AFTER THE FLOOD

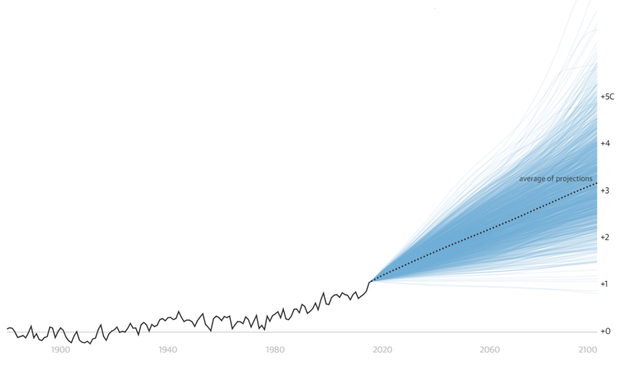
The Flood

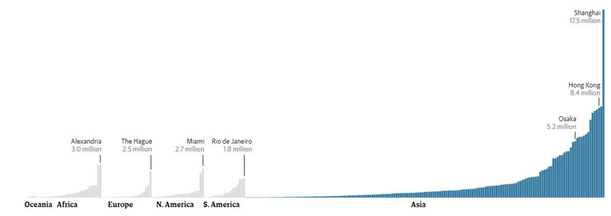
A vast amount of effort has been spent to keep the global warming 2C above the pre-industrial levels. Nevertheless with the latest estimations the situation seems to be getting out of control. Average of the projections made indicates 3.2 C by 2100.

"[We] still find ourselves in a situation where we are not doing nearly enough to save hundreds of millions of people from a miserable future," - Erik Solheim, the UN environment chief, ahead of Bonn conference

One of the biggest resulting threats to cities around the world is sea-level rise caused by the expansion of water at higher temperatures and melting ice sheets on the north and south poles.

Scientists at the non-profit organisation Climate Central estimates that 275 million people worldwide live in areas that will eventually be flooded at 3C of global warming.





Purpose

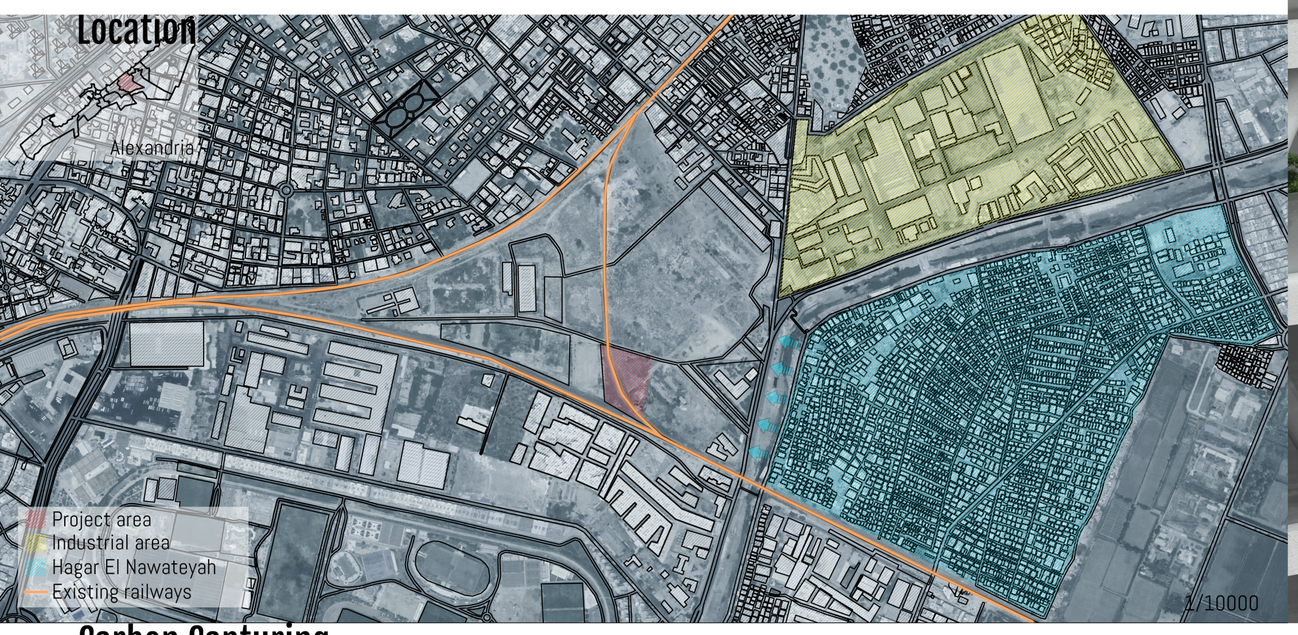
The main proposal is to create housing which is well adapted to the future conditions .Embrace what is coming and not to be the part of the cause but instead to be a part of the solution. And to ask the question "What will our houses look like after the flood?".

Today's houses use the post industrial revolution technologies. They all have blueprints, industrial manufacturing and they are made by human. This limits the adaptivity and the flexibility for future usage. Most of all cement that is been used is one of the biggest impacts on the situation we are in today.

Global warming is believed to affect hundreds of million people by the year 2100. The living conditions are predicted to be very different than today. So why should the housing be the same?

The effects of global warming are already here and will be here to stay for a long time as long as we don't take a step to change things. Instead of denying the inevitable, we should accept it and prepare ourselves for what is coming.

Location

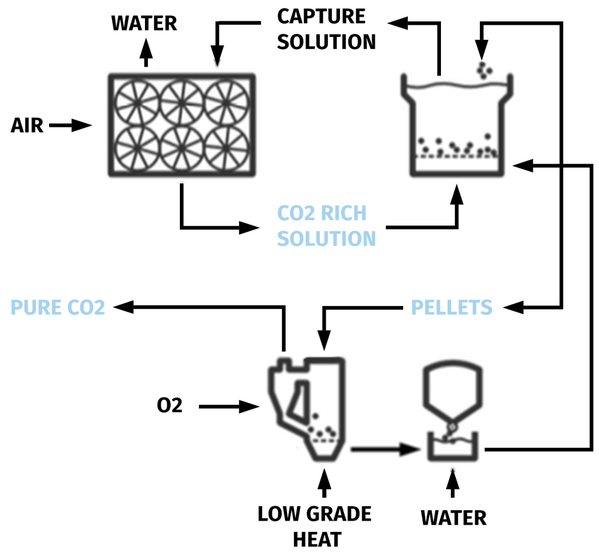


Carbon Capturing

There have been many attempts in order to achieve zero carbon emission to reduce our carbon footprints. Although significant improvements have been made in renewable energy and energy efficiency, these are not enough to keep the global temperature change less than 2 degrees. Direct carbon capturing removes CO2 from the air and purifies it. It enables negative carbon emission which seems to be the only way to keep the weather conditions in our favor.

