

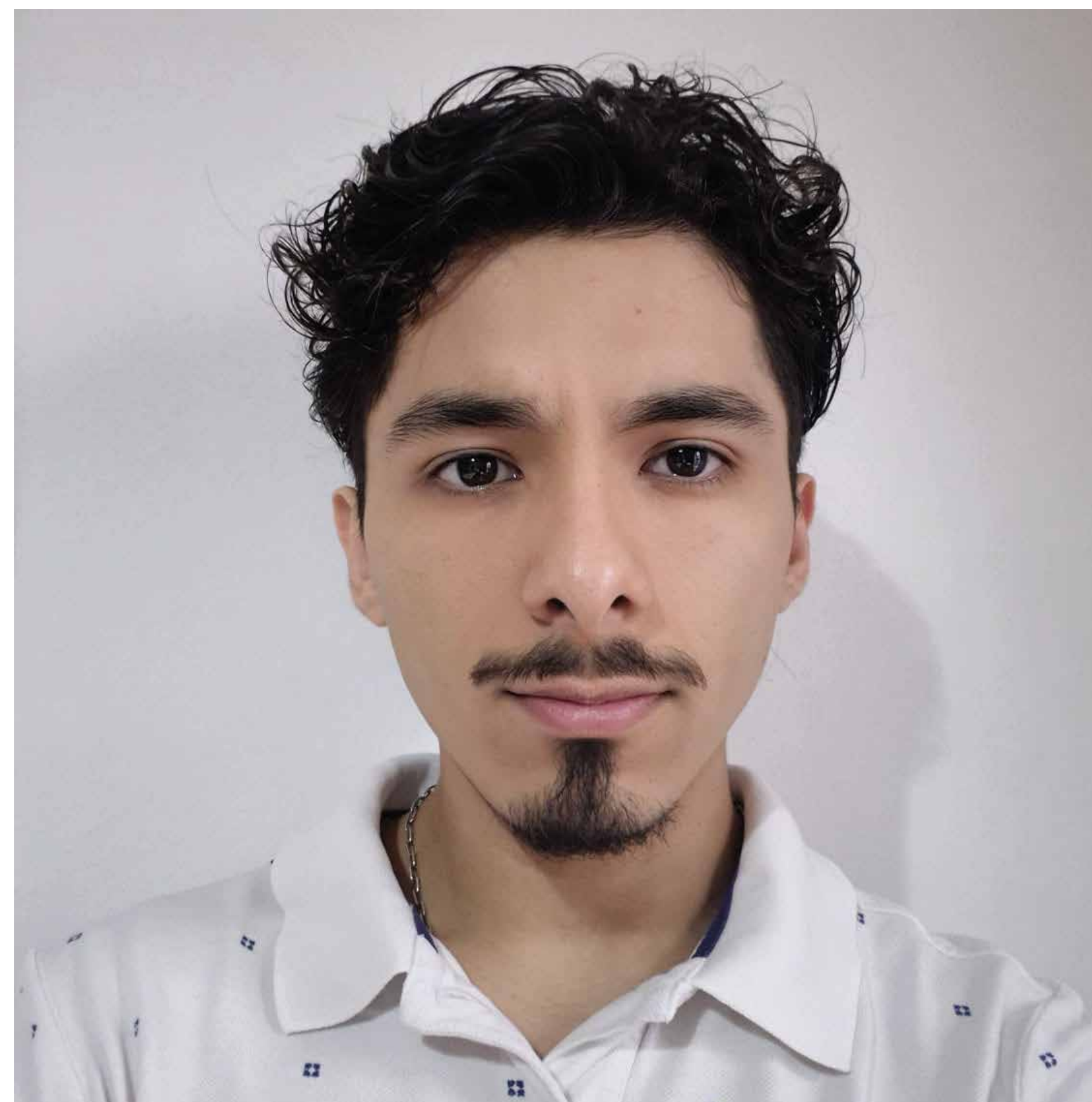
UMBRHAL WORKSHOP

FINAL DEGREE PROJECT

Historical Rebirth

2026

Author



Mateo Lautaro Olarte

Final Project Supervisor

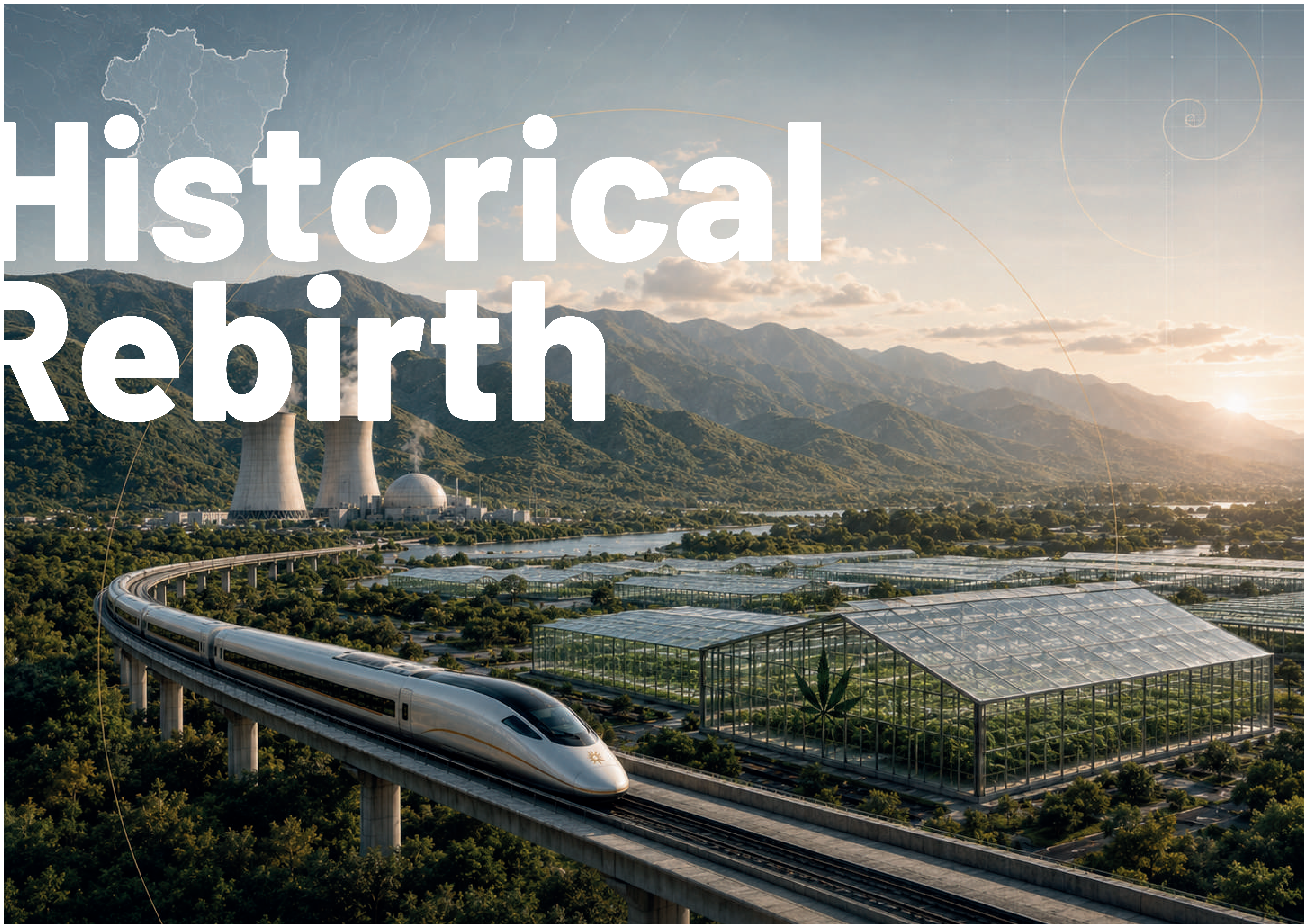
Arch. Adriana Assef

Academic Team

Arch. Adriana Assef

Arch. Griselda Figueroa

Historical Rebirth



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#1
PROJECT
FOUNDATIONS

FOUNDATIONS

PRODUCTIVE DEVELOPMENT AND URBAN CONNECTIVITY

Regional plan for the province of Tucumán, aimed at addressing several long-standing social issues that the province has been facing over time.

The regional plan consists of three stages that support one another, allowing the project to be carried out effectively and without major obstacles.

Stage 1 – Economic Development

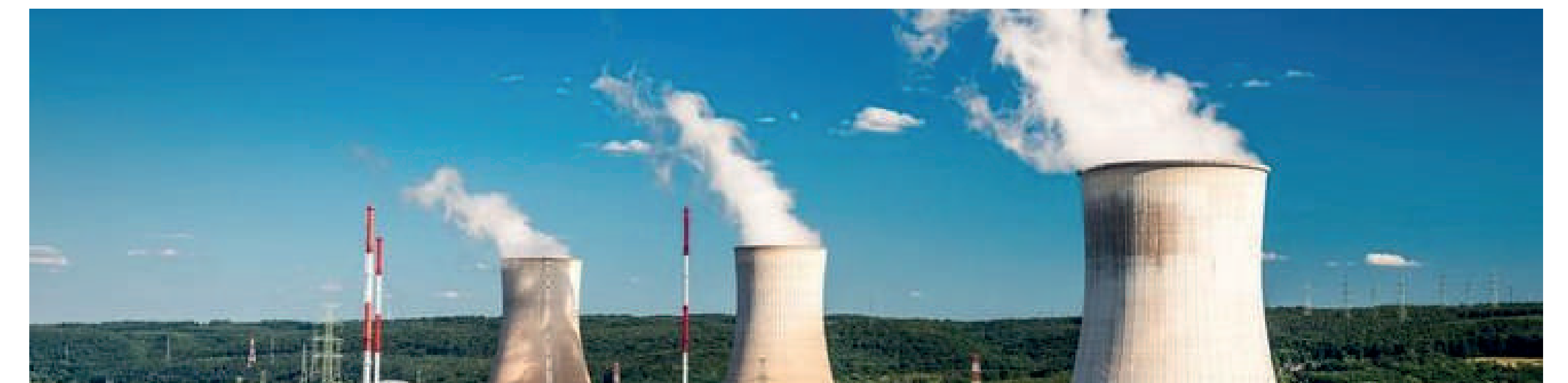
As the foundation of the project, 50 hectares of hydroponic medicinal cannabis cultivation will be developed.

Stage 2 – Energy Independence

A nuclear power plant is required to support the energy demand of the high-speed rail system, as well as that of the current and future population.

Stage 3 – Provincial Connectivity

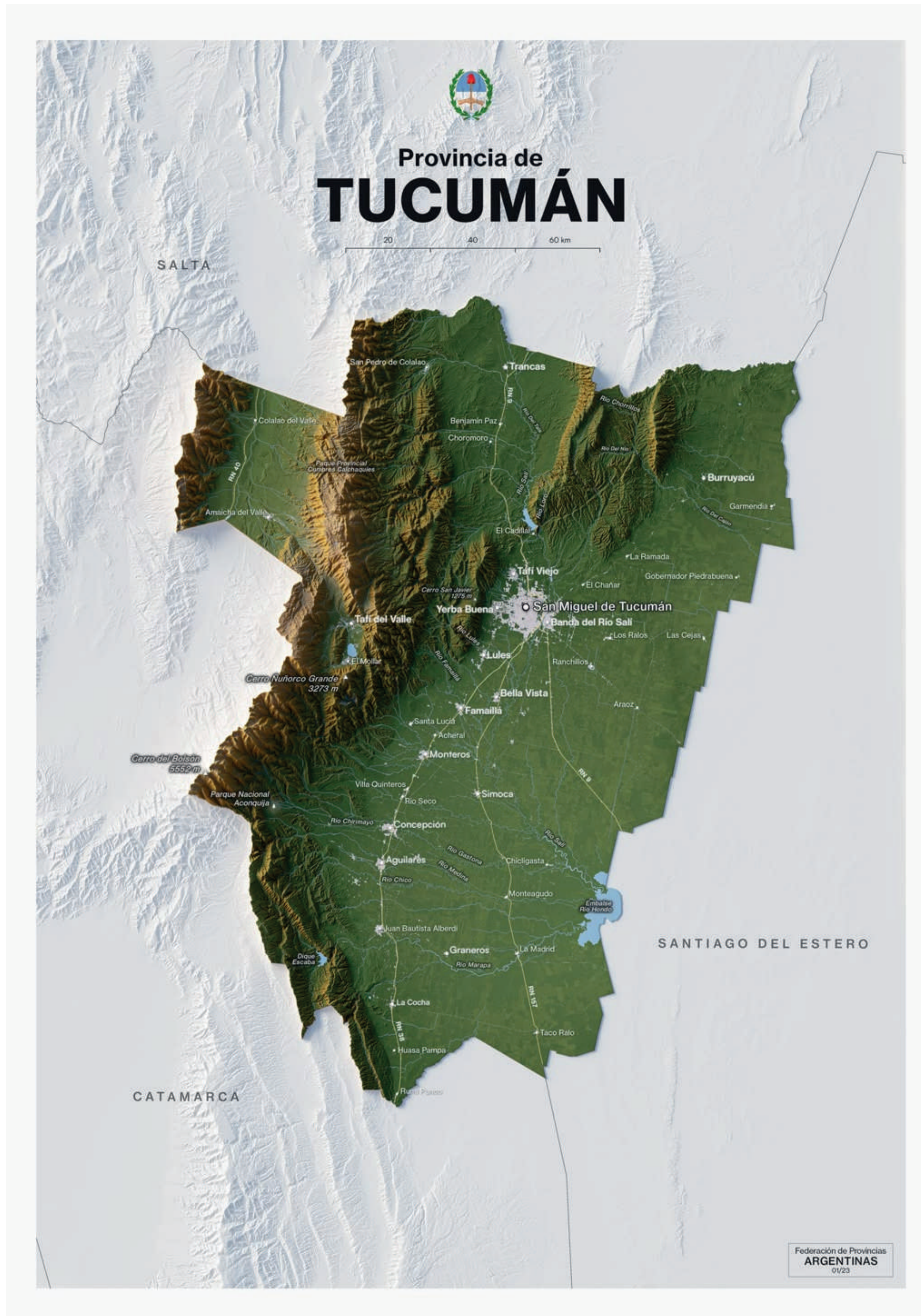
Through the implementation of high-speed rail, the province will be decentralized, allowing the most distant cities to grow in terms of infrastructure, population, and economy.



Together, these three stages support one another, not only to make the regional plan possible, but also to restore Tucumán's historical, cultural, and economic role within the Argentine Northwest.

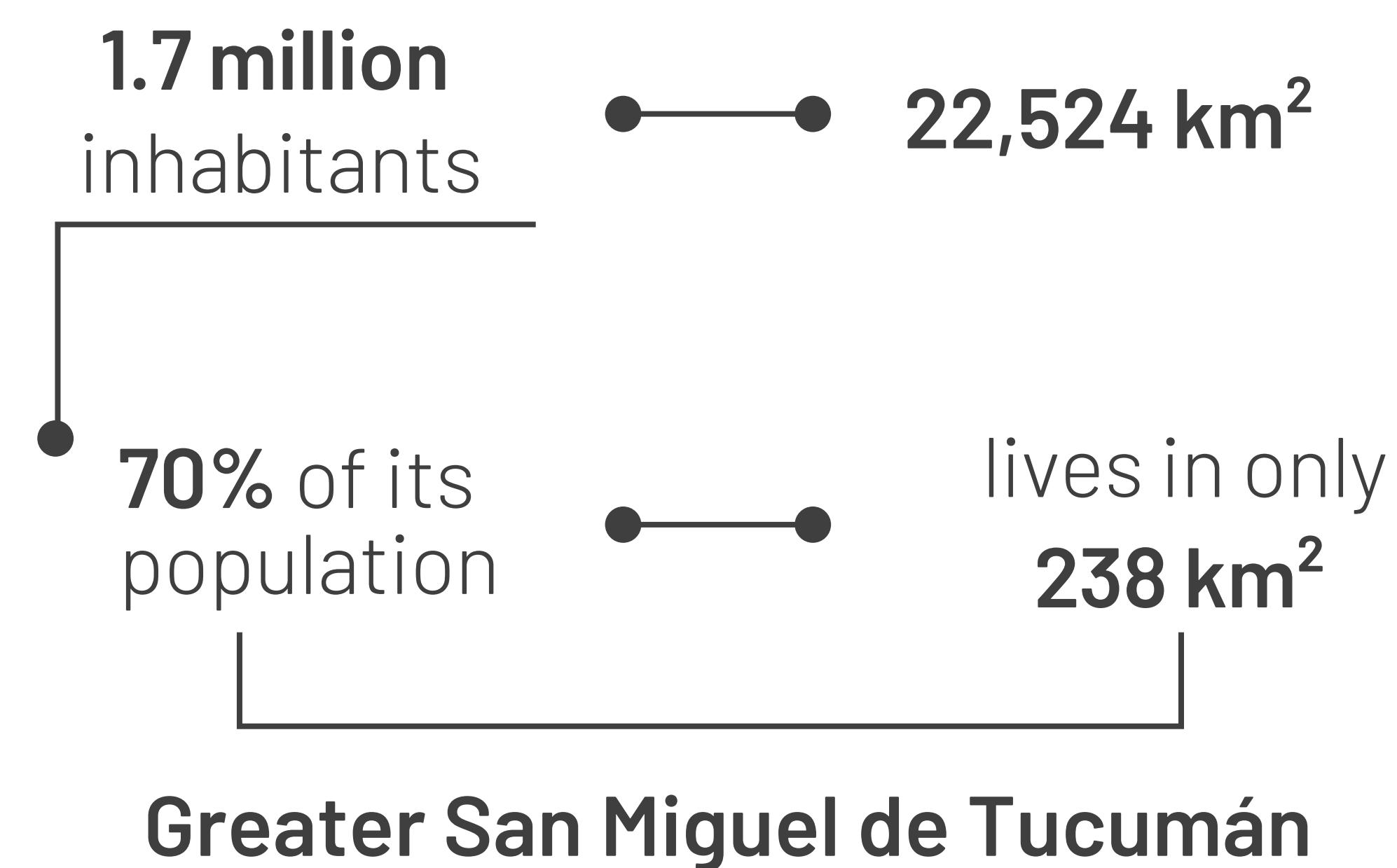
HYPOTHESIS

The central aim of the project is to address Tucumán's territorial inequality and the need to propose a more integrated, equitable, and innovative development model for the province.



Current Situation

Tucumán, the smallest province in Argentina, faces one of the country's most complex social challenges: **a profound territorial inequality.**



This extreme centralization has generated deep **social and territorial inequalities**, reflected in the lack of access to healthcare, education, and transportation for those living in the interior of the province.

From a social perspective, being born in the capital city or in the interior can determine the difference between having access to:

- University studies
- Specialized medical care
- Shorter travel times

These inequalities, along with many others, represent one of the greatest social challenges facing the province.

