

Innovative Workflows for Delivering Complex Buildings

Brendan Mullins

Architect





About the speaker

Brendan Mullins

Brendan Mullins is an architect and visualization expert with Stantec Architecture. He has integrated virtual reality into the design process of prestigious projects such as the Lucas Museum of Narrative Art, the San Ysidro Land Port of Entry, and the UCSF Precision Cancer Medical Center. Brendan is currently living in Los Angeles and working as an Architect on the Lucas Museum of Narrative Art.



Cleveland Clinic Cancer Building

The 377,000-square-foot facility, estimated at \$276 million, will house all outpatient cancer treatment services in one location with the center's team of medical and radiation oncologists, surgeons, nurses, genetic counselors, social workers and others all working together in one shared space to improve patient outcomes.

San Ysidro Land Port of Entry

Design Build delivery of Southern California's San Ysidro Land Port of Entry (LPOE)—the busiest international border crossing in the western hemisphere, with 70,000 northbound vehicle passengers and 20,000 northbound pedestrians crossing daily

Learning Objectives

- COORDINATE AND DELIVER DESIGNS DIGITALLY USING CLOUD-BASED COLLABORATION AND VIRTUAL REALITY
- INTEGRATE RHINOCEROS 3D AND REVIT USING GRASSHOPPER AND DYNAMO
- OVERCOME THE DIFFICULTIES OF DELIVERING CONSTRUCTION DRAWINGS FOR BUILDINGS WITH COMPLEX GEOMETRIC FORMS
- UNDERSTAND THE CHALLENGES AND WORKFLOWS FOR ARCHITECTS DELIVERING 3D MODELS FOR FABRICATION



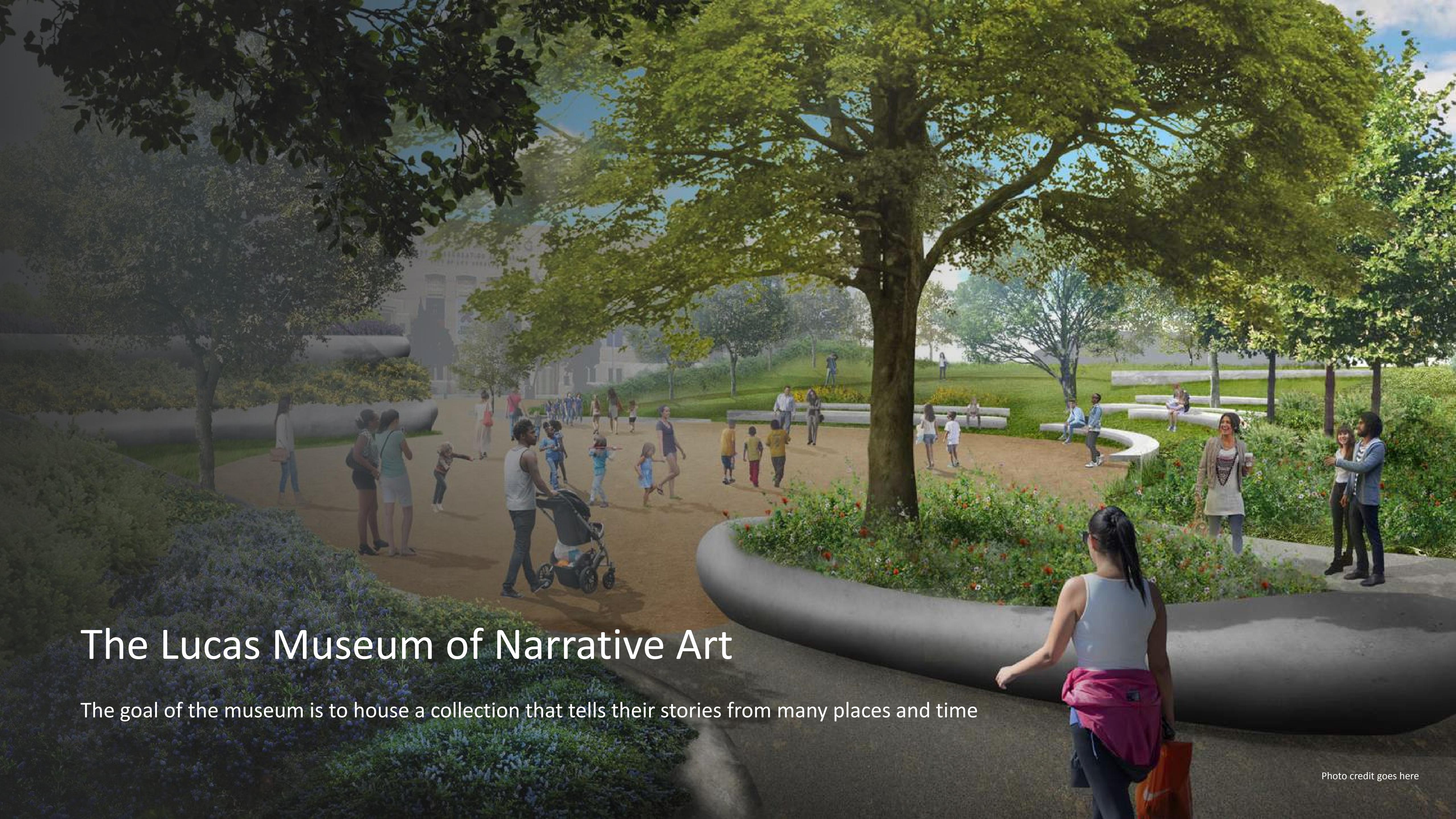
The Lucas Museum of Narrative Art

The value of these materials goes beyond their rarities as objects



The Lucas Museum of Narrative Art

This is the first museum of its kind, with an unprecedented collection...



