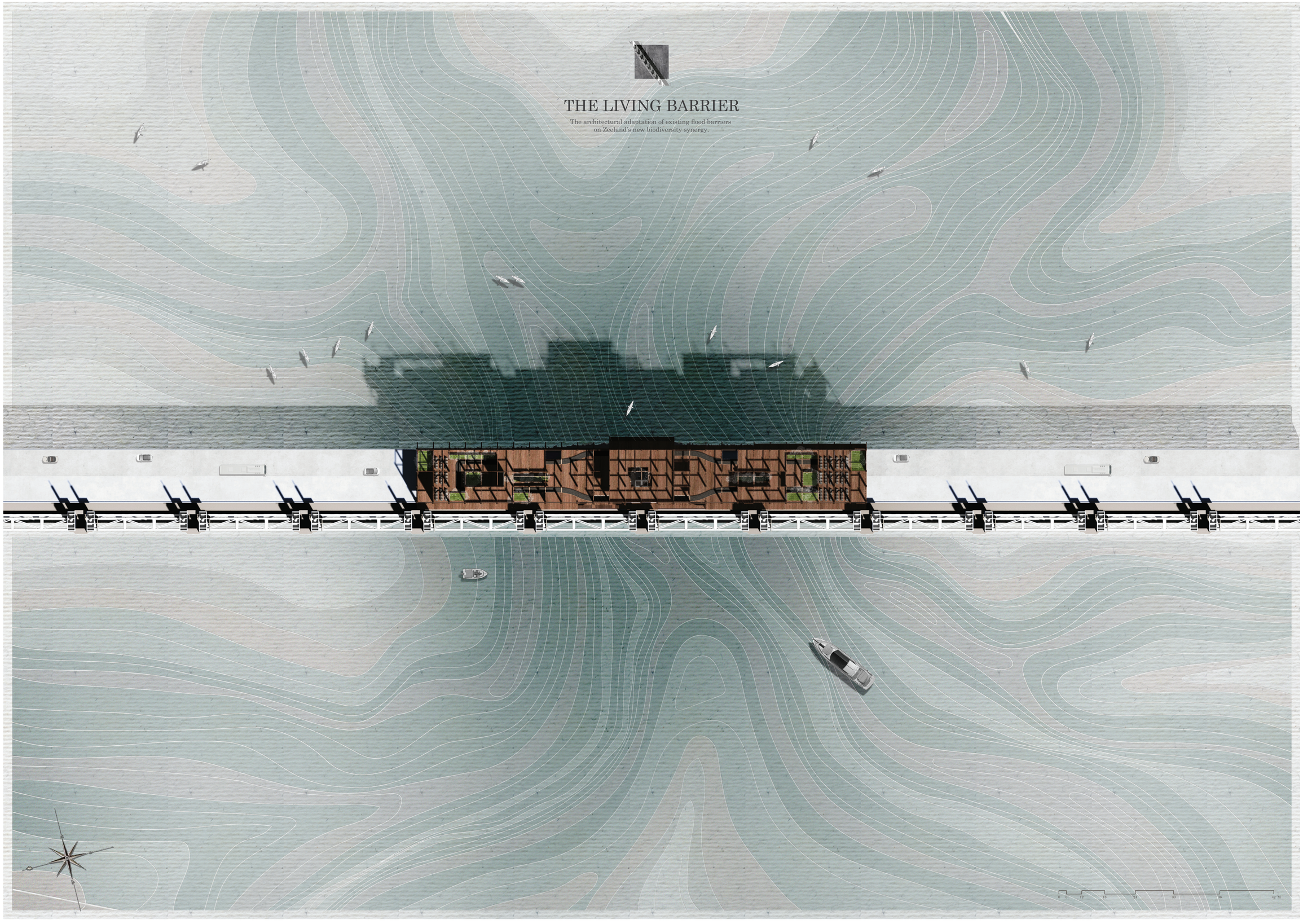
THE LIVING BARRIER

The architectural adaptation of existing flood barriers
on Zeeland's new biodiversity synergy.



