

Ambiguous Lines

Architectures for/of Urban Interstitial Ecologies

Hyungsoon Kim

Architectural Design Crossovers

Framework



Jonathan Webb, Railway viaduct from Greenwich to London Bridge station

Linear Infrastructures and Urban Interstices

*"A third effect, [...] involves a fundamental **paradigm shift** from viewing cities in formal terms to looking at them in dynamic ways. Hence, familiar urban typologies of square, park, district, and so on are of less use or significance than are the **infrastructures, network flows, ambiguous spaces**, and other **polymorphous conditions** that constitute the contemporary metropolis."*

*"Unlike the treelike, hierarchical structures of traditional cities, the contemporary metropolis functions more like a **spreading rhizome**, **dispersed and diffuse**, but at the same time **infinitely enabling**."*

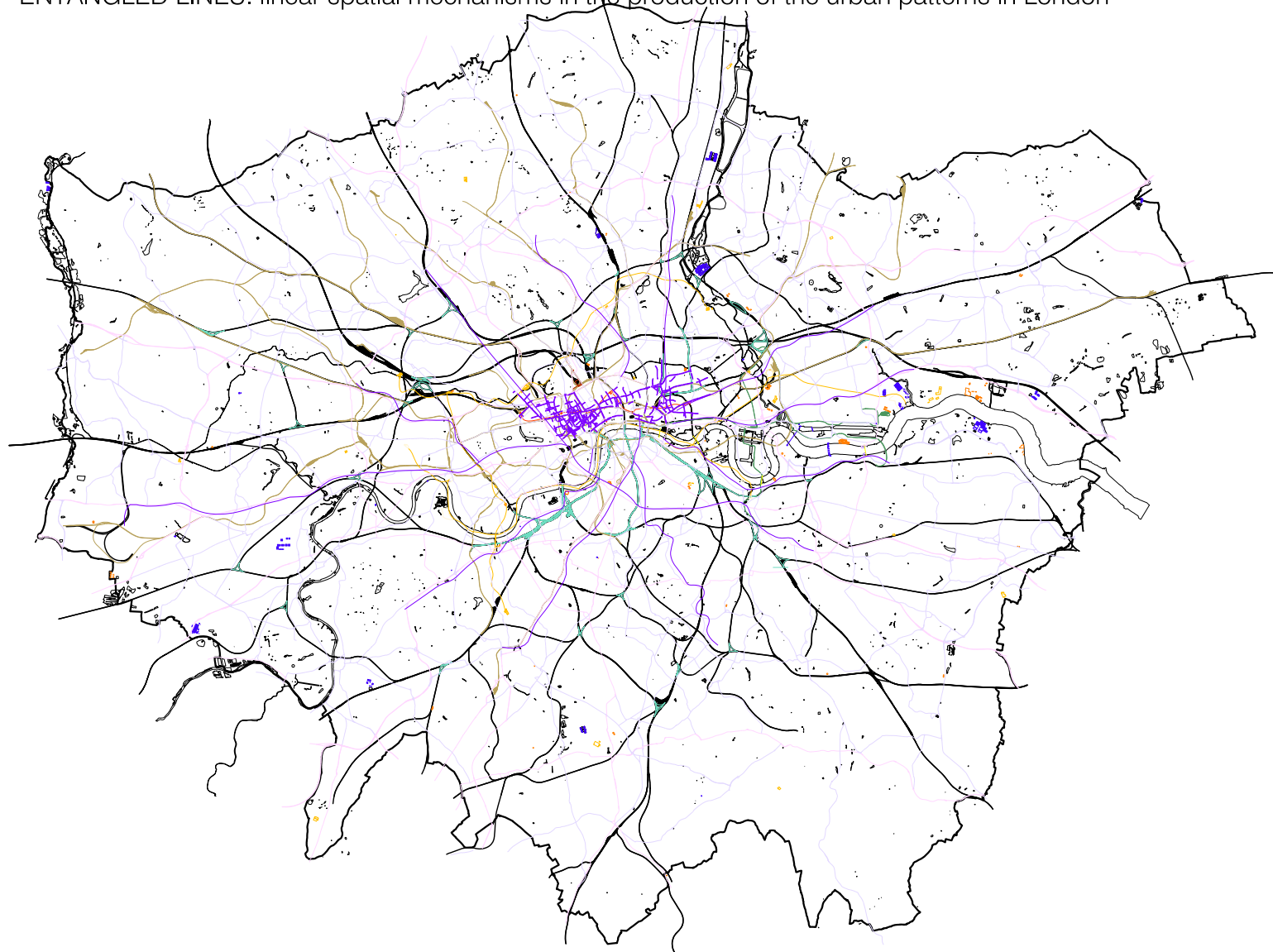
Wall, Alex. 1999. "Programming the Urban Surface."



*"Unlike trees or their roots, the **rhizome connects any point to any other point.** [...] It has neither beginning nor end, but always a **middle (milieu)** from which it grows and overflows, [constituting] **linear multiplicities.**"*

Corner, James. 2014. *The Landscape Imagination: Collected Essays of James Corner 1990-2010*

ENTANGLED LINES: linear spatial mechanisms in the production of the urban patterns in London



INFRASTRUCTURE Networks

WATER Networks

- Water (river, canal, dock, reservoir)
- Energy (waterworks)
- Peculiarity (barrier, cable car, ferry, dock bridge)

RAILWAY Networks

- Railway (national rail, light rail)
- Energy (gasworks, coal yards)
- Peculiarity (viaduct, embankment, junction)

SUBWAY Networks

- Subway (underground tube)
- Peculiarity (defunct; post rail, pneumatic rail, tram tunnel, station)

TUNNEL Networks

- Tunnel (tideway, power)
- Energy (tideway site, substation)
- Peculiarity (various tunnel; disused, foot, etc.)

ROAD Networks

- Road (trunk, primary)
- Peculiarity (high street, cycle super highway)

KEY Spaces

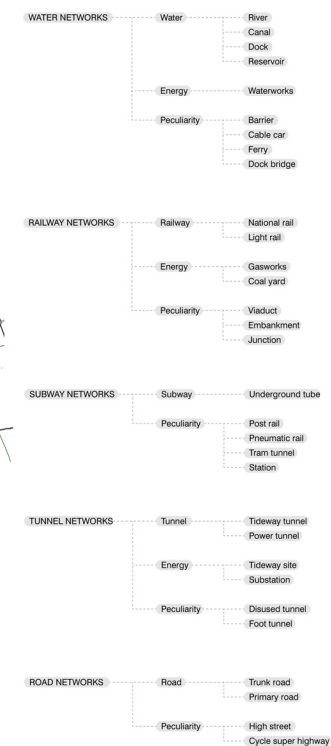
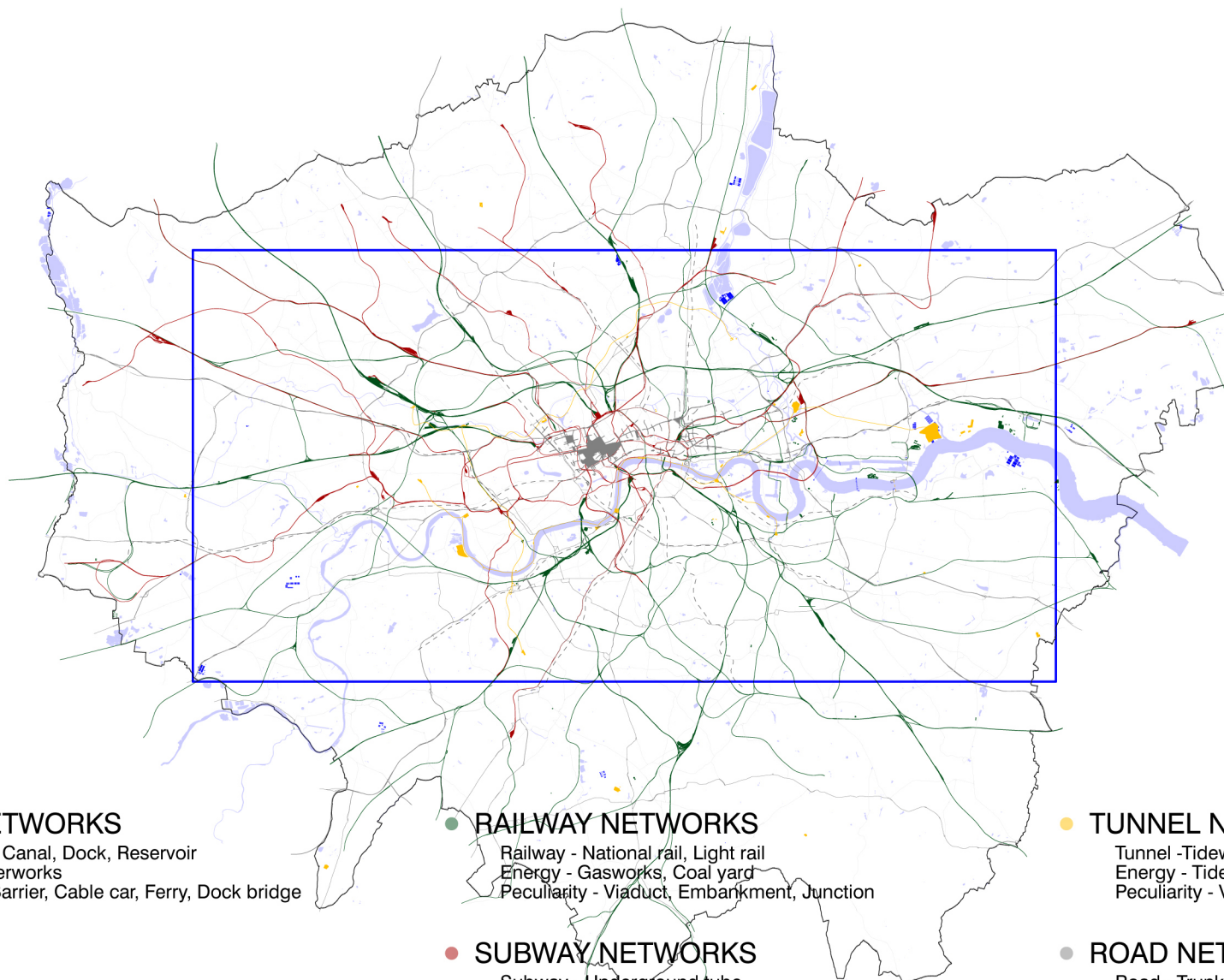
- interstitial spaces, leftovers, in-betweens, unprogrammed, derelicts zones, non-places, misused, disused, abandoned spaces, defunct former infrastructures, brown fields, defunct former infrastructures, brown fields,



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5

10



● WATER NETWORKS

Water - River, Canal, Dock, Reservoir
Energy - Waterworks
Peculiarity - Barrier, Cable car, Ferry, Dock bridge

● RAILWAY NETWORKS

Railway - National rail, Light rail
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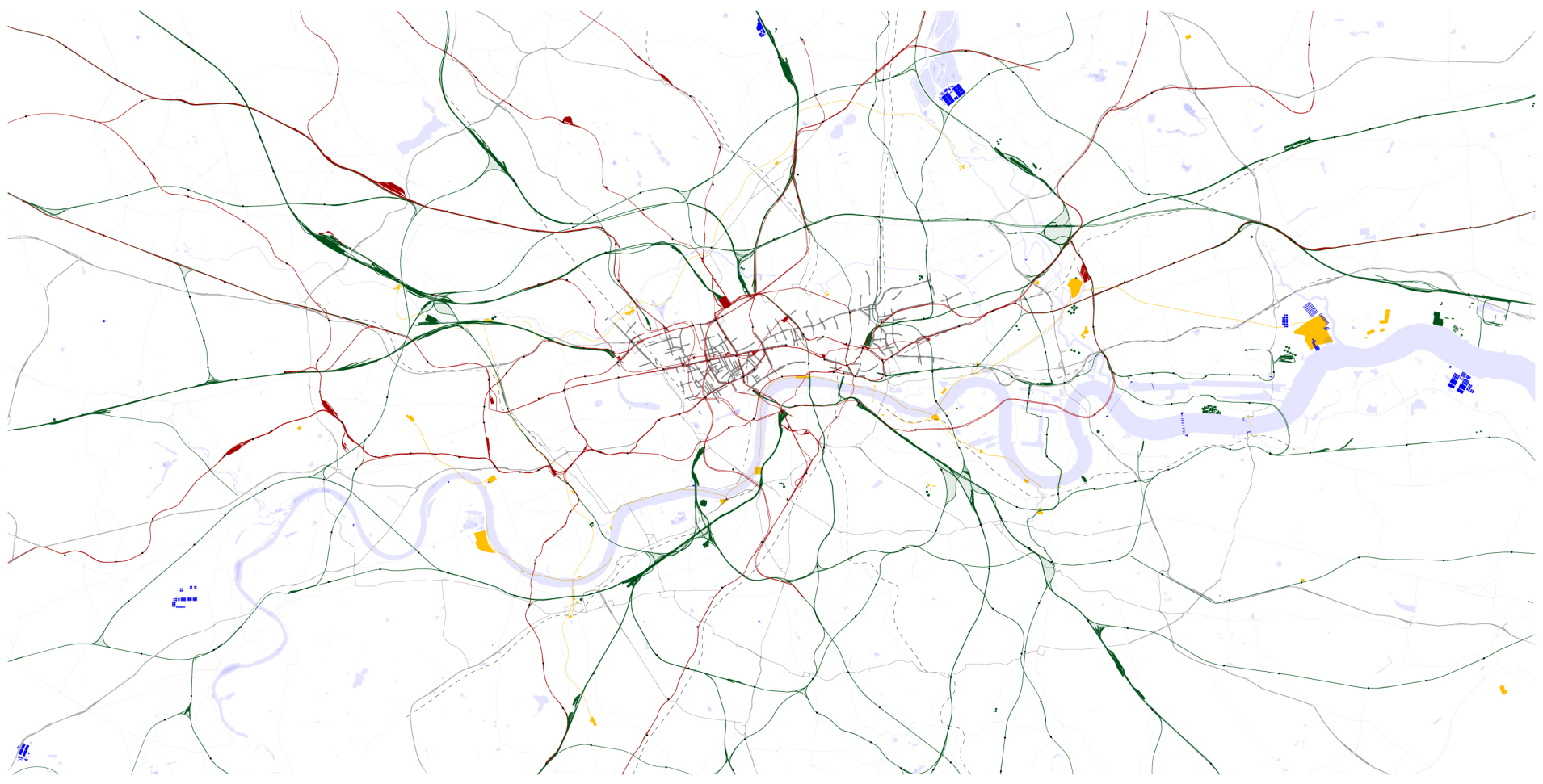
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Peculiarity - Defunct; Post rail, Pneumatic rail, Tram tunnel, Station

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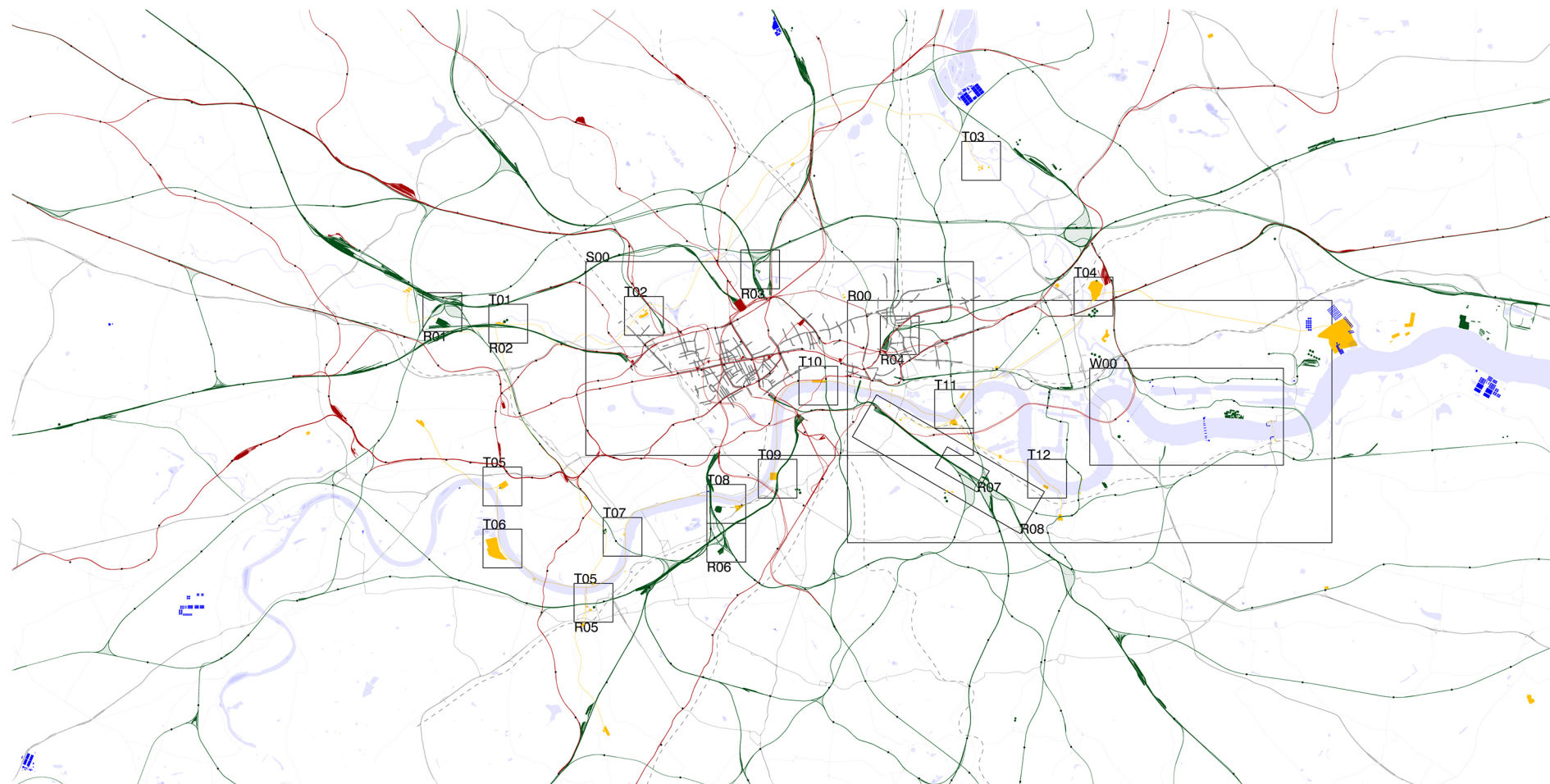
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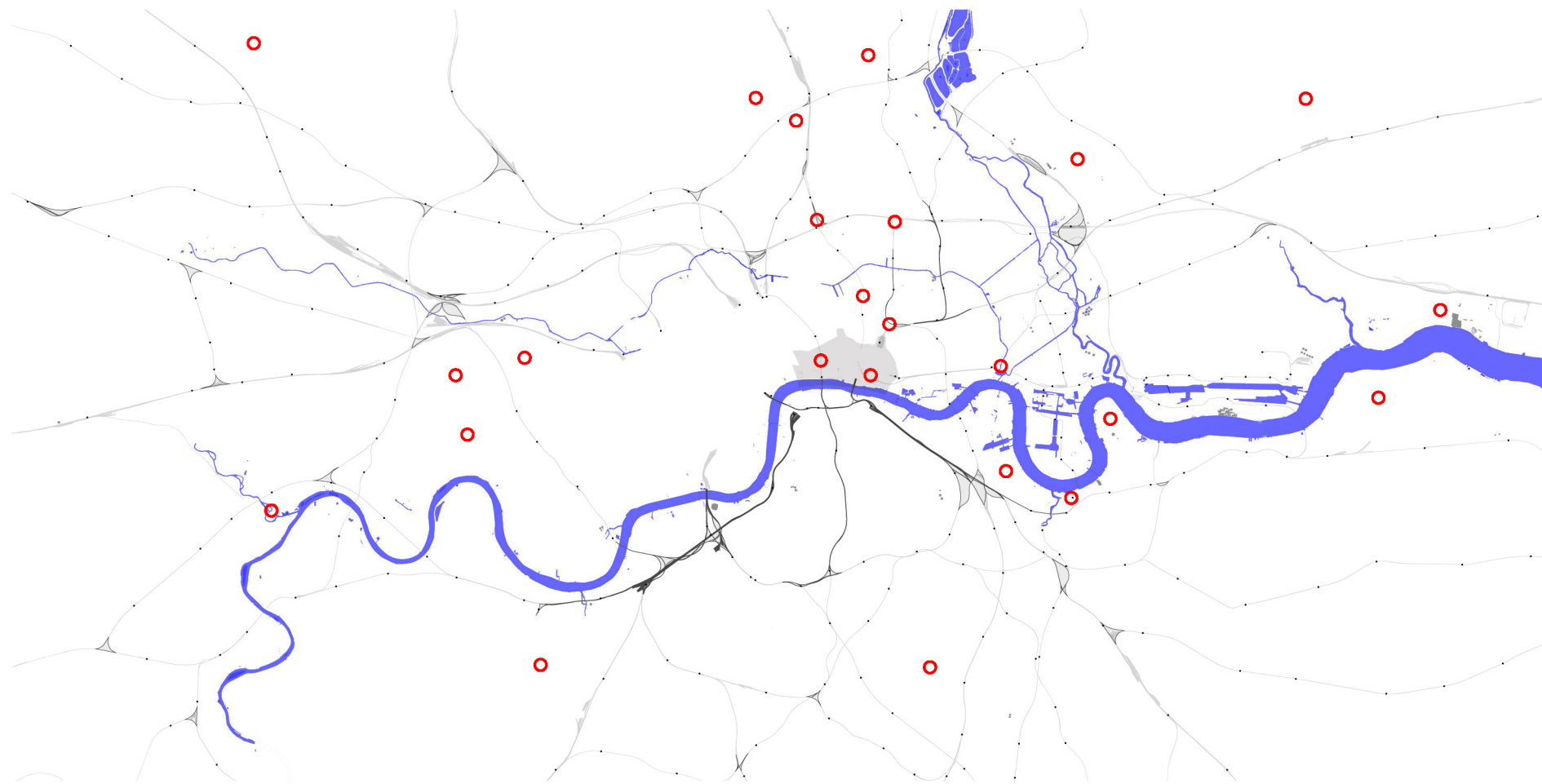
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Urban Reading Sampling

Battersea Power Station



© BARRY EVANS PICTURE LIBRARY
MEV 10062127 - agefotostock



www.britainfromabove.org.uk/image/EPW040849

© Historic England

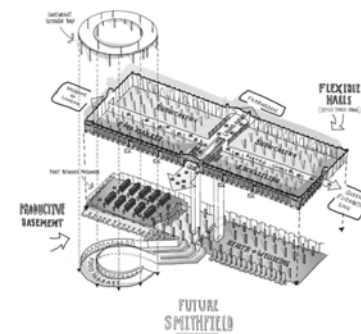
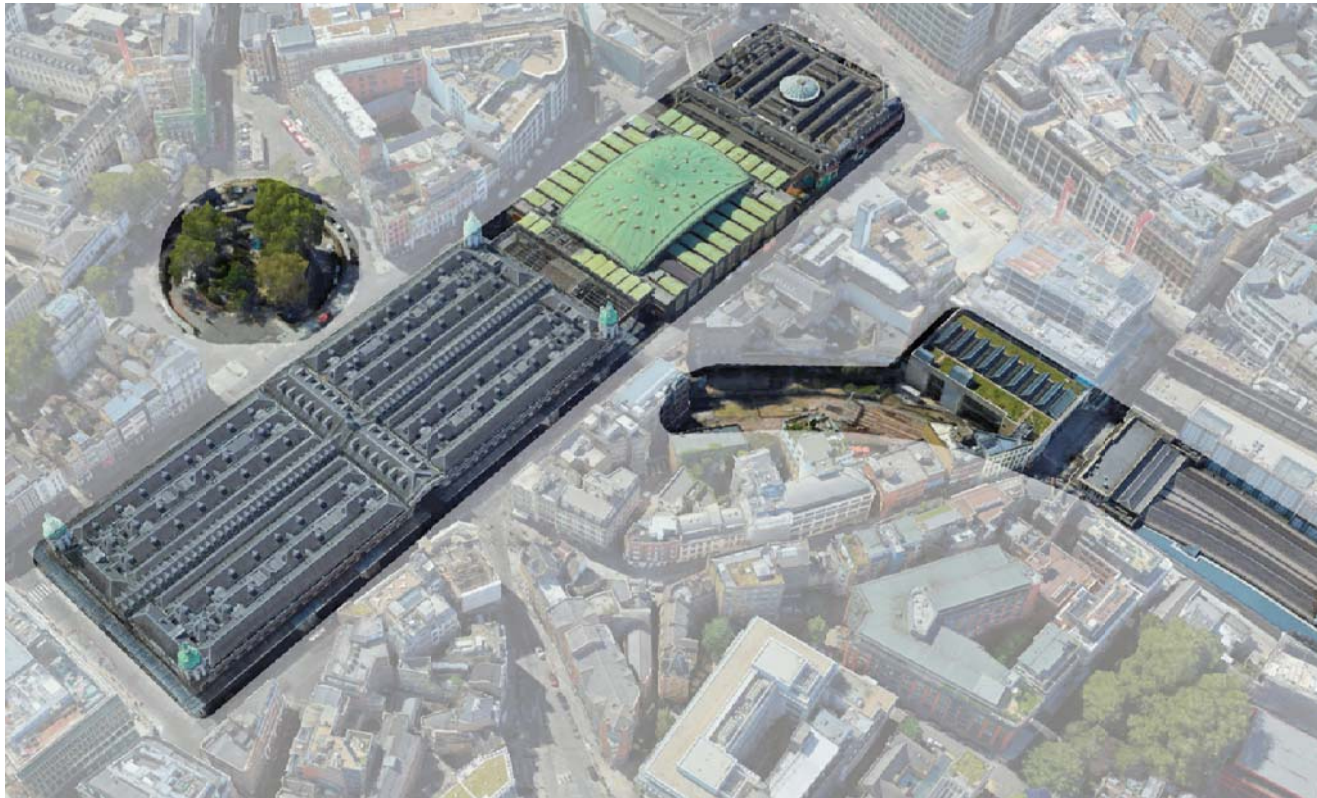
Urban Reading
Sampling

Camden Town Market



Urban Reading Sampling

Smithfield Market



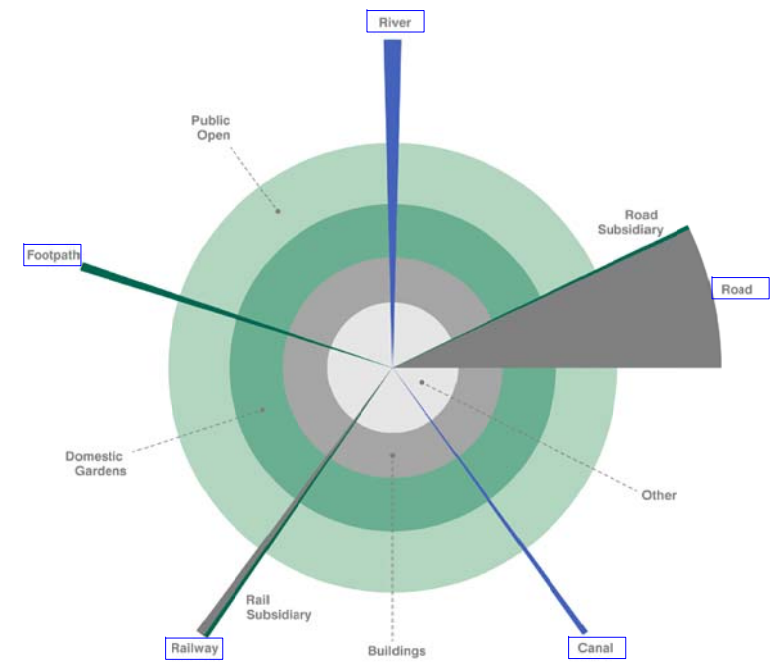
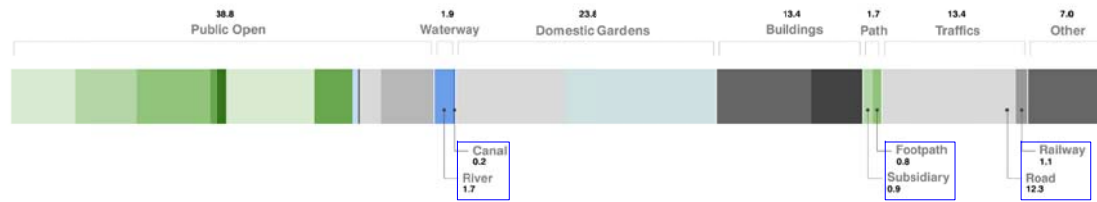
Urban Reading
Sampling



Bethnal Green Trajectory



Linear Infrastructures and Urban Interstices

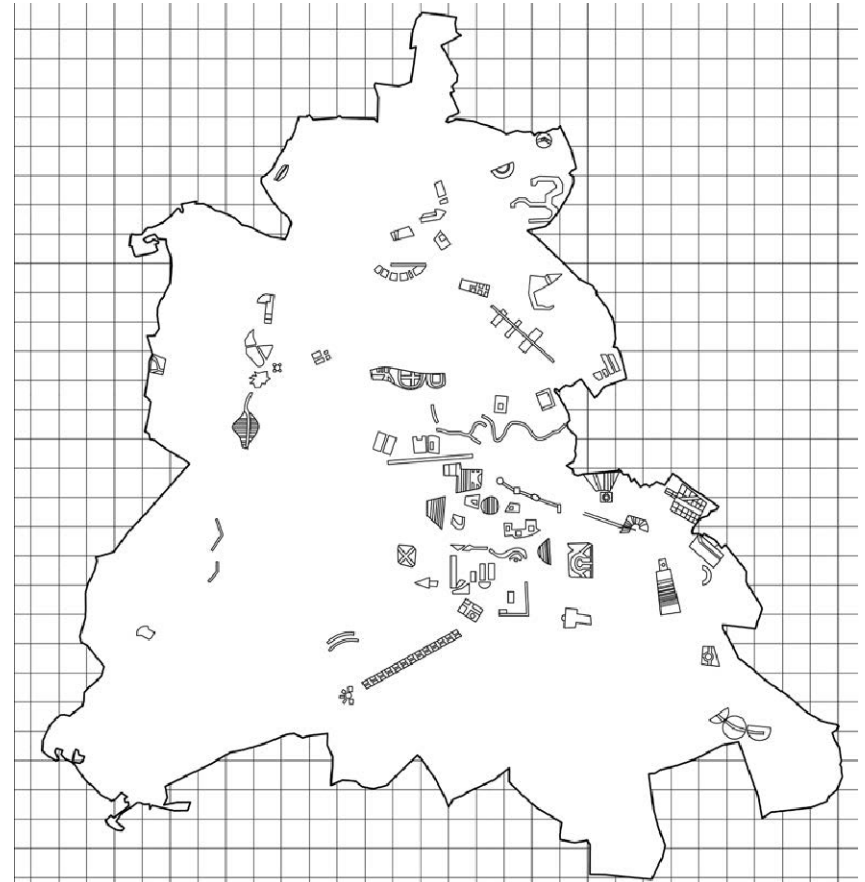


Linear Infrastructures and Urban Interstices

"The idea of the City in the city is substantiated in the image of Berlin as a city-archipelago. [...] The city as a whole is formed by the federation of all these urban entities with different structures, developed in a deliberately antithetic manner."

