

Entangled Interventions

**Harnessing Synergies in Interrelated
Interventions**

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The portfolio is an integration of the interventions from my graduate school and comprises a collection of my academic projects. The portfolio encompasses a diverse array of projects, ranging from hospitality and housing to the futuristic realm of climate design.

01. Restitching the Borscht Belt

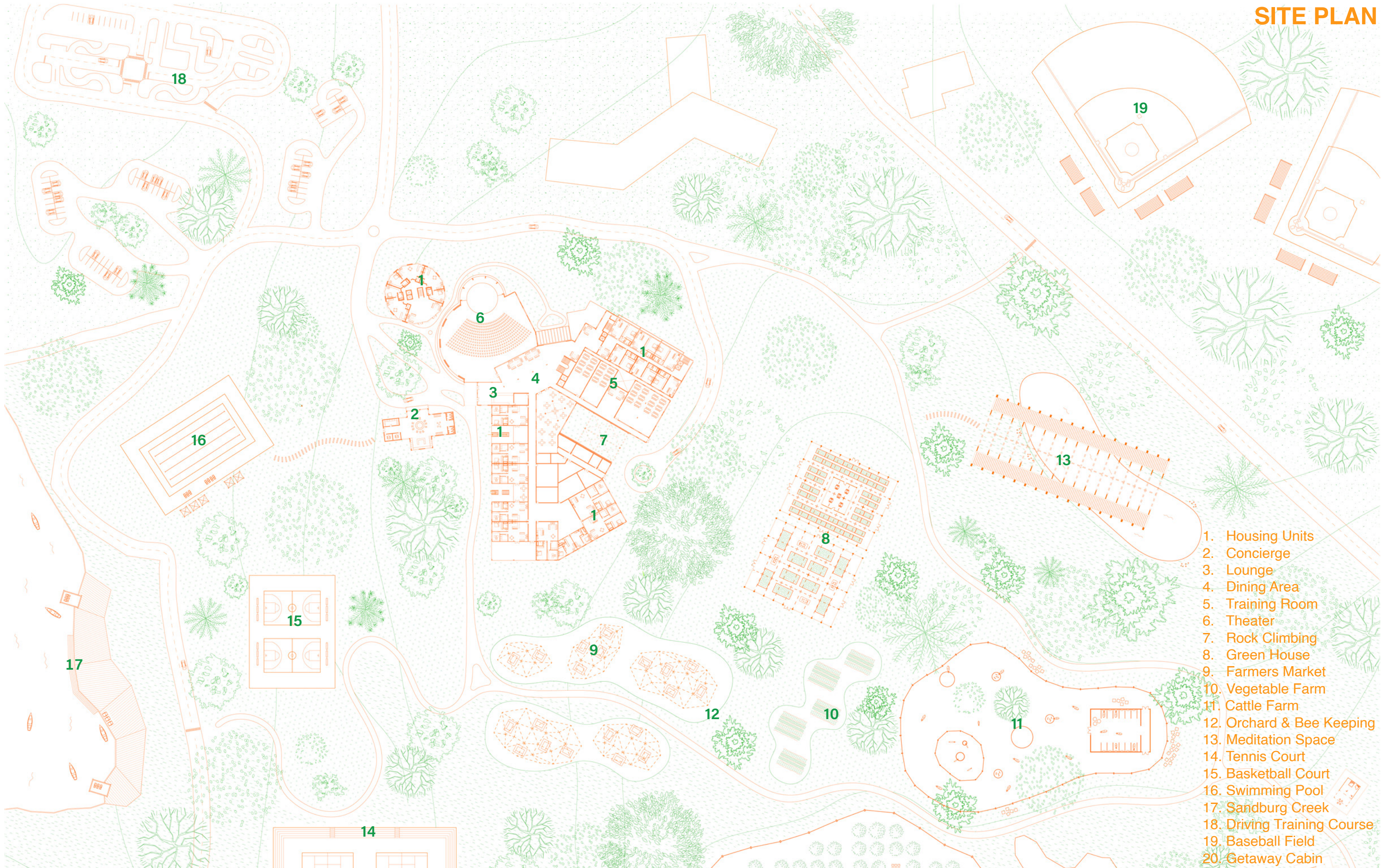
*Instructors: Olga Aleksakova & Joel McCullough
Group: Annet Kennady, Yerin Won*

Borscht Belt, a shelter and retreat for Jewish people in the Catskills mountains accommodating 150,000 guests a year in the late 1960s has remained abandoned for many decades. The Nevele hotel was one of the most prosperous resorts and has kept its shape intact until now. This project aims to rehabilitate the forgotten Nevele hotel and generate a communal living space while inheriting its nature as an amalgam of human comfort, nature and architecture. The housing provided by our initiative offers a unique living experience that redefines conventional notions of housing. In light of recent global events, there has been a growing reconsideration of the relationship between life and work. The traditional notion of living in close proximity to one's workplace is being reevaluated, as remote work becomes increasingly prevalent.

Against this backdrop, the initiative aims to push the boundaries of residential living, with ongoing experimentation and exploration of new possibilities. By offering a fresh perspective on the concept of living, the initiative seeks to spark conversations and inspire new ways of thinking about the future of housing.



SITE PLAN



- 1. Housing Units
- 2. Concierge
- 3. Lounge
- 4. Dining Area
- 5. Training Room
- 6. Theater
- 7. Rock Climbing
- 8. Green House
- 9. Farmers Market
- 10. Vegetable Farm
- 11. Cattle Farm
- 12. Orchard & Bee Keeping
- 13. Meditation Space
- 14. Tennis Court
- 15. Basketball Court
- 16. Swimming Pool
- 17. Sandburg Creek
- 18. Driving Training Course
- 19. Baseball Field
- 20. Getaway Cabin

HOUSING FACILITY FLOOR PLANS

Housing initiative consists of three distinct blocks, each offering a unique living experience. The first block is a standalone tower that houses 39 single-family/couple units spread over 10 floors. The second block comprises of 48 single units, spanning over 8 floors, while the third block is comprised of 10 luxury housing units and 14 units spread over the two upper floors.



Ground Floor Plan

First Floor Plan

Second Floor Plan





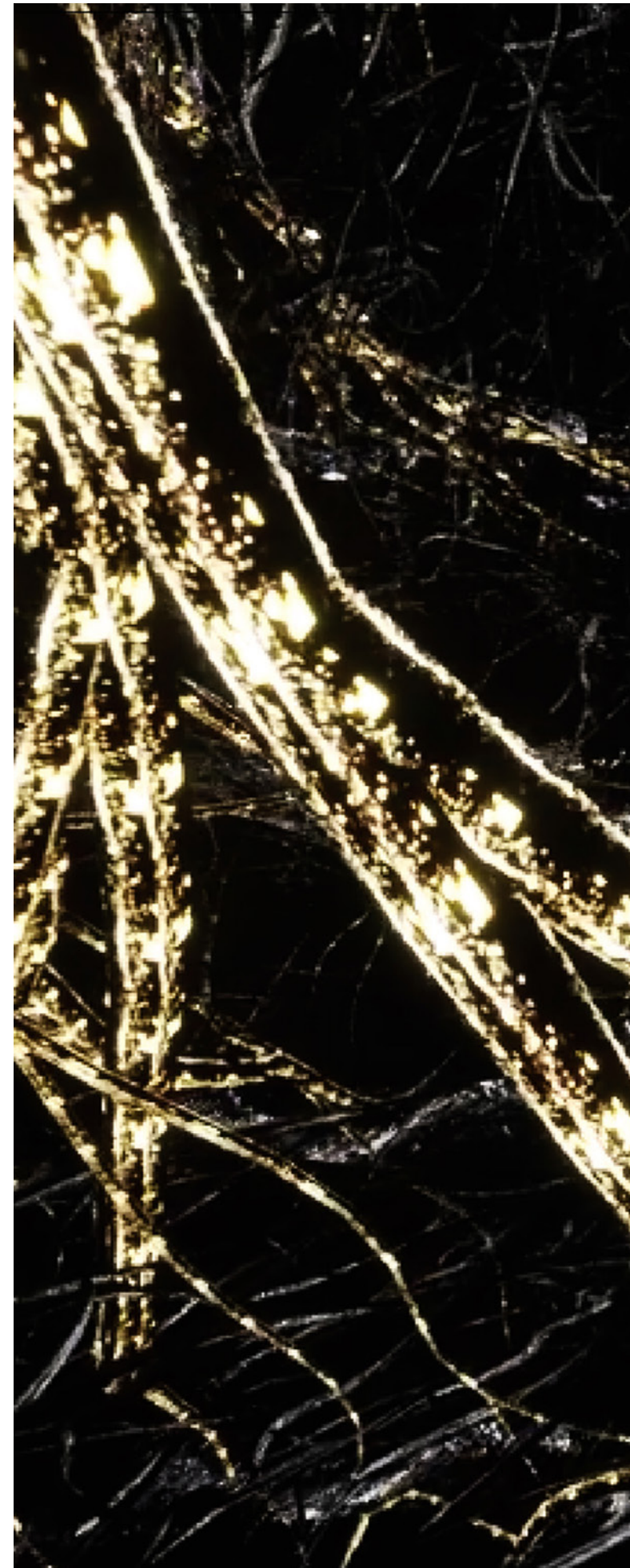
02. The Above and Below

*Instructors: Vanessa Keith
Group: Annet Kennady, Weiyu Xu*

Standing at the intersection of past, present and future, in the year of 2180, Brazil is facing drastic changes in climate, temperature, and habitable territories. In the present tense, humans harm our connection to the land, and when we are in the future, we lose our connection to our past, the land that we reside on, leaving a scar on Mother Earth.

