

DESIGN STUDIO 3B

FINAL REVIEW - PRESENTATION

The HYBRID Development of Interchange Transport Terminals in Kosovo

DATE: 14.06.2021

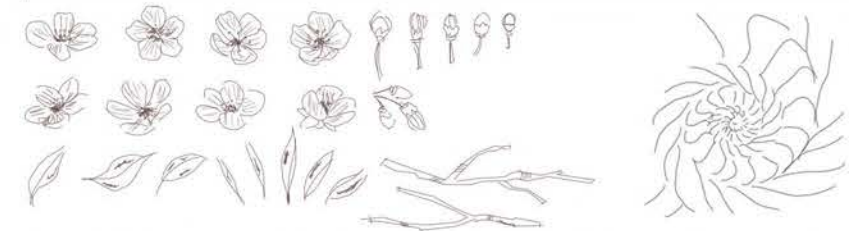
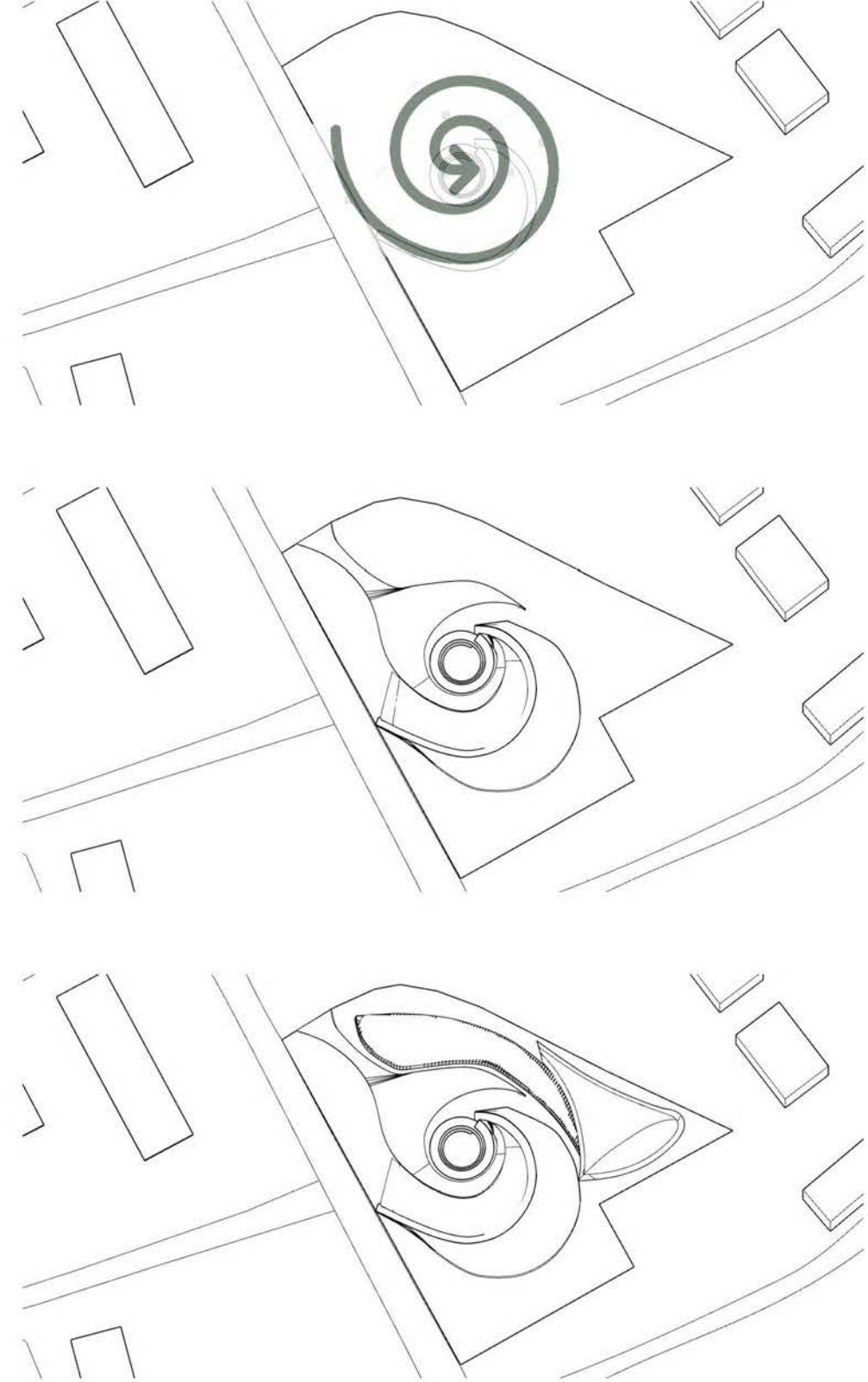
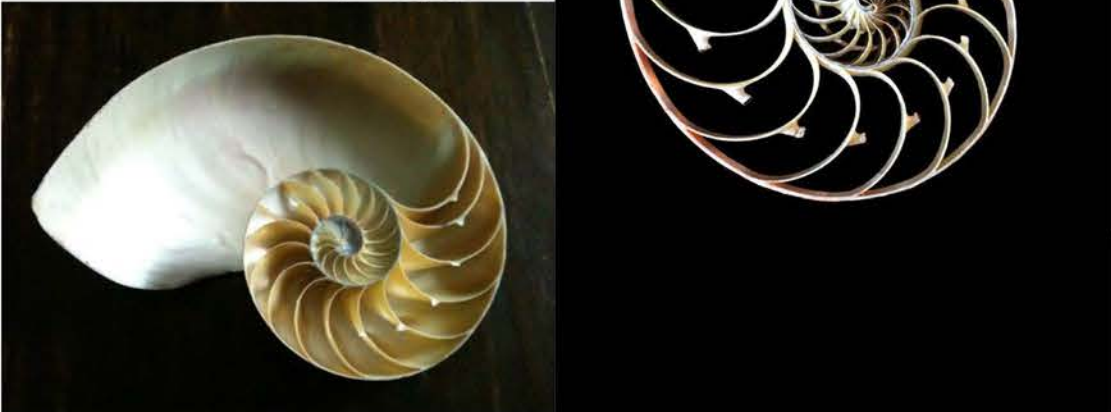
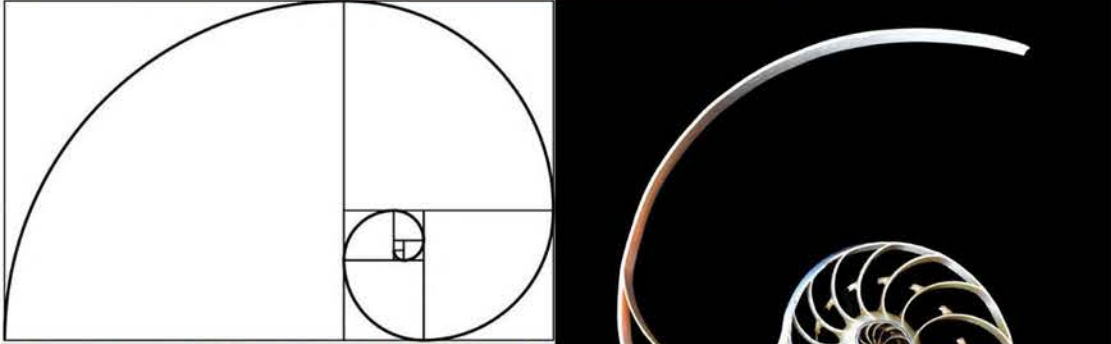
professor: Banush Shyqeriu
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Valëza Tahiri

II. INTERPRETATION OF DESIGN THEME AND PHYLOSOPHY

1, Studio sub-theme: BIONISPIRATION – from Biological Design to Architectural Design

HEDONISTIC SUSTAINABILITY, BIOPHILIC DESIGN, FRACTALS - BLOSSOM



Fractals, blossom, biophilic and hedonistic design/ sustainability were some of the main assets used to generate the concept of the masterplan and try to bring it to life. Rotation, dynamics, spirals, circulation, were some of the operations as part of the design process. The complex starts within a point, which increases its infinitum and becomes the spot, of which 3 main spirals expand from it, each one of them connecting with the other through ramps, halls, etc. The same way that the petals hold and protect the fruit, the same way the complex contains an inner garden with the most important access to every building and part of the station,

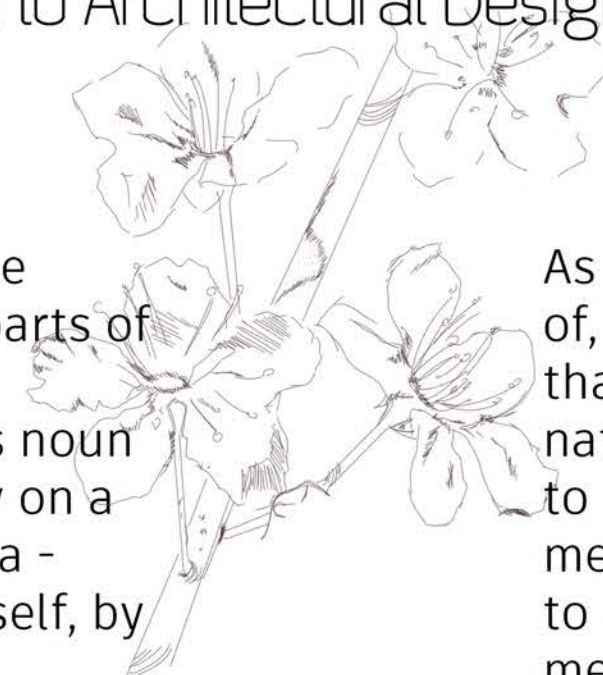
II. INTERPRETATION OF DESIGN THEME AND PHILOSOPHY

1, Studio sub-theme: BIONISPIRATION – from Biological Design to Architectural Design

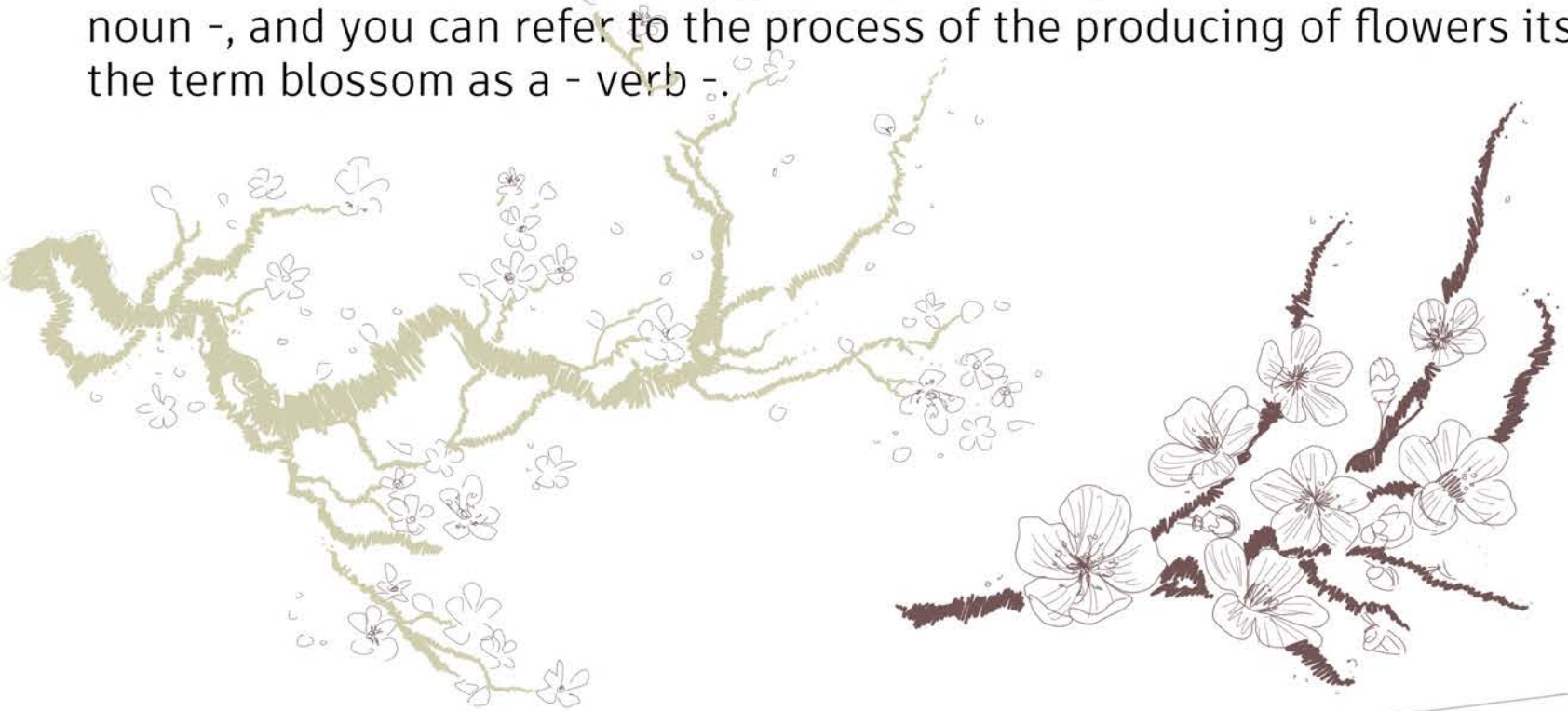
i. Studio' Operative Vocabulary;

-BLOSSOM-

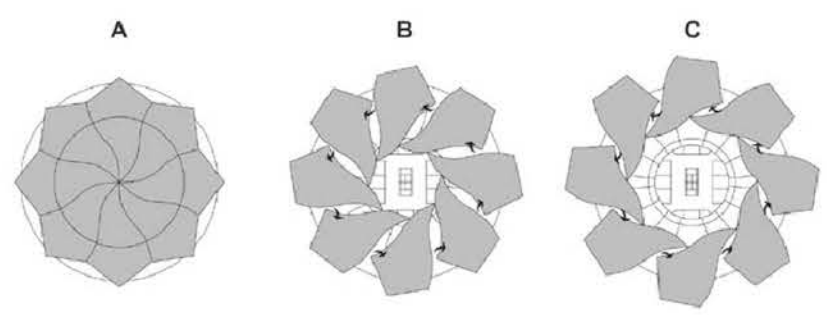
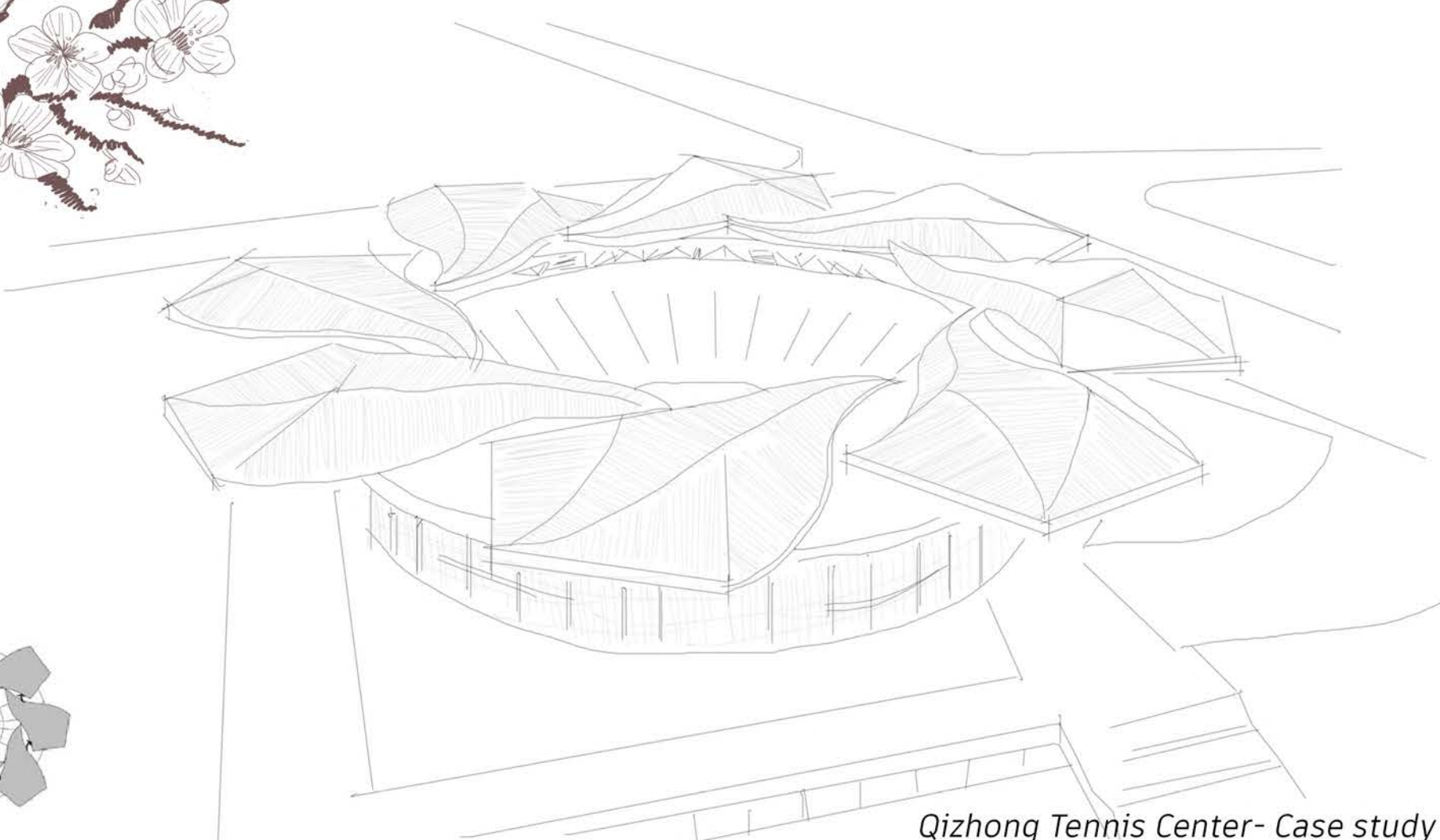
From it's etymological roots the word "Blossom" has it's origin from the German term "bloesem" meaning also to bloom. Apart from the eight parts of speech: verbs, nouns, pronouns, adverbs, adjectives, prepositions, conjunctions, and interjections, the word Blossom can be used both as noun and as a verb. You can refer to a flower or a mass of flowers, especially on a fruit tree or bush, mostly during spring times, by the term blossom as a - noun -, and you can refer to the process of the producing of flowers itself, by the term blossom as a - verb -.



As for its context and use when spoken of, the term blossom, except the fact that it represents and describes a floral, natural procedure, it can be often used to describe approximately the same meaning for humans too. When we refer to people as they "blossom" , it usually means that they achieved to develop for good, increasing attractive or successful qualities. The term is also used to express other meanings in sentences such as describing the metamorphosis of a specific relation between people, which is outgrowing itself even more.



Blossom in botany, aims also to protect, through a delicate wrapping of the petals it gives protection and shelter to the seed or the fruit of the flower. Qizhong Tennis Center in Shanghai features dynamic roof "petals" inspired of the Magnolia petals that can open and close depending on the weather conditions and the stadium's needs.



Qizhong Tennis Center- Case study

II. INTERPRETATION OF DESIGN THEME AND PHILOSOPHY

1, Studio sub-theme: BIONISPIRATION – from Biological Design to Architectural Design

i 'STUDIO' OPERATIVE VOCABULARY: FRACTAL

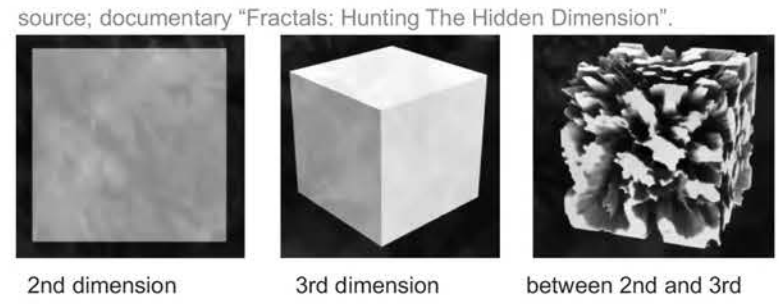
The name 'fractal' comes from the Latin word 'fractus' and from the French word 'fractal' meaning "interrupted, irregular", literally "broken", past participle of fangere "to break". Fractals were named the highly irregular sets invented by Benoit Mandelbrot. A curve or a pattern that includes a smaller curve or pattern that has exactly the same shape repeatedly, at any scale or any level of zoom, is called a fractal. Fractals are simply never ending patterns. Mandelbrot had to rethink one of the most basic principles of math: dimensions. In 'normal geometry', there are 3 dimensions. Mandelbrot supposed that fractals have a dimension in between.



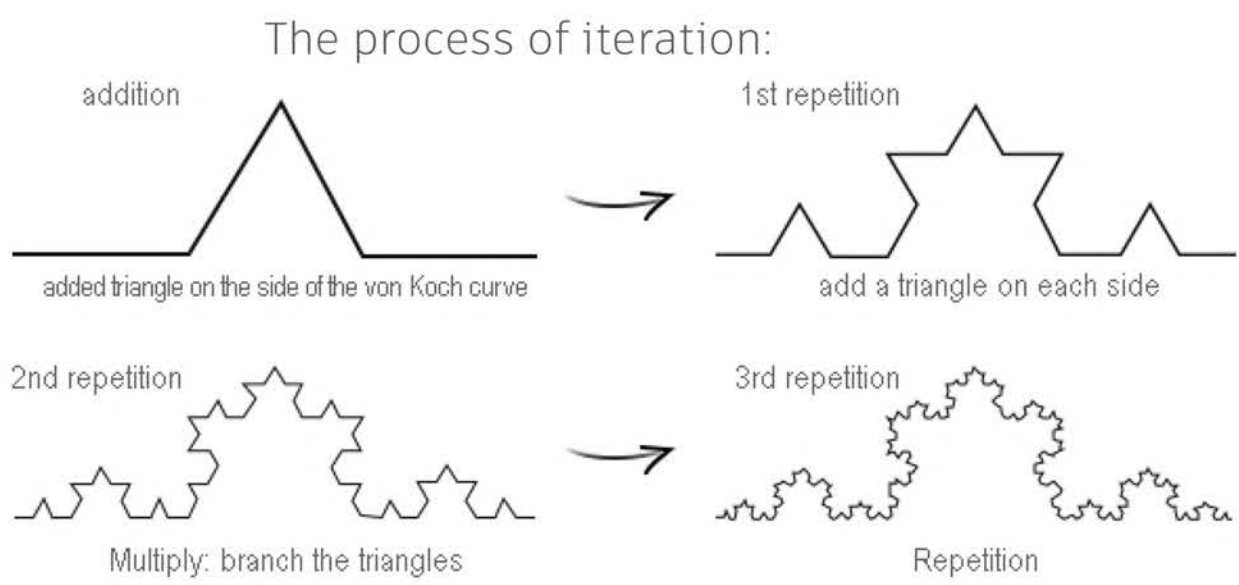
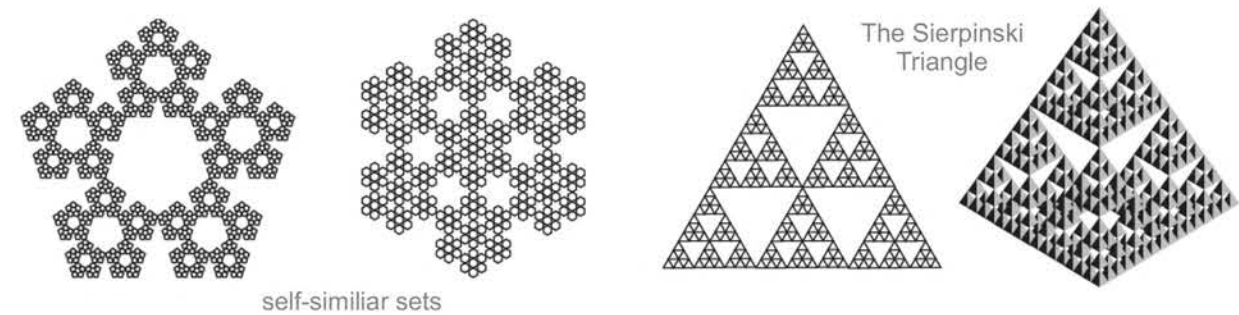
Fractal patterns are highly common in trees and forests



Fractal geometry in architecture: structural pattern building: Centenary of the federation of Australian States

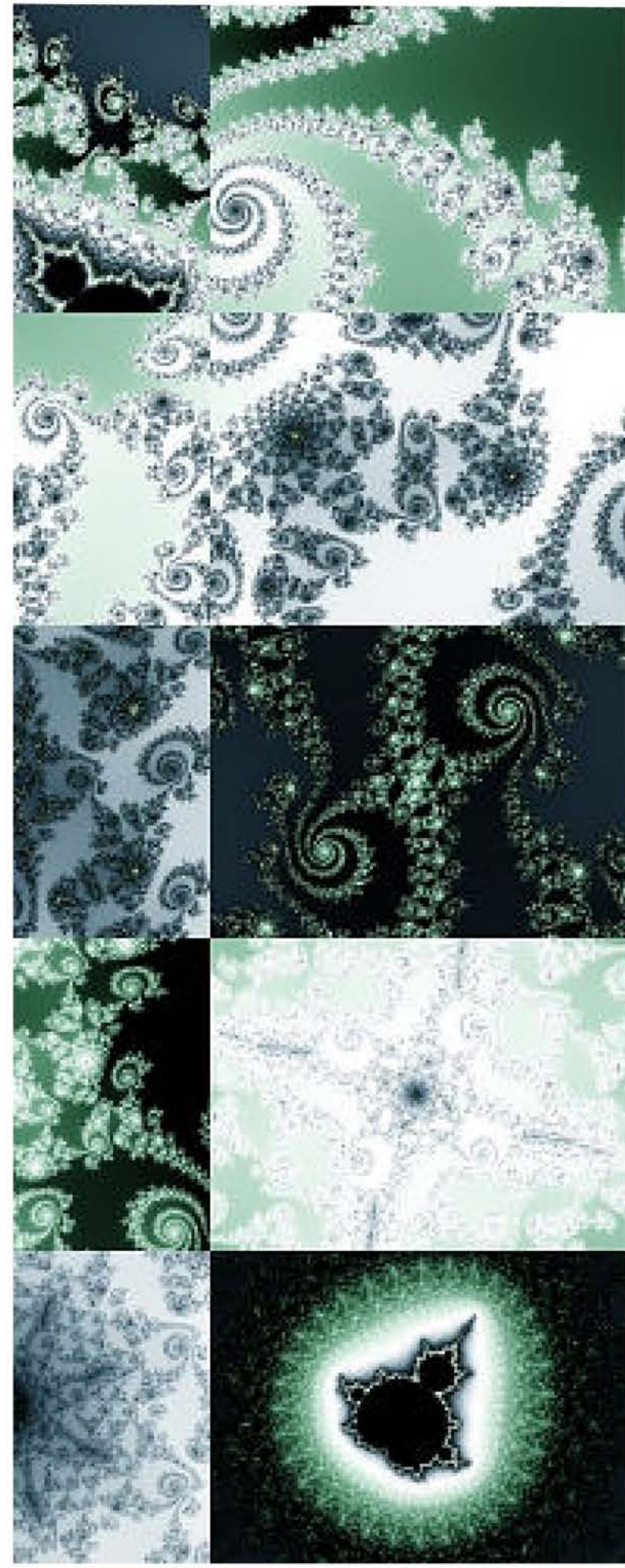


The most impressive thing about fractals is their ubiquity in nature. Mandelbrot created a new geometry that mirrors not the ideal forms of thought but the real complexity of nature. He found order in disorder. Architecture is closely associated with geometry and nature. A variety of nature's forms, which in many cases present fractal geometry in their structural appearance, have been creatively used in projects.

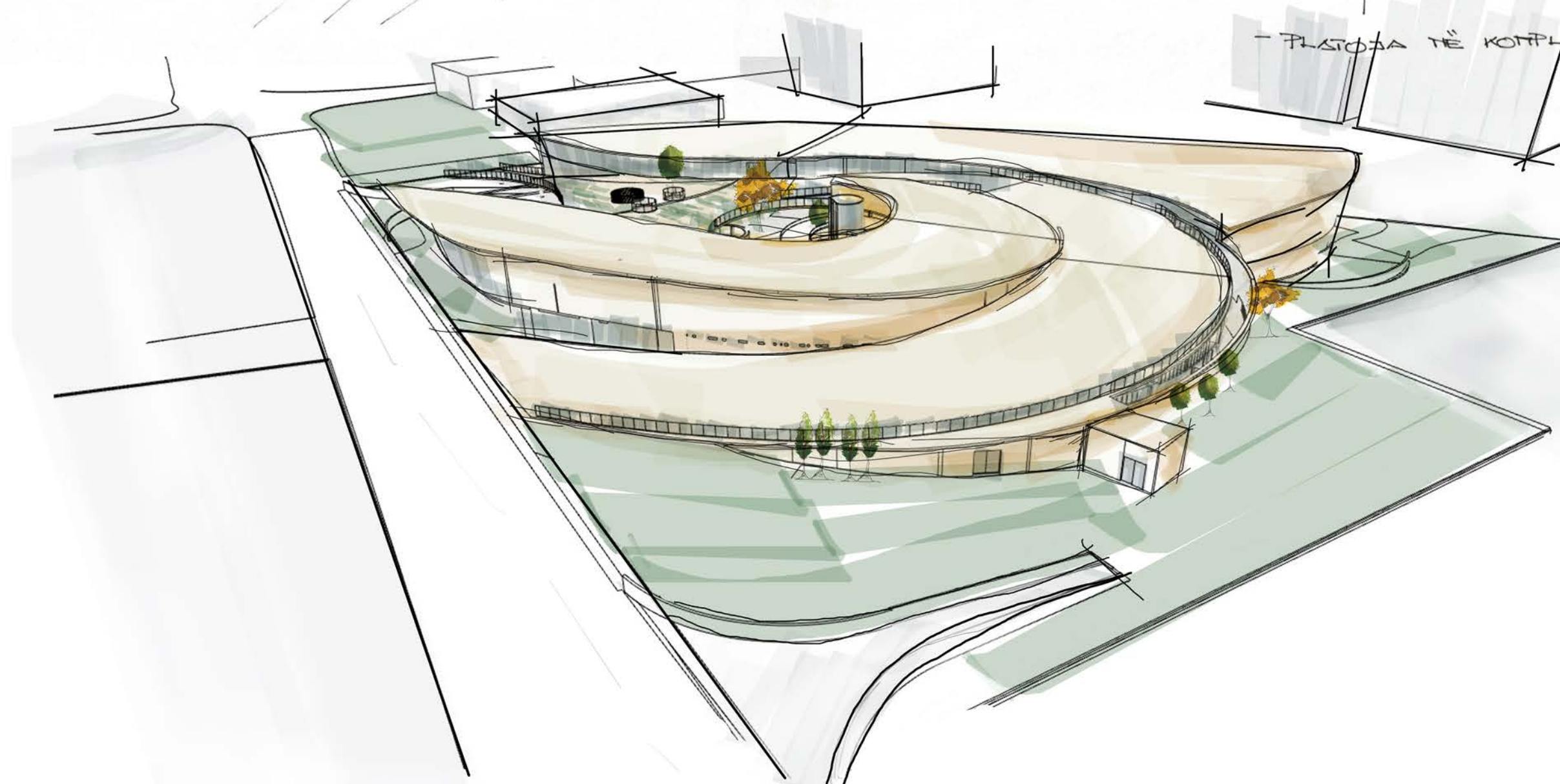


This operative process can be repeated for an infinite number of times, and so there would be an infinite number of sides. This means that the perimeter would be infinite. But, what makes the fractal Snowflake more interesting, is that the area finite and the perimeter is infinite.

References
 Oxford Dictionary (source: <https://www.oxfordlearnersdictionaries.com/>)
<https://www.etymonline.com/word/fractal>
 Benoit Mandelbrot (1924-2010) in "Les Objets Fractals"
<https://mathigon.org/course/fractals/mandelbrot>
<https://cosmosmagazine.com/>



1. STUDIO SUB-THEME: BIOINSPIRATION - FROM BIOLOGICAL DESIGN TO ARCHITECTURAL DESIGN;



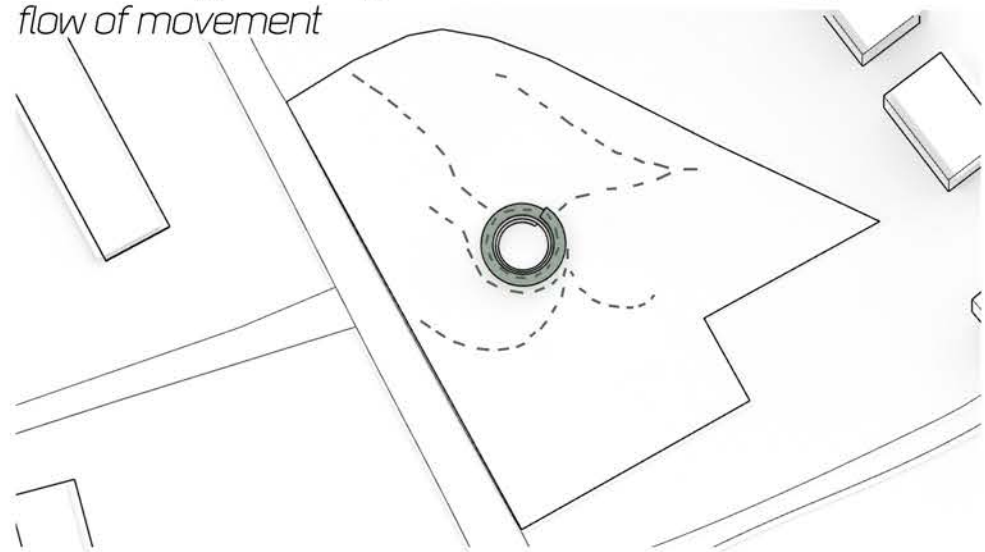
II. INTERPRETATION OF DESIGN THEME AND PHILOSOPHY

1, Studio sub-theme: BIONISPIRATION – from Biological Design to Architectural Design

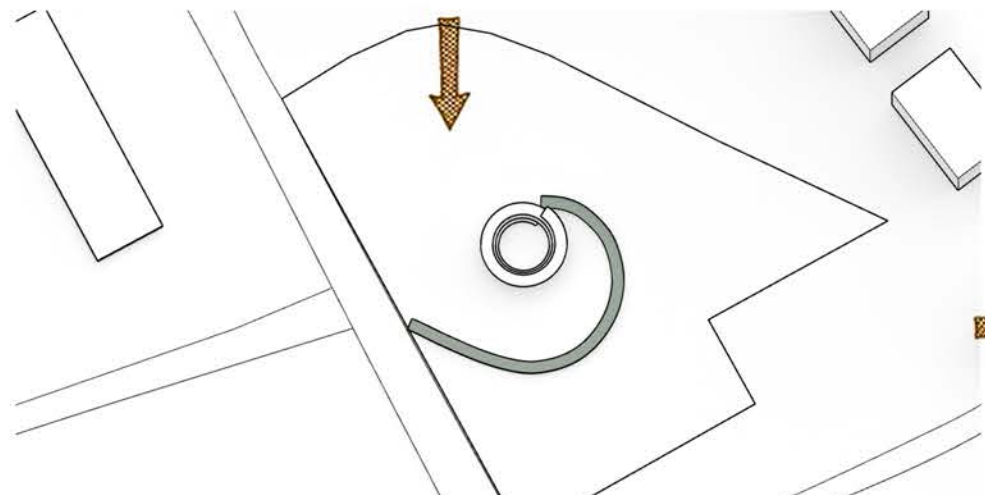
HEDONISTIC SUSTAINABILITY, BIOPHILIC DESIGN, FRACTALS - BLOSSOM



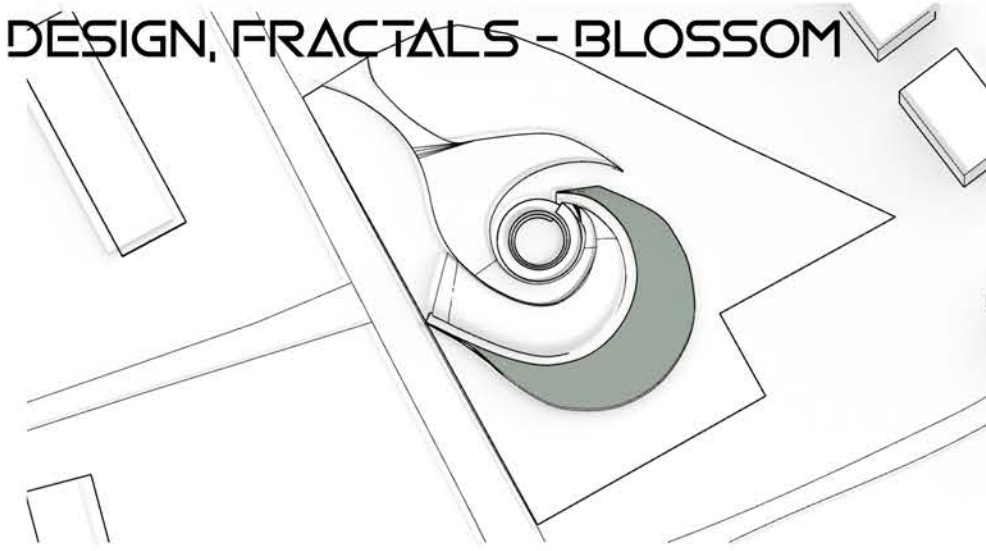
Concept ; The building is concentrated and derives from a main centric point, gradually increasing same way as blossoms, generating undulated forms, creating a visual flow of movement



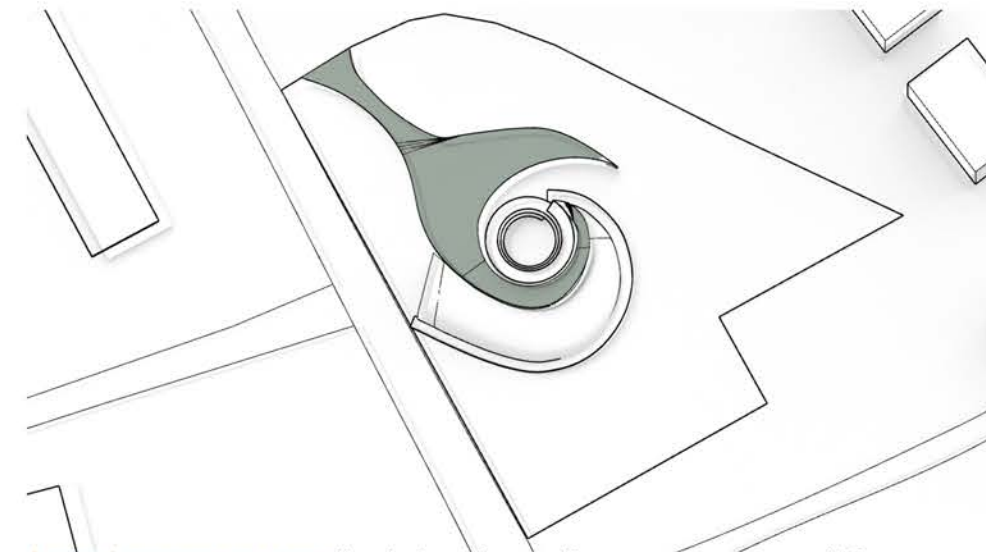
Center Point, 3 Stories High Ramps with circulation and access from each point of the anexes/objects, creating the concept of inner gardens filled with greenery.



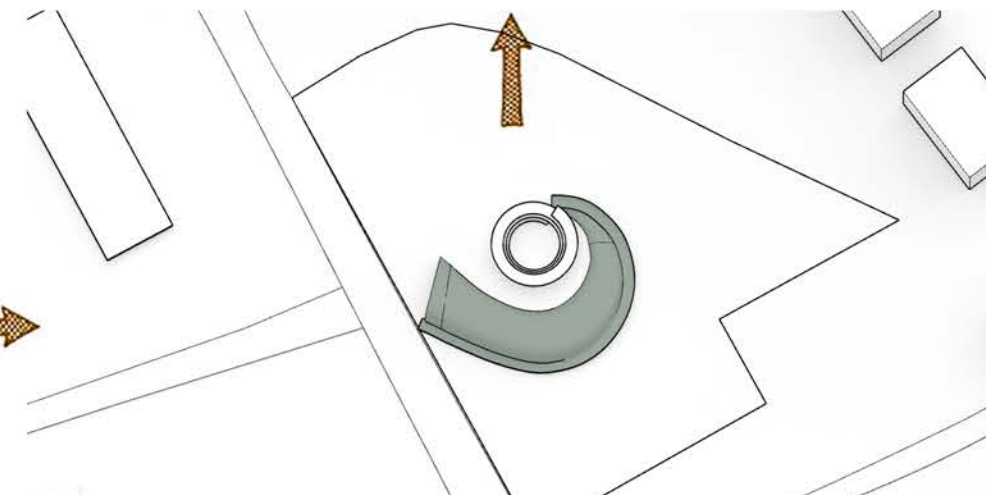
One of the Promenades, in the complex, also an entrance to the site



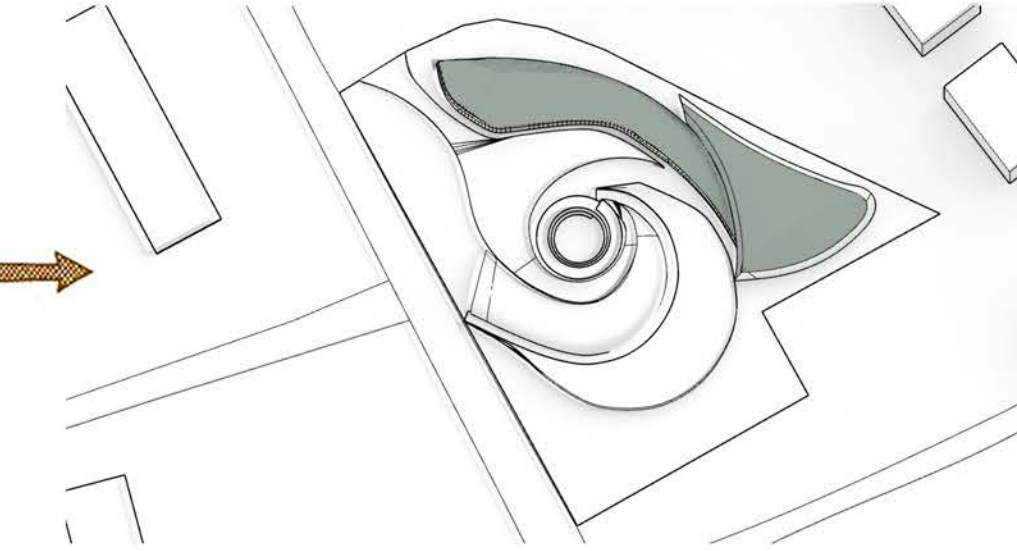
Retail Stores



Landscape areas that rise from the ground, multifunctional, used for recreational purposes.



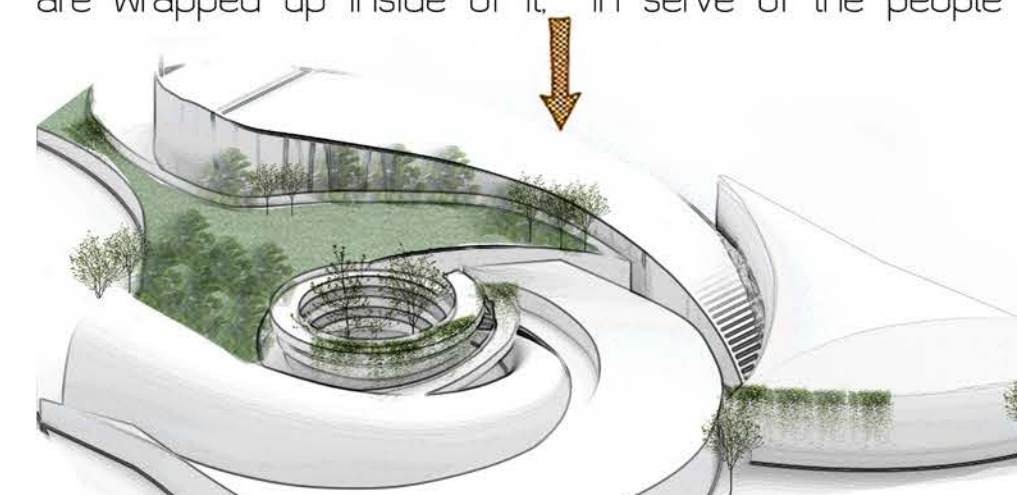
One of the Anex; The entrance, information and waiting halls



The Art Gallery



Center Point ; Due to its form, the complex represents a welcoming, warm entrance, serving as a gateway from the city with all the open-public green spaces that are wrapped up inside of it, in serve of the people

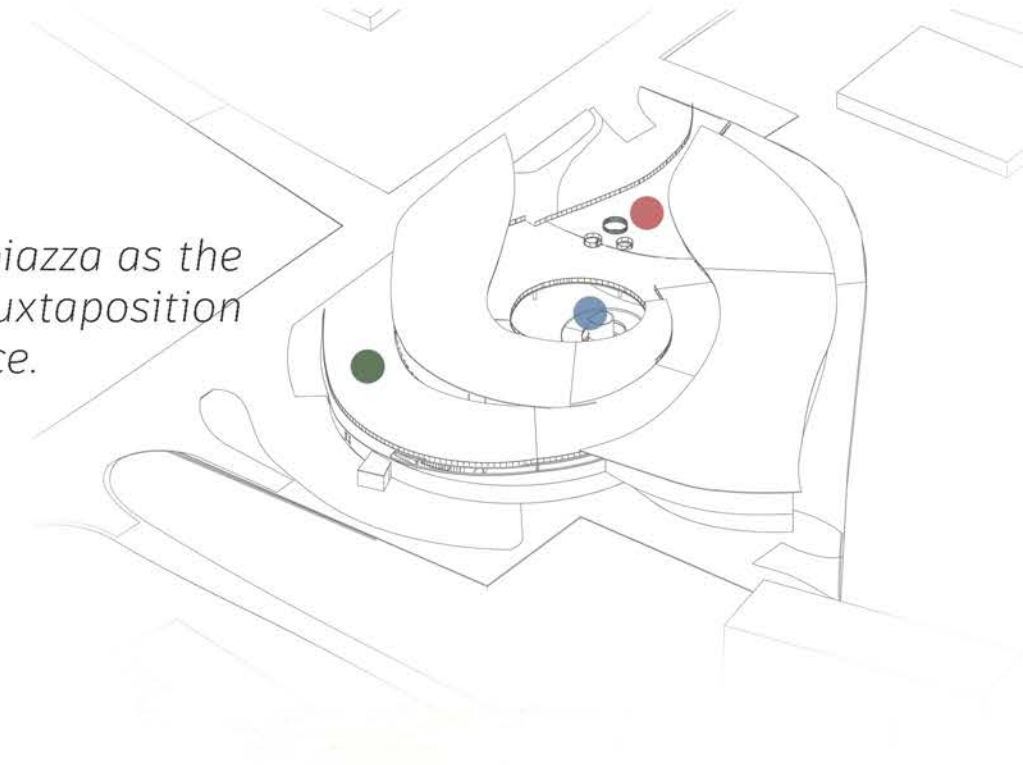


What is external becomes internal and vice versa

II. INTERPRETATION OF DESIGN THEME AND PHYLOSOPHY

2. Hedonistic Sustainability through Biophilic Design

The hedonistic philosophy is highlighted especially in the public/open areas for the visitors. The piazza as the main hybrid point also serves as a semi public park that can be used by the citizens and it works as a juxtaposition with the industrial and residential buildings, that have little to no greenery or recreational public space.



BIOPHILIC/HEDONISTIC SYSTEMS USED IN THE PROJECT PROPOSAL



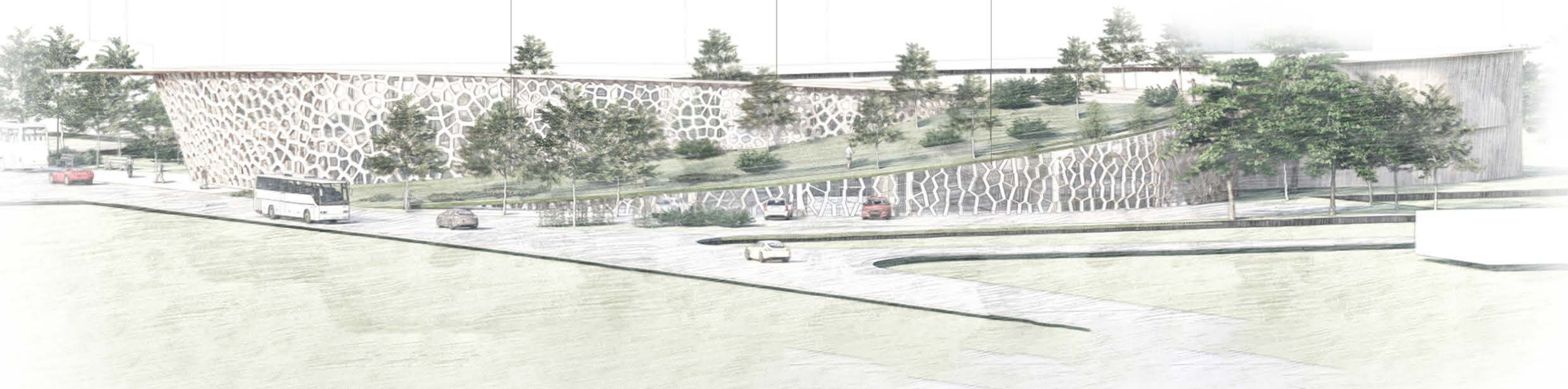
● open public spaces for pedestrians only as main hybrid points of the project



● the centric atrium that is wrapped by the spiral ramps that flow along the landscape of the project



● green and ecological areas - connecting the external and the internal parts of the project



II. INTERPRETATION OF DESIGN THEME AND PHYLOSOPHY

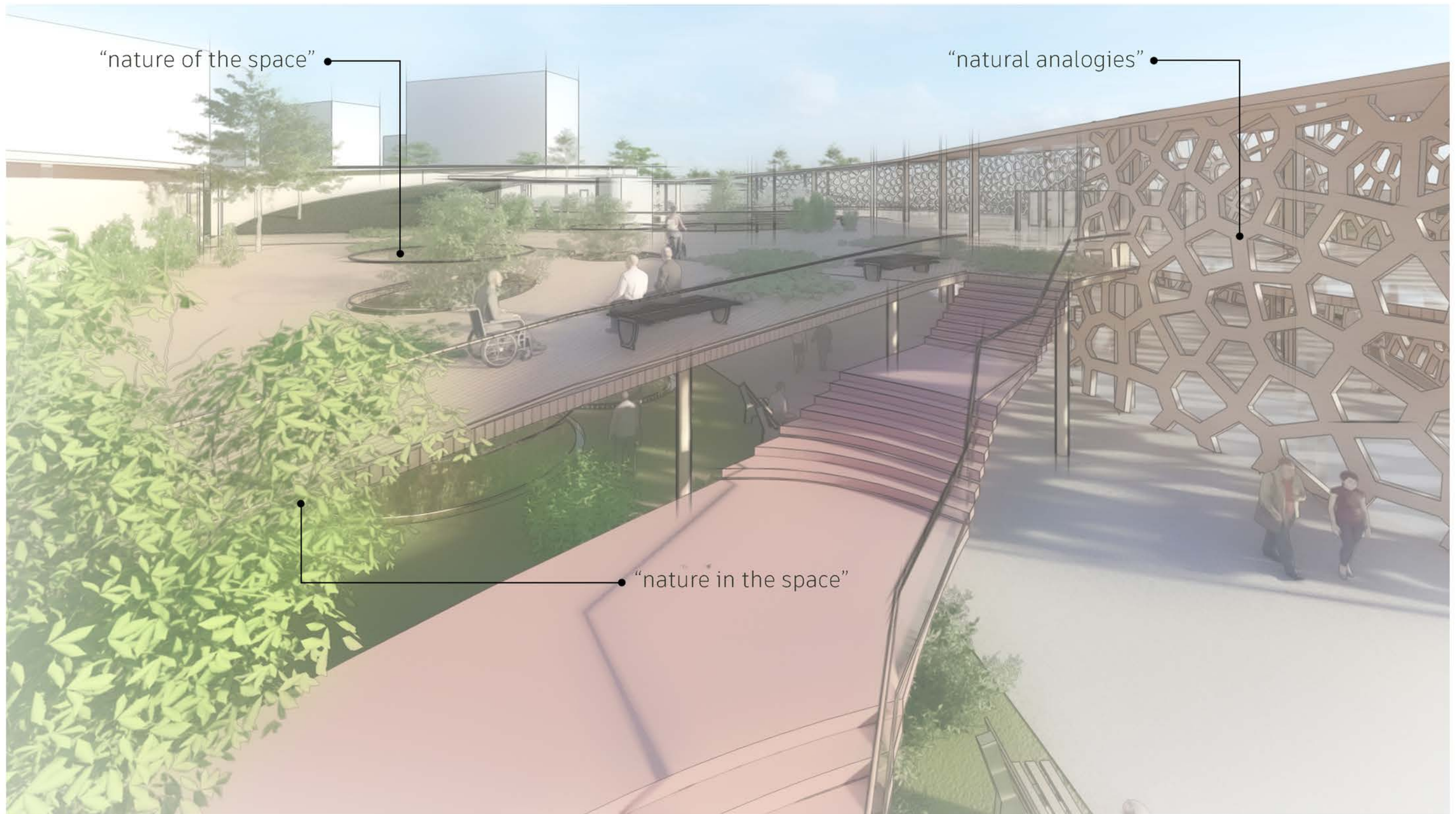
2 HEDONISTIC SUSTAINABILITY THROUGH BIOPHILIC DESIGN



Biophilic design principles are generally organised into three categories: nature in the space, nature of the space, and natural analogues. Nature in the space refers to the direct presence of nature. Nature of the space is about mimicking or being inspired by spatial configurations in nature. This is about replicating the feelings that natural spaces give us. Natural analogues use indirect methods to reflect nature, such as the use of naturally-inspired patterns and shapes with non-natural materials. The key to biophilic design is to integrate these forms in a way that feels natural. These categories have their sub-categories which are "The 14 patterns of Biophilic Design"

II. INTERPRETATION OF DESIGN THEME AND PHYLOSOPHY

2, Hedonistic Sustainability through Biophilic Design



Almost all the three categories of the principles of the biophilic design are used in the project proposal. "Nature in the space" is present almost everywhere, and is the category that is used the most. because greenery takes a huge part in the project.proposal. "Nature of the space" is used in the design concept itself, by the usage of atriums, patios and greenery. Whereas the whole building concept is inspired by "natural analogies" as the last principle of biophilic design.

