

# MATERIAL ACCELERATION

The Emergence, Evolution and Proliferation of Cladding Material

## SPEAKERS



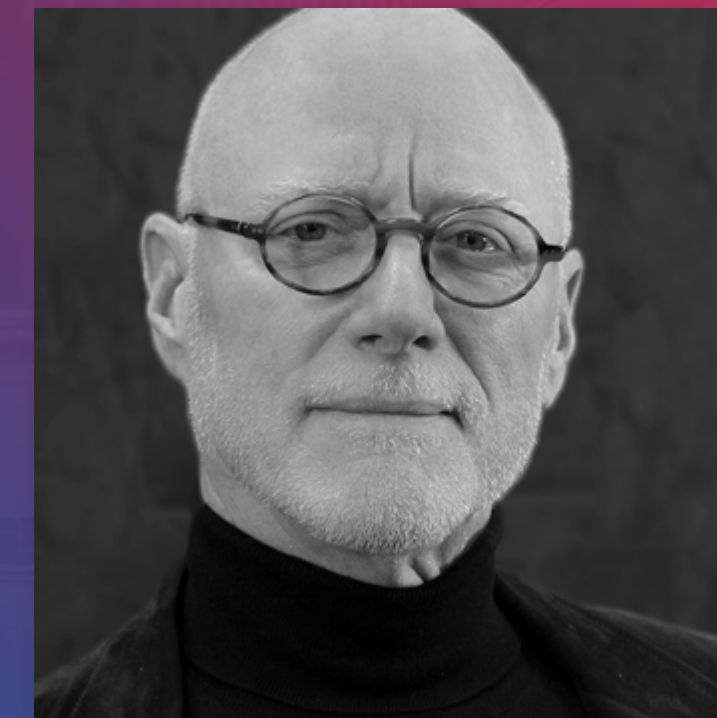
**William Rieck, AIA,  
NCARB, LEED GA**  
*Senior Project Architect*  
HOK



**Thomas Bayer, AIA,  
NCARB, LEED GA**  
*Technical Principal*  
HOK



**Sheldon B. Davis, PhD**  
*Vice President of Research,  
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Guardian Glass



