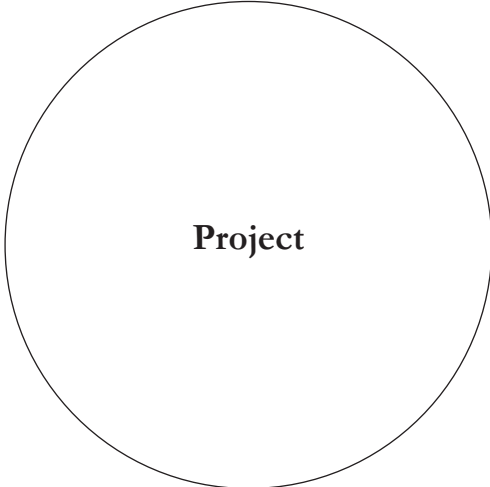
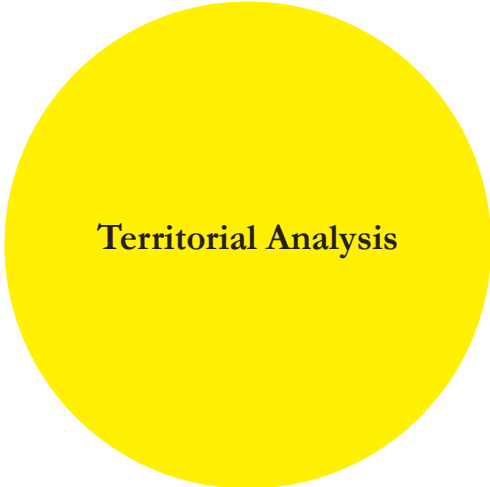


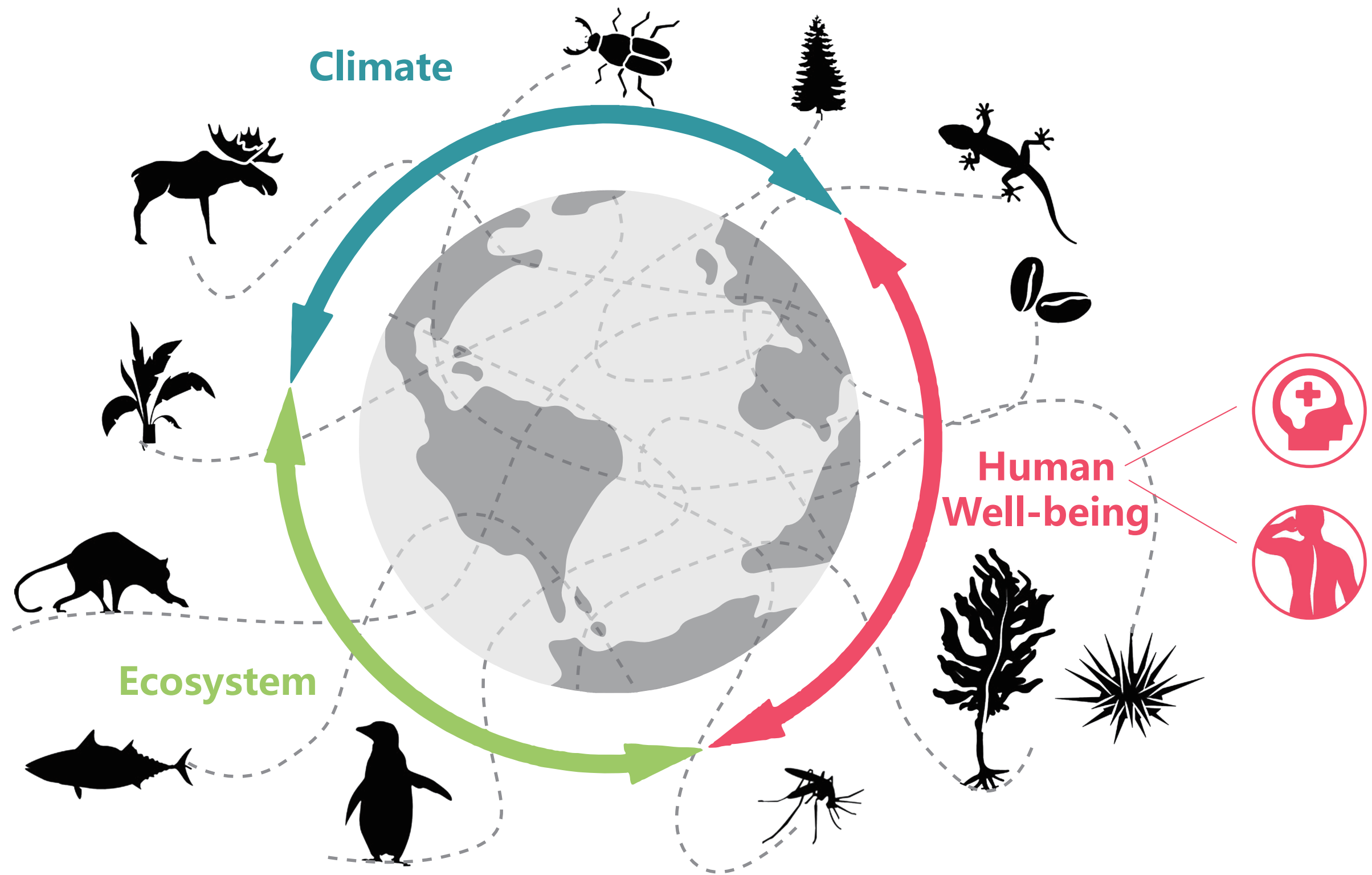
Recolonization of Offshore Platform

Junrui Liu 4718321

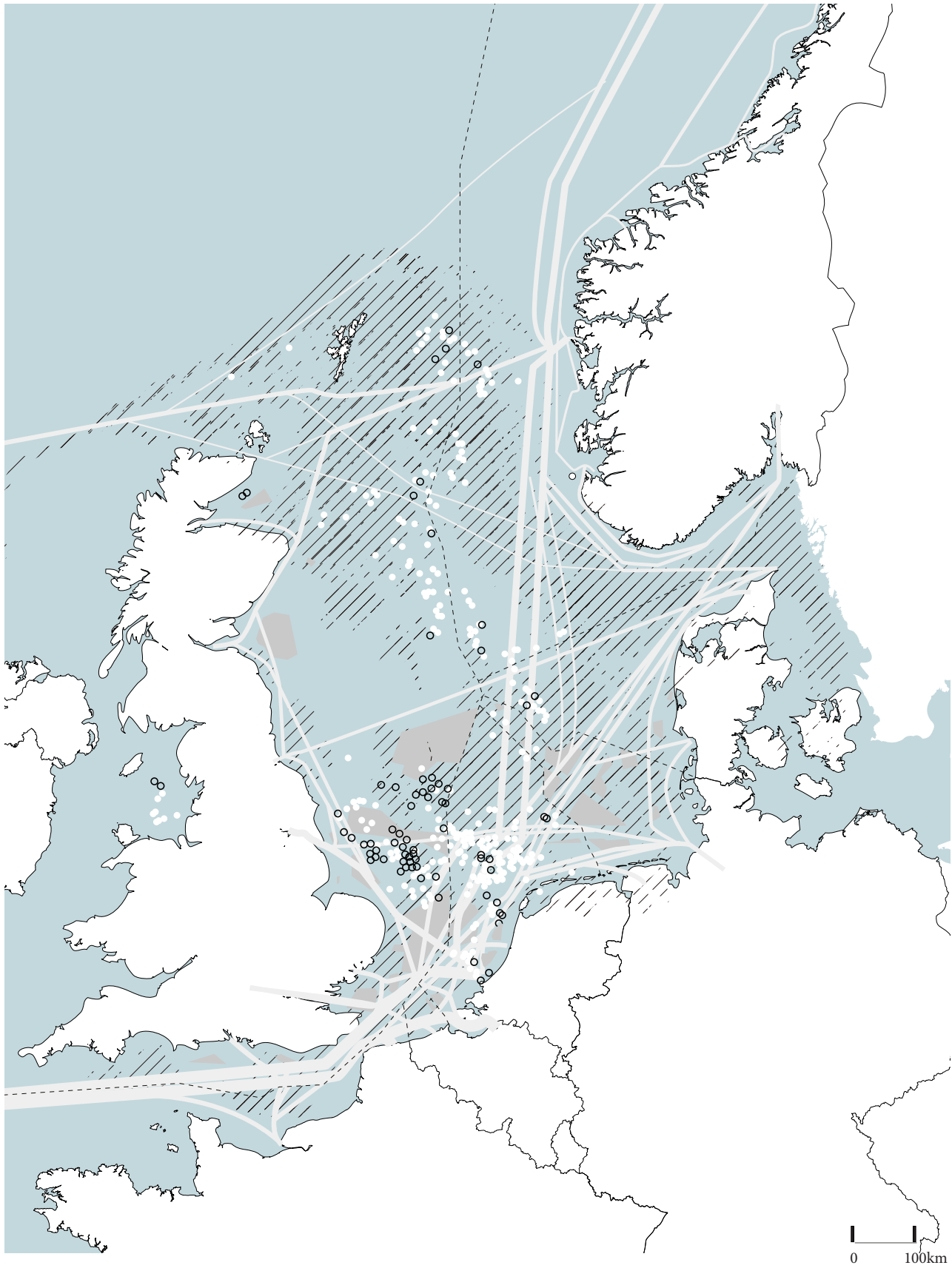


Territorial Analysis





Activities affect ecosystem in North Sea



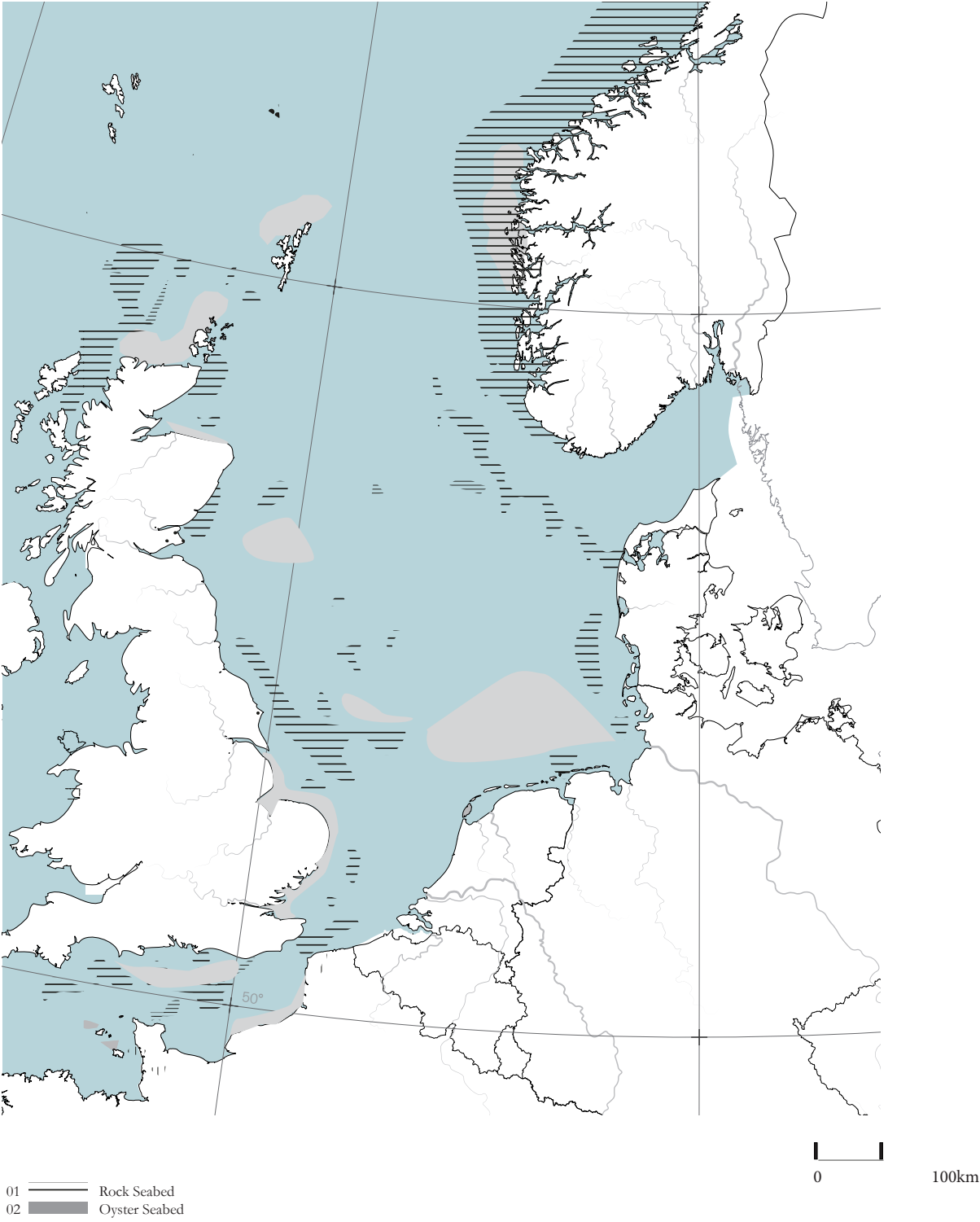
Activities on the North Sea

Source: New Geographics

- 01 Highly Intensive Bottom Trawling Area
- 02 Wind Farm
- 03 Shipping Routes
- 04 Decommissioned Offshore Platforms
- 05 Working Offshore Platforms

Comparison of the Hard Substrate in the North Sea

1883

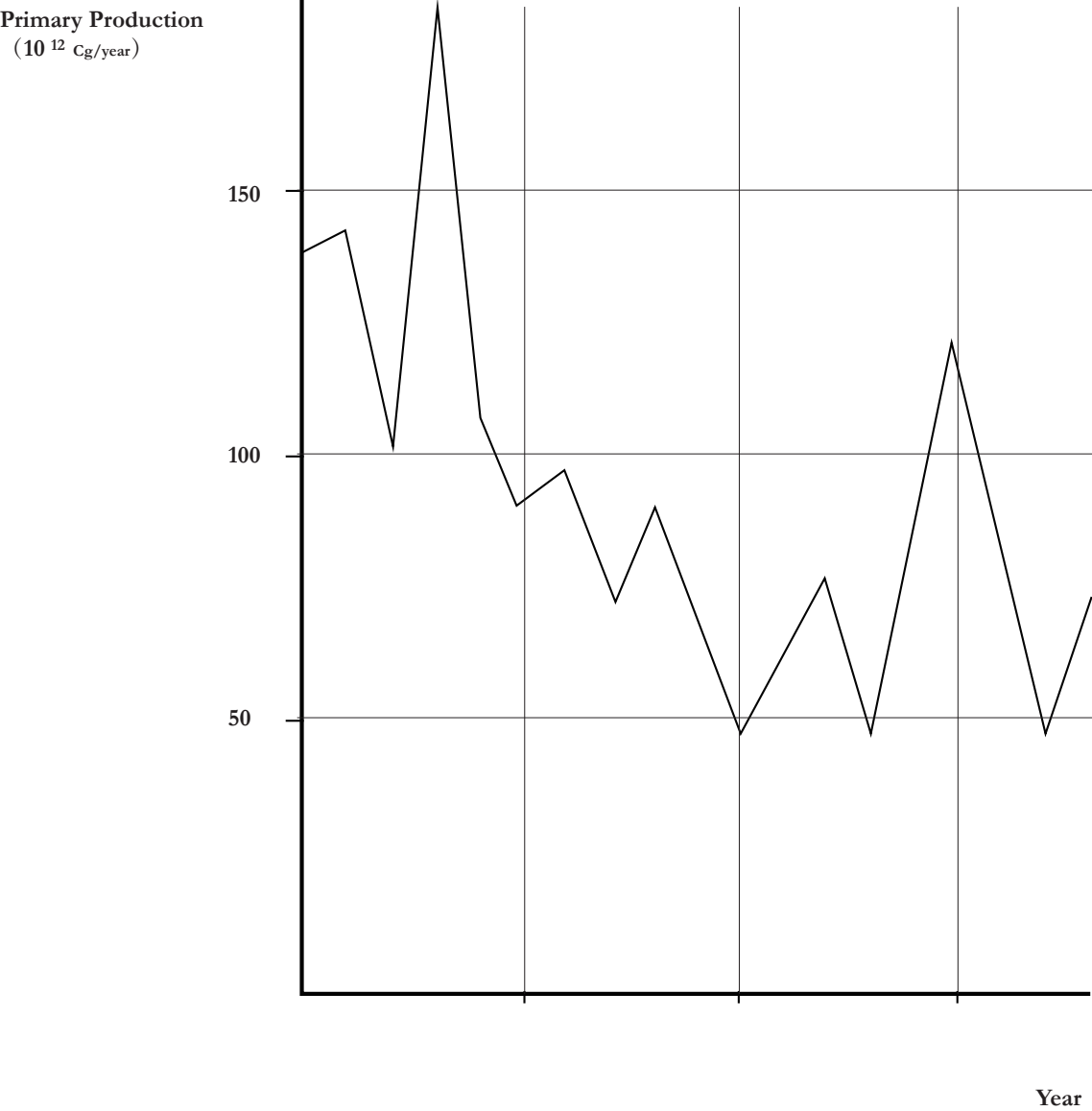


Now



Change of Primary Production in North Sea

Data Source: (A decline in primary production in the North Sea, E Campuzzo)

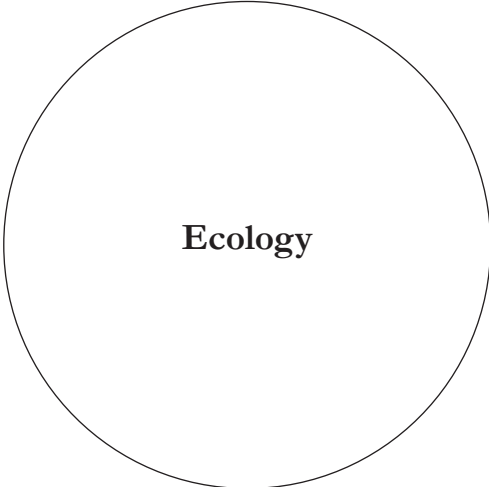


Problem in North Sea Ecological Research

Data Source: Royal Netherlands Institute for sea research

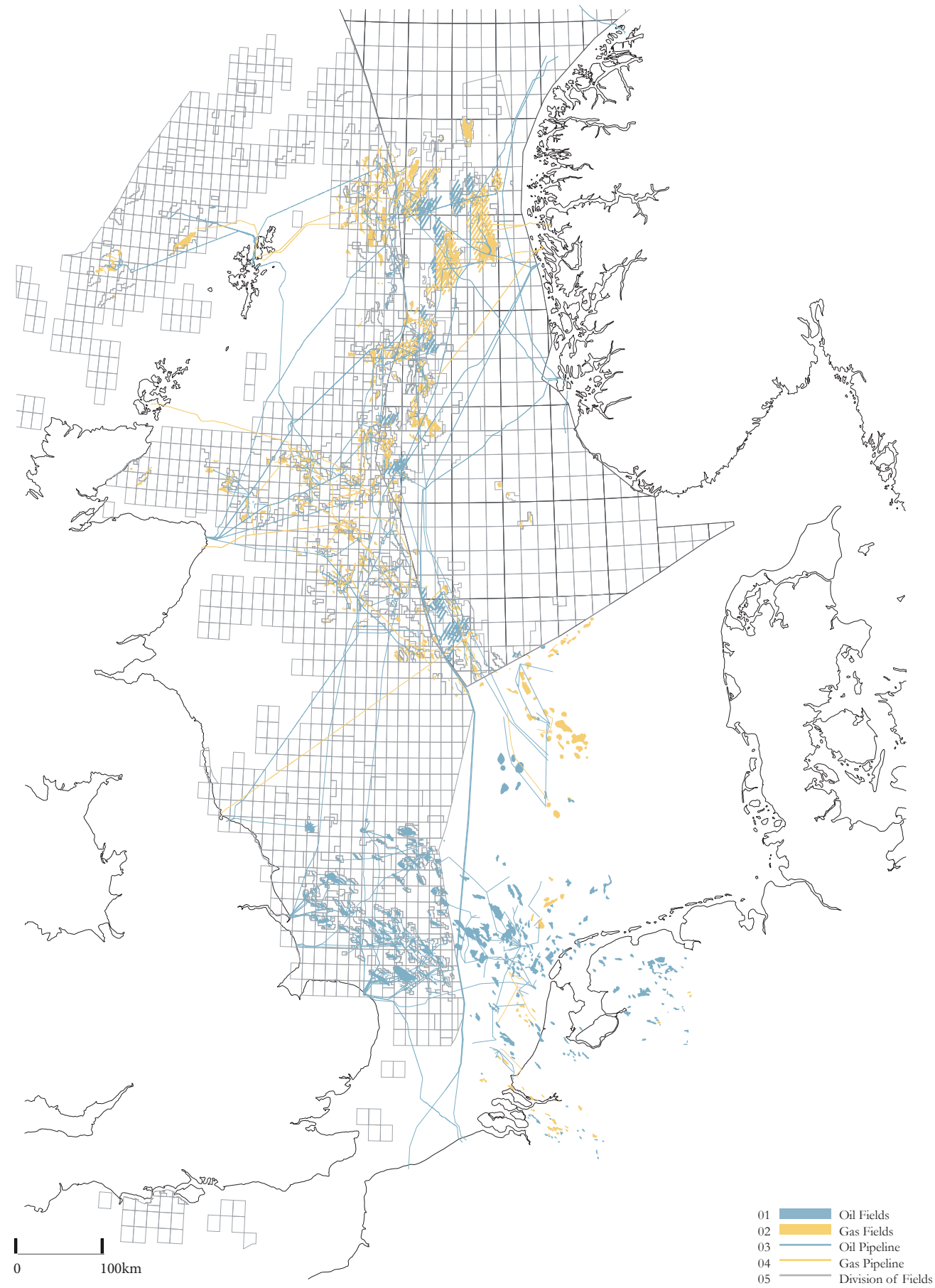


Basic Data

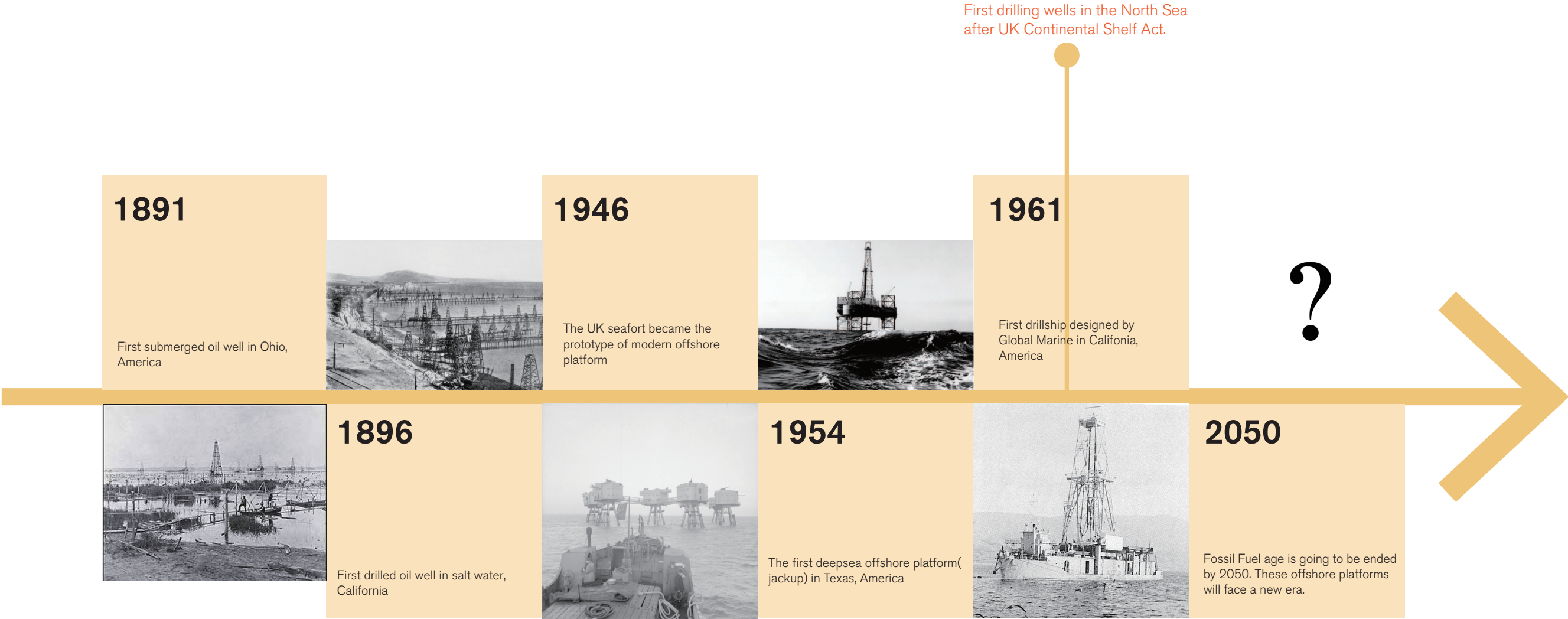


North Sea Oil and Gas Industry

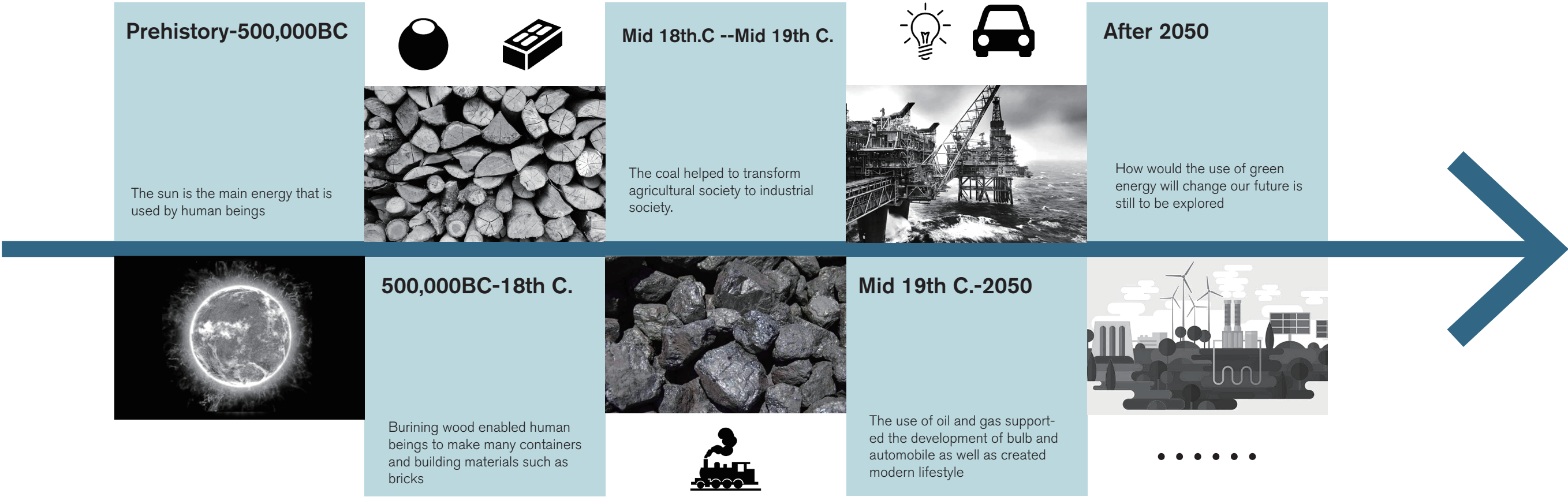
Source: New Geographics

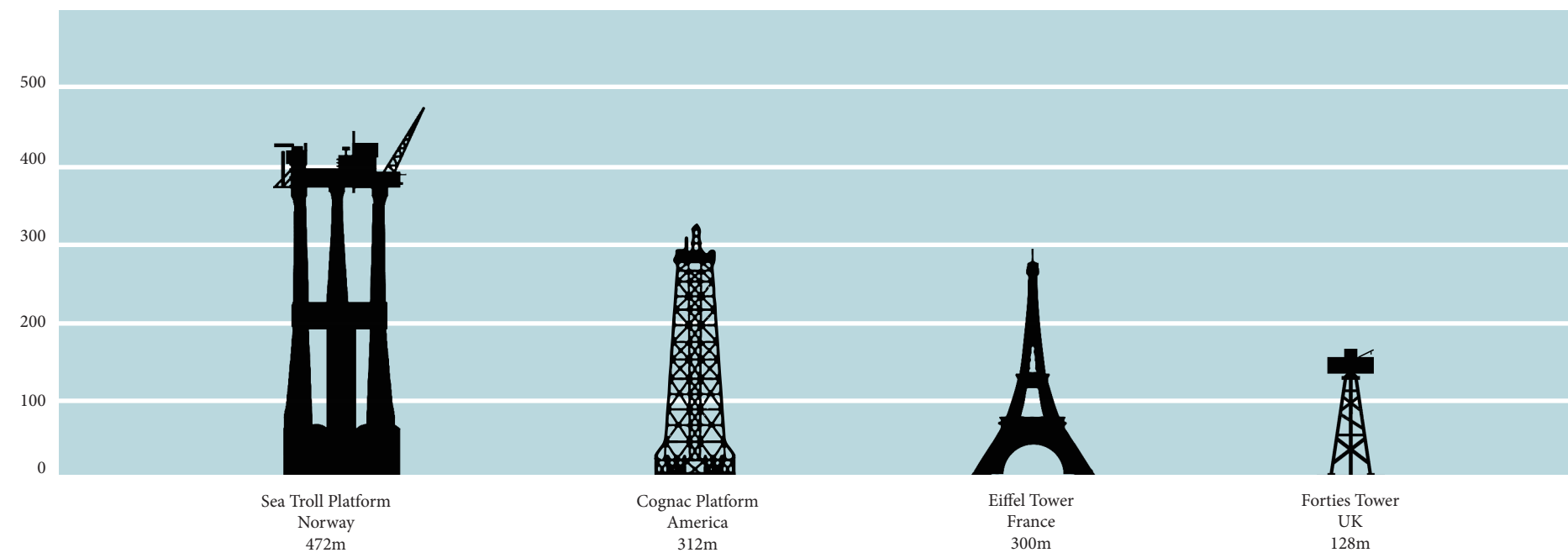


History of Offshore Platforms



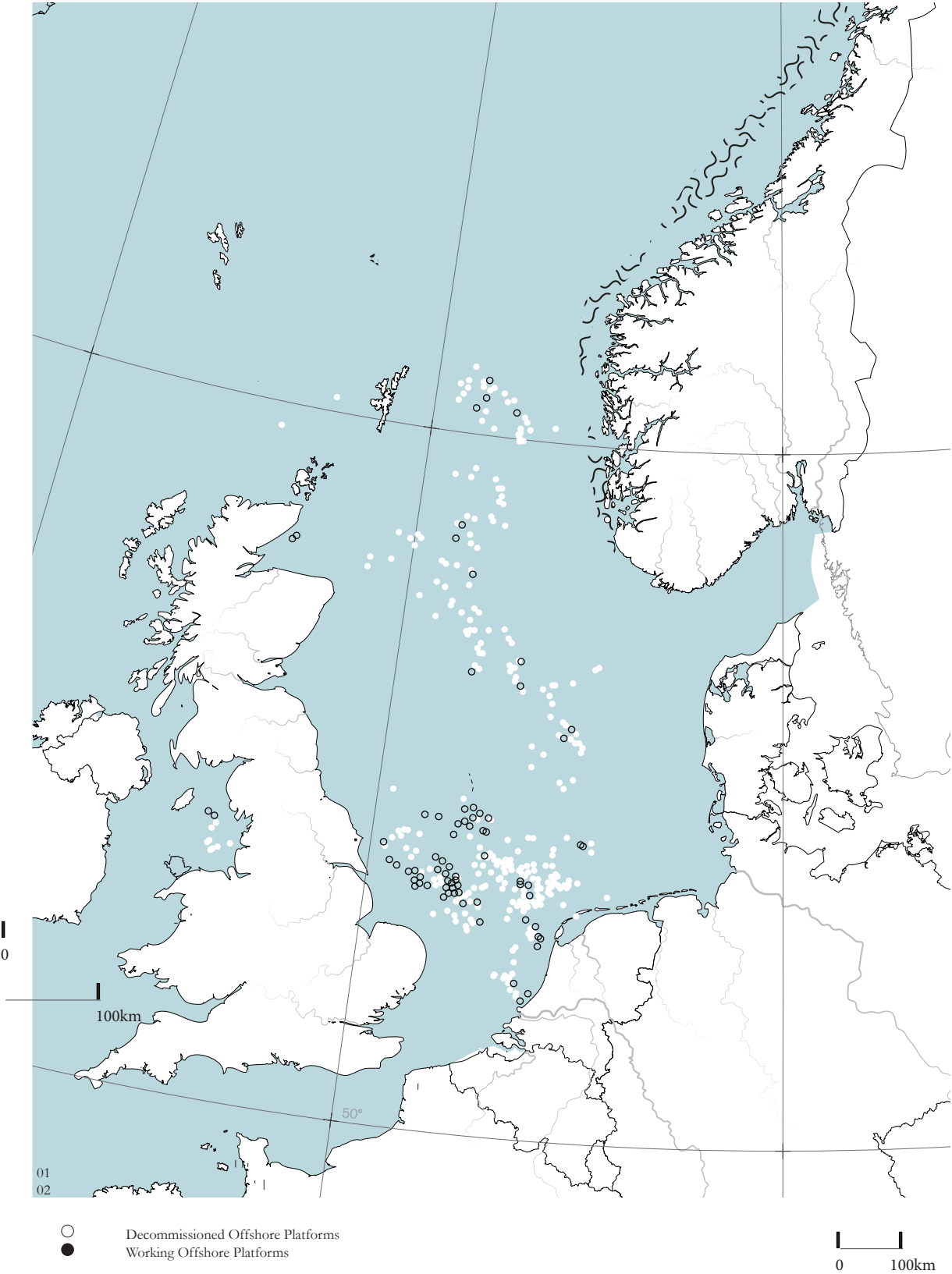
Heritage Value of Offshore Platforms





Ecological Value of Offshore Platforms

Distribution of Offshore Platforms



Collage of Non-human Occupants on Offshore Platforms



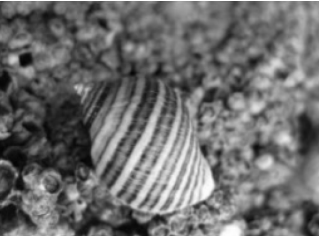
Ecologizing process on North Sea Offshore Platforms

Non-human Occupants on North Sea offshore platforms



Some species that might be found on the offshore platforms in the North Sea

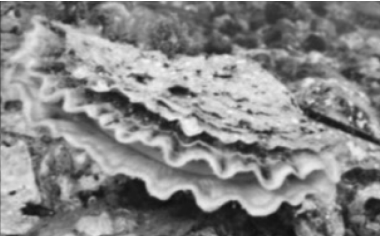
Data Source:(North Sea Reefs, *Joop Coolen*)



