From Deconstruction to Creation: Reimagining Materials for Sustainable Architecture Through Circular Modularity - Manufacturing Facility & Materials Provider

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Acknowledgements

I would like to express my gratitude, first and foremost, to God, for providing guidance throughout my journey over the past years.

I extend my heartfelt appreciation and acknowledgement to all my tutors who have been instrumental in shaping my education during these five years. A special note of gratitude goes to my supervisors, Sima Rouholamin and Martin Spillane, for their invaluable assistance and guidance throughout this project and semester.

I am deeply grateful to my family for their unwavering support in my educational pursuits. I owe you a debt of gratitude for enduring those late-night snack runs and witnessing the transformation from a sleep-deprived student to a caffeine-fueled zombie.

Last but certainly not least, a huge shout-out to my amazing friends and colleagues. Thank you for the laughter, camaraderie, and shared memories that have made these years truly unforgettable

Contents

Thesis

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Thesis Title: From Deconstruction to Creation: Reimagining Materials for Sustainable Architecture Through Circular Modularity.

Building Typology: Adaptive Reuse and Modular Construction

Description: Located in the Tolka Valley, on the canal & adjacent to TUD Broombridge, my project aims to enhance the node of experimentation. Its doing this by fostering a the culture of reuse by extracting existing building materials and repurposing them into modular components, panels & objects.
By embracing modular construction, we create a system where diverse materials can be ingeniously assembled, allowing for bespoke designs and functions. The vision extends to waste reduction and embodies the principles of sustainability, efficiency, and creative adaptation.

To showcase the potential of this approach, the project establishes a factory built from these components and panels. This factory becomes a living testament, both exhibiting our innovative materials and functioning as a hub for production. It`s location in the Tolka Valley industrial estate provides a rich resource of vacant sheds, enabling the gathering of various materials and its transformation into architecture.

The project aims to inspire a new generation of roles and expertise, such as the "Brick Cartographer" and "Materials Nurse.", "Wood Frame Radiographer" (Architecture Review) and so on. These pioneers will shape the future of construction, working together to minimize waste, reduce embodied carbon, and construct buildings that reflect our sustainable vision.

The Tolka Valley is located in Dublin, Ireland. The valley is traversed by the River Tolka, and has been an important site for housing, various manufacturing & industrial facilities over the years.

In recent times, there has been a renewed focus on revitalizing the Tolka Valley, seeking to leverage its potential and transform it into a vibrant & sustainable area.

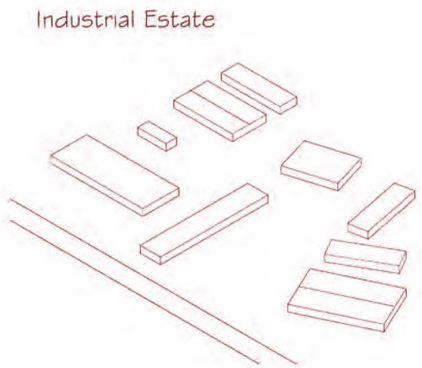
However, little efforts are being made to repurpose existing buildings, promote innovation, and foster collaboration between different industries and sectors. As such the Tolka Valley has succumbed to various “islands” being formed.

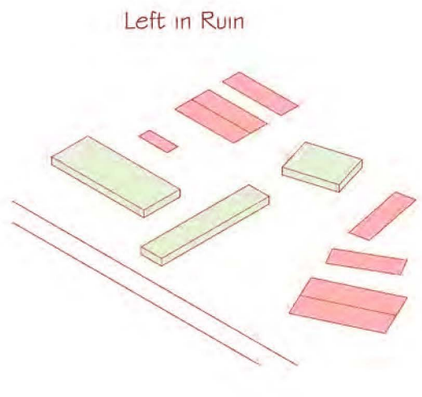
Thesis Deveopment

Whilst studying the Tolka Valley Industrial Estate, I observed numerous dormant buildings, which prompted an exploration into the underlying reasons for their current state.
One factor contributing to the vacancy of these buildings is their size and shape, which may not align with contemporary change in programme. The industrial estate may have housed industries that have become obsolete or undergone significant changes, rendering the existing structures less adaptable to new functions.

In addition to this, the materials used in these buildings might have deteriorated over time, making their retention impractical or cost-prohibitive, which would require inovative solutions.

Furthermore, economic factors, changing market demands, and a lack of investment could also play a role in the abandonment of certain buildings. By recognizing these challenges, I aim to address them through my thesis project, proposing innovative solutions that repurpose and reimagine these dormant spaces, breathing new life into the industrial estate while preserving its historical significance.





LEAVE NO TRACE - ONLY FOOTPRINTS

A Rewilded Chernobyl - Designed using AI & Photoshop

A Spectrum That is Preservation

Reconstruction

2.Restoration-This is very similar to reconstruction. It involves in-depth research into the historic details that surrounds the structure under restoration. You would attempt to use existing and original material where possible and the methods used in those periods of time. Similar to reconstruction it must harmoniously fit in with the

Fig.3.1.7 Restoration commencing on the Parthenon

Fig.3.2 Many examples of Irish Cottages- where simple maintainance is all that is required

5.Conservation-This is a very early version of what is known as letting be. You preserve a building as it currently stands and prevent any further decay. Ussually the building has minimum damage due to decay. existing but be distinguishable upon close examination.

3.Preventing Deterioration-This is where we begin take control of external factors that aid decay, and limit their impact. This can include monitoring flooding, pollution, maintenance, security, ground level alterations & contaminations. It's a great way of minimal impact on a historic monument that is undergoing decay but that

3.1.8 The Palace of Versailles- It has faced various threats over the years, including subsidence and the sinking of the ground beneath it. In the 20th century, engineers worked to stabilize the palace and prevent it from sinking further, using techniques such as injecting grout into the ground beneath it to stabilize the foundations.

Fig.3.2.1 Coventry Cathedral The Initial building made structurally sound. With an anticipated new proposal

6.Consolidation -The damage cause due to decay can range here from minimum to extreme. Here the main priority is to ensure the buildings structural integrity is classified as being safe, any other alterations are minimum.

Fig.3.2.2 Rotor Venice Bienale 2010 - Curated through stripping away existing material- Anticipated by imaging the future use

7.Curation&Anticipation- This is where we design alongside decay and where we can become part of the process of decay. We imagine the future scenario, where decay is in fact part of the end goal in design through curation and anticipate what may be.

4.Rehabilitation-This is where a building takes upon a change in design, this can range from minimum intervention to change in layout, in order to fit a new program or function (so long as there is no need for a change in structure). This can be a method of preventing decay as it prevents the building in becoming dormant in use. Which

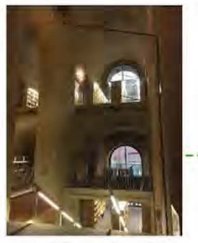
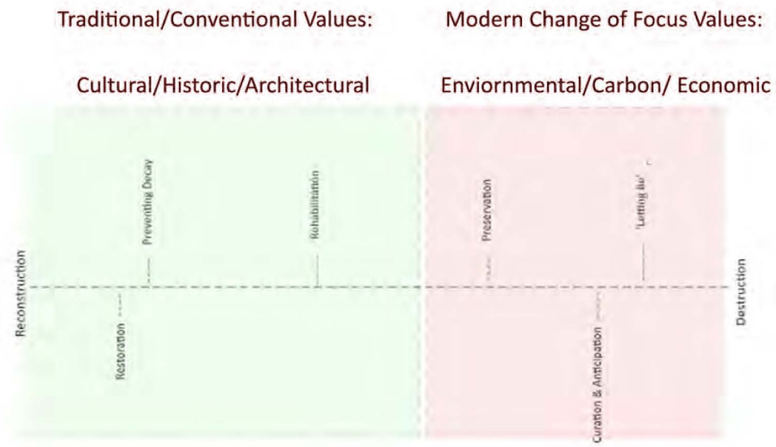


Fig.3.1.9 Les Aigües Libarary,Barcelona. Initially a Resevoir, now turned campus library to allow for maintainance that comes along with continued use

Fig.3.2.3 Alexandra Palace Theatre Dereliction retained

9.Letting be-The building is left alone, with the bare minimum intervention maybe to allow for some type of use or program.

Destruction



Ruins- "the disordered materials of considerable constructions diminished by the passage of time" (Denis Diderot, 1772)

From an early stage, I have been intrigued by 'dormant' buildings, left in decay/ruin. Through my Thesis Development, I began to investigate the history of interventions of ruin and what may lead to the determined outcome. I have found 'Value' is the variable in the equation that determines the method of intervention.

A buildings value may differ depending on circumstances.A building's age, construction, or design may have given it a deeper value. Today, however, we must challenge the conventional due to changes in focus, such as the climate crisis. This creates new values revolving around sustainability. As such other buildings may have a potential value because of their construction, enviornmental impact or carbon values in existing materials.

As part of my research, I examined existing charters and their guidlines, including the renowned Venice Charterwhich provides a set of rules for the preservation of historic buildings and sites. The Venice Charter has played a significant role in shaping preservation practices and fostering a collective understanding of heritage conservation.

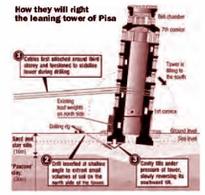
In my analysis and interpretation of the Venice Charter, I found that, while it offers valuable principles and frameworks for the preservation of historical structures, it may not fully address the complexities revolving contemporary intervention and the requirements for a sustainable future. The Charter does well to emphasize the importance of respecting the original form and materiality of buildings, which is crucial for safeguarding their authenticity and historical/cultural value. However, in today's context, there is an increasing need to balance preservation with adaptive reuse and sustainable practices.

I believe that charters like the Venice Charter should be viewed as starting points for discourse but not rigid frameworks. Preservation practices should be adaptable and responsive to changing social, cultural, and environmental contexts. It is essential to consider the sustainable use of materials, energy efficiency, and the integration of modern technologies in the preservation and intervention processes.

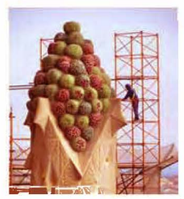
By critically examining existing these charters, I am able to conclude that each building must throughly be assessed prior to any intervention. Any method of intervention is directly correspondent to the level of value the building holds.

The Venice Charter

The Venice Charter is a document that outlines principles for the preservation and restoration of historical architecture.

Listed Article		Comments
Articles 1 Defines a building as belonging to a context, and that this building can not be worked in singularity.	 Fig.2.1.4 BESALÚ, CATALONIA - A Cultural heritage & historic setting	This is a great for understanding the importance of preserving cultural & historic values of a building and its region.
Article 2 Outlines that we should 'recourse to all sciences' and modern technique in order to ensure a buildings survival. An example would be	 Fig.2.1.5 Stabalising the Leaning Tower of Pisa	This is the only article where there is a real push for modern intervention in order to save a structure from complete annihilation.
Article 3 That monuments are not just art but also factual remnant of our past.	 Fig.2.1.6 Parthenon in Athens, Greece. Stands as physical evidence of our past	This helps to provide a more complete understanding of the history and significance of our past. In some cases, the preservation of this evidence may not be possible or may not be necessary for the conservation and restoration of a historical building.
Article 4 Is about ensuring longevity through correct maintenance	 Fig.2.1.7 Tower of London illustration by Simon Lewis - Maintanance incudes materials & technique appropiateto the buildings age & style	Revealing the traditional techniques and materials used in the construction of a historical building may be costly and time-consuming.
Article 5 Limits the modification of a building and its layout due to change of programme or function.	 Fig.2.1.8 Palau de la Musica Catalana in Barcelona by Gerard Michel. Reversible modifications made that wouldnot compromise the historical and architectural integrity of the building	The strict adherence to this principle may not allow for the incorporation of modern design elements or the adaptation of historical buildings for new uses.
Article 6 Is about being sensitive towards an existing historic site or building, and that there is no clear comparable difference in scale or visual	 Fig.2.1.9 Murcia City Hall Extention- Rafael Moneo	This can be great for respecting certain cultural and traditional values of historic areas or adjacent structures.

The Venice Charter

Listed Article		Comments
Article 7 Denies any form of complete or partial removal of a historic building from its site.	 Fig.2.2 Belle Tout Lighthouse - Set Back 100 Feet - To Provide Clear Light	By keeping the monument in its original location, we can avoid the risk of damage during the moving process.But it may not be the best option for the preservation of the monument. So it becomes a judgement call that cannot be resolved through the charter.
Article 8 The removal of decorative features must be avoided.	 Fig.2.2.1 Wells Cathedral - To Preservere facade sculptures on site? or to relocate them to a museaum	Keeping the decorative elements Preserves authenticity. However, if these are in poor condition it may affect the structural integrity of the building. It can also become very costly to restore these elements and may also not align with the public's desire to safeguard these.
Article 9 States that the aim of restoration is to preserve and reveal the aesthetic and historic value of a monument using original material and authentic documents	 Fig.2.2.2 La Sagrada Familia - They also used original materials, such as clay tiles, to repair the roof, and they carefully documented their work so that it could be undone if necessary.	Some may argue that the strict preservation requirements outlined in Article 9 can be inflexible and may not allow for necessary adaptations or renovations to be made to historic buildings. This can make it difficult to use these buildings for modern purposes, such as converting them into museums or public spaces.
Article 10 Where original methods of construction are 'inadequate', consolidation can occur but it has to be backed up by science	 Fig.2.2.3 Colosseum structure was ensured prevent unsafe collapse	This helps to preserve the authenticity and historical integrity of these buildings, which is important for understanding and appreciating their cultural significance.
Article 11 Buildings can have different periodic layers in its fabric, this article states that the destruction of one layer in order to expose another can be very controversial. This judgement cannot be biased.	 Fig.2.2.4 Great Mosque of Djenné in Mali. The mosque has undergone several renovations and additions over the centuries, and these different layers reflect the history and evolution of the building.	This is a great article, as it explores the extent required for evaluation. Even if it means looking beyond the architect,who may, in their own opinion, be biased.

The charter is essential in that it helps promote the safegaurding of cultural heritage, which can be important for understanding and appreciating the history of a place and its people. It also emphasizes the importance of maintaining the authenticity and integrity of historical buildings. But in this, the charter may become too rigid and inflexible, and may not allow for the incorporation of modern design elements or the adaptation of historical buildings for new uses. The strict adherence to the principles of the Venice Charter could make restoration efforts more costly and time-consuming, which can detract people from pursuing interventions. The charter MUST keep up to date with current situations, such as climate change, which can alter the course of action taken in preservation.

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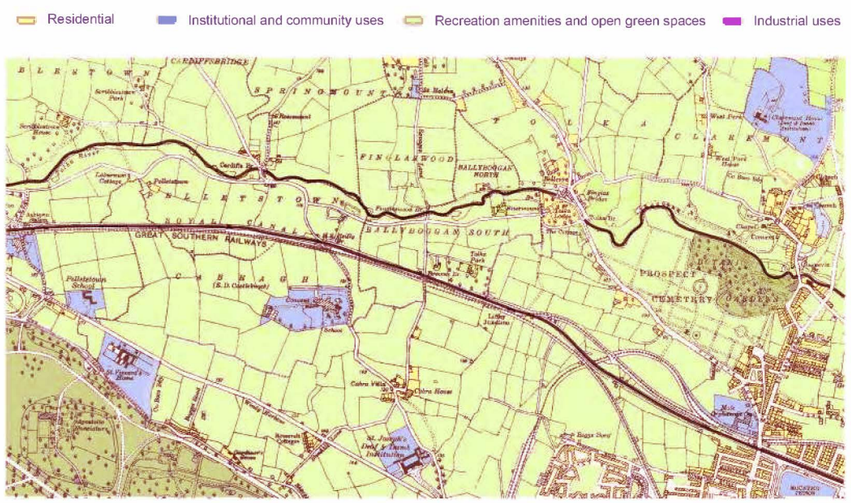
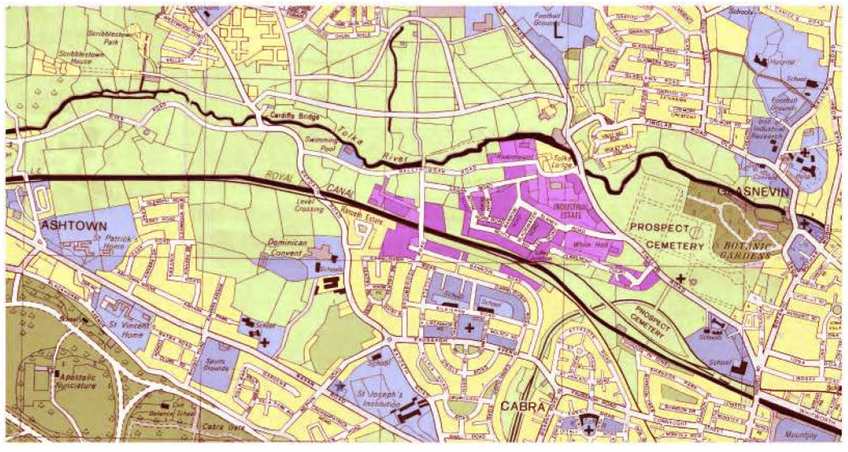
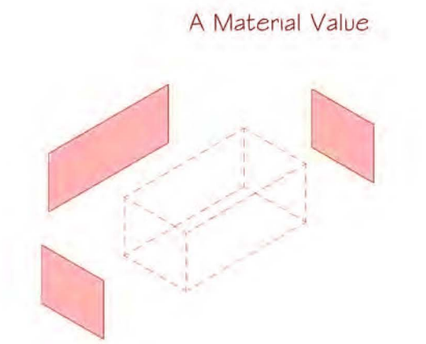


Historic Map - 1931



Historic Map - 1973
This is when the area of interest (Industrial Estate) first began to be developed - meaning it lacks any historic significance

Existing Elevation Example
Showing the potential material available.It lacks any architectural value or a use value for change of function.
This material is already existing, and time and energywas consumed in making it. Meaning it contains a Carbon Value.



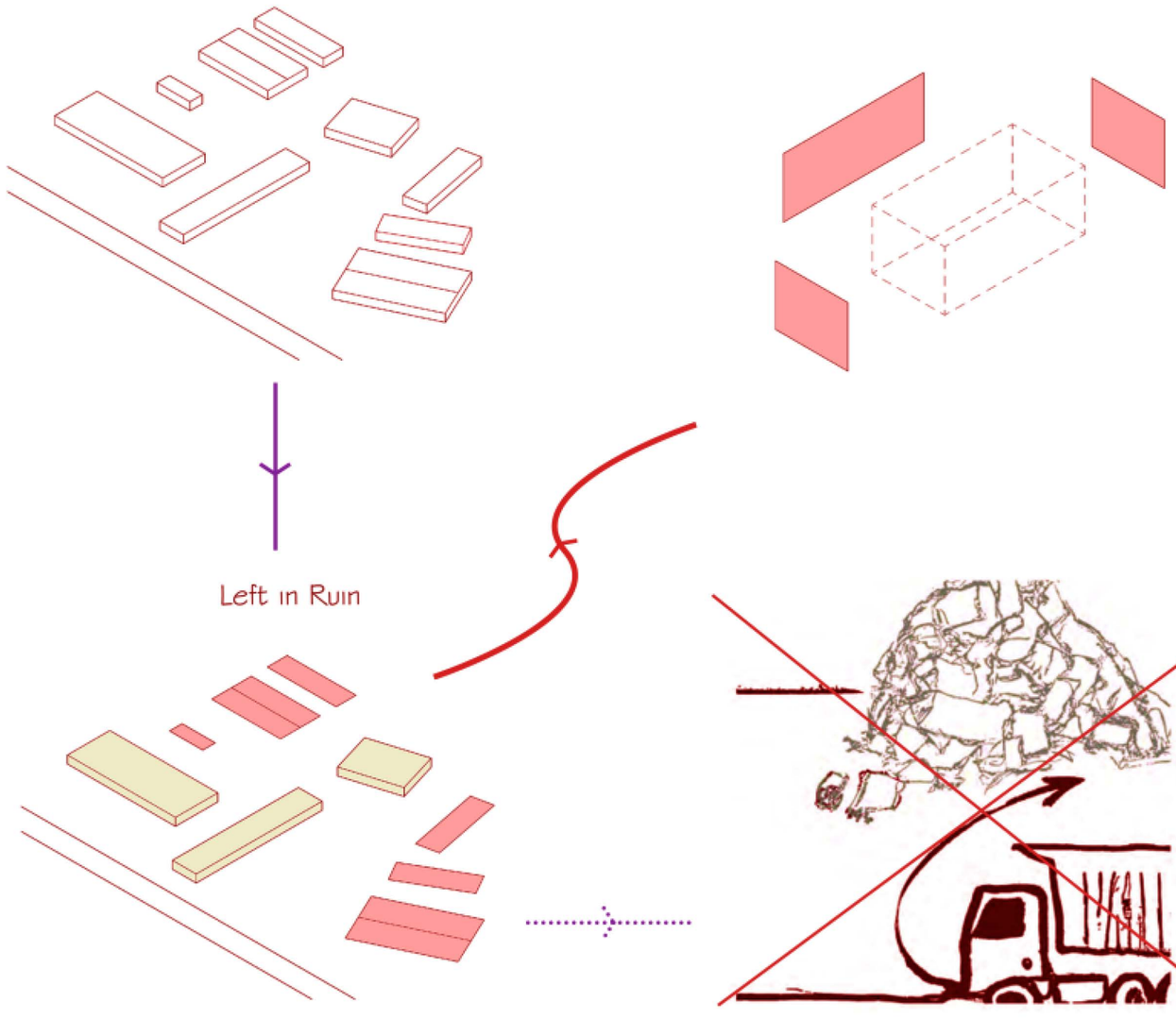
In my exploration of the Industrial Estate, I discovered that the buildings lacked significant cultural or historical value. However, I recognized a different kind of value in the materials used to construct them, as time, energy & carbon was invested in these. This realization led me to propose an intervention strategy that focuses on preserving and repurposing these valuable materials rather than the buildings as a whole. By prioritizing the reuse of materials, I aim to reduce waste, minimize resource extraction, and promote a circular economy within the construction industry.

This approach aligns with principles of sustainability and offers an opportunity to create innovative and functional spaces while reducing environmental impact. By valuing the embodied energy and materiality of existing structures, we can contribute to a more sustainable and resource-efficient built environment.

