BANGKOK CITY MUSEUM

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VITHIA HOK
6530193

ARCHITECTURAL PROPOSAL
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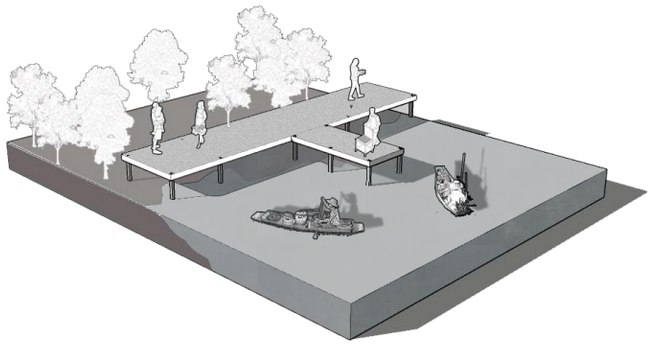
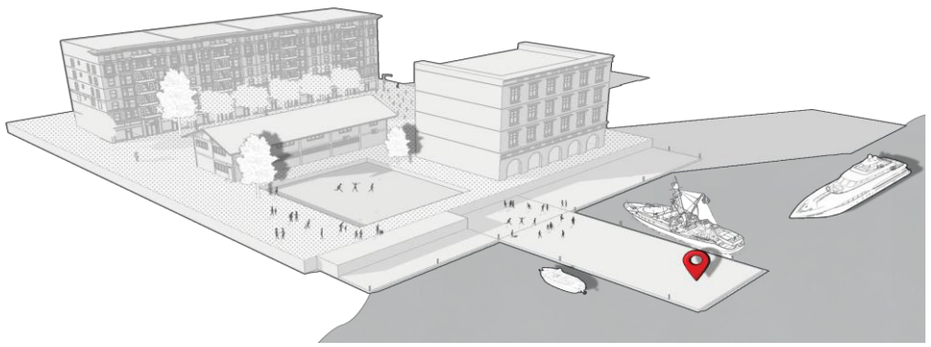
DESIGN OBJECTIVES

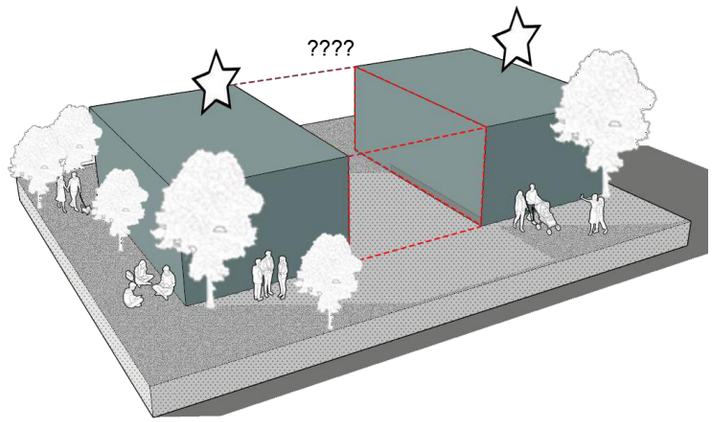
GROUP DESIGN OBJECTIVES



Revitalization of water lifestyle In Bangkok.



Connectivity by water transportation.



Promote user engagement by inserting Between existing programs.

DESIGN OBJECTIVES

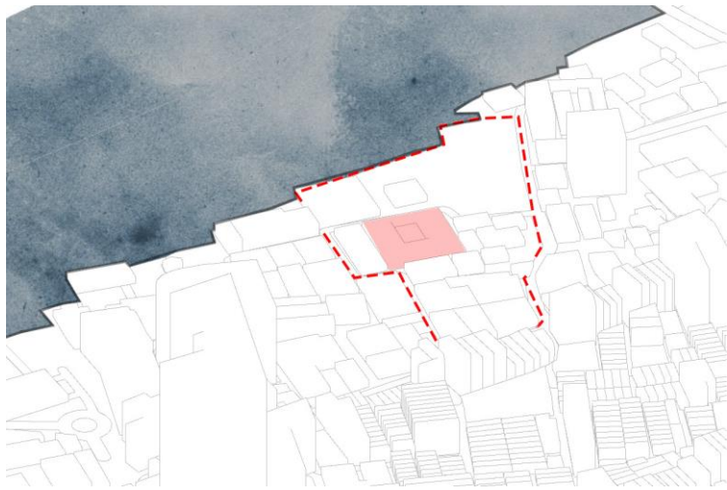
INDIVIDUAL DESIGN OBJECTIVES

GREEN SPACE FOR THE AREA

Provide public green space for the area since the surrounding area lacks public green space for gathering and recreational activities.

SPONGE CONCEPT

Act as a flood shield to protect the surrounding from flood impact.



CULTURAL PRESERVATION

Preserve the So heng tai mension and integrate it as part of the museum contents and user experience.

DESIGN CONCEPTS
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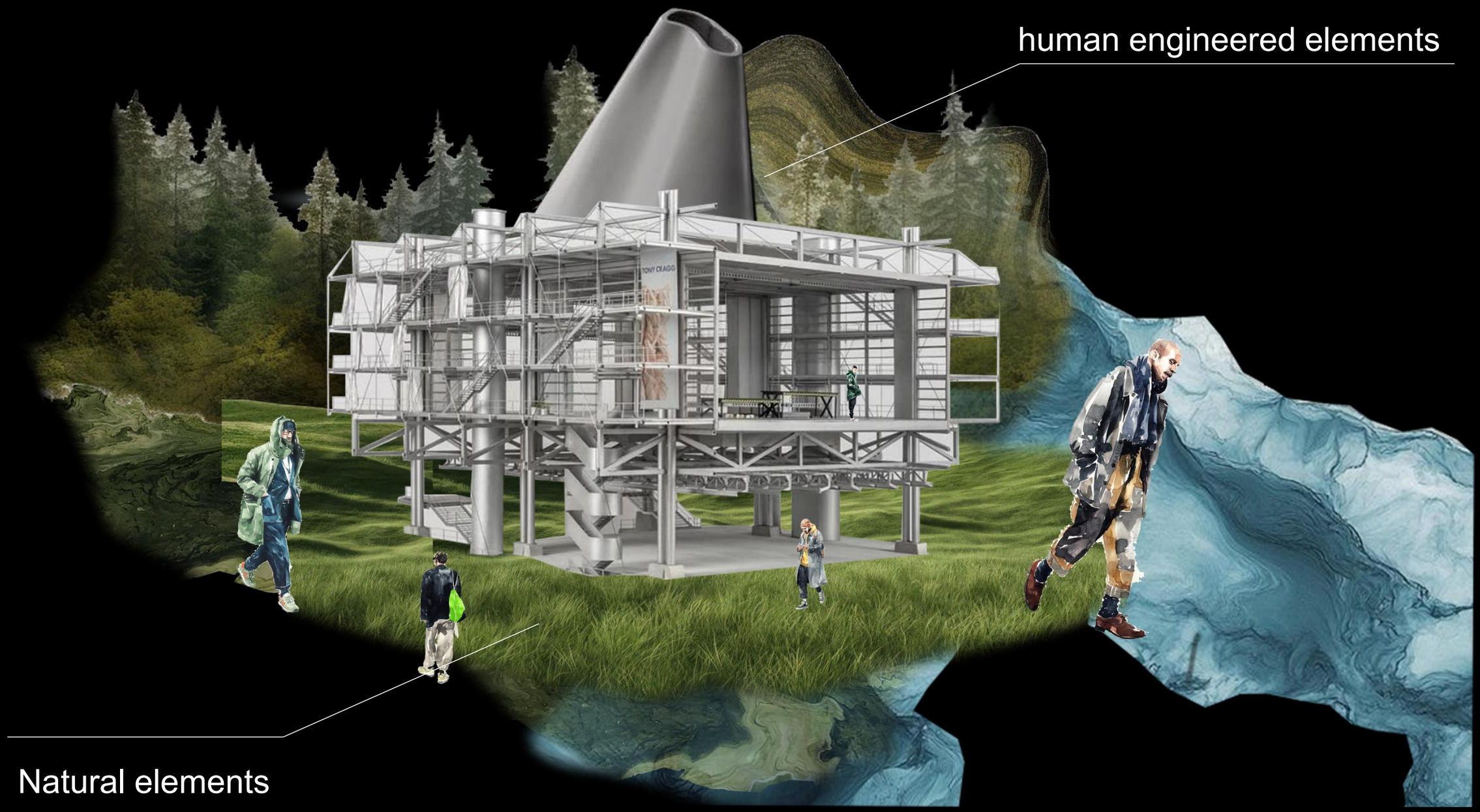
OPPOSITION GIVES MEANING

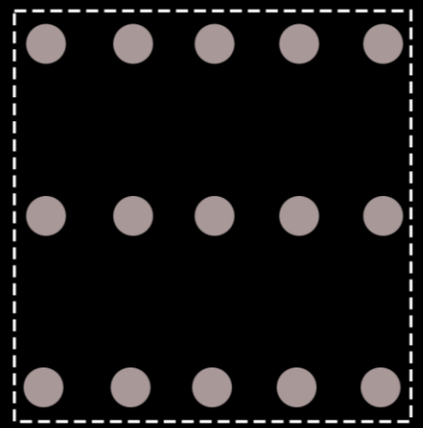


OPPOSITION GIVES MEANING

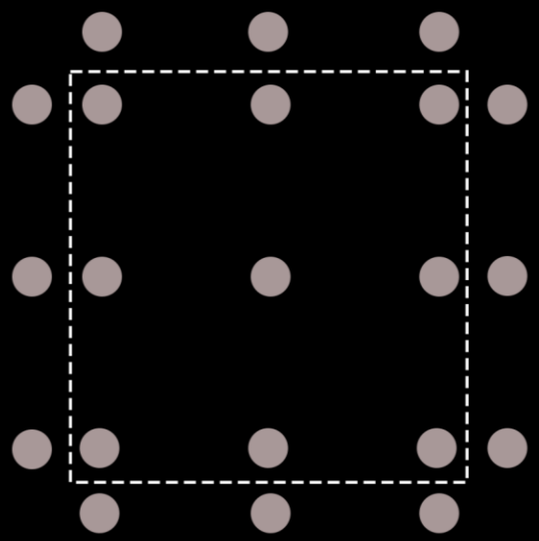
BRIEF DESCRIPTION

This architectural project is rooted in the concept that *opposition gives meaning* a dialogue between contrastive elements that shapes perception, space, and experience. Through the intentional juxtaposition of human-made structures and natural systems, the project explores how each can elevate the presence and significance of the other.
The architectural expression is defined by an exoskeletal language an external structural framework that asserts a clear human imprint. It reflects order, geometry, precision, and control, symbolizing the technological and cultural interventions of mankind. These bold, expressive frameworks not only serve structural purposes but also create a visual language that communicates strength, permanence, and clarity of design intent. In contrast, the natural environment is represented through the integration of wetlands and landscape design. These elements are organic, fluid, adaptive, and responsive to time and season. The wetlands bring life, biodiversity, and softness to the composition, embodying nature’s resilience and complexity. They also play a functional role in water filtration, habitat creation, and climate moderation, blurring the line between ecological infrastructure and poetic landscape. Rather than blending or masking these elements, the design amplifies their differences allowing the built and the natural to remain distinct, yet interdependent. This opposition creates tension, but also harmony; a dynamic relationship where the rigidity of the human-made finds balance in the fluidity of the natural. By placing these forces in dialogue, the project becomes a narrative of coexistence where contrast is not a conflict, but a source of meaning.

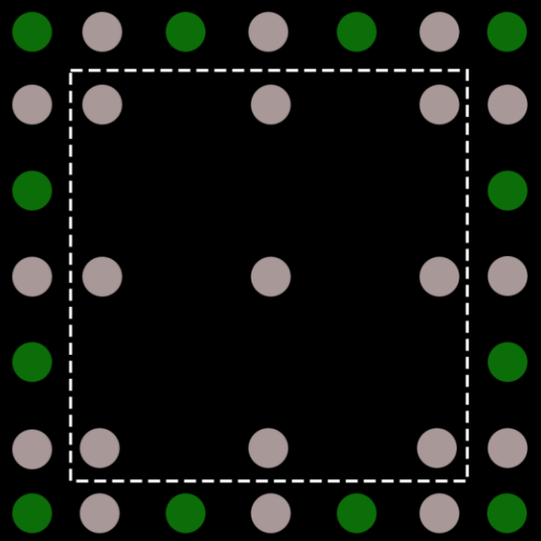
OPPOSITION GIVES MEANING



The exterior facde's finishing gives a feeling of finished and completed design.

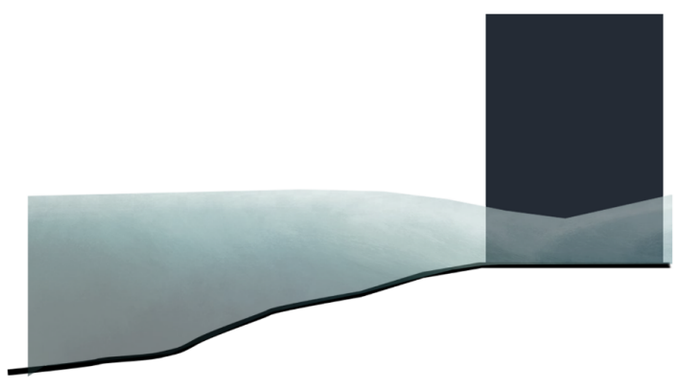


With the structure on the outside (exoskeleton) it gives a feeling of still growing and not completed.

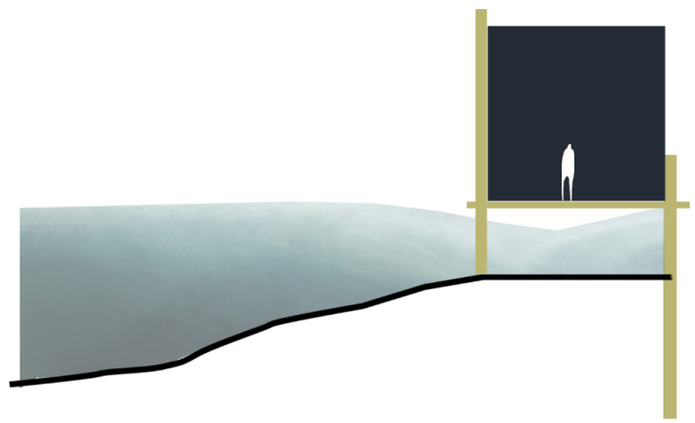


Exoskeleton also allows greenary to grow and implement with the design.

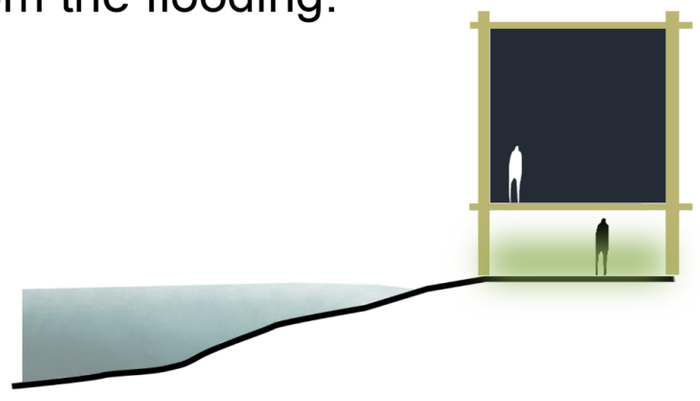
CONCEPTS/DESIGN BENEFITS



Direct hit from the flooding.



Elevated mass and move functions above.



Wetland and human activities below during dry season.

