

Kadia Miller
Arch 565 Journal

Typical Work Flow

Journal 01
01.17.2025



Journal



Conceptual
Physical
Models for
Iterations



Digital
Modeling



Editing

Form and Forces

John Ochsendorf

Building a bridge - based in Peru
Day 3 - the bridge is complete and
resembles a basket

Tile Vaulting
(Catalan vaults)

Catalan architecture

Gaudi

origins near Valencia, Spain

Fray Domingo de Petres

1" layer of tile thick - double
curvature + amazing load capacity

Guastavino spiral stairs - tile stairs
dome spanning 190 ft. - each day
add rings and cantilever and held the
worker's weight

this reminds me of Brunelleschi's
duomo in Florence.

1961-65 Cuban Art School - long
form vaults and domes + sagrada
familia being built with this same
technology

Colonia Guell Hanging Model, near
Barcelona

Alex Jordan developed a program
to bring gravity into the design
environment - gravity free isn't real.

we have lots of analysis tools - not
many design tools.

compressive forces in a spiral stair -
thrust network analysis as a design
tool.

constructability is part of the design
process !!

Initial Design

Journal 02
01.23.2025

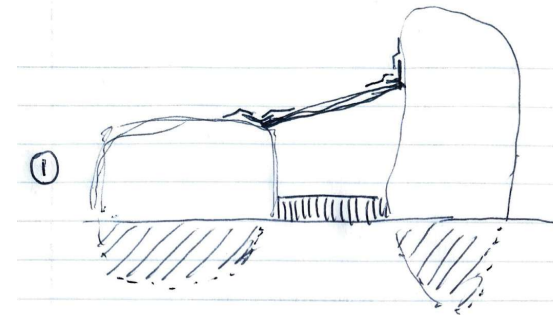
Location of Project: Rock field driving out to Natural Bridge Climbing Area.
Topology of Project: Bouldering microhotel for chilling and winter use.



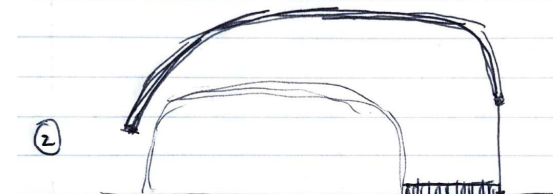
Inspiration



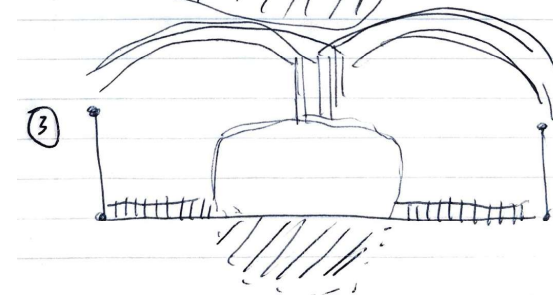
Actual Site from Google Maps



balancing in between
2 rocks - old foam for
the floor - some sort
of flashing to keep the
water out.



shell shape to cover
the rock + climbing
area.



use the rock as the
structural element and
form some parametric
shape out.

LiDAR Data

Journal 03
02.07.2025

Tried really hard to get the LiDAR data from Montana Lidar Inventory but I couldn't get anything to download even though it is in green and says it has been completed.

Lidar Acquisition Status

This map depicts completed, in-progress, and planned lidar acquisitions. "Completed" (green) means the lidar has been flown, processed, and delivered. "In-progress" (blue) means lidar is currently being collected or the data are being processed and going through quality control. "Planned" (yellow) means the area is expected to be collected in the near future (~1 year). If you are interested in an area adjacent to a planned collection, you should contact the organization listed about potentially partnering. There may be opportunities to work with the lidar vendor to expand the collection.

Click on a project area to view additional information, such as project name, collection dates, and a link to the project report.

[Download the lidar acquisition status map in PDF format.](#)

[Download the lidar inventory in GIS format \(geodatabase or shapefile\).](#)

Status map and GIS data updated June 2024.

