

# Semi-unitized *rainscreens*

Rethinking Execution Quality,  
Speed and Design Freedom



# Learning Goals

1



Understand **basic principles** of semi-unitized rainscreen systems



Understand how to achieve **project cost and labor time savings** with semi unitized rainscreen



Understand **unique design possibilities** that can only be achieved with semi-unitized rainscreen

# What is a *Rainscreen System*

## 1 Definition:

An exterior wall cladding system designed to protect buildings by creating a ventilated cavity between the outer cladding and the inner structure.

## 3 Benefits:

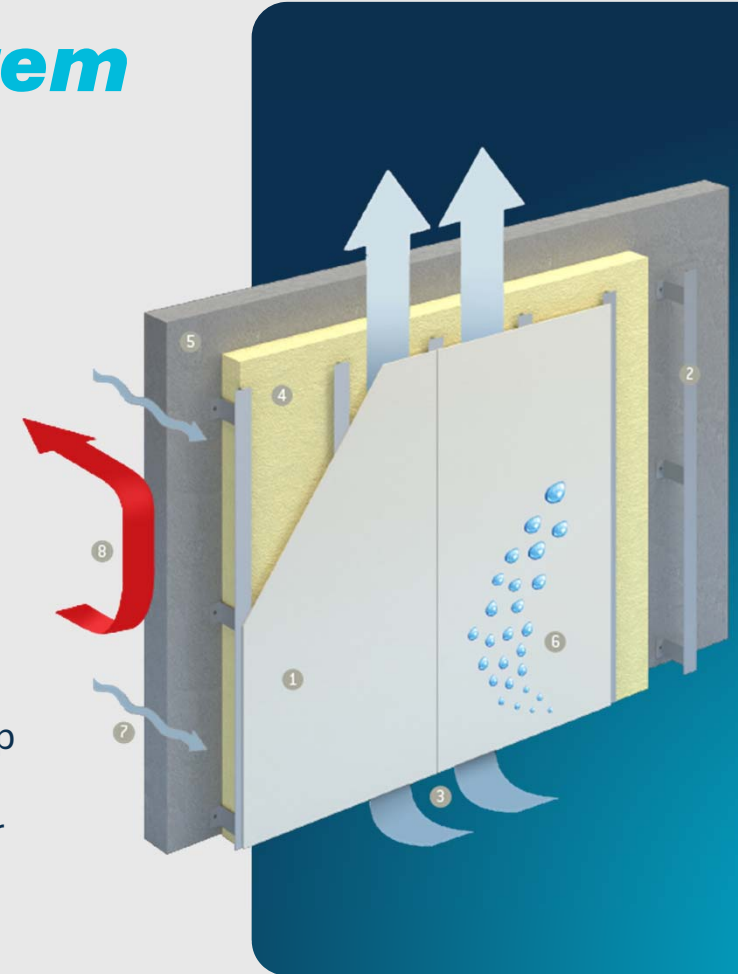
- Enhanced weather resistance
- Improved thermal performance and energy efficiency
- Increased durability of building envelope
- Reduced risk of condensation and mold

## 2 Key Principle:

Keeps rainwater out while allowing trapped moisture to drain and evaporate.

## 4 Components:

- Outer cladding (protective skin)
- Ventilated cavity / air gap
- Insulation layer
- Inner structural wall / air and vapor barrier



### Typical Applications:

Projects where installation **speed**, **aesthetic control**, and **cost balance** are important.

### Definition:

A factory assembled façade system designed for fast and precise on-site installation.

Combines the factory quality of a fully unitized system (curtain wall) and the design flexibility of a traditional rainscreen system

## What is a *Semi-Unitized Rainscreen*

### Advantages:

Better quality control

Faster installation

Less loose pieces to install on-site

More design flexibility than fully unitized systems for complex geometries.

