# Assignment 3:
# Digital Model

# Parametric Modeling: Perforated Metal Panel

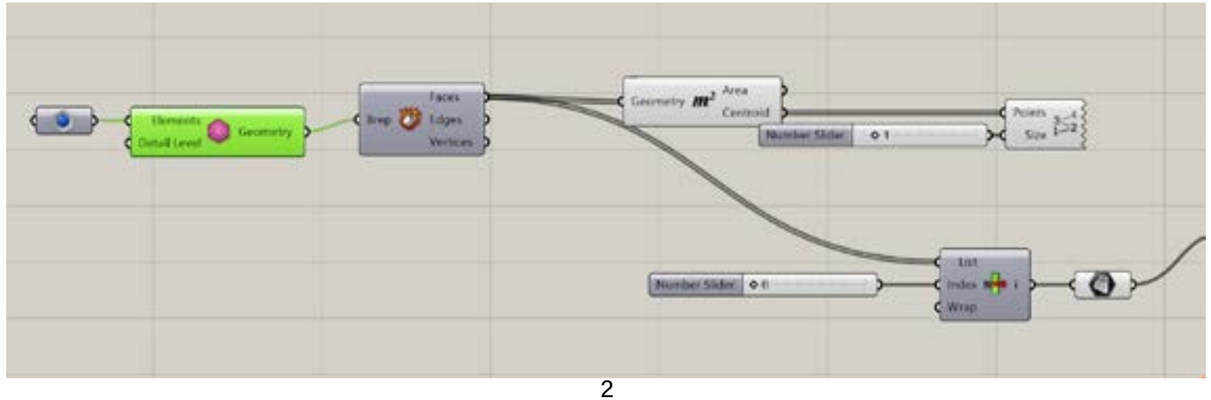
## Thinking Process

### Idea

Create an element in revit that can become a perforated surface that will be able to be see through without using revit material properties.

### Thought process

For the walls to appear the way I wanted them to. I had to work backwards and realize that I needed the wall profile to show all the holes that I was interested in seeing. I would take an existing wall profile that I want the boundary of the wall to look like. Then I would divide that surface to create the holes. Then add a shape to those holes to cut out of the wall.




## Part 1:

**Create planar graphical element in Revit that you want to perforate. Using either a wall or a roof for element creation**

