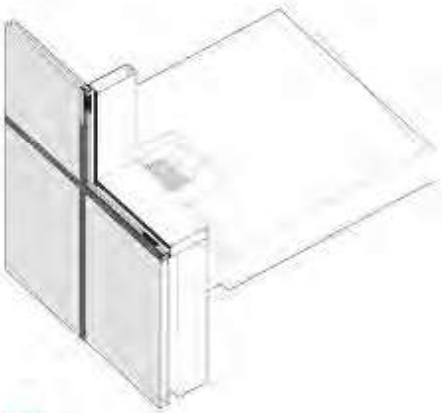
"Lösungsansätze für komplexe Anforderung moderner Fassadenarchitektur"

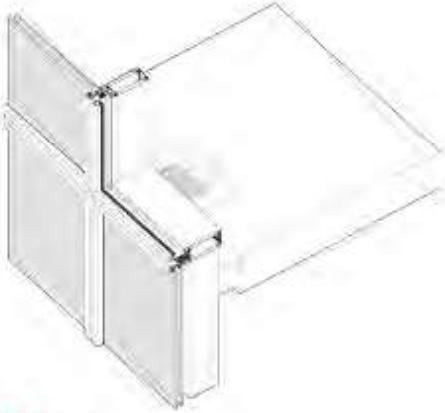
KommR Ing. Helmut Forstner

FASSADEN digital | 24. März 2021

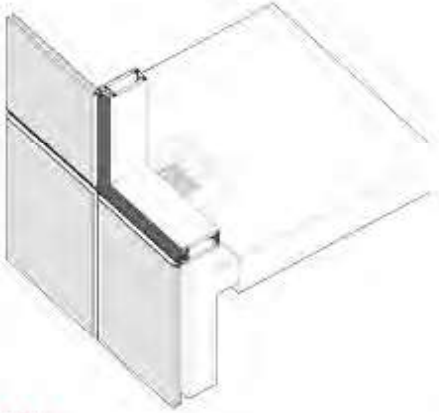

VS1
REDEFINING THE CURTAIN WALL
by Innovation Glass



Stick

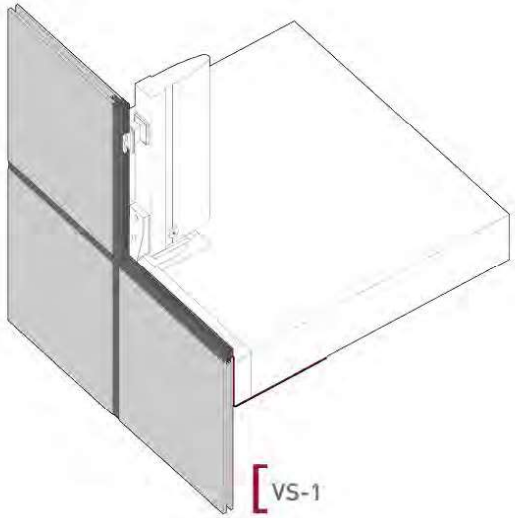


Unitised

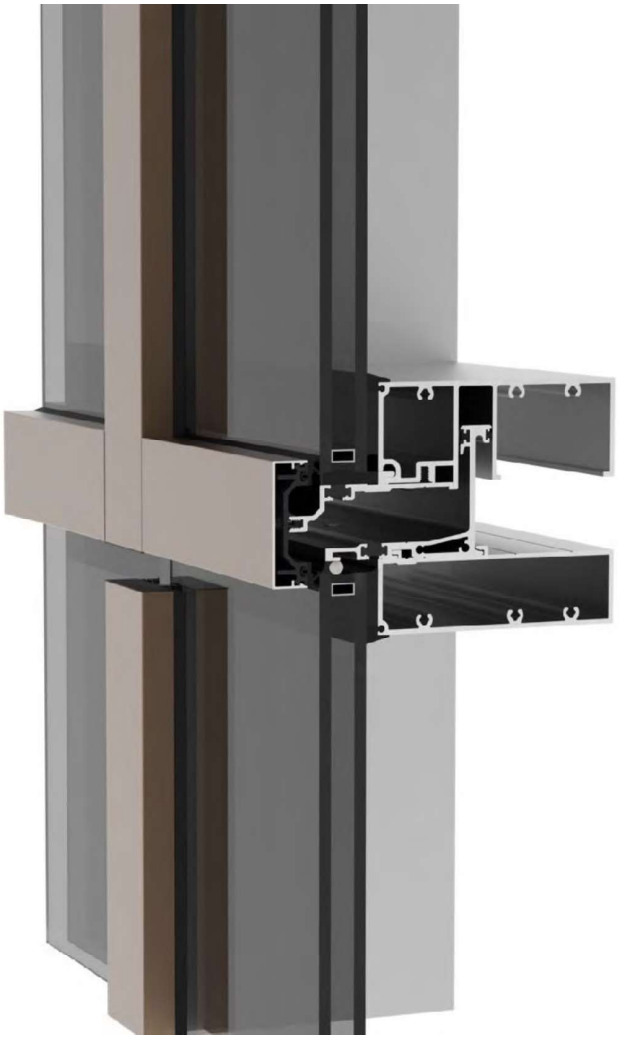


SSG

Bolted

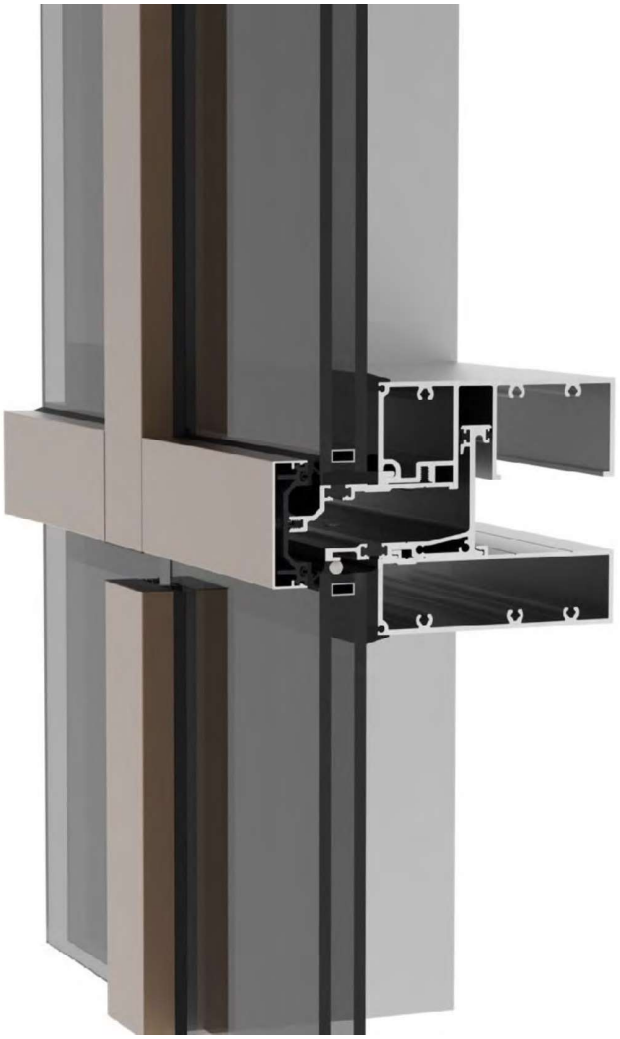


VS-1



Current World Standard:

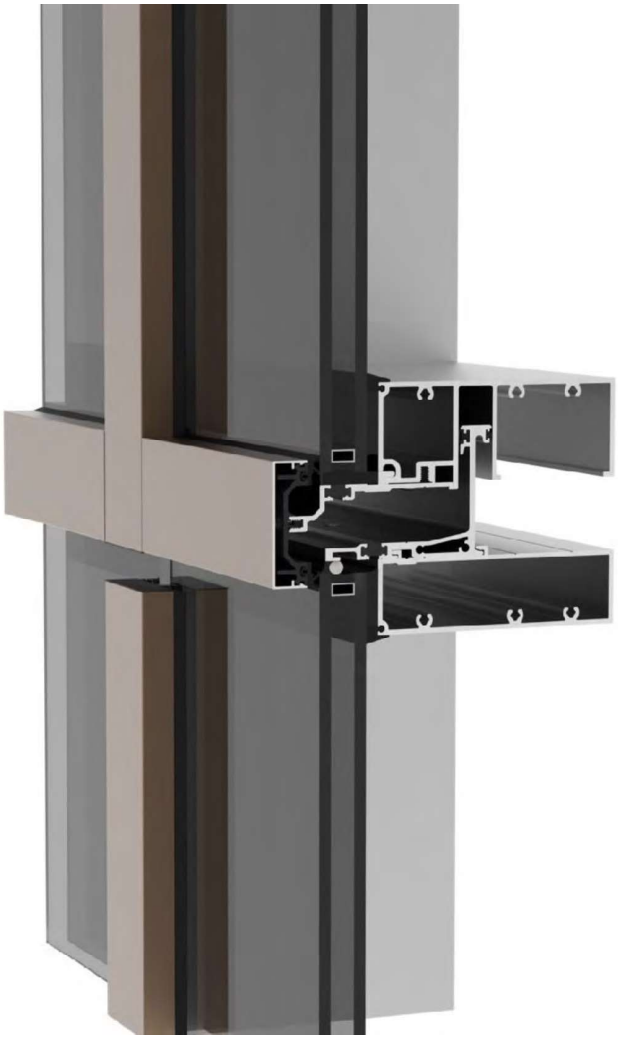
Unitized System



Current World Standard:

Unitized System

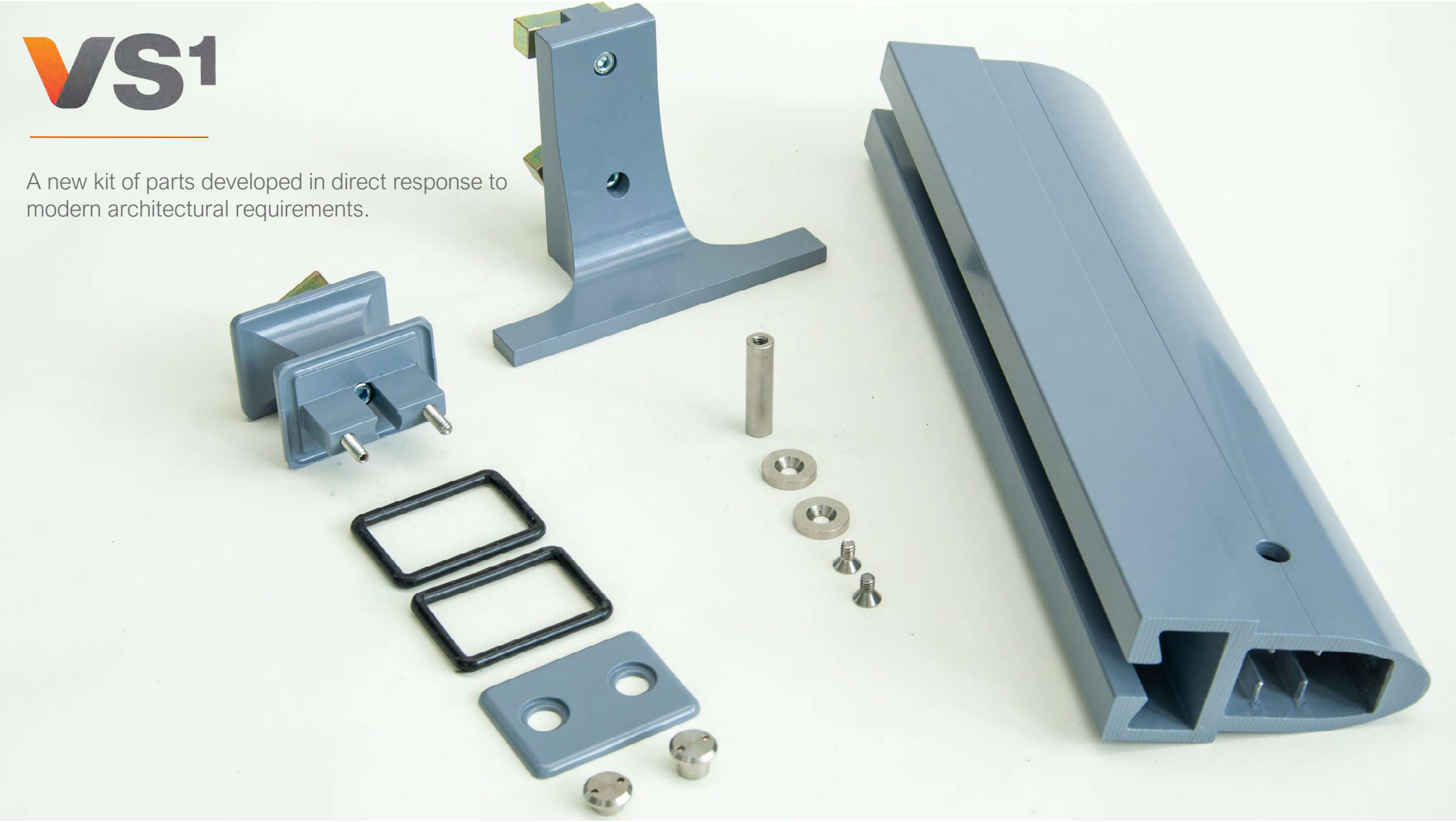
- Complex detail
- Worldwide similarity



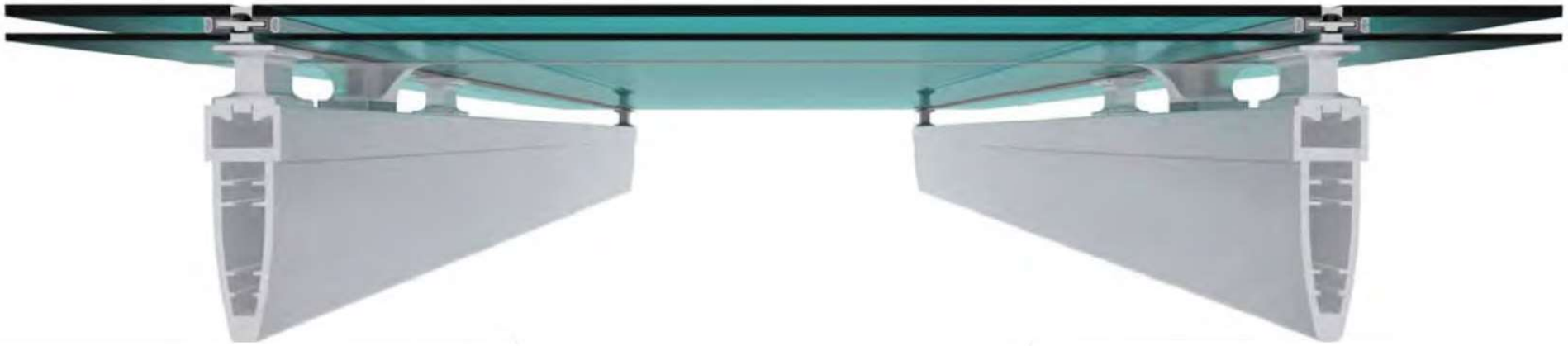
VS1

VS1

A new kit of parts developed in direct response to modern architectural requirements.

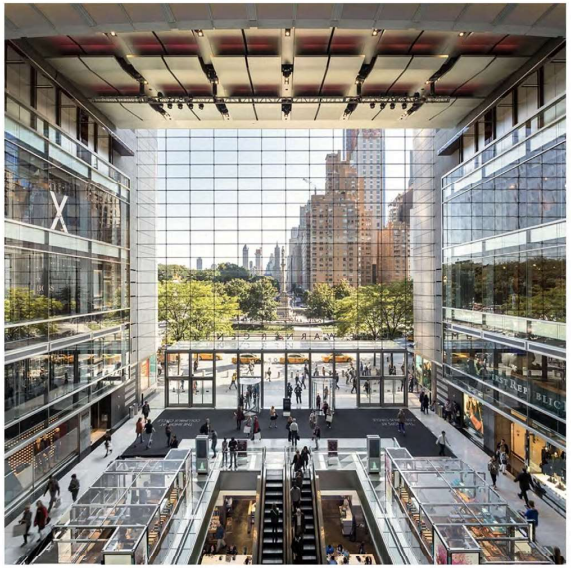


VS1



BACKSTORY (technical foundation)

Eskind Library at Vanderbilt University: First tension-truss glass enclosure in U.S. after completion of the Louvre Pyramid, 1991.



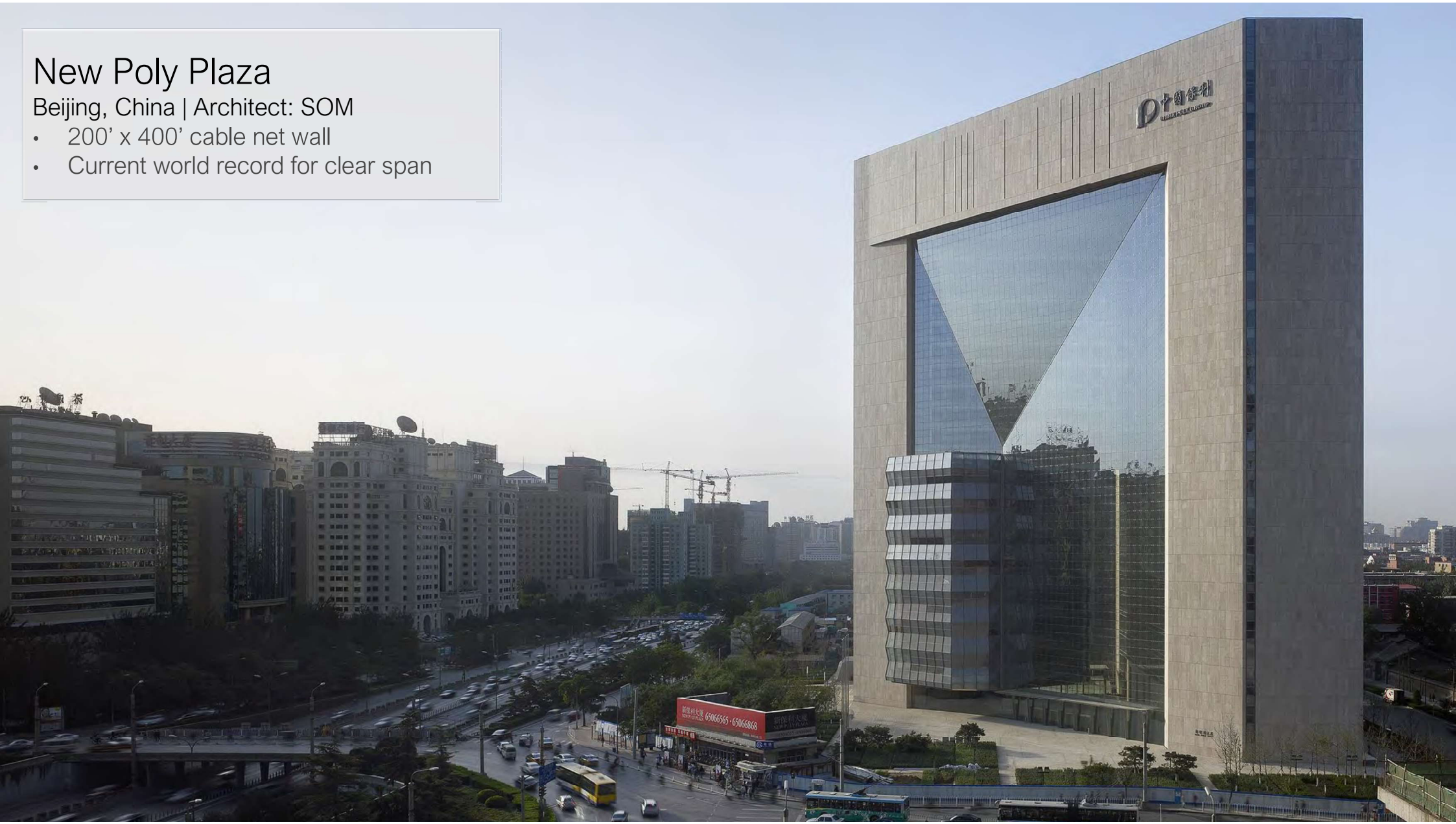
Time Warner Center, New York City. World-record cable net span at the time of construction in 2001.

