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 !!
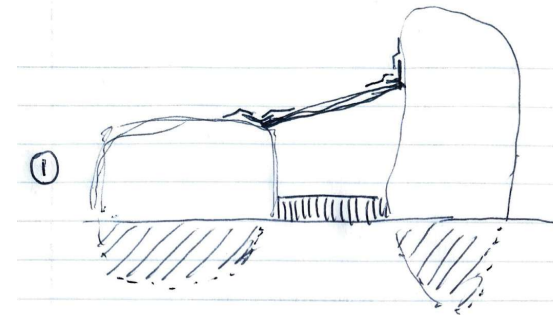
Initial Design

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.
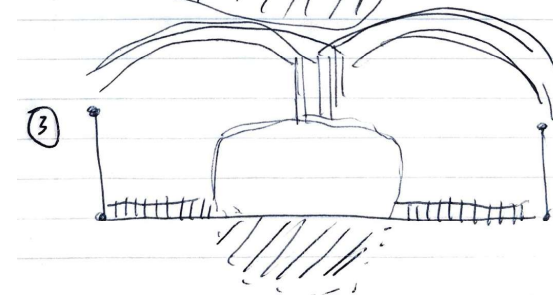

Inspiration

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

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.
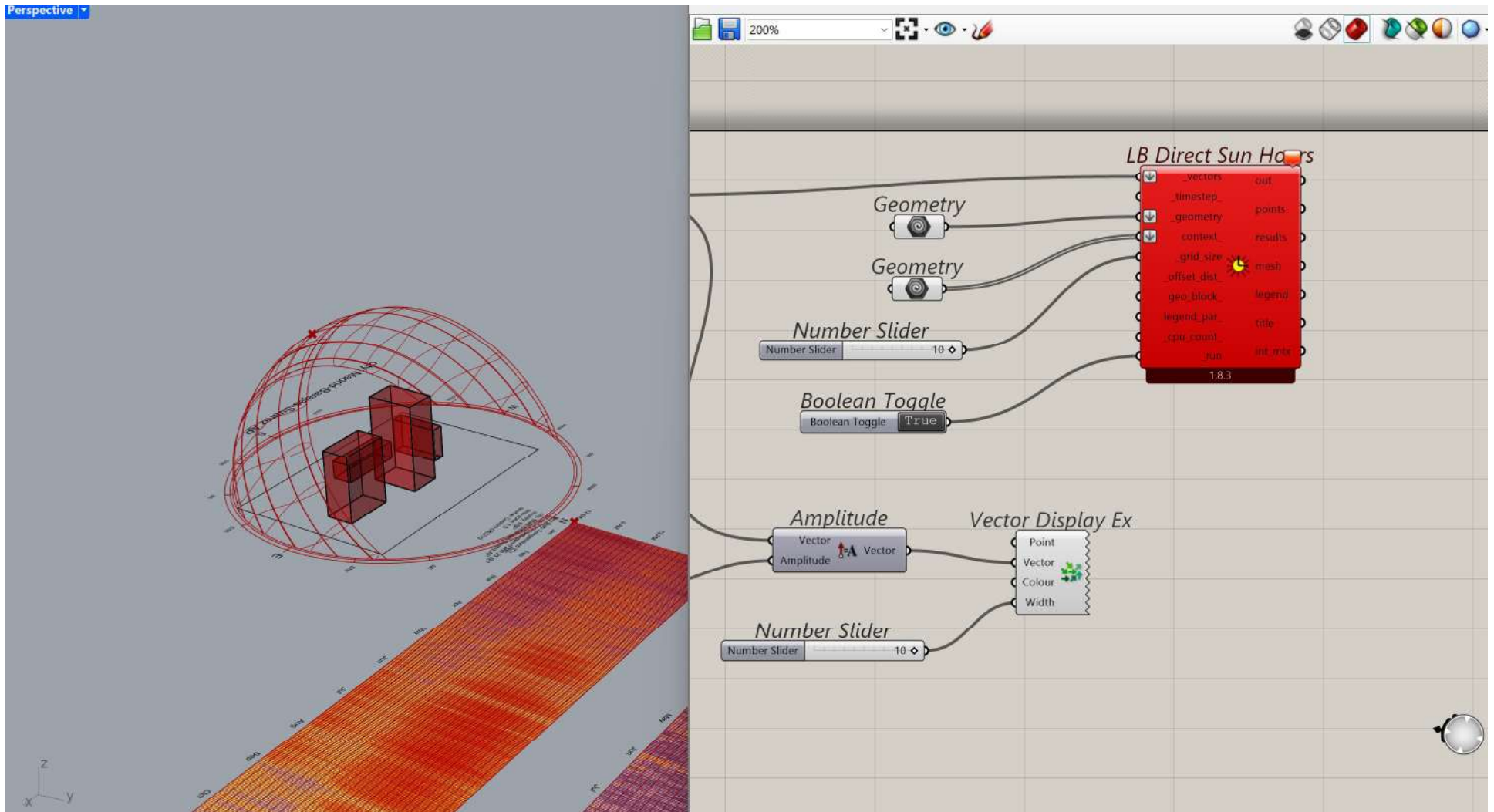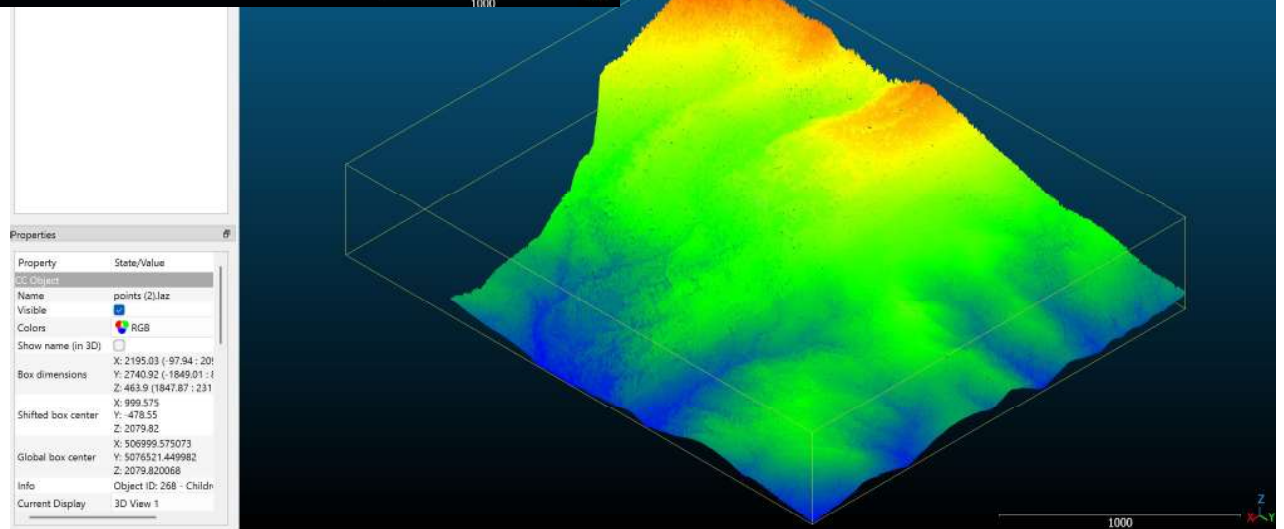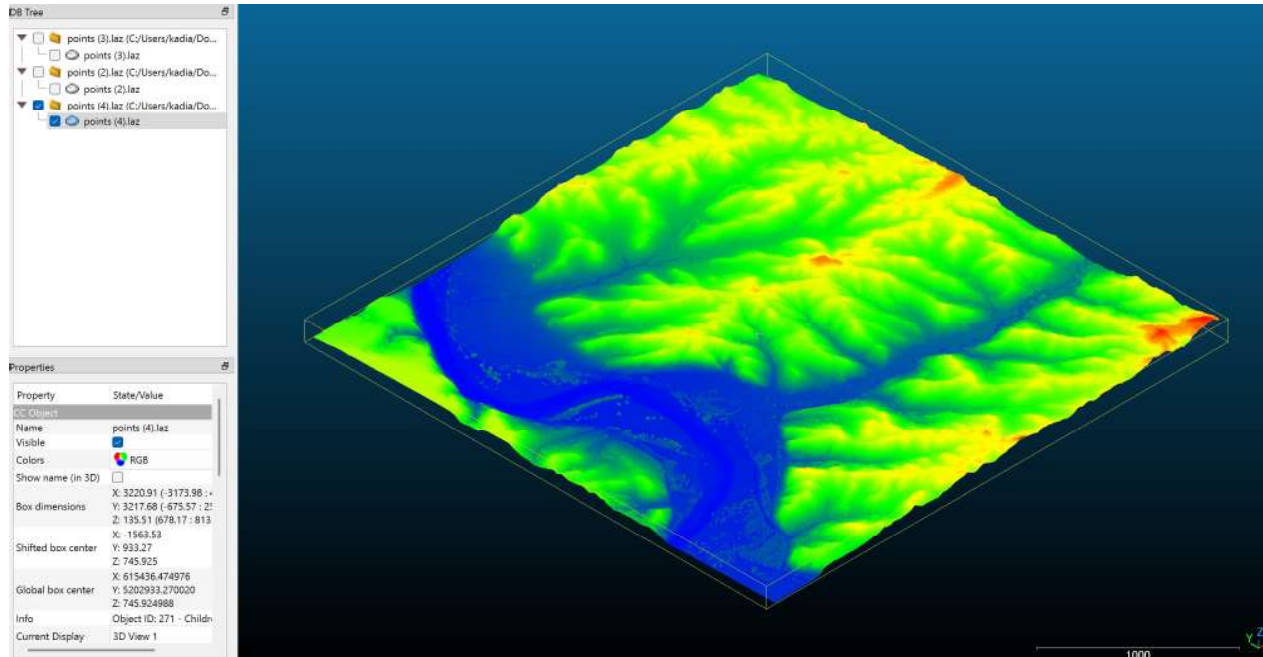
Ladybug Plugin

