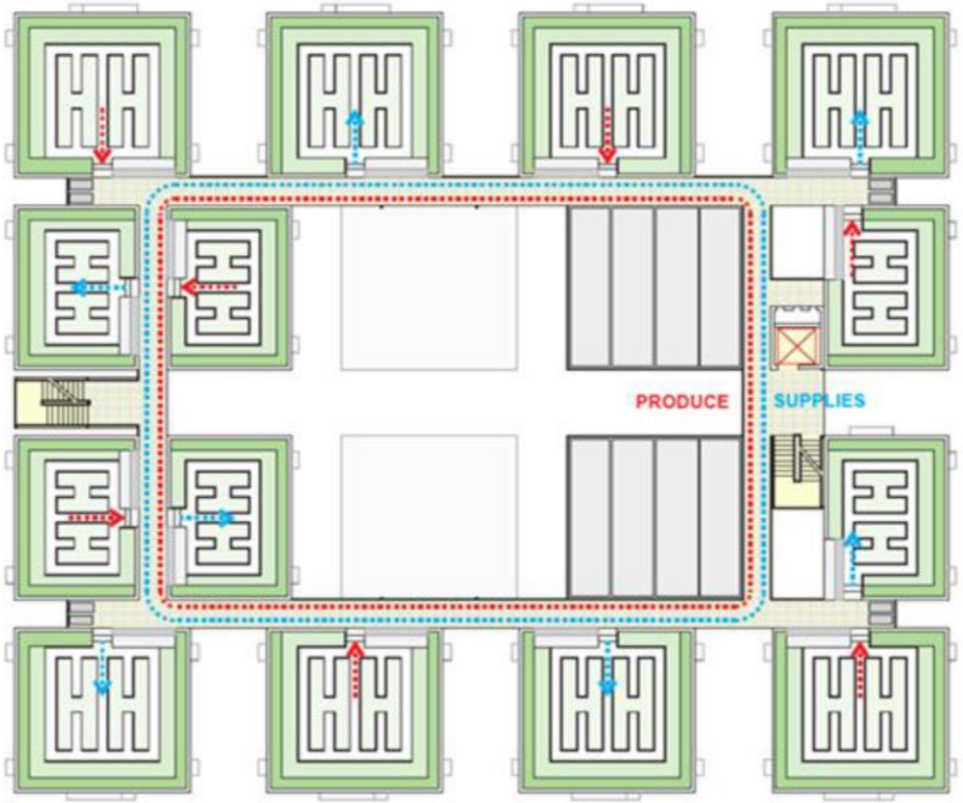


SEATING /
TOOL STORAGE
GREEN HOUSE
WIND SCREEN
CART
STORAGE
ELEVATOR
LOADING
FULTON STREET
DWIGHT WAY


ROOF FARM
GREEN HOUSE
VERTICAL CIRCULATION
FARM OFFICE
LOADING
PROCESSING

Commercial rooftop farm delivers 16 tons of hyper-local produce to the community





Stellar Design

Honorable Mention

THE YARD
AT CHICAGO SHAKESPEARE THEATER

American Institute of Architects
2017 Innovation Award

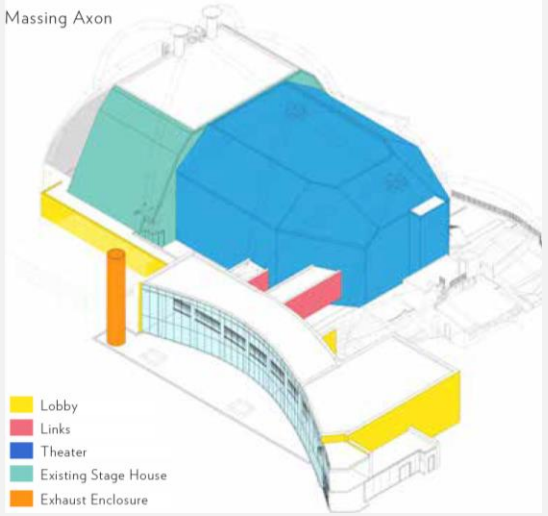
Jury Comments:

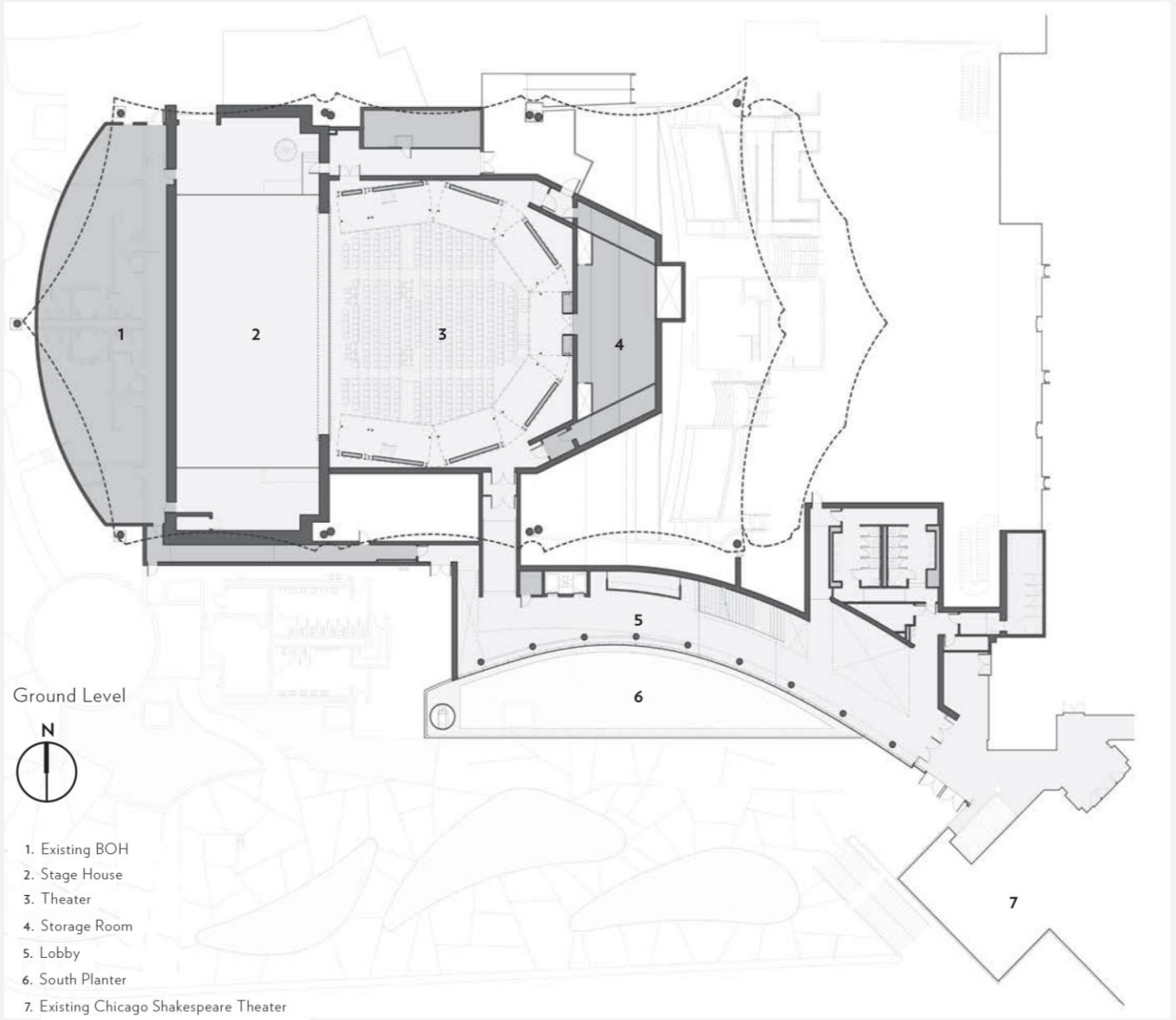
The architects balanced numerous design and constructability challenges to deliver a project that beautifully blends difficult existing conditions with a technically demanding program.

The project's flexible and sustainable use of space allows for multiple configurations and full utilization of the site in a way that can evolve with future programming.

From the project delivery, its use of technology and design creativity, this project elevates the real demands of audience experience, structure, and systems configuration to expand the artistic possibilities of the resident theater companies.

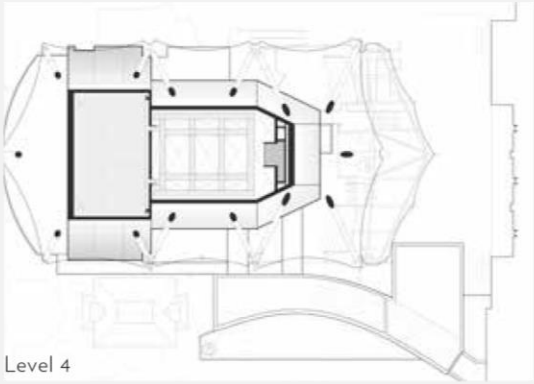
Massing Axon



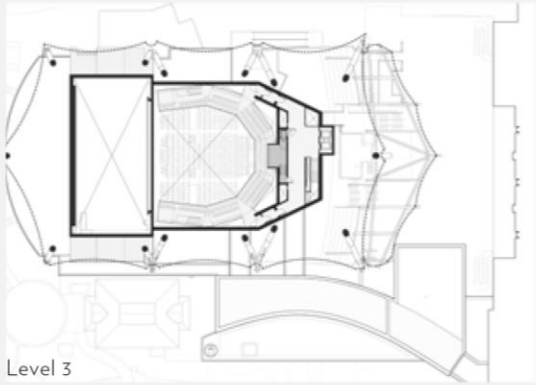


Ground Level

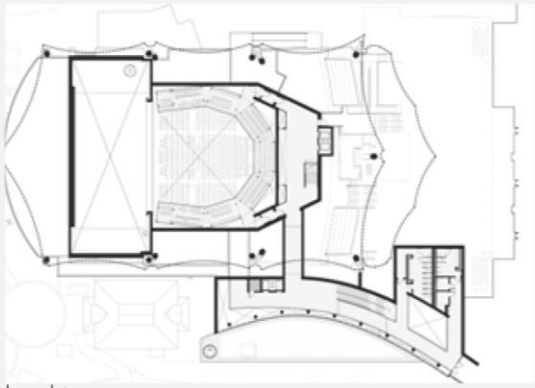
1. Existing BOH
2. Stage House
3. Theater
4. Storage Room
5. Lobby
6. South Planter
7. Existing Chicago Shakespeare Theater



