



COMPLEX PROJECTS

NIGHT TRAIN HUB BERLIN

Connecting Berlin with the rest of Europe

Broer Schipper

21/march/2024

INTRODUCTION

RESEARCH

DESIGN BRIEF

CONCEPT

IMPLEMENTATION

DEVELOPMENT

CONCLUSION

introduction

NIGHT TRAIN TRAVEL

An aerial photograph of Paris, France, taken at dusk. The Eiffel Tower is the central focus, illuminated with golden lights and standing out against the darkening sky. The city's dense urban landscape, with its characteristic grey rooftops and white buildings, is visible in the foreground and middle ground. A wide, tree-lined boulevard runs through the center of the image. The overall atmosphere is serene and romantic.

LEAVE IN THE EVENING

introduction

NIGHT TRAIN TRAVEL



ARRIVE IN THE MORNING

introduction
HISTORY

South Eastern Railway. London-Chatam-Dover Railway
 CHEMINS DE FER DU NORD & DE L'EST DE FRANCE

LONDRES · PARIS · CONSTANTINOPLÉ

Départ tous les Jours DE LONDRES & DE PARIS POUR VIENNE Les Mercredis POUR CONSTANTINOPLÉ Le Jeudi & le Dimanche POUR BUKAREST

SERVICE RAPIDE Sans Changement de Voitures SANS PASSEPORT ENTRE

FAST TRAVELLING Without any Change of Carriages WITHOUT PASSPORT BETWEEN

The Trains are Starting FROM LONDON & PARIS EVERY DAY FOR VIENNA Only on Wednesday FOR CONSTANTINOPLÉ On Thursdays & Sundays FOR BUKAREST

PARIS · MUNICH · VIENNE · BUDAPEST · BELGRADE & CONSTANTINOPLÉ
 & ENTRE & BETWEEN
 PARIS & BUKAREST
ORIENT EXPRESS

HIVER 1888-89 WINTER 1888-89

LONDRES-PARIS-VIENNE

LONDRES (Quai de la Gare) à 8 h 30	VIENNE (Gare de l'Est) à 8 h 45
PARIS (Gare de l'Est) à 10 h 15	BUDAPEST (Gare de l'Est) à 10 h 30
VIENNE (Gare de l'Est) à 11 h 30	CONSTANTINOPLÉ (Gare de l'Est) à 11 h 45

Les JOURS PARIS (Gare de l'Est) à 11 h 30 Every Day

PARIS-CONSTANTINOPLÉ

Mercr. PARIS (Gare de l'Est) à 11 h 30	Depart 7 h 30	à Wednesday
Jeudi VIENNE (Gare de l'Est) à 10 h 15	à 15	à Thursday
Vendredi BUDAPEST (Gare de l'Est) à 11 h 30	à 15	à Friday
Samedi BELGRADE (Gare de l'Est) à 11 h 30	à 15	à Saturday

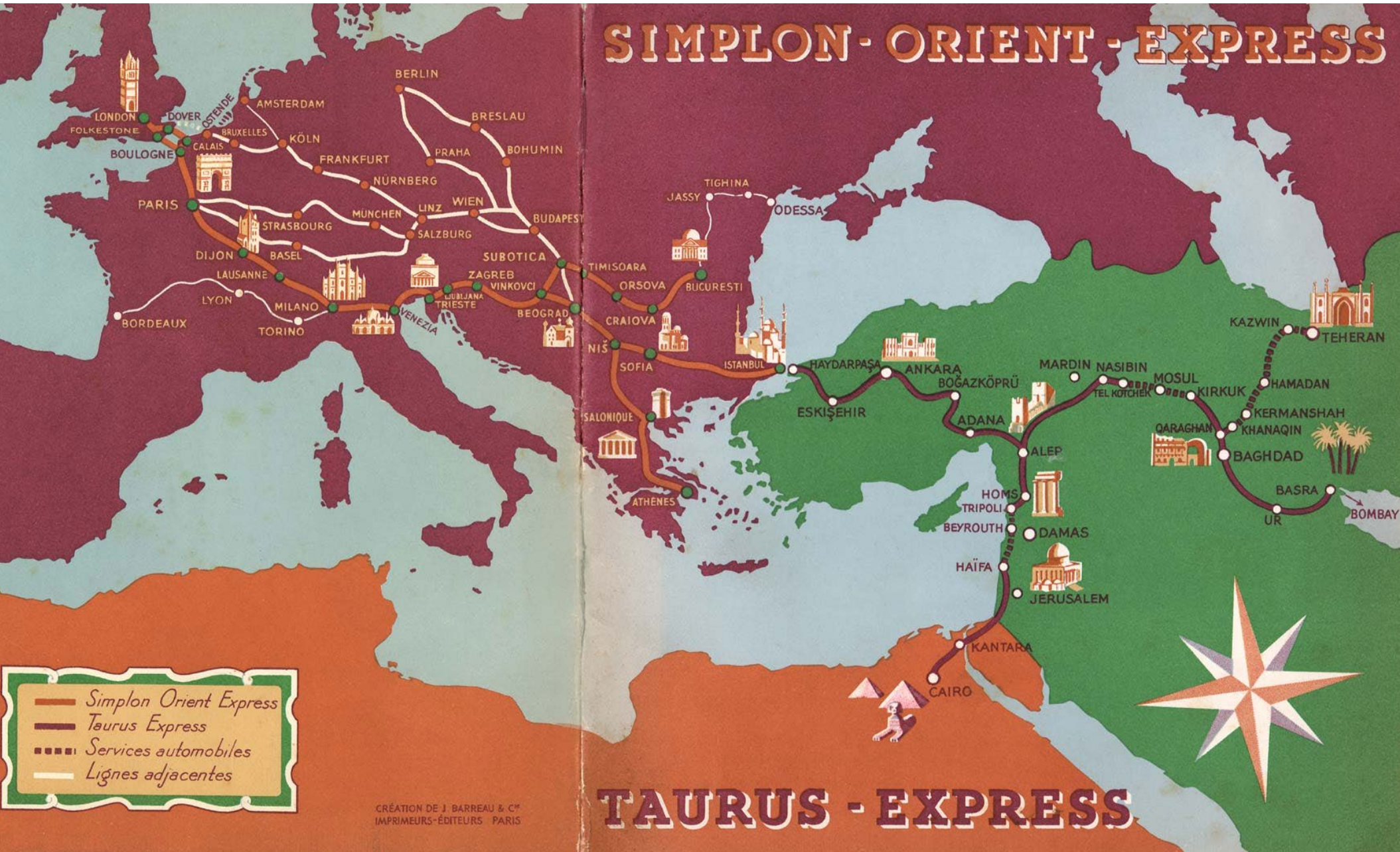
PARIS-BUKAREST

Jeudi et Dimanche PARIS (Gare de l'Est) à 11 h 30	Depart 7 h 30	à Thursday and Sunday
Vendredi et Lundi VIENNE (Gare de l'Est) à 10 h 15	à 15	à Friday and Monday
Samedi et Mardi BUKAREST (Gare de l'Est) à 11 h 30	à 15	à Saturday and Tuesday

For more information, consult the Libretto available at the Company and the Stations of the P. O. and other of the international stations of the Western Co.

26, rue CHATELAIN (Châtelet) 18, rue Brest, Paris.

HISTORY



introduction
EXTINCT



End of the line for Europe's iconic night trains?

The sleeper service is being phased out across the continent as operators are hit by hefty taxes and rise of budget airlines

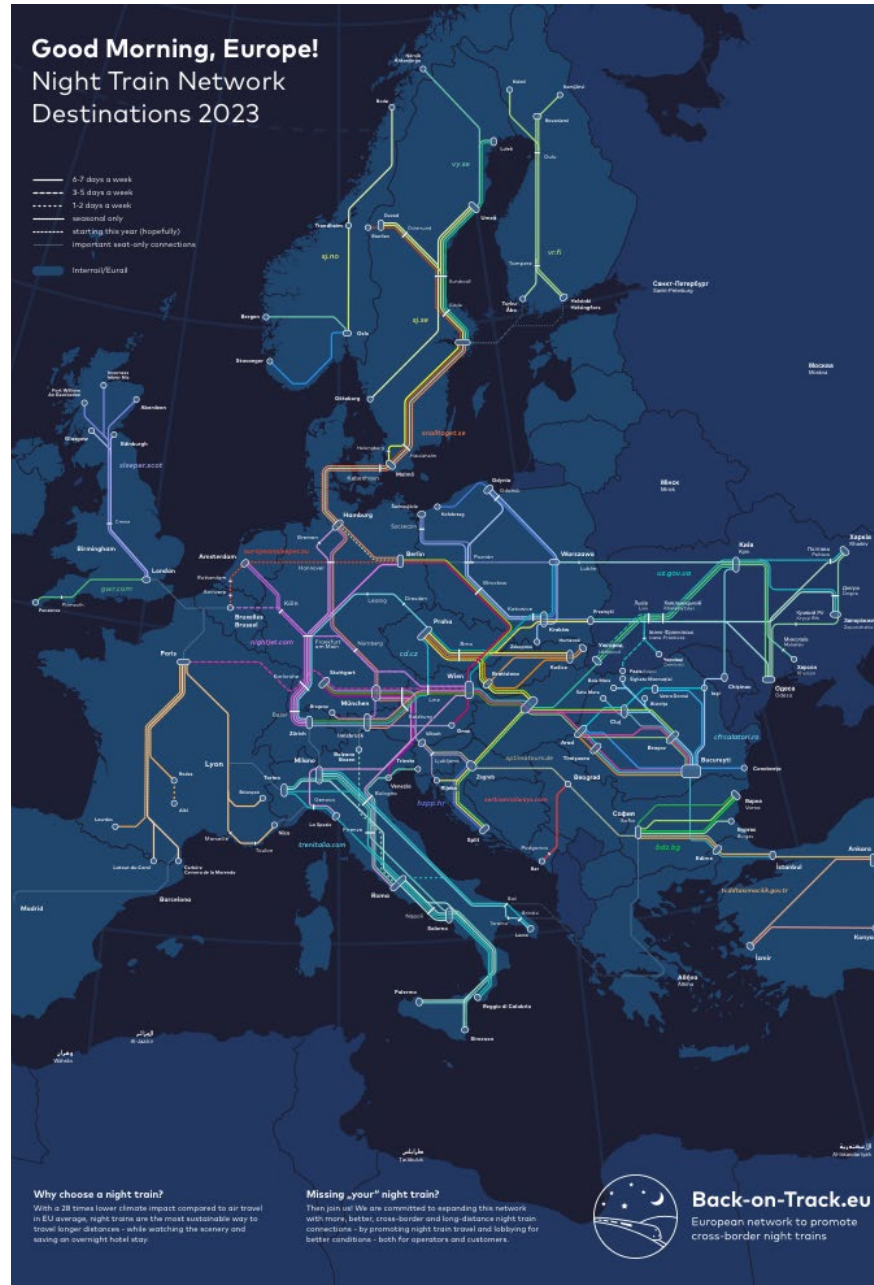
- [Cinema's enduring love affair with the sleeper train](#)
- [Love the night train? Share your stories with us](#)



📷 The Night Riviera, a sleeper train operated by First Great Western and one of only two sleeper services in the UK - the other being the Caledonian Sleeper. Photograph: Martin Godwin for the Guardian

To their fans, night trains sum up the best of the European project. They are time efficient, environmentally sustainable, and irresistibly romantic: you go to sleep in one country and wake up in another, possibly having made friends along the way.

COMEBACK IN EUROPE



From Berlin to Brussels, the night train renaissance gathers speed with the new European Sleeper

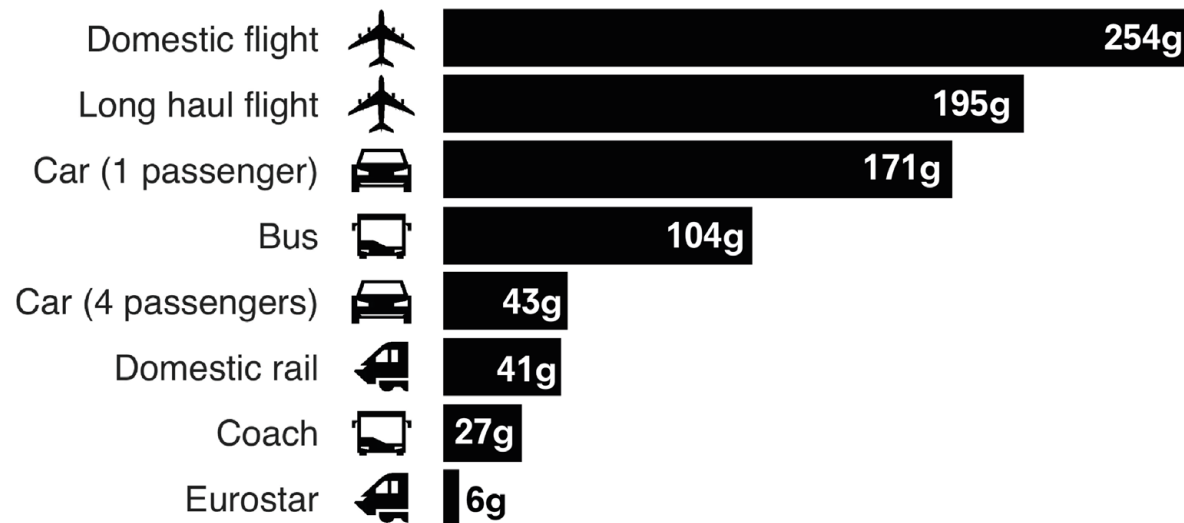


In the beer gardens of Berlin, night trains are a conversation topic almost as hot as how to get the Berghain bouncers to let you into their nightclub. (“Be a single man, be ‘alright’-looking, don’t smile,” I’m told.)

SUSTAINABILITY!

Emissions from different modes of transport

Emissions per passenger per km travelled



SLOW BUT COMFORTABLE WAY OF TRAVELLING

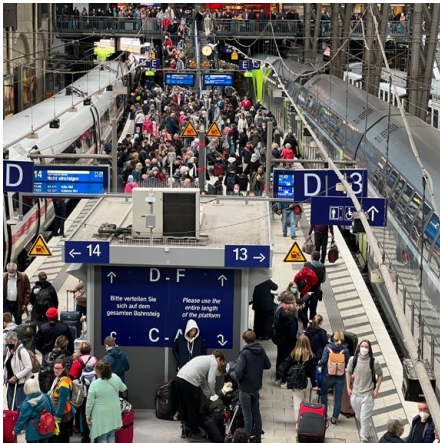


introduction

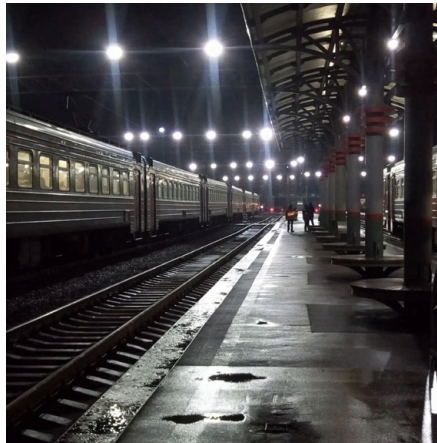
SLOW BUT COMFORTABLE WAY OF TRAVELLING



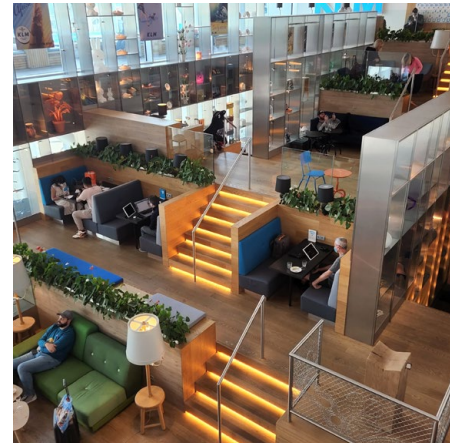
WHY A SPECIFIC NIGHT TRAIN HUB?



Capacity



Lack of Comfort



Additional Facilities

DOES CONTEMPORARY EUROPE NEED NIGHT TRAIN HUBS?

introduction
BERLIN



INTRODUCTION

RESEARCH

DESIGN BRIEF

CONCEPT

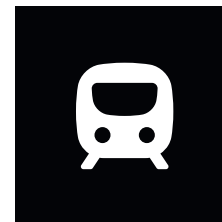
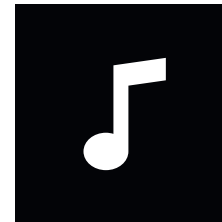
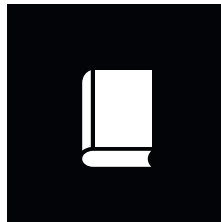
IMPLEMENTATION

DEVELOPMENT

CONCLUSION

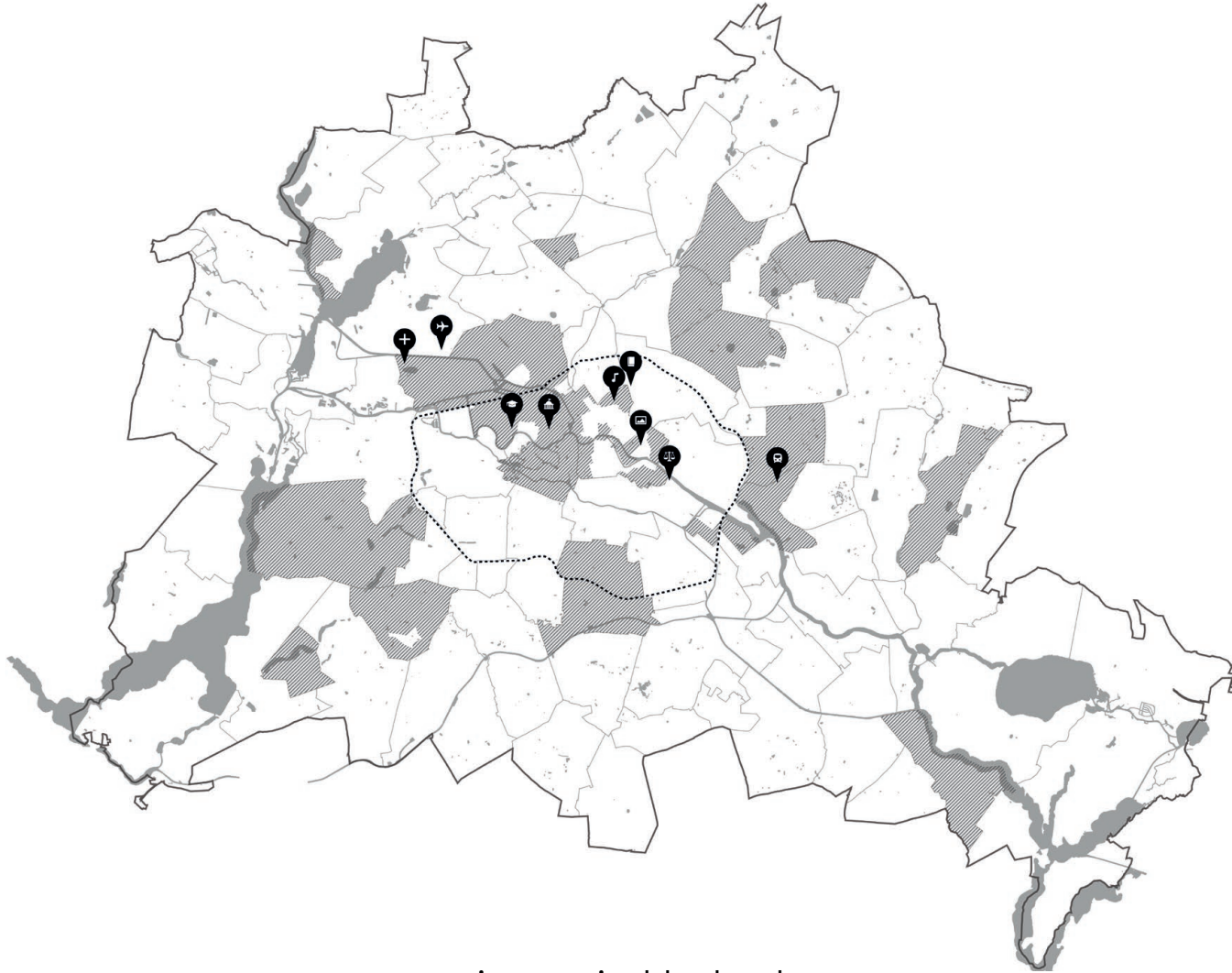
research

BODIES BUILDINGS BERLIN



research

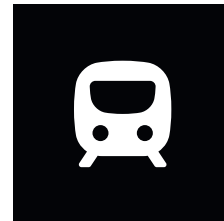
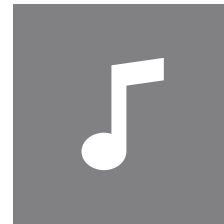
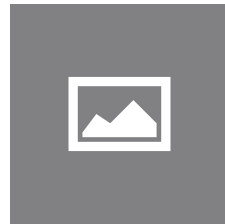
GROUP STRATEGY



economic sustainable development

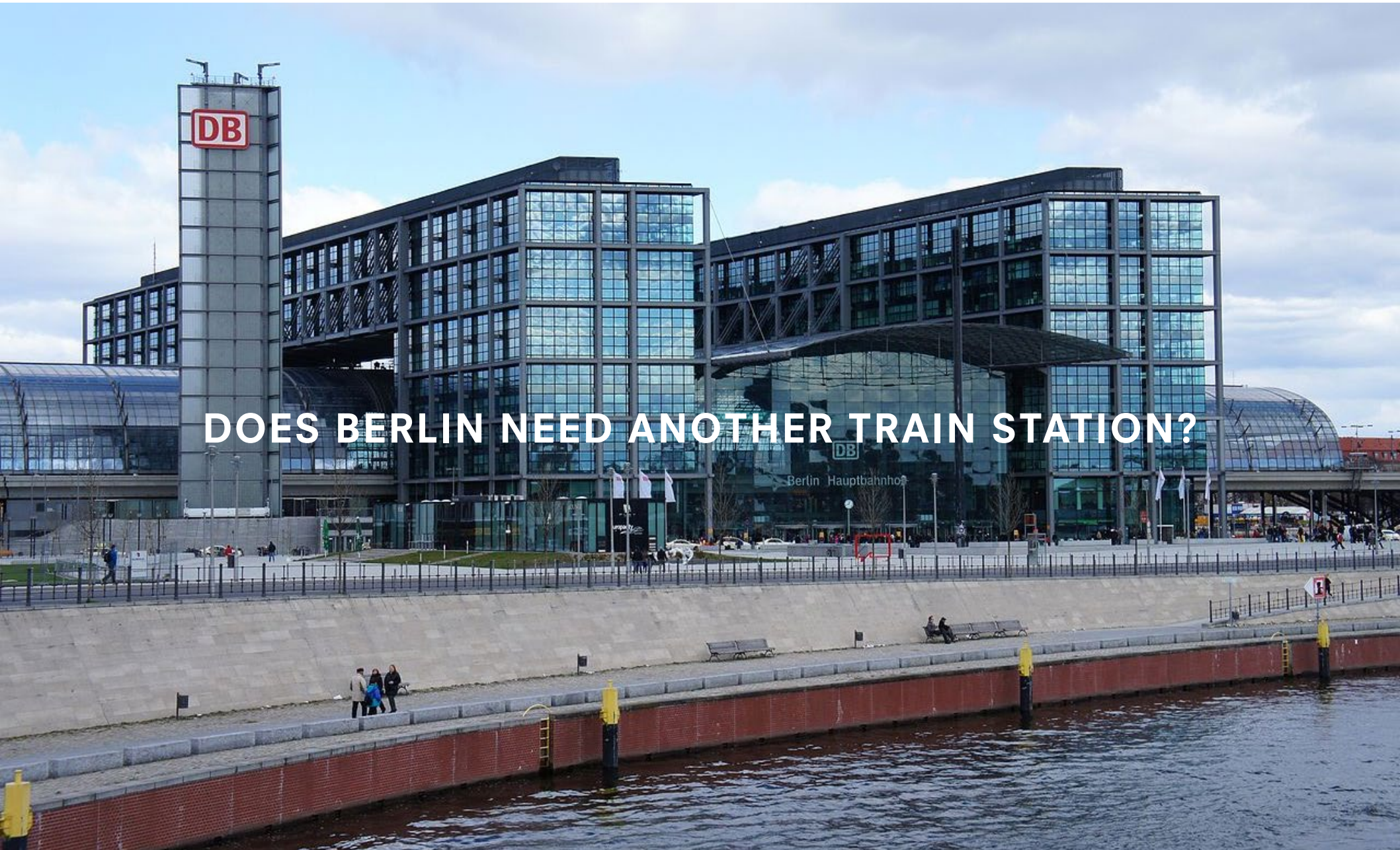
research

TRAIN STATION



research

TRAIN STATION



DOES BERLIN NEED ANOTHER TRAIN STATION?

**NIGHT TRAINS GET IN THE WAY OF COMMUTER TRAINS IN
MAIN STATIONS. THIS CAN BE SOLVED
BY USING MINOR STATIONS.**

Poul. (2022). Wie weit können Nachtzüge die Erderwärmung reduzieren? – Back-on-Track. <https://back-on-track.eu/de/koennen-nachtzuge-die-erderwärmung-reduzieren/>

**NIGHT TRAINS GET IN THE WAY OF COMMUTER TRAINS IN
MAIN STATIONS. THIS CAN BE SOLVED
BY USING ~~MINOR STATIONS.~~
NIGHT TRAIN HUBS**

BERLIN NIGHT TRAIN RESEARCH



MACHBARKEITSUNTERSUCHUNG: BERLIN ALS DREHKREUZ EINES EUROPÄISCHEN NACHTZUGNETZES

Schlussbericht

Senatsverwaltung
für Umwelt, Mobilität,
Verbraucher- und Klimaschutz

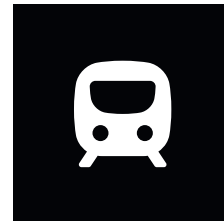
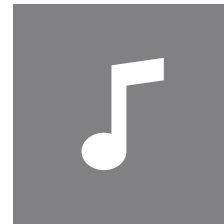
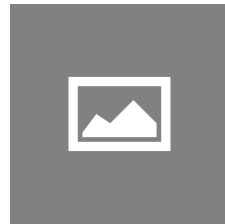
BERLIN



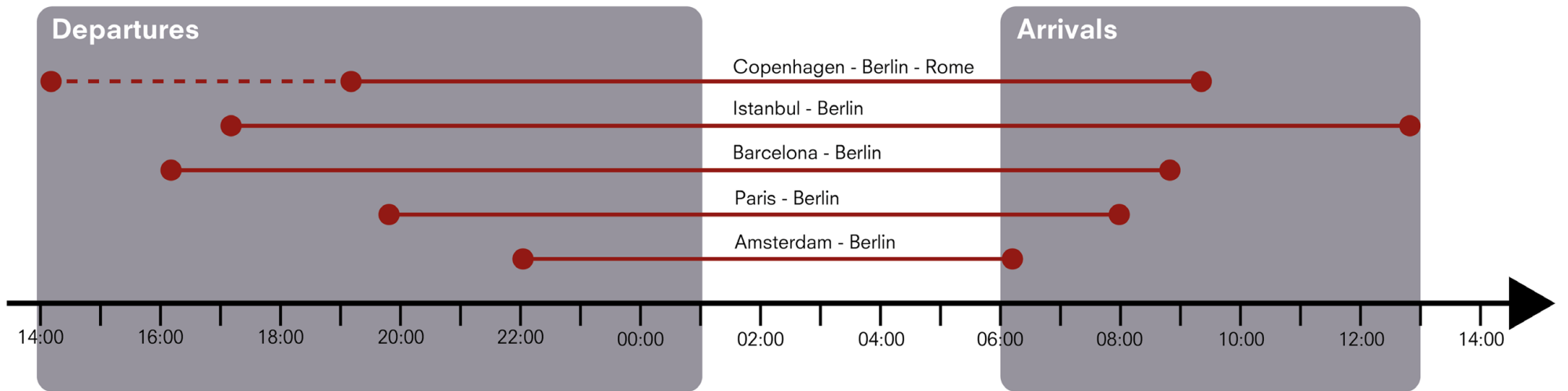


BERLIN HAD ONE...

research
FLOWS



research
FLOWS

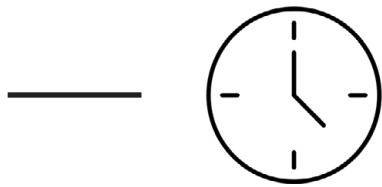


research

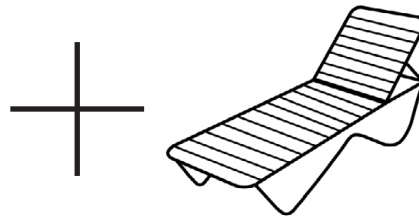
24/7 FUNCTIONALITY



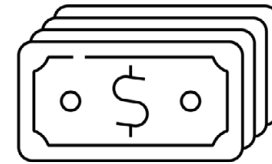
THEORETICAL FRAMEWORK



1. Travel Time



2. Comfort Level



3. Travel Cost

With a higher comfort level, travel time becomes less important.

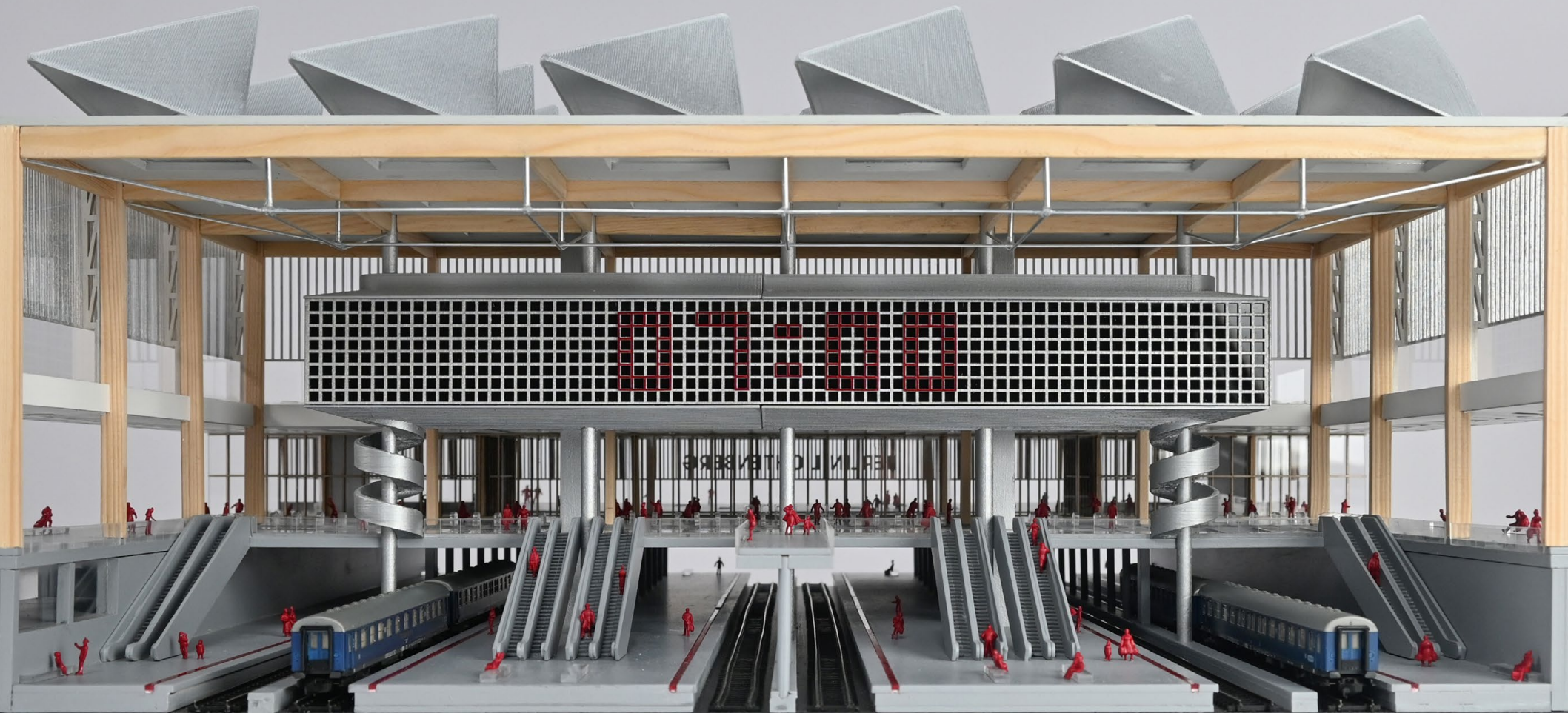


COMFORT HAS TO DO WITH CONVENIENCE, SAFETY AND LUXURY WHILE TRAVELLING BUT ALSO WITH EVERYTHING BEFORE AND AFTER THE JOURNEY.

Witlox, F., Zwanikken, T., Jehee, L., Donners, B., & Veeneman, W. (2022). Changing tracks: identifying and tackling bottlenecks in European rail passenger transport.

research

FIRST AND LAST IMPRESSION OF THE JOURNEY



WHAT IS COMFORT IN A STATION?

TOP 3 STATIONS NETHERLANDS 2024



Klimmen-Ransdaal



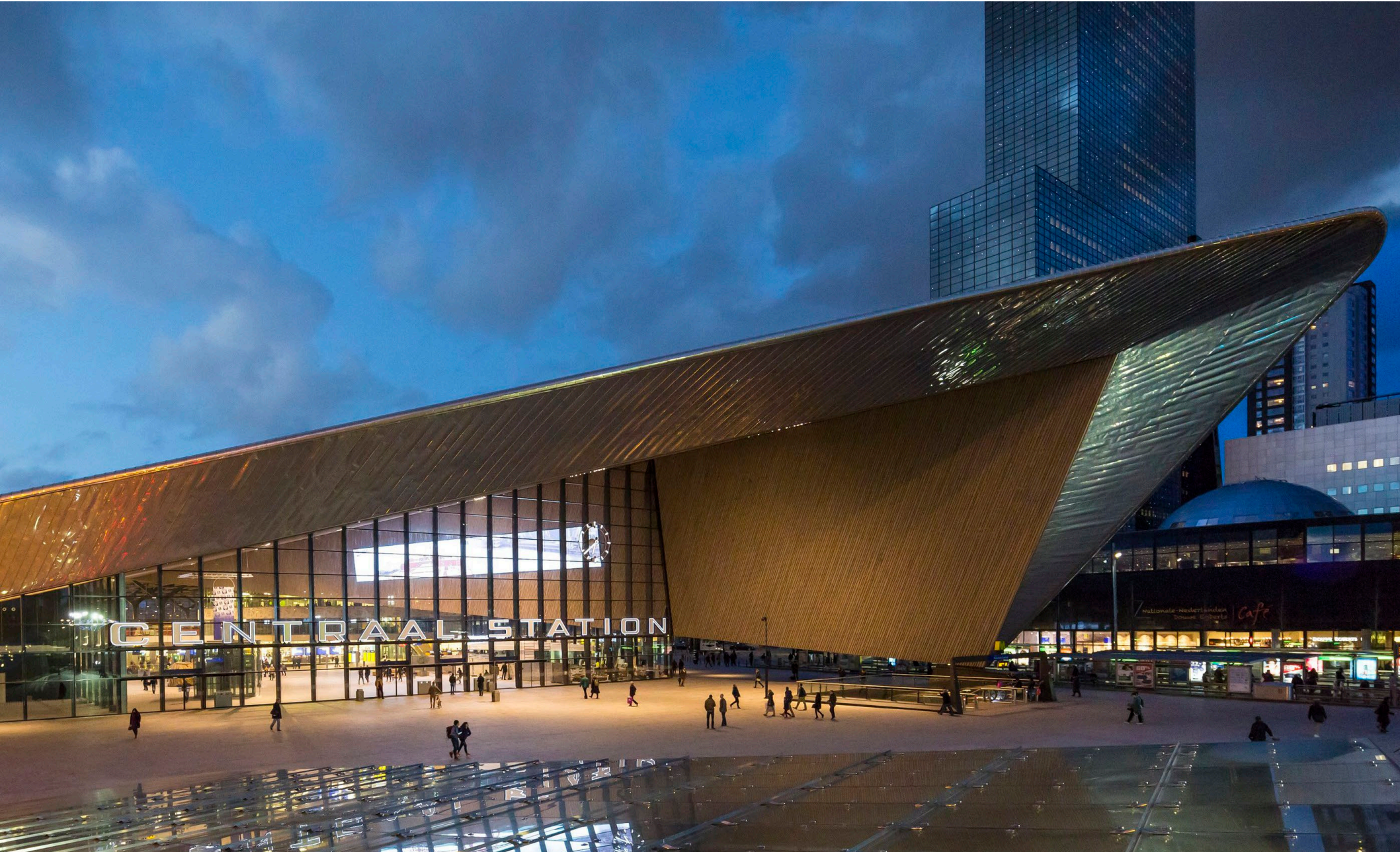
Schin op Geul



Mantgum

research

FIRST MAJOR STATION



COMFORT



Body

Physical Comfort

Convenience

Luxury



Building

Daylight
Windproof
Visual Comfort
Acoustics
Climate Control
Security
Safety

Wayfinding
Simplicity
24/7 Functionality
Connectivity

Additional Facilities
Exclusivity
An Experience
Spacious

COMFORT IS NOT THE SAME AS COZINESS



research

COMFORT IS DIFFERENT FOR EVERYONE



COMFORT IS DIFFERENT FOR EVERYONE

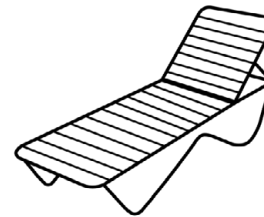


NIGHT TRAIN HUB BERLIN IS FOR EVERYONE

THE GOAL OF COMFORT



Sustainability



Comfort

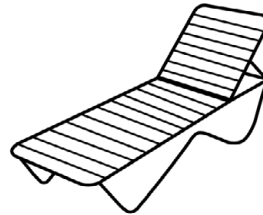
Convince people with comfort, so that they will travel sustainable

research

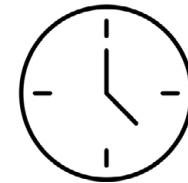
RESEARCH THEMES & AMBITIONS



Sustainability



Comfort



Time Specificness

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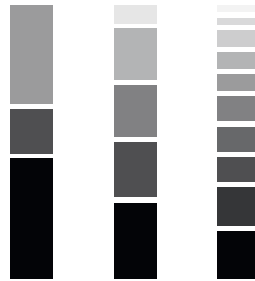
DEVELOPMENT

CONCLUSION

WHO? WHAT? WHERE?



Client



Program



Site

design brief

CLIENT



Initiator

design brief

REVIVAL TRANS EUROP EXPRESS



design brief
PARTNERS



Berlin Municipality

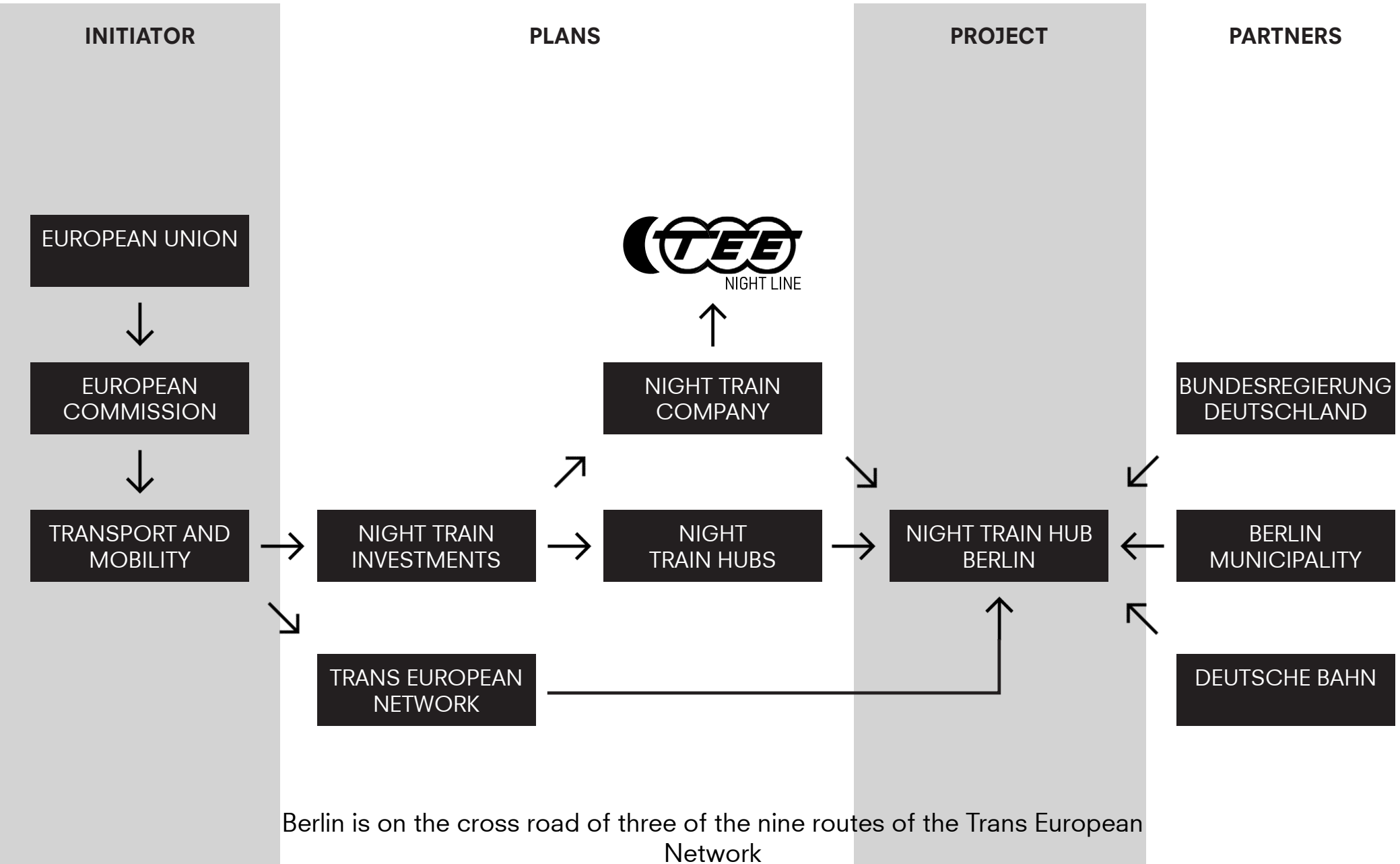


Die Bundesregierung
Deutschland



Deutsche Bahn

design brief
OVERVIEW



design brief
USERS



Passengers



Personnel



Berliners

design brief

PASSENGERS

Business Travelers



Workspaces
Conference Rooms
Lounges
Restaurants
Sanitation
Hotel
Luggage Facilities

Tourists



Entertainment
Bars
Lounges
Restaurants
Sanitation
Hotel
Luggage Facilities

design brief

PASSENGERS

C^{ie}. Int^{le}. des WAGONS-LITS

**LES
WAGONS
-LITS
DE**

**2^e
CLASSE**

PARIS VERS STRASBOURG,
BALE, PRAGUE.
APPENWEIER-STRASBOURG
- MARSEILLE.
OSTENDE-BALE.