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Aphitchaya Wongnitchakul (Min) 5245265

AR3AE100 | Architectural Engineering | Second life

Design tutor: Thomas Offermans
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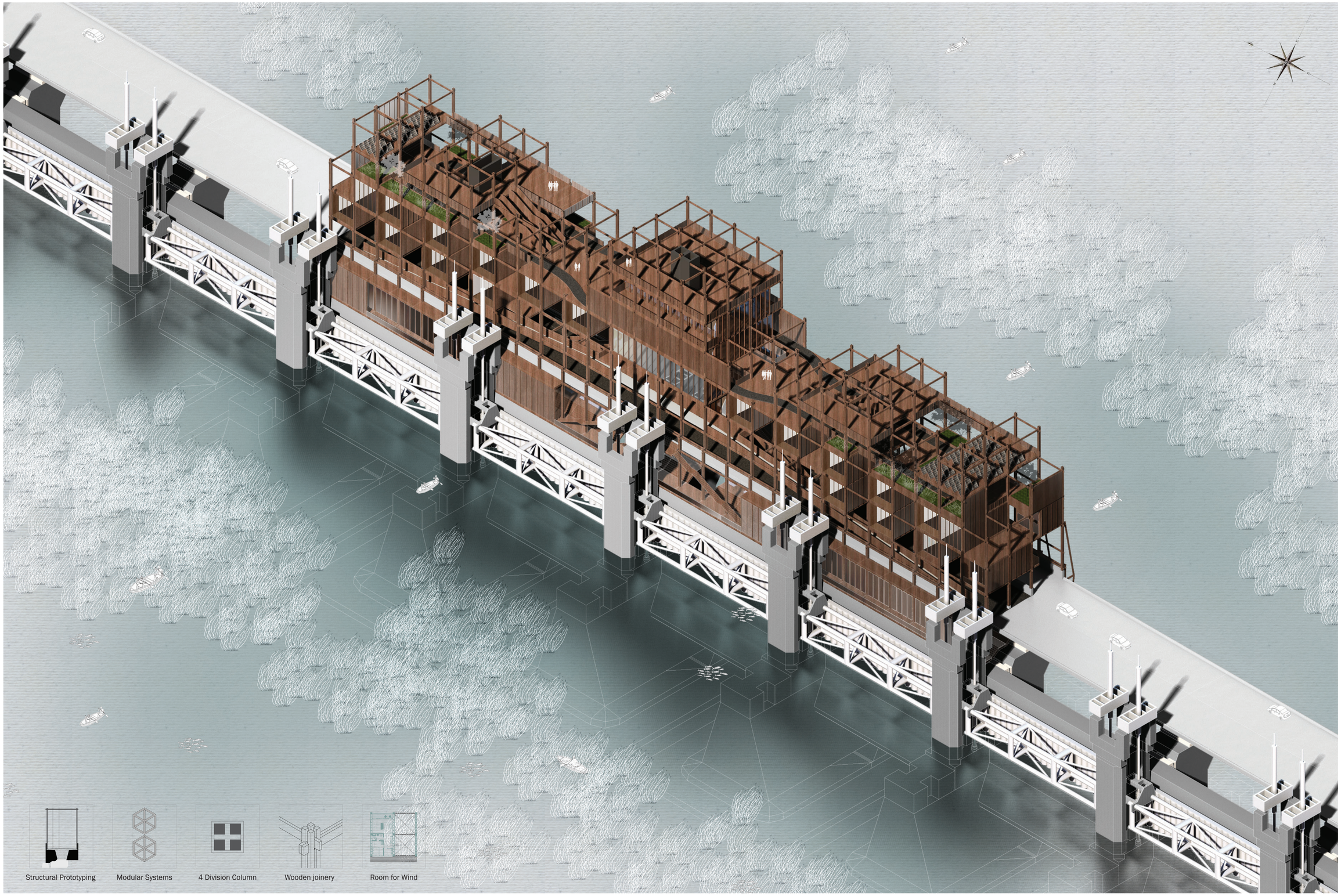
ADAPTABILITY | FUTURE ADAPTATION

Due to the uncertainty and dynamic of the future, the adaptation through time in architecture from the urban scale to the detail is increasingly crucial. Particularly, The prototyping method can be customized to the different circumstances, locations, and functions would be the answer for the architectural world in the future.



STRUCTURAL STABILITY | HYBRID SYSTEMS

In order to construct the architecture of the current flood barrier in response to harsh weather conditions such as high winds and storms, structural stabilization is required.
The hybrid systems' two diverse qualities are the keys to coping with nature's dynamic.