This project does not only seek to respond to a current need, but also to lay the foundations for a comprehensive territorial development model — one that **positions Tucumán as a reference in social and technological innovation in northern Argentina.** In doing so, it aims to restore the province's leading role within the region, consolidating its strategic and historical importance in Argentina.

OBJECTIVES

Strategic Axis 1 – Establishing New Economies and Technologies

Create hydroponic cannabis crops mainly for medicinal use, but also for textile, bioplastic, industrial, and biofuel applications. Build a nuclear power plant to obtain clean energy on a large scale. Connect the province's population through a high-speed rail system.



Strategic Axis 2 – Quality of Life and Tourism

Bring citizens closer to better services both within and beyond the city. Create parks and recover urban spaces adjacent to the future railway lines. Promote tourism through stations that connect relevant destinations.



Strategic Axis 3 – Identity and New Cities

Promote the decentralization of the main city. Create new urban nodes where citizens can actively participate and feel part of the city. Incorporate civic centers to listen to the population's opinions and needs.



Strategic Axis 4 – Reactivating the Argentine Northwest

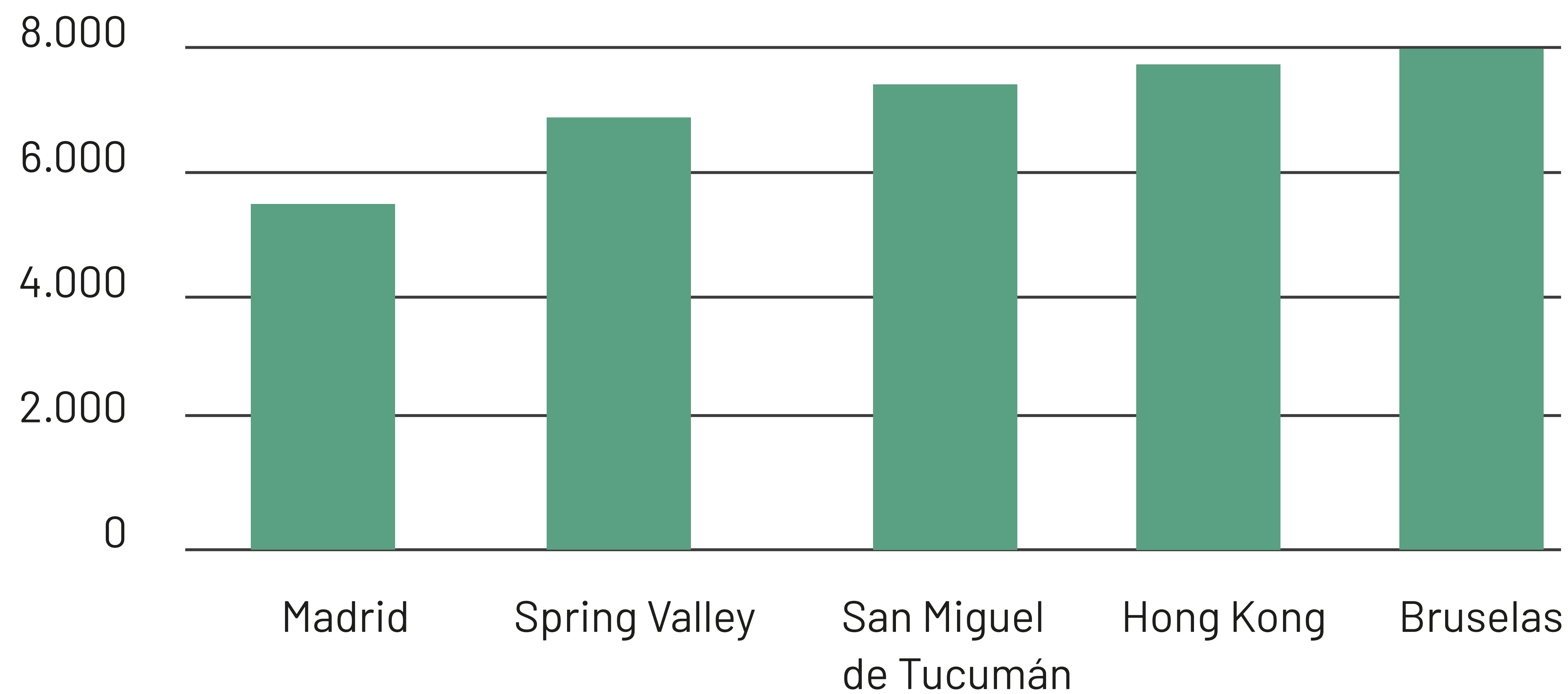
Encourage neighboring provinces to create a railway network that connects communities and brings people closer together. Recover and strengthen the historical and economic roles of the region. Attract tourism and investment to improve the province.



Population:

PLACE	AREA (km ²)	POPULATION	DENSITY (inhabitants/km ²)
Tucumán	22.524	1.731.820	72
Interior of Tucumán	22.286	657.626	29,6
Greater San Miguel de Tucumán	238	1.074.194	4.513
San Miguel de Tucumán	90	598.835	6.656

Comparison with Cities Around the World



Source: INDEC Y Wikipedia

Education

Percentage indicating, on average, the level of education achieved according to social stratum. (Tucumán)

SOCIAL STRATUM	INCOMPLETE SECONDARY EDUCATION	COMPLETE SECONDARY EDUCATION	ENTER UNIVERSITY	COMPLETE UNIVERSITY EDUCATION
Low	70%	30%	22%	4%
Middle	40%	60%	48%	46%
High	12%	88%	78%	67%

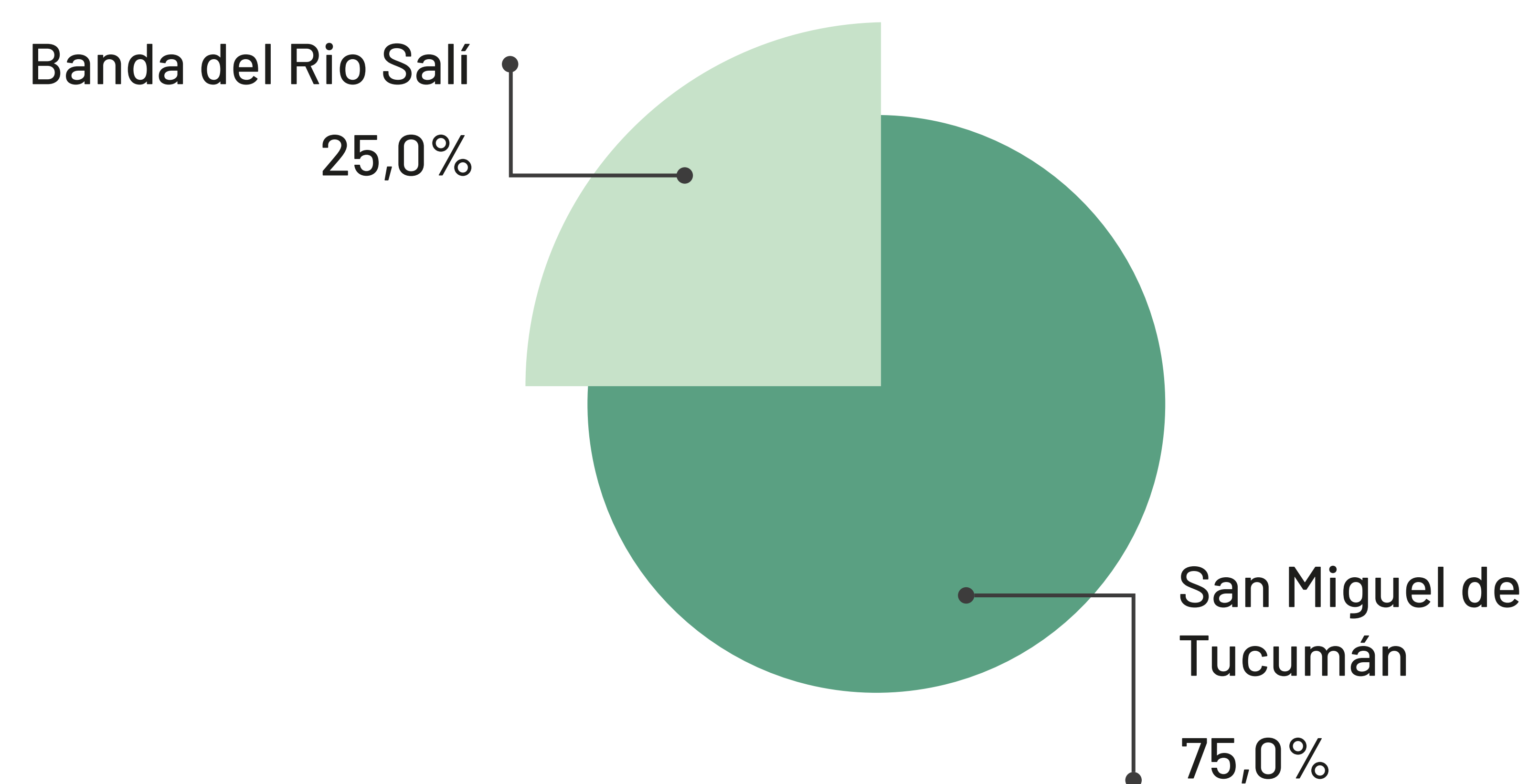
PLACE OF RESIDENCE	INCOMPLETE SECONDARY EDUCATION	COMPLETE SECONDARY EDUCATION	ENTER UNIVERSITY	COMPLETE UNIVERSITY EDUCATION
Capital City	32%	68%	45%	30%
Interior	48%	52%	26%	12%

Healthcare

Tucumán has four high-complexity hospitals, three of which are located in the capital city and one in Banda del Río Salí.

This reflects an overload of healthcare services in the capital city. The transportation system used by the population must also be considered. Many citizens from the interior of the province who require specialized treatments must either drive or use public transportation. This can sometimes take several hours of travel alone, in addition to waiting times at healthcare centers and administrative procedures, before returning home through another long journey.

Many families do not have the necessary time to complete these procedures and end up seeking care in small health centers near their homes, even though these facilities may lack the necessary staff and equipment.



Source: <https://msptucuman.gov.ar/hospitales/>

Transportation

Everything mentioned above is directly related to the transportation system, whether public or private. Traveling from different parts of the province to the capital city can take minutes or hours, depending on whether people use a private car or a bus. In addition, unfinished roads or roads in poor condition generate congestion and traffic accidents.

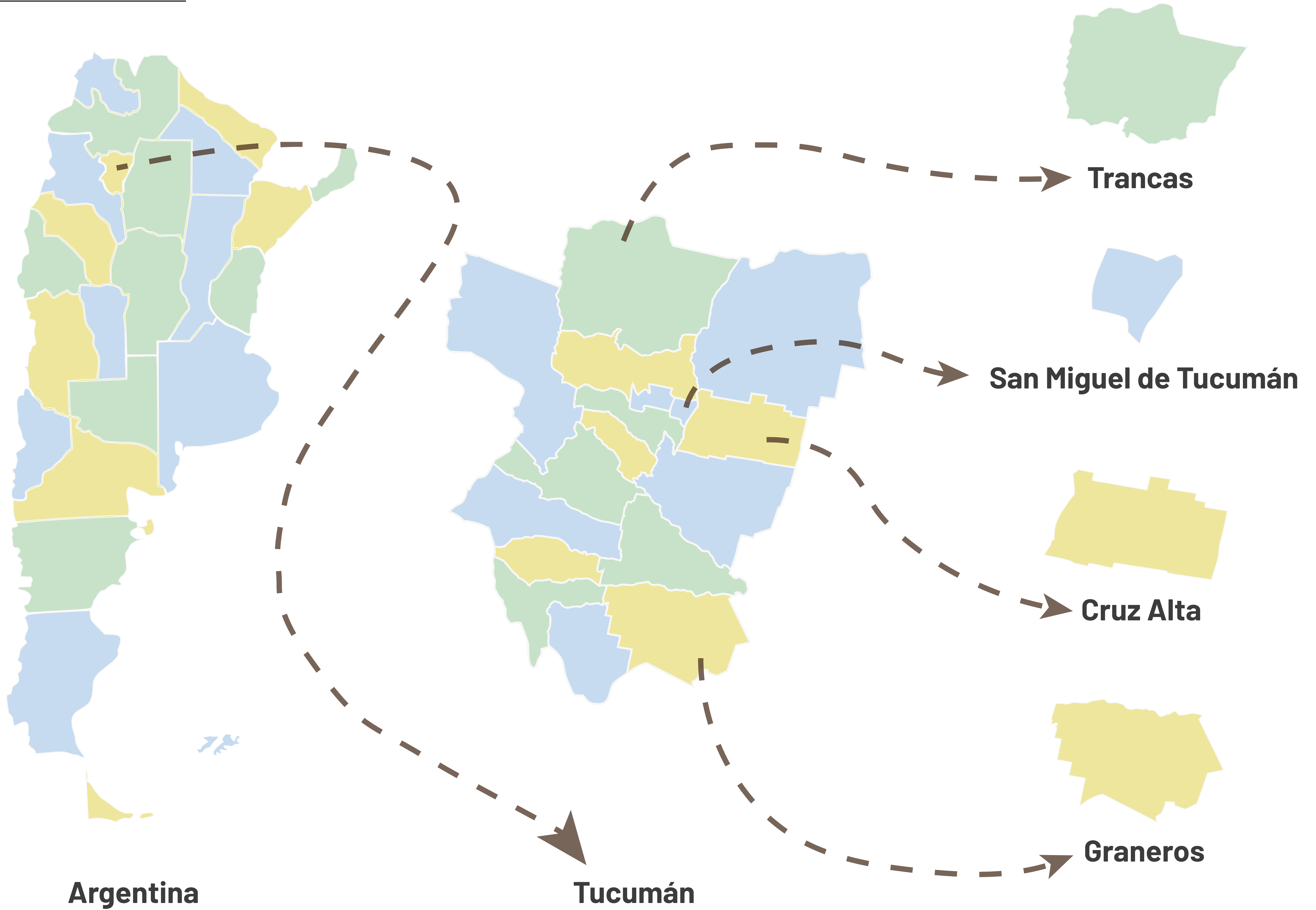
In 2024, Tucumán ranked fourth among the Argentine provinces with the highest number of deaths caused by road accidents, with a total of 335 victims. Tucumán has a total of 2,716 km of roads, including provincial and national routes. Of these 2,716 km, 2,141 km belong to provincial roads, and only 1,119 km of them are paved; the remaining roads are gravel or dirt roads.



#2

LOCATION WITHIN
THE TERRITORY

LOCATION

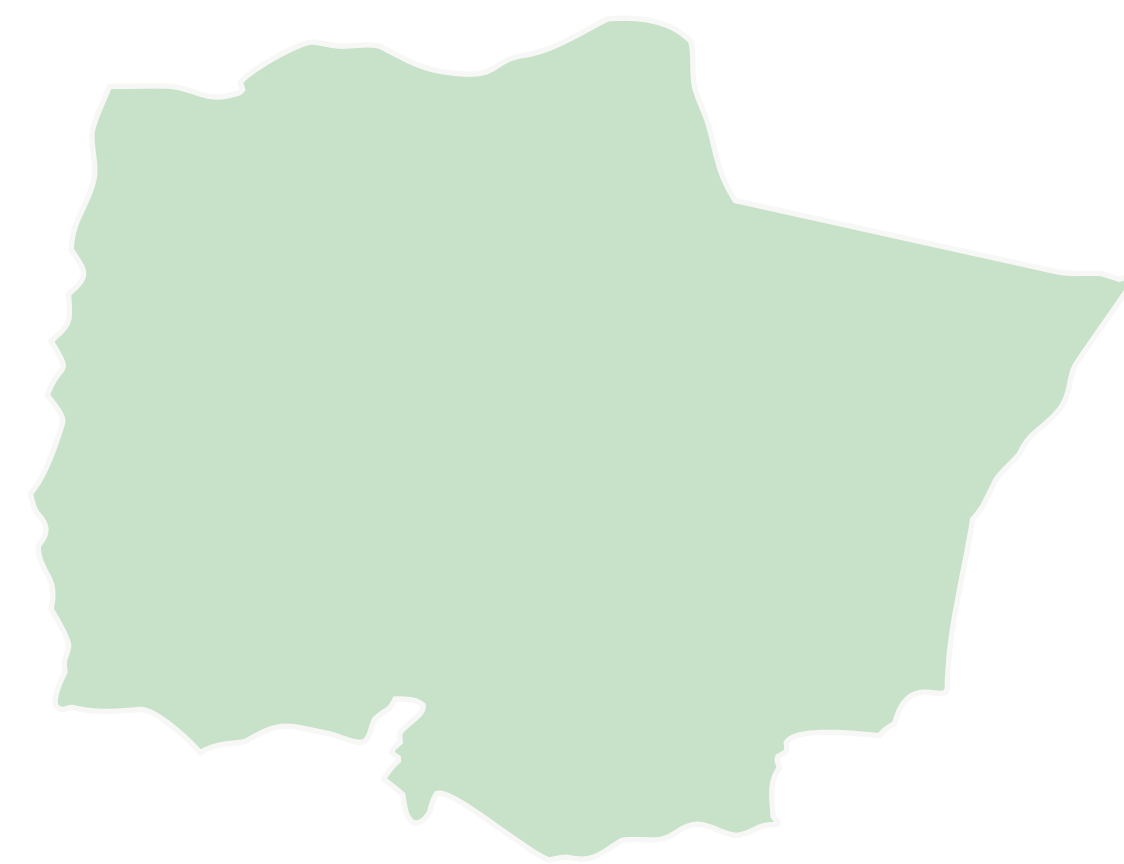


PHYSICAL CHARACTERISTICS



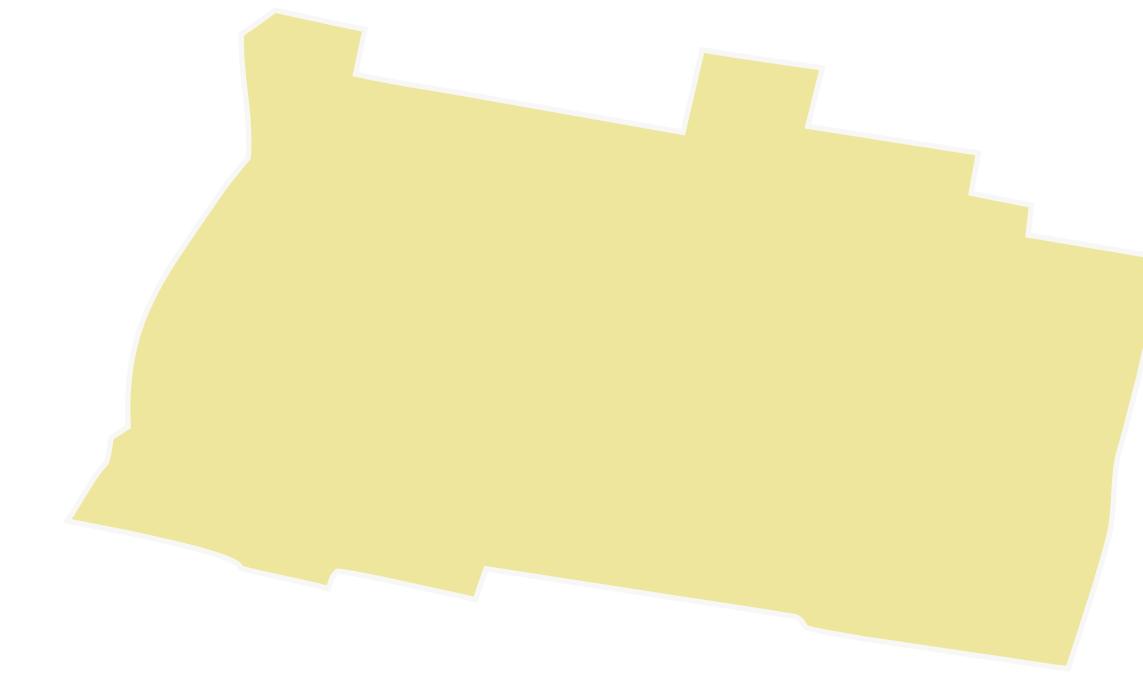
Graneros

Graneros is located in the southeastern end of Tucumán. It borders Santiago del Estero and Catamarca. The department has an approximate area of 1,678 km², an average altitude close to 321 meters above sea level, and is one of the least populated departments in the province. Its warmer and drier climate makes it ideal for hydroponic cultivation.