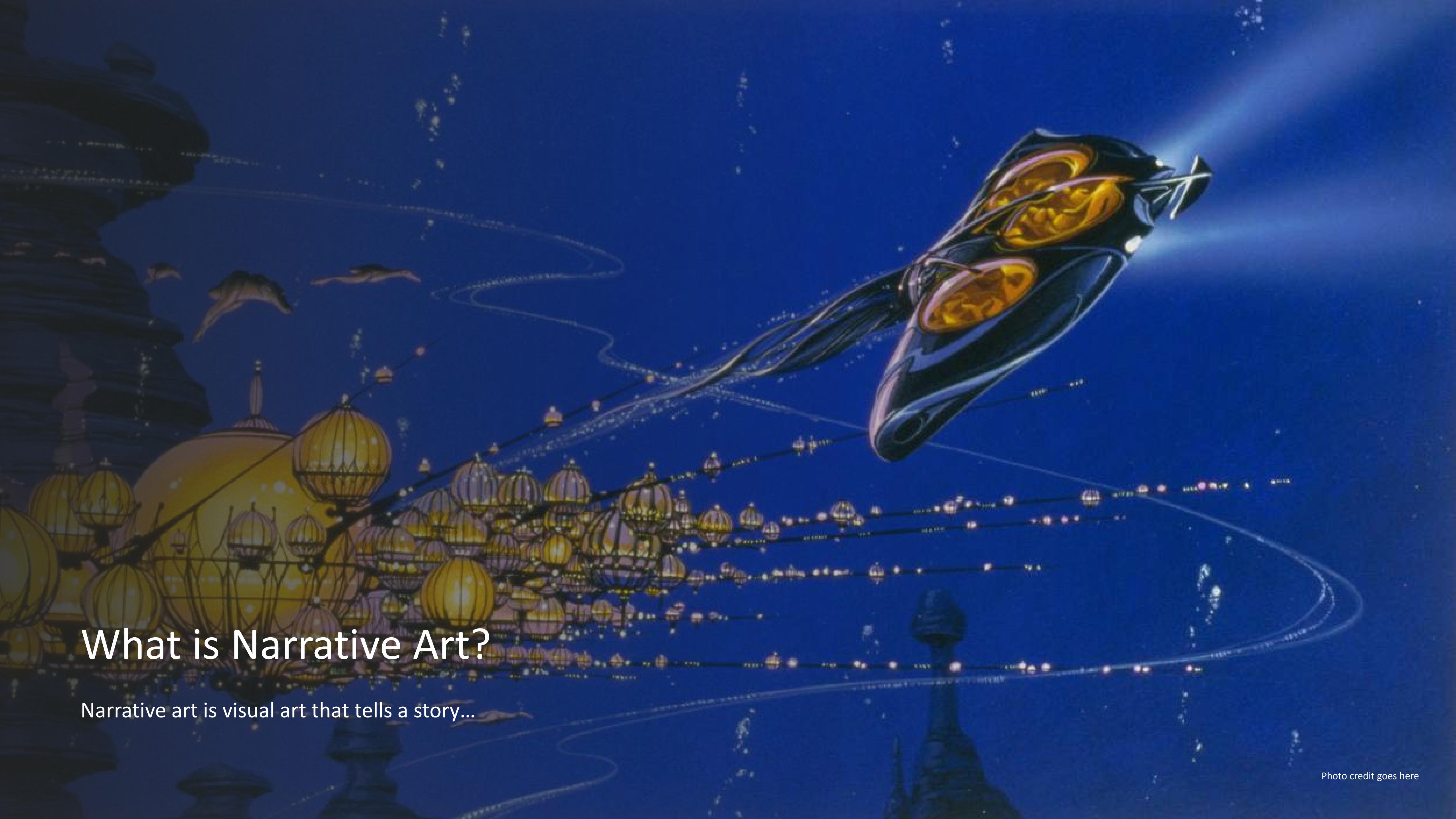
The Lucas Museum of Narrative Art

The goal of the museum is to house a collection that tells their stories from many places and time



What is Narrative Art?

Narrative art is visual art that tells a story...



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Collaboration and Visualization



