

OBJECTIVES OF THE COMPETITION

GENERAL OBJECTIVE

To develop a cable transport station in Freetown that offers a safe, efficient, and sustainable alternative for urban mobility, reducing traffic congestion and improving connectivity in the city. The project will integrate the urban context and historical heritage, promoting ecological solutions and encouraging economic development in the area. It aims to transform the experience of mobility and generate trust among residents to adopt a new mode of transportation.

SPECIFIC OBJECTIVES

- Improve urban mobility through a safe, efficient, and connected transport system that reduces traffic congestion.
- Integrate the station with its environment, respecting the urban context, historical heritage, and promoting Freetown's identity.
- Boost economic and tourism development, by leveraging the potential of the center and the waterfront to attract investment and improve quality of life.
- Prioritize sustainability and citizen well-being, by promoting healthy public spaces and ecological solutions.
- Ensure a positive and immediate impact with actions that benefit local residents from the project's implementation.

10 DESIGN PRINCIPLES

- The residents: The project seeks to improve residents' quality of life through investment.
- Tourism follows a well-designed city: If Freetown works for its residents, it will attract tourists and investment.
- Heritage matters: Freetown's history and culture must be part of this space.
- Poor mobility: Traffic and poor roads affect daily life and job opportunities.
- The station must be integrated: The station must work as a transition node, not a barrier.
- Connected transport: Local transport must connect with the cable system.
- Immediate local benefit: What changes will be felt first?
- The waterfront and river are assets: The opportunities offered by the waterfront must be made visible.
- Quality spaces: Accessible and comfortable spaces for walking and waiting must be created.
- Sustainability always: The project has to include ecological and sustainable solutions

PROPOSAL

Understood, here is an intermediate version, brief but with more development:

The proposal is born from respect for the urban and environmental context, seeking to integrate without altering the harmony of the place. Local materials such as clay and bamboo are used for their sustainability, climate resistance, and cultural value.

The design is based on modular volumes stacked on each other, inspired by the game Jenga, which allows the creation of three levels with spatial dynamism, good ventilation, and a strong relationship with the surroundings. This form allows the building to visually dialogue with nearby elements such as Ane School, reinforcing its urban integration.





SITE FREETOWN ANALYSIS

1787

-The Sierra Leone Company (SLC) takes control of the settlement and seeks to rehabilitate poor Black people from London and former slaves from North America, as part of the fight against the slave trade.

– The first groups of Black settlers arrive—around 400 Londoners—settling in Granville Town.

1808

-Freetown becomes a British Crown Colony, granting a greater degree of autonomy to the Creoles (a union of the surviving London settlers, those from Nova Scotia, and the Jamaican Maroons due to their Christian background and Western culture).

– Freetown served as the headquarters of the British Royal Navy's West Africa Squadron, which captured slave ships bound for the Americas and freed their human cargo in the city. Over time, these people became the largest segment of the Creole population.

– Freetown became a center of trade, culture, and learning in West Africa.

Capital city: Freetown

Area: 71.740

Currency: Leone (SLL)

Official language: English

Independence Day: April 27, 1961

Population 7.092.113

Republic of Sierra Leone

The name "Sierra Leone" dates back to 1462, when Portuguese explorer Pedro da Cintra, sailing along the West African coast, saw the high mountains rising above what is now the Freetown Peninsula and called them the "Lion Mountains" or "Serra Lyoa." Subsequent visits by English sailors and later British colonization modified the name to "Sierra Leone."



AFRICA



SIERRA LEON



FREETOWN

1971

-Sierra Leone gained its independence, and Freetown, with a population of approximately 100,000, became its capital.

-It welcomed thousands of migrants in search of employment, most of them Muslims, which contrasted with the Christian Creole population.

The city experienced economic and urban growth driven by the export of agricultural and mineral products.

1991-2002

-The civil war breaks out, destroying much of the city's infrastructure and economy, devastating the country and causing a large number of deaths and displacements.

-The civil war leaves a deep impact on society and a lasting legacy of trauma and poverty after 12 continuous years of civil war.

2017

-After the end of the civil war, a slow reconstruction process begins, with efforts to improve the city's infrastructure, economy, and security.

-Freetown faced a new challenge, having to deal with the Ebola epidemic.

-It faces devastating floods, causing hundreds of deaths and significant damage to infrastructure.

-A fuel tanker explodes in Freetown, killing more than 100 people.

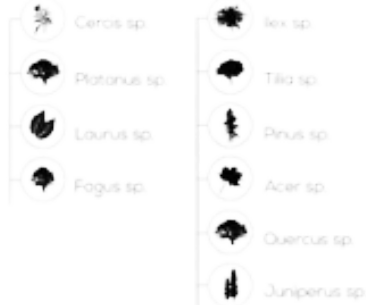
- *Population growth: In 2025, the population of the Freetown metropolitan area is estimated at 1,387,000 inhabitants, representing an increase of 2.89% compared to the previous year.*



SITE ANALYSIS

ECOLOGICAL ESTRUCTURE

Flora in danger



Fauna in danger



FAUNA

Although urbanization has reduced the presence of many species, wild animals can still be found in the outskirts of the city and in nearby reserves, such as the Freetown Peninsula. Notable fauna includes:

- **Colobus and green monkeys:** Found in forested areas.
- **Birds such as the hornbill and the African weaver:** The region is a paradise for bird watchers.
- Reptiles like the Nile monitor and snakes such as the African rock python.
- Small mammals like rodents and mongooses.

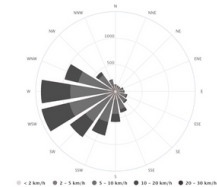
GEOGRAPHY

Sierra Leone borders Guinea to the north and east, Liberia to the southeast, and the Atlantic Ocean to the southwest and west.

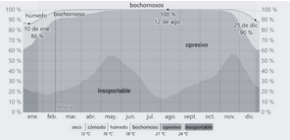
Most of Sierra Leone's coastline consists of swampy mangroves, except for the peninsula where the capital, Freetown, is located. The rest of Sierra Leone is a large plateau with an average altitude of about 300 meters, mainly covered by forests. In the far northeast of the country, however, there are mountains, with the highest point being Loma Mansa at 1,948 meters.

Among the many rivers that flow through the territory, the most important are the Great Scarcies and Little Scarcies, Rokel, Jong, Sewa, and Moa, most of which are navigable during the rainy season.

COMPASS ROSE



TEMPERATURE LEVELS



Prevailing direction: The wind blows mostly from the west (W) and southwest (SW), with less frequency from other directions.

Wind speed: Most recorded winds have speeds between 2 and 10 km/h, with some events reaching up to 20 km/h. No speeds above 30 km/h have been observed.

Frequency: The highest number of records are concentrated in W and SW directions, suggesting these are the dominant directions in the region.

In general, the wind in Freetown is moderate and blows mainly from the west and southwest. This may be influenced by local geographic and climatic factors, such as proximity to the ocean and regional atmospheric patterns.

- **High humidity throughout the year:** Relative humidity remains high, with values exceeding 80% for most of the year, reaching 100% on August 12.
- **Periods of muggy and oppressive conditions:** From March to November, the heat index ranges from "muggy" to "oppressive" and even "intolerable." The most uncomfortable months are June and July, when humidity combined with temperature creates an extreme sense of discomfort.
- **More comfortable periods:** January and December show lower humidity levels compared to the rest of the year, with some days considered "humid" but not reaching the oppressive levels of other months.
- **Rising temperatures:** As the year progresses, temperatures also increase, ranging from 13°C in January to 24°C in December, contributing to the muggy sensation.

GENERAL GEOLOGY OF FREETOWN

The geology of Freetown, the capital of Sierra Leone, is characterized by a combination of igneous, metamorphic, and sedimentary rocks, along with a notable influence from coastal erosion and tectonic activity in the region.

Relief and Soils:

- The terrain is mountainous and rugged, with hills and plateaus formed by the erosion of igneous rocks.
- In lowland and coastal areas, the soils are sandier due to the deposition of marine and river sediments.

