

2020 Project Delivery Symposium

Design Collaboration through Technology

10 March 2020



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Project Delivery

an **AIA** Knowledge Community

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



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Organizer:

- **Mark Dietrick**, Assoc. AIA, LEED AP; Director of Services, CASE Technologies

Moderator:

- **James Brogan**, AIA, RIBA; Principal/CIO - KPF

Presenters:

James Vandezande

Architect; Principal/CTO
HOK

Michael Brotherton, AIA

President, SITU Fabrication

Ryan Johnson

Architect; 2020 Chair, Technology in
Architectural Practice (TAP)
Clark Nexsen



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Learning Objectives:

- Discover how effectively using technology in collaborative delivery methods can streamline documentation and fabrication processes.
- Prepare for owner-driven project technology and collaboration requirements that requires rigorous information management planning and quality control processes.
- Understand the barriers to buy-in and develop ways to build confidence in the process by simplifying data access.
- Discover how effective use of technology may minimize uncertainty and increase trust and the opportunities this may provide for project leadership.

Agenda:

A: Session Introduction + Introduce Panelists (10 min)

B: Presentations and Panel Discussion (60 min)

C: Open Discussion with Attendees (20 min)

D: Closing Statements (5 min)



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A: Introduction:

1: Impact of Digital on Project Delivery Methods

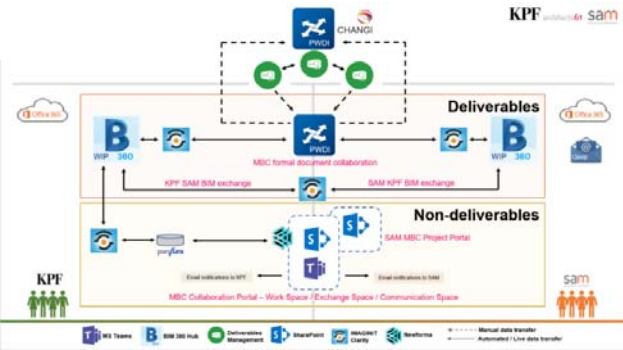
2: Adoption of these Processes and Methods

3: Expectations of Project Constituents

- Owner
- Design Team (Lead Design, AOR)
- Consultants
- Contractor, Subcontractors, Fabricators and CM
- Operator
- Local Building Authority (ISO 19650, etc.)

A: Digital Platforms and Project Delivery: Collaboration

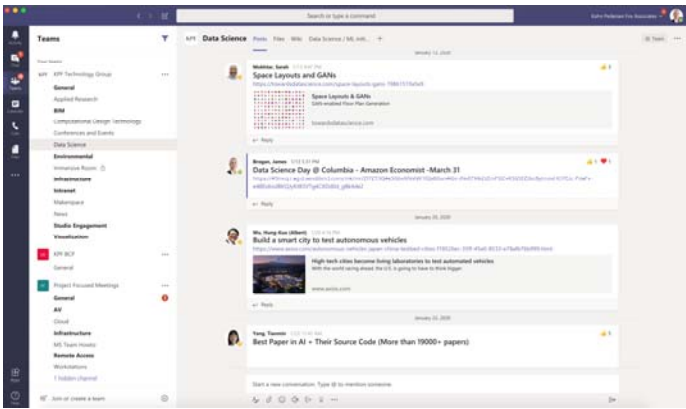
Common Data Environment (CDE) ISO 19650



Cloud Platforms



Communication



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A: Digital Platforms and Project Delivery: Processes

Shared Formats



SOLIBRI
A NEMETSCHEK COMPANY

BIMcollab®



Data and KPIs

BIM MODEL PERFORMANCE
Hang Lung
2867-1
Hangzhou, China
Mixed-use



Fabrication



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KPF



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Michael Brotherton
SITU



James Vandezande
HOK

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Why Care About Tech?

The Power of Culture

Trust People & Tools

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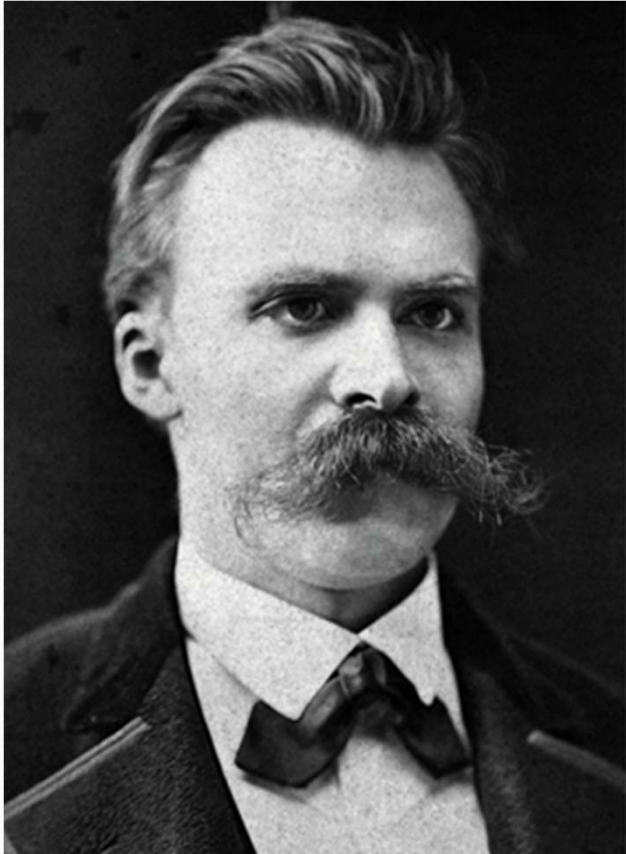
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“ You are right, our writing equipment takes part in the forming of our thoughts. ”

Friedrich Nietzsche



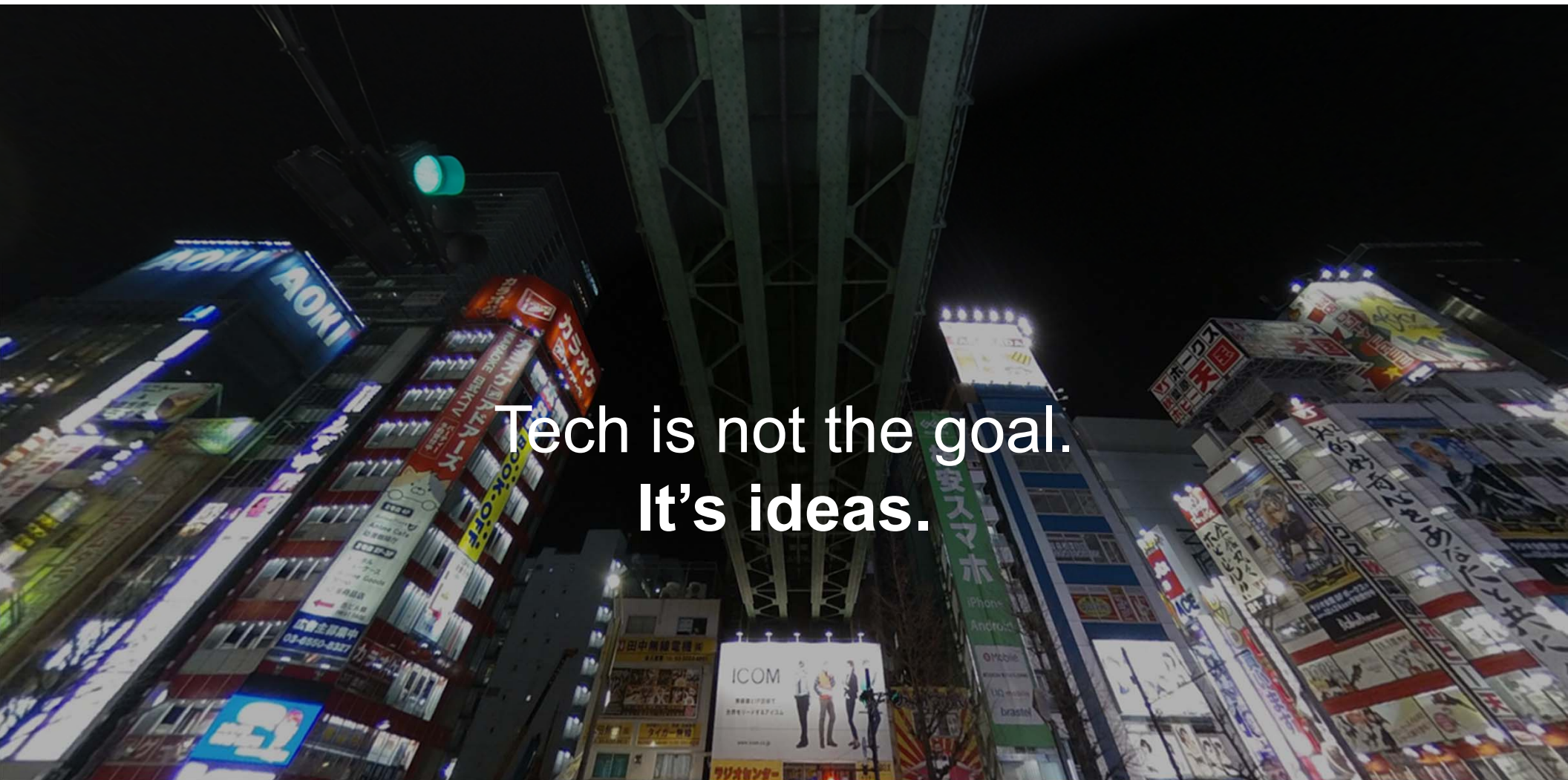
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Tech is not the goal.
It's ideas.



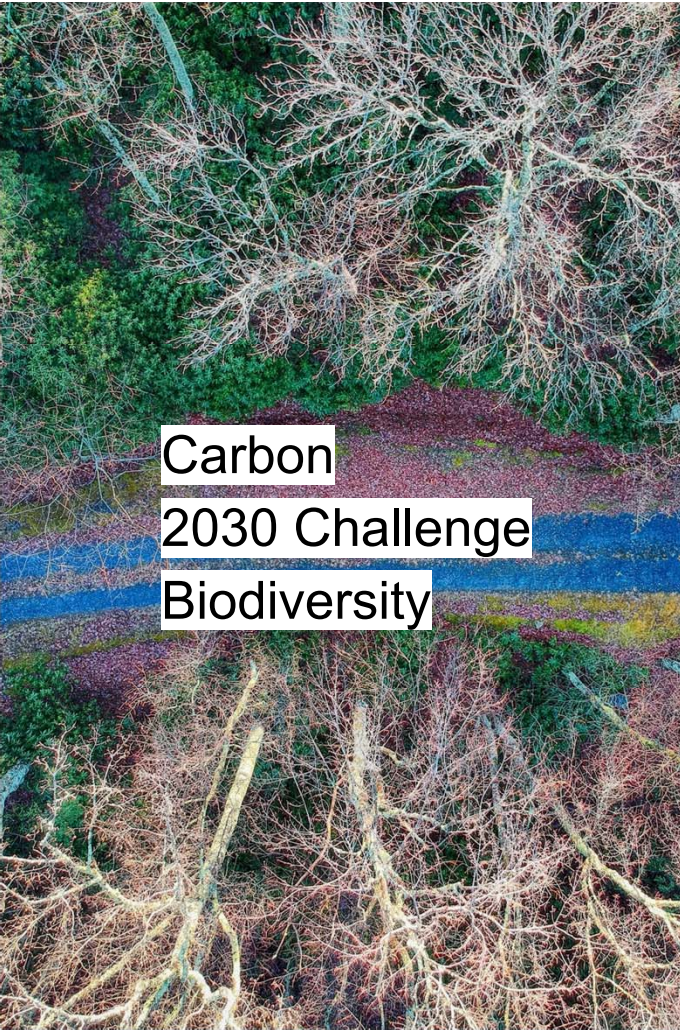
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Carbon
2030 Challenge
Biodiversity



Design
Innovation
Relevance



School Safety
Inequality
Humanitarian Crises



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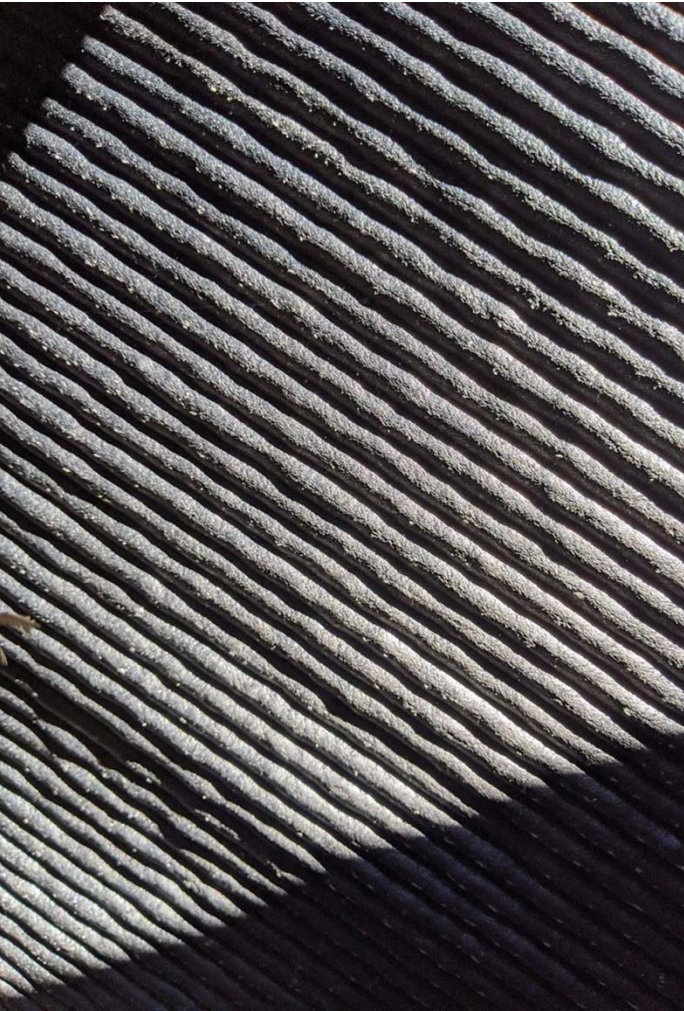
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Culture



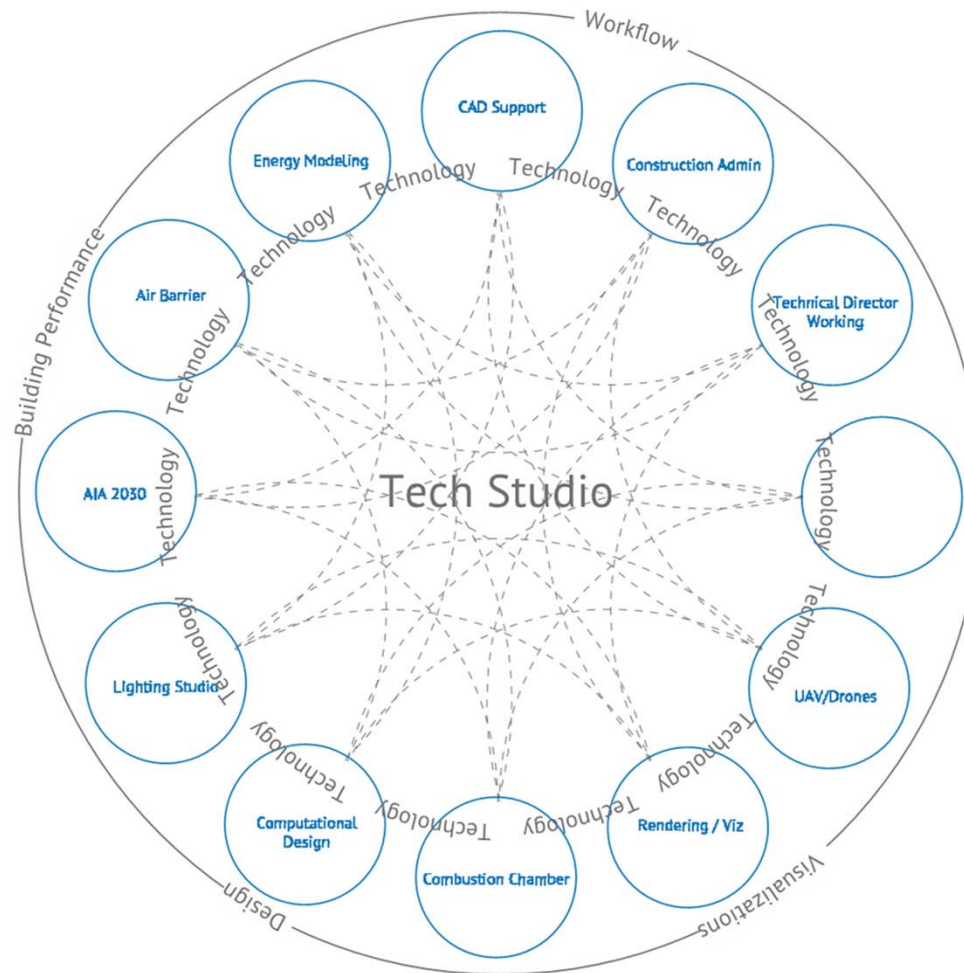
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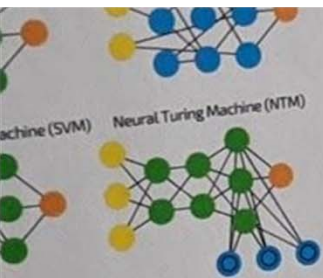
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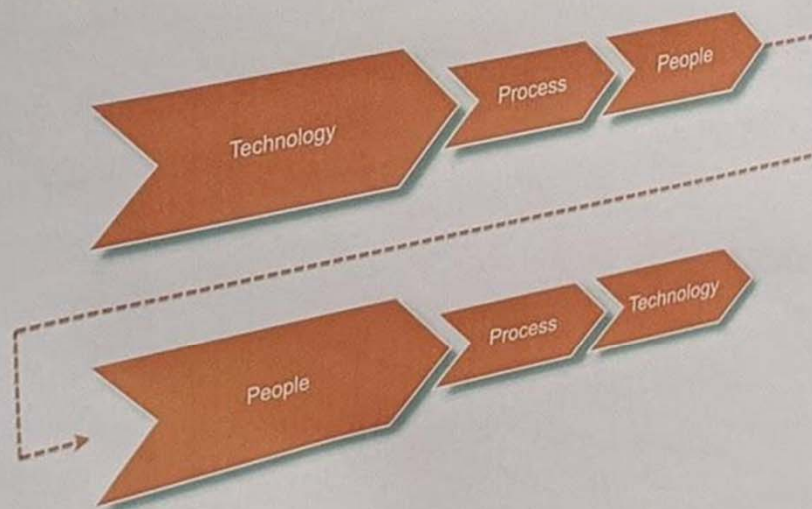
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Virtual Design & Construction at CannonDesign



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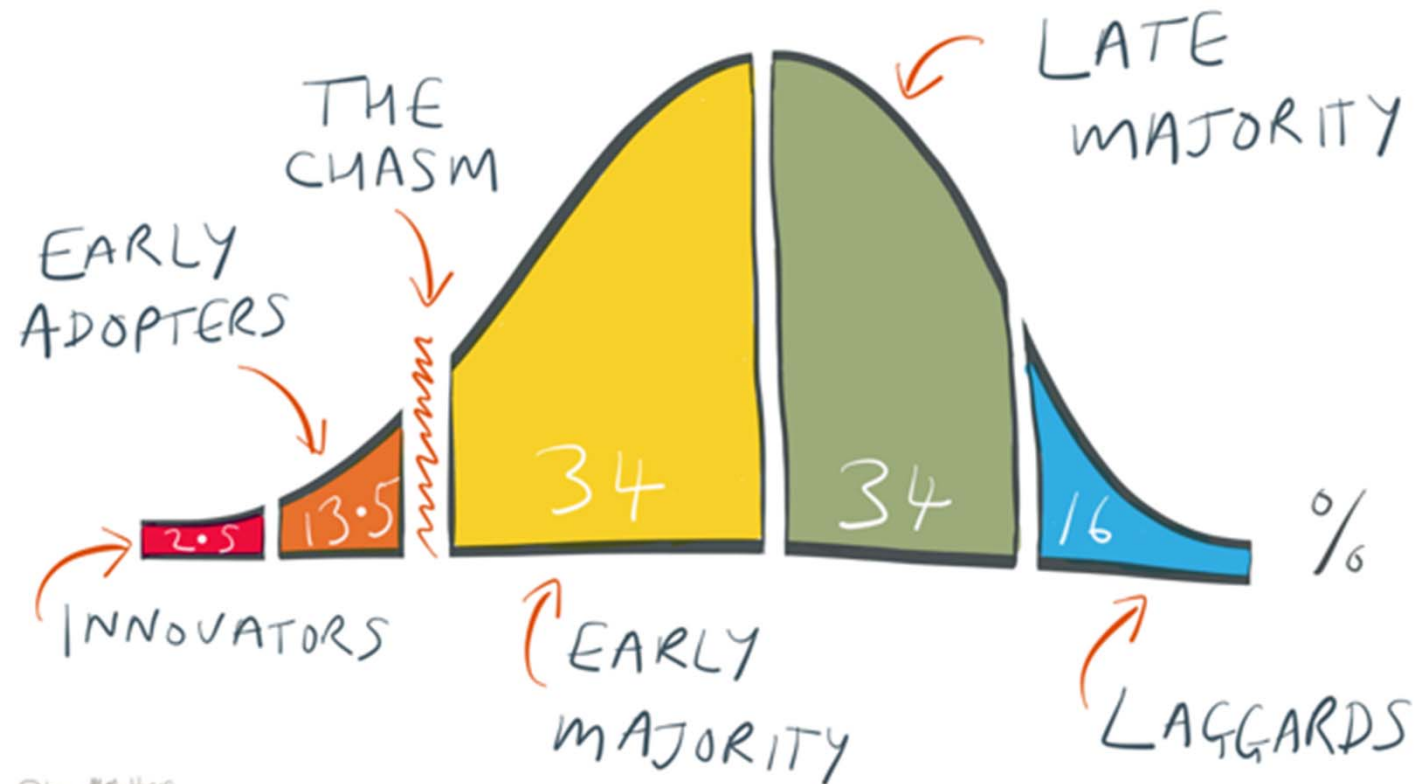
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DIFFUSION OF INNOVATION



@bryanMathers



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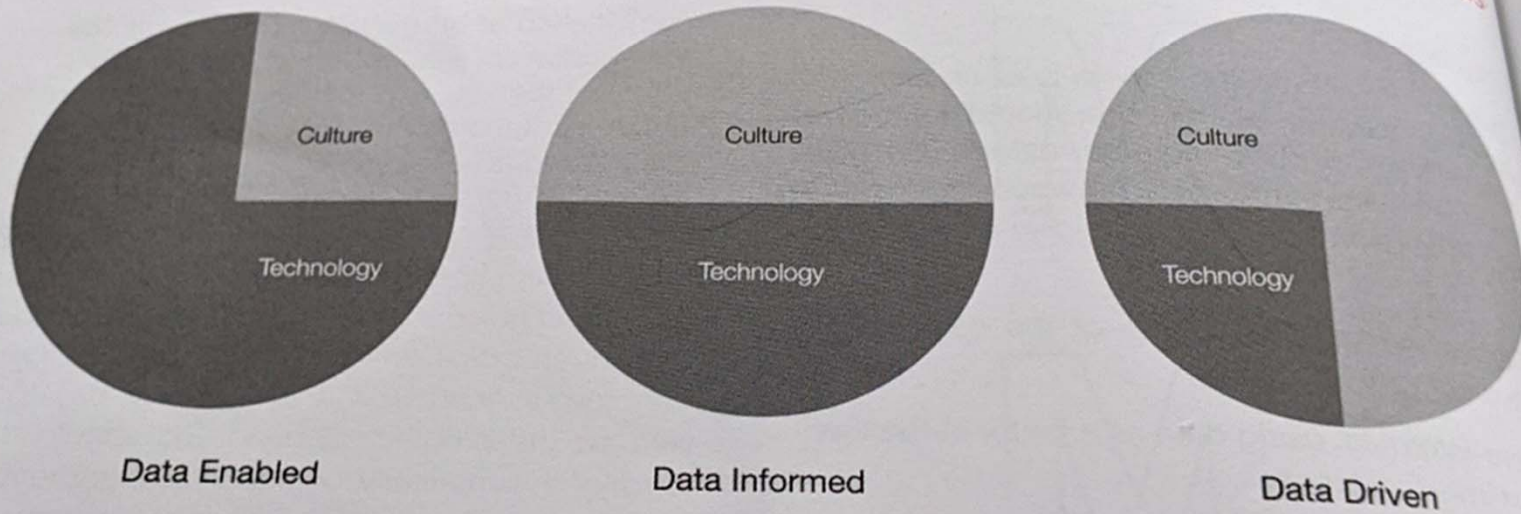


Figure 2.15: To become data-centric, the core of your efforts ought to be focused on firm culture, not technology. © R. Deutsch

Data-driven firms go beyond the status quo and boldly address and work with data to their better-

lic—at the expense of potentially reducing human input? Aditazz co-founder Ziemund B...