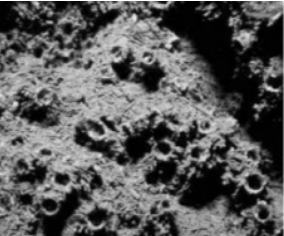
Dog Whelk



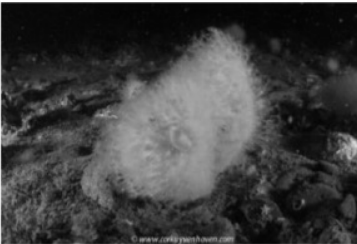
Cod



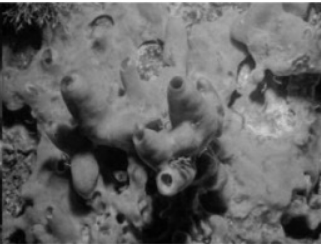
Edible Oyster



Sabellaria Room



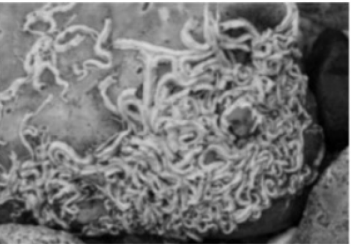
Dead man's finger



Sponges

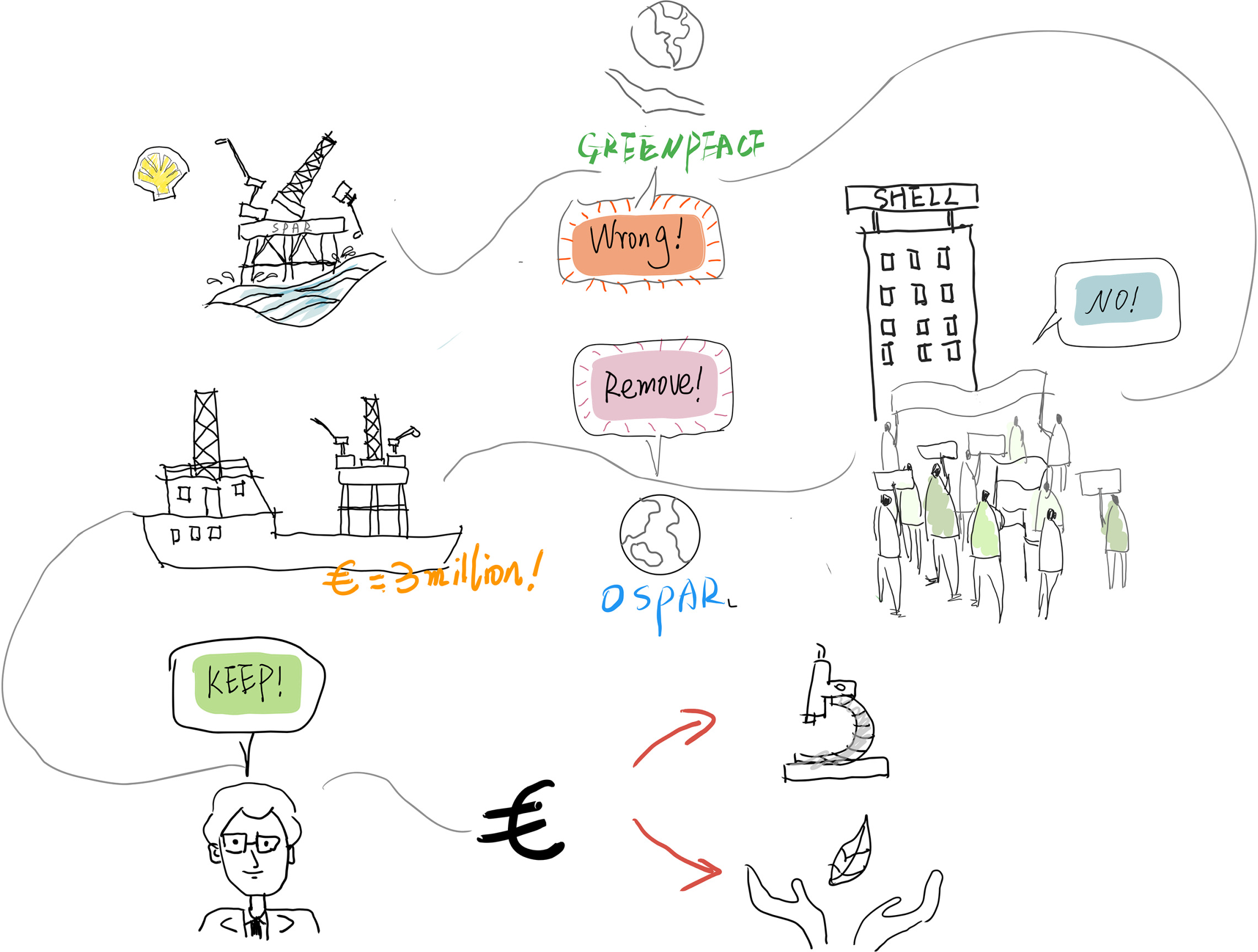


Whelk



Encrusting worms

Conflicts in the Decommission of North Sea Platforms

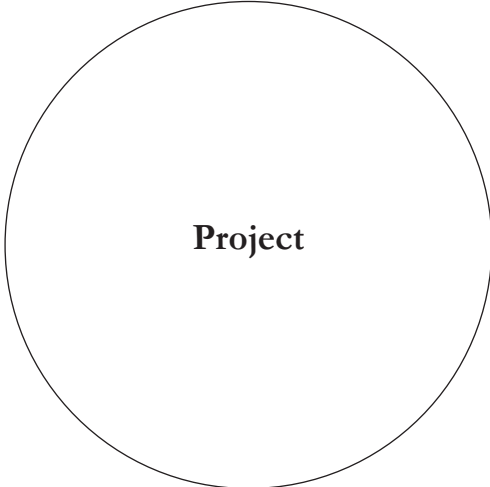
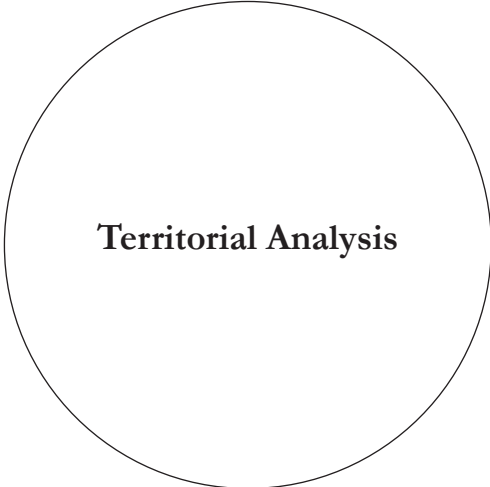


Problem Statement

- 1.The ecosystem of the North Sea has degraded due to the resource-demanding economic growth. Protection and restoration is necessary.*
- 2.In order to conduct protection activities, the understanding of the ecosystem is essential. However, the basic data of the non-commercial species in the North Sea is still not complete*
- 3. The offshore platforms are going to be decommissioned in the following decades, there might be a need to adaptive reuse or keep some of them due to their heritage values and ecological values.*

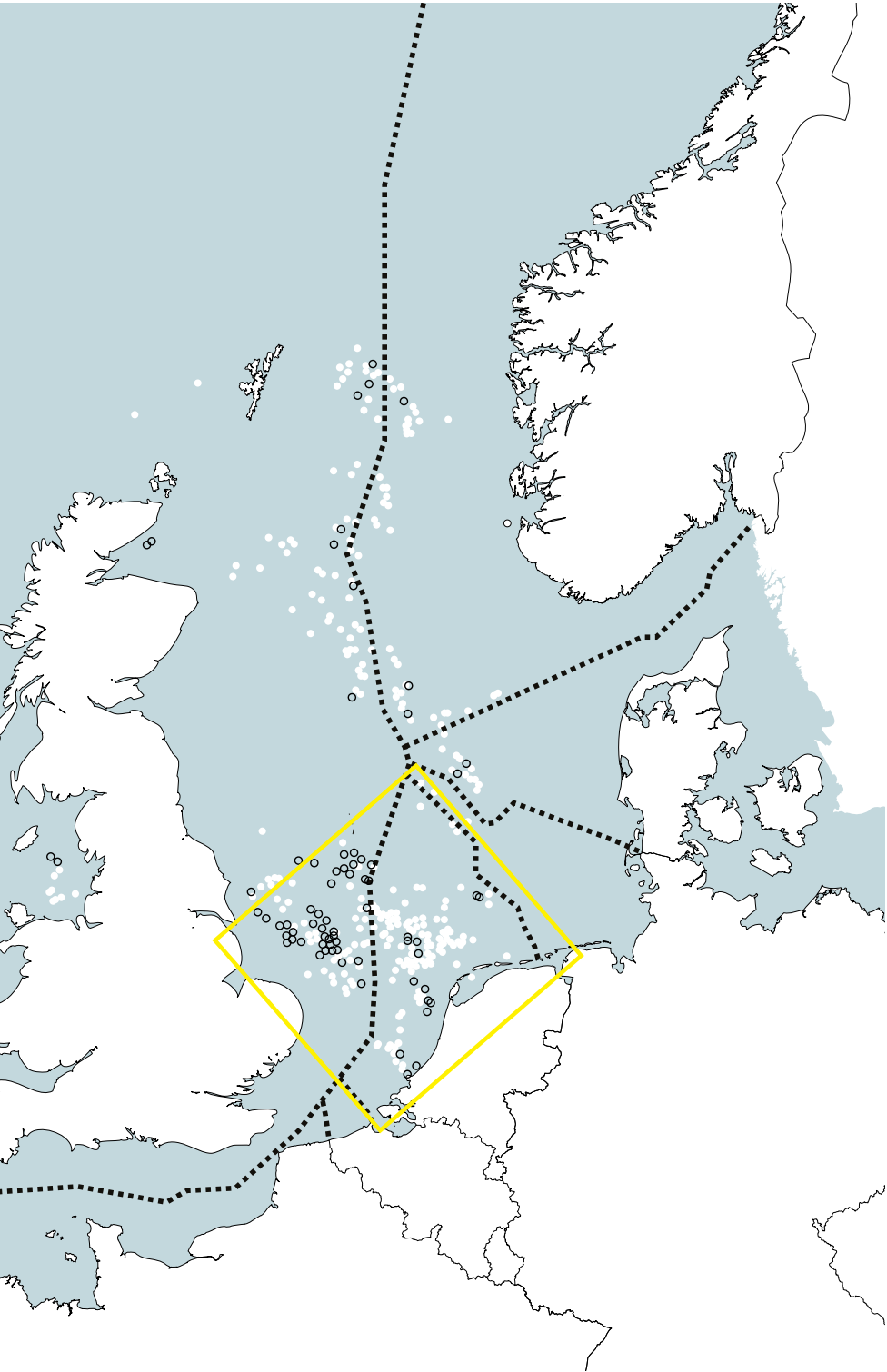
Research Question

- 1.What are the methods to adaptive reuse these offshore platforms in order to keep their heritage value?*
- 2.What kind of roles can these offshore platforms play in creating a better ecosystem?*



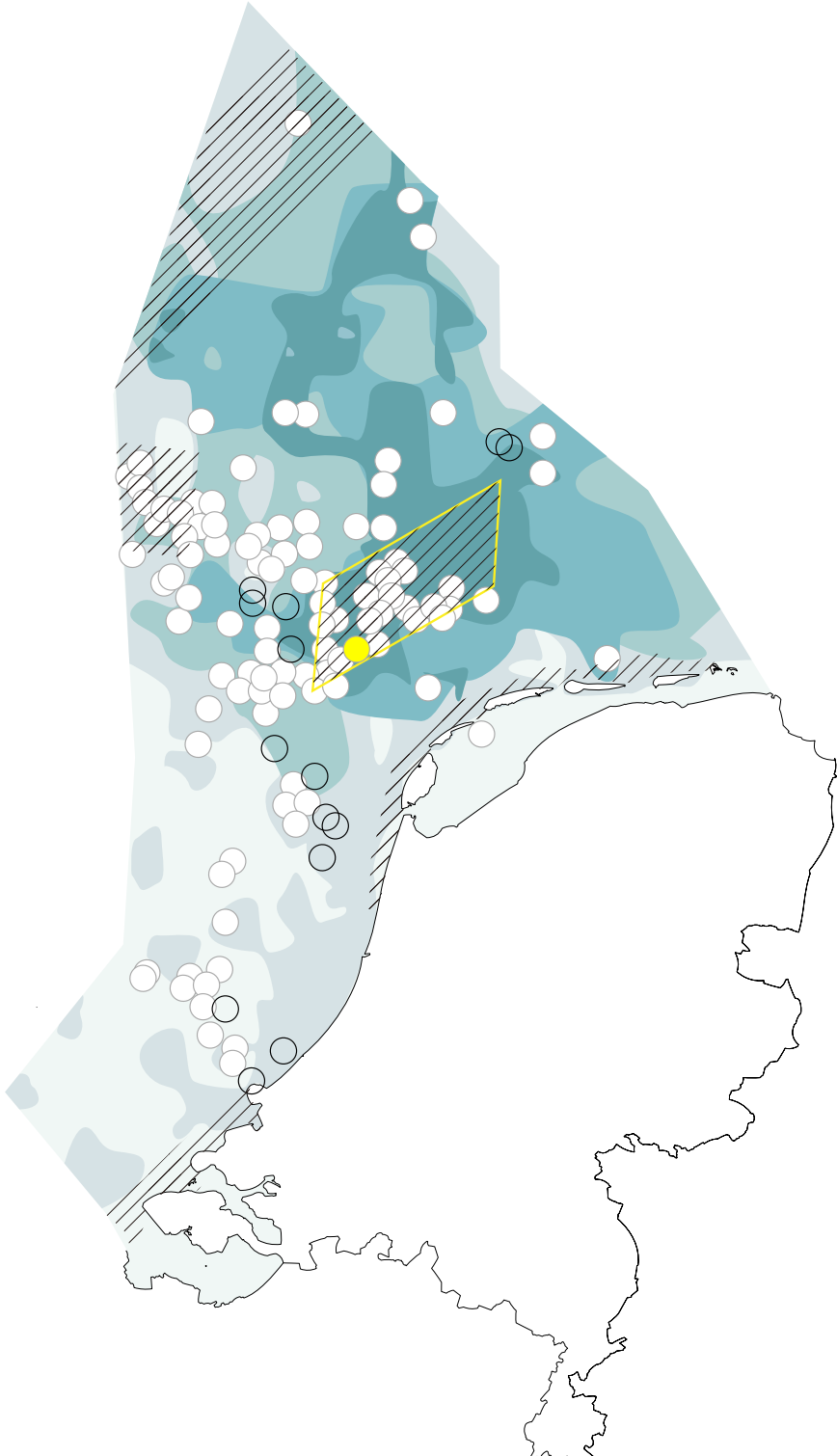
Country and Regional Scale

Country Scale



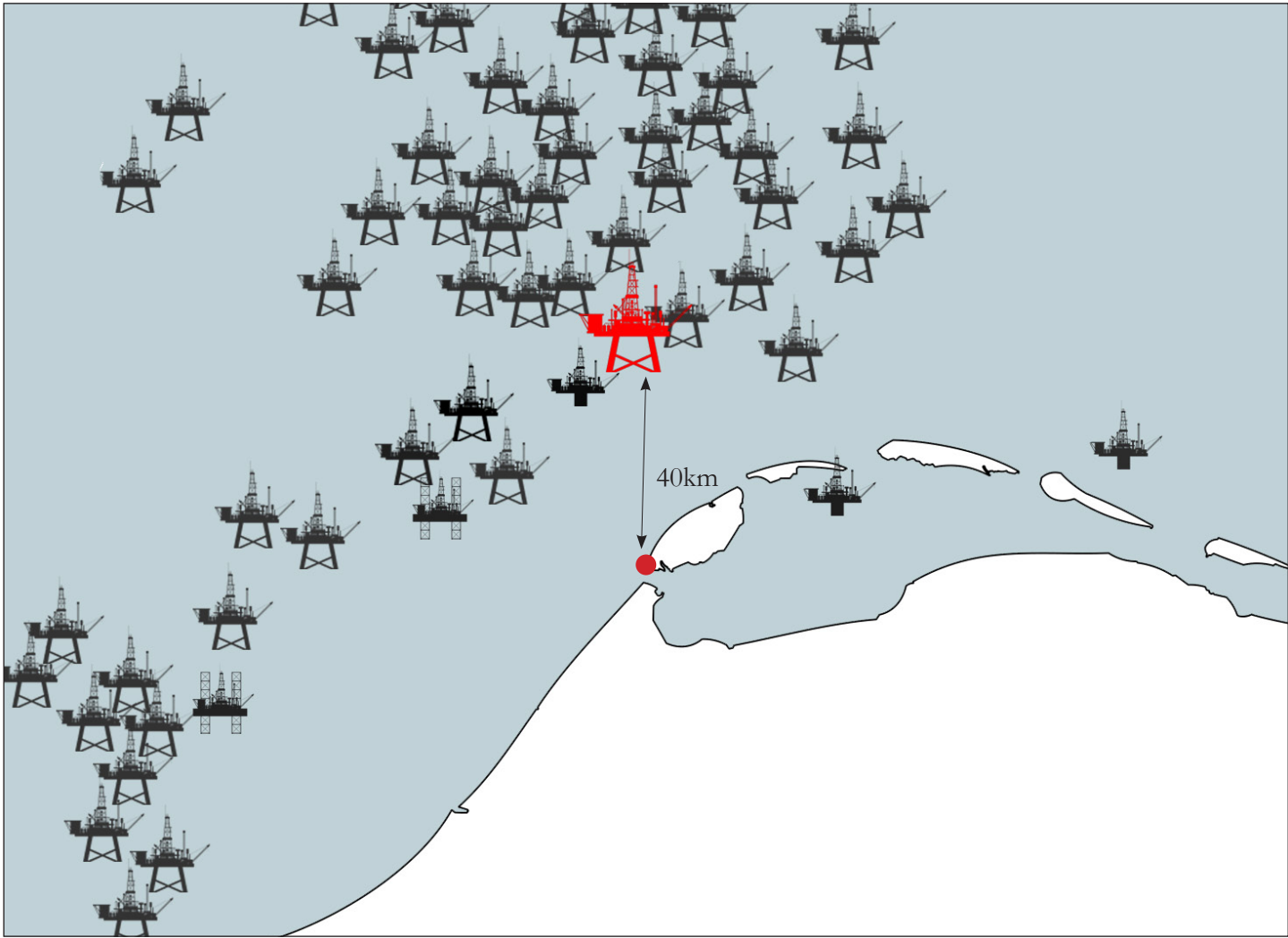
- 01 - - - - Marine National Boundary Line
- 02 ○ Decommissioned Offshore Platforms
- 03 ● Working Offshore Platforms

Regional & Architectural Scale



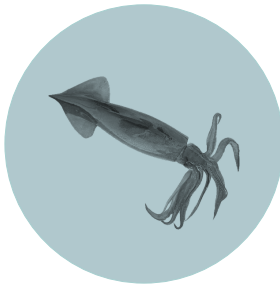
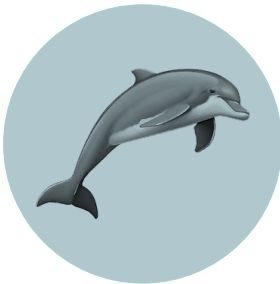
- Natural Reserve // // // 01
- Decommissioned Offshore Platforms ○ 02
- Working Offshore Platforms ● 03
- Selected Platform ● 04
- Biodiversity Low → High 05

Architectural Scale



Species in Frisian Front

Marine Species



Magafauna

Macrobenthic species

Bird Species

Common Guillemot



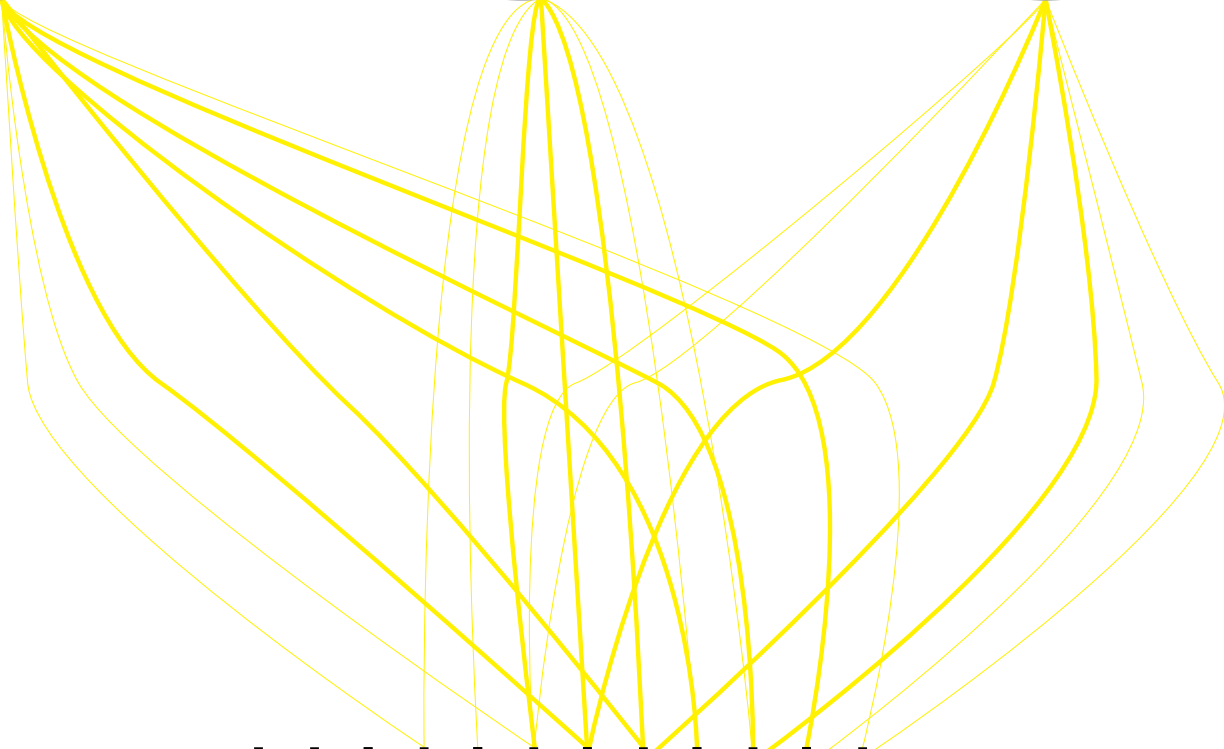
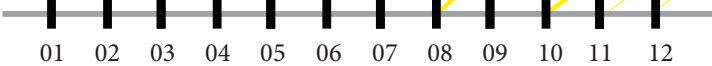
Black-Backed Gulls



Great Skua

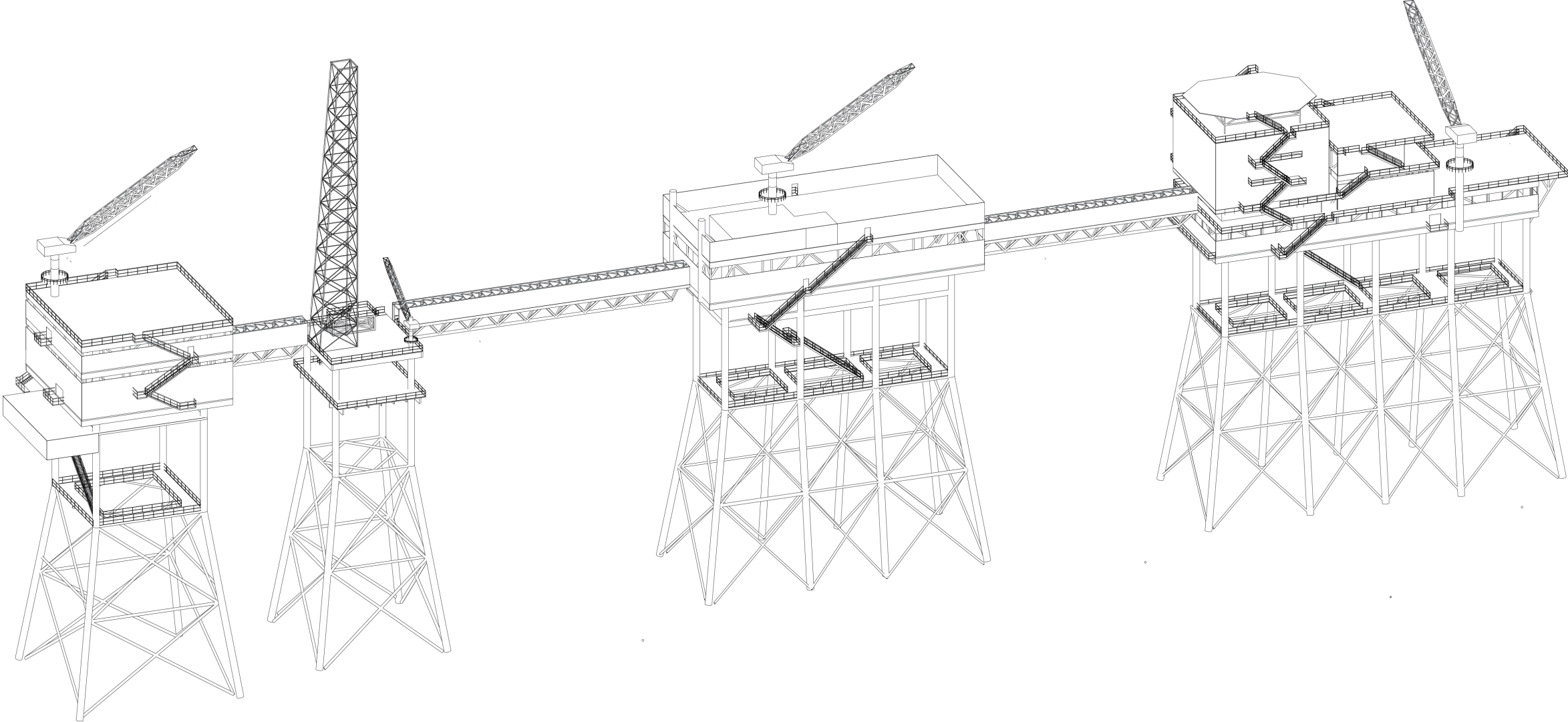
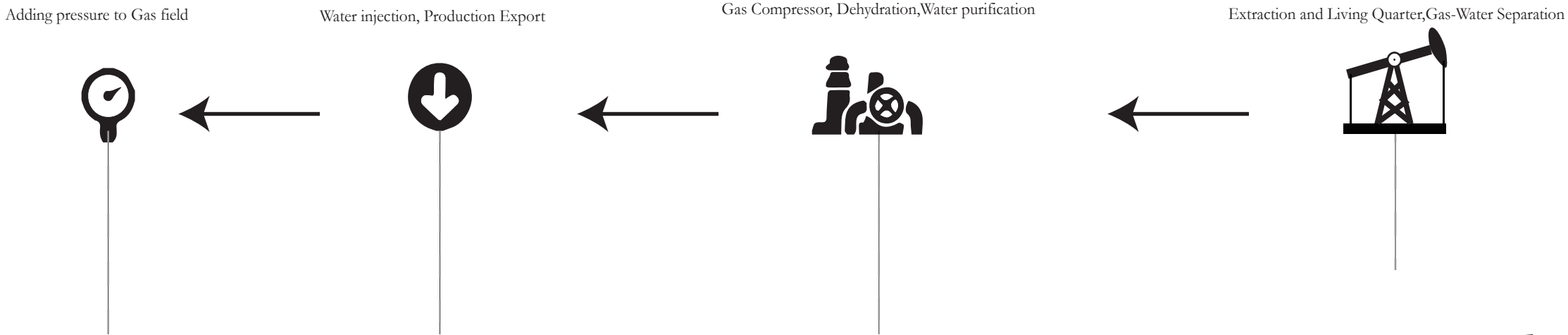


Month





Introduction of existing Platform

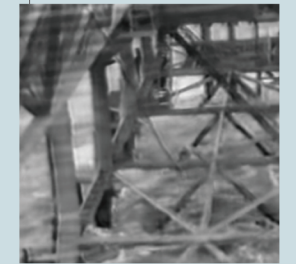
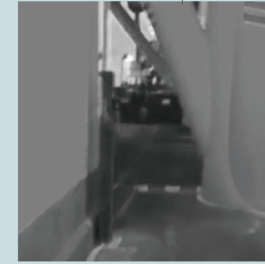
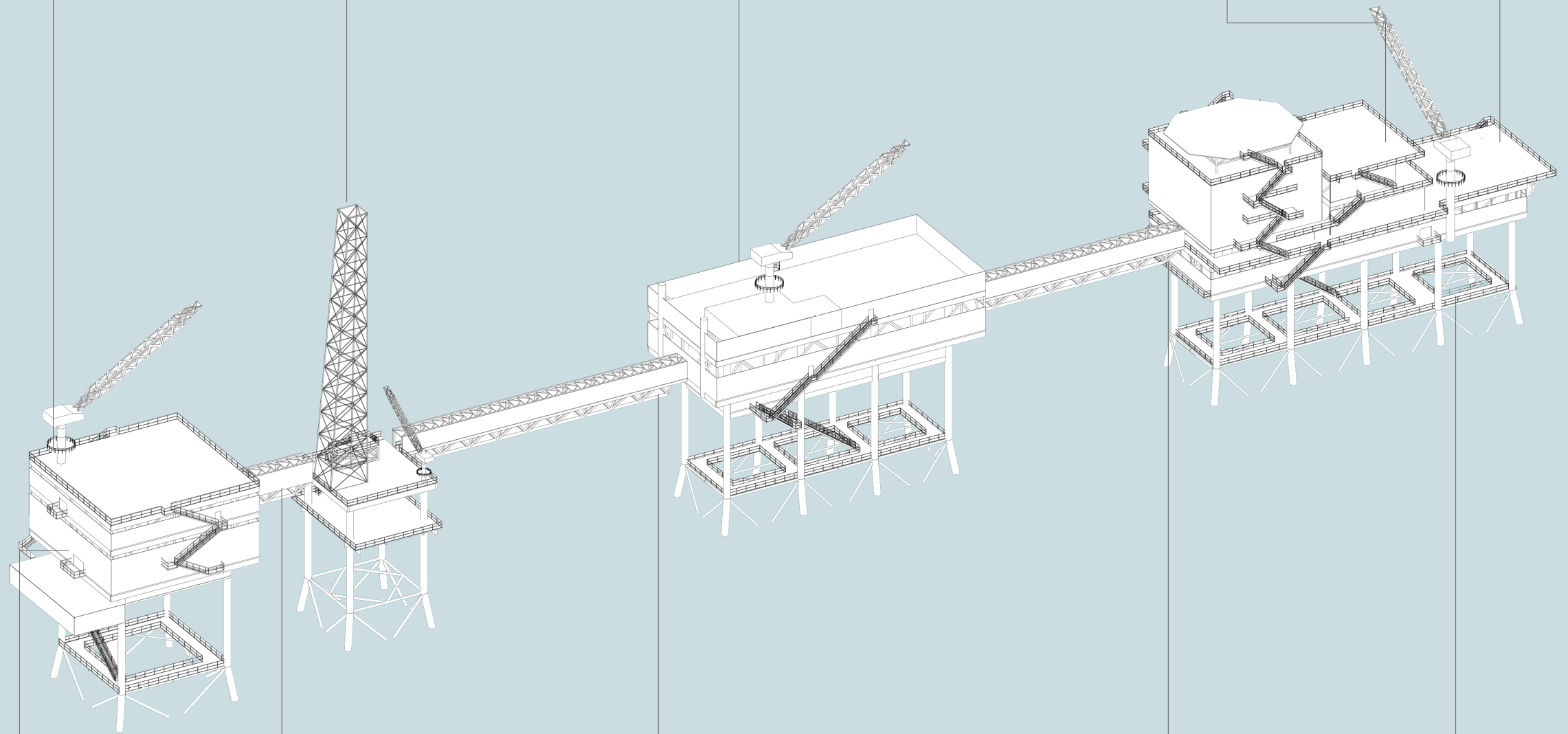


1987
L10-AC
Compression Platform

1975
L10-AR
Riser Platform

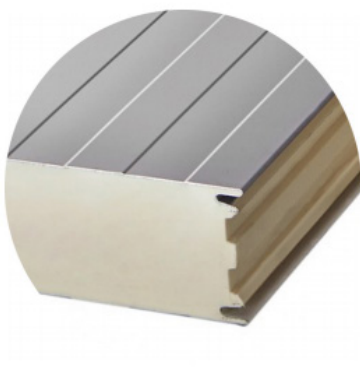
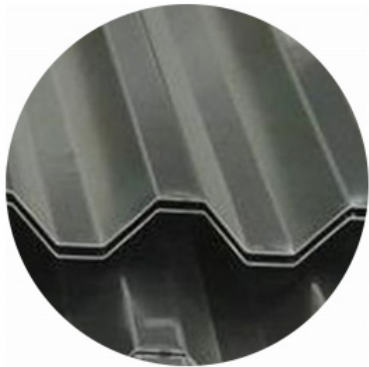
1975
L10-AP
Production Platform

1972 Oldest
L10-AD
Drilling Platform

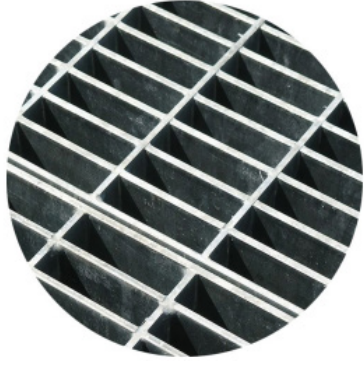
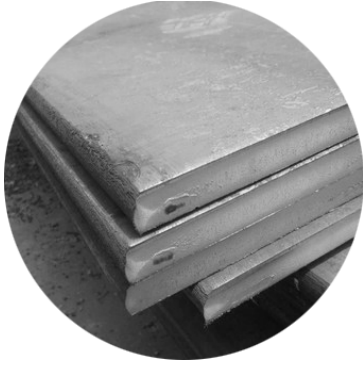


Materialization of existing platform

Wall



Floor



Structure



Problem Statement

The Frisian Front (which the L10A platform is located in)hosts the highest biodiversity in the Dutch part of North sea. It also has the highest biodiversity of megafauna and macrobenthos. As a bird reserve, it is attracting a large number of birds every year. It is an ideal place to conduct marine ecological research.

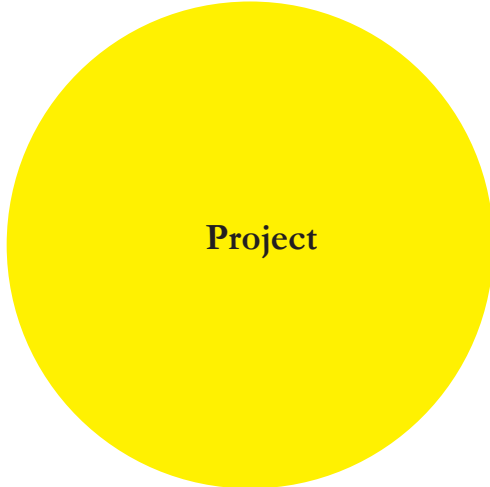
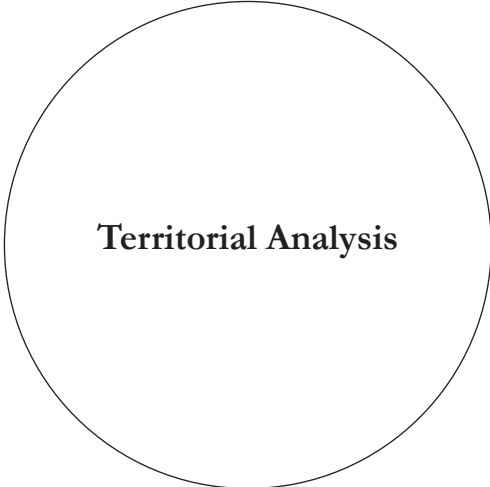
The L10 A complex is the first offshore platform on the Dutch continental shelf. With the gas field going to stop production very soon, it would be abandoned. It has the potential to provide dry space for in-situ observation. experimentation and other research activities.

Architectural Research Question

1.How can the L10A complex contribute to ecological research?

