

## IFL | Identified Flooding Landscape

P5 presentation



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P5 presentation

### Identified

**Identity** [ ahy-den-ti-tee, ih-den- ]

noun, plural i·den·ti·ties.

- condition or character as to who a person or what a thing is; the qualities, beliefs, etc., that distinguish or identify a person or thing.

### Flooded

**Flood** [ fluhd ]

Noun

- a great flowing or overflowing of water, especially over land not usually submerged.

### Landscape

**Landscape** [ land-skeyp ]

verb (used with object), land·scaped,  
land·scap·ing.

- to improve the appearance of (an area of land, a highway, etc.), as by planting trees, shrubs, or grass, or altering the contours of the ground.

## Problem statement

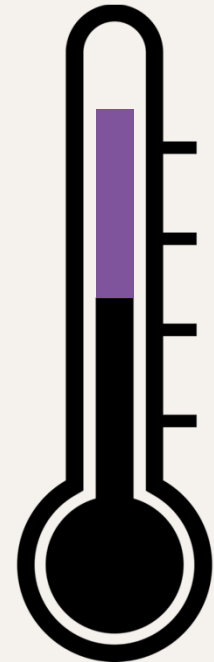
Extreme flooding due to climate change



Floods happen all over the world



Extreme weather conditions cause more severe and frequent flooding



Global temperature is expected to rise 0,2 degrees per decade

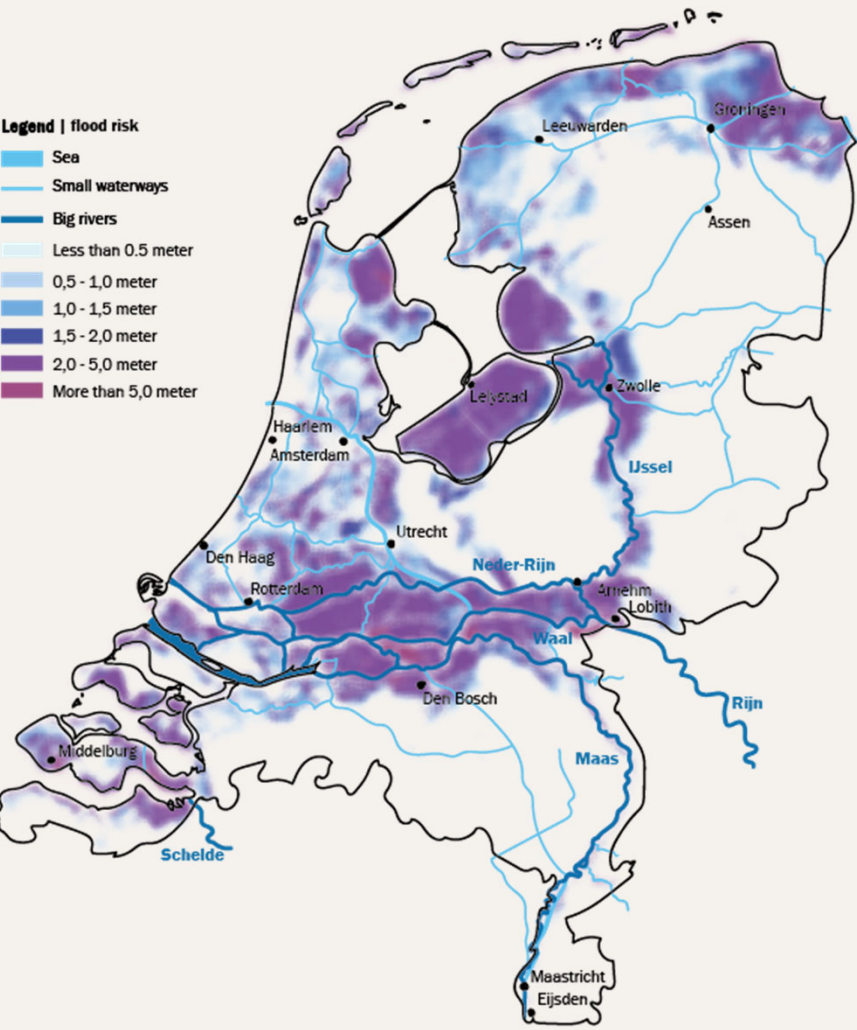






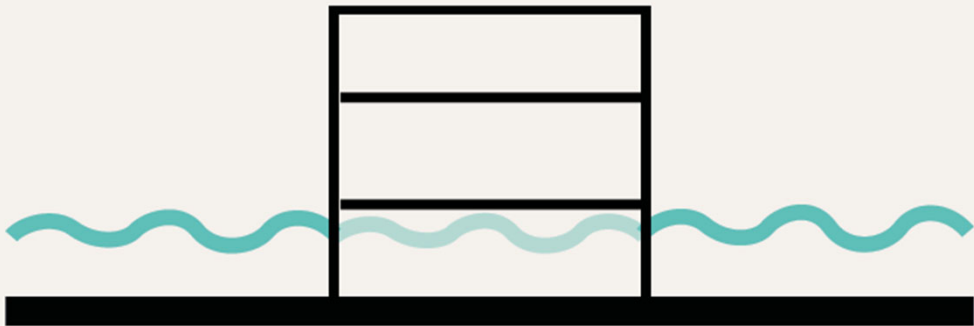
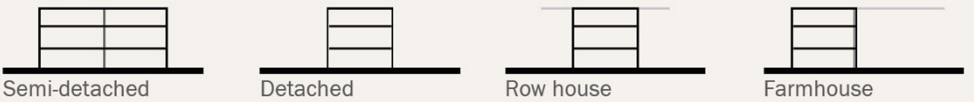
# Problem statement

Current residential buildings in the netherlands



## Current family home in the Netherlands during a flood.

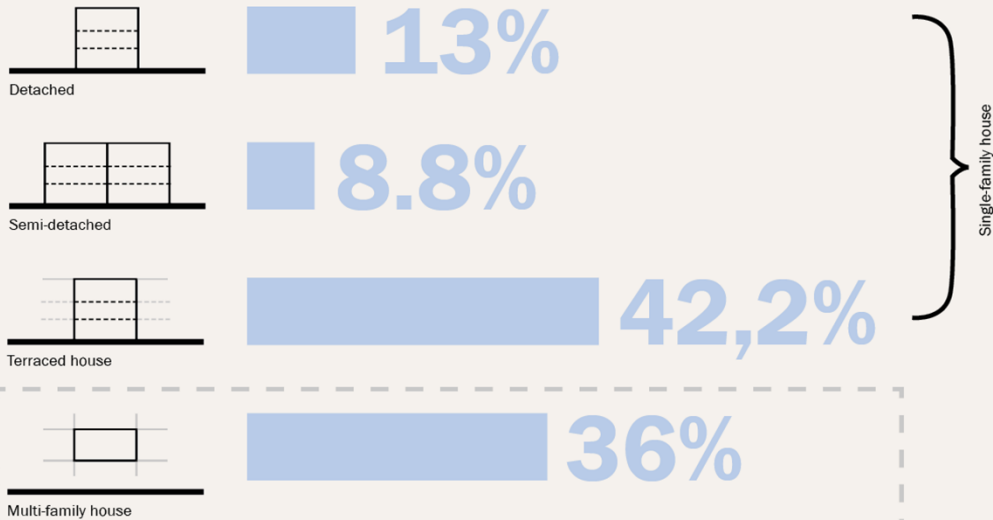
Multiple types



# Target group

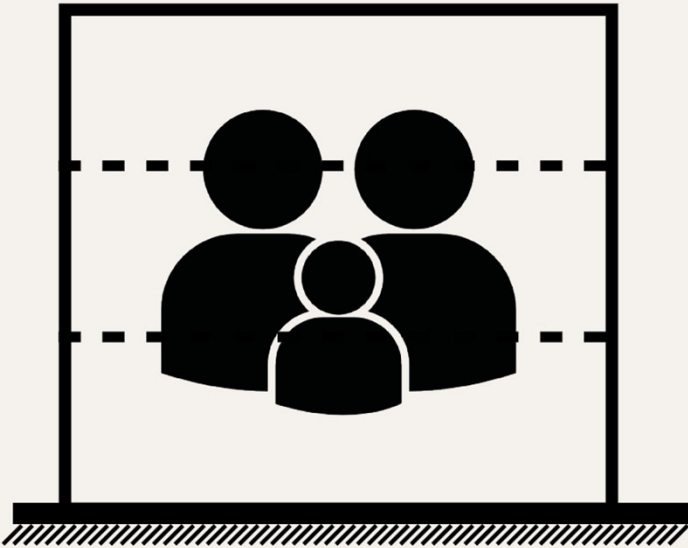
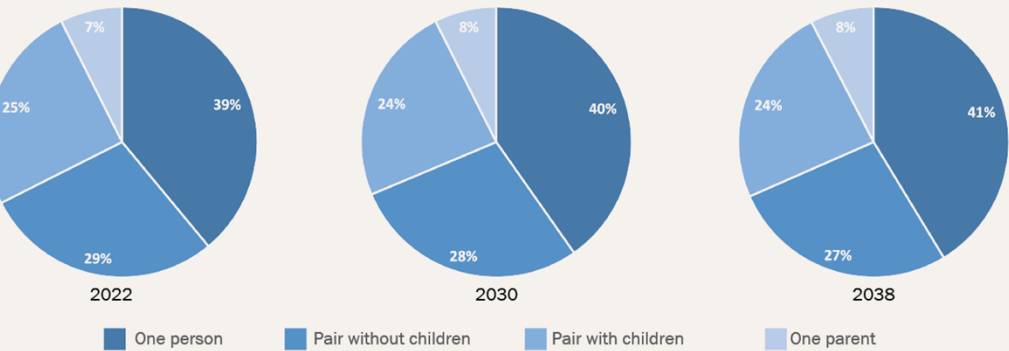
Possible house owners and renters

Current housing typologies in NL (CBS, 2021)



Multi family house is excluded from the study since the problem statement clearly states that there is a problem with land bound houses. And since the biggest percentage of these houses are not accessible on street layer this does not involve these houses. Not saying there would be a problem if these flood and that there is no risk, it is just that at this moment the risk is higher for land bound typologies.

Average household in NL (CBS, 2022)



Single family housing

For



Possible home owners

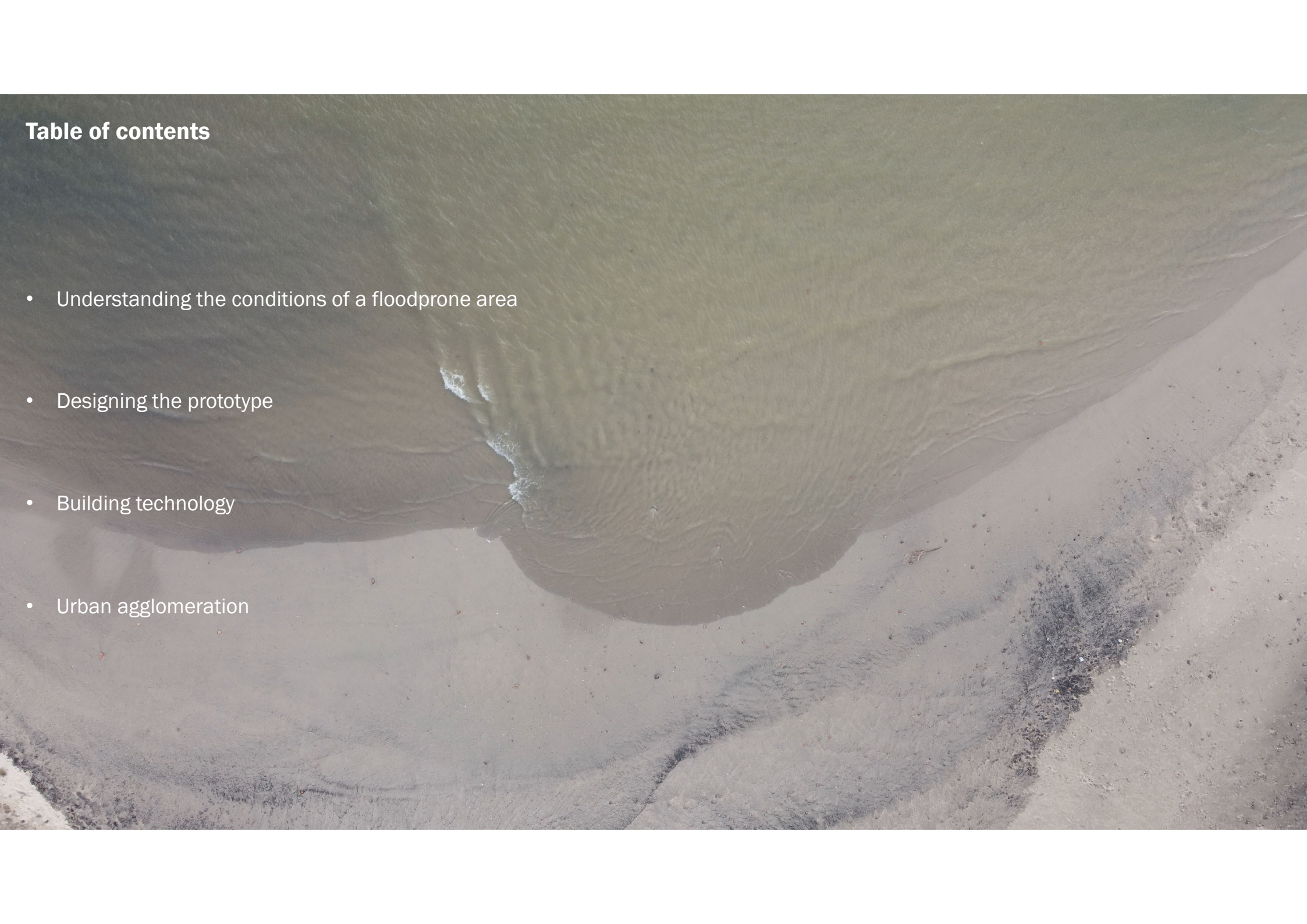


Possible home renters



## Overall design question

What are the spatial consequences for a building constructed in flood prone areas that offers resilience against the dynamics of floods?

An aerial photograph of a river delta, showing the intricate patterns of water channels and sediment deposits. The water is a murky, olive-green color, while the surrounding land is a light, sandy beige. The river branches out from the top left towards the bottom right, creating a complex network of channels and islands. The overall texture is grainy, typical of an aerial shot.

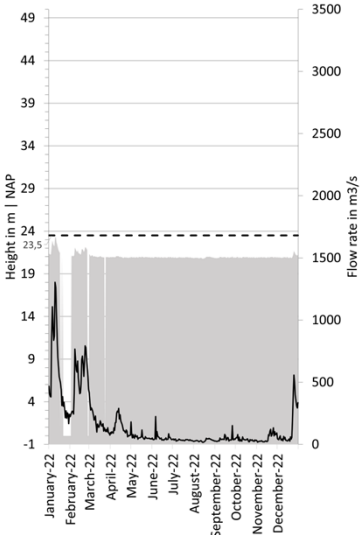
## Table of contents

- Understanding the conditions of a floodprone area
- Designing the prototype
- Building technology
- Urban agglomeration

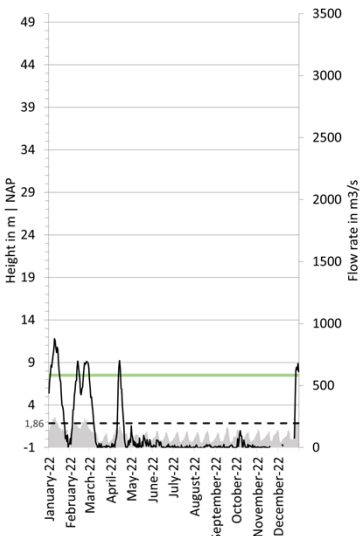


# Understanding the conditions

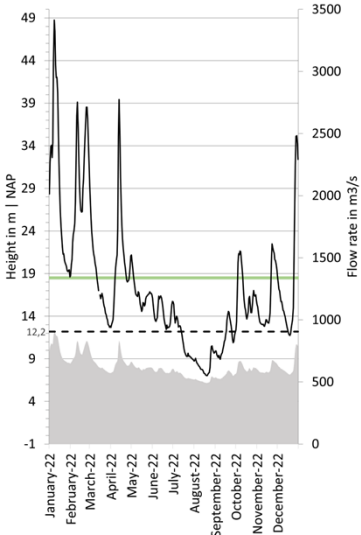
Floodplains as test case



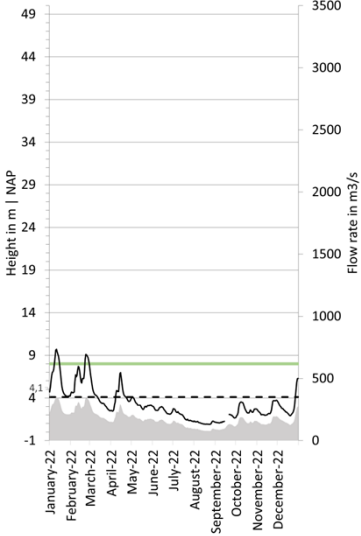
3, Maasbracht (Maas)



17, Lexmond (neder-rijn)



13, Millingen a/d Rijn (Waal)



19, Olst (ijssel)

Water level  
Flow rate  
Ground level  
Dike height

# Understanding the conditions

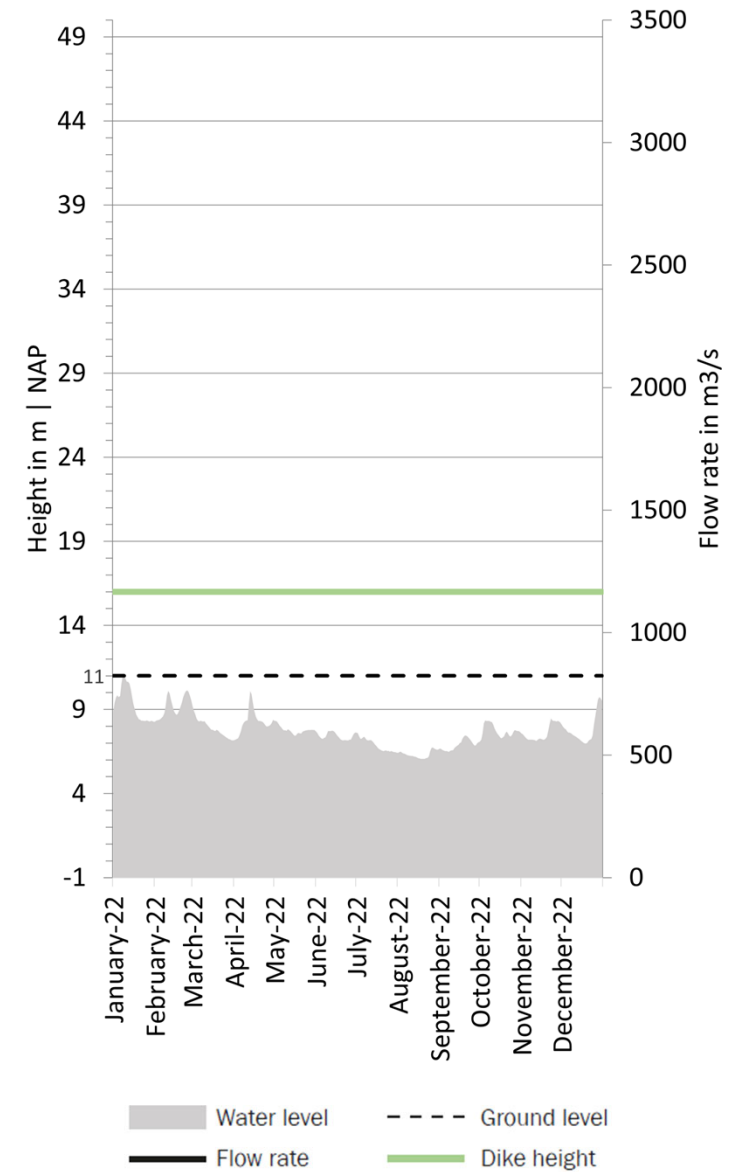
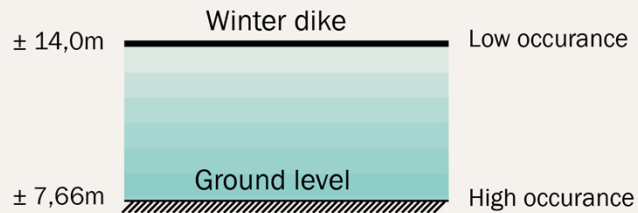
Flood water characteristics

## Possible rising speed of water level\*



\*depending on rainfall intensity, original waterlevel and flow rate

## High water occurrence

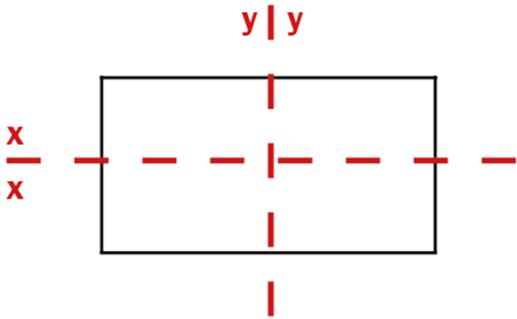
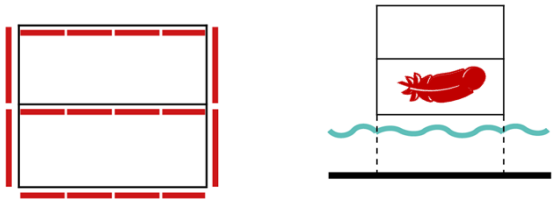
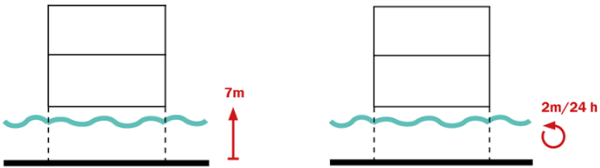