Trancas

Trancas is located in the northern part of the province. The city is approximately 750 meters above sea level, in a wide valley between mountain systems and transition areas between the Chaco mountain forest and the Yungas. It is one of the largest departments in Tucumán, but has a low population density. Its climate is drier and has very low humidity.



Cruz Alta

Cruz Alta is located east of San Miguel de Tucumán. It has an approximate area of 1,255 km², an average altitude close to 405 meters above sea level, and is one of the most populated departments in the province. Toward the east, the agricultural landscape predominates, especially sugarcane and other crops. The western area is more urban and industrial, making it a key location for the precast concrete factory.



San Miguel de Tucumán

San Miguel de Tucumán is the provincial capital, with a high population density within only 90 km², and an average altitude of approximately 447 meters above sea level. It concentrates administrative, commercial, university, healthcare, and transportation functions. The central railway station would be located here.

The selection of these four departments follows a territorial logic, as the project functions as an integrated regional system: Trancas produces strategic energy; San Miguel promotes provincial mobility; Cruz Alta manufactures heavy infrastructure; and Graneros acts as a high-value agro-industrial production hub. The province has a highly defined physical structure: microclimates caused by variations in altitude, summer rainfall from October to March, mountains and valleys toward the west and north, and Chaco plains toward the east and southeast. This diversity makes it possible to locate each part of the project according to its specific requirements: safety, centrality, logistics, available land, water, energy, and distance from dense urban areas.

#3

TERRITORIAL

PROPOSAL

STAGE 1 – HYDROPONIC CULTIVATION

GRANEROS DEPARTMENT

The department of Graneros was chosen for hydroponic cultivation in automated greenhouses because it is a more rural department, with lower urban density, greater land availability, a drier climate, and an existing agricultural territorial base. For medicinal cannabis grown in greenhouses, it is not necessary to be located within the city. What is required is land, security, stable energy, controlled water, biosecurity, logistics, and distance from conflicting urban uses.

Excess outdoor humidity increases the risk of fungi and diseases; therefore, this area can facilitate internal climate control.

Water availability is also a key factor. The hydrogeology of southern and southeastern Tucumán indicates annual rainfall of around 600 to 800 mm, rivers that lose flow through infiltration in permeable soils, and important underground reservoirs in areas such as Palancho, Colonia Nicolás Avellaneda, and Los Vázquez, with good-quality water used for irrigation. There are also deep aquifers with good yields near Provincial Route 334 toward Taco Ralo.

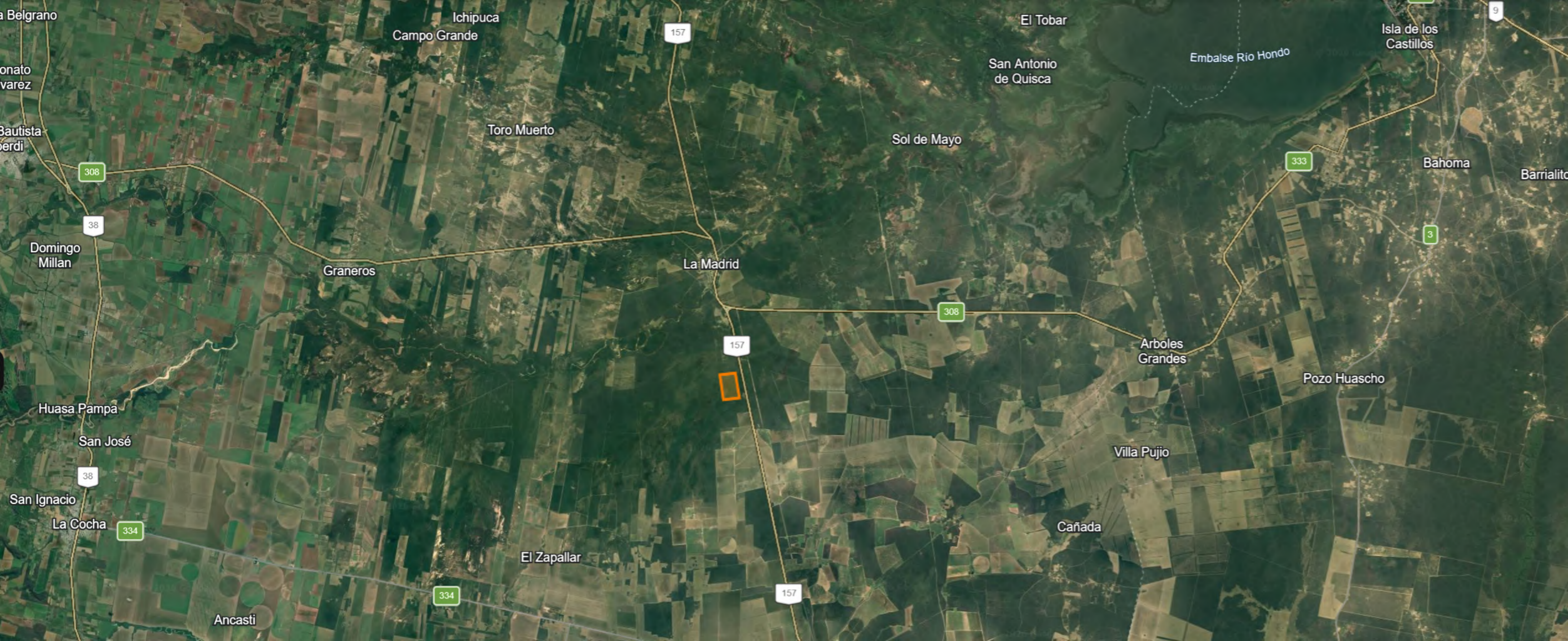
The project will use recirculating hydroponics, including water treatment, salt monitoring, precision fertigation, and strict control of groundwater extraction.

Connectivity is also favorable. National Route 157 crosses southeastern Tucumán and passes through the Graneros Department, connecting towns such as Taco Ralo and La Madrid before continuing toward Simoca, Leales, and San Miguel de Tucumán. This provides access to the capital city, as well as interprovincial connections with Santiago del Estero and Catamarca.

Within the overall project, Graneros would serve as the initial economic and productive engine. Medicinal crops will finance later stages, generate technical-rural employment, incorporate laboratories, introduce new technologies, and train local labor.

Territorially, this also helps decentralize the province and expand development toward the south.





Ichipuca
Campo Grande

157

El Tobar

Isla de los
Castillos

9

Embalse Rio Hondo

San Antonio
de Quisca

Toro Muerto

Sol de Mayo

333

Bahoma

Barrialito

308

38

Domingo
Millan

Graneros

La Madrid

3

308

157

Arboles
Grandes

Pozo Huascho

Huasa Pampa

San José

38

San Ignacio

La Cocha

334

Villa Pujio

Cañada

El Zapallar

157

334

Ancasti



Yanimas

Marapa

Graneros

Campo

Santa Ana

Parque
Nacional
Aconquija

Aguilares

Rio Marapa

308

331

65

38

308

FUTURE LOGISTICAL
AREA

157

157

157

STAGE 2 – PRECAST CONCRETE FACTORY

CRUZ ALTA DEPARTMENT

The department of Cruz Alta is located in the center of the province. It has a direct connection to National Route 9, provincial roads, proximity to the airport, an industrial presence, and a territorial structure that is more suitable for large-scale production areas.

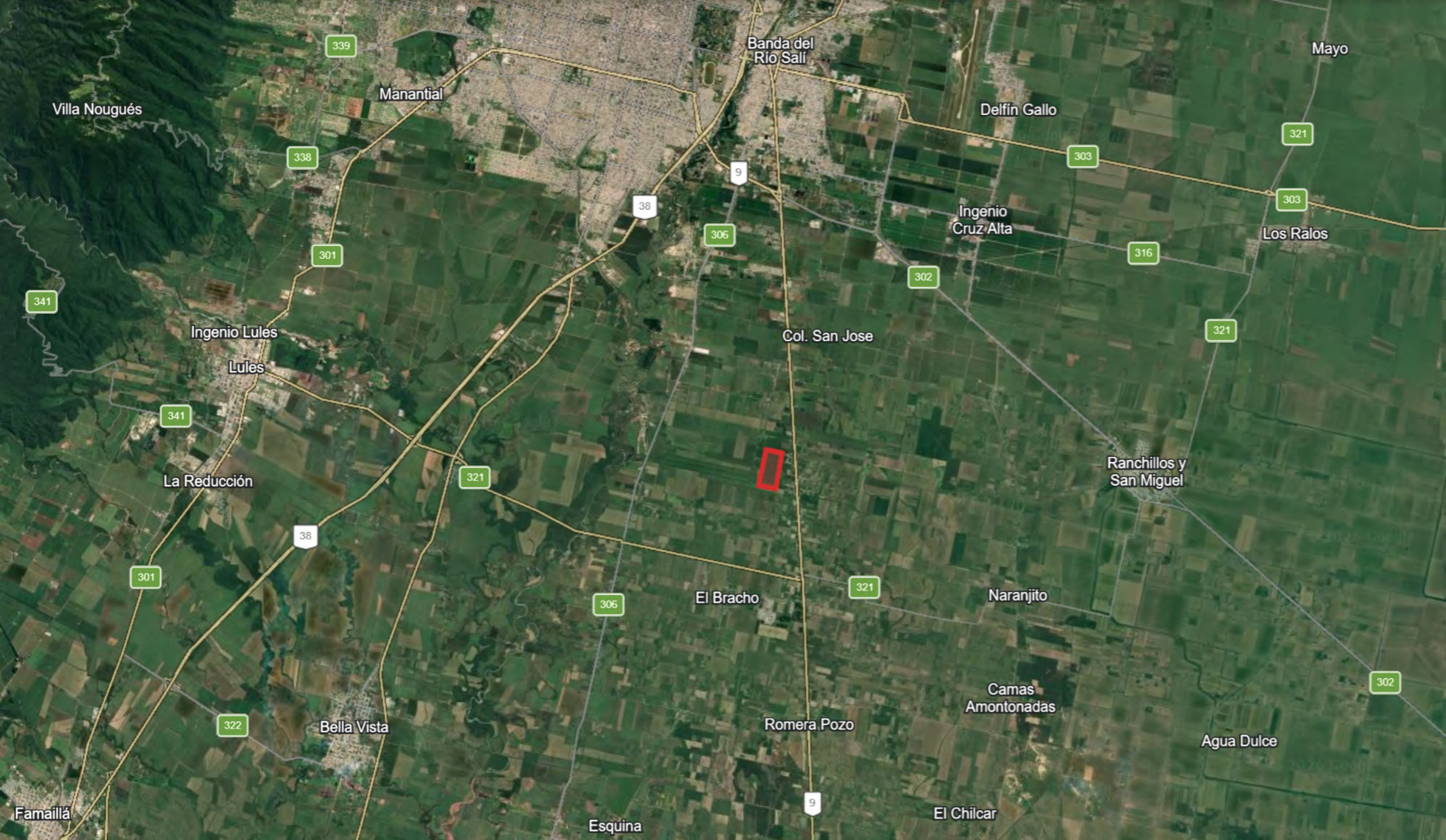
A factory for columns, beams, precast segments, deck slabs, and viaduct components requires three key conditions: industrial land, heavy logistics, and proximity to the construction site. Cruz Alta meets these conditions effectively because it is located next to San Miguel de Tucumán, where the central station and the first elevated urban sections would begin, before expanding toward the rest of the province. This reduces conflicts with dense residential areas, lowers heavy traffic within the city center, and allows operations involving trucks, cranes, storage yards, and oversized loads.

It is strategically positioned to distribute components toward several construction fronts: toward San Miguel de Tucumán and the western metropolitan area; toward the east through Banda del Río Salí and Alderetes; toward the north through National Route 9; and toward the south and southeast by connecting with National Route 157 and provincial roads. National Route 9 crosses the metropolitan axis and connects the provincial system with the national corridor of Buenos Aires–Córdoba–Santiago del Estero–Tucumán–Salta–Jujuy.

This factory will help reduce costs, accelerate construction, control quality, and create local technical employment. It would not be merely a concrete factory; it would become the industrialization center of Tucumán's infrastructure.

The factory will function as the anchor industry for the nuclear power plant and the railway project. It will also serve as a supplier for the Argentine Northwest, supporting future bridge projects, specific infrastructure works, and the possible expansion of the railway network toward other provinces.





Villa Nougues

339

Manantial

Banda del Rio Sali

Mayo

Delfin Gallo

338

321

303

38

306

Ingenio Cruz Alta

303

Los Ralos

301

316

341

302

Ingenio Lules

Col. San Jose

321

Lules

341

Ranchillos y San Miguel

La Reduccion

321

38



301

321

El Bracho

Naranjito

302

306

Camas Amontonadas

Agua Dulce

322

Bella Vista

Romera Pozo

El Chilcar

9

Esquina

Famailla



CASA
ADA

Villa Nougés

301

39

San Rafael

La Reducción

321

341

321

Ingenio Lules

301

Ingenio San Pablo

San Pablo

368

321

Río Sal

306

306

Esc. Malvinas

Río Sal

306

Industrial facility rendering showing various buildings, storage areas, and silos. The facility includes large blue-roofed warehouses, a central processing area with silos, and a parking lot with a modern office building. The surrounding landscape is a mix of green and brown agricultural fields, with the Río Sal visible in the distance. The background features a range of mountains with patches of snow under a clear blue sky.

STAGE 2.5 – NUCLEAR POWER PLANT

TRANCAS DEPARTMENT

The selection of Trancas for the nuclear power plant is justified by the fact that it is a more open department, less densely urbanized, and with greater access to large areas for control, buffering, and safety.

For a nuclear facility, the location should not be considered only in terms of land availability, but also in terms of the ability to control its surroundings: nearby population, land uses, water, accessibility, natural hazards, and emergency response capacity.

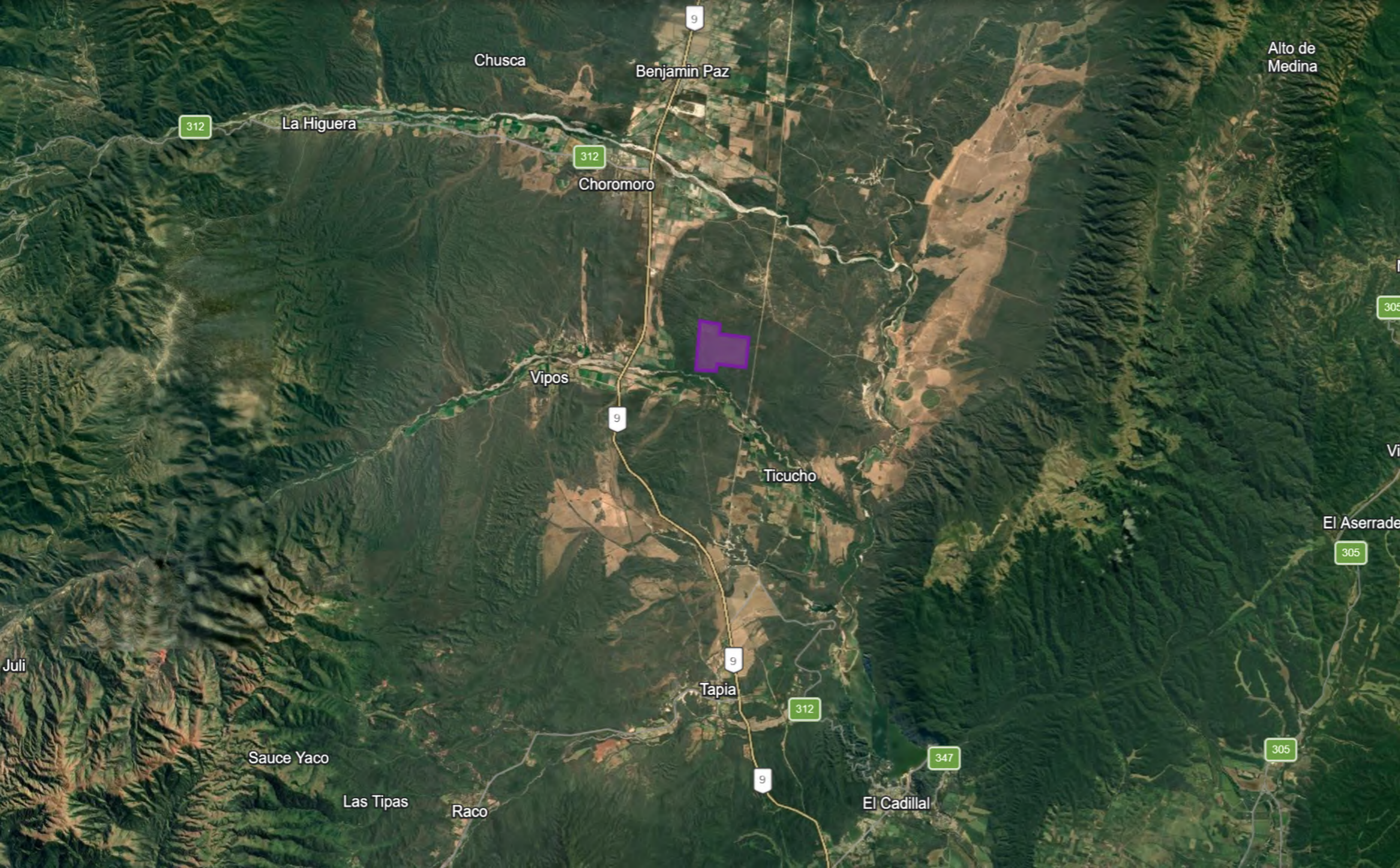
Trancas has an important advantage: it allows critical infrastructure to be separated from Tucumán’s main urban footprint. This reduces conflicts with residential uses, decreases real estate pressure, and makes it possible to plan a perimeter safety zone, service roads, controlled access points, technical areas, and potential exclusion zones.