2 Hedonistic Sustainability through Biophilic Design



- **Biomorphic Forms & Patterns**

Biomorphic Patterns inspired by natural analogies are used in the tectonic elements and system of the hybrid complex

- **Material Connection with Nature**

Main material used is Timber, which is a very natural and ecological material



- **Thermal & Airflow Variability**

Atriums in the internal parts of the complex to create a strong connection with nature and also to enable natural ventilation

- **Dynamic & Diffuse Light**

Channel Glass is used in the building walls, which gives a dynamic ambiance and diffusive light in the interior of the building

2 Hedonistic Sustainability through Biophilic Design



• Presence of Water

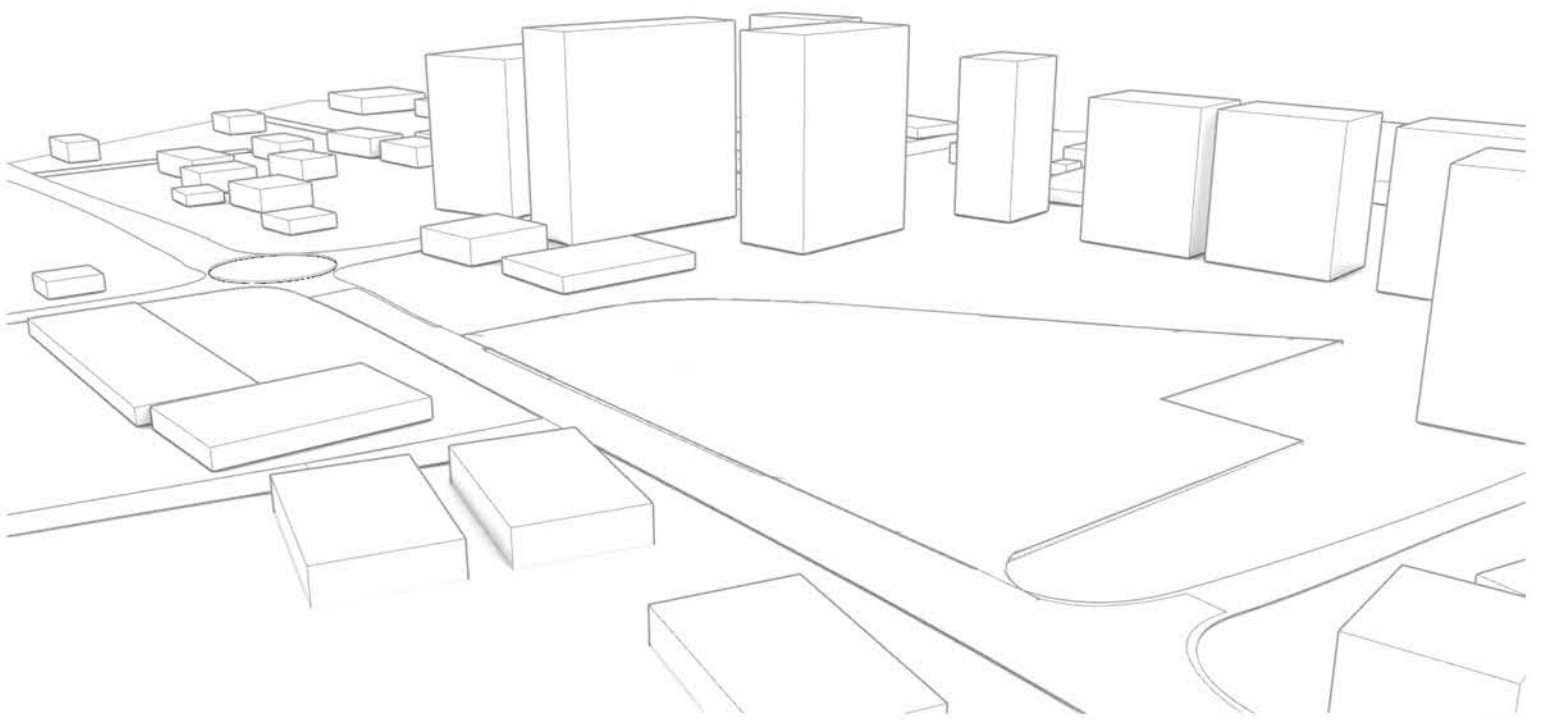
• Visual Connection
with Nature

• Connection with
Natural Systems

III. MASTERPLAN AND PHYSICAL MODEL OF HYBRID COMPLEX

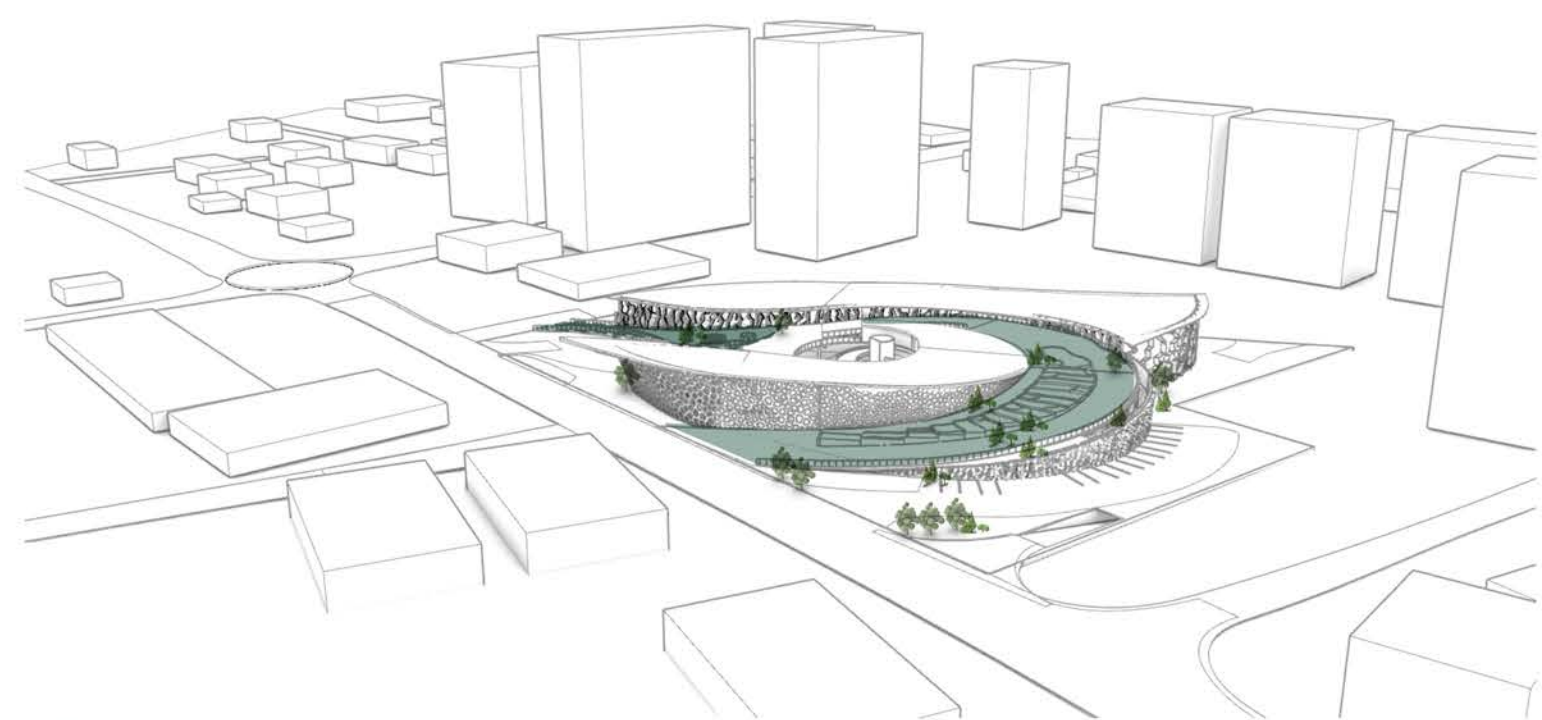
3 Systematic and iterative presentation of generative process of MASTERPLAN;

1.



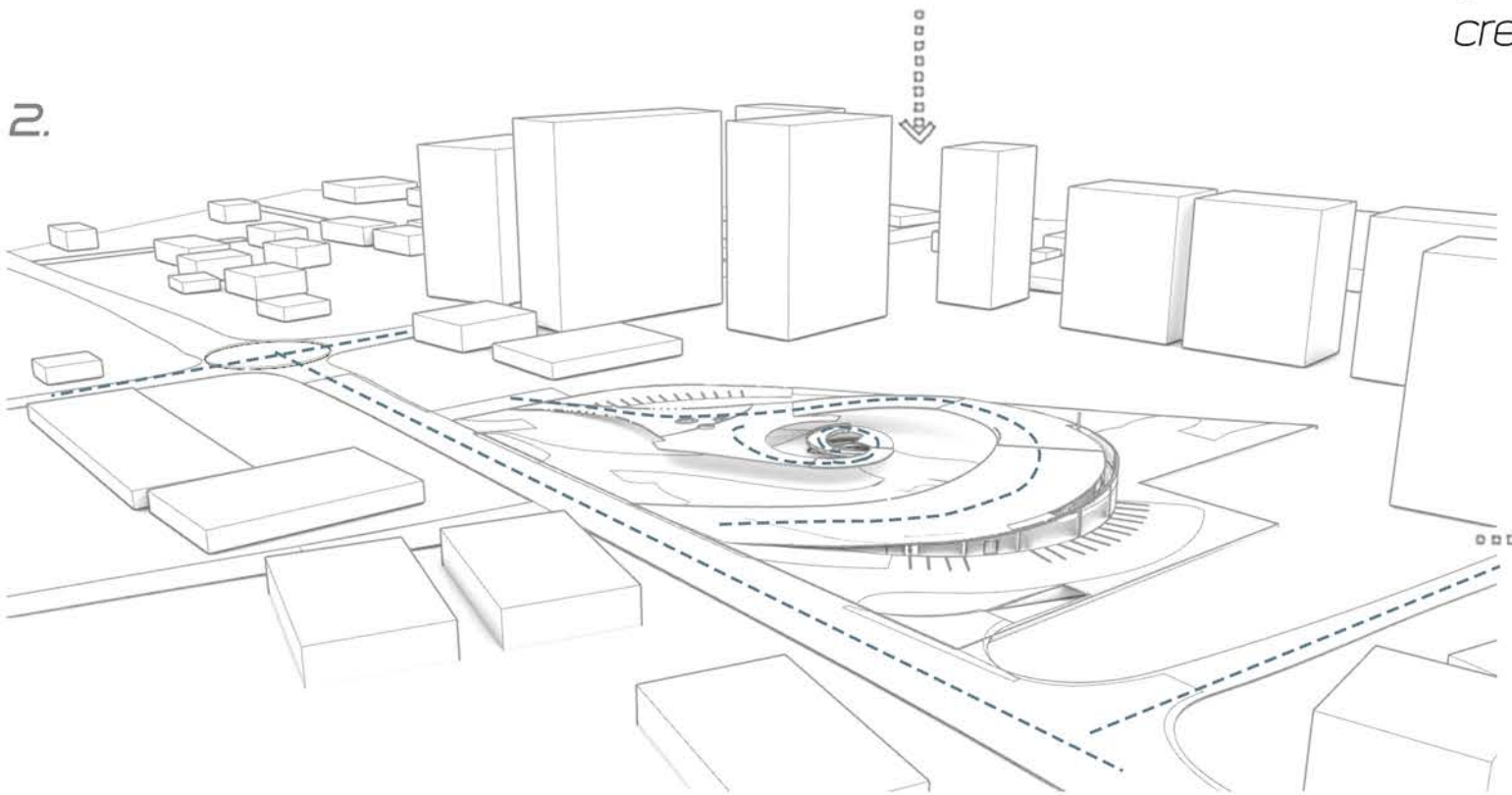
Site and Context

4.



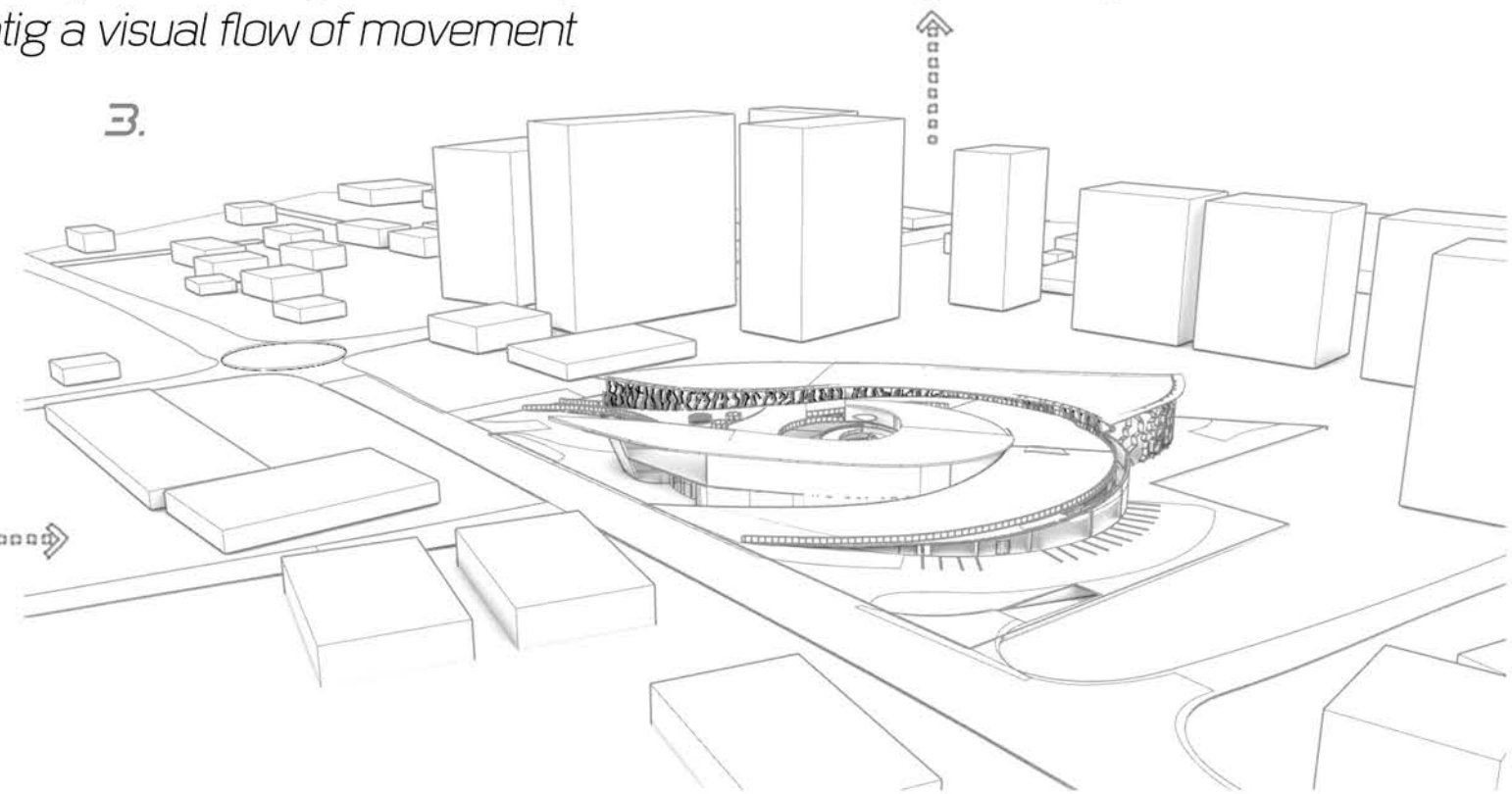
Concept ; The building is concentrated and derives from a main centric point, gradually increasing same way as blossoms, generating undulated forms, creatig a visual flow of movement

2.



Entrances, Access points from roads to Location, Spirals

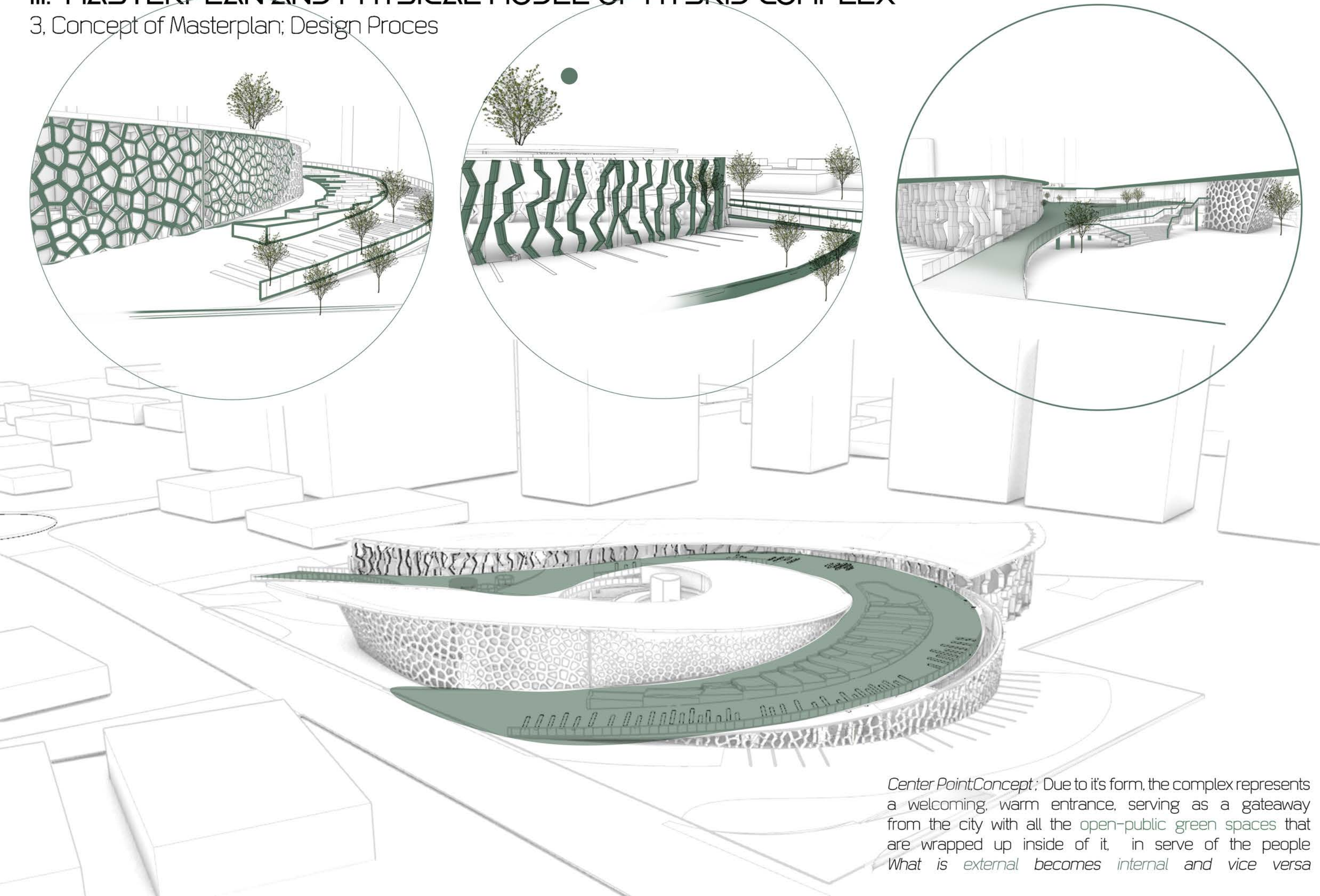
3.



Volumes, Extrude,

III. MASTERPLAN AND PHYSICAL MODEL OF HYBRID COMPLEX

3. Concept of Masterplan; Design Proces

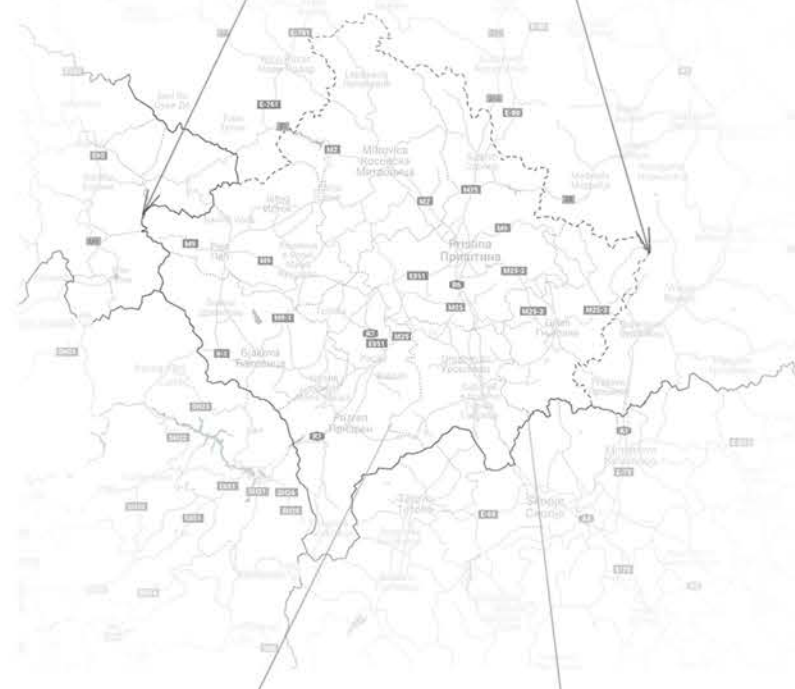


Center Point;Concept: Due to its form, the complex represents a welcoming, warm entrance, serving as a gateway from the city with all the open-public green spaces that are wrapped up inside of it, in serve of the people
What is external becomes internal and vice versa

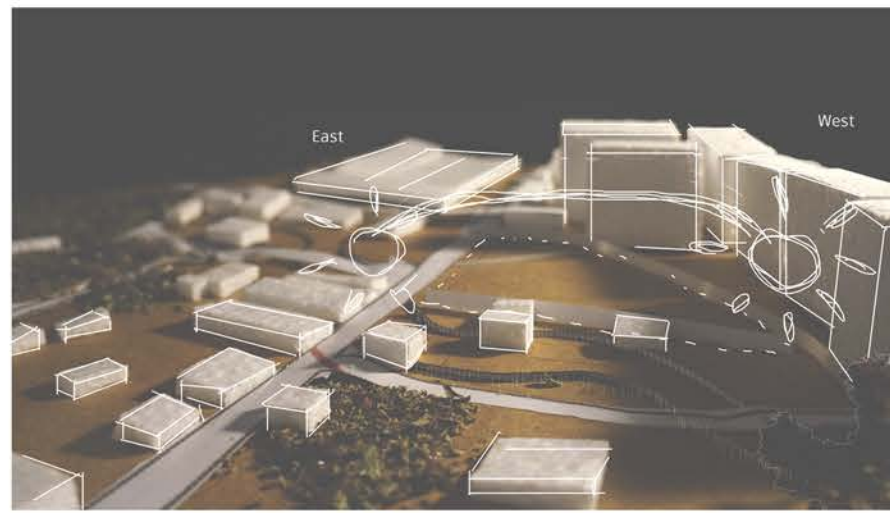
global context - continent of Europe:



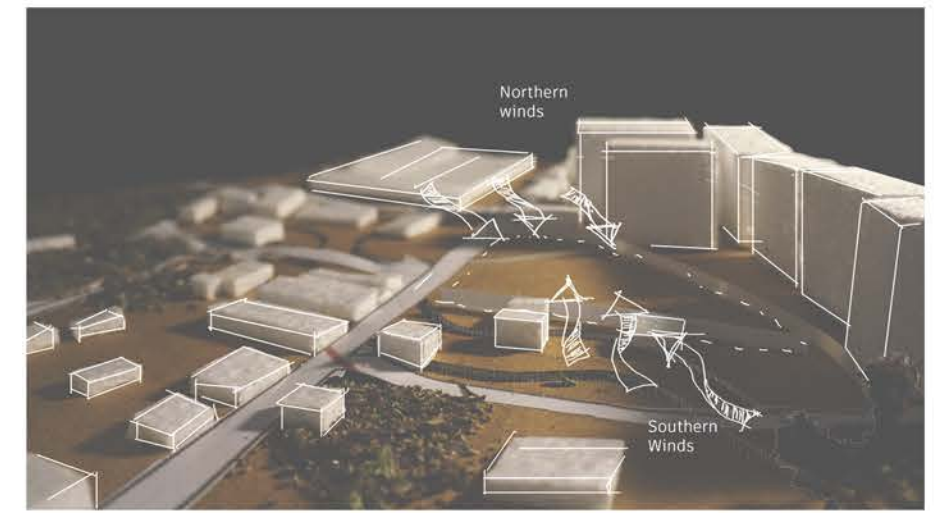
R. of Kosovo:



City of Ferizaj:



sun path

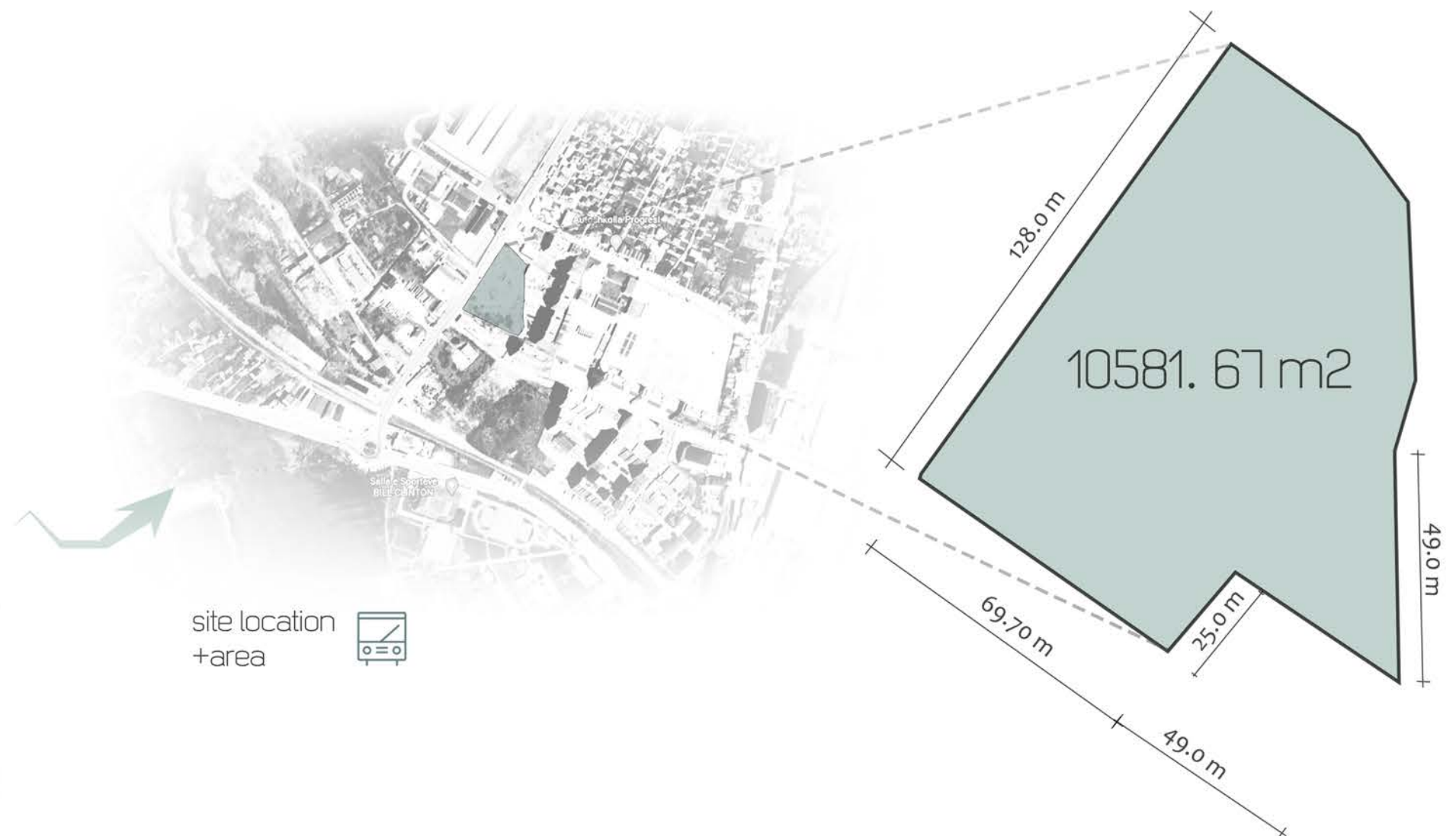


winds

Site short description:

The city of Ferizaj, which is located in the south-eastern part of Kosovo, bus station of the city of Ferizaj. The site location is the Bus Station site area of Ferizaj, which is planned by the Municipal Development Plan to be relocated to a new area, The new location is somewhere in between the sports area and the industrial area of Ferizaj, which makes it a very strategic area.

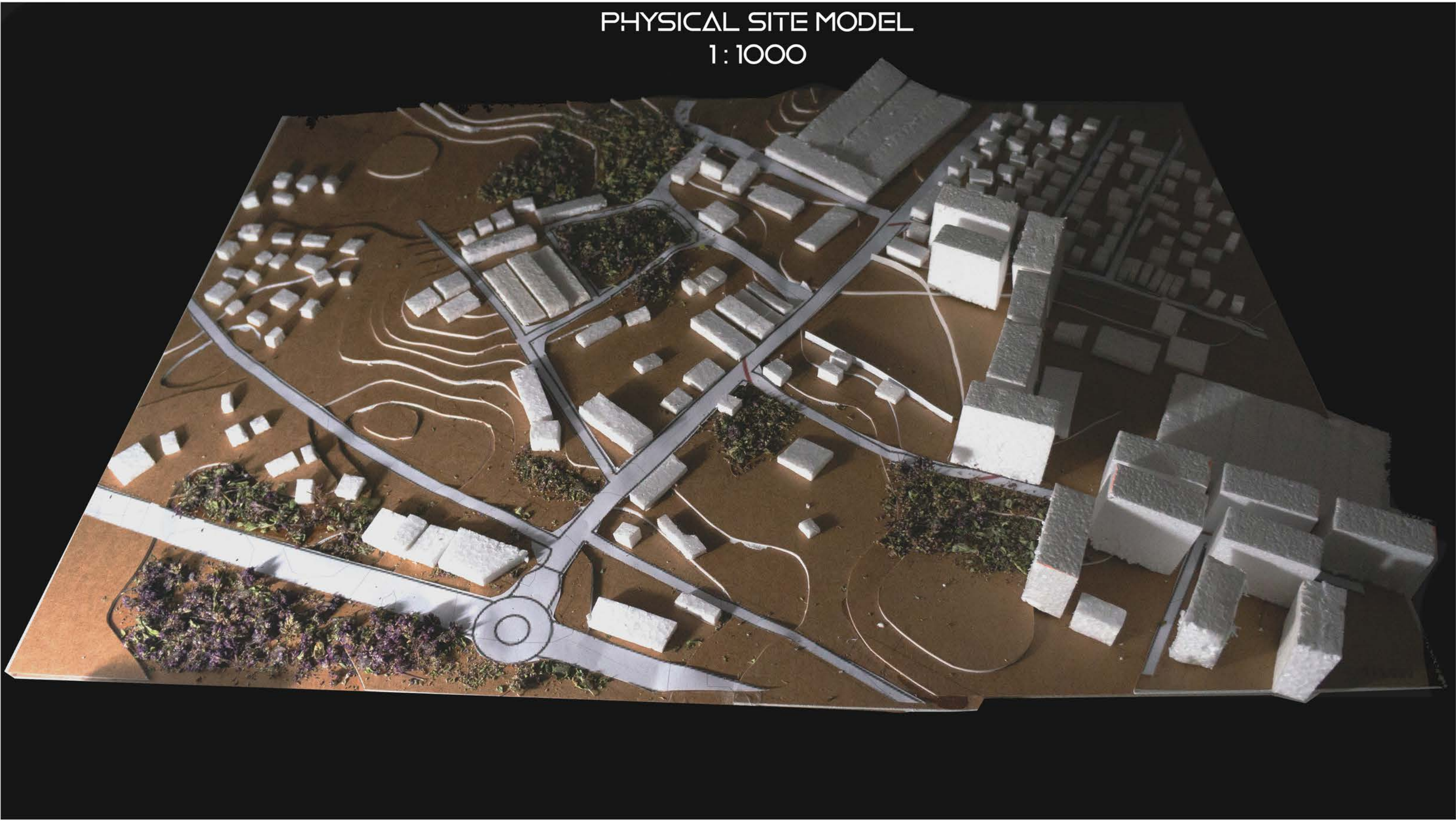
4 SITE LOCATION



V. STRUCTURES AND TECTONICS

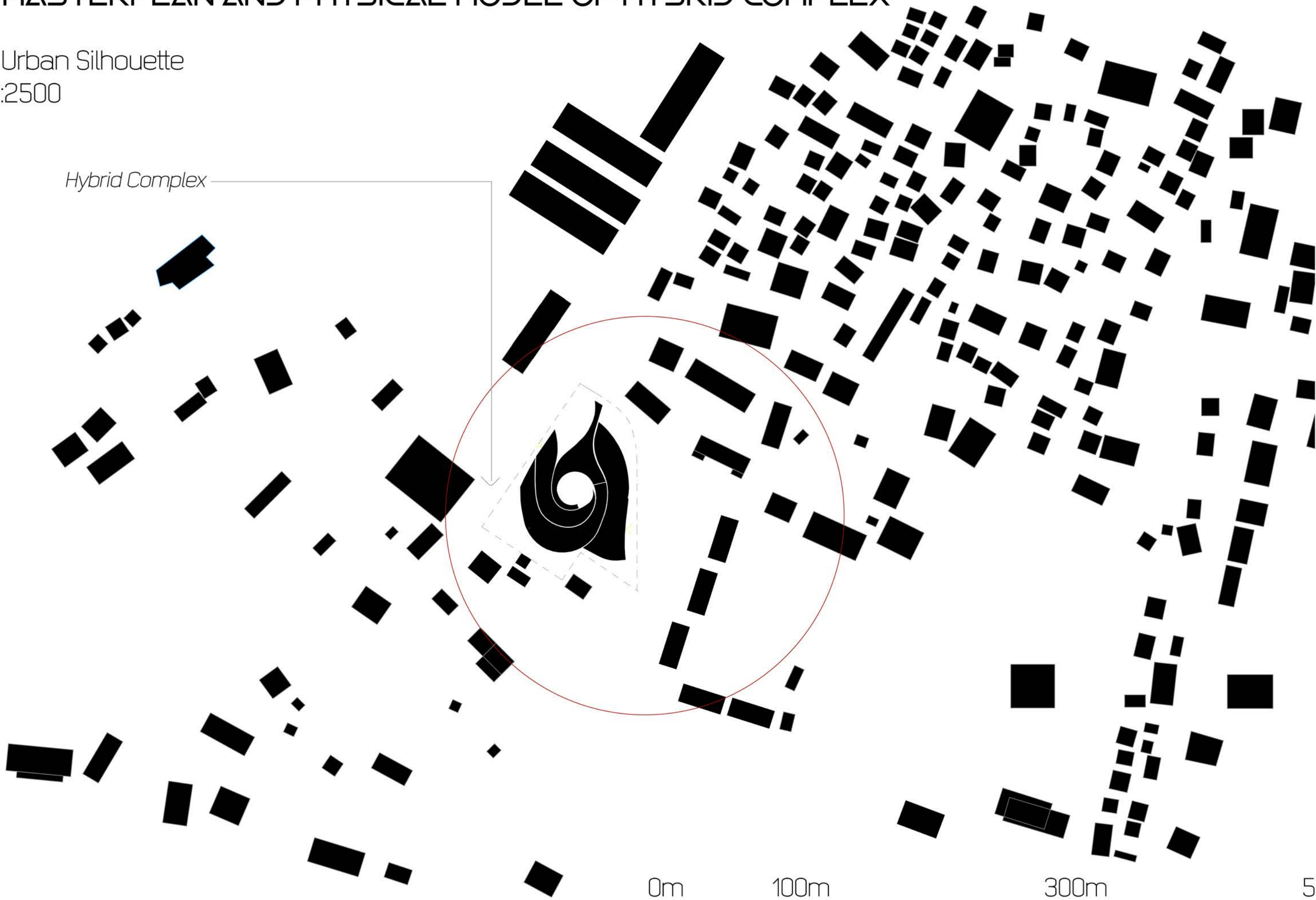
4, Site Location

PHYSICAL SITE MODEL
1:1000



III. MASTERPLAN AND PHYSICAL MODEL OF HYBRID COMPLEX

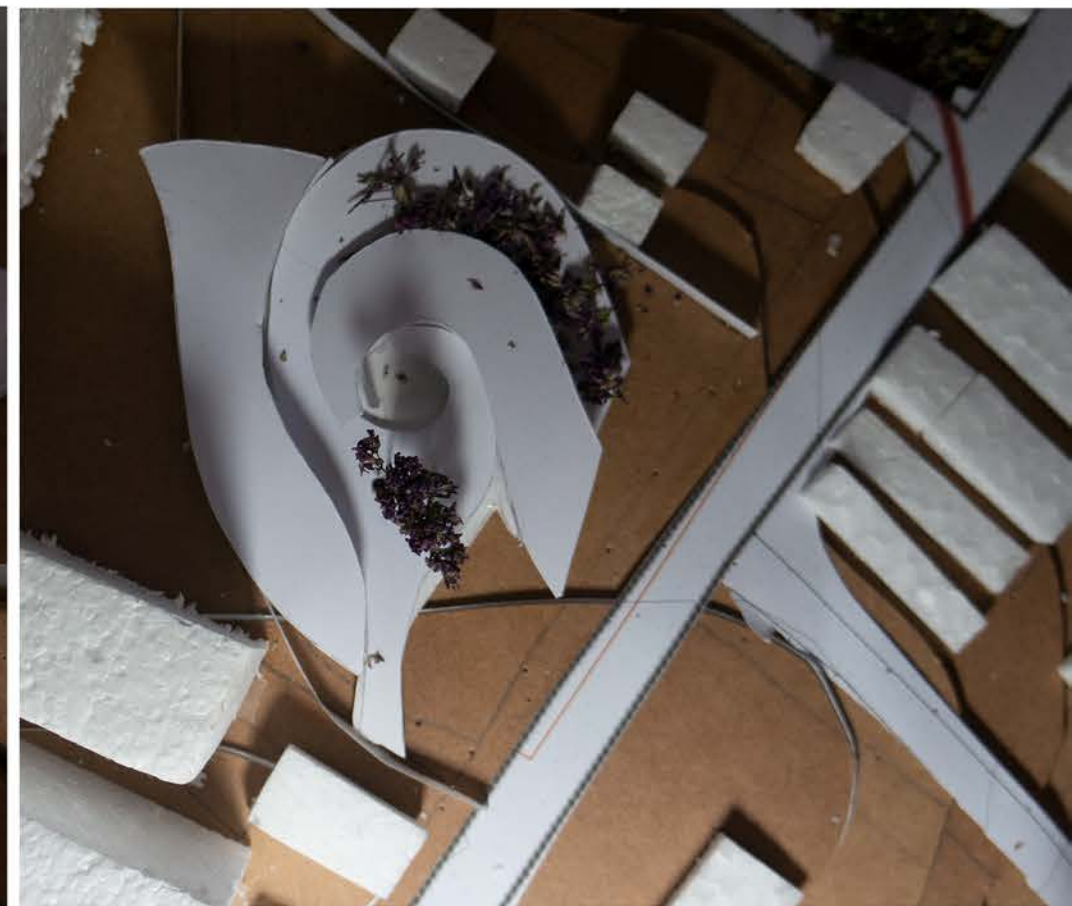
4,1 Urban Silhouette
P=1:2500



Hybrid Complex



5. PHYSICAL MODEL OF HYBRID COMPLEX INTEGRATED INTO PHYSICAL URBAN / SITE MODEL 1:1000



III. MASTERPLAN

4, Masterplan - Site plan;
1:1000

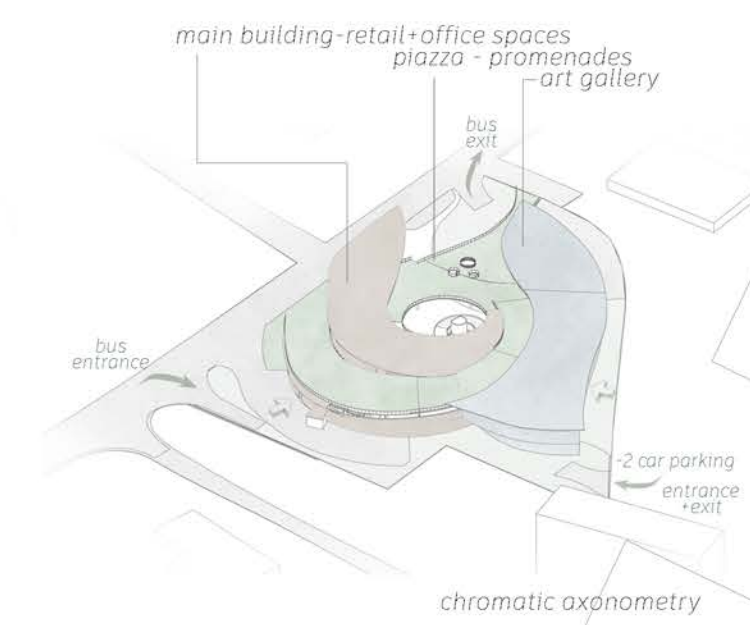
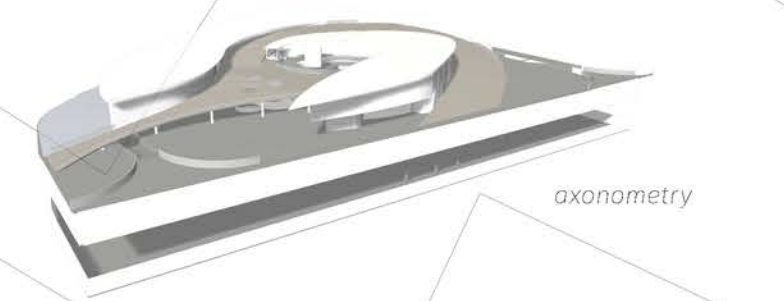
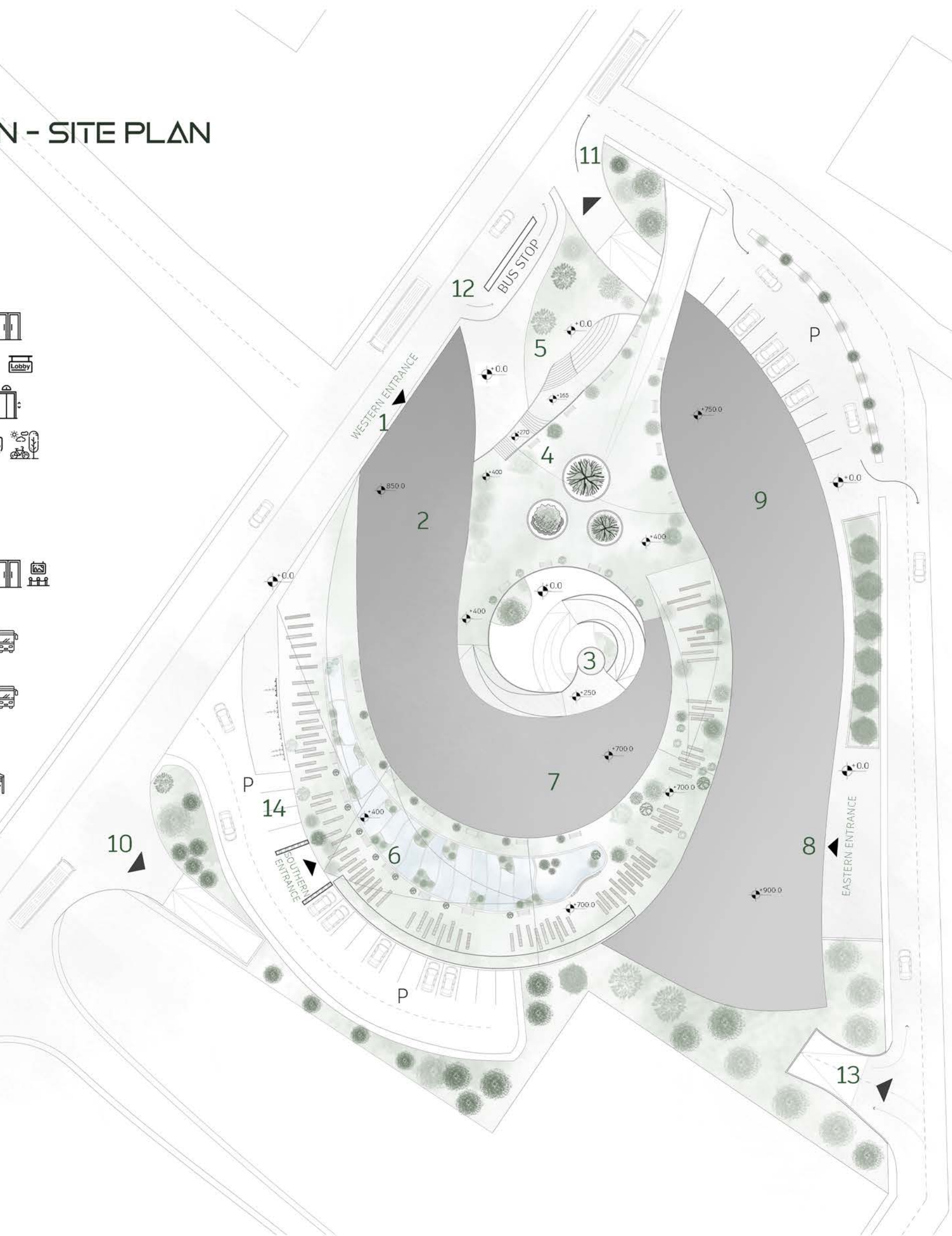




4. MASTERPLAN - SITE PLAN

LEGEND:

- 1. Main entrance for the visitors
- 2. Entrance hall, lobby, information
- 3. Vertical communication: spiral ramps + panoramic elevator
- 4. Hybrid 'nod': piazza and park
- 5. Green ecological spaces
- 6. Rooftop Ramp - promenade
- 7. Office + Retail Spaces
- 8. Art Gallery Entrance + passage
- 9. Art Gallery
- 10. Underground parking for buses: ENTRANCE
- 11. Underground parking for buses: EXIT
- 12. Urban Bus Stop
- 13. Underground parking for cars: ENTRANCE AND EXIT
- 14. TAXI parking





IV.FINAL INTERPRETATION OF THE PROJECT

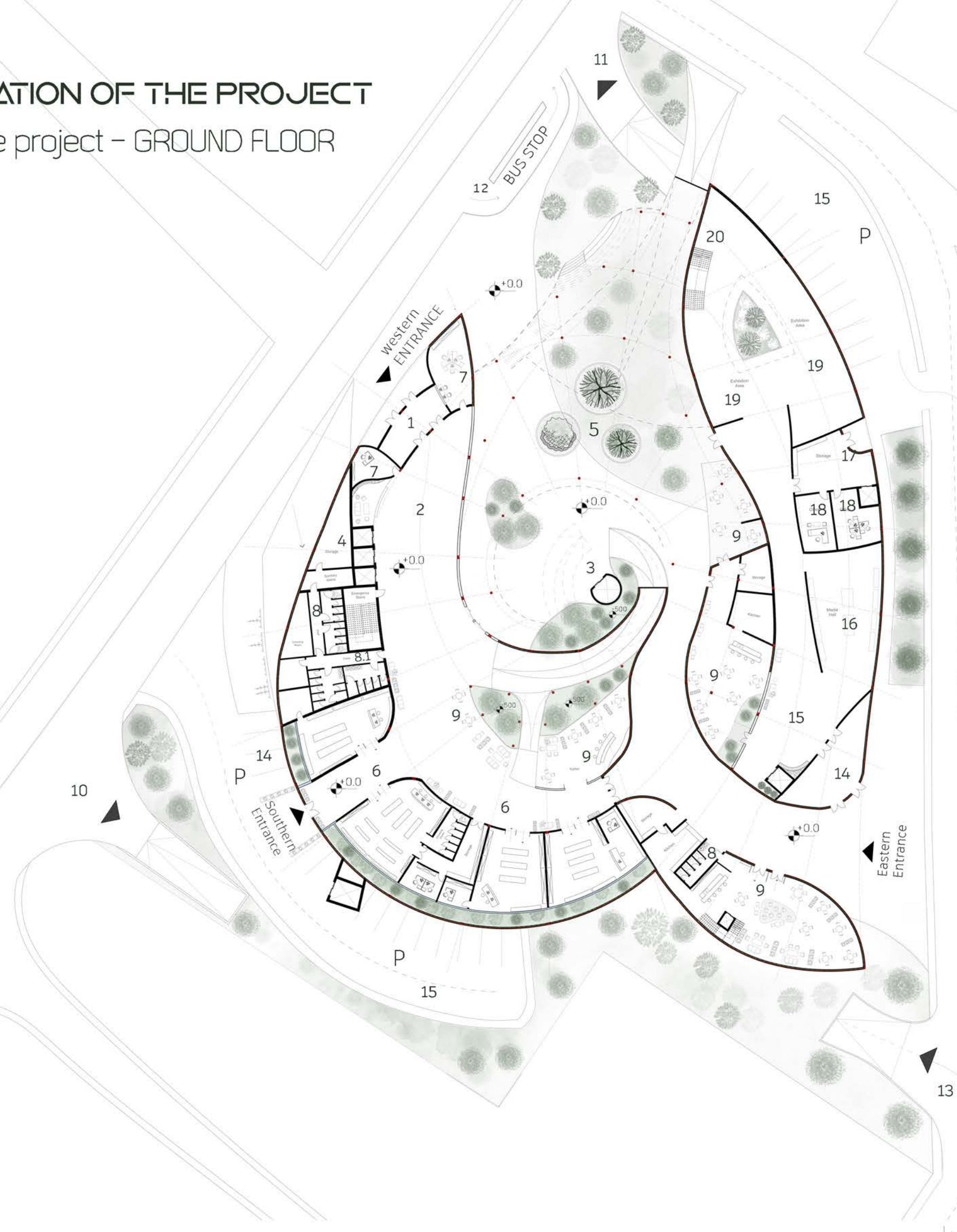
6,1 Close site plan of the project – GROUND FLOOR

LEGEND:

- 1. Main entrance for the visitors
- 2. Entrance hall, lobby, information
- 3. Vertical communication: spiral ramps + panoramic elevator
- 4. Storage Room
- 5. Green ecological spaces
- 6. Retail Spaces
- 7. Office Spaces
- 8. Toilets for staff/ 8.1: for visitors
- 9. Restaurants/Cafiteria
- 10. Underground parking for buses: ENTRANCE
- 11. Underground parking for buses: EXIT
- 12. Urban Bus Stop
- 13. Underground parking for cars: ENTRANCE AND EXIT
- 14. TAXI parking
- 15. outside car parking

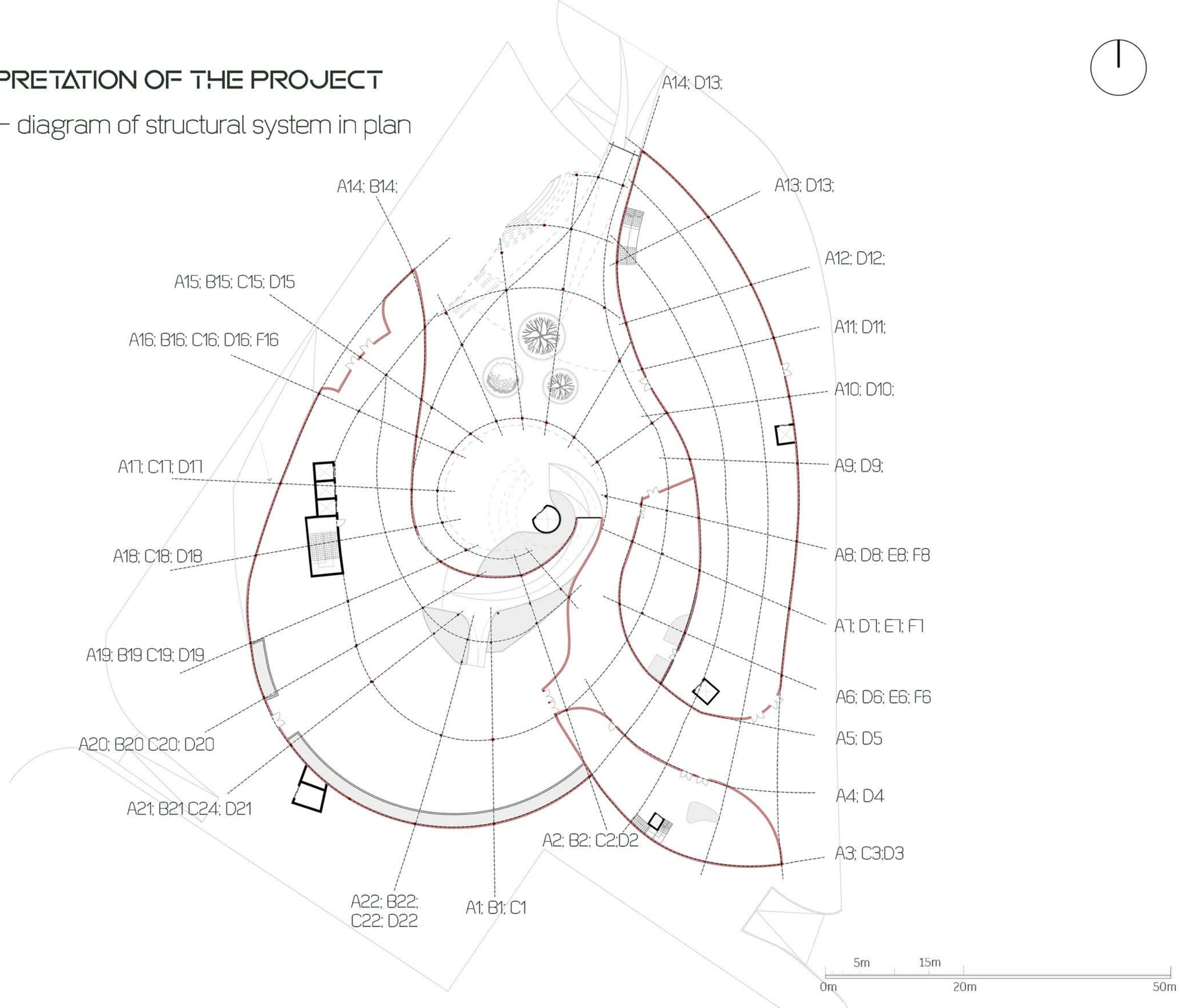
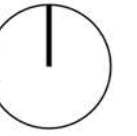
LEGEND:

- 14. Art Gallery Entrance
- 15. Lobby/info hall
- 16. Media Hall
- 17. Technical spaces +storage
- 18. Office - managment
- 19. Exhibition Areas
- 20. Stairs



IV.FINAL INTERPRETATION OF THE PROJECT

6,1 Ground Floor – diagram of structural system in plan

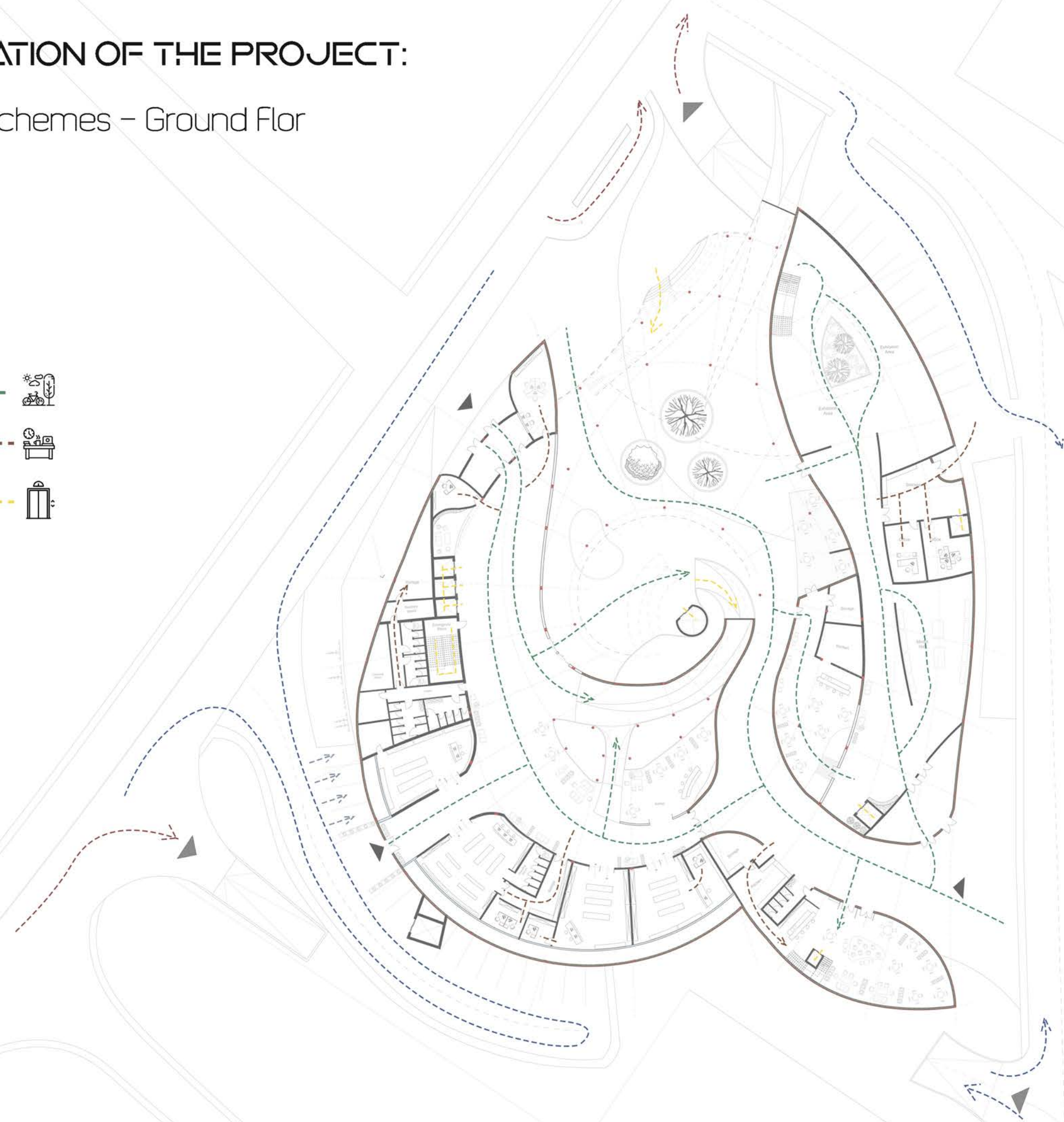


IV. FINAL INTERPRETATION OF THE PROJECT:

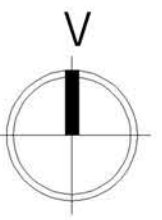
6.1 Traffic, Circulation schemes – Ground Flor

