TIMAH

ESAMALDEEN OMER MOHAMED BAKER

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CHAPTER 1 INTRODUCTION

1.1 Background and Personal Motivation

This project explores the architectural potential of tin as both a material and a

conceptual driver. Tin, as a resource, represents transformation, industry, and economic value, which inspired the development of a design that reflects these qualities through space and form.

The motivation behind this project comes from an interest in creating architecture that tells a story. Rather than designing a conventional building, the aim is to develop a spatial experience that translates the process of tin—from extraction to refinement—into a sequence of architectural moments. This approach allows the project to go beyond functionality and become an educational and experiential environment.

Additionally, the project reflects my personal interest in integrating concept-driven design with real-world conditions, combining industrial inspiration with user experience and spatial clarity.

1.2 Objectives of the Project

The main objective of this project is to design an architectural space that expresses the transformation of tin through both form and experience. The project aims to:

- Create a clear spatial sequence that represents stages of transformation
- Develop an engaging user experience through movement and circulation
- Integrate structural and architectural elements as part of the design concept
- Respond to environmental conditions through passive design strategies
- Reflect both industrial identity and cultural context within a contemporary design

1.3 Project Context and Significance

The project is developed within a context that values both natural resources and cultural identity. Tin, as a material, has historical and economic importance, making it a strong conceptual foundation for the design.

Architecturally, the project translates this significance into a built form that reflects process, layering, and transformation. The use of structural expression, perforated elements, and dynamic forms reinforces the idea of transition from raw to refined states.

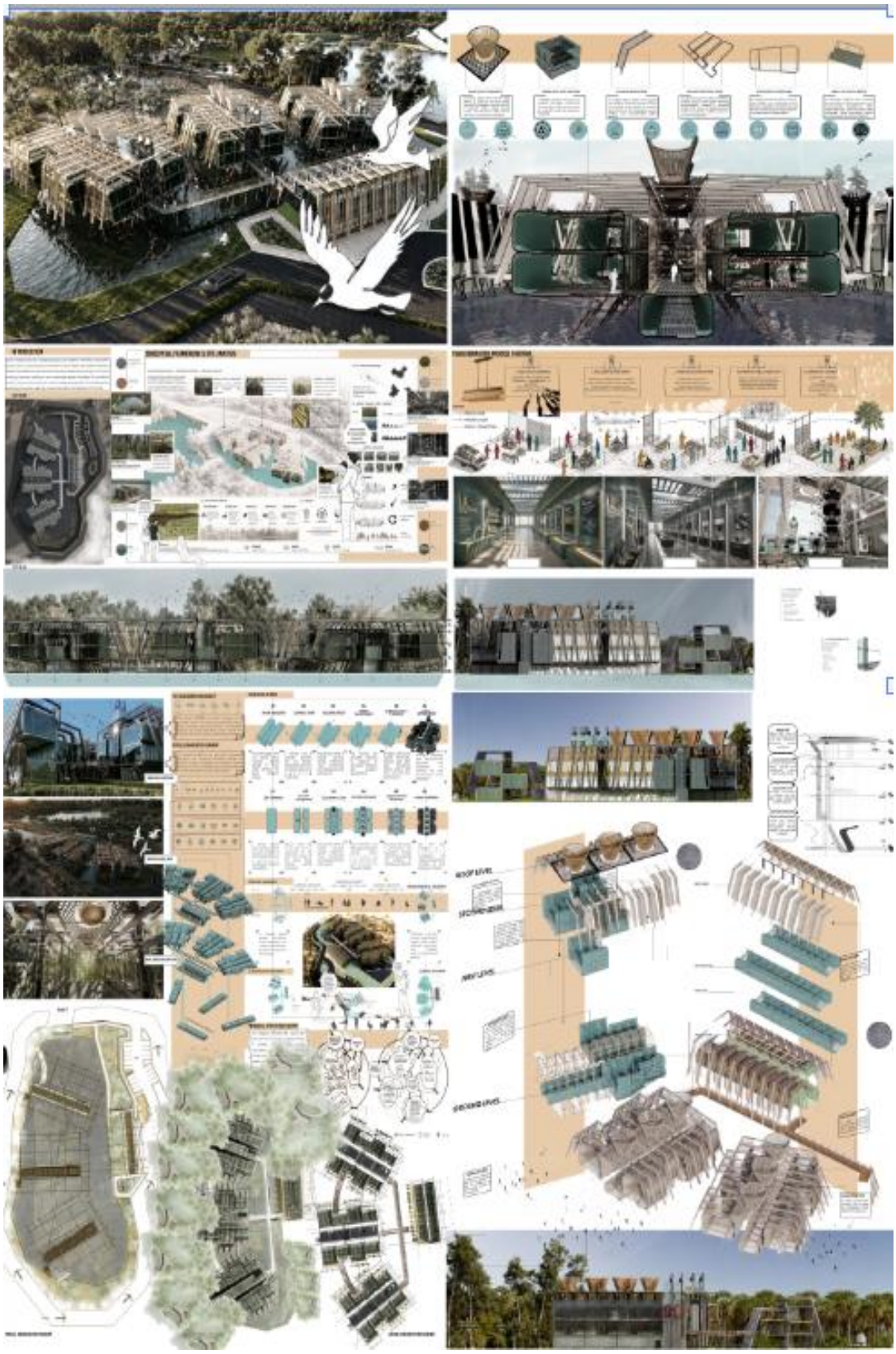
The project also aims to create a meaningful connection between users and the subject matter, allowing visitors to experience the story of tin through space, movement, and visual interaction.

1.4 Project Development Overview

The project was developed through a series of structured phases, beginning with research into the properties and significance of tin, followed by conceptual exploration and form development.

This was followed by spatial planning and design development, where the relationship between structure, circulation, and user experience was refined. The final stage focused on detailed drawings, 3D representation, and presentation, ensuring a cohesive and well-resolved architectural outcome.

Final Presentation Board



CHAPTER 2

INITIAL TOPIC EXPLORATION

2.1 Introduction to Project Direction

At the initial stage of the project, several thematic directions were considered in order to establish a strong conceptual foundation. These directions were evaluated based on their relevance to the site, cultural context, and potential for architectural expression.

Through this exploration, the focus shifted toward developing a concept based on **material transformation**, which led to the selection of tin as the main driver of the project.

2.2 Why Tin?

Tin was selected as the core concept due to its strong connection to the region, its industrial significance, and its potential to be translated into an architectural experience.

2.2.1 Personal Interest

The choice of tin reflects an interest in process-based design, where architecture is not only a static form but a sequence of transformation. The stages of tin processing inspired the idea of creating spaces that evolve as users move through the building.

2.2.2 Material and Conceptual Value

Tin represents transformation from a raw material into a refined product. This concept allows the design to express:

- change in form
- layering of spaces

- progression in user experience

These qualities are reflected in the architectural language of the project.

2.2.3 Relevance to the Site

The selected site, located at **4°23'40.4"N 101°03'20.9"E**, is situated within a context that supports the narrative of natural resources and environmental interaction.

The presence of water and the surrounding landscape enhances the experiential quality of the project, allowing the design to integrate reflection, transparency, and material

2.3 Preliminary Research on Tin

Initial research focused on understanding tin as both a material and a process, including its extraction, refinement, and applications.

2.3.1 Origin and Formation Tin is a natural metal extracted from the earth, typically found in mineral deposits. Its raw state is rough and unrefined, requiring multiple stages of processing.