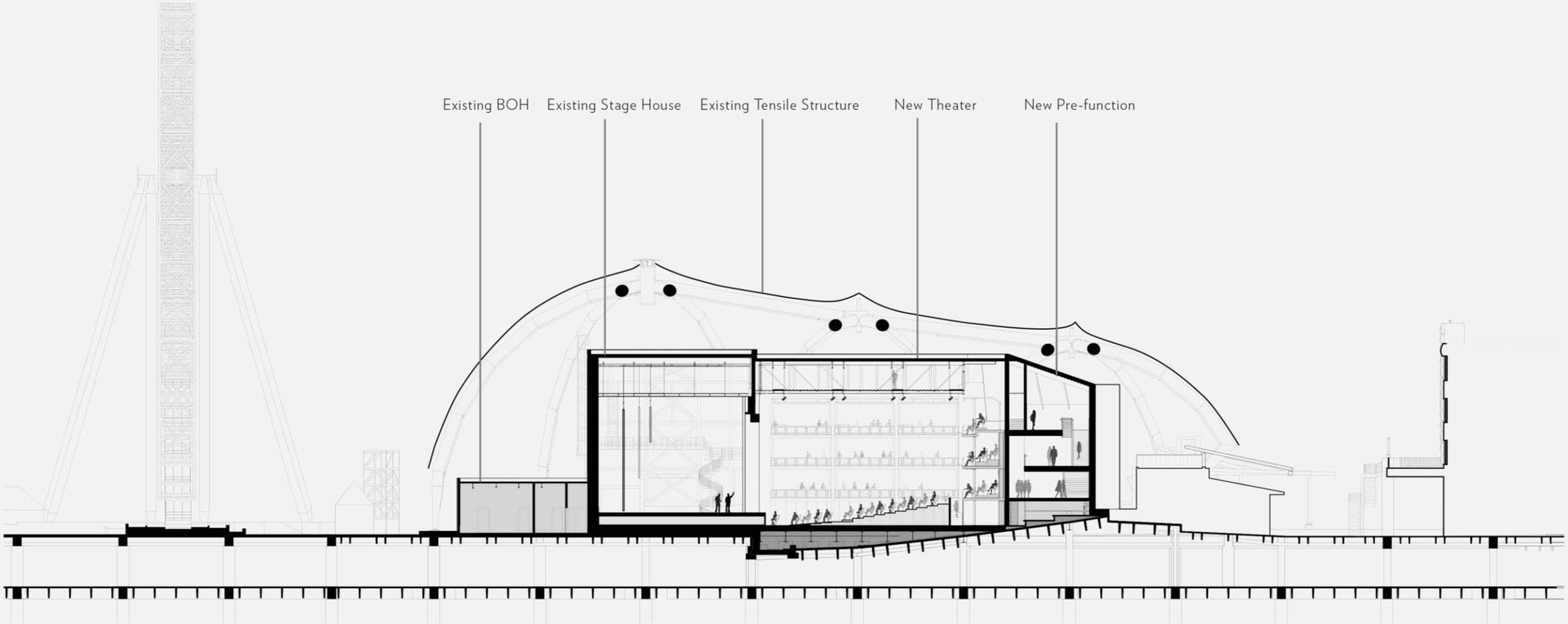
Level 4

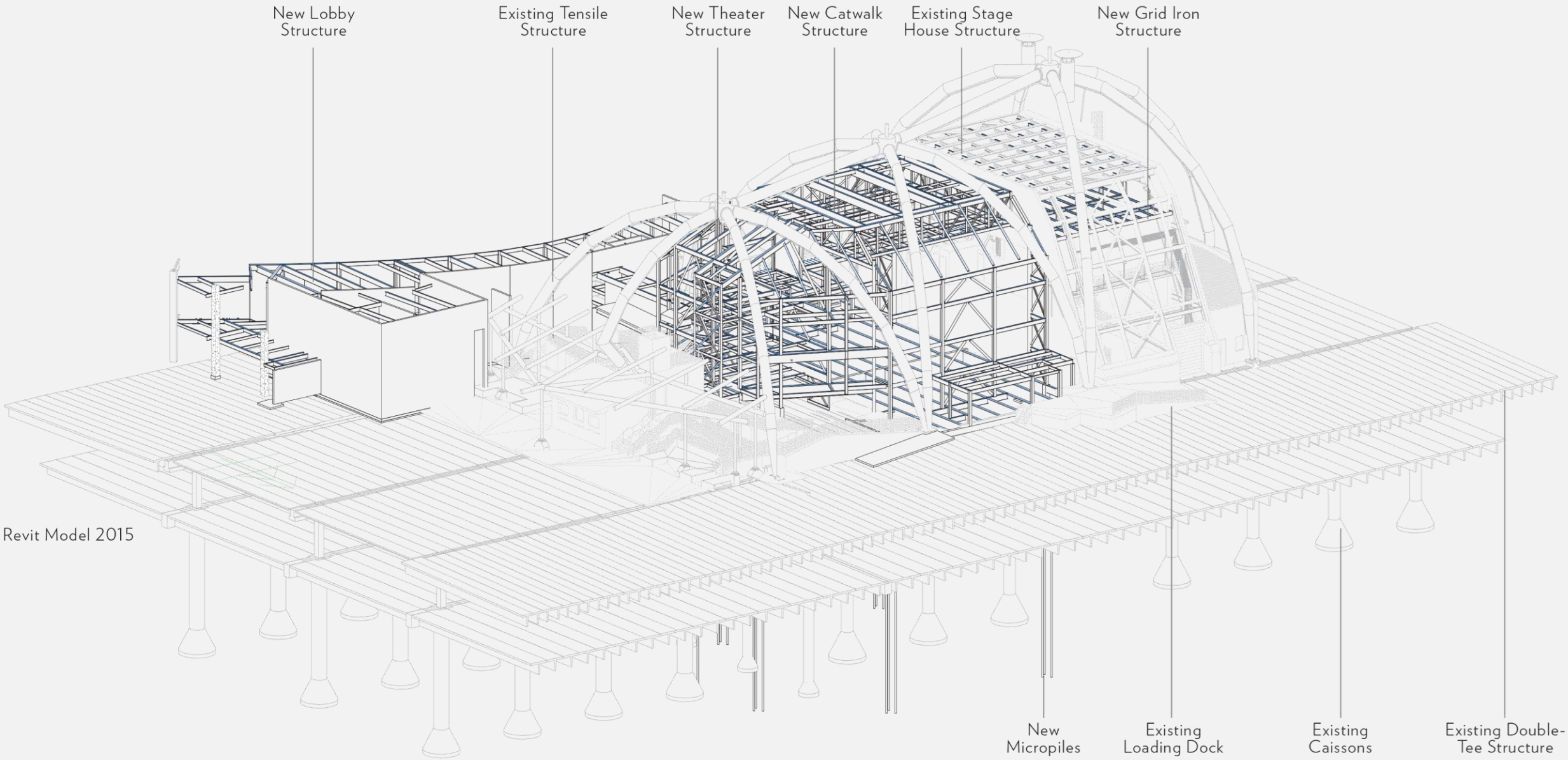


Level 3

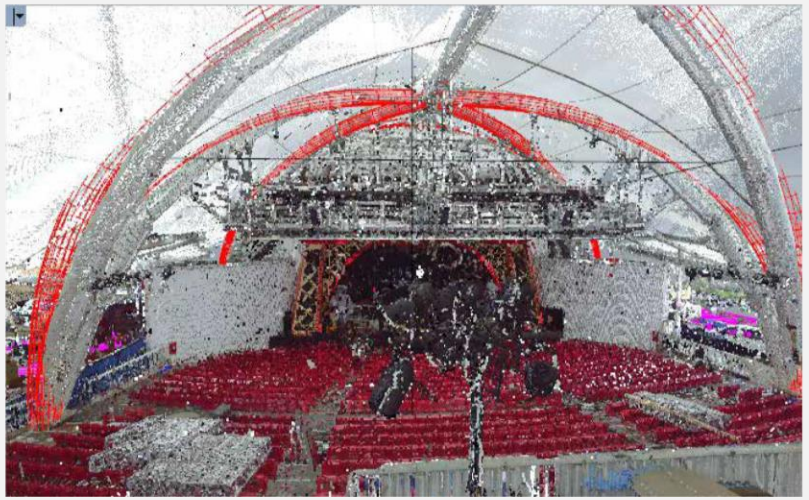


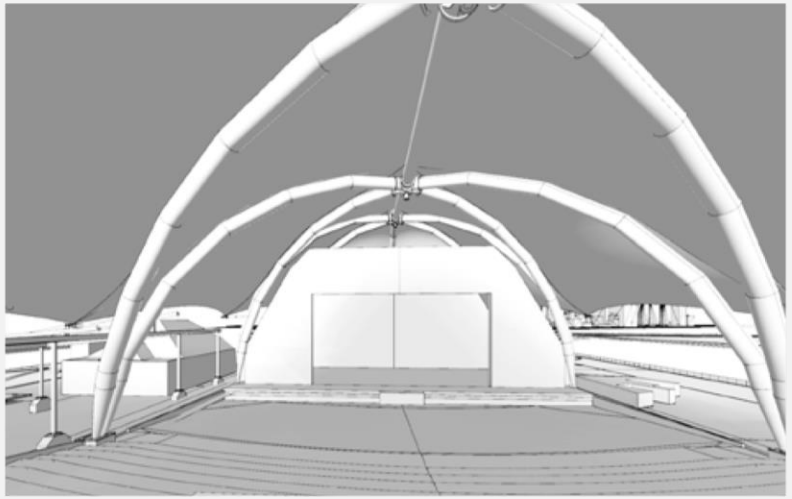
Level 1

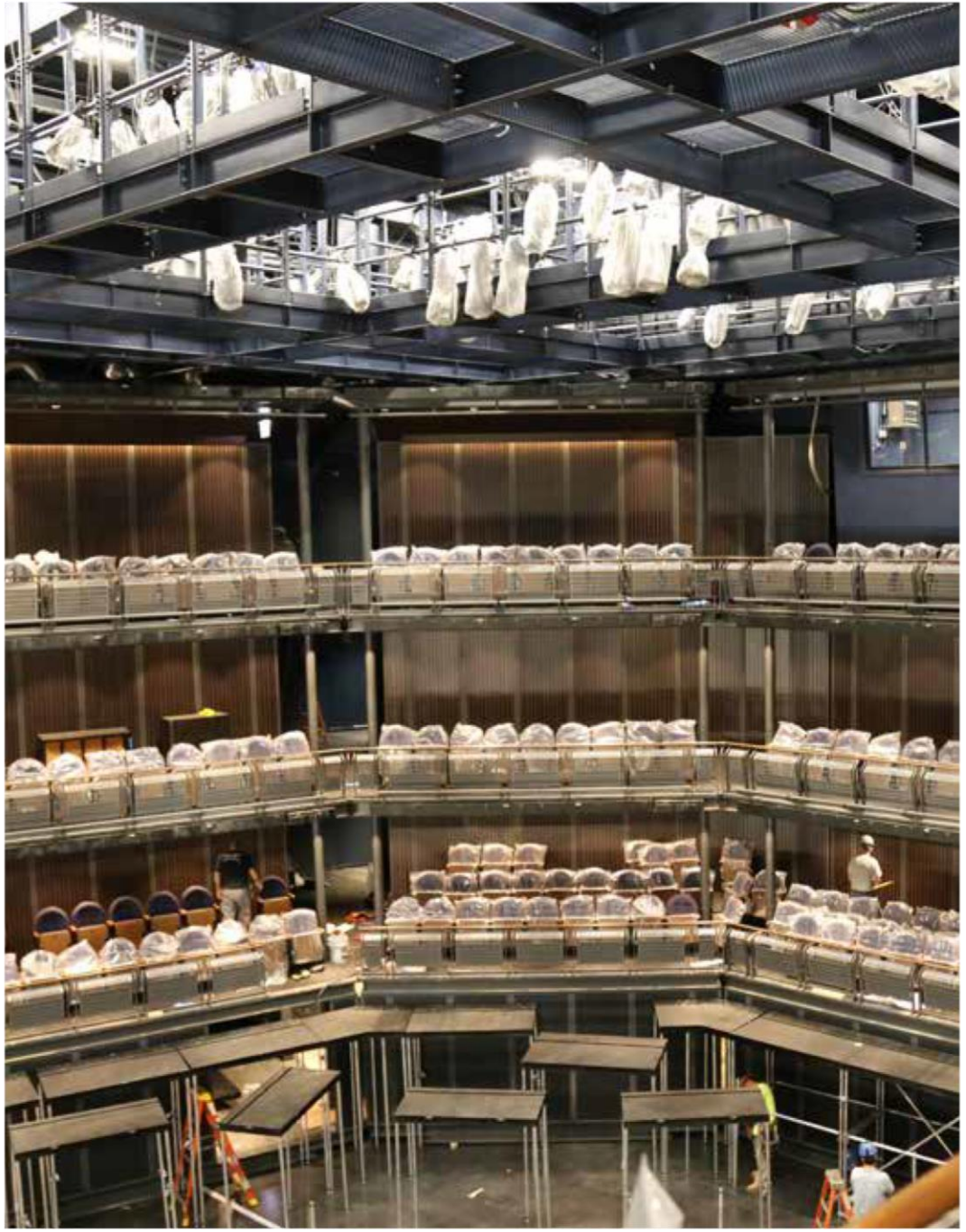

Existing BOH
Existing Stage House
Existing Tensile Structure
New Theater
New Pre-function