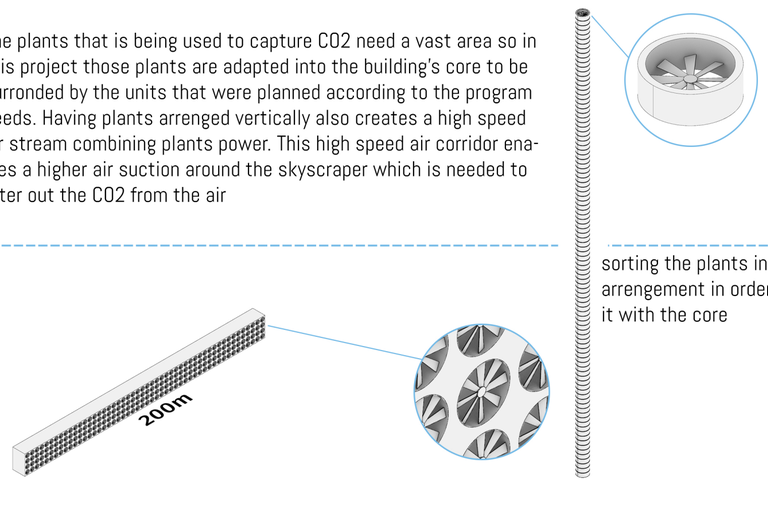
Only drawback from this technology is that in filtration process a large amount of heat is required to unbind the molecules in order to filter the CO2 that is captured from the capturing solution. In this project the heat required for the filtration is obtained from industrial high degree heat waste which is one of the reasons of the selection of the area.

The end product of this process, pure liquid CO2 can be used to produce gasoline, electricity and many other products. Another product that CO2 can be used is green cement which this project aims to do. The materials that is going to be used on this building will be made out of the air that have ben purified.

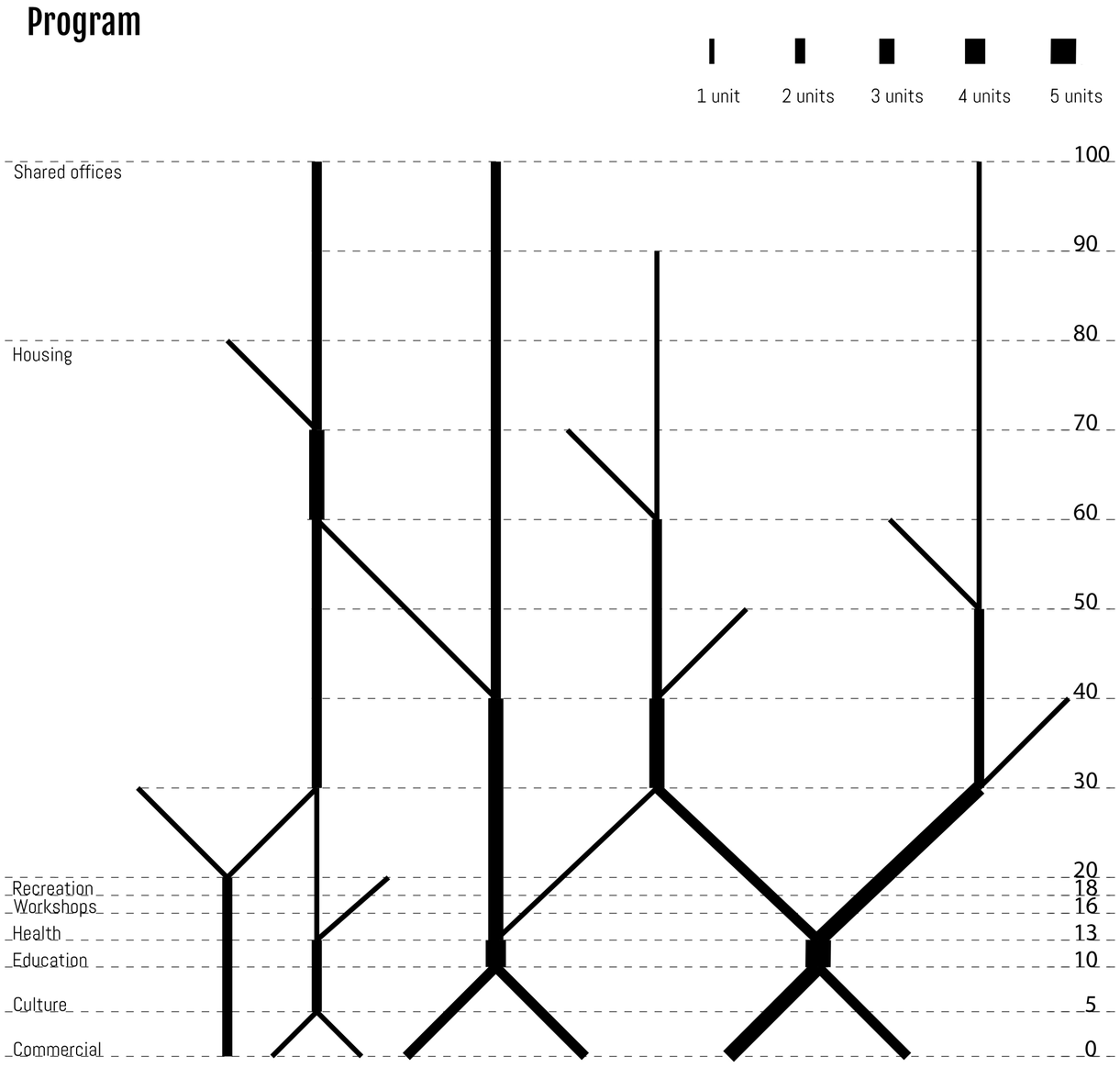


Form finding

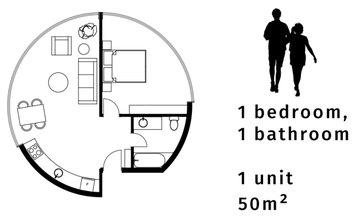
The plants that is being used to capture CO2 need a vast area so in this project those plants are adapted into the building's core to be surronded by the units that were planned according to the program needs. Having plants arrenged vertically also creates a high speed air stream combining plants power. This high speed air corridor enables a higher air suction around the skyscraper which is needed to filter out the CO2 from the air

