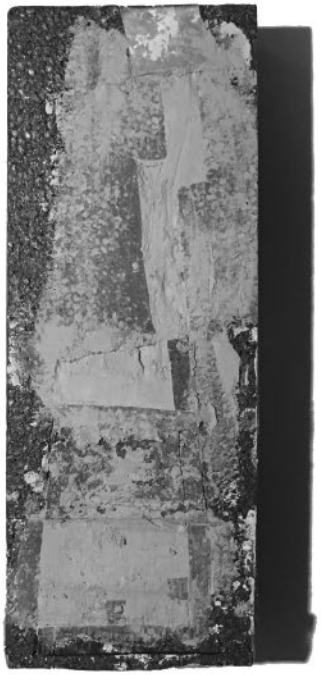

ARCHITECTURE **PORTFOLIO** 2023

ALEXANDRA MÜLLER

ALEXANDRA MÜLLER

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EDUCATION

2018-2024 (ongoing)
Bachelors+Masters, "Ion Mincu" University of Urbanism and Architecture

EXPERIENCE

2022-2023
Architect, Graphic Designer and Visualization Artist for UTCB Seismic Design Team

2020-2021
Artist/Art Installation Designer-"Overflow" @Brasov Underground Museum & @The Long Night of Museums at UAUIM

2018-2019
Author/Contributor CSAV(Center for Vernacular Architecture Studies) Academic Journal

AWARDS

San Francisco, California, USA
2023
1st Place for Best Architecture at EERI Annual Seismic Design Competition

Bucharest, Romania
2021-2023
Nominee, "Arch. Dinu Patriciu" Awards for Excellence in Architectural Design

Bucharest, Romania
2021-2022
Honorable Mention, The VR Scene

TOOLS & SKILLS

CAD & 3D Modeling
AutoCAD,
Rhinoceros 3D,

Parametric design
Rhino +Grasshopper

BIM
Autodesk Revit,
Archicad,

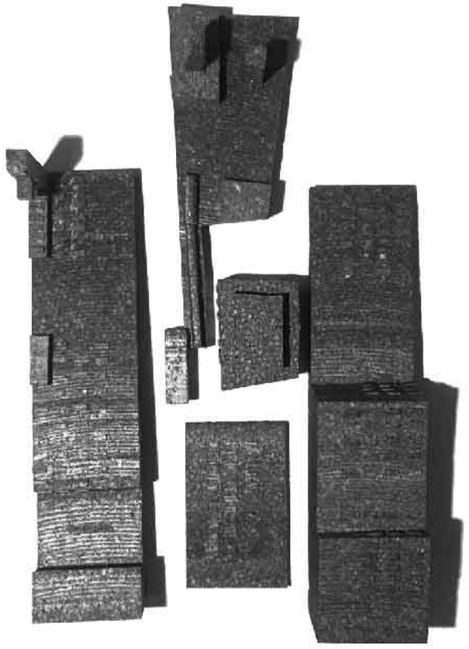
Rendering:
Enscape
Lumion
TwinMotion
+ PostProcessing- Photoshop

Graphic Design, Illustration & Photo Editing
Adobe Illustrator
Adobe Photoshop
Adobe InDesign
Adobe Lightroom

Photogrammetry & VR
Reality Capture + Unreal, Engine

Model Fabrication:
laser, 3d printing, handmade, plaster, digital design

Video Editing
Autodesk 3ds Max,
Google Sketchup,
Adobe Premiere Pro,
Adobe After Effects,

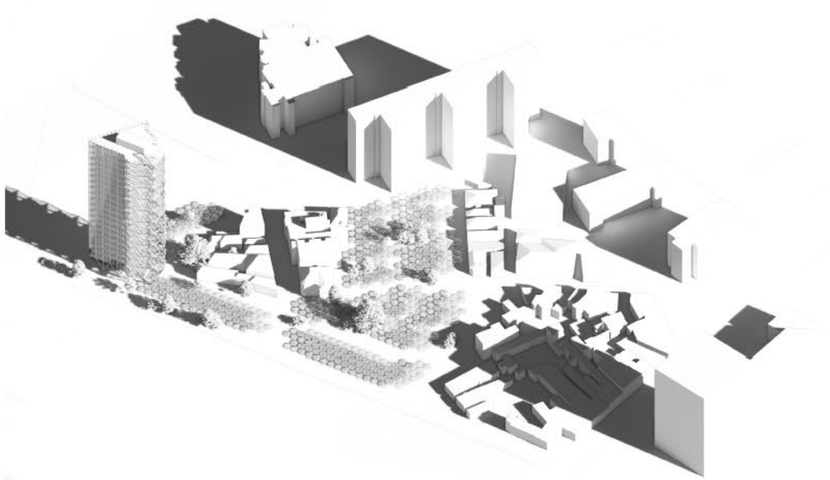


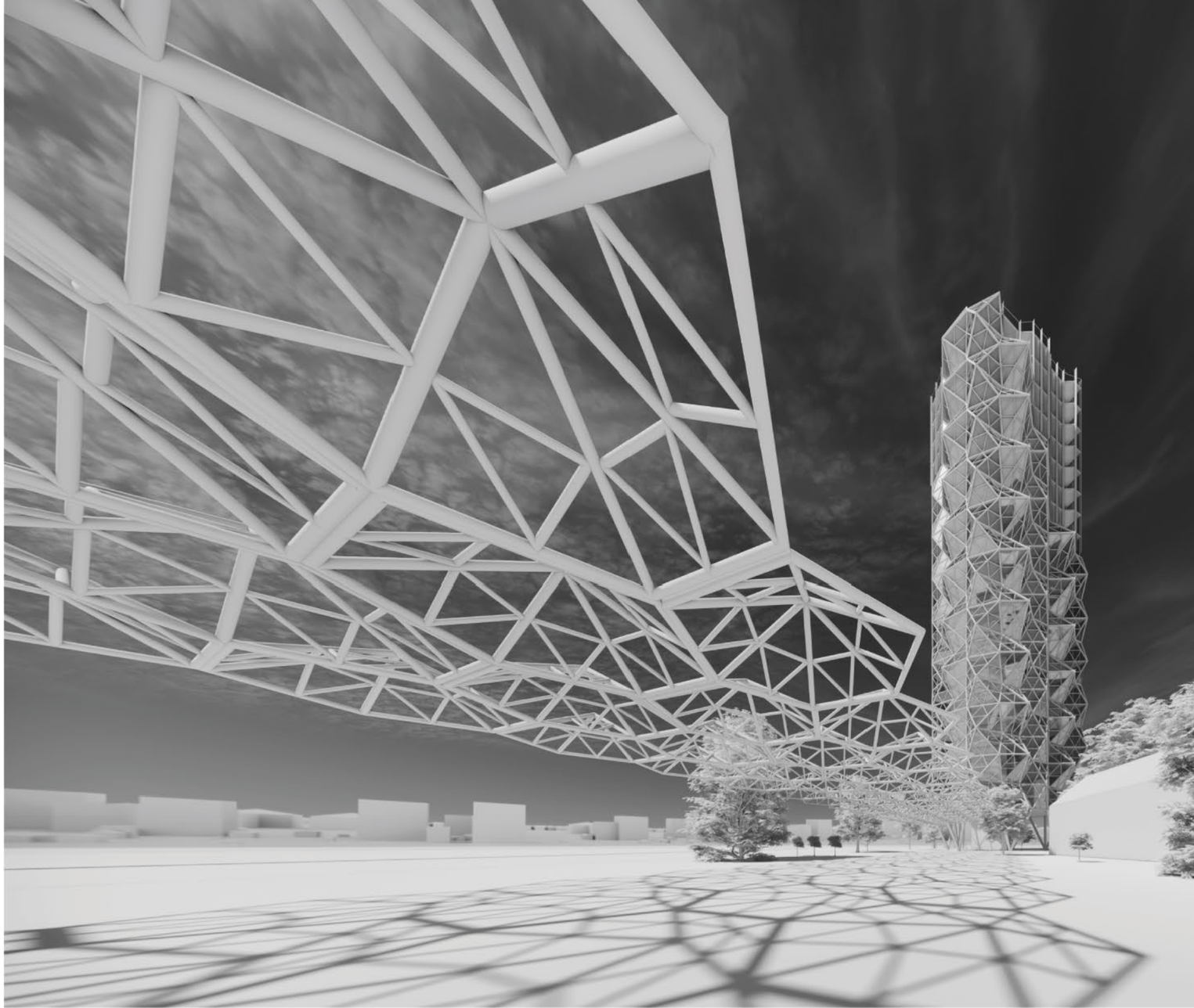
/CONTENTS

01 BUZESTI OFFICE TOWER

special structures and technolgies
5th year/2023

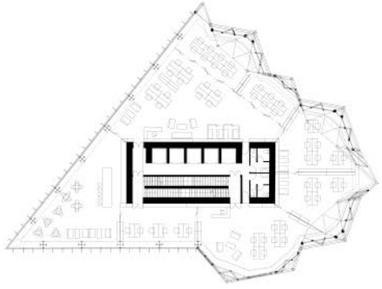
This project explores the expressive possibilities of special structures, in the development of a high-rise office building project. For this project, a special diagrid was designed, from a series of hexagonal cones with slightly varied shapes, which extend over 2 floors, and come together perfectly like a honeycomb. The concept is based on the first project of the semester in which I developed a special structure for large spans, made out of CLT wood, in the same structural logic. This project tried to take that structural model, transform it and adapt it for a high-rise building, on a metallic structure.





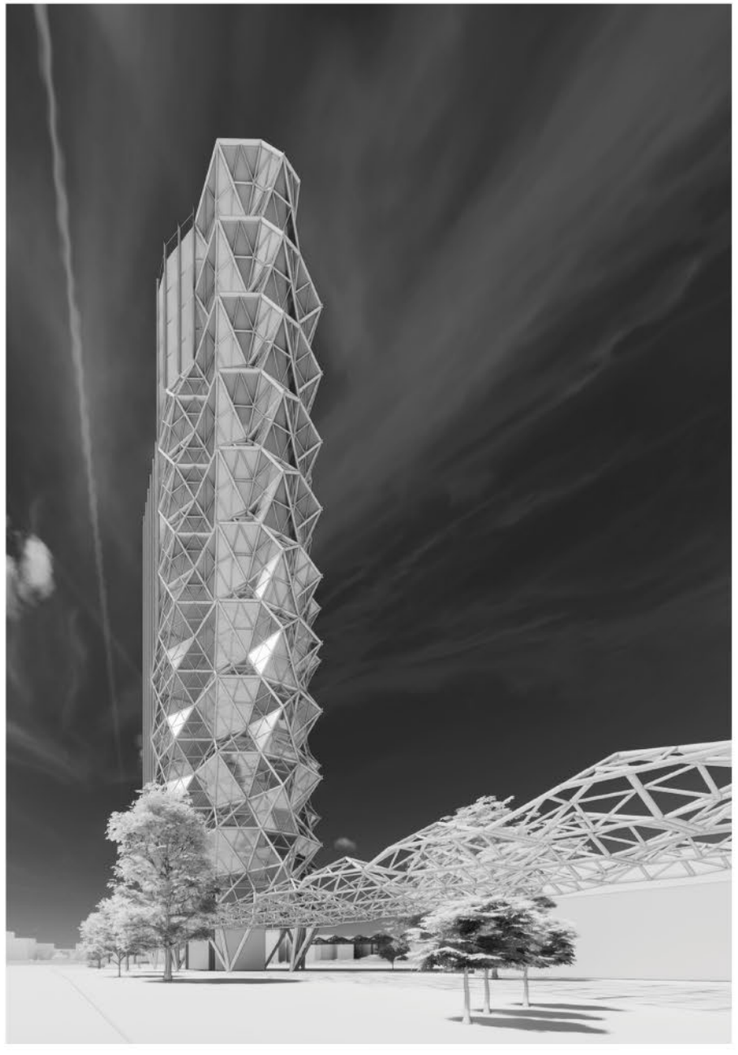
01 BUZESTI OFFICE TOWER

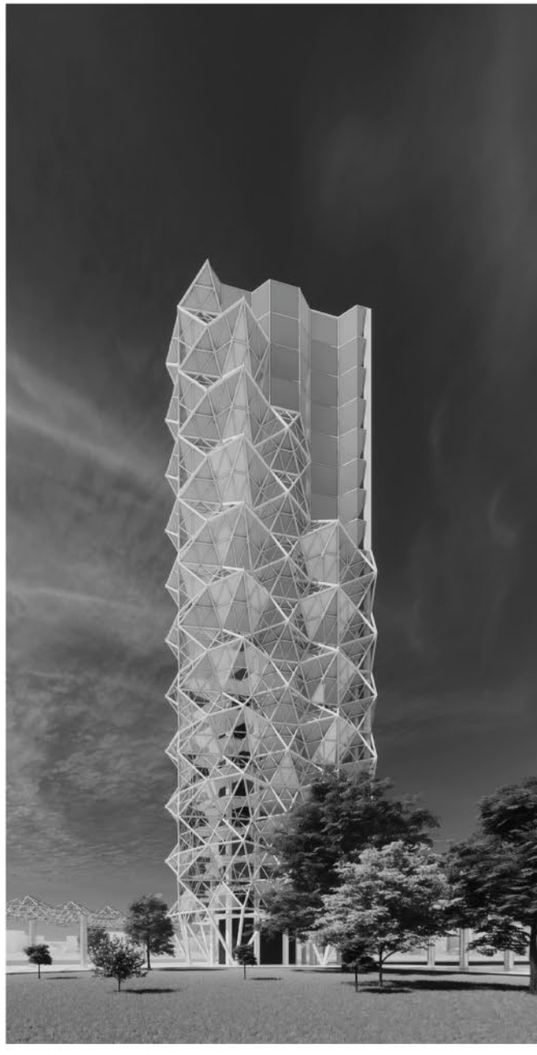
special structures and technolgies
5th year/2023