Due to the hardness of the rocky terrain, foundation construction can be complex and costly. In steep areas, strategies are required to prevent landslides, and the proximity to the ocean necessitates considering coastal erosion in urban projects. Freetown has a geology dominated by resistant igneous rocks, with challenges related to mountainous topography, erosion, and soil stability.



NATURAL HAZARDS

1. Landslides
Freetown has experienced major landslides, especially during the rainy season. One of the most devastating events occurred in 2017 in Regent, where a mudslide caused over 1,000 deaths.

Main causes:

- Mountainous terrain with steep slopes.
- Deforestation due to urbanization and agriculture.
- Heavy rains that saturate the soil and make it unstable.

2. Floods
Heavy rains between May and October cause urban and river flooding in Freetown.

Factores que agravan el problema:

- Insufficient drainage due to rapid urban expansion.
- Deforestation, reducing the soil's capacity to absorb water.
- Occupation of floodplains, increasing the population's vulnerability.

3. Coastal erosion
Freetown, located on the Atlantic coast, suffers erosion due to the action of waves, tides, and storms.

Contributing factors:

- Construction in coastal areas, removing natural barriers such as mangroves.
- Sand extraction for construction, weakening the coastline.
- Climate change, with rising sea levels and more intense storms.



RELIEF

Freetown, the capital of Sierra Leone, features a varied terrain that combines mountainous areas, hills, and a rugged coastline. Its location on the Freetown Peninsula shapes its landscape, with steep slopes, low-lying coastal zones, and a network of small rivers and streams.

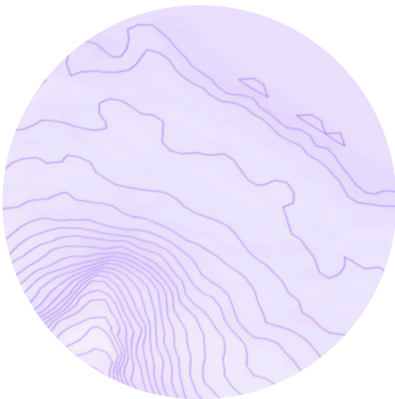
1. Mountainous Area and Hills
The city is surrounded by the mountains of the Freetown Peninsula, which reach up to 900 meters above sea level. Among them, Leicester Peak is one of the most prominent elevations.

2. Coastal Plains and Beaches
The coastal strip includes low plains, sandy beaches, mangroves, and estuaries. The coastline is irregular and rocky, with areas of cliffs and erosion.

Bays and inlets have been crucial to the city's port and commercial development, facilitating maritime trade.

3. Rivers and Watersheds
Several rivers and streams originate in the mountains and flow into the Atlantic Ocean. These water bodies play an essential role in the city's natural drainage, although they also contribute to flooding during the rainy season.

Mangroves and wetlands in lowland areas help mitigate coastal erosion and protect local biodiversity.



SOCIODEMOGRAPHIC ASPECTS

LOCAL CONSTRUCTION TECHNIQUES AND MATERIALS

Construction Materials and Techniques

- Wood: Used in structures and finishes, sourced locally.

Although wood is widely used in Freetown and much of construction depends on it, it is important to consider the environmental and political impact that the logging industry is having on the country. Ongoing deforestation—whether for slash-and-burn agriculture, mining, livestock grazing, or fuel collection—is causing numerous environmental problems. These include soil erosion and the worsening of water scarcity.

- Recycled metal: Commonly used in roofing and structural reinforcements.
- Compressed Earth Blocks (CEB): A sustainable alternative to cement, offering good thermal insulation.
- Clay bricks: A traditional material with good durability.
- Concrete: Used for foundations and structural elements.

Construction Techniques:

- Load-bearing walls with CEB: Reduce construction costs and improve thermal comfort.
- Mixed wood and metal structures: Combine strength and flexibility for earthquakes and strong winds.
- Ventilated roof designs: Reduce heat in tropical climates.
- Elevated foundation systems: Protect against flooding and moisture.

Urban Design and Housing

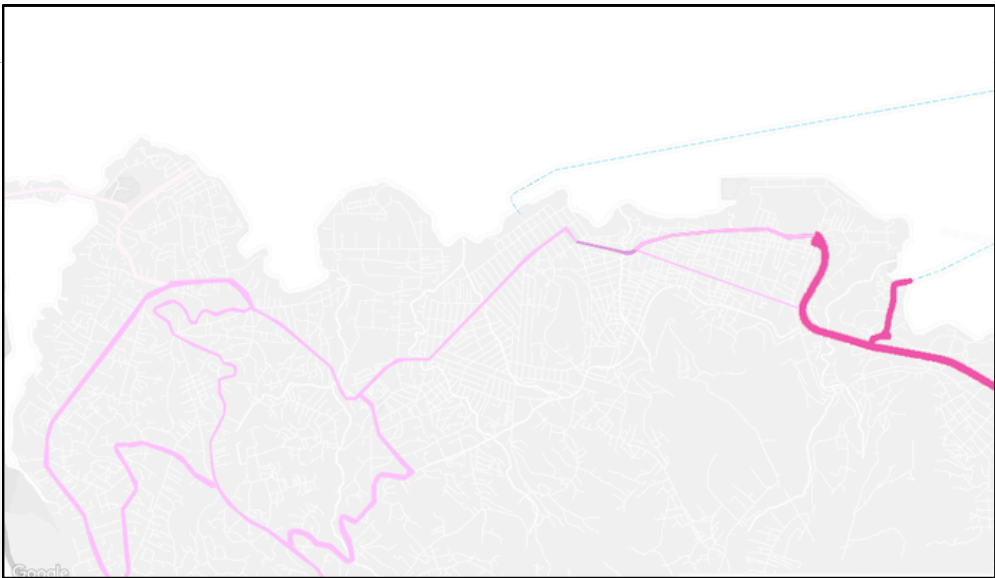
- Compact and efficient homes: Adapted to the urban density of Freetown.
- Space distribution: Prioritizes natural ventilation and lighting.
- Use of internal courtyards: Improve ventilation and create shared living spaces.
- Infrastructure and Services:
 - Water access: Promotion of rainwater harvesting systems.
 - Basic sanitation: Use of improved latrines and sustainable drainage systems.
 - Waste management: Encouragement of recycling and composting.

Sustainability and Climate Adaptation

- Bioclimatic design: Use of materials that improve thermal comfort without relying on external energy.
- Passive strategies: Reflective roofs, walls with natural insulation, and cross ventilation.
- Use of renewable energy: Implementation of solar panels for basic lighting.



MOBILITY IN FREETOWN ANALYSIS OF FLOWS AND TRANSPORTATION



Freetown, **the capital of Sierra Leone**, faces significant challenges regarding traffic flow and transportation systems. Below is an analysis of the current situation:

Road Infrastructure and Traffic Flow

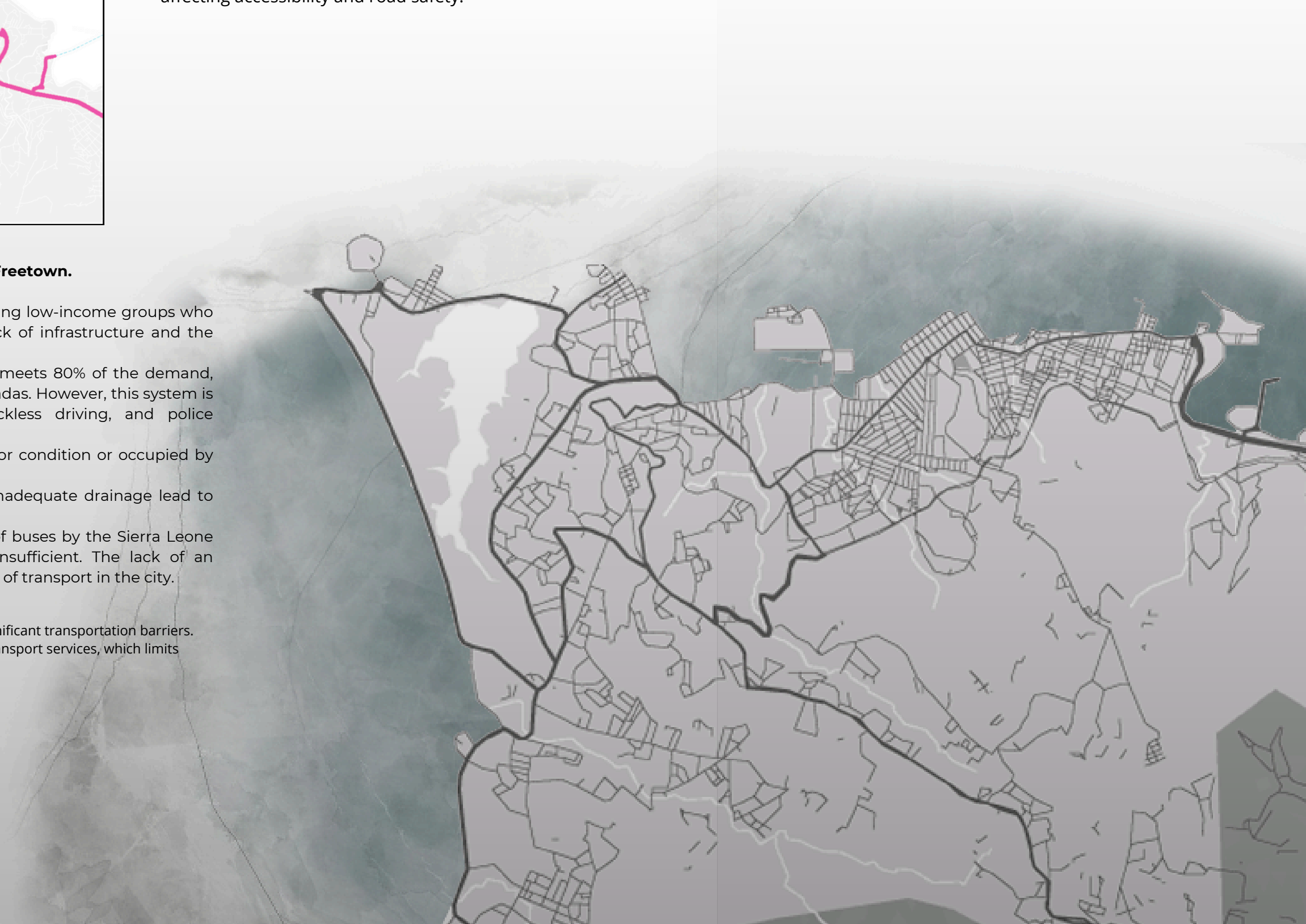
The road infrastructure in Freetown is limited, with **only 8% of roads paved**. This contributes to traffic congestion and hinders urban mobility. The city's rugged topography and adverse weather conditions, such as heavy rainfall, further exacerbate these problems, affecting accessibility and road safety.

Public transport is the dominant mode of transportation in Freetown.

Access to transportation in Freetown is unequal, mainly affecting low-income groups who must walk long distances to reach public minibuses. The lack of infrastructure and the scattered location of services and jobs worsen the situation. Urban transport is characterized by an informal system that meets 80% of the demand, including minibuses (poda-poda), shared taxis, kekehs, and okadas. However, this system is disorganized, with poorly defined routes, congestion, reckless driving, and police corruption. Pedestrian mobility is essential, but sidewalks are often in poor condition or occupied by vendors. Climate change also impacts transportation, as rainfall and inadequate drainage lead to flooding and landslides, blocking roads. Despite some modernization efforts, such as the acquisition of buses by the Sierra Leone Road Transport Corporation (SLRTC), the system remains insufficient. The lack of an effective regulatory body limits the planning and improvement of transport in the city.