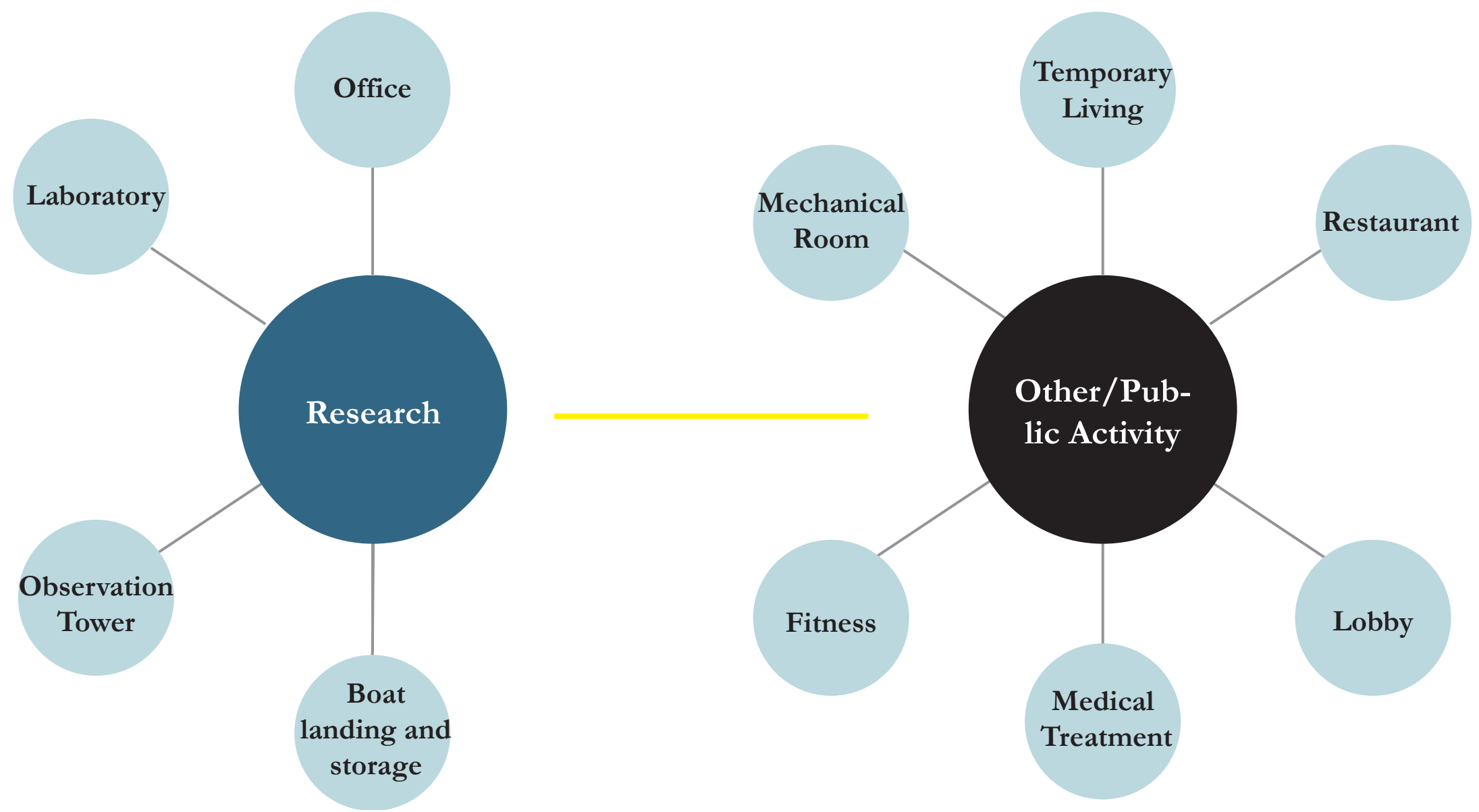
2.How can human beings and other species coexist on the platform without excessive interference towards each other?

3 How can the architectural intervention keep the heritage value of the powerful construction?

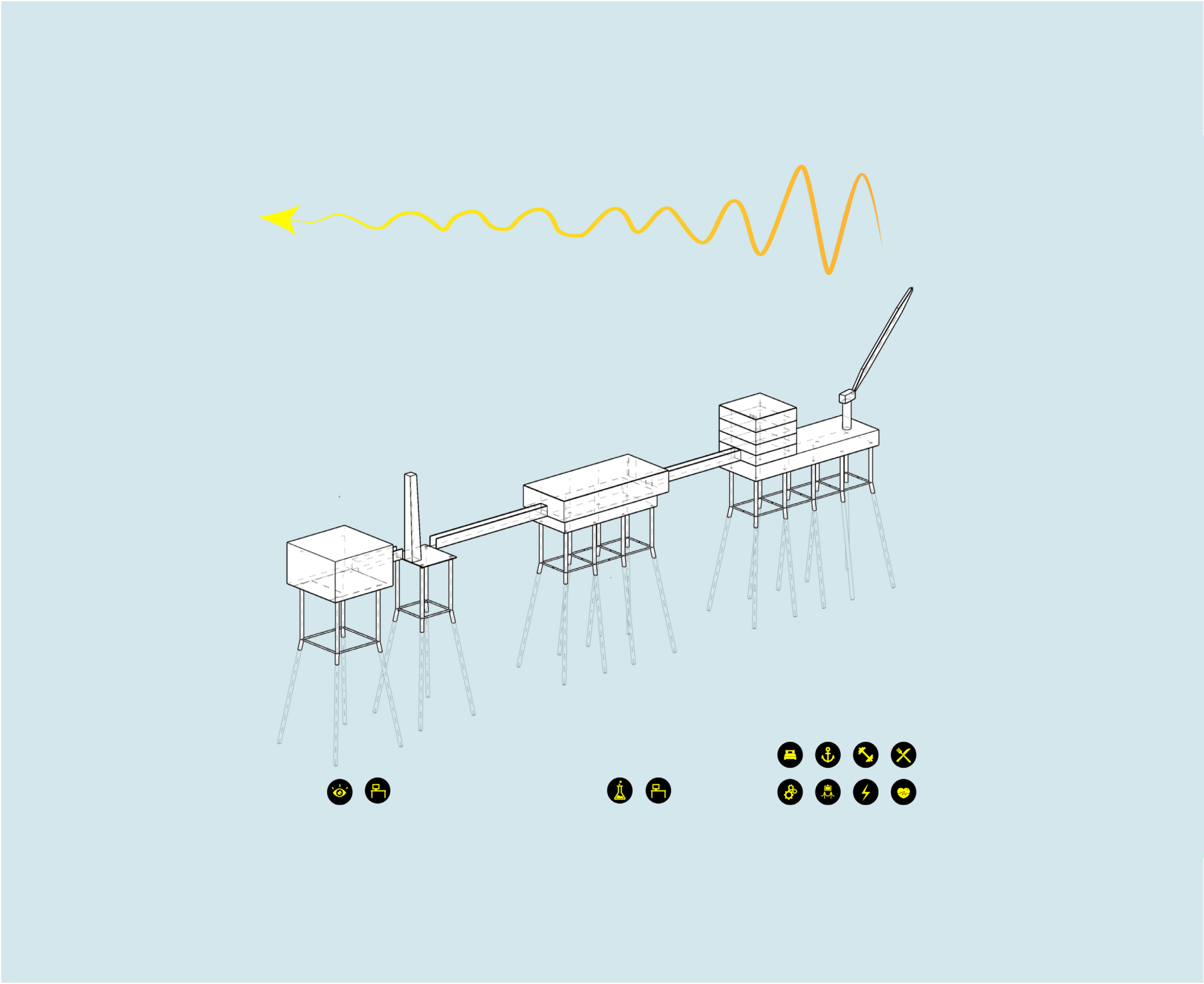




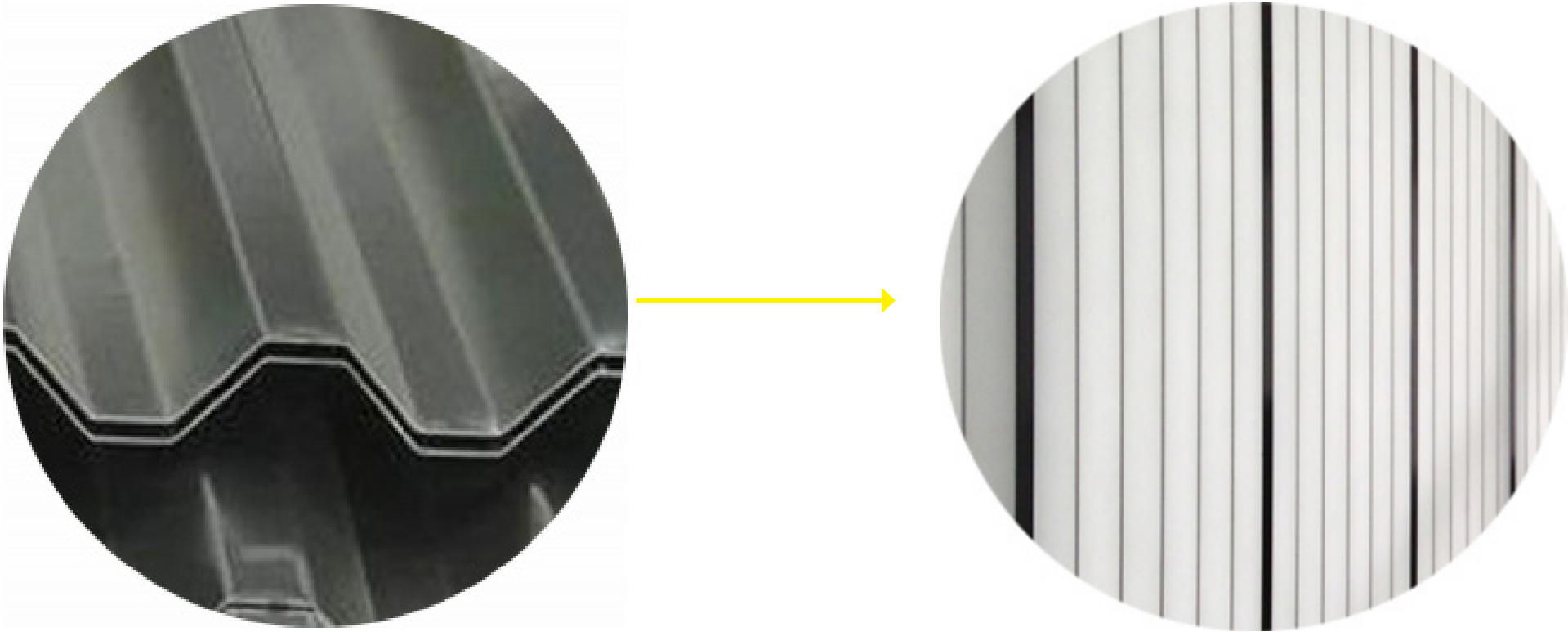
Program



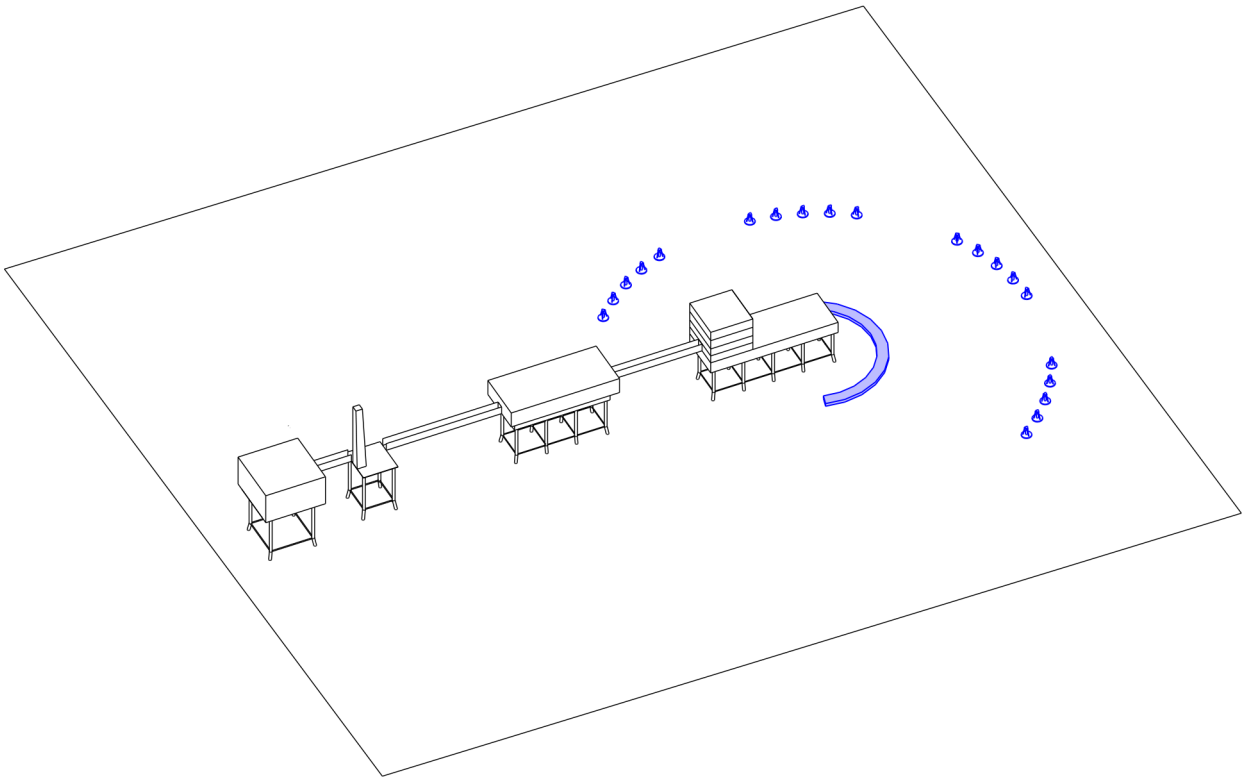
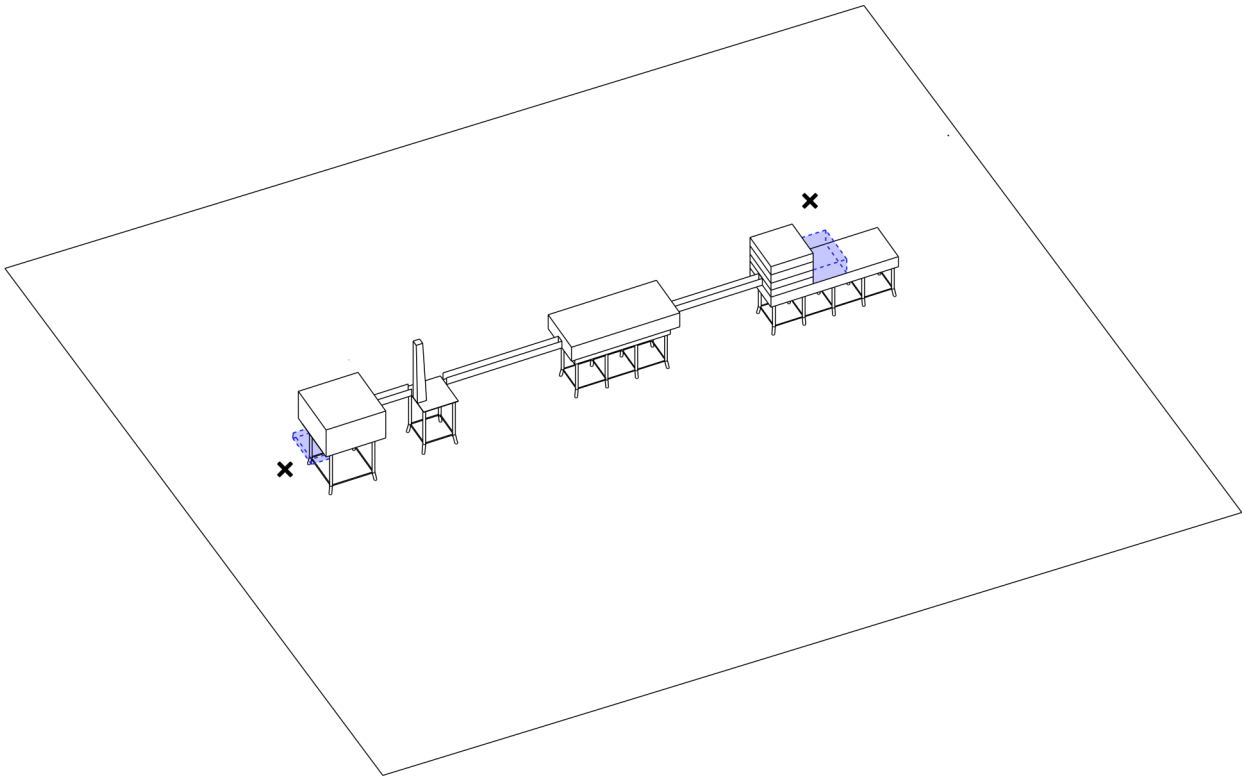
Concept

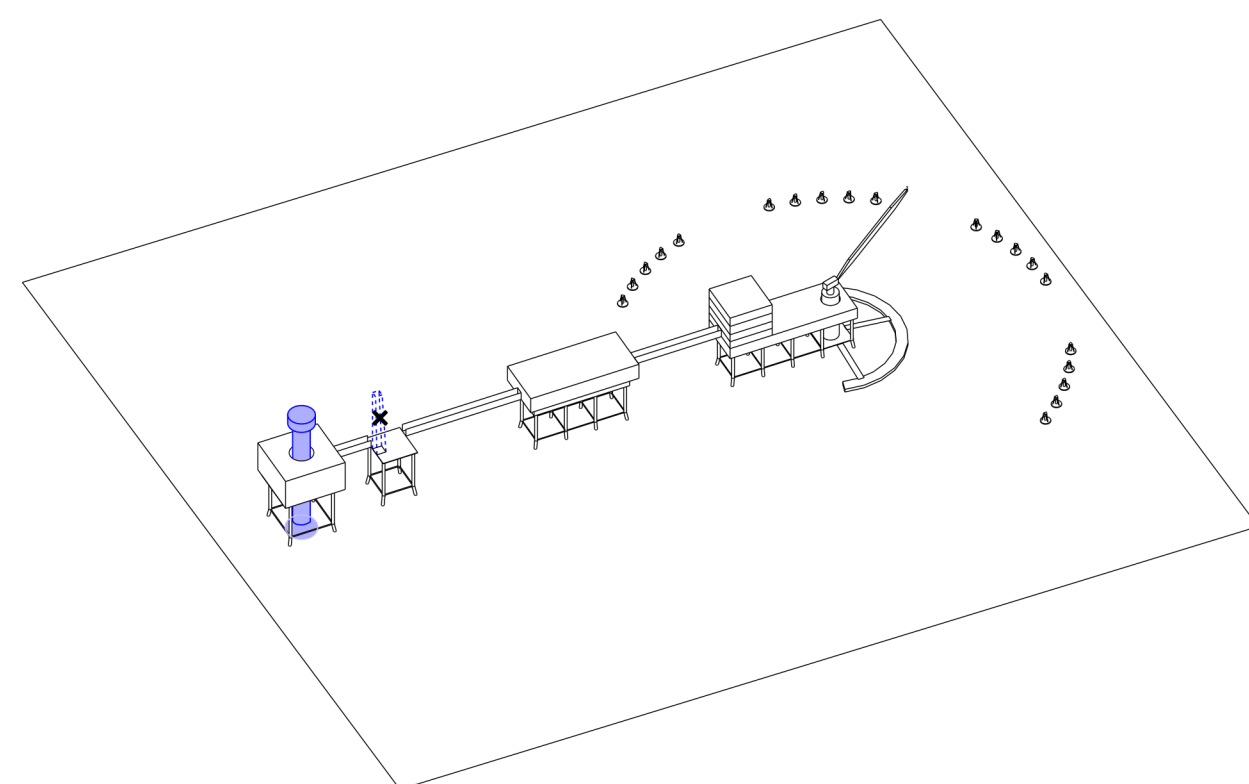
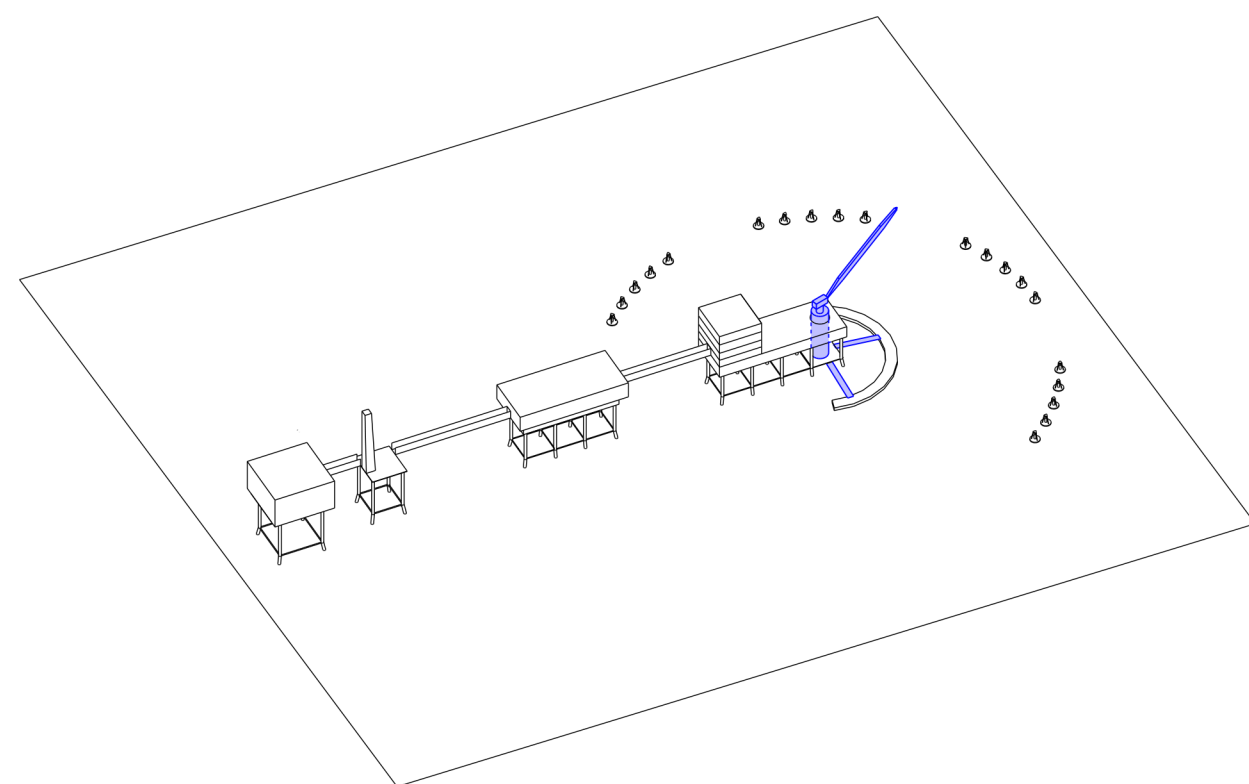


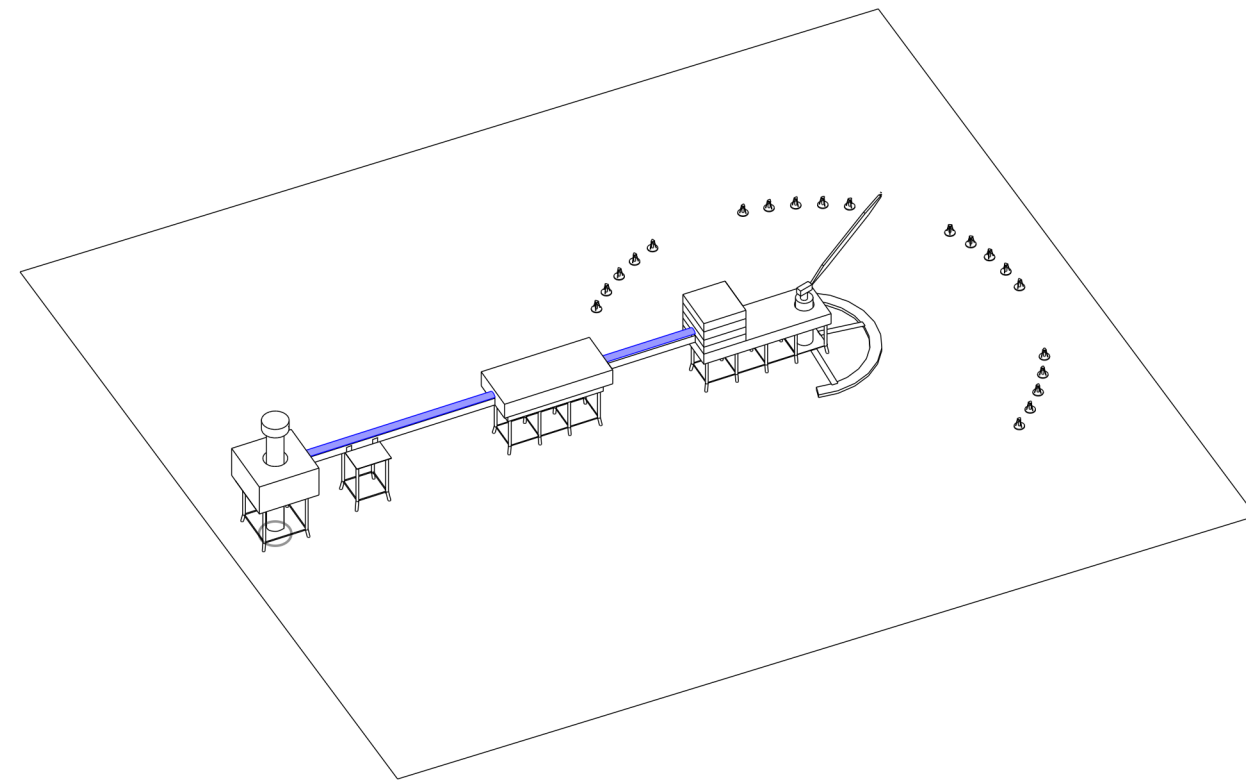
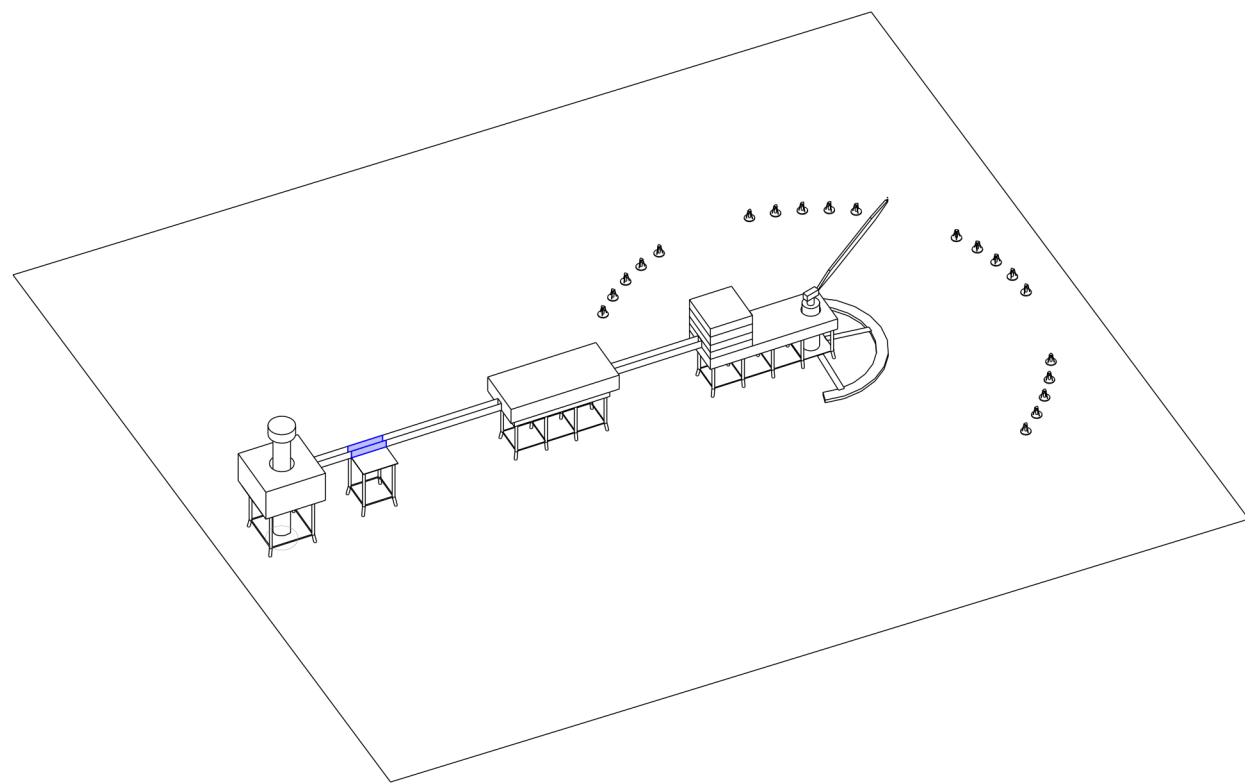
Facade Intervention