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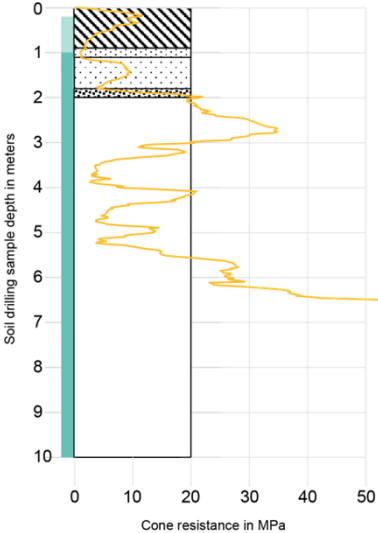
Guidelines for designing in flood prone areas based on:

## Flood water

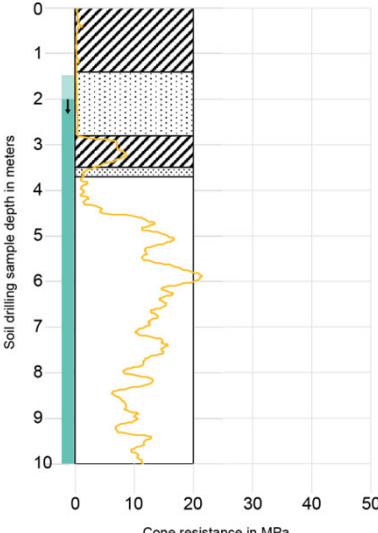


# Understanding the conditions

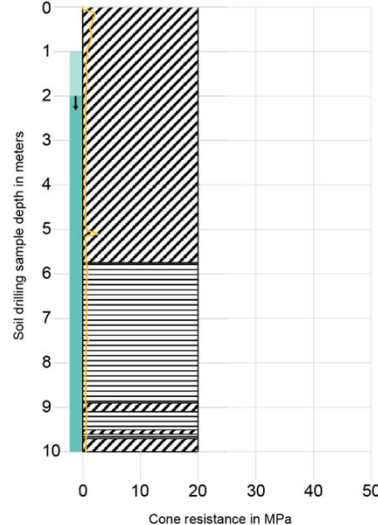
Soil characteristics in floodprone areas



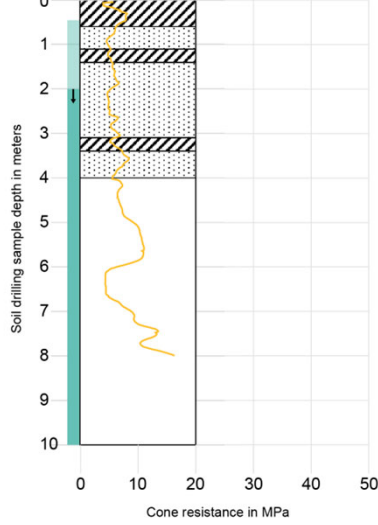
3, Maasbracht (Maas)



13, Millingen a/d Rijn (Waal)



17, Lexmond (neder-rijn)

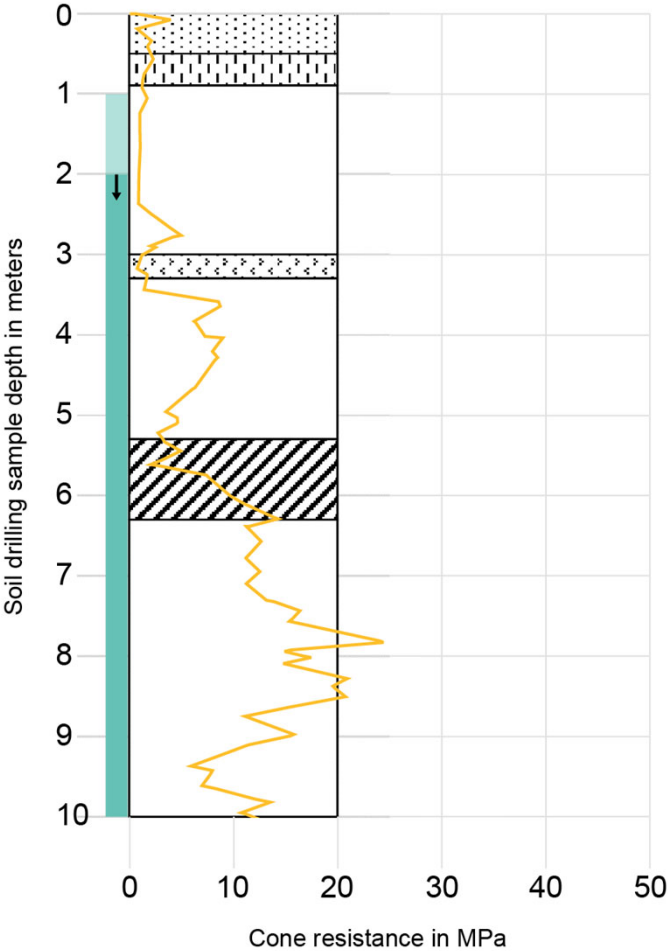
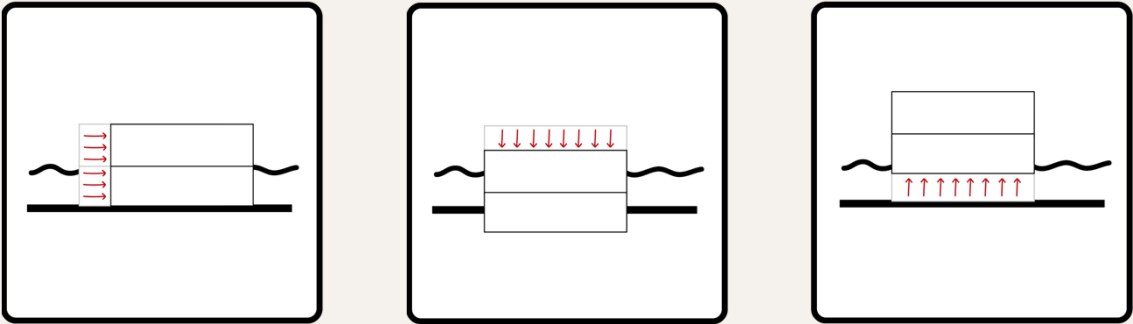


19, Olst (ijssel)



# Understanding the conditions

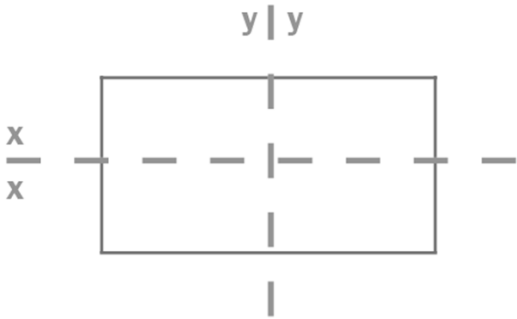
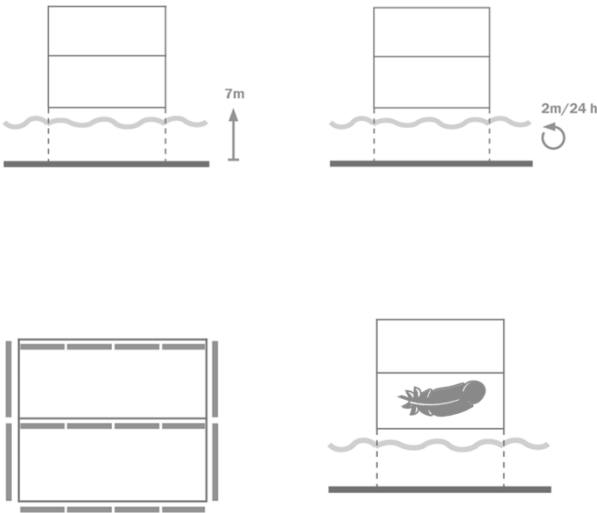
Soil characteristics in floodprone areas



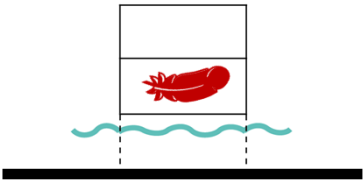
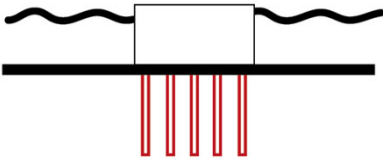
# Understanding the conditions

