



1. INTRODUCTION AND PROJECT BRIEF:

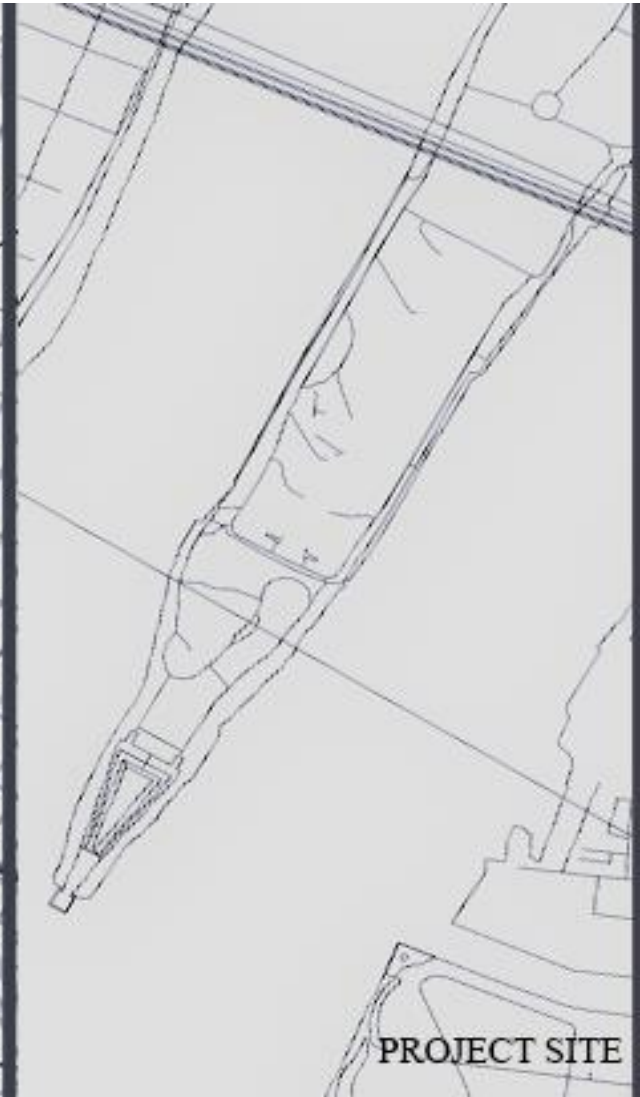
THIS CHAPTER COVERS A BRIEF OVERVIEW OF THE PROJECT SITE WHICH IS ONE OF THE MOST POPULAR METROPOLITAN CITIES IN THE WORLD REGARDING A SUMMARY OF NYC URBANISM AND ARCHITECTURE, THE MAIN IDEOLOGY ABOUT USE OF SPACE : NATURE VERSUS MANKIND, SOCIOCULTURAL ASPECTS OF SUCH A MULTI-RATIONAL CITY AND A DESCRIPTION OF ROOSEVELT ISLAND REGION. THESE SUBTITLES OF STUDY ALL HAVE REMARKABLE ROLES IN THE DESIGN PROCESS AS THEY INEVITABLY INFLUENCE THE PROJECT AND LEND RELEVANCE AND UTILITY THROUGHOUT THE PLAN TO BE PROPOSED.



NYC MANHATTAN



ROOSEVELT ISLAND



PROJECT SITE



NYC URBANISM:

WHAT DOES NYC NEED?

- Metropolitan City
- Dense Population
- One of the most important economies and harbours of the world
- Hosts lots of different ethnic backgrounds
- Includes Majority of skyscrapers and Concrete mass in compare to Green Area

NYC NEEDS A FREEDOM FOR NATURE AND SOME CALMNESS FROM ITS DENSITY!



ROOSEVELT ISLAND:

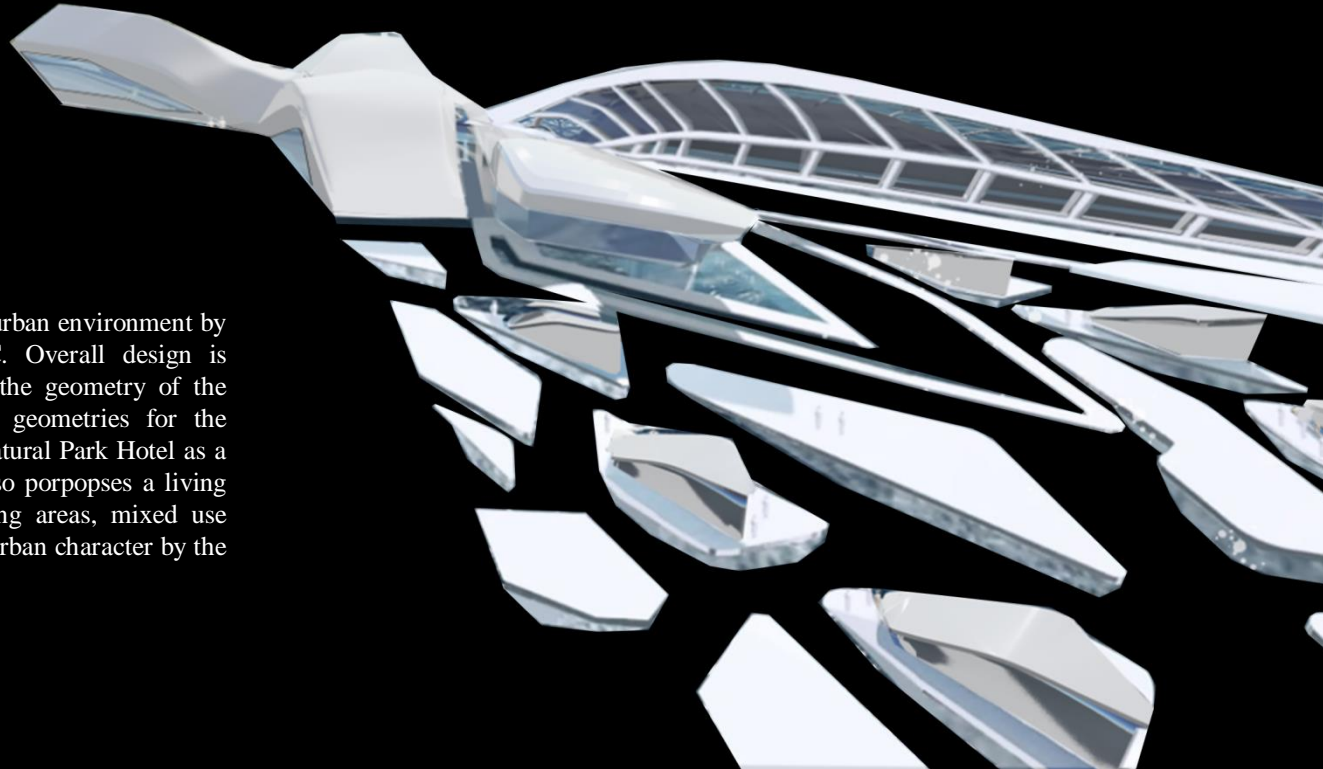
- It is a narrow island between Manhattan and Queens in the East River.
- The island has a huge importance to use the potential of the East River for NYC.
- It is about 3,2 km long with a max width of 238 m and a total area of 0.59 km²
- Includes mini schools, rentals and residentials and the population is mostly mid-high class like a small town
- Public transportation encouraged master plan
 - Access is via Ferry, Bus, Subway, Cable Car (from Manhattan to the Island) and Roosevelt Island Bridge (from Queens to the Island) or Car from the bridge



2. PROJECT BRIEF, SITE ANALYSIS AND BUILDING FORMATION:

PROJECT BRIEF:

The project proposes a prototype for a sustainable urban environment by using the potential of the East River in NYC. Overall design is composed of two distinct geometries which are the geometry of the hydroplant dam for energy production and the geometries for the wetlands for water purification and it is being a Natural Park Hotel as a relaxation space in the whole NYC. The design also proposes a living environment that provides open spaces, gathering areas, mixed use spaces, private and service spaces and having an urban character by the contribution of the cable car from the main city.



CITY LAYOUT AND OPEN SPACE:

Roosevelt Island



LAND USE:

Roosevelt Island



PEDESTRIAN CIRCULATION:

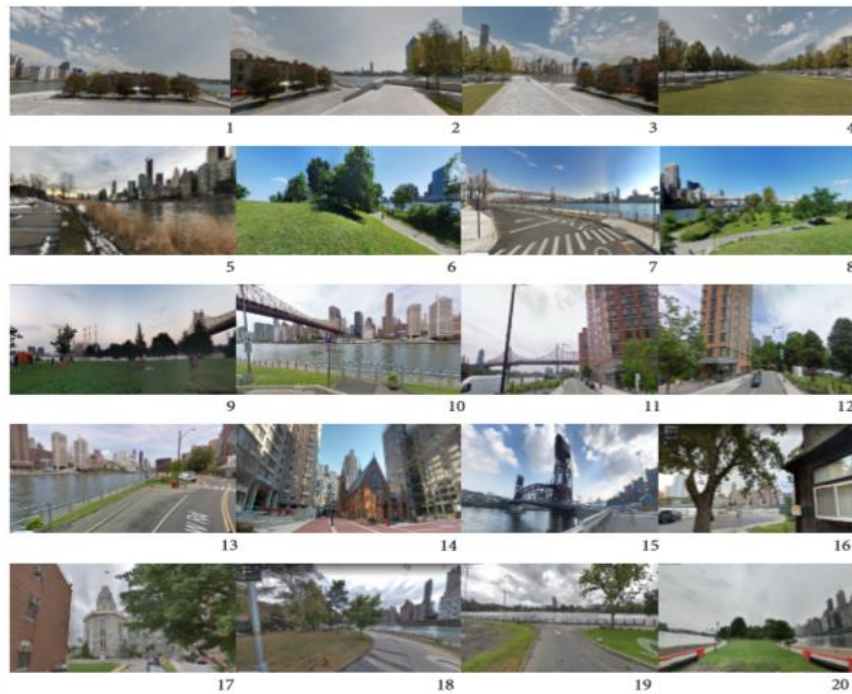
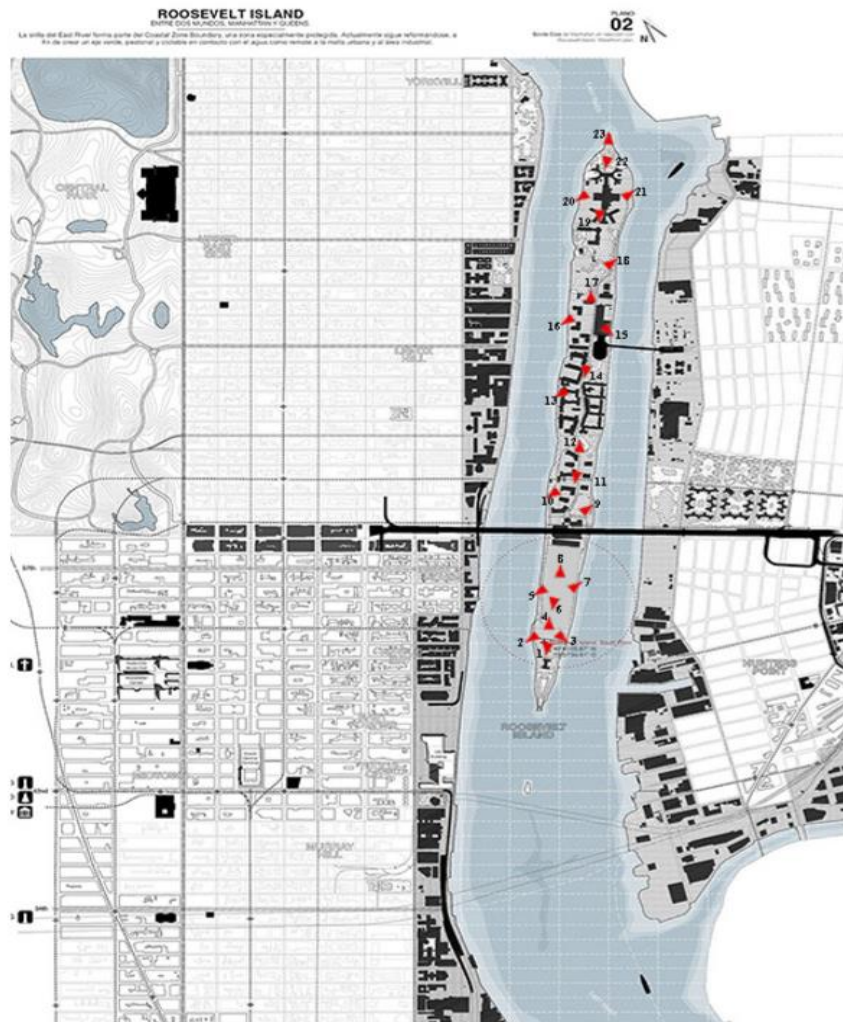
Roosevelt Island