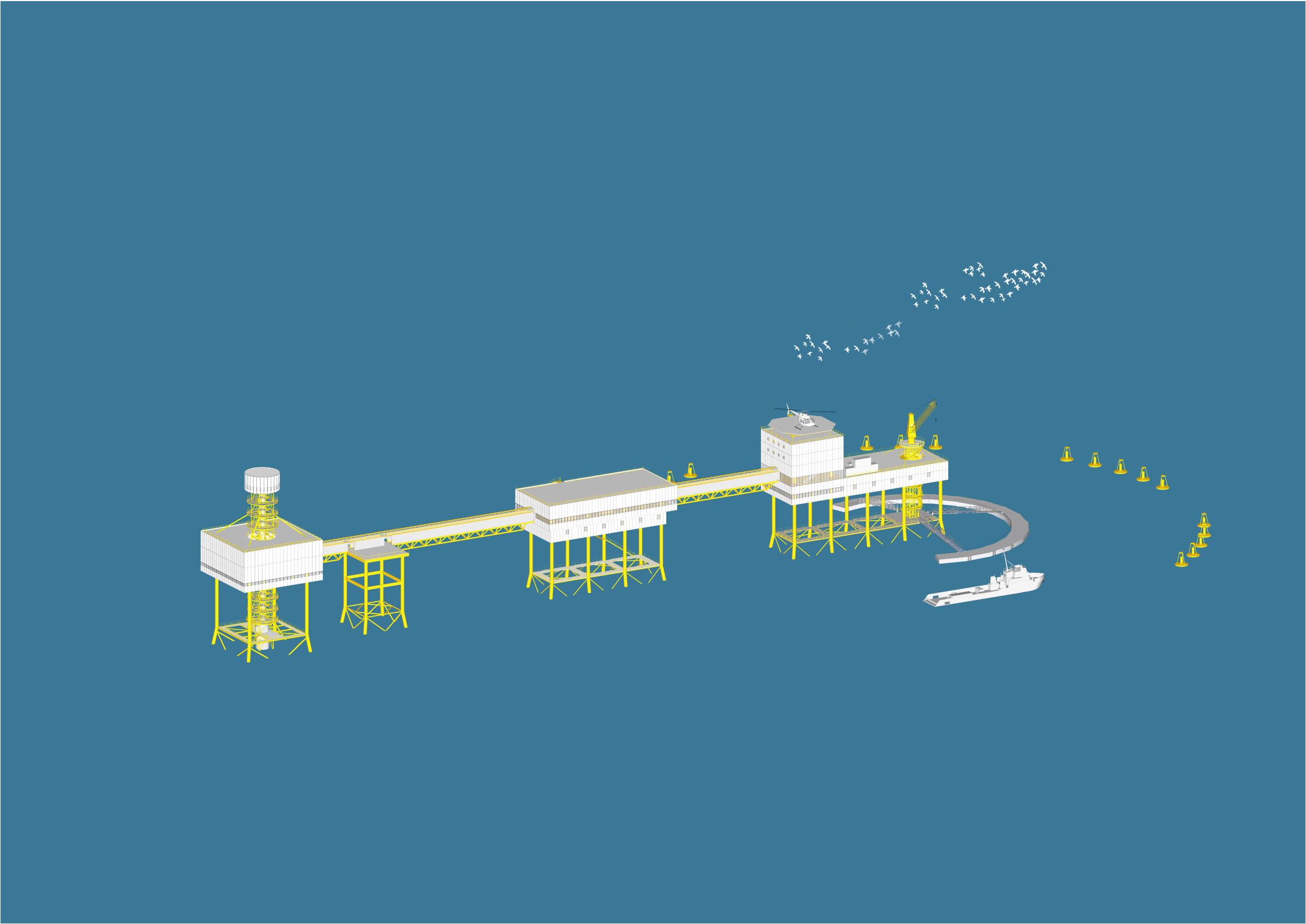


Volume Intervention

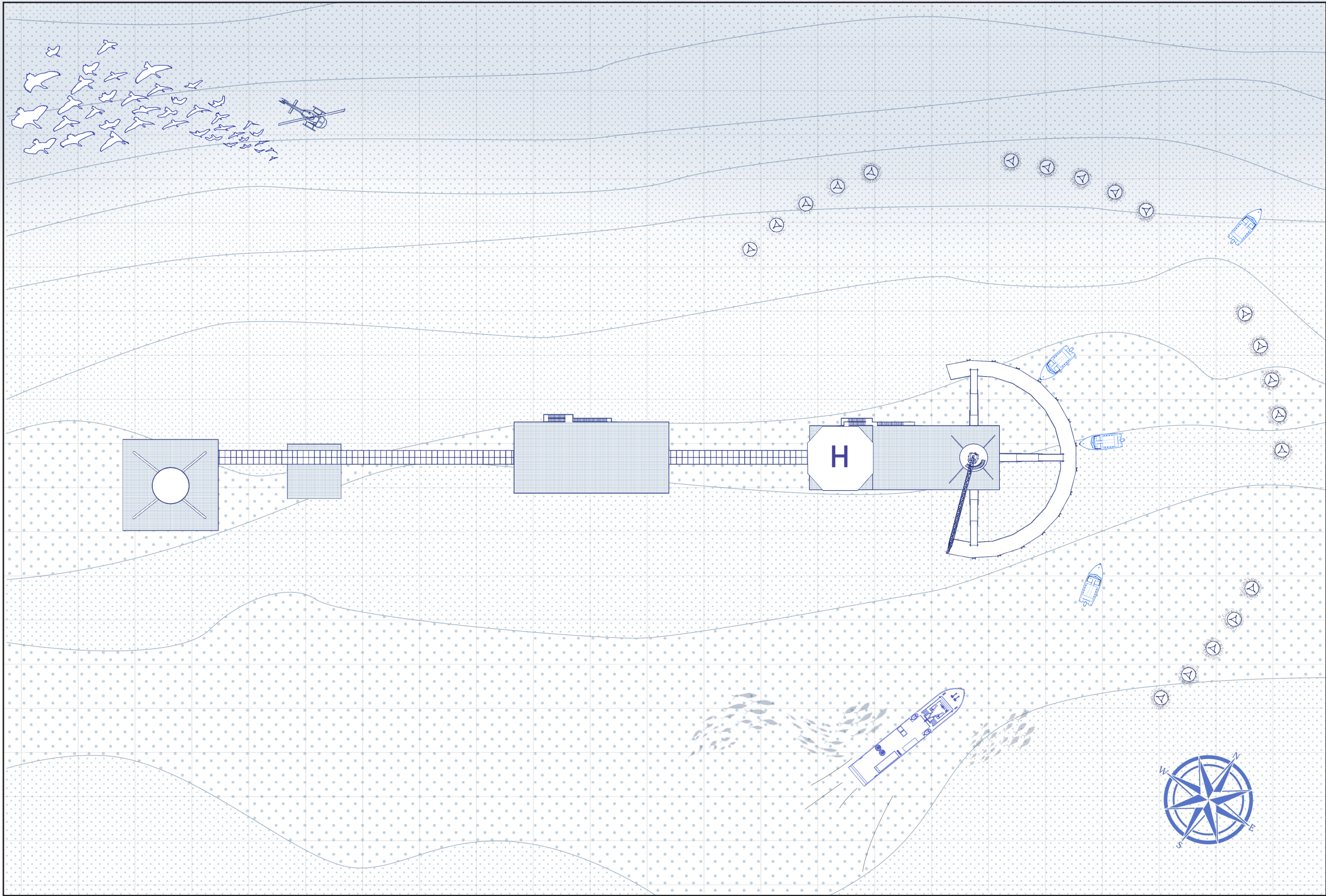




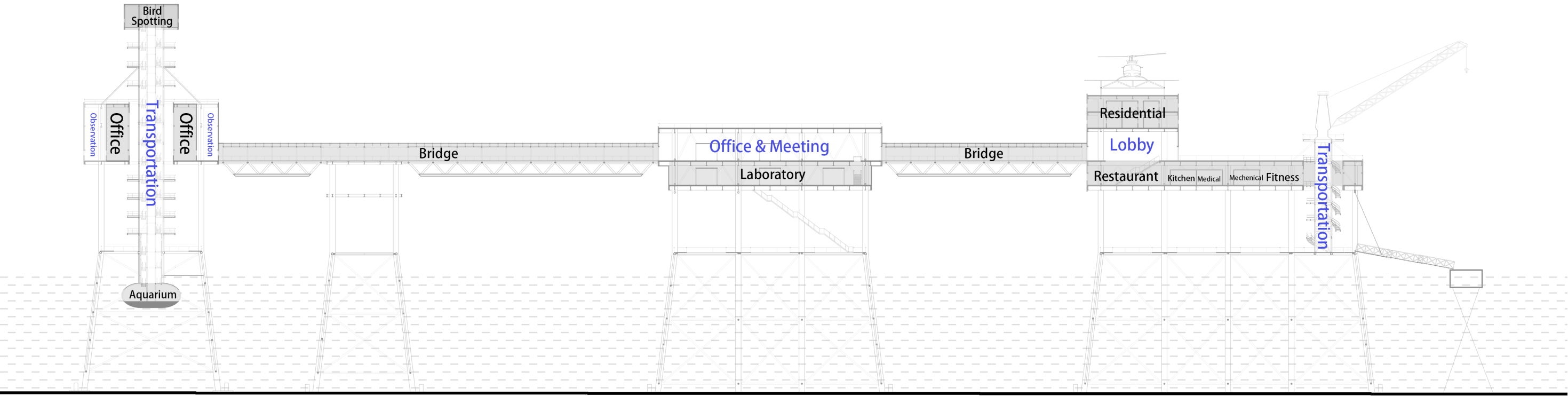




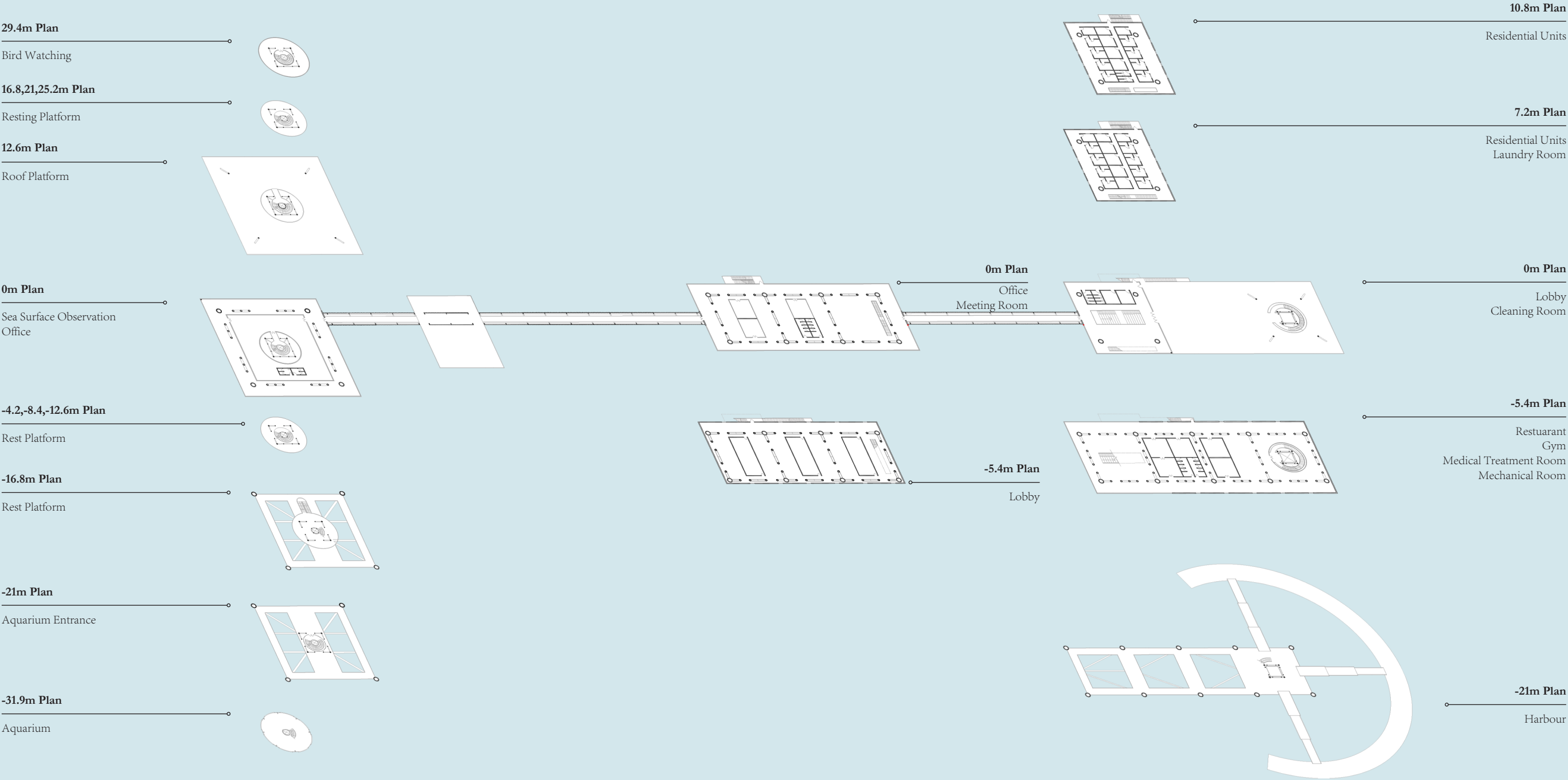
Master Plan



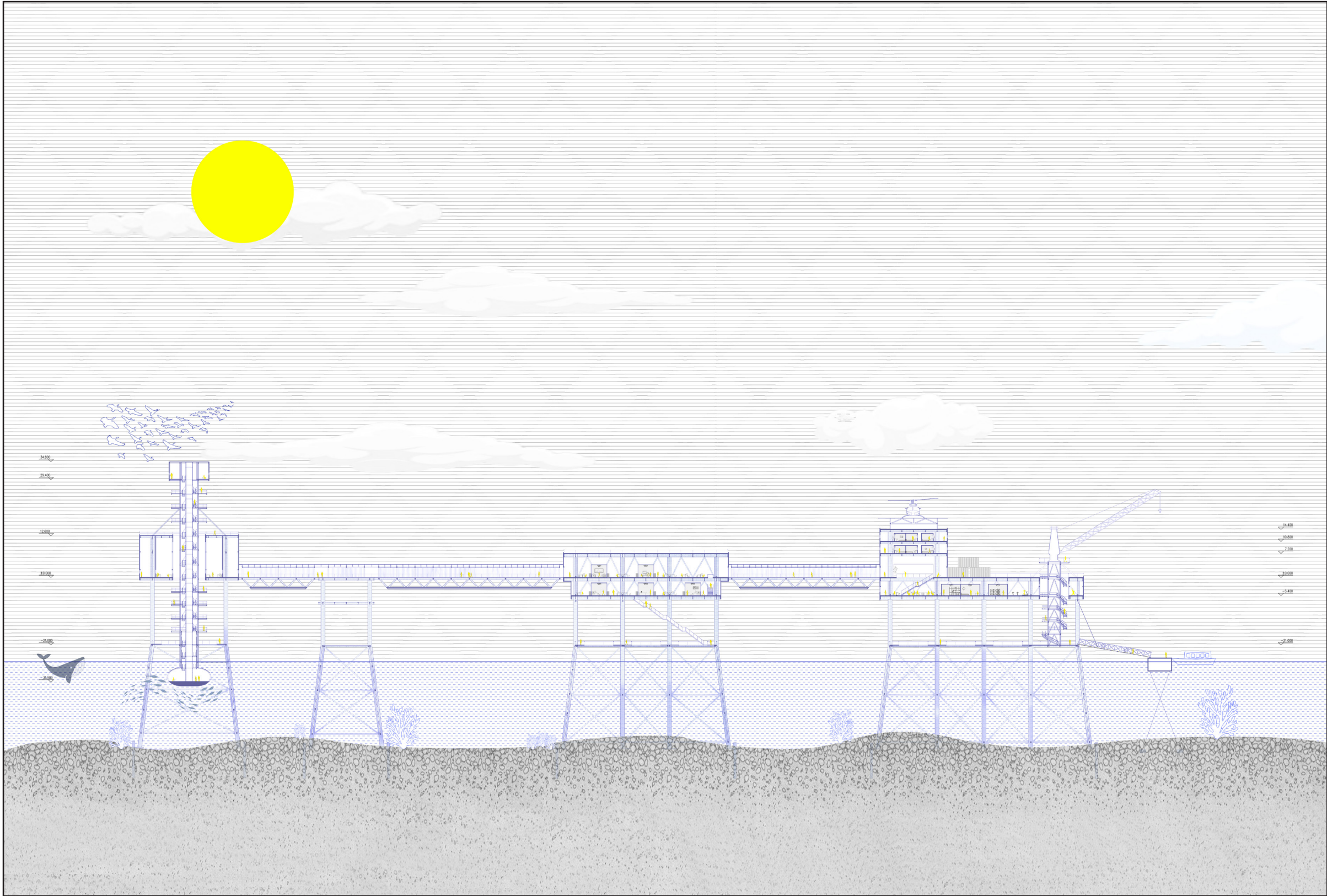
Program



Plan

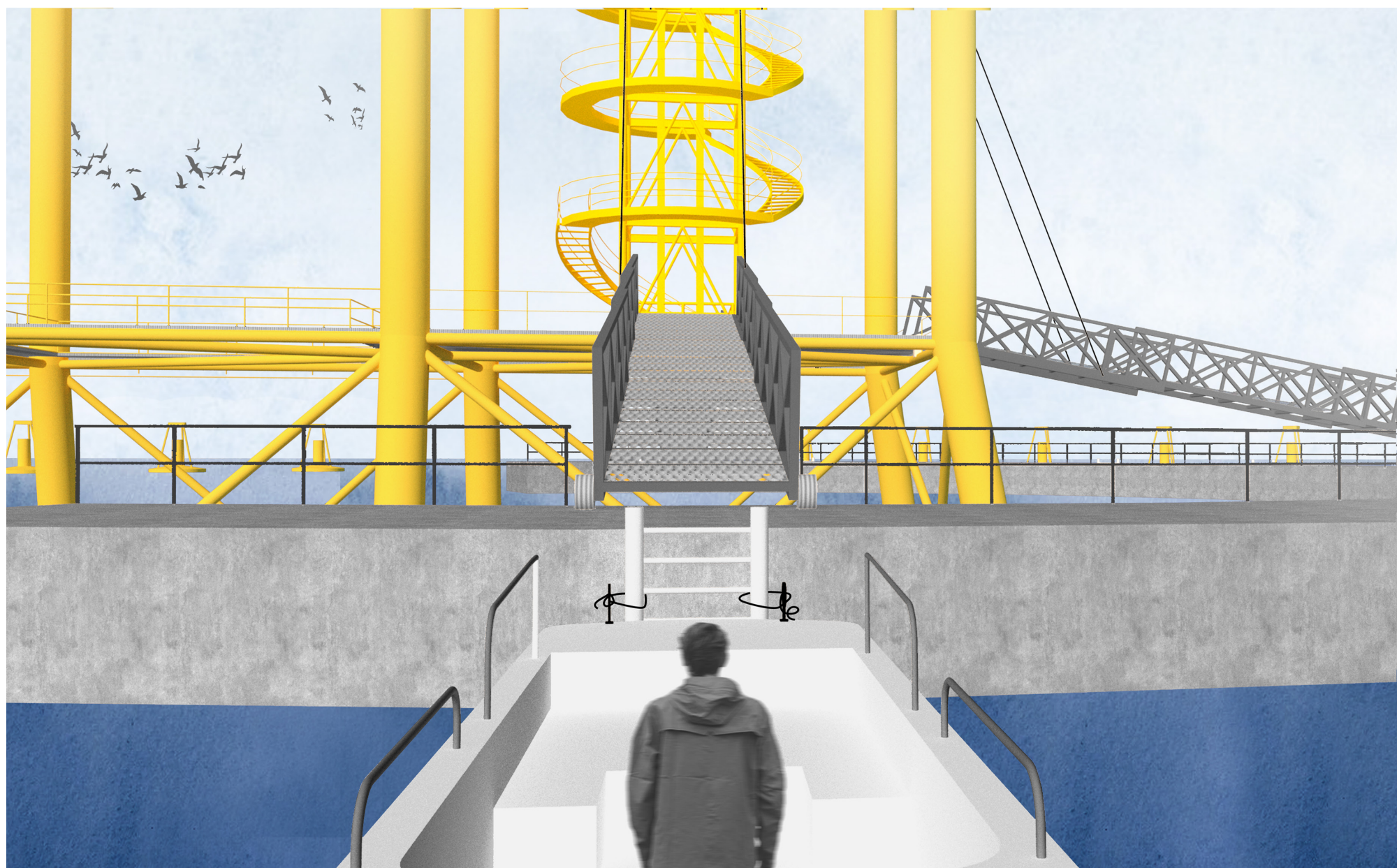


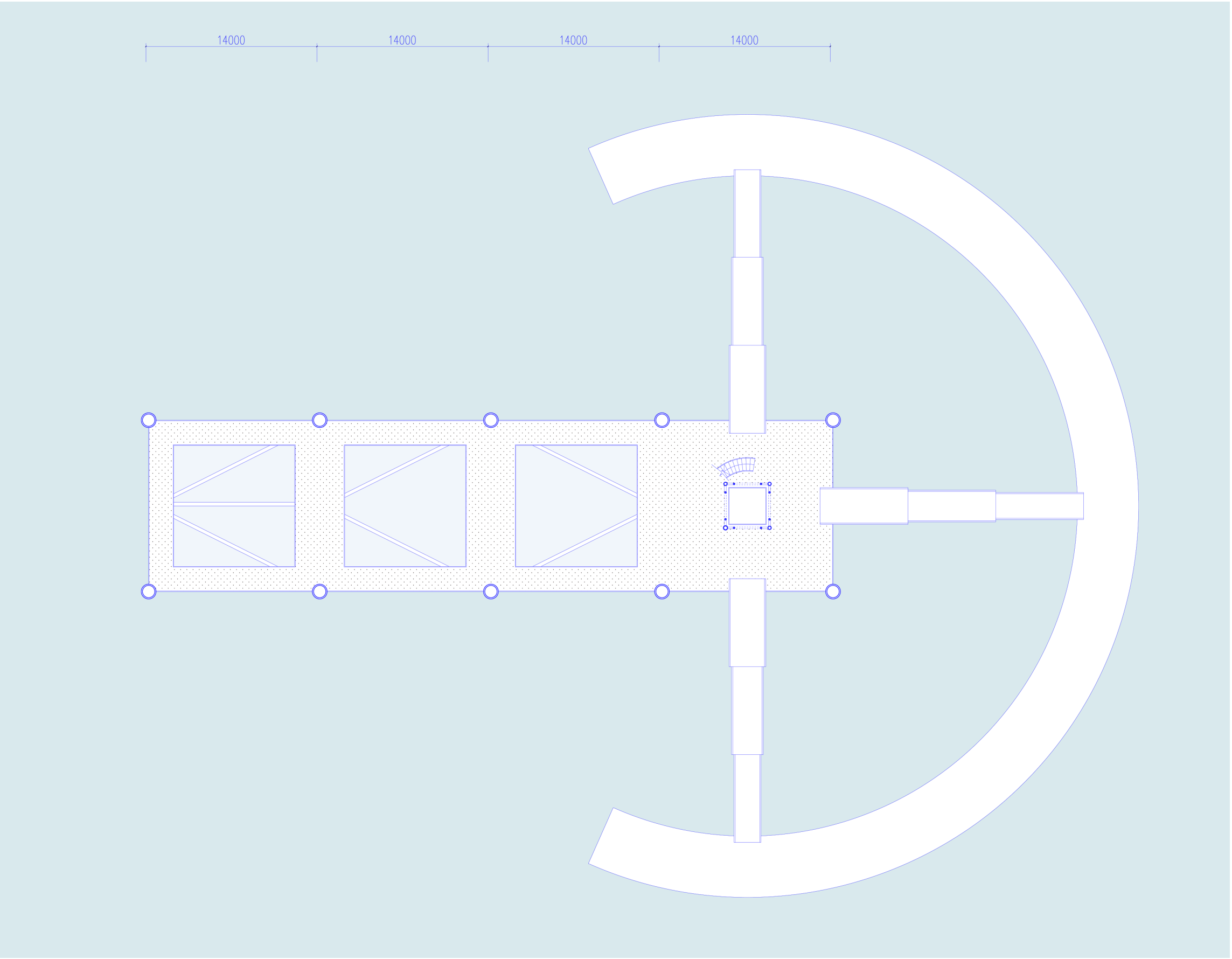
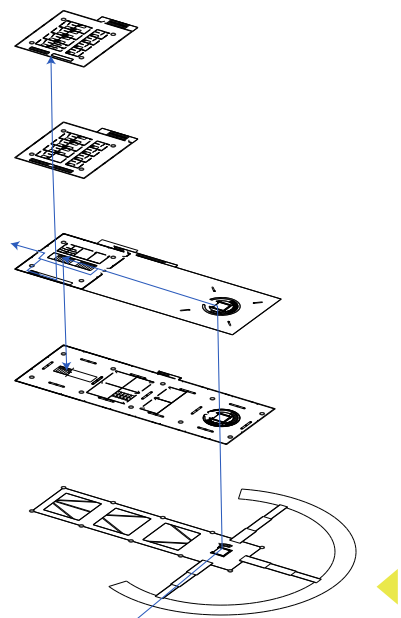
Overall Section



Renderings and Floor Plans

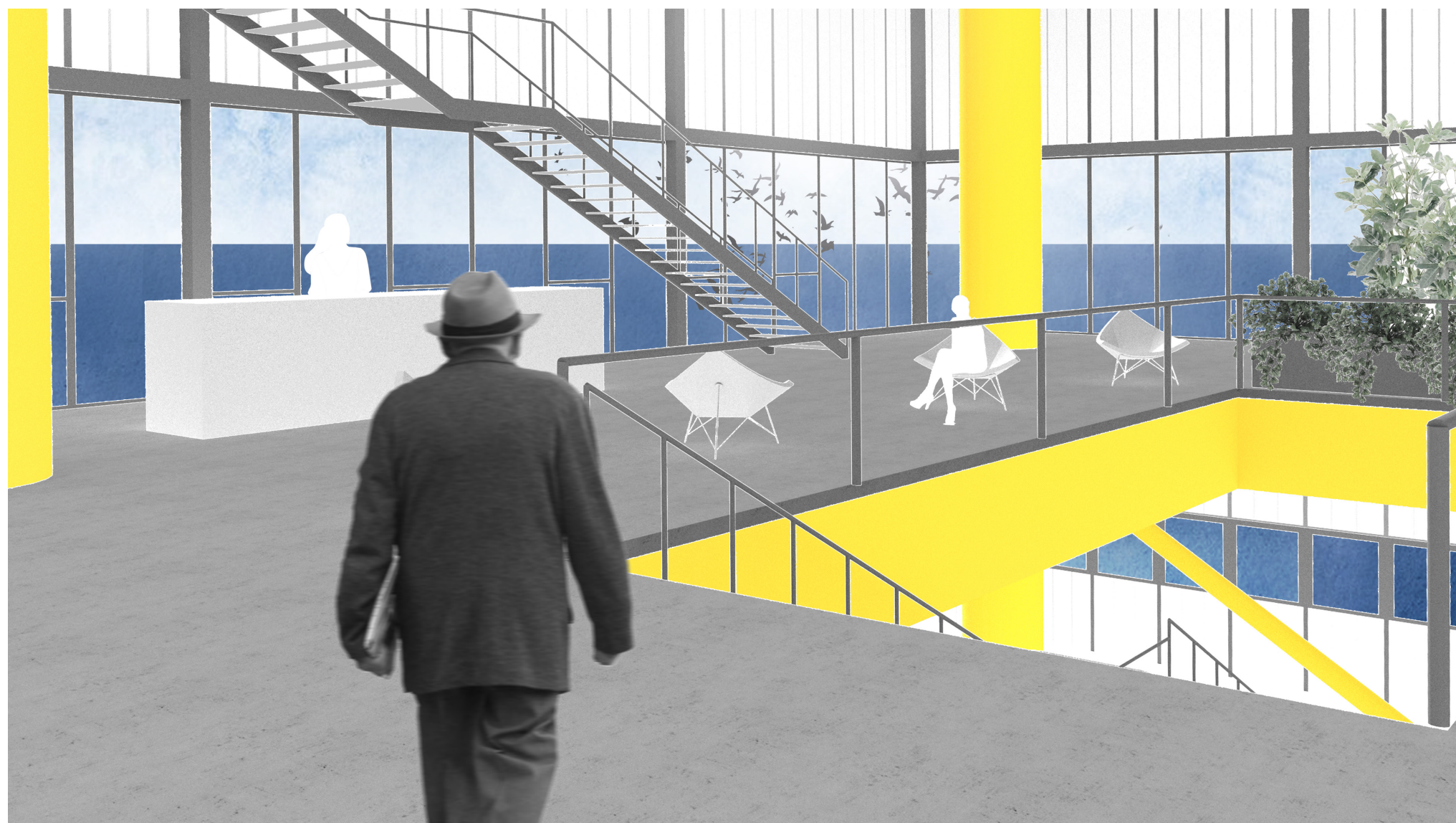


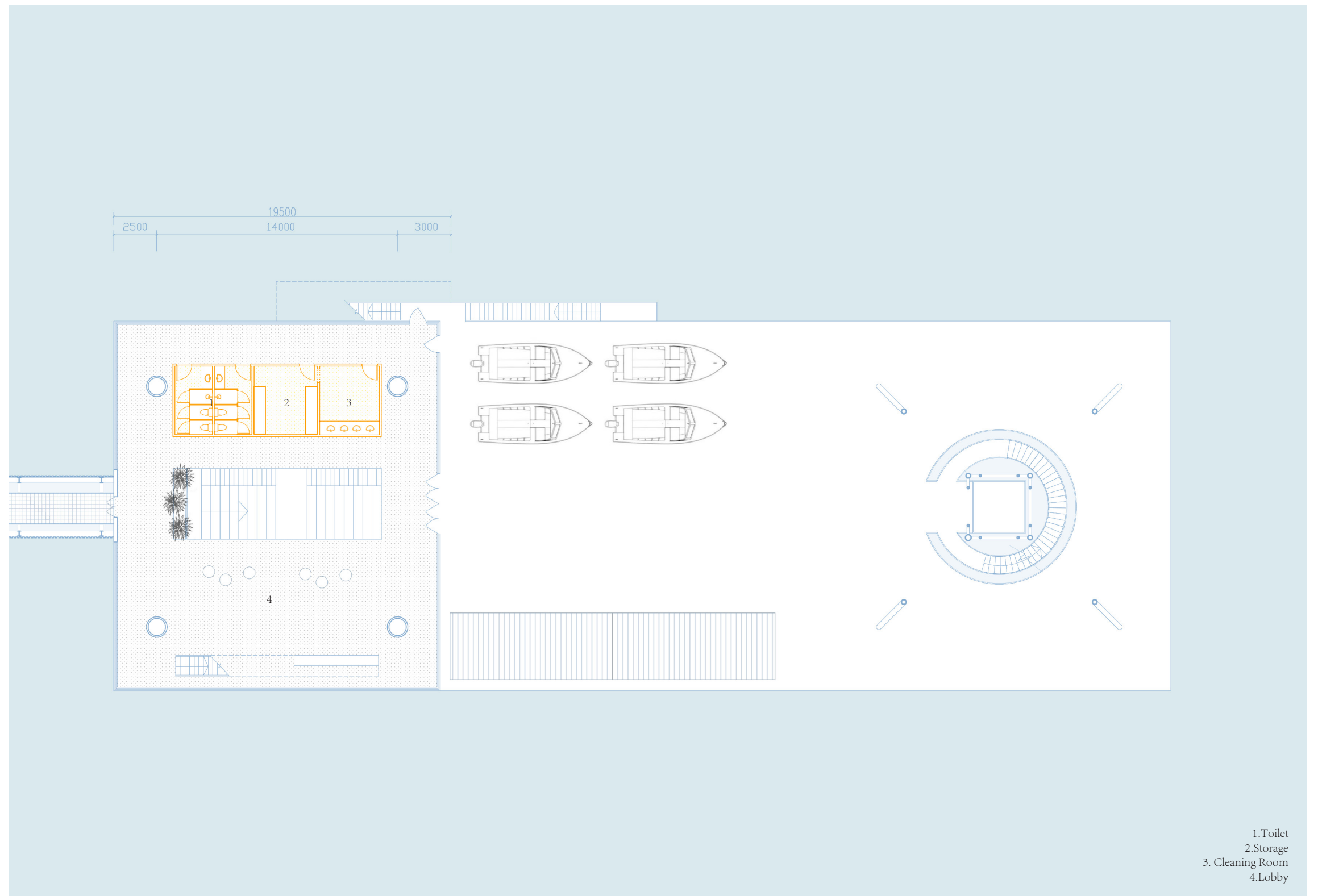
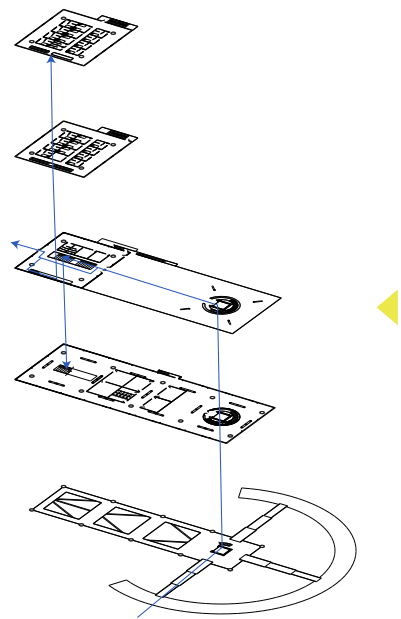




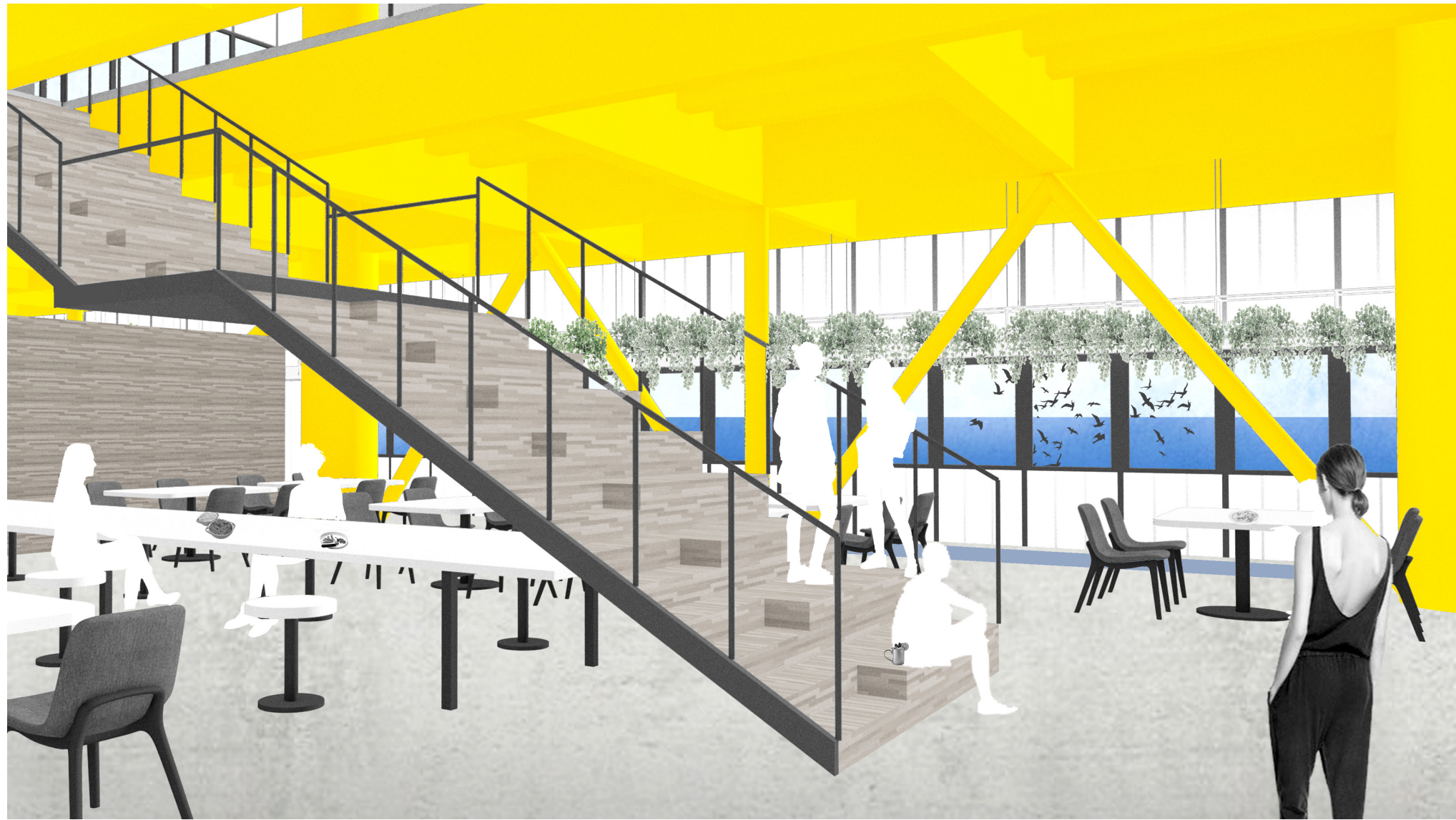


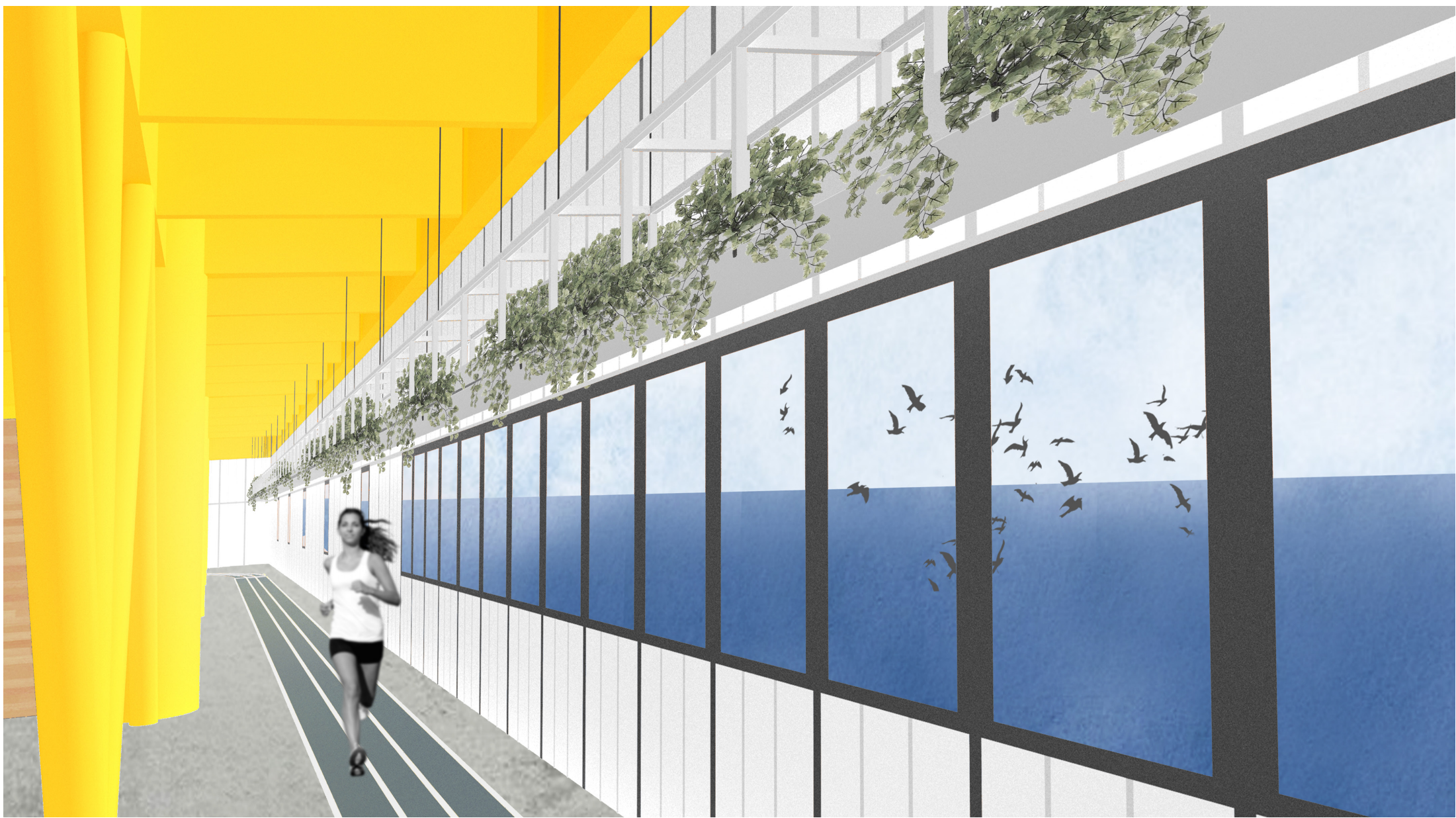




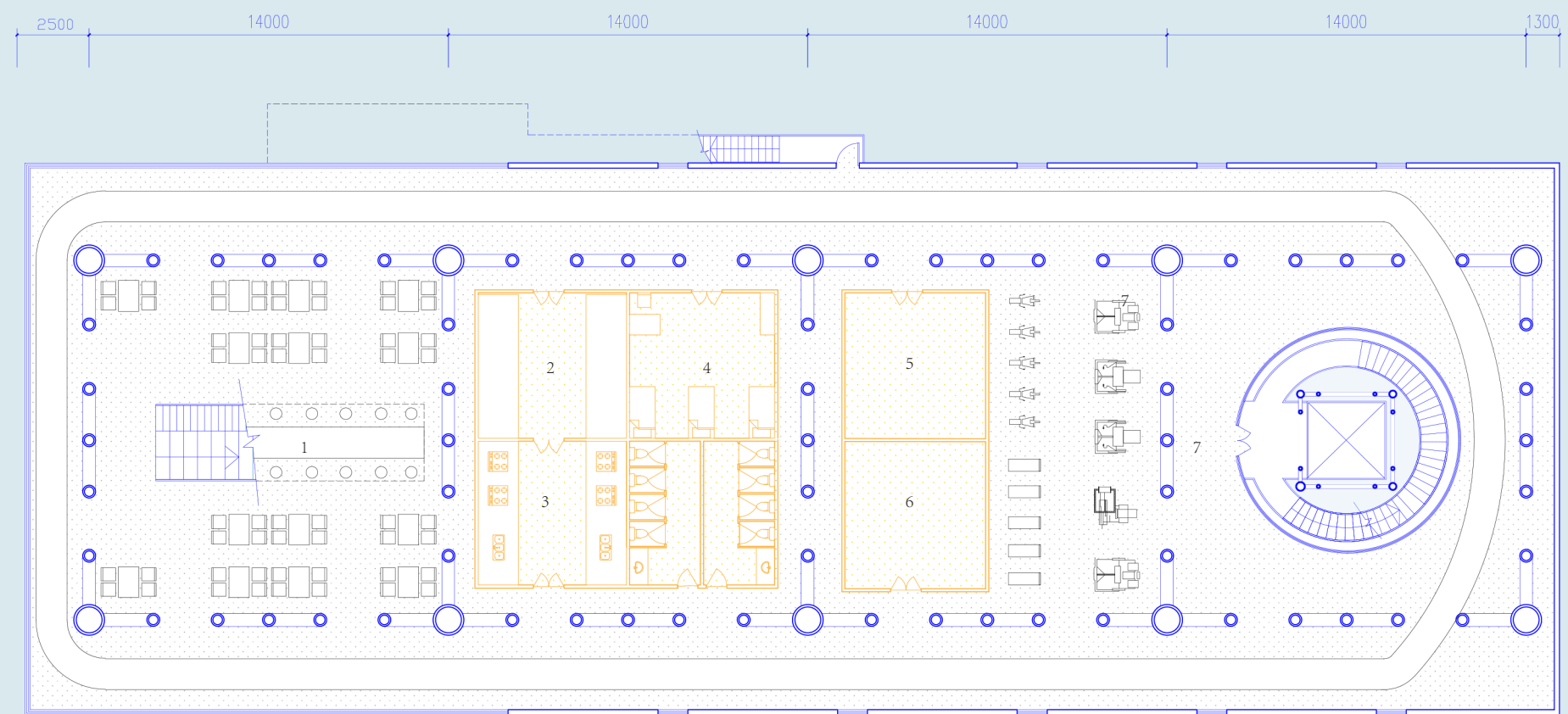
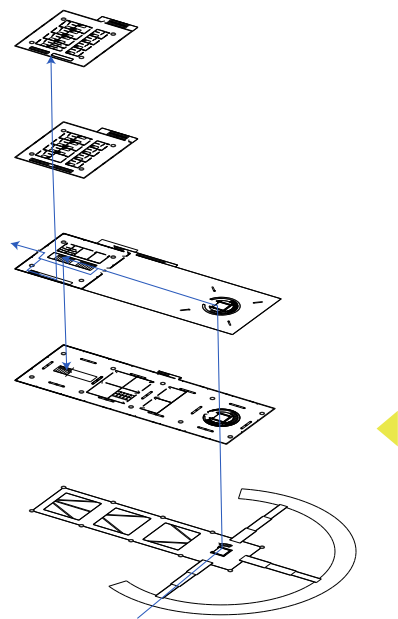


