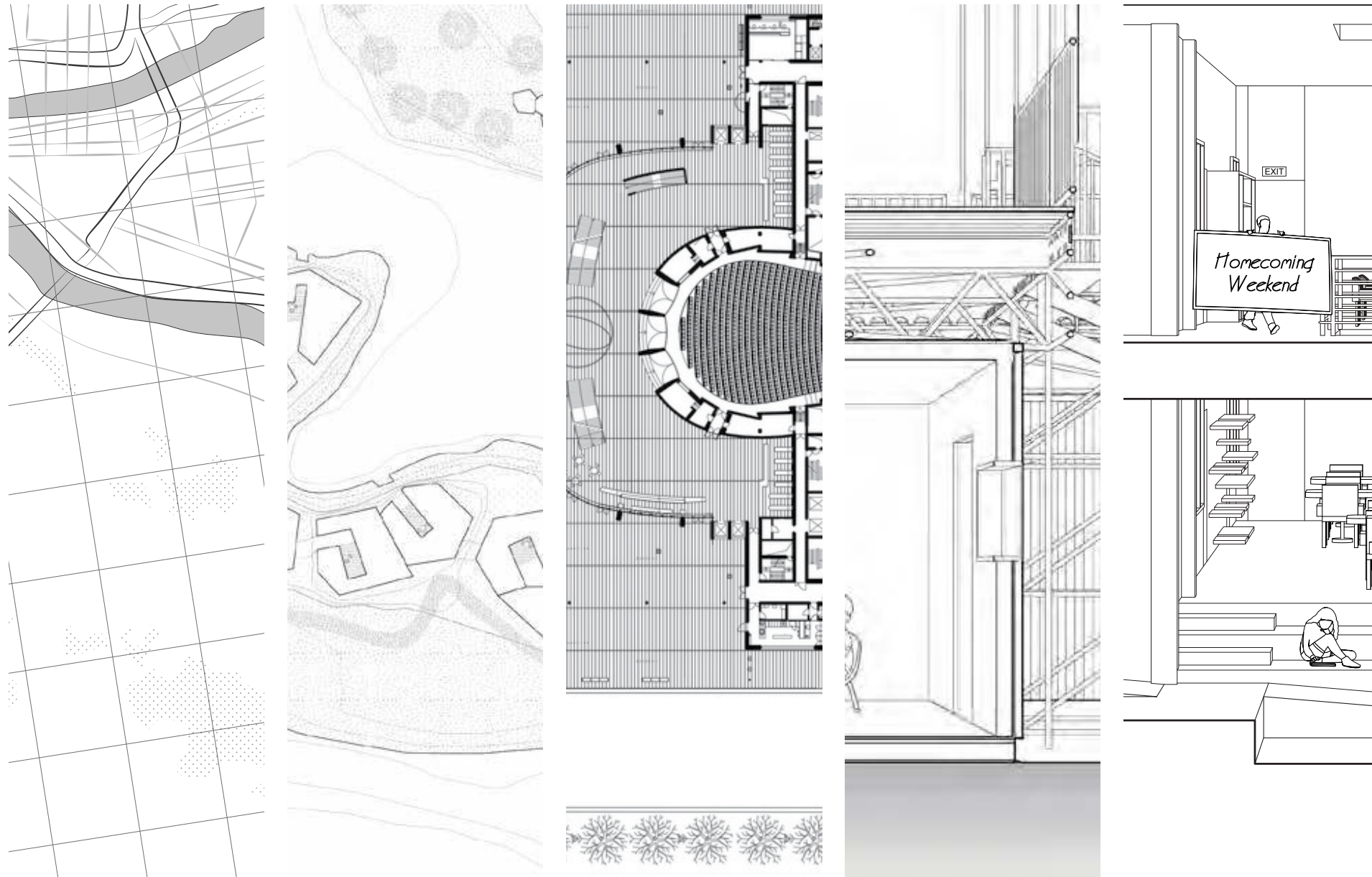


# ARCHITECTURE PORTFOLIO



**Stephanie Y. Huang**

Carnegie Mellon University  
Bachelor of Architecture

<http://stephanieh.me>  
[Steph.yl.huang@gmail.com](mailto:Steph.yl.huang@gmail.com)

(516) 710 - 0850  
Jericho, New York

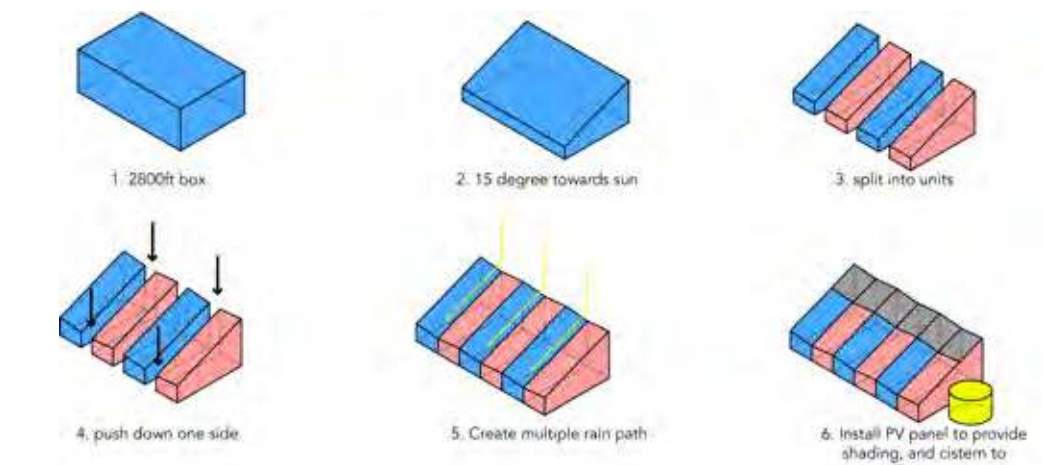


Ground Plan

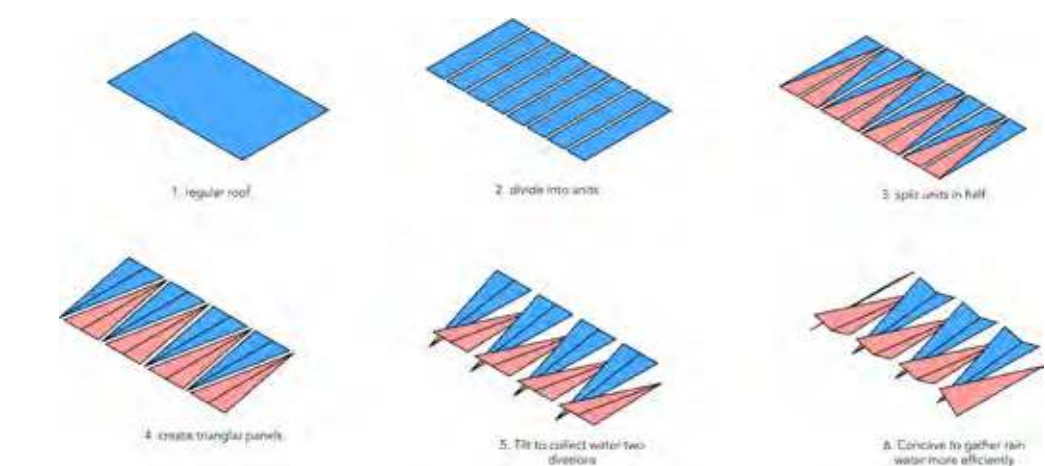
## Proximity: *Boxed & Unboxed*

Proximity between humans and the natural systems they are cultivating. Bringing in an aquaponics system for an urban farming system.

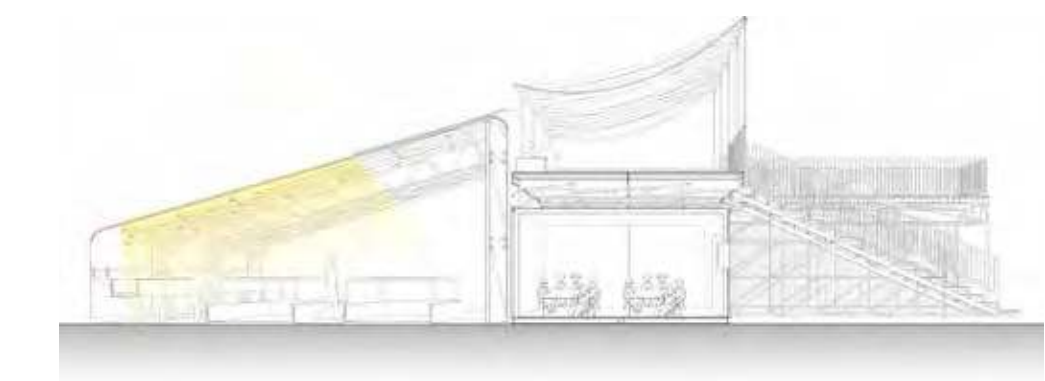
Proximity between people and their local culture. Consolidating the community through new spaces that provide education, meeting work space, concerts, and farmers' markets.