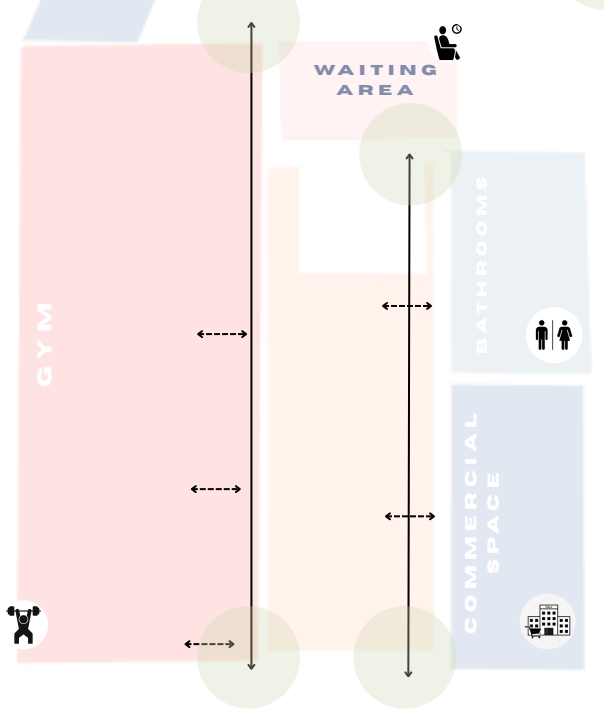
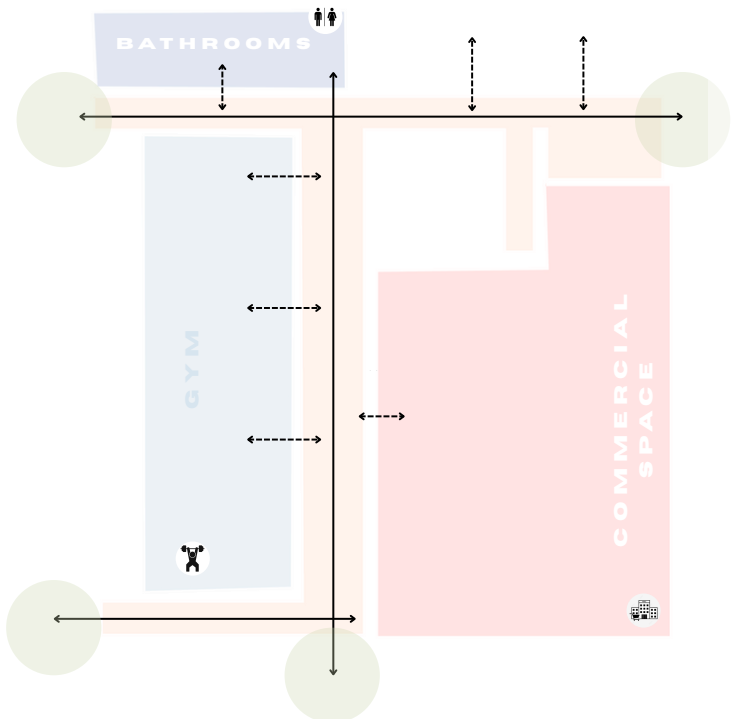
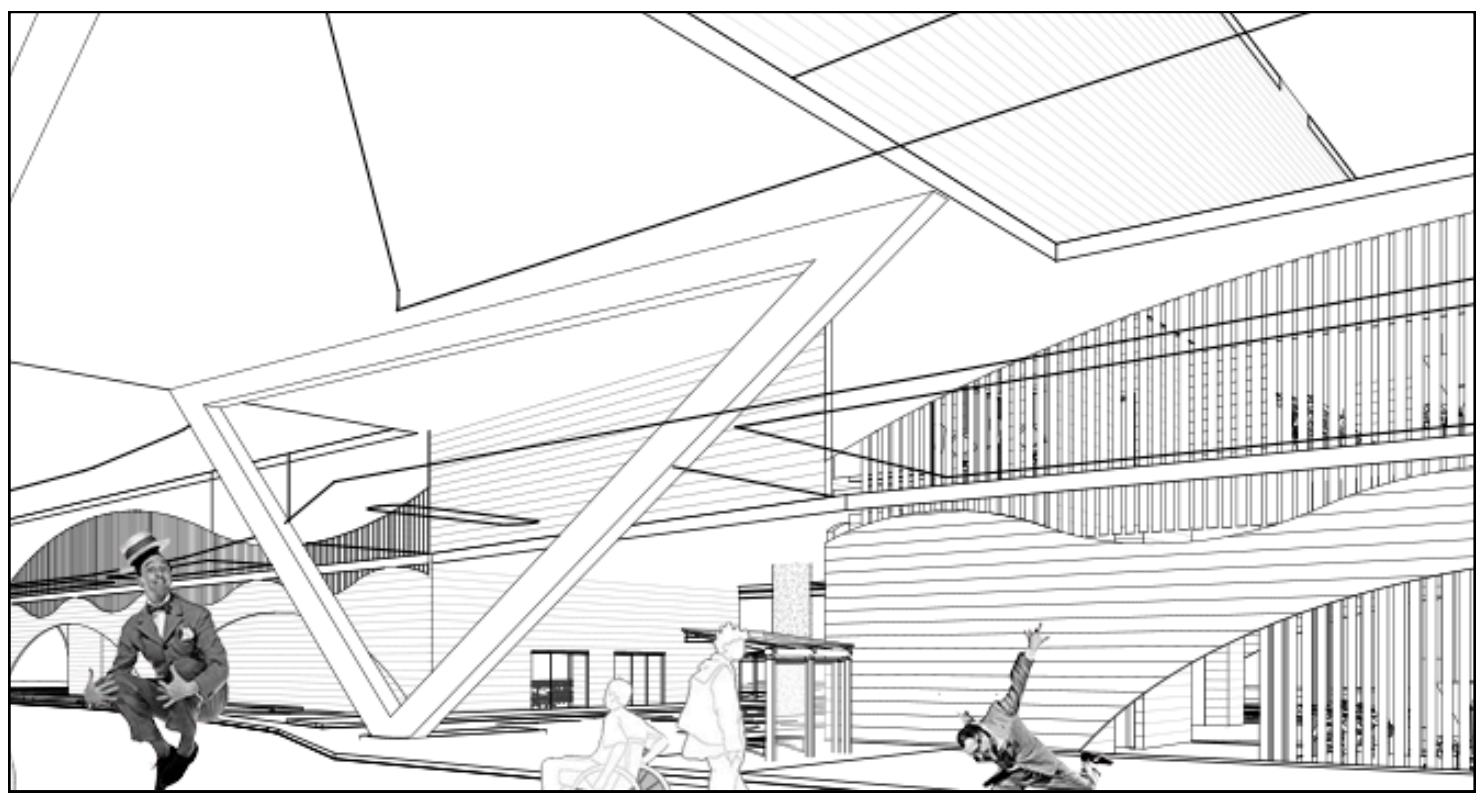
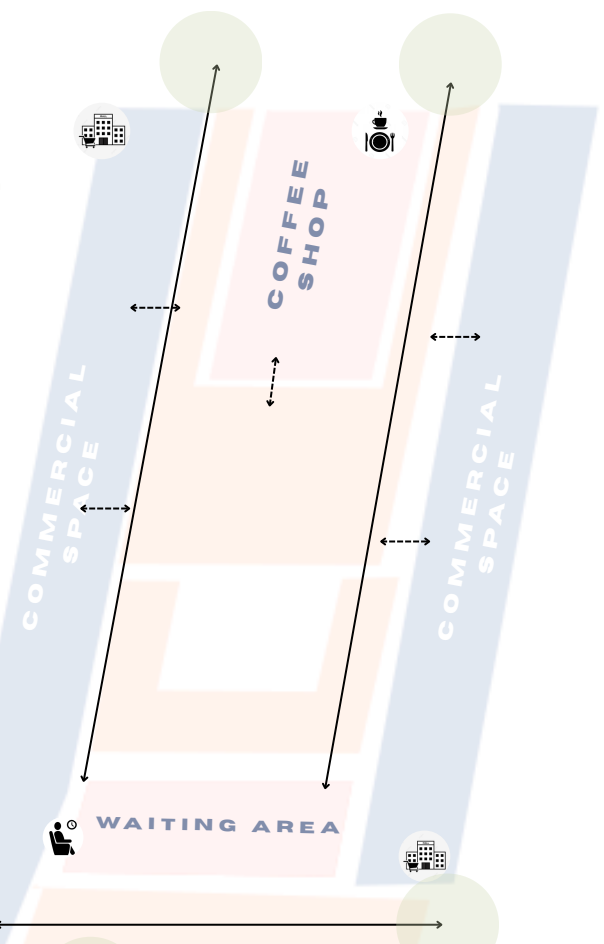
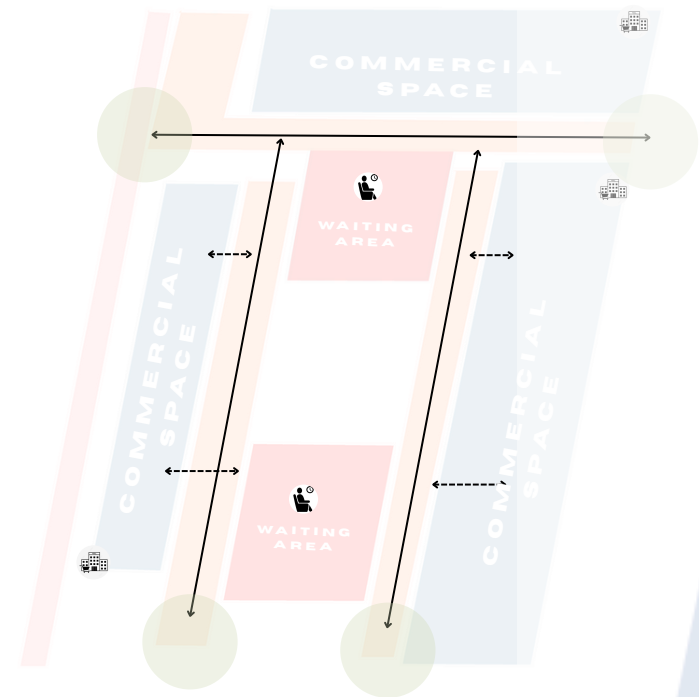
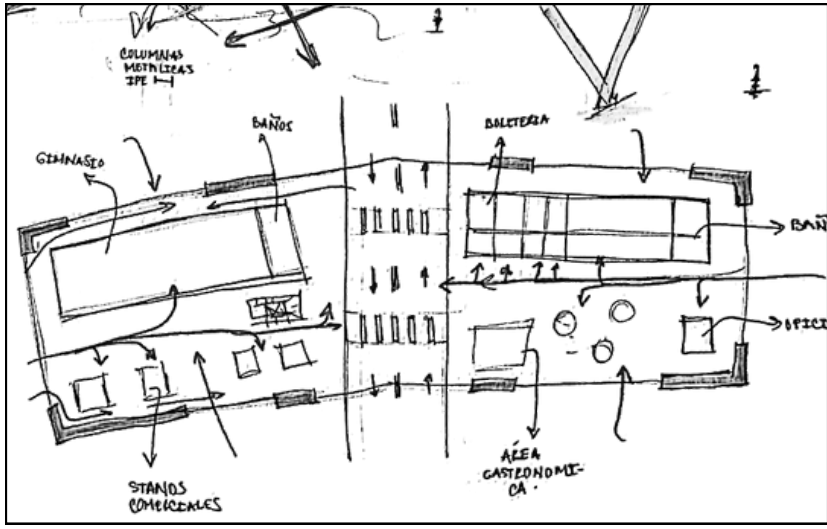
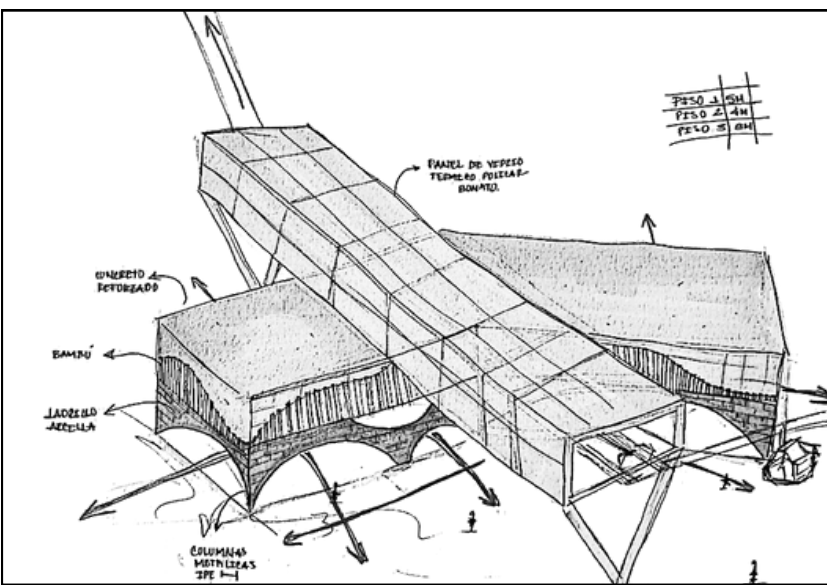
Impact on the Population