LEGEND:

- Visitors (cafe, atriums, wc) 
- Administration, Storage 
- Vertical communication (stairs, elevator, ramps) 
- Vehicles:
 - buses 
 - cars 
 - taxi 



IV. FINAL INTERPRETATION OF THE PROJECT:



6,2 Underground Level -2

LEGEND:

1. Entrances

1.1 For cars only

2. Parking Spaces

2.2 Roads

3. Handicap Parking

4. Storage Rooms

5. Elevators

5.1. Stairs

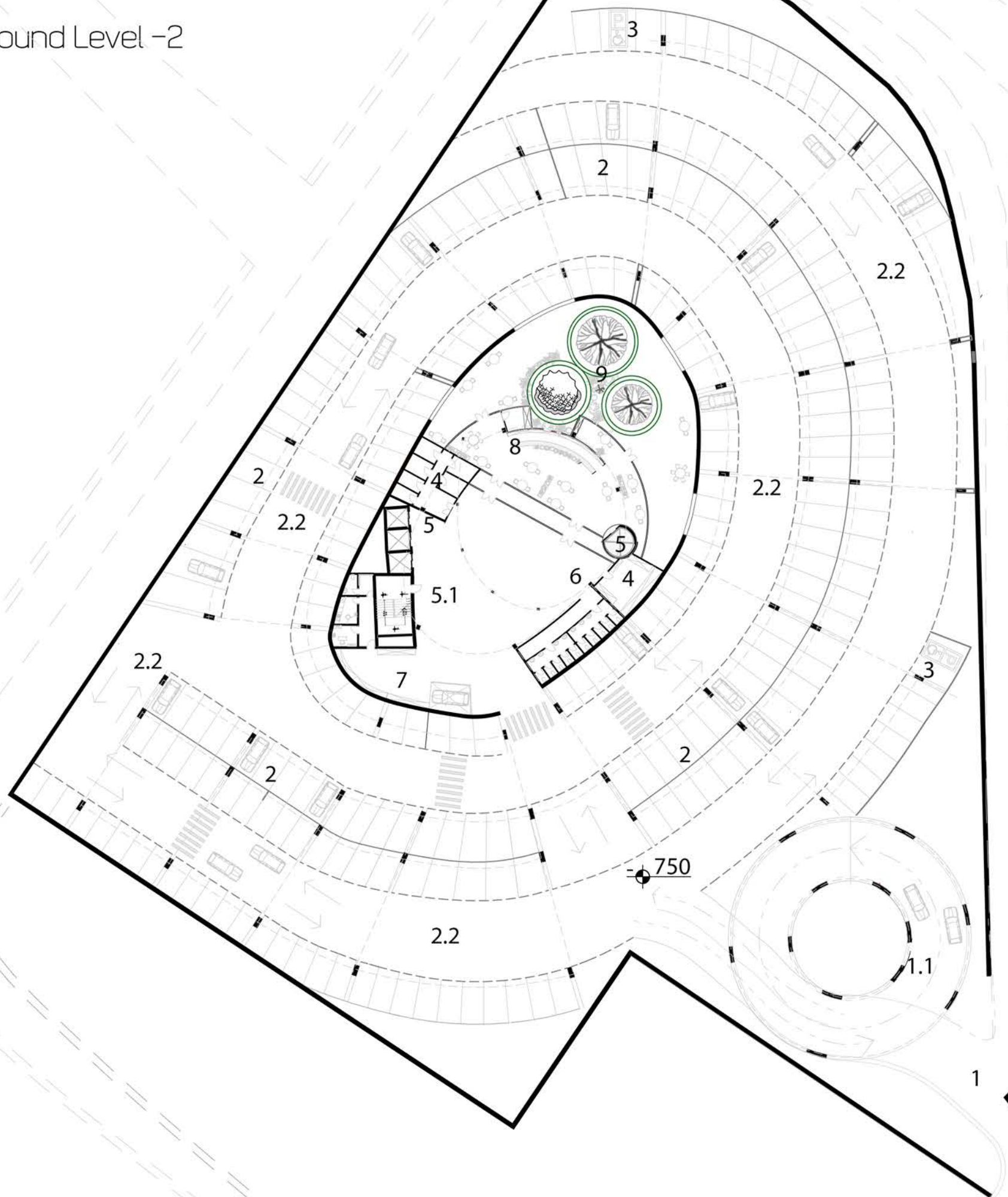
6. Toilets

7. Auto Maintenance (Mechanic Service)

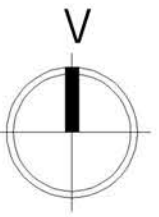
8. Bar/Café

9. Atriums

Total number of parkings; 250

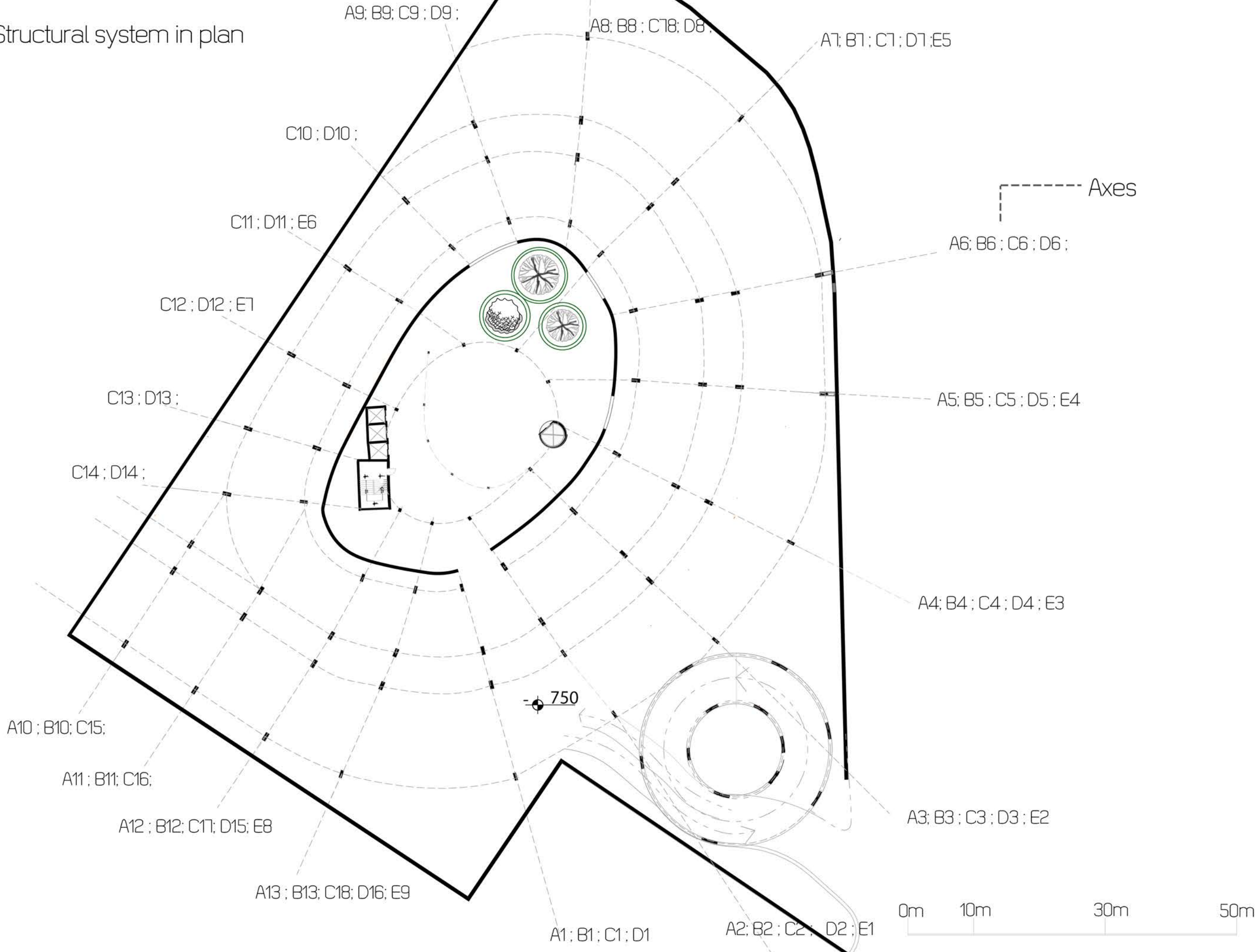


0m 10m 30m 50m



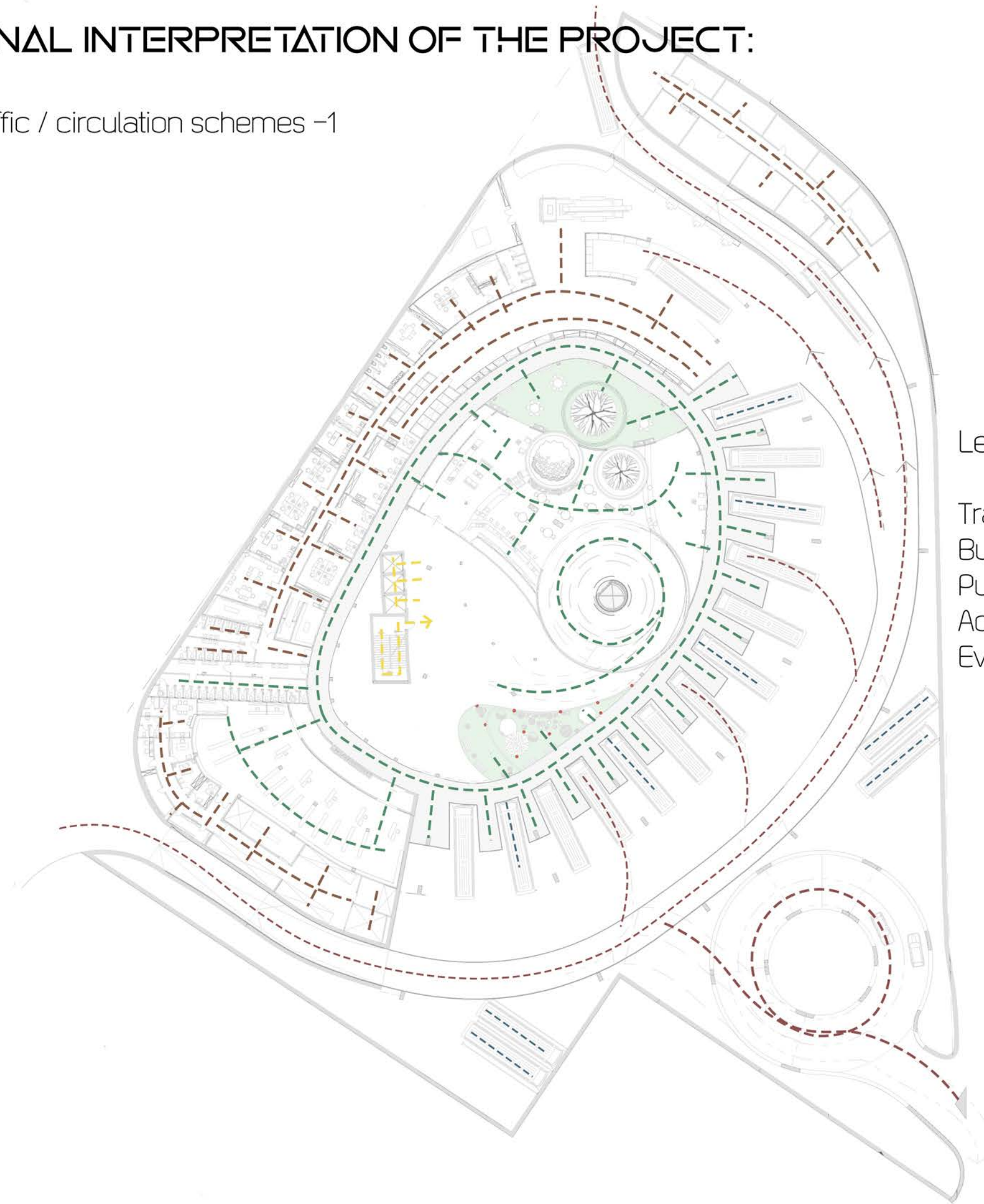
IV. FINAL INTERPRETATION OF THE PROJECT:

6,2,2 Structural system in plan



IV. FINAL INTERPRETATION OF THE PROJECT:

6.2 Traffic / circulation schemes -1



Legend:

- Traffic; Roads
- Bus Parkings
- Public; Cafe, Atriums, Wc, Waiting Halls
- Administration, Storage Rooms
- Evacuation; Stairs, Elevator

The legend icons are arranged vertically. From top to bottom: a black road sign with a white 'A' and a white arrow; a white parking sign with a black 'P' and a black car icon; a black icon of a public seating area with a table and chairs; a black icon of a desk with a chair; and a black icon of a person running, representing an evacuation route.












IV. FINAL INTERPRETATION OF THE PROJECT:

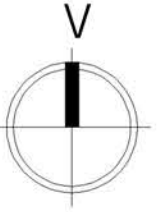
6,2 Underground Level -1; Bus Station



LEGEND:

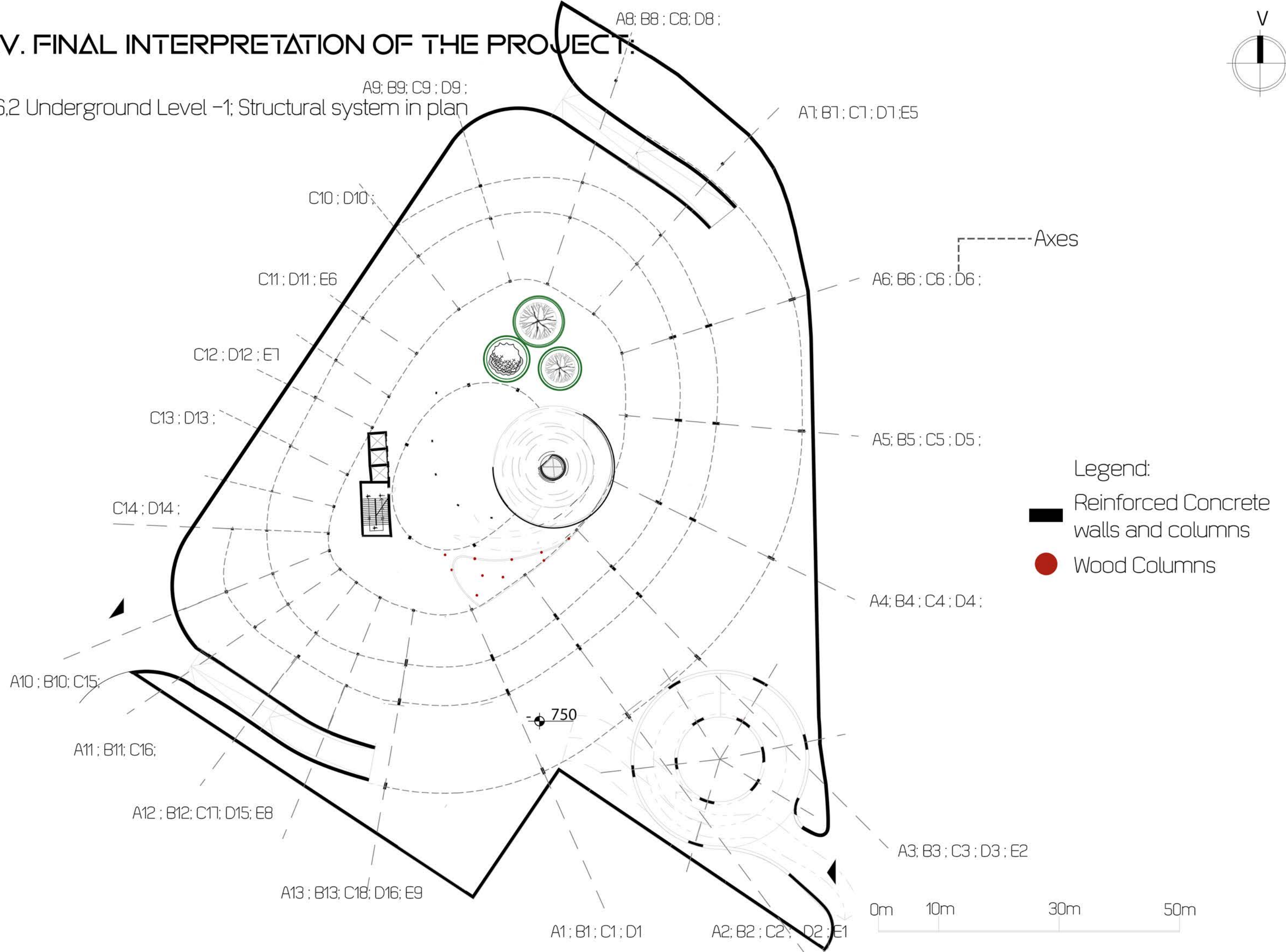
- 1. Entrances 
- 1.1 For the buses 
- 1.2 For the cars (-2 level) 
- 2. Platform 
- 3. Buses 
- 4. Spiral Ramps (The atrium) 
- 5. Greenery
 - 5.1 The three Atriums 
 - 5.2 Atrium 
- 6. Waiting Halls
 - 6.1 Cafeteria 
- 7. Supermarket
 - 7.1 Entrance 
 - 7.2 Reception/Security 
 - 7.3 Shopping Carts
 - 7.4 Groceries Elevator
 - 7.5 Cold Storage Rooms
 - 7.6 Administration Offices 
 - 7.7 IT-and Cameras
 - 7.8 Private Wc 
 - 7.9 Dressing Rooms
 - 7.10 Private Kitchen 
 - 7.10.1 Public WC 
 - 7.10.2 Shopping
 - 7.10.3 Exit 
- 8. Public WC 
- 9. Public Service
 - 9.1 Information 
 - 9.2 Ticket Counter
 - 9.3 Exchange
- 10. Bus maintenance and Parking 
 - 10.1 Driver's Collective Rooms
 - 10.2 Lost and Found Section
 - 10.3 Parking Lots
- 11. Exit 

0m 10m 30m 50m



IV. FINAL INTERPRETATION OF THE PROJECT:

6,2 Underground Level -1; Structural system in plan



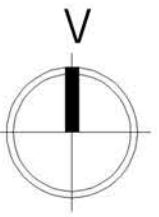
- Legend:
- Reinforced Concrete walls and columns
 - Wood Columns

0m 10m 30m 50m

-750

Axes

A8; B8; C8; D8;
A9; B9; C9; D9;
A7; B7; C7; D7; E5
C10; D10;
C11; D11; E6
C12; D12; E7
C13; D13;
C14; D14;
A10; B10; C15;
A11; B11; C16;
A12; B12; C17; D15; E8
A13; B13; C18; D16; E9
A1; B1; C1; D1
A2; B2; C2; D2; E1
A6; B6; C6; D6;
A5; B5; C5; D5;
A4; B4; C4; D4;
A3; B3; C3; D3; E2



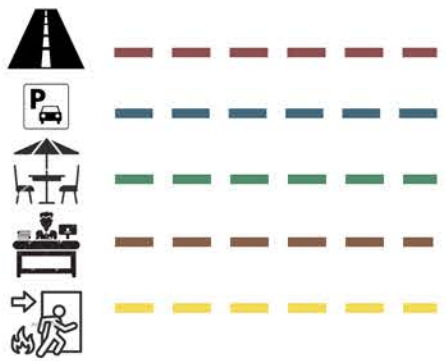
IV. FINAL INTERPRETATION OF THE PROJECT:

6,2,1 Traffic / circulation schemes



Legend:

- Traffic; Roads
- Parking Lots
- Public; Cafe, Atriums, Wc
- Administration, Storage Rooms
- Evacuation; Stairs, Elevator



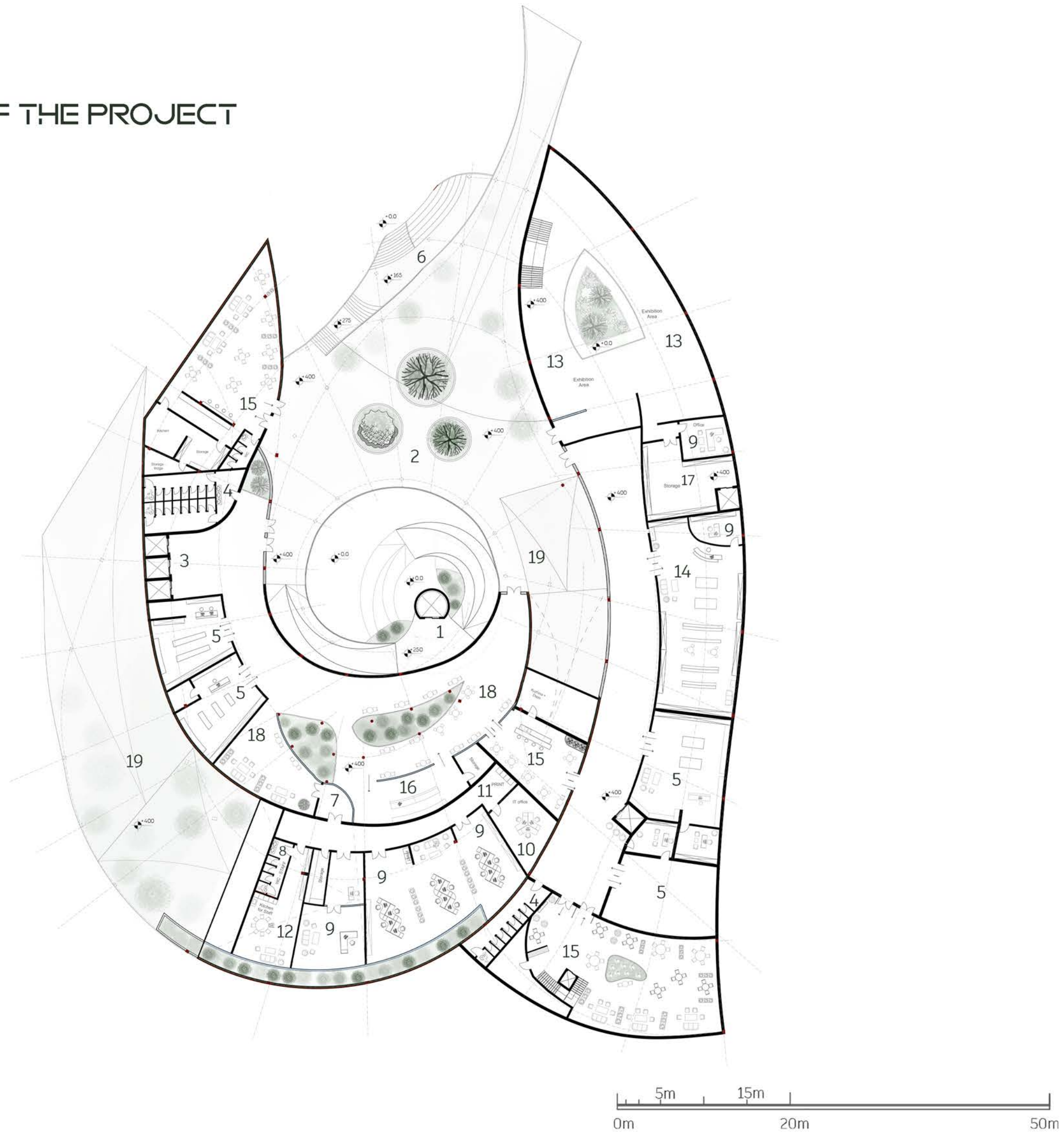
IV.FINAL INTERPRETATION OF THE PROJECT



6,2 – Upper level: 1st FLOOR

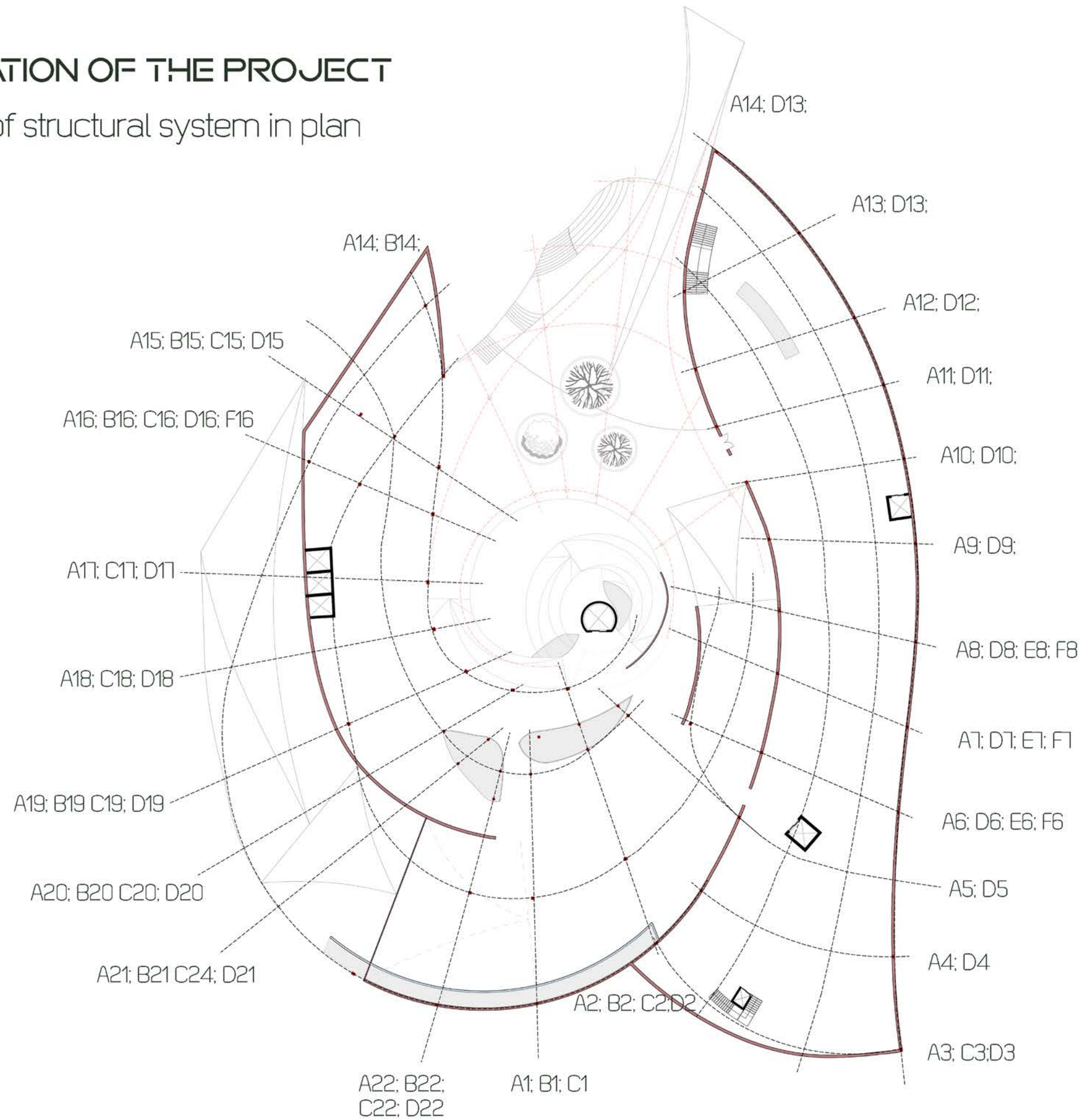
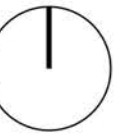
LEGEND:

- 1. Centric vertical communication
- 2. Piazza-Hybrid Nod
- 3. Elevators for the visitors+staff
- 4. Toilets for the visitors
- 5. Retail spaces - shops
- 6. Open Amamphitheater + stairs
- 7. Staff Entrance
- 8. Toilets for Staff
- 9. Office Spaces
- 10. IT office
- 11. Printing space
- 12. Kitchen and eating area for staff
- 13. Art Gallery - Exhibition Area
- 14. Library
- 15. Restaurant/Cafiteria
- 16. Take Away - shop
- 17. Storage - Gallery
- 18. Sitting/Resting Areas
- 19. Rooftop green ramp



IV.FINAL INTERPRETATION OF THE PROJECT

6,2 1st Floor – diagram of structural system in plan

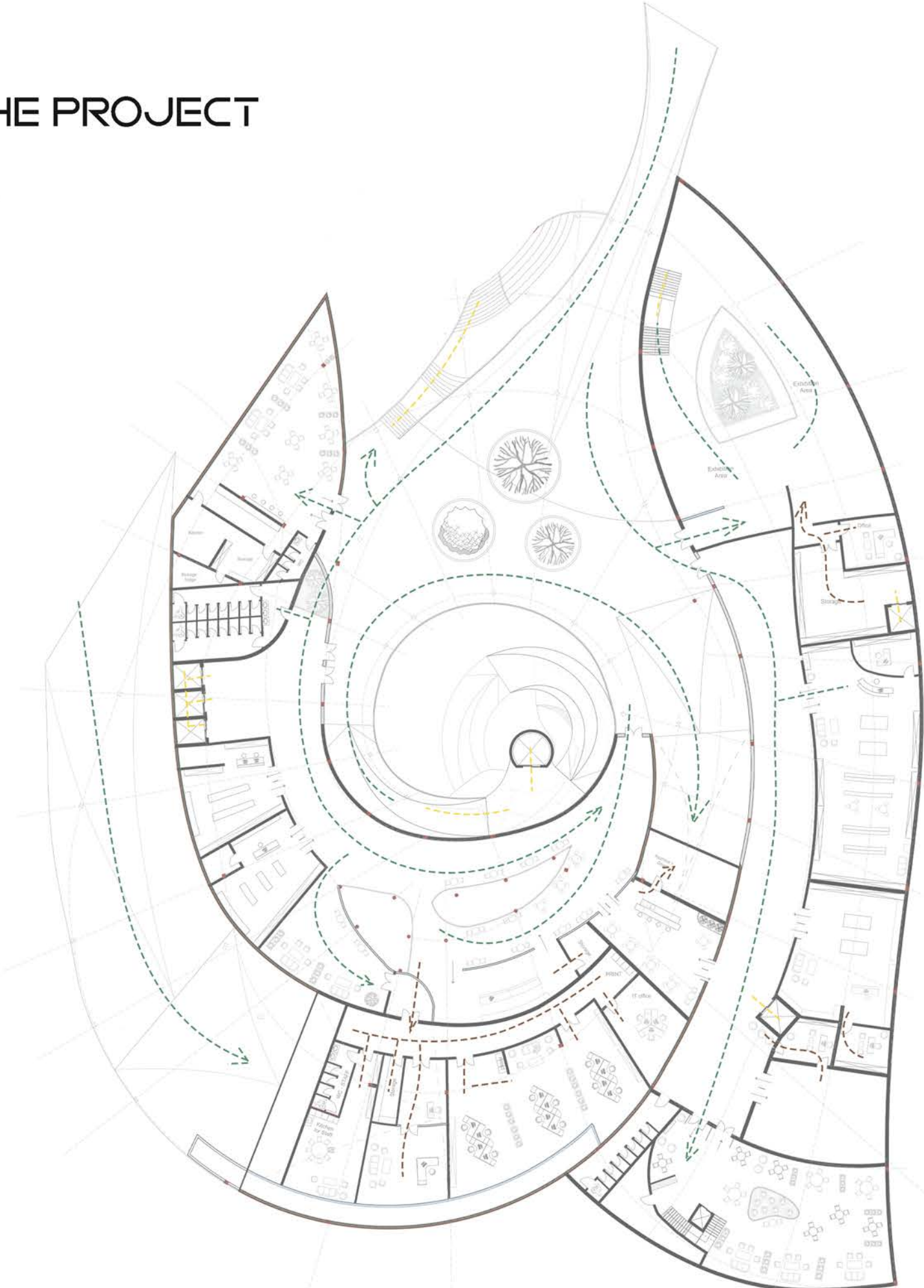


6. PRE-FINAL INTERPRETATION OF THE PROJECT

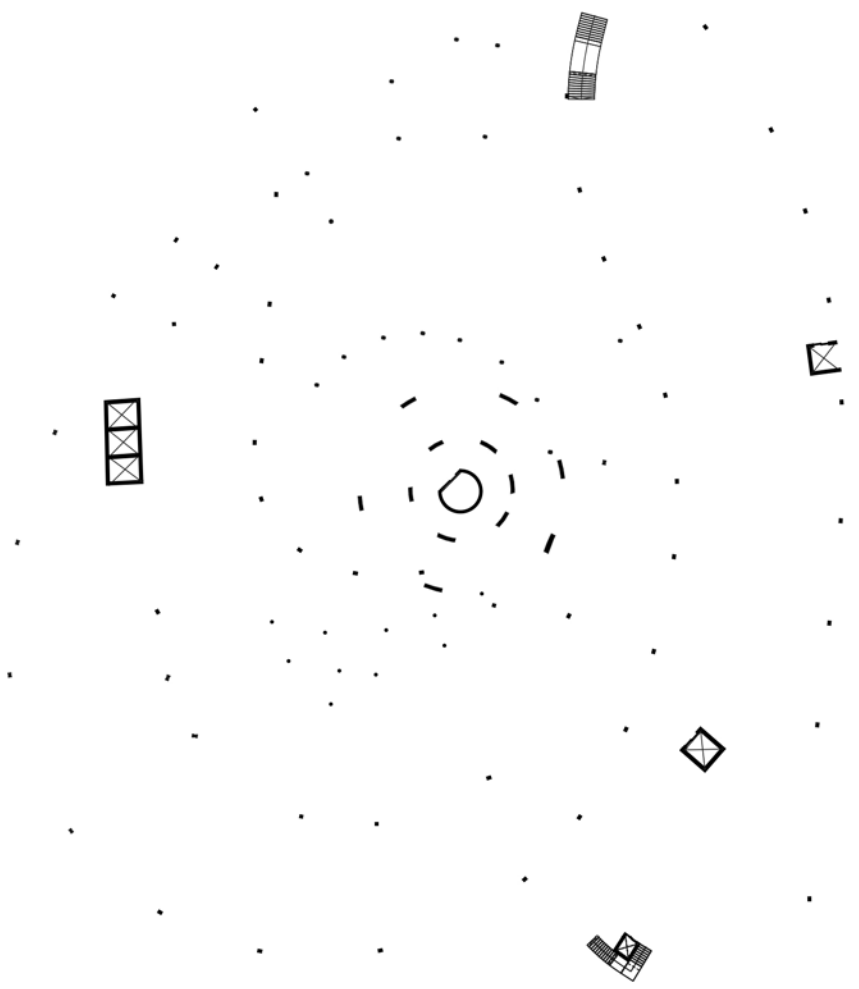
6.4 Traffic, Circulation schemes – 1st Floor

LEGEND:

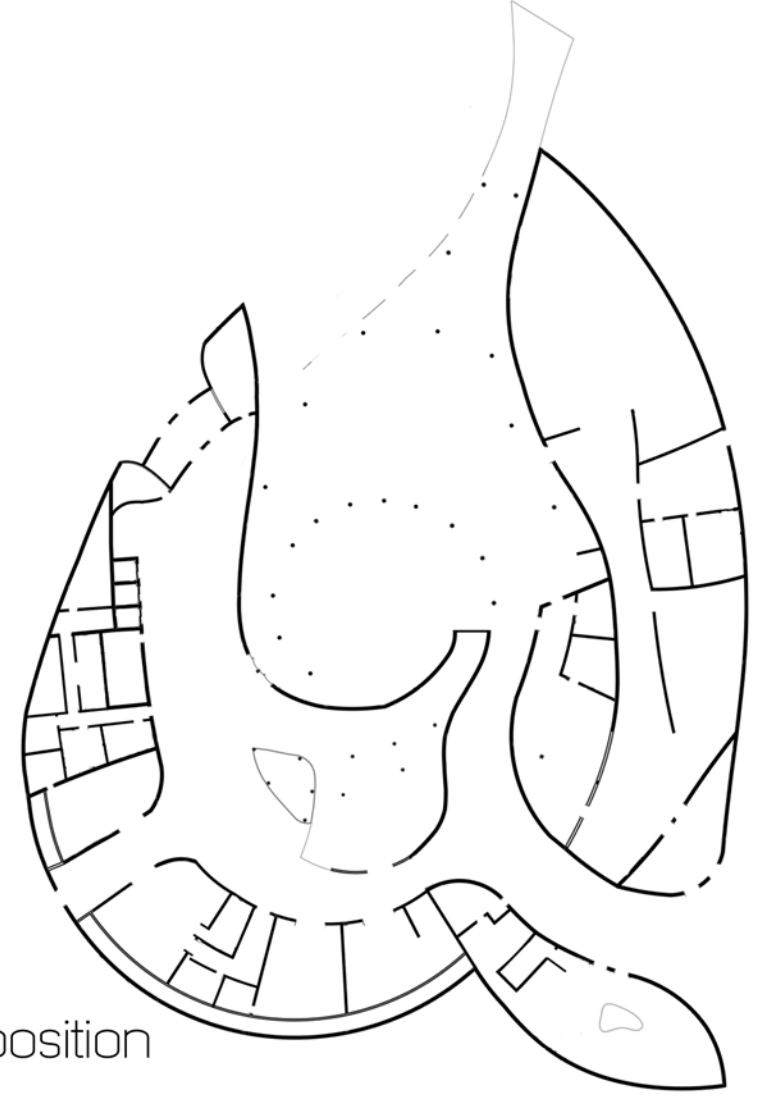
- Visitors (cafe, atriums, wc) 
- Administration, Storage 
- Vertical communication (stairs, elevator, ramps) 



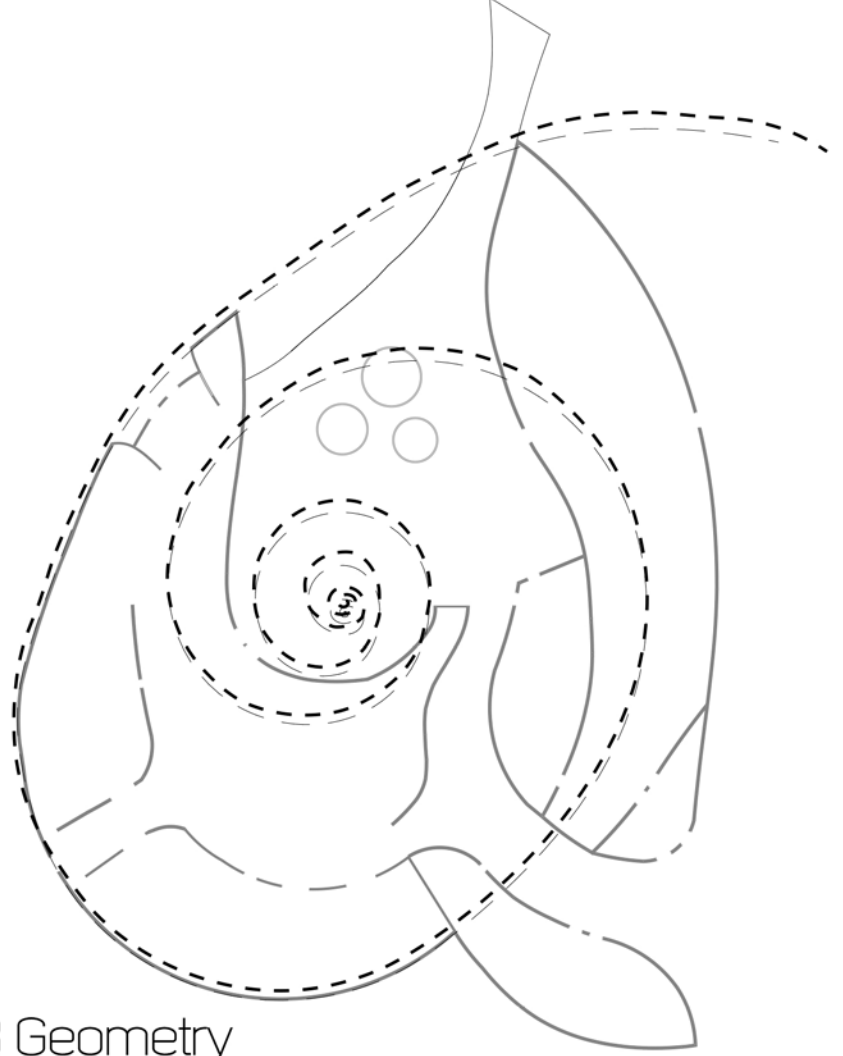
WORKSHOP 6.0 - ANALYTICAL DIAGRAMS



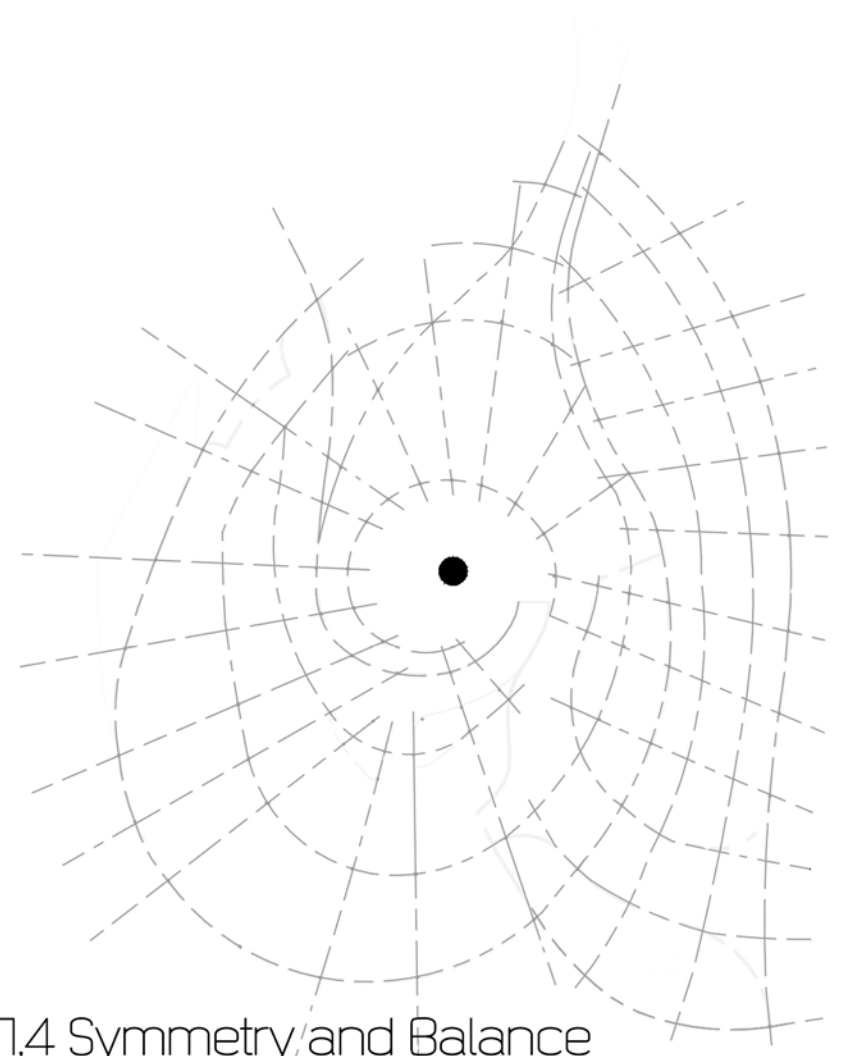
7.1 Structure



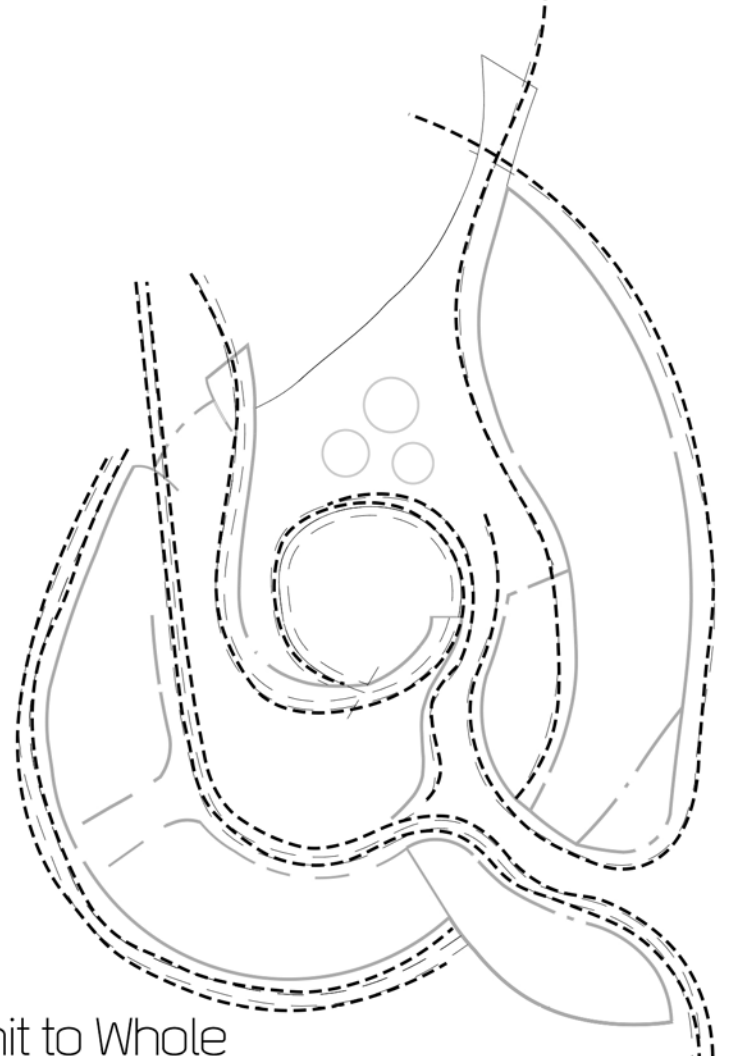
7.2 Spatial Composition



7.3 Geometry

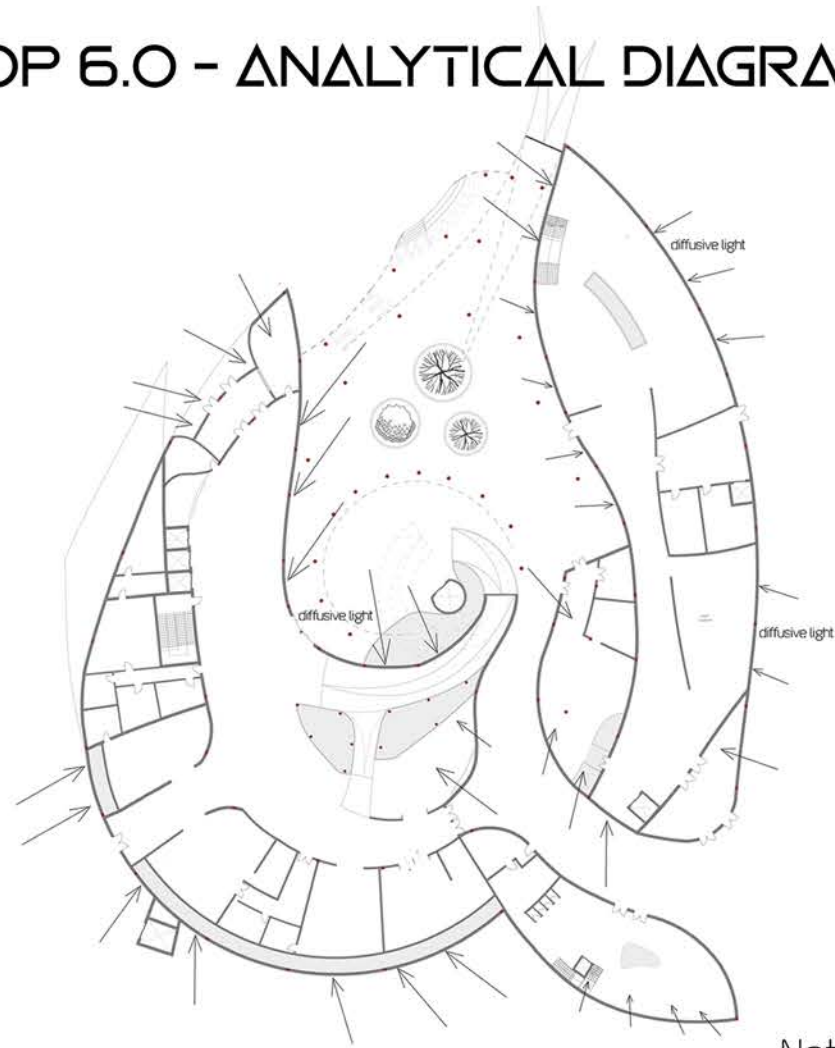


7.4 Symmetry and Balance

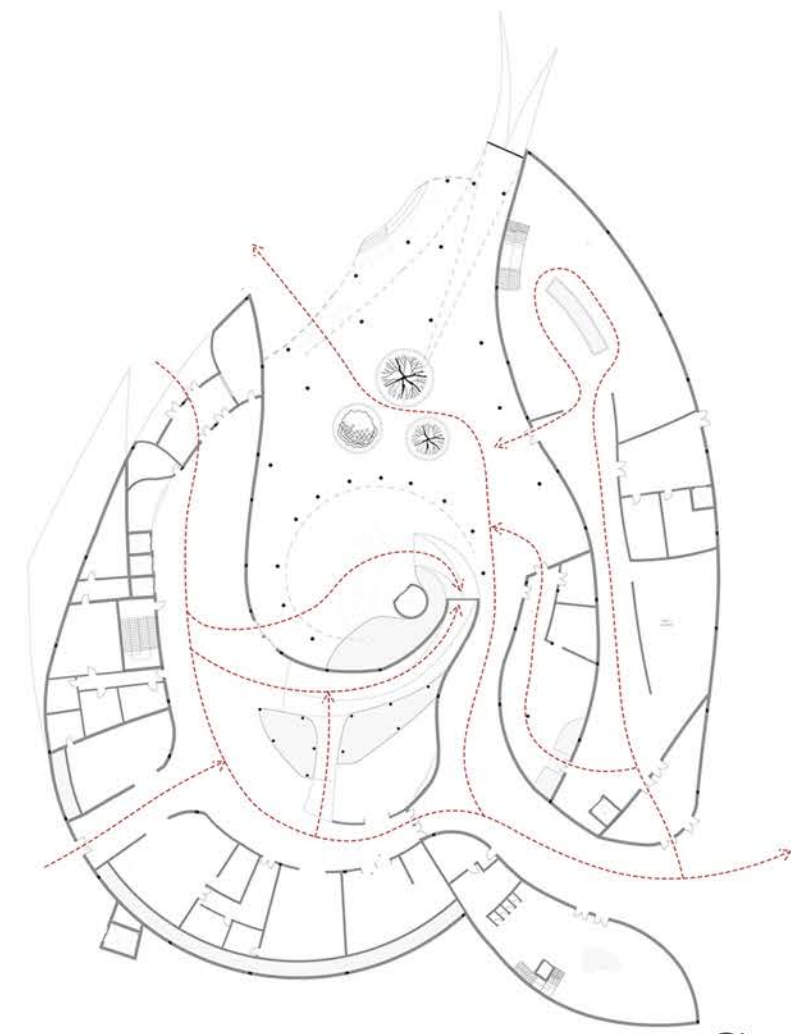


7.5 Unit to Whole

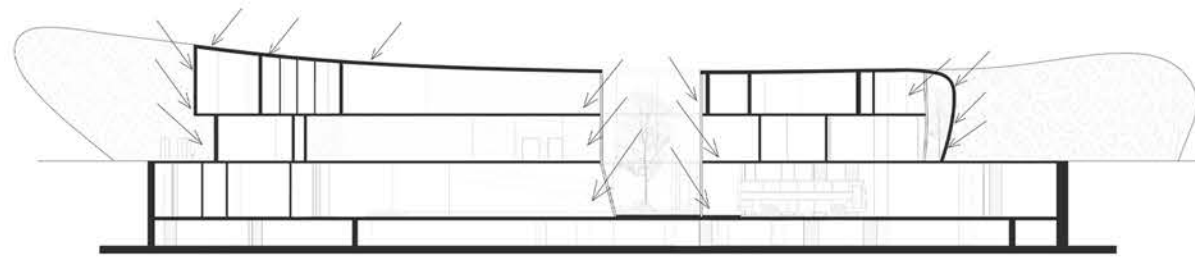
WORKSHOP 6.0 - ANALYTICAL DIAGRAMS



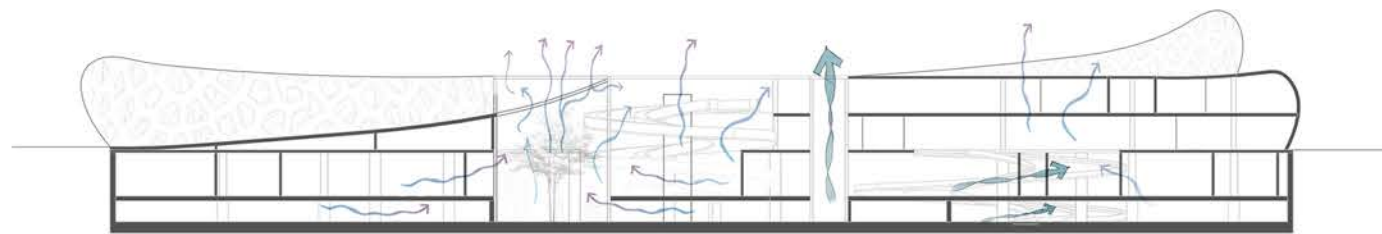
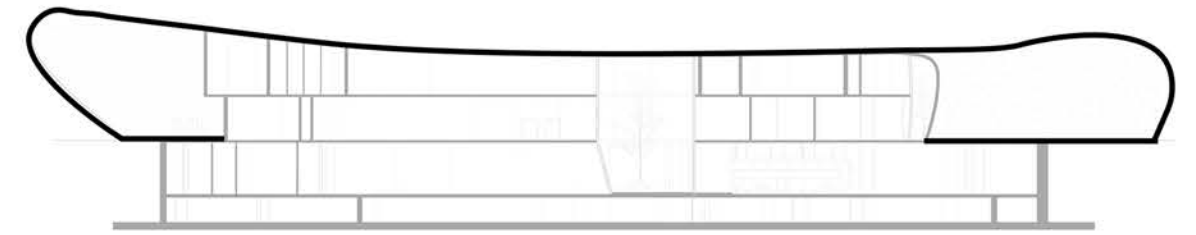
Natural lightning (plan)



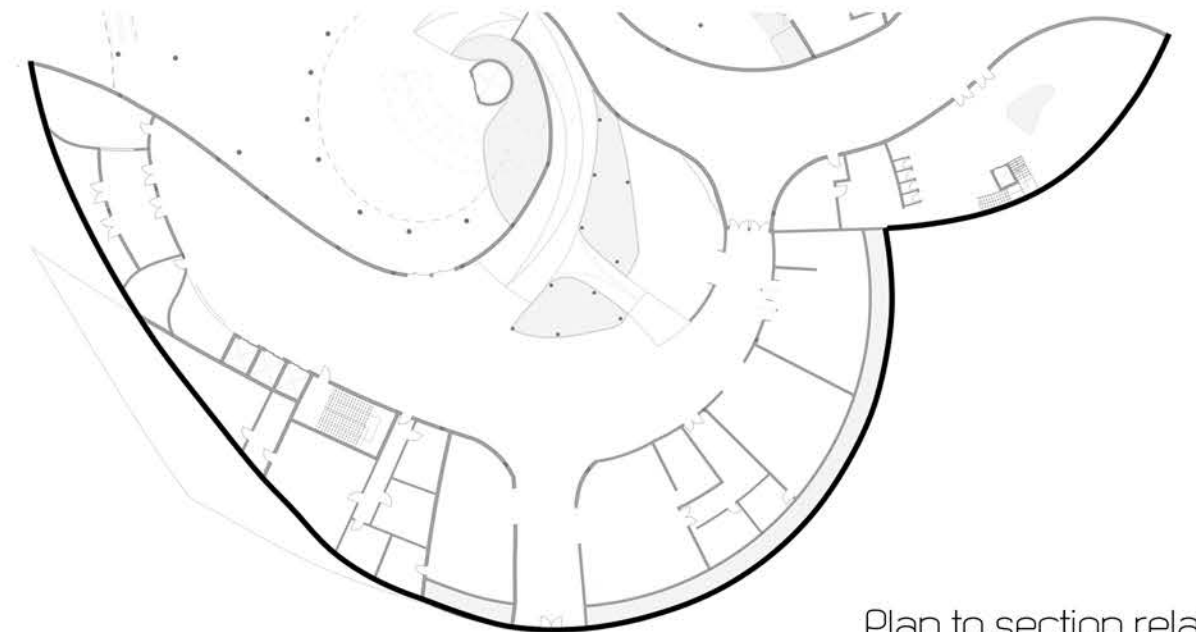
Circulation to use (plan)