Topographically, it is located in an intermontane valley with slopes, terraces, and bajada/pediment areas. It has a warm, dry climate, with semi-arid and arid zones.

Connectivity also supports the choice of Trancas. National Route 9 is the historic north-south axis that connects Buenos Aires with northern Argentina and crosses Tucumán, linking it with Santiago del Estero, Salta, and Jujuy. In addition, the National Road Administration inaugurated a new access to Trancas on National Route 9, with a grade-separated interchange and bridge, designed to improve safety and freight movement. This is key for a nuclear power plant, since during construction it is necessary to transport heavy components, special equipment, technical personnel, and construction materials.

Within the project, Trancas would serve as the regional energy base. The nuclear power plant would not only supply household consumption, but also three key components of the master plan: the electric railway network, the precast concrete factory, and the greenhouses. In this sense, Trancas would not remain an isolated element, but would become the “energy engine” that stabilizes the entire system.





Chusca

Benjamin Paz

Alto de Medina

312

La Higuera

312

Choromoro

9

Vipos

Ticucho

305

El Aserradero

305

Juli

9

Tapia

312

Sauce Yaco

347

Las Tipas

Raco

9

El Cadillal

305



STAGE 3 – CENTRAL RAILWAY STATION

SAN MIGUEL DE TUCUMÁN DEPARTMENT

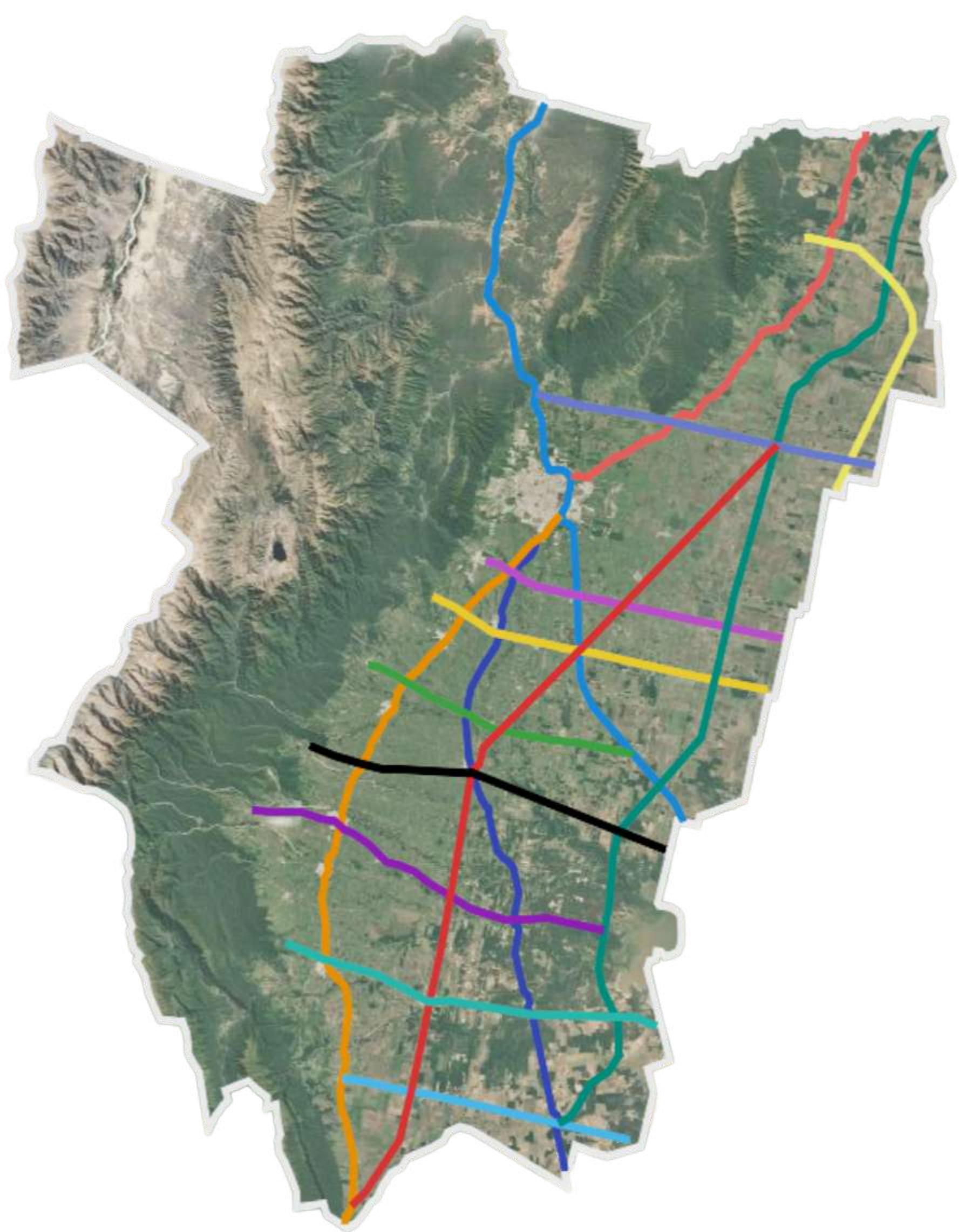
San Miguel de Tucumán is the provincial capital and forms the core of Greater San Miguel de Tucumán, the main urban agglomeration of the Argentine Northwest. The choice of this location for the central station is the most logical from both an urban and social perspective. The elevated railway system seeks to integrate the province and decentralize the capital; therefore, it must begin in the capital city, where demand exists from the first day. In this way, the population would have access to a fast and efficient means of reaching different parts of the province.

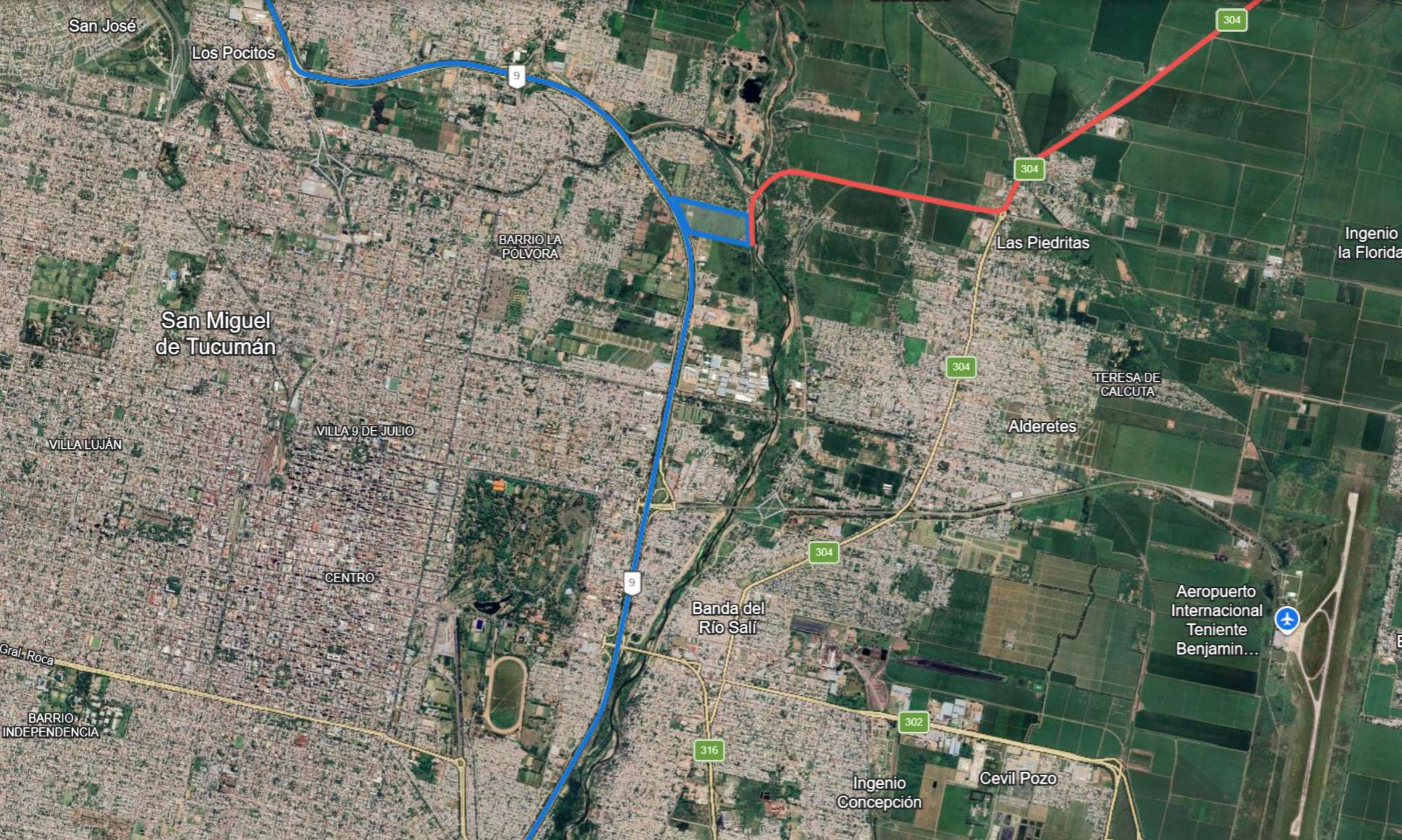
The station would function as the transfer heart of the system. Its objective would not only be to move passengers, but also to address territorial inequality: allowing a person from Graneros, Trancas, Simoca, Monteros, Cruz Alta, and other towns to quickly reach the capital to study, work, receive healthcare, or complete administrative procedures. It would also make it possible for people to live farther away from the urban center. This is not only railway infrastructure; it is a tool for social integration.

It would be located near Parque 9 de Julio, the Bus Terminal, and the airport. This sector already functions as an interurban transportation node. This allows the station to connect with buses, taxis, private car services, pedestrians, bicycles, and potential metropolitan trunk lines.

The role of this stage would be to transform San Miguel de Tucumán into the province's redistribution node and into a beacon of the future.







San José

Los Pocitos

BARRIO LA PÓLVORA

San Miguel de Tucumán

VILLA LUJÁN

VILLA 9 DE JULIO

CENTRO

Gral. Roca

BARRIO INDEPENDENCIA

Banda del Río Salí

Ingenio Concepción

Cevil Pozo

Las Piedritas

Alderetes

TERESA DE CALCUTA

Aeropuerto Internacional Teniente Benjamin...

Ingenio la Florida



9

9

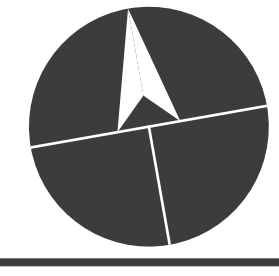


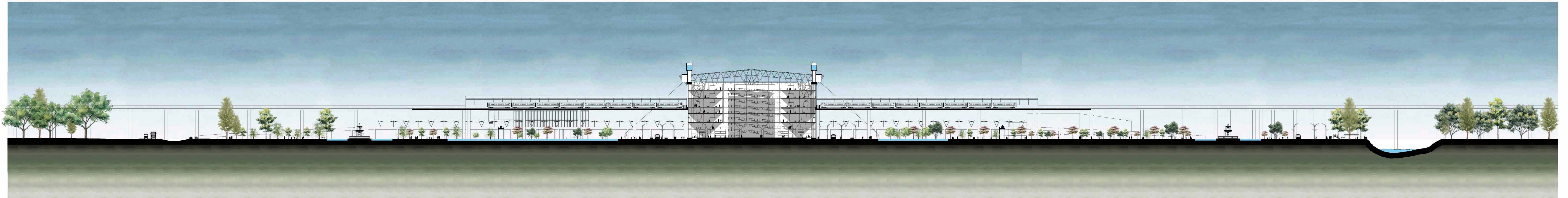




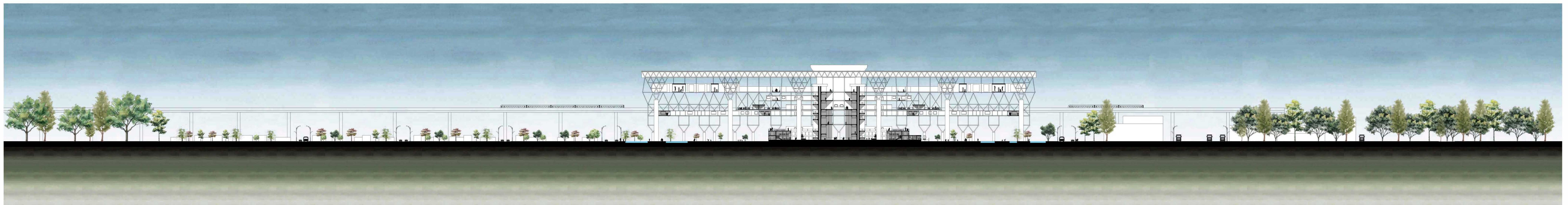
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ARCHITECTURAL
DEVELOPMENT

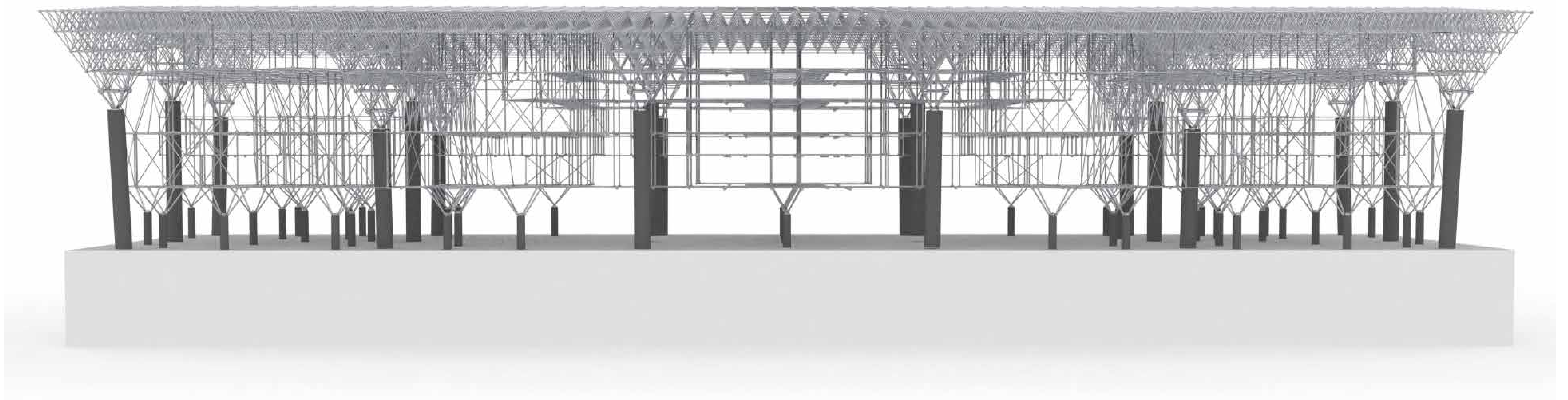
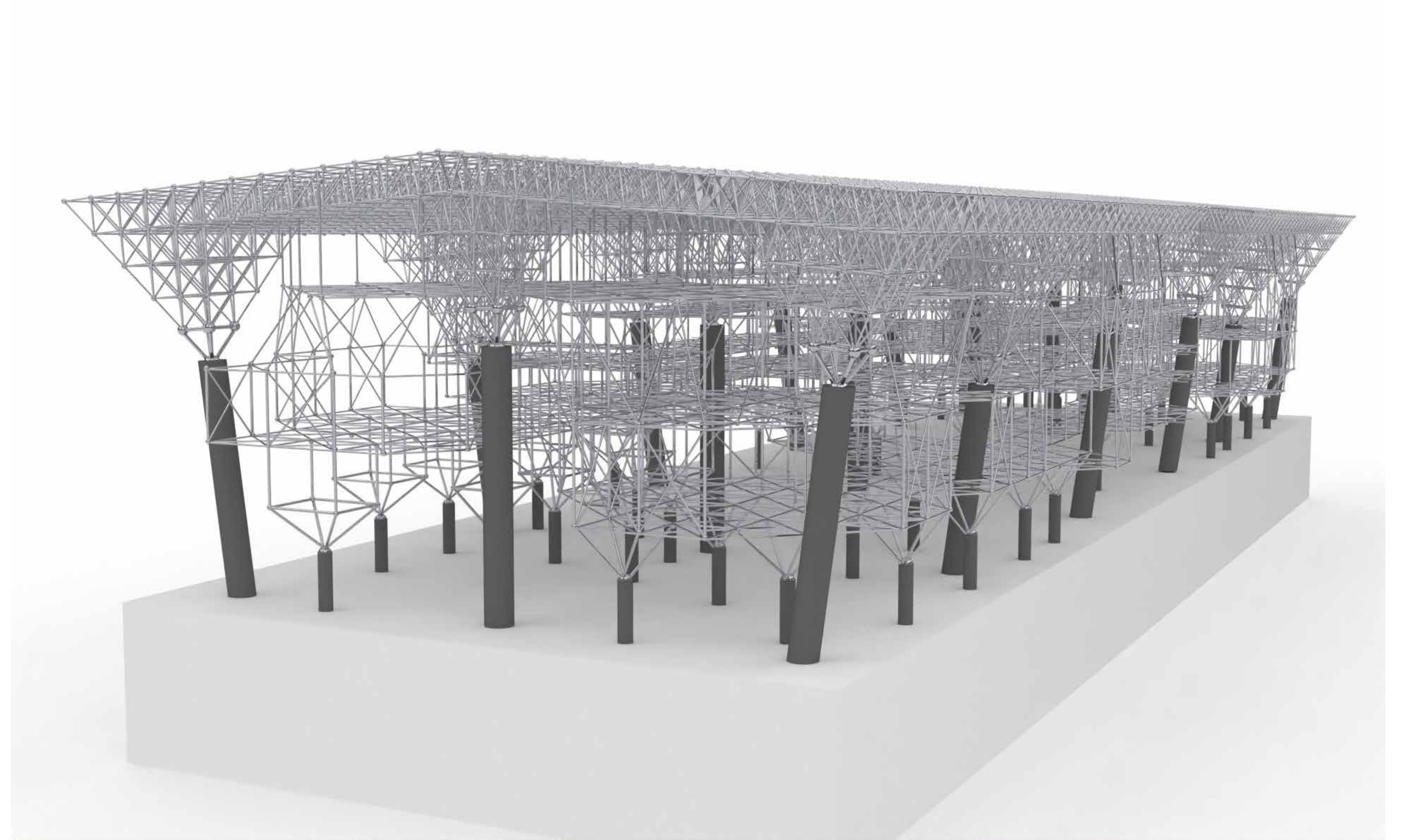
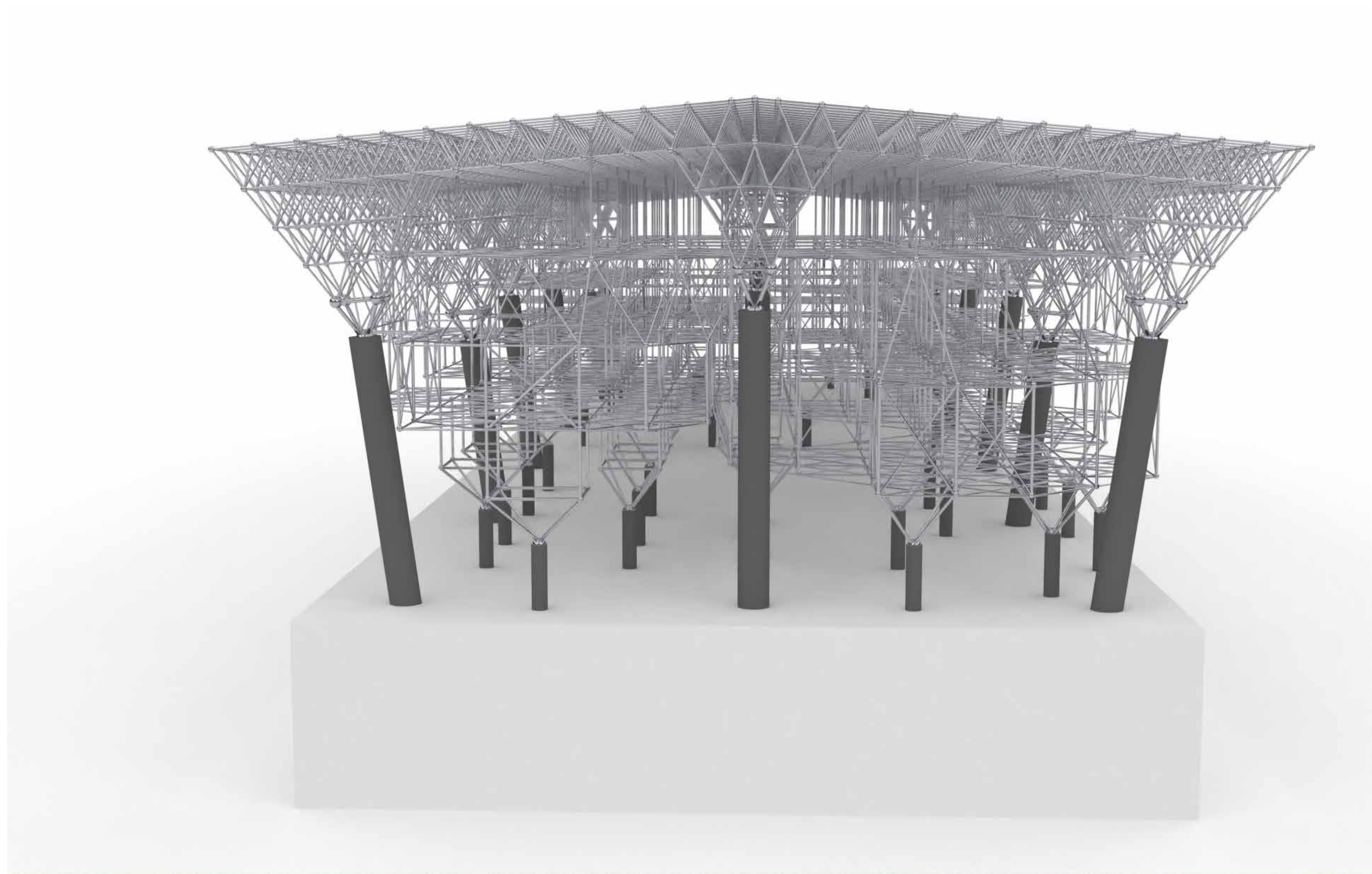