Ca. OFFICE d'ÉDITIONS G&A P.T. - PARIS

USER ESTIMATION

15.000.000 → **41.000**

Annual Night Train Travellers

Daily Night Train Travellers

This is equal to 75% of the passengers of flights from Berlin Brandenburg Airport which could be replaced by night trains

design brief

CLIENT AMBITIONS

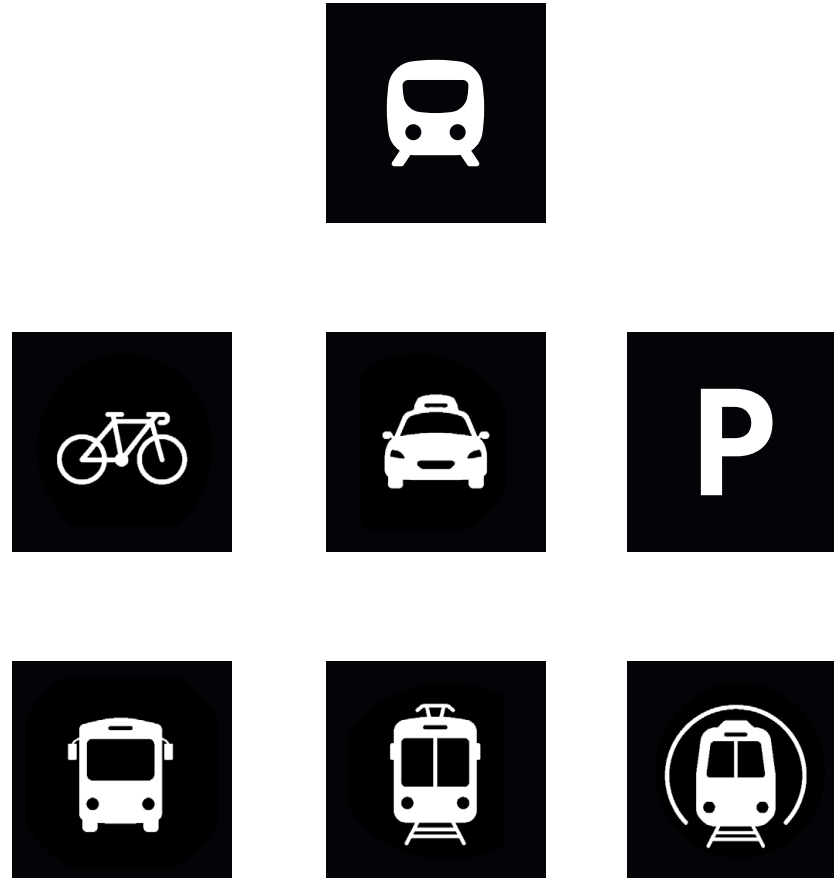


design brief
PROGRAM

TRAIN STATION + ADDITIONS = NIGHT TRAIN HUB

design brief

JUNCTION OF MOBILITY



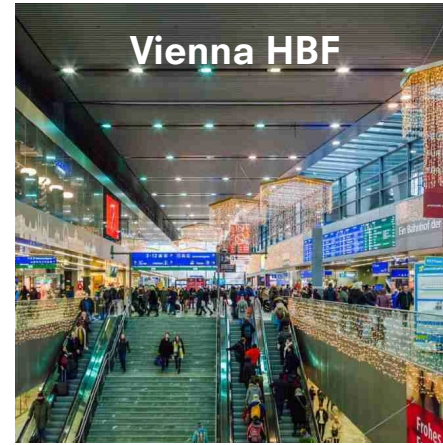
PROGRAM BARS



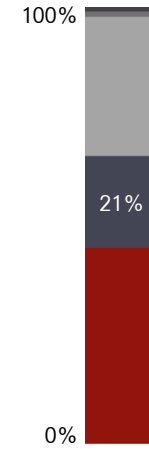
- Lounge
- Office
- Commercial
- Circulation
- Platforms



Platforms	32.000 m ²
Commercial m ²	4.200 m ²
Lounge m ²	800 m ²
Office m ²	4.500 m ²



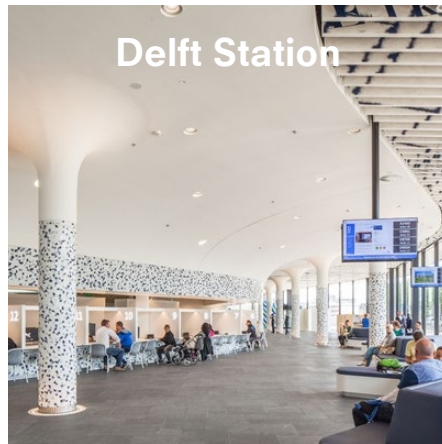
Platforms	28.000 m ²
Commercial	20.000 m ²
Lounge	800 m ²
Office	800 m ²



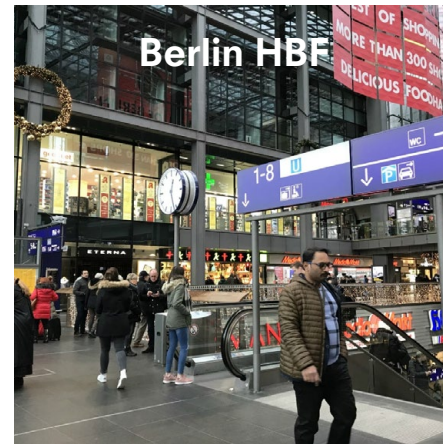
- Lounge
- Office
- Commercial
- Circulation
- Platforms



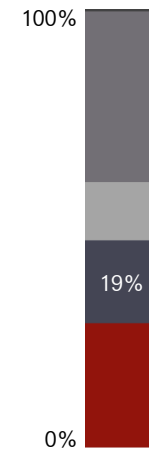
- Lounge
- Office
- Commercial
- Circulation
- Platforms



Platforms	8.000 m ²
Commercial	900 m ²
Lounge	-
Office	19.000



Platforms	32.000 m ²
Commercial	15.000 m ²
Lounge	700 m ²
Office	44.000 ²



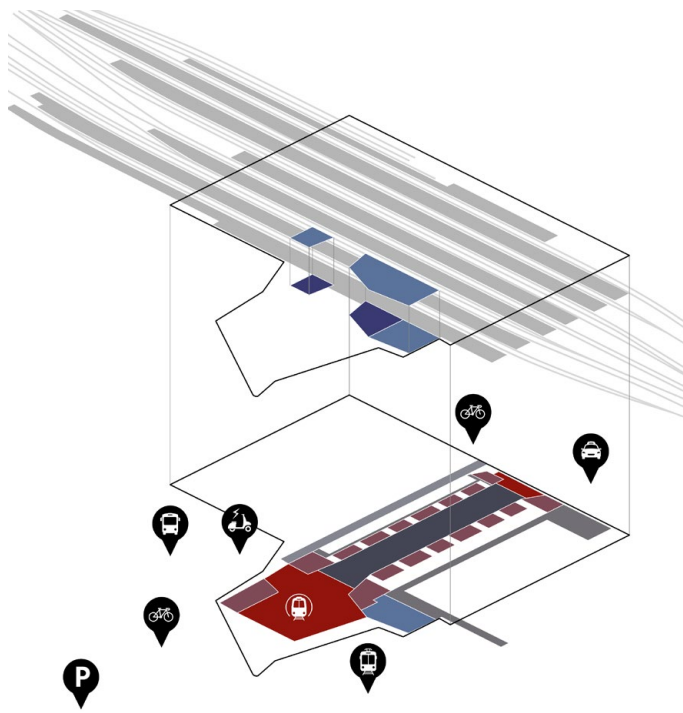
- Lounge
- Office
- Commercial
- Circulation
- Platforms

design brief

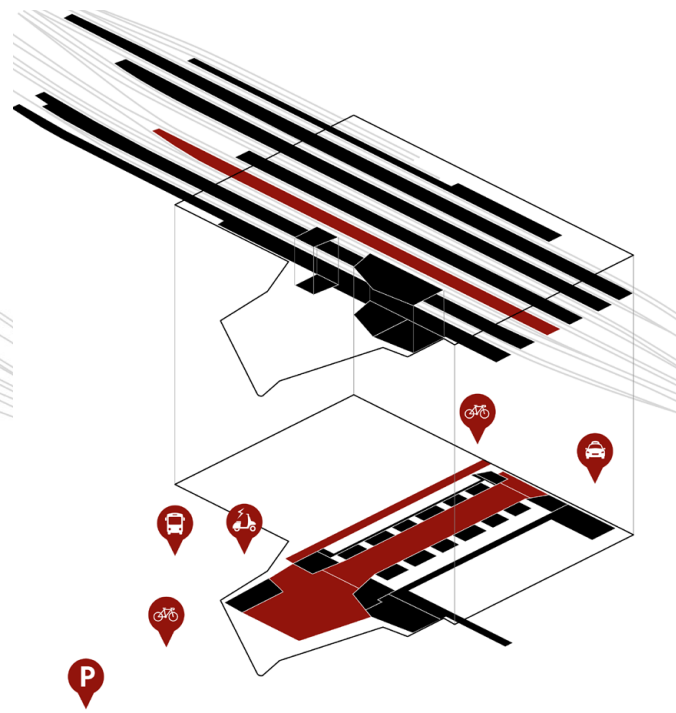
ROTTERDAM CENTRAAL



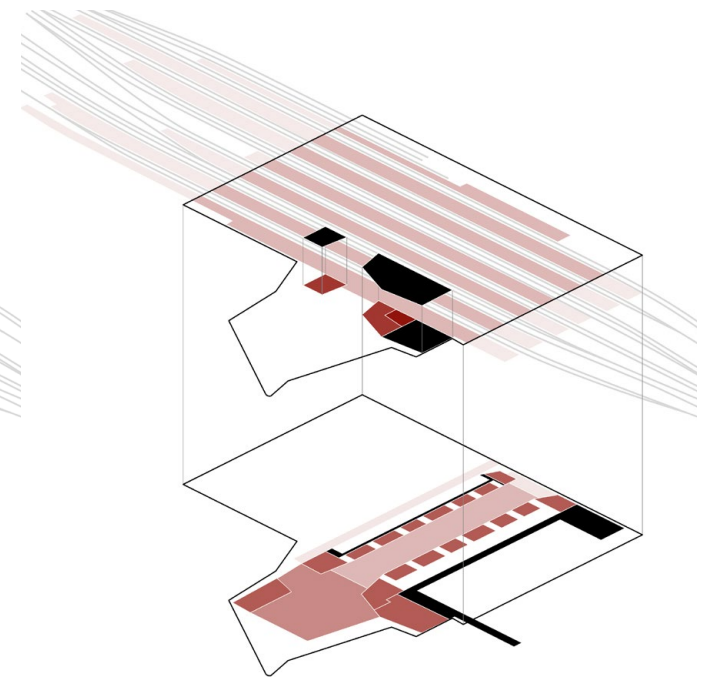
ROTTERDAM CENTRAAL



Program and Mobility



24/7 Functionality



Levels of Comfort

NIGHT TRAIN RAILWAY OPERATIONS



450m Platforms



Car Platforms



Railway Yard



Personnel Facilities



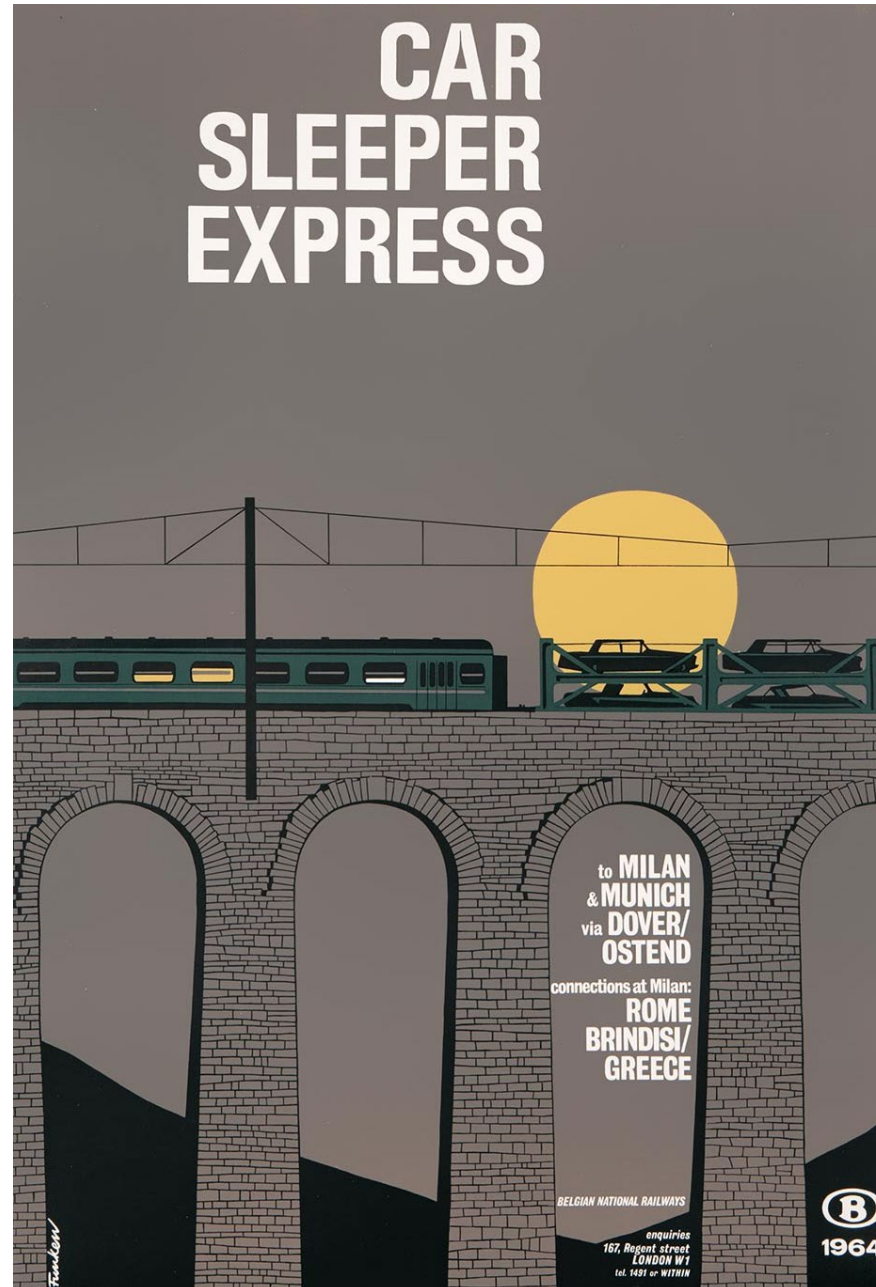
Ticket Gates



Non-Schengen Facilities

design brief

CAR PLATFORMS



design brief

CAR PLATFORMS



ADDITIONAL FACILITIES PASSENGERS

CONFERENCE ROOMS

BARS/CLUB

WORKSPACES

LUGGAGE LOCKERS

BIKE RENTAL

CAR RENTAL

ENTERTAINMENT

SANITATION

SHOPS

TAKE AWAY

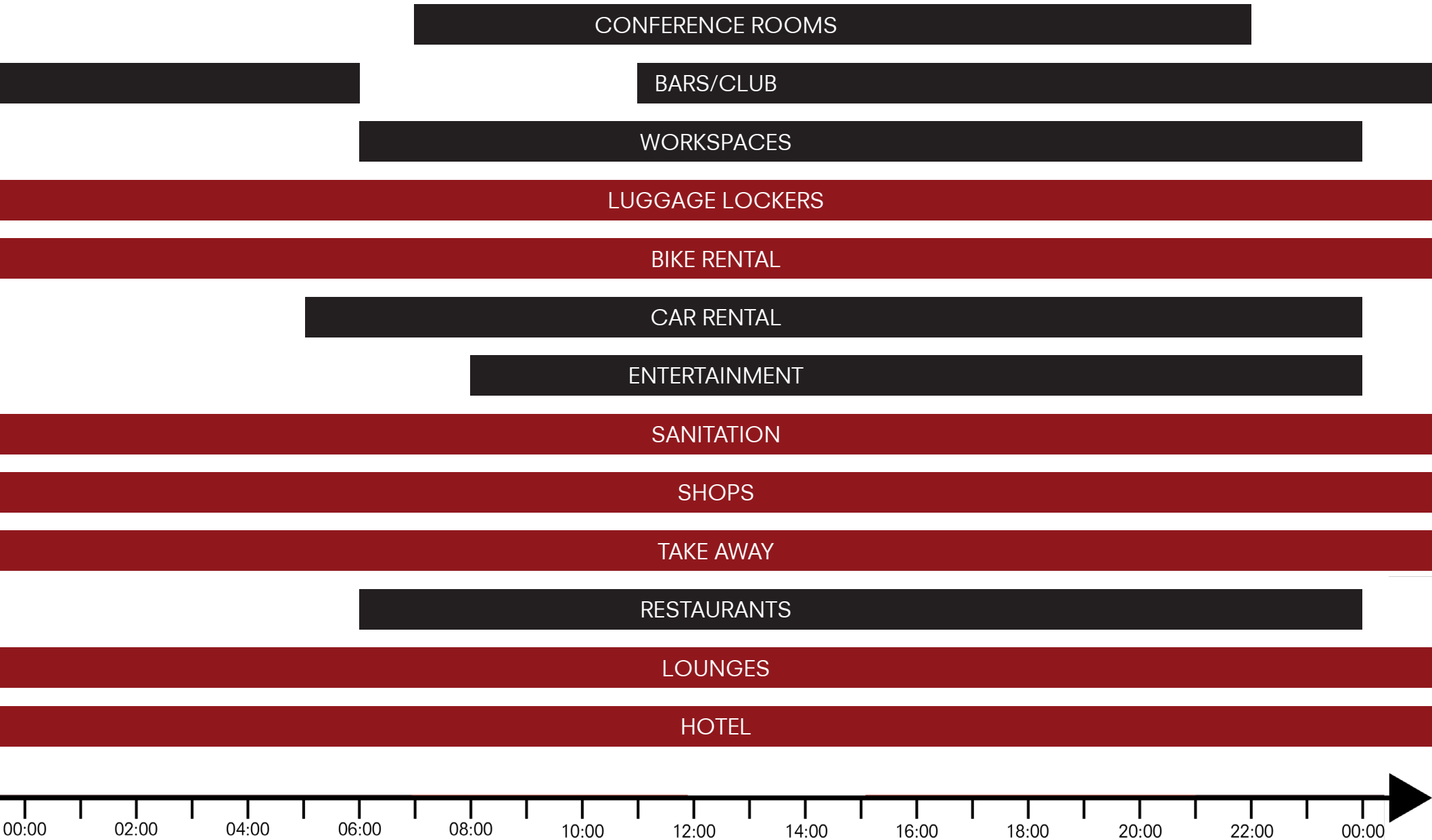
RESTAURANTS

LOUNGES

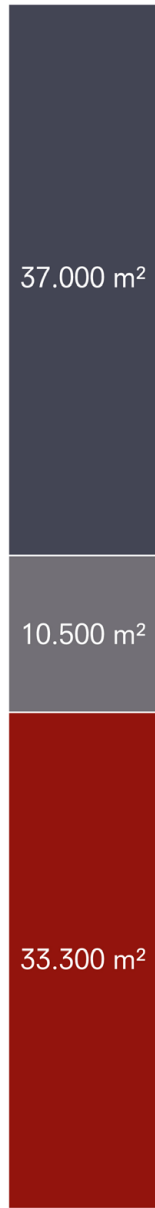
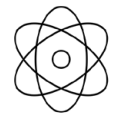
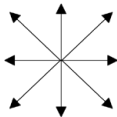
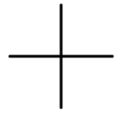
HOTEL

Time spend at night train hubs is longer compared to current day stations
therefore additional facilities are important

ADDITIONAL FACILITIES OPENING TIMES



PROGRAM BAR BUILDING

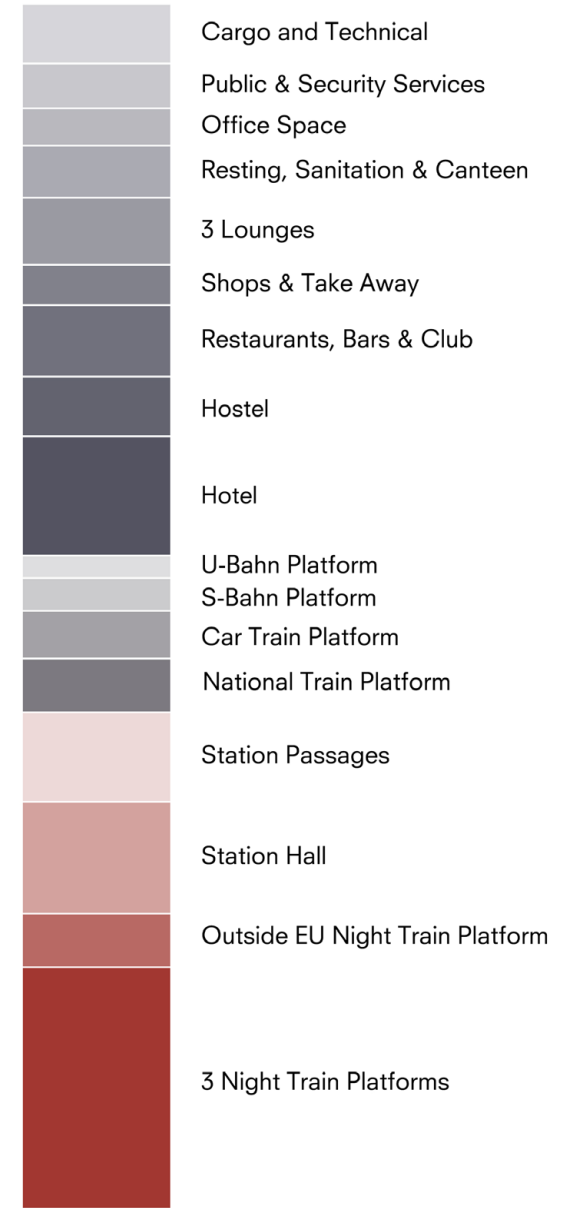
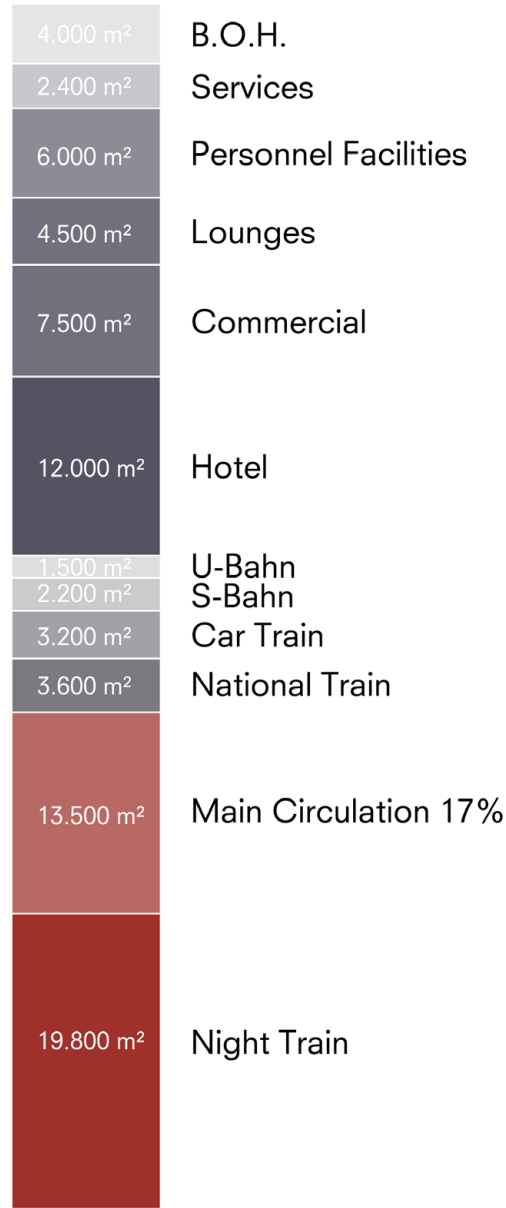


Additional Facilities

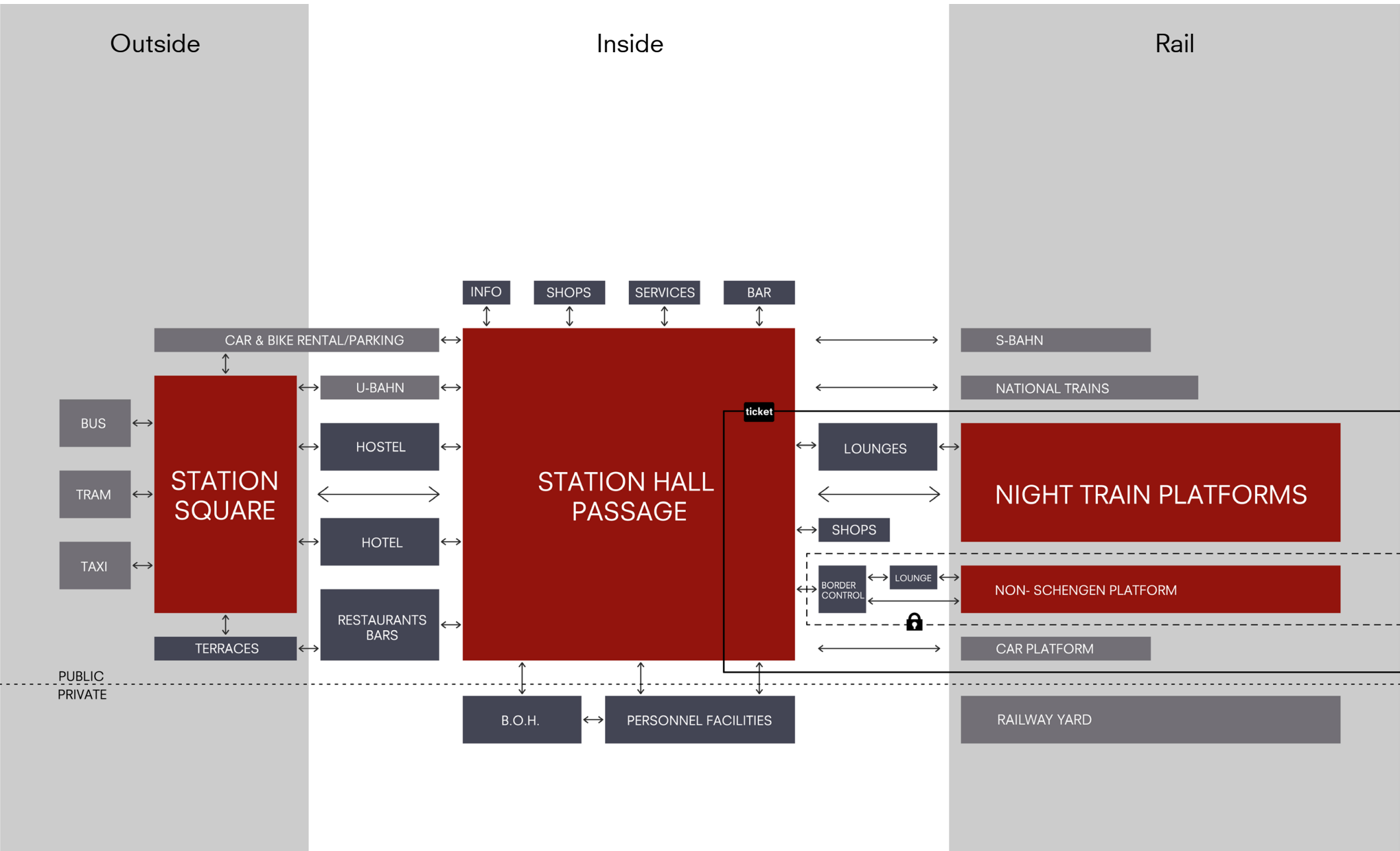
Junction of Mobility

Core Functionalities

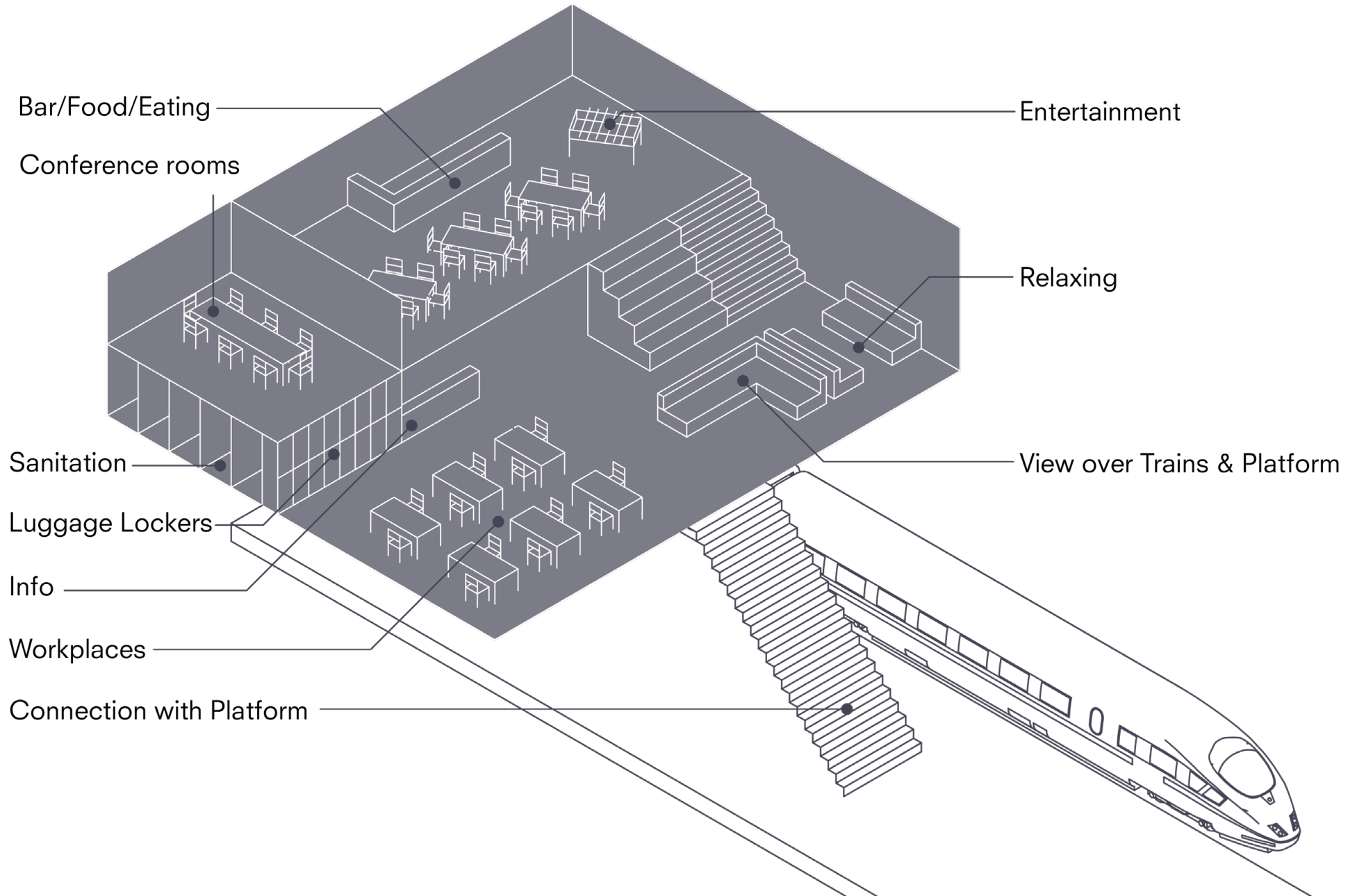
80.800 m²



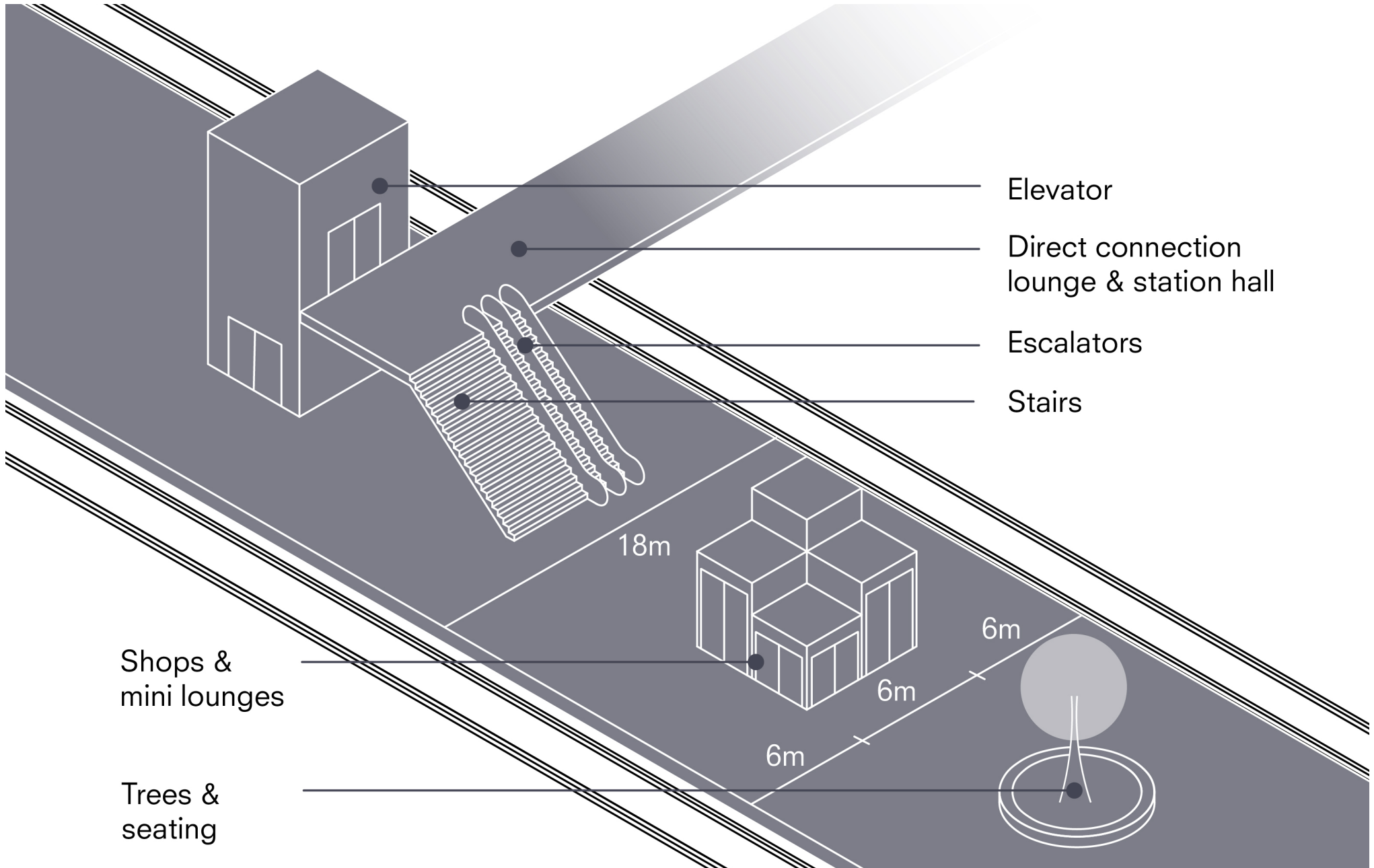
RELATION SCHEME: ADDITIONAL FACILITIES



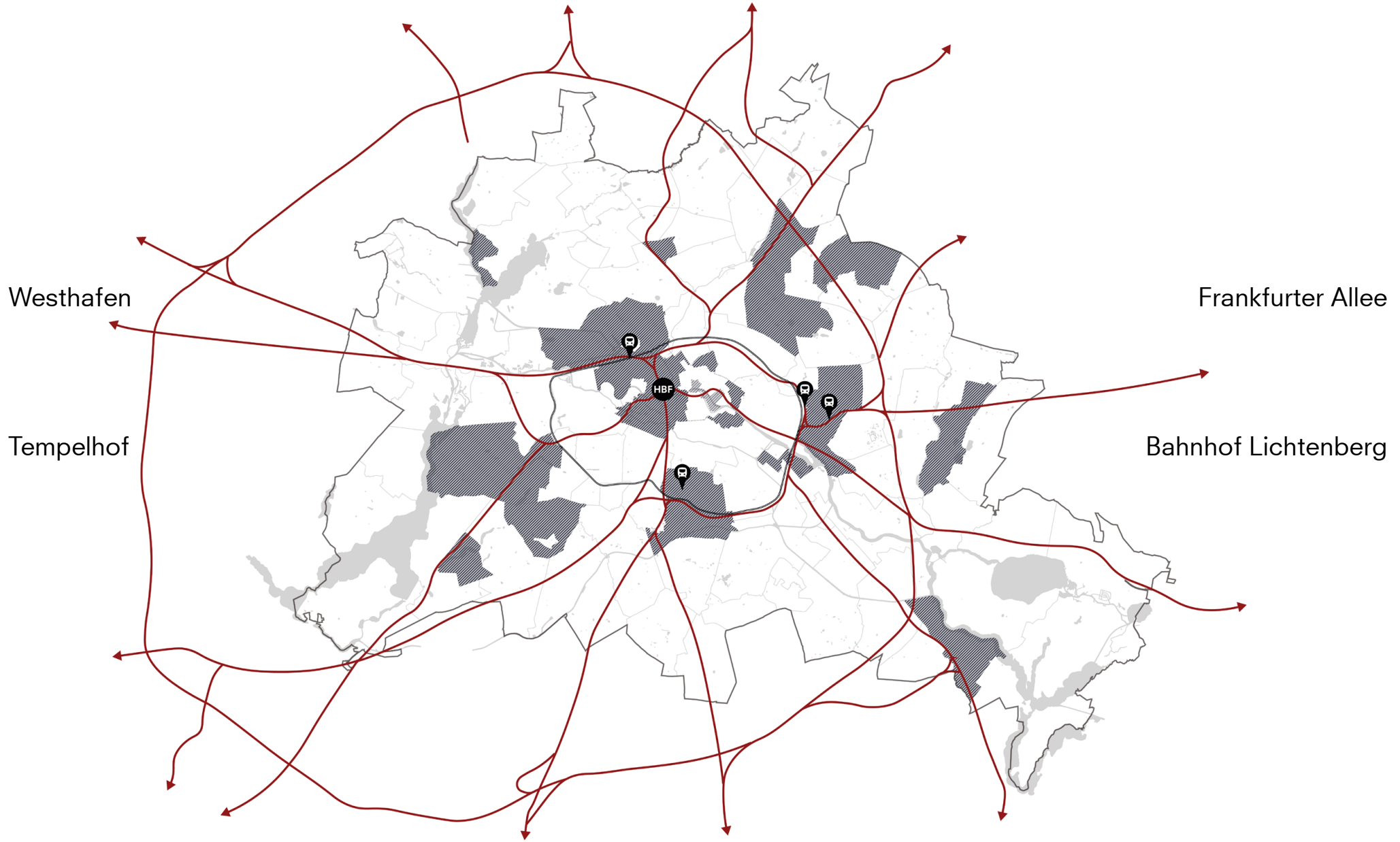
KEY SPACE: LOUNGES



KEY SPACE: PLATFORM



POSSIBLE SITE LOCATIONS



SITE COMPARRISON

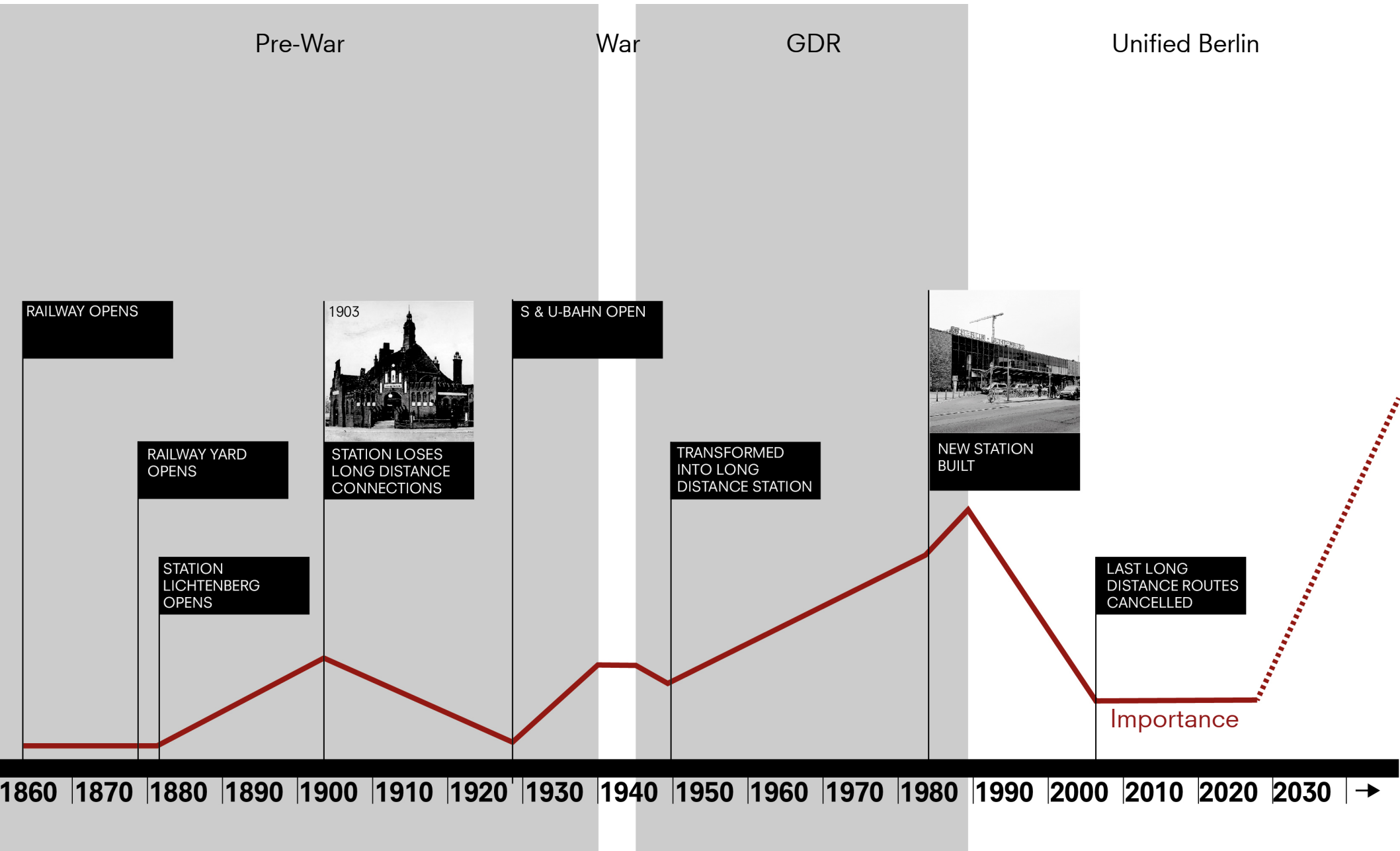
	Bahnhof Lichtenberg	Westhafen	Frankfurter Allee	Tempelhof
Connectivity U-Bahn (U5 Bonus) S-Bahn (Ringbahn Bonus) Main Road Direct connection HBF	● ● ● ◐	● ● ◐ ○	● ● ● ●	● ◐ ○ ○
Space For program (FAR = max 1.5) For railwayyard For future expansions For indirect development	● ● ● ●	● ● ● ○	● ○ ○ ○	● ● ● ○
Railway Functionality Station is no bottleneck 450m platforms fit location Transfer Station Tracks can be underground	● ● ● ○	● ● ○ ○	● ◐ ○ ○	● ● ● ○
Impact Site positive impact on station Station positive impact on site Positive impact on Berlin Positive impact economy	● ● ● ○	● ○ ○ ○	● ● ● ○	● ● ○ ○
Comfort Special arrival passengers Facilities in surrounding area Possibility for station square Spread of tourism	● ● ● ○	● ● ○ ○	● ● ● ●	● ● ● ○
Sustainability Not newly build Tracks can stay in place Possible Re-Use Sustainable landmark	● ● ● ●	● ● ● ○	● ● ● ○	● ○ ○ ○
Total	20,5	13,5	16,5	13,5

design brief

REVIVAL BAHNHOF LICHTENBERG



TIMELINE BAHNHOF LICHTENBERG



BERLIN EUROPEAN CONNECTIONS

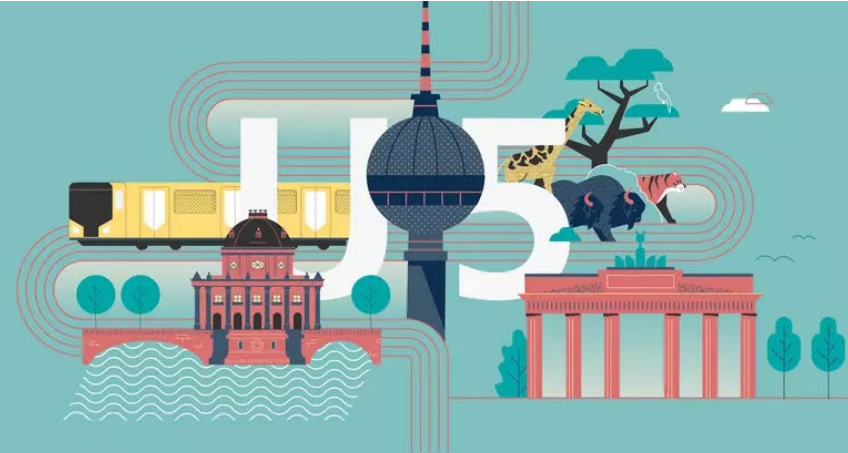


BERLIN CITY CONNECTIONS




design brief

TOURISTIC U5




U5 – Berlin's new metro line

Sightseeing with Berlin's U-Bahn: The new U5 line from the Central Station across Berlin's Mitte district to Hönnow includes three new stations conveniently located for many key sights in the city centre. The U5 also offers a fast, direct link from the centre to the eastern suburbs.