**Mic Patterson,  
PhD, LEED AP+**  
*Ambassador of Innovation &  
Collaboration*  
The Facade Tectonics  
Institute

# Material Morphologies

Vetting Cladding Materials for NFPA 285 Compliance

Façade Techtonics Forum

Houston 10.10.2019

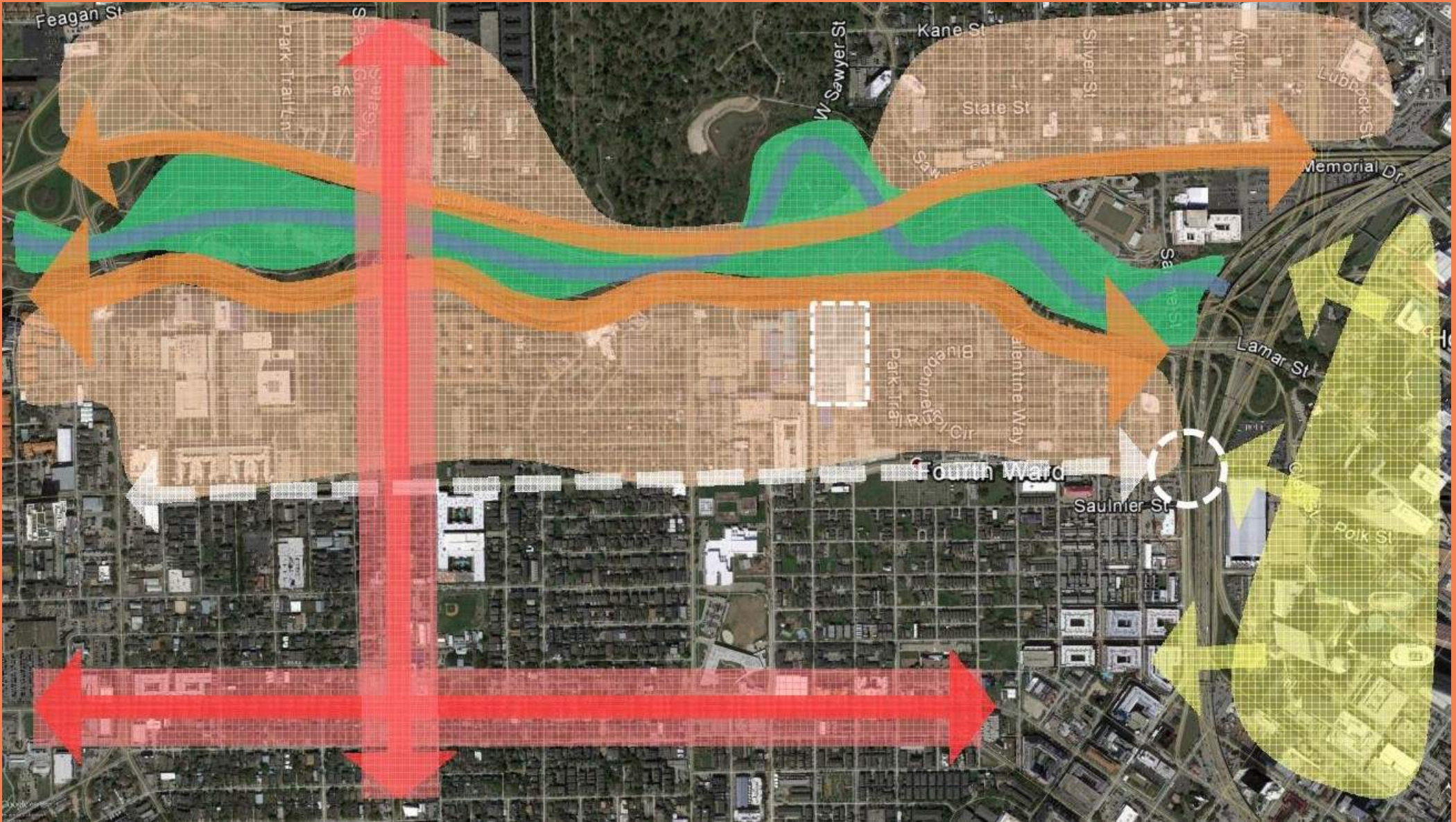
William Rieck

Thomas Bayer

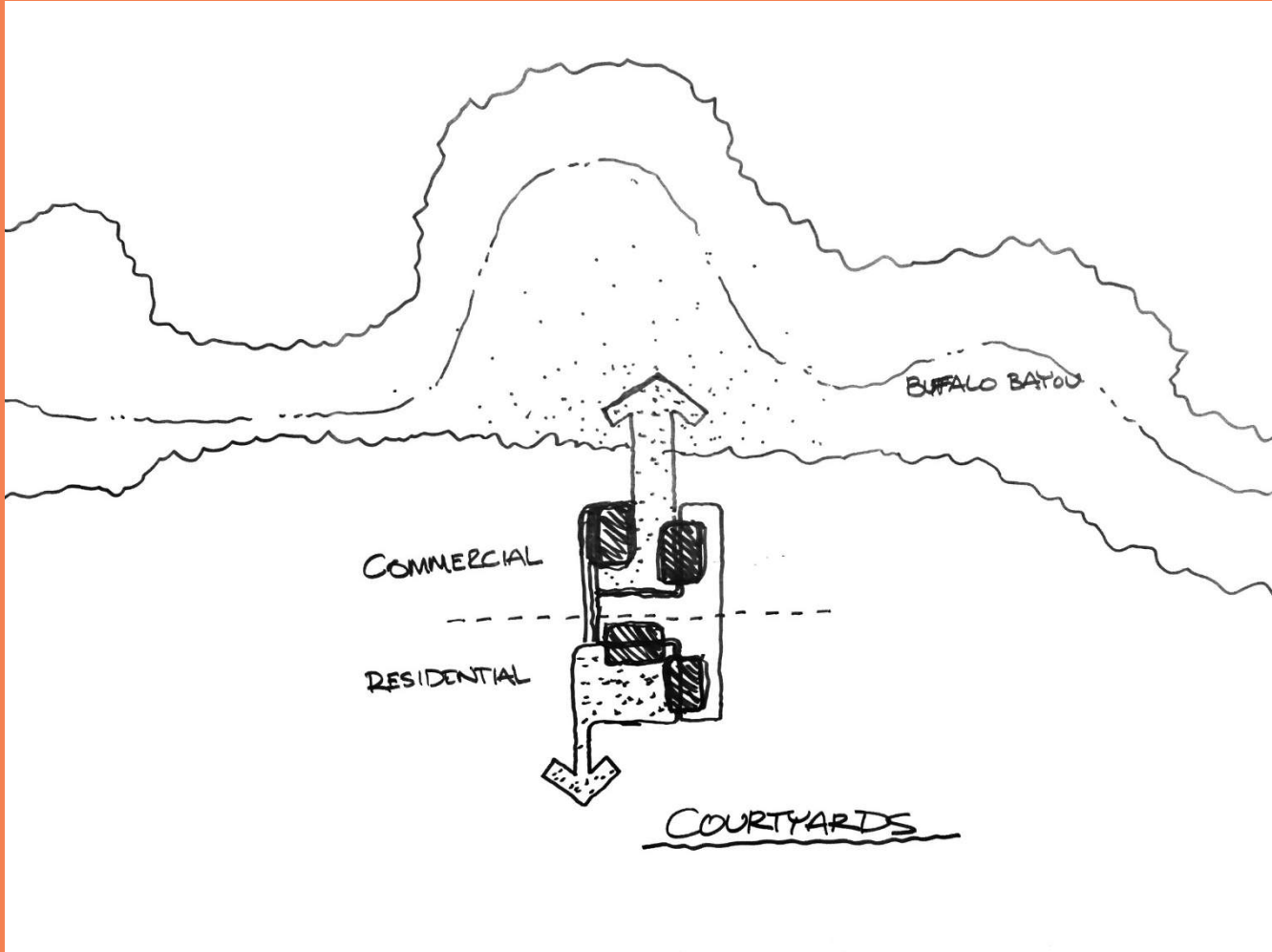