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Trust as a driver for change



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Trust People



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Trust Technology



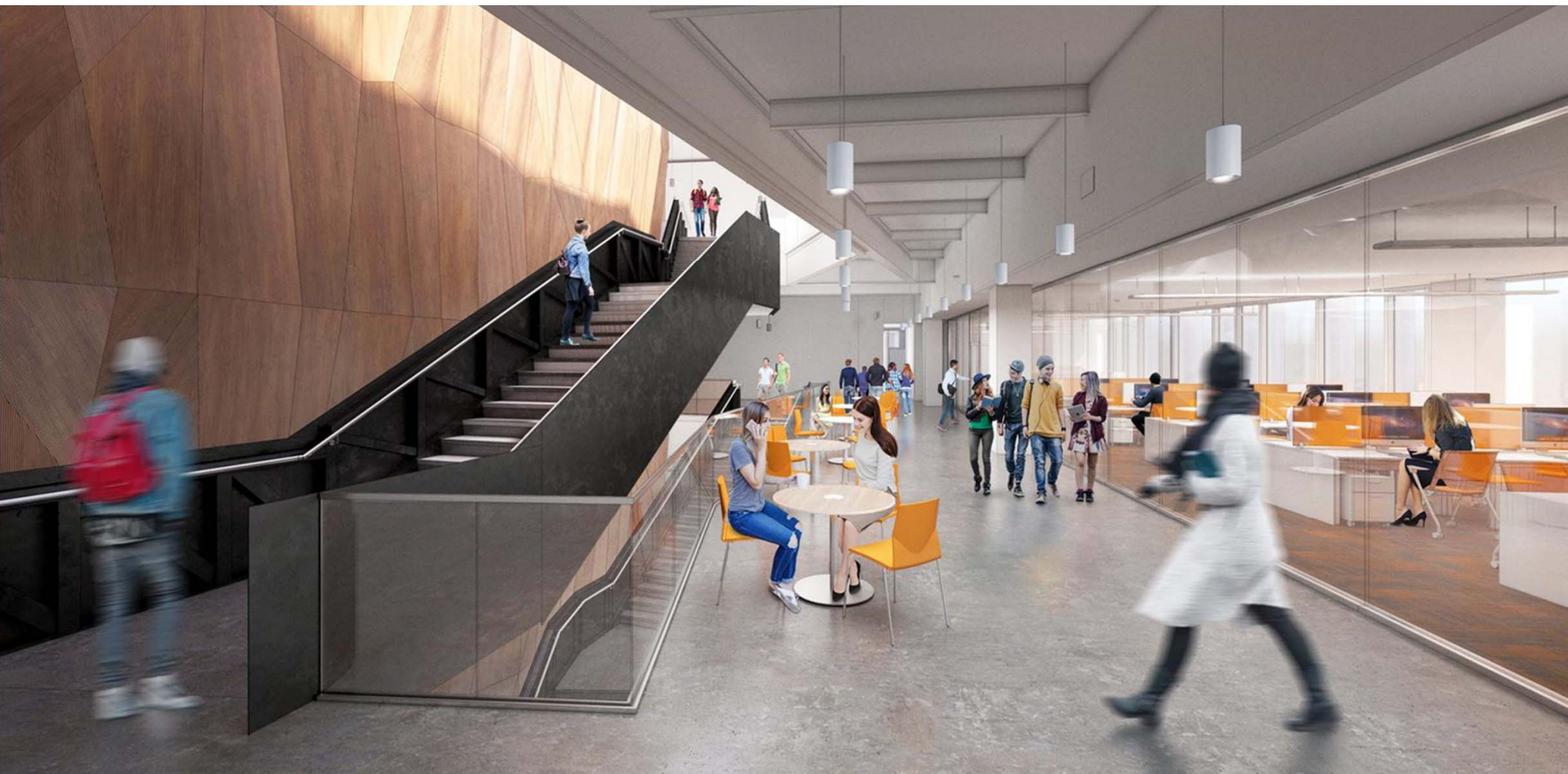
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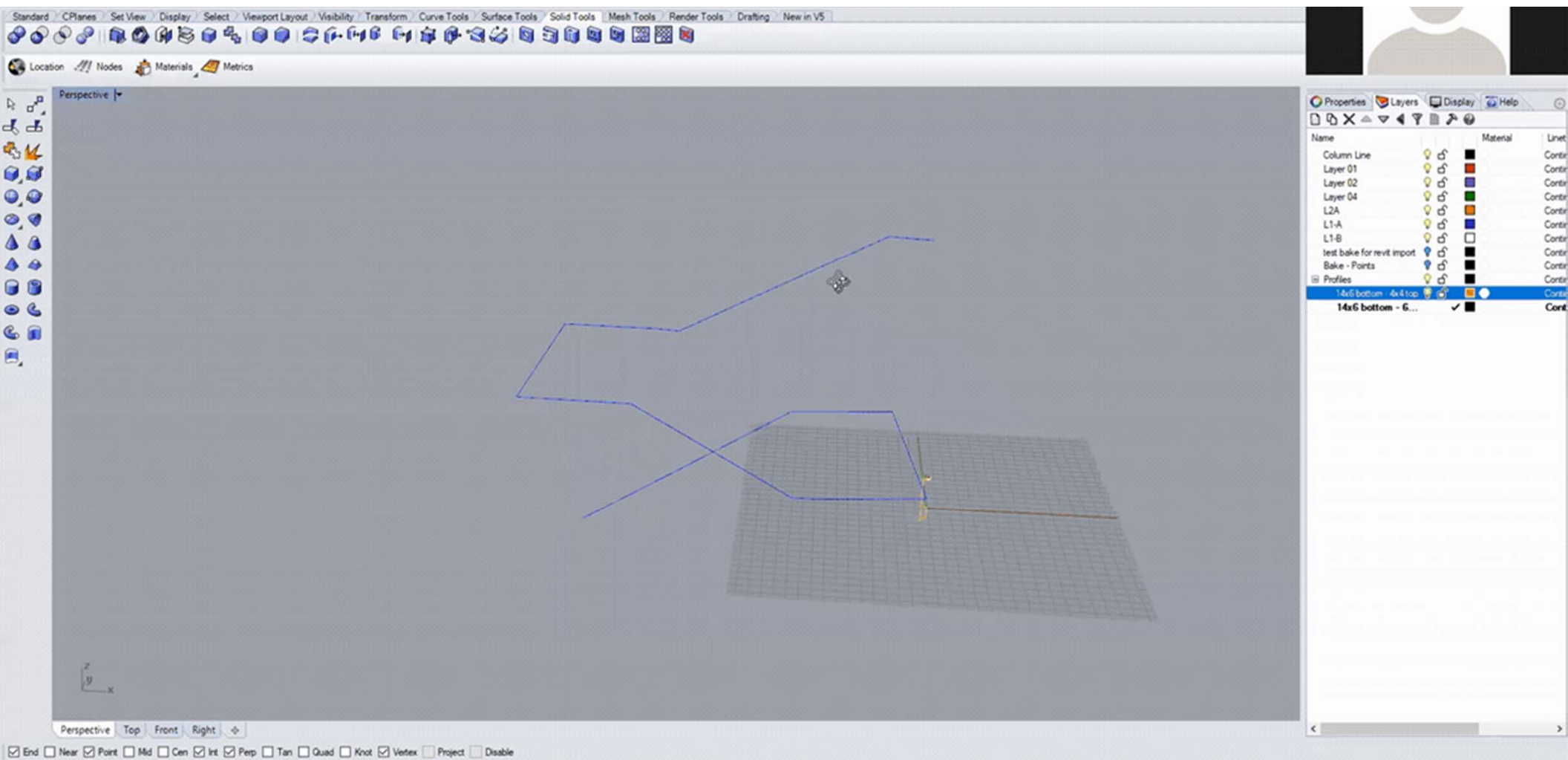
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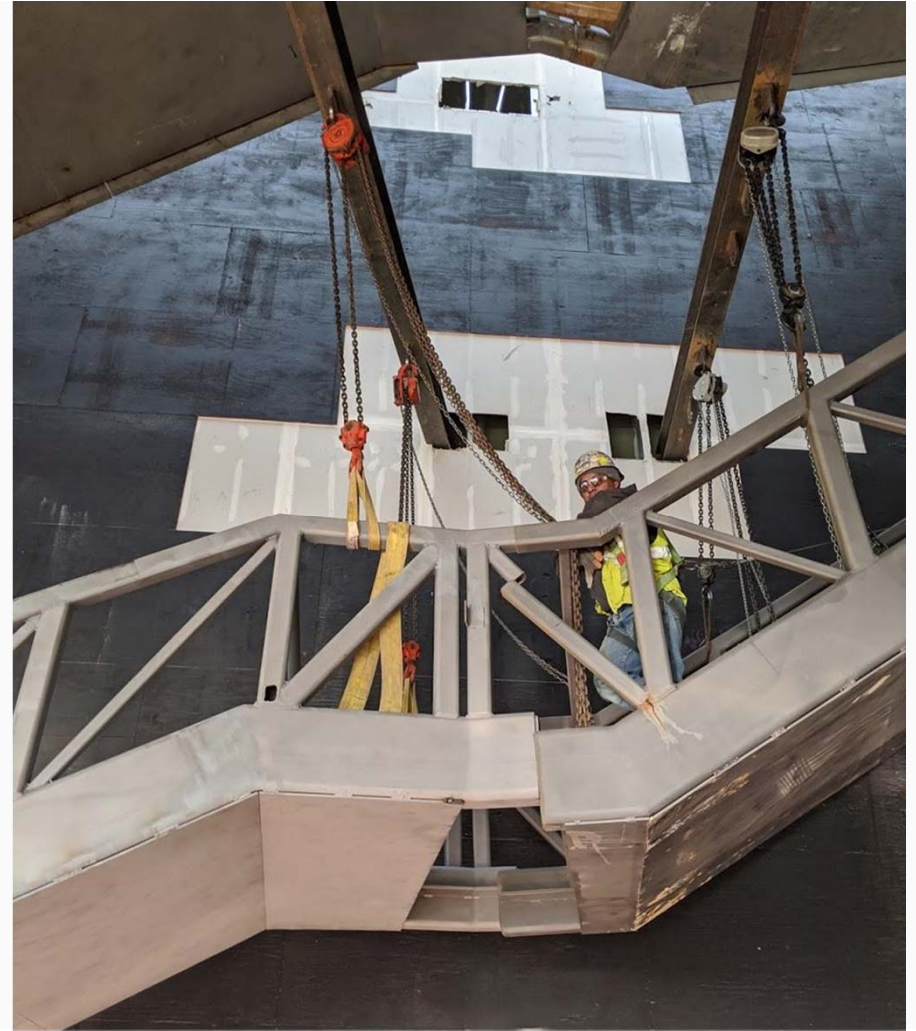
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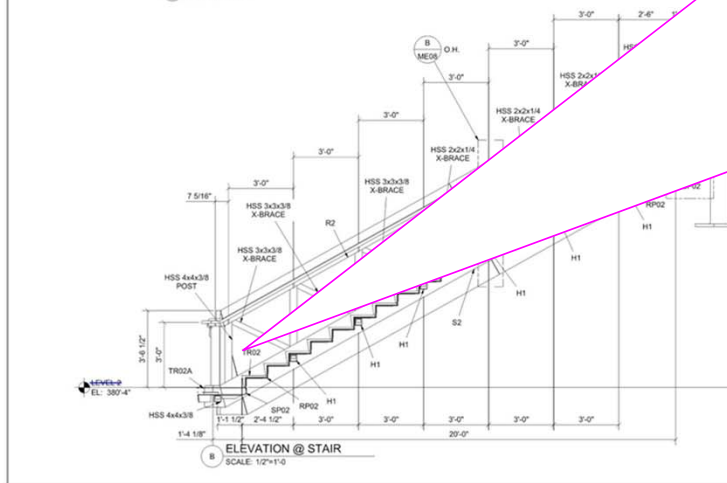
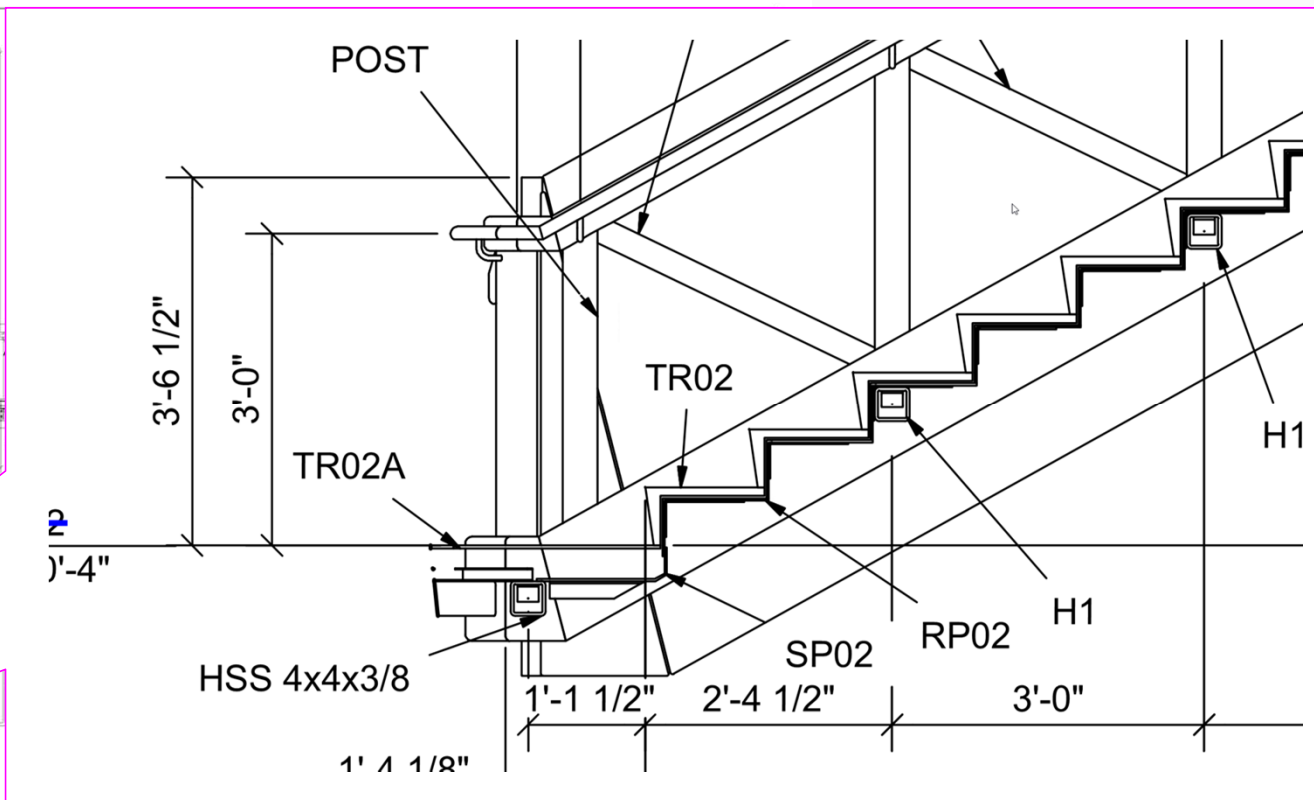
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SHIP NAME	AS NOTED	AS NOTED	AS NOTED	AS NOTED	AS NOTED
SHOP PRIMER	AS NOTED	AS NOTED	AS NOTED	AS NOTED	AS NOTED
NCSU ENG. BUILDING OVAL 915 PARTNERS WAY, RALEIGH, NC			PROJECT NO. MB 09/28/11 DESIGNED BY BS 09/28/11 DATE 29311		
NORTH STAIN (NO)			(NO)		
CLARK NEXSEN			29311		
SKANSKA			SMC04		

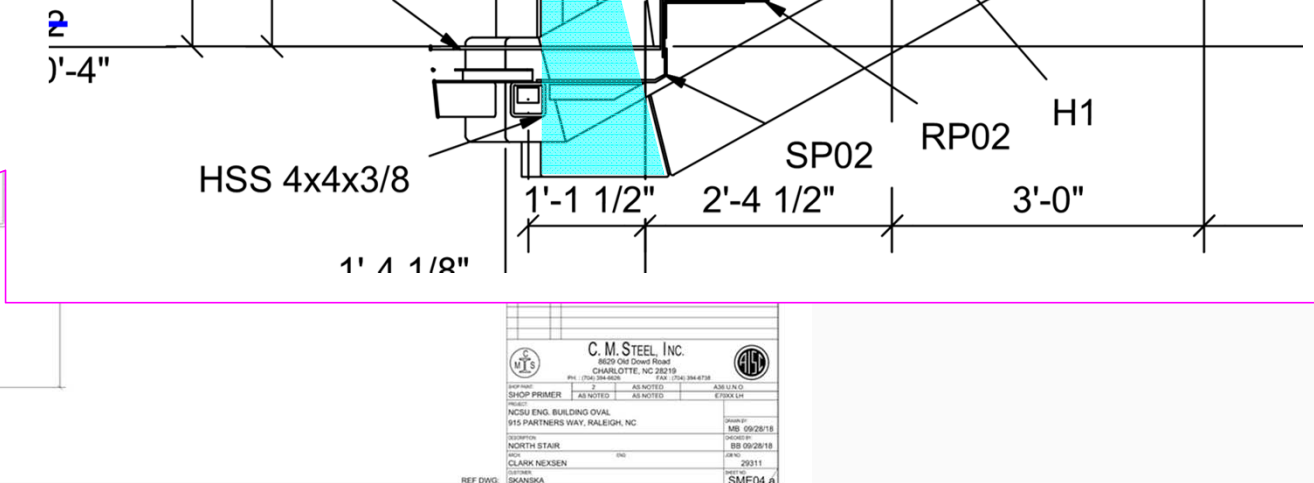
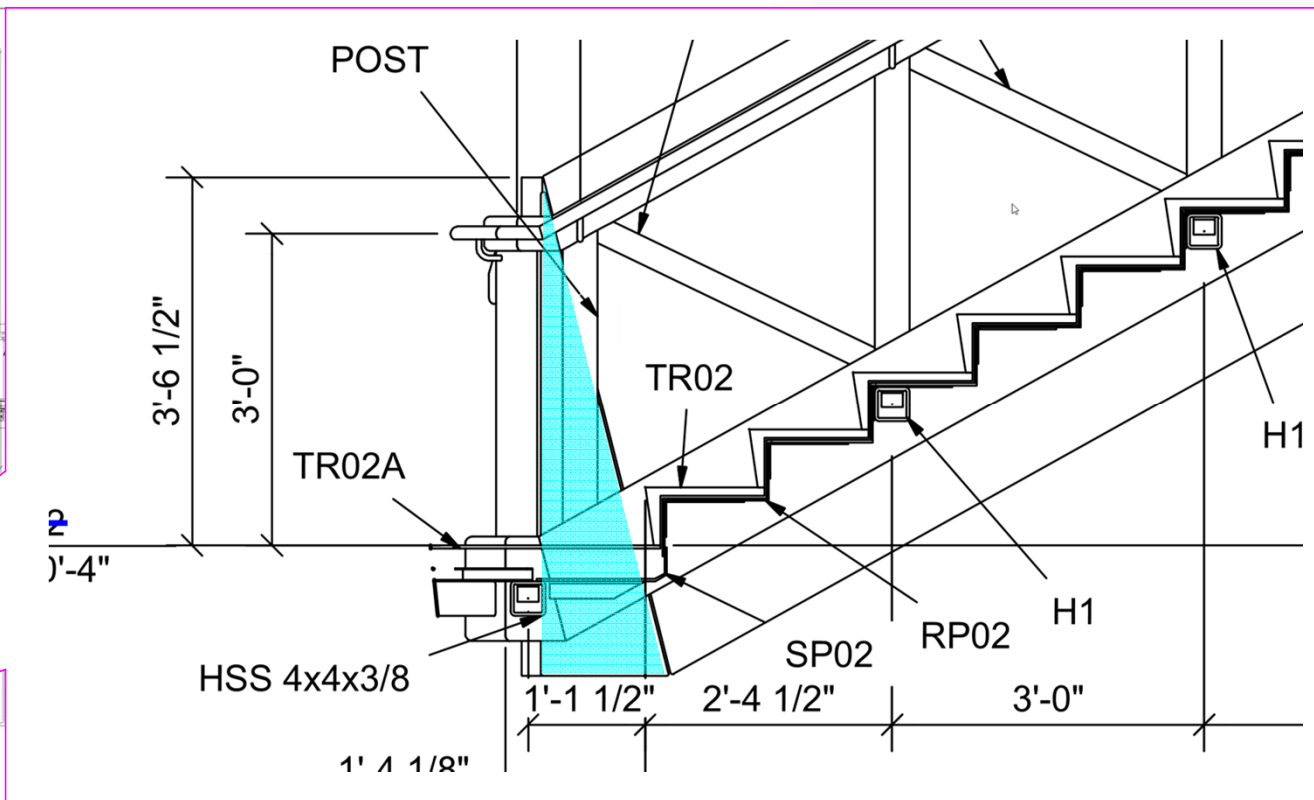


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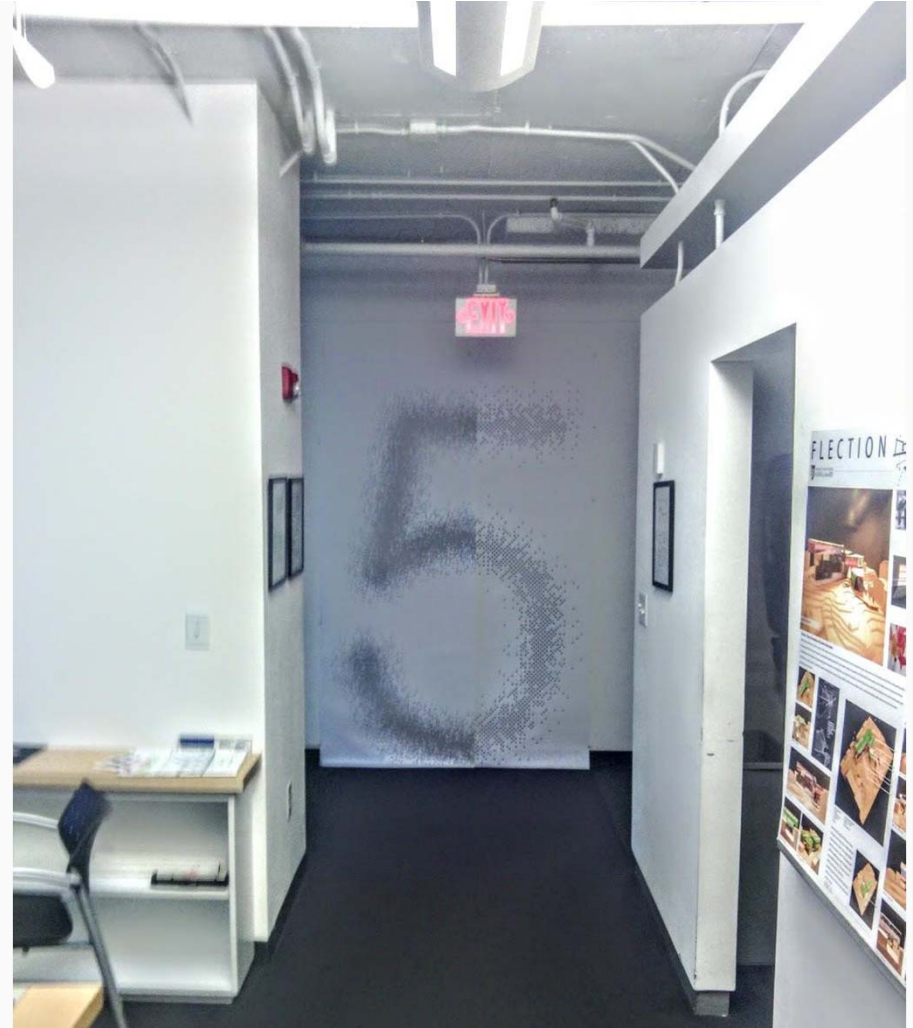
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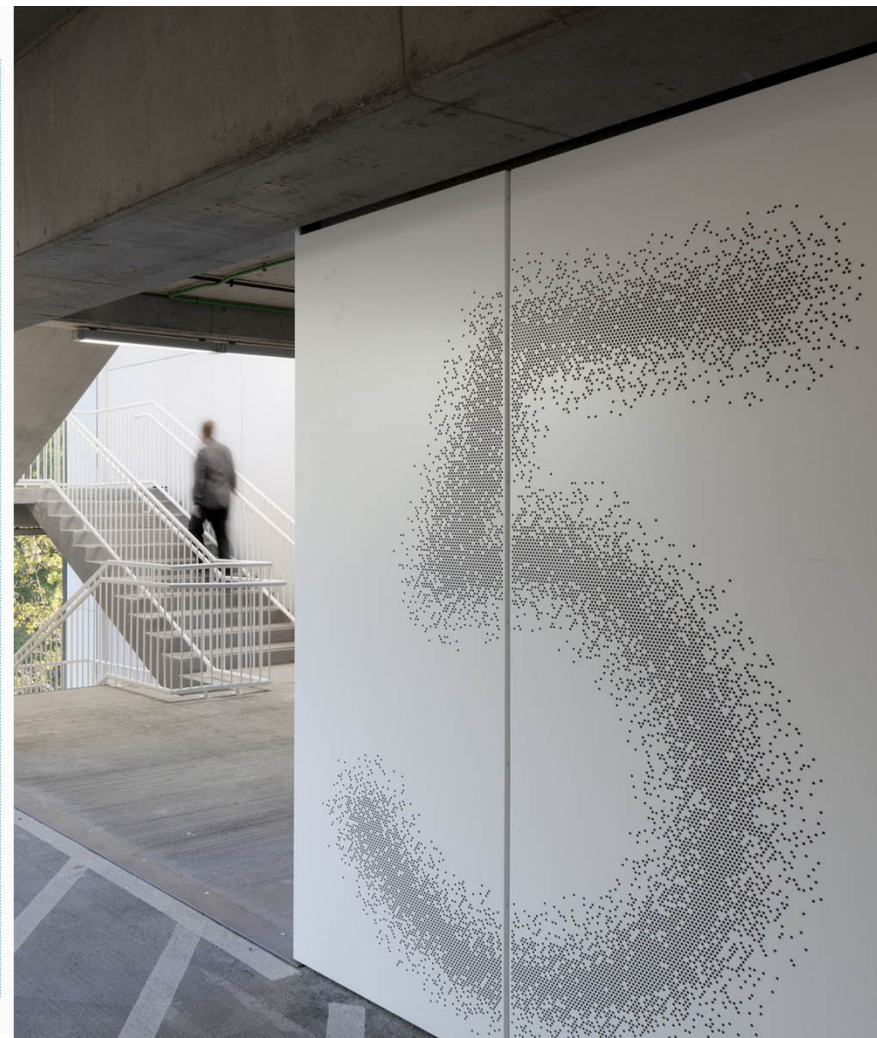
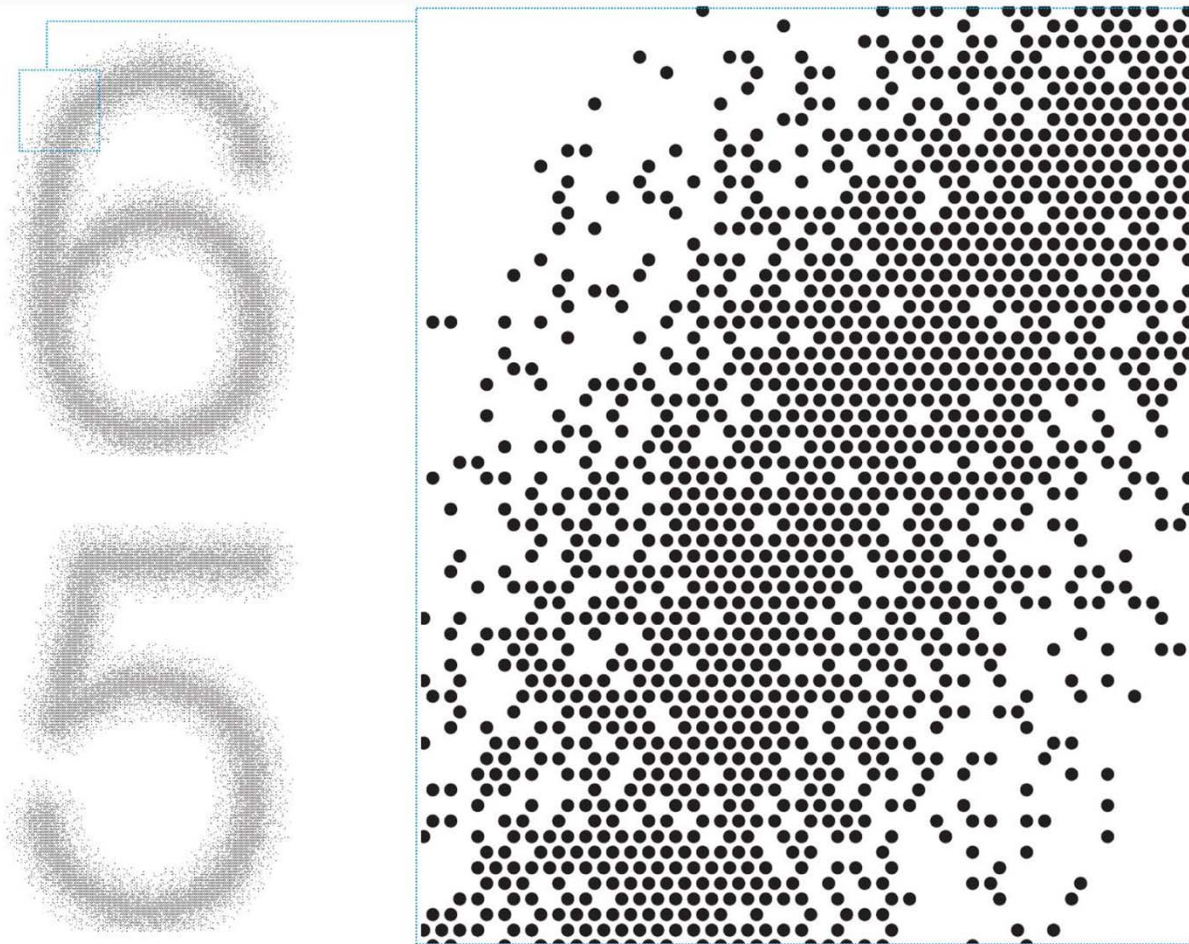
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Put it in your documents
that you will deliver **digital** files to
the **contractor**



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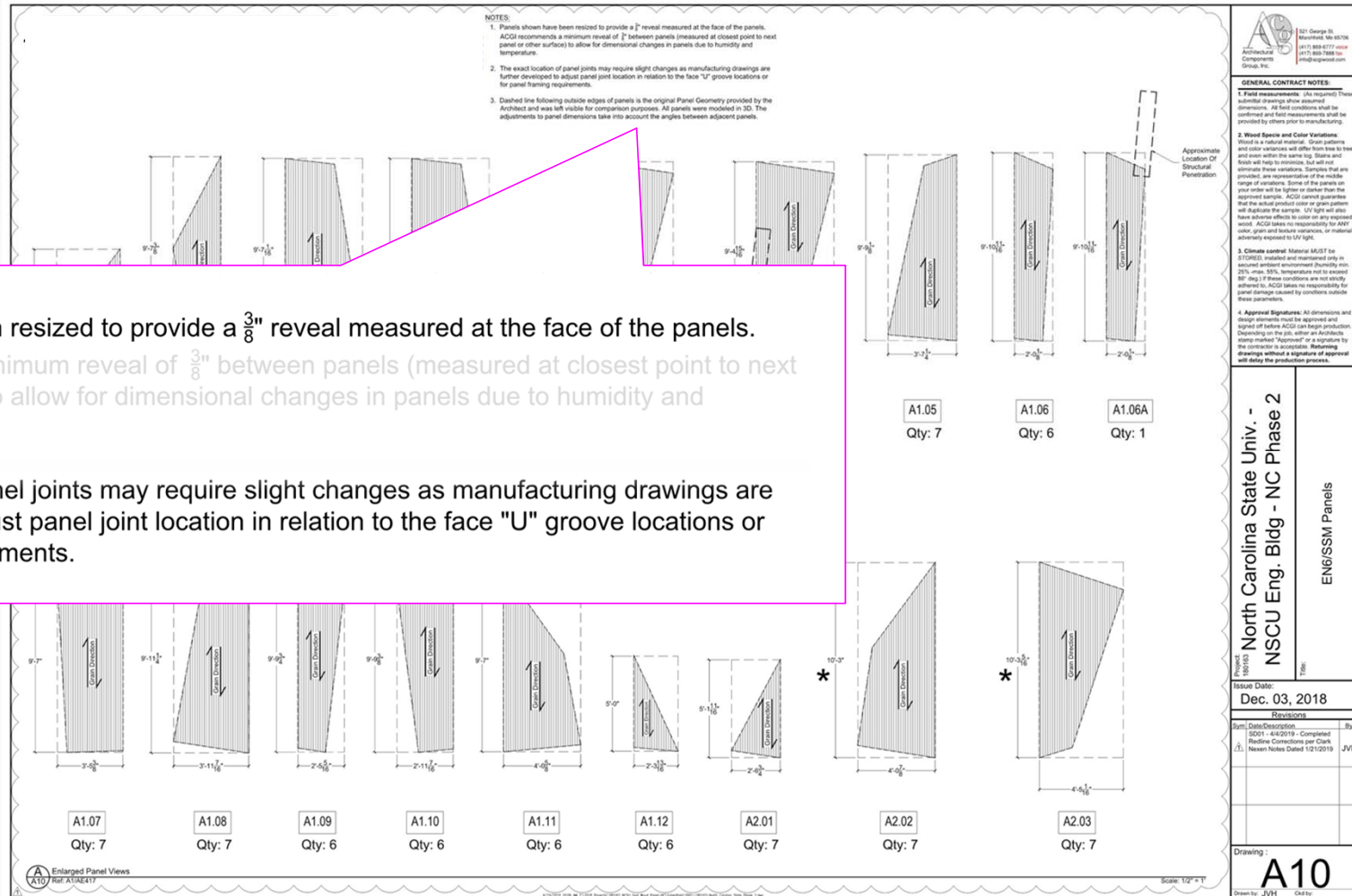
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Closing



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Tweet



Kate Morrical Towne

@KateMTowne



Bet laid down at [@aia_tap](#) Building Connections Congress: In 10 years (2030) we'll still be delivering 2D construction documents—or at least, they'll still outnumber 3D model deliverables. Which side would you take?