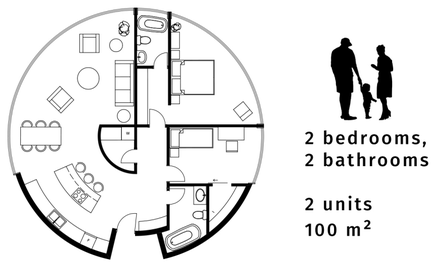


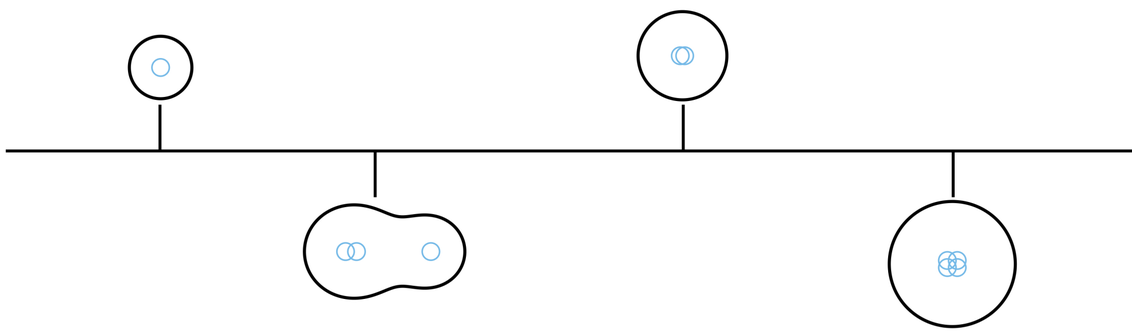
Program

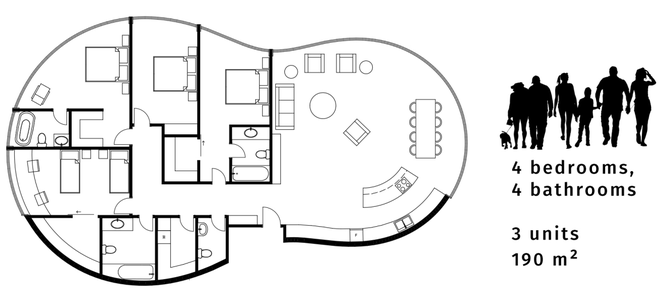


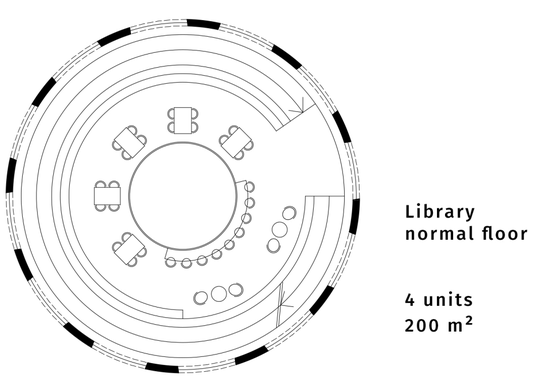
Typology



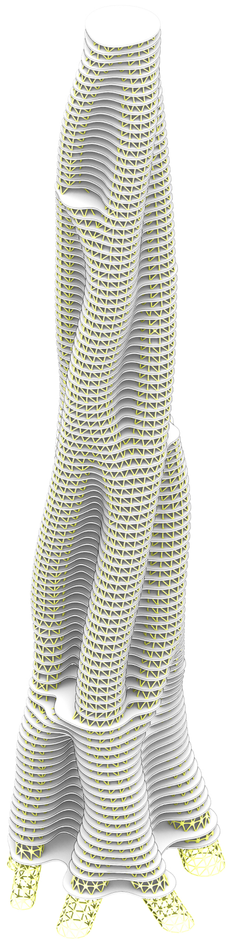




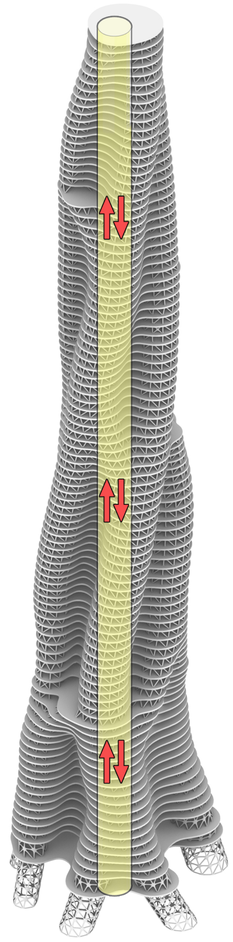




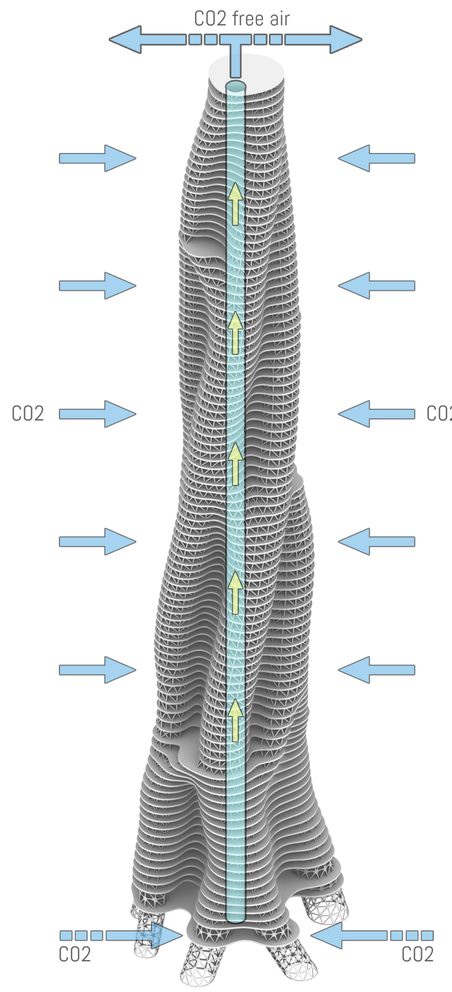
Structural system



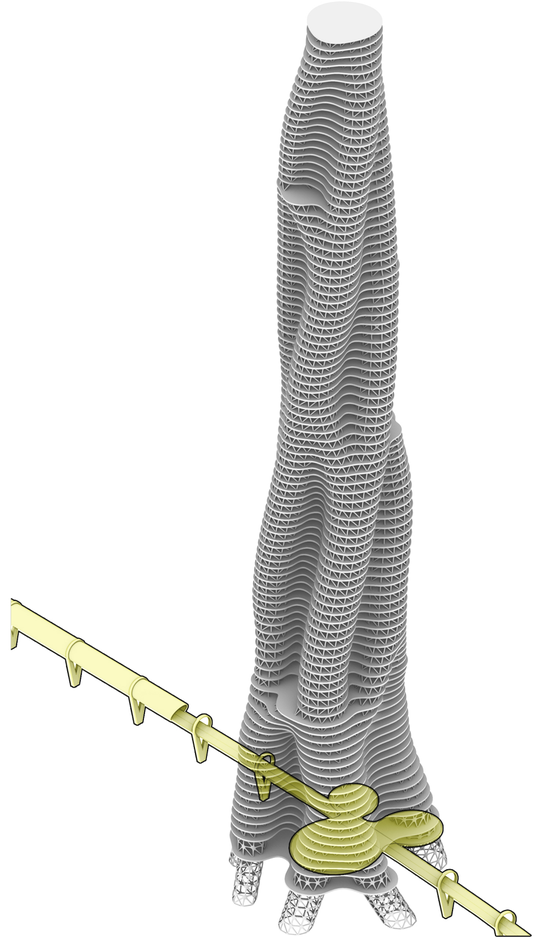
Vertical circulation



Carbon Capturing



Connection



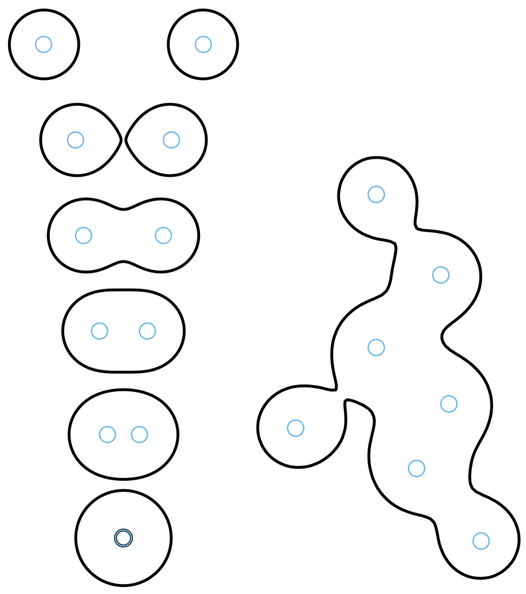
Metaballs

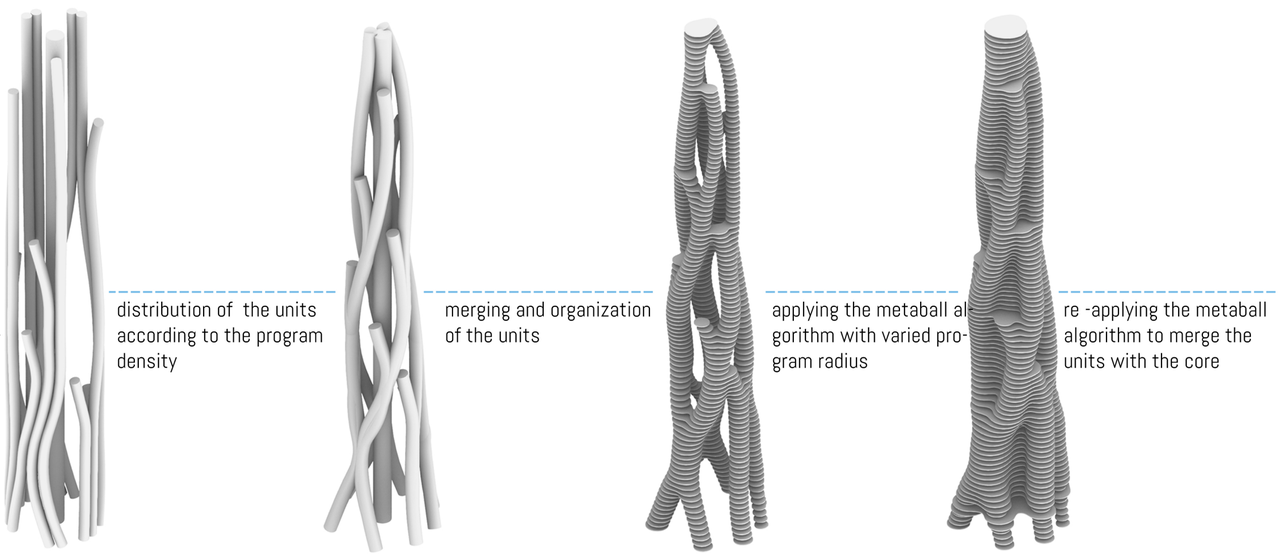
Metaball is an algorithm developed by Jim Blinn in the early 1980s. It is used in many areas such as defining elettvation contours on maps and computer graphics. In the computer graphics metaballs are organic looking n-dimensional objects.

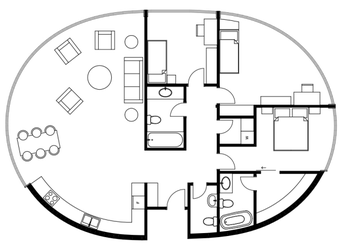
Combining multiple metaballs creates amoeba like organic merged single cells. In this projects this algorithm is used in order to diverse the program combining the volume of the cells. Using different combinations of a single 50 m² unit ends up with various units to be used to fulfill the program of the building needs.

Function for a circle centered at (x0,y0) with radius r is:

$$f(x,y) = \sum_{i=0}^{n} \frac{r_i^2}{(x-x_i)^2 + (y-y_i)^2}$$

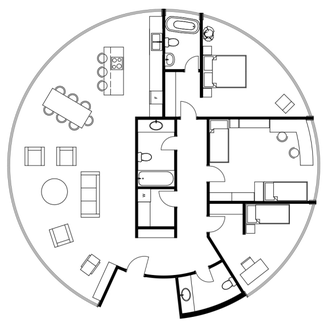






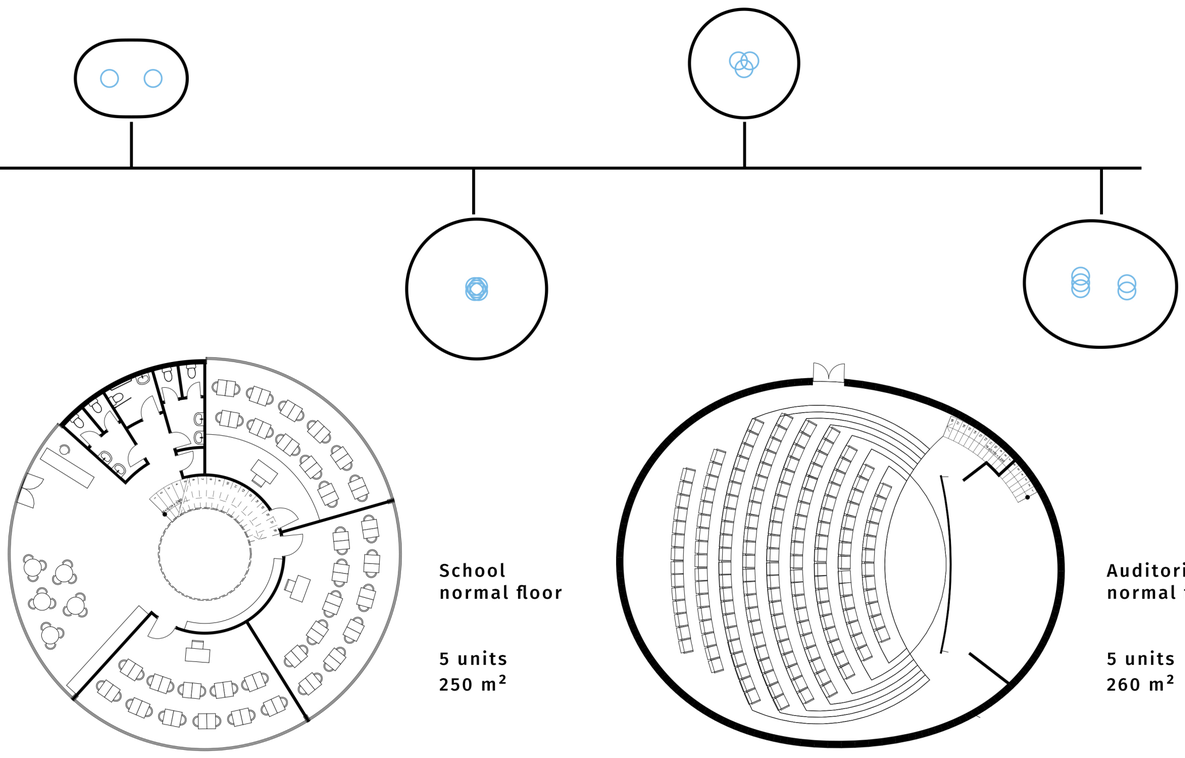
3 bedrooms,
3 bathrooms

2 units
125 m²



3 bedrooms,
3 bathrooms

3 units
150 m²

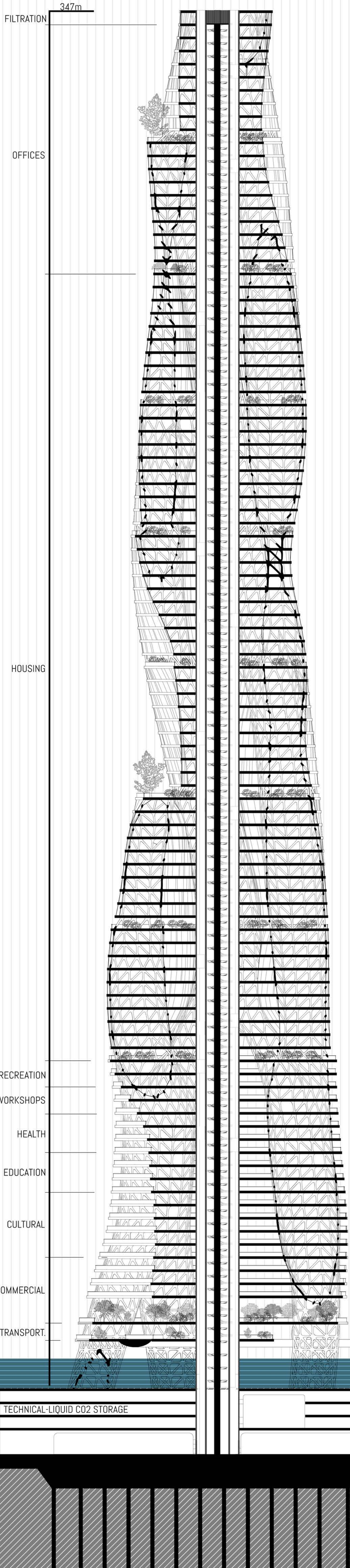