How can we bring back the connection between the land and us? Looking at the issues, our project focuses on connecting the above and below as a loop to form a better understanding and connection between humans and the ecosystem.

With the help of two climate devices and a series of buildings, the designs use different renewable energy systems like wind and solar which are stored in electrolyte solutions or as flowing batteries. This provides sufficient energy for the carbon capture devices to capture carbon. The carbon bricks catalysis the growth of mycelium and thus helps in reforestation. The climate devices support the Tropical Climate Research Institute in Sao Paulo and Yawanawa providing a platform for research and study of climate change solutions for the present, future and beyond.



CLIMATE DEVICES

Solar and Wind

Roof - Organic photovoltaic cells

Lower roof

Wind turbines

Central structure

Lift

Flowing battery

Solar Energy

Low speed shaft

Highspeed shaft

Wind Energy

Blades --- Brake --- Gear box --- Controller --- Generator

Organic Photovoltaic panels --- Controller --- Flowing Battery --- Carbon Captor

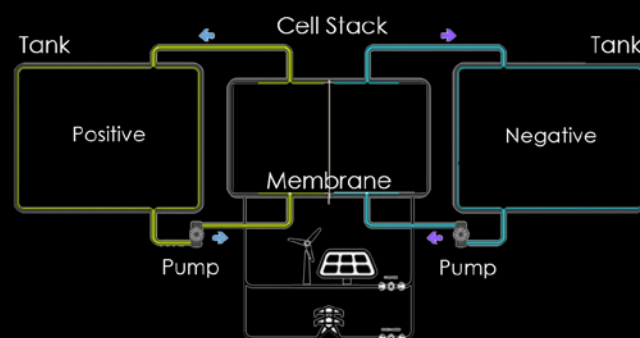
Central lift

Photovoltaic panels

Outer frame

Mesh

FLOWING BATTERY



Carbon

Airtight Sealer (Spinning)

Water Collection Mesh

Steel Frame Structure

Airtight Sealer Panels

Stretchable Frame

Ambient CO2

COLLECTED WATER

Carbon solidify

Purification

Carbon Capture Mesh

Center Spinning Core

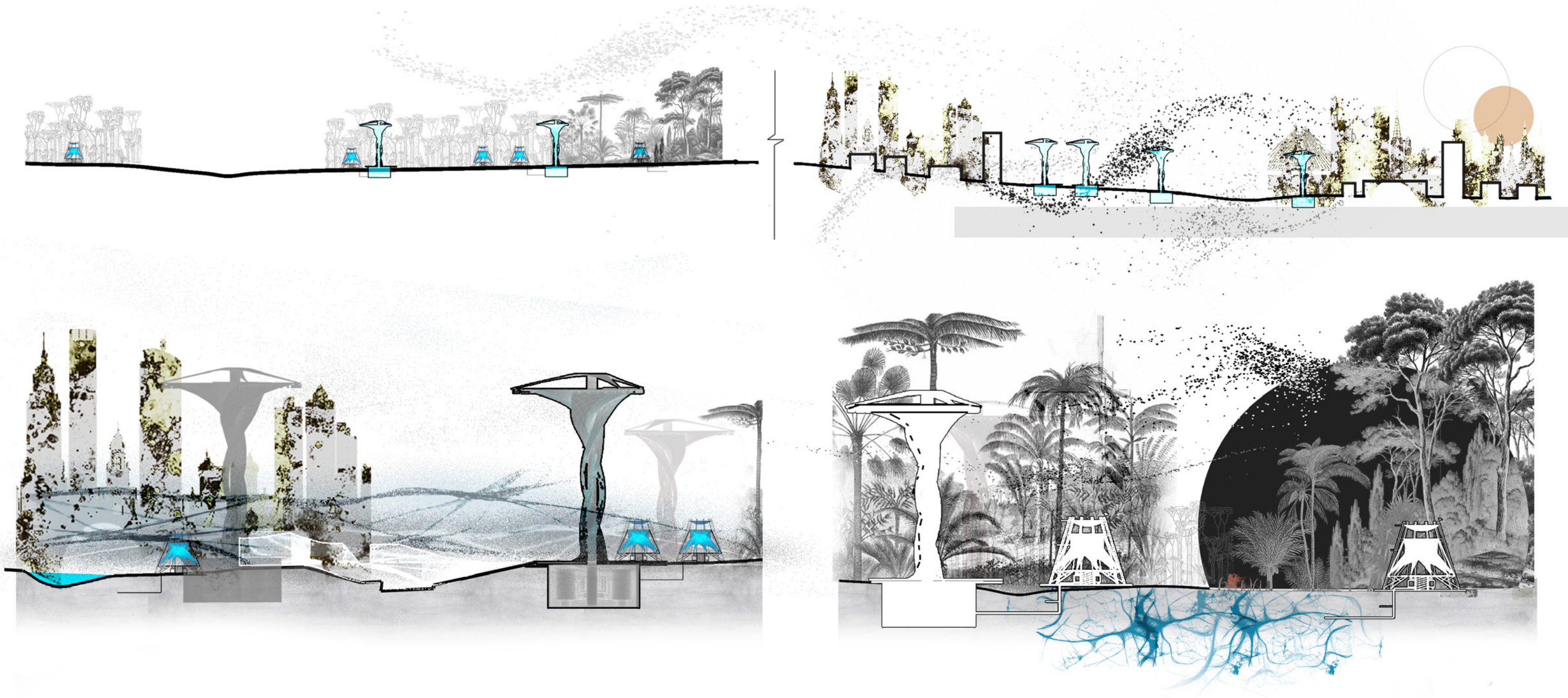
Rotary Screw Shaft

Carbon Solidify Tank

Carbon solidify flow

Kinetic mechanism

Supporting structures



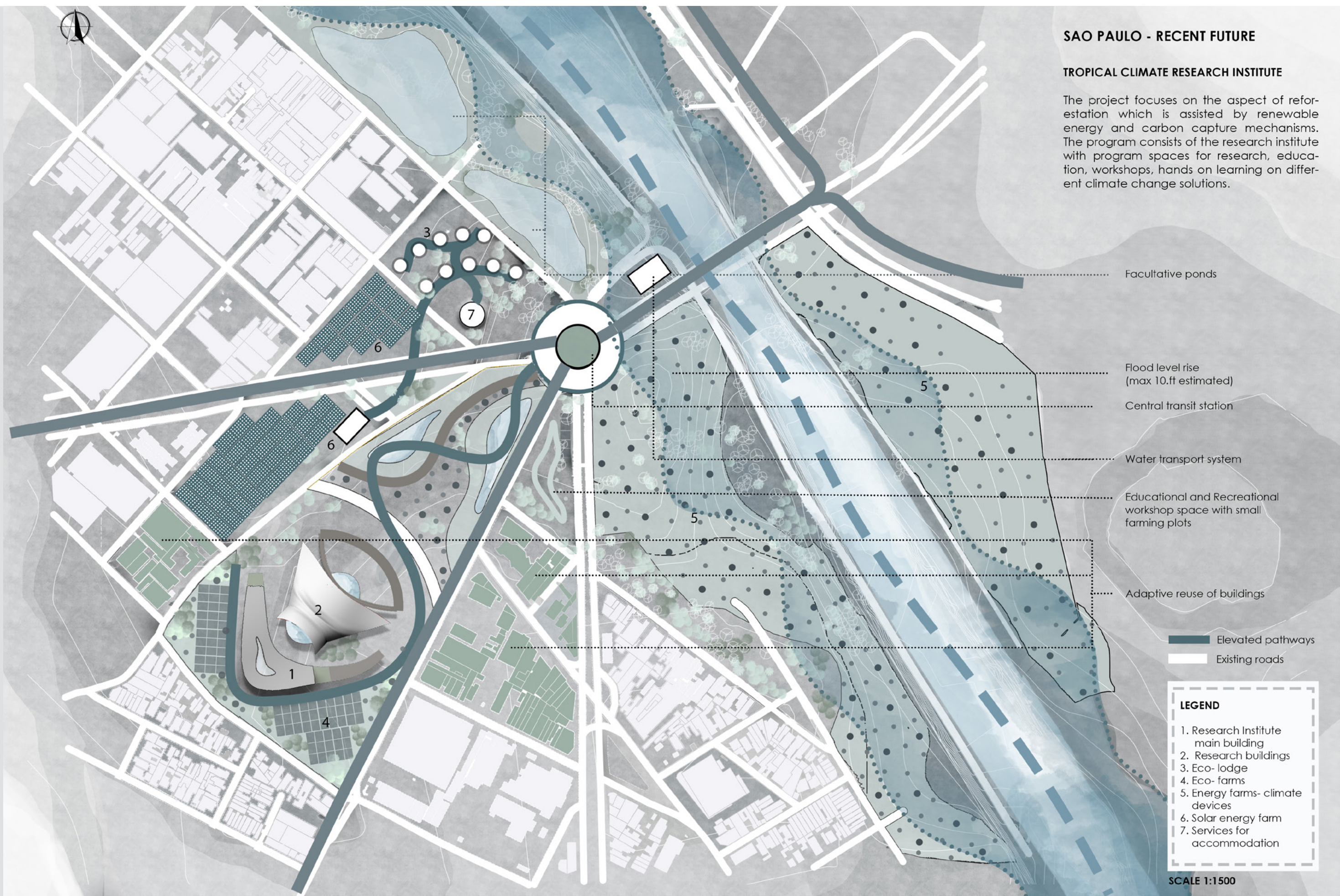
Cross section of Sao Paulo & Yawanawa with Climate devices