2D will never go away

66.7%

3D will take over

33.3%

93 votes · Final results

11:38 AM · Jan 13, 2020 · [Twitter for iPhone](#)



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Driverless Shuttle a Smart Move for Centennial Campus

NC State isn't cutting corners in the drive for innovation. Thanks to a partnership with the N.C. Department of Transportation, the university is testing an autonomous vehicle that can ferry 12 passengers.

February 5, 2020 | [Tim Peeler](#)



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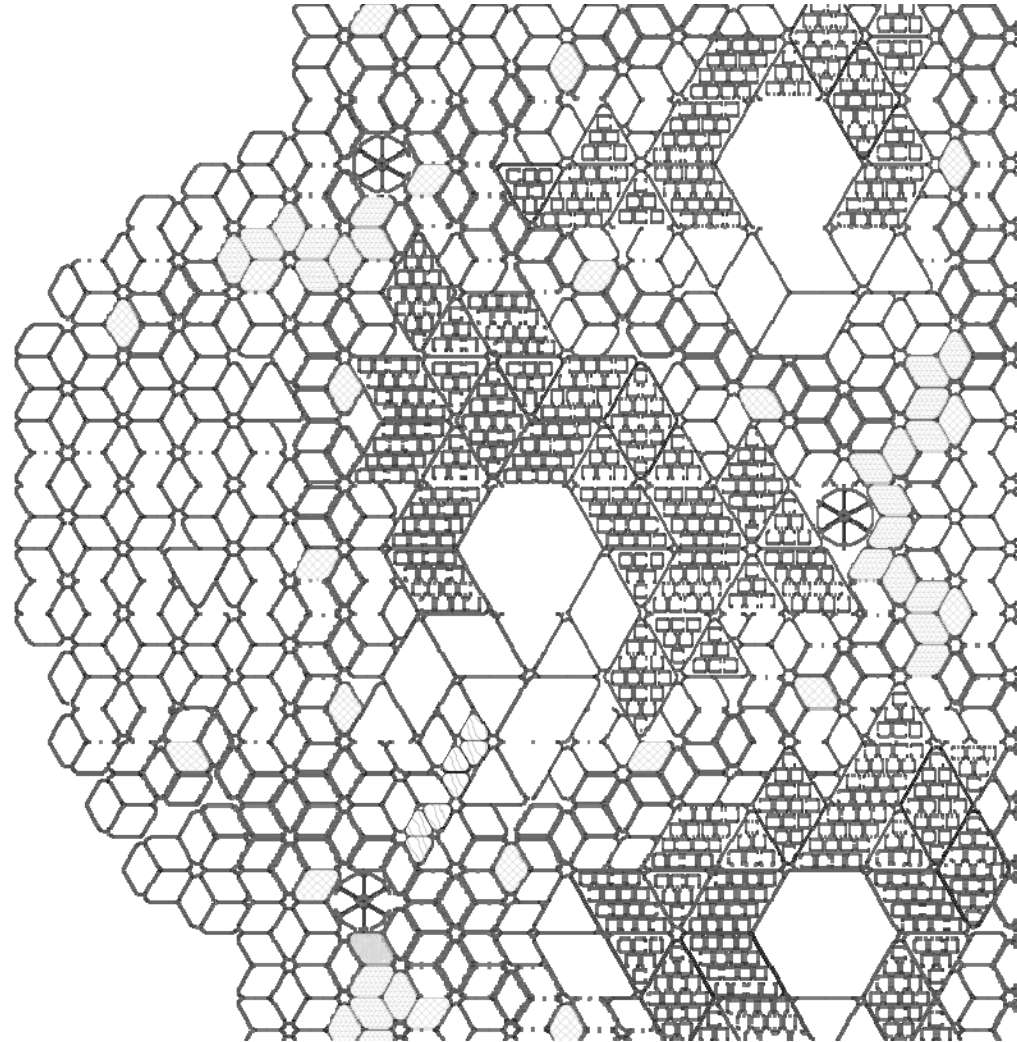
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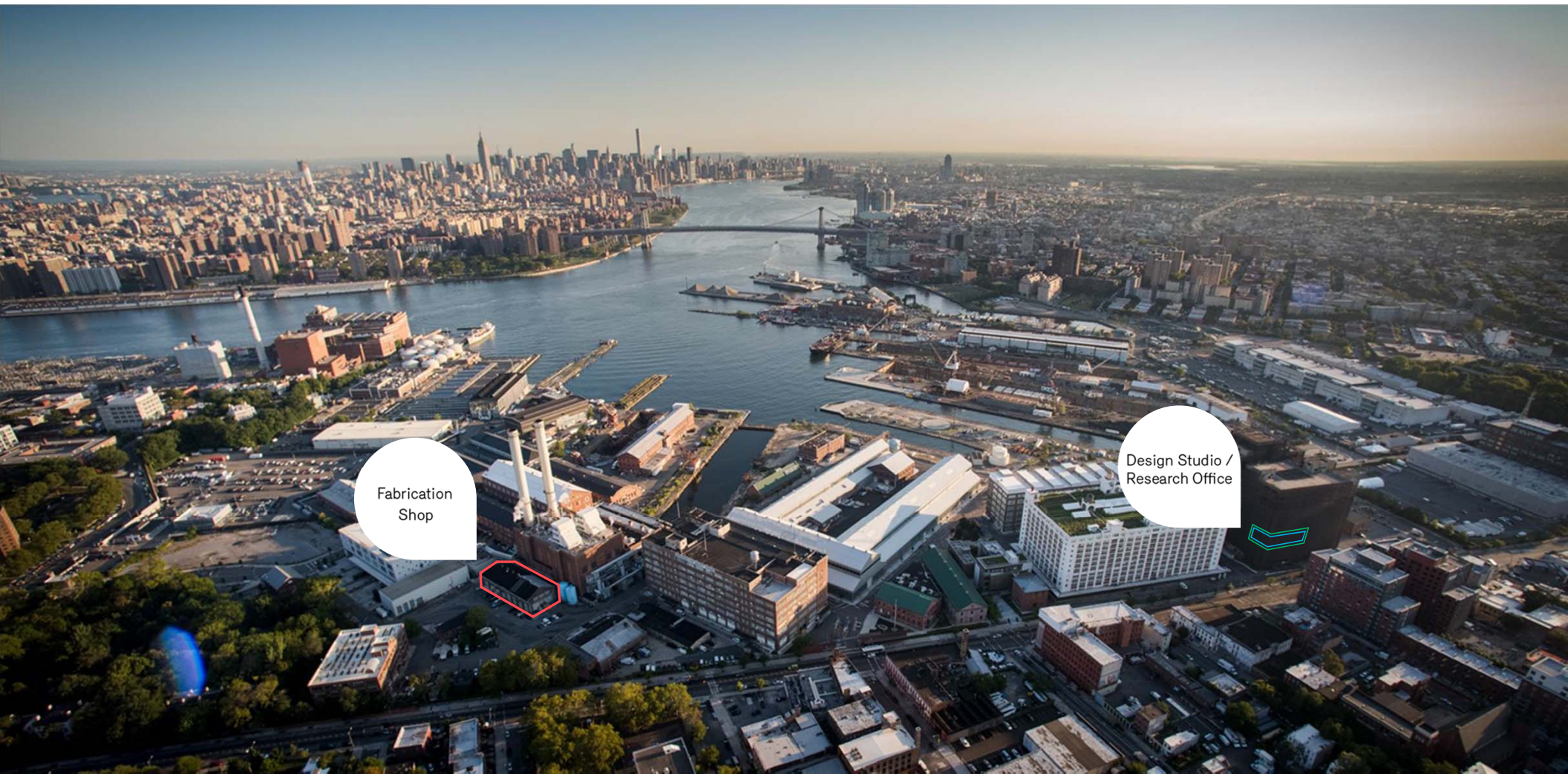
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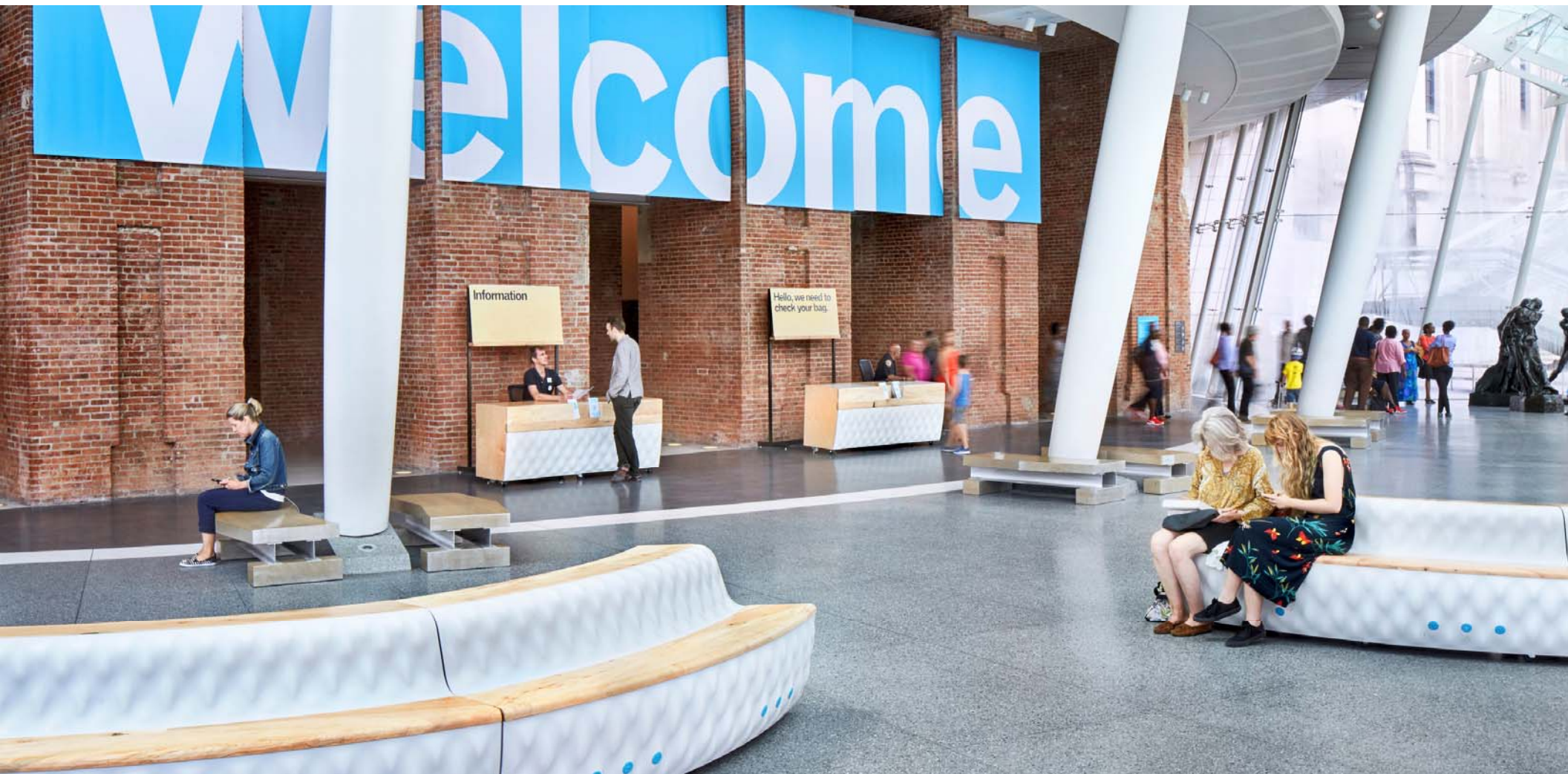


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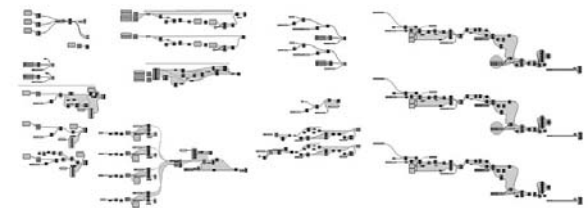
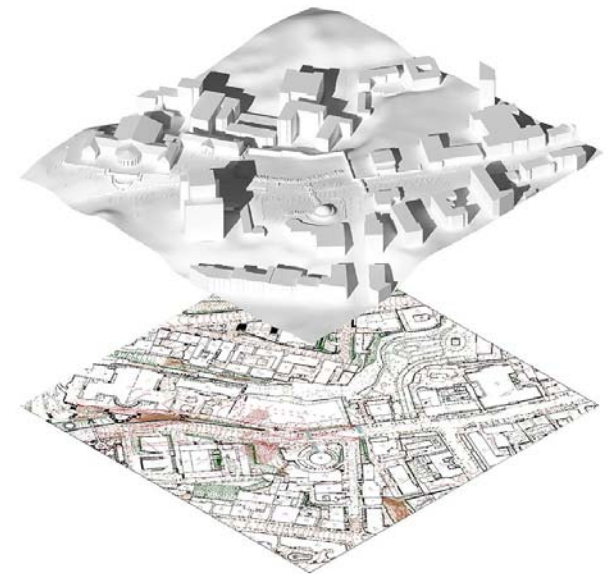
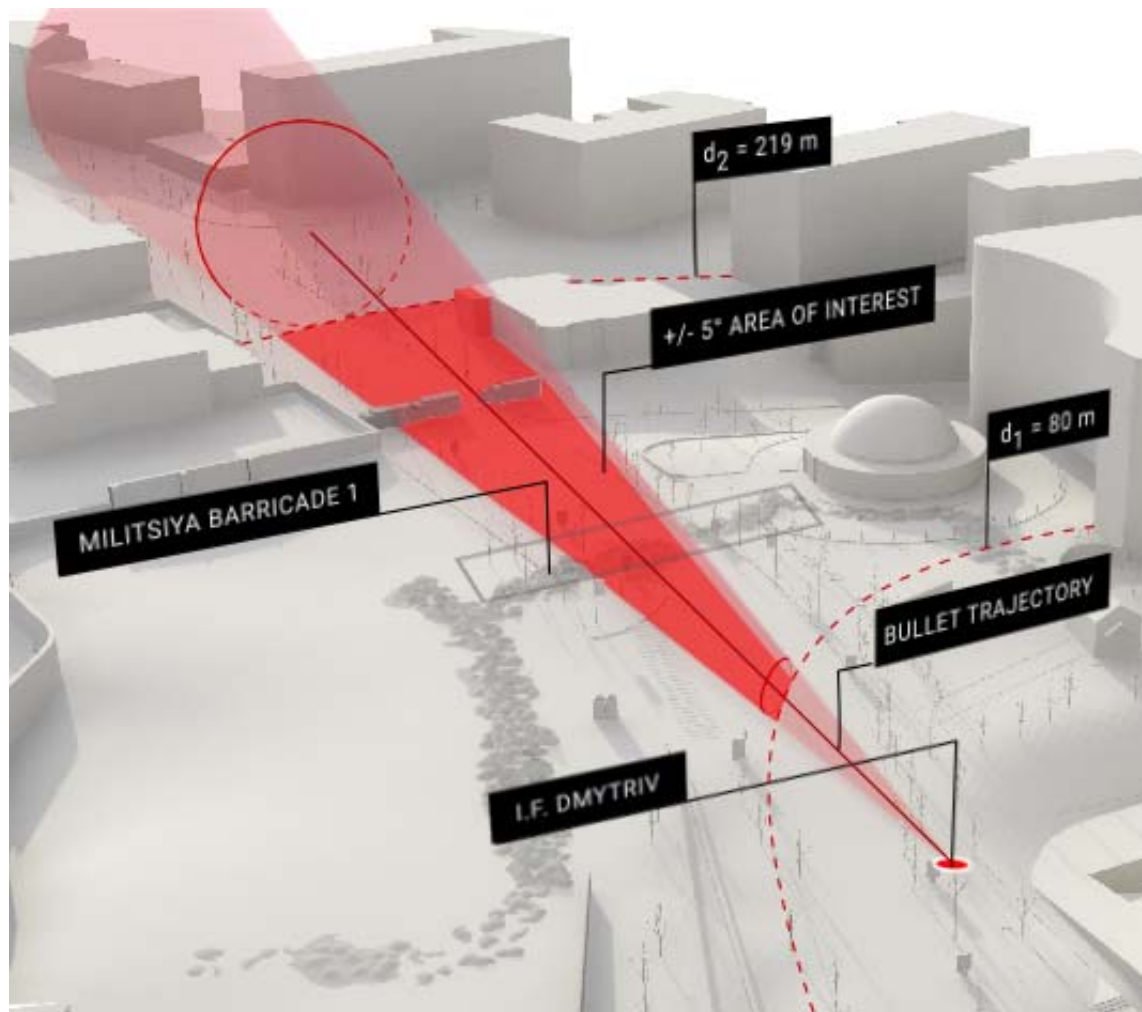


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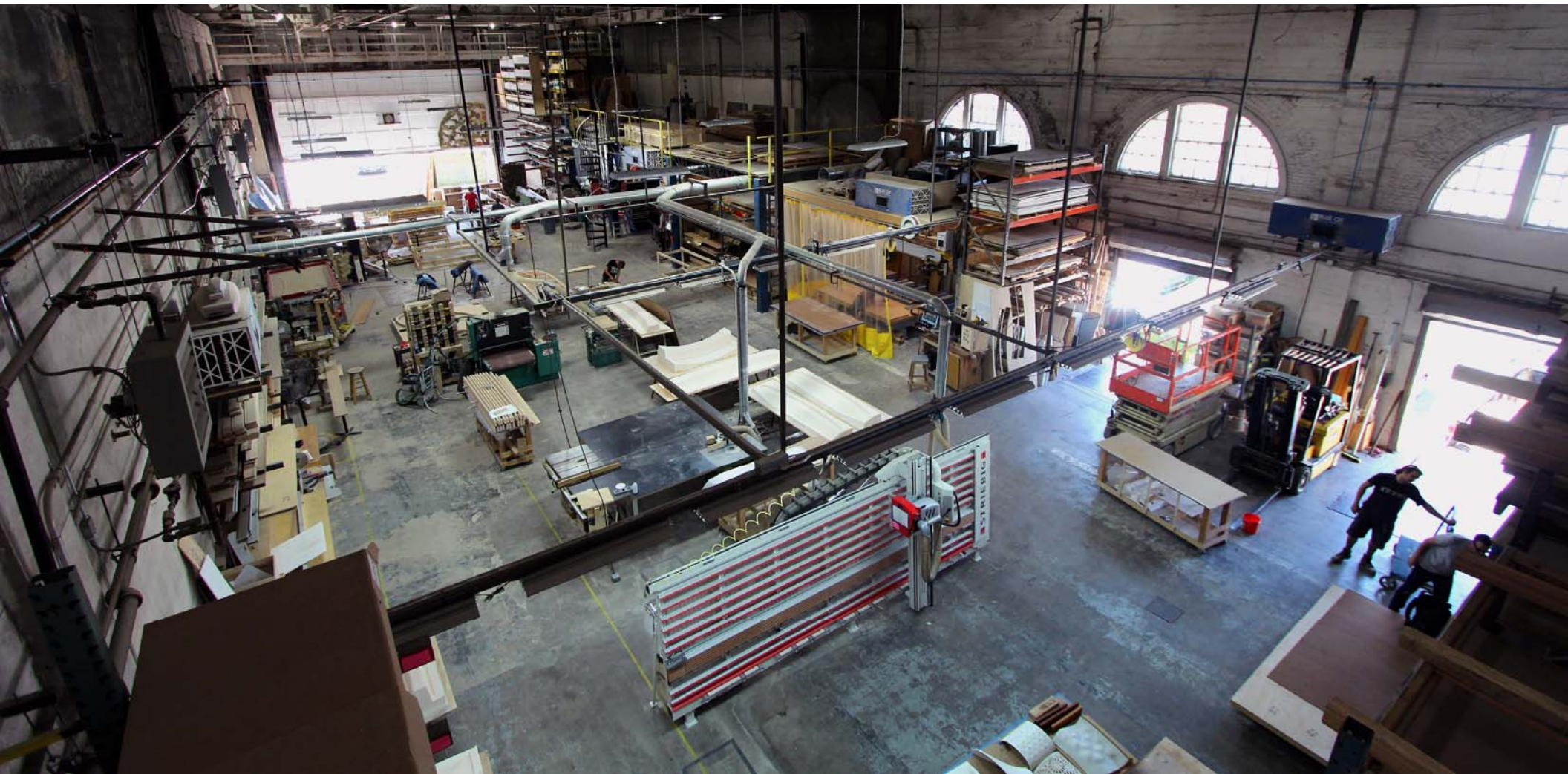


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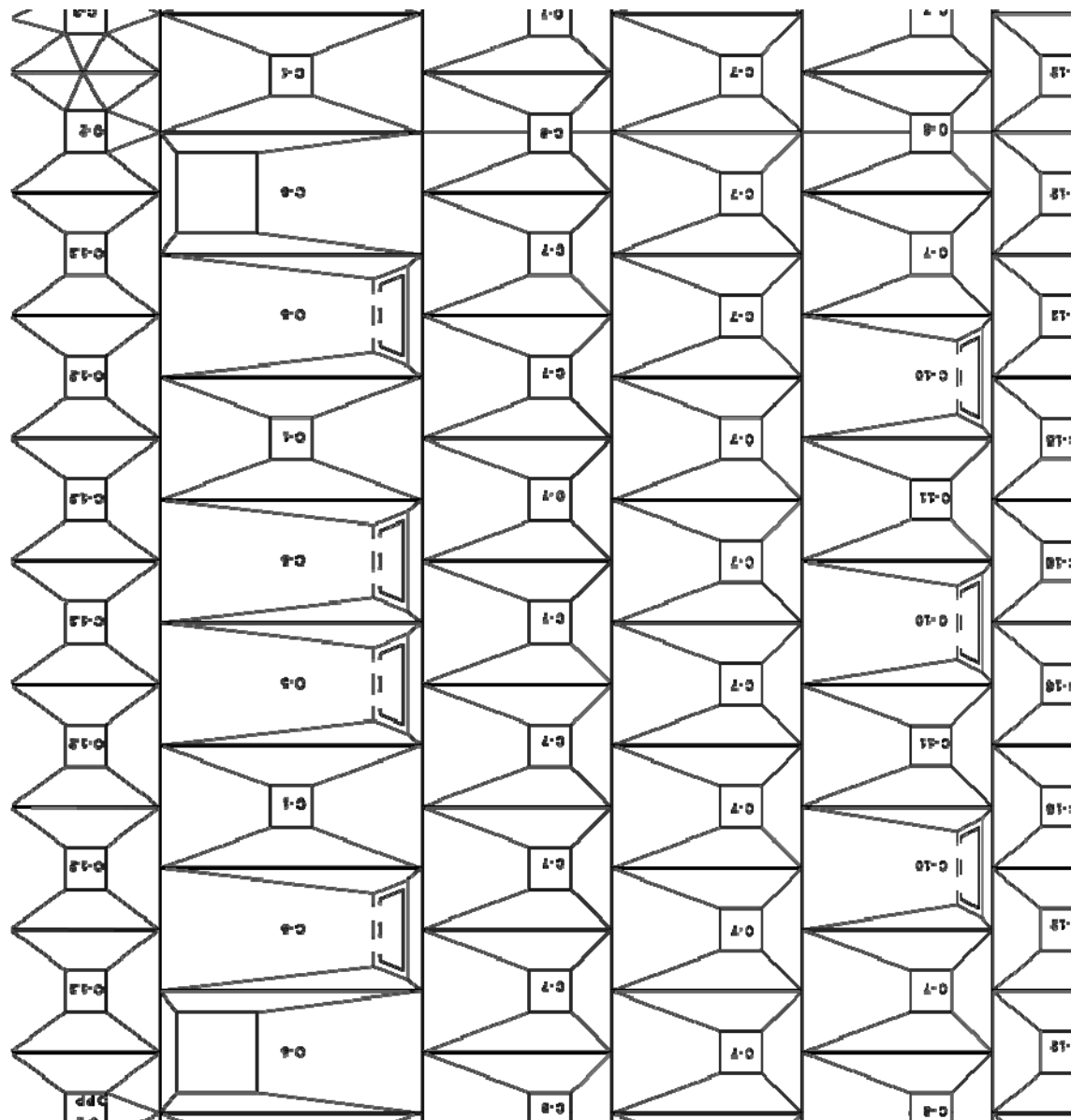
Design Assist



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Design Assist is a process of developing and optimizing design by leveraging interdisciplinary expertise.



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Design Assist helps to refine details, expedite production, resolve materiality, reduce cost and better express the design intent.