FLOOD

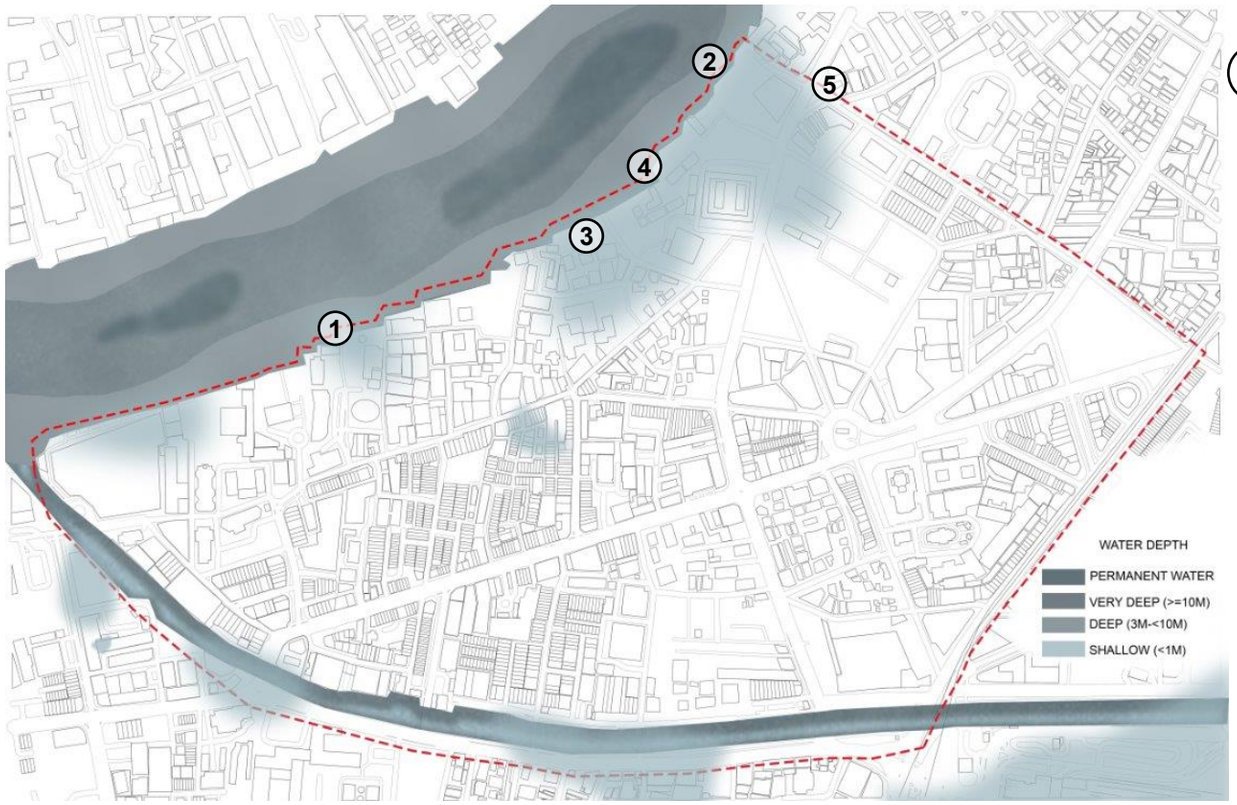


Fig. current flood analysis (2025)

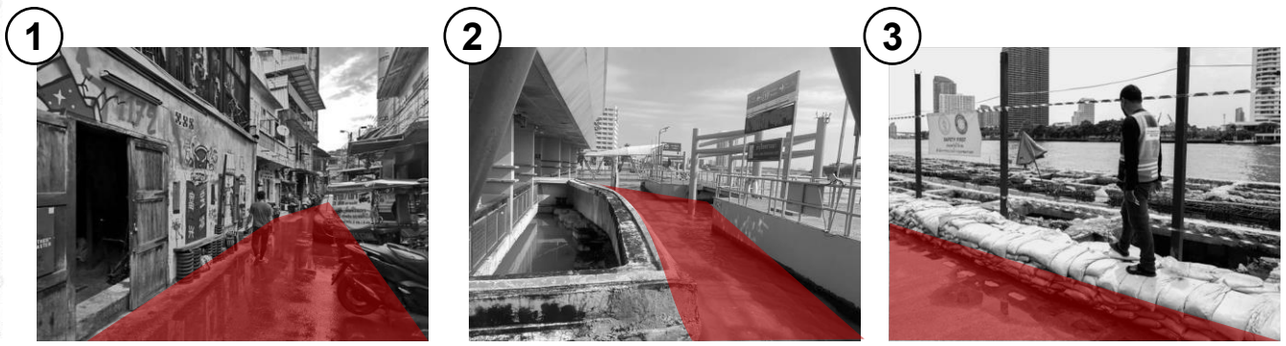


Fig. current flood evidence

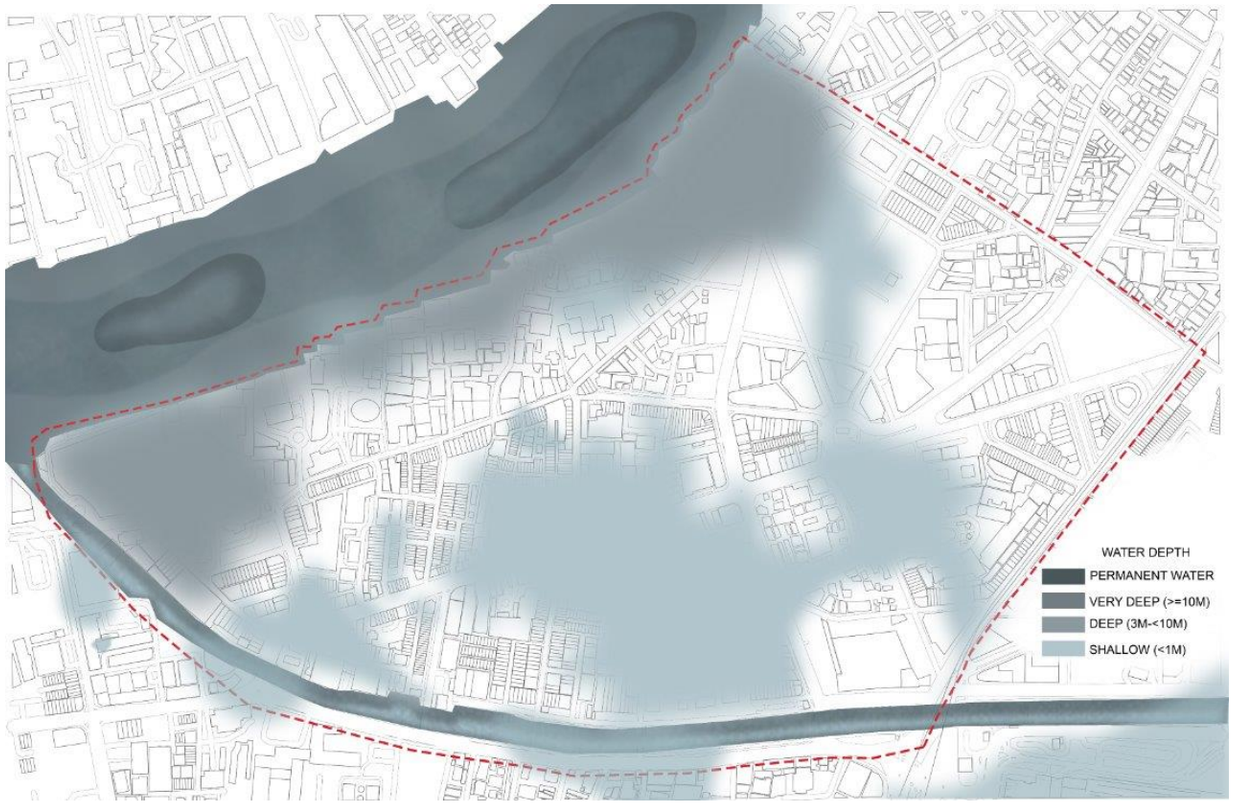
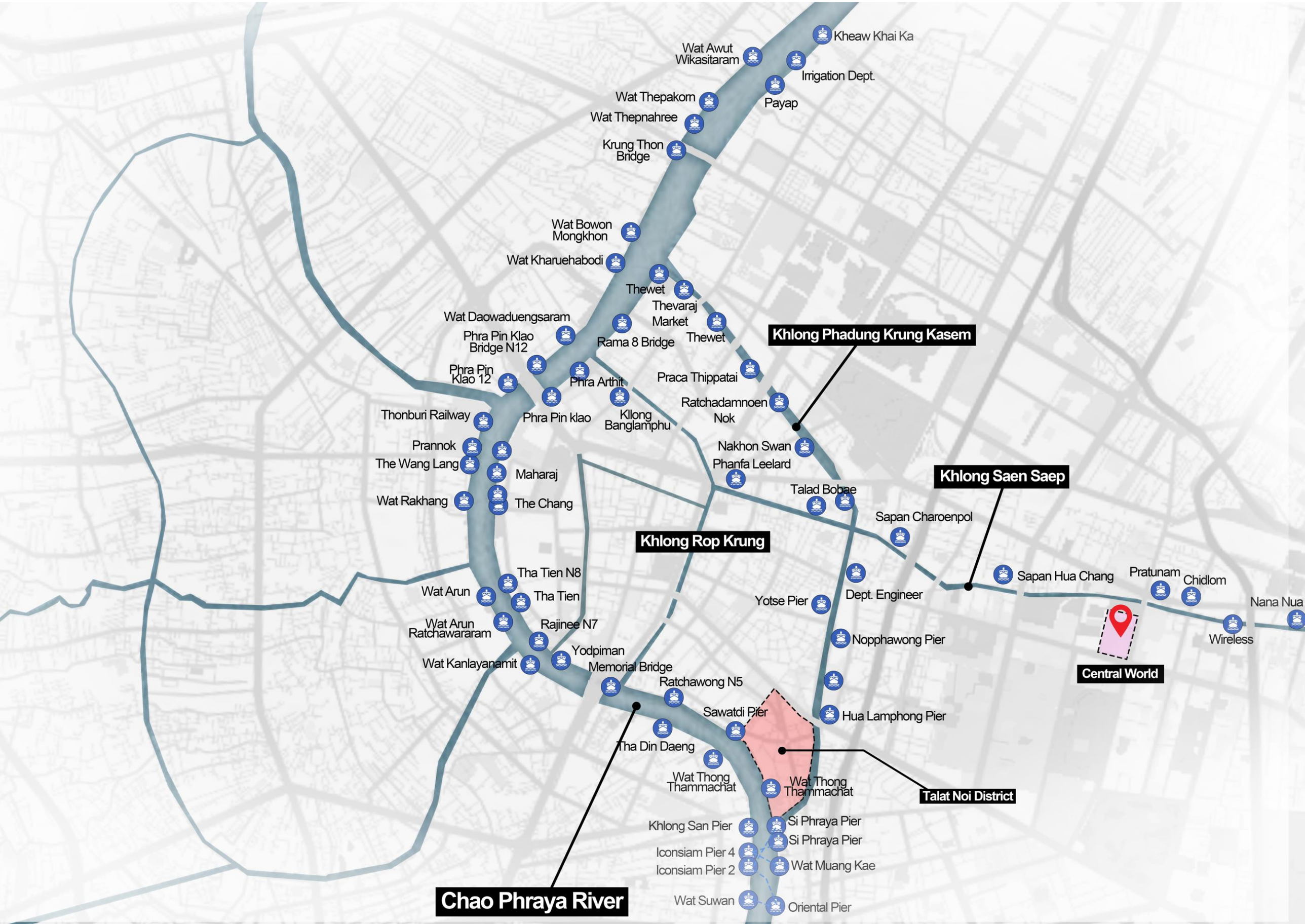


Fig. future flood line (2050)

Fig. topography of talat noi

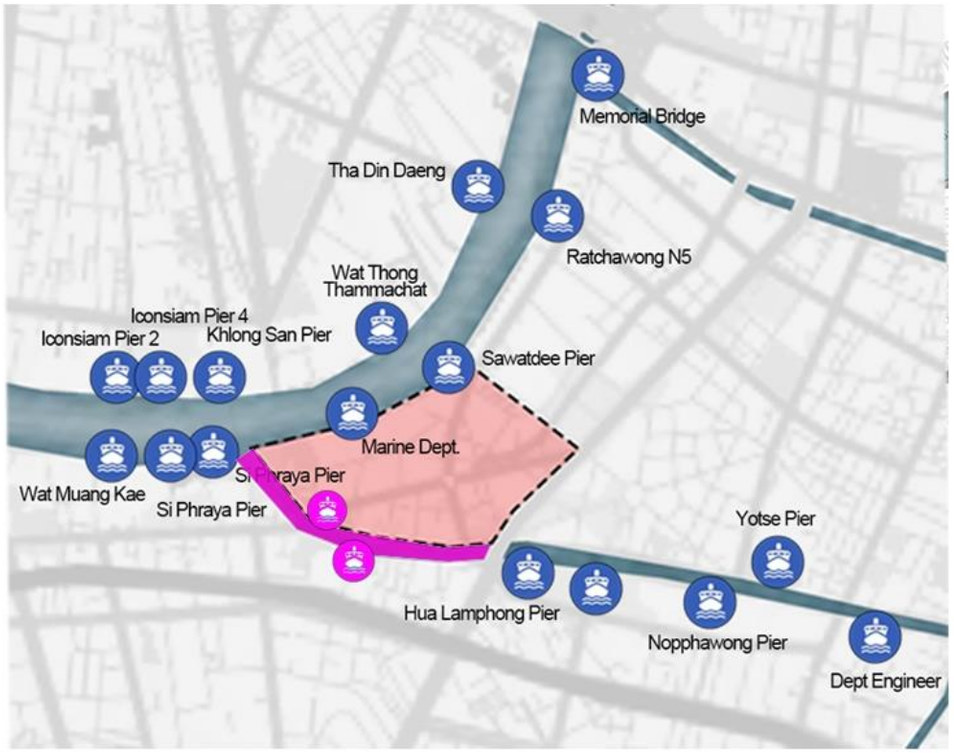
https://www.pattayamail.com/thailandnews/88-kilometers-of-chao-phraya-river-flood-barrier-ready-to-protect-bangkok-475406

WATER CONECTIVITIES



URBAN SCALE DESIGN

EXISTING PIER STATIONS

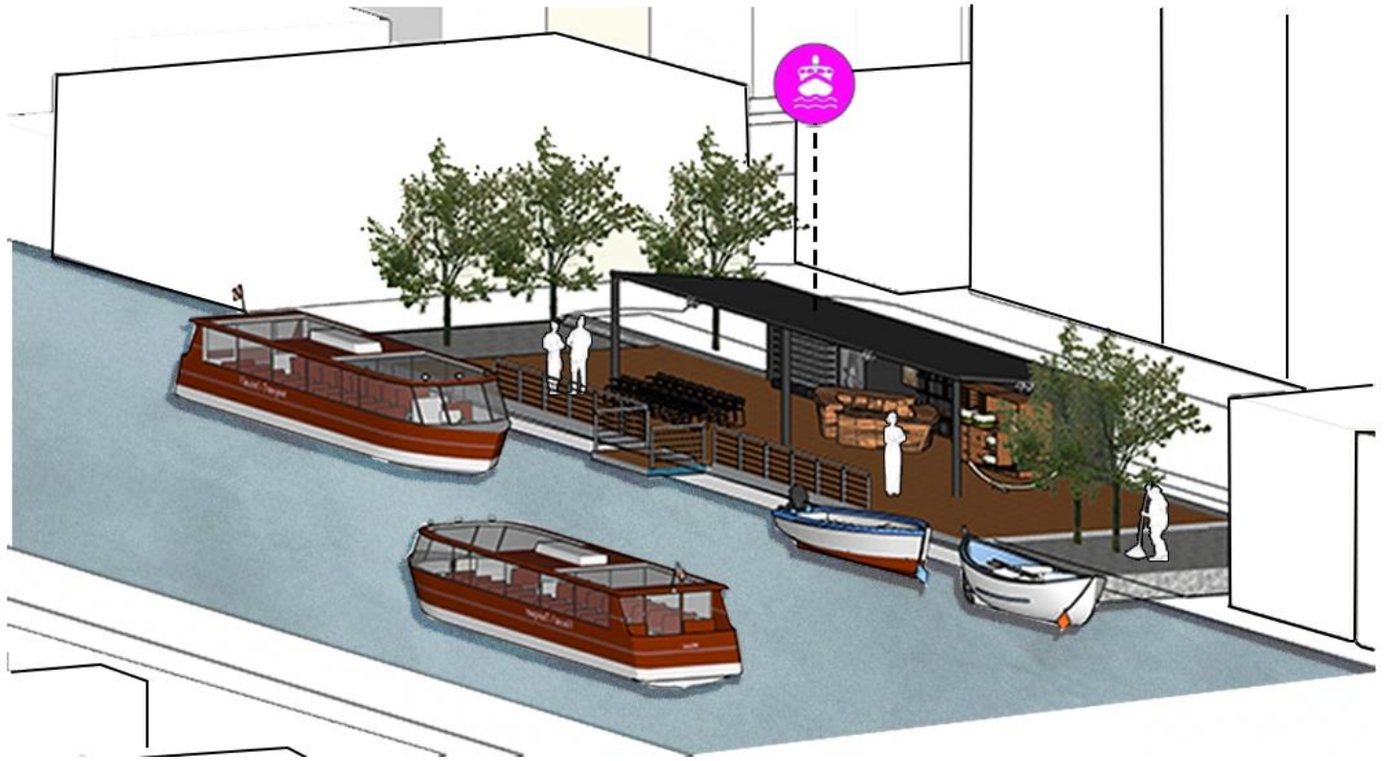


Pier Station Lack of Water Connectivity Proposed Piers

HUA LAMPHONG PIER

POTENTIAL AREAS OF NEW STATIONS

VISUALIZATION OF PROPOSAL PIER



CONCEPTS/DESIGN BENEFITS

1.RIVER ACCESS

THE CONCEPT AND DESIGN PROVIDE PUBLIC AND GREEN SPACES,MAKING GREEN CORRIDOR AND ALLOW THE NEIGHBORING AREA ACCESSIBILITY TO THE WATER FRONT.