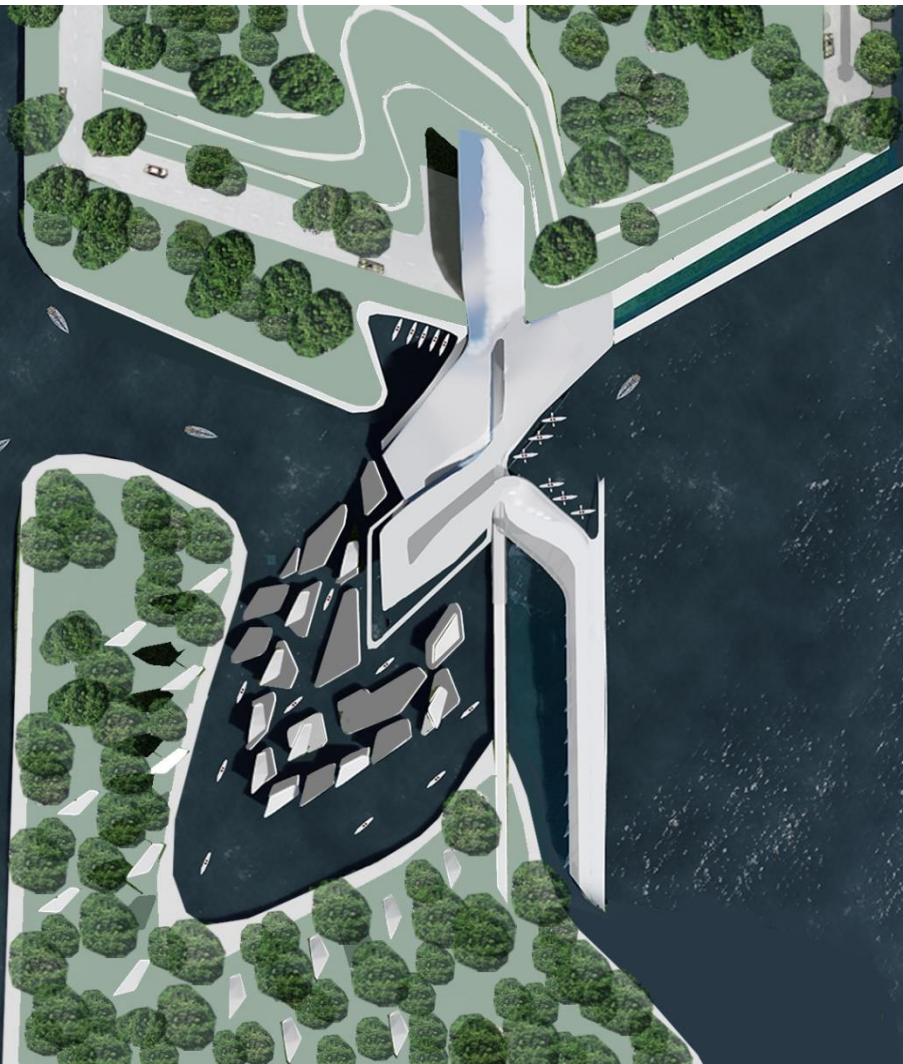
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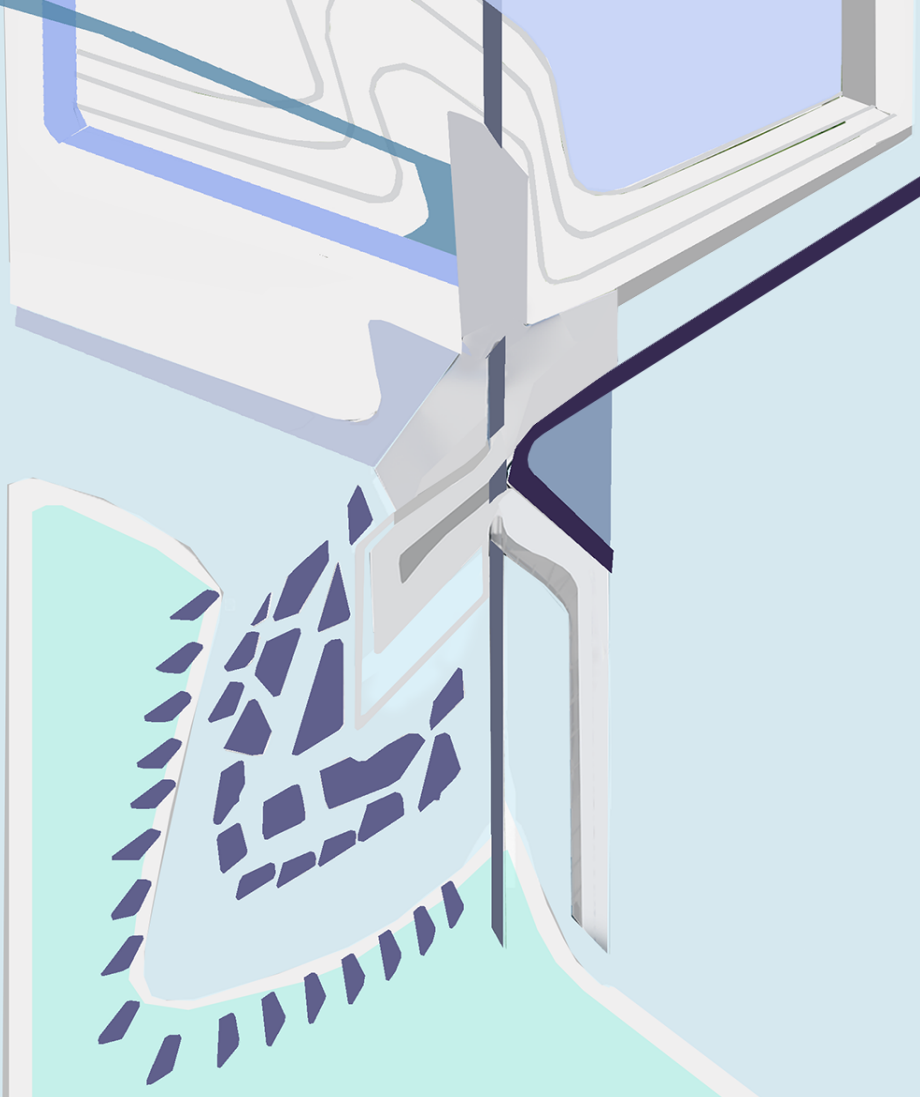
Roosevelt Island





-  Hardscape
-  Softscape
-  Planting





Design Solutions for Problems:
(Master Plan Scale)

-  The Spine (Main Axis)
-  Hydroplant Dam (Maximizing the use of the river)
(Saving from economic income)
-  Wetlands (Water Purification)
-  Forest Park (More Green Areas)
-  Main Entrance Port (Environmental Use of Kinetic Energy)
-  Water Sports Port (Environmental Use of Kinetic Energy)
-  Car Entrance (Main Access)
(goes to parking lot)
-  Cable Car Station (Urban Character of the building)
-  Urban Dam Terrace