HYBRID STRUCTURAL SYSTEMS

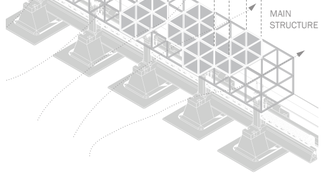
01 OVERALL GRID SYSTEM
MAIN STRUCTURE | INFILL

02 MAIN STRUCTURE
UPPER STRUCTURE | UNDERNEATH STRUCTURE

03 CONSTRUCTION TYPES
CUSTOMIZED | MODULAR SYSTEMS

04 JOINERY
WOOD CONNECTION | STEEL CONNECTION

05 FLOOR SYSTEMS
KERTO - RIPA (WOOD PREFABRICATION) | CLT (CROSS LAMINATED TIMBER)



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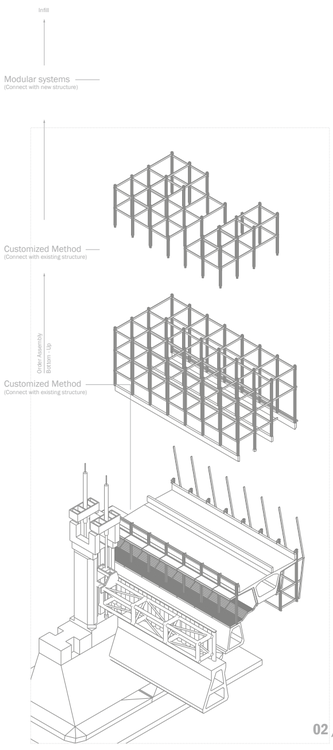
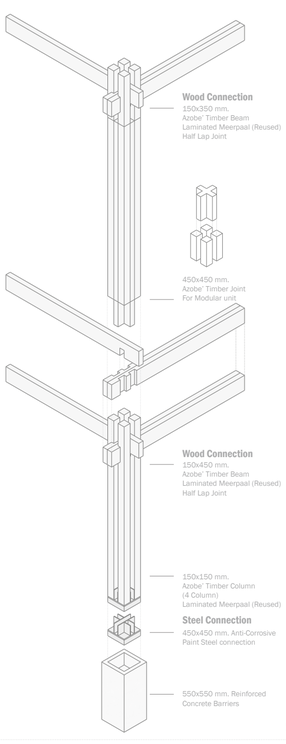


02 / 03



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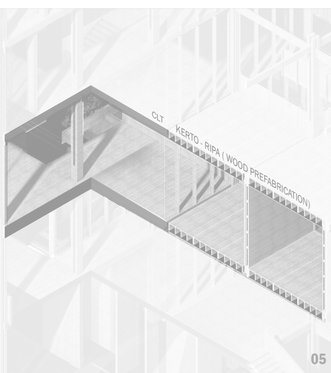