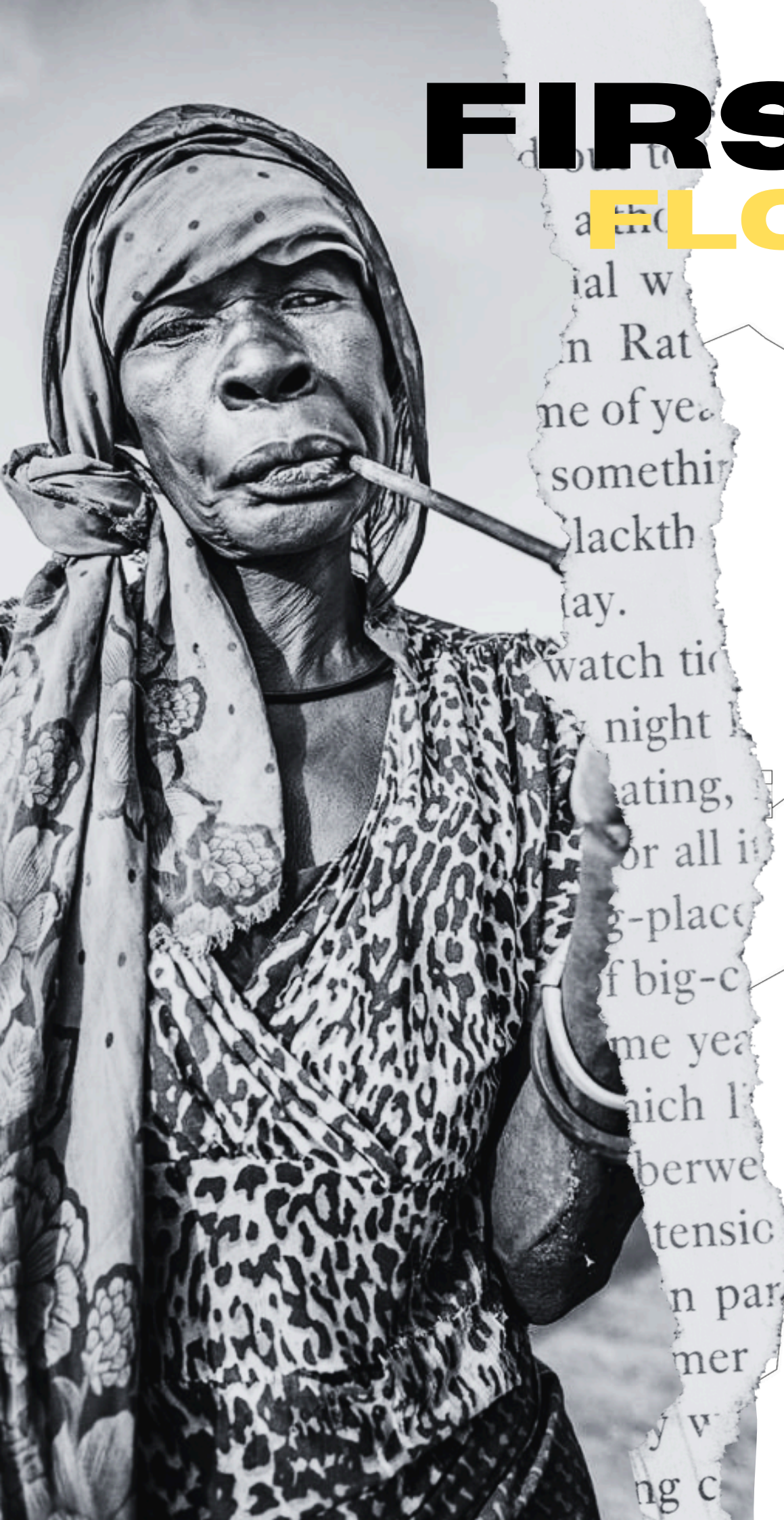
Low-income communities, especially those in hard-to-reach areas, face significant transportation barriers. Many people must walk long distances to access more affordable public transport services, which limits their access to job opportunities and essential services.