Project Objectives

my project aims to tackle the pressing issue of waste in the construction industry. Construction and demolition activities generate a significant amount of waste, which often ends up in landfills, contributing to environmental degradation. By reimagining the use of existing buildings and embracing a philosophy of deconstruction, we can salvage the inherent value of materials and objects that would otherwise go to waste. This approach not only reduces the burden on landfills but also minimizes the need for resource-intensive production processes associated with new materials.

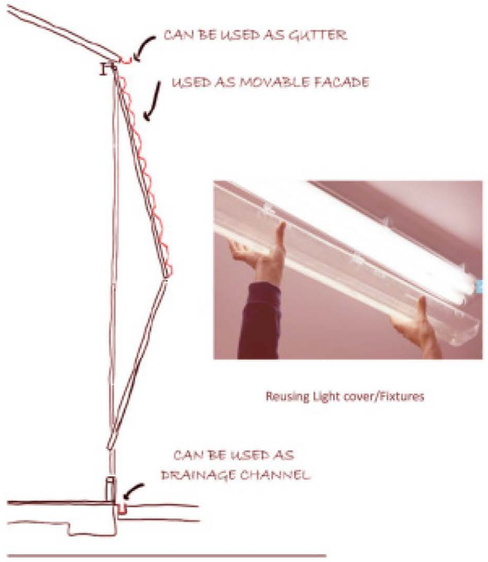
1. Waste Reduction in Construction & Demolition



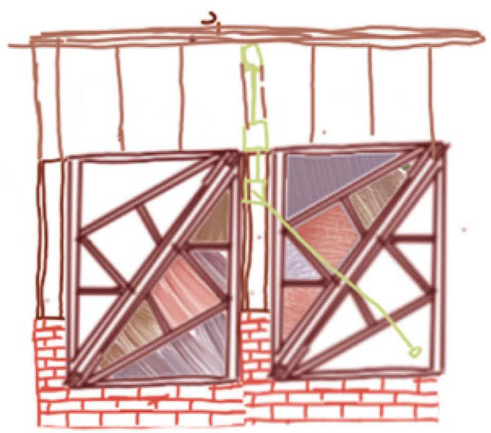
2. Fostering a New (Circular) Economy

Architecture Review: Graphic Novel - A Global Moratorium On New Construction

What then becomes interesting is the anticipated economy this can produce. The roles in society begin to shift into a spectrum of its own.



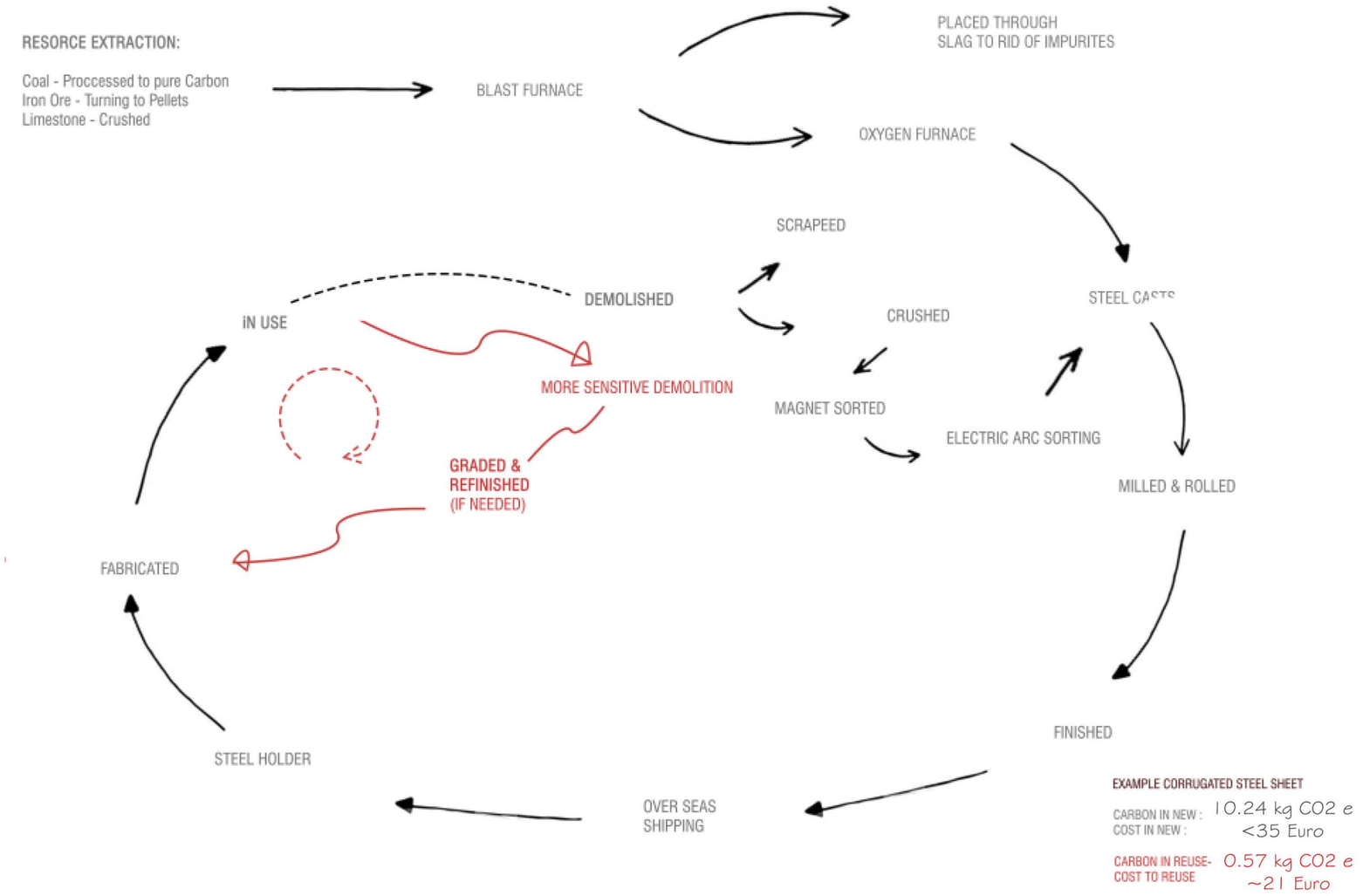
Reusing Light cover/Fixtures



My project is not just about repurposing materials; it aims to foster a circular economy within the construction industry. To achieve this, my project proposes the integration of new roles and professions that support the circularity of materials. For example, imagine a “brick cartographer” who maps and catalogs salvaged bricks, or a “Materials Pscyhologists” who designs architectural elements best suited for a new project . By establishing these new roles, we can tap into the vast potential of repurposing, promoting job creation and expertise in circular construction practices.

3. Reducing The Embodied Carbon Produced In New Construction

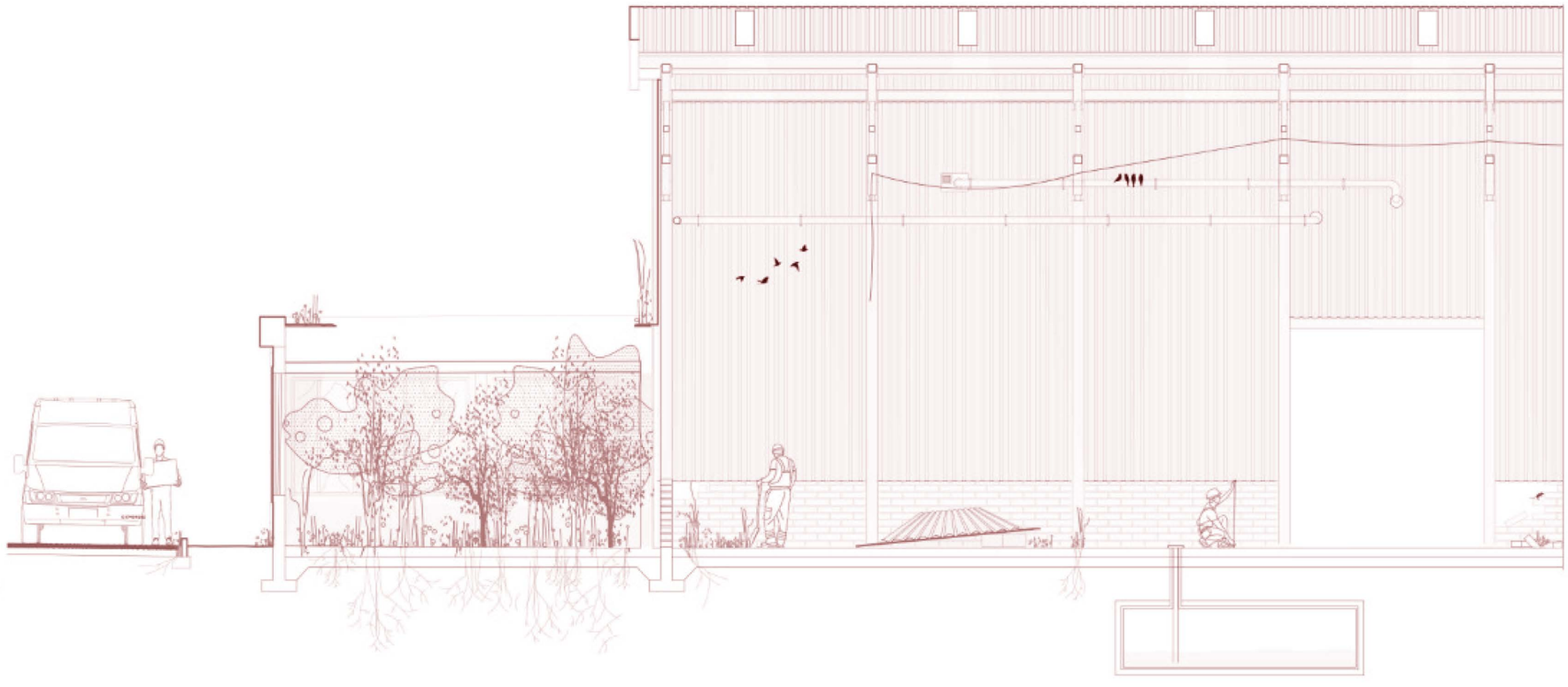
Embodied carbon, which refers to the total carbon emissions associated with the production and transportation of construction materials, is a significant contributor to climate change. My project addresses this issue by utilizing repurposed materials and components, significantly reducing the reliance on new resource-intensive production. By embracing circular modularity, we can substantially reduce the embodied carbon in new builds, making a positive impact on our environment. we can refine our current methods, optimize material selection, and explore innovative techniques to further enhance the efficiency and effectiveness of reducing embodied carbon in future construction projects.



Technical Process

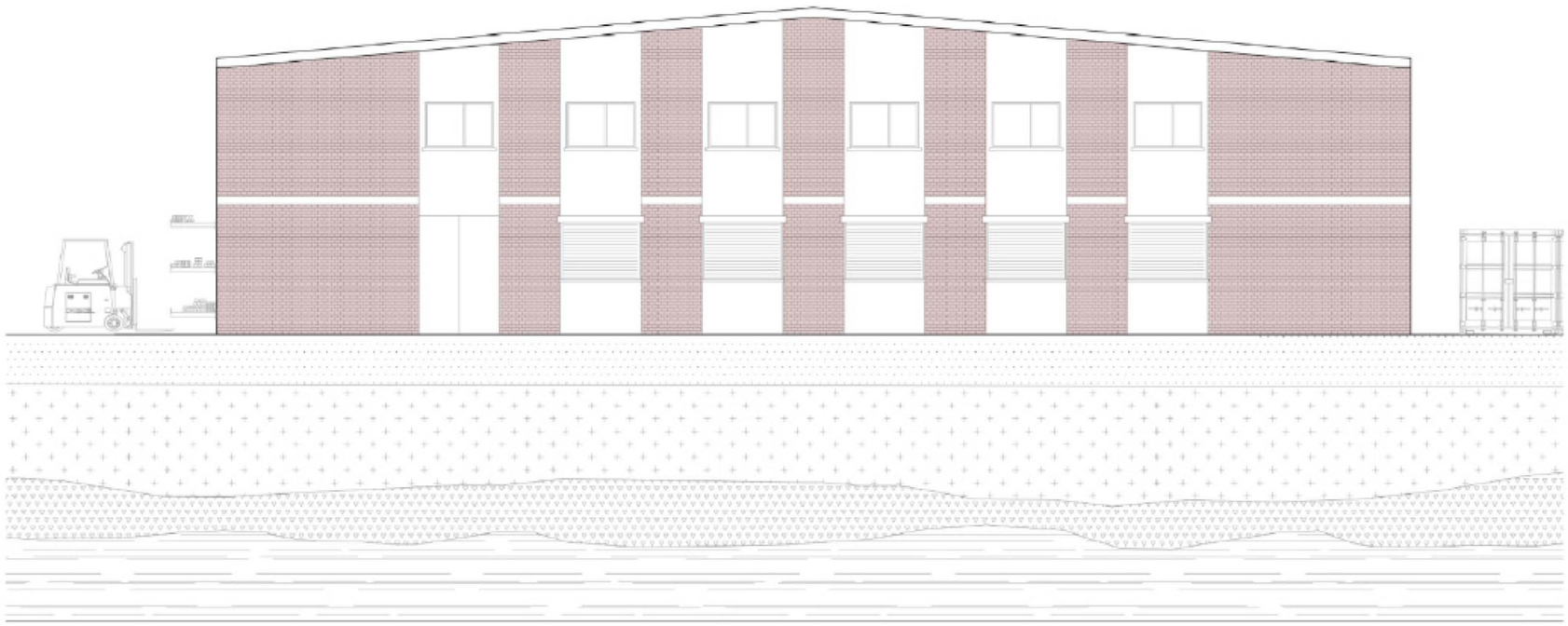
1. The Industrial Estate as a Quarry - A Material Value

TUD Broombridge



In the technical process of my thesis project, I have explored potential areas within the Tolka Valley in Dublin, showcasing the abundance of materials available for reuse. Through images, I have highlighted the potential of trusses, corrugated steel, and bricks, which are prevalent in the industrial estate.& cost

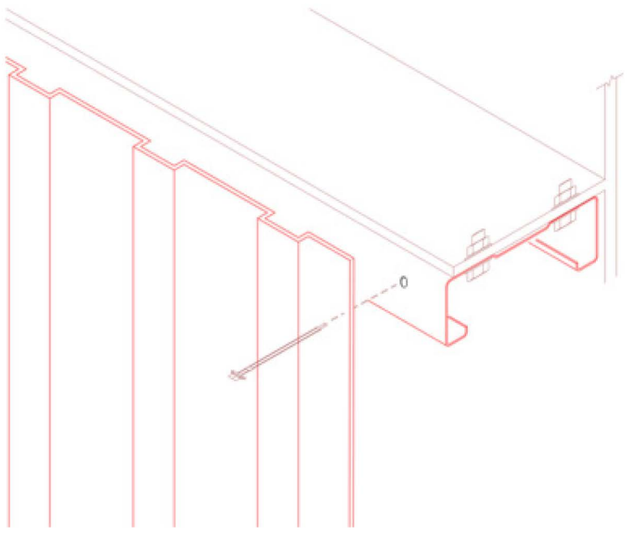
Broombridge Road



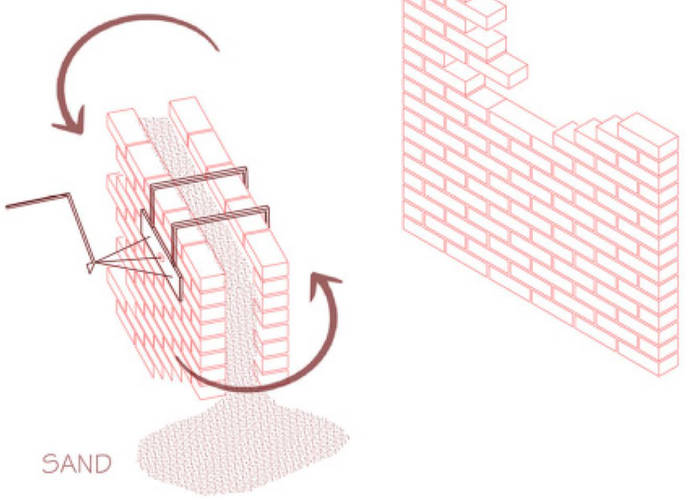
Broombridge Road

2. Determining The Best Methods of Extraction

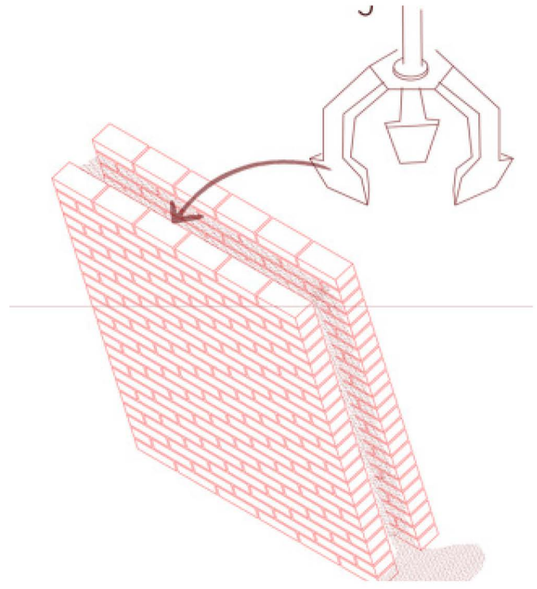
Dismantaling of Steel



Torquing of Material



Knocking of Brick



To demonstrate the dismantling process, I have presented diagrams illustrating the disassembly of materials in a sustainable, cost-effective, and efficient manner. This includes techniques such as unscrewing corrugated steel, torquing brick walls, and knocking down. By considering the easiest and most sustainable methods of dismantling, we can maximize the salvageable materials and minimize waste.

Corrugated Steel Sheeting

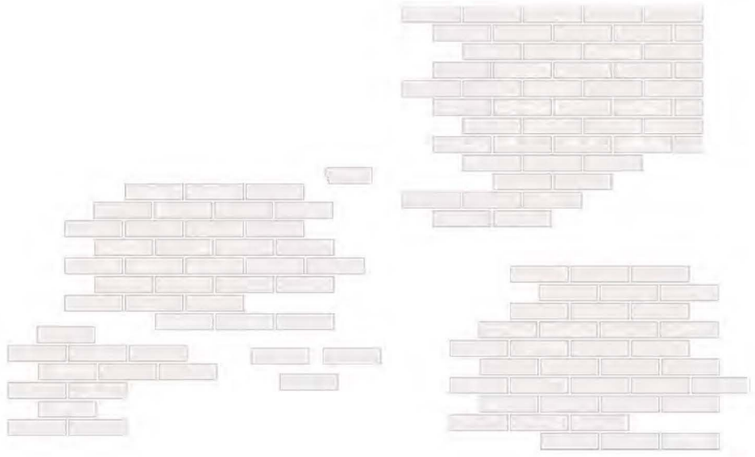
About 2 of 3 Sheets can be retouched to be reused as building material. The remaining can be furpurposed for certain furniture or other non-building materials.

Material: Corrugated Steel Sheeting

Sheet size - 2440x1090mm = 2.66m2
Sheet weight - 14.4 kg
Area: of 1 m2 - 5.41kg
1.86kg Co2 e produced per 1kg Steel sheeting
5.41 x 1.86 = 10.06kg Co2 e saved/ m2

Sheet Cost = €40.5
Per m2 = €15.22 saved

any additional sheets can be sold at 50%
market value = €7.61/m2



Demolition/dismantling of brick

This is interesting as its uncontrolled in ways, and can be used as an intersting aesthetic, almost like a puzzle

Material: brick

brick size - 215x65mm = 0.14m2
1 m2 = 7.14 = Nr.bricks
Brick weight - 2.04 kg
weight of 1 m2 - 14.57kg
0.5kg Co2 e produced per 1kg brick
14.47 - 20%= 11.6 (in 1 m2 there is ~80& brick)

11.6x 0.5 = 5.8kg Co2 e saved/ m2
brick cost = ~ €1.2
Per m2 = €7 saved

Its not a whole lot but, worth it in the long run

Intact Brick

This is expected to be a great outcome
but can leave broken pieces along the edges.

Material: brick

brick size - 215x65mm = 0.14m2
1 m2 = 7.14 = Nr.bricks
Brick weight - 2.04 kg
weight of 1 m2 - 14.57kg
0.5kg Co2 e produced per 1kg brick
14.57 x 0.5 = 7.3kg Co2 e saved/ m2

brick cost = ~ €1.2
Per m2 = €8.6 saved

Thinking about whay is the most efficient way to use the deconstructed materials as is or with minimum intervention. Reduction in further carbon & cost

Èxample : Corruhated Steel Sheeting

	A	B	C	D	E	F
1	Process Corrugated Steel	Time per Sheet	People	Total Time		
2	Dissassembling	5m	2	10m		
3	Transport (T>V>I>E)	12s	1	12s		
4	Unloading & Setting up	7s	2	10s		
5	Angle.G w/ Steel Brush 2 Sides	6m	1	6m		
6	Turning Over	2s	2	4s		
7	Painting	4m	1	4m		
8	Change of Paint	30s	1	30s		
9						
10					TOTAL TIME per Panel	~24m 54s
11					Wages	20 /hr
12					Total Cost	8.33 Euro

Figure 1 Labour Cost for Retouching Steel Sheeting (90% of Total Costs)

For 16 minutes of tool use:

Assuming a cordless tool with a power consumption of 500 watts and an emission factor range of 0.7 kgCO2e/kWh:

Power consumption in kilowatt-hours (kWh): 500 watts / 1000 = 0.5 kWh

Maximum emissions: 0.7 kgCO2e/kWh * 0.5 kWh = 0.35 kilograms of CO2e

For 4 minutes of liquid painting:

Assuming a paint emission range of 0.3 kilograms of CO2e per liter:

Surface area of one side: 2440mm x 1220mm = 2.98 square meters
Surface area of both sides: 2.98 square meters x 2 = 5.96 square meters

Minimum emissions: 0.3 kgCO2e/L * (5.96 square meters / 8 square meters per liter) = 0.2235 kilograms of CO2e

Combining the emissions from the tool use and painting:

Total emissions: 0.35 kilograms of CO2e + 0.2235 kilograms of CO2e = 0.5735 kilograms of CO2e

Therefore, the maximum estimated carbon emissions for 16 minutes of tool use and 4 minutes of liquid painting would be approximately 0.5735 kilograms of CO2e.

~ 7 Euro for cost of a steel sheet refinish.