2.3.2 Industrial and Regional Significance

Tin has played an important role in the development of regions in Southeast Asia, contributing to economic growth and industrial development.

2.3.3 The Process of Transformation

The transformation of tin involves several stages:

- extraction
- separation refinemenfinal produc
  This process became the main inspiration for the architectural concept the building is designed as a sequence of spaces reflecting these stages.

CHAPTER 3

SITE ANALYSIS

4.1 Site Location: Tanjung Tualang, Batu Gajah, Perak

The project is located at Tanjung Tualang Tin Dredge No. 5 in Batu Gajah, Perak, Malaysia. The site is historically significant as it represents one of the major tin mining areas in the region. The presence of the preserved tin dredge machine provides a strong industrial identity and directly supports the conceptual direction of the project.

This location offers a unique opportunity to develop an architectural intervention that connects with the history, industry, and transformation of tin.

4.2 Accessibility and Transportation

The site is accessible via Jalan Tanjung Tualang and is well connected to nearby towns such as Batu Gajah and Ipoh.

- Direct vehicular access
- Suitable for tourism and visitors

This accessibility supports the project as a tourism and experiential destination.

4.3 Topography and Terrain Analysis

The site is generally flat, typical of former has been previously modified due to industrial activity, resulting in open and flexible terrain.

This allows:

- Easy placement of building masses (Bongkah)
- Clear circulation planning
- Minimal works

4.4 Climate and Sun Orientation

The site experiences a tropical climate characterized by:

- High temperatures
- Strong solar exposure
- High humidity

Design responses include:

- Use of shading systems
- Layered façades
- Controlled openings to reduce heat gain

4.5 Wind Direction and Ventilation

Due to the open nature of the site, natural airflow is strong and consistent.

- Good potential for natural ventilation
- passive cooling

The design incorporates:

- Open circulation
- Gaps between building masses
- Breathable façades

4.6 Views and Context (Natural and Industrial Environment)

The site is surrounded by:

- Mining lakes
- Open landscape
- Industrial elements (tin dredge)

This creates a strong contrast between natural and industrial environments.

The design responds by:

- Orienting spaces toward water views

- Using reflection as a design element
- Creating visual connections to the dredge

4.7 SWOT Analysis of the Site

Strengths:

- Strong historical identity (tin mining)
- Presence of iconic dredge
- Surrounding water bodies
- Unique tourism potential

Weaknesses:

- Harsh climate conditions
- Limited natural shading

Opportunities:

- Development of tourism
- Educational and experiential design
- Strong concept alignment with tin

Threats:

- Weather conditions (rain, heat)
- Long-term site exposure

4.8 Design Implications from Site Findings

Based on the analysis, the following design strategies were developed:

- Integrating water as a key design element (reflection + experience)
- Creating visual links with the tin dredge
- Using metal and reflective materials to express the tin concept

CHAPTER 4

DESIGN DEVELOPMENT OF THE CENTRE

5. DESIGN DEVELOPMENT OF THE CENTRE

5.1 Master Planning Process

The master planning of the project was developed through a sequence of steps responding to both the site conditions and the concept of tin transformation. The process began with identifying key site features such as the mining lake, the existing tin dredge, and main access points.

The layout was then organized to create a clear relationship between built forms and open spaces, ensuring integration with the surrounding environment while maintaining a strong architectural identity.

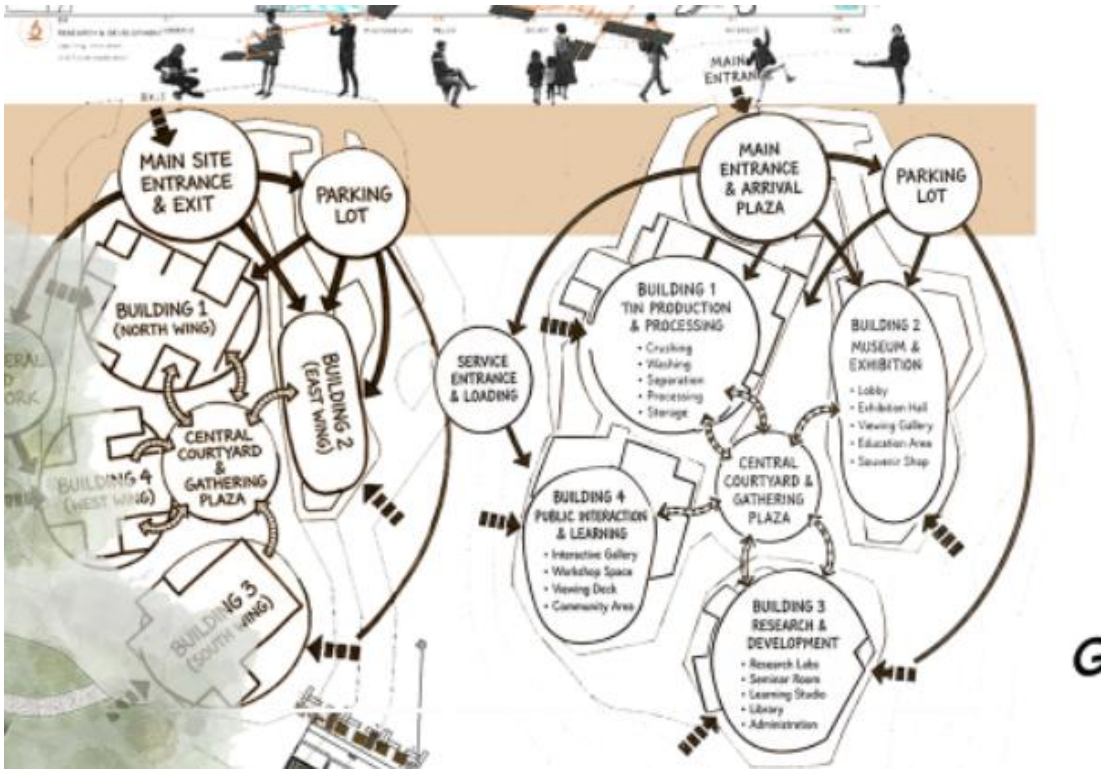
5.2 Zoning Layout on the Site

The zoning strategy is based on functional clarity and experiential progression. The site is divided into:

- **Public Zone**: entrance, gathering areas, open spaces
- **Semi-Public Zone**: exhibition and viewing areas
- **Interactive Zone**: workshops and experience-based spaces
- **Private/Service Zone**: administration and support areas

These zones are distributed using the “Bongkah” concept to create both separation and connection between functions.

5.3 Circulation (Public vs. Private, Tourist Flow)



Circulation is designed as a guided journey reflecting the transformation of tin. Movement begins in open public areas and gradually transitions into more focused and interactive spaces.