PROCESS, SKETCH, DIAGRAMS

CREATIVE PROCESS



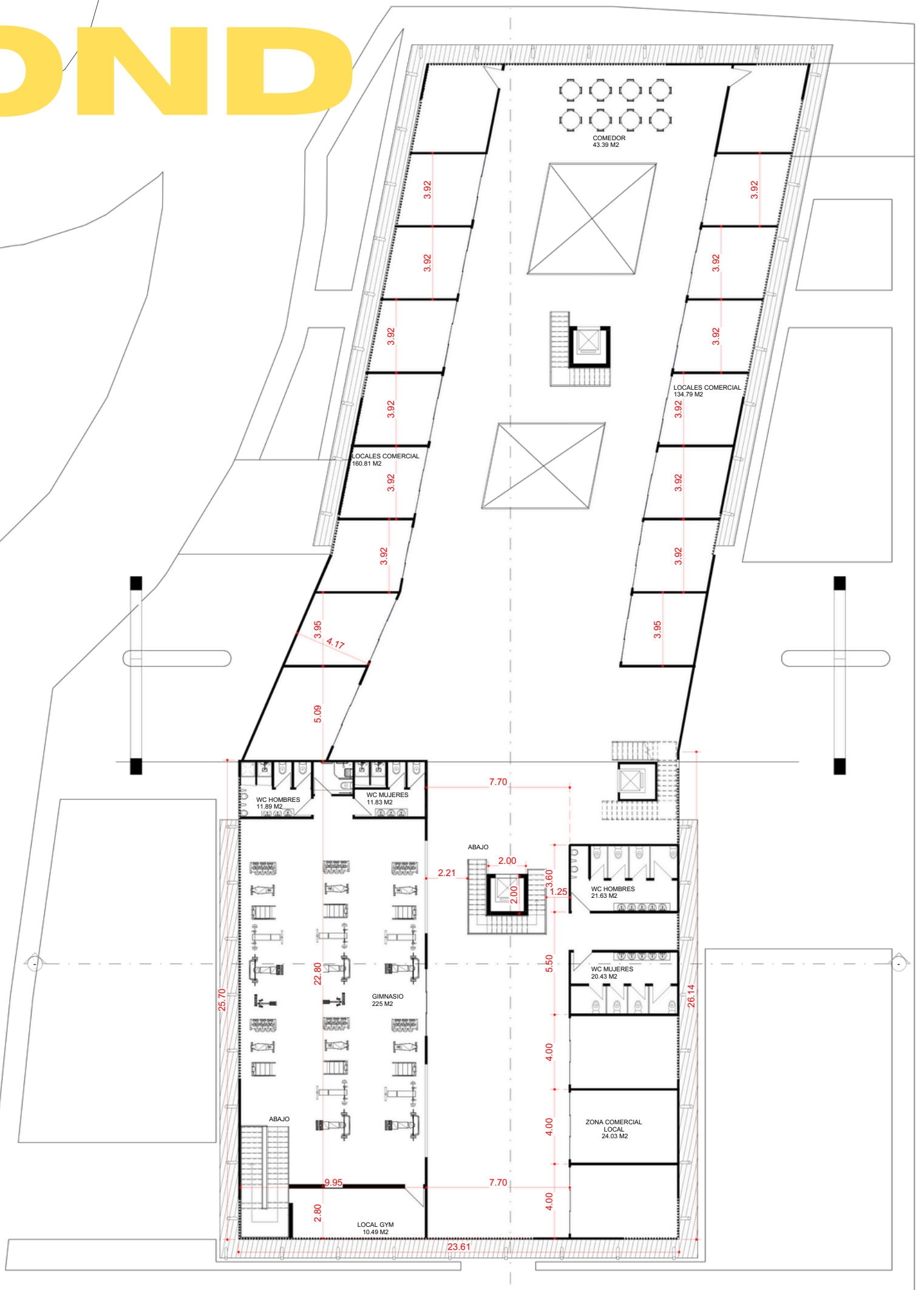


FIRST FLOOR

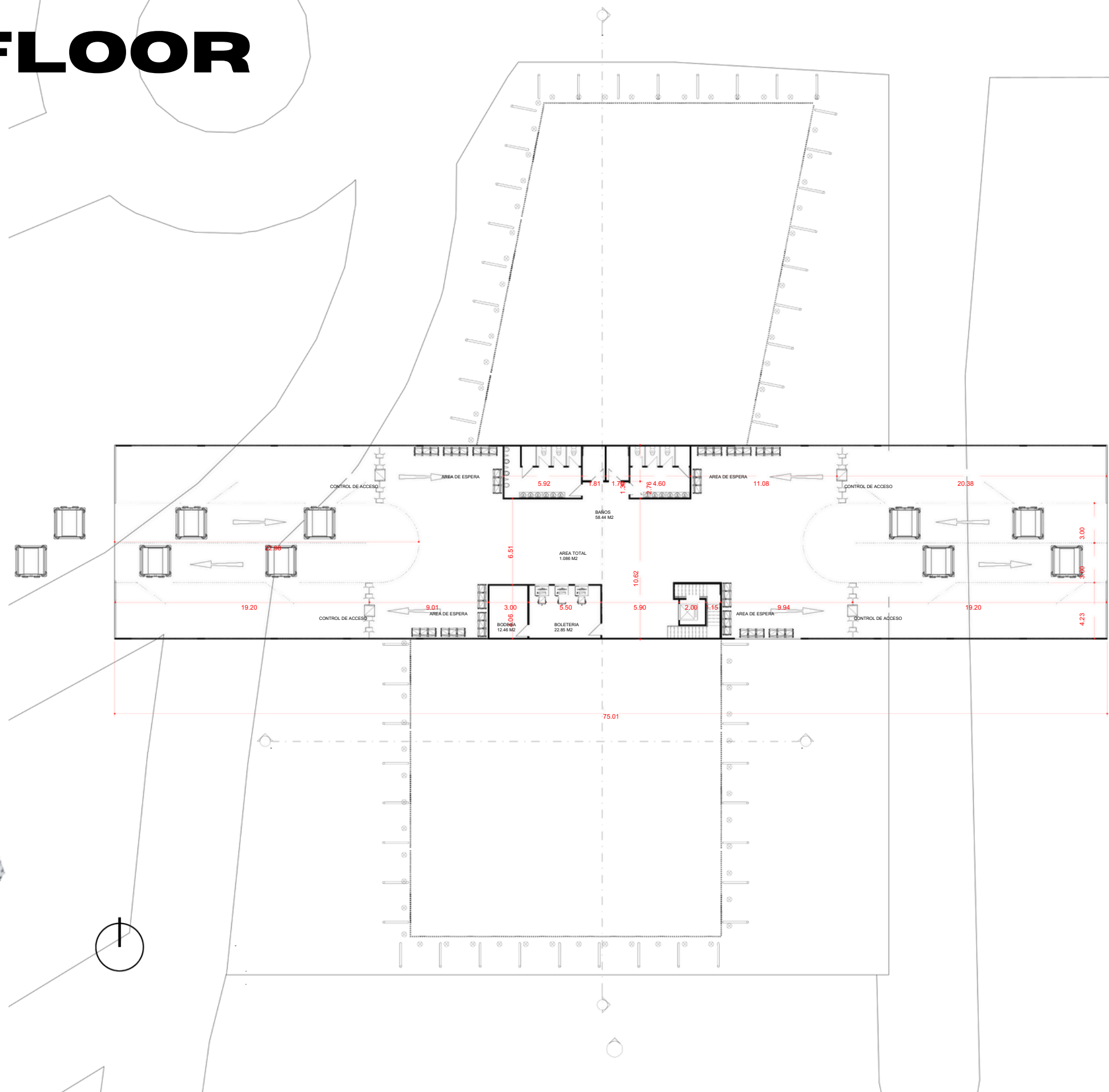


SEE
FLO

d out to
alth
al w
n Rat
me of yea
somethin
blackth
ay.
watch tic
night
ating,
or all i
g-plac
of big-c
me yea
which I
berwe
tensi
n pa
mer
y v
ng c

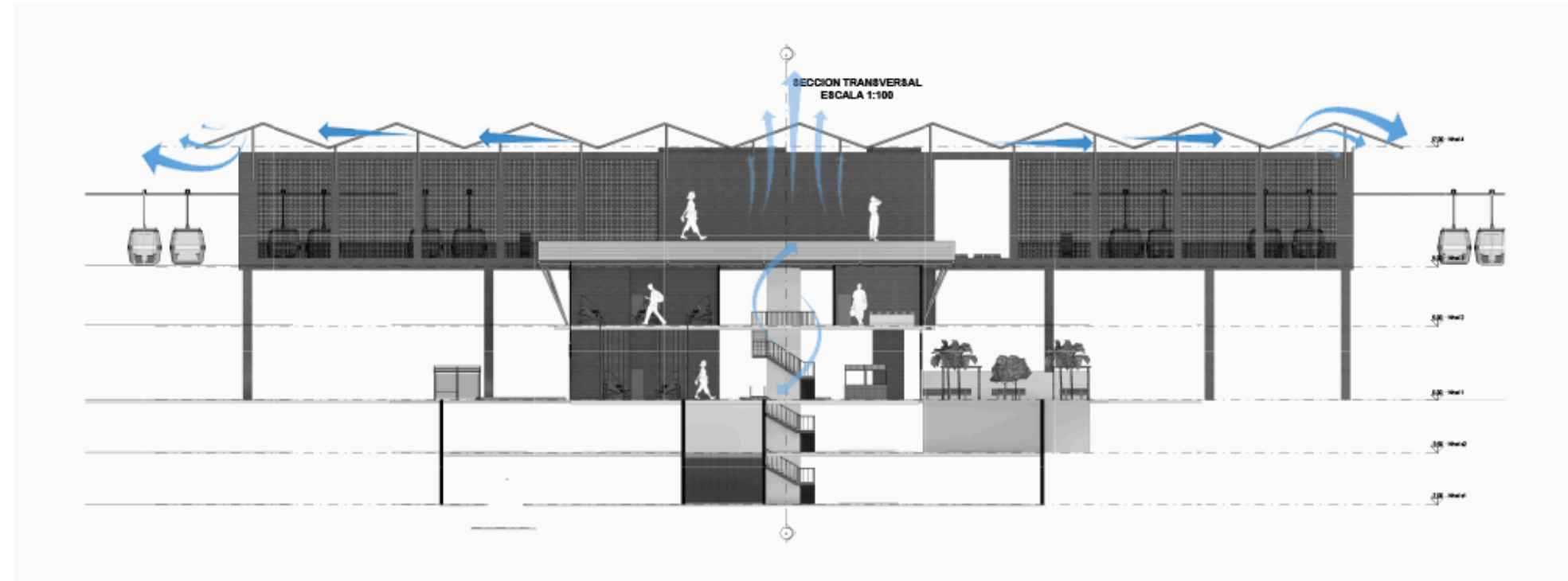


and out
 altho
 al w
 n Rat
 me of yea
 somethi
 lackth
 ay.
 watch tic
 night
 ating,
 or all i
 g-place
 f big-c
 me yea
 which l
 berwe
 tensic
 n par
 mer
 y v
 ng c