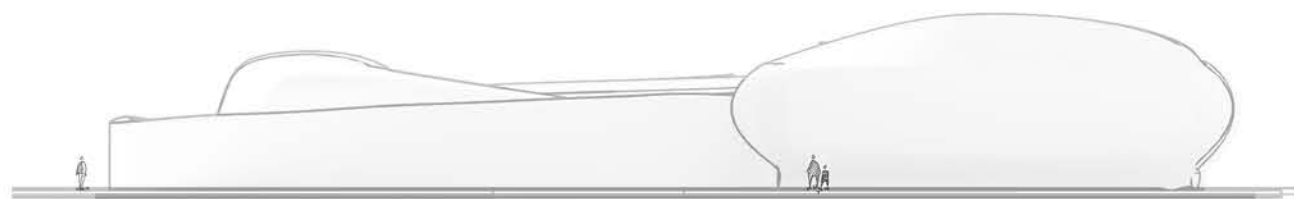
Natural lightning (section)



Natural ventilation (section)



Plan to section relations

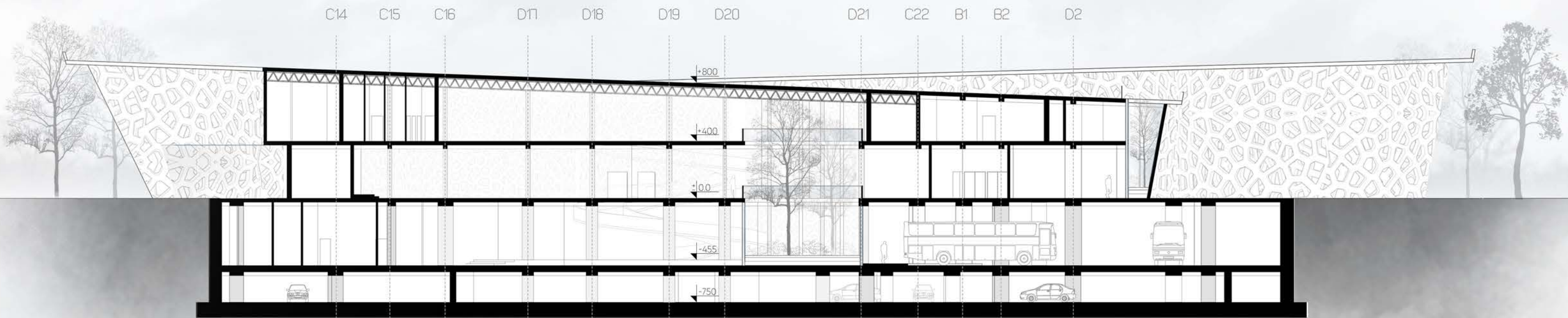
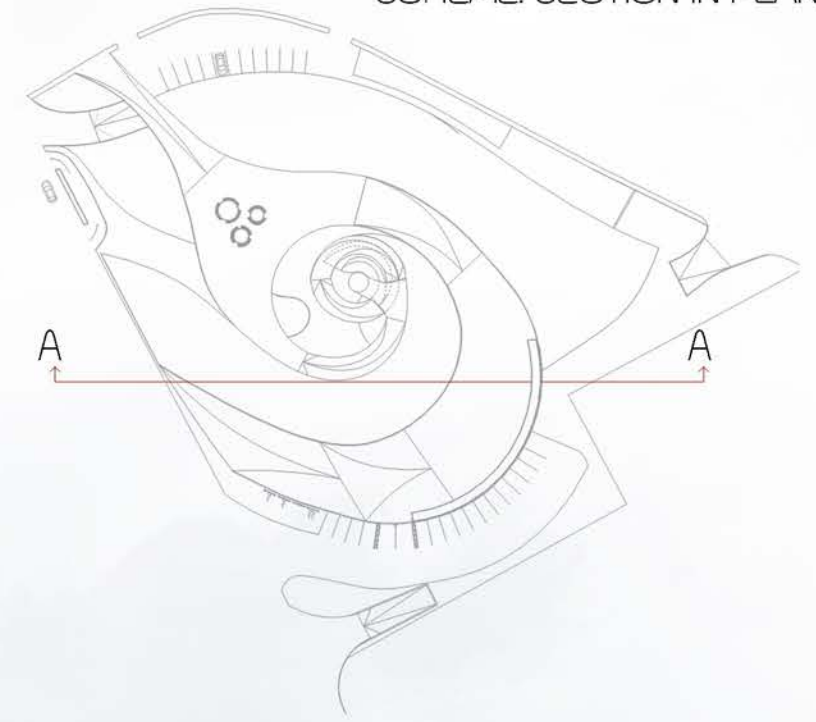


Massing (elevation)

IV.FINAL INTERPRETATION OF THE PROJECT:

6.3 At least three sections in context

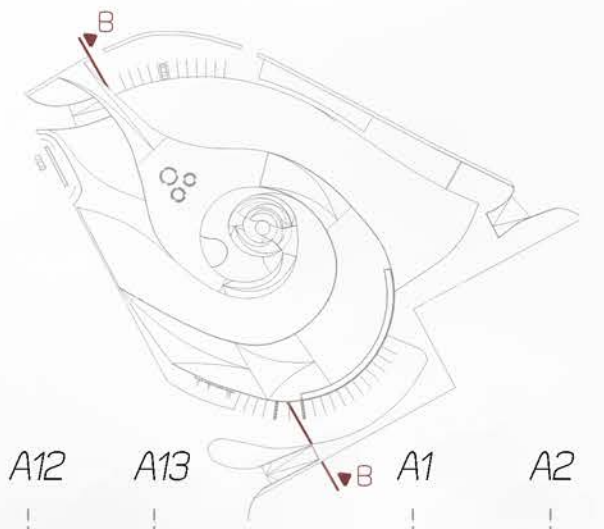
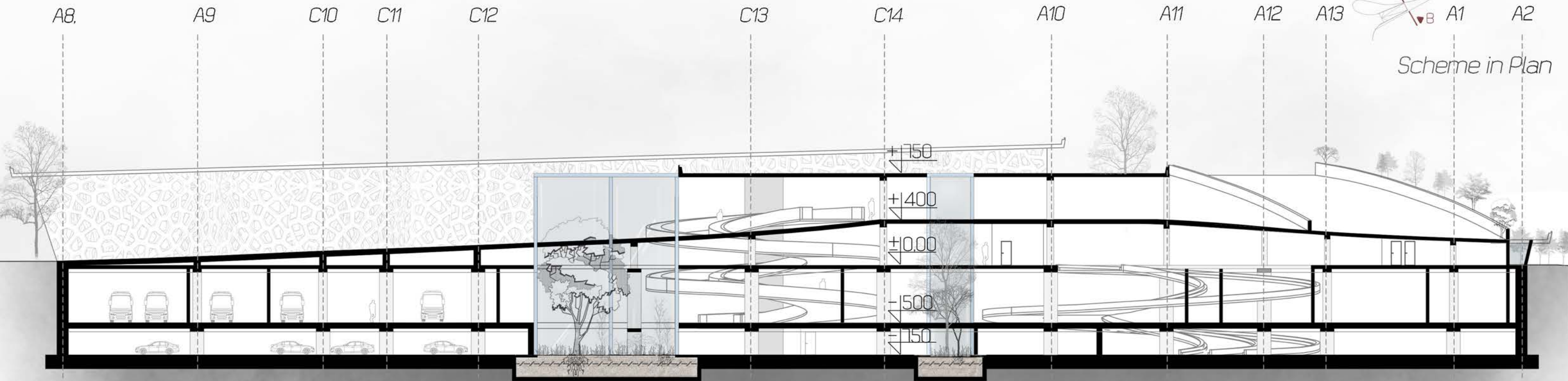
SECTION Δ-Δ



IV. FINAL INTERPRETATION OF THE PROJECT:

6.3 Section in Context

SECTION B-B



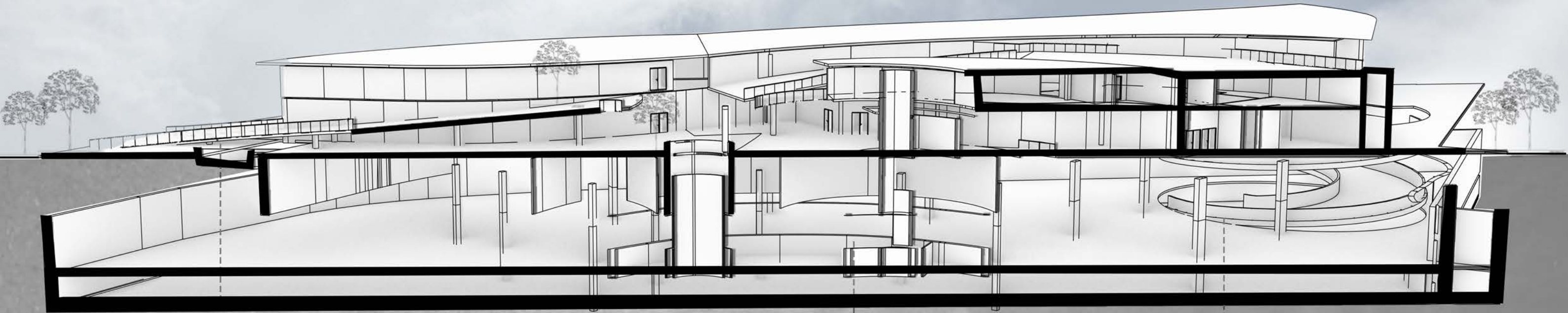
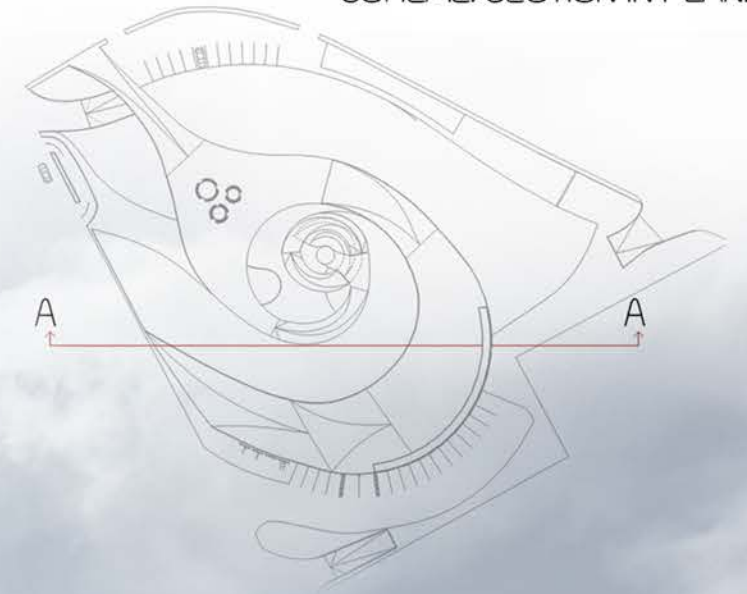
Scheme in Plan



IV. FINAL INTERPRETATION OF THE PROJECT:

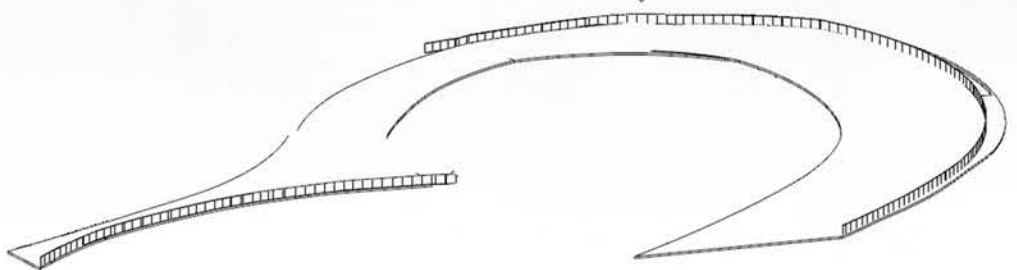
6.3, 3D Section

SCHEME: SECTION IN PLAN:

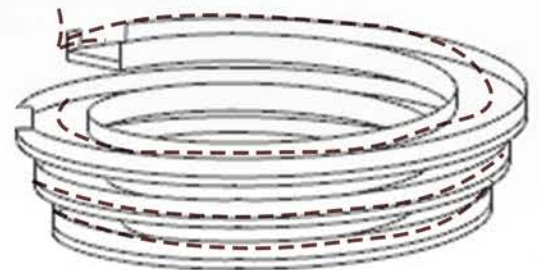


3D Section A-A of the Complex

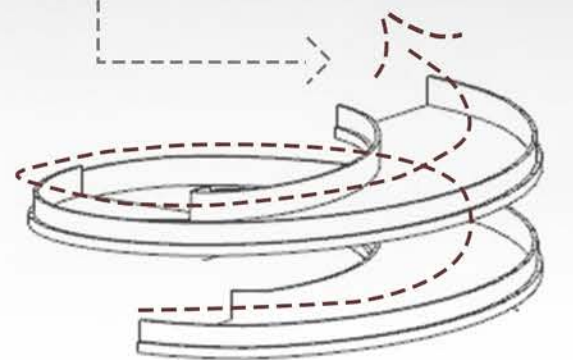
Vertical Composition Elements



Promenade



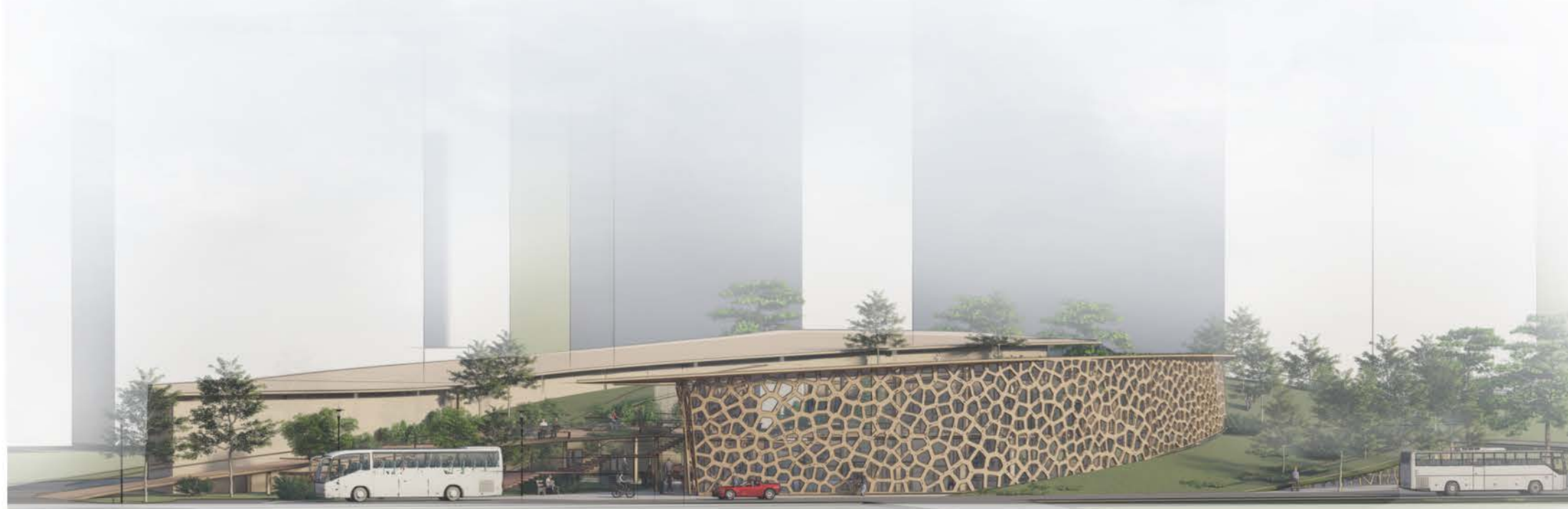
Central Core



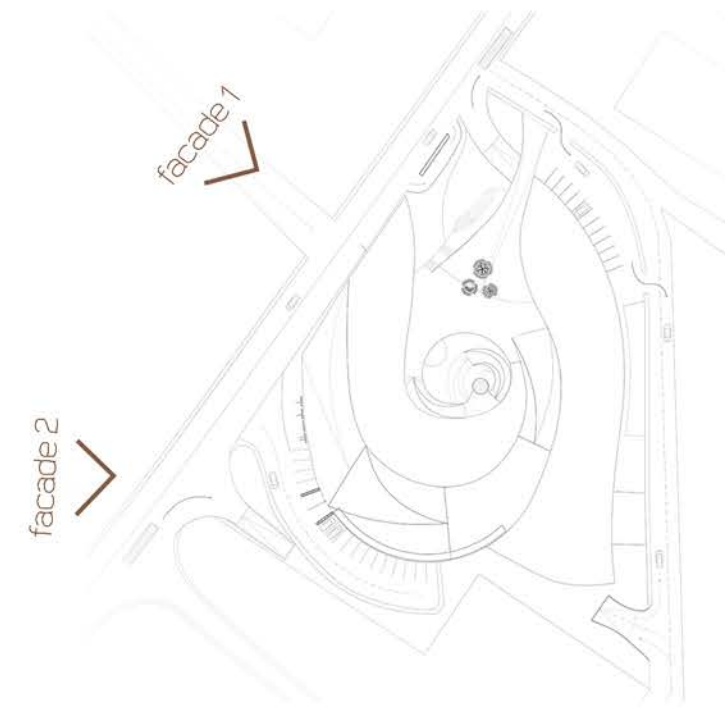
Car Ramp

IV.FINAL INTERPRETATION OF THE PROJECT

6,4 Elevations



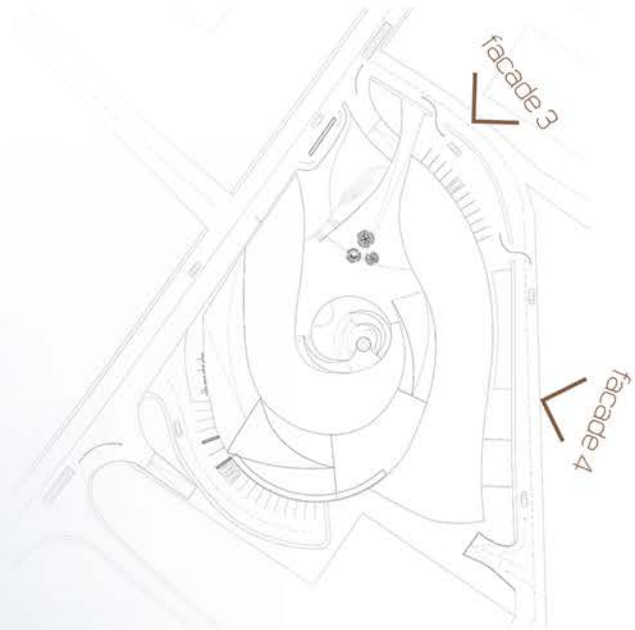
facade 1



facade 2

IV. FINAL INTERPRETATION OF THE PROJECT:

6,4 Elevations



facade 3



facade 4

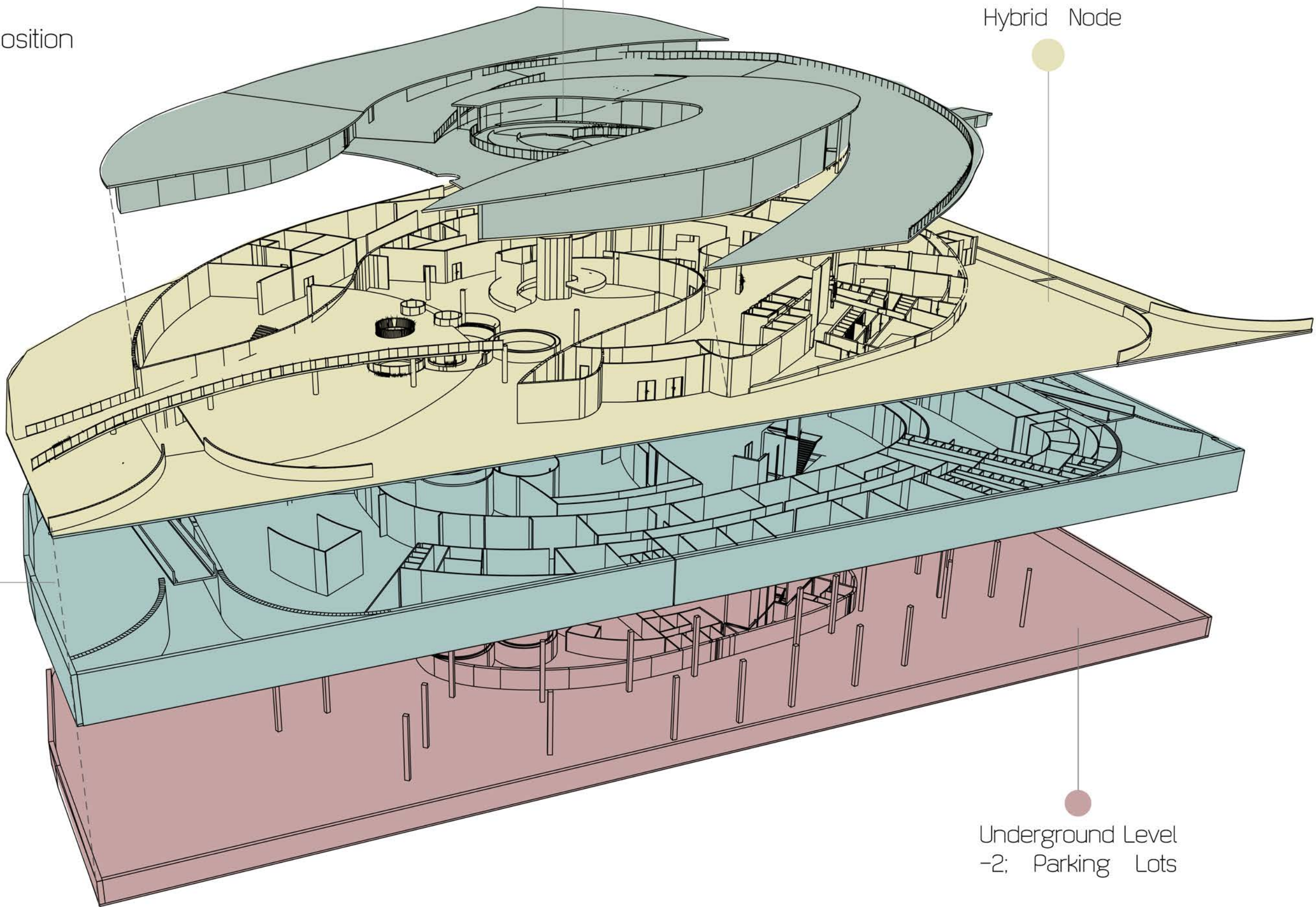
IV. FINAL INTERPRETATION OF THE PROJECT:

7, Exploded axonometric view

First Floor Hybrid Node

Ground Floor Hybrid Node

7,1 Spatial Composition



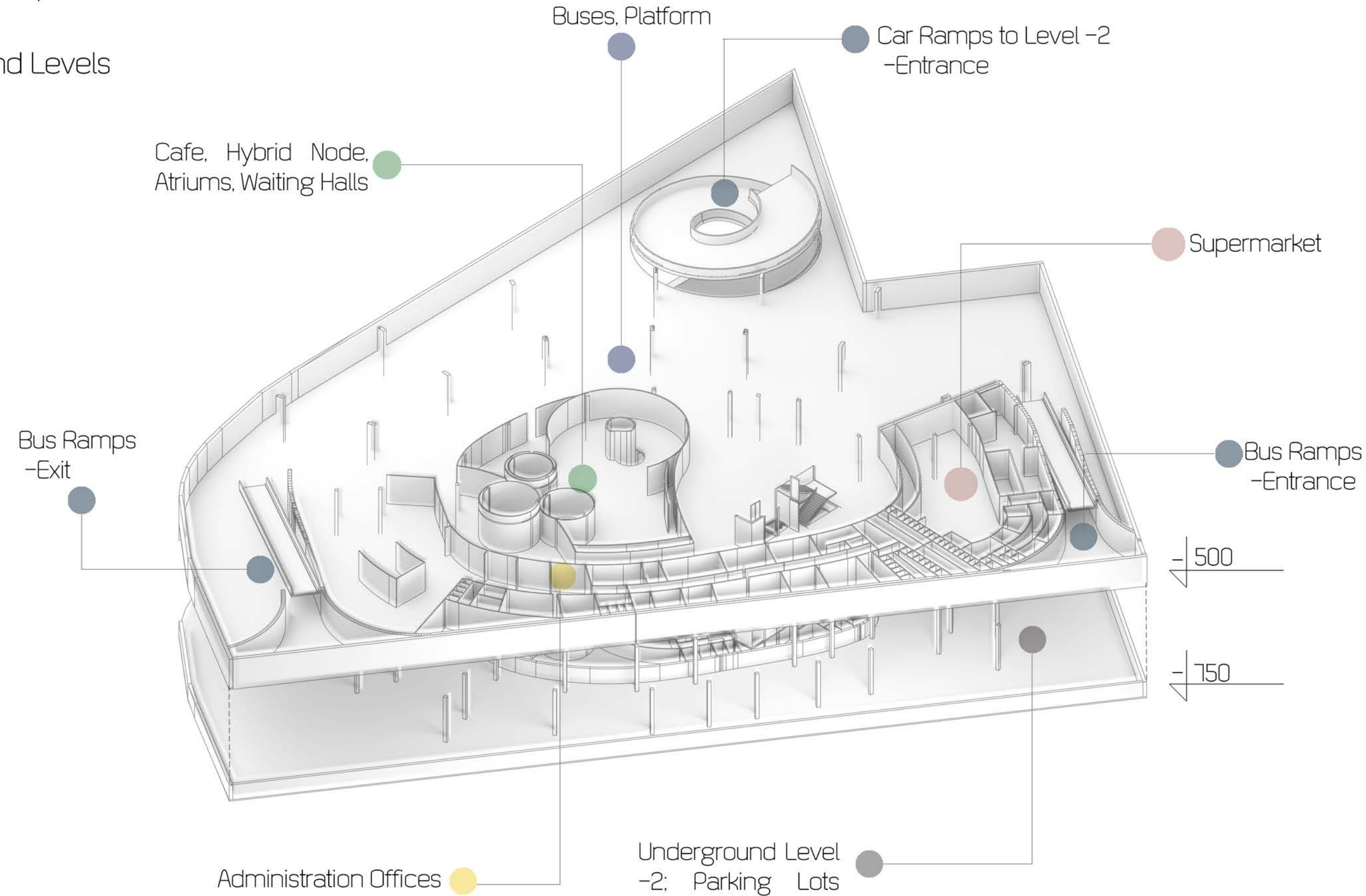
Underground Level -1; The Bus Station

Underground Level -2; Parking Lots

IV. FINAL INTERPRETATION OF THE PROJECT

7,1 Spatial composition

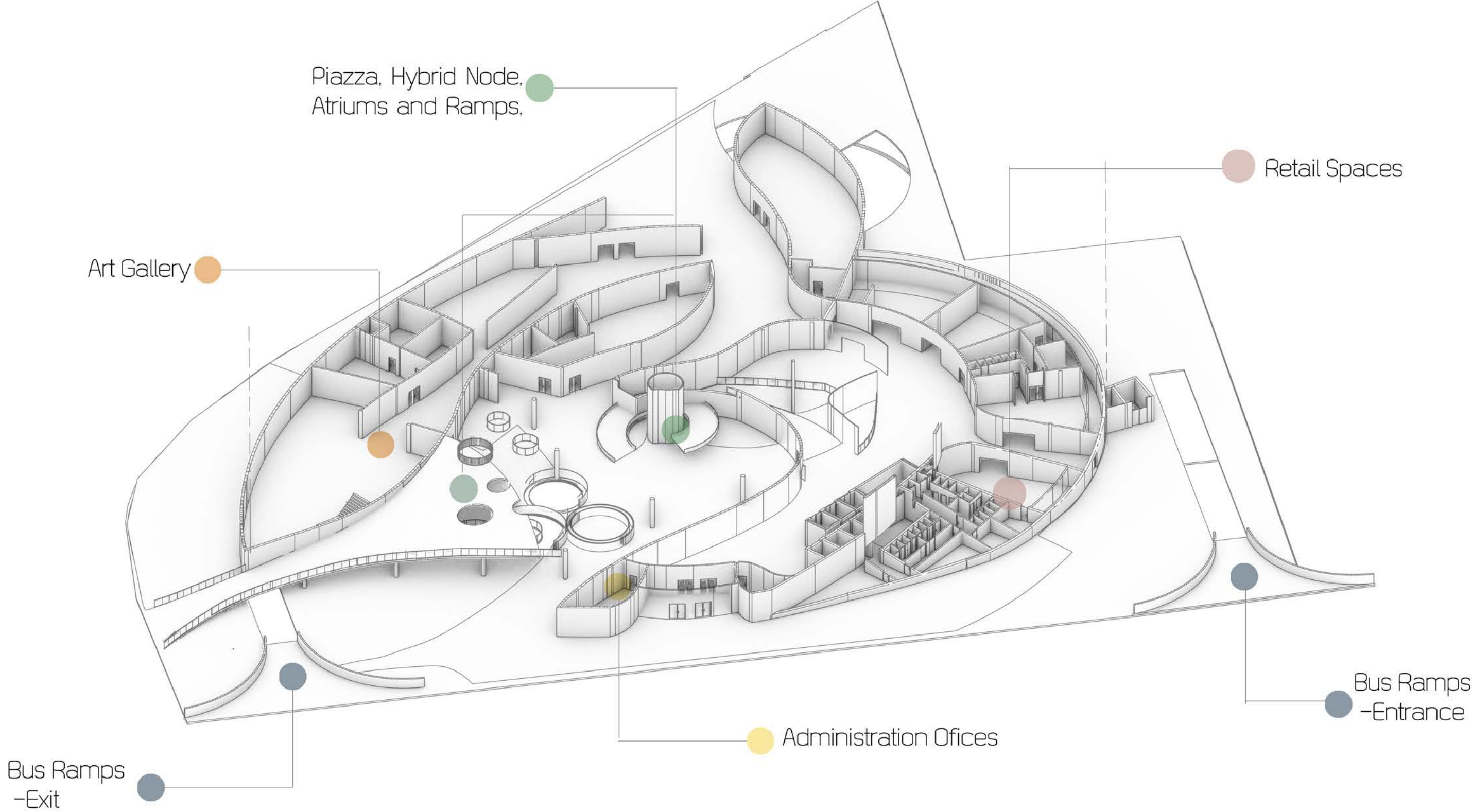
Underground Levels
-1; -2



IV. FINAL INTERPRETATION OF THE PROJECT

7,1 Spatial composition

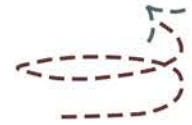


Ground and First Floor
0,1

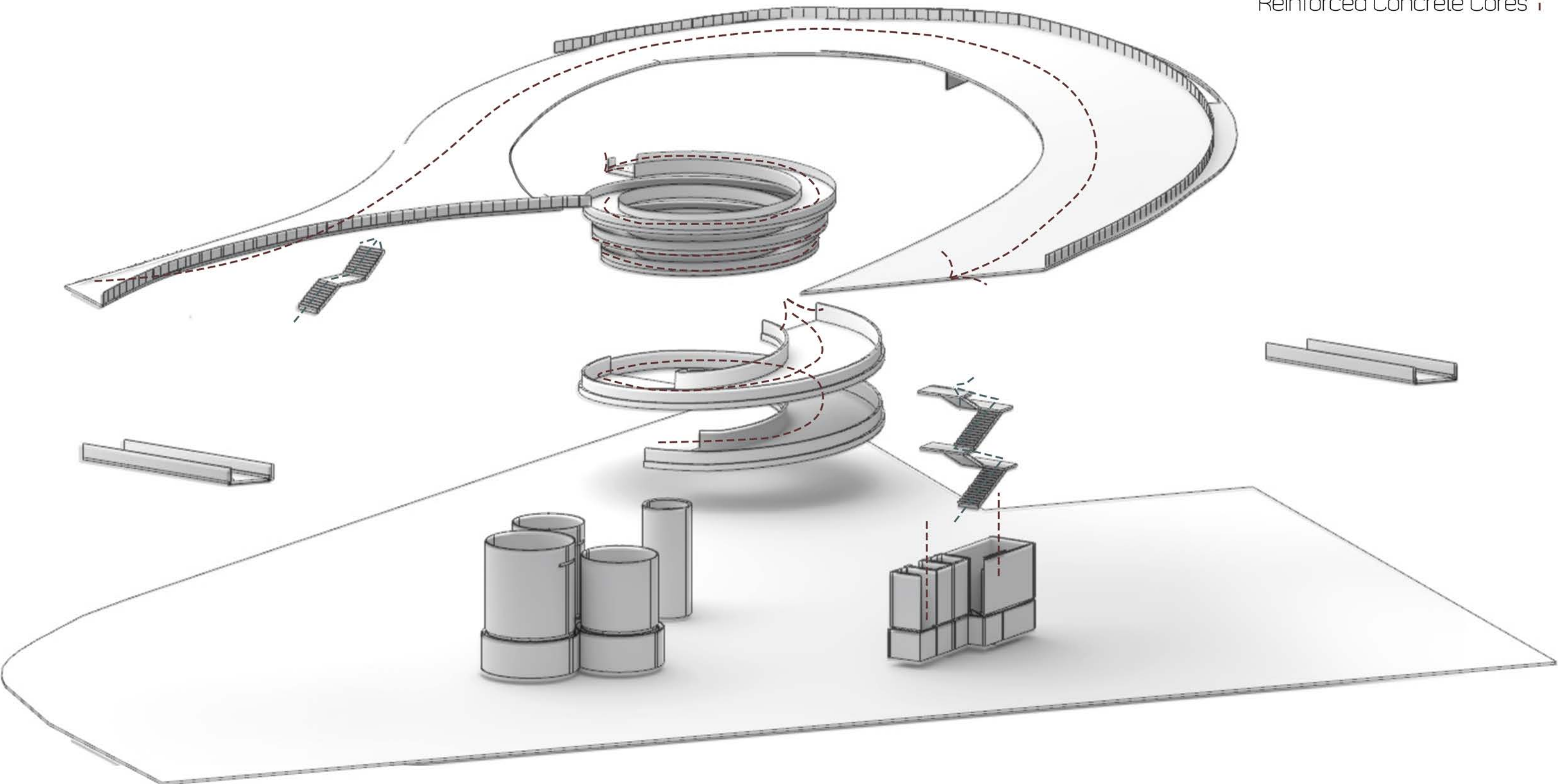


IV. FINAL INTERPRETATION OF THE PROJECT:

7. Exploded axonometric view

7.2 Spatial Configuration

- Ramps 
- Stairs 
- Reinforced Concrete Cores 



Communication through vertical constructive elements

IV. FINAL INTERPRETATION OF THE PROJECT:

7, Exploded axonometric view

Masterplan

7.3 Hierarchy of circulation

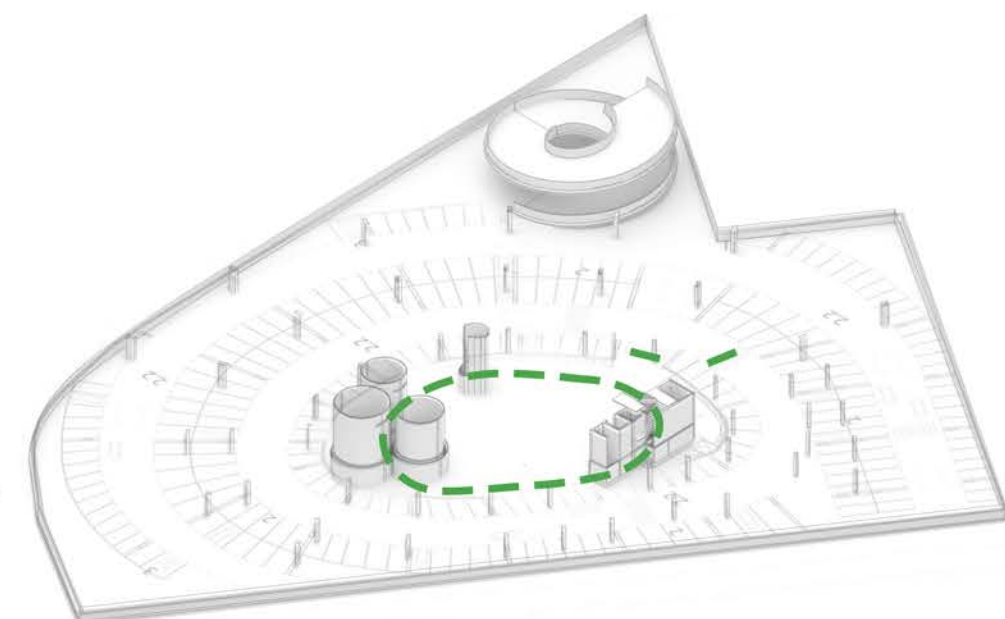
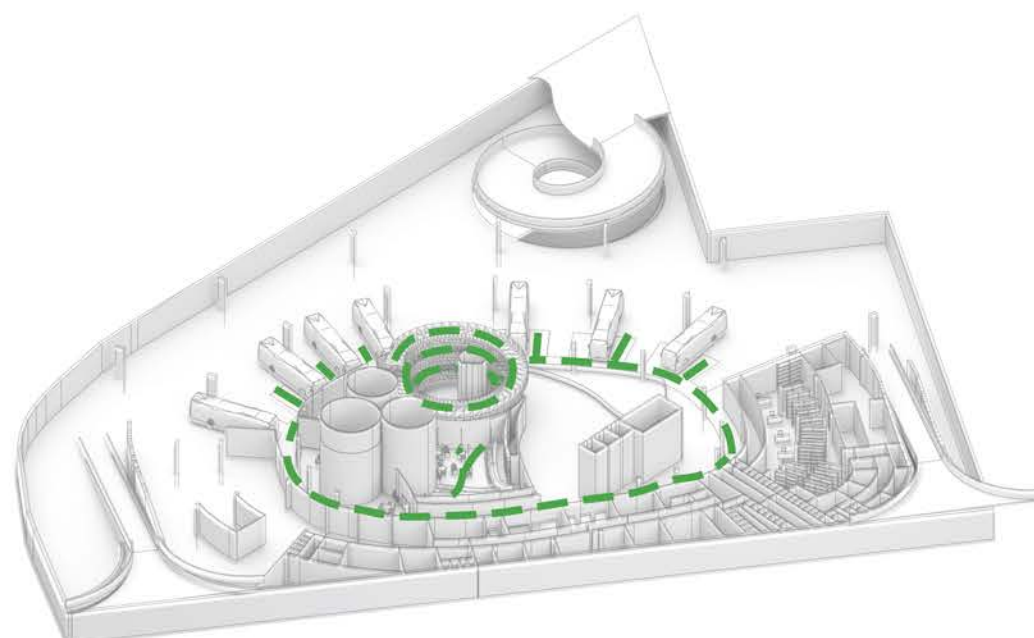
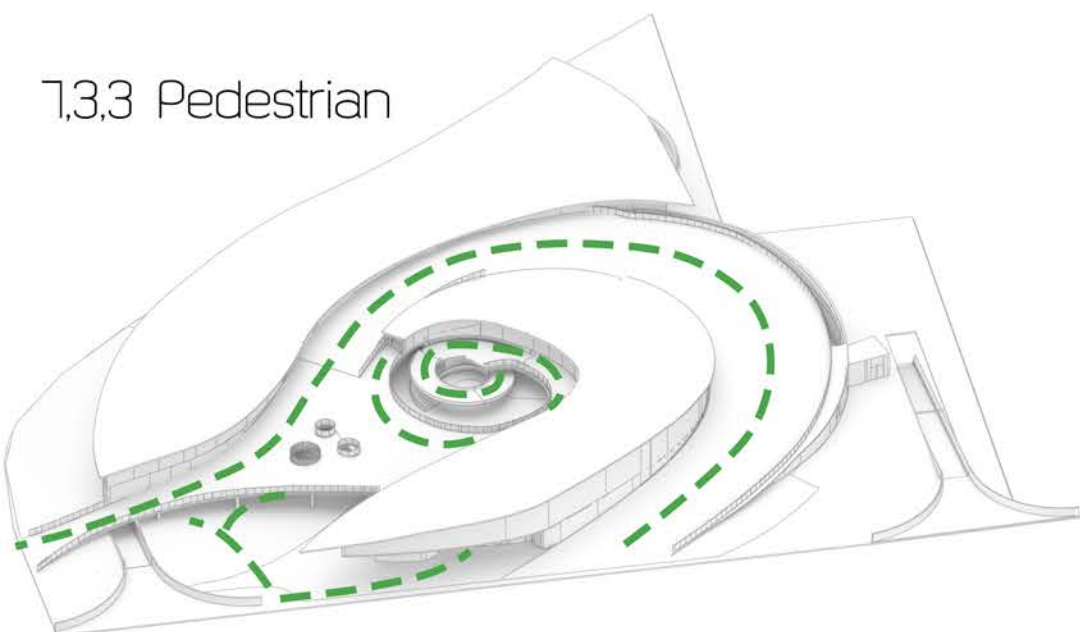
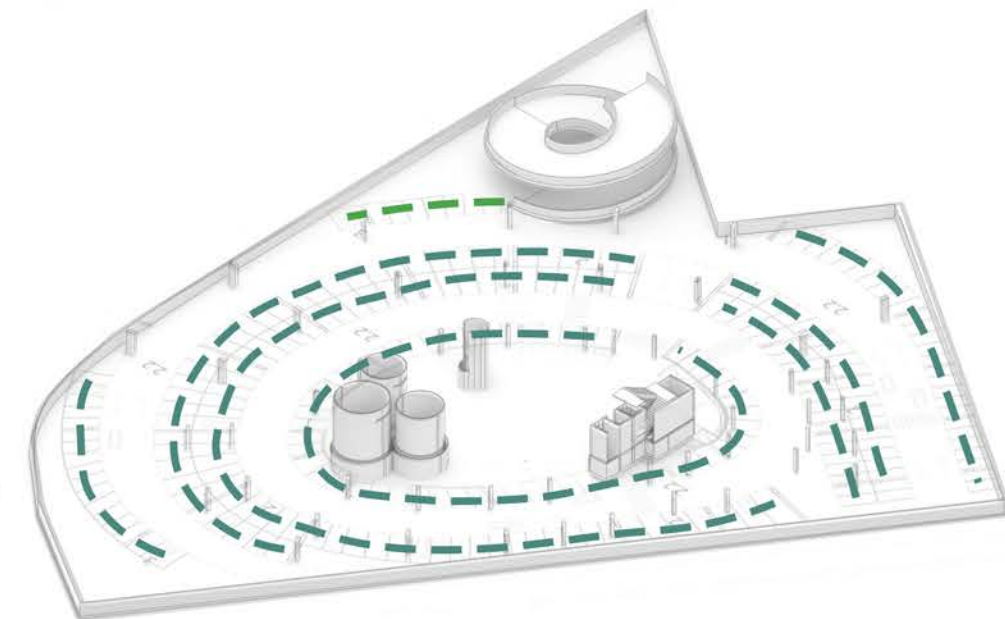
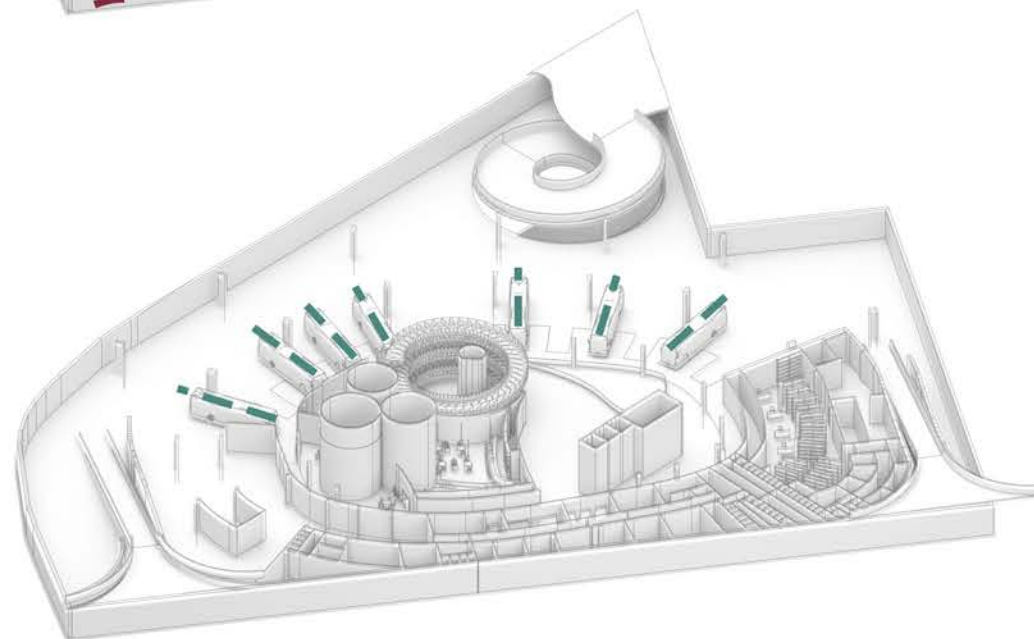
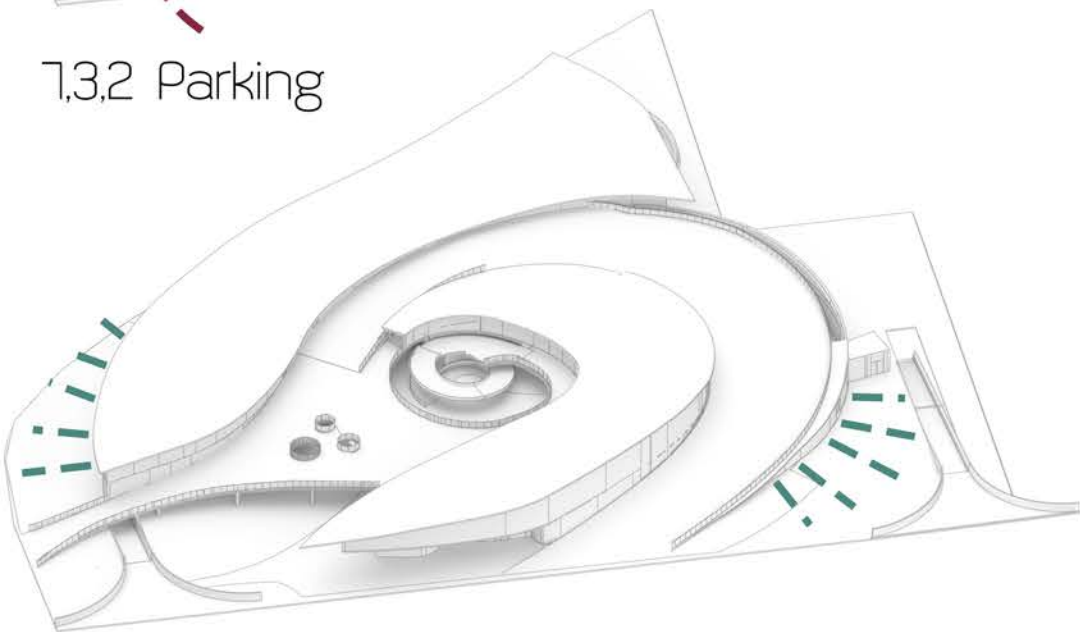
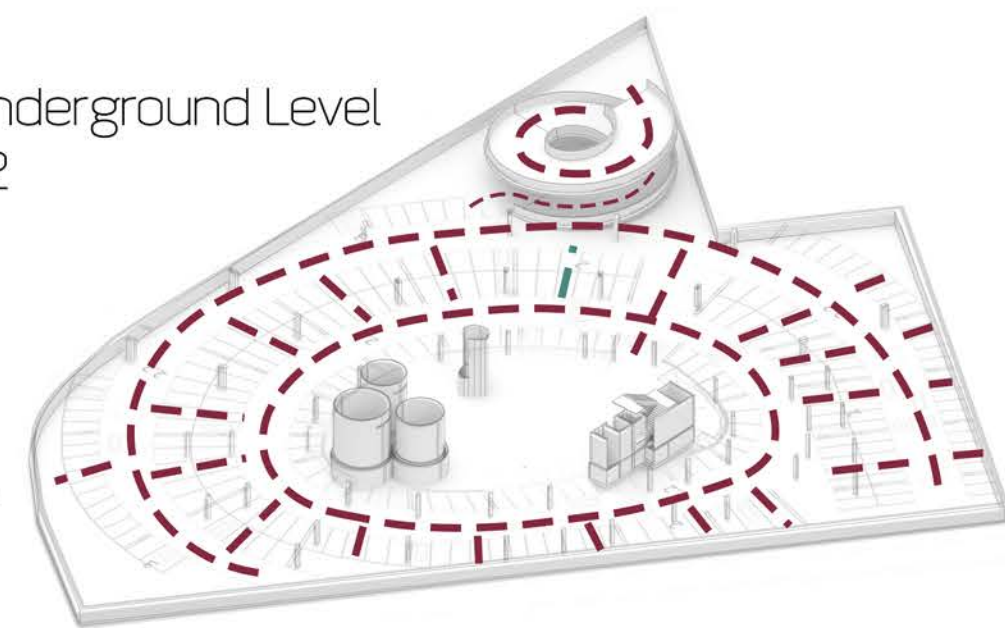
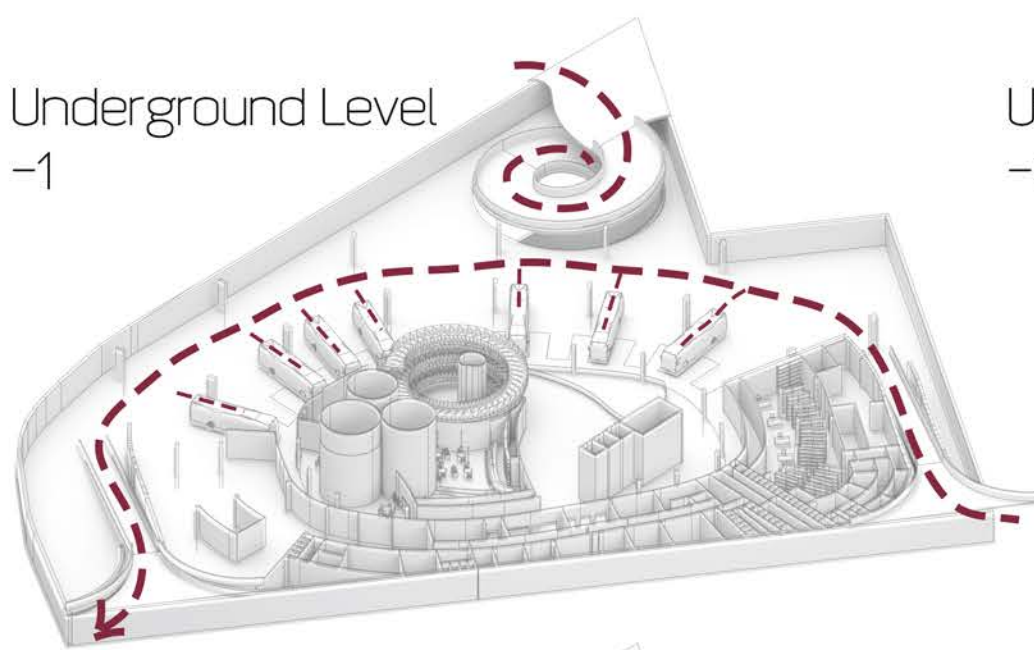
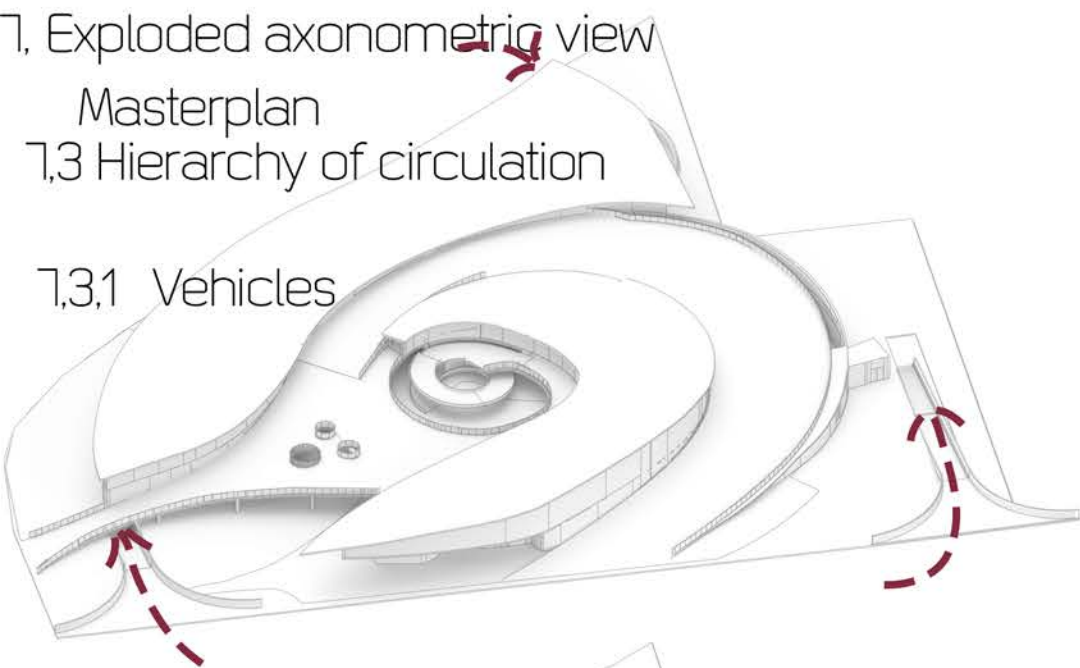
7.3.1 Vehicles