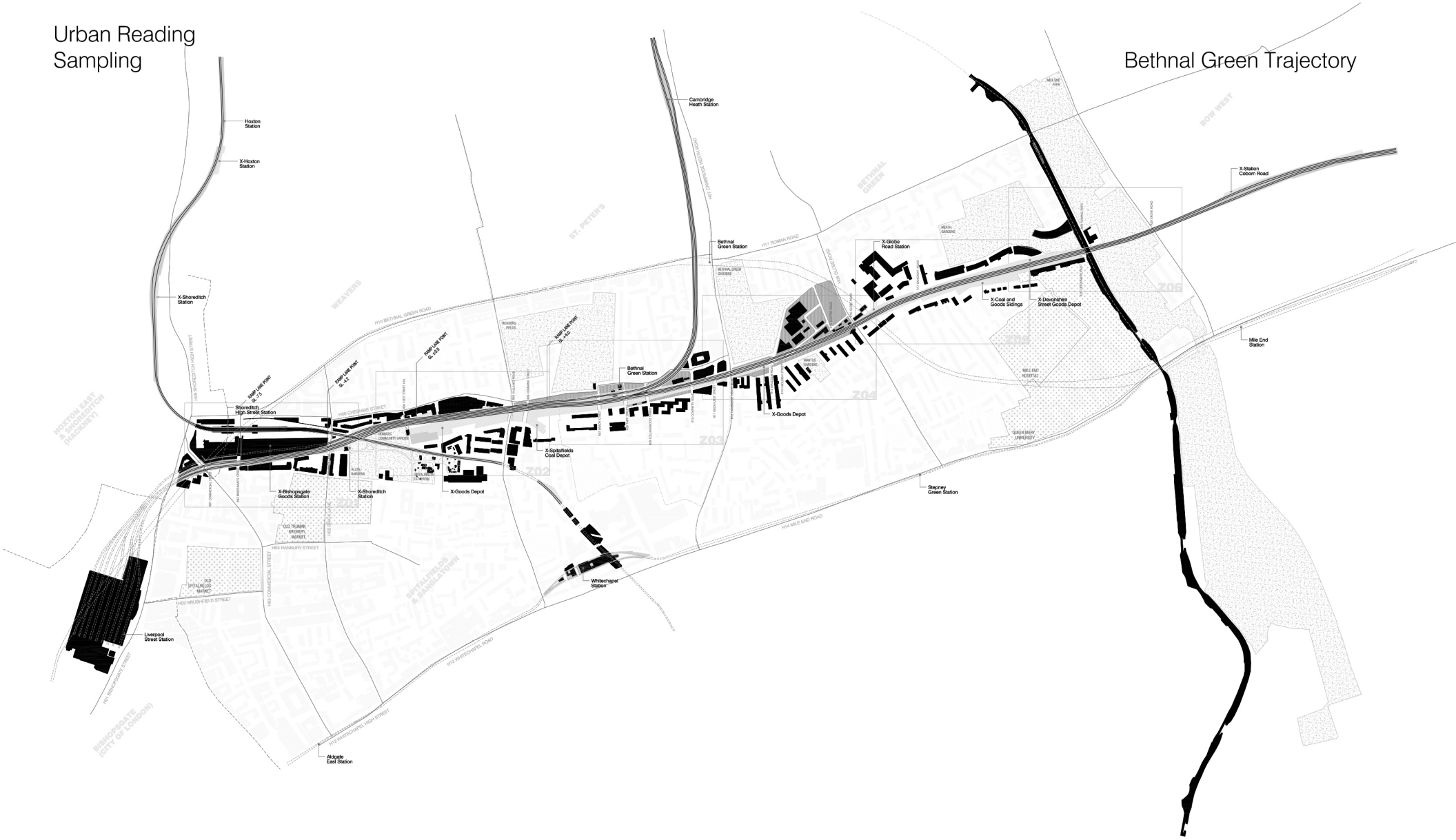
"Urban islands would be divided from each other by strips of nature and green, thus defining the framework of the city in the city."

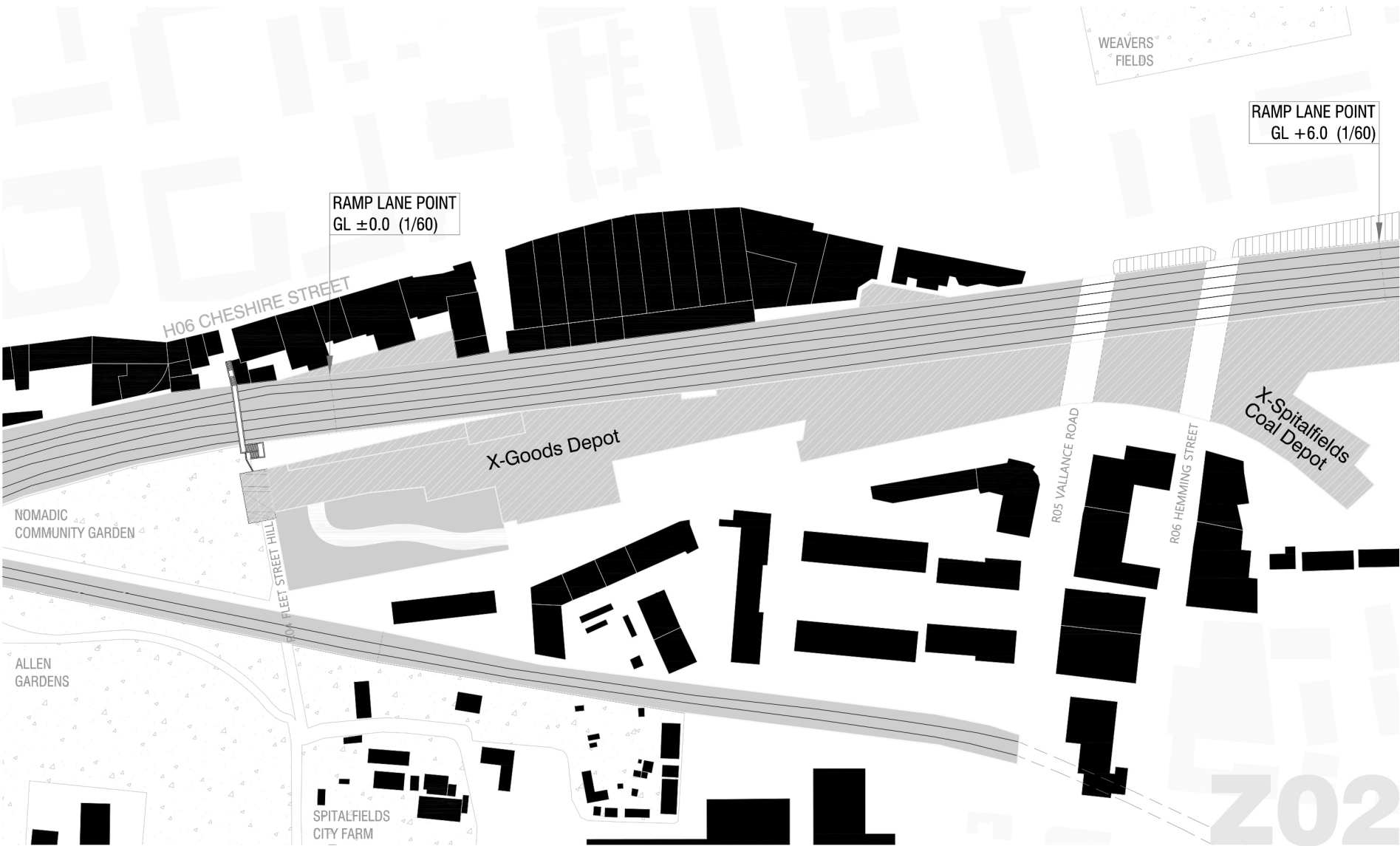
Oswald M. Ungers, *The City in the City, Berlin: A Green Archipelago*



Urban Reading
Sampling

Bethnal Green Trajectory





- Interstitality around | *Fragmented Plots, Disconnected Roads*
- Interstitality on | *Disused Infrastructures, Inaccessible Leftovers, Unprogrammed Installations*
- Green Open Space | *Gardens, Parks, Fields, Farms*
- Water Space | *Rivers, Canals*

- Historic, Cultural, Symbolic Buildings and Plots
- Buildings
- Railway above
- Railway under, Underground



INTERSTITIAL CONDITION I

Leftover
Inaccessible
Unprogrammed

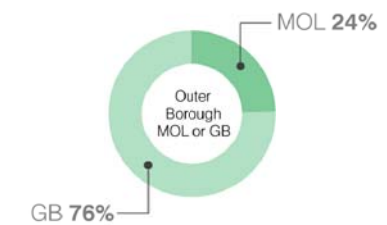
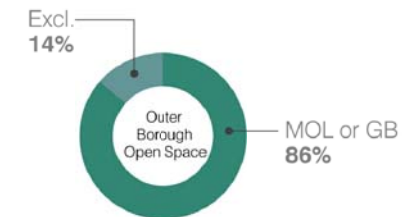
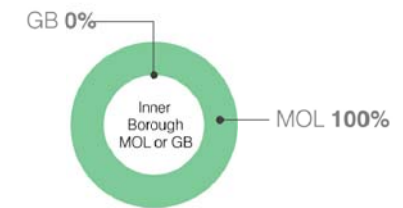
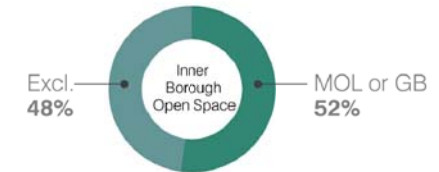
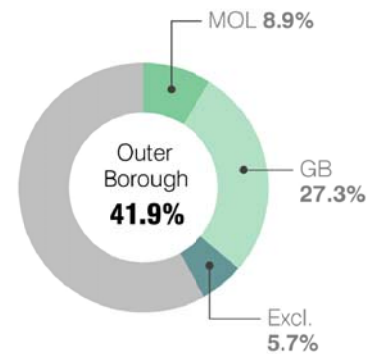
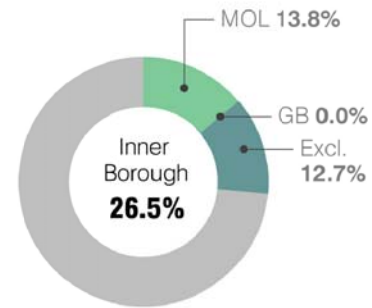
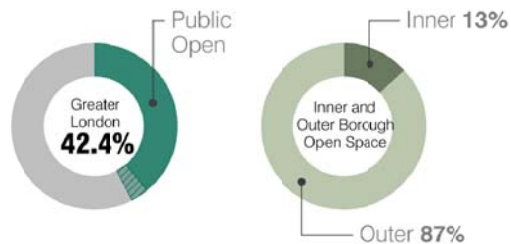
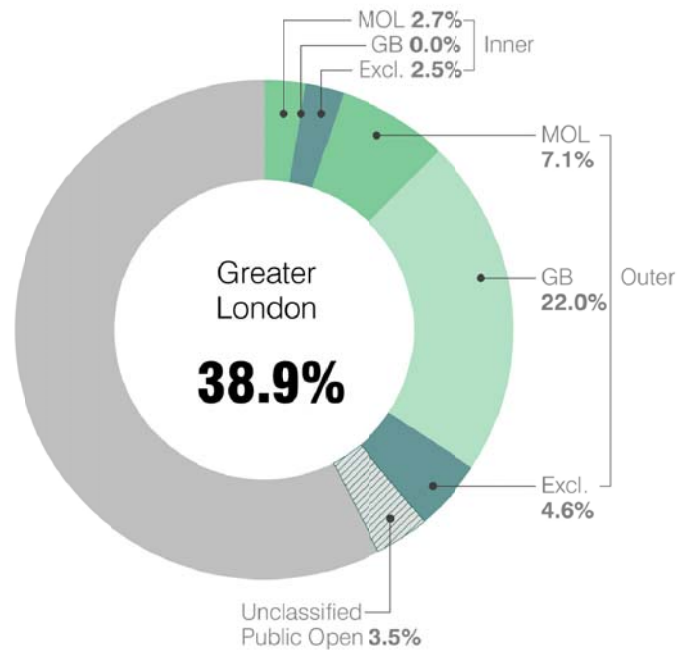
Defunct
Misused
Oversaturated

A - Oversaturated
B - Misused + Defunct
C - Misused + Unprogrammed
D - Leftover + Inaccessible + Unprogrammed

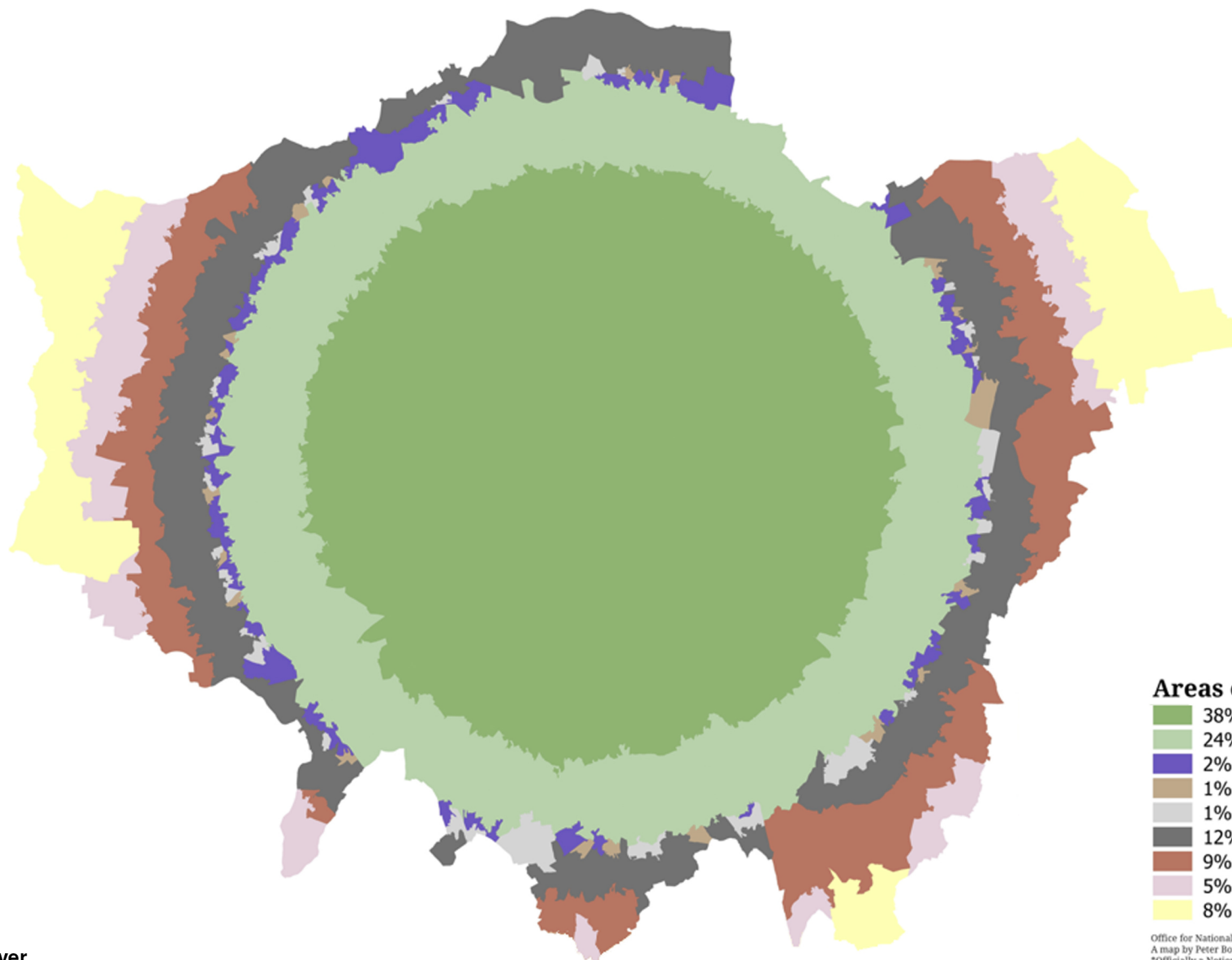
E - Disused + Unprogrammed
F - Disused + Oversaturated
G - Misused + Oversaturated
H - Disused + Unprogrammed

Constructed Urban Ecologies

MOL : Metropolitan Open Land / GB : Green Belt



Absolute and Relative comparison



- Areas of Land**
- 38% Open Greenspace
 - 24% Domestic Gardens
 - 2% Open Water
 - 1% Footpaths
 - 1% Railways
 - 12% Roads
 - 9% Domestic Buildings
 - 5% Non-Domestic Buildings
 - 8% Other Land Uses

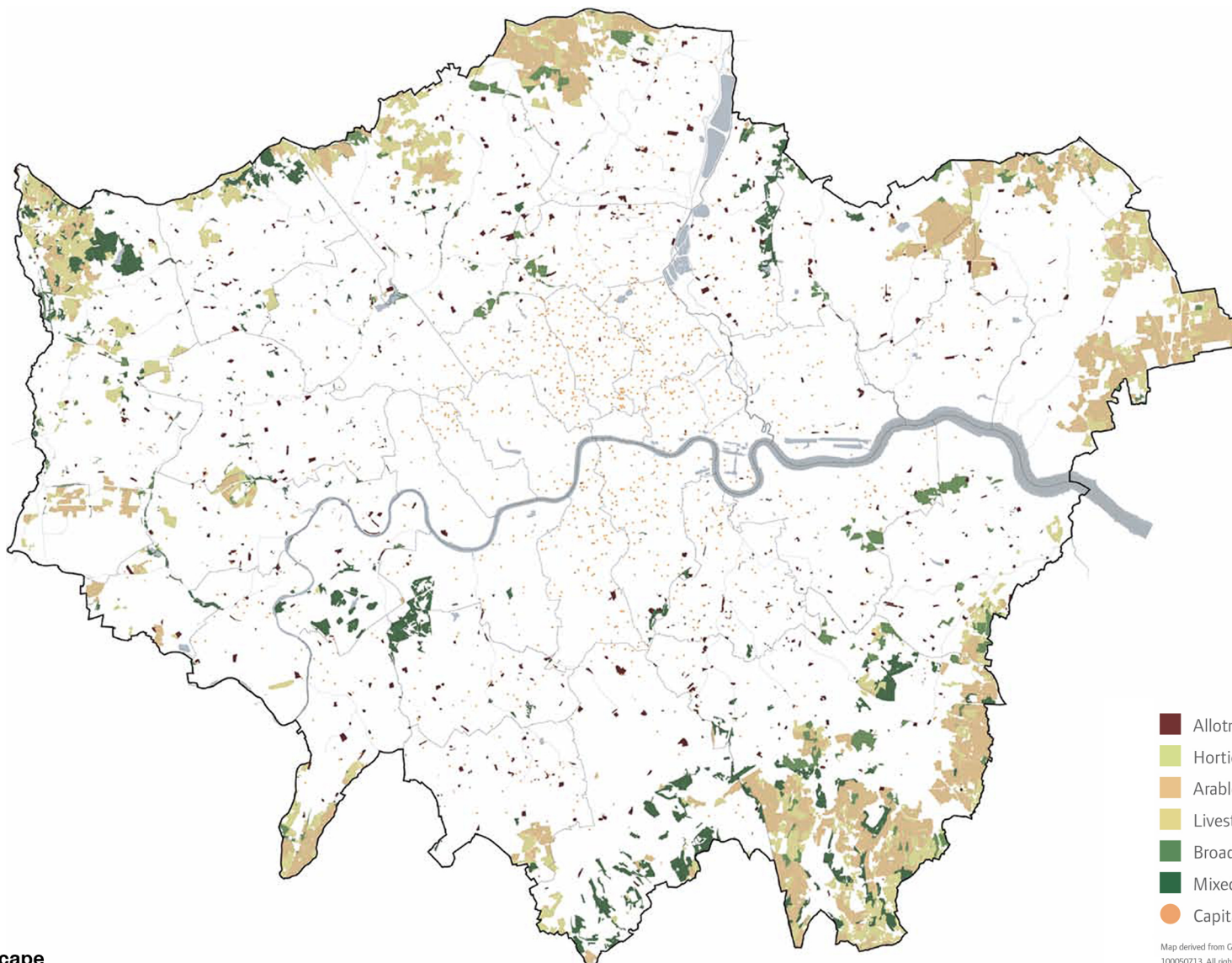
Office for National Statistics Generalised Land Use Database 2005.
A map by Peter Boyce for the Greater London National Park*.
*Officially a Notional Park.

Land Use and Cover



- Public Open Space
- Other Open Spaces
- Private Domestic Garden Land

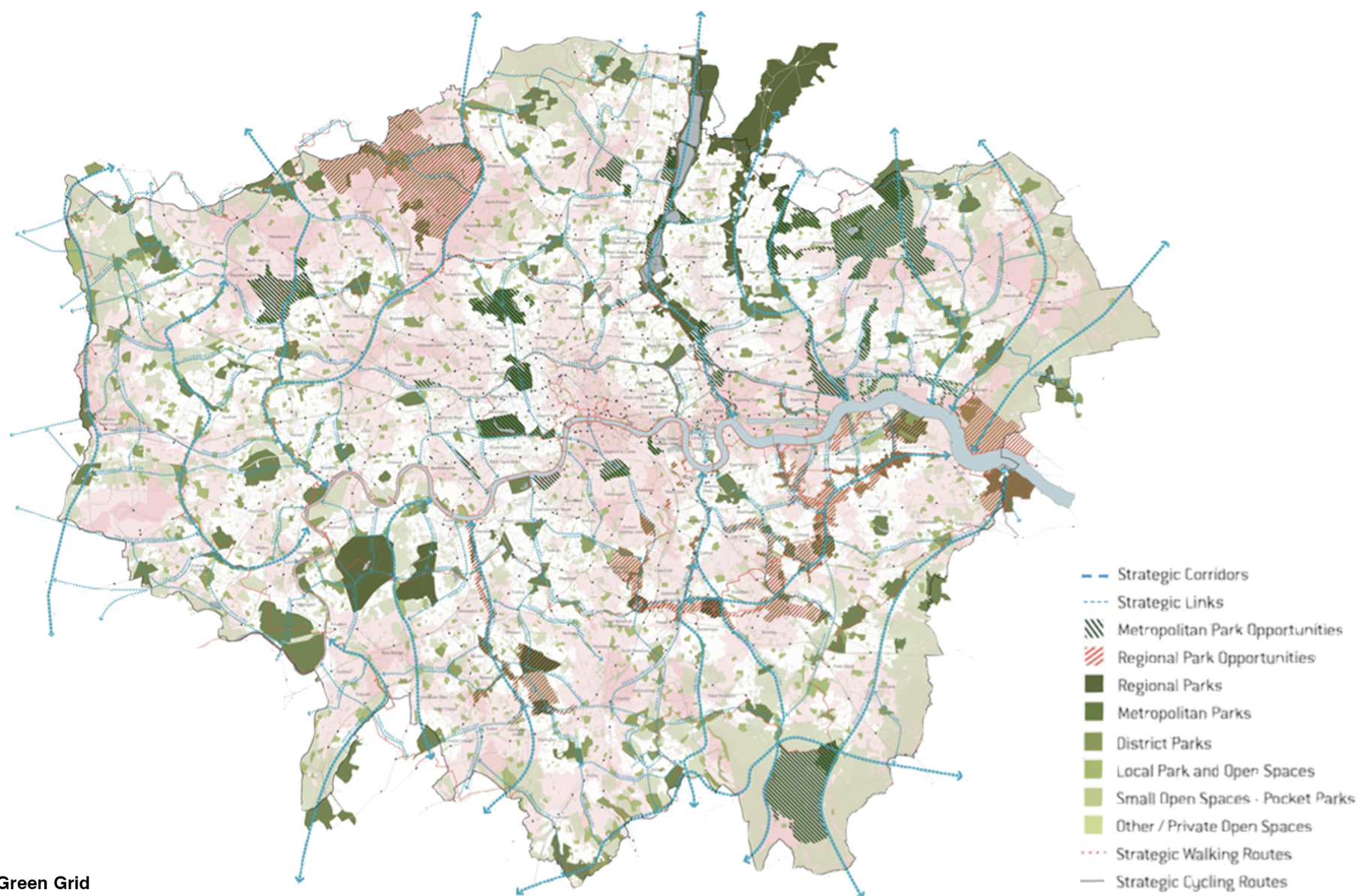
Open Space



- Allotments / Community Gardens
- Horticulture / Orchards
- Arable Agriculture
- Livestock Agriculture
- Broadleaf Woodland
- Mixed Woodland
- Capital Growth Sites

Map derived from GiGL data 2011 – © Crown Copyright and database right 2011.
100050713. All rights reserved London Development Agency 2011