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'"
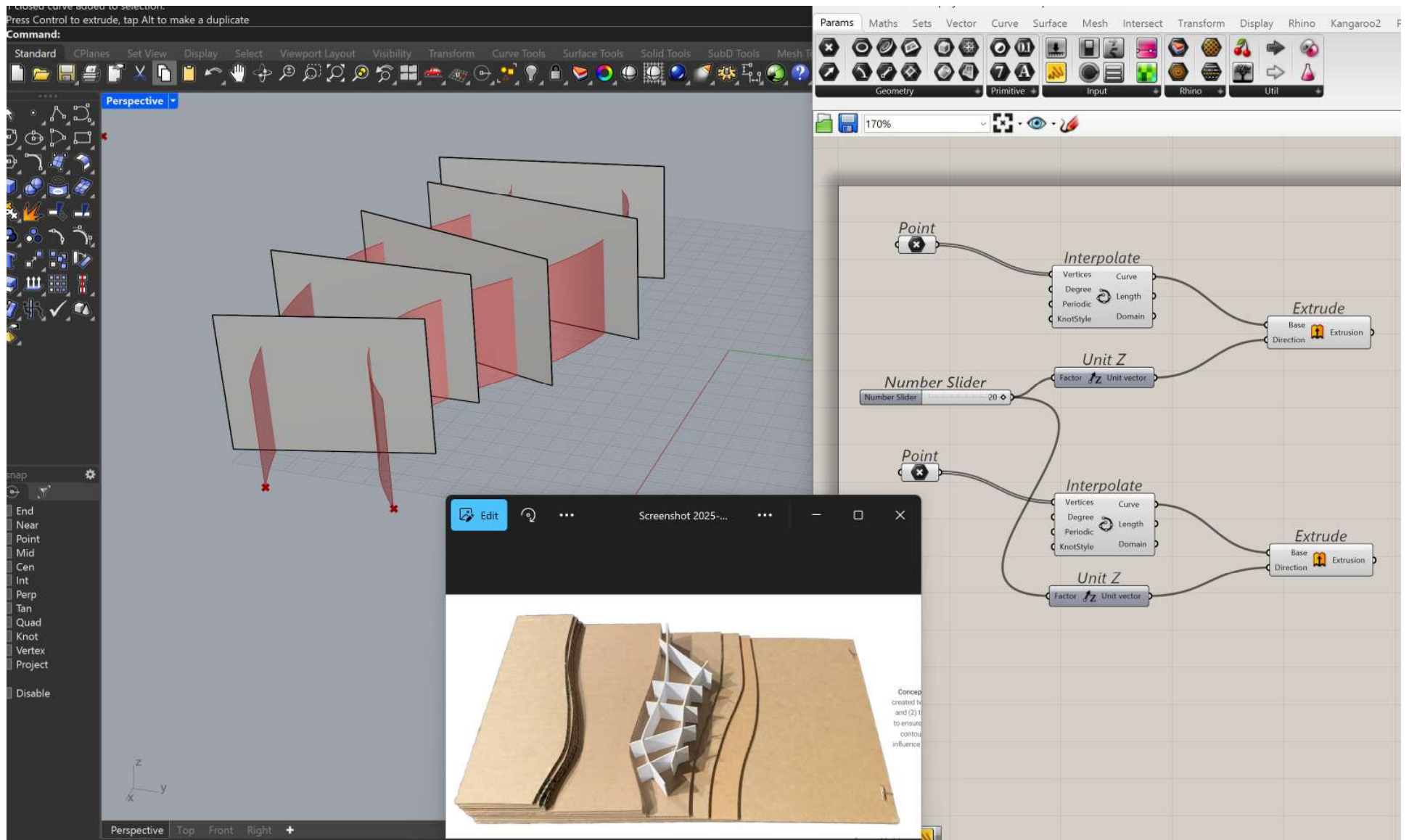
Topography