Berlin Hbf

Hönnow



Hauptbahnhof

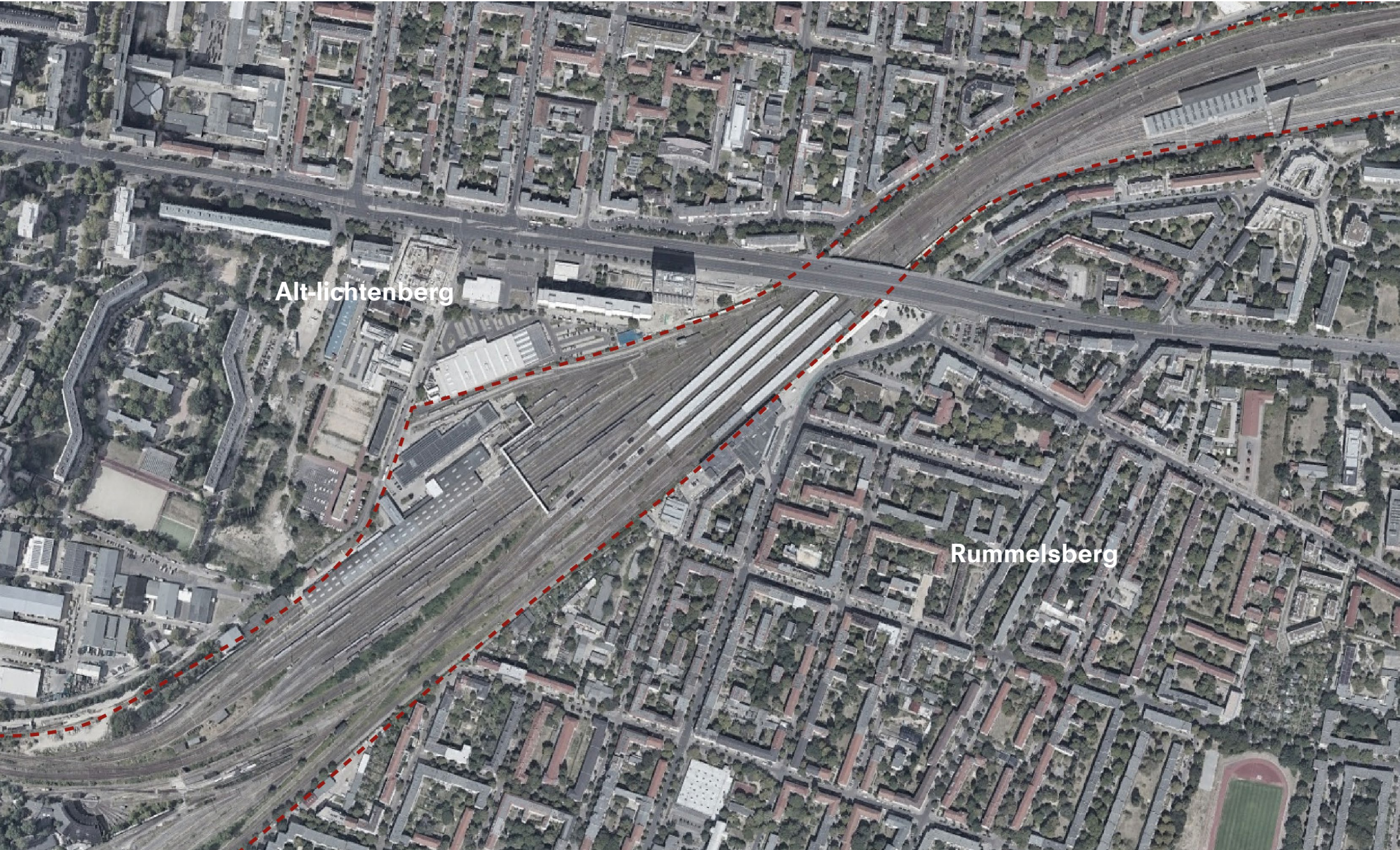
FUTURIUM

design brief

LICHTENBERG



DISTRICTS WITHIN LICHTENBERG



Alt-lichtenberg

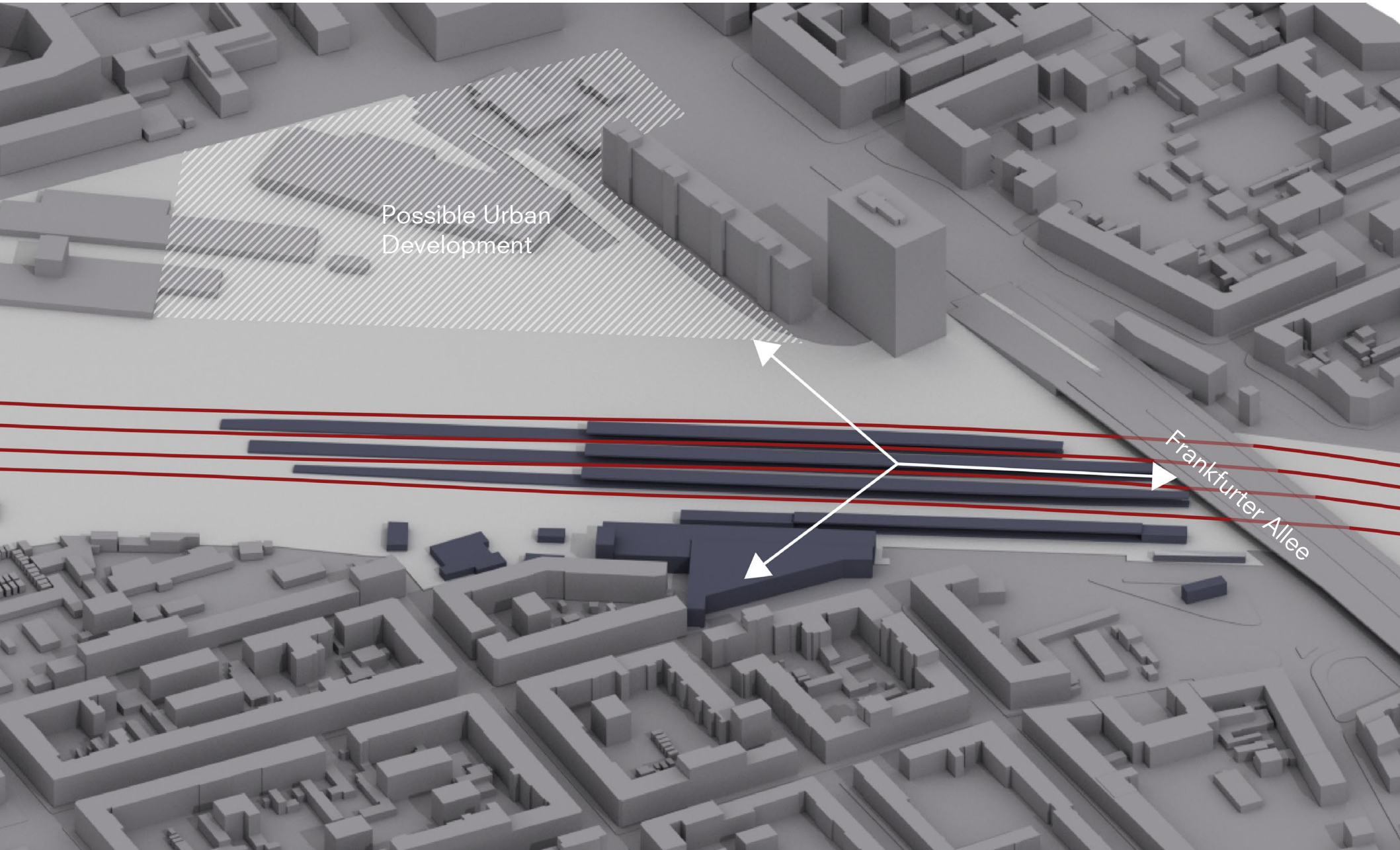
Rummelsberg

design brief

BAHNHOF LICHTENBERG



POSSIBLE INTERVENTION

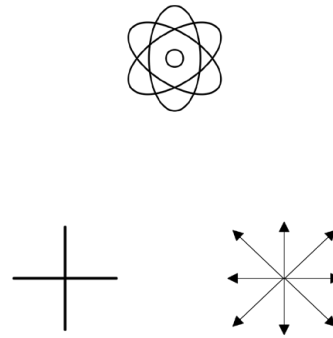


design brief

OVERVIEW



Client



Program



Site

INTRODUCTION

RESEARCH

DESIGN BRIEF

CONCEPT

IMPLEMENTATION

DEVELOPMENT

CONCLUSION

concept

FROM RESEARCH TO DESIGN

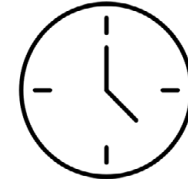
Research



Sustainability



Comfort



Time Specificness

Design brief



Client



Program



Site

concept
DESIGN



First impression Berlin
Night train theme
Character
Material
Design driver



Flows
Infrastructure junction
Platform organisation
Structure
Programmatic demands

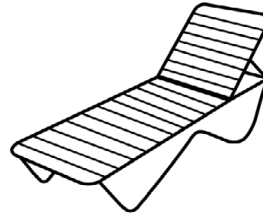


Placement
Entrances
Public Space
Safety
Impact on city

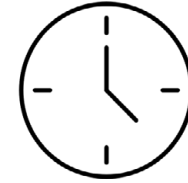
concept
DESIGN DRIVER



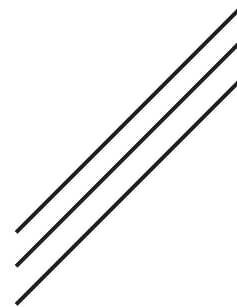
Sustainability



Comfort



Time Specificness



Light

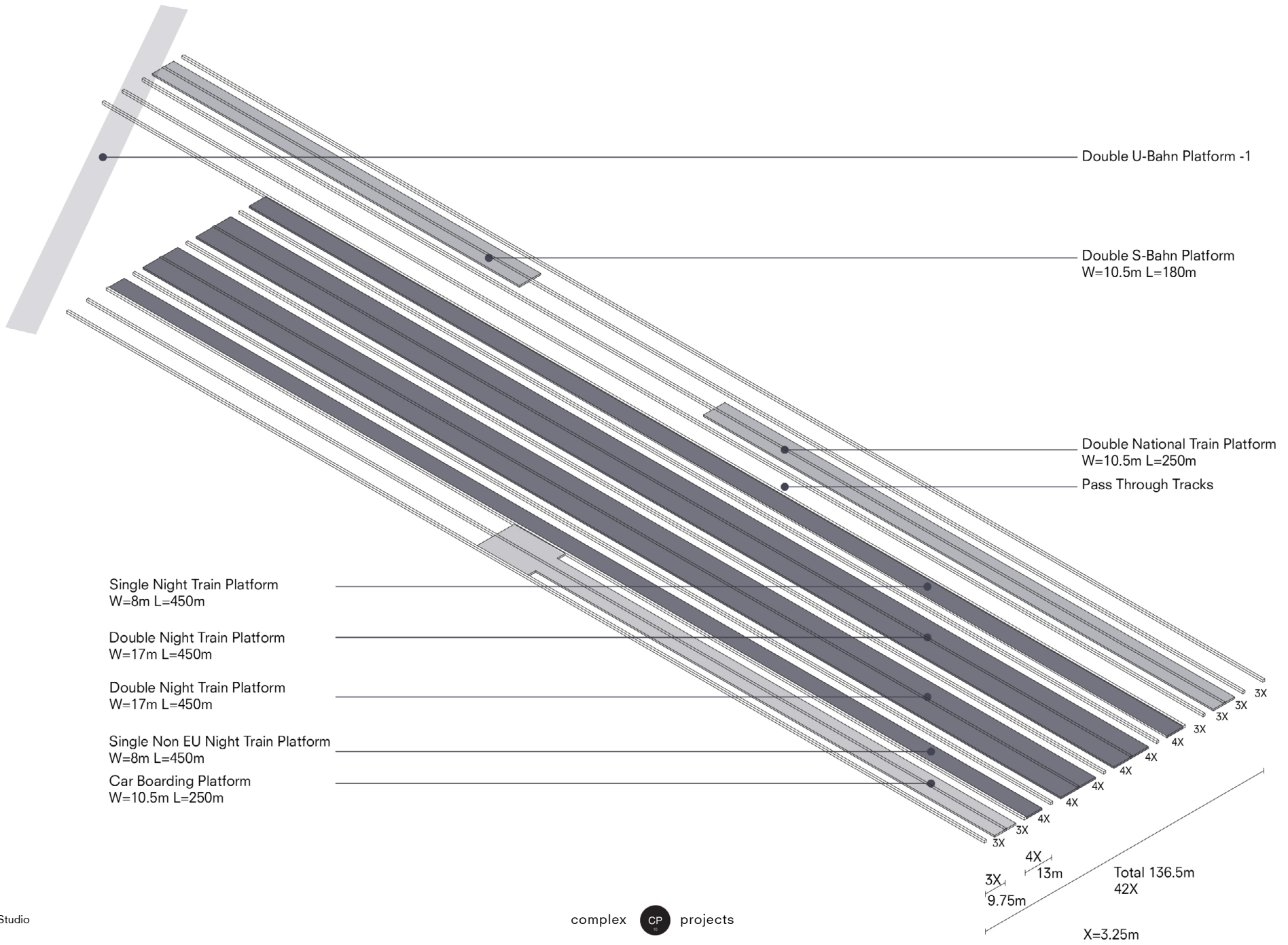
concept
LIGHT







concept PLATFORM DESIGN



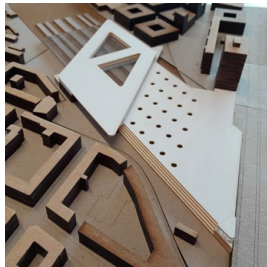
concept

CONCEPT STUDIES

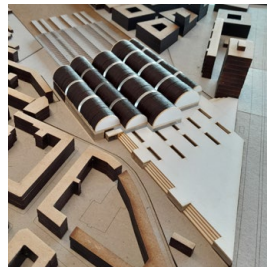
Program



Site

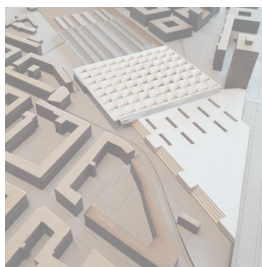
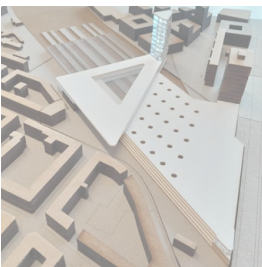
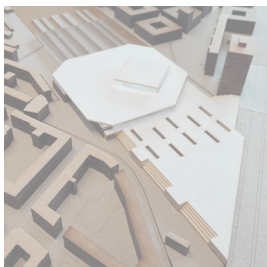
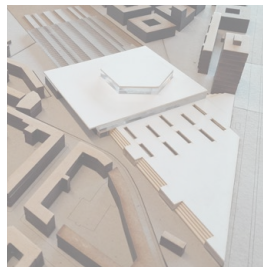