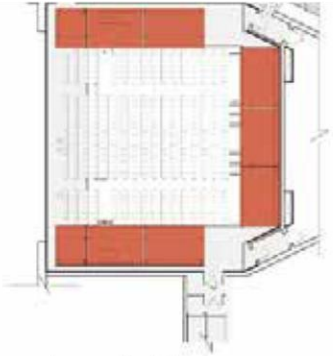
Revit Model 2015



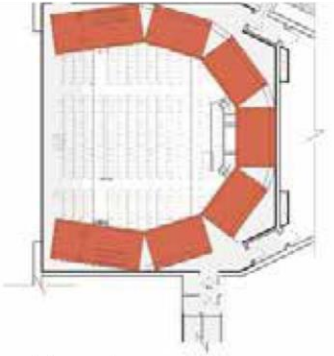




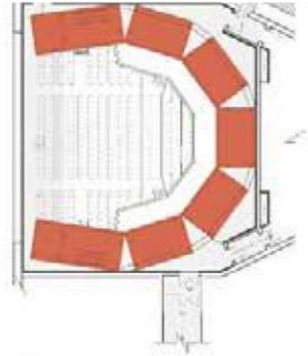
Seating Towers



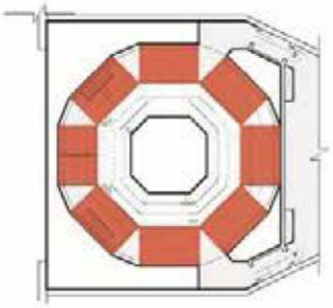
Large End On
872 Occupants



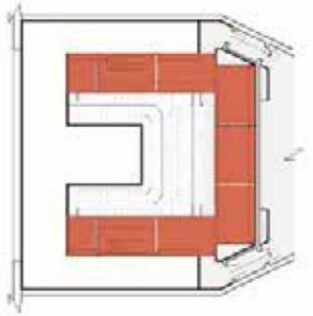
Horseshoe
849 Occupants



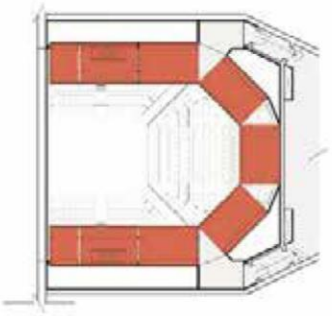
Traverse
805 Occupants



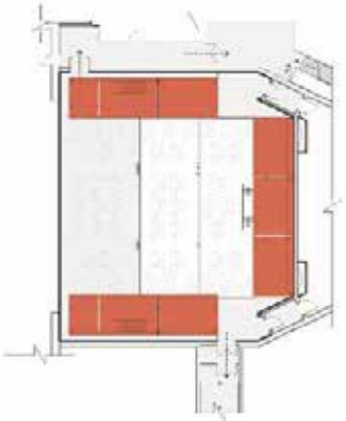
In The Round
468 Occupants



Small Thurst
480 Occupants

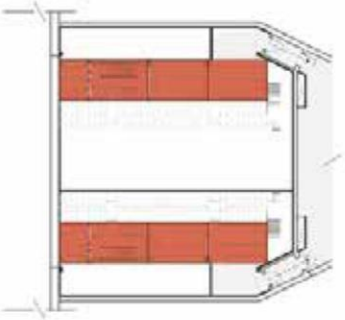


Thrust
623 Occupants

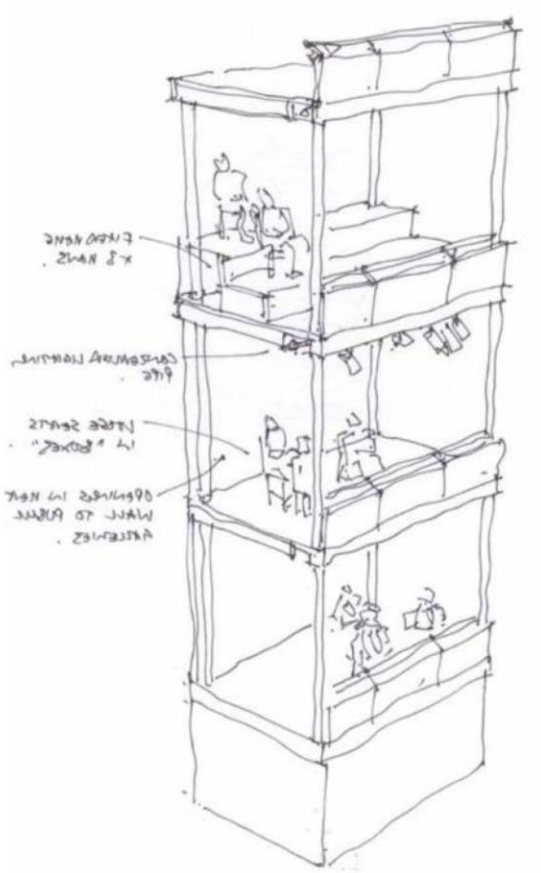


Cabaret
197 Occupants

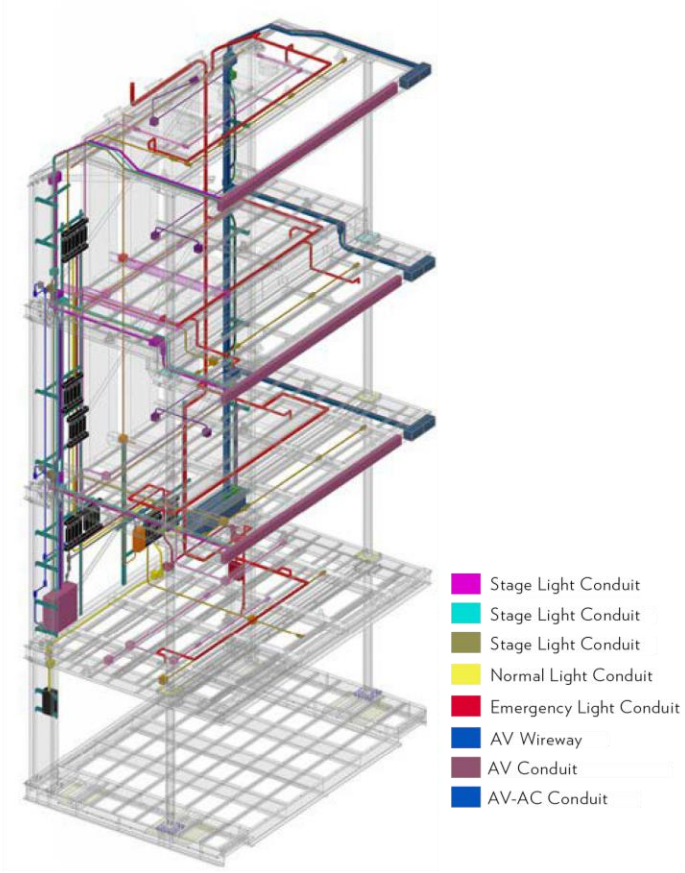
Cabaret Gala/ Banquet
201 Occupants



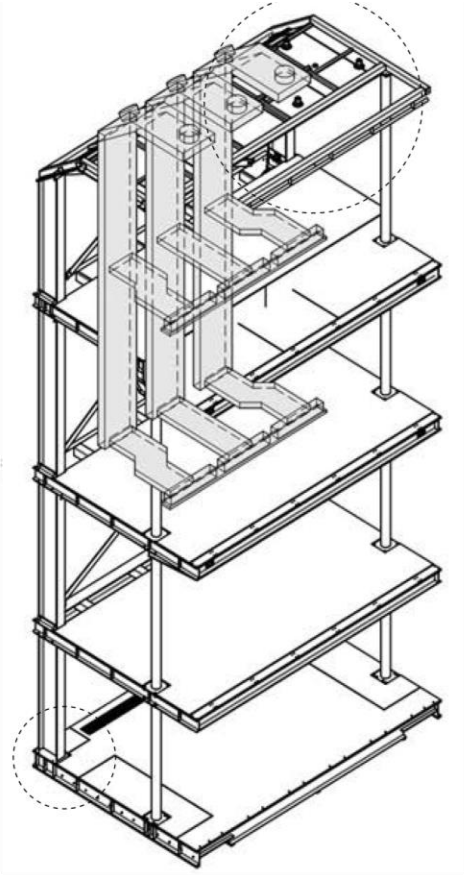
Traverse
430 Occupants



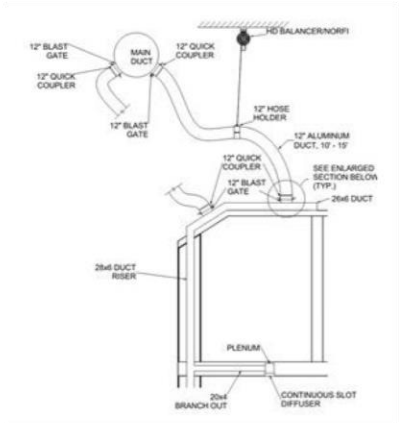
Seating Tower Sketch 2014