2.USER ENGAGEMENT

THE MUSEUM/COMMERCIAL/GREEN SPACE WORK AS A LANDMARK TO PROMOTE AND IMPROVE THE LACK OF USER ENGAGEMENT IN THE AREA, MAKING THE POPULARITIES AND CONNECTIVITIES OF THE RIVER FRONT BALANCE OUT.

3.SAFE SPACE

THE DESIGN MITIGATE AND ADAPT TO THE FLOOD, THE PROJECT COULD CONVERT INTO AN EMERGENCY SHELTER SPACE FOR THE AREA IN THE TIME WHERE THE FLOOD GOT OUT OF CONTROL.

MUSEUM CONTENS
MUSEUM CONTENS
MUSEUM CONTENS

MUSEUM CONTENS

RIVER GENESIS AND DAILY LIFE

LIVING WITH WATER

CHAOPHRAYA TRADING

TEACH AND PREACH

1.RIVER GENESIS AND DAILY LIFE

- interactive and immersive river boat ride story telling of the life style and culture along the Chaophraya river.

2.LIVING WITH WATER

- Showcase Thai traditional stilt house and immersive experience on how the architecture during those times adapt with flood.
- Boat exhibition

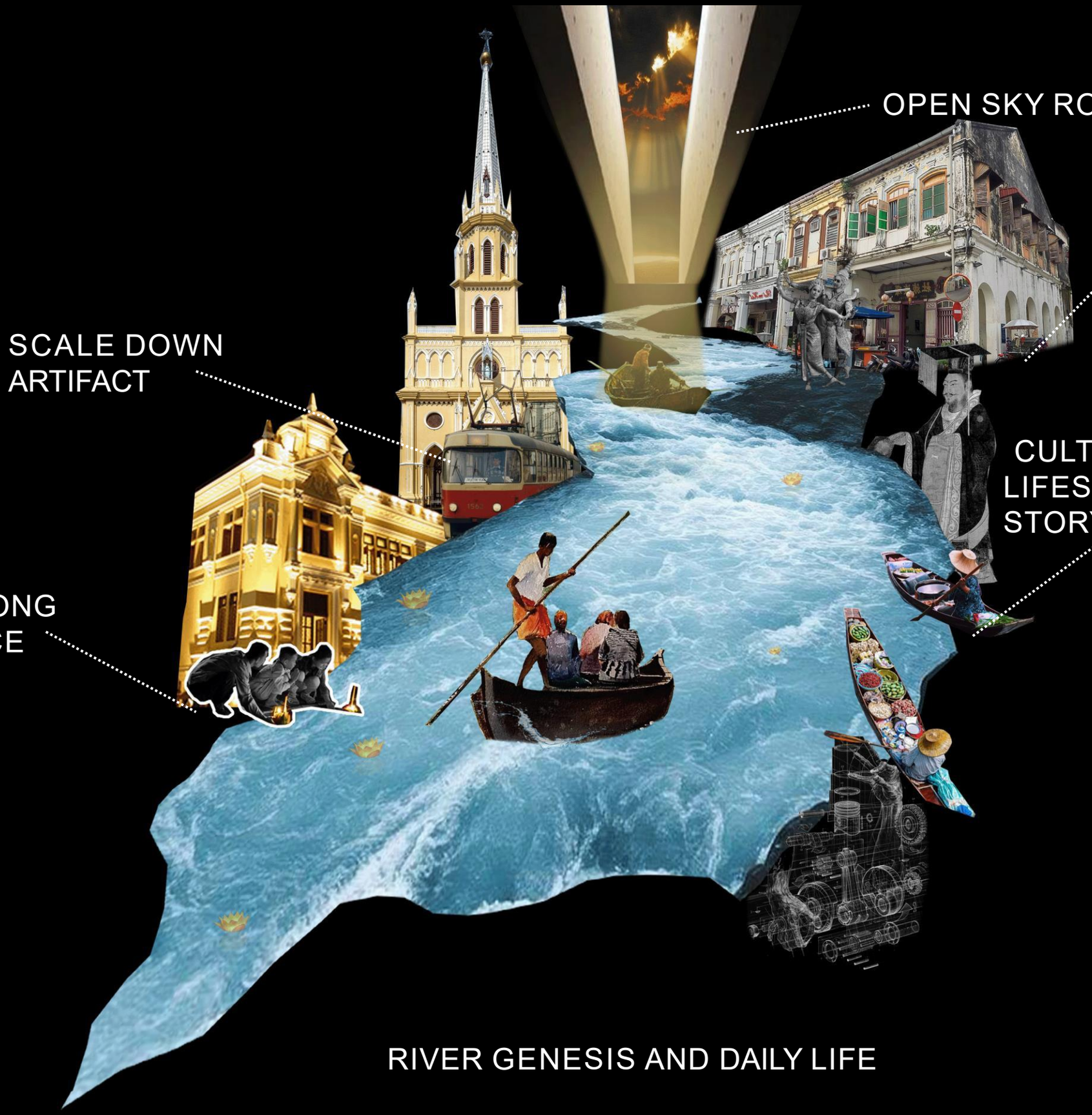
3.CHAOPHRAYA TRADING

- Exhibition of the history of trading along the Chaophraya river.
- The history of explorer discover Thailand through trading.

4.TEACH AND PREACH

- Educated about wetland and flood (walk through)
- Hands on and immersive experience with the wetland
.

MUSEUM CONTENS



OPEN SKY ROOF

IMMERSIVE
THEME

SCALE DOWN
ARTIFACT

CULTURE AND
LIFESTYLE IMMERSIVE
STORY TELLING

LOYKRATHONG
EXPERIENCE

RIVER GENESIS AND DAILY LIFE

MUSEUM CONTENS

FLOOD SIMULATION
SHOWCASE HOW PEOPLE
ADAPT WITH FLOOD

BOATS EXHIBITION

FAÇADE OPENING TO SEE
CHAOPHRAYA RIVER

LIVING WITH WATER

MUSEUM CONTENS

EXHIBITION INSDIE SO HENG TAI MENSION

SHOW CASE THE HISTORY OF TRADING

IMMIGRANTS AND CULTURE ALONG THE CHAOPHRAYA RIVER

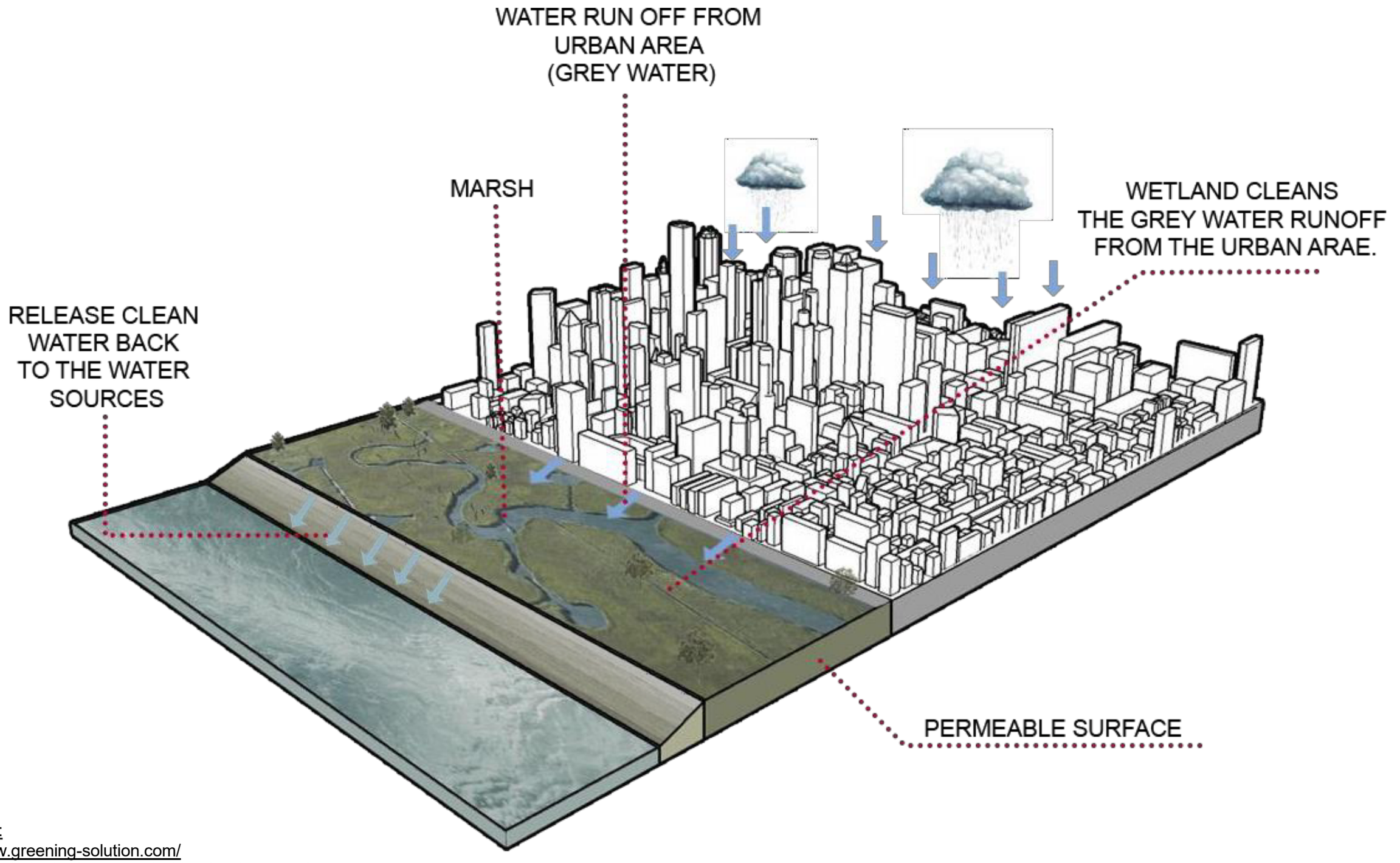
EXHIBIT HOW PEOPLE USE CHAOPHRAYA AS DEFEND ROUTE

CHAOPHRAYA TRADING

DESIGN GUIDLINE
DESIGN GUIDLINE

DESIGN GUIDLINE

Helps slow water flow and prevent floods	Provides open space and enhances the overall green space of the area.	Filters sediments,pollutants & nutrients.	Sponge-like quality allows water to be returned to the ground during dry periods.



SOURCE :
https://www.greening-solution.com/
https://www.iadc-dredging.com/subject/environment/wetlands
/https://www.foronuclear.org/en/updates/in-depth/nuclear-techniques-to-protect-the-wetlands-and-preserve-the-ecosystem/?doing_wp_cron=1753968307.4017770290374755859375

DESIGN GUIDLINE

WETLAND PLANTATIONS

NELUMBO
NUCIFERA

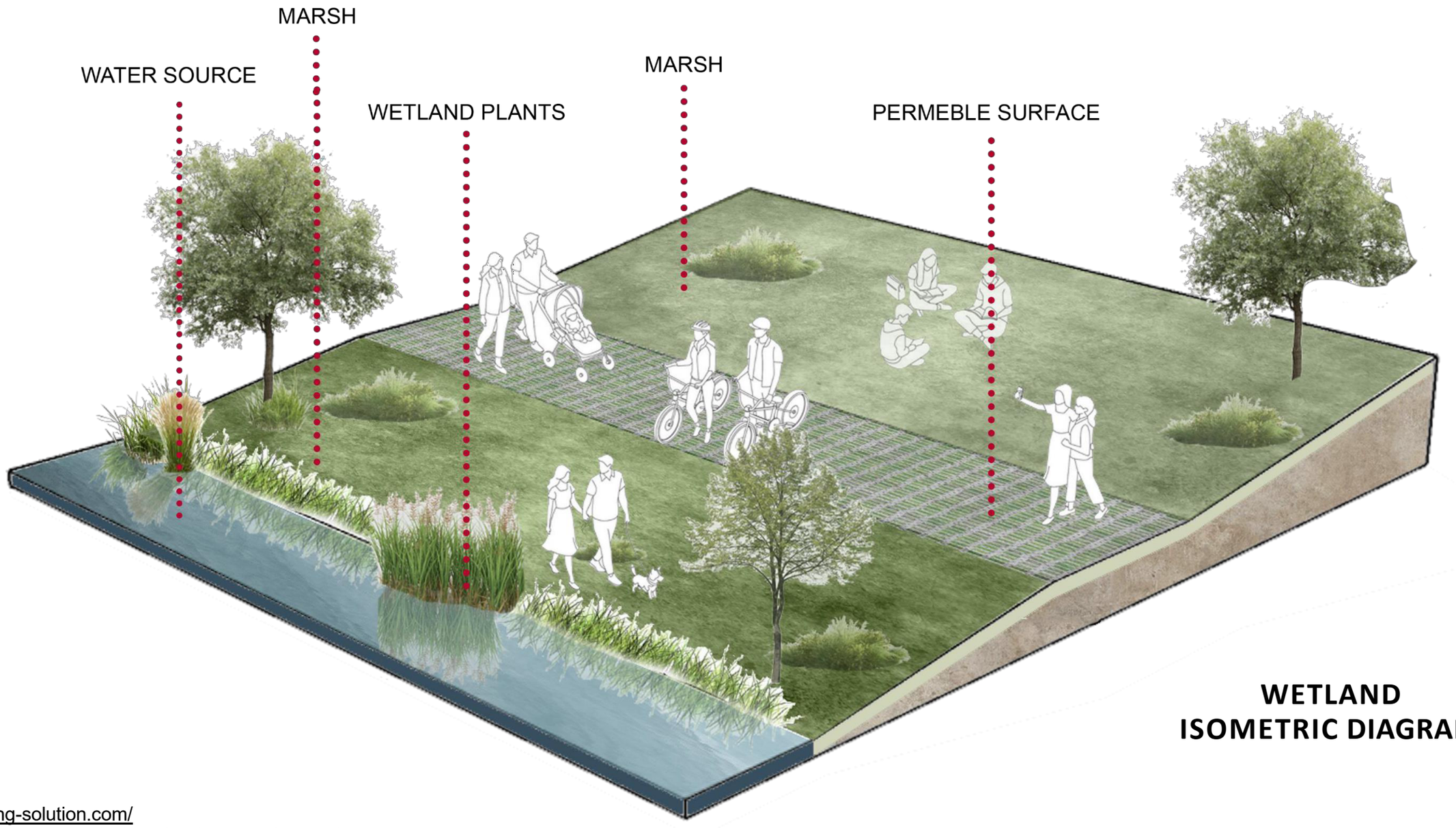
RHIZOPHORA
MUCRONATA

AVICENNIA
MARINA

MELALEUCA
CAJUPUTI

SONNERATIA
CASEOLARIS

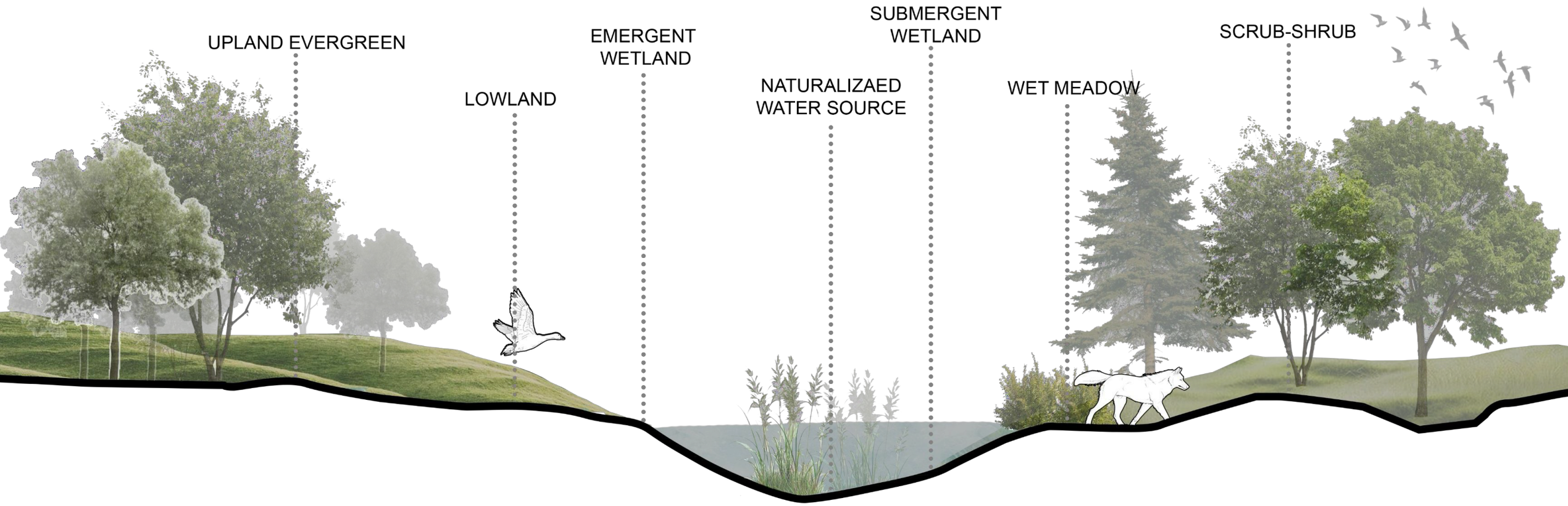
PANDANUS
SPP



WETLAND
ISOMETRIC DIAGRAM

SOURCE :
https://www.greening-solution.com/
https://www.iadc-dredging.com/subject/environment/wetlands
/https://www.foronuclear.org/en/updates/in-depth/nuclear-techniques-to-protect-the-wetlands-and-preserve-the-ecosystem/?doing_wp_cron=1753968307.4017770290374755859375