Material

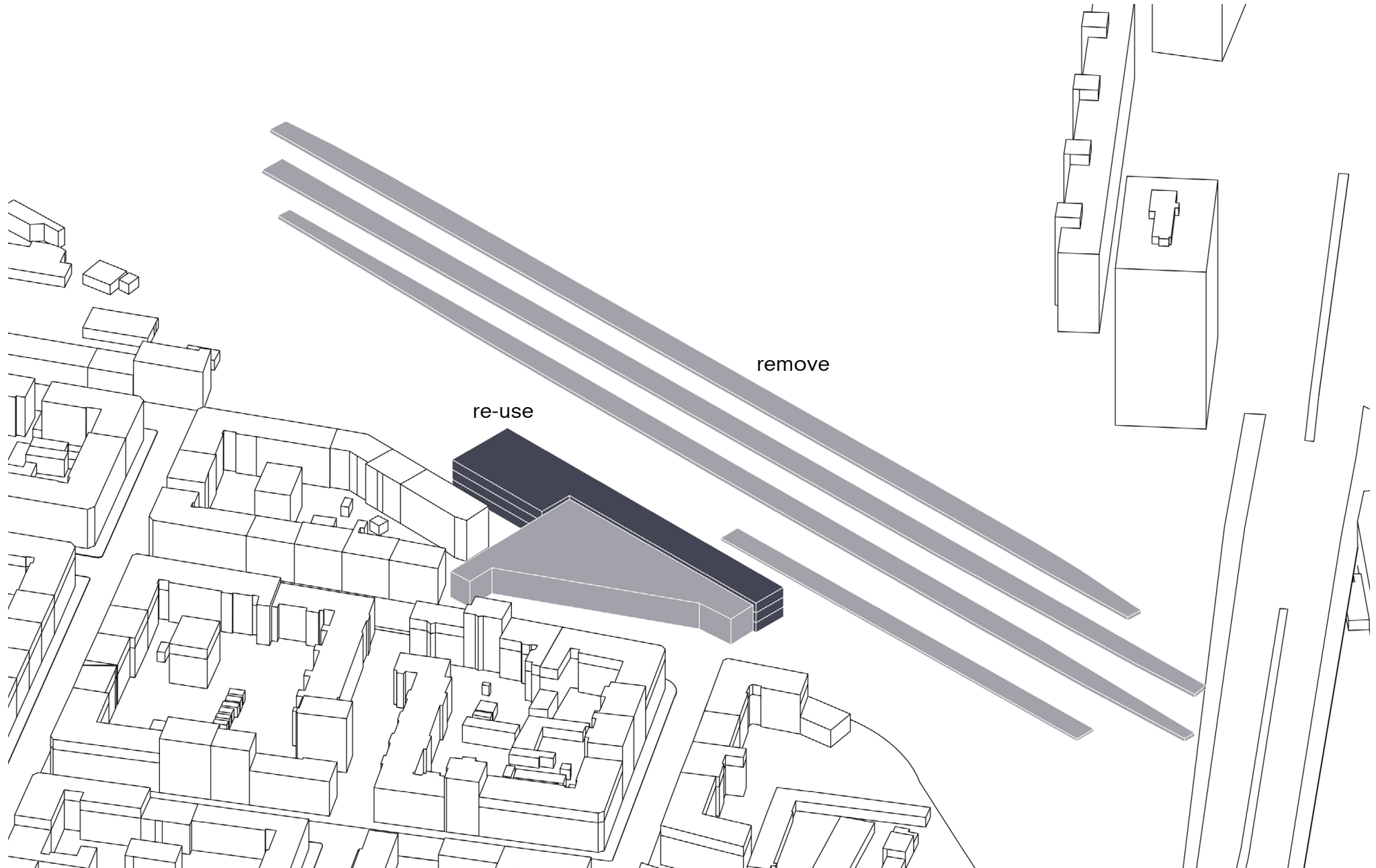


concept

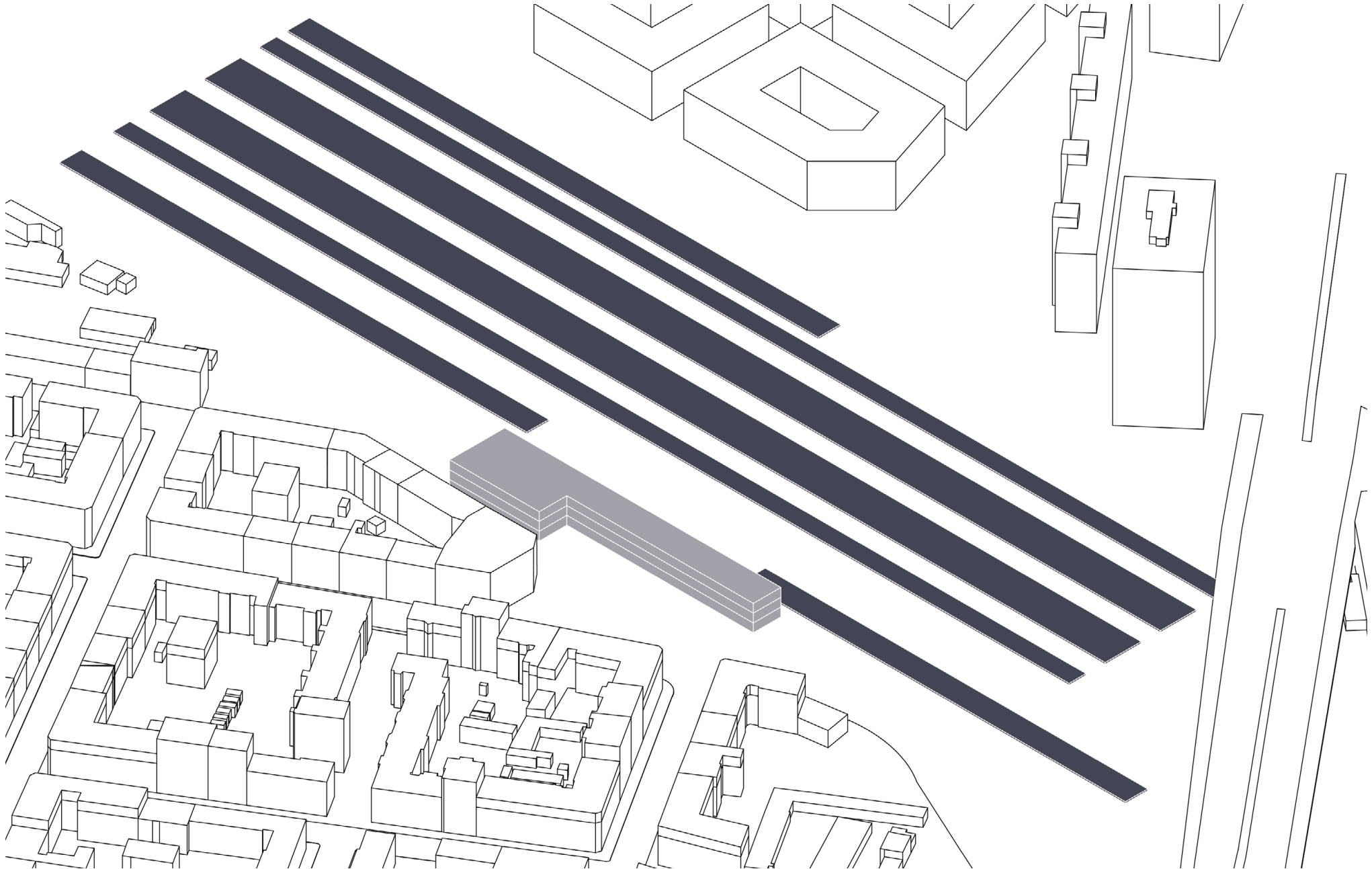
CONCEPT STUDIES



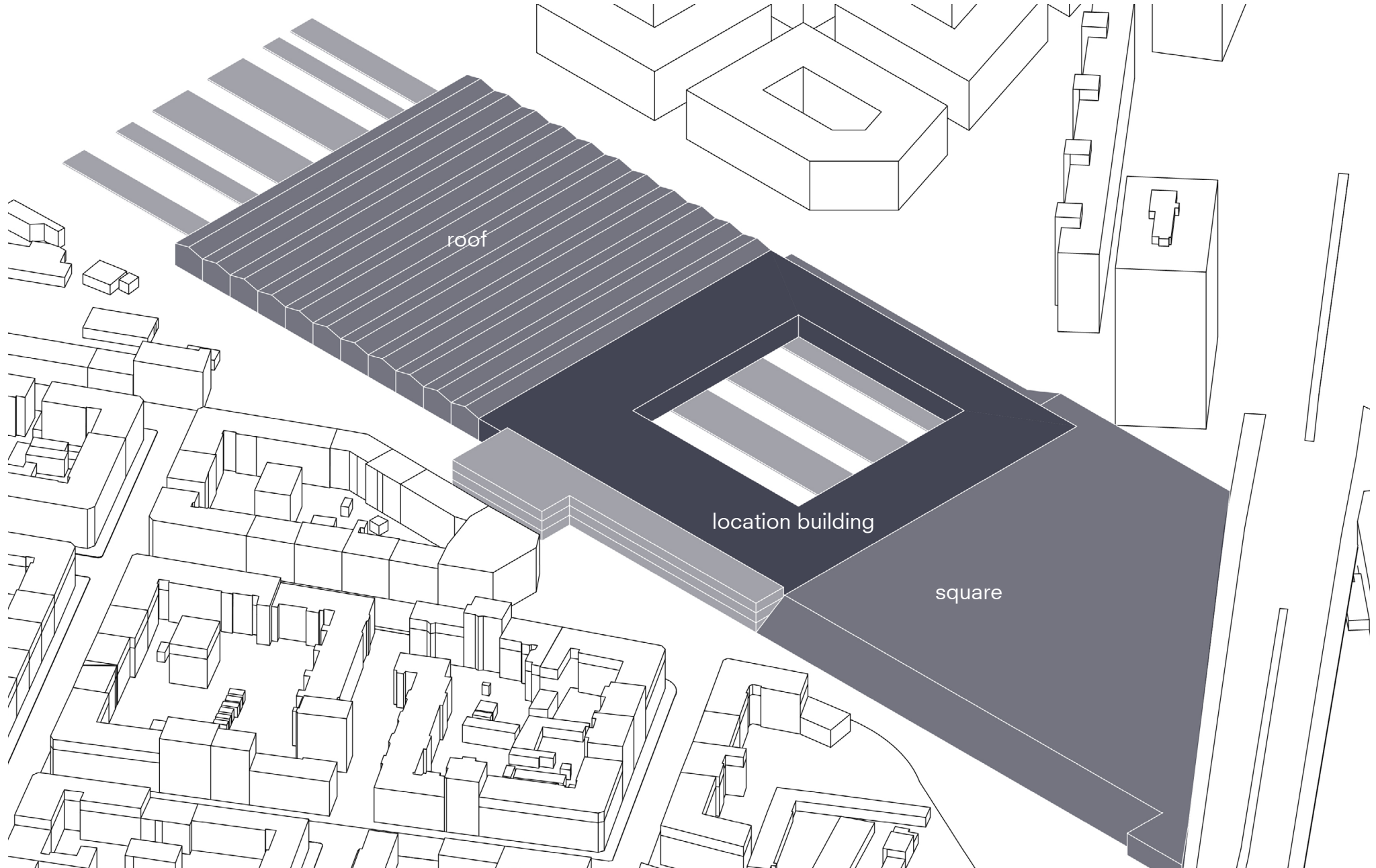
concept
EXISTING



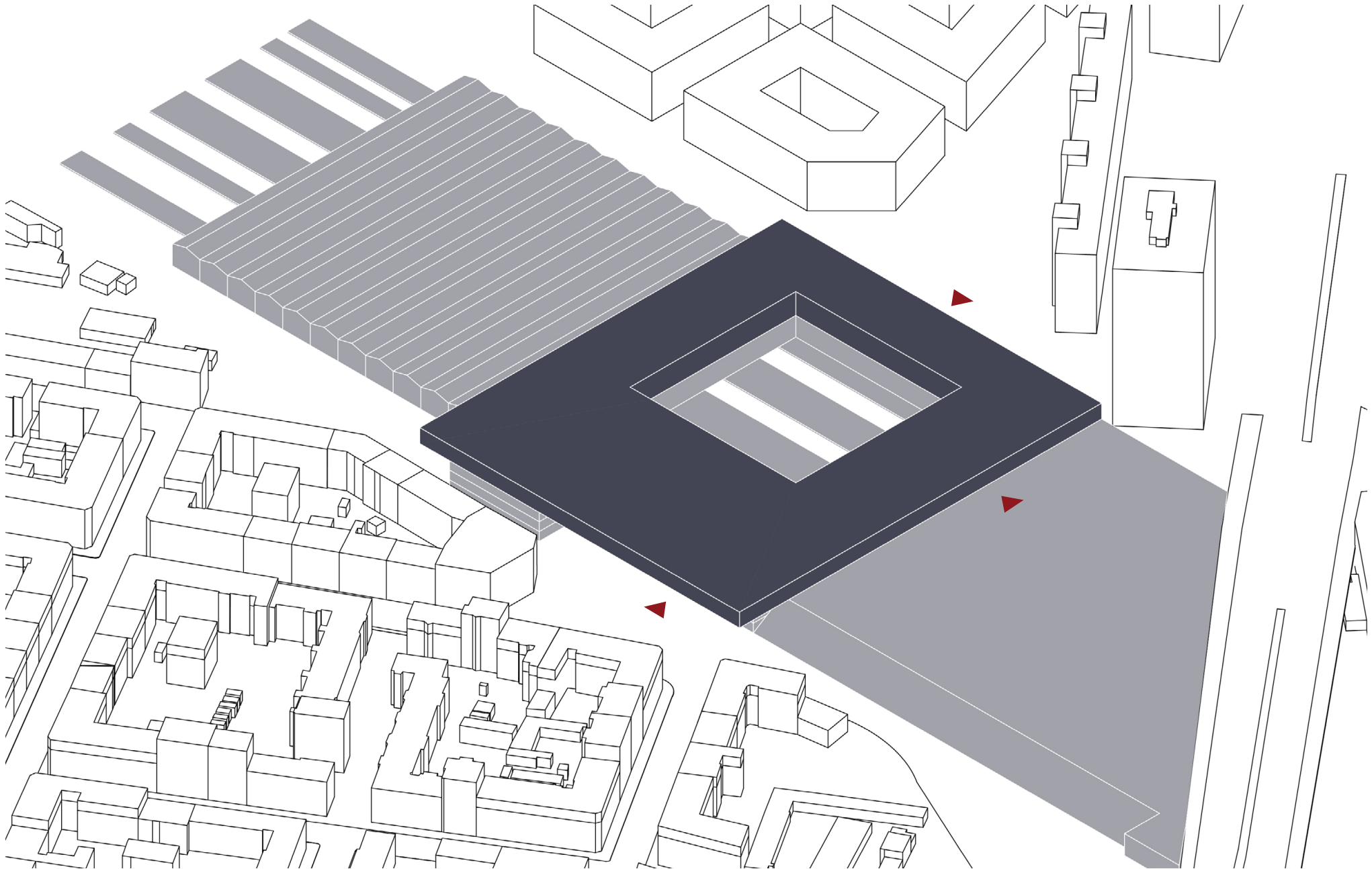
concept
PLATFORMS



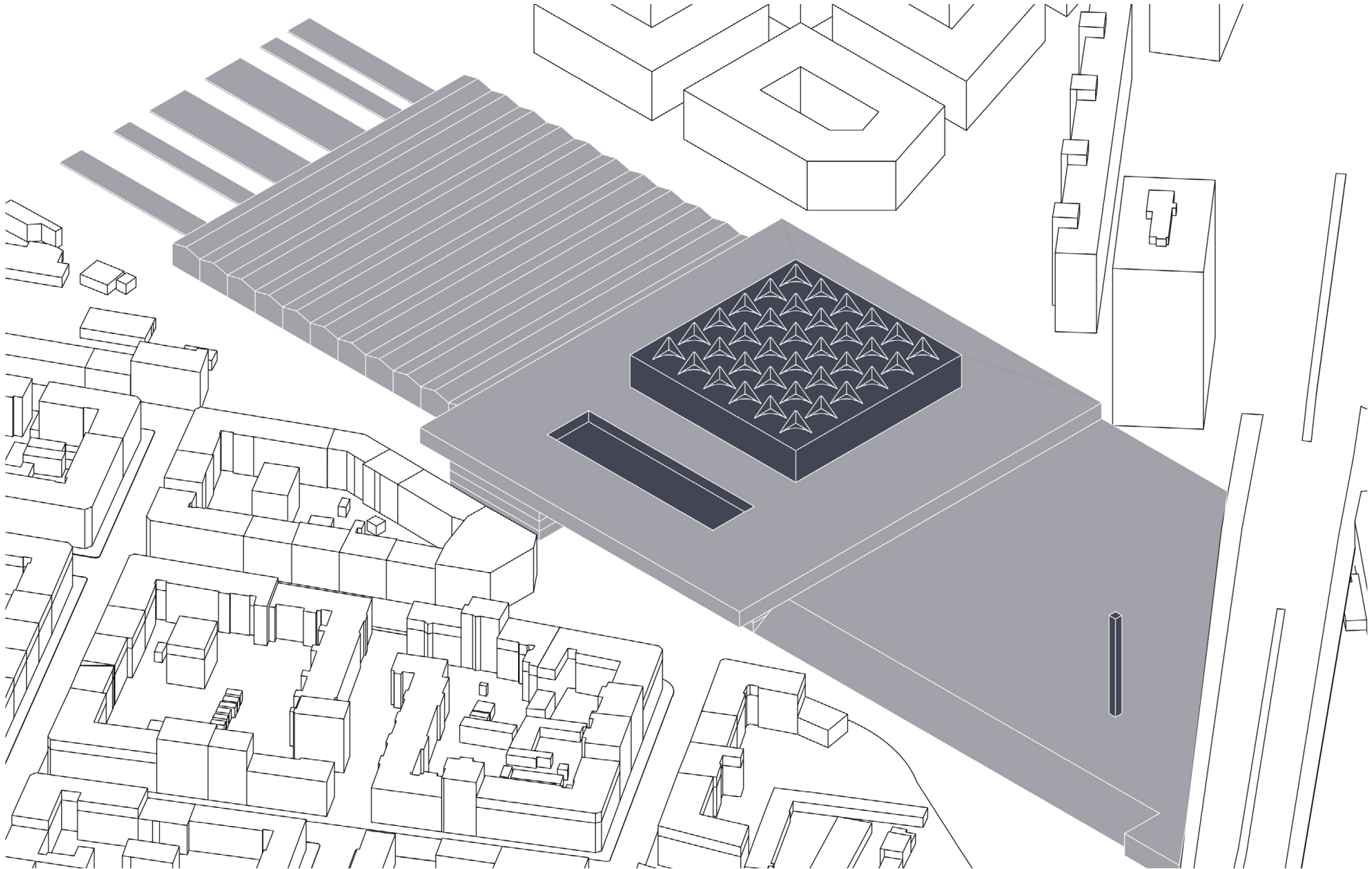
concept
BASE



concept
BUILDING



concept
CROWN



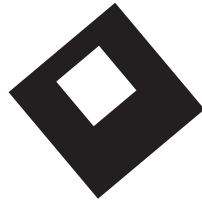
OVERVIEW PRINCIPLES

Shape



Orthogonal

Site



Orientation on Site

Material



No Building Underground

Light



Orientation on Sun



Layers



Public Square



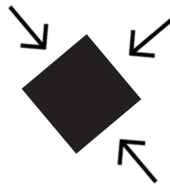
Wood Construction



Different Uses of Daylight



Crown



Three Entrances



Spans Related to Material



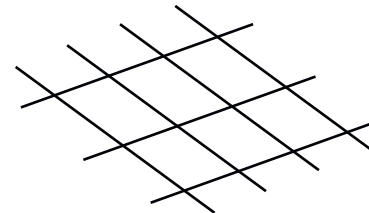
Beacon during night



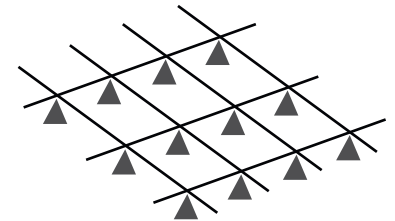
Platforms as Foundation



Integrate Existing Station



Modular Concrete



Integrate Artificial Light

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RESEARCH

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DEVELOPMENT

CONCLUSION

implementation

ARRIVING PASSENGERS

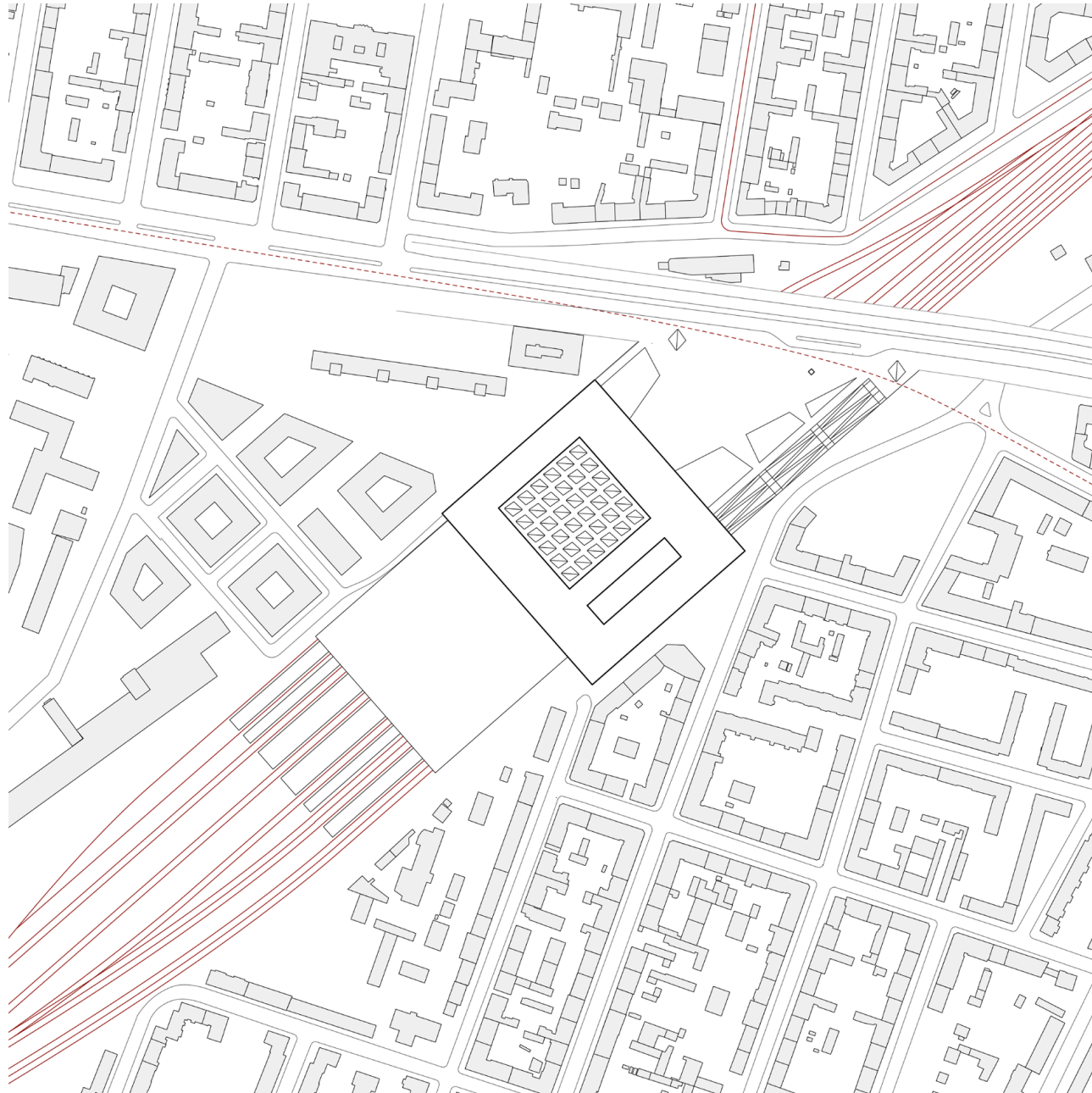


implementation

GROUP SITE PLAN



implementation
SITE PLAN



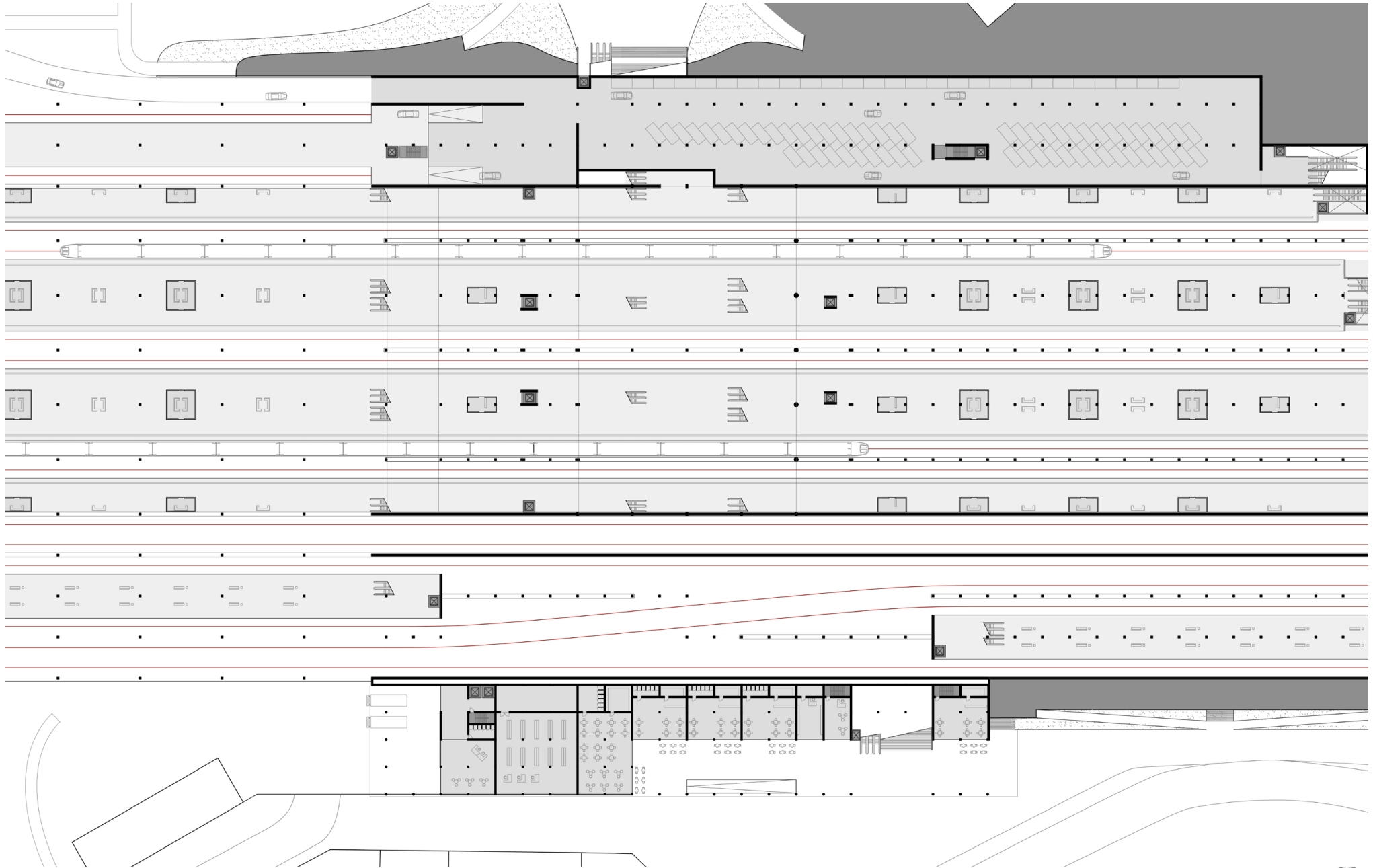
implementation

AXO



implementation

BASE

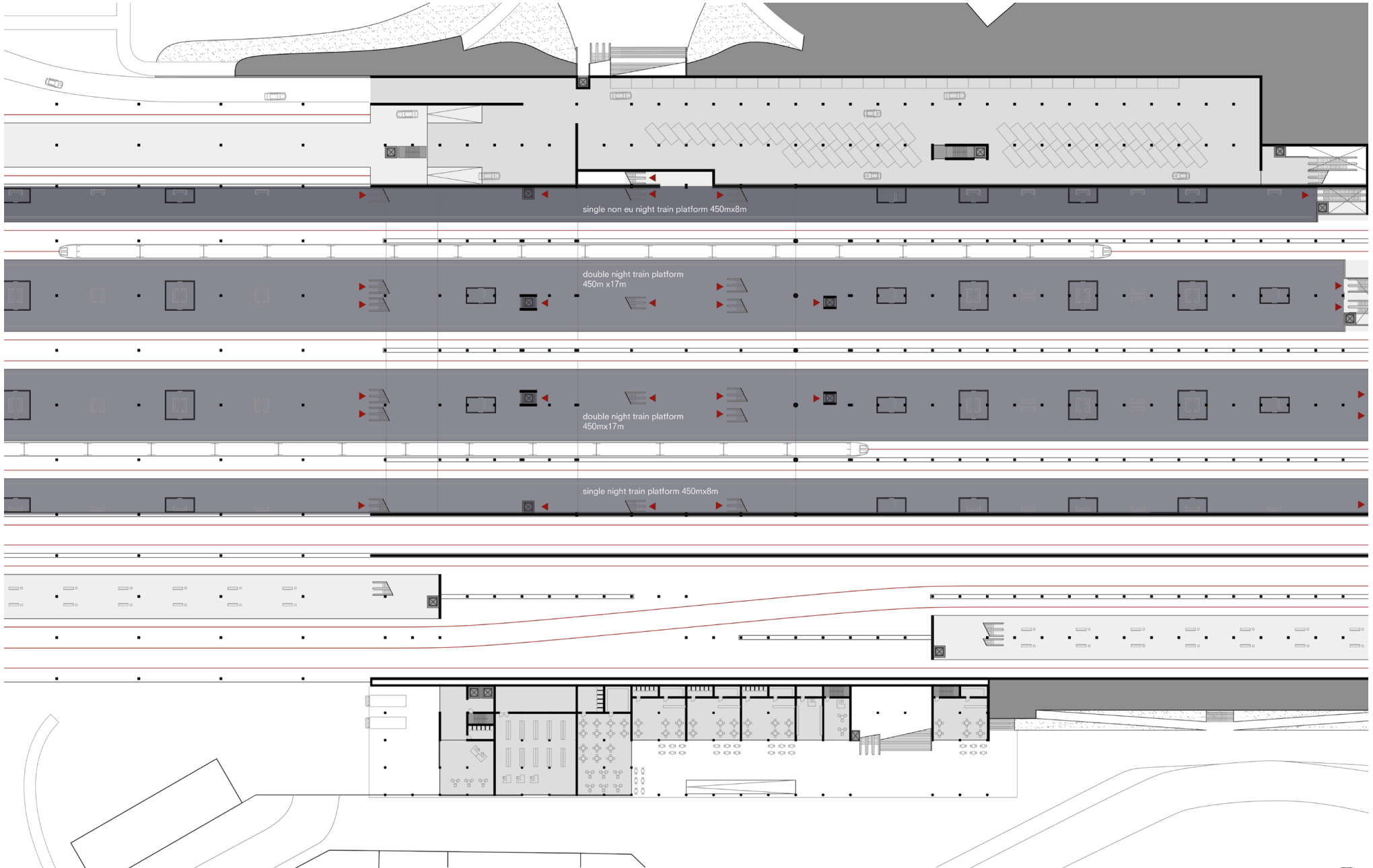


0m 10m 20m 40m 100m



implementation

NIGHT TRAIN PLATFORMS



0m 10m 20m 40m 100m

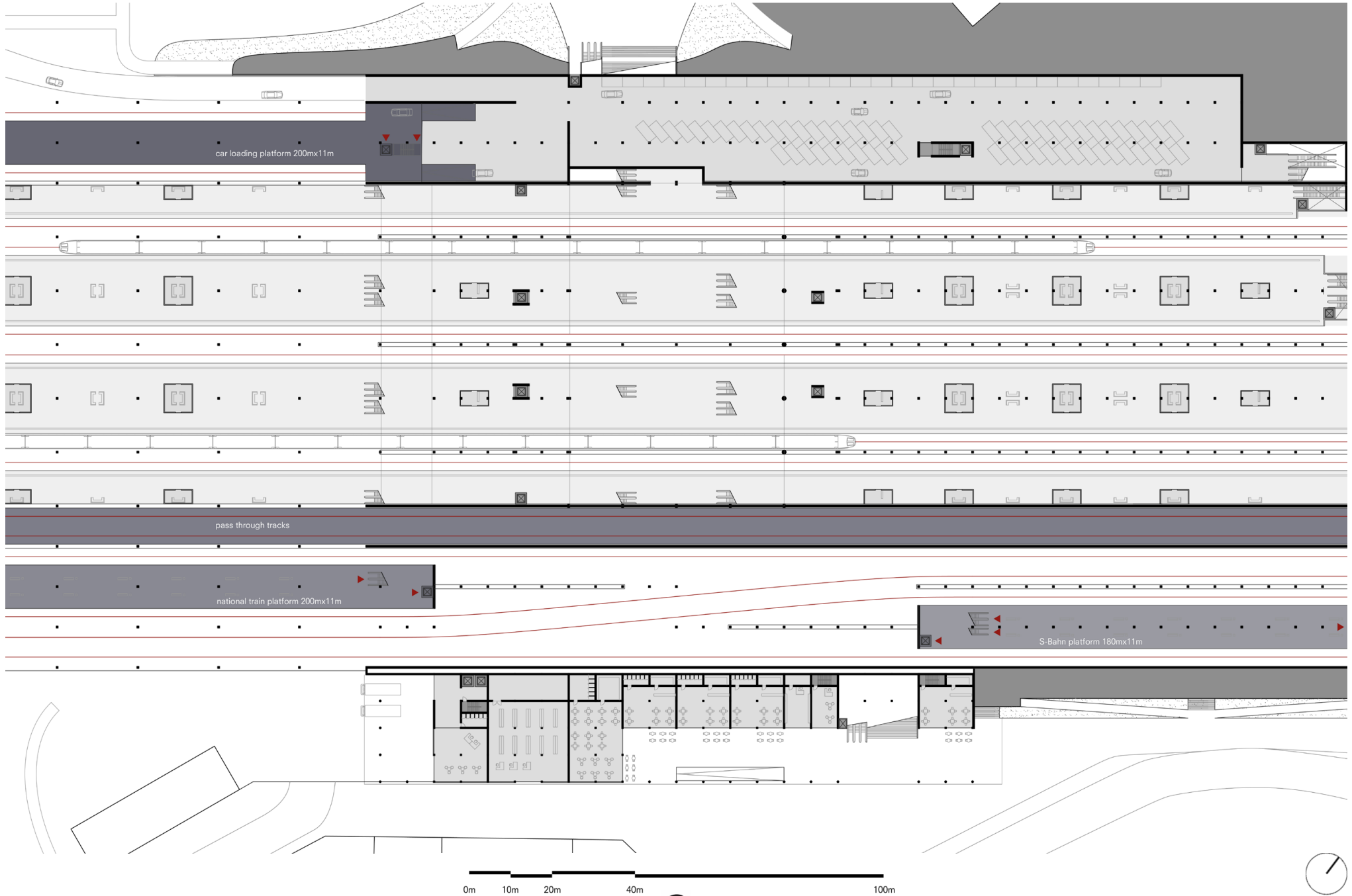


implementation

NIGHT TRAIN PLATFORMS

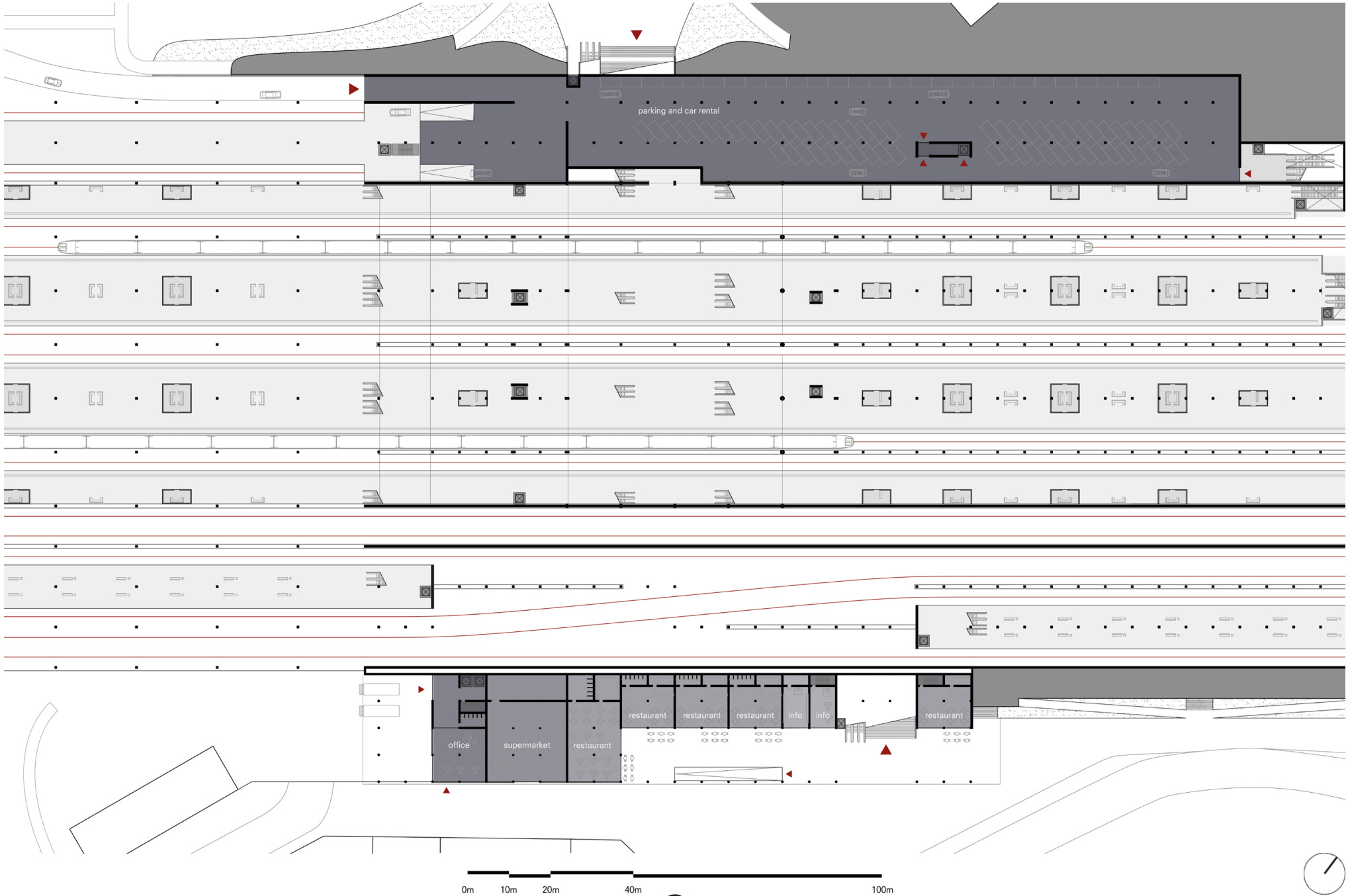


OTHER TRAIN FACILITIES



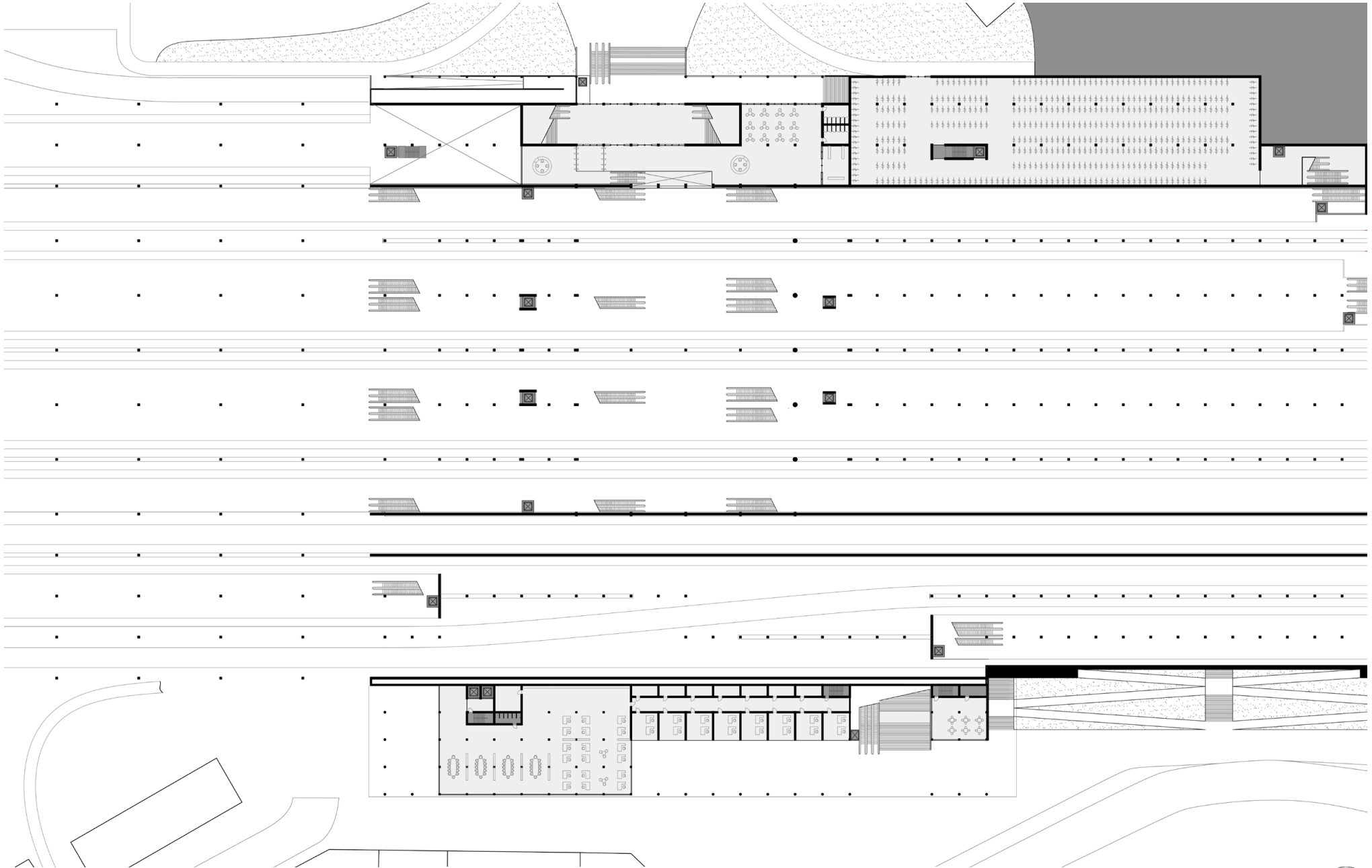
implementation

ADDITIONAL FACILITIES



implementation

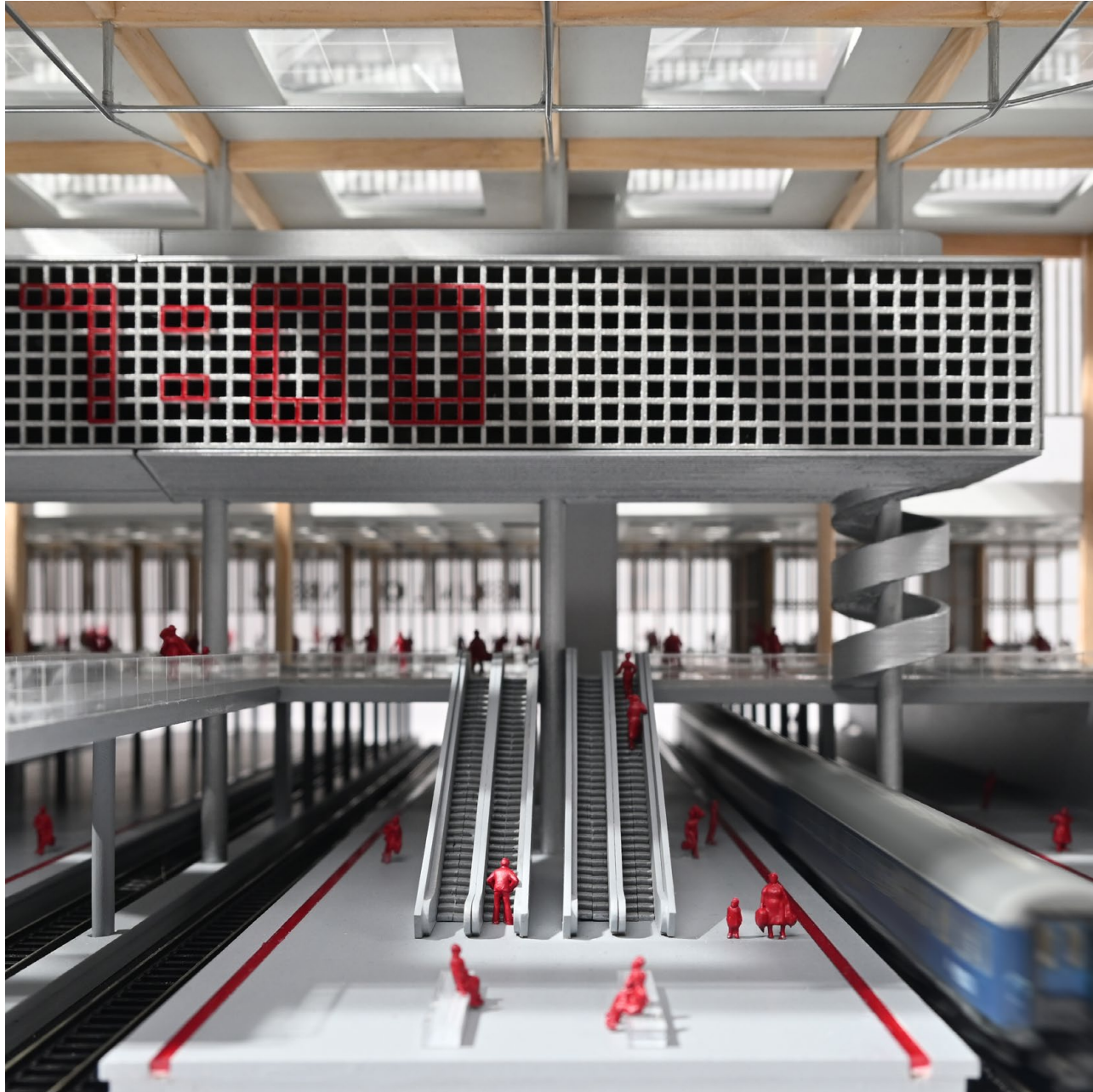
BASE +



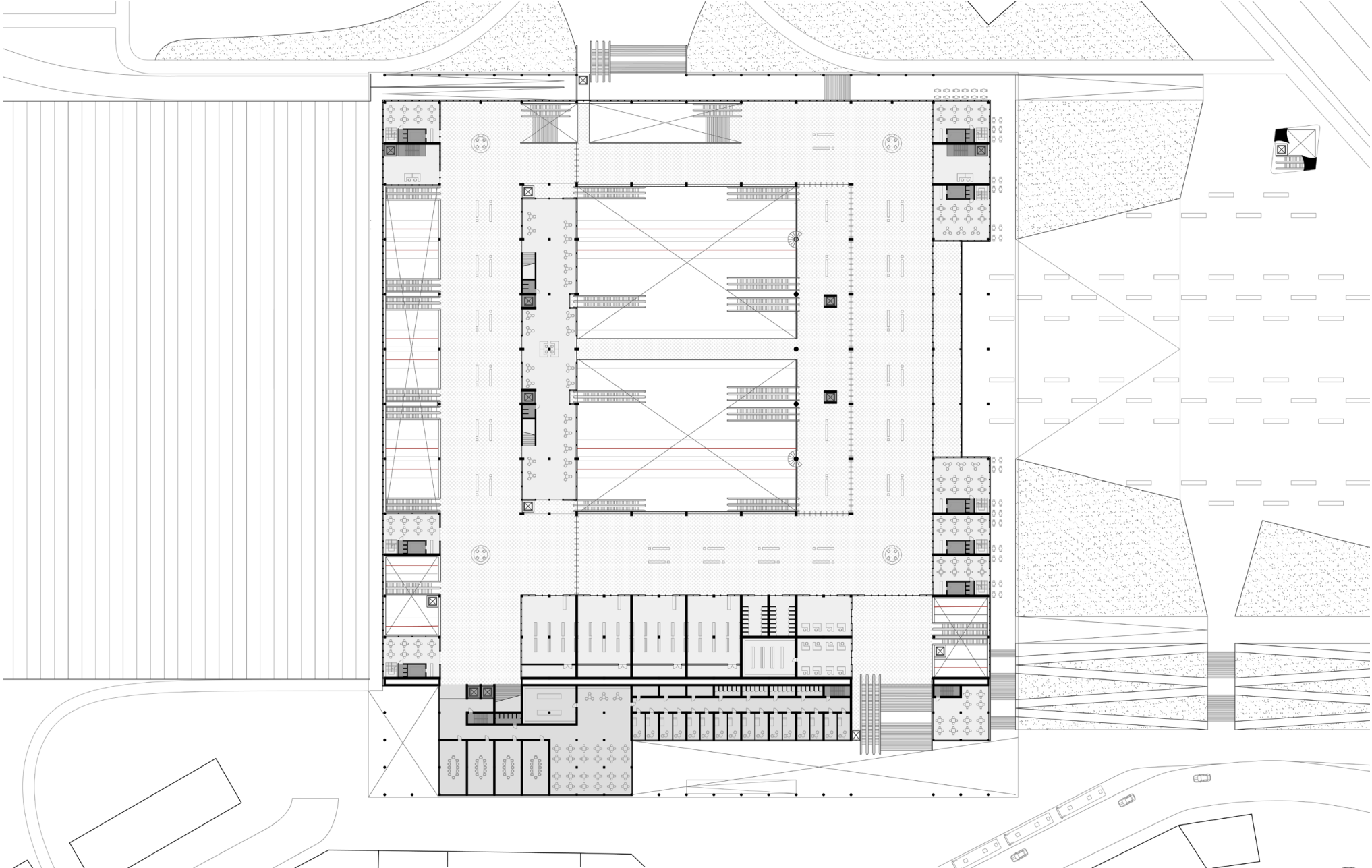
0m 10m 20m 40m 100m



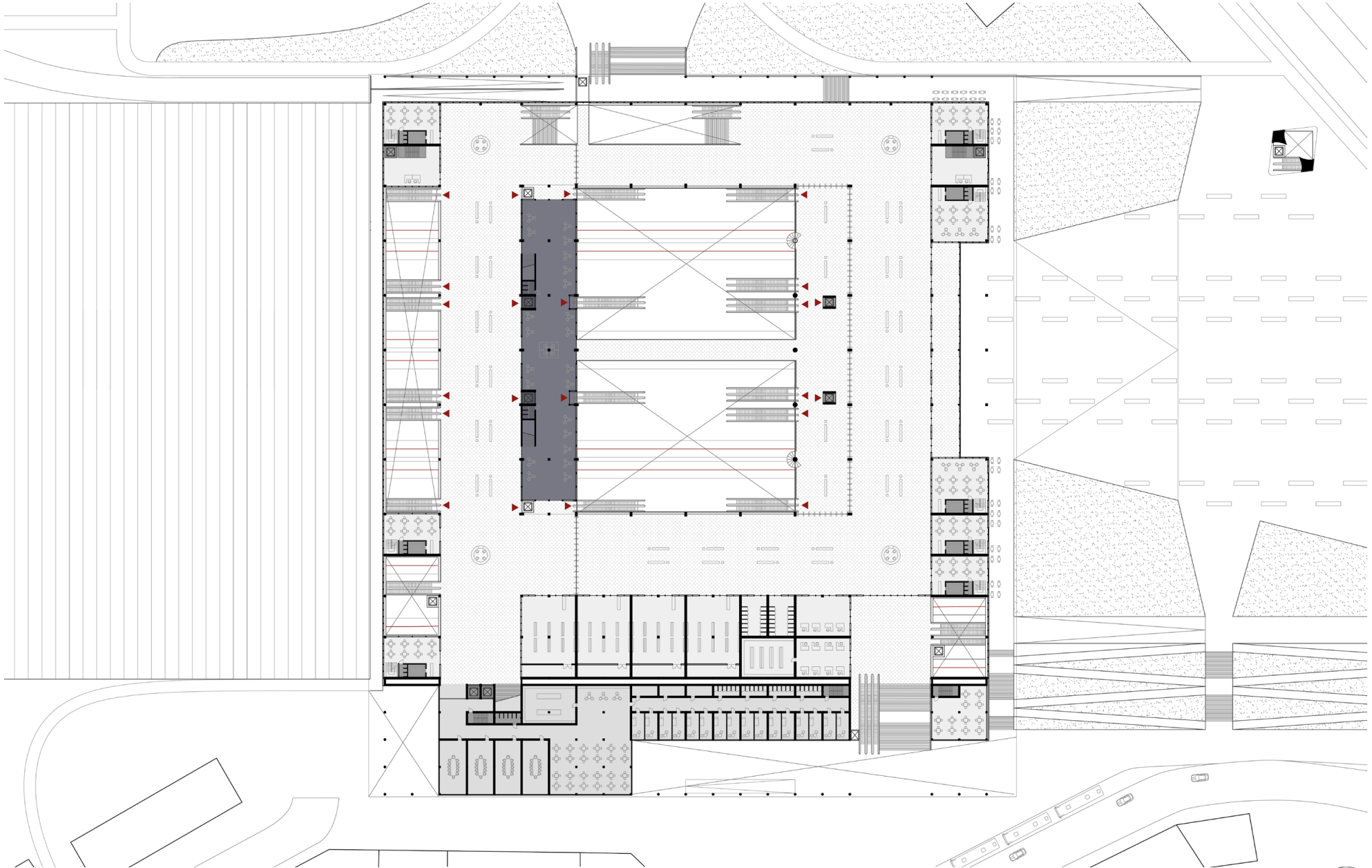
implementation
MOVING UP



implementation
BUILDING

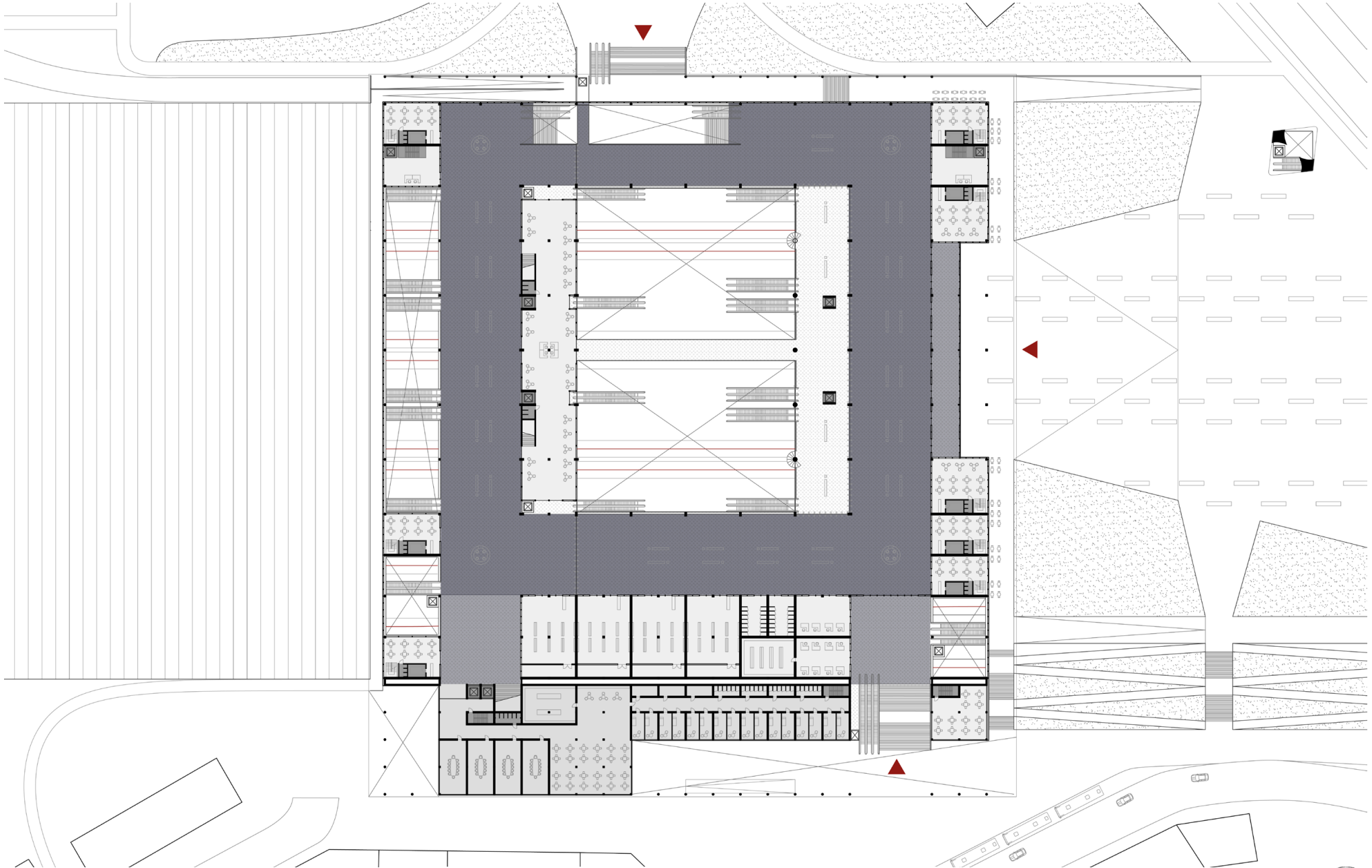


implementation
ARRIVAL



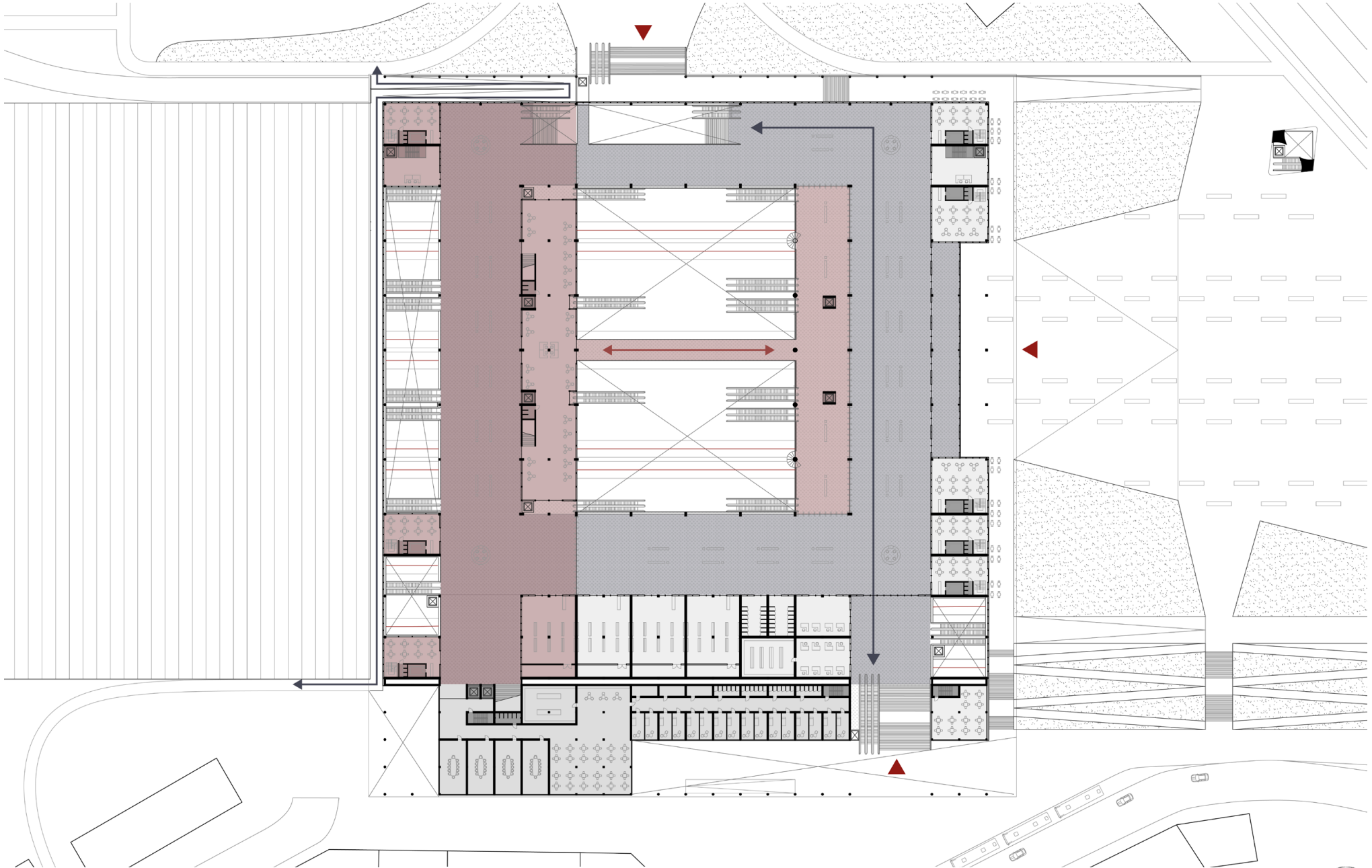
implementation

PASSAGE = STATION HALL



0m 10m 20m 40m 100m

implementation
TICKET ZONE

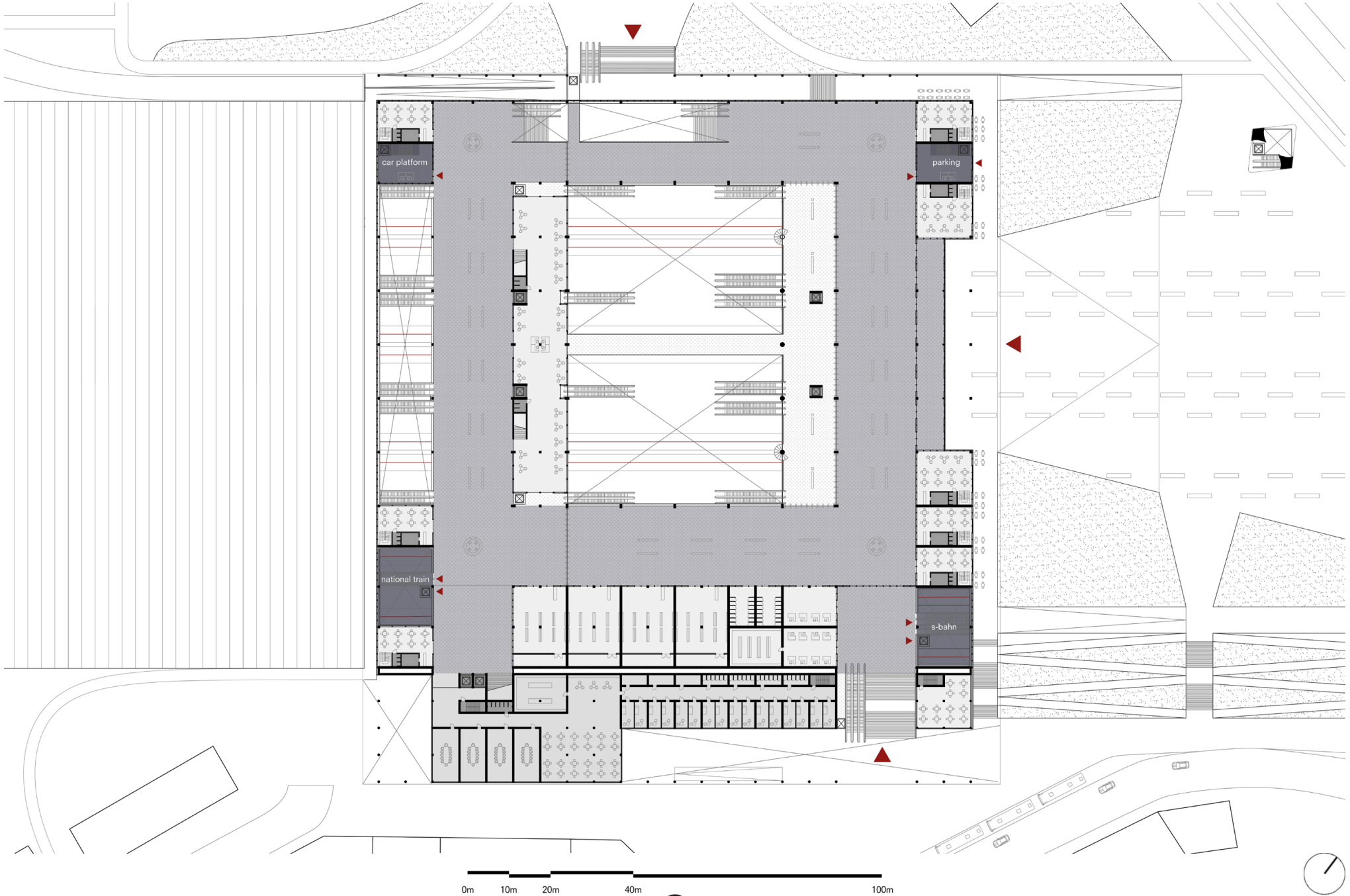


implementation



implementation

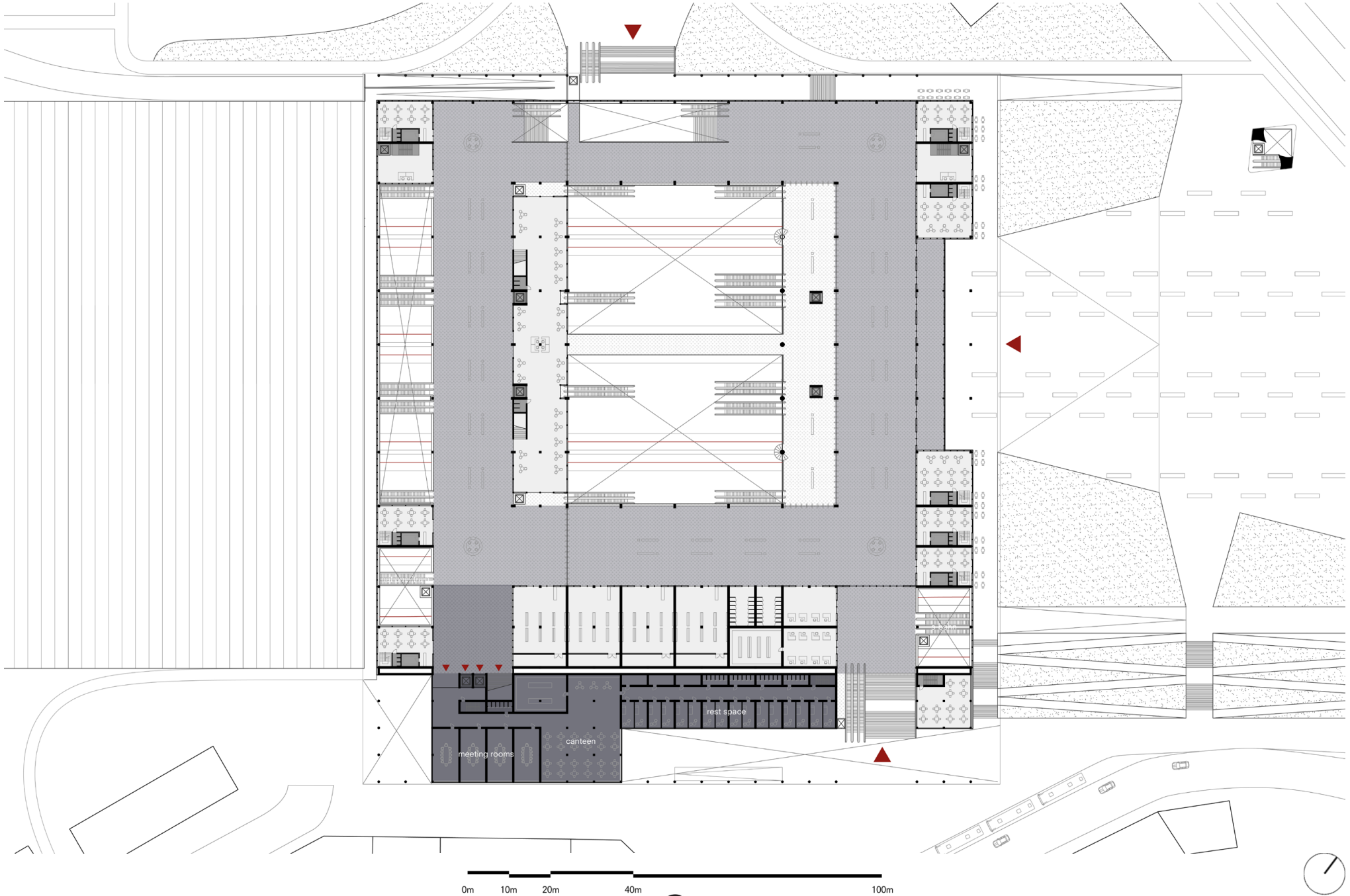
OTHER MODES OF TRANSPORT



0m 10m 20m 40m 100m

implementation

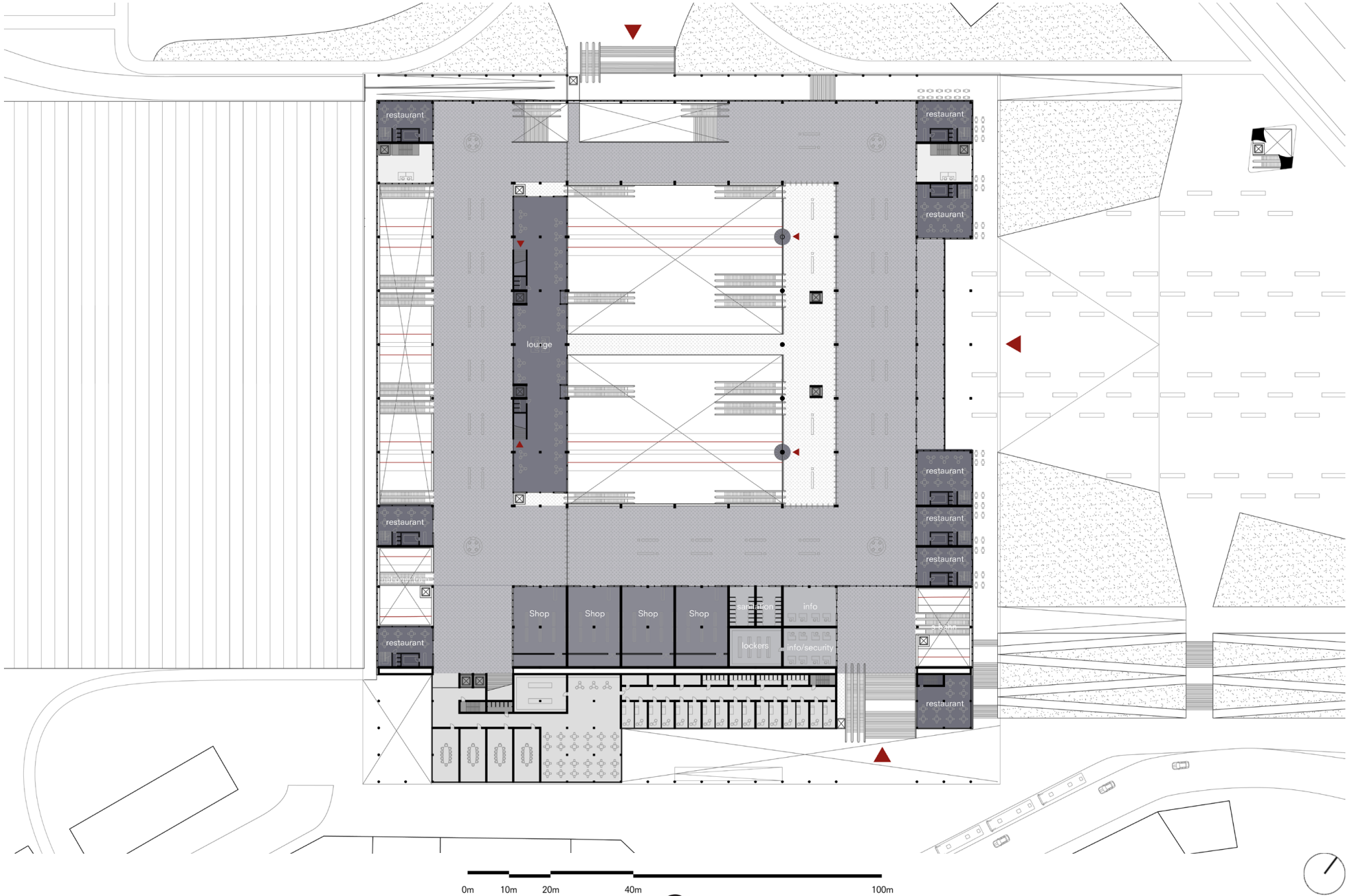
PERSONELL FACILITES



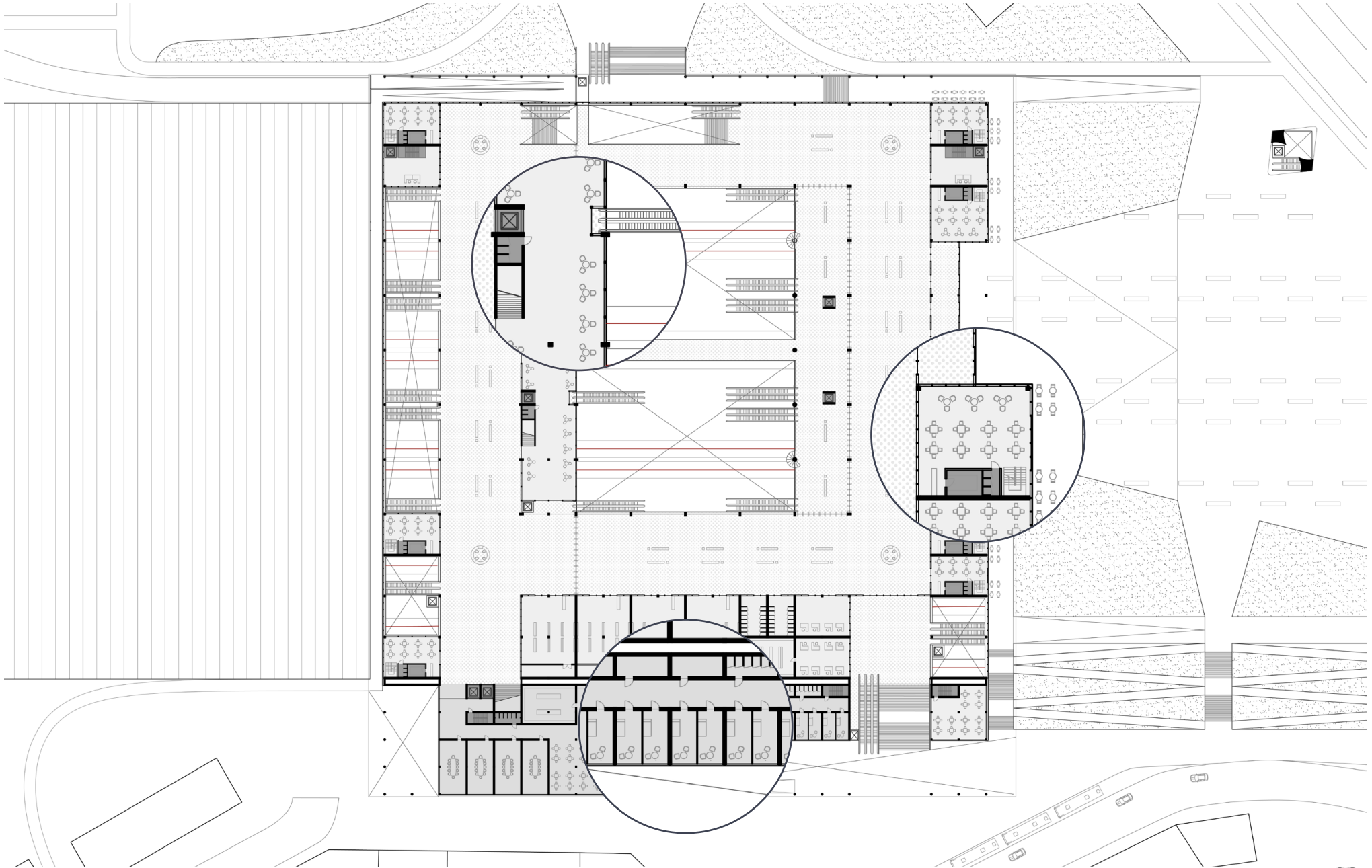
0m 10m 20m 40m 100m



ADDITIONAL FACILITIES



implementation
CLOSE UPS



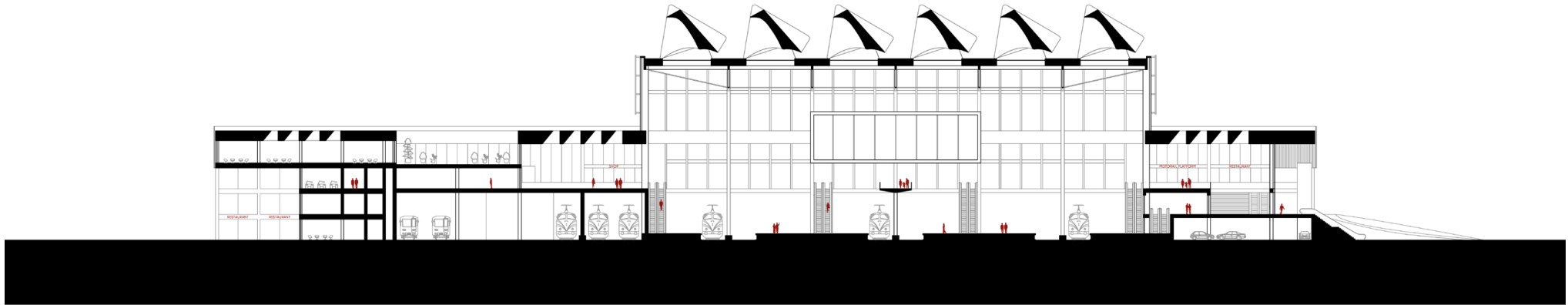
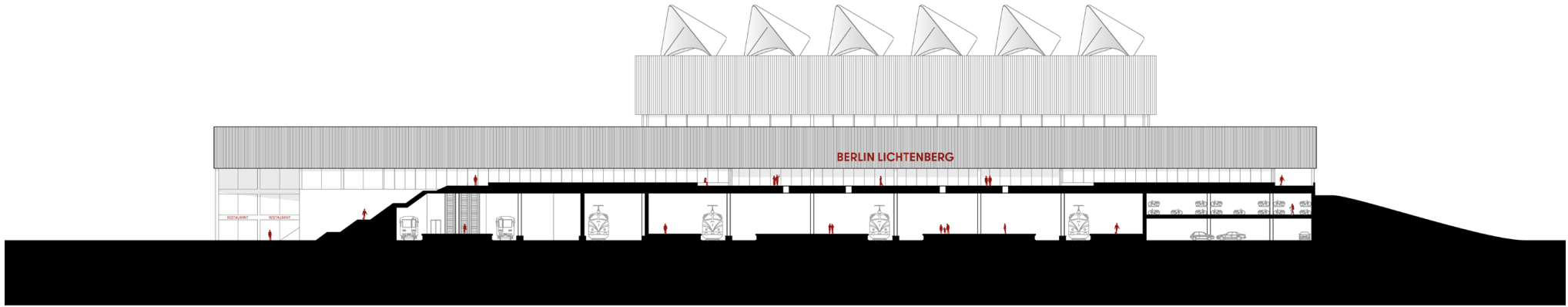
implementation