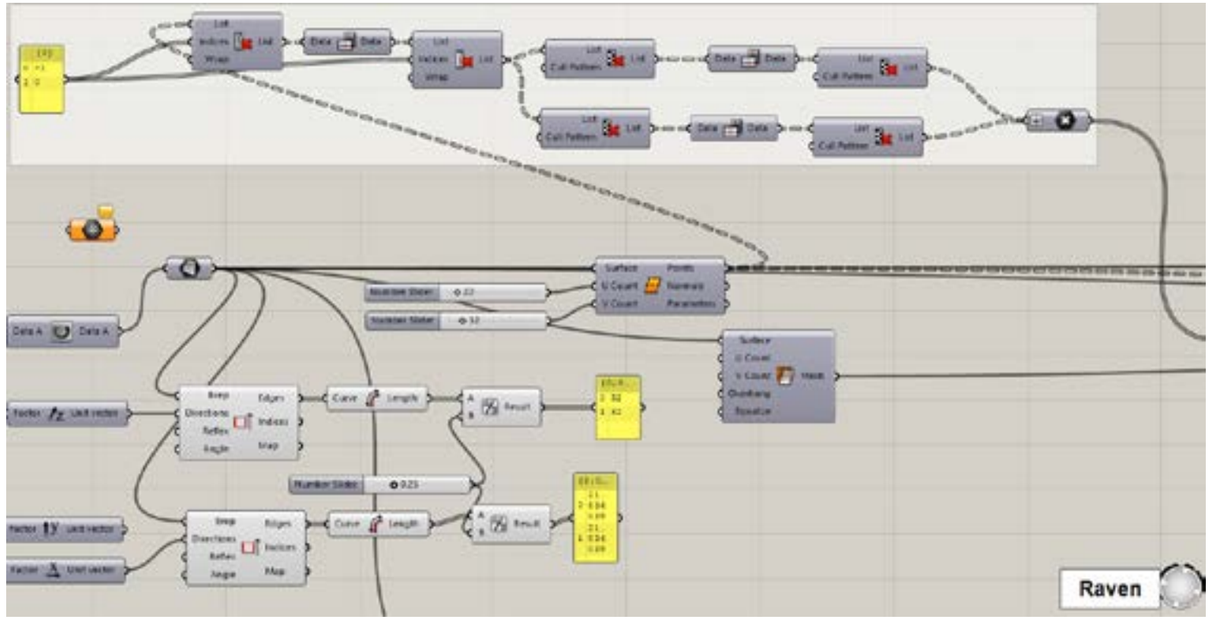


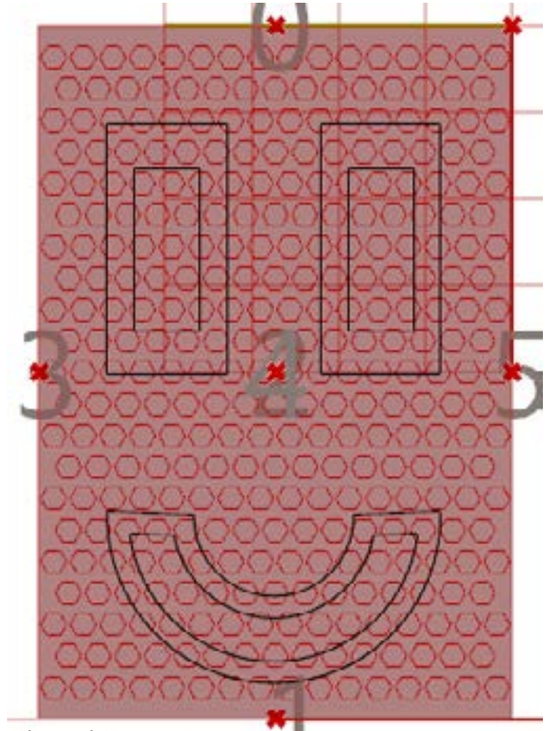
## Part 2:

**The grasshopper script is meant to take the element gathered and separate the faces to isolate the face of the wall which acts as the profile surface as the wall.**

## Part 3:

**After acquiring the surfaec, it is broken down to gather distances of the perimeter, which can then be used to determine the amount of holes in the perforation. The group offsets the holes to make it a nonlinear grid.**