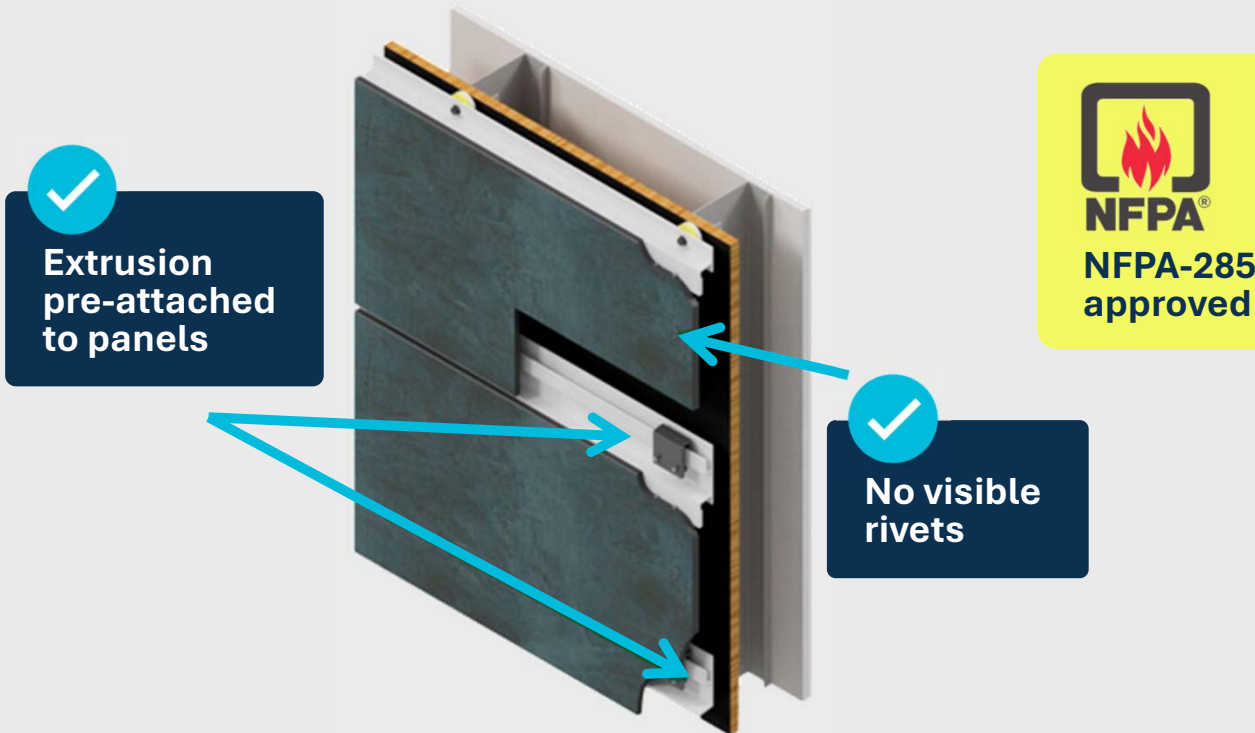
### Key Characteristics:

Pre-fabricated modules

On-site installation

Ventilated cavity

# Semi-Unitized System for HPL and Fiber Cement Panels



50% less labor  
required, 90% less  
drilling on-site



Perfect  
joinery



Easy to  
install

# Comparison Table

Feature/  
Aspect

Traditional Non-  
Unitized Rainscreen

Semi-Unitized  
Rainscreen

## Sweet spot for Semi-Unitized Rainscreen



Mid size:  
5k-50k SF



Urban environments  
with tight space,  
deadlines and high  
labor costs



Complex  
panel  
layouts

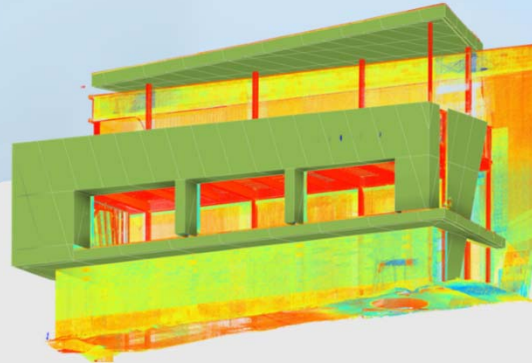
# Process Flow



1

## Field Engineering experts laser scan the structure

Laser scanning uses laser pulses to capture precise 3D measurements of structures, enabling accurate modeling, faster surveys, and reduced construction errors.



2

## Façade Engineers models the structure and future façade layout

The Façade Engineer communicates closely with the architect optimizing and streamlining the design intent. Output is an approved set of drawings.



3

## Fully automated CNC cutting and drilling of the façade panels

Drawings are directly uploaded to the machines. This enables high-precision and high-productivity cutting even for very intricate designs.

# Process Flow



4

## Units shop assembled

Expert craftsmen assemble the units with unmatched precision. Invisible rivets are standard.



5

## Units are delivered in protective crating

Modules are delivered exactly when and where needed in the construction process and logically numbered.