Assuming I would require a 3x mark-up in price (**1x** cost, **1x** Additional expensis (electricity,gas ,unforseen costs), **1x** proft), The sale price ~ 21 Euro

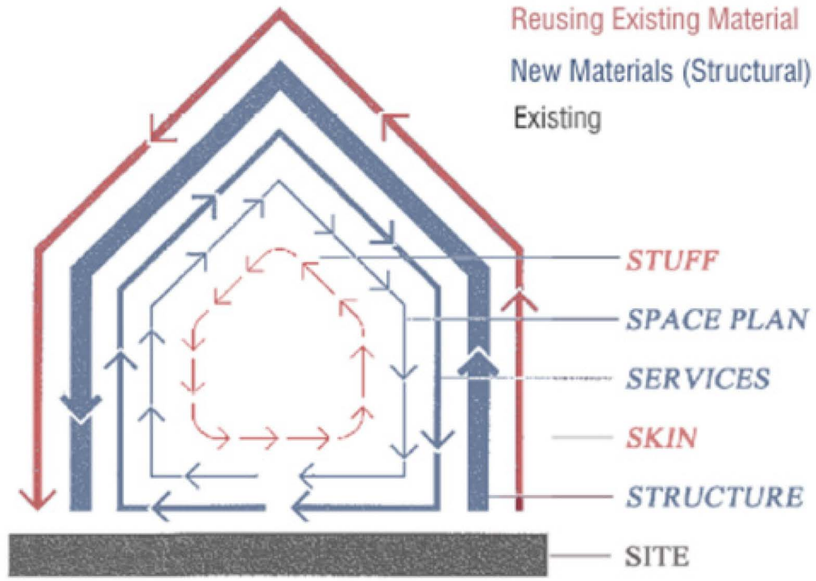
Cost of new = >35 Euro

To add to this, nothing to this scale is actively done. By essentially becoming a builders provider, we would cut the need for the “middle-man” that is the main contractors, subcontractors, steelfabricators. All of which would add to eachothers cost in the tendering stages of a project, in order to make it worth their time.

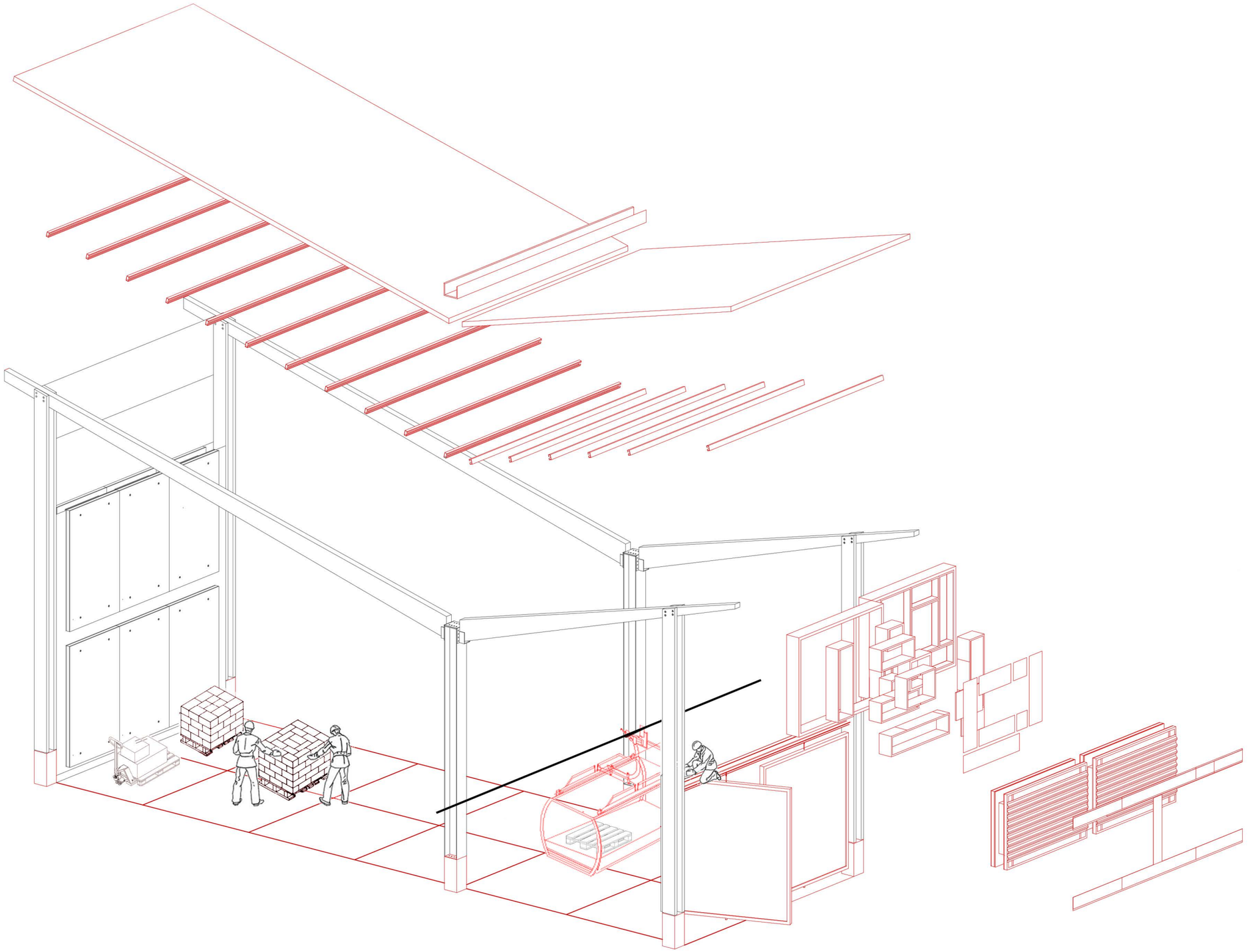
3. A Material Inventory

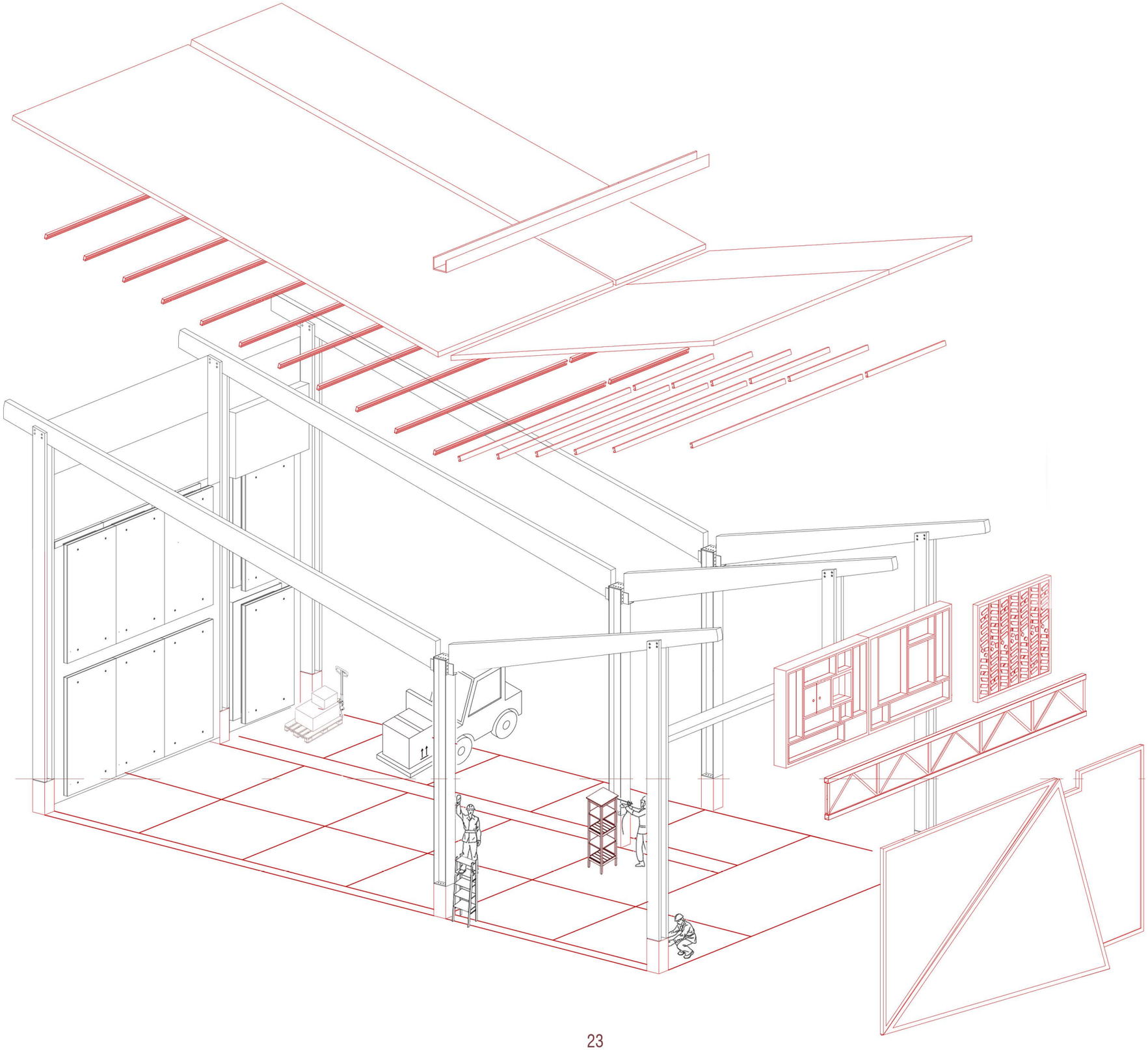
Central to the technical process is the creation of a material catalogue and inventory. I have emphasized the importance of keeping a record of the salvaged materials and carefully considering the best and most suitable ways to reuse them. This may involve a change in their original function or minimal fabrication to ensure their integration into new designs. By cataloguing and evaluating these materials, we can make informed decisions and unlock their potential for sustainable reuse.

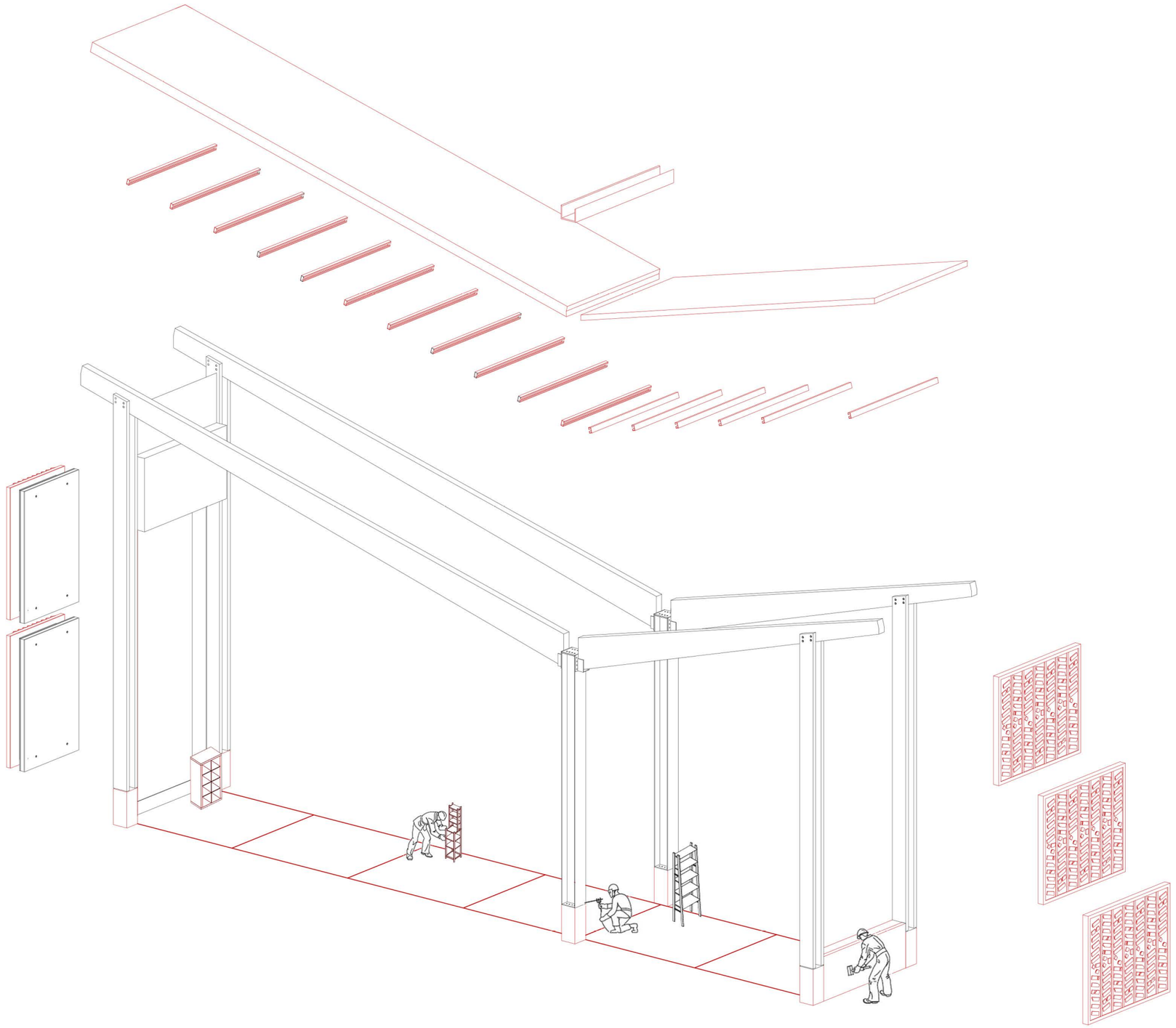
In terms of architectural focus, my project centres around the external envelope and the objects within the building. I have provided exploded axonometric diagrams to showcase the individual components and panels that form the basis of my design approach. By prioritizing the skin and the interior elements, we can create a cohesive and visually compelling architectural language that celebrates the character and materiality of the reused elements.



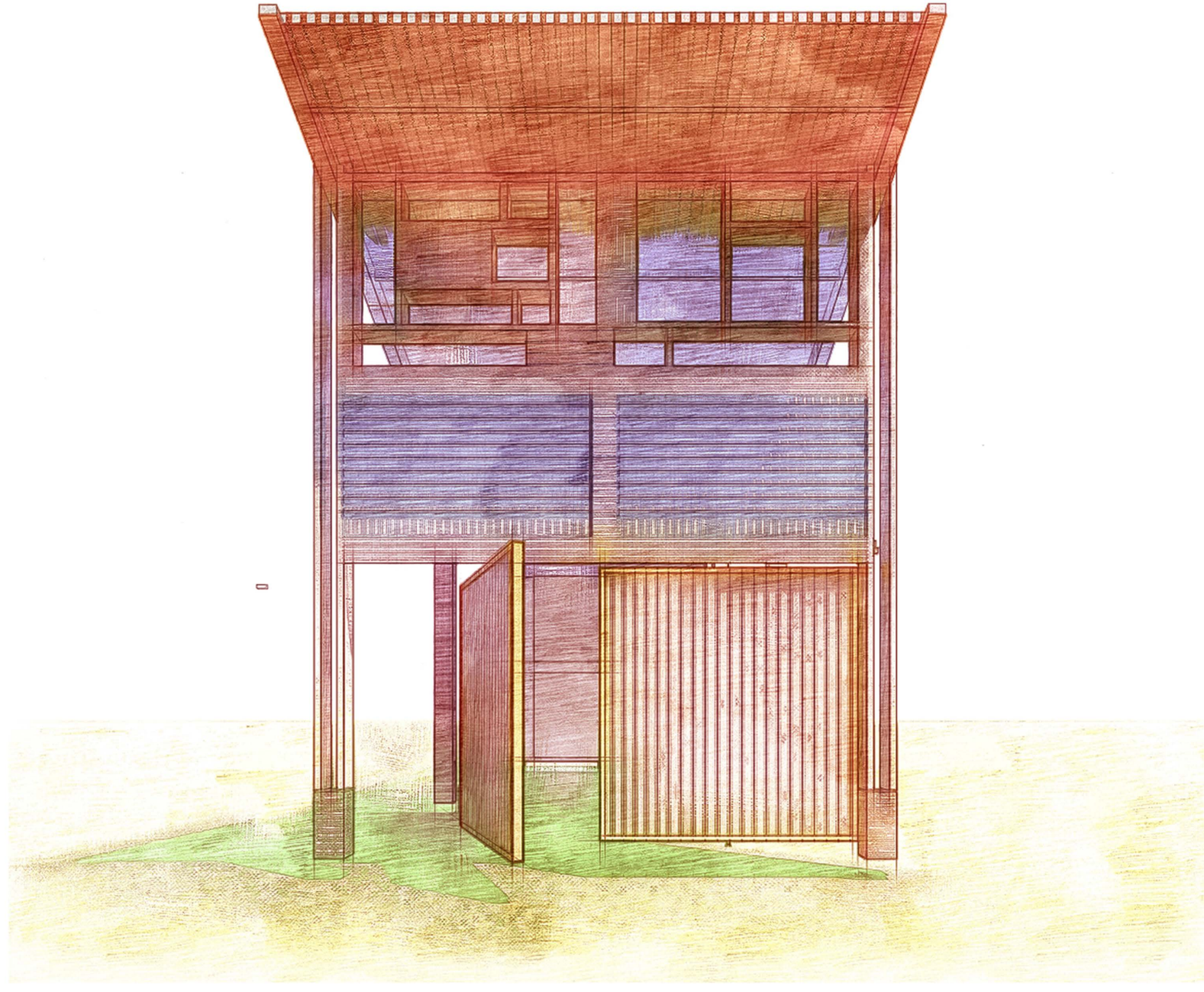
Shearing layers of Change (Brand, S. 1994)