- 1.Toilet
- 2.Storage
- 3. Cleaning Room
- 4.Lobby





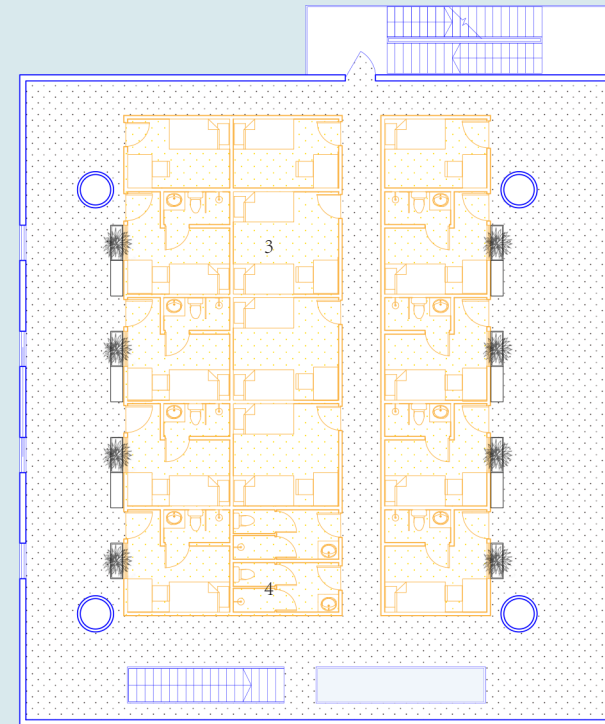
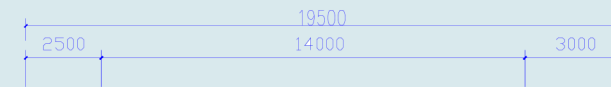
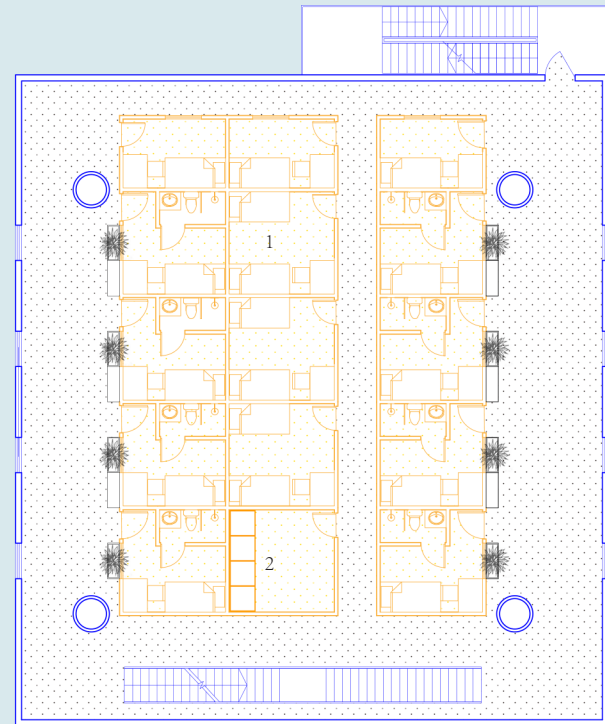
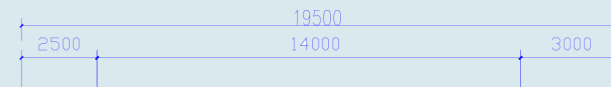
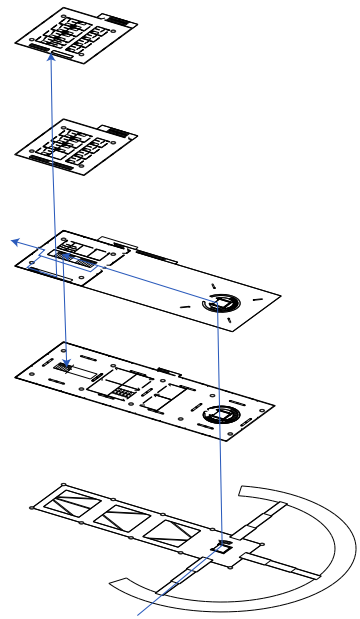




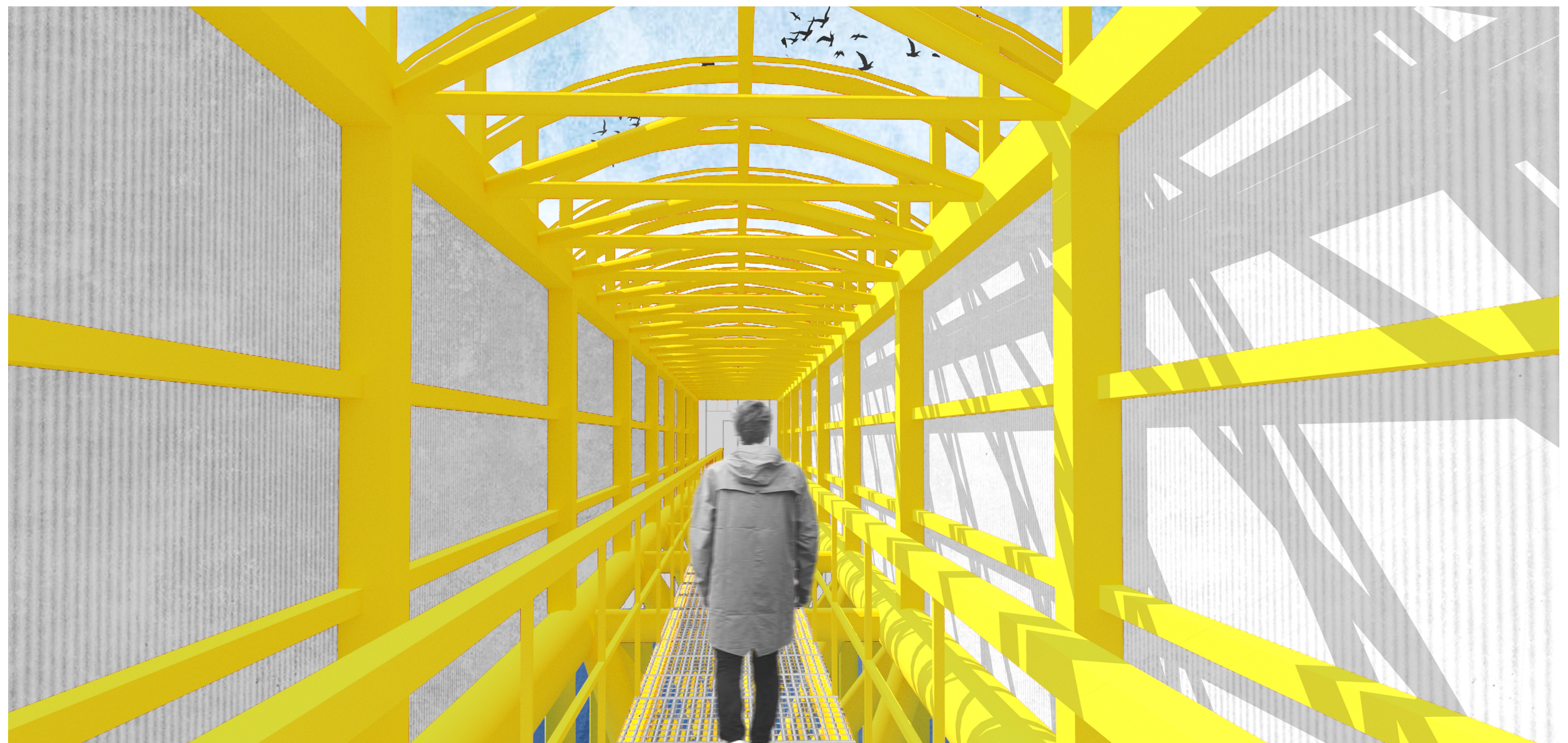
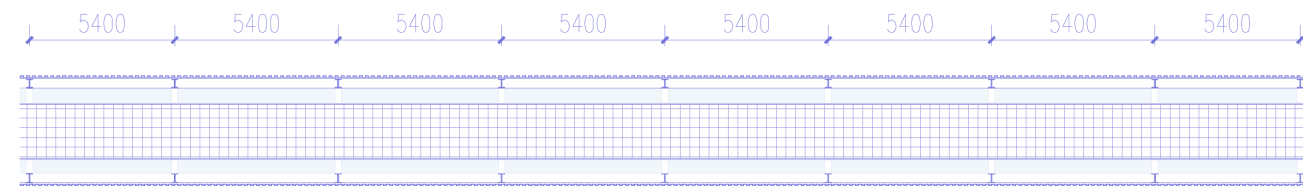
1. Restaurant
2. Kitchen
3. Kitchen Storage
4. Medical Treatment
5. Water related mechanical room
6. Other mechanical room
7. Fitness





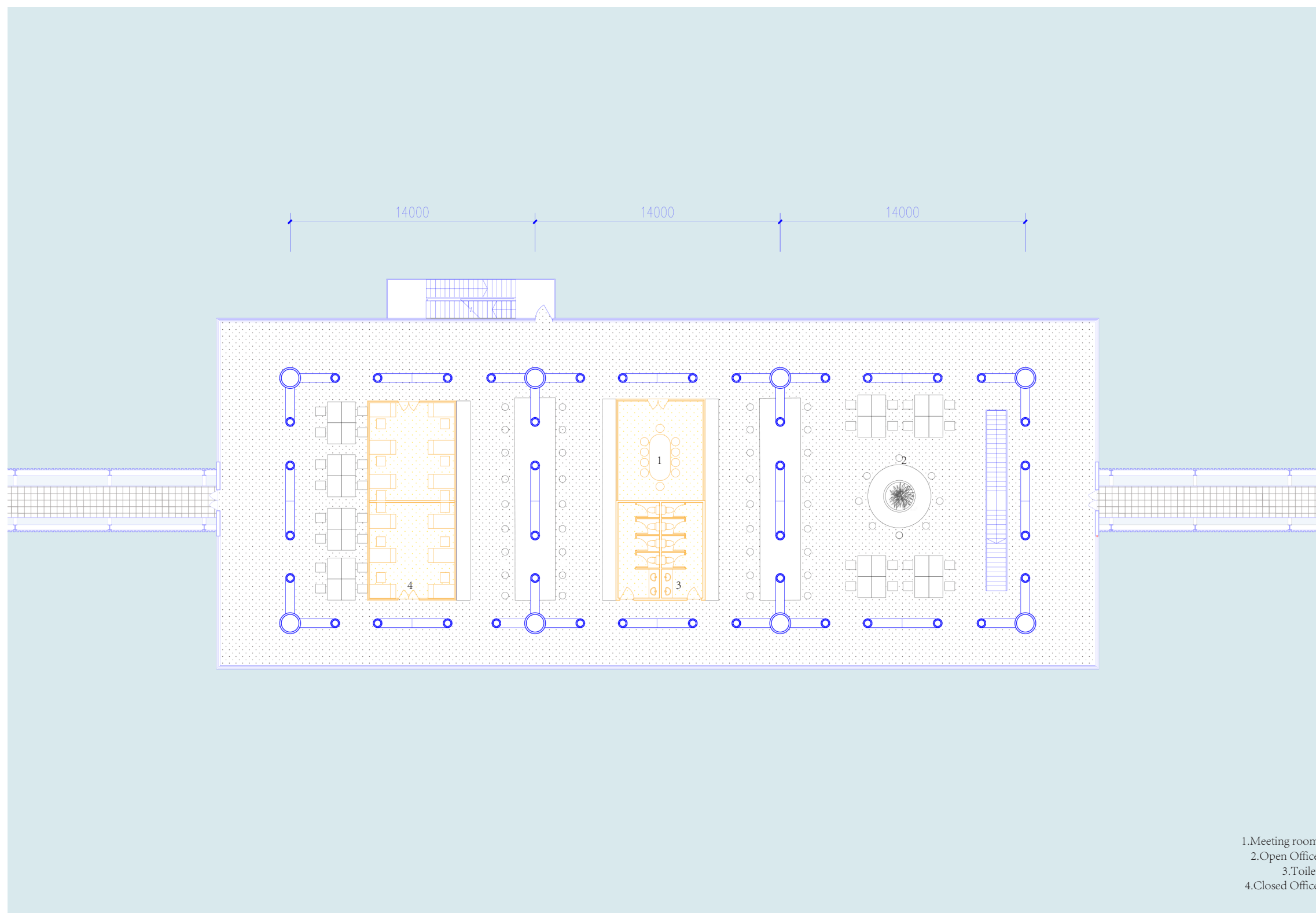
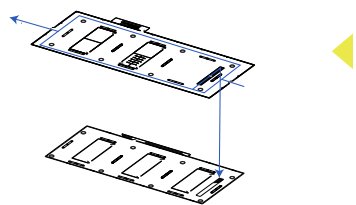


- 1. Single bed room
- 2. Laundry room
- 3. Double bed room
- 4. Toilet and shower

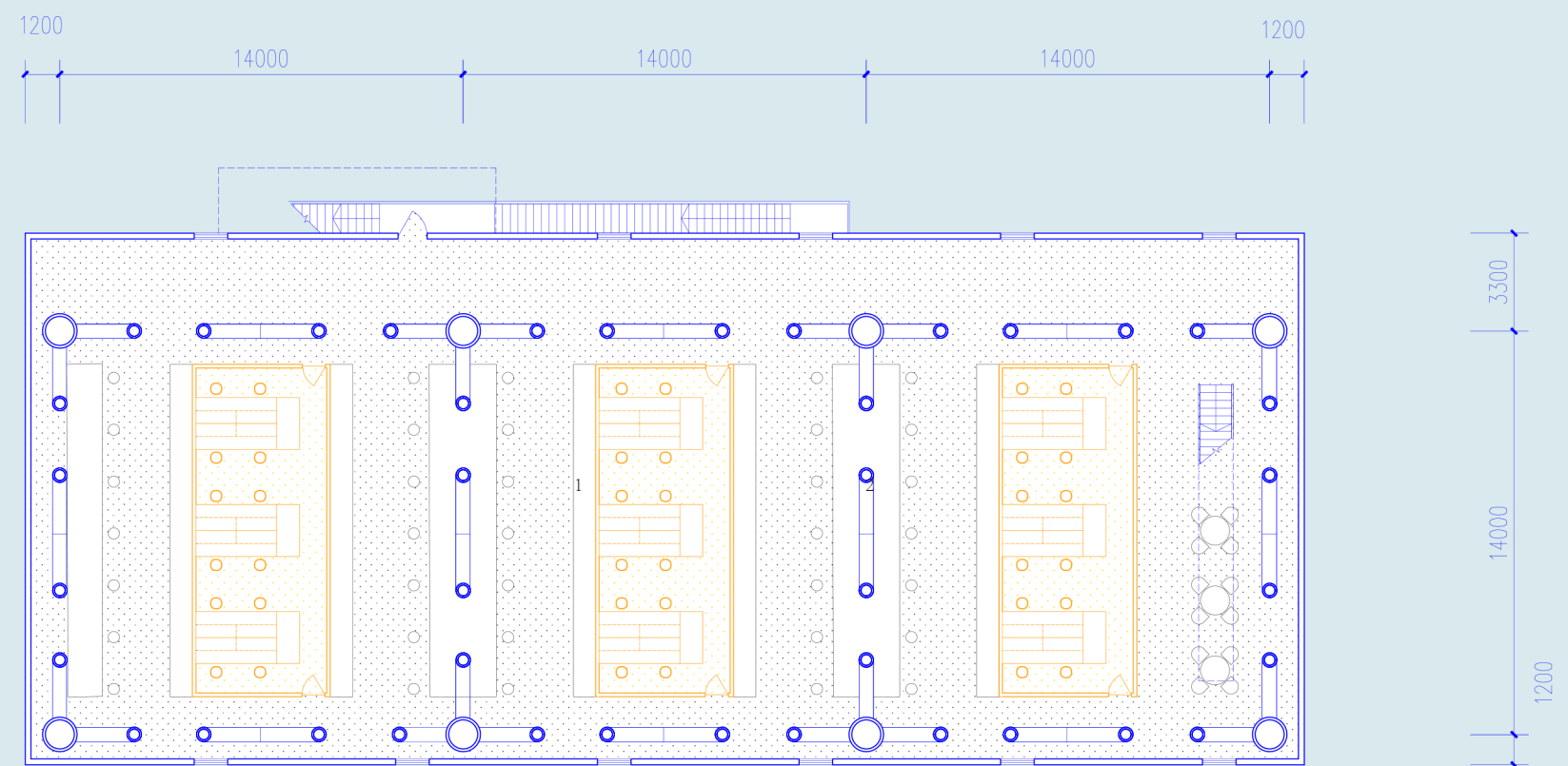
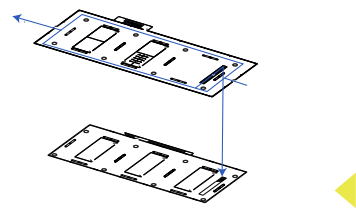




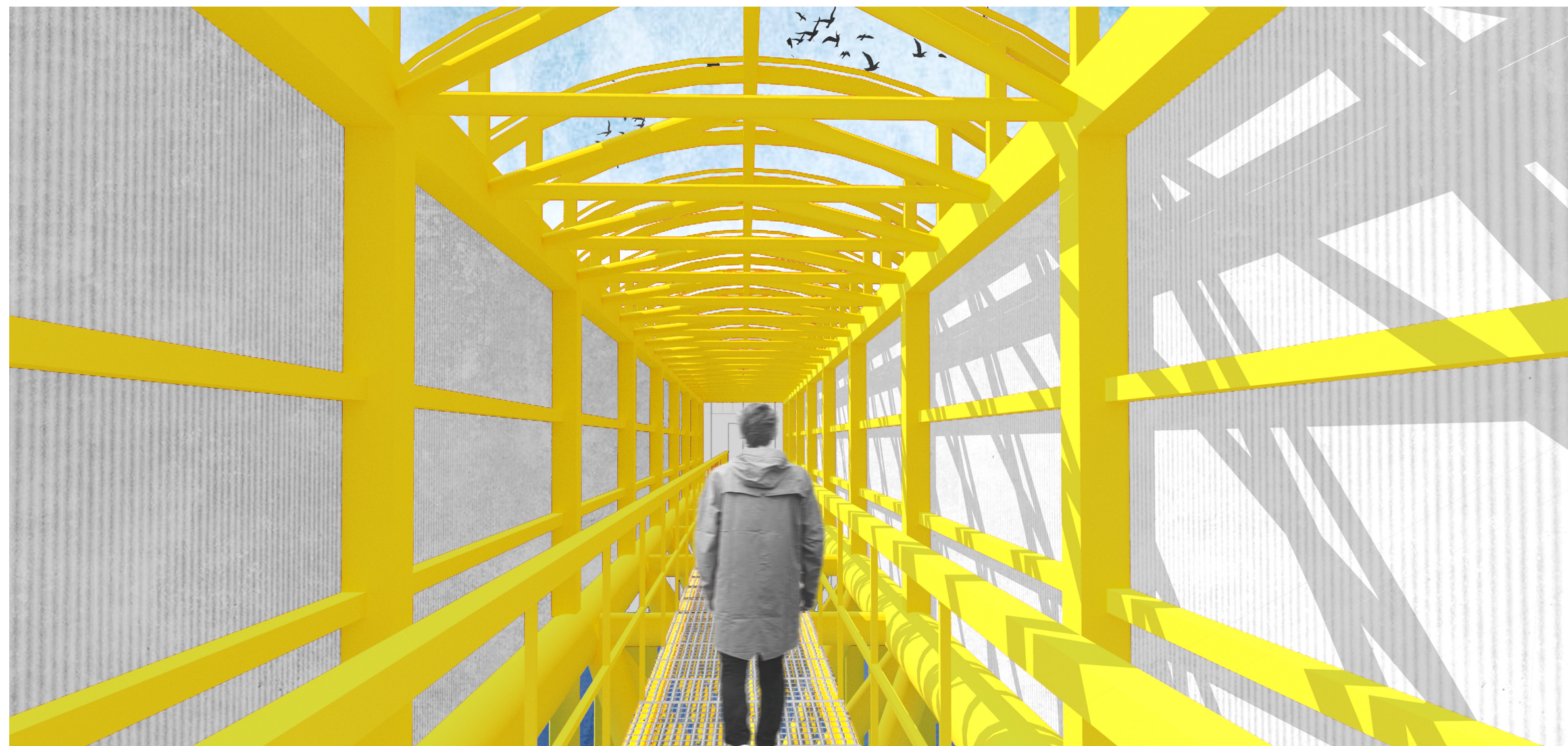
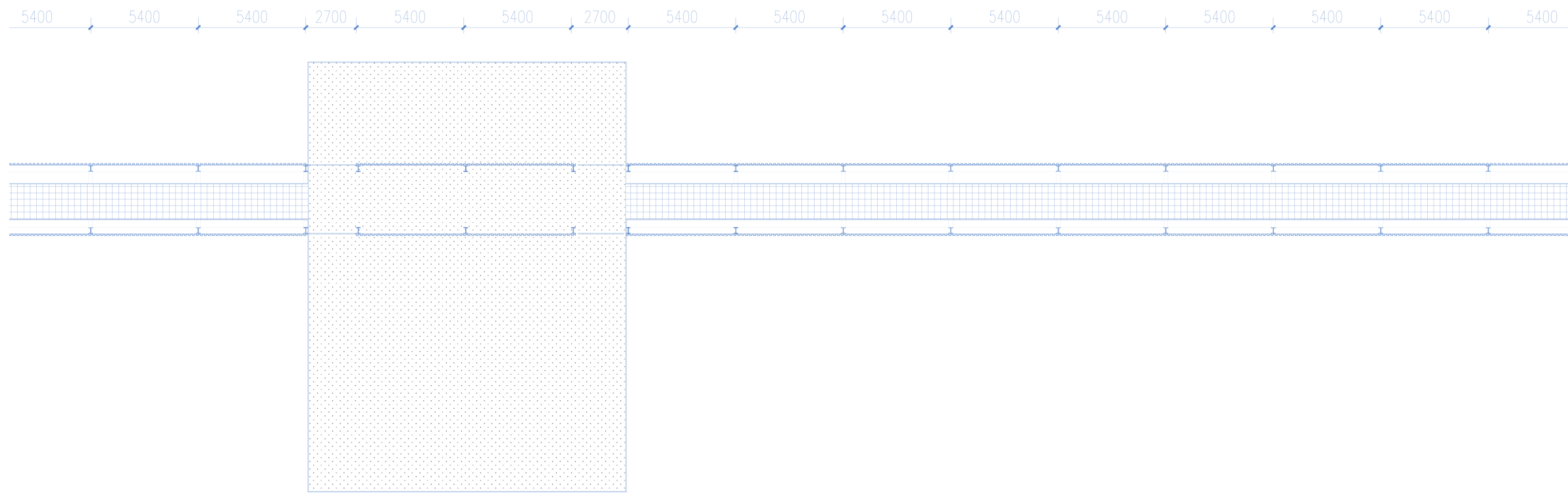


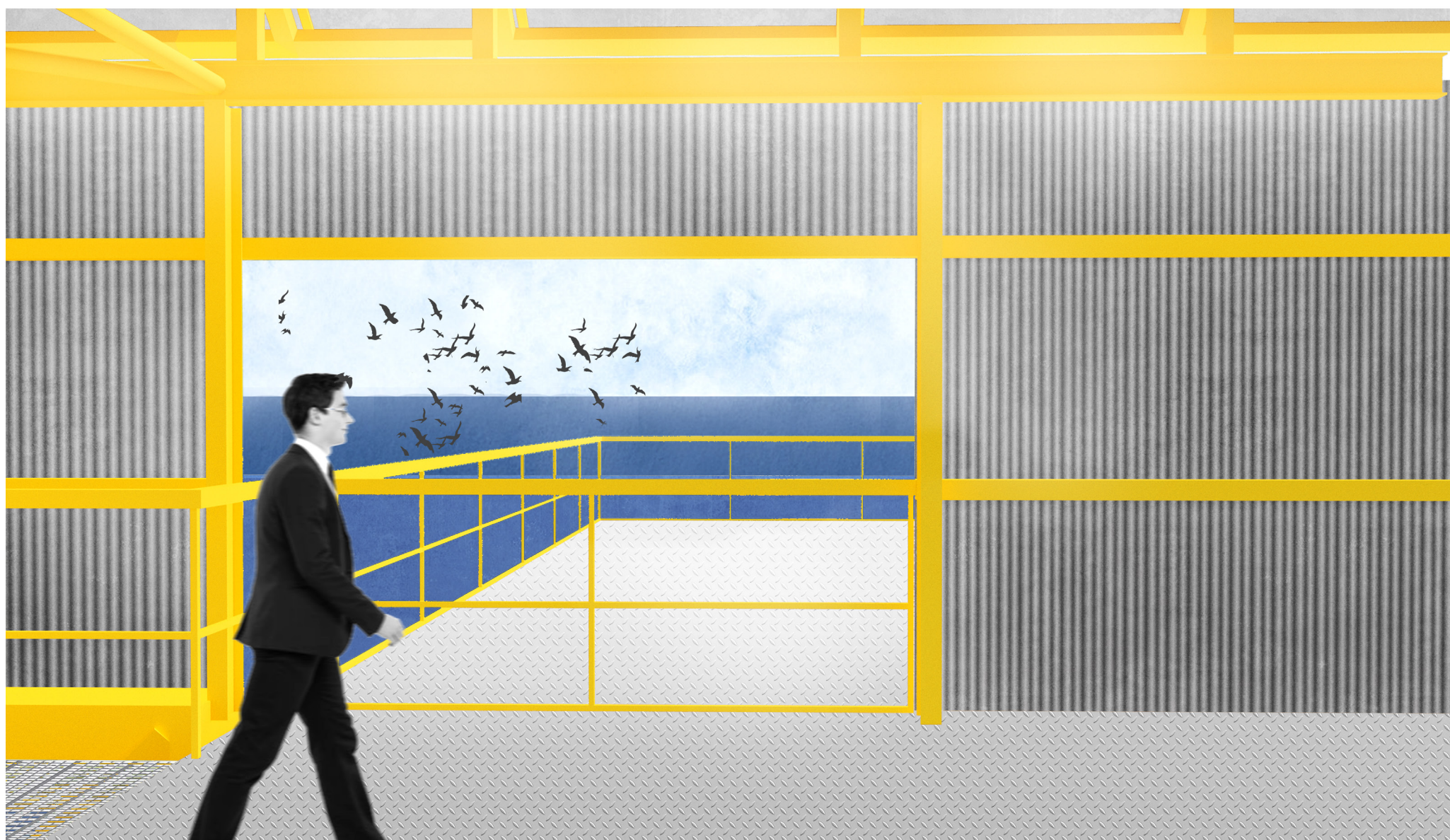


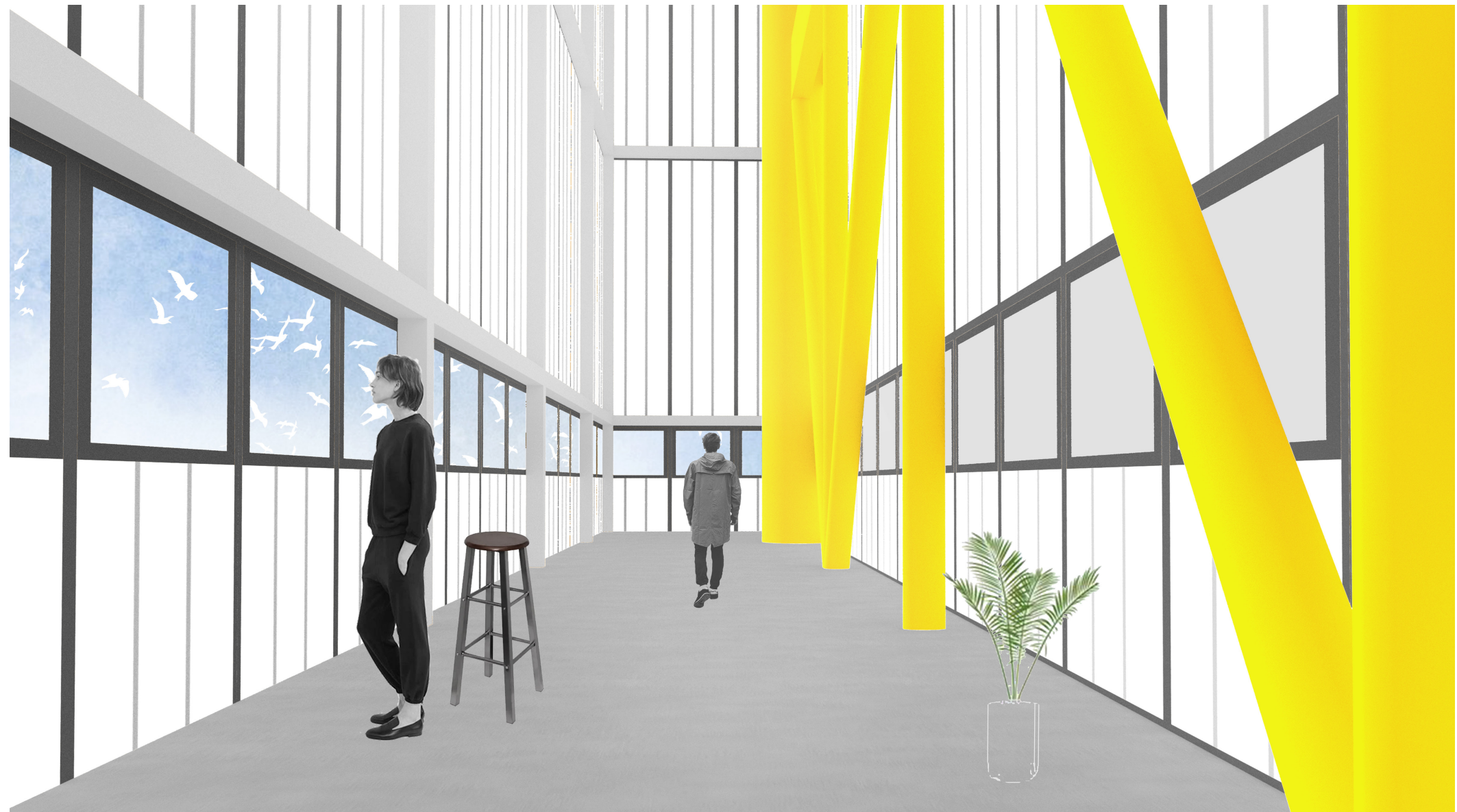




1.Closed Lab
2.Open Lab



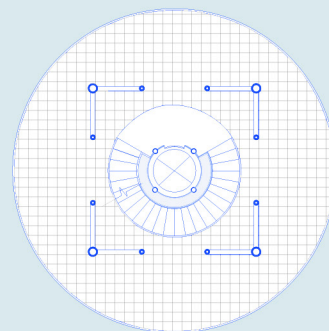
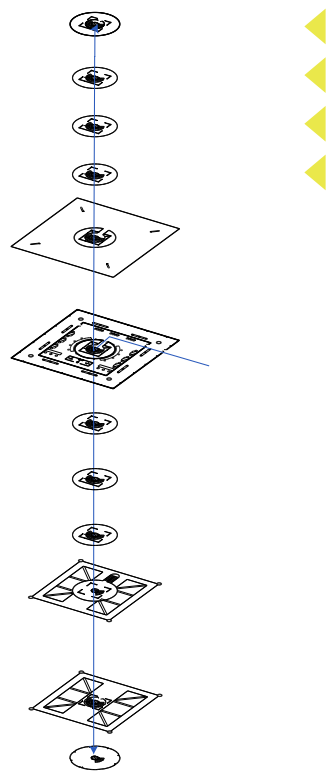




