

Bringing Mass Timber to the Public: Taking Civic Buildings from Vision to Reality

**Jason
Roberts**
Marble
Fairbanks



**Jon
McCandlish**
KieranTimberlake



**Chris
Hardy**
MASS
Design Group



**Maya
Stuhlbarg**
TYLin



WoodWorks | The Wood Products Council

is a registered provider of AIA-approved continuing education under Provider Number G516. All registered **AIA CES** Providers must comply with the AIA Standards for Continuing Education Programs. Any questions or concerns about this provider or this learning program may be sent to AIA CES (cessupport@aia.org or (800) AIA 3837, Option 3).

This learning program is registered with **AIA CES** for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product.

AIA continuing education credit has been reviewed and approved by **AIA CES**. Learners must complete the entire learning program to receive continuing education credit. AIA continuing education Learning Units earned upon completion of this course will be reported to **AIA CES** for AIA members. Certificates of Completion for both AIA members and non-AIA members are available upon request.

Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.



Course Description

As mass timber construction expands across North America, its application for civic projects in dense urban environments presents unique technical, logistical, and regulatory challenges.

The first part of this presentation examines the New Lots Branch Library, a new 25,000-square-foot public library designed as a replacement for an existing mid-century branch in Brooklyn, New York. The project was one of seven selected by the NYC EDC to participate in their inaugural Mass Timber Studio. The session will explore the realities of delivering a mass timber civic building within New York City's complex construction environment.

The second part of this presentation examines Kieran Timberlake's Penn's Landing Pavilion. Just blocks from this year's Mass Timber+ venue, The 11,000-square-foot (above grade) pavilion will be the architectural centerpiece of the new 11.5-acre Park at Penn's Landing, a decades-long effort to reconnect Philadelphia to its Delaware River waterfront across I-95. Projected to be the city's first mass timber and zero-carbon structure for public use, it targets both LEED Platinum and Living Future Zero Carbon Certification.

Topics include early design assist collaboration with fabricators and envelope consultants, coordination between the timber structure and a high-performance façade system, urban site and staging constraints, and the integration of building systems within a public-sector project delivery framework. Attendees will leave equipped to advocate for mass timber in their own civic projects.

Learning Objectives

1. Identify the key design, code, and construction considerations associated with delivering mass timber civic buildings in dense urban environments, including strategies for maintaining life safety, structural performance, and regulatory compliance.
2. Evaluate interdisciplinary coordination strategies between the mass timber structural system, building enclosure, and building systems that support durable, high-performing, and safe public buildings.
3. Explore project delivery approaches that facilitate successful integration of mass timber into public-sector civic projects, including design-assist collaboration, procurement strategies, and coordination among architects, engineers, contractors, and manufacturers.
4. Apply lessons learned from the New Lots Branch Library and Penn's Landing Pavilion projects to inform the planning, detailing, and execution of future mass timber civic projects.

Delivering Civic Mass Timber in New York City: Lessons from the New Lots Branch Library

Disclaimer: This presentation was developed by a third party and is not funded by WoodWorks or the Softwood Lumber Board.

**Model of
Architecture
Serving Society**

marble fairbanks

TYLin

Project Overview

Chris Hardy

Model of Architecture

Serving Society (MASS)











Photo circa 1922, showing the northeast corner of the school
<https://dcmny.org/do/6be33b88-36d8-4d72-bfa0-9351711cc168>



Brooklyn Daily Eagle, Aug 05, 1900, pg 28
<https://bklyn.newspapers.com/image/50353115/>



Ullitz, 1898

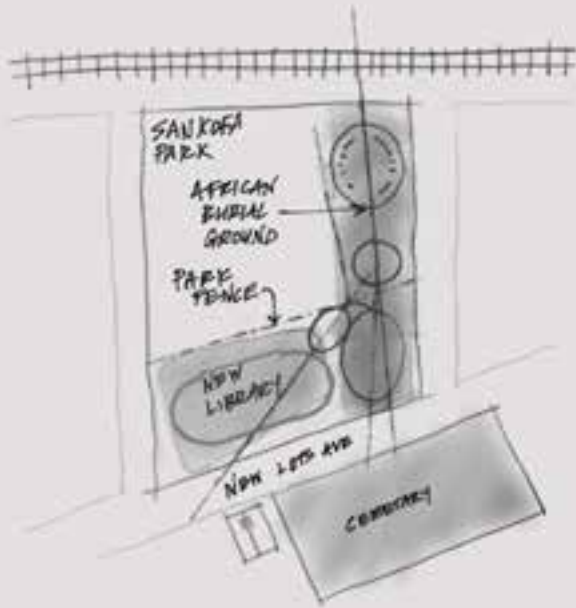
Current library site marked in red.

In many African communities the space of collective gathering is called the palaver.



Under the palaver the community comes together to create a space: of dialogue and truth telling; opportunities for solidarity and a shared sense of memory, and to commit to reconciliation and restorative justice in the wake of conflict.

New Lots Library, a Palaver for East New York



1

Access to dialogue and truth telling, including reverence to and unification of the African Burial Ground



2

Create opportunities for reconciliation and restorative justice



3

Imagine spaces for joy and the celebration of culture















Design Process

Jason Roberts

Marble Fairbanks Architects

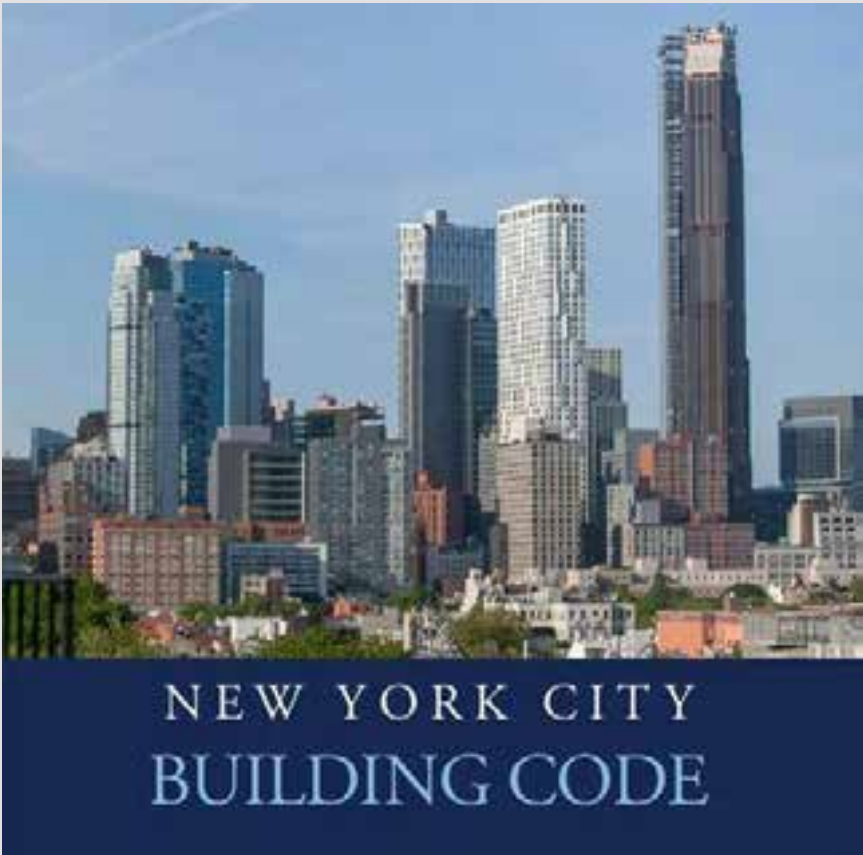


BROOKLYN PUBLIC LIBRARY - NEW LOTS BRANCH

BROOKLYN, NEW YORK



Regulatory Approval





BUILDINGS
2024-004
BULLETIN
TECHNICAL

ISSUANCE DATE
June 5, 2024

NYC
Buildings

ISSUER: Keith L. Wei, R.A.
Assistant Commissioner
Code & Zoning Interpretation

PURPOSE: This Bulletin provides clarification to the specific requirements of Section BC 602.4 regarding mass timber construction.

SUBJECTS: Solid wood, Glue-laminated timber (glulam), Structural composite timber (SCLT), Cross-laminated timber (CLT), Concealed spaces, Mass timber, Type IV IFC, Type IV, Heavy timber, interior walls and partitions

RELATED CODE SECTIONS & RESOURCES
2022 IBC 602.4, 2022 IBC 718, 2022 MC 602, 2021 IBC 602.4.4.3

II. MASS TIMBER MUST BE FILED AS TYPE IV CONSTRUCTION

The 2022 NYC Construction Codes include provisions that specifically address the unique characteristics of Type IV construction in New York City. The requirements are intended to provide a greater degree of safety in relation to relatively new materials and construction methods. These requirements include but are not limited to special inspections and construction site safety provisions. To ensure that the relevant provisions are applied, any building using mass timber elements must file the building as Type IV construction.

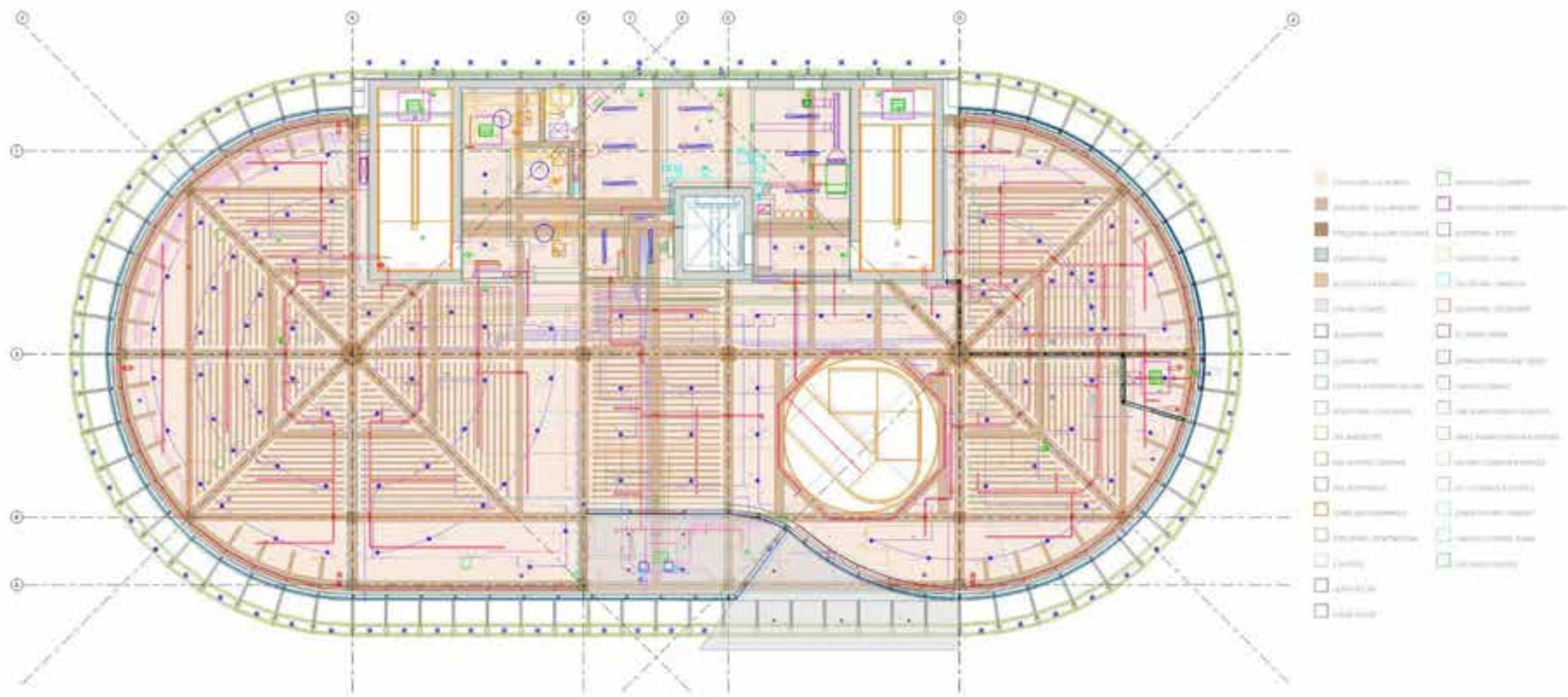
Mass timber buildings that are filed as other construction types will be subject to audits and may trigger the need to be re-filed as Type IV construction.

NOTE: Type IV construction projects that are professionally certified are subject to review by the Department.



Systems Integration





Dark West - Notes from T212 call - Martine Fairbanks to follow up on noted.

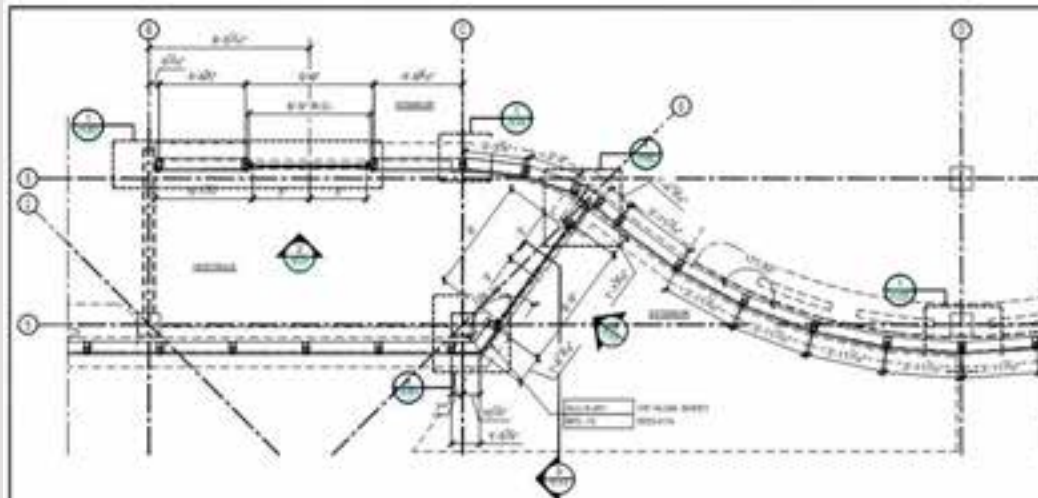
☐ ☒ ☐



The Veil



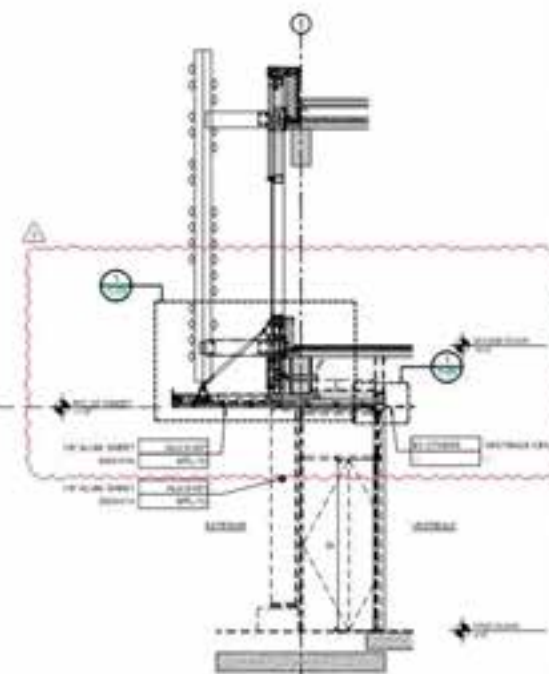




PS-4 (PLAN) LEVEL BY CANOPY & VESTIBULE



PS-4 (ELEV) LEVEL BY SOUTH LEVEL BY CANOPY & VESTIBULE



PS-4 (SECTION) LEVEL BY CANOPY & VESTIBULE

ISLAND
Exterior
Fabrications

140 SOUTH AVE
ROCKY HILL, CT 06067
TEL: 860.261.0000
FAX: 860.261.0001
WWW.ISLANDFAB.COM

DESIGNED AND DRAWN
BY: [Signature]

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMIT	01/11/17
2	ISSUED FOR CONSTRUCTION	01/11/17
3	ISSUED FOR CONSTRUCTION	01/11/17
4	ISSUED FOR CONSTRUCTION	01/11/17
5	ISSUED FOR CONSTRUCTION	01/11/17
6	ISSUED FOR CONSTRUCTION	01/11/17
7	ISSUED FOR CONSTRUCTION	01/11/17
8	ISSUED FOR CONSTRUCTION	01/11/17
9	ISSUED FOR CONSTRUCTION	01/11/17
10	ISSUED FOR CONSTRUCTION	01/11/17

PROJECT
BROOKLYN PUBLIC LIBRARY
NEW LOT 10 BRANCH

DESIGNED BY: [Signature]
DESIGNED BY: [Signature]
DESIGNED BY: [Signature]
DESIGNED BY: [Signature]
DESIGNED BY: [Signature]
DESIGNED BY: [Signature]
DESIGNED BY: [Signature]
DESIGNED BY: [Signature]
DESIGNED BY: [Signature]
DESIGNED BY: [Signature]

DATE: 01/11/17
DRAWN BY: [Signature]

DATE: 01/11/17
DRAWN BY: [Signature]

DATE: 01/11/17
DRAWN BY: [Signature]

DATE: 01/11/17
DRAWN BY: [Signature]

DATE: 01/11/17
DRAWN BY: [Signature]

DATE: 01/11/17
DRAWN BY: [Signature]

DATE: 01/11/17
DRAWN BY: [Signature]

DATE: 01/11/17
DRAWN BY: [Signature]

DATE: 01/11/17
DRAWN BY: [Signature]

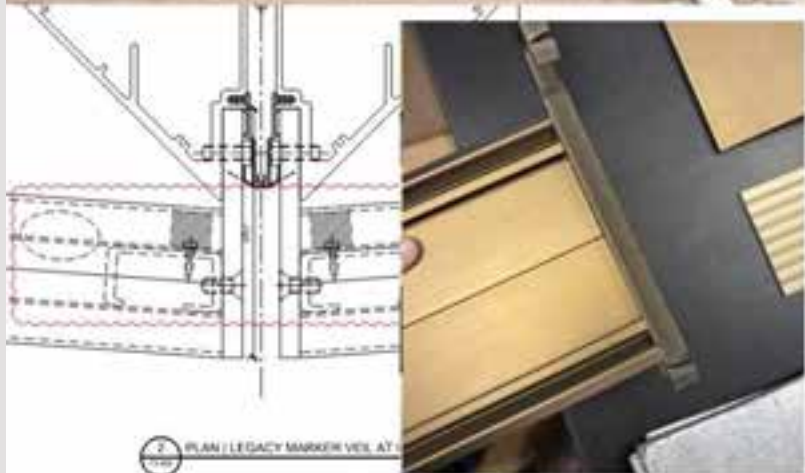
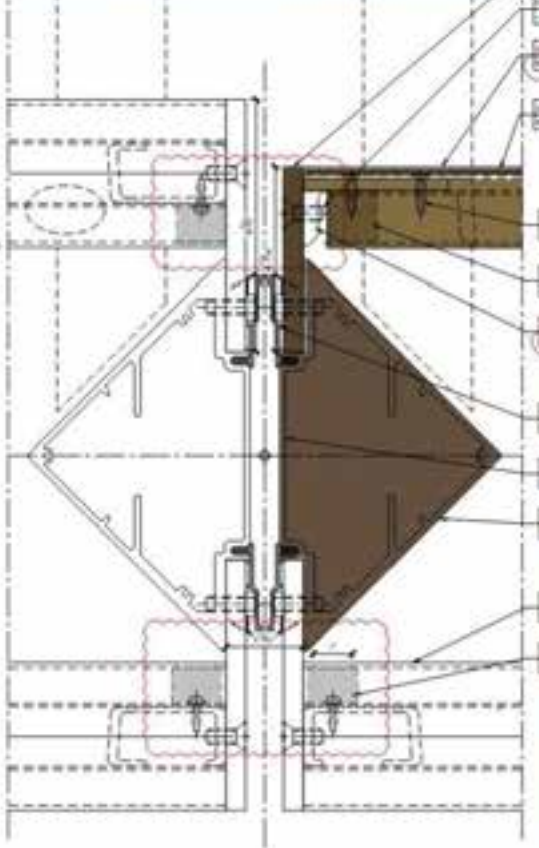
DATE: 01/11/17
DRAWN BY: [Signature]