Productive Landscape



All London Green Grid

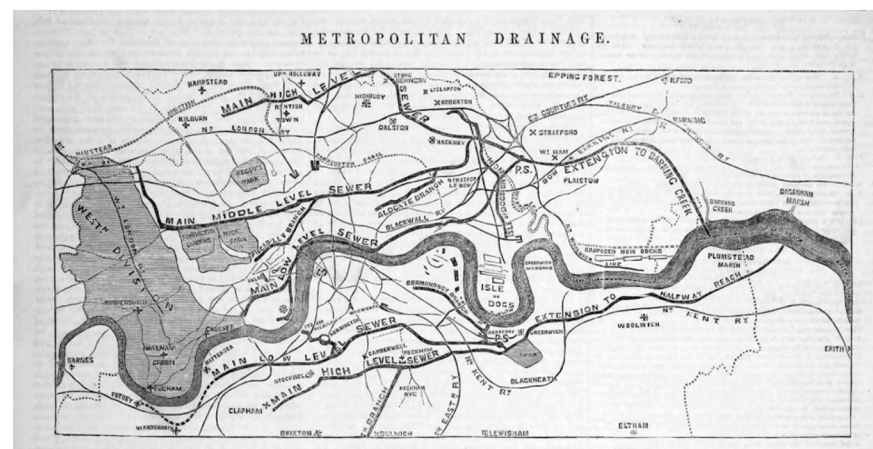
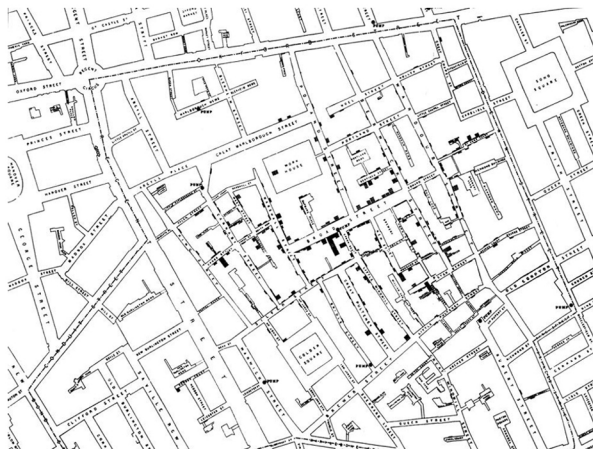
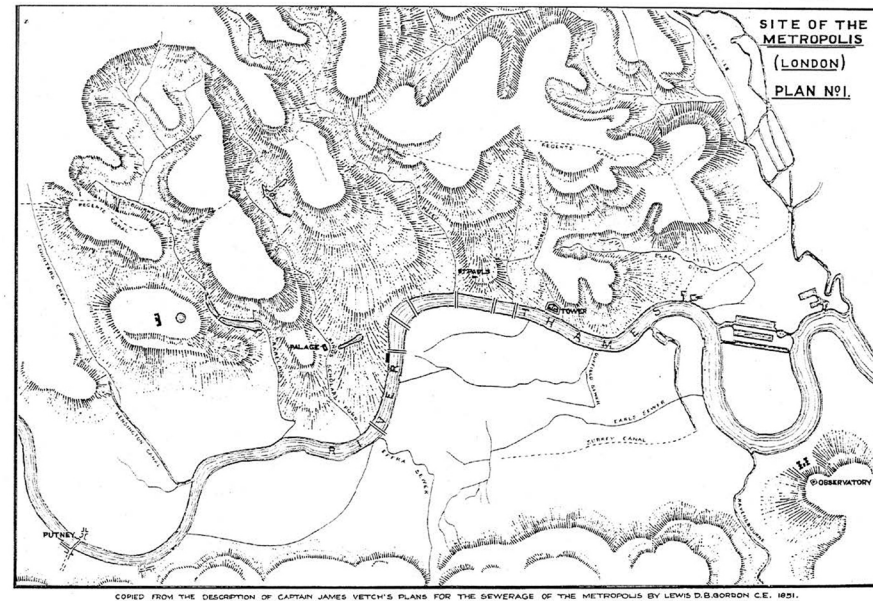
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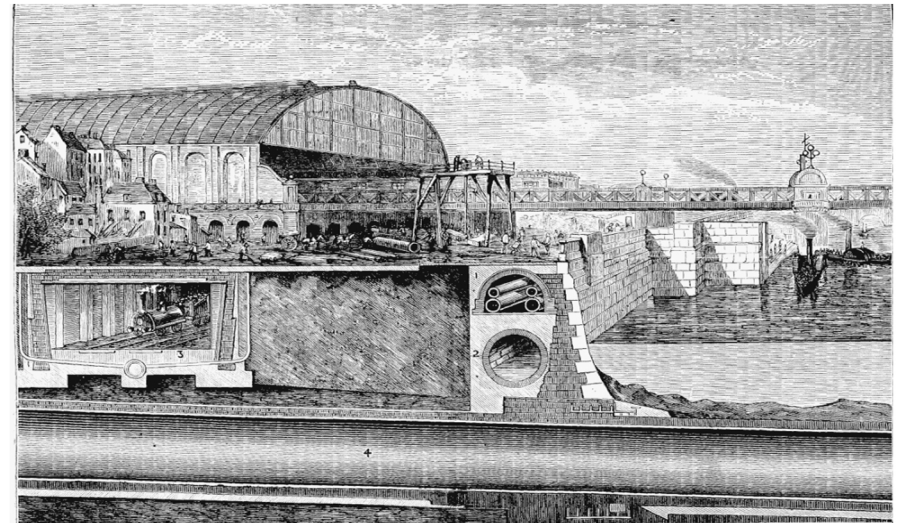
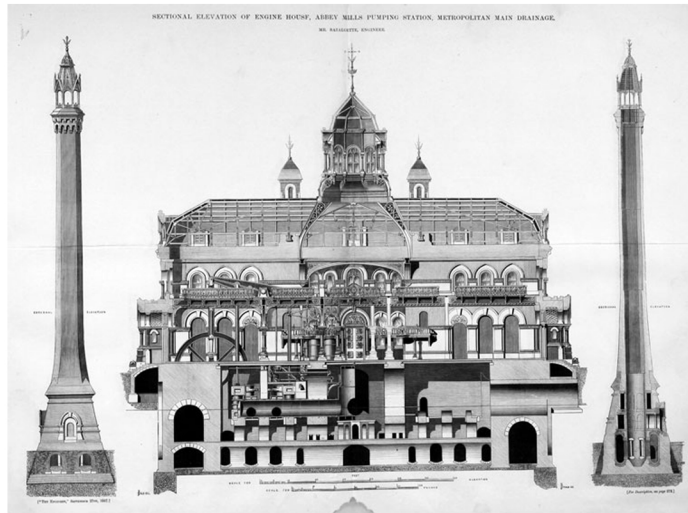
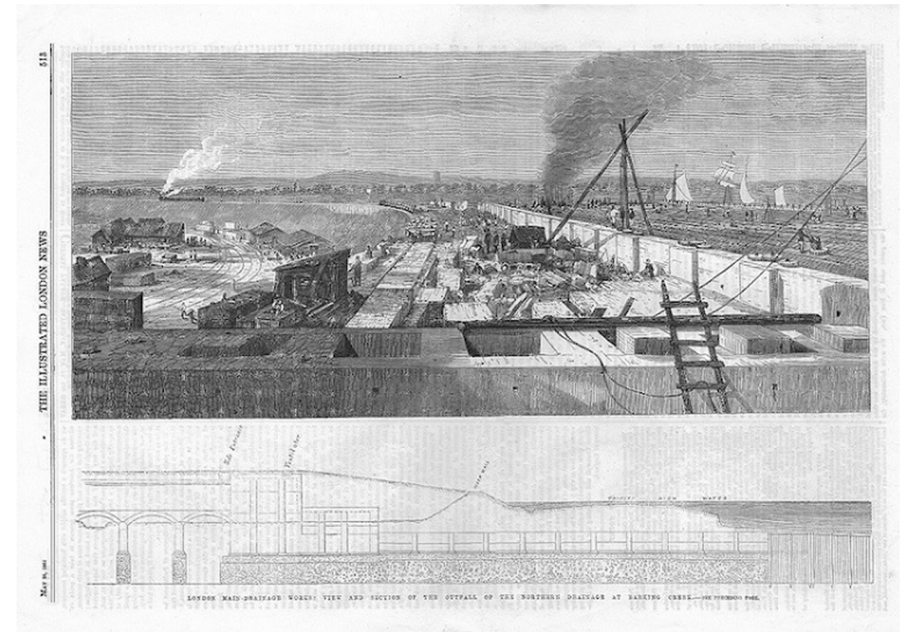


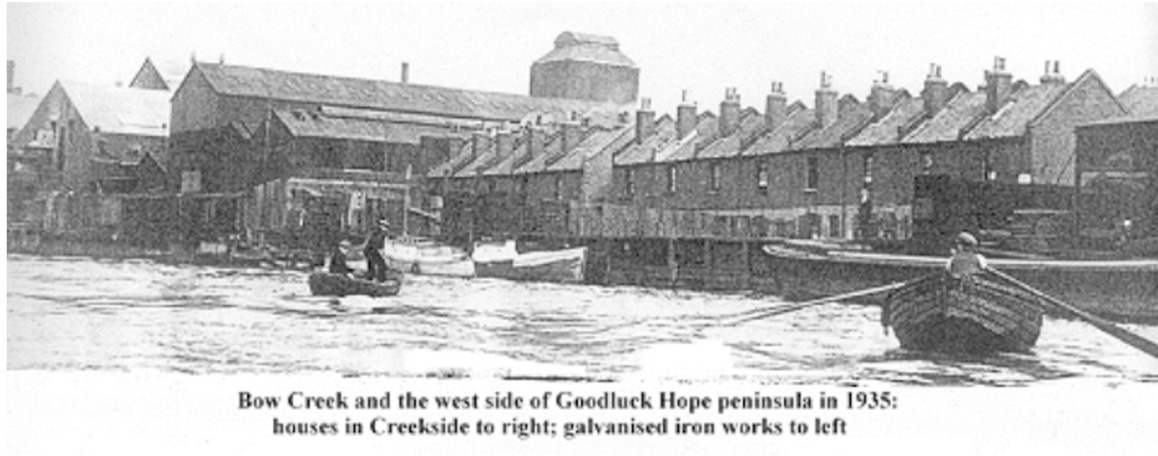
London, Daytime, NASA Earth Observatory



London, Nighttime, NASA Earth Observatory



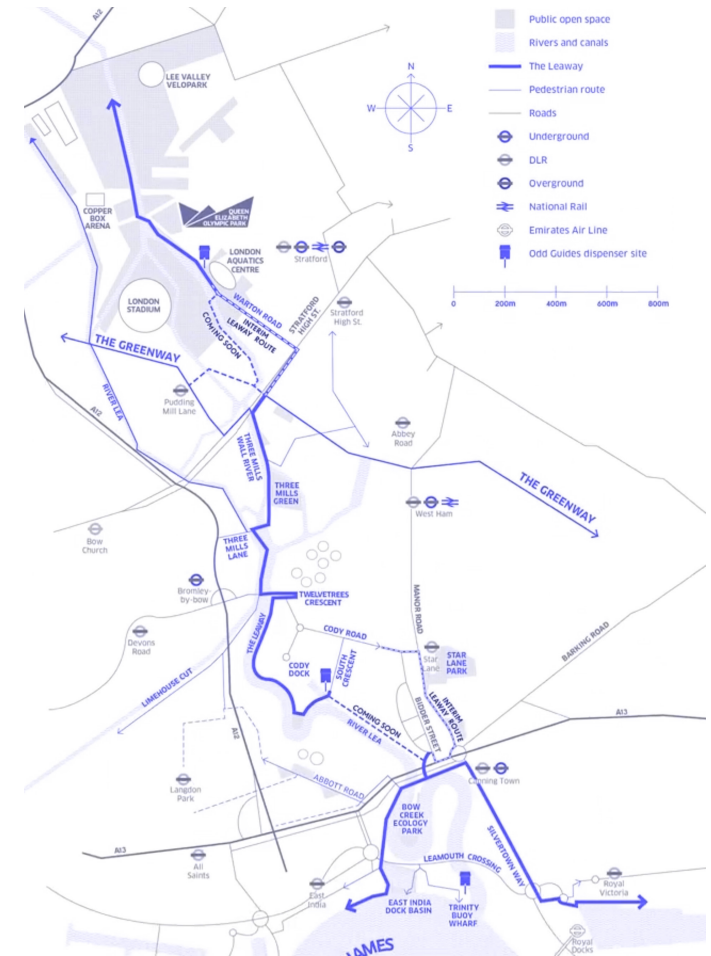




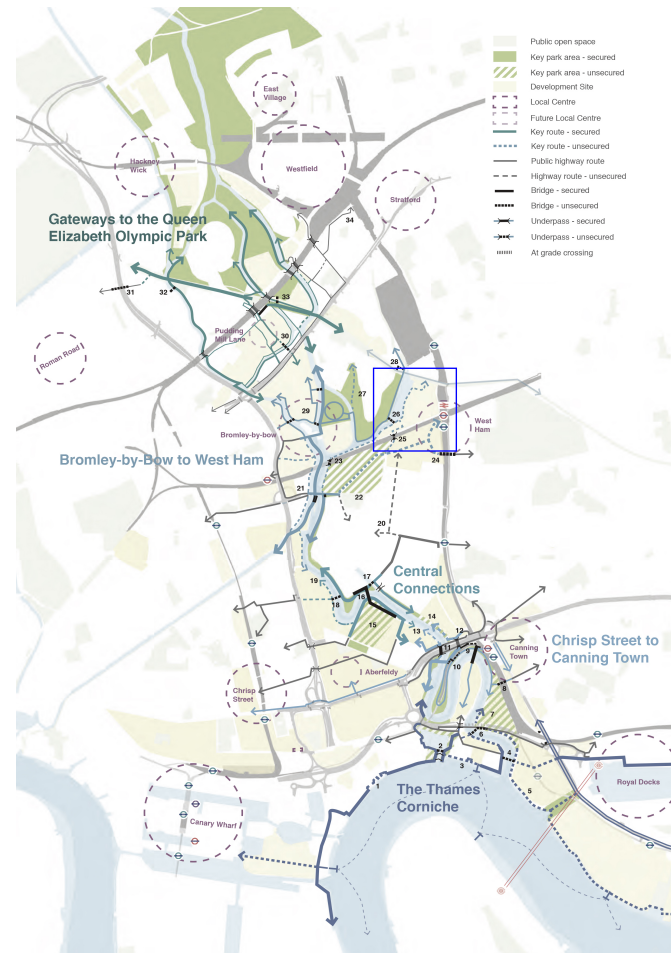
Urban Ecology of East London



Urban Green Grid Networks, Lee River, Leeway and Greenway

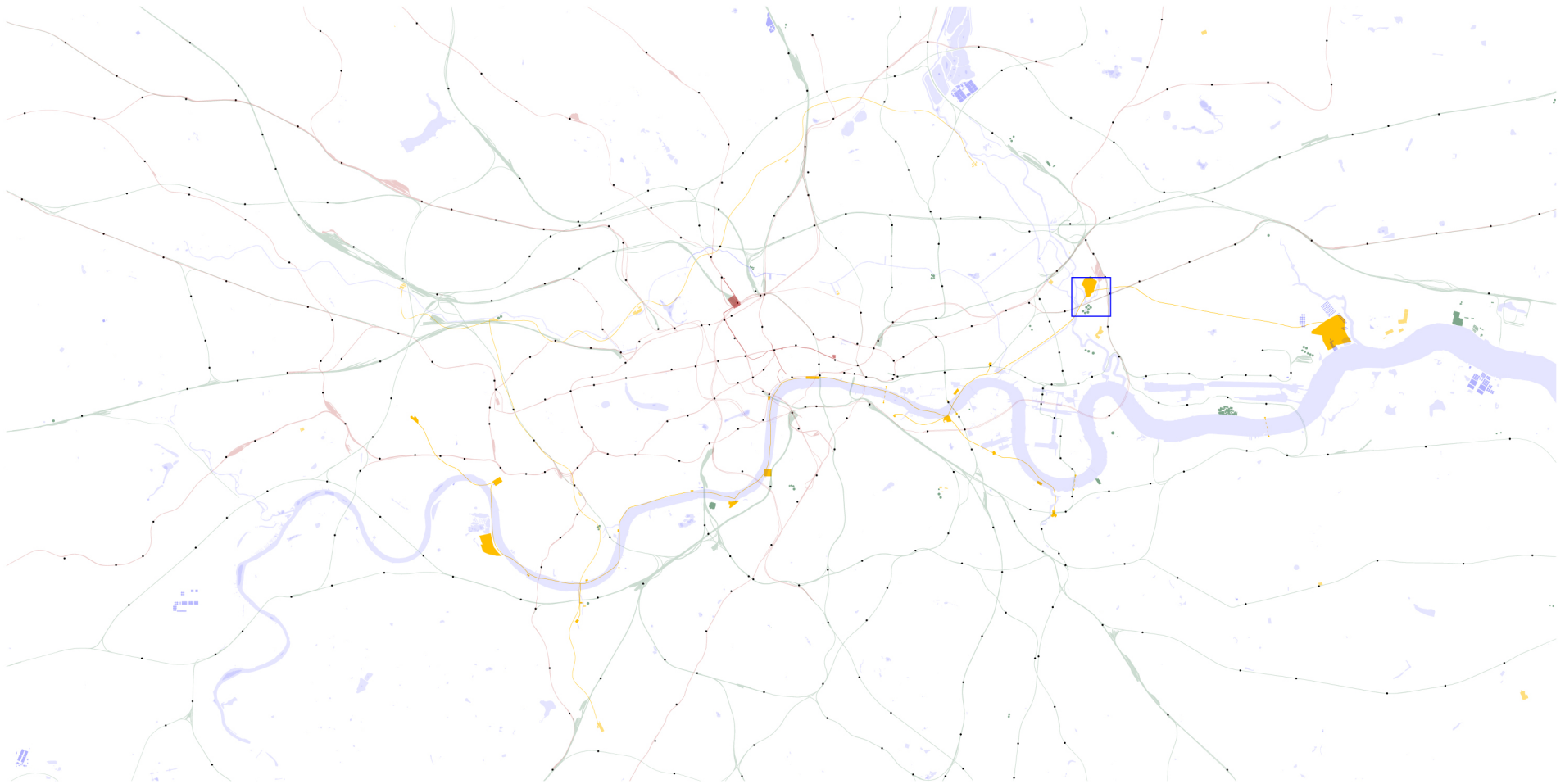


Urban Ecology of East London



Urban Green Grid Networks, Lee River, Leeway and Greenway

Urban Ecology of East London



WATER NETWORKS

RAILWAY NETWORKS

GAS NETWORKS

SUBWAY NETWORKS

TUNNEL NETWORKS

Abbey Mills

Historical Layers



OS Map, 1944-1970



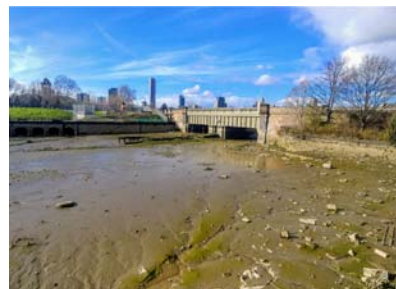
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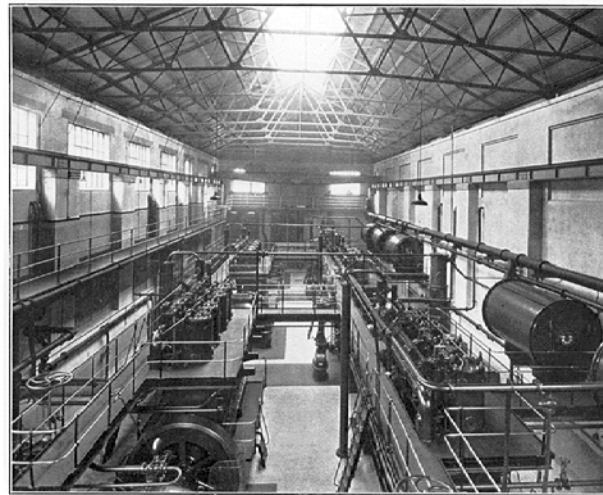
Abbey Mills

Historical Layers



Abbey Mills

Social and Environmental Layers



HANDBIER SMITH STORM WATER PUMPING STATION—GAS ENGINES AND CENTRIFUGAL PUMPS.
1922-24.

Abbey Mills Pumping Station

The pumps raised the sewage in the London sewerage system between the two Low Level Sewers and the Northern Outfall Sewer, which was built in the 1860s to carry the increasing amount of sewage produced in London away from the centre of the city.



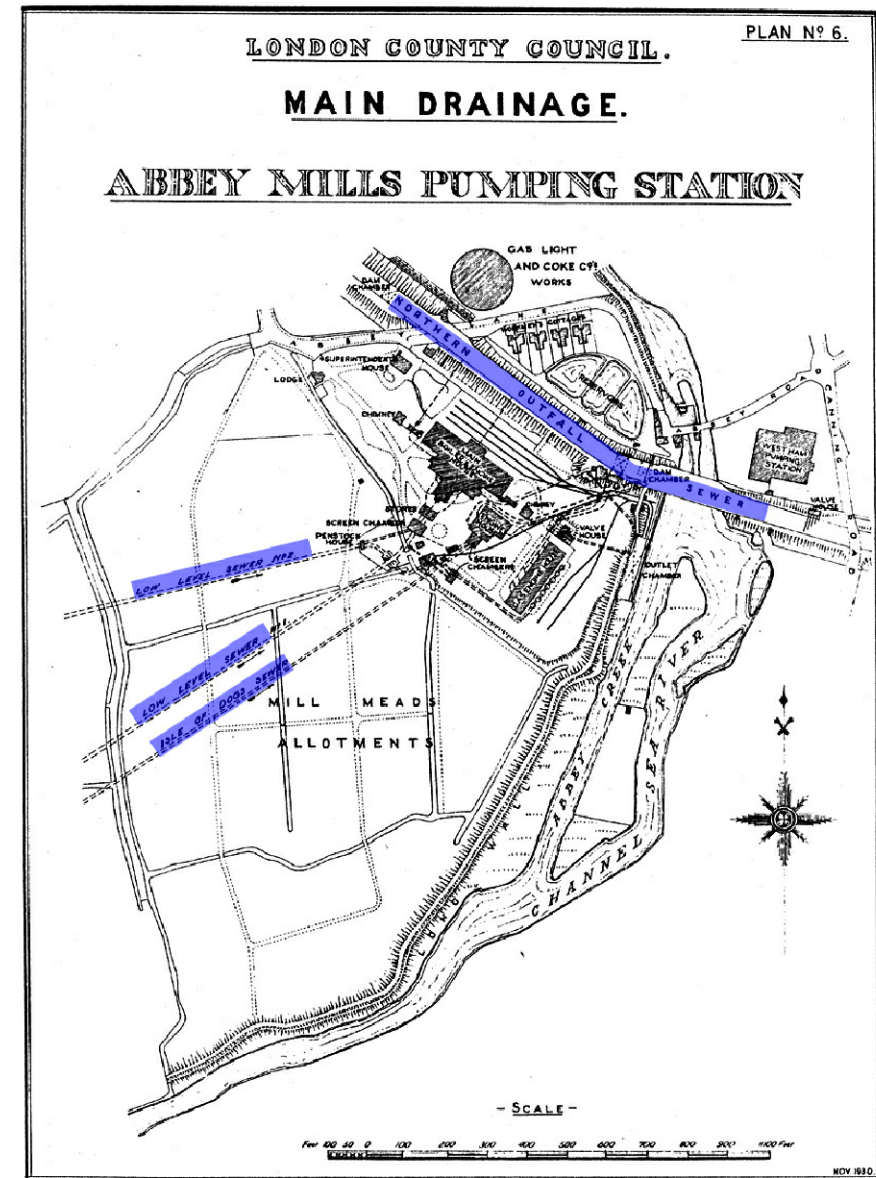
NORTHERN OUTFALL SEWER IN COURSE OF CONSTRUCTION, SHOWING CAST-IRON SEWERS OVER ABBEY CREEK AND CHANNISEA RIVER.
1902-06.

Northern Outfall Sewer

The Northern Outfall Sewer (NOS) is a major gravity sewer which runs from Wick Lane in Hackney to Beckton sewage treatment works in east London; most of it was designed by Joseph Bazalgette after an outbreak of cholera in 1853 and the "Great Stink" of 1858.

Thames Tideway Tunnel

The Thames Tideway Tunnel will be a 25 km super sewer running mostly under the tidal section of the River Thames across Inner London to capture, store and convey almost all the raw sewage and rainwater that currently overflows into the Thames. These events occur when rainfall volumes exceed the capacity of Bazalgette's London sewerage system.



Abbey Mills



Urban Situation



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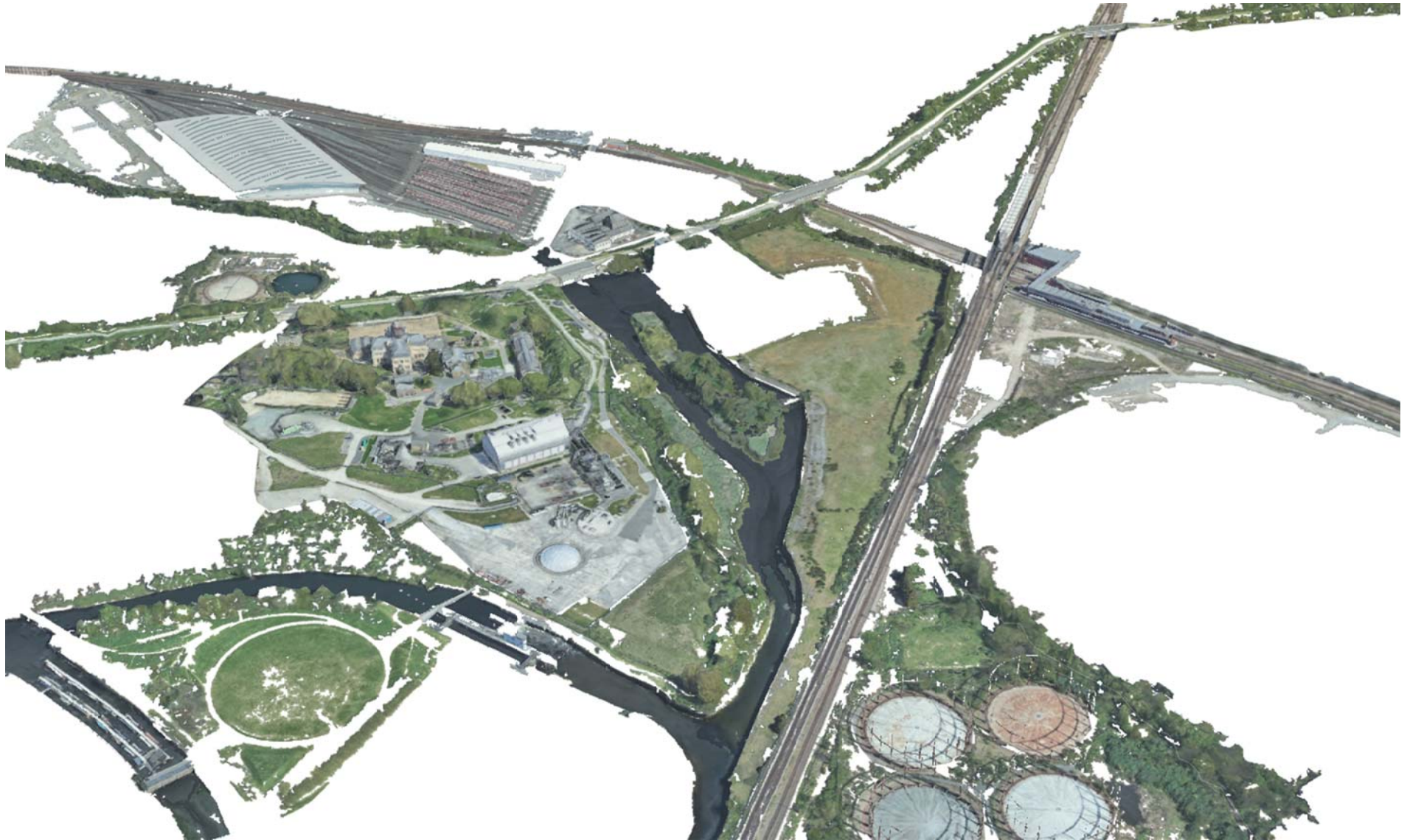
Abbey Mills

Fuzzy Drawings



Abbey Mills

Fuzzy Drawings



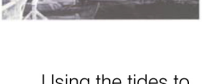
Dissecting the layered and networked territory of the site



Cities are shaped in the process of transformation by the layers and networks of the system, becoming a palimpsest inscribing the strata of the times.



Nature (natural constructions, primary state, rural landscapes)



Using the tides to grind grain and other products (mills and distillery)

(Utilitarian purpose) Repurposing of the land and water - Bank revetment and docks with barge via waterways (rivers and canals)



Massive industrial growth with highly industrialised landscapes (gasholders and plants, pumping station)

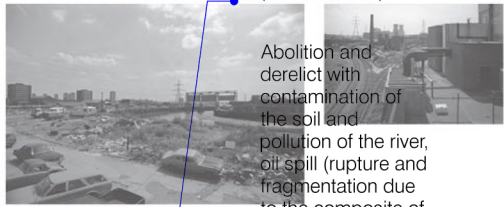
Outbreak of cholera and the Great stink 1858 - Introduction of a new system (hydraulic sewage system, so far dumping onto the shores of the Thames)

Population growth and consequently, the growth of emission and the great flood (high tides and storm surges) - Control of the water (Thames Barrier and tidal locks)



Territories could be extended with the help of environment and infrastructure systems. However,

Decline of the industries and the change of industrial structures (Postindustrial)

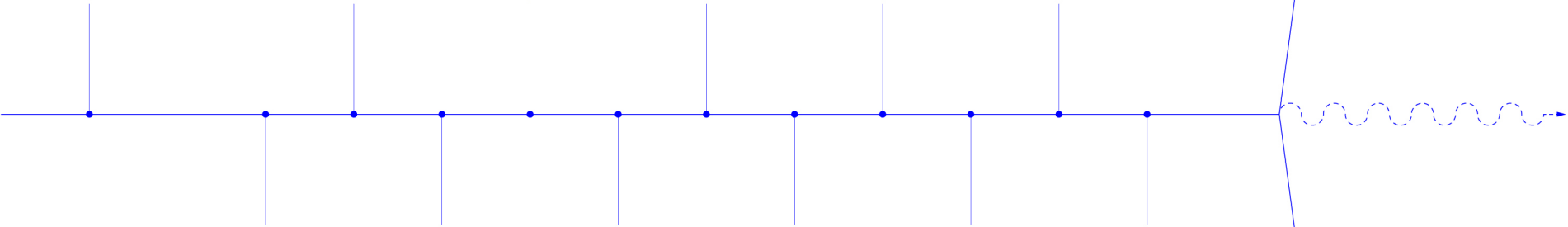


Abolition and derelict with contamination of the soil and pollution of the river, oil spill (rupture and fragmentation due to the composite of systems)

Agenda

Repurposing and regenerating the site for the ecological resilience at the urban interstices (geopolitical limits, air rights, ecological thresholds)

Operating and designing of epigenetic territory ; for extending the boundary and performance of the territory ; by reading and responding to wider environment and the context ; with the intent of producing new spatial systems, building typologies, and public realms (Lola Sheppard, From site to territory)



Alongside the early industry, human transformation of the physical landscape began with marsh reclamation for agriculture

Development of road for coach and wagon

Water pollution, other uses, flat land for factories and industrial works (printing and dyeing to chemical and animal rendering industries) - Retaining of the earth and river (timber and steel sheet piles wall)

Railways, swap and replacement of canal systems (railway engineering works and a shipbuilding works) - Dramatic transformation of the landscapes in the decades

Electrical and communication installations (pylon)

Sustained growth of the population and the city (super sewer, Lee tunnel and Thames Tidal Tunnel)



Planting, recycling, and environmental clean-up campaigns, (civic organization, Surge Cooperative)