typical floor variations

groundfloor





01 BUZESTI OFFICE TOWER

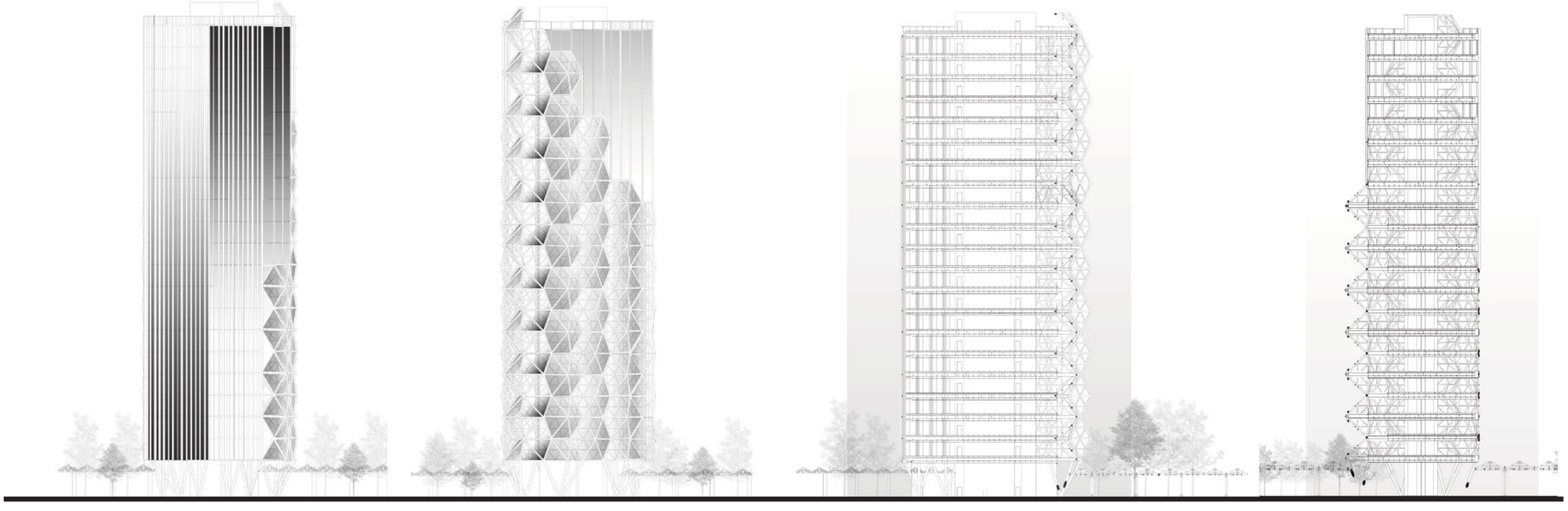
special structures and technolgies
5th year/2023

western facade

eastern facade

longitudinal section

transversel section

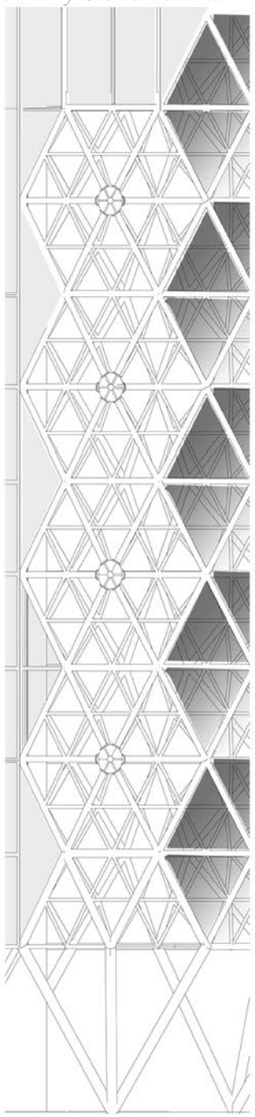


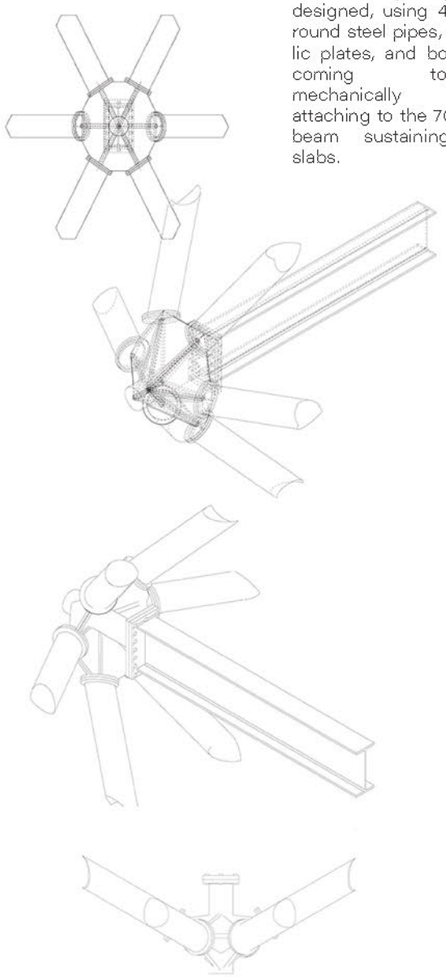
The facades of the tower make the gradual transition from the banal form of an office building, to the parasitic form of the diagrid that makes the transition to the horizontal structure of the market, relating each one of the facades to its direct context..

01 BUZESTI OFFICE TOWER

special structures and technolgies

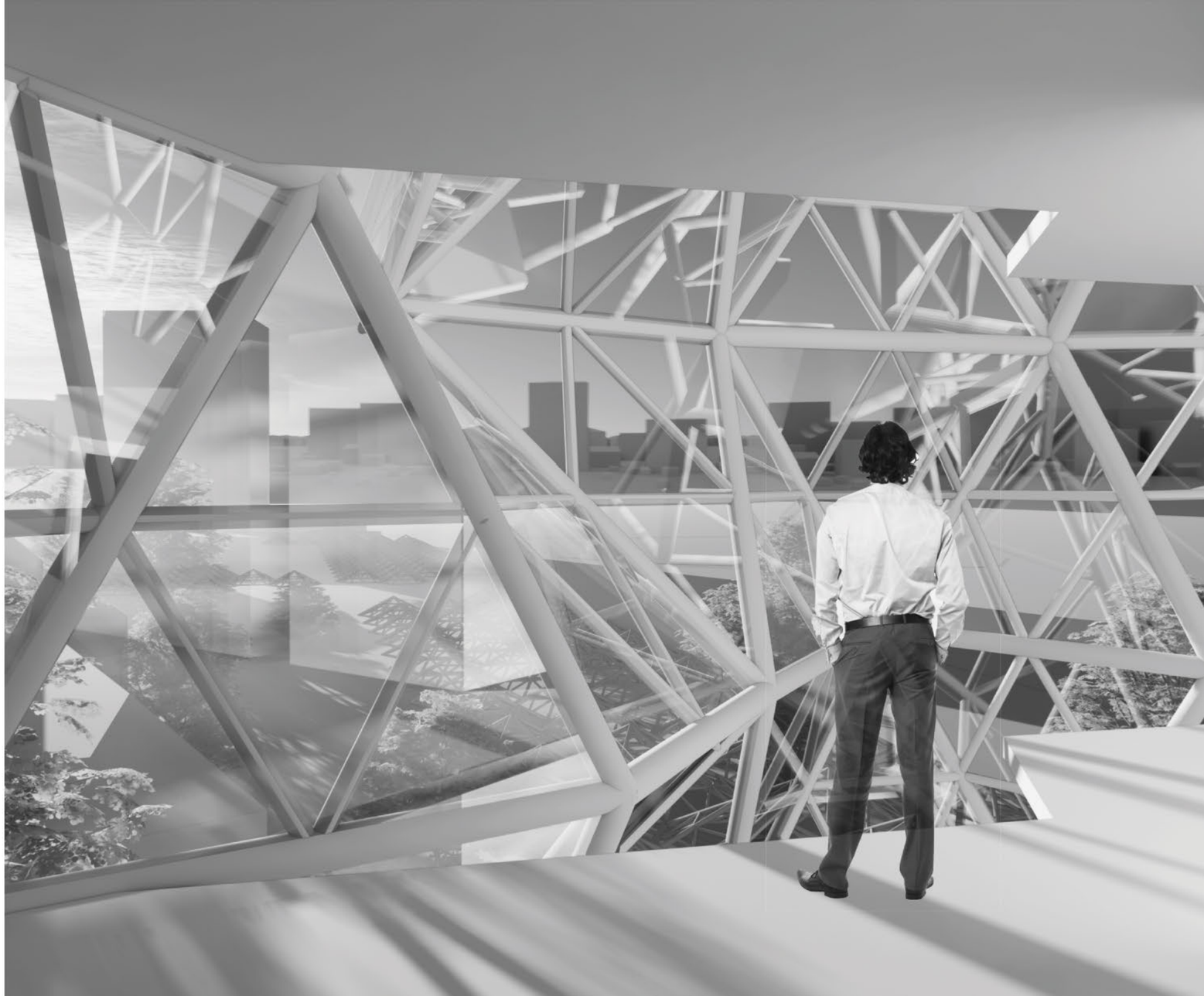
5th year/2023





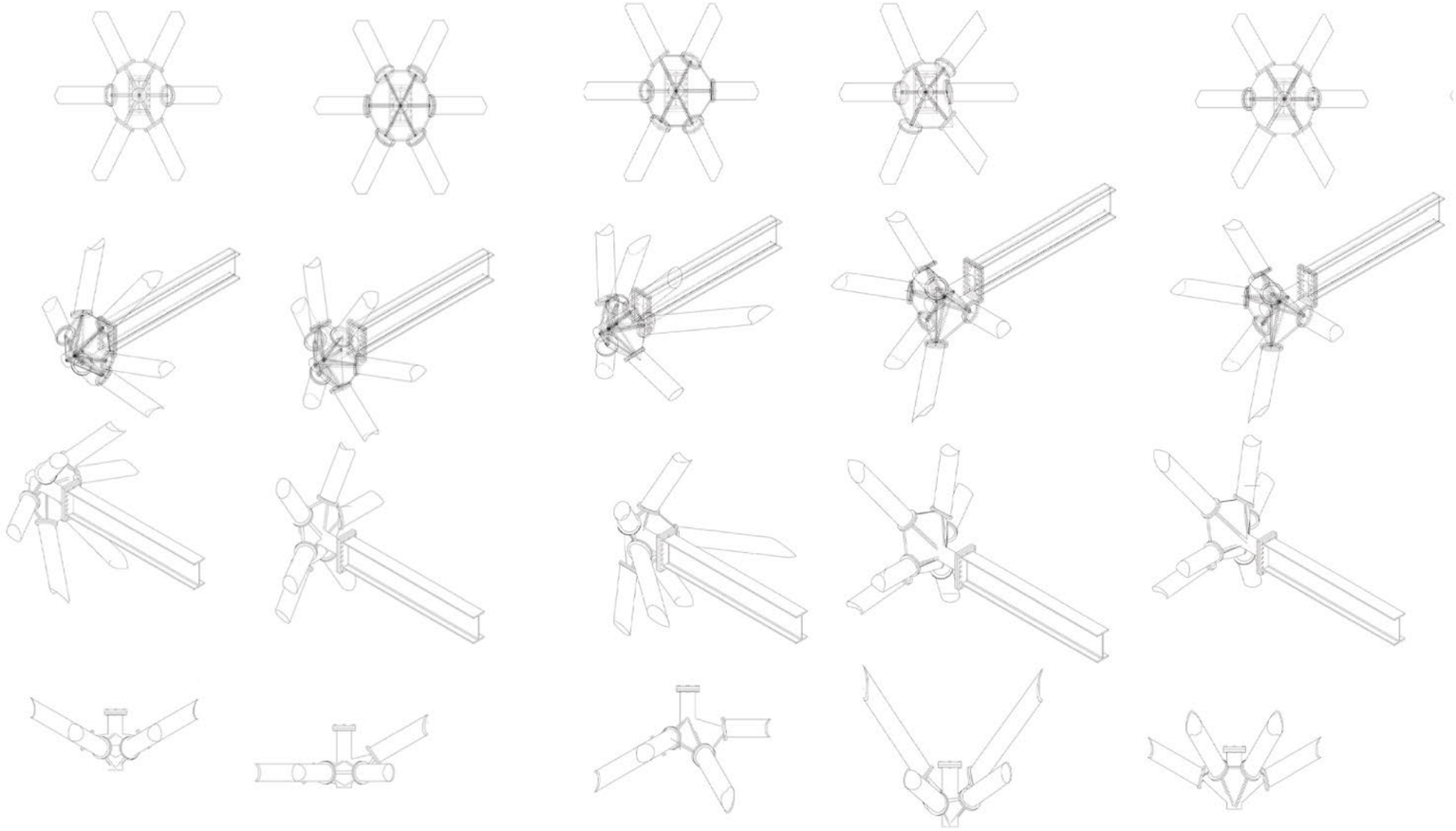
A special type of diagrid knots and joinery was designed, using 400mm round steel pipes, metallic plates, and bolts; all coming together mechanically and attaching to the 700 IPE beam sustaining the slabs.