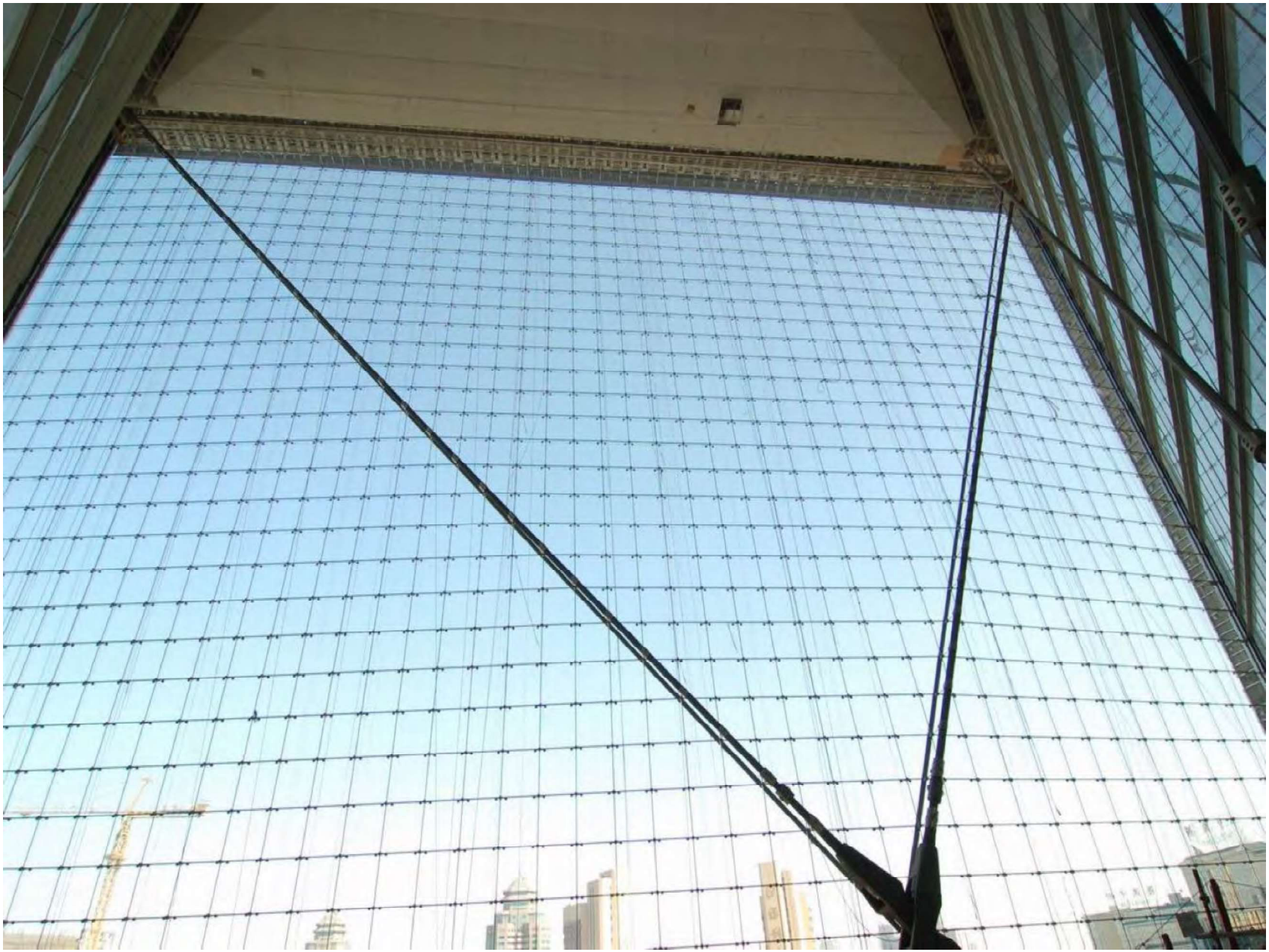
TKTS Booth, New York City. First all-structural glass enclosure for operational use in the world.

New Poly Plaza

Beijing, China | Architect: SOM

- 200’ x 400’ cable net wall
- Current world record for clear span





New Poly Plaza

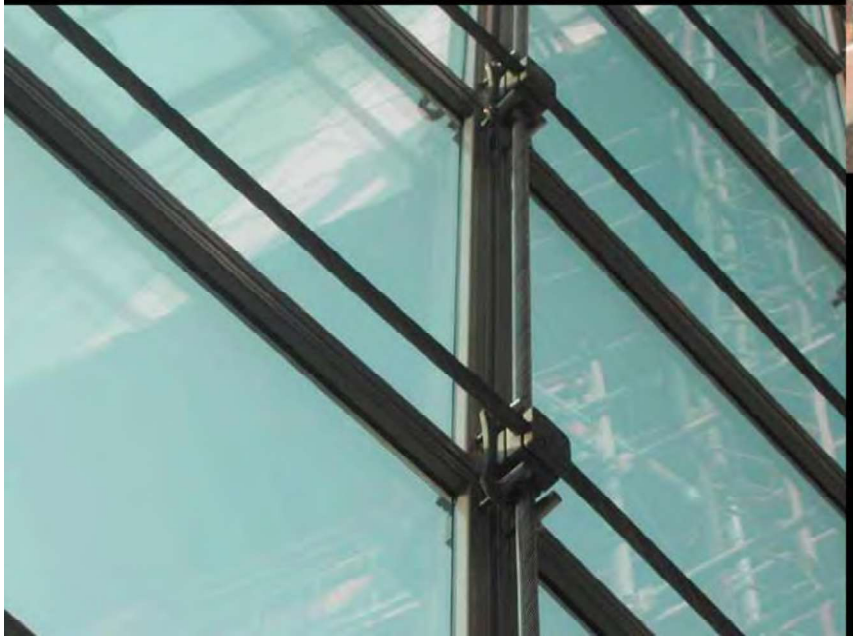

U.S.
SECURITIES
AND
EXCHANGE
COMMISSION
U.S.
SECURITIES
AND
EXCHANGE
COMMISSION


Net structure was
delivered on giant
spool

Pre-assembled net structures are unfurrled from spool and hung into place.

Nets are pre-stressed to attain final hypar shapes.

panelized, bomb blast resistant glazing system



node assembly

connection strategy had to accommodate the variation of the hyperbolic surface geometry

SERVICES PROVIDED

VS1 Provides:

1. Pre-bid technical support
2. Design-assist services
3. Engineering and CAD drawings
4. Fabrication
5. World-wide support

VS1 Partners:

Hansen Group – European glazing partner

Saint Gobain - glass fabrication

Press Glass - glass fabrication

Dow Silicones Corporation - main sealant supplier. Offers 20-year VIP warranty (labor & material)

Tremco - gasket supplier

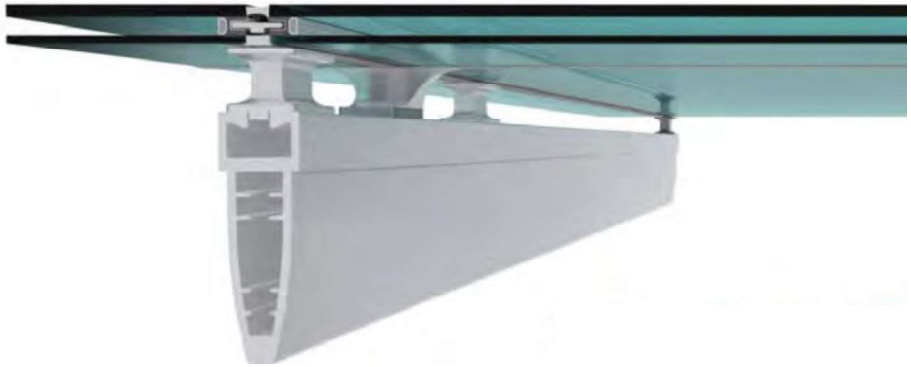
Keymark Corporation - aluminum extruder for standard VS1 mullions - U.S.

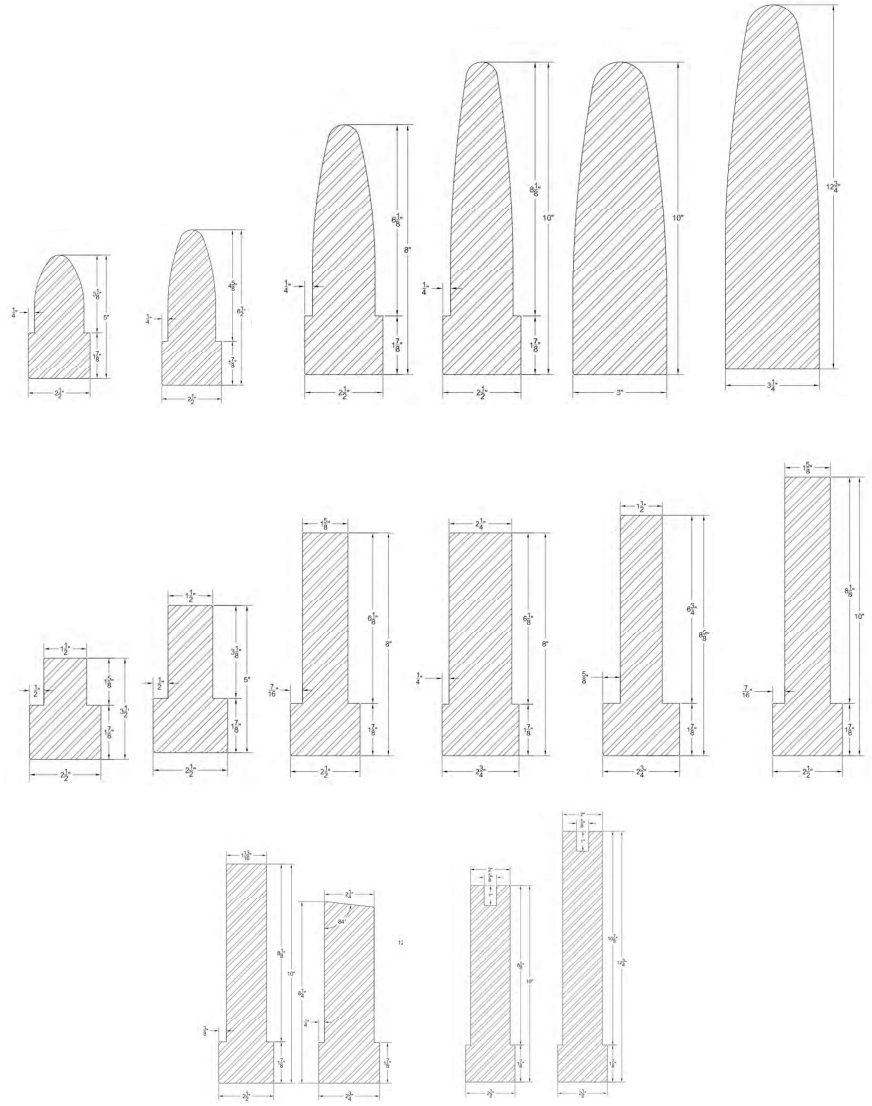
Hydro - aluminum extruder for heavy VS1 mullions - Belgium