ORDERING SYSTEMS

Environmental

No outer energy uses
Cleans Environment
Contributes Marine Life
New City Park

Economical

New job opportunities
Attraction Node in the island
Smarth Growth



Socio-Cultural

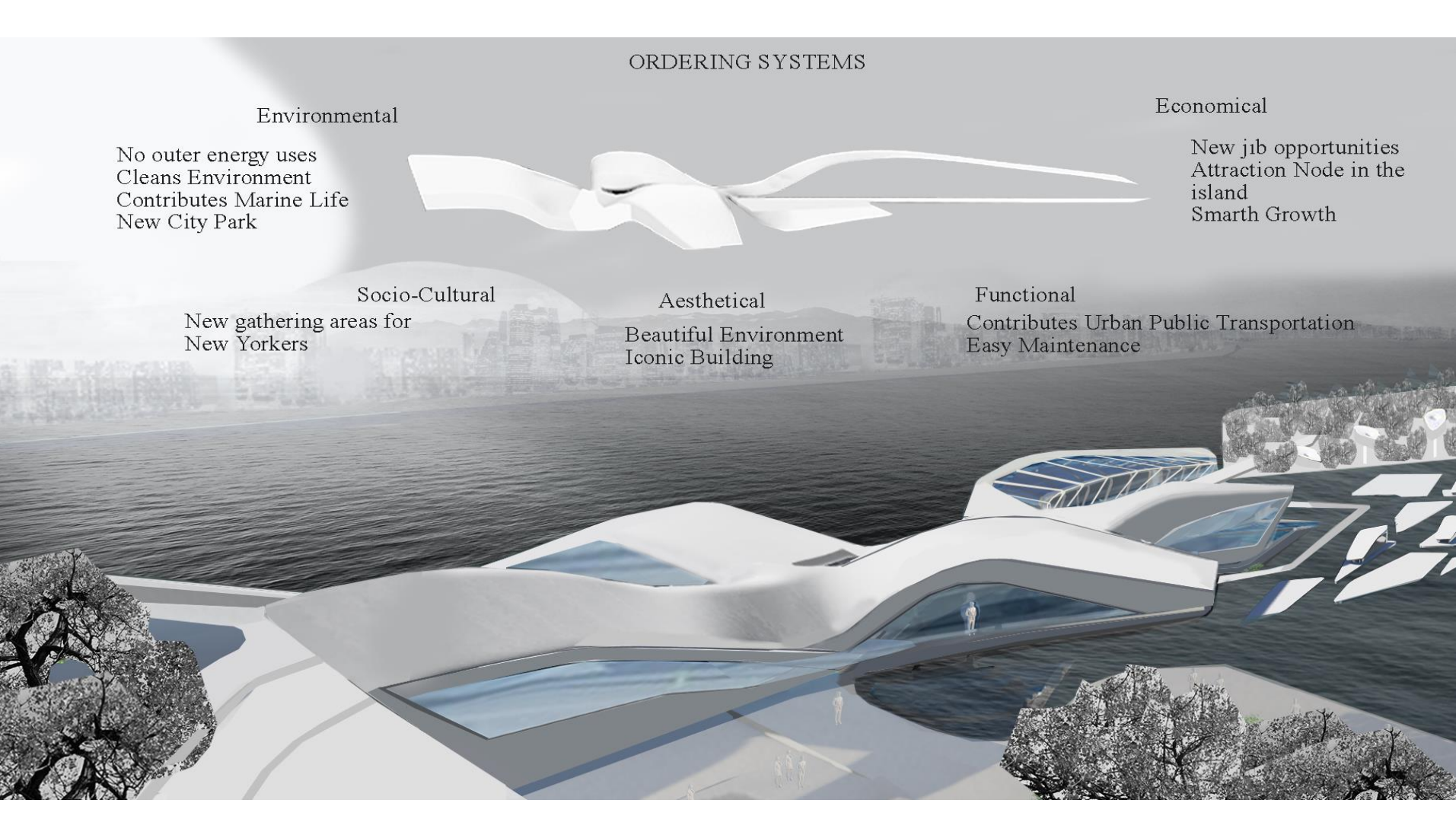
New gathering areas for
New Yorkers

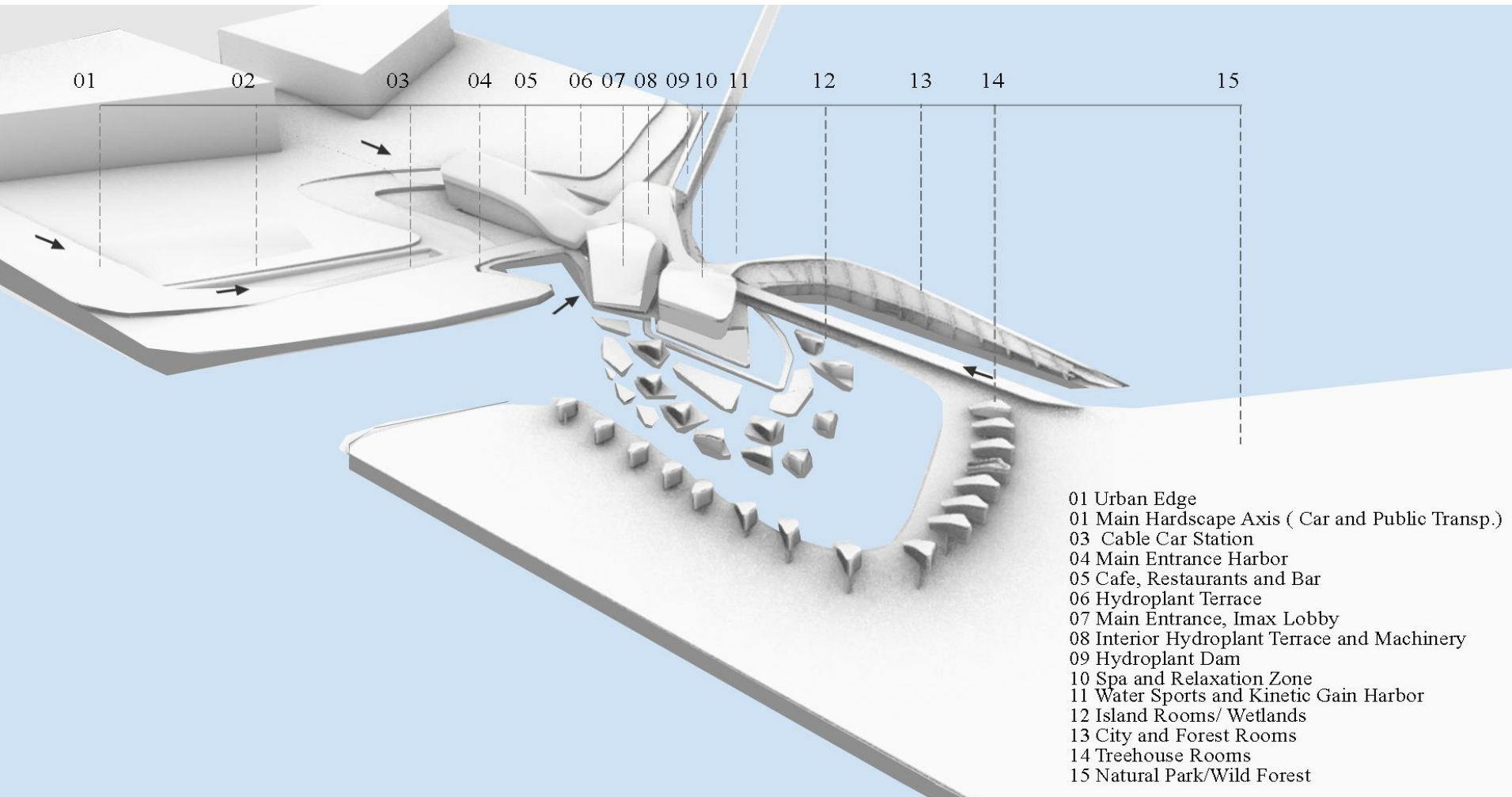
Aesthetical

Beautiful Environment
Iconic Building

Functional

Contributes Urban Public Transportation
Easy Maintenance





Main Axis/ The Spine

01

Secondary Axes and Massing

04

03

Forms are defined

07

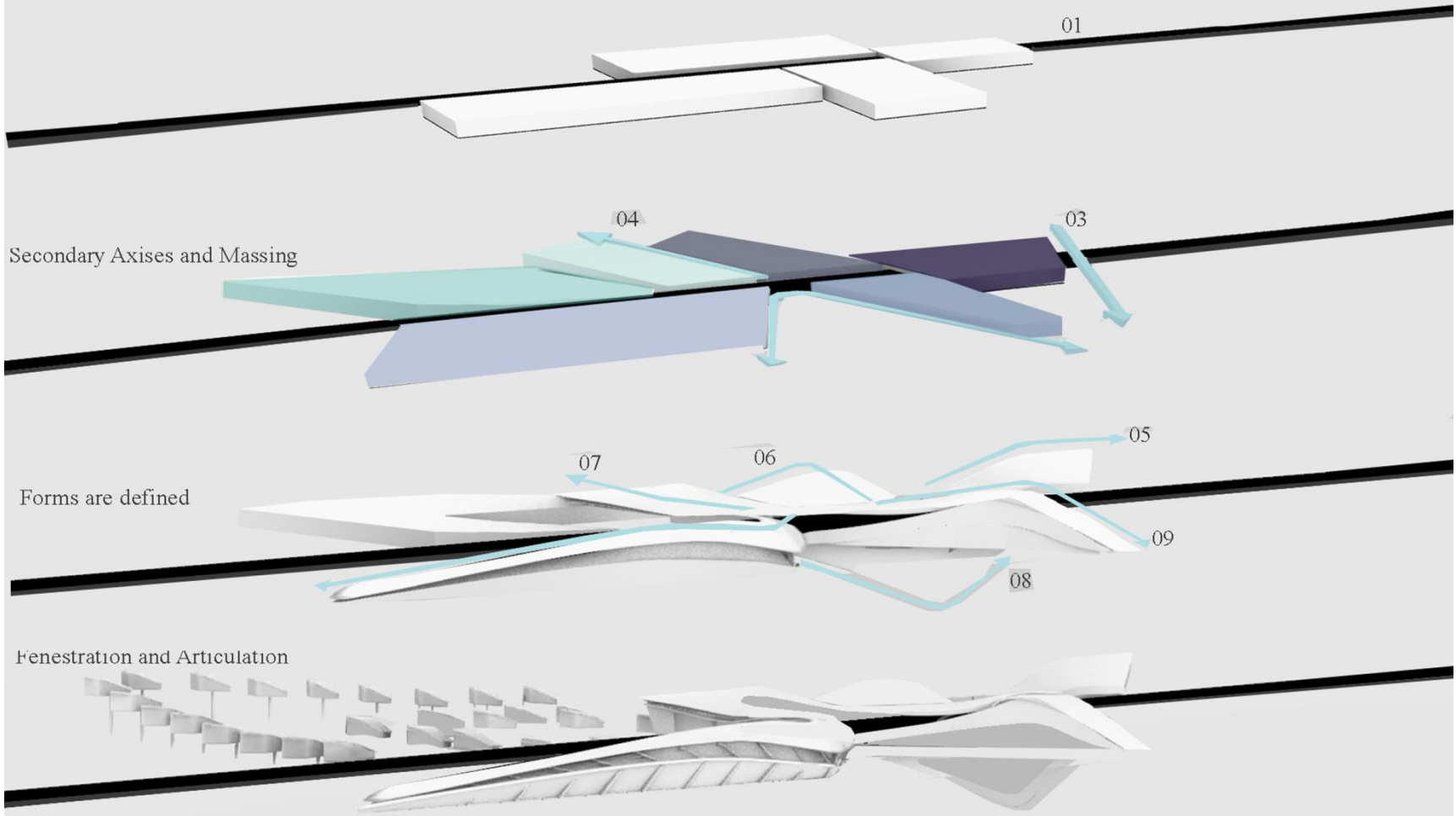
06

05

09

08

Penetration and Articulation



Main Axis/ The Spine

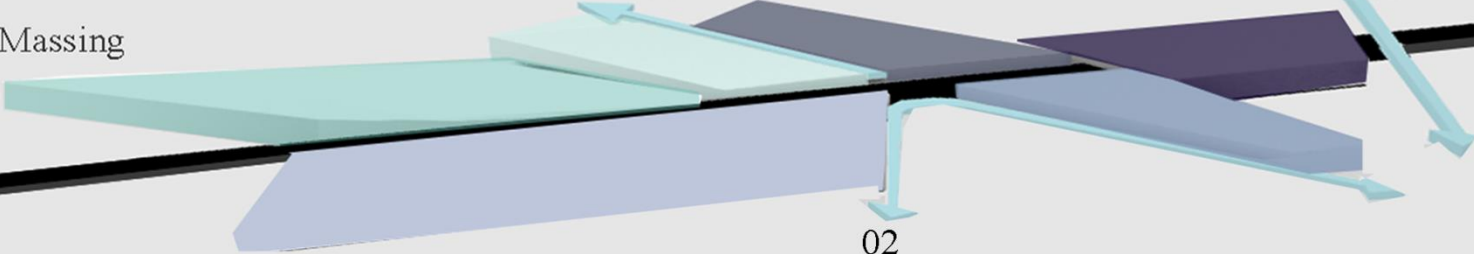
01



Secondary Axes and Massing

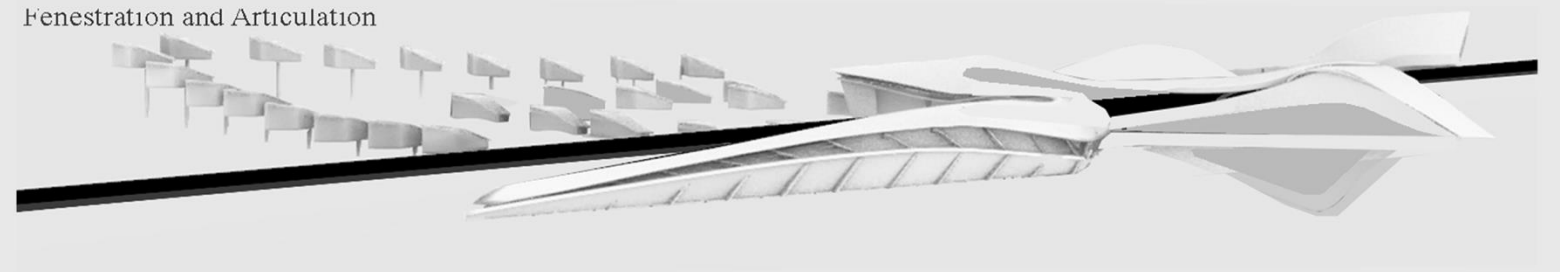
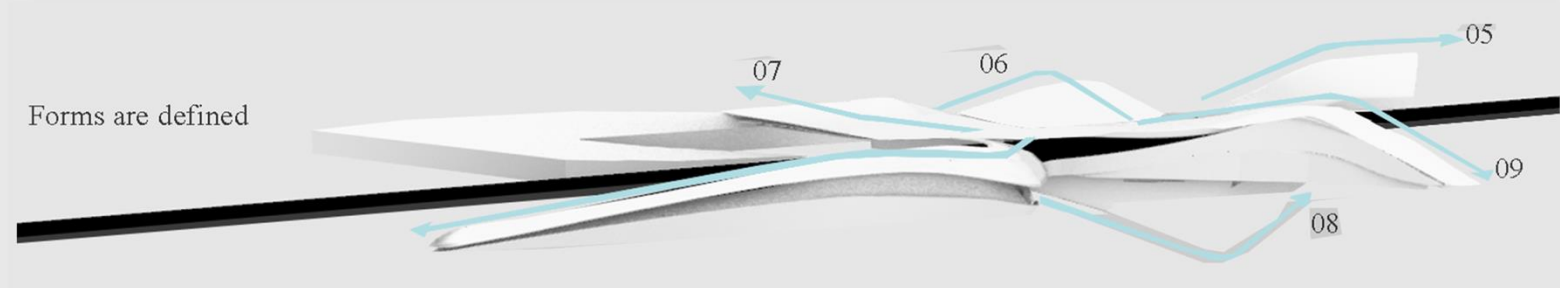
04

03



02

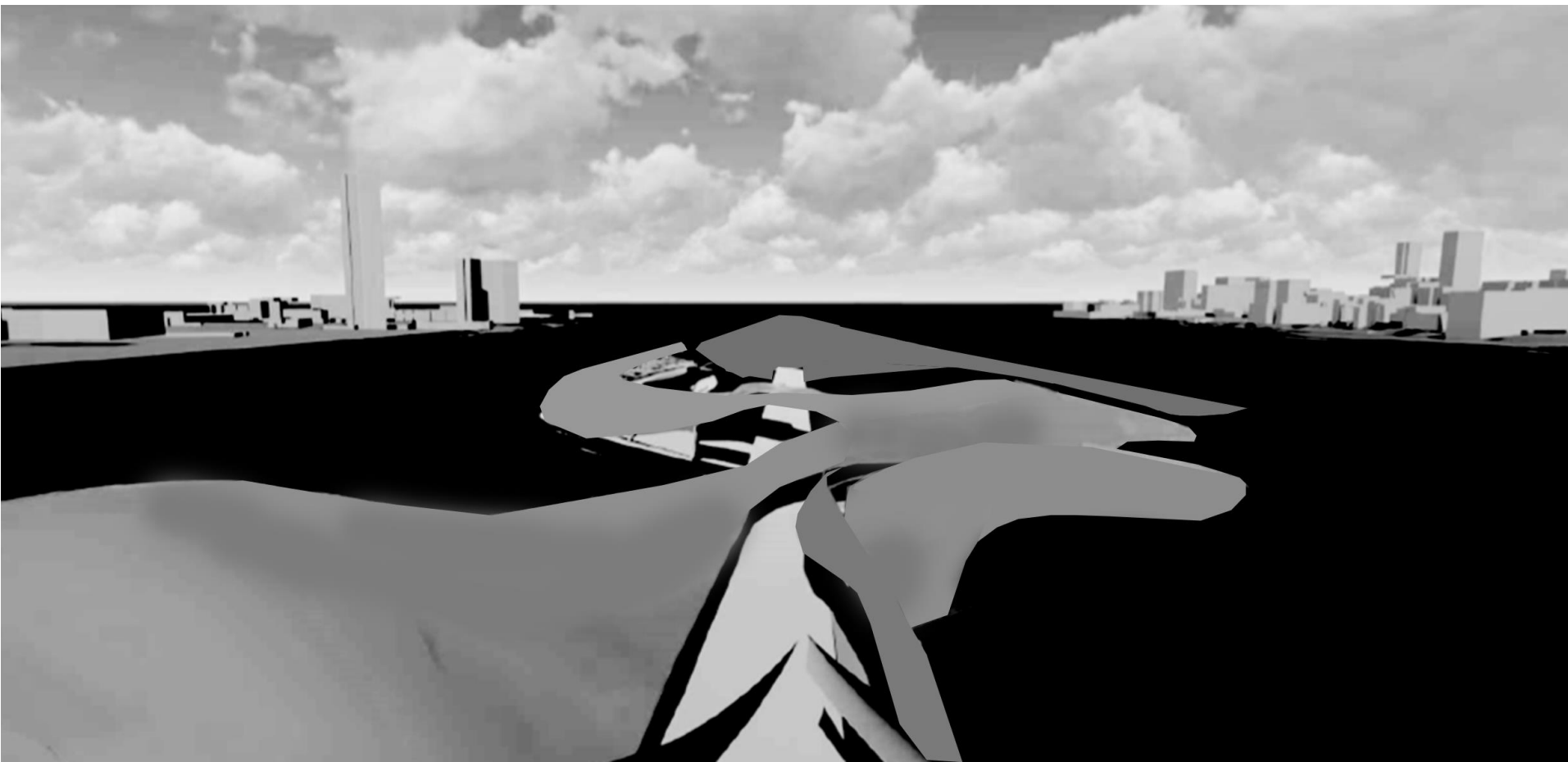
■ Lobby/Imax Lounge	■ Spa/Relaxation Center	01 Main Axis/The Spine
■ Hydroplant Machine Mass	■ City and Forest Rooms	02 Hydroplant Dam Axis
■ Restaurants/Bar and Cafe	■ Island and Treehouse Rooms	03 Urban Dam and City Axis
		04 Forest Axis



- | | |
|----------------------------|------------------------------|
| 05 Encountering Urban Edge | 07 Raising to forest |
| 06 Bowing for Imax | 08 Platform Structure of dam |
| | 09 Bowing for Dam |