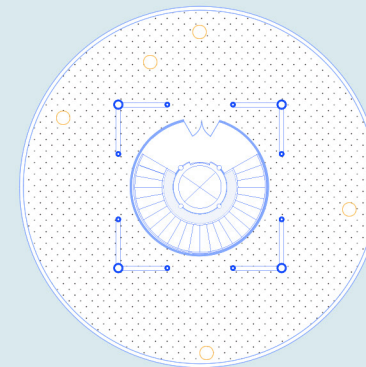




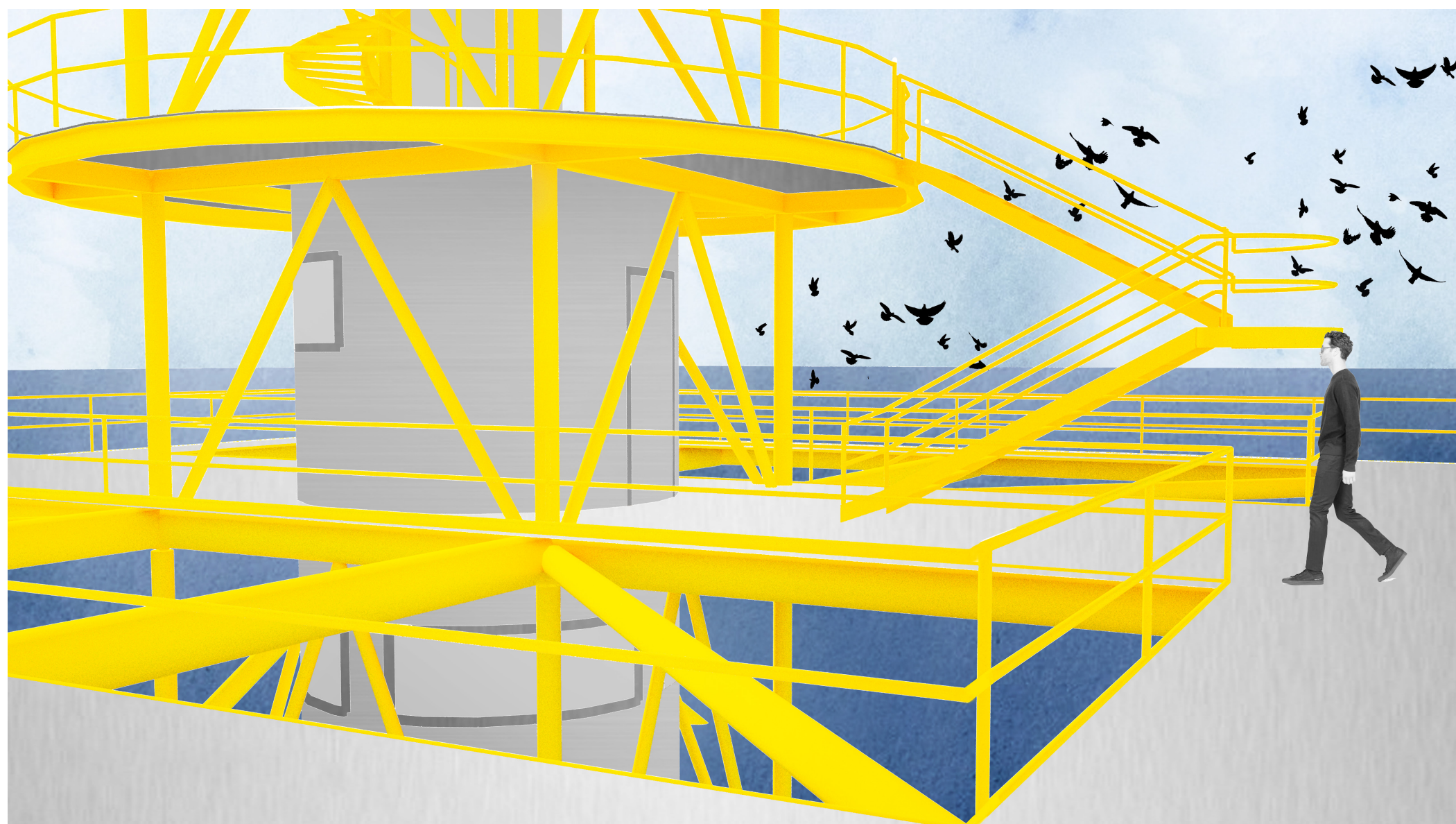


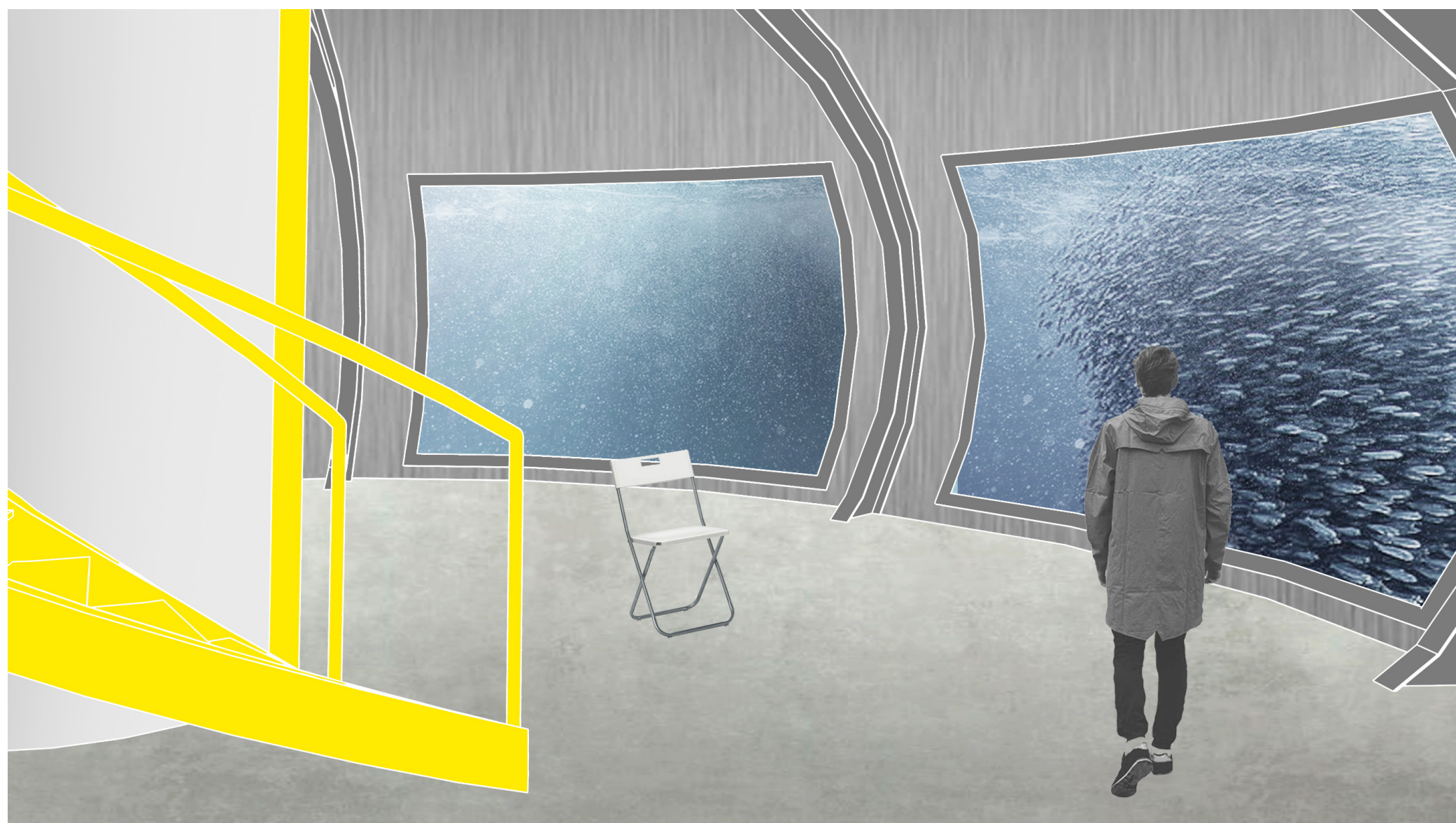


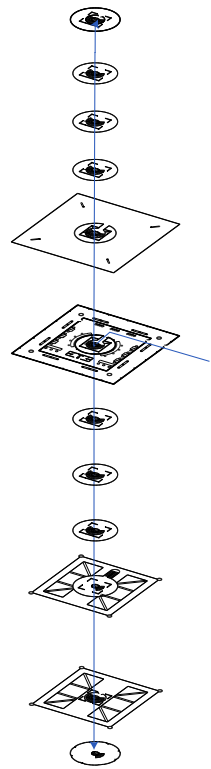
12.6m, 16.8m, 21m, 25.2m, Plan



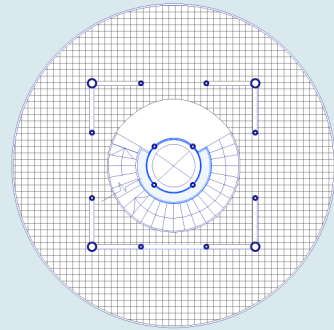
29.4m Plan





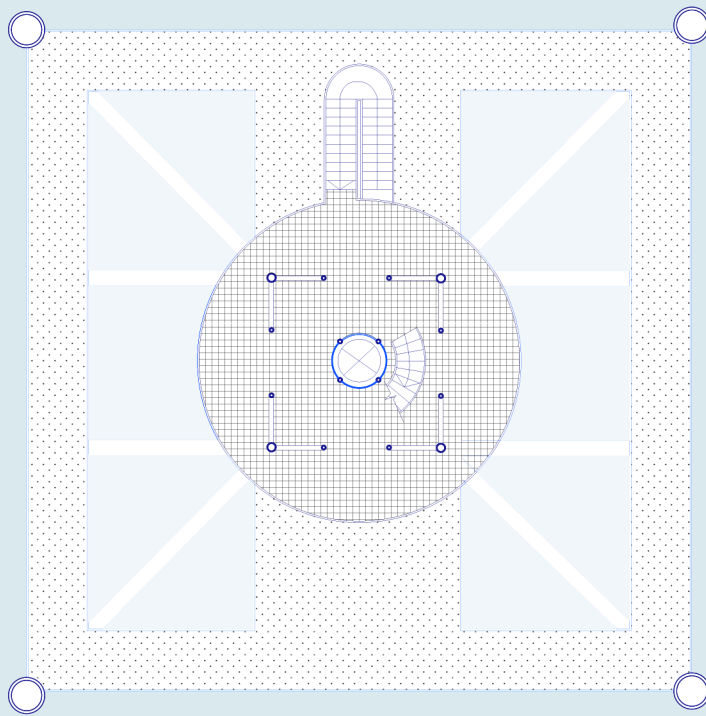


2600 5400 2600



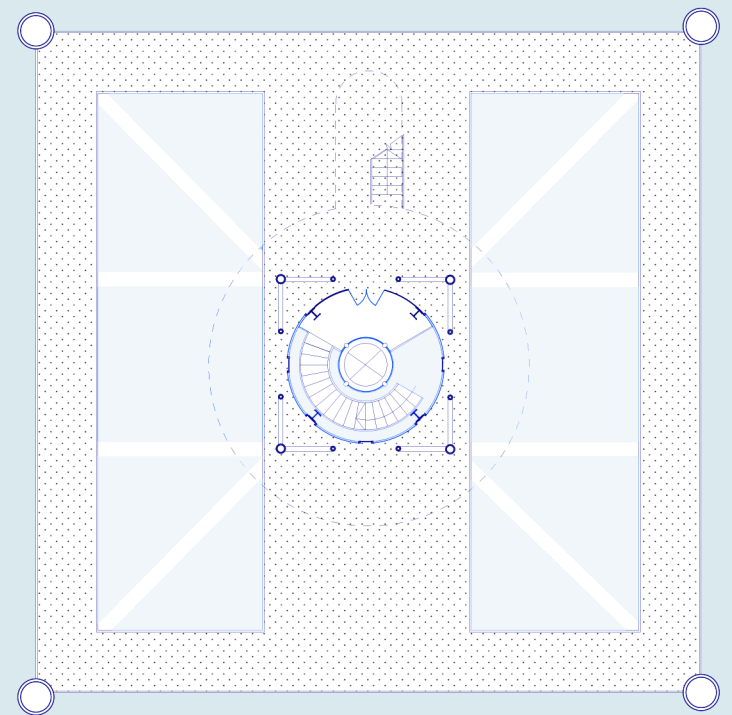
-4.2m,-8.4m,-12.6m Plan

8200 5400 8200



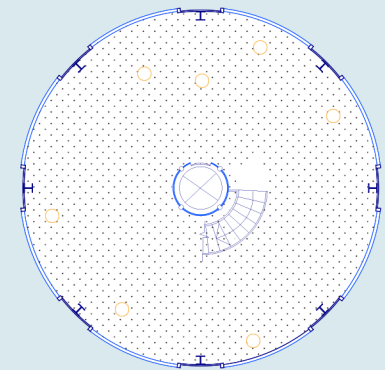
-16.8m Plan

8200 5400 8200



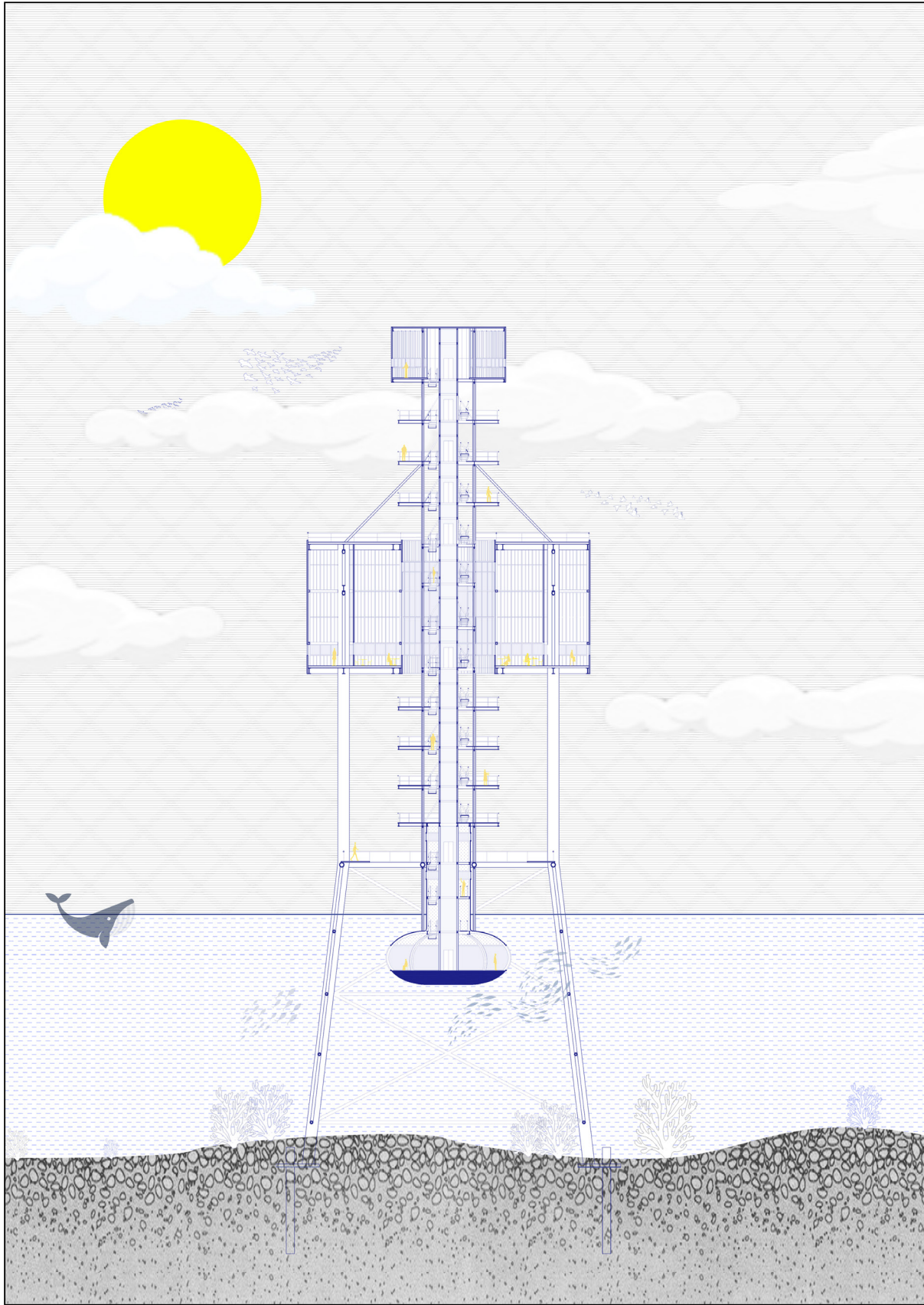
-21m Plan

11800

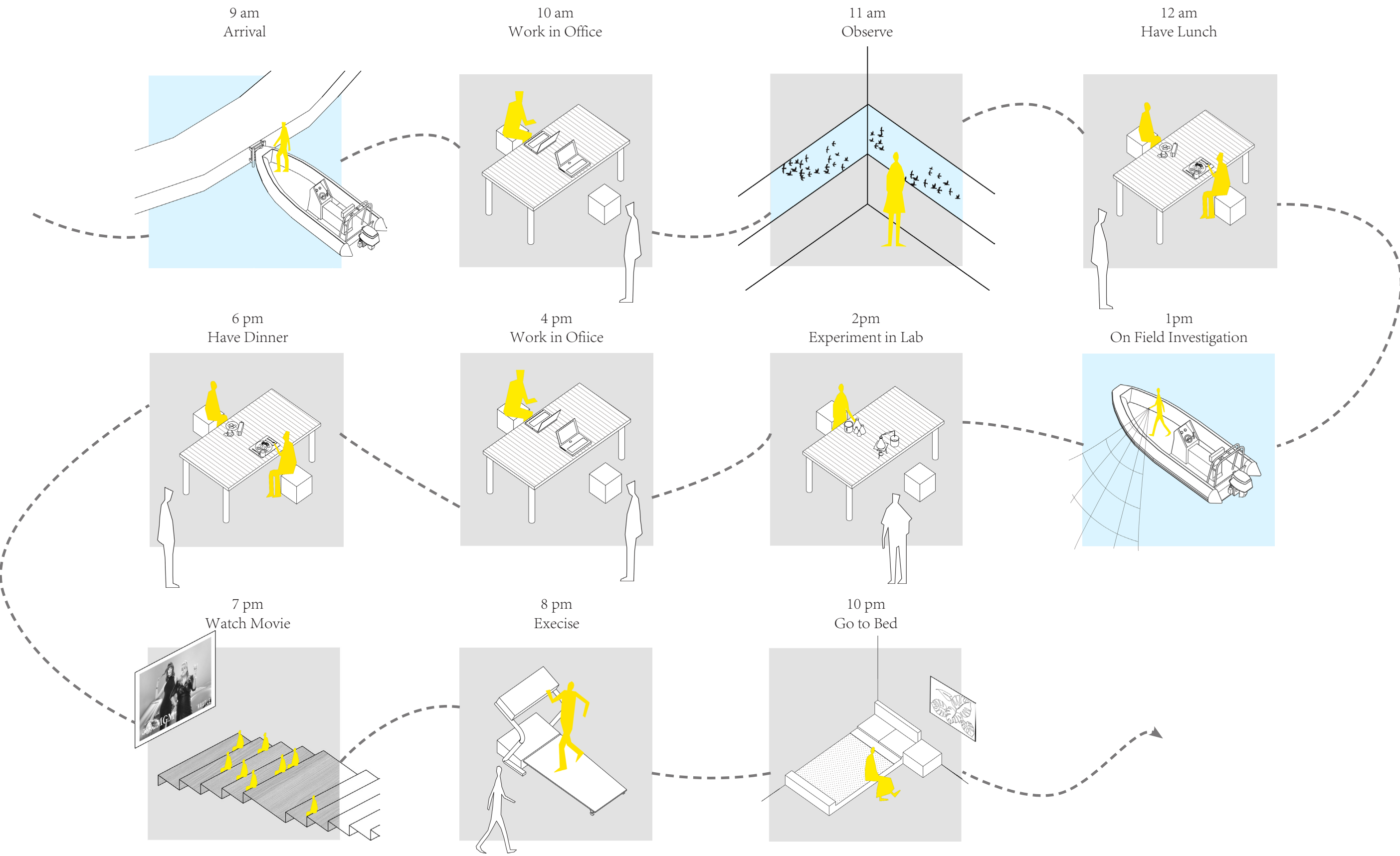


-31.9m Plan(Aquarium)

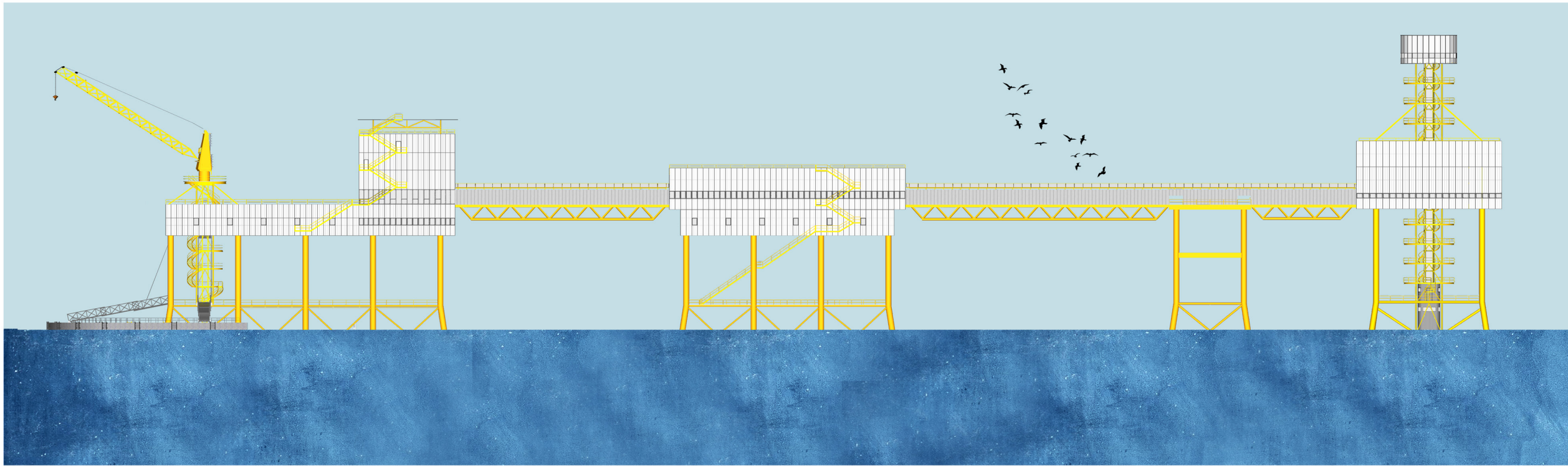
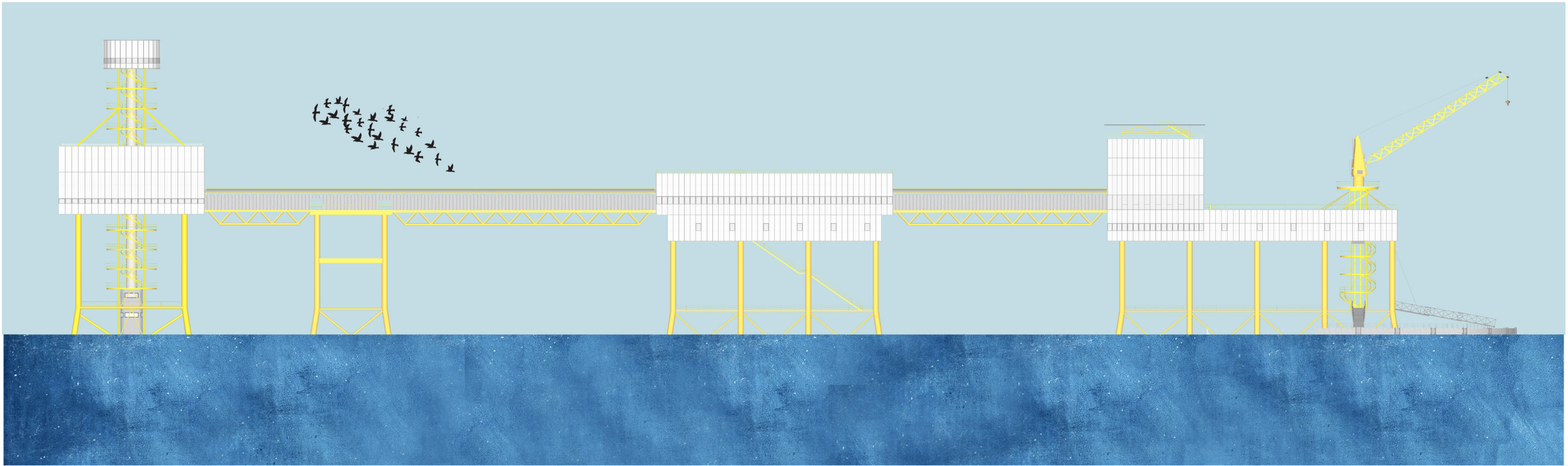
Section of Observation Center

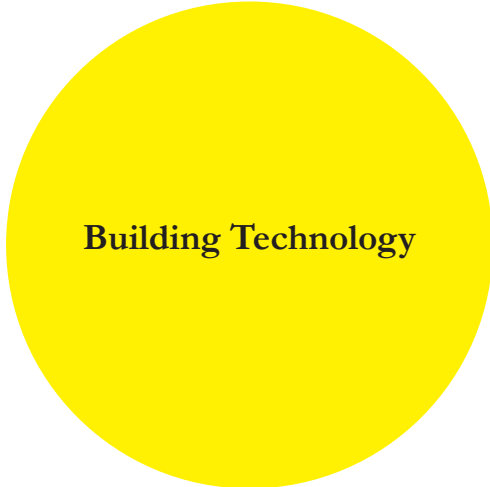
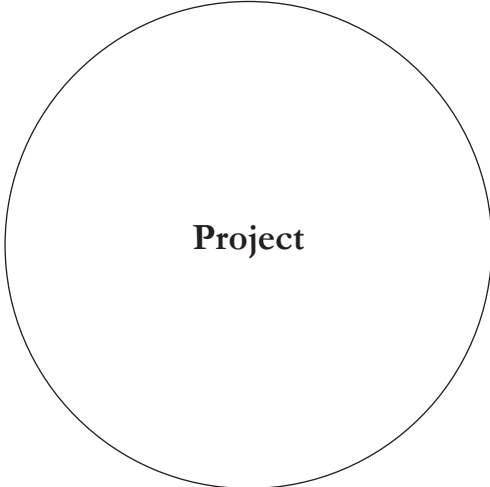
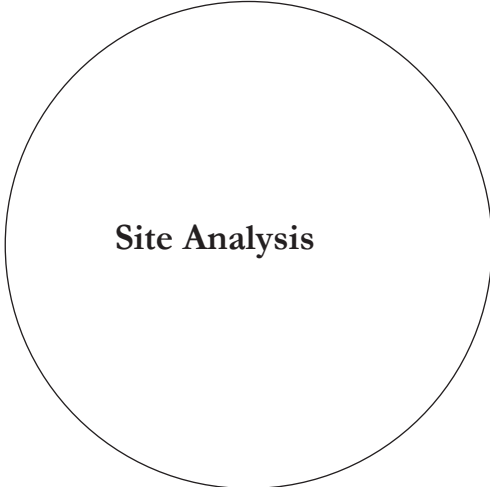
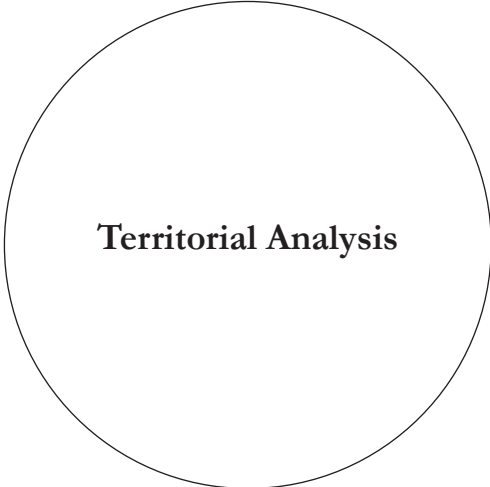


A Day in the Research Center

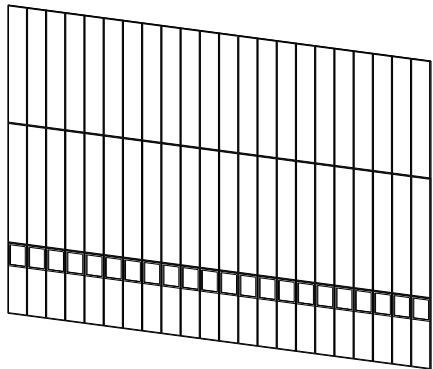


Facade

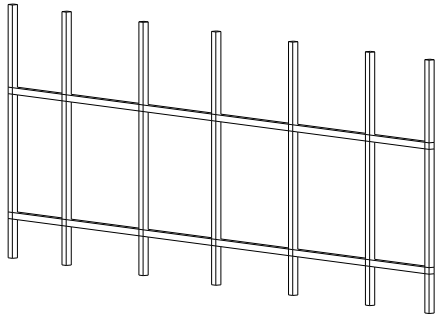




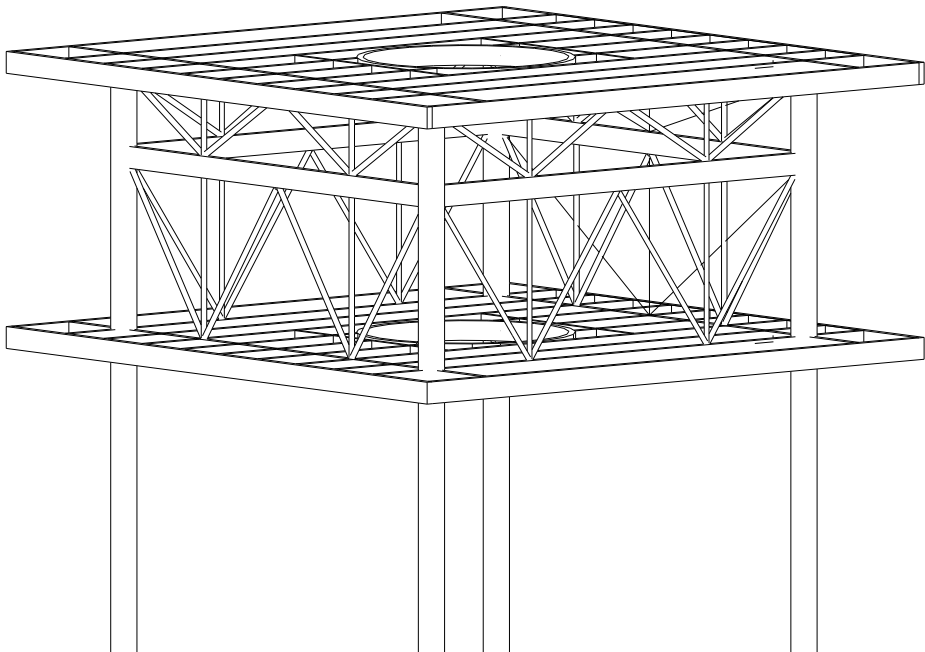
Facade



Translucent Wall Panel



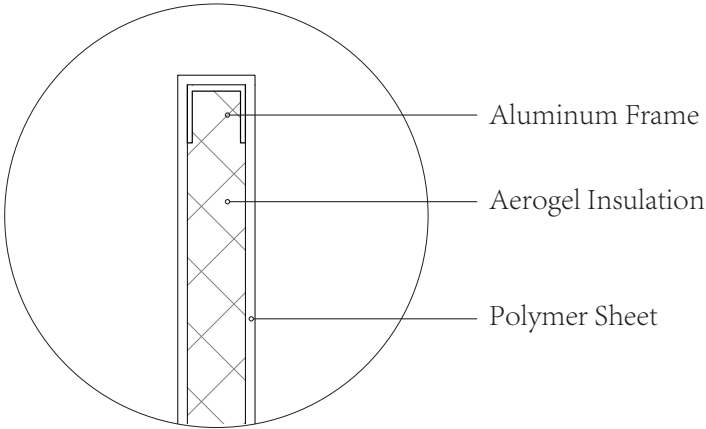
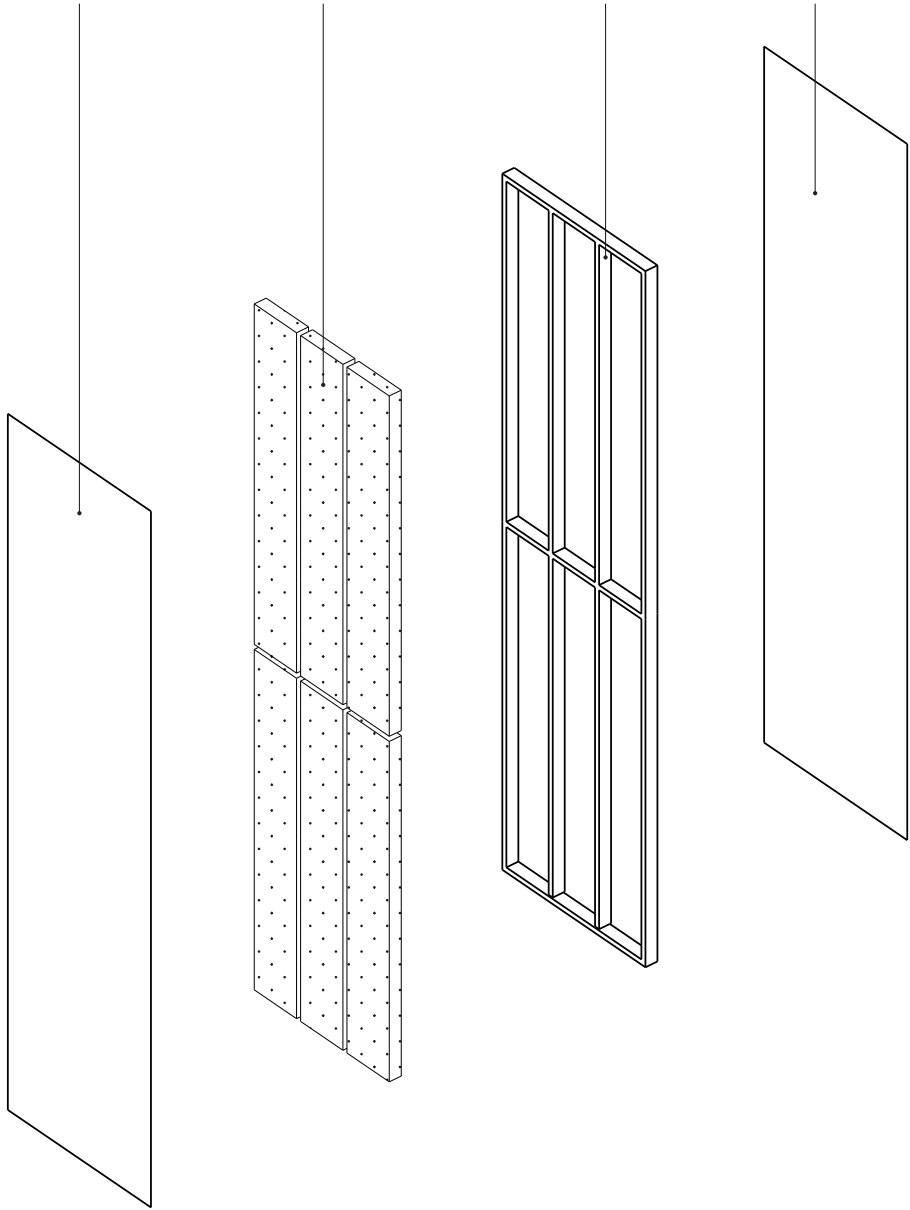
Steel Facade Substructure