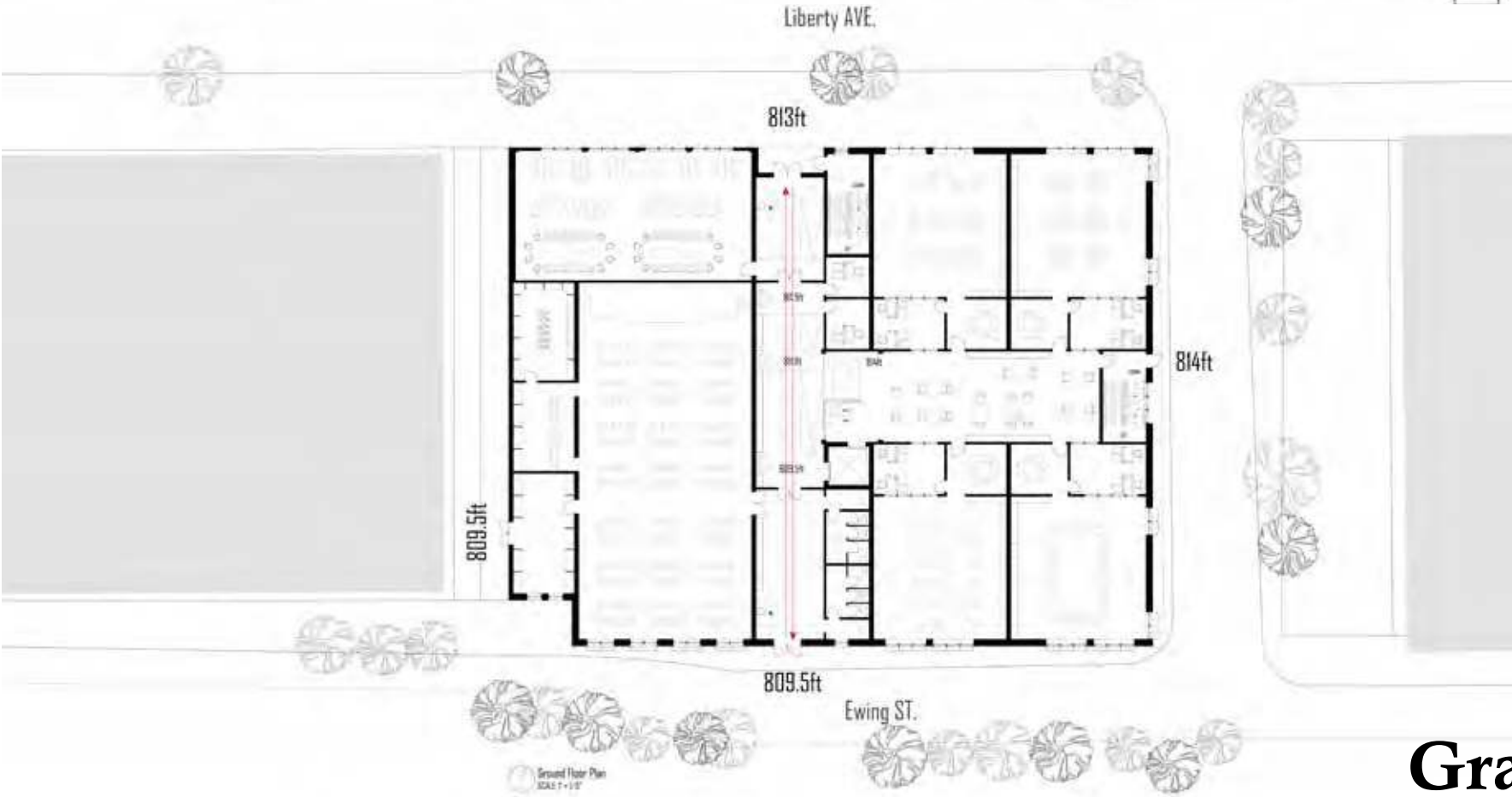
Water collection is a crucial part of this design. For both the main campus and the greenhouse roof structure, by manipulating the roof geometry, the result is able to achieve better rain collection as well as ventilation and shading.



The greenhouse geometry uses a modular greenhouse unit that concave to the center. This geometry can effectively power the PV panels positioned on the top while also being able to gather water to the center of each unit.

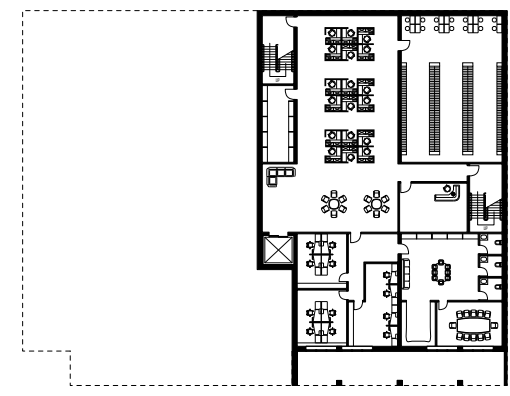
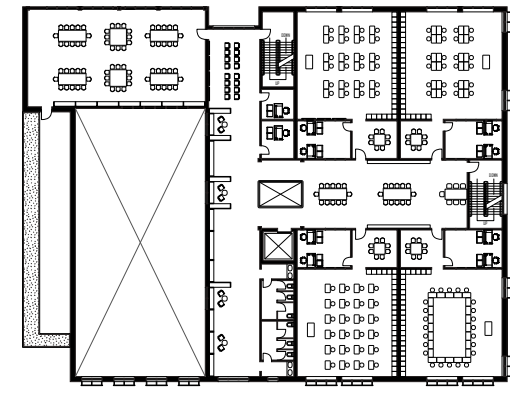
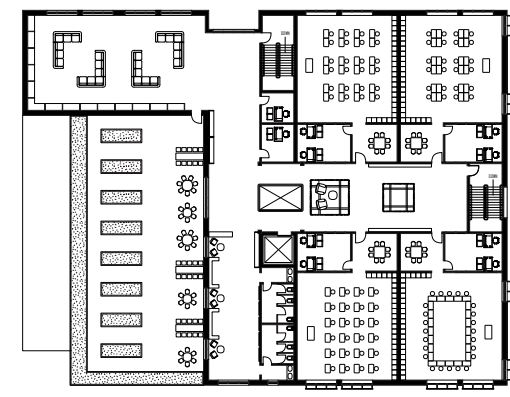


This project aims to build a sustainable and remountable campus that is able to accomplish multiple tasks during different times of the year. Not only an educational campus for children, it is also a gathering hub for nearby residents. It's designing a setting in which a person could be just casually driving by, but then discovers a store, gets attracted by concert events, wanders to the learning center, and eventually gets up to the second level decks to enjoy the view.