A Tool For Every Task

COLLABORATION

- AUTODESK A360
- BLUEBEAM STUDIO
- AUTODESK GLUE

MODELING

- REVIT C4R
- RHINOCEROUS 3D
- MAYA

COMPUTATION

- DYNAMO
- GRASSHOPPER
- EXCEL

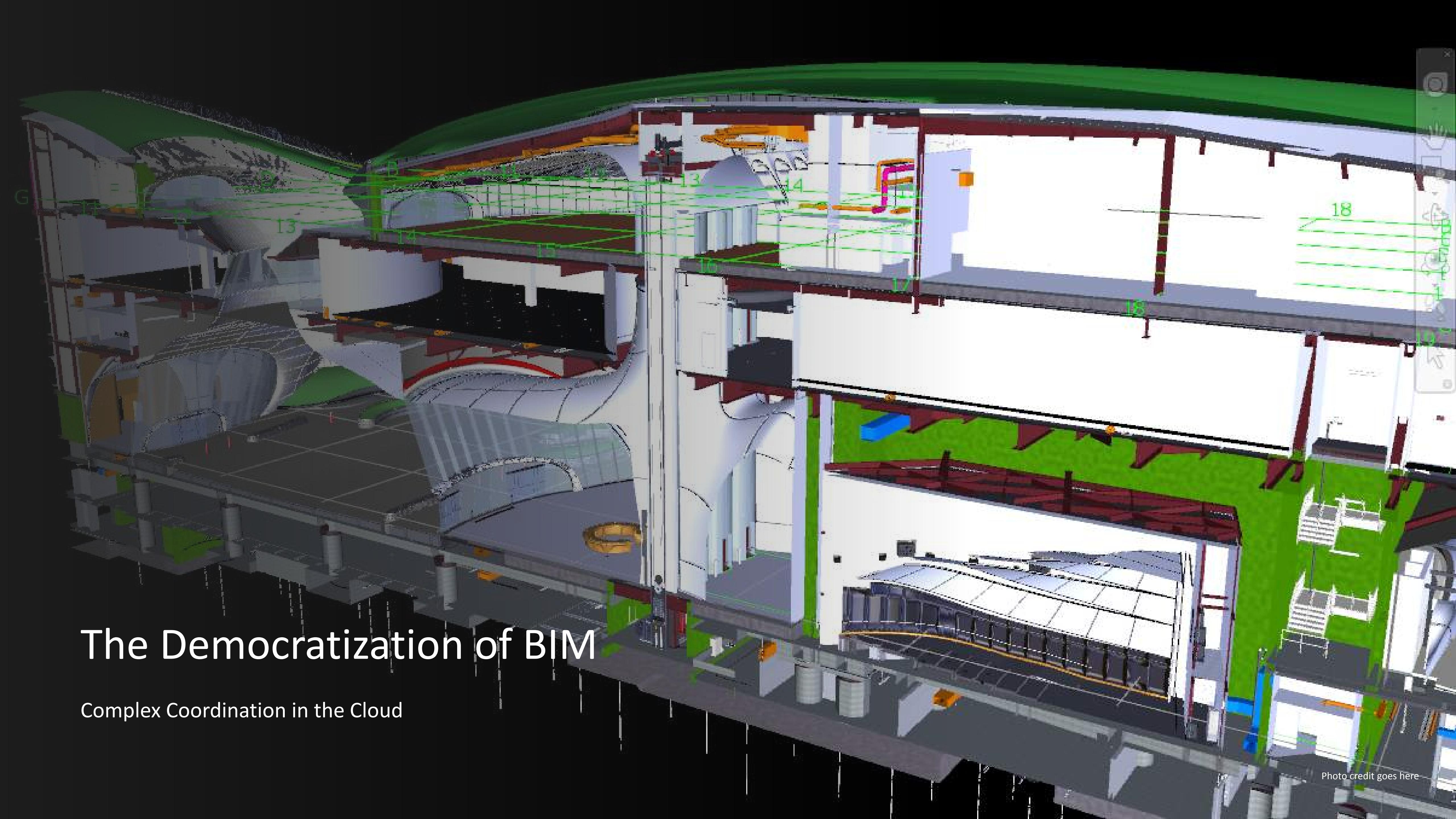
VISUALIZATION

- ENSCAPE
- INSITEVR



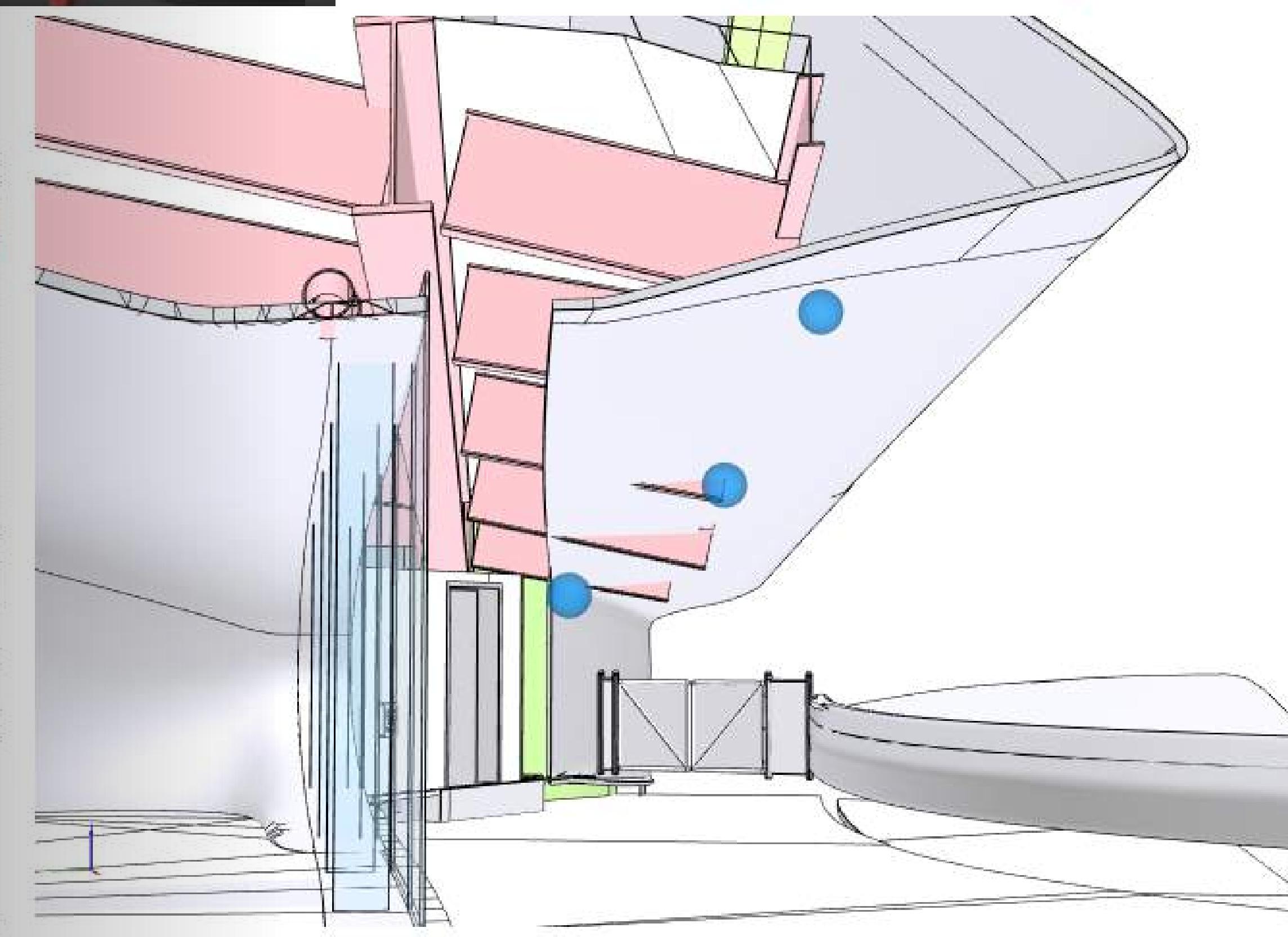
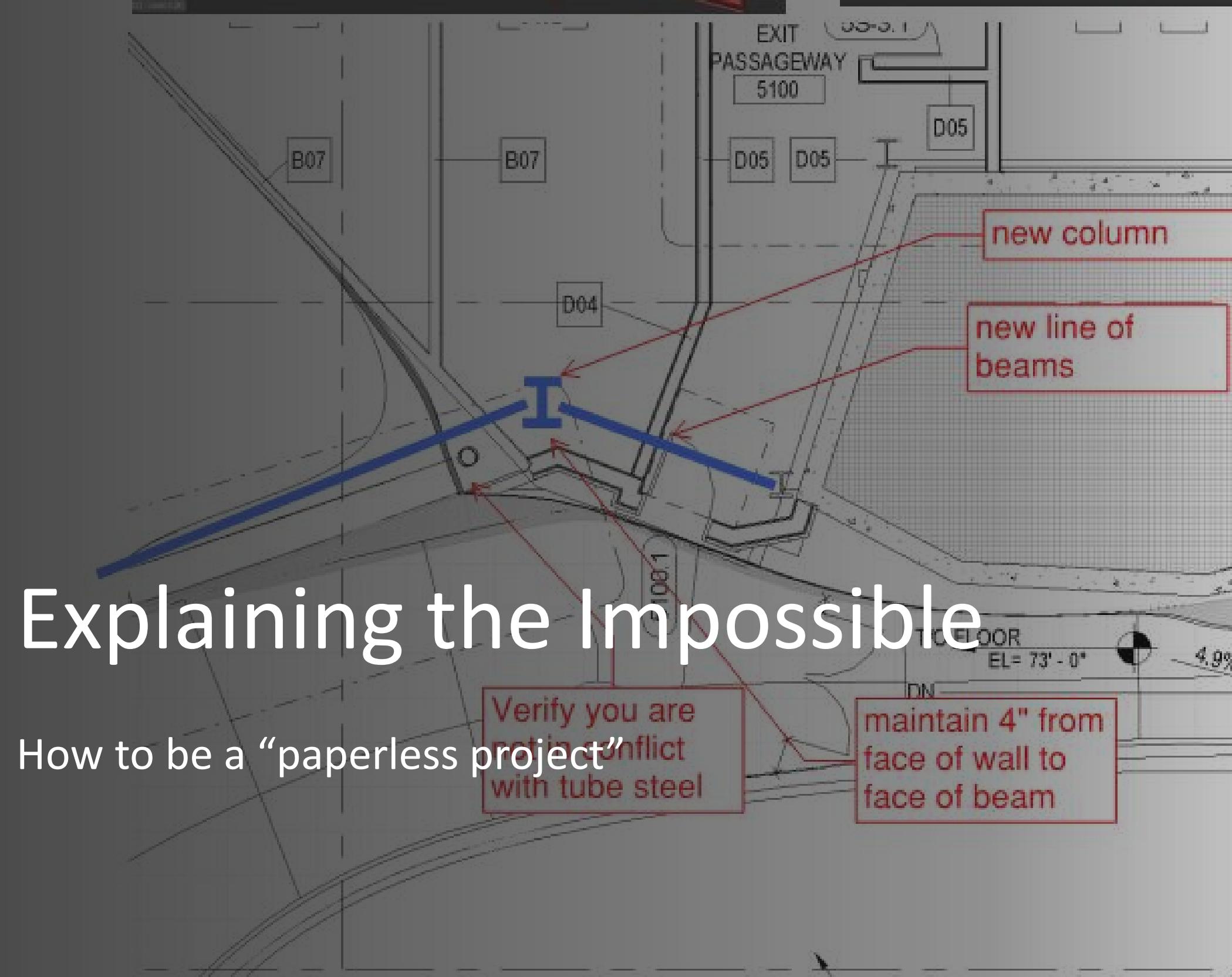
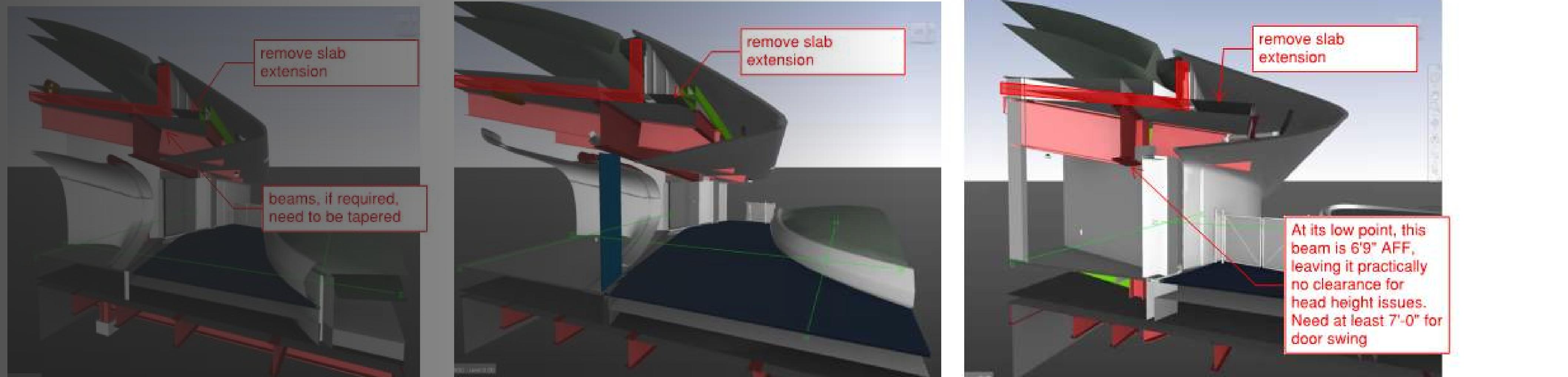
Technological Innovation From Within