I got two different topography downloads into CloudCompare.
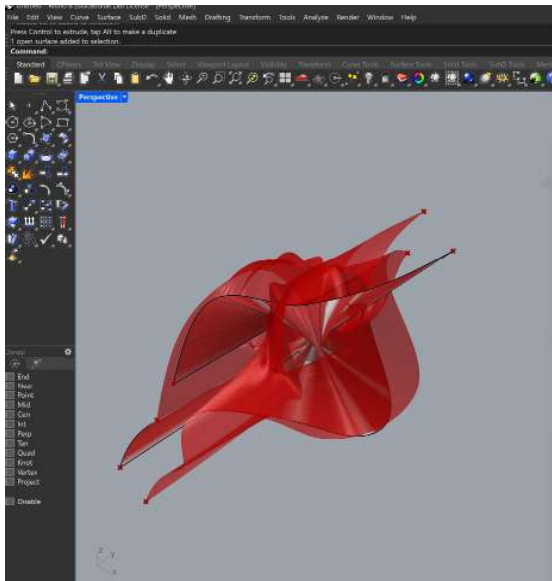
Grasshopper Script 1

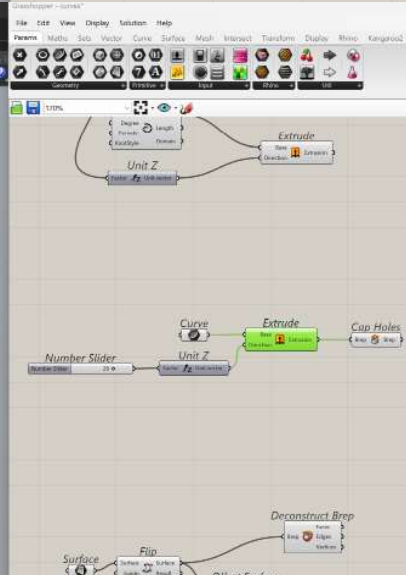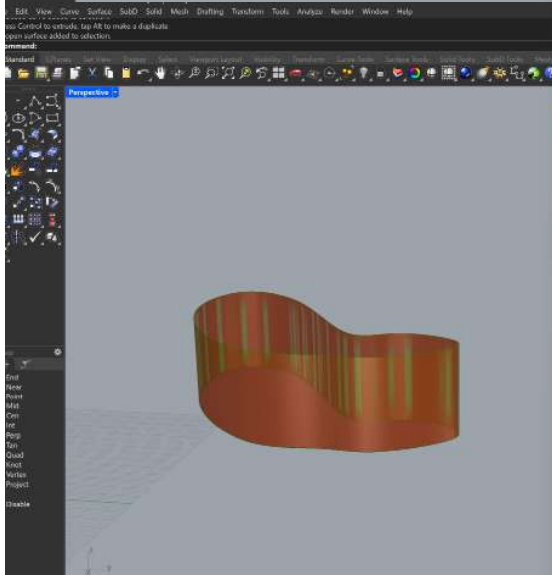Journal 06   I recreate a physical model into a grasshopper script.
03.01.2025

Grasshopper Script 2

I watched a YouTube video to create this formation.
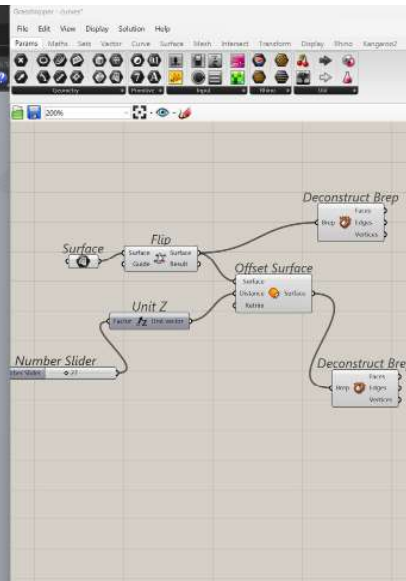
Lofted two curves and then offset the surfaces.

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.
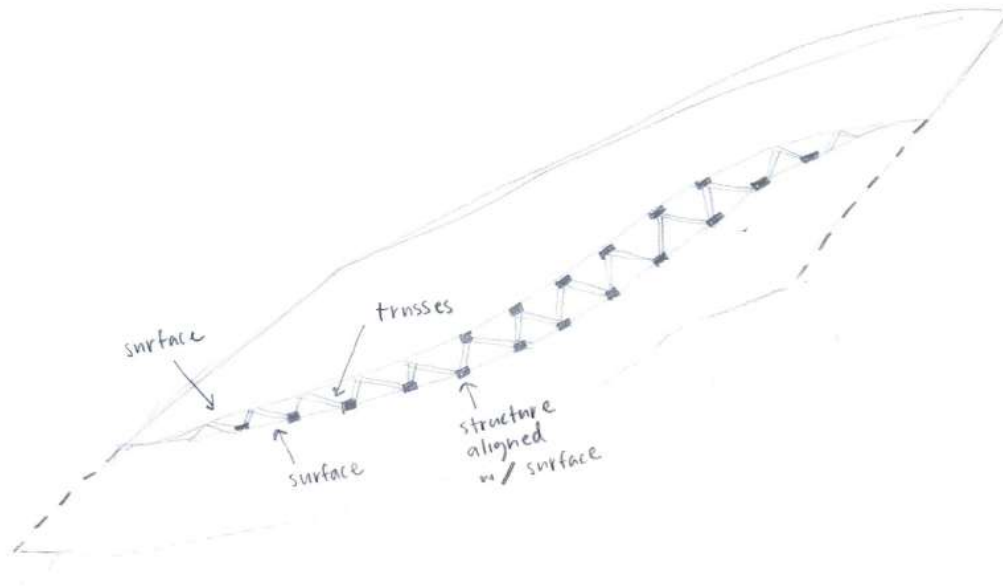