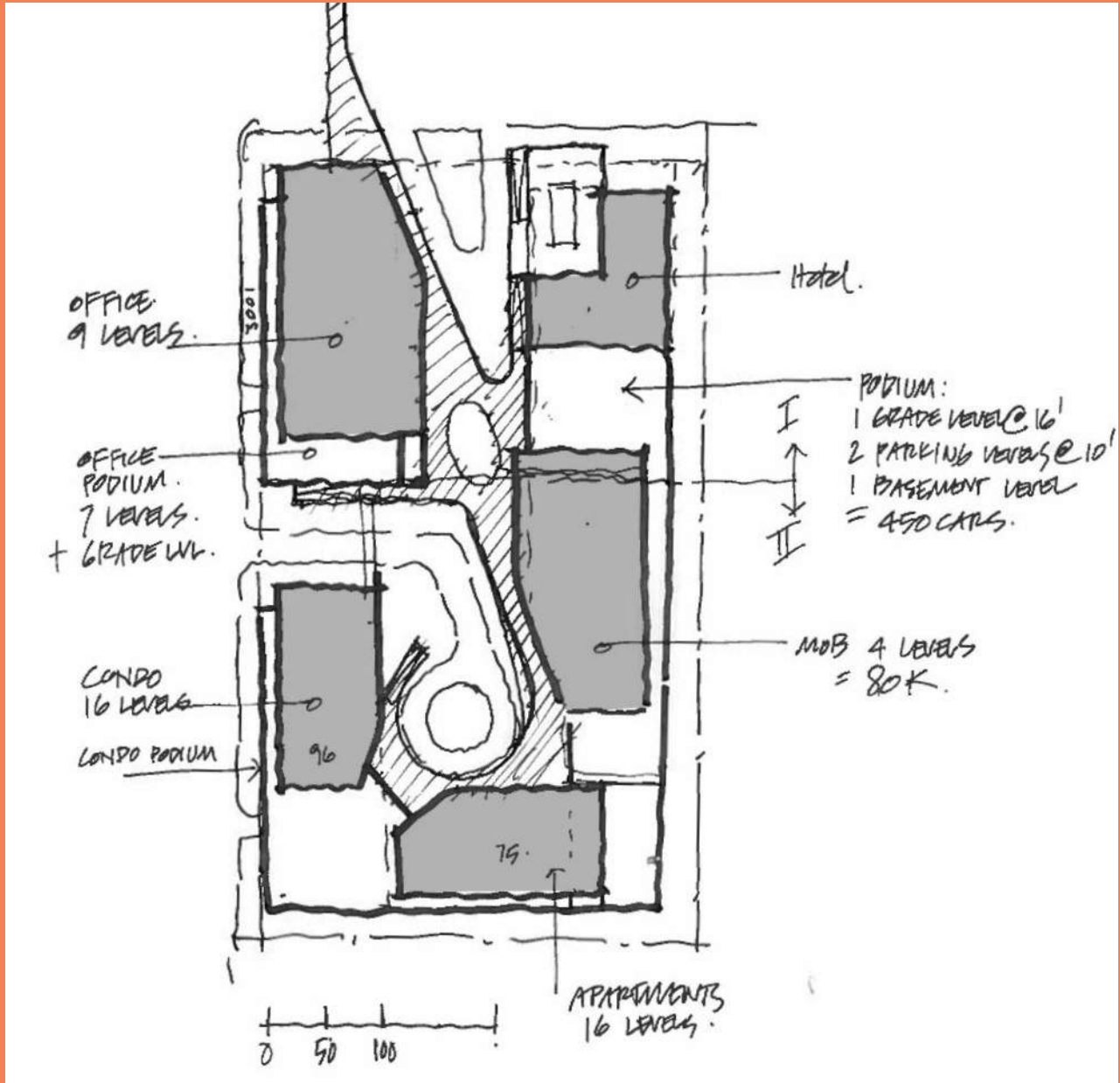
# Design - Ideas and Process

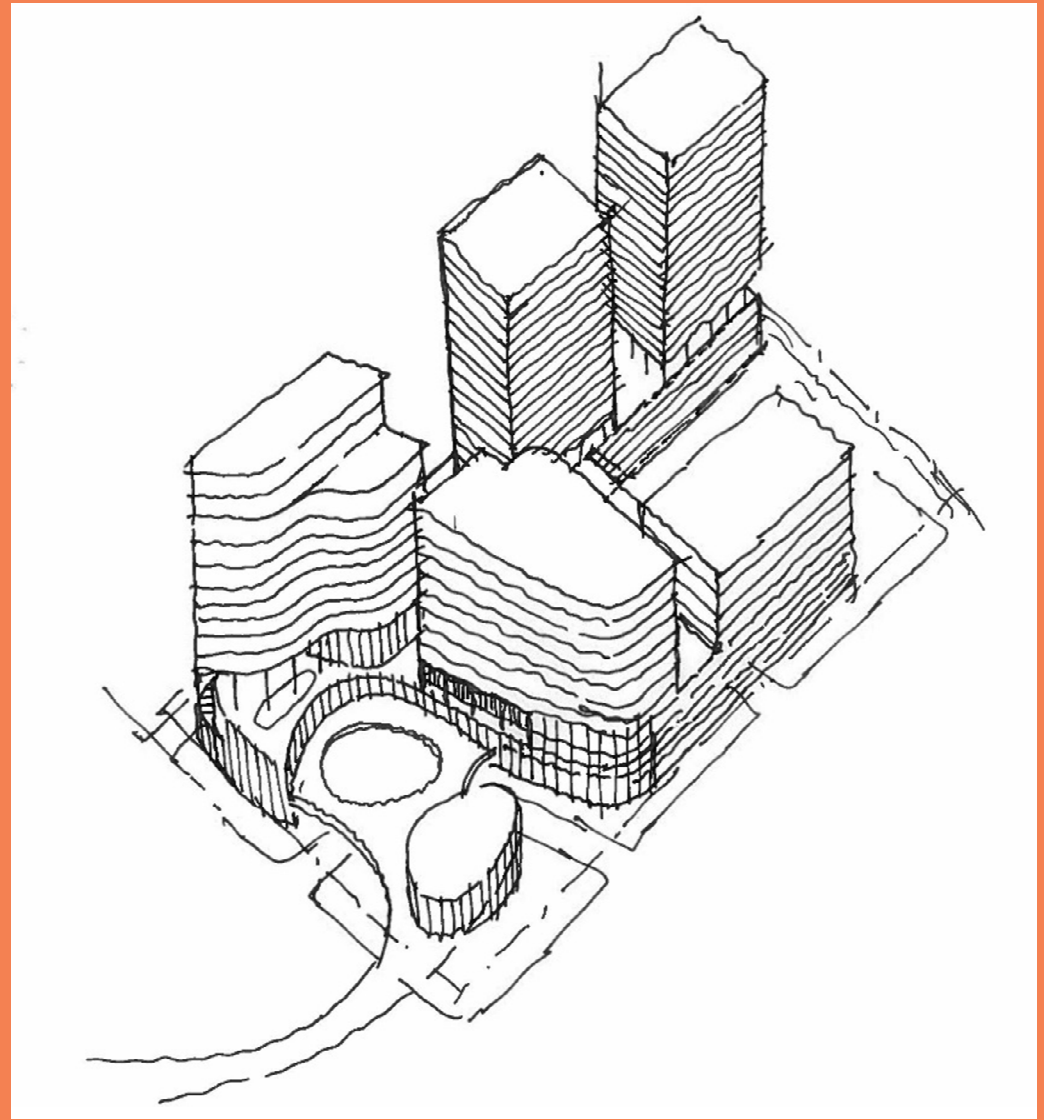








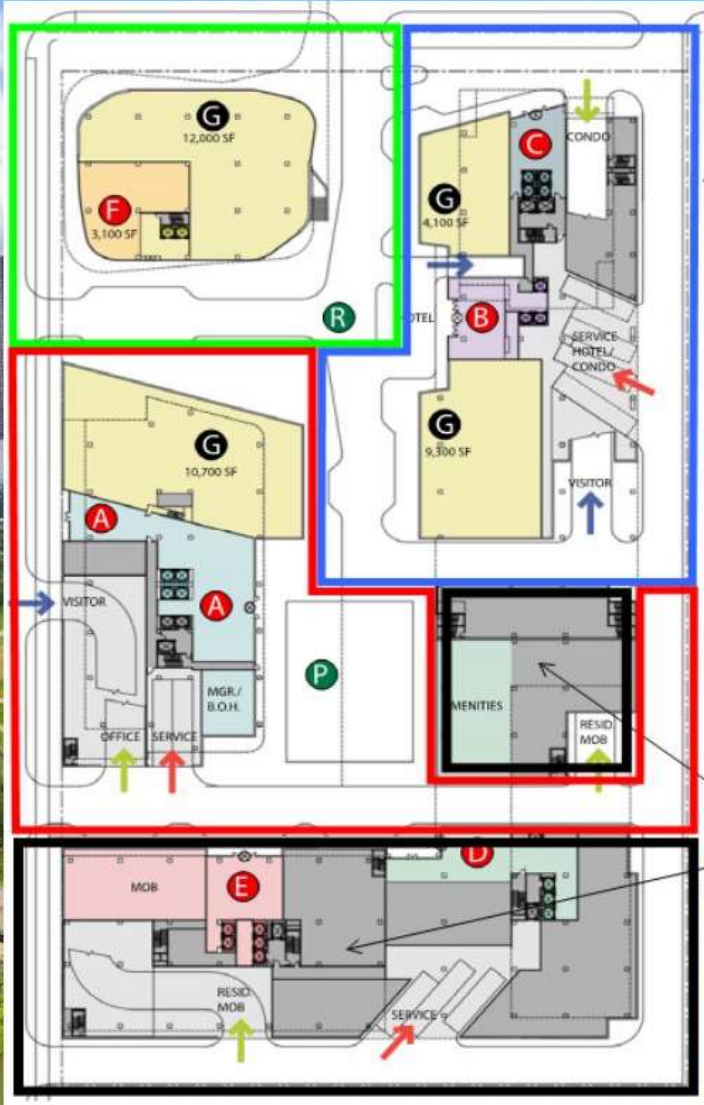