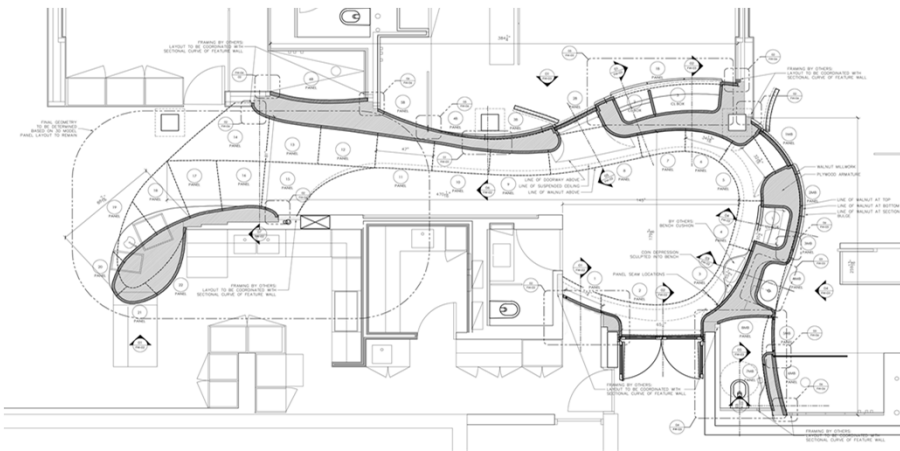
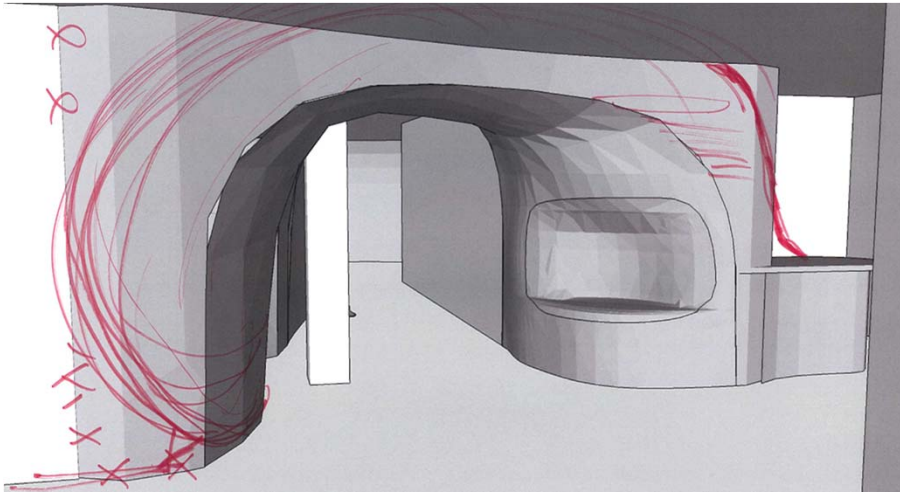


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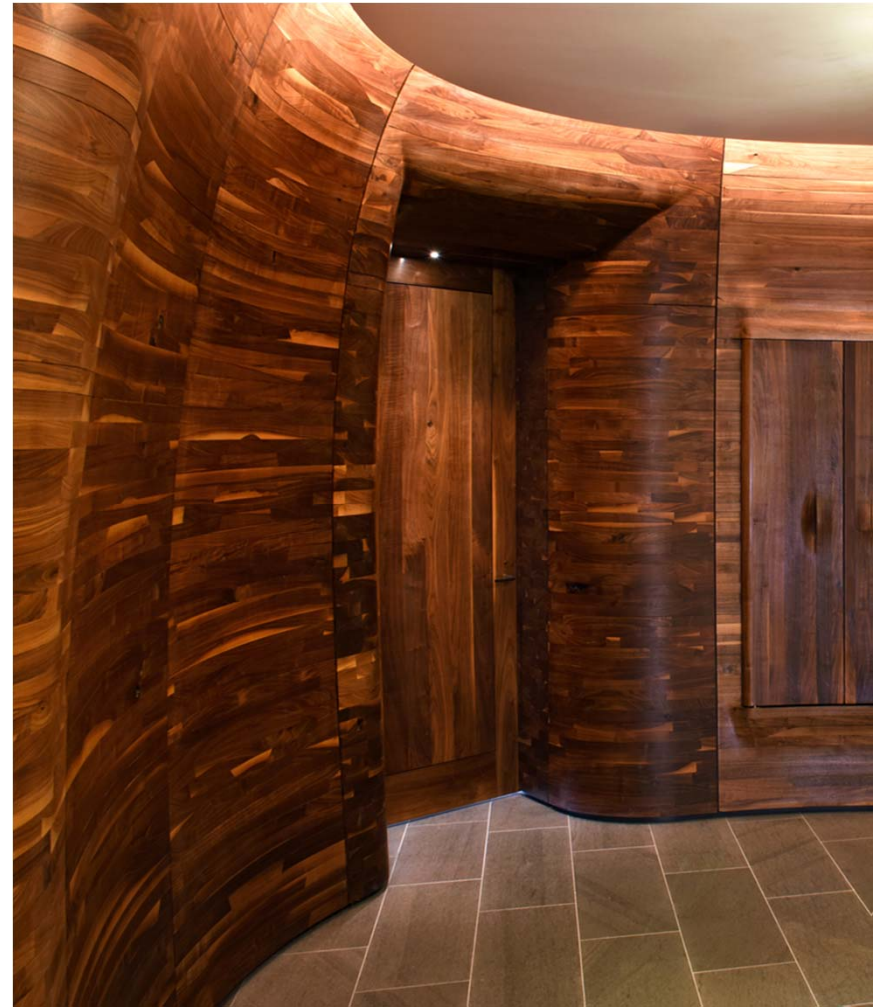
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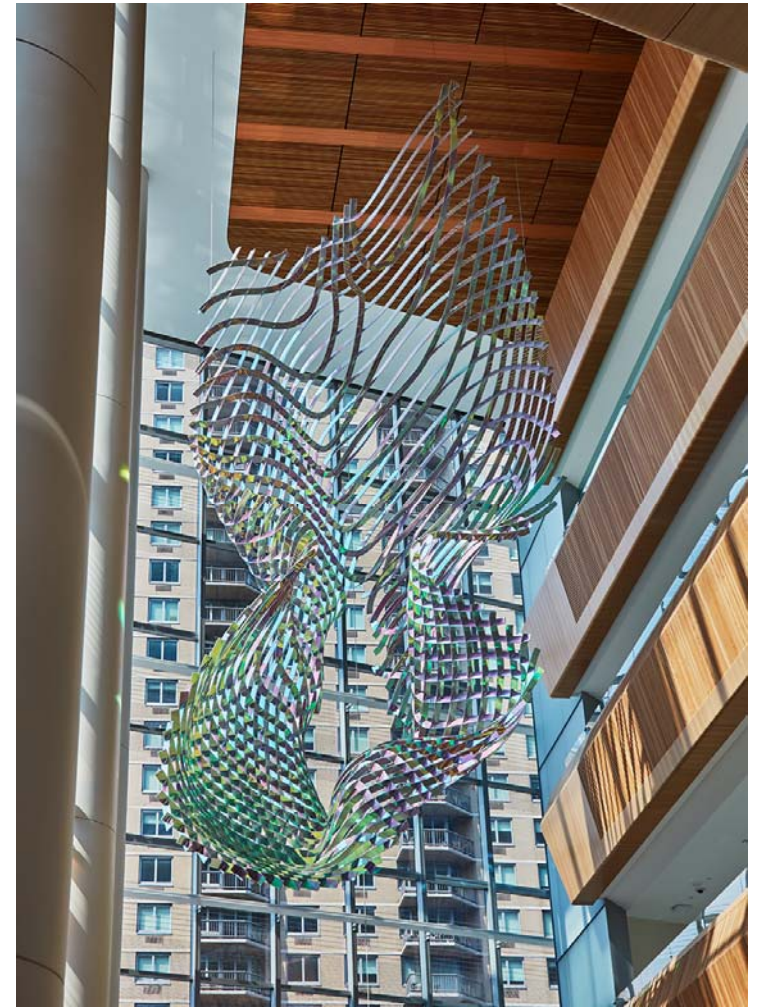
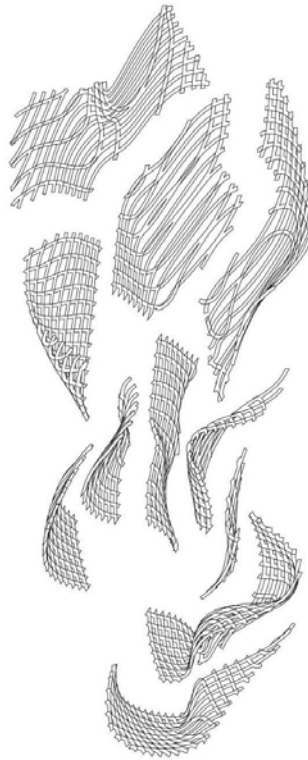
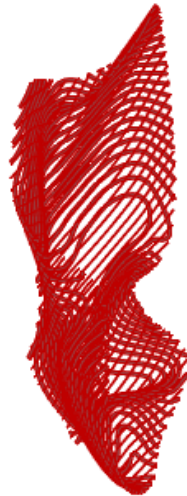
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Aaron Korntrager Design: Palm Beach Residence



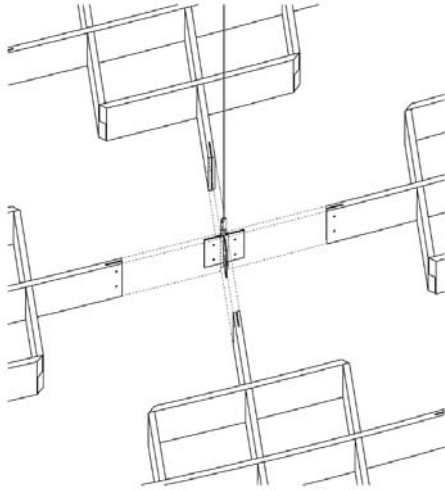
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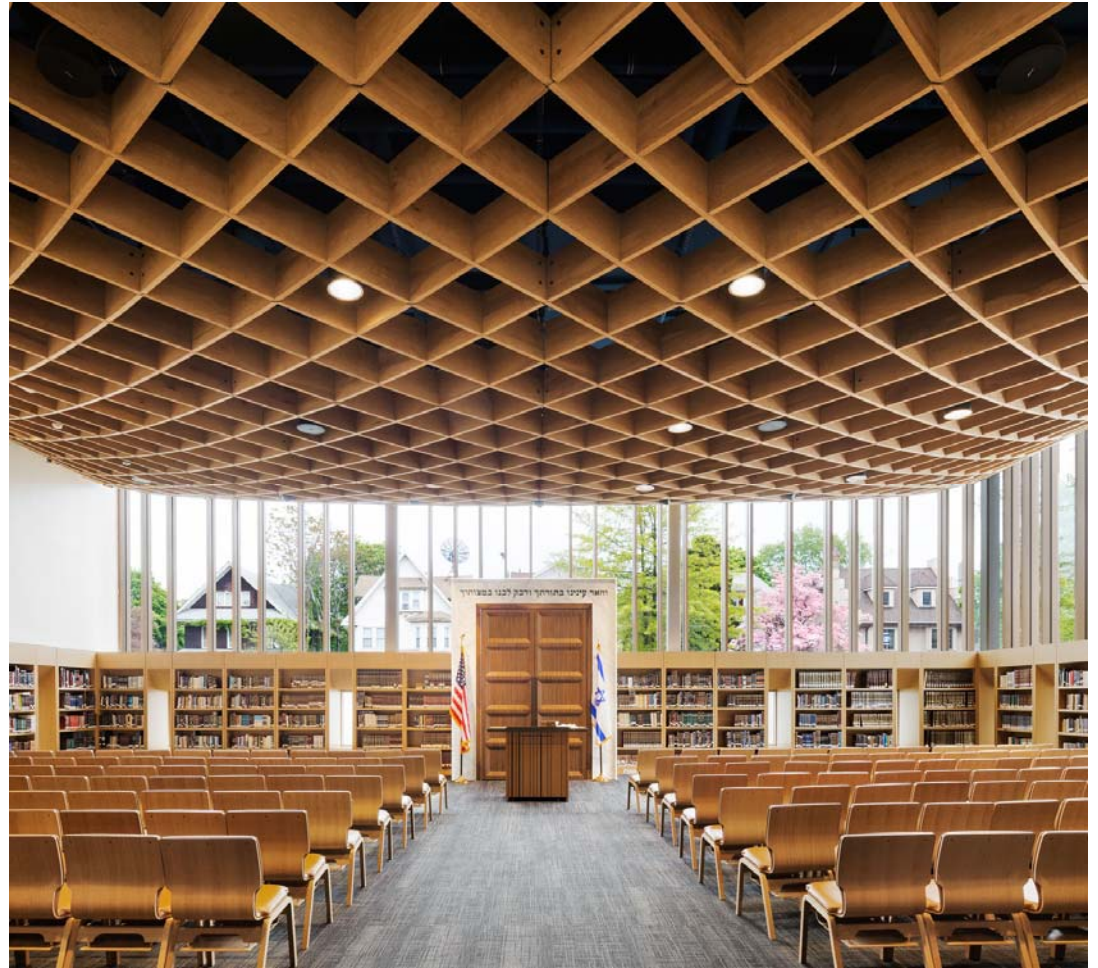
Alyson Shotz: *The Moon's Eyelid*



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Dattner Architects Joel Braverman High School Bet Midrash Canopy

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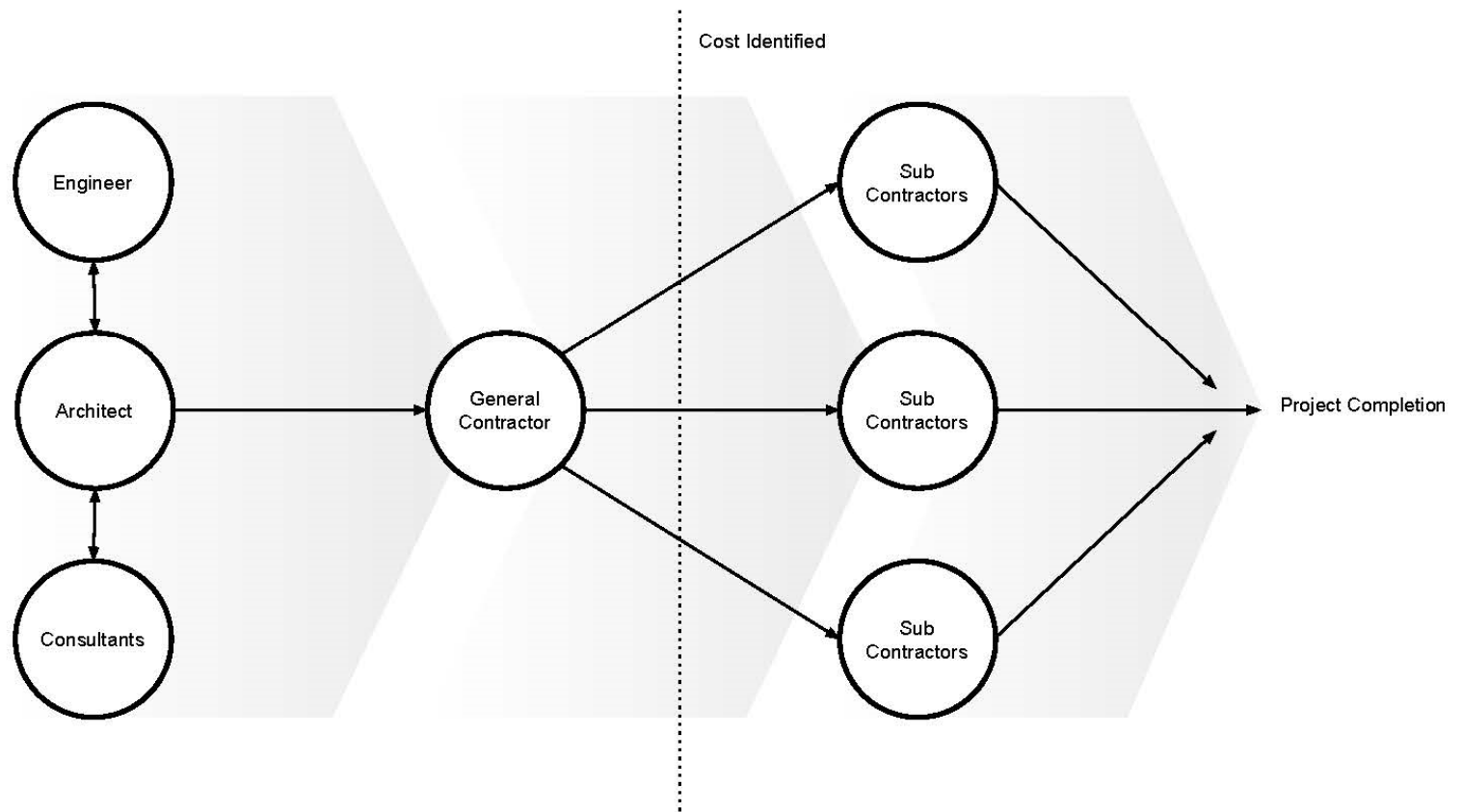


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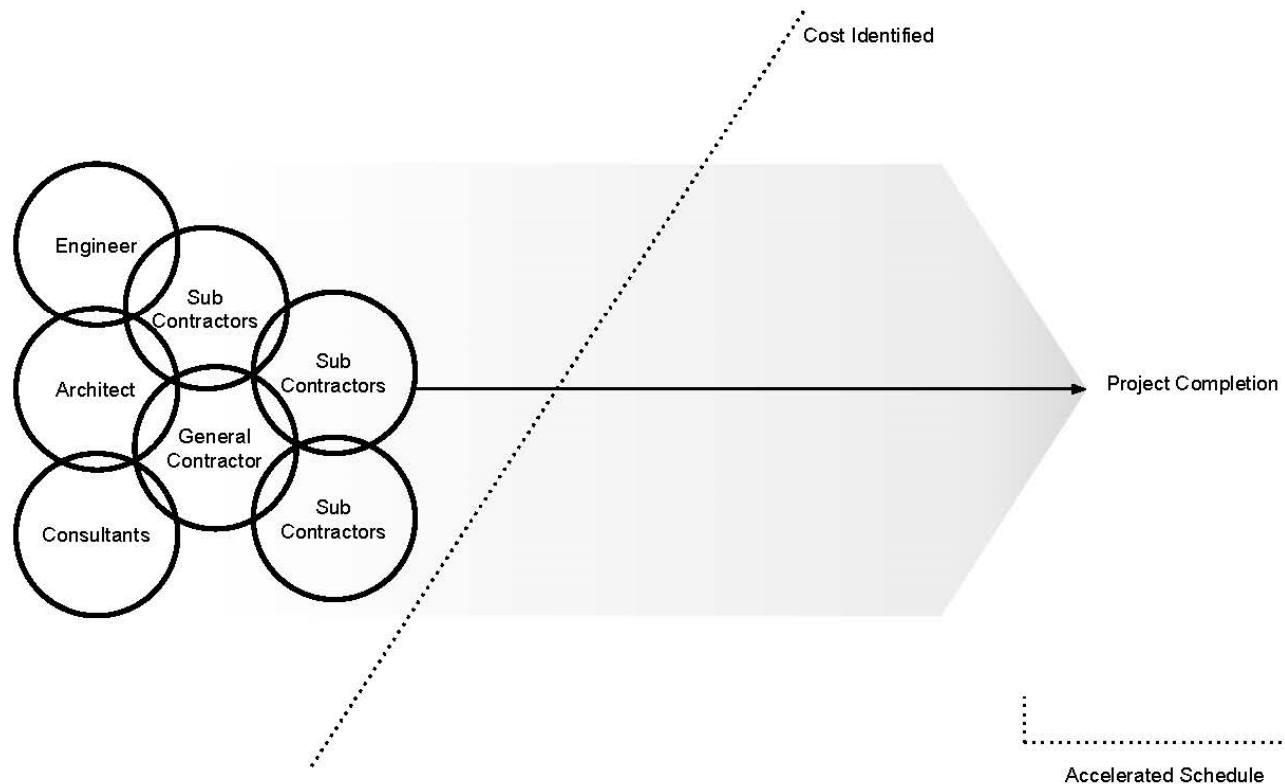


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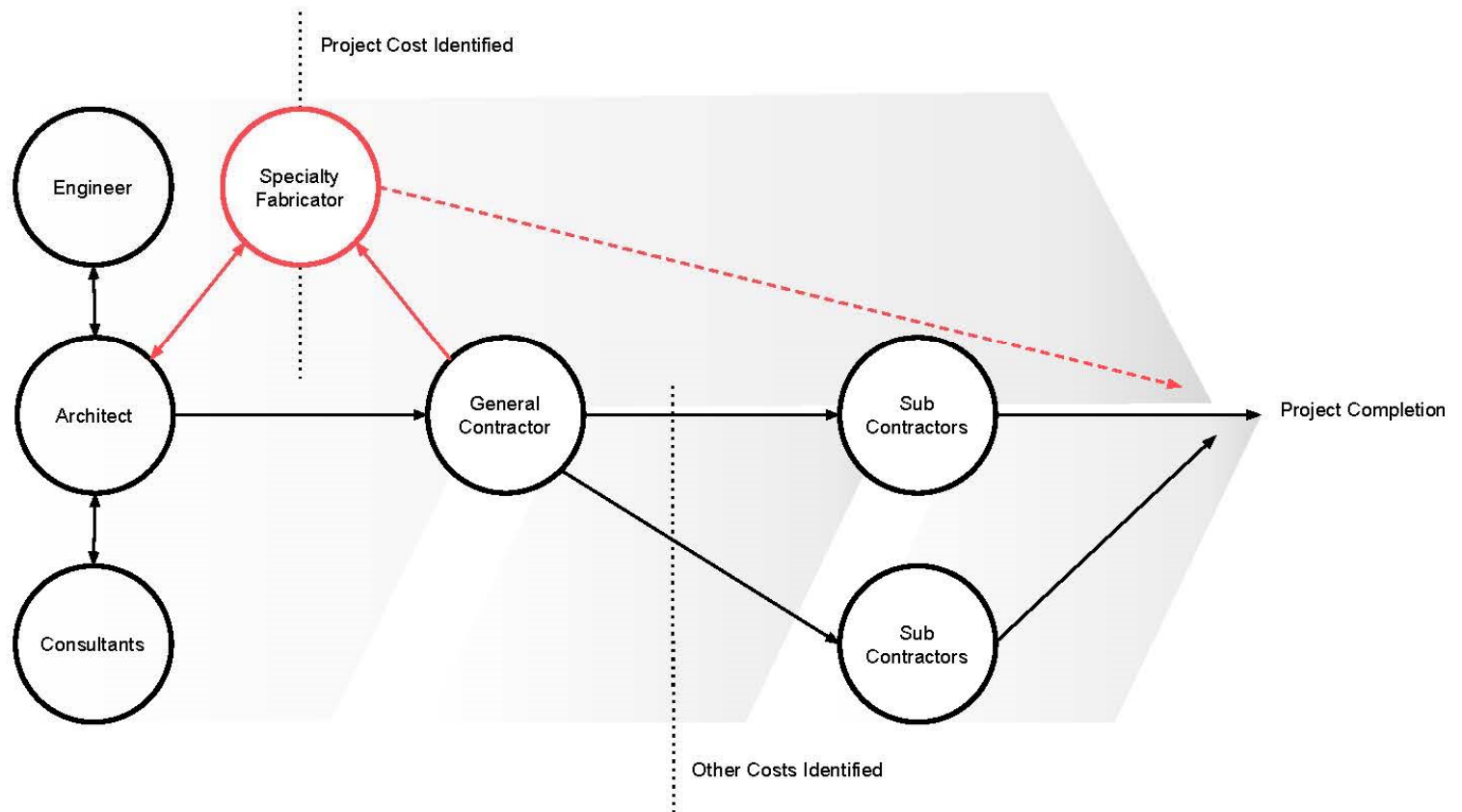
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Project Delivery | Integrated Project Delivery (IPD)

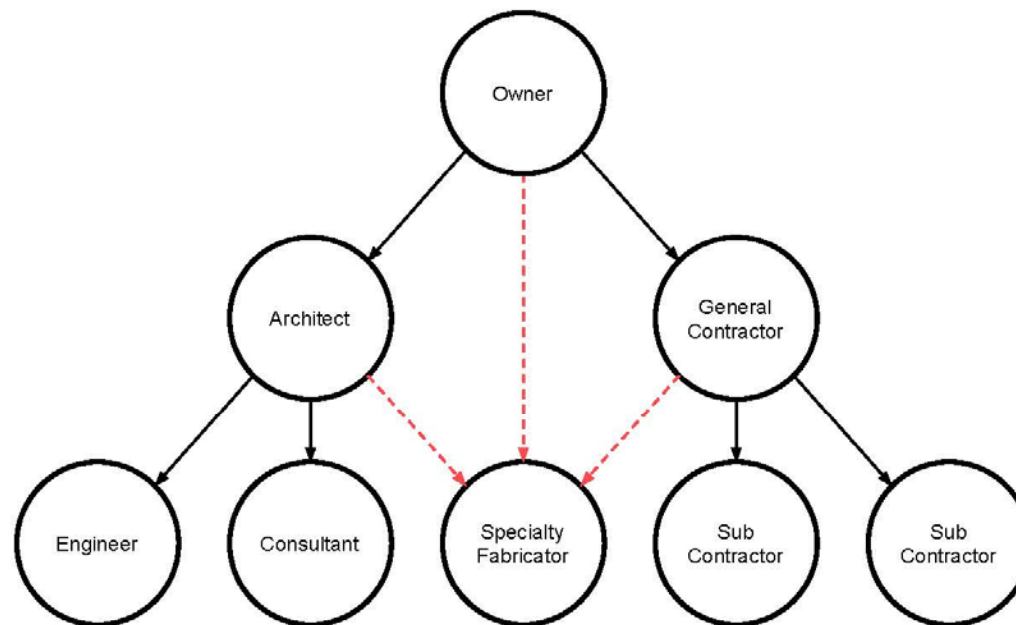


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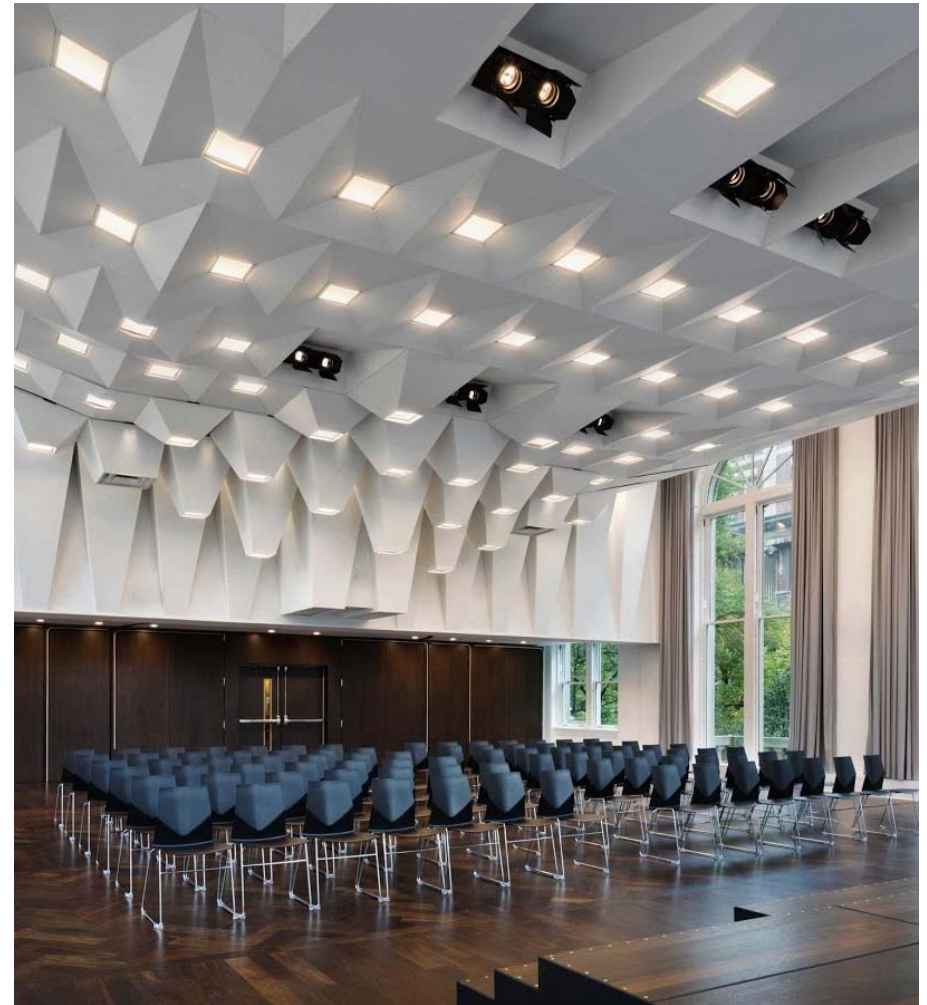
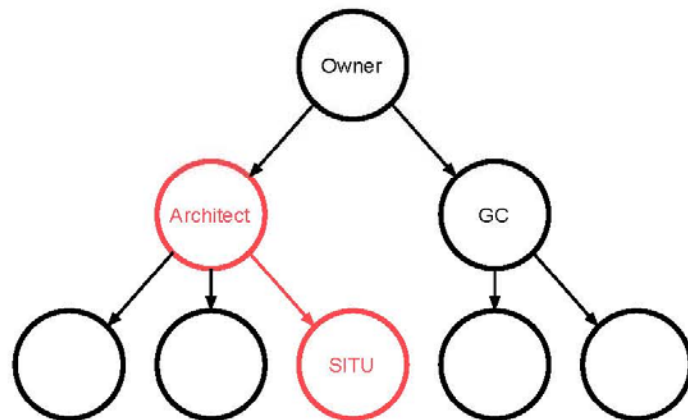