Tools built by practitioners for practitioners



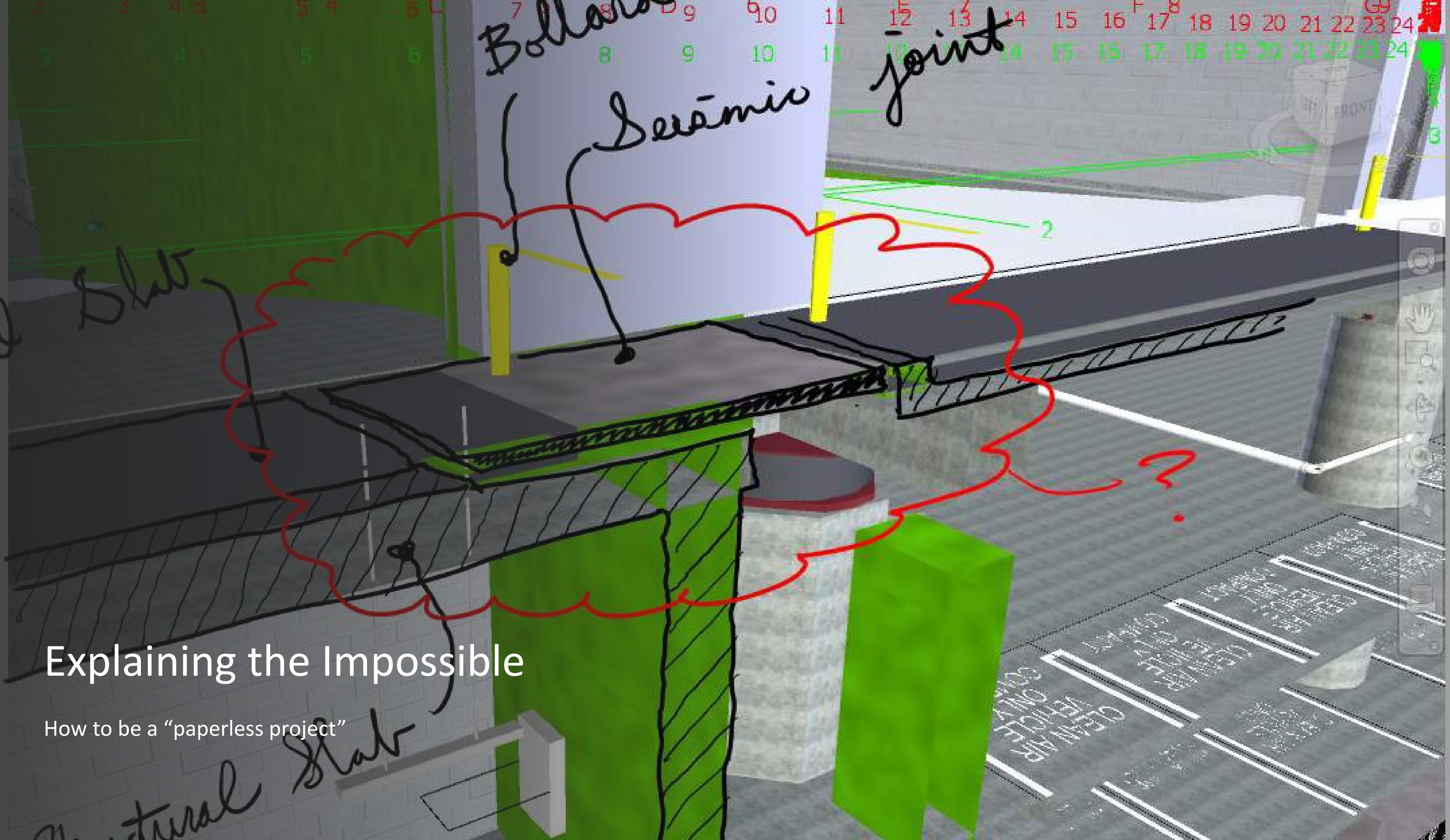
The Democratization of BIM

Complex Coordination in the Cloud



Explaining the Impossible

How to be a “paperless project”



Explaining the Impossible

How to be a “paperless project”



Let's Take a Tour

Taking the client into our design...





Let's Take a Tour

Taking the client into our design...