Completed Lidar Projects



In-Progress (Processing) Lidar Projects



Planned Lidar Projects

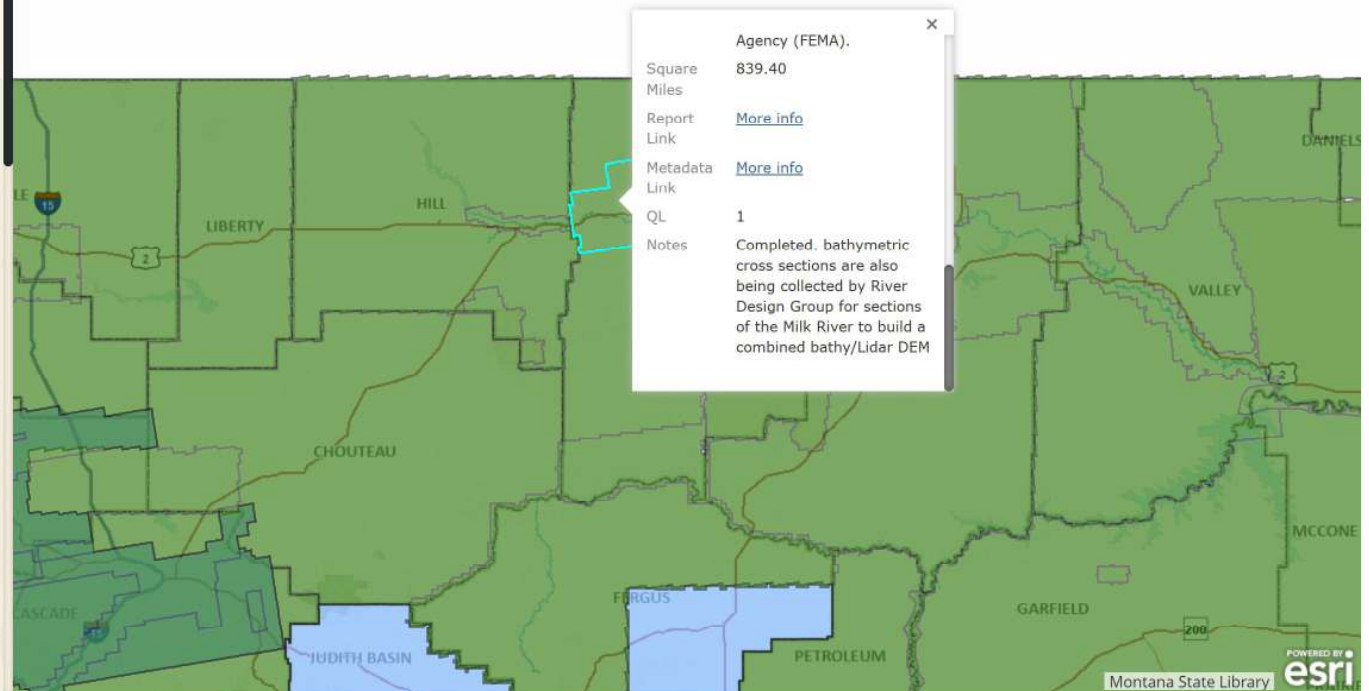


MontanaBaseMap

Political Entities

CountyLines

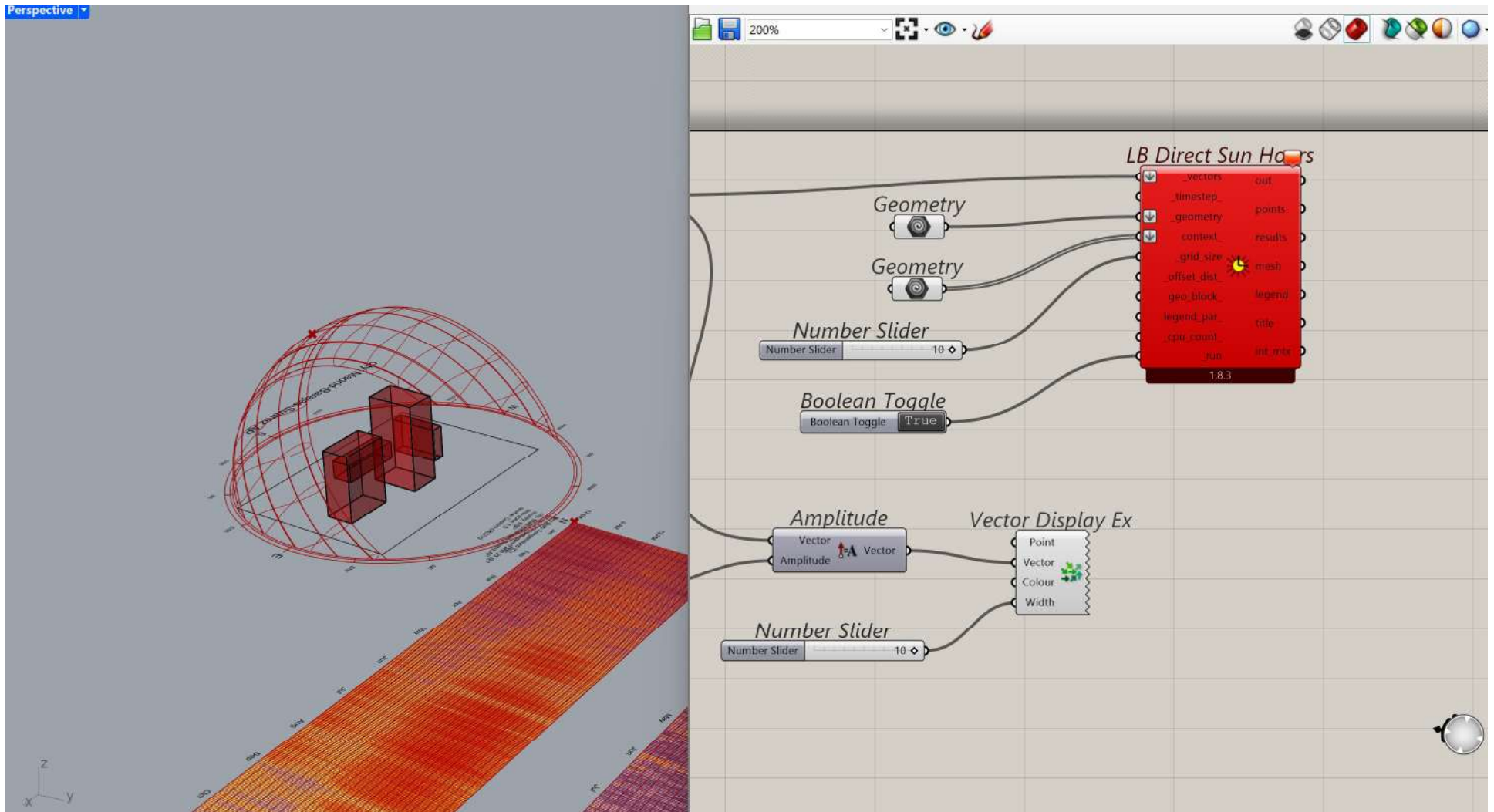
Counties



Ladybug Plugin

Journal 05
02.21.2025

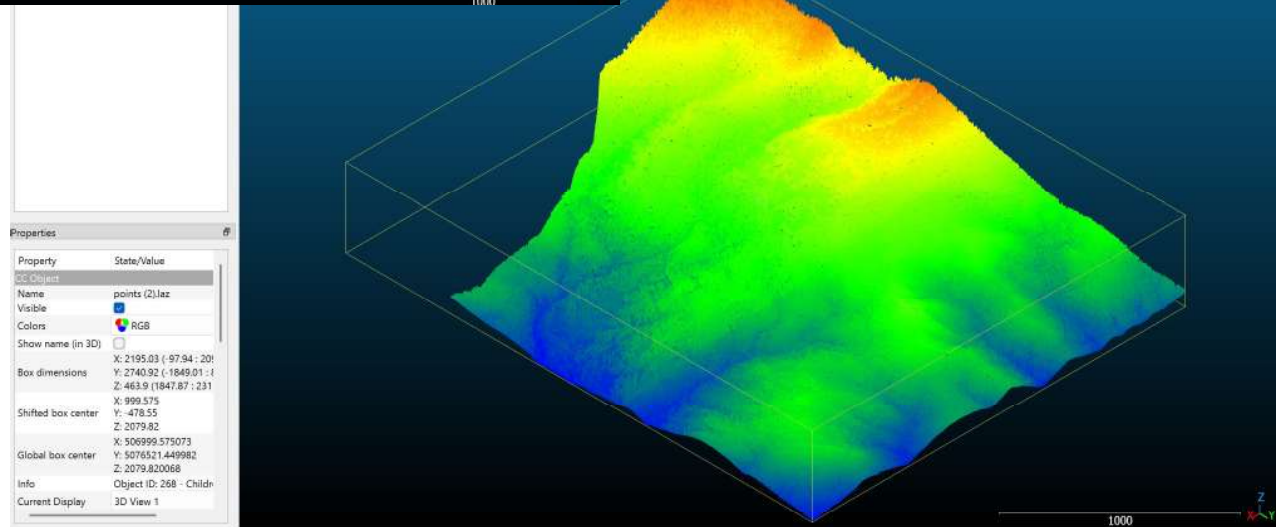