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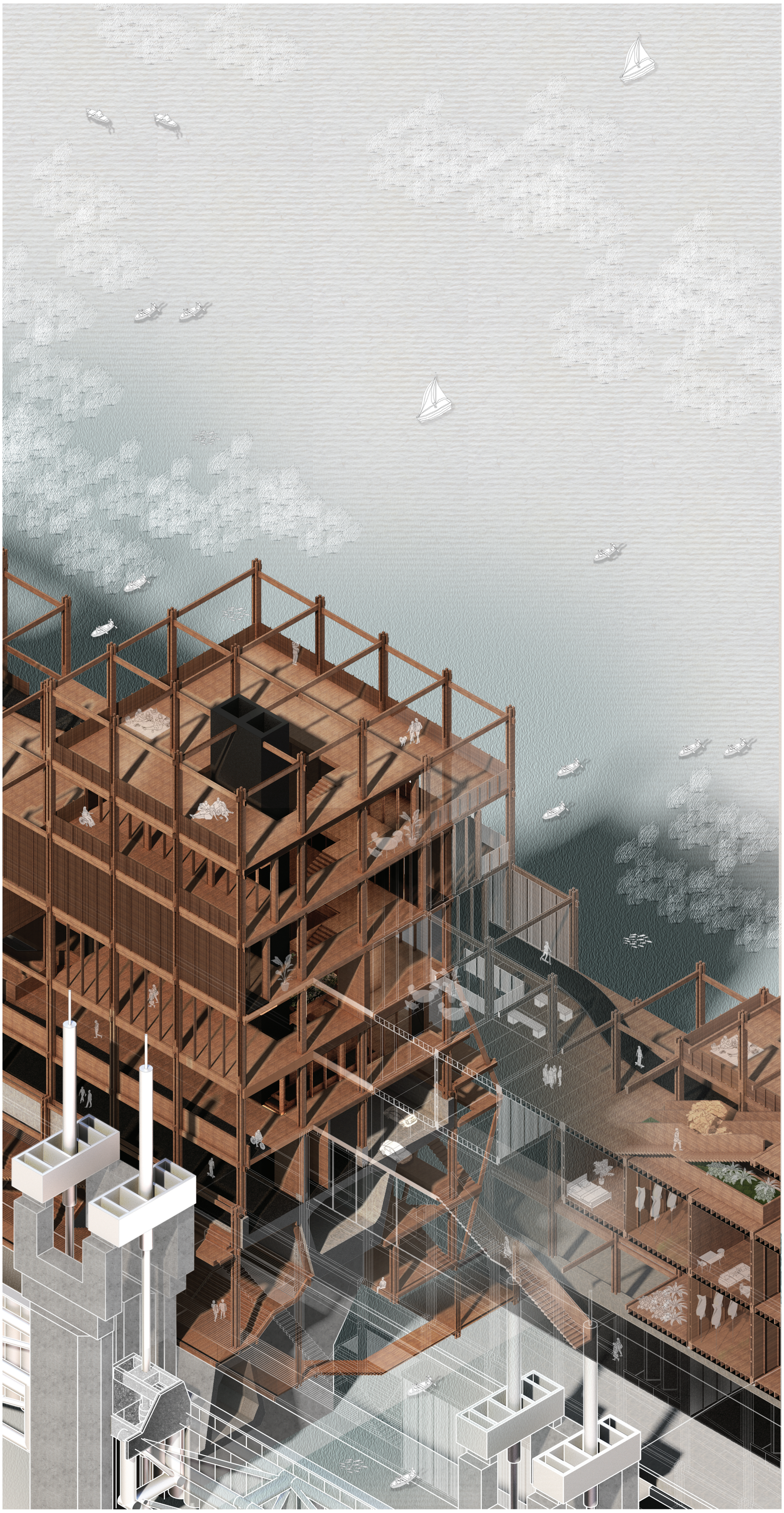
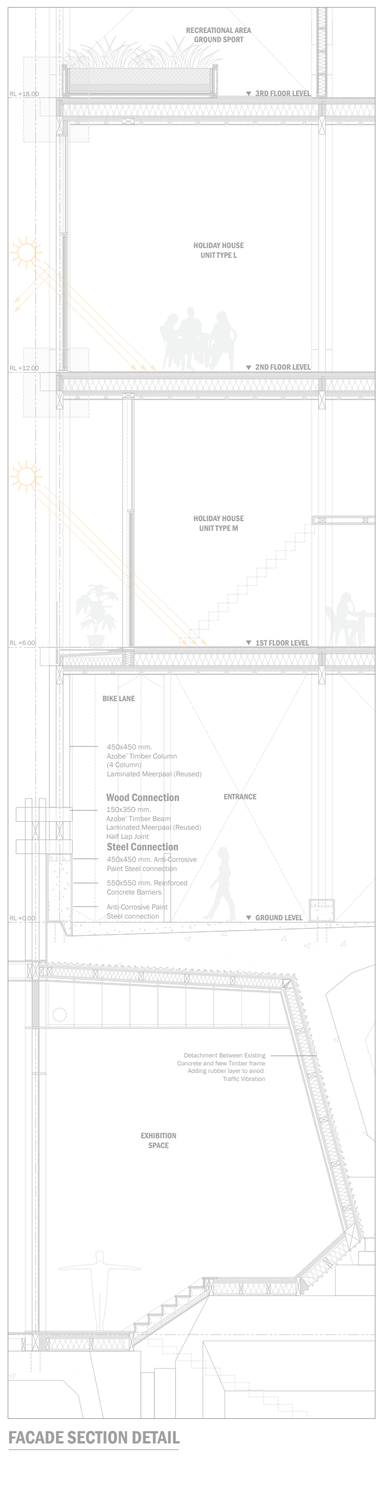
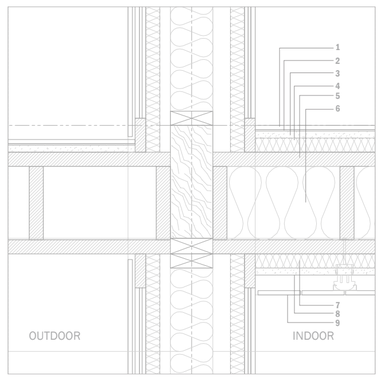