Making the Tools Work



Computational Design

Rapid Roof Drainage Analysis

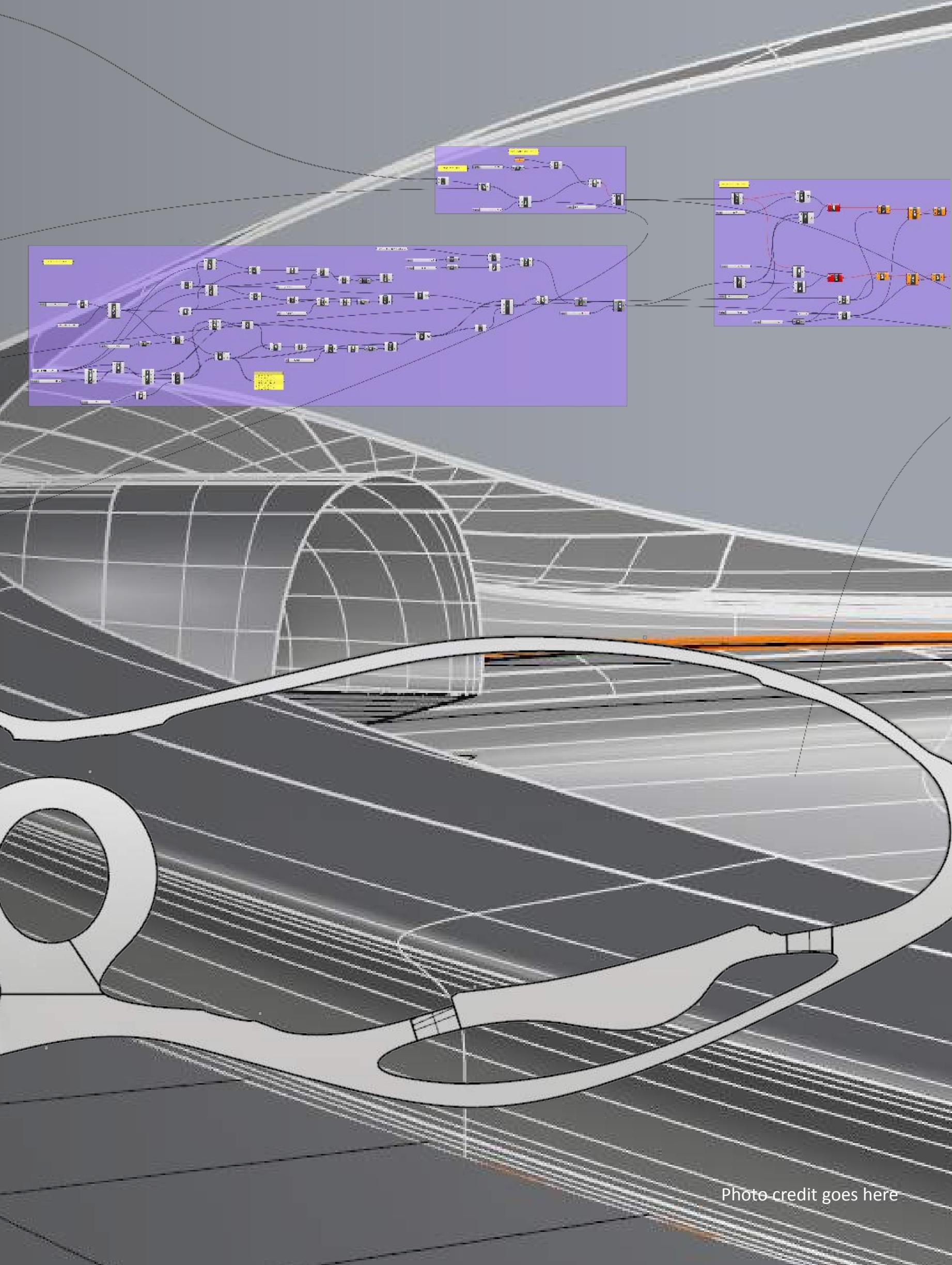
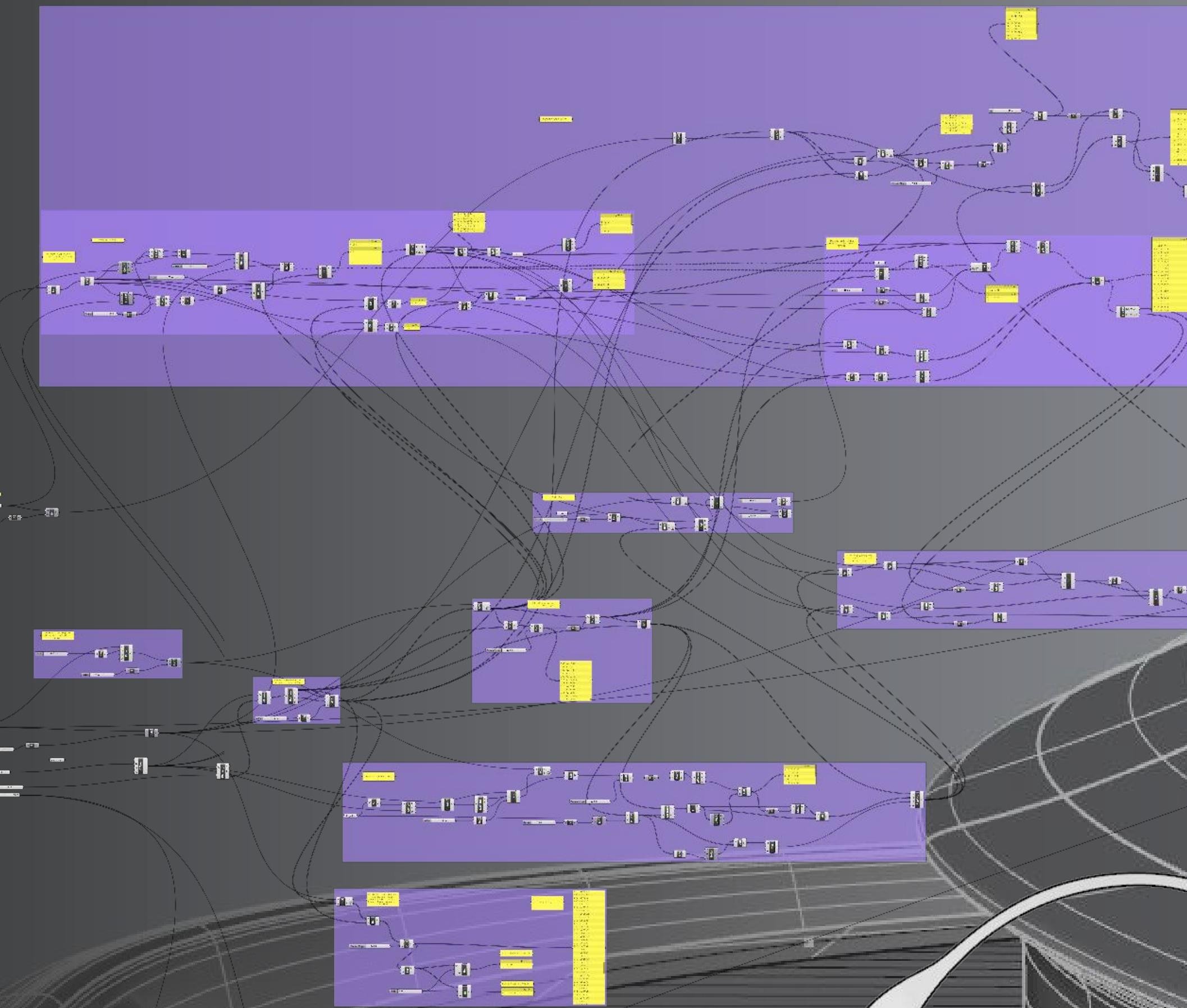
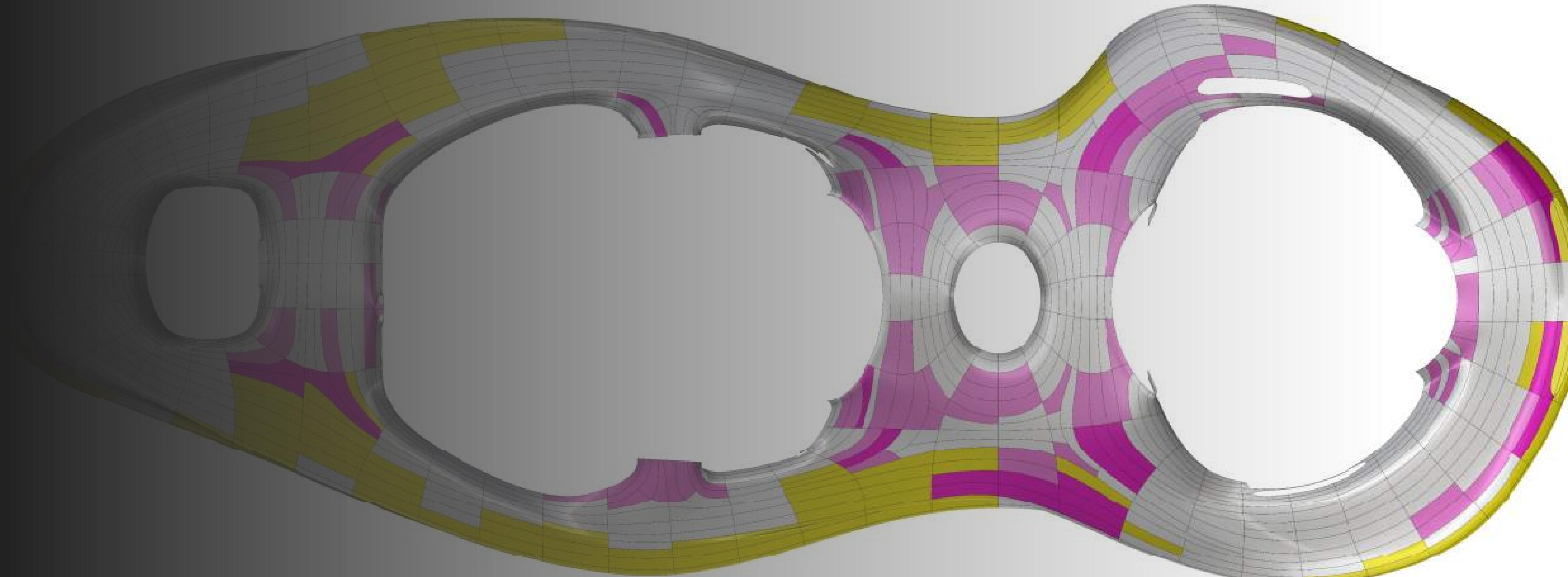


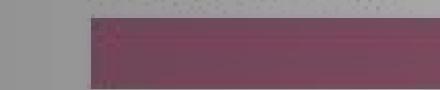
Photo credit goes here



Computational Design

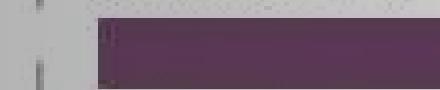
W<7.5' | W<7.5' | 7.5'<W<11.5'
Rapid Panel Analysis | 0'<L<48' | L<30'

Class D:



7.5'<W<11.5'
30'<L<48'

Class E:



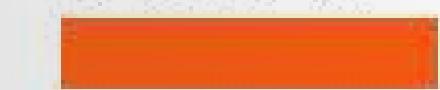
W>11.5'
30'<L<48'

Class F:



7.5'<W<11.5'
L>48'

Class G:



W>11.5'
L>48'