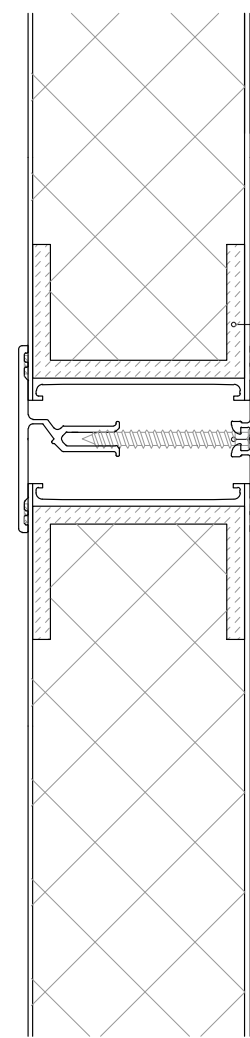


Main Structure

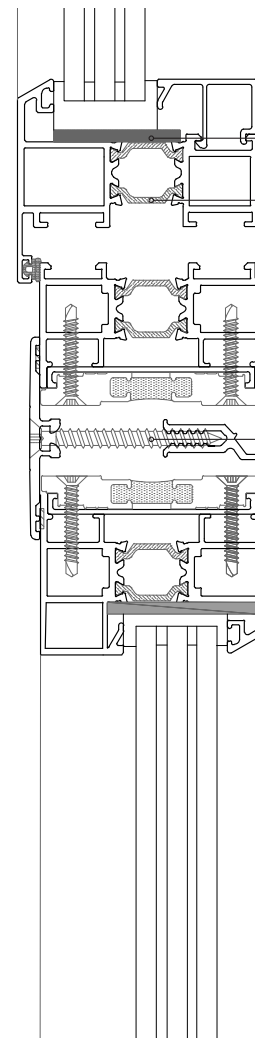
Facade

Polymer Sheet Aerogel Insulation Aluminum Frame Polymer Sheet

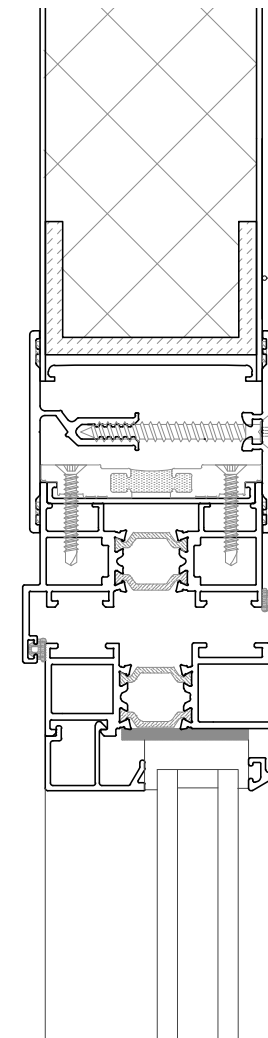




Panel to panel connection

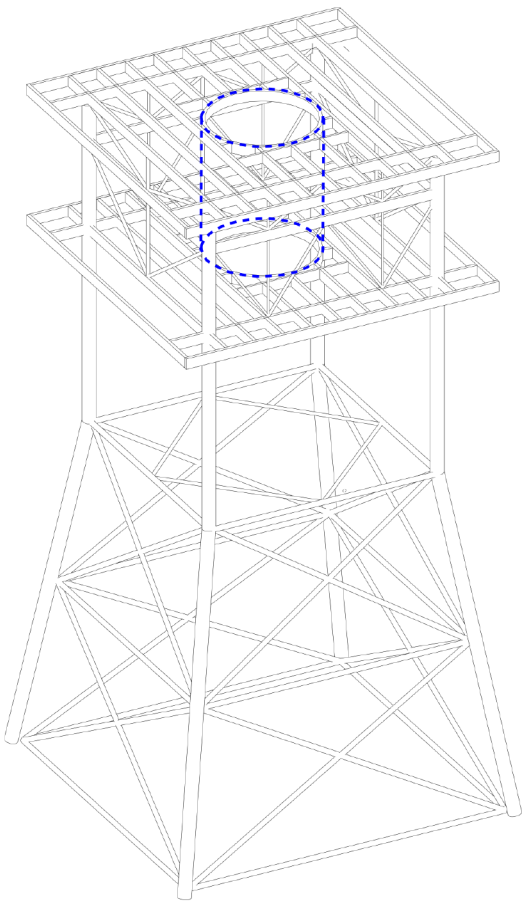
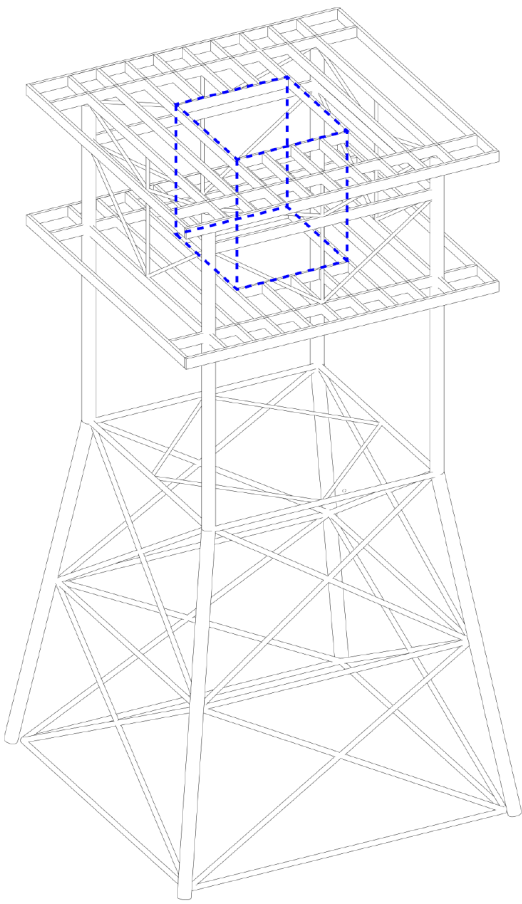
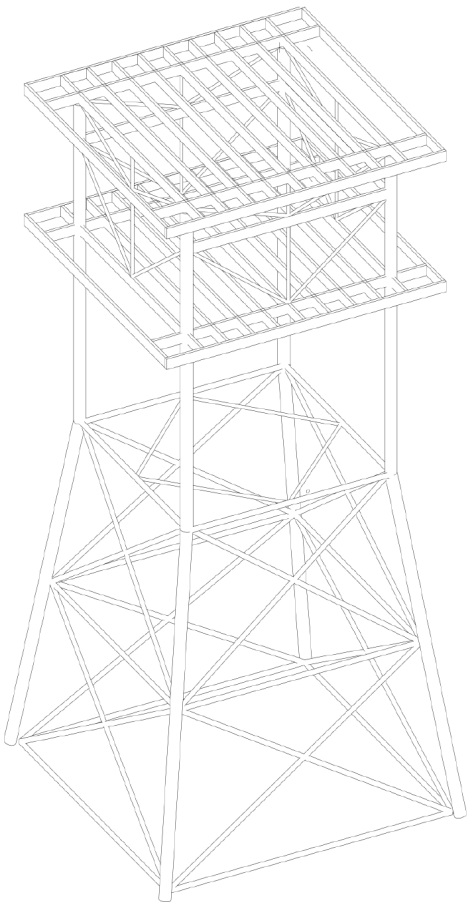


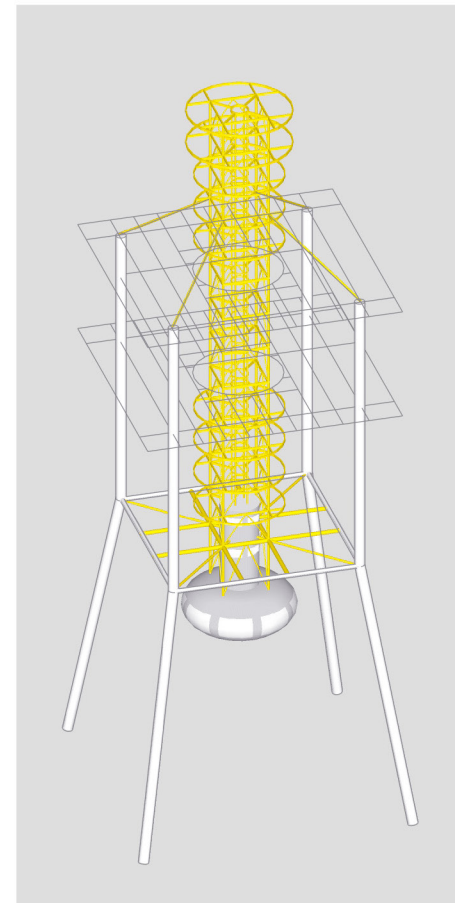
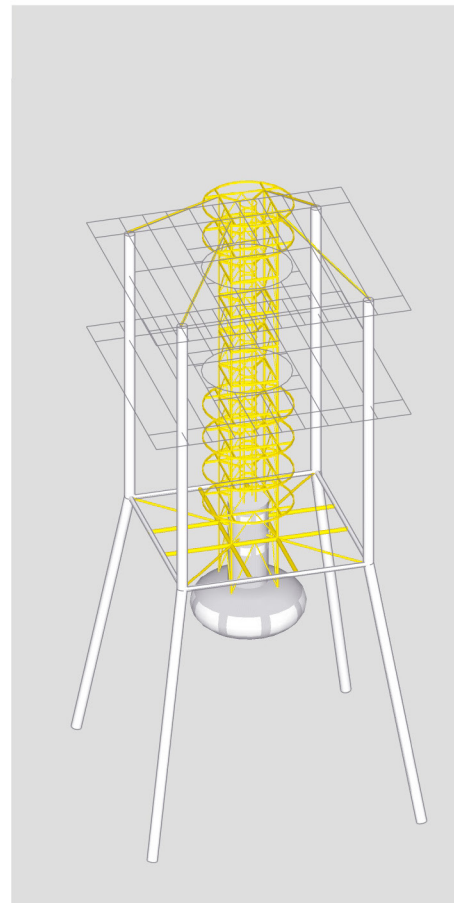
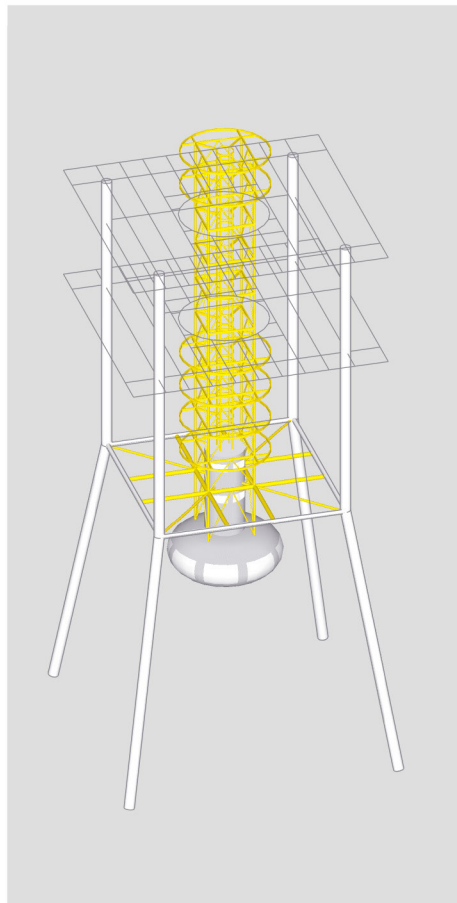
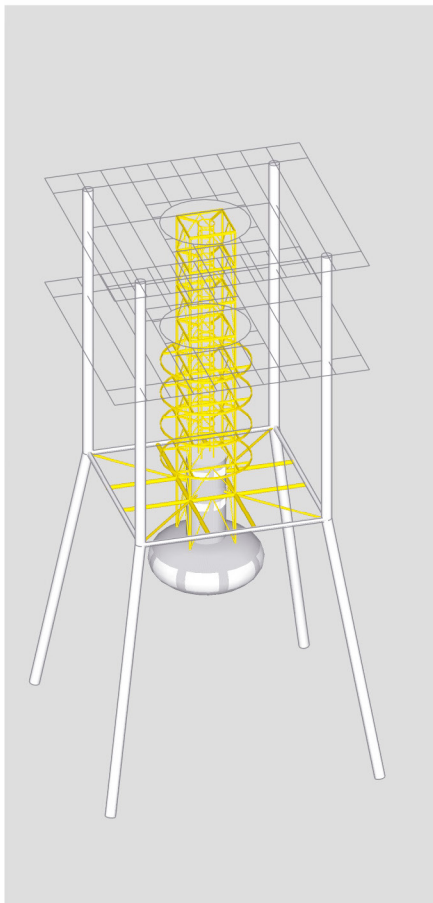
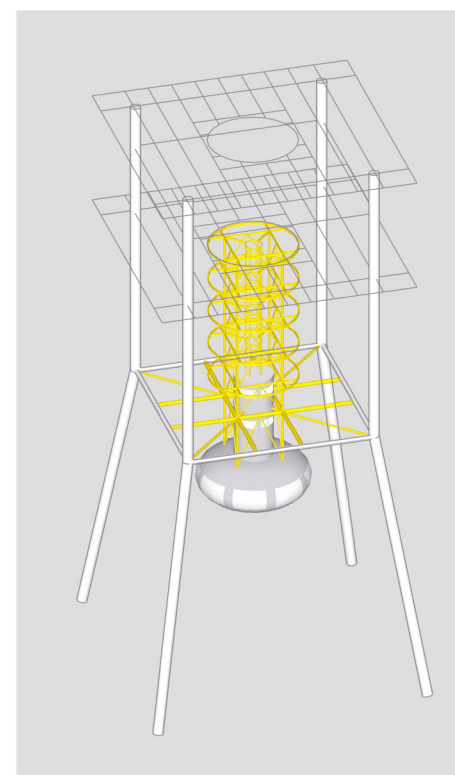
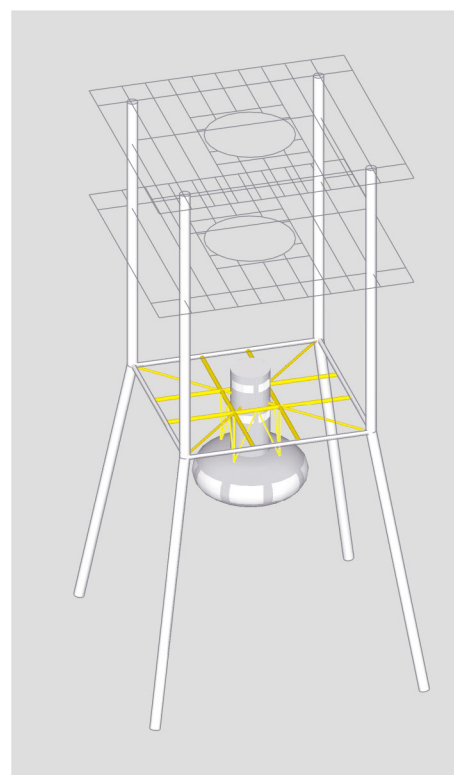
Windowto window connection

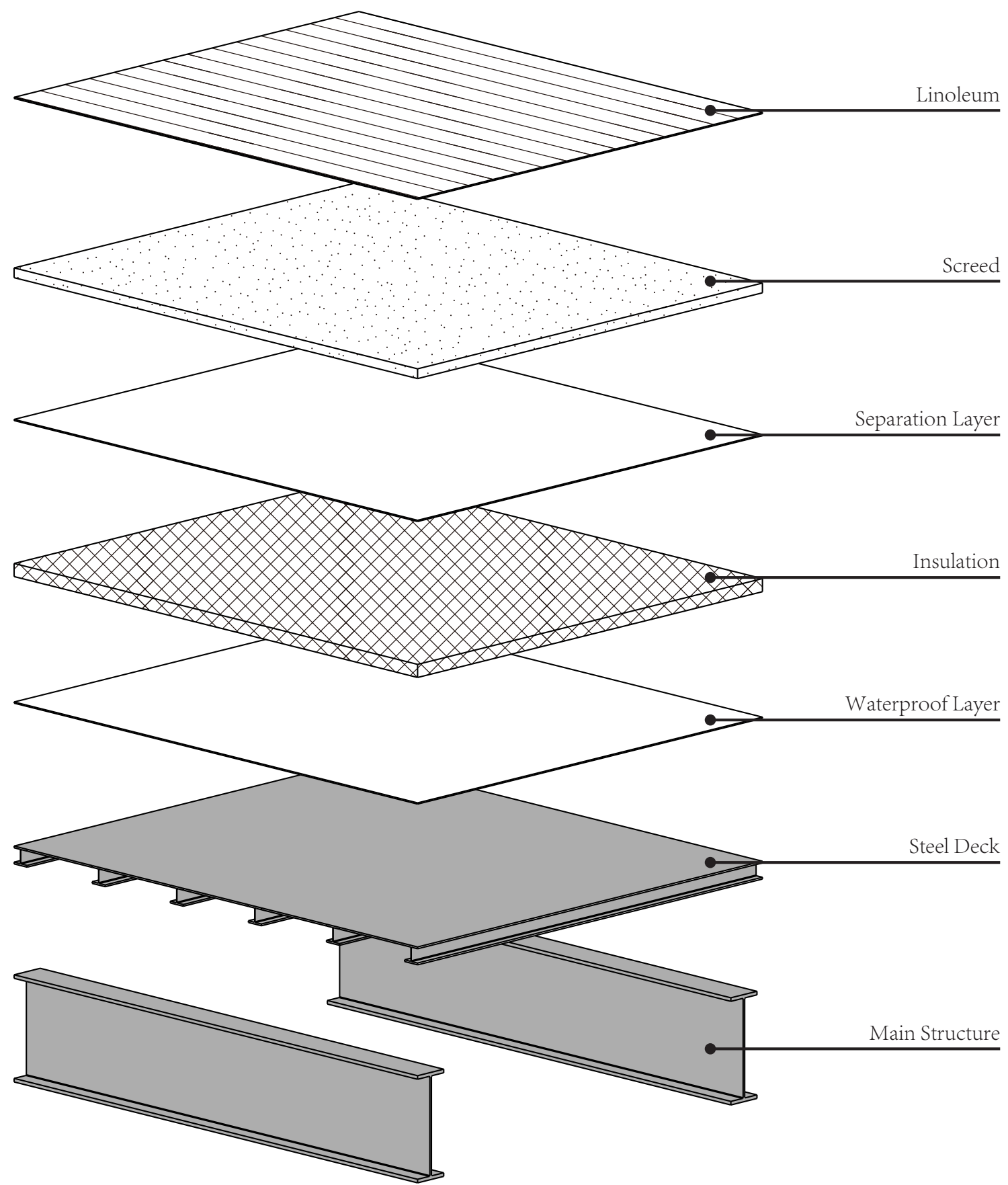


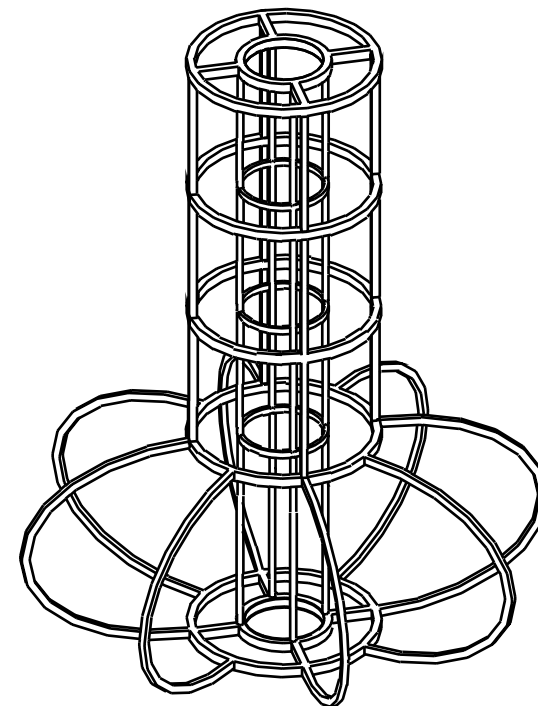
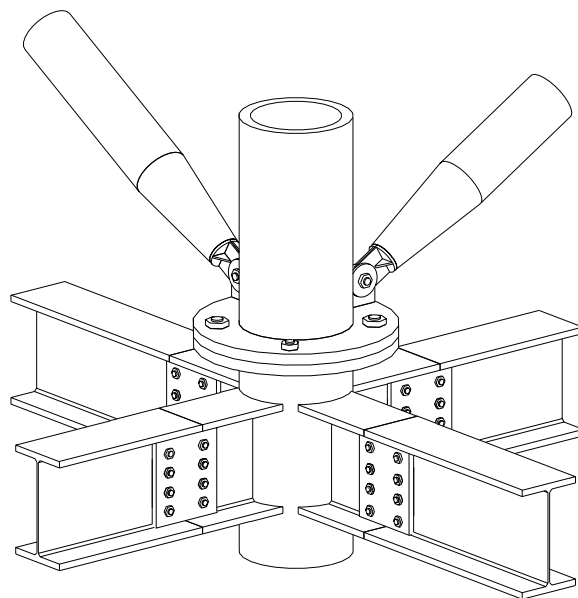
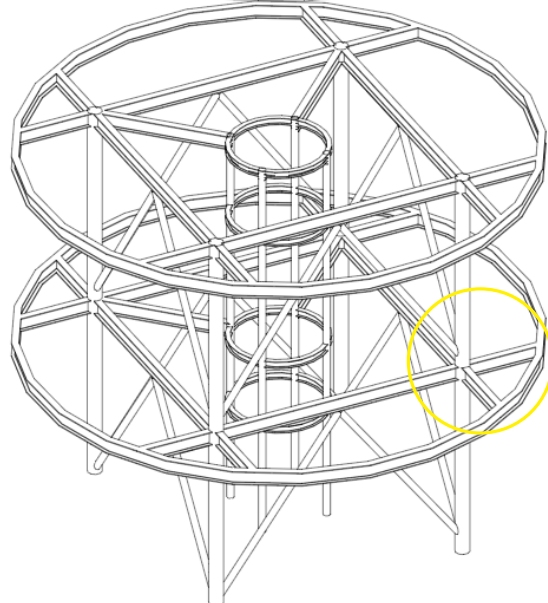
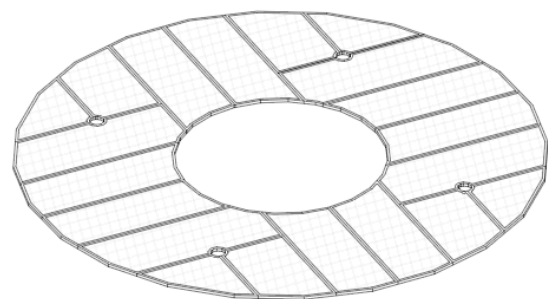
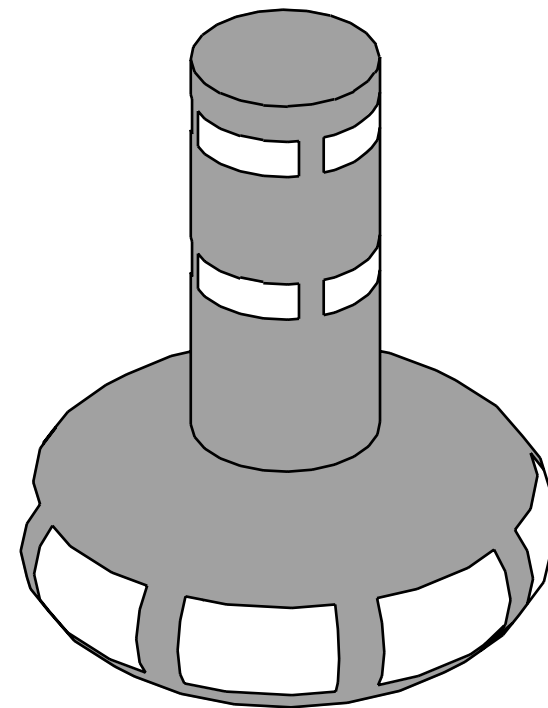
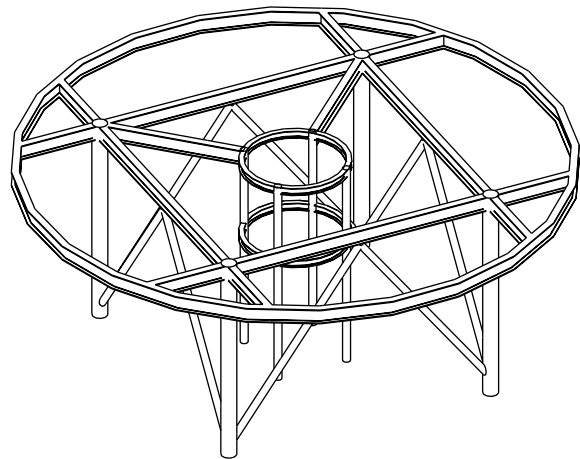
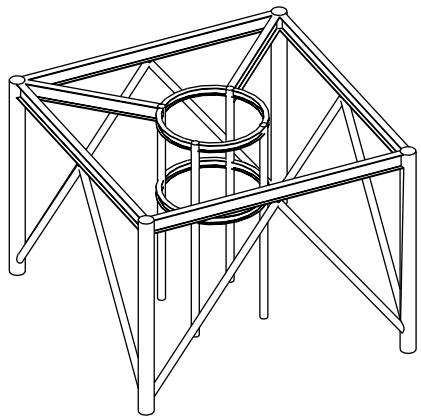
Panel to window connection

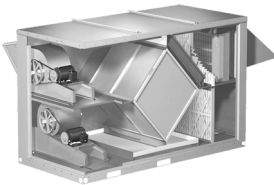
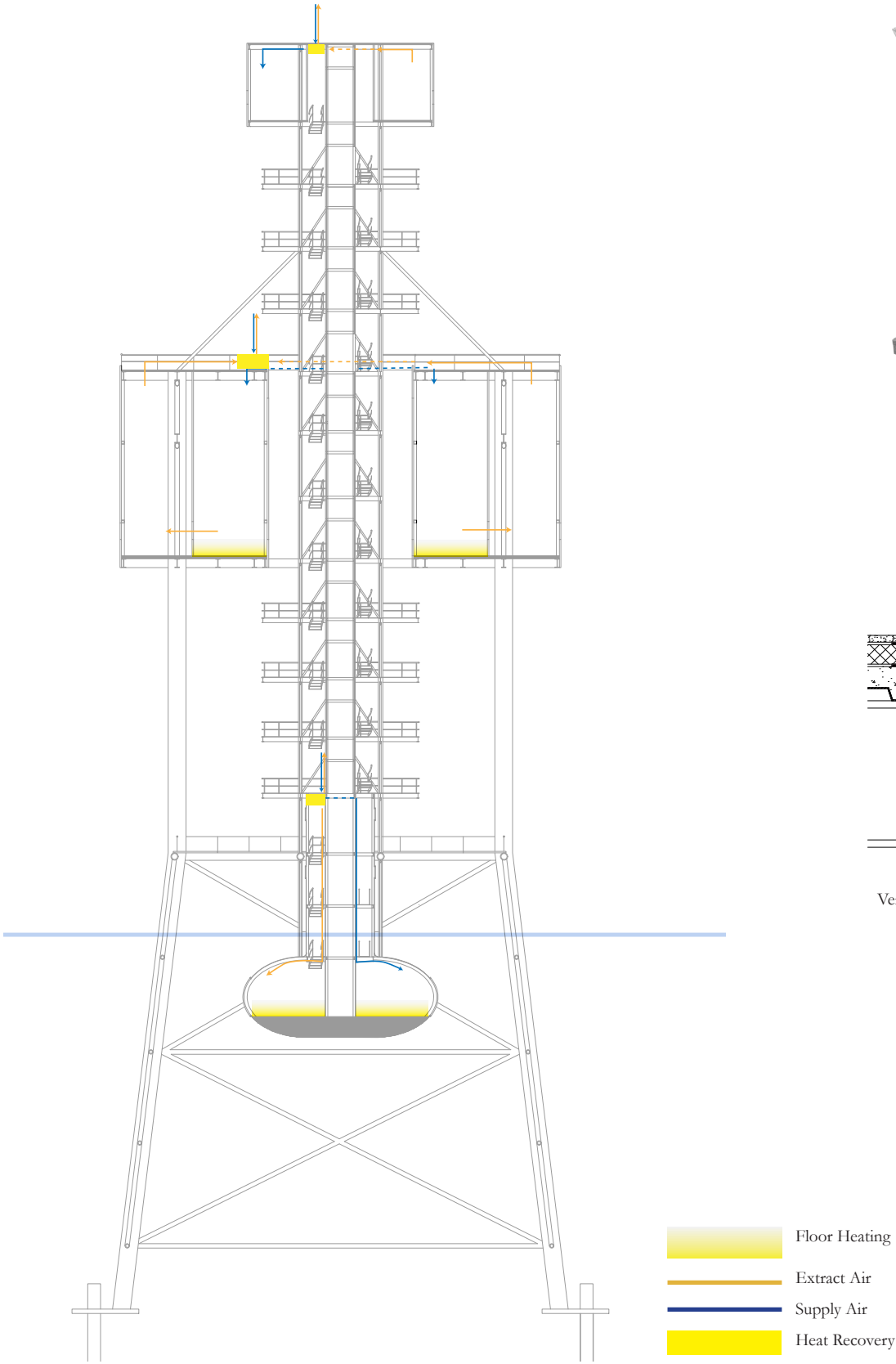
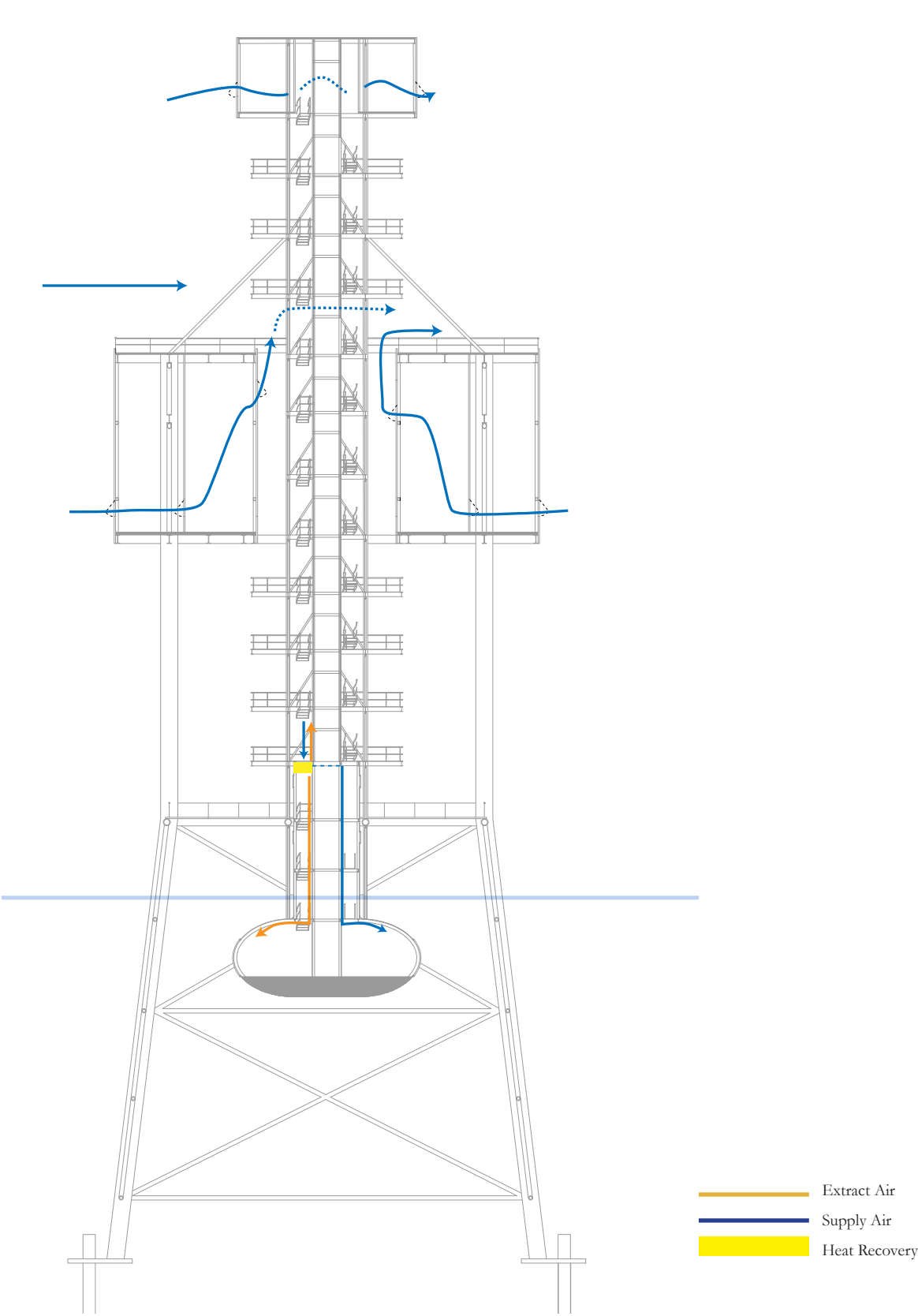
Structure



