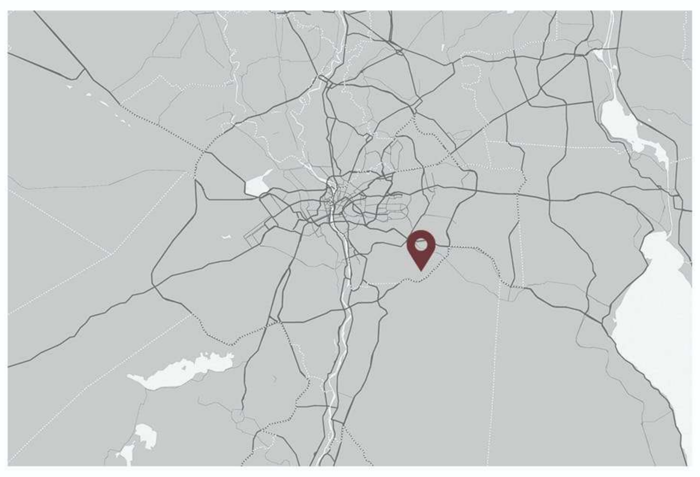
Re-Factory, Green Industries HQ

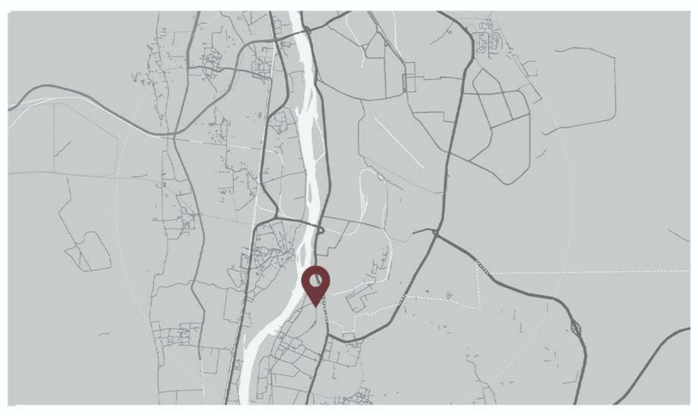
Concept Statement

Transforming industrial production into a visible experience by creating a visual interaction between visitors and the process.
Waste becoming the raw material

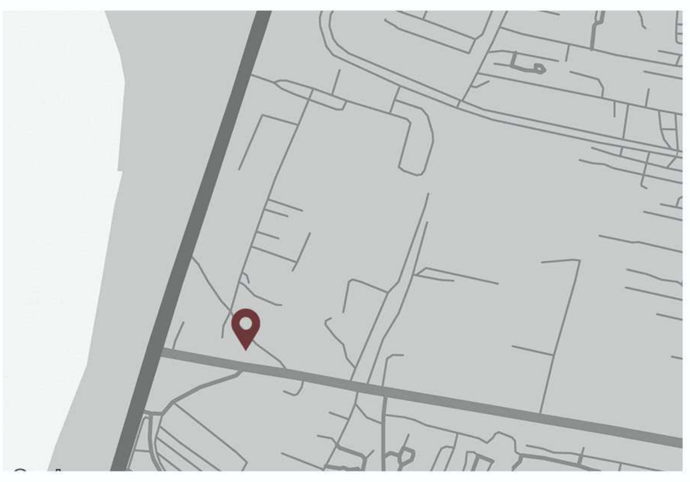
Location



Greater Cairo



Helwan



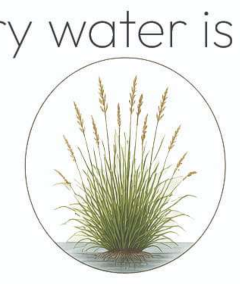
El-Tebbin

Problem Definition

The Helwan Industrial Complex liquid wastes discharcged are found to contain high amounts of heavy metals and high concentration of soluble salts. The measured impact on the river shows that concentrations of heavy metals in the industrial complex is found 4 times their normal concentrations.The scale of this discharge is about 115000 m^3/day loaded by about 3.39 tons/day
Liquid wastes returning to the Nile is carrying:

Thermal Plume – water used for cooling then returning it to water results in thermal pollution affecting aquatic life

Solution – Establishing a closed loop system where discharged factory water is cleaned to be re-used again



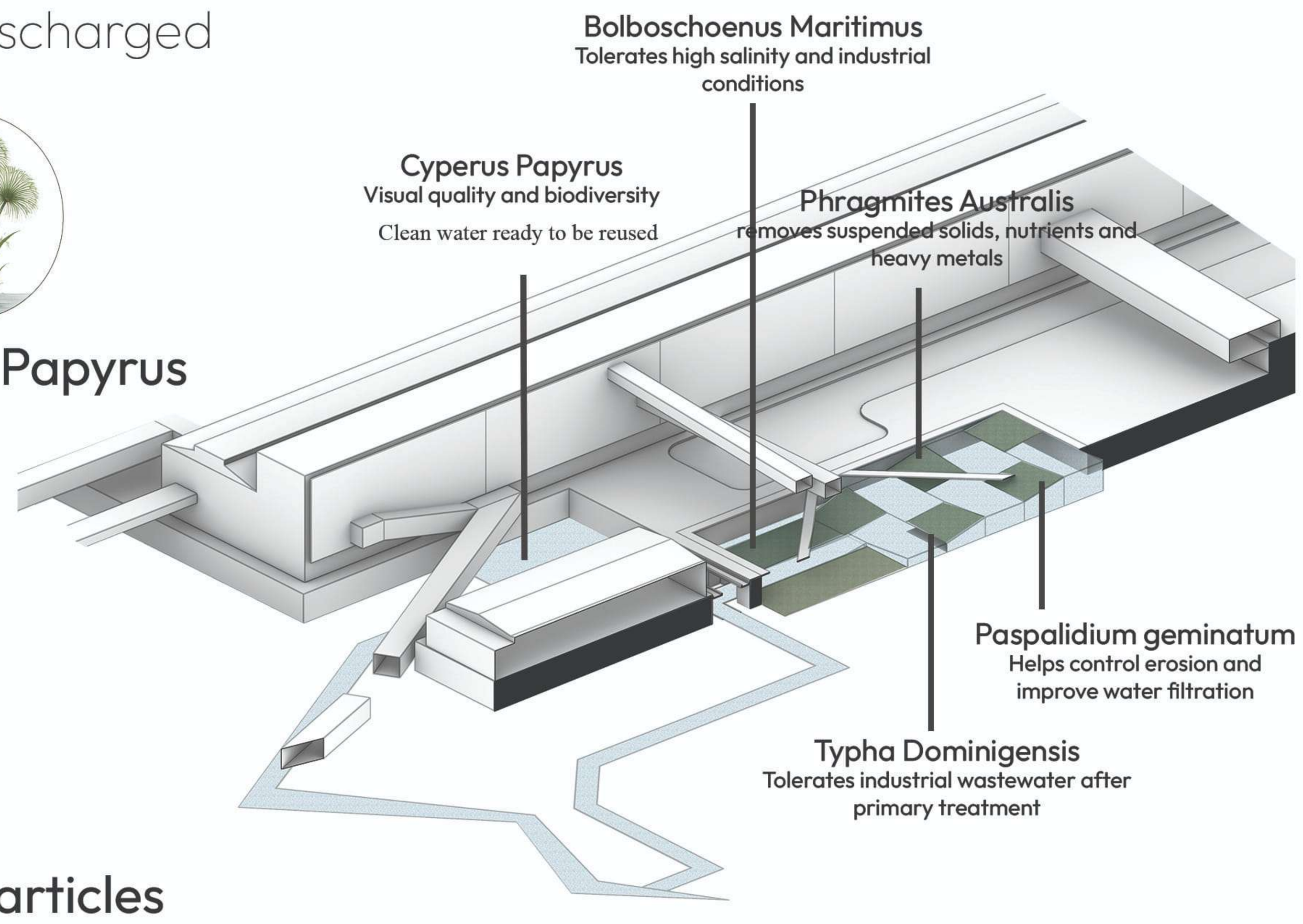
Paspalidium Geminatum

Phragmites Australis

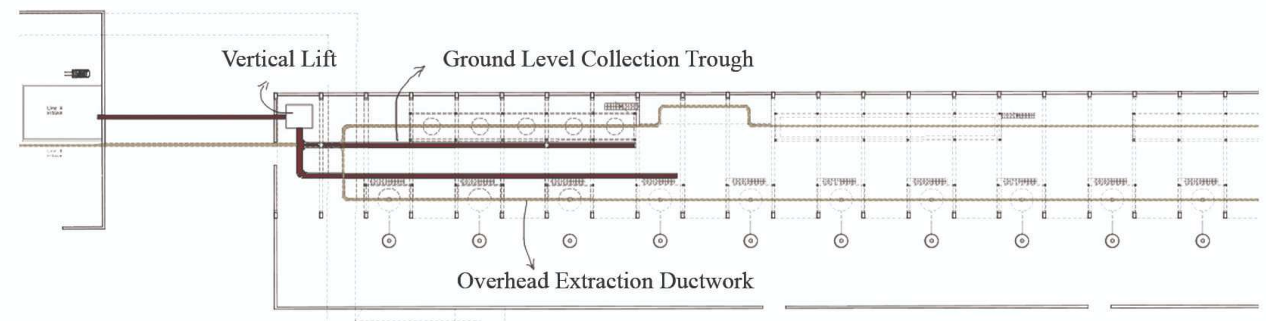
Cyperus Papyrus

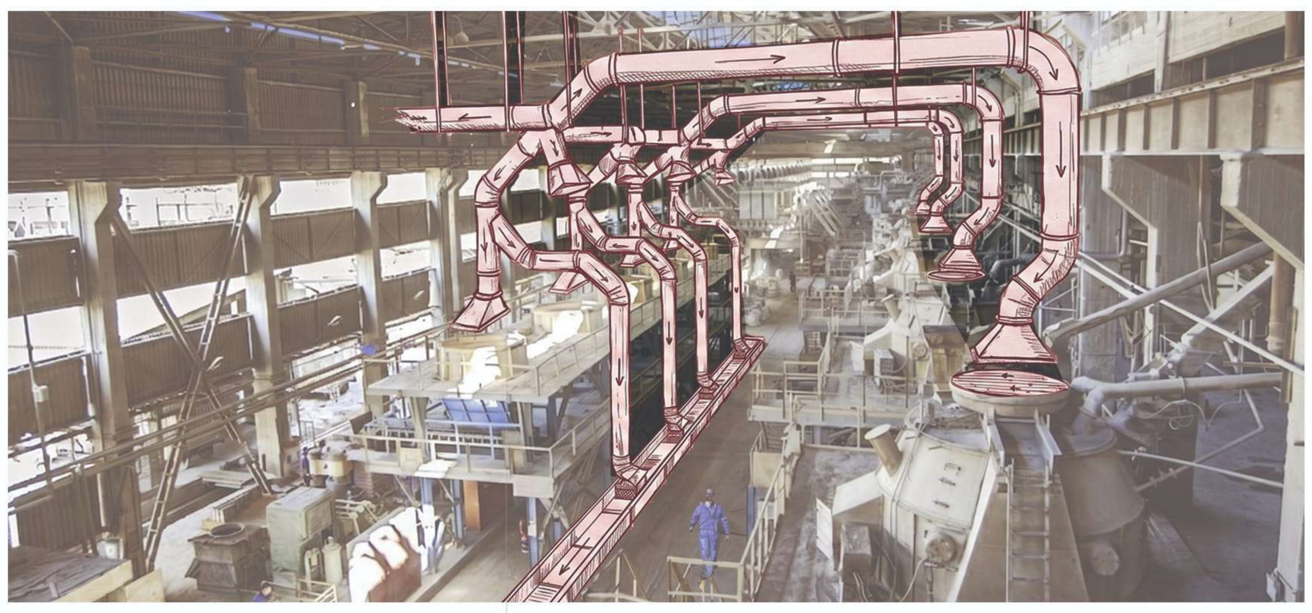
Typha Dominigensis

Bolboschoenis Maritimus



Suspended Solids – Fine refractory dust and grog particles





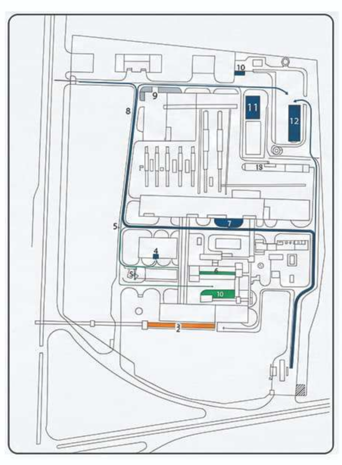
Solution

Establishing a collection system to collect these solid and transport them to the new production core via the extension pipes