# PAVILION

(Construction Start Summer 2018)

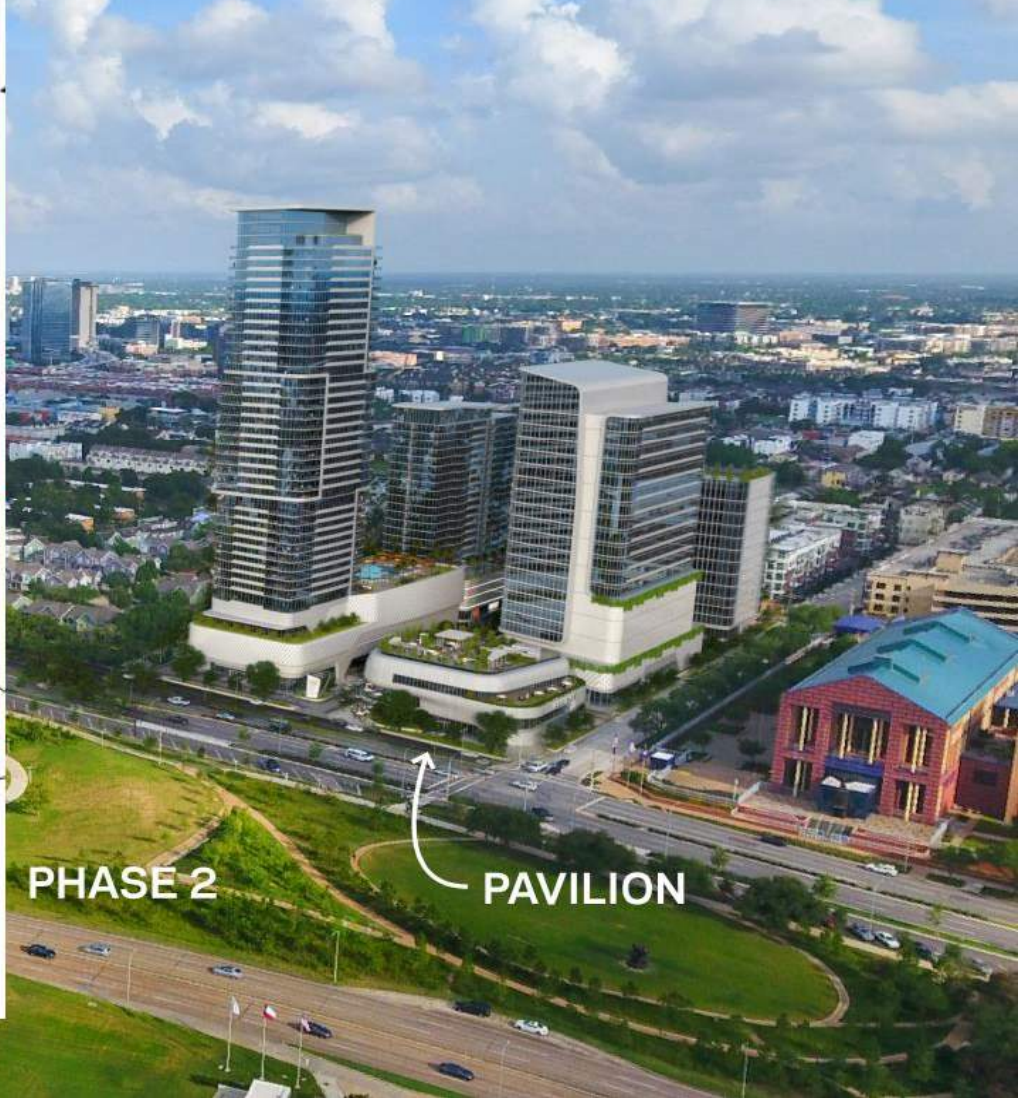


OFFICE

NORTH

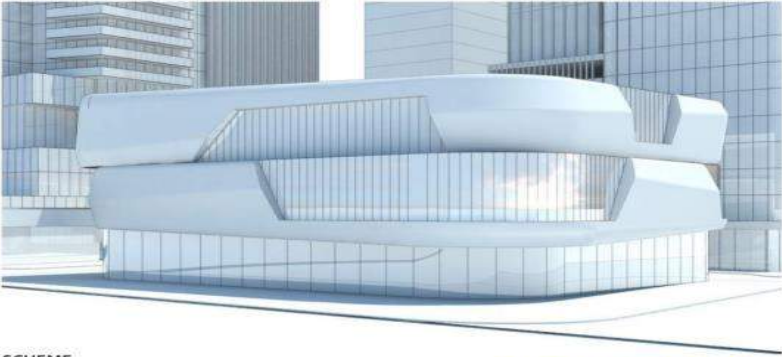
# HOTEL/CONDOMINIUM

(Construction Start Summer 2019)