How would this realistically get built?

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.
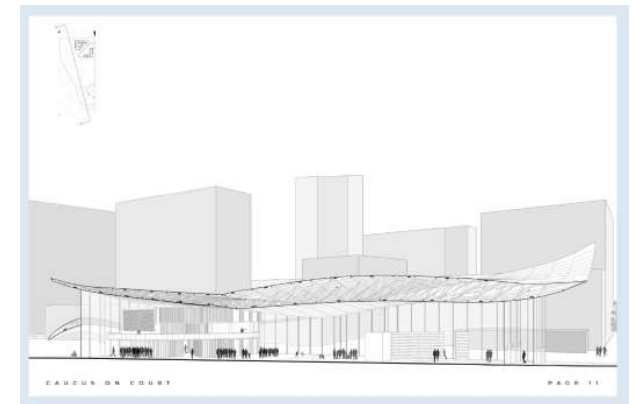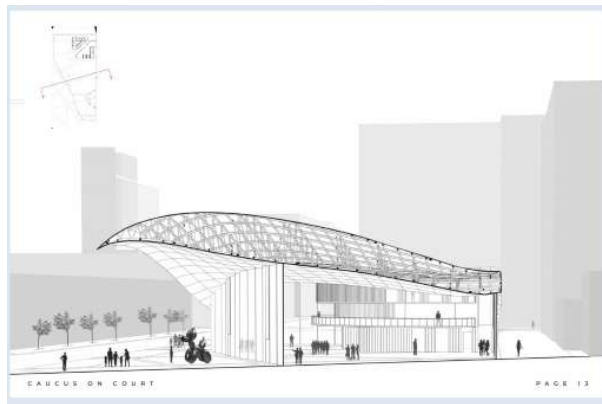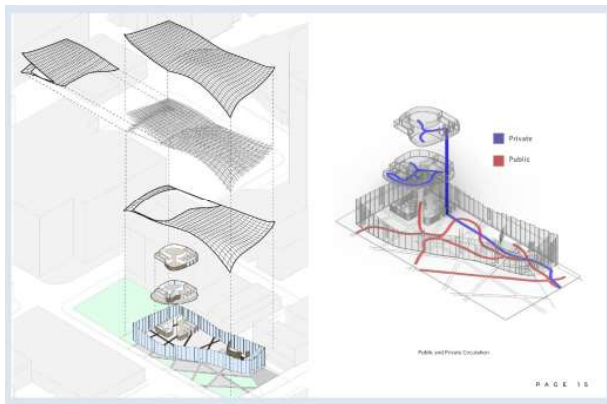
Rhino Inside Iteration 1