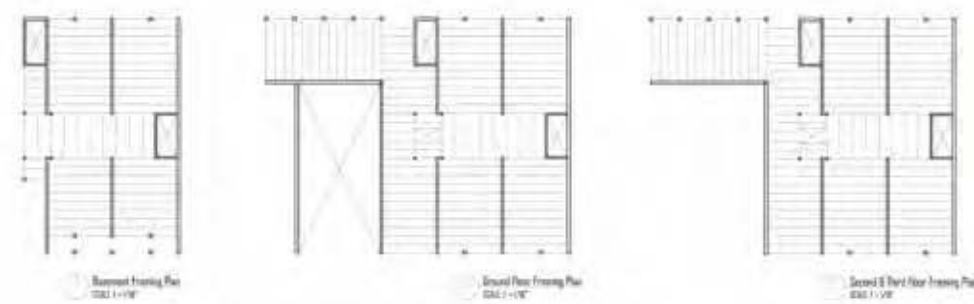
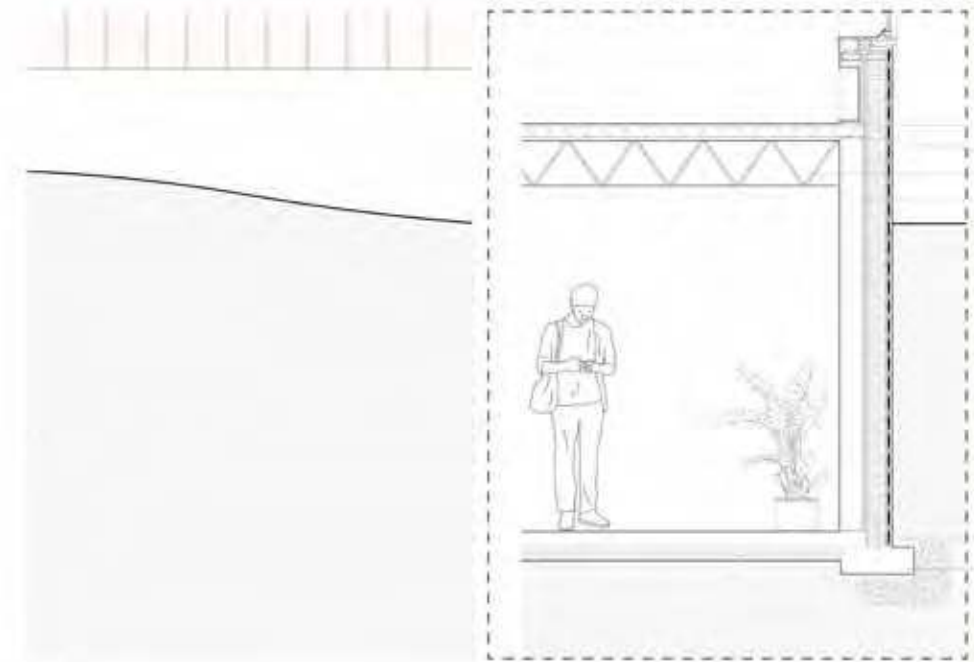
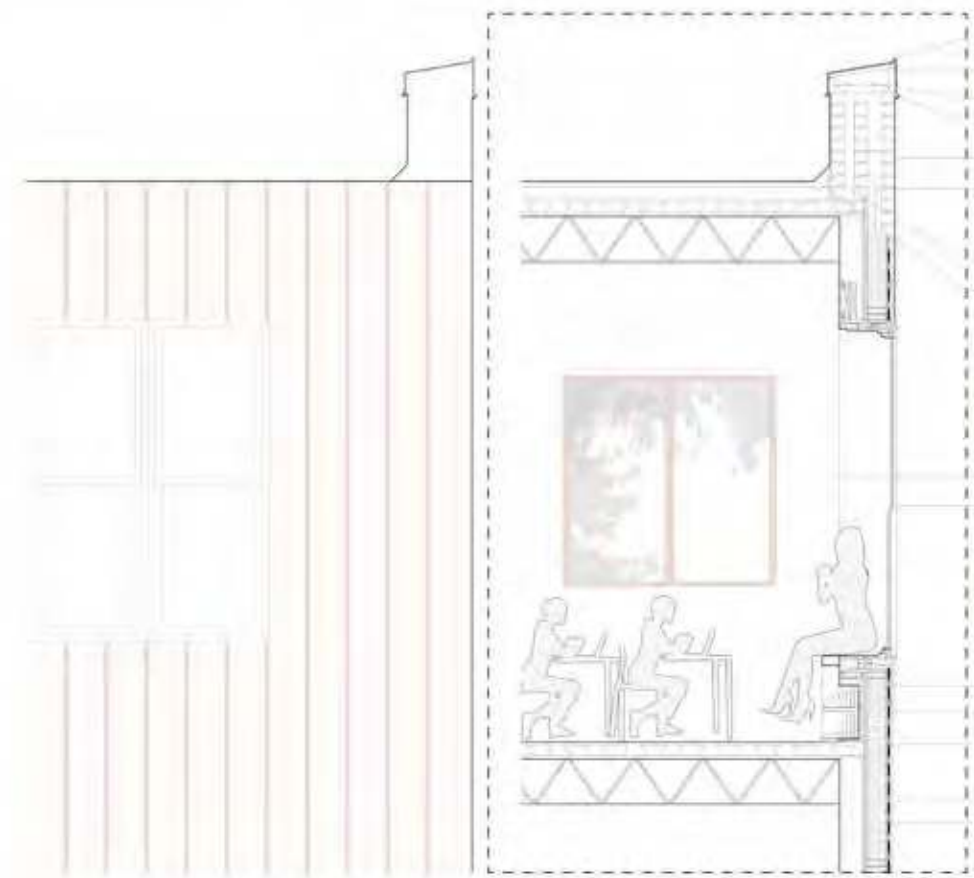
## Gradient: *Pierced Through*

There are two punctures in this design.  
The atrium that allows sunlight to pierce through the floors.  
The hallways that separate each level into communal and classroom spaces.

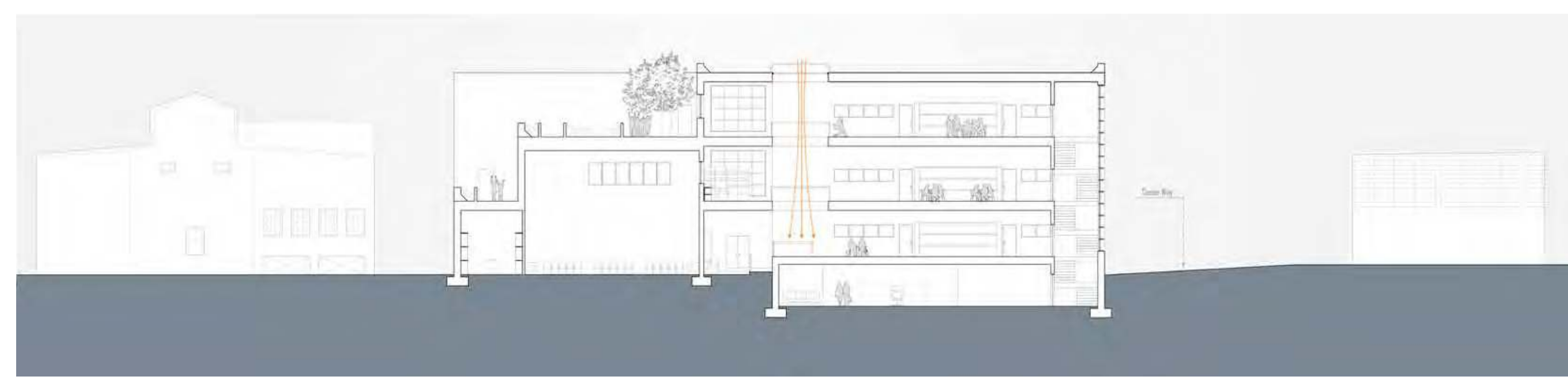
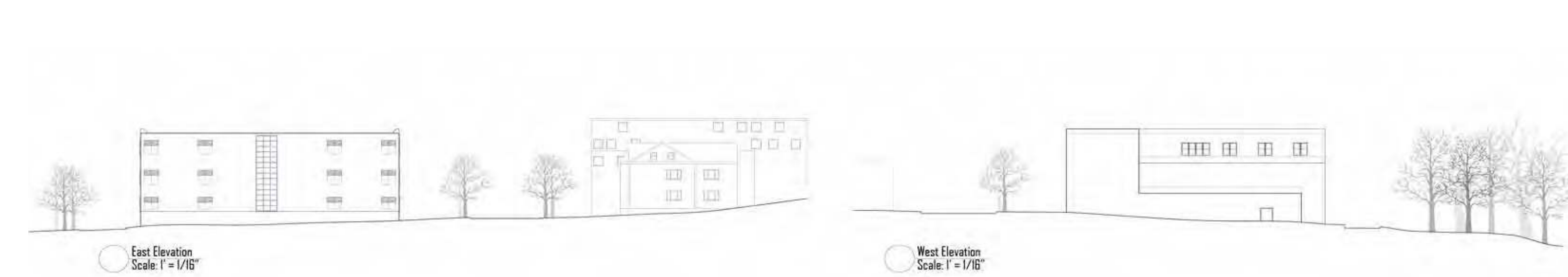


The hallway not only acts as an dividing tool that separates the classrooms from gathering space, it also follows the slanted landscape, creating a more coherent language with the surrounding without transforming the landscape.

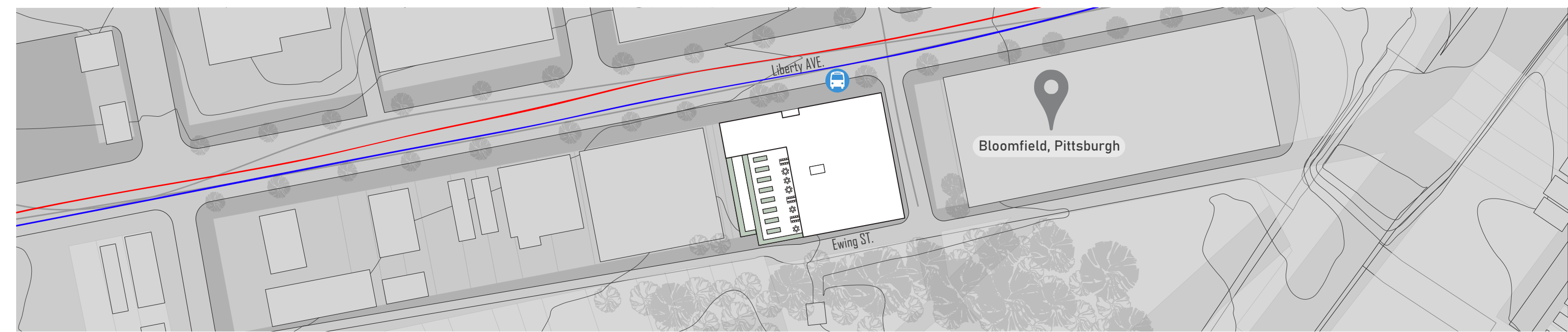
This main corridor is also a place for the students to showcase their creative work, to gather with friends, and get access to resources and books on shelves.