SAO PAULO - RECENT FUTURE

TROPICAL CLIMATE RESEARCH INSTITUTE

The project focuses on the aspect of reforestation which is assisted by renewable energy and carbon capture mechanisms. The program consists of the research institute with program spaces for research, education, workshops, hands on learning on different climate change solutions.



Facultative ponds



Flood level rise (max 10.ft estimated)

Central transit station

Water transport system

Educational and Recreational workshop space with small farming plots

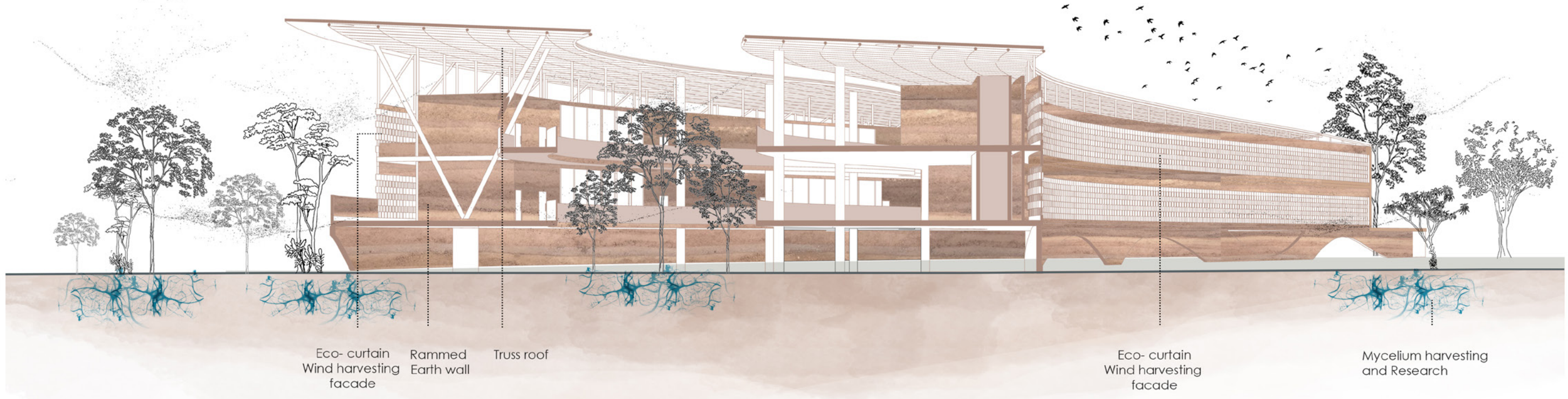
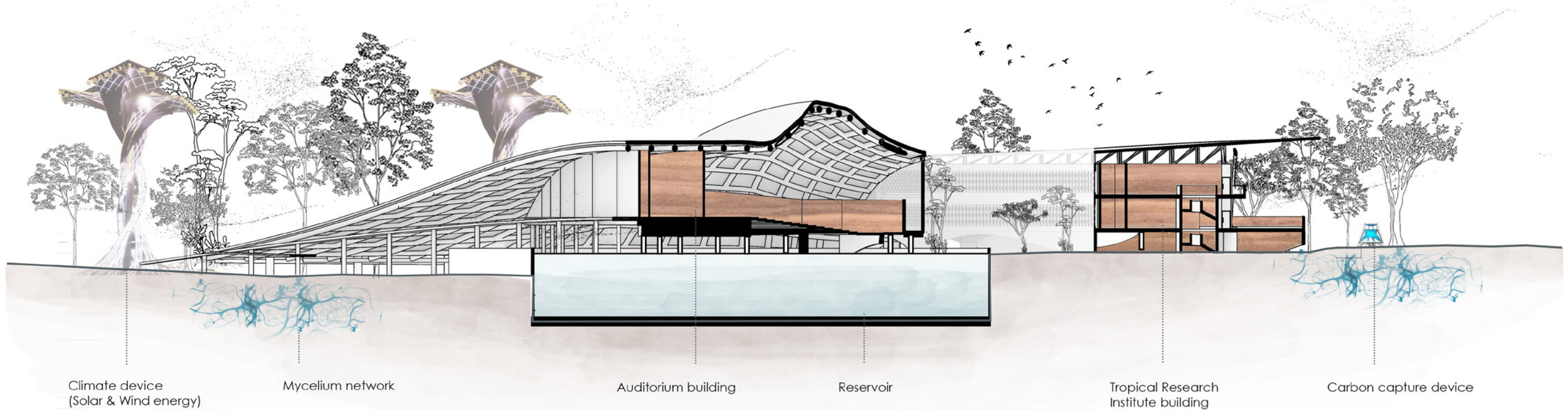
Adaptive reuse of buildings

-  Elevated pathways
-  Existing roads

LEGEND

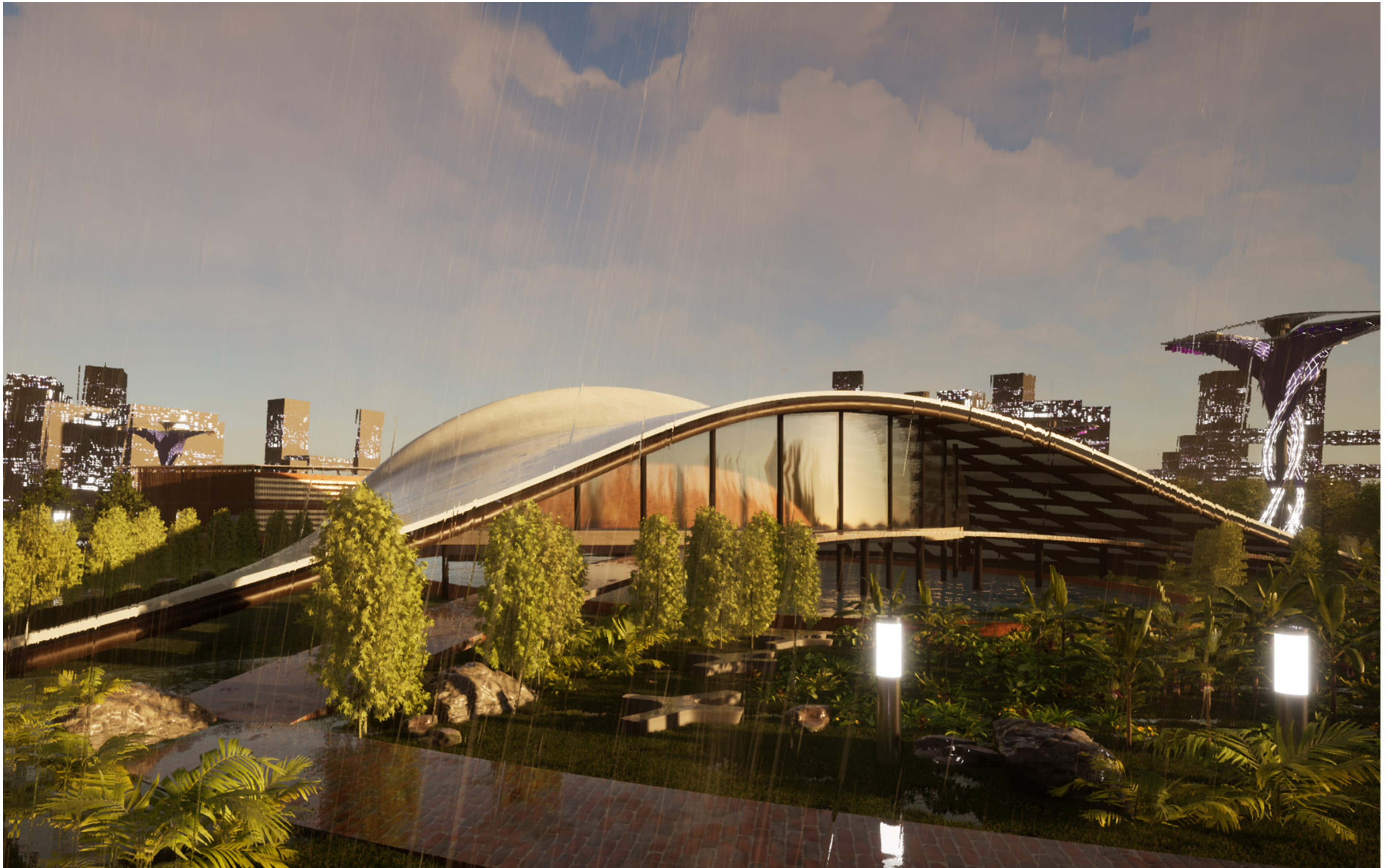
1. Research Institute main building
2. Research buildings
3. Eco- lodge
4. Eco- farms
5. Energy farms- climate devices
6. Solar energy farm
7. Services for accommodation