DATE: 01/11/17
DRAWN BY: [Signature]



Noon





2 PLAN / LEGACY MARKER VES. AT

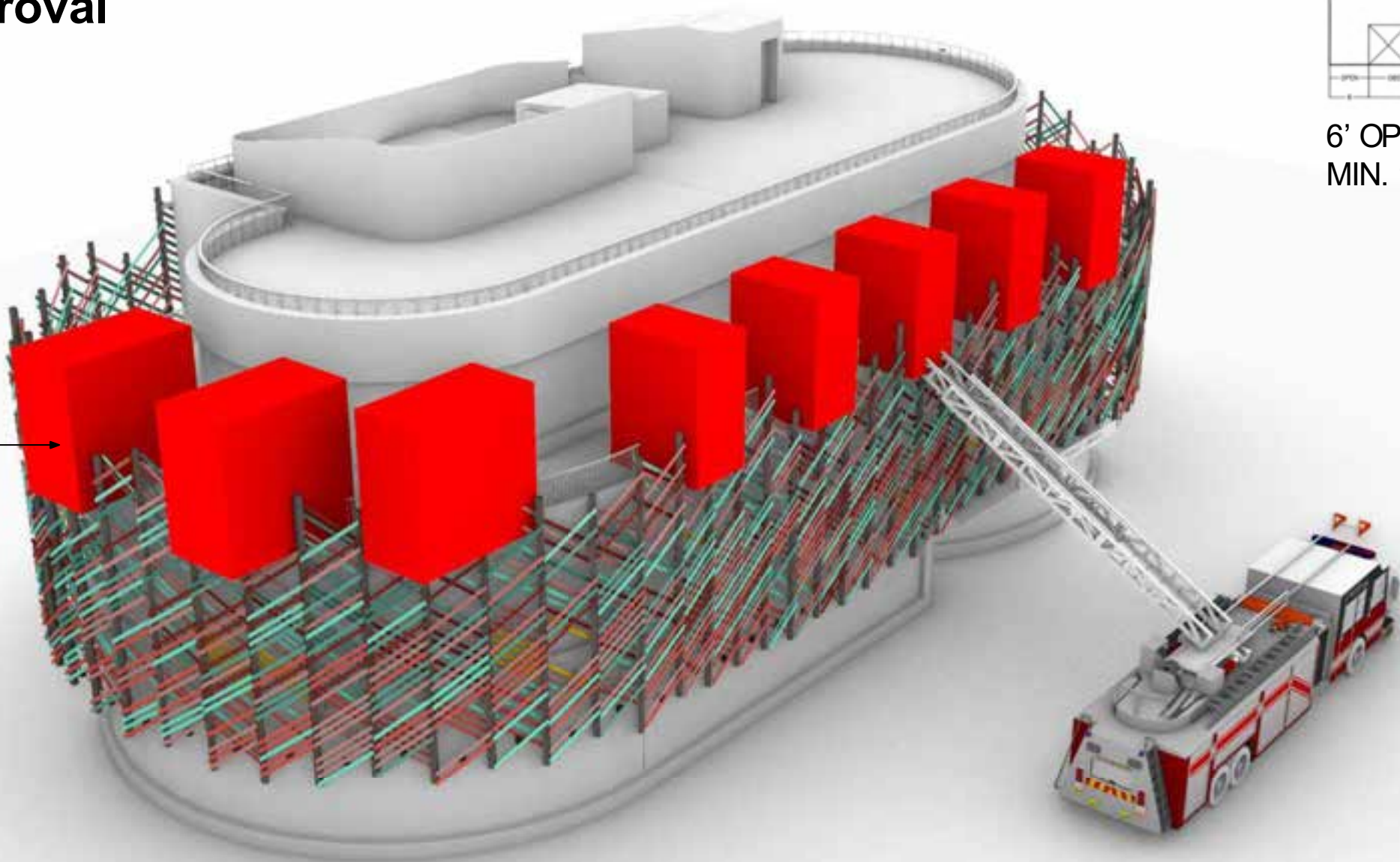
1 PLAN / LEGACY MARKER VES.

FDNY Approval

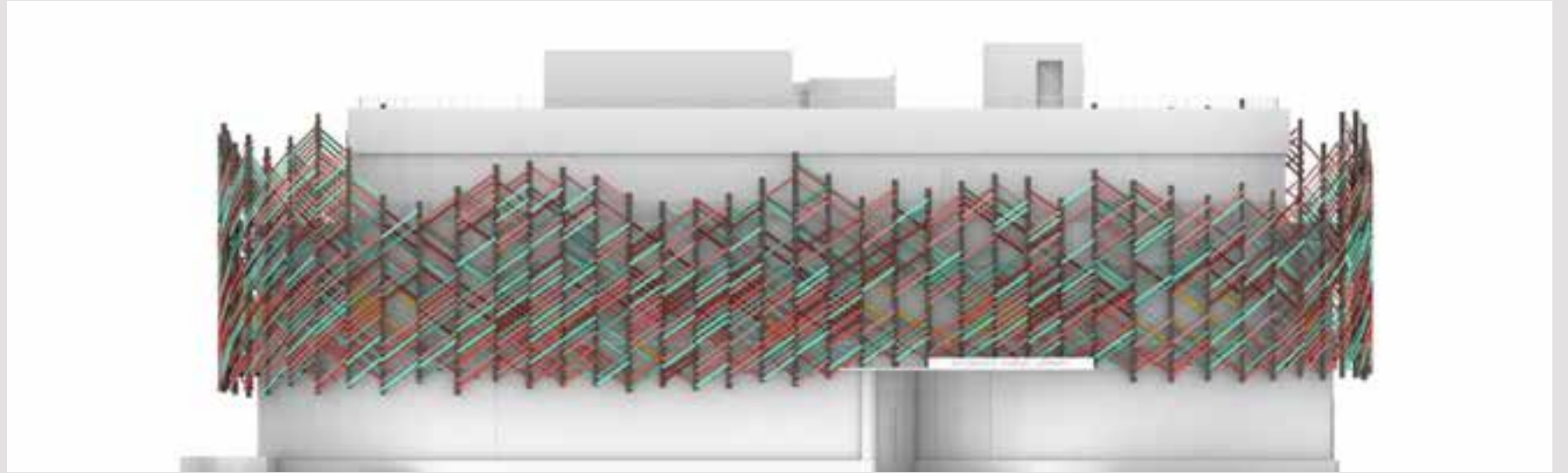


6' OPENINGS WITH
MIN. 12' BETWEEN

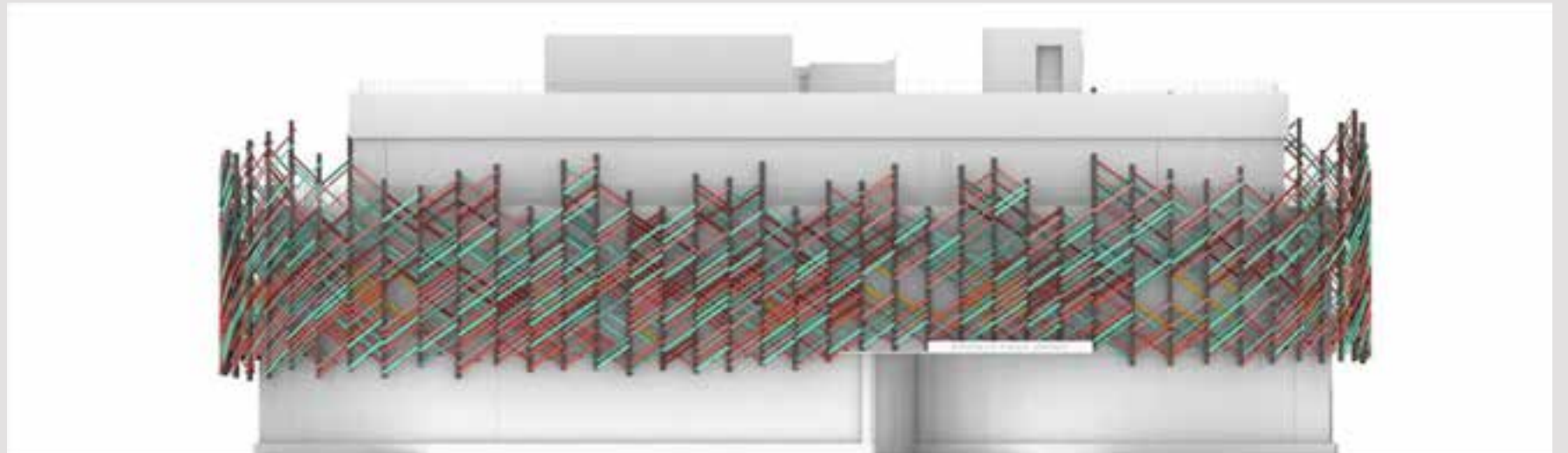
AREAS IN RED
INDICATE REQUIRED
CLEAR OPENINGS



PREVIOUS



REVISED

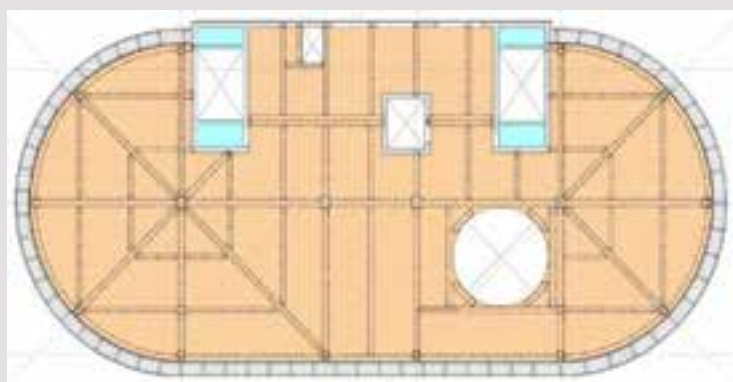
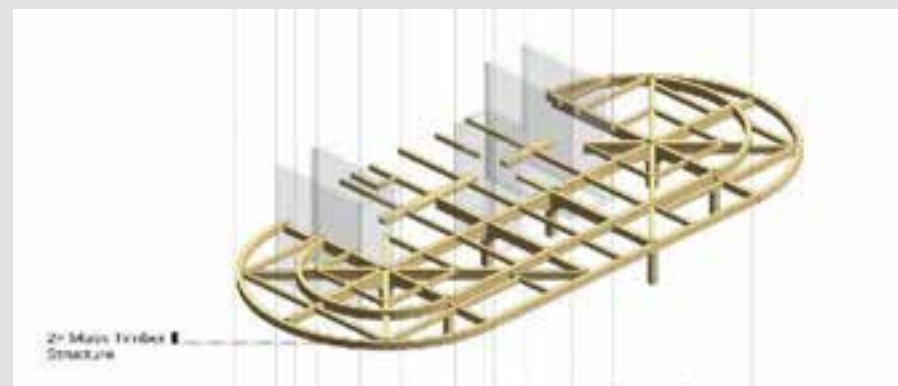
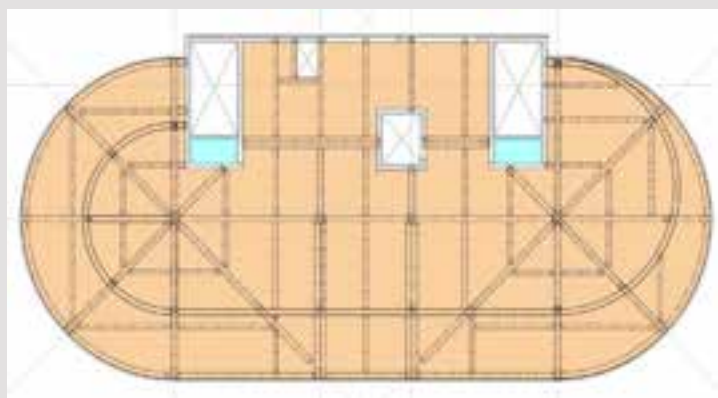
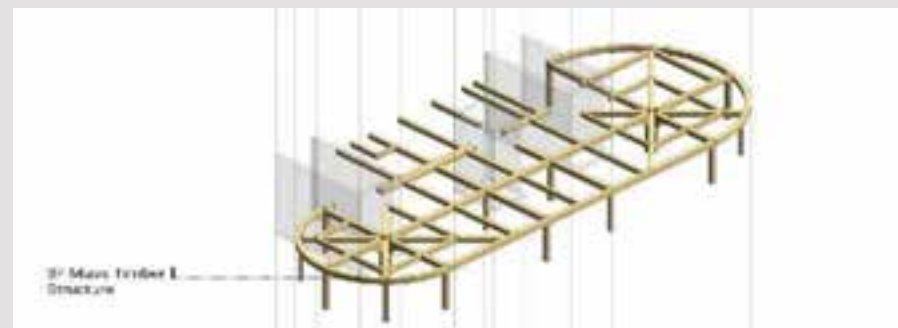


Engineering Design

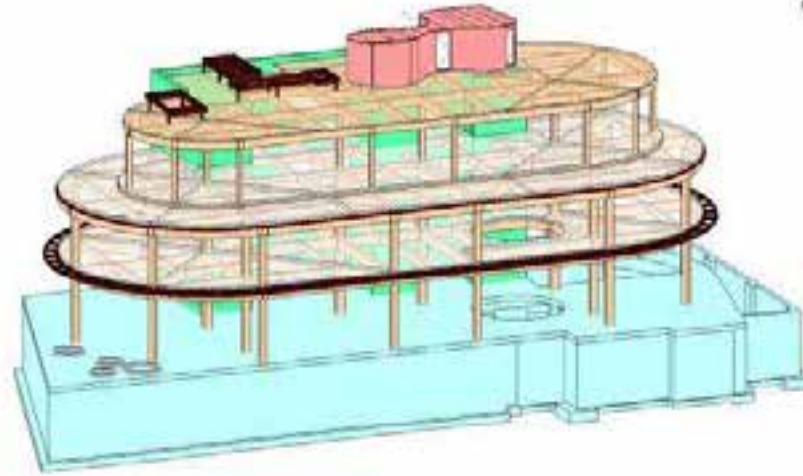
Maya Stuhlbarg

TYLin

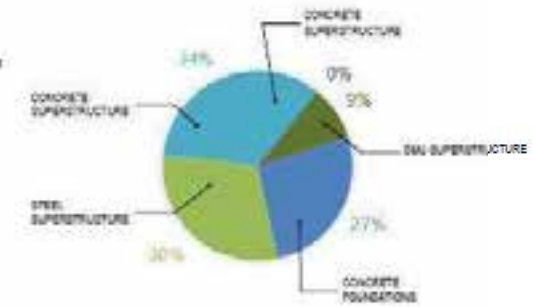
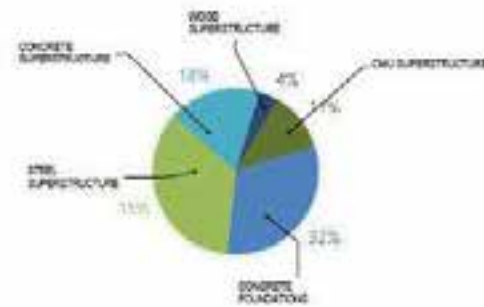
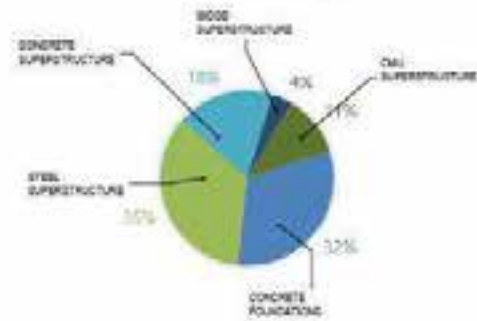




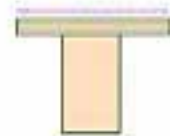
AXON OF BASELINE OPTION



PERCENT BREAKDOWN OF EMBODIED CARBON CONTRIBUTION BY MATERIAL



STRUCTURAL ASSEMBLY



EMBODIED CARBON % INCREASE

% 0

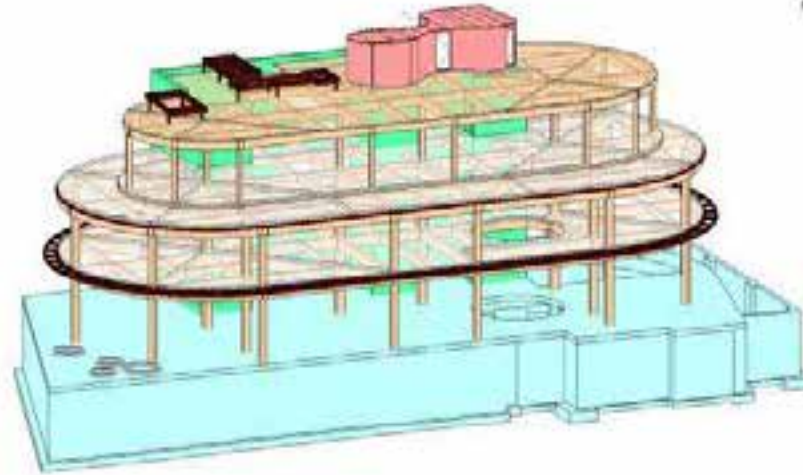
+% 26

+% 40

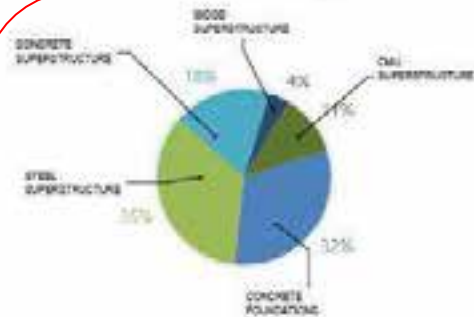
MASS TIMBER (BASELINE)

CLT/STEEL HYBRID FRAMING (ALTERNATE)

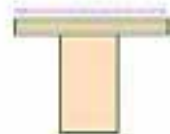
STEEL FRAMING (ALTERNATE)



PERCENT BREAKDOWN OF EMBODIED CARBON CONTRIBUTION BY MATERIAL



STRUCTURAL ASSEMBLY



EMBODIED CARBON % INCREASE



MASS TIMBER (BASELINE)

Mass Timber Selected

- ~3% cost premium over other systems
 - Not including: builder's risk insurance, Chapter 33 Temp. Construction provisions
- No significant schedule advantage