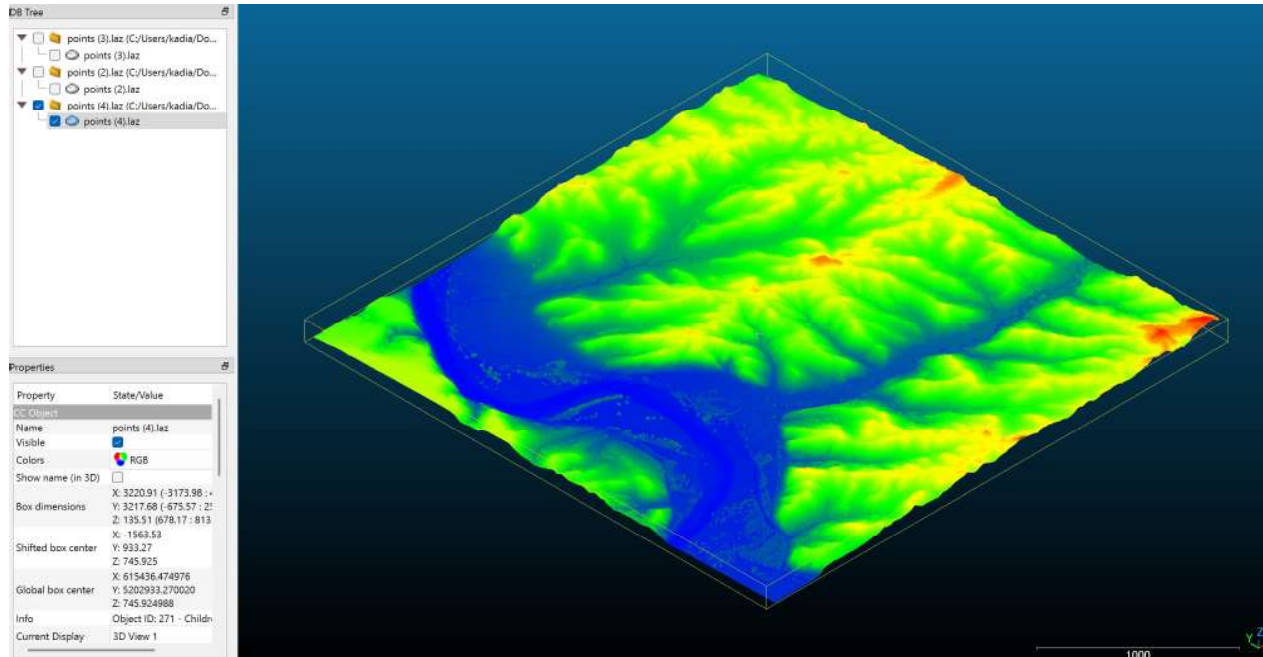
This is definitely been my most favorite tool I've learned in the class so far. I analyzed all of the different tools on the "LB Import EPW" and was trying to do the sun path diagram when I ran into a problem saying "1. Solution exception:'PolylineCurve' object has no attribute 'ToBrep'"