SCALE 1:1500



SECTION - RESEARCH INSTITUTE



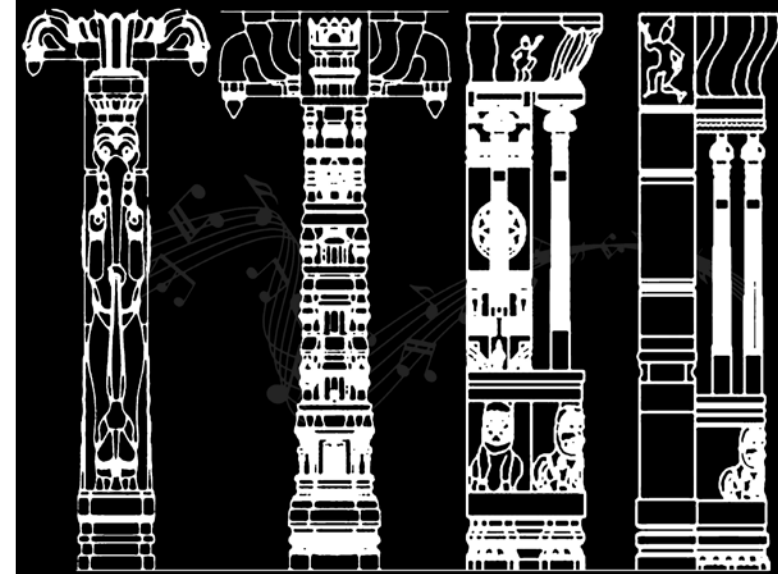


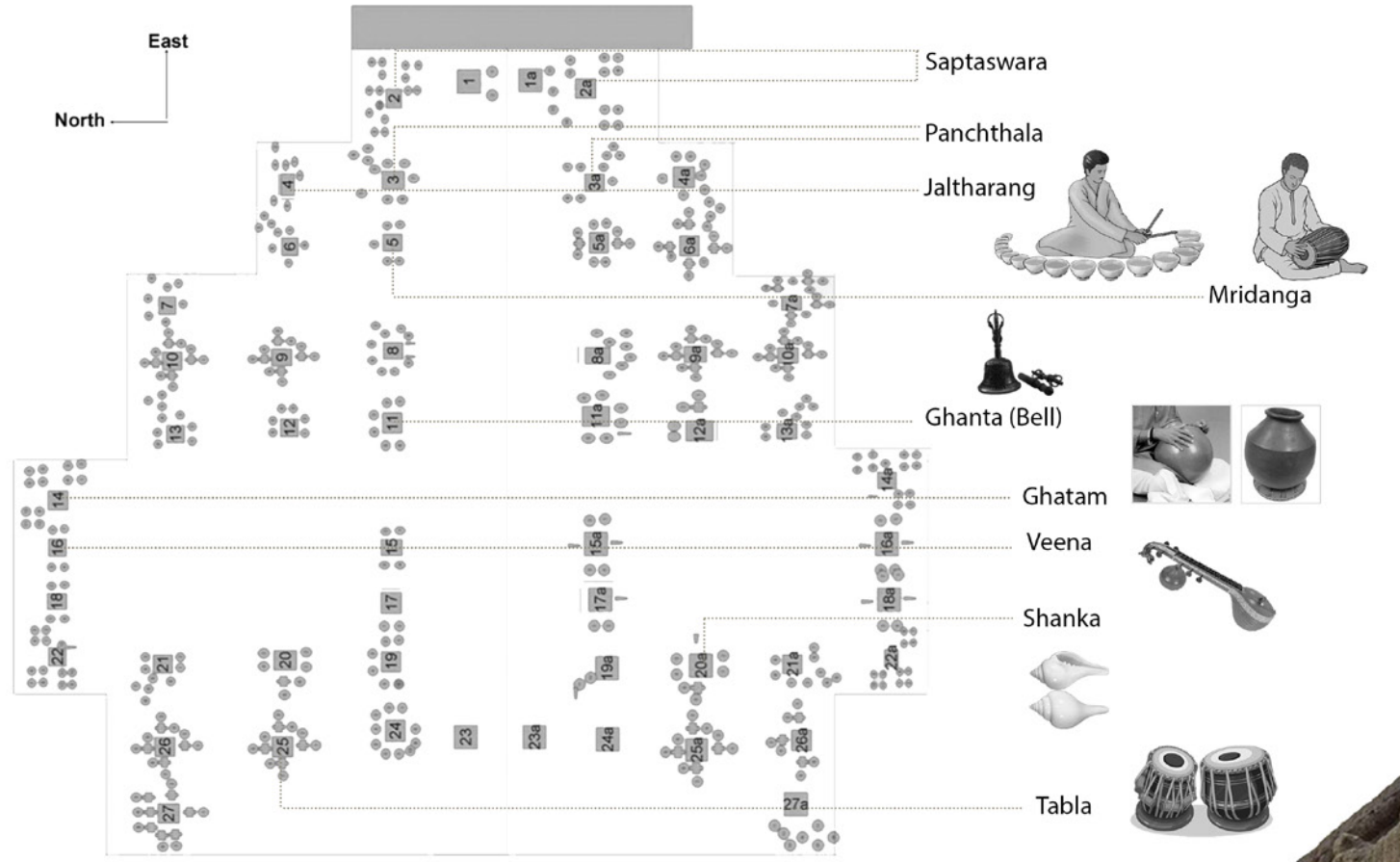
03. The Art of Sound in Architecture

Instructors: Elias Anastas & Yousef Anastas

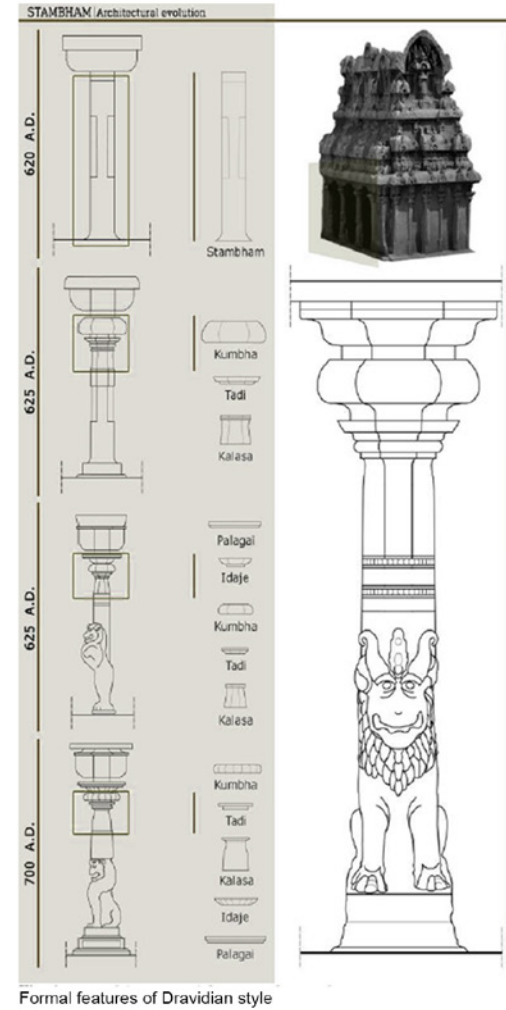
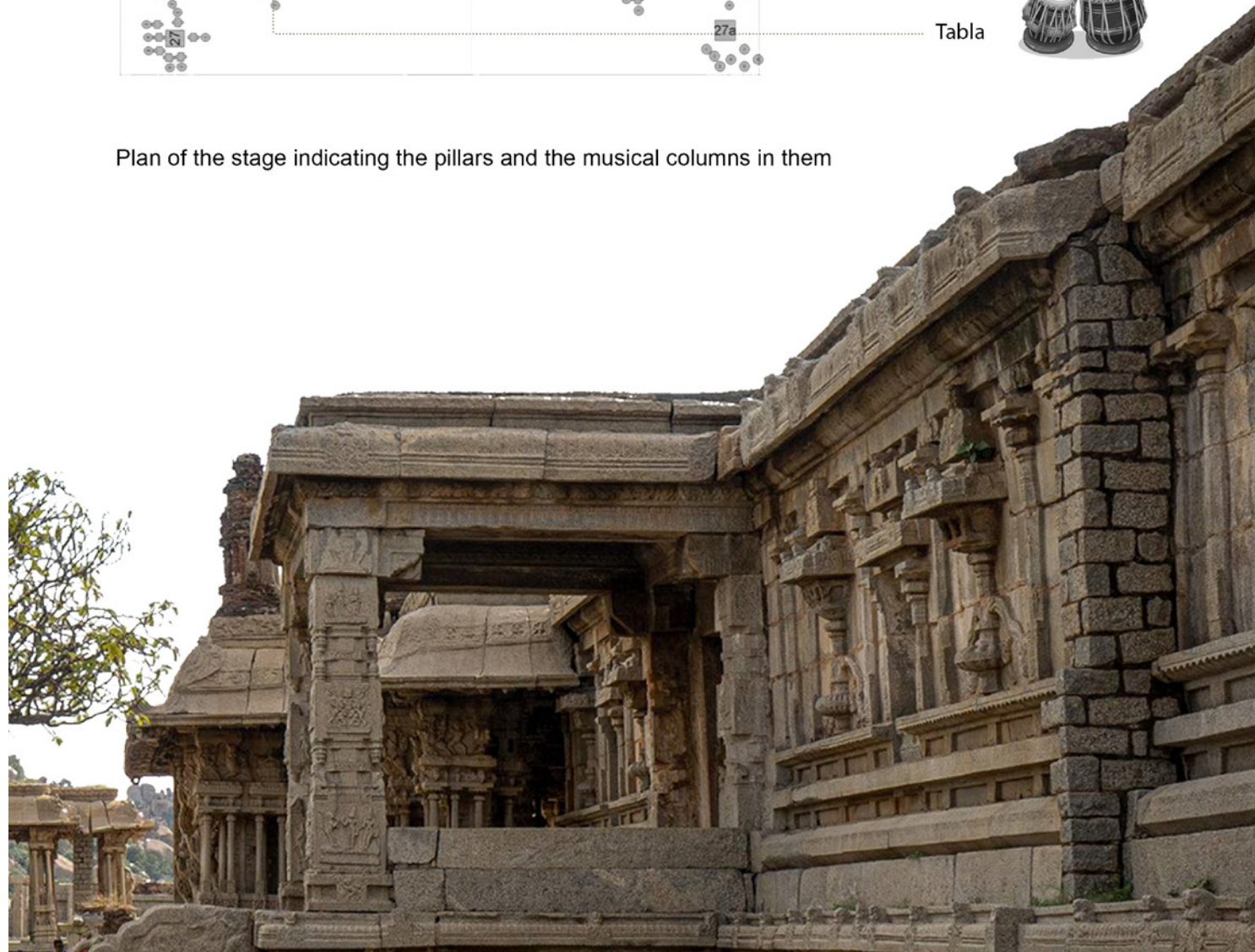
The Vijaya Vittala temple in Hampi, India has a form of architecture that is shaped by the ritual sounds its architectural components produce. The temple's design is deeply rooted in the ritual sounds produced by its columns varying in shape, cuts and thickness producing different notes in music. In times where ecology is often clumsily only associated with green labels, can a sustainable architecture be also shaped by the ritual sounds that its elements would produce?

By designing architectural elements that produce specific sounds, a building can not only be functional and aesthetically pleasing but also contribute to