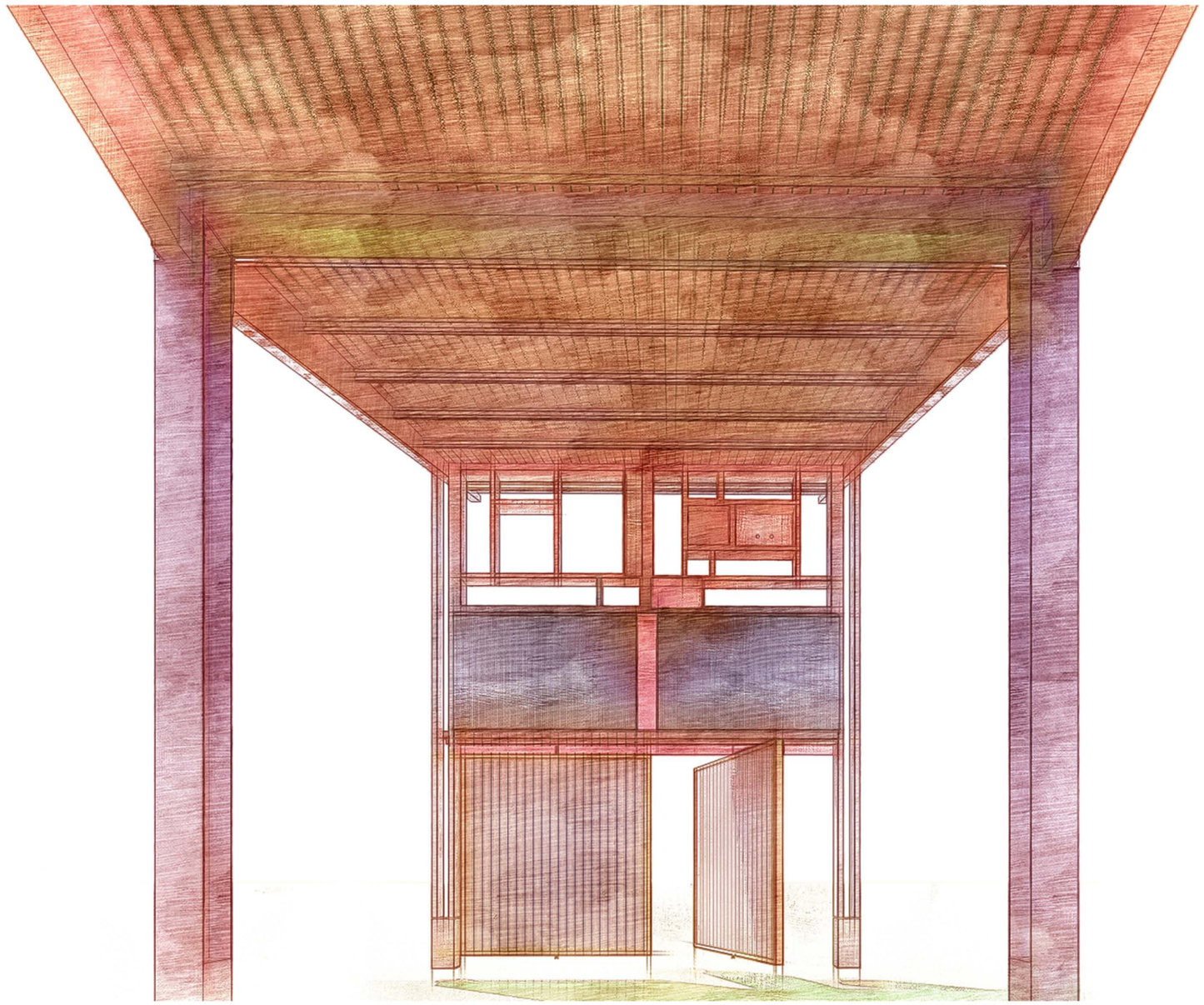


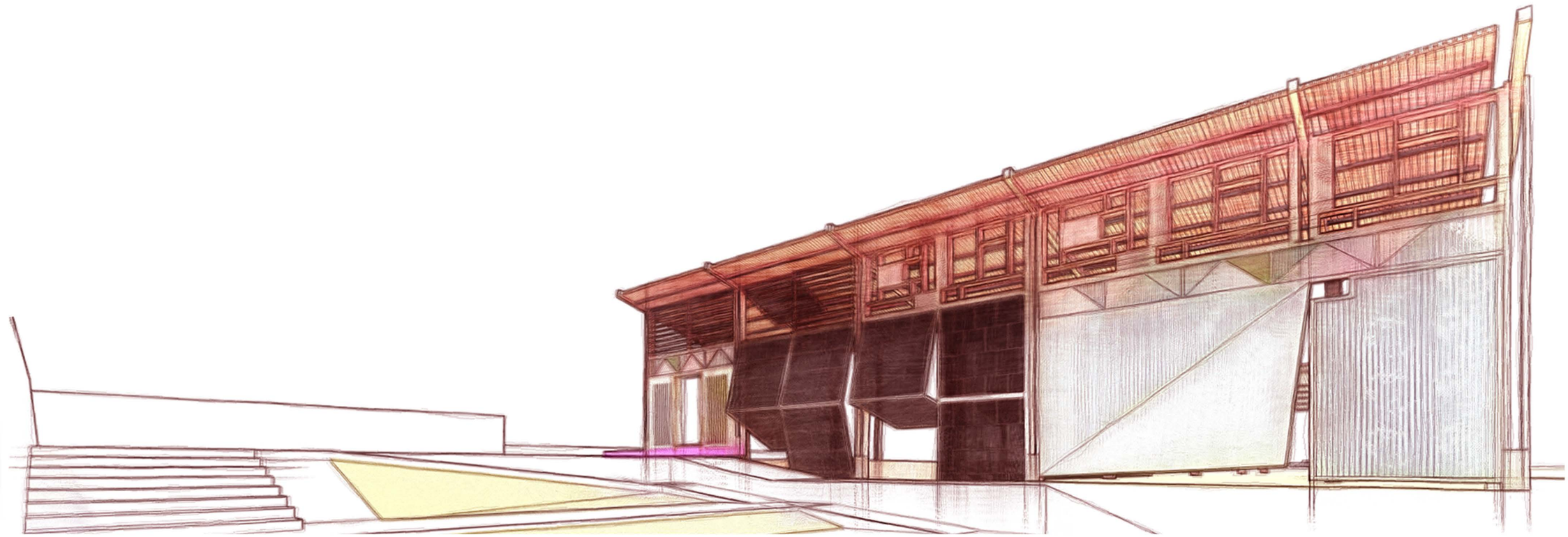


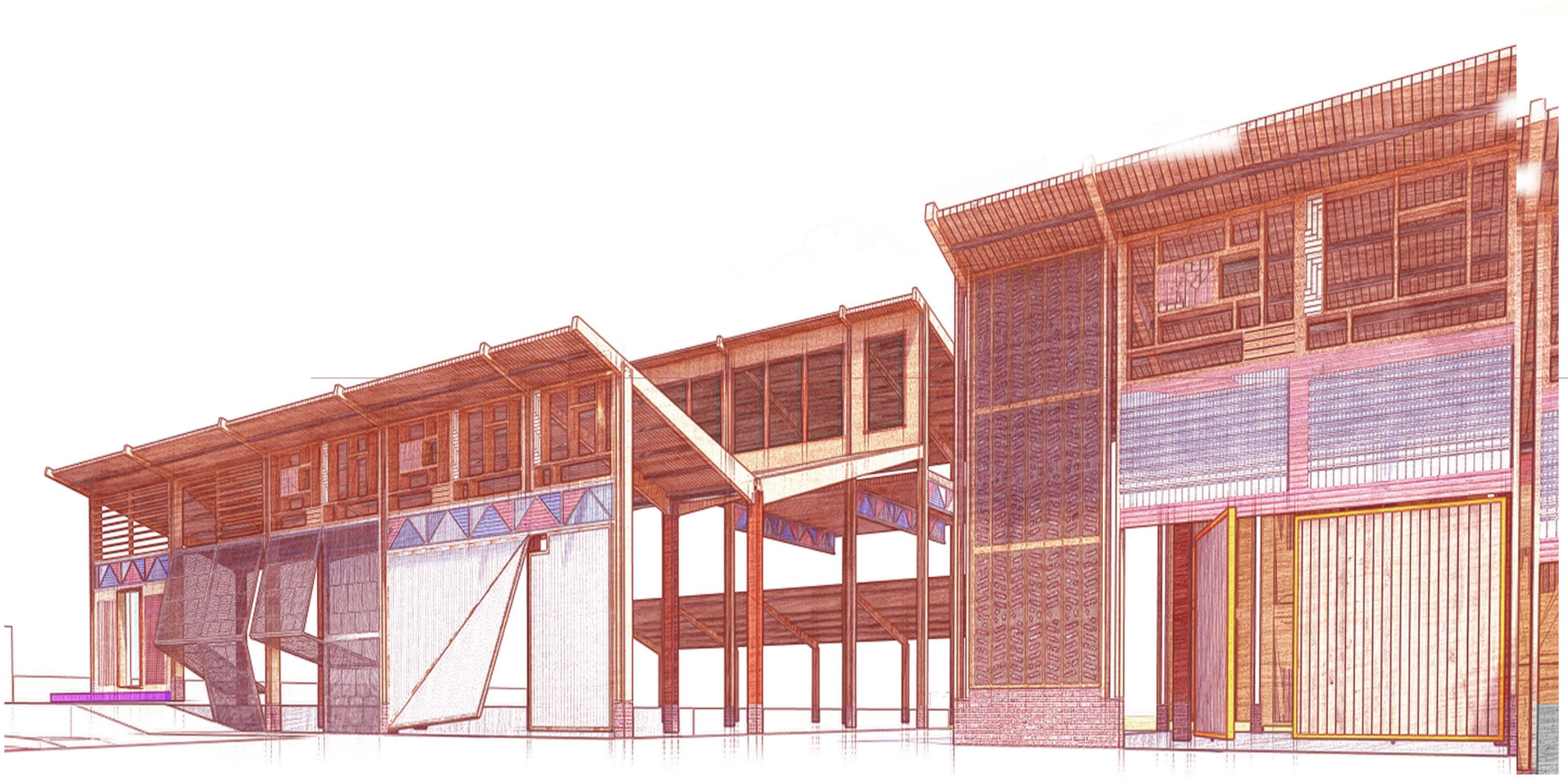


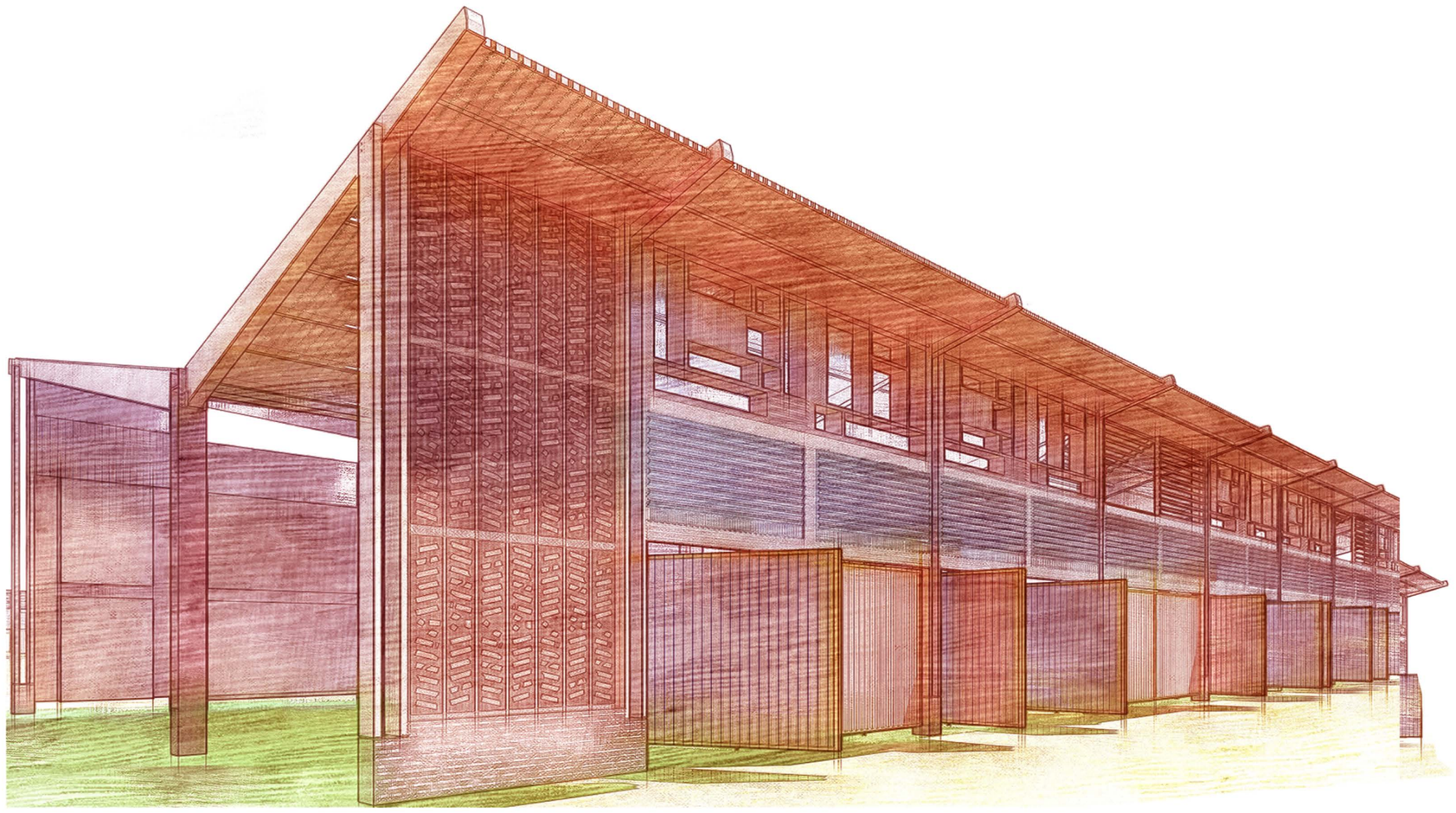
To bring the vision to life, I have included rendered images that capture the essence of the materiality and aesthetic qualities of these reused elements. These visuals offer a glimpse into the architectural potential and demonstrate the unique character that emerges from repurposing materials with a rich history.





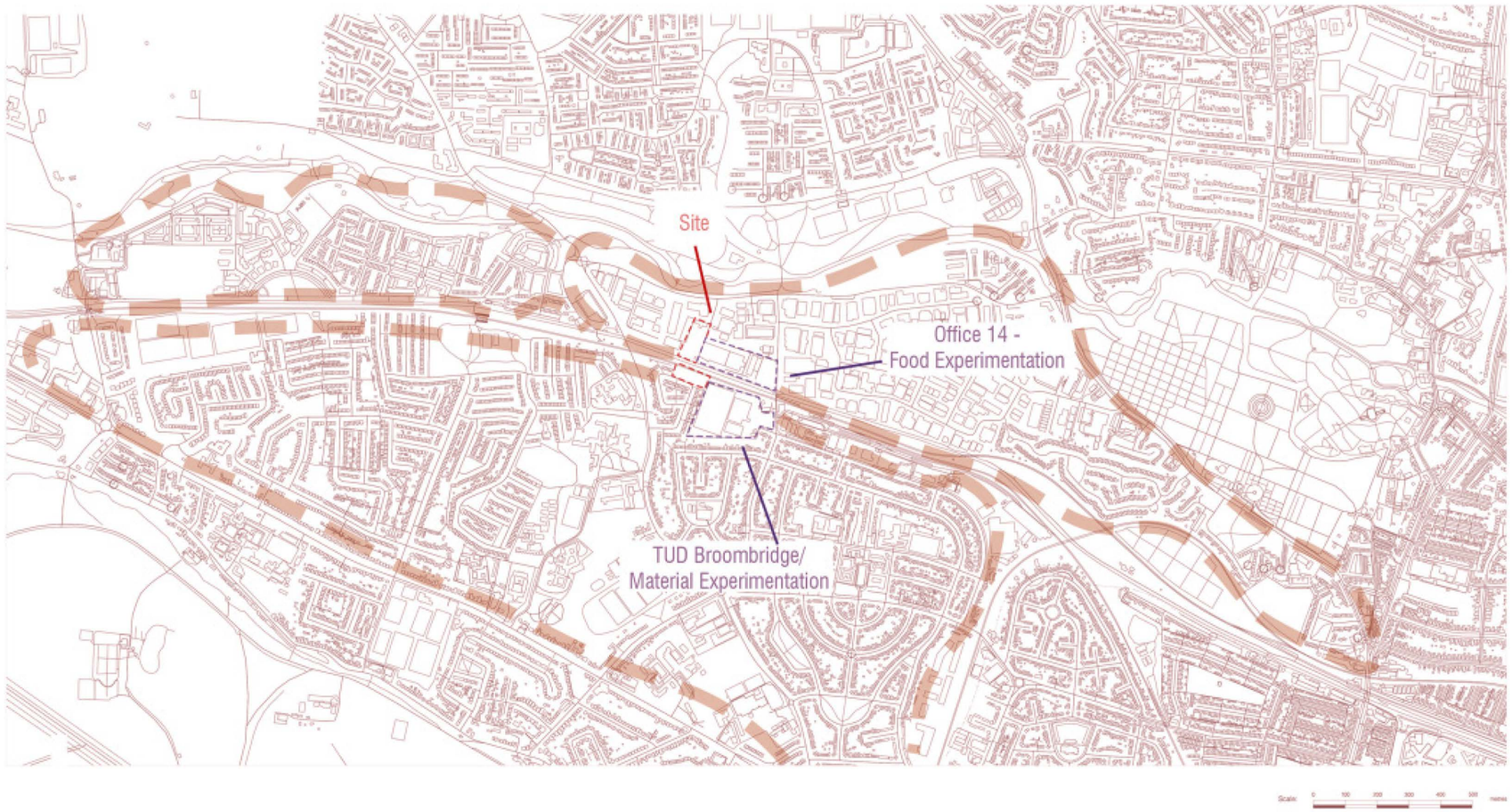




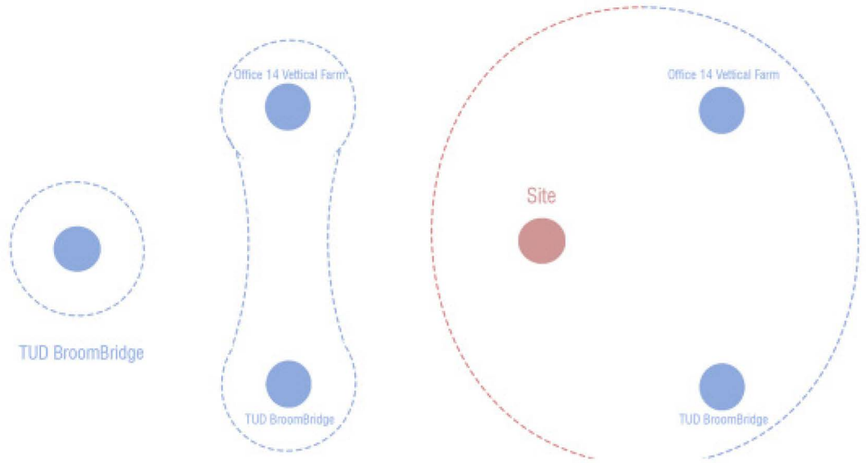


Site Response

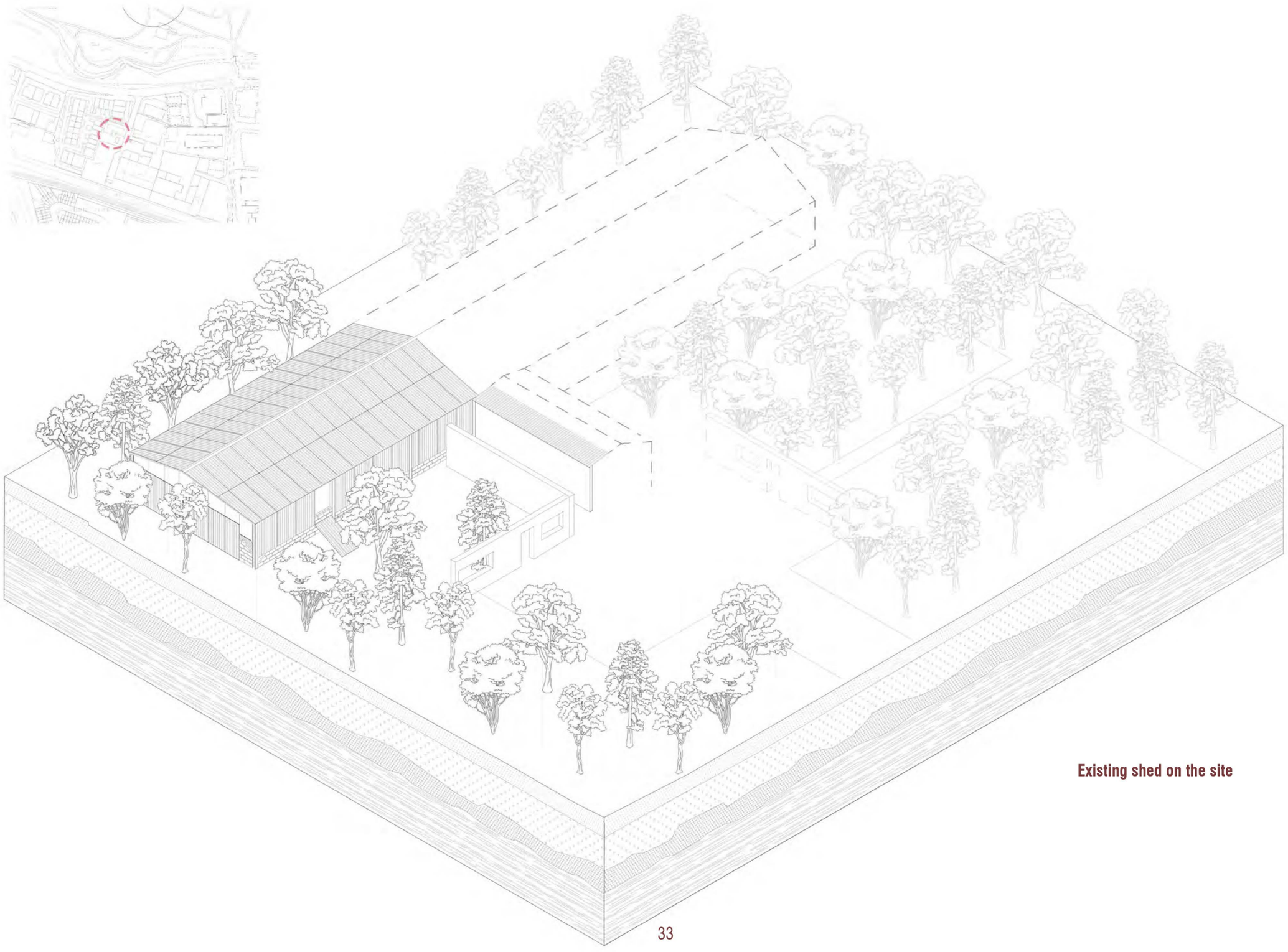
1. Site Location - A Node of Experimentation



In considering the site for my thesis project, I carefully selected the Tolka Valley Industrial Estate, strategically located adjacent to TUD Broombridge and in close proximity to my previous group's project on food production. This location provides a unique opportunity to create a node of experimentation, fostering collaboration between disciplines and promoting a culture of innovation.



By situating my project in this context, I aim to strengthen the area's identity as a hub of experimentation, encouraging the development of new future roles within the field of sustainable architecture and construction.
Through this interconnected network of projects, the industrial estate can become a vibrant center for creative exchange, knowledge sharing, and research.



Existing shed on the site

GEOTECHNICAL CONSULTING SERVICES LTD.

BOREHOLE RECORD Inv ID 3297

LOCATION: Broome Bridge	CLIENT: Dublin Corporation	Borehole No. G2
		Sheet I of I
EQUIPMENT: Pilcon Wayfarer 1500	Boring Commenced: 20/6/77	Coordinates
	Boring Completed: 20/6/77	Ground Level

DESCRIPTION	Reduced Level	Log	Depth	Thickness	SAMPLES/TESTS Depth	Sample Type	Sample No.	Test
CLAY and rubble Fill				1.00				
	34.42		1.00		1.00	D	2044	
Stiff brown gravelly sandy silty CLAY					1.20	U	2045	
				2.50	2.50	D	2046	
	31.92		3.50		3.50	D	2047	S.P.T. N=Refusal
Black gravelly silty CLAY with cobbles and boulders				0.60				
	31.32		4.10					
Obstruction (Chiselling 1 Hr.)								

GROUND WATER OBSERVATIONS:

Water struck at 2.00m Water level at the end of the day 1.00m.