Topography

Journal 05
02.21.2025

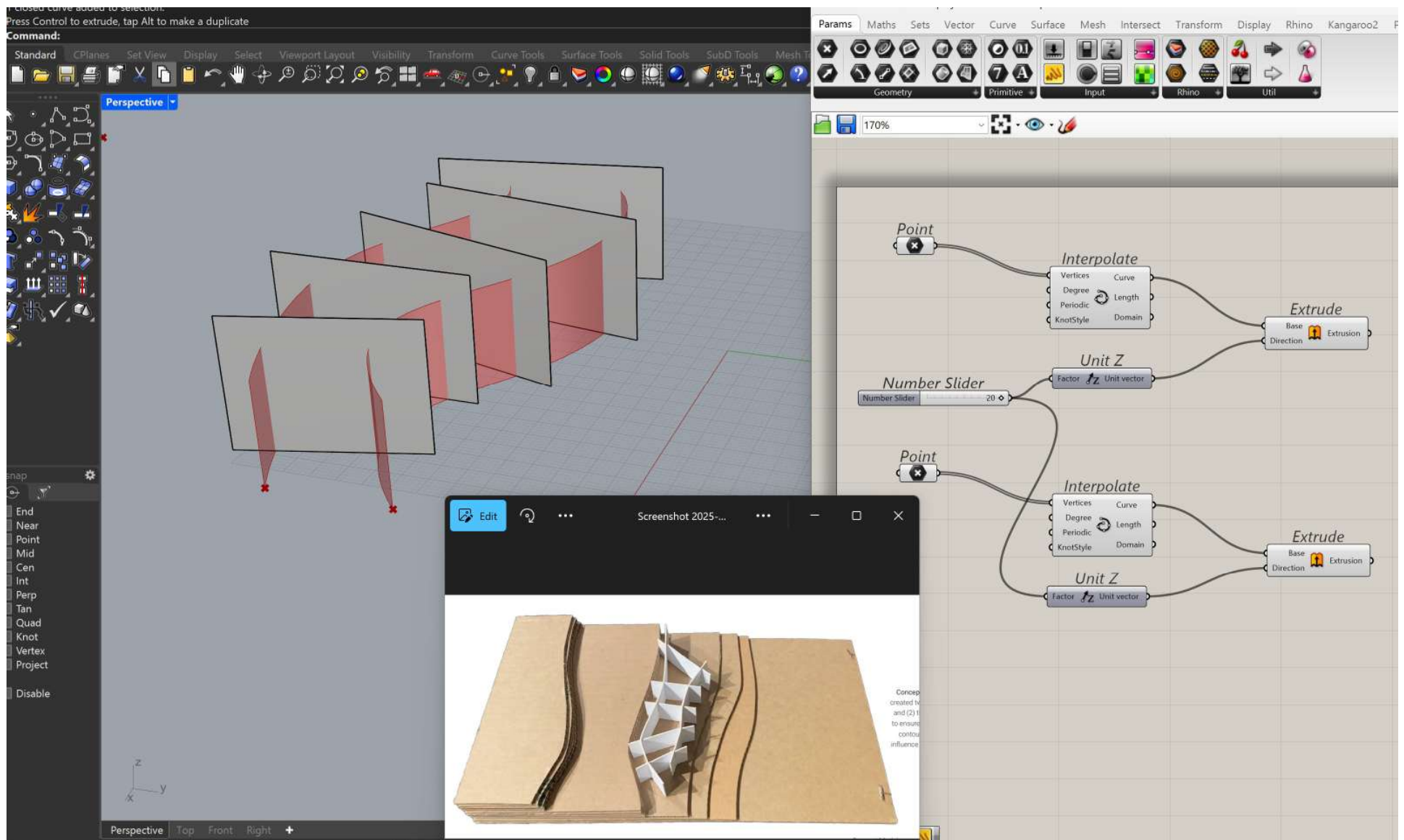
I got two different topography downloads into CloudCompare.



Grasshopper Script 1

Journal 06
03.01.2025

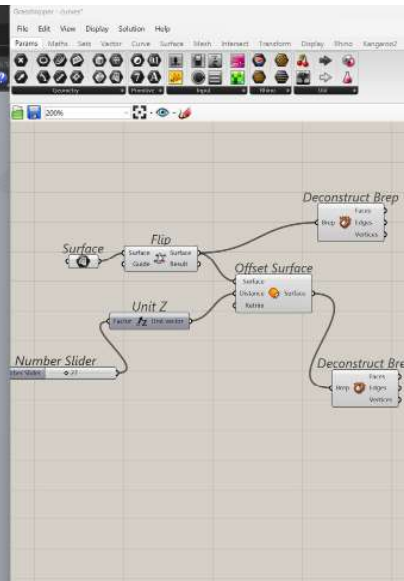
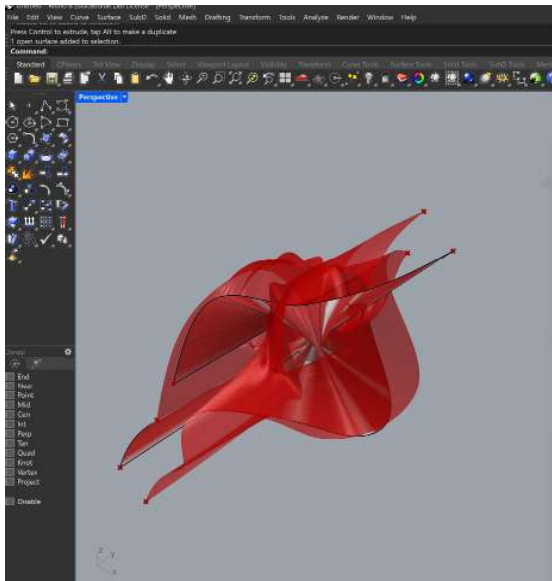
I recreate a physical model into a grasshopper script.