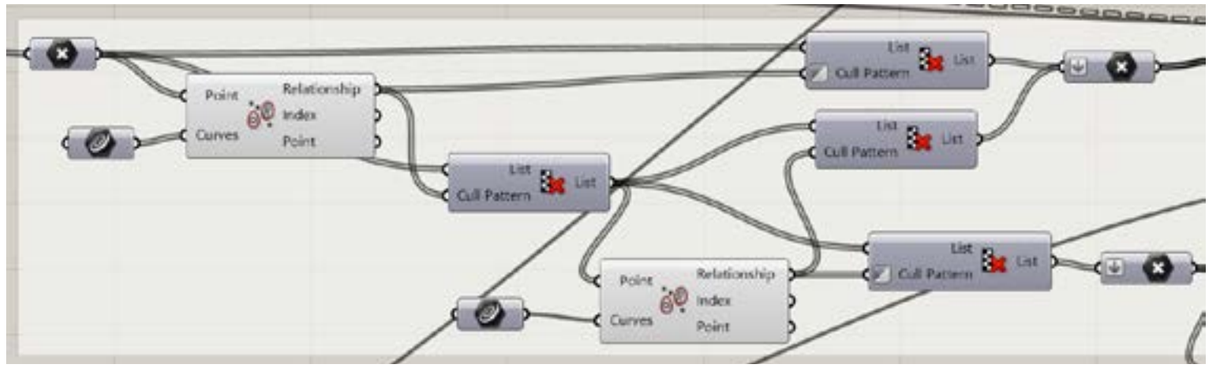


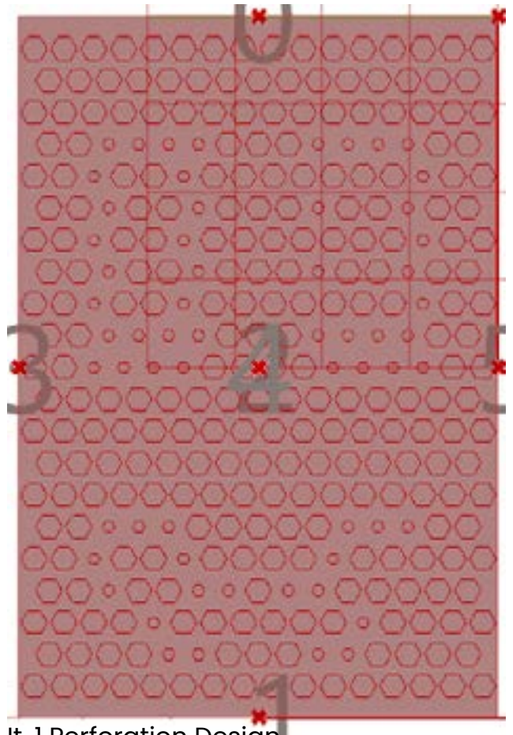




Closed Curve Pattern

## Part 4:

**Add either text or a closed curve design that can be used as a pattern within the perforation**

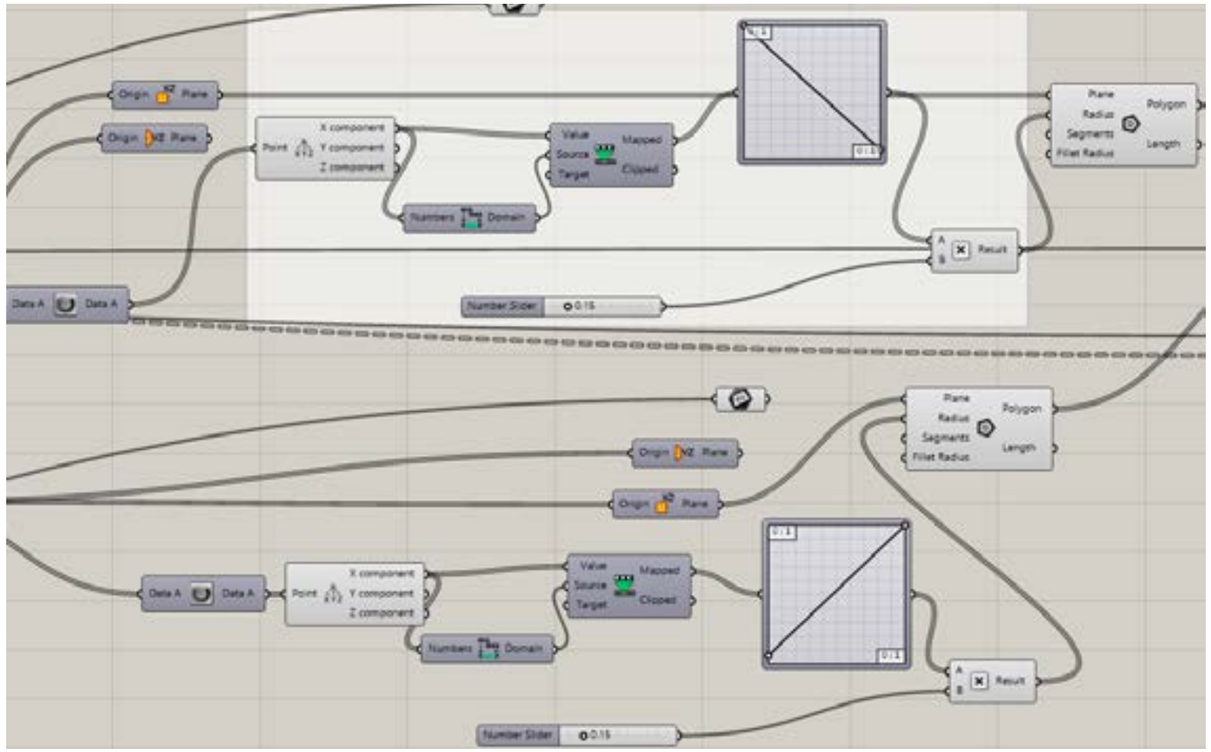


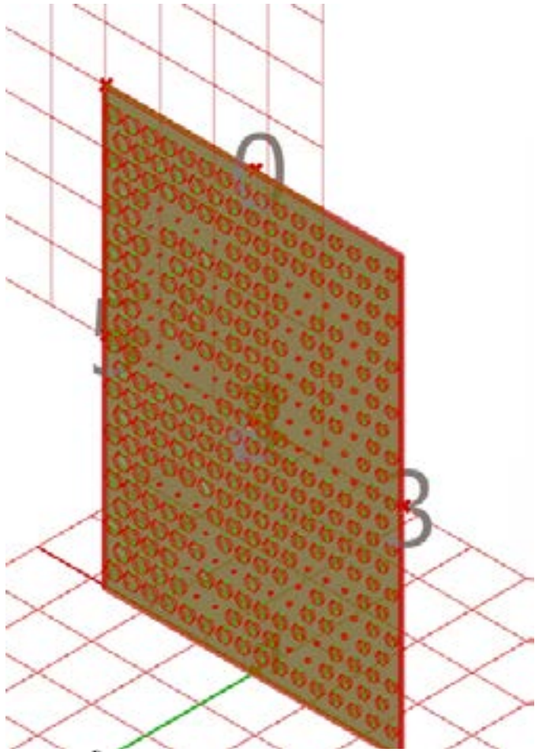




It. 1 Perforation Design

## Part 5:

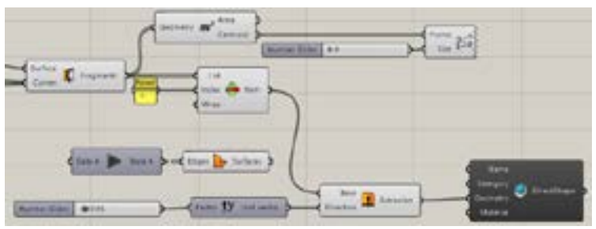
**Once the Curve pattern has been separated, there is an option to apply a gradient perforation to the material, not only to the main detial, but the perforation within the design.**



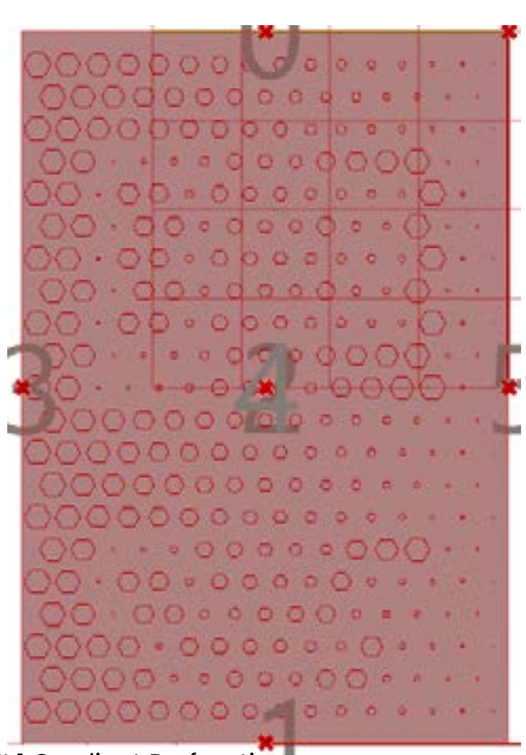