Metra - aluminum extruder for heavy VS1 mullions - Italy

FEATURES AND BENEFITS

END OF THE BOX SECTION

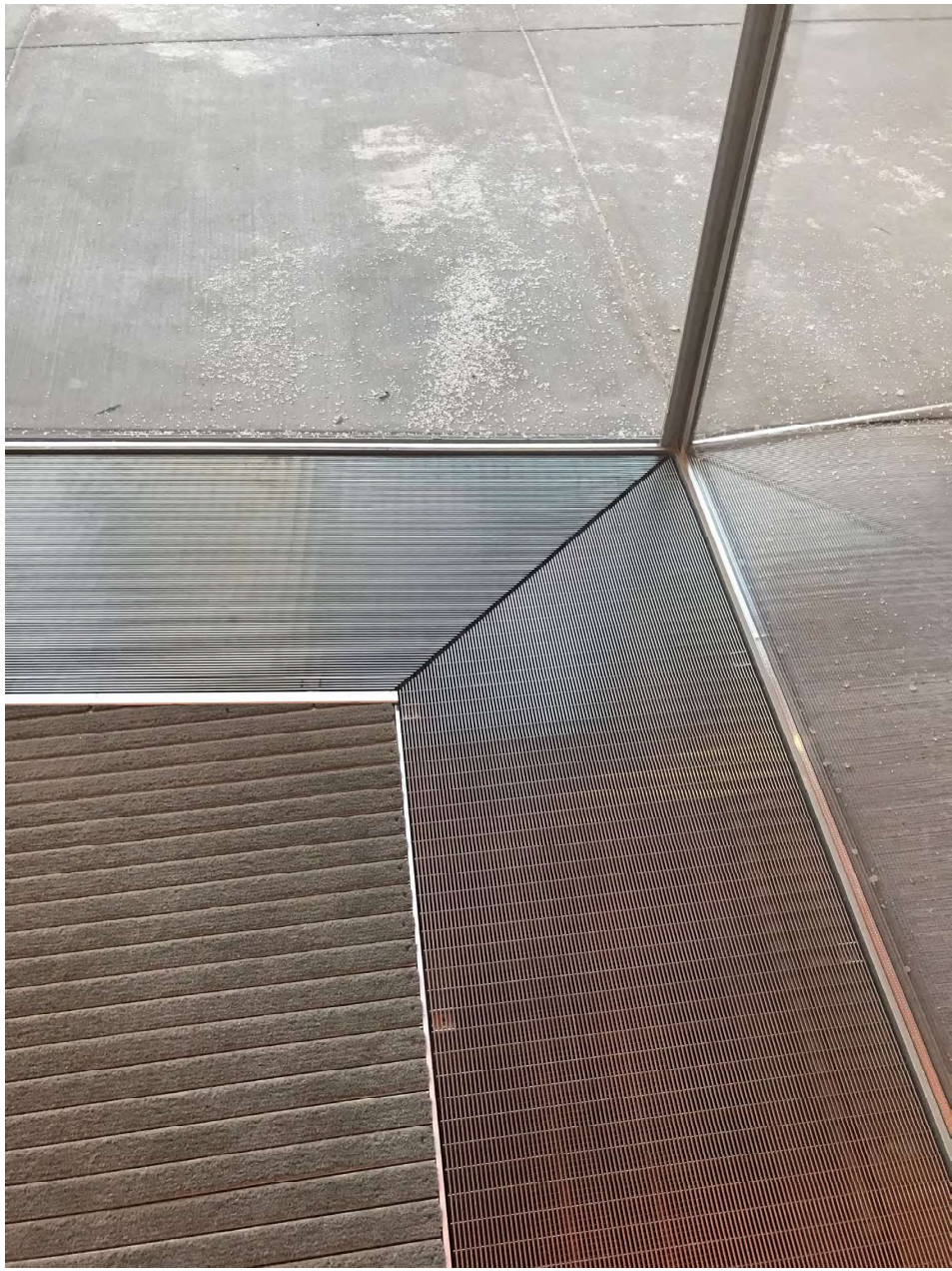


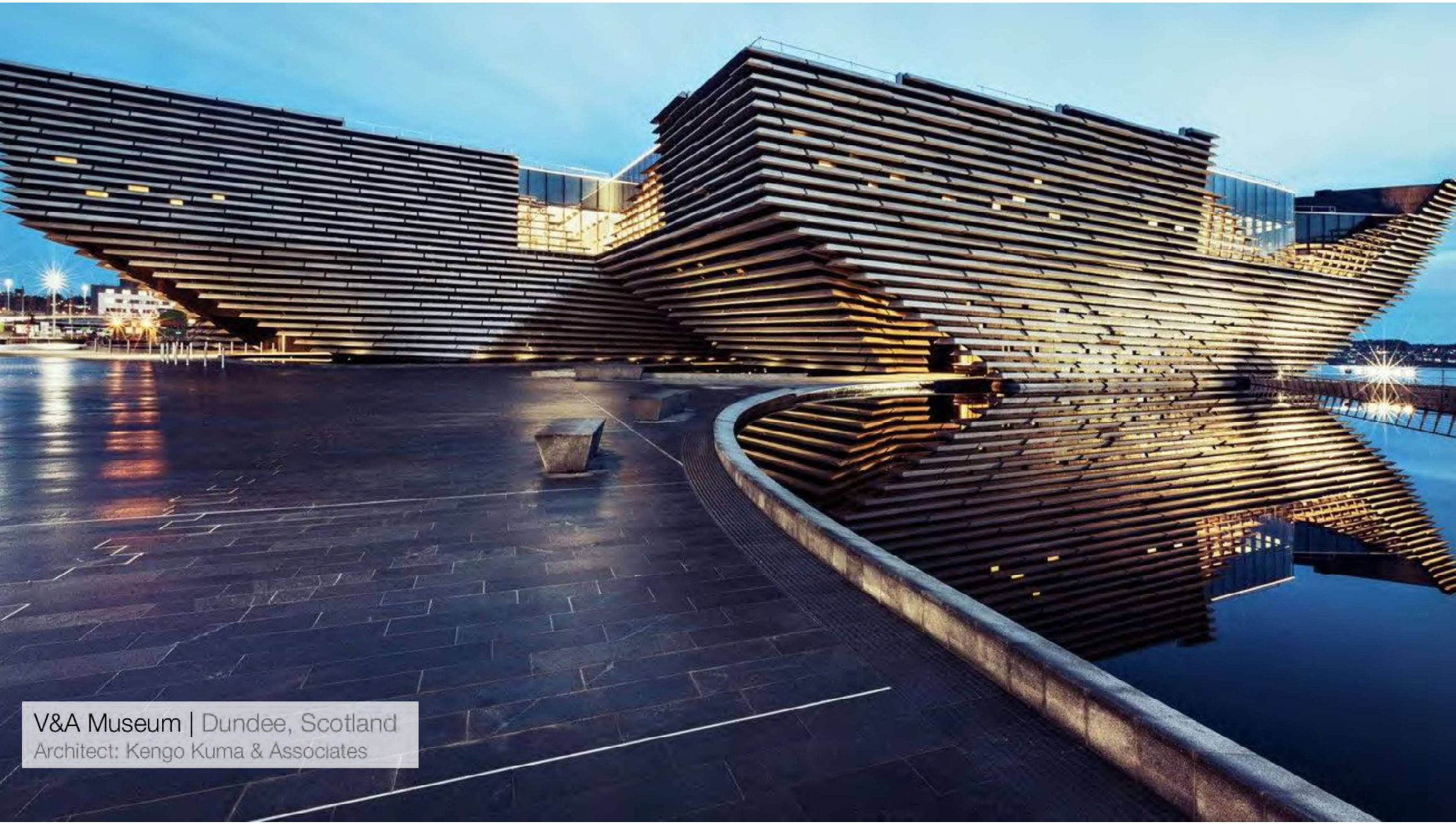


Mullion Shape Flexibility

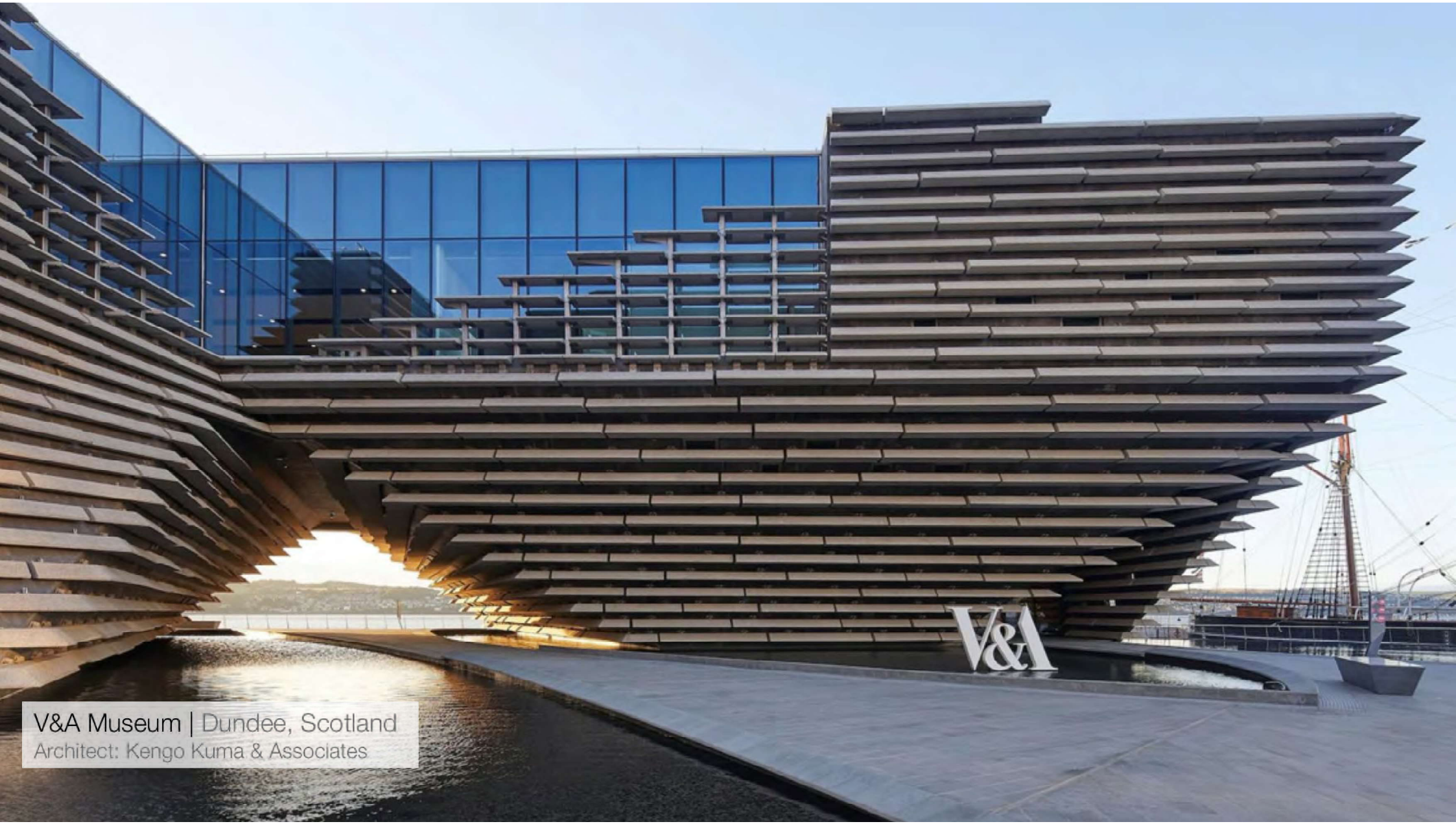
ELIMINATION OF HORIZONTALS

Shirley Ryan Ability Lab
Architect: Gensler





V&A Museum | Dundee, Scotland
Architect: Kengo Kuma & Associates



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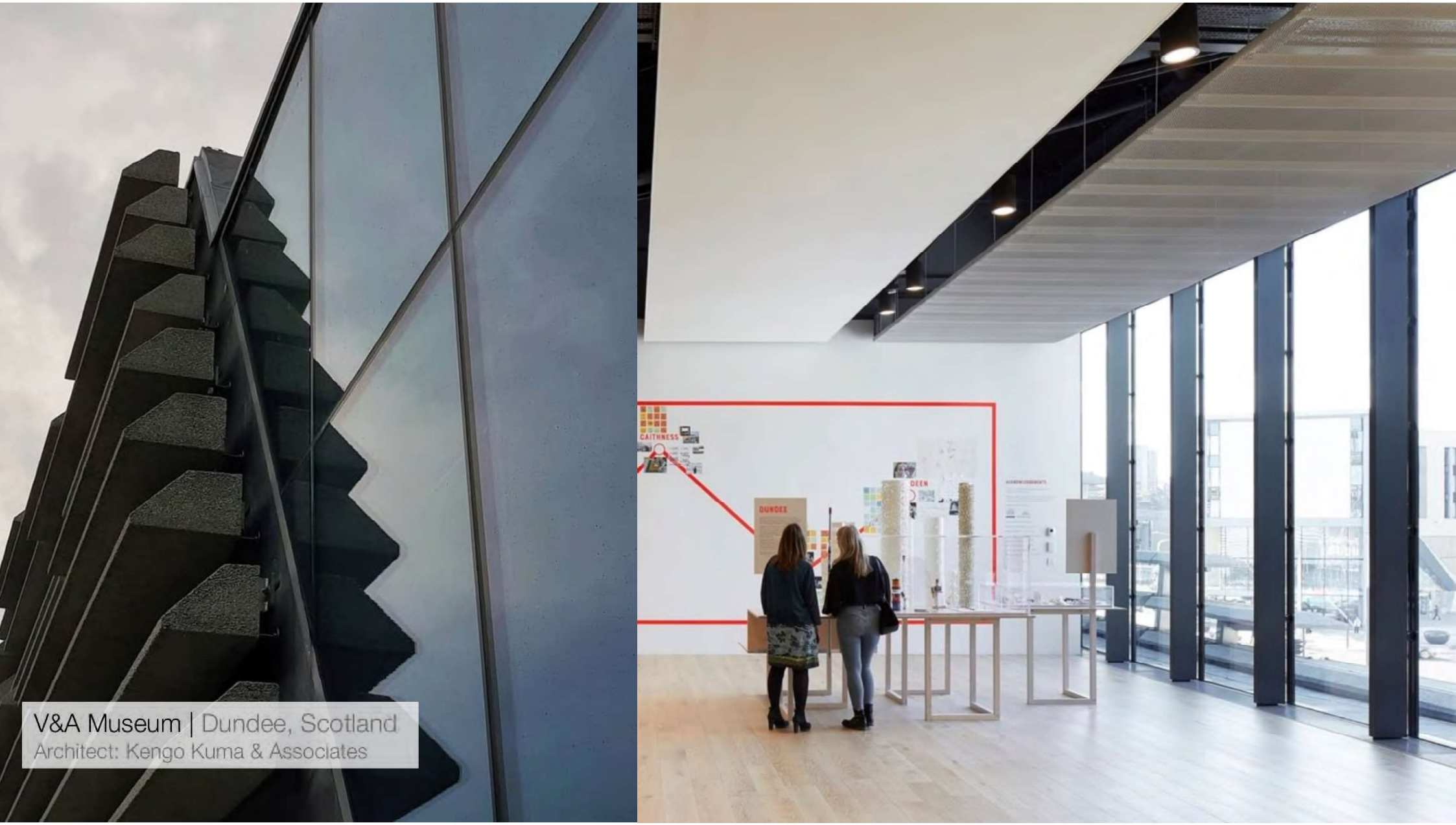
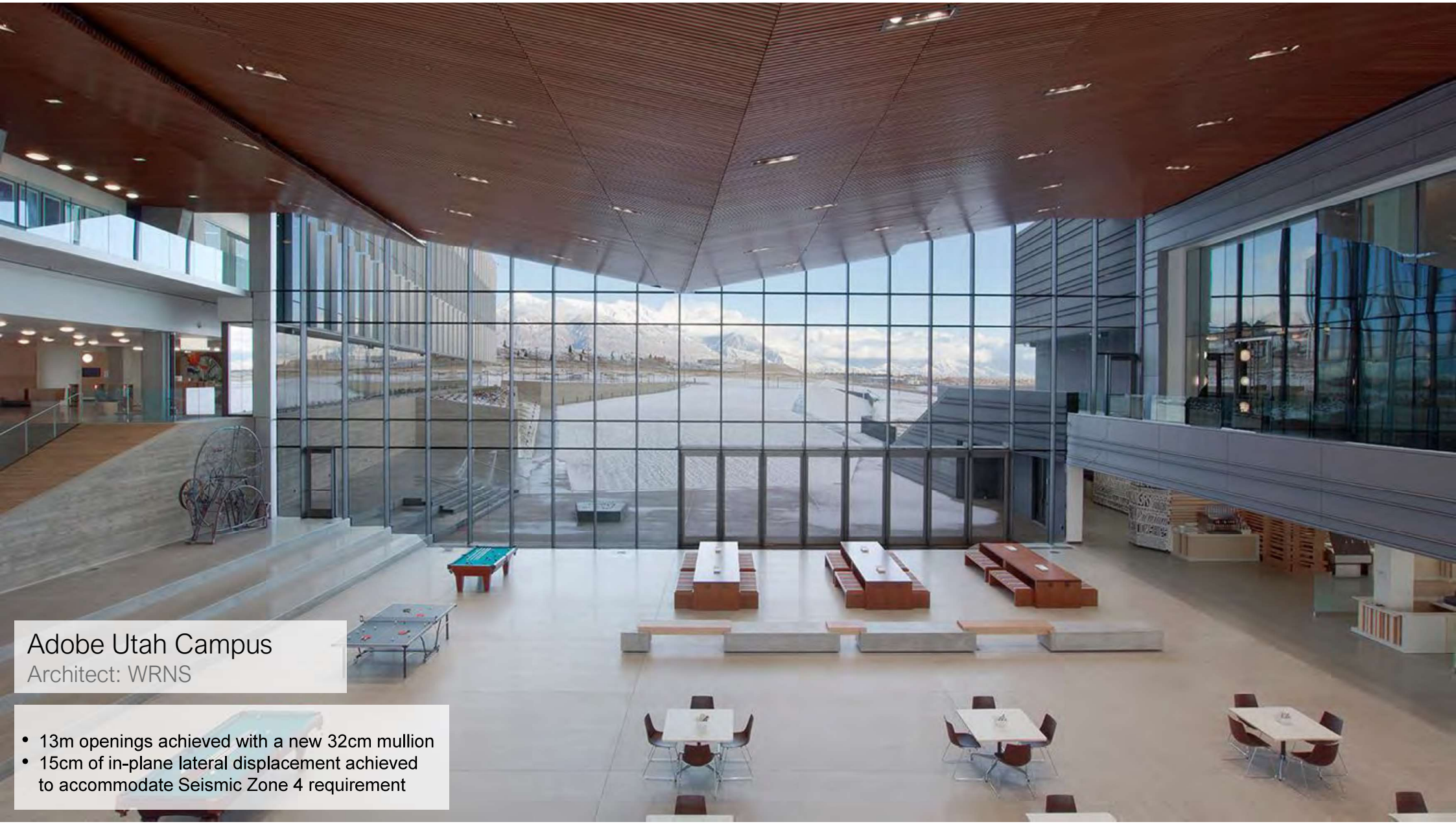


V&A Museum | Dundee, Scotland
Architect: Kengo Kuma & Associates

LONG SPANS
UP TO 60’ CLEAR



Adobe Utah Campus

Architect: WRNS

- 13m openings achieved with a new 32cm mullion
- 15cm of in-plane lateral displacement achieved to accommodate Seismic Zone 4 requirement


The Hiscox Building | York, England


The Hiscox Building | York, England

The Hiscox Building | York, England

The Hiscox Building | York, England

Advocate Good Sheperd Hospital

Architect: HOK

Advocate Good Sheperd Hospital
Architect: HOK

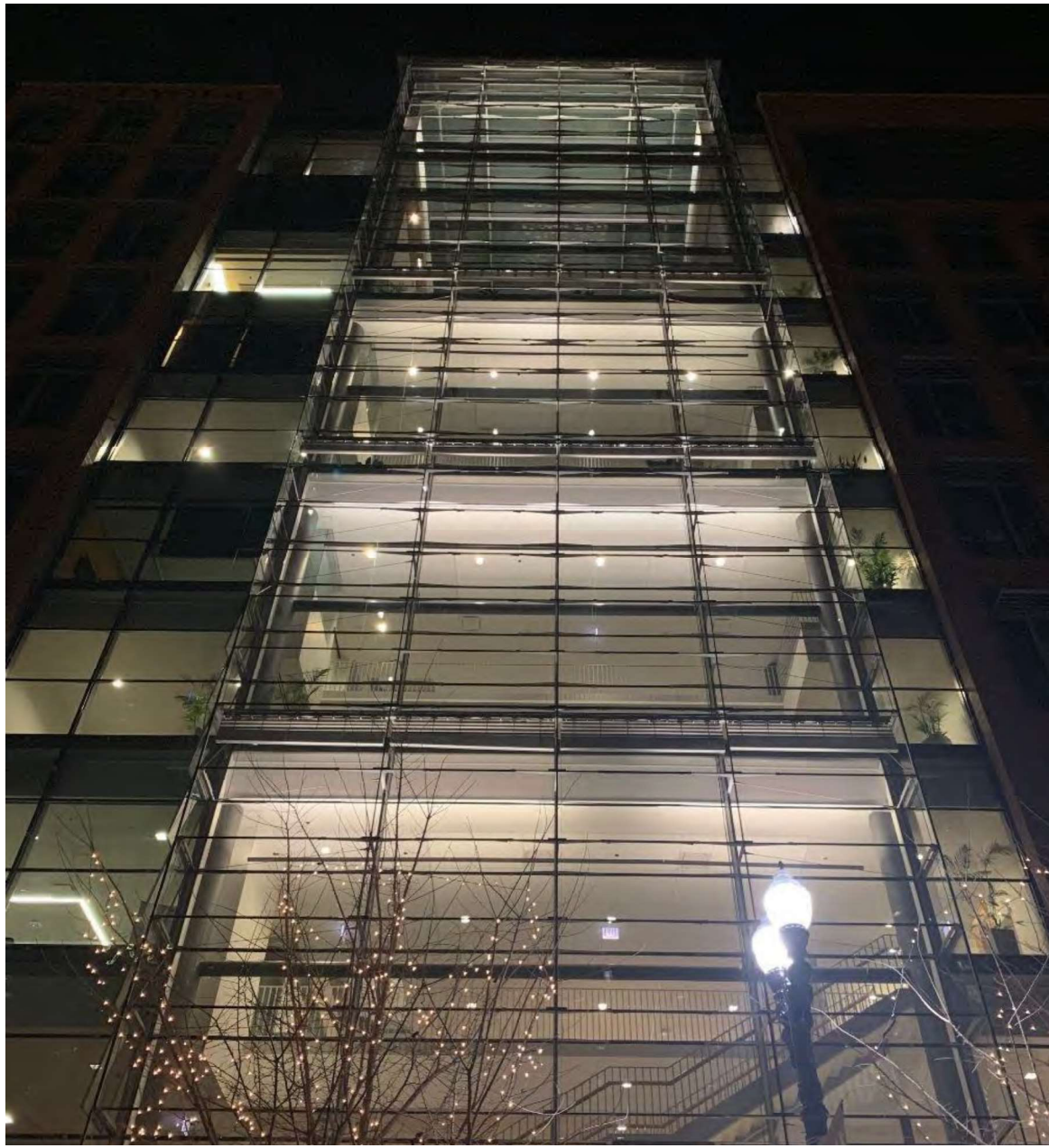
Advocate Good Sheperd Hospital

Architect: HOK

JUMBO GLASS SIZES

Statue of Liberty Museum
Architect: FXCOLLABORATIVE

HIGH TRANSPARENCY

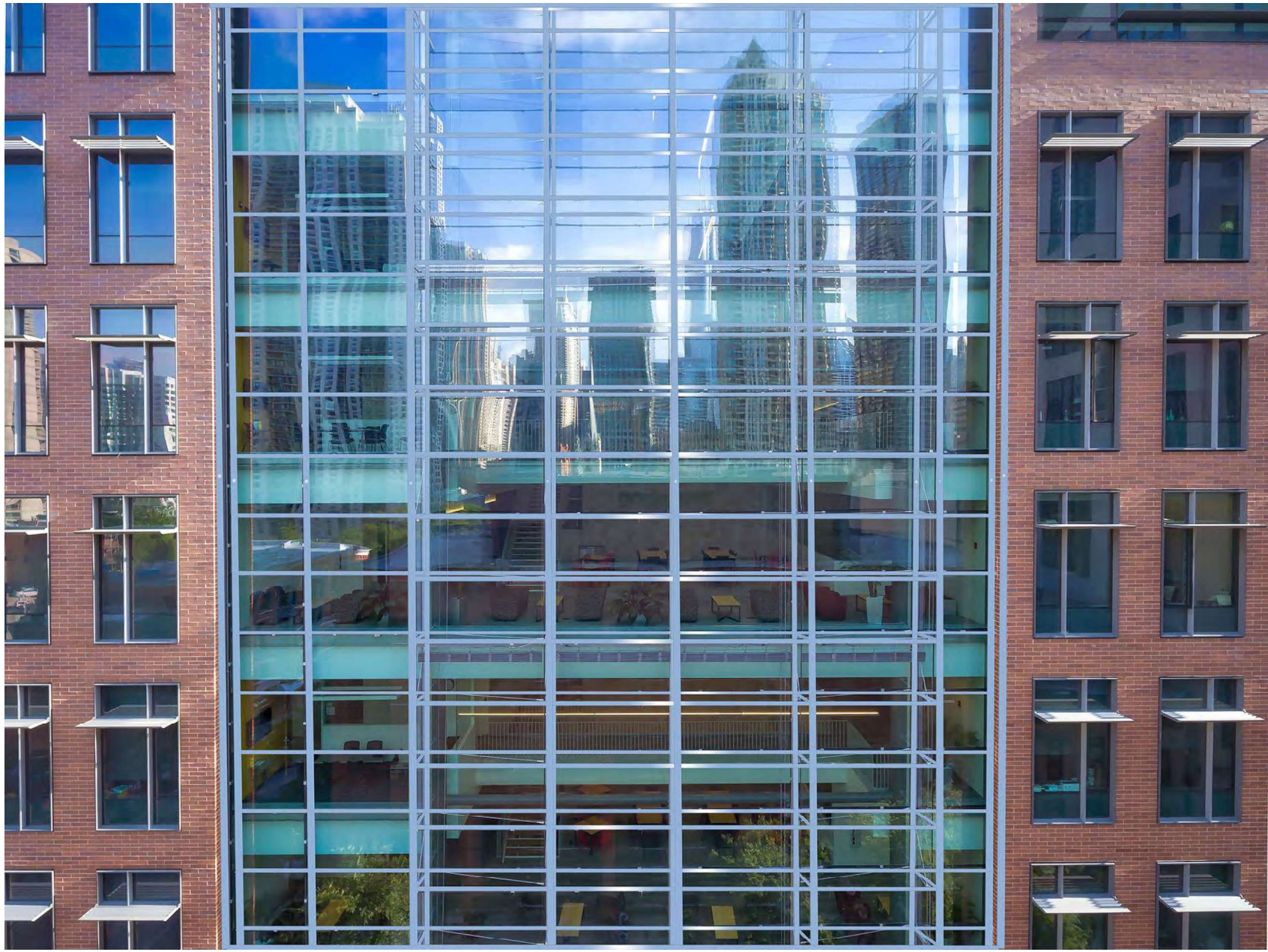


Schreiber Center at Loyola University Chicago

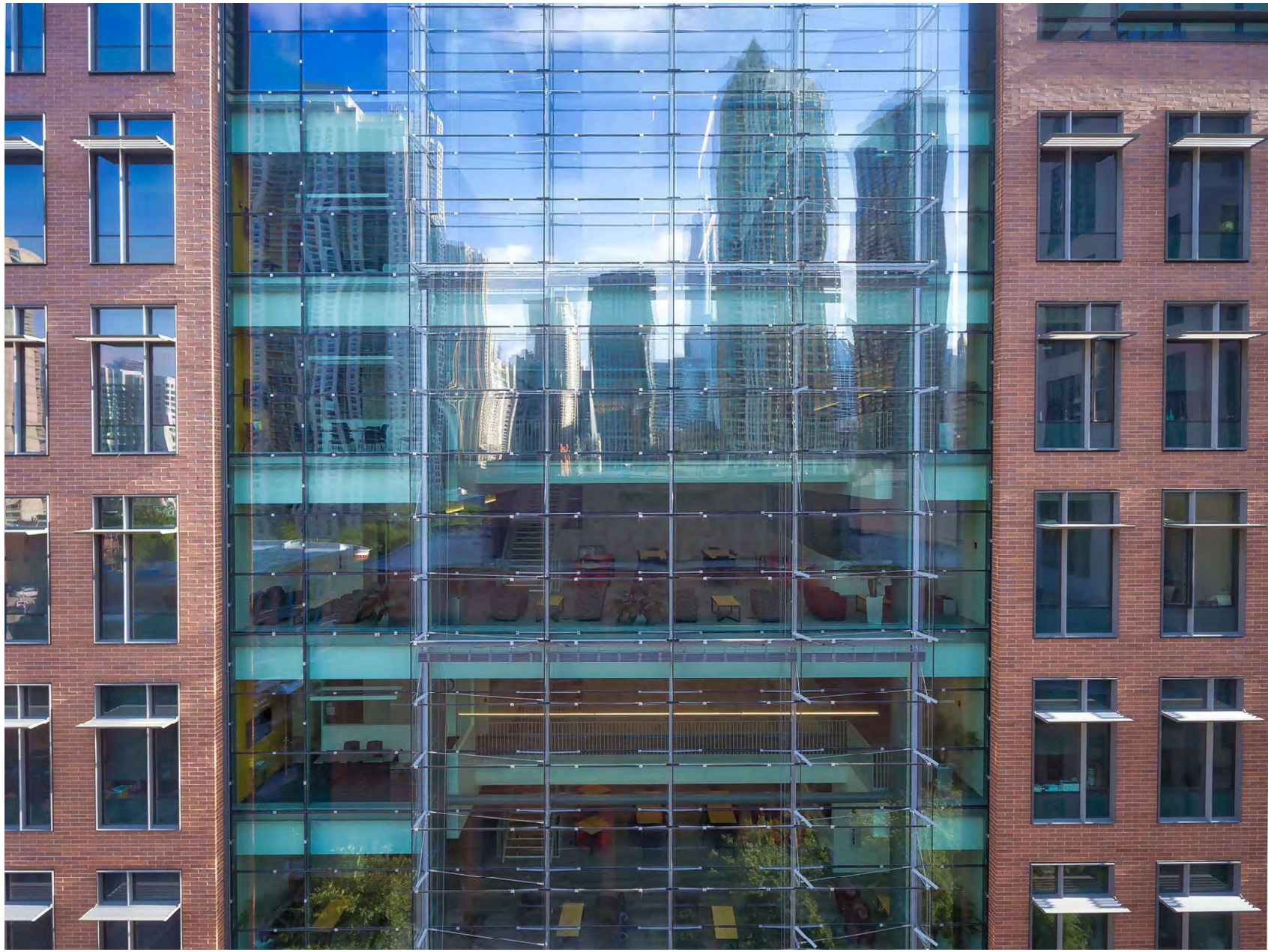
Architect: SCB

- 10-story dual glass wall envelope
- No horizontals, 3m mullion spacing
- High transparency achieved with tapered horizontal armatures bolted

CONVENTIONAL



VS1



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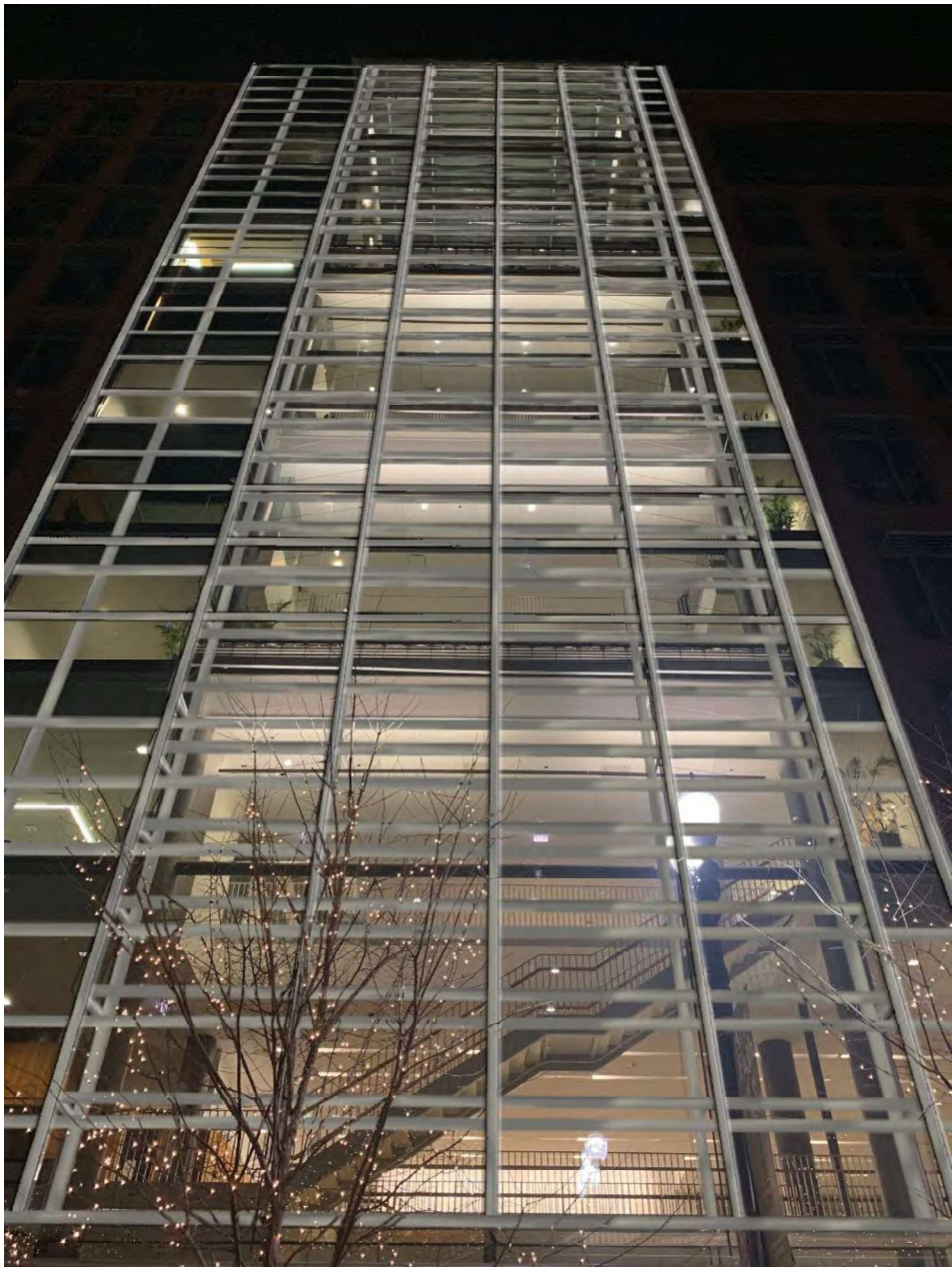