Guidelines for designing in flood prone areas

Flood water

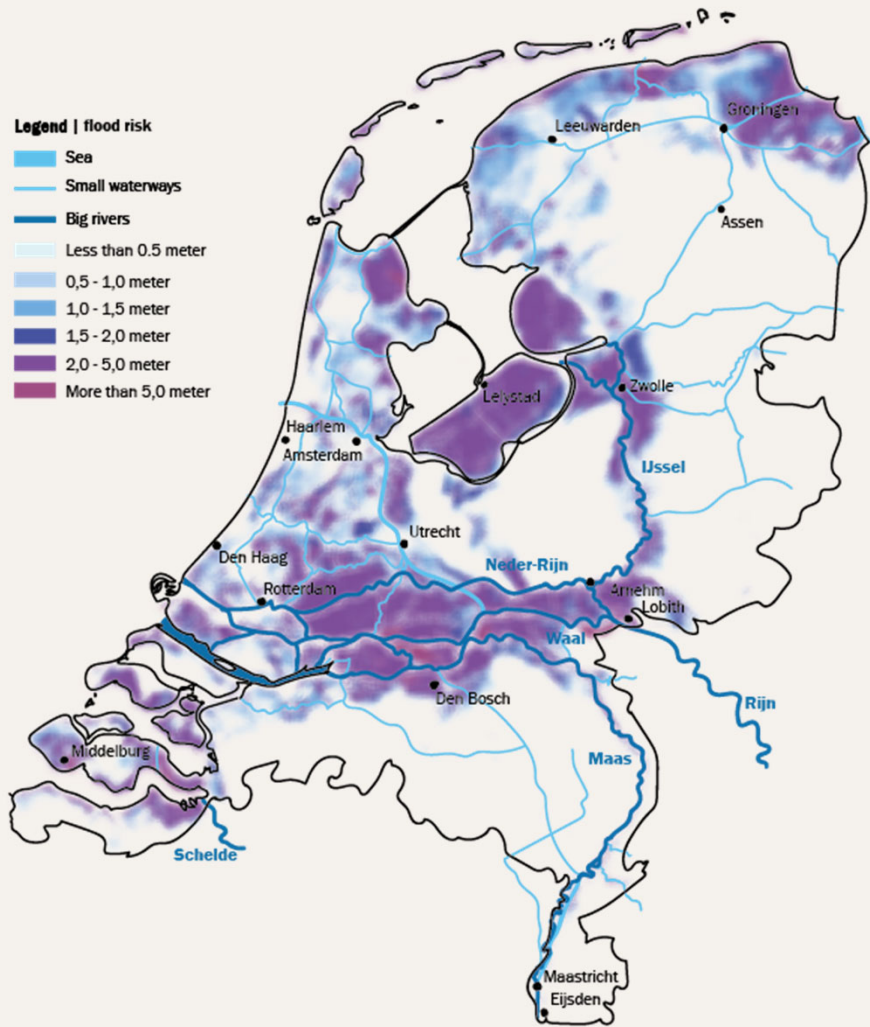


Soil



# Understanding the conditions

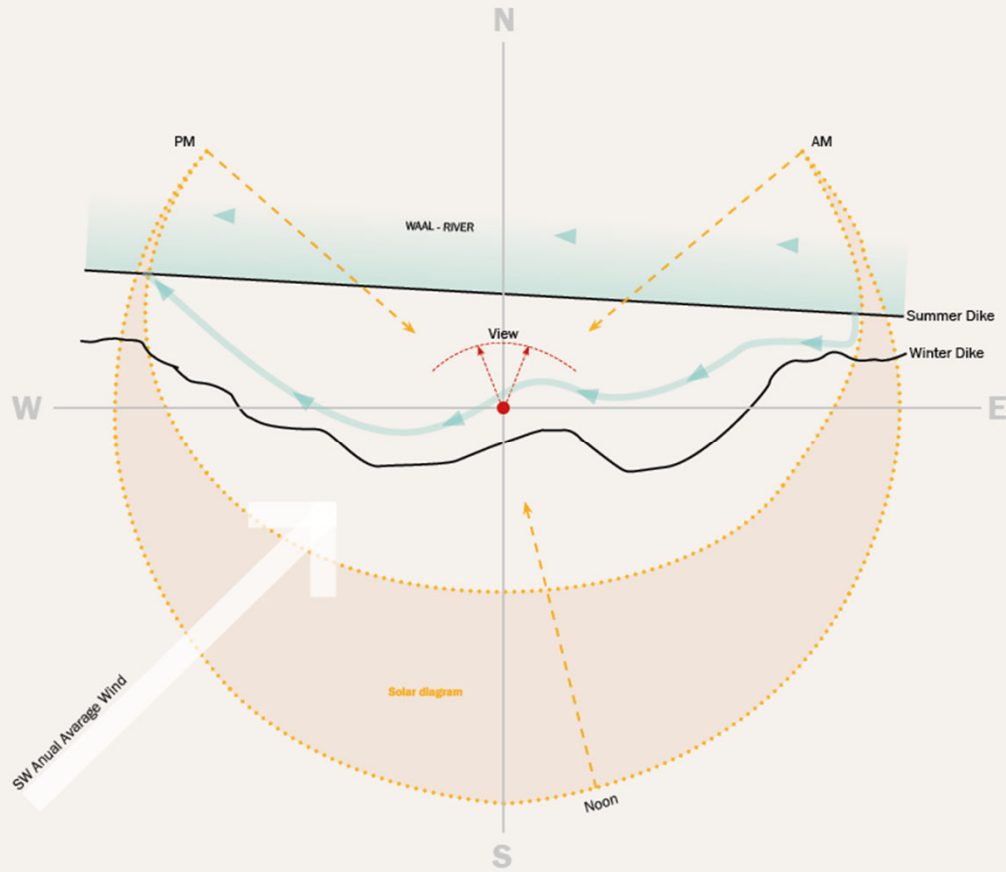
Location characteristics





# Understanding the conditions

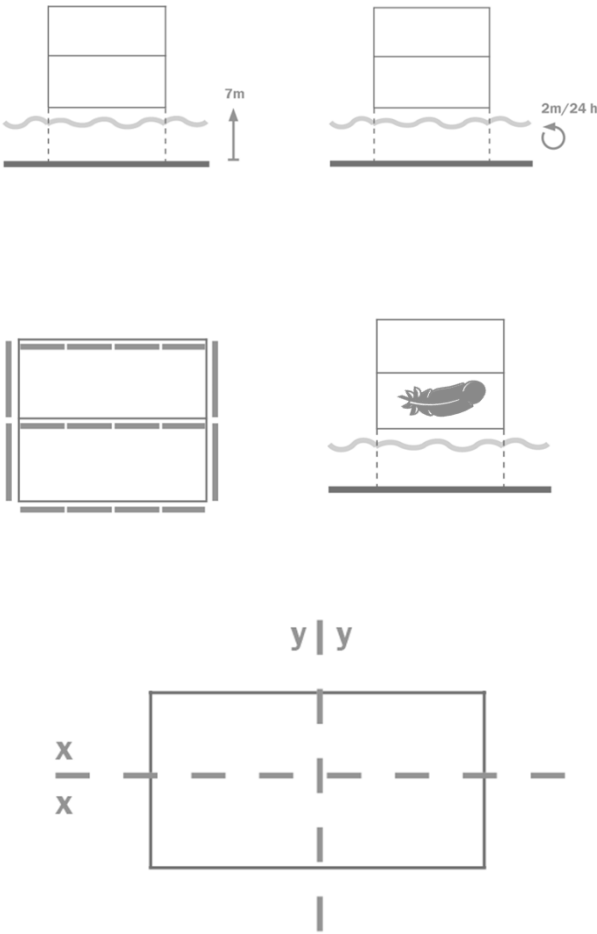
Location waal – deest characteristics



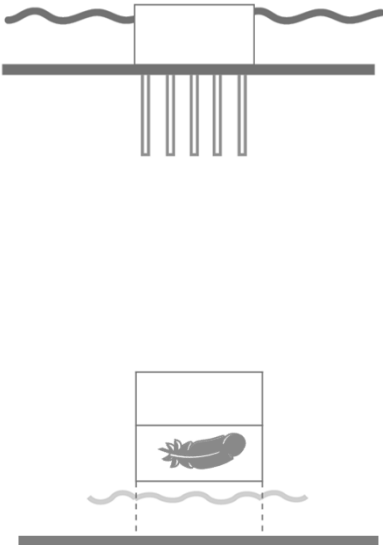
# Understanding the conditions

Guidelines for designing in flood prone areas

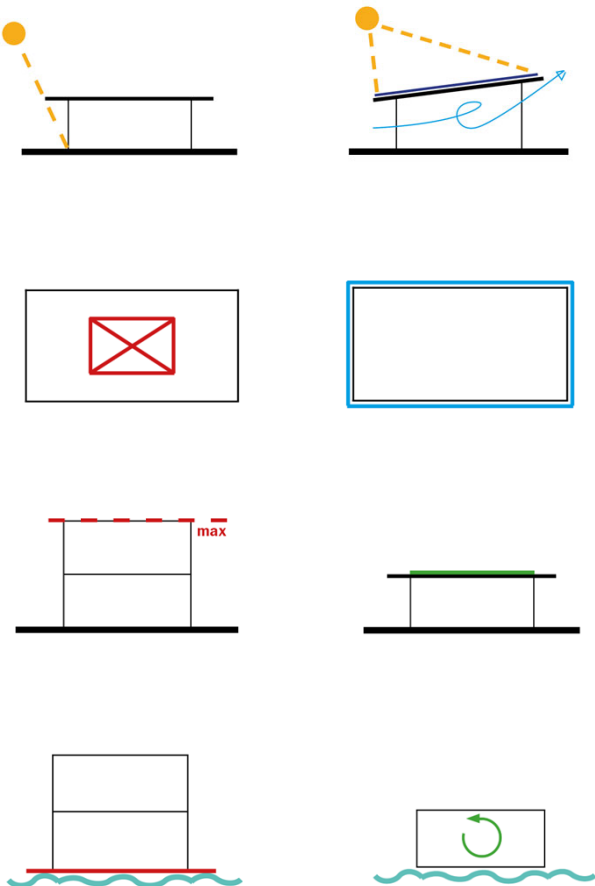
## Flood water



## Soil



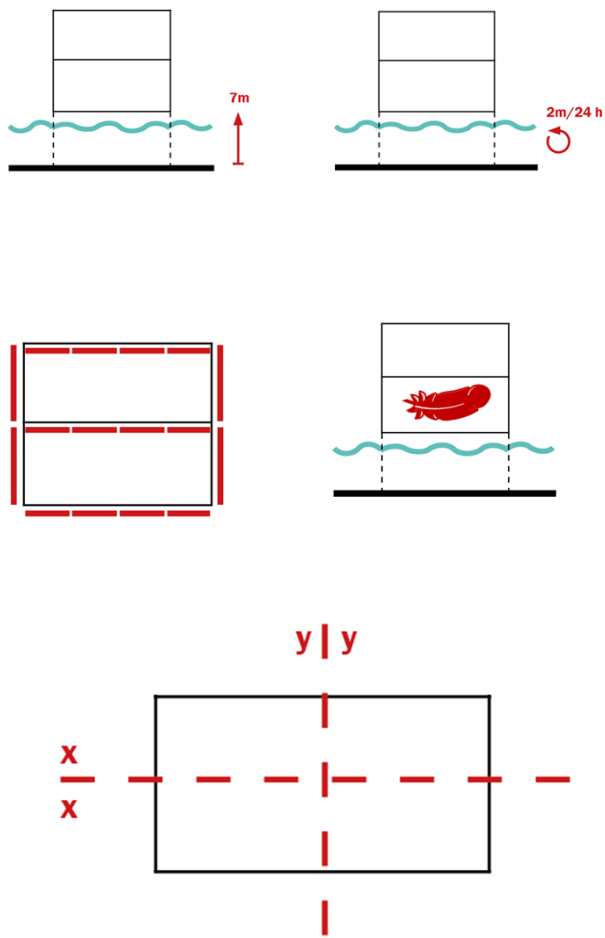
## Location characteristics



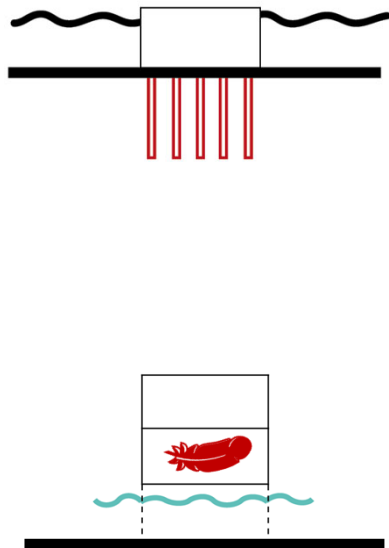
# Understanding the conditions

Guidelines for designing in flood prone areas

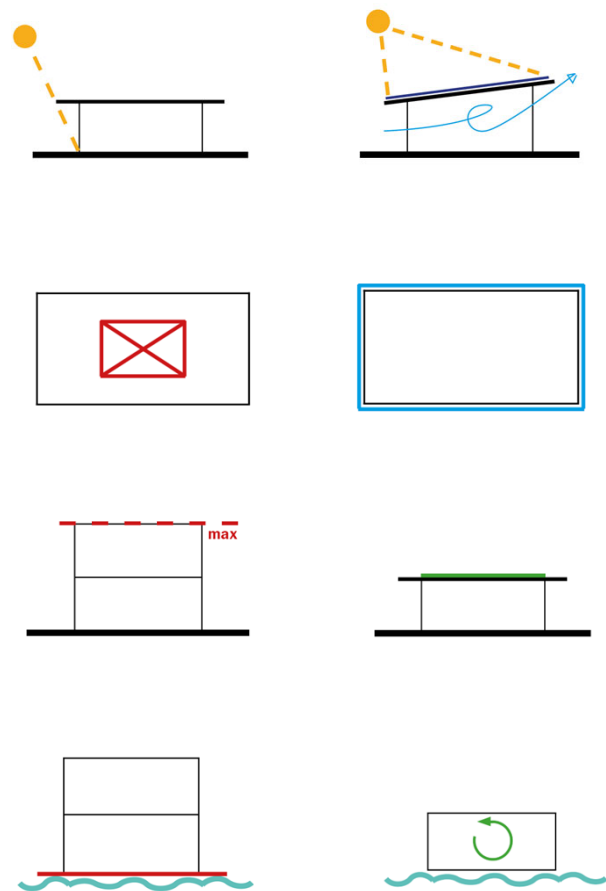
## Flood water



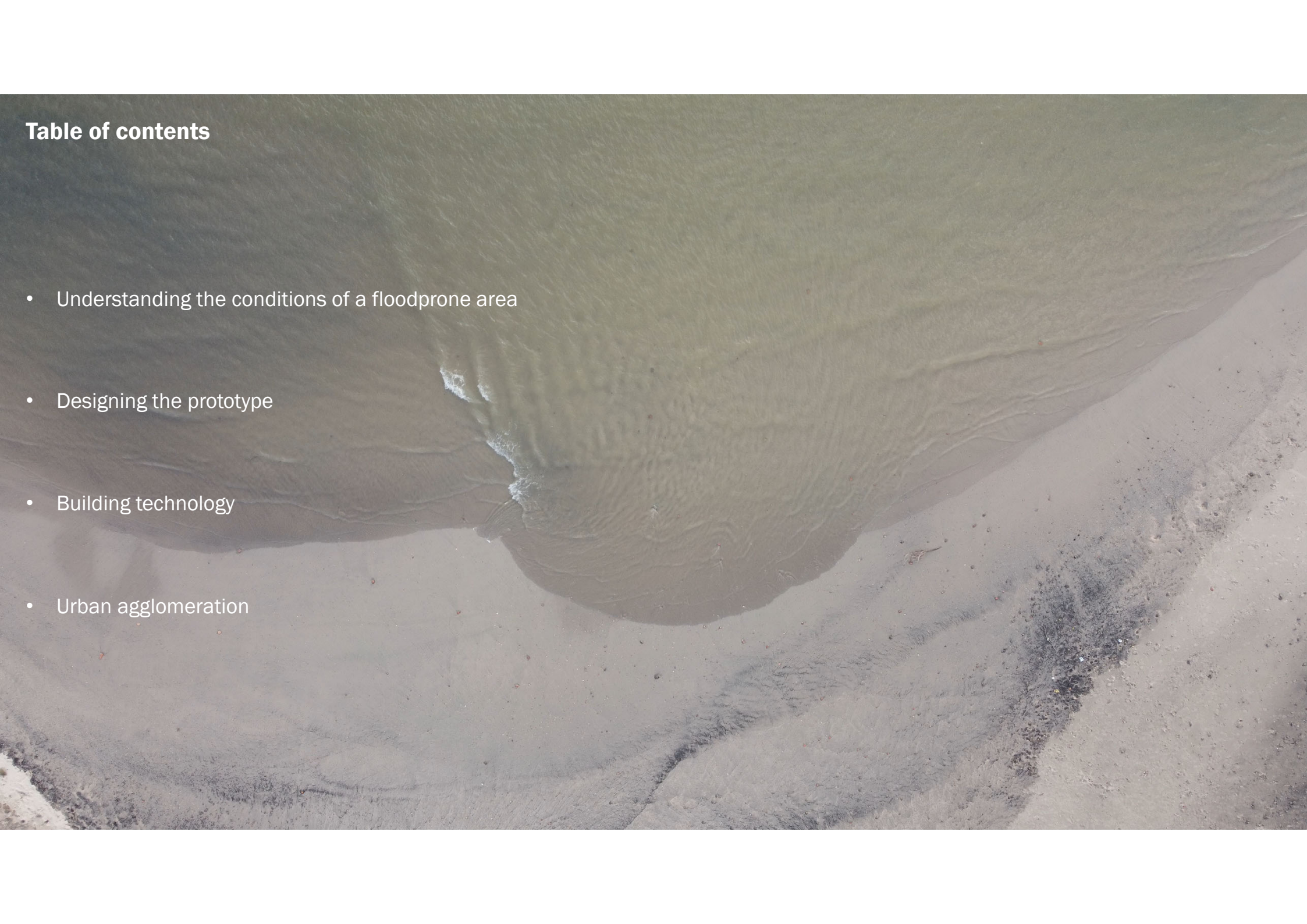
## Soil



## Location characteristics





An aerial photograph of a river delta, showing the intricate patterns of water channels and sediment deposits. The water is a murky, olive-green color, while the surrounding land is a light, sandy beige. The river branches out from the top left towards the bottom right, creating a complex network of distributaries. The overall texture is grainy, typical of an aerial shot. A semi-transparent white box containing a table of contents is overlaid on the left side of the image.

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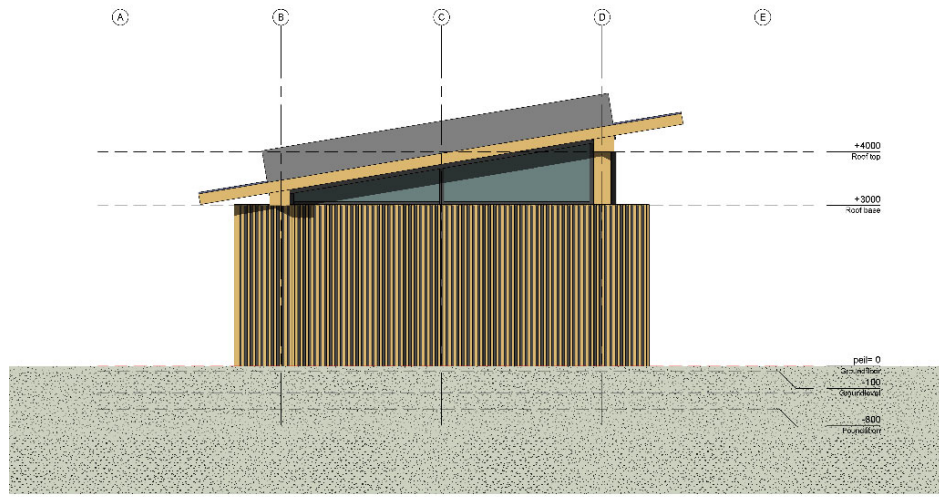
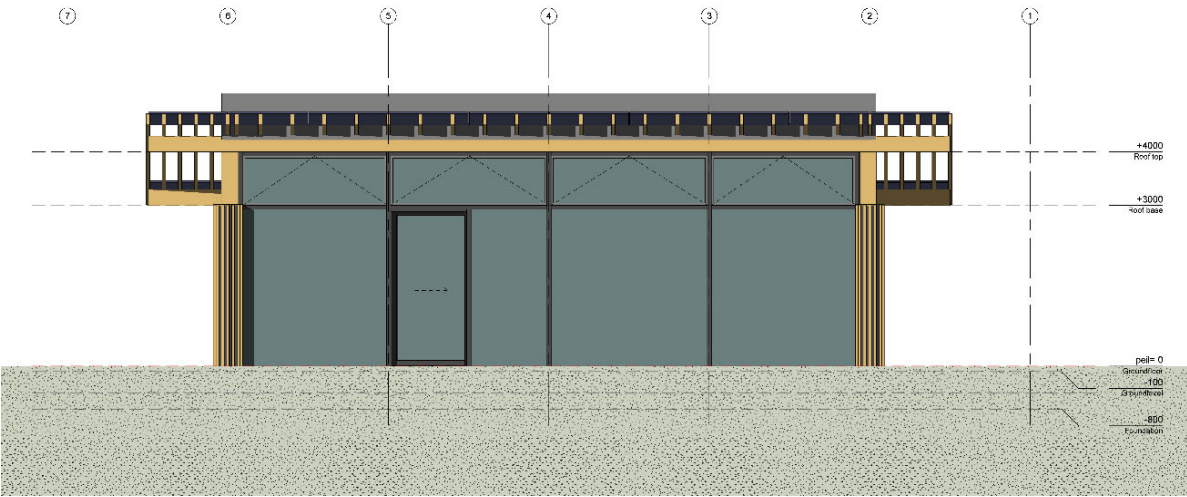
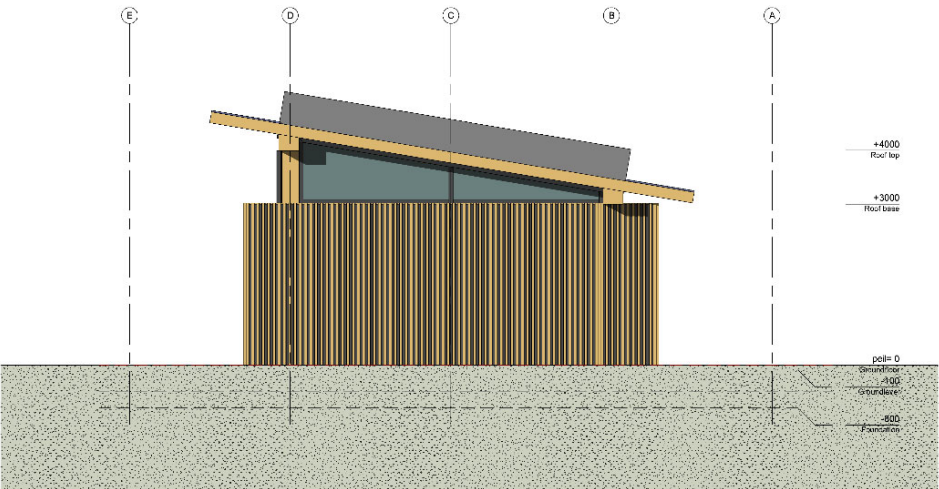
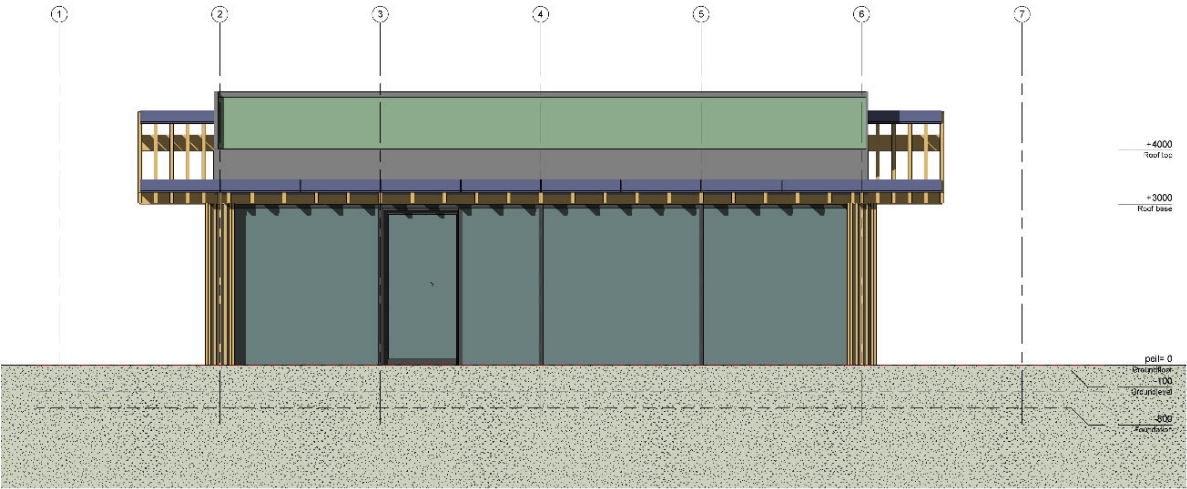
# Designing the prototype

Exterior

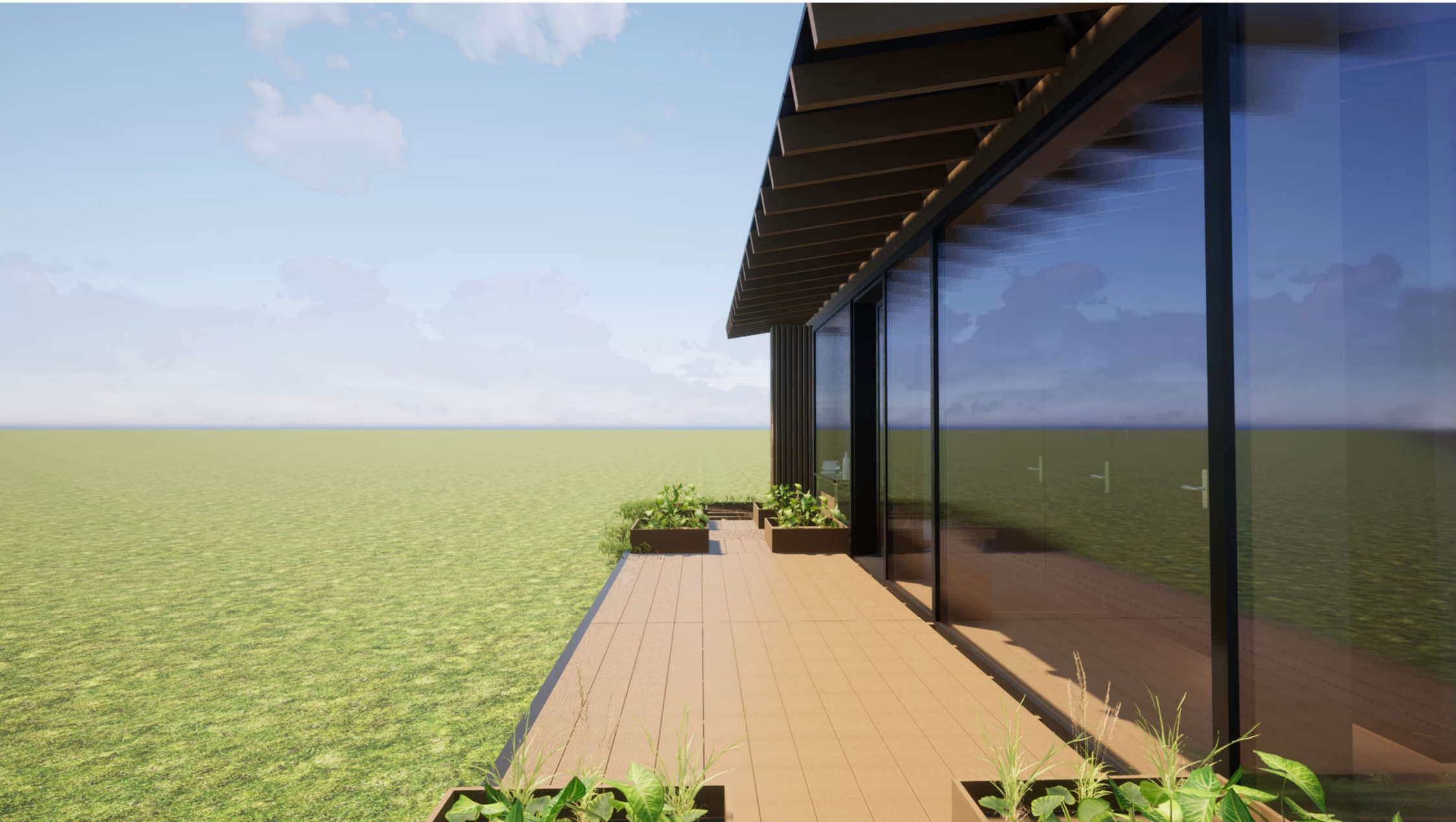


# Designing the prototype

## Facade

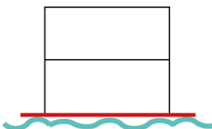
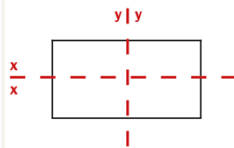
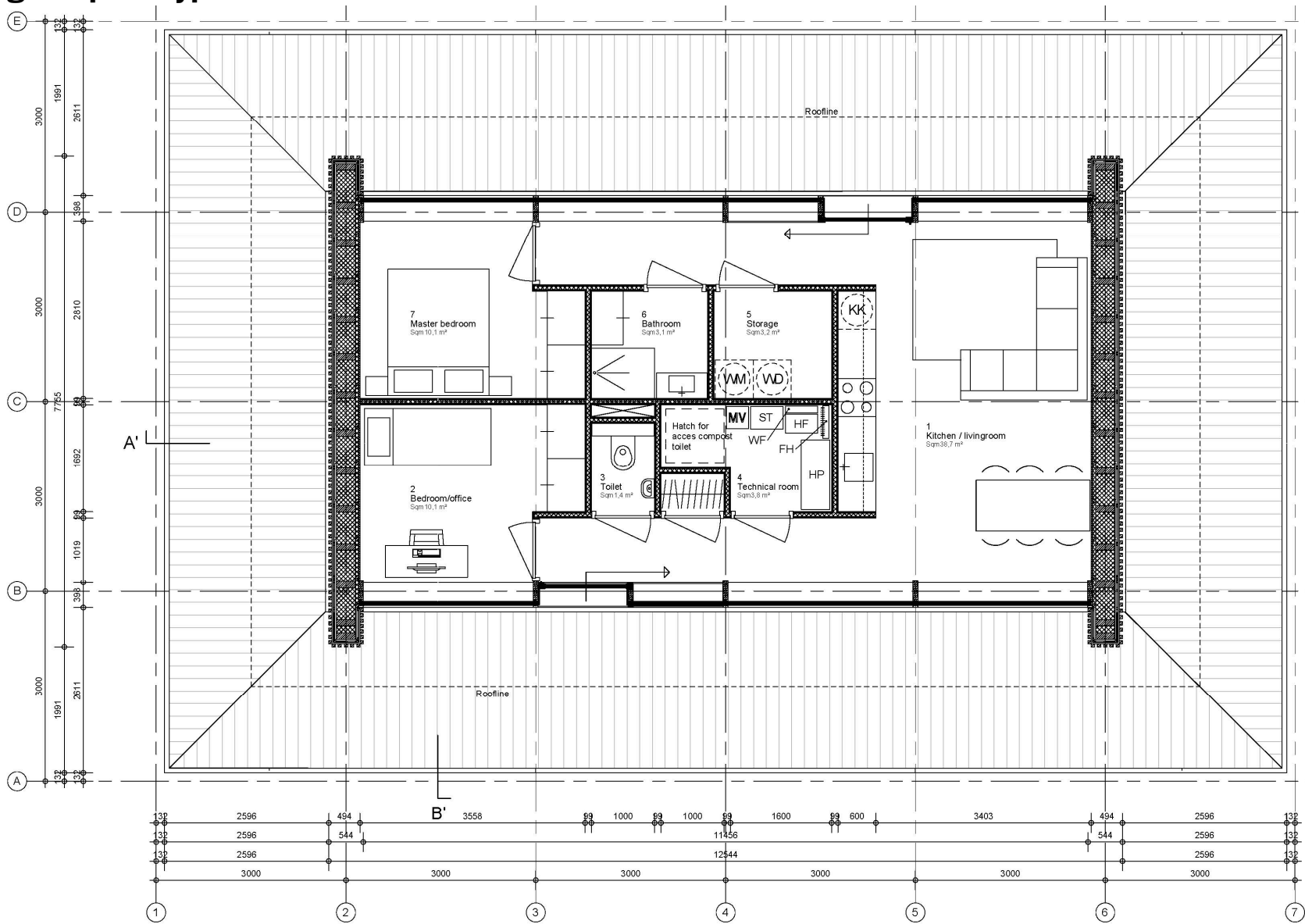