Determining Material Properties

- Keep Mass Timber specification performance based to keep open to providers
- Communicate species options with client
- If possible, provide options for CLT and glulam grade

7. GLULAM MEMBERS TO MEET THE FOLLOWING SPECIFICATIONS. ANY SUBSTITUTION MUST BE APPROVED BY THE ENGINEER AND ARCHITECT.

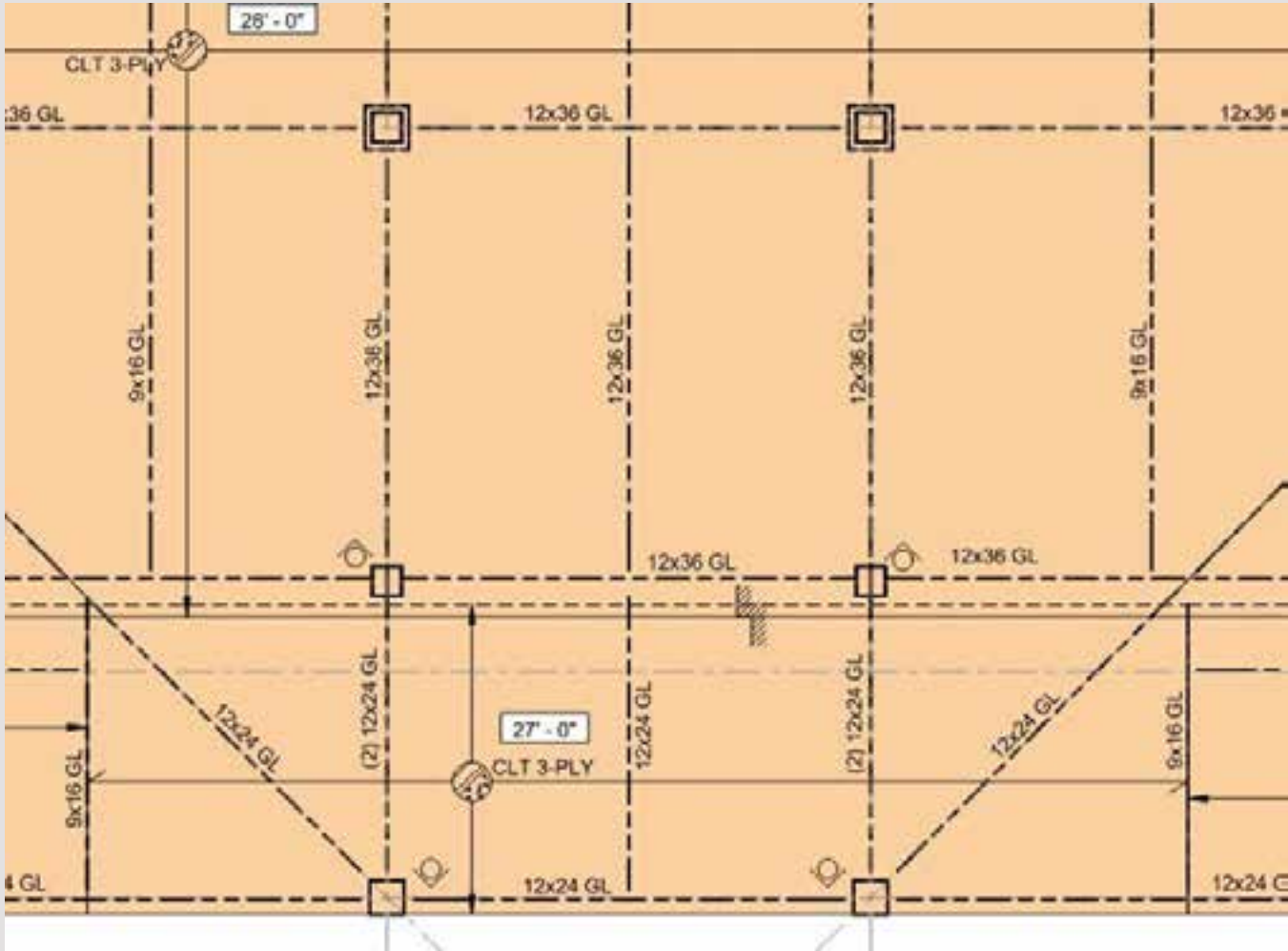
- A. SPECIES: TO BE DETERMINED
- B. STRESS GRADE BEAMS: 24F-1.8E UNBALANCED FOR SIMPLE SPAN CONDITIONS,
24F-1.8E BALANCED FOR CANTILEVER OR CONTINUOUS BEAMS
- C. COLUMN F_c (PARALLEL TO GRAIN) 1600psi
- D. ADHESIVE AITC 405
- E. APPEARANCE CLASSIFICATION INDUSTRIAL WHERE CONCEALED, ARCHITECTURAL WHERE
EXPOSED AS DEFINED IN AITC 110
- F. SEALER PER MANUFACTURER STANDARD - TO BE TRANSPARENT AND
COMPATIBLE WITH FINISH

B. CLT STRESS GRADE: E1, E2, OR E4 TO BE CONFIRMED WITH CLT PROVIDER

Determining Material Properties

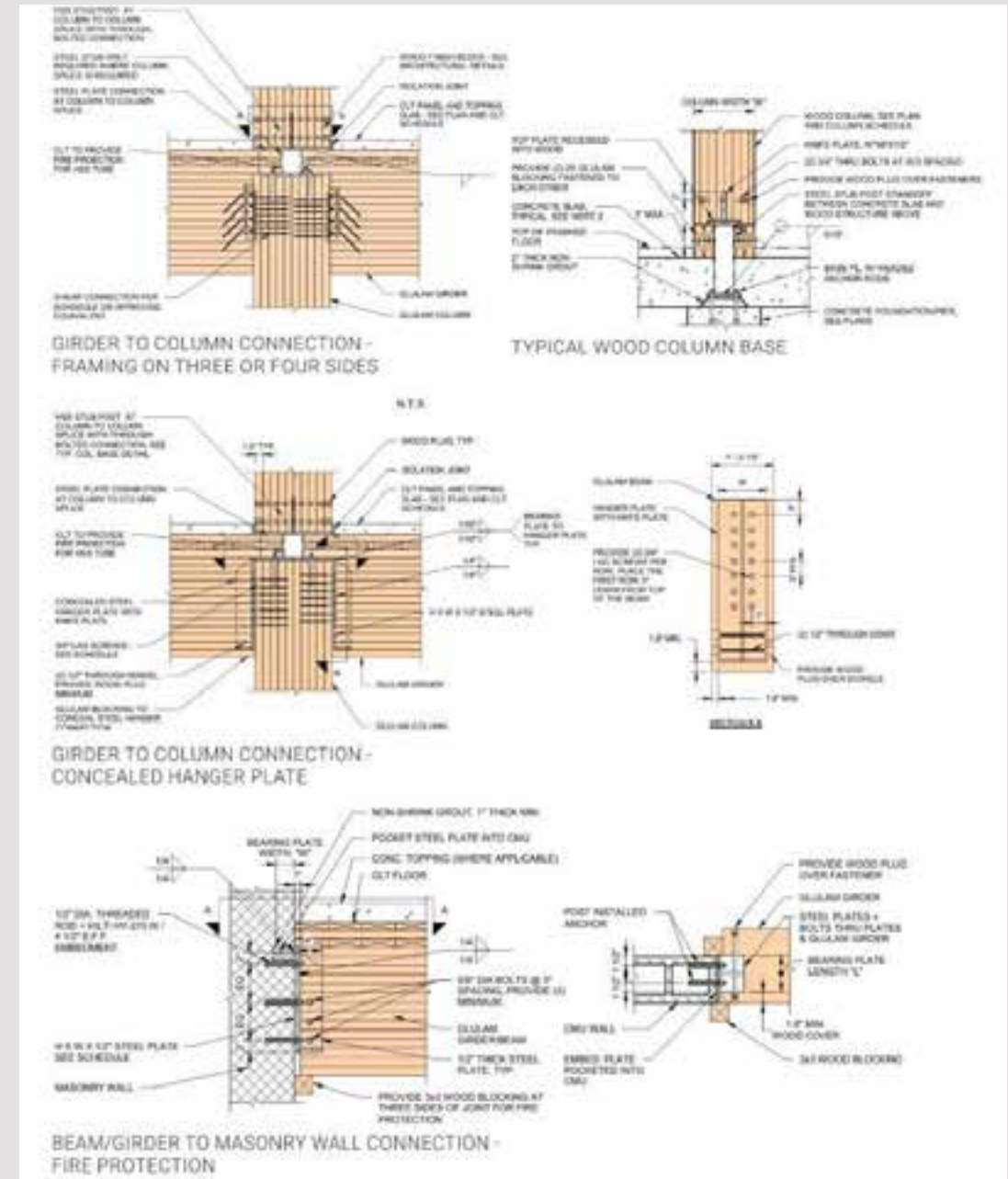
GLULAM BEAM SIZES		
NOMINAL	ACTUAL	
W x D	WIDTH (INCHES)	DEPTH (INCHES)
9x12	8.5	12
9x16	8.5	15.125
11x16	10.5	15.125
12x12	12	12
12x18	12	17.875
12x19.5	12	19.5
12x24	12	23.375

NOTE: GLULAM BEAM SIZES NOTED ABOVE MAY VARY BY UP TO 1/2" IN WIDTH AND 1" IN DEPTH BASED ON FINAL SELECTED SPECIES/MANUFACTURER.

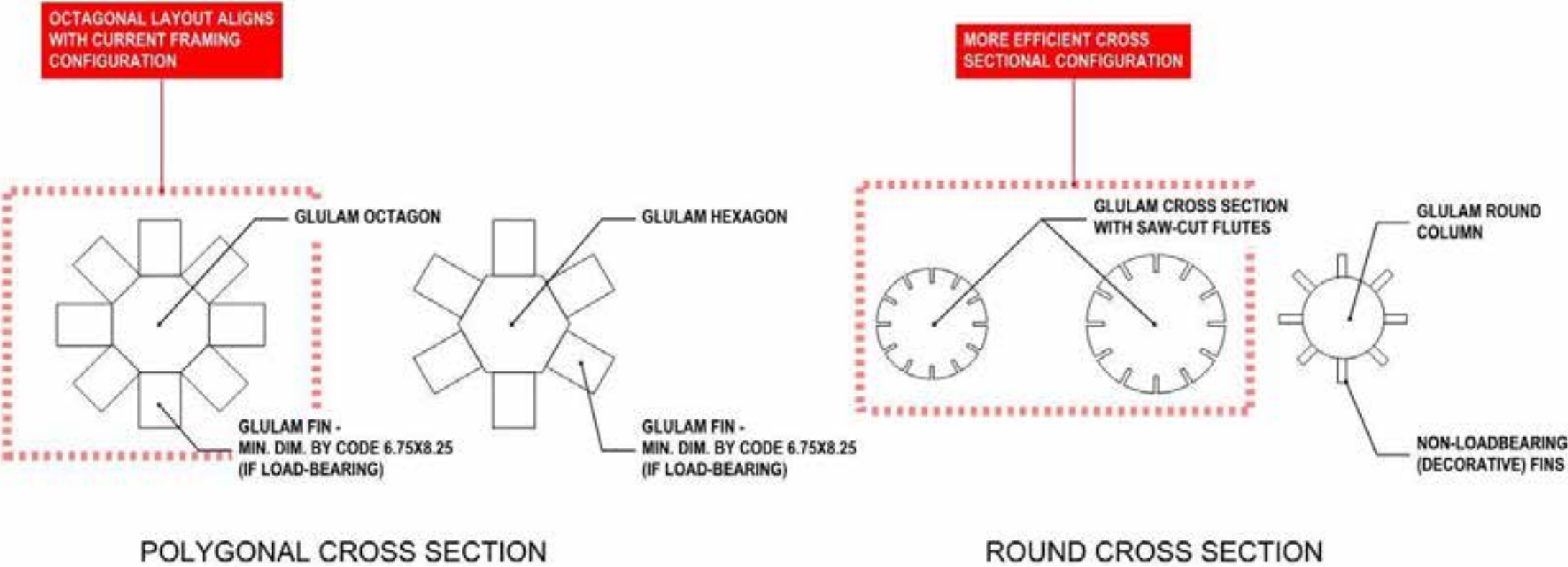


Connection Design

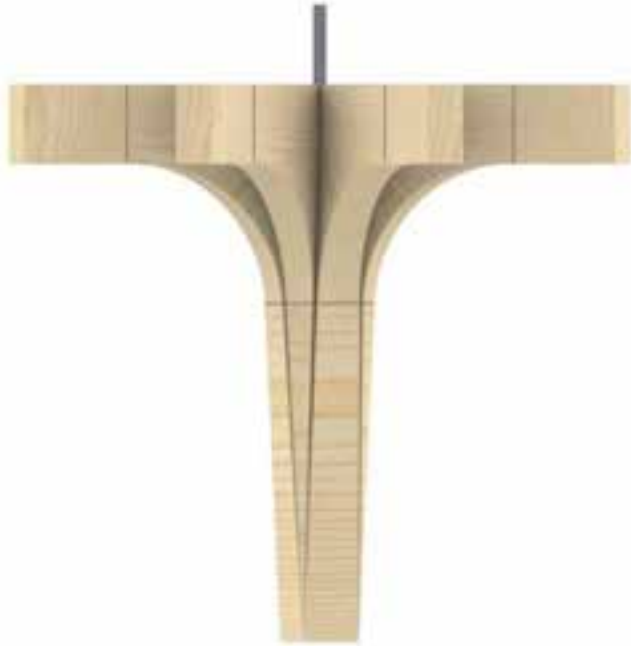
- Mass Timber connections require 1 hr rating in NYC
- Provide typical details that show approach for connection details with generic hardware (DDC prohibits sole proprietor)
- Important to assure that beam sizing has been verified with connection approach and fireproofing requirements
- Connections will be finalized when Mass Timber provider is on board and confirms manufacturing capabilities and preferences