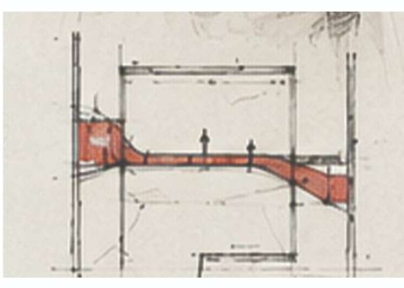
Site Study

Site Map

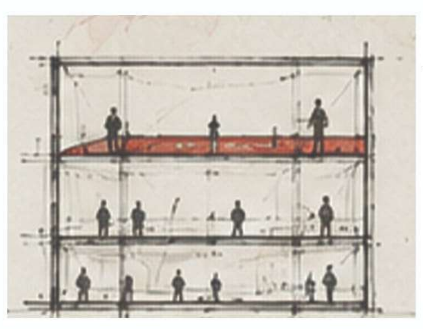
1.Unloading Rotary Kiln Storage
2.Loading Done Rotary Kiln
4.Engineering Workshop
6.Spare Pieces Storage
7.Done Rotary Kiln Product
8.Loading Brick Storage
9.Loading and Checking Bricks



User Scenario

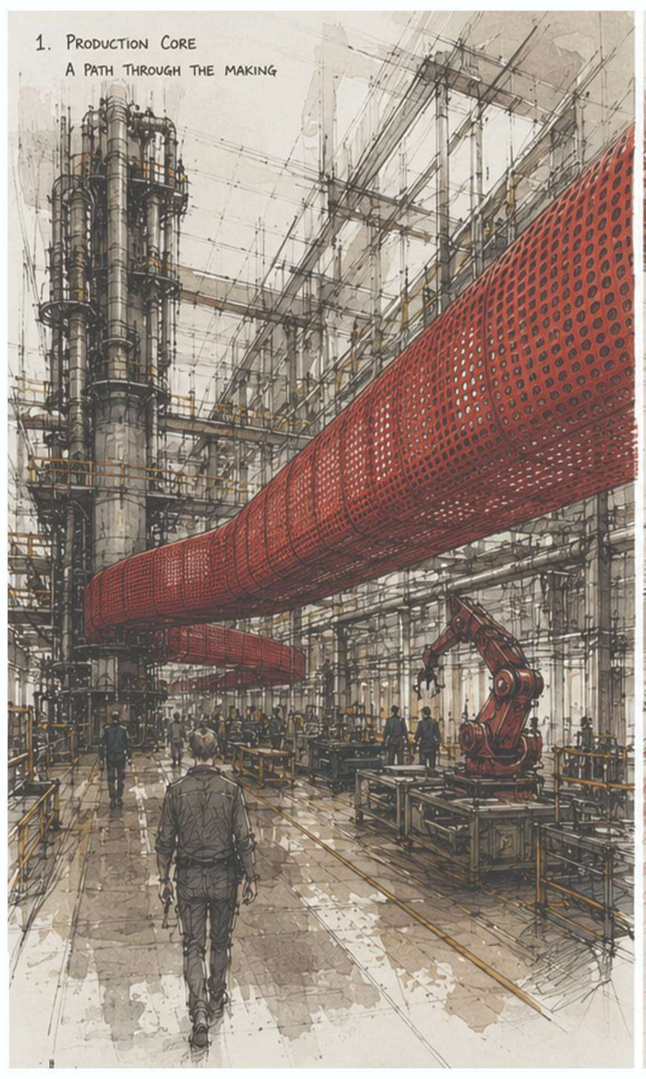


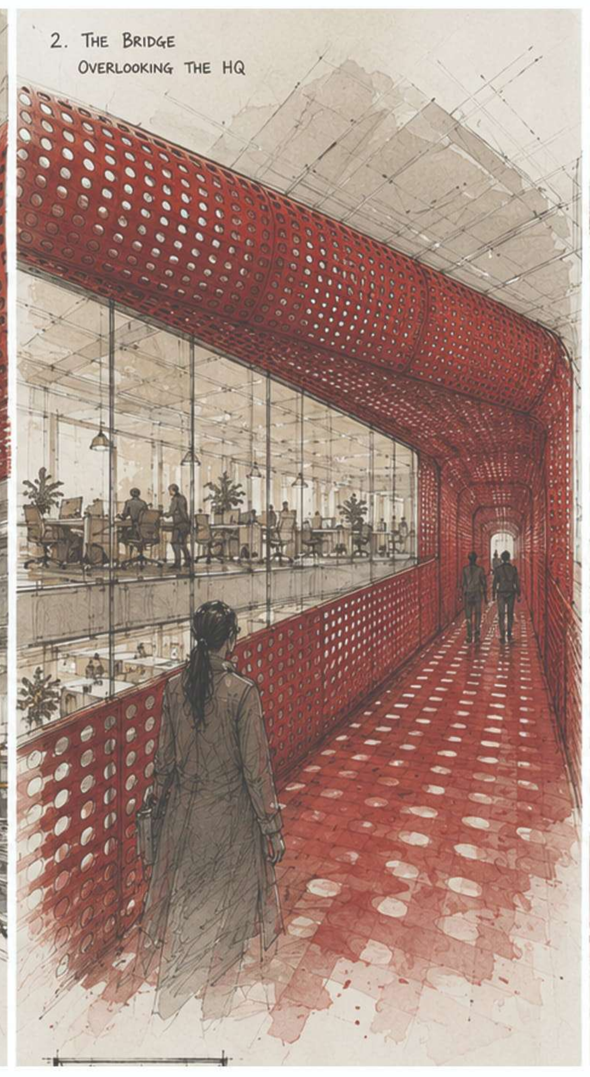
A seamless journey through the heart of production, witnessing, and learning