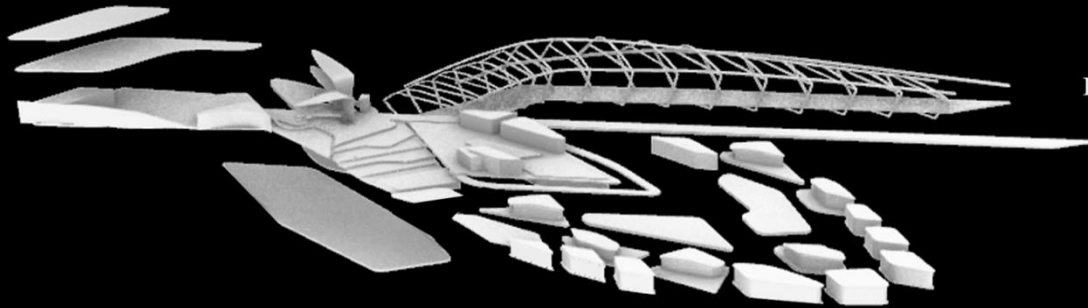


3. BUILDING STRATEGIES AND BUILDING PROGRAM

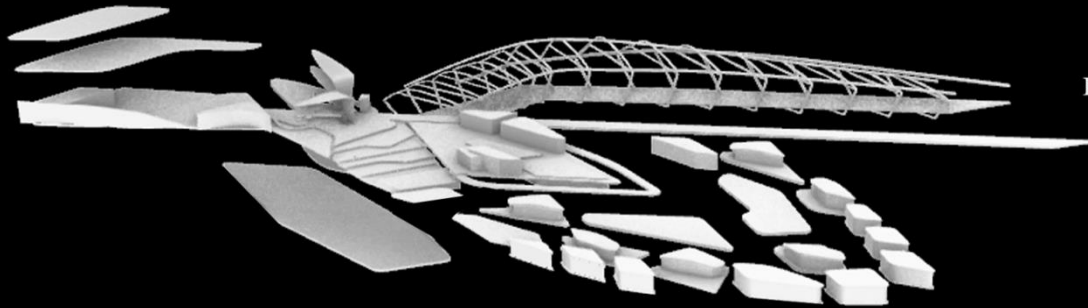




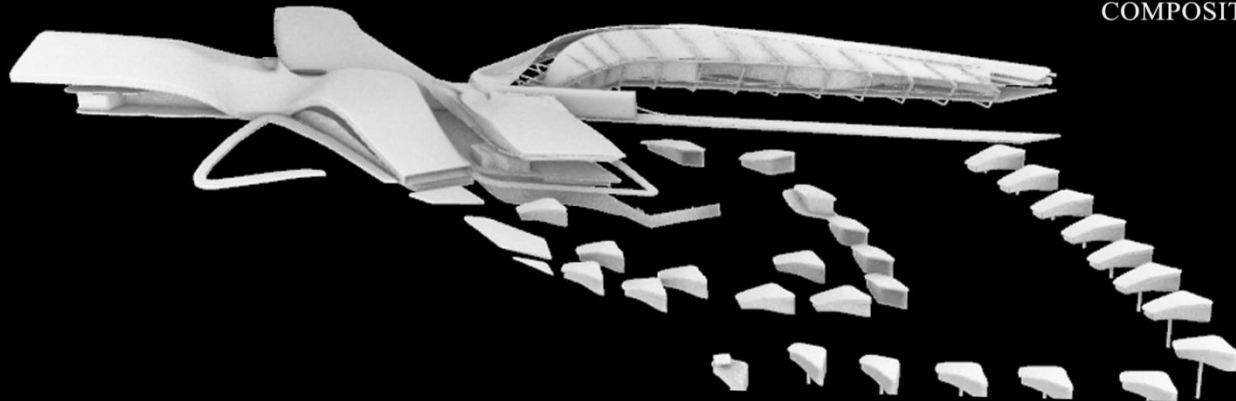
BUILDING SKIN



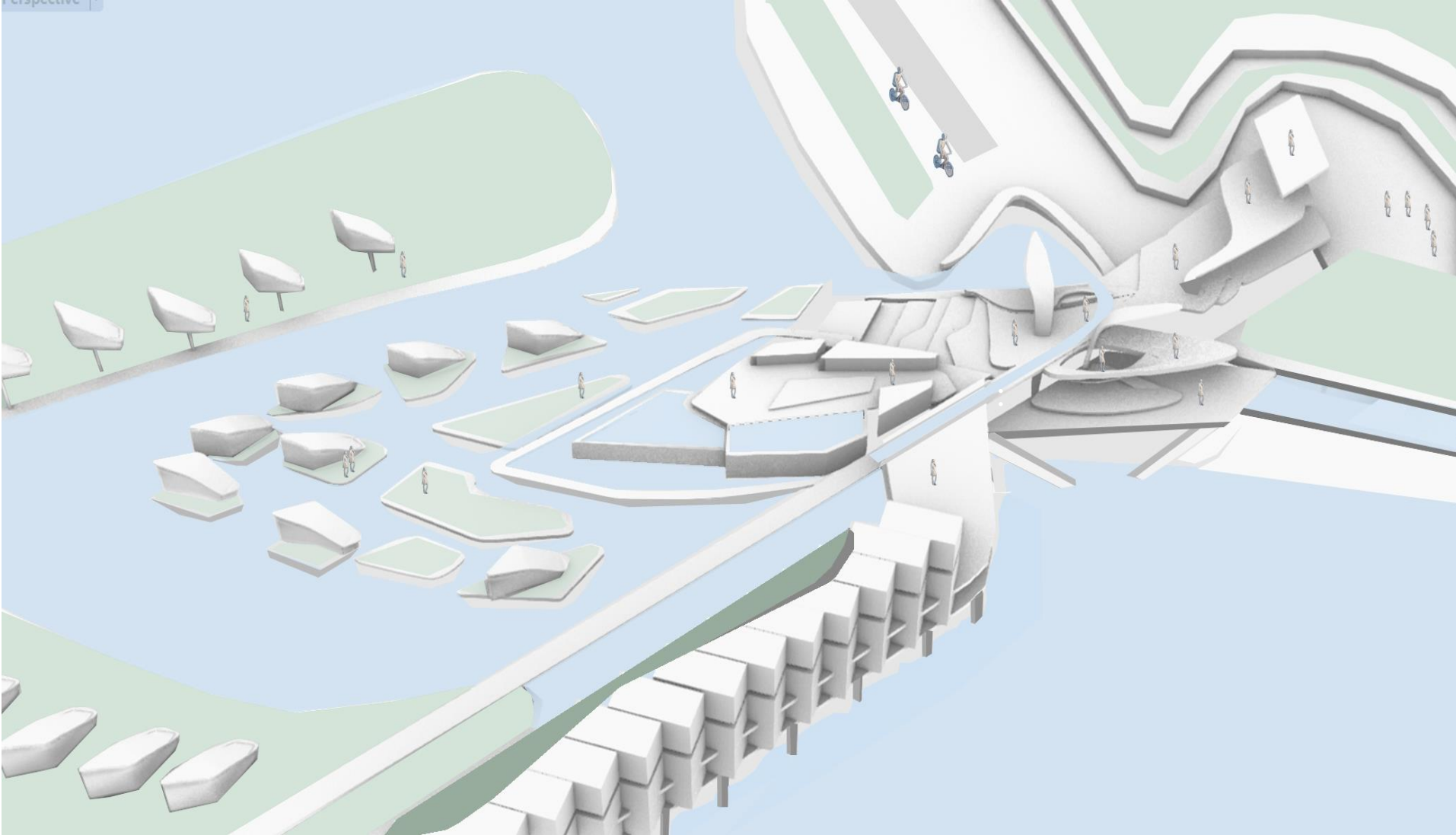
STRUCTURE

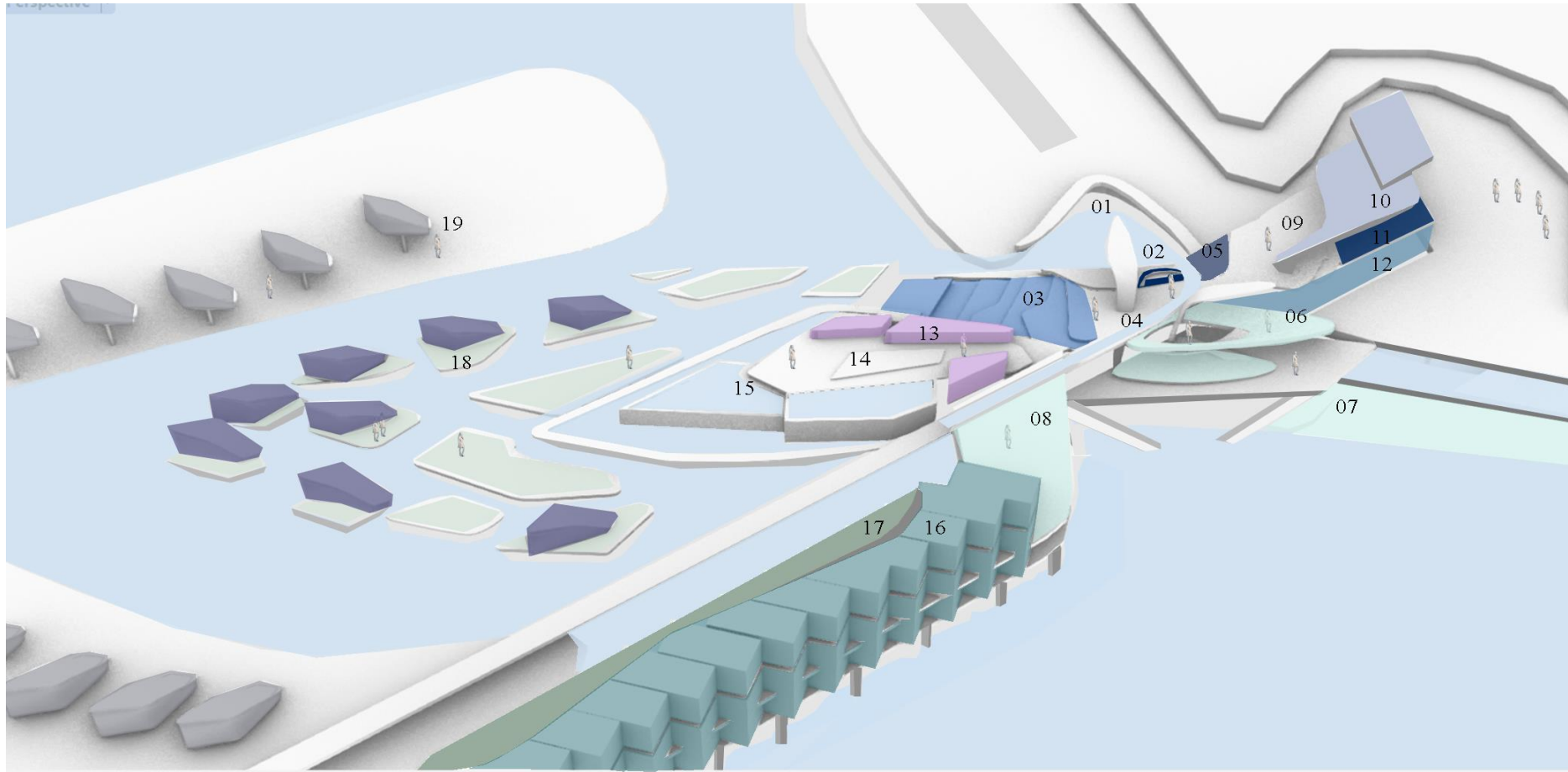


BUILDING LAYOUT



COMPOSITE





01 Entrance Harbor

05 Administration

09 Atrium

13 Gym, Hamam

17 Private Gardens

02 Lobby Desk

06 Hydroplant Terrace/Machinery

10 Cafe/ Restaurant/Bar

Relaxation Units

18 Island Rooms

03 Imax Lounge

07 Hydroplant Dam

11 Urban Entrance

15 Pools

19 Treehouse Rooms

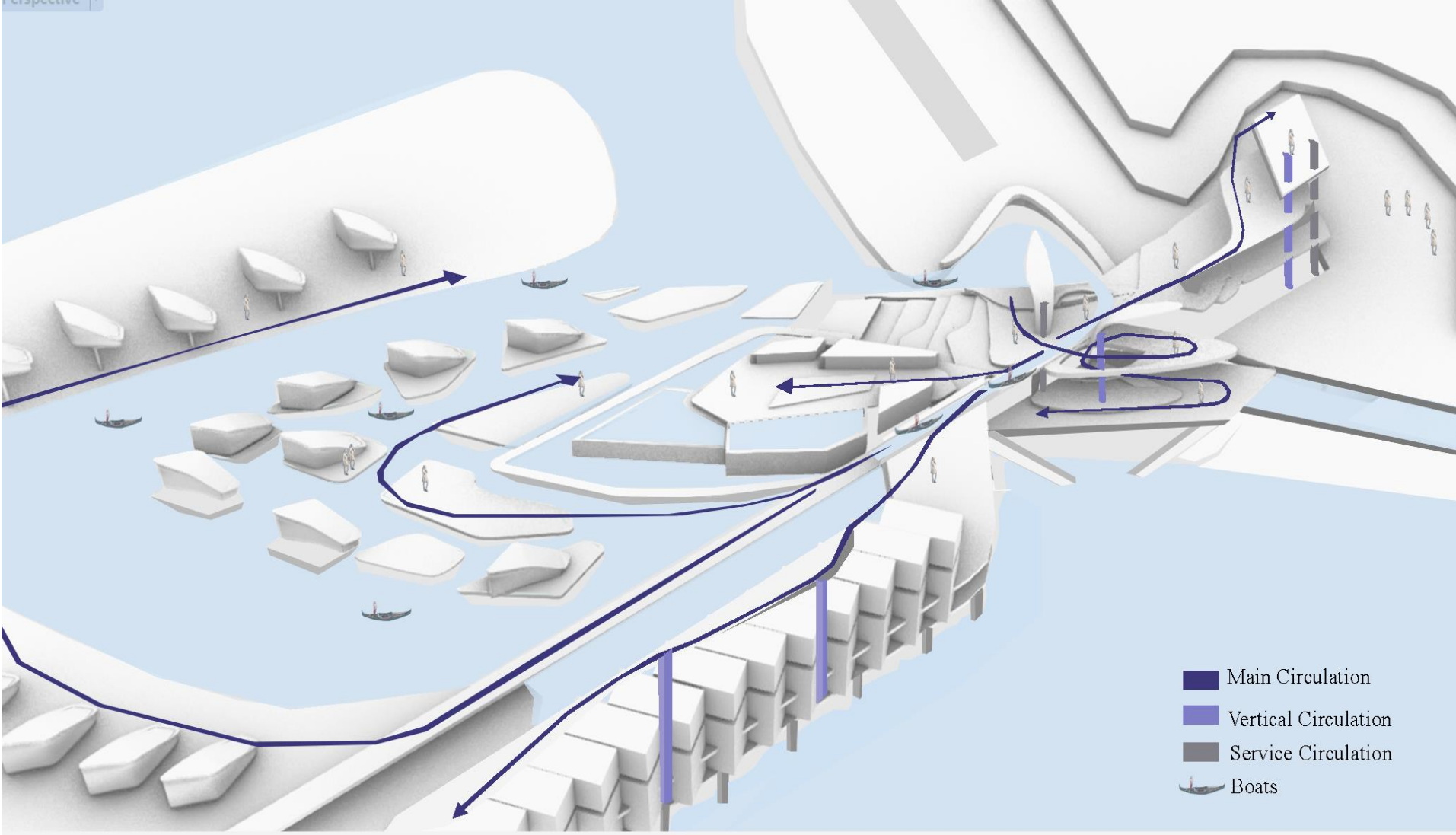
04 Interior Canal

08 Hydroplant Release Water

12 Services

16 City and Forest Rooms

14 Atrium



- Main Circulation
- Vertical Circulation
- Service Circulation
- 🚤 Boats



LIVING MACHINE WETLAND CELLS - STAGE 1

Wastewater from Primary Treatment enters Stage 1. Beneficial biofilms -- microscopic plants and animals-- grow on the porous gravel filling the cells. These biofilms consume the waste in the water.

PLANTS

A variety of native or ornamental species can be planted. Plant roots provide additional surface area for biofilm growth and further oxygenation.

PRIMARY TANK + COMPONENTS

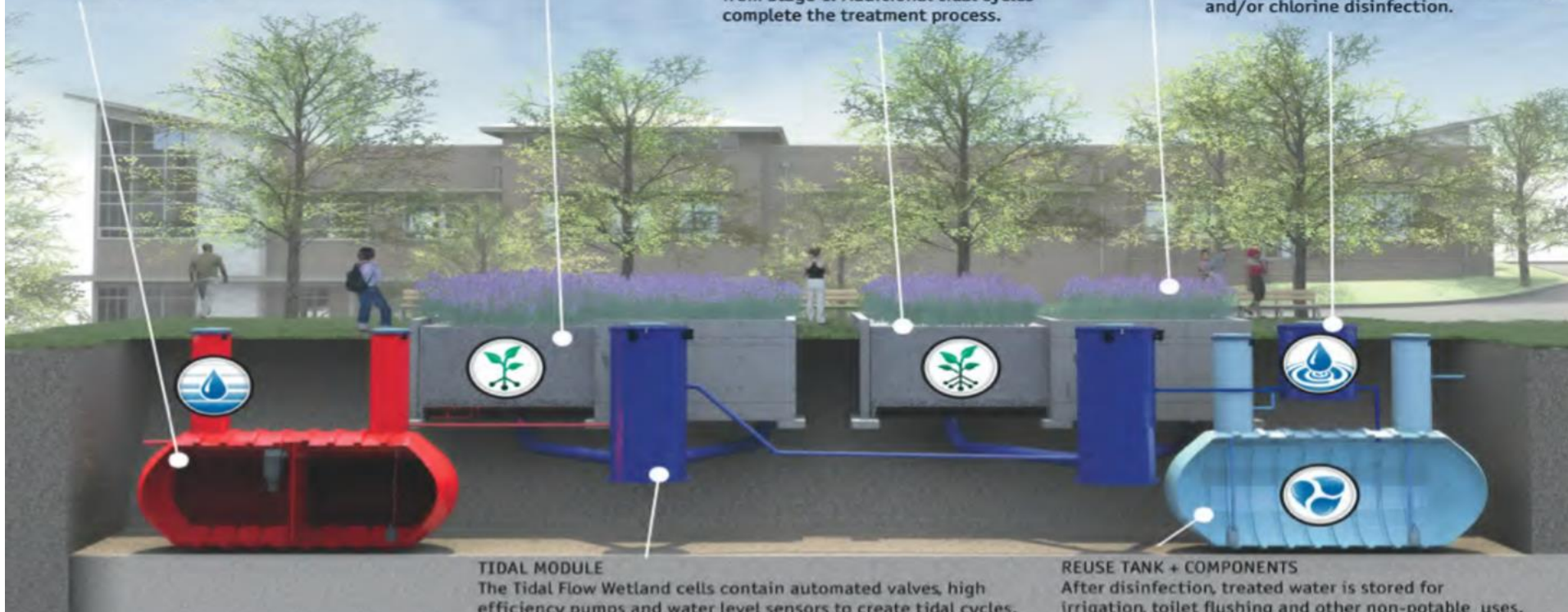
Untreated wastewater enters this tank, for primary settling, screening and treatment. It is then pumped to Stage 1 Wetland Cells.

LIVING MACHINE WETLAND CELLS - STAGE 2

Partially treated wastewater is pumped here from Stage 1. Additional tidal cycles complete the treatment process.

POLISHING MODULE

Treated wastewater is "polished" through dual-stage filtration and UV (ultraviolet) and/or chlorine disinfection.