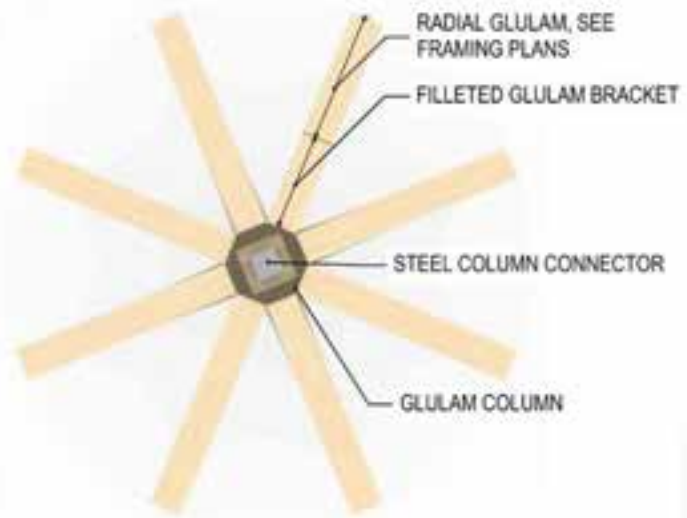
Connection Design



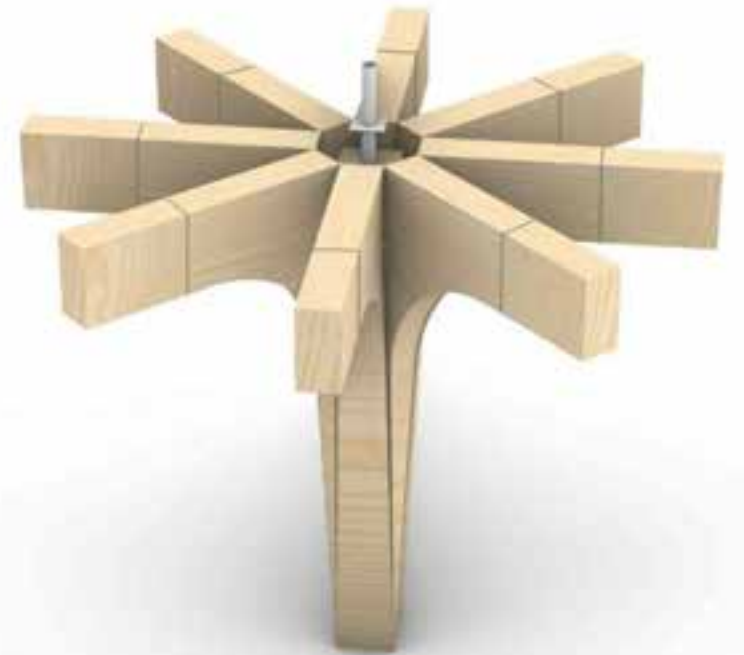
Connection Design



ELEVATION VIEW

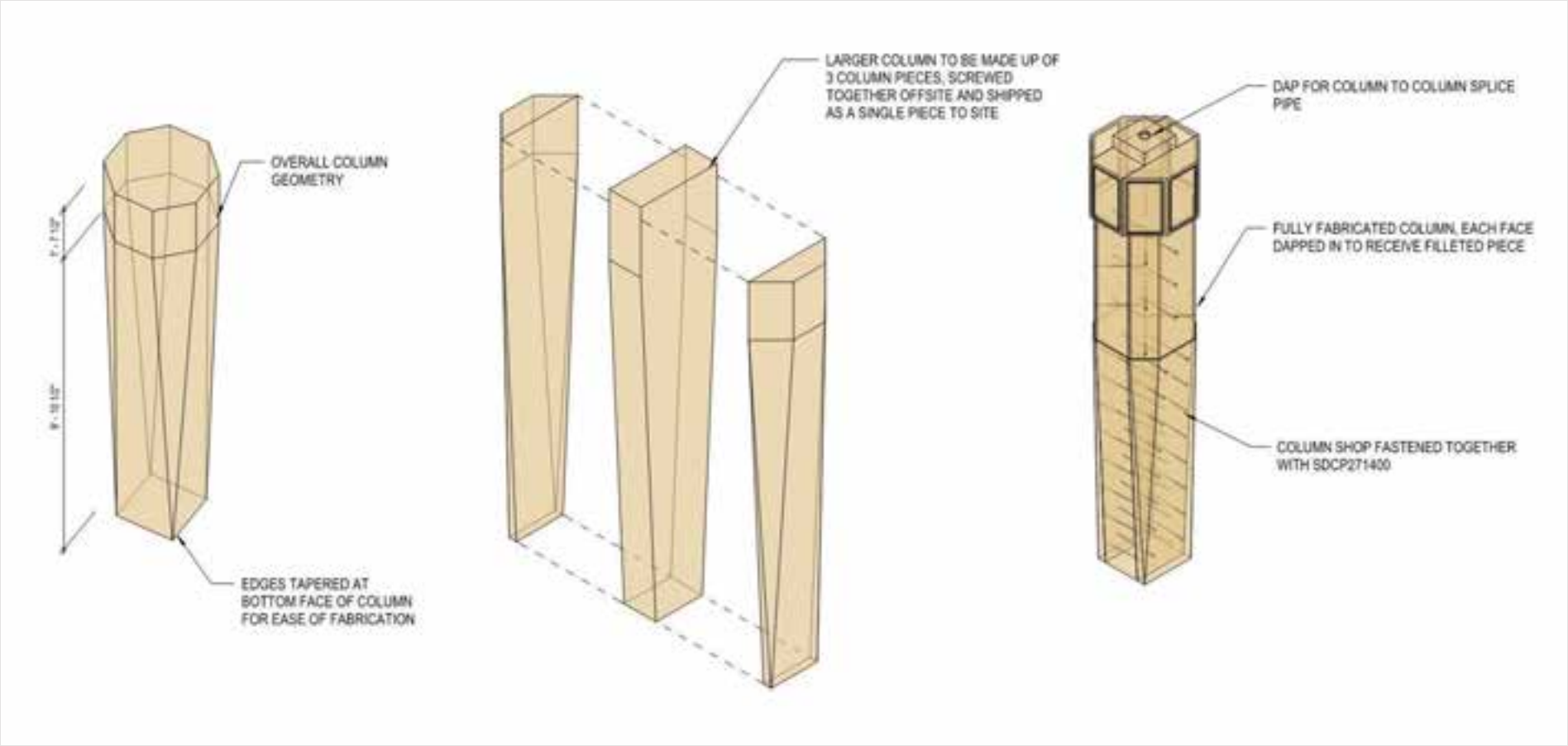


PLAN VIEW



AXONOMETRIC

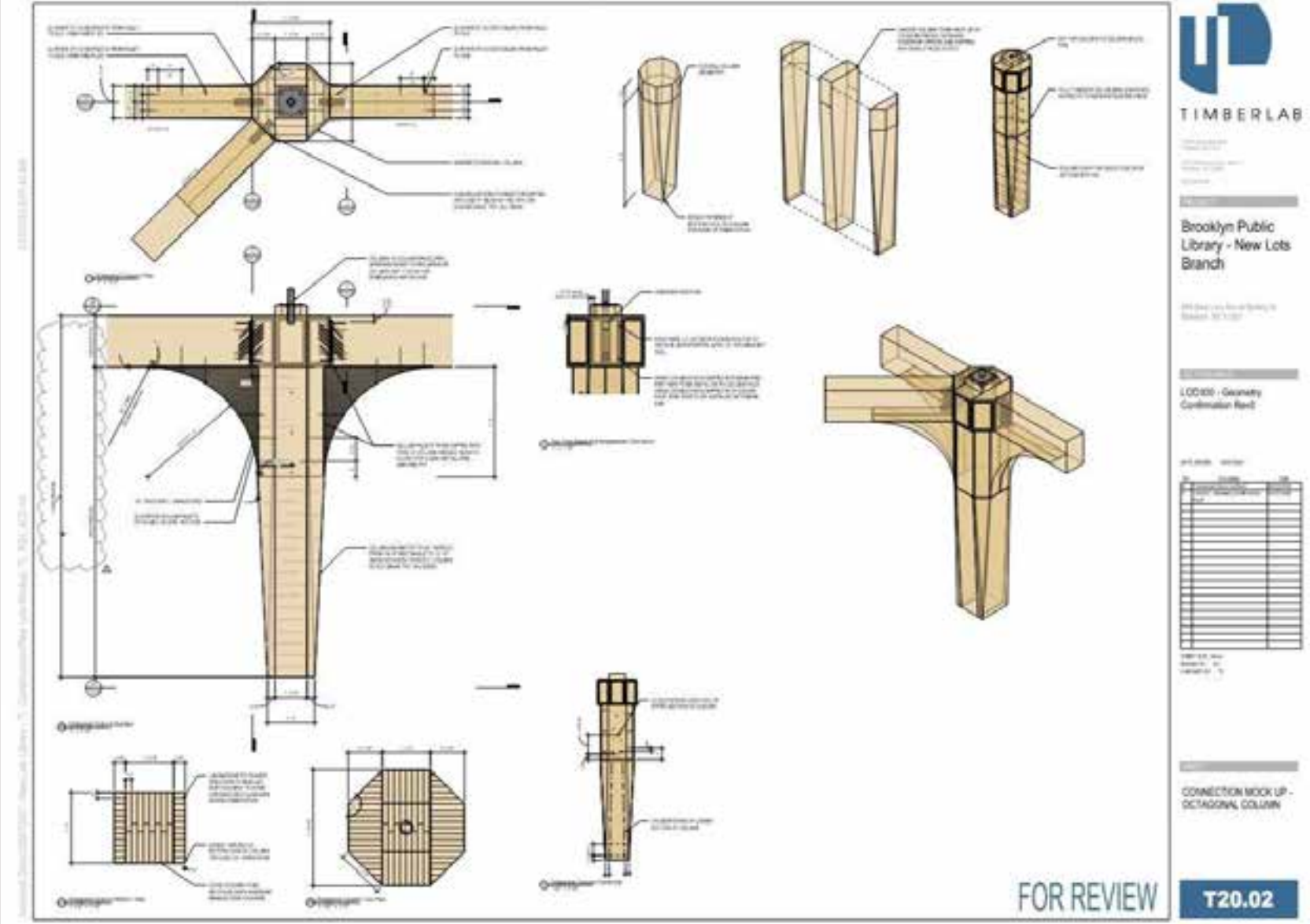
Connection Design



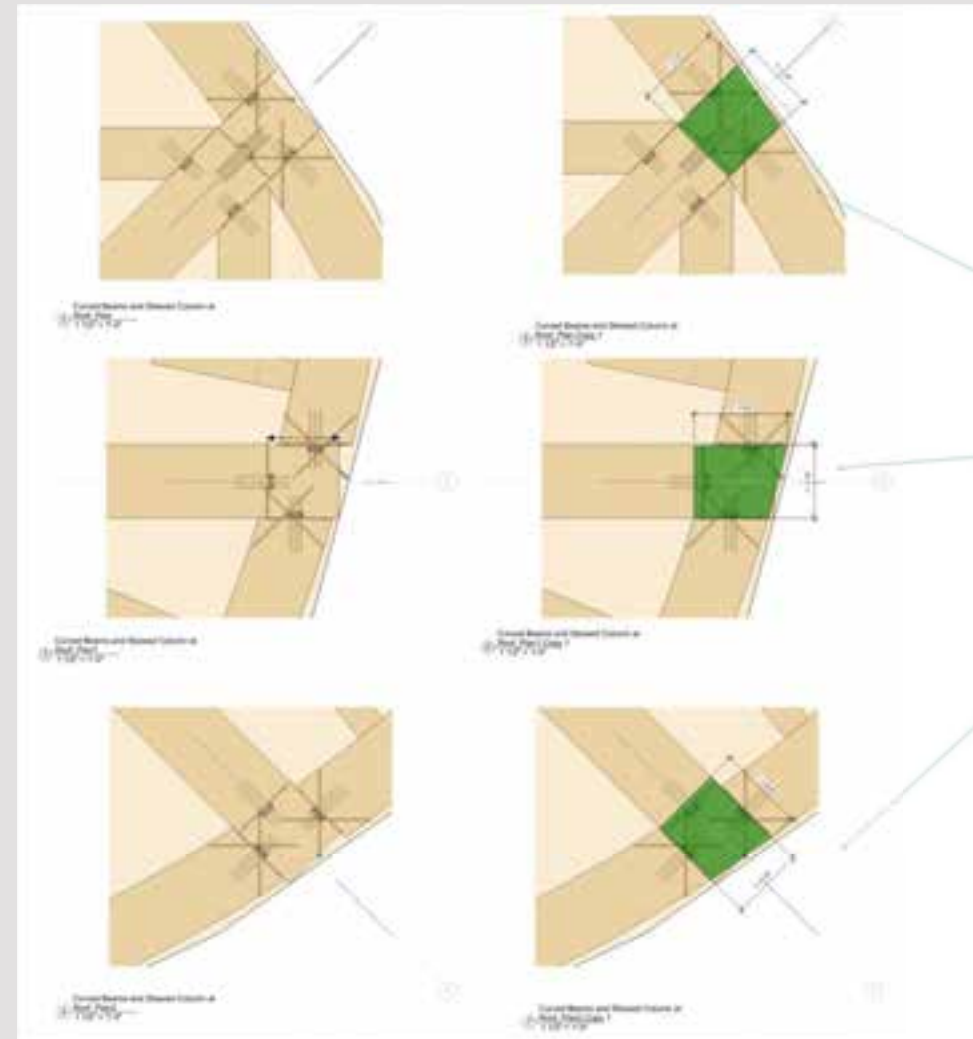
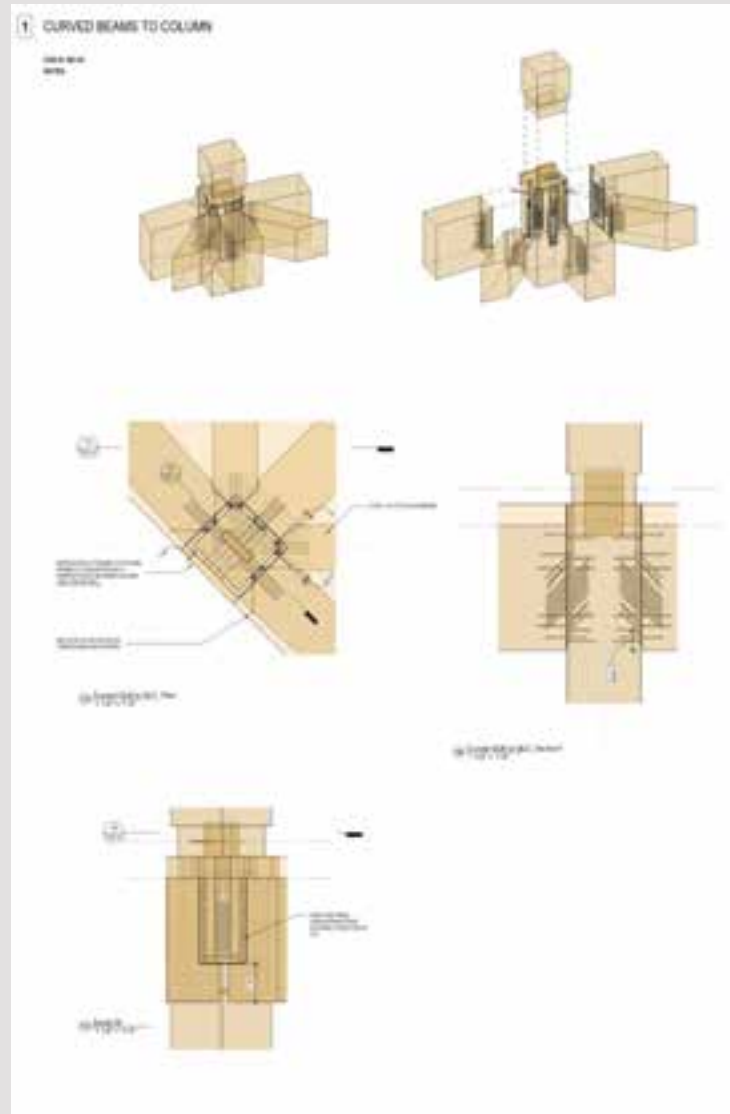
Connection Design



Connection Design



Connection Design



Connection Design







Stay tuned for (late) 2028!

Chris Hardy
Model of Architecture
Serving Society (MASS)
chardy@mass-group.org

Jason Roberts
Marble Fairbanks Architects
jason@marblefairbanks.com

Maya Stuhlbarg
TYLin
maya.stuhlbarg@tylin.com

Thanks!

*This concludes The American Institute of Architects
Continuing Education Systems Course.*





PENN'S LANDING PARK PAVILION & CAFE

Mass Timber+ 2026 | Philadelphia, PA

October 2026

KIERANTIMBERLAKE



**Philadelphia
Pennsylvania
USA**

**PENN'S
LANDING
PARK**

CENTER CITY

0 1.5 3 km

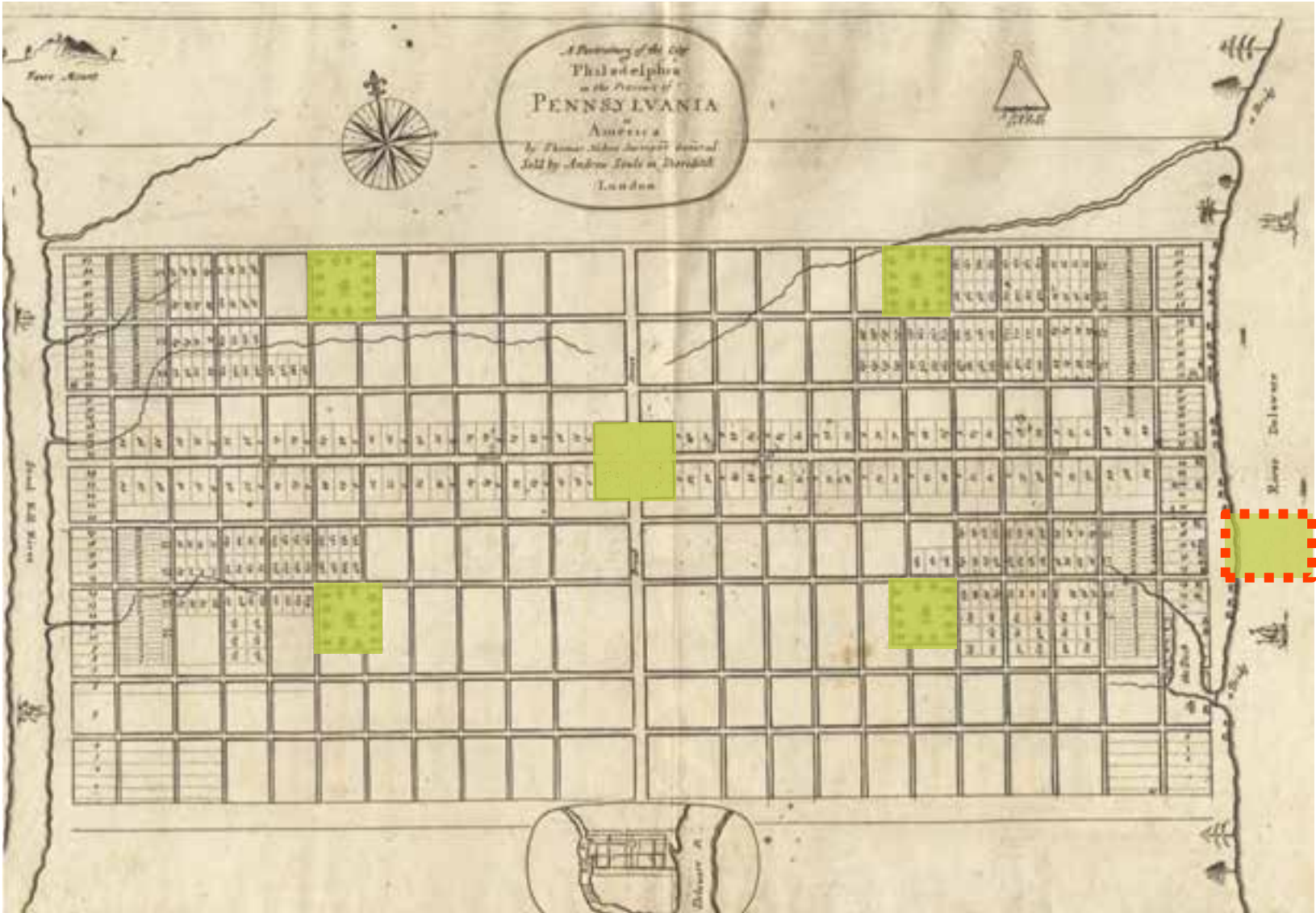


Center City Philadelphia

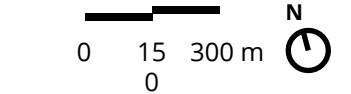


PENN'S
LANDING
PARK

City Plan of 1683



ORIGINAL 1683 MAP OF PHILADELPHIA
PENN'S LANDING PAVILION & CAFÉ | DELAWARE RIVER WATERFRONT CORPORATION



Three Centuries of Development



1776 COLONIAL CITY
PENN'S LANDING PAVILION & CAFÉ | DELAWARE RIVER WATERFRONT CORPORATION



1883 INDUSTRIAL CITY



1995 POST-INDUSTRIAL CITY

Industrial City



c. 1930

Post-Industrial City



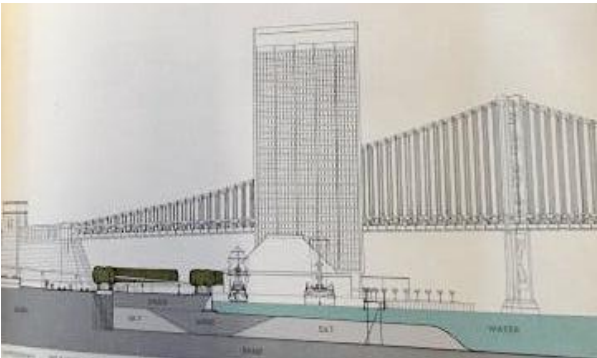


Connecting the City to the River

4 Decades of Attempts

1960s

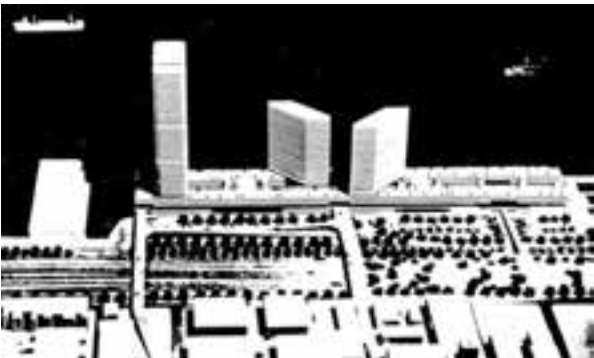
Construction I-95 starts
City Old Philadelphia Development Corp.
Planner Geddes Brecher Qualls Cunningham
Developer City of Philadelphia



1963 Plans include an embarcadero, major buildings, and a tower at the foot of Market Street, unbuilt

1970s

Construction New I-95 offramp requested
City Old Philadelphia Development Corp.
Planner Murphy Levy Wurman
Developer McClosky Company



1973 Skidmore, Owings & Merrill, scheme included an office building/hotel high-rise on the Market Street axis, and two smaller apartment slabs, unbuilt

1980s

Construction Great Plaza built
City Greene and Goode Administrations
Planner Cope Linder, Bower Lewis Thrower, Jerde Partnership (Phase 2)
Developer Rouse & Assoc., Welcome Partnership



1984 7-story office tower, 35-story apartment building, hotel planned, unbuilt
1986 5,000 capacity amphitheater, 800-room hotel planned, unbuilt

1989 37-acre site with tower and exhibition hall, unbuilt

1990s

Construction River tram piers built
City Rendell Administration
Planner Murphy Levy Wurman
Developer Simon Property Group



1990s "Family-oriented entertainment attraction" including 500,000+ square feet shopping mall shops, restaurants, "special attractions", Steven Spielberg's Gameworks arcade, public park on top level, amphitheater, ice skating rinks, 24-screen movie theater, landscaped parking garage. Cost overruns and public outcry over loss of public space led developer to abandon project in 2002

A New Start

Planning to Reality

2000s

Construction 24-story hotel tower, 2001
City Street Administration
Outreach University Pennsylvania PennPraxis
Developer Delaware River Waterfront Corp.



2003 City planners and public demand less developer control. UPenn's Penn Praxis engaged for a public outreach process, including forums and workshops with hundreds of residents

2005 PLC Selection committee chair charged with extortion
2006 New advisory group w/ PennPraxis acting as lead design consultant

2010s

Construction Spruce Street Harbor Landscape, 2015
City Nutter Administration
Planner KieranTimberlake & OLIN Master Plan; Hargreaves Jones Feasibility Study
Developer Delaware River Waterfront Corp.