# Designing the prototype

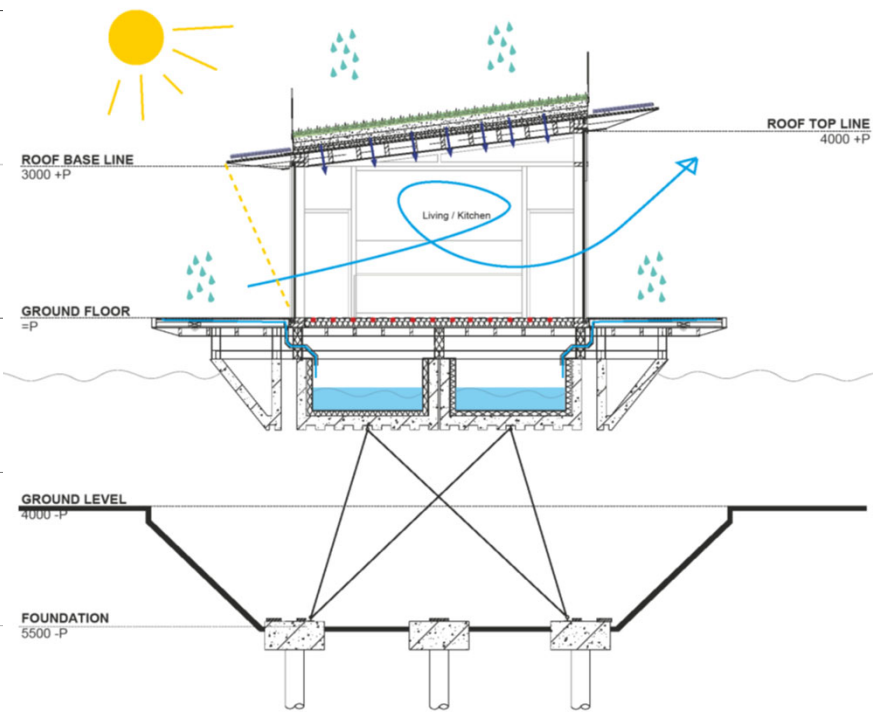
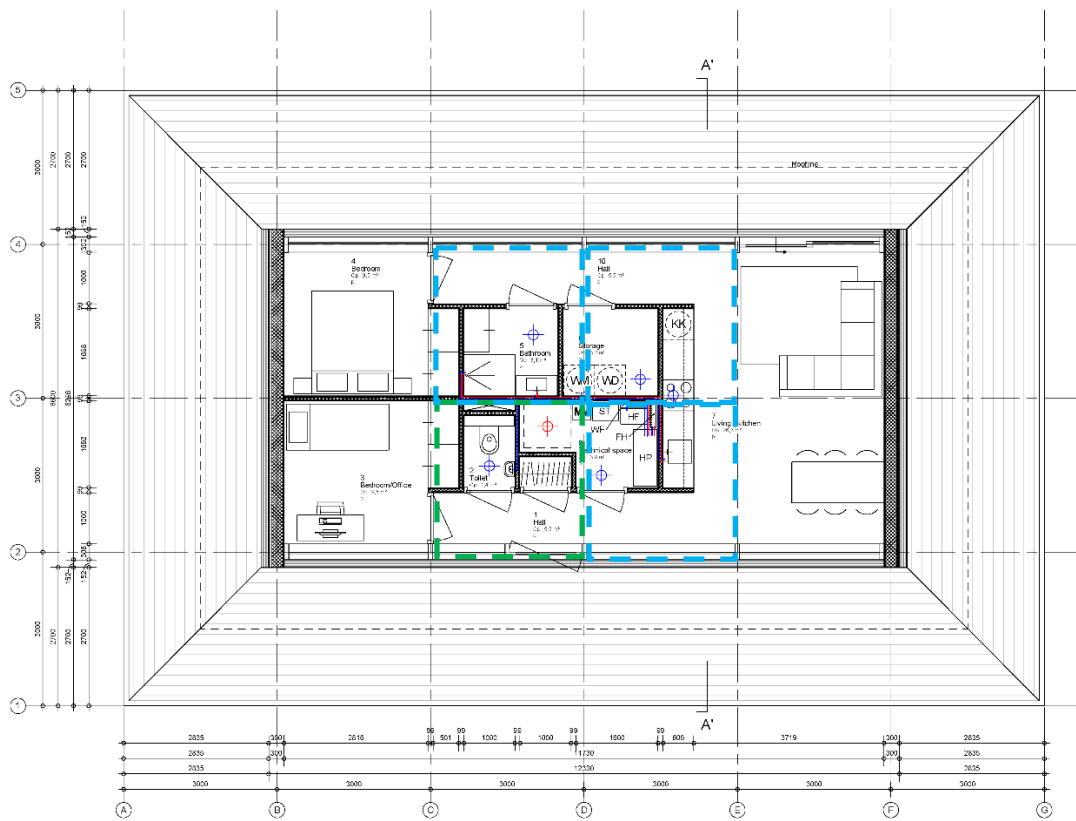
Floorplan



# Designing the prototype

Climate

Compost toilet – Sunshade – Solarpanels – Rainwater storage – Drinking water – Ventilation – Heatpump – Green roof



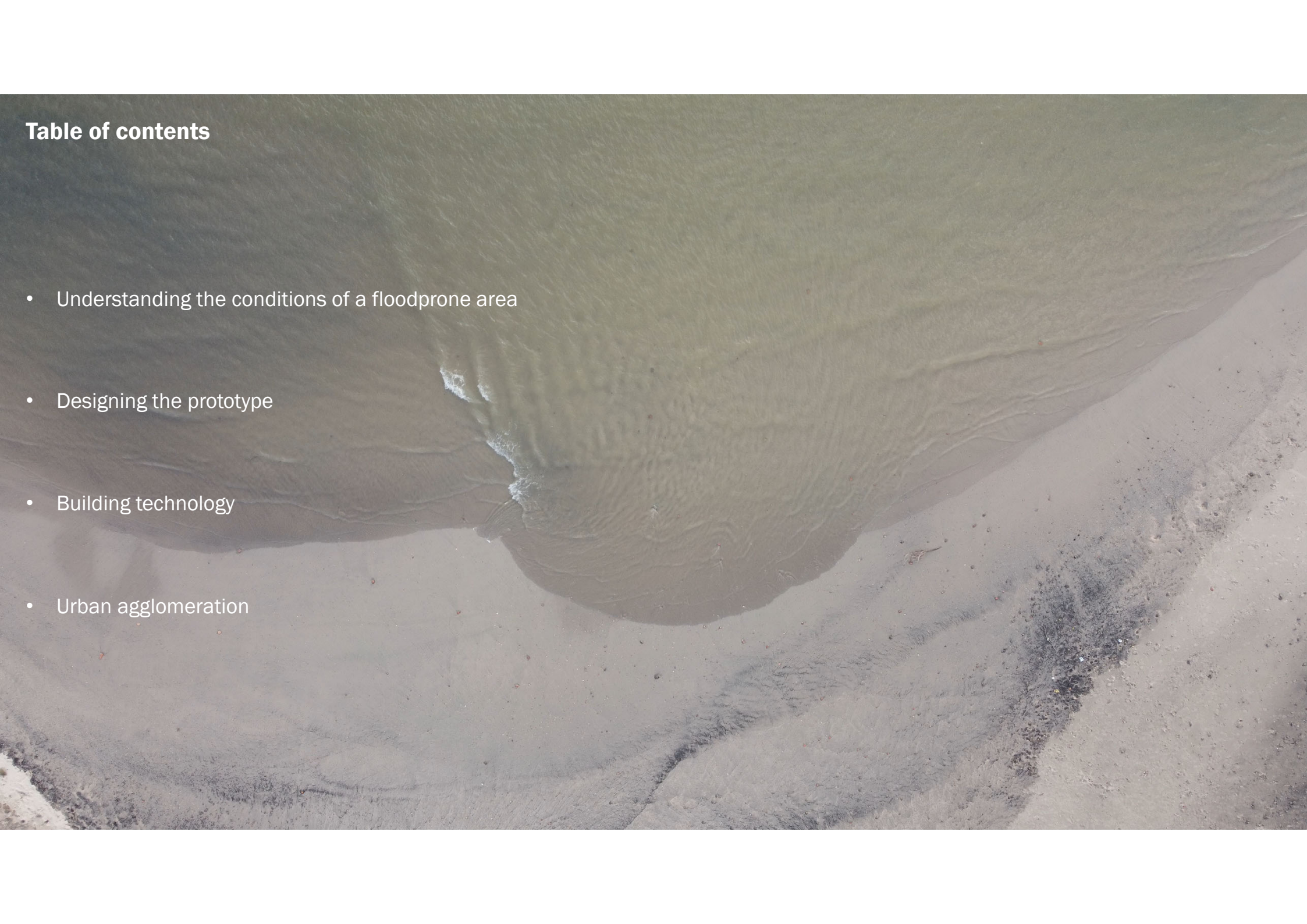


## Designing the prototype

overall





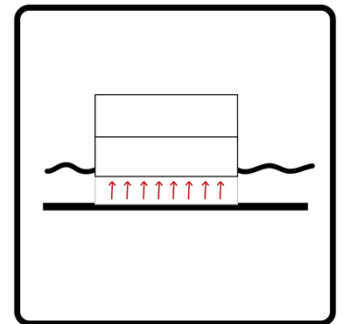
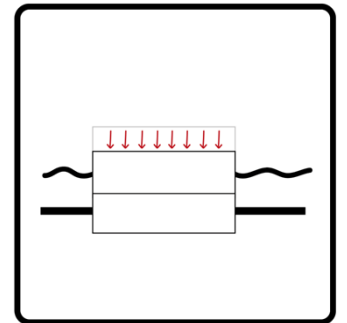
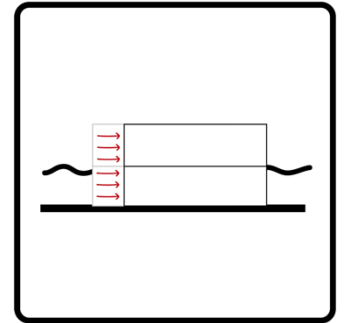
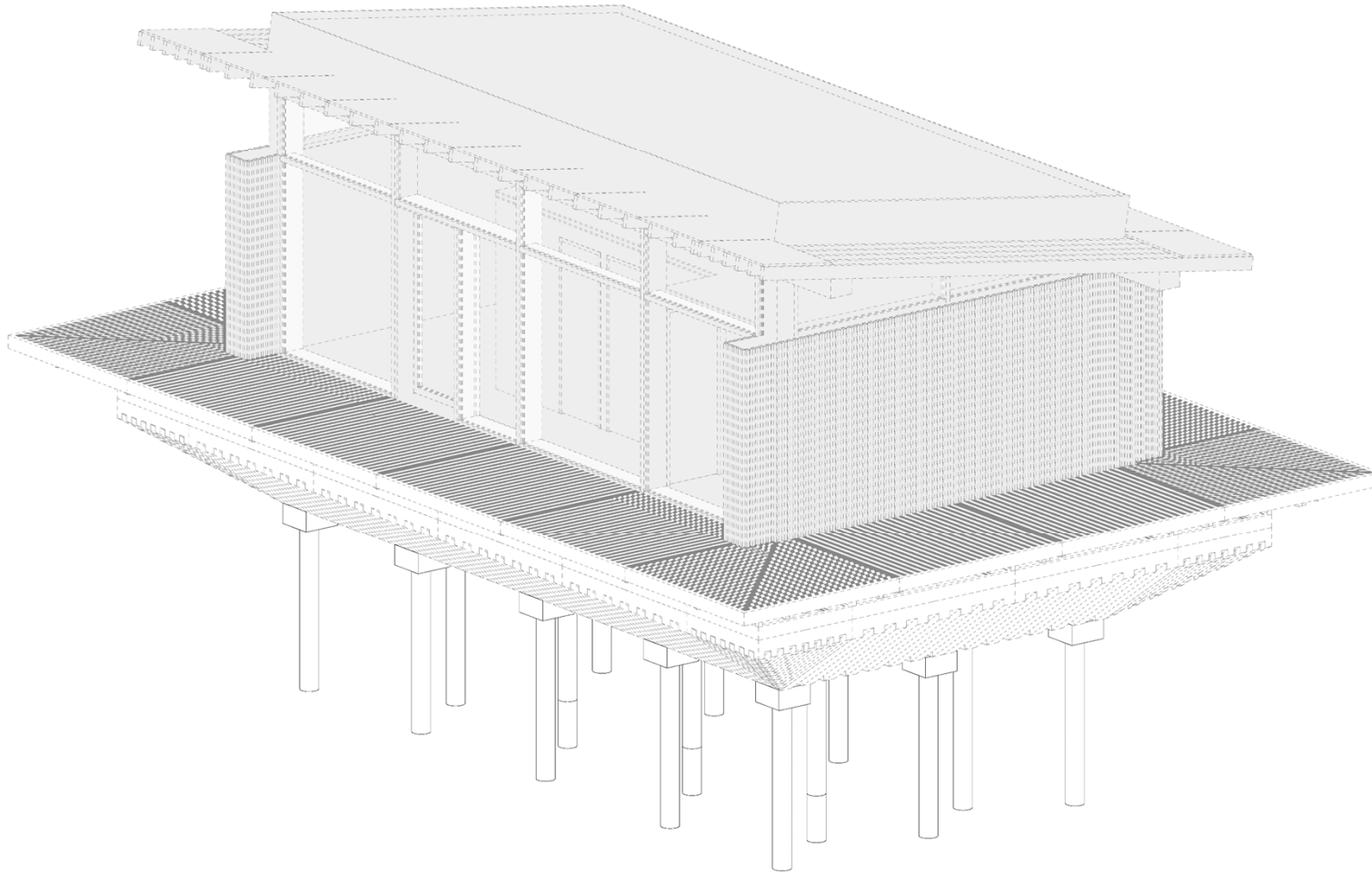
An aerial photograph of a river delta, showing the intricate patterns of water channels and sediment deposits. The water is a murky, olive-green color, while the surrounding land is a light tan or beige. The text of the table of contents is overlaid on the left side of the image.

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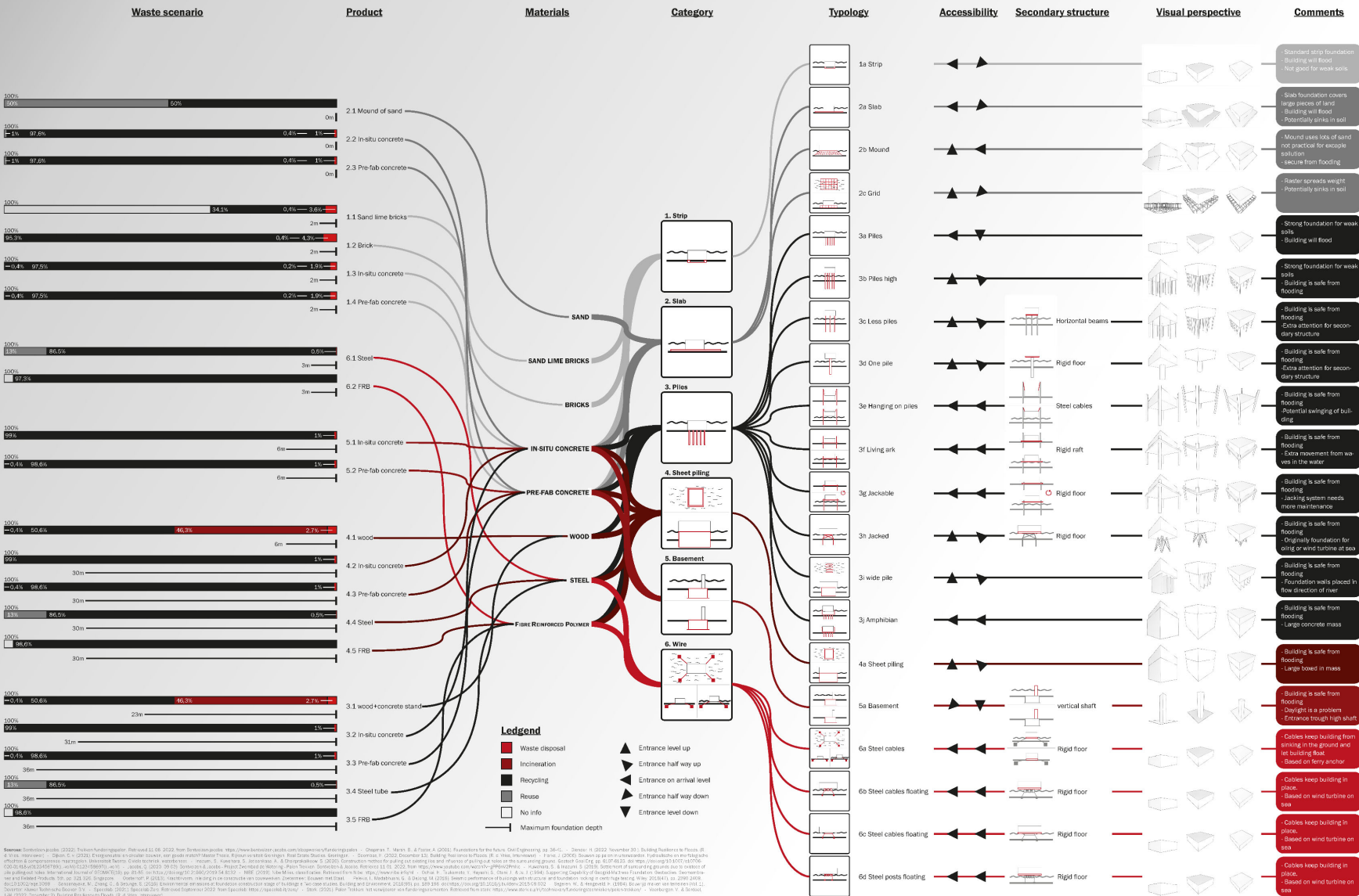
# Building technology

Overview axonometric view | foundation





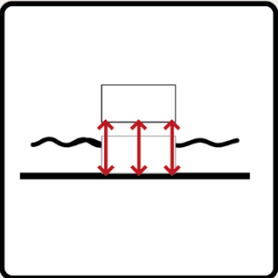
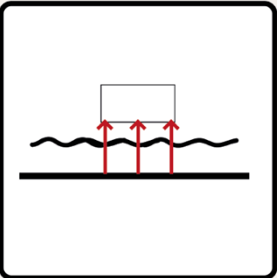
## Foundation typology



# Building technology

Foundation typology

Statically raised      OR      In height adaptive



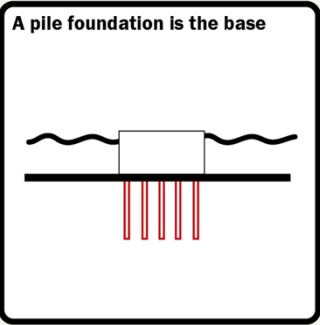
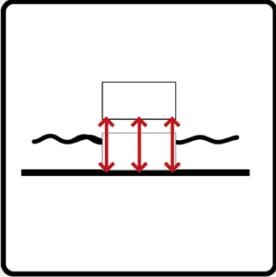
Water landscape

Grass landscape

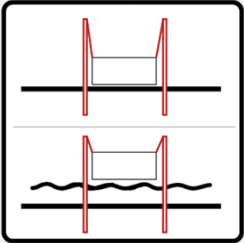


## In height adaptive

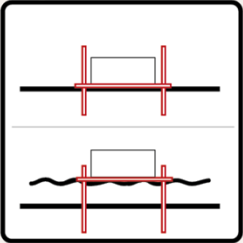
This foundation is a better solution for a project that has to deal with two entirely different landscapes.