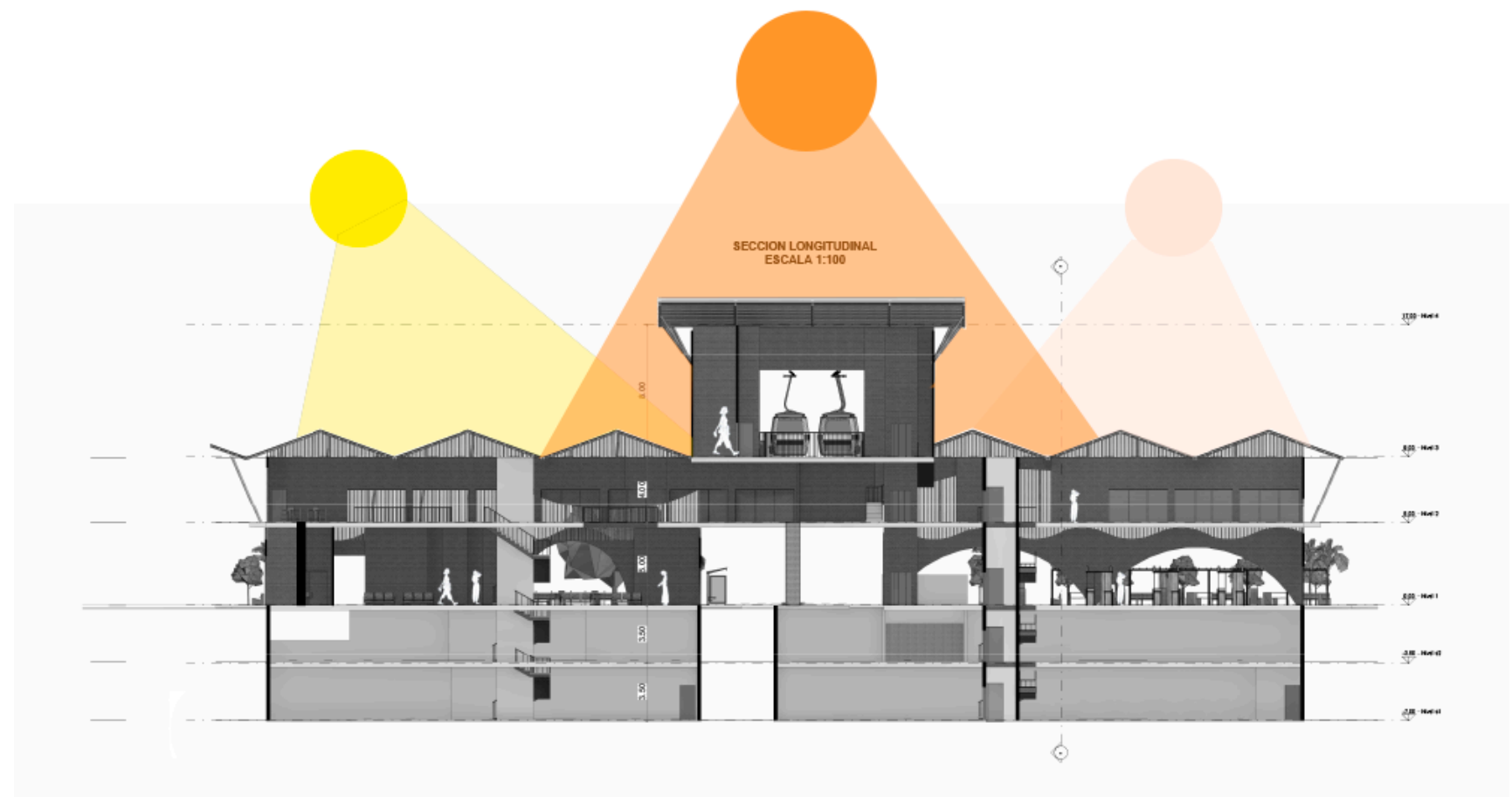




ARCHITECTURAL SECTIONS

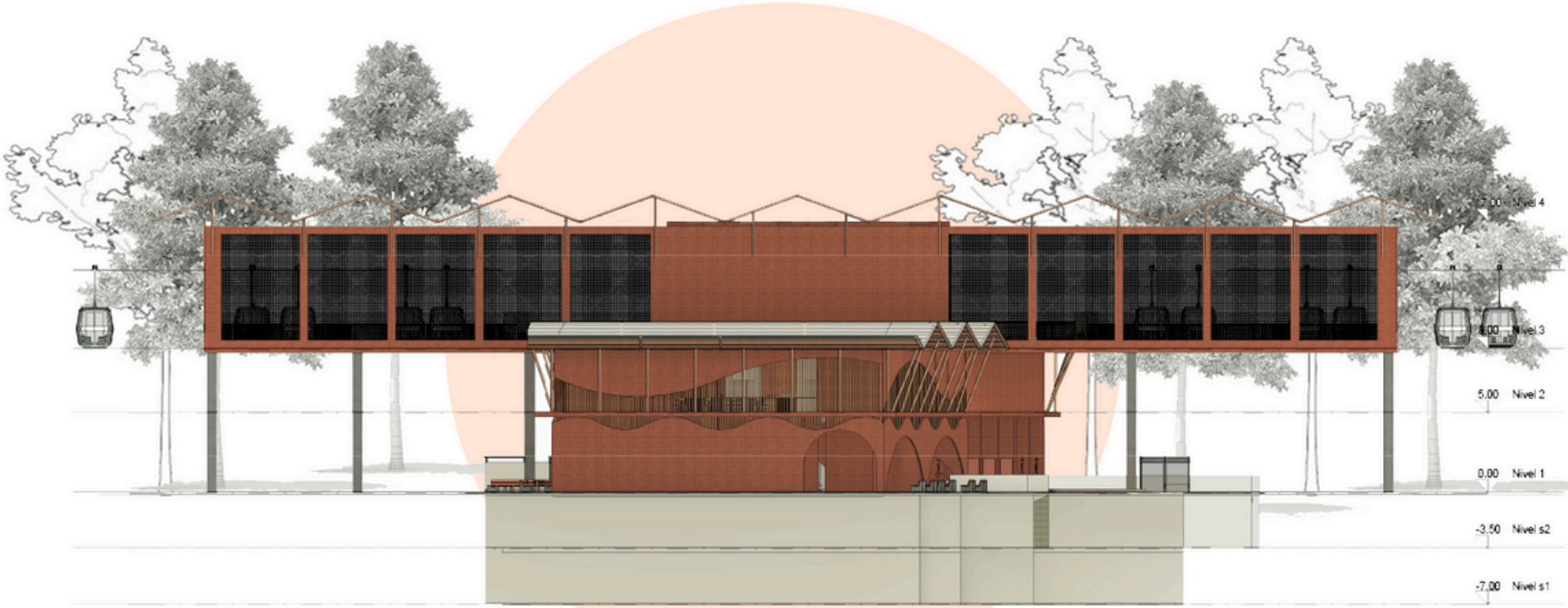


The project's roof applies bioclimatic strategies inspired by Francis Kéré, focusing on achieving passive thermal comfort in hot climates. Its design includes an elevated structure that allows air to enter from the sides and exit through openings at the top, generating **cross ventilation and a chimney effect**. This constant airflow helps expel accumulated heat, keeping the interior cool. Additionally, the gap between the outer roof and the habitable space creates an **air cushion** that acts as natural thermal insulation, reducing heat transfer. **Permeable or ventilated materials** are used in the enclosures, such as latticework or mesh, which block direct solar radiation but allow for ventilation and natural lighting. This **bioclimatic solution** helps reduce energy consumption and improve the quality of the indoor environment, following a **sustainable design logic**, climate-sensitive and centered on the **well-being of users**.