## Part 6:

**Acquire the initial surface and curves created from the perforation, and develop it into one surface. Extrude the surface to the depth of the wall/geometry. Then bake into revit**

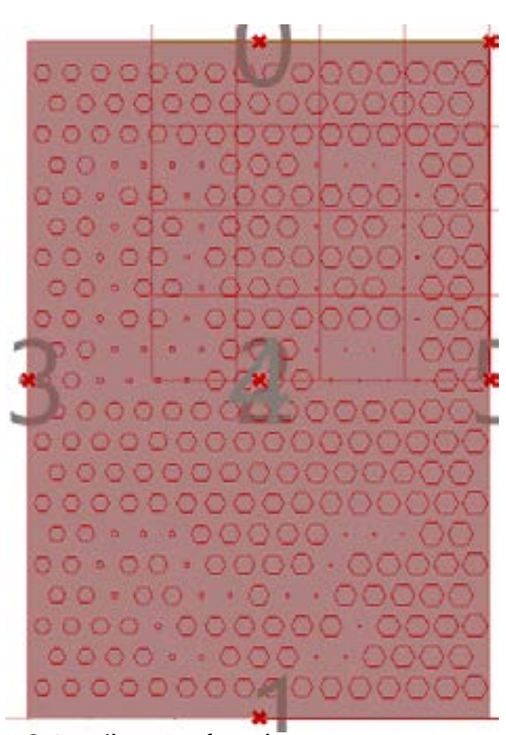


**Reflection**

This perforated panel has informed me of what can be done with parametric design. Through this process, I could see what can be done with one line, and perhaps in the future I can expand. Possibly changing the shapes of the holes, or introducing an image to the detail for a more detailed piece of art.



It.1 Gradient Perforation



It.2 Gradient Perforation