6

## Fast installation - saving over 50% installation labor

Minimal extrusions installation on the jobsite. Zero panel riveting, 90% less drilling on the jobsite.

# Quality of Finish

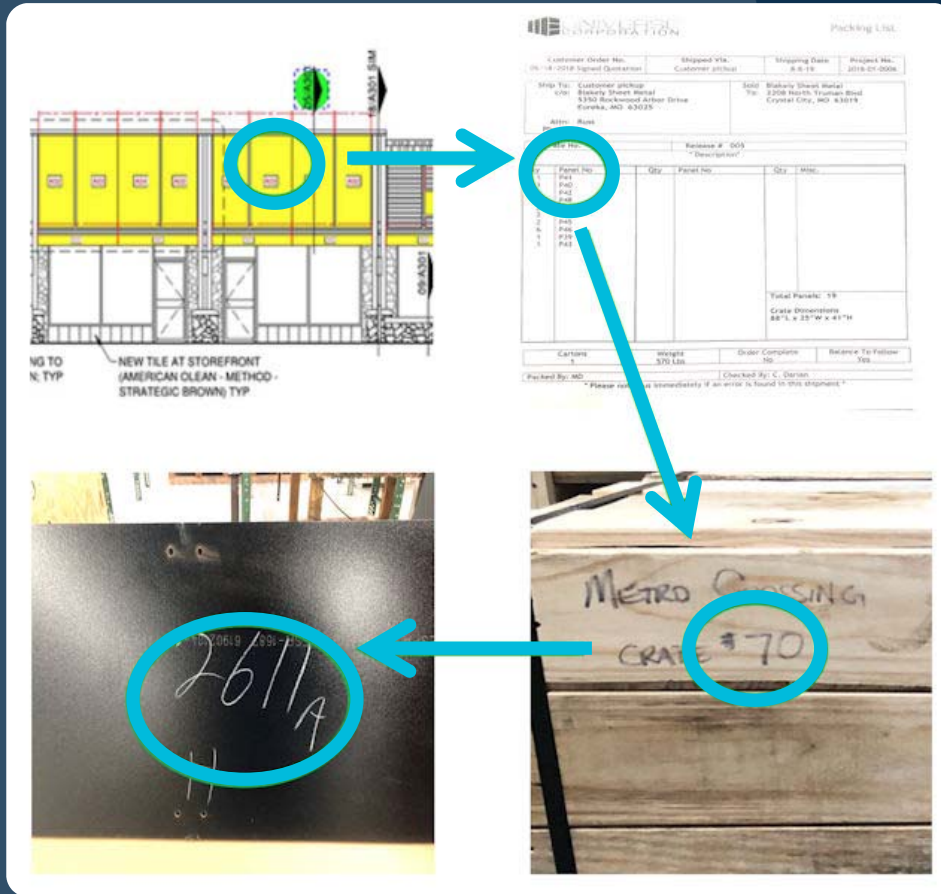


Each panel is sanded with the proper tools and utmost care



Edge sealing with protective coating for panels when required





# Logical Packing & Shipping



Each semi-unitized module has a unique number that indicated on the drawings, packing lists, crates and modules. "lego system"



Logical Shipment: delivery timing and location coordinated with construction progress.

# Benefits of semi-unitized systems

**Faster Installation**  
Panels arrive partially assembled, cutting install time by 30–50% vs traditional systems.

**Factory Pre-Assembly**  
Clips, rails, or brackets pre-fixed reduce on-site measuring and drilling.

**Reduced Labor Needs**  
Less precision cutting/fitting required on site lowers dependency on highly specialized trades.