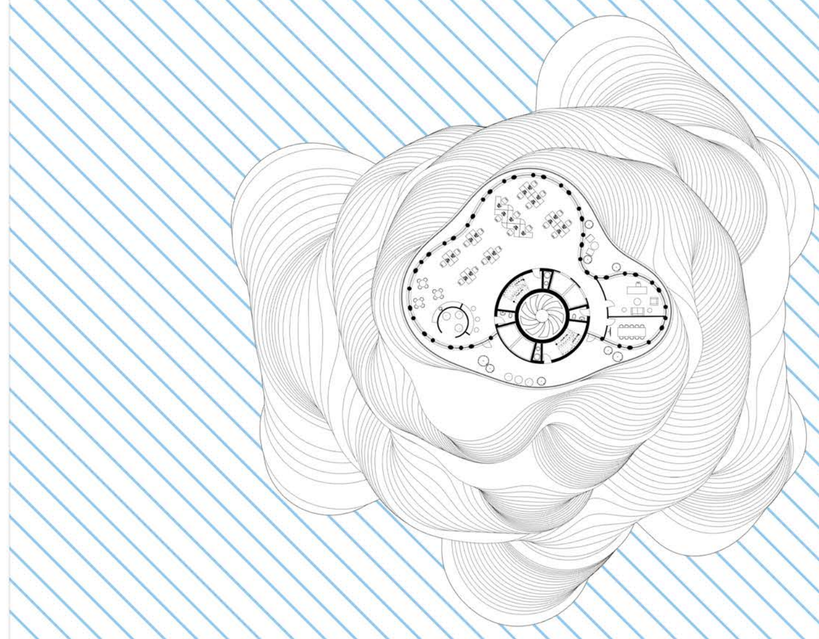
School
normal floor

5 units
250 m²

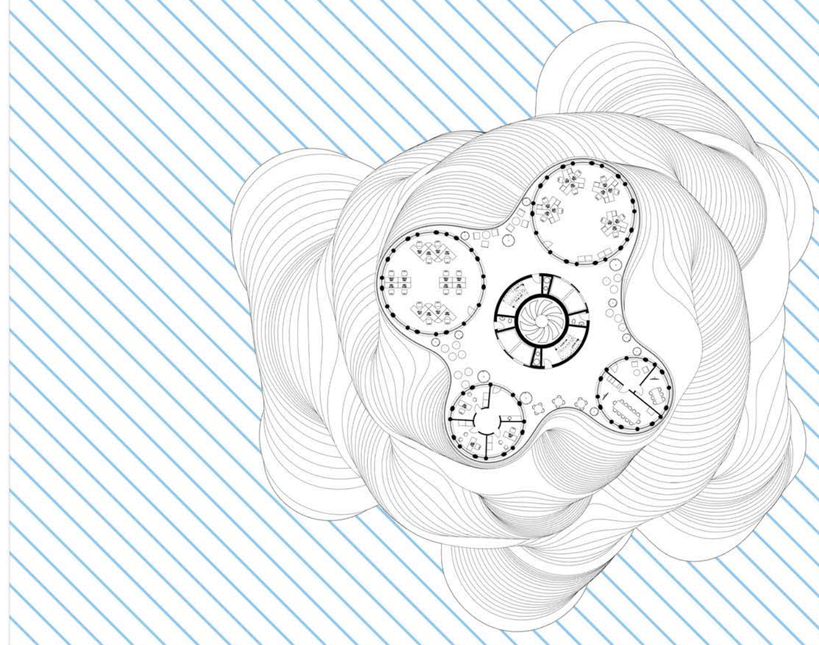
Auditorium
normal floor

5 units
260 m²

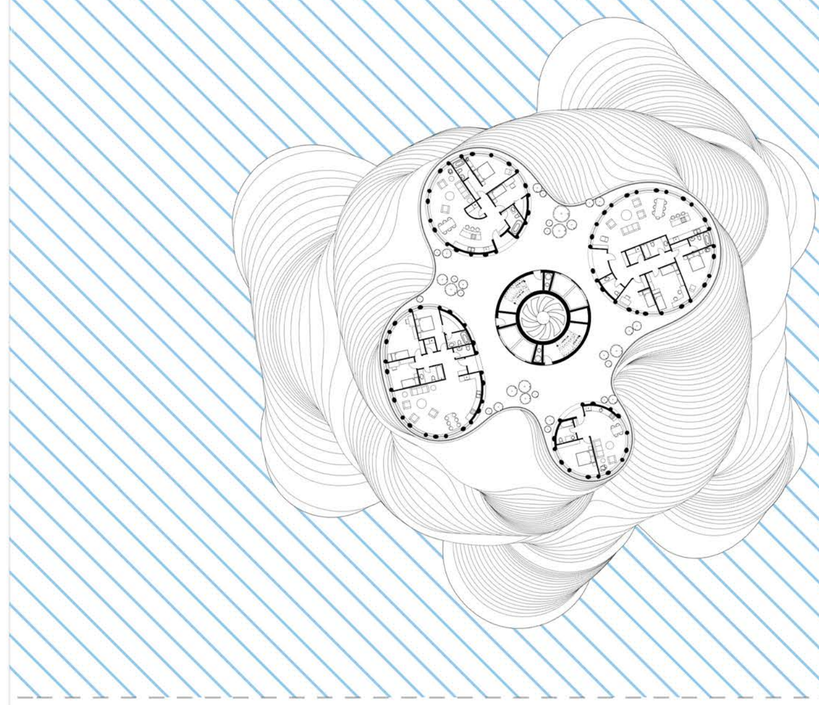




100th floor plan 1/500

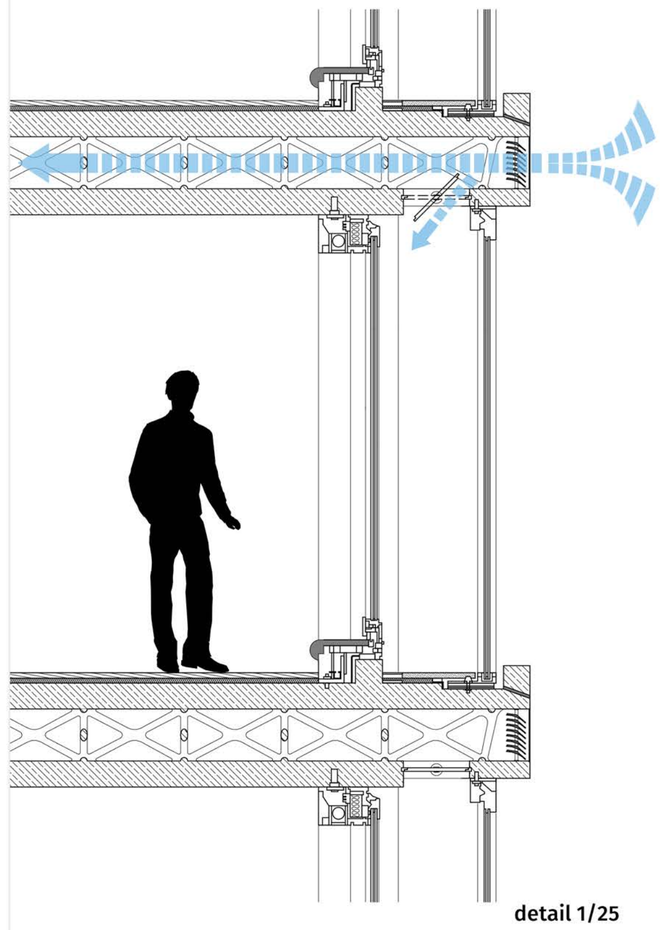