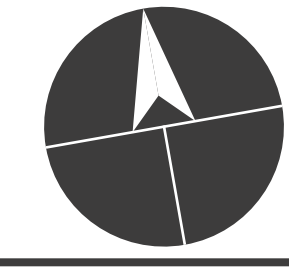


A-A



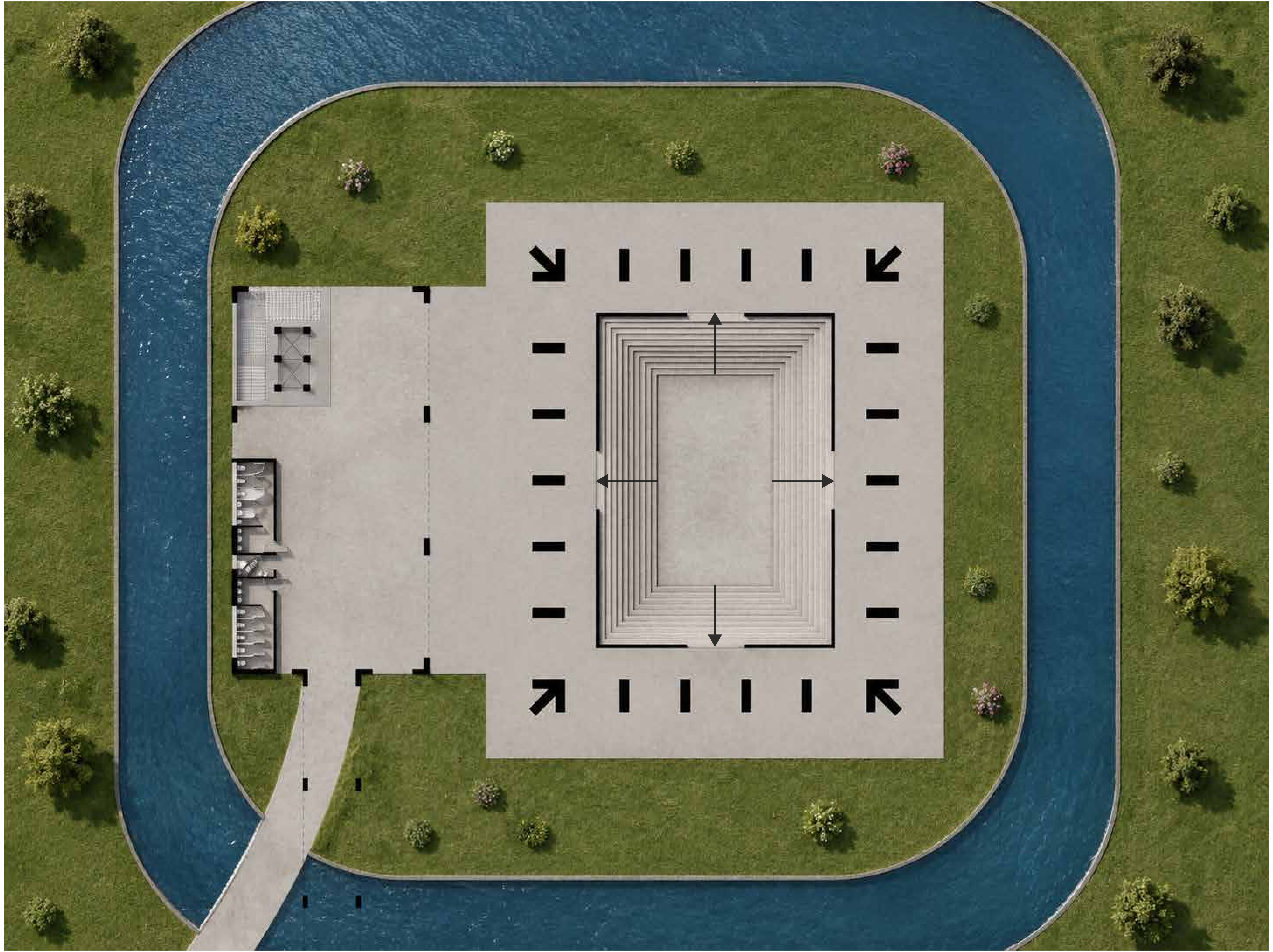
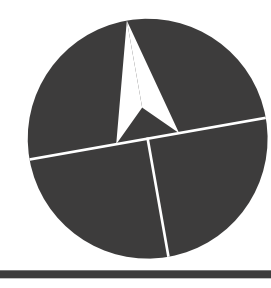
B-B

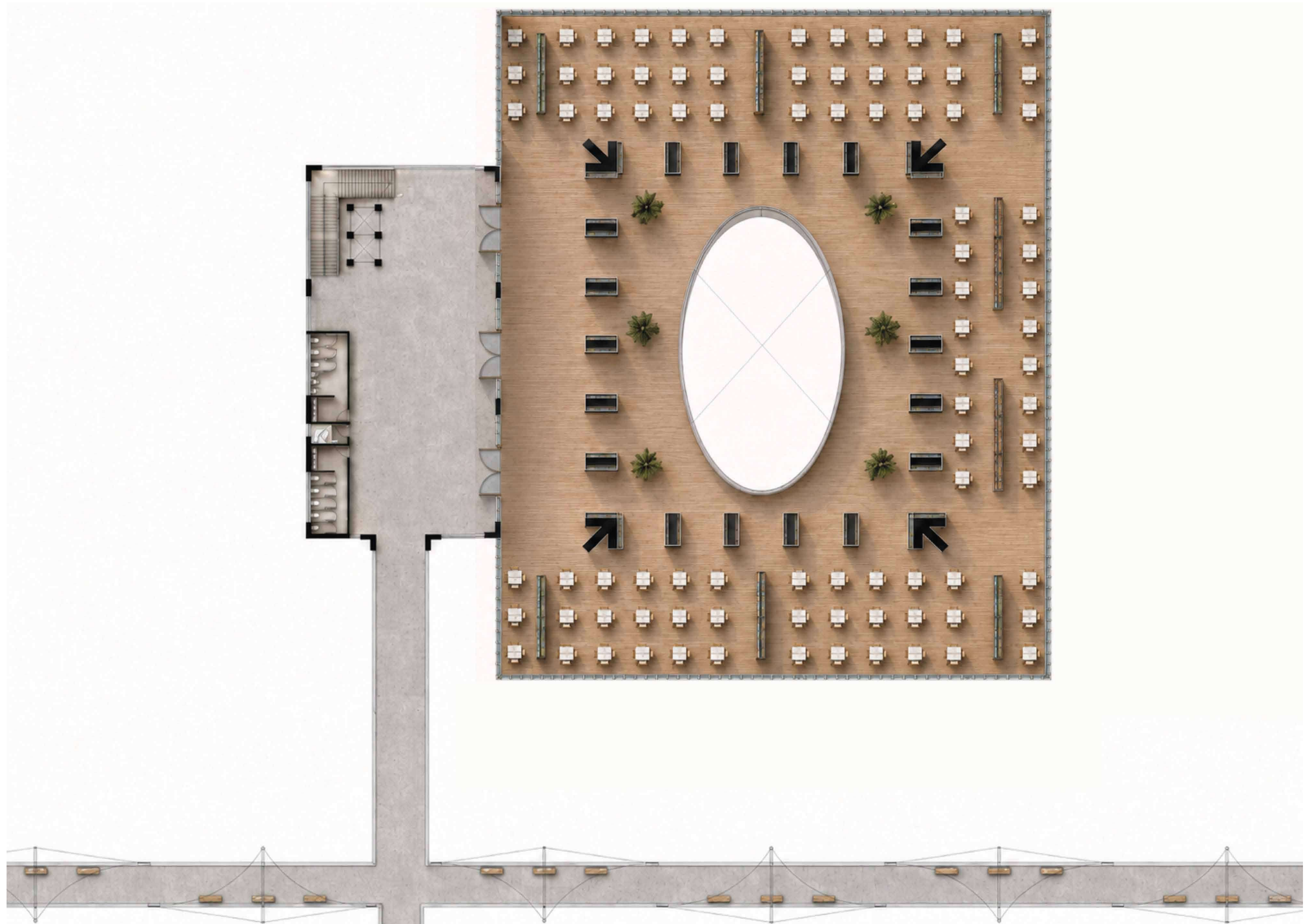
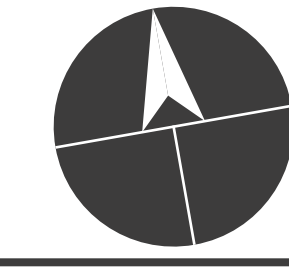














40
VELOCIDAD
MÁXIMA

VELOCIDAD MÁXIMA







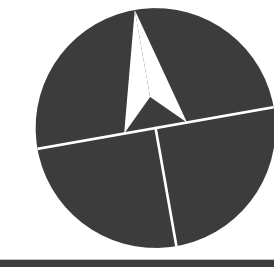


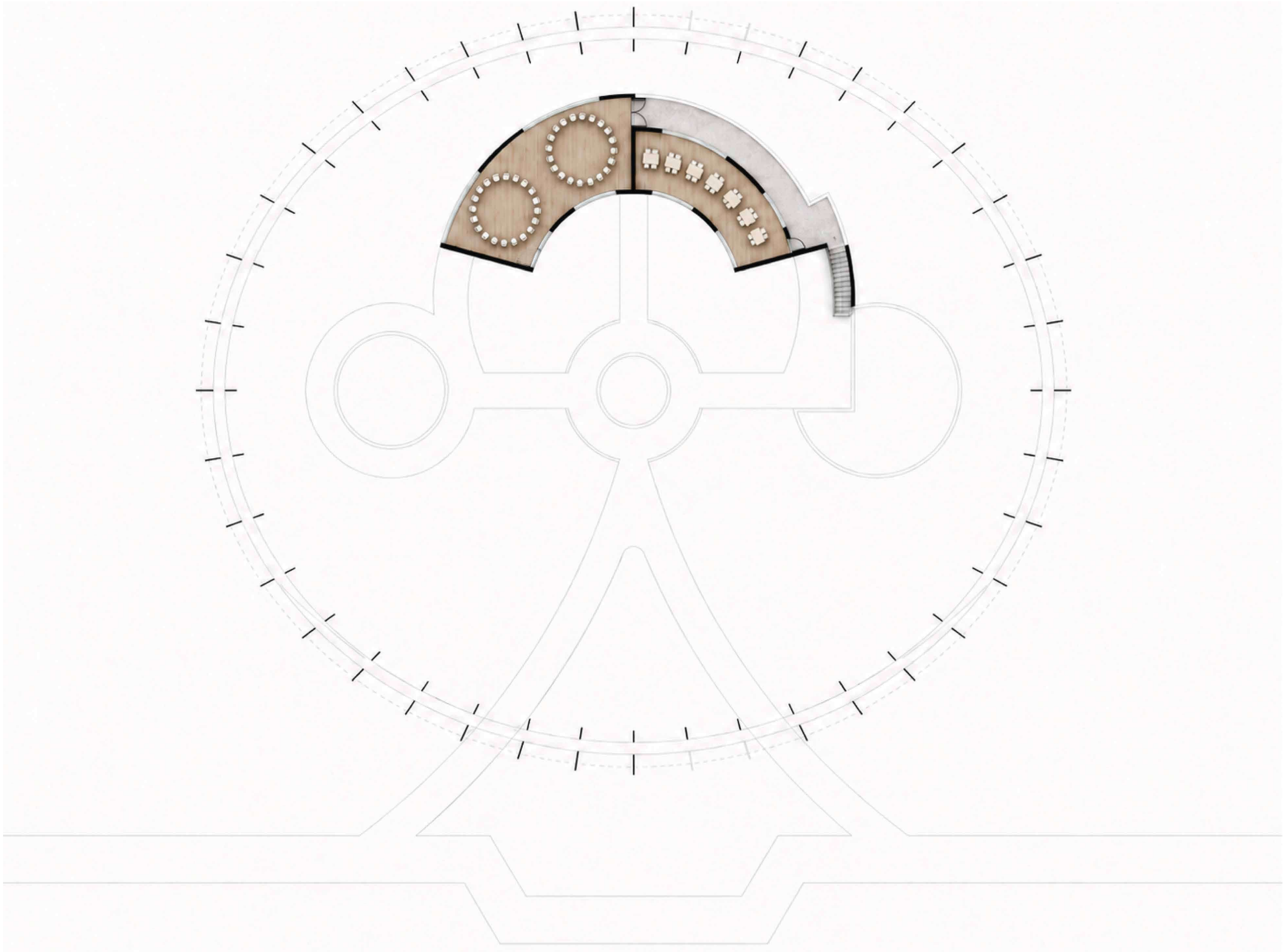
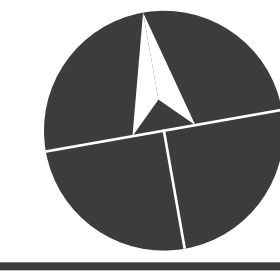






LITERATURA
HISTORIA
FILOSOFIA
CIENCIAS SOCIALES
ARTE





CENTRO CÍVICO

BIENVENIDOS

- ↑ ACCESO PRINCIPAL
- ← MESA DE ENTRADAS
- ← SALÓN DE USOS MÚLTIPLES
- ← ADMINISTRACIÓN
- ← BAÑOS
- ← ACCESIBLE

INFORMES

ACCESO PRINCIPAL

SALÓN DE USOS MÚLTIPLES

PUNTO DE INFORMACIÓN CÍVICA



PAPEL

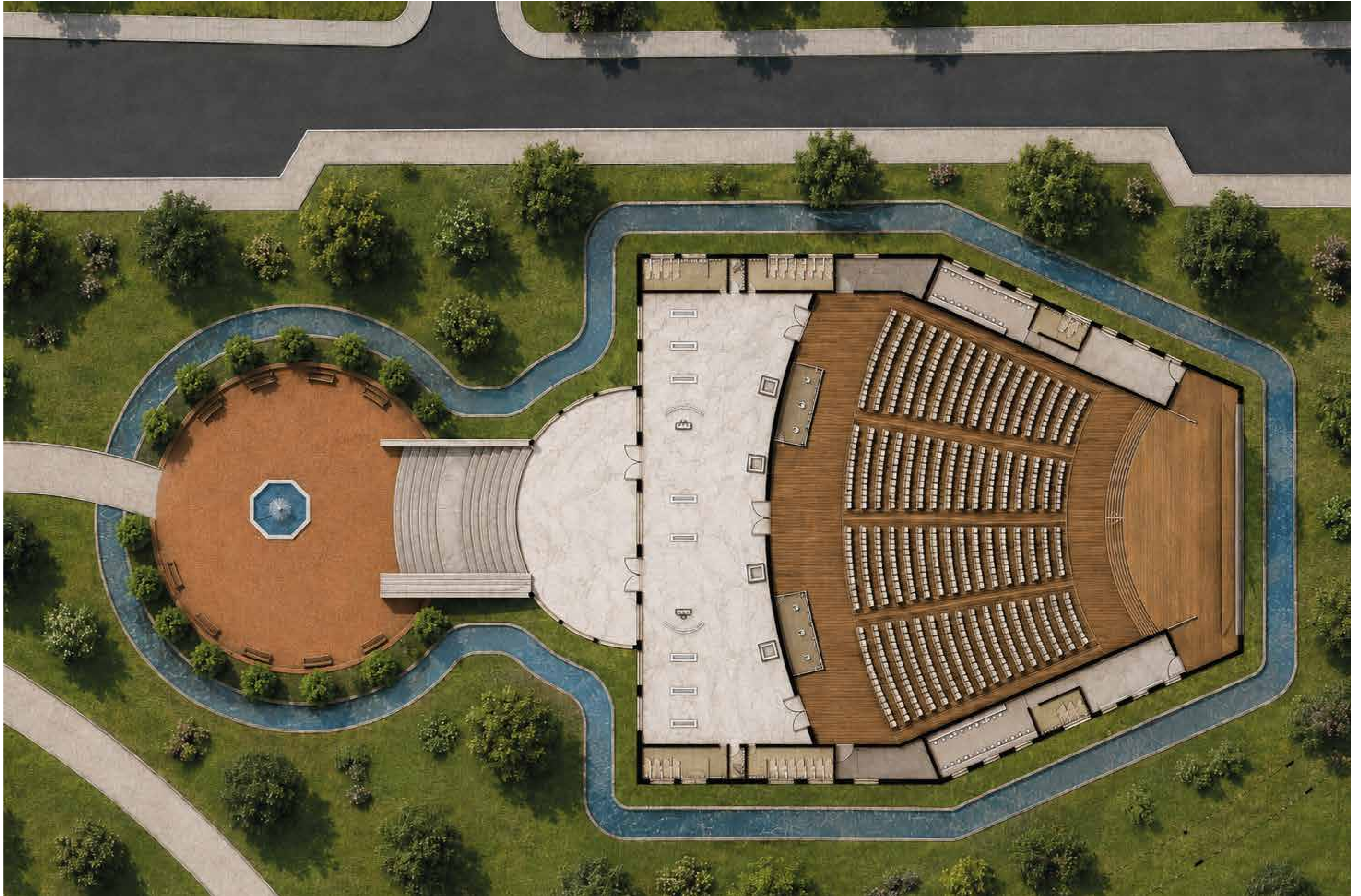
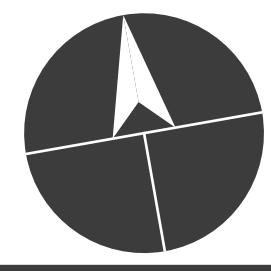
PLÁSTICO