PHASE 2

PAVILION



SCHEME:  
ERODED MASS

**EARLY MASSING**



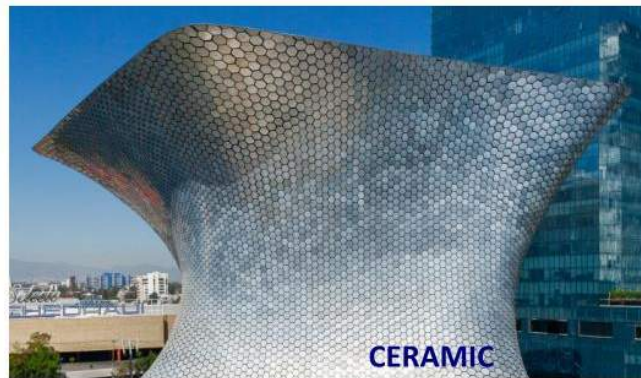
**FINAL CONCEPT**



**CURRENT MASSING**



# Material Research





<http://shapeshift.tech>

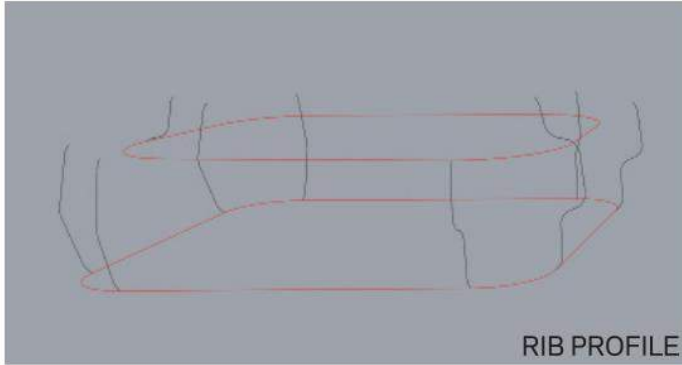


 ShapeShell™

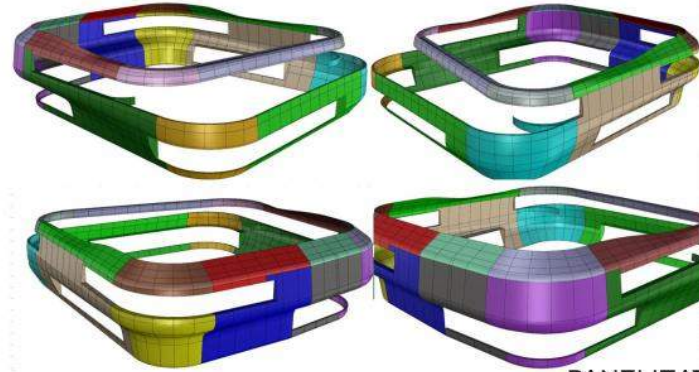
# Vetting – Code Compliance



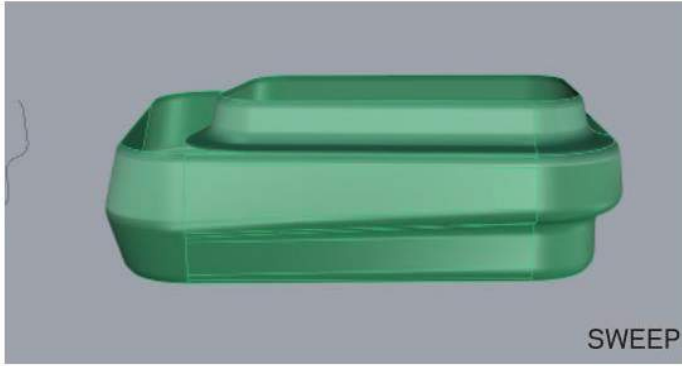
NFPA 285



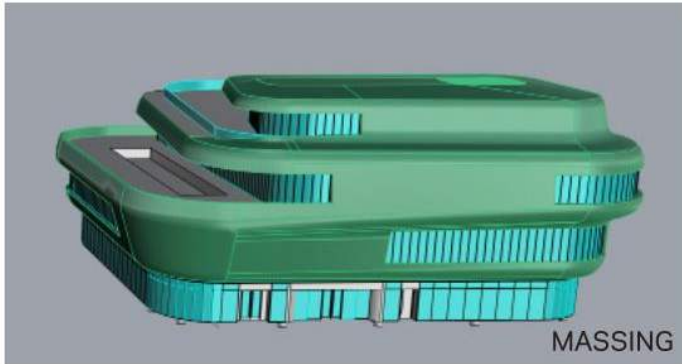
RIB PROFILE



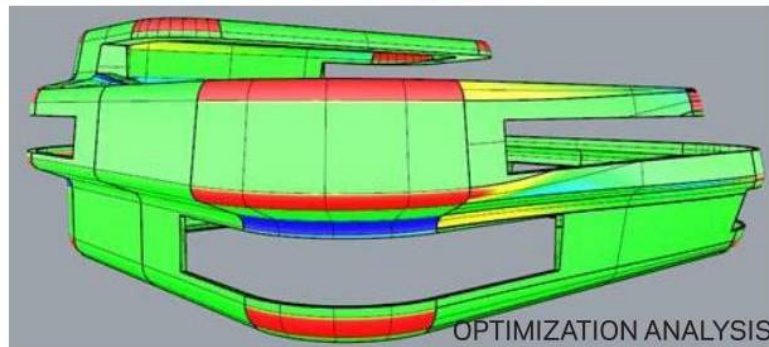
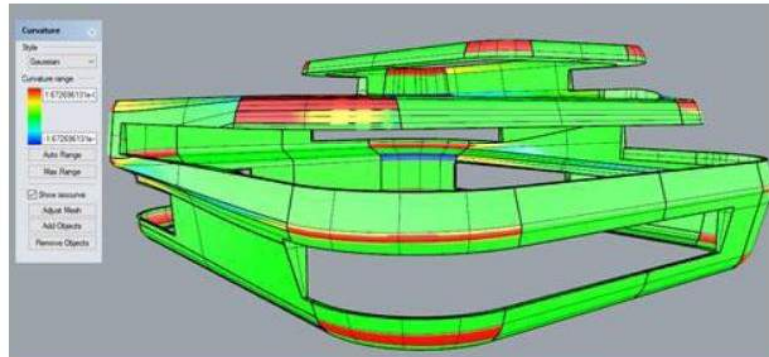
PANELIZATION