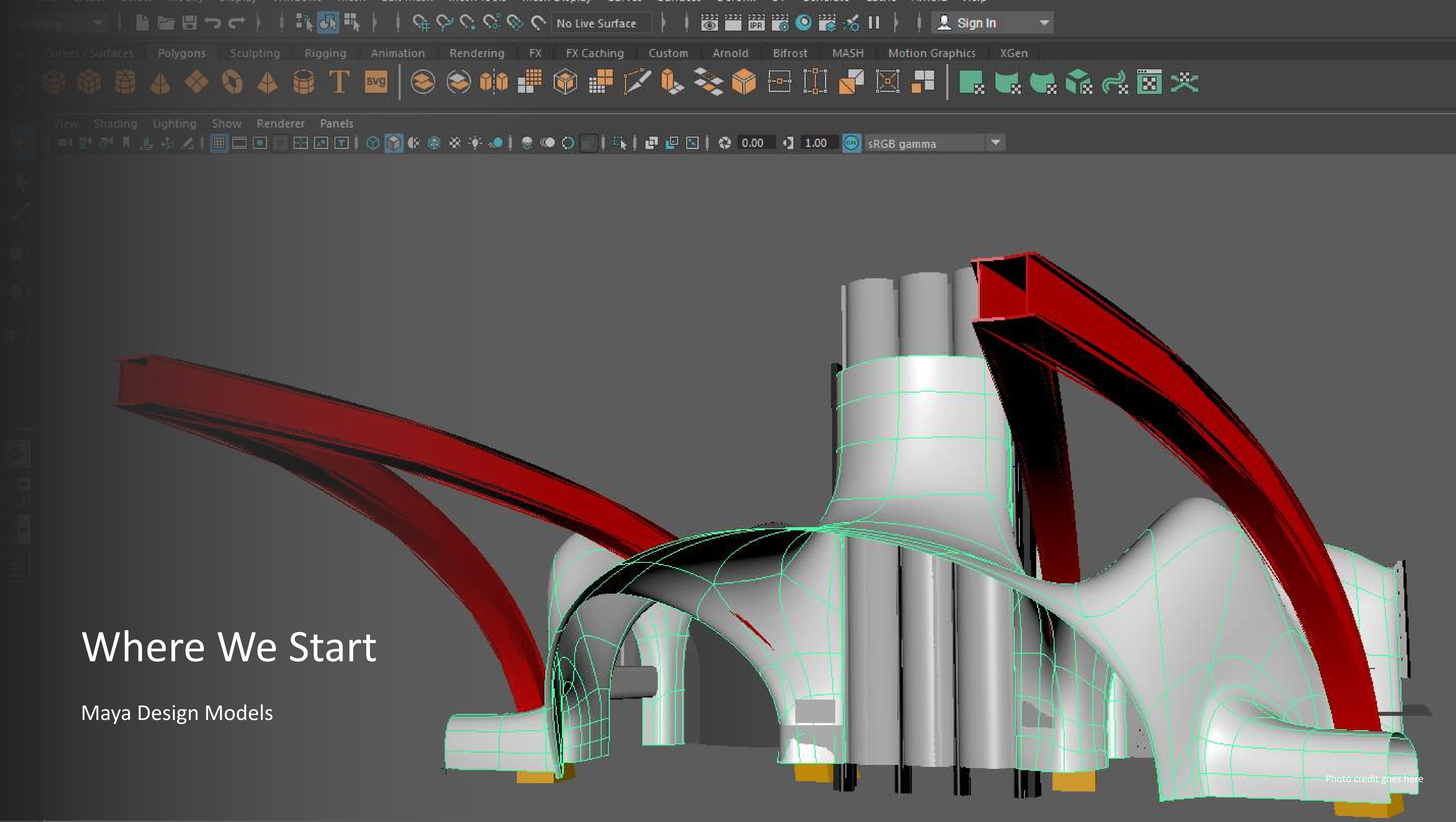
Delivering Design Digitally



The Task

How do you draw this?