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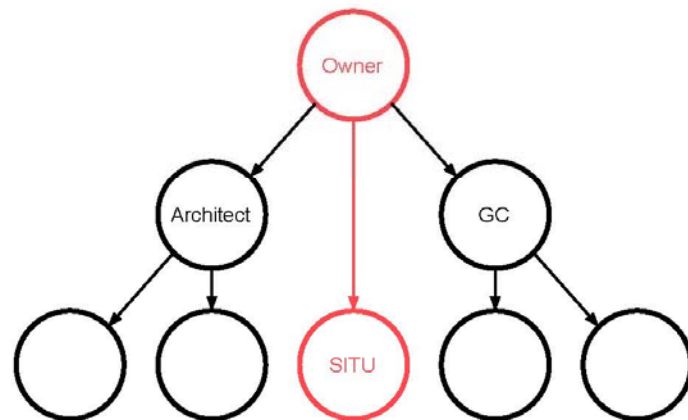


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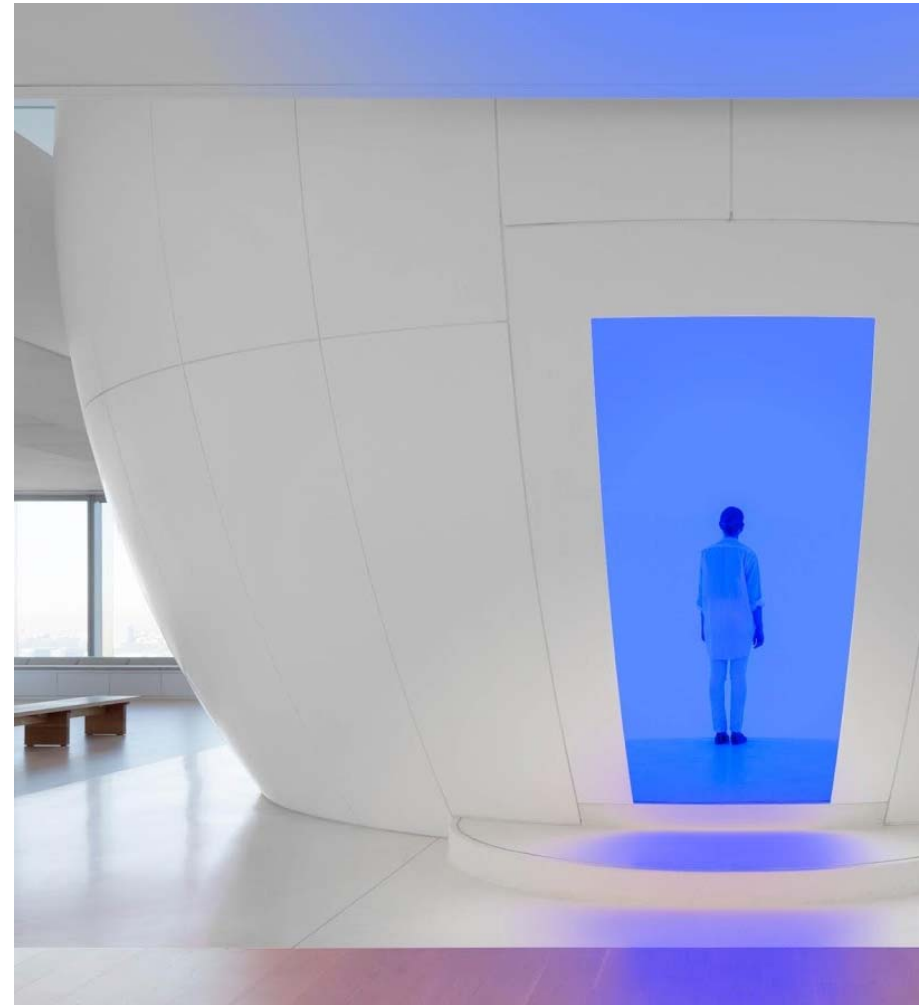
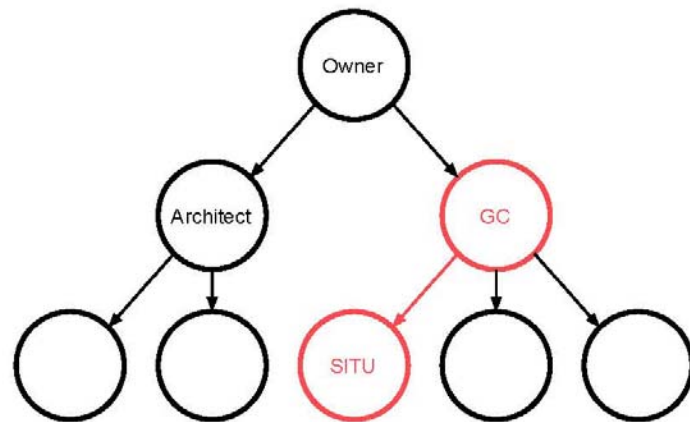
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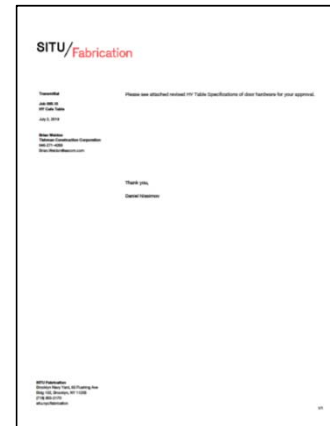
Tools



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Project Delivery | Workflow Methods



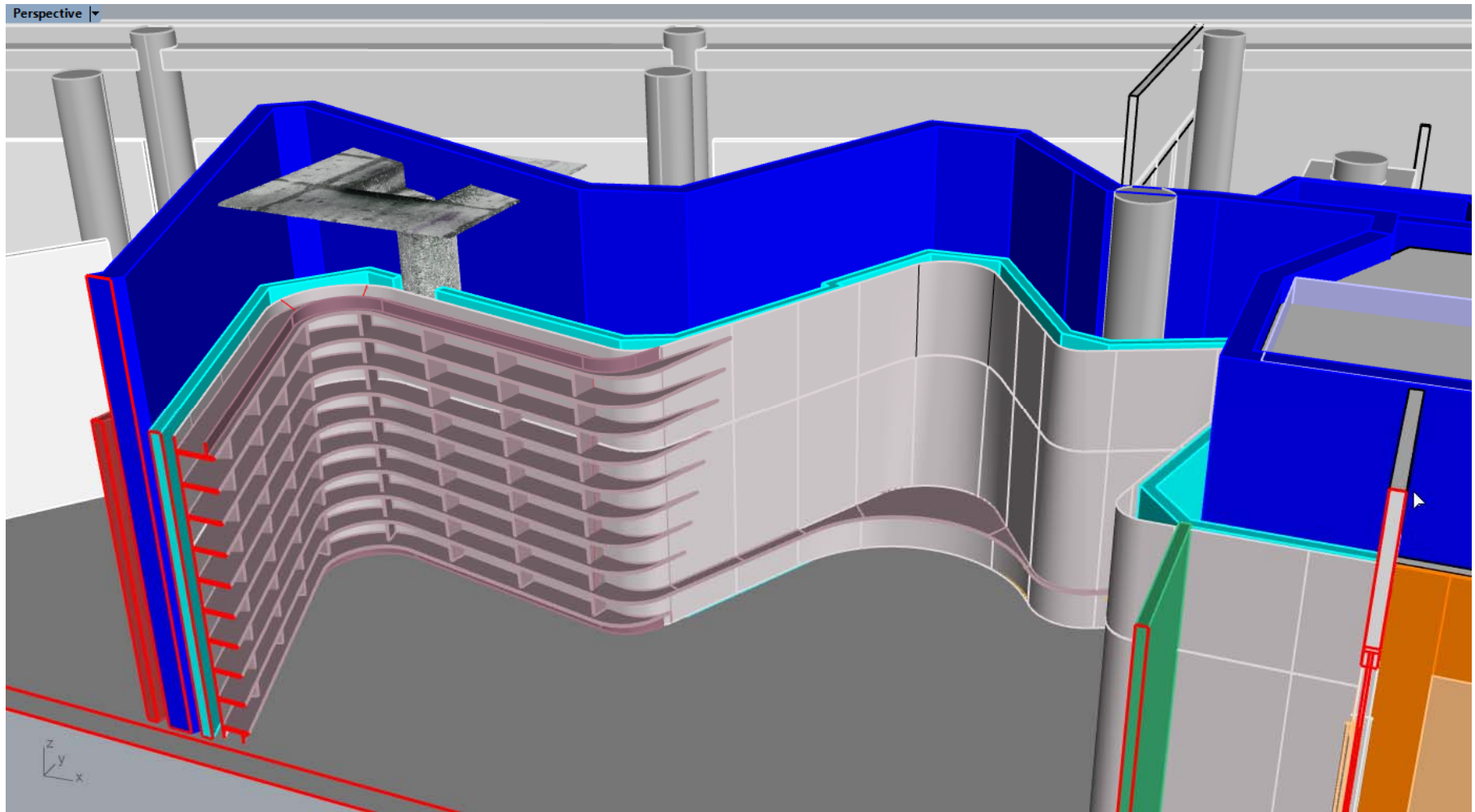
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Project Delivery | Workflow Methods



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Defining Deliverables



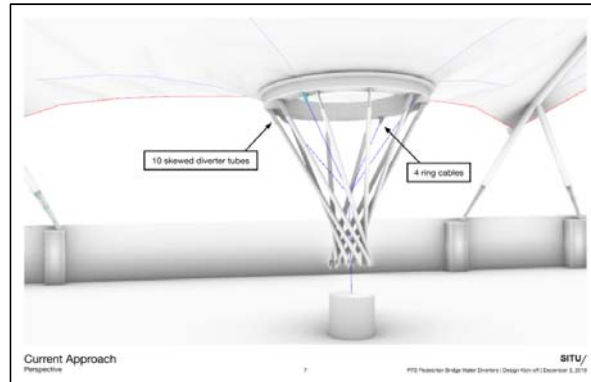
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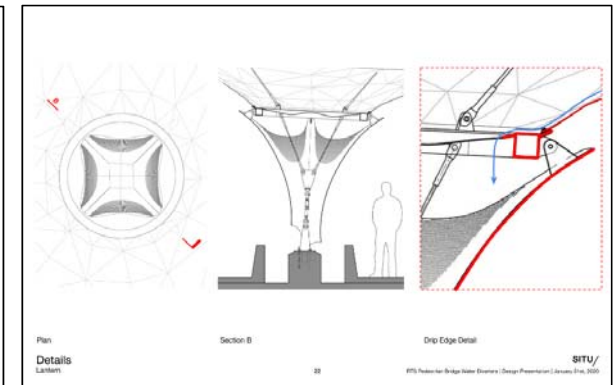
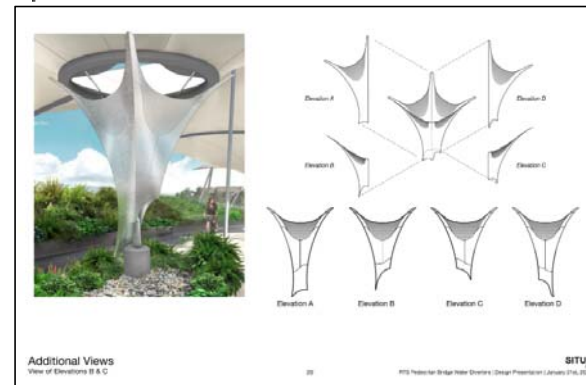
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SITU/Fabrication

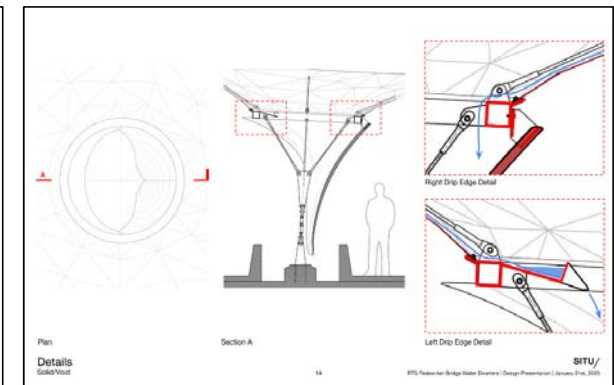
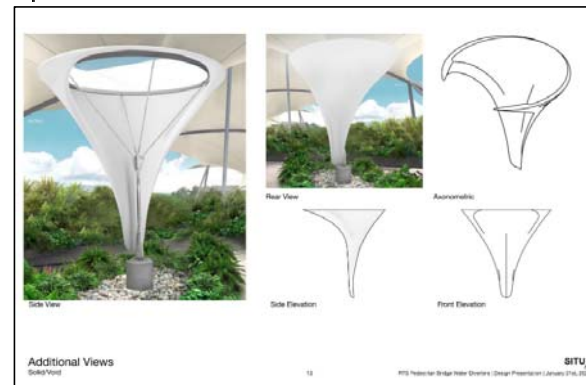
Original Concept



Option A



Option B

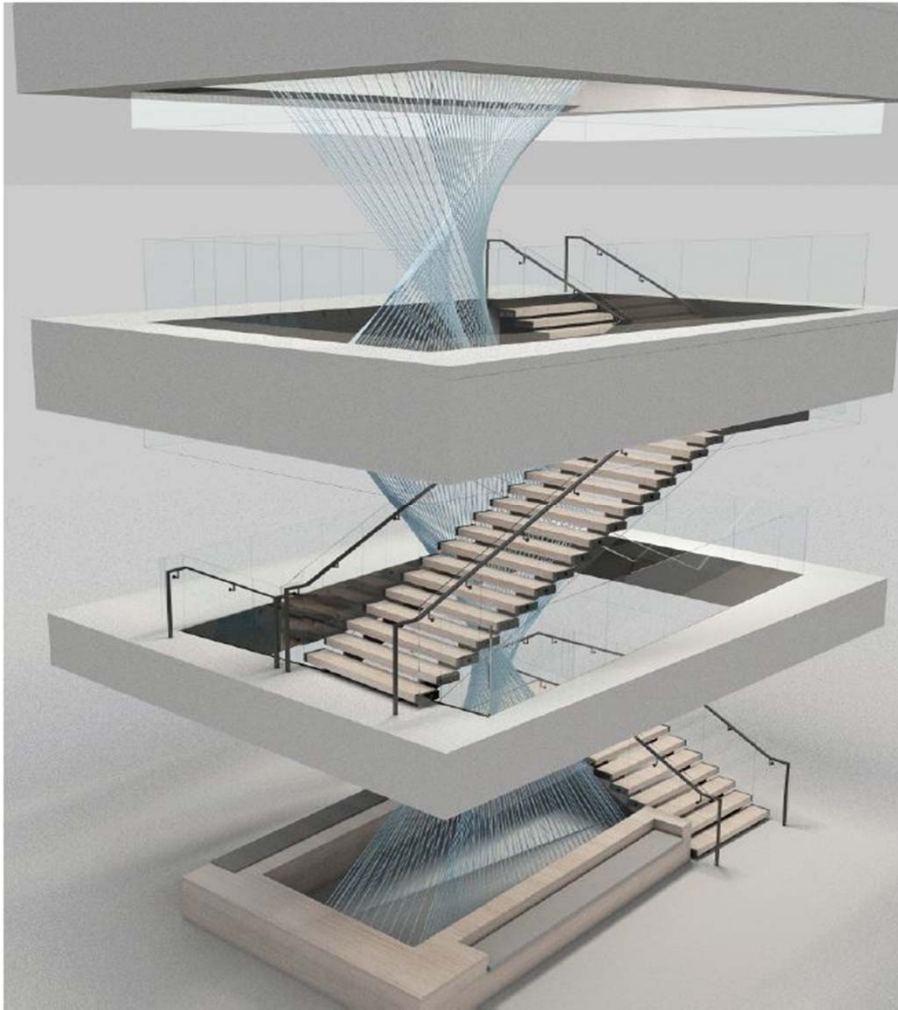


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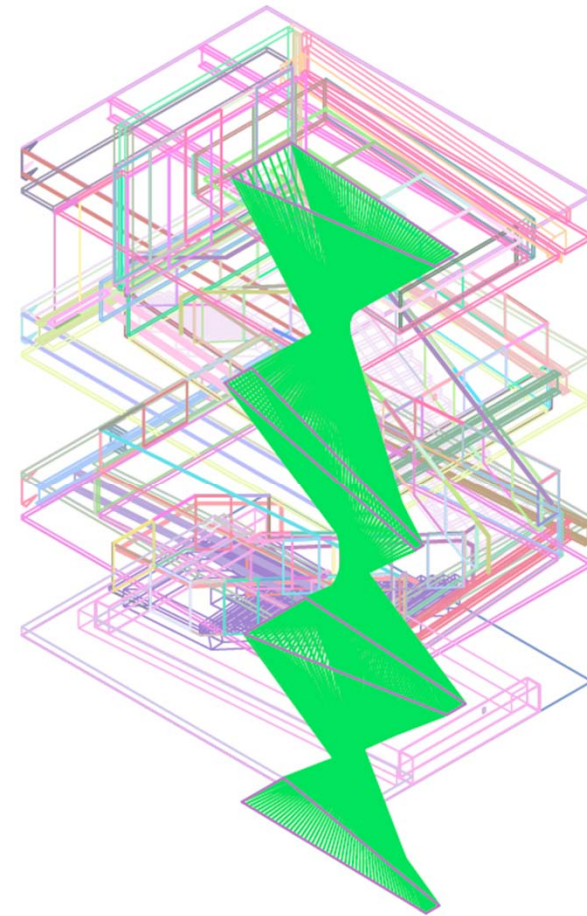
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Project Deliverables | Schematic Packages



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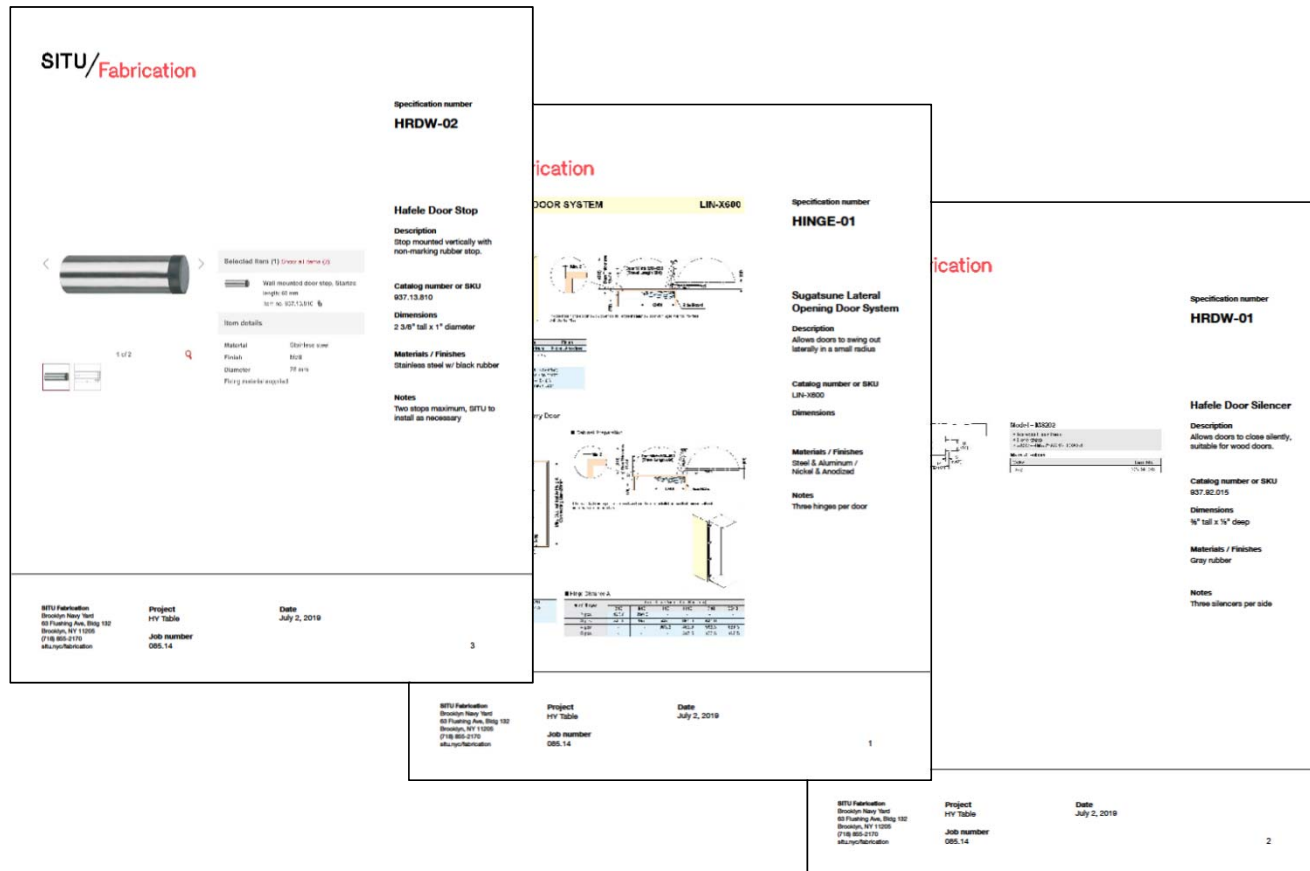
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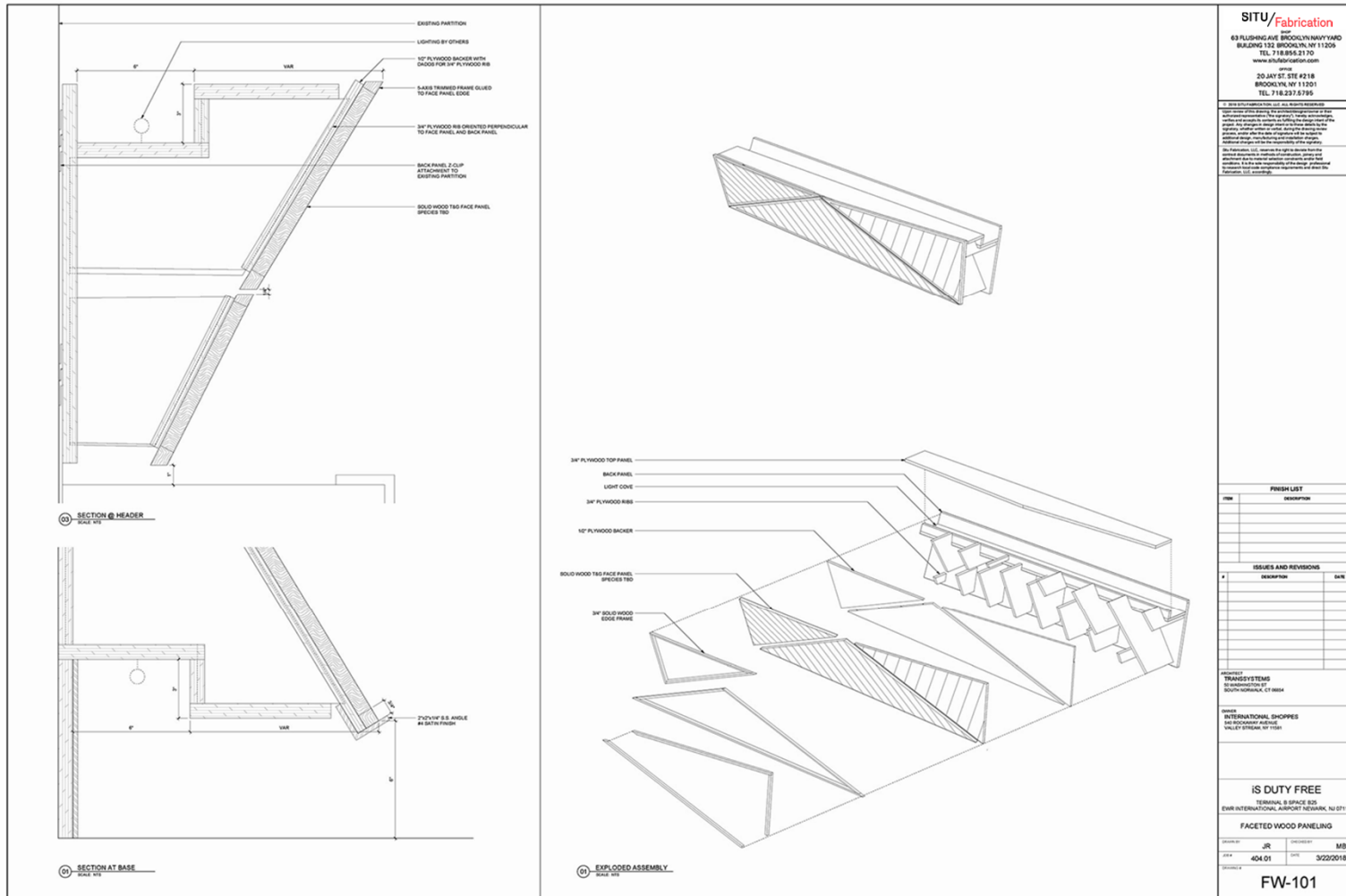
Project Deliverables | 3D Models



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Project Deliverables | Specs



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Project Deliverables | Drawings



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Project Deliverables | Drawings