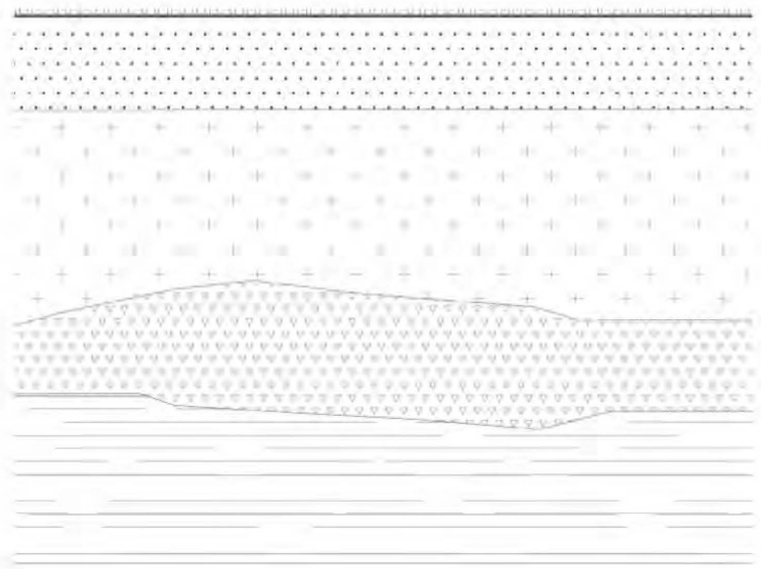
SAMPLE/TEST KEY

D Disturbed Sample
B Bulk Sample
W Water Sample
I Piston (P), Tube (U) or Core Sample (length to scale)
S.P.T. Standard Pen. Test
V Vane Test
C Core Recovery (%)
R.Q.D. Rock Quality Designation (%)

REMARKS:

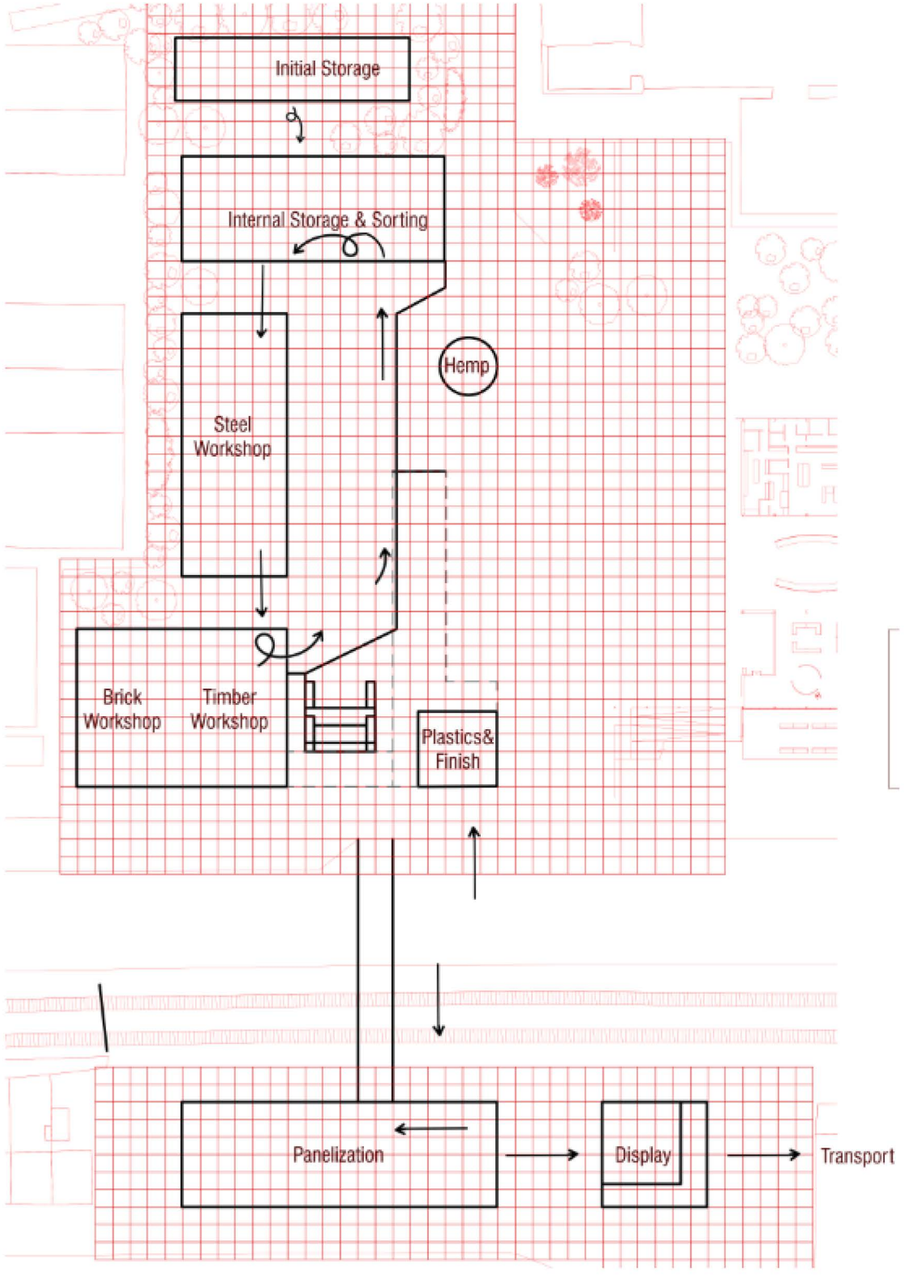
Total chiselling 1 hour

Vanessa Press Ltd. 5451.



To respond to the site's needs and the requirements of my project, I started by establishing a grid system based on the dimensions of the panels used in my design. This grid informed the organization of key areas such as the initial drop-off zone, storage facilities, workshops, display areas, and transportation routes. This systematic approach ensures efficiency in material handling and creates a logical flow within the site.

2. A Required Process Overlayed On a Grid



Working Enviornment

Fig.2

GMIT Furniture College Letterfrack

O'Donnell + Tuomey

Ligh

Structure

Services

–

Fig.3

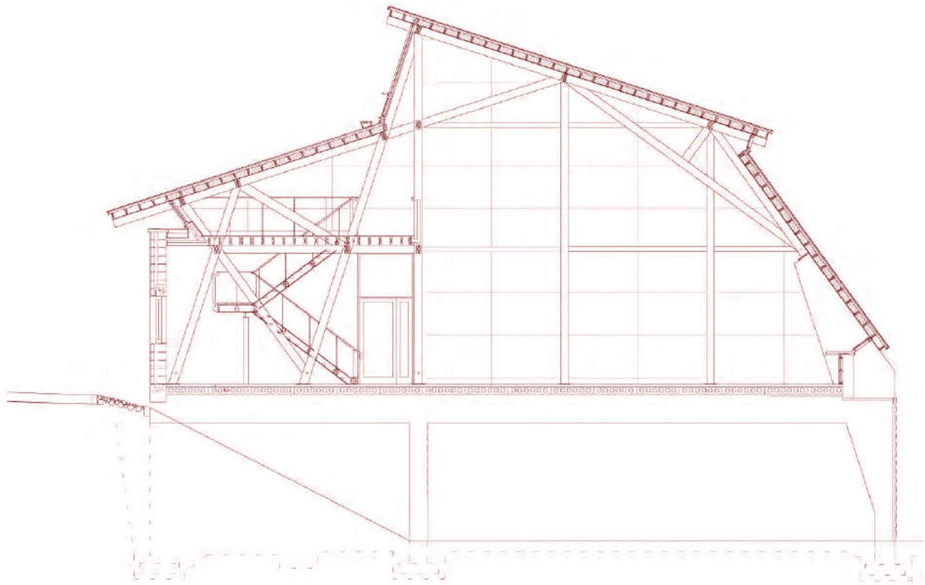


Fig.4

Sectional Thinking/Organisation

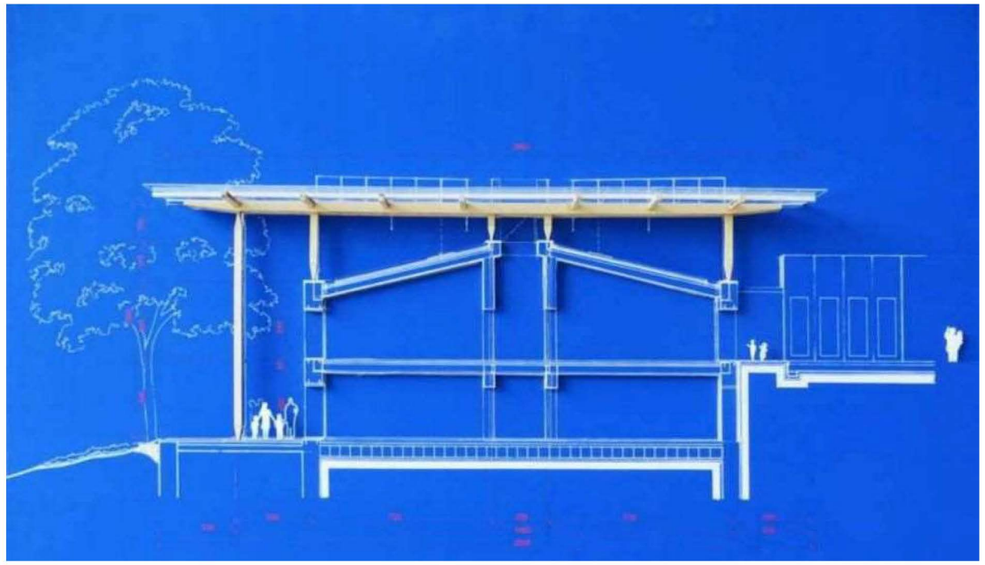


Fig.5

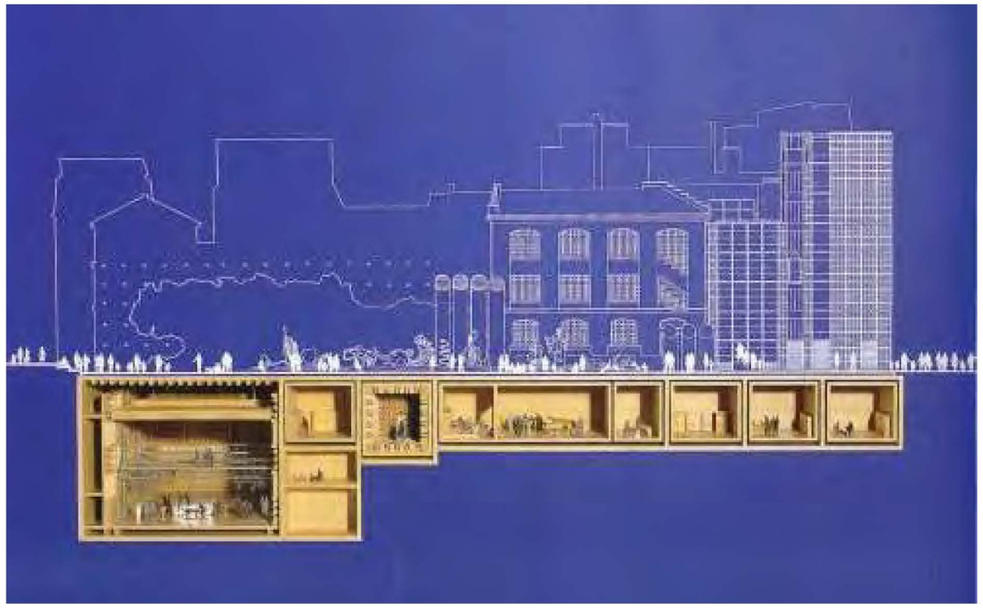
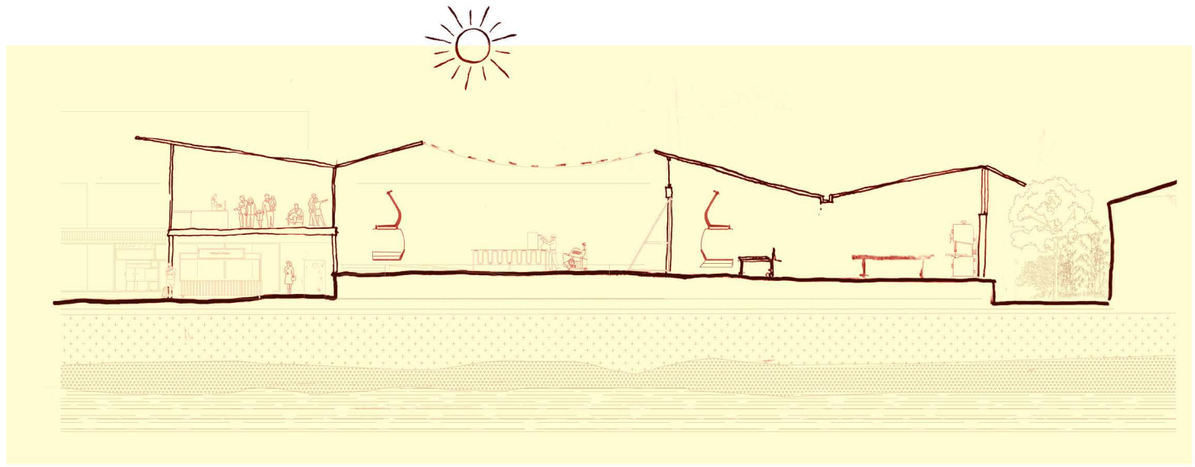


Fig.6

Sectional Models

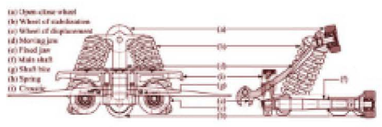
Renzo Piano

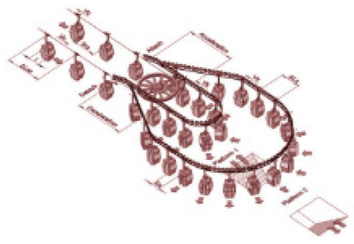


3. The Functional System Required

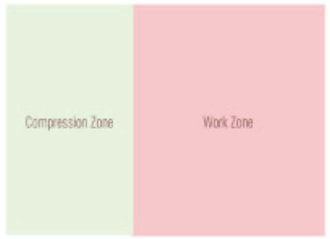
To facilitate the movement of materials throughout the site, I repurposed a cable car system, providing an efficient and visually engaging method of transportation. This system not only serves as a functional solution but also adds a sense of charm and uniqueness to the site. It becomes a defining feature that captures the imagination of visitors and further reinforces the project's commitment to repurposing and innovation.

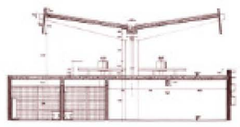
Reusing The Cable Car - Serving as a Function & Expression





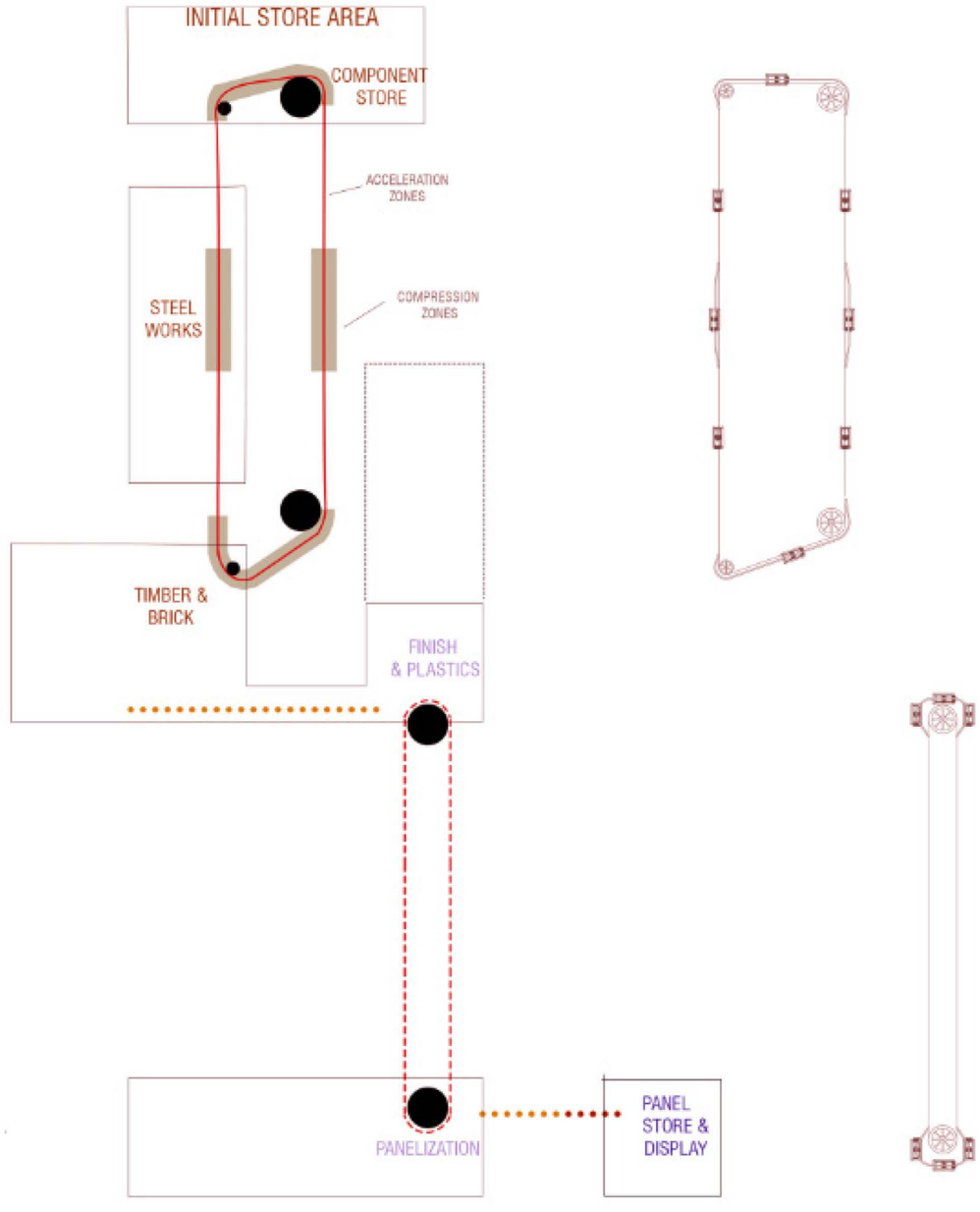
A Design Response



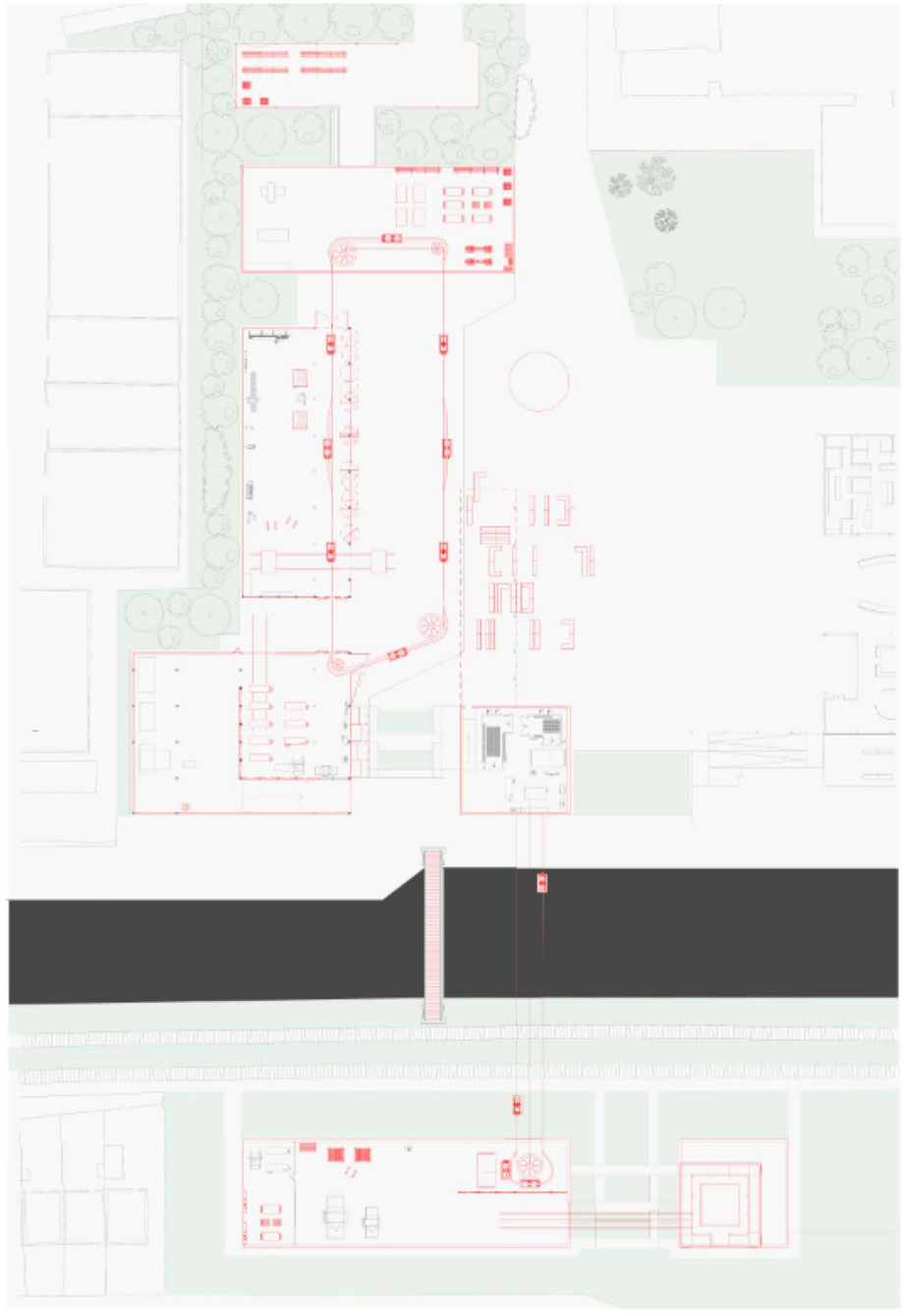


Fernando Tavora - Municipal Market Portugal

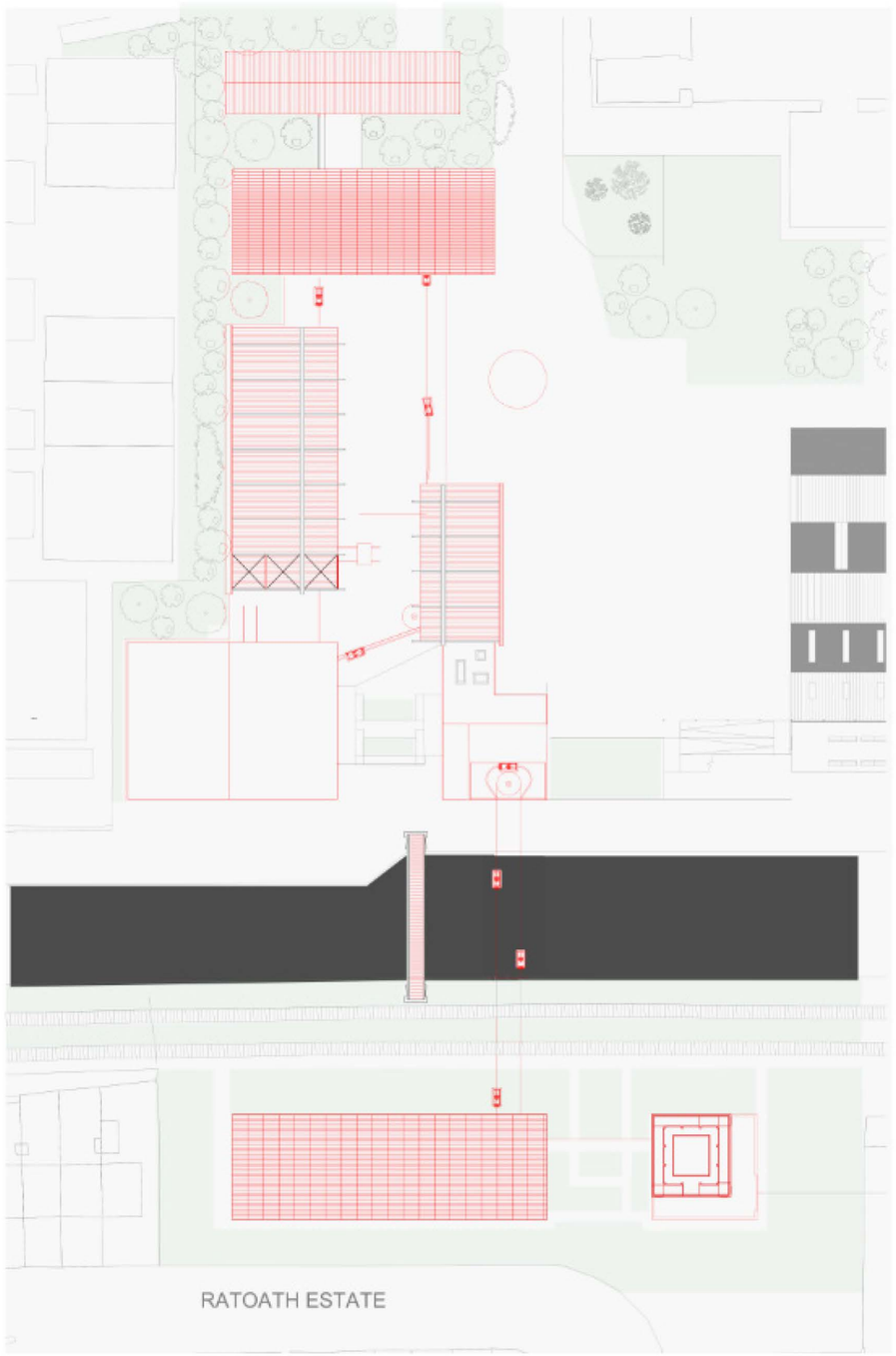
In order to create an immersive experience and provide visibility into the workshop activities, I incorporated movable facades that make skin visually permeable . These elements allow passersby to witness the dynamic nature of the manufacturing process, enhancing the interaction between the building and the public realm. By showcasing the transformation of reclaimed materials into new components and panels, the building becomes a spectacle, drawing attention and sparking curiosity.