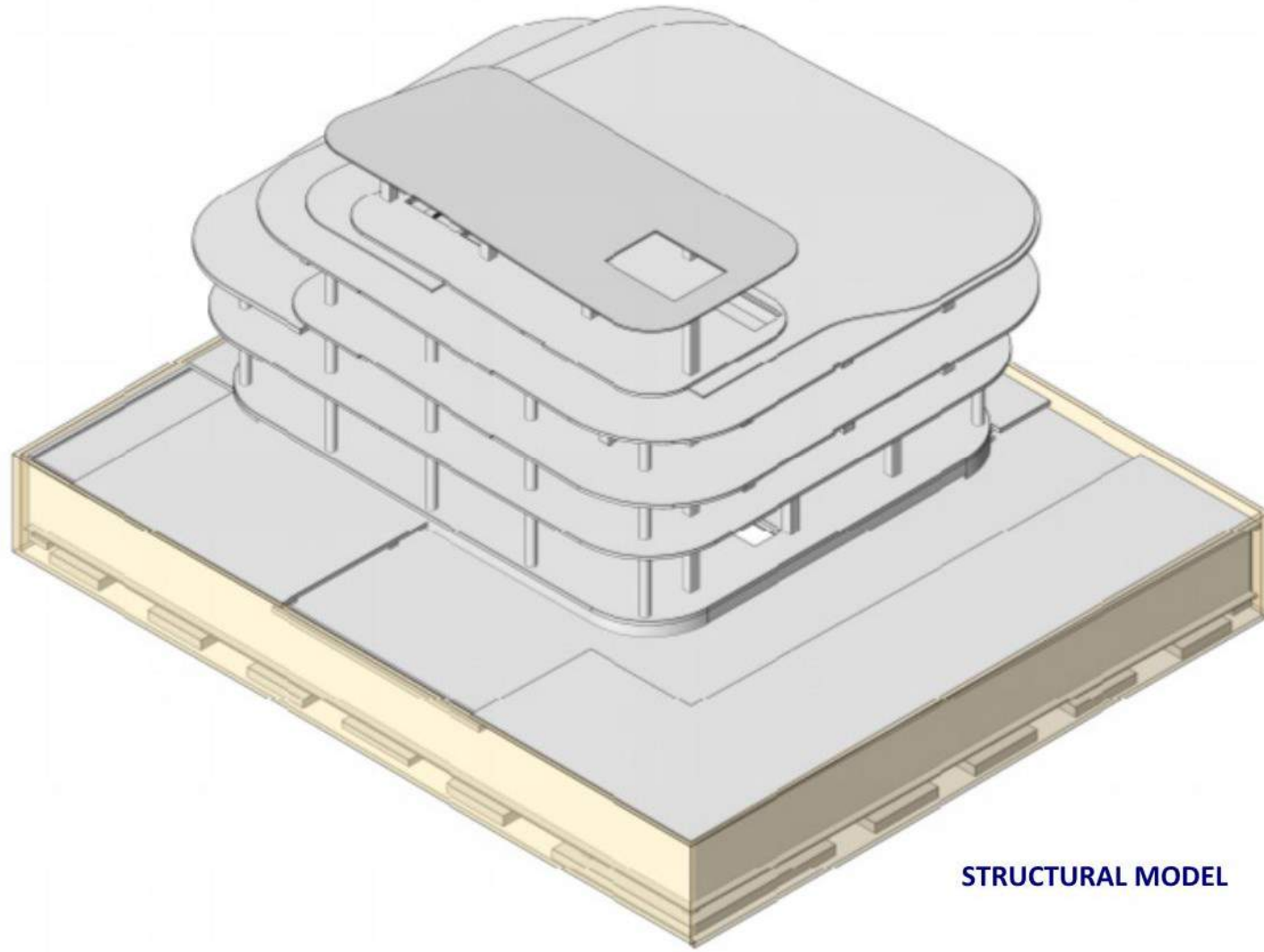
SWEEP



MASSING



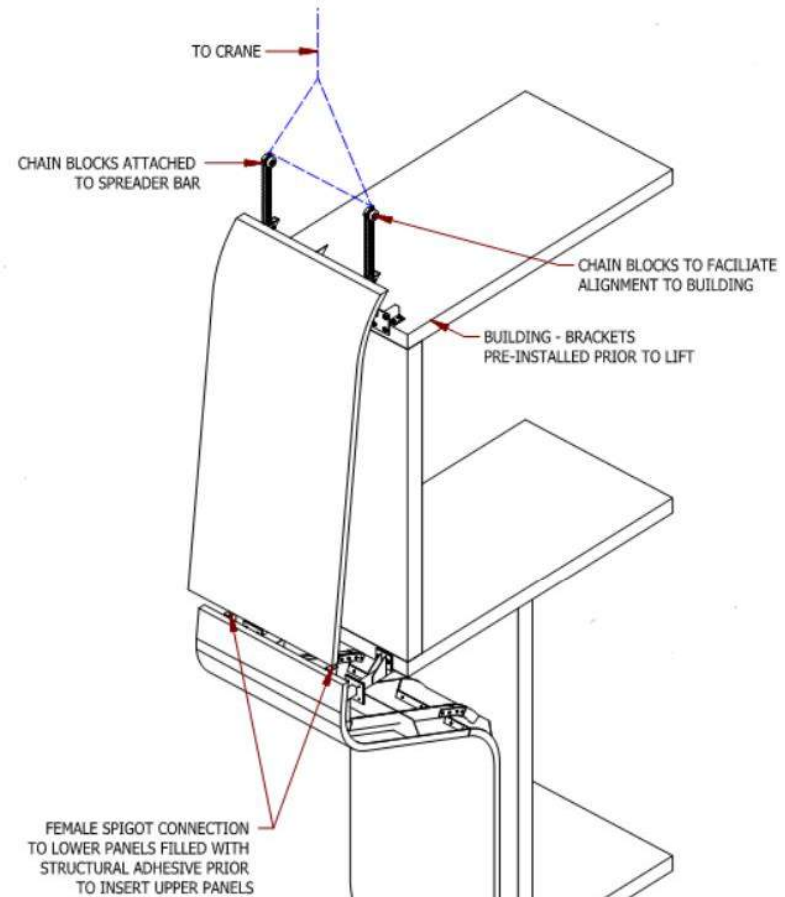
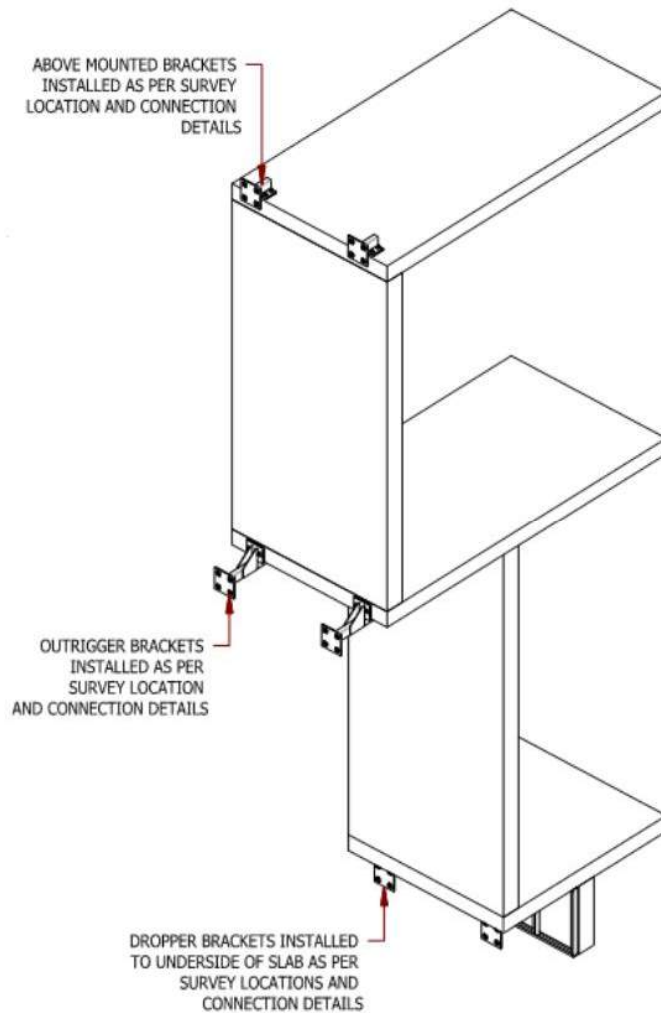
OPTIMIZATION ANALYSIS