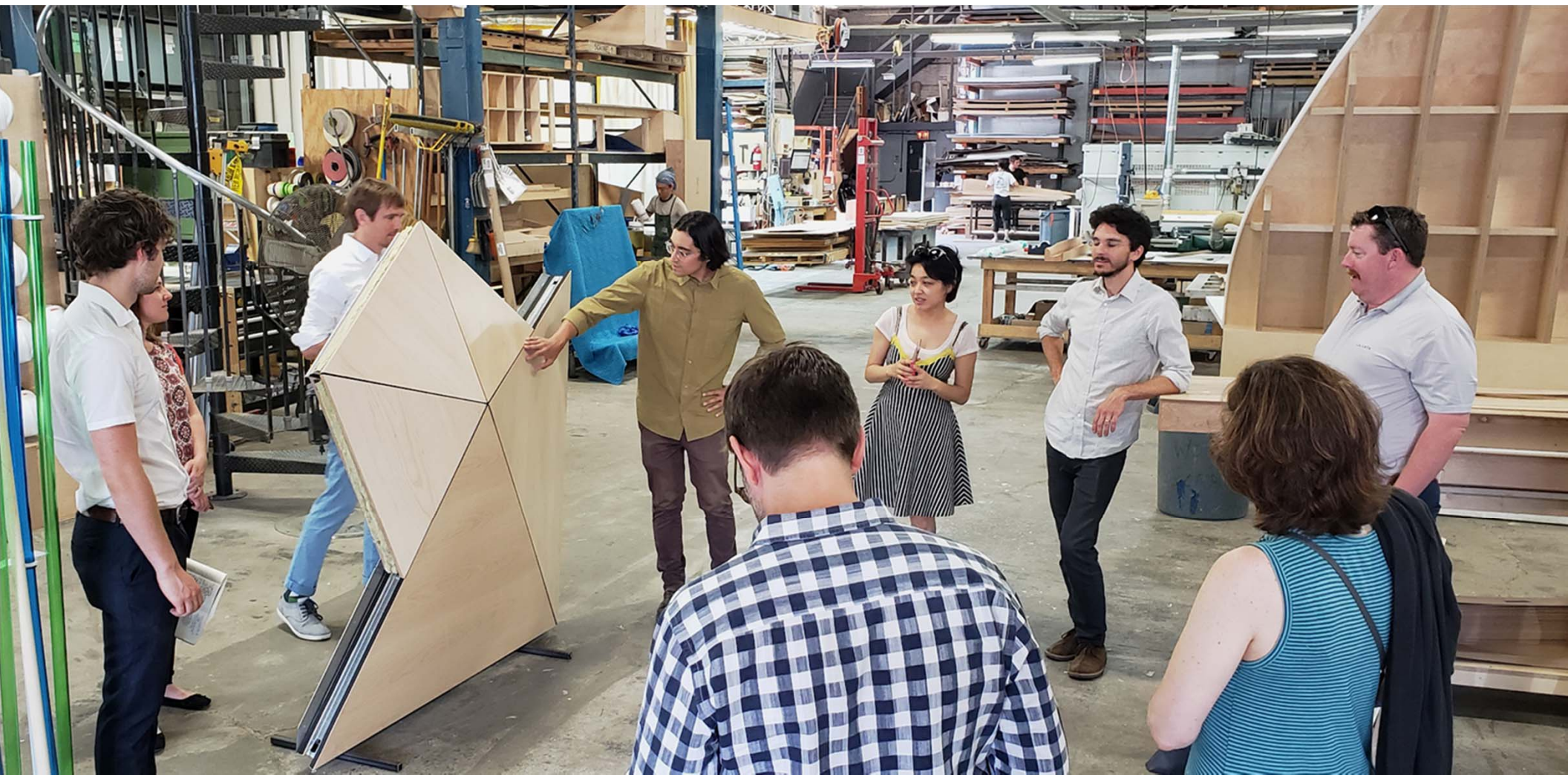
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Project Deliverables | Physical Samples



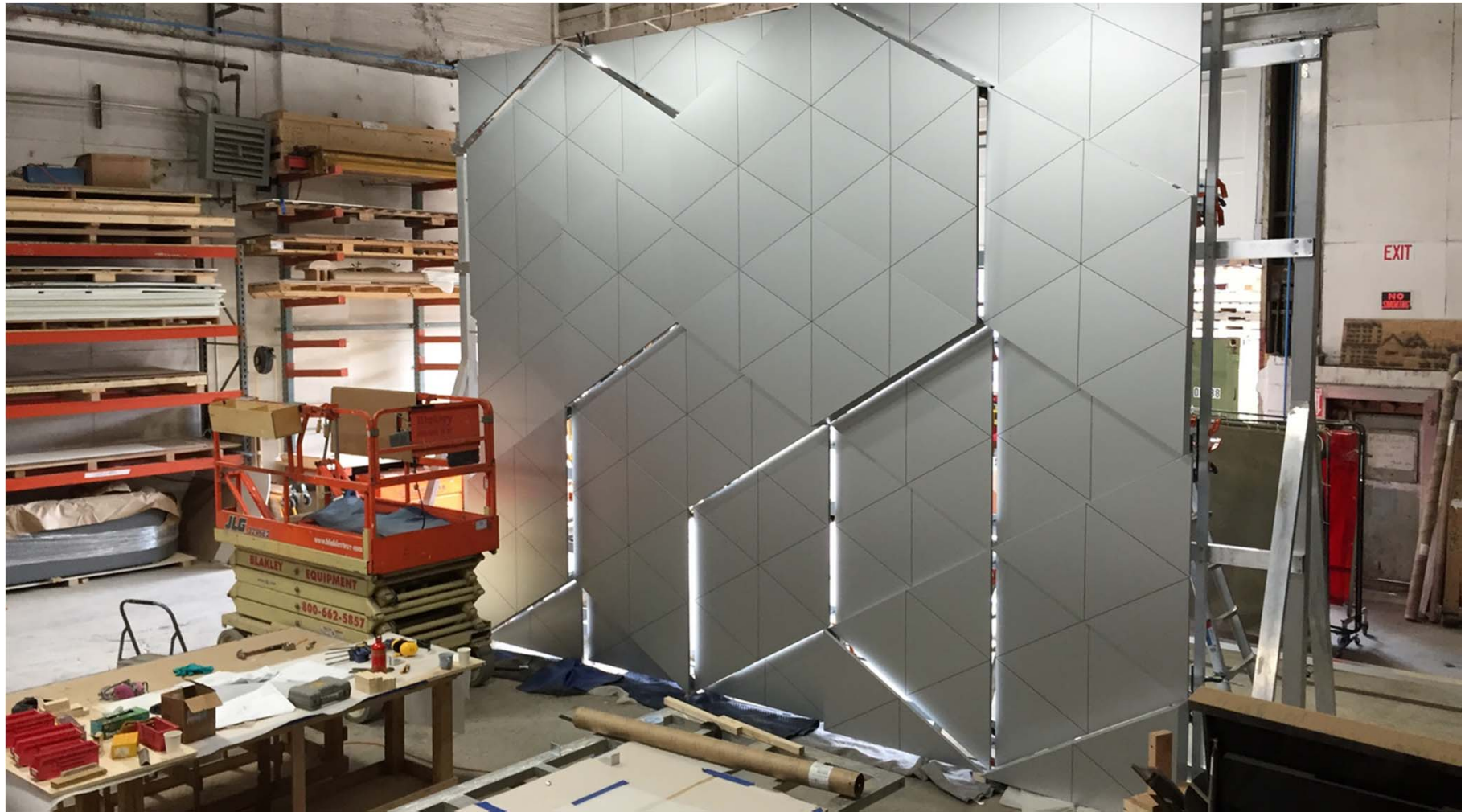
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Project Deliverables | Physical Samples



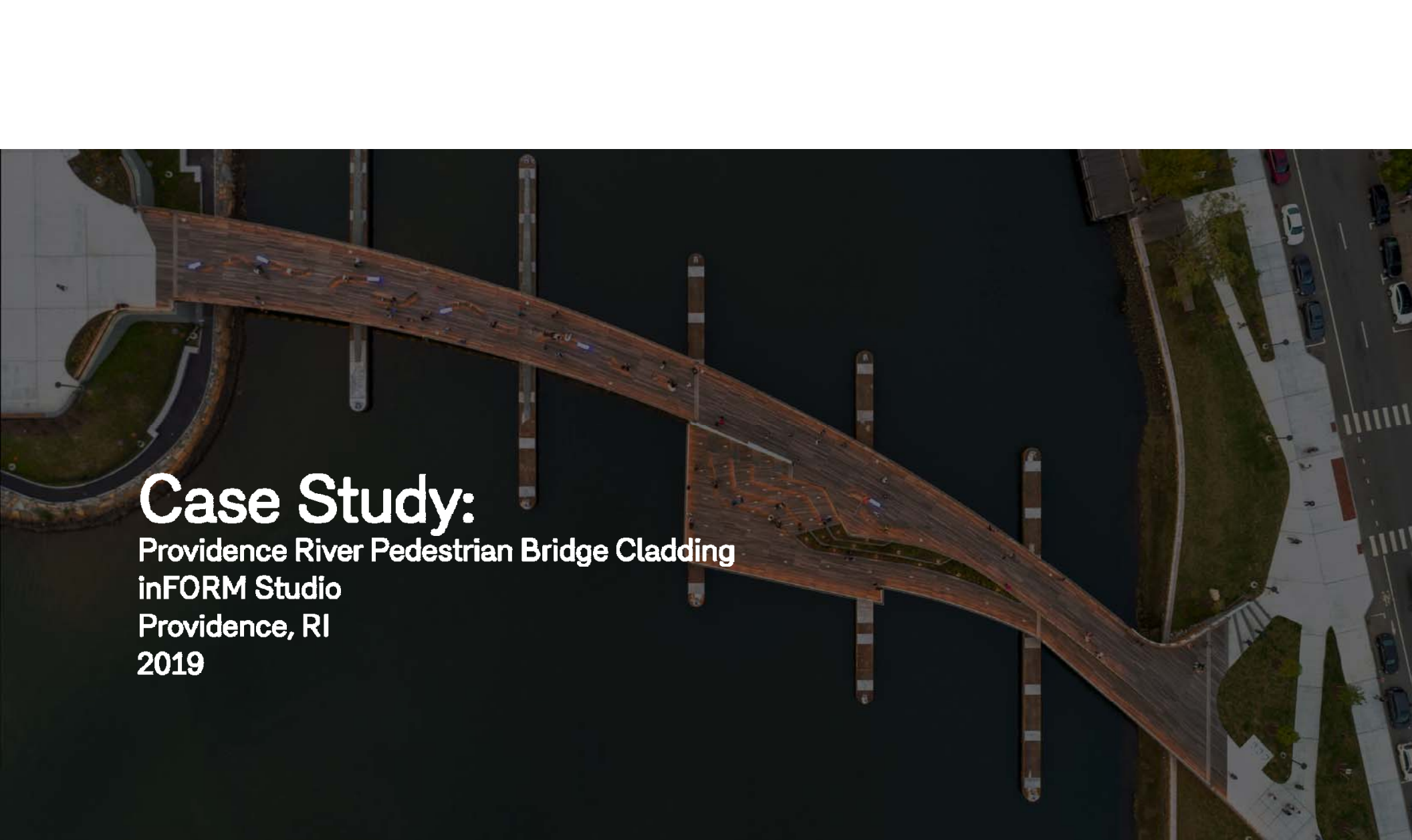
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Project Deliverables | Physical Samples



Case Study:

Providence River Pedestrian Bridge Cladding
inFORM Studio
Providence, RI
2019



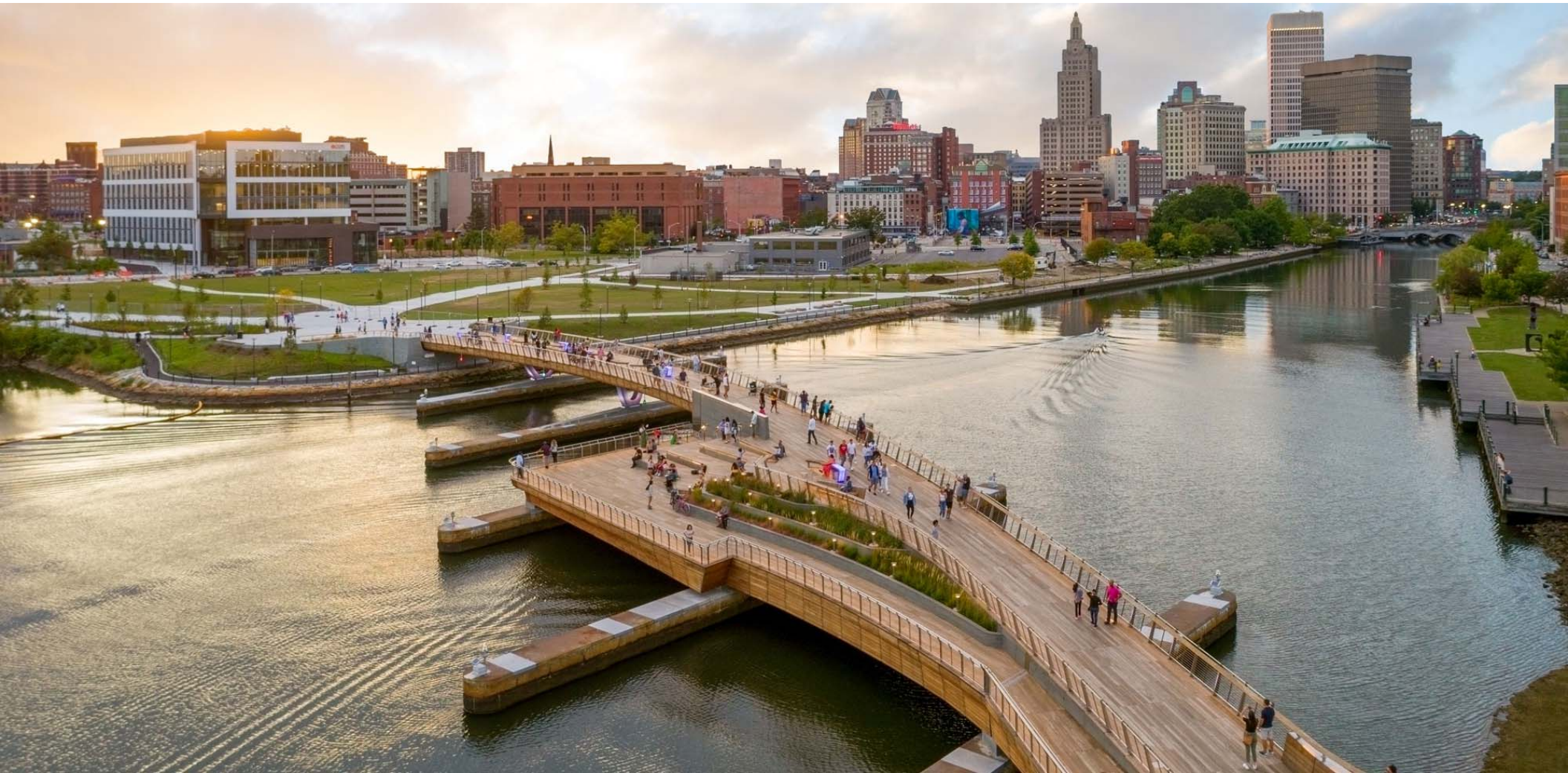
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inFORM Studio: Providence River Pedestrian Bridge Cladding



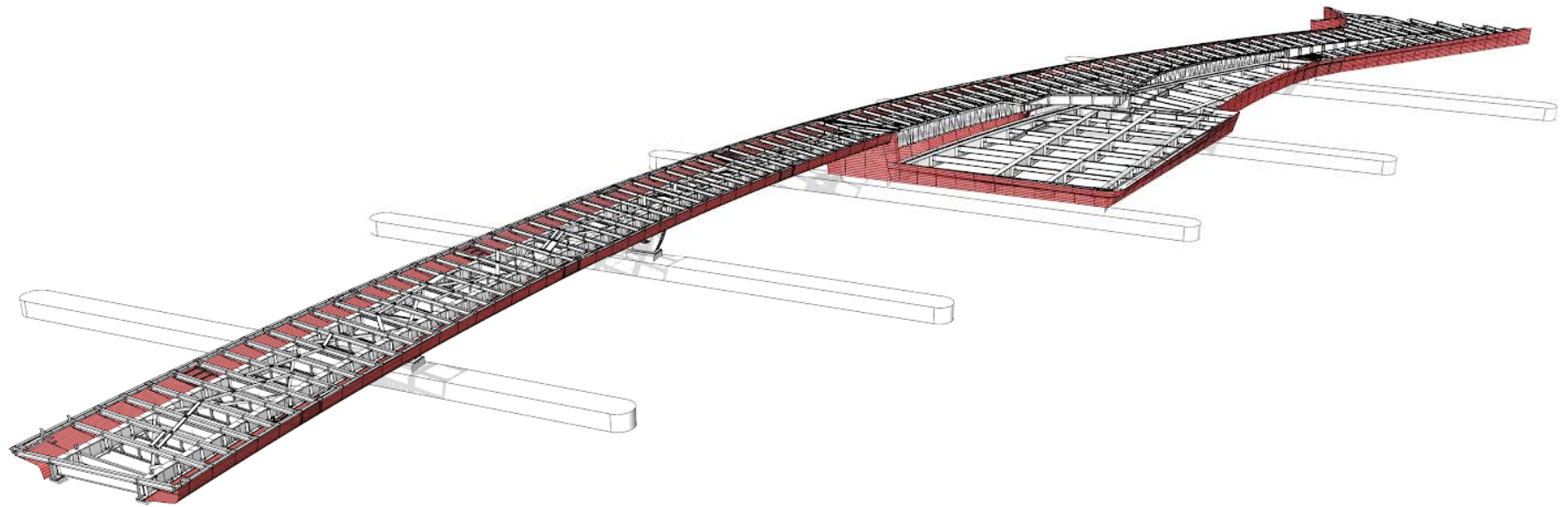
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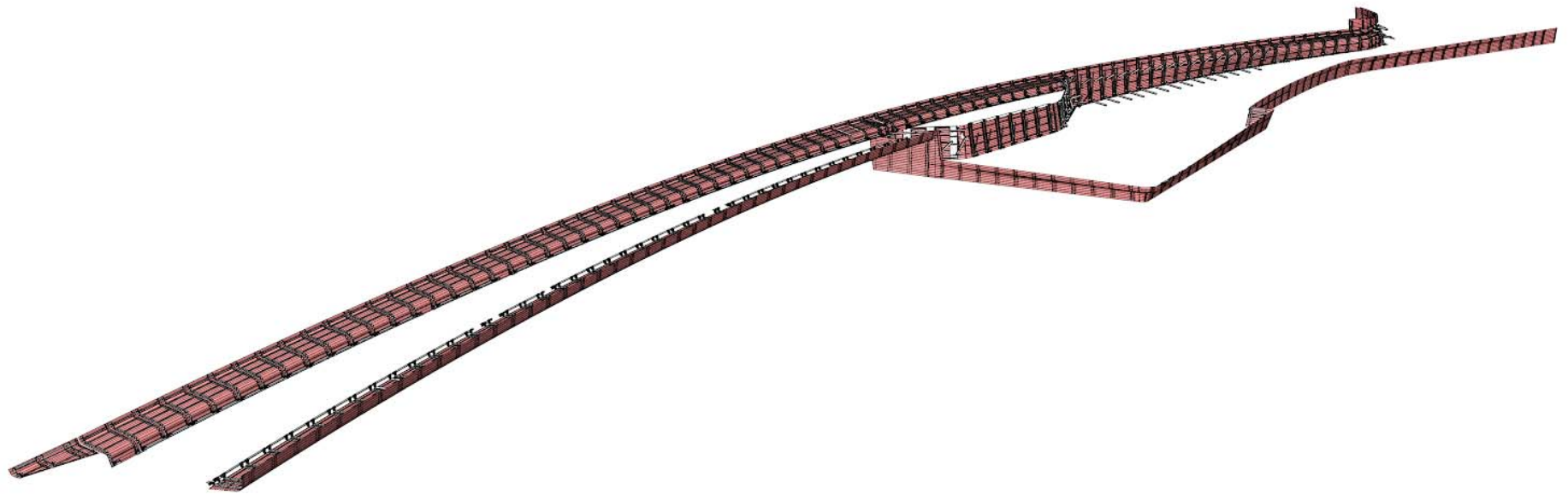
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inFORM Studio: Providence River Pedestrian Bridge Cladding