2009 *A Civic Vision for the Central Delaware* published, 7-mile stretch including Penn's Landing, balances commercial and public interest



2011 Master Plan by Cooper Robertson, KieranTimberlake & OLIN published

2014 Project feasibility by Hargreaves Jones

2020s

Construction Park at Penn's Landing breaks ground, existing cap over I-95 demolished
City Kenney and Parker Administrations
Designer KieranTimberlake & Hargreaves Jones
Developer Delaware River Waterfront Corp.



2023 Groundbreaking

2029 Opening

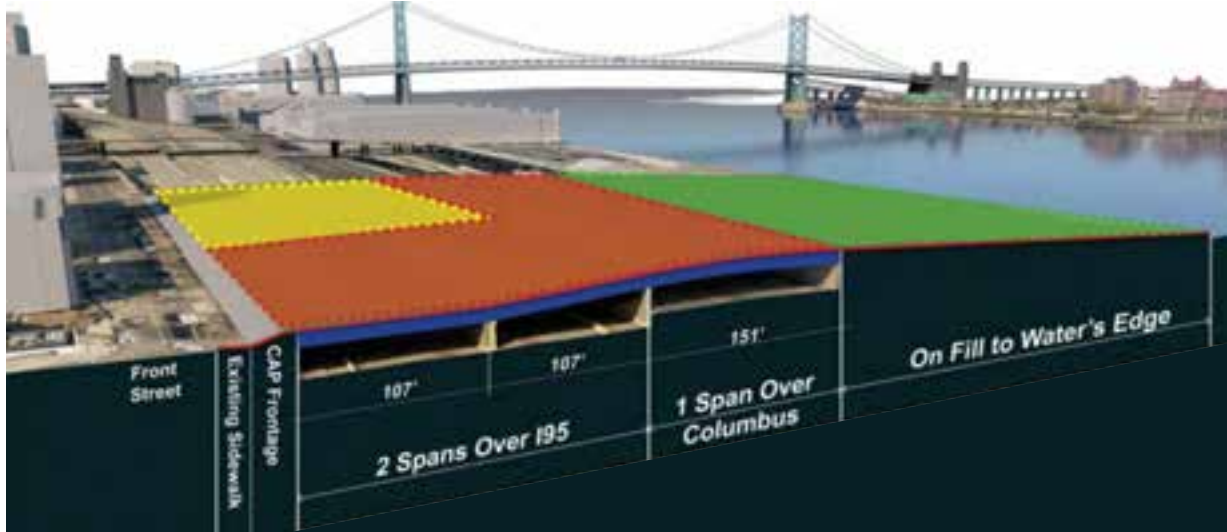
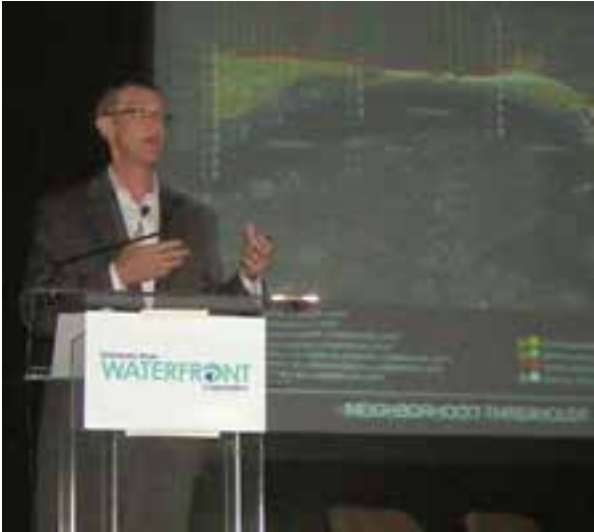
Master Plan for the Riverfront



Public Park Every Half Mile (0.8 km)



Civic Participation



A New Penn's Landing



A Home For RiverRink



Project Vision

TIMELESS

A design that exudes warmth and a sense of belonging.
A serene presence at the center of the park.
A harmonious relationship between pavilion, park, and waterfront.

DURABLE

Materials that are long-lived and durable.
Building systems that work together efficiently.
Flexibility for a variety of uses.

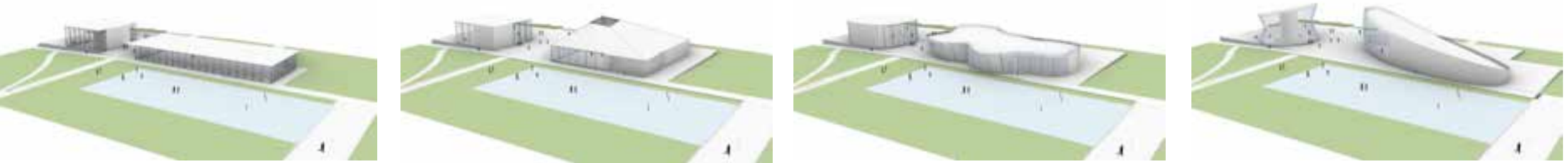
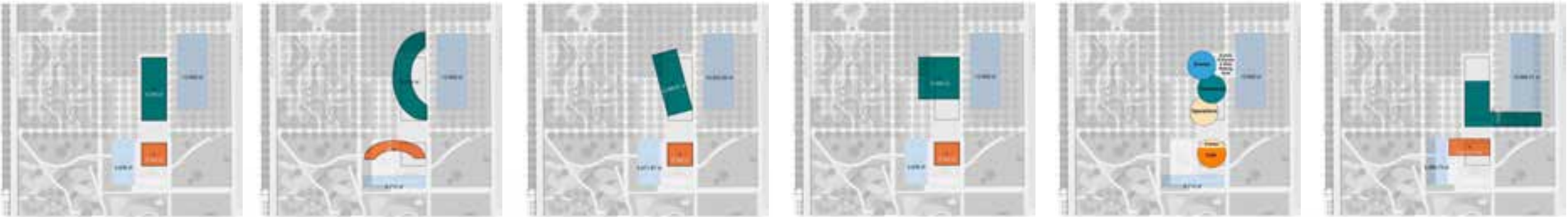
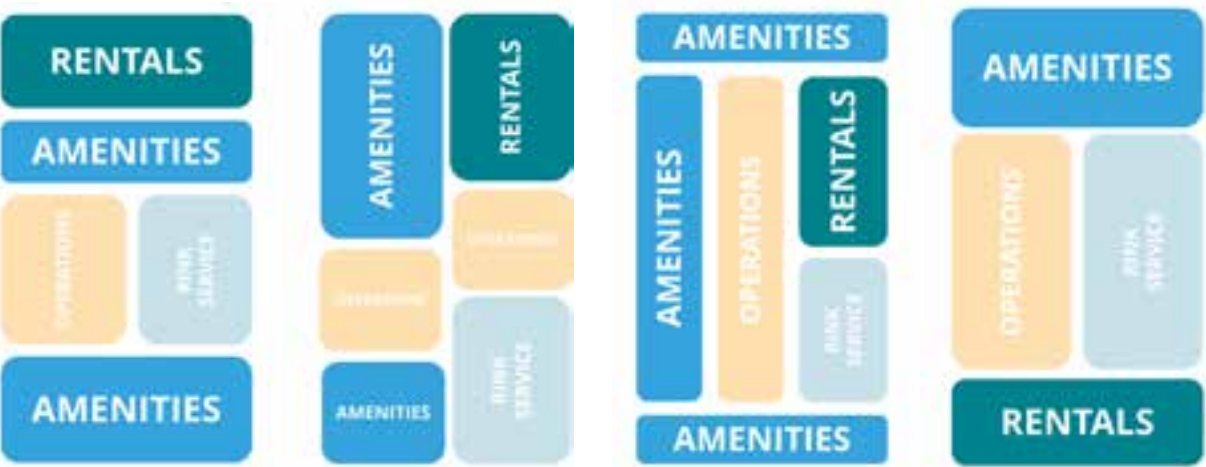
MEMORABLE

A warm, welcoming design that draws people in.
A sense of fun, wonder, and discovery in the center of the park.
An iconic, memorable design that resonates with people.

CIVIC

Net-zero energy and carbon, a new standard for public buildings in Philadelphia.
Materials that promote healthy interior conditions.
Building systems that invite fresh-air and natural ventilation.

Early design analysis





STROLLING
AND RELAXING

INTERACTIVE
WATER PLAY

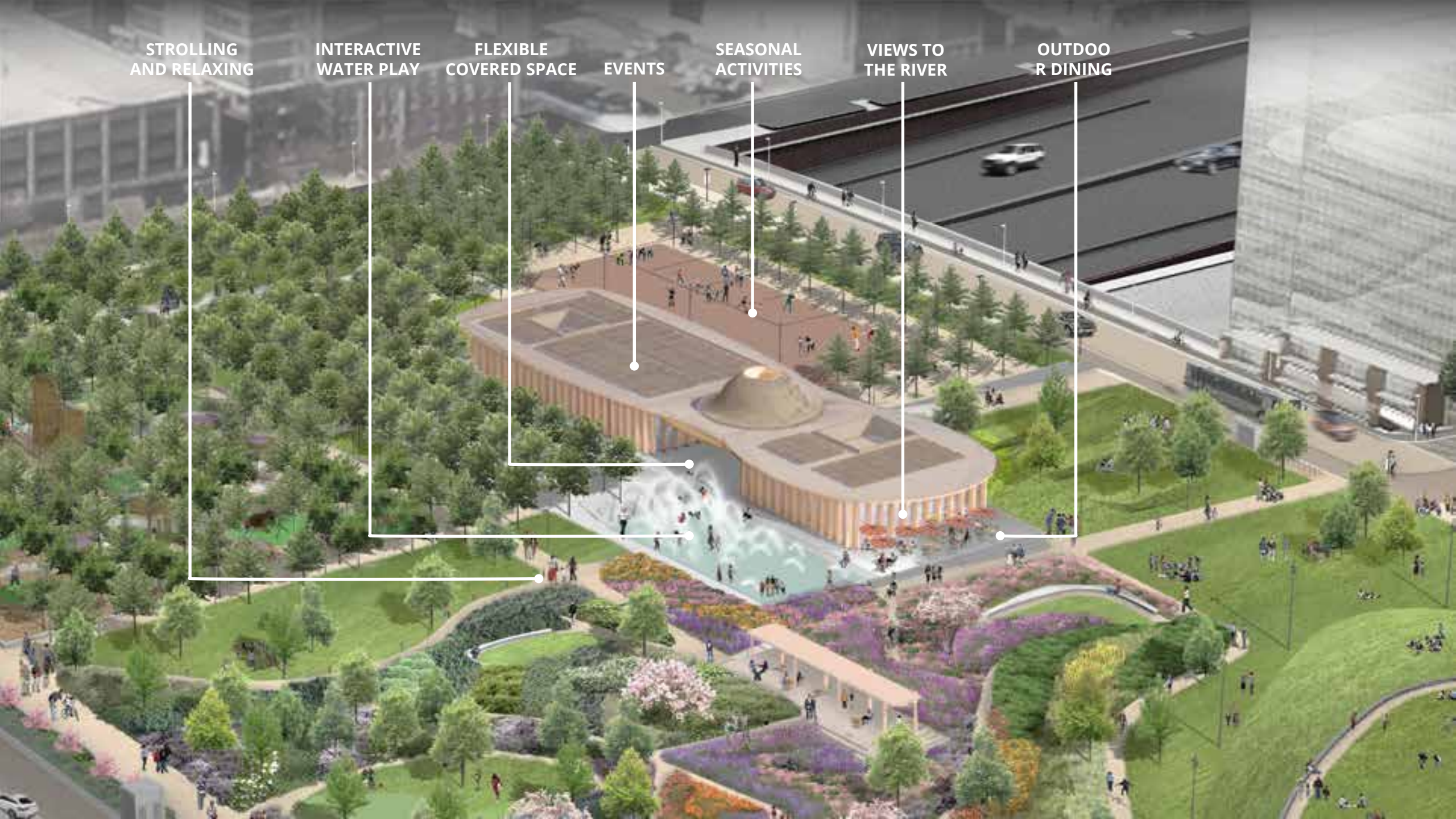
FLEXIBLE
COVERED SPACE

EVENTS

SEASONAL
ACTIVITIES

VIEWS TO
THE RIVER

OUTDOOR
DINING



WHY MASS TIMBER?

Naturally warm and welcoming.

Durable, cleanable, low-maintenance.

Naturally fire and rot-resistant.

Ease and speed of construction.

Integral finish for both interior and exterior.

Highly efficient weight to strength ratio.

Capable of long-spans for column-free interior.

Renewable resource.

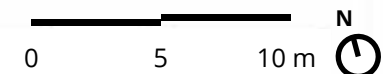
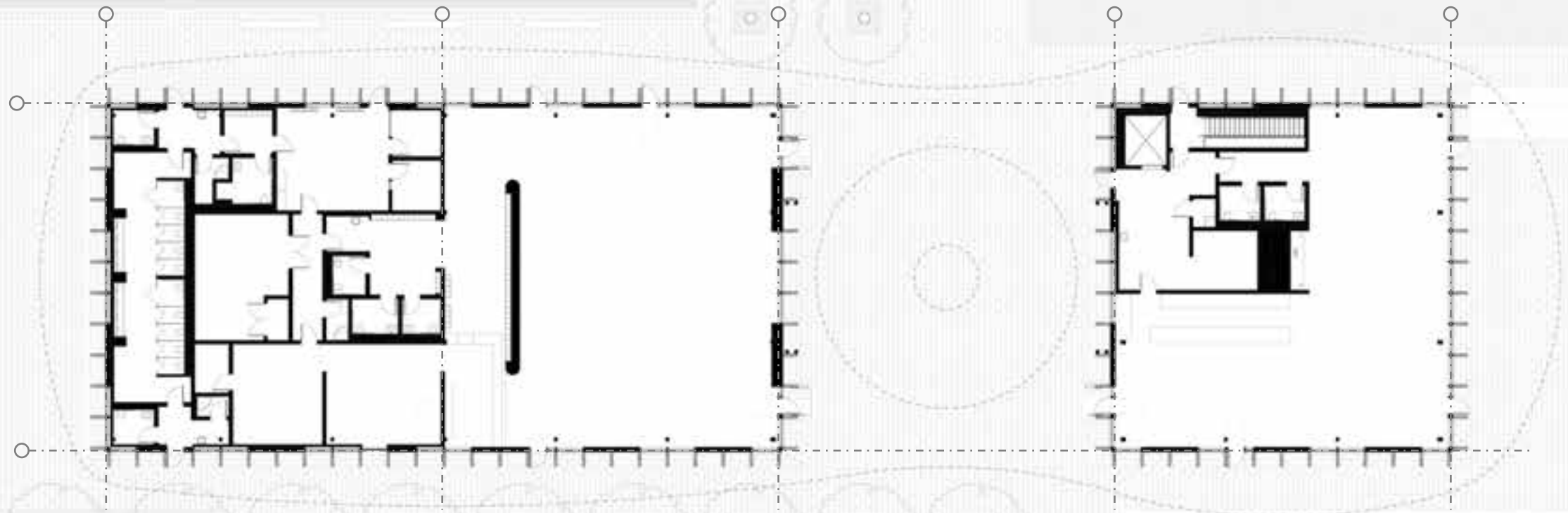
Much lower carbon impact than steel or concrete.