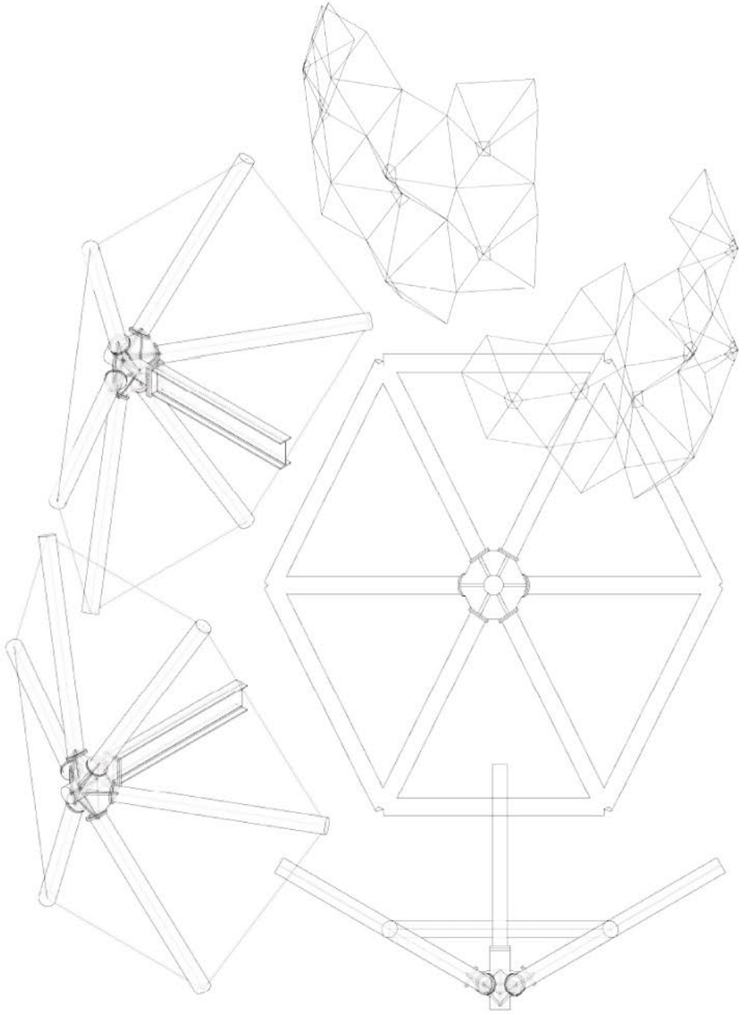
diagrid bay details



01 BUZESTI OFFICE TOWER

special structures and technolgies
5th year/2023





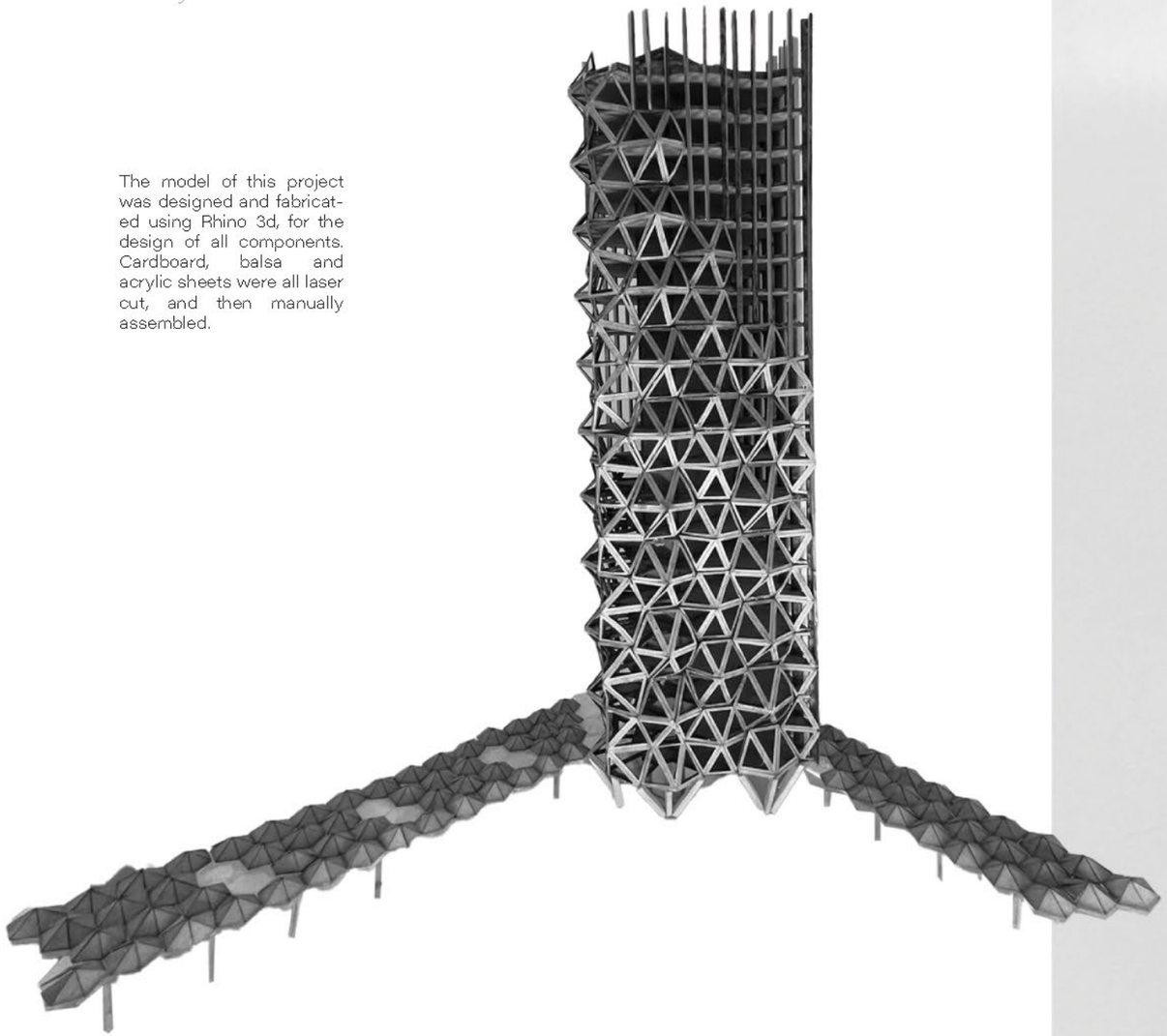
detailed views of diagrid knots variations

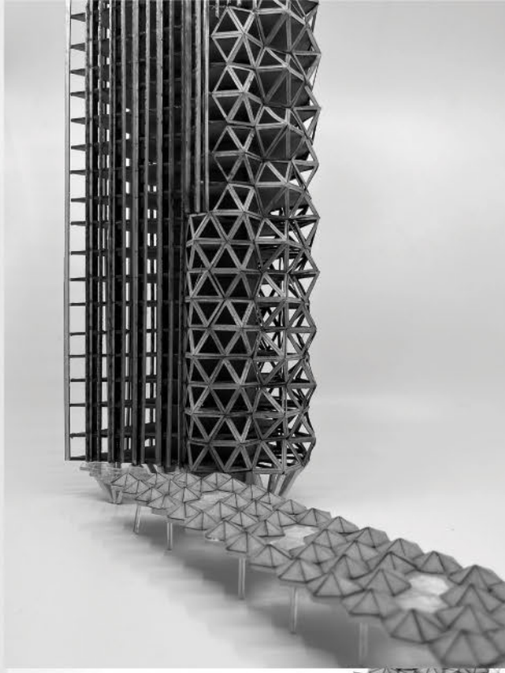
01 BUZESTI OFFICE TOWER

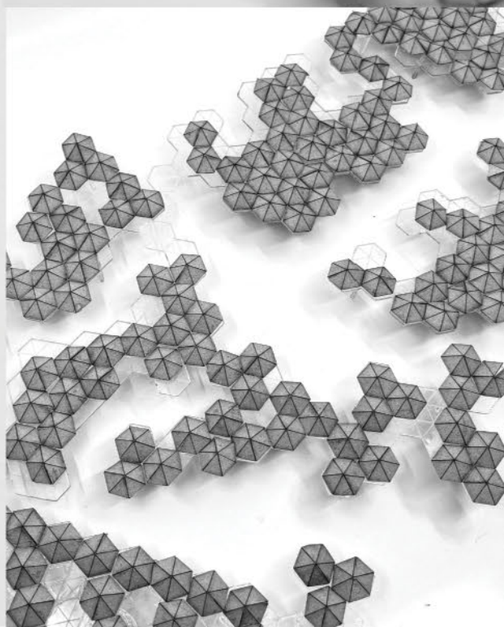
special structures and technolgies

5th year/2023

The model of this project was designed and fabricated using Rhino 3d, for the design of all components. Cardboard, balsa and acrylic sheets were all laser cut, and then manually assembled.