DESIGN GUIDLINE



NATURAL WETLAND

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/https://www.foronuclear.org/en/updates/in-depth/nuclear-techniques-to-protect-the-wetlands-and-preserve-the-ecosystem/?doing_wp_cron=1753968307.4017770290374755859375

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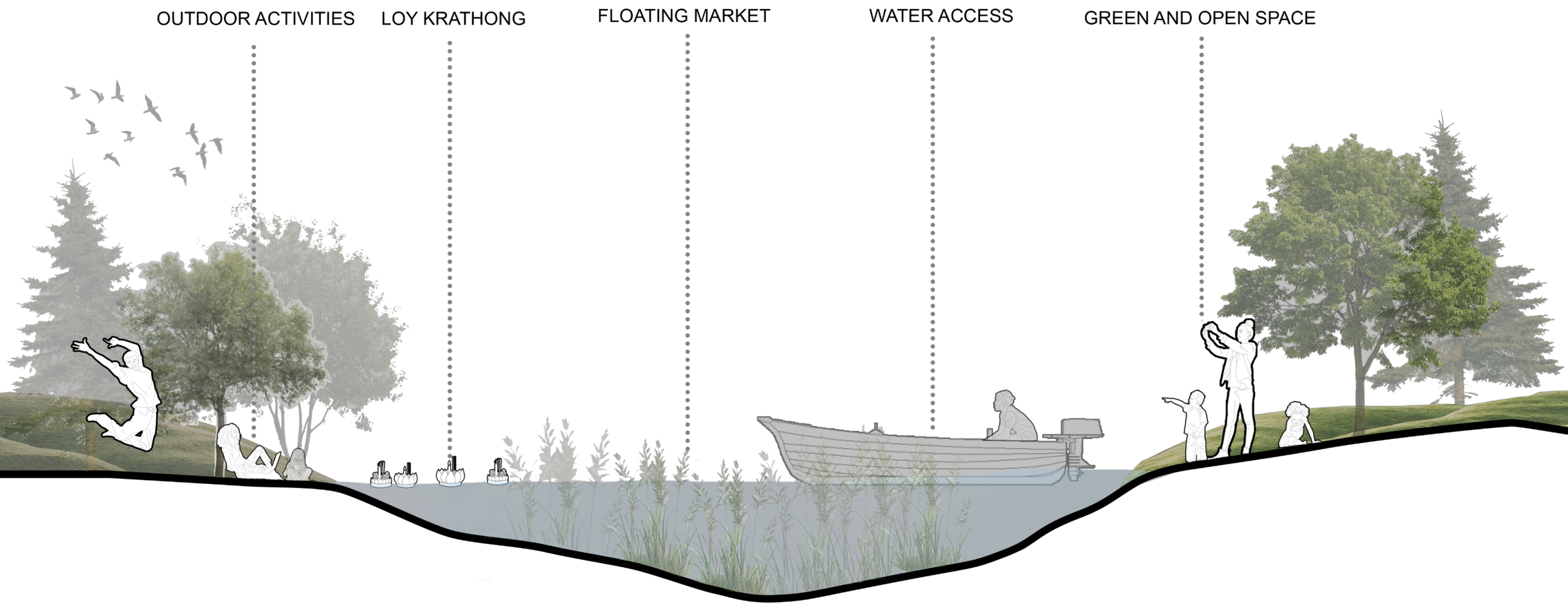

HUMANS WITH WETLAND

SOURCE :
https://www.greening-solution.com/
https://www.iadc-dredging.com/subject/environment/wetlands
/https://www.foronuclear.org/en/updates/in-depth/nuclear-techniques-to-protect-the-wetlands-and-preserve-the-ecosystem/?doing_wp_cron=1753968307.4017770290374755859375

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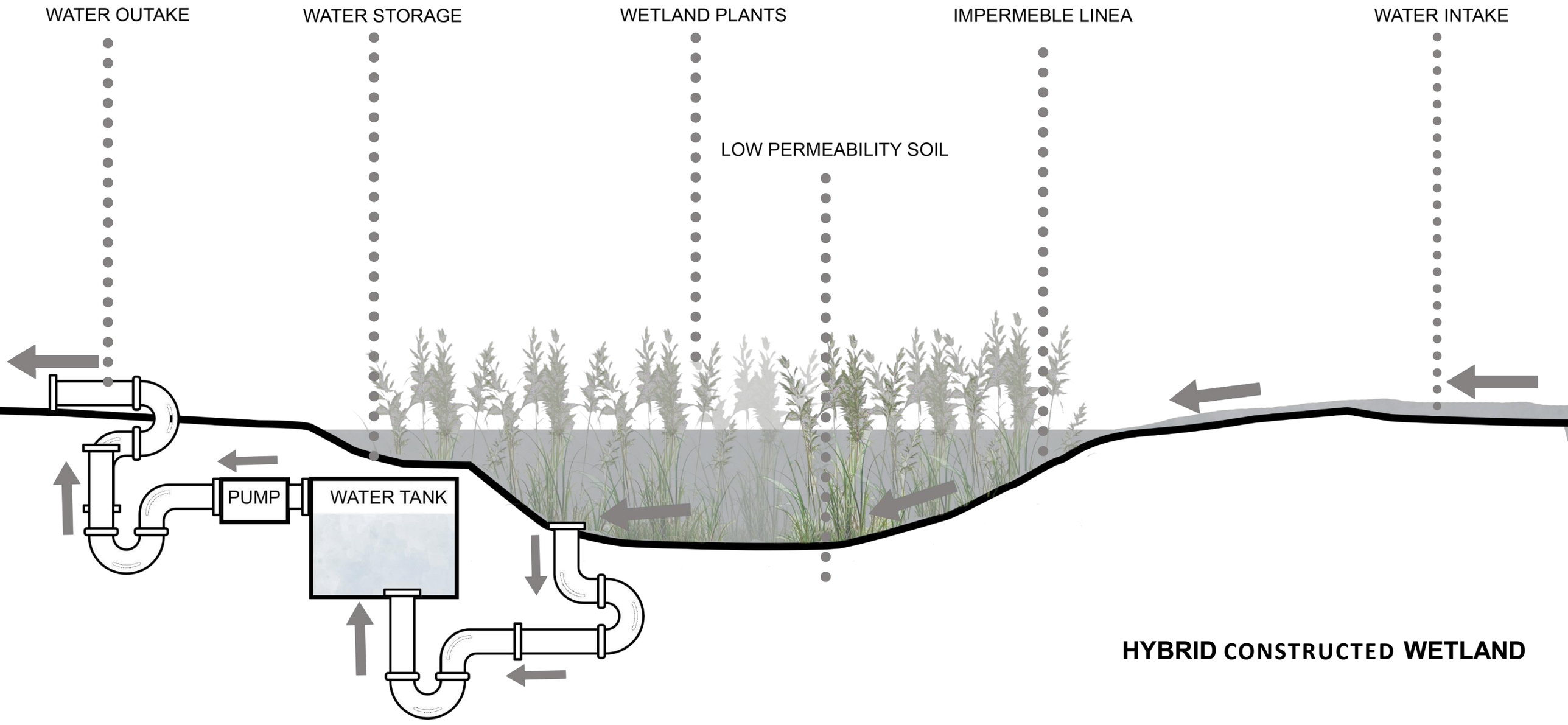


HYBRID CONSTRUCTED WETLAND

SOURCE :
https://www.greening-solution.com/
https://www.iadc-dredging.com/subject/environment/wetlands
/https://www.foronuclear.org/en/updates/in-depth/nuclear-techniques-to-protect-the-wetlands-and-preserve-the-ecosystem/?doing_wp_cron=1753968307.4017770290374755859375

DESIGN GUIDLINE

Typical Height Limits:

- Single-story: 5-6 meters
- Multi-story: 9-12 meters
- Area: 100-500+ sqm

Things To Consider:

- Increased lateral forces (wind, waves, water current).
- Structural reinforcement (e.g., thicker pontoons, larger footprint).

Anchor Depth:

- Shallow Water (e.g., canals): 2-10 meters.
- Deep Water (e.g., offshore, deeper rivers): from 30 meters to 100-150 meters

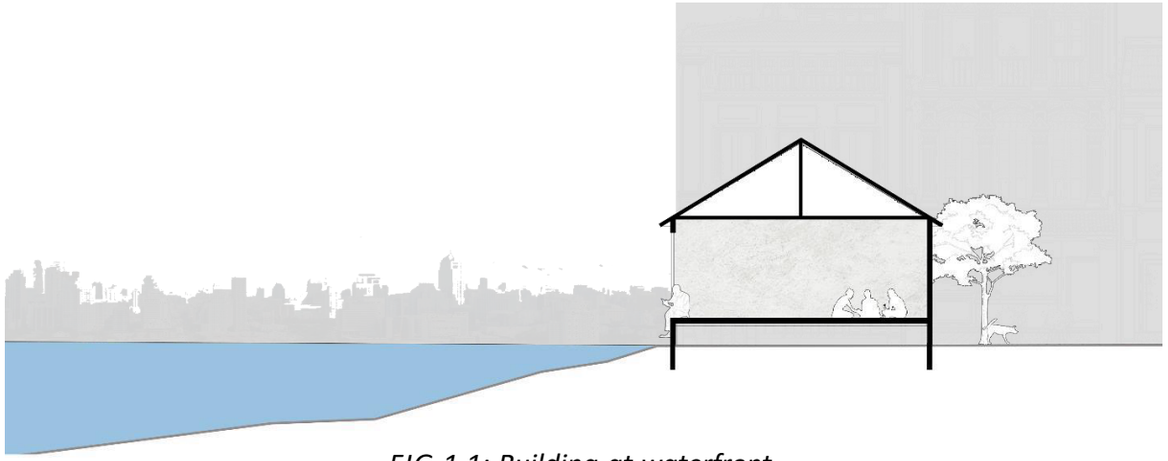


FIG 1.1: Building at waterfront

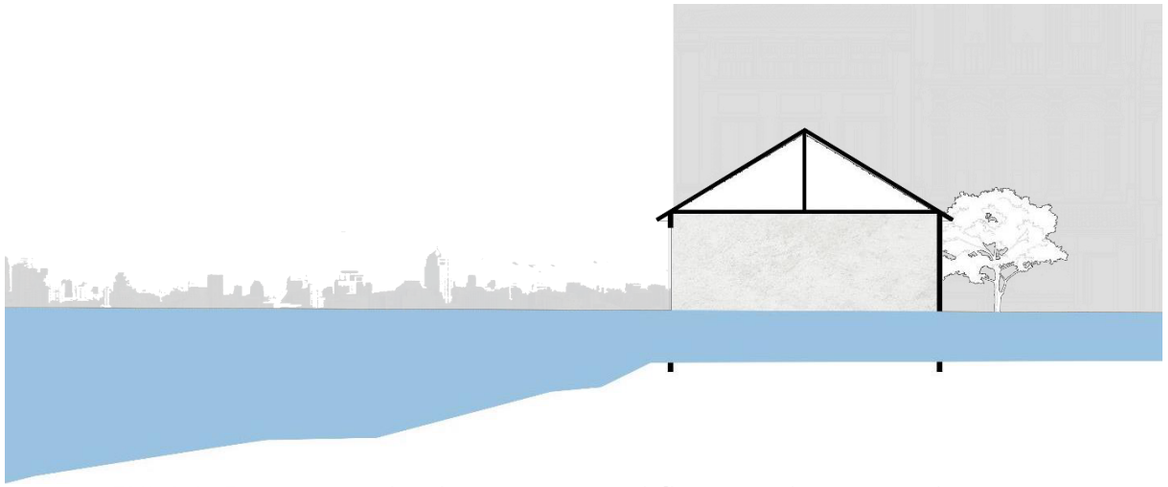


FIG 1.1: Rising water level causing ground floor to submerge under water

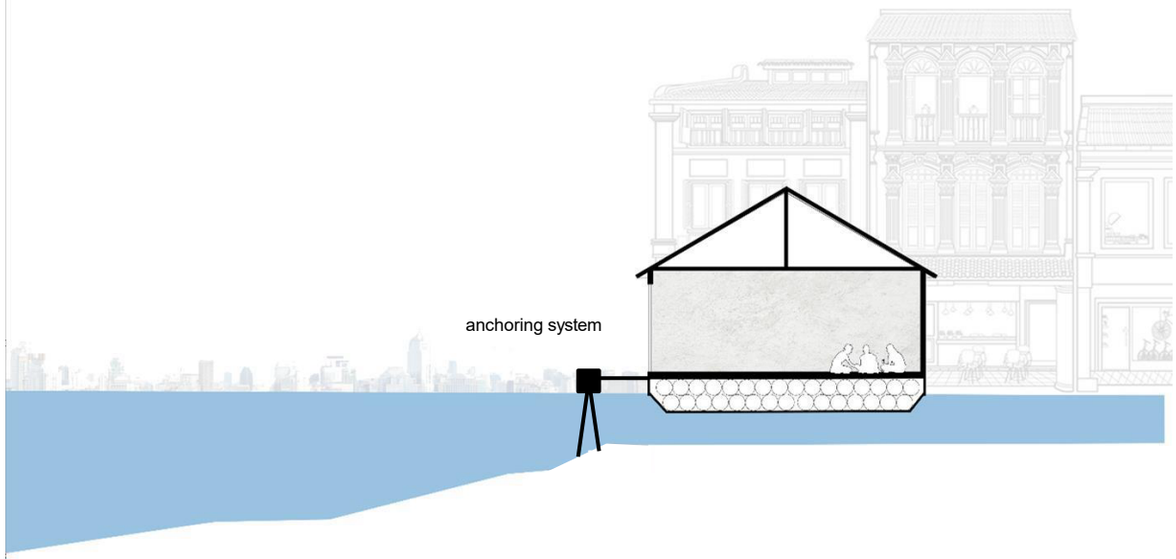
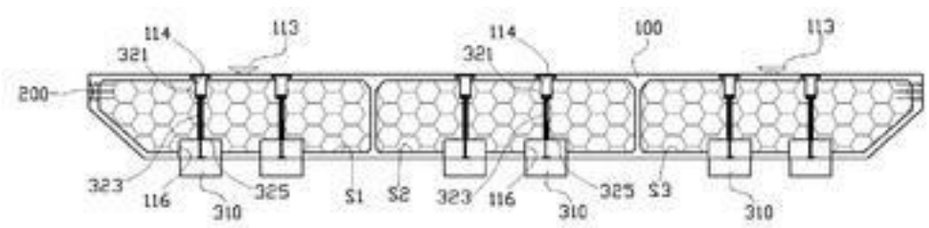


FIG 1.1: Replacing foundation system with pontoon structure to adapt with flooding



https://patents.google.com/patent/KR101342579B1/en

SOURCE https://www.climatesafehousing.org/dry-floodproofing?utm_source=chatgpt.com

Typical Height Limits:

- Single-story: 4.5-5 meters
- Multi-story: 6+ meters
- Area: 70-150 sqm

Things To Consider:

- Accessibility (Stairs, Ramps) consider for in especially inclusive design
- Underfloor used (Car Parking, Open landscape)
- Drainage & overflow zone
- Wind load Resistance