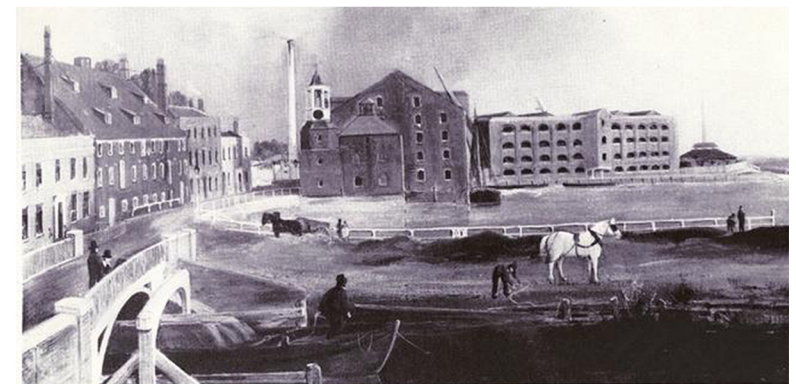
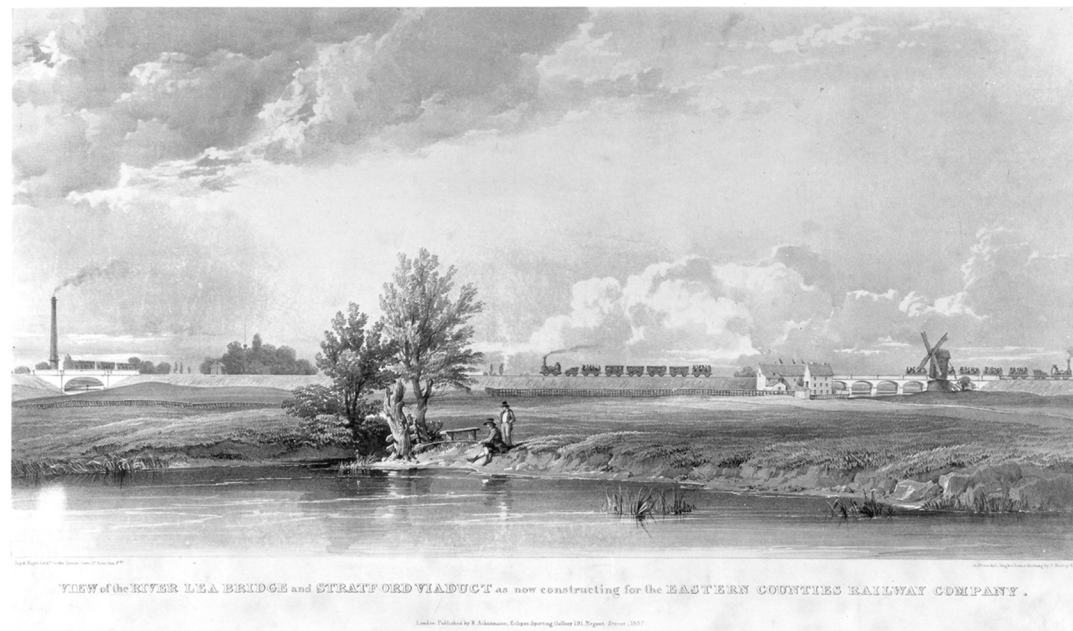
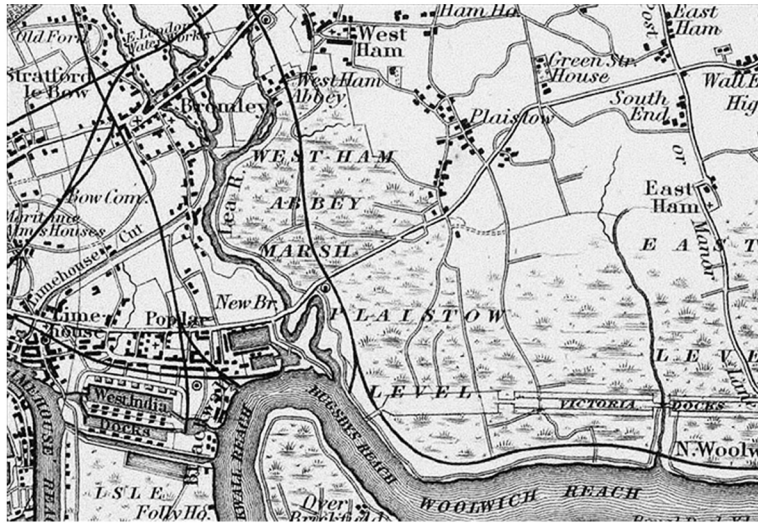
Spontaneous recovery and naturalization of the nature

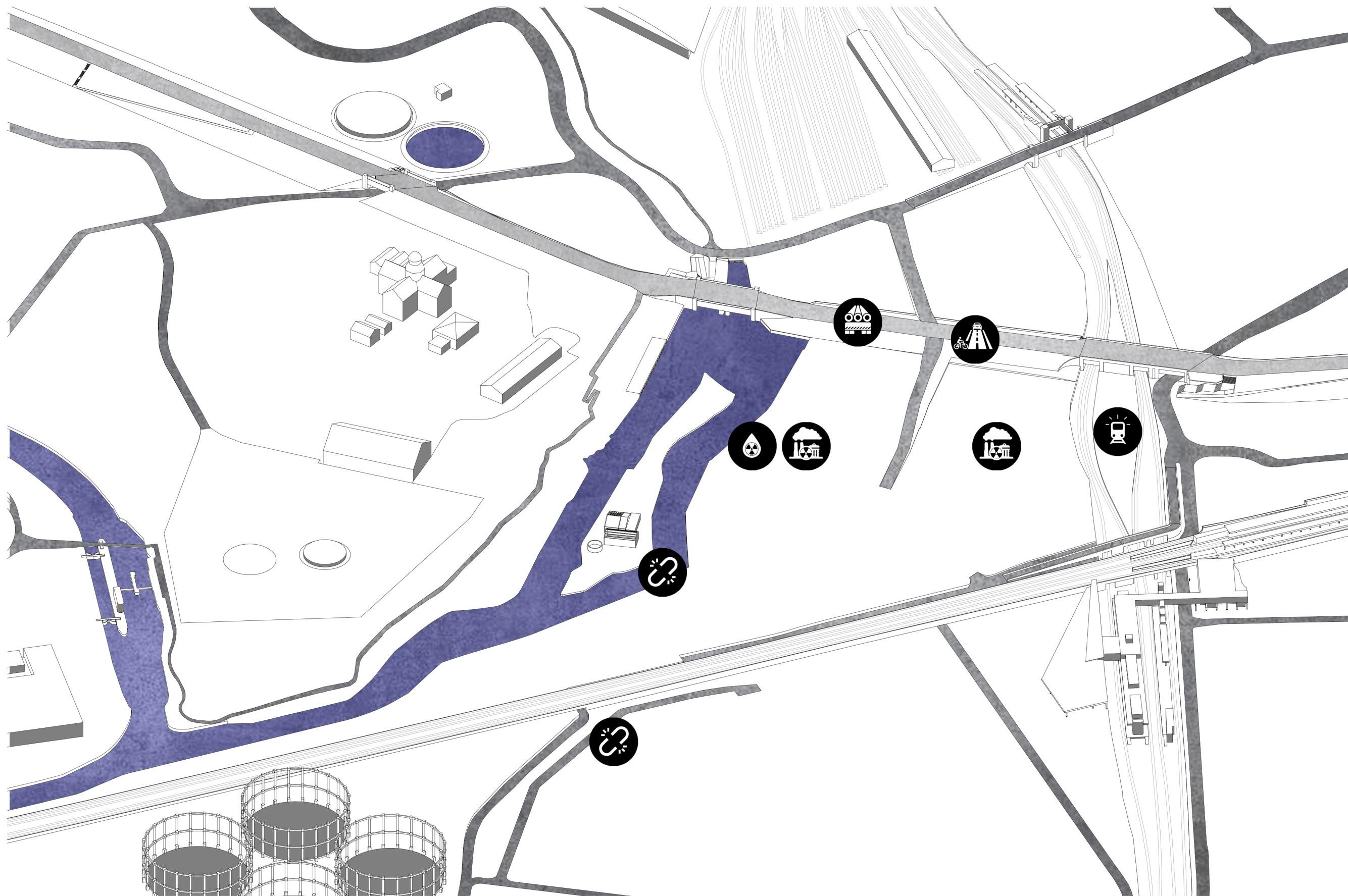


Return of migratory birds and aquatic animals - Habitat for the animals and plants (flora and fauna)

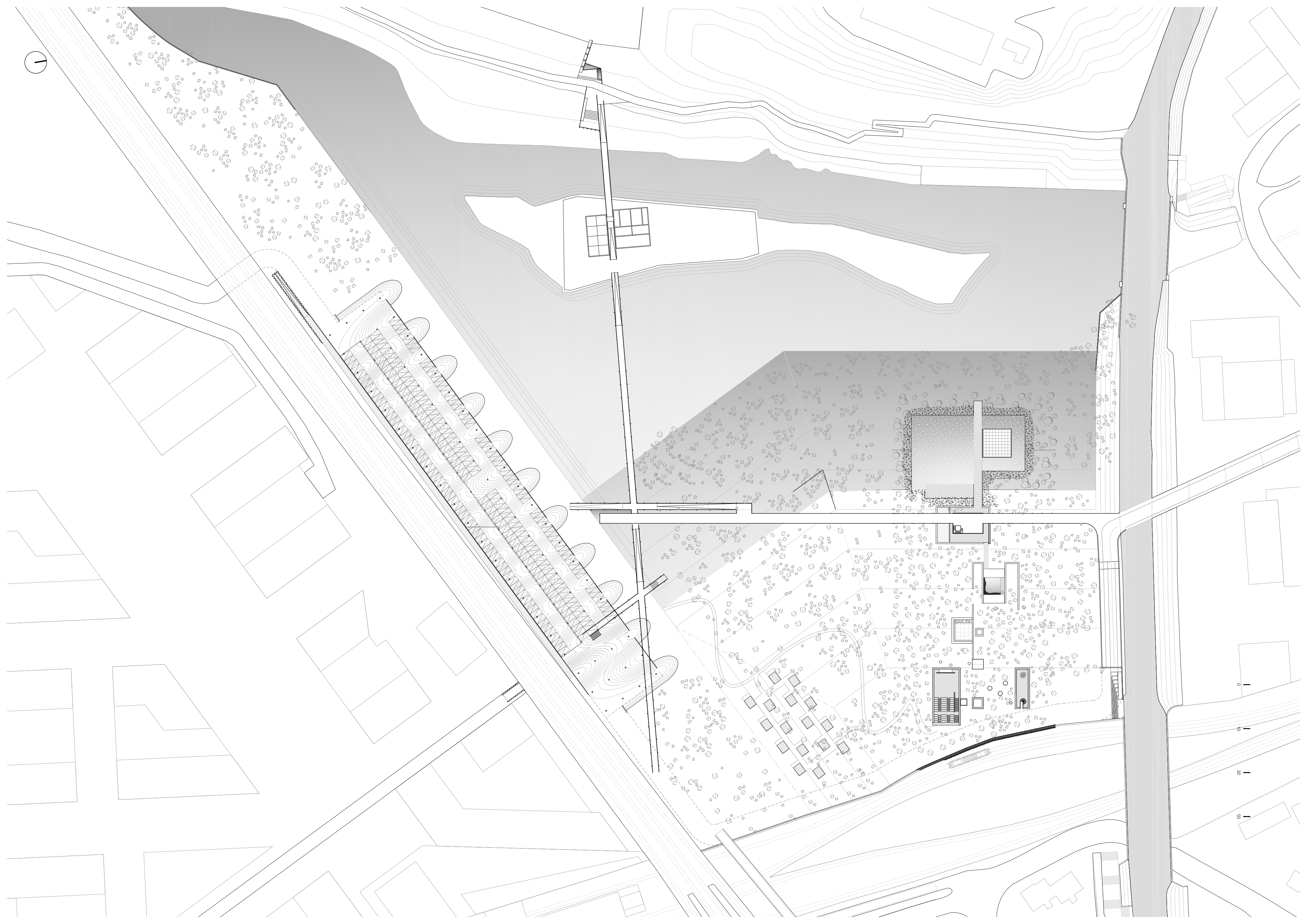


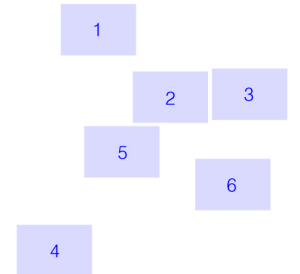
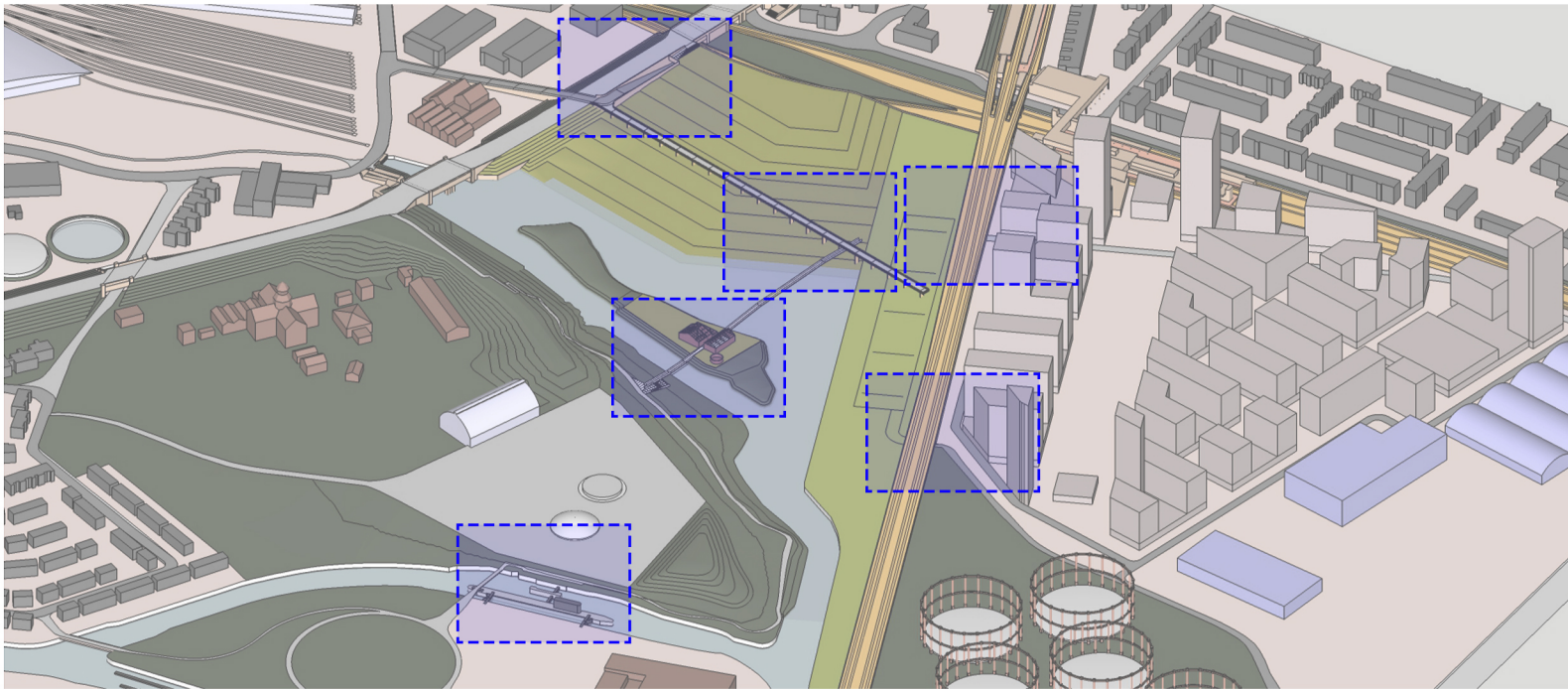
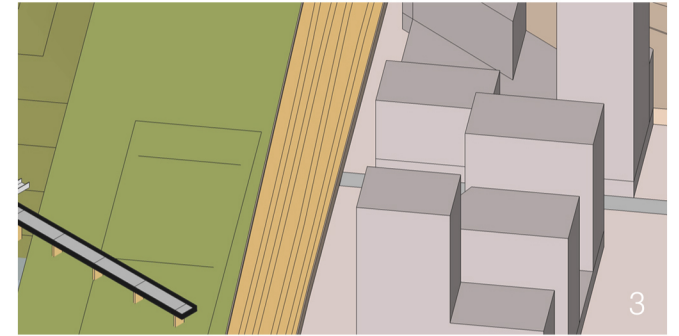
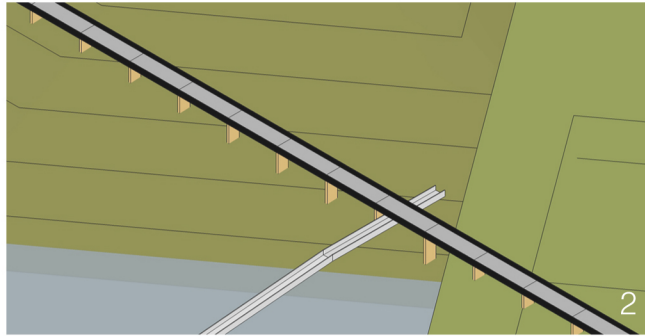
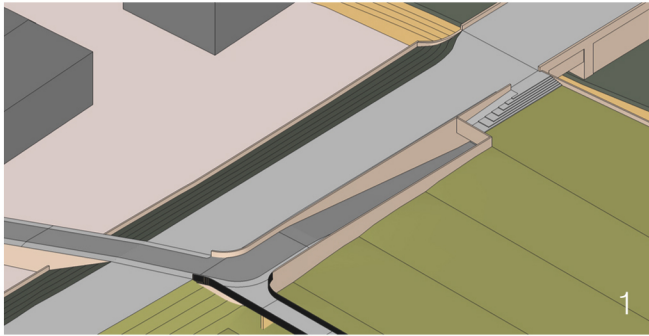
Not as a receiver, but as a initiator (architect's role)





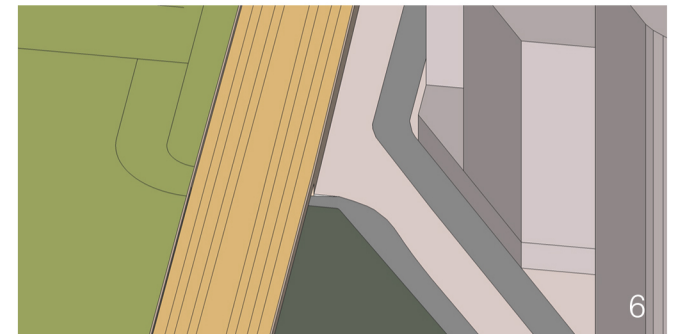
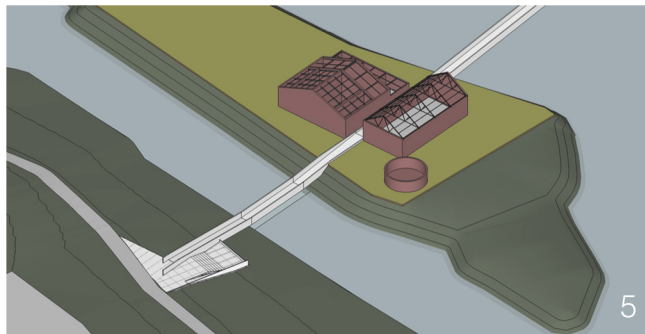
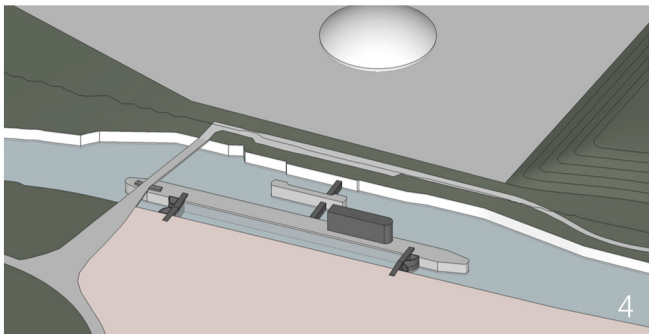


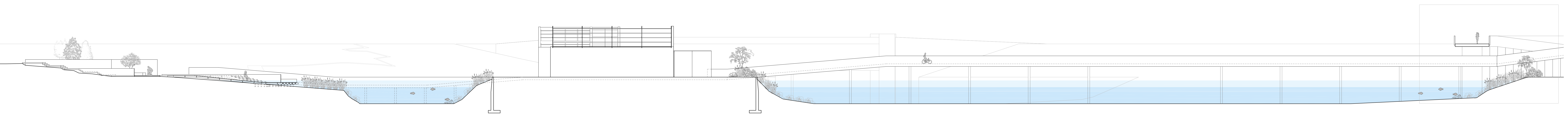
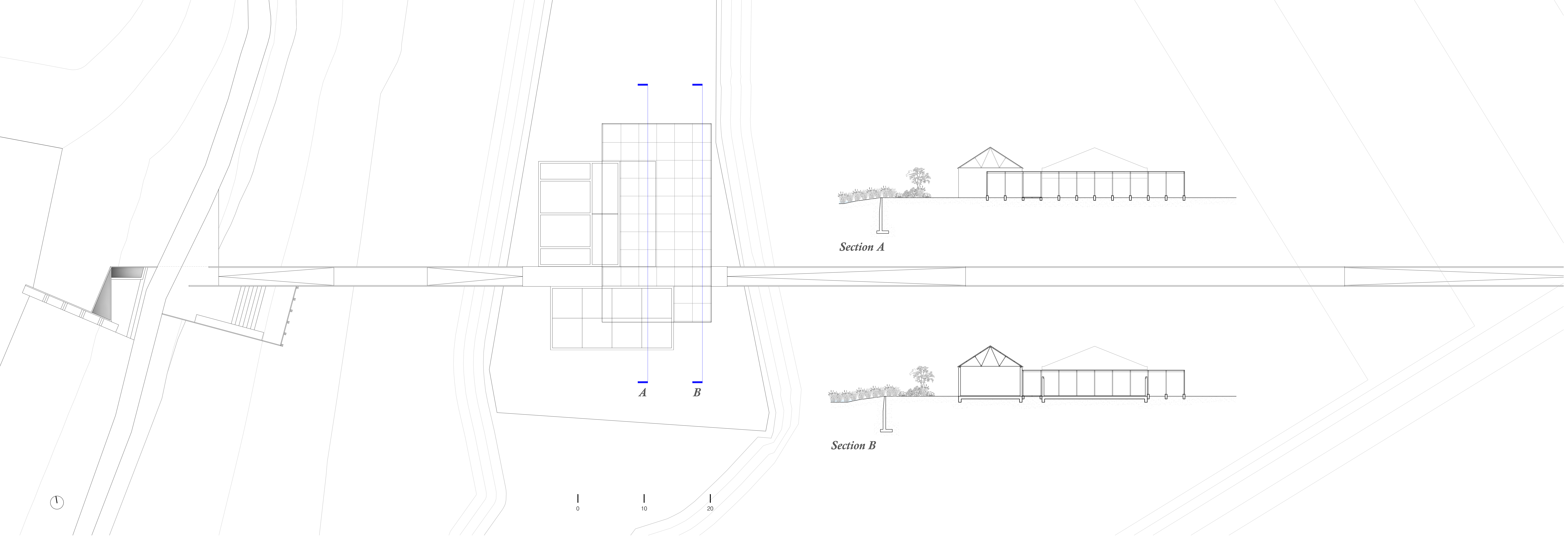


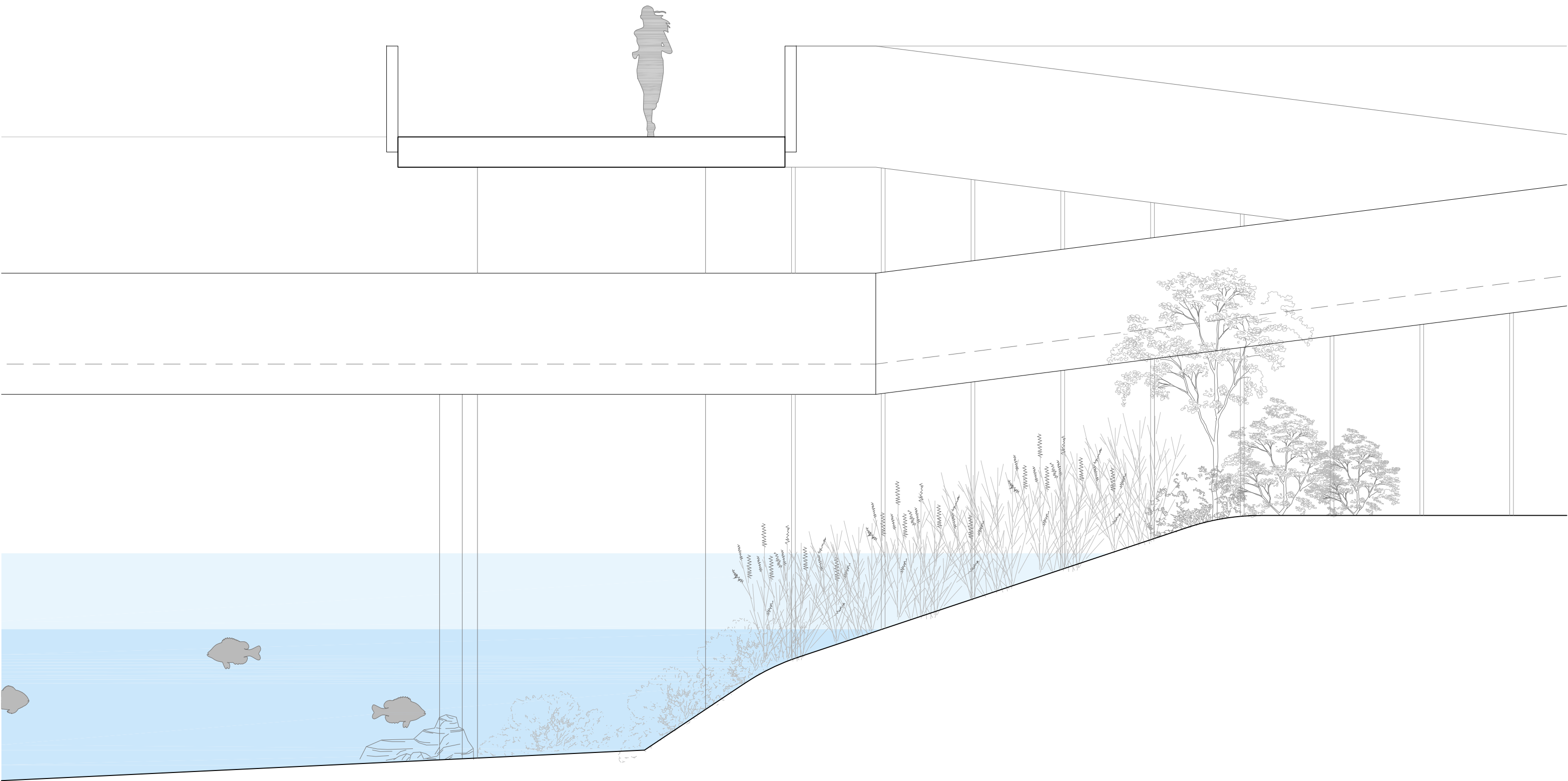


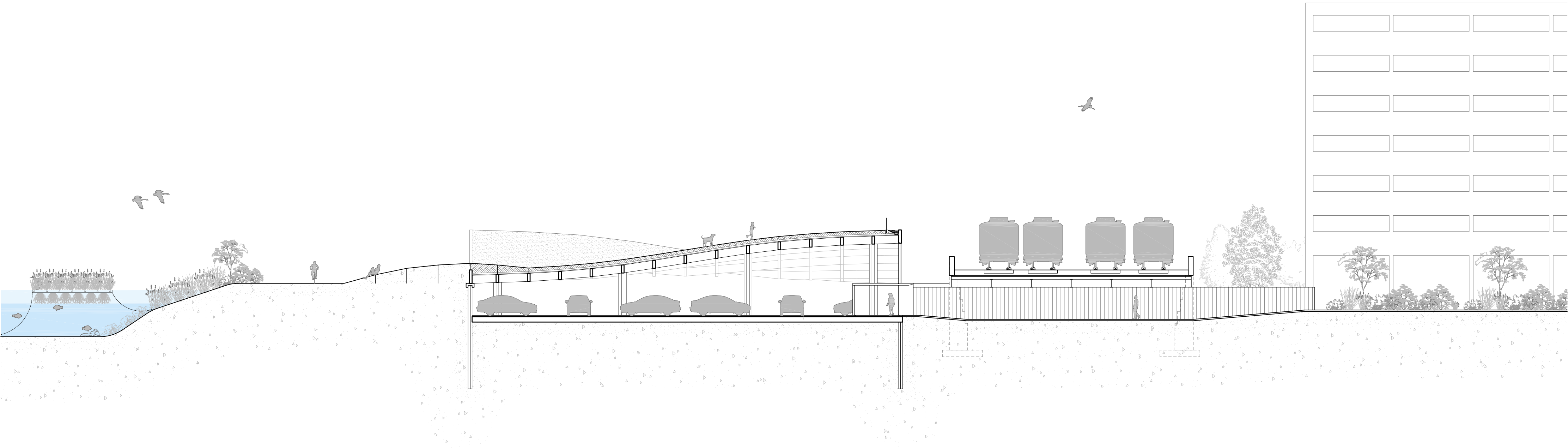
Approach and Landing

- 1 Abbey Road Station + Greenway Approach
- 2 Swimming Area Landing
- 3 West Ham Station. + Twelve Trees Residential Approach
- 4 Leeway + Three Mills Water Locks Approach
- 5 Tribune to Island Restaurant Landing
- 6 Thames + A12 Rd. Approach