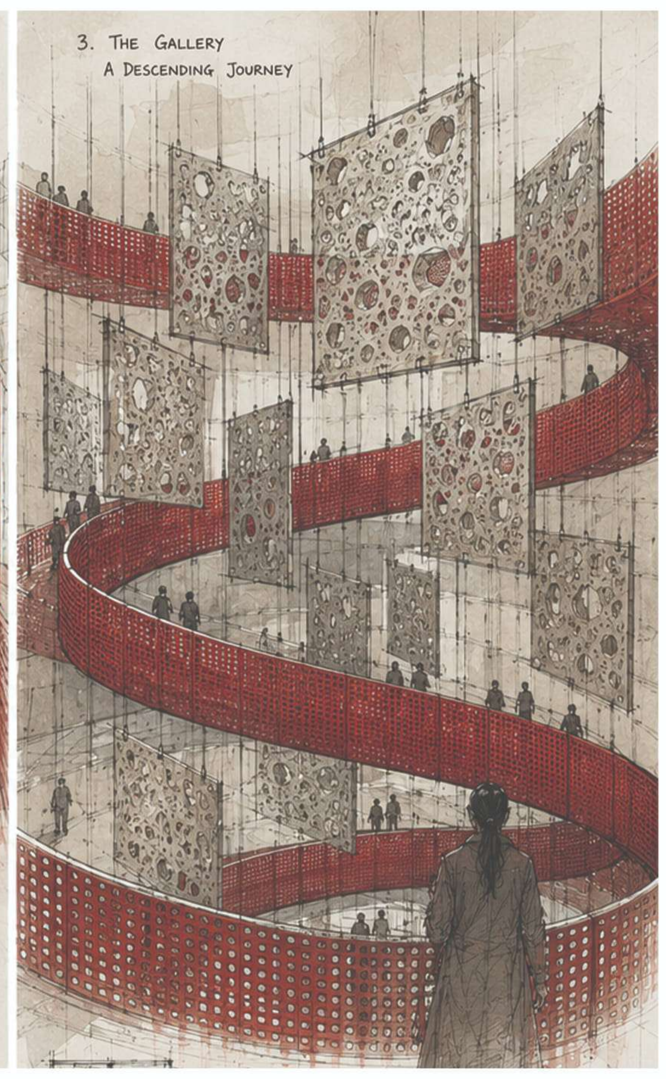


Connecting worlds, trasparencey below, focus above

A descent through heritage and innovation, suspended stories

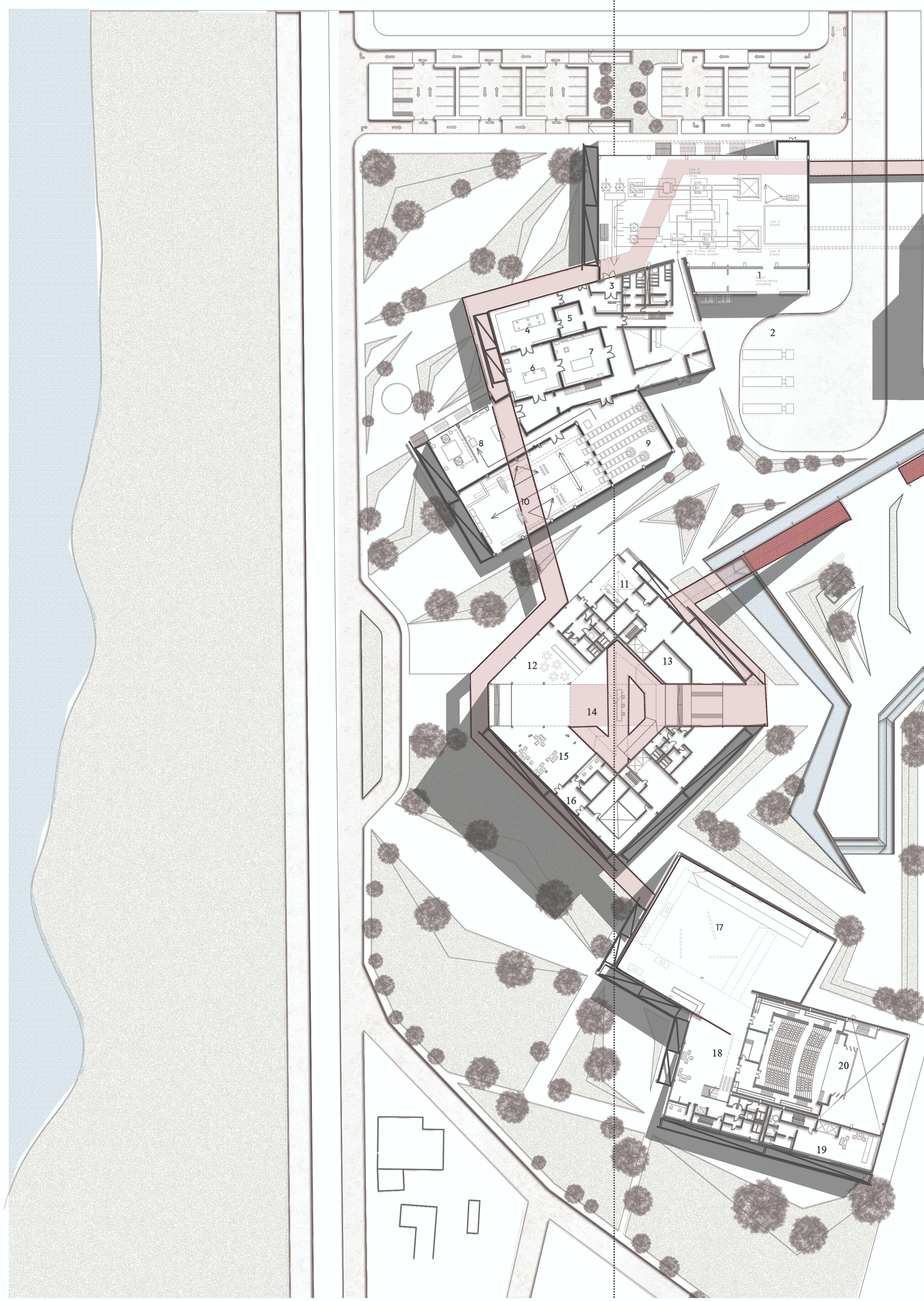
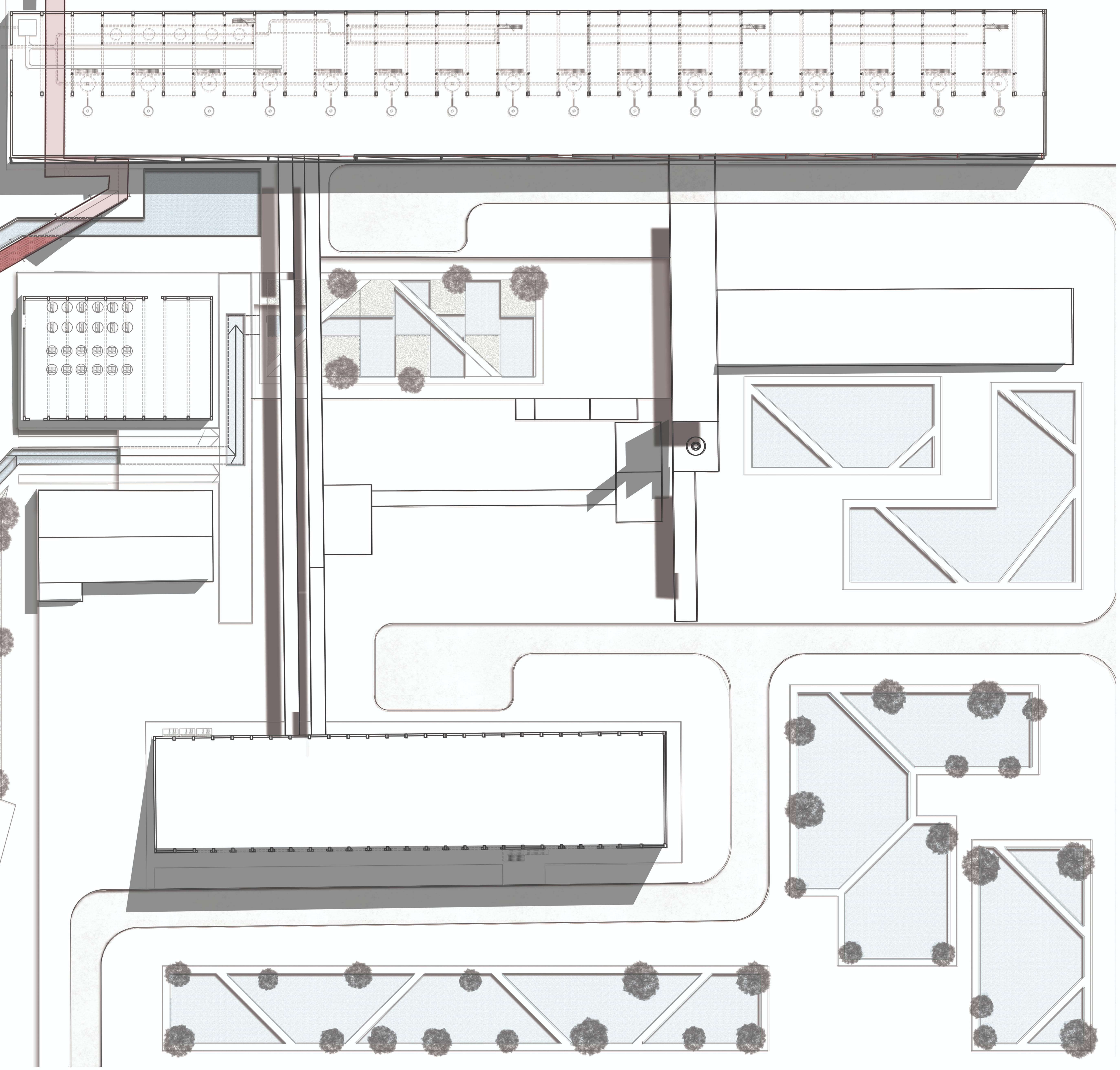




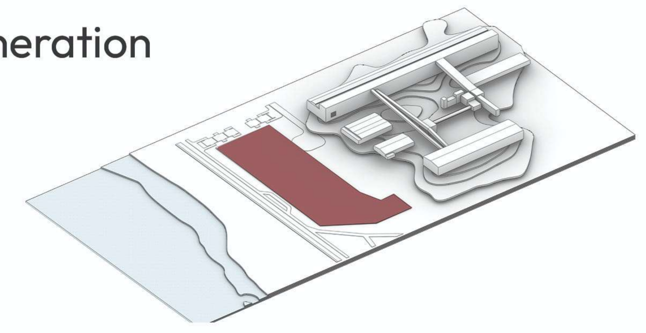


Master Plan

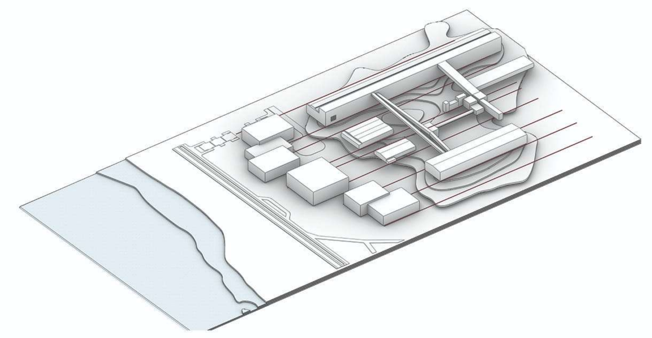
1.Receiving Bay
2.Loading/Unloading
3.Sample Registration
4.Analytical Instrumentation Room
5.Storage
6.Mechanical and Chemical Testing Room
7.Physical Testing Laboratory
8.Robotic Fabrication Laboratory
9.Batching and Mixing Station
10.Casting Hall and Curation
11.Staff Entrance
12.Cafeteria
13.Sample Reception
14.Reception
15.Lounge
16.Ticketing
17.Gallery
18.Reception
19.VIP Entrance
20.Auditorium

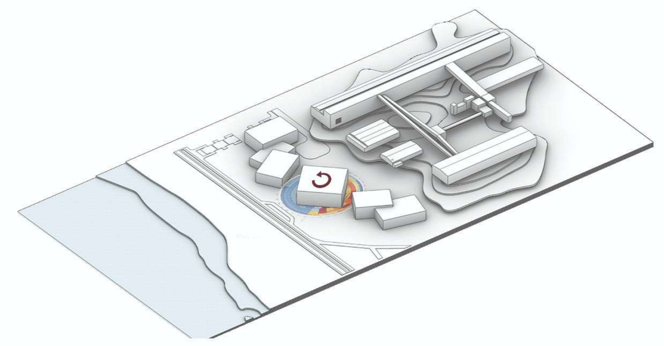
Form Generation



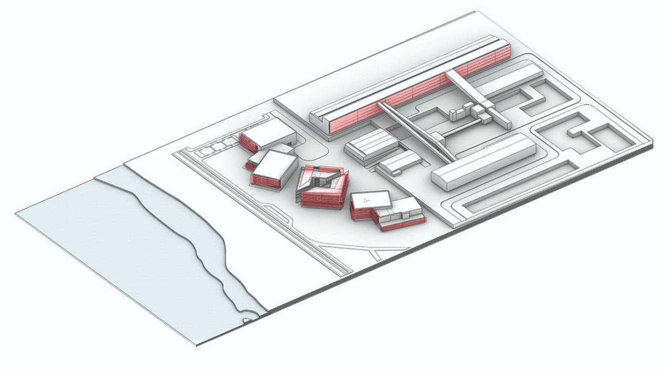
Extruding footprint



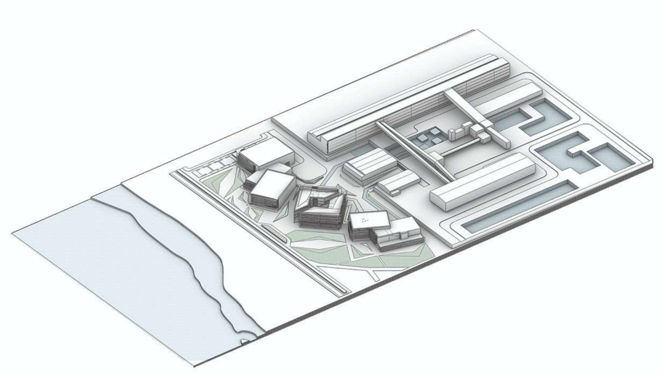
Massing influenced by the existing factory's grid



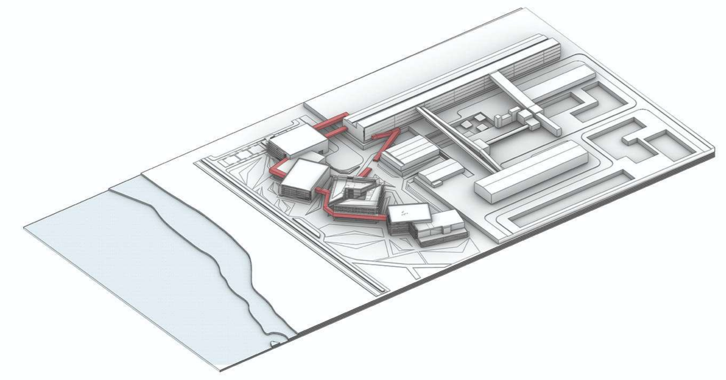
Rotating HQ mass responding to environment resulting in an impact in surrounding masses