VIDRIO

ORGÁNICO



RECEPCIÓN ADMINISTRATIVA





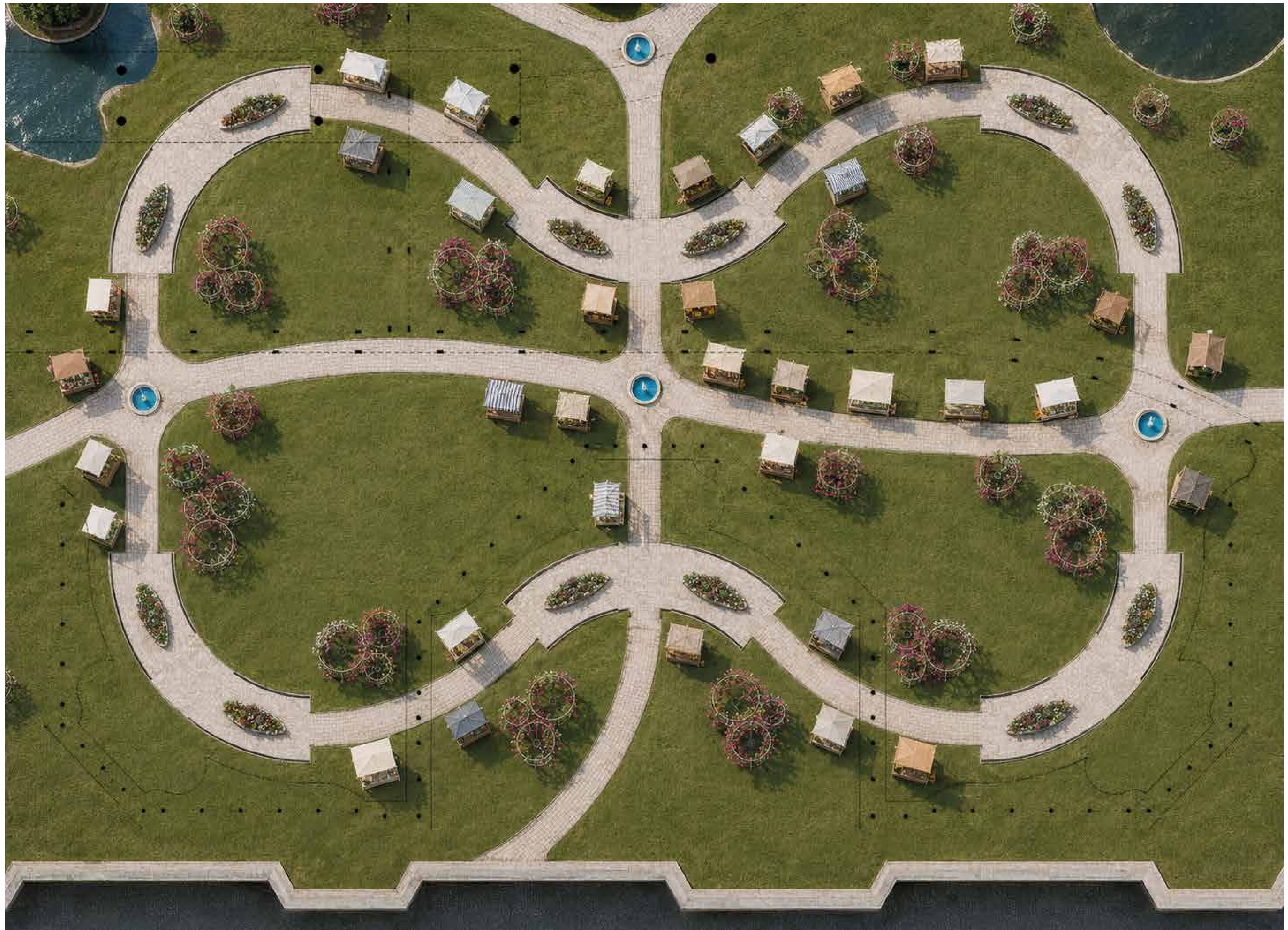
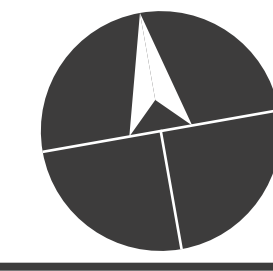


TEATRO CENTRAL











CENTRO CIVICO

- Biblioteca ↑
- Plaza →
- Auditorio ←
- Estacionamiento ←



Artesanías Locales

Productos Regionales

Arte y Diseño

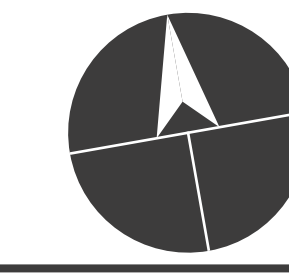
Arte y

Parque
del Encuentro

- Anfiteatro →
- Jardines →
- Pabellón →
- Baños →









↑
Centro Cívico
Biblioteca Pública
Museo de Arte
Estacionamiento
P →



Ingreso →

- Ⓐ Vestibulos
- Ⓑ Boletarias
- Ⓒ Información

Ⓗ Información



↑ Vestibulos ↑

← Ascensores

- Ⓔ Andenes
- Ⓕ Sanitarios

ACCESO
VESTÍBULOS



ASCENSORES

BÁÑOS

0 INFORMACIÓN

VESTÍBULOS ↑

ARBORES →

SALIDA →

ASCENSORES ↑

DOACALIA

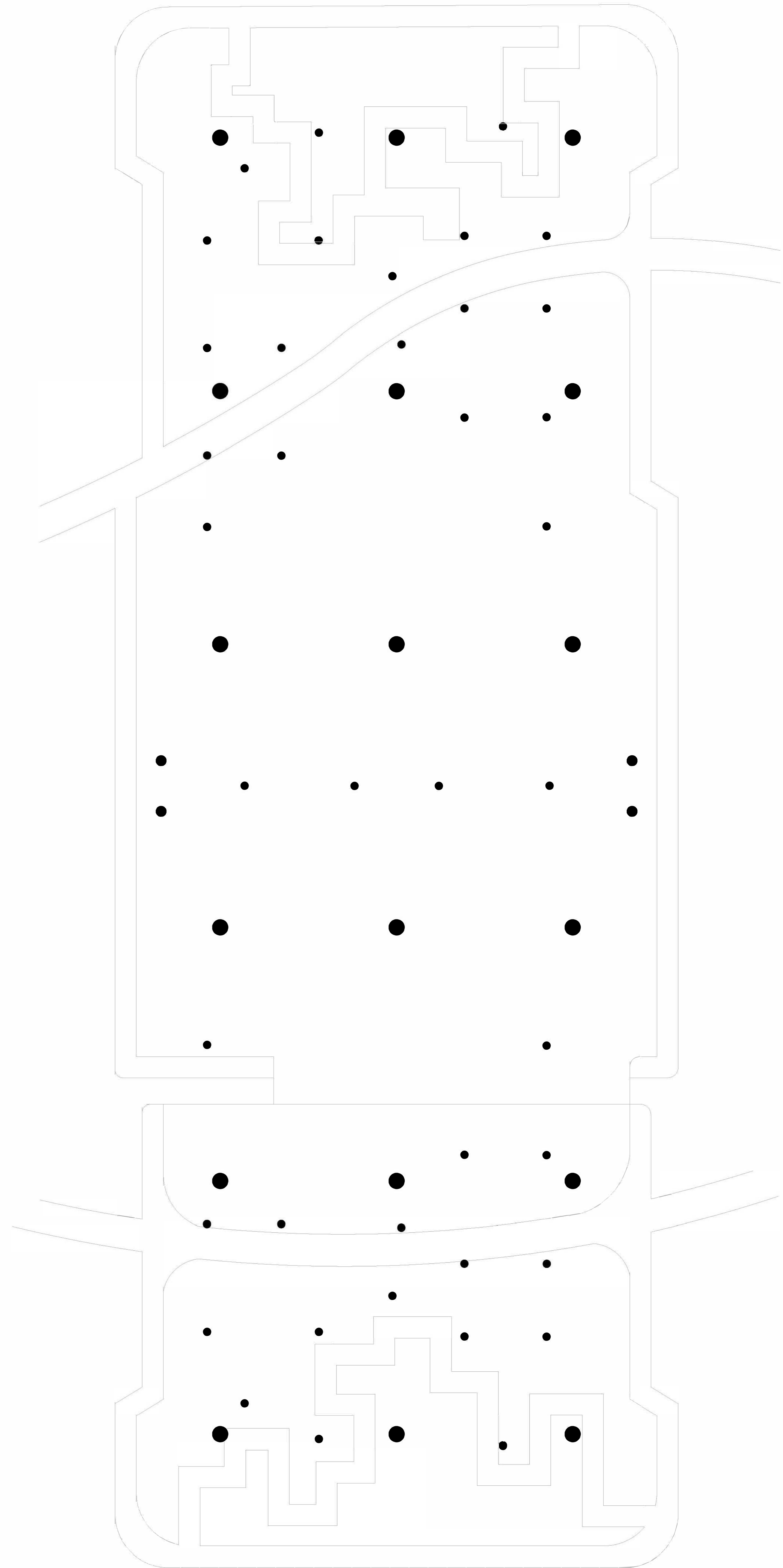
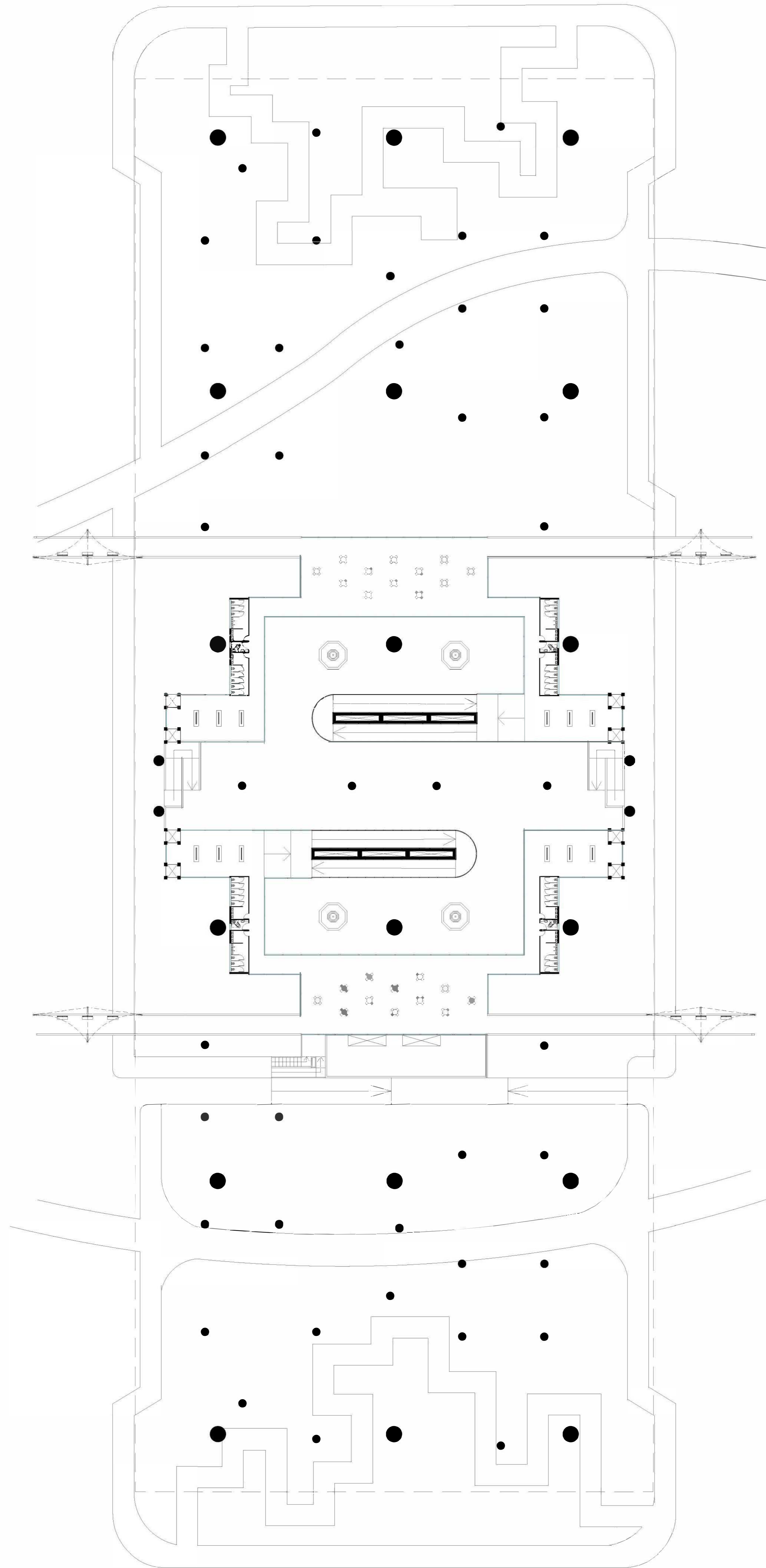
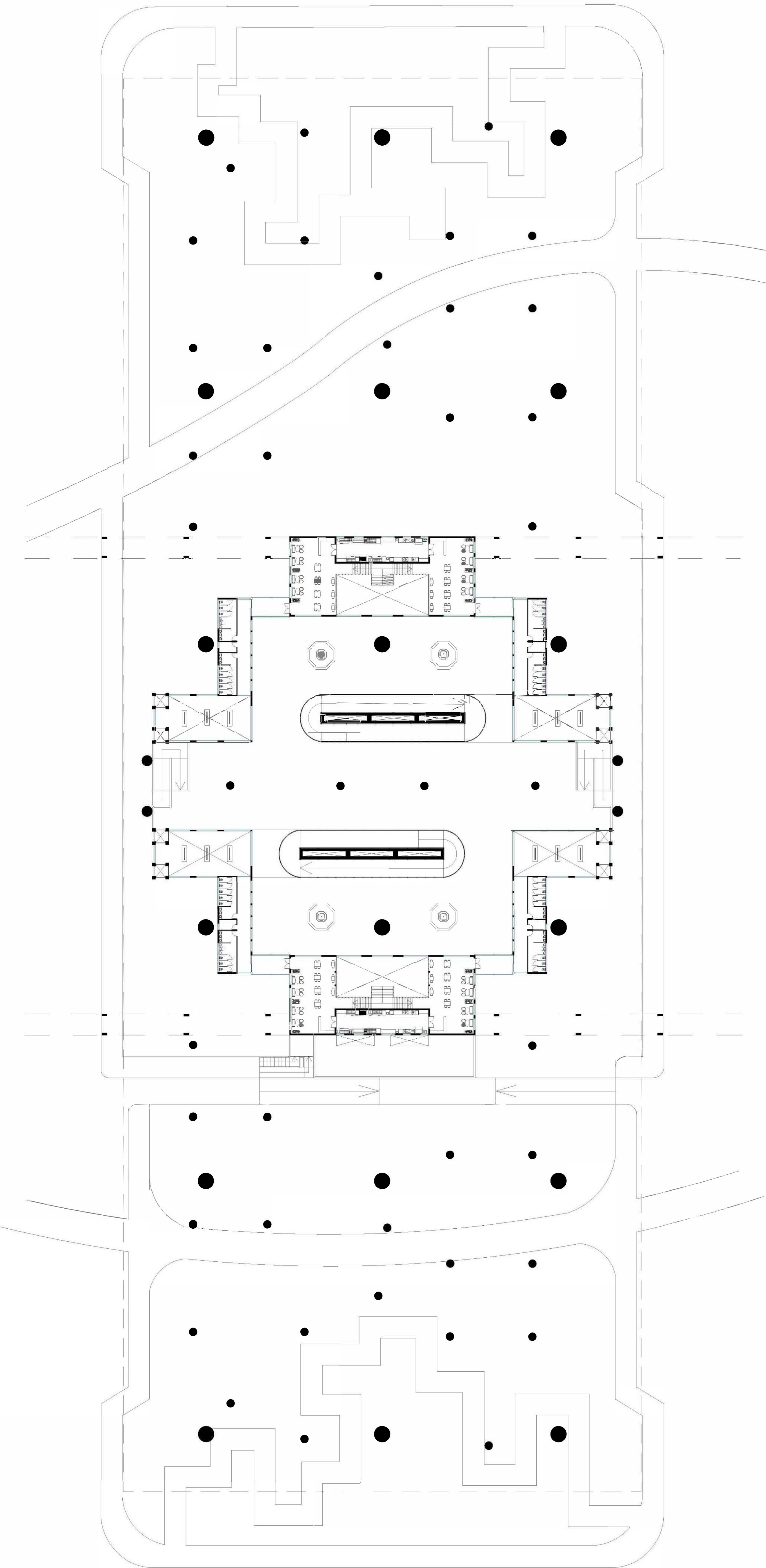
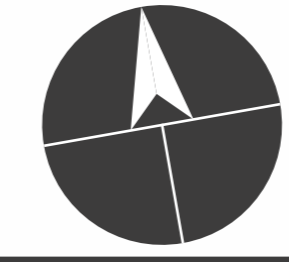