STATION HALL COMBINES LAYERS



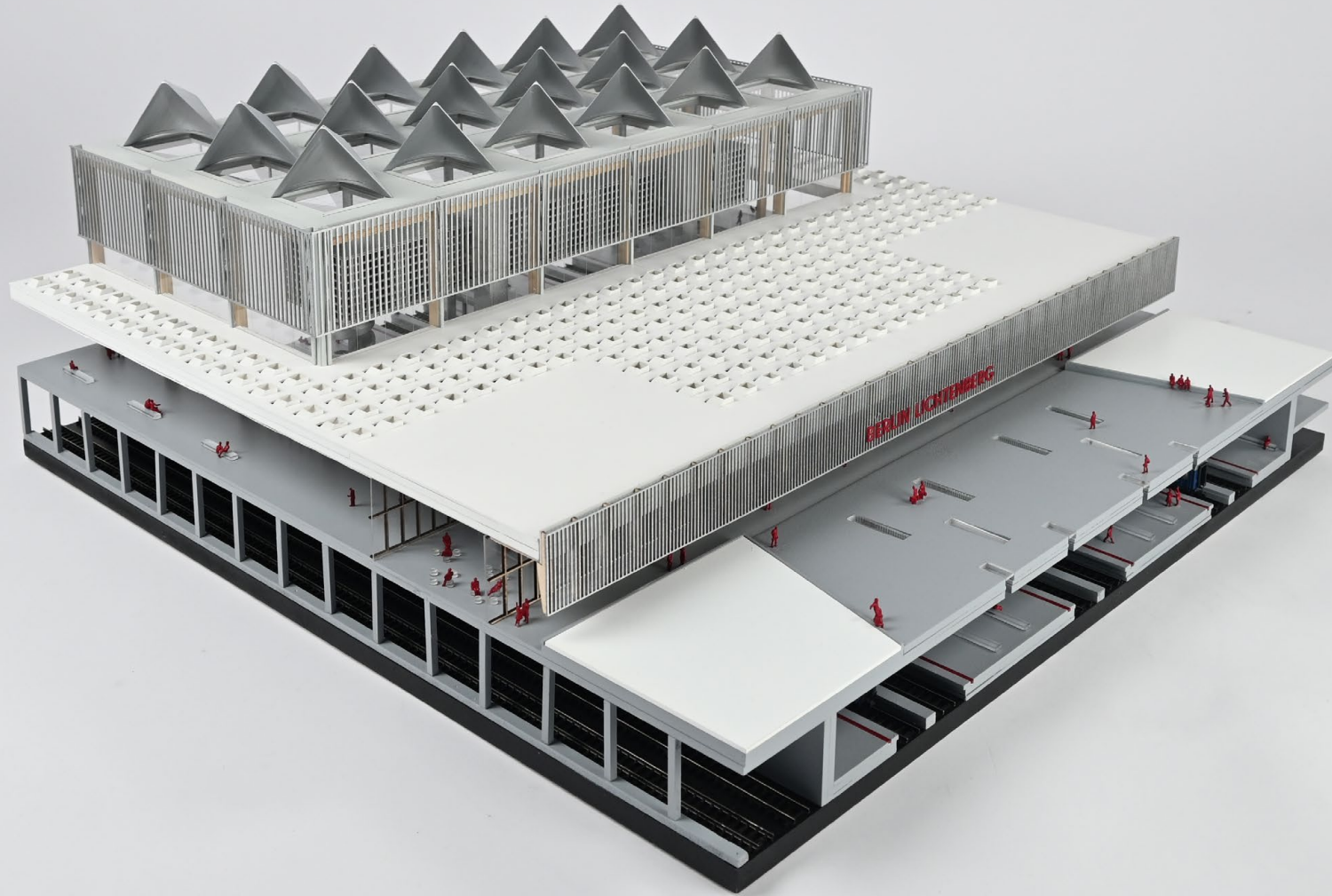
implementation

SECTION & ELEVATION



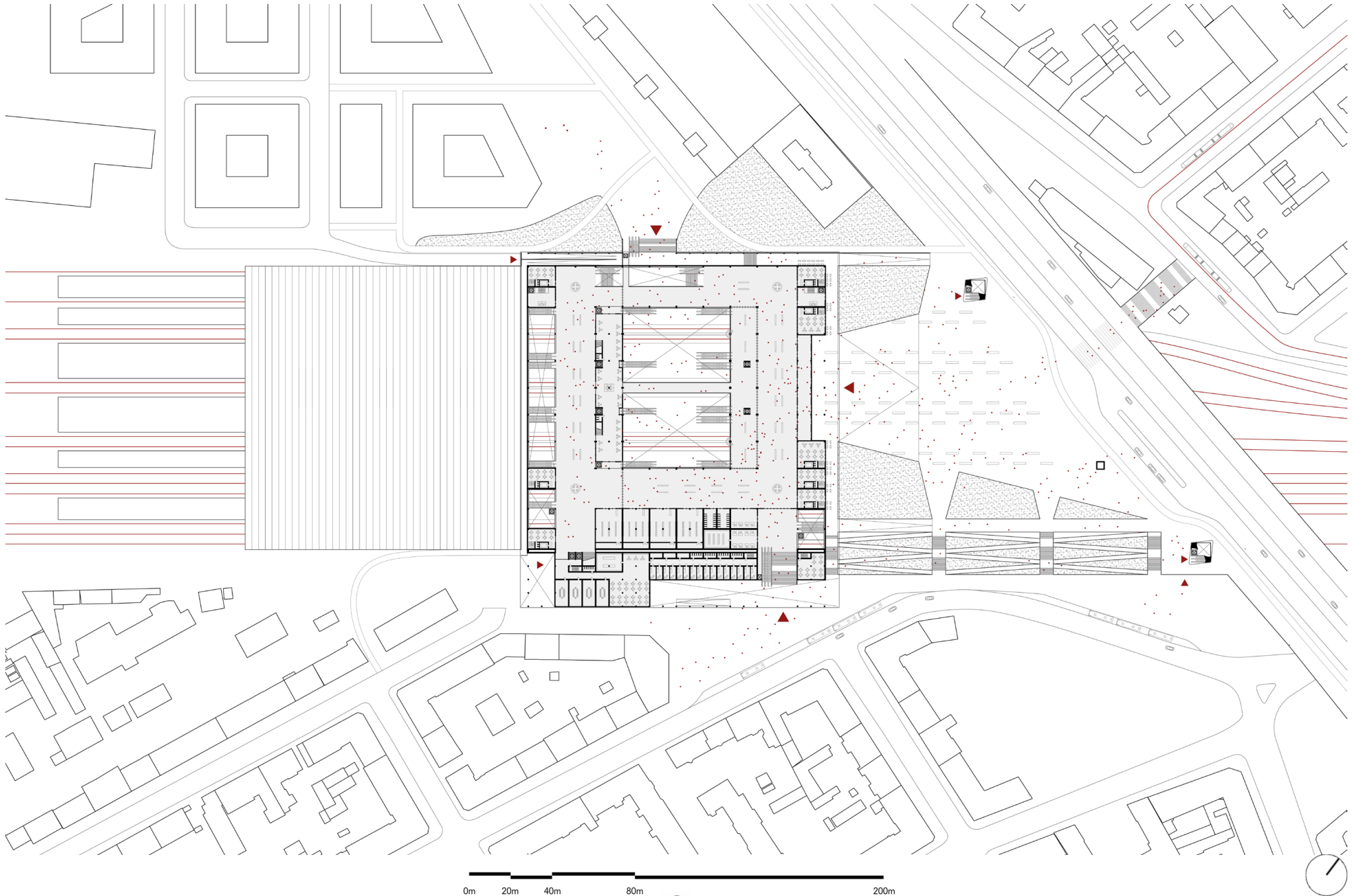
0m 10m 20m 40m 100m

implementation

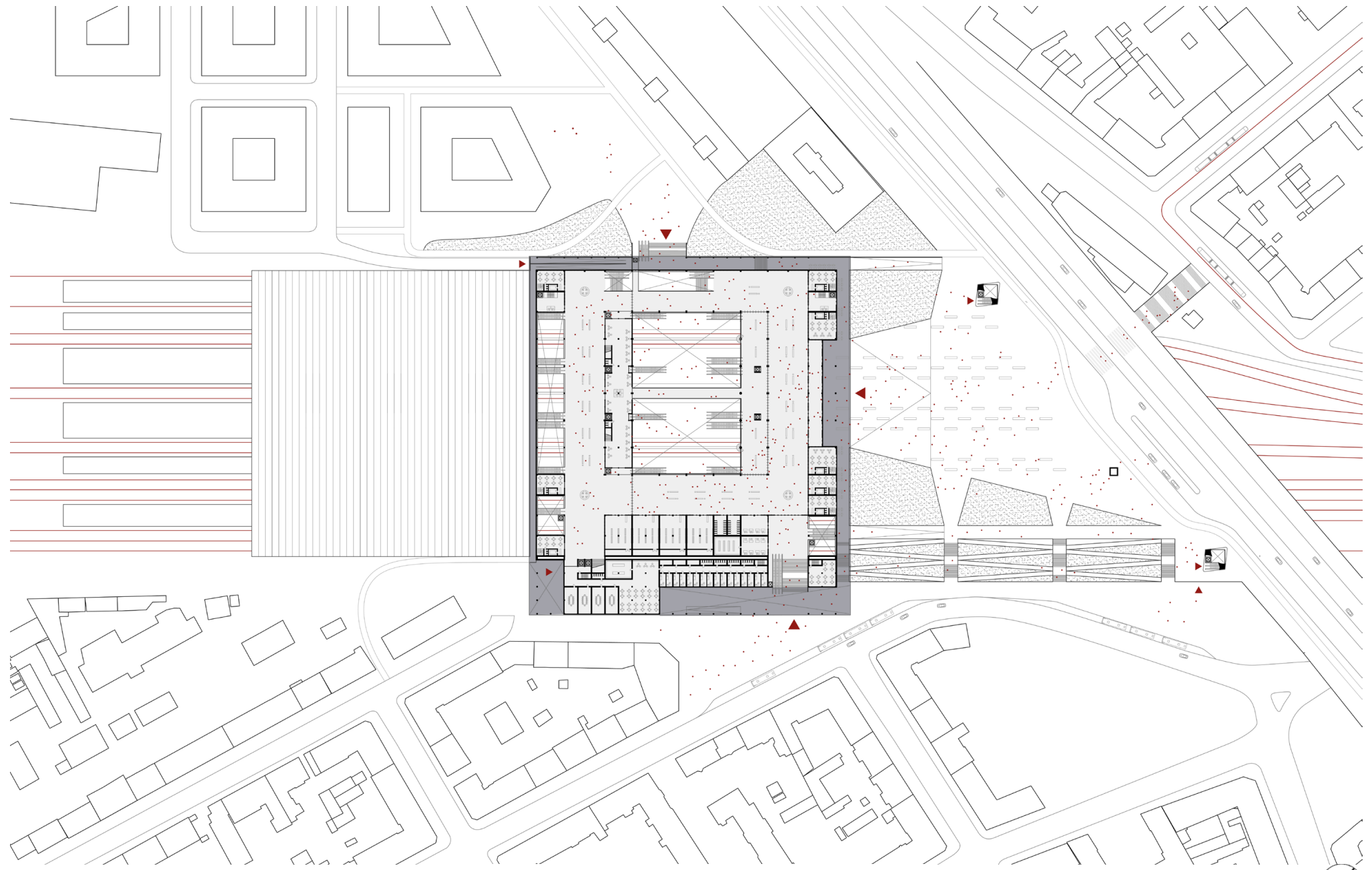


implementation

UBRAN IMPLEMENTATION BUILDING

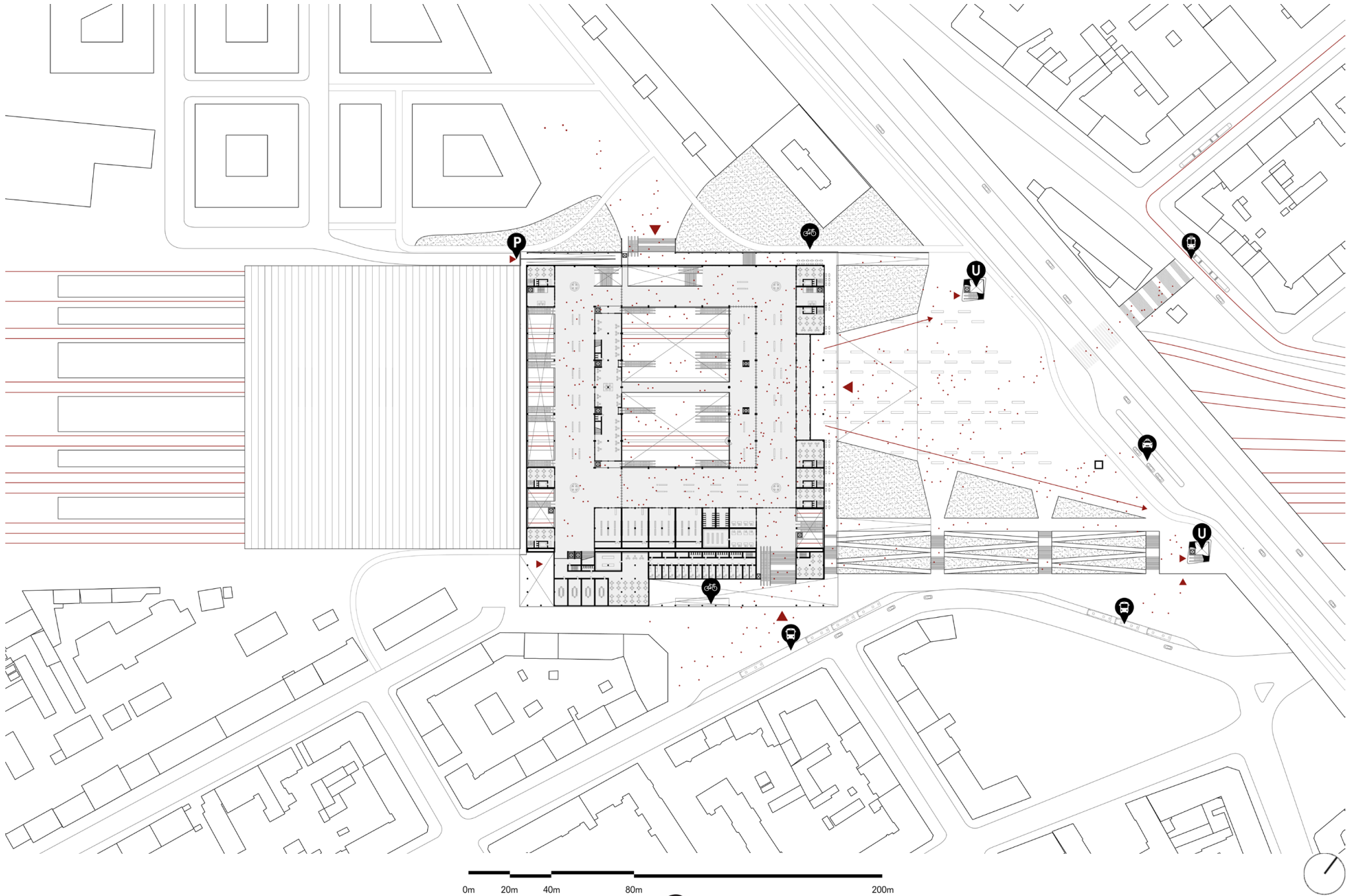


implementation
FLOATING ROOF

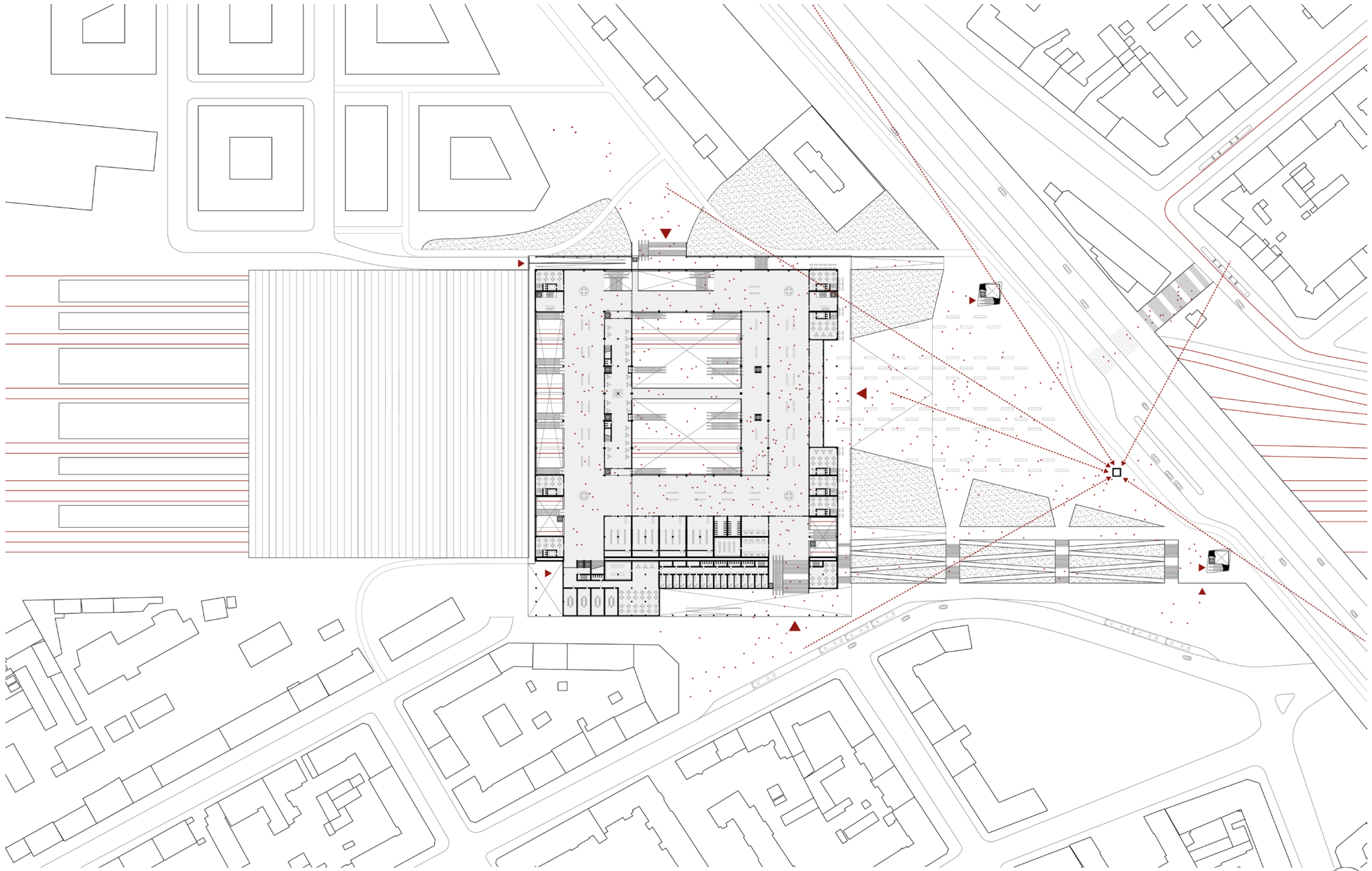


implementation

MODES OF TRANSPORT



implementation
TOWER



0m 20m 40m 80m 200m

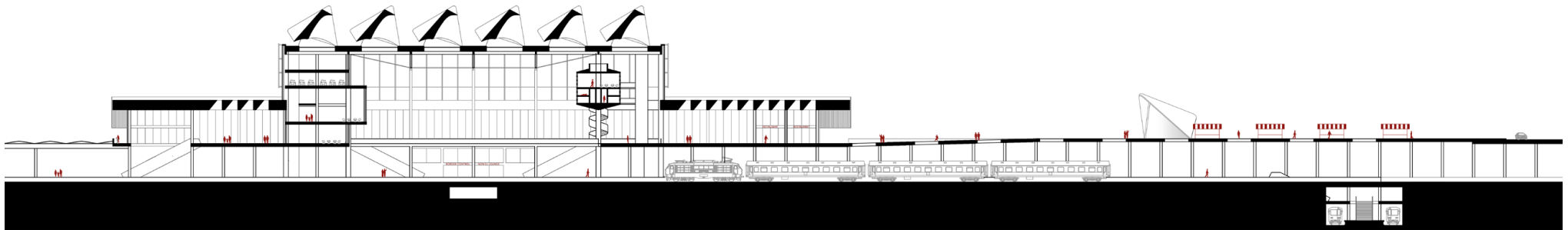
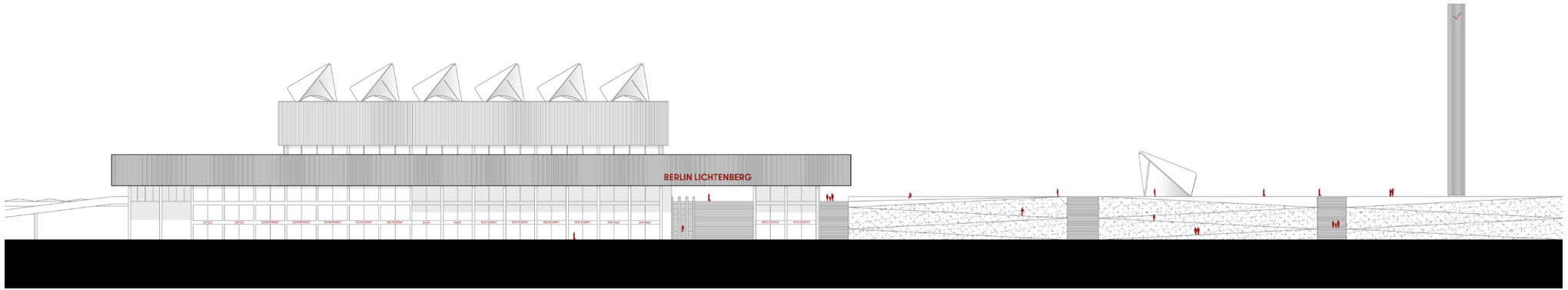


implementation

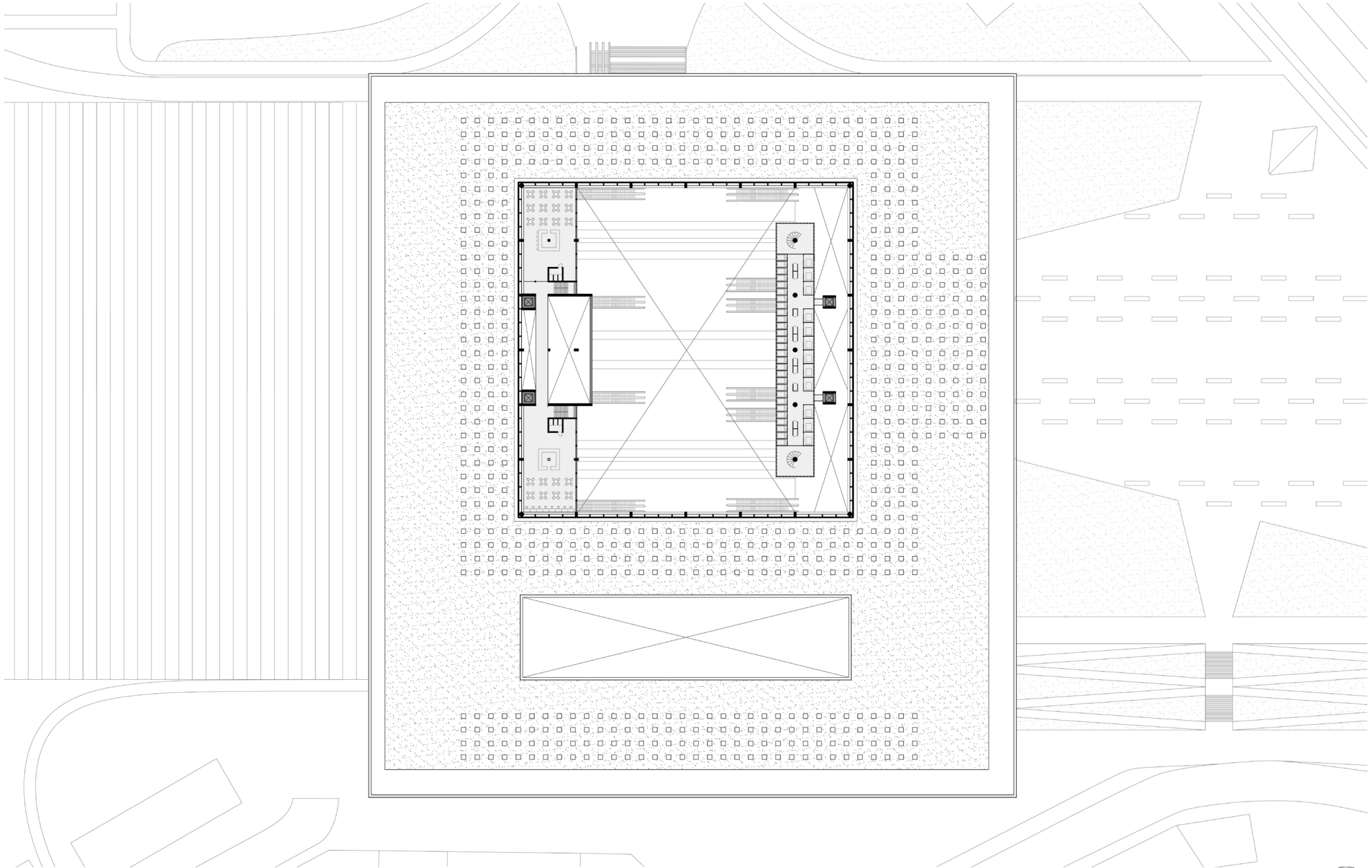
OLD LOCAL ENTRANCE



implementation
SECTION & ELEVATION



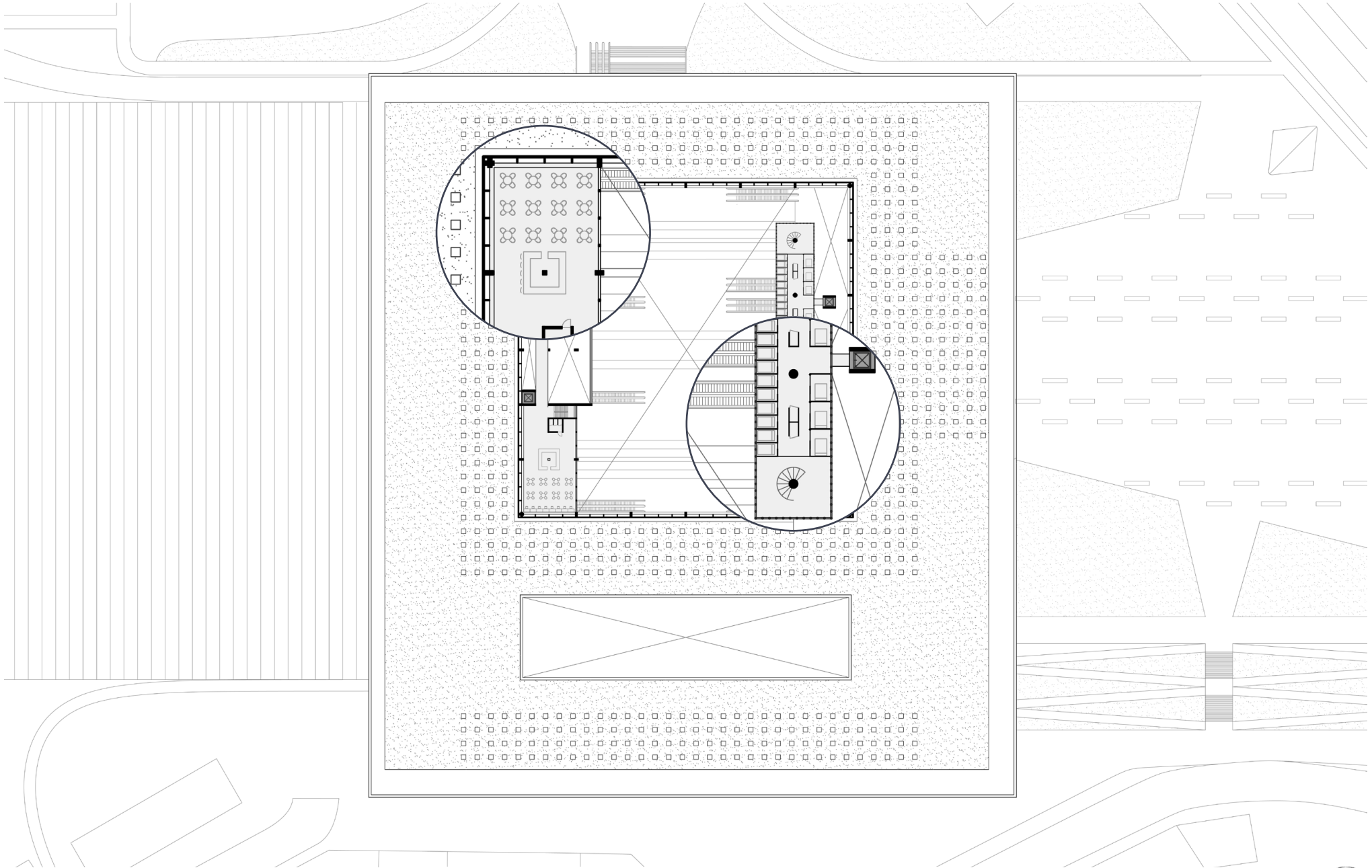
implementation
CROWN



0m 10m 20m 40m 100m



implementation



0m 10m 20m 40m 100m



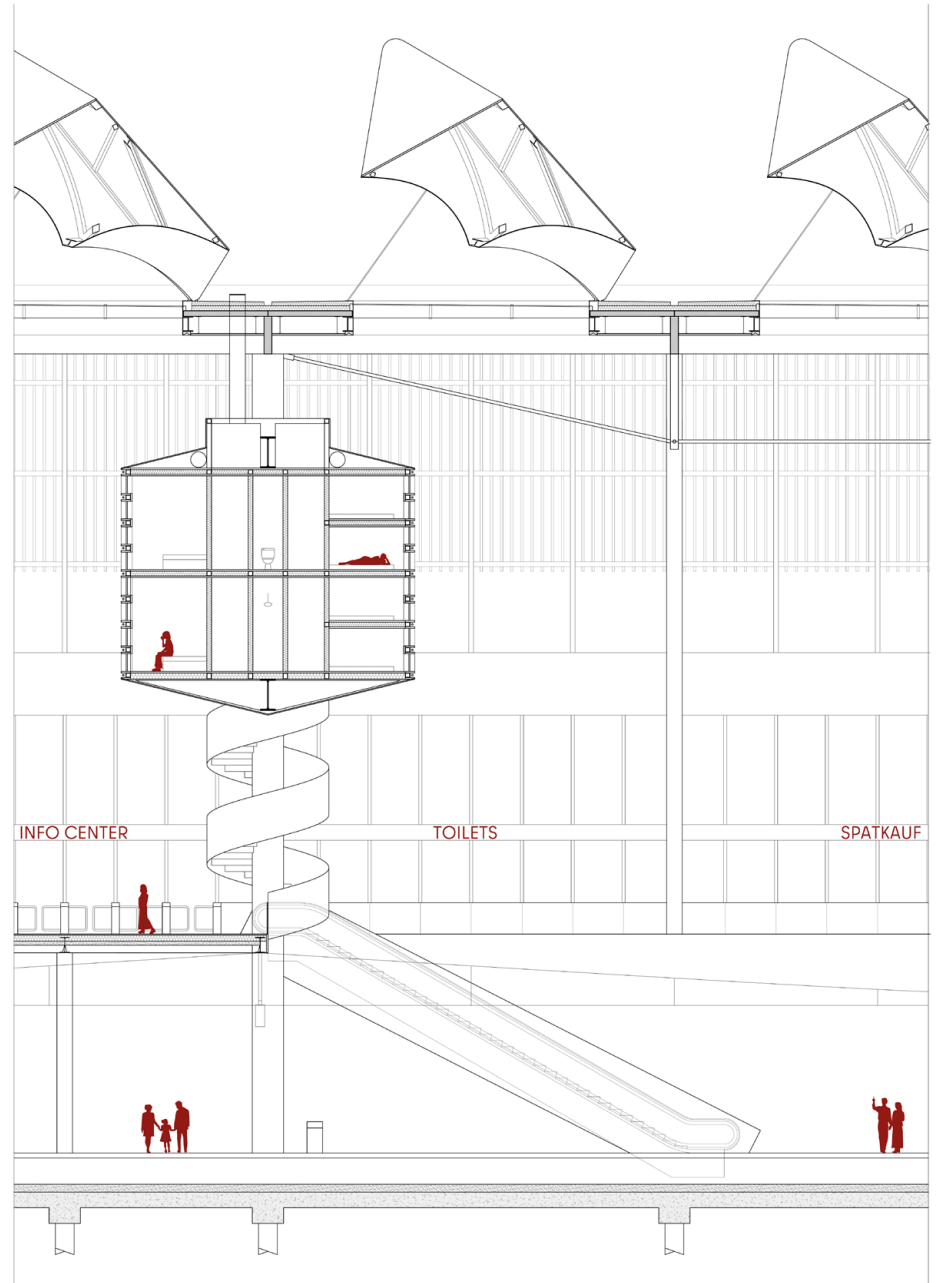
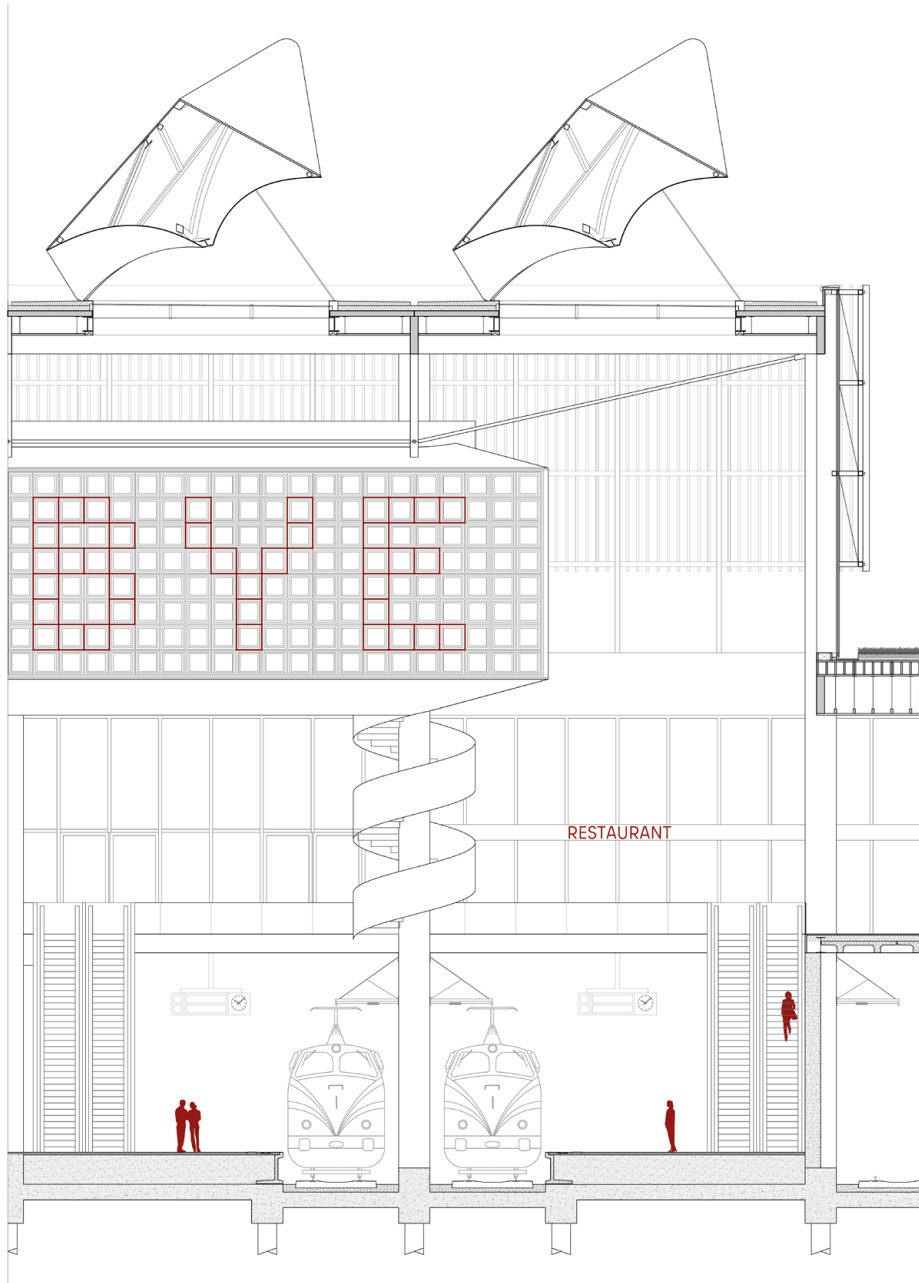
implementation

RESTAURANT IN LOUNGE



implementation

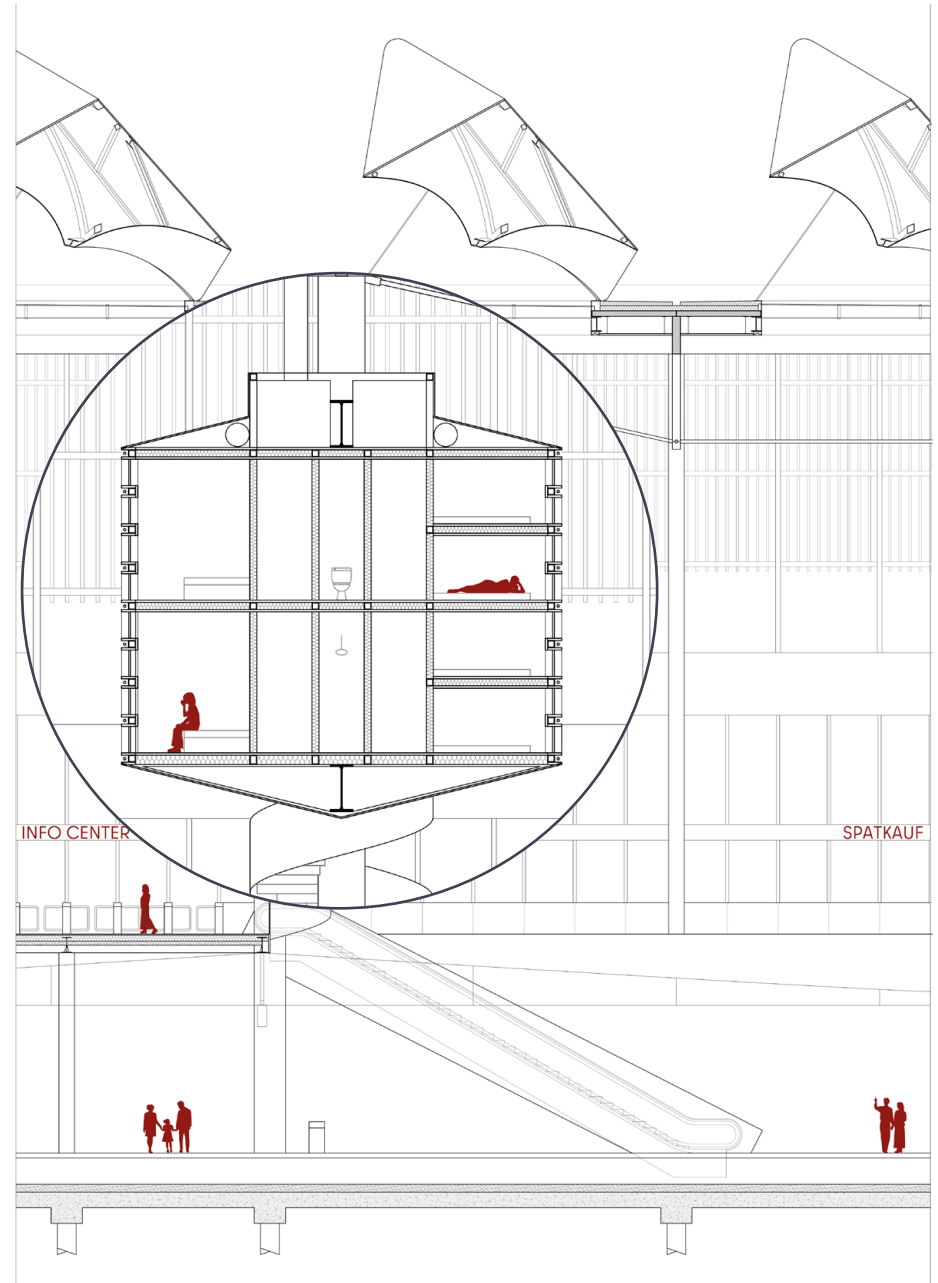
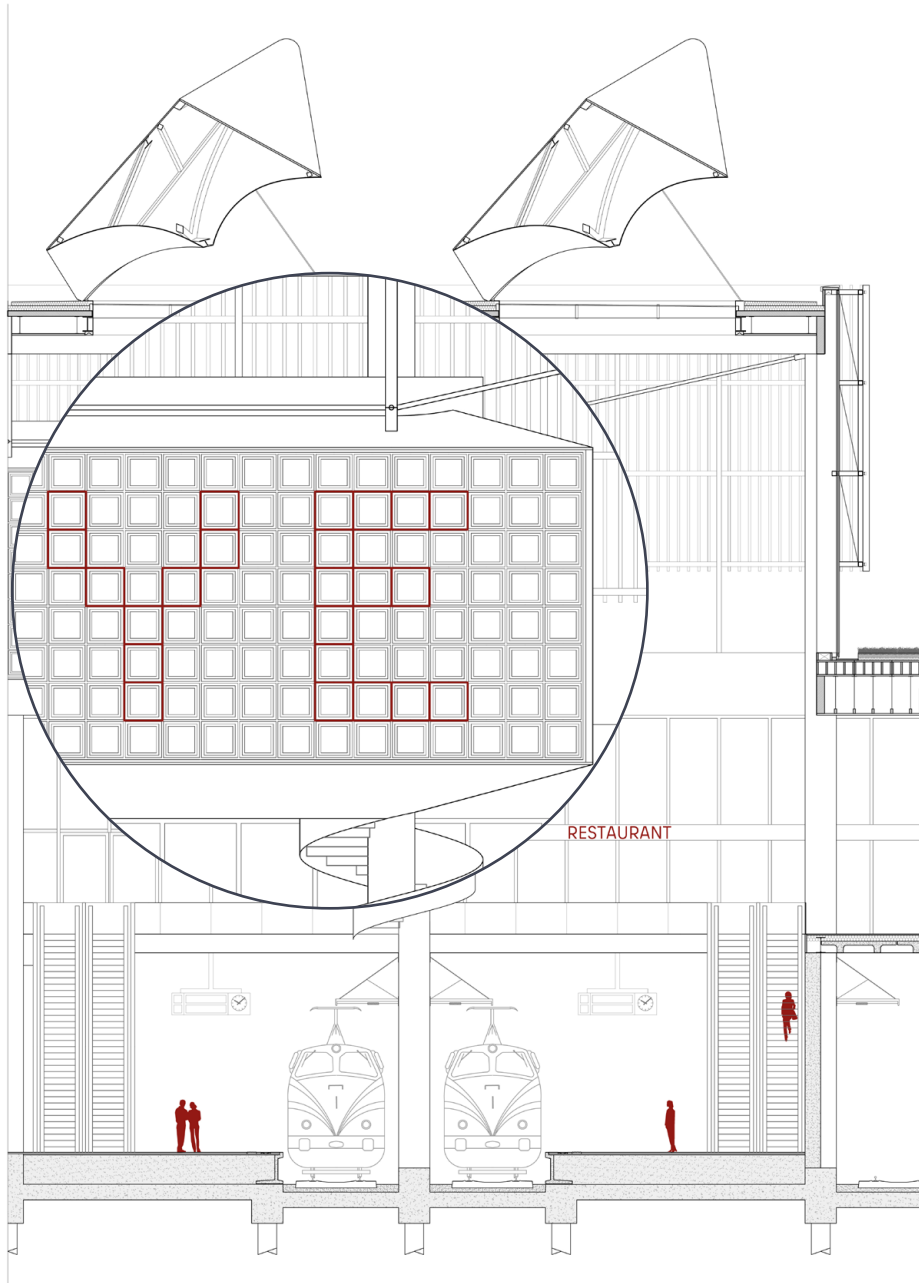
INTERIOR FRAGMENT