**Minimized Rework**  
Factory quality control reduces on-site errors and adjustments.

**Simplified Logistics**  
Fewer components shipped loose to site, streamlining handling and staging.

**Weather Resilience**  
Shorter exterior exposure time lowers risk of weather delays and water ingress during install.

**Lower Field Equipment Costs**  
Faster install = fewer days with access equipment and labor onsite.

# Case Study:

## San Francisco Police Credit Union



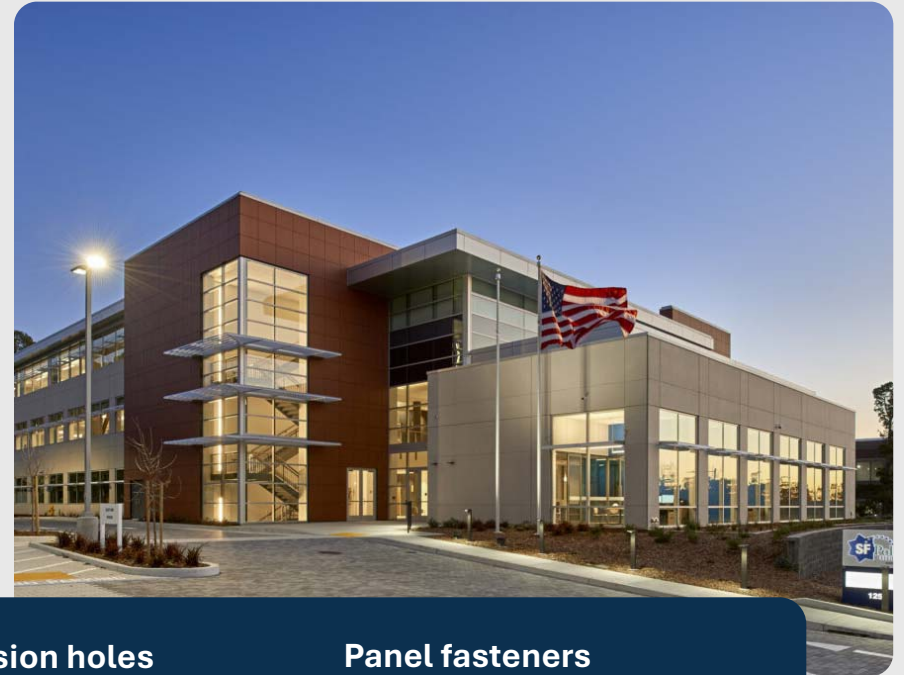
Material:  
TRESPA



Small unit  
modules  
36" by 10ft



Hidden  
fastener,  
installer priced  
it as an exposed



|                             | <b>Extrusions</b><br>Installed on the<br>construction site | <b>Extrusion holes</b><br>Drilled on<br>construction site | <b>Panel fasteners</b><br>Attached on<br>construction site |
|-----------------------------|------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------|
| Traditional systems         | 6,000 linear ft                                            | 8,200                                                     | 8,200                                                      |
| Semi-unitized<br>rainscreen | 650 linear ff                                              | 0                                                         | 0                                                          |

# 15 Benefits in Dense Urban Environments

Faster installation process



Shipping the needed crate only at the time they need to go up



Logical shipping with minimum footprint (choreographing the job)



Less time scaffolding/cranes



Safety: units are safer to lift than many individual pieces.