- Clear visitor path (tourist flow)
- Separate service circulation
- Vertical circulation through stairs and platforms

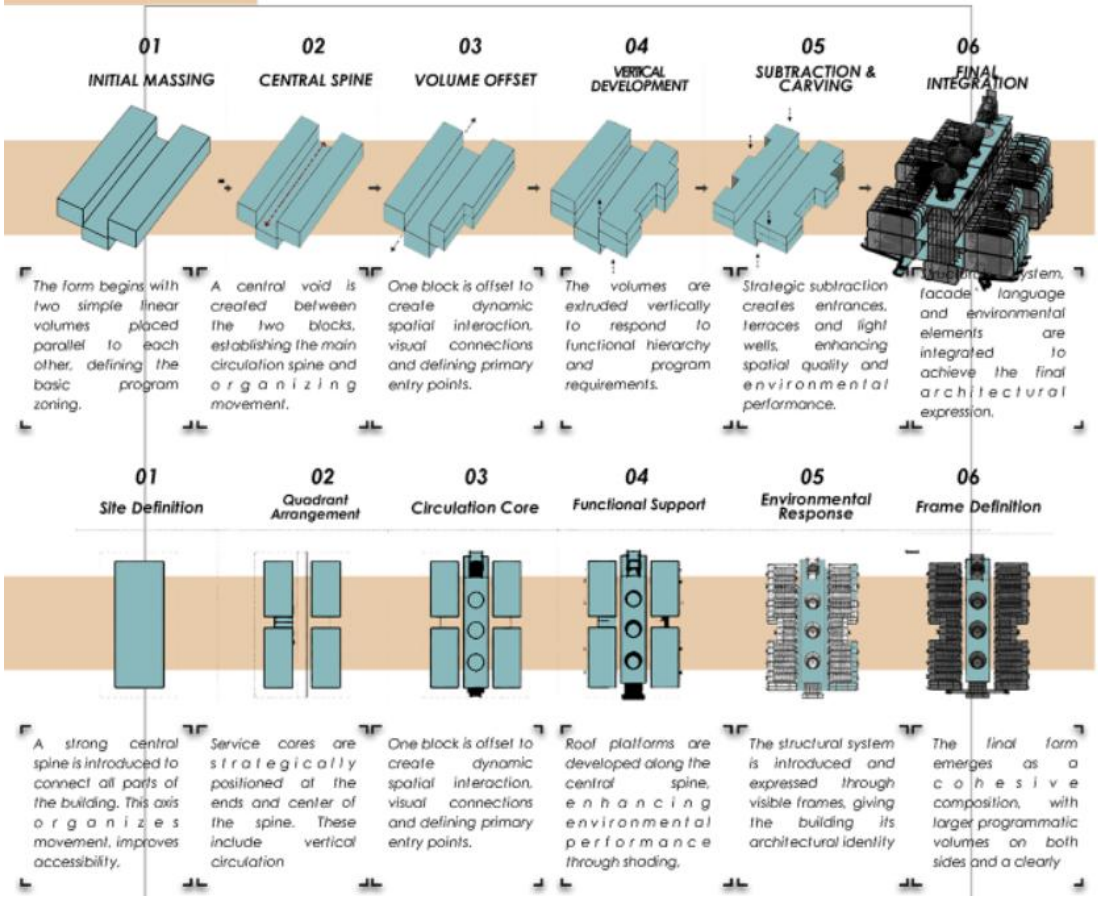
This ensures smooth movement while enhancing the overall spatial experience.

5.4 Massing Development

The massing is based on the “Bongkah” concept, where the building is formed as a series of separated volumes. Each mass represents a stage of transformation.

This creates:

- Visual rhythm
- Spatial hierarchy



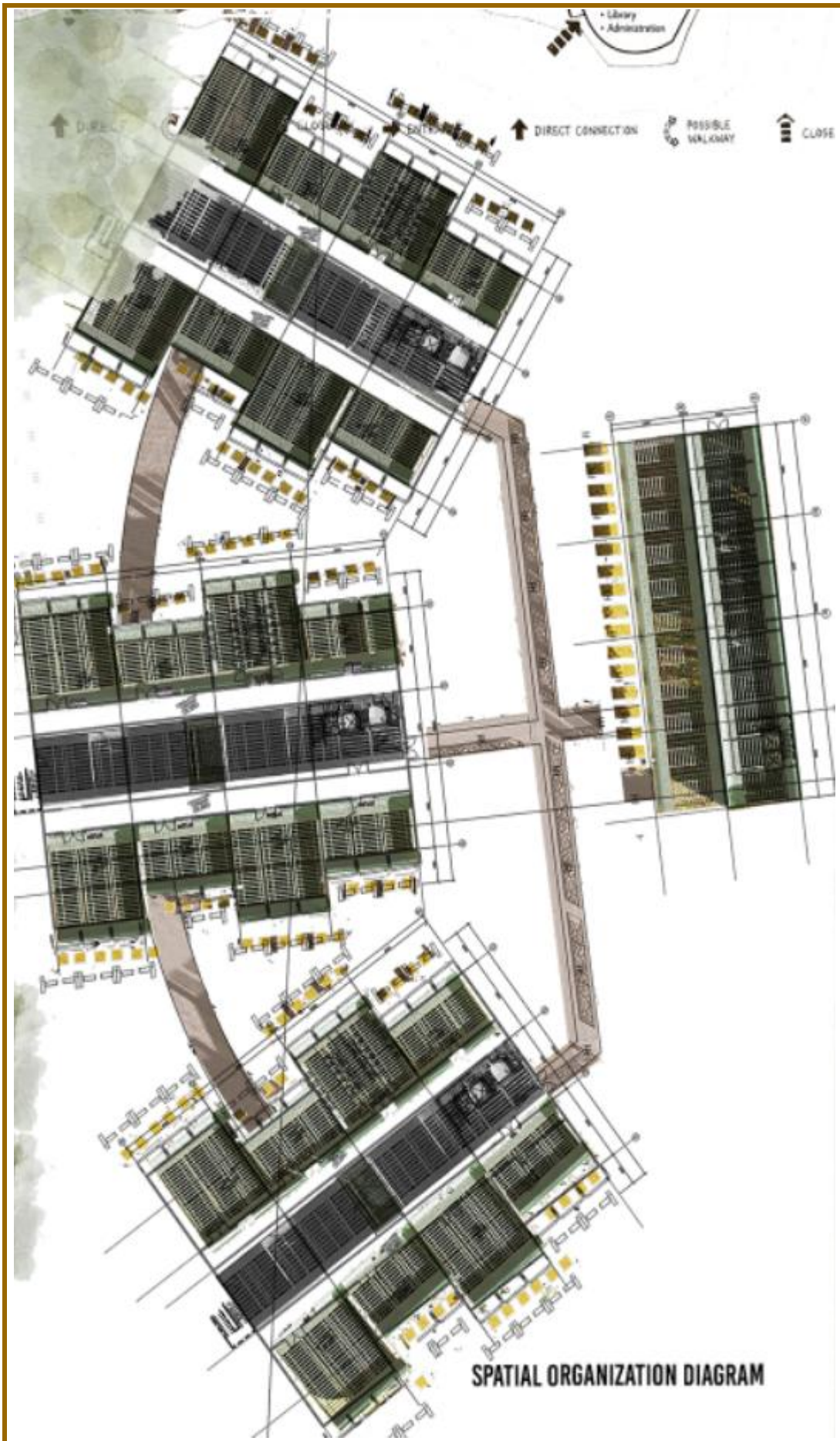
- Open gaps for light and ventilation

The fragmented form strengthens both environmental performance and architectural expression.

5.5 Integration with Terrain (Unflattened / Digging Concept)

Instead of flattening the site, the design responds to the terrain through a “digging” approach inspired by tin extraction.

- Some volumes are partially embedded into the ground
- Multiple levels are created
- Strong connection between building and site


• Library
• Administration
DIRECT CONNECTION
POSSIBLE WALKWAY
CLOSE
SPATIAL ORGANIZATION DIAGRAM

5.6 Inspiration and Architectural Language

The architectural language is derived from the nature of tin:

- Solid to refined transformation
- Reflective qualities
- Layering and progression

The design uses:

- Metal surfaces
- Perforated façades
- Simple geometric forms

to express the concept clearly.