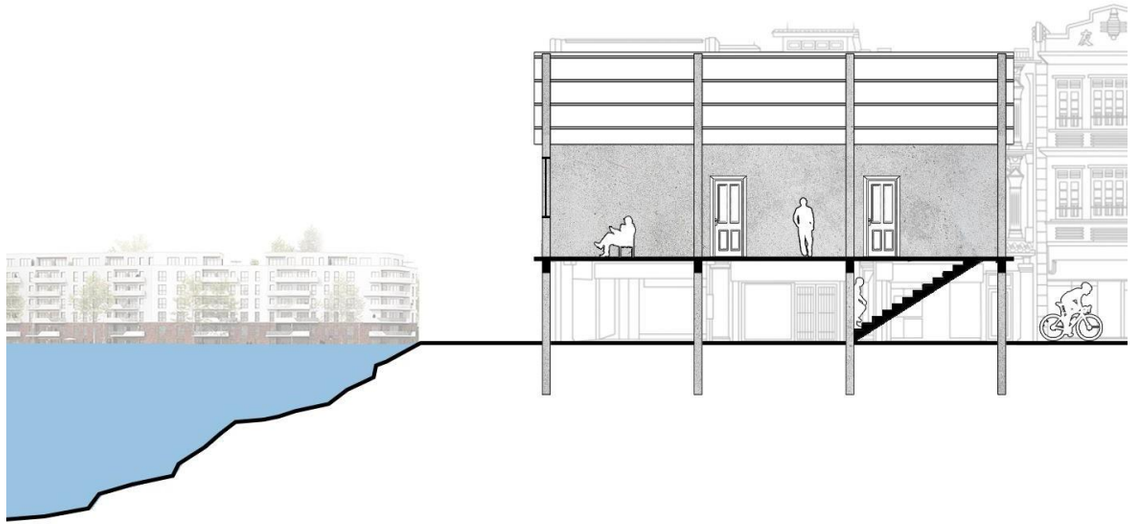
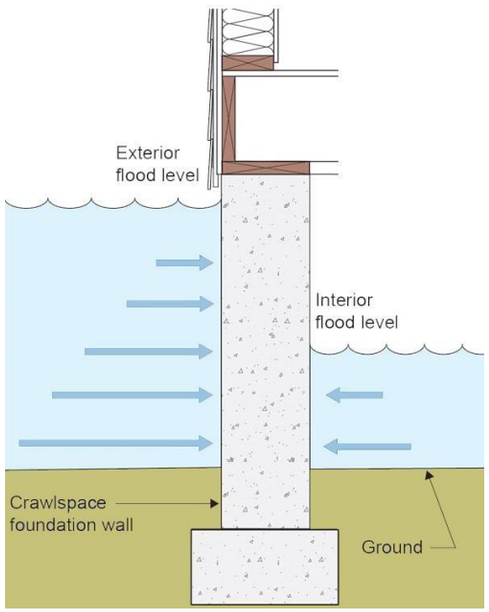


FIG 2.1: Stilted Building at waterfront

Foundation Types:

- Timber Piles (Traditional)
- Concrete Piles
- Steel Piles



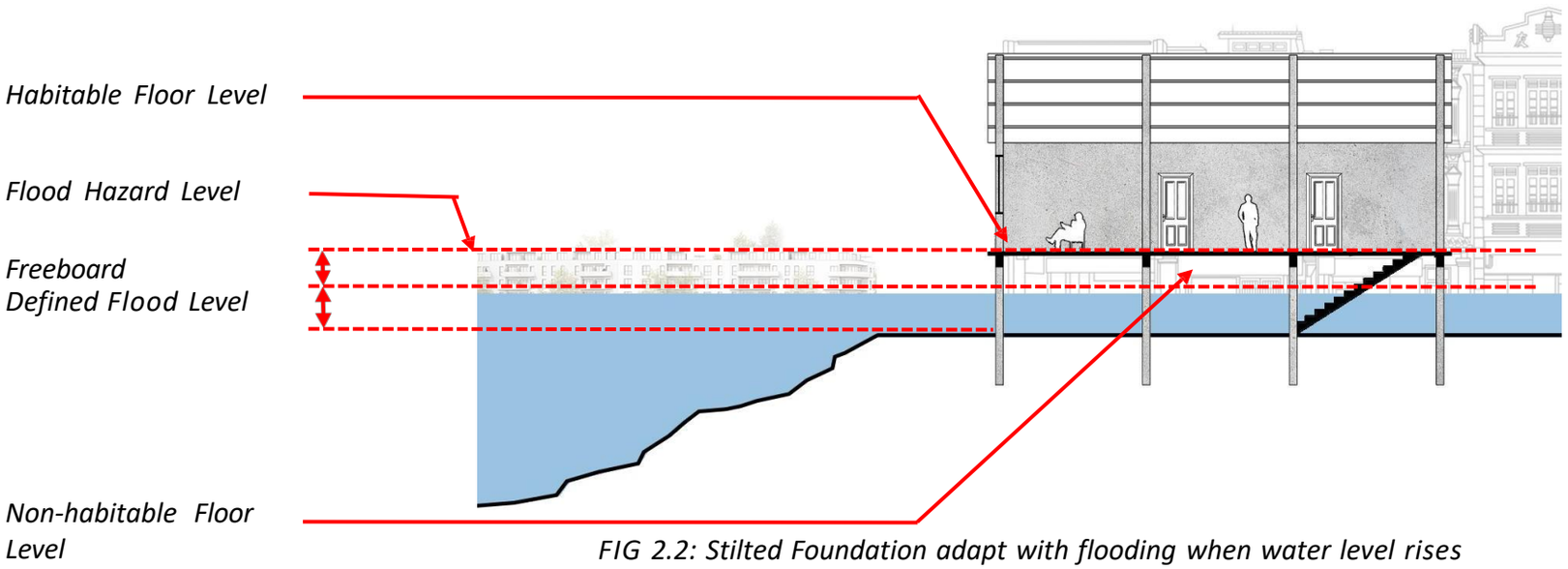


FIG 2.2: Stilted Foundation adapt with flooding when water level rises

SOURCE https://www.climatesafehousing.org/dry-floodproofing?utm_source=chatgpt.com

DESIGN GUIDLINE

Typical Height Limits:

- Single-story: 3-4 meters
- Multi-story: 8+ meters
- Area: 150+ sqm

Things To Consider:

- Soil condition (ensure soil can support anchor and vertical guidance)
- Site slope and drainage
- Wind and Current Loads

Vertical Guidance System:

•Guideposts or Tracks

- •Must be tall enough to accommodate
- •Smooth, durable materials reduce wear.

•Slip Connectors

- •Use corrosion-resistant collars (steel, composite) to slide along posts.

Vertical guidance posts or sleeves are key to avoid lateral drift when floating. They should exceed the highest projected flood level by 1–1.5 meters for safety

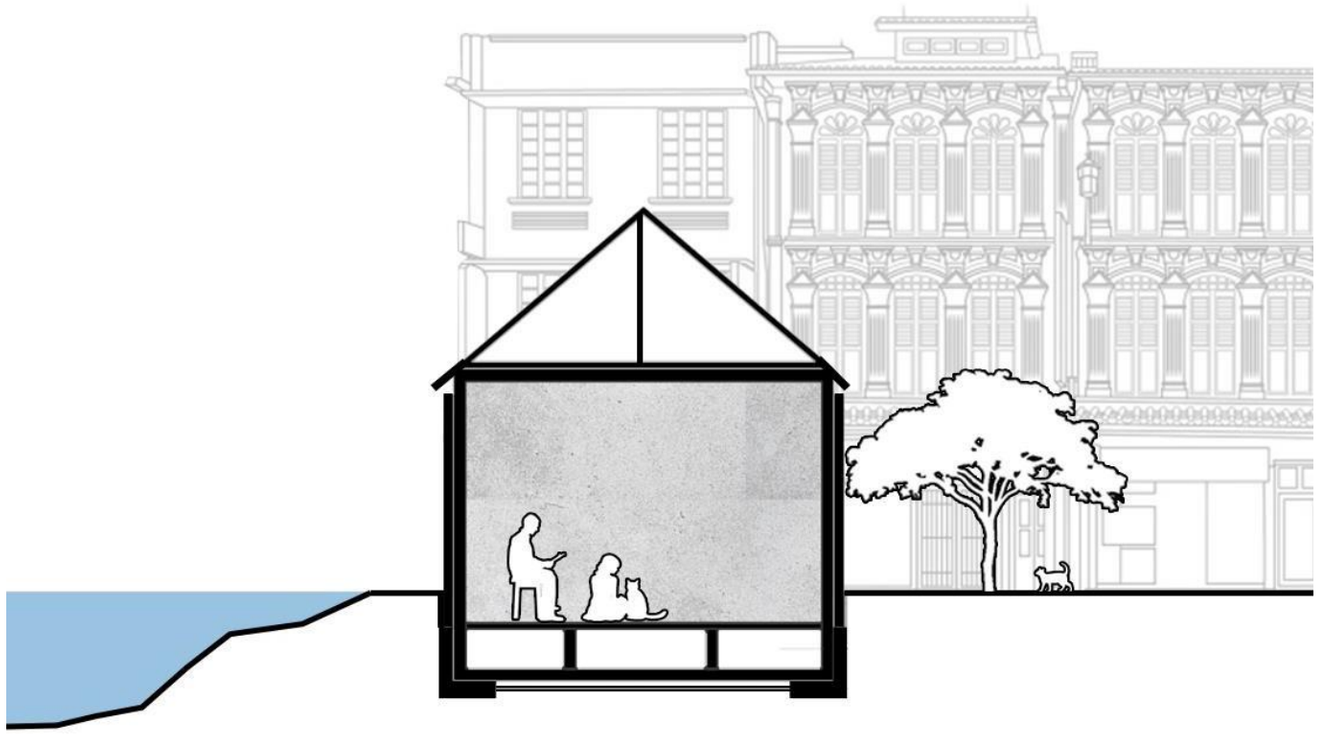


FIG 3.1: Building with amphibious foundation at waterfront

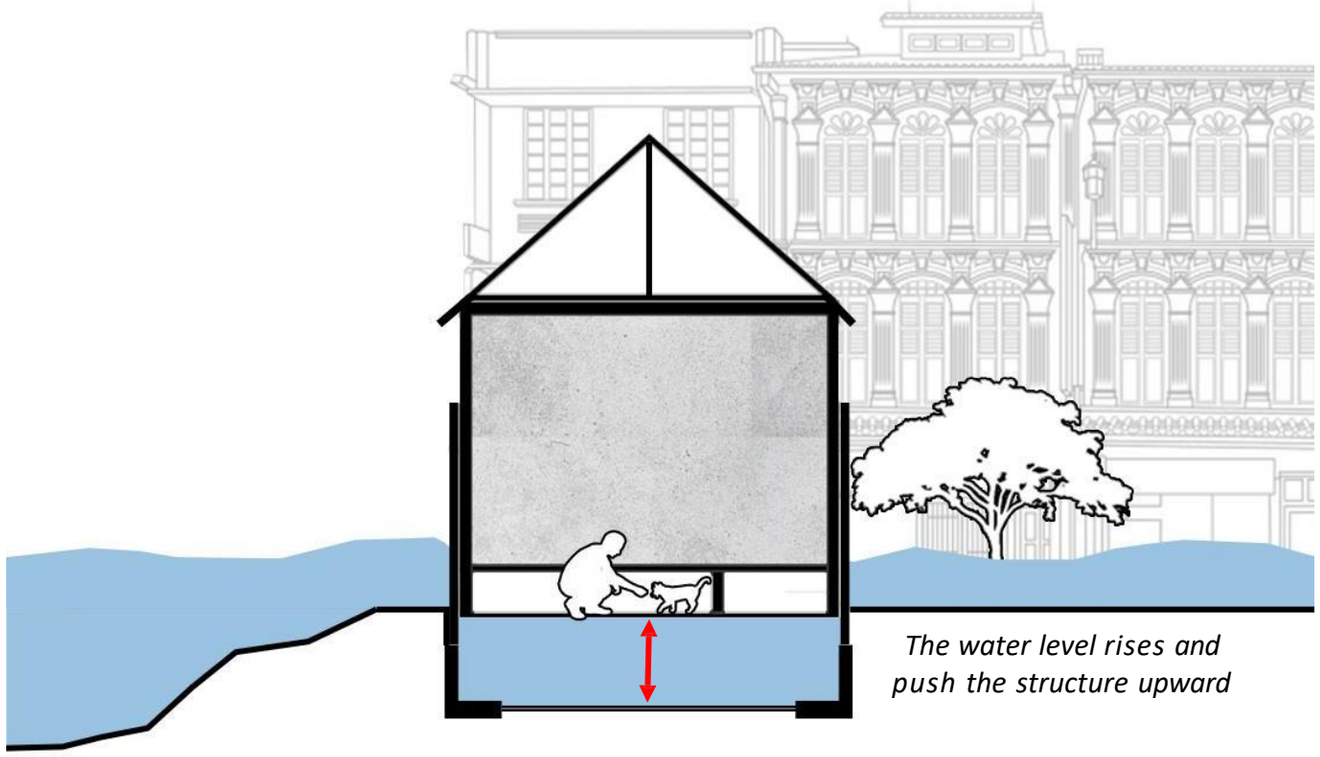
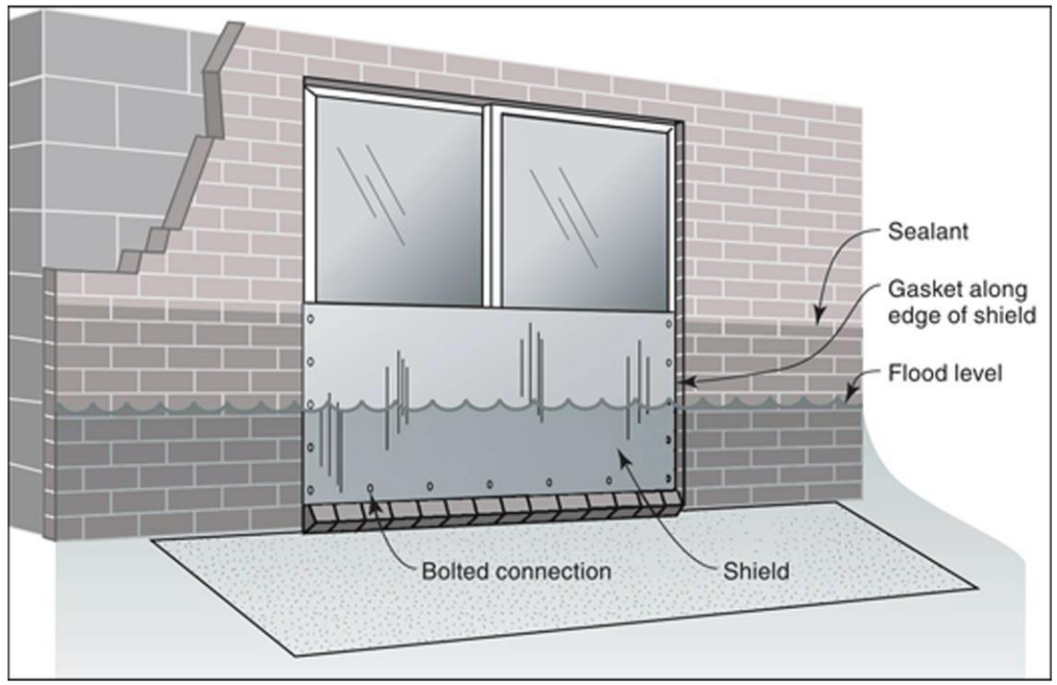


FIG 3.2: Amphibious Foundation adapt with flooding when water level rises

SOURCE https://www.climatesafehousing.org/dry-floodproofing?utm_source=chatgpt.com

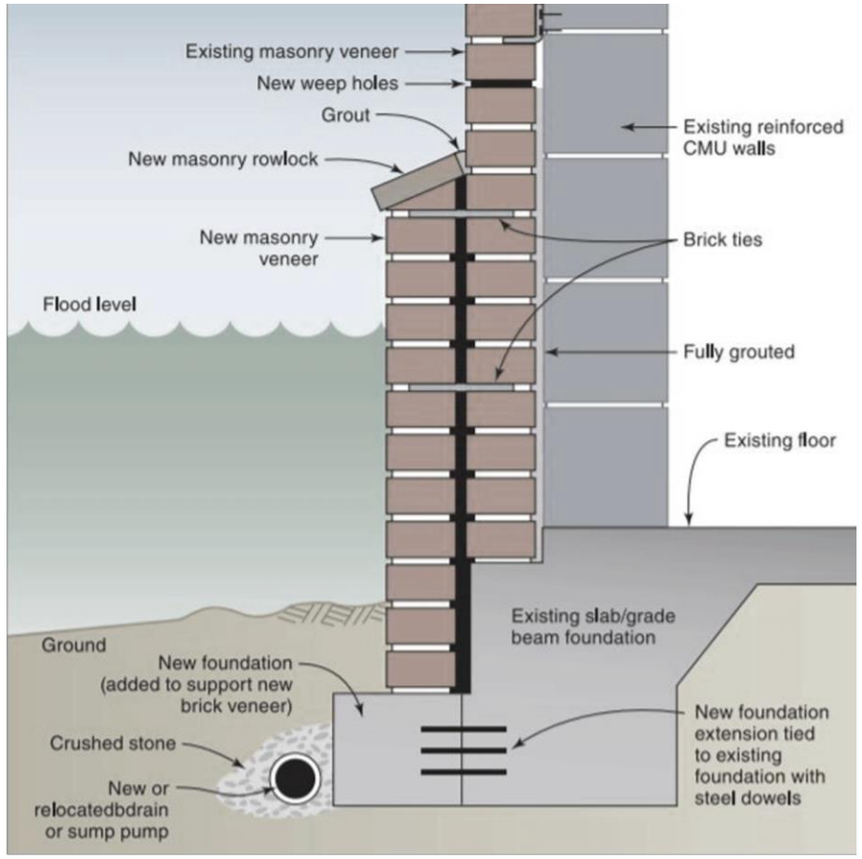
DESIGN GUIDLINE

Dry floodproofing is a method used to keep floodwaters out of a building by making it watertight. This involves sealing walls, floors, and openings so water cannot enter the interior spaces. It's a common alternative to elevating non-residential buildings—but not typically allowed for residential buildings under U.S. FEMA guidelines