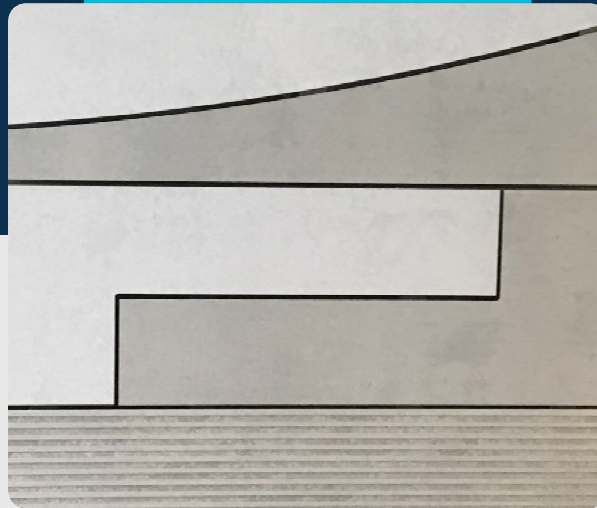


# Unique Design Freedom

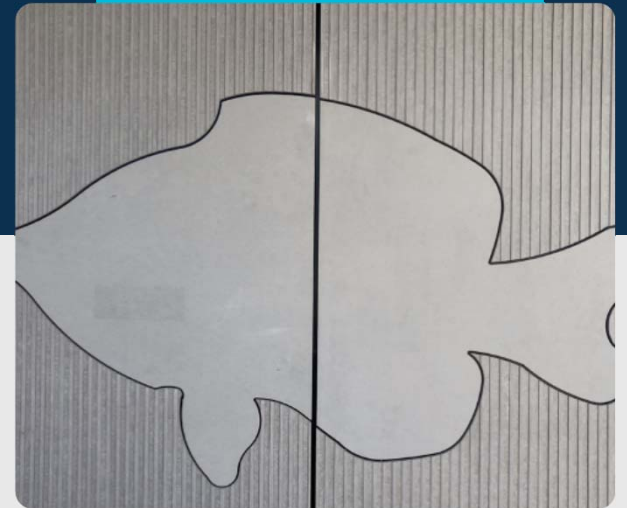
Invisible riveting



Mixed materials



Complex patterns



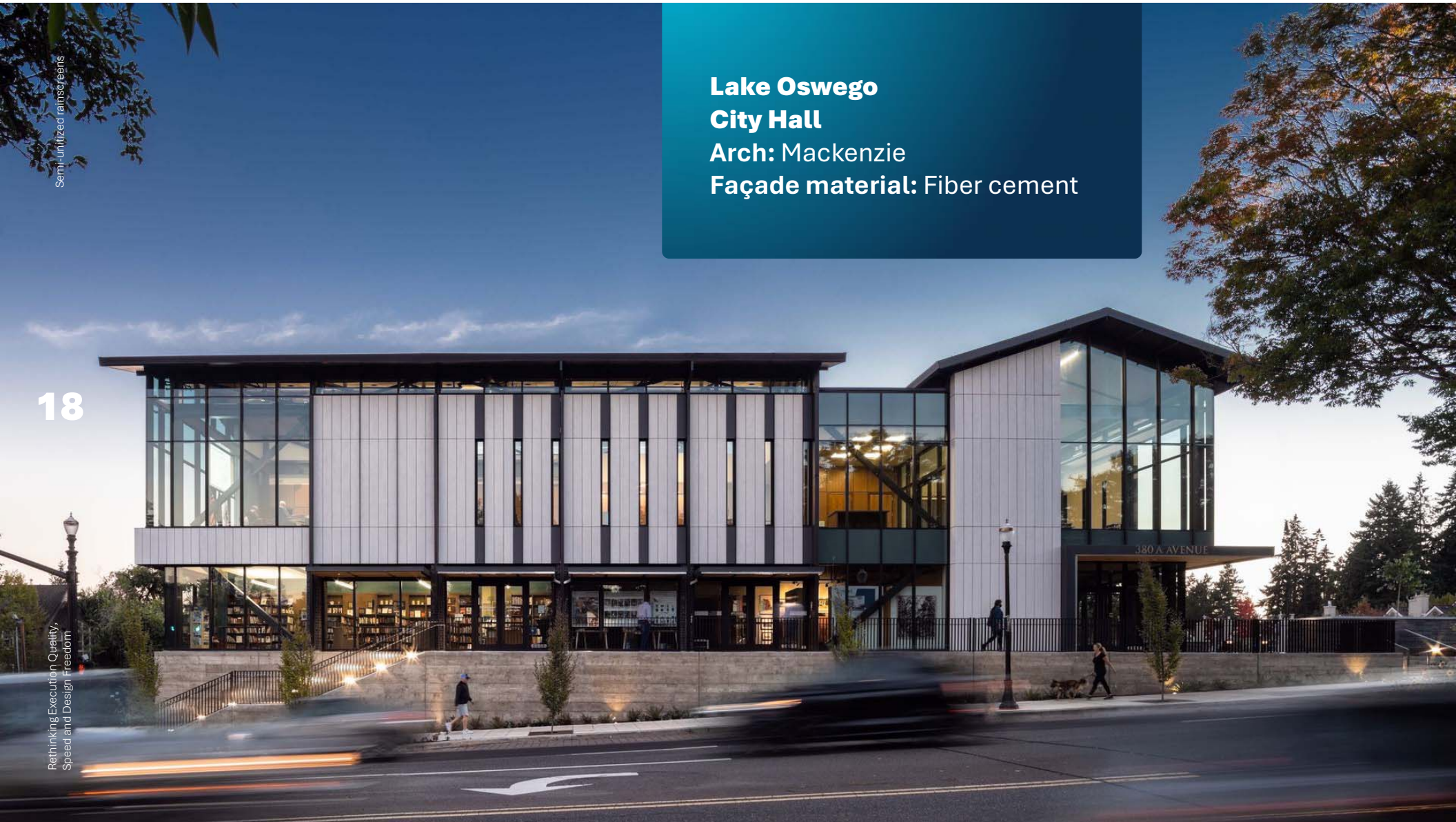
**TRESPA-Formica  
Headquarters**  
Arch: Constandi Studio  
Façade material: HPL