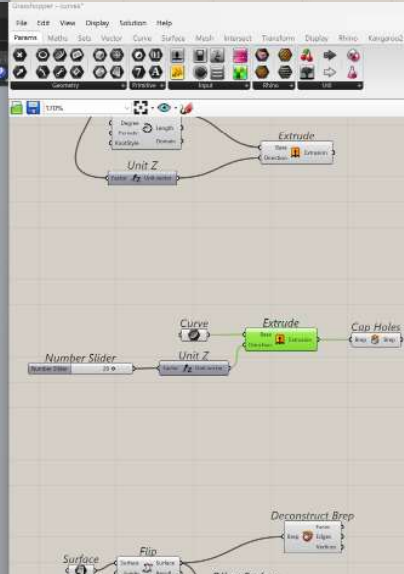
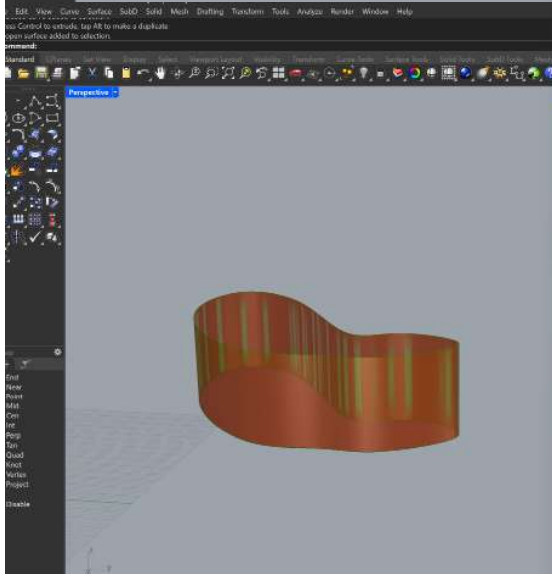
Grasshopper Script 2

Journal 06
03.01.2025

I watched a YouTube video to create this formation.



Lofted two curves and then offset the surfaces.

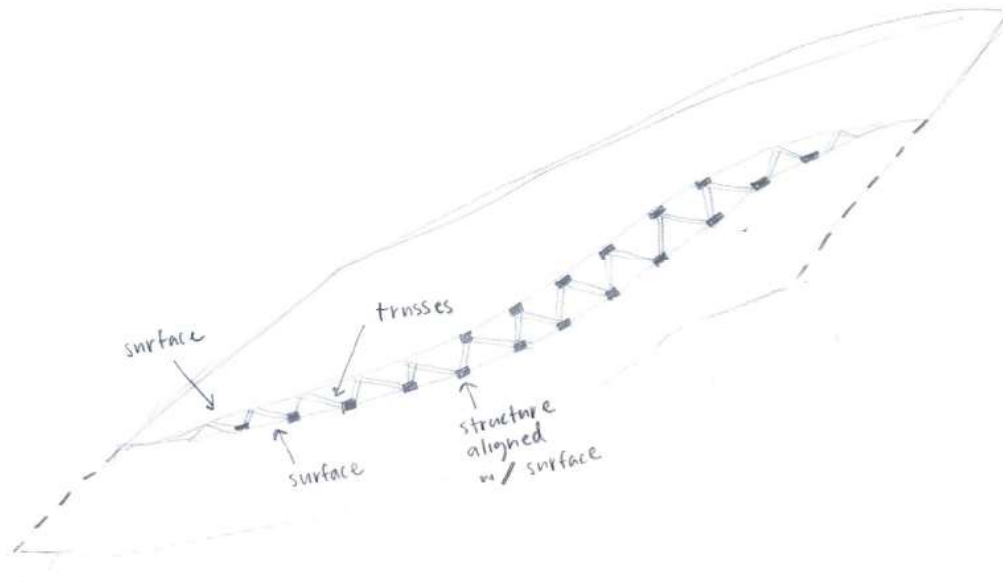


Created a curved shape and then extruded and capped.