INITIAL STORE AREA
COMPONENT STORE
ACCELERATION ZONES
STEEL WORKS
COMPRESSION ZONES
TIMBER & BRICK
FINISH & PLASTICS
PANELIZATION
PANEL STORE & DISPLAY

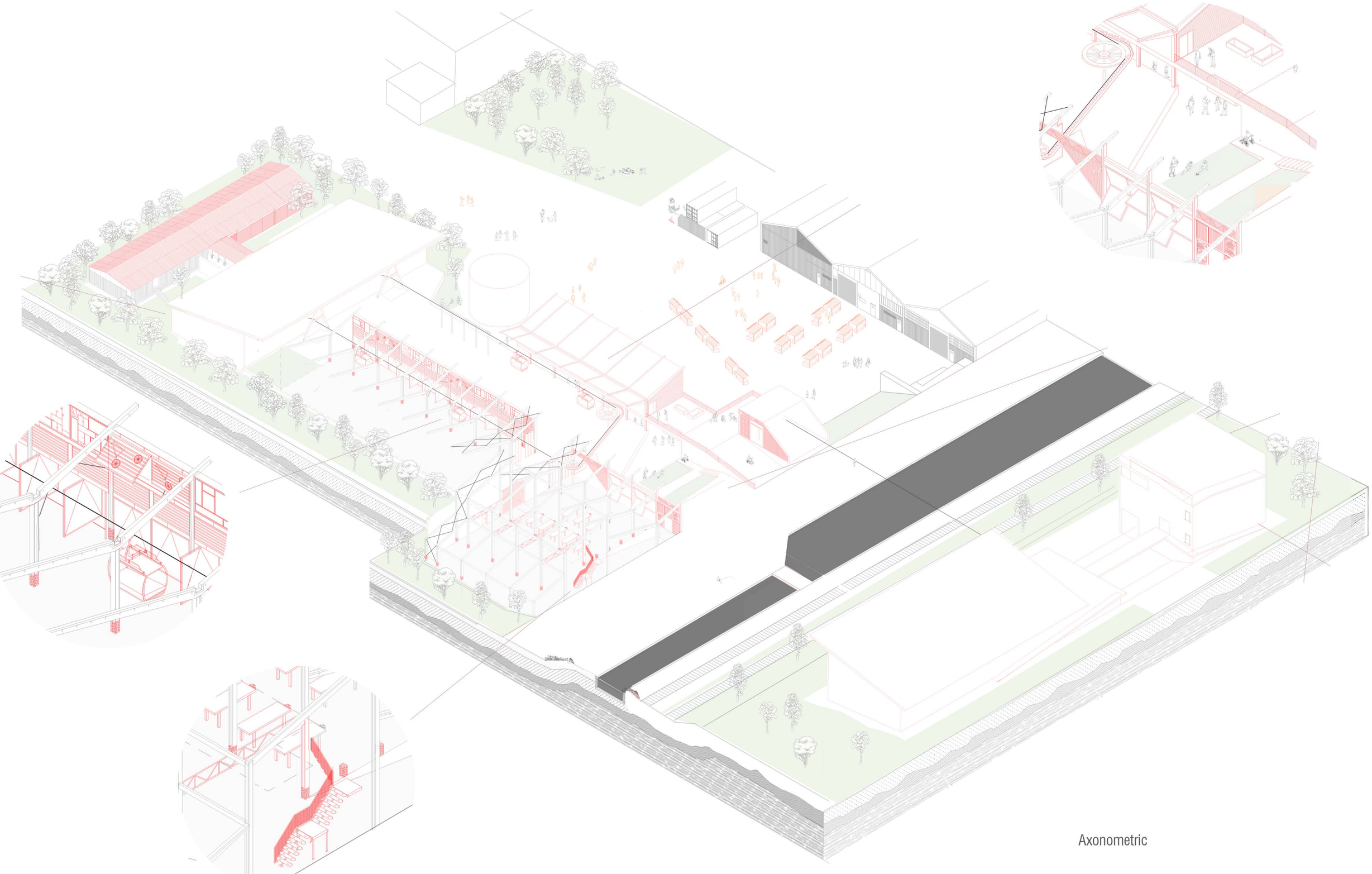
Proposal & Detailing



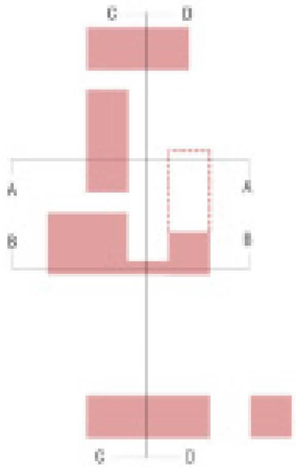
Ground Floor Plan

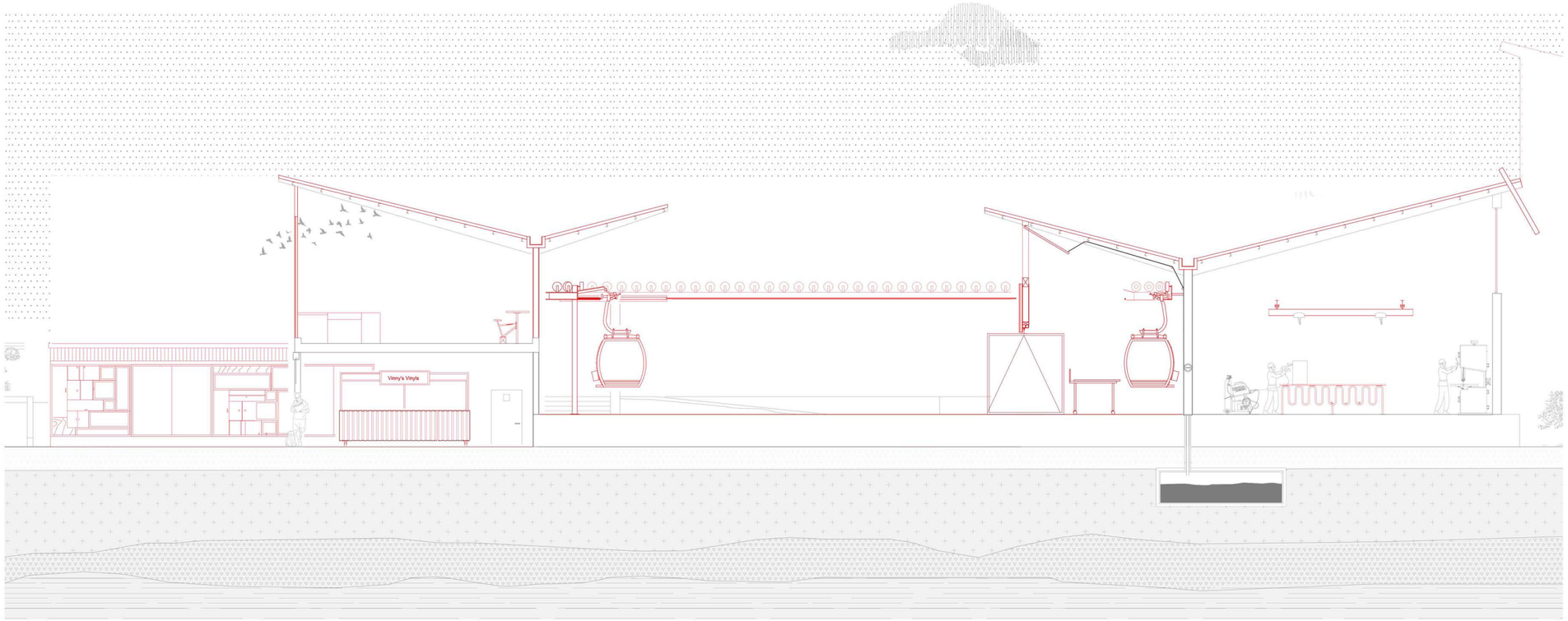


Roof Plan

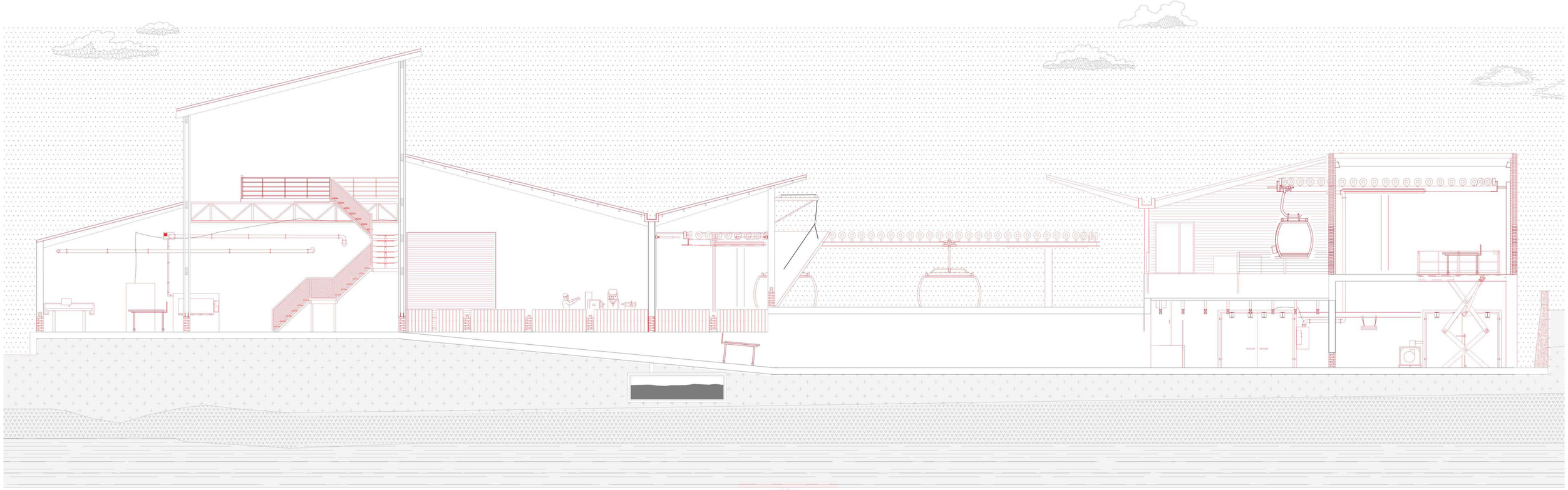


Axonometric



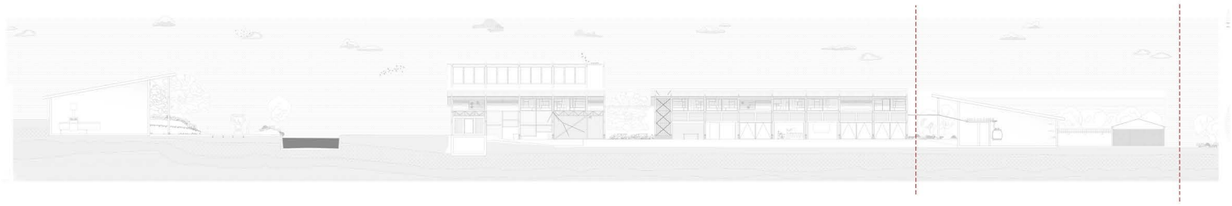


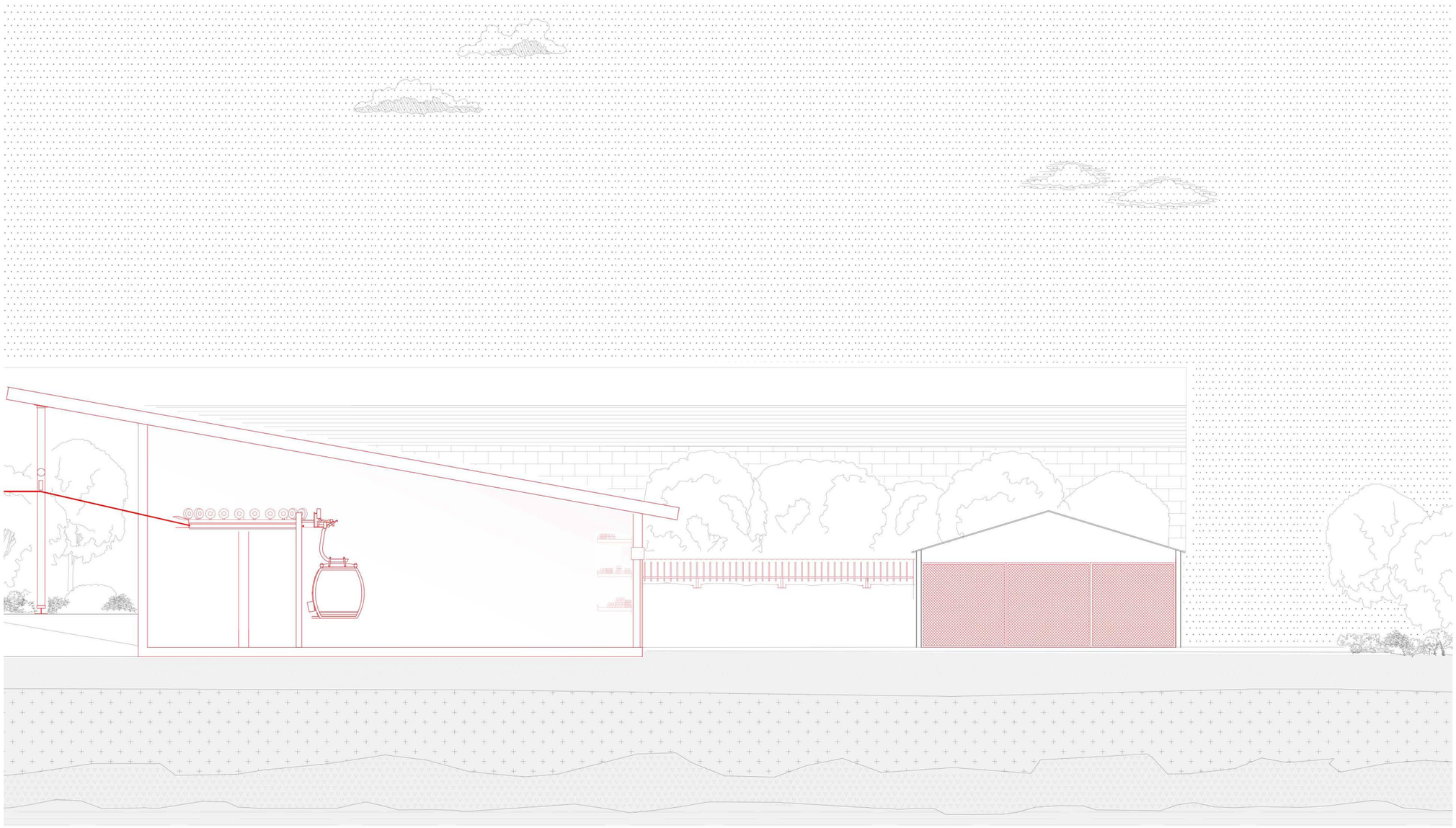
Section A-A