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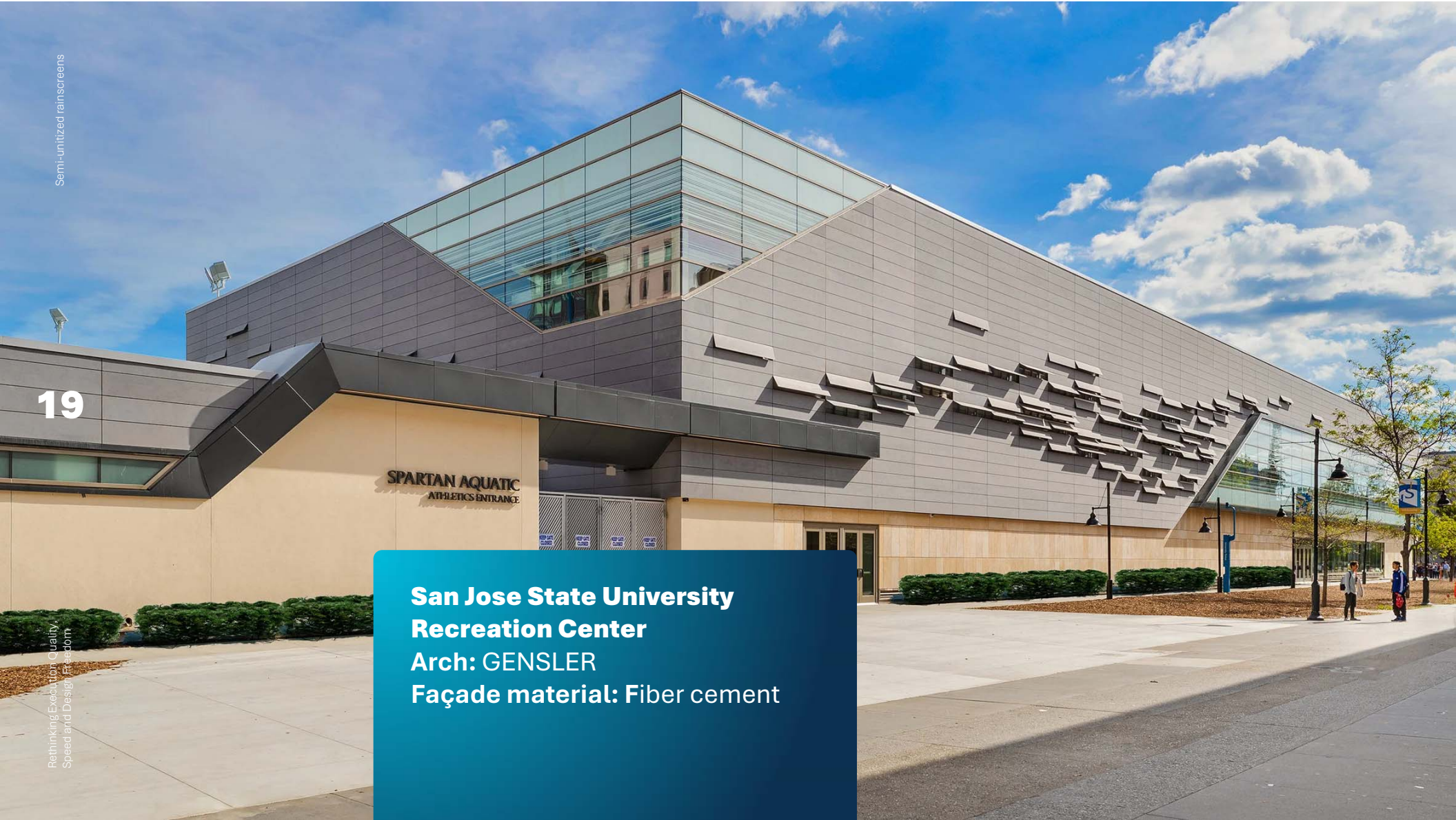


**Lake Oswego  
City Hall**  
Arch: Mackenzie  
Façade material: Fiber cement

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**San Jose State University  
Recreation Center**  
Arch: GENSLER  
Façade material: Fiber cement



Semi-unitized rainscreens

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## STUDENT UNION

Rethinking Execution Quality,  
Speed and Design Freedom

**College of Southern  
Nevada Student Union**  
Arch: TSK  
Façade material: HPL

**Progress High School. Brooklyn, NY**  
Arch: Nelligan & White  
Façade material: Fiber cement

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# **Semi-unitized** ***rainscreens***

Thank you!