- Roof
- Ceiling 2" Framing
- Acoustic Ceiling
- Copper Ceiling System
- 12" Insulated Gypsum Wall
- Vertical Reinforcing
- Steel Members
- Form Cast Concrete
- Interior Wall Finish
- Double Pane Public Use Windows
- 5" Acoustic Insulation
- Decking
- 5/8" Concrete Slab
- Air Barrier
- Exterior Wood Finish
- 1" Concrete Deck
- Rebar Decking
- 1/2" Insul
- Roof
- Finish
- Finishing



The rooftop growing garden gives students opportunities to study outdoor when weather is permitted. It is also a micro farm that supplies to the cafeteria.





## Eco-Morphology: *Living Machine*

The project, located at Six-mile Island, Pittsburgh, focused on transforming the landscape. The architecture is meant to communicate with the environment while resolving concerns about waste water management and rainwater collection.



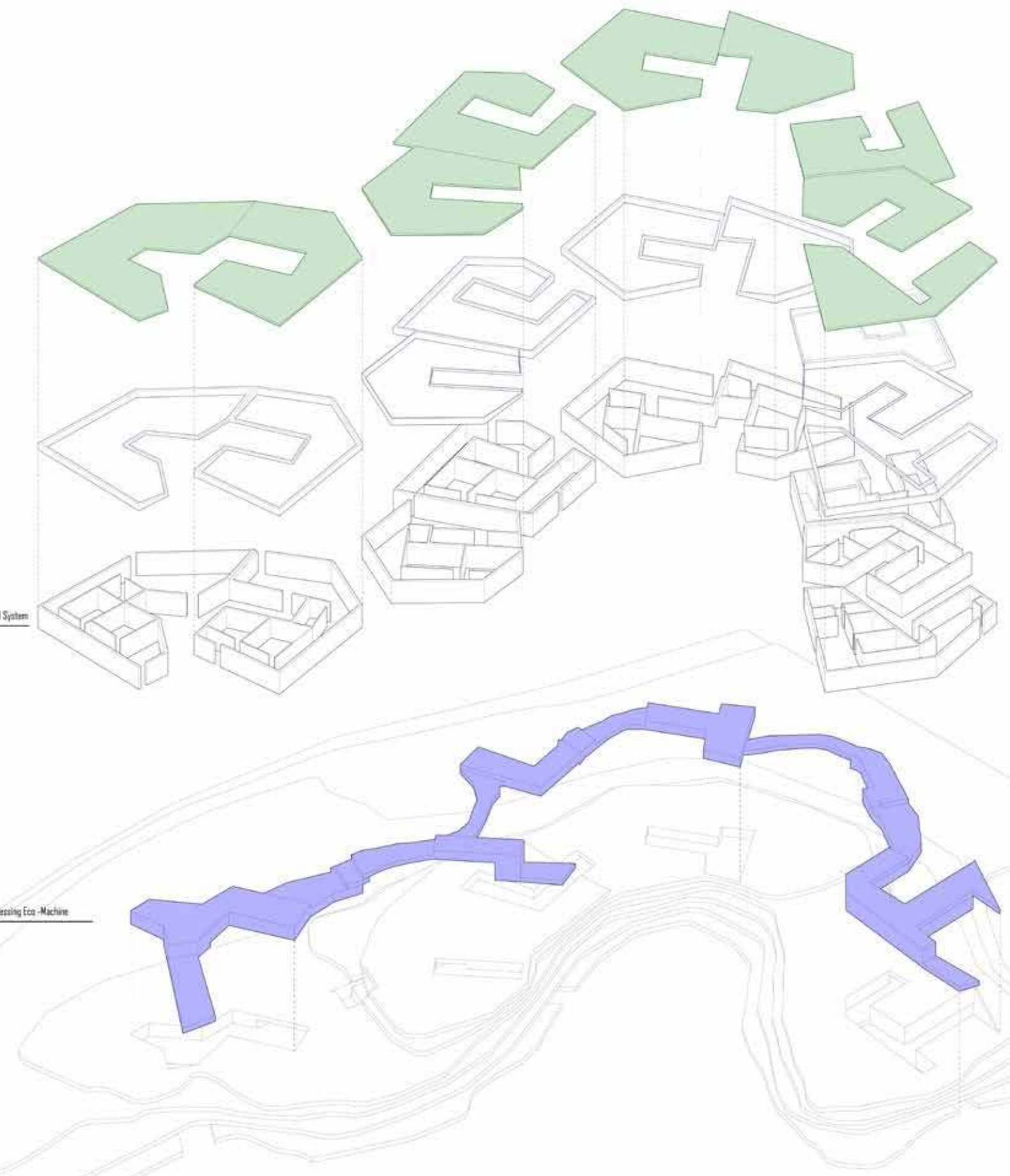
### NE Axonometric

**Slanted Roof** Rainwater Collection

**Glass Openings** Light Penetration

**Heptagonal Housing Units** Courtyard System

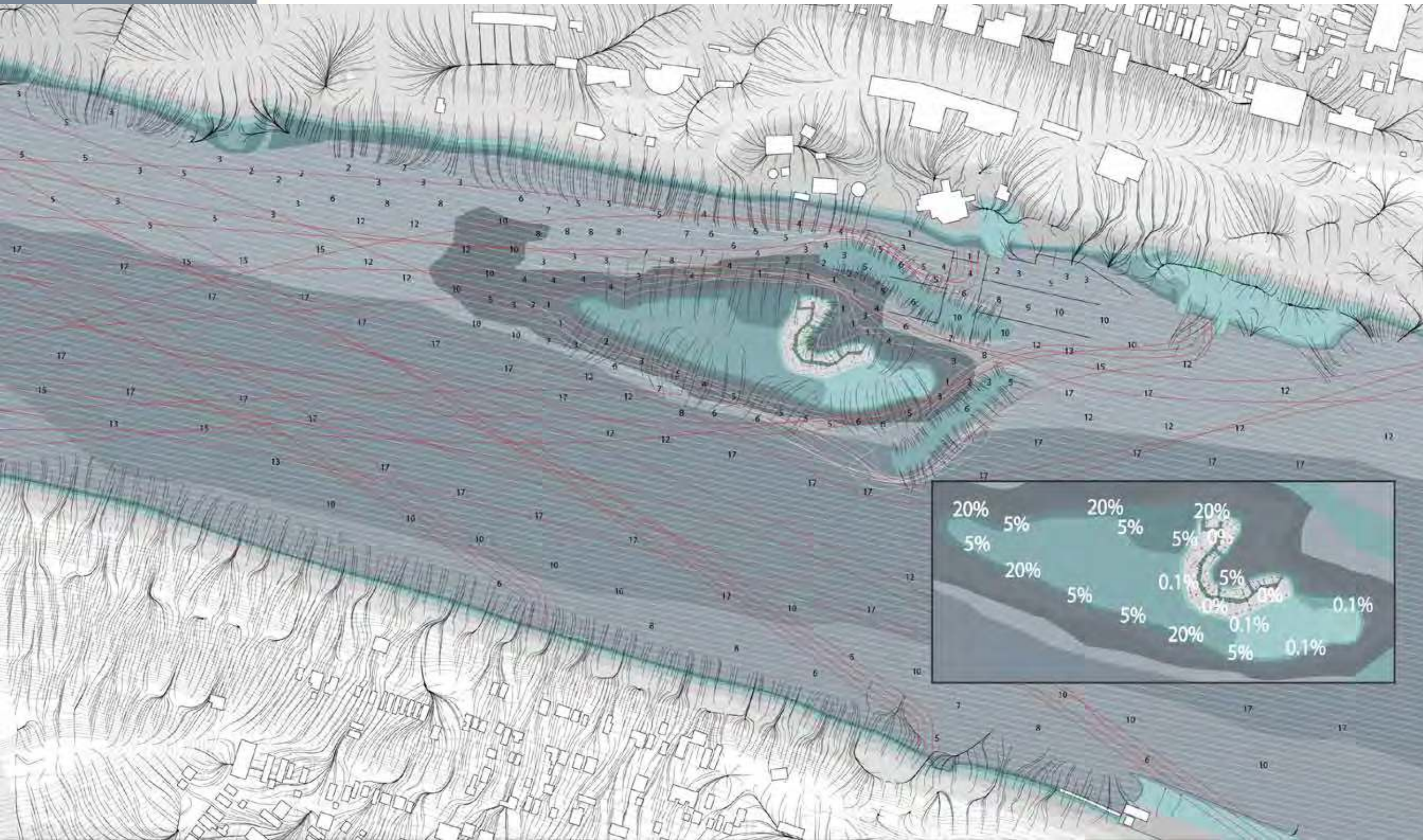
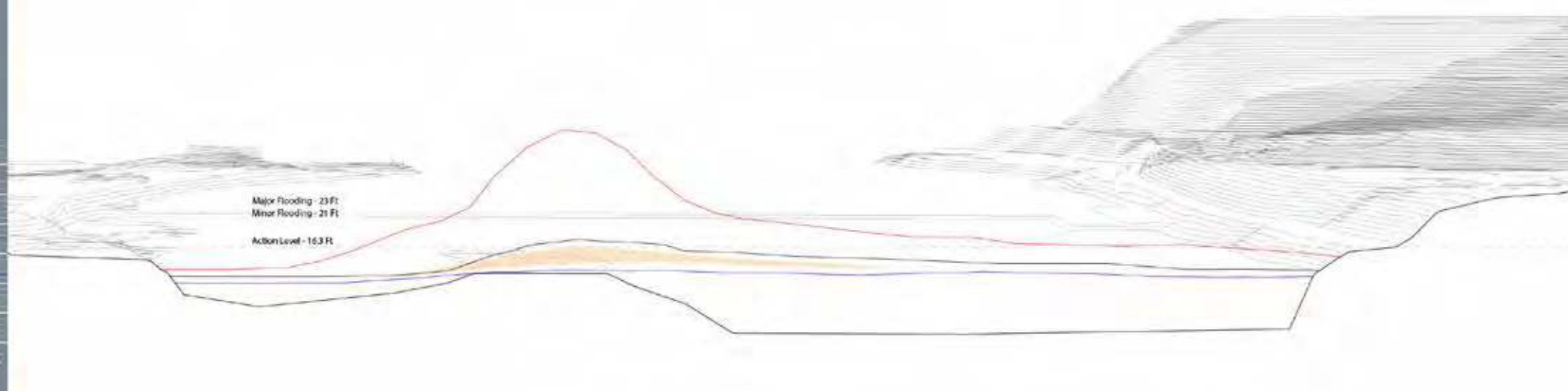
**Water Circulation** Wastewater Processing Eco-Machine