7.3.2 Parking

7.3.3 Pedestrian

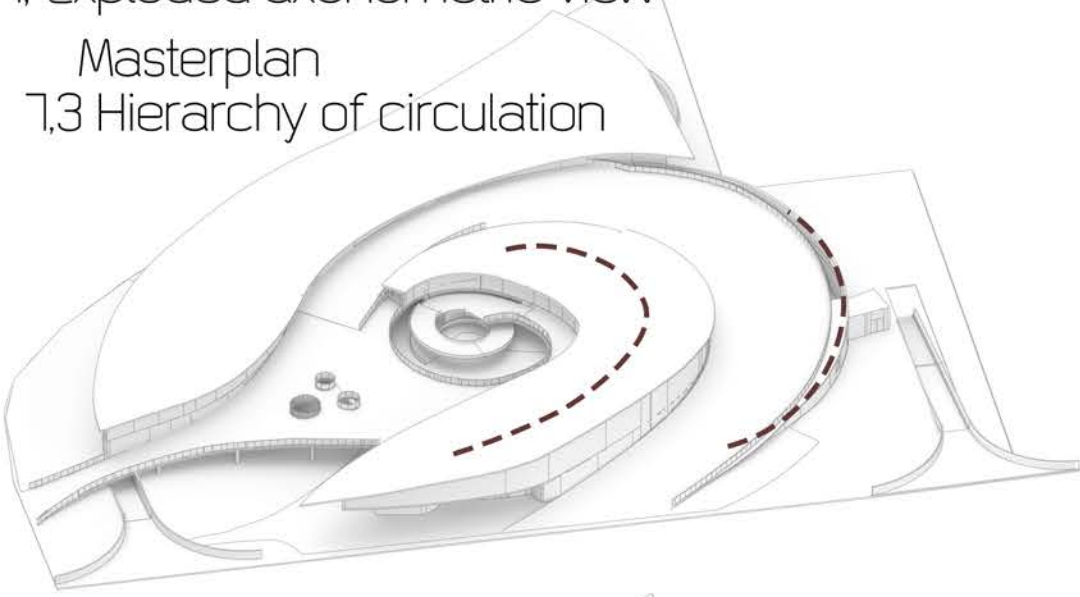
Underground Level
-1

Underground Level
-2

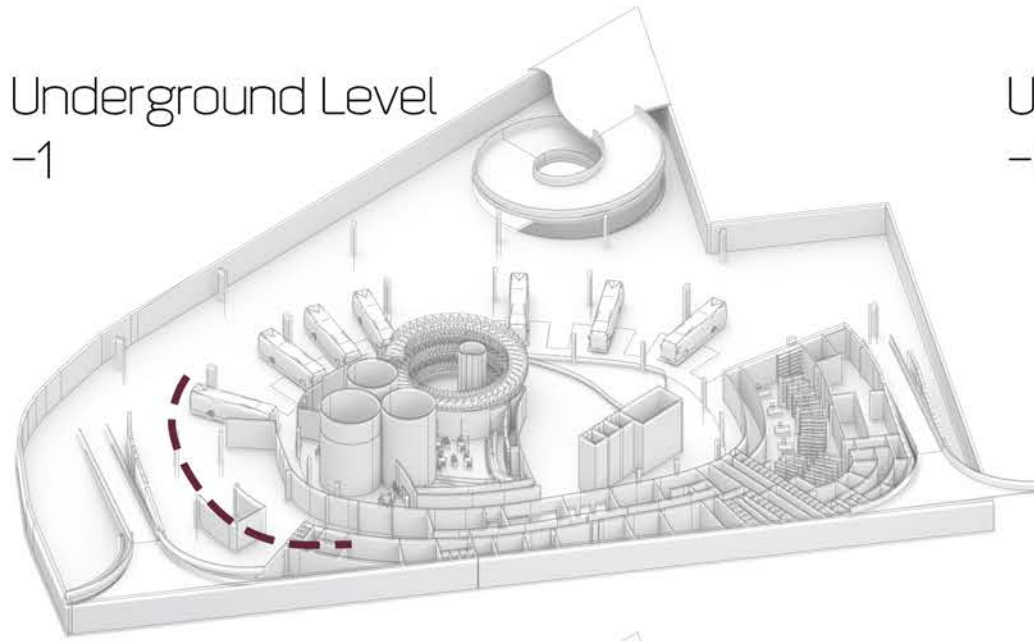


IV. FINAL INTERPRETATION OF THE PROJECT:

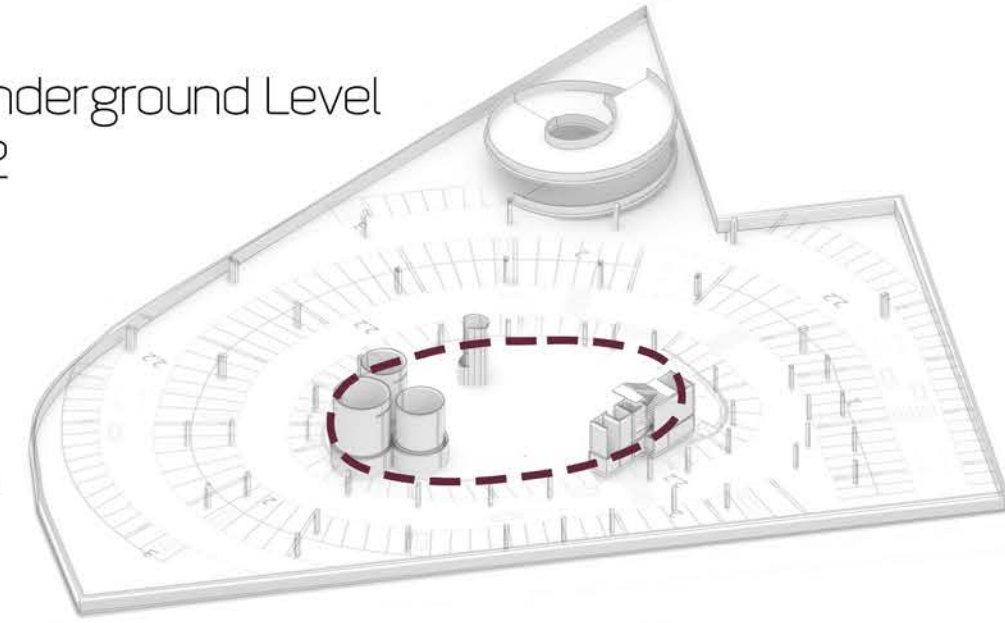
7.3.4 Services
7. Exploded axonometric view
Masterplan
7.3 Hierarchy of circulation



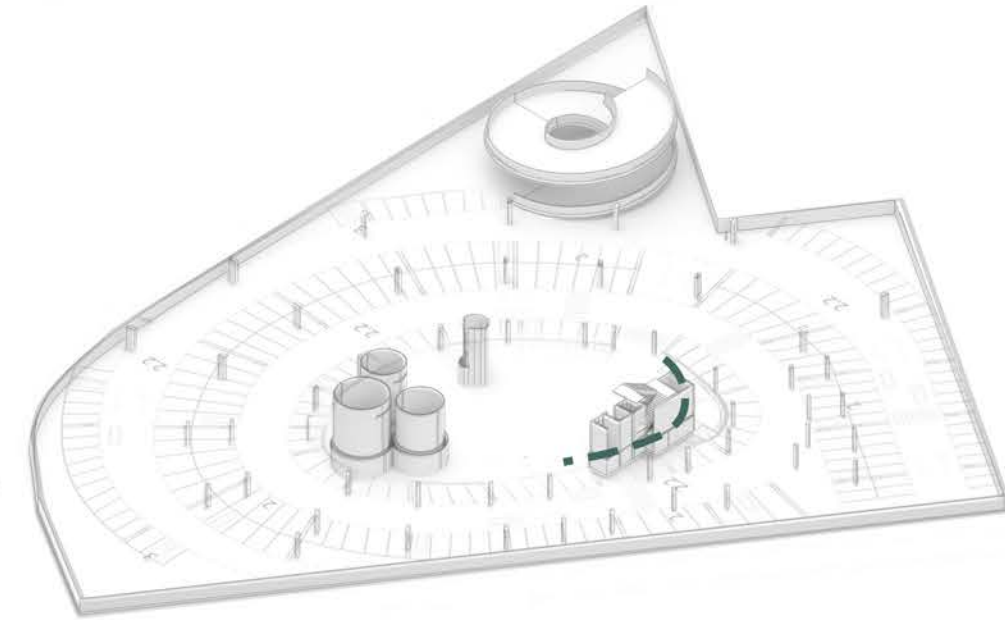
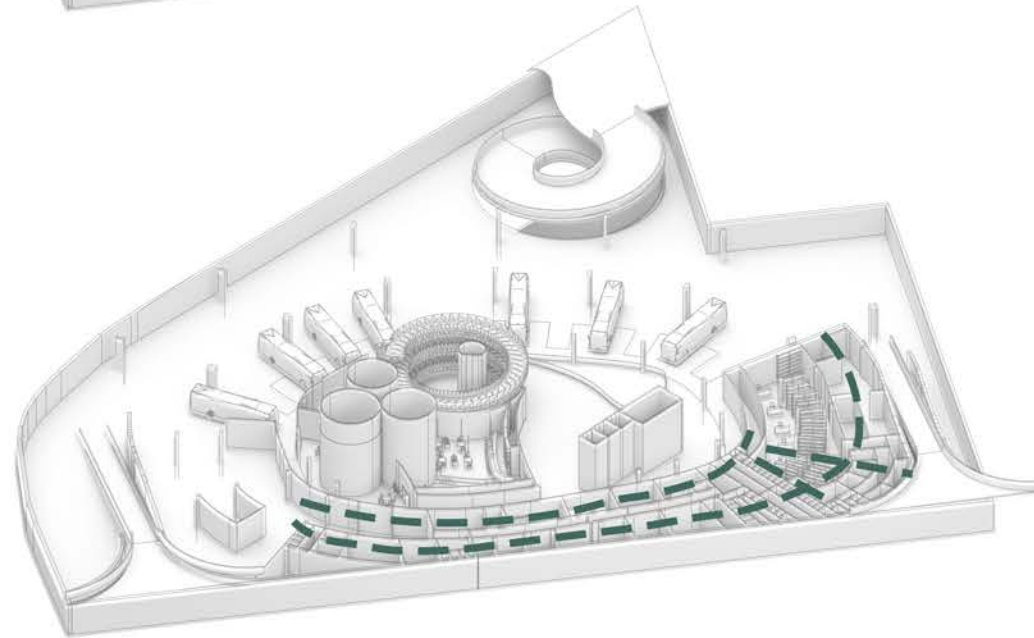
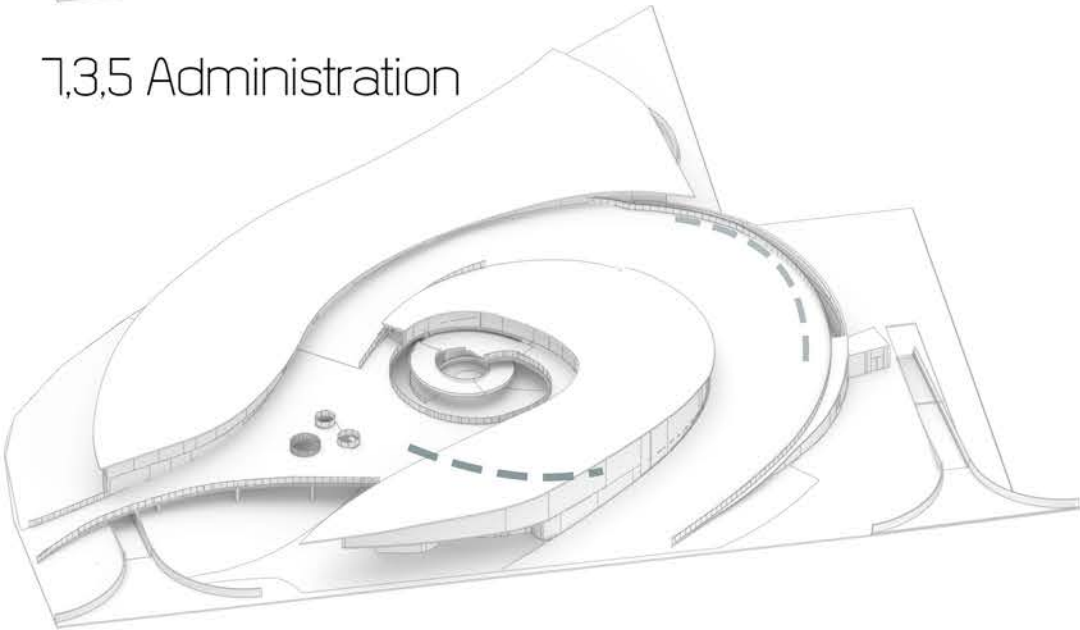
Underground Level
-1



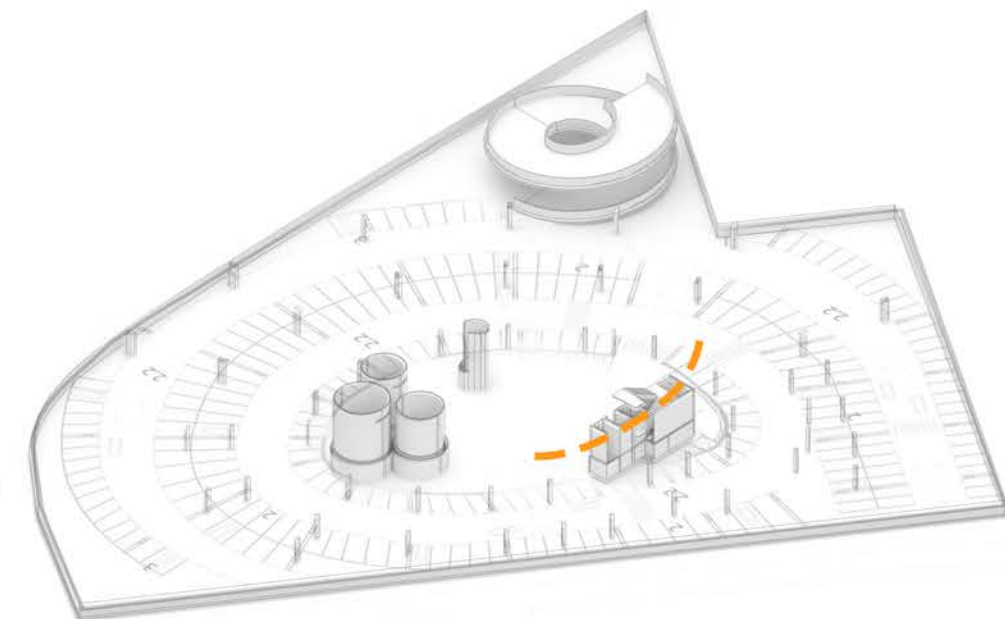
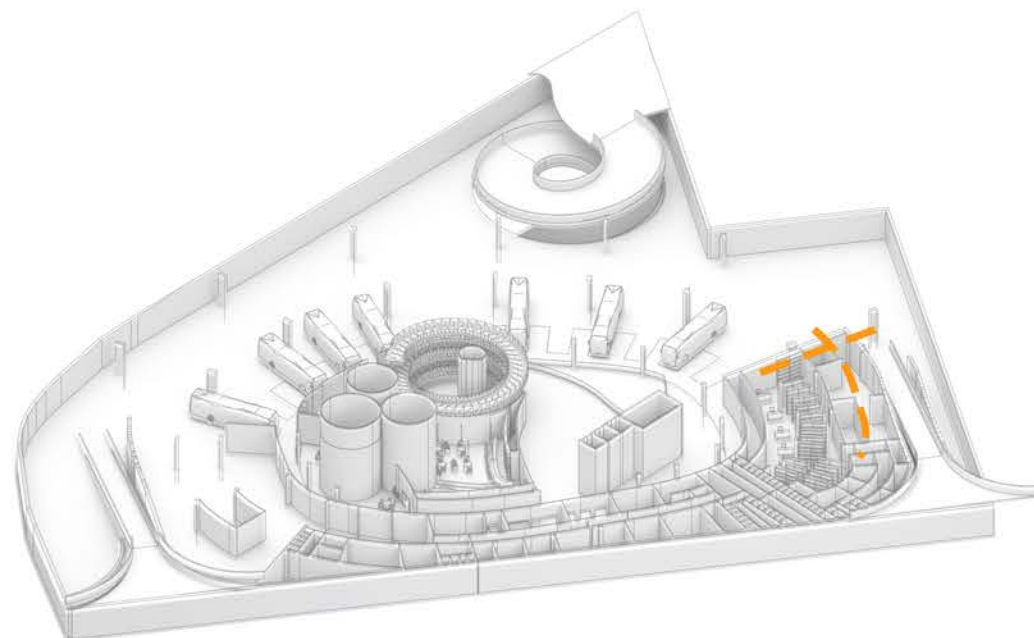
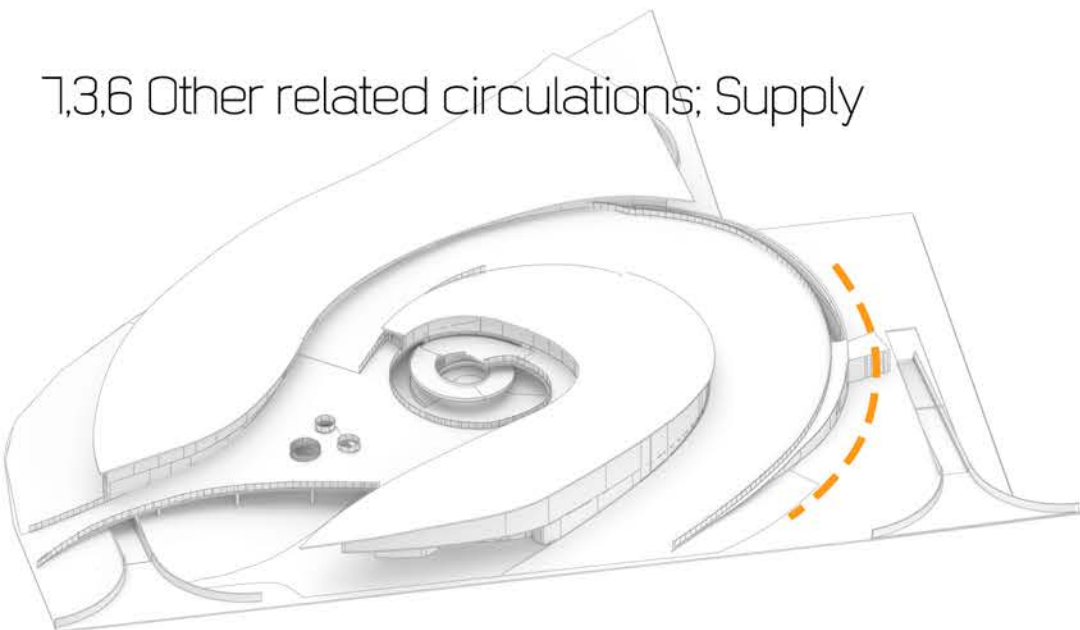
Underground Level
-2



7.3.5 Administration



7.3.6 Other related circulations: Supply



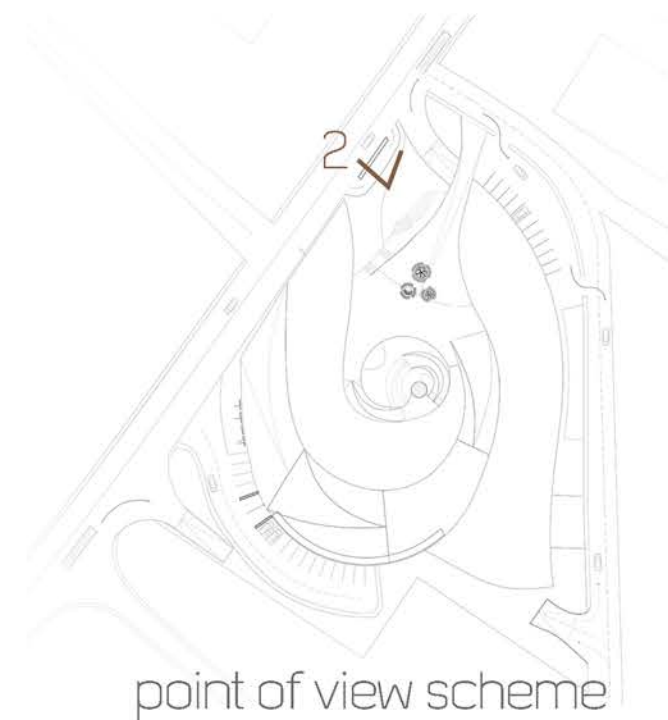
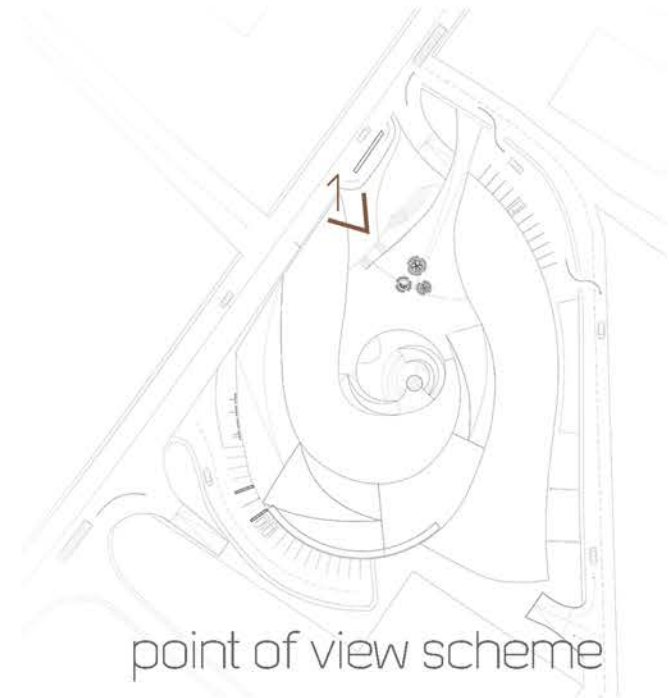






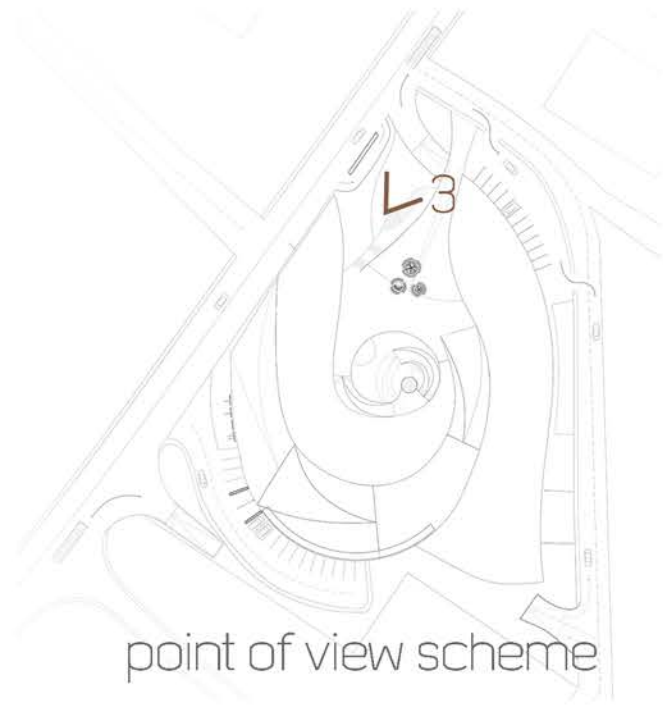
IV.FINAL INTERPRETATION OF THE PROJECT

8 EXPRESSION - RENDERED IMAGES



IV.FINAL INTERPRETATION OF THE PROJECT

8 EXPRESSION - RENDERED IMAGES



IV.FINAL INTERPRETATION OF THE PROJECT

8 EXPRESSION - RENDERED IMAGES



8.1 External atmospheric renderings

5

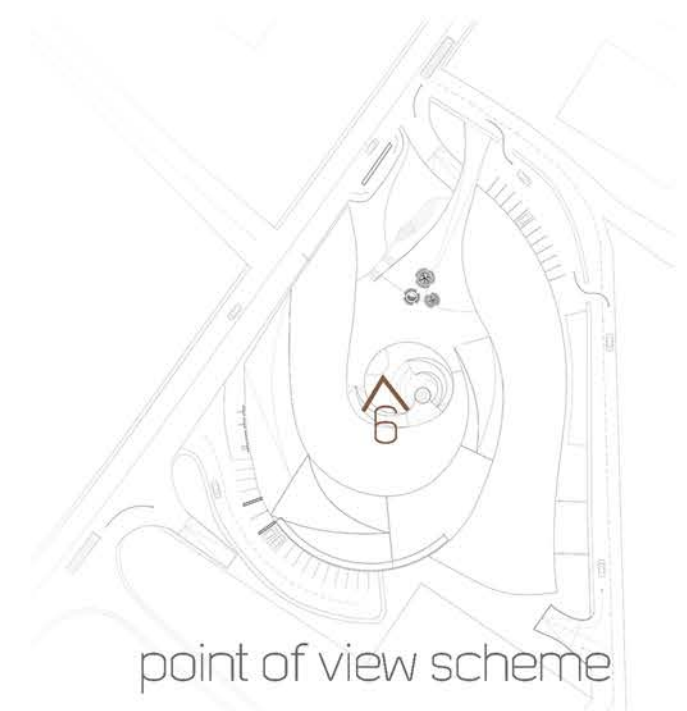
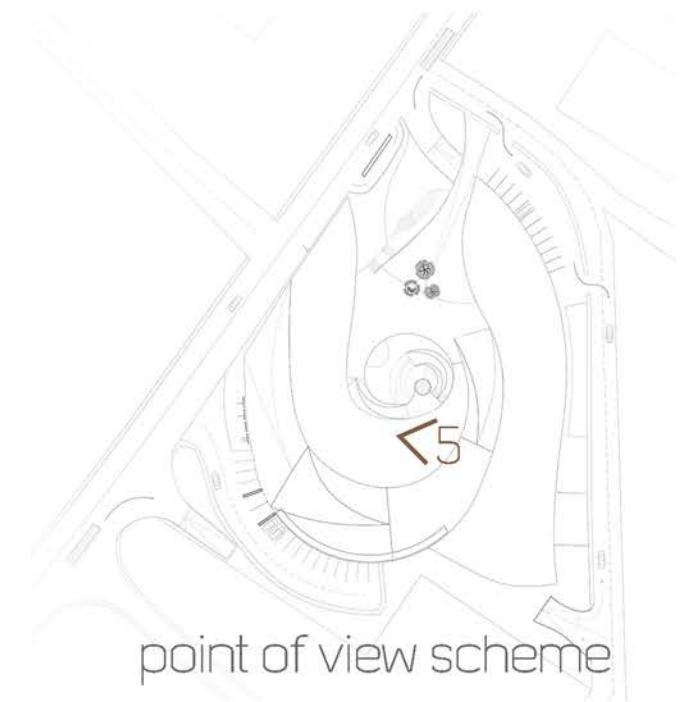


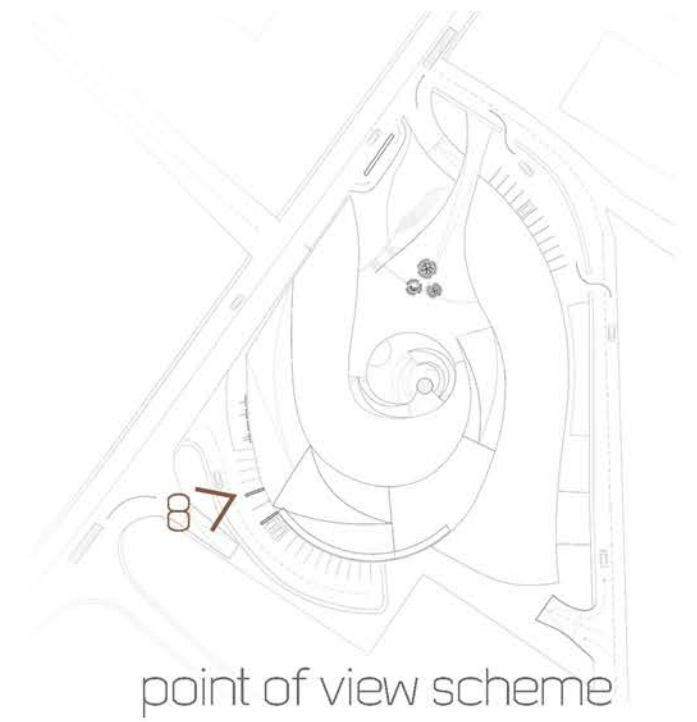
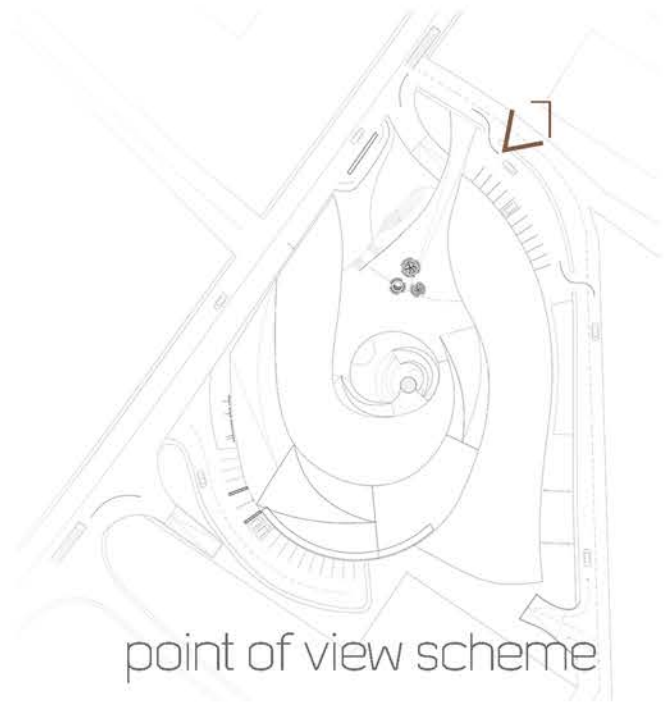
6



8 EXPRESSION - RENDERED IMAGES

8,2 Internal atmospheric renderings





IV. FINAL INTERPRETATION OF THE PROJECT

8, Redered images



IV. FINAL INTERPRETATION OF THE PROJECT

8, Redered images



IV. FINAL INTERPRETATION OF THE PROJECT

8, Redered images



IV. FINAL INTERPRETATION OF THE PROJECT

8, Redered images



IV. FINAL INTERPRETATION OF THE PROJECT

8, Redered images



V. STRUCTURES AND TECTONICS

9. PHYSICAL MODELS OF STRUCTURAL AND TECTONIC ELEMENTS, COMPONENTS AND SYSTEMS;
1:200 / 1:20 / 1:10



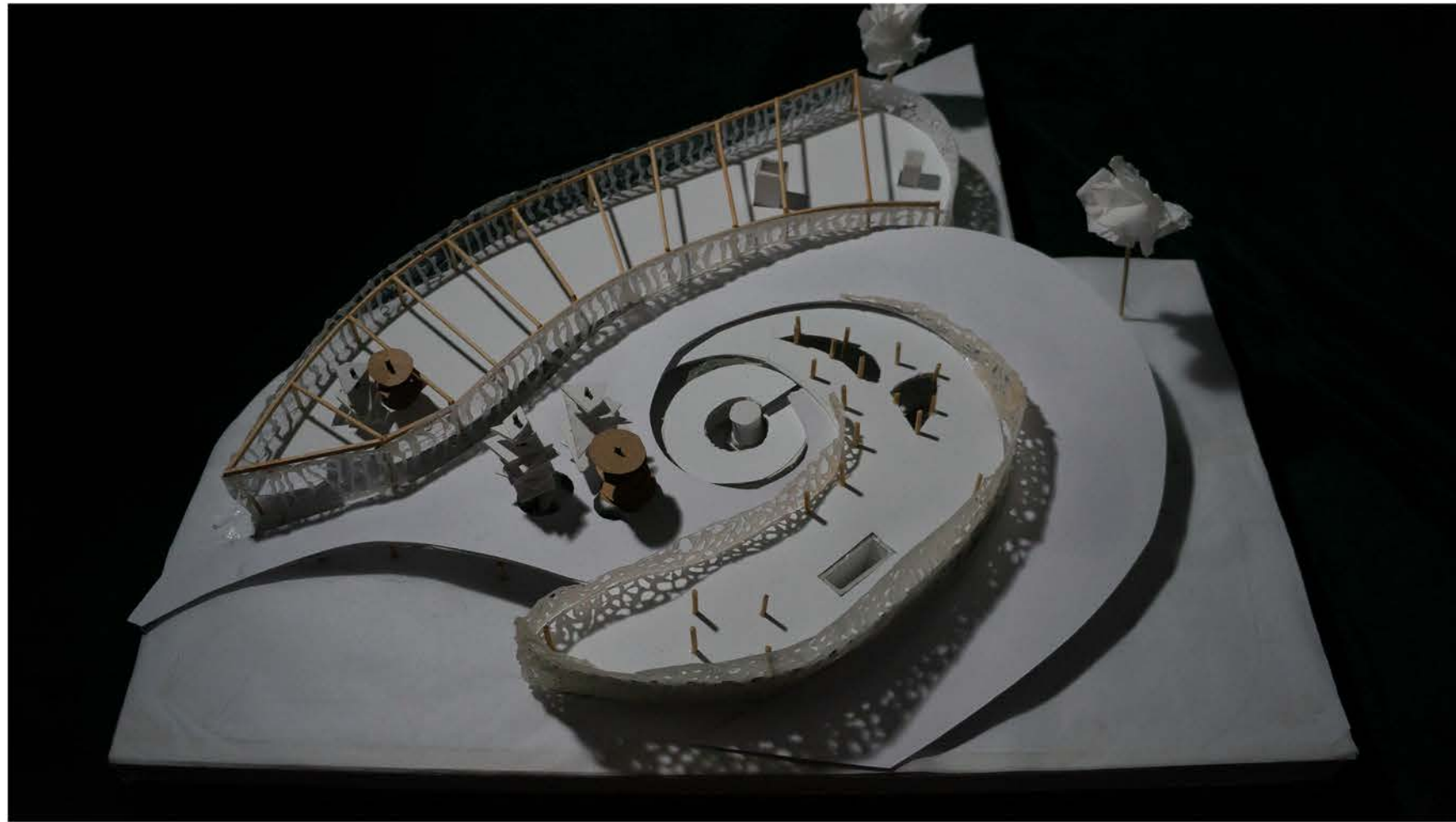
V. STRUCTURES AND TECTONICS

9,1 Whole physical model of structural system of the project



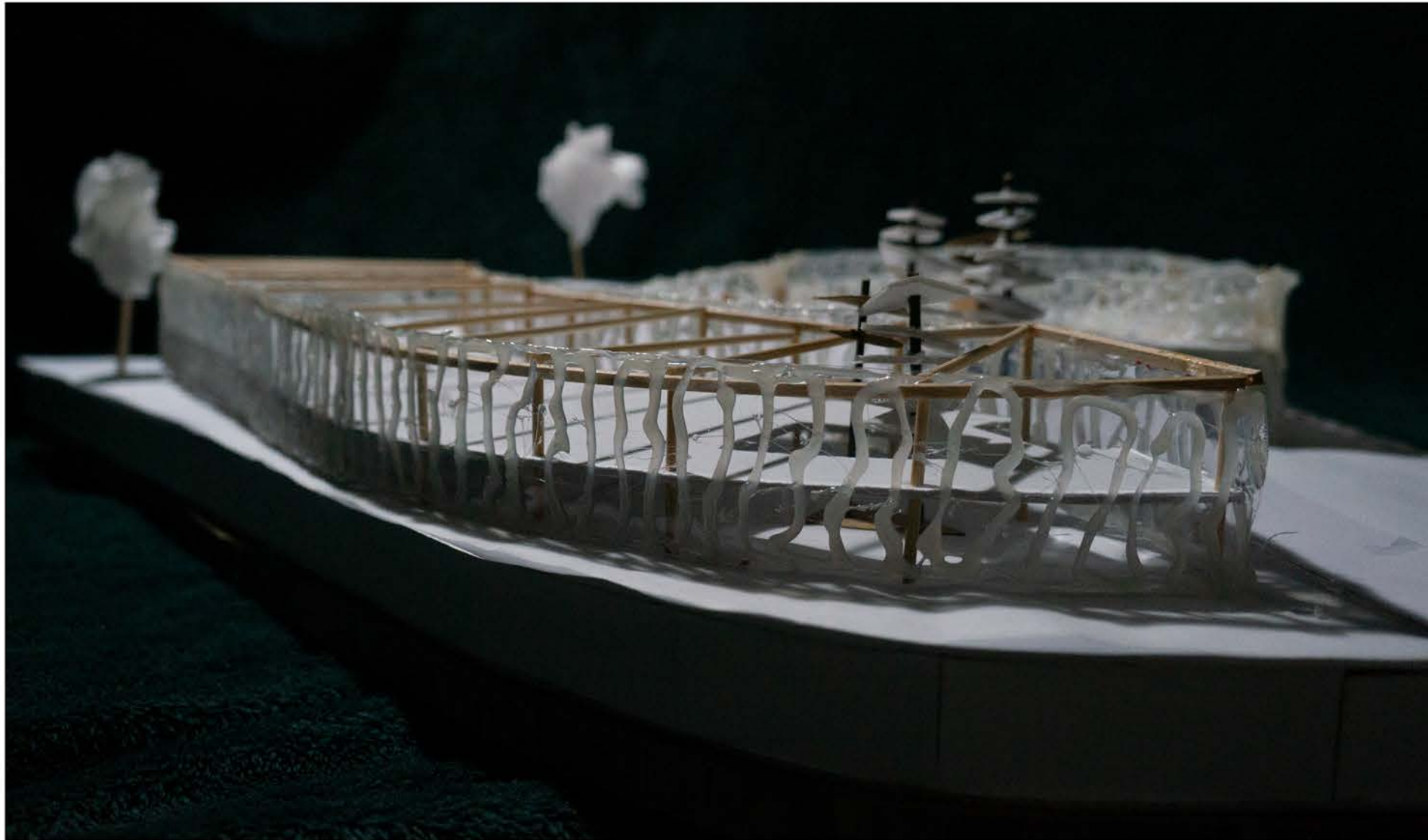
V. STRUCTURES AND TECTONICS. 15% OF FINAL GRADE

9, 1 Whole physical model of structural system of the project, 1:200



V. STRUCTURES AND TECTONICS

9,1 Whole physical model of structural system of the project



P 1:200

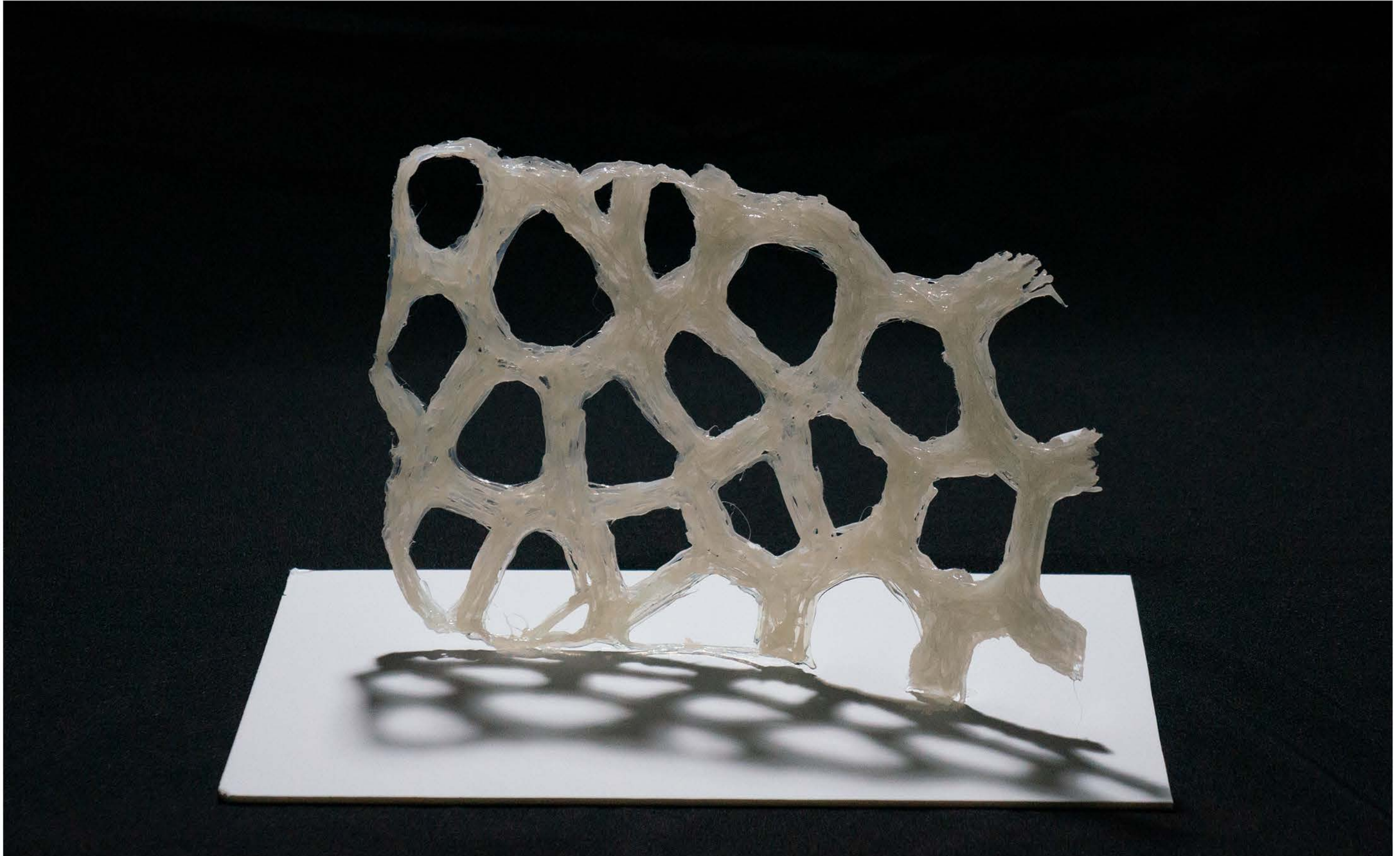
V. STRUCTURES AND TECTONICS. 15% OF FINAL GRADE

9, 1 Whole physical model of structural system of the project, 1:200

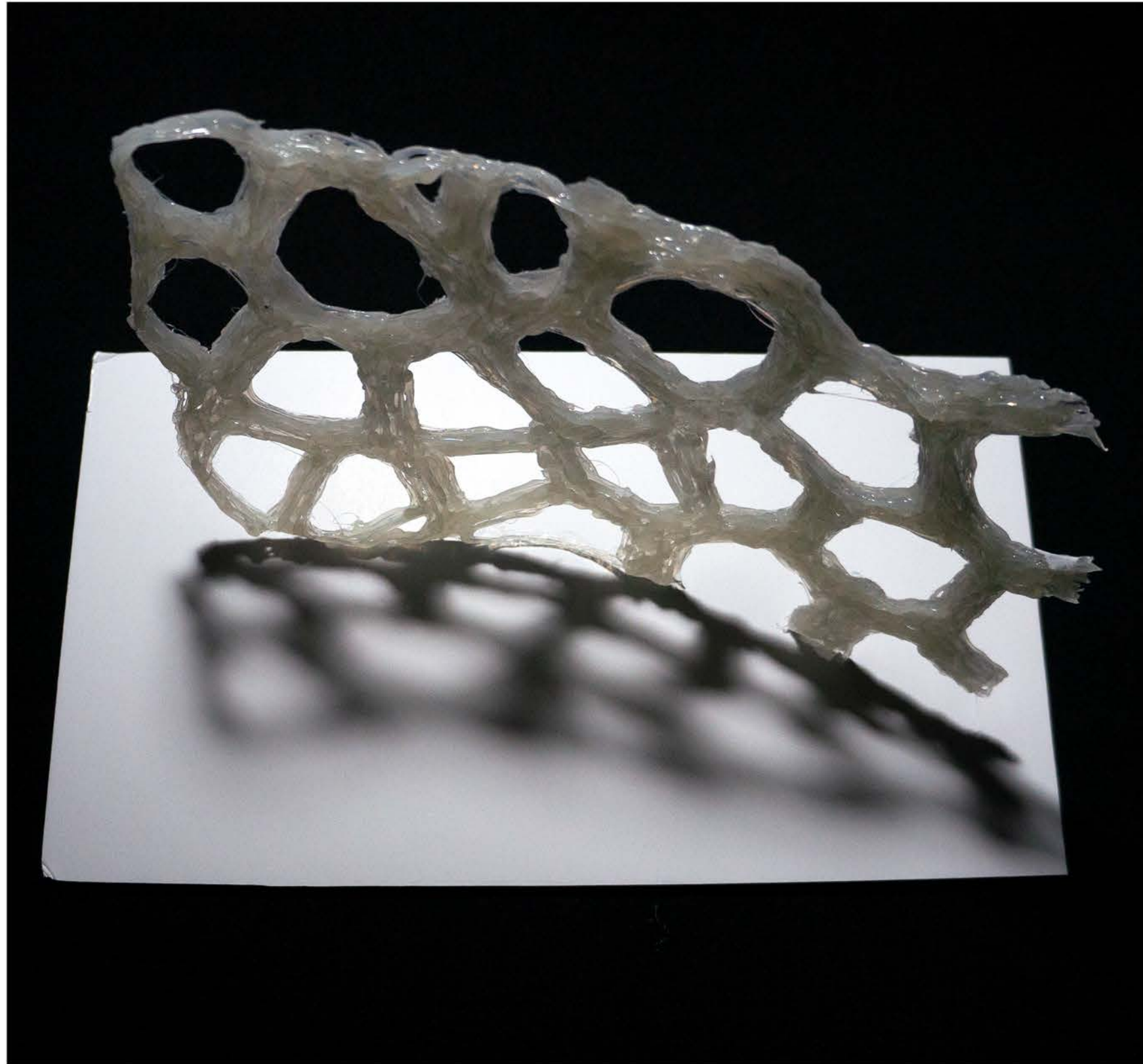


V. STRUCTURES AND TECTONICS.

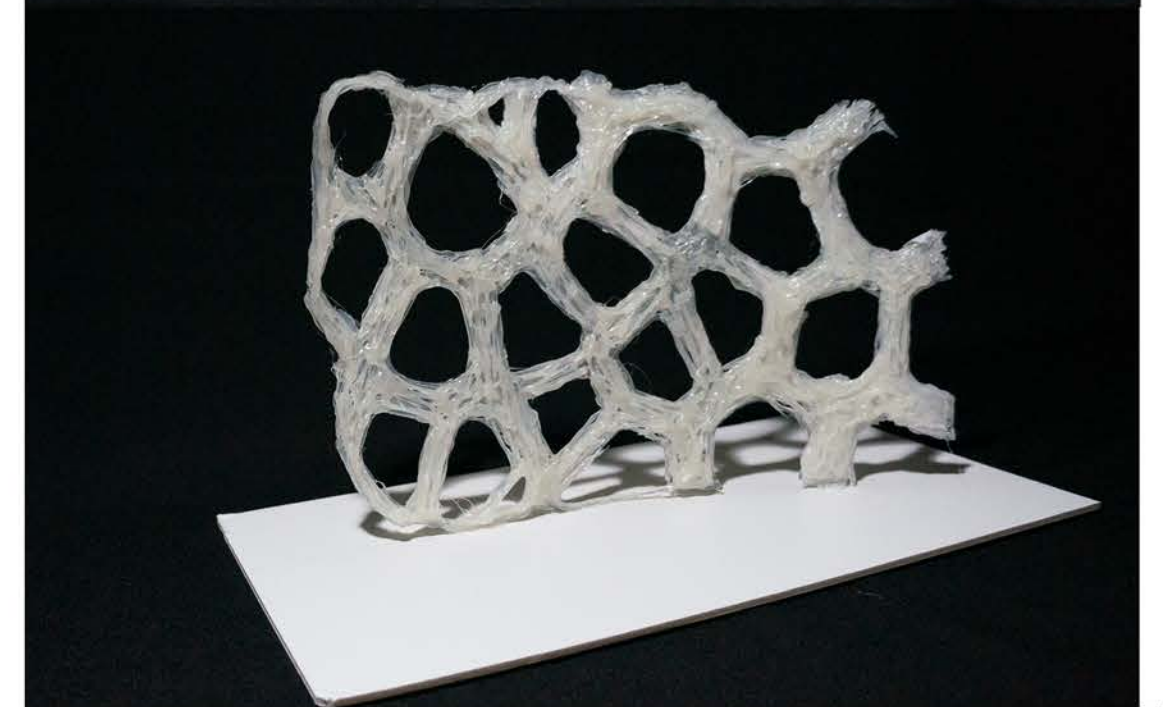
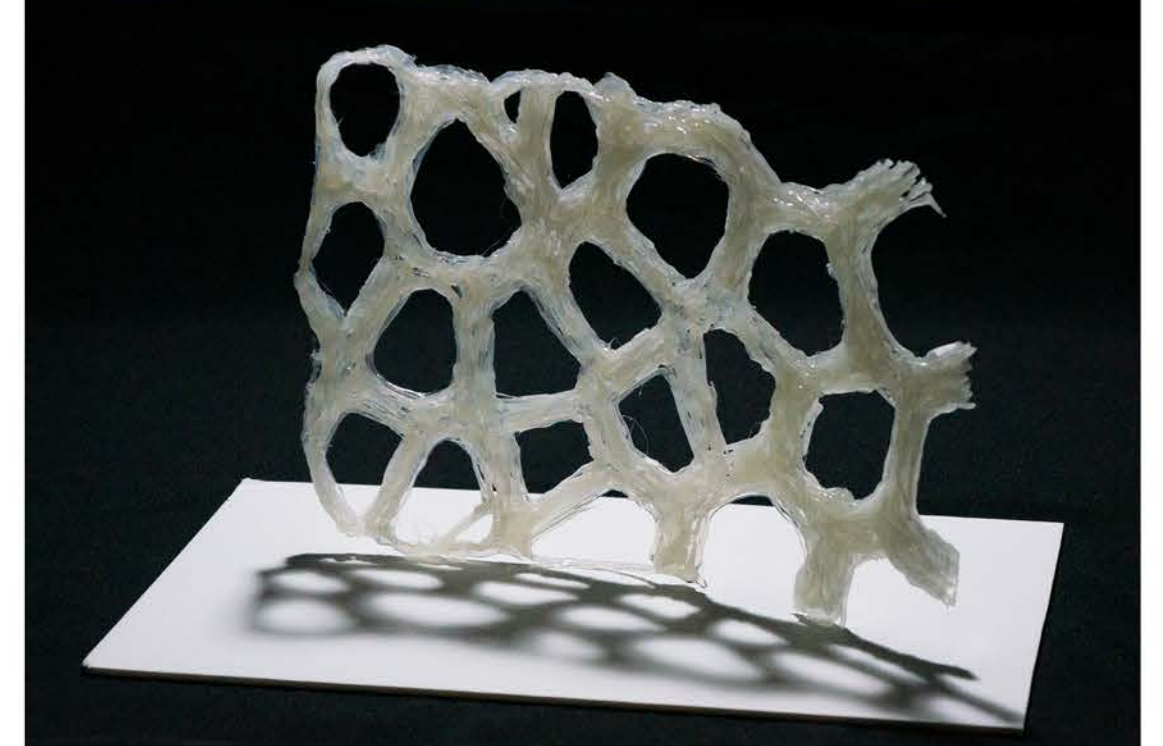
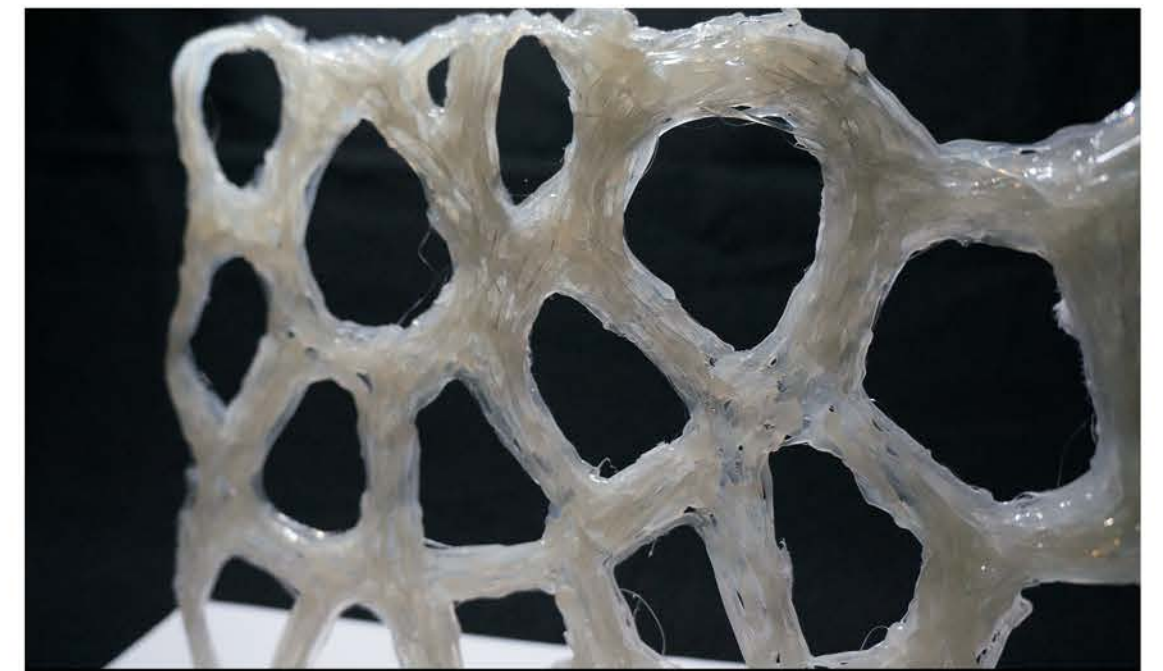
9,2 A typical module / section of tectonic system – building envelope, 1:20

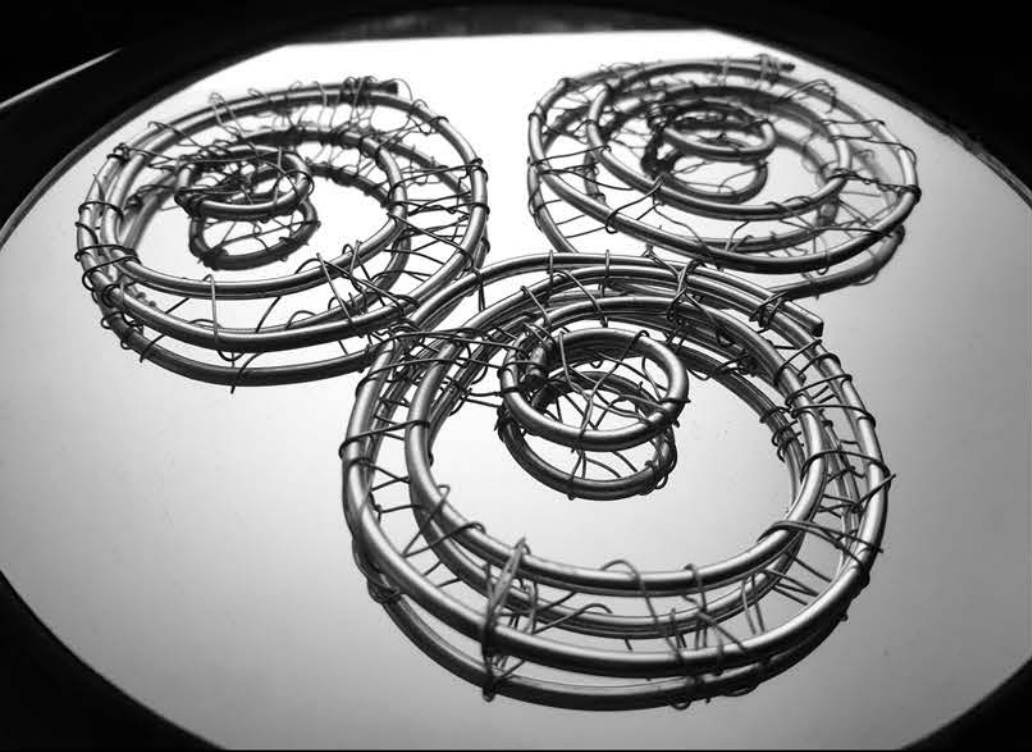


V. STRUCTURES AND TECTONICS.



9,2 A typical module / section of tectonic system - building envelope, 1:20





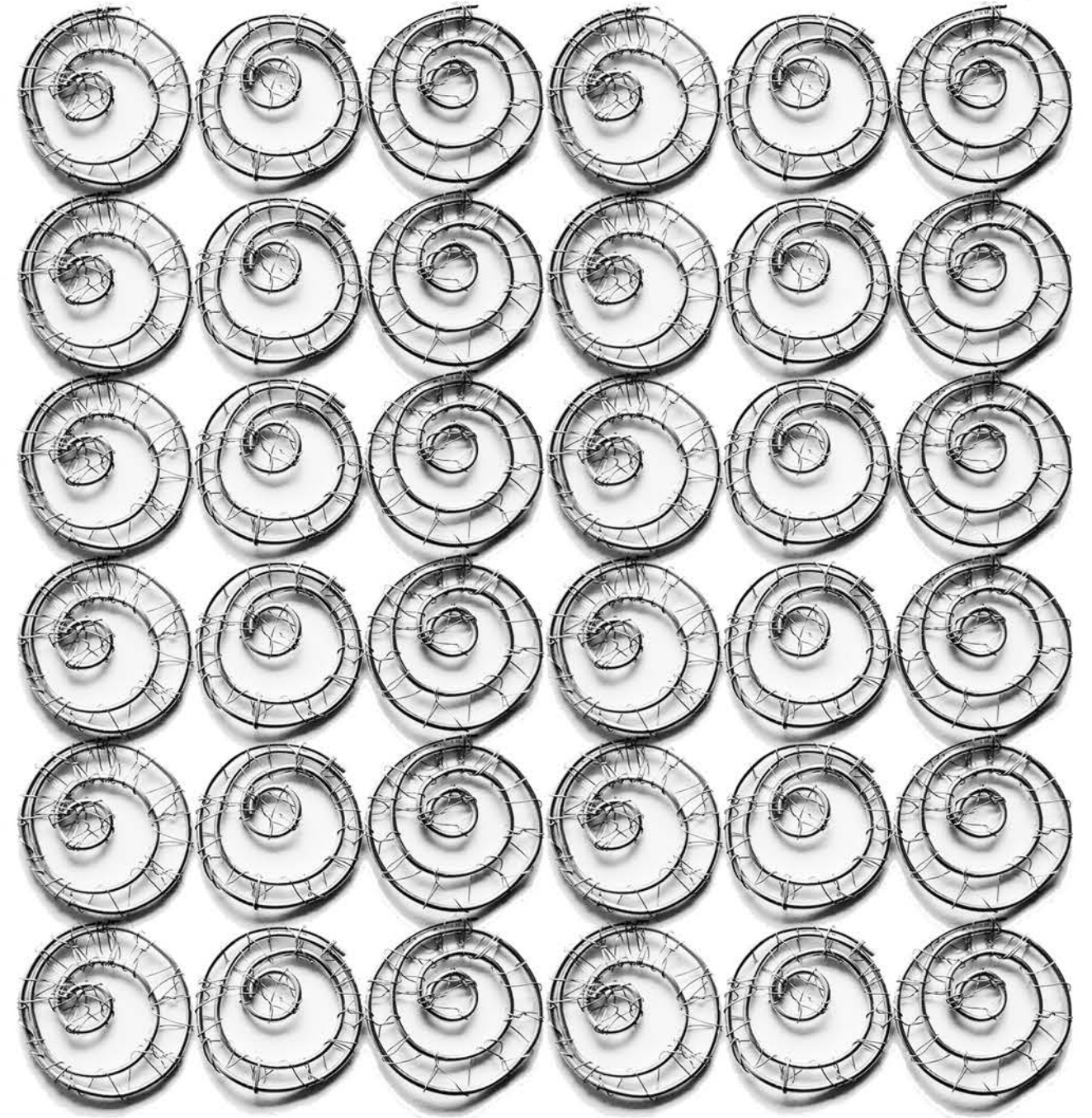
physical wire-frame model of Ornament Module, This module will be repeated and a pattern will be created, which will generate tectonic walls that will be used in the more representative parts of the hybrid complex,