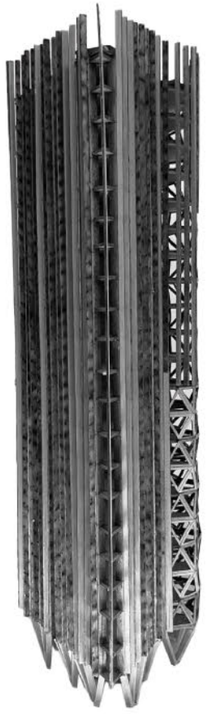




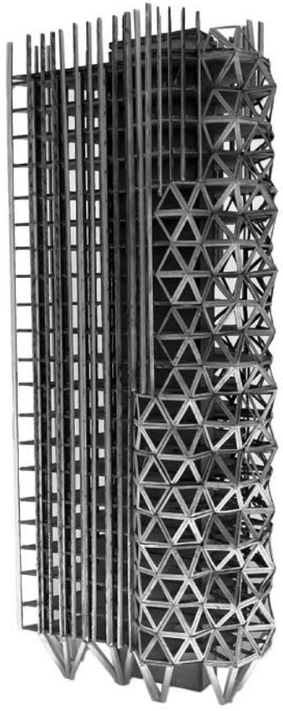
01 BUZESTI OFFICE TOWER

special structures and technolgies

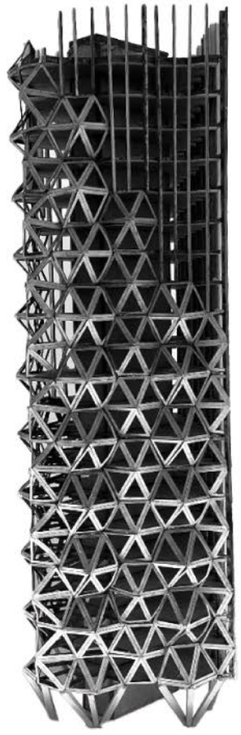
5th year/2023



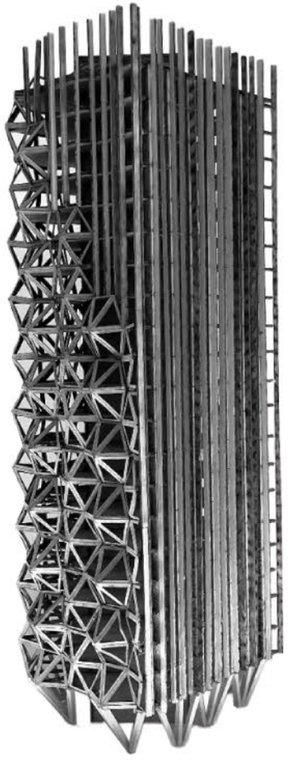
west



south



east

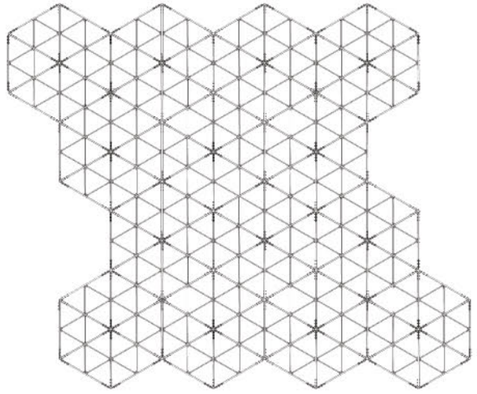


north

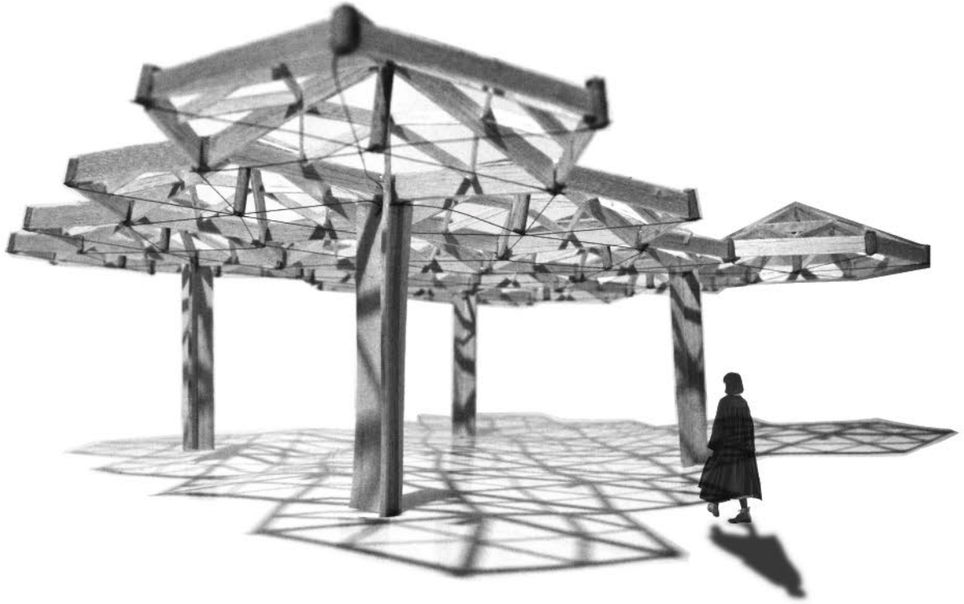
02 HEXAGONAL CANOPY

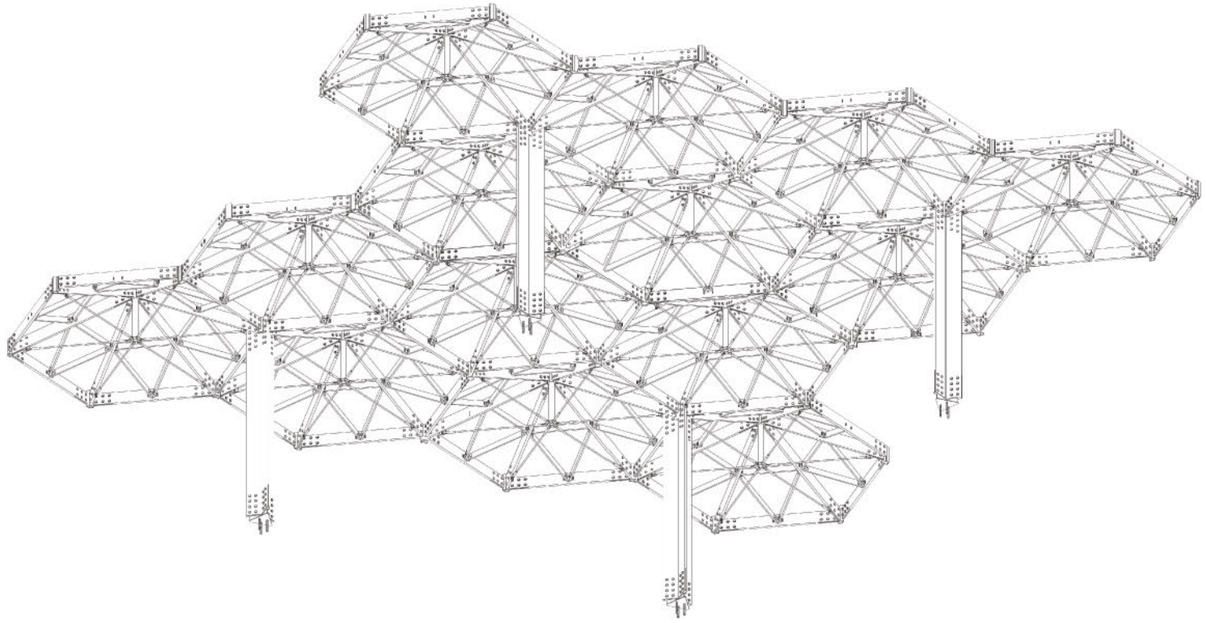
expressive potetials of the structure

5th year/2022

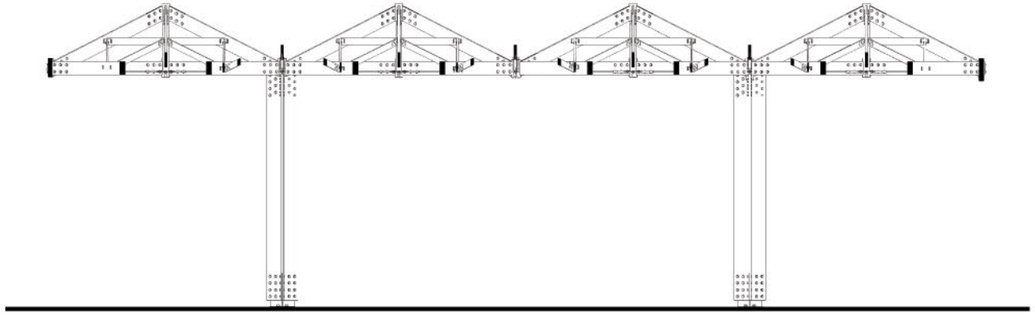


The 1st project of the 5th year was dedicated to the experimentation of the potential of large scale- large span structures. The project plays with the idea of modularity and multi-directionality, the structural module being composed out of 3 hexagonal cones and a pillar, structural stability being ensured by a series of tensioned cables underneath. The structural integrity is assured when the modules come together. The hexagonal shape of the canopies serve the idea of possible extension in any direction.





axonometric view

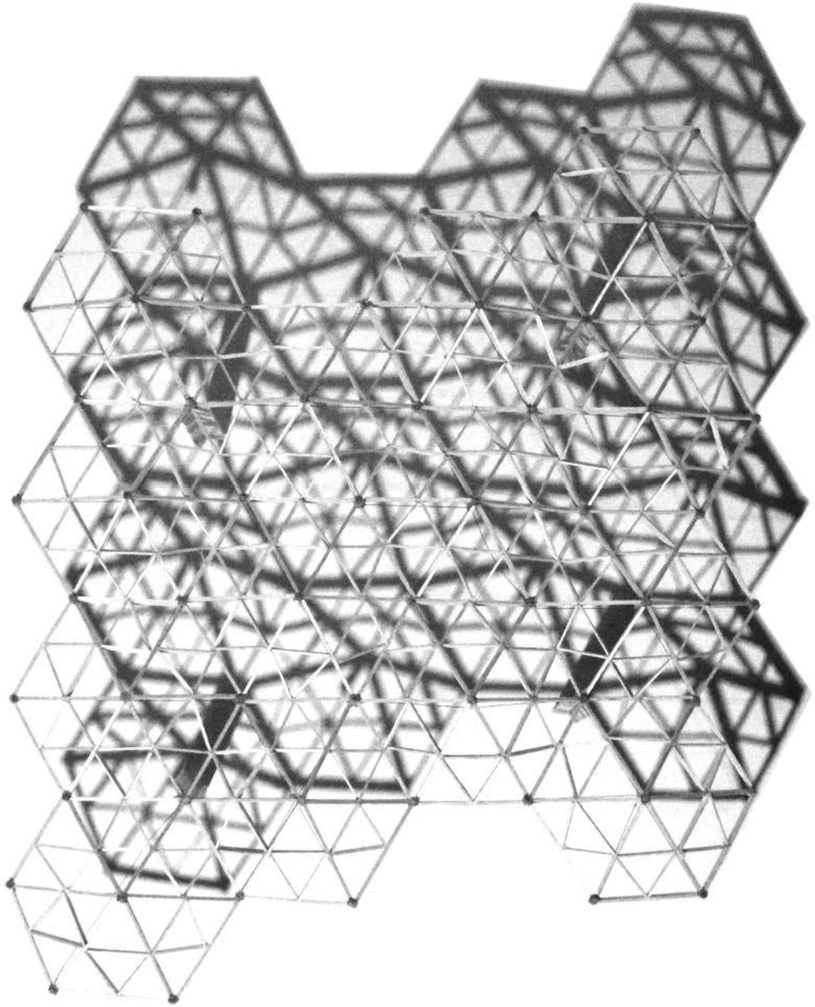


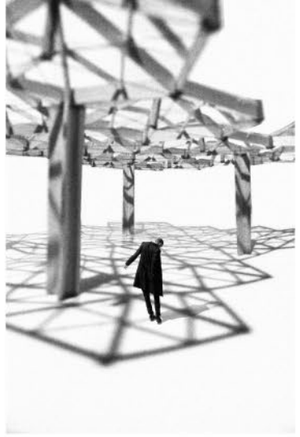
transverse cross section

02 HEXAGONAL CANOPY

expressive potetials of the structure

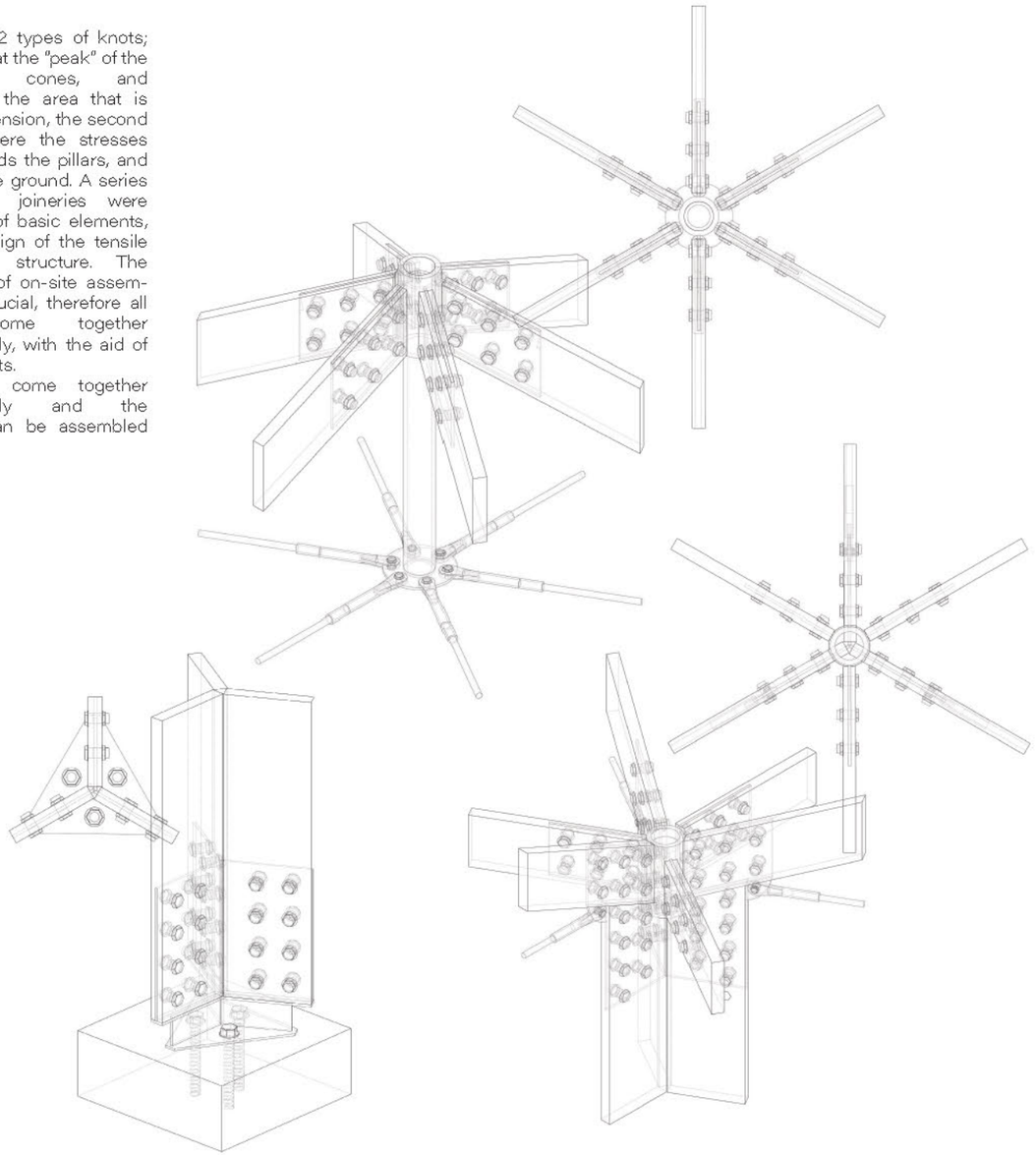
5th year/2022





There are 2 types of knots; first one is at the "peak" of the hexagonal cones, and represents the area that is always in tension, the second one is where the stresses pass towards the pillars, and towards the ground. A series of special joineries were made out of basic elements, for the design of the tensile supporting structure. The possibility of on-site assembly was crucial, therefore all parts come together mechanically, with the aid of metallic bolts.