88th floor plan 1/500

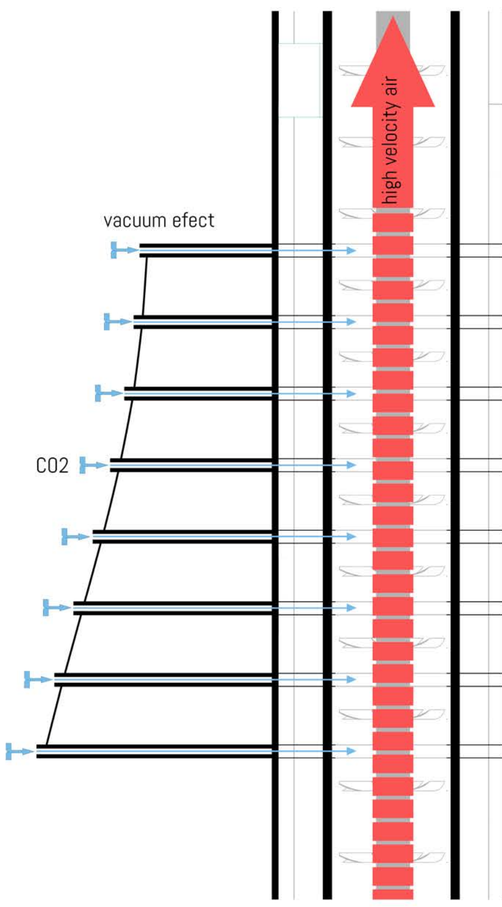


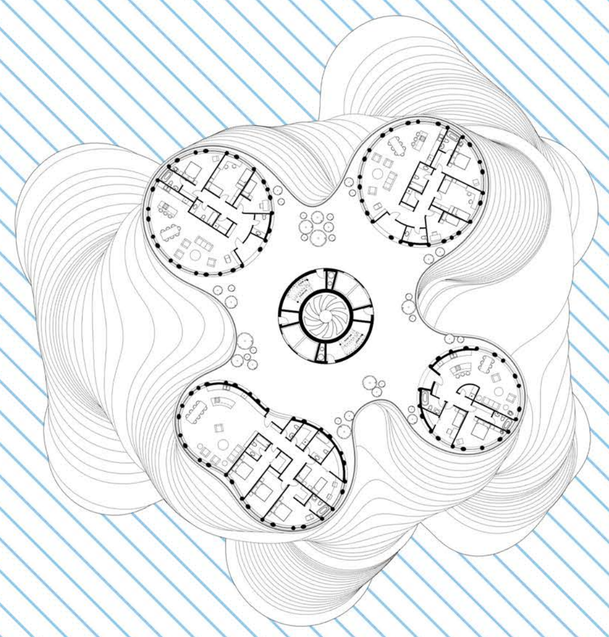
70th floor plan 1/500

section A 1/500

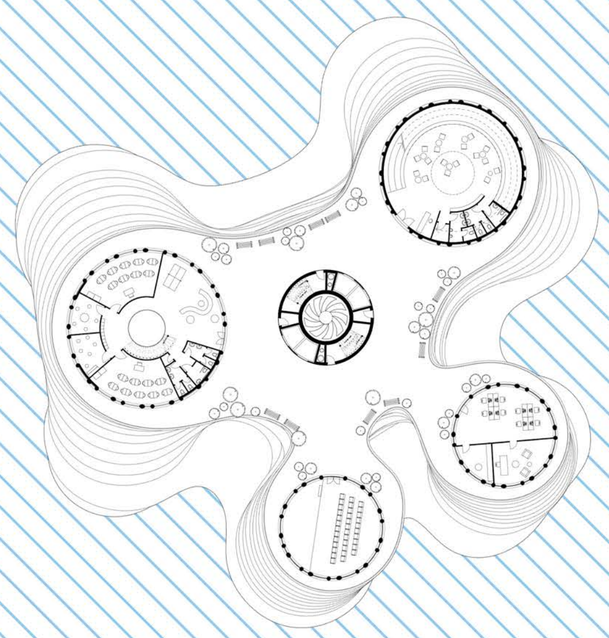


detail 1/25

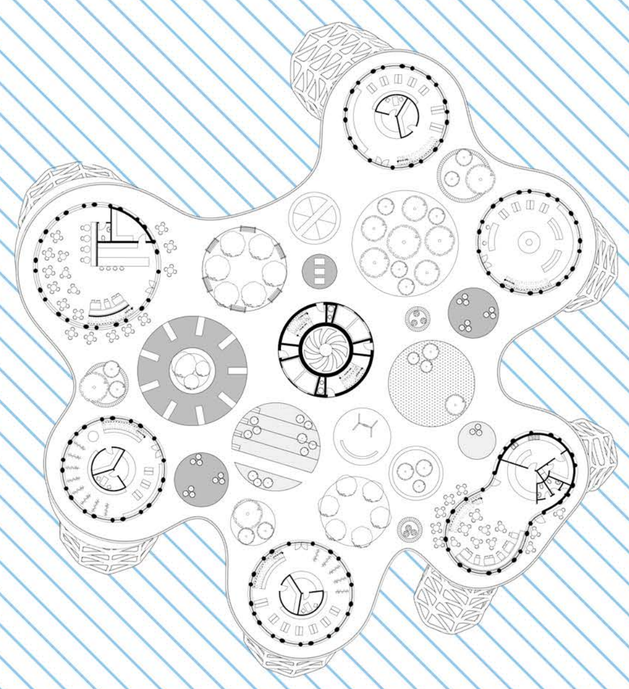




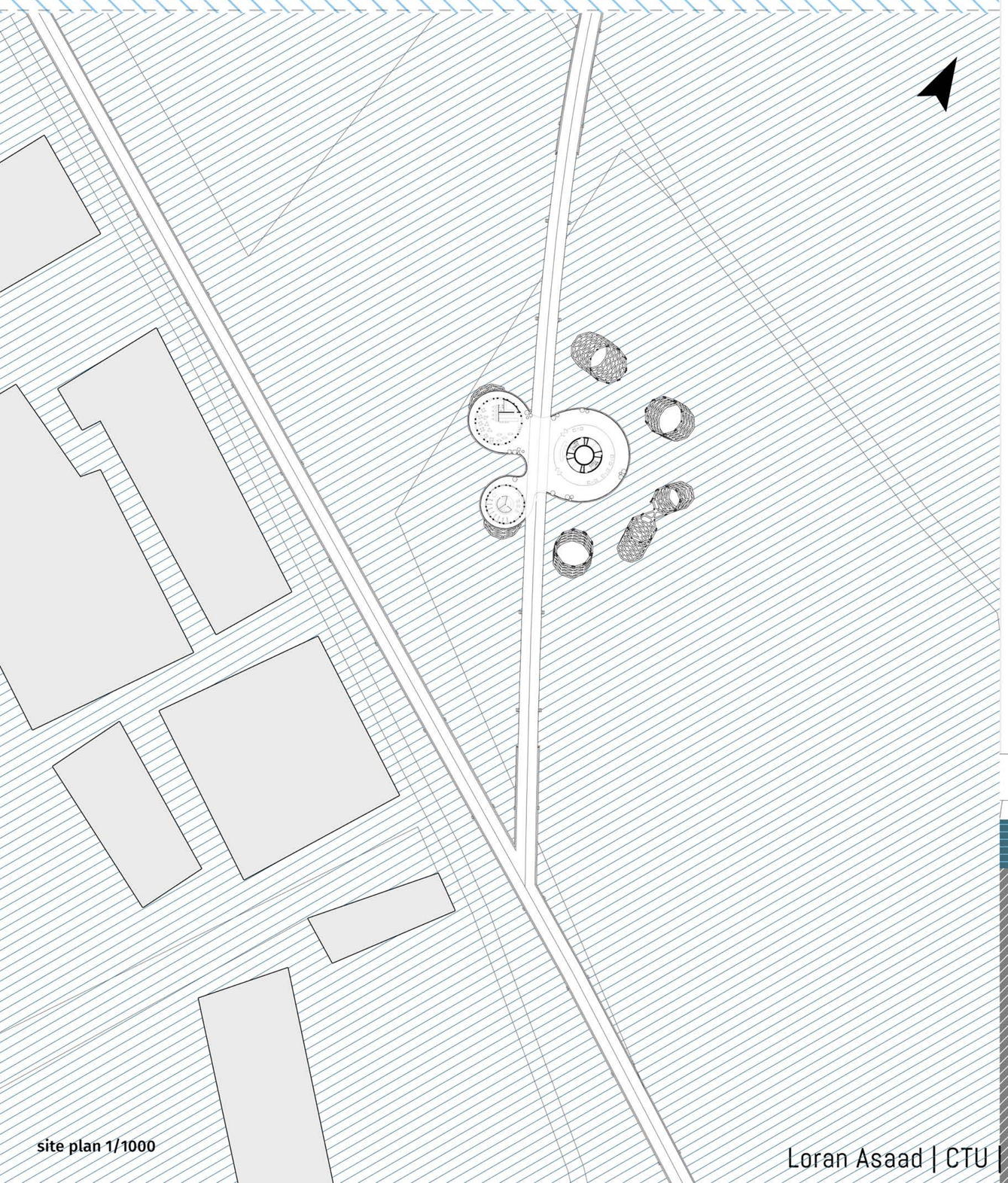