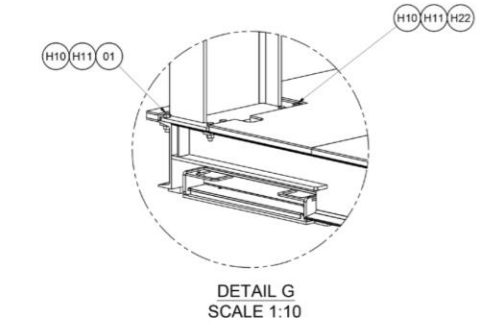
Electrical and Fire Protection System



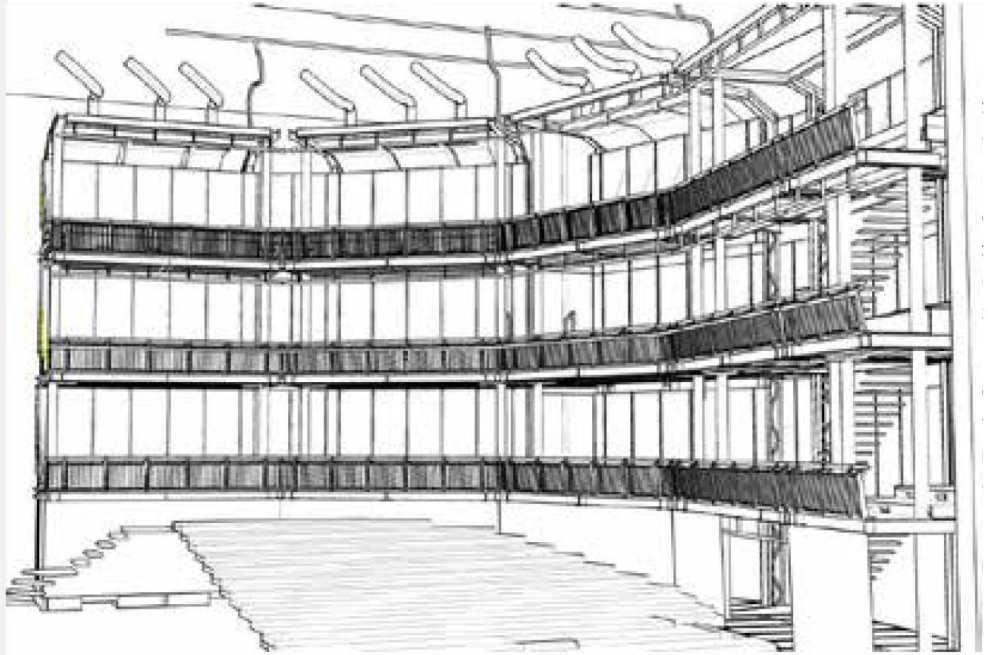
Mechanical System

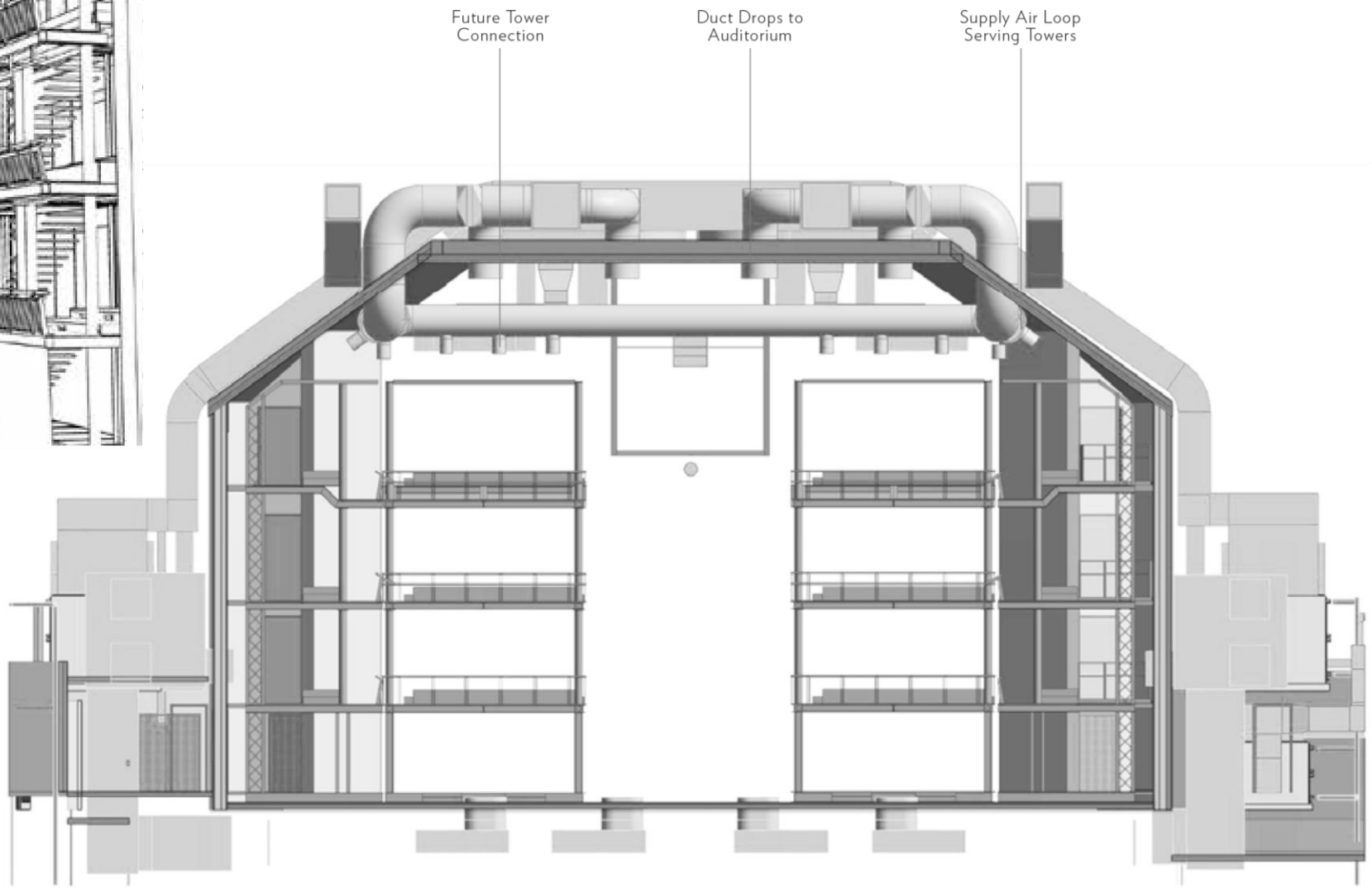


Flexible Connection



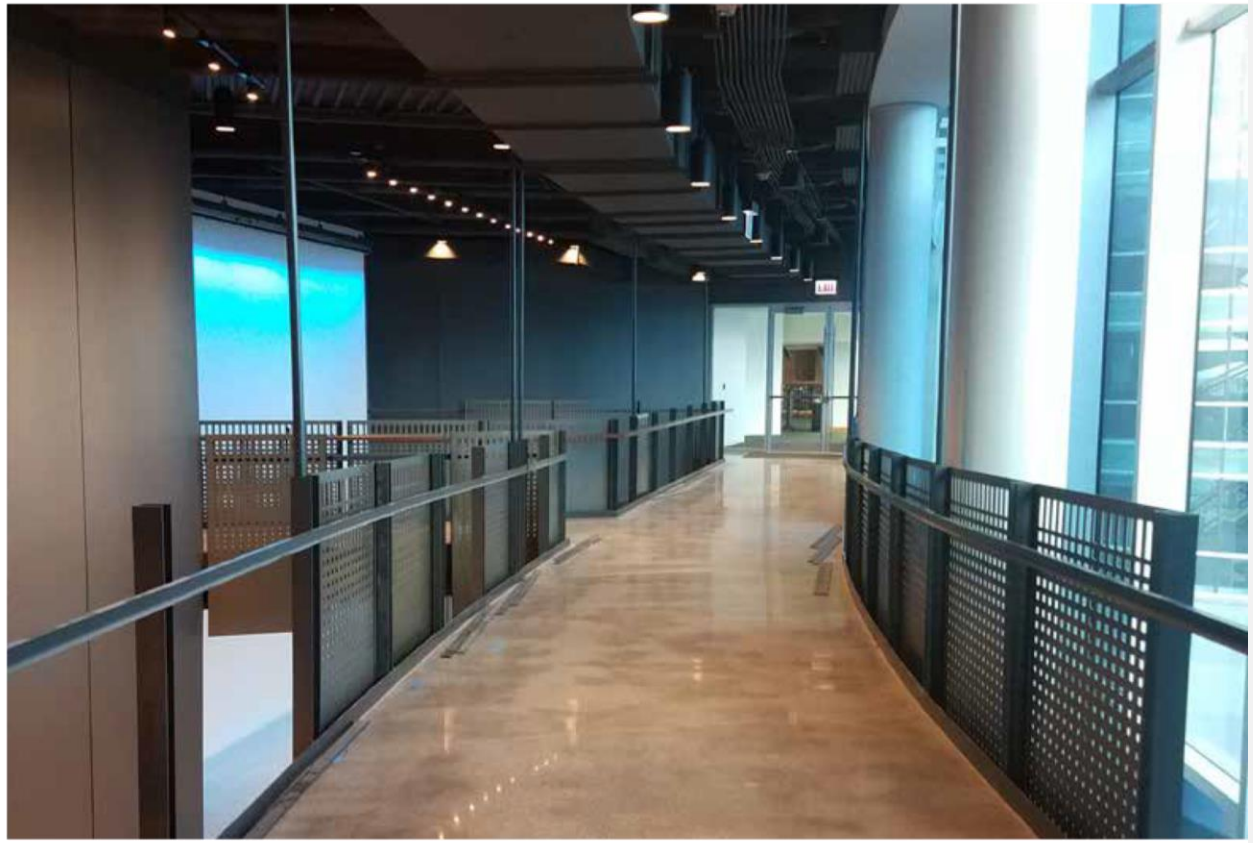
Air Caster **WATCH VIDEO**




Future Tower Connection
Duct Drops to Auditorium
Supply Air Loop Serving Towers

Lobby Mezzanine Interior Rendering

Lobby Interior Rendering



Interior Lobby Construction 2017

The design concept for the Lobby interiors follows the design concept of the seating towers **maximum flexibility**, an overarching theme throughout the many facets of the project. The client requested that the lobby be as flexible as the theater, to provide an open concept space that can accommodate various events and small-scale performances. The furniture, including concierge desk, drink rails and seating are all mobile. Nothing is fixed, to reinforce the flexible concept.