Adding Facade treatments

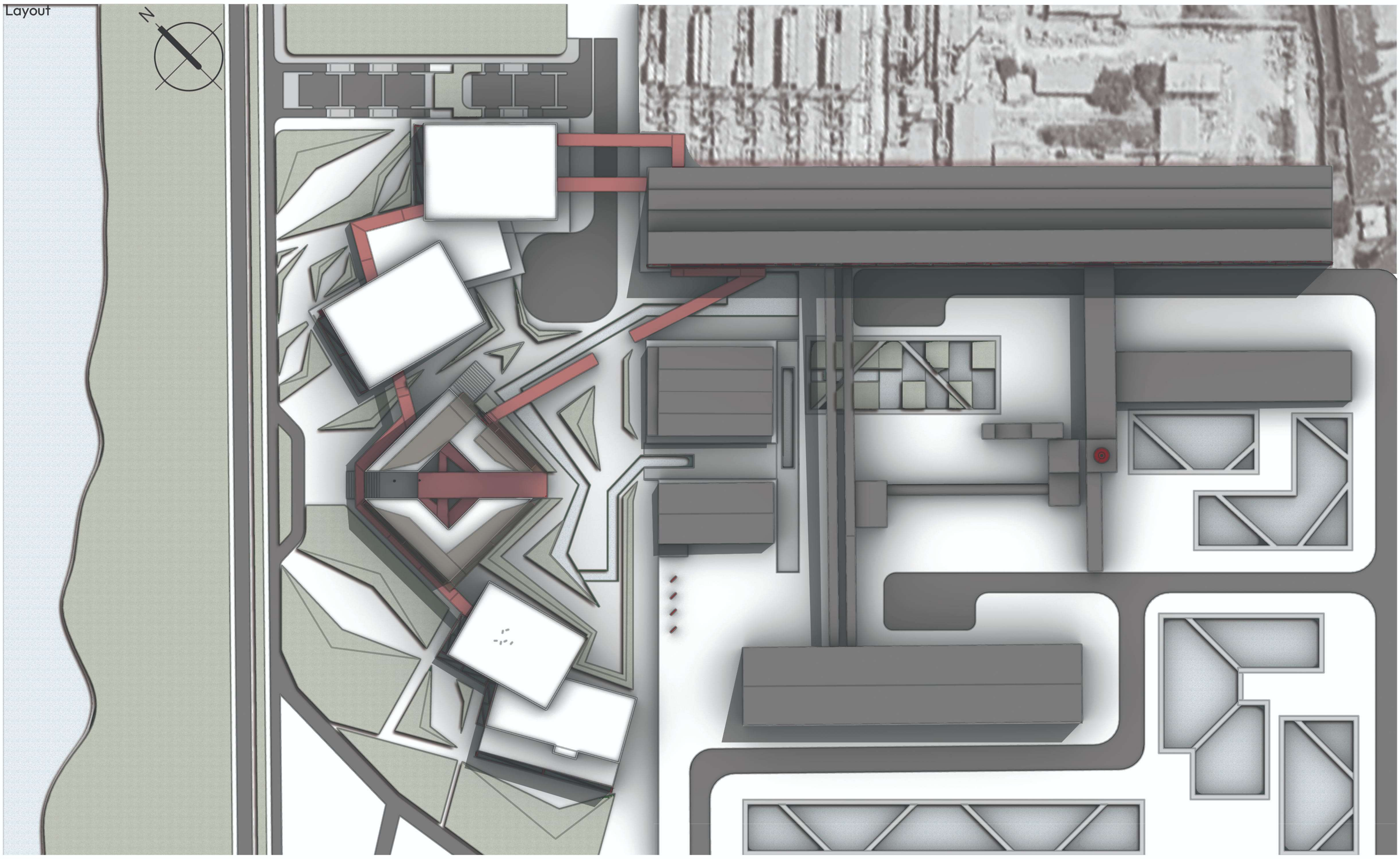


Integrating Landscape Elements

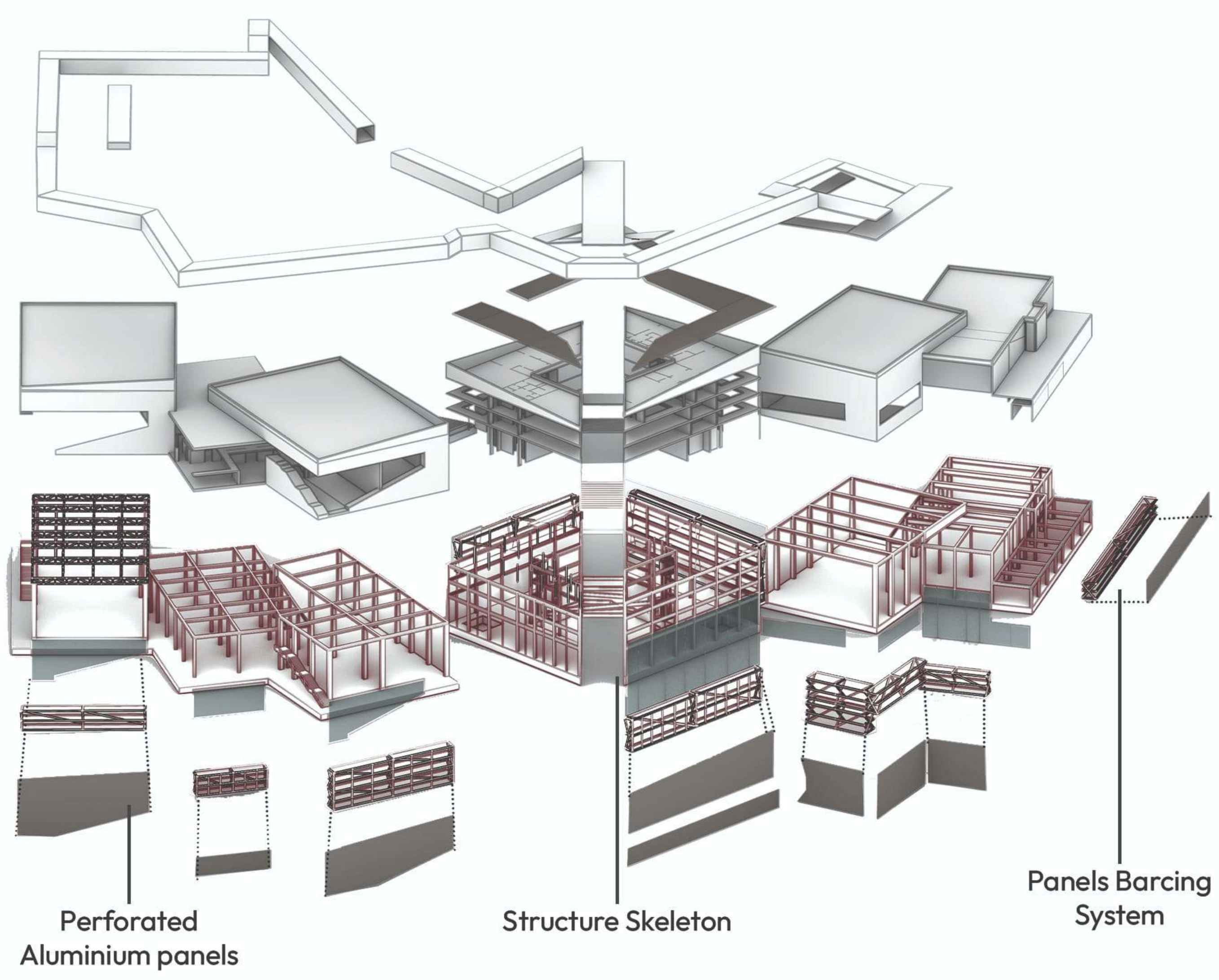


Establishing Public Tour Bridge

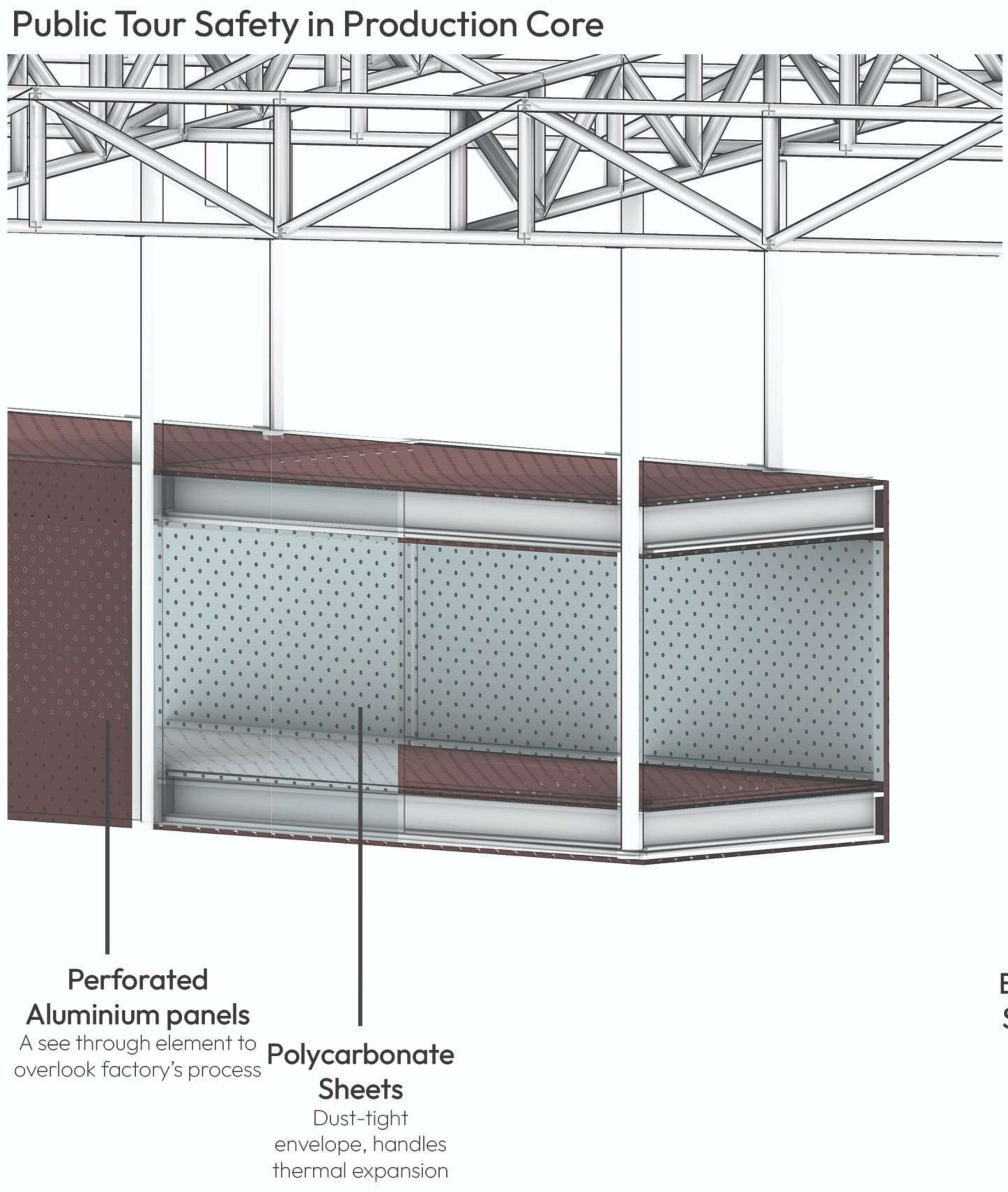
Layout



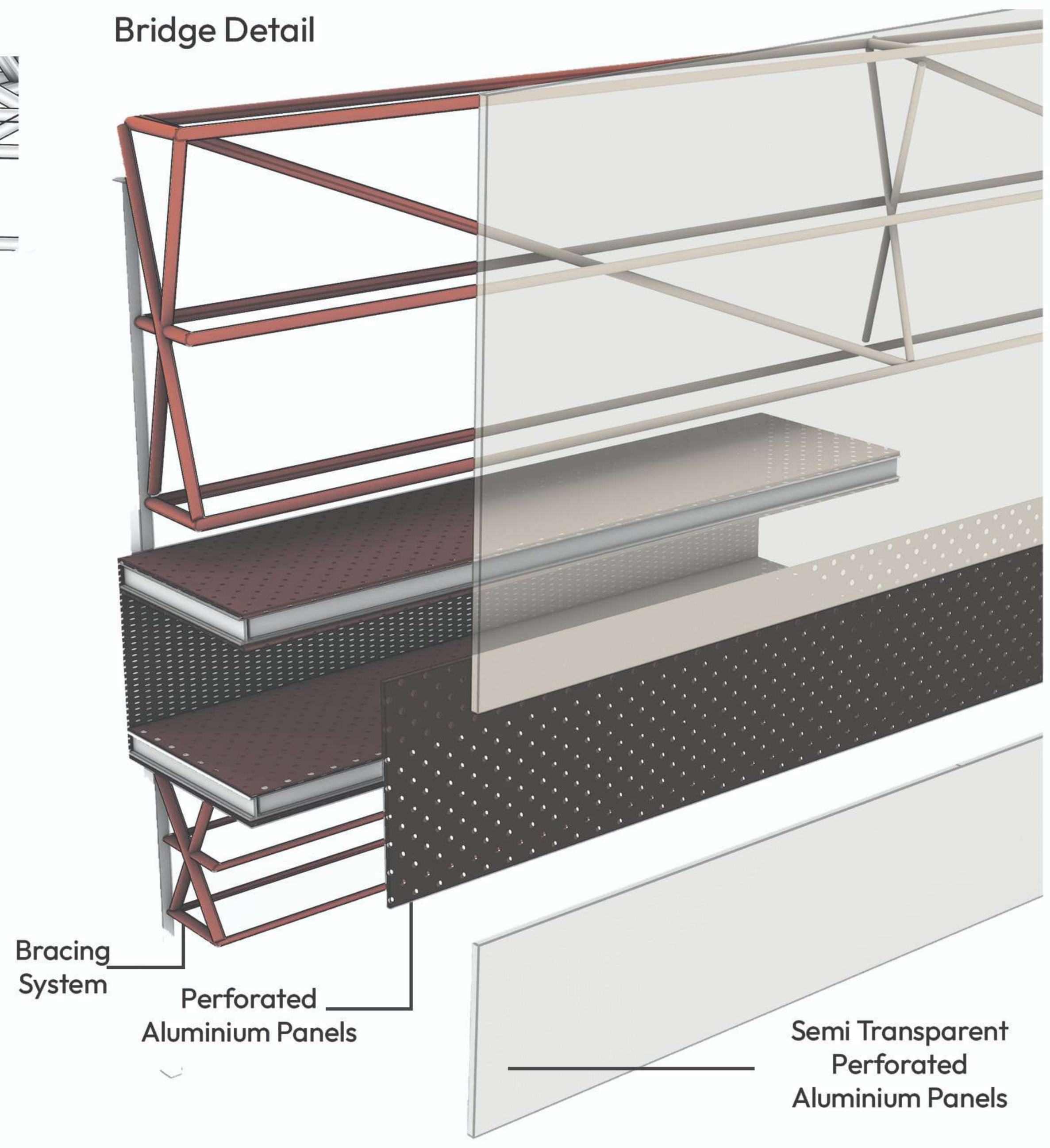
Structure Exploded Diagram



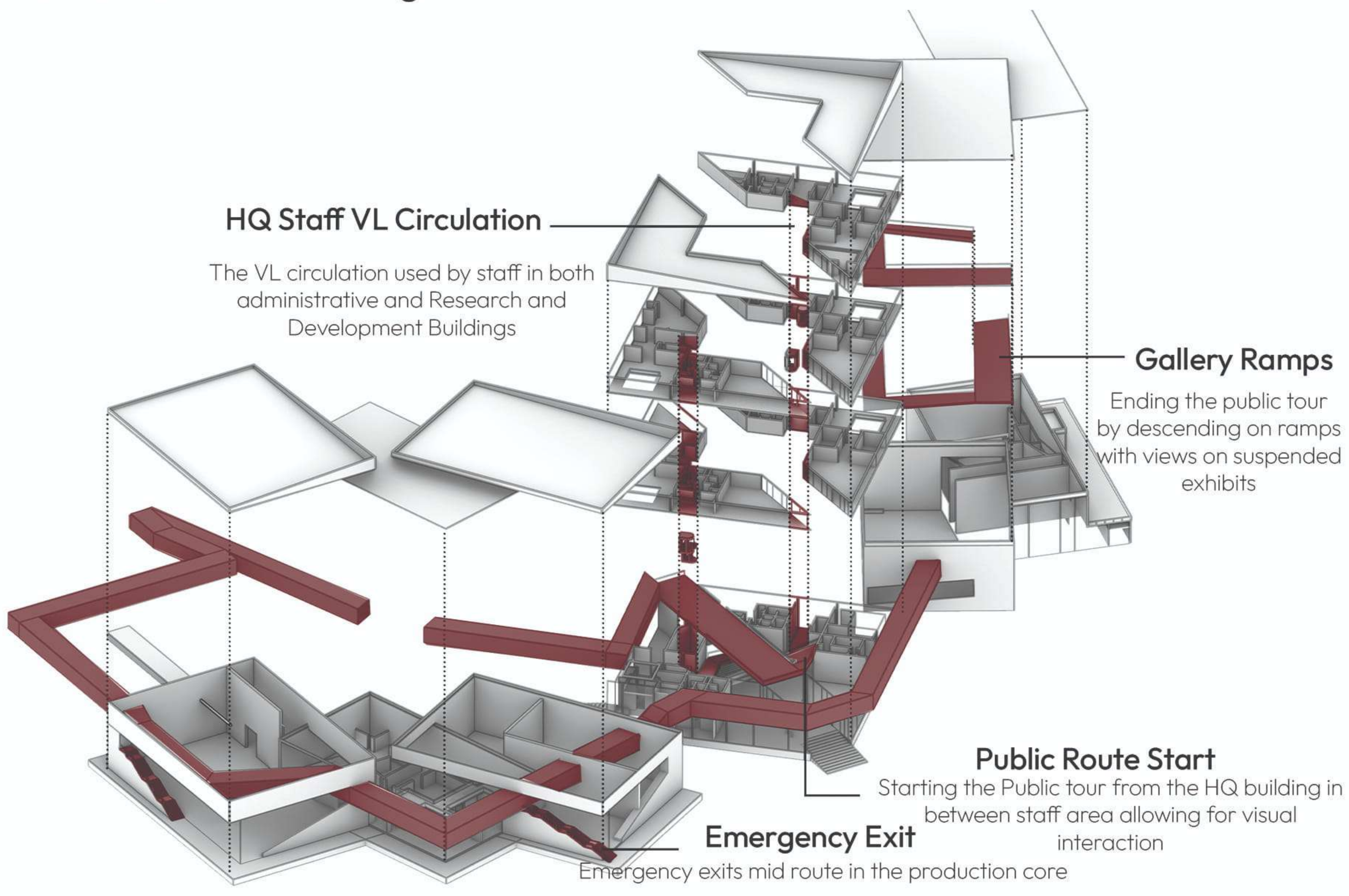
Public Tour Safety in Production Core



Bridge Detail

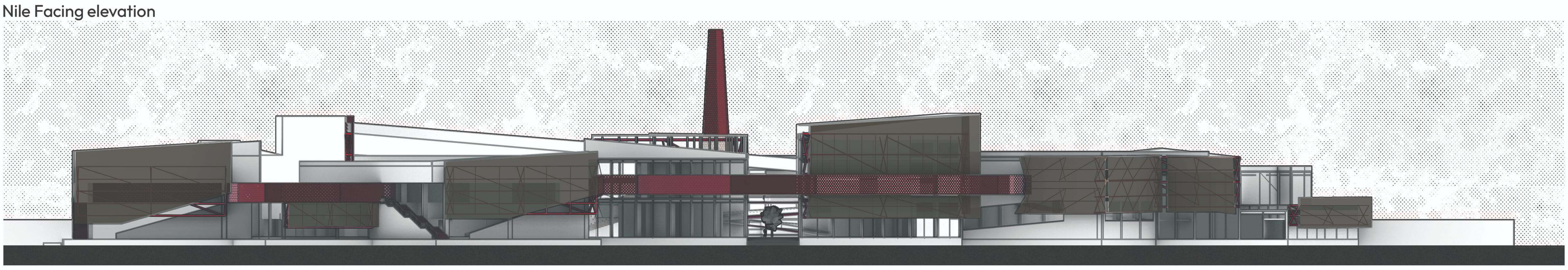


Vertical Circulation Diagram

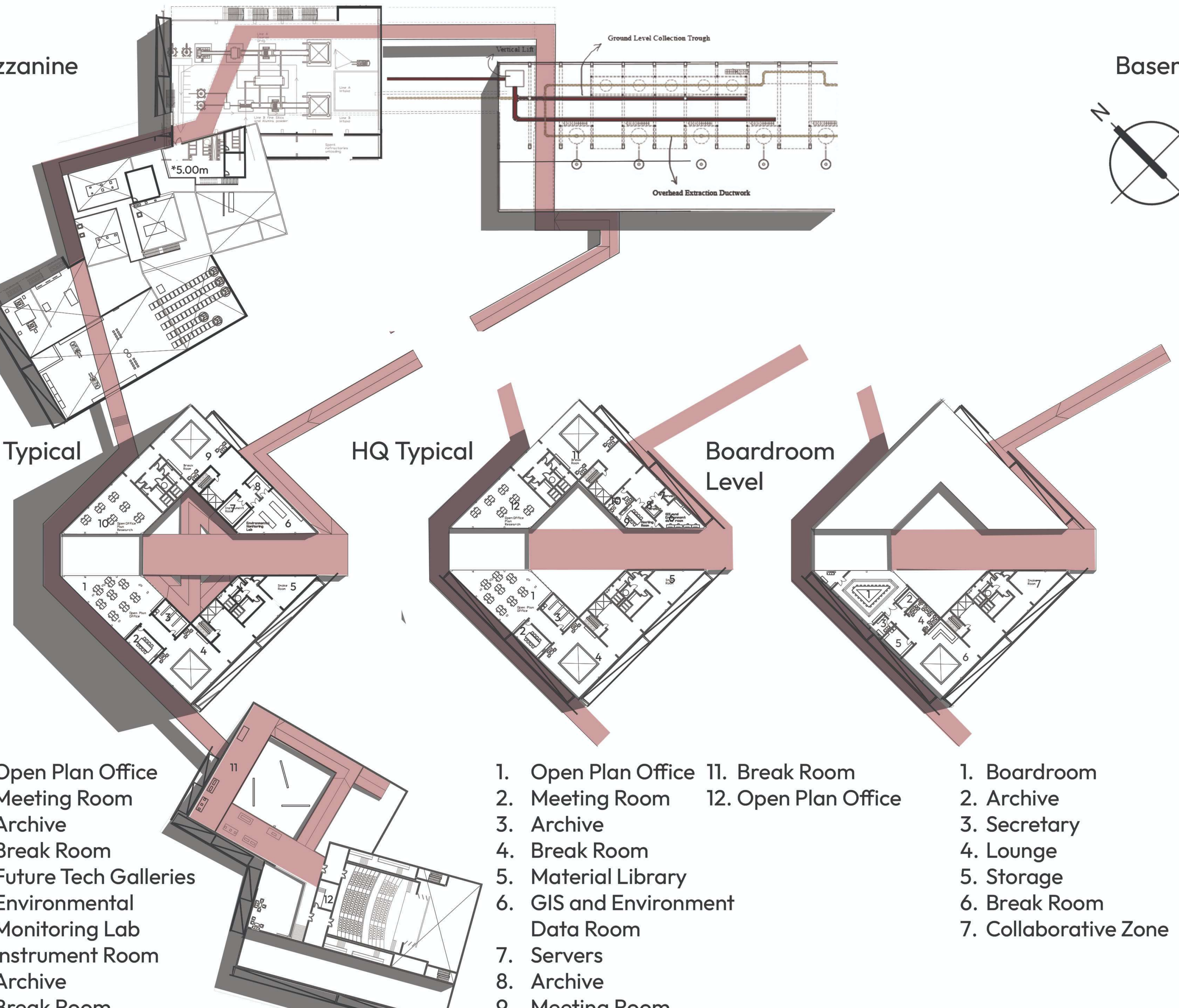


The Bridge overlooking the production process

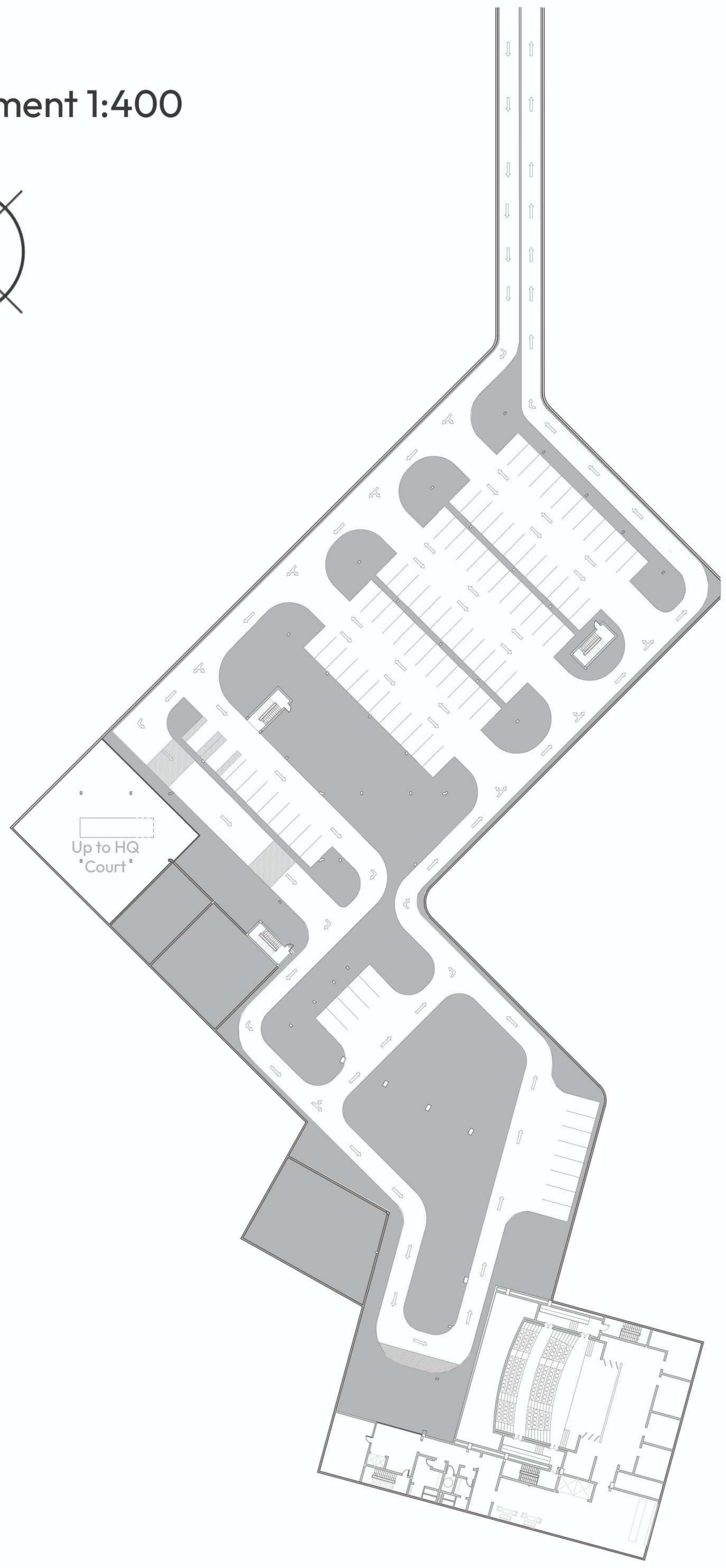