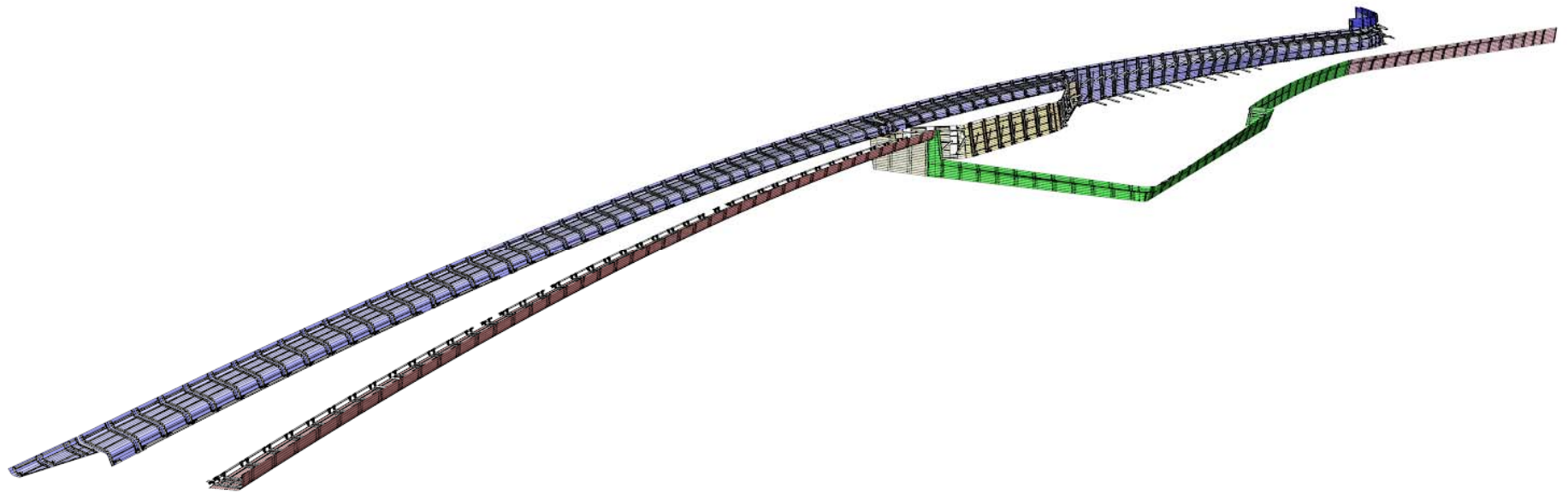
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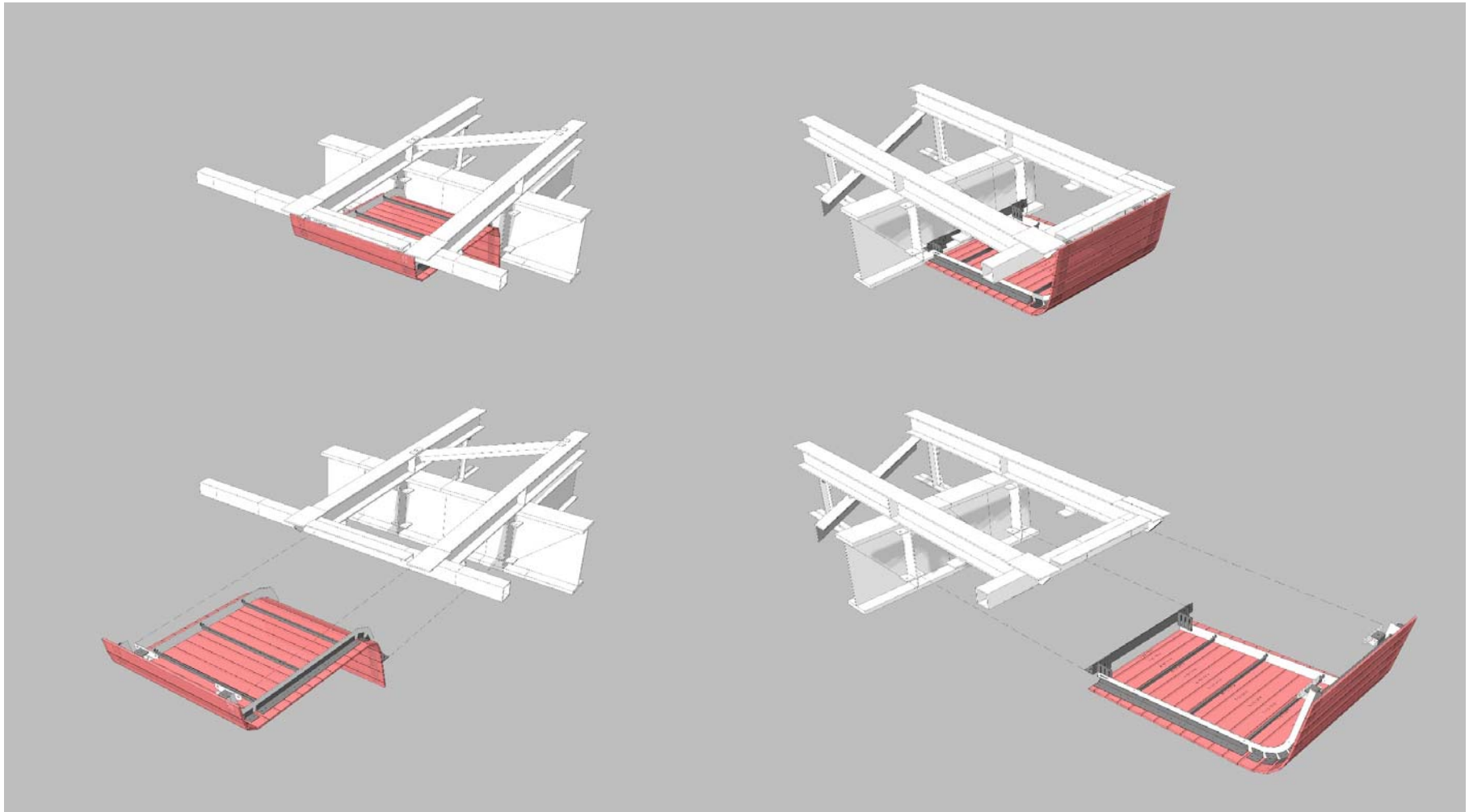
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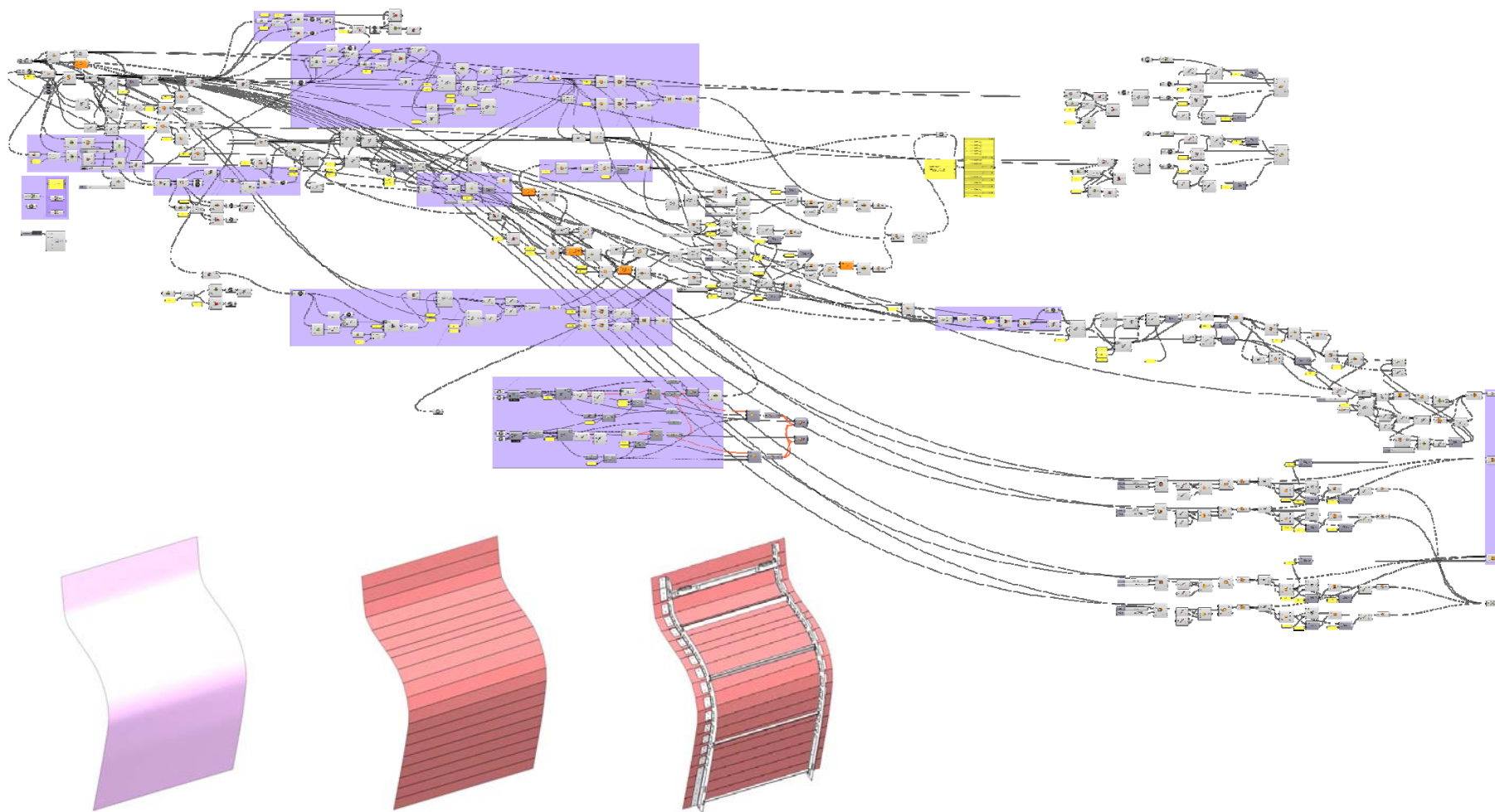
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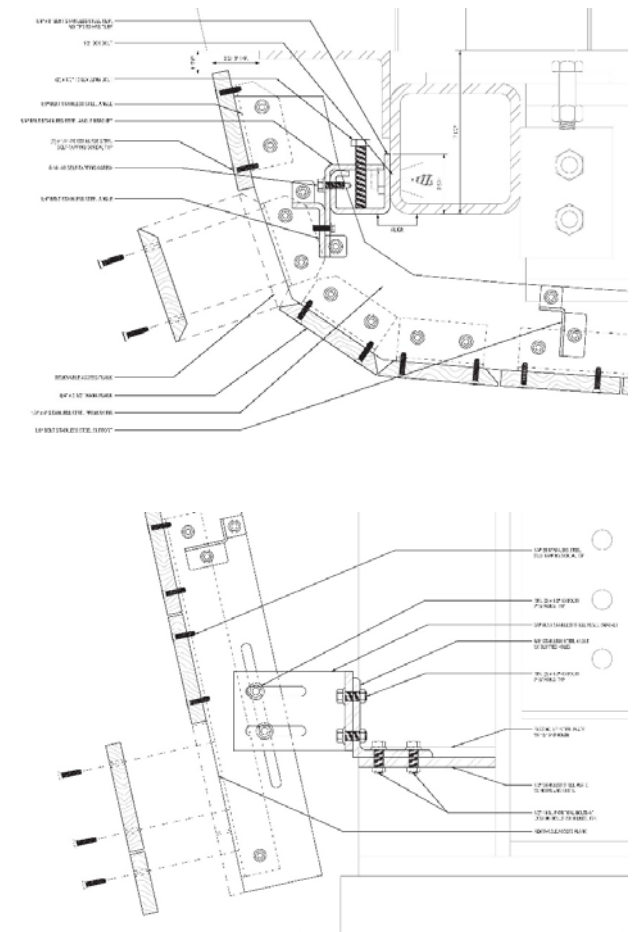
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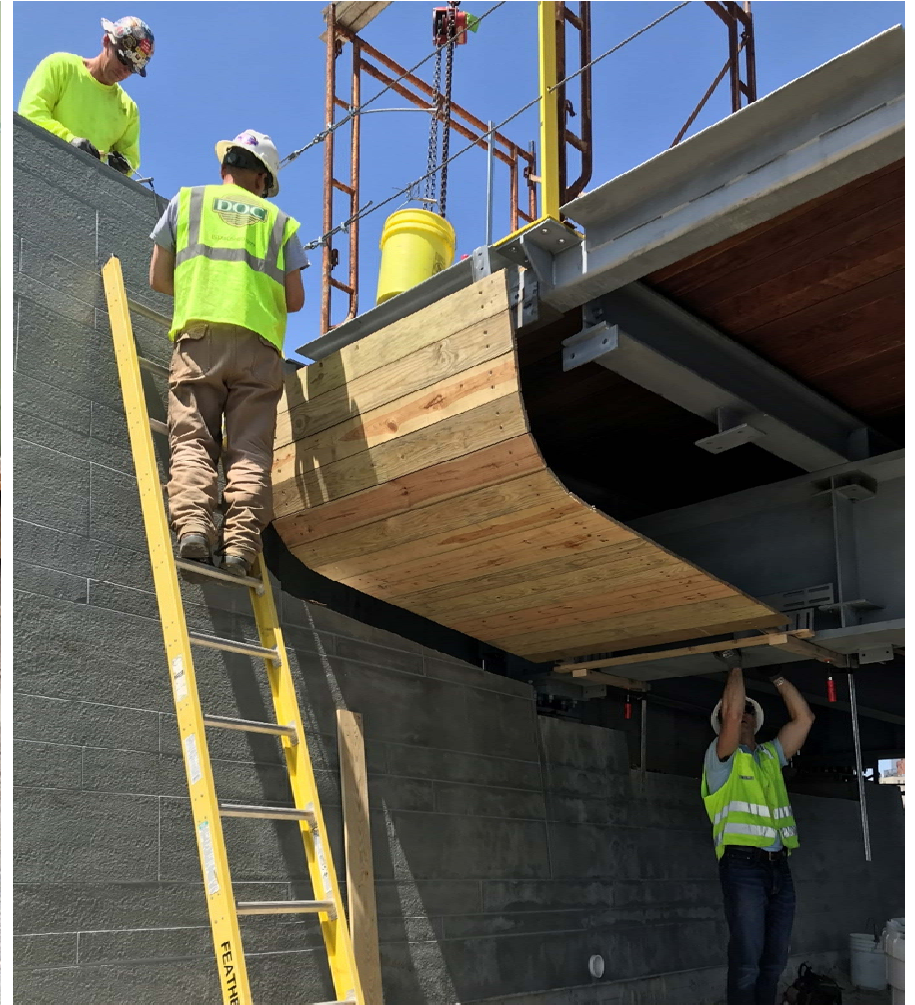
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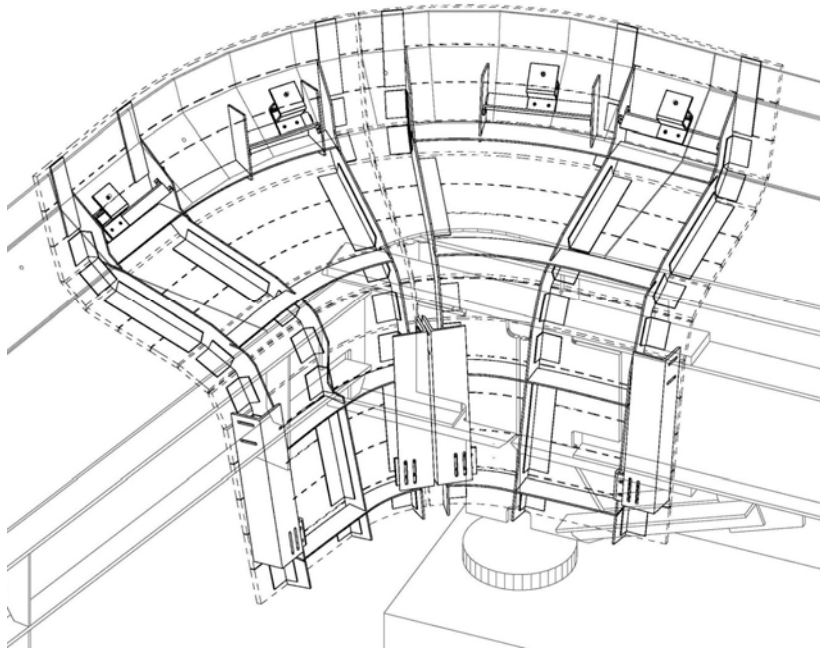
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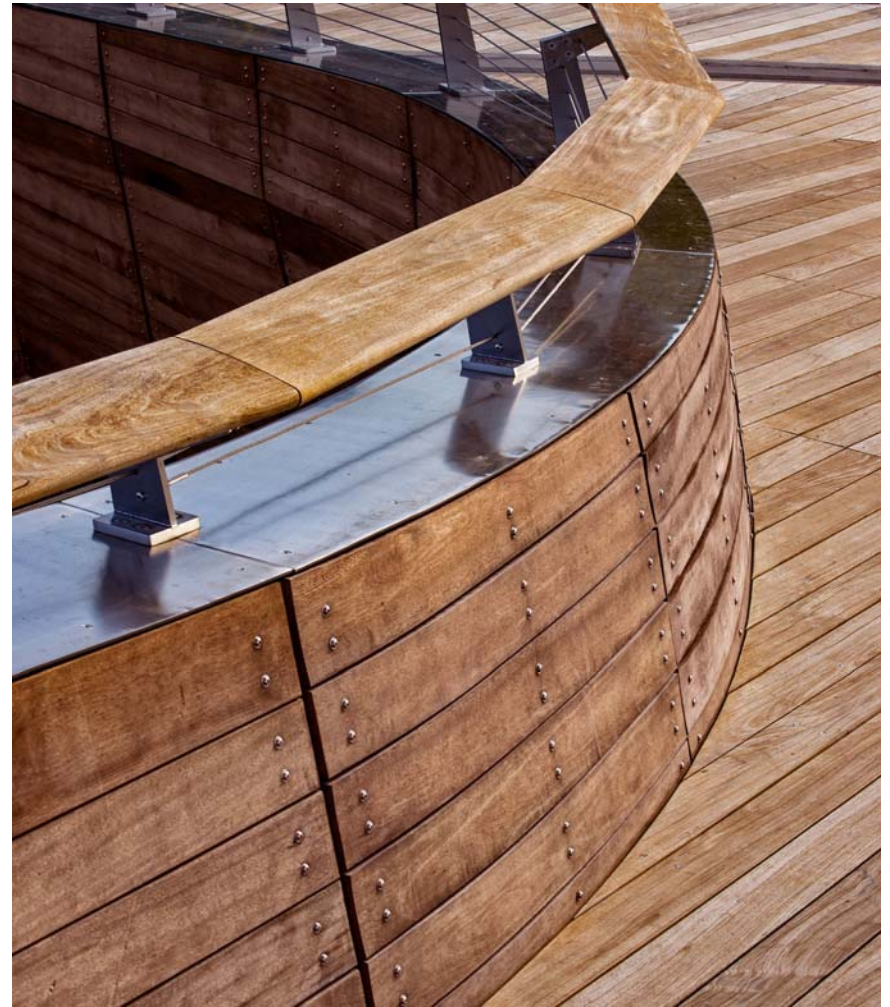
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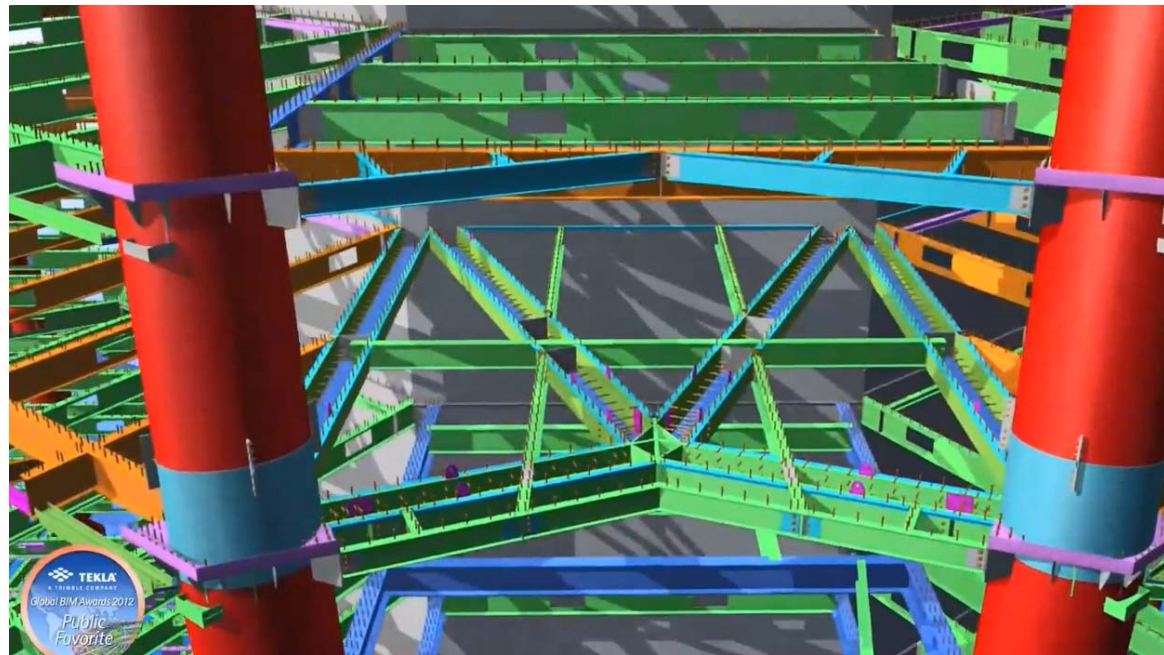
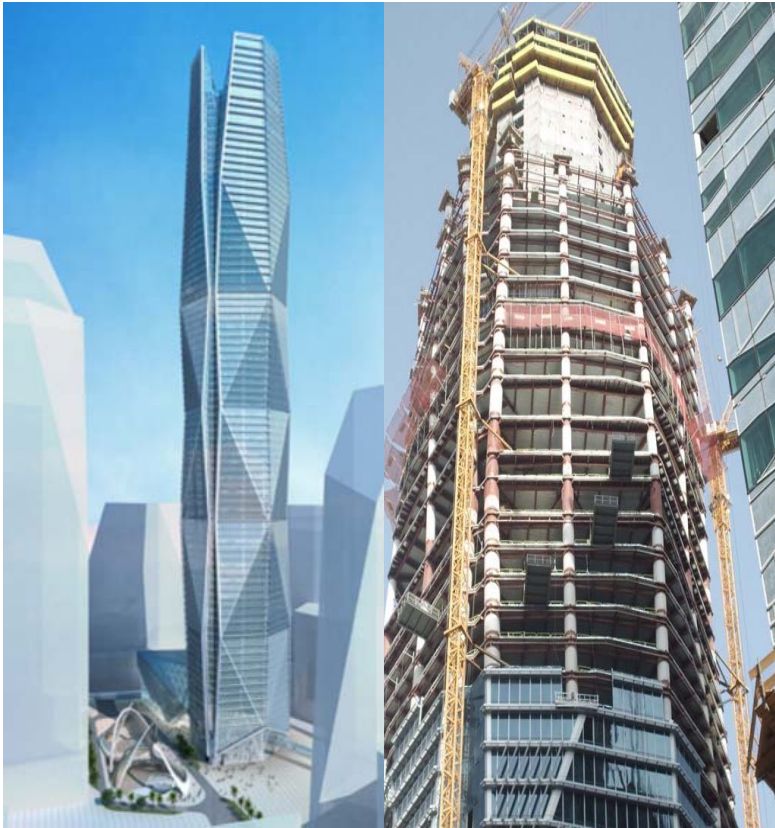
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CAPITAL MARKET AUTHORITY TOWER
Riyadh, Saudi Arabia

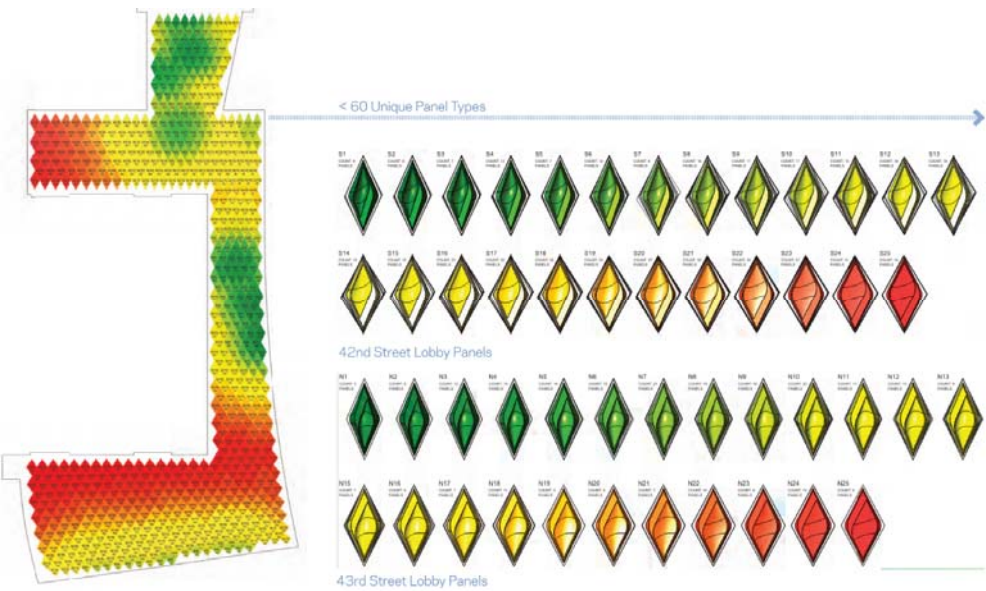


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4 TIMES SQUARE – LOBBY
New York, NY

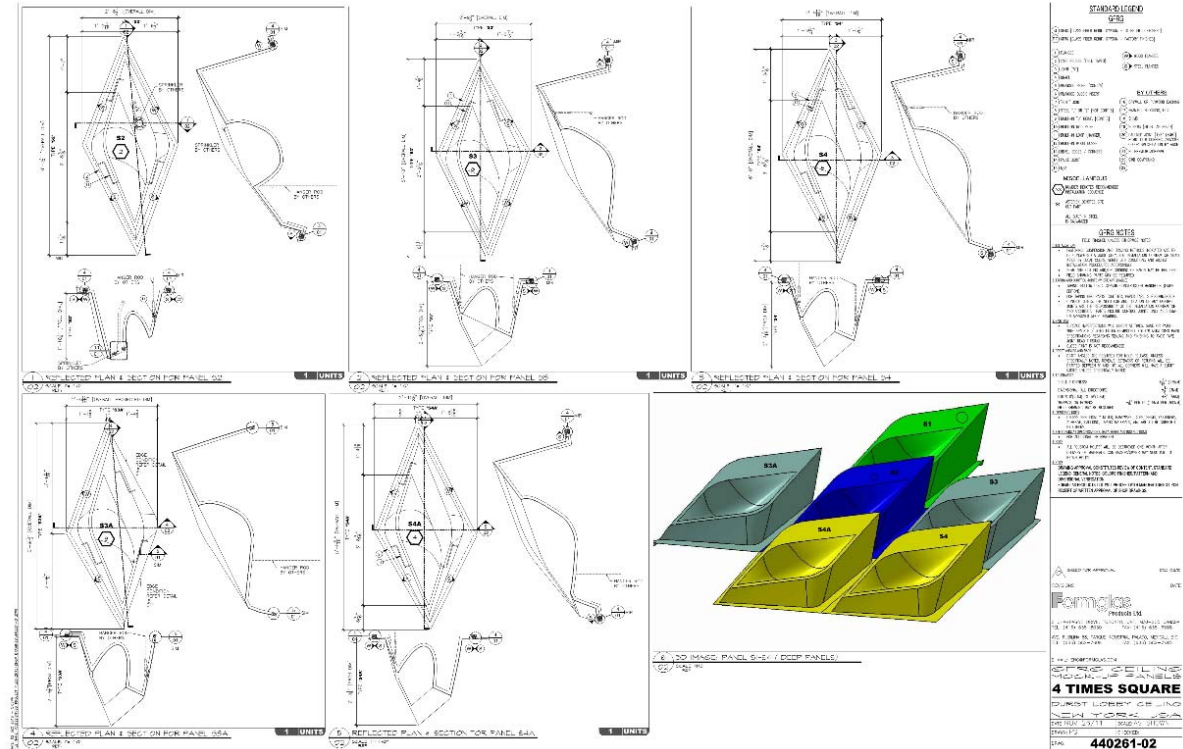
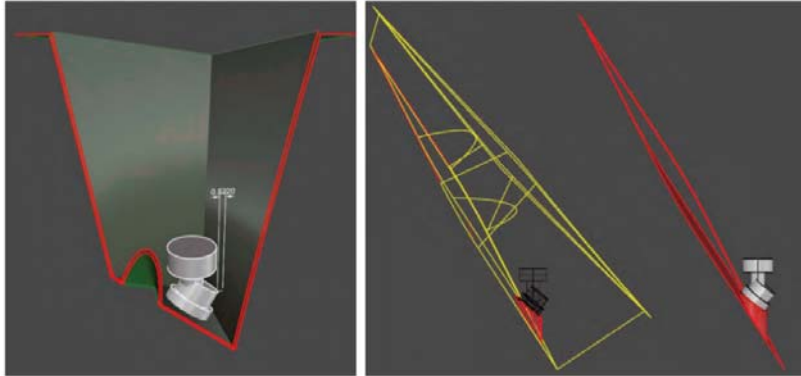


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Project INFORMATION Delivery



Image from "Revenge of the Nerds" by Twentieth Century Fox (1984)



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Challenges

Clients & Builders:

- Fee pressure
- Client expectations
- Risk management / litigation

Technology Providers:

- Increasing costs / acquisitions
- Lack of sustained innovation
- Lack of interoperability

Strategies & Solutions

- Aggressive negotiation for tech
- Explore fringe alternatives
- Training, training, training
- Development & sharing



Challenges with some tech providers

- Requests for improvement
- Cost increases without commensurate innovation
- Lack of interoperability
- Limited ability to migrate your data



Putting all your eggs in one basket...

Exploring alternatives

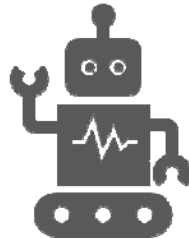
- Do they support open standards? (IFC, BCF)
- Do they have an application programming interface (API)?
- Pricing structure (by Project, User, Fees...)
- Available on multiple platforms (browser, mobile)



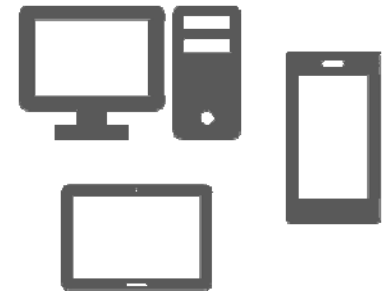
IFC



BCF



API



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What are we researching?

- Exited our EBA with Autodesk in 2018
 - Piloted Graphisoft Archicad
 - Exploring Bricscad BIM
- Moving from Adobe CC to Affinity Suite
- Moving away from Newforma
- Looking for Bluebeam alternatives



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Deltek
Vision



Trimble Connect



Project Work Plan
(**Phase-based**
w/ resources)

eMail Filing

File Transfer

smartsheet



Schedule
(**Task-based**)

QC Scoring
Technical Checklists
Other Logs

Team Directory
Regional Dashboard
Firmwide Dashboard

Risk/Action Log*
RFI Status*
Submittal Status*



ProjectSight

Action Items*
RFIs*
Submittals*

Drawing Register
Meeting Minutes
Punch Items
Site Observations



PROCORE®

And others...

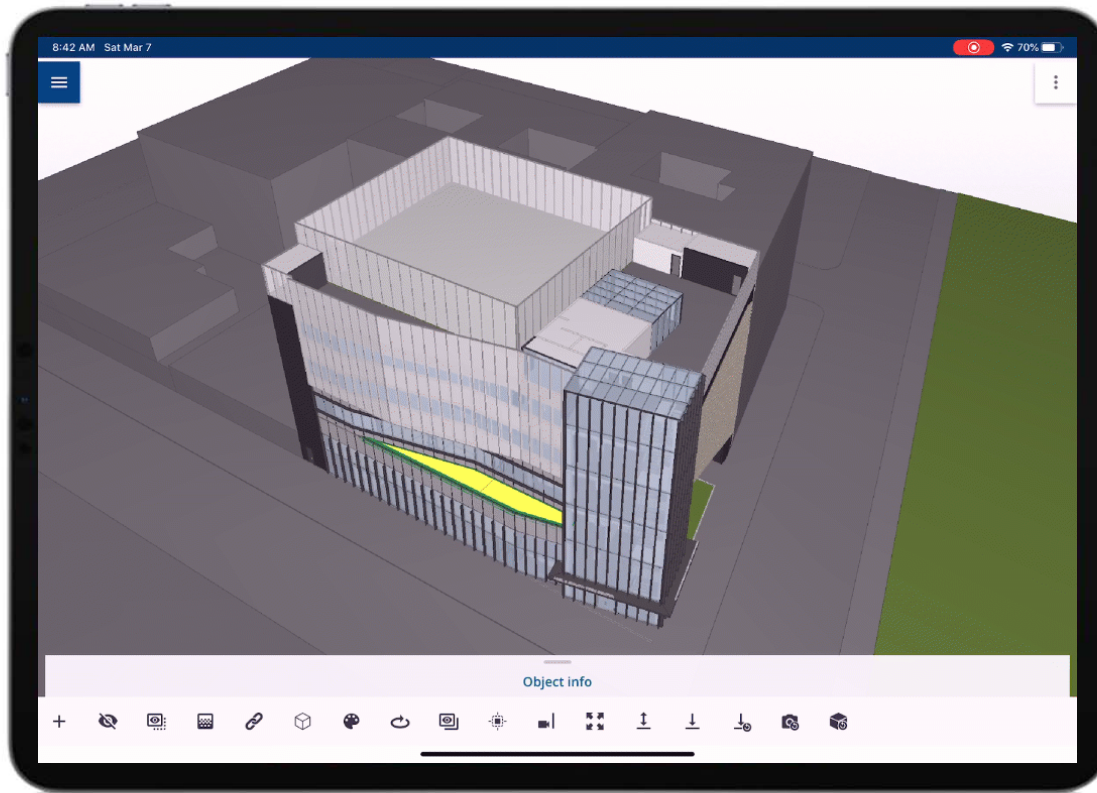


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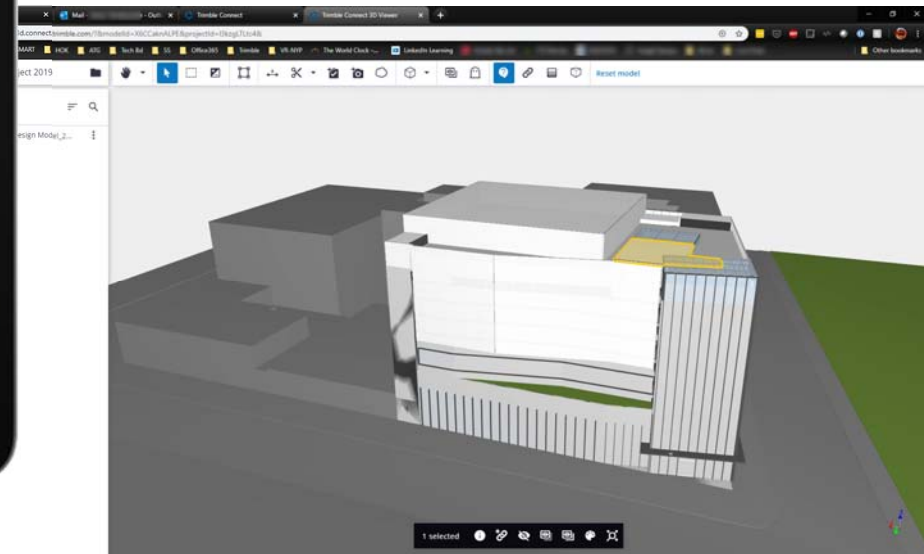
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BIM Data via mobile and web