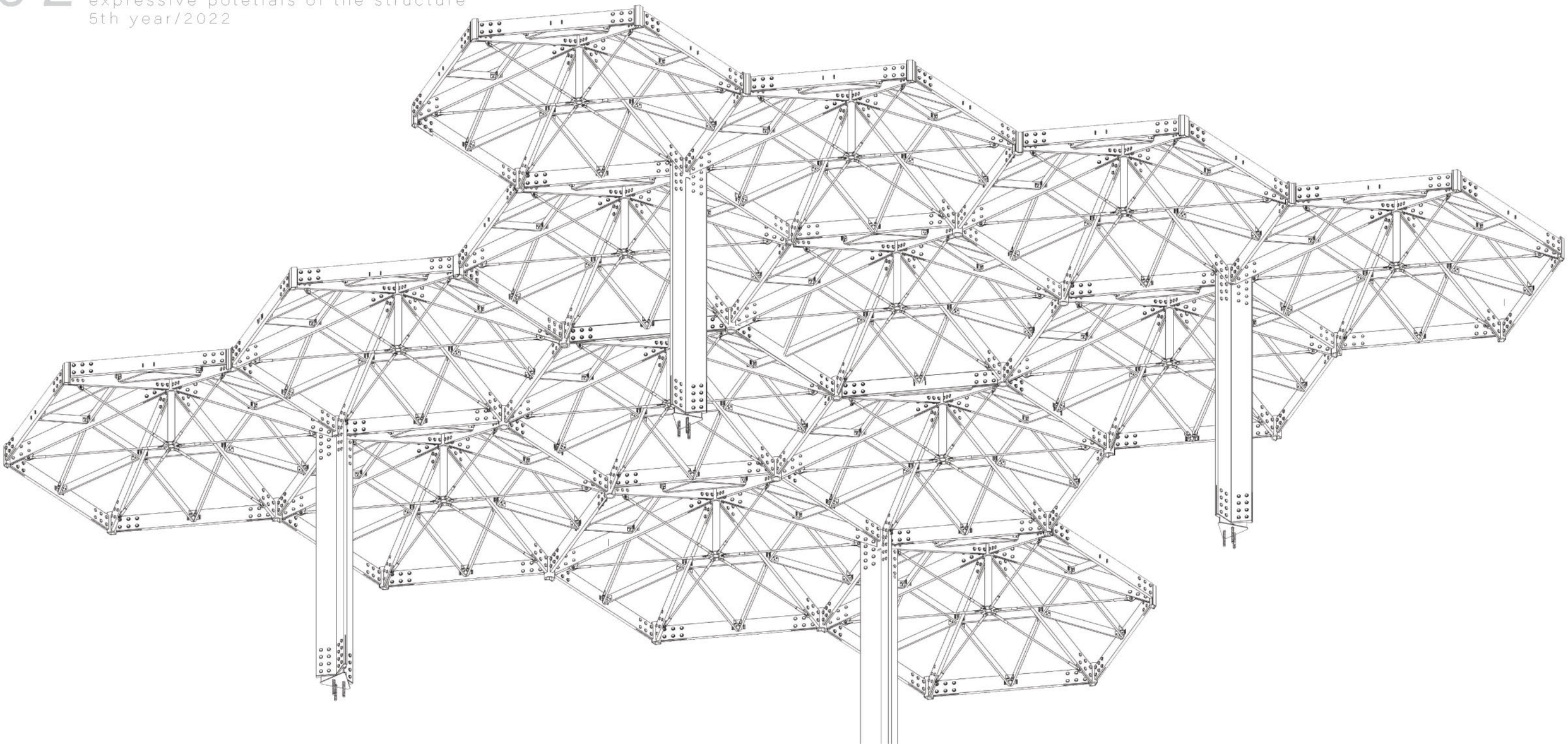
All parts come together mechanically and the concept can be assembled on-site.



02 HEXAGONAL CANOPY

expressive potetials of the structure

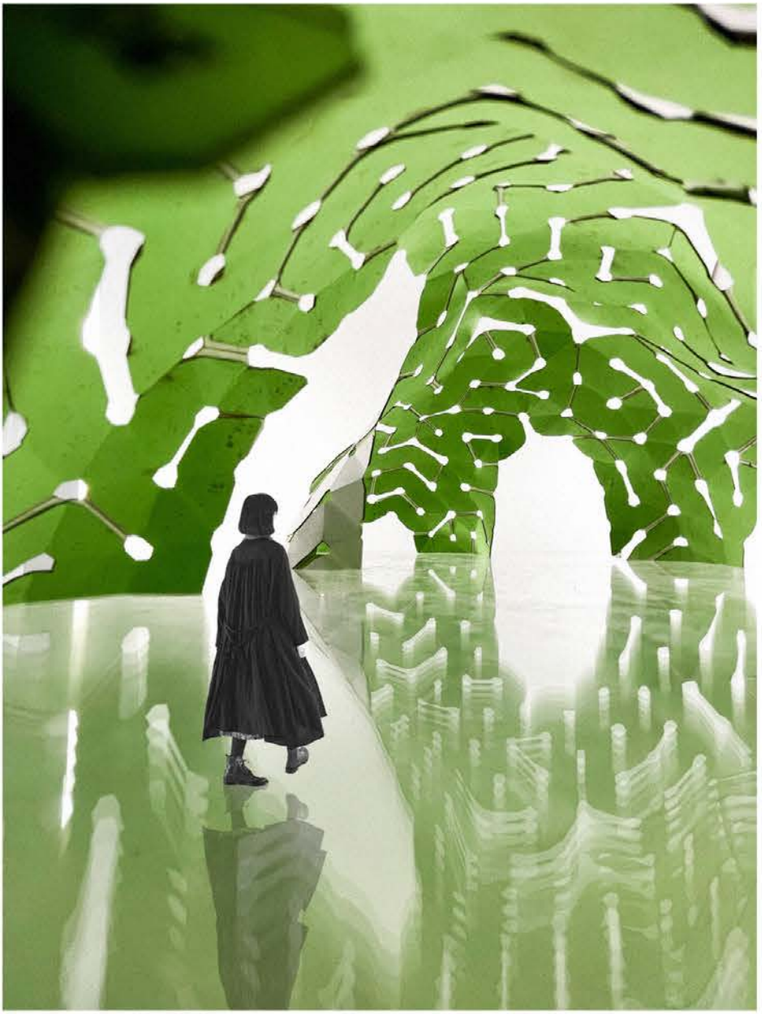
5th year/2022



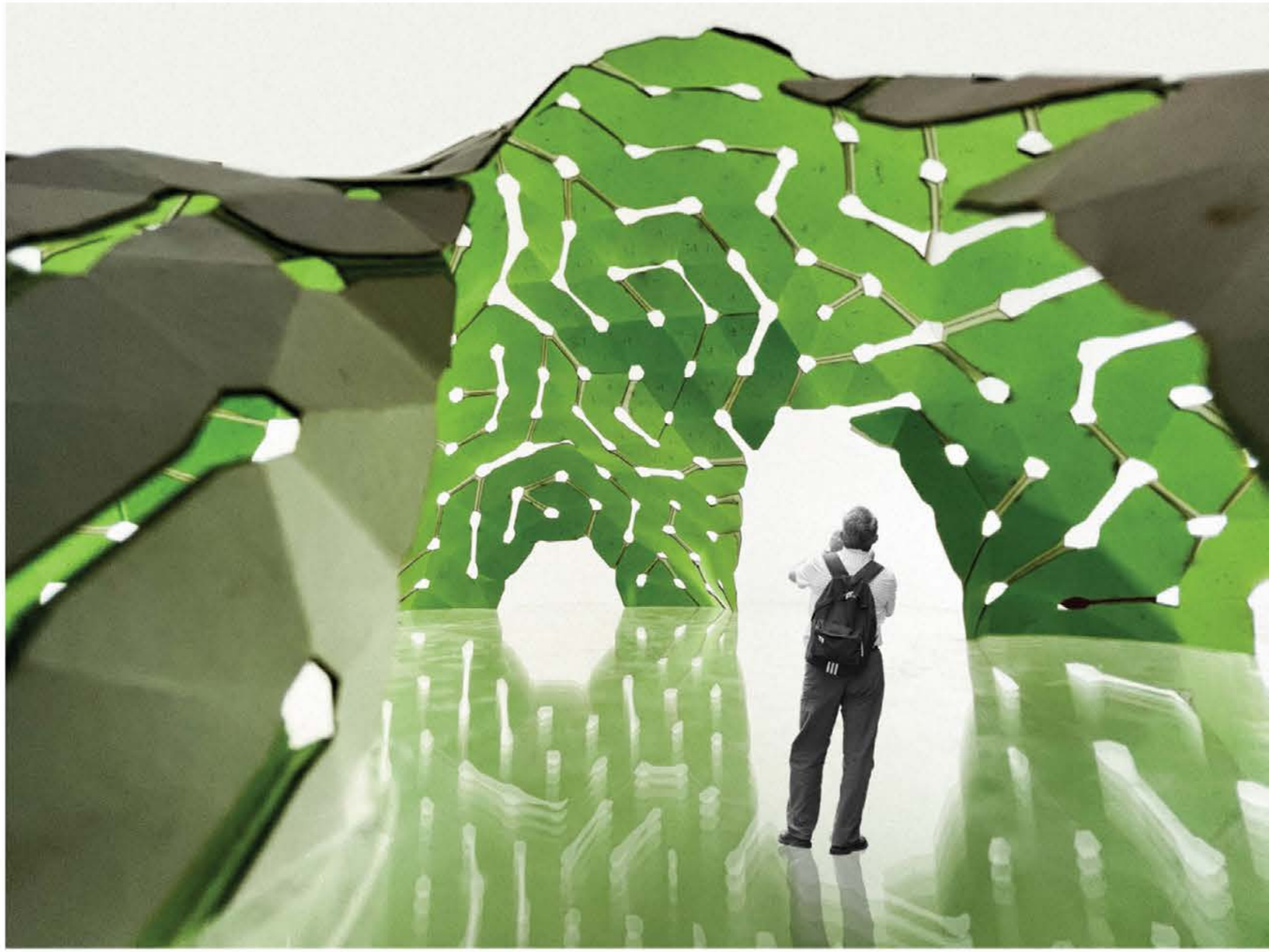
03 NEURA VAULT/DIGITAL EXPLORATIONS

parametric design X digital fabrication

4th year/2022



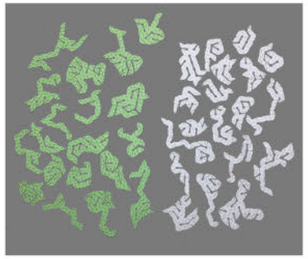
Neura-Vault is a project developed as part of a Digital Fabrication course, where I learnt how to manufacture an architectural object, from 3d parametric design, fabrication and organization of components, to assembly. The project was made using Rhino 3D and Grasshopper, for the form finding and final design, RhinoVault was used to define the structural integrity of the vault; and finally the components and ordering were extracted using Grasshopper. It draws inspiration from the shape of the cortex of the brain, with its grooves and folds. The project is based on the Strips method of fabrication, meaning that the 3d object is divided into strip like components ("orange-peel"), that are then laser cut and assembled seamlessly, to form the final product. In a real life implementation, the object would serve as an open pavilion or an art installation, and would be manufactured out of thin steel sheets that would intersect each other, to be fixed with the help of screws.



03 NEURA VAULT/DIGITAL EXPLORATIONS

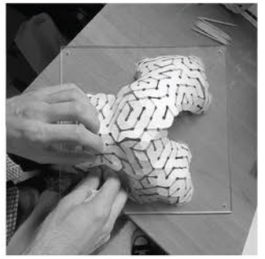
parametric design X digital fabrication

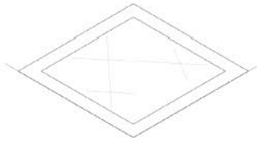
4th year/2022



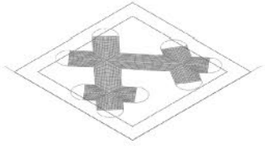




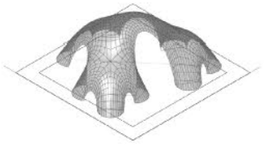



intersecting
axis



mesh bands
+arch anchors



vault inflate
+tri-remesh

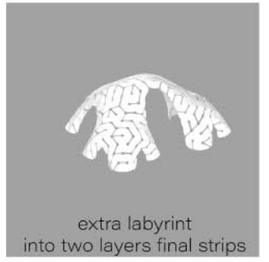
honeycomb
remesh in tri-centers

honeycomb
random labyrinth

tri
cut-out nodes

labyrinth
tri-split

one
layer strips



extra labyrint
into two layers final strips





03 NEURA VAULT/DIGITAL EXPLORATIONS

parametric design X digital fabrication

4th year/2022

04 PARAMETRIC BRIDGE/DIGITAL EXPLORATIONS

parametric design concept

4th year/2021

Development of the necessary points, lines and surfaces.