In-Depth Sketch& Inspo

Journal 07
03.07.2025

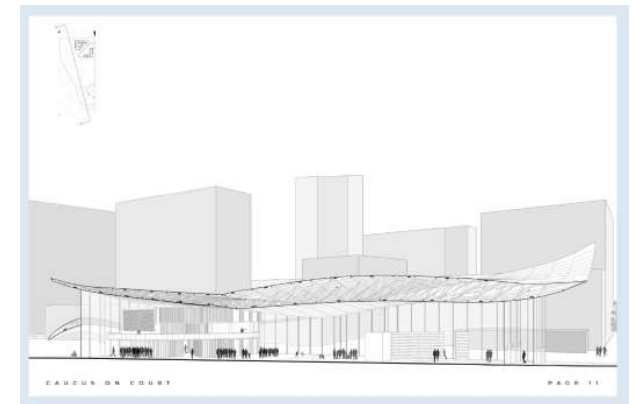
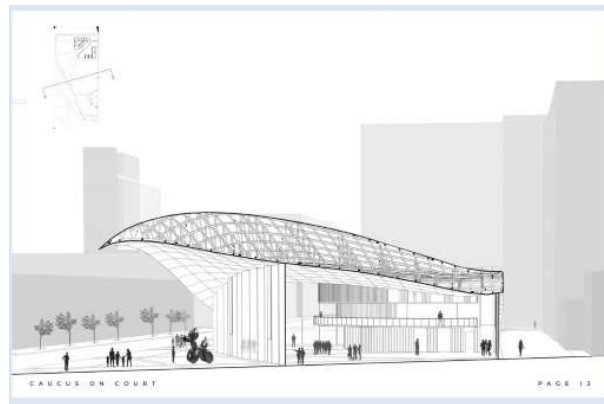
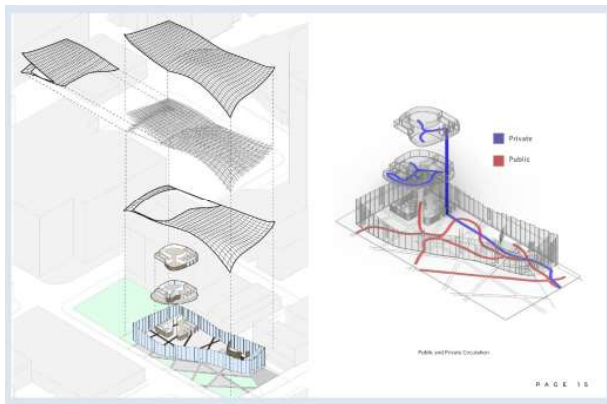
More in-depth sketch of structure for my climbing retreat micro-home. There will be 2 surfaces somehow connected and then small bendy beams that connect to these surfaces and then there will be trusses criss-crossing inside.



How would this realistically get built?

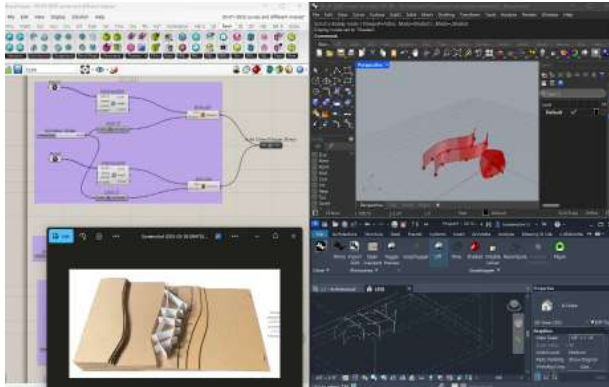
I think you would start with lining the beams up with the columns because that will transfer the weight down. The columns will all be set at different heights to create the curve shape. Then the "criss-cross" trusses will be welded (metal) or connected (wood) then there would be more beams for the top surface. Then a light-weight skin would be attached.

Eventually, it would be cool to create construction documents for something like this.



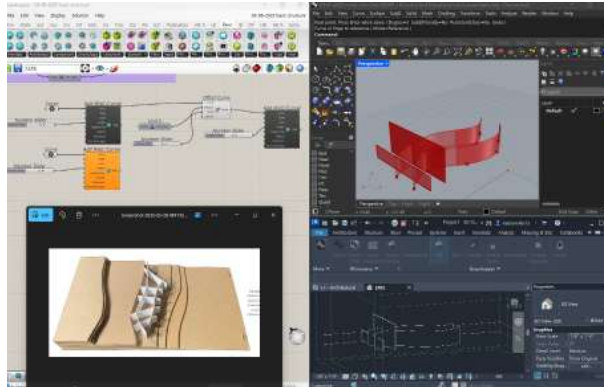
Rhino Inside Iterations

Journal 07
03.07.2025

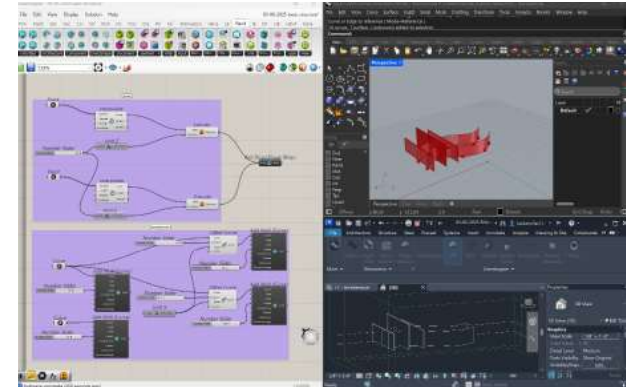


This is two surfaces connected by intersecting structures just like my sketch but just turned on it's side.

I started by extruding two curves and then added "directshape brep" to get the shape from grasshopper into revit.