0 10 20 m



RINK / PLAZA

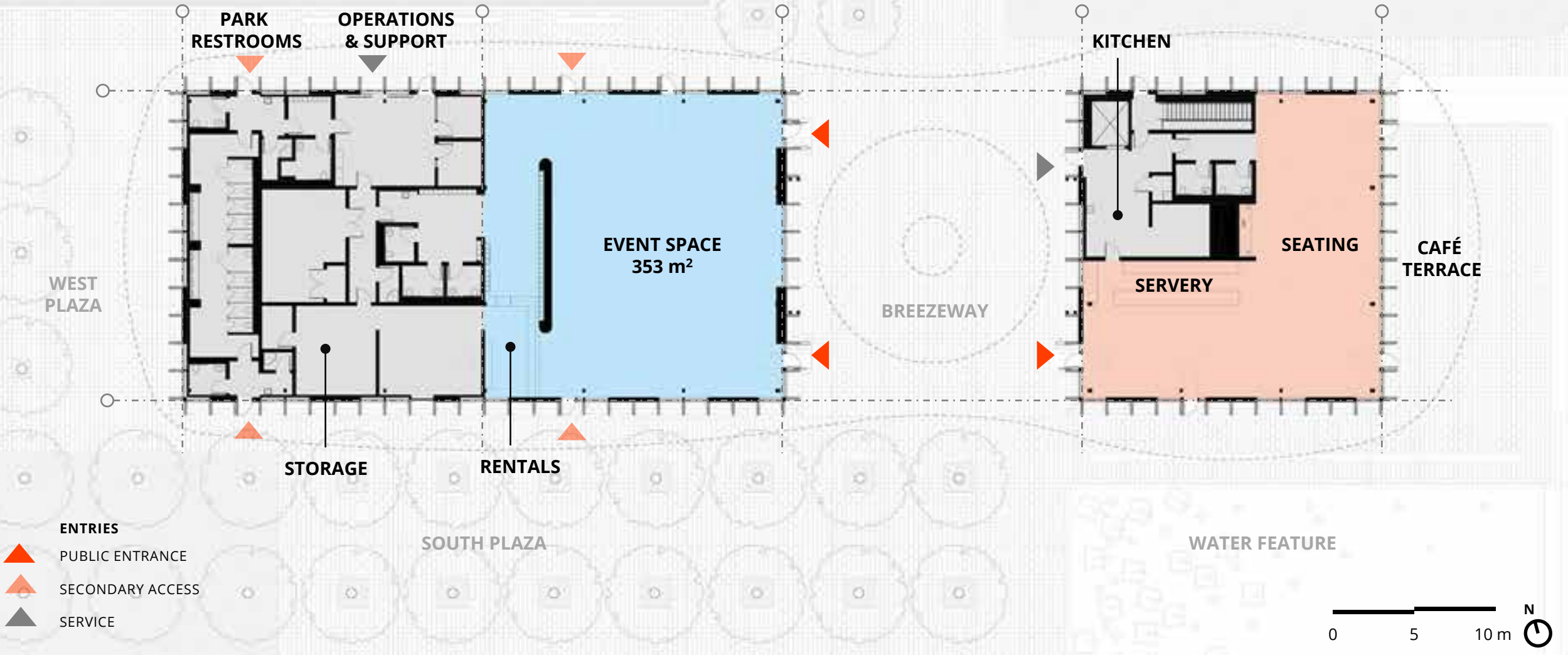
LAWN

PAVILION

724 m² TOTAL

CAFÉ

1,291 m² TOTAL



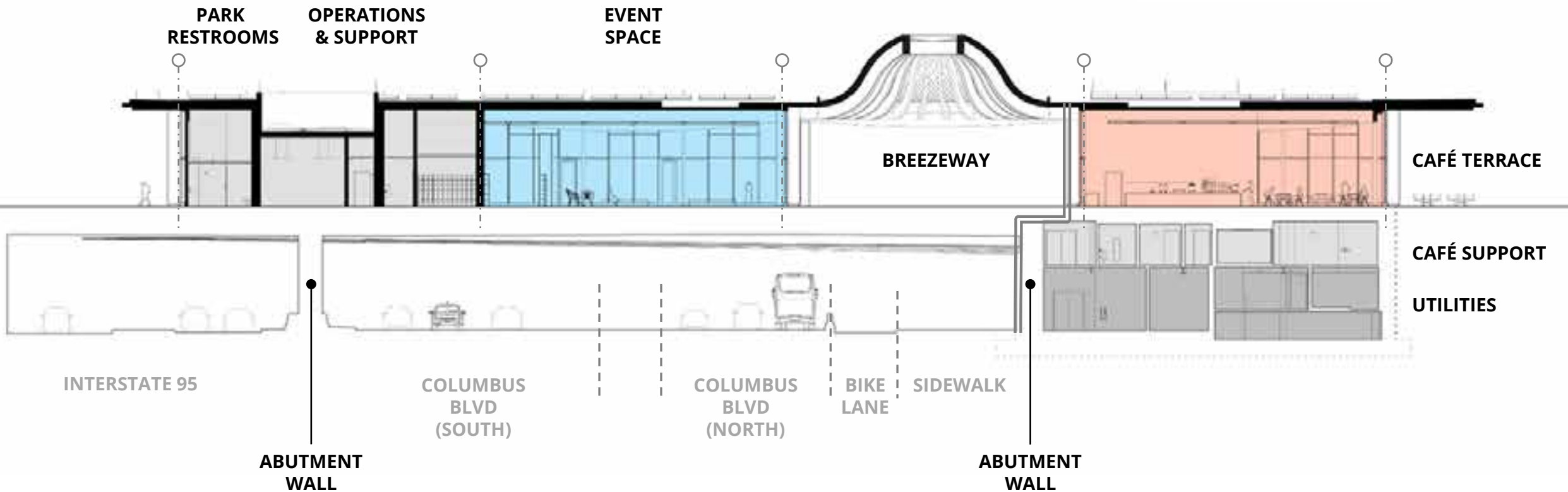
PAVILION

724 m² TOTAL

CAFÉ

1,291 m² TOTAL

362 m² PARK LEVEL
427 m² LOWER LEVEL
418 m² BASEMENT LEVEL





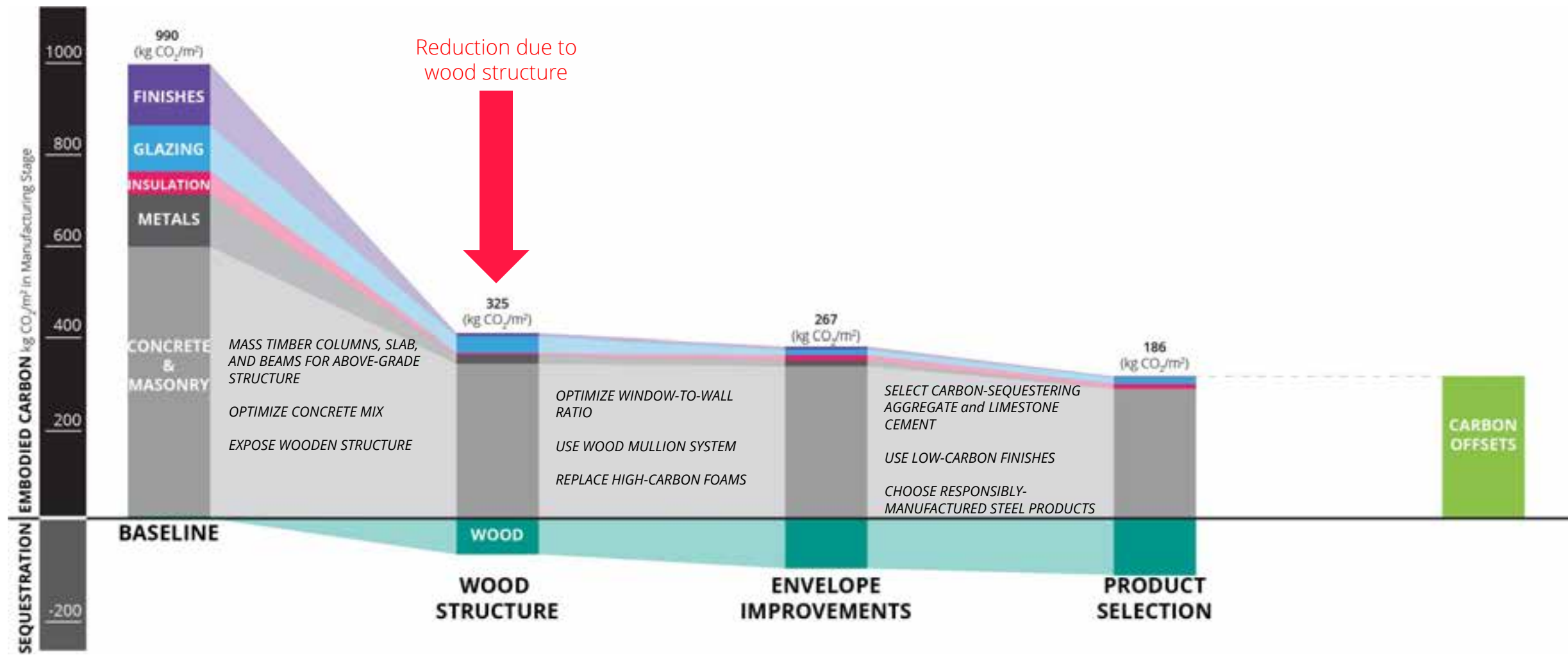
PAVILION ELEVATION
PENN'S LANDING PAVILION & CAFÉ | DELAWARE RIVER WATERFRONT CORPORATION



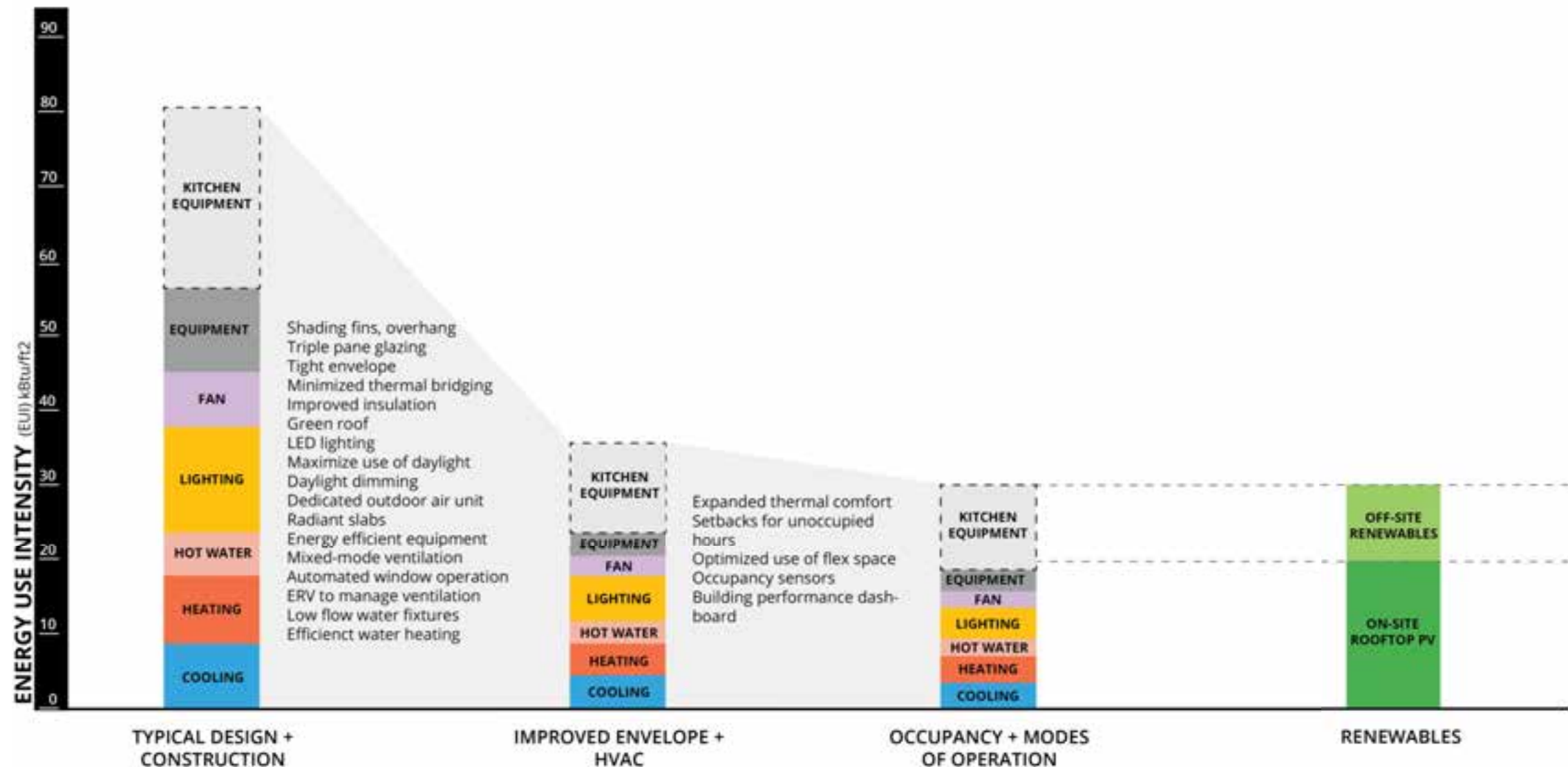




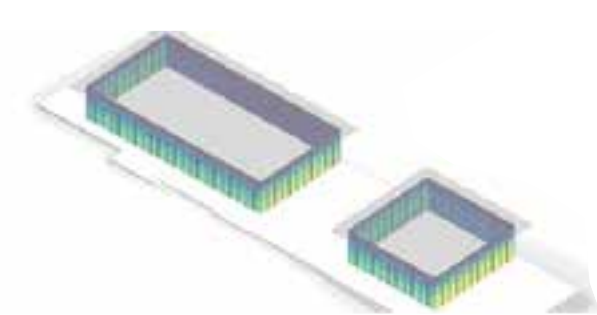
GETTING TO ZERO EMBODIED CARBON



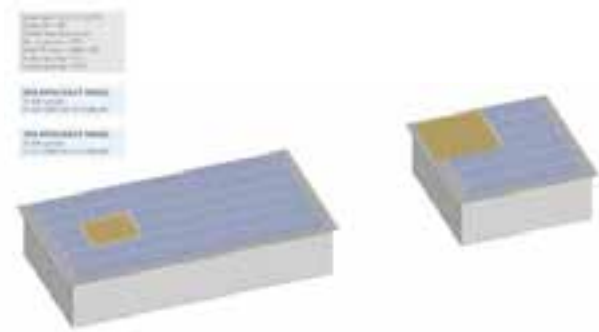
GETTING TO ZERO OPERATIONAL CARBON



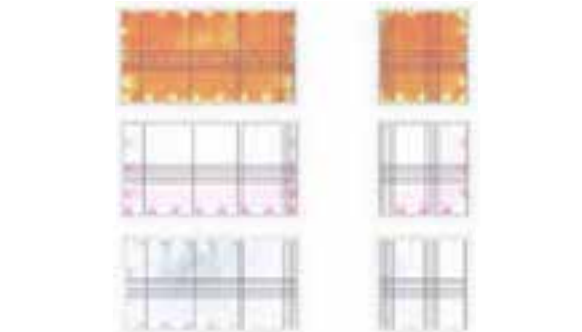
INCIDENT SOLAR RADIATION



SOLAR ENERGY POTENTIAL



DAYLIGHTING



ENERGY USE INTENSITY

	Program	NSF	Baseline EUI
Position	Office	1140	20
	Recreation (includes storage, mech)	2360	95
Cafe	Food sales	3600	290
	Food service	2300	230-290
	Storage	1300	95
	TOTAL	14400	140
2030 Target			290/110

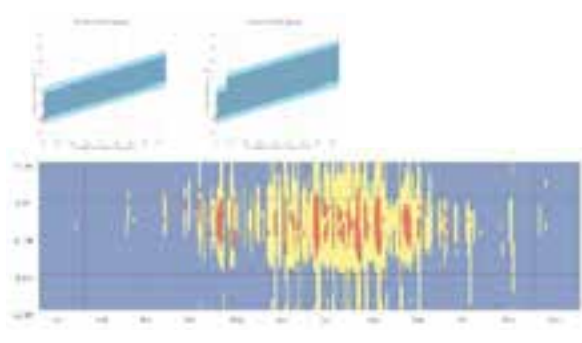
CARBON FOOTPRINT



KEY VIEWSHEDS

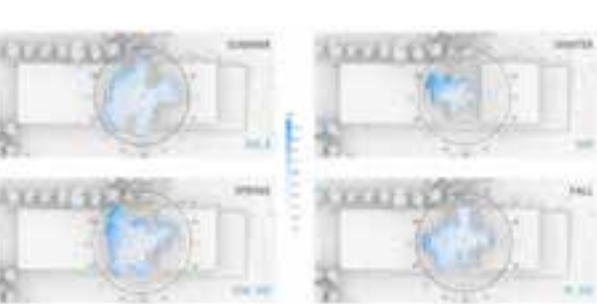


NATURAL VENTILATION POTENTIAL



Environmental analysis directly informs building performance.

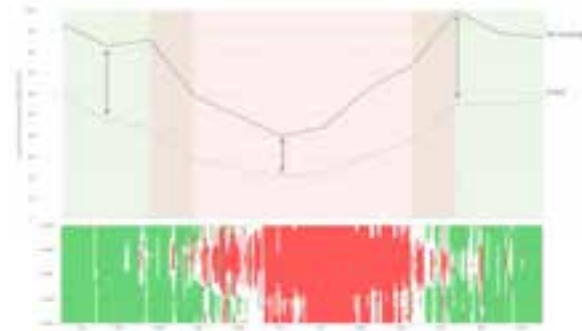
PREVAILING WINDS



GLAZING SENSITIVITY



SHADING OPTIMIZATION



CONTEXT



ROOF OVERHANG

REDUCES SUMMER HEAT GAIN, ALLOWS
BENEFICIAL SOLAR IN THE WINTER

**CROSS-LAMINATED TIMBER
ROOF PANELS**

REDUCES CONSTRUCTION DURATION,
REDUCES CARBON FOOTPRINT

**INTERIOR GLULAM BEAMS
AND COLUMNS**

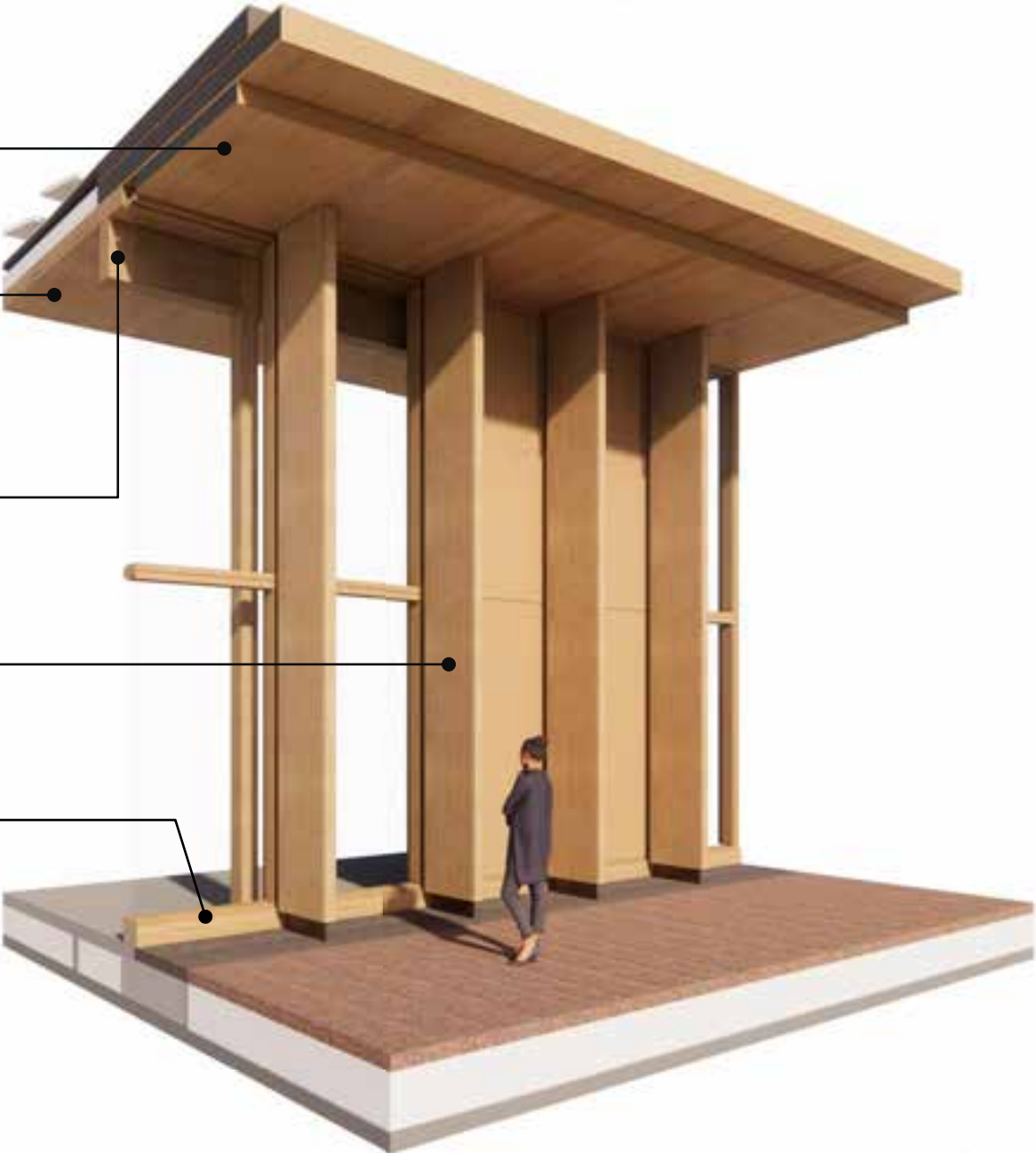
SIGNIFICANTLY REDUCES CARBON
FOOTPRINT, OFFERS WARM,
WELCOMING ATMOSPHERE

EXTERIOR GLULAM COLUMNS

PROVIDES SHADING, IMPROVES INTERIOR
COMFORT, REDUCES GLARE

WOOD WINDOW WALL SYSTEM

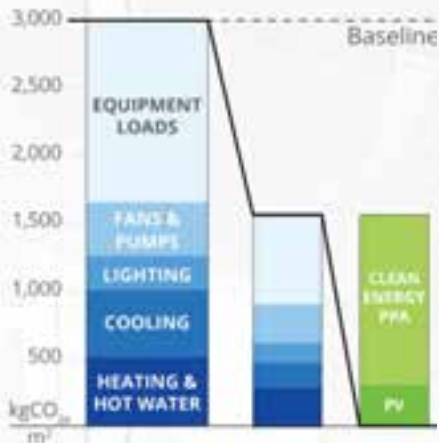
ENERGY-EFFICIENT, HIGHLY INSULATED, REFLECTS
HEAT. R-26 WHERE TRANSPARENCY IS NOT
REQUIRED