Stellar Design

Citation

The Bahá'í Temple of South America

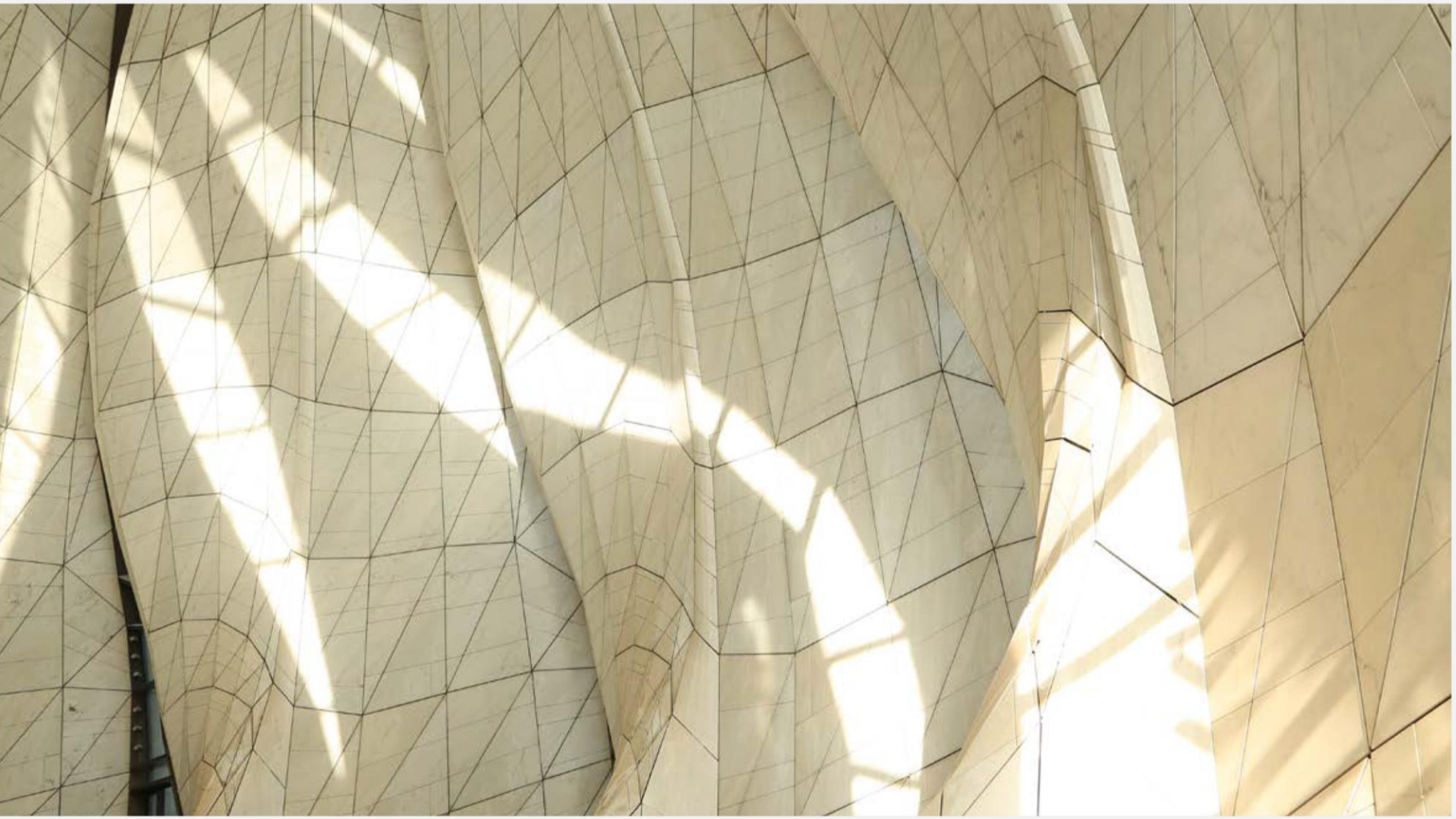
AMERICAN INSTITUTE OF ARCHITECTS | 2017 INNOVATION AWARDS

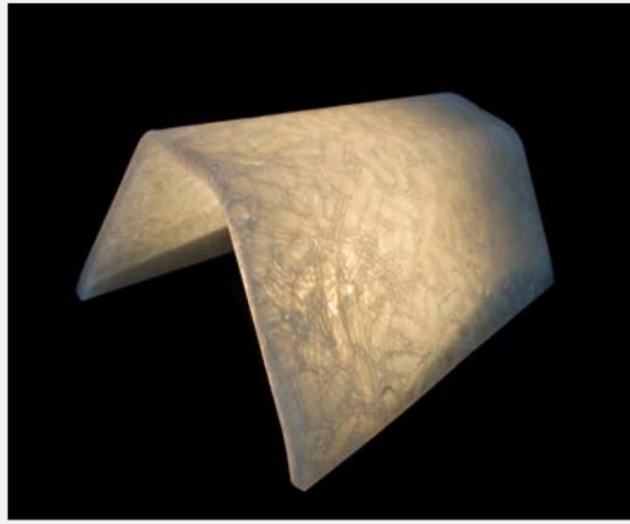
Jury Comments:

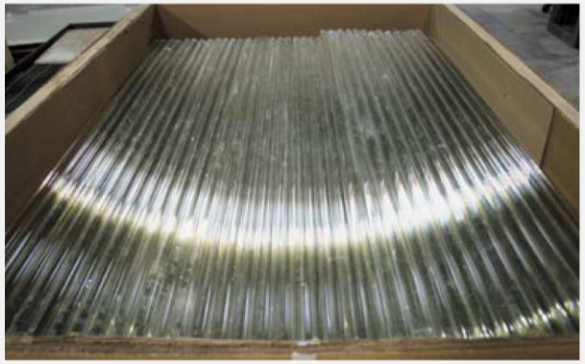
This highly aspirational work of architecture was a labor of love informed by over 10 years of research and analysis.

The result of a transdisciplinary, global collaboration, it was thoughtfully conceived and exceptionally well-executed.

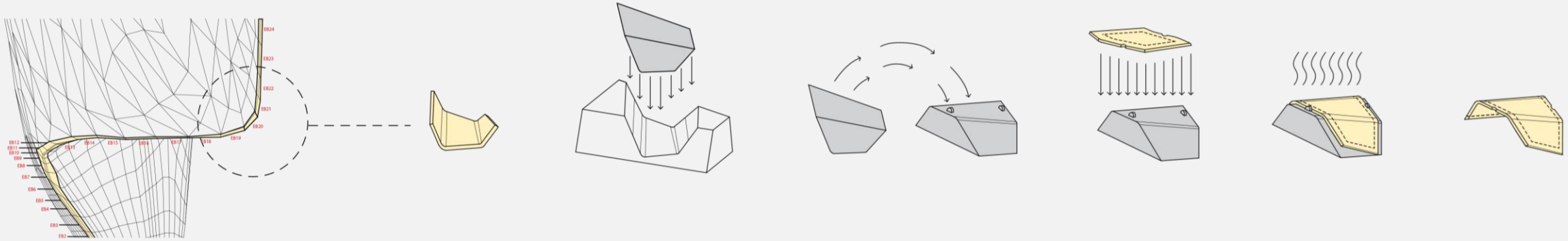
The treatment of normative materials like marble and glass with groundbreaking technology and elegant detailing creates a transcendental moment, amplifying the building's purpose.