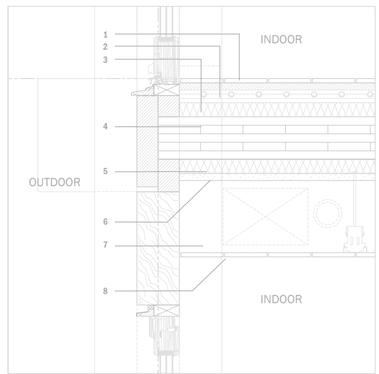


FACADE SECTION DETAIL



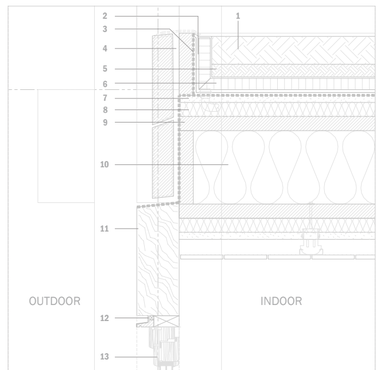
KERTO-RIPA DETAIL

1 Wooden Floor
2 Polyester fibermat
3 Gypsum fiberboard
4 Sound insulation
Wood Fiber density 100 kg/m3
5 360 MM Kerto-Ripa Floor Systems (5 Ribs)
6 Thermal Insulation
7 Sound insulation Wood Fiber density 100 kg/m3
8 Plaster Board
9 Wooden Ceiling for Interior



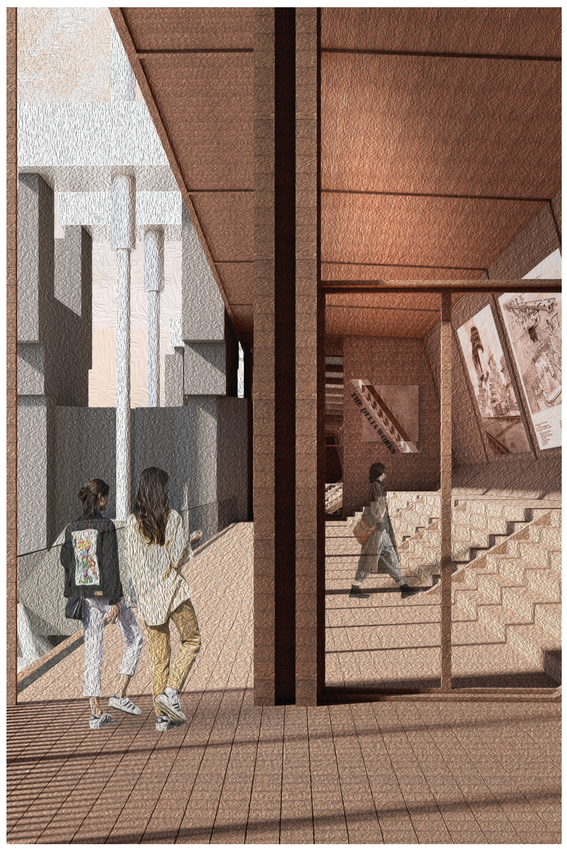
CLT FLOOR DETAIL

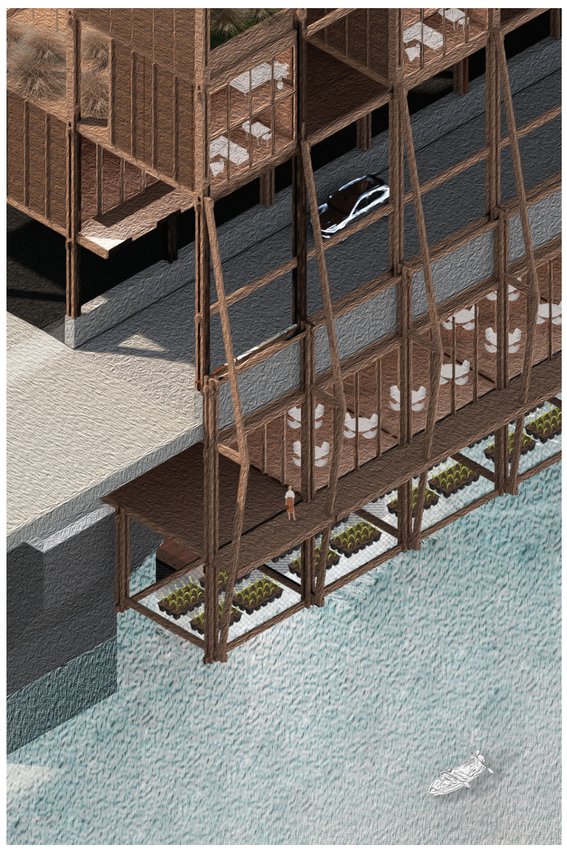
1 Wooden Floor
2 Heating Floor
3 Insulation Wood Fiber
- density 200 kg/m3
4 150 MM CLT Panel - 5 Layer
5 Insulation
Wood Fiber - density 200 kg/m3
6 Plaster Board
7 Air
8 Utility Systems (AHU Duct/Pipe)