↑ Atrio
→ Cafetería
← Biblioteca

Información

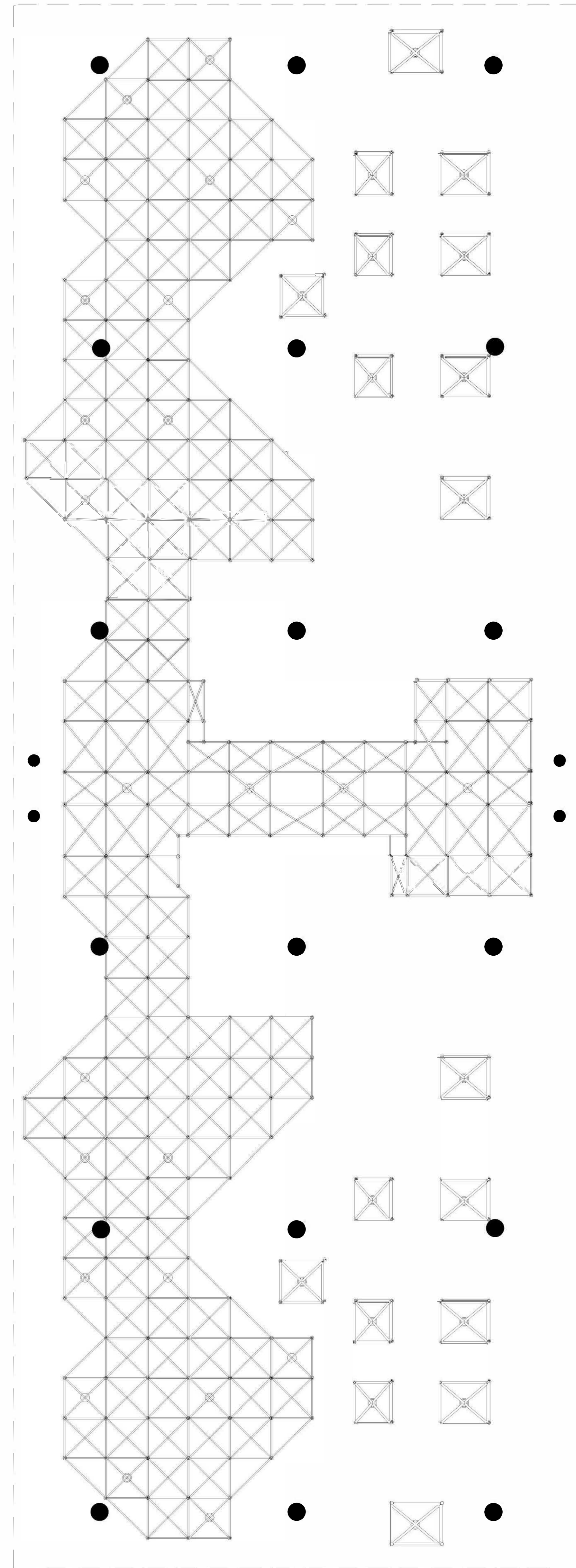
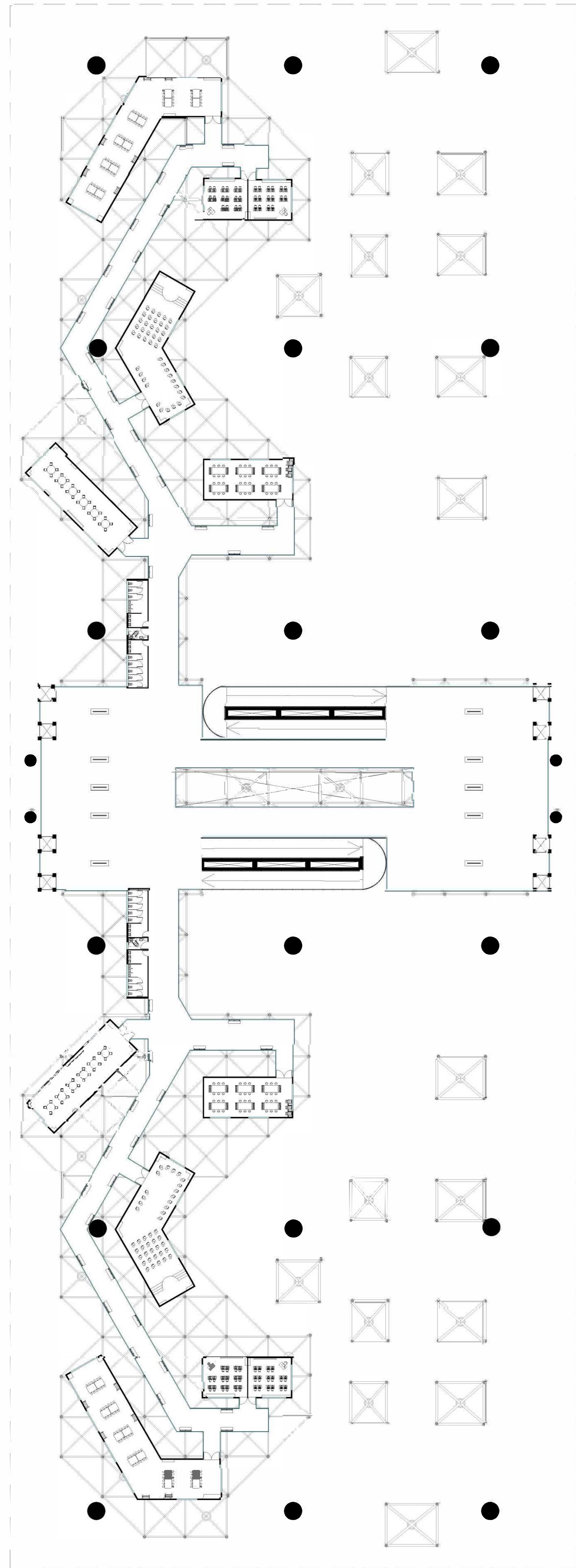
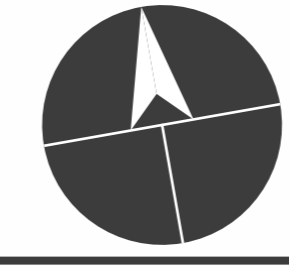


ORIZONTE
BAR







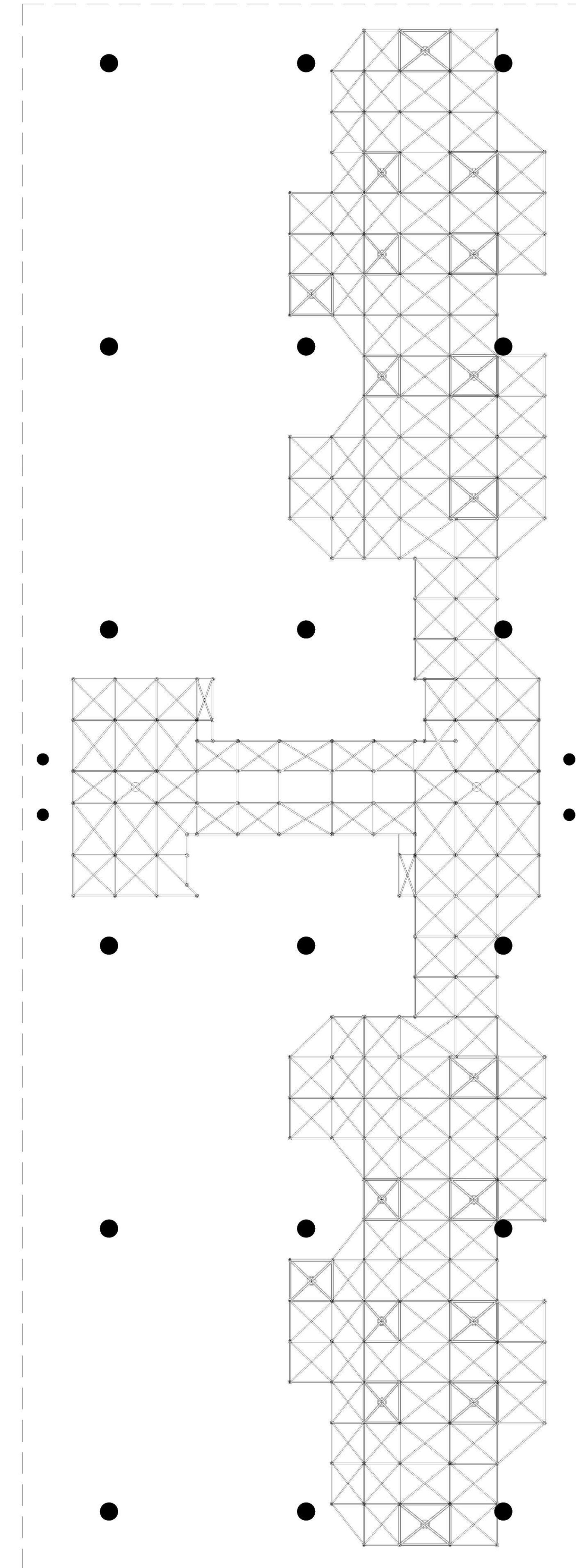
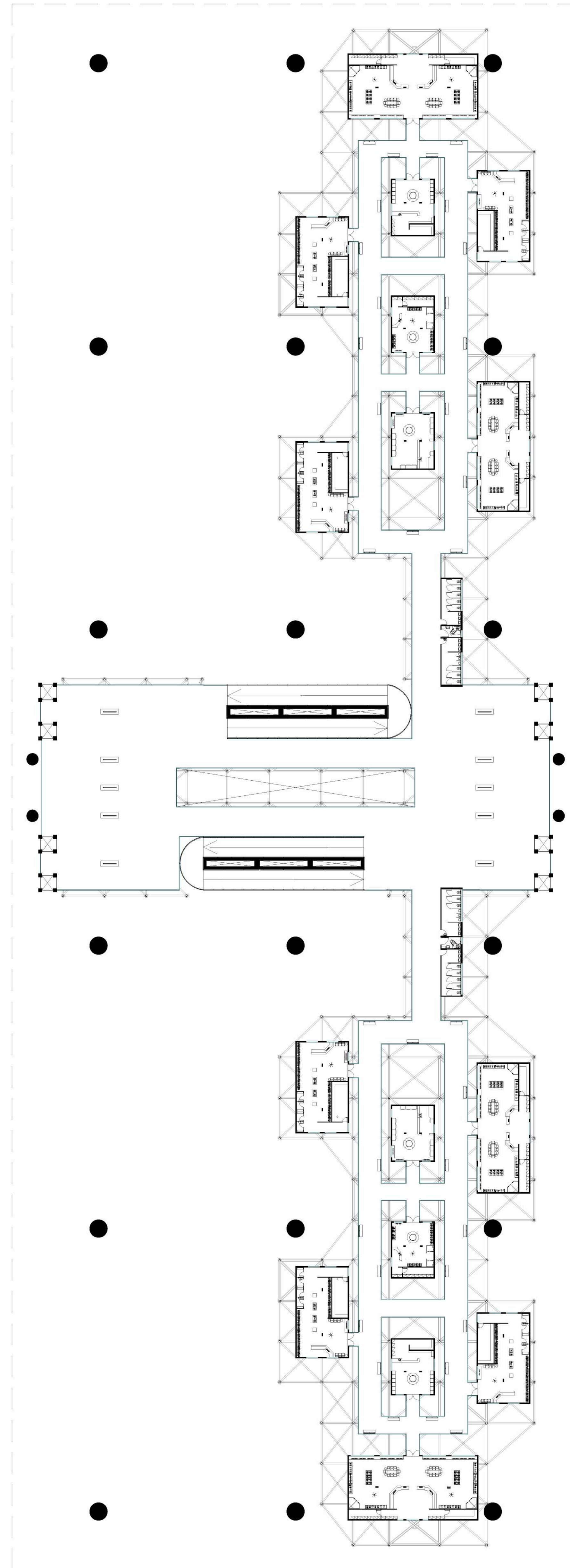
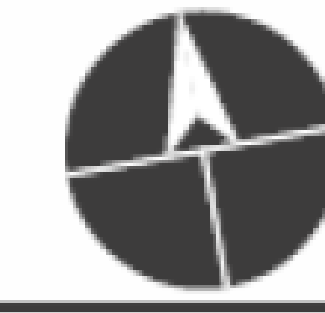






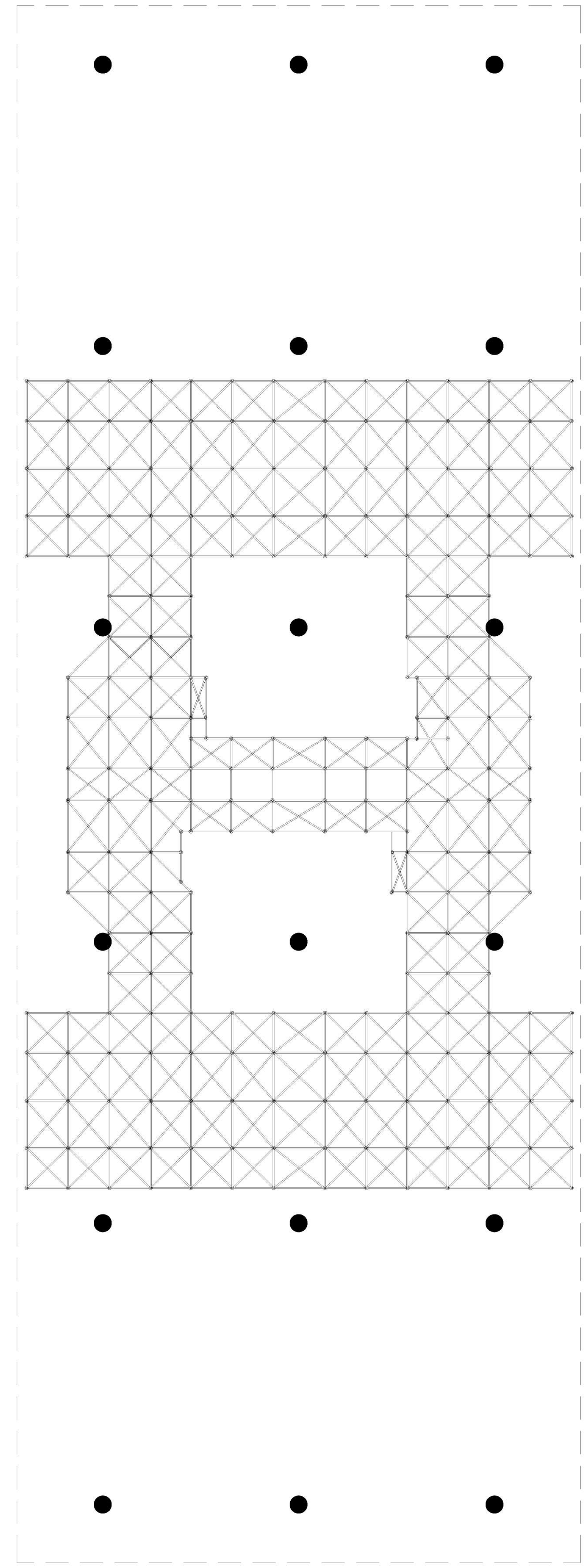
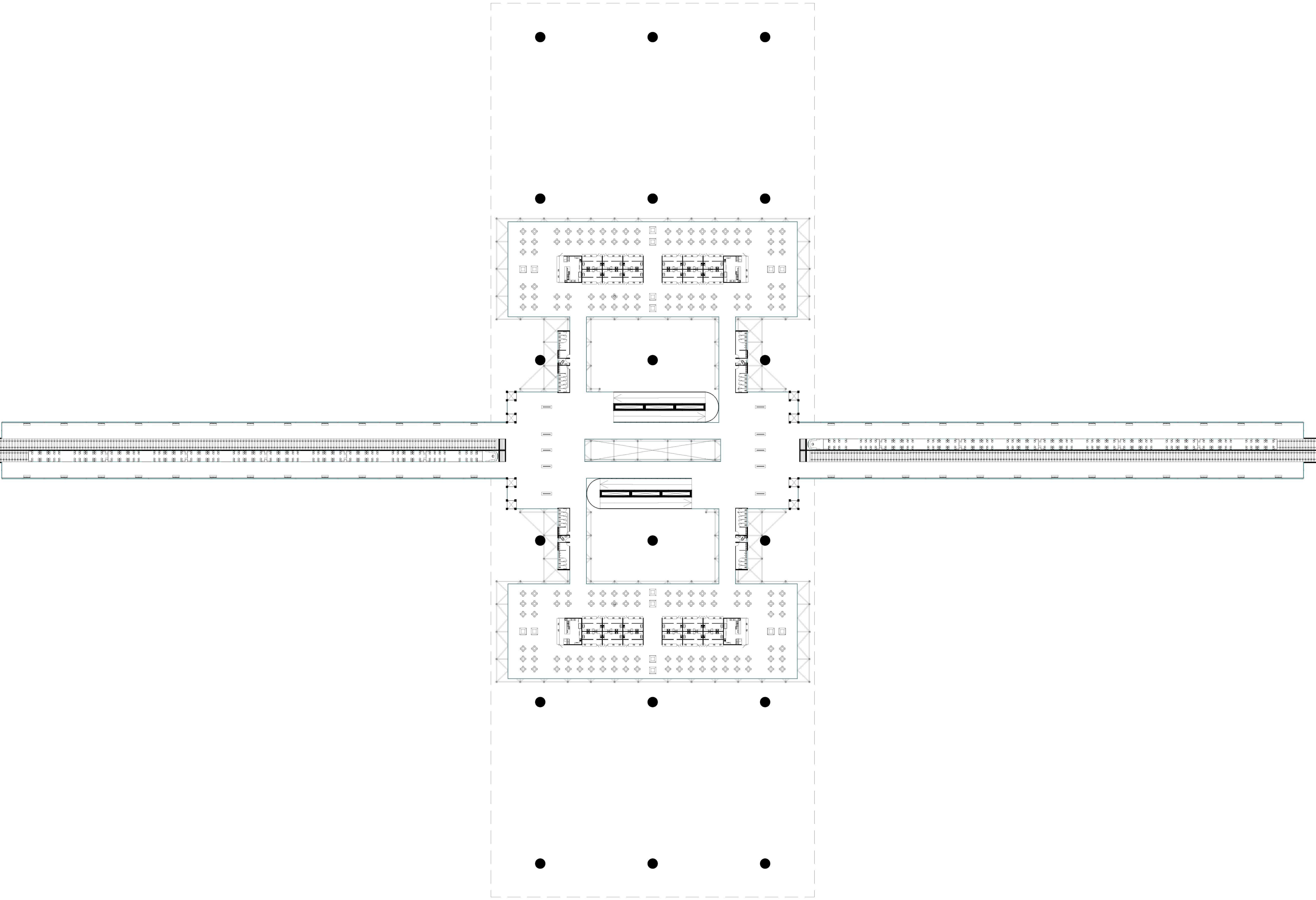