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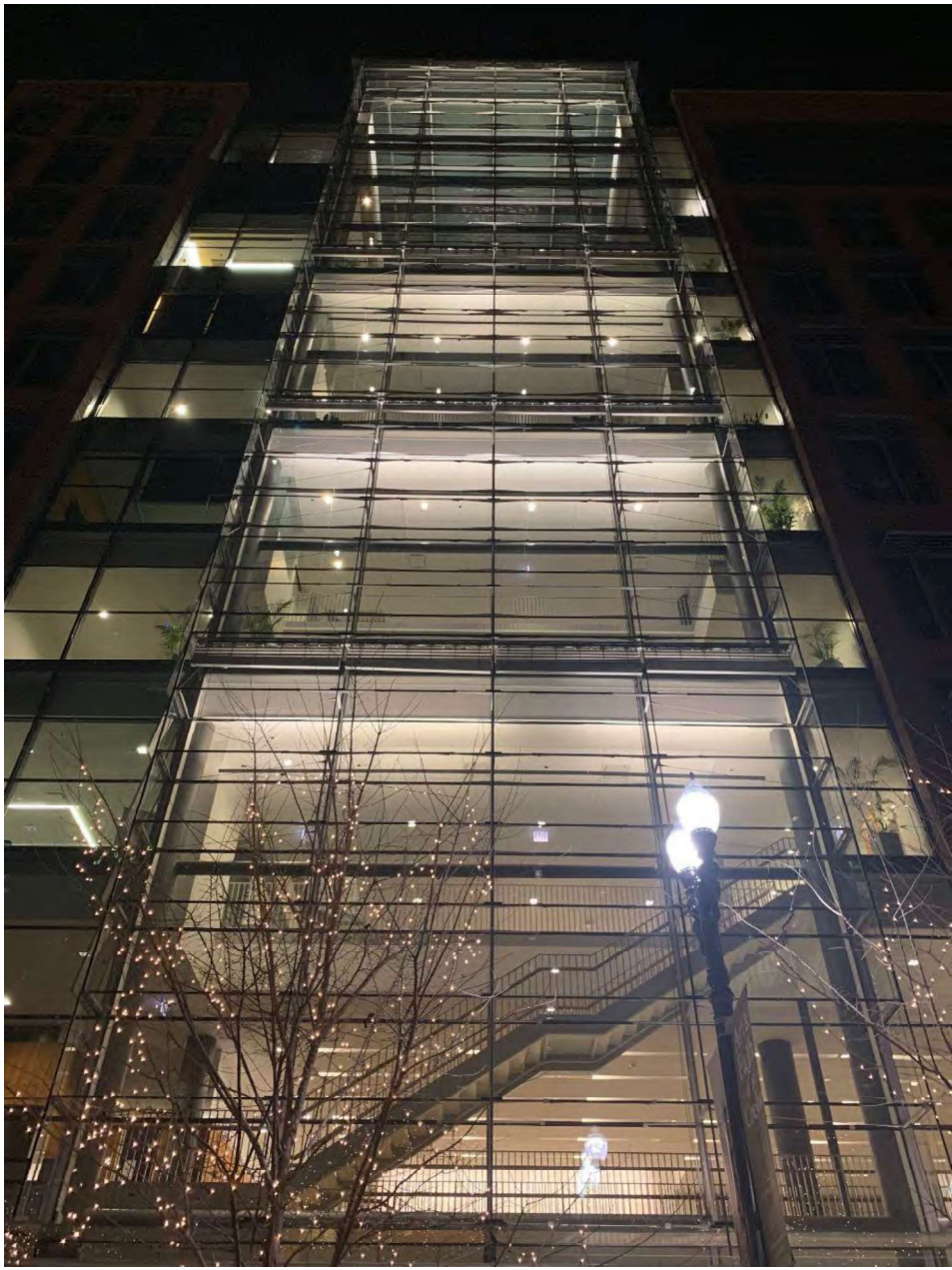
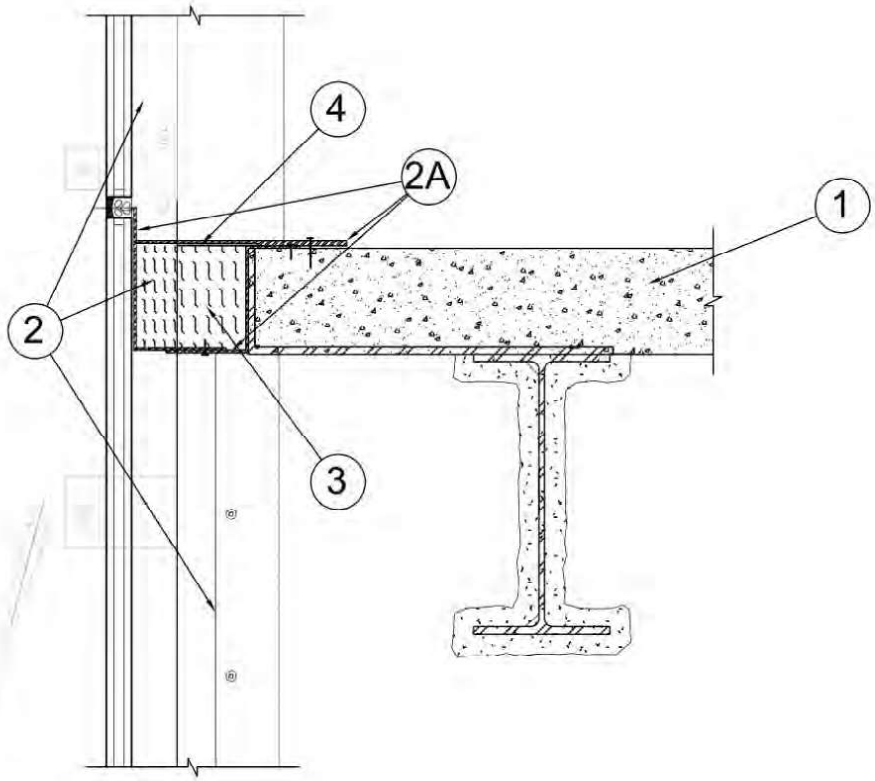


MULTI-STORY

***Rated Firestop System Using SpecSeal® Firestop Products**



1. **Floor Assembly (2 Hr)** — Min 5" thick concrete.

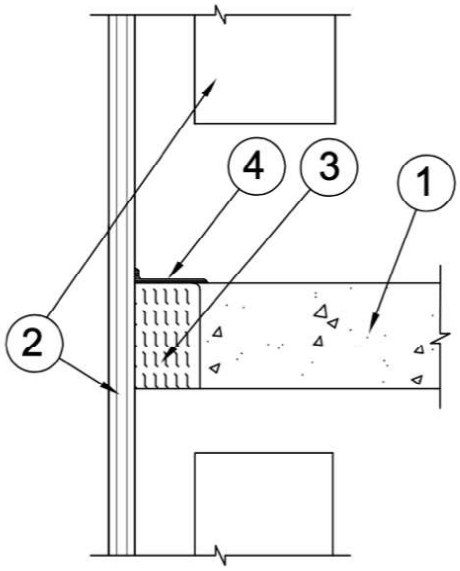
2. **Exterior Wall Assembly** — Aluminum and glass curtain wall built per others design incorporating min 11" high steel enclosure, vertical mullions located above and below floor assembly and no horizontal transoms. Min 2" thick (8 pcf) curtain wall insulation tightly fitted into steel enclosure. Linear gap width between floor and curtain wall is a max 5". Steel flat, "L" and "Z" plates (Item 2A) fabricated from min No.20 gauge galv steel installed above and below safing system (Items 3 & 4) and attached to floor assembly covering gap.

3. **Forming Material** — Min 4 pcf mineral wool batt insulation cut to a min width of 4" and stacked to attain a thickness 25% greater than gap width. Mineral wool compressed 20% and installed into gap, flush with top surface of floor.

4. **Spray** — SpecSeal® AS200 Elastomeric Spray or SpecSeal® Fast Tack™ Firestop Spray applied over forming material to a min 1/8" wet thickness, overlapping surrounding substrates by min 1/2".

*Note: Rating of the firestop system is dependent on the performance of the surrounding substrates under fire exposure with a max possible F rating of 2 Hr.

***Rated Firestop System Using SpecSeal® Firestop Products**



Section View

1. **Floor Assembly (2 Hr)** — Min 4-1/2" thick concrete floor. Concrete beam may be located at edge of floor.

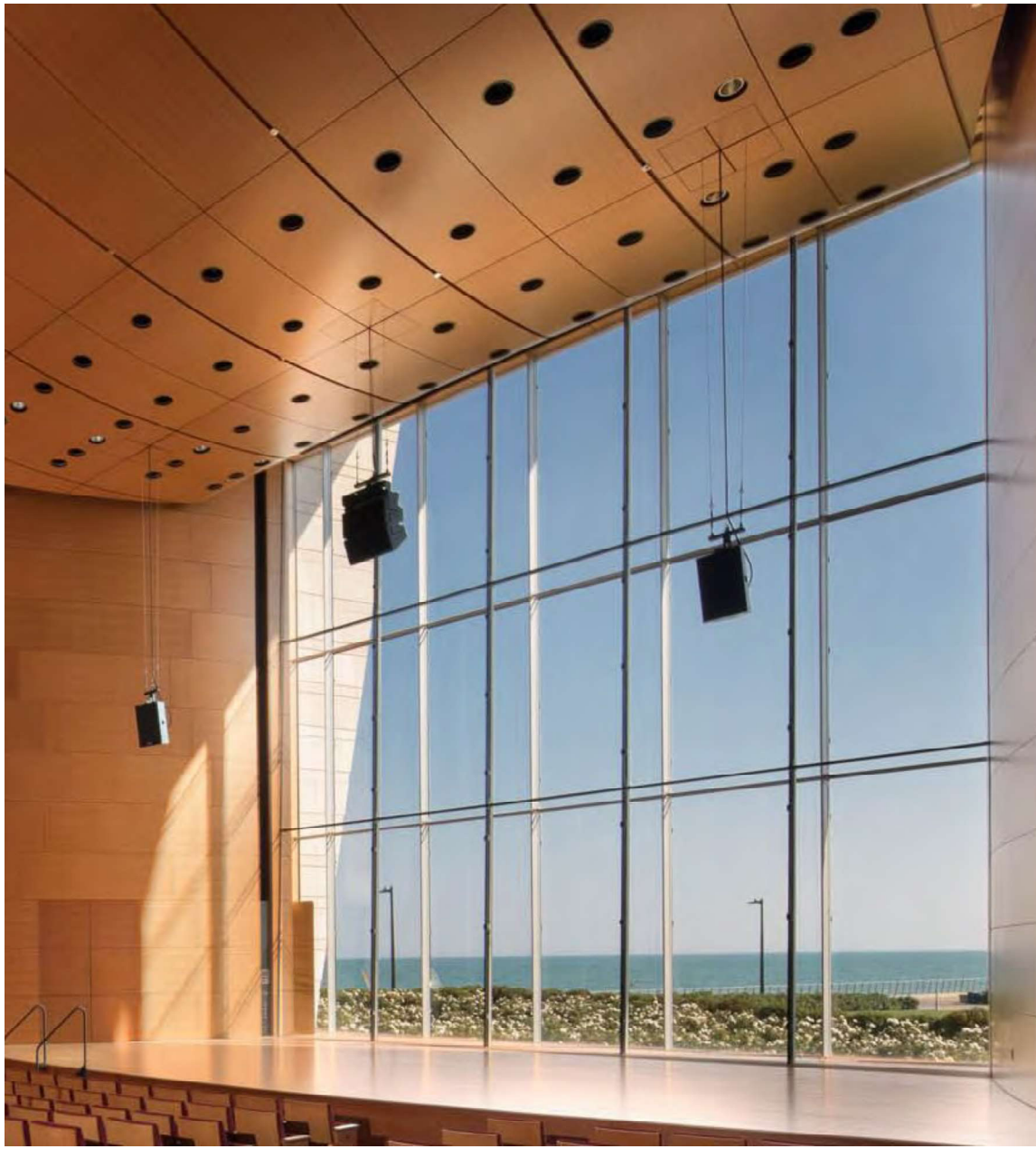
2. **Exterior Wall Assembly** — Aluminum and glass curtain wall. Linear gap width between floor and curtain wall is a max 4".

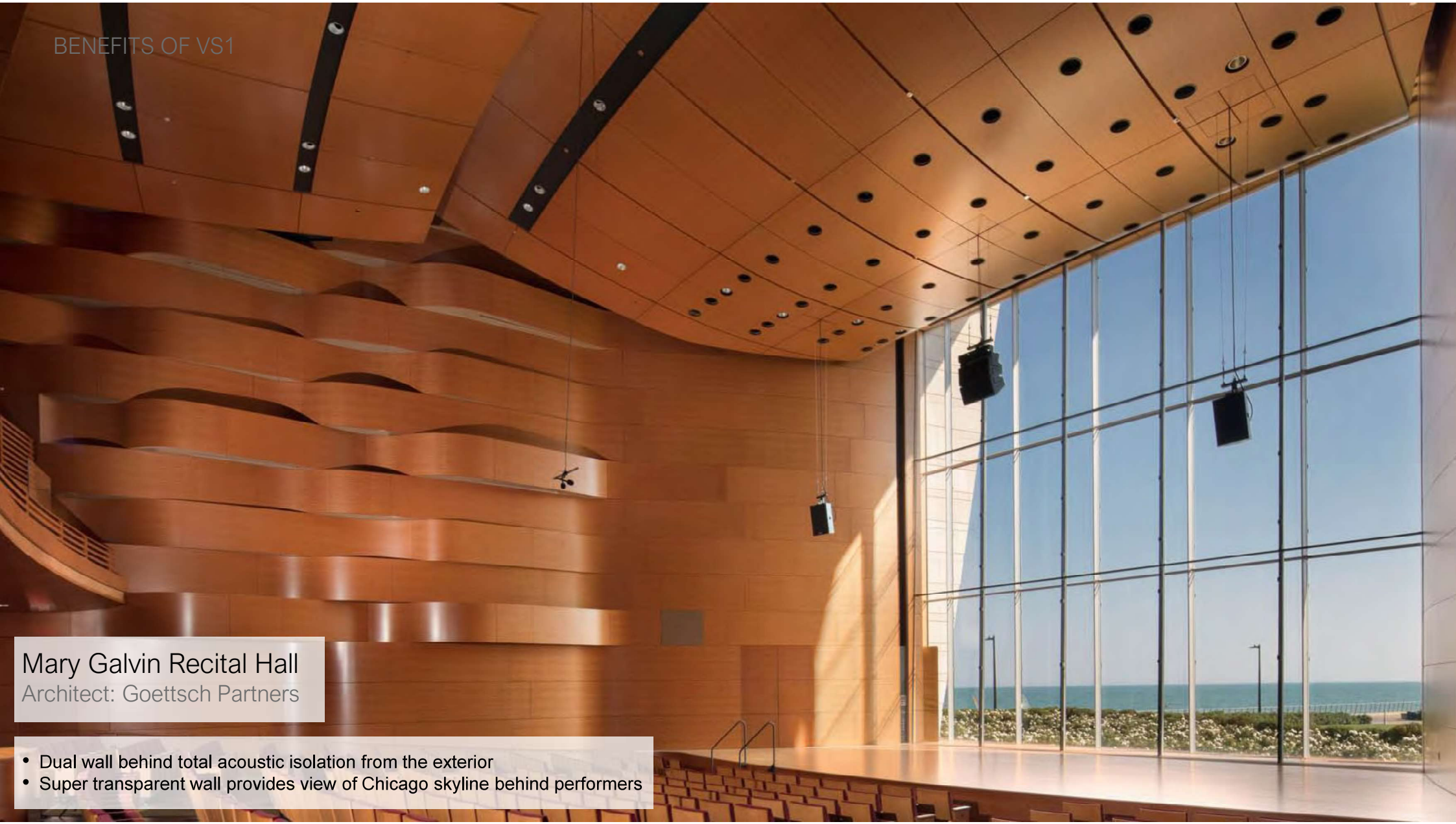
3. **Forming Material** — Min 4 pcf mineral wool batt insulation, cut to a min width of 4" and stacked to attain a thickness 25% greater than width of linear opening. Mineral wool compressed 20% in thickness and installed into linear opening flush with top surface of floor.

4. **Spray** — SpecSeal® AS200 Elastomeric Spray applied over mineral wool to a min 1/8" wet thickness, lapping surrounding substrates a min 1/2".

***Note:** Rating of the firestop system is dependent on the performance of the surrounding construction under fire exposure with a max possible F rating of 2 Hr. STI does not recommend installing firestop materials in direct contact with exterior elements of curtain wall without first consulting the project architect or engineer to determine suitability of this design.

CAVITY WALLS

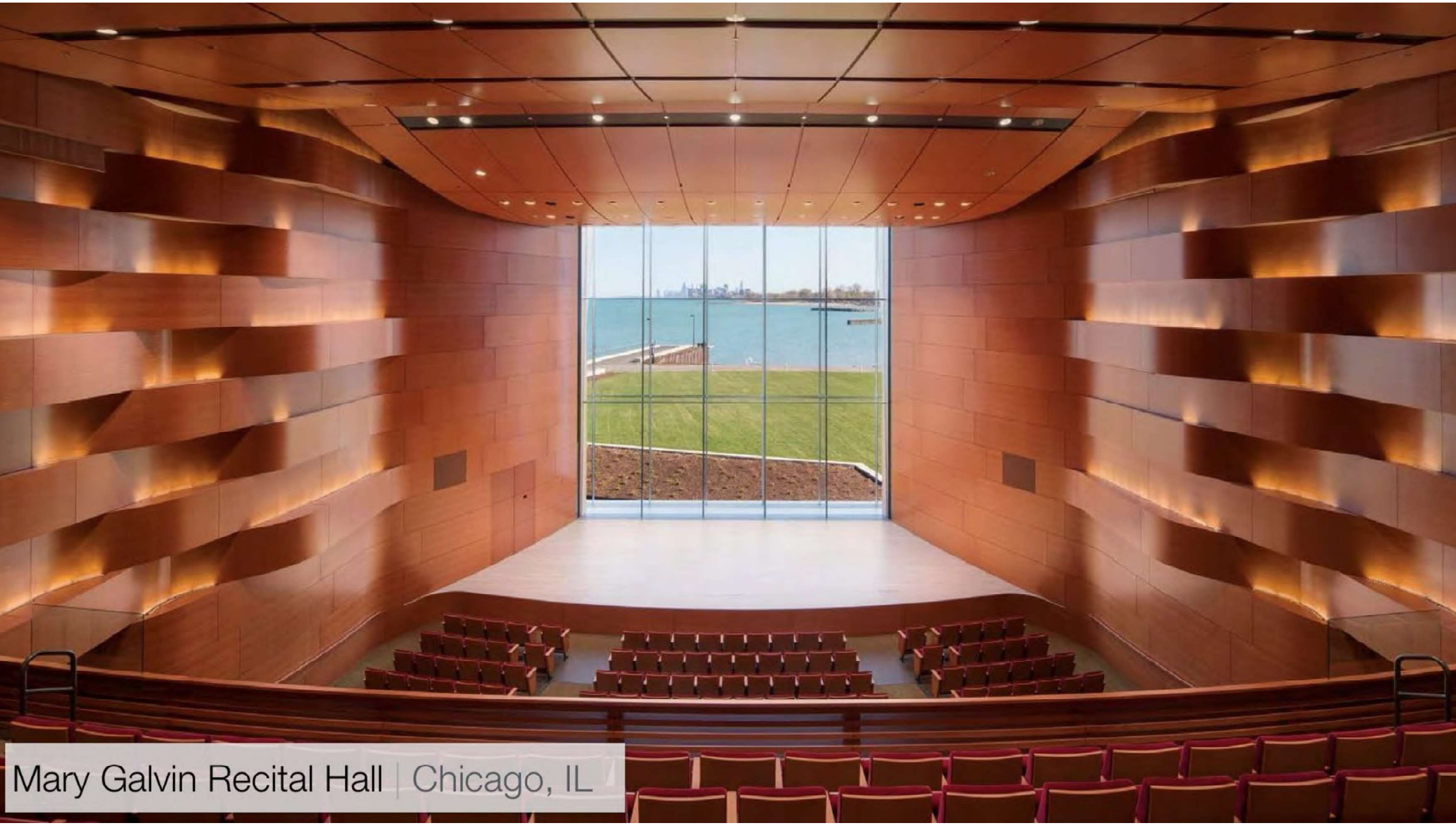




Mary Galvin Recital Hall

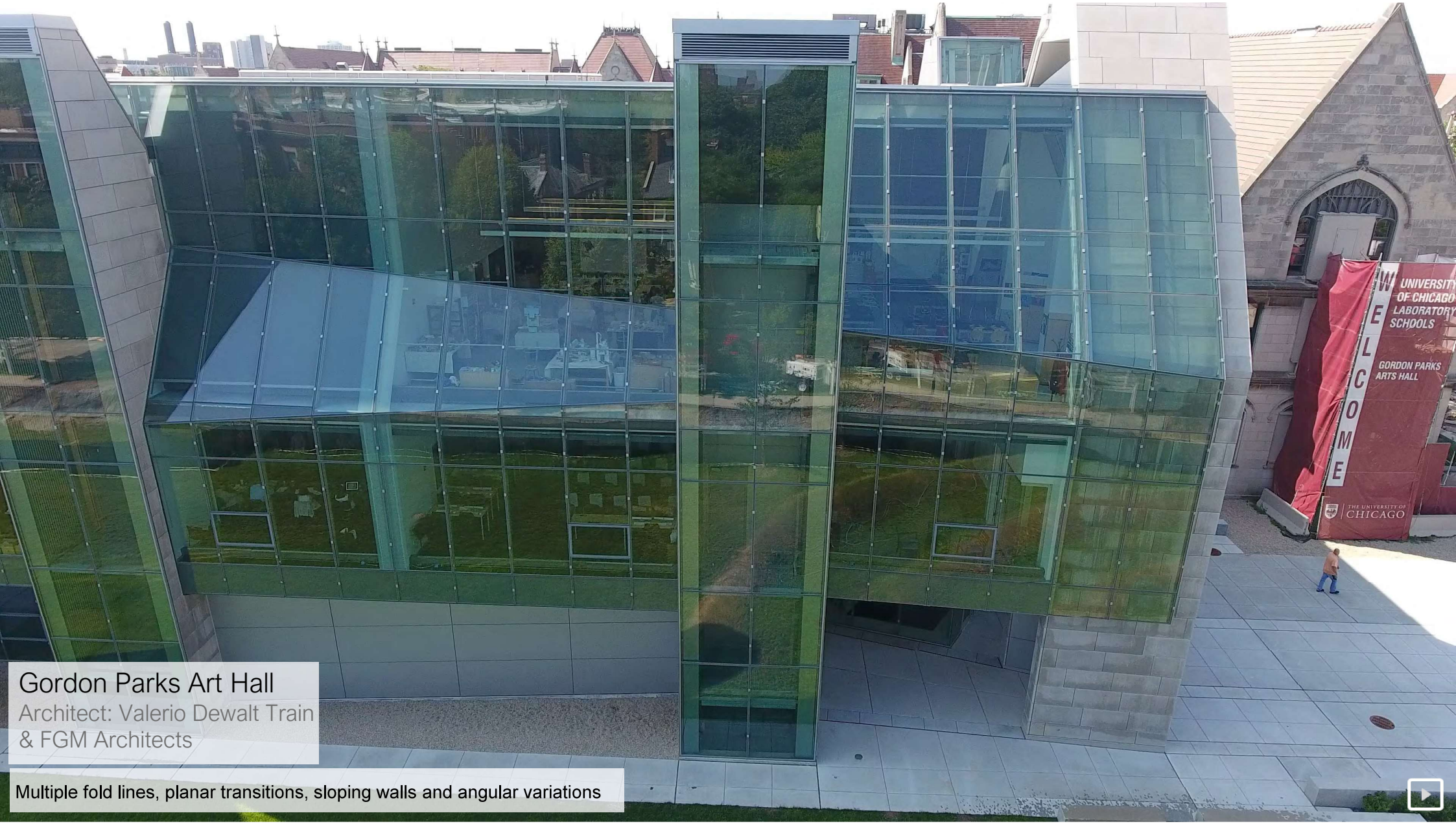
Architect: Goettsch Partners

- Dual wall behind total acoustic isolation from the exterior
- Super transparent wall provides view of Chicago skyline behind performers