the sensory experience of its users. This, in turn, could potentially enhance the building's longevity by fostering a deeper connection between the users and the structure.





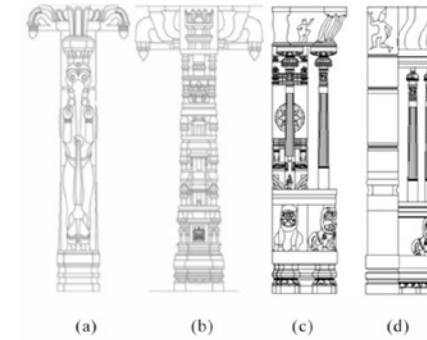
Plan of the stage indicating the pillars and the musical columns in them



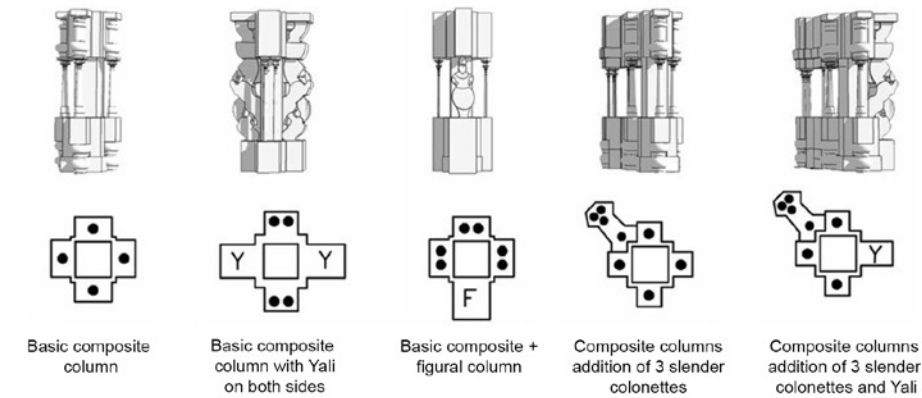
STRUCTURAL SYSTEM

Trabeated System

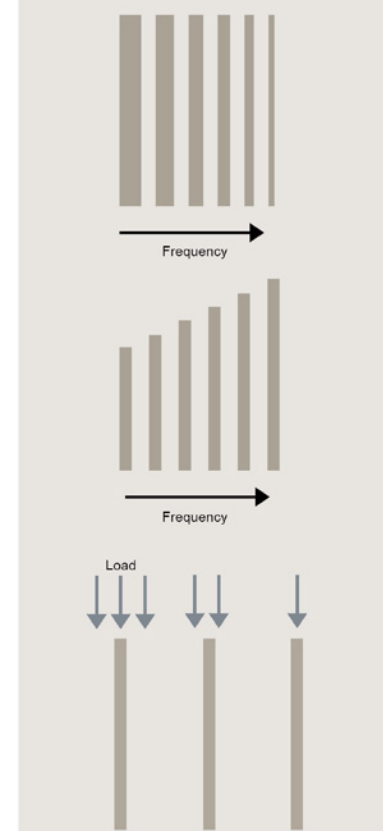
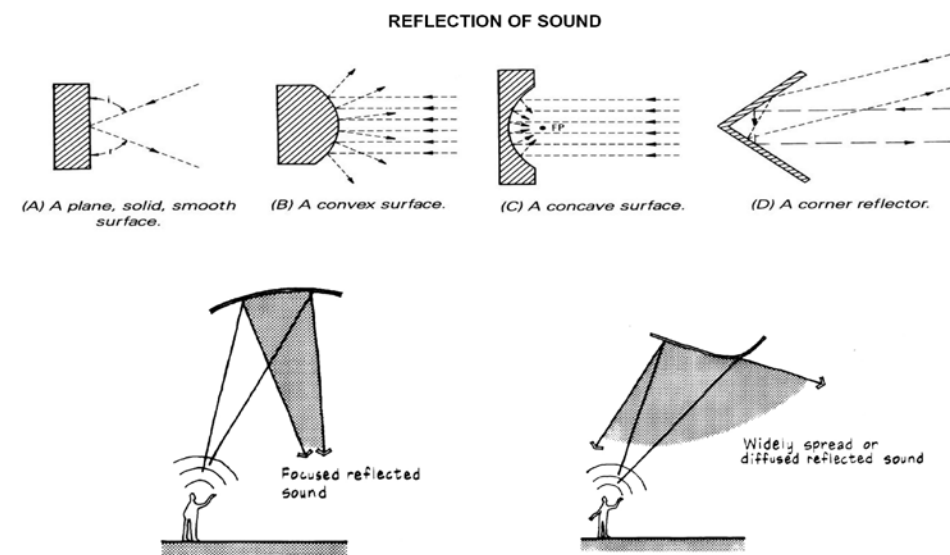
In the trabeated system only the horizontal and the vertical members are used and the stability is achieved by the massive arrangements of vertical elements such as pillars and pilasters together and heavy cross beams and lintels see Figure 4. The use of the spanning system to enclose the interior spaces was the most typical feature of this system. The roofing system consists of horizontally laid slabs of stone spanning from one supporting beam or wall to the other.