5.7 Reference Projects

The project is informed by precedents that explore:

- Industrial architecture
- Experiential spatial design
- Use of metal and structural expression

These references guided decisions on form, material, and spatial organization.

5.8 Local Architecture or Vernacular Influence

The project integrates local architectural principles, including:

- Climate-responsive design
- Shading strategies
- Open and naturally ventilated spaces

These elements ensure that the building responds effectively to its tropical context while maintaining a strong conceptual identity.

CHAPTER 5

DESIGN PROCESS OF MAIN COMPONENT STAGES

6.1 Sketch 1: Initial Rough Idea and Inspiration

The first sketch represents the earliest stage of the design, where the main inspiration was explored. The idea was driven by the concept of tin as a raw material, focusing on solid mass and industrial identity. At this stage, the design was abstract, emphasizing verticality and the presence of a central form that could act as a landmark within the site.

6.2 Sketch 2: First Spatial Layout Attempt

In the second sketch, the project began to take a more defined spatial form. Basic zoning and circulation paths were introduced, organizing the building into functional areas. The idea of separating masses started to appear, forming the foundation of the "Bongkah" concept.

This stage focused on translating the initial concept into a spatial arrangement that could support user movement and program distribution.

6.3 Sketch 3: Improvements Based on Feedback or Functionality

The third sketch reflects adjustments made based on feedback and functional requirements. Circulation paths were refined to improve user flow, and spatial relationships between different zones were clarified.

Additional considerations included:

- Better connection between spaces
- Clearer hierarchy of public and private zones
- Improved accessibility

This stage marked the transition from conceptual exploration to more practical design thinking.

6.4 Sketch 4: Developing Structure/Form Details

At this stage, the design began to develop in terms of structure and form. The masses were further defined, and the relationship between solid and void became more intentional.

Key developments included:

- Refinement of building volumes (Bongkah masses)
- Introduction of structural logic
- Consideration of materials, especially metal elements reflecting the tin concept

The design started to express both its conceptual and structural identity more clearly.

6.5 Sketch 5: Finalized Design Reflecting All Considerations

The final sketch represents the resolved design, integrating concept, site response, and functionality. All elements were brought together into a cohesive architectural proposal.

At this stage, the design demonstrates:

- Clear circulation and spatial sequence
- Strong connection to the site and mining context
- Fully developed massing and form
- Integration of environmental strategies

This version reflects the final architectural vision of the project.

6.6 Description of How Feedback, Site, and Program Influenced Changes

Throughout the design process, the project evolved through continuous refinement influenced by feedback, site conditions, and program requirements.

- **Feedback** helped improve functionality, circulation, and clarity of design
- **Site conditions** influenced orientation, massing, and integration with the landscape and water
- **Program requirements** shaped spatial organization and user experience

These factors ensured that the final design is not only conceptually strong but also practical, responsive, and well-integrated with its context.

CHAPTER 6

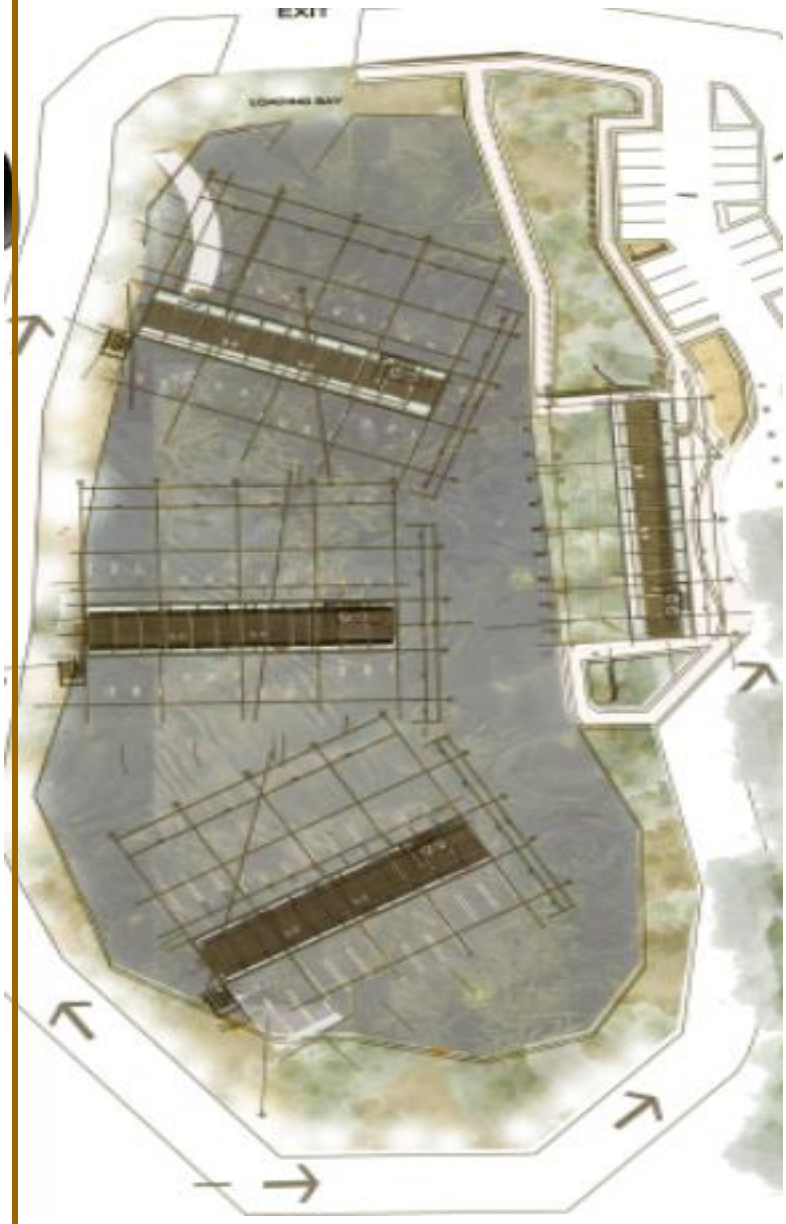
FINAL DESIGN

7.1 Site Plan

The site plan demonstrates the overall organization of the project within the Tanjung Tualang context. The layout responds to key elements such as the mining lake, the historic tin dredge, and the main access road.

The building masses are arranged using the “Bongkah” concept, creating a balance between built forms and open spaces. Circulation paths and entry points are clearly defined to guide visitors through the site while maintaining visual connections to the surrounding landscape and industrial heritage.

7.2 Ground / Floor Plans



The floor plans illustrate the spatial organization and functional distribution of the project across different levels.

They show:

- Clear zoning between public, semi-public, and private spaces
- Logical placement of exhibition, workshop, and service areas
- Efficient circulation connecting all spaces

The layout supports a sequential experience, reflecting the transformation process of tin through movement.

7.3 Elevations

The elevations express the external character of the building and reflect the architectural language derived from the tin concept.

They highlight:

- The contrast between solid and void
- Layered and perforated façade systems
- Clean and simple geometric composition

The elevations also demonstrate how the building responds to climate through shading and façade treatment.

7.4 Sections

The sections reveal the internal spatial relationships and vertical organization of the building.

They illustrate:

- Floor-to-floor connections
- Structural system
- Integration of circulation elements such as stairs and platforms

Sections also show how the building interacts with the ground, especially where the “digging” concept is applied.

7.5 Perspective Views (3D Renderings / Sketches)

The perspective views present the project in a three-dimensional form, allowing a clear understanding of the design.