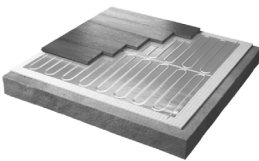




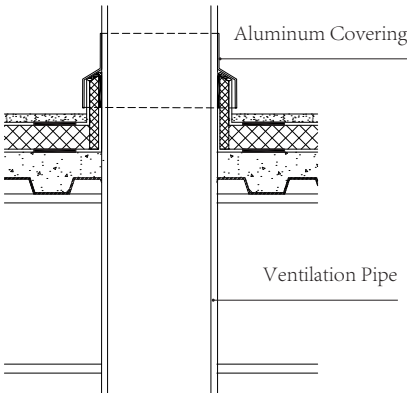




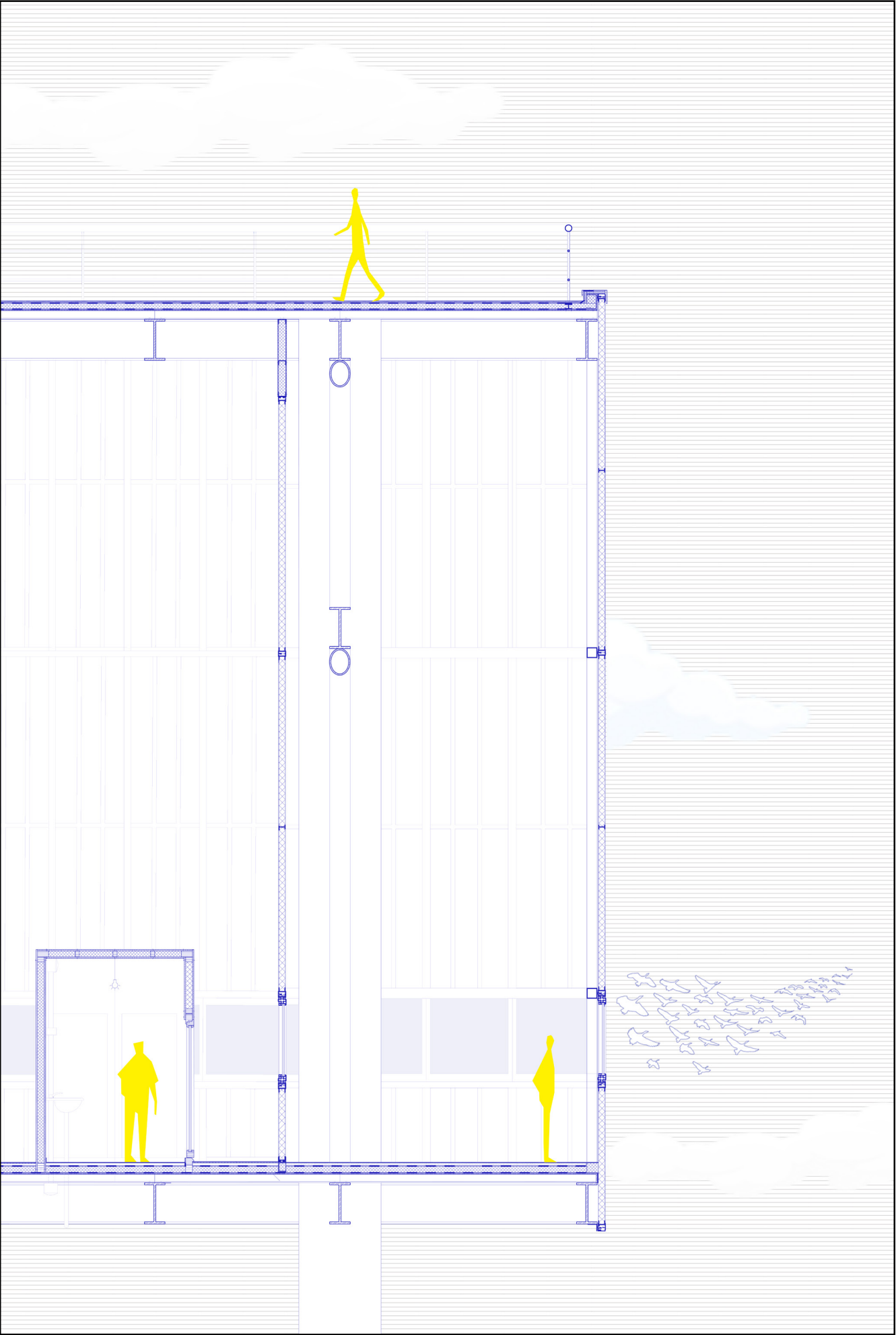
Rooftop Heat Recovery

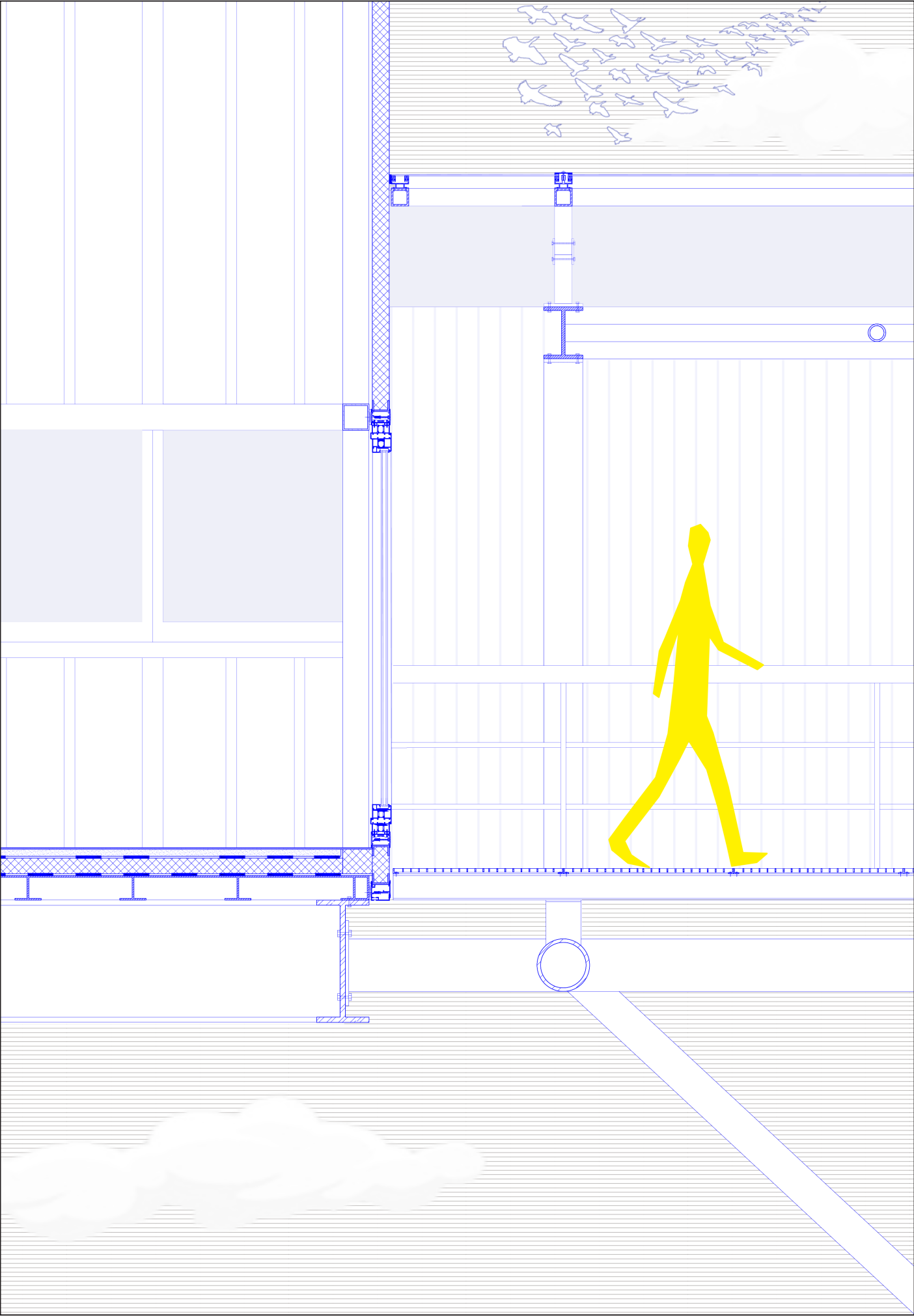


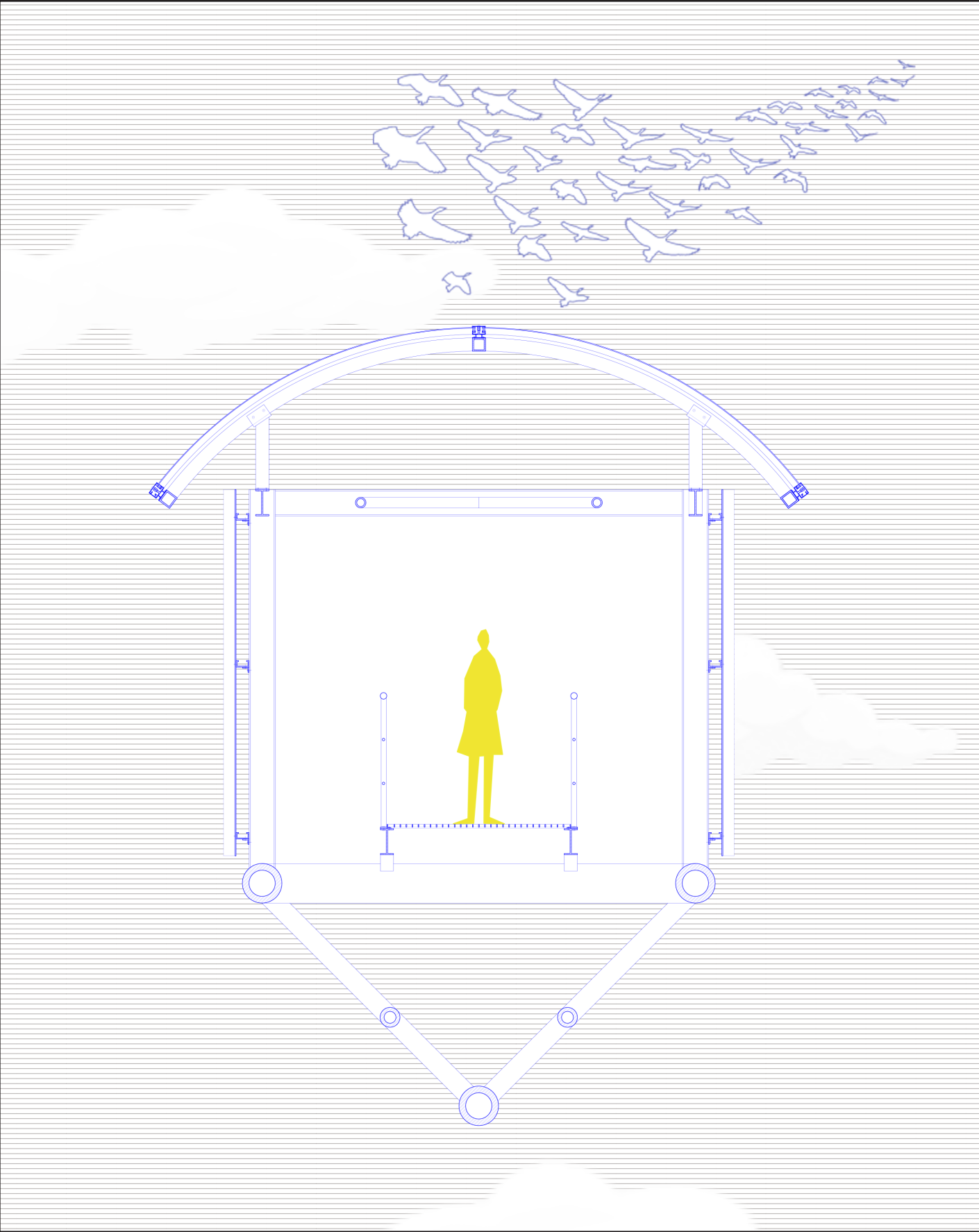
Floor heating mat

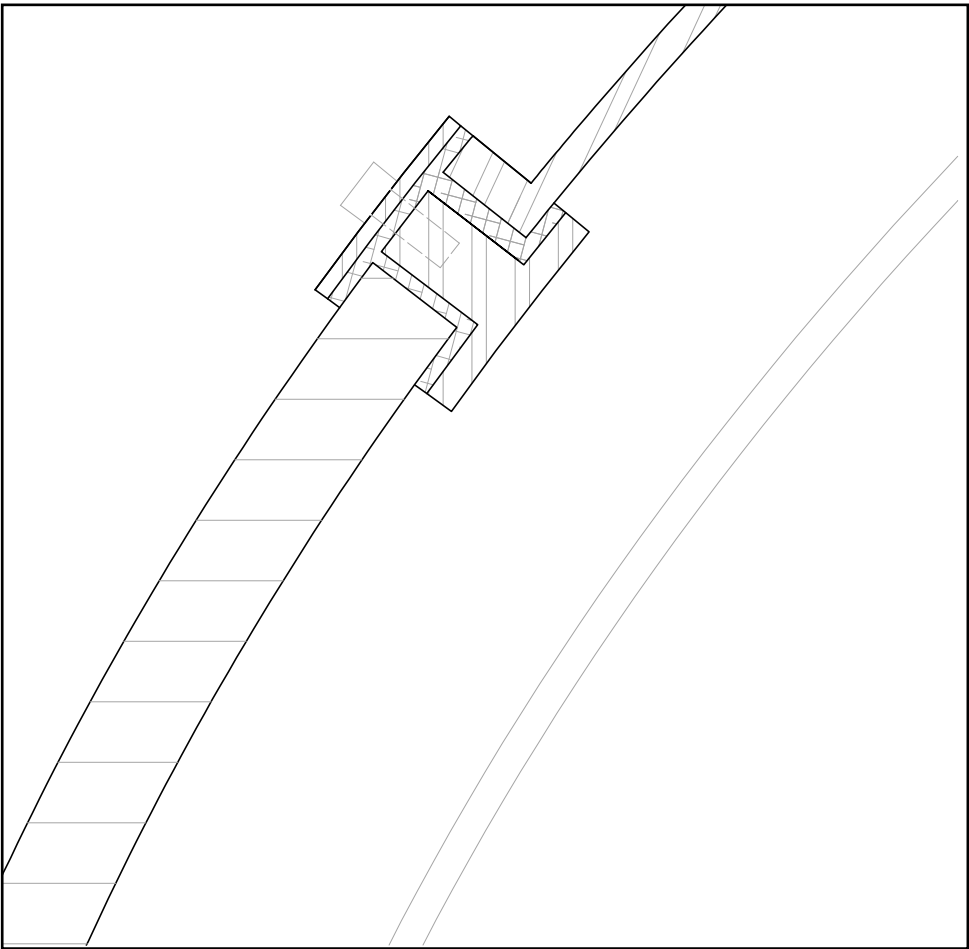
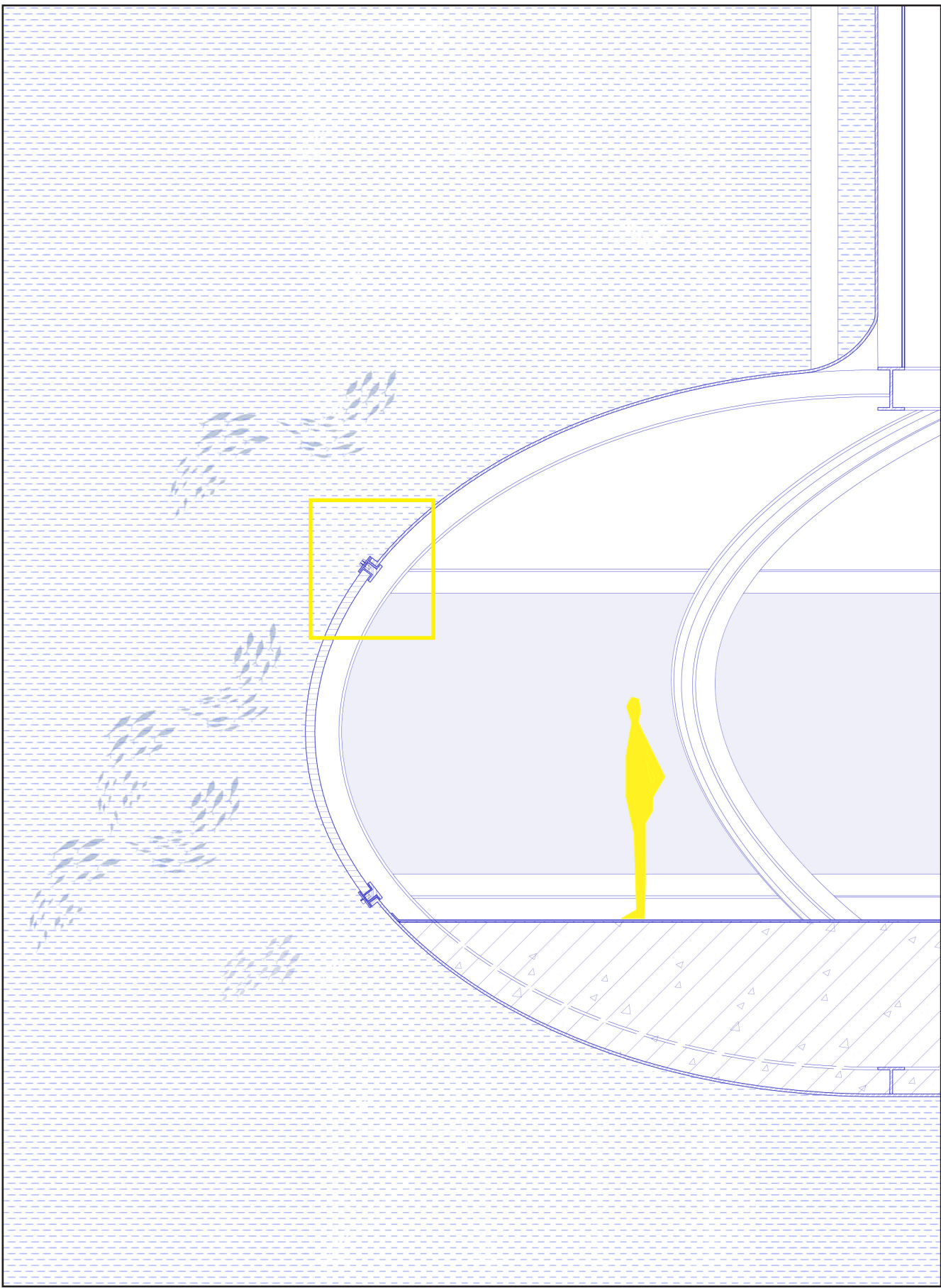


Ventilation pipe penetrating roof

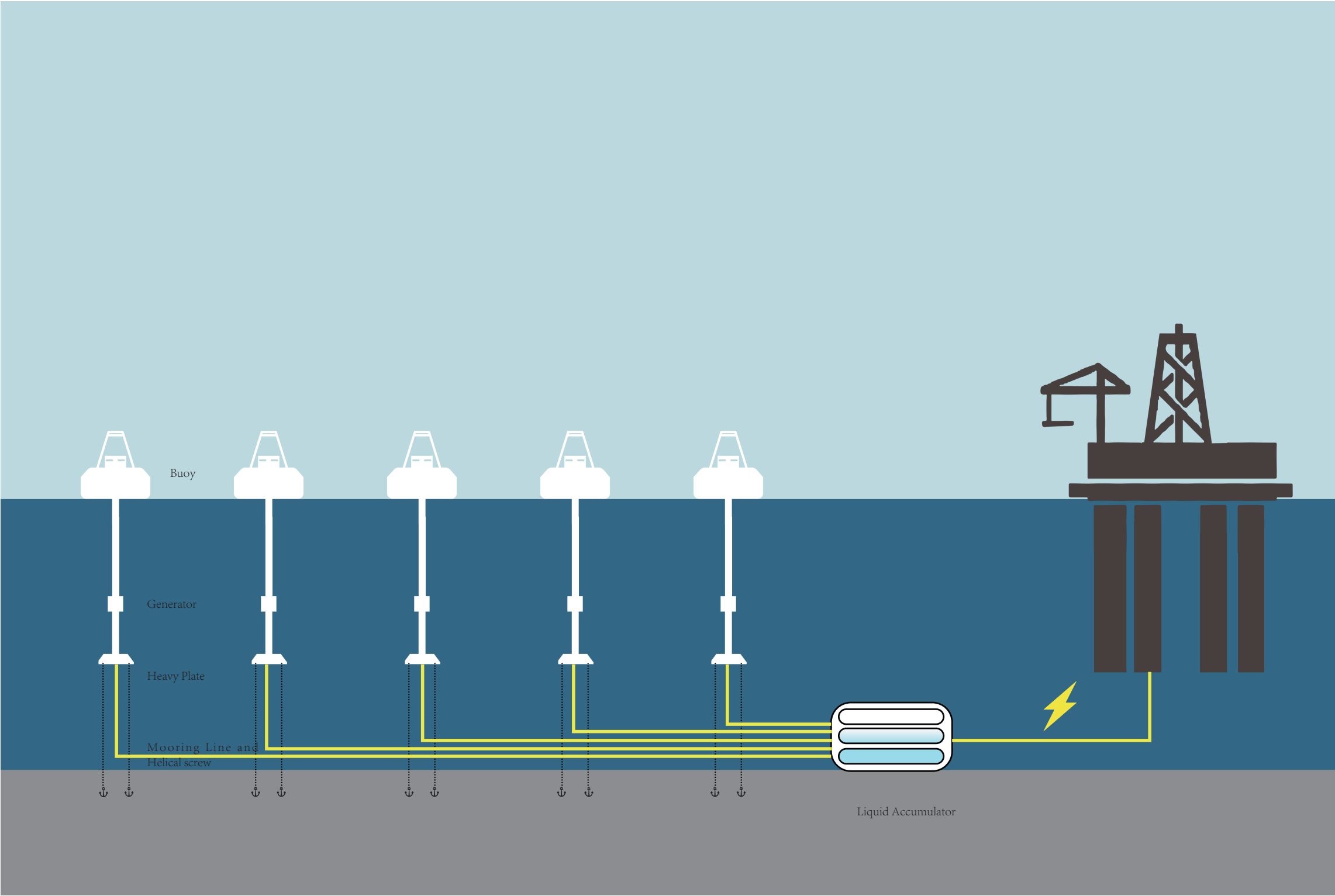




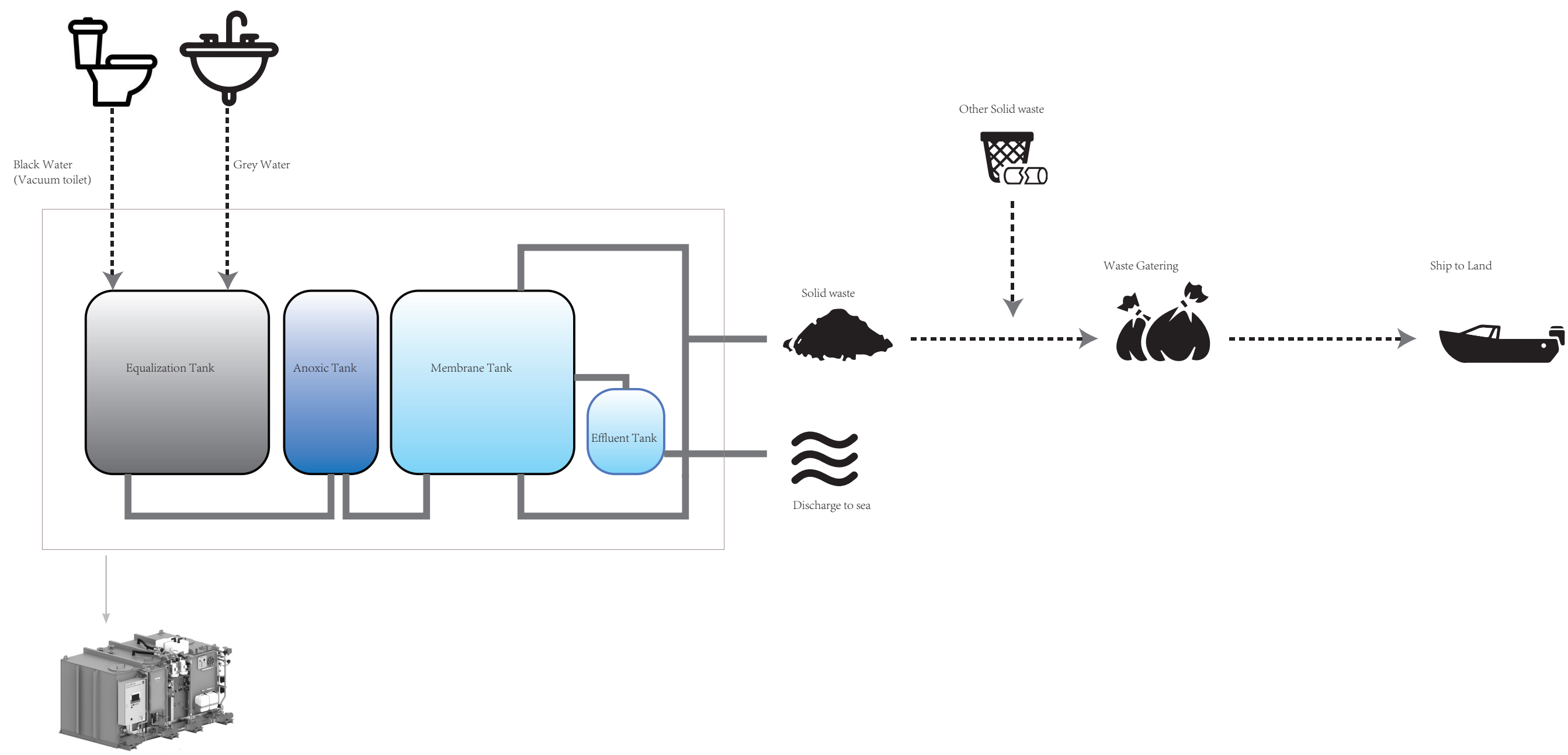




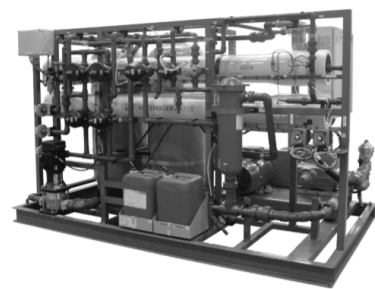
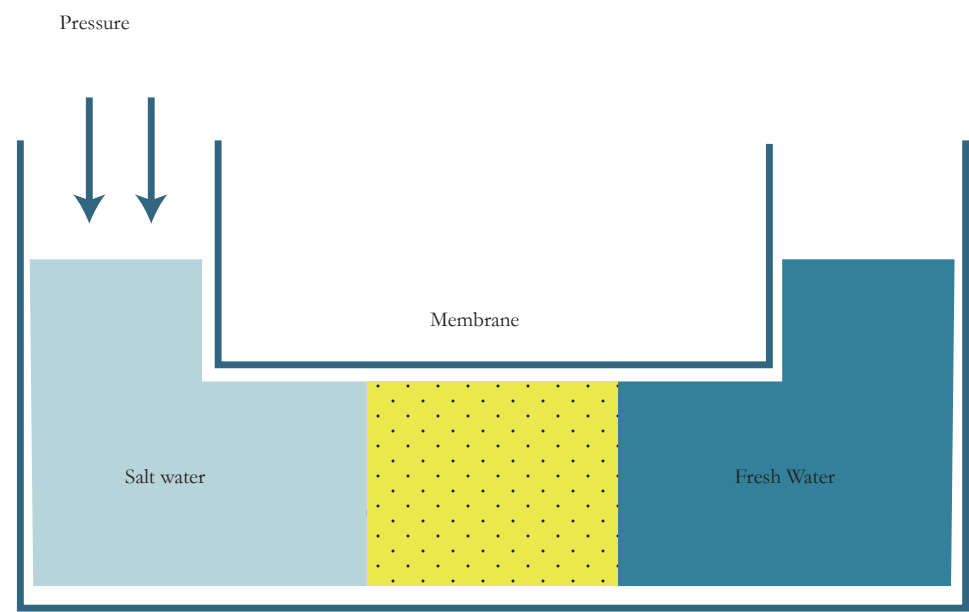
Energy Use



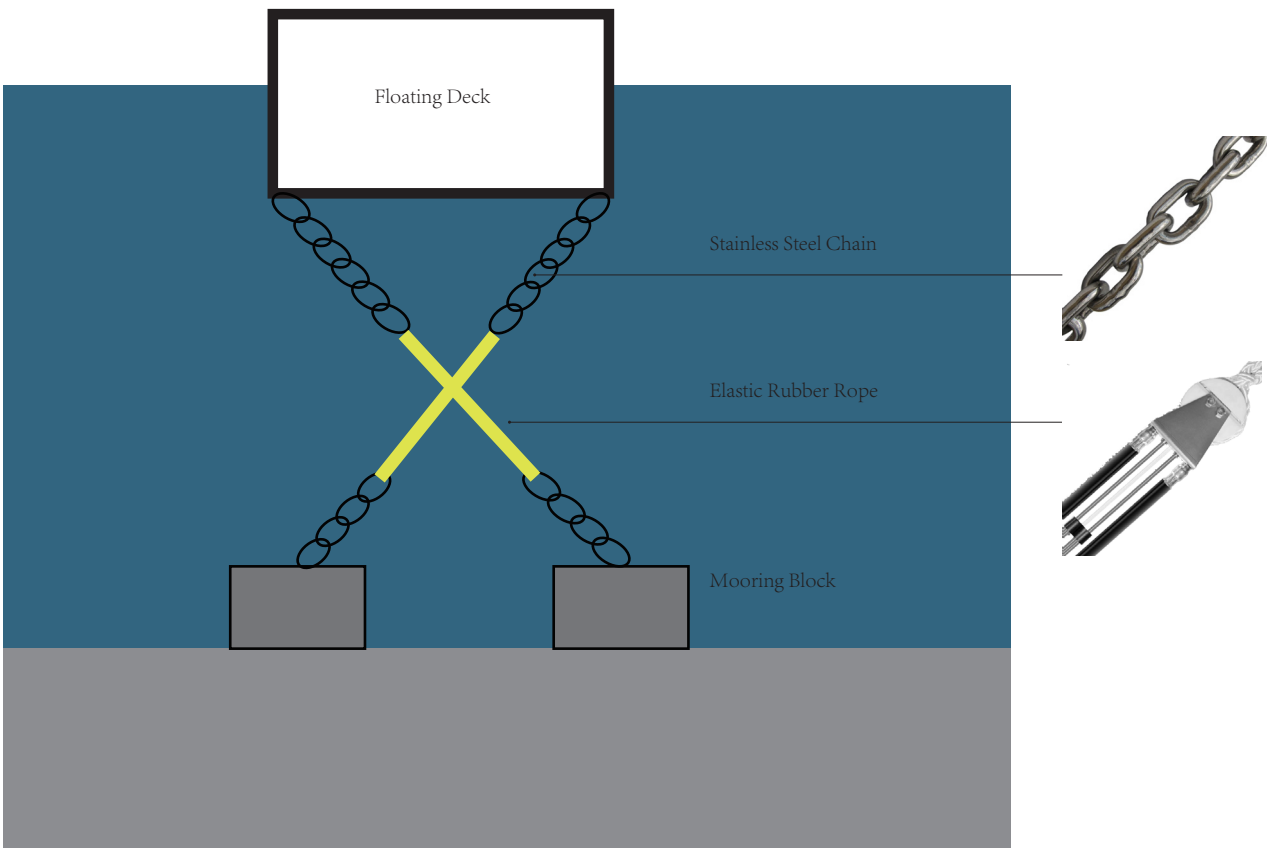
Waste Management



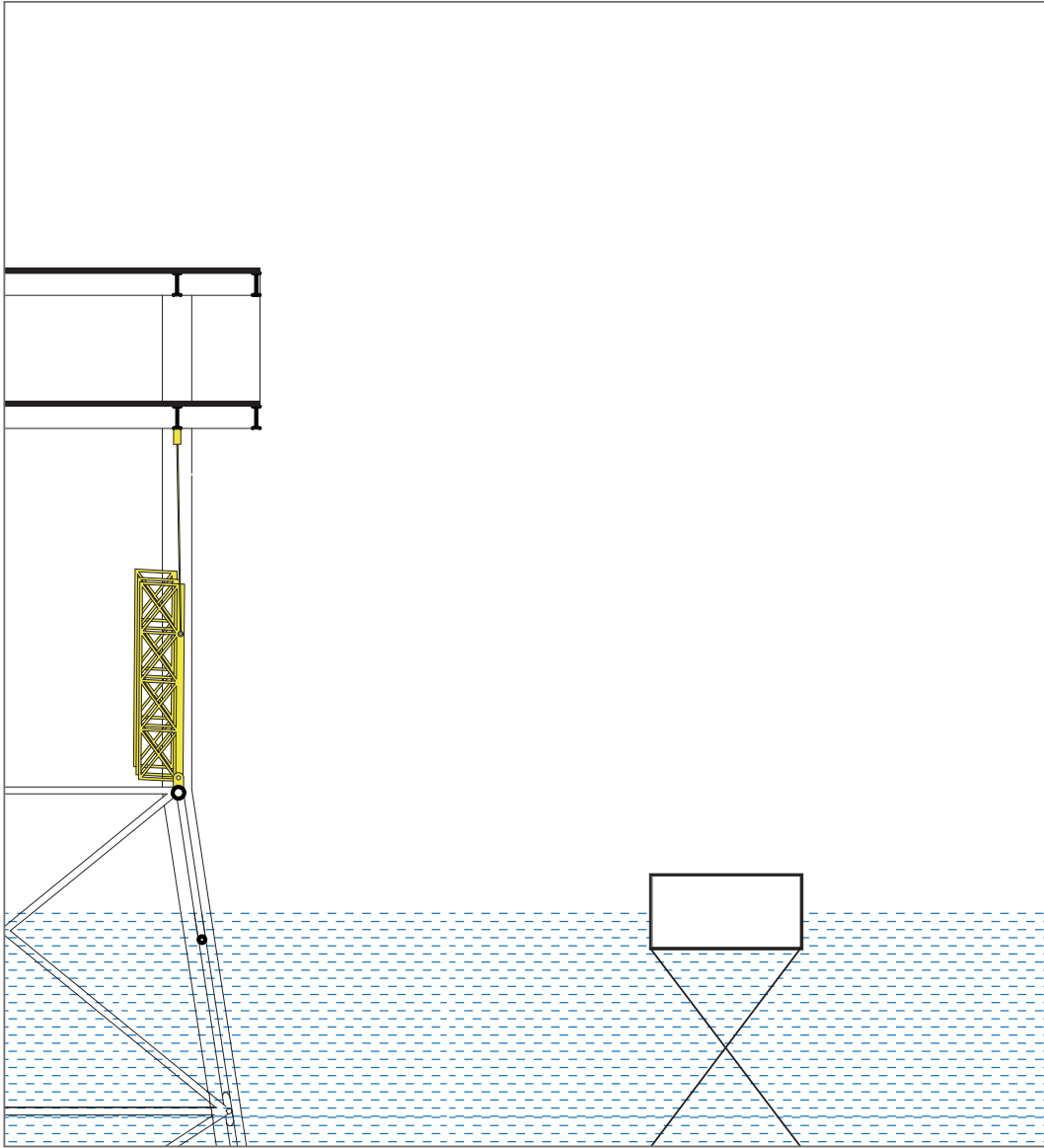
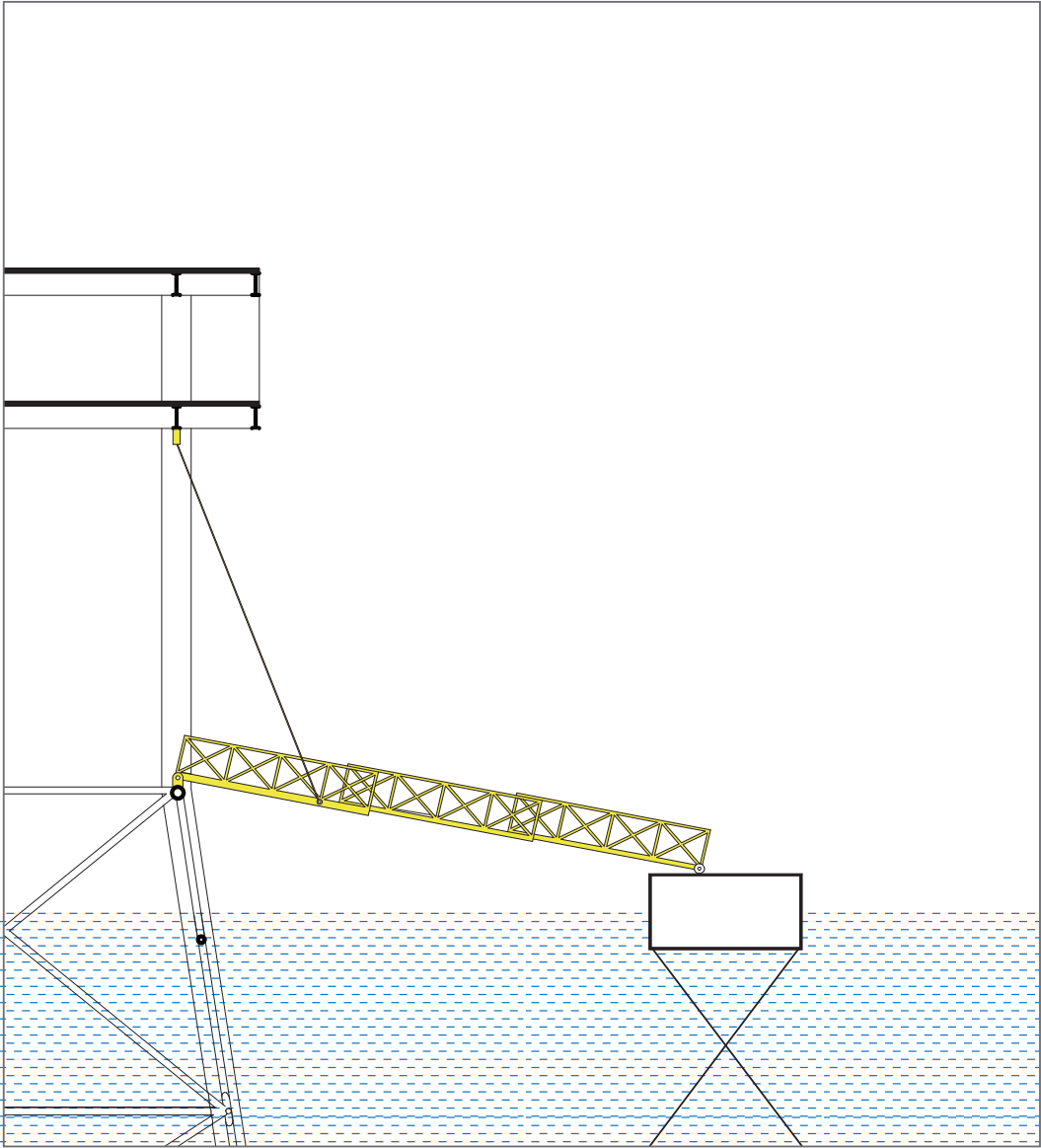
Fresh Water Production



Floating Deck Construction



Construction of Ship Gangway



Thanks!

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