Column types (a) Yali (b) Sculpture (c) Sculpture core and miniature (d) core and miniature



The frequency of sound produced from pillars varies with the width and height of the pillar as well as the pressure exerted on them.







Working Models

04. Dust & Data : Ines Weizman

Instructor: Samuel Stewart-Halevy

Will depending exclusively on materiality confuse the fundamental aim of discovering the history of a building? Will the historical results to be determined from the materials be neutralized if the 'dust' travels transboundary and accumulates on spaces and buildings based on climatic factors?

Inez Weizman's 'documentary architecture' method is heavily reliant on the materiality of a building or space in order to assess its historical significance and find information about its builders and users. The historical transformation of the building over time, from the beginning of construction to the most recent user, is documented in this method. The book explores the inception of Bauhaus after the World War One and the several stages of its dislocation to different places, the complexity of Bauhaus reaching trans boundaries. Identifying traces of relevant architectural features in ruined and surviving buildings to establish the influence Bauhaus school had after the World War One and the following years and revealing the importance of 'dust' in architecture and gathering data.

The two buildings discussed – one in Golan Heights and the other in Tel Aviv, referred to as Bauhaus buildings presents the story of its construction over time through the wars and the political agendas that lead to the use of certain materials and labor, its transformation over the years based on functionality and how the story was unfolded during the renovation. The French custom house which was renovated hides the truth of a tragic past while the British building remains untouched revealing that tragedy. For instance, the history of the building can be better understood by recognizing the type of paint, bricks, or tiles, as well as their place of origin, rather than by analyzing the plans and elevations. It depicts the background story of a building like the work happening behind the screens of a performance which in fact builds it.

The 'materiality', both micro and macro plays a significant role. Inez Weizman considers the method of documentary architecture to not just identify the history of the building but its surroundings too. While the building materials tell the story of its construction, the dust reveals the story of its evolution over time. Dust travels transboundary and accumulates on spaces and buildings based on climatic factors. The 'micro' particles that has travelled from different regions carries with it the history of that area. The way materials that were transported from Germany to Palestine through the Haavara agreement became a part of the building through construction, the dust that travelled and accumulated on the building becomes part of its history. The dust clouds formed as a result of bombings which travel across borders carries with it the information of that attack to a different region connecting the places and entangling their histories.

The Forensic Architecture initiative by Eyal Weizman employs architecture as a tool to investigate injustice against nations, environment and individuals either directly or indirectly. The common perception of Architecture being just about buildings is questioned by Weizman. "Architecture is the movements and the relations that are enabled by the way you open, close and channel functions, people and movements within that. Architecture is about the incident, about the event, about social relations that happen within it". Buildings are sensors registering environmental impact or forces. With the help of the metadata, this made it possible to recreate a hybrid of the physical and virtual space. In order to examine the nature of an attack and its aftermath, they employ architectural software to reconstruct 3D models of the buildings and therefore the surrounding areas. For instance, parametric software which are used to design buildings by feeding data into them, are used here as a technique to investigate the clouds created by the smoke shell attack which help in calculating the scale of explosives used. Material deformation holds information, recording and erasing things and materiality is the fundamental aspect in both these practices.

The 'documentary architecture' method relates to Rotor's projects - A Reverse Engineering Methodology and Practice. Careful deconstruction of historically significant buildings to preserve architectural elements is the base of this practice. As a result of meticulous evaluation and disassembly of materials with high reuse values, deconstruction waste that was initially disposed of in landfills is decreased. A more sustainable series of events is produced when historically significant parts of these structures are auctioned off to raise money for the renovation. The deconstruction methodology chosen will aid in determining the building's history, character, material usage, and relevant construction methods from a previous century. The proposal is an amalgam of sustainability and giving back, an approach of reinvesting knowledge in the communities from which it was extracted.

Modernism or the 'whitewashed' era which hid the tragic past of a building eventually fades out revealing the truth. Inez Weizman's practice brings in the thought of how even the neglected 'bullet mark' on a building showcases the history. Limiting the history of a building to its construction and architectural style is reconsidered. Architectural softwares are used as tools for extracting data from buildings and surroundings and dust acts as the main resource. These micro articles reveal information that were unknown to the people living in the building or to the general public. The perception of 'dust' in architecture can be different in many ways, the information a micro particle holds in this scenario is crucial than imagined. Dust reveals facts that are invisible to the naked eye. Each layer of dust tells a different time or events in the history. Inez Weizman's method reminds us the importance of architecture and the potential of this profession in revealing the hidden history and facts that may have been forgotten over time. The political connections, exchange, natural disasters, wars etc. are reminisced through this. Rather than the dust accumulated neutralizing the information, it adds on to the history of a building. Buildings are considered as witnesses of history.

References:

Bois, Y.-A. (2016, October). Retrieved from MIT Press Direct: https://direct.mit.edu/octo/article-abstract/doi/10.1162/OCTO_a_00254/59301/On-Forensic-Architecture-A-Conversation-with-Eyal

05. Floating New York

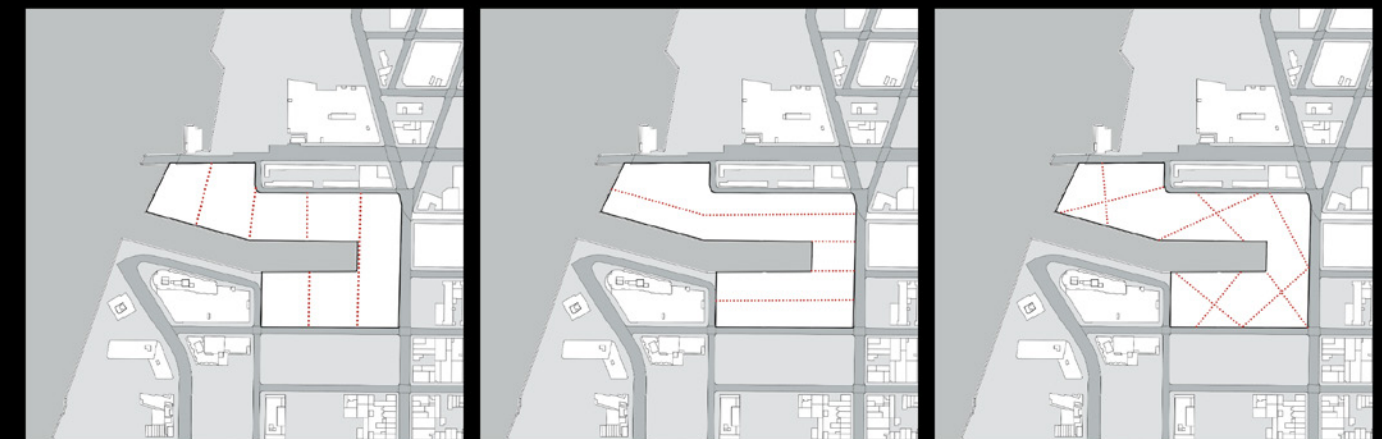
*Instructor: Snoweria Zhang
Group: AAnnet Kennady, Tara Zhang*

The site, Anable Basin in LIC, is constantly under the threat of flooding. Through a carefully designed new street grid strategy and ground floor height based on their proximity with water, while satisfying at least the median FAR for the commercial areas of development in average, we can mitigate how the water flows through the site. Anable Basin is a former industrial waterway that has been transformed into a popular park and recreation area.

We developed the tool to map the flow of water and generated three water flow patterns with the three street grids and we could see the perpendicular and uneven street grids created more obstacles for the flow of water while the parallel grid allowed more transparency for the flow of water.