0m 2m 4m 8m 20m

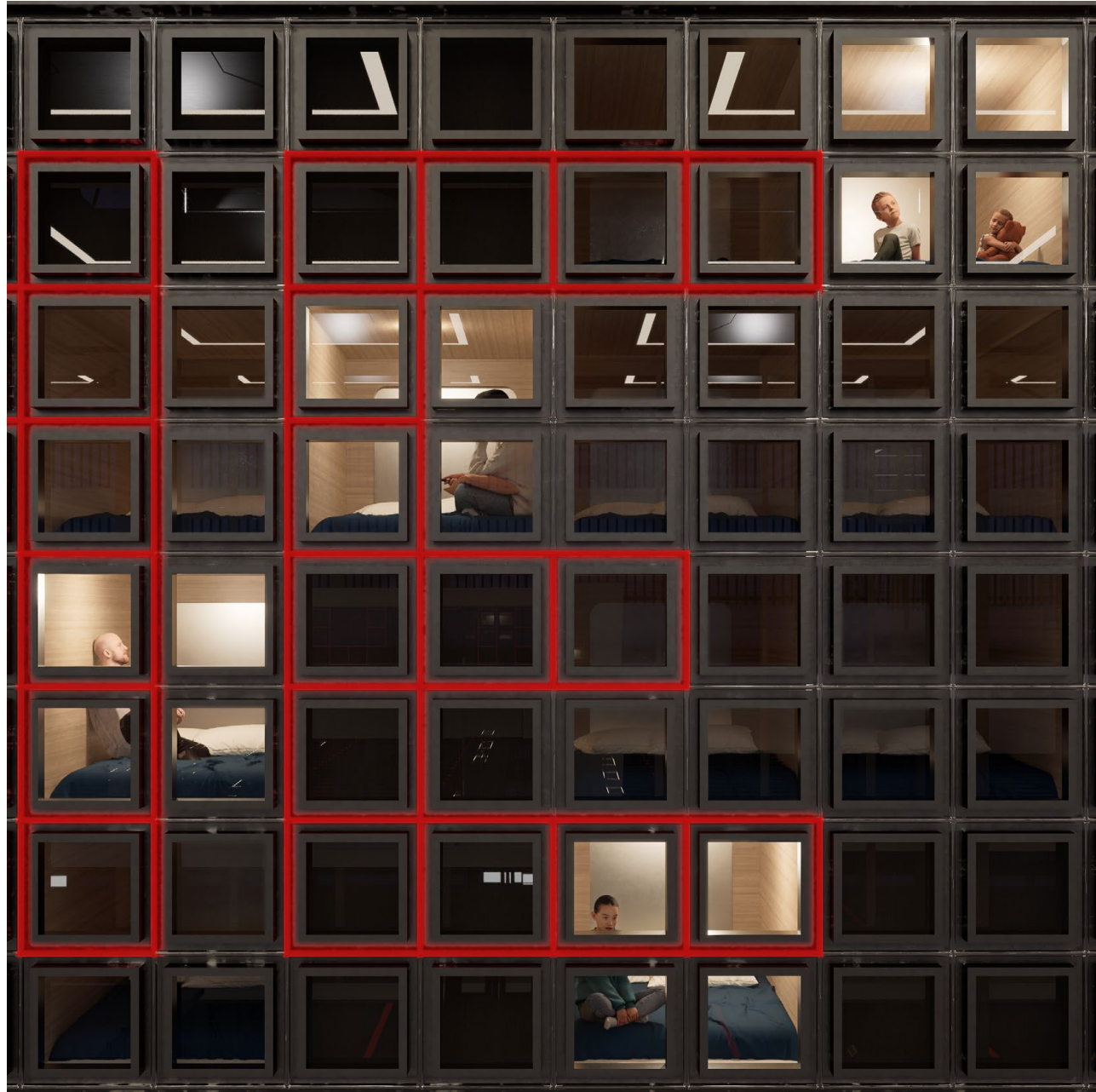
implementation

INTERIOR FRAGMENT



0m 2m 4m 8m 20m

implementation
CAPSULES



implementation

EVENING ON THE SQUARE



BERLIN LICHTENBERG



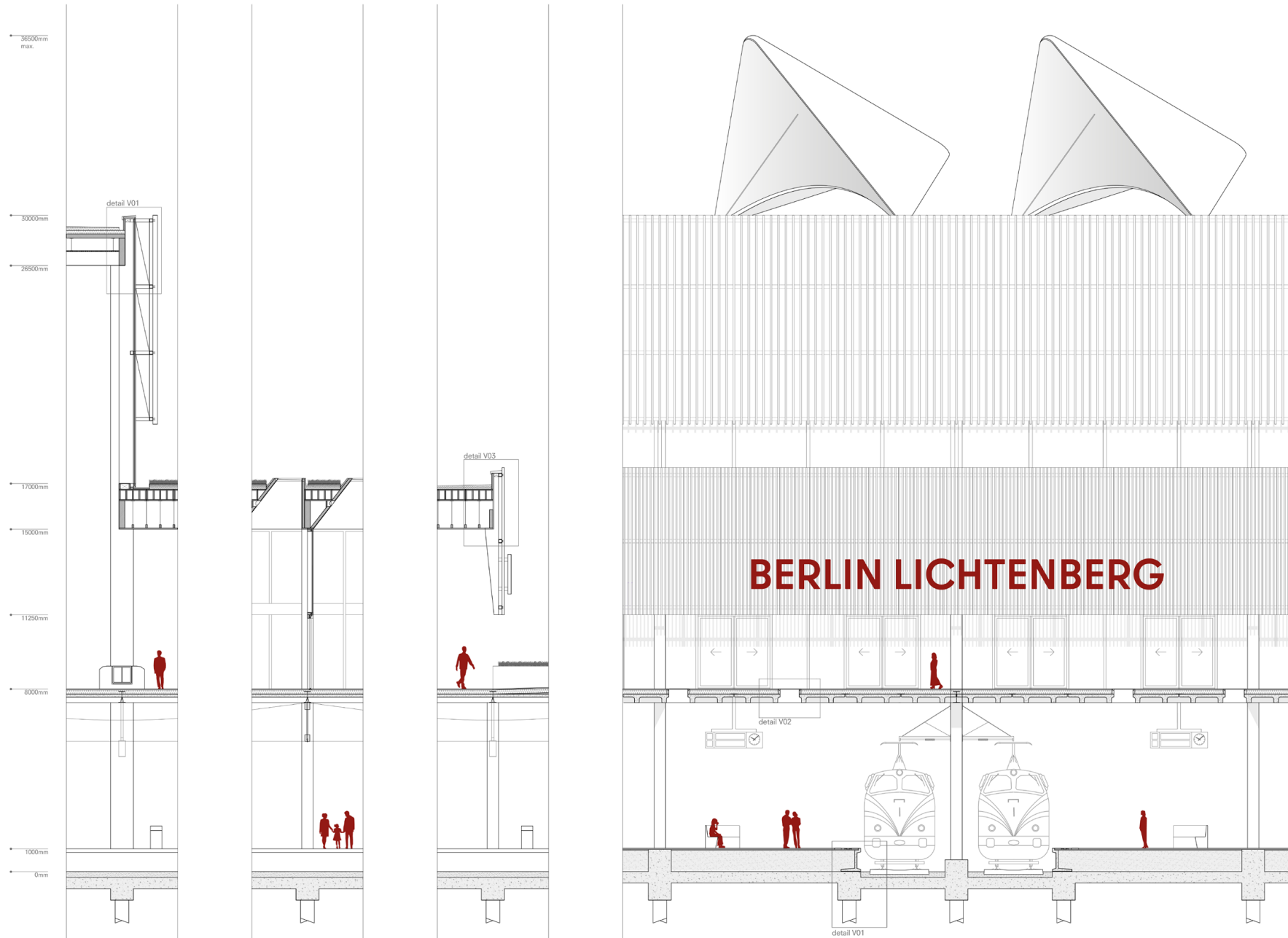
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development
FACADE



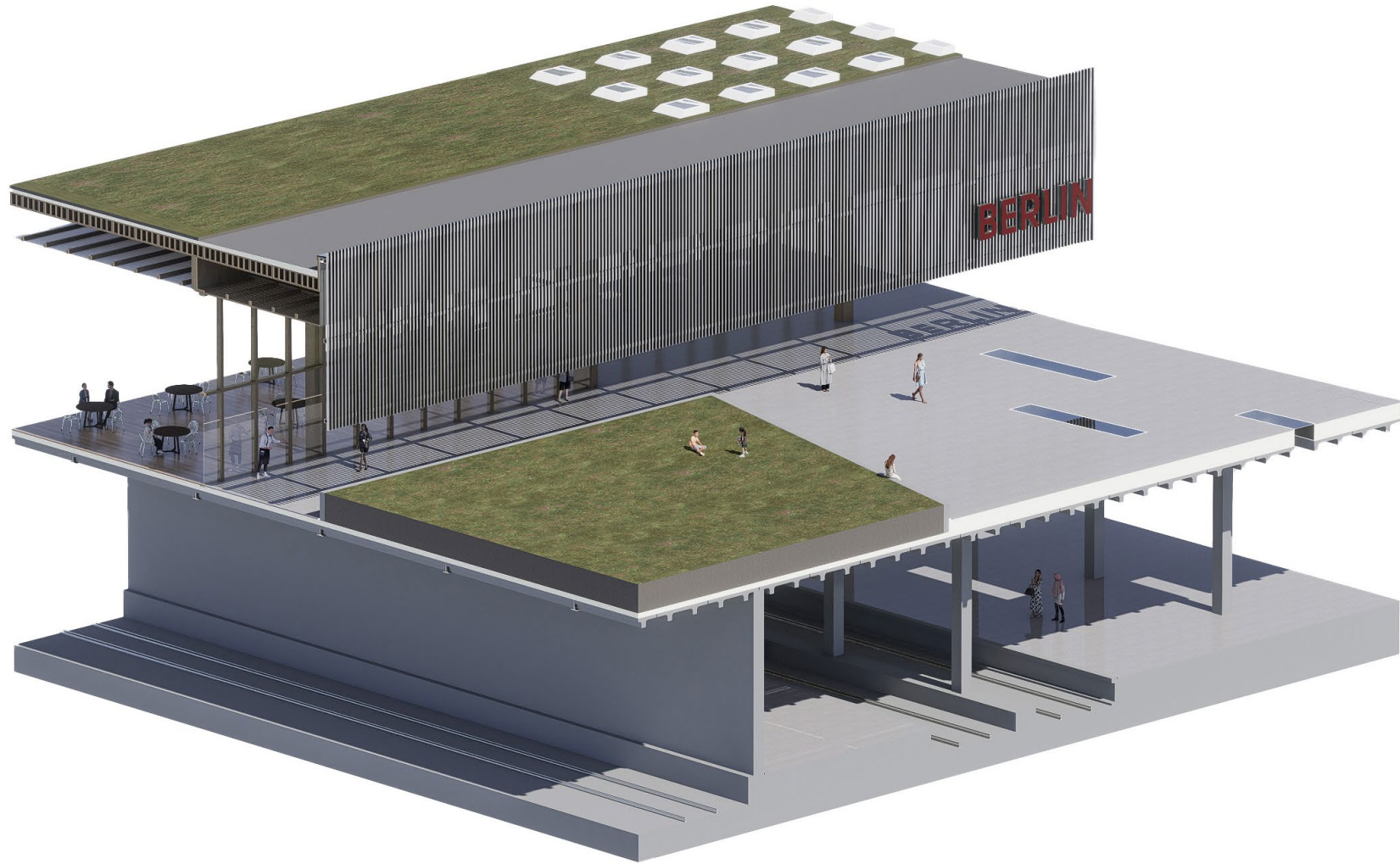
development

FACADE FRAGMENT



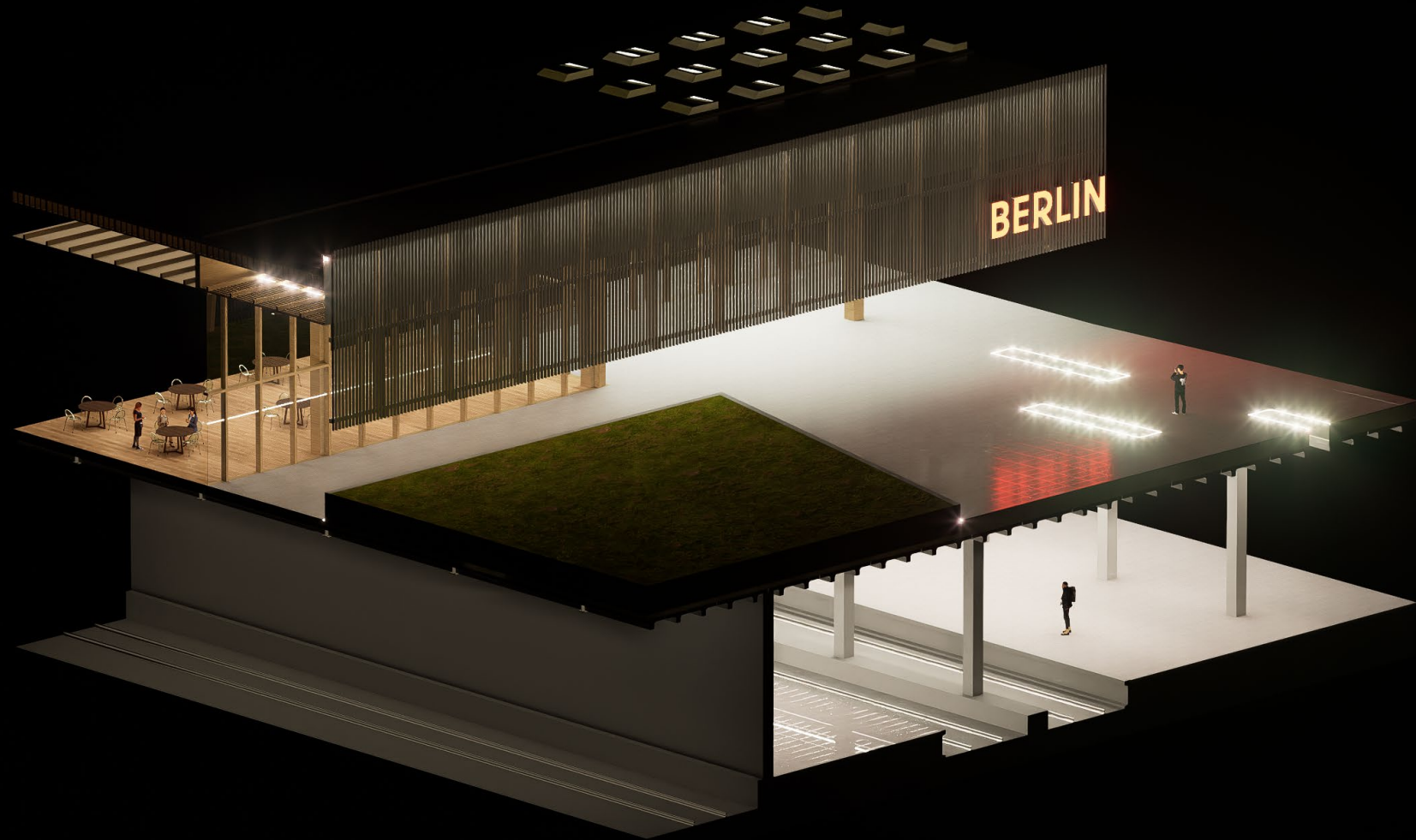
development

3D FACADE FRAGMENT DAY



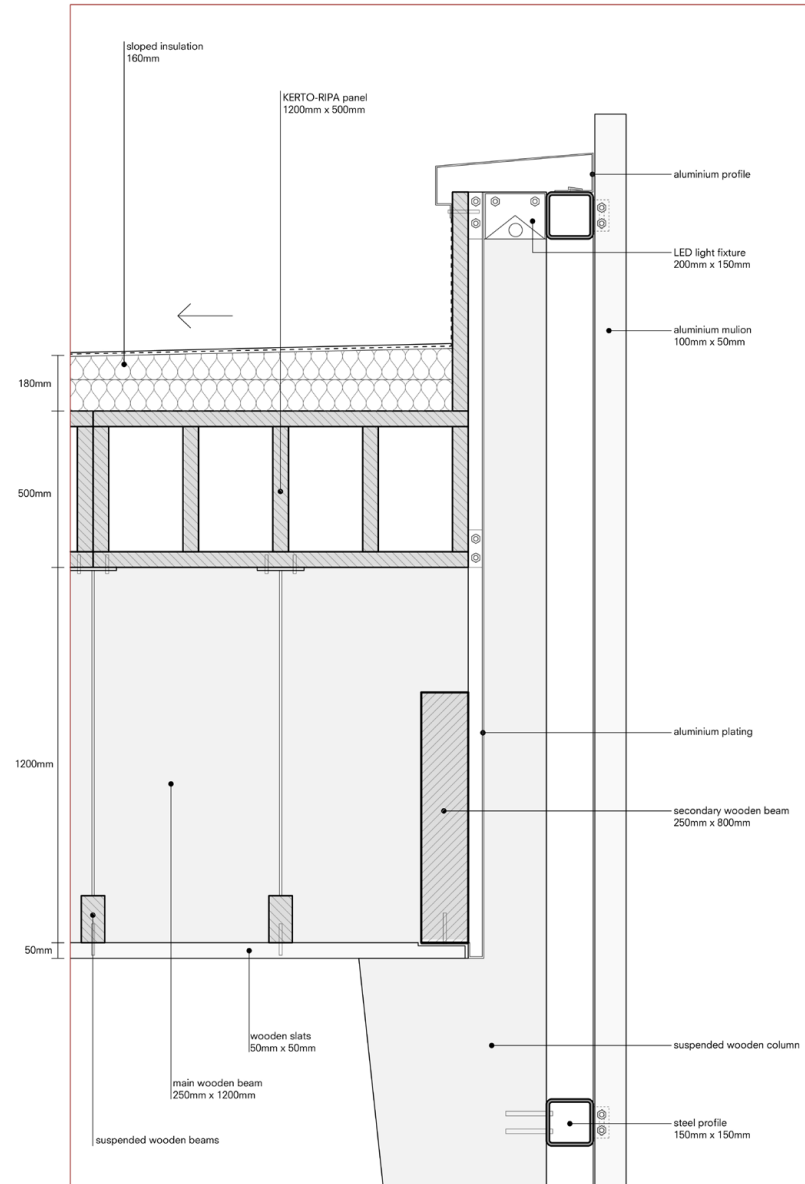
development

3D FACADE FRAGMENT NIGHT



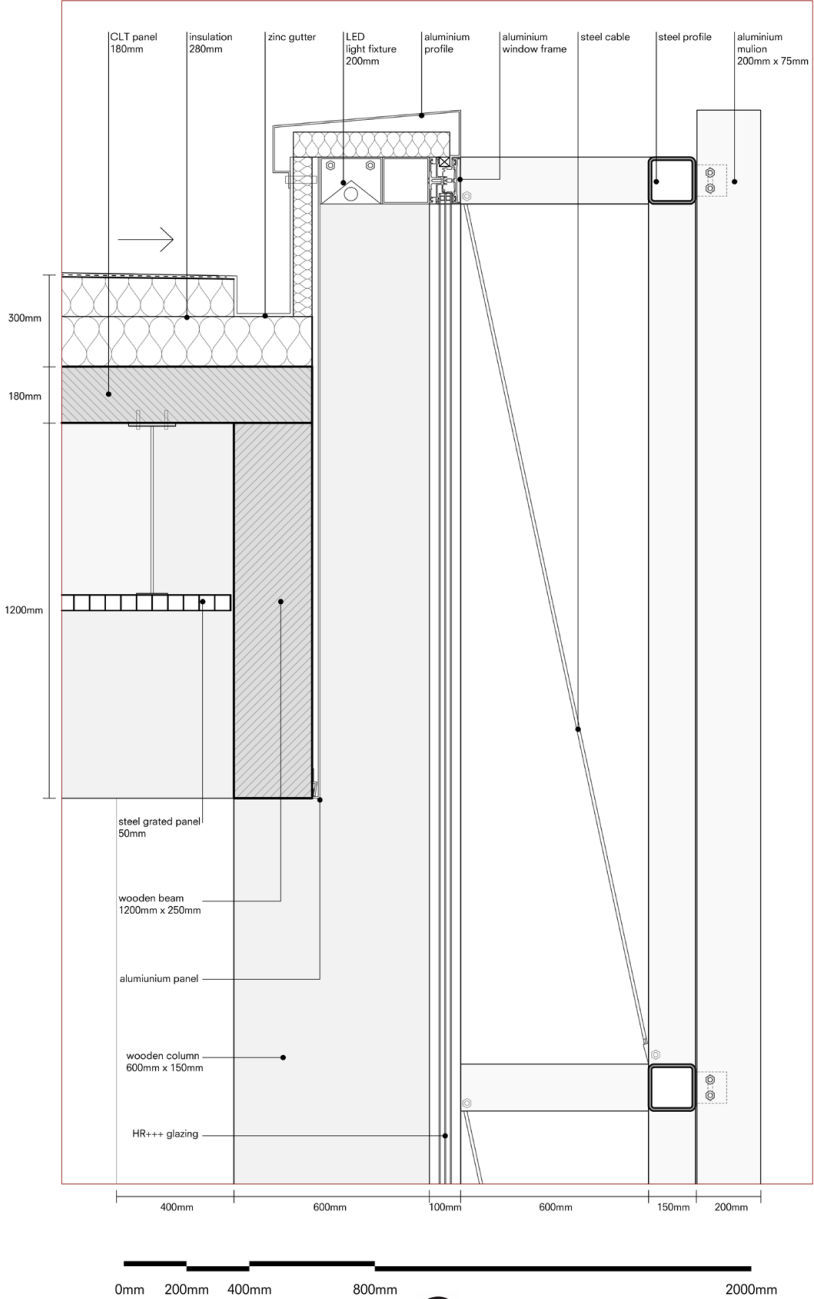
development

BUILDING ROOF DETAIL



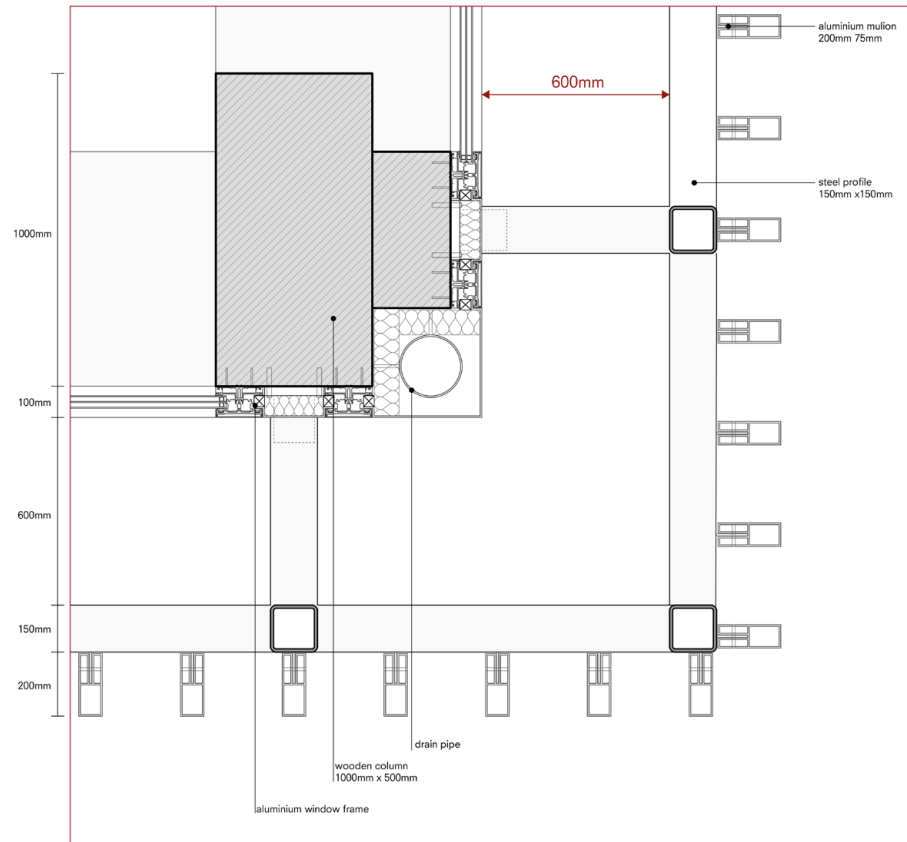
development

CROWN ROOF DETAIL

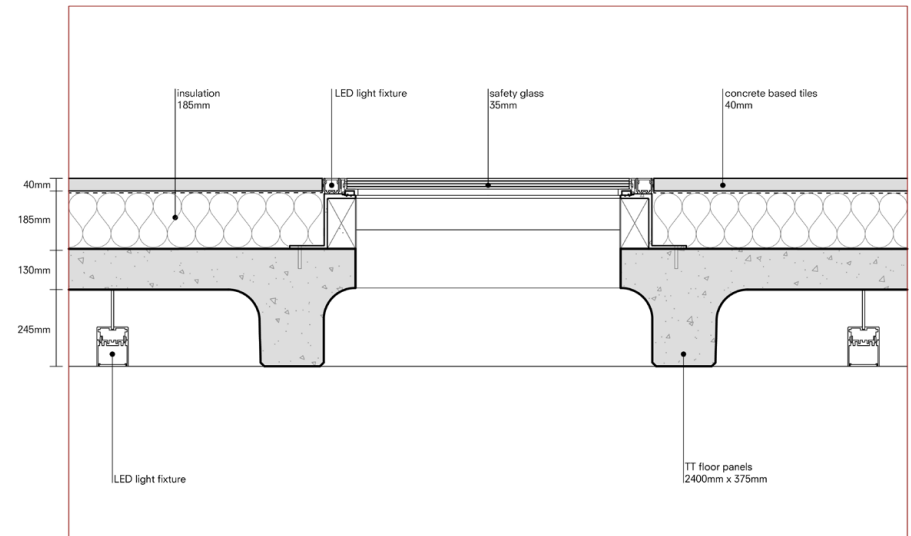
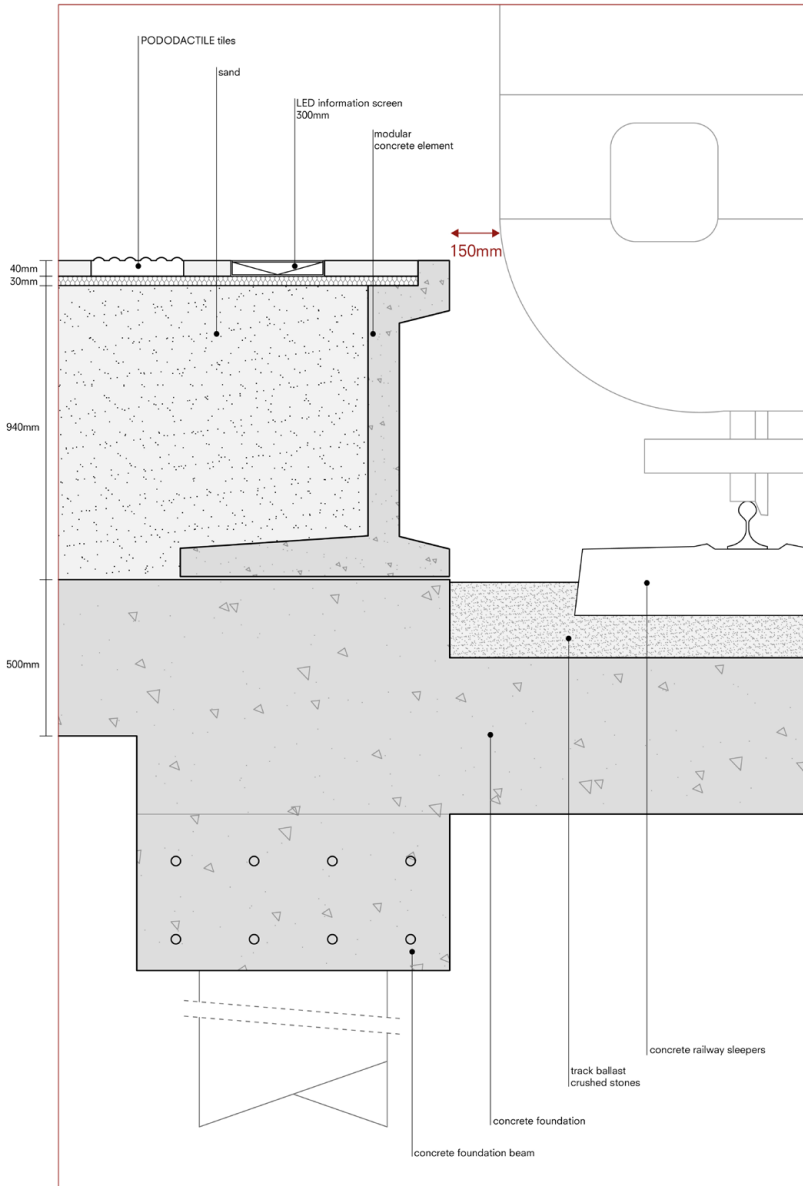


development

HORIZONTAL DETAIL

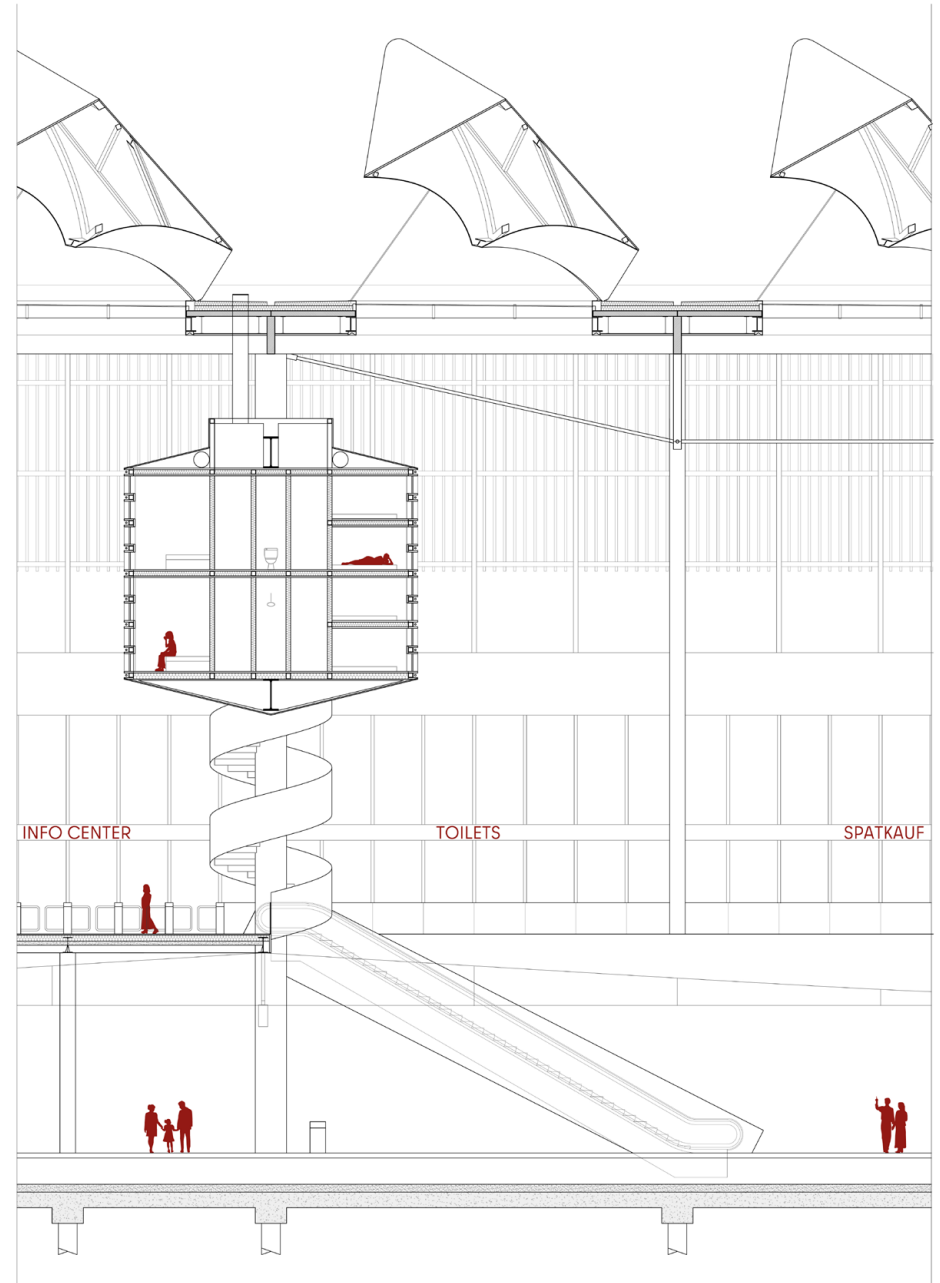
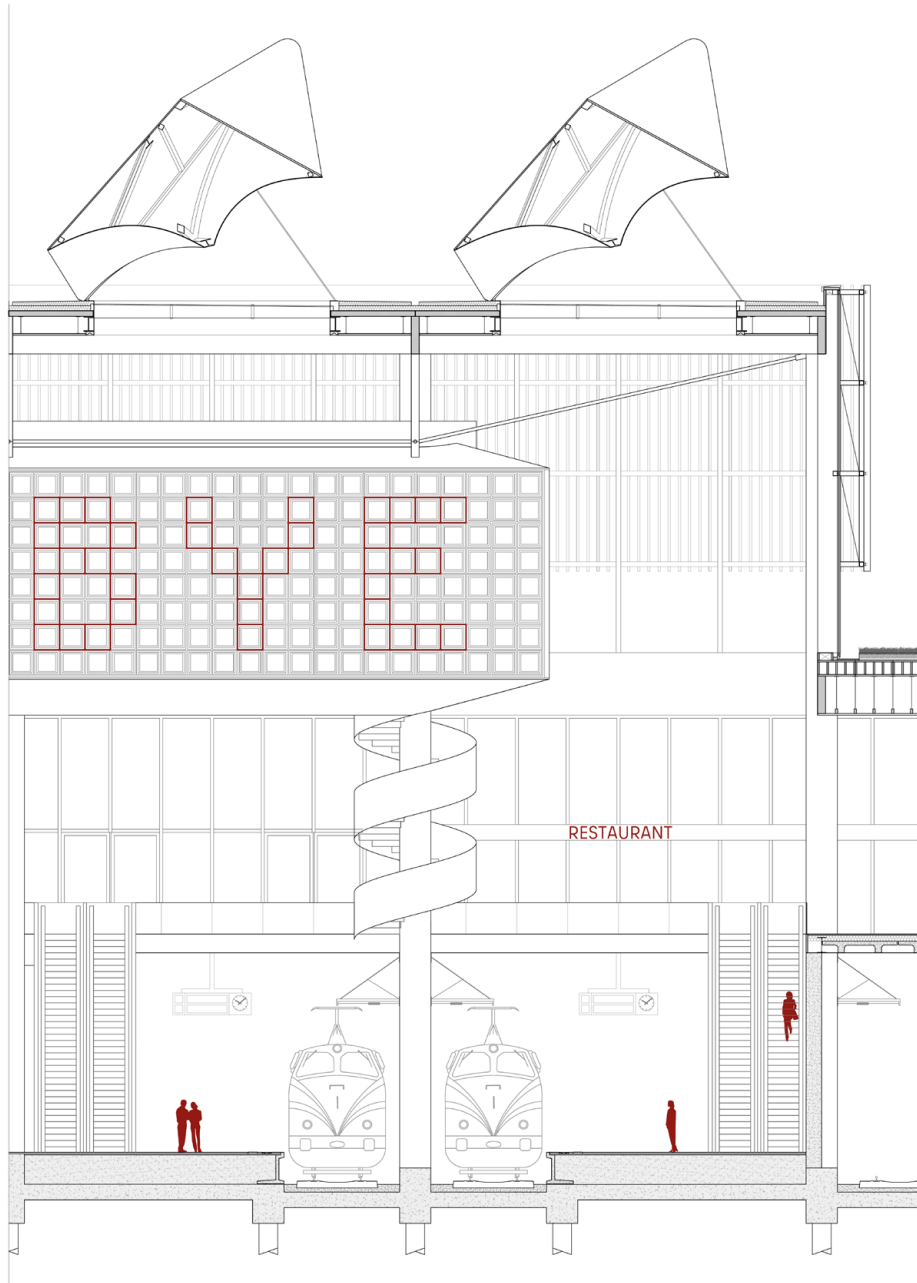


PLATFORM AND ROOF WINDOW DETAIL



development

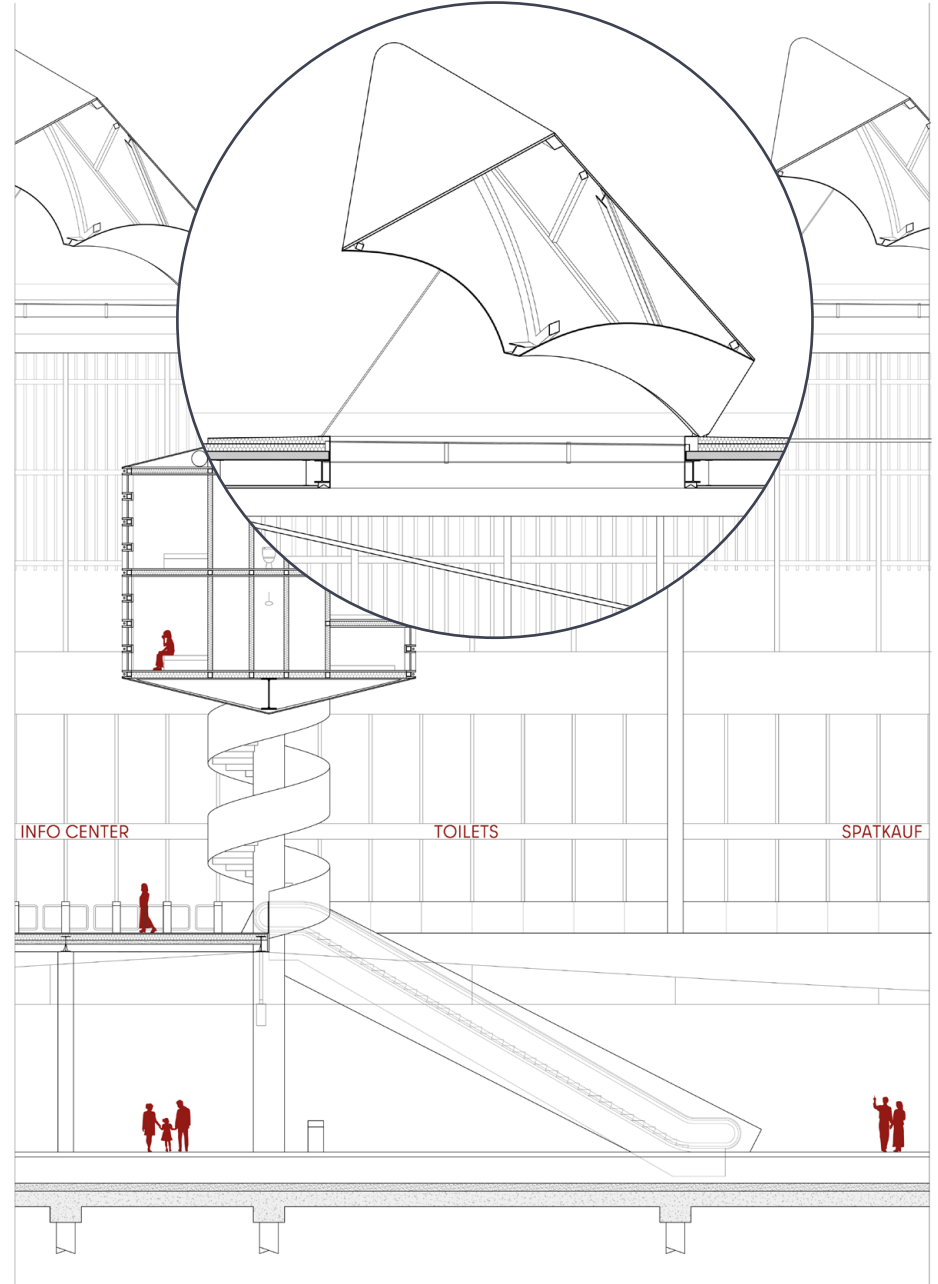
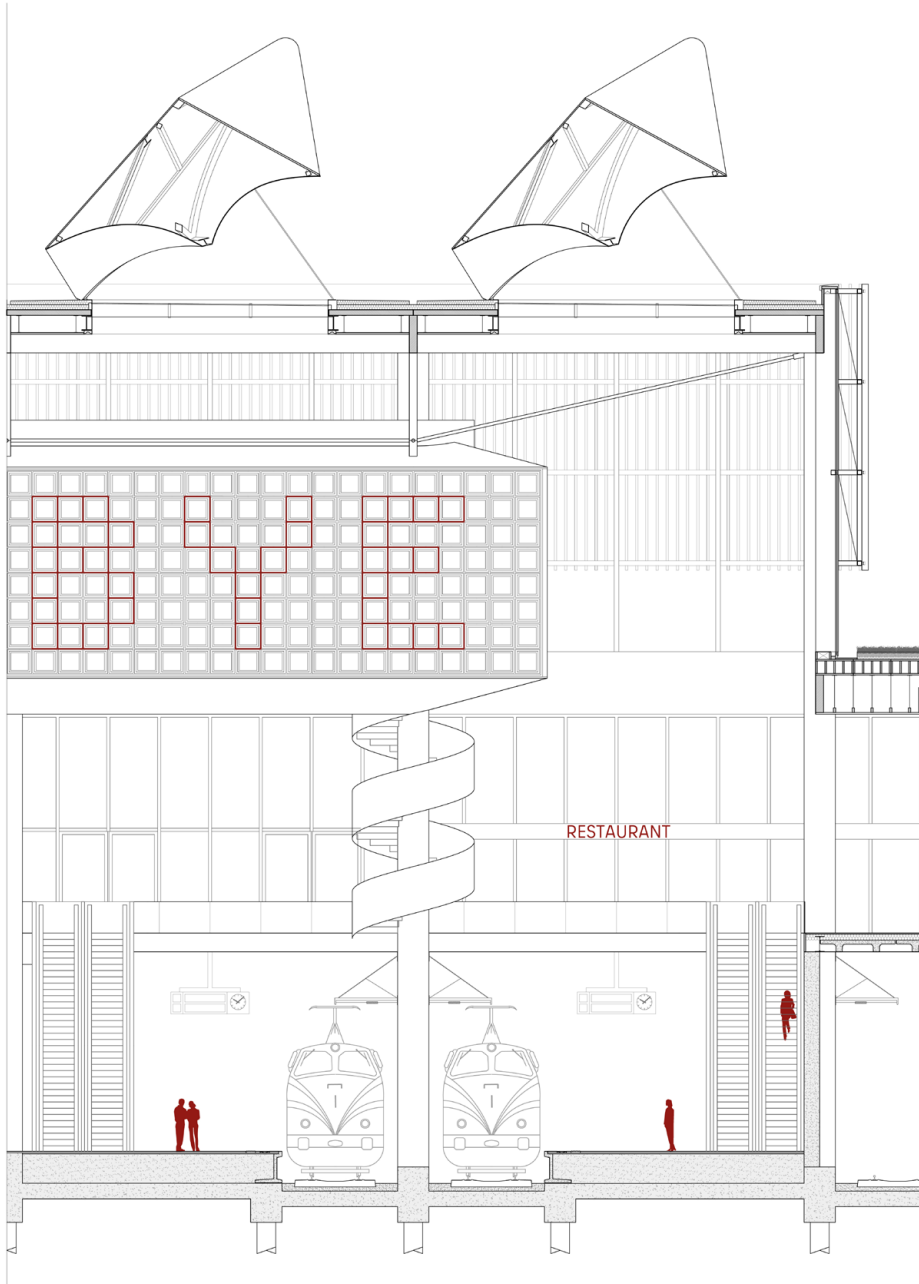
INTERIOR FRAGMENT