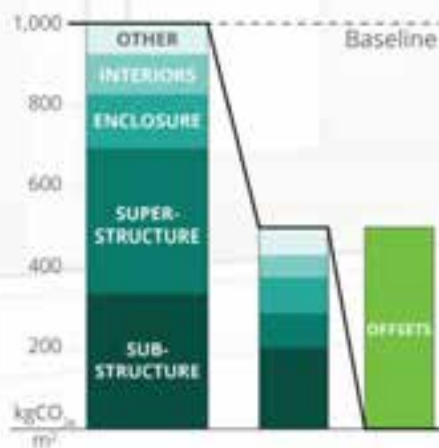
INTEGRATED ENEVELOPE DESIGN

PENN'S LANDING PAVILION & CAFÉ | DELAWARE RIVER WATERFRONT CORPORATION

OPERATIONAL CARBON



EMBODIED CARBON



EMBODIED CARBON STRATEGIES

LEVERAGE EXISTING BRIDGE FOUNDATION
GLULAM + CLT SUPERSTRUCTURE
WOOD WINDOW & WALL PANELS
BIO-BASED INTERIOR FINISHES

BUILDING SYSTEMS

FULL ELECTRIFICATION
ROOFTOP PV
CLEAN ENERGY PURCHASING

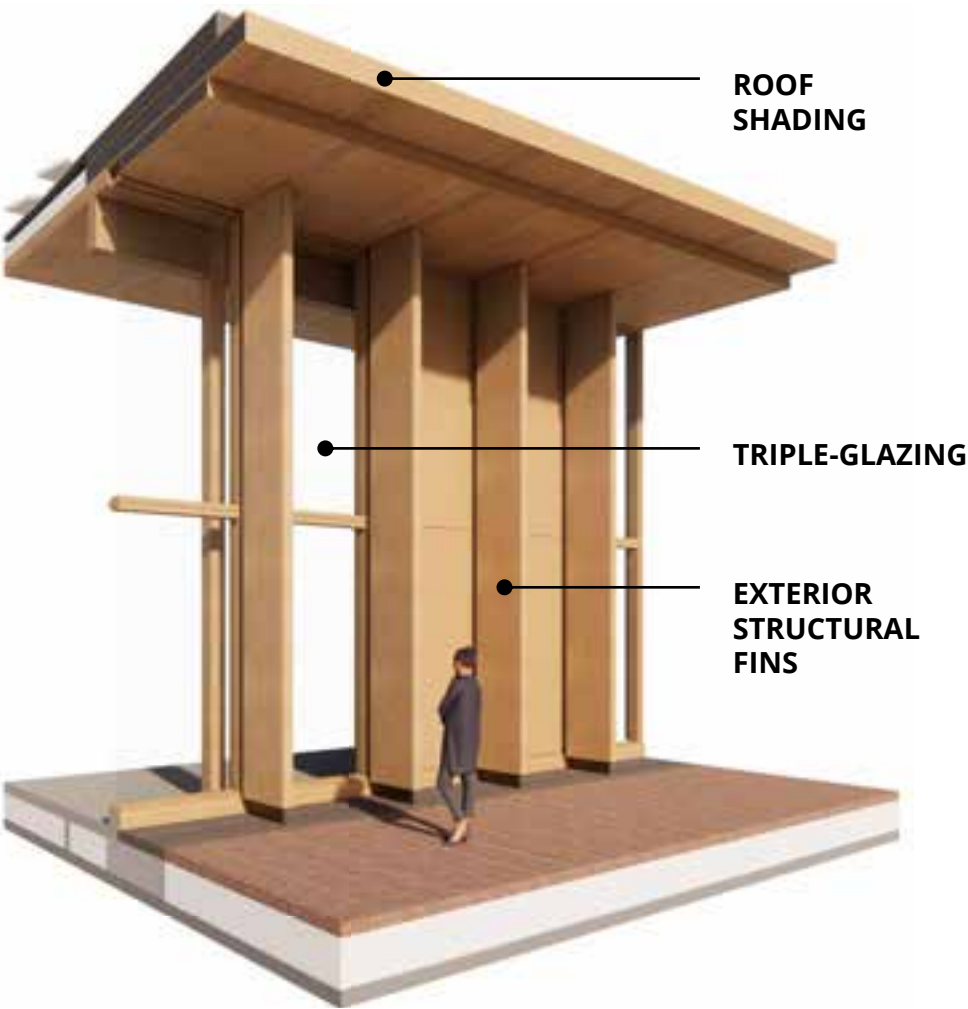
ENERGY EFFICIENCY STRATEGIES

SHADING FINS & OVERHANGS
MIXED-MODE VENTILATION
TRIPLE-GLAZING

HUMAN COMFORT

AUTOMATED SHADING
EXTERIOR COVERED SPACE
CROWD SIMULATION

Passive Strategies



SOLAR GAIN



BASELINE



-53%
FINS ONLY



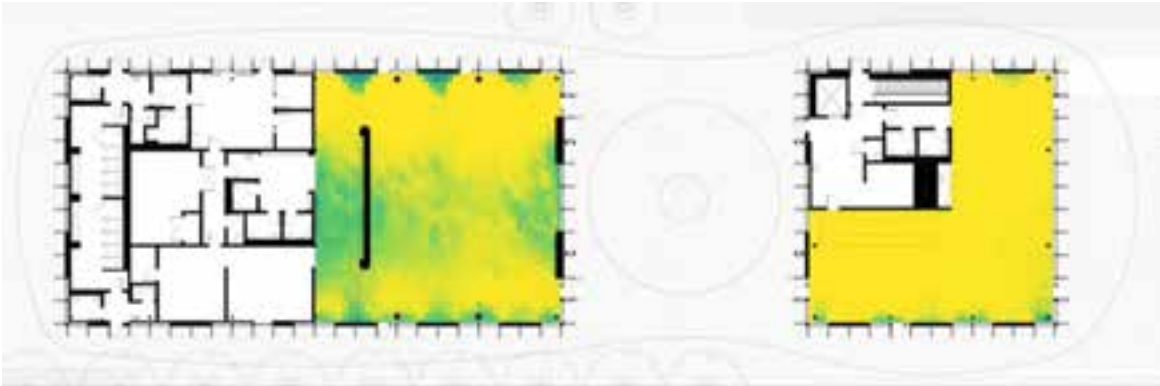
-73%
FINS & OVERHANG



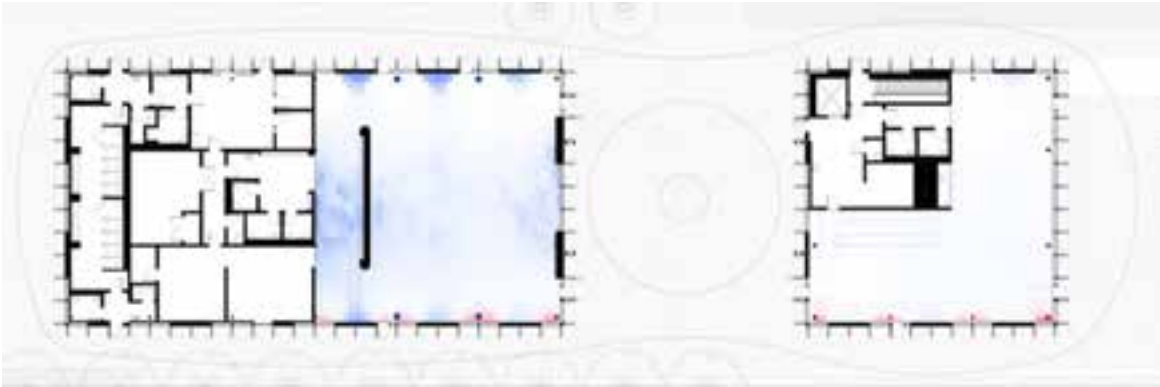
Testing Fin Depth & Spacing

KieranTimberlake Office

Daylighting



85% WELL-LIT



1% OVERLIT



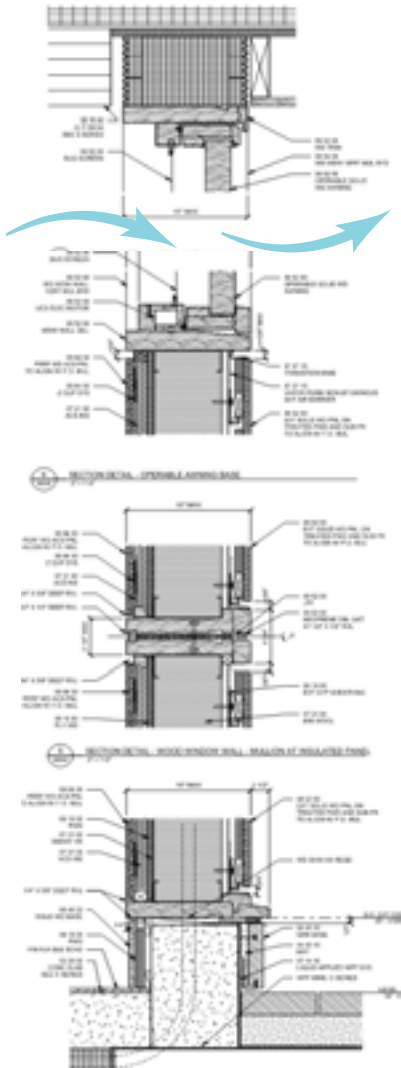
13% UNDERLIT

Operational Strategies

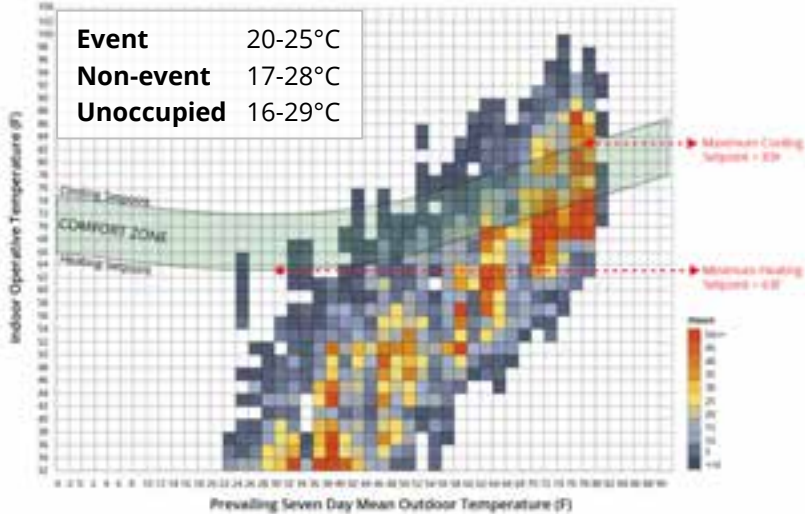


CAFÉ FACING EAST
PENN'S LANDING PAVILION & CAFÉ | DELAWARE RIVER WATERFRONT CORPORATION

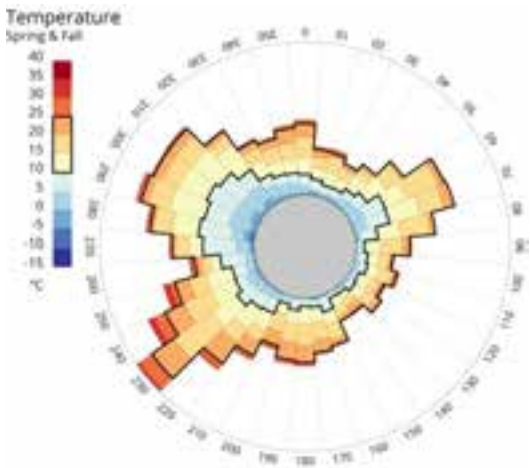
WOOD WINDOW WALL SECTION



RELAXED & SEASONAL SETPOINTS

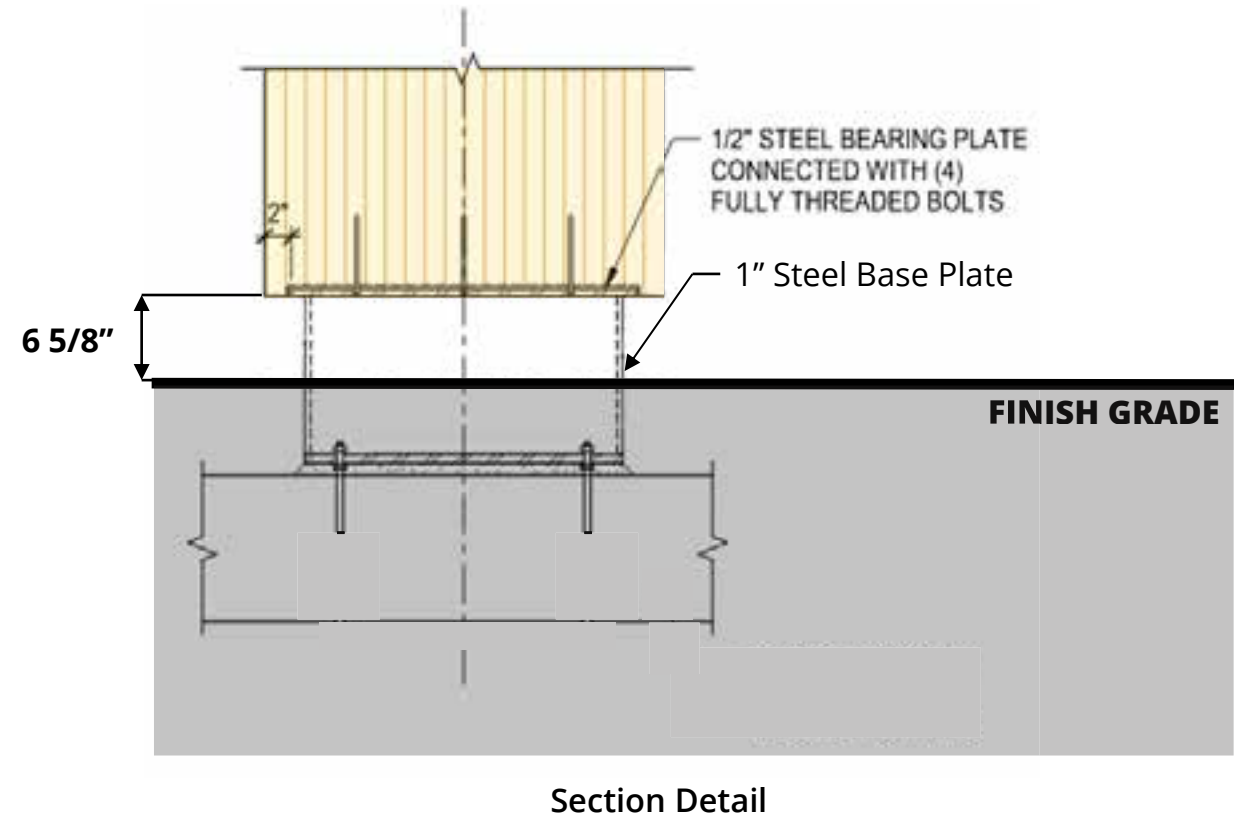
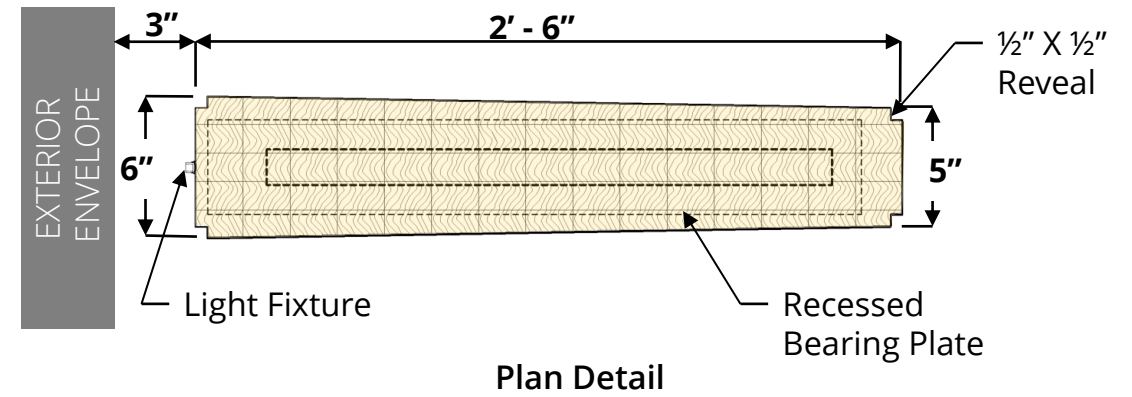