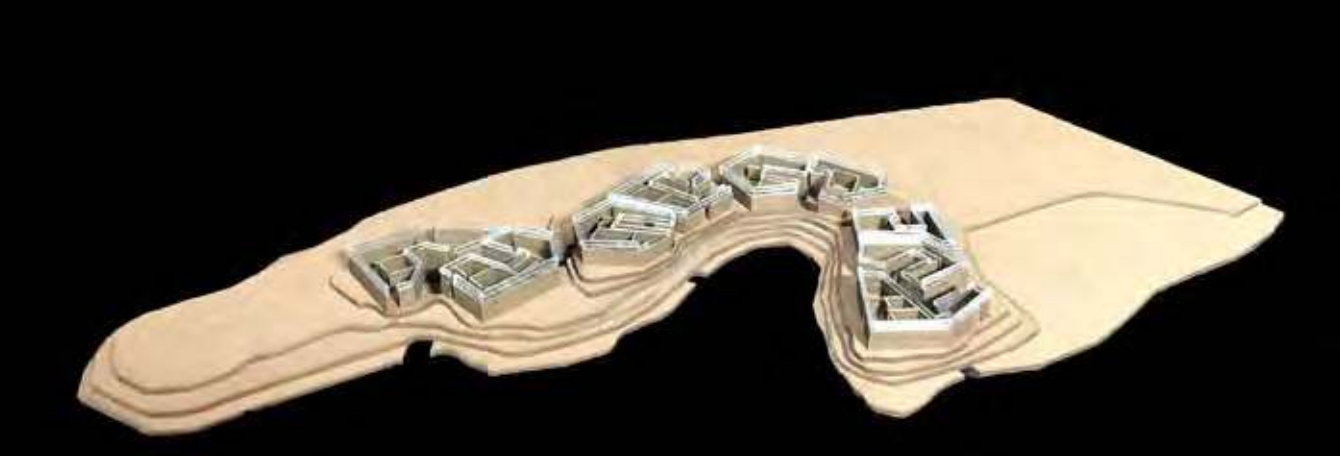
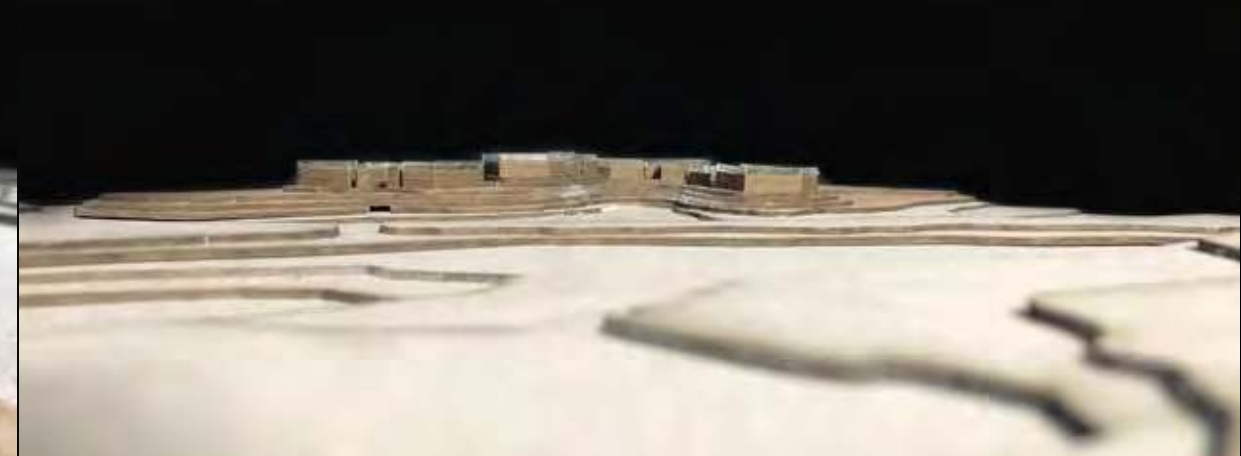
This design considers how to incorporate the eco machine into the residence units. Underground water channel system connects the units, processes waste water, then flows back to the river after it's being processed.

GEFS Simulations Indicate Flooding Chance

Maximum level: 5% chance of occurring  
 Median level: 50% chance of occurring  
 Most Likely level: 42% chance of occurring  
 Minimum level: 5% chance of falling below



Much of the preliminary work is dedicated to the study of the landscape and environment, including but not limited to flooding simulations, population density research, hydrology movement, and sewage management.