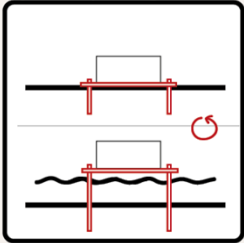
Steel cables on piles



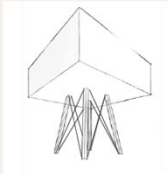
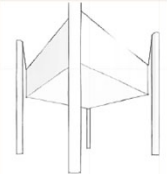
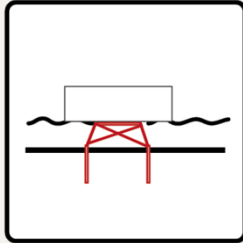
Living ark



Adjustable pile height

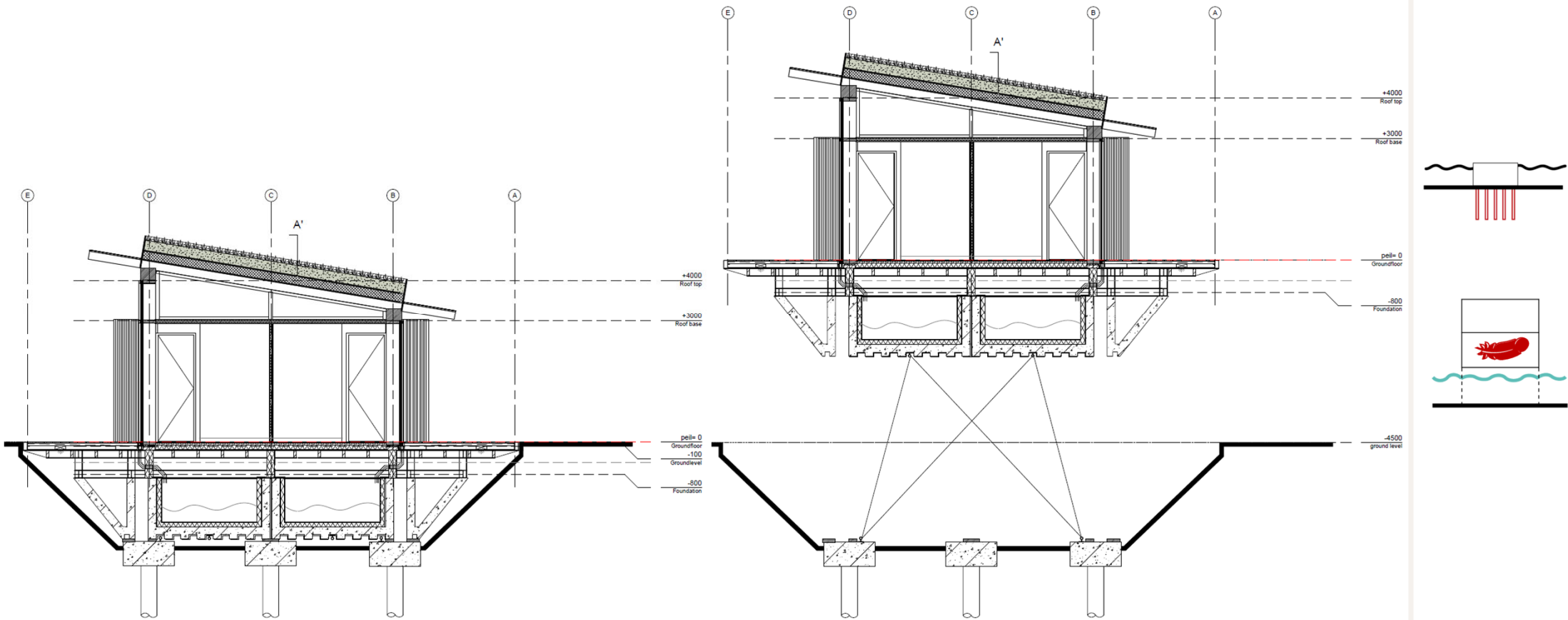


Steel cables



# Building technology

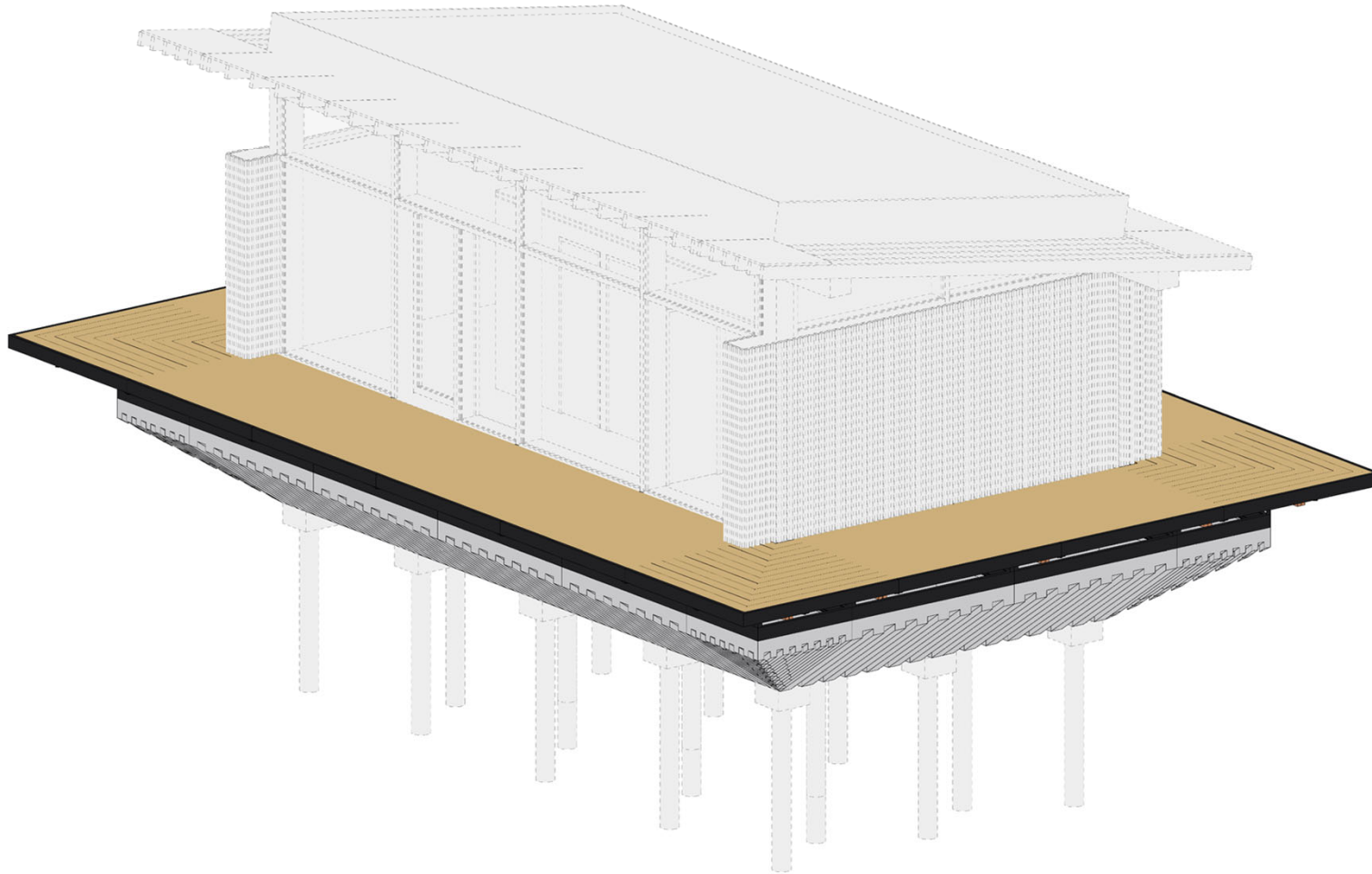
sections





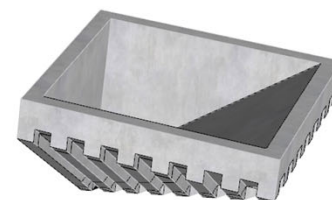
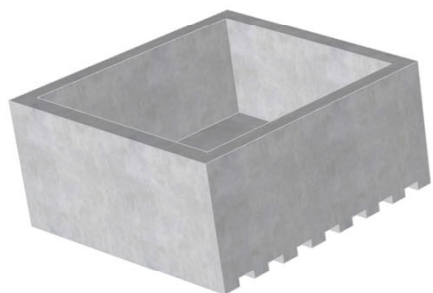
## Building technology

Overview axonometric view | deck



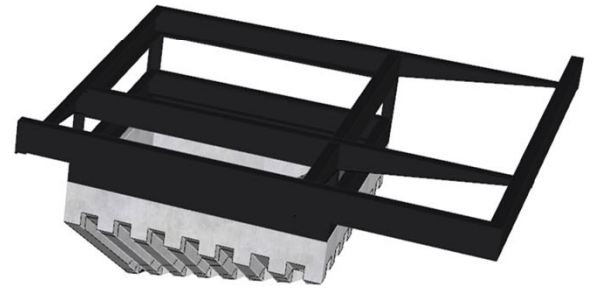
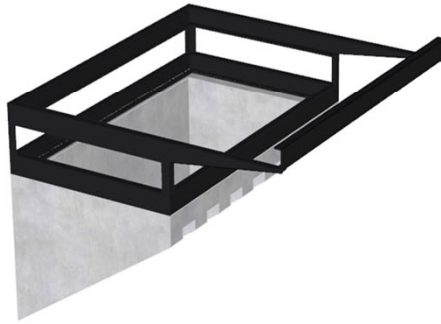
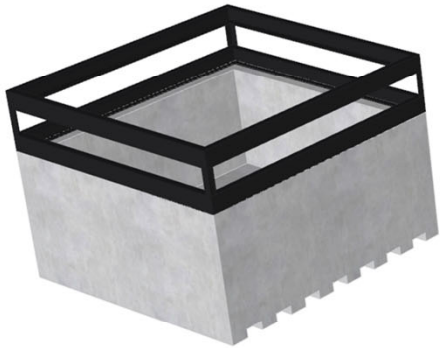
## Building technology

Deck elements



## Building technology

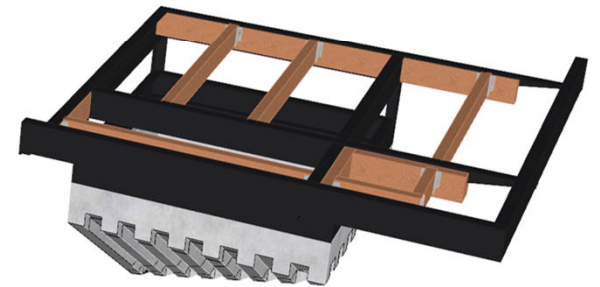
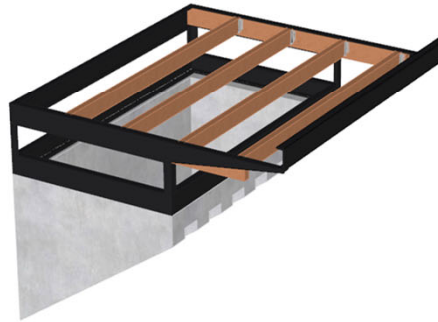
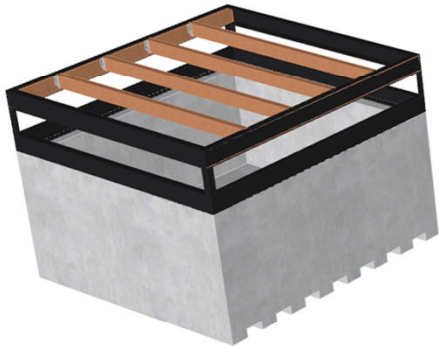
Deck elements





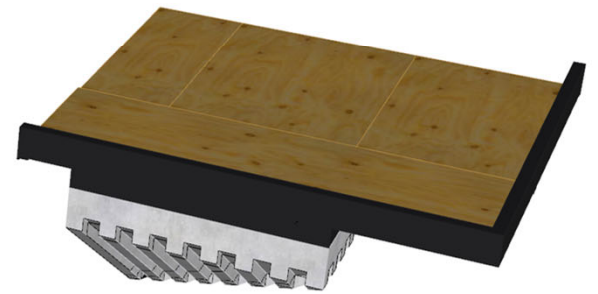
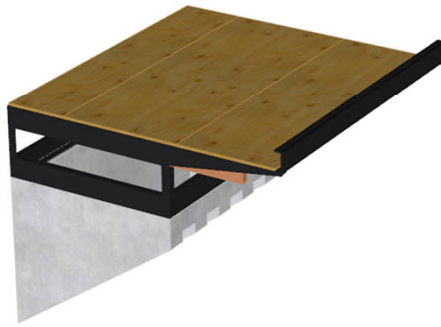
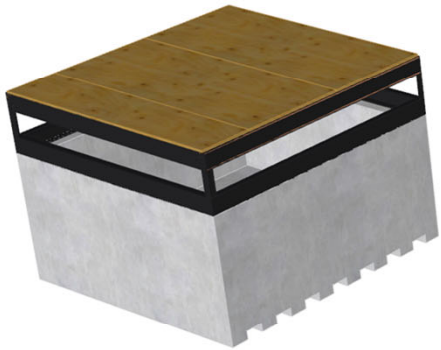
## Building technology

Deck elements



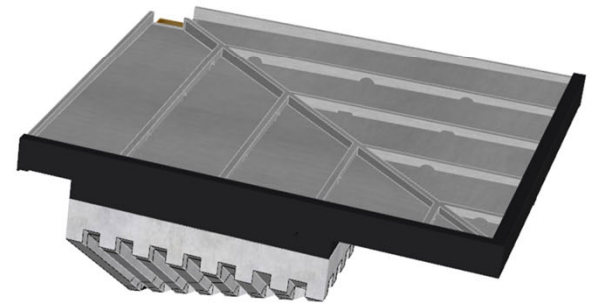
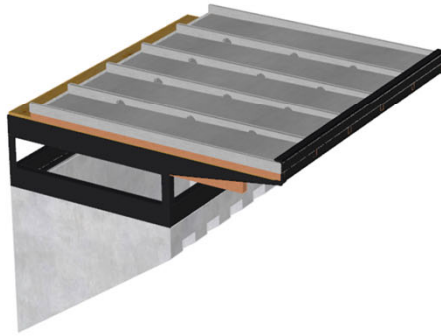
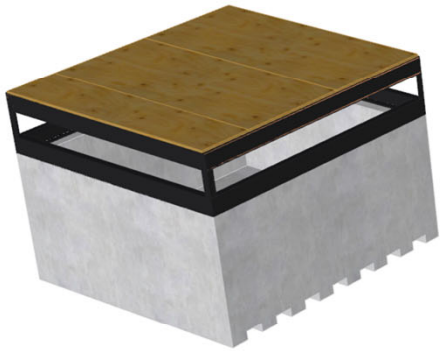
## Building technology

Deck elements



## Building technology

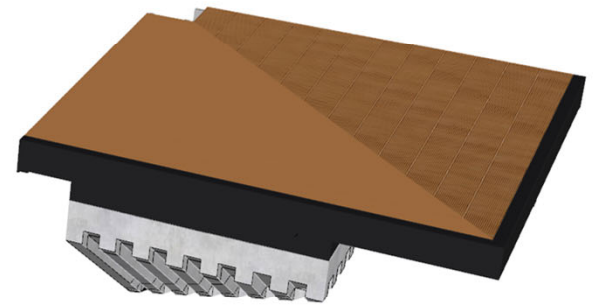
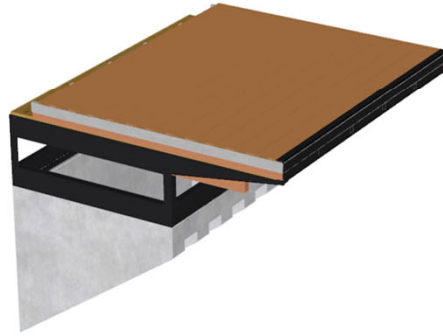
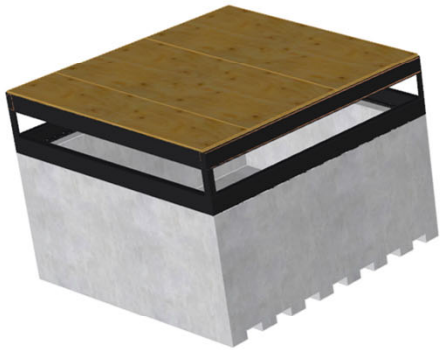
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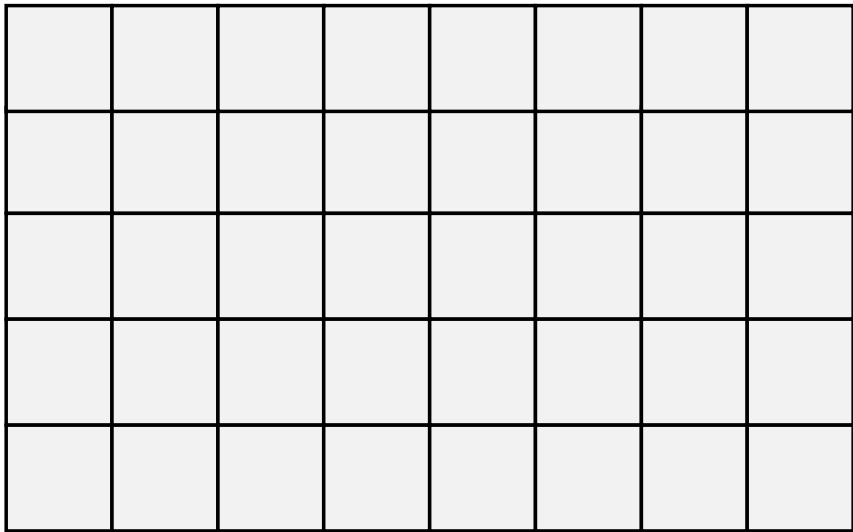
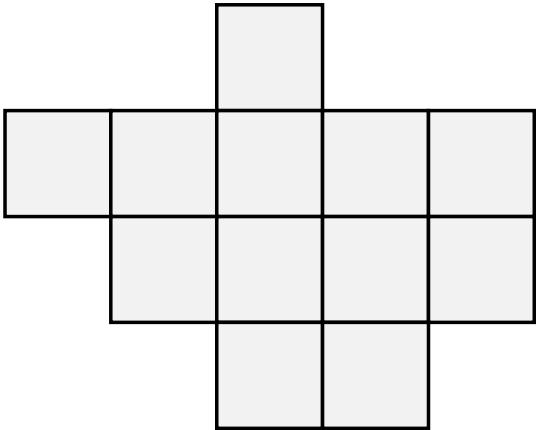
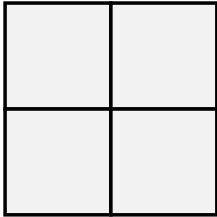
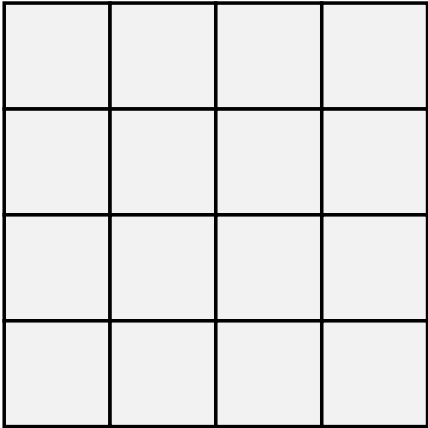
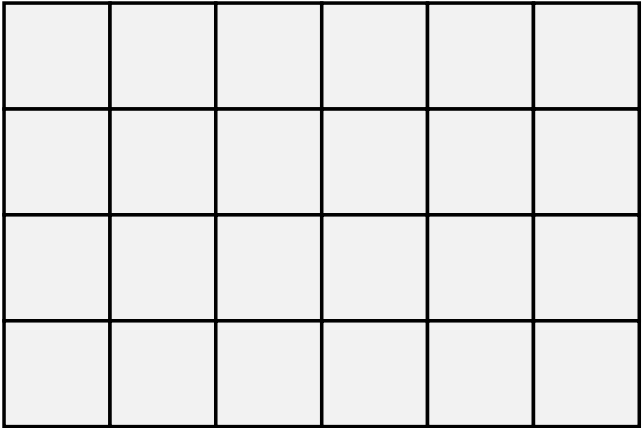
## Building technology

Deck elements



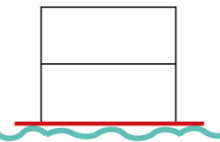
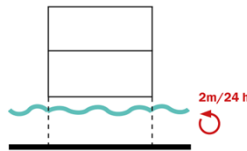
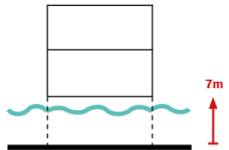
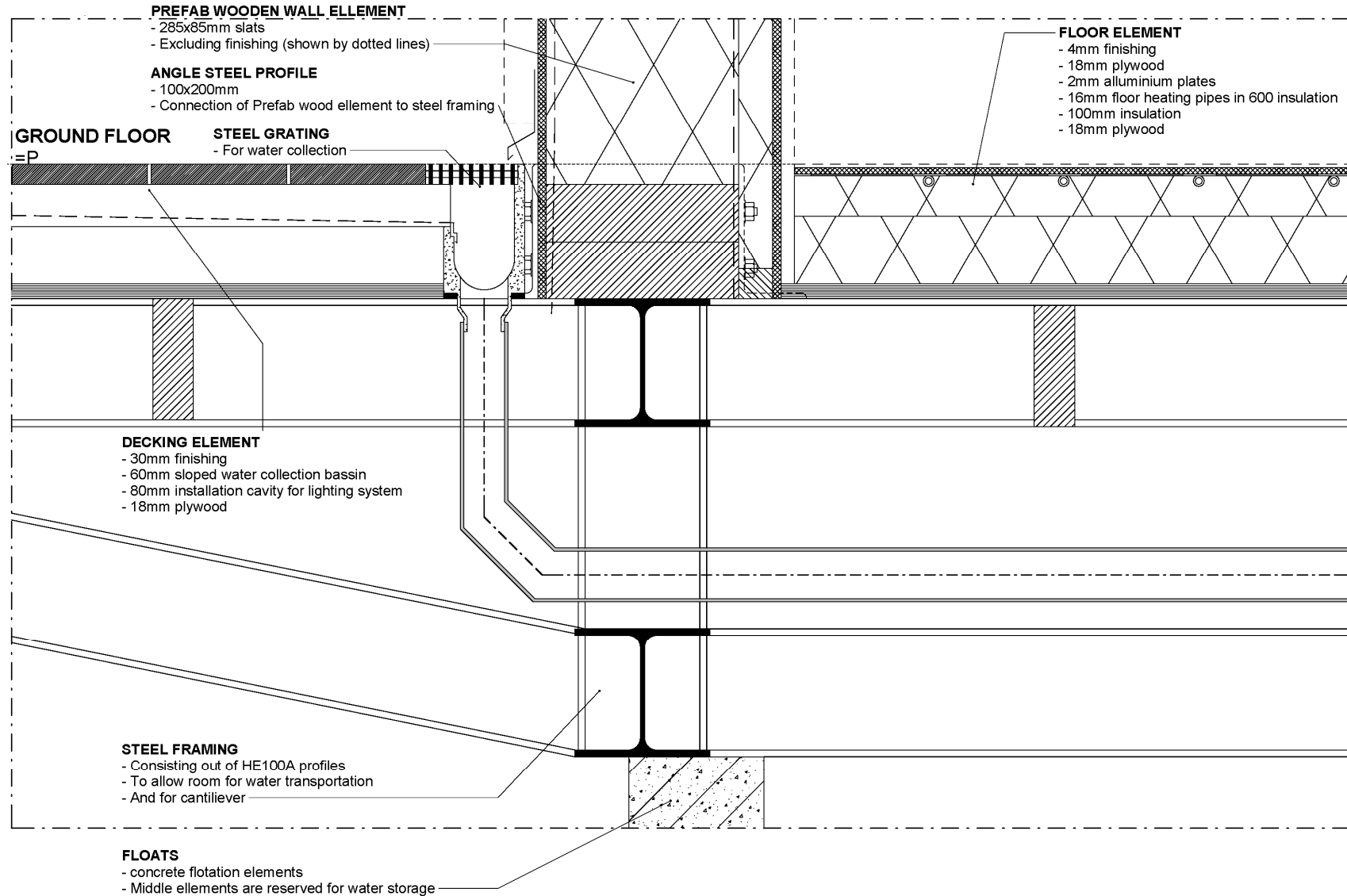
**Building technology**