V. STRUCTURES AND TECTONICS.

9.3 Autogenic Ornament - a compartment
PHYSICAL MODEL OF THE AUTOGENIC ORNAMENT

SCALE 1:20



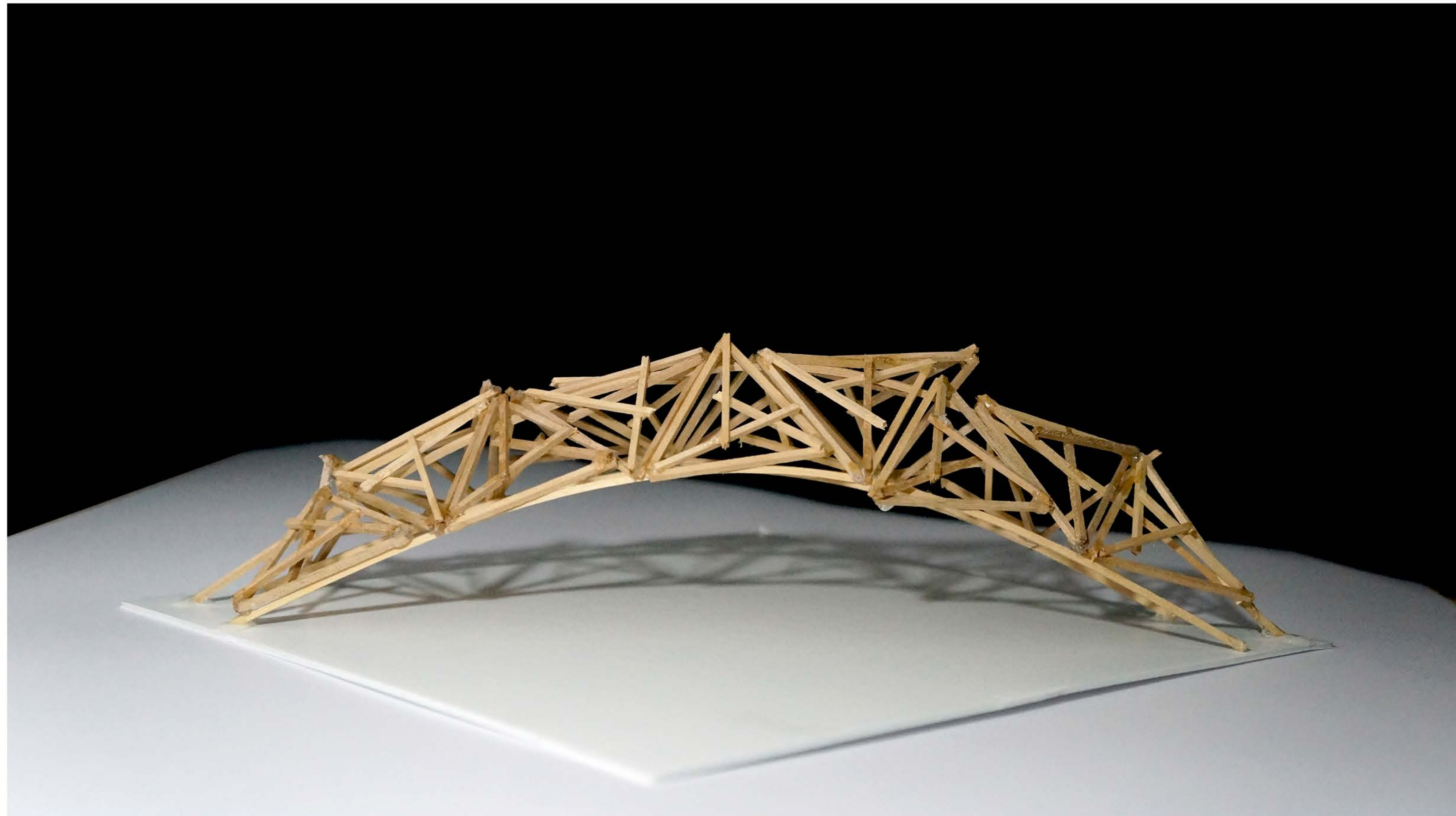
populated surface of the autogenic ornament pattern - physical wire model

V. STRUCTURES AND TECTONICS

9,4 Working Models during the process

WORKSHOP 1.0

STRUCTURAL EXPLORATION - STRUCTURE AS ARCHITECTURE

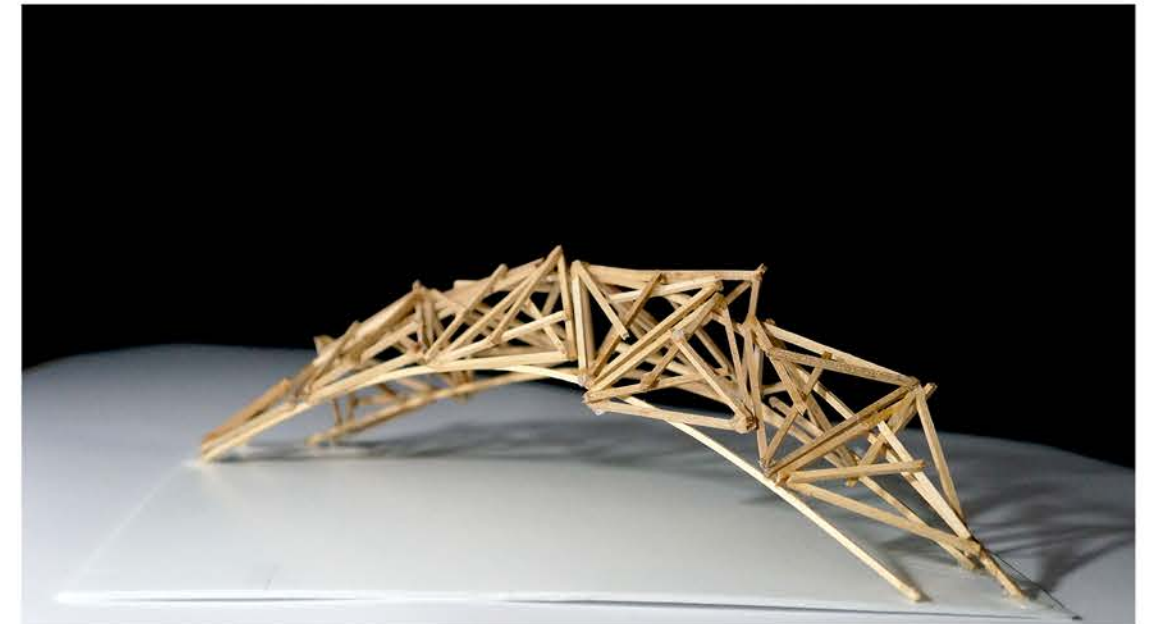
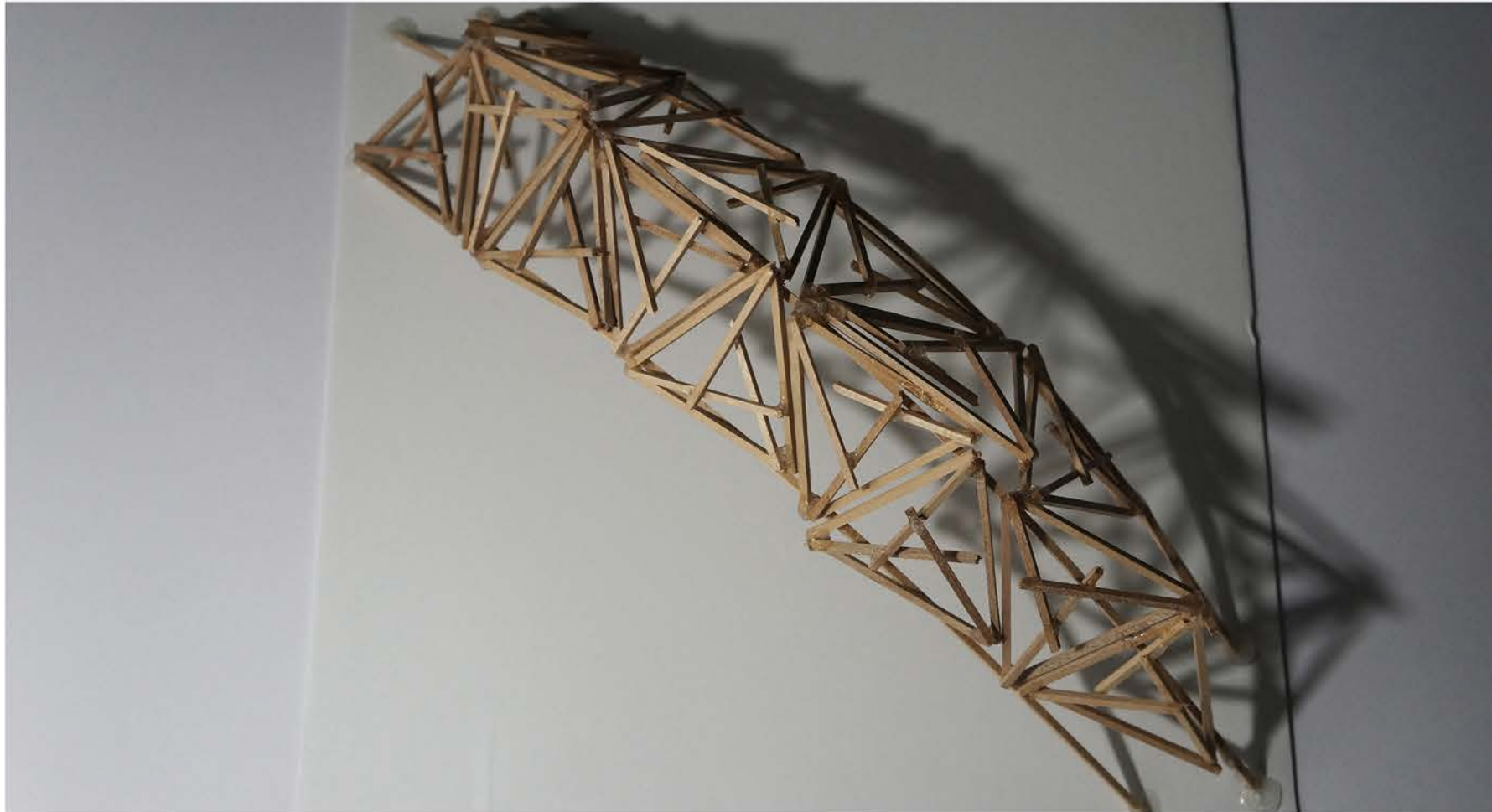
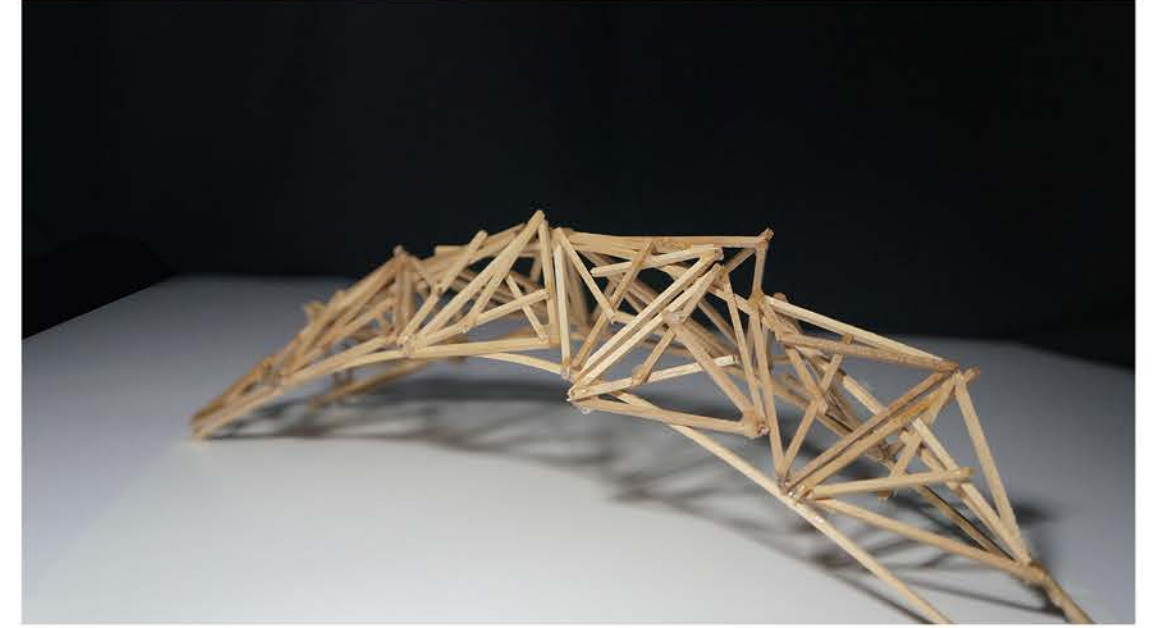
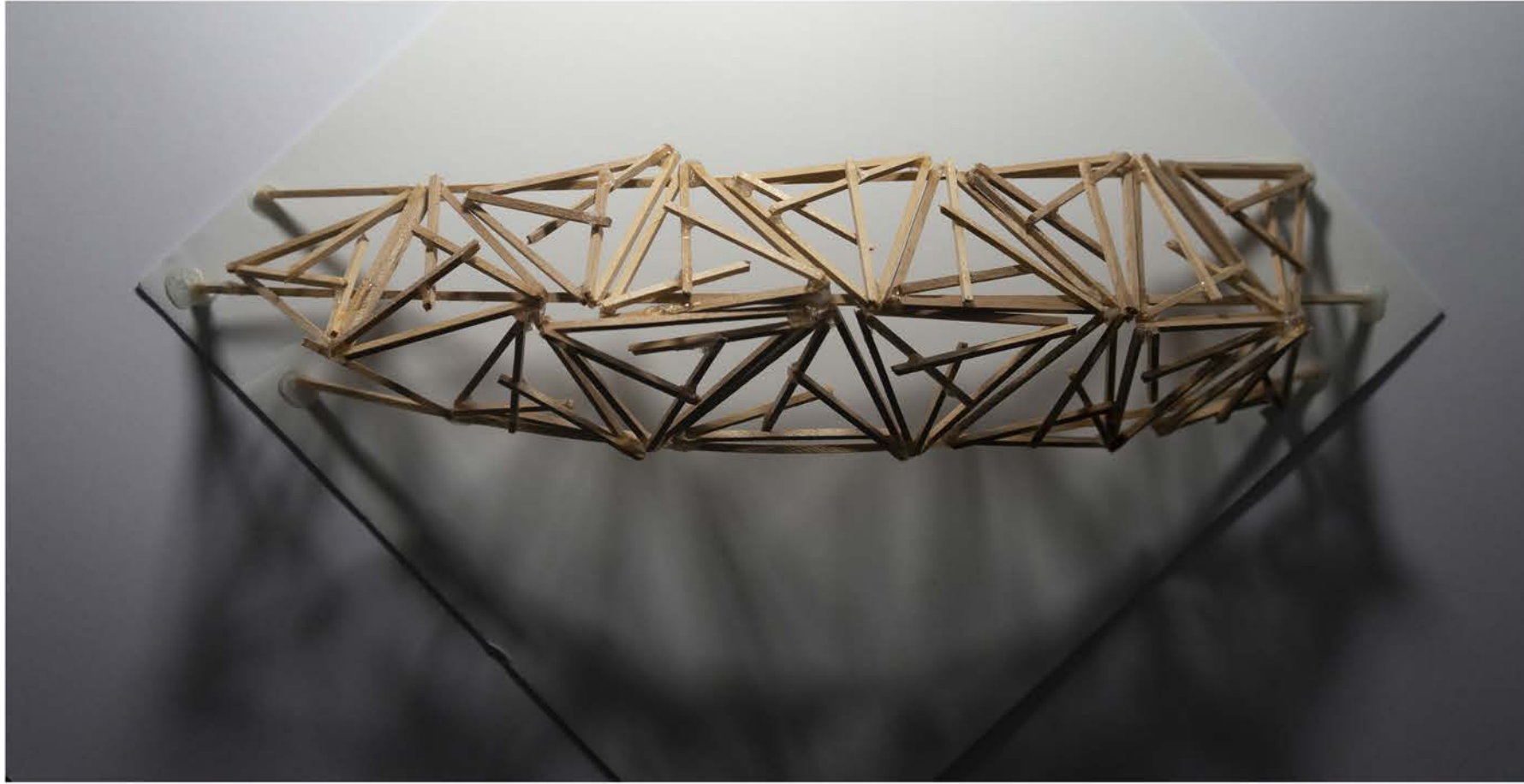


V. STRUCTURES AND TECTONICS

9,4 Working Models during the process

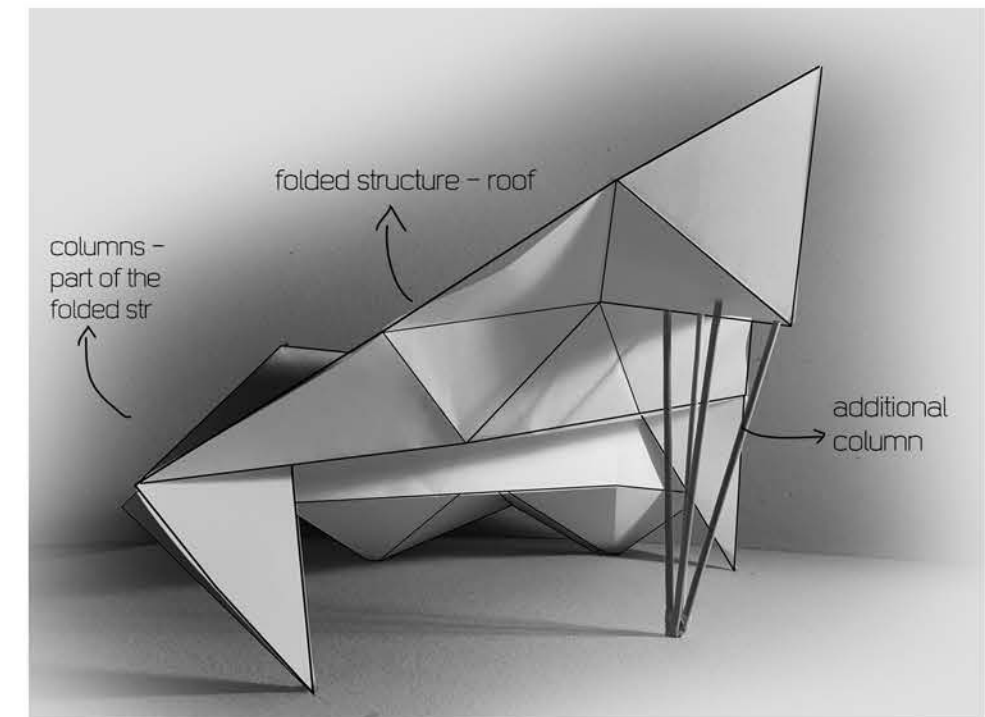
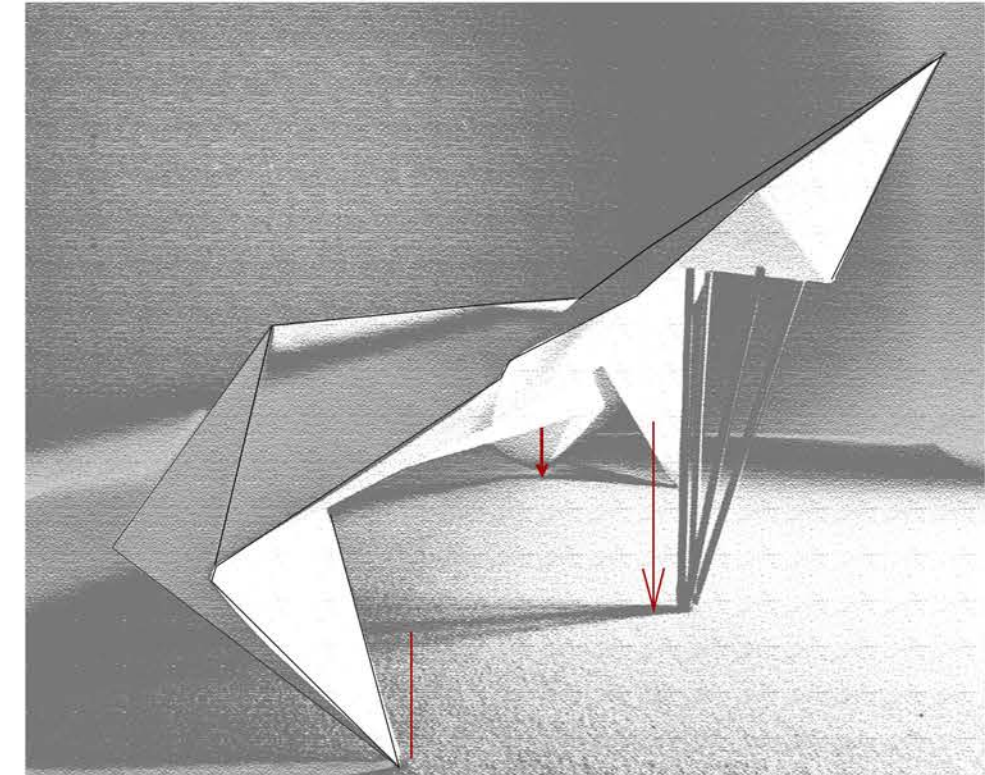
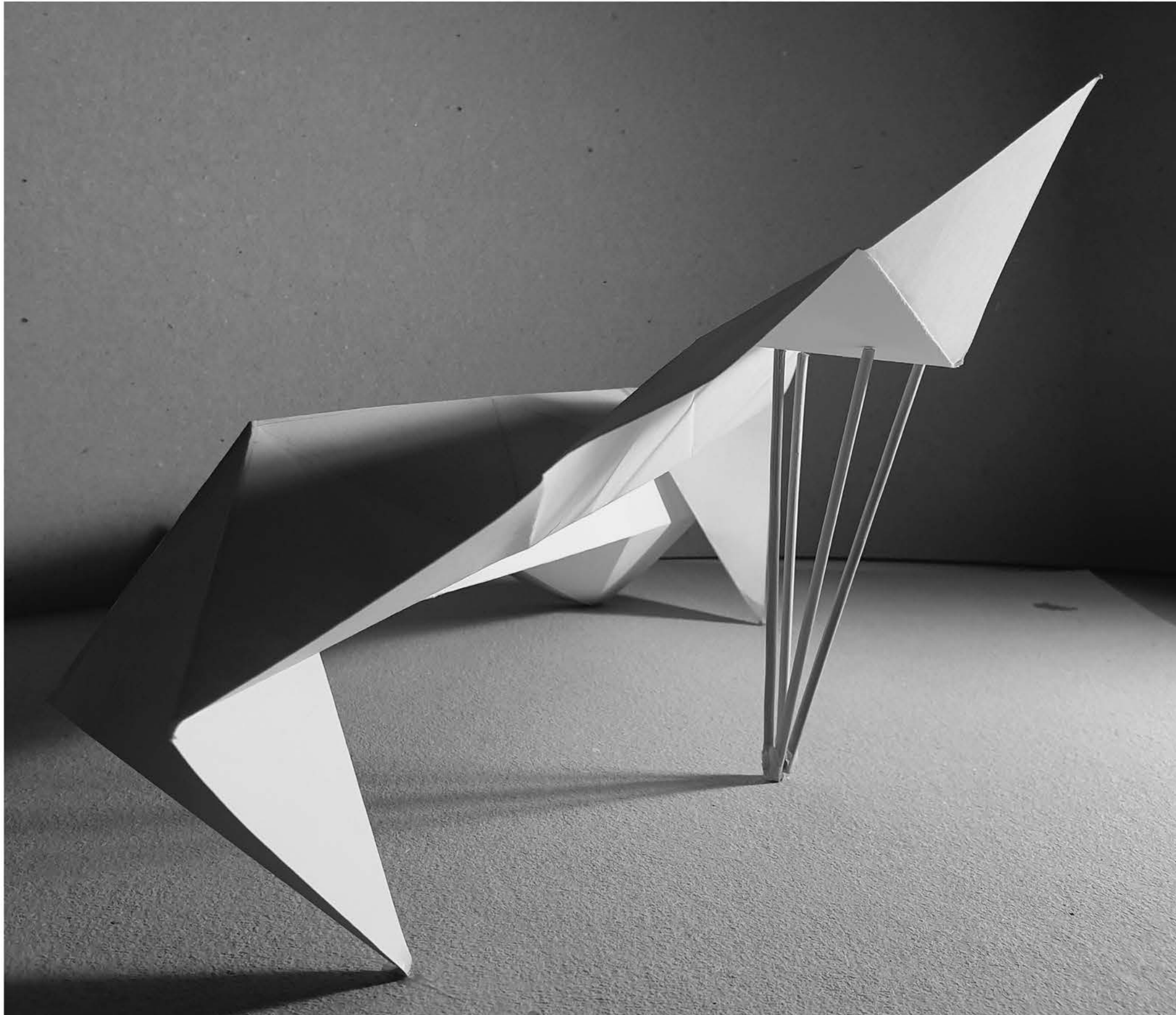
WORKSHOP 1.0

STRUCTURAL EXPLORATION - STRUCTURE AS ARCHITECTURE



V. STRUCTURES AND TECTONICS.

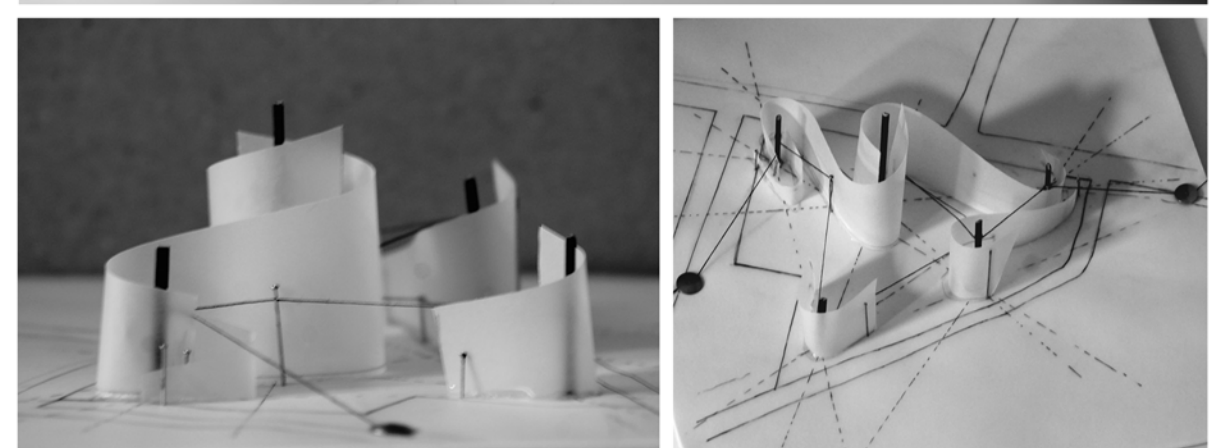
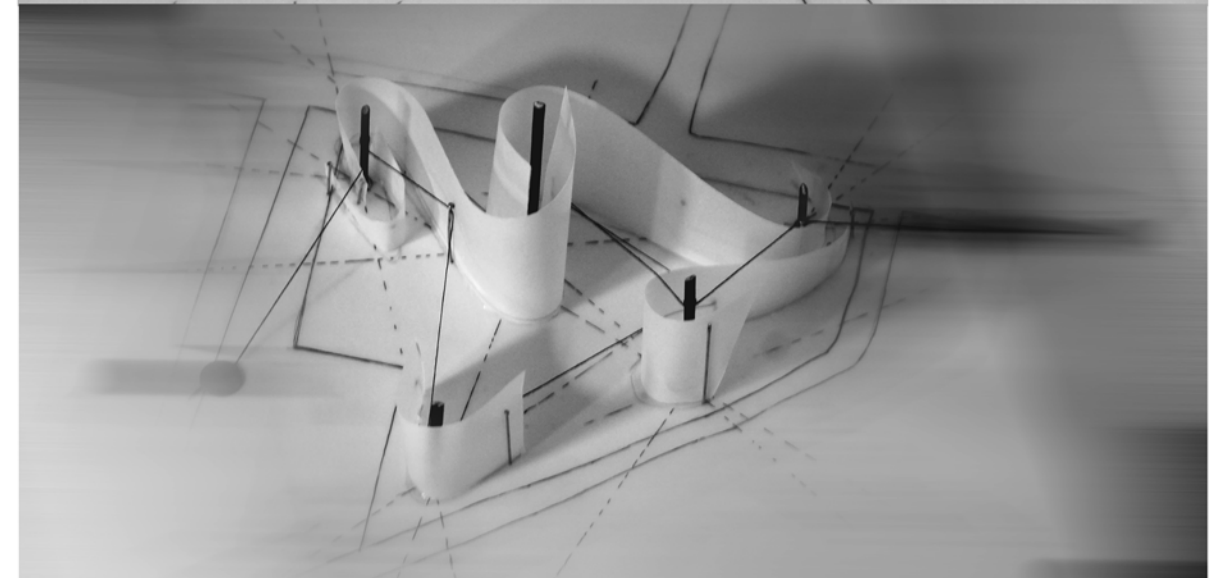
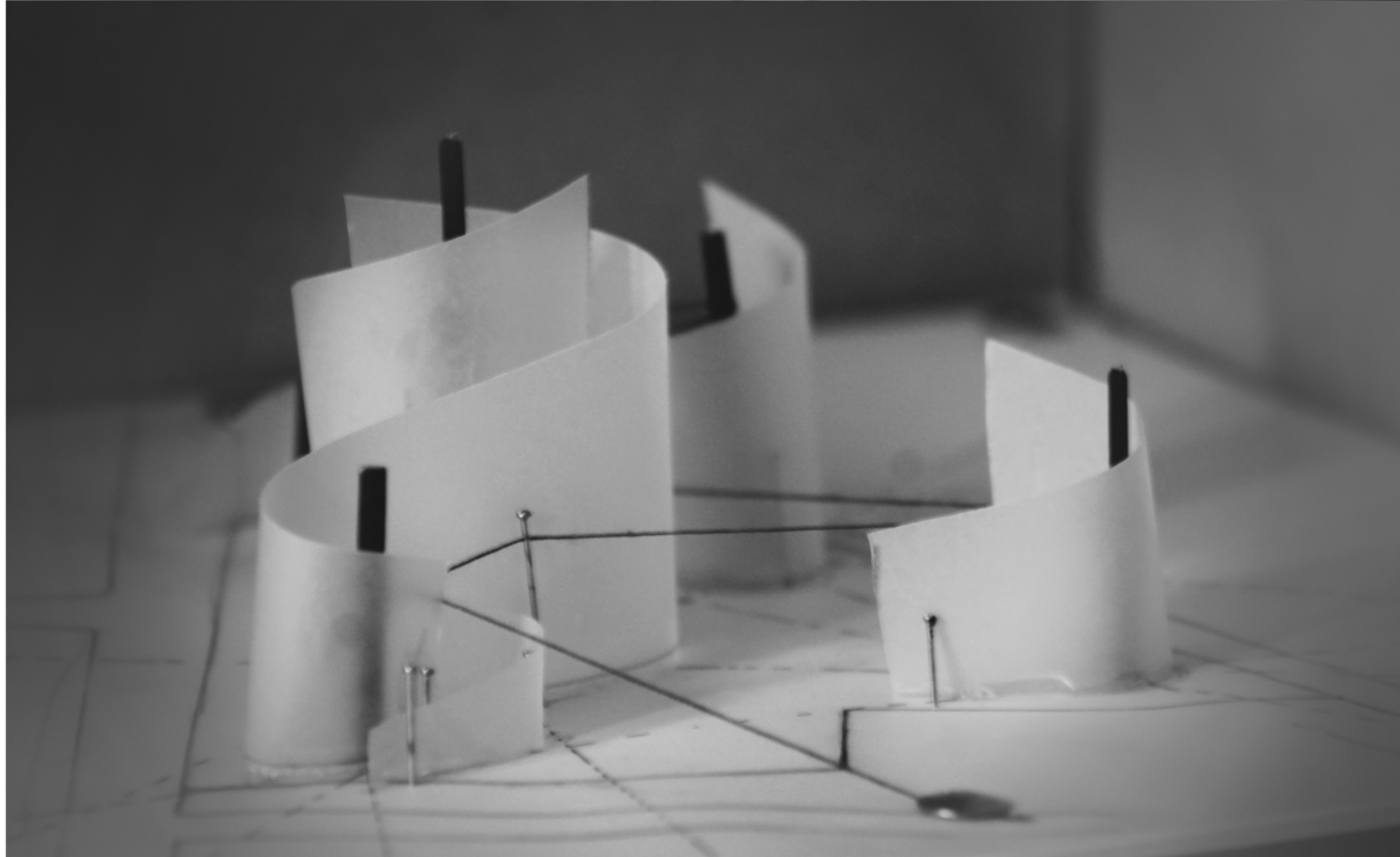
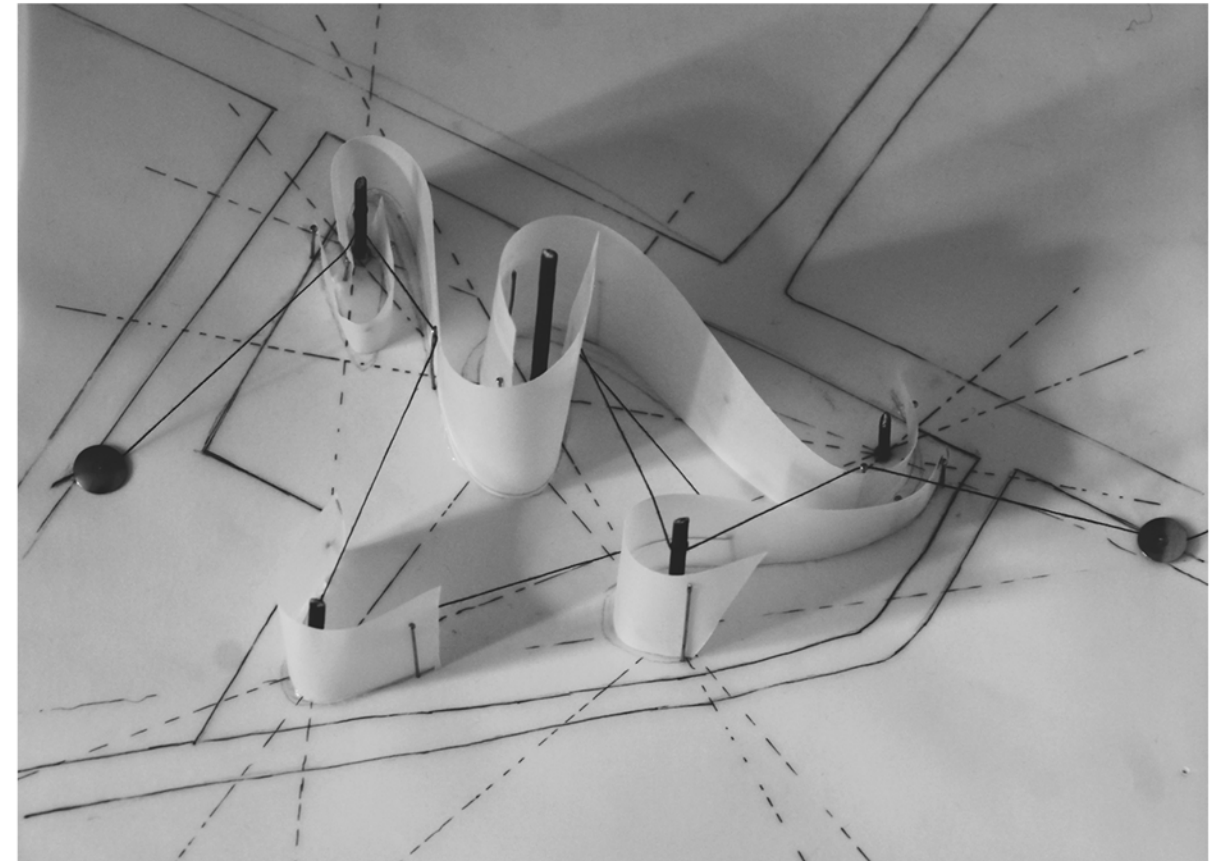
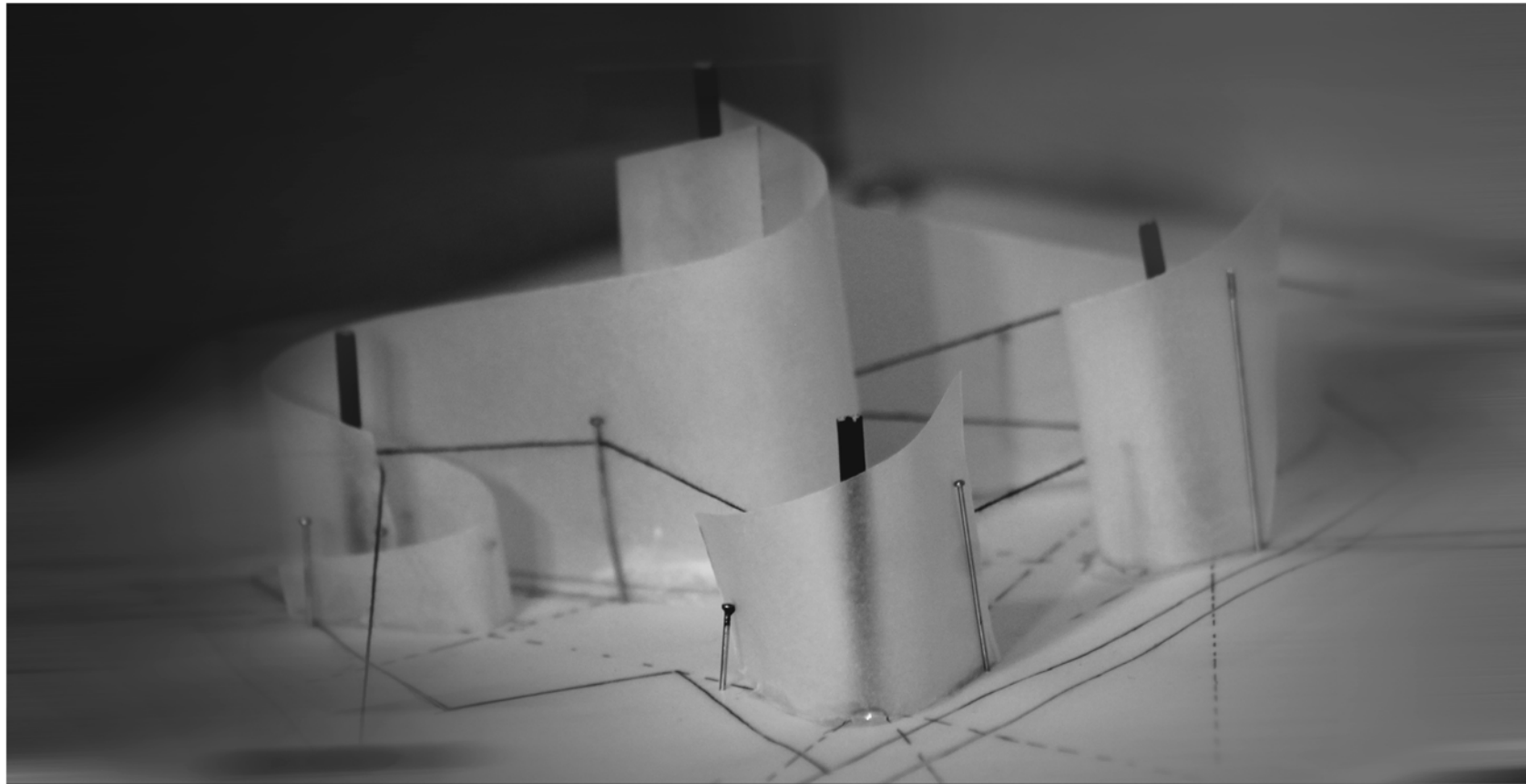
9,4 working models during the process



3rd assignment
STRUCTURAL EXPLORATION

V. STRUCTURES AND TECTONICS.

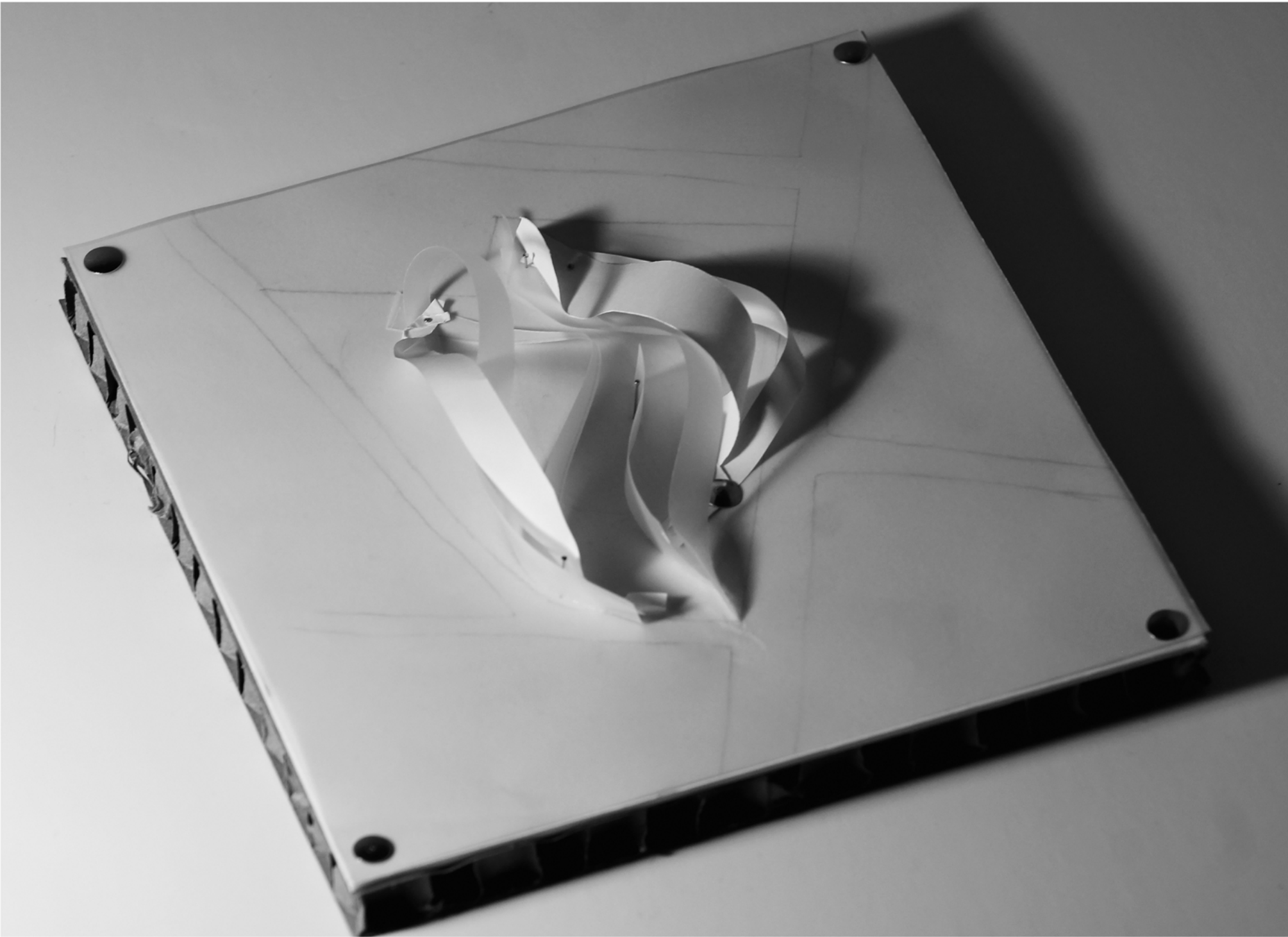
9,4 working models during the process



Workshop 3.0: Diagramming 2D and 3D/ conceptual model

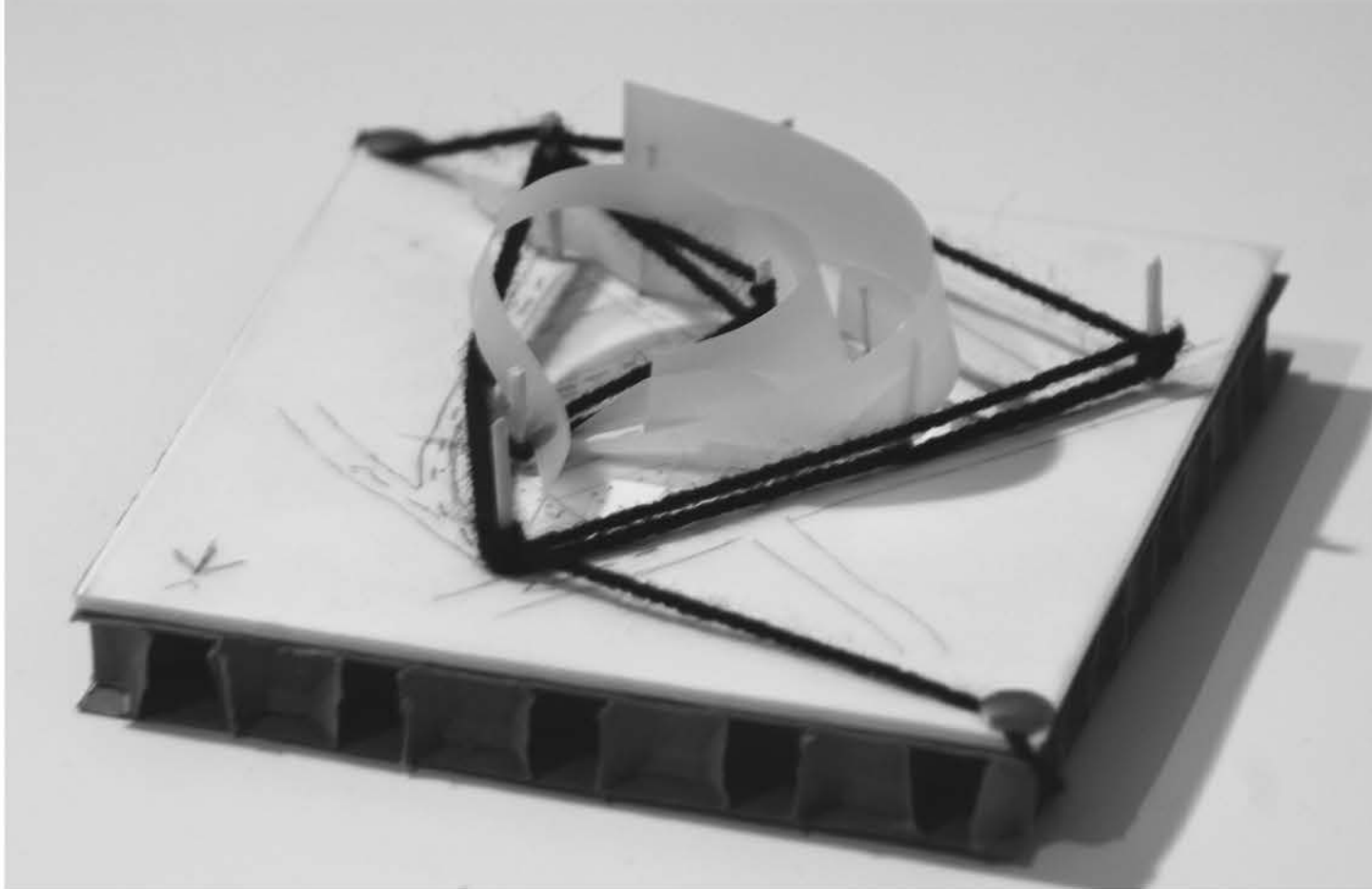
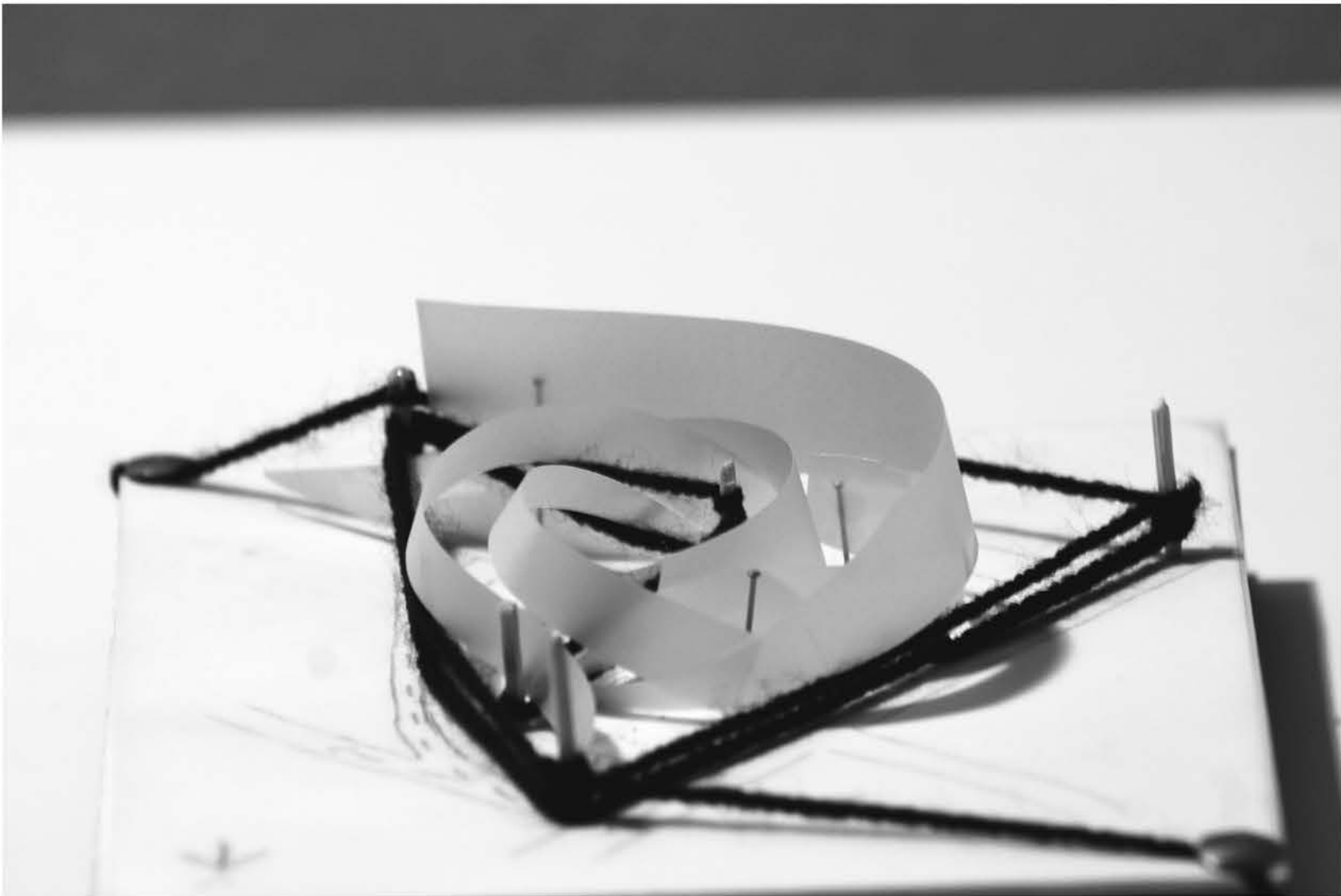
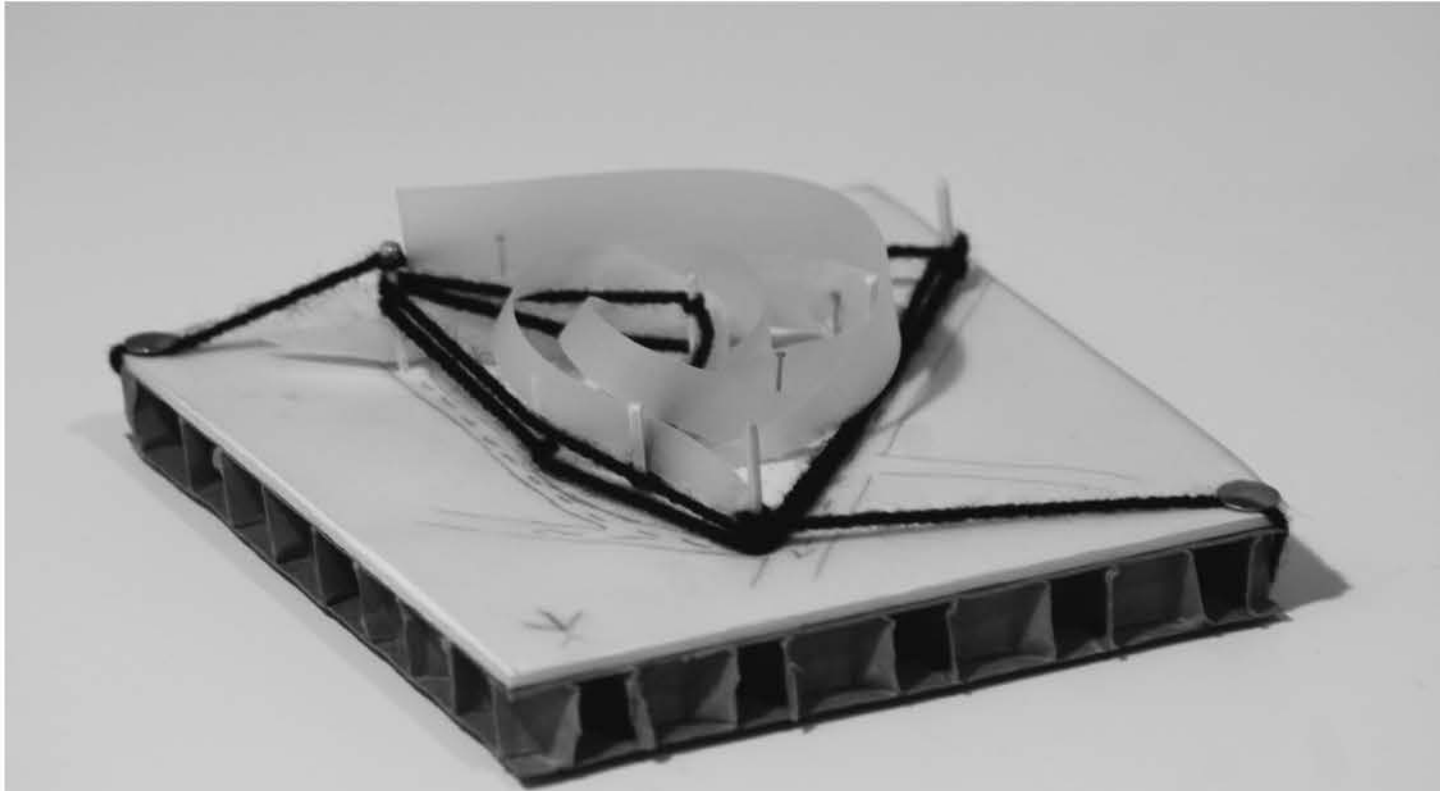
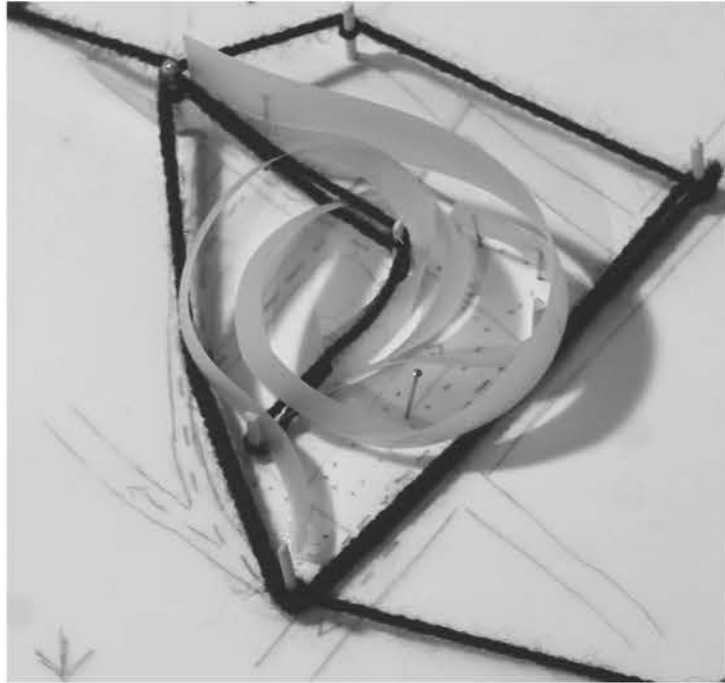
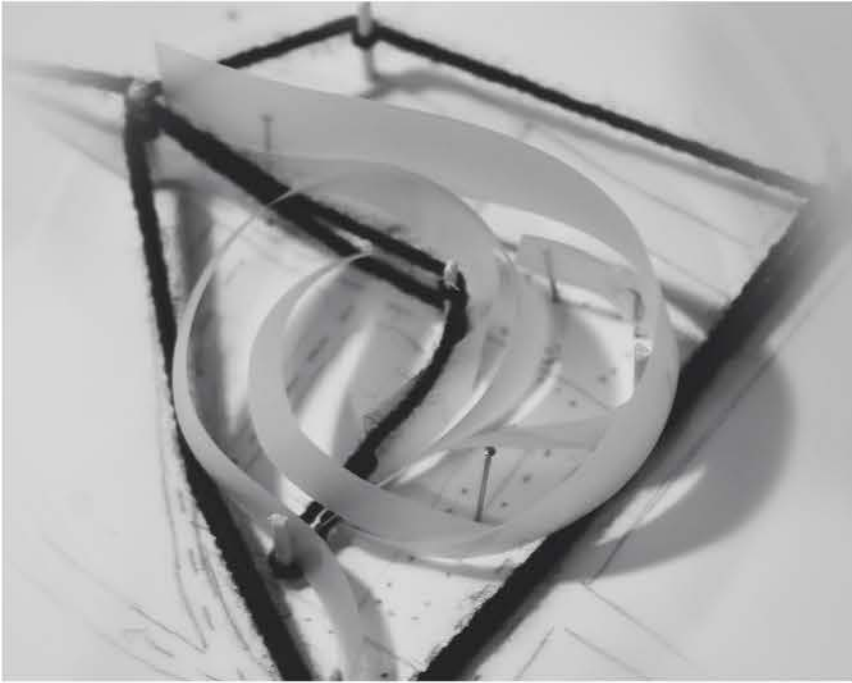
V. STRUCTURES AND TECTONICS.