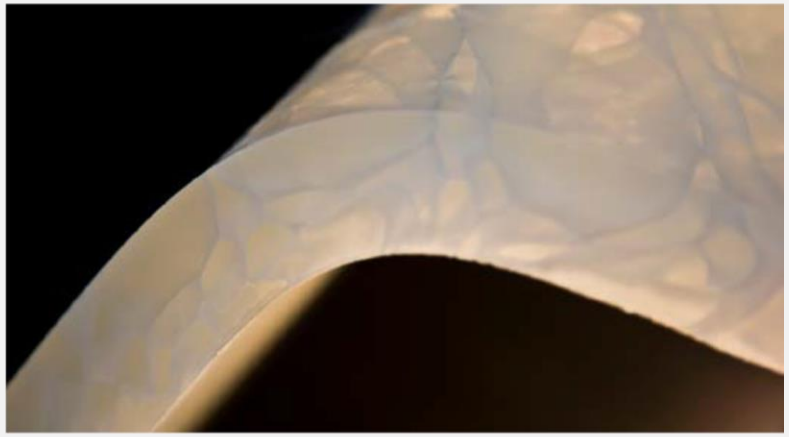


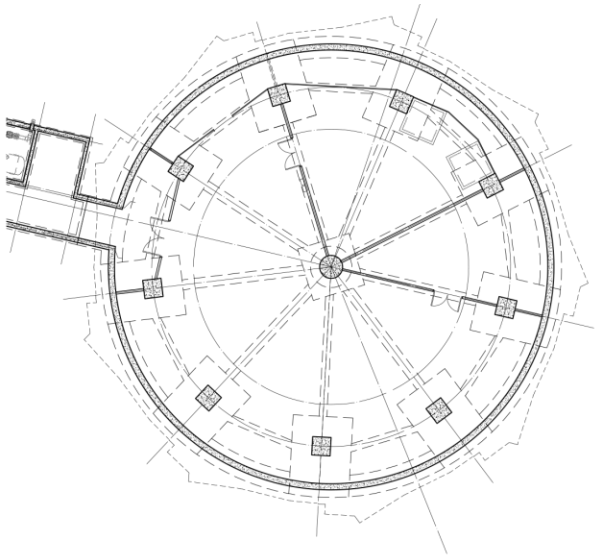


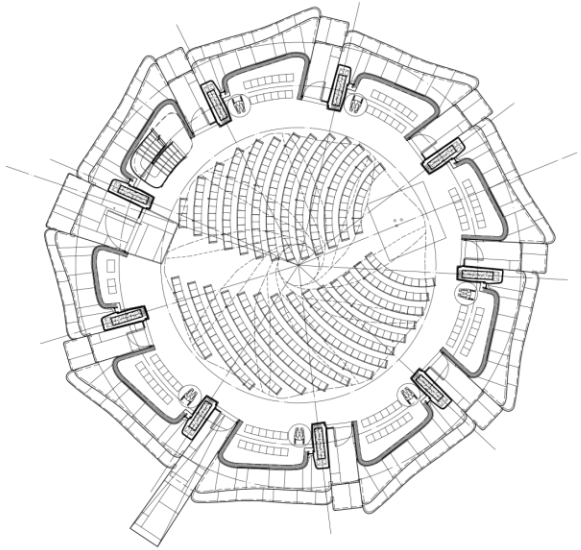
Fabrication of flat cast glass sheets for the exterior cladding.

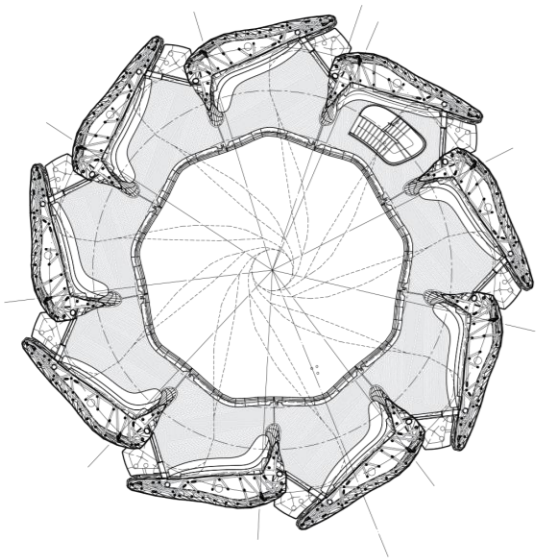


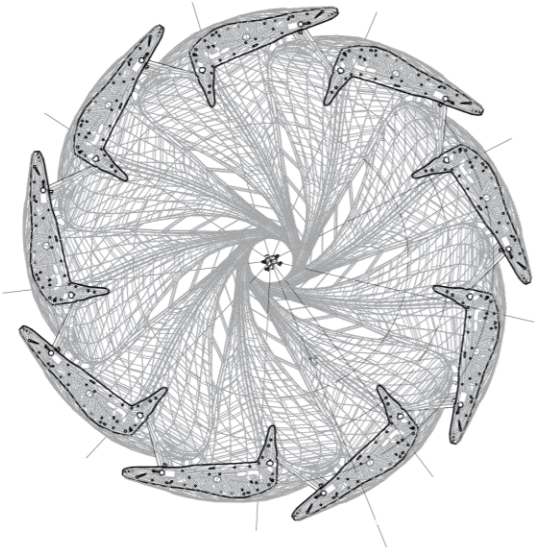
Process of “slumping” cast glass into curved shapes.

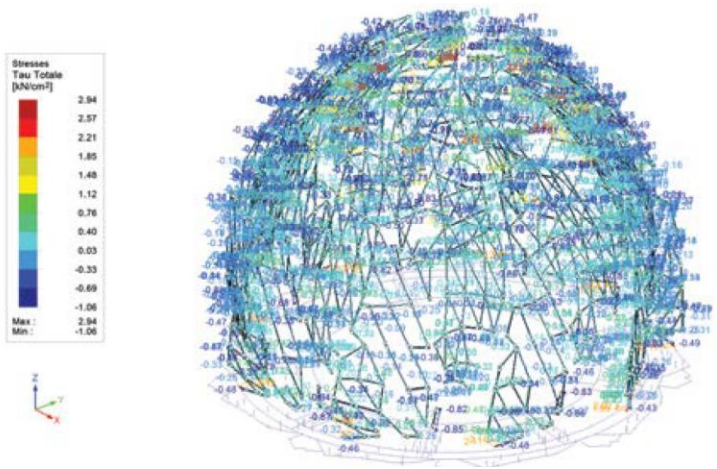








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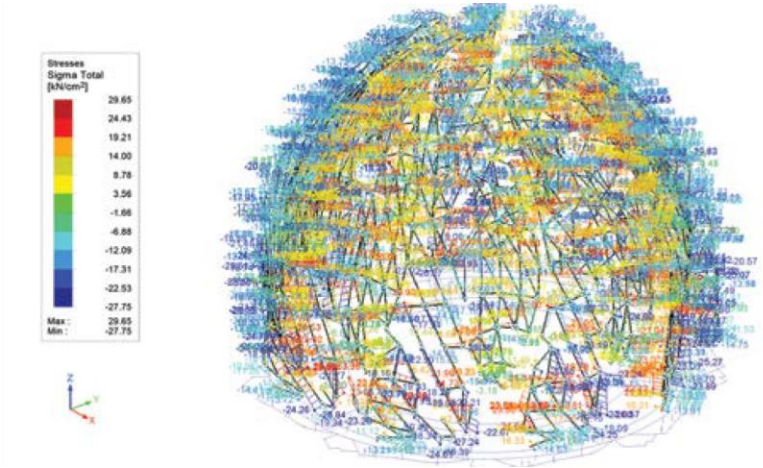
Tau Totale
[kN/cm²]
2.94
2.57
2.21
1.85
1.48
1.12
0.76
0.40
0.03
-0.33
-0.69
-1.06
Max : 2.94
Min : -1.06