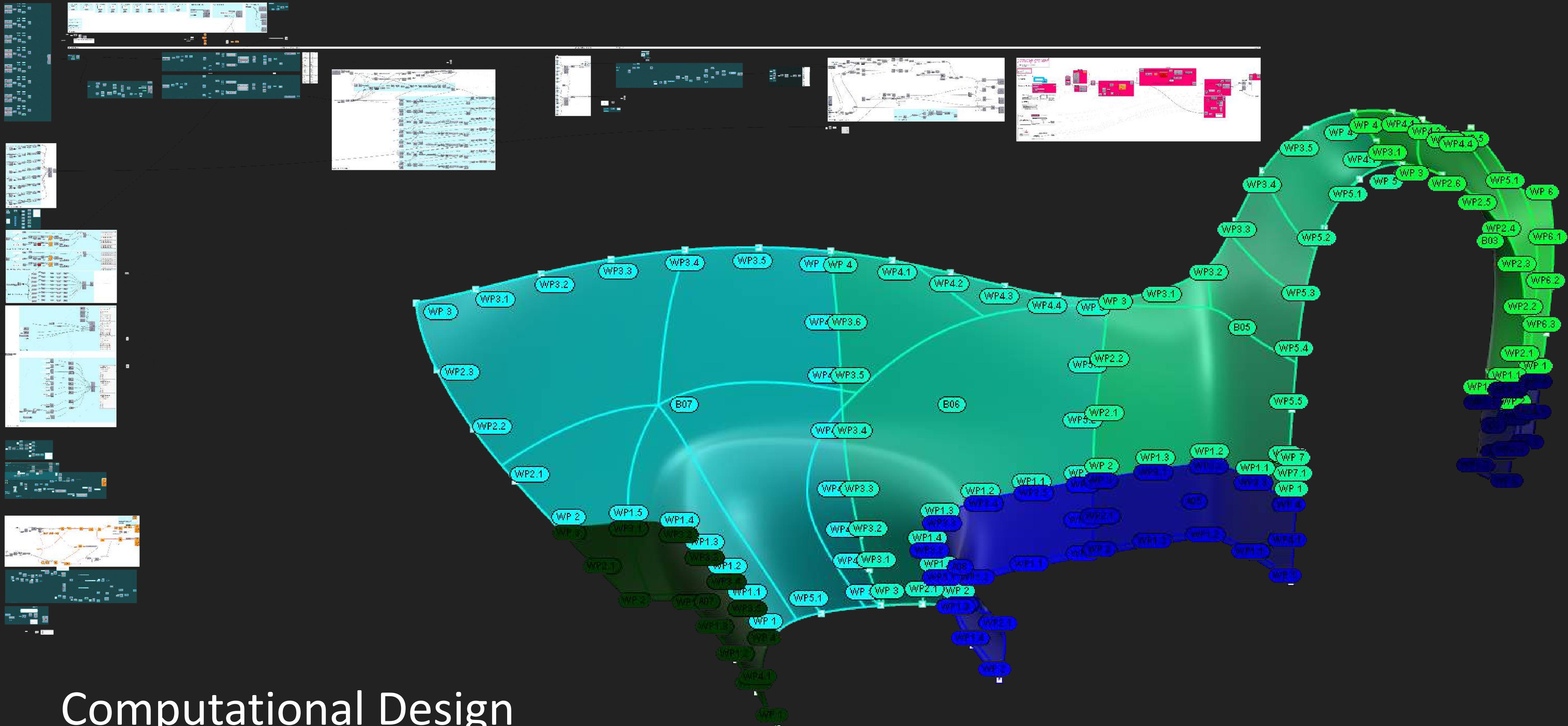




Where We Start

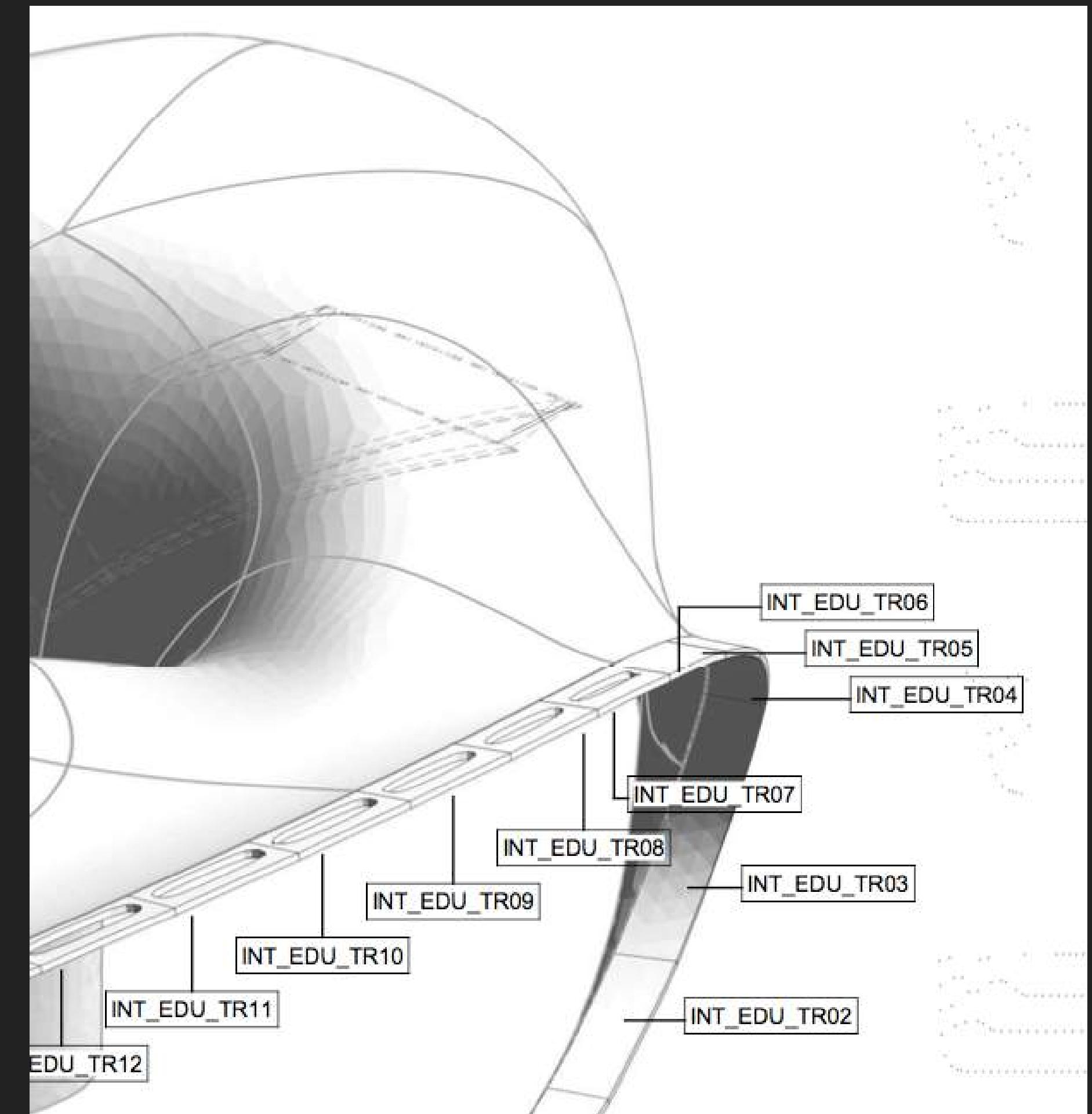
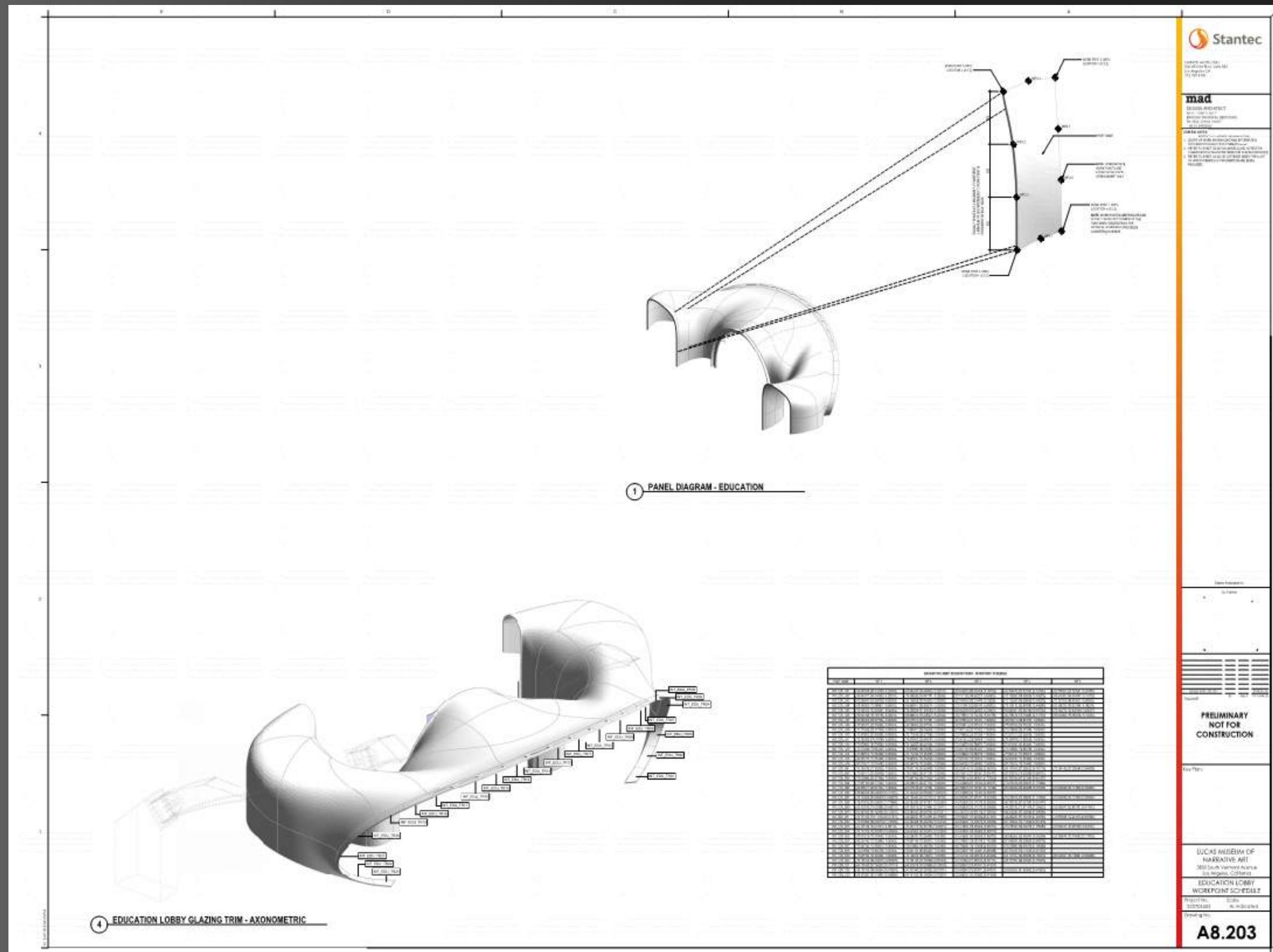
Maya Design Models