Nile Facing elevation



Mezzanine



Basement 1:400



HQ Typical

HQ Typical

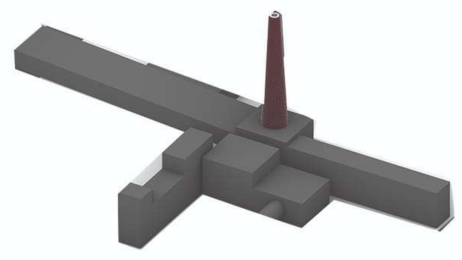
Boardroom Level

1. Open Plan Office
2. Meeting Room
3. Archive
4. Break Room
5. Future Tech Galleries
6. Environmental Monitoring Lab
7. Instrument Room
8. Archive
9. Break Room
10. Open Plan Office

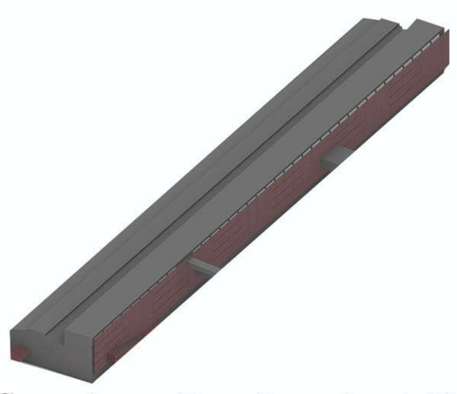
1. Open Plan Office
2. Meeting Room
3. Archive
4. Break Room
5. Material Library
6. GIS and Environment Data Room
7. Servers
8. Archive
9. Meeting Room
10. Director Office
11. Break Room
12. Open Plan Office

1. Boardroom