They emphasize:

- The composition of the building masses
- Material qualities and lighting
- The relationship between architecture, water, and landscape

These views communicate the overall atmosphere and user experience of the project.

7.6 Material Palette and Local Relevance

The material selection is inspired by the concept of tin and the industrial identity of the site.

Main materials include:

- Metal surfaces representing tin
- Concrete for structure
- Glass for transparency and visual connection

These materials reflect both durability and conceptual meaning while responding to the local context.

7.7 Sustainability and Passive Design Features

The design integrates passive environmental strategies to respond to the tropical climate:

- Shading devices to reduce heat gain
- Natural ventilation through openings and spatial gaps
- Daylighting to reduce artificial lighting
- Reflective materials to minimize heat absorption

These strategies improve thermal comfort and energy efficiency.

7.8 Cultural Storytelling Through Architecture

The project acts as a narrative space that tells the story of tin through architecture.

This is achieved through:

- A sequence of spaces reflecting stages of transformation
- Variation in form and material
- Movement from open to enclosed environments

The design creates an experiential journey, allowing visitors to engage with the history and significance of tin in a meaningful and spatial way.

9. A

9.1

Strip 1 represents a linear architectural narrative that illustrates the initial stages of the project experience. It focuses on the transition from the external environment into the core of the design, highlighting the relationship between approach, entry, and first spatial impression.

This strip emphasizes:

- The connection between the site and the built form
- The sequence of arrival and orientation
- The introduction to the concept of tin transformation

Visually, it demonstrates how users are guided from open landscape areas toward more defined architectural spaces, establishing the beginning of the experiential journey.

9. 2 STRIP 2

Strip 2 continues the spatial narrative by focusing on the internal progression of the project. It represents the development of experience as users move deeper into the building, interacting with key program elements such as exhibitions, workshops, and viewing areas.

This strip highlights:

- The transition between different functional zones
- The interaction between solid and void spaces
- The integration of circulation with the “Bongkah” masses

It reflects the core concept of transformation by showing how spatial conditions evolve, becoming more immersive and engaging as users move through the project.

10. REFLECTION

10.1 Challenges Faced

Throughout the development of this project, several challenges were encountered at different stages of the design process. One of the main difficulties was translating an abstract concept, such as the transformation of tin, into a clear and functional architectural form. Balancing conceptual strength with practical requirements, such as circulation, zoning, and structural logic, required continuous refinement.

Another challenge was responding effectively to the site conditions, particularly the tropical climate and the open mining landscape. Designing a building that is both environmentally responsive and visually impactful demanded careful consideration of orientation, shading, and material selection.

Additionally, managing the complexity of the program, especially integrating exhibition, workshop, and experiential spaces, required a clear organizational strategy to ensure a smooth user experience.

10.2 How I Overcame Them

These challenges were addressed through an iterative design process that involved continuous testing, feedback, and refinement. Sketching and model exploration played a key role in developing and improving the design, allowing ideas to evolve gradually from abstract concepts into more defined architectural solutions.

Feedback from instructors and peers helped identify weaknesses in the design, particularly in circulation and spatial clarity. By responding to this feedback, improvements were made in zoning, movement flow, and the relationship between different spaces.

Site analysis also played an important role in guiding design decisions. By understanding the environmental conditions and physical characteristics of the site, appropriate strategies such as natural ventilation, shading, and integration with the landscape were applied.

10.3 What I Learned About Tin, Terengganu, and Architecture

Through this project, I gained a deeper understanding of tin as both a material and a cultural element. Learning about its extraction, processing, and historical significance provided a strong foundation for developing a meaningful architectural concept.

The study of the site and its context also highlighted the importance of responding to local conditions. The relationship between industry, landscape, and water became a key factor in shaping the design approach.

Architecturally, the project reinforced the idea that design is not only about form, but also about experience, narrative, and context. It demonstrated how a strong concept can guide decision-making and create a cohesive design outcome.

10.4 Personal Growth as a Designer

This project has significantly contributed to my growth as a designer. It improved my ability to think conceptually and translate ideas into architectural form. I developed stronger skills in spatial planning, massing development, and integrating environmental strategies into design.

The process also enhanced my ability to critically evaluate my own work and make improvements based on feedback. I became more confident in making design decisions and in presenting my ideas clearly through drawings and diagrams.

Overall, the project helped me understand the importance of balancing creativity with functionality and context.

10.5 What I Would Do Differently or Improve

If given the opportunity to further develop this project, several improvements could be made. One area for enhancement would be the level of detail in structural and material systems, ensuring a more realistic and buildable design.

Additionally, more exploration could be done in refining the user experience, particularly in the transition between spaces and the interaction between indoor and outdoor environments.

Further development of sustainability strategies could also be considered, including more advanced passive and active systems to improve environmental performance.

Finally, more time could be invested in exploring alternative design options during the early stages, allowing for a wider range of ideas before finalizing the concept.

11. CONCLUSION

11.1 Summary of the Project's Purpose and Design Journey

This project was developed as an exploration of architecture as a medium for expressing material transformation, cultural identity, and spatial experience. The main purpose was to design a tourism and experiential centre that reflects the significance of tin, both as a material and as part of the historical and industrial context of the site.

The design journey began with initial concept exploration and evolved through multiple stages of development, including site analysis, programming, and form generation. The concept of transformation played a central role throughout the process, influencing spatial organization, circulation, and massing.

Through the application of the “Bongkah” approach, the project was able to translate abstract ideas into a clear architectural language. The integration of site conditions, environmental strategies, and user experience resulted in a cohesive design that responds to both functional and conceptual requirements.