Unlimmited amount of compositional options



# Building technology

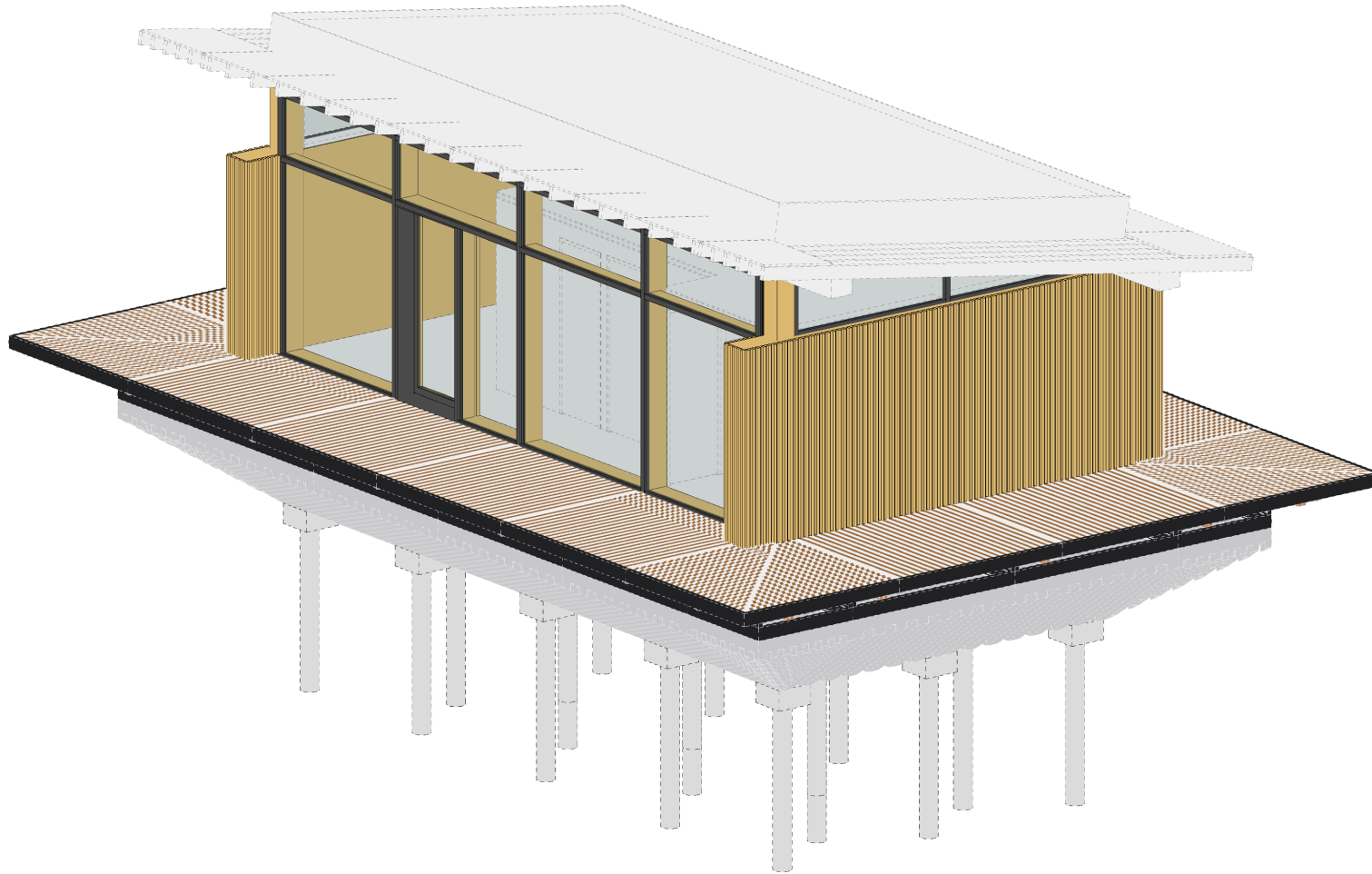
## Detail



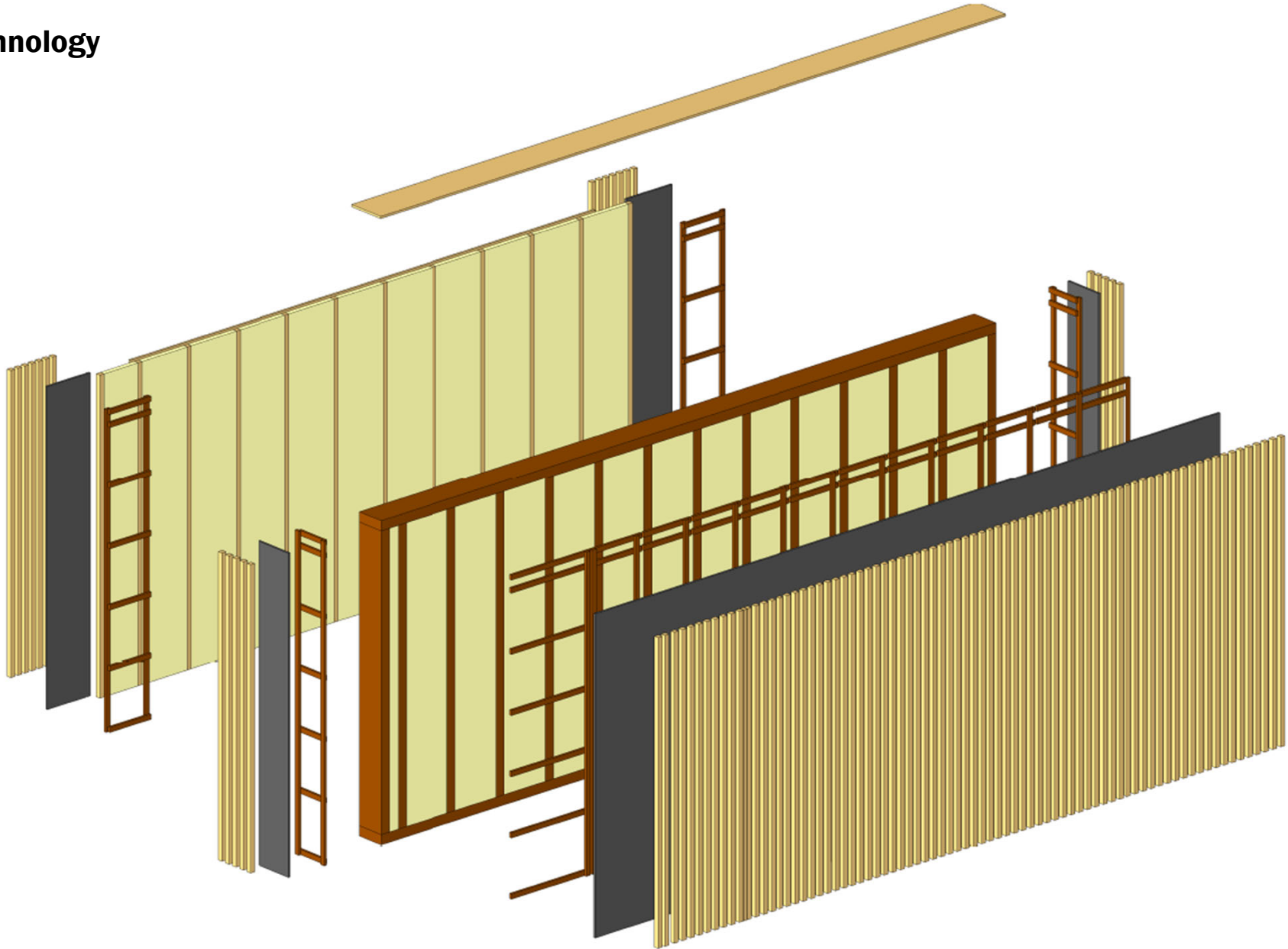


## Building technology

Overview axonometric view | Walls

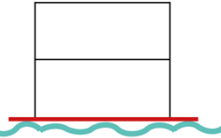
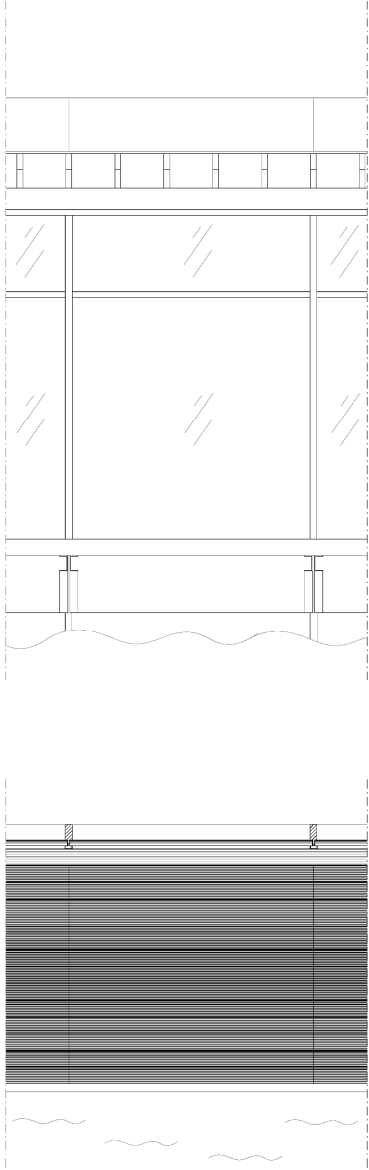
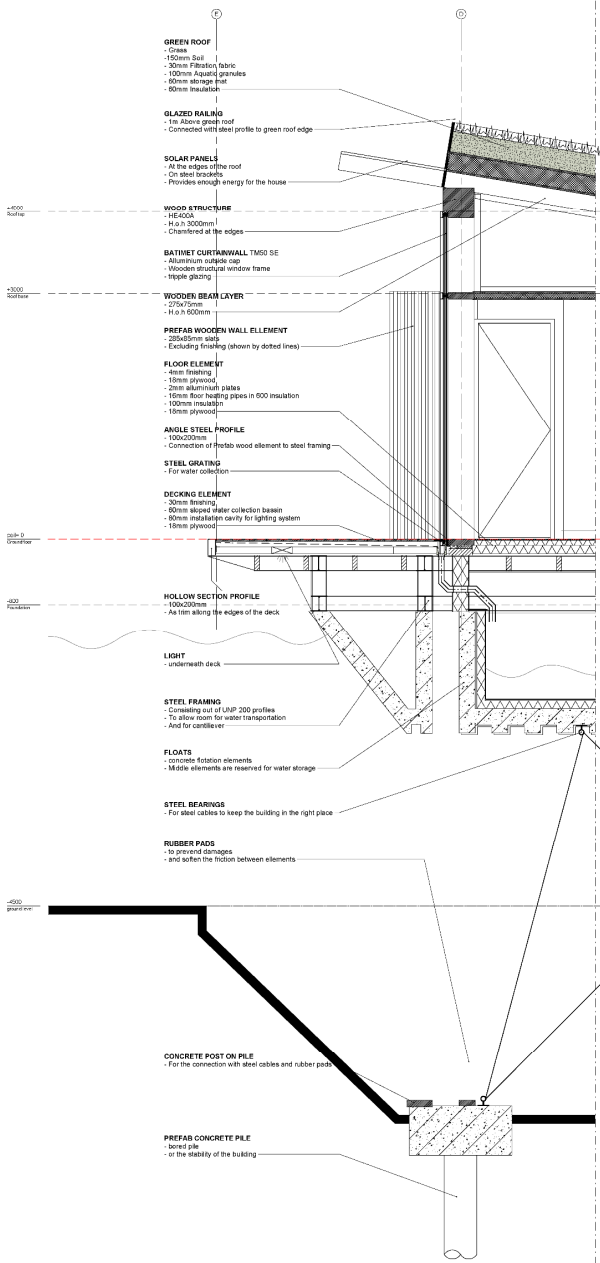