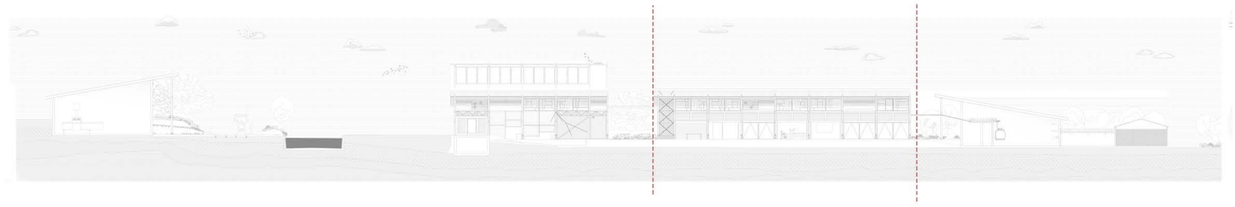


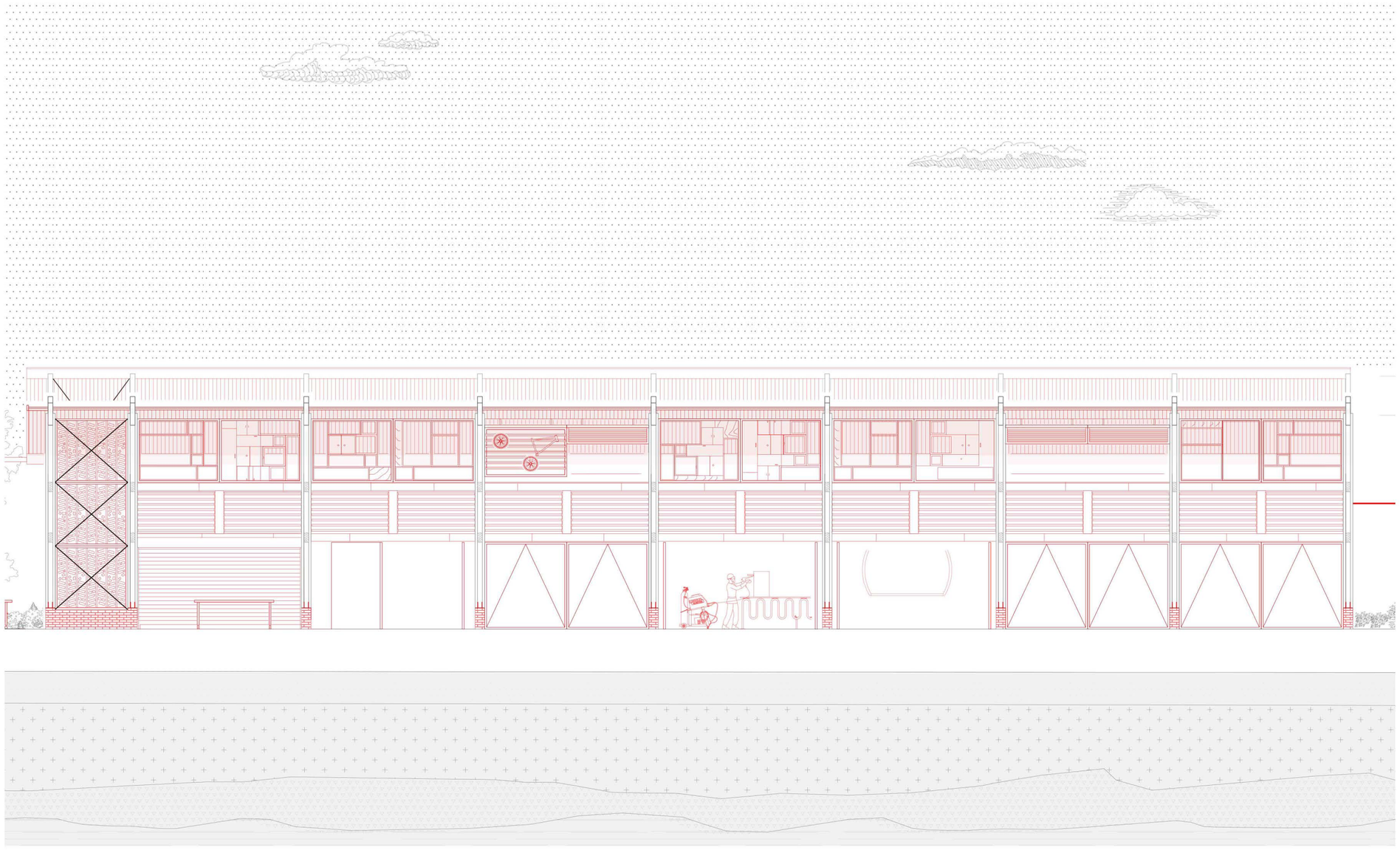
Section B-B

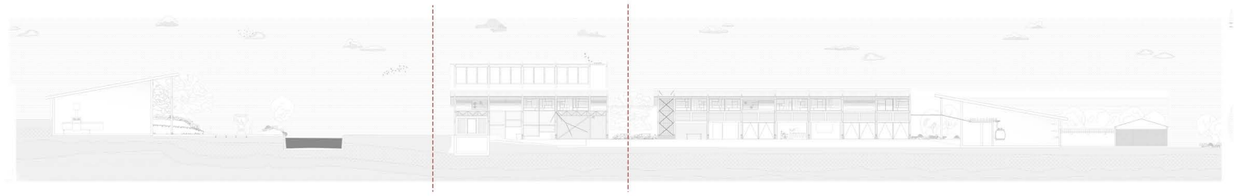
Section C-C

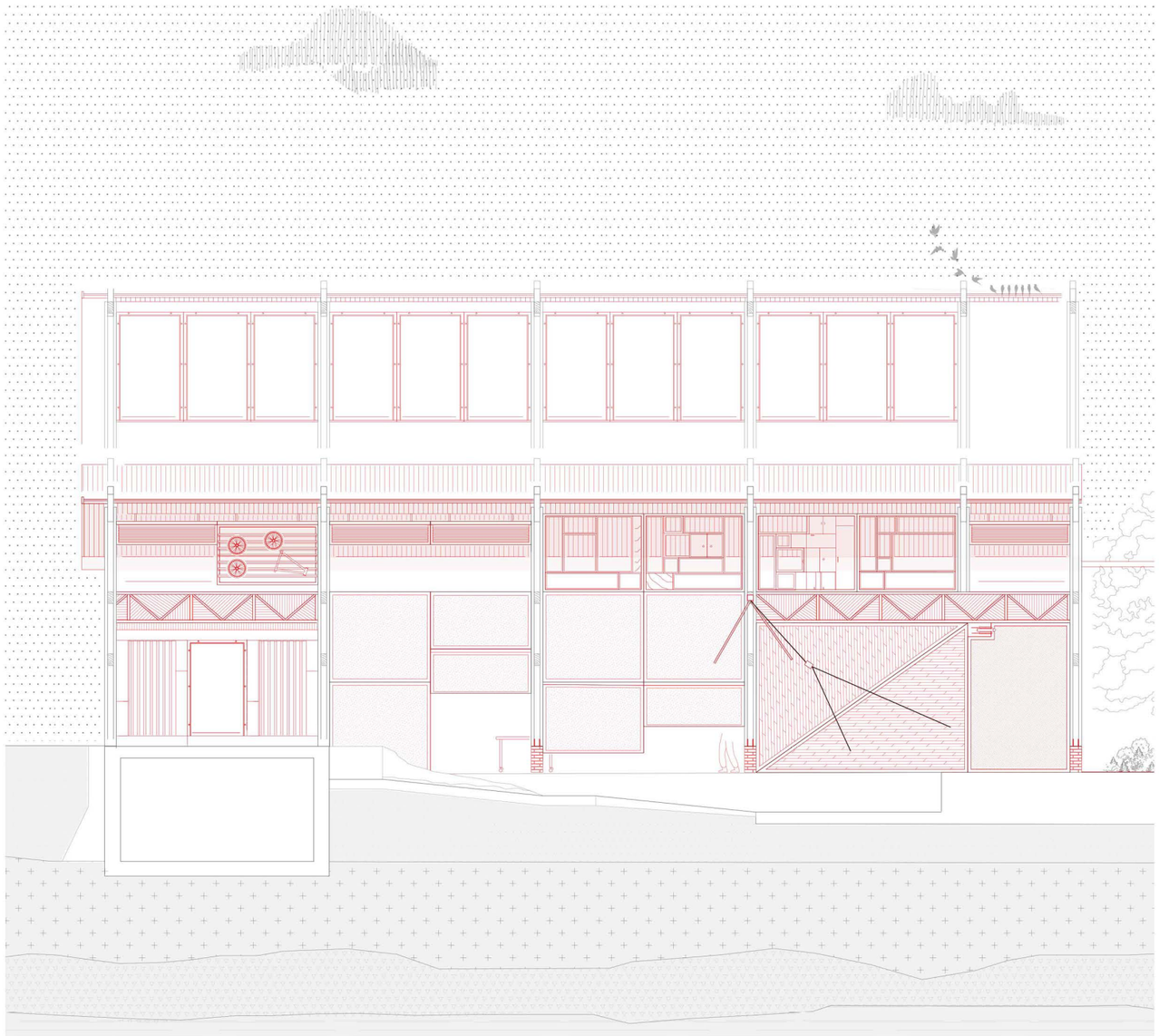


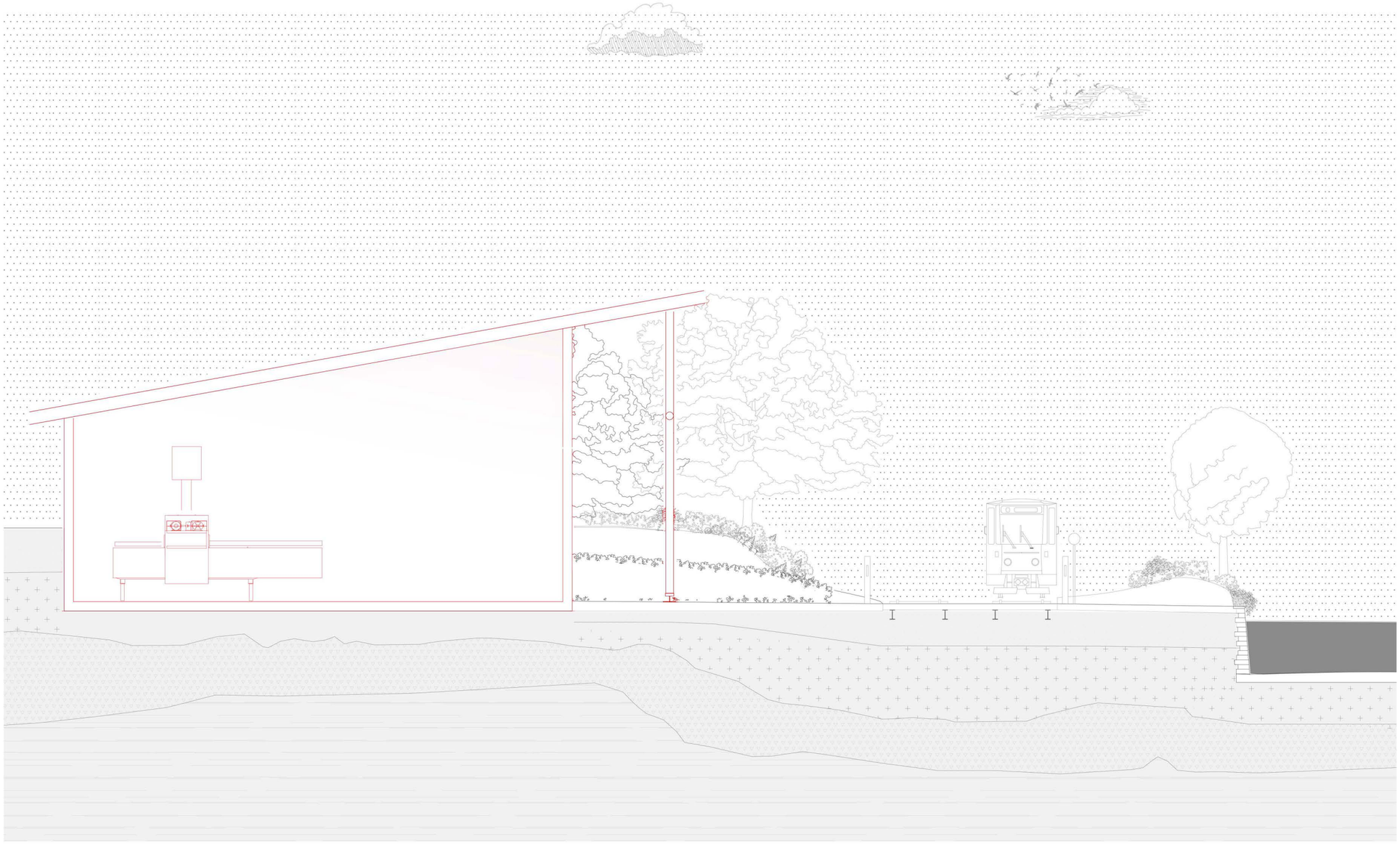




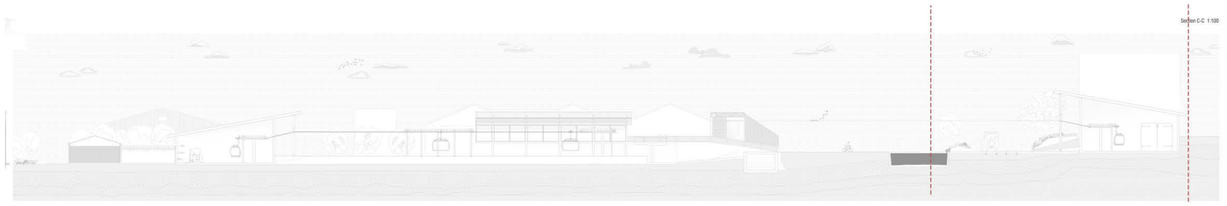


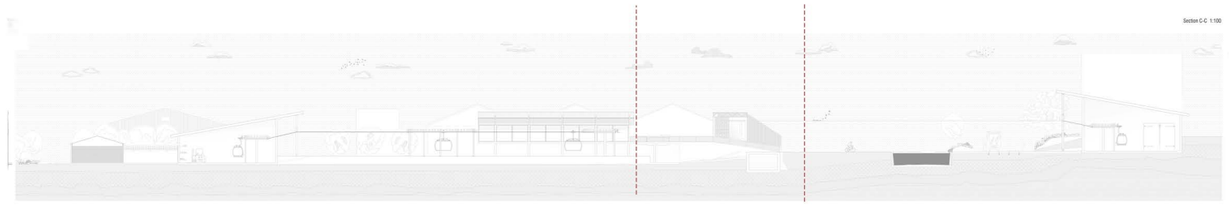




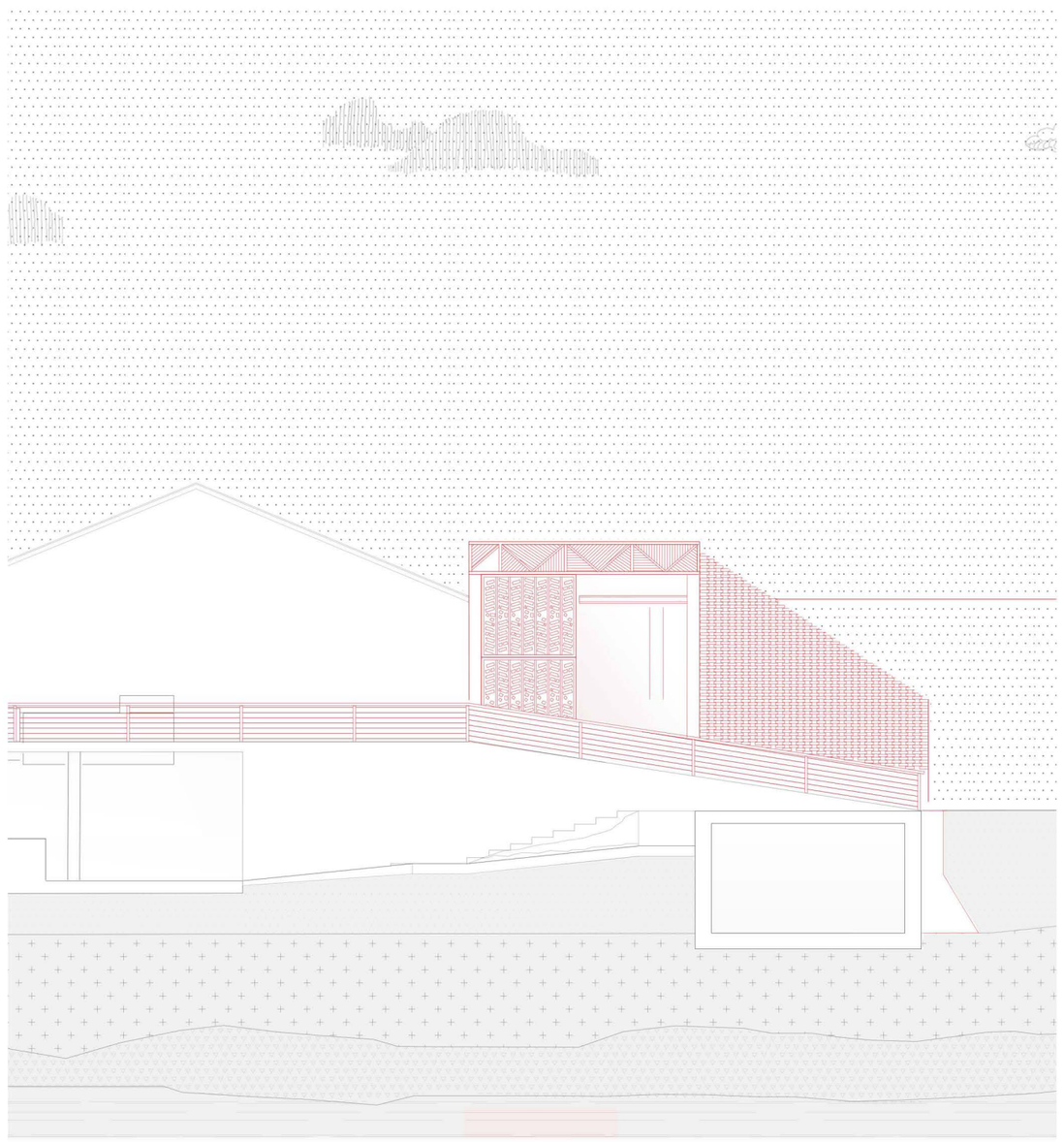


Section C-C





Section C-C 1:100



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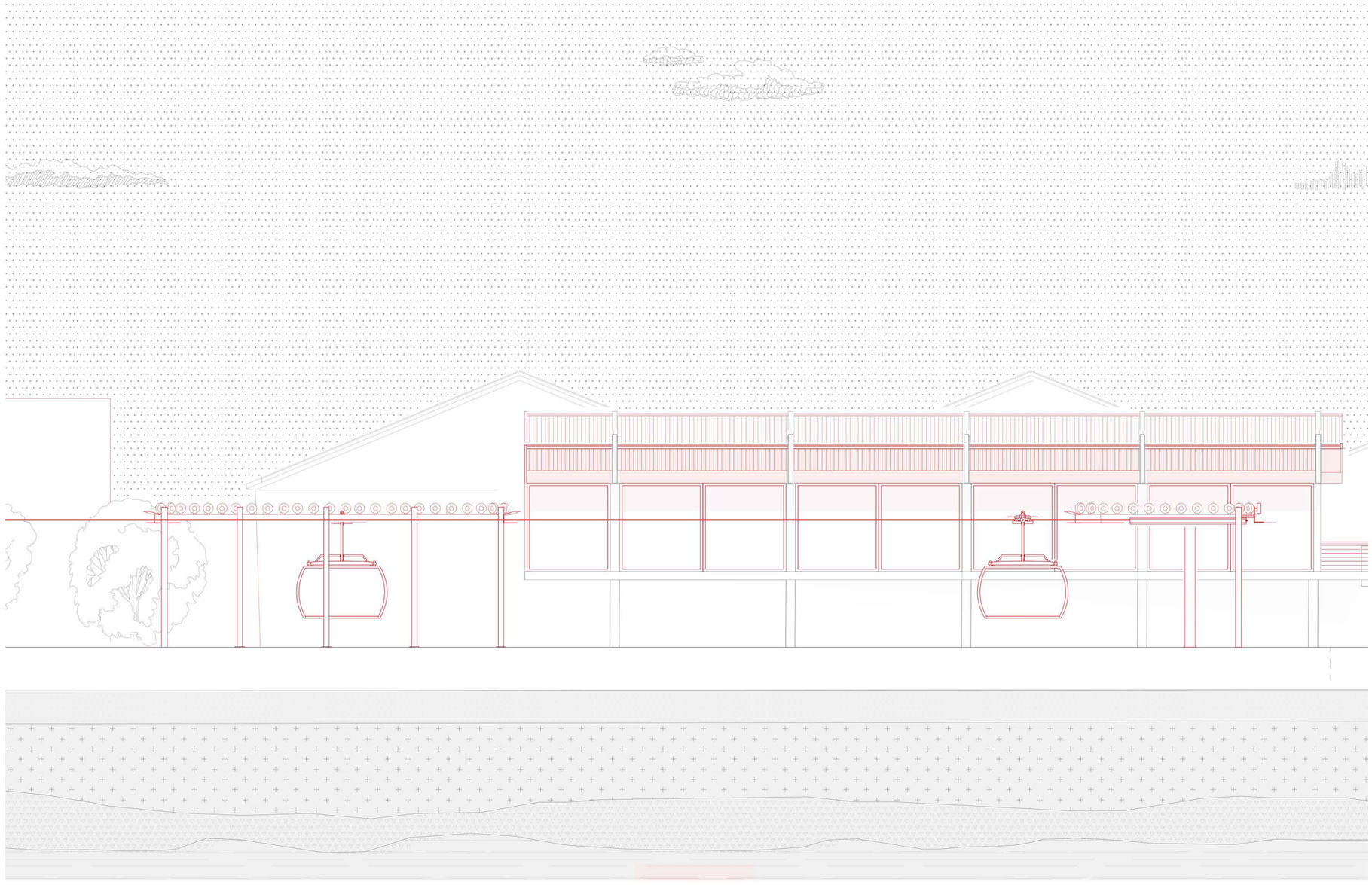