Journal 07
03.07.2025
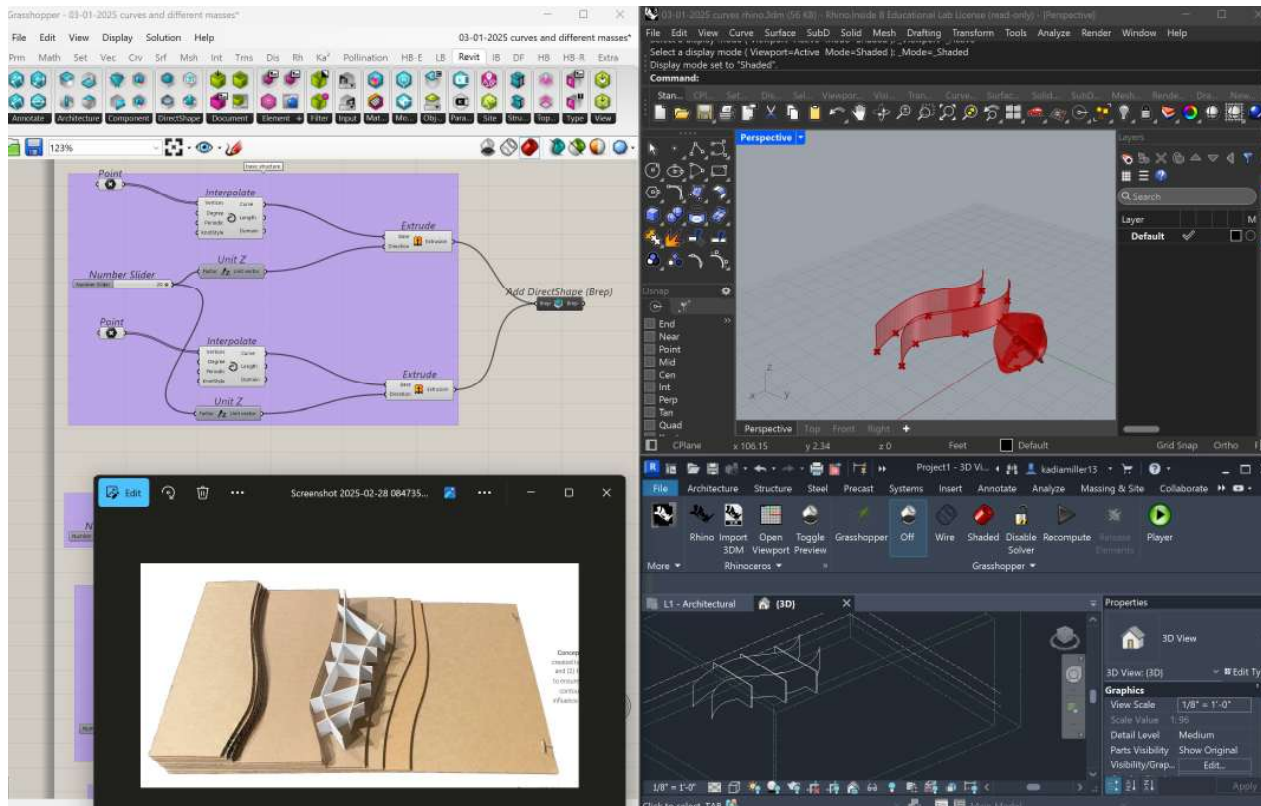
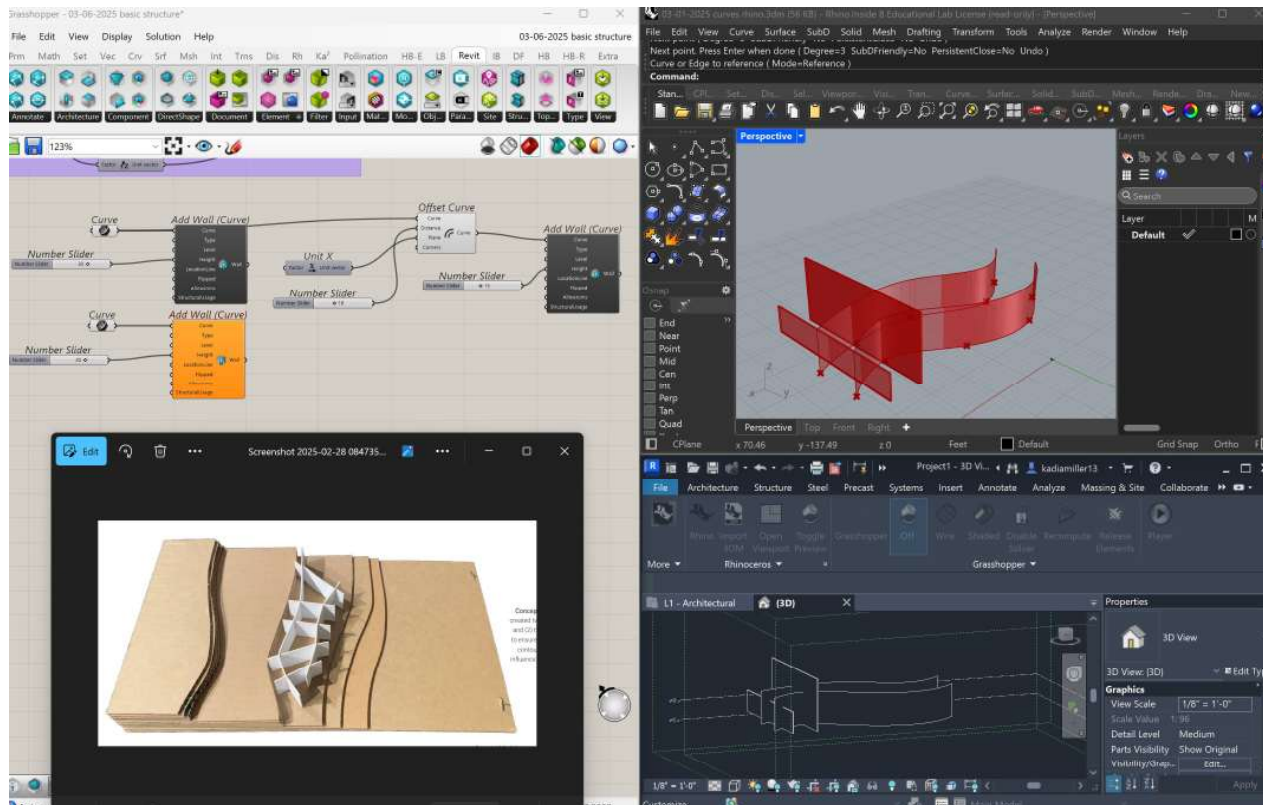