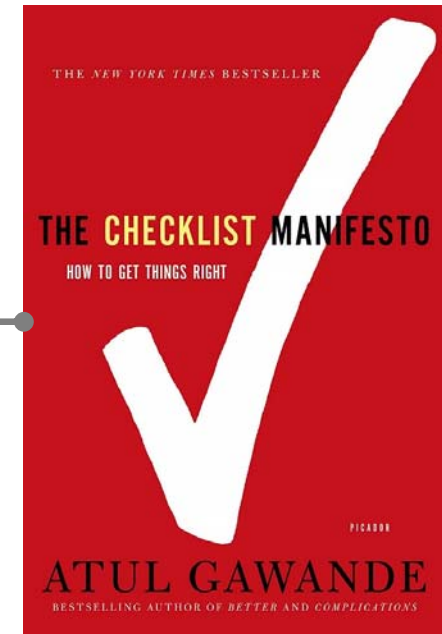
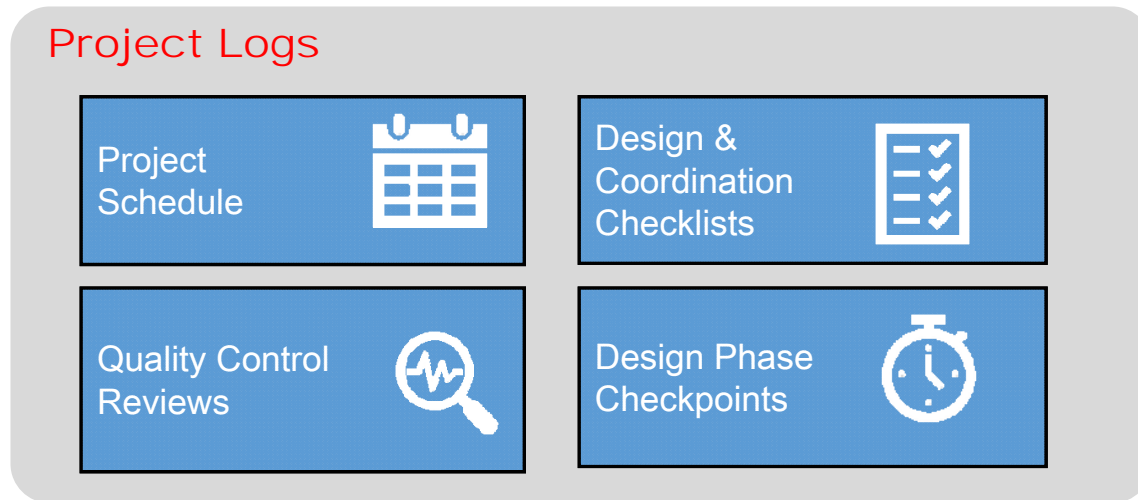


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Better Quality Management without
additional reporting processes

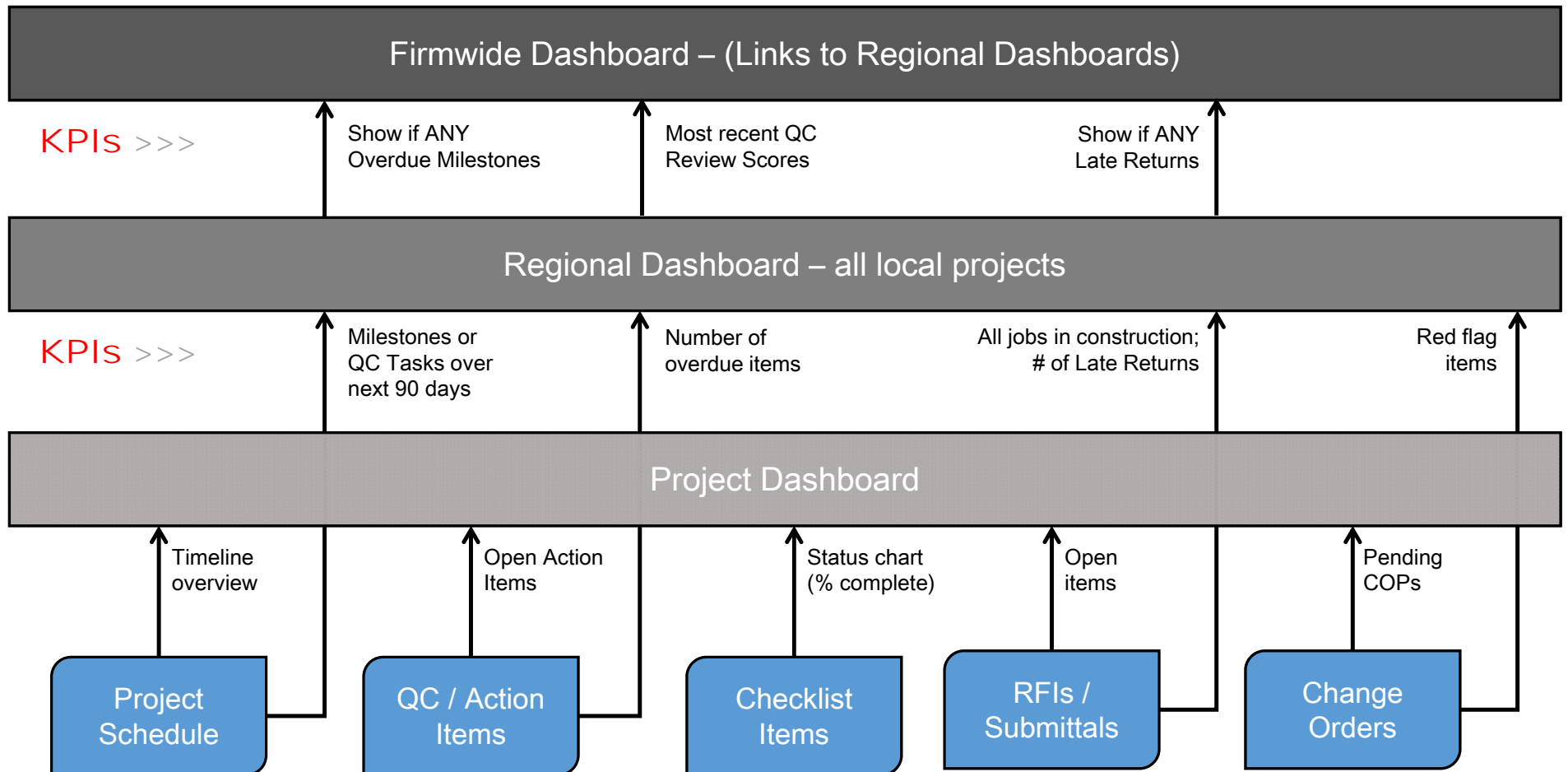


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[Back to Office Projects](#)

Office: **New York**

[PHI Milestones](#)

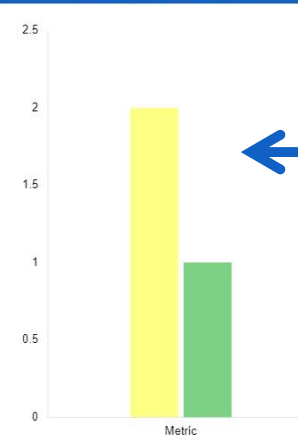
Schedule & Actions (Deliverables in next 90 days)

Dashboard Link	Project No.	Project Name	Current Phase	All Checklists	Checkpoints - Progress	Next Deliverable	Next Deliverable Date	Schedule-Overdue	Overdue Action Items
Project Dashboard	16.07055.00	Building Community, Hagerman	CONTRACT DOCUMENTS	3%	<div><div></div></div>	50% Contract Documents	Apr 30, 2020	<input type="checkbox"/>	
Project Dashboard	19.07018.00	Project: Central Institute New York	Charette #2, Schematic Design	0%	<div><div></div></div>	Final Schematic Design	May 22, 2020	<input type="checkbox"/>	
Project Dashboard	19.07041.00	Project: New York City, New York	Schematic Design	0%	<div><div></div></div>	Final Schematic Design	Feb 26, 2020	<input type="checkbox"/>	
Project Dashboard	19.07033.00	100 Westchester Turnpike, Westchester	Concept Design	0%	<div><div></div></div>	Final Concept Design Submittal	Mar 10, 2020	<input type="checkbox"/>	
Project Dashboard	12.07057.31	Project: New York City, New York	Design Development	0%	<div><div></div></div>	Final Design Development	Feb 28, 2020	<input type="checkbox"/>	
Project Dashboard	19.07043.00	100 Westchester Turnpike, Westchester	Feasibility / Concept Design, I	0%	<div><div></div></div>	Testimonial Review and Program	Feb 24, 2020	<input type="checkbox"/>	

Scheduled QC Reviews - Next 90 Days

Dashboard Link	Project No.	Project Name	Next Review	Next Review - Date	Next Review - Assigned	QC Review Overdue
Project Dashboard	19.07018.00		QC Review 1 - 75% SD	Mar 23, 2020	<input type="checkbox"/>	<input type="checkbox"/>
Project Dashboard	19.07041.00		QC Review 1 - 75% SD	Feb 14, 2020	<input type="checkbox"/>	<input type="checkbox"/>
Project Dashboard	12.07057.31		QC Review 3 - 50% CD	Apr 6, 2020	<input checked="" type="checkbox"/>	<input type="checkbox"/>

QC Review Scores



QC Reviews - Last 90 Days

Dashboard Link	Project No.	Project Name	Last Update - QC Review	Last Update - Modified Date	Last Update - QC Score
Project Dashboard	19.07019.00		QC Review 4 - 90% CD	01/21/20	<input checked="" type="checkbox"/>
Project Dashboard	12.07057.31		QC Review 1 - 75% SD	12/20/19	<input type="checkbox"/>

QC Reviews - OVERDUE

Dashboard Link	Project No.	Project Name	Next Review	Next Review - Date	Next Review - Assigned	QC Review Overdue
Project Dashboard	17.07032.00		OVERDUE REVIEW	N/A	<input type="checkbox"/>	<input checked="" type="checkbox"/>

KPIs



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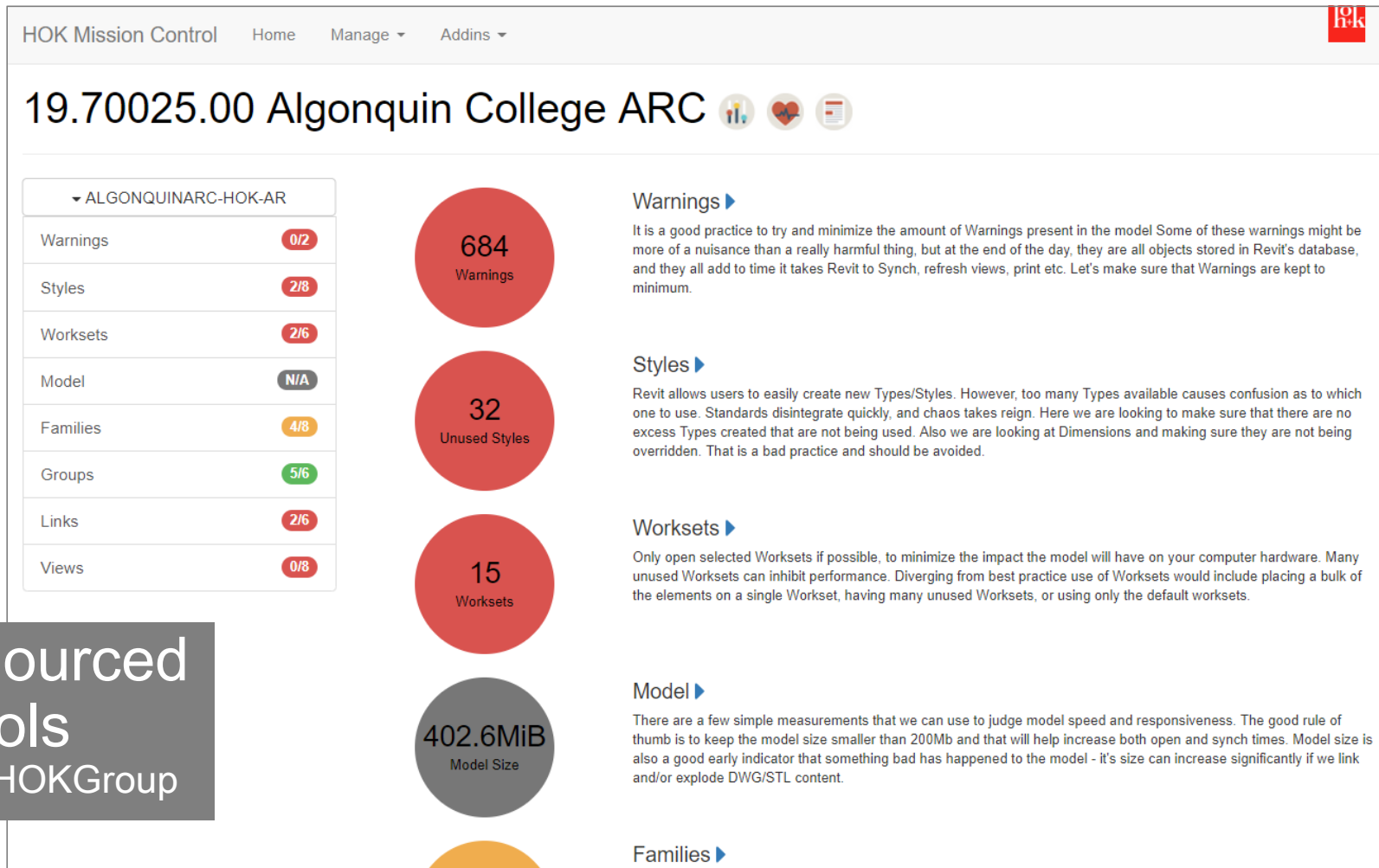
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Development & Sharing

- Support and leadership within [buildingSMART International](#)
- Sharing code on [Github.com/HOKGroup](#) (open source)
 - “Mission Control” – Revit monitoring & management
 - HOK Revit Addins
 - “Zombie” – Automated Revit addin management
- In-house development:
 - “BIL” (Building Information Language)
 - “Trajectory” – user/project/systems coordinator



Open-Sourced
HOK tools
github.com/HOKGroup



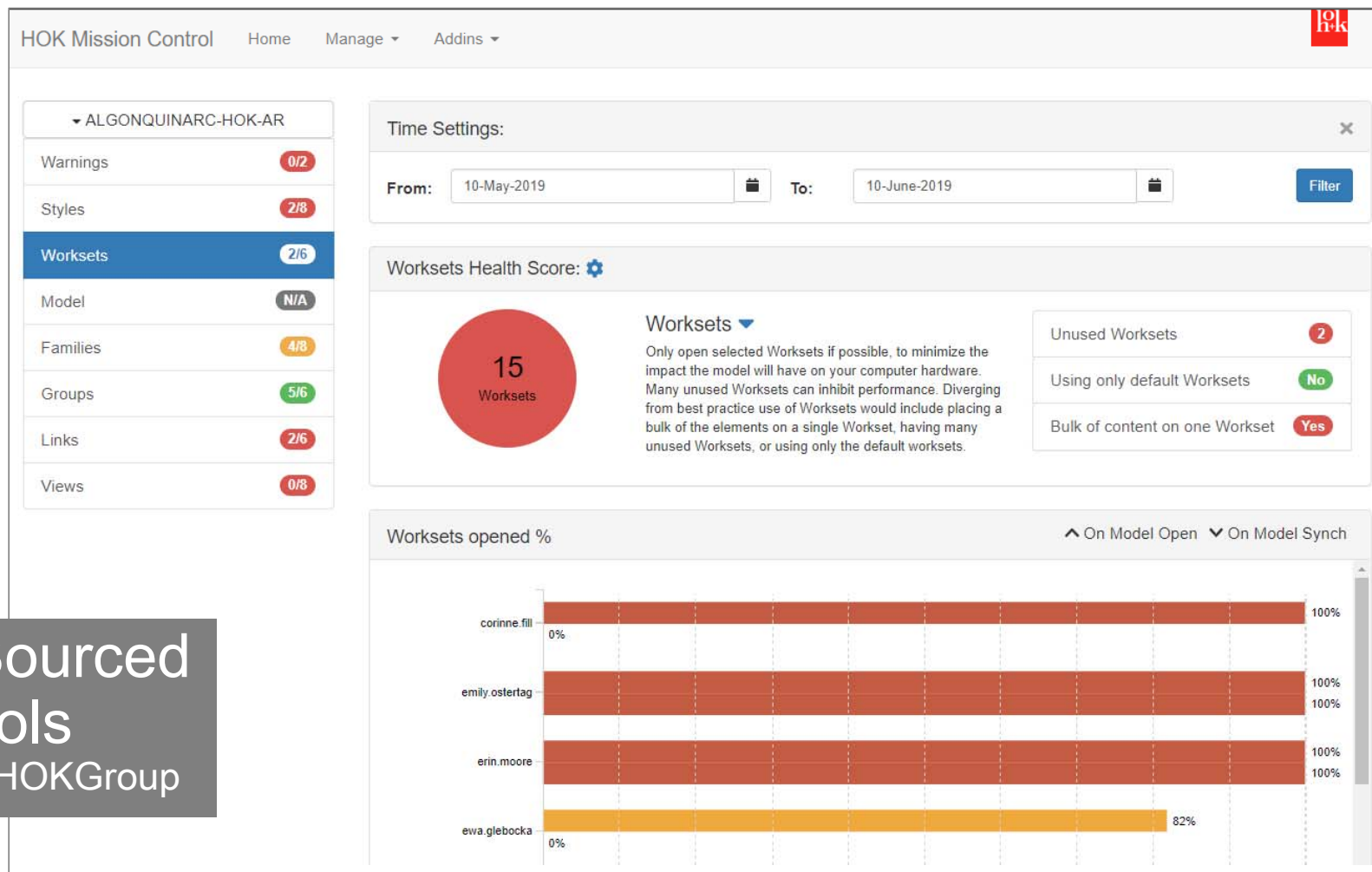
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HOK tools
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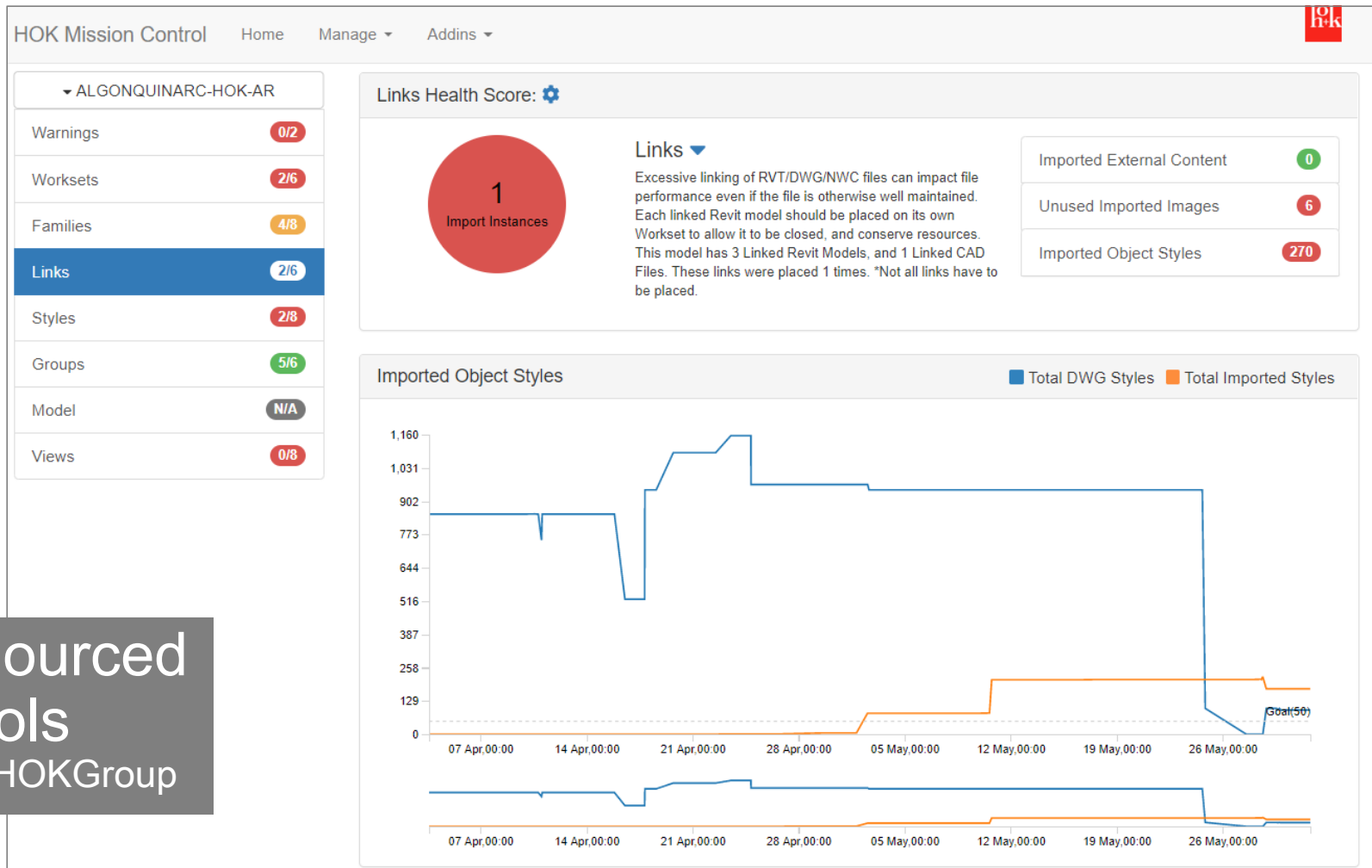


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github.com/HOKGroup

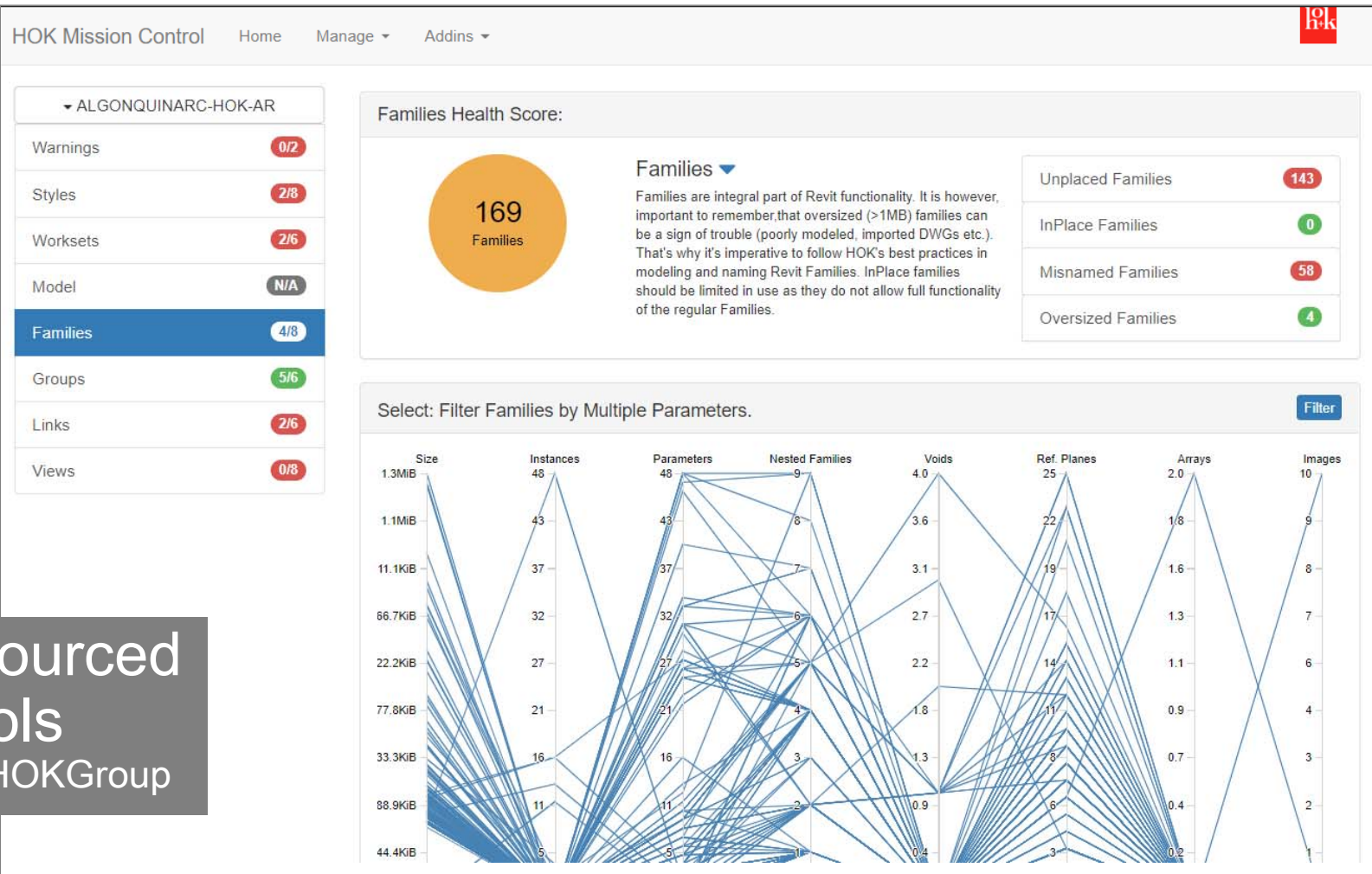


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HOK tools
github.com/HOKGroup



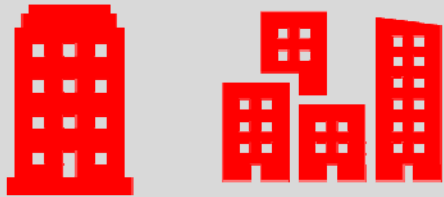
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PROJECTS



PEOPLE



TRAJECTORY

Deltak
Vision



Trimble Connect

dRofus

smartsheet

ProjectSight

TOOLS / SERVICES



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h+k Trajectory

James Vandezande (Admin)

Authenticate

Clear

My Projects

Project Team

Manage External Apps

Project Team

(20.07005.00)

Add Internal User:

Search User...

Add External/Multiple Users

	Name	Email	Company	Project Role
Edit Remove			HOK	Internal
Edit Remove			HOK	Internal
Edit Remove			HOK	Internal
Edit Remove			HOK	Internal
Edit Remove			HOK	Internal



Manage the
Team



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James Vandezande (Admin)

Authenticate Clear

- My Projects
- Project Team
- Manage External Apps
- SmartSheet
- Trimble Connect
- Trimble ProjectSight

Manage External Applications

(20.07005.00)

☒ SmartSheet
 ☒ Trimble Connect
 ☐ dRofus
 ☒ Trimble ProjectSight

Result	App	Action	At	Details	By
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fail	HOKSmartsheet.fmw	create	2/7/2020 5:23:09 PM	Project [20.07005.00] was not found in database [HUB-Model]. Please try again tomorrow.	
success	HOKTrimblePS.fmw	create	2/7/2020 5:21:52 PM	Project [2202] - created	
success	HOKTrimbleConnect.fmw	user_add	2/7/2020 5:21:13 PM	Project User added	
success	HOKTrimbleConnect.fmw	user_add	2/7/2020 5:20:50 PM	Project User added	
success	HOKTrimbleConnect.fmw	user_add	2/7/2020 5:20:29 PM	Project User added	
success	HOKTrimbleConnect.fmw	user_add	2/7/2020 5:19:54 PM	Project User added	
success	HOKTrimbleConnect.fmw	create	2/7/2020 5:19:21 PM	Project - create from template [Import ID 80xLXKIJ96Q] - PENDING. Next User Management action (add) will automatically add DTM as Admin but this message will not update.	
fail	HOKSmartsheet.fmw	create	2/7/2020 5:18:53 PM	Project [20.07005.00] was not found in database [HUB-Model]. Please try again tomorrow.	



Manage the Tools

h+k Trajectory

James Vandezande (Admin)

Authenticate Clear

My Projects

Project Team

Manage External Apps

SmartSheet

Trimble Connect

Trimble ProjectSight

Manage External App - Trimble Connect

(20.07005.00)

Office: NY

Import ID: 80xLXKIJ96Q

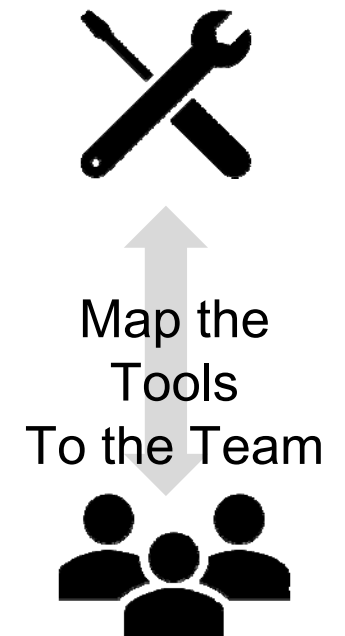
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Available Actions

	Result	Details	Last Action	Action By
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User Management

	Name	Company	Service Role	Last Action	Action By
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<input checked="" type="checkbox"/>	Manage	HOK	User	user_add, success (2/7/2020 5:20:50 PM)	(Admin)
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<input checked="" type="checkbox"/>	Manage	HOK	User	user_add, success (2/7/2020 5:20:29 PM)	(Admin)



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Develop your “data stories”

Support open standards & interoperability

Learn some coding

Don't be afraid to experiment