Mary Galvin Recital Hall | Chicago, IL

COMPLEX GEOMETRIES



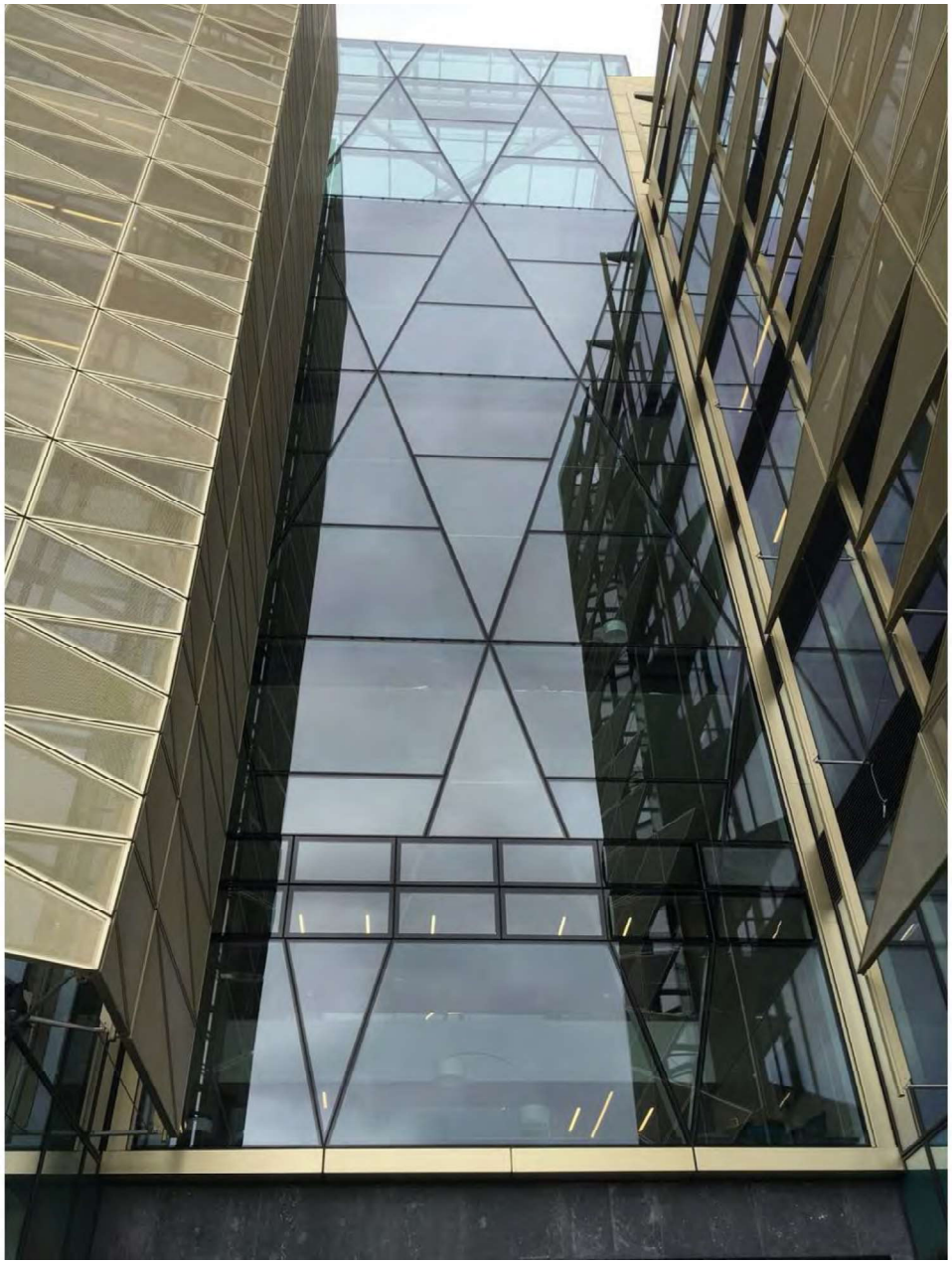
Gordon Parks Art Hall

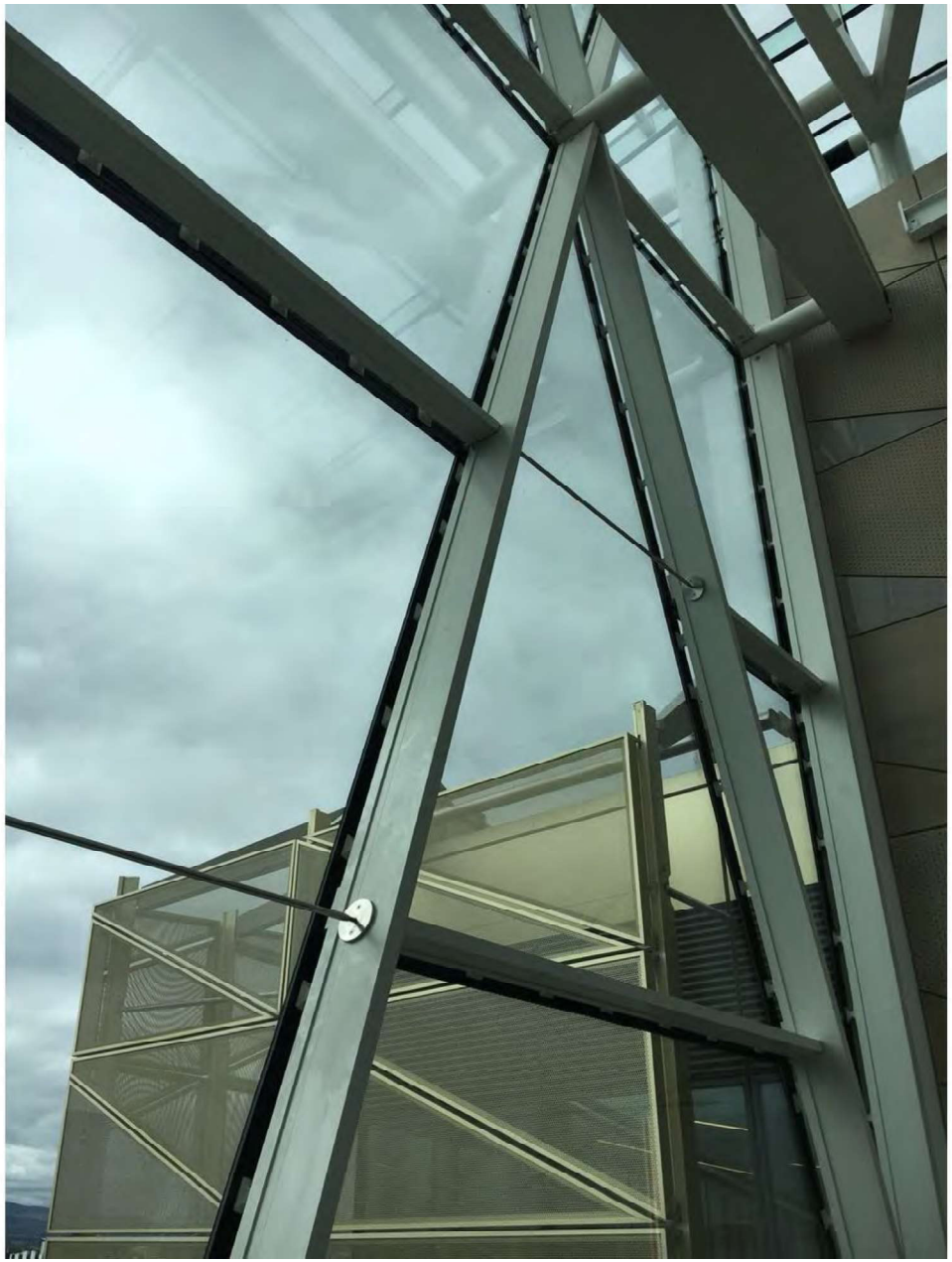
Architect: Valerio Dewalt Train & FGM Architects

Multiple fold lines, planar transitions, sloping walls and angular variations

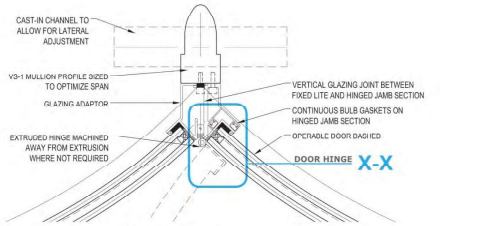
Gordon Parks Arts Hall at University of Chicago Lab School | Chicago, IL

Central Bank of Ireland | Dublin, Ireland
Architect: Henry J Lyons



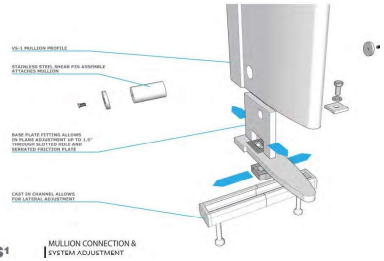


CURVED GLASS

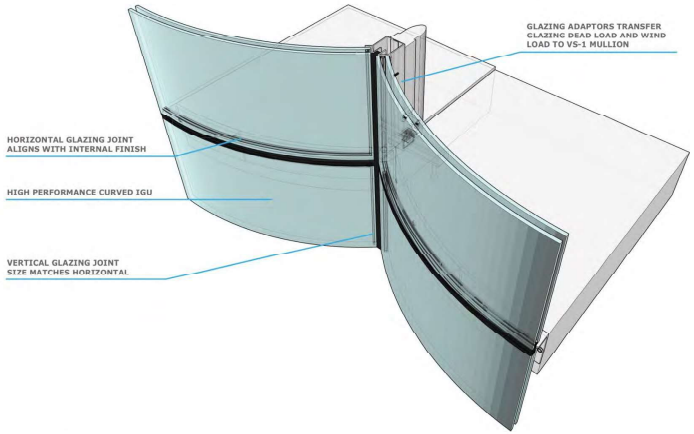


3 ZERO SIGHTLINE DOOR JAMB

X-X HINGE INTEGRATED INTO JAMB PROFILE

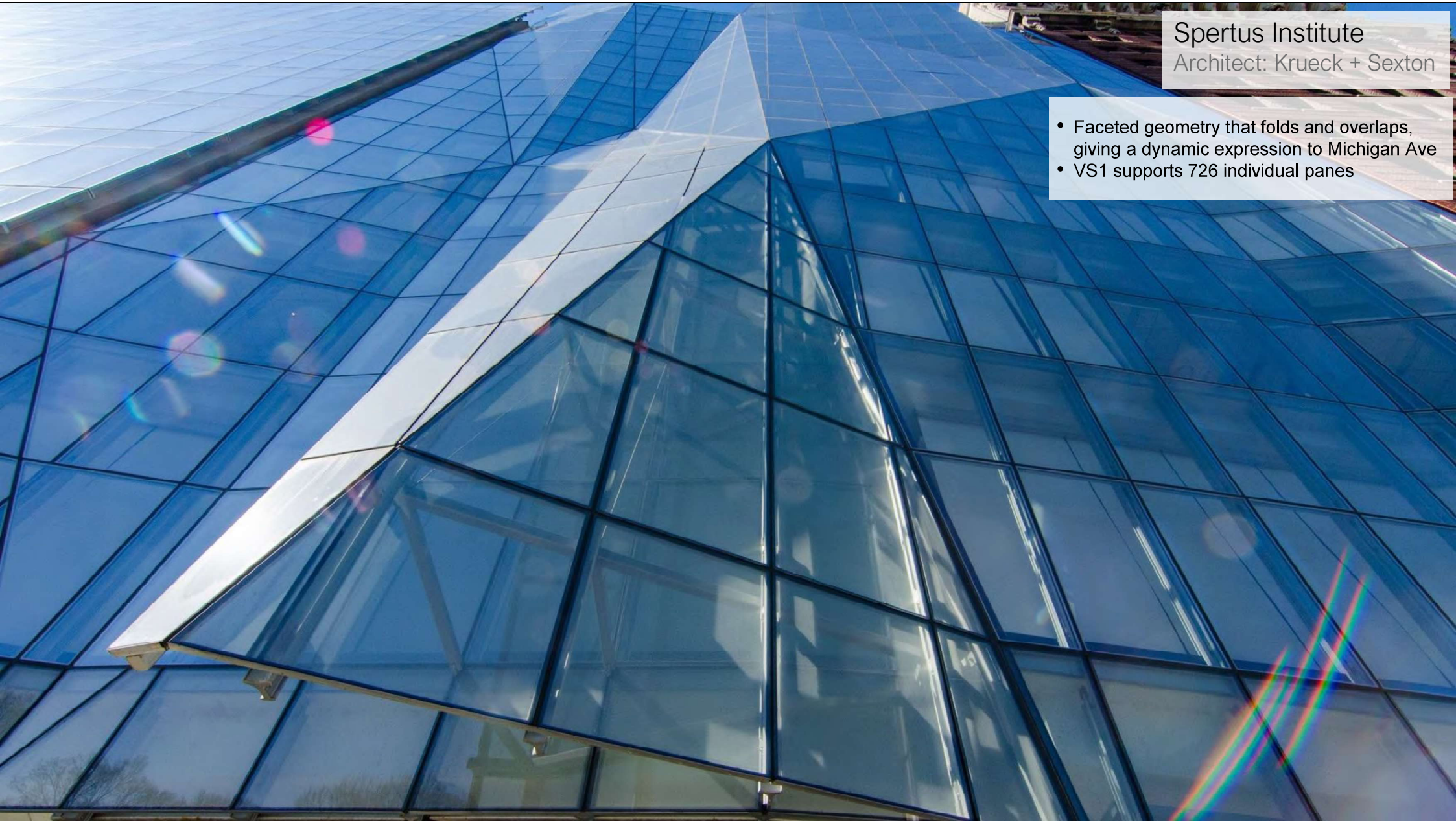


VS1 | MULLION CONNECTION & SYSTEM ADJUSTMENT



VS1 | SLAB EDGE EXTERIOR VIEW

FACETED FACADES



Spertus Institute

Architect: Krueck + Sexton

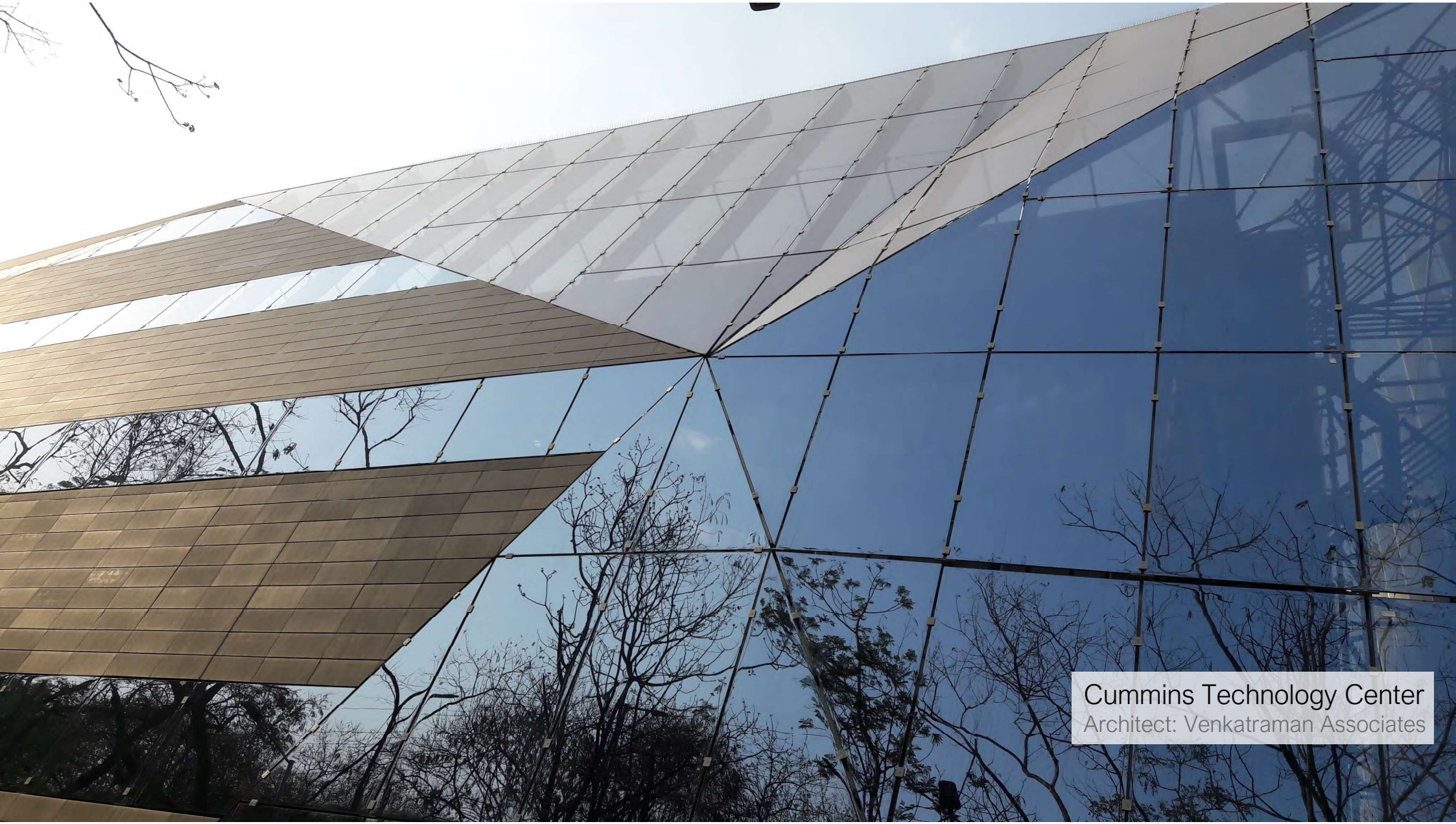
- Faceted geometry that folds and overlaps, giving a dynamic expression to Michigan Ave
- VS1 supports 726 individual panes




Cummins Technology Center

Architect: Venkatraman Associates

- World's largest faceted wall: 11,150 sq. m. VS1 wall
- Complex, multi-plane geometry
- Terra cotta cladding panels
- 21m long mullions with multiple mitered bends
- Custom laminated terra cotta glass