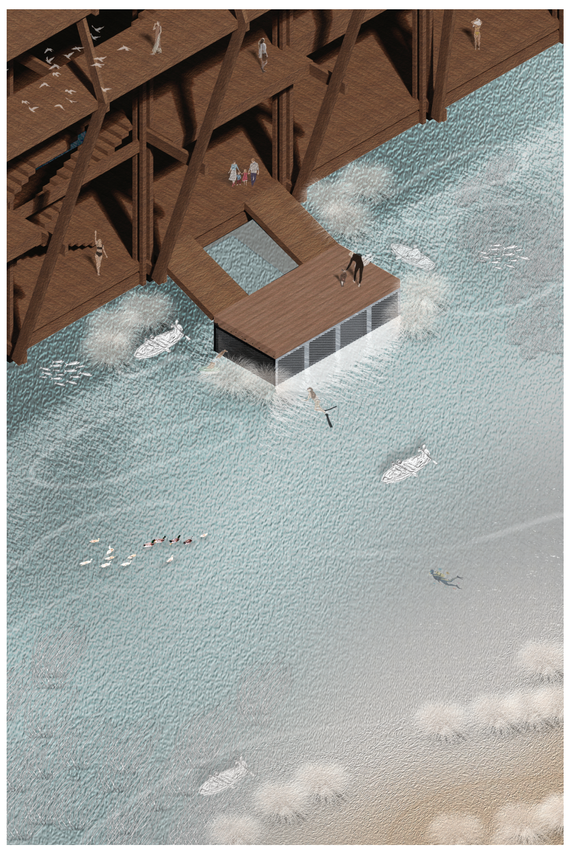


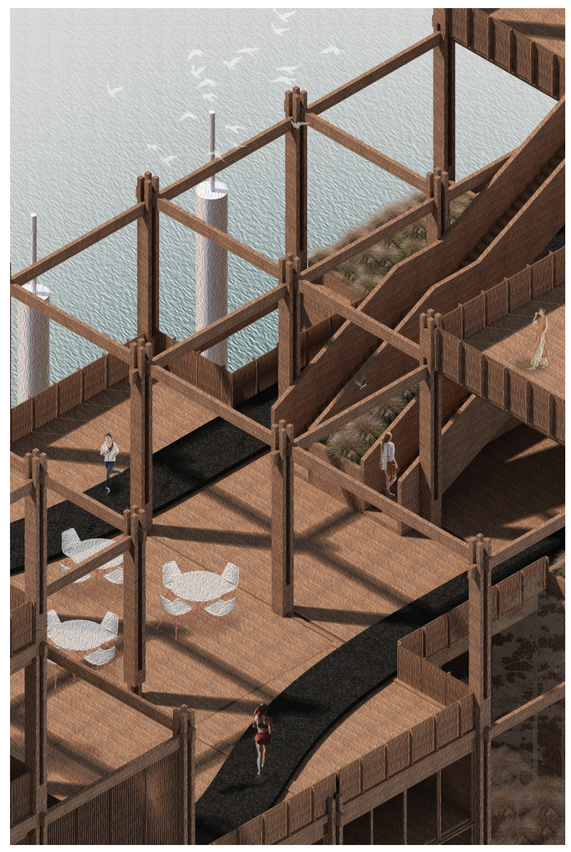
GREEN ROOF DETAIL

1 Planting Ground cover
2 Geo-Fabric Layer
3 Waterproofing/Protection Layer
4 Overflow
5 Fresh water Coarse Sand
6 Drainage Cells
7 Gypsum fiberboard
8 Sound insulation
Wood Fiber density 100 kg/m3
9 360 MM KERTO-RIPA Roof System
10 Thermal insulation
11 150x400 mm. Azobe' Wooden Beam
12 Stainless Steel Flashing
13 Passive house window









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MULTIFUCTIONALITY

The new architectural design methodology represents the relationship between the existing flood barrier and Zeeland biodiversity. In this unique context, the multifunctionality of architecture plays an important role in connecting the massive infrastructure and the ecological systems.