42nd floor plan 1/500



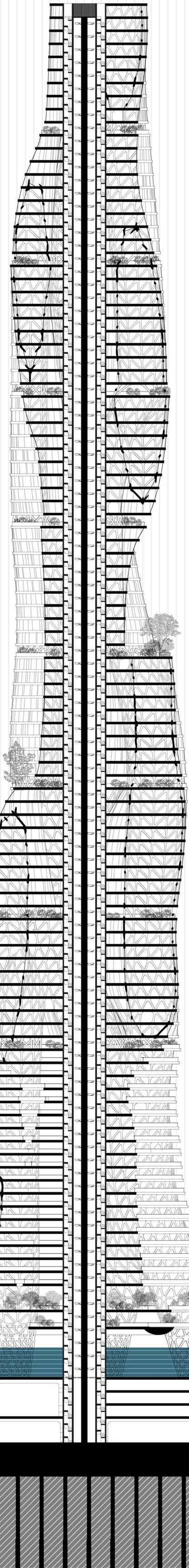
15th floor plan 1/500



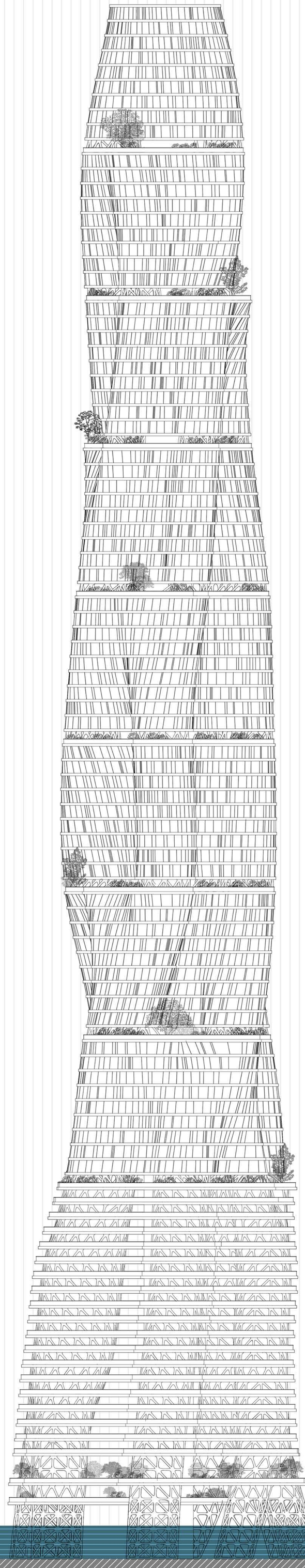
entrance floor plan 1/500



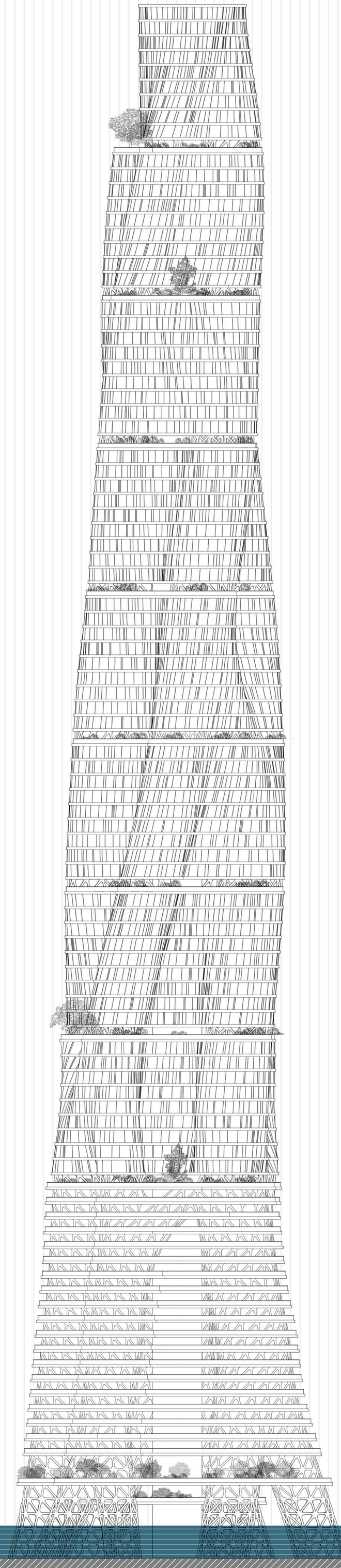
site plan 1/1000



section B 1/500



elevation south 1/500



elevation east 1/500