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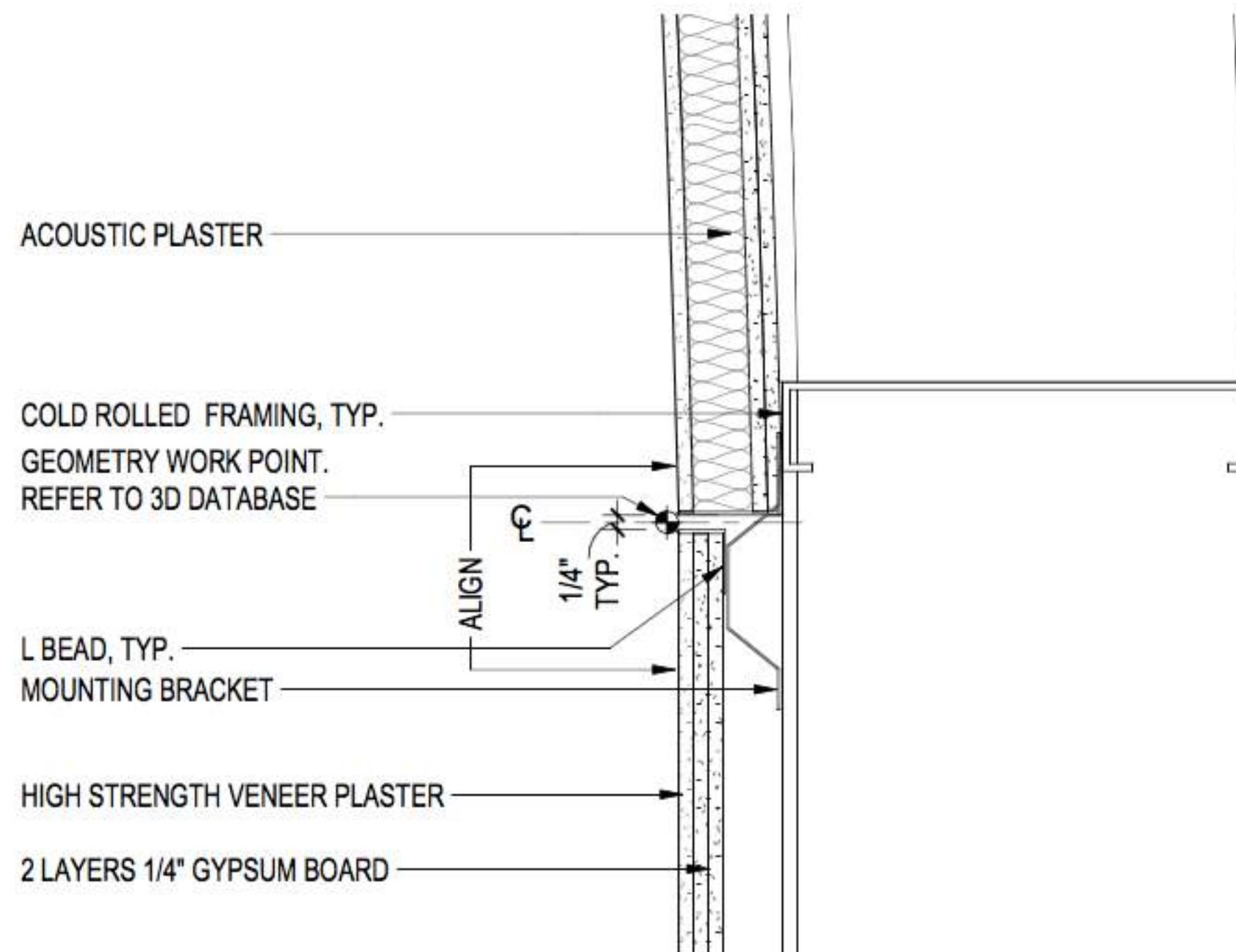
Computational Design

Panel and work point marks



Design Documentation

Integration with Revit



6

DETAIL - IMPERIAL PLASTER TO ACOUSTIC PLASTER

3" = 1'-0"

Connecting the Model to the Drawings

Documenting Organic Geometry

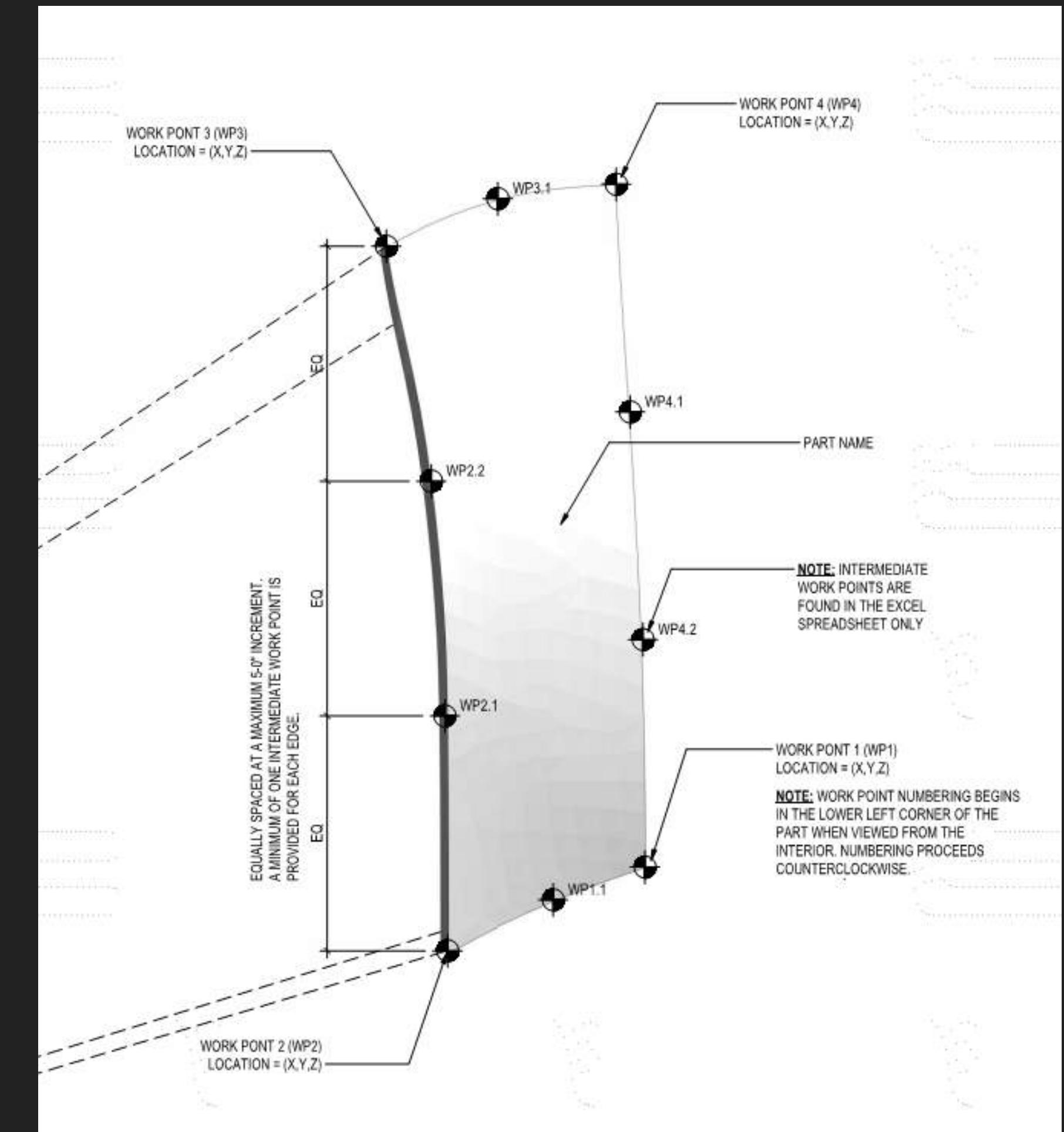


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Team Stantec | LMNA-LA

DATA

Name	Owner	Type	Size	Last Updated	
2016 Archive	Brendan Mullins	Folder		Mar 12, 2018	
LMNA_LA_AREA CAD_backup	Alex Rodriguez	Folder		May 29, 2018	
LMNA-LA-Landscape-PG.rvt	V2	Michael Corless	Cloud Revit ...	179.8 MB	May 17, 2018
LMNA_CIVIL.rvt	V2	Michael Corless	Cloud Revit ...	12.9 MB	May 17, 2018
LMNA_LA_AREA CAD.rvt	V2	Michael Corless	Cloud Revit ...	13.1 MB	May 18, 2018
LMNA_LA_AT_MEPC.rvt	V7	Michael Corless	Cloud Revit ...	495.4 MB	Sep 20, 2018
LMNA_LA_CORE.rvt	V17	Michael Corless	Cloud Revit ...	158.4 MB	Sep 20, 2018
LMNA_LA_DB GARAGE.rvt	V3	Michael Corless	Cloud Revit ...	15.5 MB	Sep 20, 2018
LMNA_LA_EXTERNAL_SITE.rvt	V2	Michael Corless	Cloud Revit ...	56.0 MB	May 17, 2018
LMNA_LA_EXT_ENCLOSURE.rvt	V15	Michael Corless	Cloud Revit ...	286.6 MB	Sep 20, 2018
LMNA_LA_FACADE_3D-WPM.rvt	V8	Michael Corless	Cloud Revit ...	2.6 GB	Sep 20, 2018
LMNA LA FLUIDITY FOUNTAIN.rvt	V8	Michael Corless	Cloud Revit ...	277.0 MB	Sep 20, 2018

C4R-Published
2 SubFolders, 27 Files
Project Type: Secret

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Model Delivery

It's not just PDF's anymore

Entering Construction



Preparing for Construction

360 Site Visits





Preparing for Construction

Weekly Automated Laser Scans



Questions?

Image caption goes here