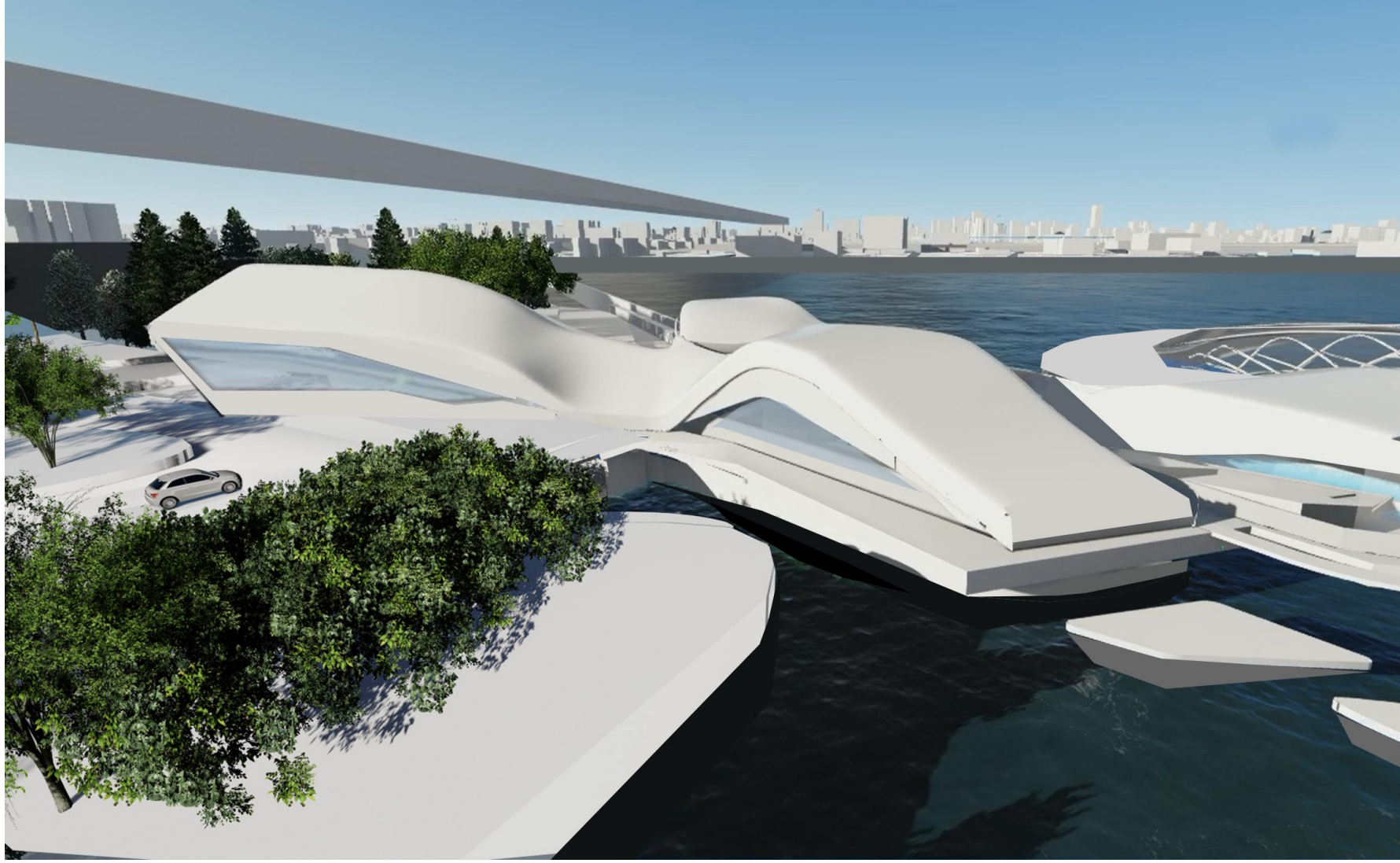


TIDAL MODULE

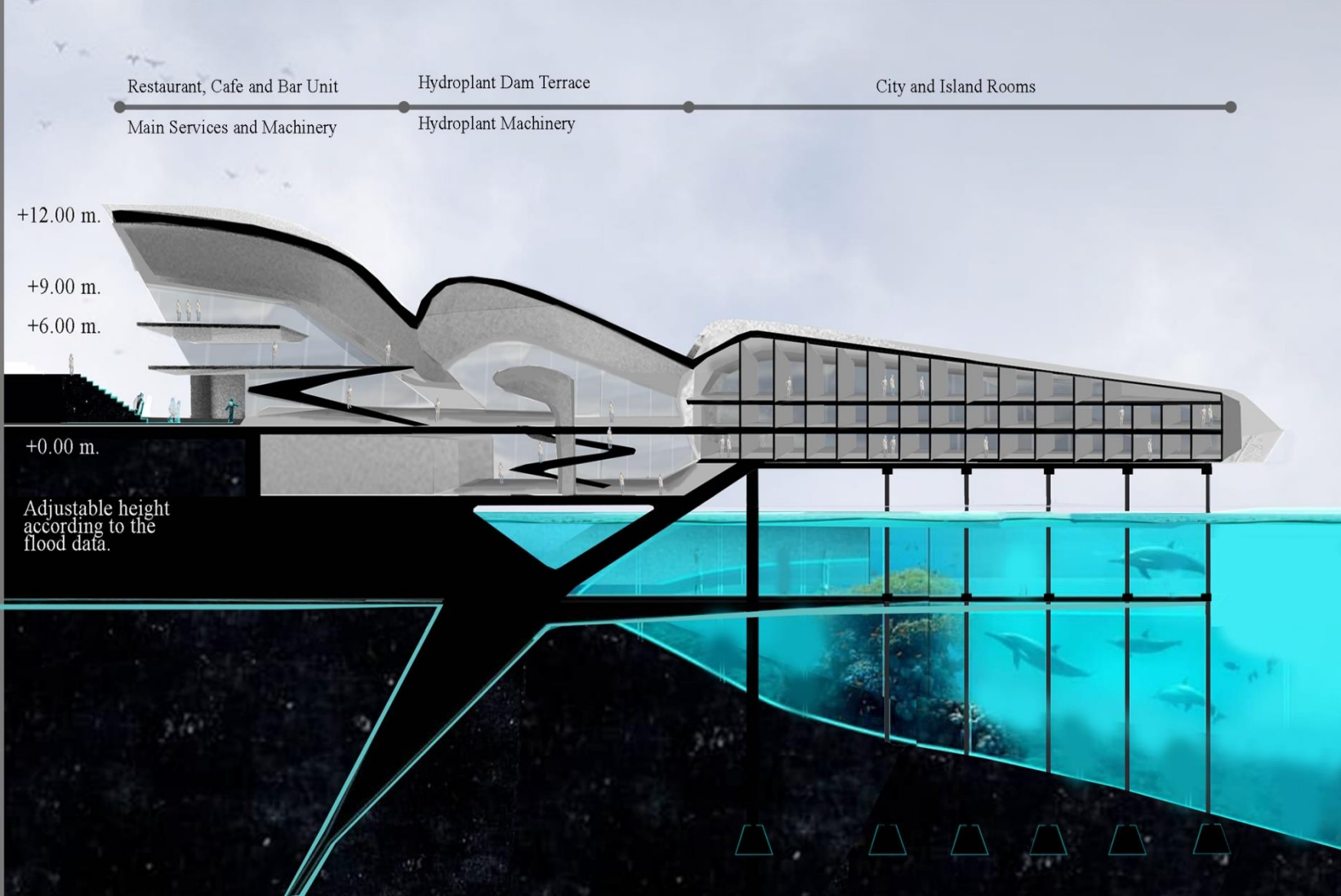
The Tidal Flow Wetland cells contain automated valves, high efficiency pumps and water level sensors to create tidal cycles.

REUSE TANK + COMPONENTS

After disinfection, treated water is stored for irrigation, toilet flushing and other non-potable uses.



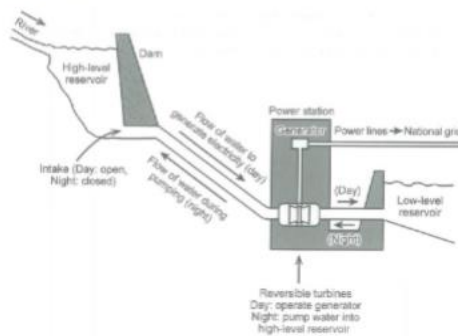






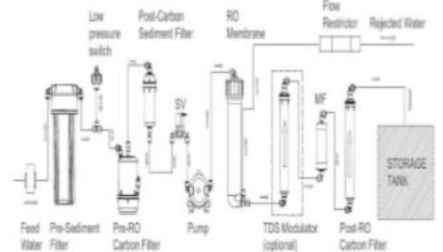
URBAN HYDROELECTRIC GENERATION IN RIVERS:

- Electricity from Hydropower 16.6% of the World's total energy to be increased
- Power comes from the potential energy of dammed water driving a water turbine and generator
- A flexible source of electricity
- Very low cost-High value power
- Reduced CO₂ emissions
- Suitable for industrial applications
- Yet to be careful about:
 - Ecosystem damages
 - Loss of land
 - Water loss by evaporation
 - Failure risks

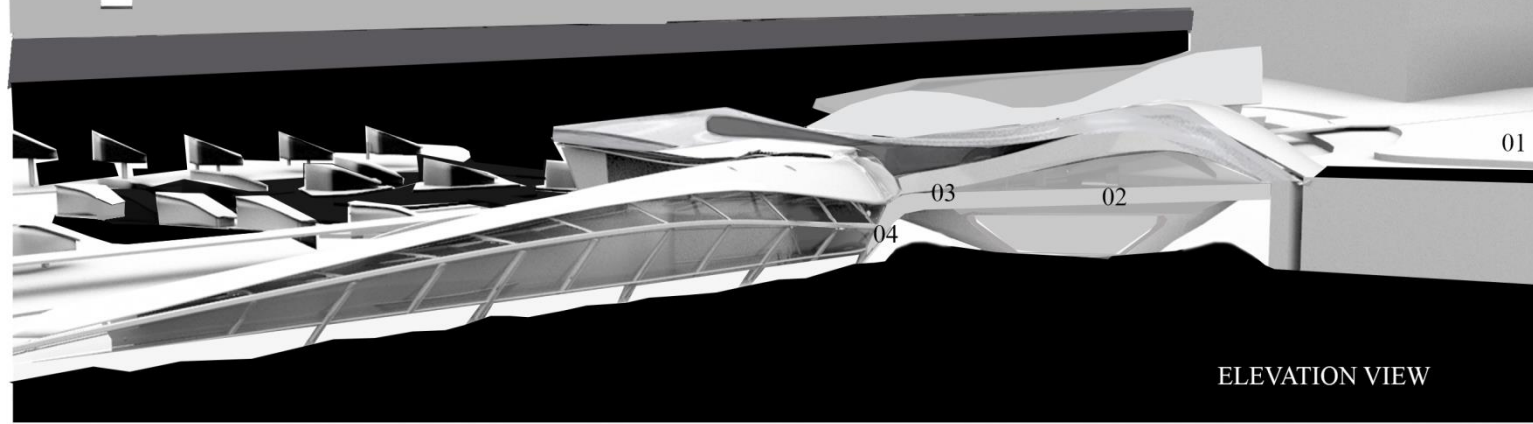


WASTE WATER PURIFICATION:

- Removal of unwanted constituents from the water to make it safe
- Clean water
- Process
 - Pretreatment
 - Coagulation and Flocculation
 - Sedimentation
 - Filtration (UV Disinfection etc.)
 - Portable Water Purification