2. Archive
3. Secretary
4. Lounge
5. Storage
6. Break Room
7. Collaborative Zone

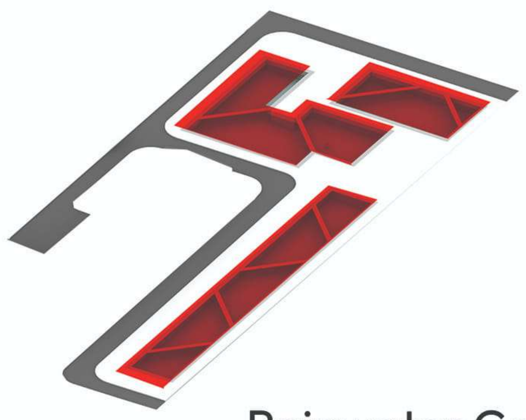
Environmental Strategic Plan



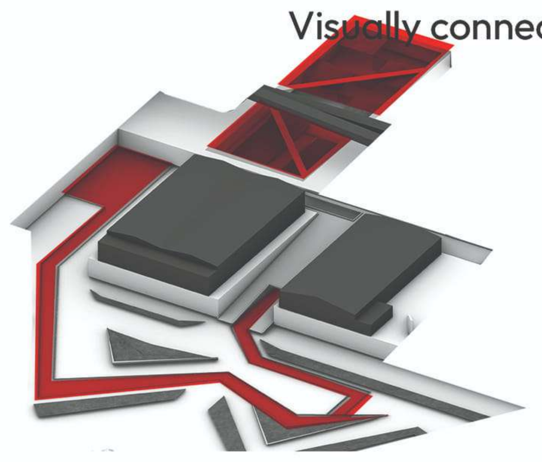
Around Chimney Skin
Acts as a framework for environmental monitoring



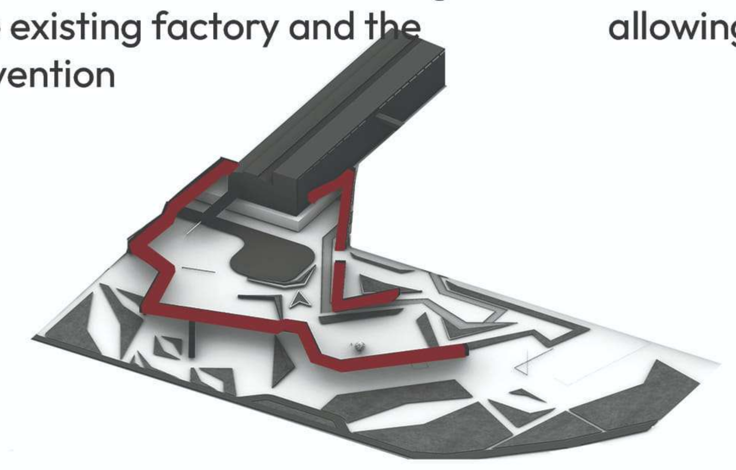
Secondary Perforated Skin
Acts as a framework for environmental monitoring Visually connecting the existing factory and the intervention



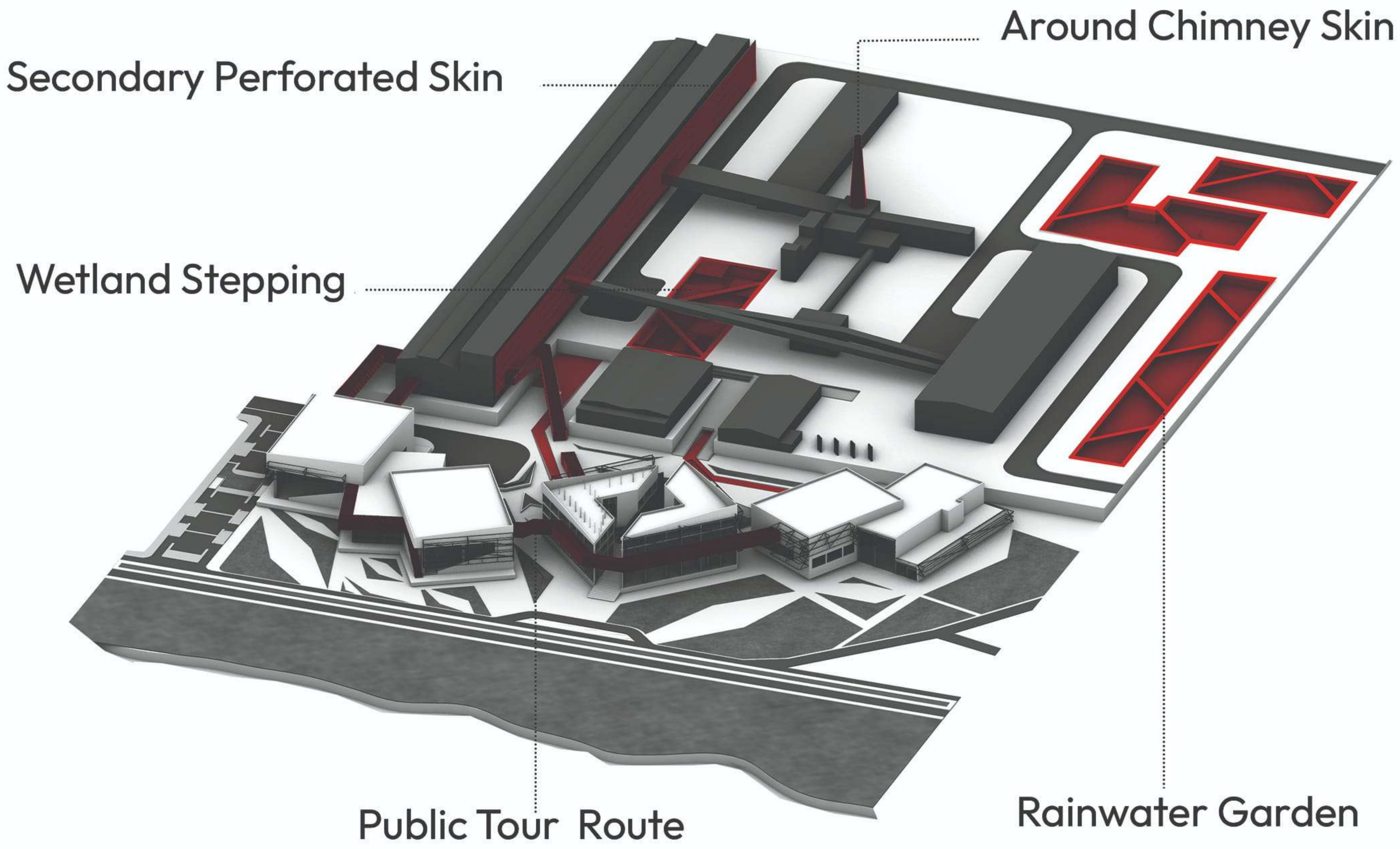
Rainwater Garden
Collect stormwater runoff, filter pollutants, allowing water to infiltrate soil