Active (Temporary) Dry Floodproofing
Requires action when a flood is imminent, such as:
•Installing flood shields or panels over doors/windows
•Setting up sandbag barriers or closing vents

Passive (Permanent) Dry Floodproofing
Integrated into the building, requiring no action during a flood:
•Waterproof coatings or membranes on walls and floors
•Sealed or gasketed flood doors
•Backflow prevention valves and sump pumps



SOURCE https://www.climatesafehousing.org/dry-floodproofing?utm_source=chatgpt.com

CLIMATE AND PLANTS
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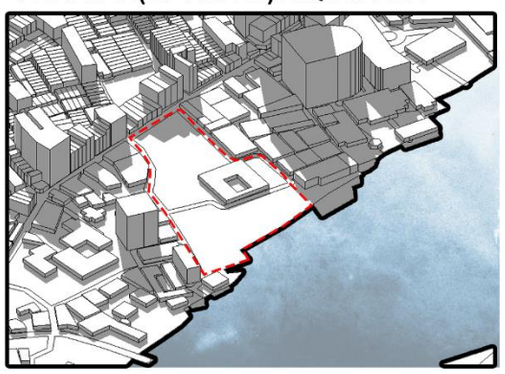
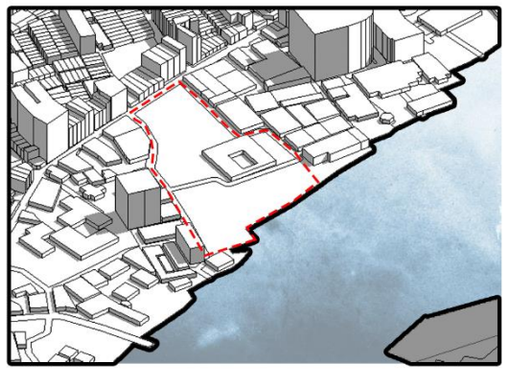
MARCH 21
VERNAL(SPRING)EQUINOX

Base sunpath



8:00AM



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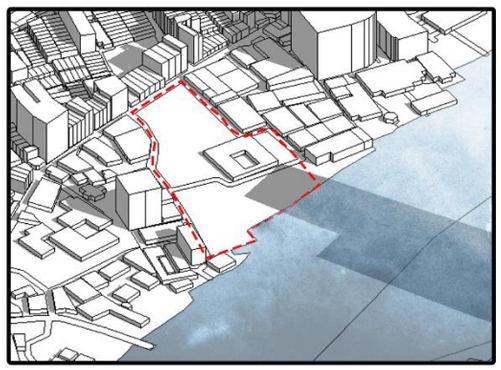

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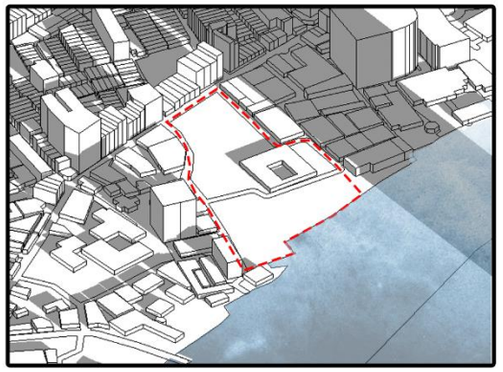
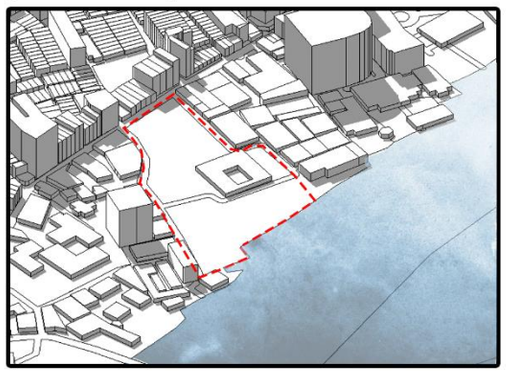


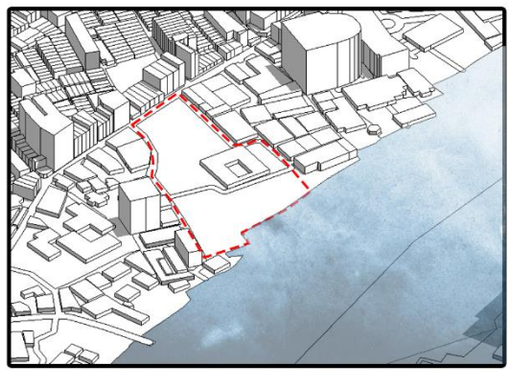
5:00PM

JUNE 21
(SUMMER)SOLTICE

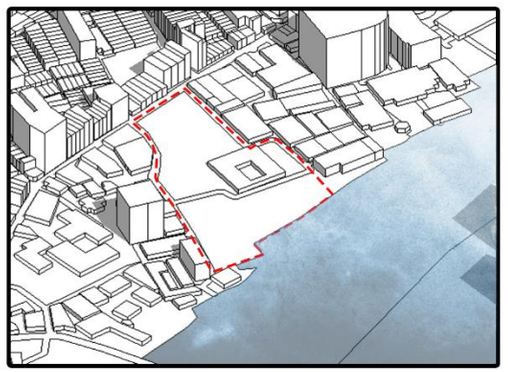
Longest daylight



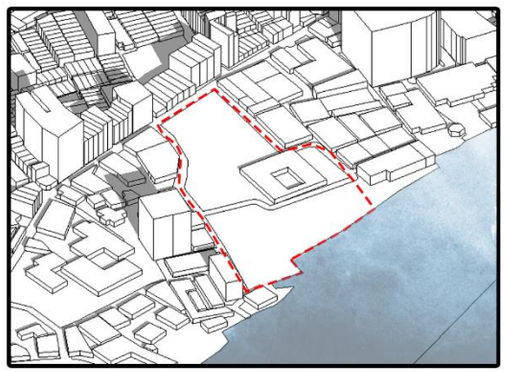
8:00AM



12:00PM



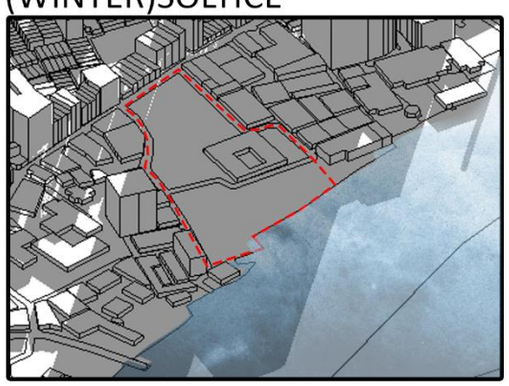
3:00PM



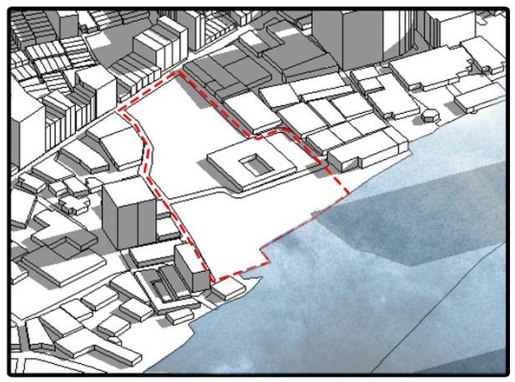
5:00PM

DECEMBER21
(WINTER)SOLTICE

Shortest daylight



8:00AM



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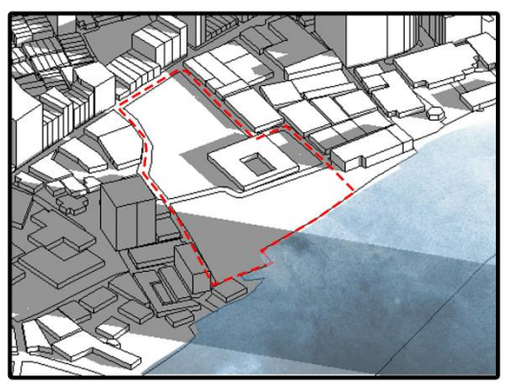

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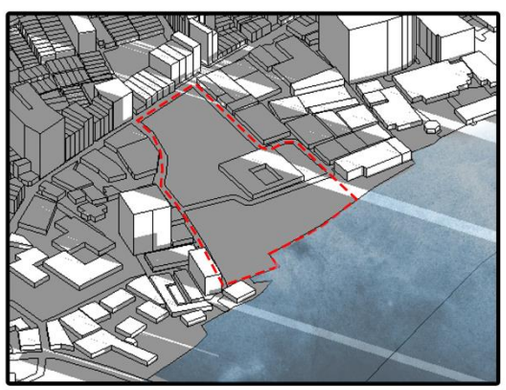


5:00PM

https://www.climatestotravel.com/

CLIMATE AND PLANTS

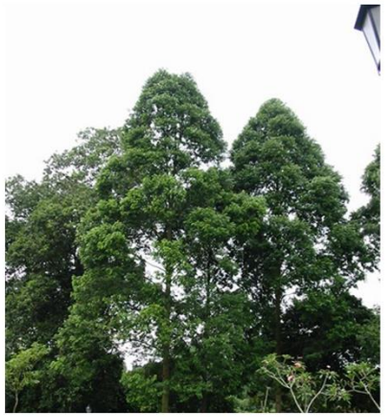
1,500mm – 1,650mm Monsoon from mid may to mid october
SOLAR IRRADIANCE : 5.3-5.6kWh/sqm/day

SHADING PLANTATION


SAMAEA SAMAN (rain tree)


SENNA SIAMEA(siamese cassia)


MIMUSOPS ELENGI(spanish cherry)


HOPEA ODORATA (ta-khian)

BUSHES


ALLAMANDA(yellow allamanda)


BOUGAINVILLEA


DESMOS CHINENSIS (dwarf ylang ylang)


IXORA(west indian jasmine)

WETLAND
EMERGENT PLANTS
rooted in soil underwater ,but stems,leaves,flowers rise above water surface.


CRINUMTHAIANUM(thai onion plant)