WORKING PRINCIPLE OF THE DAM



ELEVATION VIEW

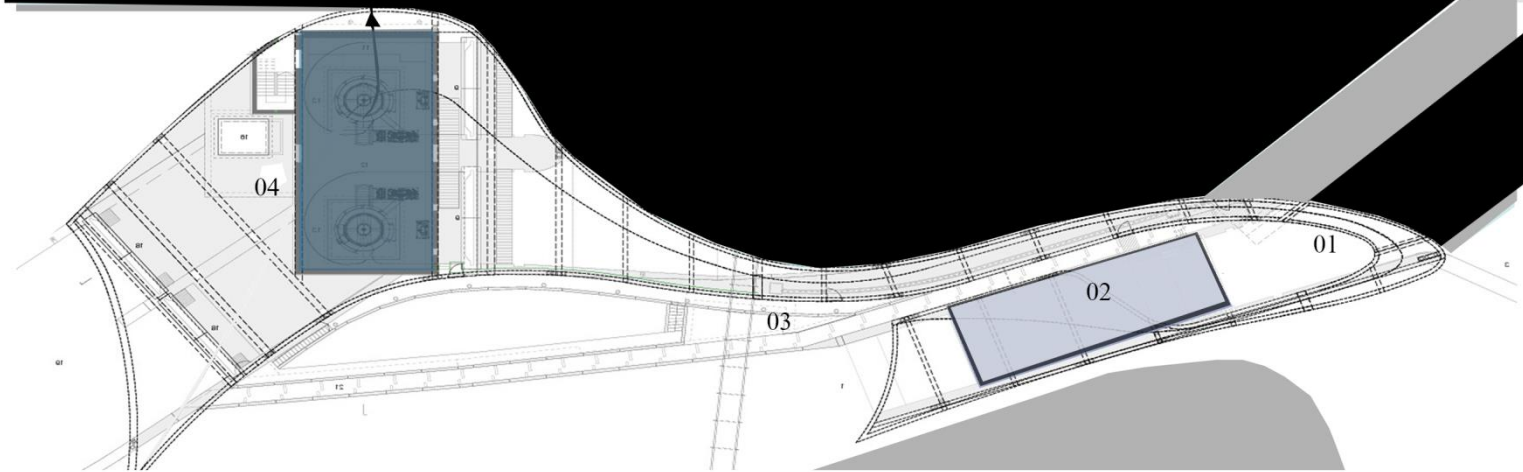
01 ENTRANCE OF THE WATER

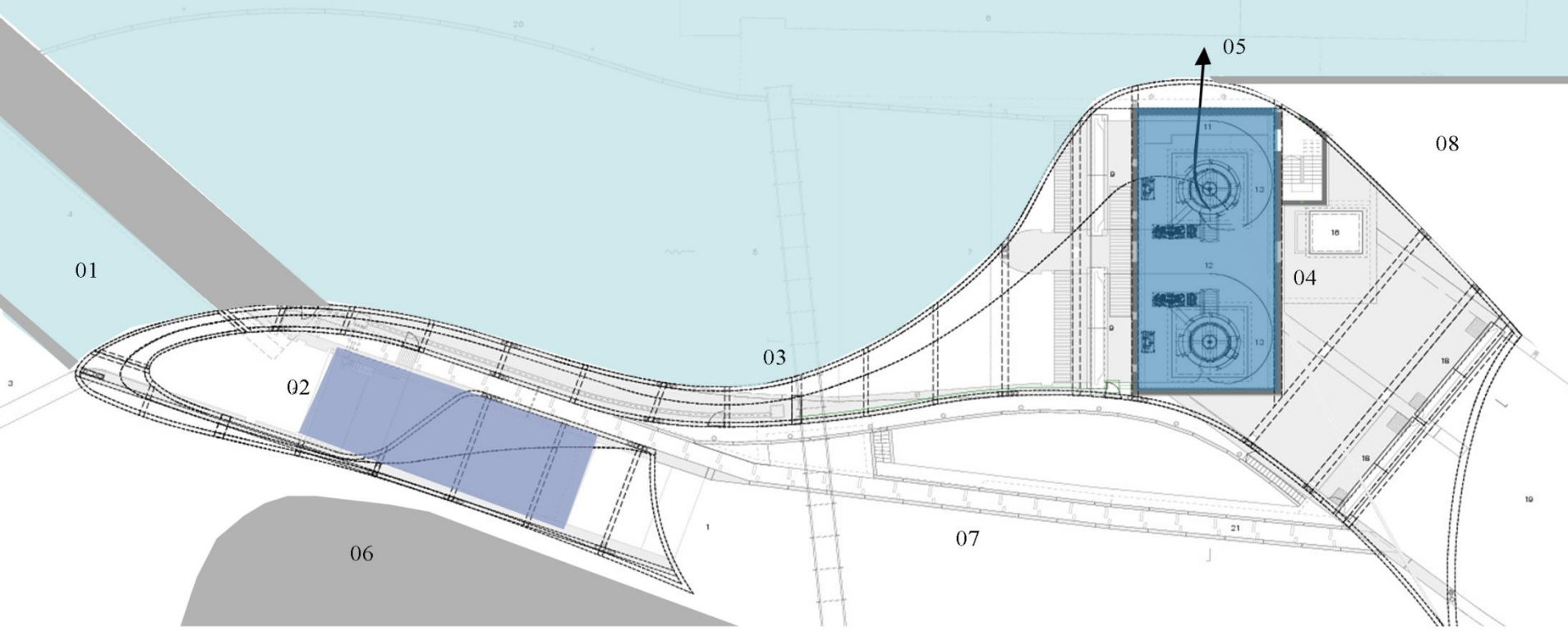
02 COLLECTION OF THE WATER

03 TRANSFER OF THE WATER TO MACHINERY

04 TRANSFORMATION OF WATER TO ELECTRICITY

PLAN VIEW





01 Hydroplant Dam (Water Entrance)

02 Collection of the Water

03 Transfer of the Water to Power Generation

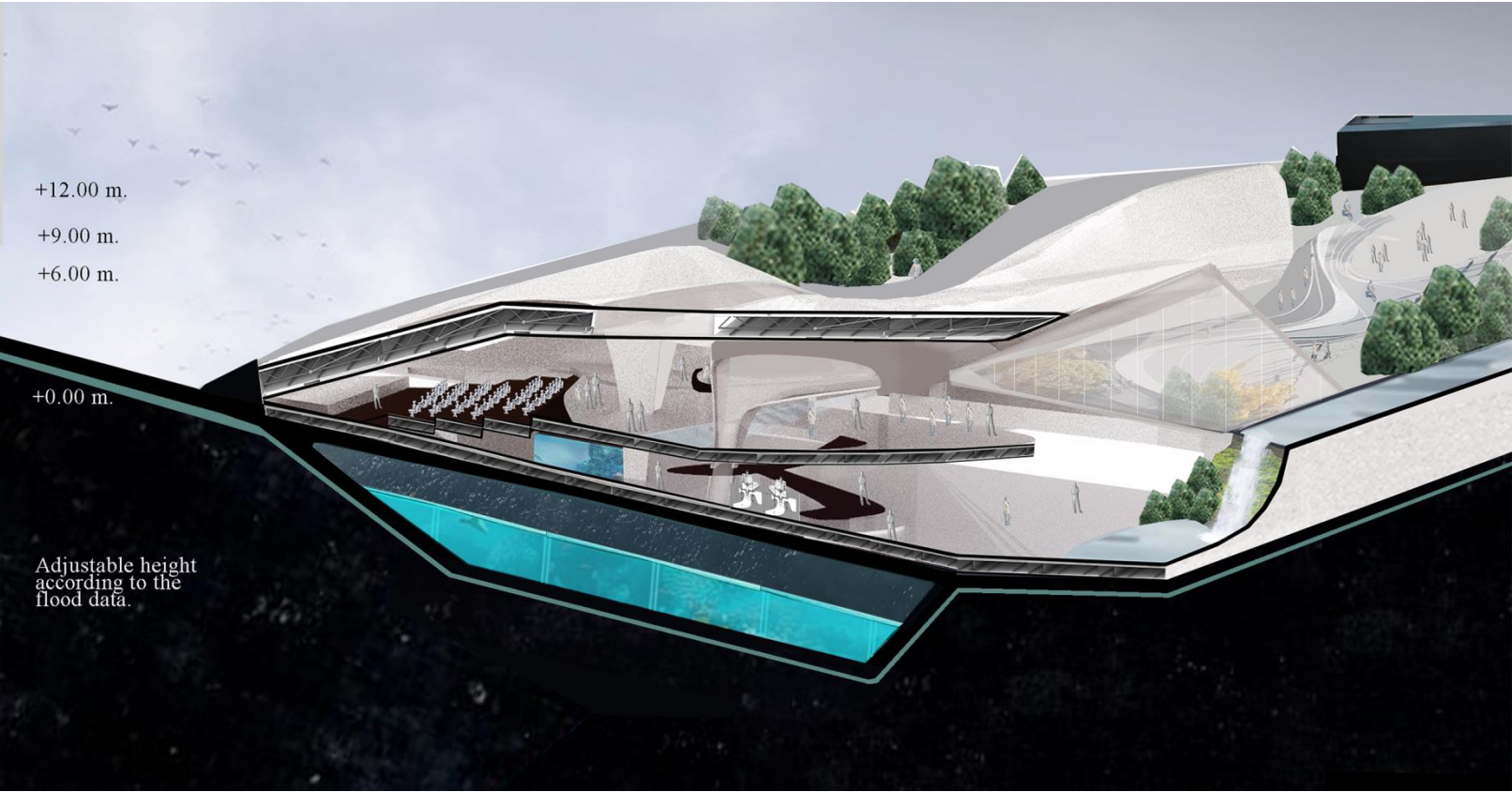
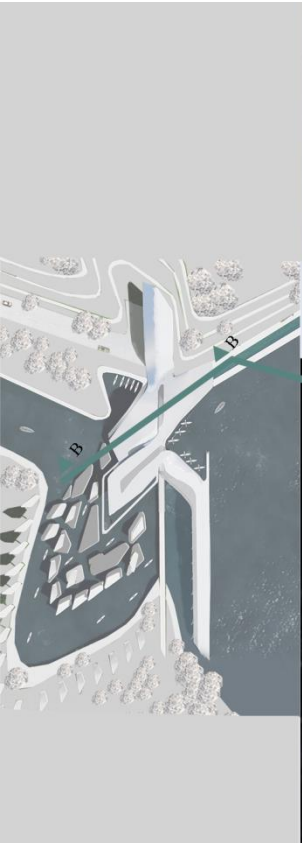
04 Power Generation (Transformators)

05 Release of the water back to the river

06 Hydroplant Dam Terrace

07 Downstairs

08 City and Forest Rooms



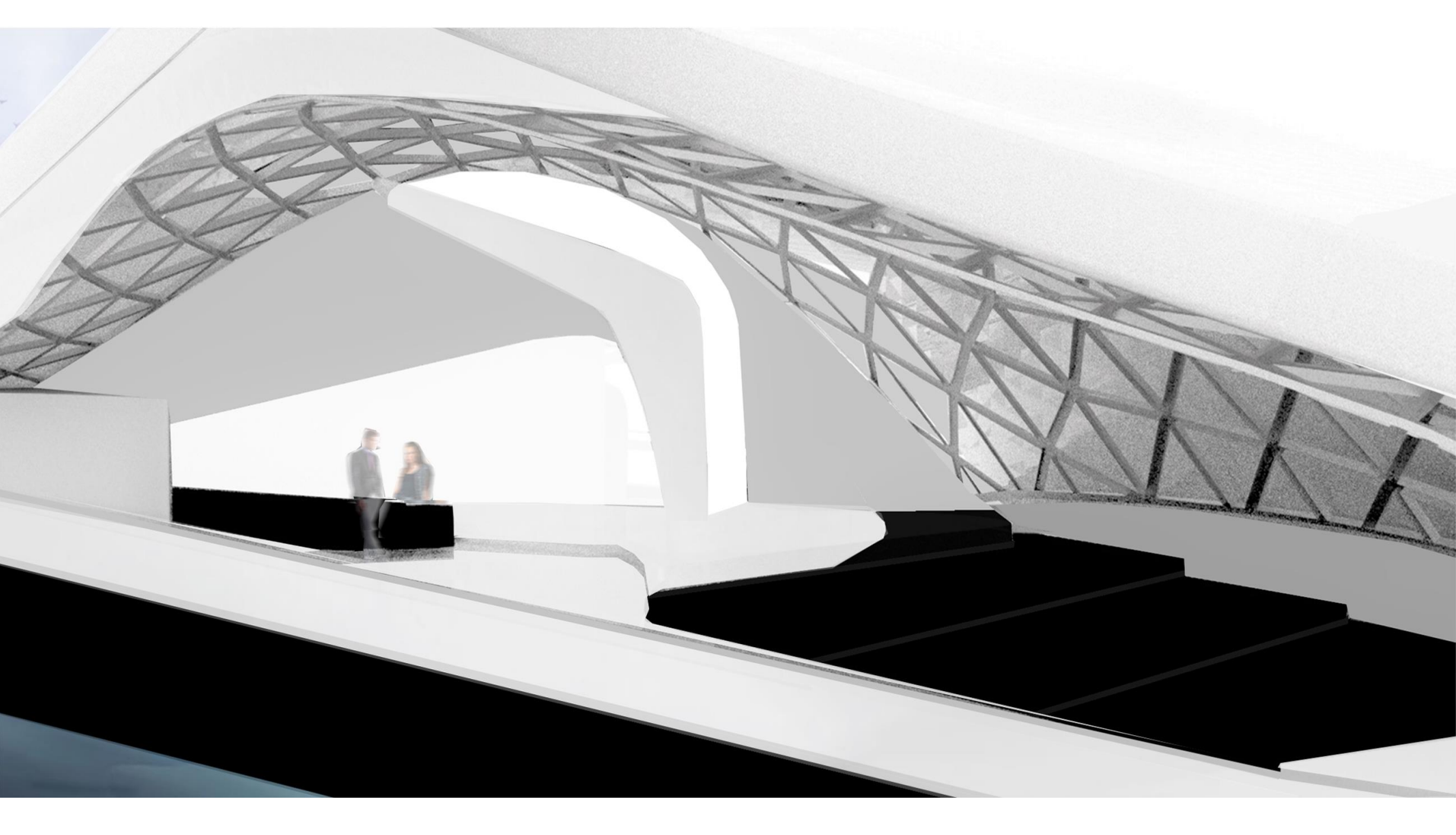
+12.00 m.

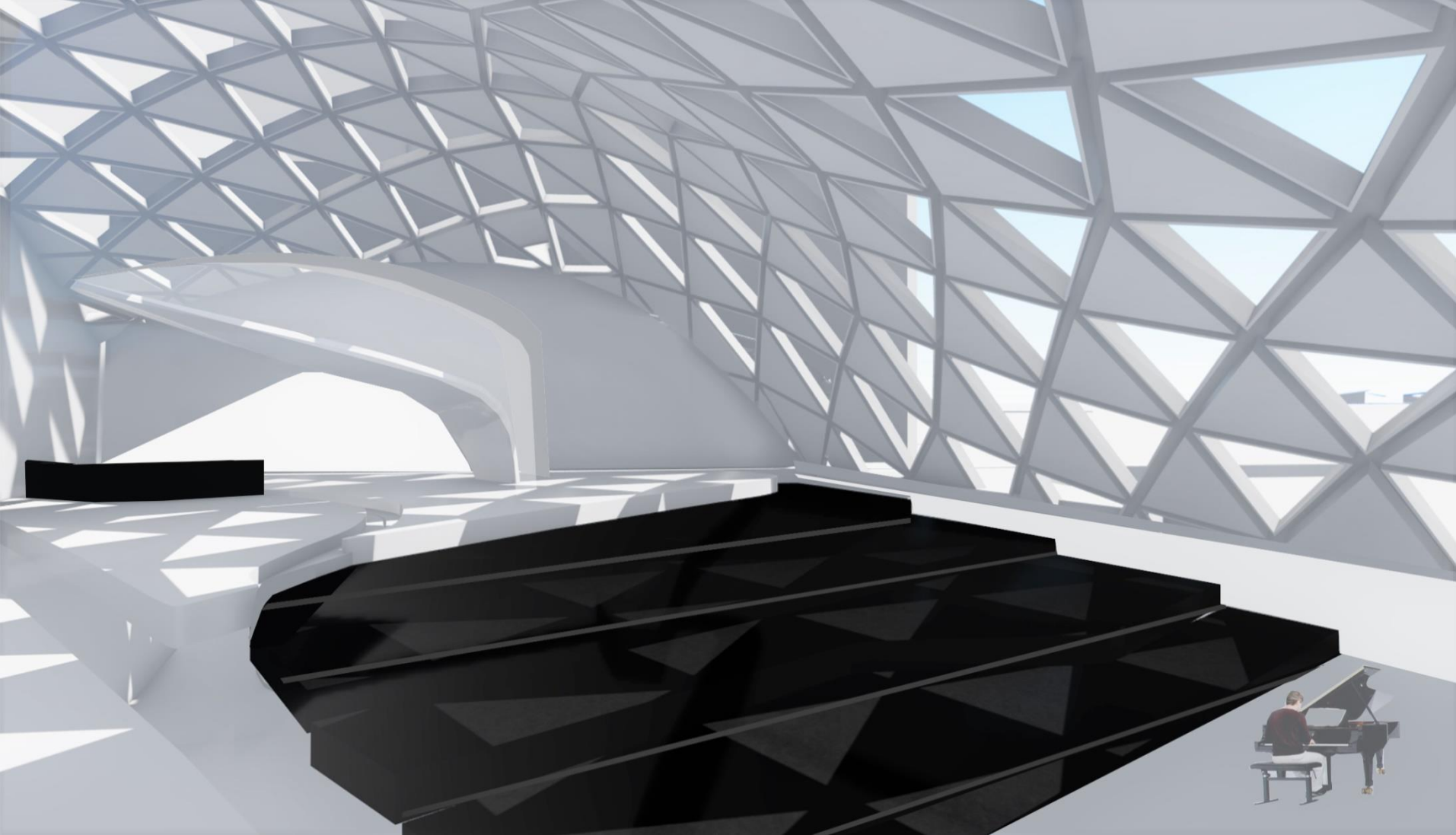
+9.00 m.