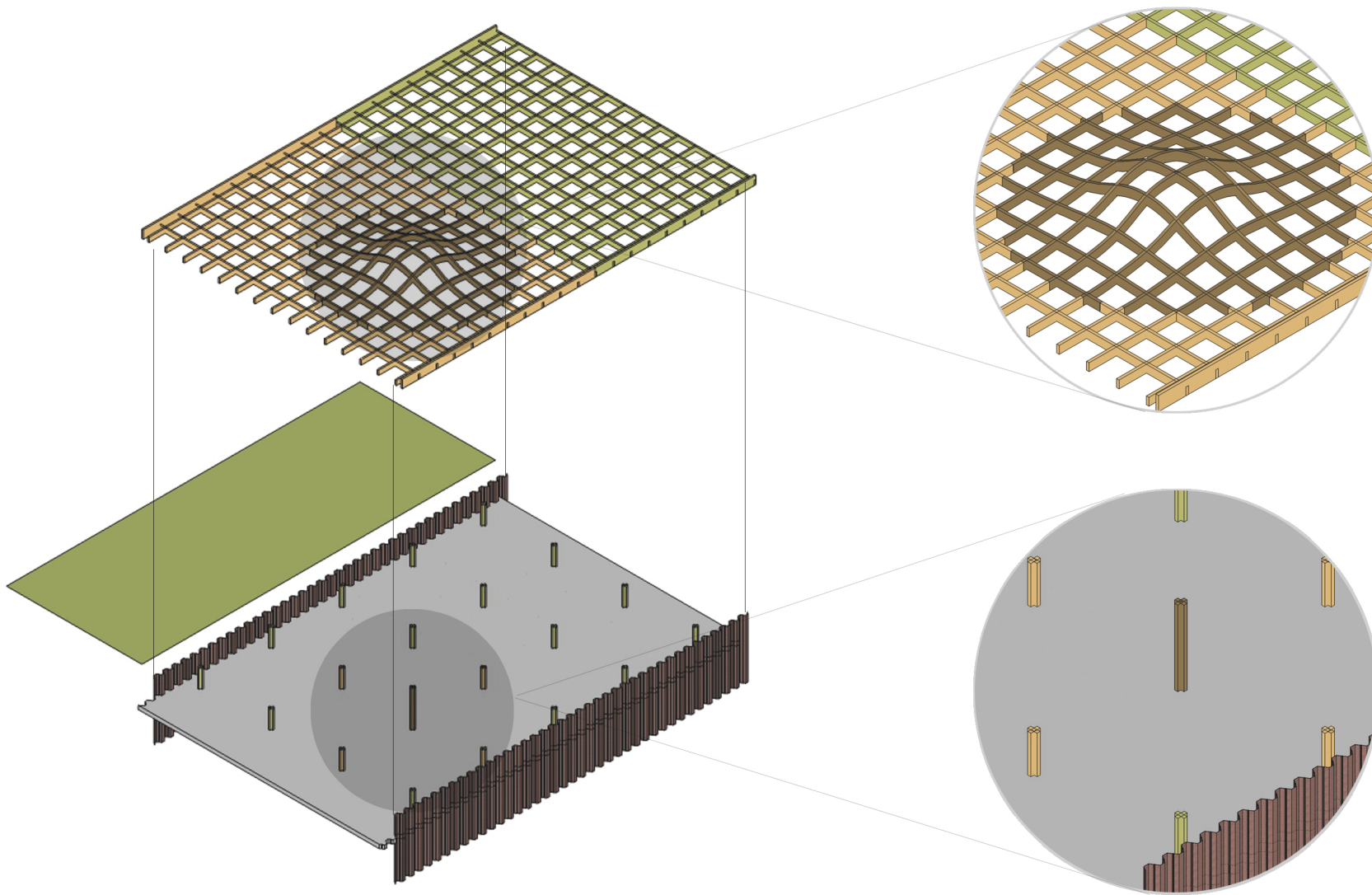


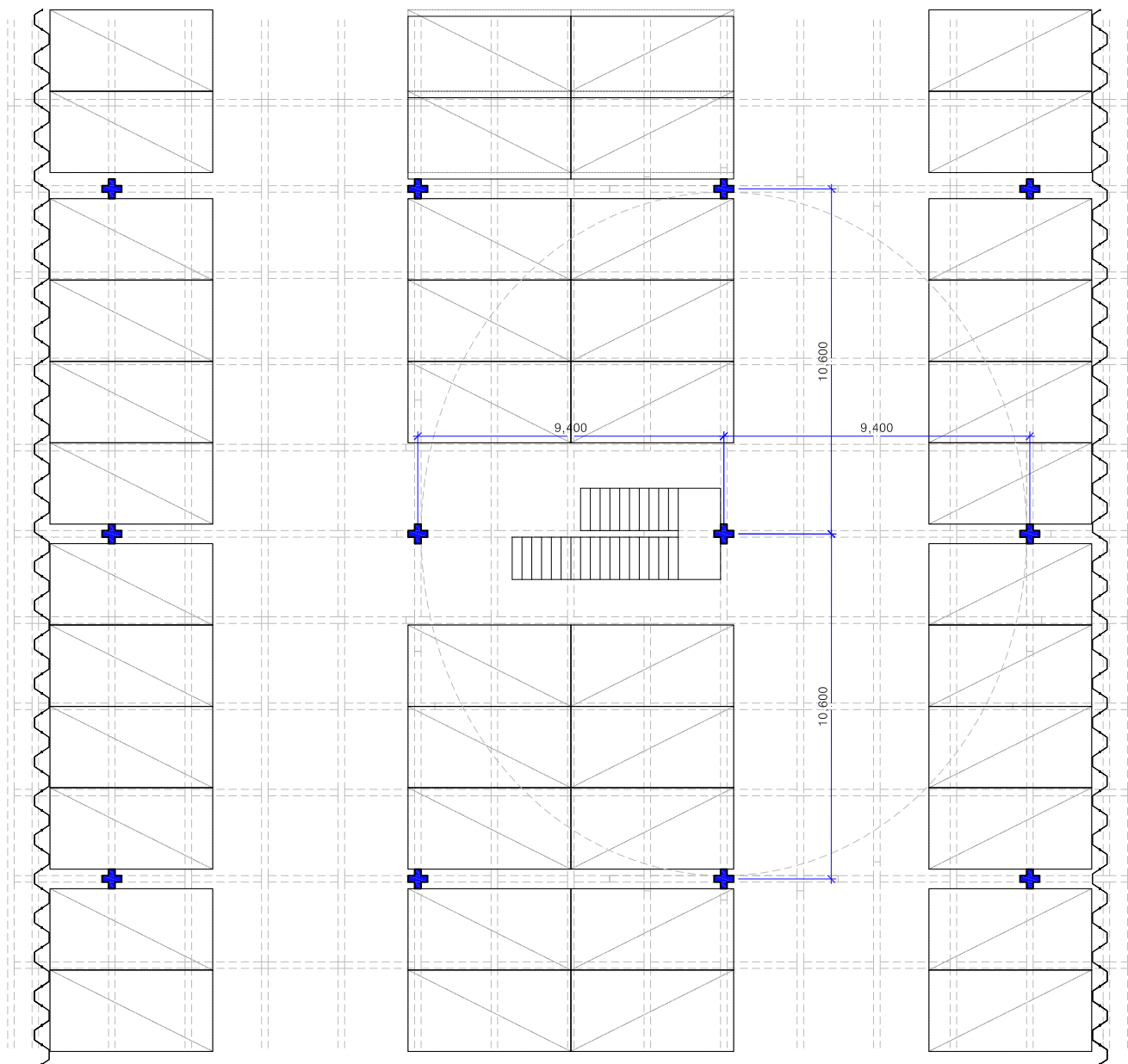
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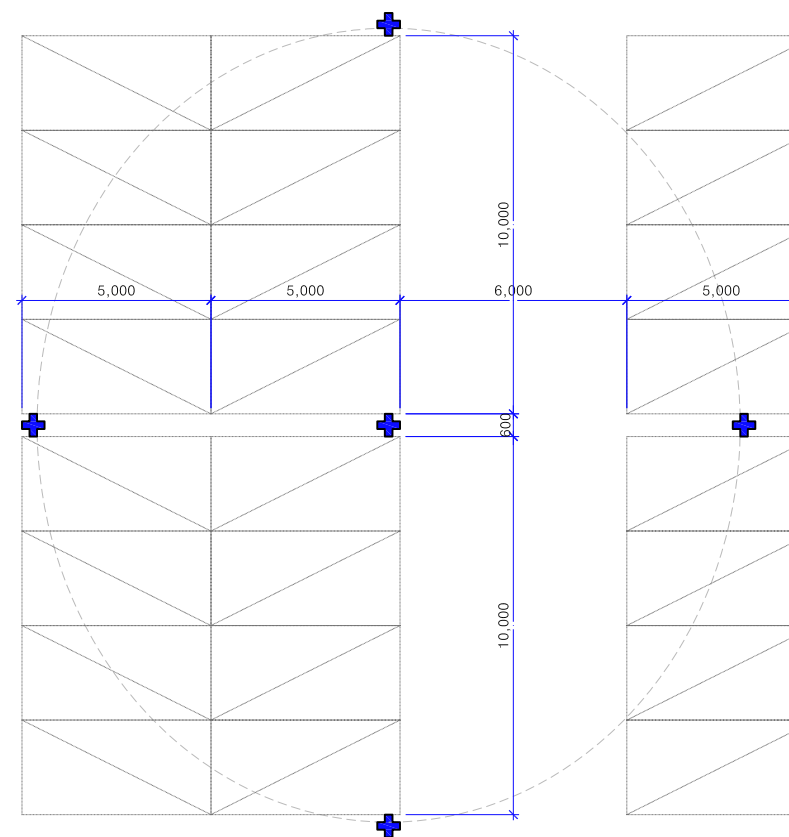
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Cars Landing Mound

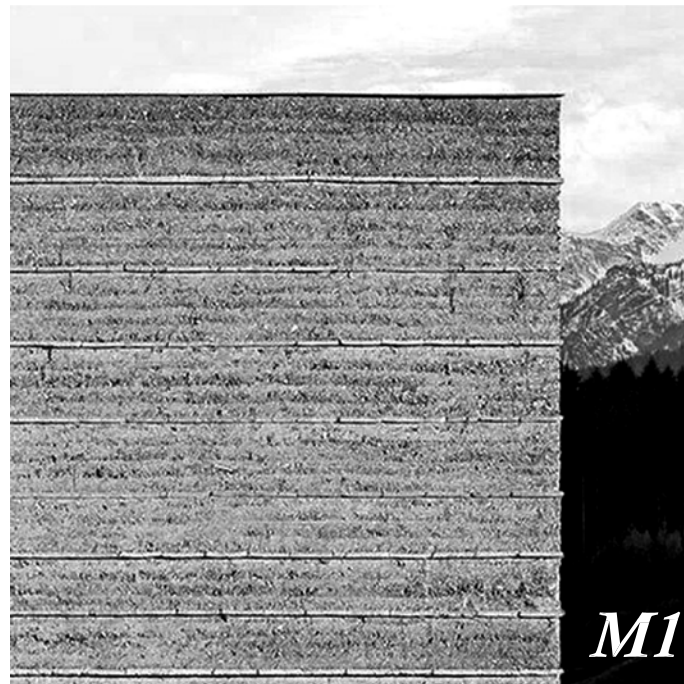




Cars Landing Mound



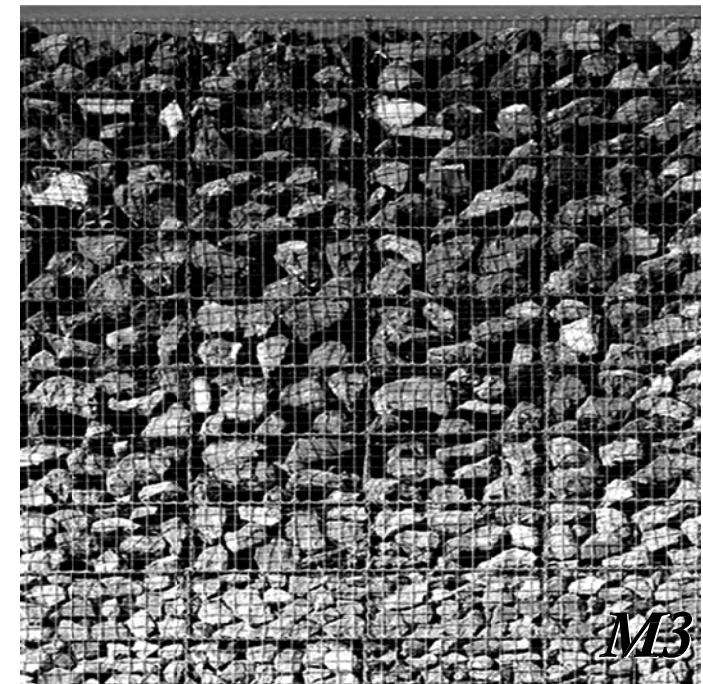
*Rammed Earth Wall
from Reclaimed Soil*

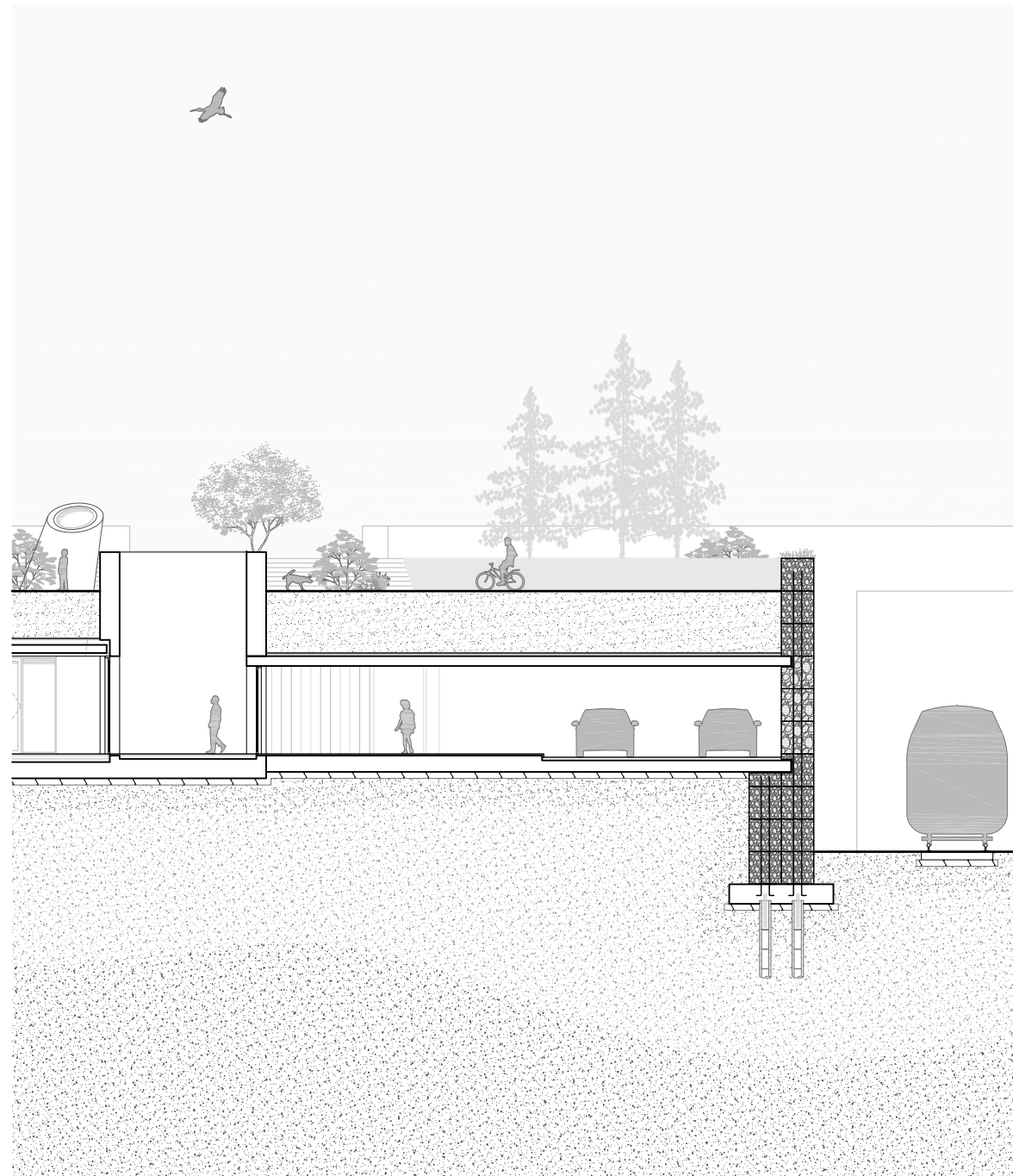
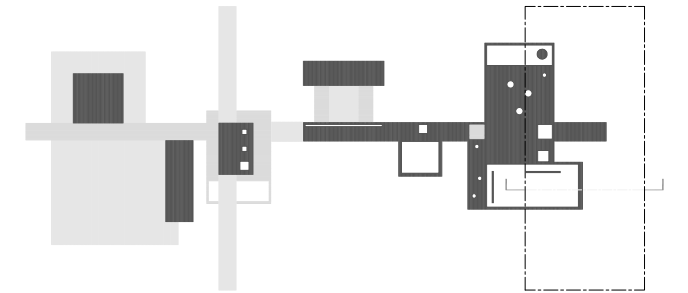


*Steel Sheet Pile Wall
from Riverbank*



*Gabion Retaining Wall
from Reclaimed Stones*





Landing Platform

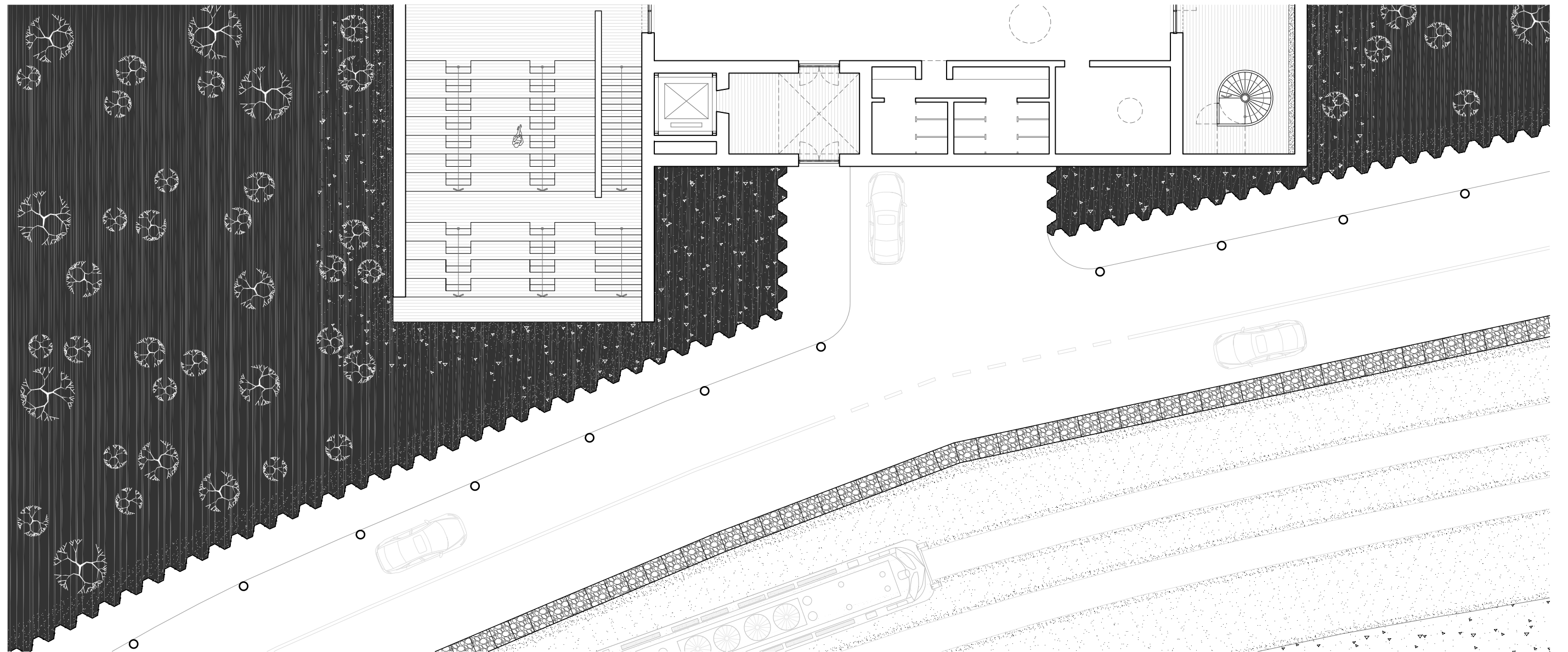
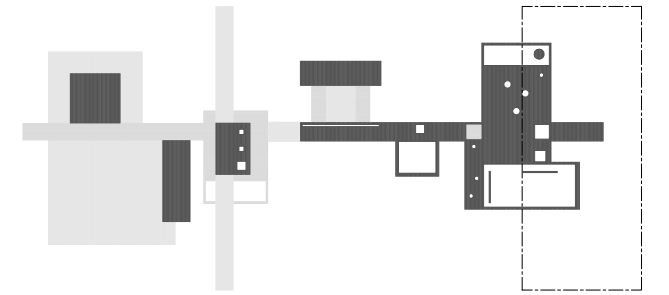
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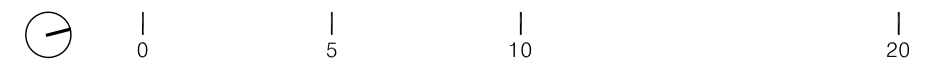
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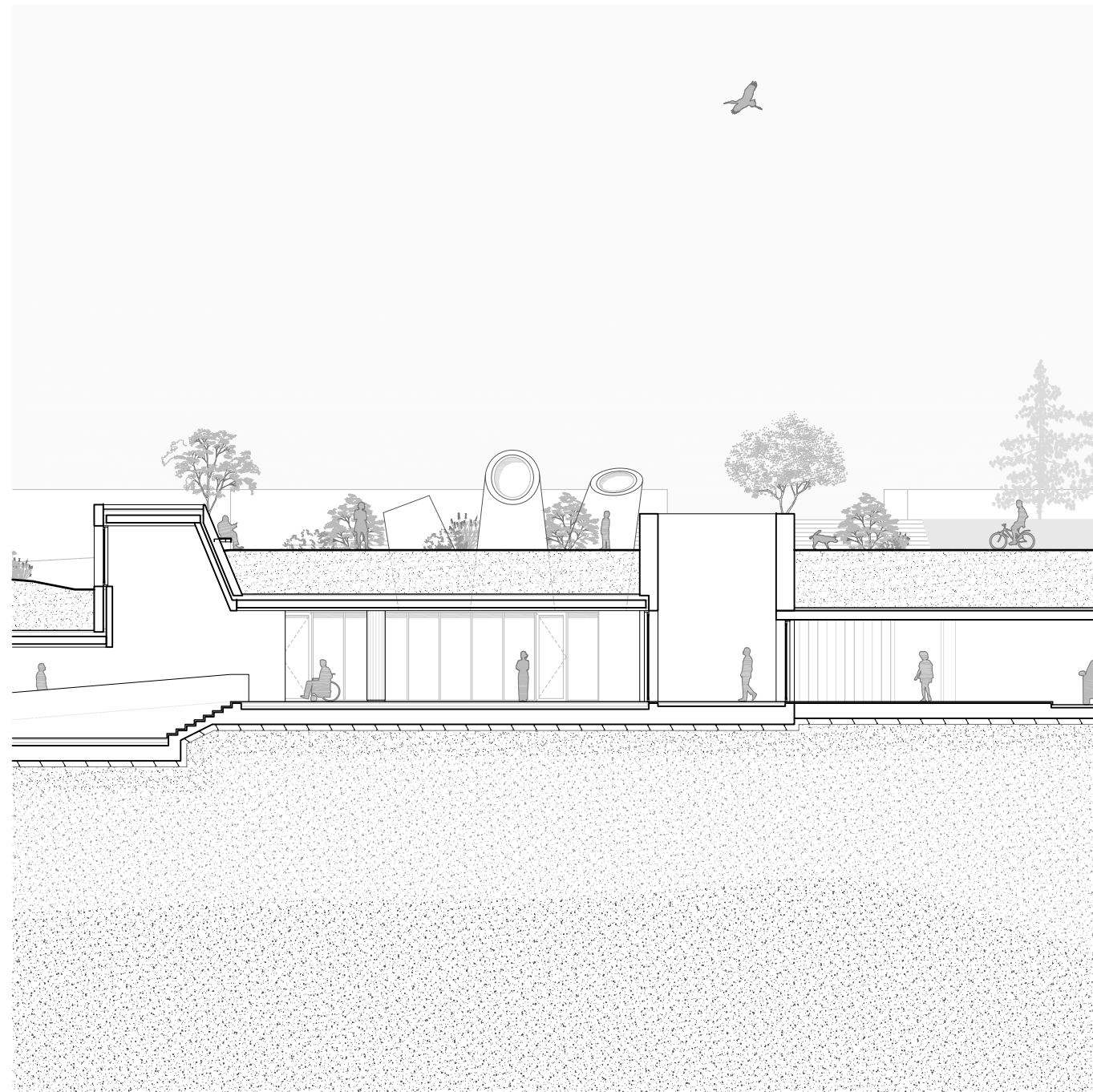
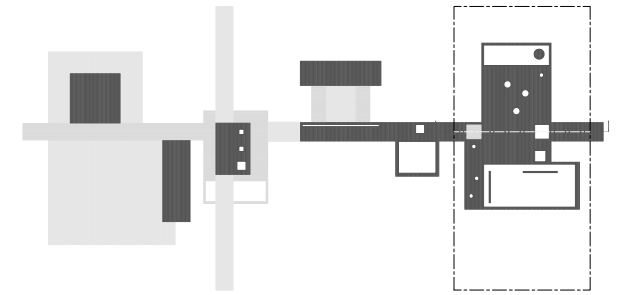
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Landing Platform





Open Air Theater and Multipurpose Hall

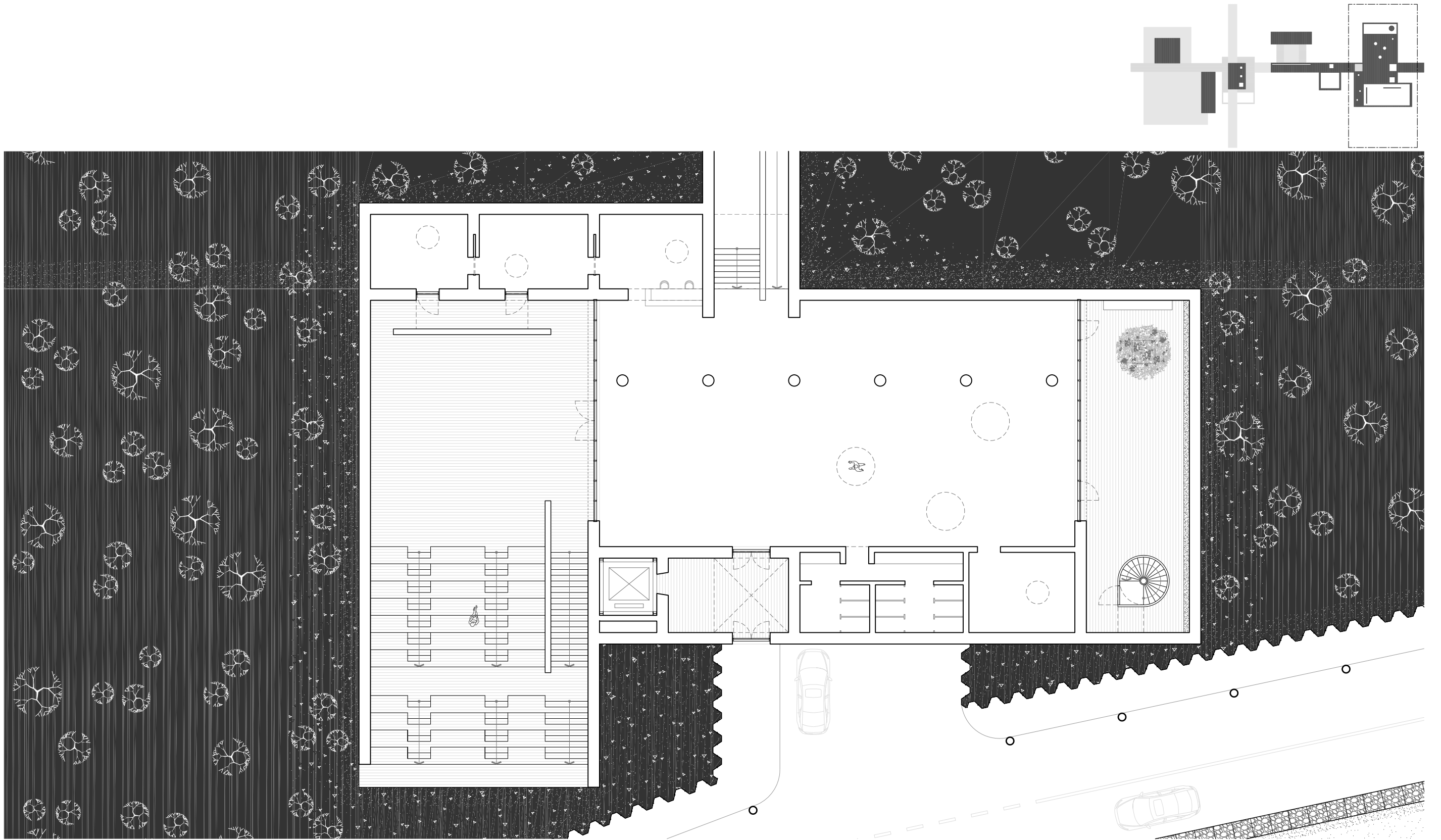
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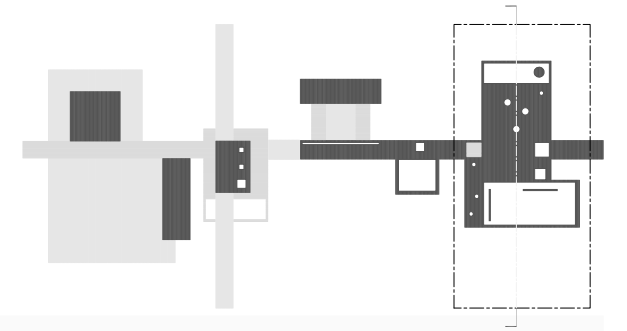
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Open Air Theater and Multipurpose Hall