11.2 Final Thoughts on the Importance of Cultural Preservation Through Architecture

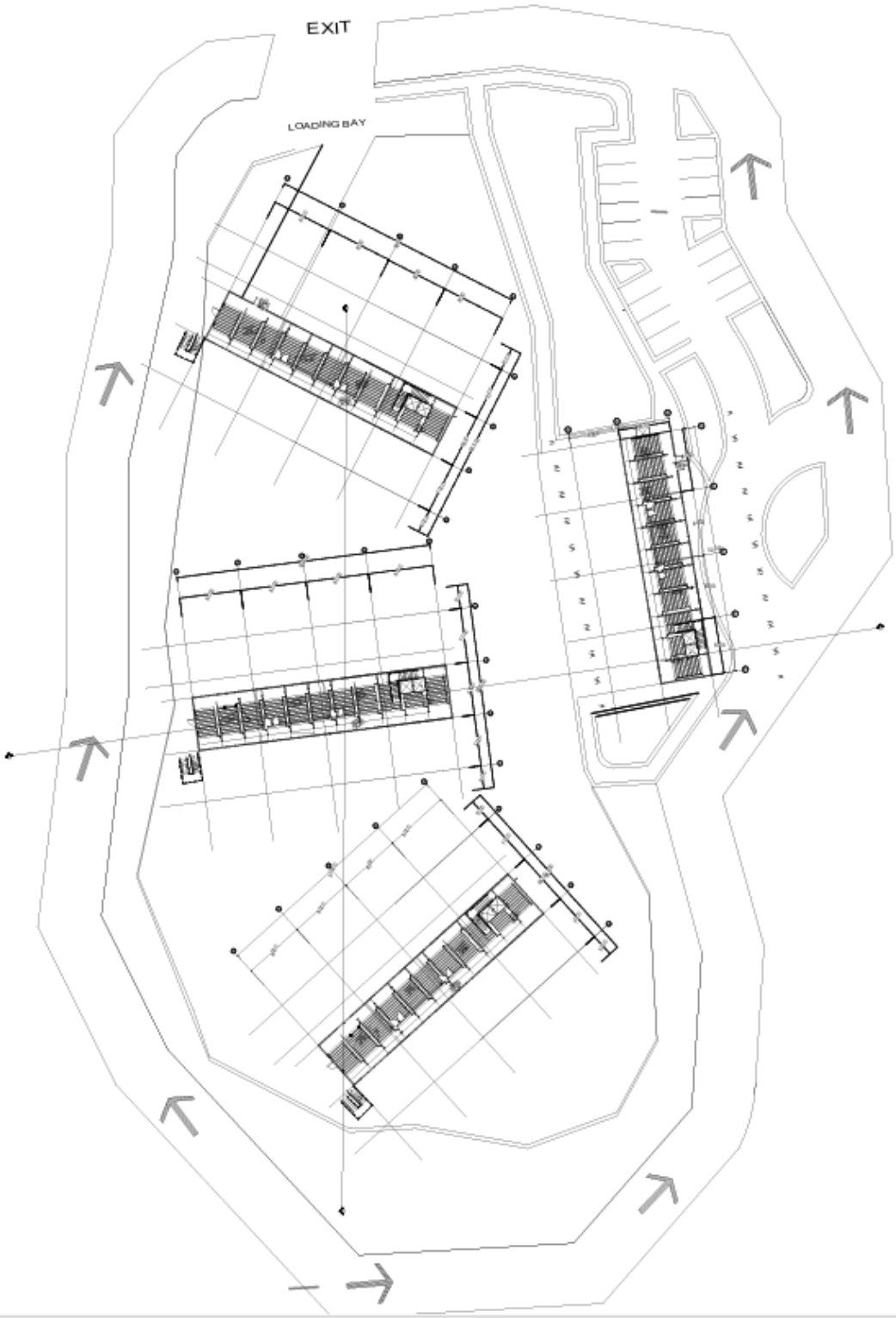
Architecture plays a crucial role in preserving and communicating cultural and historical narratives. In this project, the focus on tin as a material and industrial heritage demonstrates how architecture can serve as a platform for storytelling and education.

By embedding cultural meaning into spatial design, the project goes beyond physical form and becomes an experiential journey that connects users to the past, present, and future. It highlights the importance of preserving industrial heritage, not only as a memory but as an active part of contemporary design.

Furthermore, this project emphasizes that cultural preservation does not mean replicating the past, but rather reinterpreting it in a way that is relevant to current needs and future development. Through thoughtful design, architecture can bridge the gap between tradition and innovation, creating spaces that are both meaningful and functional.

Ultimately, this project reinforces the idea that architecture has the power to shape experiences, preserve identity, and contribute to a deeper understanding of place and history