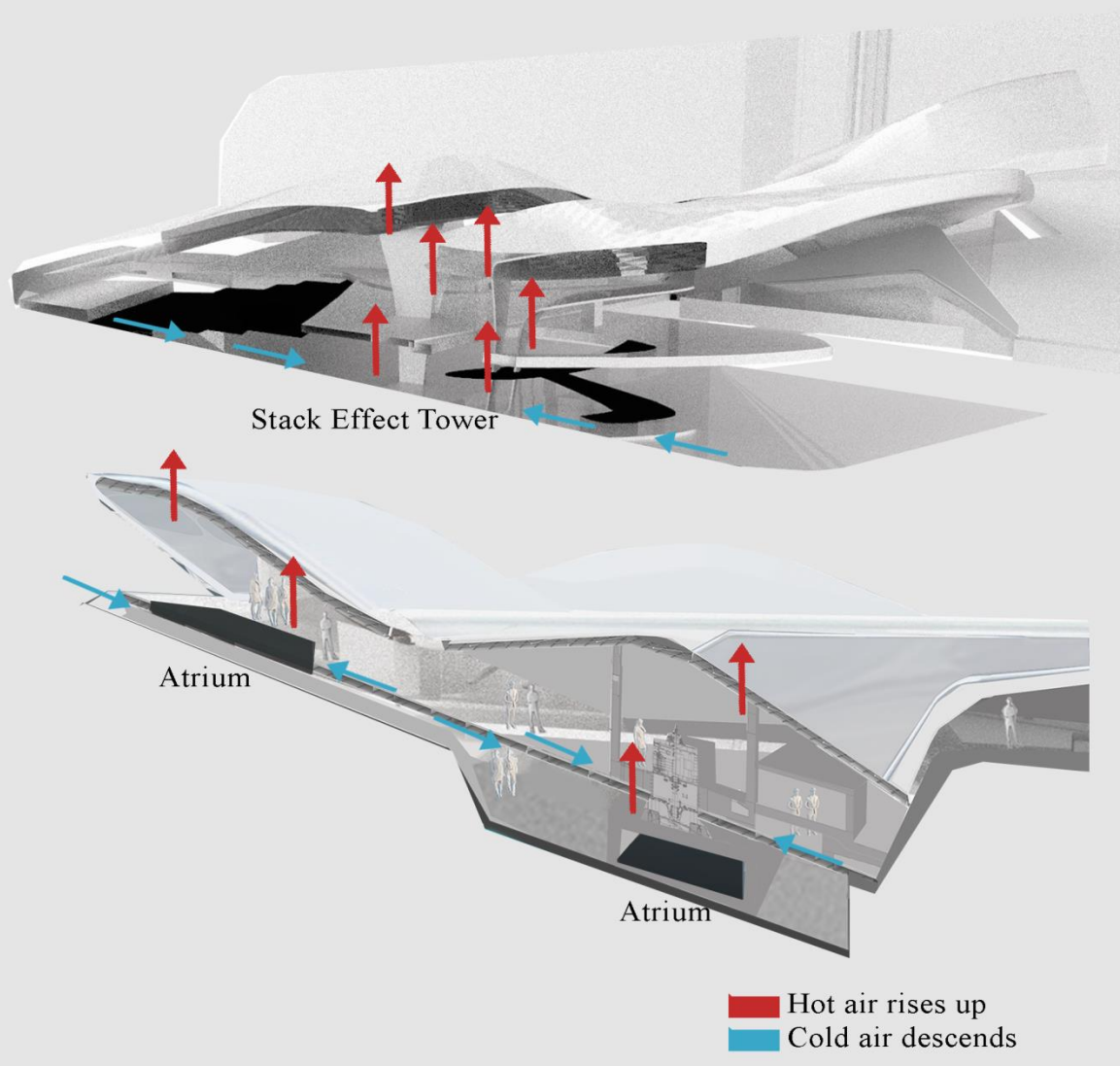
+6.00 m.

+0.00 m.

Adjustable height
according to the
flood data.





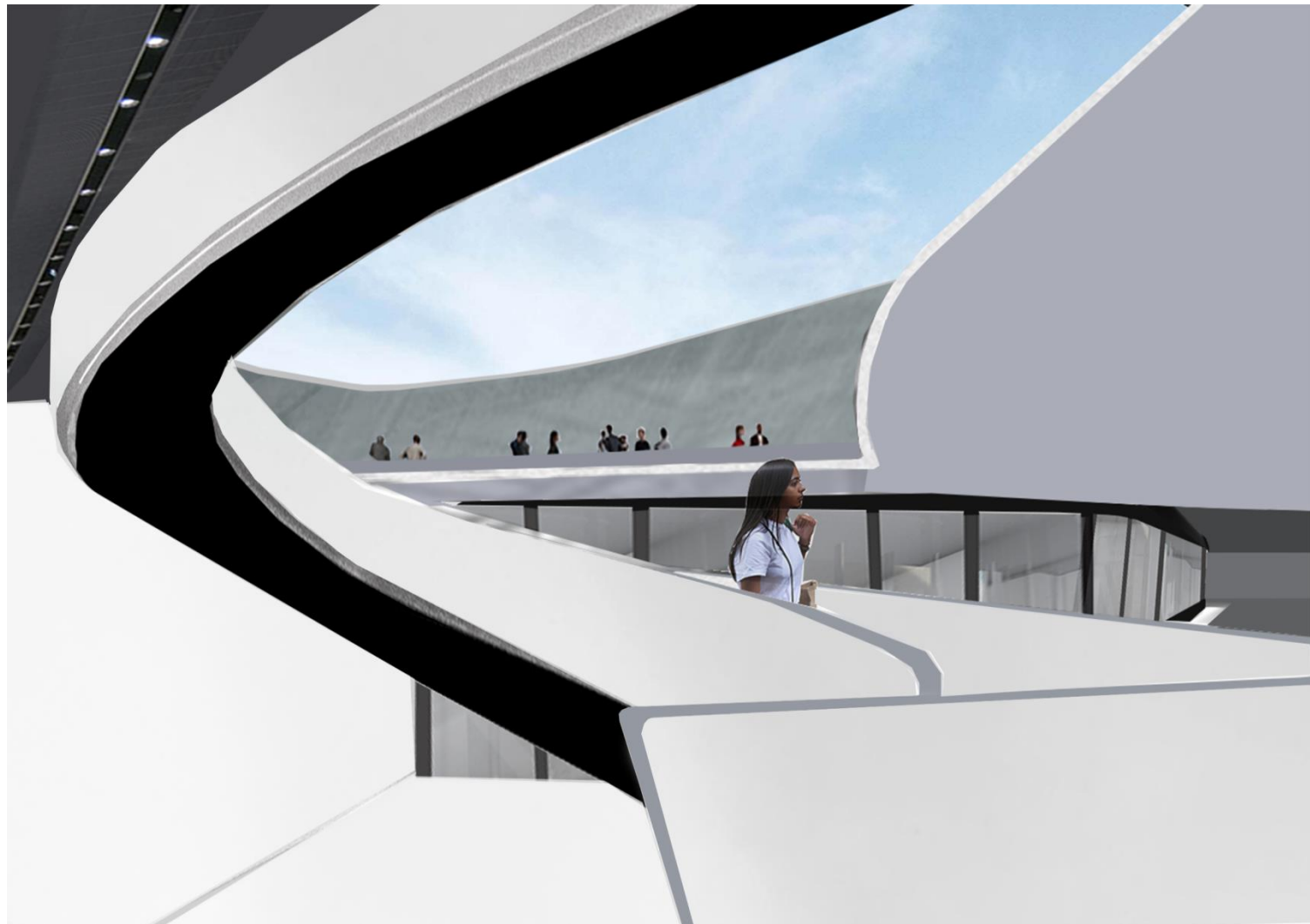


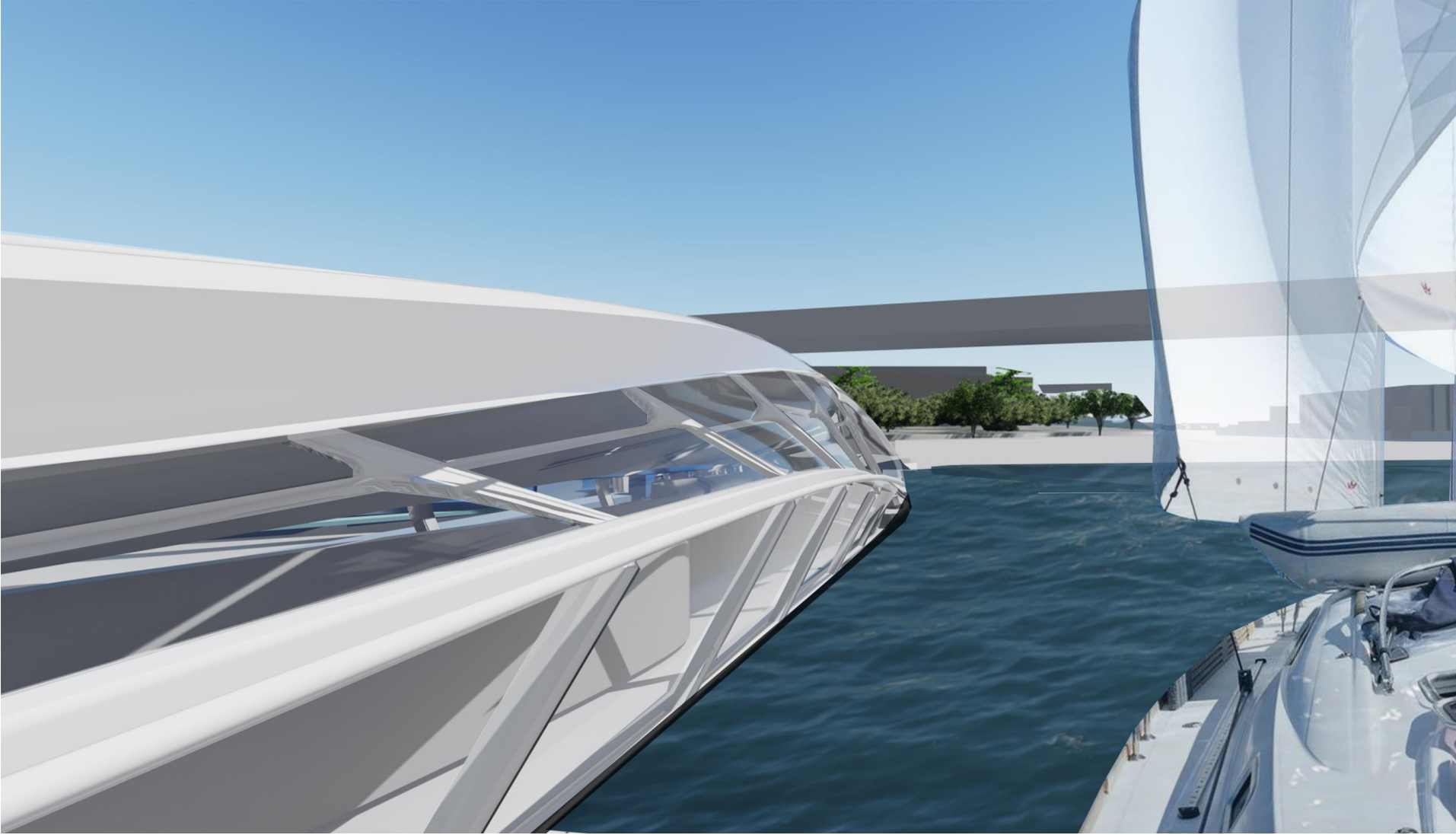
Stack Effect Tower

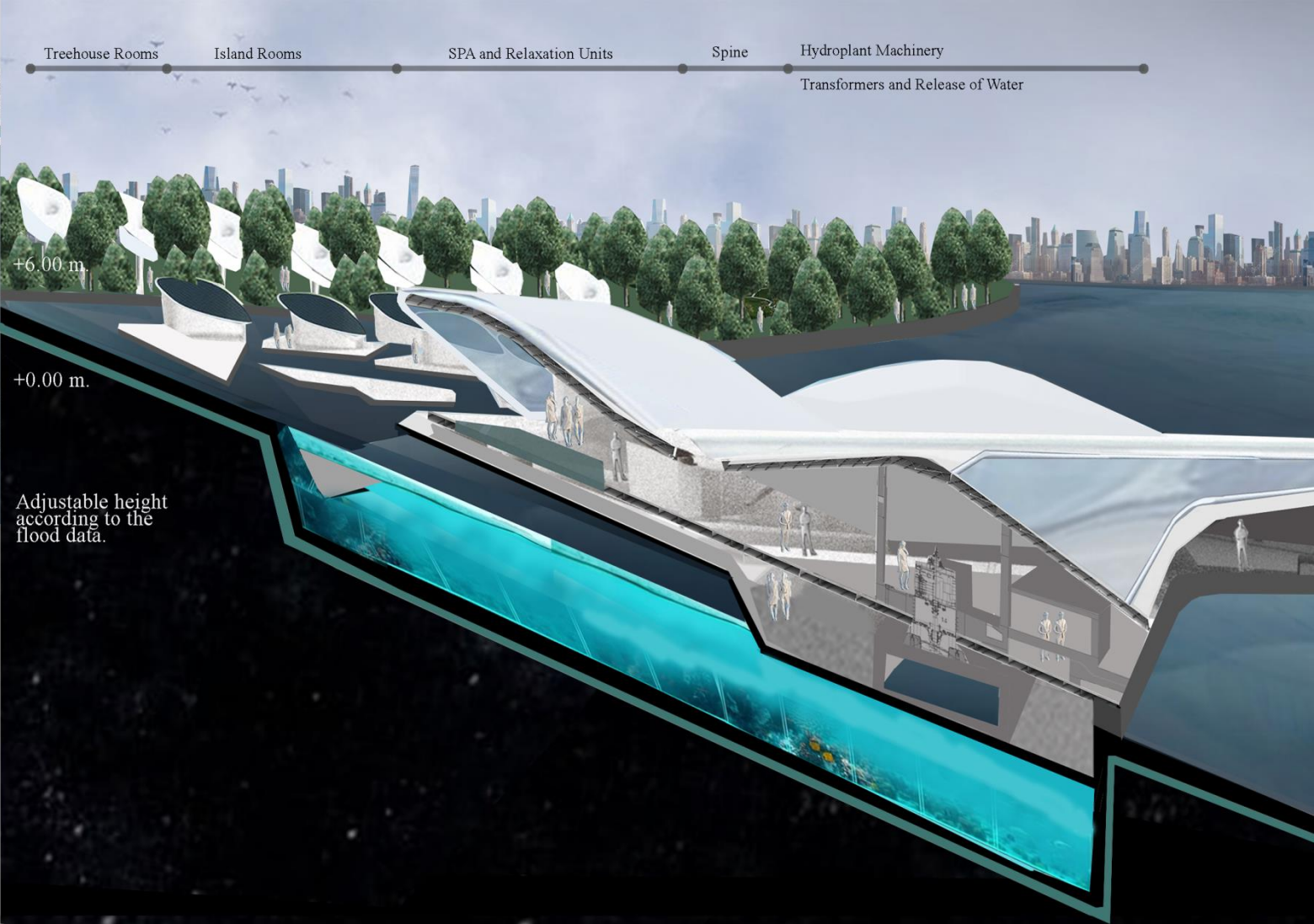
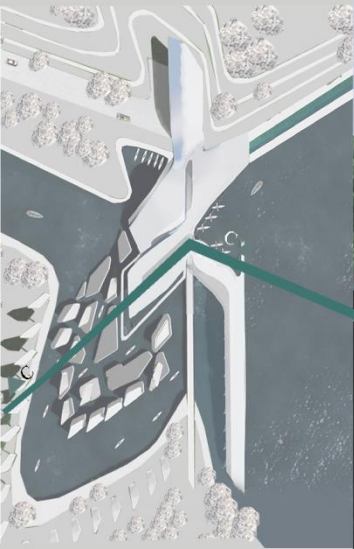
Atrium

Atrium

Hot air rises up
Cold air descends







Treehouse Rooms

Island Rooms

SPA and Relaxation Units

Spine

Hydroplant Machinery

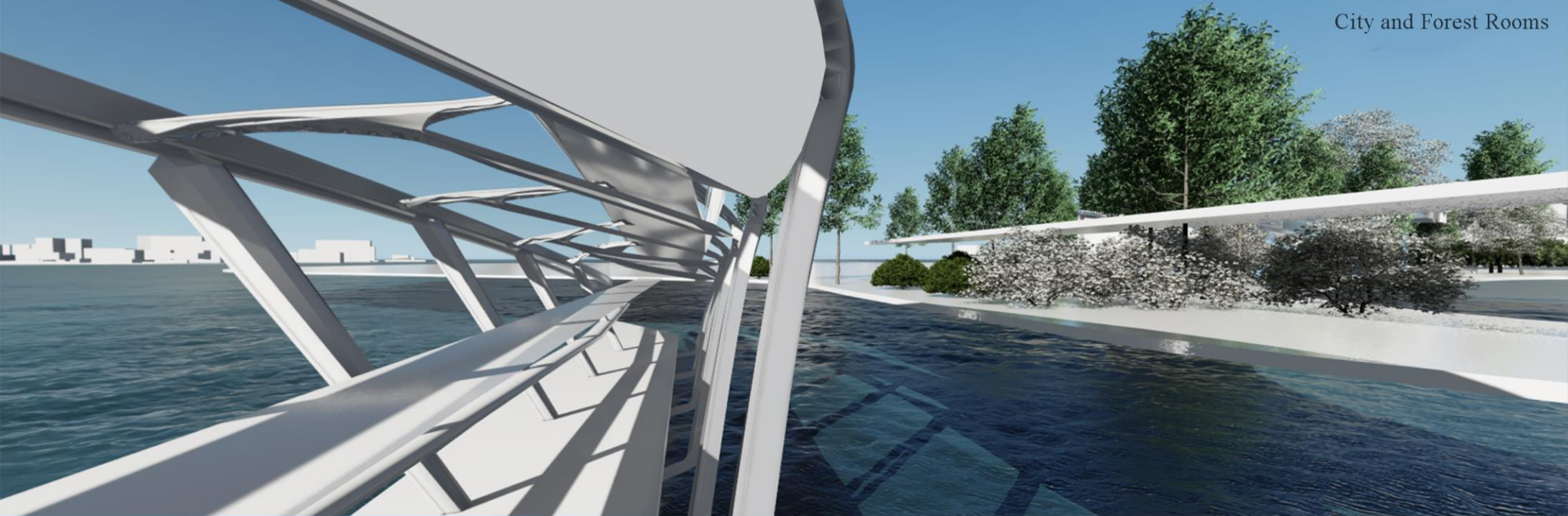
Transformers and Release of Water

+6.00 m.