9,4 working models during the process



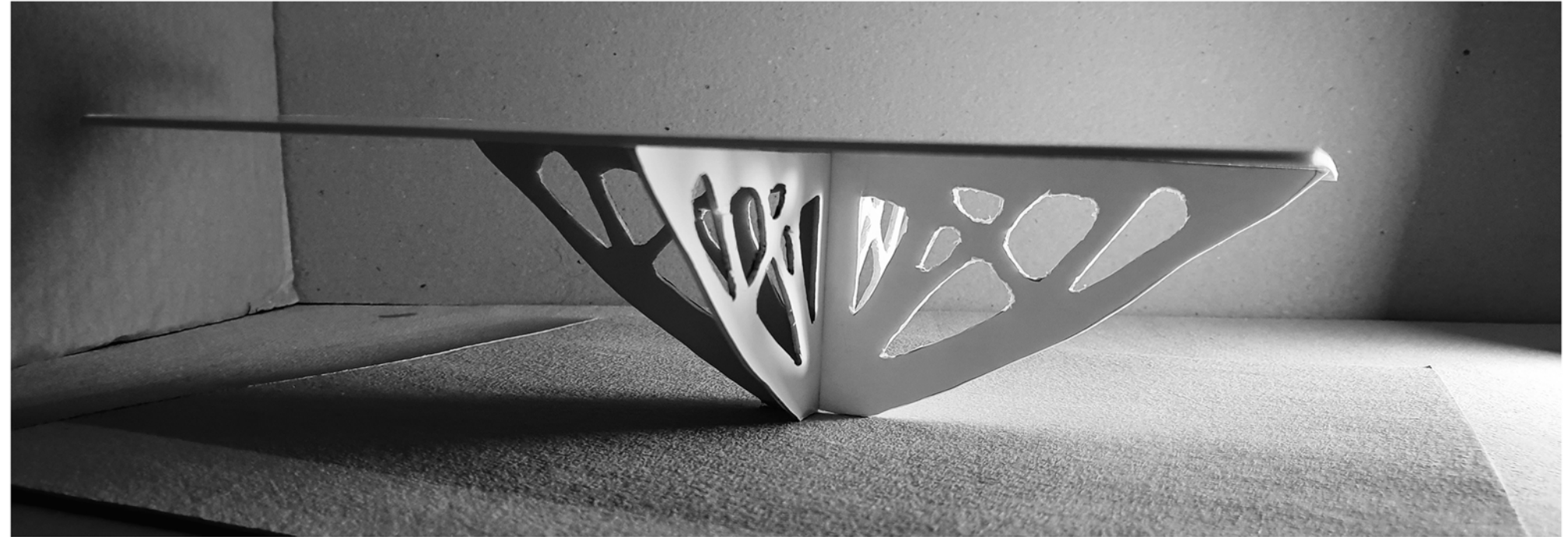
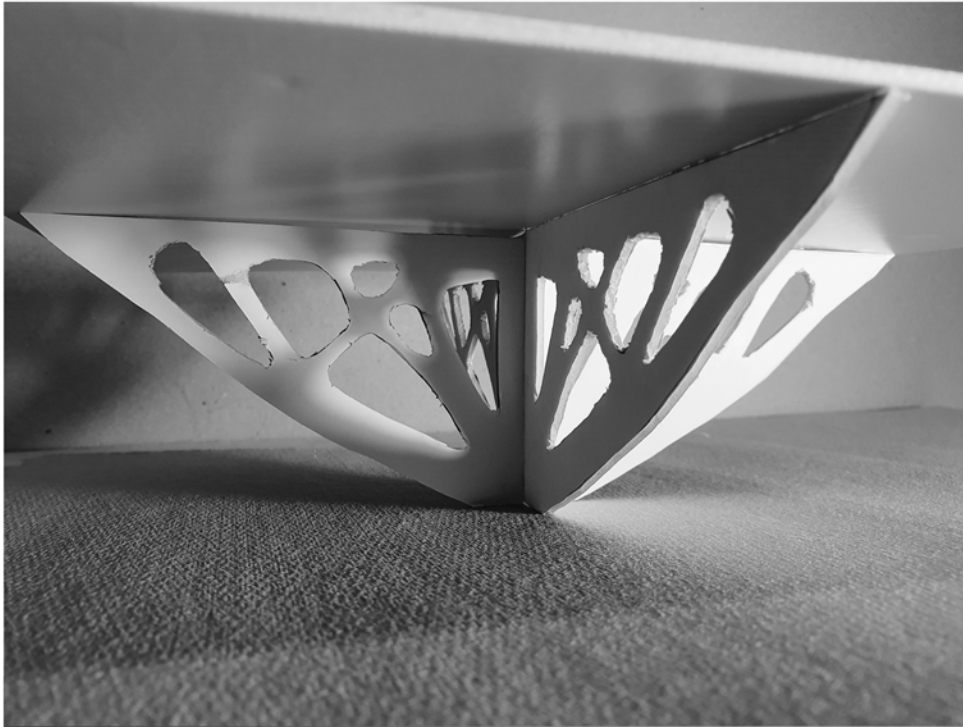
V. STRUCTURES AND TECTONICS.

9,4 working models during the process



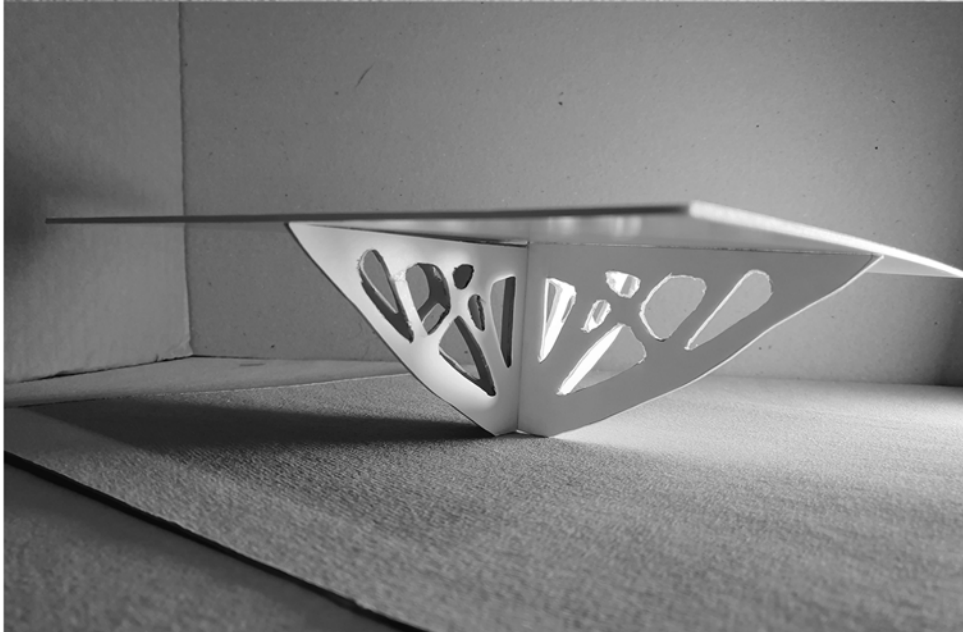
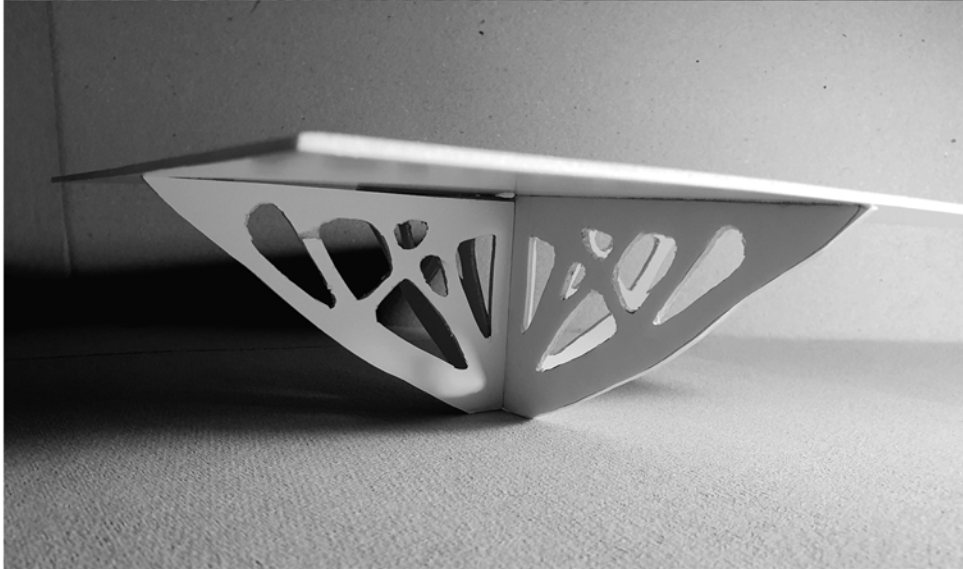
V. STRUCTURES AND TECTONICS.

9,4 working models during the process



The structural physical model as a three dimensional representation of the Modular System that was generated using BESO 2D.

The final result of the Module and the modular system, is comparable with many natural analogies, this is why it can be used as a structural element for Biophilic Architecture.

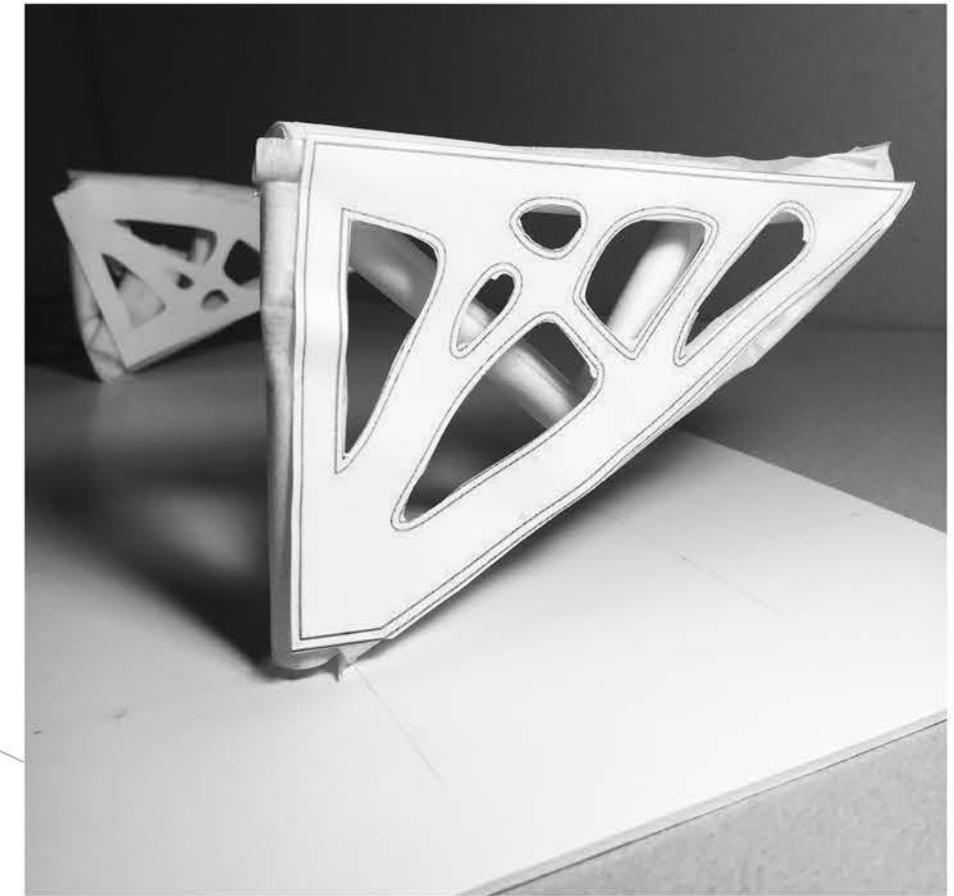
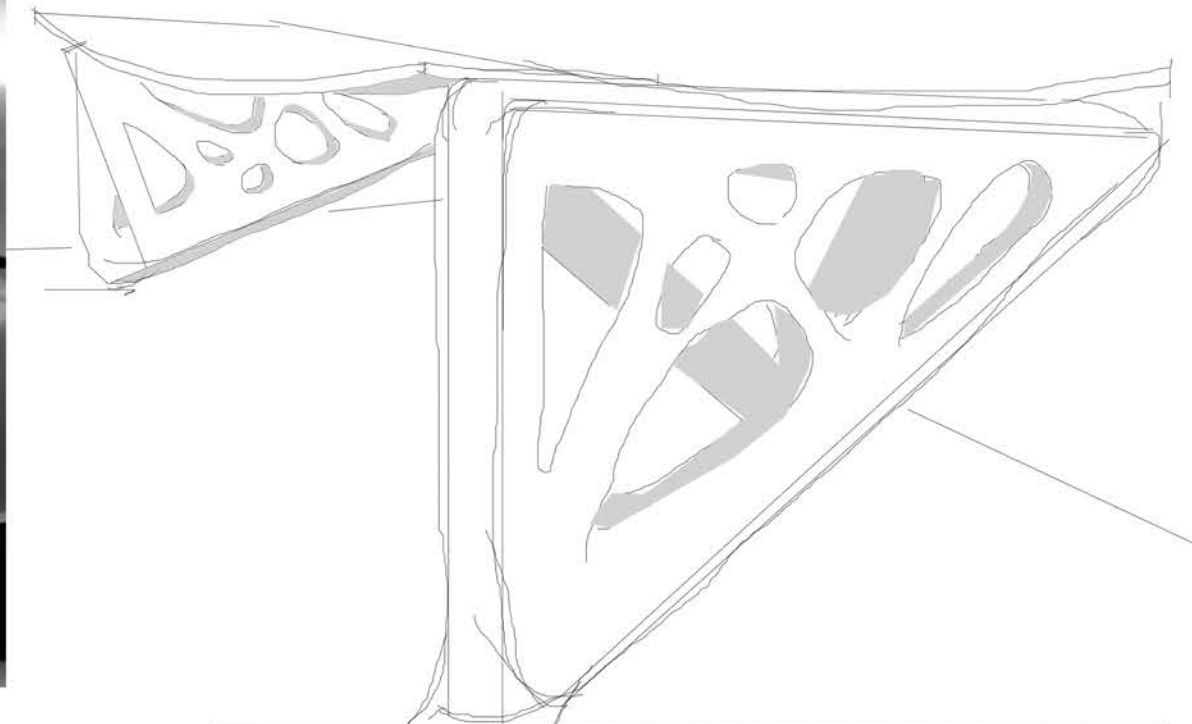
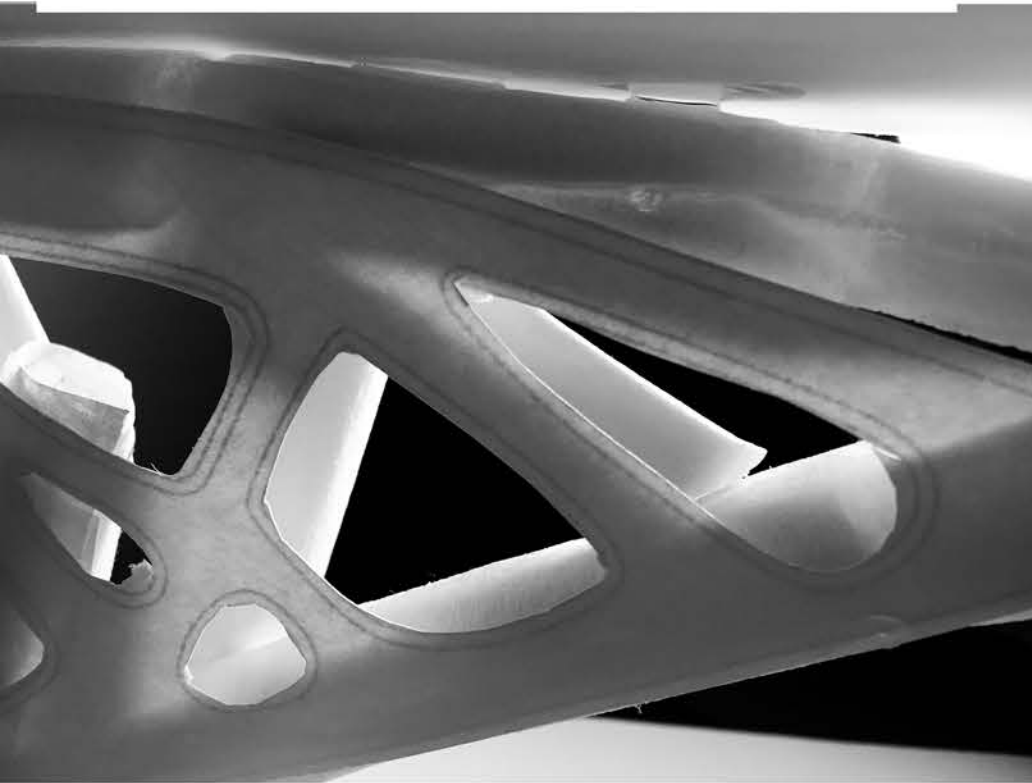
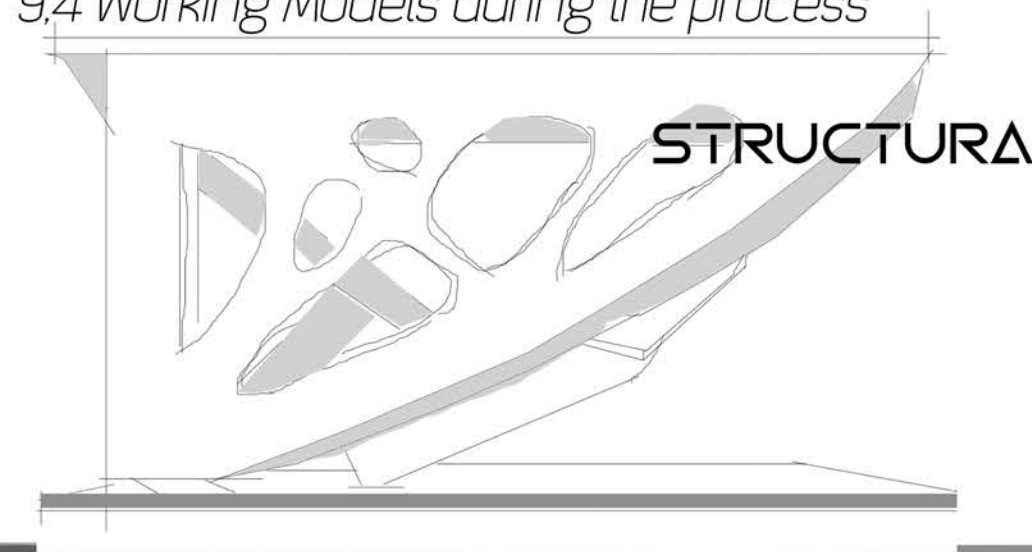


V. STRUCTURES AND TECTONICS

9,4 Working Models during the process

WORKSHOP 1.0

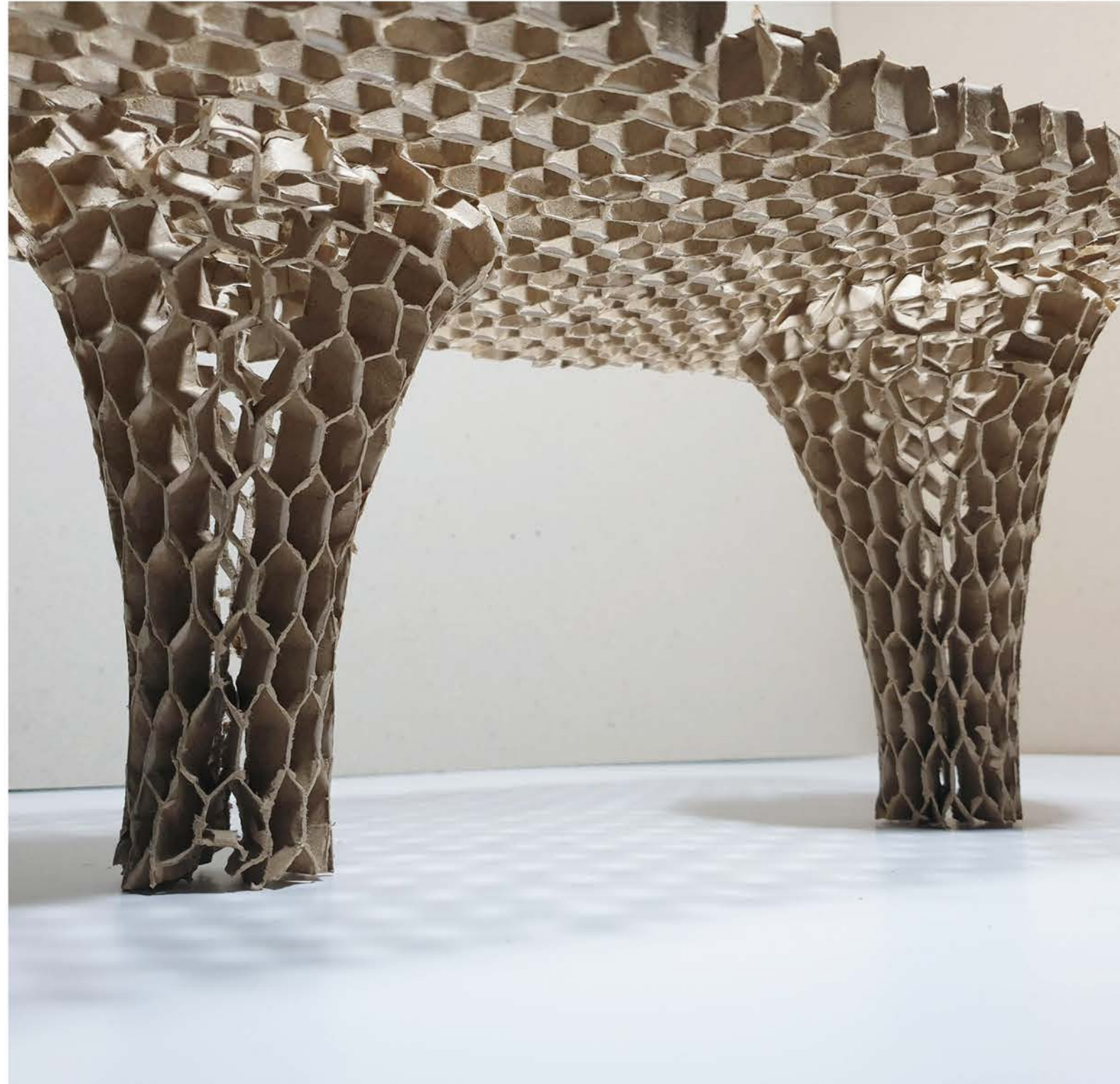
STRUCTURAL EXPLORATION - STRUCTURE AS ARCHITECTURE



V. STRUCTURES AND TECTONICS.

9,4 working models during the process

Physical model of repeated characteristic structural module in order to generate the structural/tectonic system



CLT- Glulam Grid She Structure
Distance between columns: $l=10\text{m}$

Height of CLT grid slab: $h=50\text{cm}$
Height of the columns: $H=4\text{m}$



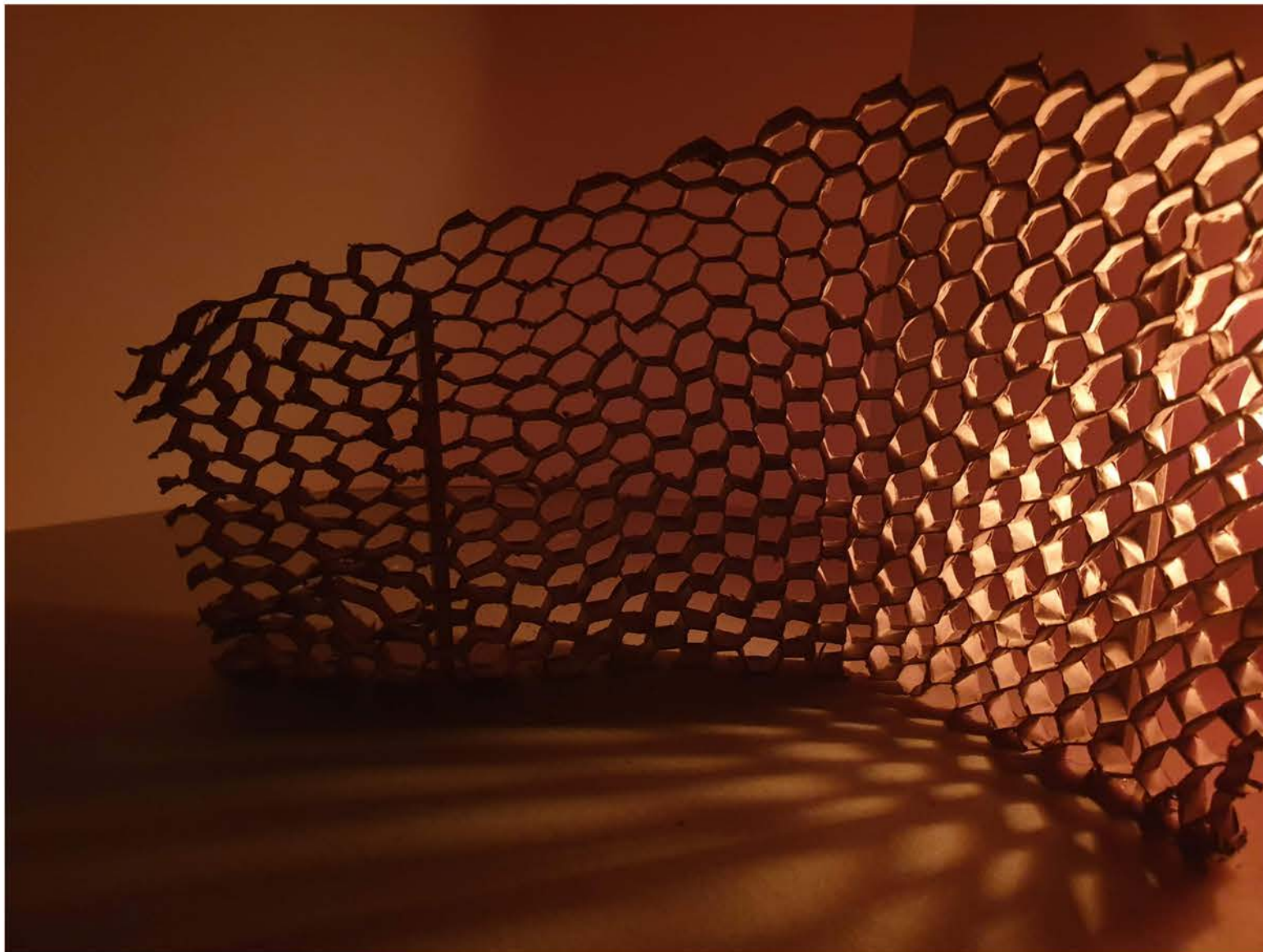
P 1:30



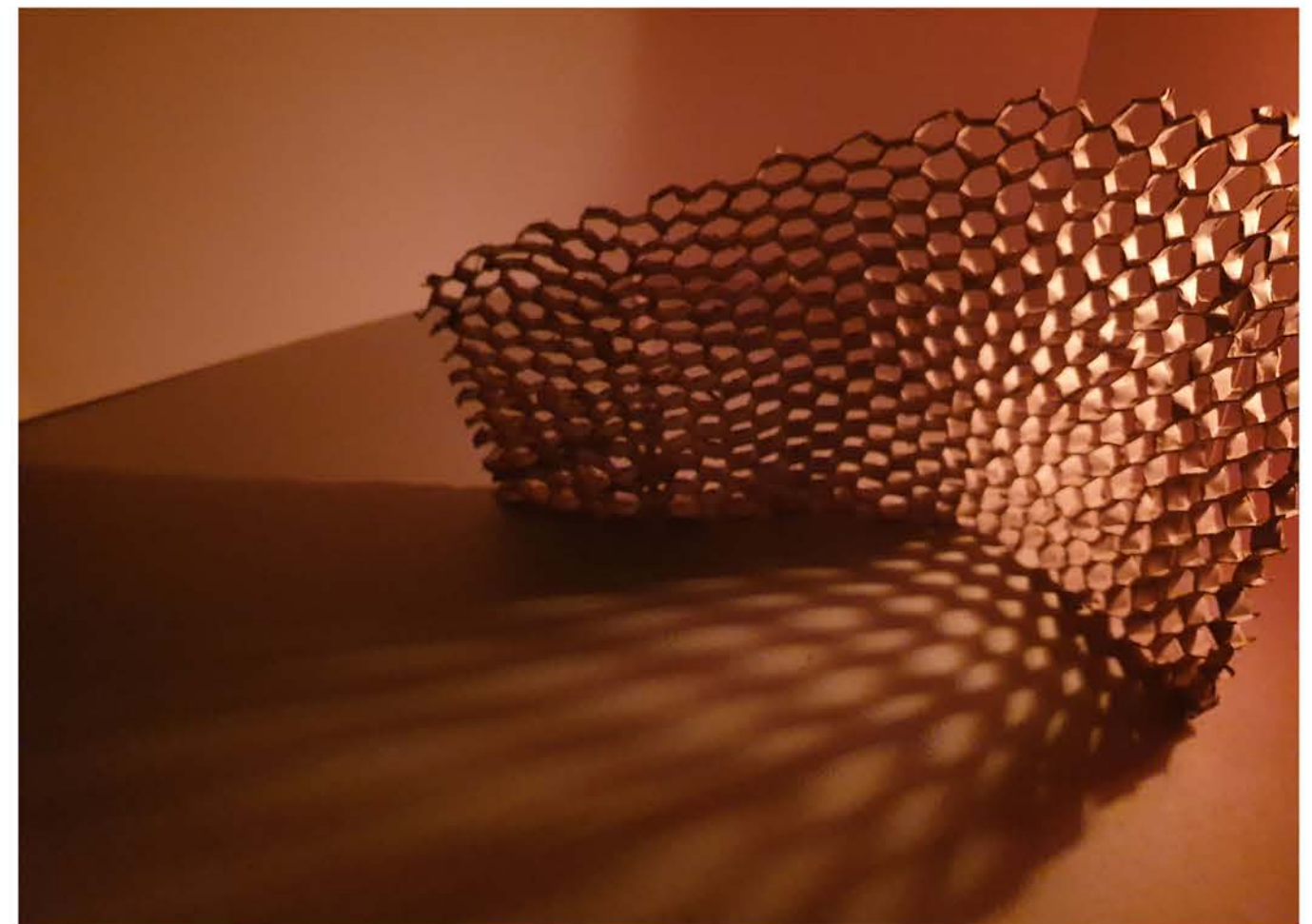
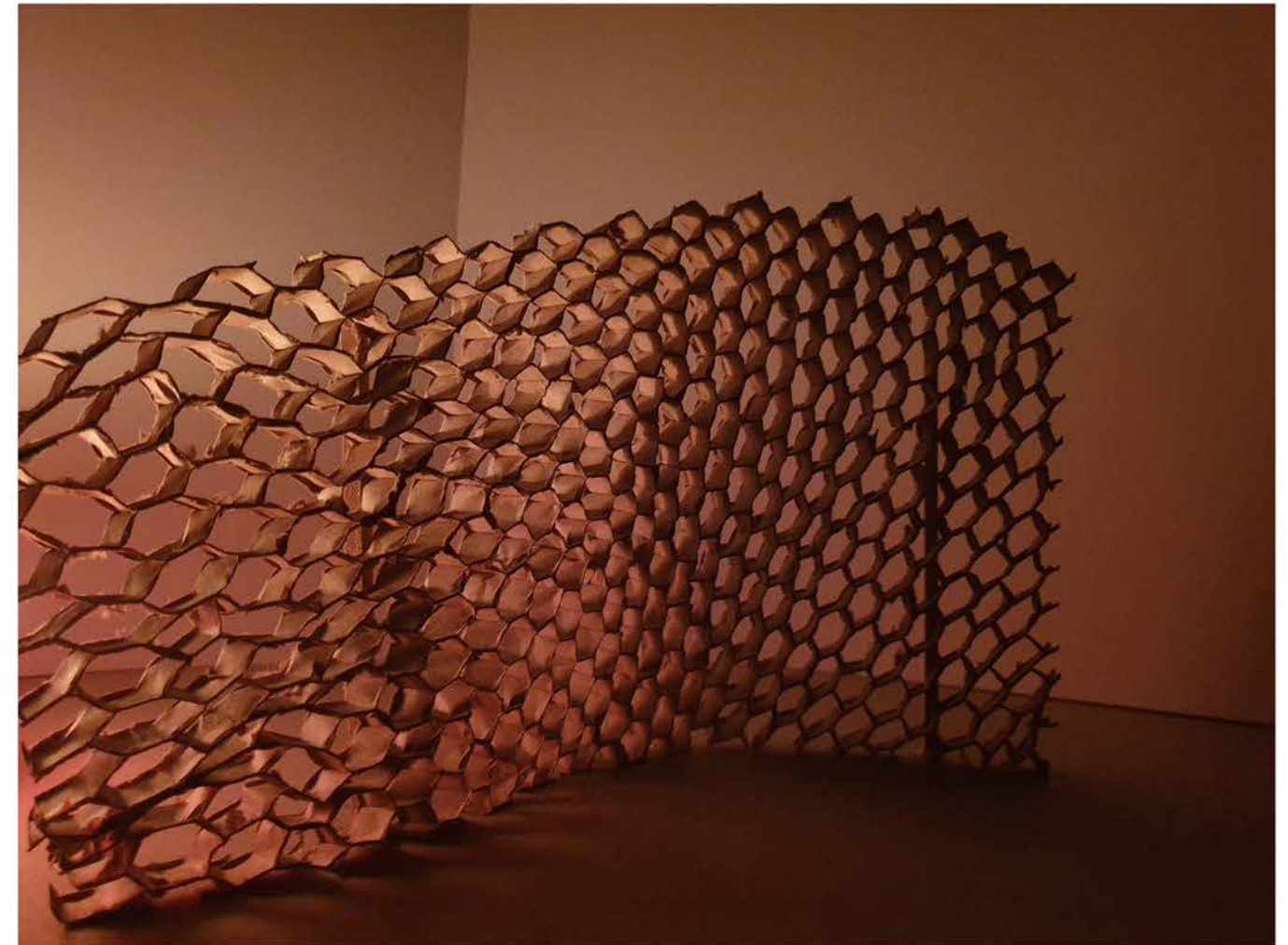
V. STRUCTURES AND TECTONICS.

9,4 working models during the process

Physical Model of a component/sector
of the building envelope – version

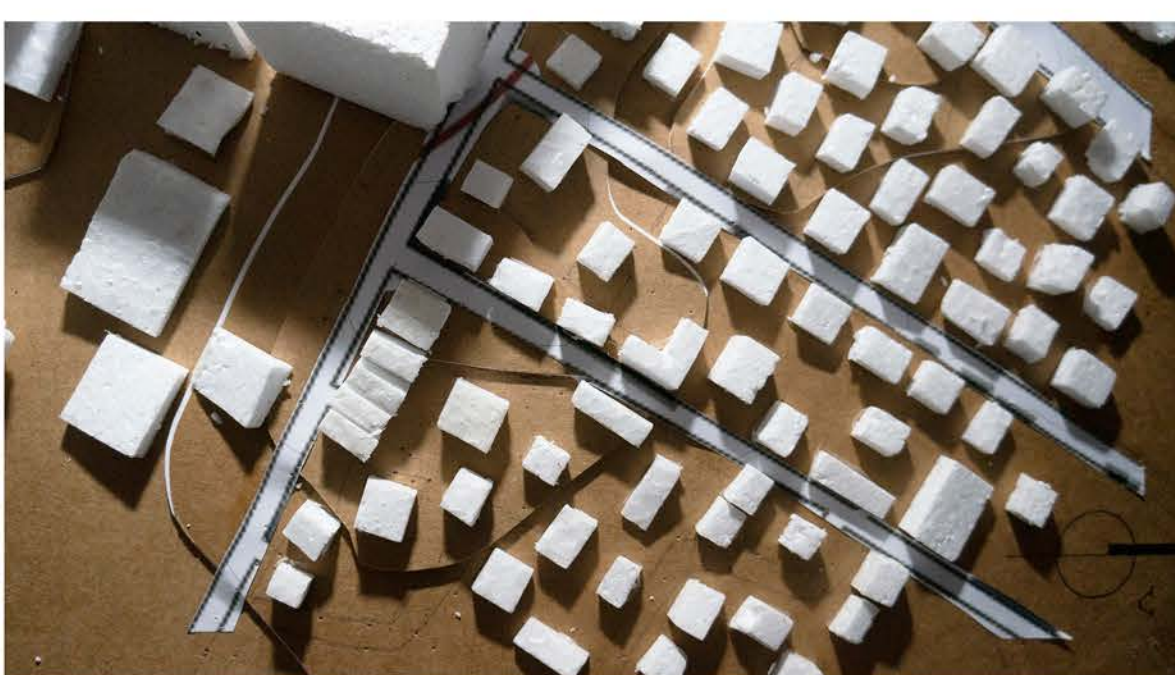


Light and Shadow: the poetics of tectonics



V. STRUCTURES AND TECTONICS

9.4 Working Models during the process



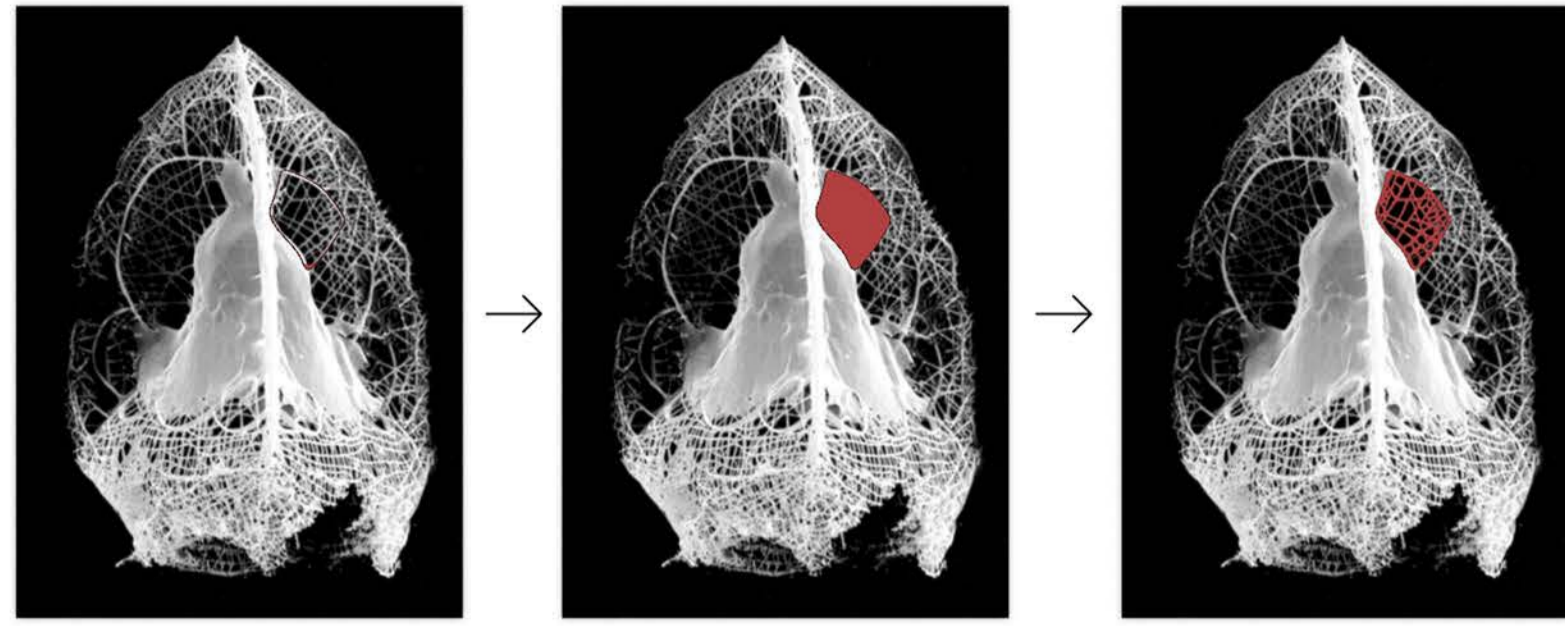
PHYSICAL SITE MODEL 1:1000



V. STRUCTURES AND TECTONICS

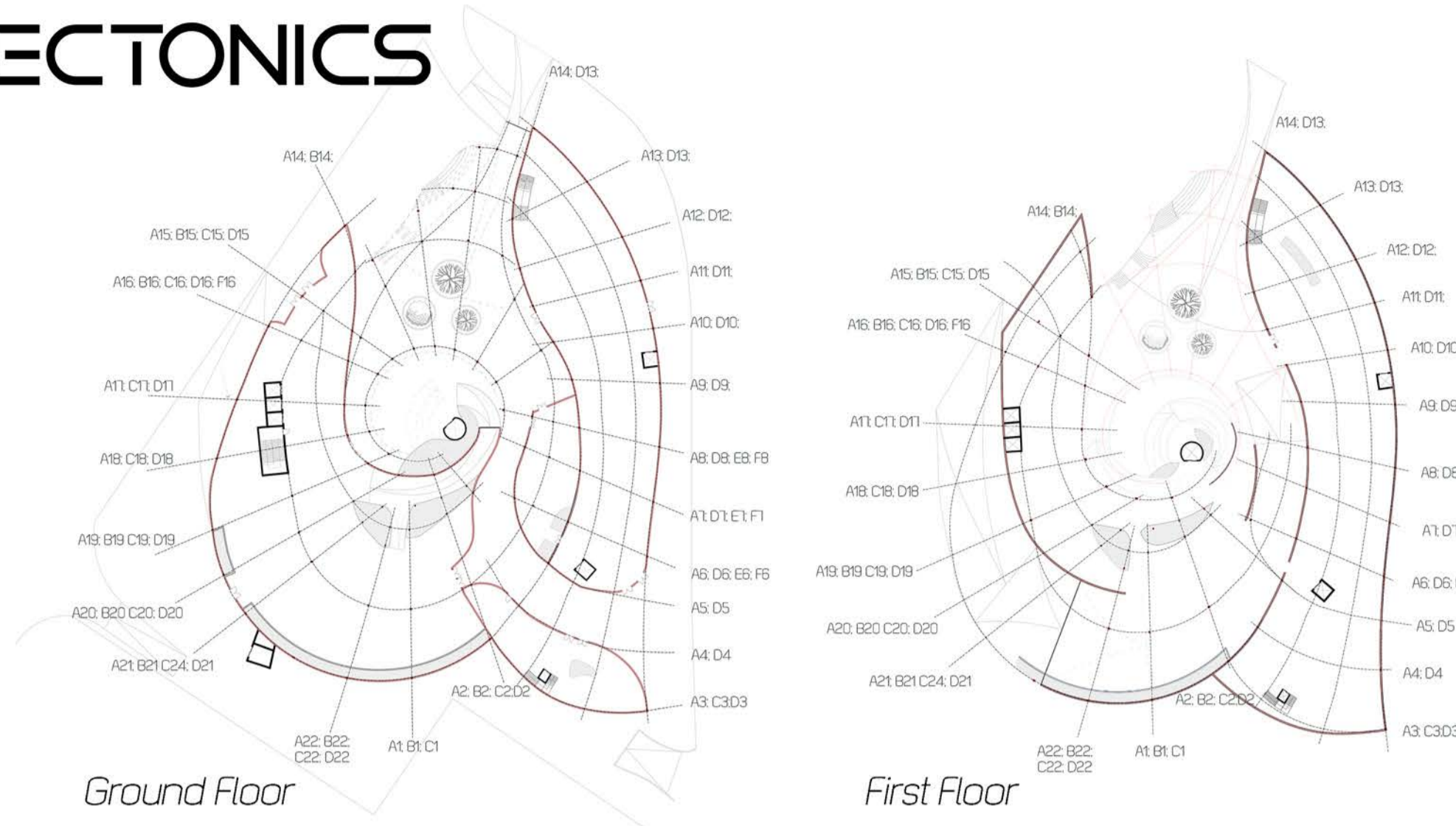
10. THE POETICS OF NOVEL STRUCTURES AND TECTONICS

Inspiration of the tectonic/structural system

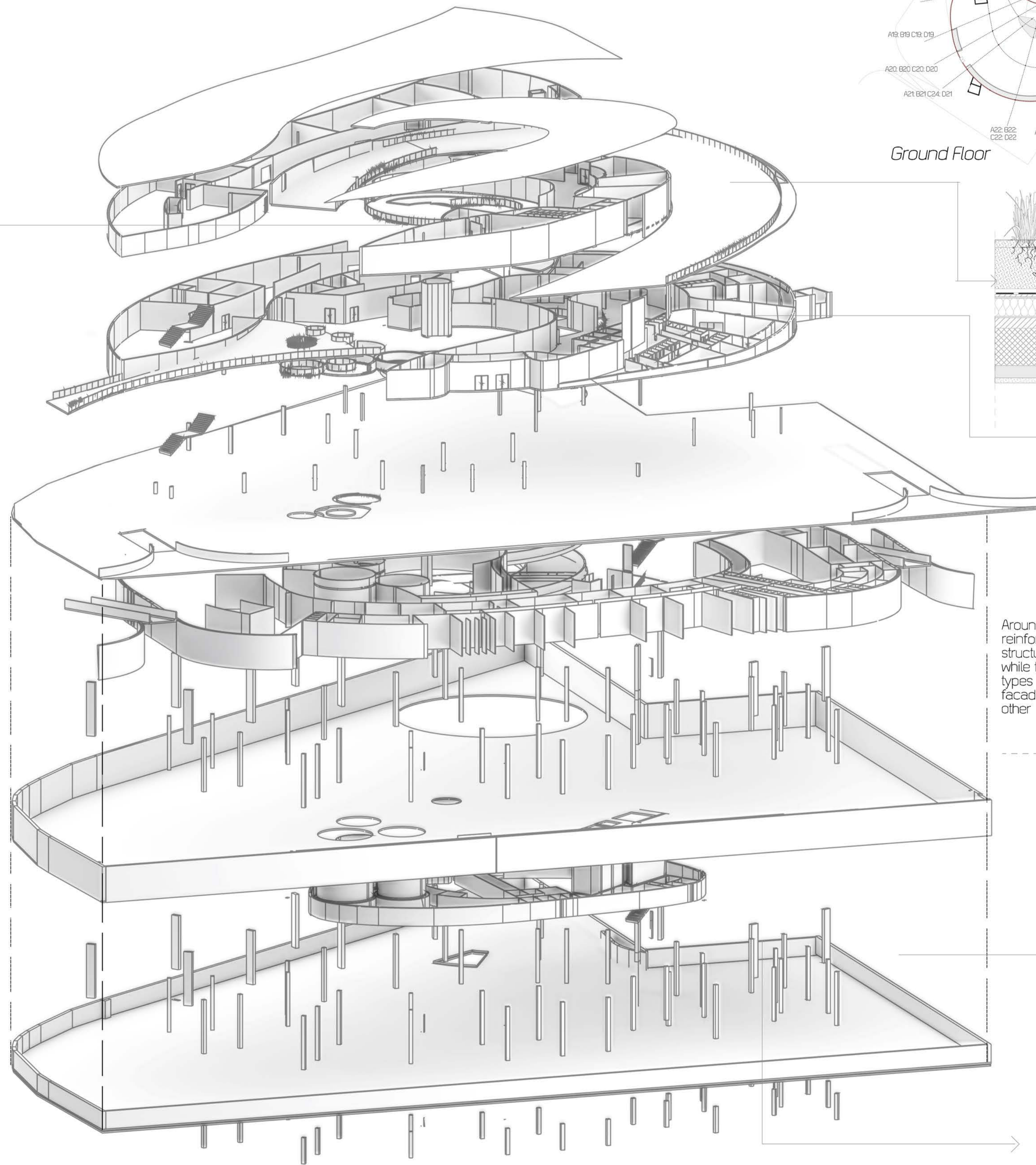
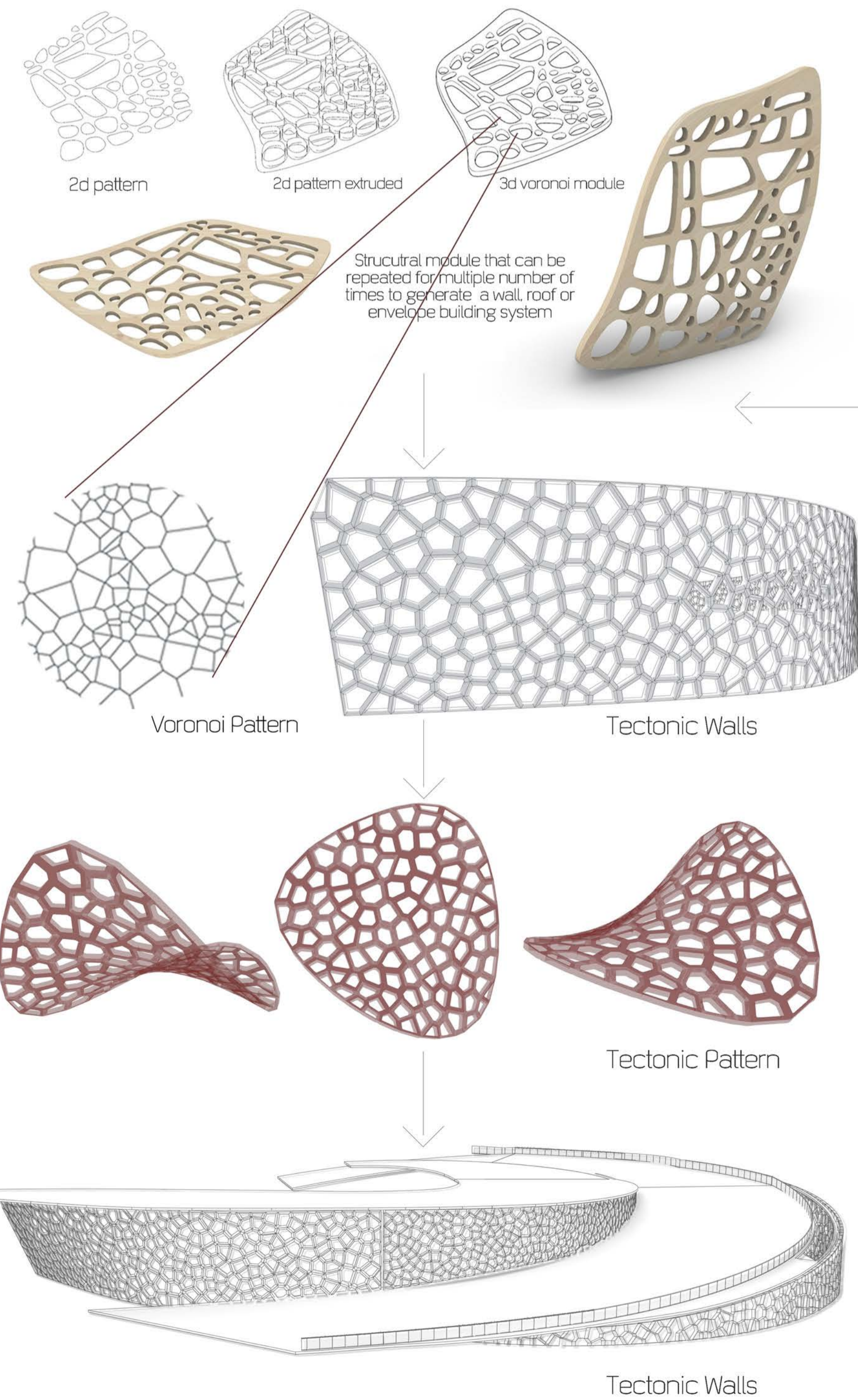


HYBRID STRUCTURES AND TECTONICS

- STRUCTURAL DESIGN -

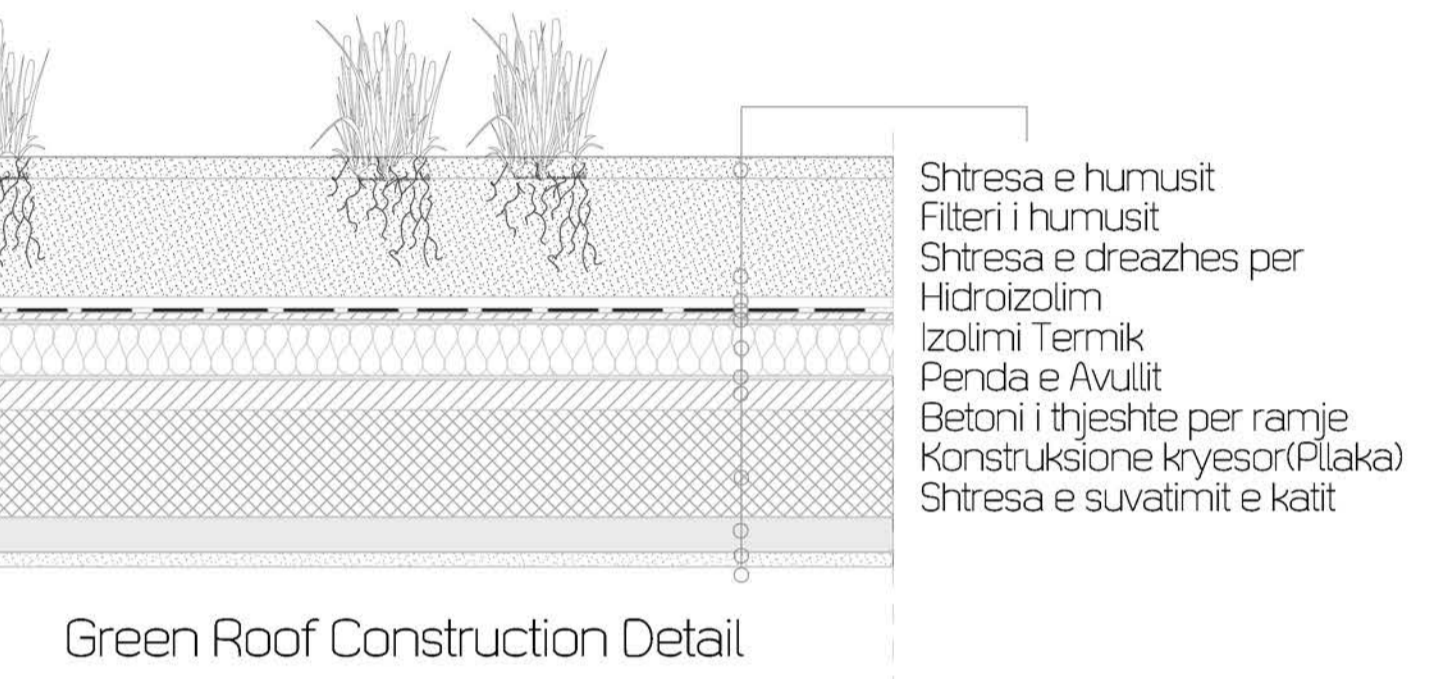


radiolaria callimitra's unique exoskeleton which is similar to the voronoi geometry served as an bioinspiration for creating the structural pattern/system



Ground Floor

First Floor



Green Roof Construction Detail

Around 20% of the structural system materialization is made of reinforced concrete. Most of underground storeys structure, and structural cores in upper floors, are made of reinforced concrete, while the other 80% of the Hybrid Complex is made of different types of Wood, used as a main representative for exterior and facade purposes. Wood Surfaces get special treatment with other materials which result in no extra need for maintenance

Methods of Mounting

Wood Column
Steel Bolts
Steel Reinforcement

Exploded Axonometric

Derrasat nga druri 2.5 cm
Listelat 3-5 cm
Izolimi Akustik 2.5cm
Derrasa 1 cm
Izolimi Termik 10 cm
PE folja
Listelat 3 cm
Dyshemeja tjeter nga derrasat e druri

V. STRUCTURES AND TECTONICS

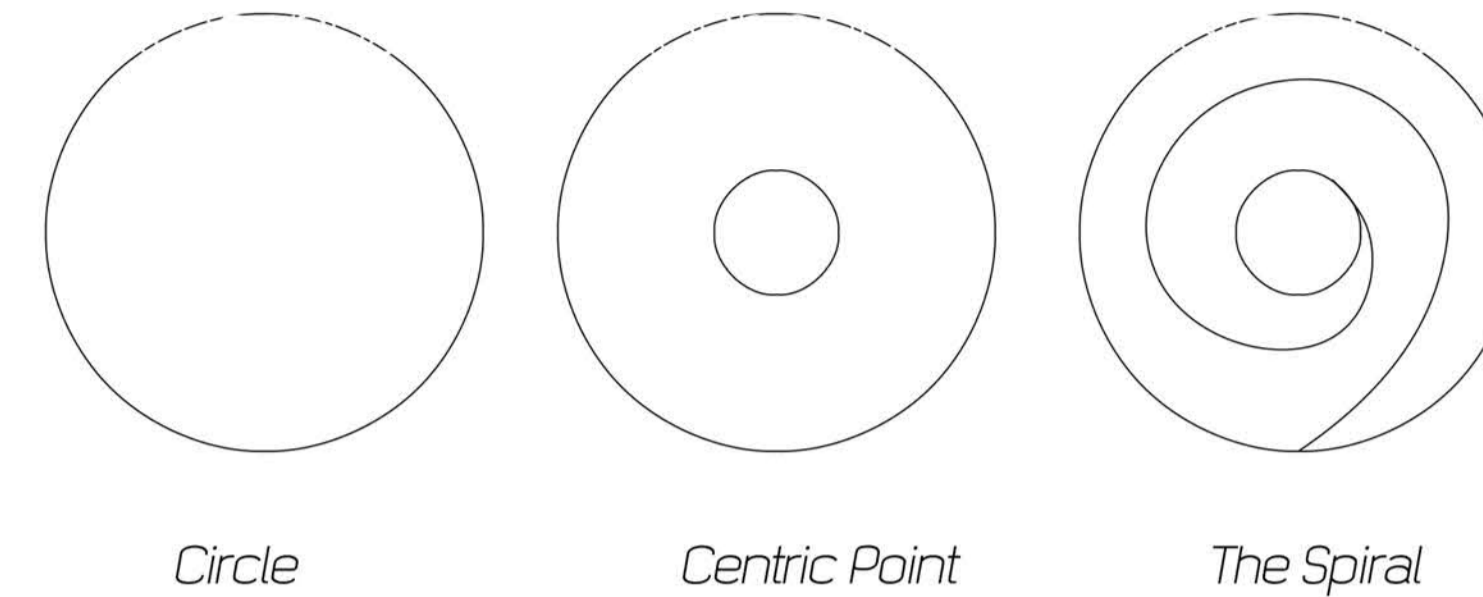
10. THE POETICS OF NOVEL STRUCTURES AND TECTONICS

10.4. THE REVIVAL OF AUTOGENIC ORNAMENT:



Autogenic is an adjective that means: self-generated or self-produced. Architecture can become autogenic, especially when we speak of ornamentation and patterning as generators for tectonic, or even structural systems in architectural design. Finding paradigms and references in natural and biological systems is a way to create a patterns or modular systems of different kinds. More specifically, 'biomimetics' is a way to produce a single ornamented module, that can be multiplied, repeated, and modified until a pattern is created. In this way, the pattern generates and multiplies itself

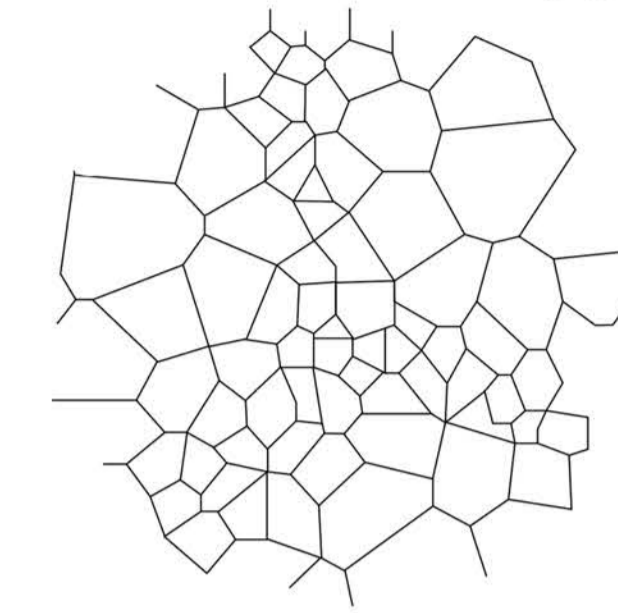
Folk costumes and traditional clothing represent one of the most powerful components of traditional culture and national heritage. They reflect and express the history and cultural development of a country. These Albanian features are elements of identity, of our identity, which it has survived through centuries. The use of textile, colors, ways of knitting, when all-together combined, they become parts of something bigger, a symbolic meaning expressed through ornament. The use of ornament in traditional clothing appeared in very early times, based either on decorations or patterns which it differs from specific regions and areas.