Stresses
Sigma Total
[kN/cm²]
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24.43
19.21
14.00
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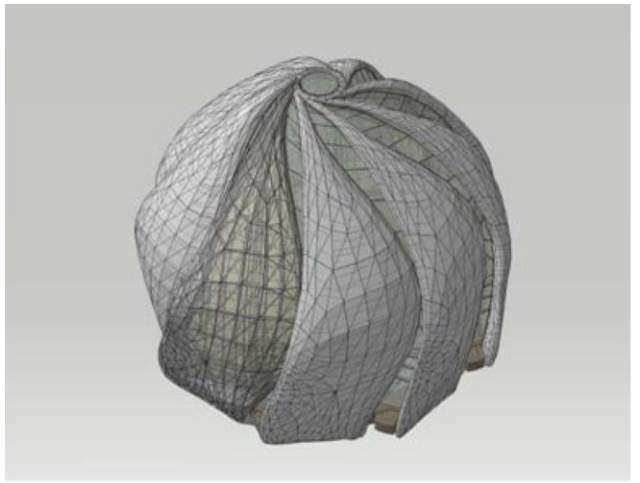
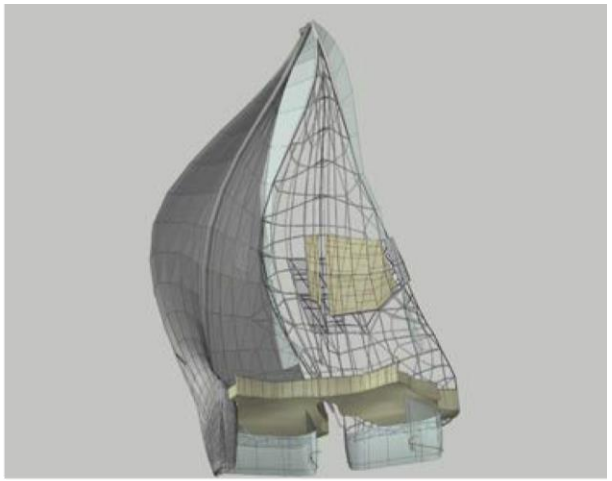
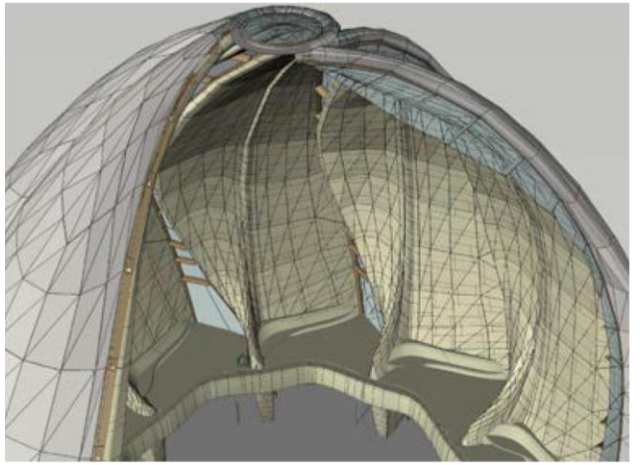
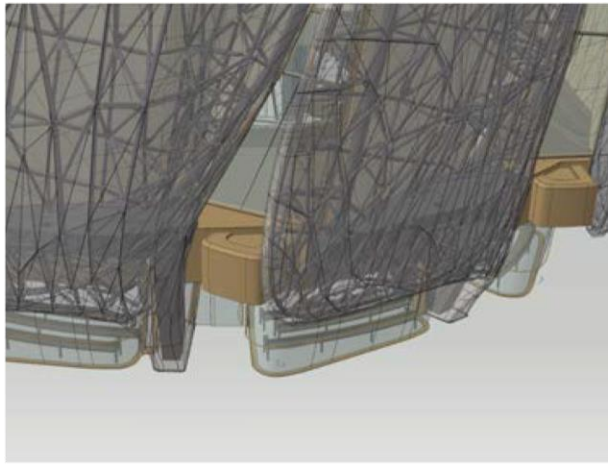
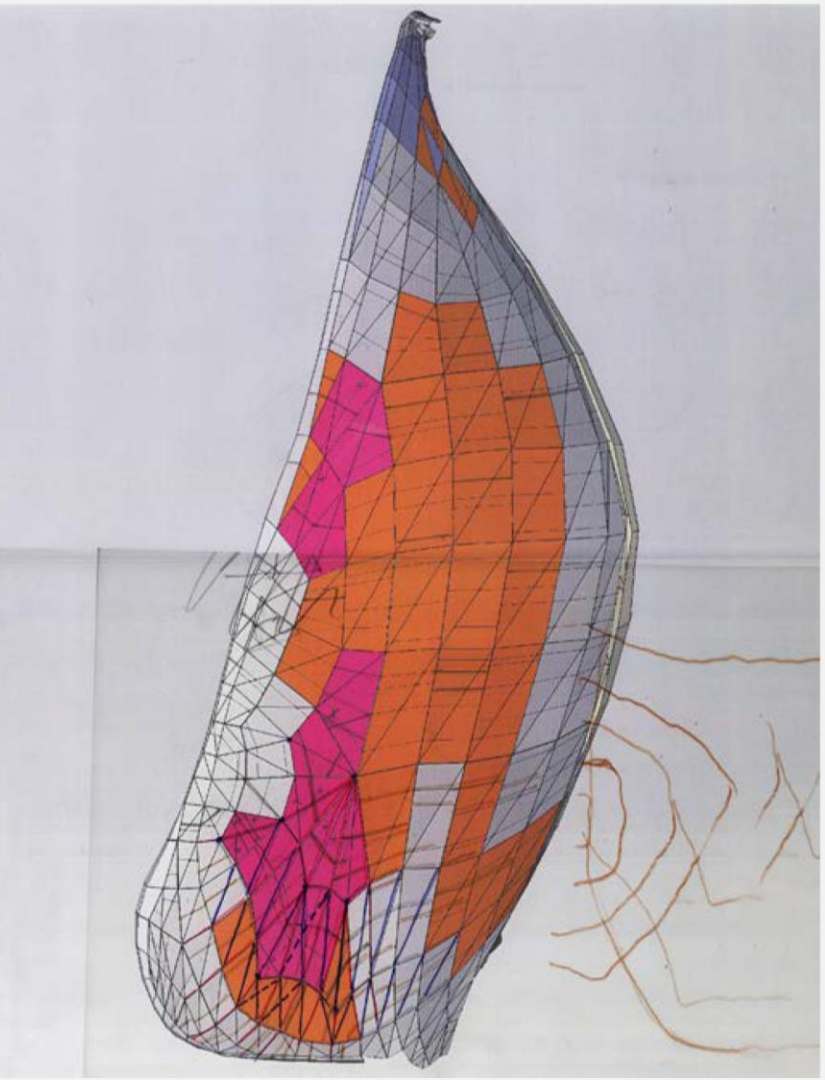
-6.88
-12.09
-17.31
-22.53
-27.75
Max : 29.65
Min : -27.75