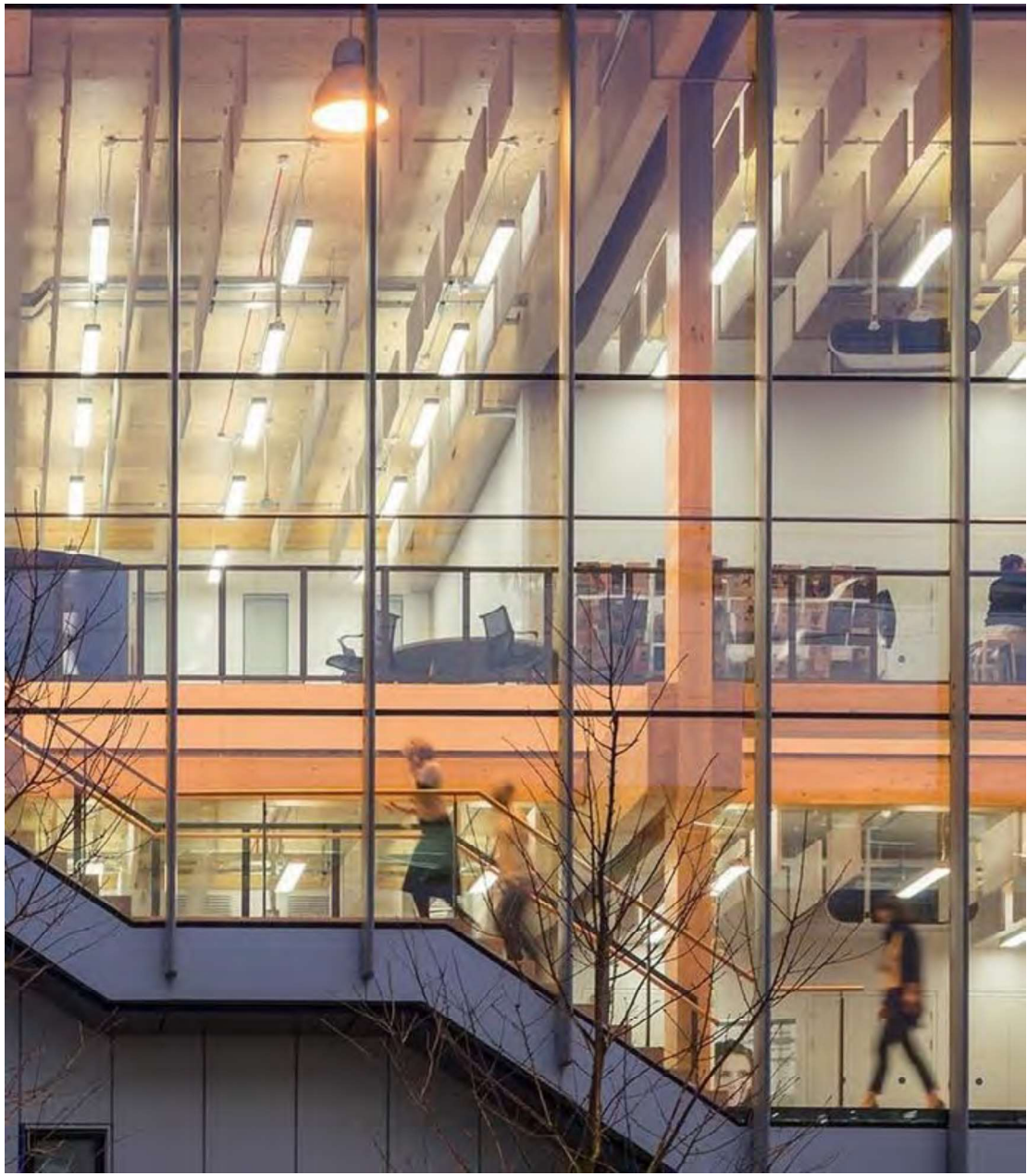
Cummins Technology Center
Architect: Venkatraman Associates

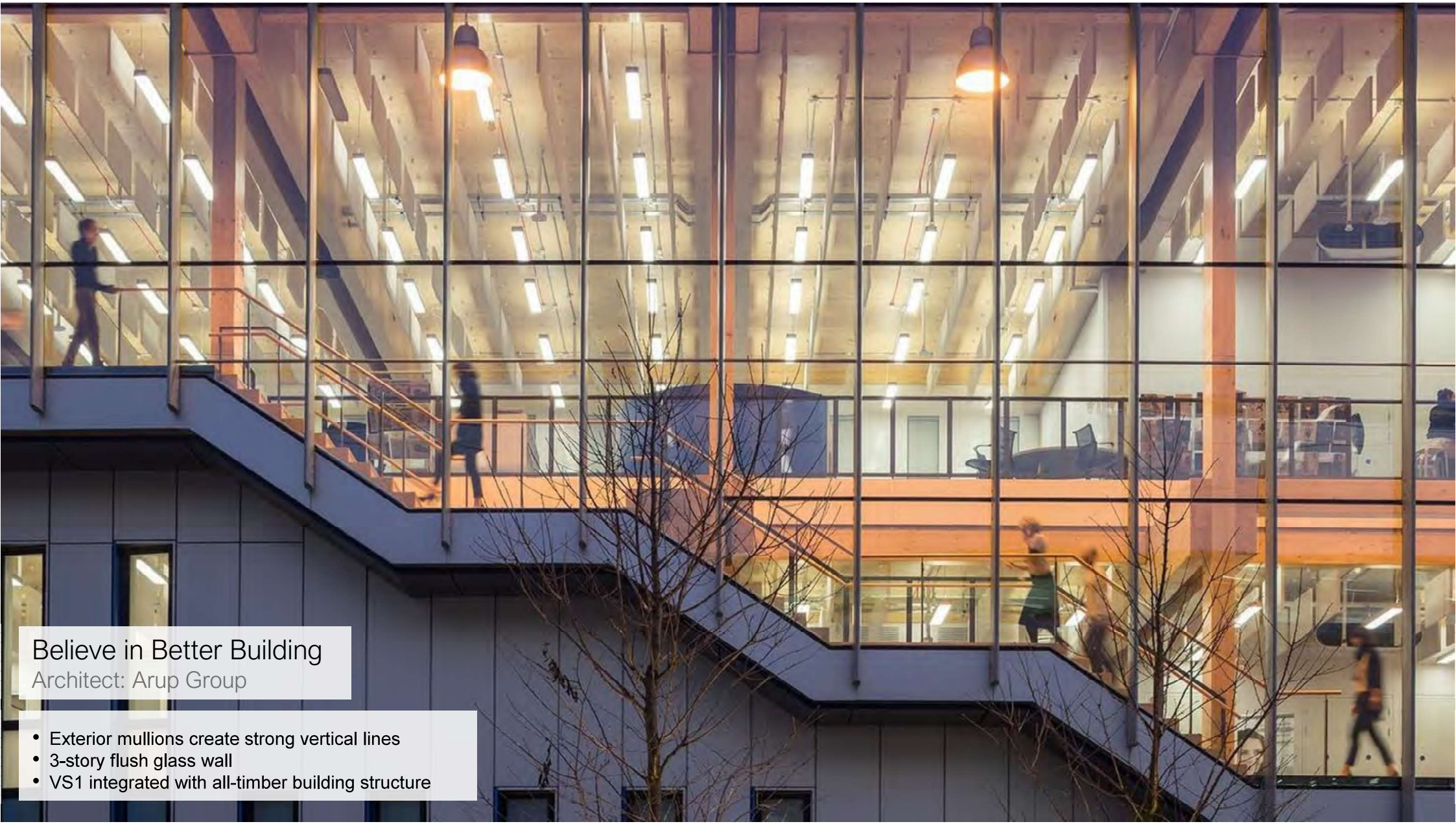
UNPRECEDENTED DESIGN FREEDOM

Gannon Building, Lansing Community College
Architect: SHW Group


OPEN

REVERSIBLE EXTERIOR MULLIONS





Believe in Better Building

Architect: Arup Group

- Exterior mullions create strong vertical lines
- 3-story flush glass wall
- VS1 integrated with all-timber building structure

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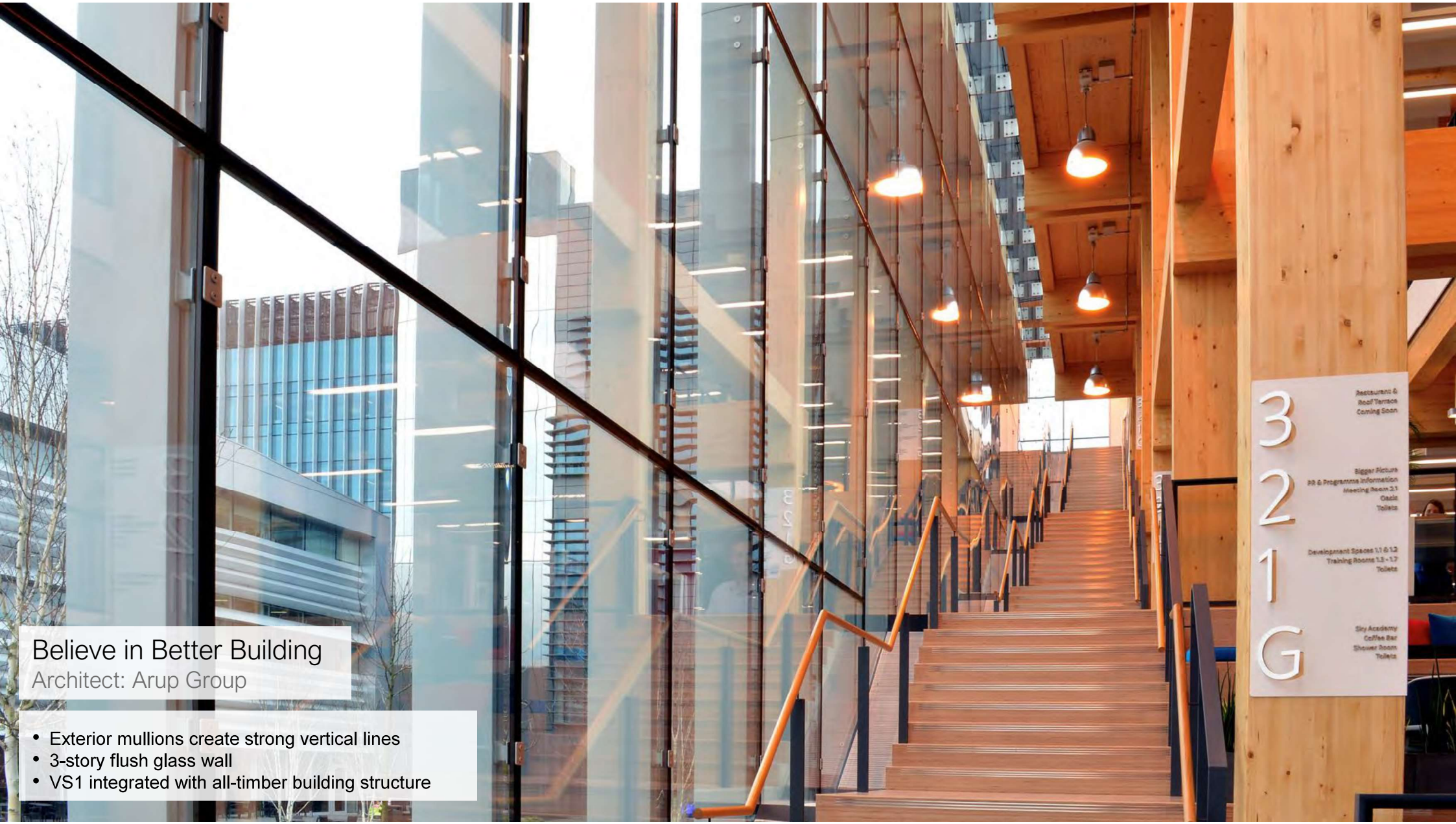

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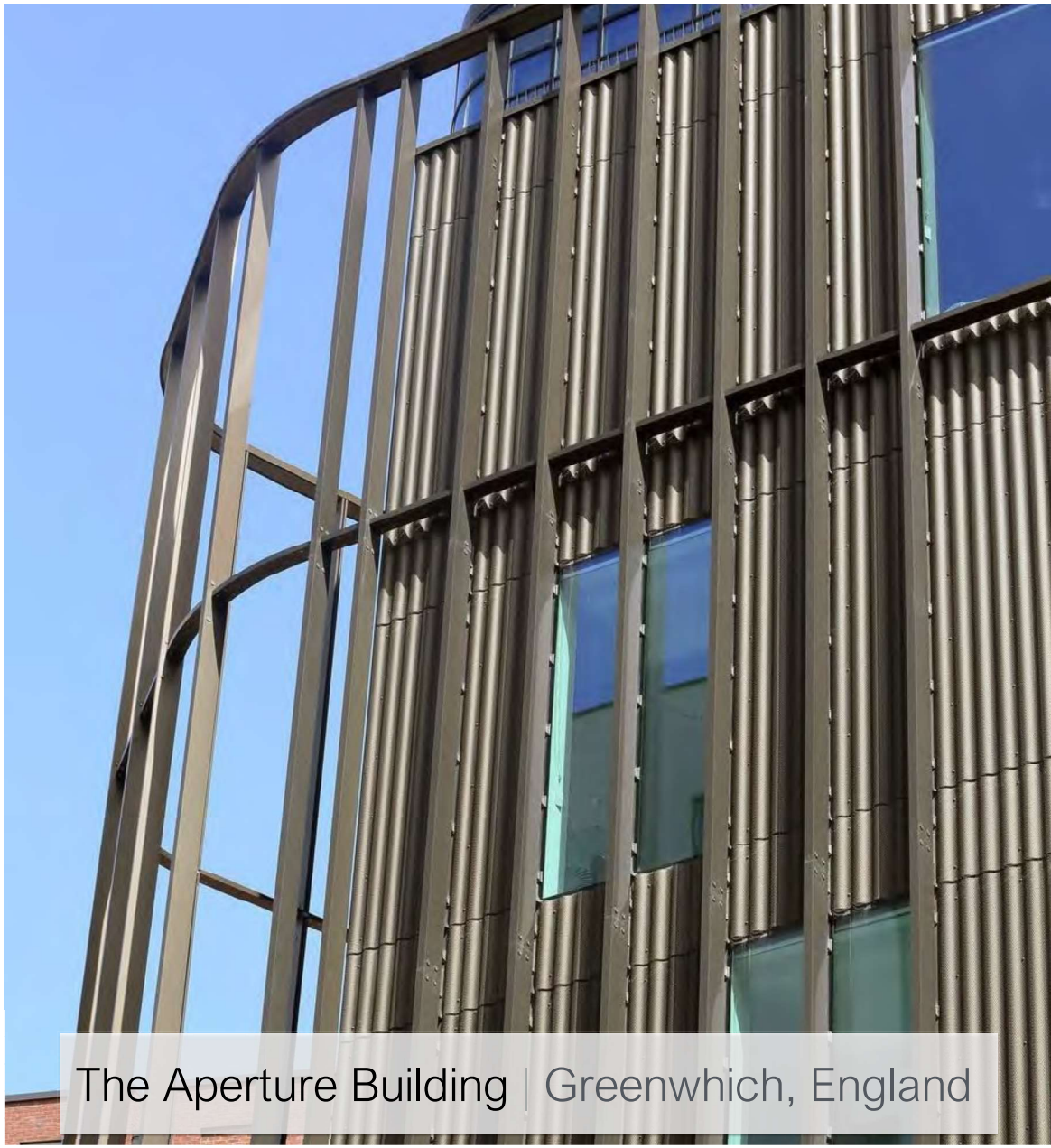
The Aperture Building | Greenwhich, England



The Aperture Building | Greenwhich, England

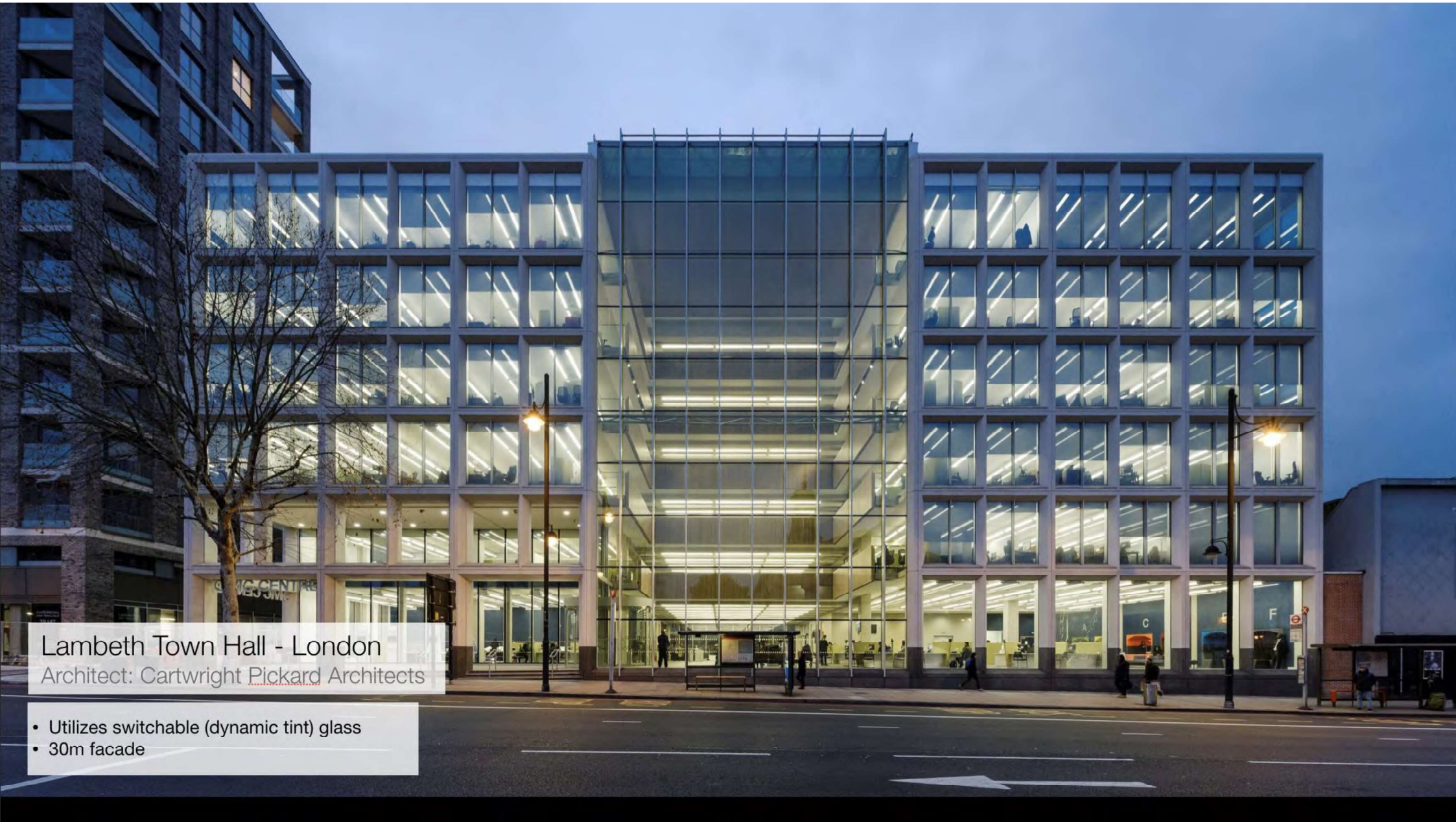
INTELLIGENT BUILDING SKINS

Information Commons at Loyola University Chicago

Architect: SCB

- Dual VS1 wall allows for shading and venting
- Transparent link between the college's campus and the shores of Lake Michigan

Information Commons at
Loyola University Chicago
Architect: SCB



Lambeth Town Hall - London

Architect: Cartwright Pickard Architects

- Utilizes switchable (dynamic tint) glass
- 30m facade

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Architect: Cartwright Pickard Architects

- Utilizes switchable (dynamic tint) glass
- 30m facade

SUPERIOR THERMAL PERFORMANCE

0.18 BTU/h-sq.ft-F

1.02 W/sq.m-K

BENEFITS OF VS1

GLASS CANTILEVERS

POINT-SUPPORTED GLASS (through-joint)