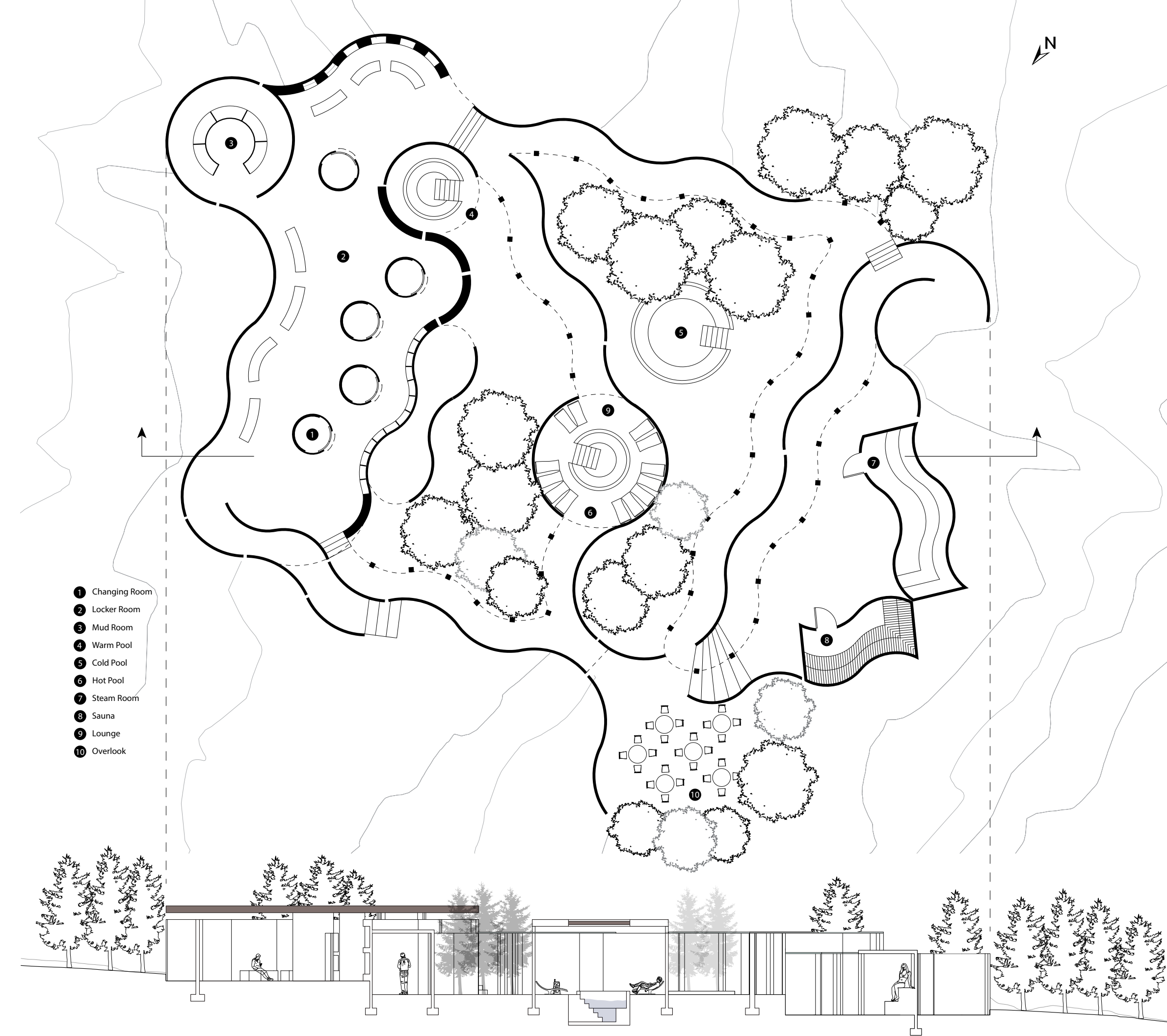
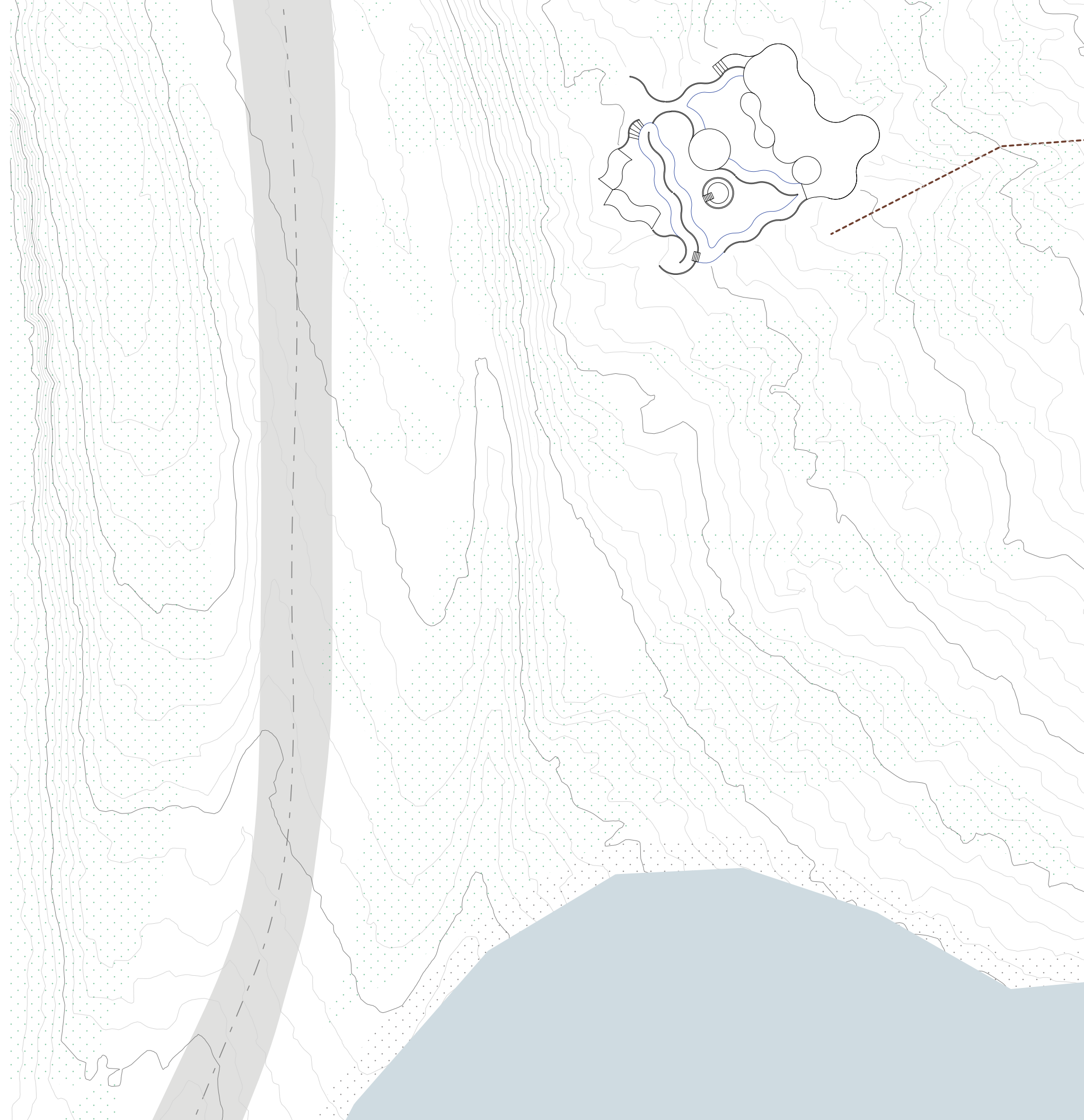




## Terraceus: *Apertures*

This year-round bathhouse design proposal is a study of the dynamic between the natural conditions of a valley and the experiential qualities of a bath house. Set in the scenic Saco Lake region of New Hampshire, this bathhouse offers hot pool, warm pool, cold pool, sauna, steam room, mud room, lounge and overlook, accommodating travelers and near-by hikers.

The apertures heightened the sensorial experience whether visitors are strolling underneath the glass covered pathways, or enjoying the facilities. The detachment in the modular walls from the covers frames the picturesque surrounding and makes the space feel more airy. The slits between the modules connect the different areas by allowing pedestrians to peek through the space. It also sets up a contrast between the heavy concrete parts and sudden openness, piquing the viewer's interest to look past the openings and get excited for the next space.



- 1 Changing Room
- 2 Locker Room
- 3 Mud Room
- 4 Warm Pool
- 5 Cold Pool
- 6 Hot Pool
- 7 Steam Room
- 8 Sauna
- 9 Lounge
- 10 Overlook

The three main aspects of this project focuses on circulation, terracing and a modular system.  
 The program layout is derived from a preferred and optimized circulation path; the different elevations in terraces integrate with the landscape; the identical units alternate to form a modular system.



The initial design started with the mass volume occupying the landscape ....



... progressed to the conceptual form of space ....



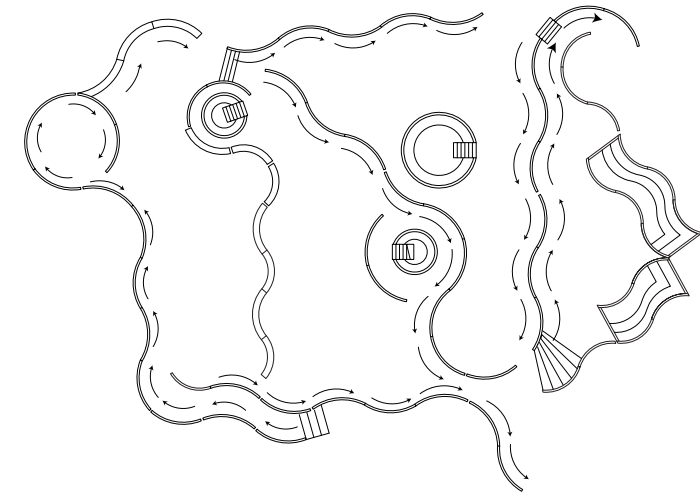
... developed a hypothetical circulation with a terrace down idea ....



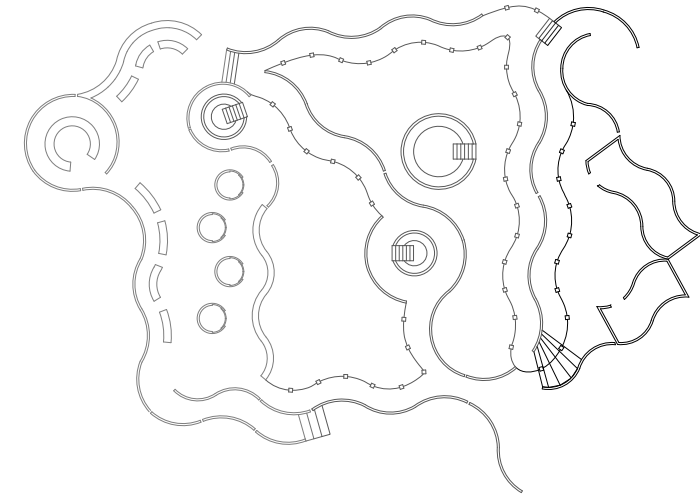
... further divided the space into three layers and settled on the modular units forming the partition ....