+0.00 m.

Adjustable height according to the flood data.

City and Forest Rooms

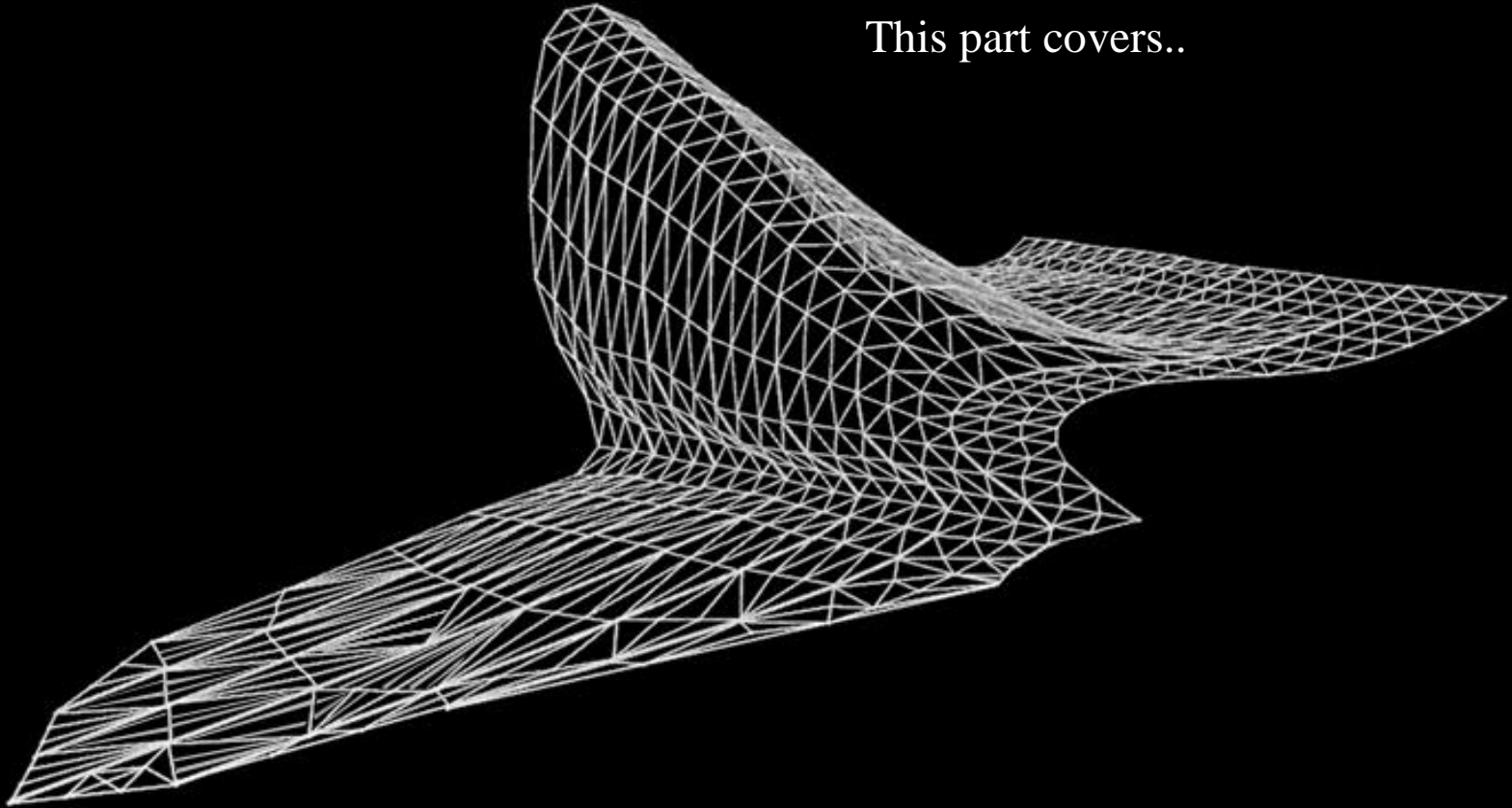


Island Rooms Treehouse Rooms

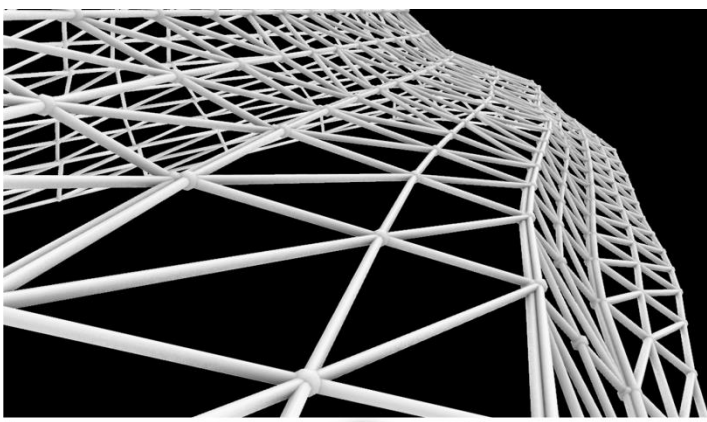


4. STRUCTURE, BUILDING SKIN AND DETAIL DRAWINGS :

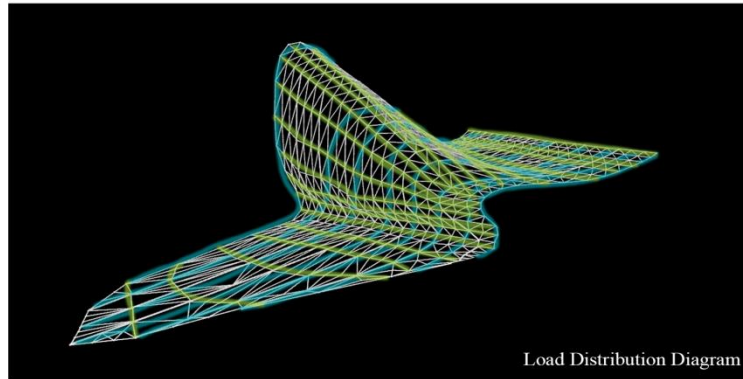
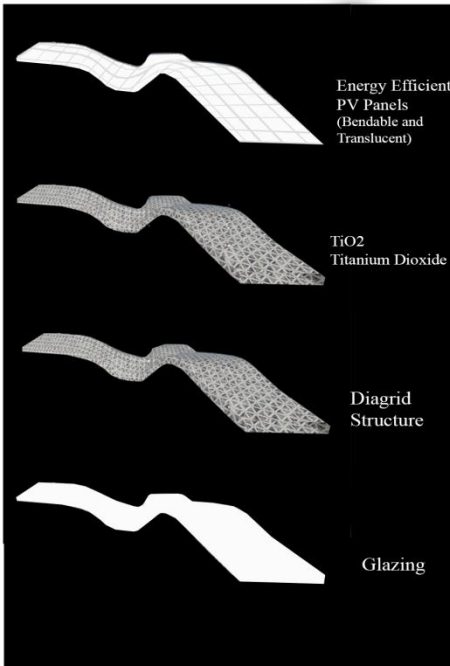
This part covers..



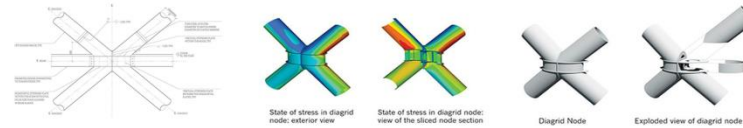
MATERIAL AND STRUCTURAL ANALYSIS



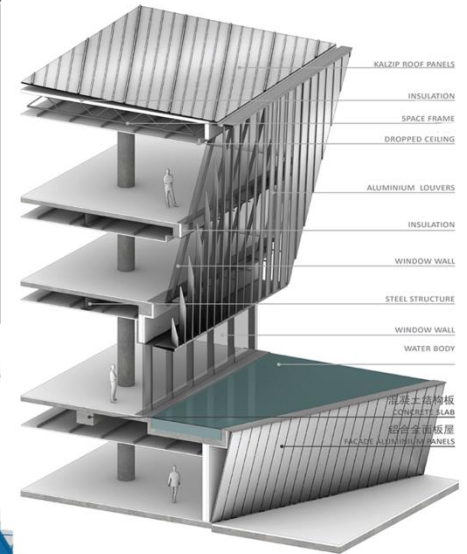
METAL DIAGRIDS AS THE MAIN STRUCTURAL SYSTEM



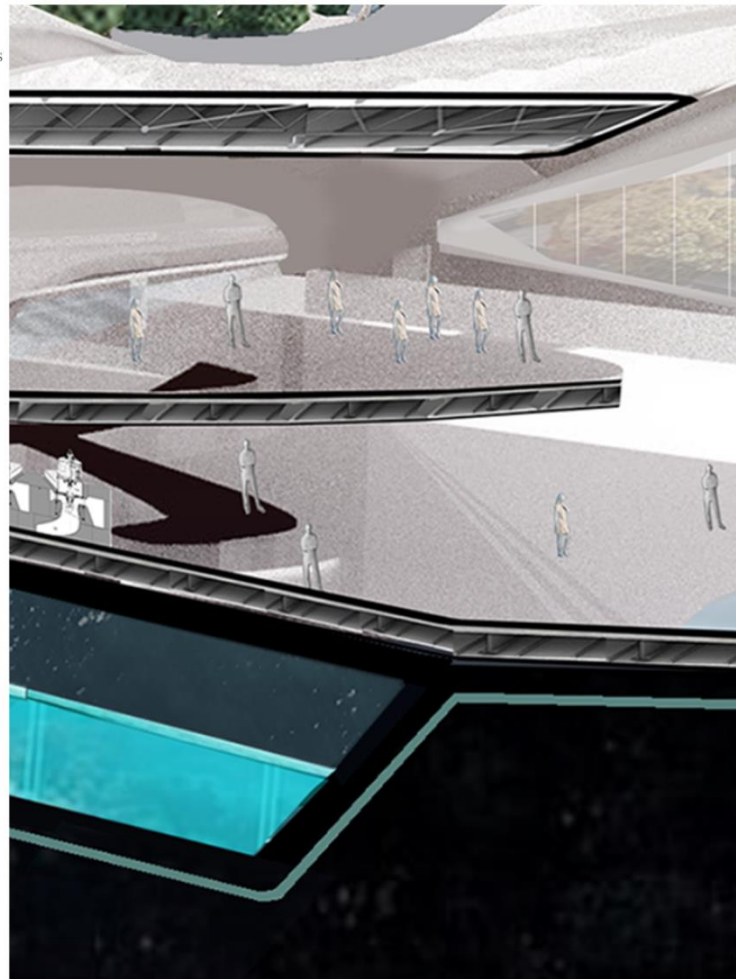
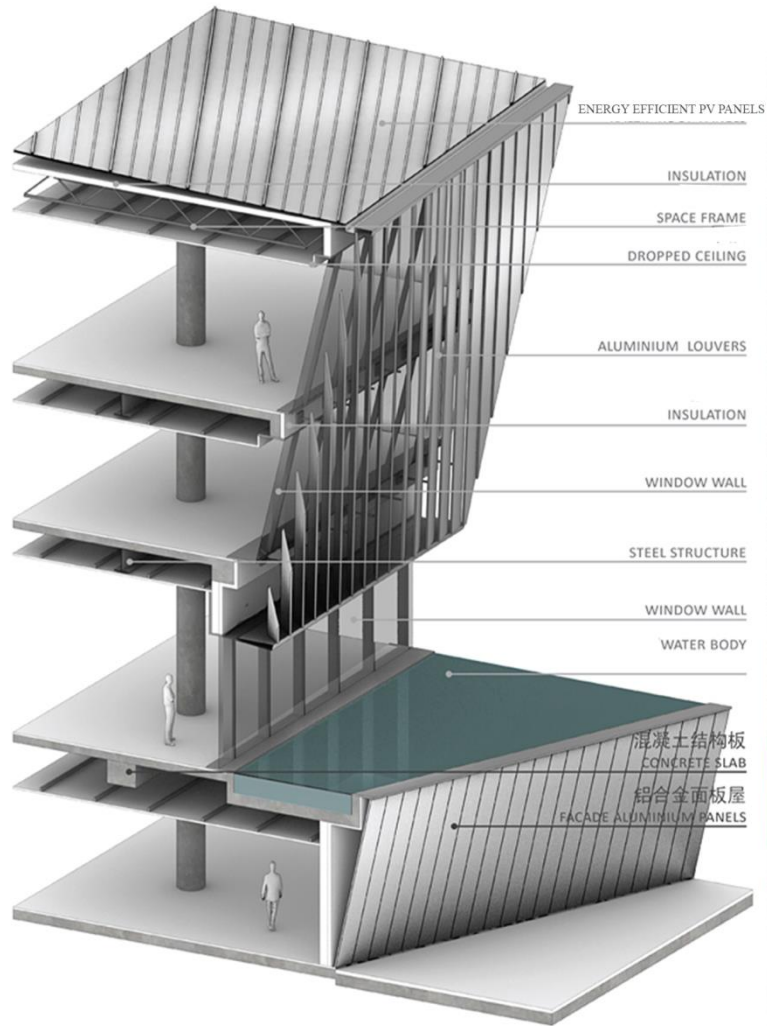
SYSTEM DETAILS:



CASE STUDIES AND CONSTRUCTION METHODS



WALL SECTION



A black and white photograph of a city skyline at night. The Empire State Building is the most prominent feature, illuminated from top to bottom. Other skyscrapers are also lit up, and their lights reflect on the water in the foreground. A dark horizontal band is superimposed across the middle of the image, containing the text.

THANK YOU FOR YOUR ATTENTION