MIXED-MODE VENTILATION

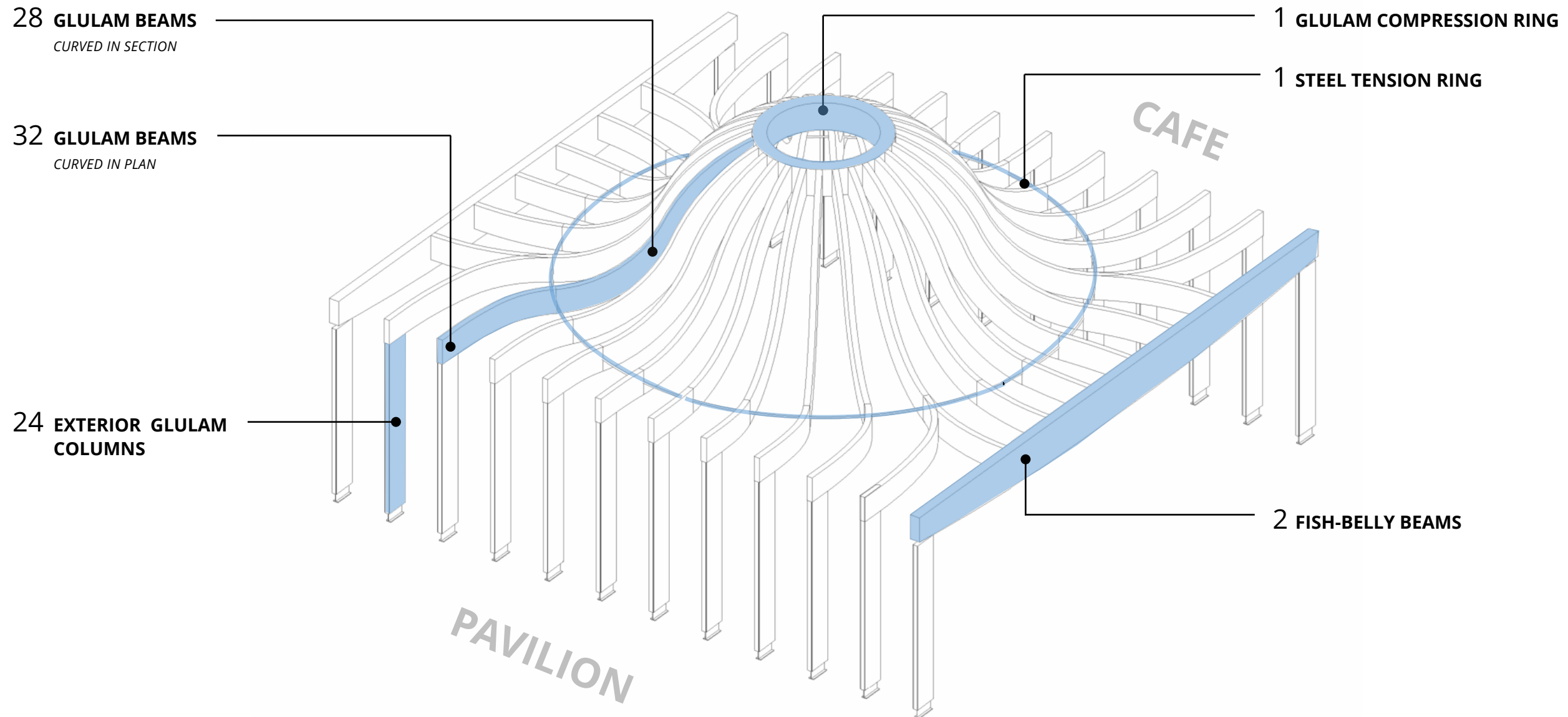


63%
Hours of Swing Seasons
Suitable for
Natural Ventilation

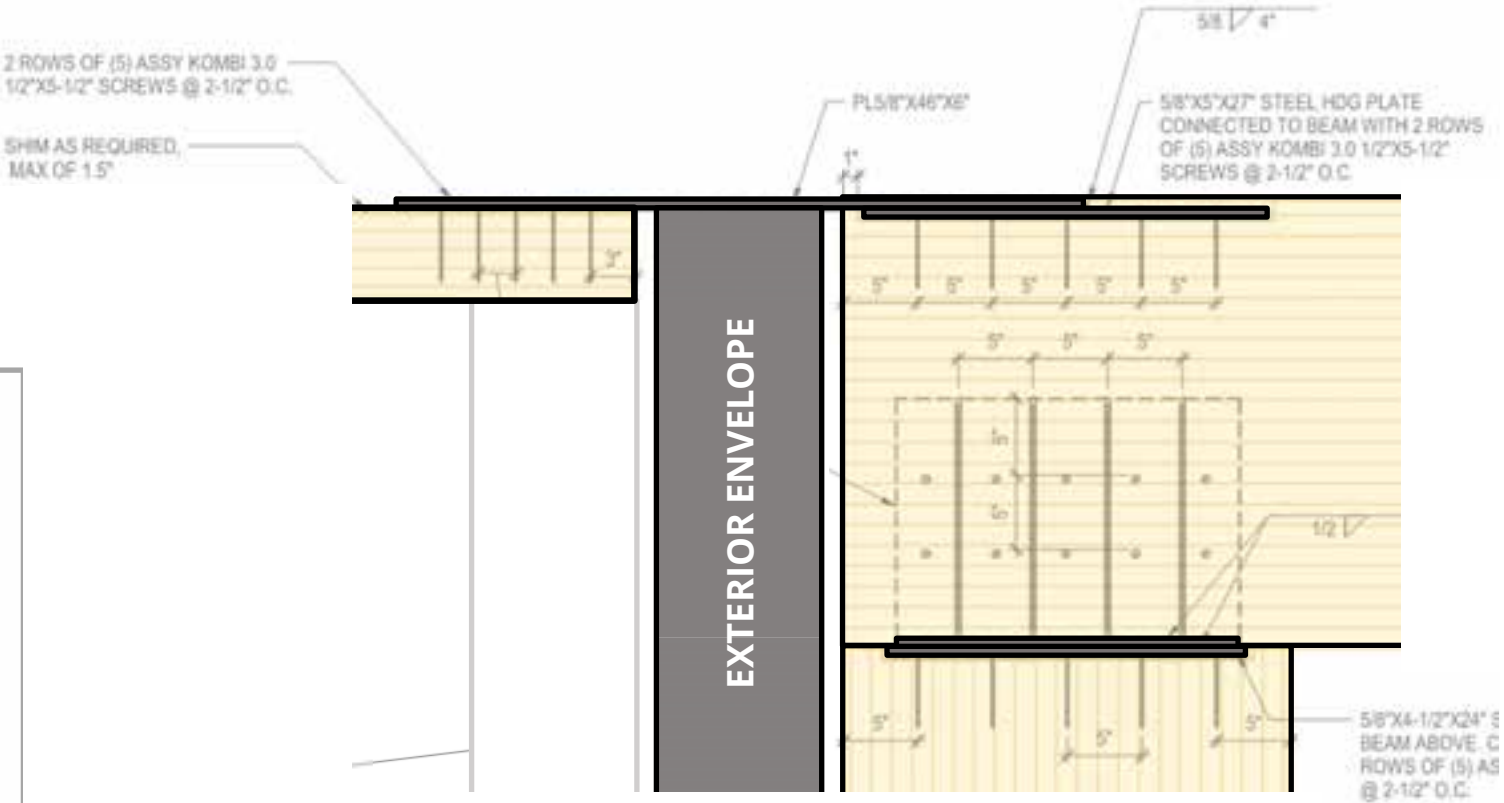
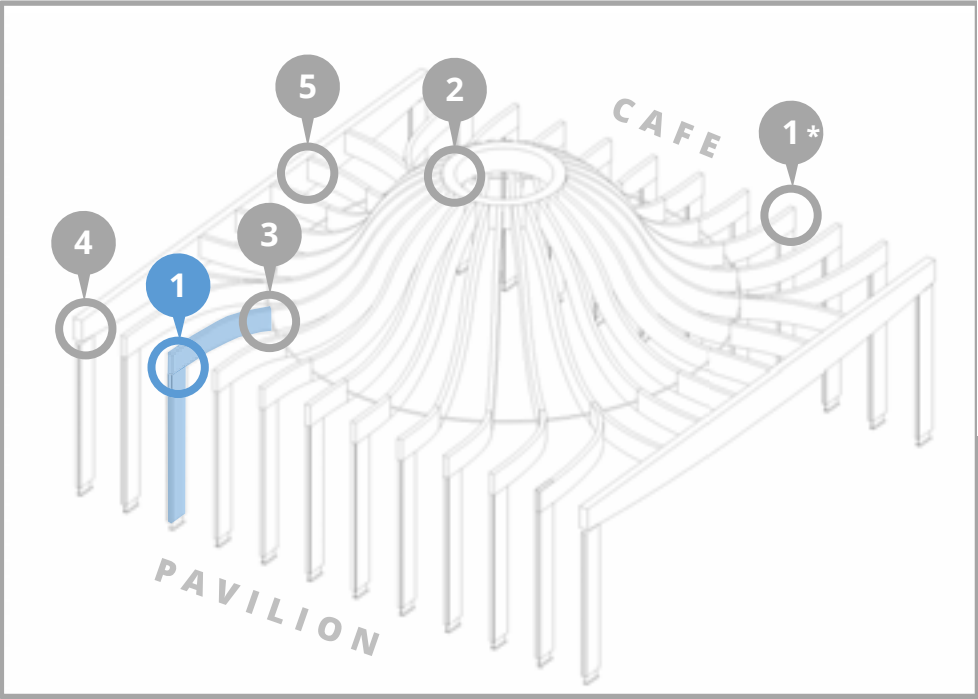








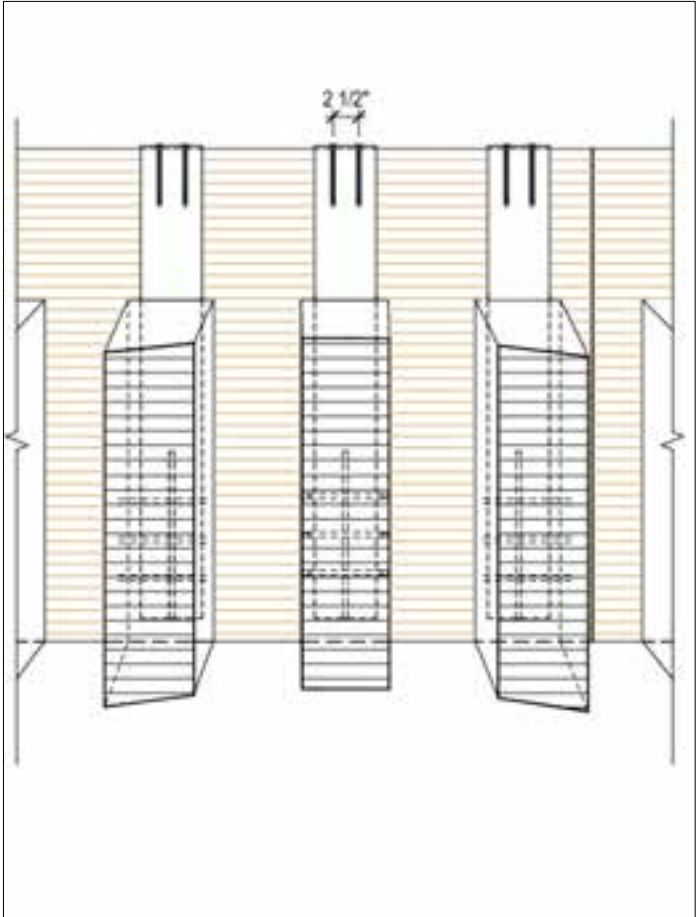
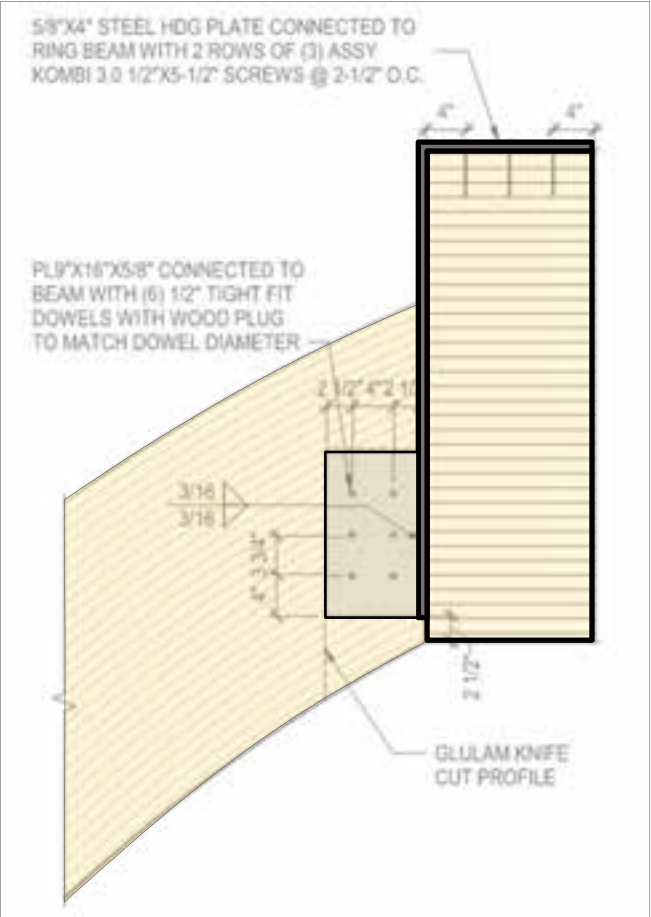
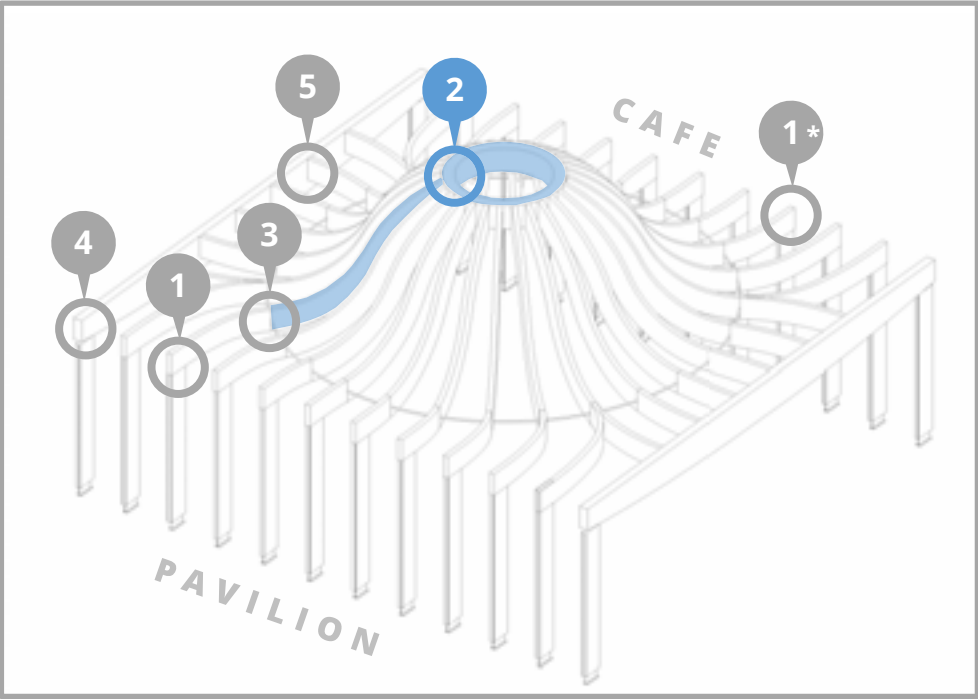
- 1. COLUMN TO CURVED BEAM
- 2. CURVED BEAM TO COMPRESSION RING
- 3. CURVED BEAM TO TENSION RING
- 4. FISH BELLY BEAM TO COLUMN
- 5. FISH BELLY BEAM TO BREEZEWAY BEAM



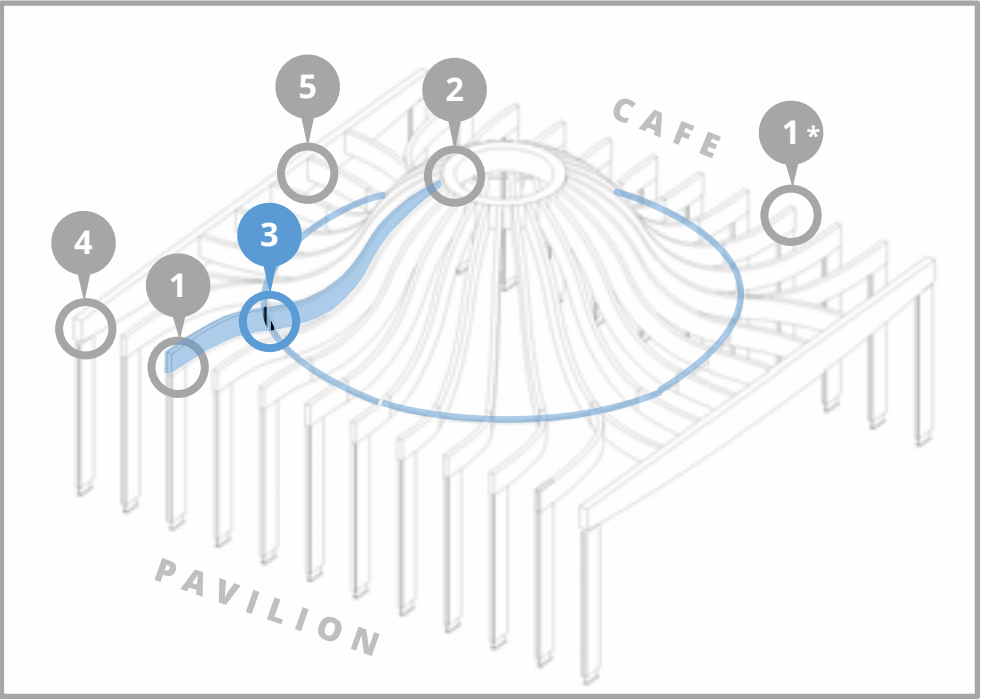
Pavilion Interior

Exterior/Breezeway

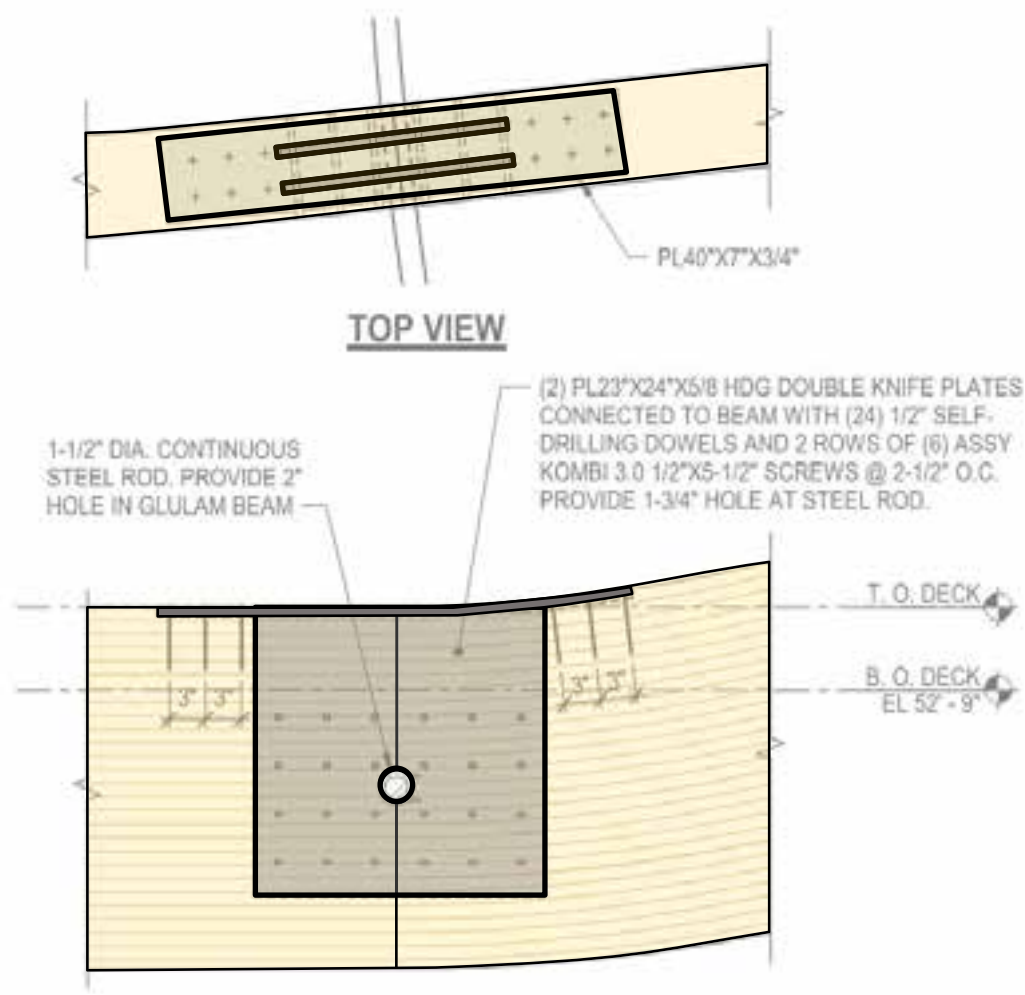
- 1. COLUMN TO CURVED BEAM
- 2. CURVED BEAM TO COMPRESSION RING
- 3. CURVED BEAM TO TENSION RING
- 4. FISH BELLY BEAM TO COLUMN
- 5. FISH BELLY BEAM TO BREEZEWAY BEAM



- 1. COLUMN TO CURVED BEAM
- 2. CURVED BEAM TO COMPRESSION RING
- 3. CURVED BEAM TO TENSION RING
- 4. FISH BELLY BEAM TO COLUMN
- 5. FISH BELLY BEAM TO BREEZEWAY BEAM



CATALOGUING THE DETAILS BREEZEWAY
PENN'S LANDING PAVILION & CAFÉ | DELAWARE RIVER WATERFRONT CORPORATION









PENN'S LANDING PARK PAVILION & CAFE

Mass Timber+ 2026 | Philadelphia, PA

October 2026

*This concludes The American Institute of Architects
Continuing Education Systems Course.*

KIERANTIMBERLAKE