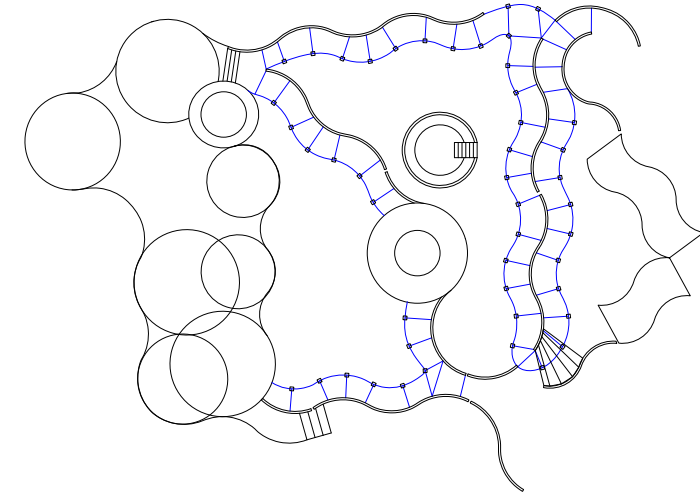
... alternative placement of programs and modular units alignment.



Circulation



Terrace/layer



Modular System



```
# C:\Users\Heinz\Underworld\Tomato Trafficking\mapping.py
import heinz_kick_bap
from pittsburgh_road_system import lamp_post
import random
```

```
class UnderworldTomatoes:
    factory = UnderworldTomatoes(factory)
    packaging = UnderworldTomatoes(packaging)
    shops = UnderworldTomatoes(shops)
    tastings = UnderworldTomatoes(tasting)
```

```
def _init_(self,occupants, sizes, NumberOfTomatoes):
    self.occupants = occupants
    self.sizes = sizes
    self.NumberOfTomatoes = NumberOfTomatoes
```