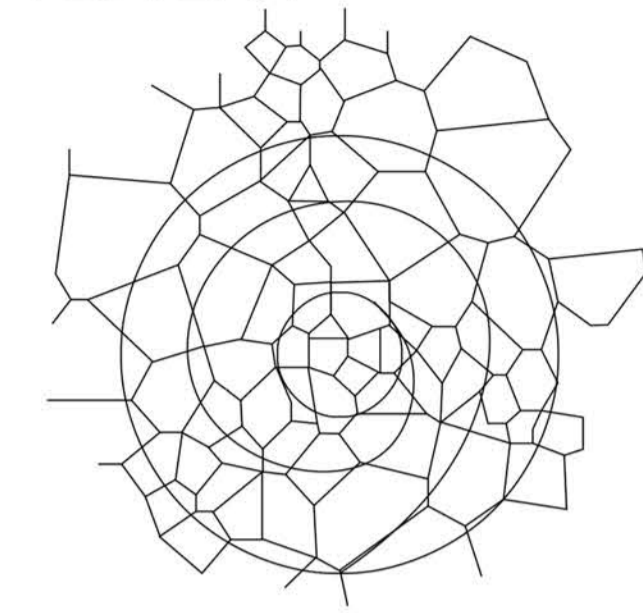
Circle

Centric Point

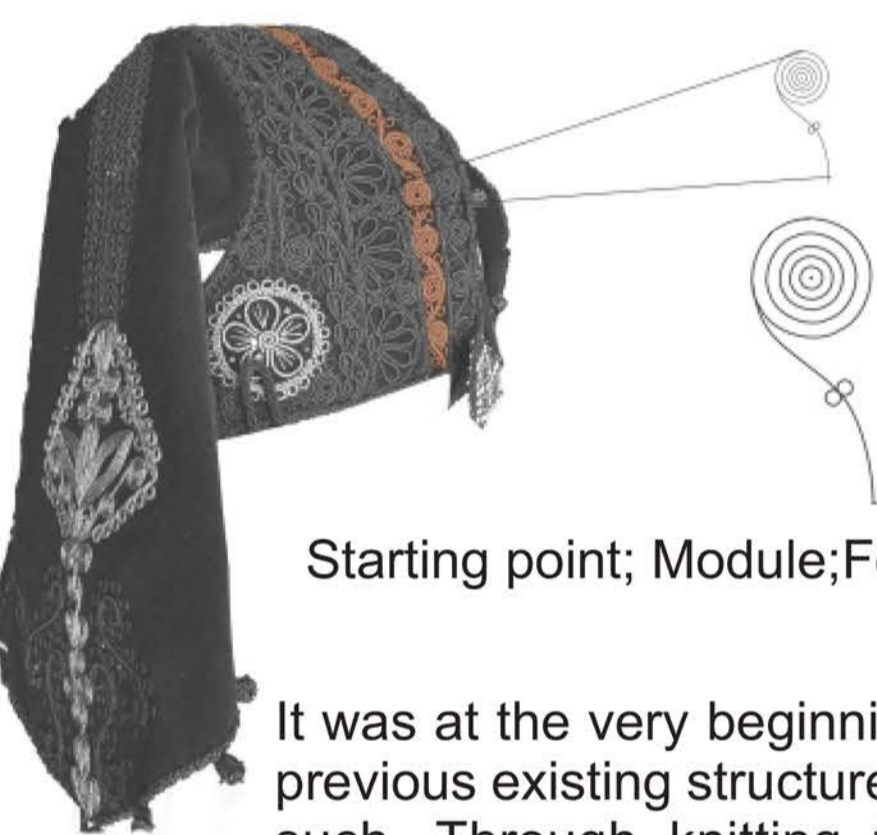
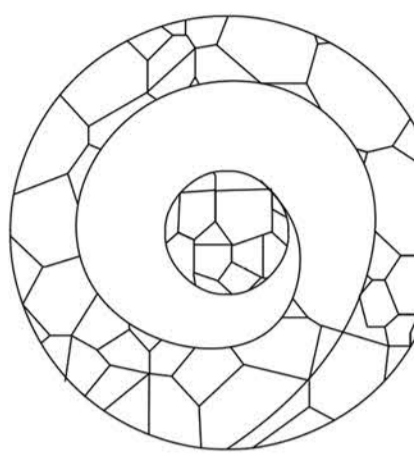
The Spiral



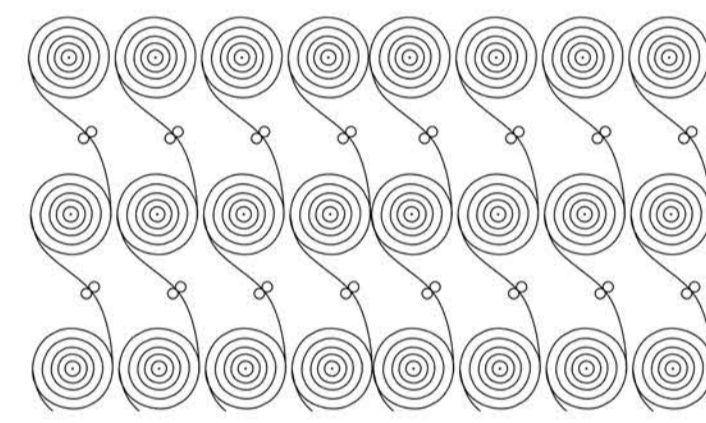
2D Voronoi Pattern



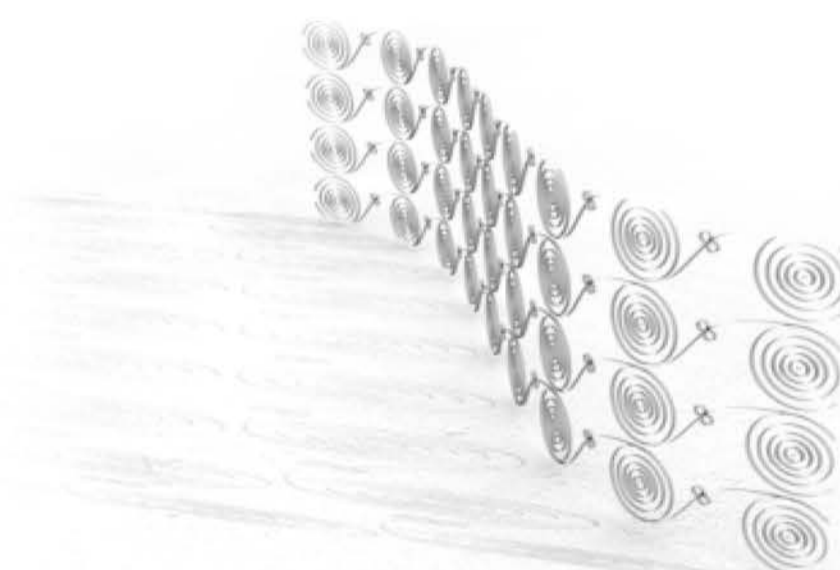
Combination of Voronoi and Ornament Patterns



Starting point; Module; Folding

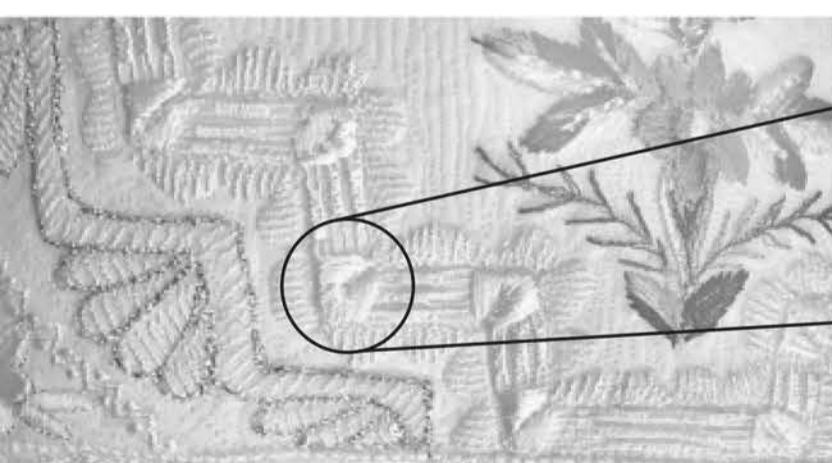
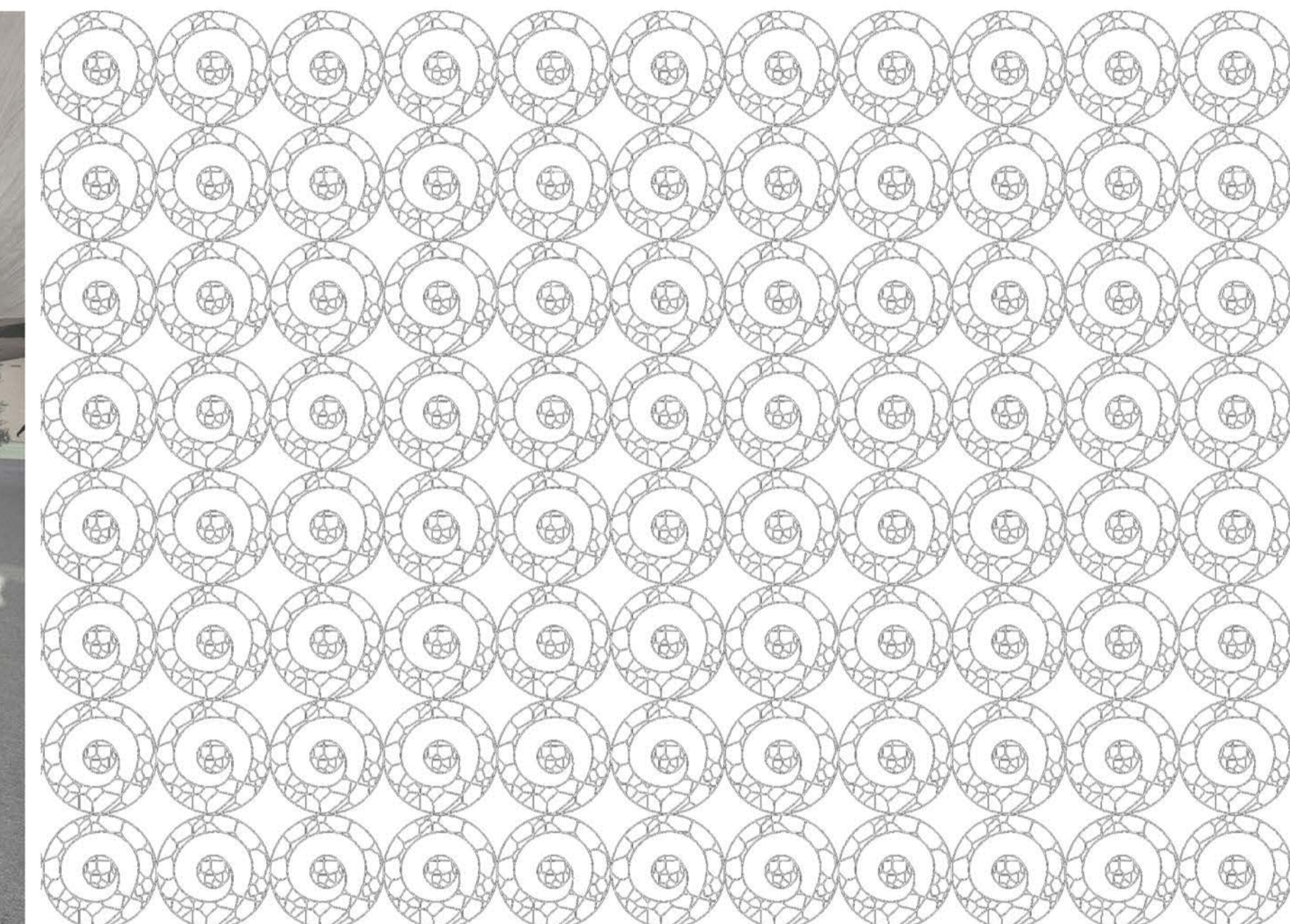


Repetition; Creation of a Pattern

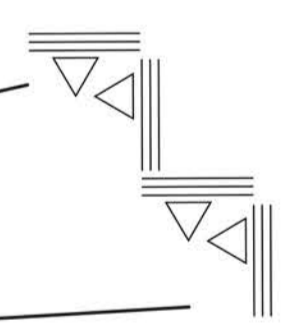


The ornament

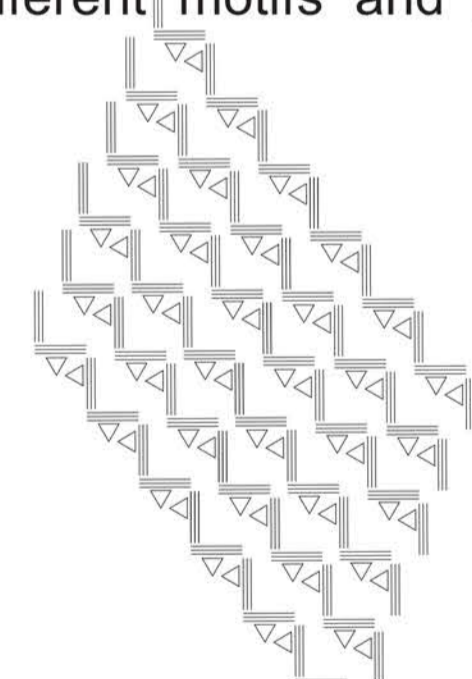
It was at the very beginning that ornament was considered as decoration, something that is added to a previous existing structure/ base material, which in Albanian traditional clothing it was quite often used as such. Through knitting they created different motifs and patterns, mostly those of nature origin



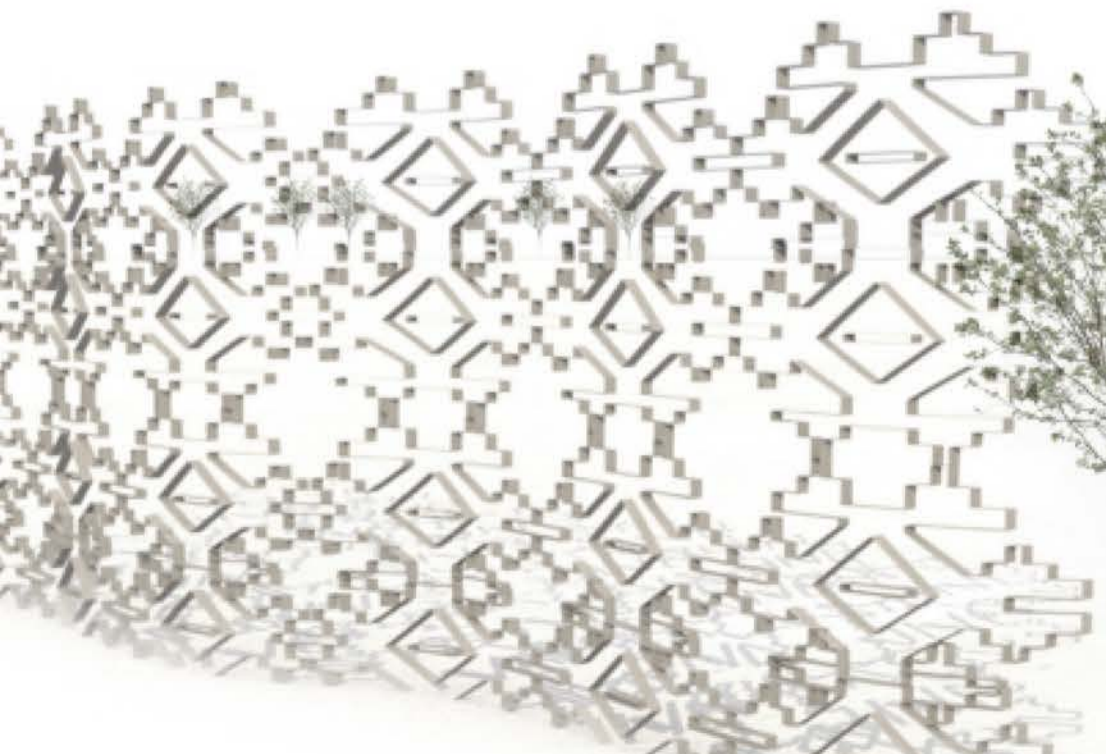
Starting point; Module; Add



Repetition; Creation of a Pattern



The ornament



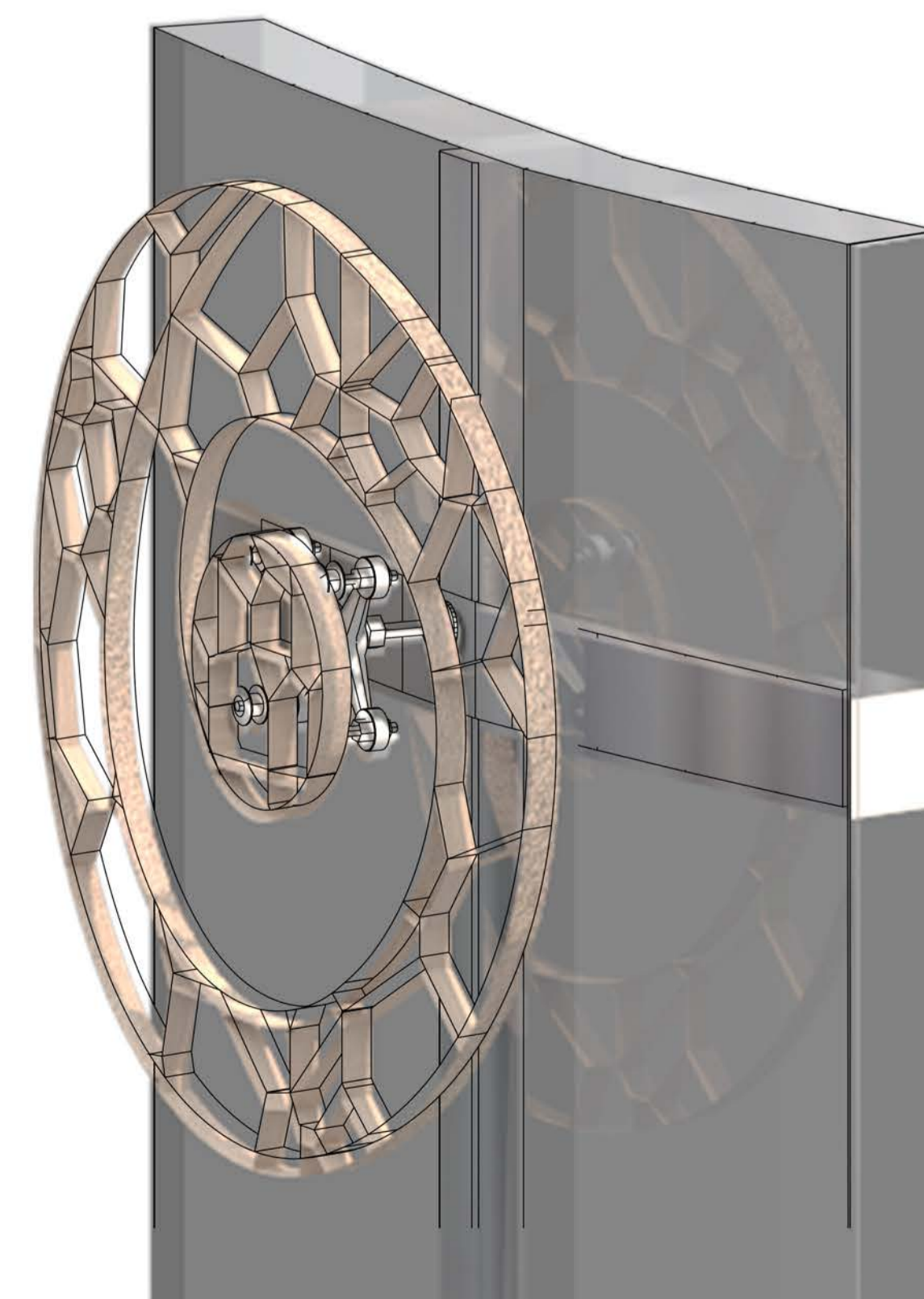
Starting point; Module



Repetition; Creation of a Pattern

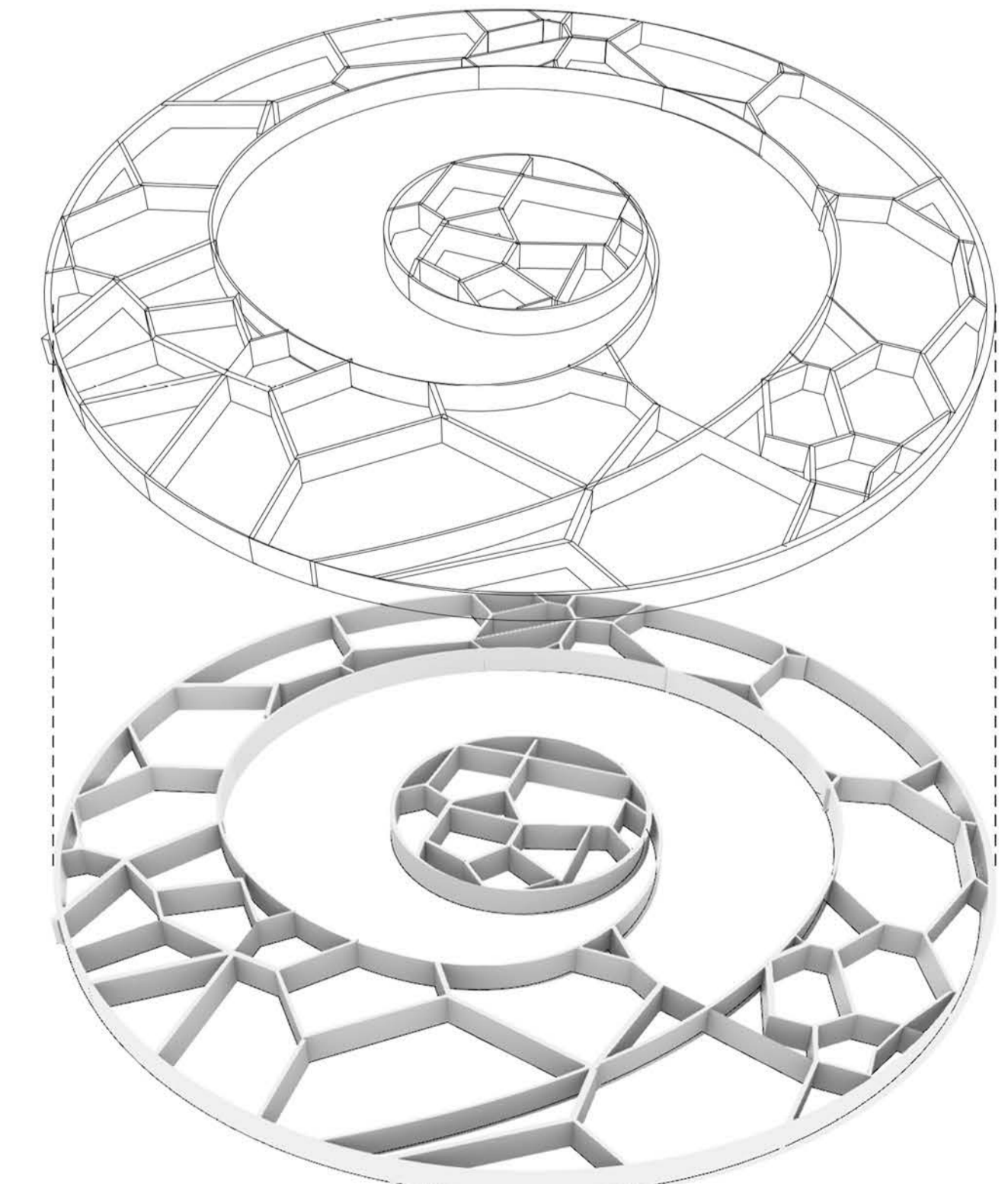
The ornament

Albanian Rugs play a very important role as part of our cultural heritage and serve as an example of the use of ornament specifically knitting in Textile and different fabrics. Colorful palettes, the clear geometric sense within the patterns, symmetry and balance, are just some of the main characteristics in their designs.



Methods of Mounting; 3D Detail

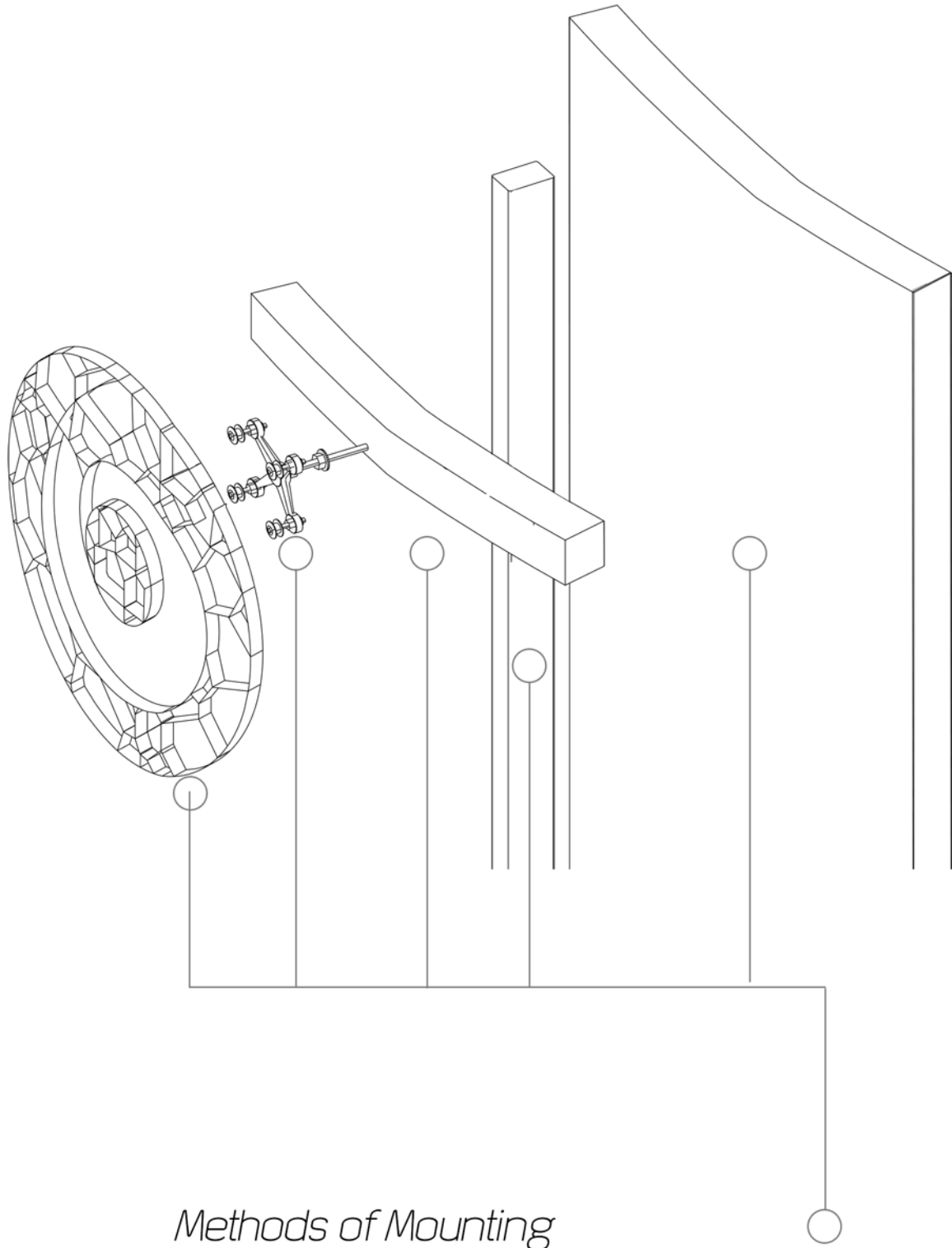
SECOND PATTERN



3D view of the Module

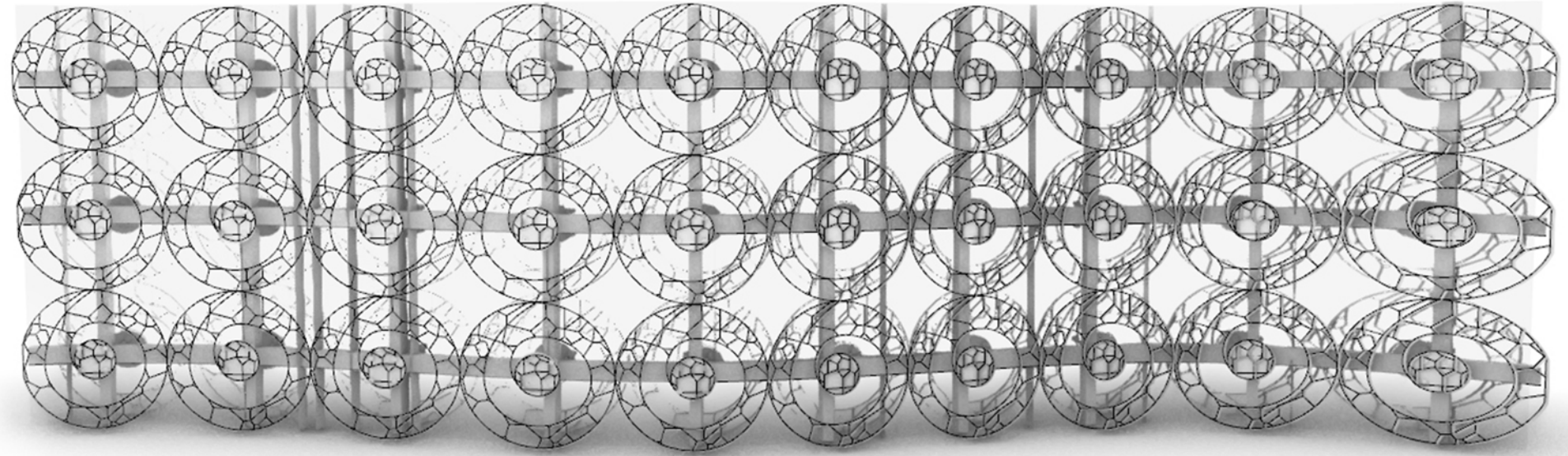
V. STRUCTURES AND TECTONIC

10.2, Tectonic Novelties in WOOD - Expressive

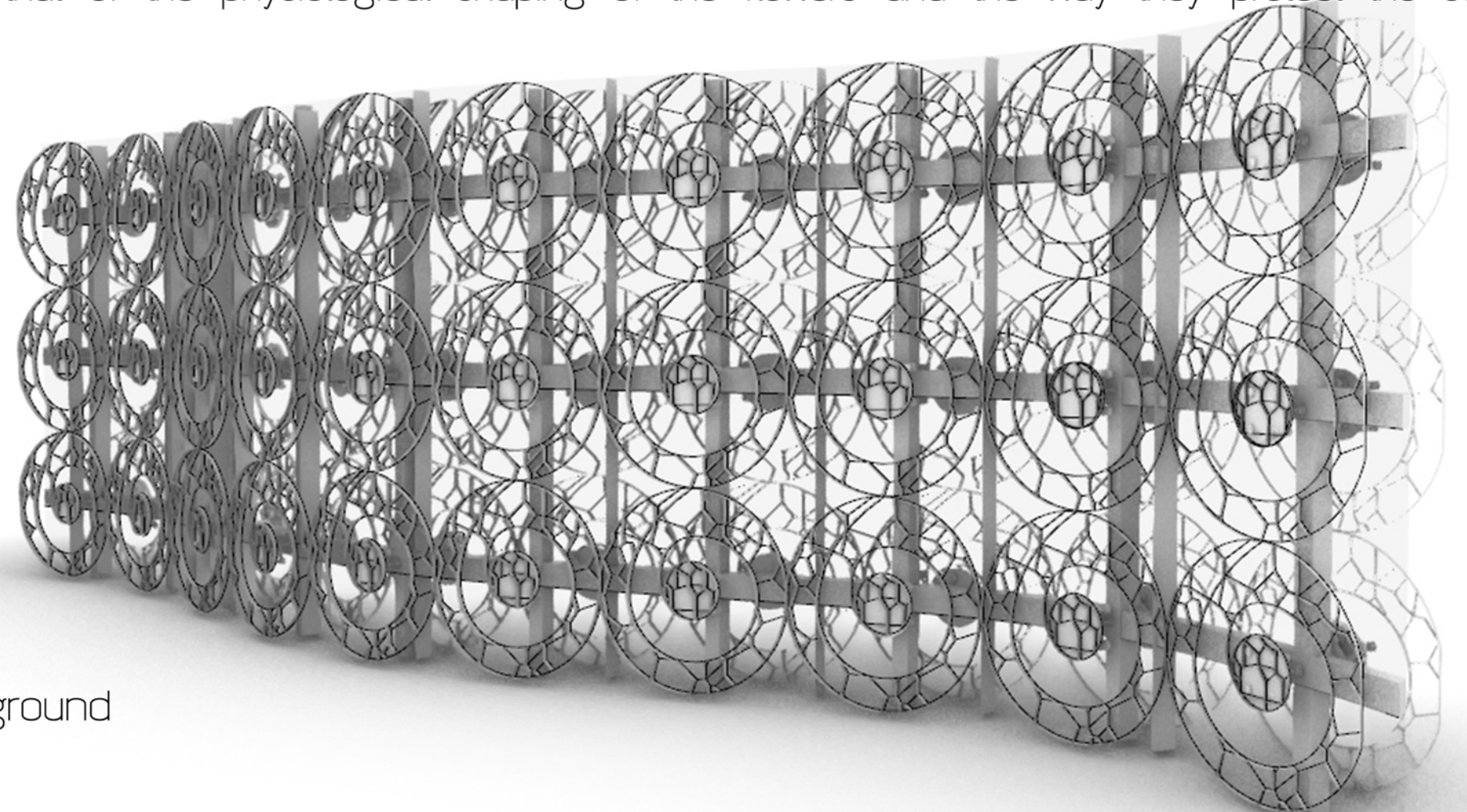


Methods of Mounting

- Ornament Module
- Steel Detail
- Steel Slim Beams
- Steel Slim Columns with reinforcement to the ground
- Glass Wall



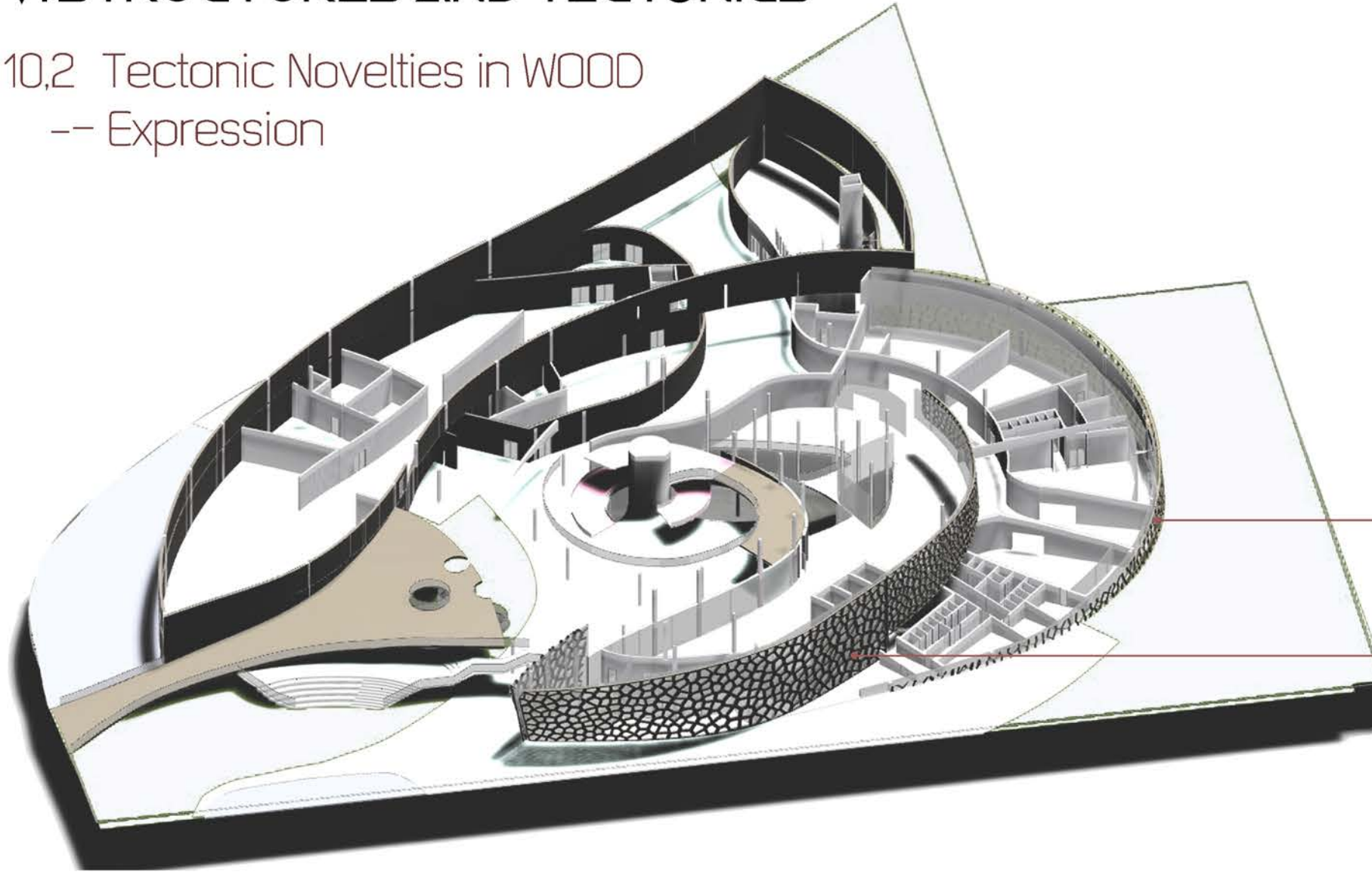
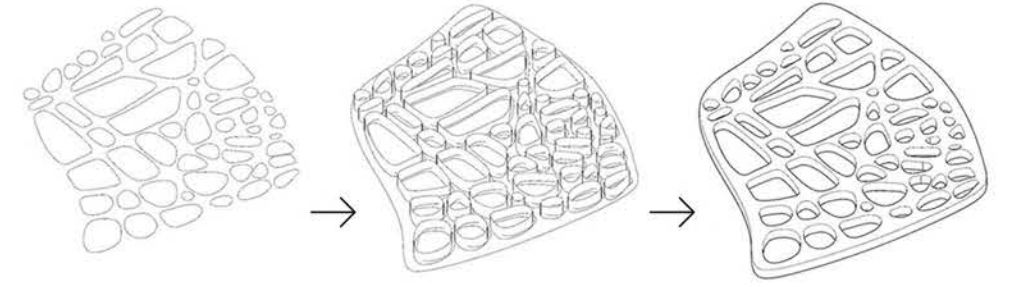
The form and inspiration of the ornamental pattern derives from the concept of the masterplan itself. Starting from the main centric point, continuing with the growing spiral and the expansion of lines, to 3 dimensionality. It is through this way that after detailed studies the ornament now becomes part of the structure, building, tectonics, and a main aspect of expressiveness. The module of the ornament serves now not only as decoration but its use and meaning has expanded into so much more. Besides that it also has a big correlation between biophilic design and the two terms used and studied from the studio vocabulary ; Fractals and Blossom, Fractals as an never ending spiral same as that of the golden ratio and with the term Blossom same as that of the physiological shaping of the flowers and the way they protect the seed



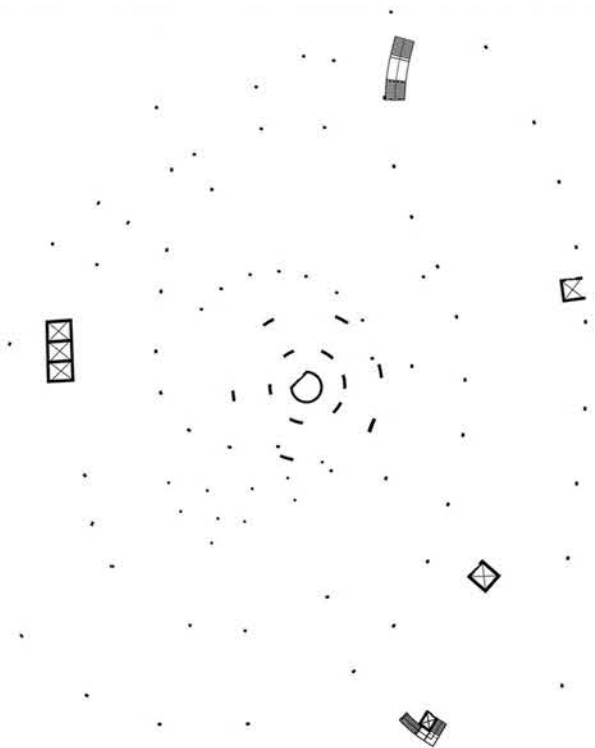
V. STRUCTURES AND TECTONICS

10,2 Tectonic Novelties in WOOD -- Expression

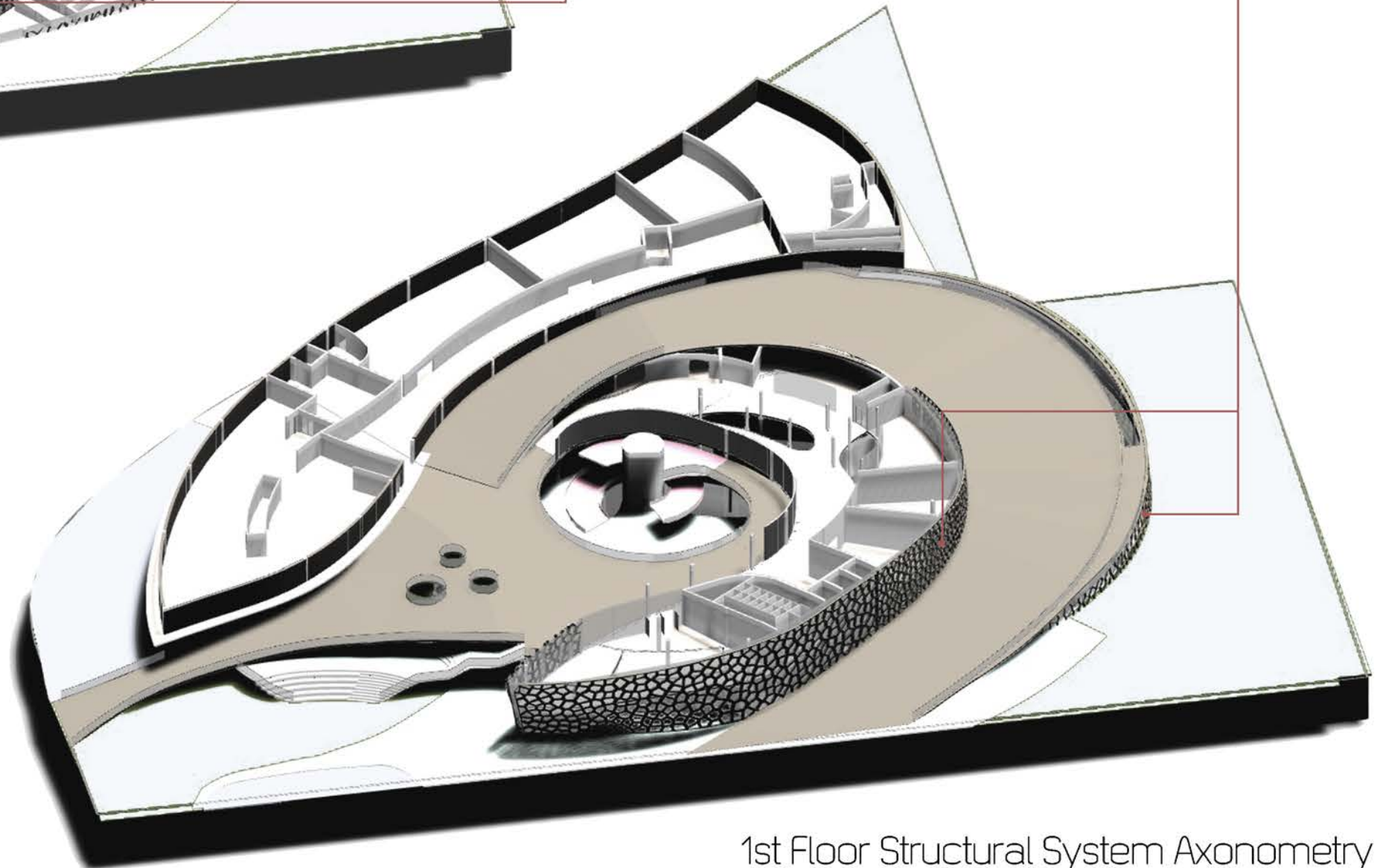
CLT - material
design process -
inspired by voronoi
pattern



Ground Floor Structural System Axonometry



Timber Structural
Columns in both
floors as
Main load-bearing
structural element

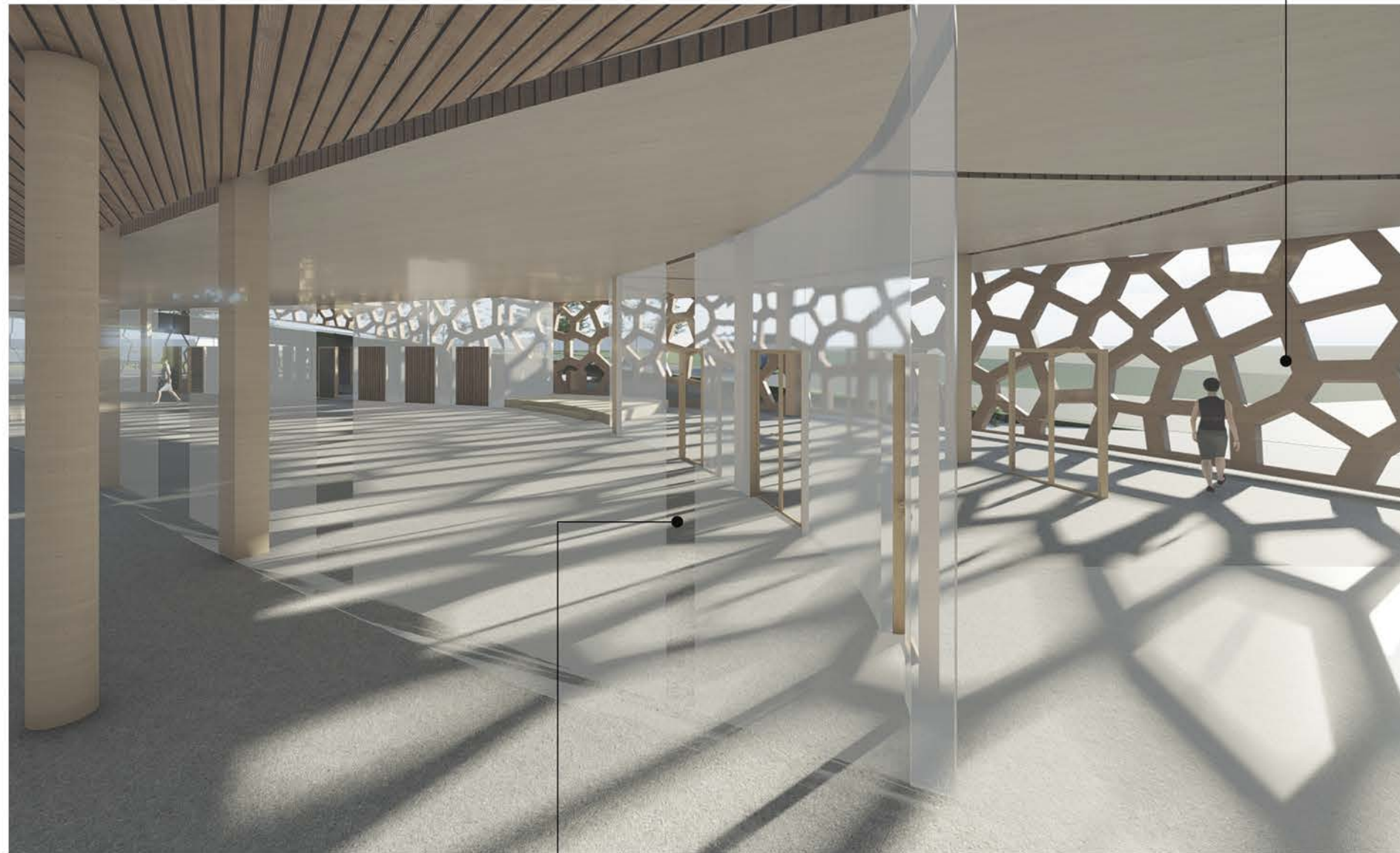


1st Floor Structural System Axonometry

Structural/tectonic walls

Structural Glass – Application in project proposal

Double skin facade is used in the perimeter walls that are the most representative ones in the project. The voronoi facade, is supported by structural load bearing glass walls, where air flows in between them and gives the building better efficient performance.



double skin facade

Structural glass:
-self supporting
partition walls

Structural glass is also used in partition walls inside the building, that play no structural role, except that they are self supporting. These walls are used to increase the transparency, hedonistic and visual qualities of the functional spaces.

Glass as a load-bearing material

Glass has its own load-bearing qualities and can therefore be used for precisely such purposes in structural engineering. This means that flat glass is suitable as a primary, not just secondary material. There are no irritating braces and no metallic reflections – just pure glass.

The load-bearing effect of the glass can be reinforced. This makes it possible to enhance not only the normal load-bearing capacity of the glass, but also its residual load-bearing capacity after potential breakage. If an appropriate and structurally efficient film is used, manufacturers can now produce a laminated glass that will carry the weight, despite a nearly 30% reduction in thickness. Structural glass engineering stands or falls by the mounting option that is applied to the material on the support structure. The most common type of glazing involves linear mounting. The main components of this option are horizontal and vertical exterior mullion-and-transom designs with interior pressure bars and elastic supports.

An architectural rendering of a modern building featuring a prominent green roof. The building's facade is characterized by a complex, white, geometric lattice pattern. The green roof is a curved, multi-level structure with various levels of greenery, including trees and smaller plants. Several people are shown walking on the roof, providing a sense of scale. The background shows a clear blue sky with light clouds and other parts of the building's structure.

FALEMINDERIT PER VEMENDJEN