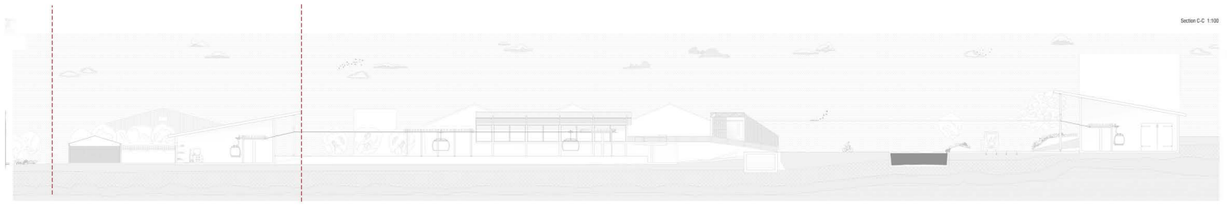

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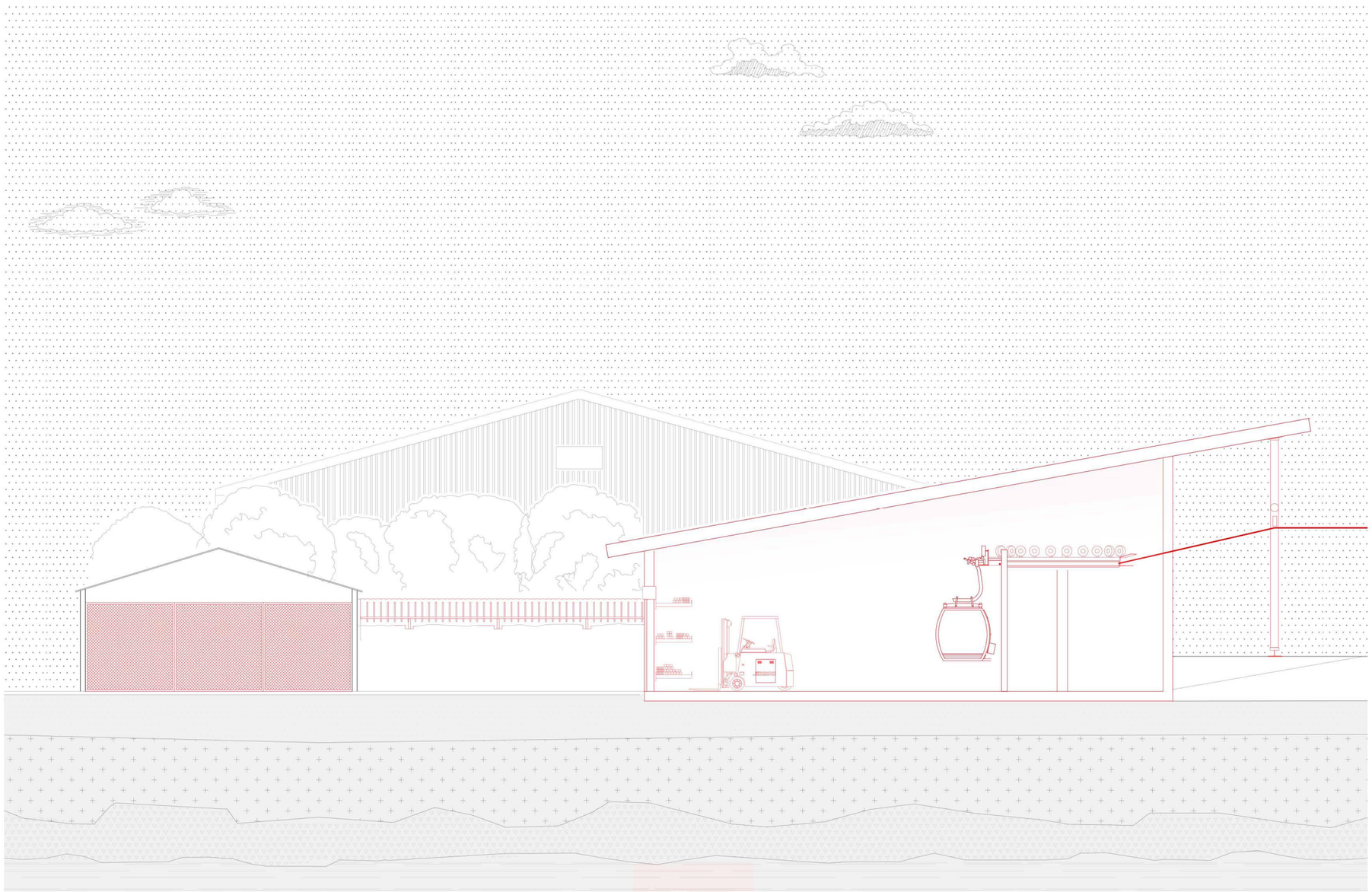
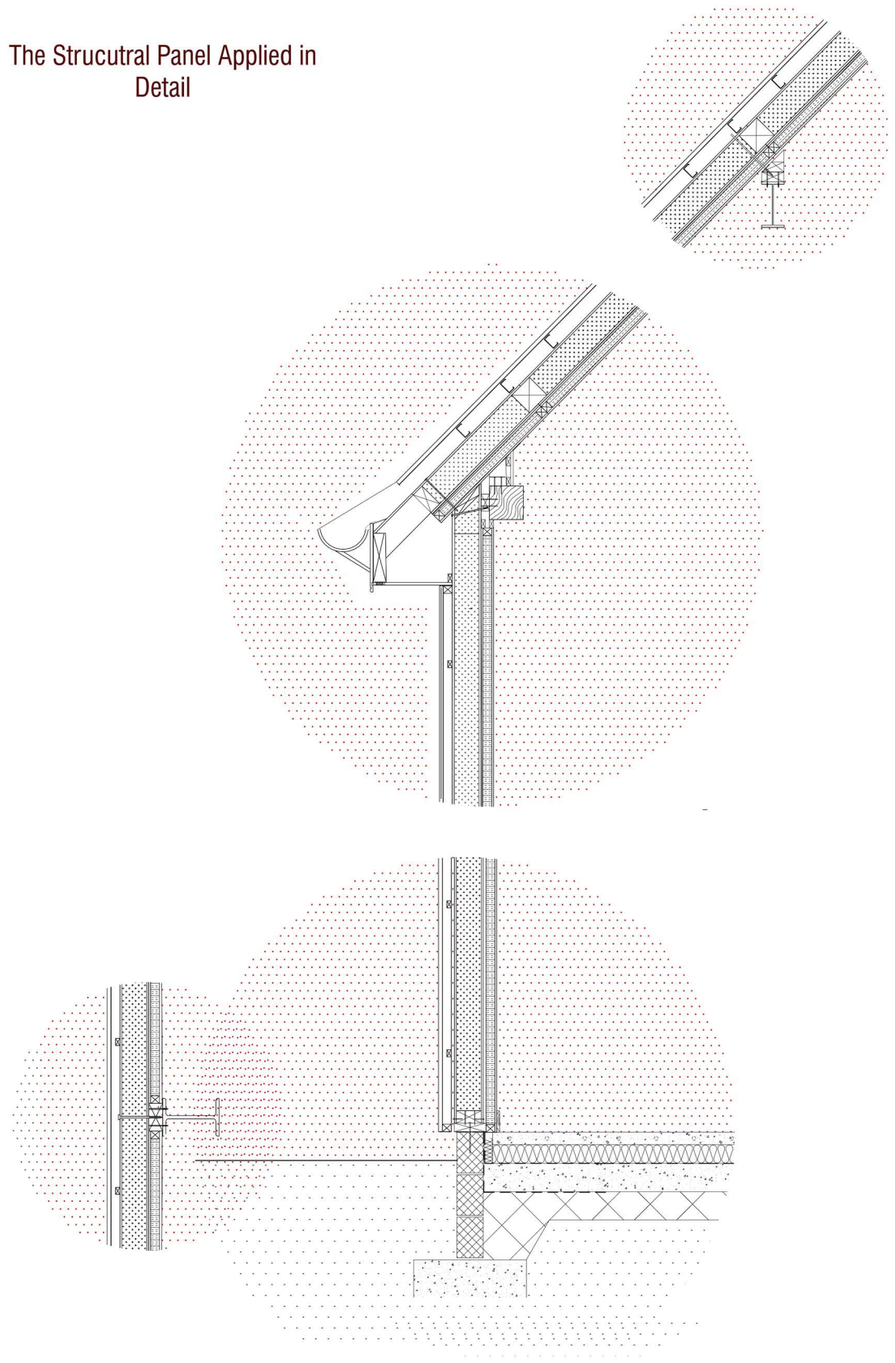
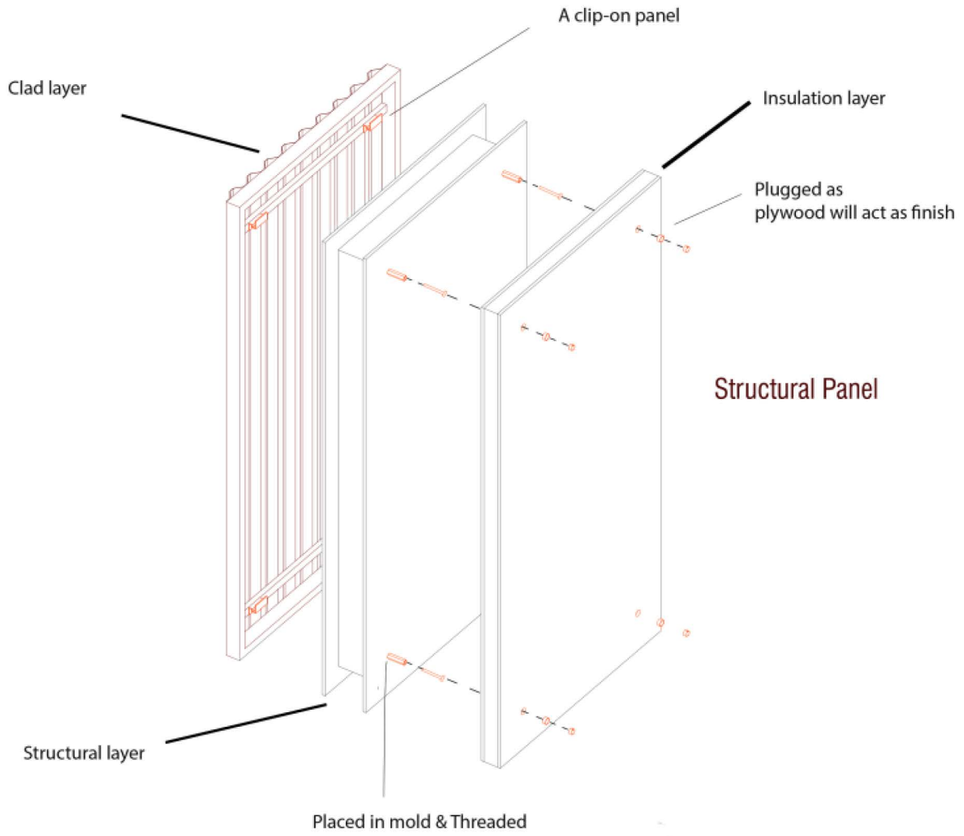


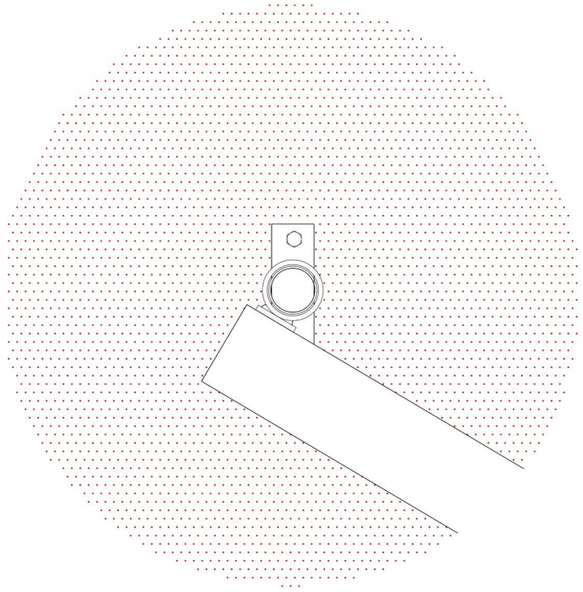
Details

Structural Panel

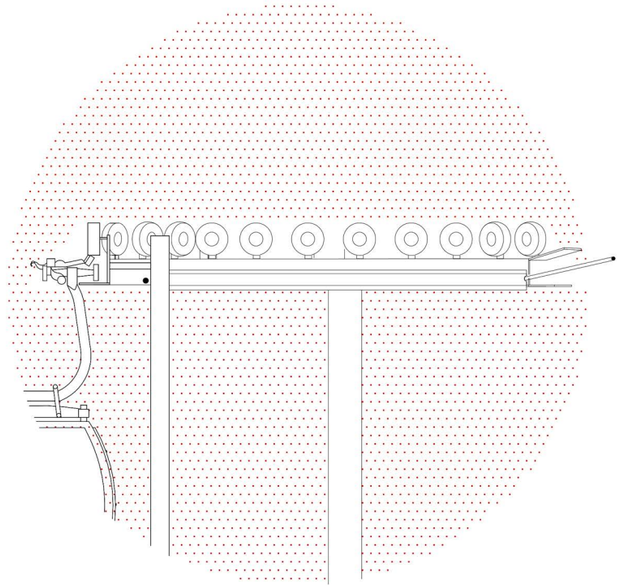
The Strucutral Panel Applied in Detail



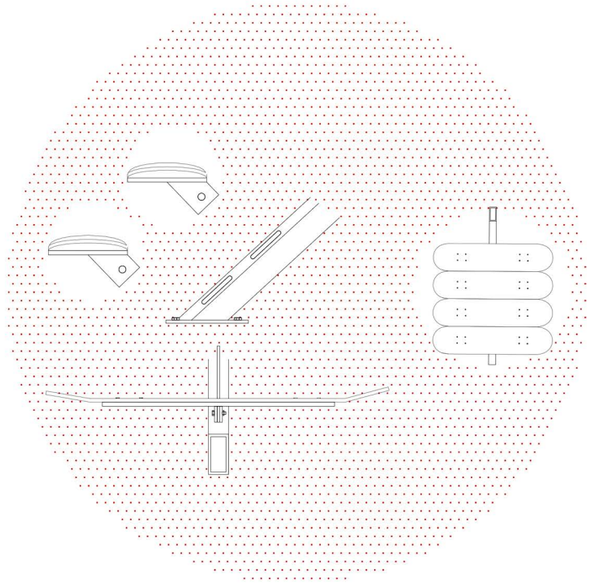




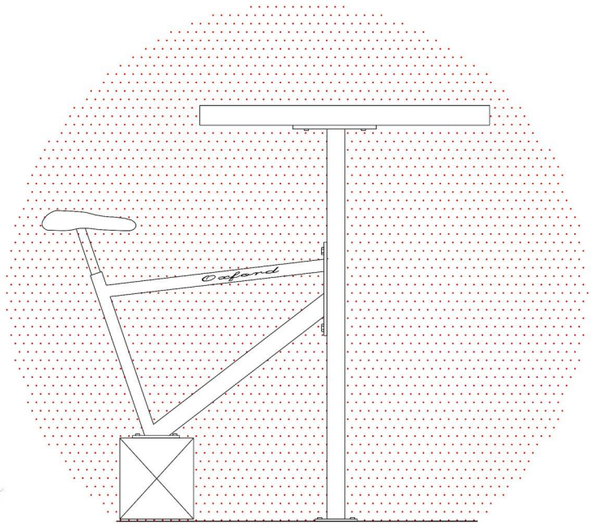
Reuse of Timber, CHS, Plates, Bolts & Cables



Reusing the Cable Car

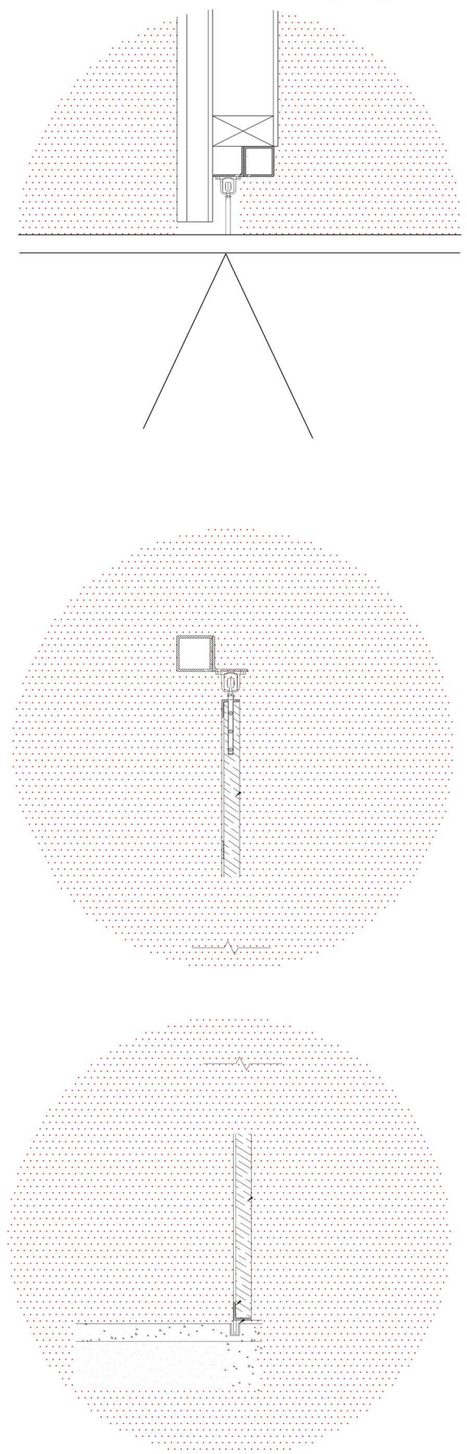


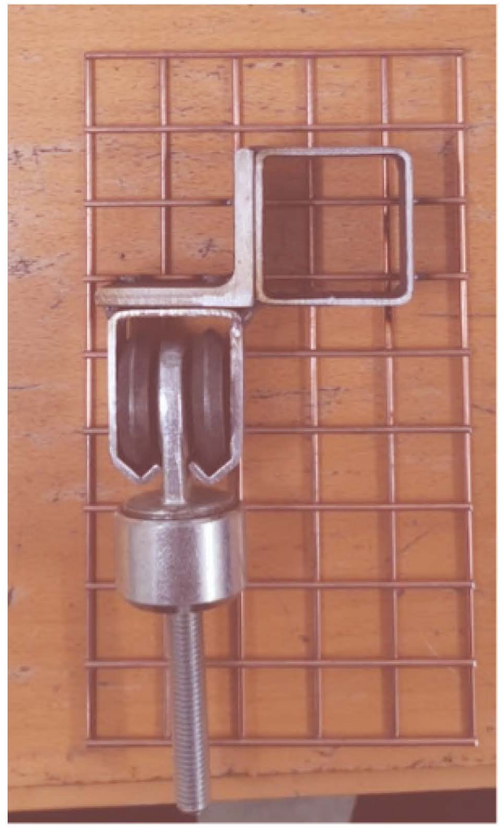
Reuse of Skateboard Decks



An Old Bike Frame Upcycled
Into a Seating/Table

The Reuse of Steel Angles, Box Sections & Channels
To Produce a Movable Door/Opening





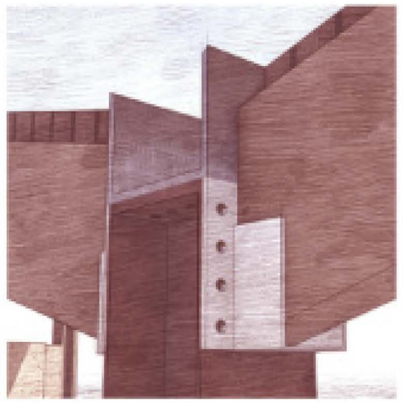
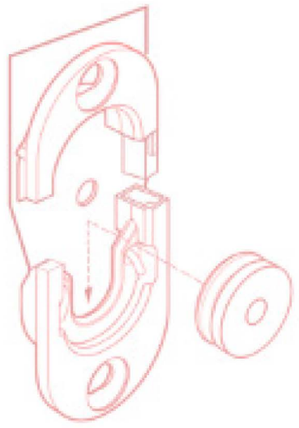
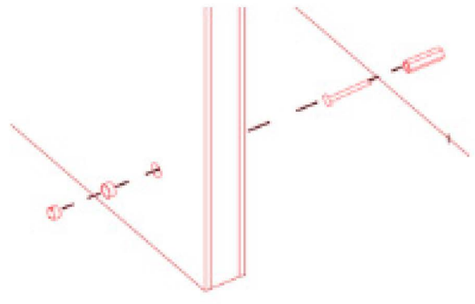


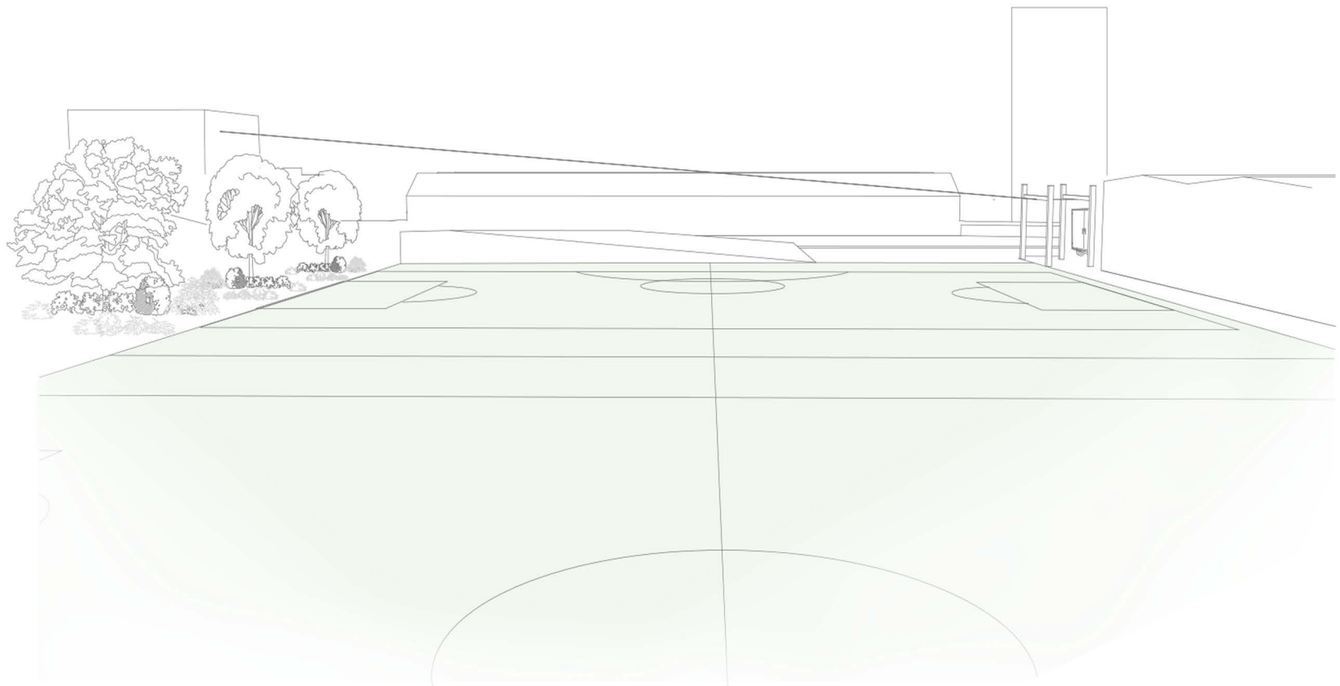
Plate Connections

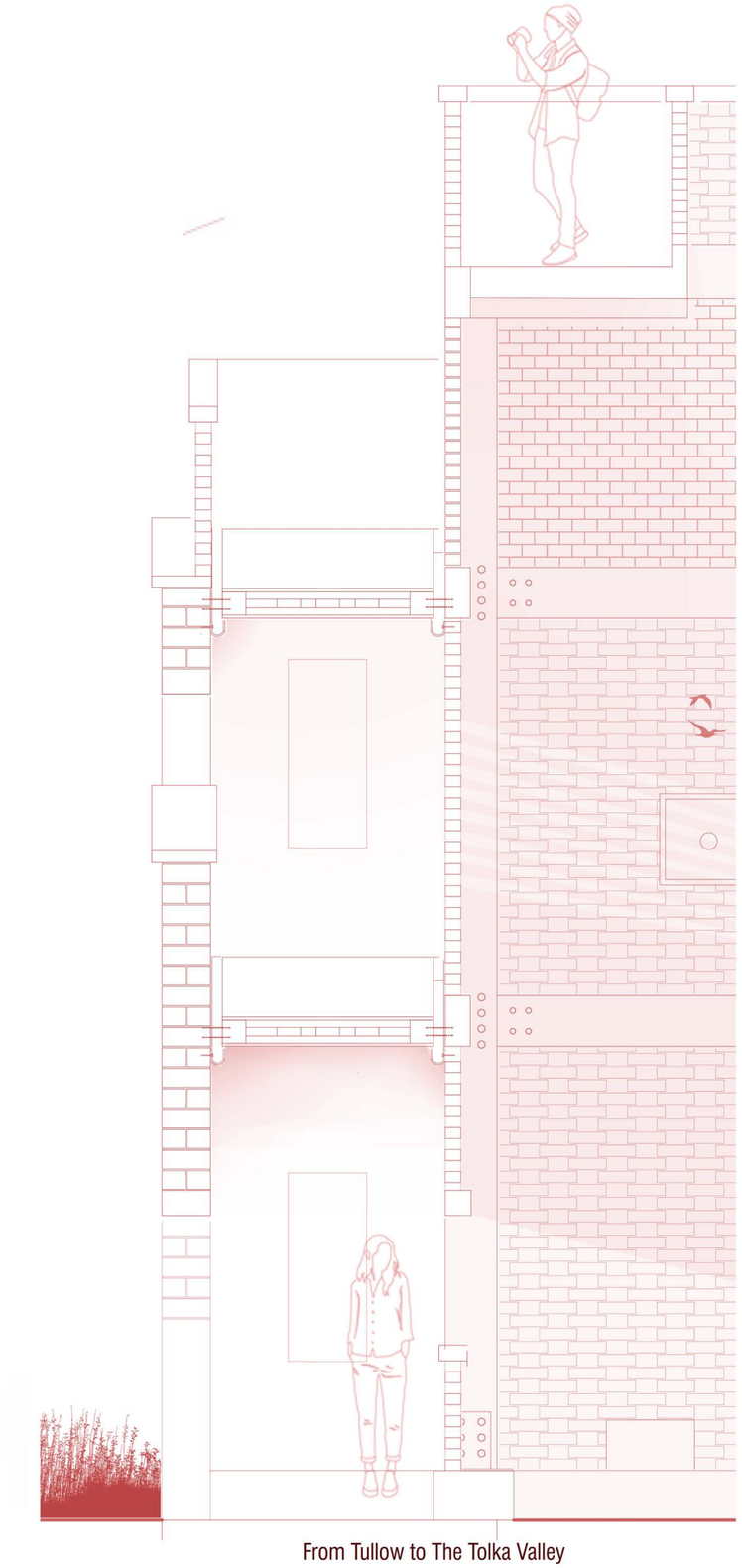


Modified ButtonFix Clip



Plant-Based Resin Thread Fixing w/ Plug & Bolt





From Tullow to The Tolka Valley

Figure Table:

Figure 1: https://www.architectural-review.com/essays/graphic-novel-a-global-moratorium-on-new-construction

Figure 2-4 : https://odonnell-tuomey.ie/index.php/furniture-college-letterfrack

Figure 5&6: https://www.fondazionerenzopiano.org/en/project/pirelli-tyre-factory-expansion/