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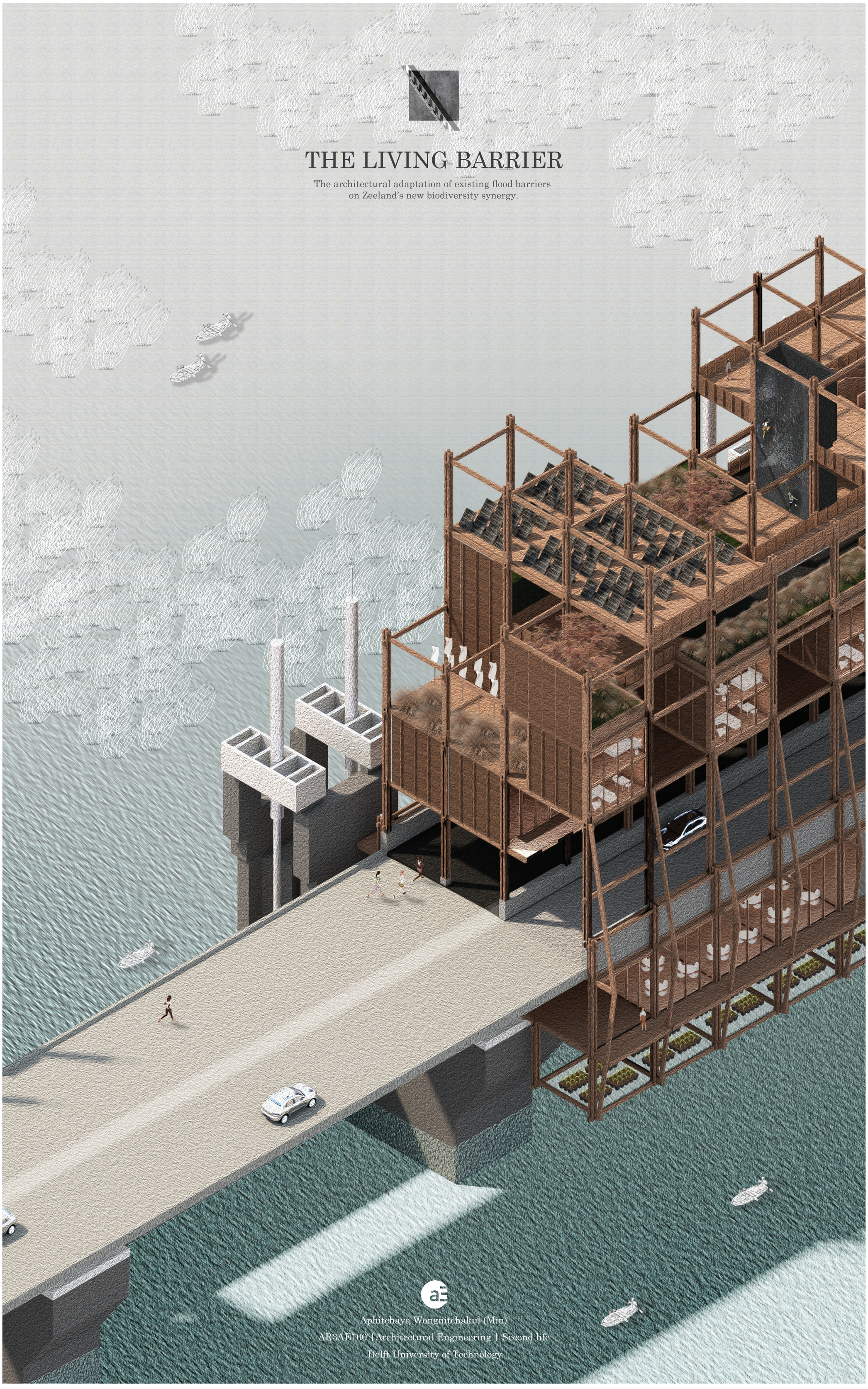

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