BARCLAYA LONGIFOLIA


HYGROPHILA CORYMBOSA


LIMNOCHARIS FLAVA

CLIMATE AND PLANTS

WETLAND
SUBMERGED PLANTS
fully underwater


VALLISNERIA SPIRALIS


HYDRILLA VERTICILLATA


CERATOPHYLLUM DEMERSUM


NAJAS SPP

WETLAND
SUBMERGED PLANTS
float freely on water surface


ECHHORNIA CRASSIPES

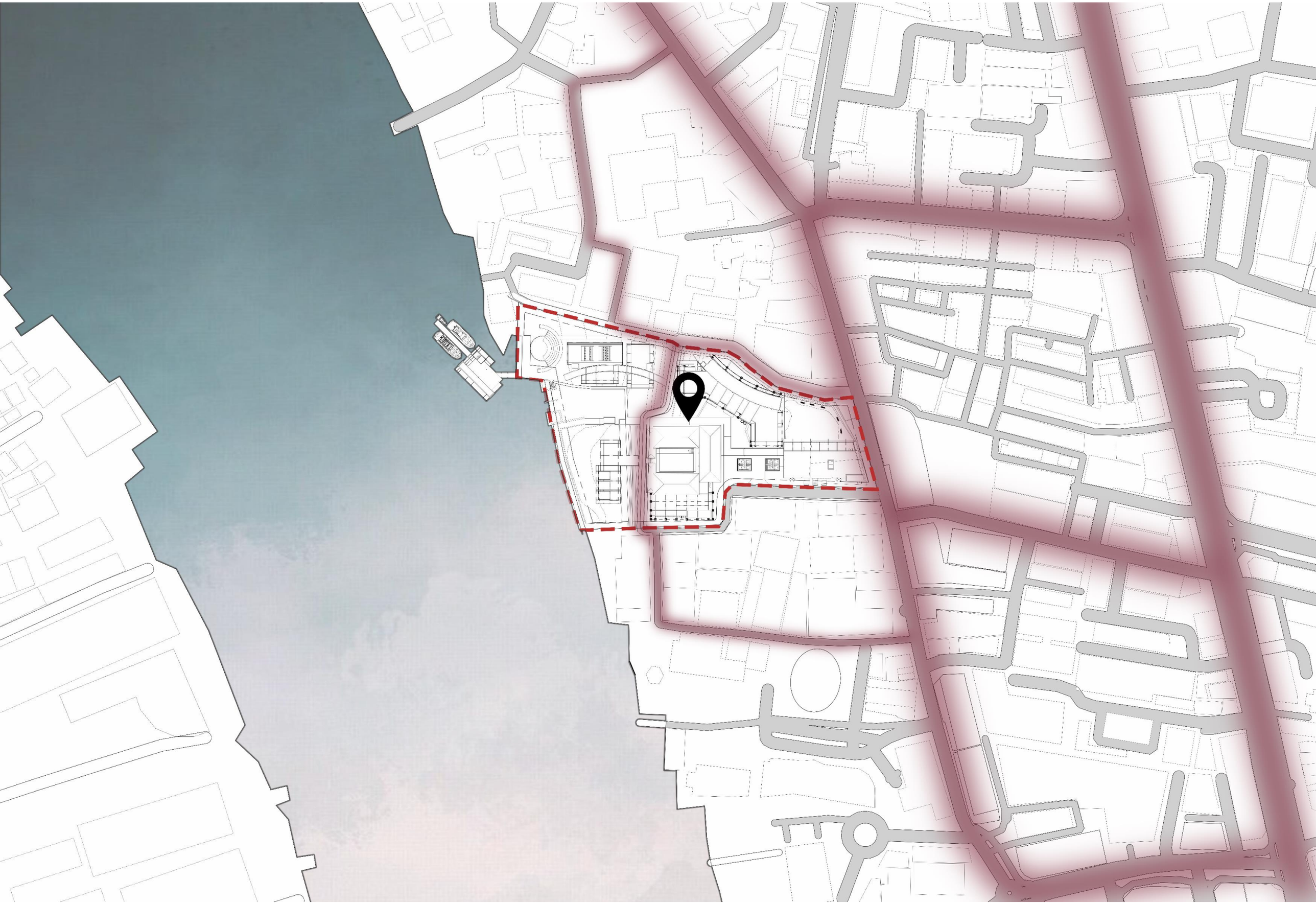

PISTIA STRATIOTES


SALVINIA NATANS

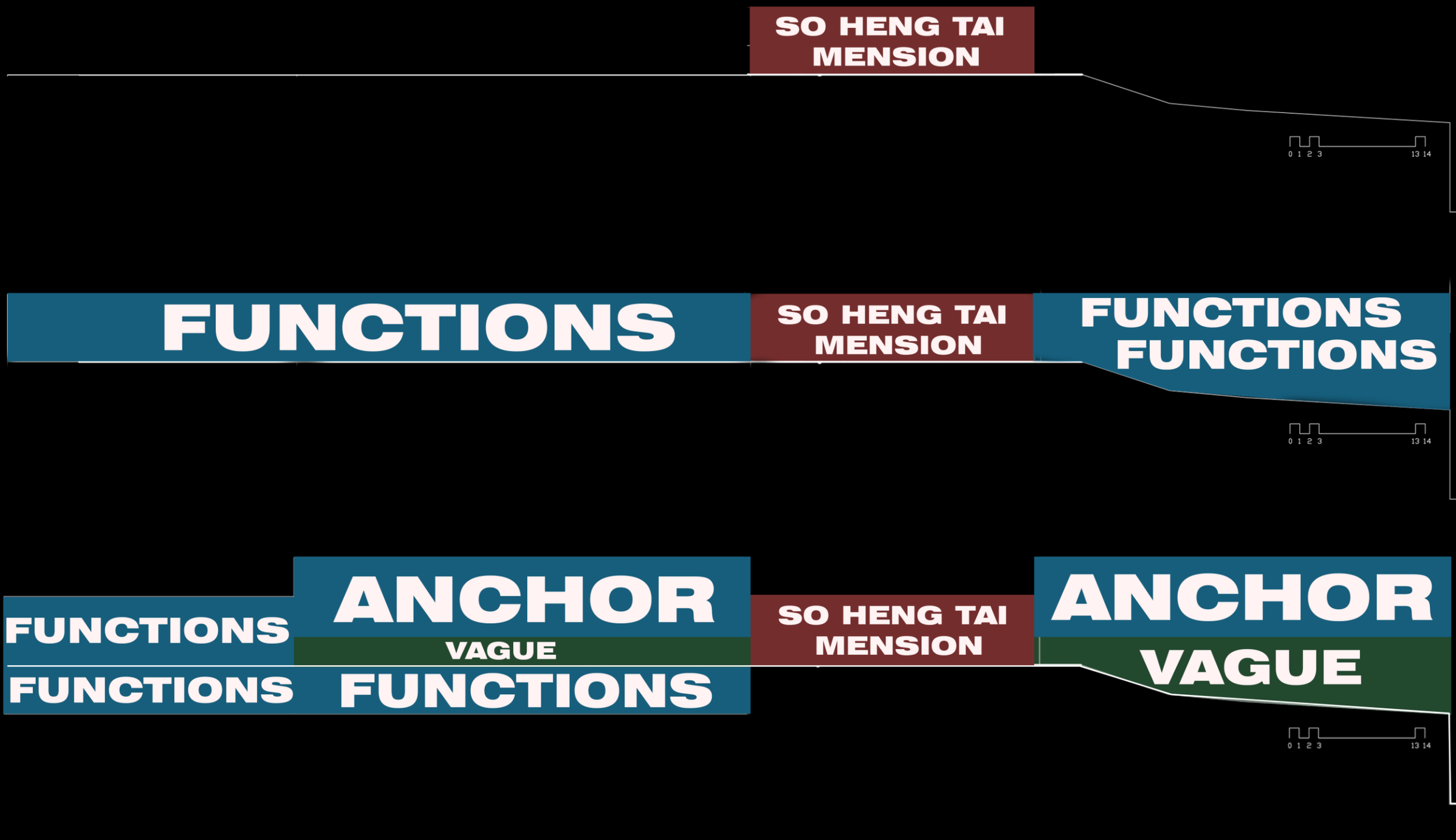

AZOLLA FILICULOIDES

DES|GN
DES|GN

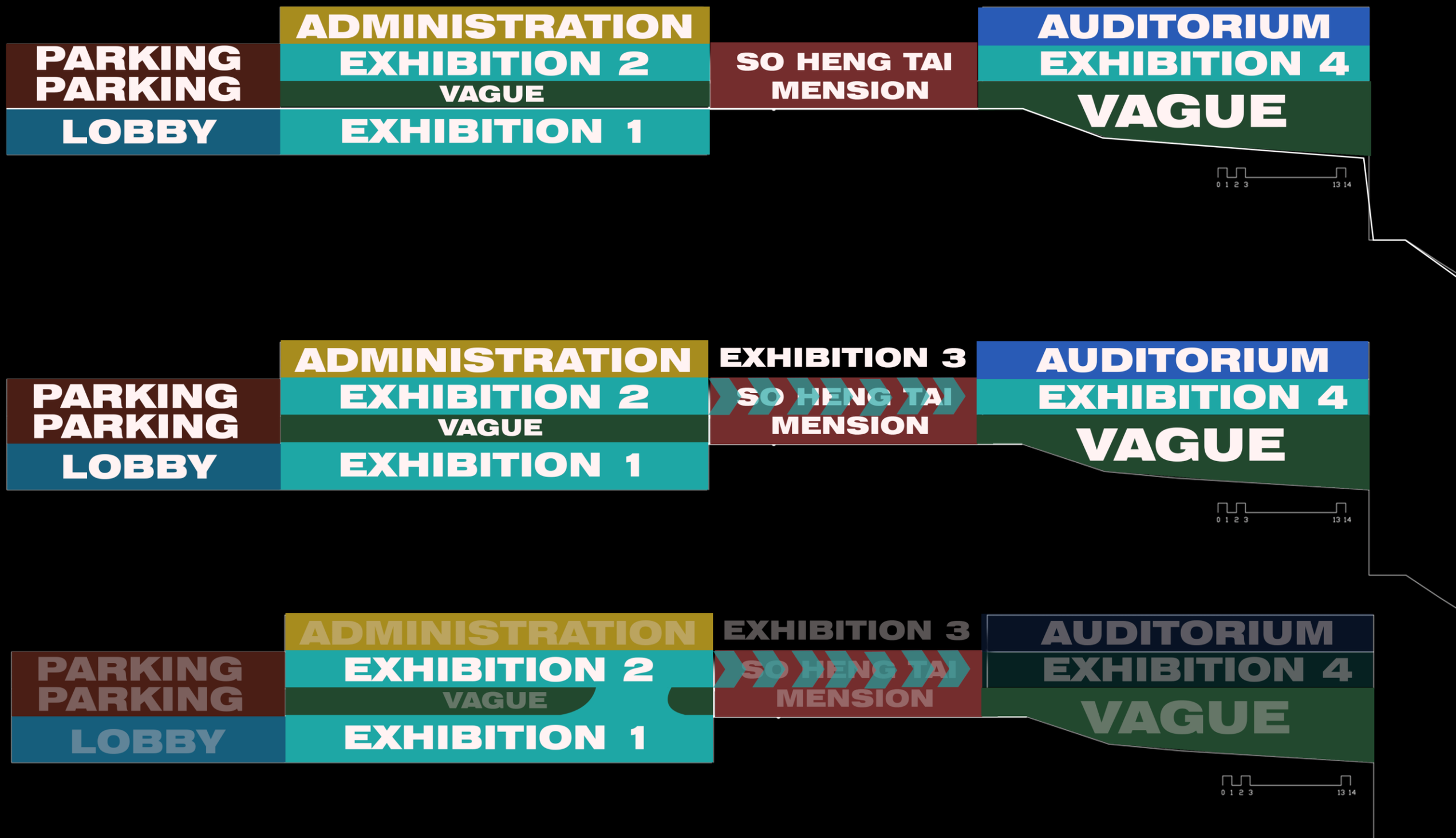
LOCATION PLAN



PROGRAM IDEOLOGY



PROGRAM IDEOLOGY



PROGRAM IDEOLOGY

PROGRAM IDEOLOGY

WATER/WETLAND SYSTEM

1.INLET WATER CONTROL STORAGE
2.TREATMENT MARSH
3.RIPARIAN WETLAND
4.FILTERATION POND
5.FILTERED WATER

PUMPING SYSTEM

1

2

3

4

5

FLOOR PLAN

GROUND FLOOR PLAN

0 5 10 15 25

FLOOR PLAN


PUBLIC PARK
-3.50
AMPHITHEATER
-5.30
FILTERED WATER
TEMPORARY
EXHIBITION
+3.00
ENTRANCE
PIER
-3.50
ENTRANCE
INLET WATER CONTROL
-12.00
2,496M3
STREAM
ELE
STREAM
CHAOPHAYA RADING
EXHIBITION
+6.00
FLOOD SIMULATION
+6.00
OPEN
TO
BELOW
BOAT
EXHIBITION
+6.00
ENTRANCE
RIPARIAN WETLAND
(SEMI DIRTY)
STREAM
TREATMENT
MARSH
-6.00
TALAT NOI EXHIBITIN
+3.00
TRADING
EXHIBITION
+3.00
SO HENG TAI MENSION
EXHIBITION
+3.00
WC
+3.00
MECHANICAL
ROOM
+3.00
MEETING
ROOM
+3.00
TECHNICIAN
+3.00
JANITOR
+3.00
STREAM
ENTRANCE
PARKING
ARCHIVE
+4.00
ADMIN
OFFICE
+4.00
ENTRANCE
SECOND FLOOR PLAN
OUTDOOR
+7.00
CONFERENCE ROOM
+7.00
CONFERENCE ROOM
+7.00
THIRD FLOOR PLAN
0 5 10 15 25

FLOOR PLAN

1.LOBBY
2.CAFE
3.WATER LIFESTYE EXHIBITION
4.RIVER GENESIS
5.FRONT DESK
6.TEMPORARY EXHIBITION
7.WAITING AREA
8.AUDITORIUM
9.PROJECTOR ROOM
10.AMPHITHEATER
11.PUBLICK PARK
12.WORKHOP
13.F&B
14.STORAGE
15.SOUVENIR STORE
16.ELEVATOR PARKING
17.ADMINISTRATION LOUNGE

11 PUBLIC PARK -3.50
10 AMPHITHEATER -5.30
FILTERED WATER
ENTRANCE
WAITING
STREAM
PIER -3.50
ENTRANCE
INLET WATER CONTROL -12.60 2,496M3
STREAM
TREATMENT MARSH -6.00
STREAM
POOL
STREAM
16 PARKING
RIPARIAN WETLAND (SEMI DIRTY)
ENTRANCE
ENTRANCE
ENTRANCE

ROOF PLAN

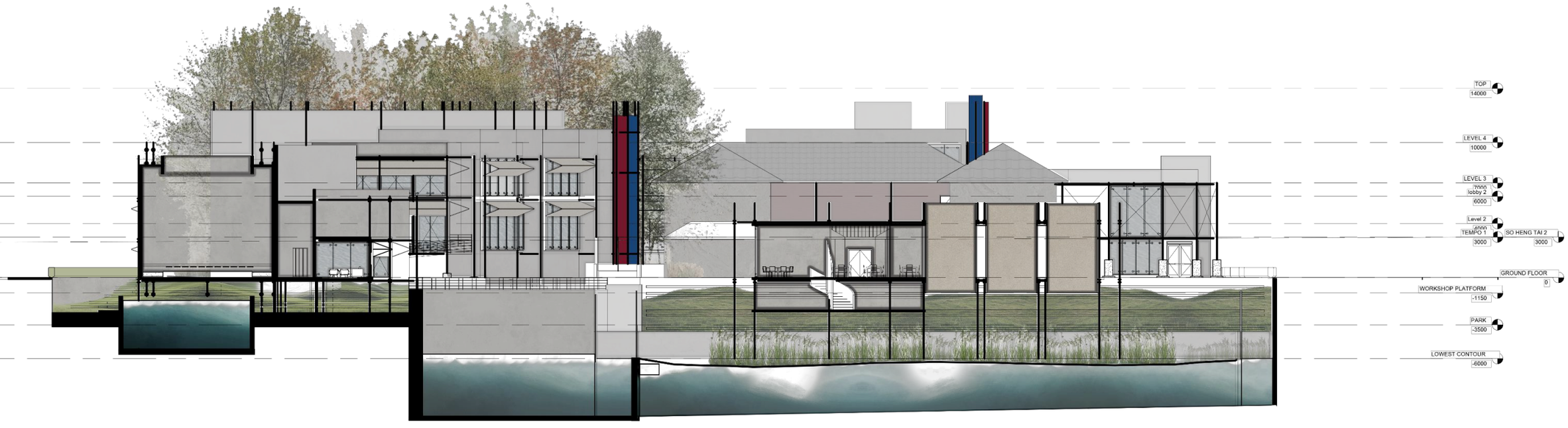
0 5 10 15 25

SECTIONS

SECTIONS

CROSS SECTION A-A

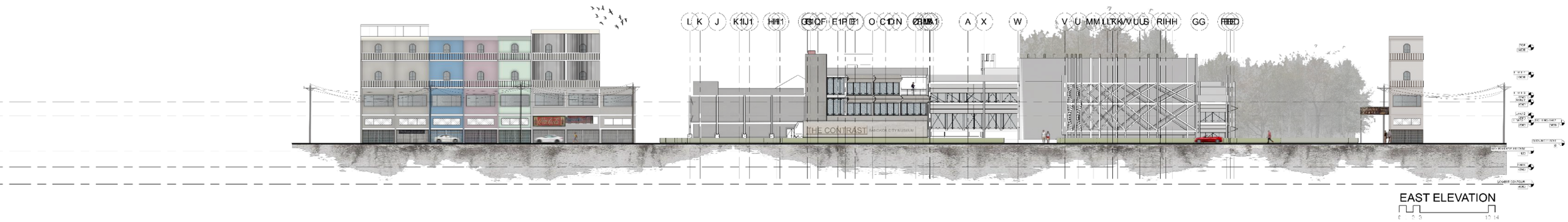
0 1 2 3 13 14



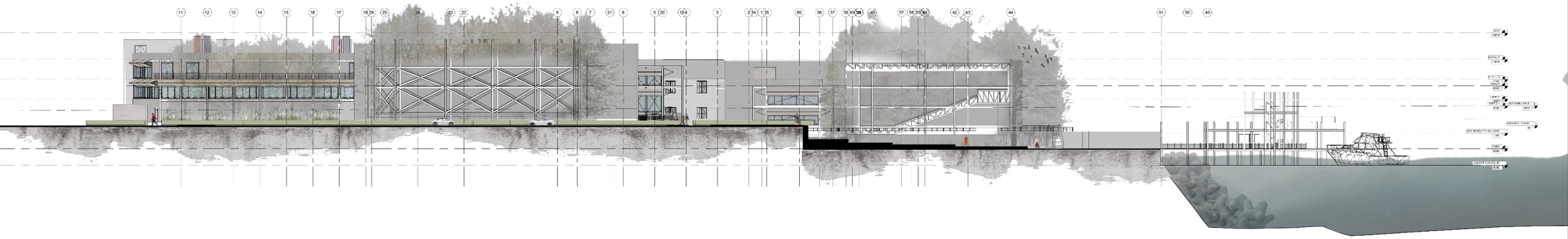
CROSS SECTION B-B

0 1 2 3 13 14

ELEVATIONS

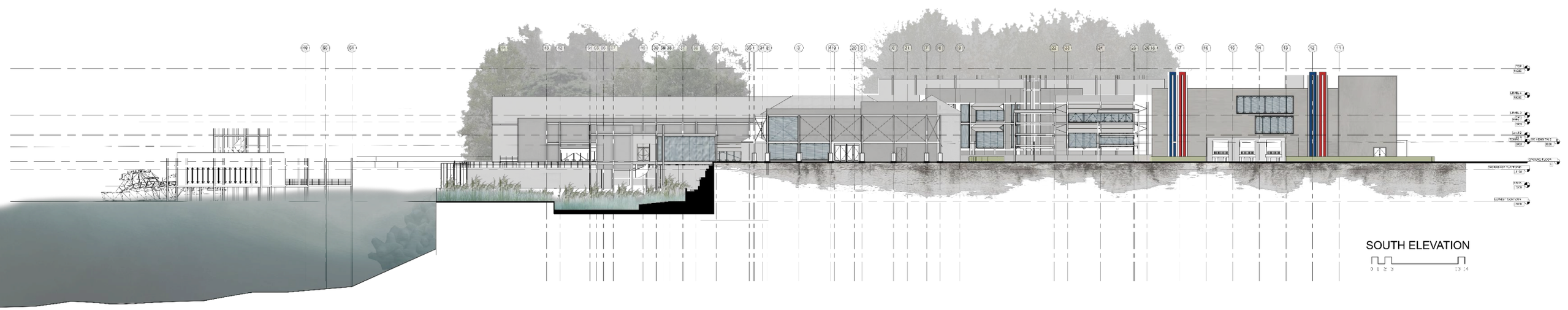


EAST ELEVATION



NORTH ELEVATION

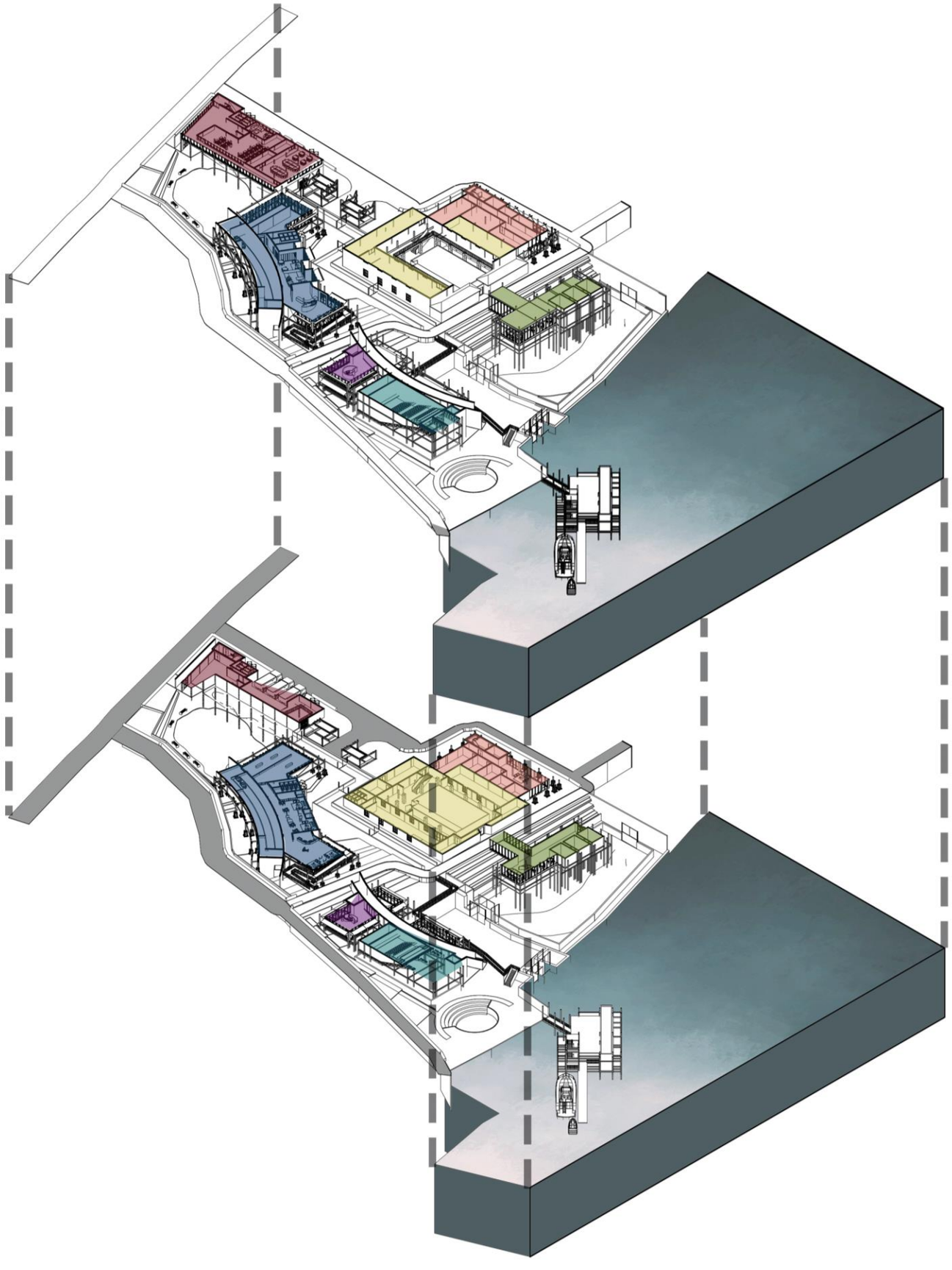
ELEVATIONS



SOUTH ELEVATION

WEST ELEVATION

ARCHITECTURE PROGRAMMING



ADMINISTRATION
(APPROX.600SQM)