12.1 Working Drawings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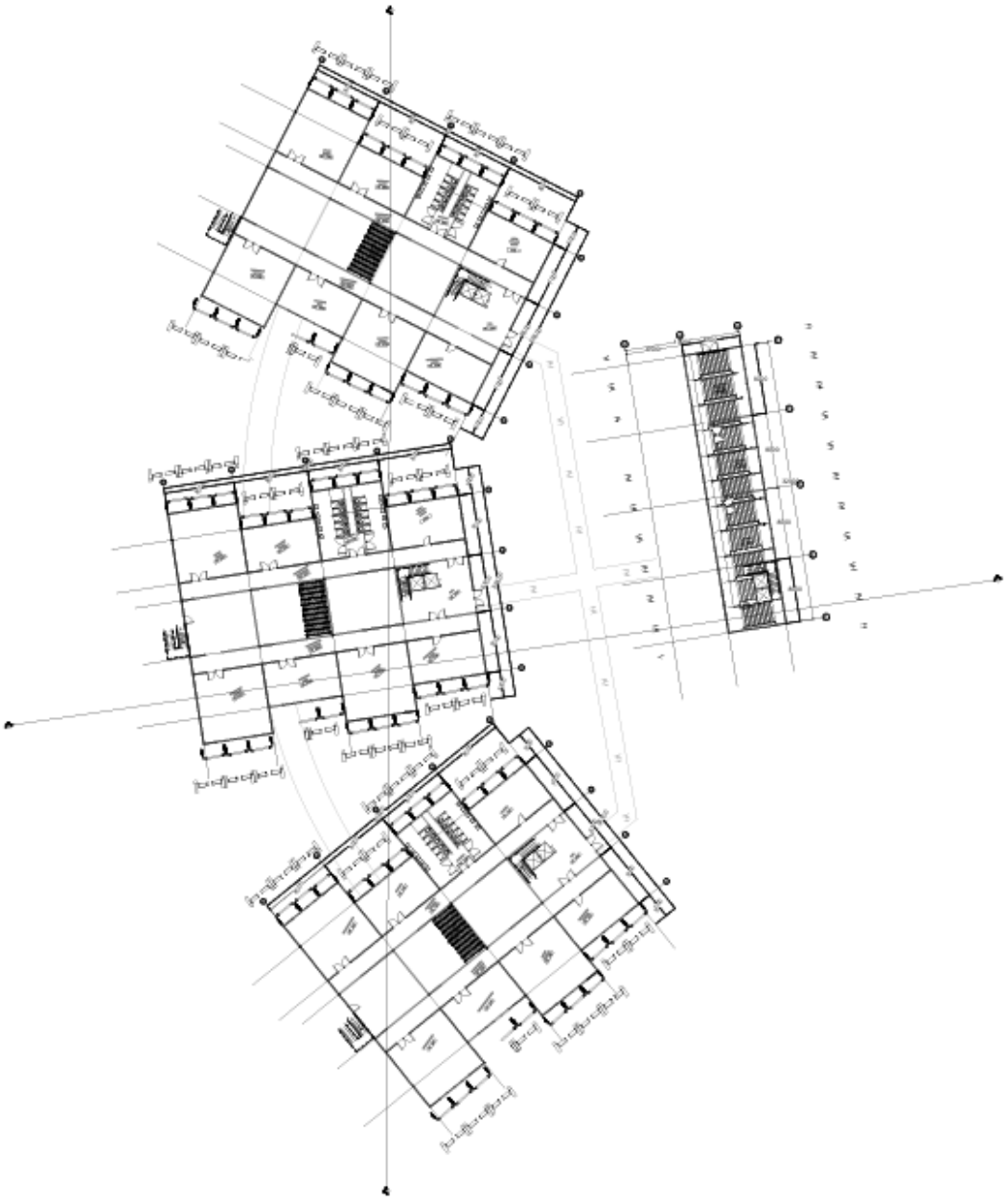

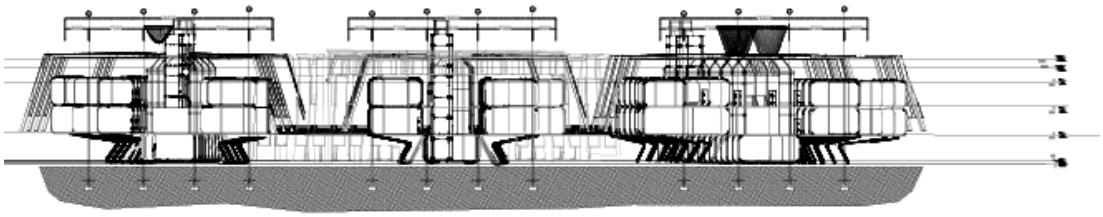

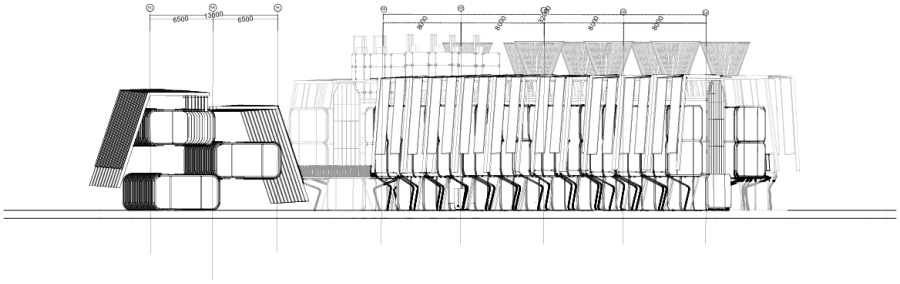
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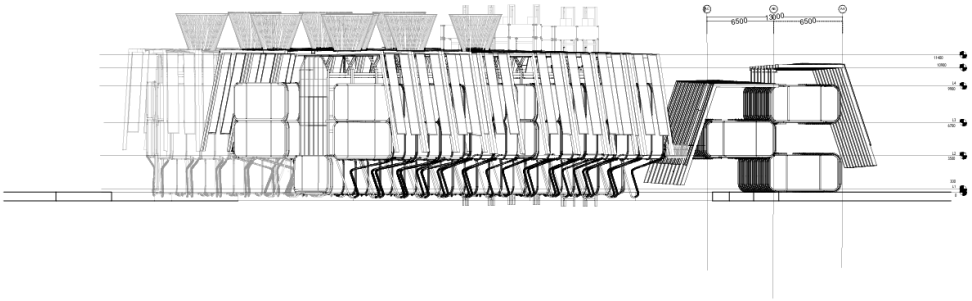

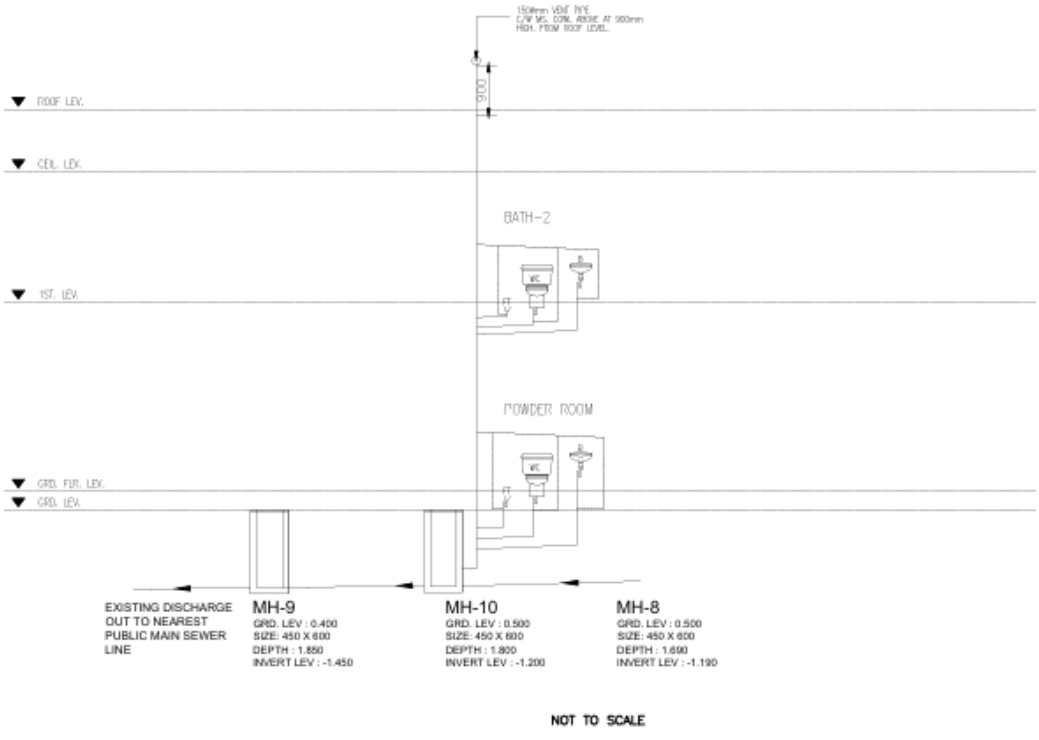
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ROOF LEV.
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BATH-2
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EXISTING DISCHARGE
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PUBLIC MAIN SEWER
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INVERT LEV : -1.450
MH-10
GRD. LEV : 0.500
SIZE: 450 X 600
DEPTH : 1.800
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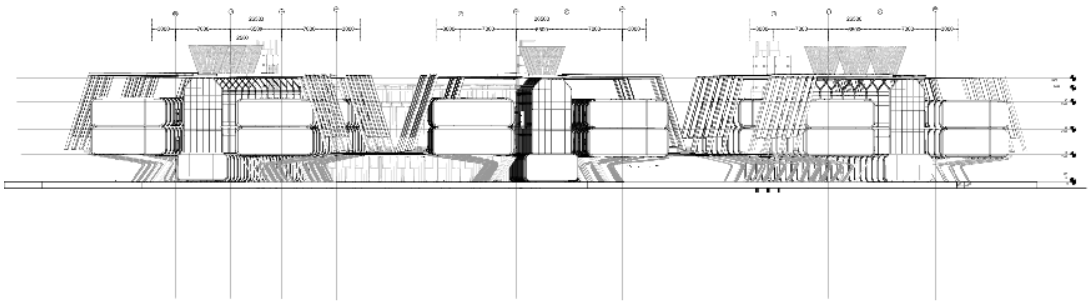