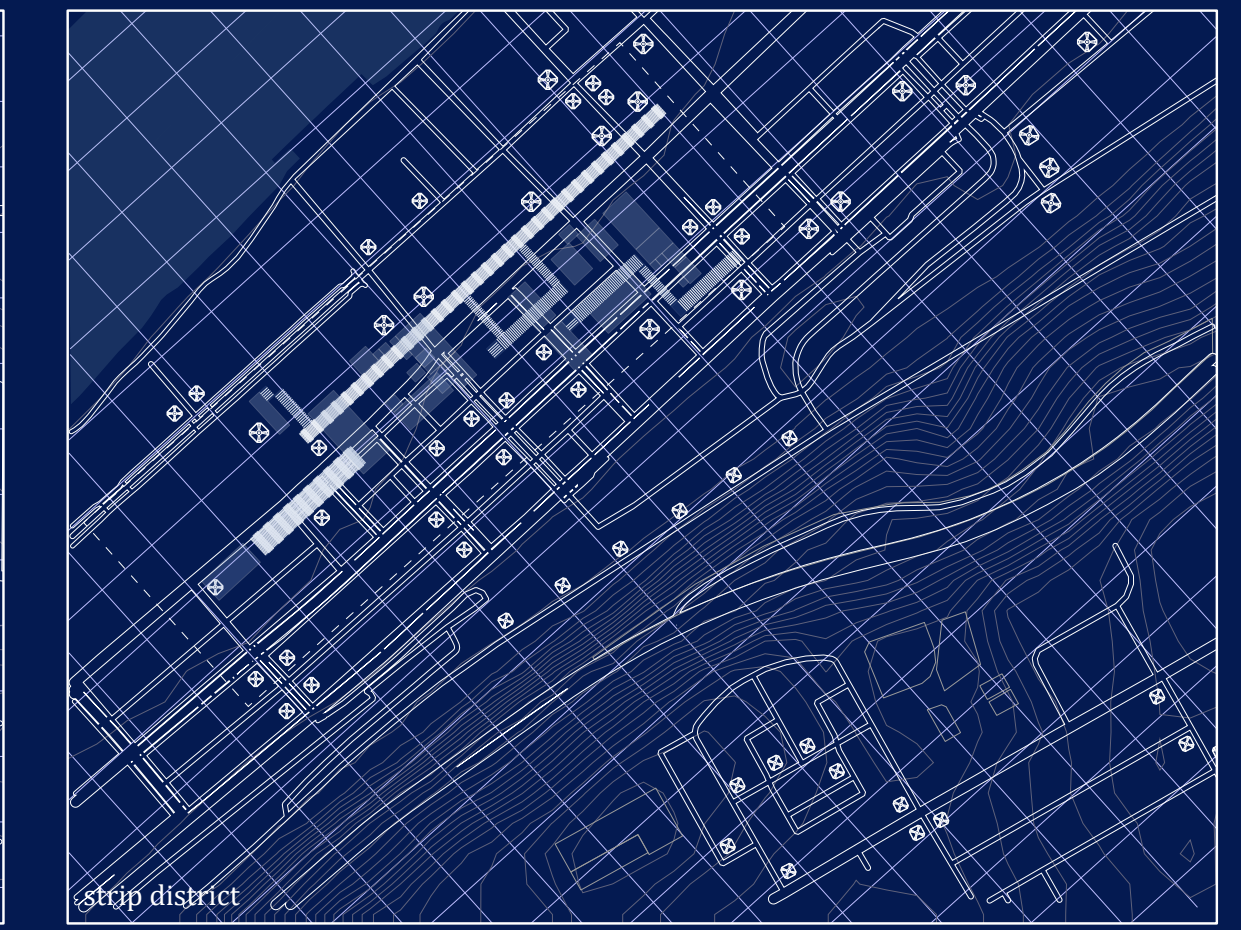
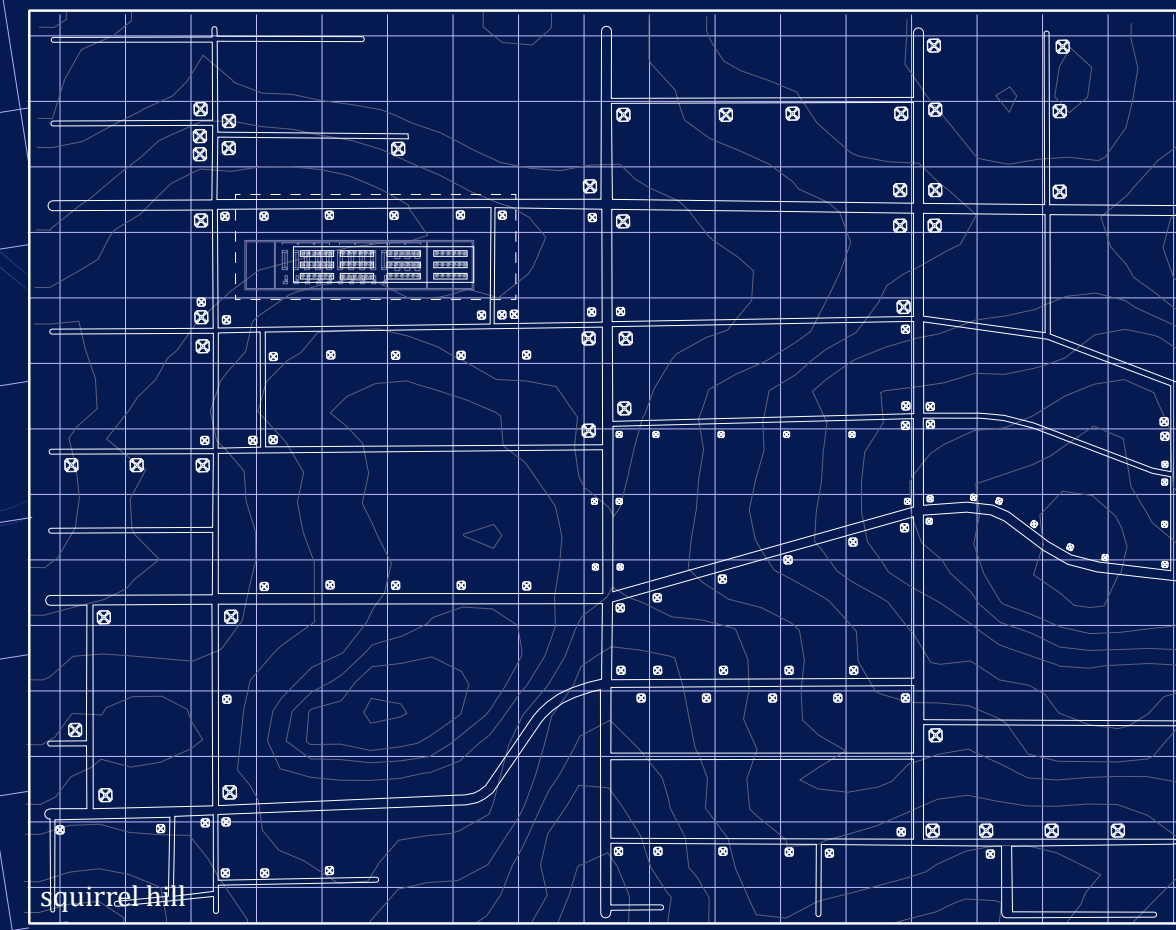
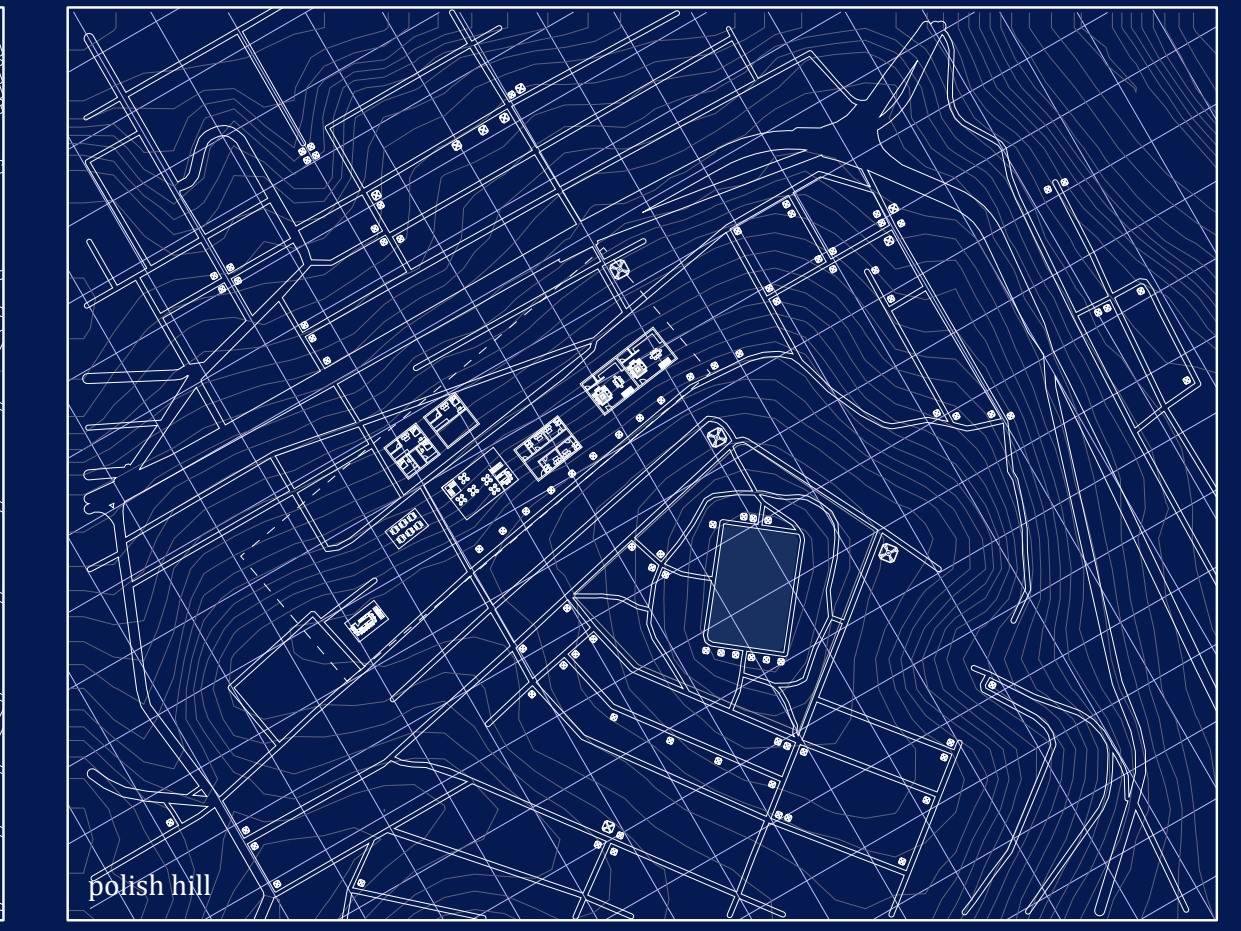
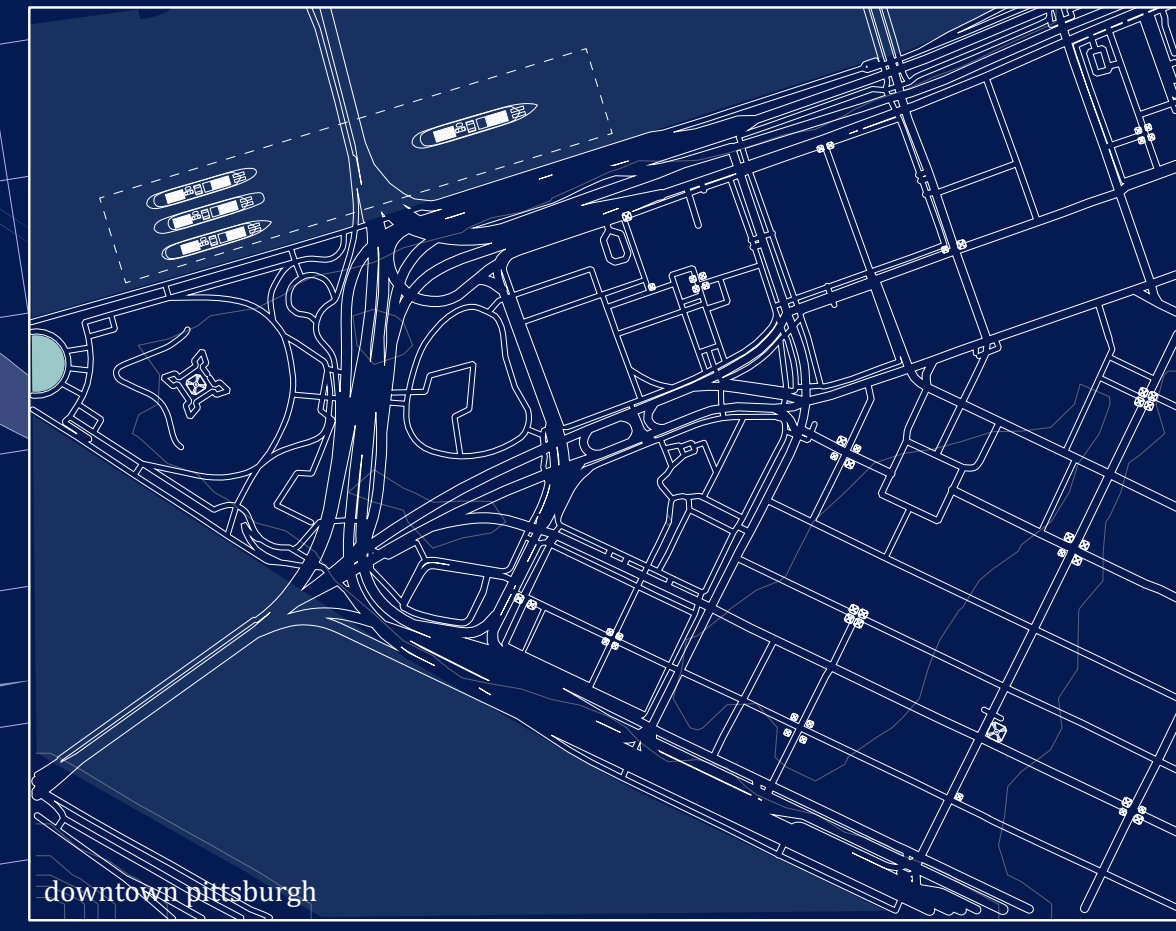
```
def init(data):
    data.factory = []
    data.packaging = []
    data.shops = []
    data.tastings = []
    lamppostFactory = 1
    lamppostPackaging = 2
    lamppostShops = 3
    lamppostTastings = 4
```

```
def randomGenerator():
    possibleArrangement = [LargeLampPost,SmallLampPost,space]
    n = len(possibleArrangement)

    return random.random(possibleArrangement[i] for i in n)
```

```
def generator(self,occupants, sizes, NumberOfTomatoes):
    if self == factory:
        for i in range(lamppostFactory):
            temp += randomGenerator()
            data.factory.append(temp)
    elif self == packaging:
        for i in range(lamppostPackaging):
            temp += randomGenerator()
            data.factory.append(temp)
    elif self == shops:
        for i in range(lamppostShops):
            temp += randomGenerator()
            data.factory.append(temp)
    elif self == tastings:
        for i in range(lamppostTastings):
            temp += randomGenerator()
            data.factory.append(temp)
```

```
print "factory list" + data.factory
print "packaging list" + data.packaging
print "shops list" + data.shops
print "tasting list" + data.tasting
```



## Underground: *Digital Reality*

Inspired by the simulation hypothesis, this set of drawing uses the graphic standards from a coding perspective to subcategorize and classify the layers of reality — transit lines, neighborhood zones, people, nature, etc. In that virtual reality of Pittsburgh, there's is a underground mafia running the city. They use the Heinz industry as a cover to build a drug empire. Everything in sight is secretly related to the underground trade.