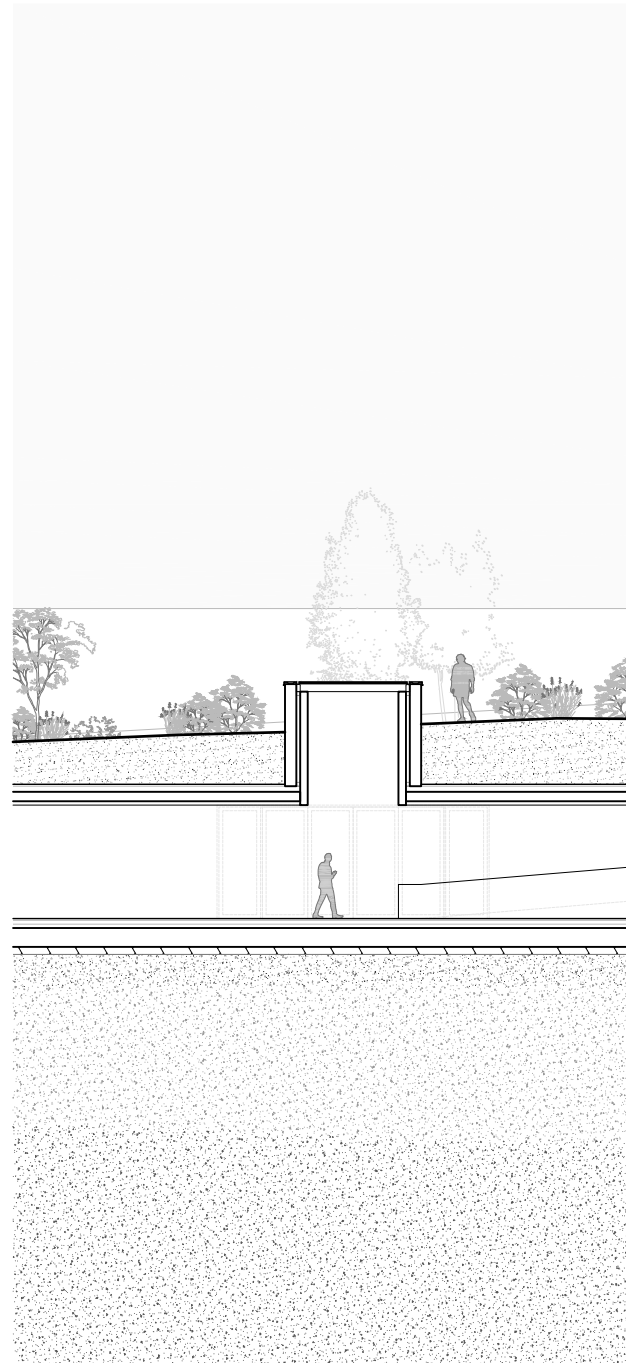
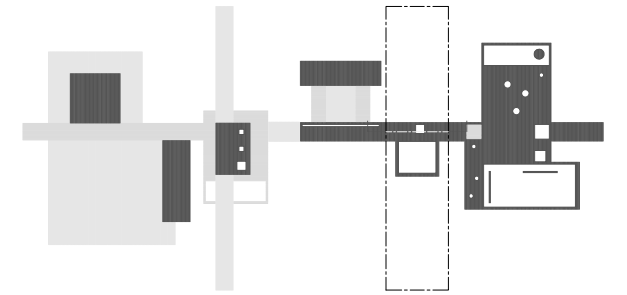




Open Air Theater and Multipurpose Hall

Section B

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Sunken Garden Patio and Skylight Basin Corridor

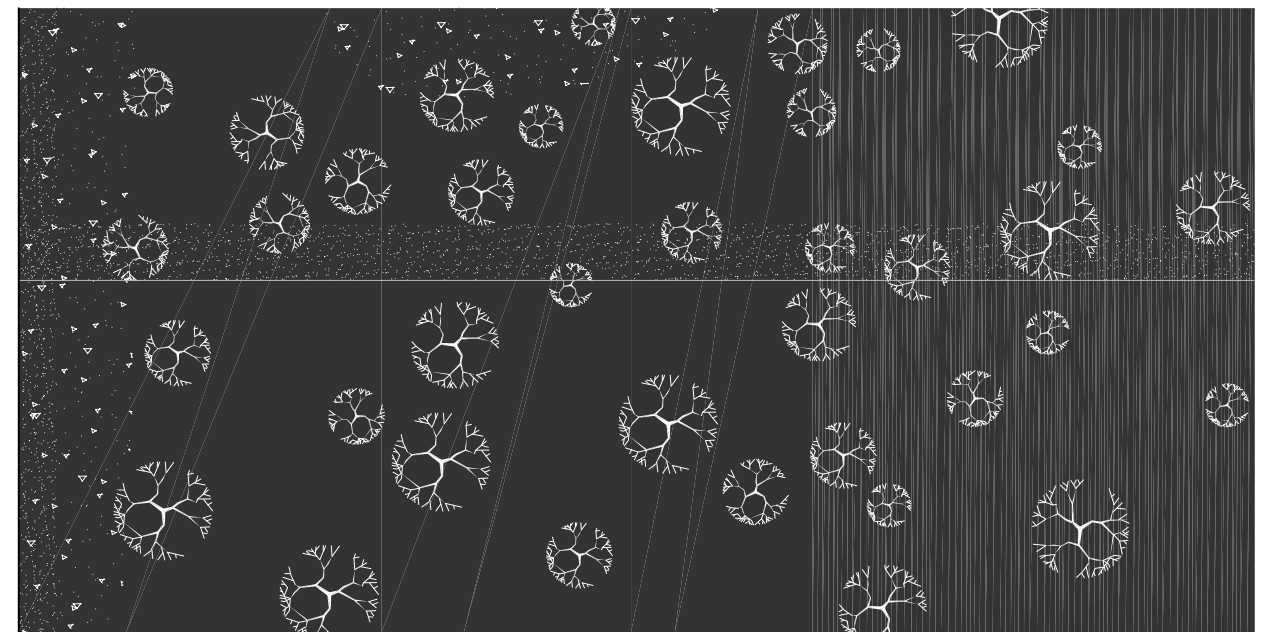
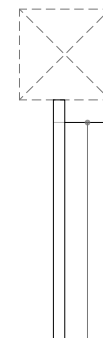
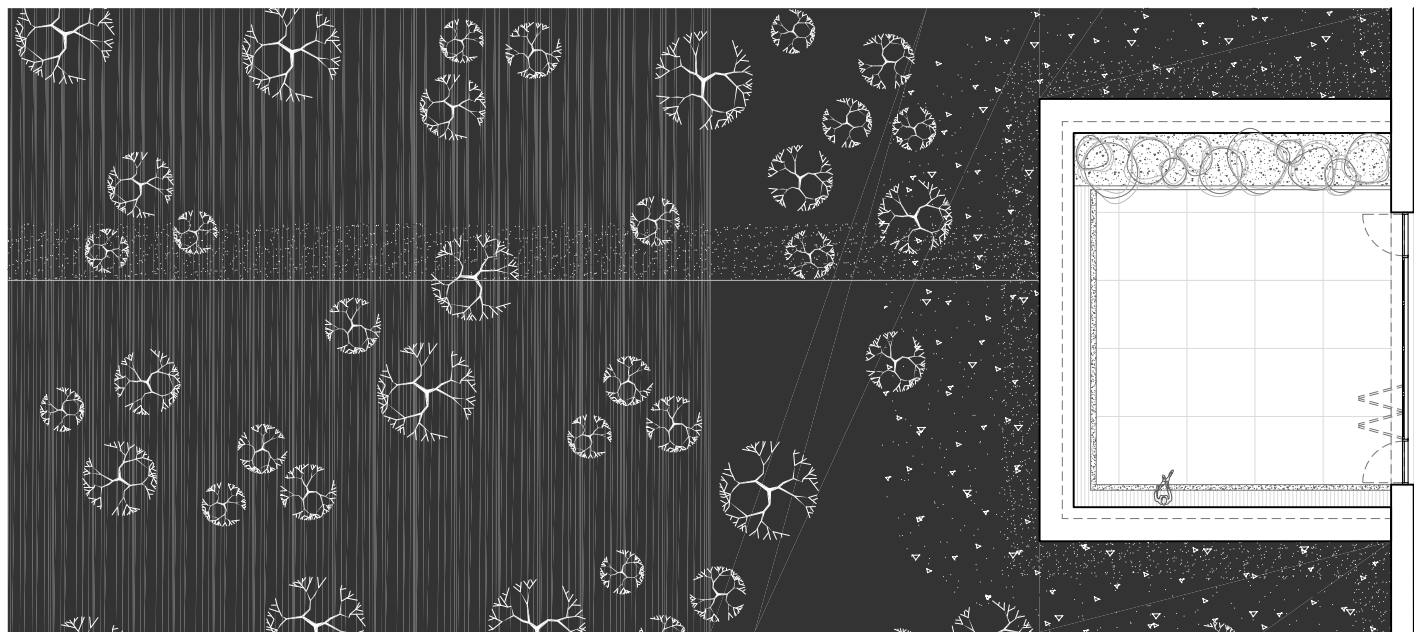
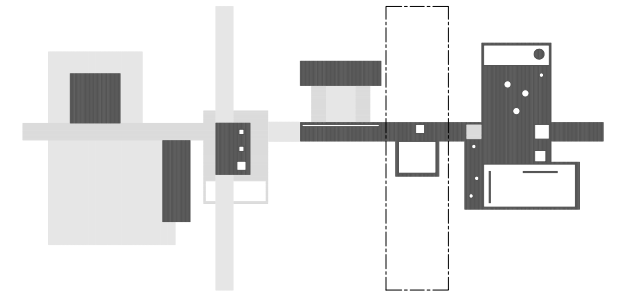
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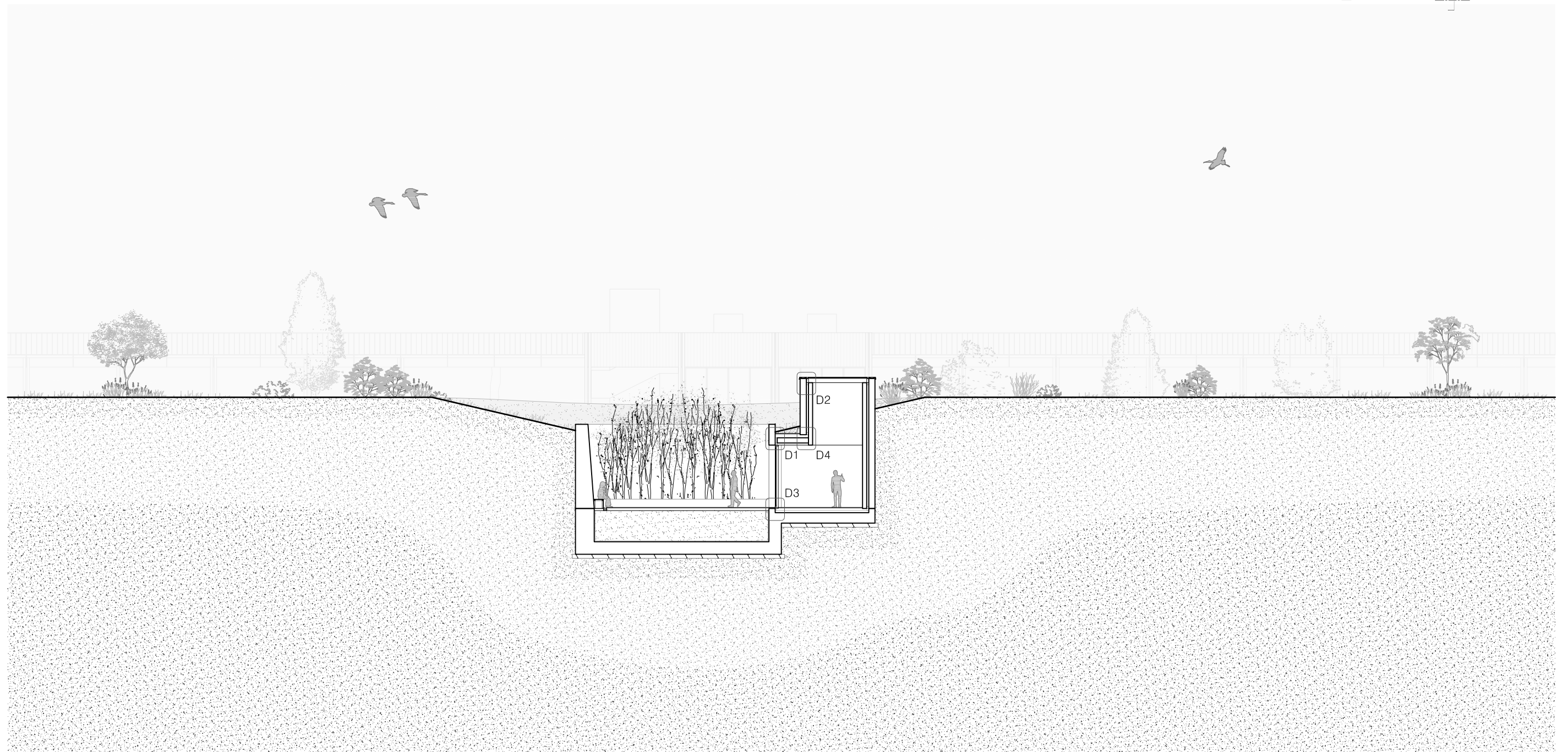
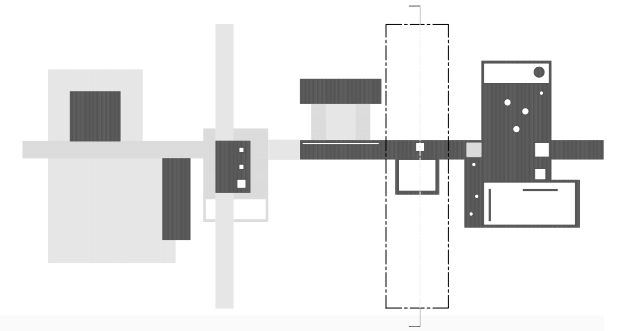
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Sunken Garden Patio and Skylight Basin Corridor

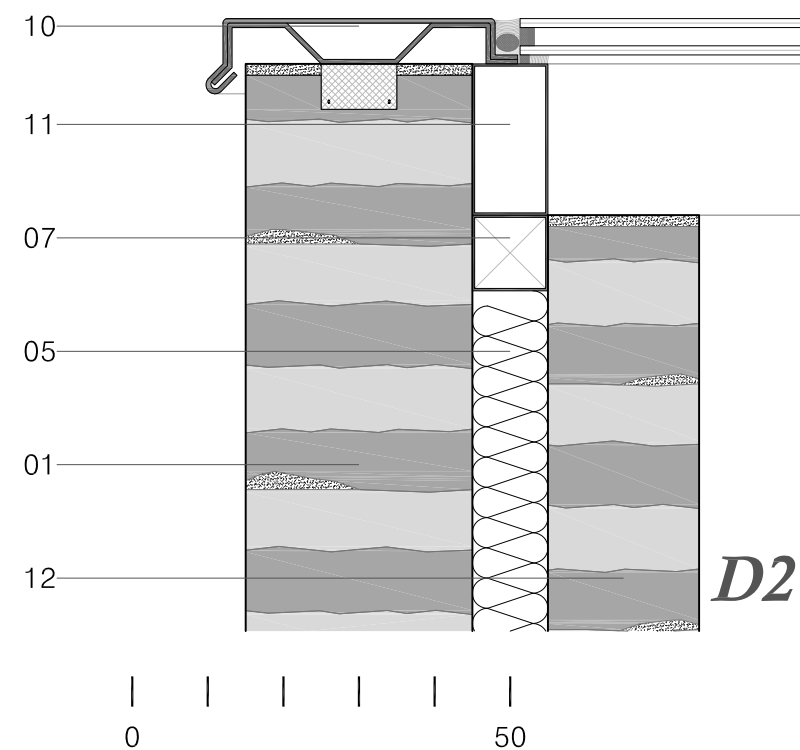
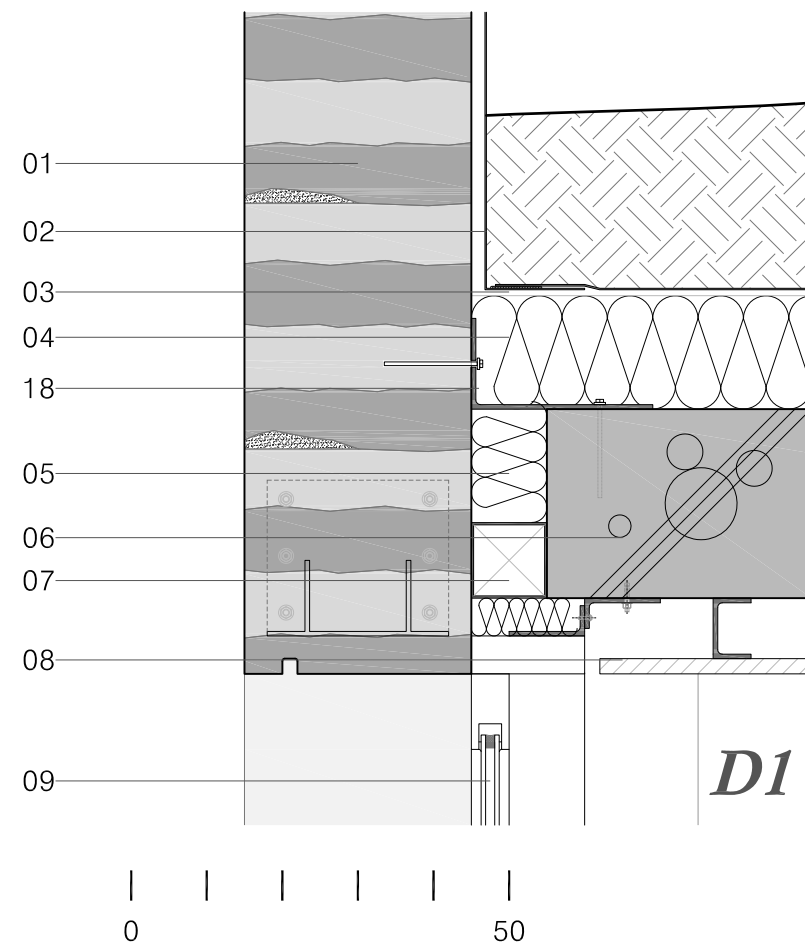




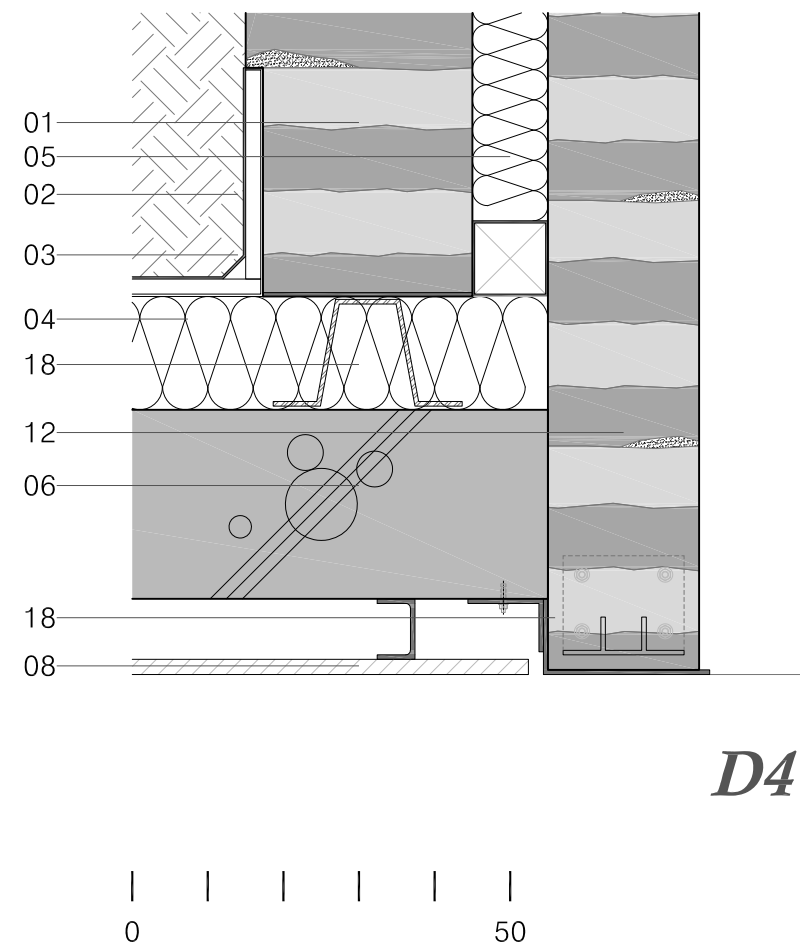
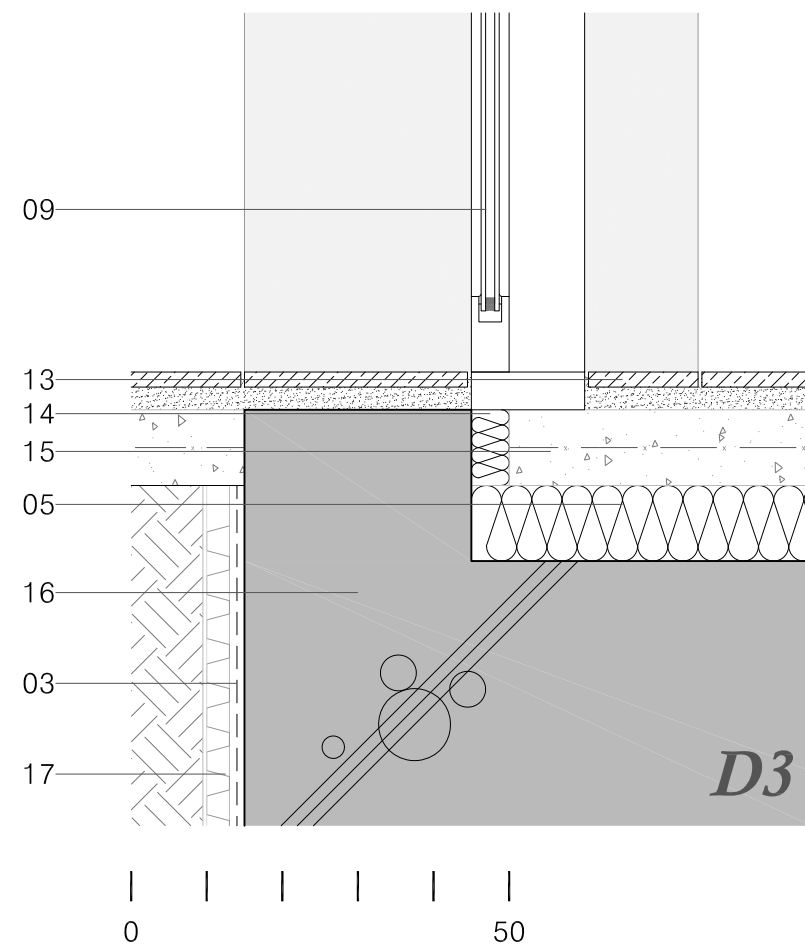
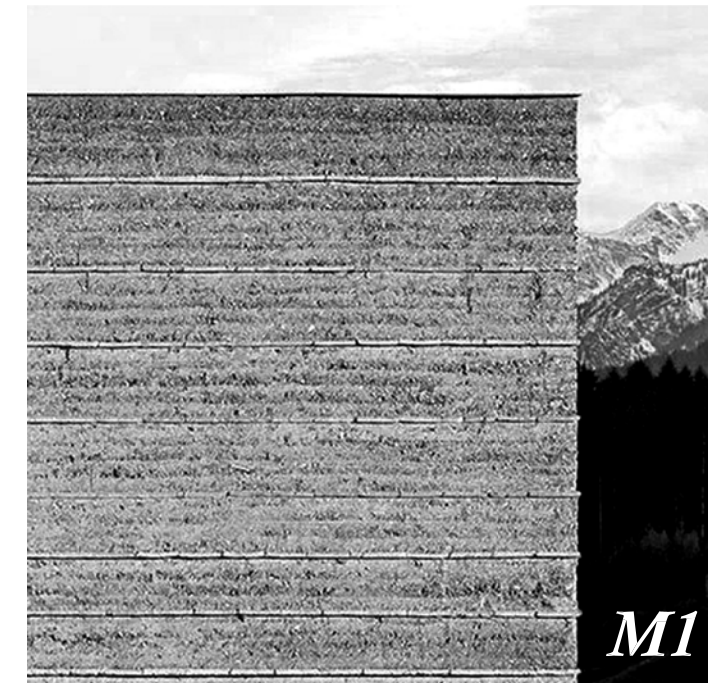
Sunken Garden Patio and Skylight Basin Corridor

Section B

0 5 10 20

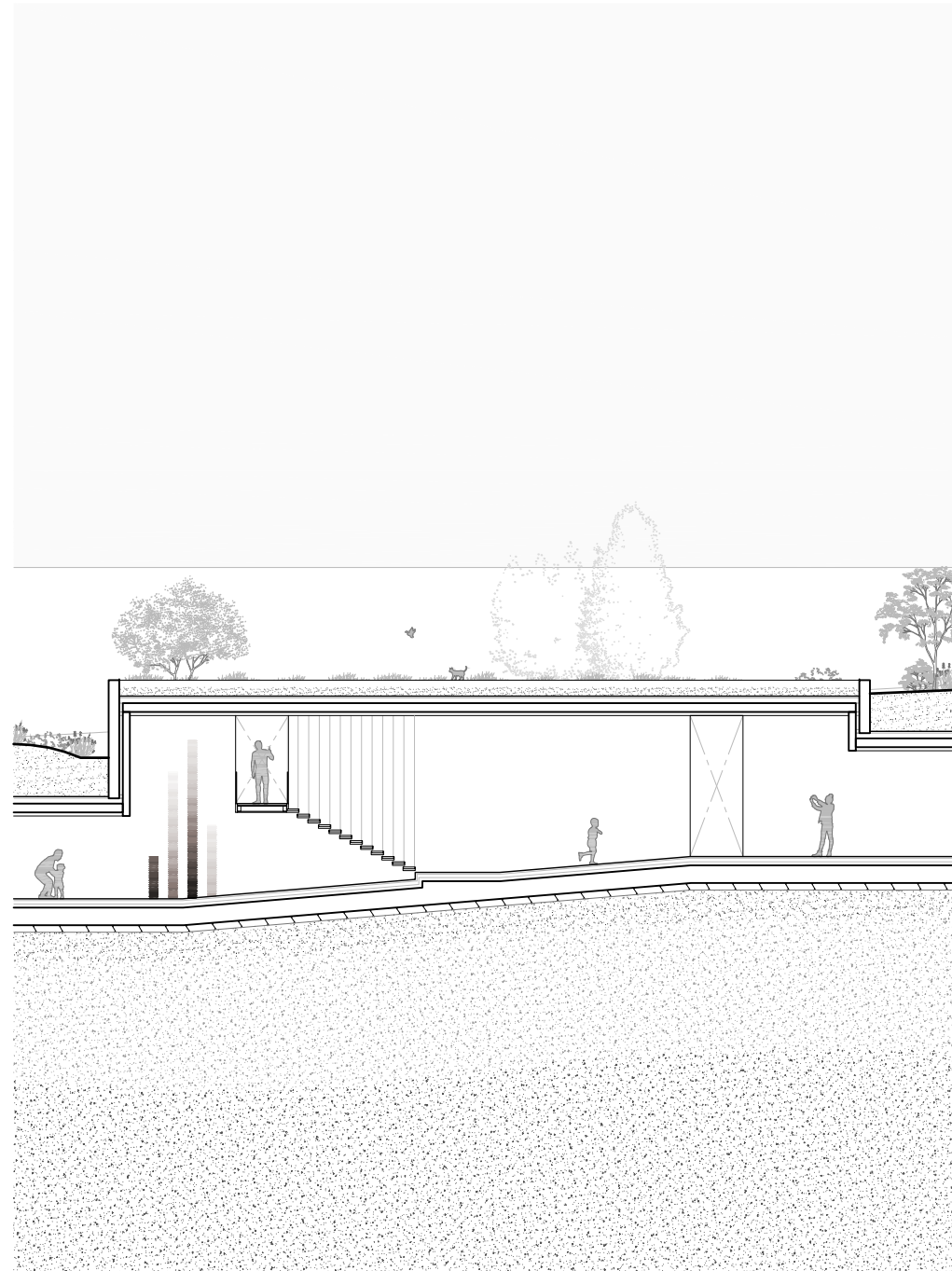
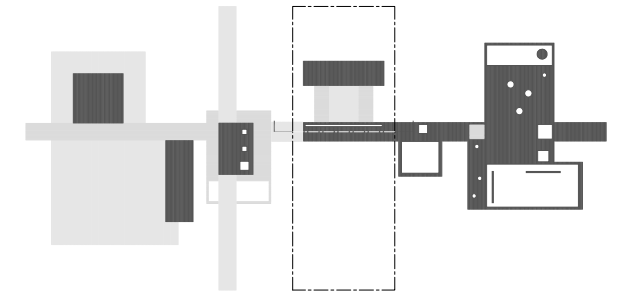


Rammed Earth Wall from Reclaimed Soil



Rammed Earth Wall Connection Detail

- 01 300 mm rammed earth wall
- 02 water proof layer of steel sheet and wood
- 03 water proofing membrane rubber sheet
- 04 150 mm Insulation
- 05 100 mm insulation
- 06 250 mm reinforced concrete slab
- 07 steel sill
- 08 20 mm wooden finish ceiling
- 09 24 mm double-glazed window mullion
- 10 aluminum sheet flashing
- 11 48 mm insulation bar window, hidden type
- 12 200 mm rammed earth wall
- 13 20 mm stoneware tile on 30 mm mortar
- 14 vapor insulation in sprayed form
- 15 100 mm plain concrete, wire mesh inside
- 16 500 mm mat concrete foundation
- 17 30 mm drain board
- 18 steel lintel with friction-fit bracket