This is two surfaces connected by intersecting stuctures just like my sketch but just turned on it's side.

I started by extruding two curves and then added "directshape brep" to get the shape from grasshoper into revit.
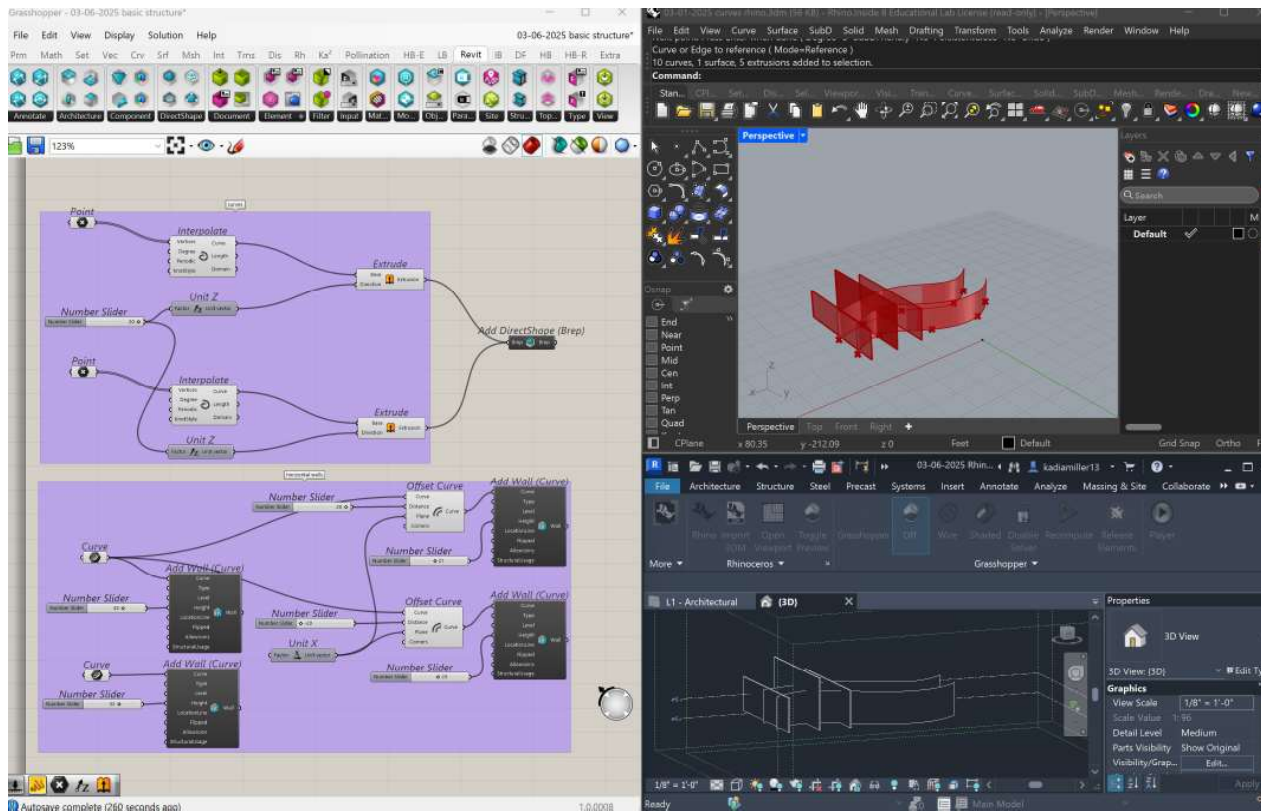
Rhino Inside Iteration 2