Inputs	# of options	Description of the options
Street type	3	Perpendicular; Parallel; Uneven
Density location	2	Evenly distributed; Waterfront heavy
FAR	-	M1-5/R9
Density distribution	5	0; 0.25; 0.5; 0.75; 1
Building types	4	Minimum footprint to maximum
	120	

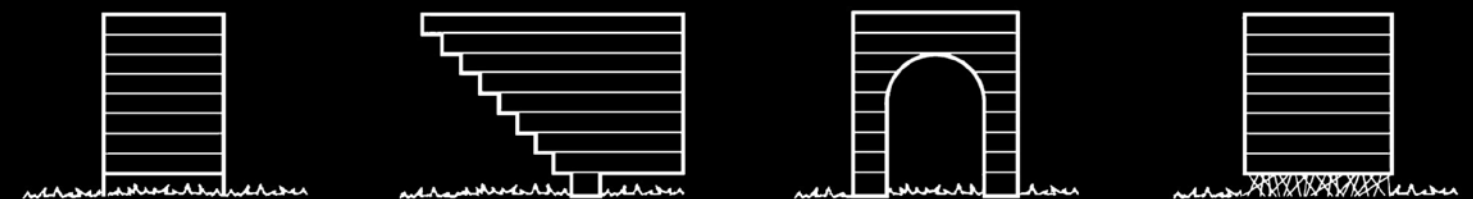
Inputs: Block Type



Perpendicular

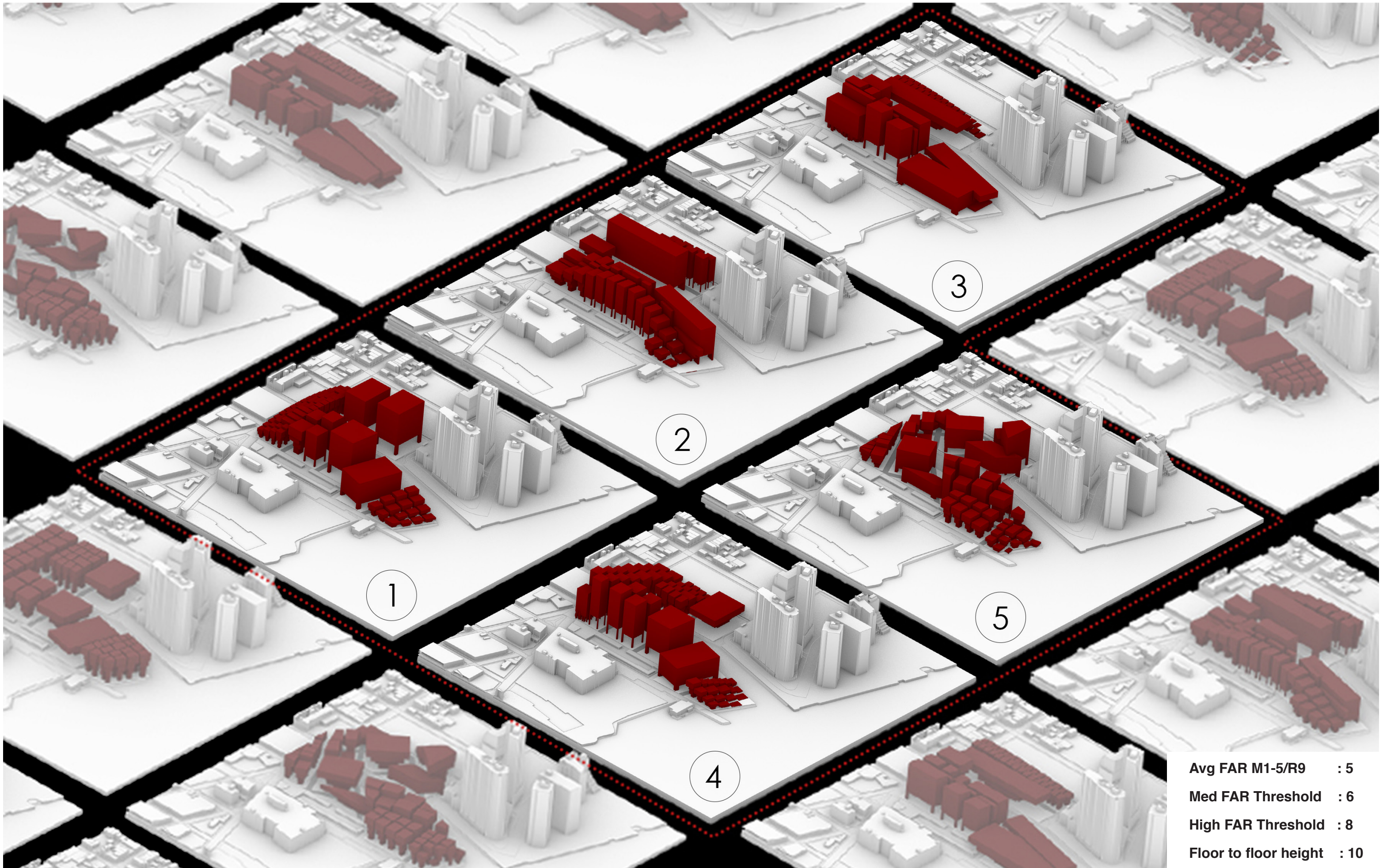
Parallel

Uneven

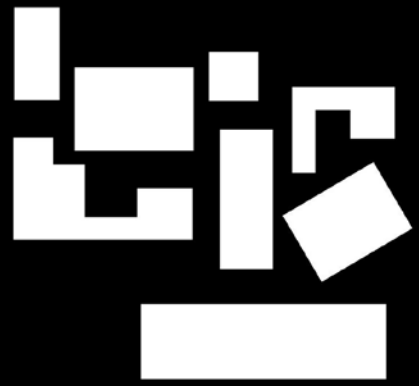


Min. footprint

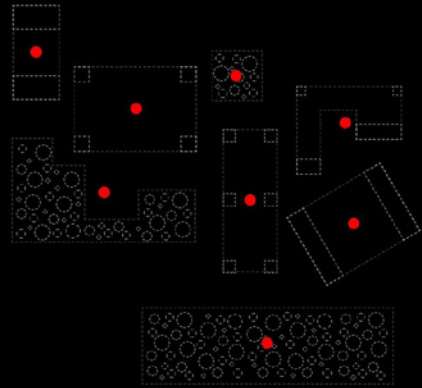
Max. footprint



Avg FAR M1-5/R9 : 5
Med FAR Threshold : 6
High FAR Threshold : 8
Floor to floor height : 10



1



4



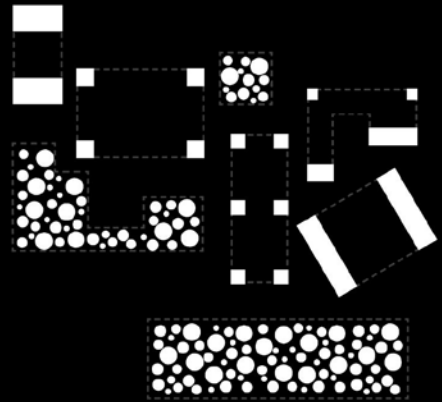
Perpendicular street grid



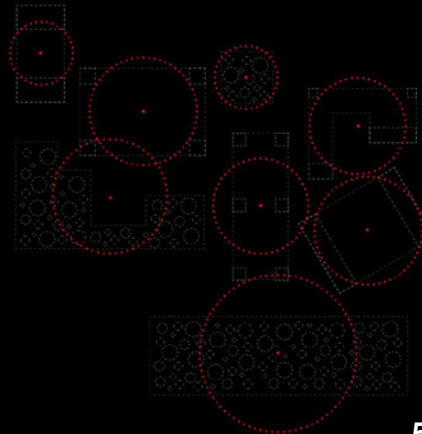
Parallel street grid



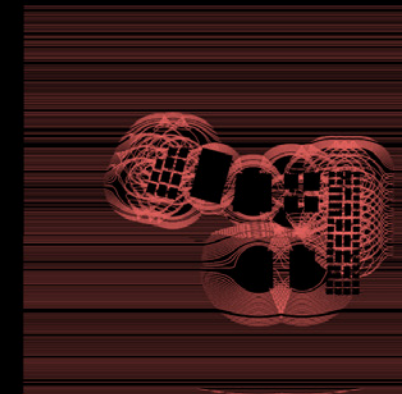
Uneven street grid



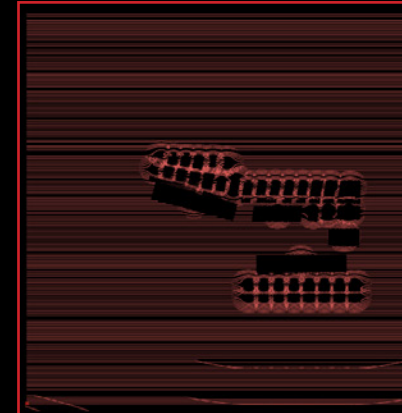
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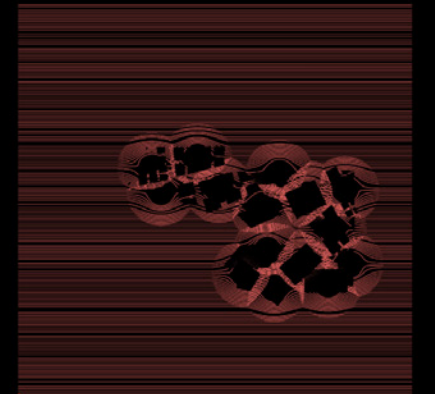
5