Water Garden Courtyard, Library Stage and Exhibition Gallery Corridor

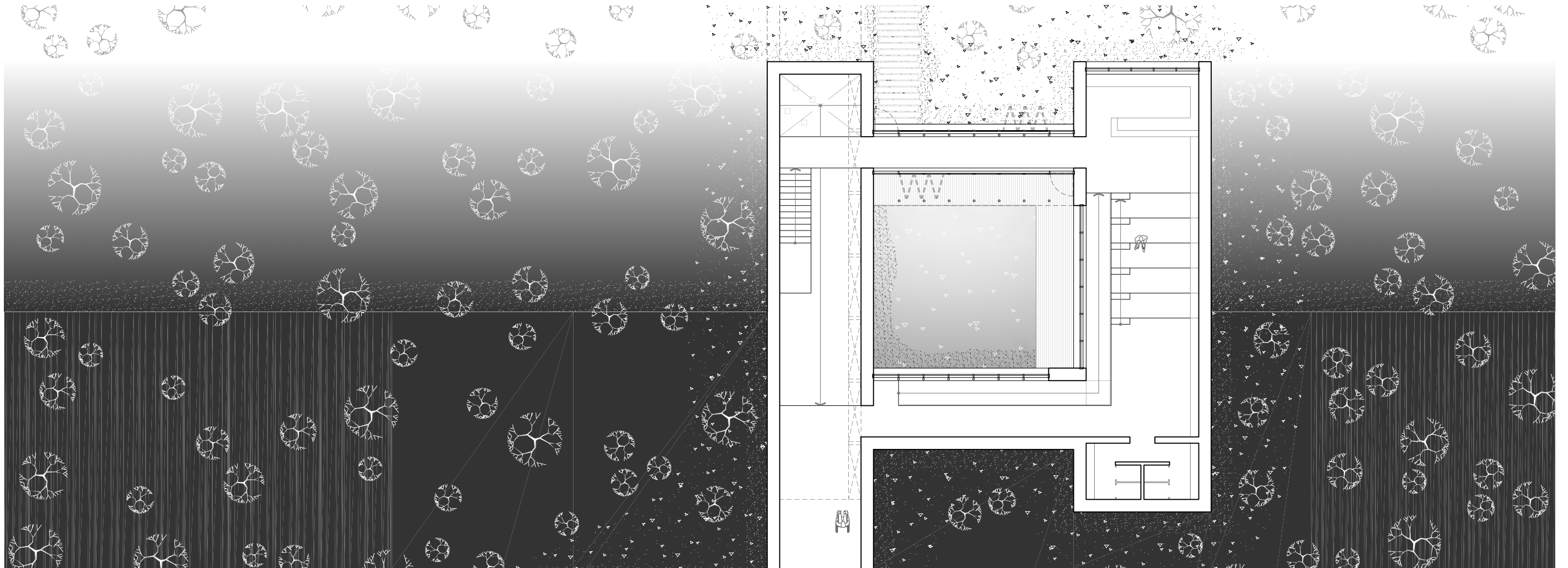
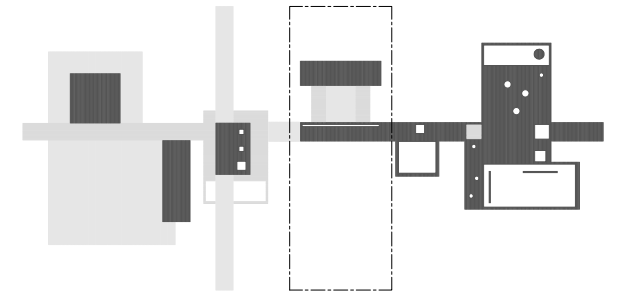
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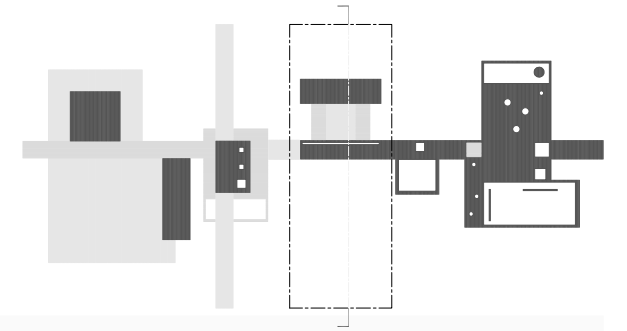
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Water Garden Courtyard, Library Stage and Exhibition Gallery Corridor



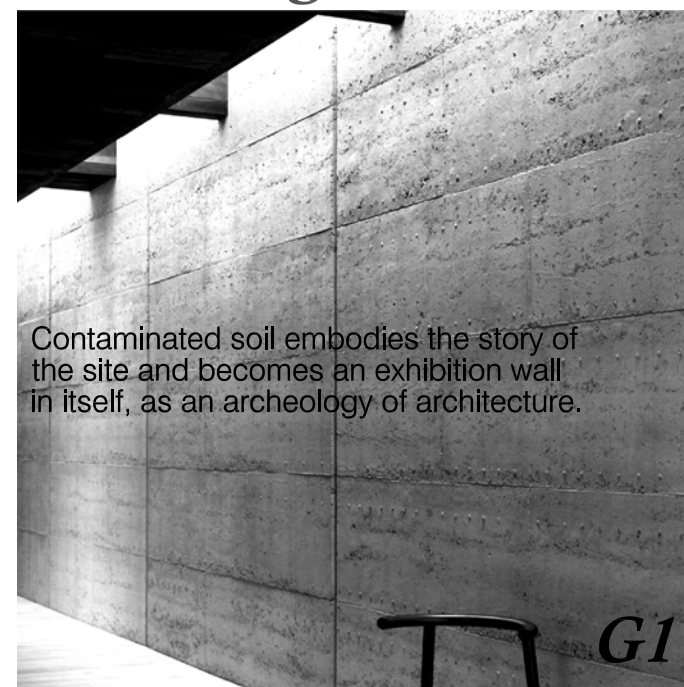


Water Garden Courtyard, Library Stage and Exhibition Gallery Corridor

Section B

0 5 10 20

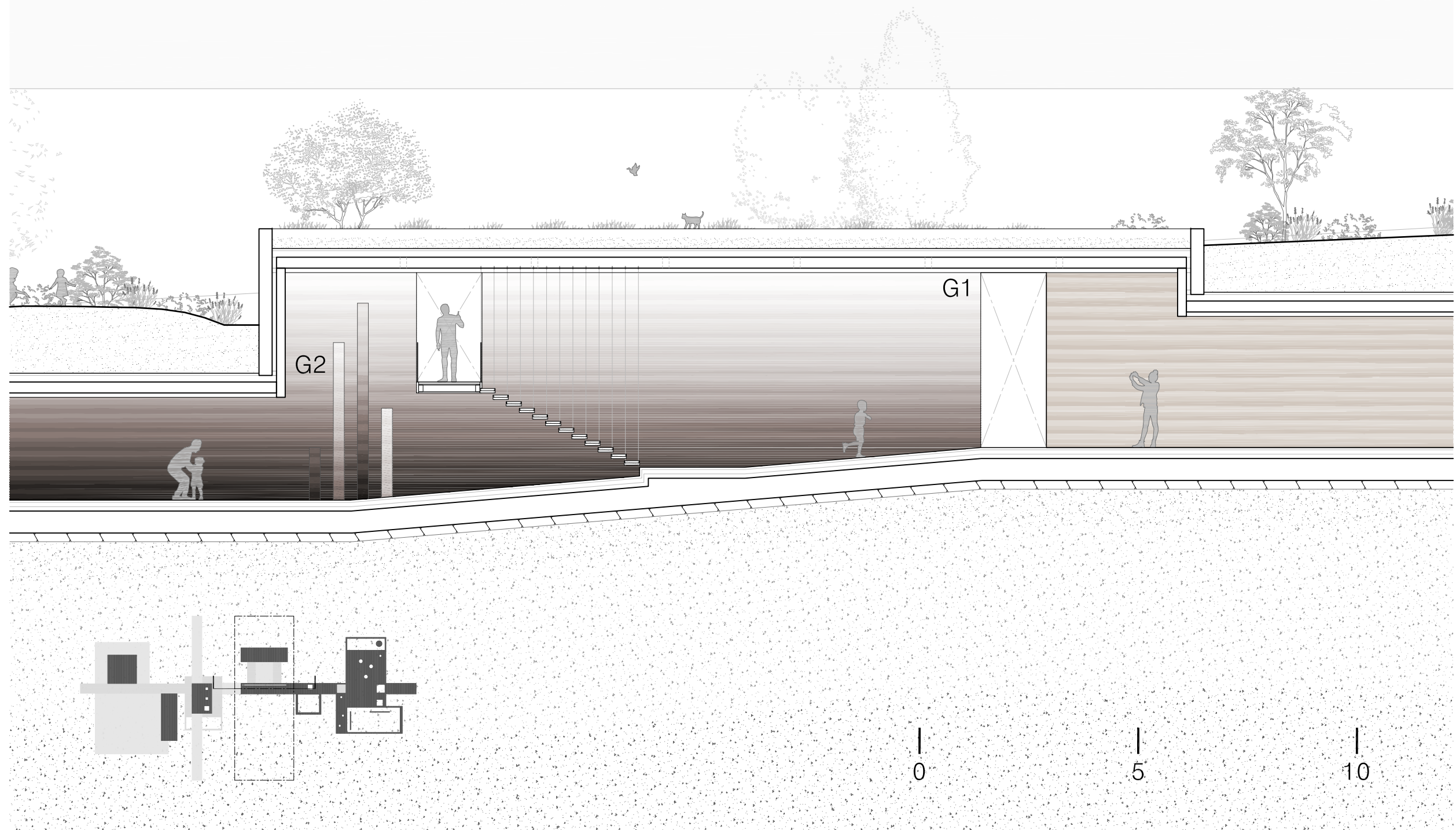
Archaeological Wall

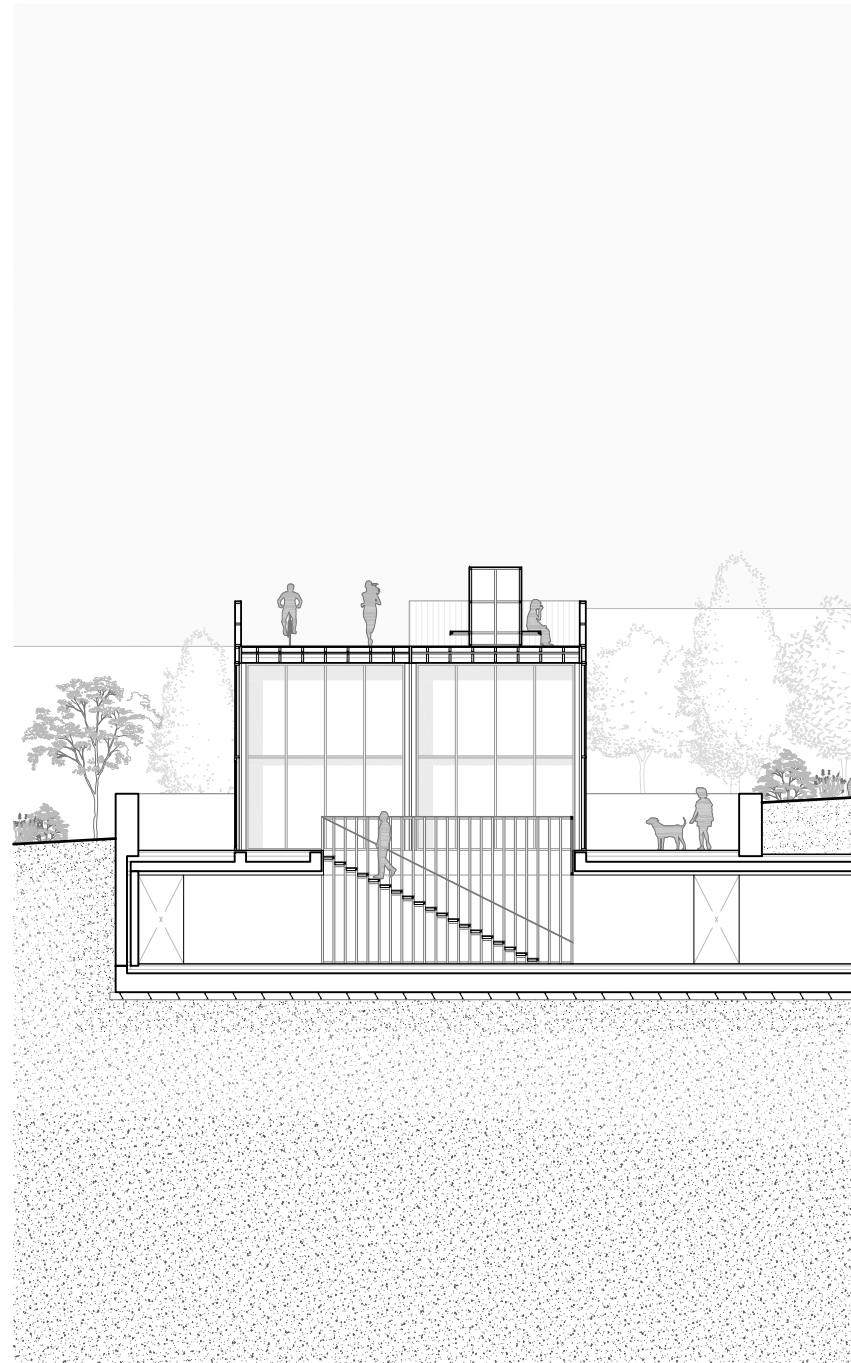
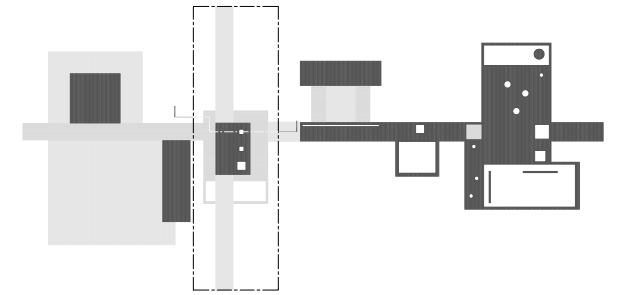


Ecological Sculpture



Exhibition Gallery Corridor





Observatory, Cafeteria and Office

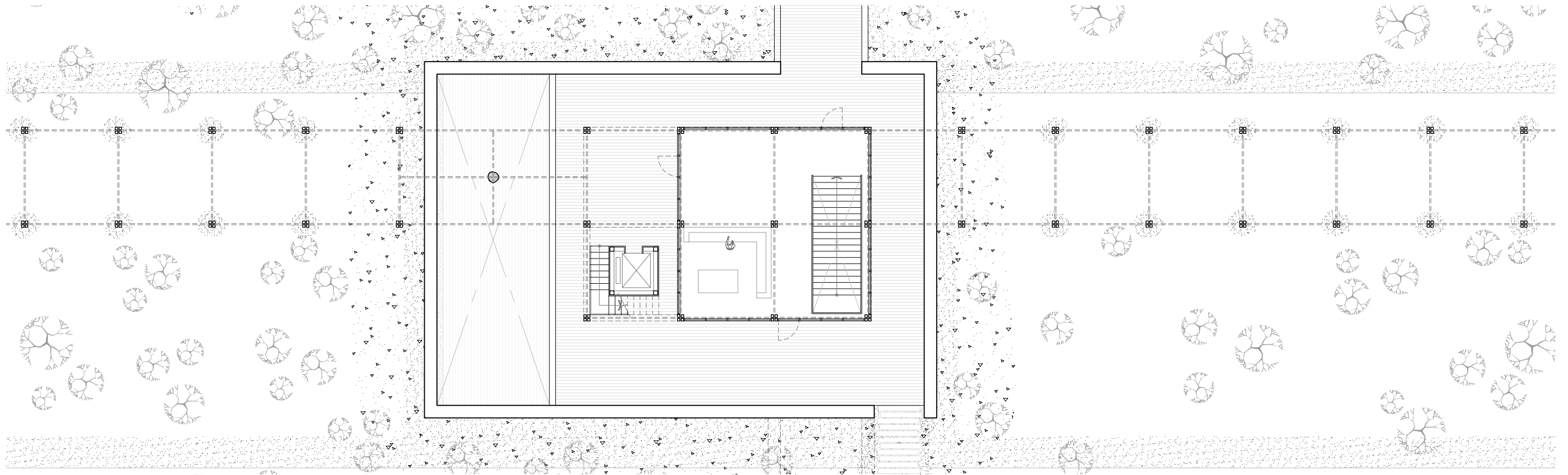
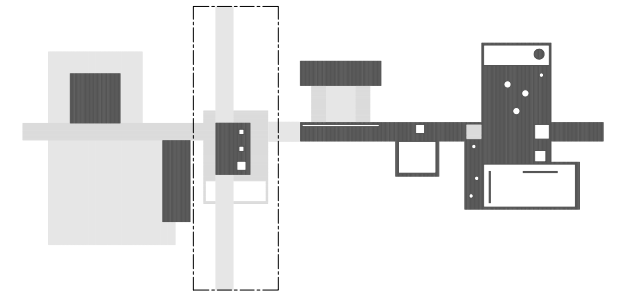
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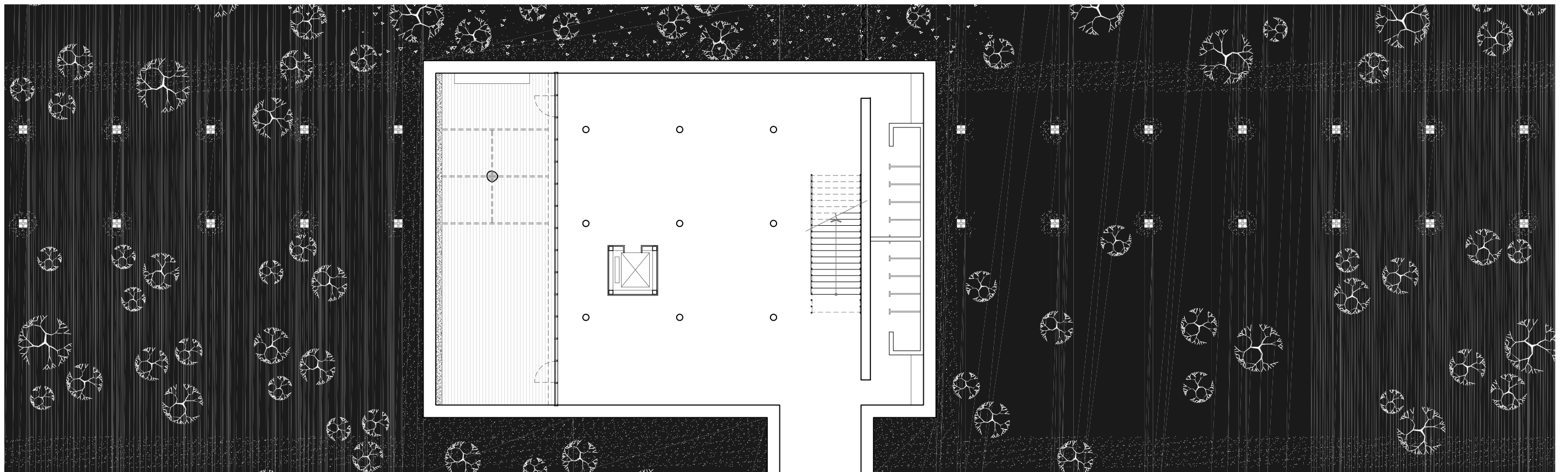
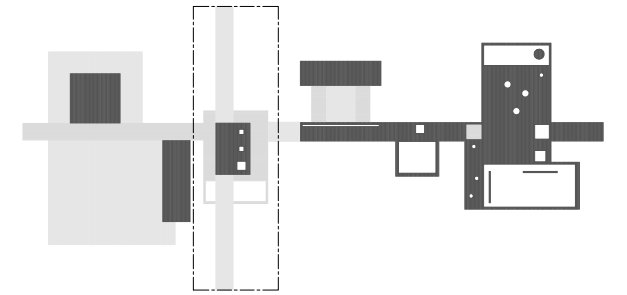
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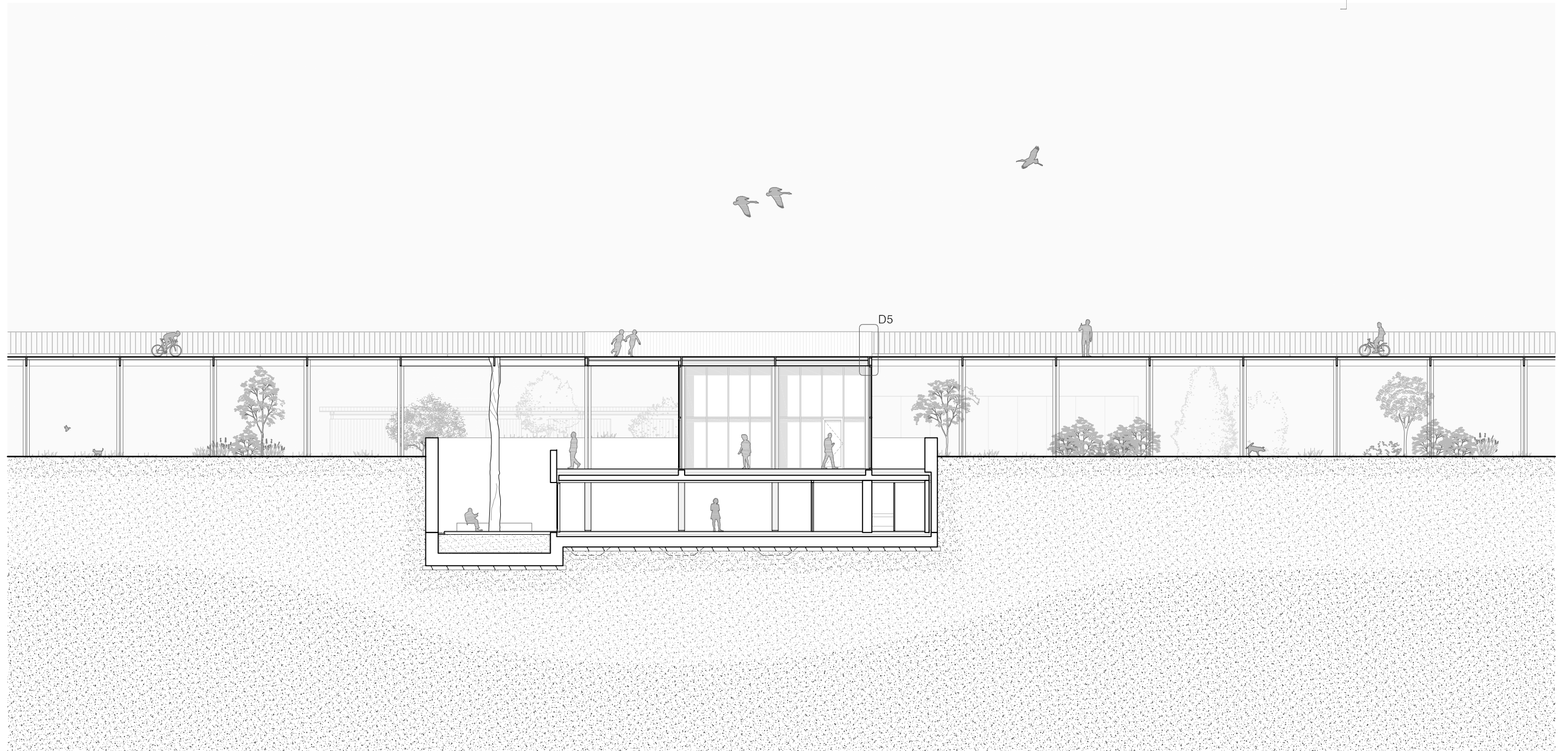
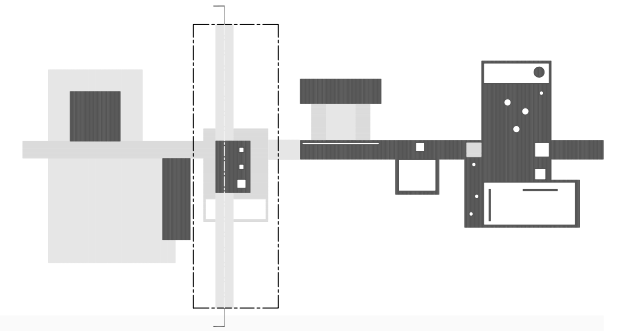
Observatory, Cafeteria and Office (Ground)





Observatory, Cafeteria and Office (Underground)





Observatory, Cafeteria and Office

Section B

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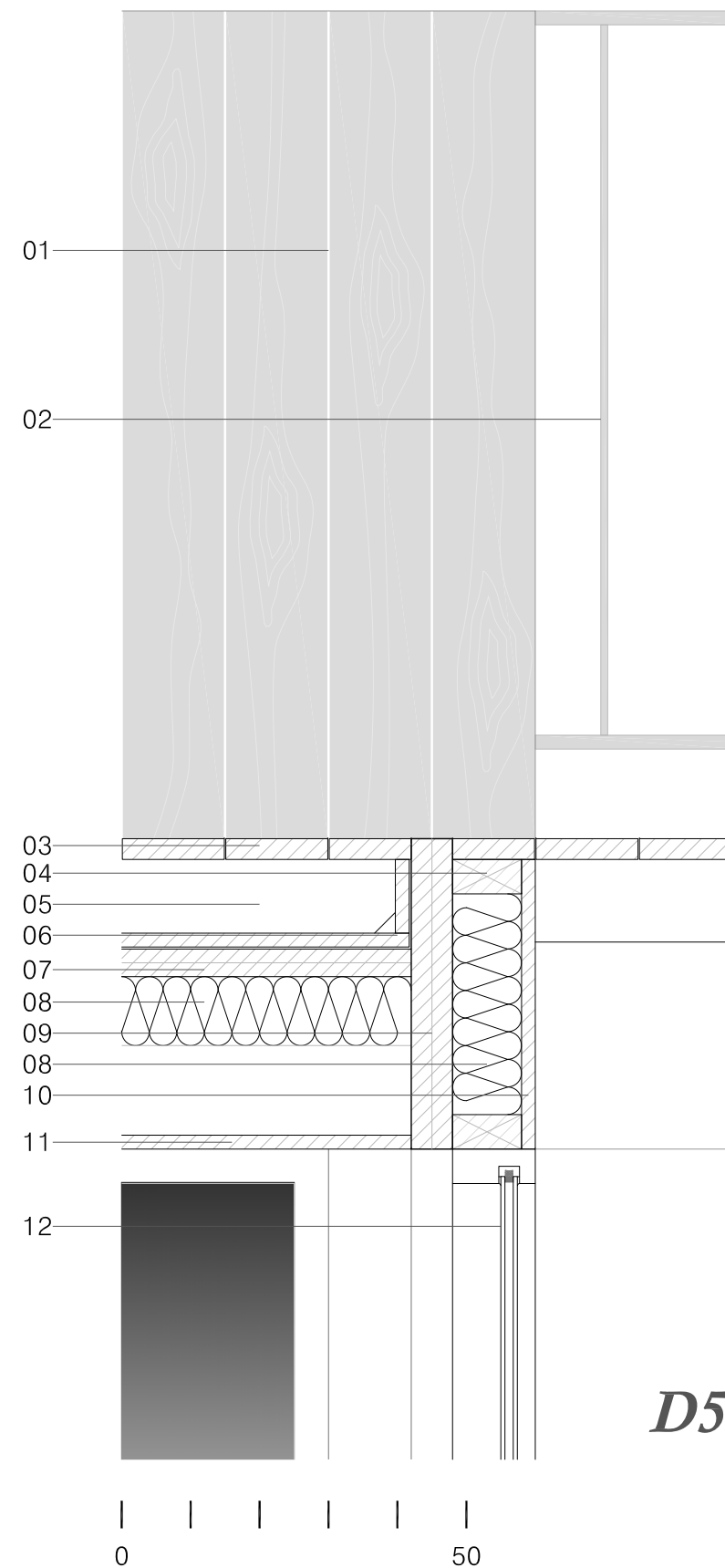
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Tree Trunk Pillar from Reclaimed Tree

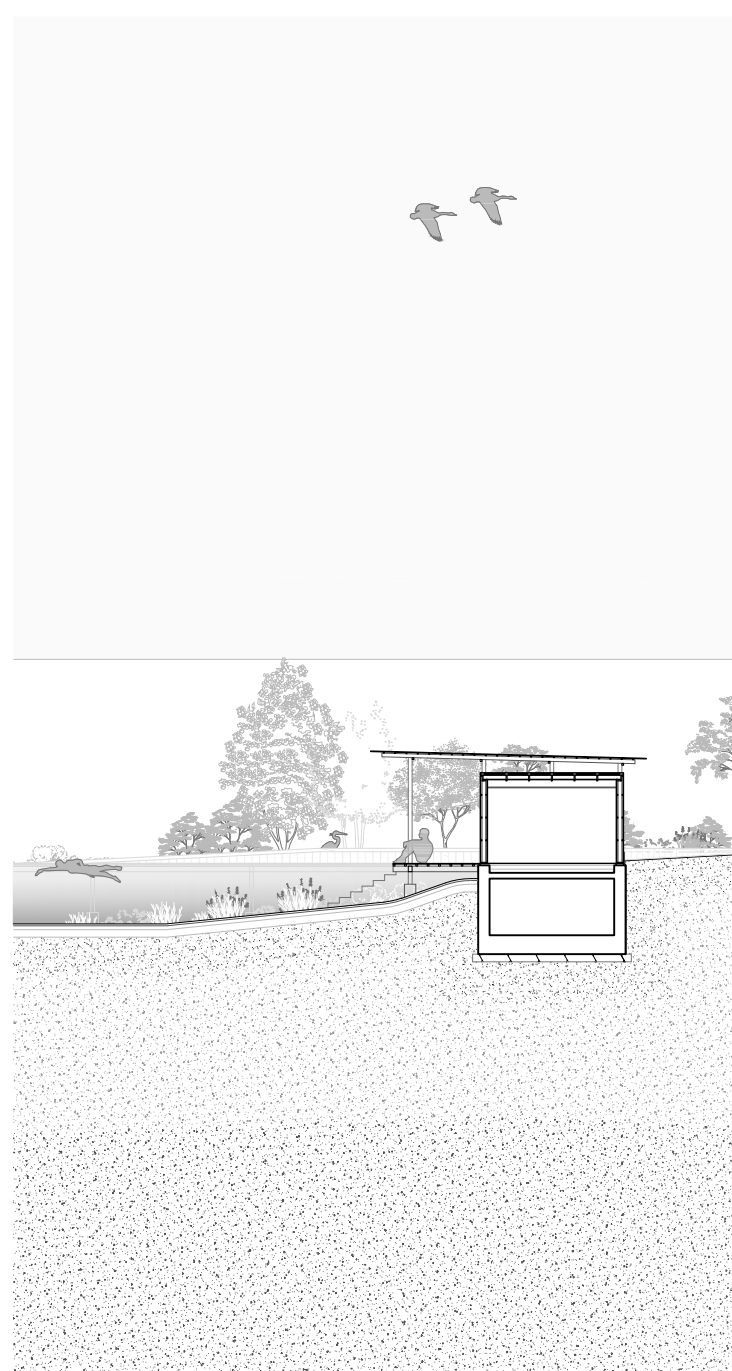
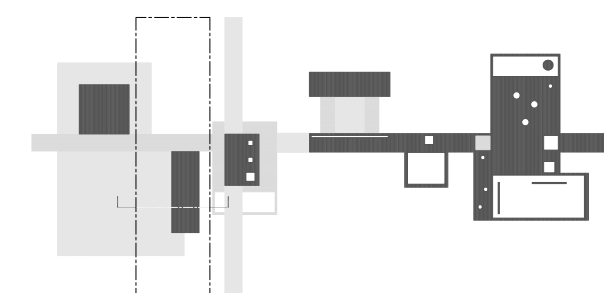