MAIN EXHIBITION SPACE
(APPROX.1500SQM)

TEMPORARY EXHIBITION
(APPROX.800SQM)

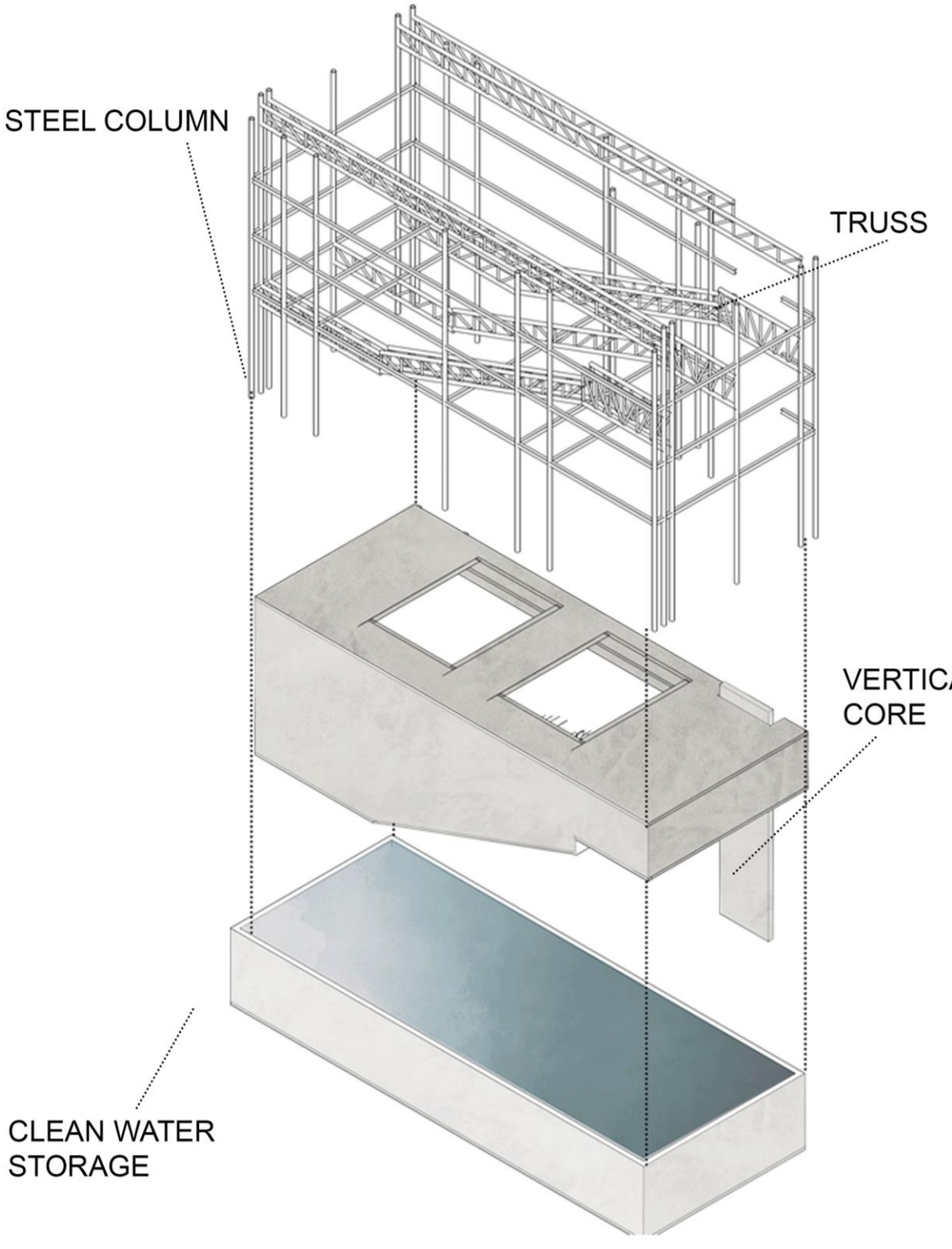
AUDITORIUM
(APPROX.1000SQM)

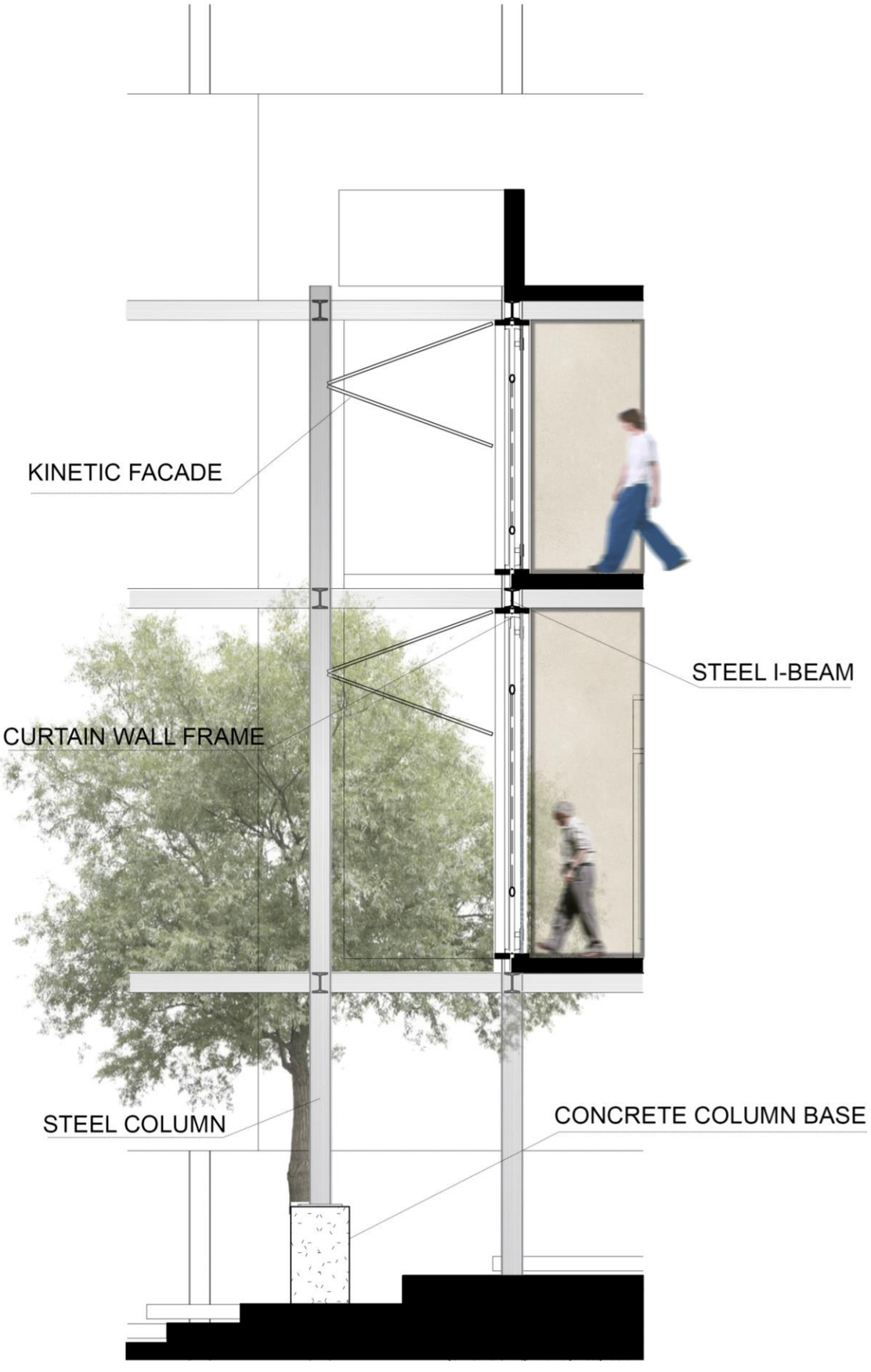
WORKSHOP AREA
(APPROX.200SQM)

PUBLIC EXHIBITION
COMMERCIAL
(APPROCX.900SQM)

SERVICE
(APPROX.600SQM)

LONG SPAN STRUCTURE





PERSPECTIVES

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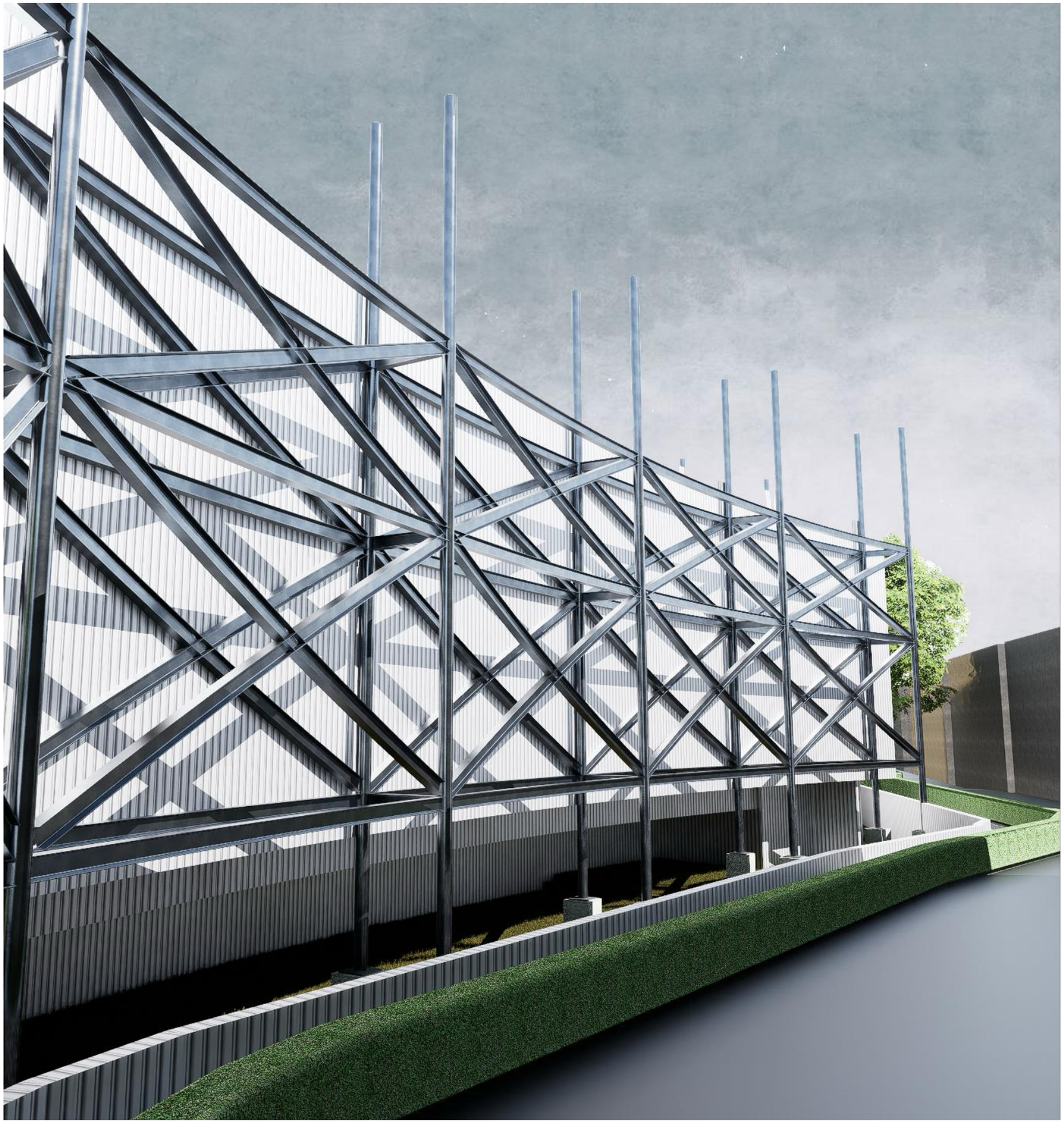

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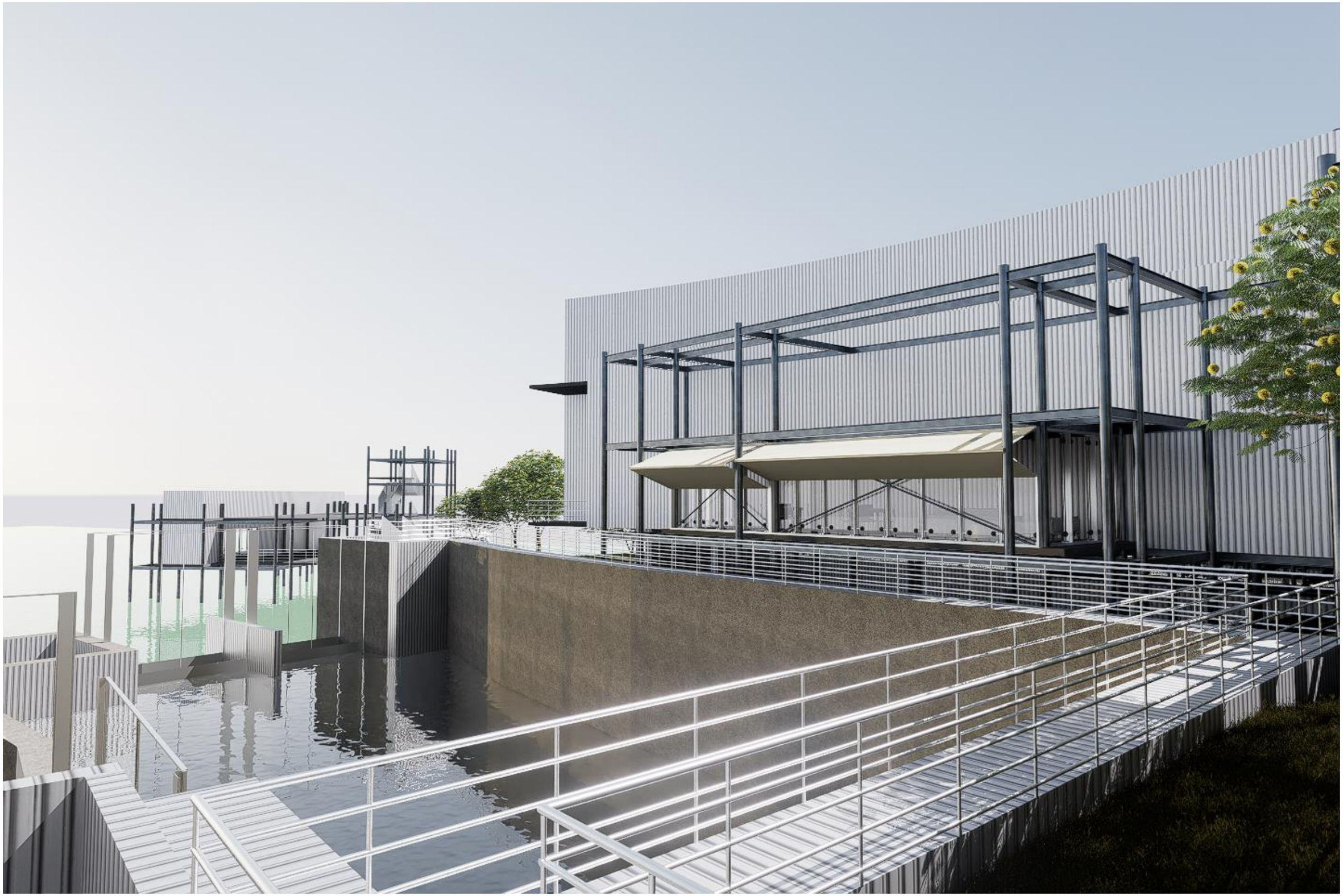

PERSPECTIVES

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