0m 2m 4m 8m 20m

development

INTERIOR FRAGMENT



RESTAURANT

INFO CENTER

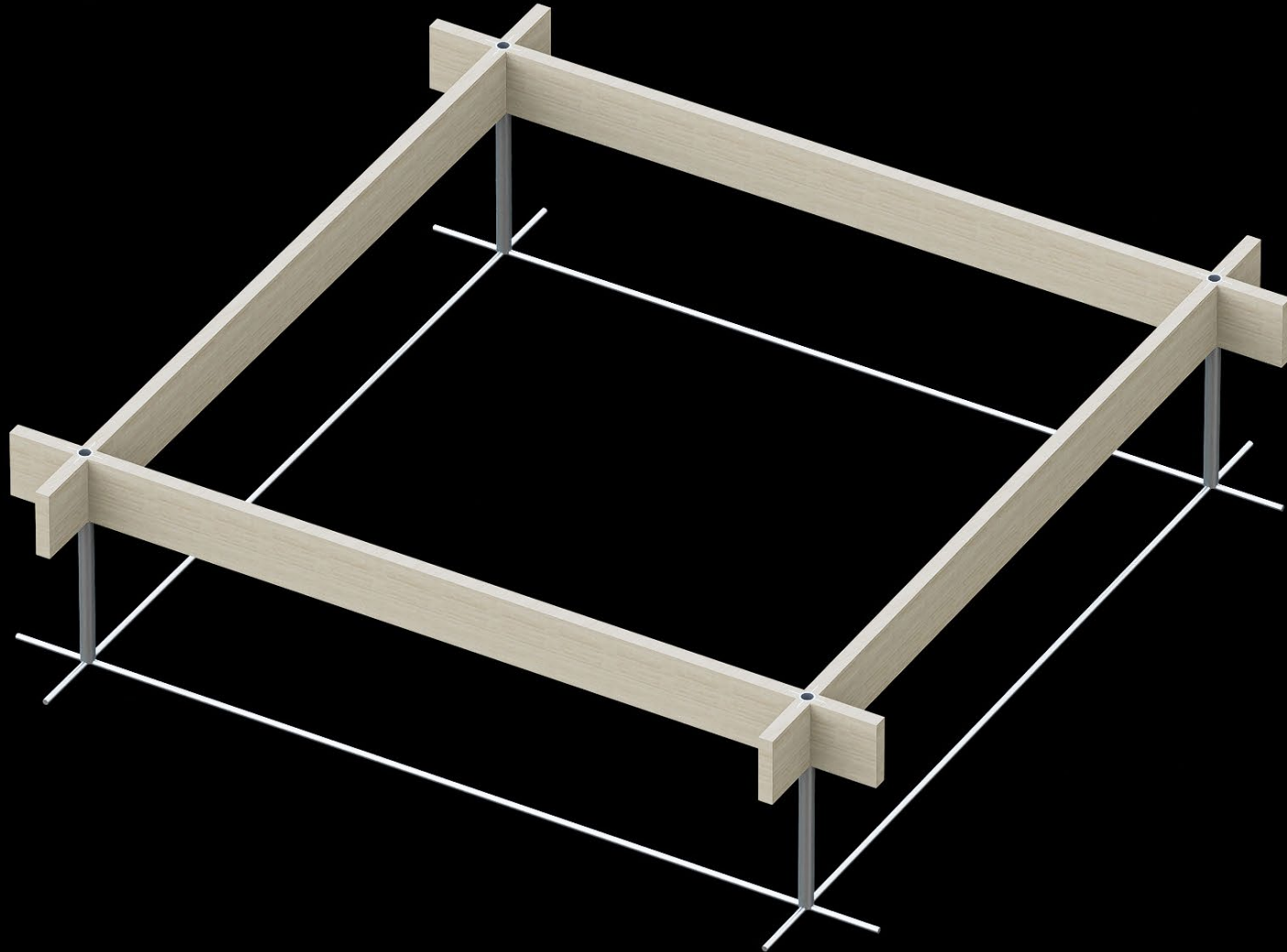
TOILETS

SPATKAUF

0m 2m 4m 8m 20m

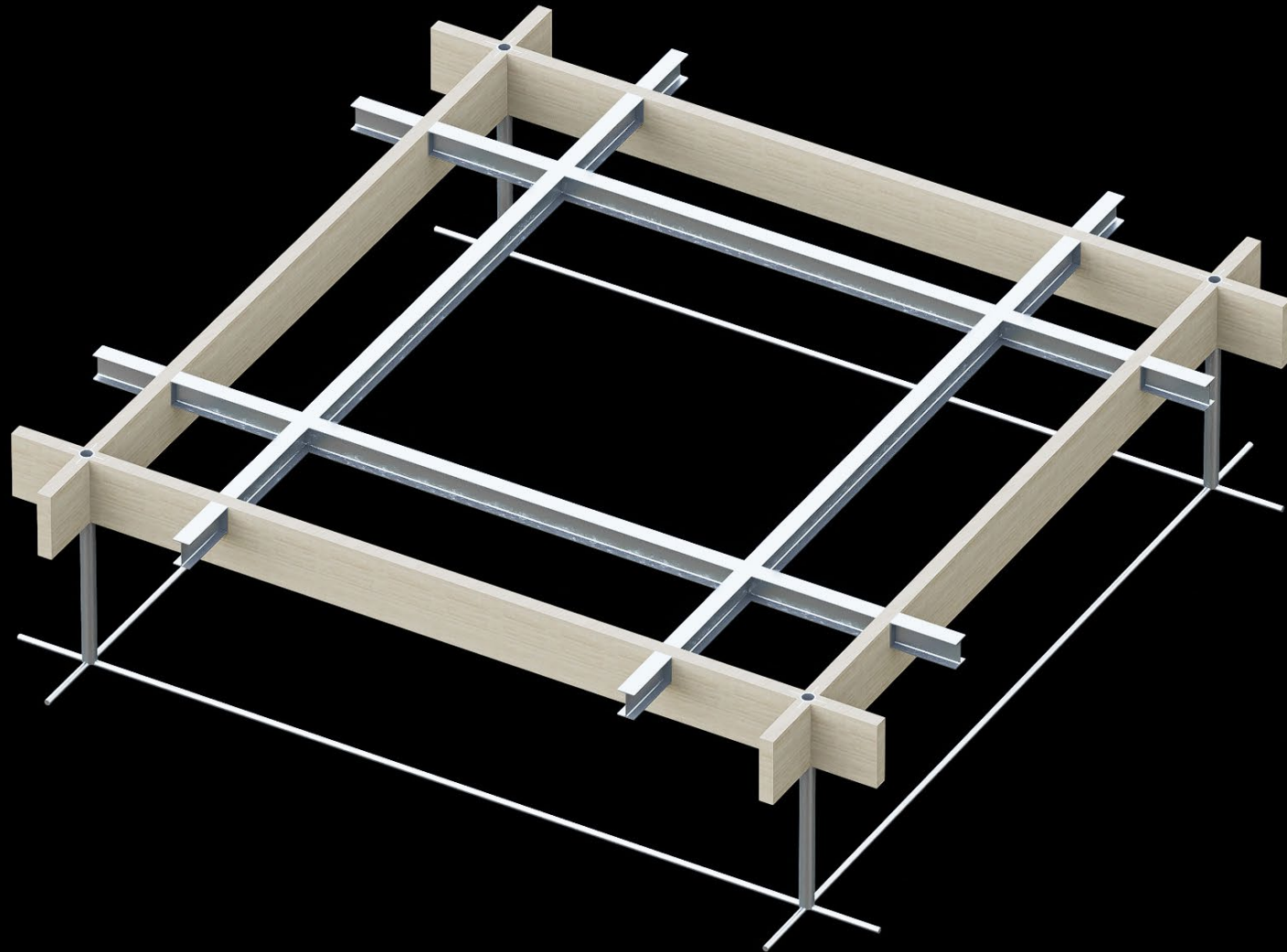
development

LIGHT CATCHER



main wooden beams, steel tensions cables and steel push rods

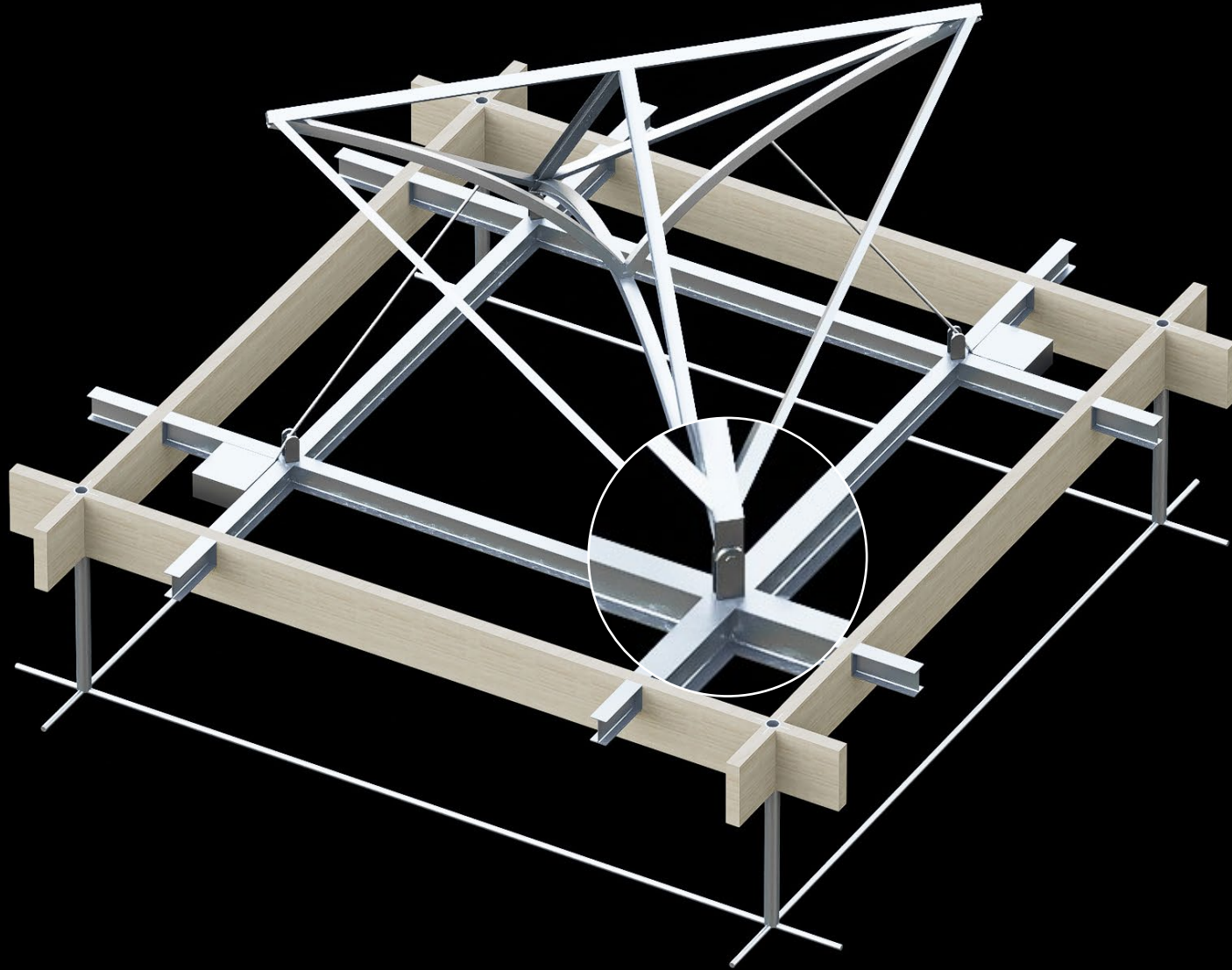
development
LIGHT CATCHER



secondary steel beams

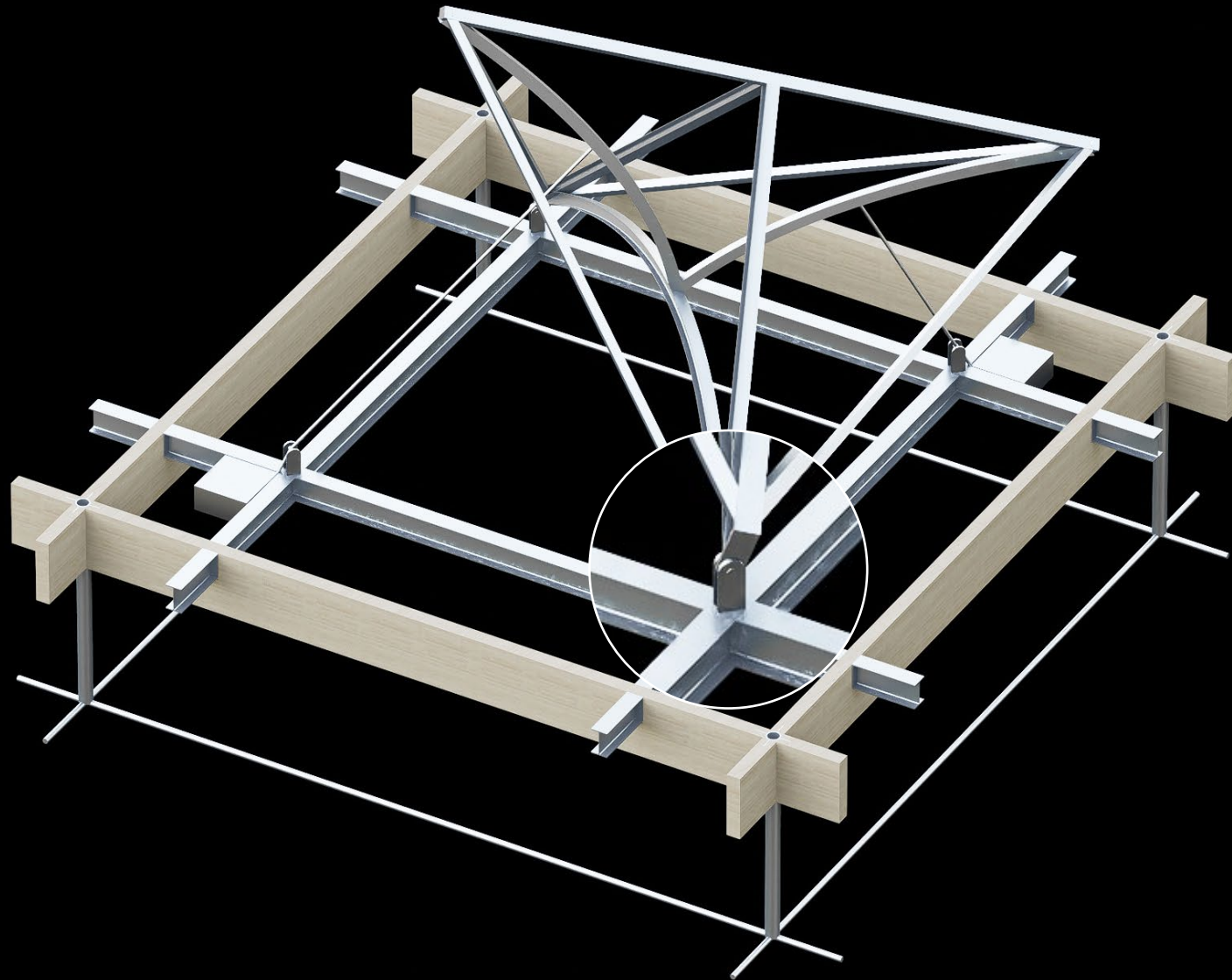
development

LIGHT CATCHER



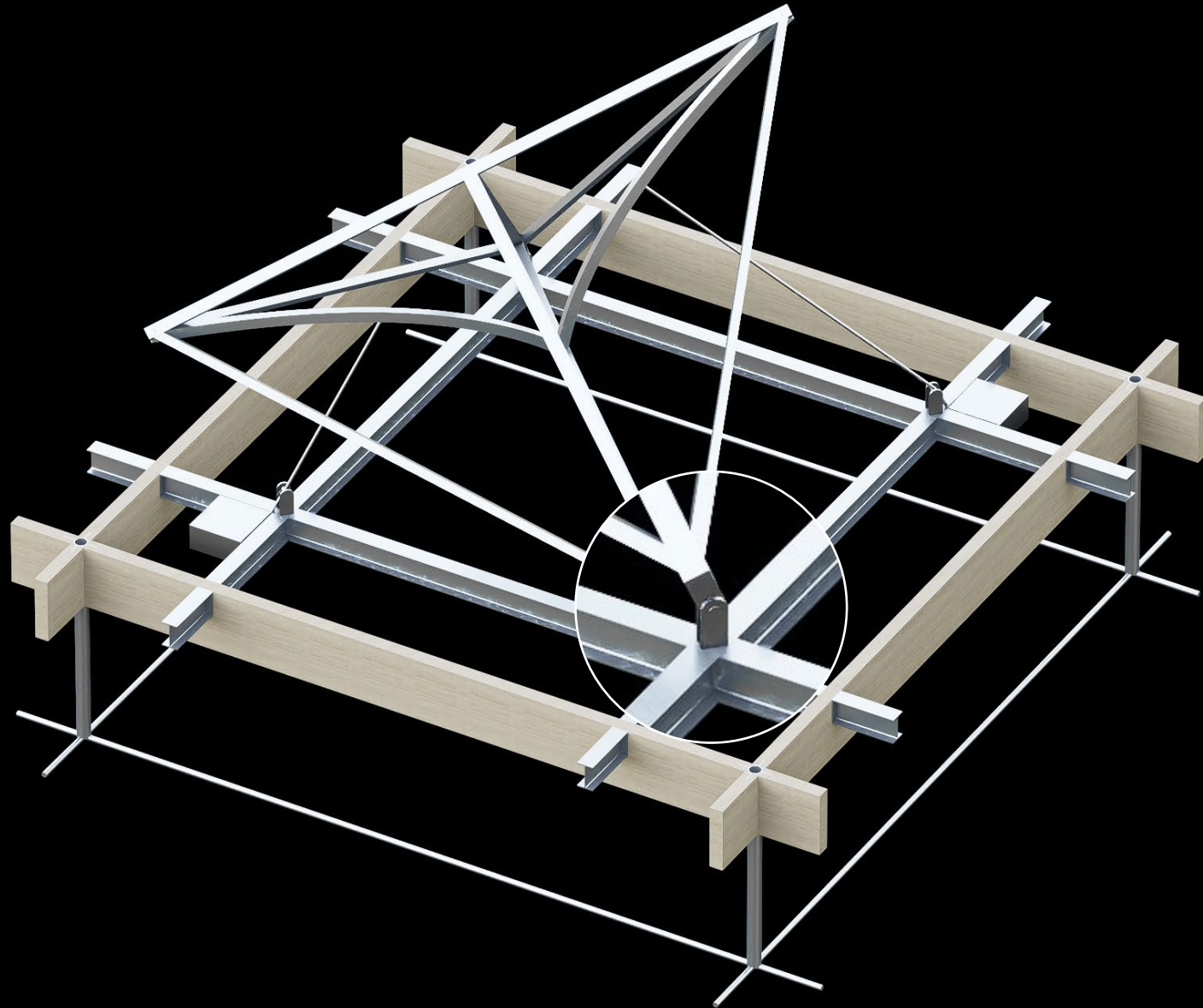
steel frame light catcher balanced by tension cables connected to hinges

development
LIGHT CATCHER



position west 22.5 degrees

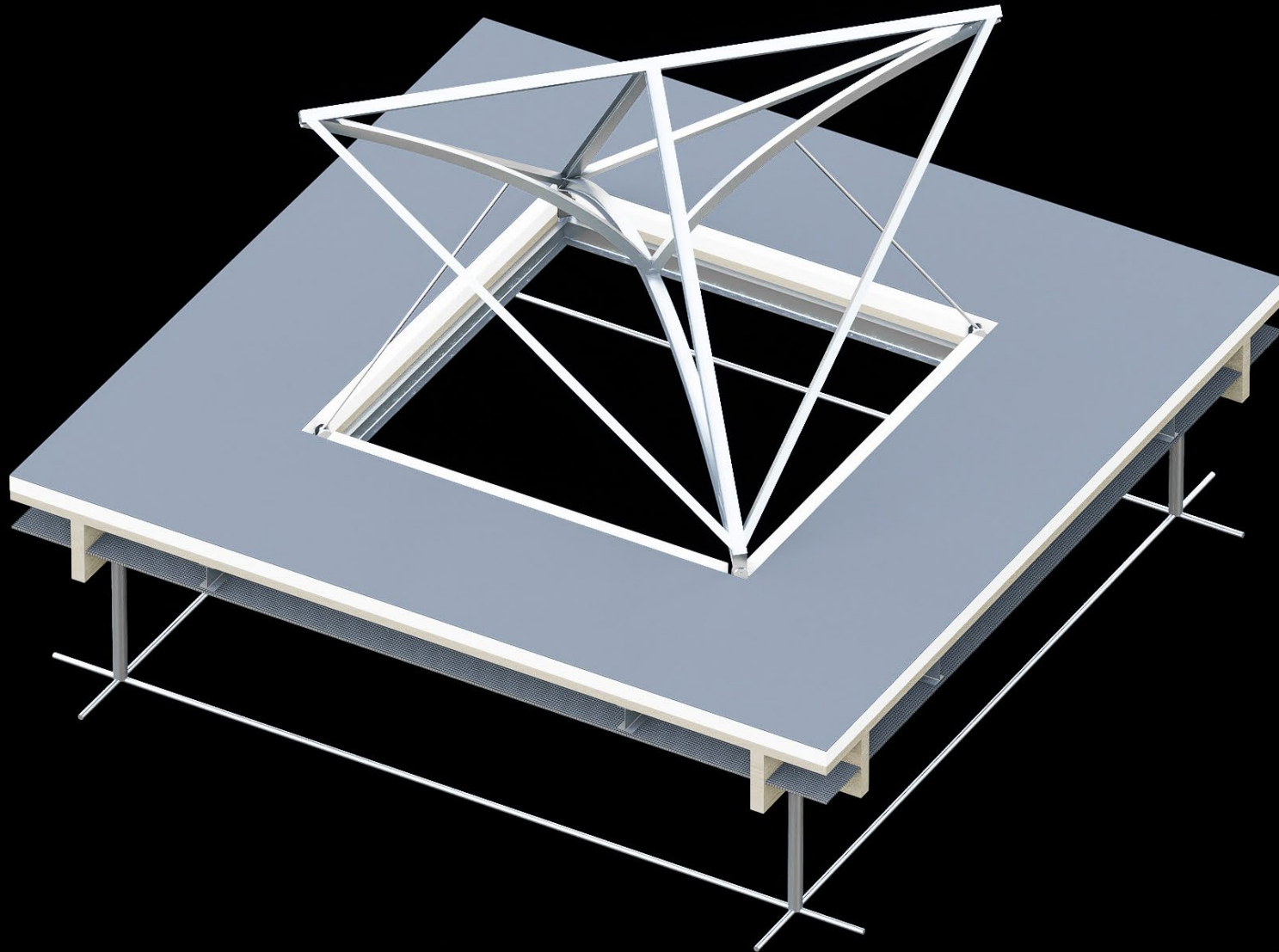
development
LIGHT CATCHER



position east 22.5 degrees

development

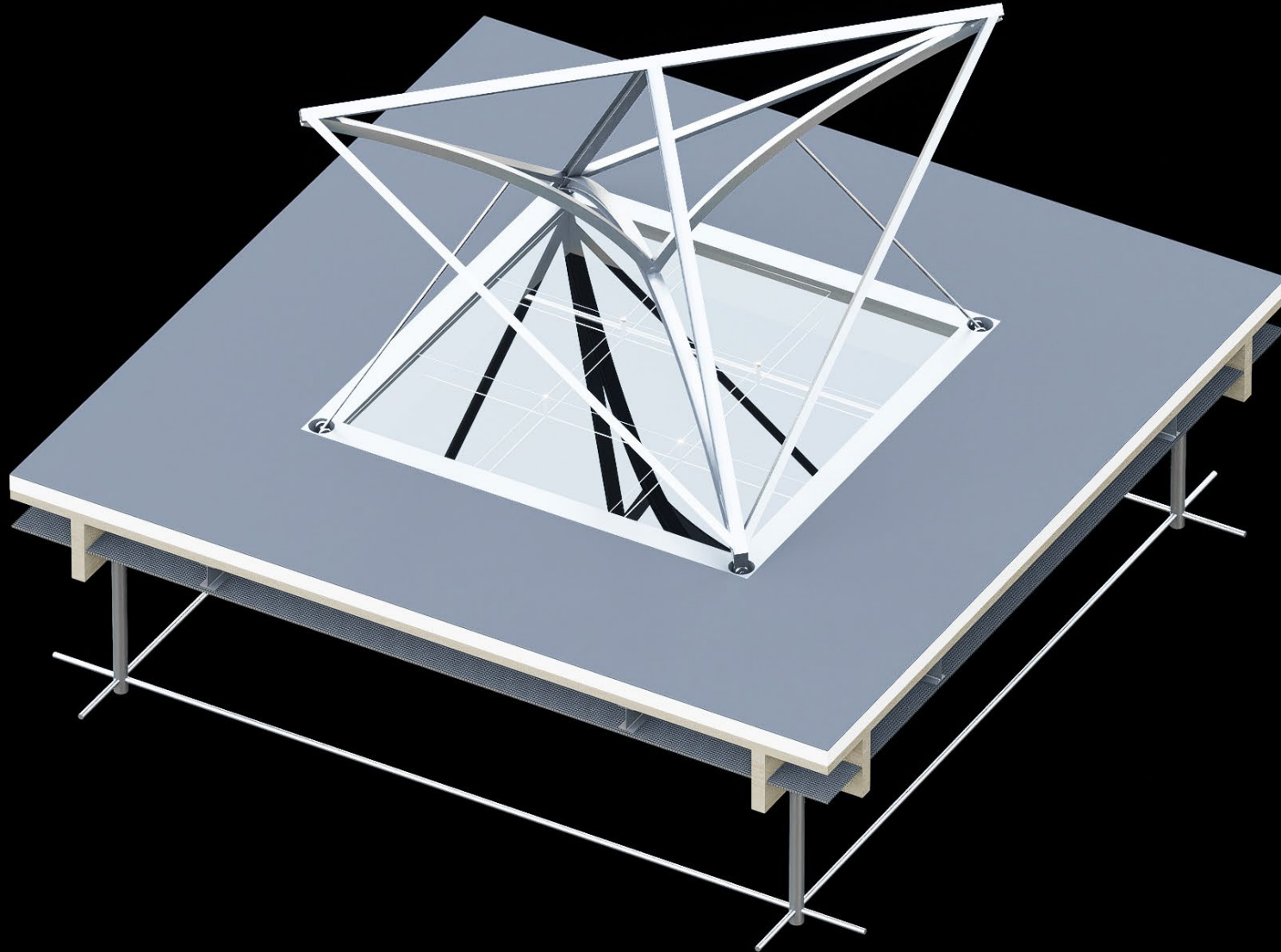
LIGHT CATCHER



suspended steel ceiling, clt roof, insulation & waterproof layer

development

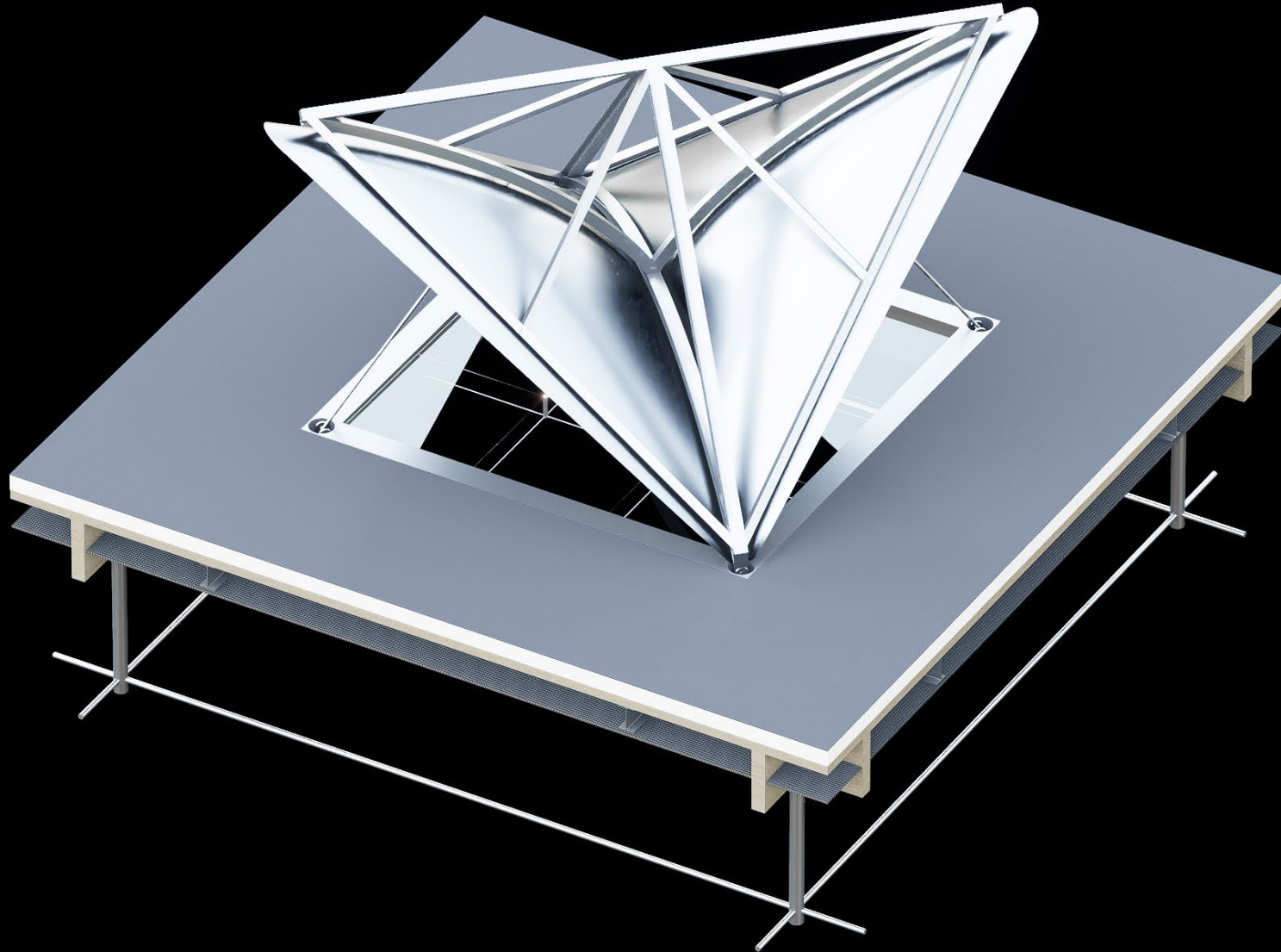
LIGHT CATCHER



glass solar roof including lighting supported by steel tension cables

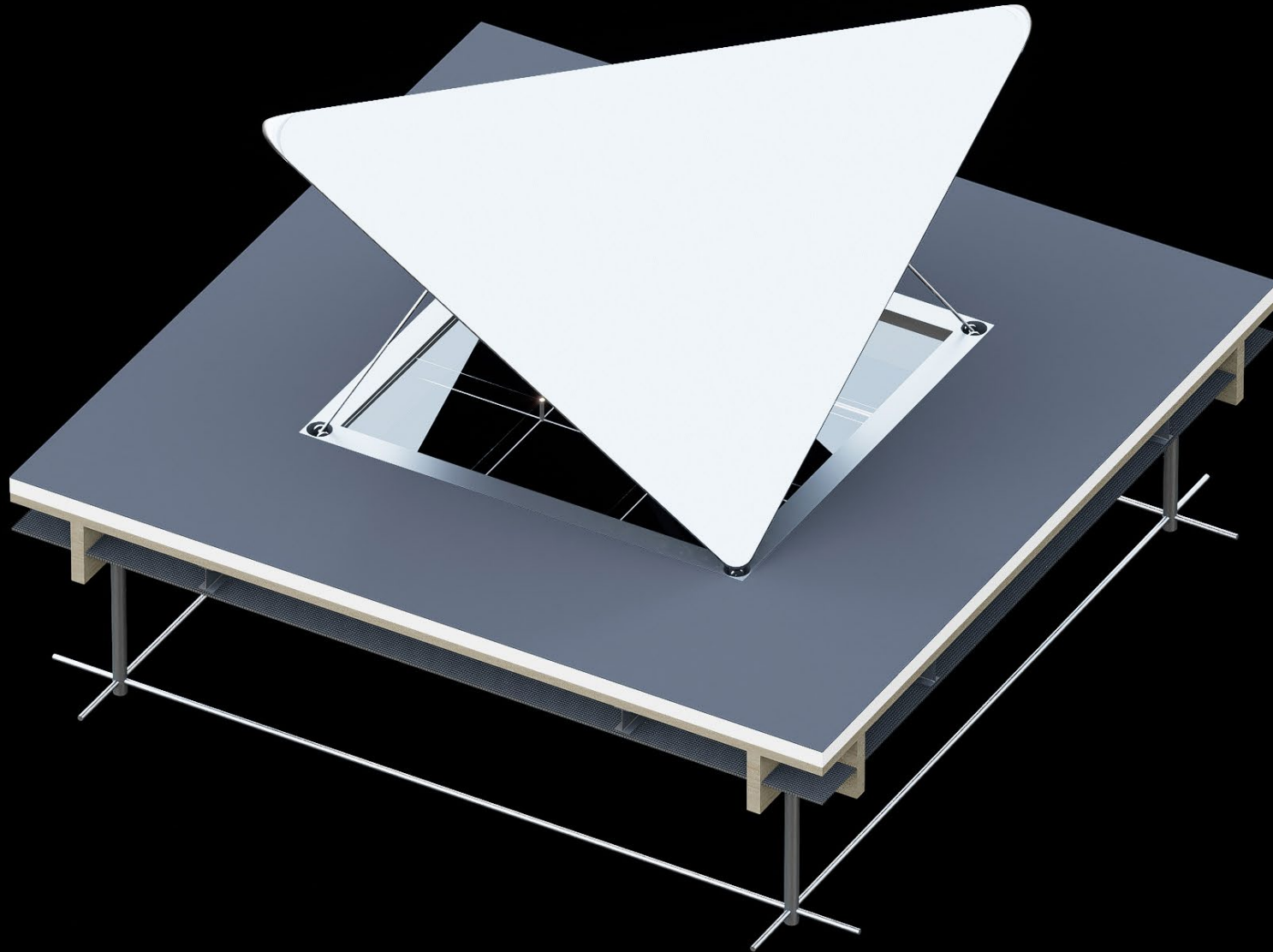
development

LIGHT CATCHER



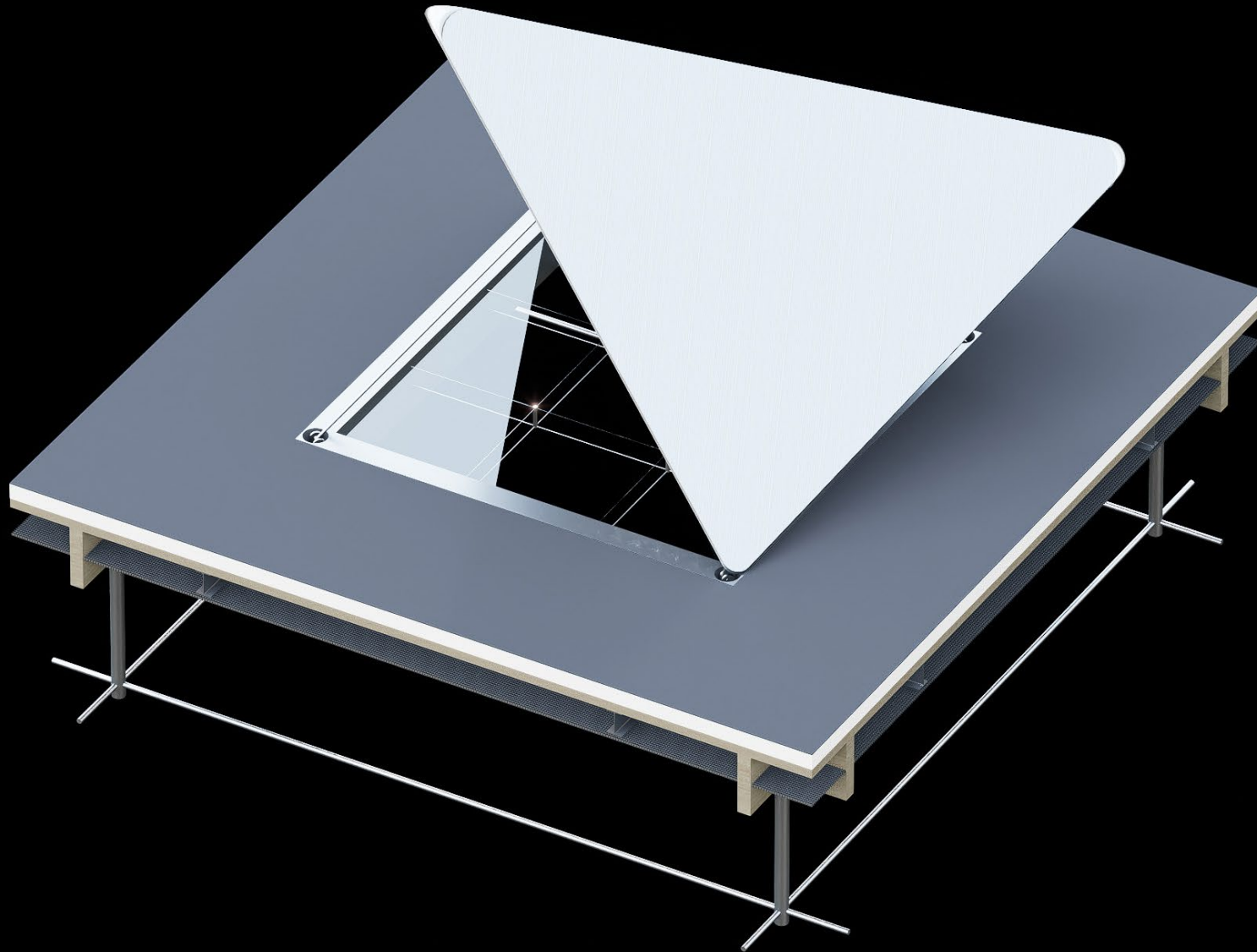
inner aluminium curved surface to reflect sunlight