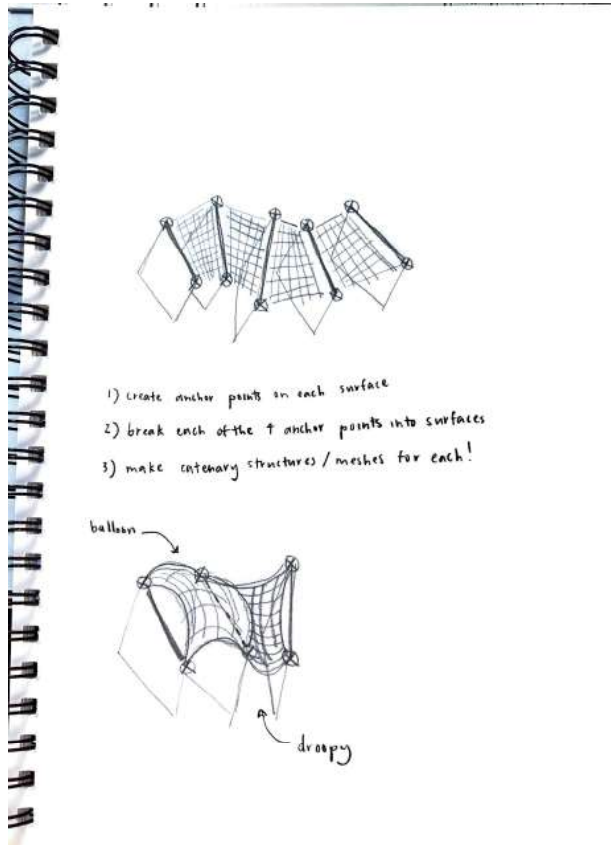
Next, to add the connections between the two curves I used "add wall (curve)" and then offset them so then I was able to control the offset distance and the height.



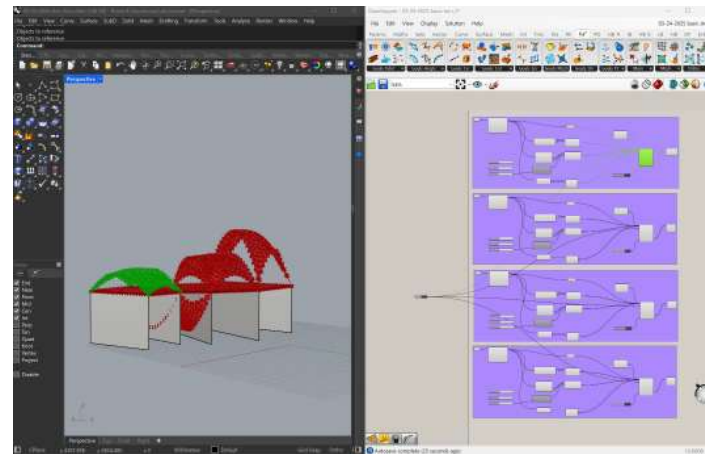
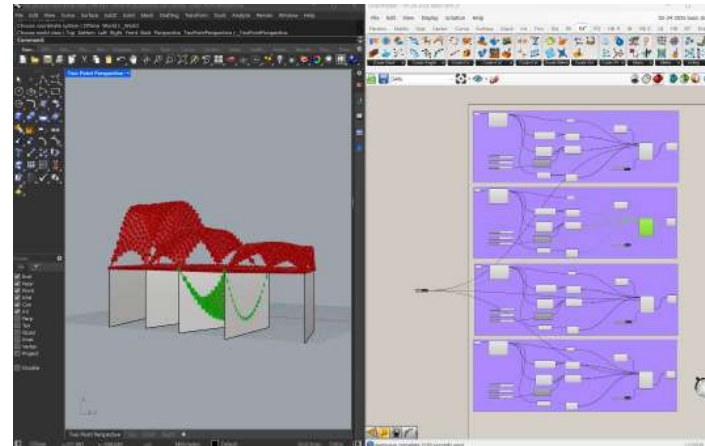
The top set of code is the two outer curves and the bottom set of code is the walls.

Kangaroo Skin

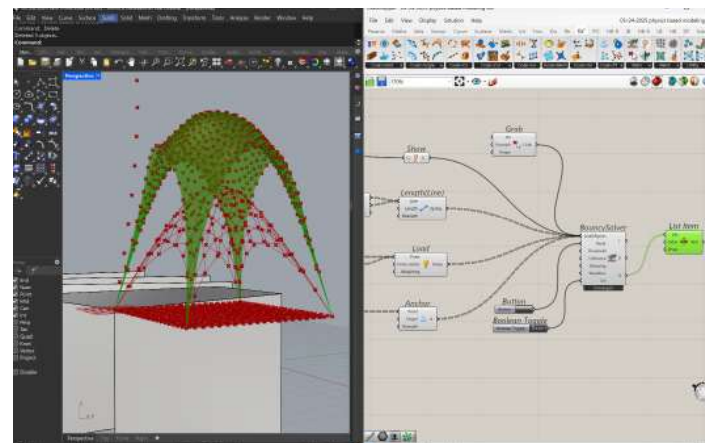
Journal 08
03.24.2025



This system is accurate for my design because it incorporates the way skin can mold around certain objects (like rocks). I also like the way it connects to the planes and is easily manipulated. I don't quite know how I would fabricate this skin.



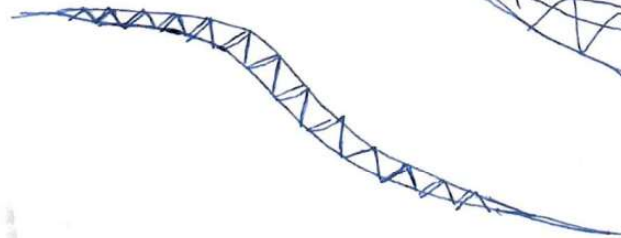
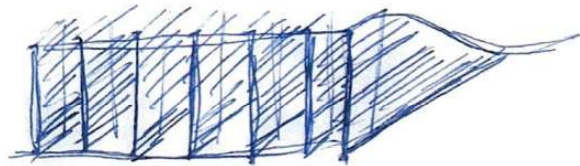
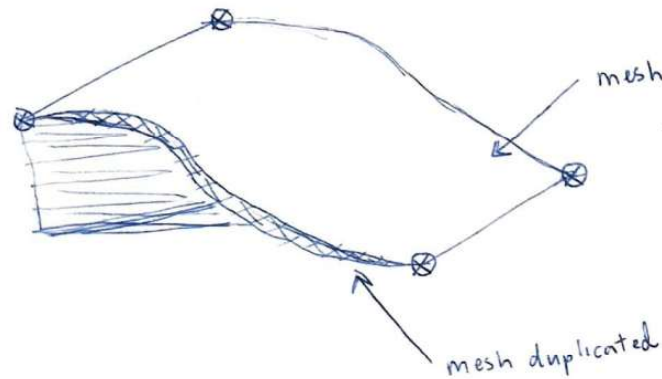
Created different geometries for each 4 connection points.