525 William Penn Plaza | Pittsburgh, PA
Architect: Perkins Eastman

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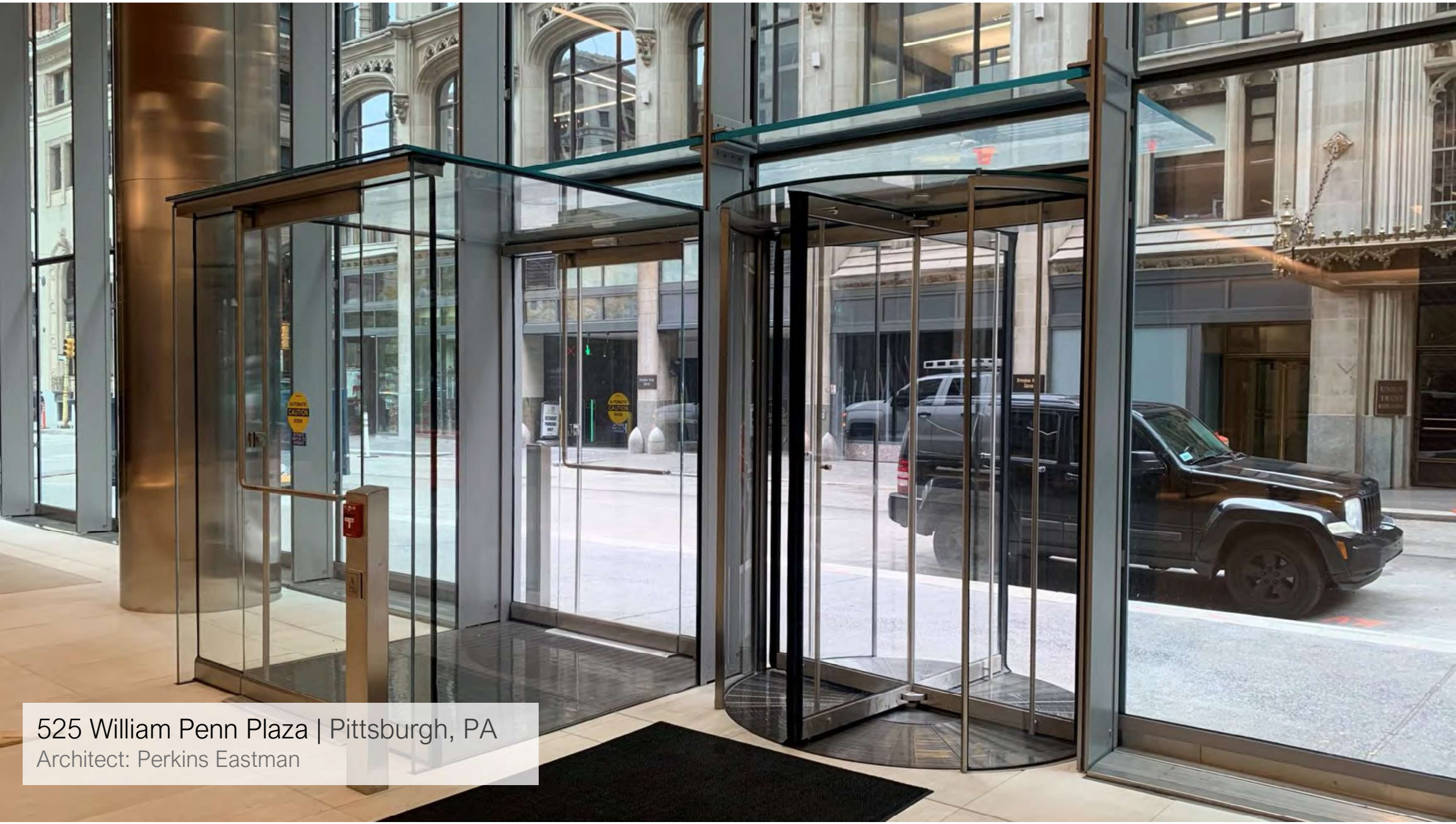
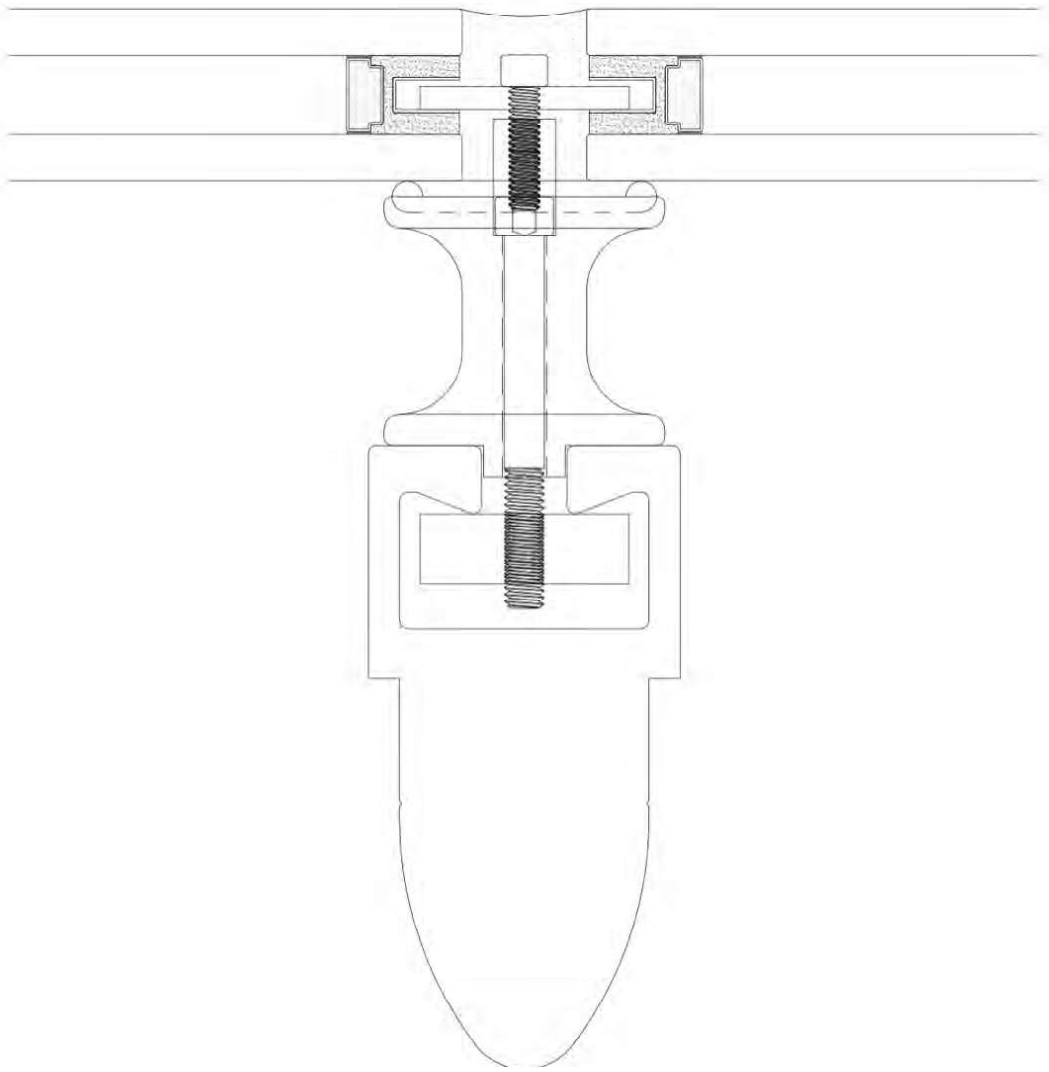
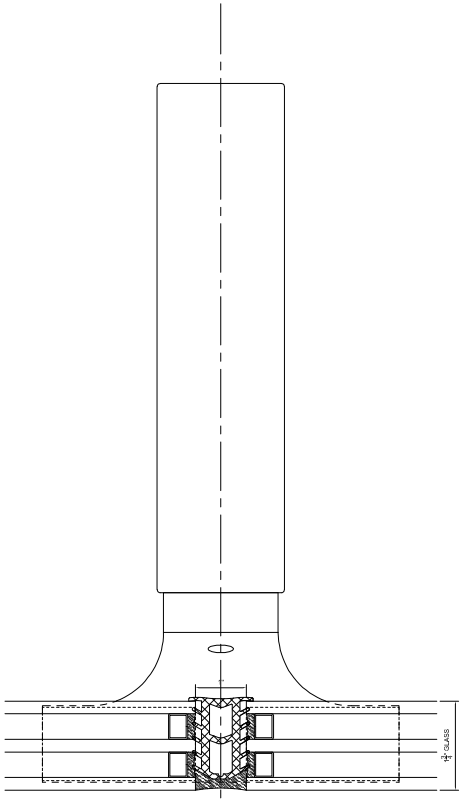


525 William Penn Plaza | Pittsburgh, PA
Architect: Perkins Eastman

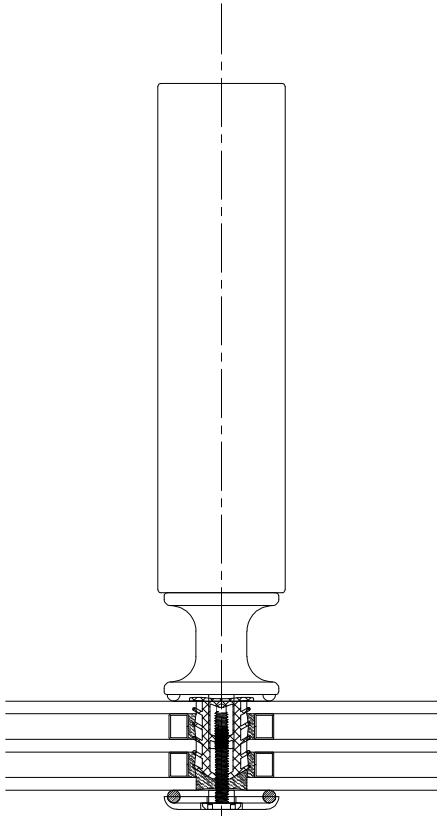
VS1

Toggle System

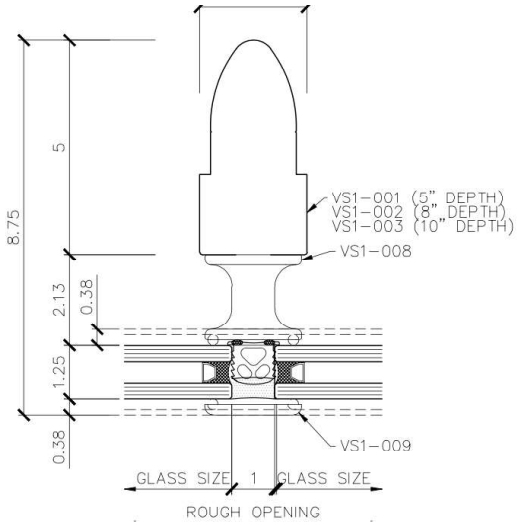




Triple glazing plan (@ gravity fitting)

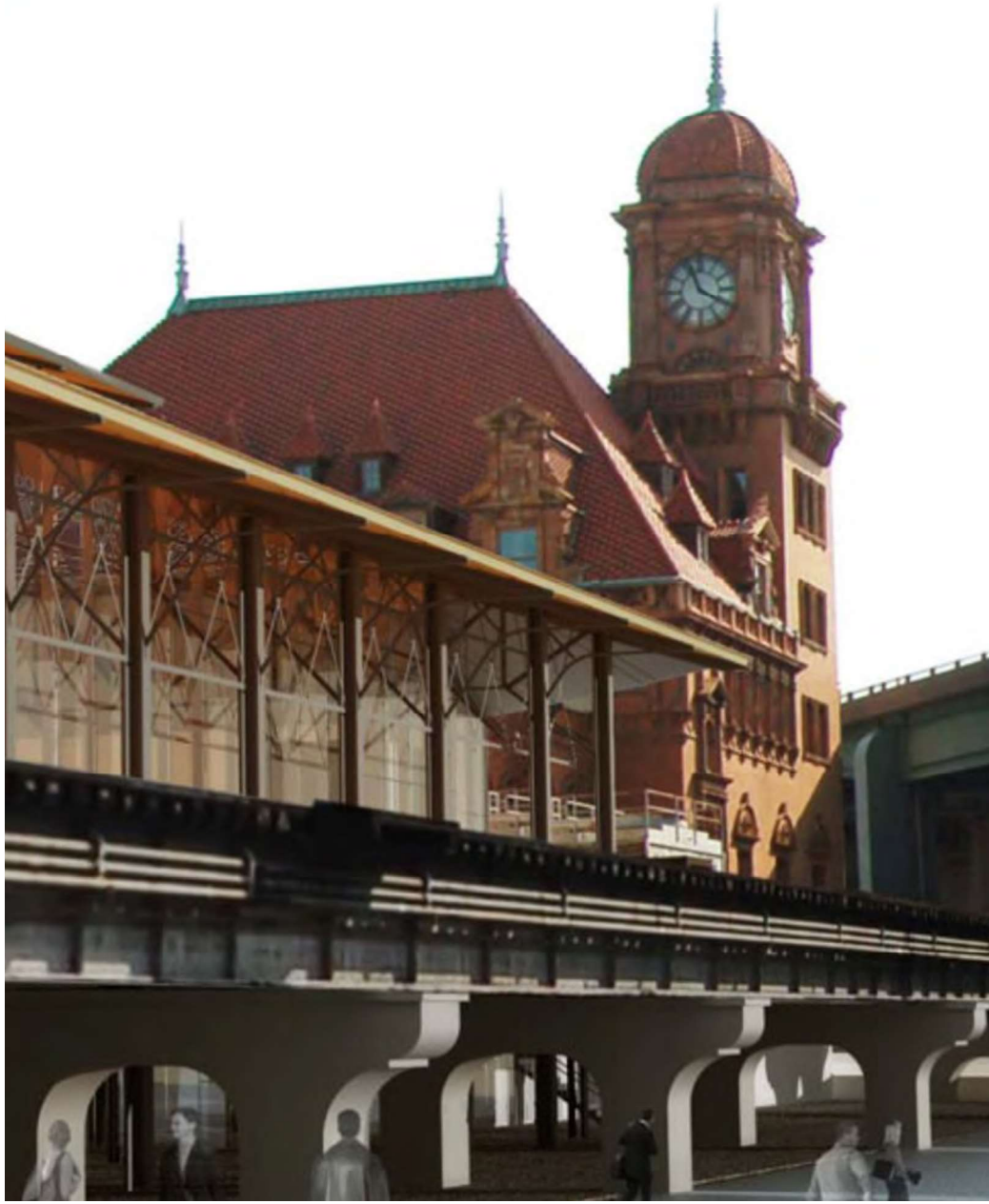


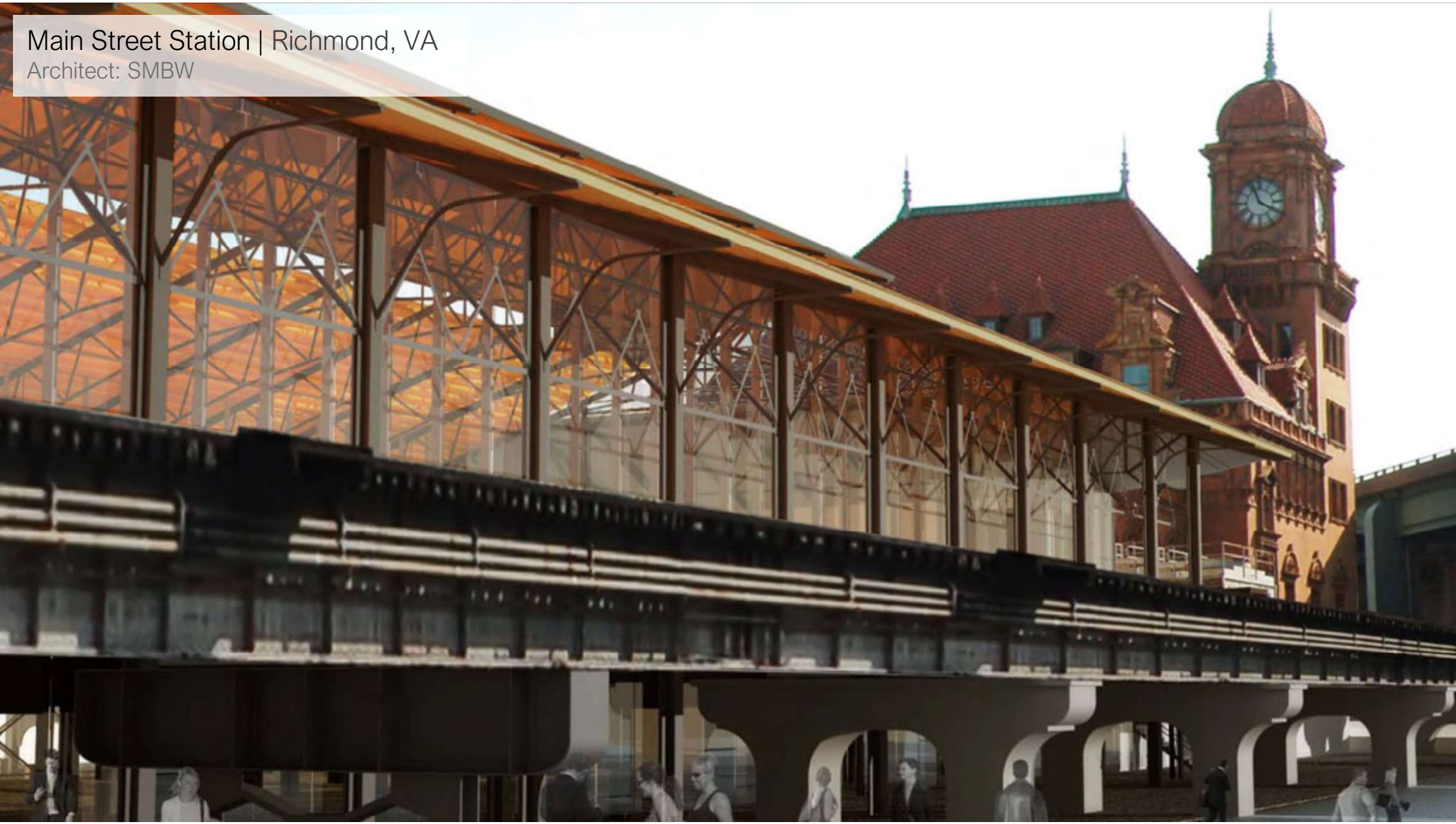
Triple glazing plan (@ pinch plate)



Double glazing plan (@ pinch plate)

HISTORICAL BUILDINGS & RENOVATIONS





Main Street Station | Richmond, VA
Architect: SMBW

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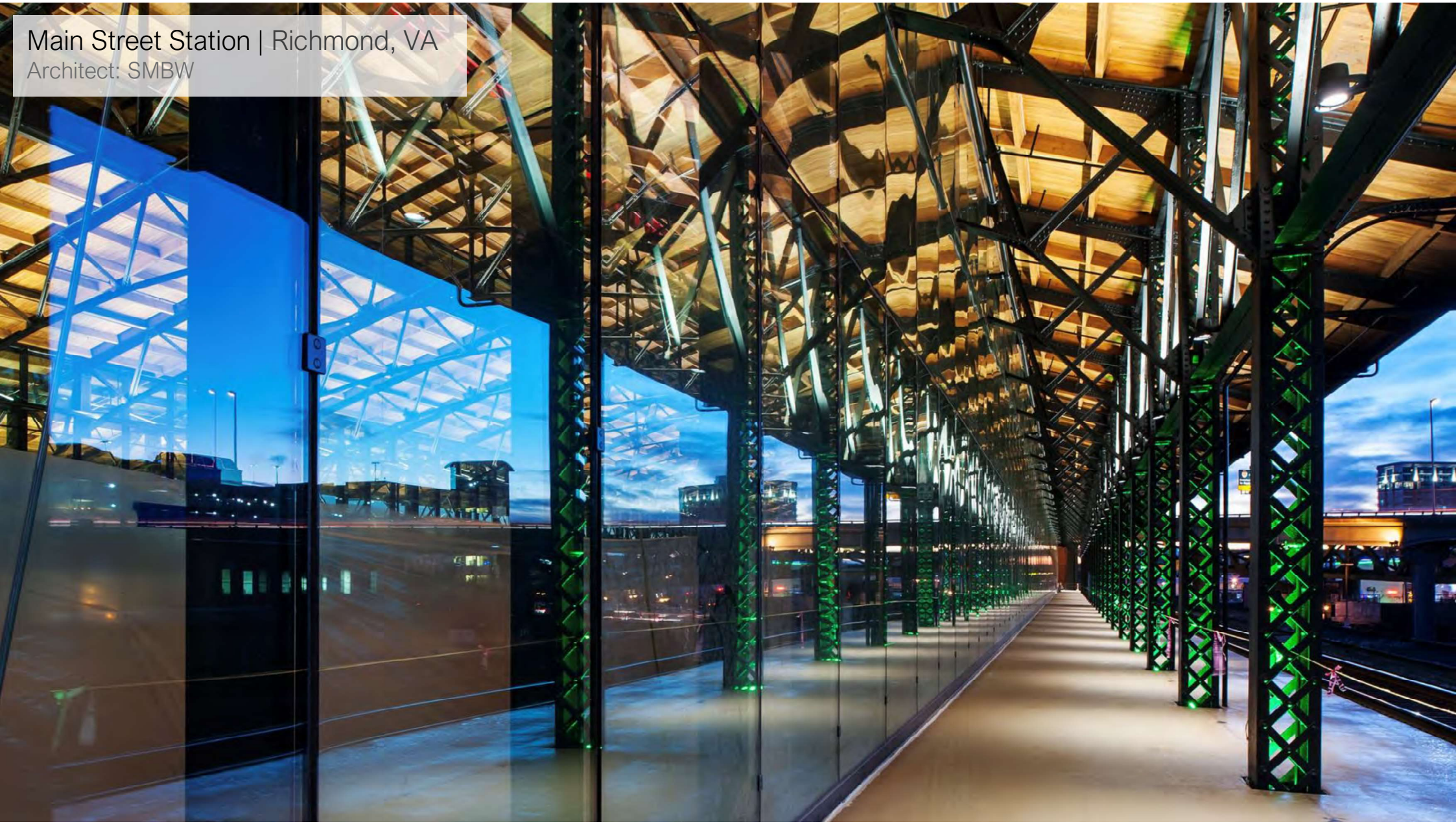
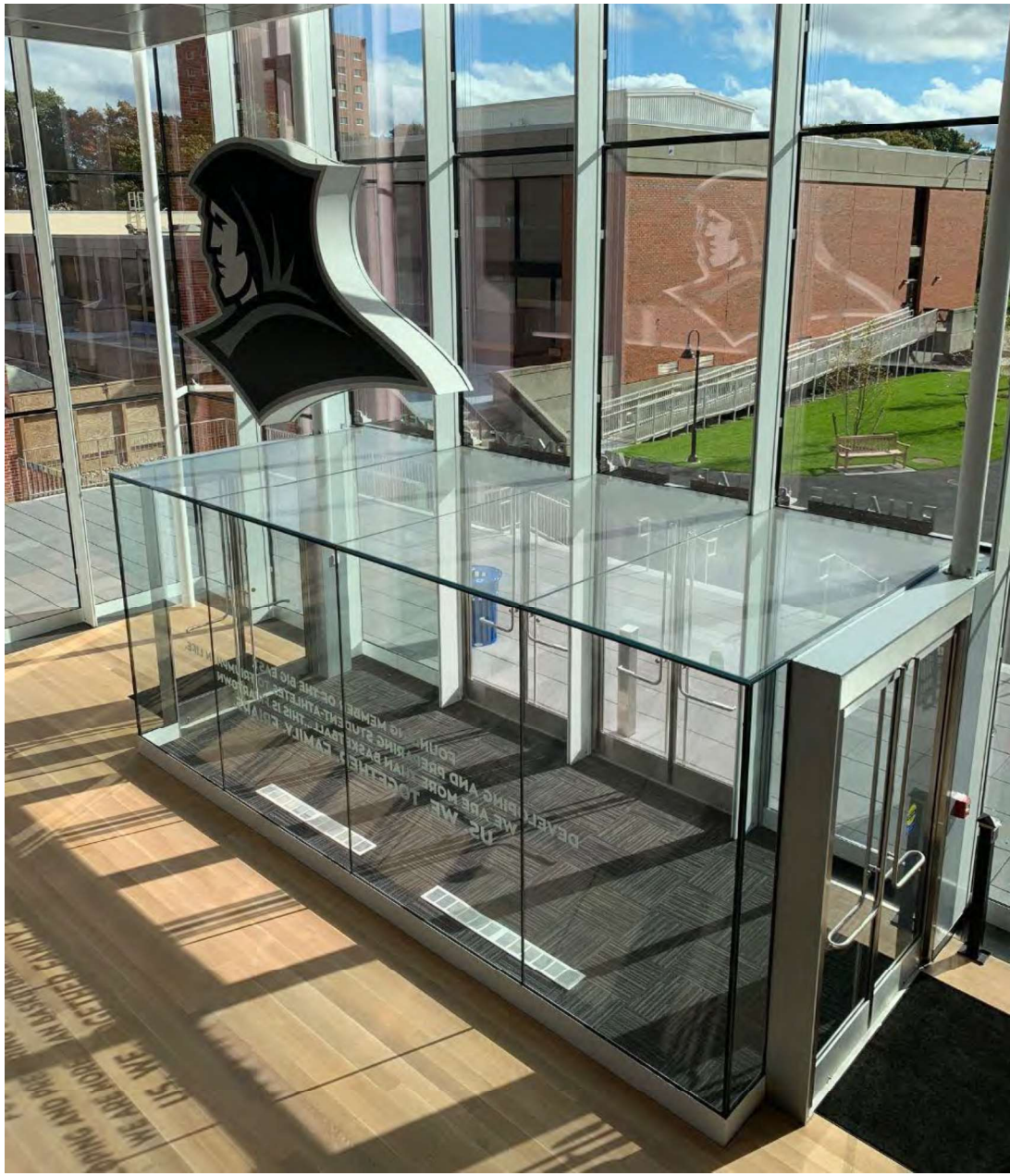
Architect: SMBW