development
LIGHT CATCHER



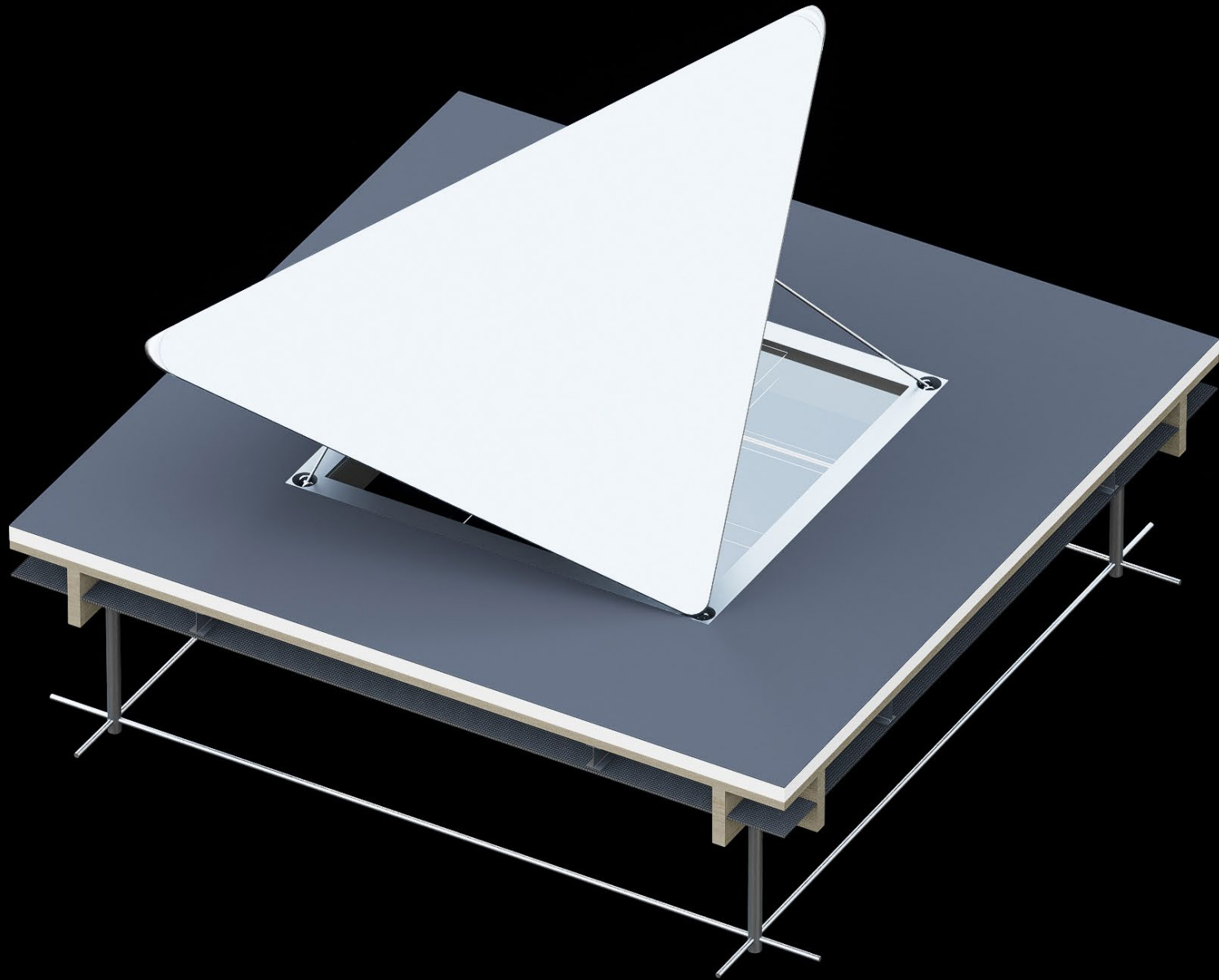
outer aluminium surface

development
LIGHT CATCHER



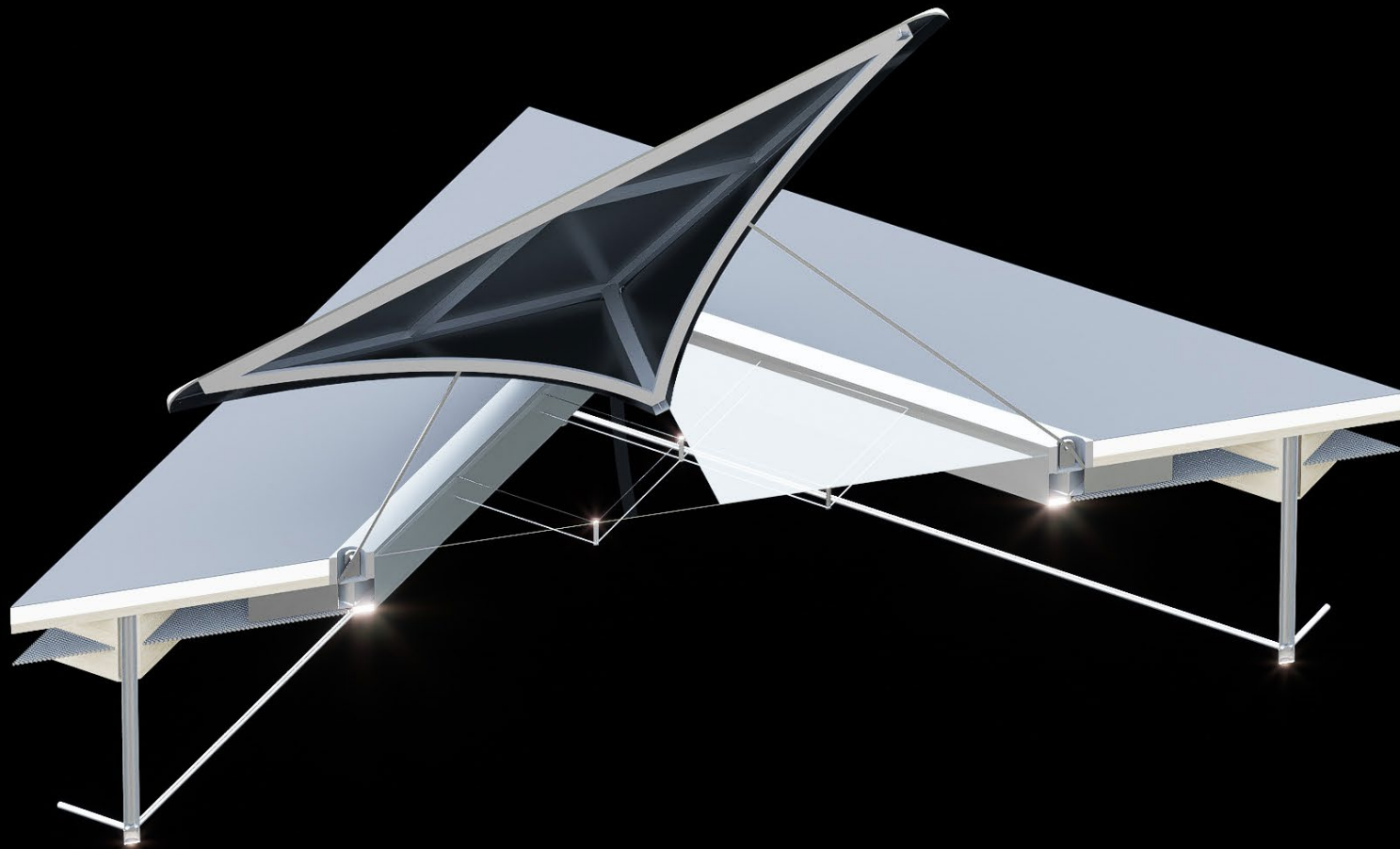
position west 22.5 degrees

development
LIGHT CATCHER



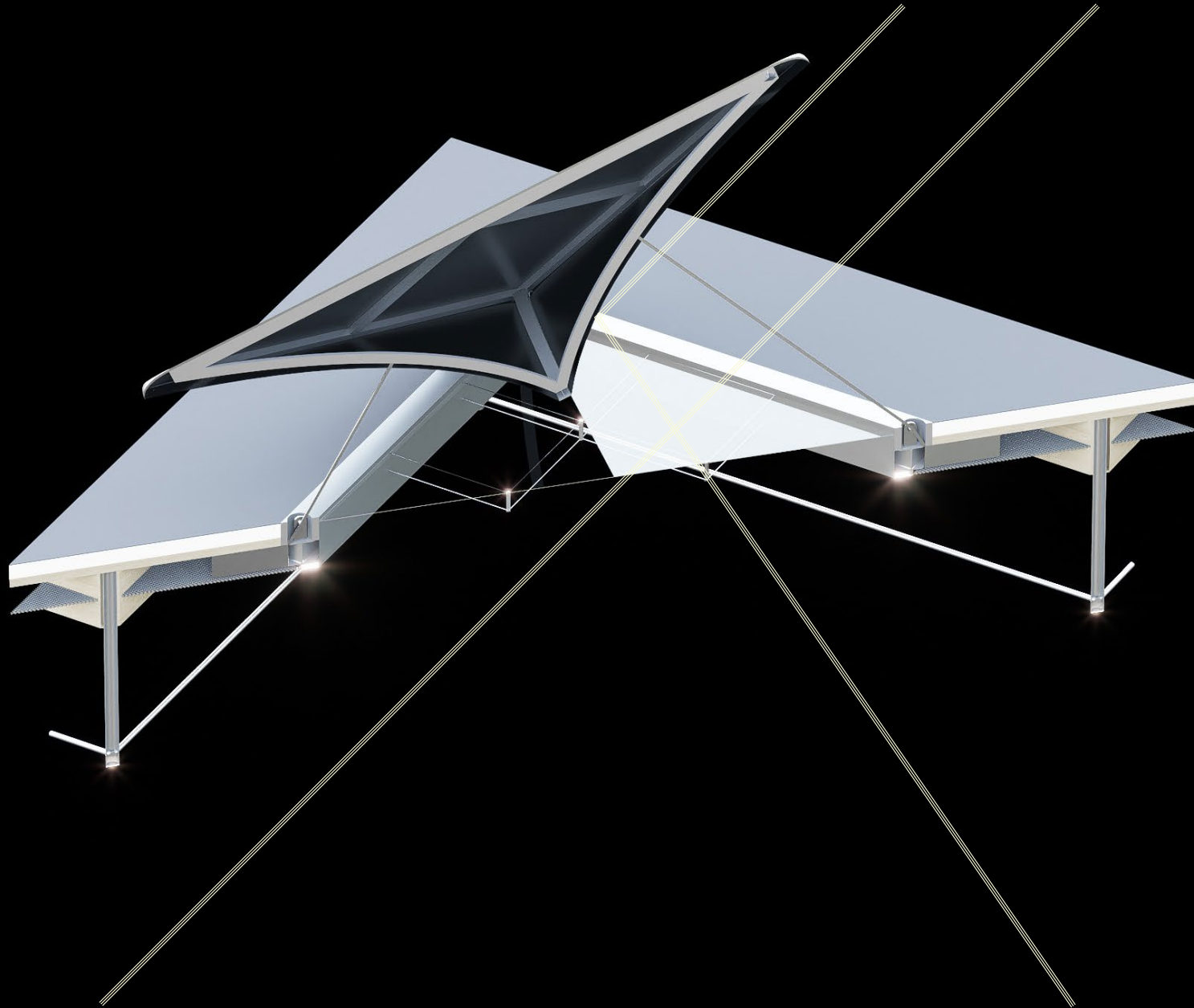
position east 22.5 degrees

development
LIGHT CATCHER



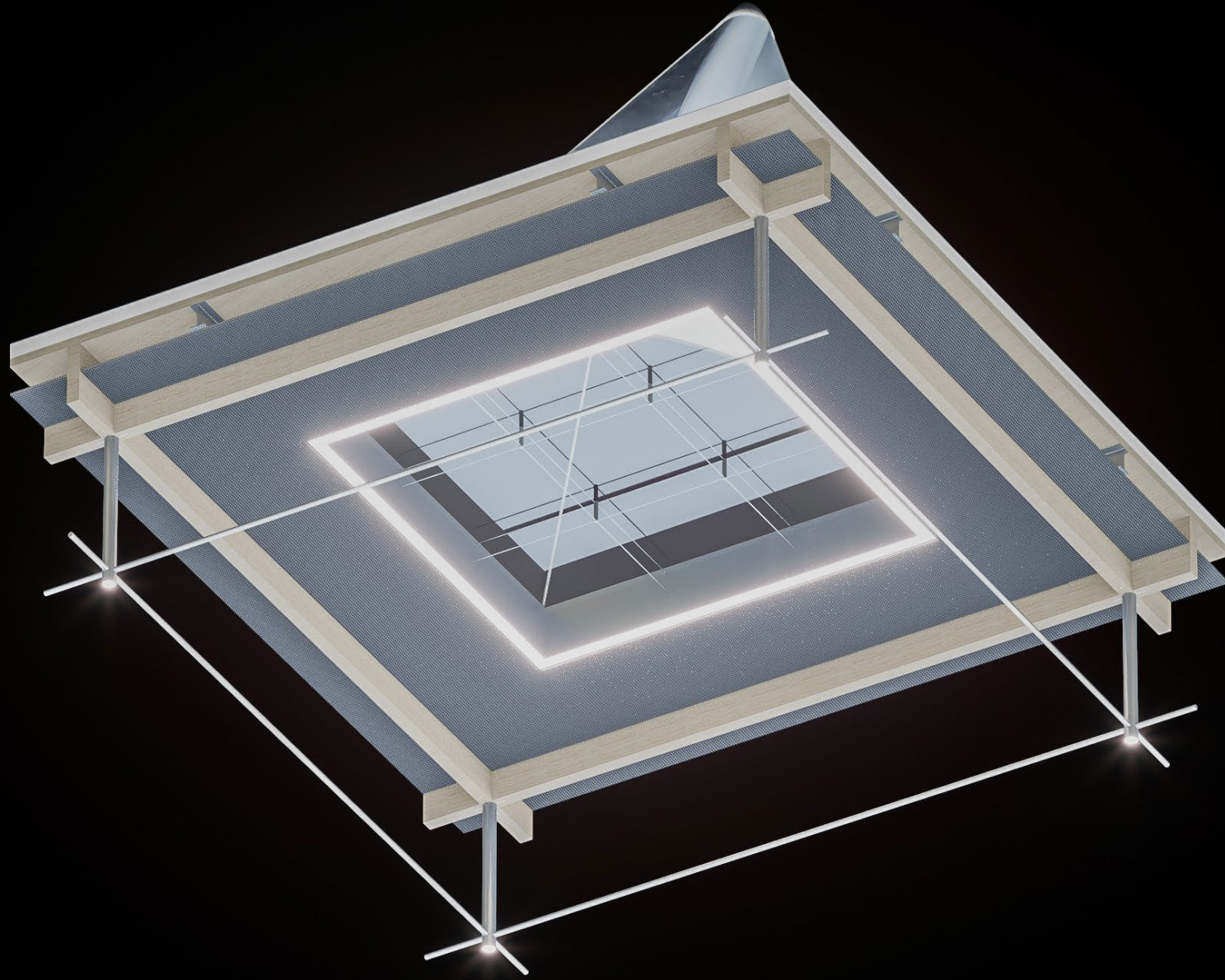
section east position

development
LIGHT CATCHER



spread and maximize sunlight during morning and evening & increase energy production of glass solar panels

development
LIGHT CATCHER



view from below

development

MORNING - EAST



development

EVENING - WEST



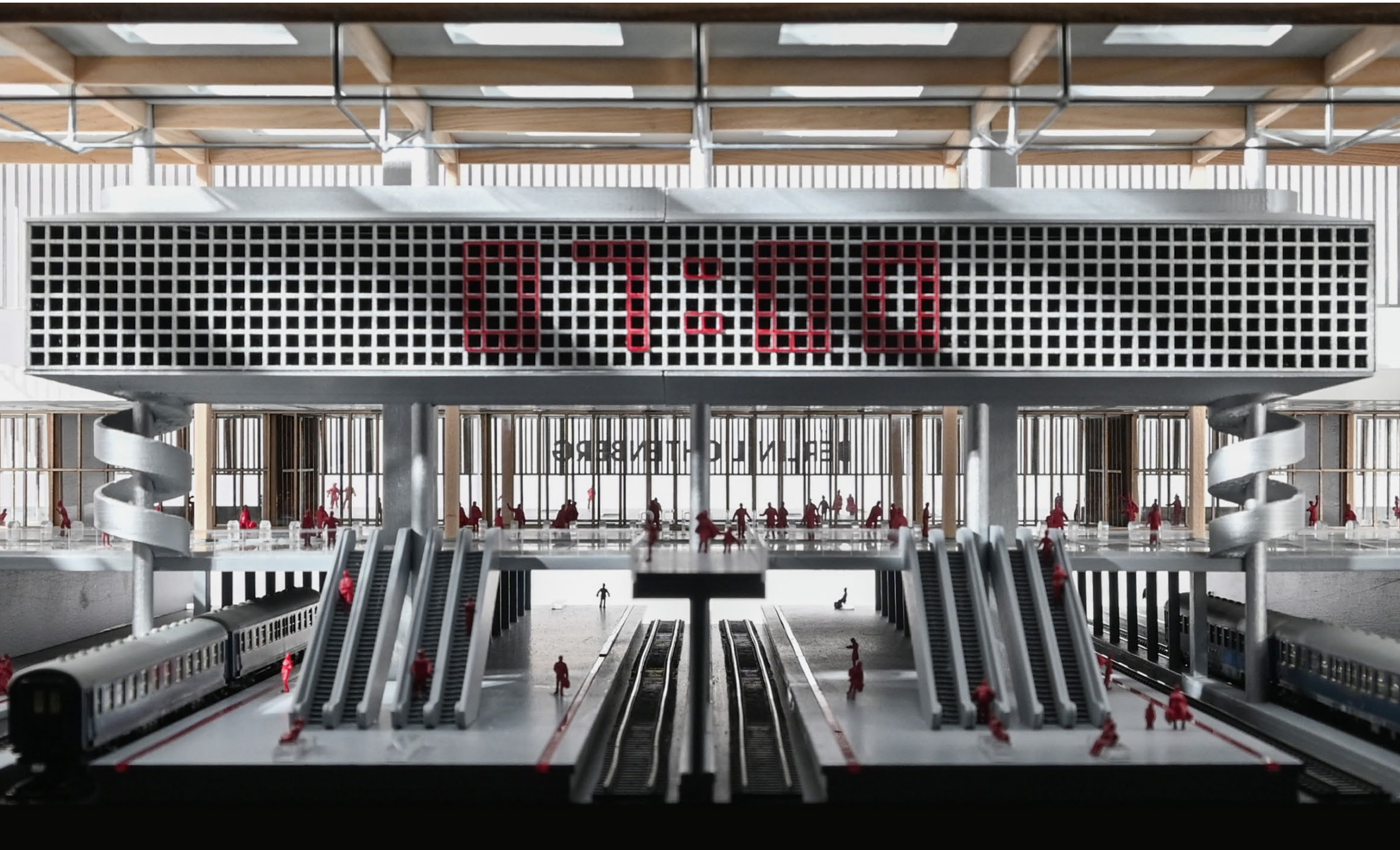
development

BERLIN - EAST&WEST



development

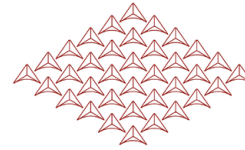
INTERIOR EFFECT



development STRUCTURE

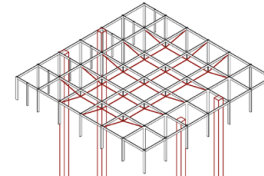
Skylights

steel construction, hinges on secondary metal structure, tensions cables for movement



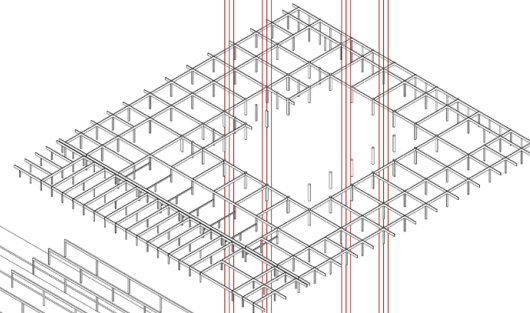
Crown

wood construction, tension cables used for main span, stability from concrete cores



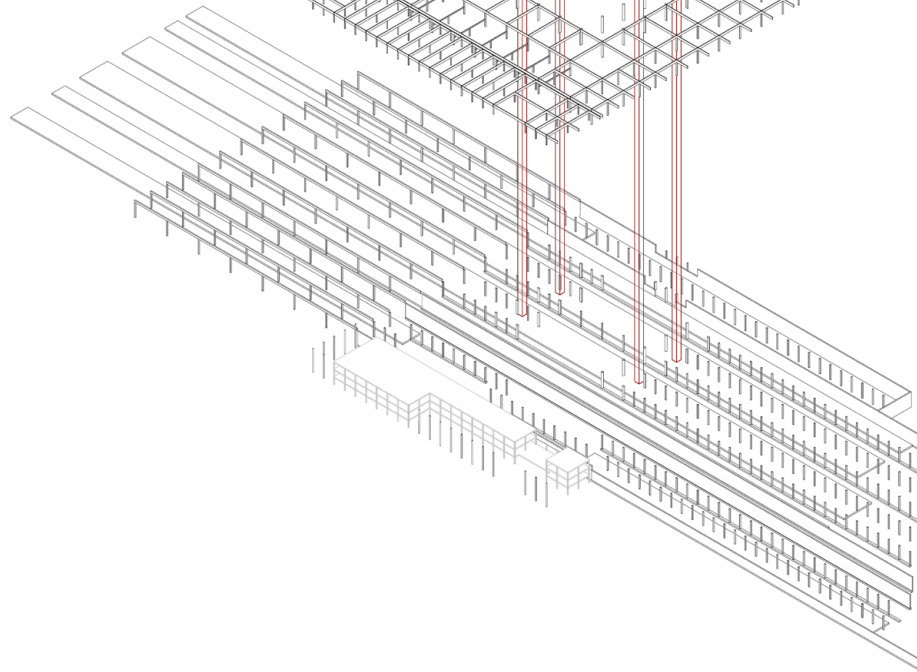
Building

wood construction, 6m overhangs for floating facade



Base

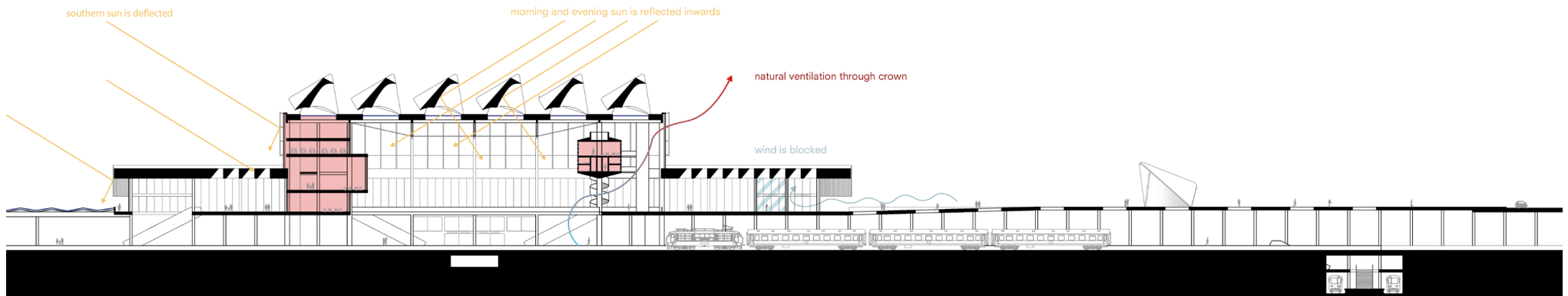
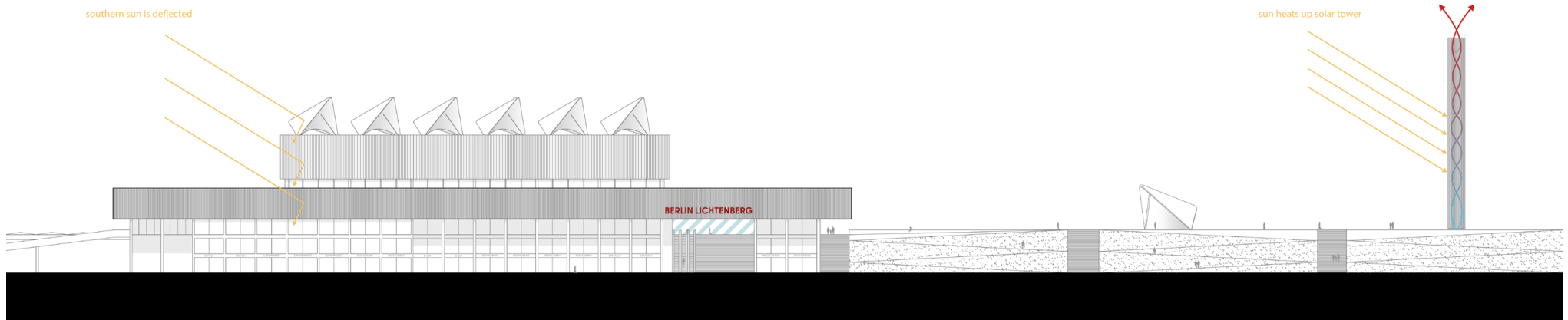
mainly concrete, bolted together, circular connections, foundation for building and crown



Existing Building

concrete structure re-used as office building and for restaurants, new entrance created through existing building

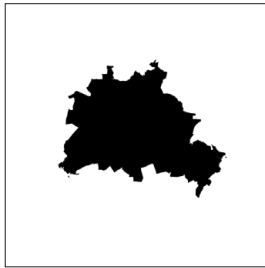
development
CLIMATE DESIGN



INTRODUCTION
RESEARCH
DESIGN BRIEF
CONCEPT
IMPLEMENTATION
DEVELOPMENT
CONCLUSION

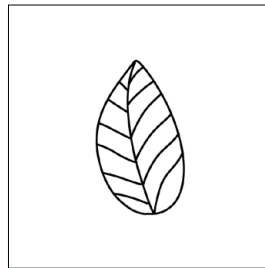
OVERVIEW THEMES

Studio



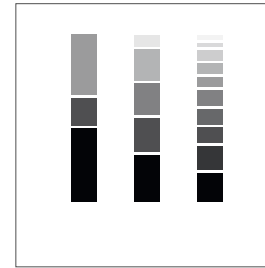
Berlin

Research



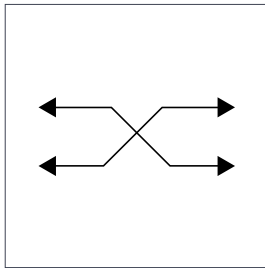
Sustainability

Design Brief

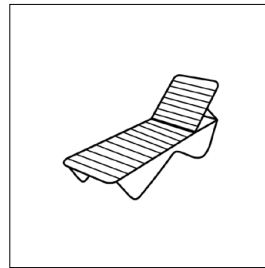


Program

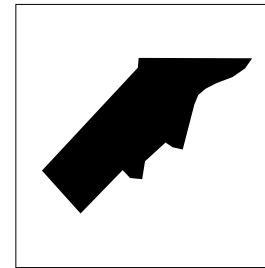
Design Driver



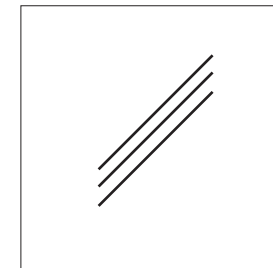
Flows



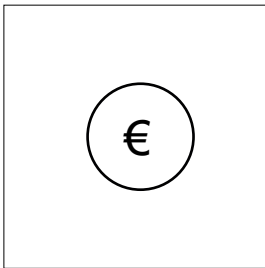
Comfort



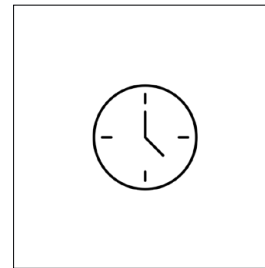
Site



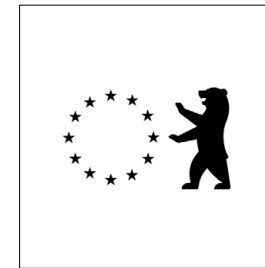
Light



Economy



Time specificity



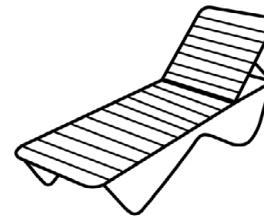
Client

conclusion

GOAL



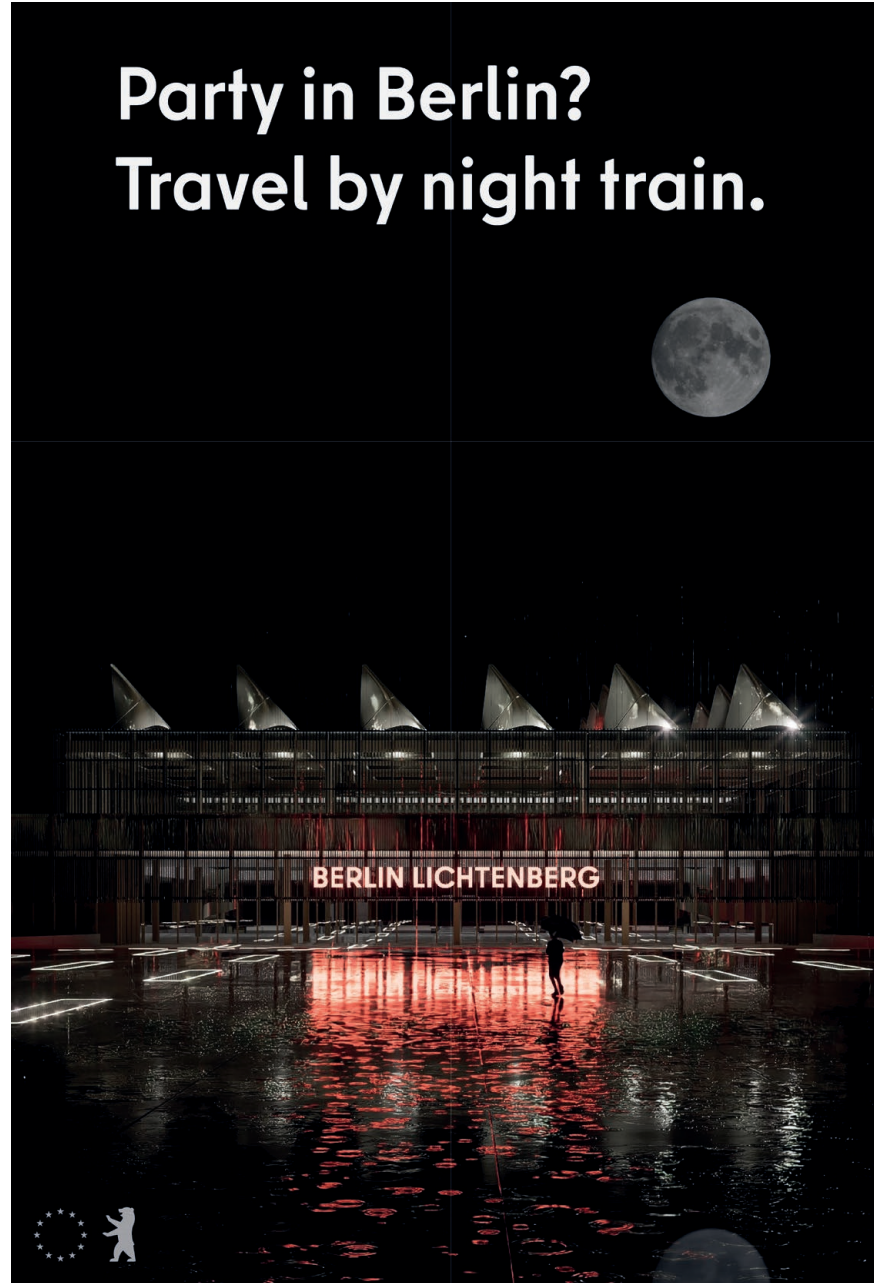
Sustainability



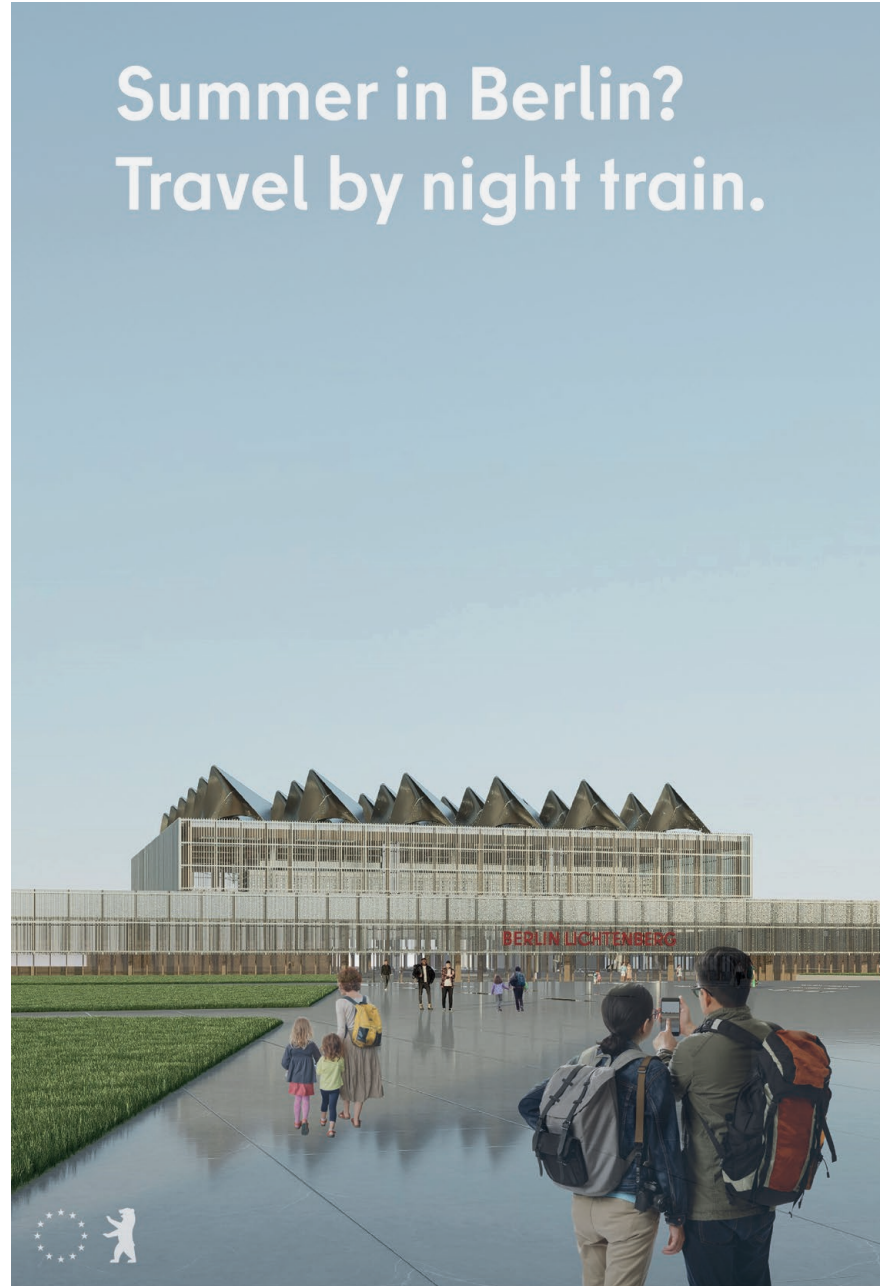
Comfort

Convince people with comfort, so that they will travel sustainable

Party in Berlin? Travel by night train.



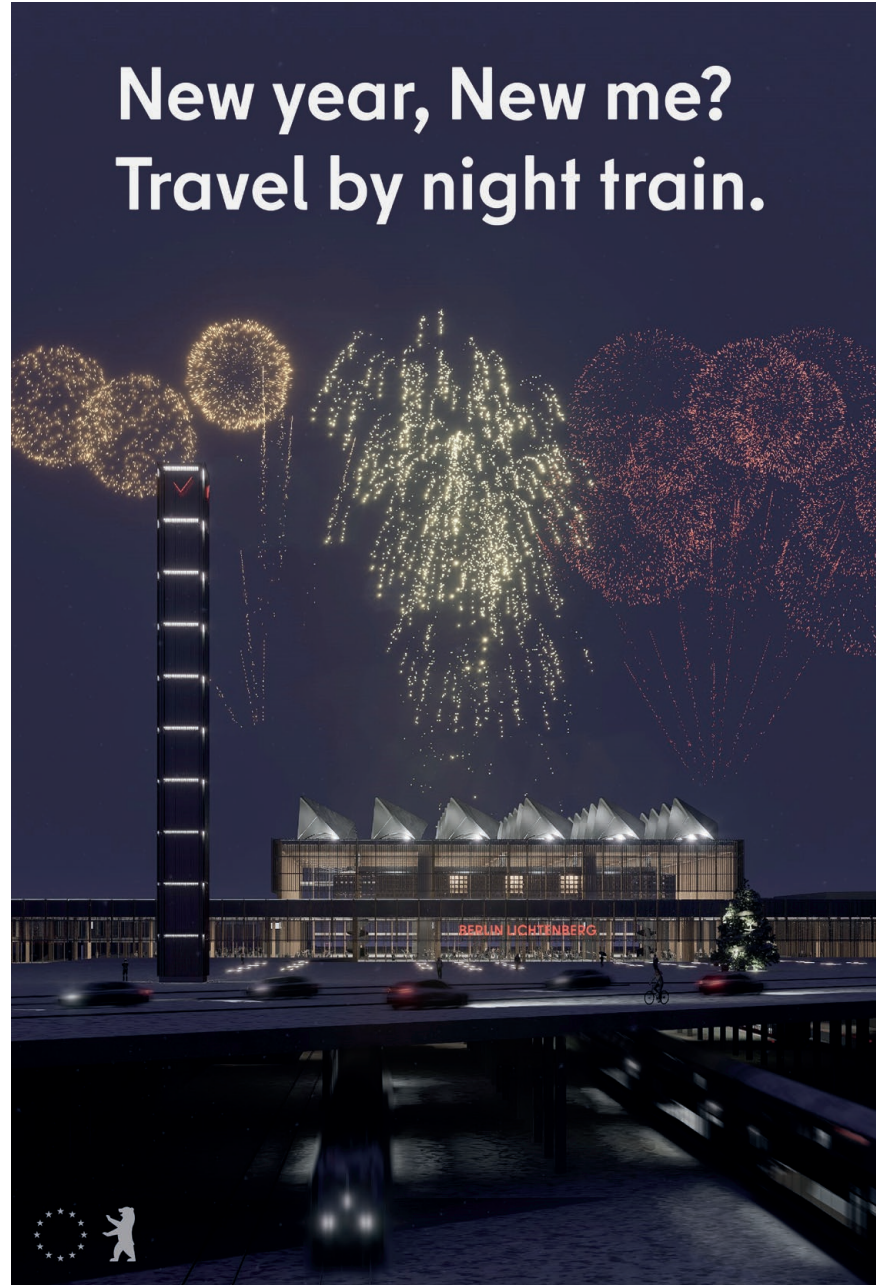
Summer in Berlin? Travel by night train.



Business in Berlin? Travel by night train.



New year, New me? Travel by night train.



conclusion

SUSTAINABILITY

$$80 \text{ kg co}_2 \times 15.000.000 : 282 \text{ kg co}_2/\text{m}^3$$

Emmissions saved per
passenger per
short flight

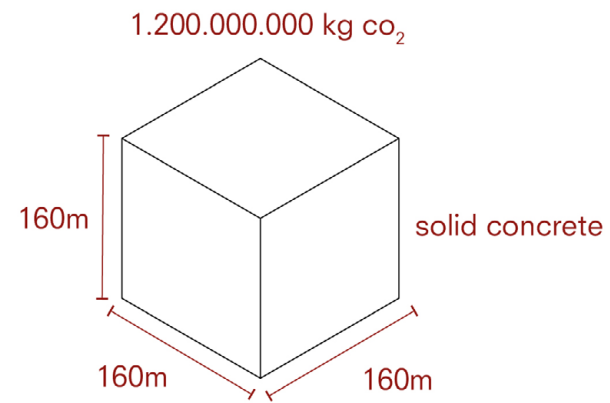
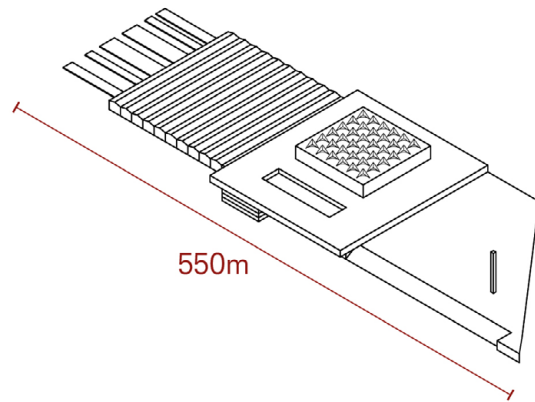
Estimation total annual
passengers to and from
Berlin
instead taking night train

co₂ emmissions for 1m³
concrete C30/37

Kommenda, N. (2021, August 25). How your flight emits as much CO2 as many people do in a year. The Guardian. <https://www.theguardian.com/environment/ng-interactive/2019/jul/19/carbon-calculator-how-taking-one-flight-emits-as-much-as-many-people-do-in-a-year>
Byggeriets materialepyramide. (n.d.). KADK/CINARK. <https://www.materialepyramiden.dk/>

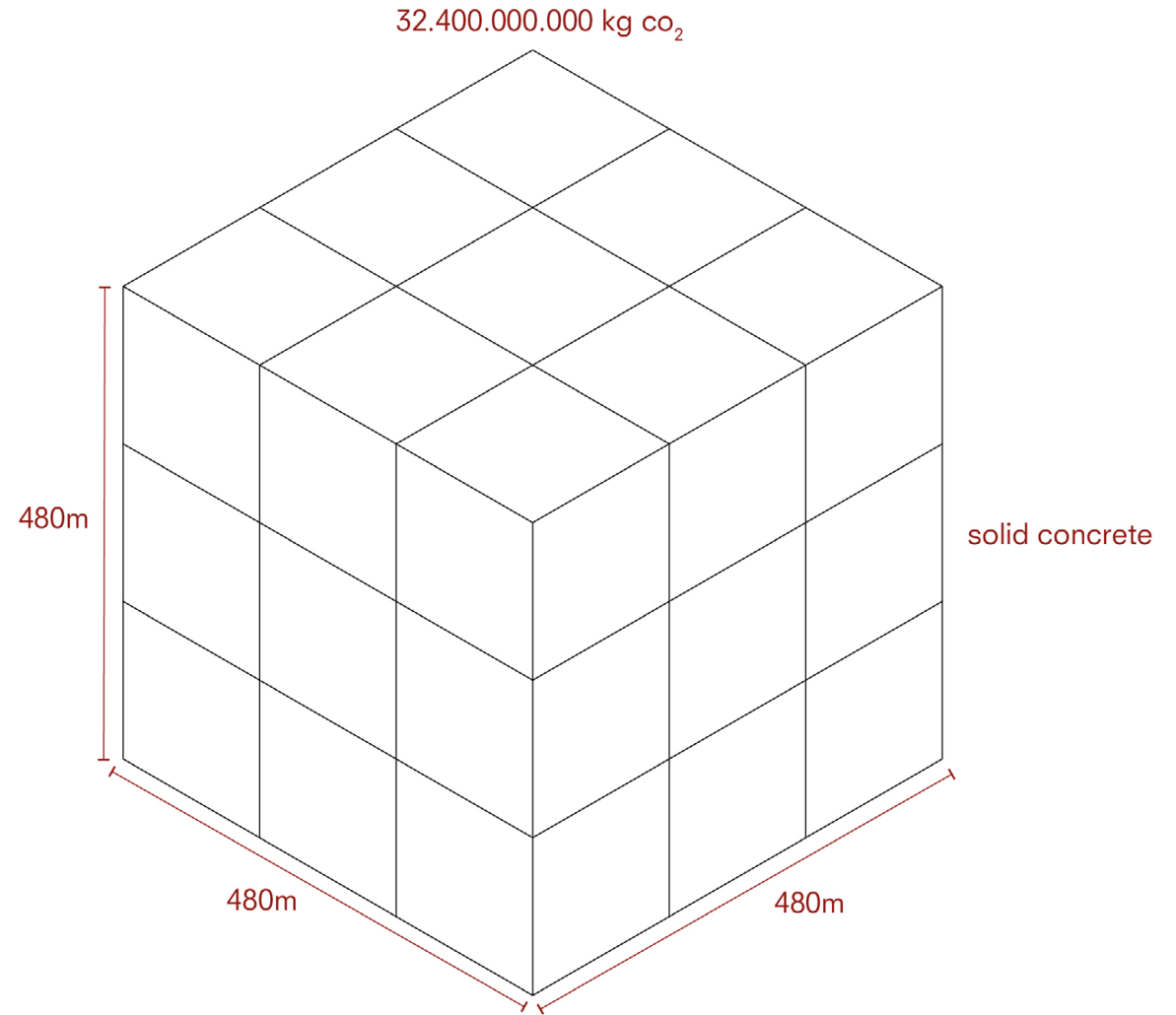
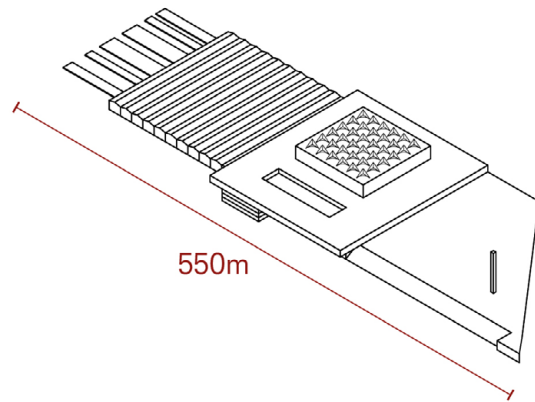
conclusion

1 YEAR IMPACT



conclusion

27 YEAR IMPACT



conclusion

DOES CONTEMPORARY EUROPE NEED NIGHT TRAIN HUBS?



conclusion

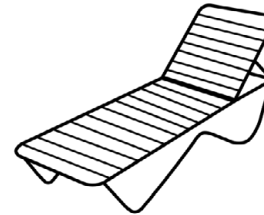
YES

BERLIN LICHTENBERG



conclusion

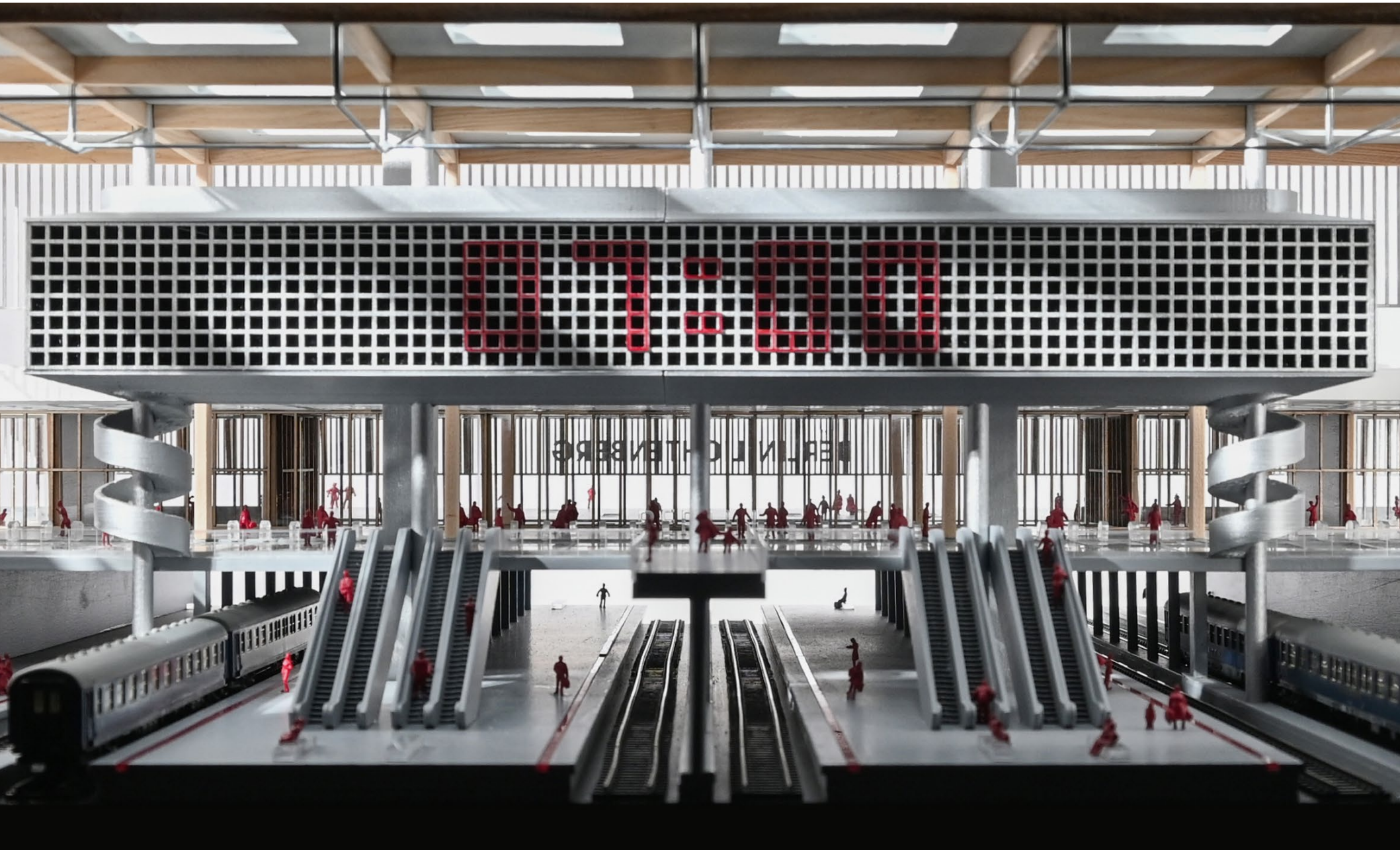
IT IS IMPORTANT TO KEEP IN MIND....



**ARCHITECTURE SHOULD STRIVE TO FIND A BALANCE
BETWEEN COMFORT AND SUSTAINABILITY**

conclusion

PAST, PRESENT & FUTURE



DO YOU WANT TO TRY THE NIGHT TRAIN?



Nightjet

Vienna, Zurich, Basel, Munich,
Innsbruck

<https://www.nightjet.com/>



European Sleeper

Berlin, Prague

<https://www.europeansleeper.eu/>