Sticks and Stones, David Chipperfield,
Installation of 144 tree trunks,
Neue Nationalgalerie, Berlin



Timber Structure Connection Detail

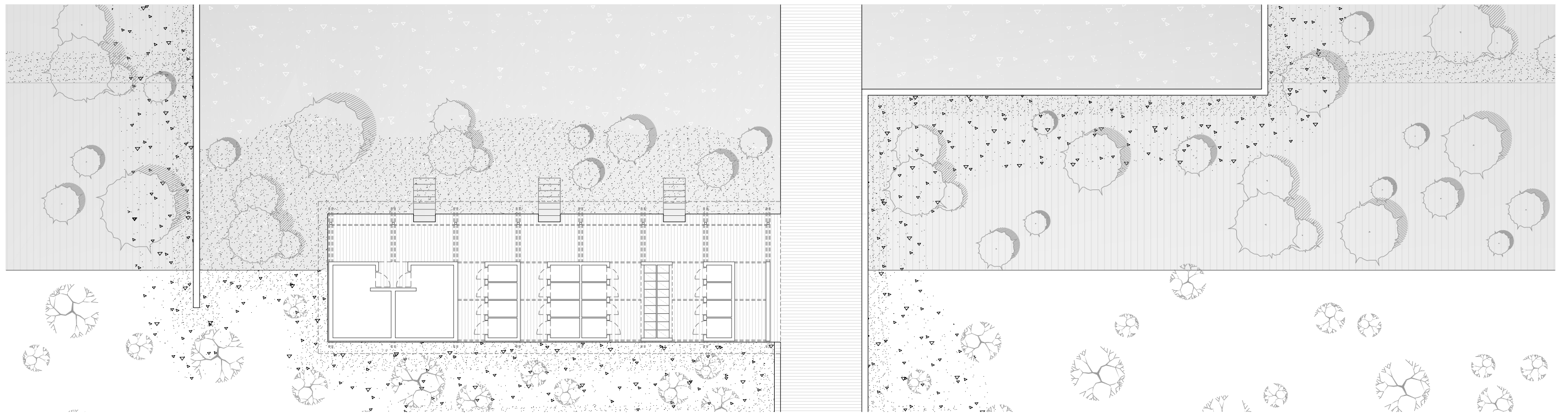
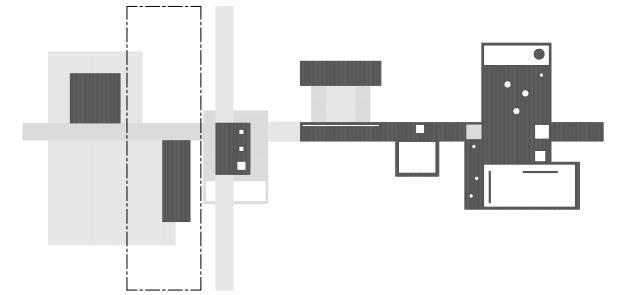
- 01 20x150x1200 mm wood batten wall
- 02 10 & 20 mm flat steel bar balustrade
- 03 30 x 150 mm wooden deck
- 04 rough wood sill
- 05 60x120 mm deck supporting hardwood
- 06 wooden waterproof layer
- 07 20 mm wooden board 2py
- 08 100 mm Insulation
- 09 60x450 mm glued laminated timber
- 10 20 mm wooden finish
- 11 20 mm wooden finish ceiling
- 12 24 mm double-glazed window mullion



Swimming Shed (Changing, Locker, Toilet, Shower)

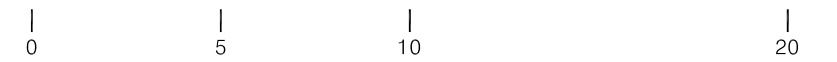
Section A

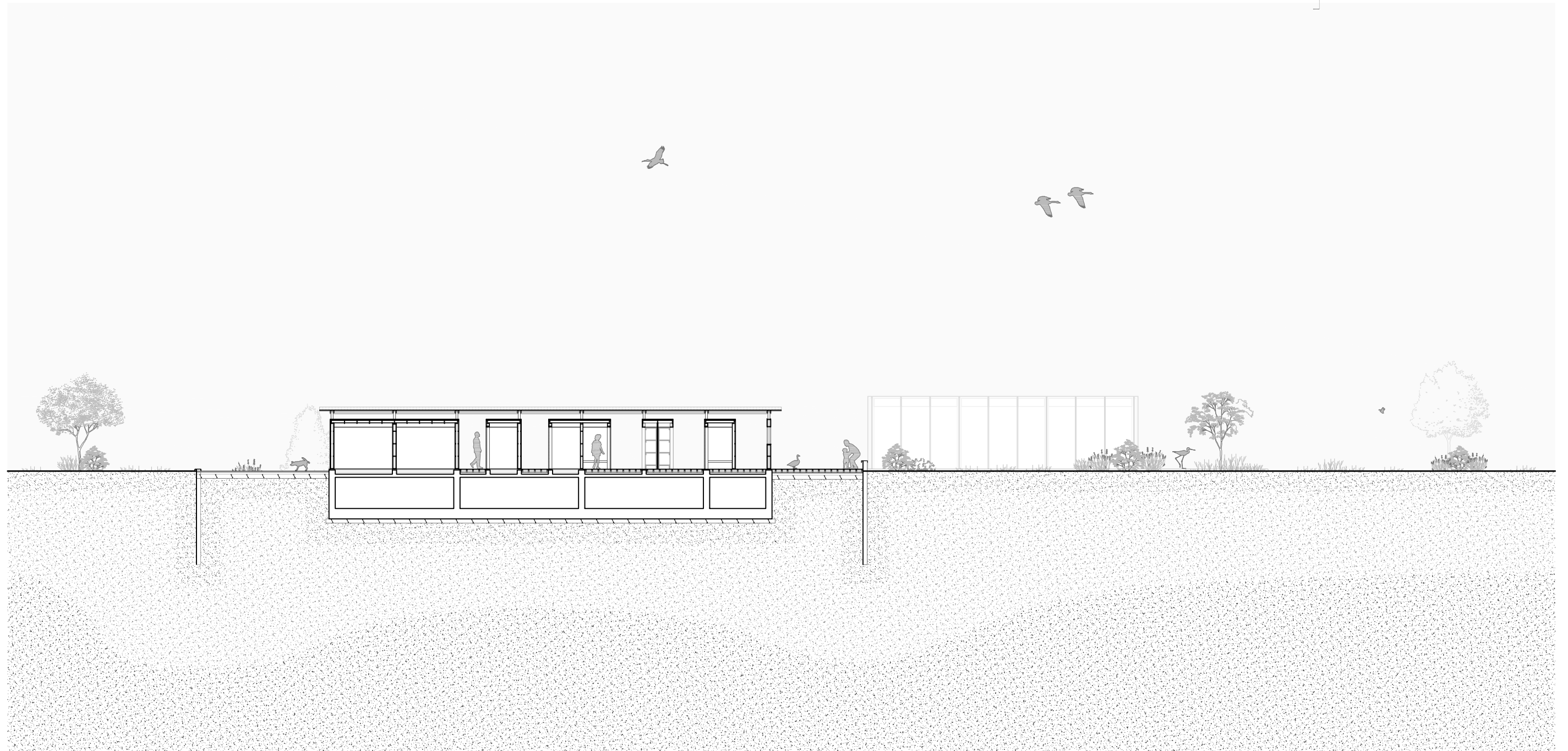
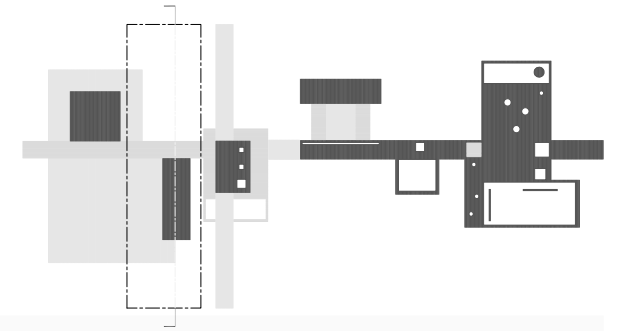
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Swimming Shed (Changing, Locker, Toilet, Shower)

Section B





Swimming Shed (Changing, Locker, Toilet, Shower)

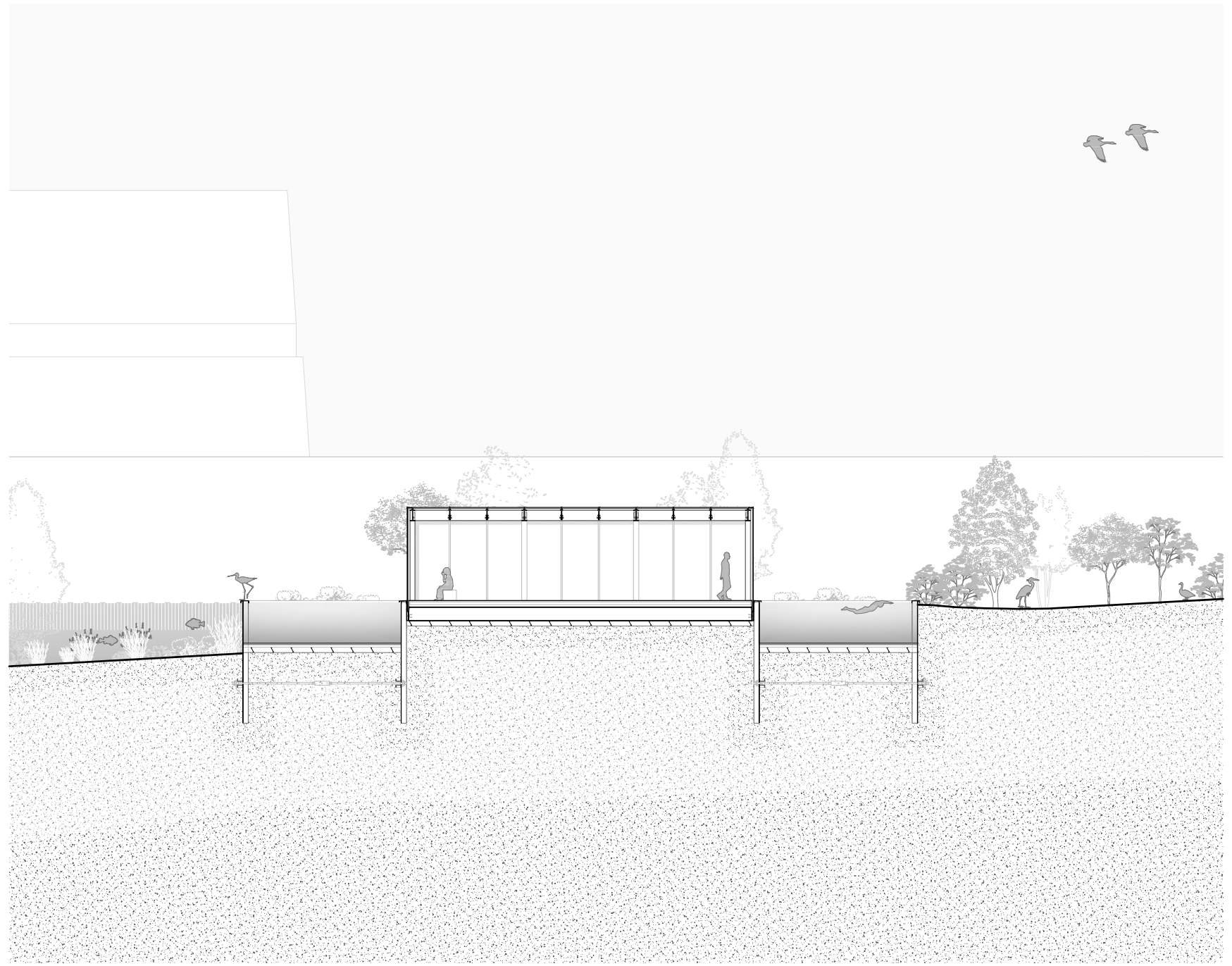
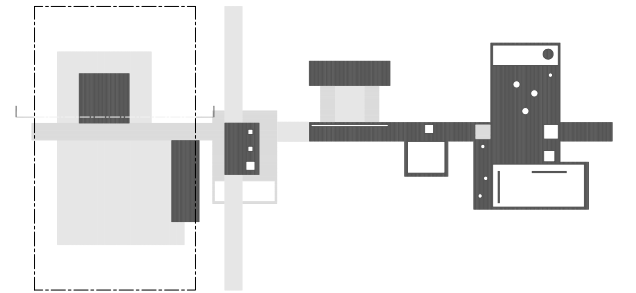
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Glass Pavilion and Natural Outdoor Pool

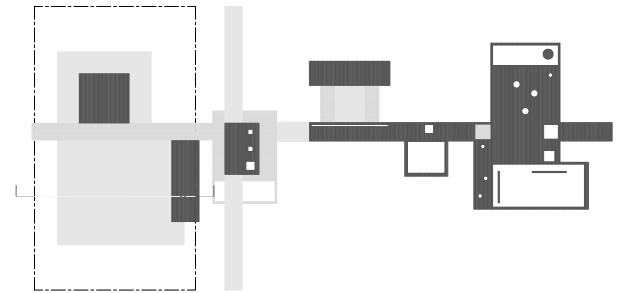
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Glass Pavilion and Natural Outdoor Pool

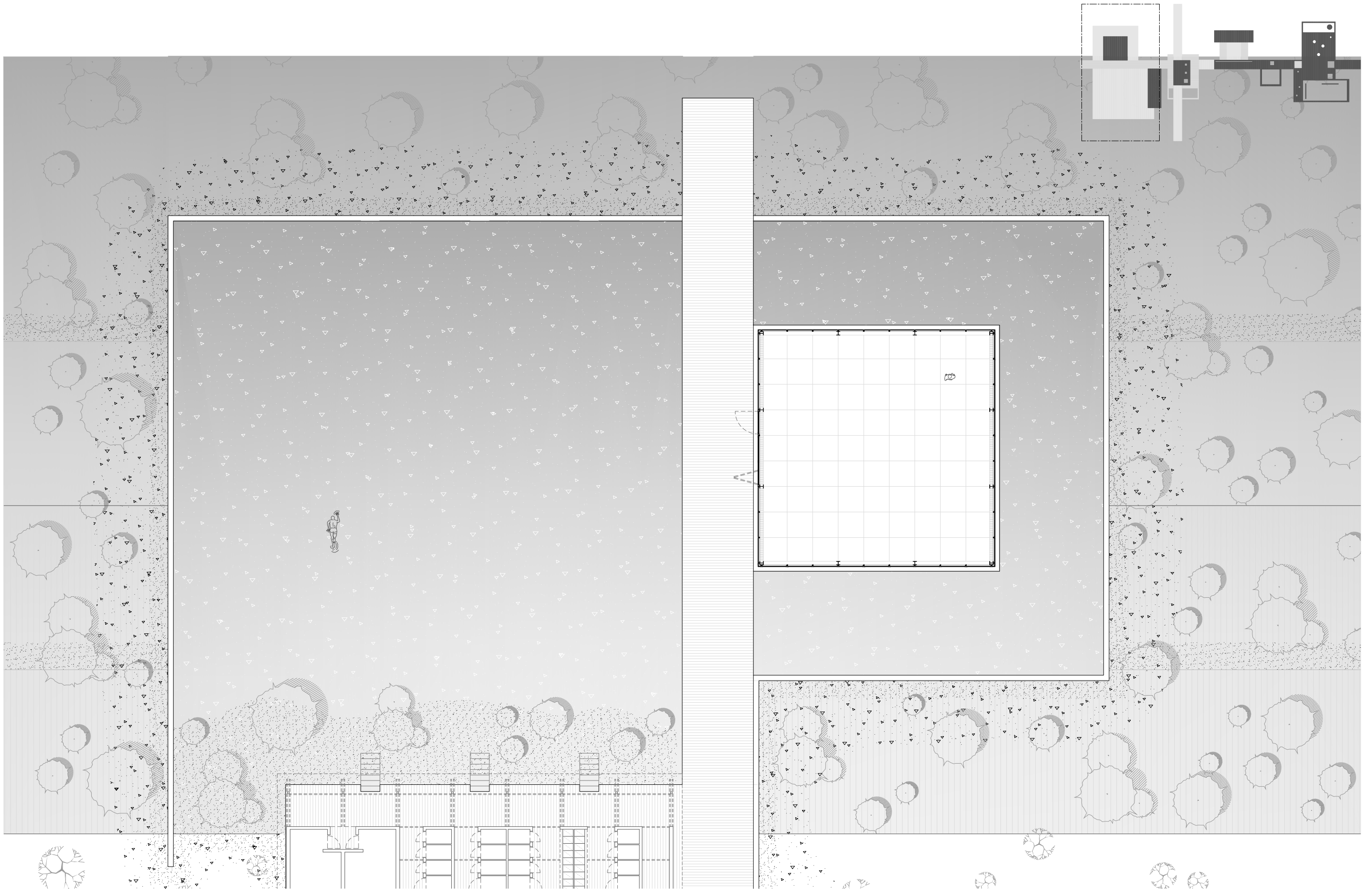
Elevation

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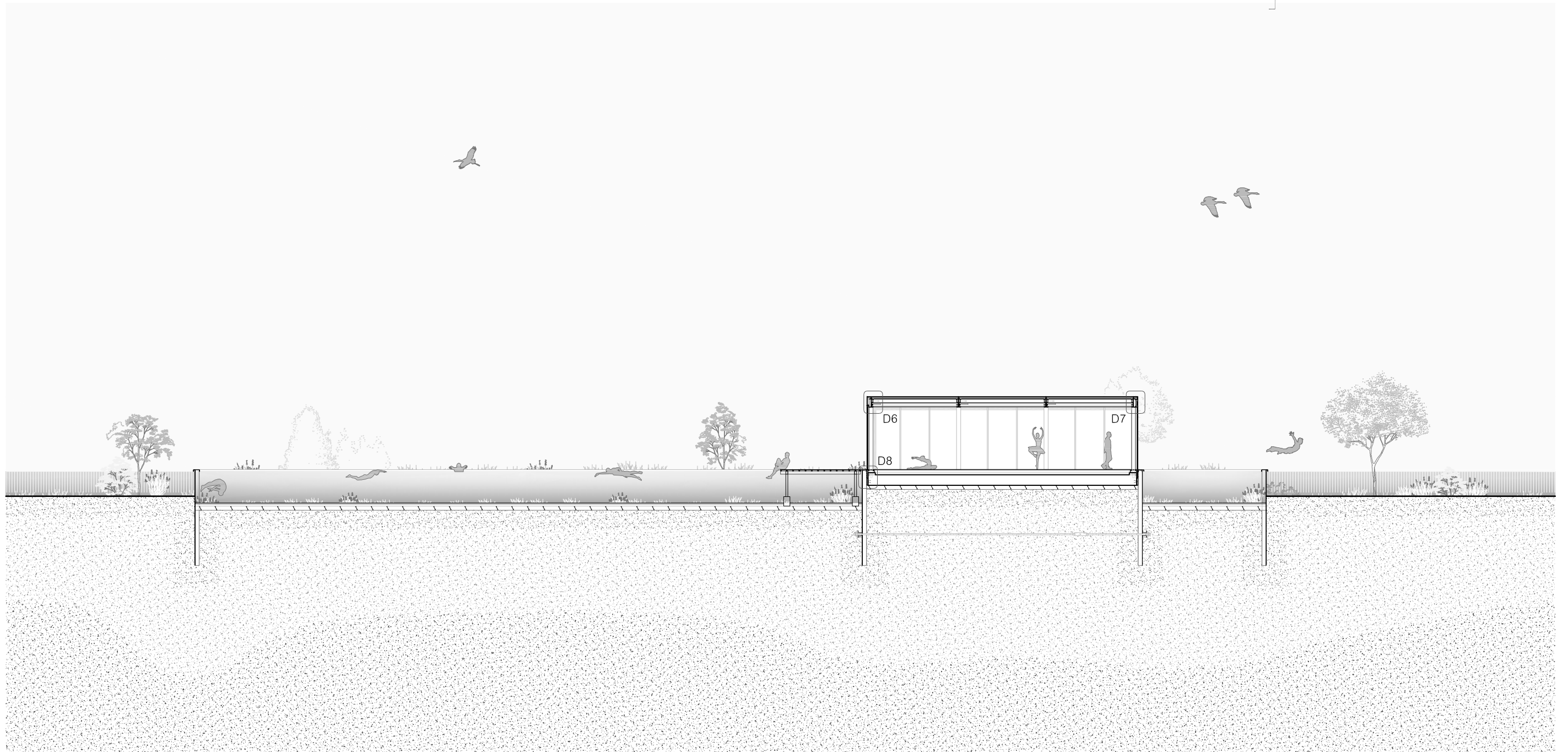
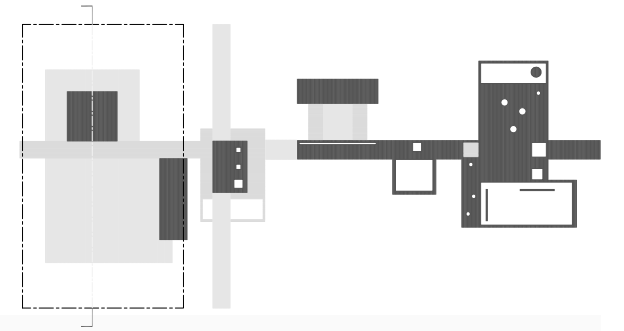
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Glass Pavilion and Natural Outdoor Pool



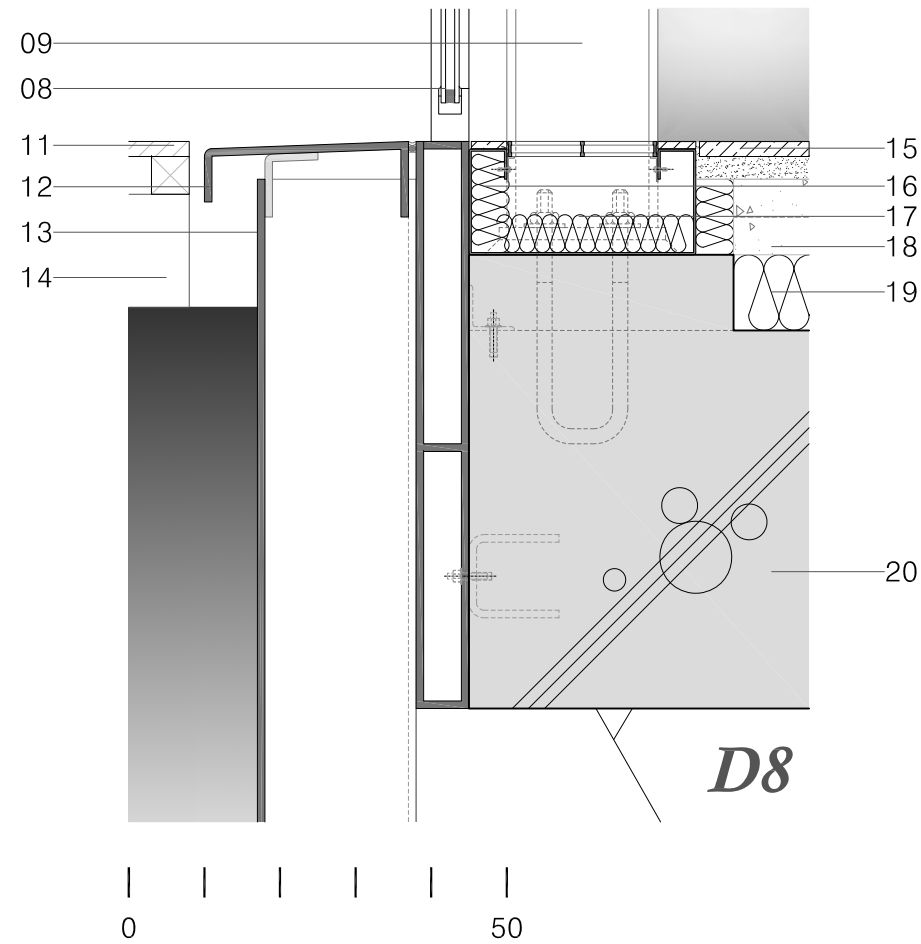
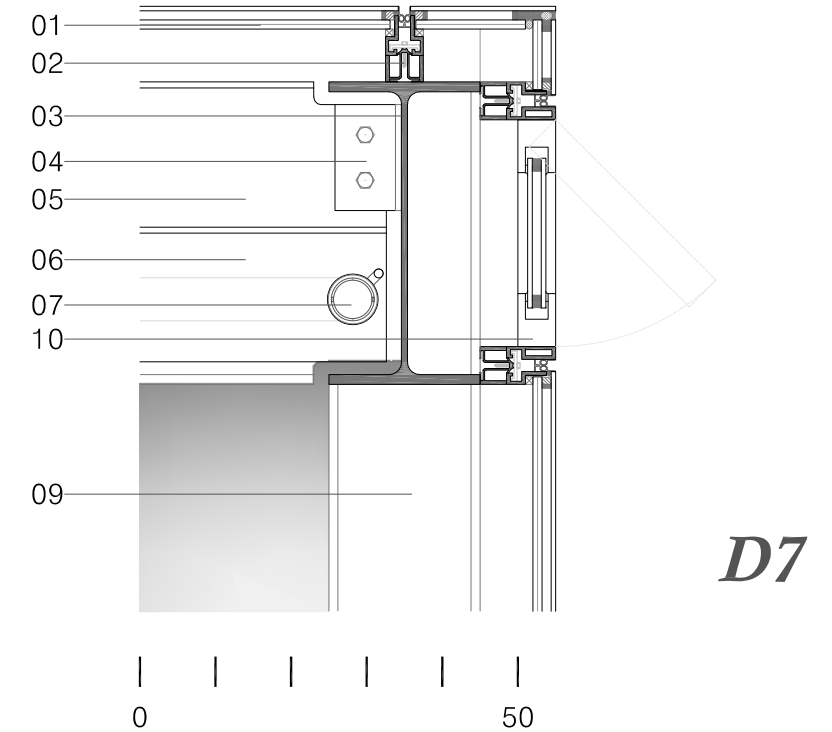
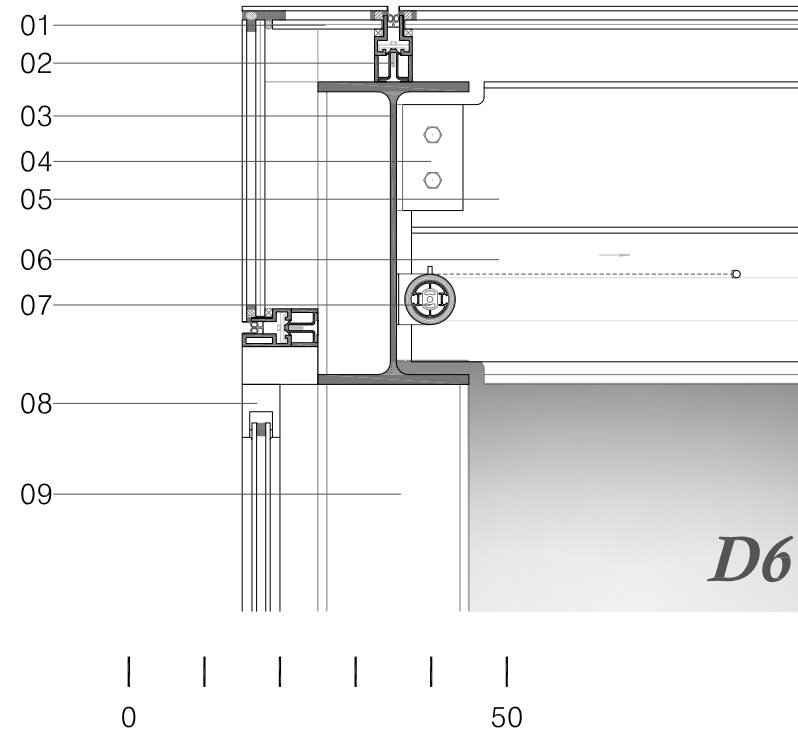
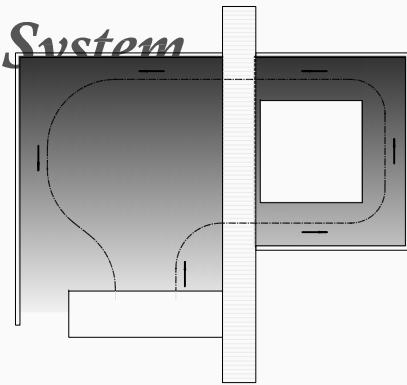


Glass Pavilion and Natural Outdoor Pool

Section B

0 5 10 20

Timber Structure Shed and Biotop Maintenance System



Steel and Glazing Structure System

- 01 laminated double-glazed curtain wall
- 02 thermal insulated mullion
- 03 200x400 mm steel girder
- 04 demountable steel web-side plate with bolts
- 05 100x200 mm steel beam
- 06 aluminum sheet flashing with light railing
- 07 electrical skylight shade fabric tube
- 08 24 mm double-glazed door
- 09 200x200 mm steel column
- 10 24 mm double-glazed project type window
- 11 20 mm wooden deck
- 12 steel sheet cover cap
- 13 200x400 mm reclaimed steel sheet U-pile
- 14 50x150 mm glued laminated timber
- 15 20 mm stoneware tile on 30 mm mortar
- 16 sprayed form insulation with floor trench
- 17 steel column base plate
- 18 100 mm plain concrete, wire mesh inside
- 19 100 mm insulation
- 20 500 mm mat concrete foundation