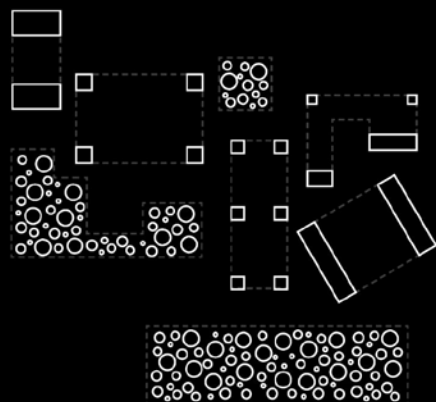
Perpendicular street grid



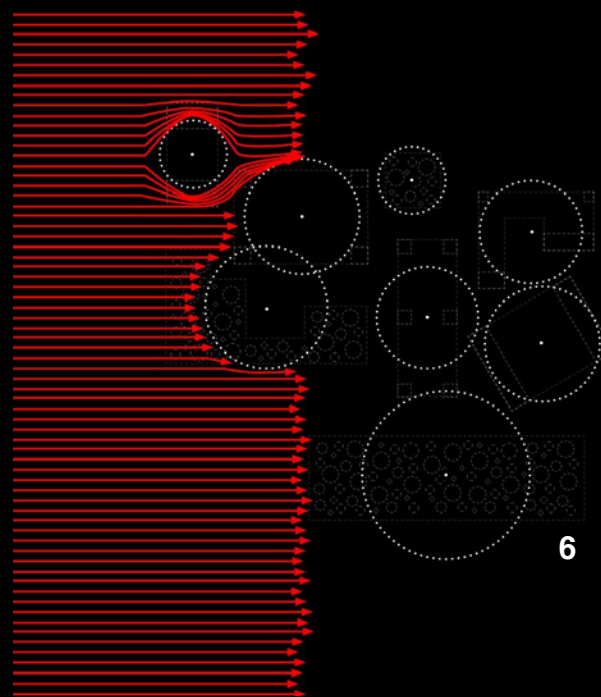
Parallel street grid



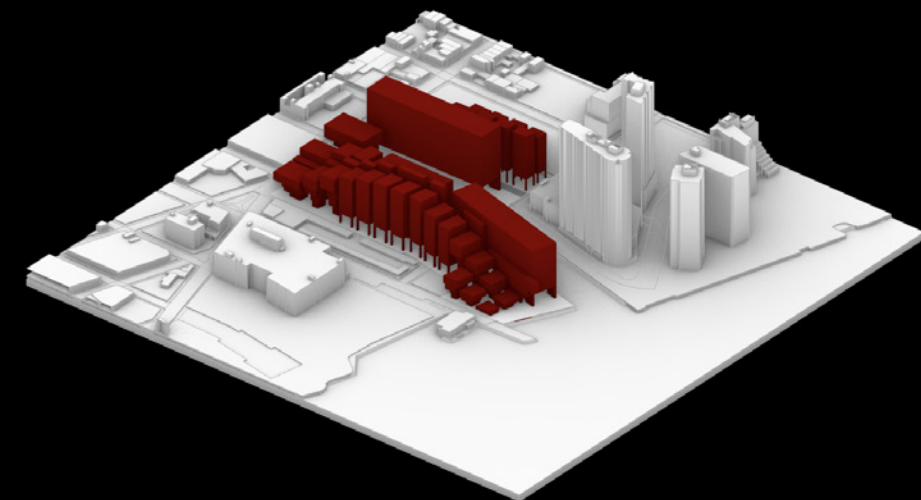
Uneven street grid



3



6



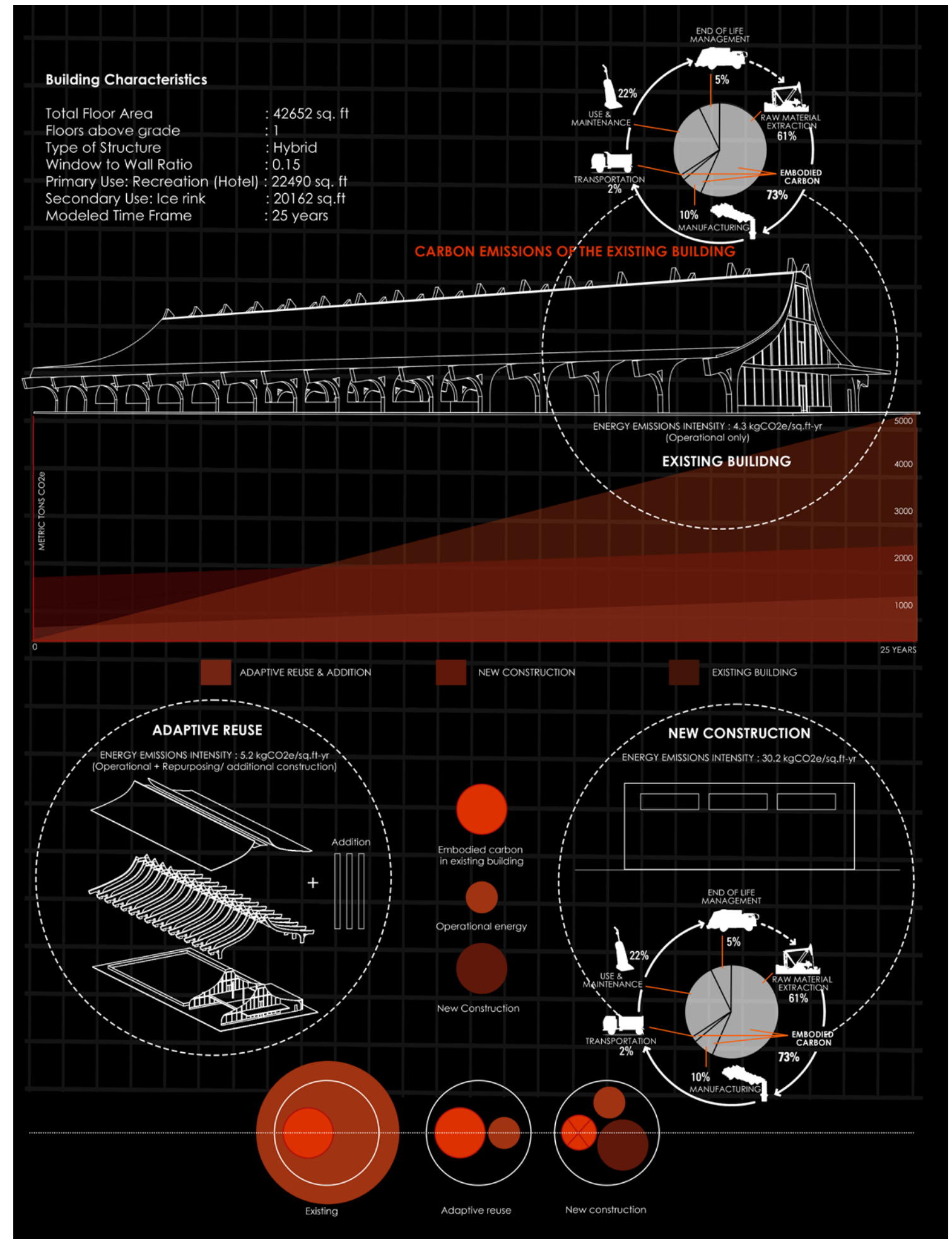
Most successful iteration based on the flow of water and FAR

06. Carbon Footprint in Adaptive Reuse

Instructor: David Benjamin

The Building Materials and Construction industry contributes approximately 11% of the world's overall carbon emissions through Embodied Carbon. To mitigate this, a potential solution is to refrain from constructing new buildings and instead repurpose abandoned or dilapidated ones. Repurposed buildings typically generate 50-70% less carbon emissions than new constructions. In line with this goal, the Nevele Grande Resort in Catskills project is an initiative to convert the impressive Ice skating rink into a recreational area.

The project aims to create a carbon footprint visualization of Nevele Resort's structure, examining the material origins and footprint changes resulting from its potential reuse/ repurpose, which can result in a lower footprint than a new construction.



Thank You!