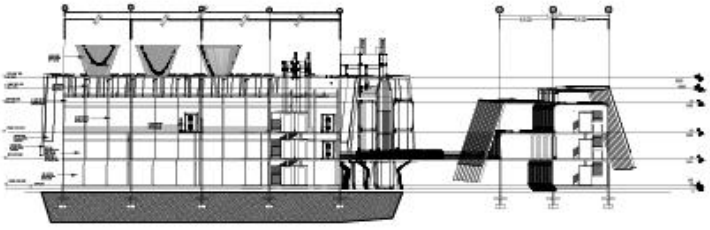

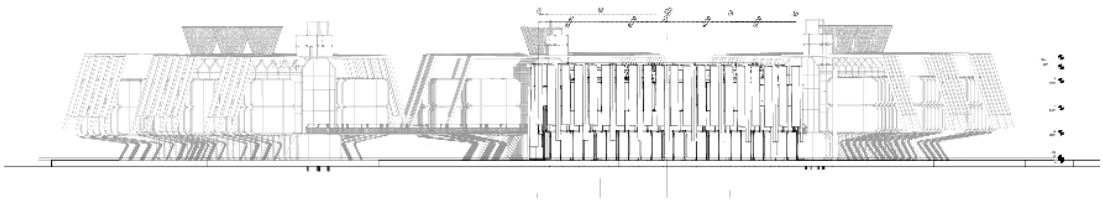

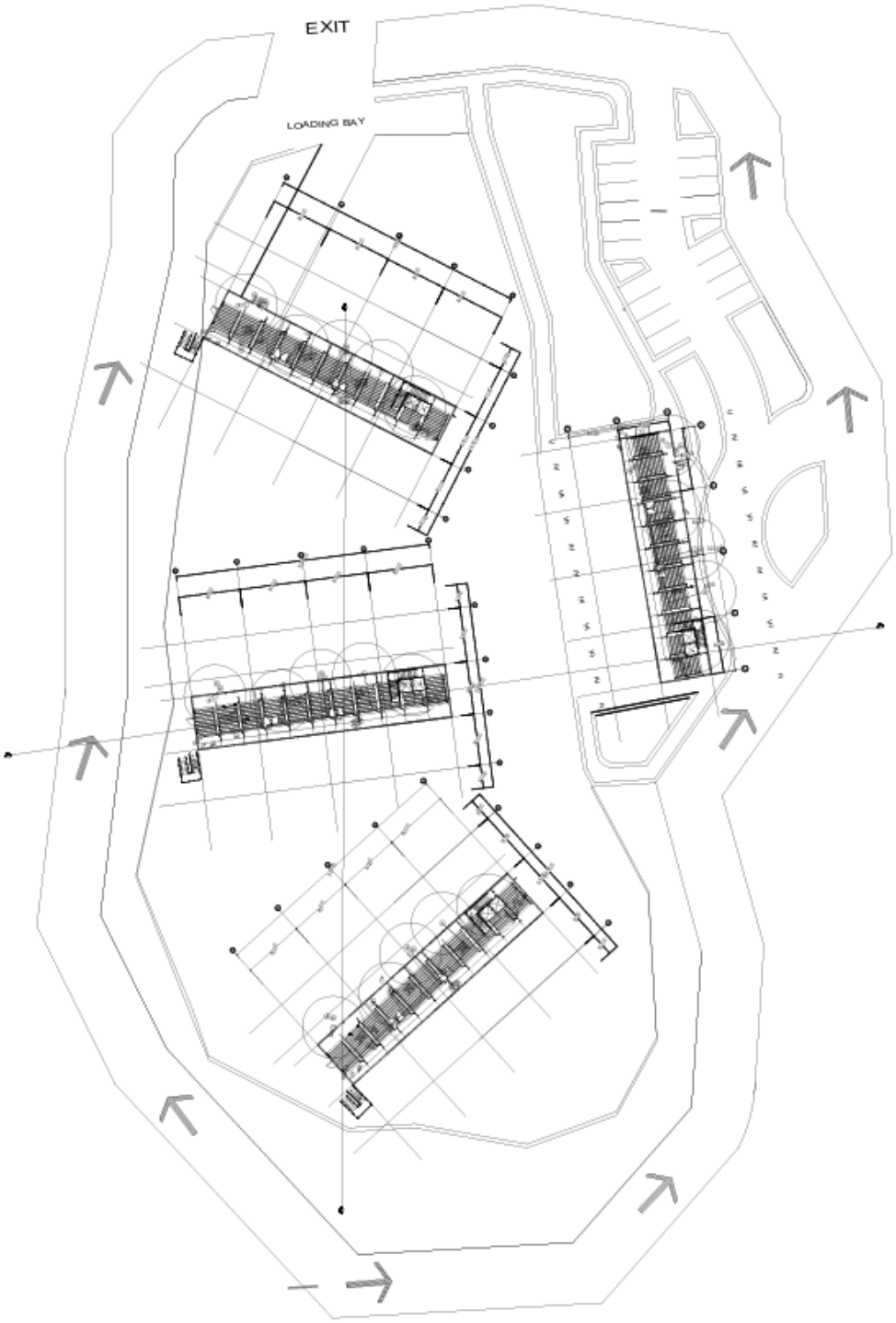
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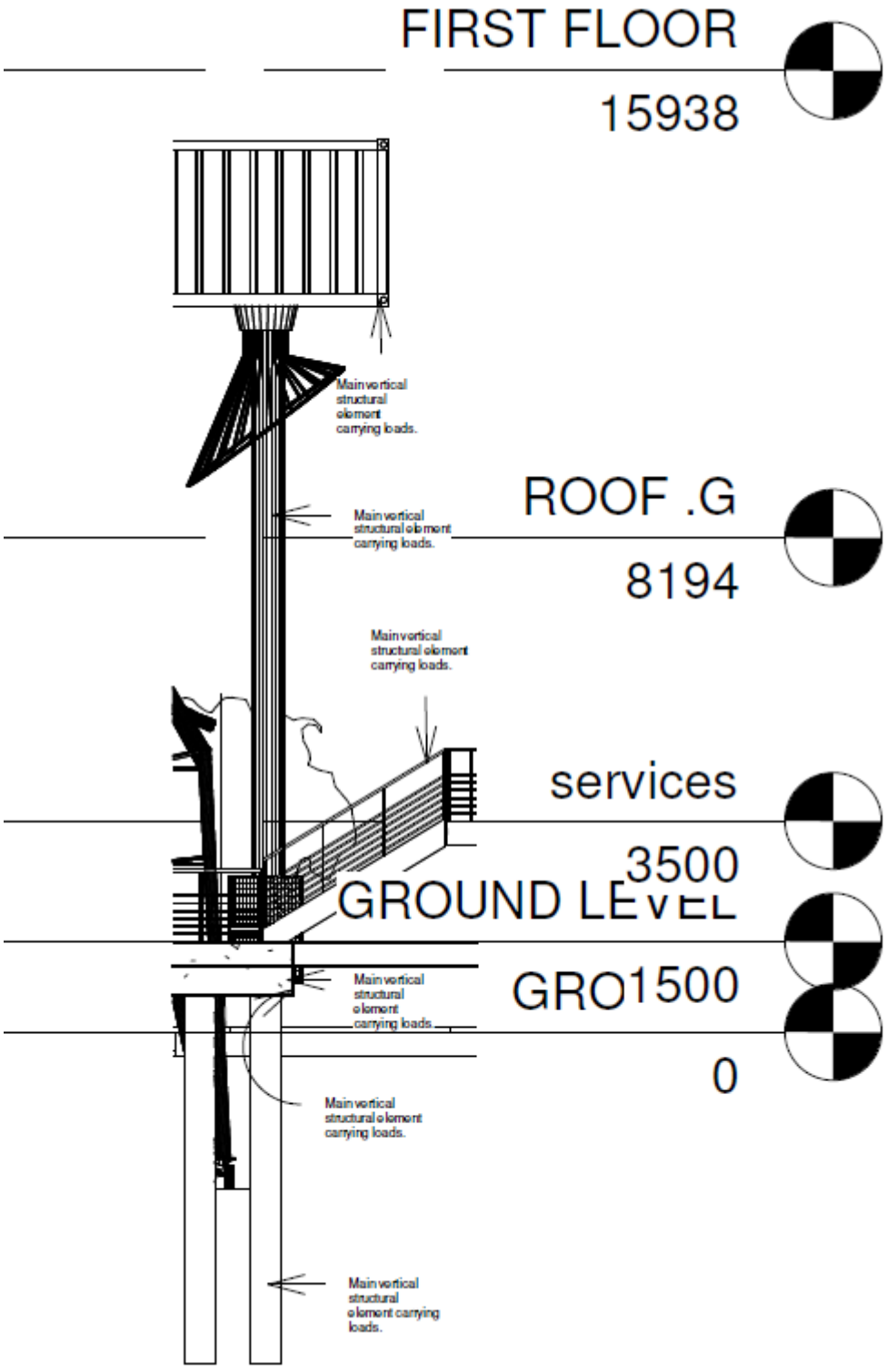
FIRST FLOOR
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Main vertical structural element carrying loads.
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Main vertical structural element carrying loads.
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