estudio21











Andén 1

Andén 2



Andén 2

Próximo tren
a Retiro 2 min



Andén 2

Próximo tren
a Retiro 2 min

ESPERE DETRÁS DE LA LÍNEA AMARILLA



↑ Salidas
☒ ☒ ☒

Andenes →
☒ ☒ ☒ ☒ ☒

↑ Salidas
☒ ☒ ☒ ☒

Andenes →
☒ ☒ ☒ ☒

Información
☒ ☒ ☒ ☒
☒ ☒ ☒ ☒
☒ ☒ ☒ ☒

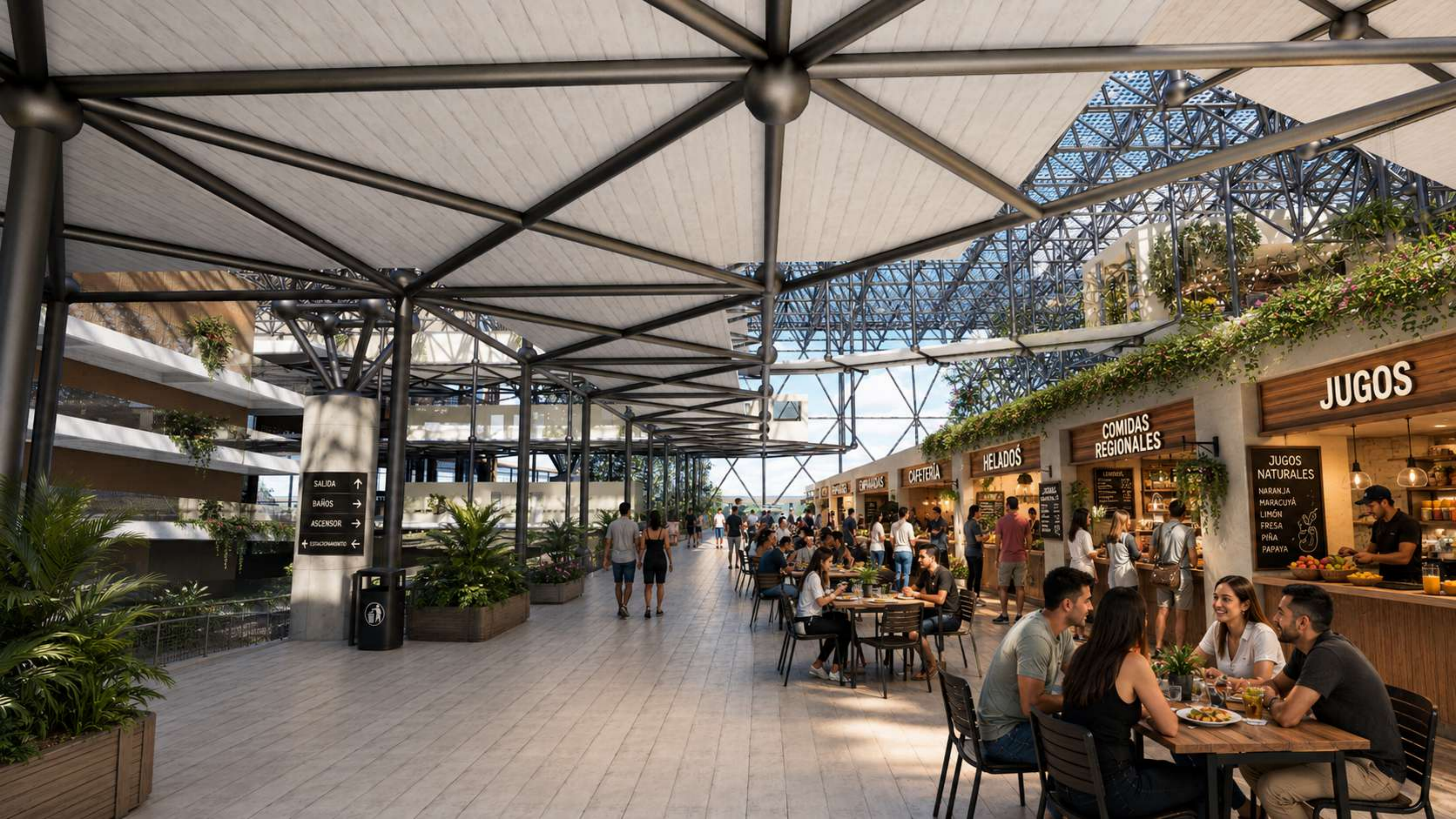
☒ ☒ ☒ ☒

☒ ☒ ☒

☒ ☒ ☒







SALIDA ↑
BAÑOS →
ASCENSOR →
ESTACIONAMIENTO ←

JUGOS

COMIDAS REGIONALES

HELADOS

CAFETERIA

JUGOS NATURALES
NARANJA
MARACUYÁ
LIMÓN
FRESA
PIÑA
PAPAYA



Andenes 1 a 4
Boleterías
Sala de espera
Salida

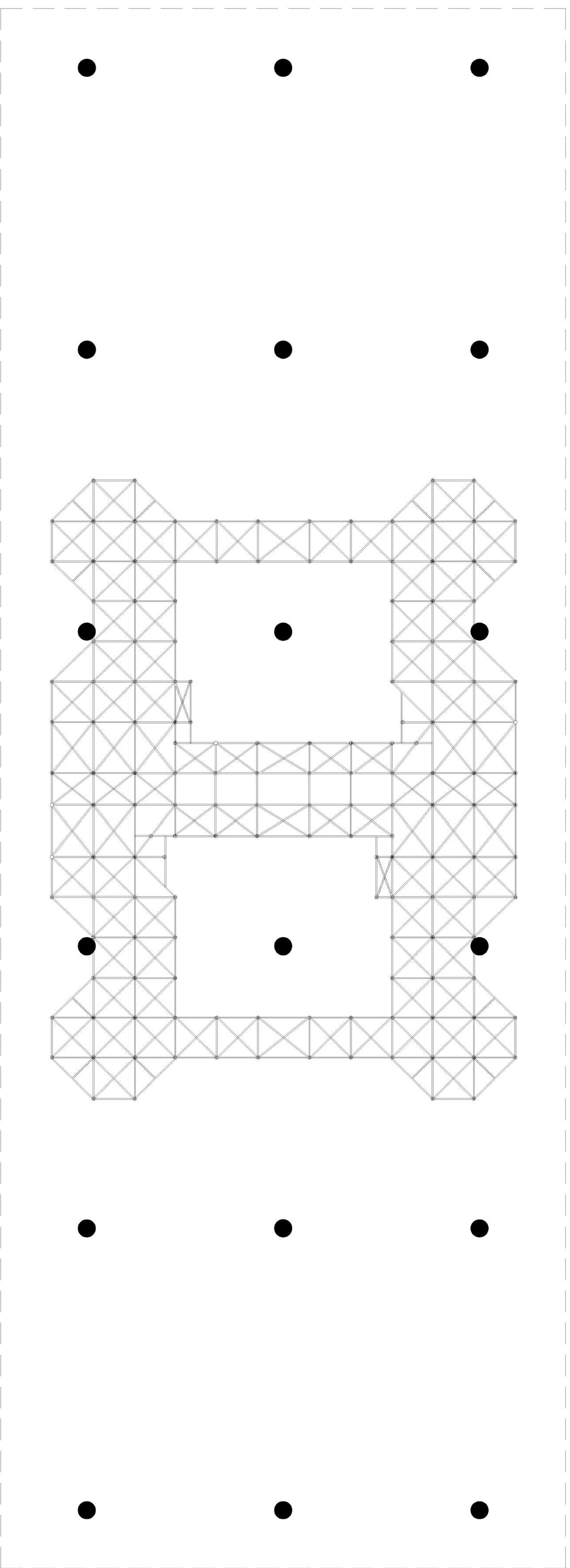
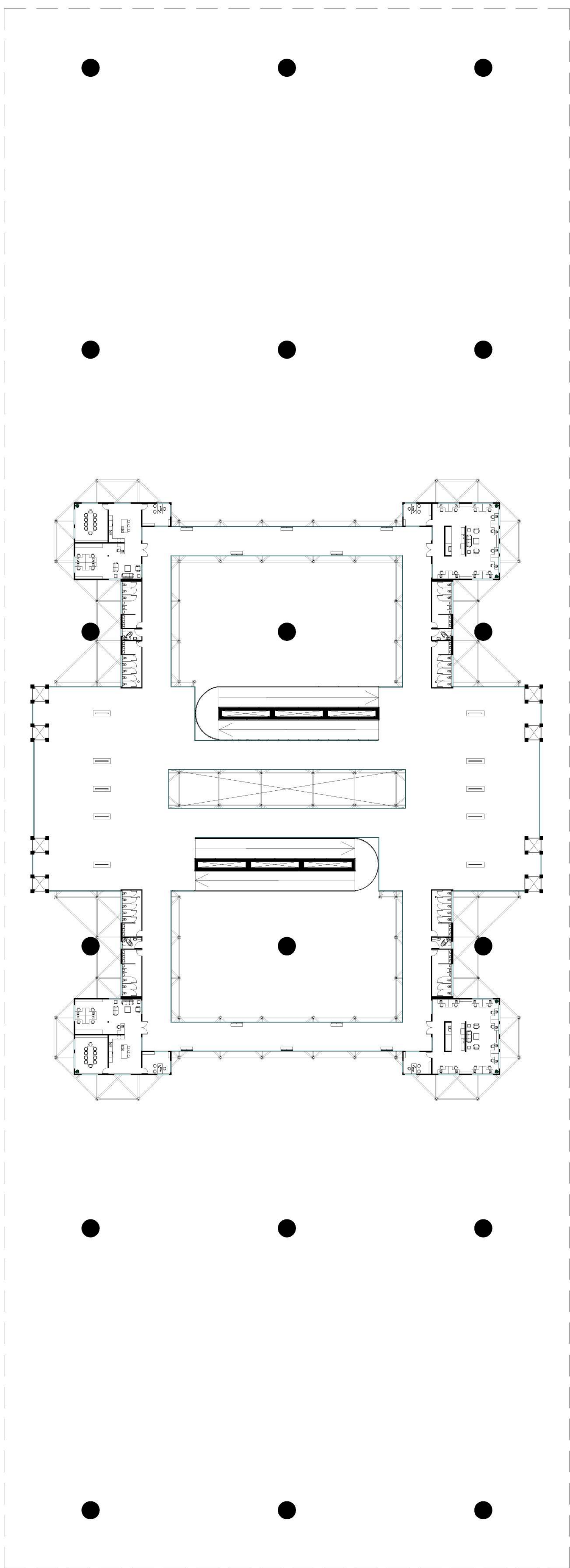
Sala de seguridad
Acceso restringido

Cafetería

Pizzería

Empanadas

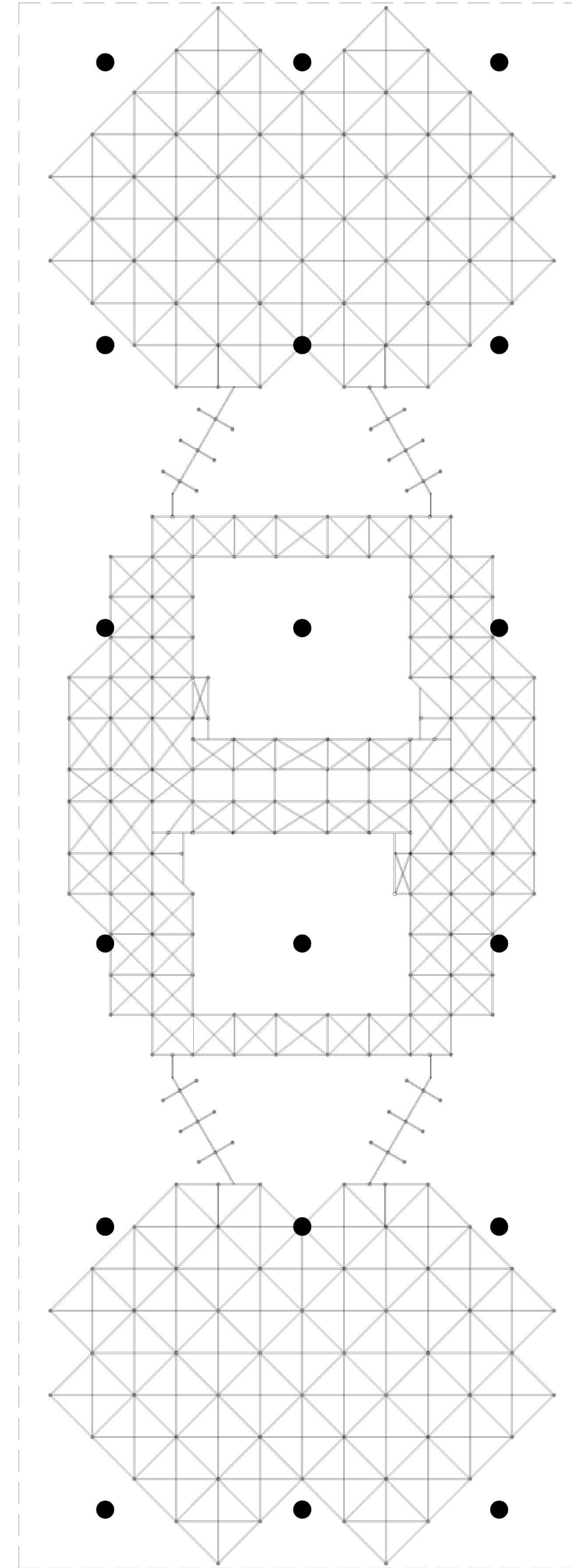
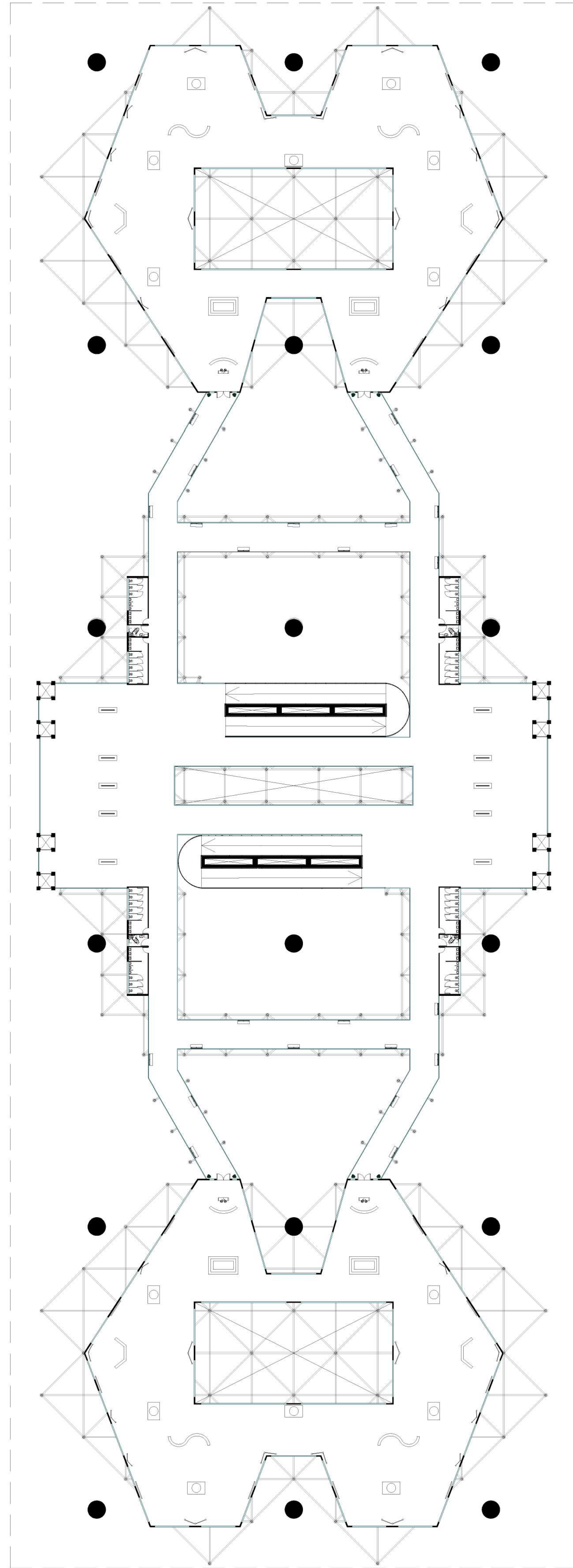
Sándwiches





10:24:31
TUE 21 MAY 2024







ART Y
NATURALEZA

Nivel 3
Mirador
Exposiciones
Sala de lectura →
Servicios
↑↑ ♿

← Mirador
Exposiciones
Sala de lectura →

ART Y
NATURALEZA

- Exposiciones →
- Sala 2 →
- Terraza →
- Ascensor →
- Baños →



Horizontes Compartidos

Arte contemporáneo y paisaje

Sala 2

Información







COSMIC FLOW
Pattern

EXPLORE
COSMOS
MAYOR





CENTRO CIVICO
MUSEOS
BIBLIOTECA
TALLERES
EXPOSICION
CAFETERIA



CENTRO CÍVICO

- ↑ Acceso Principal
- 📍 Informes
- Auditorio
- Administración
- Sala de Exposiciones
- 👤 Servicios a la Comunidad

AGENDA CULTURAL
 MÚSICA
 ARTE
 TALLERES
 TEATRO
 COMUNIDAD
 ¡PARTICIPA!

FESTIVAL DE LA CIUDAD
 Los Abuelos
 La Música

EXPOSICIÓN ABIERTA
 ARTE
 CULTURA
 HISTORIA
 ENTRADA LIBRE







CANCHA
FÚTBOL 5

REGLAS BÁSICAS
RESPECTAR A TODOS
JUGAR LIMPIO
NO INSULTAR
CUIDAR EL ESPACIO
DISFRUTAR









THE
GARDEN
PAVILION

- PAVILION →
- CAFÉ →
- WATER GARDEN →
- AMPHITHEATER →





TEATRO CENTRAL
CULTURA QUE NOS UNE

HOY
SE
PRESENTA
LA LIG
CANTON
PODRIAMO

- TEATRO CENTRAL
- ↑ Acceso Principal
 - Taquillas
 - Cafeteria
 - ← Sala Experimental
 - ← Estacionamiento





Platform 1 19:46
19:56 Express
19:58 Harbor
19:58 Express



Departures

Destination	Time	Gate
London	18:00	A1
Paris	18:30	A2
Amsterdam	19:00	A3
Brussels	19:30	A4
Frankfurt	20:00	A5
Munich	20:30	A6
Berlin	21:00	A7
Stockholm	21:30	A8
Copenhagen	22:00	A9
Oslo	22:30	A10

Arrivals

Origin	Time	Gate
London	17:30	A1
Paris	18:00	A2
Amsterdam	18:30	A3
Brussels	19:00	A4
Frankfurt	19:30	A5
Munich	20:00	A6
Berlin	20:30	A7
Stockholm	21:00	A8
Copenhagen	21:30	A9
Oslo	22:00	A10

Free Taxis /
Parkering → ↑

Lift
Escalator

Lift
Escalator

i