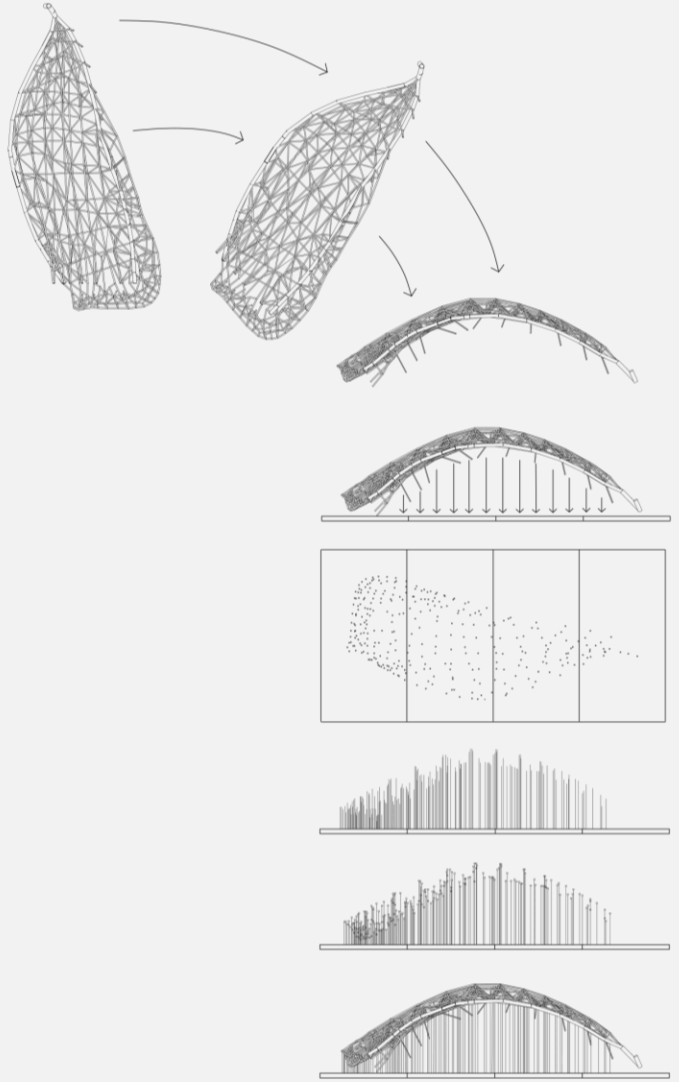


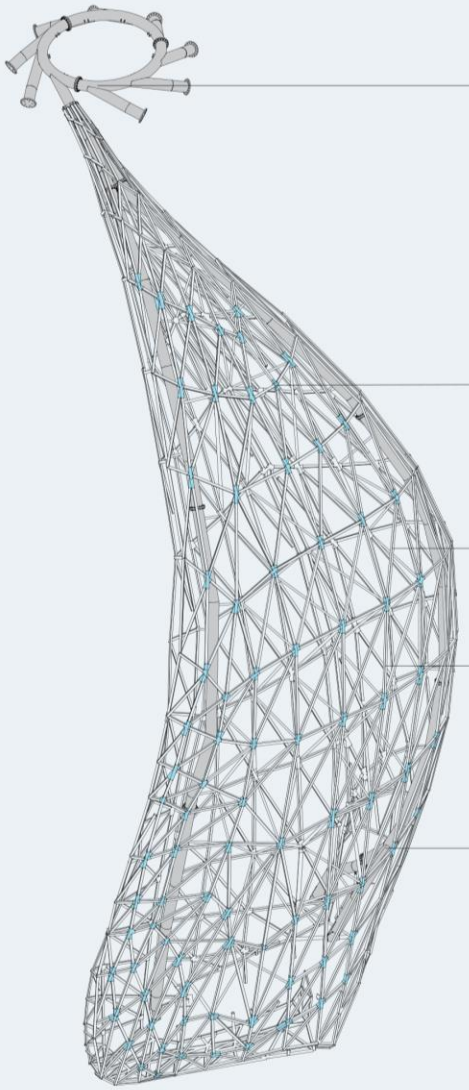












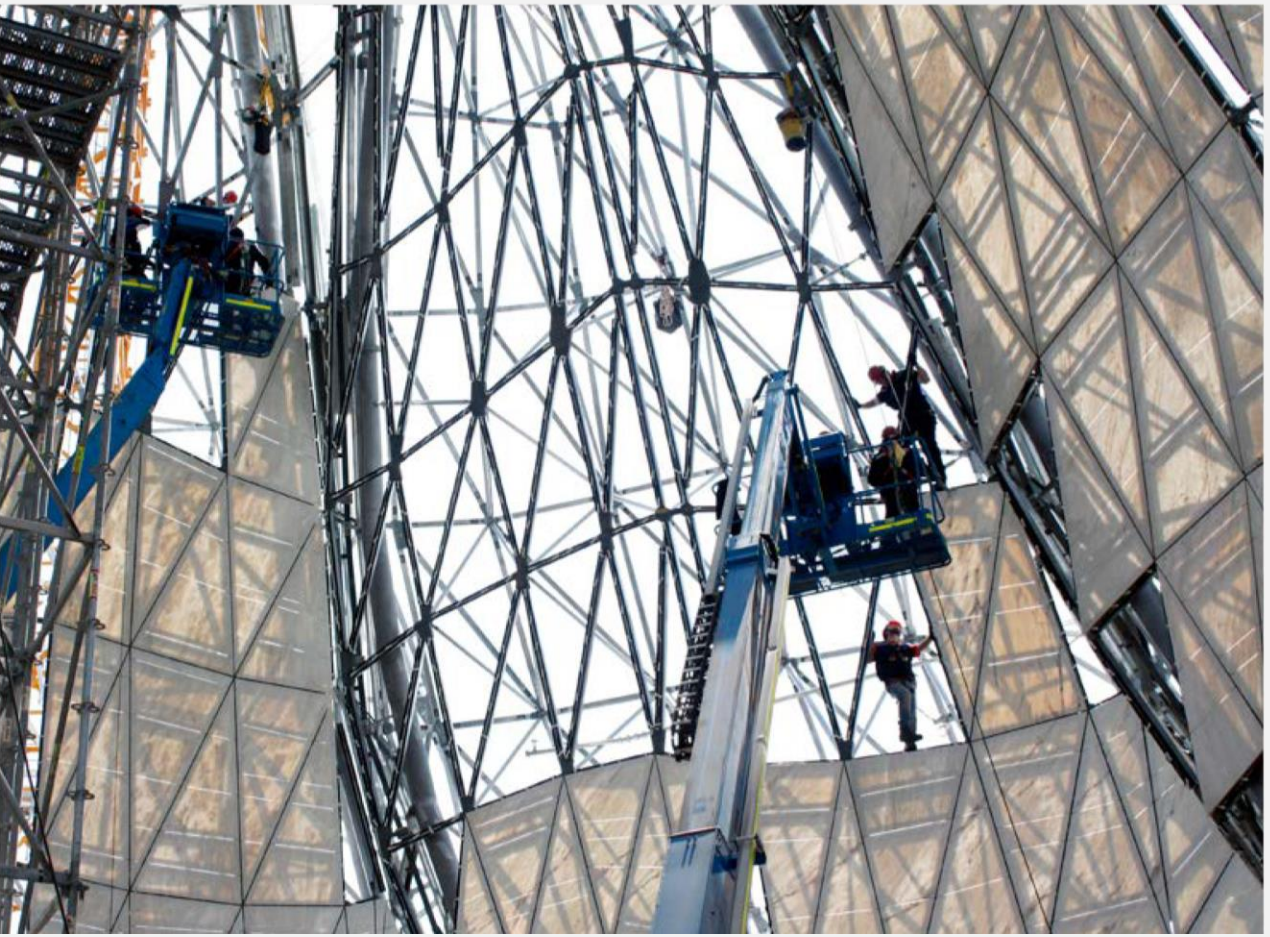
Oculus

Steel Structural Nodes
281 unique nodes
per wing

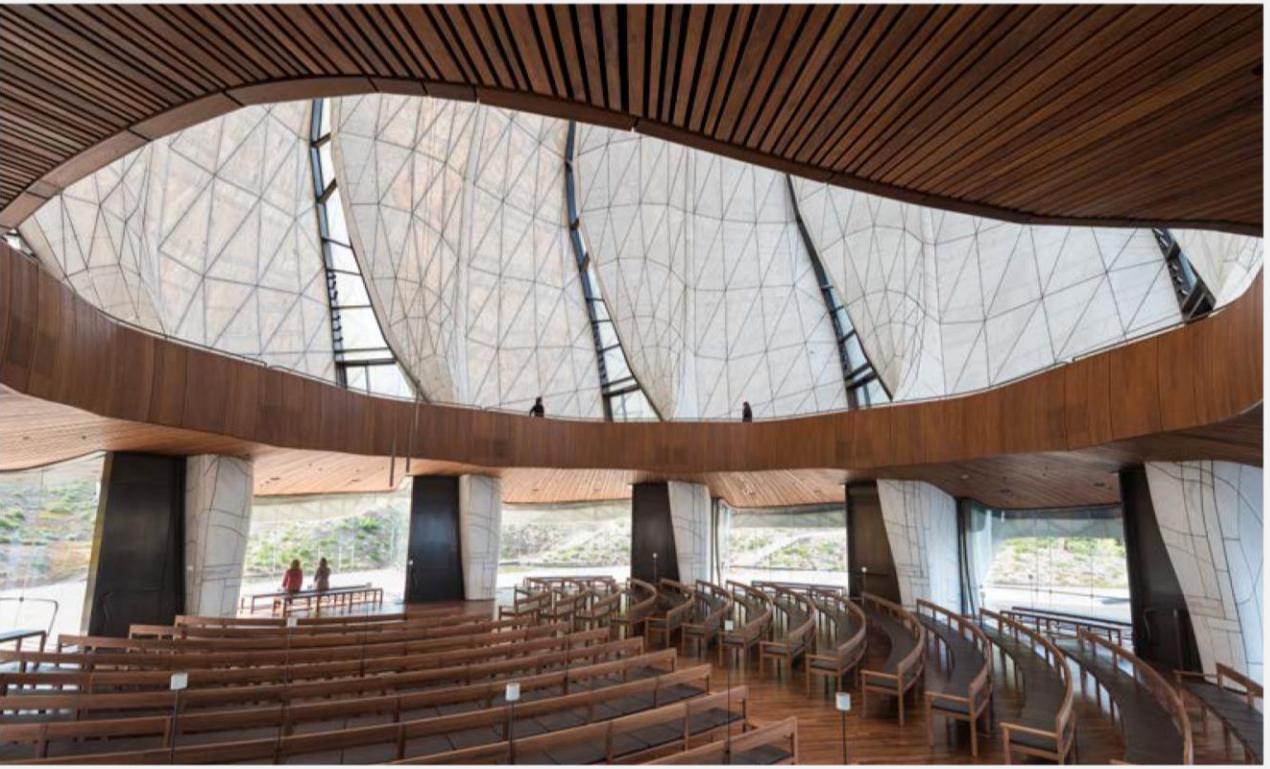
Top and Bottom Chord
Steel Structural Framing
590 unique beams
per wing

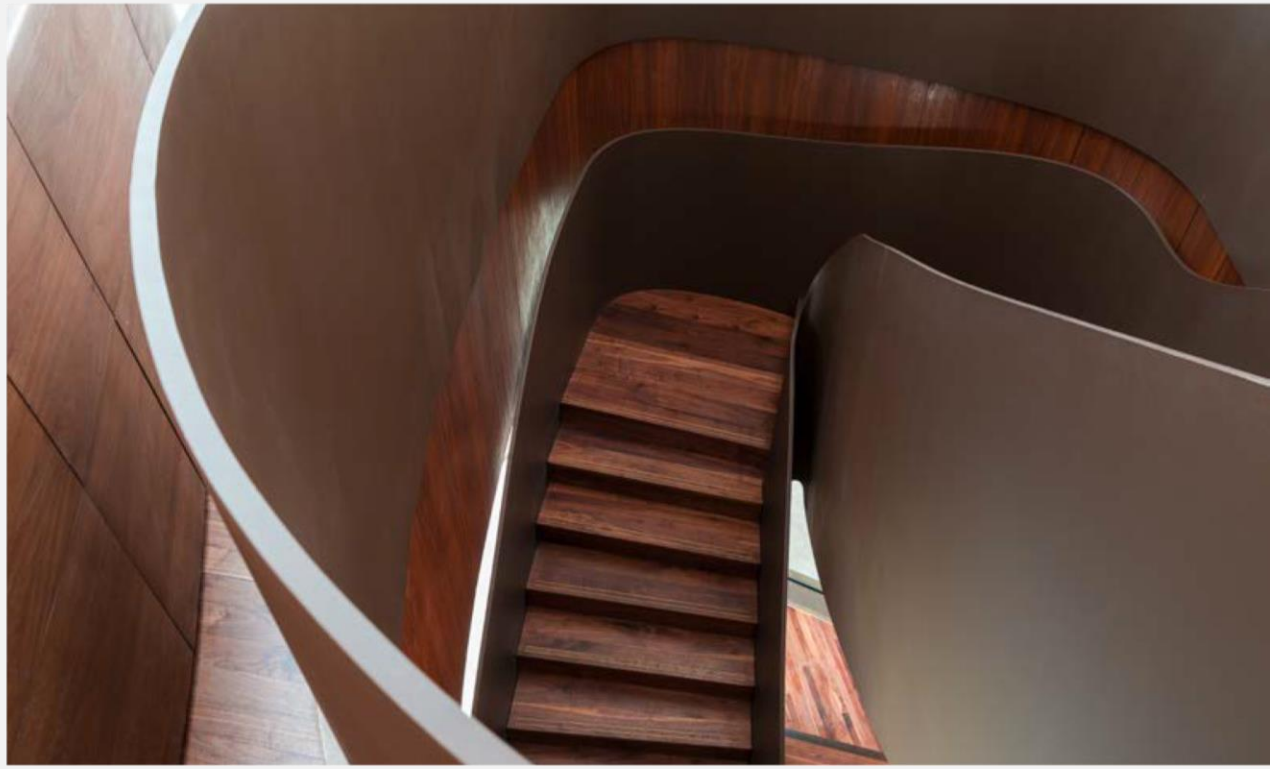
Diagonal Tube Steel
Structural Framing
130 unique tubes
per wing

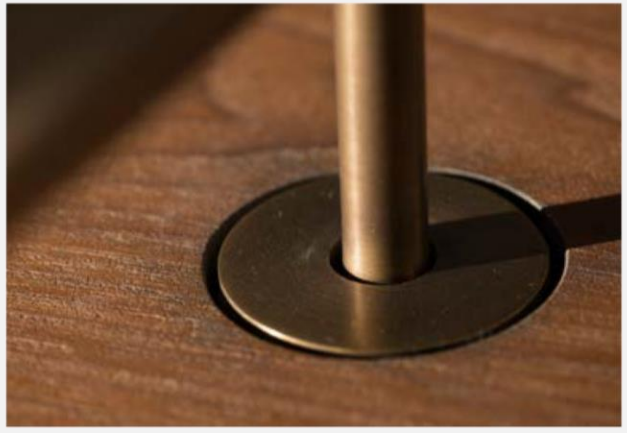
Edge/Boundary Tubes
SteelStructural Framing
18 main tubes
per wing



Genie S-125
Genie S-125







Discussion

Innovation:
Themes and Patterns - Award Recipients & your offices
Short-and Long term

Awards Program: how to keep evolving?

TAP and the Knowledge Communities

Thank you!

Inspiration & Discourse: The AIA Innovation Awards

Course Number FR111