Following through the vid.

Sketch Thinking

first thought

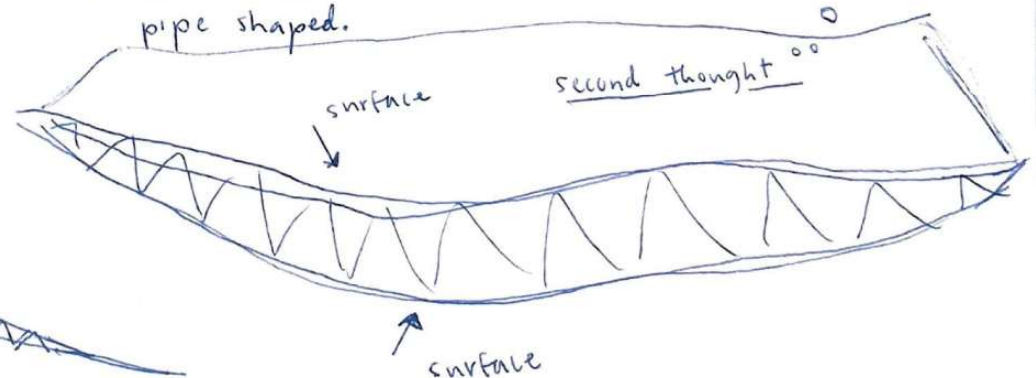


right now
the centroid
is moving
a fixed
number

surface
that is controlling
the structure

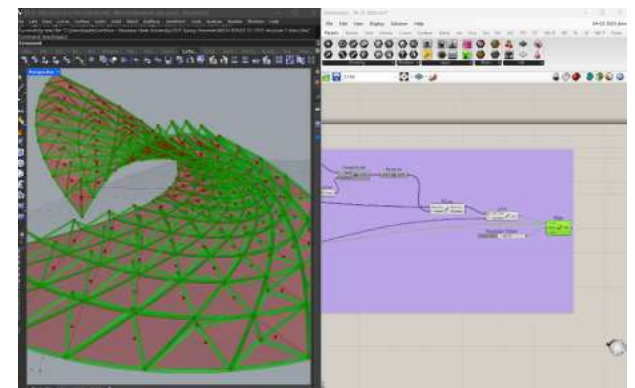
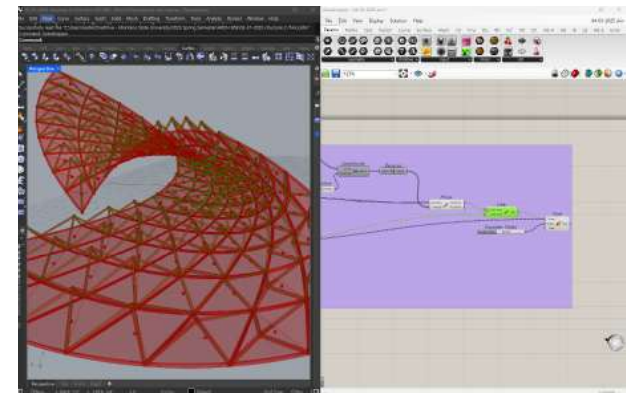
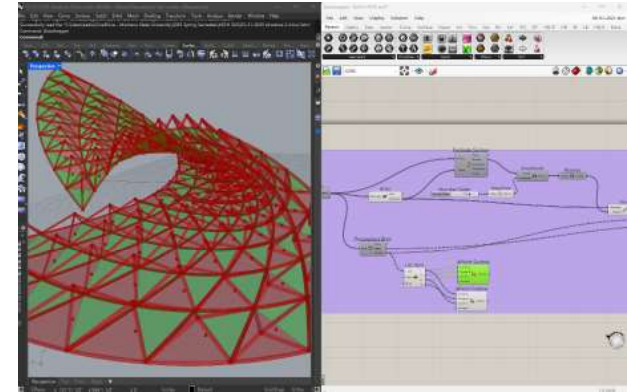
- ① start w/ surface
- ② deconstruct faces, edges, vertices
- ③ pick which edge to divide surface into iso-curves $\times 2$
- ④ surface split > flatten curves = grid on the surface (fragments)
- ⑤ take the area of each grid space to find the centroid
- ⑥ evaluate each fragment and determine the direction
- ⑦ take the centroid and move it w/ amplitude
- ⑧ make lines then make the lines, edges be pipe shaped.

second thought



Intro to Twin Motion

Journal 09
03.24.2025



Arch-itement

Journal 10
04.14.2025

This is just a simple roof I am trying to figure out for a simple structure. This excites me about architecture because I get to collaborate and work with people that also enjoy talking/puzzling about this type of work. From simple to complex we can all just nerd out.