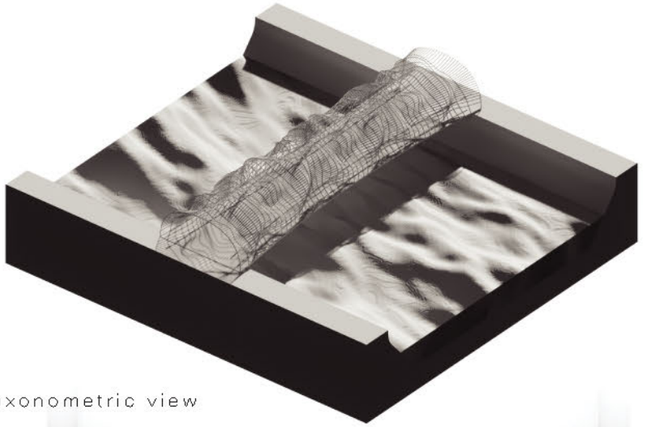
Development of the base and the underbeams

Development of the handrails

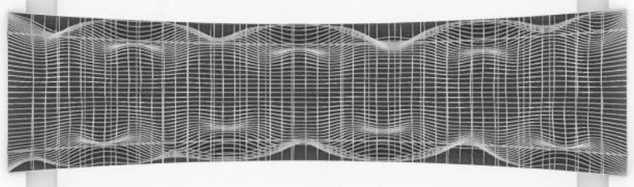
Development of overhead surface

Filtering of points, creation of the attractors and the "affected" surface

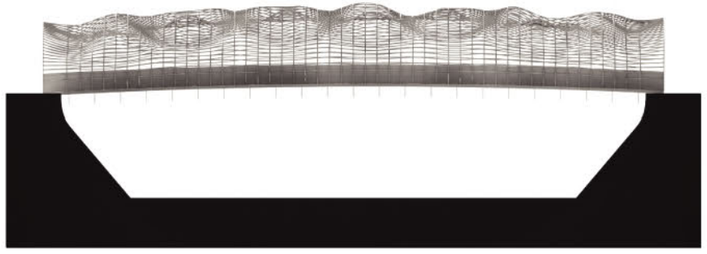
Development of the overhead metal structure.



axonometric view



top view



side view

The site is located on Unirii Boulevard, in close proximity to VV. Stanciu Street. The bridge connects the two sides of the boulevard that are divided by the Dambovitei River.

The project was design as a fully parametric object, using Rhinoceros 3d and Grasshopper as tools as part of a Parametric Design course. It draws inspiration from the shape of the water ripples. The purpose of the parametric model for the bridge was to constrain its geometry to the fabrication methods selected for its construction. The bridge's underside or tray is steel, and the canopy is made out of steel hoops at varying angles from the deck. The successful tender for the bridge was based on bending steel tubes (transversal tubes starting from the deck's edge and longitudinal ones from end to end), in two directions to achieve the three-dimensional curves that form the bridge's canopy. The tubes were then to be cut down along their bi-tangent intersection and the sides infilled with steel plate.

04 PARAMETRIC BRIDGE

parametric design concept

4th year/2021

05 CYTO-TOWER/MIXED USE HIGH-RISE

1st place for Best Architecture SDC EERI

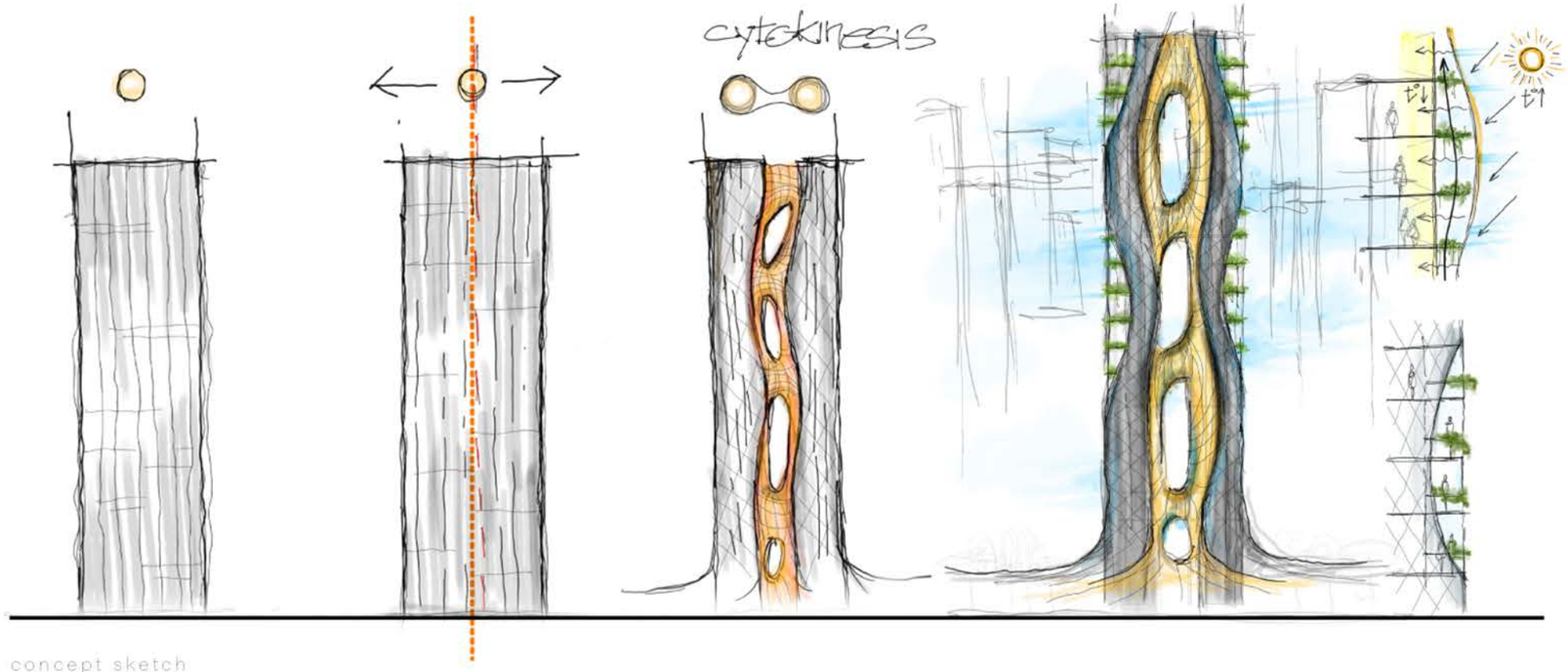
San Francisco, California,USA

2023

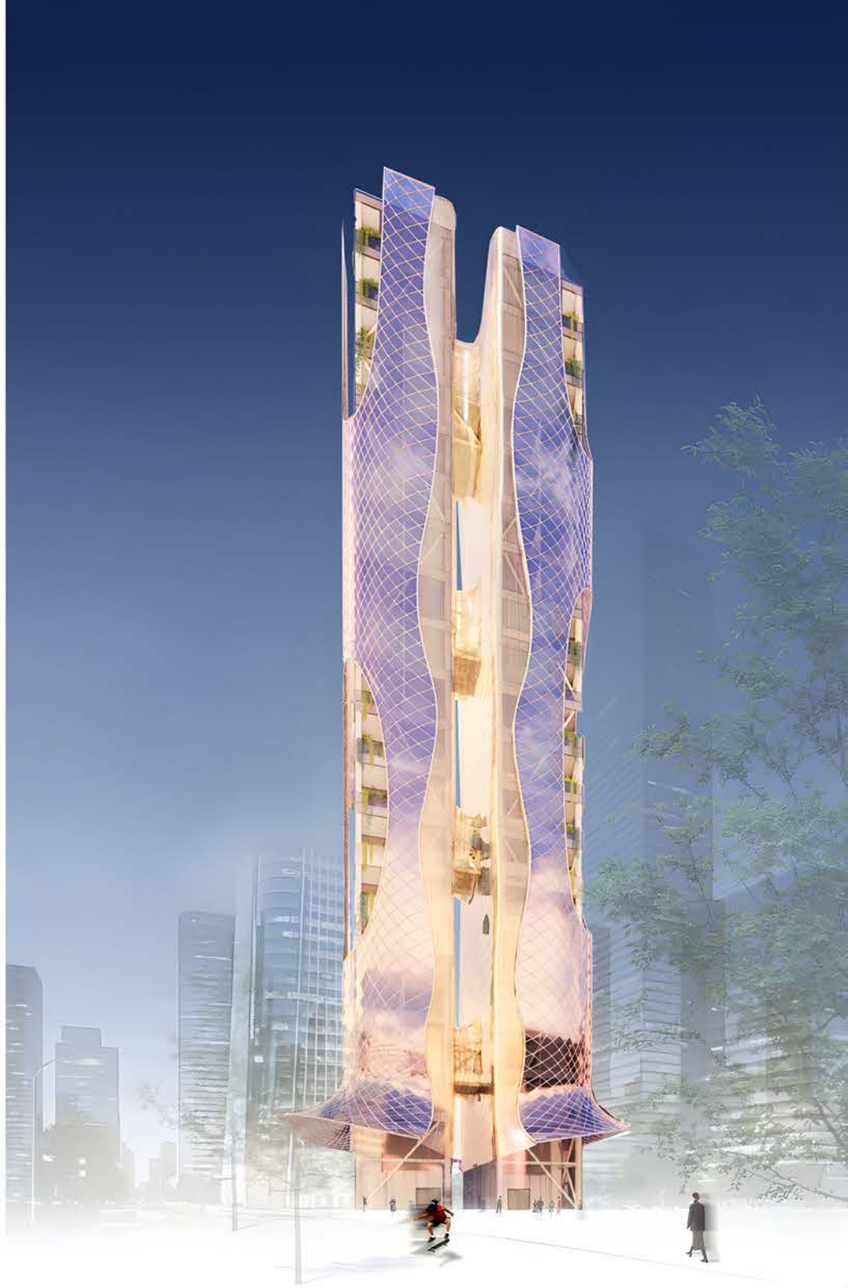
This project was developed as part of my participation in the Annual Seismic Design Competition by EERI SLC, in San Francisco, California and it was awarded 1st place for Best Architecture and Presentation.

The design concept is inspired by the process of the eukaryotic cell division, as an analogy to the urban sprawl phenomenon; as the city can be seen as a living organism, always in the process of growth and transformation.

The architectural image of the concept can be understood as a symbolic binary fission; from a single cell, the basic tower, result two daughter towers frozen in the process of cytokinesis. The rigid broken "shell", the outer skin of the tower, retracts itself to reveal the 'viscous' organic interior connections, which embrace the "skeleton" of the building, its structure. The contrast of the linear and familiar shape of the outer shell and the organic and flowy inner envelope contributes to the striking image of the skyscraper, and further facilitates the idea of the city and its buildings working as organisms in symbiosis.