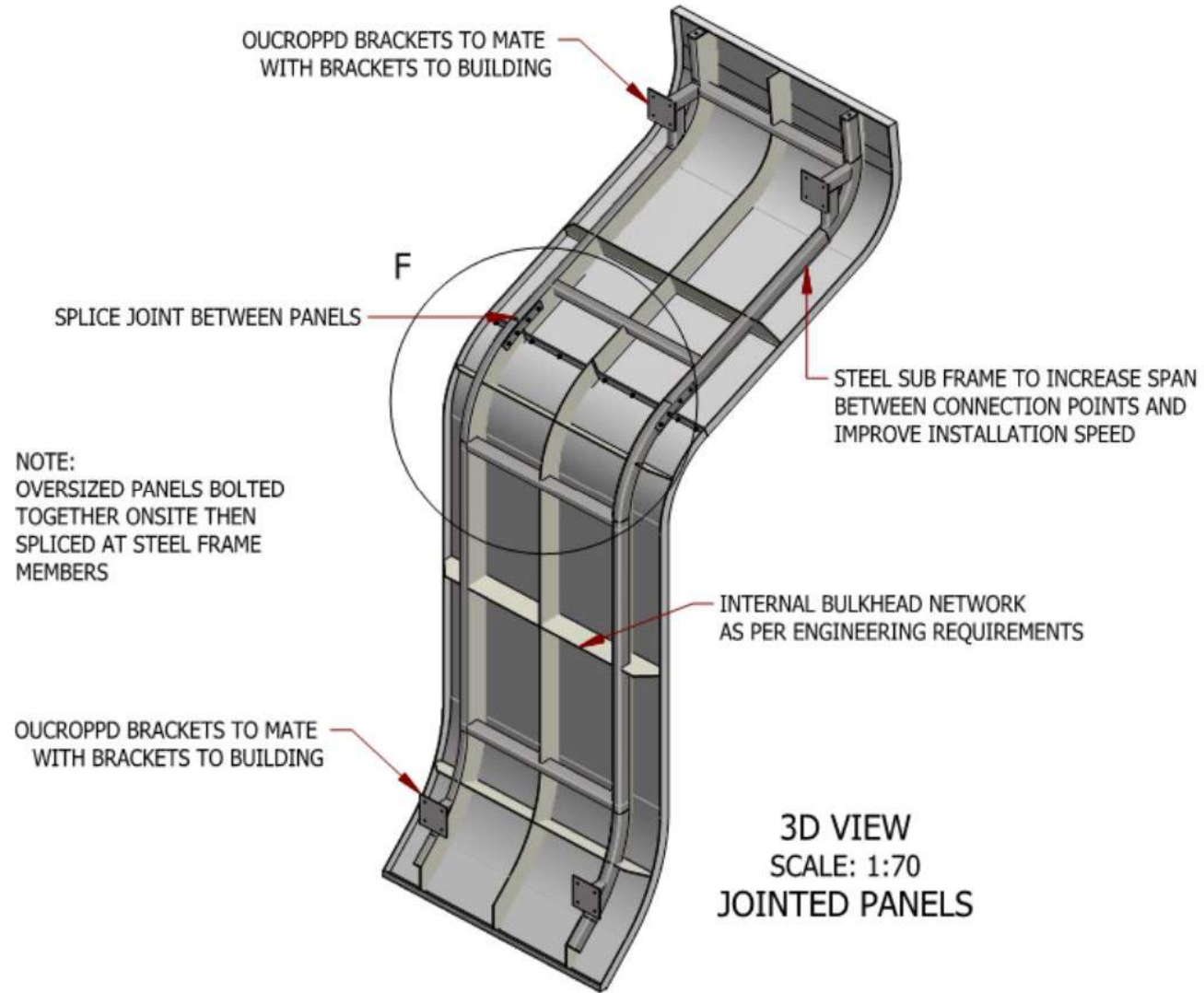
**STRUCTURAL MODEL**



## SHAPESHIFT DETAILING



## SHAPESHIFT DETAILING



Future



THANK YOU

GLASS IN FAÇADES: TRENDS, TECHNOLOGY, VALUE CHAINS

# WANDERING THROUGH THE WICKED PROBLEM

Sheldon Davis



Trends

Materials

Value Chain

**Wicked Problems...**  
**have no definitive formulation.**  
**have no "correct" solution.**  
**are not immediately testable.**  
**driven by significant externalities.**  
**have many "explanations".**

# Engineers hate wicked problems.

-rough and sarcastic translation of Rittel and Weber

# Trends



Sustainability, Resiliency, and Circular Economy



End of Low Cost capital



Demographic Shifts



Climate Change



Urbanization versus Deurbanization



Infrastructure Upsets

# Trends



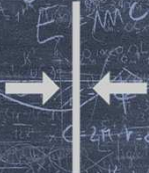
Size Matters



The Building Is Alive



Energy Neutral Buildings



Form, Function, And Thin



Workplace Wellness



Digitization

# Materials

Different Reflected Colors  
Less Internal Reflection  
Less/More External Reflection

Active Facades  
Better Thermal Insulation

Glare Protection  
Privacy When Needed  
Improving Sound Reduction

Energy Generating Facades  
Green IGUs  
Lifecycle, Embodied CO<sub>2</sub>, other

Structural Glass  
Lighter IGUs

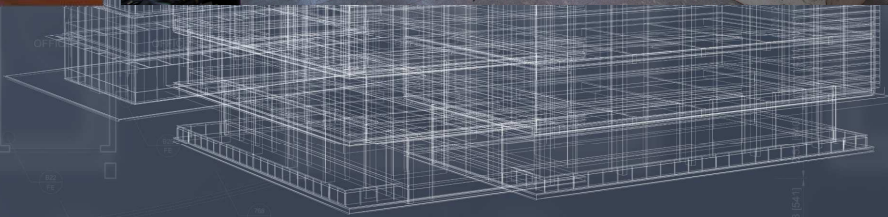
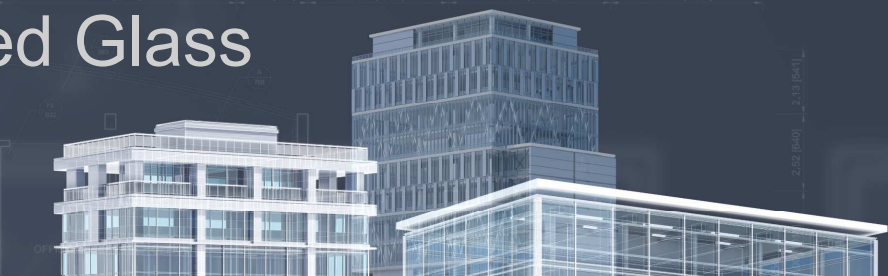
Media and Interactivity  
Integration and Automation



# Materials: Vacuum Insulated Glass



Eastern Michigan University  
Ypsilanti, MI



# Materials: Dynamic Shade







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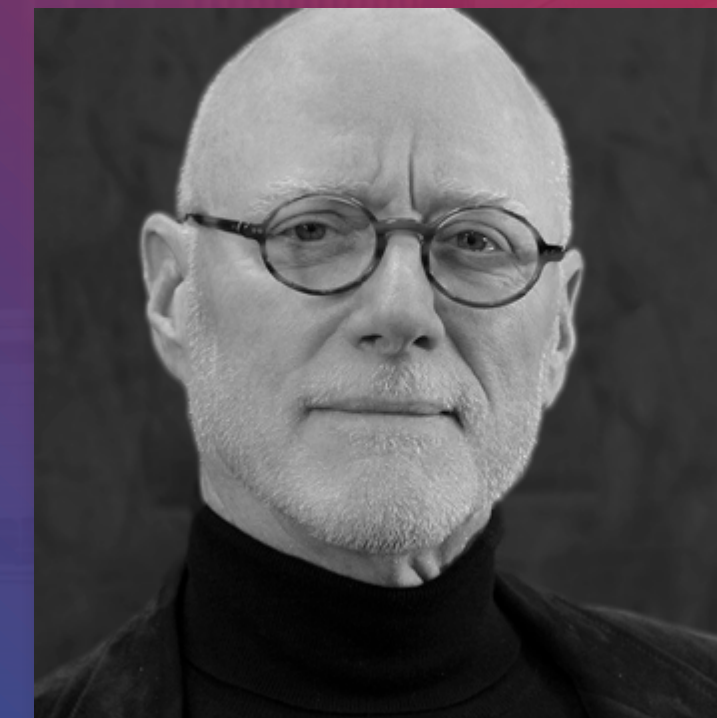
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