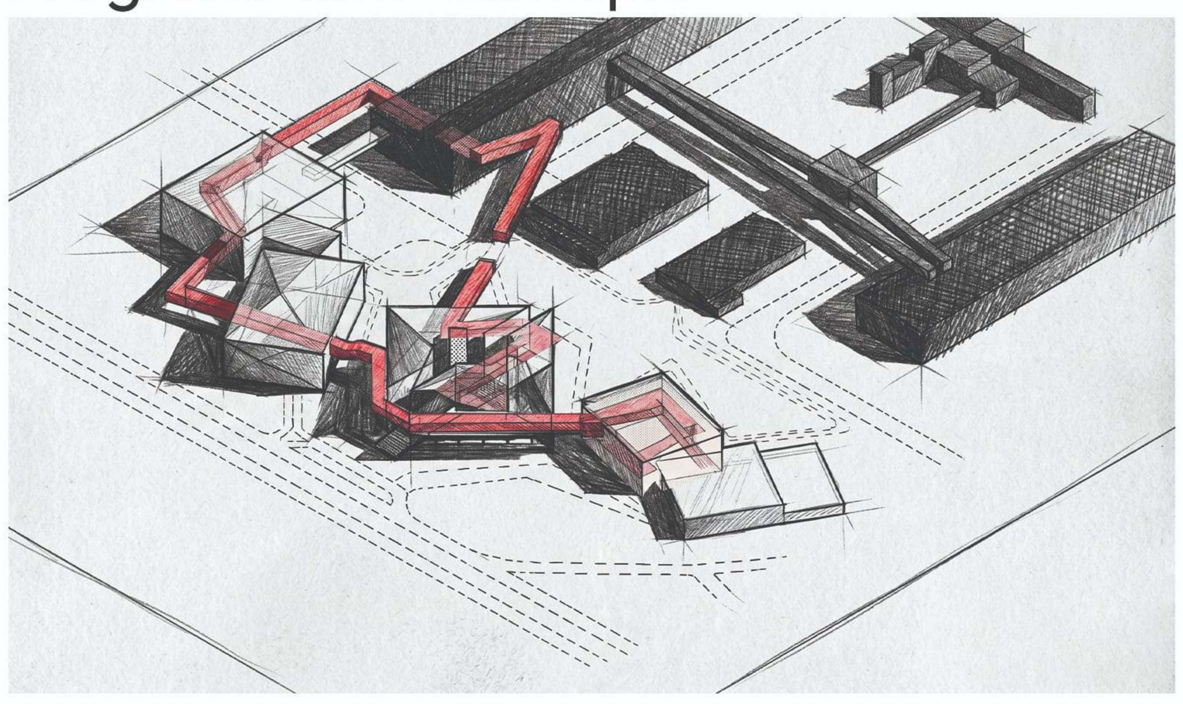
Wetland Stepping
Cleansing disharged factory water to re-use it again



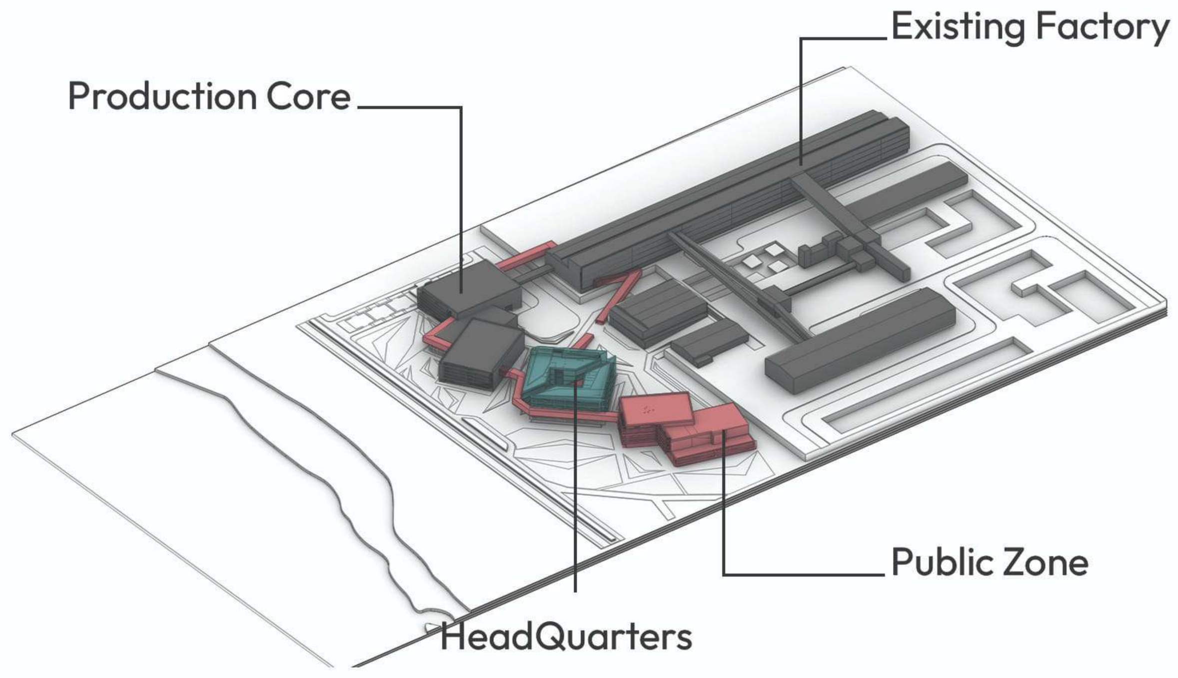
Public Tour Route
Connecting existing factory with the project through a public route touring the site



Programmatic Concepts

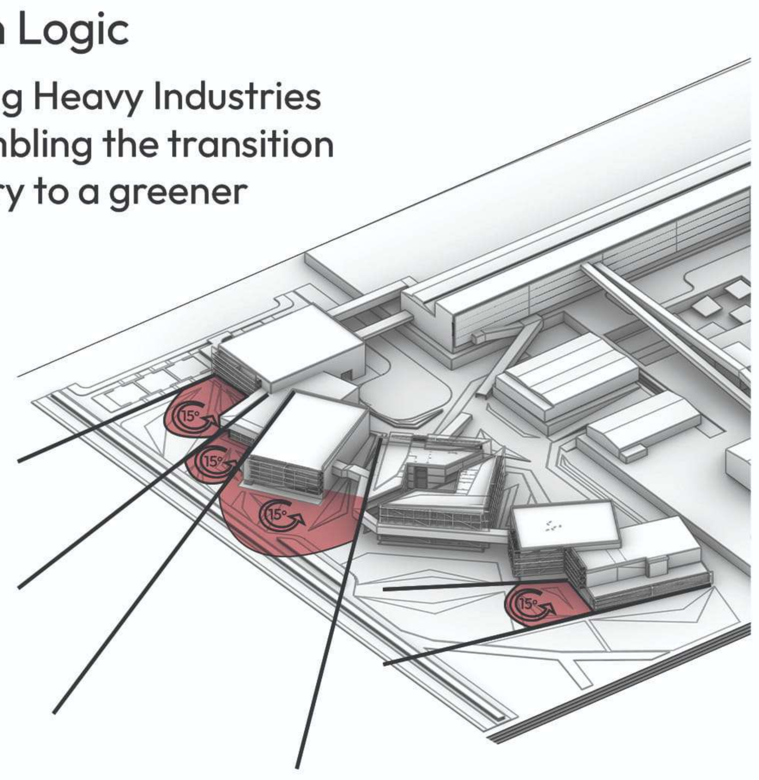


Functional Zoning

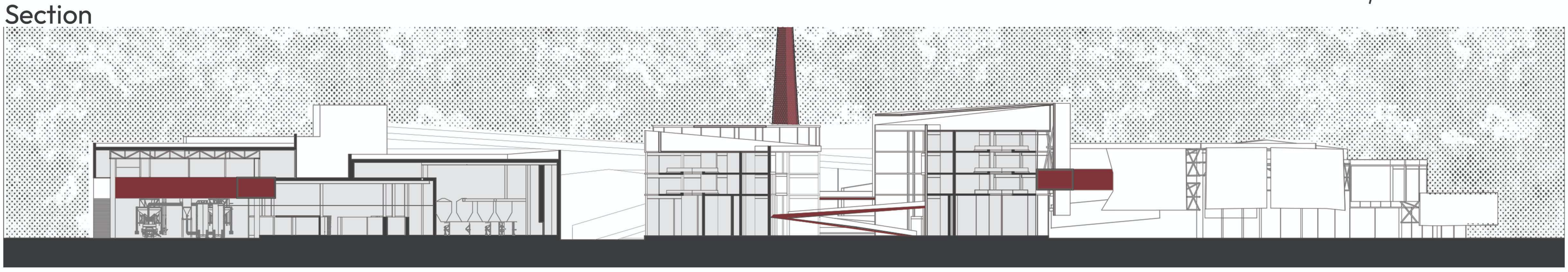


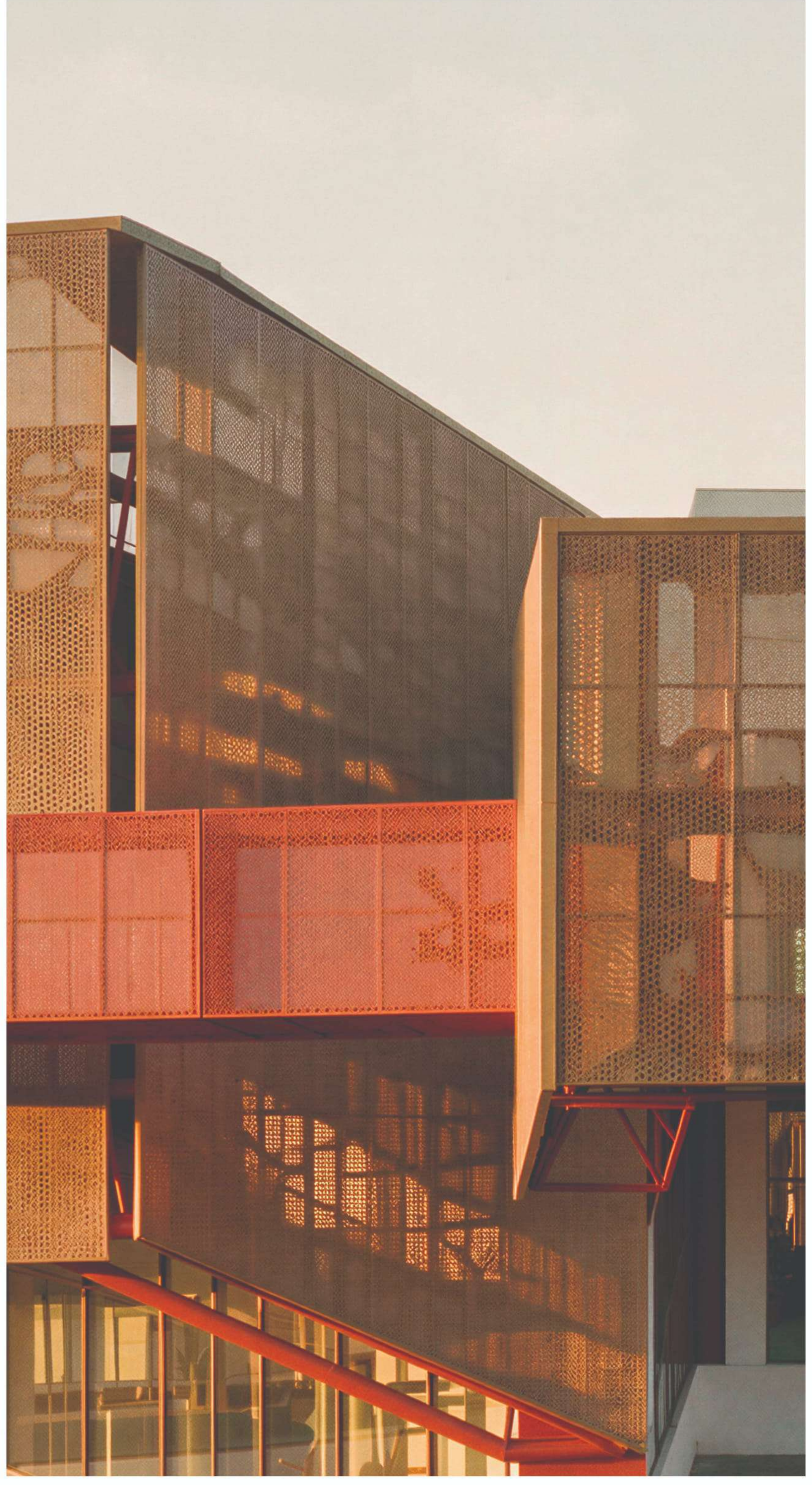
Clusters Orientation Logic

Shifting from the existing Heavy Industries grid to a new grid resembling the transition from this type of industry to a greener industry