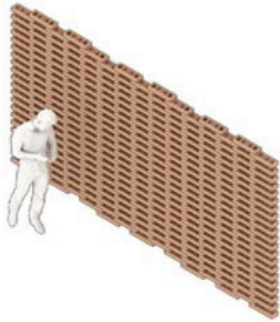
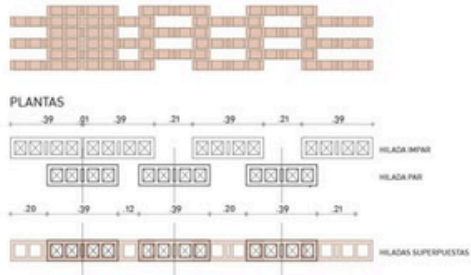
ELEVATIONS AND ARCHITECTURAL DETAILS



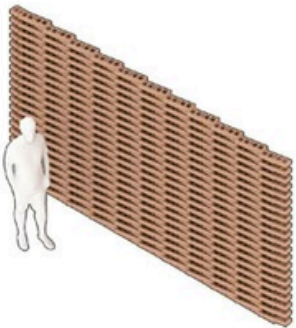
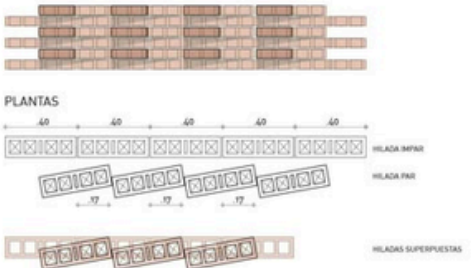
NORTH FACADE SCALE 1:100

They are built with ceramic blocks and organized into three different configurations: standard overlapping wall, perforated wall, and spine wall. Each offers particular advantages, but all share the ability to harness climatic conditions to improve the indoor environment. The perforated wall and the spine wall allow for air circulation and controlled light entry, which promotes cross ventilation and reduces heat gain. This is especially useful in warm or humid climates where it is necessary to keep spaces cool without relying on fans or air conditioning. The overlapping wall, on the other hand, provides greater control over privacy and direct solar radiation, making it effective in areas that require constant shade. In addition, ceramic blocks provide thermal mass, absorbing heat during the day and releasing it at night, which helps stabilize indoor temperatures. This solution is economical, sustainable, and easy to adapt to different contexts. Altogether, these walls represent an intelligent approach to climate-sensitive and responsible architecture.

DETALLE MURO CALADO - ESCALA 1:25
FACHADA

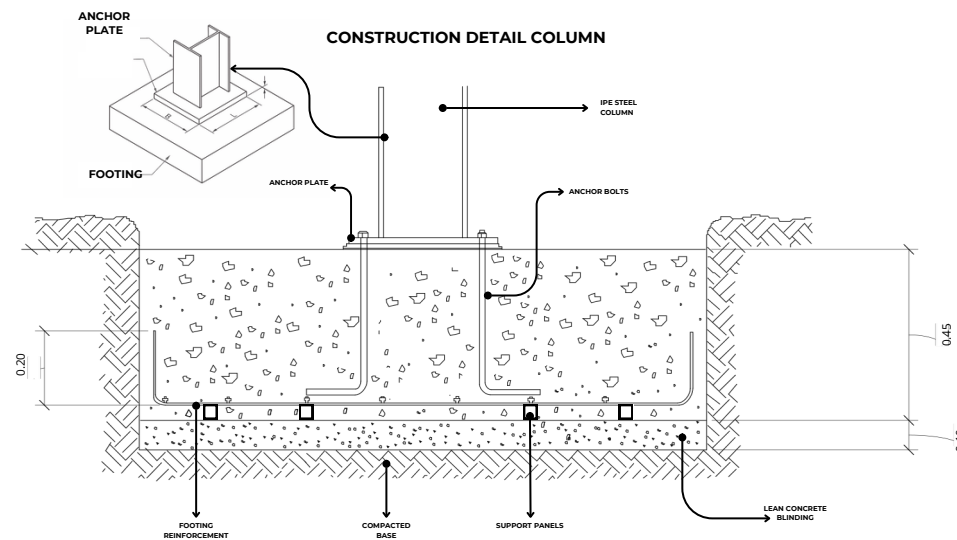


DETALLE MURO EN "ESPINA" - ESCALA 1:25
FACHADA

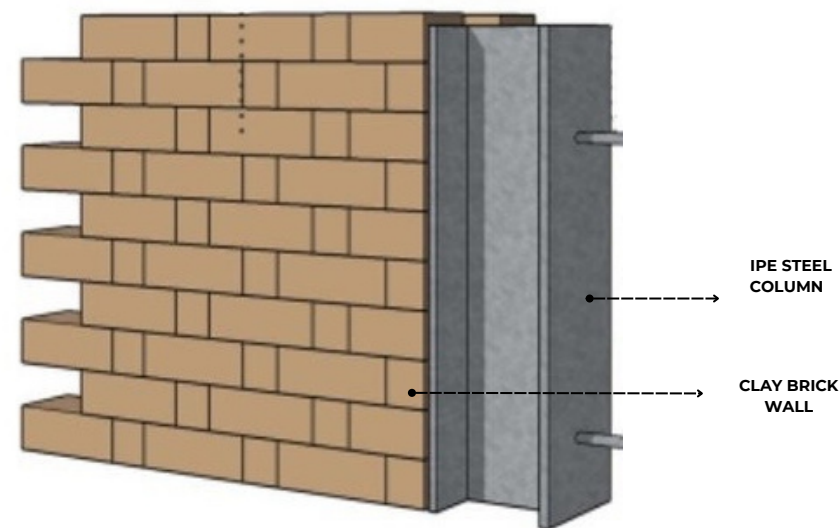
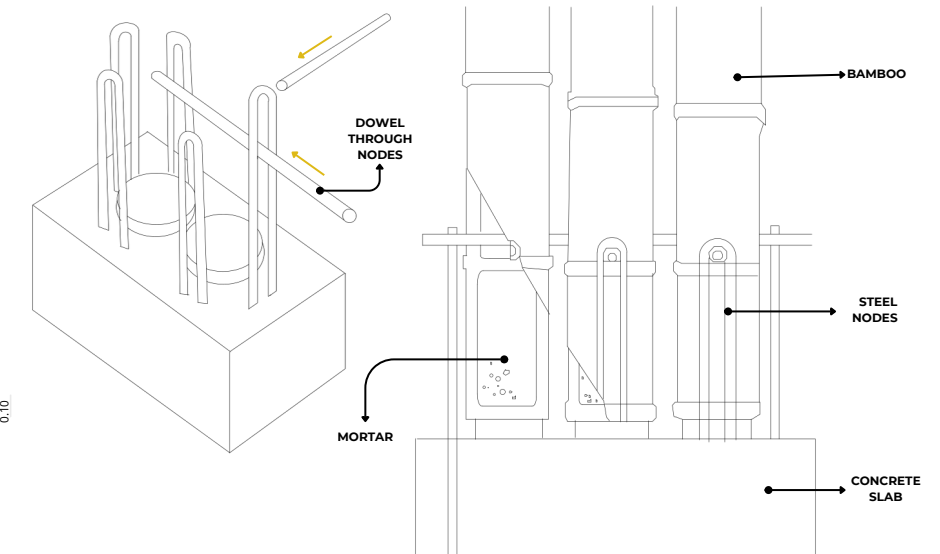




CONSTRUCTION TECHNIQUES AND DETAILS



CONSTRUCTION DETAIL: BAMBOO IN WALL



Construction Detail: Reinforced Bamboo Walls

The image shows a construction detail designed for anchoring bamboo columns onto a concrete slab. The system uses reinforcing steel bars that pass through the bamboo nodes, acting as dowels to prevent vertical slippage of the canes.

To improve crushing resistance, short bamboo segments filled with mortar are inserted inside the canes at critical points. These bars are anchored directly into the concrete slab, and are complemented by metal clamps or plates that provide additional stability and rigidity to the assembly.

This method allows bamboo to function as a structural element, effectively transferring loads to the foundation and enabling its use in sustainable, low-impact construction systems.

Construction Detail: IPE Column in Brick Wall

The system consists of a clay brick wall, which serves as both an enclosure and a thermal mass element. Due to its thermal inertia, this type of brick helps regulate indoor temperatures by absorbing heat during the day and gradually releasing it at night. Additionally, its arrangement creates an aesthetic pattern that enhances the local and artisanal character of the project.

Adjacent to the wall is an IPE steel column, which is part of the building's load-bearing structure. This metal profile provides structural strength and stability, allowing for slender design solutions and enabling efficient and modular construction.