concept sketch

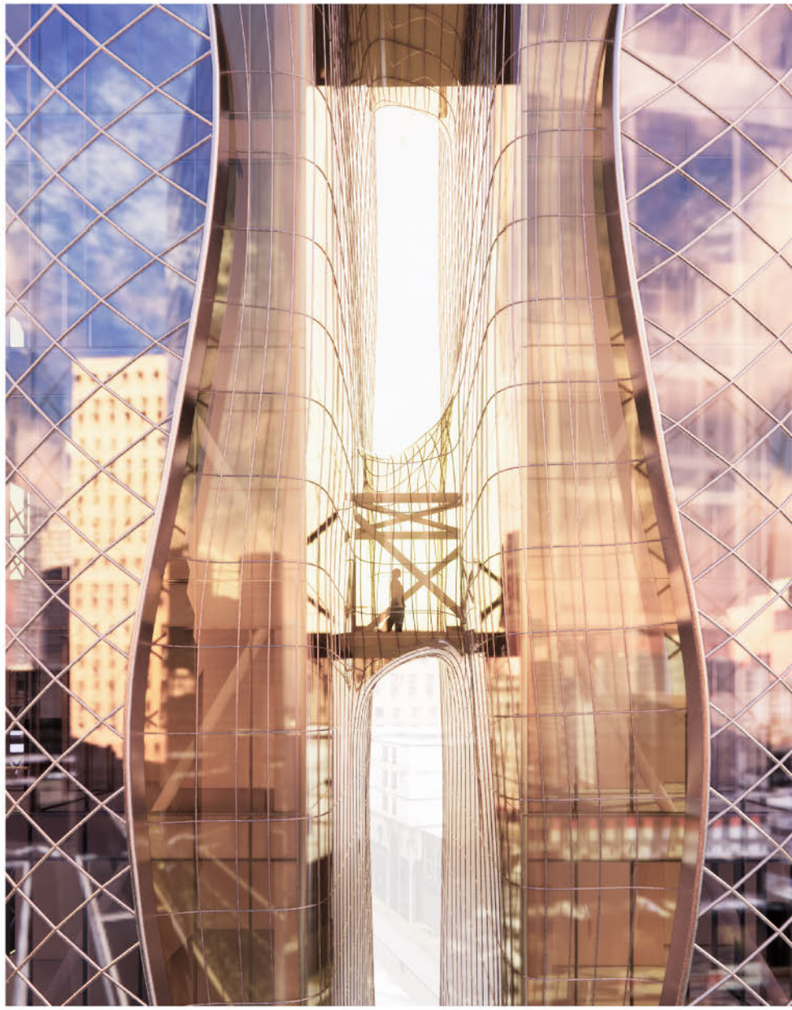


05 CYTO-TOWER/MIXED USE HIGH-RISE

1st place for Best Architecture SDC EERI

San Francisco, California,USA

2023



detailed view of the skybridge

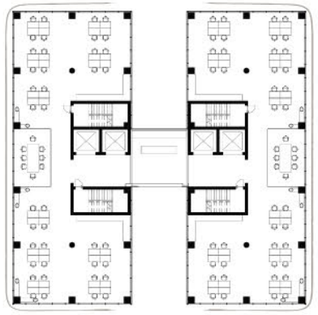
05 CYTO-TOWER/MIXED USE HIGH-RISE

1st place for Best Architecture SDC EERI

San Francisco, California,USA

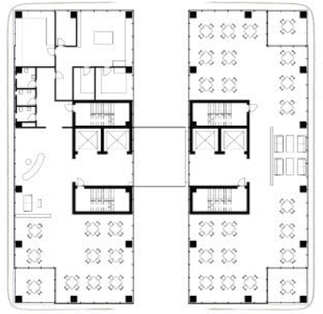
2023

groundfloor



3rd/office space

8th/living space



18th/restaurant

living quarters:interior space

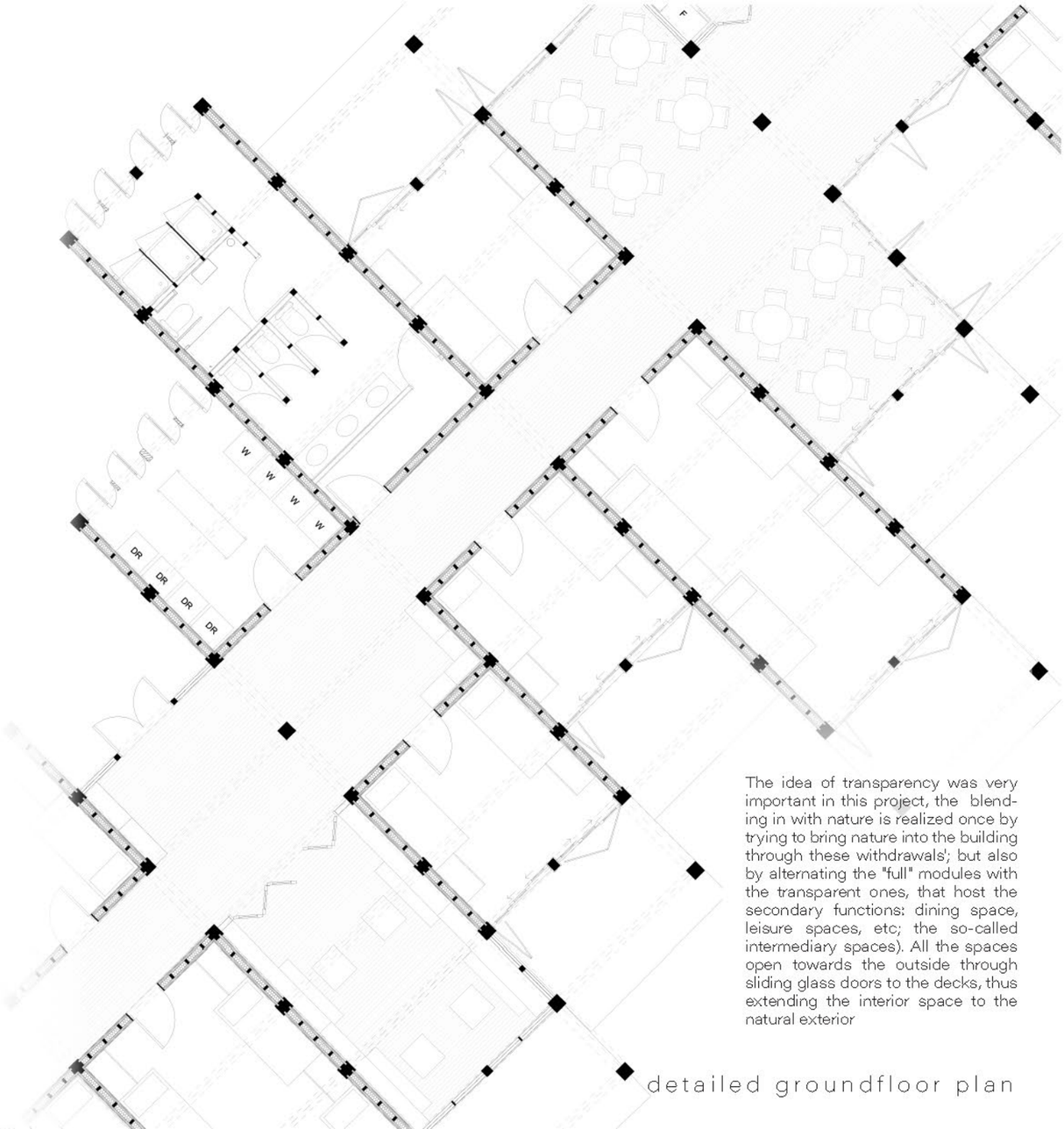
restaurant:interior space

06 YOUTH HOSTEL

Hostel on Station Hill, Sighisoara
4th year/2021

The project is located on Station Hill in Sighisoara, the site being surrounded by natural elements and old tall vegetation on both sides. The idea of the project starts from trying to impact as little as possible the natural environment of the site. Solid wood was chosen as the main construction material. Thus, the idea of modularity was outlined in a rectangular grid, which helped establish a well-defined structure for a module. The building has a capacity of 100 guests, with rooms that can host 2,4 or 8 guests at a time.

groundfloor plan



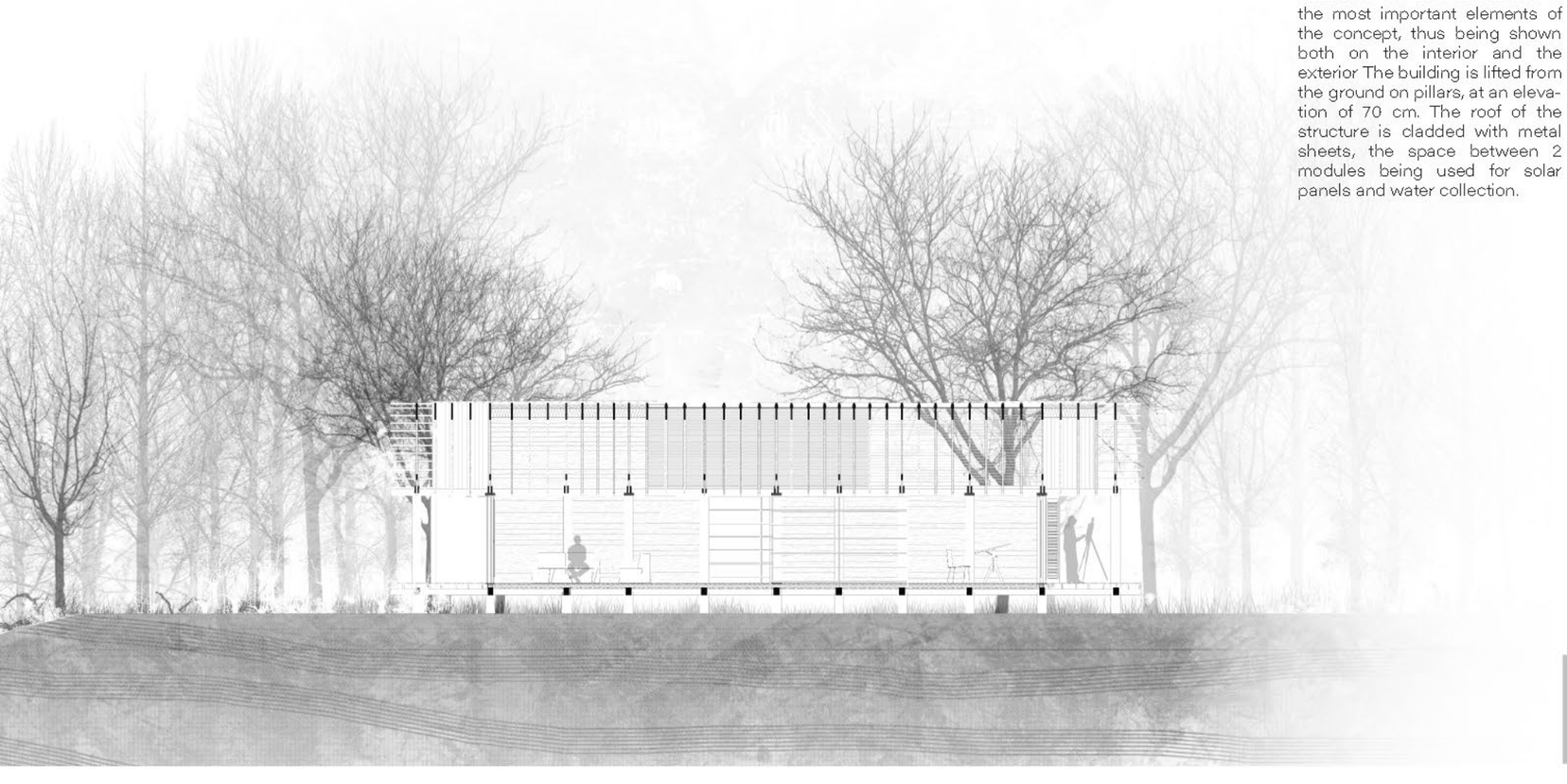
The idea of transparency was very important in this project, the blending in with nature is realized once by trying to bring nature into the building through these withdrawals'; but also by alternating the "full" modules with the transparent ones, that host the secondary functions: dining space, leisure spaces, etc; the so-called intermediary spaces). All the spaces open towards the outside through sliding glass doors to the decks, thus extending the interior space to the natural exterior

detailed groundfloor plan

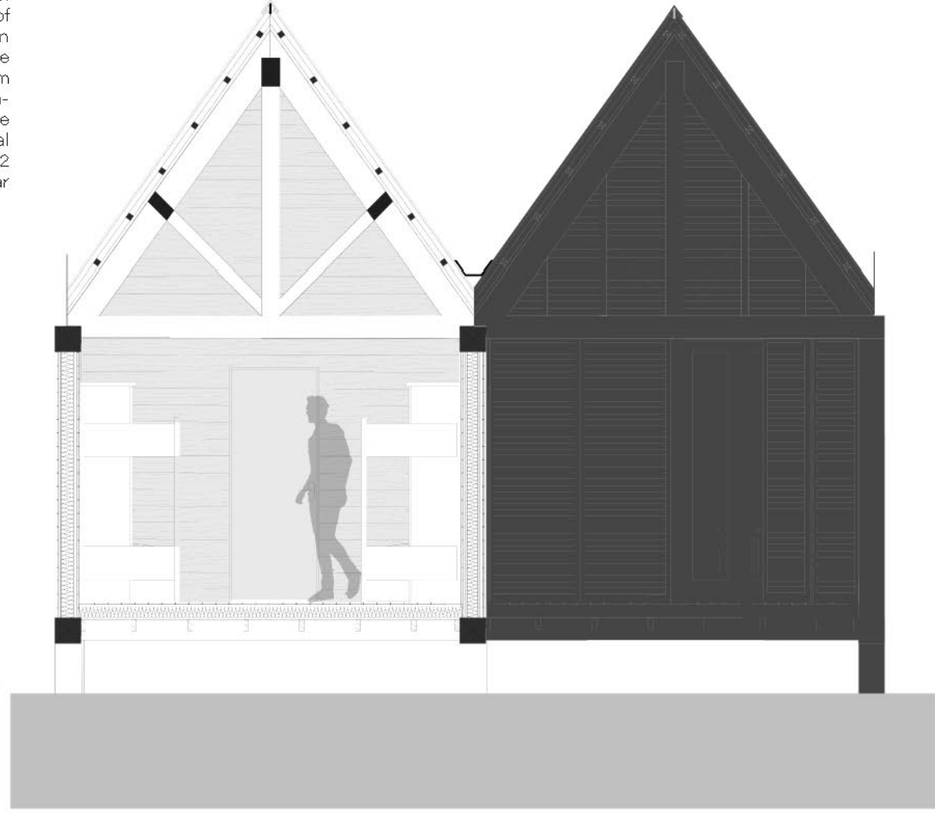
06 YOUTH HOSTEL

Hostel on Station Hill, Sighisoara
4th year/ 2021

The facade of the building is one that breathes; by using shutters for both bedrooms and intermediate spaces. The interior of the building is treated the same as the exterior, natural materials such as wood siding being used, to enhance the idea of bringing nature in. The structure is one of the most important elements of the concept, thus being shown both on the interior and the exterior The building is lifted from the ground on pillars, at an elevation of 70 cm. The roof of the structure is cladded with metal sheets, the space between 2 modules being used for solar panels and water collection.