Section

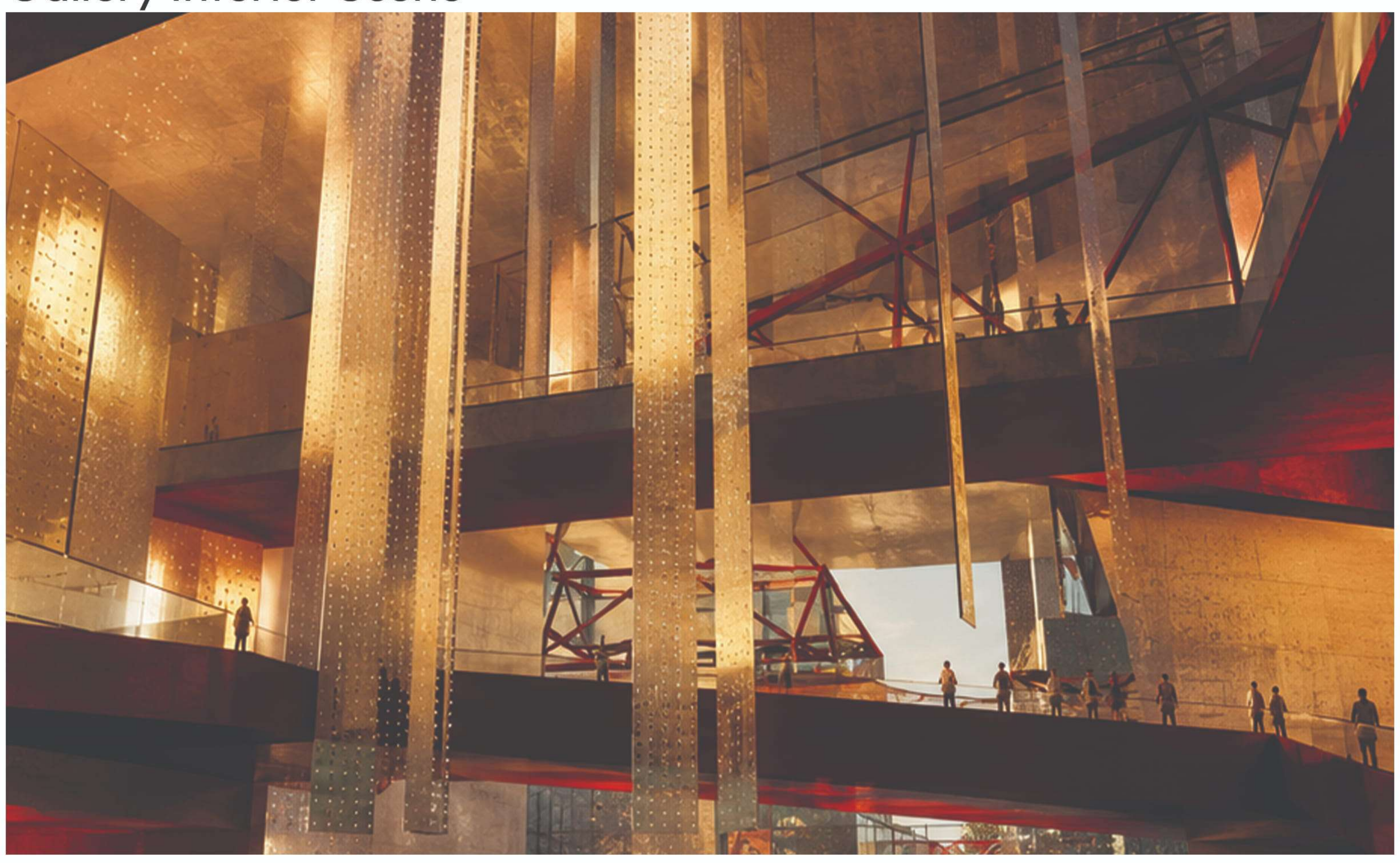




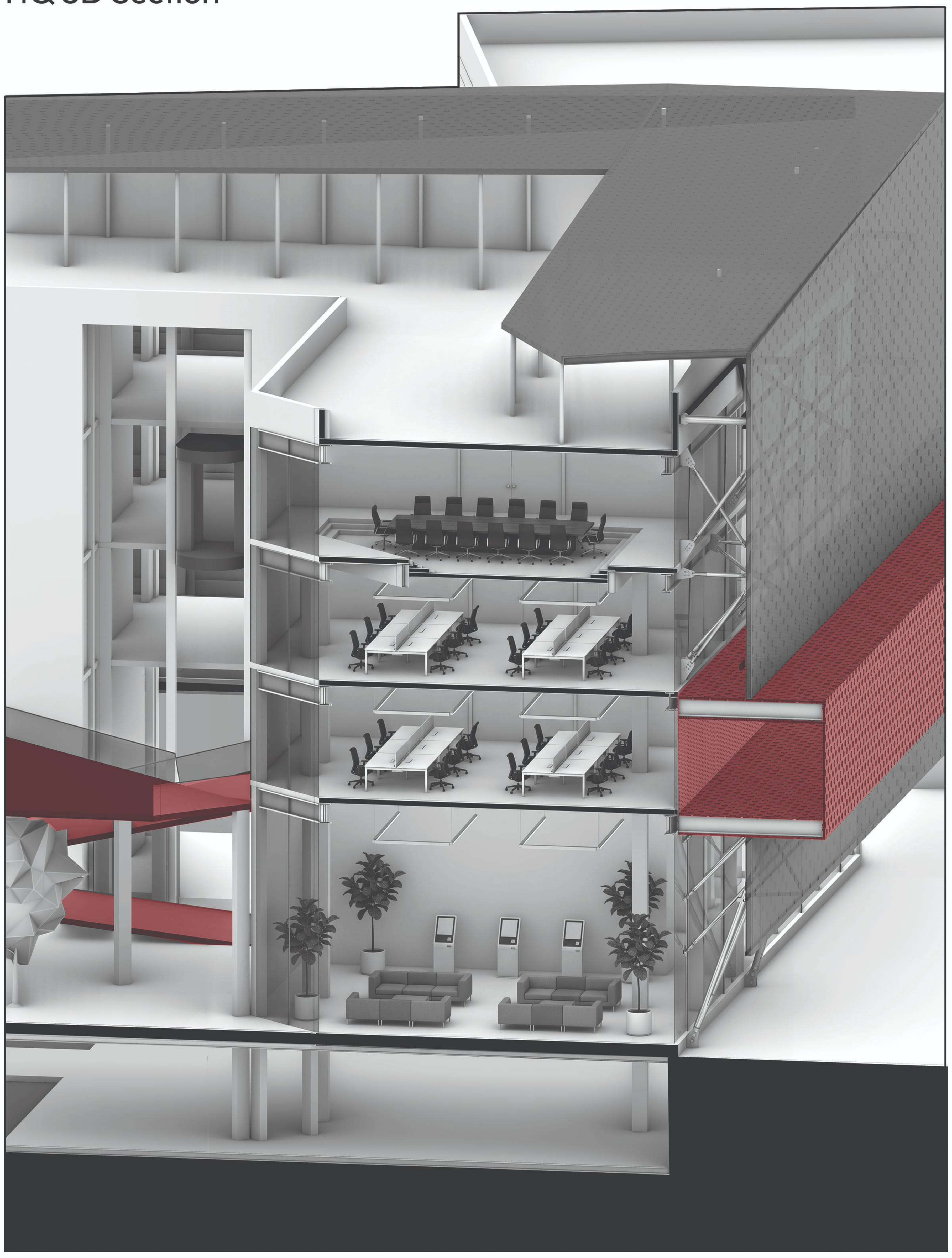
Circulation Becomes Architecture. The perforated metal skin softens the mass of the structure by filtering light and creating varying levels of transparency. During sunset lighting, the red enclosure glows warmly against the reflective glass, producing a dramatic contrast between solidity and transparency. The architecture feels simultaneously industrial, technological, and civic

The composition emphasizes the bridge as a linear thread connecting multiple building masses across a landscaped public realm. The contrast between the warm red steel, transparent glass facades, and neutral-toned volumes creates a balanced industrial aesthetic. The bridge introduces dynamism and energy.

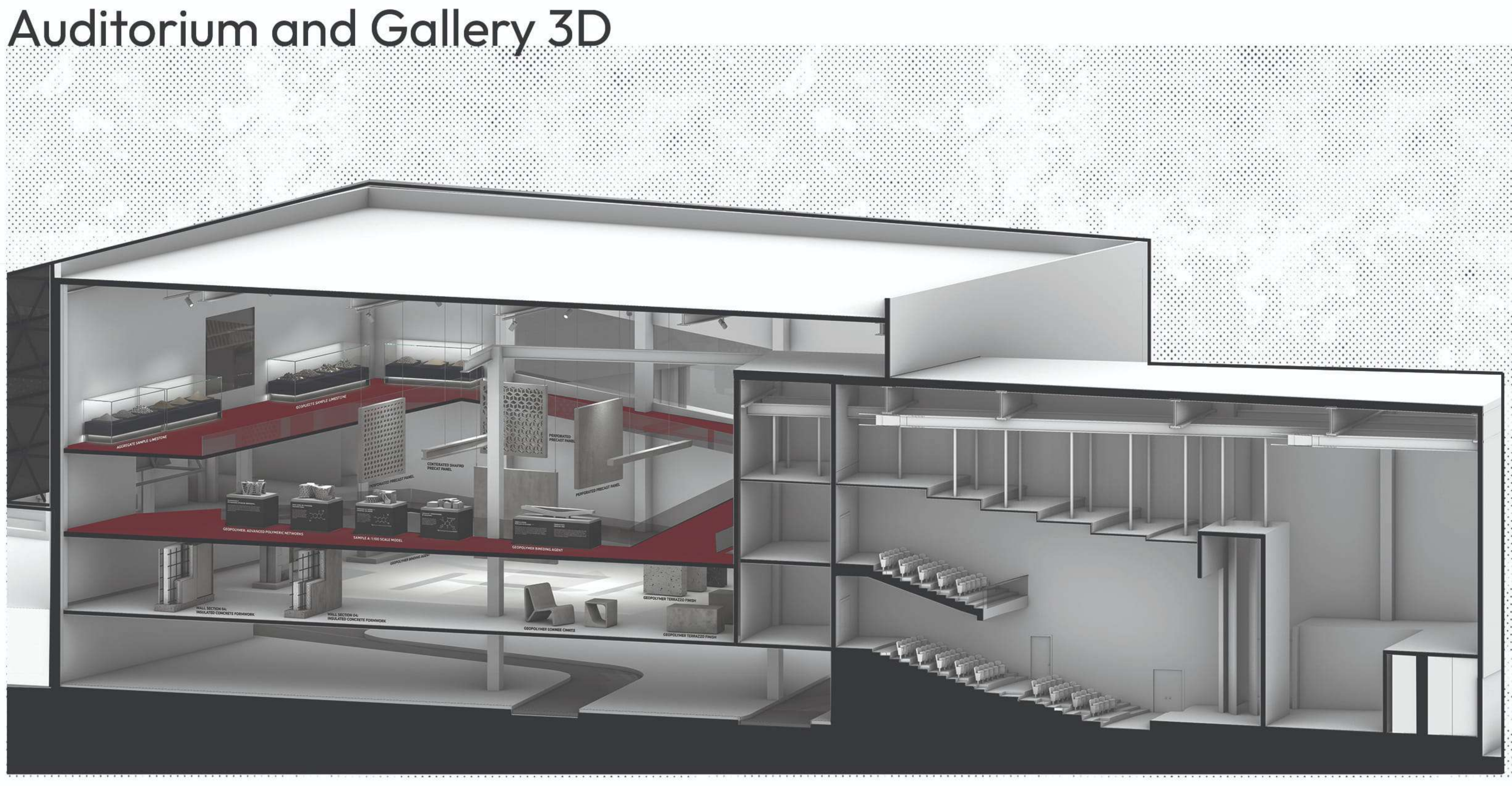
Gallery Interior Scene



HQ 3D Section



Auditorium and Gallery 3D



Production Core 3D Section