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.
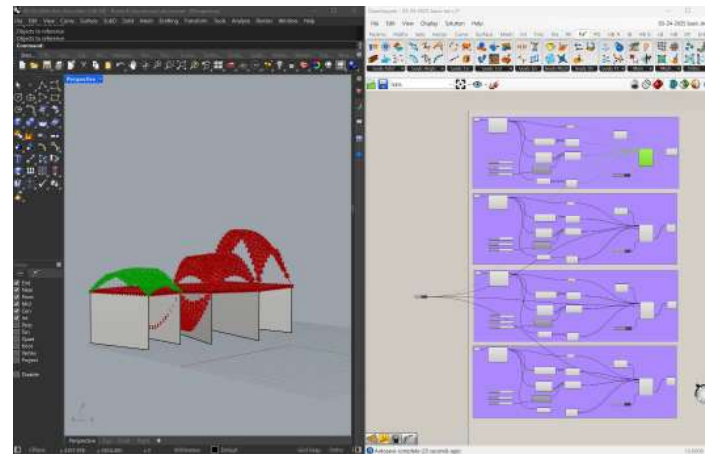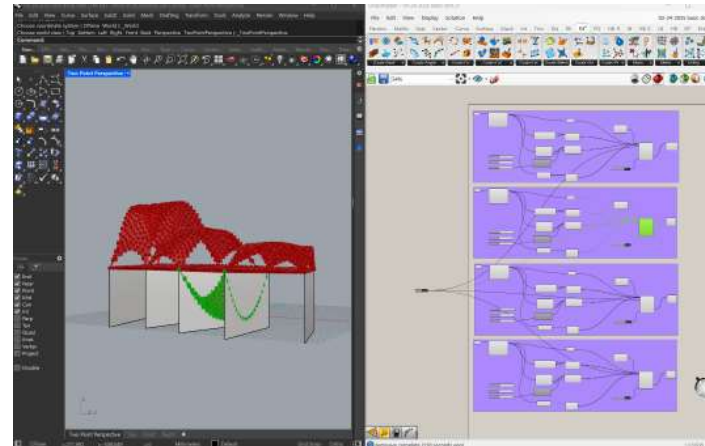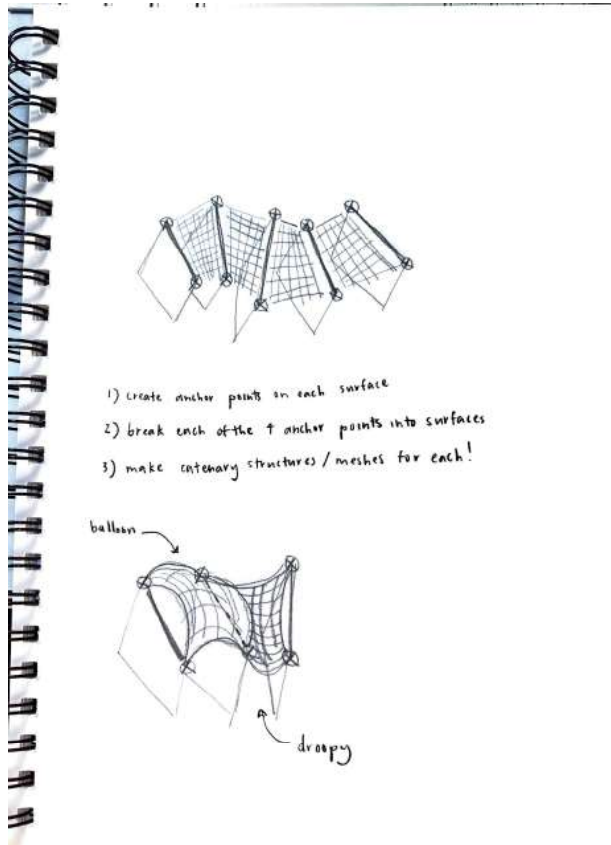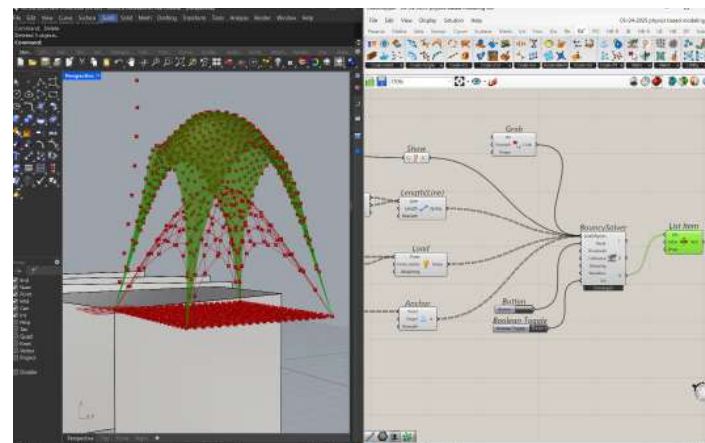
Rhino Inside Iteration 3

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

1) create anchor points on each surface
2) break each of the 4 anchor points into surfaces
3) make catenary structures / meshes for each!

balloon

droopy

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.