transverse cross section



detailed cross section
of a module

06 YOUTH HOSTEL

Hostel on Station Hill, Sighisoara

4th year/2021

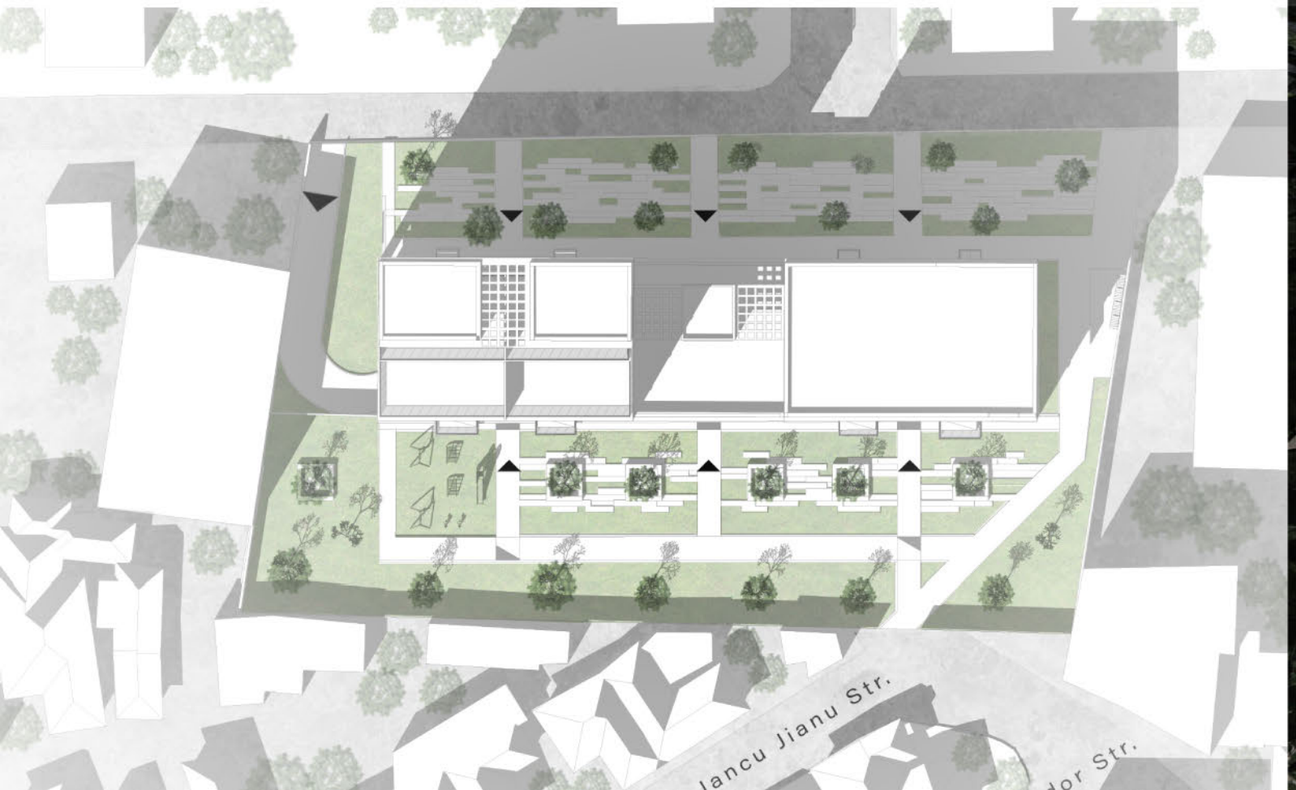
main facade

07 COLLECTIVE HOUSING

block of flats in Rahova, Bucharest

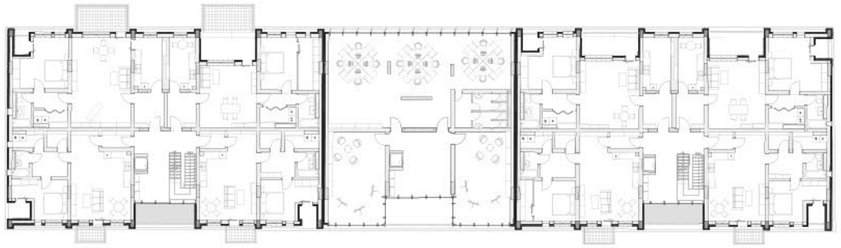
3rd year/2020

The site proposed for study is located in the Rahova neighborhood, behind the blocks on Petre Ispirescu Street. This area is located in a collision area of two completely different types of haus- ing: an interwar plot area, with houses with vernacular architecture, ground floor or one or two floors and respectively the Rahova collective housing district, built in the 1980s.
The building is fragmented into three volumes. The main volume has GF+11 levels, the secondary volume has GF+5 levels and the volume that connects the other two has Gf+2 on top of which there is a terrace that promotes the interactions between the residents living in the 2 volumes. Each residential volume includes 4 apartments per level, Totalling 60 living units.



07 COLLECTIVE HOUSING

block of flats in Rahova, Bucharest
3rd year/2020



1st floor plan

north eastern facade

07 COLLECTIVE HOUSING

block of flats in Rahova, Bucharest

3rd year/2020

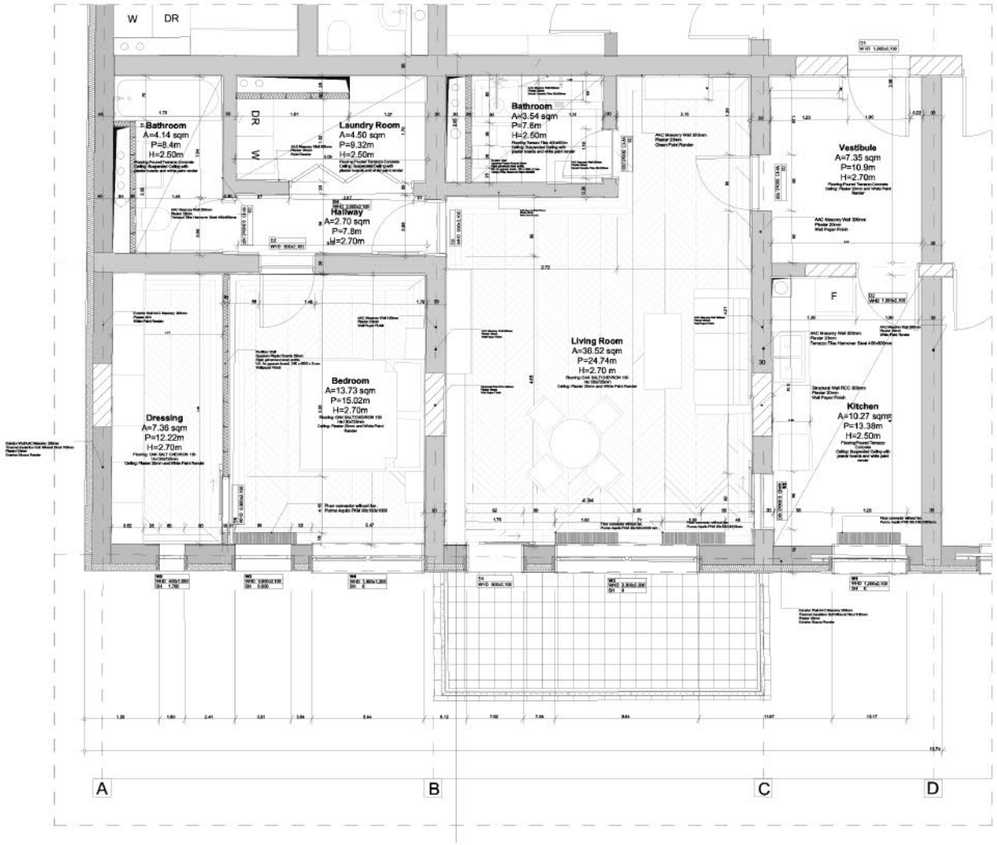
south western facade

longitudinal cross section

07 COLLECTIVE HOUSING

block of flats in Rahova, Bucharest

3rd year/2020



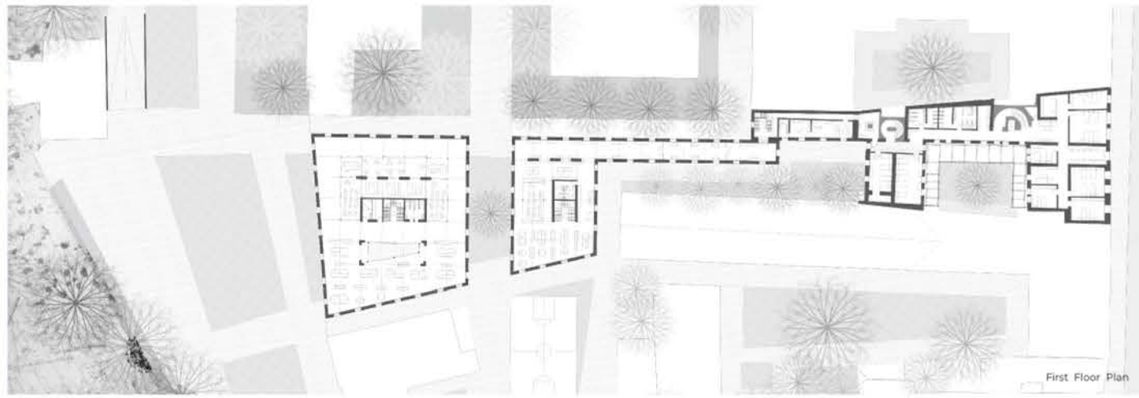
detailed plan of an apartment

08 BEFORE THE HILL/YOUTH CENTER

youth center, Brasov, Romania
4th year/2022

This project was developed as an exercise for an extension and a reconversion of an old building in Brasov. The site is located between 4 types of education buildings: a kindergarten, a primary school, a high-school and a college, right before the part of Brasov, known as "behind the wall", the part of the old citadel, and before one of the hills of the new city. The main idea of the project plays with the concept of the gradual transition from the Natural Element (the Hill) to the Mineral Element (the City). The proposed function for the buildings is a Youth Center, with learning spaces, a library, conference rooms, administrative spaces, and apartments for exchange students and professors.

Transverse Section

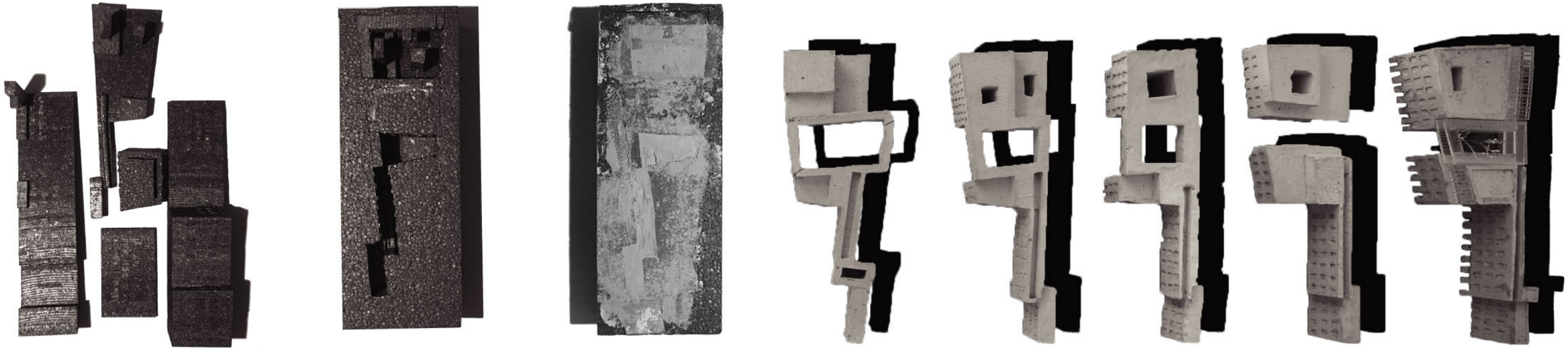


First Floor Plan

08 BEFORE THE HILL/YOUTH CENTER

Hostel on Station Hill, Sighisoara
4th year/2022

model manufacturing and form finding



hot wired polystirene molds and poured plaster model variations