### Constructive walls



# Building technology

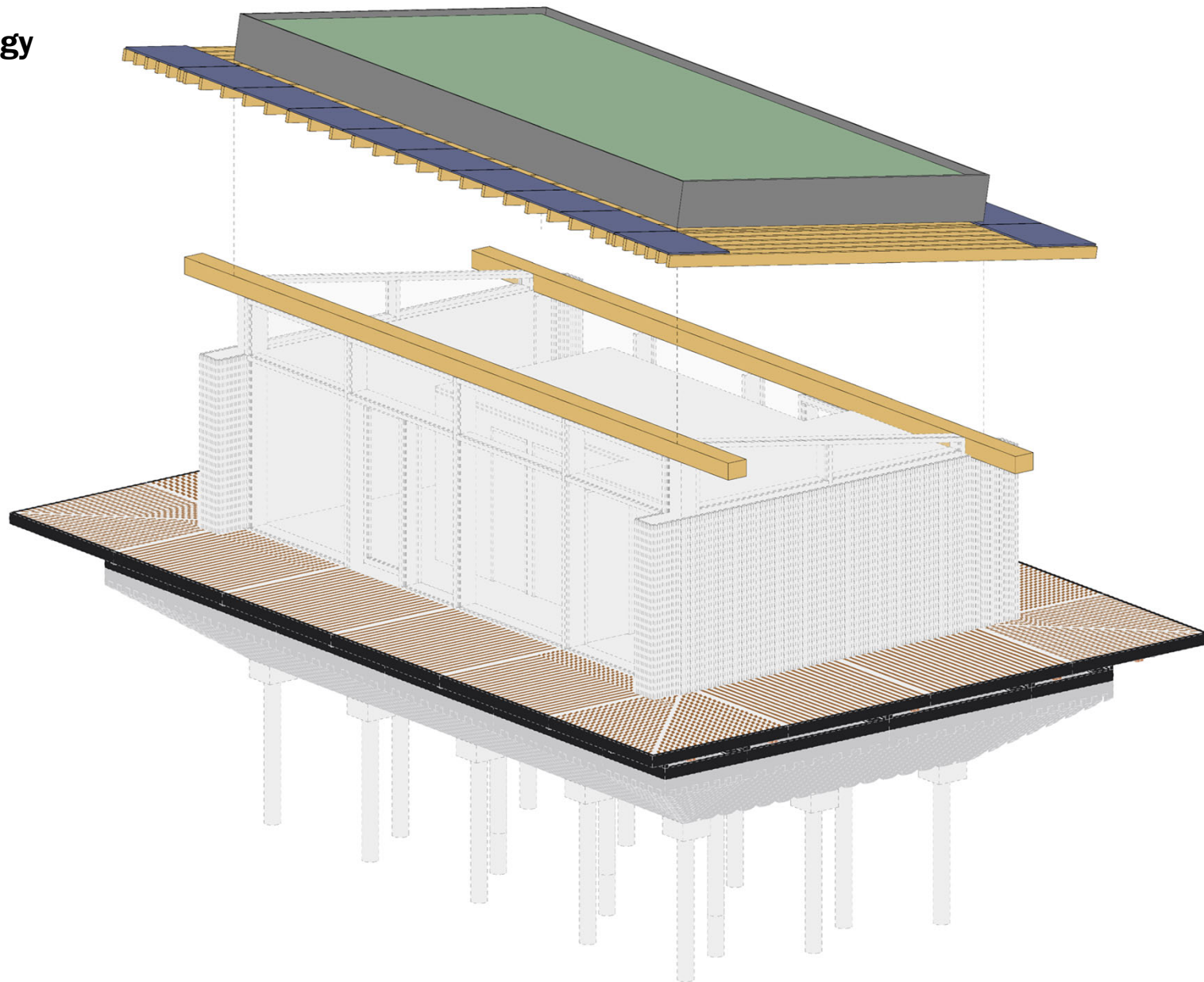
## Curtainwalls



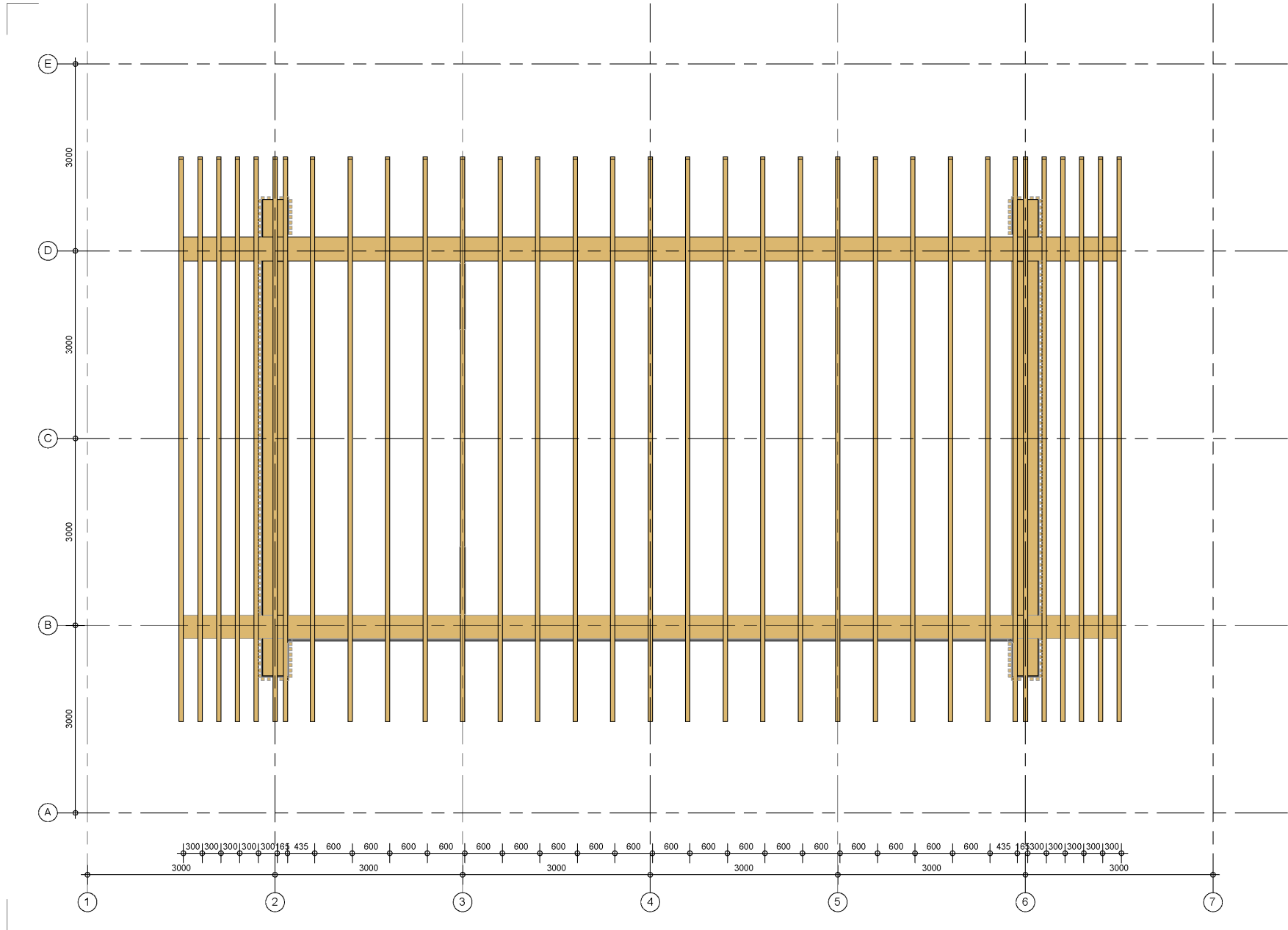


# Building technology

Overview | Roof

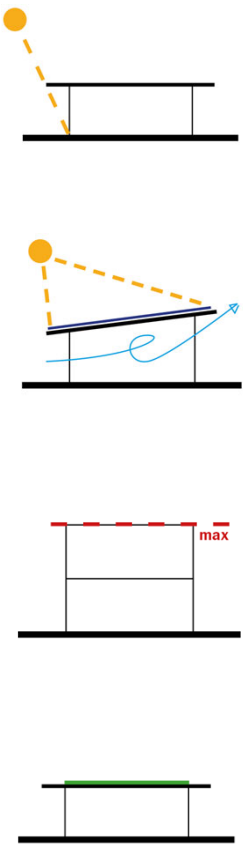
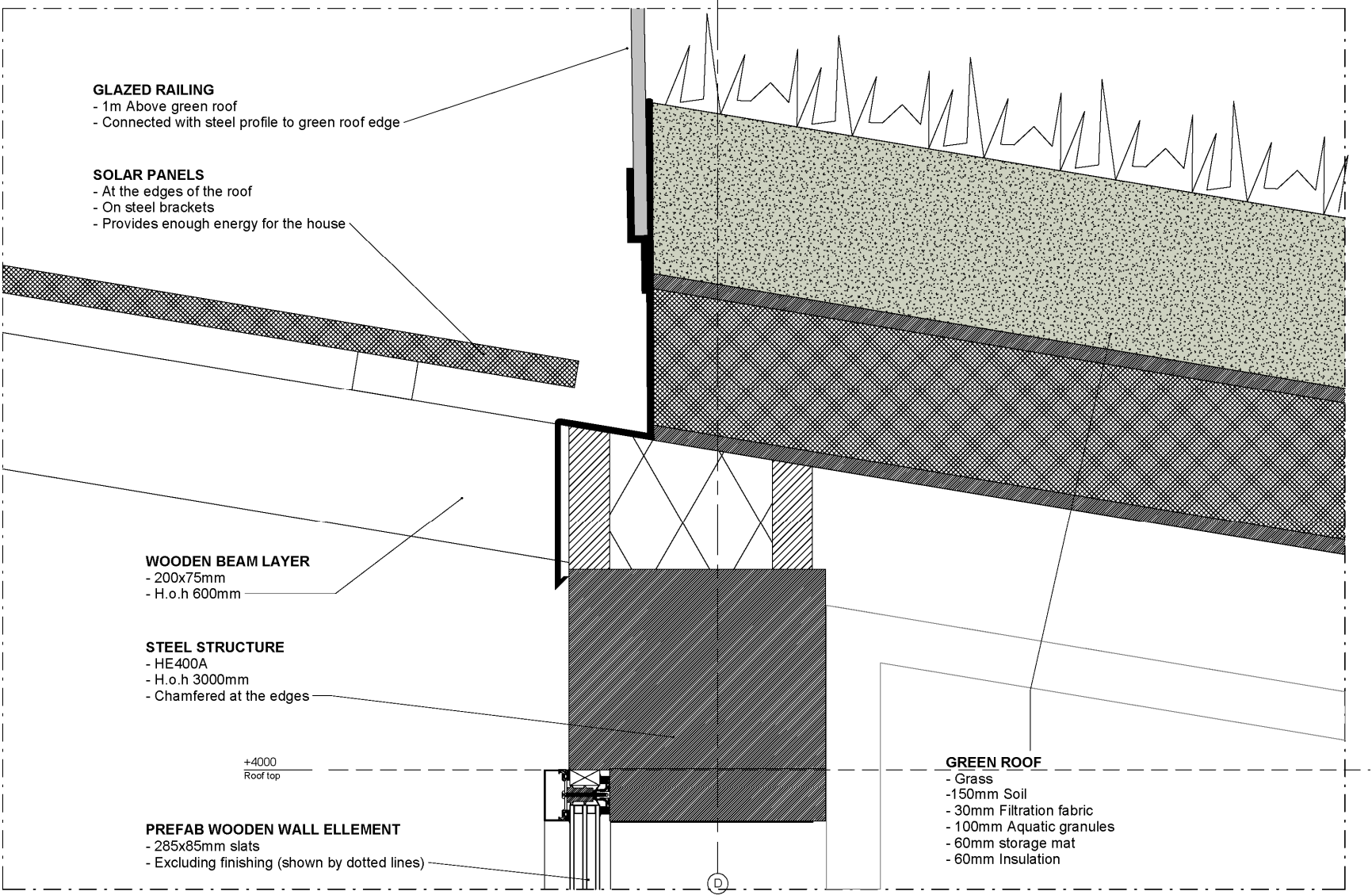


## Roof

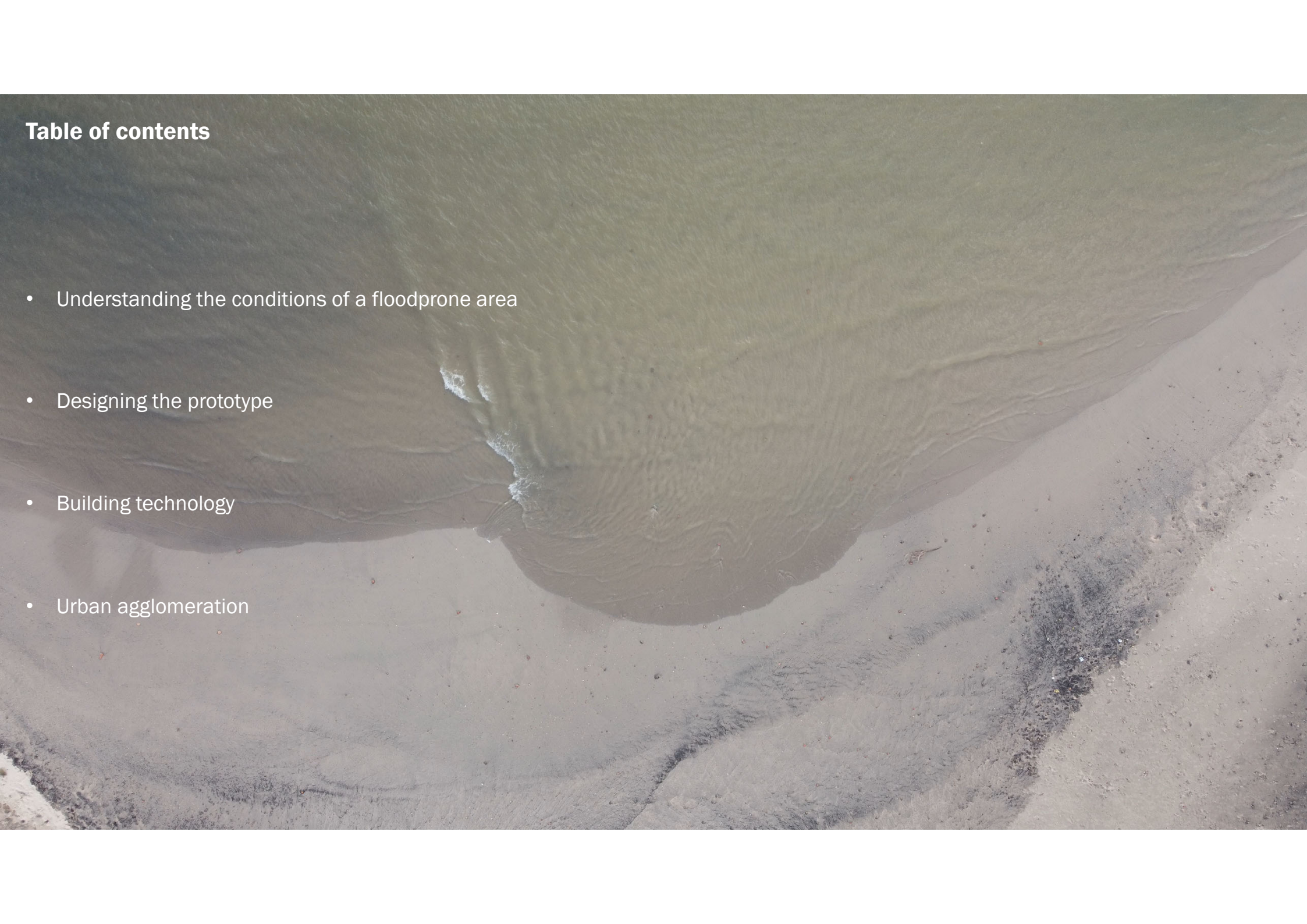


# Building technology

Details





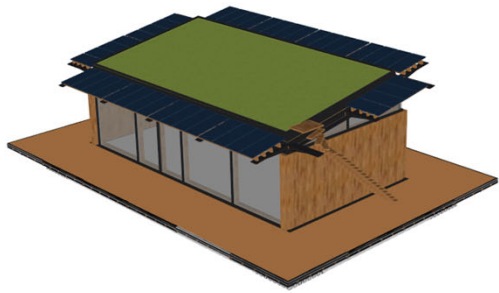
An aerial photograph of a river delta, showing the intricate patterns of water channels and sediment deposits. The water is a murky, olive-green color, while the surrounding land is a light tan or beige. The river flows from the top left towards the bottom right, where it branches out into a complex network of smaller channels. The overall texture of the image is grainy, typical of an aerial photograph. A semi-transparent black box is overlaid on the left side of the image, containing the text for the table of contents.

## Table of contents

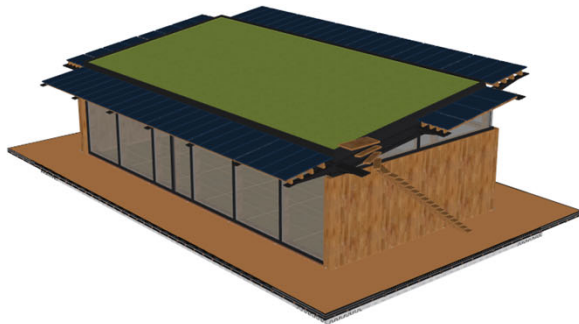
- Understanding the conditions of a floodprone area
- Designing the prototype
- Building technology
- Urban agglomeration

# Urban agglomeration

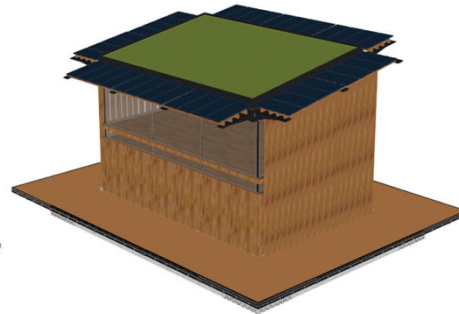
Housing options



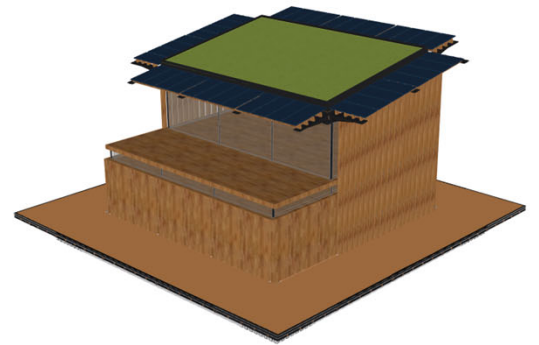
Type A,1 | 80m<sup>2</sup>  
1 level



Type A,2 | 150m<sup>2</sup>  
1 level



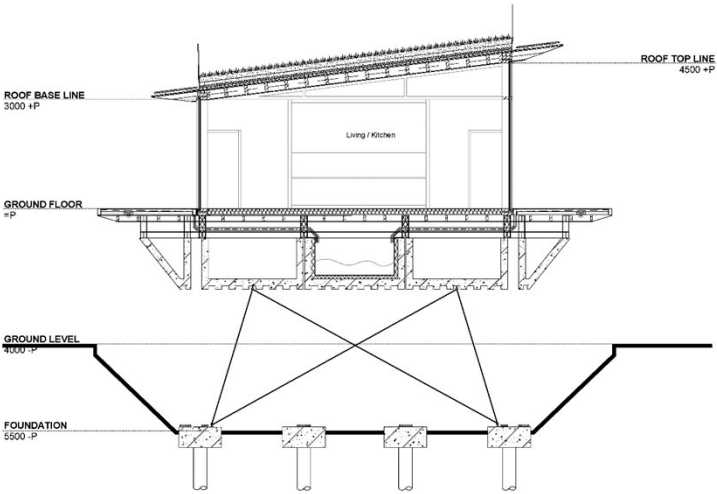
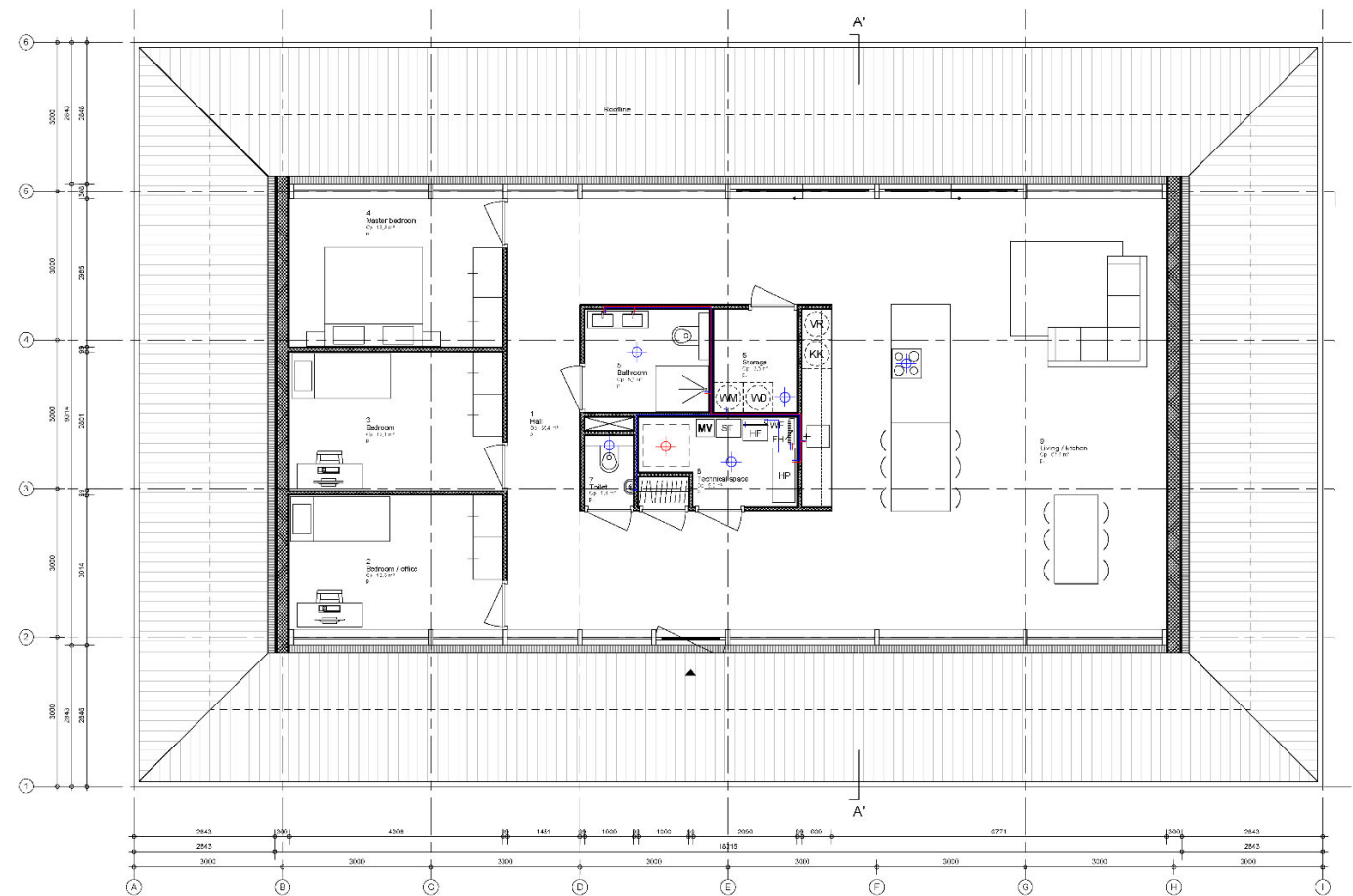
Type B,1 | 110m<sup>2</sup>  
2 levels



Type B,2 | 130m<sup>2</sup>  
2 levels

# Urban agglomeration

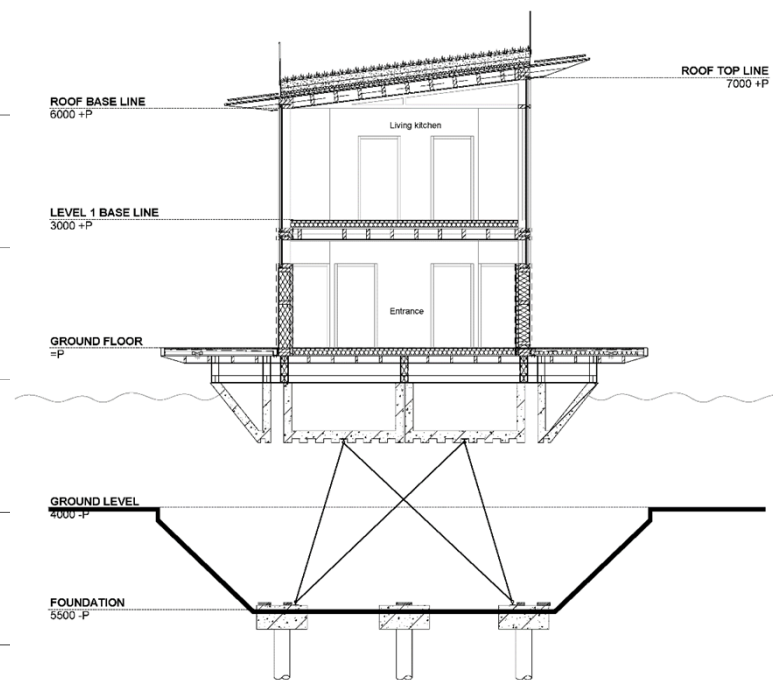
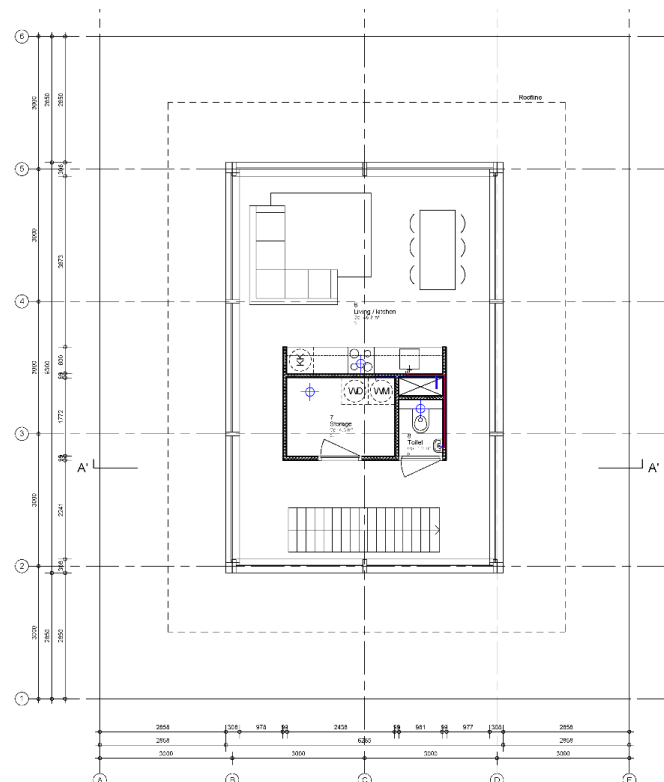
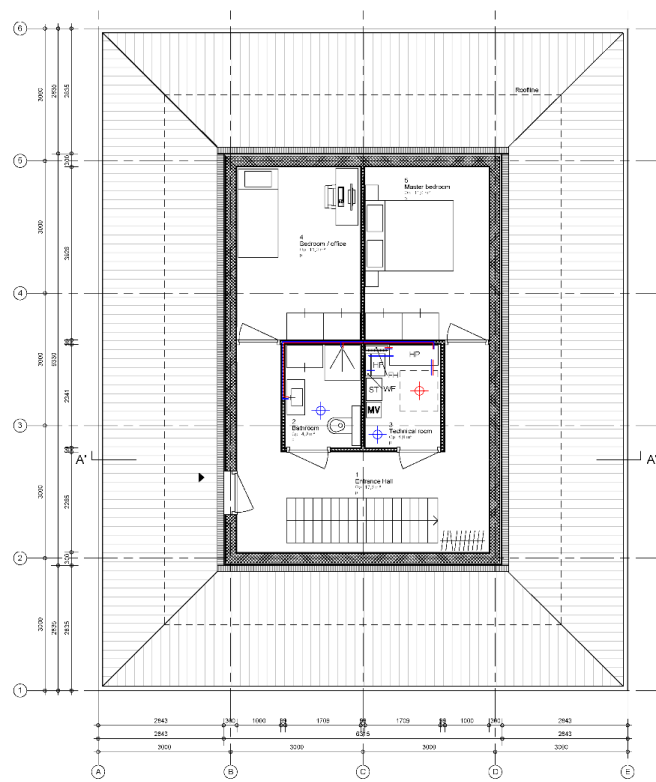
Type A,2 | 150m2