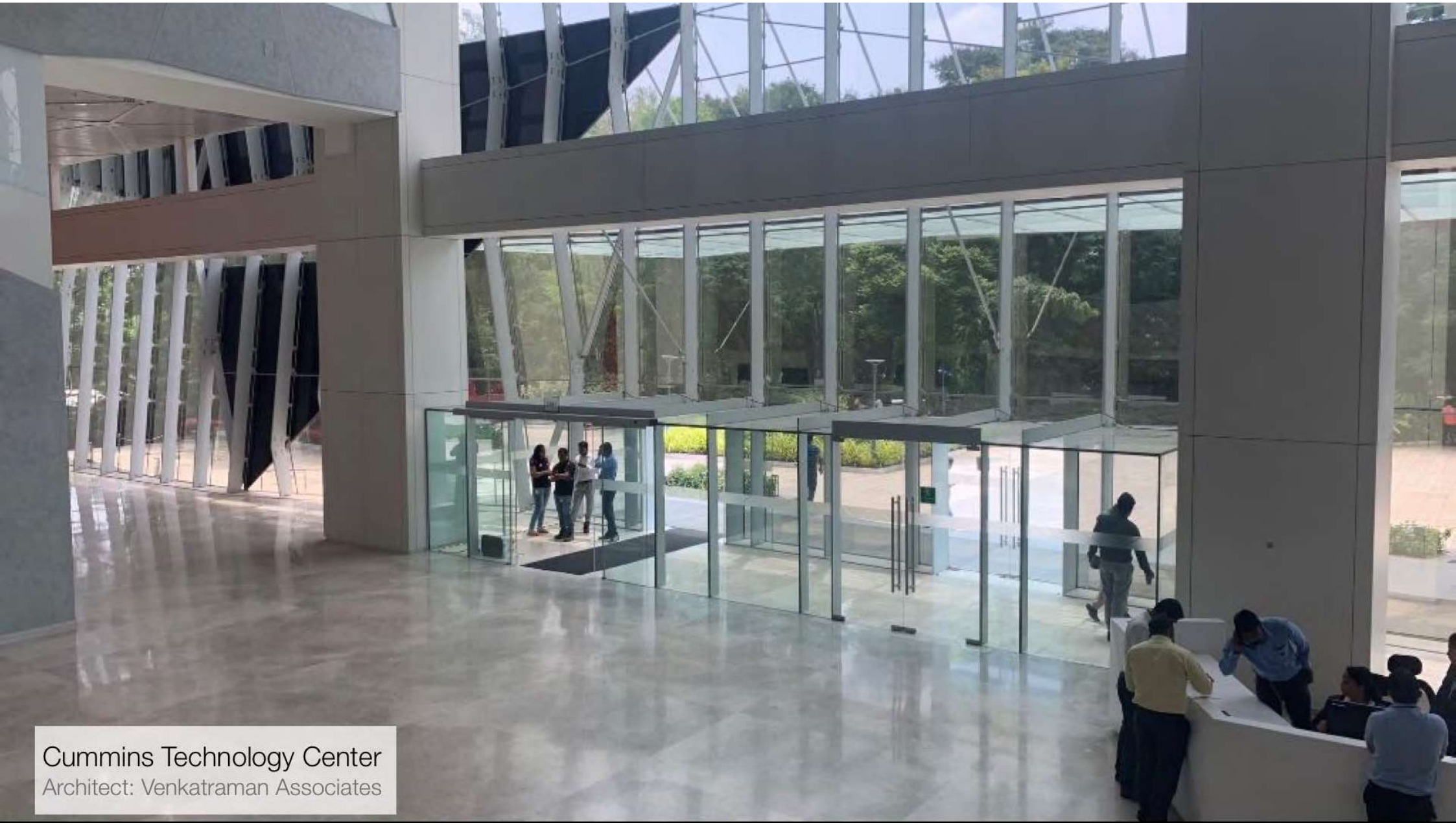


Main Street Station | Richmond, VA
Architect: SMBW

ALL-GLASS VESTIBULES



Gateway Plaza | Richmond, VA



Cummins Technology Center
Architect: Venkatraman Associates

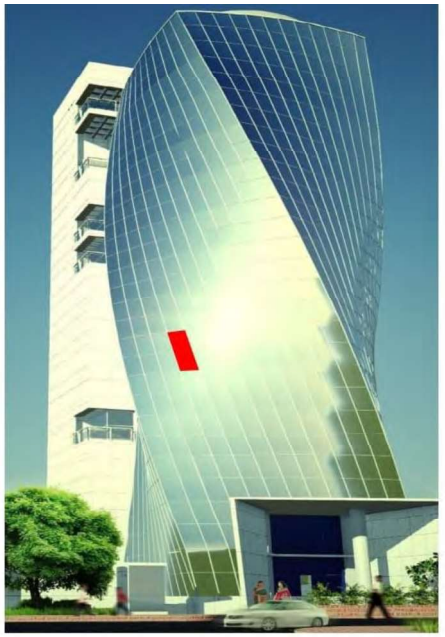
Cummins Technology Center
Architect: Venkatraman Associates

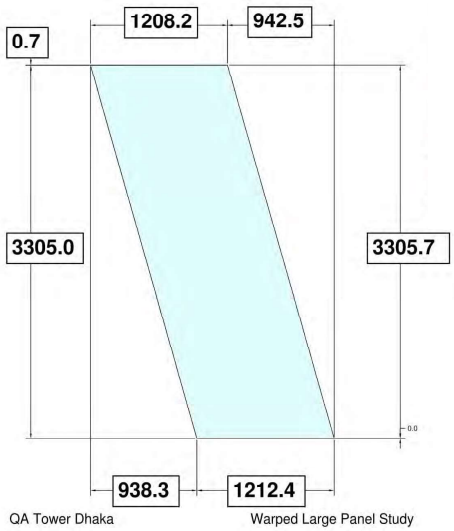
VS1

TRANSITIONAL SURFACES

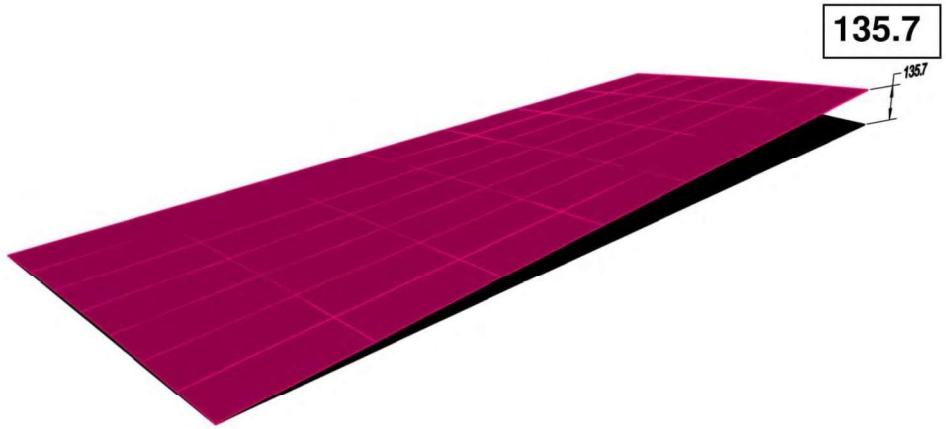
QA Tower, Dhaka Bangladesh

Architect: Mrinmoy Consultants





- 3,5m by 1,2m panels are cold-bent so one corner is 13cm off-plane
- floor-to-floor rotation of 6.6°
- ground-to-roof rotation of 90°

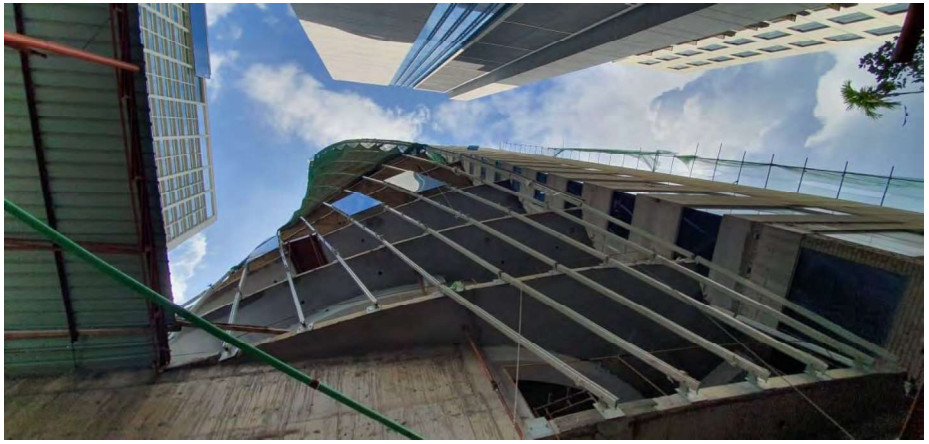


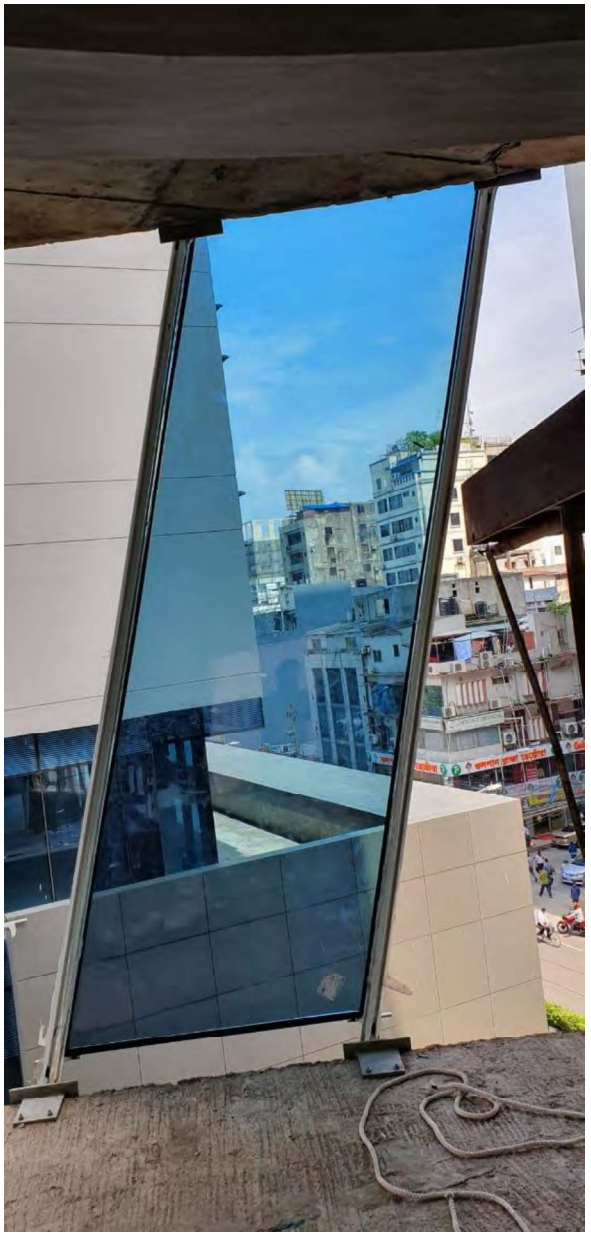
VS1

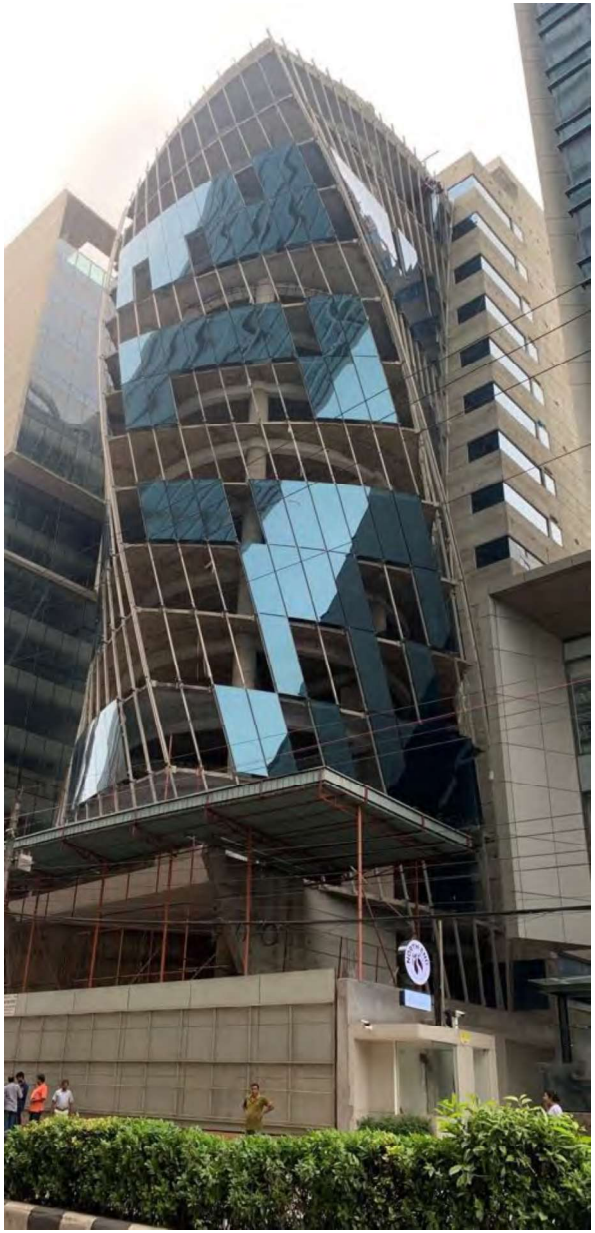
QA Tower, Dhaka Bangladesh

Architect: Mrinmoy Consultants

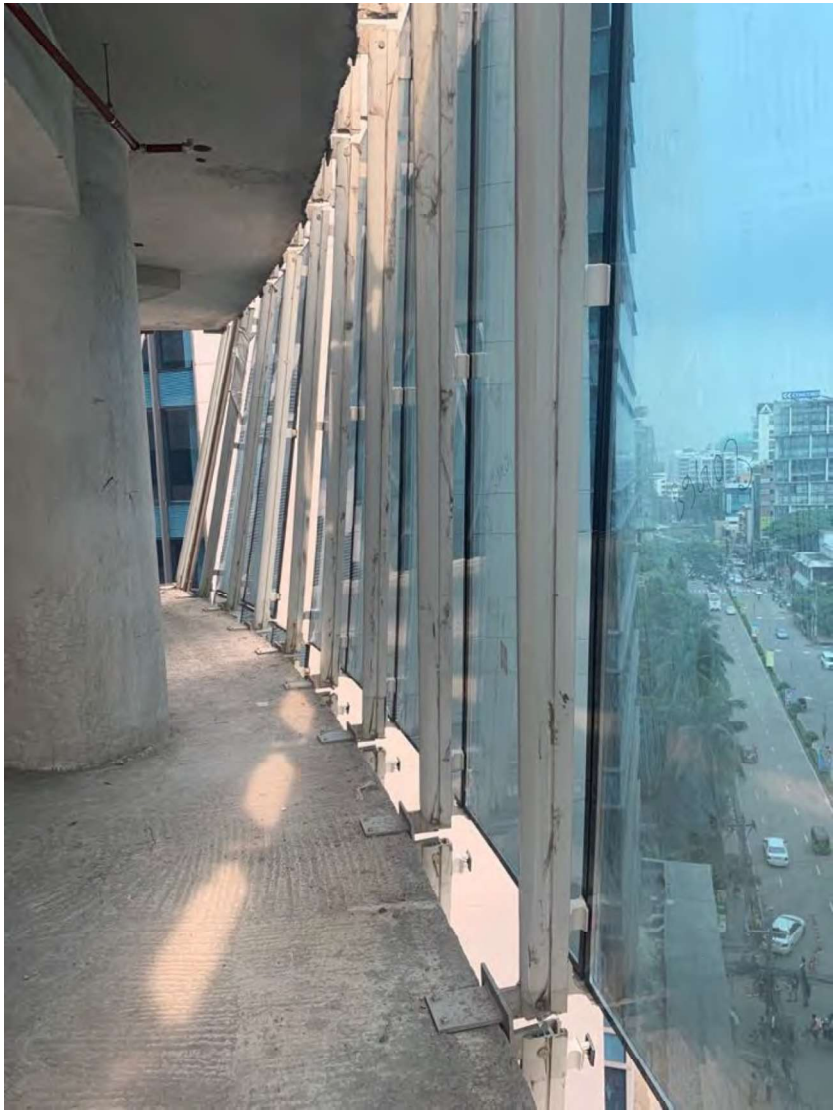
Currently under construction







BENEFITS OF VS1



VS1

Long spans

Elimination of horizontals

Jumbo glass sizes

High transparency

Multi-story

Cavity walls

Complex geometries

Faceted facades

Reversable mullions

Seamless material variation

Intelligent building skins

Superior thermal performance

Sustainability

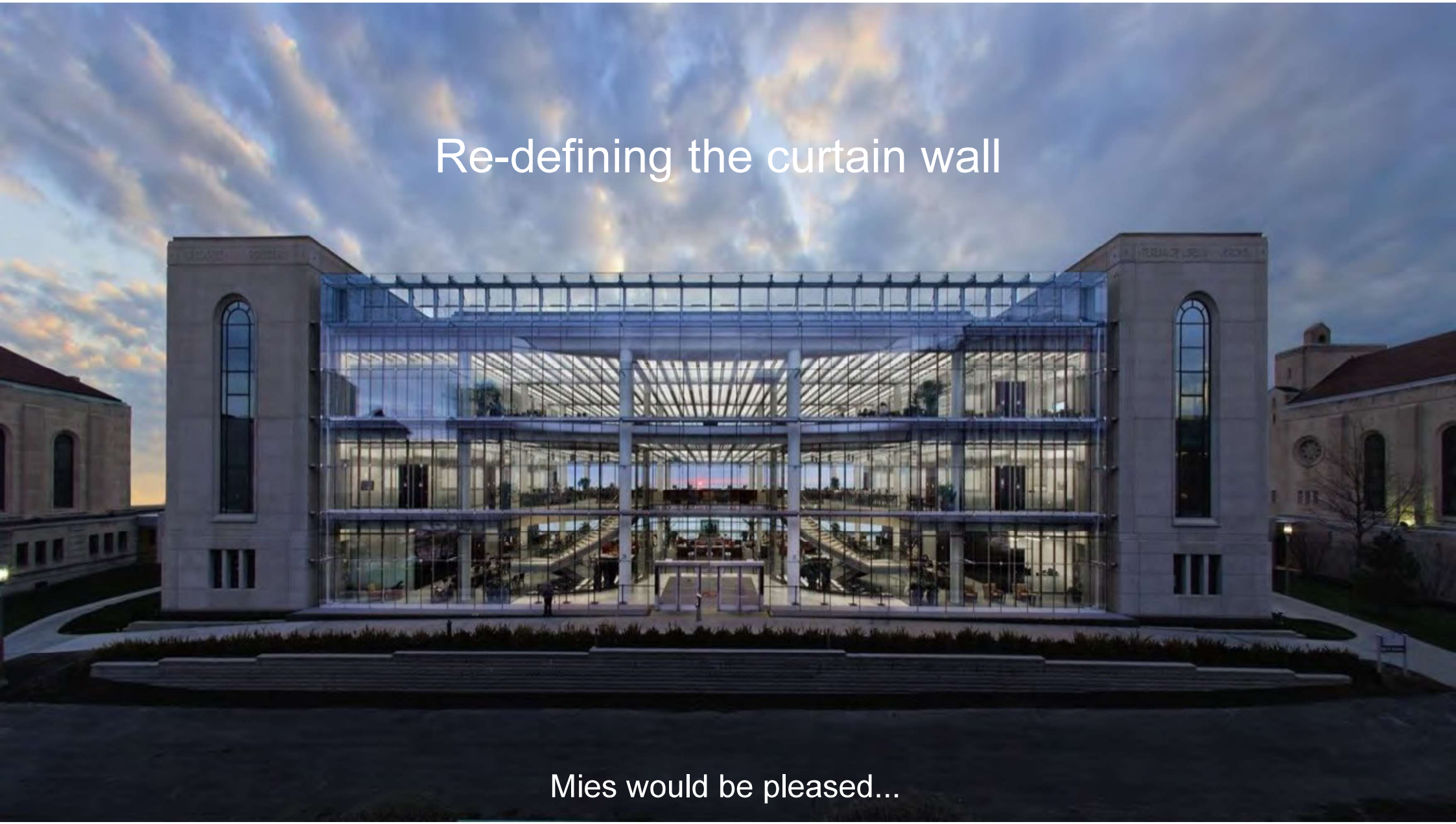
Zero sight-line windows

Point-supported system

Exterior shading support + canopies

All-glass vestibules

Transitional Surfaces


Re-defining the curtain wall
Mies would be pleased...

by Innovation Glass

www.innovationglass.com

Drone footage by Jeremy Safford.

Online & Live

Aktuelles Bauwissen aus erster Hand.