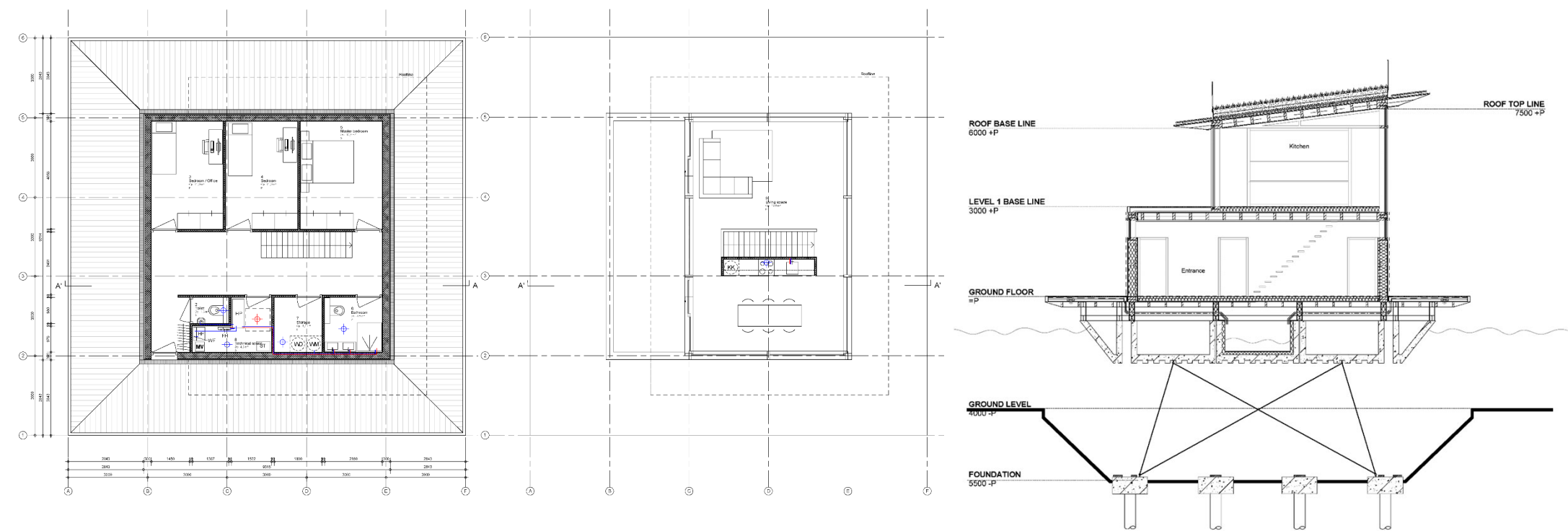
# Urban agglomeration

Type B,1, 110m2



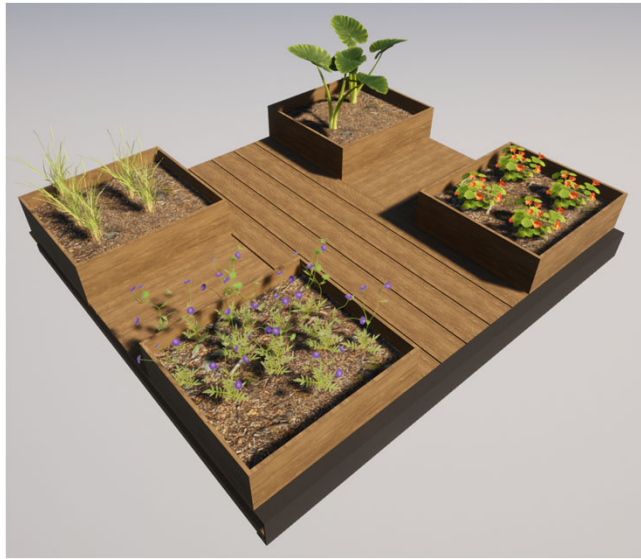
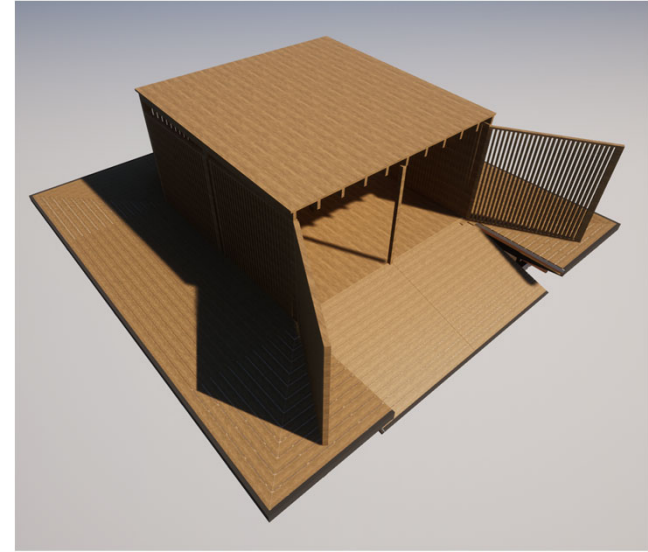
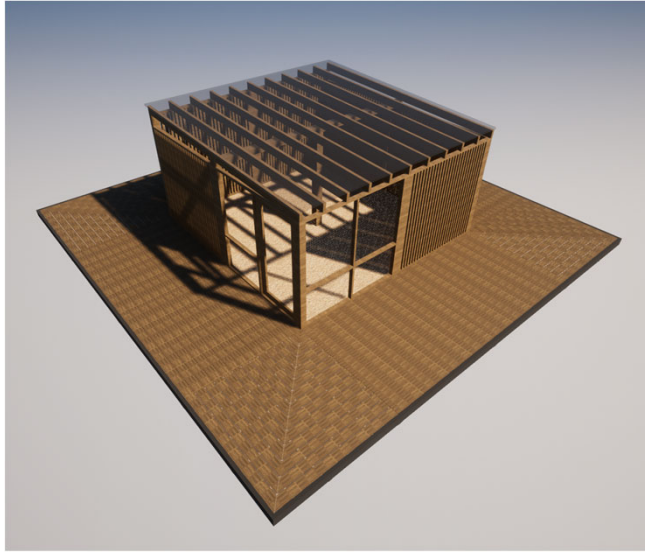
# Urban agglomeration

Type B,2 | 130m2



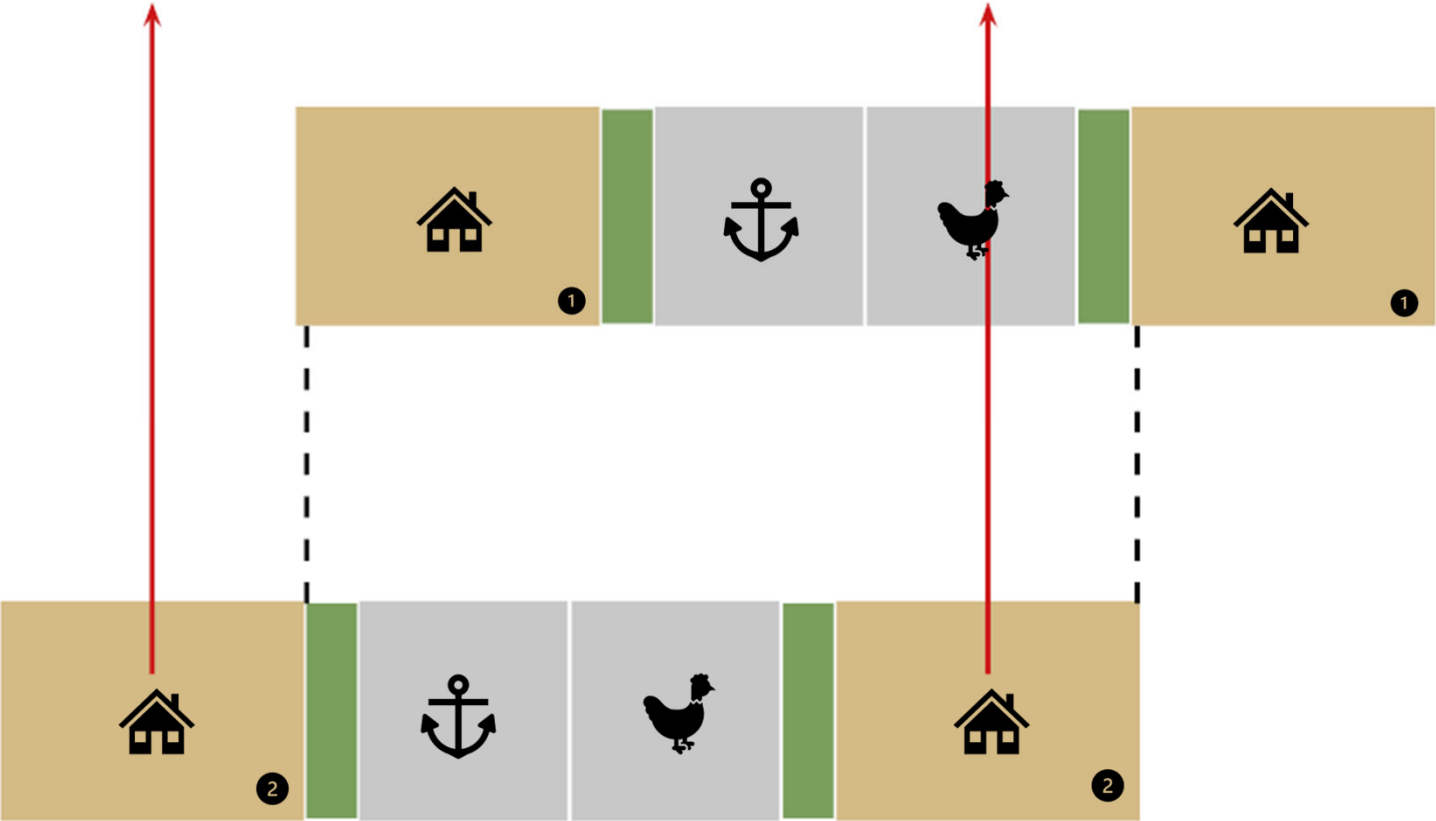
## Urban agglomeration

Ellements in urban setting



# Urban agglomeration

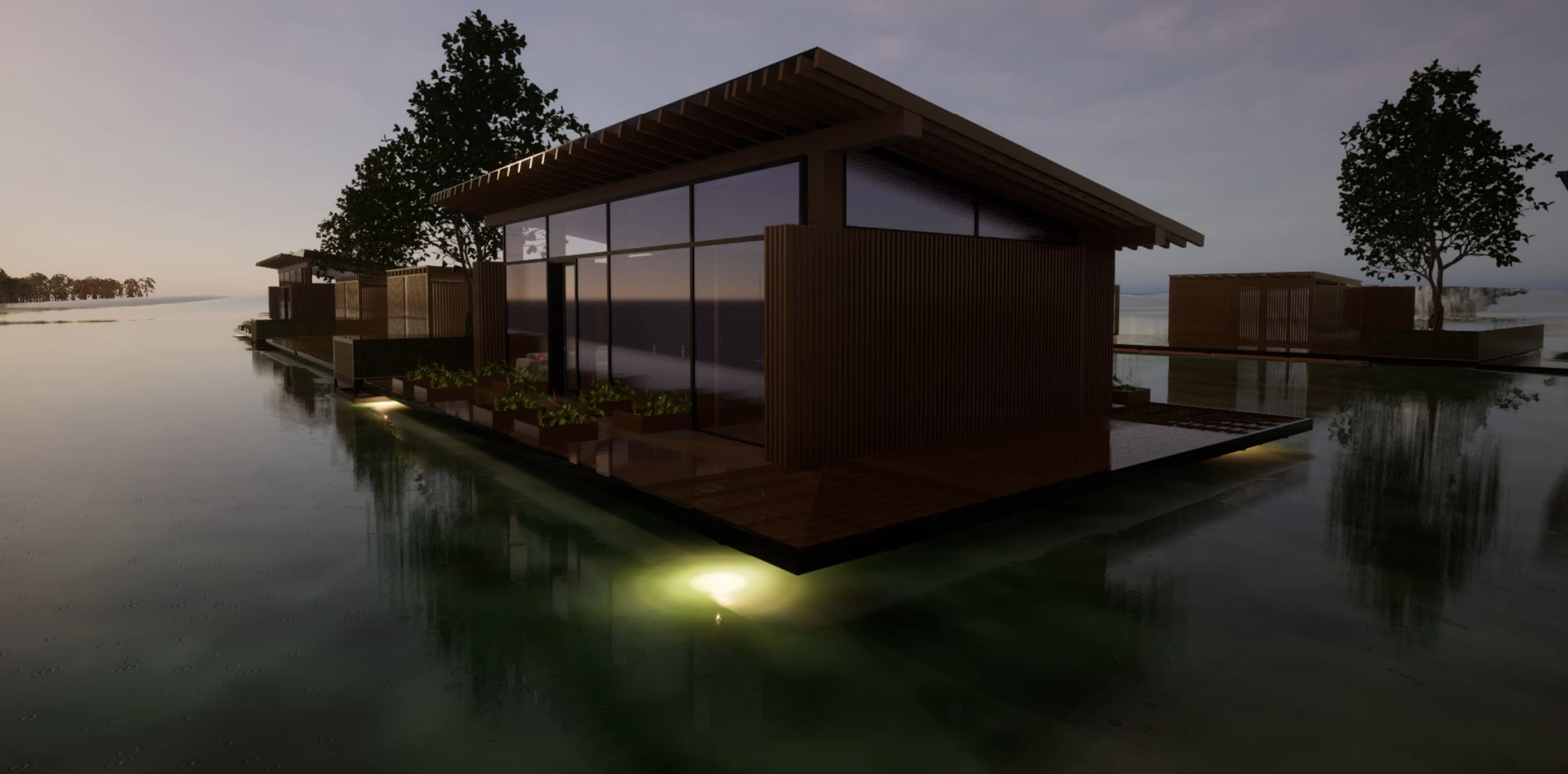
Current project location | outer dike





## Urban agglomeration

Current project location | outer dike



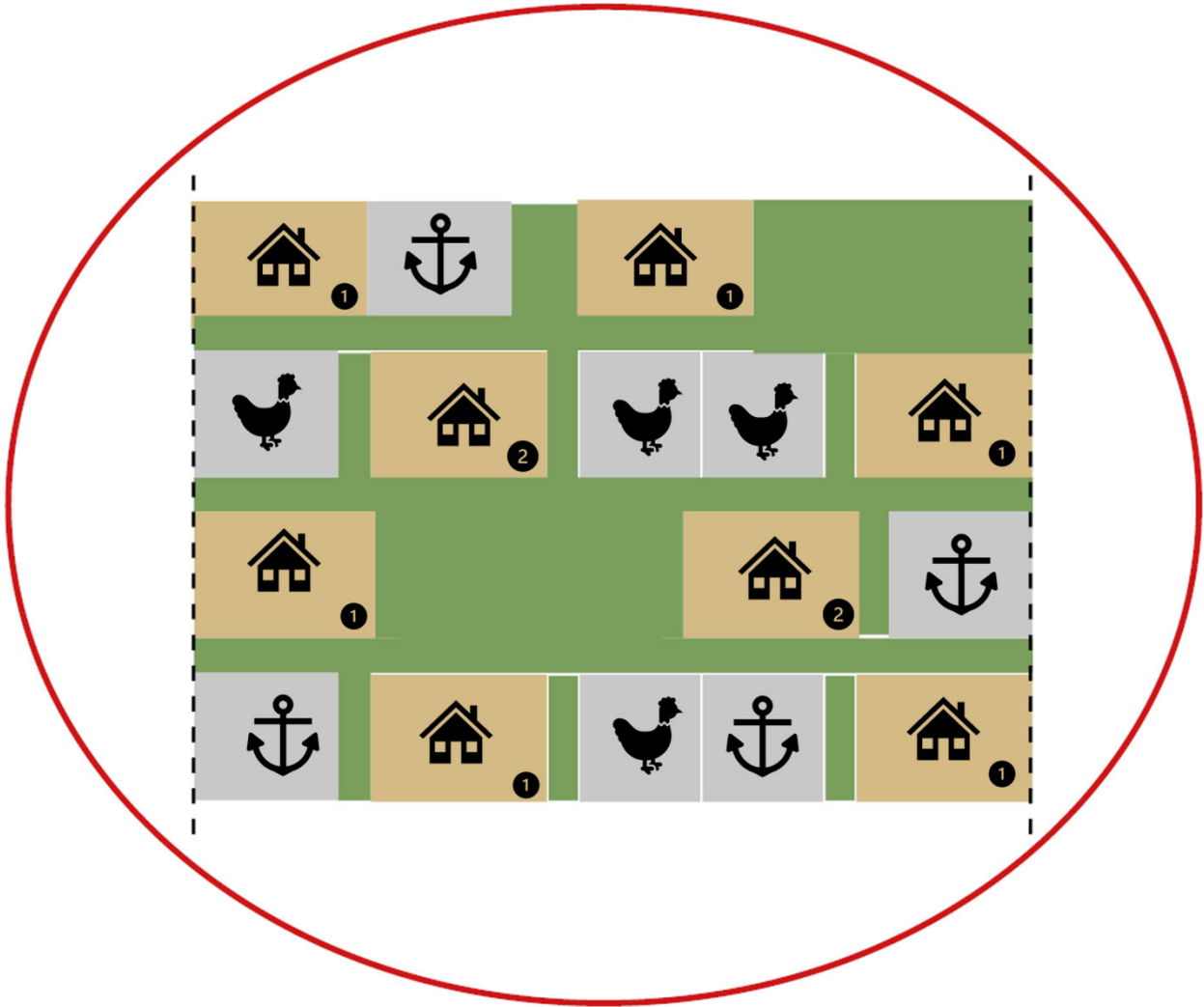
## Urban agglomeration

Future project location | inner dike



Urban agglomeration

Future project location | inner dike



## Answering main question

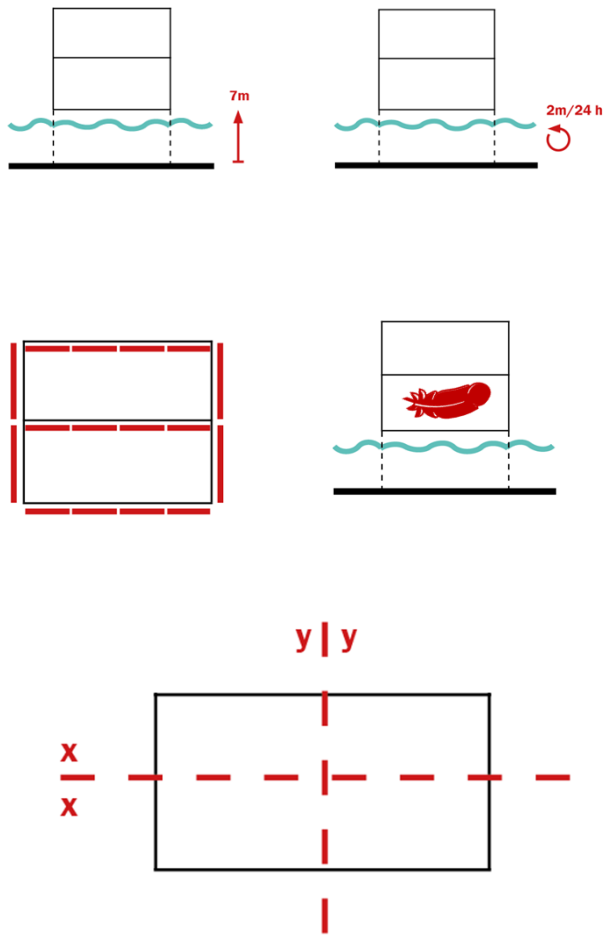
What are the spatial consequences for a building constructed in flood prone areas that offers resilience against the dynamics of floods?



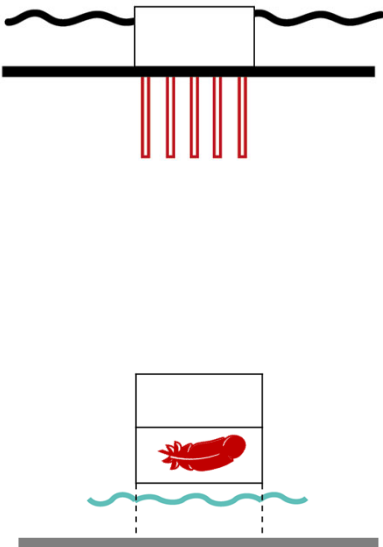
# Understanding the conditions

Guidelines for designing in flood prone areas

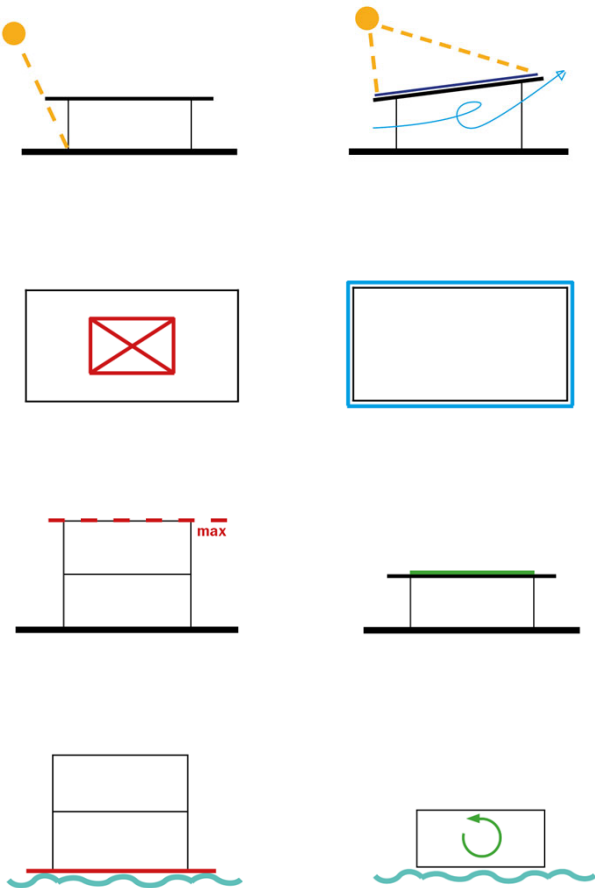
## Flood water



## Soil



## Location characteristics





## IFL | Identified Flooded Landscape

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P5 presentation

**Student:**

Renée de Vries

**Studio:**

Architectural engineering

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Research tutor: Luca Iaurio

Building technology tutor: Engbert van der Zaag

**Date:**

22-06-2023

**Created by:**

Renée de Vries