

MASTER

**The way of the water
a new watersystem for Texel**

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Award date:
2015

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“..., in al zijn verschijningsvormen illustreert water dat het is wat het is en ook wat het niet is. Wie de wereld in termen van water denkt, weet dat alles ook anders en misschien wel helemaal niet zou kunnen zijn.”

-René ten Bos

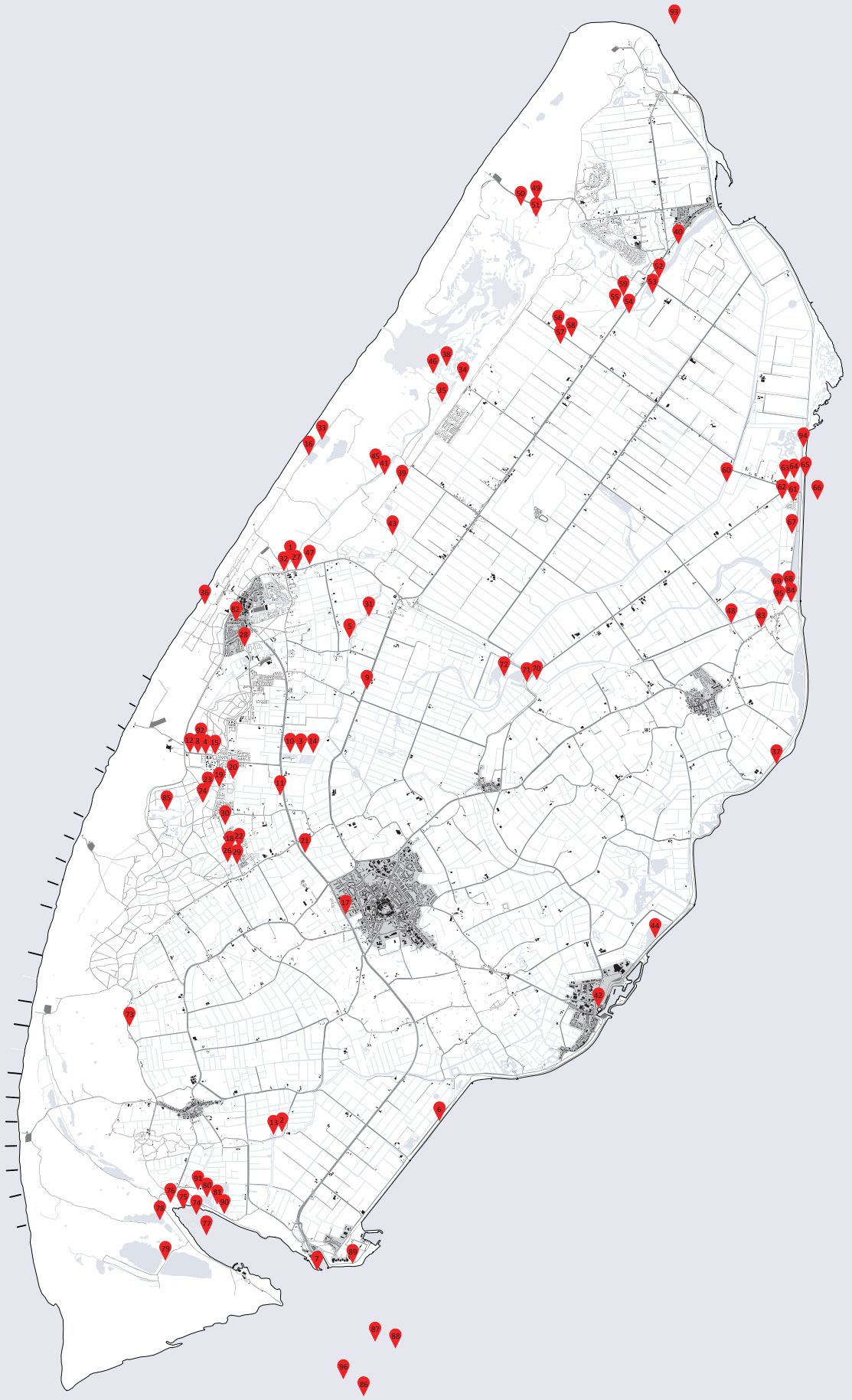
The way of the water
A new watersystem for Texel

part of graduationstudio *Texel Metabolised*

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Emma Lubbers





Most of the Dutch have some memory of Texel. If they have not been there themselves, than they probably know it from the Dutch books and movies. One of the most well-known residents is perhaps writer Jan Wolkers. He told us in an almost endearing way about the 'beestjes' in his backyard on Texel. When I started with this design studio I wondered if the books and movies idealise and romanticise the island? Is Texel nothing more than the island of the beer-crate-wall-building youth on the camping's and all the tourist shops in De Koog? What is the image of Texel? In the description for the design studio was stated "Identity is not only a concept that can be won back, or frozen; it can also be invented and expanded'. Do we need these former qualities back? Or is there perhaps a completely new future for the island?

After 12 months of looking at, researching, thinking about and visiting Texel I have now learned about the mechanism behind the first appearance of the island. I have seen the island change through the year. Watched the people on the island come and go, see the Texel of the tourists and of the inhabitants and see the seasons shift. I am now ready to give my own view on Texel; what the image of Texel is (or should be) for me.

Texel is an island, and therefore has, more than places on the mainland, its own rhythm and cycles. It has natural cycles like the tide of the sea, and the change of seasons. But also artificial cycles, like the coming and going of the ferry and the tourists. All cycles have their own timespan. Their own metabolism.

With our graduation studio we researched the metabolism of Texel from completely different angles, some more obvious than others. For example, the metabolism of plastic waste, agricultural crops, energy or the metabolism of life and death. All very different, and all very interesting. Texel can be the island of many things; the island of tourists, the island of nature the island of agriculture, of new innovations, or as a last resting place. However always with water running through, alongside, or around it.

The world in terms of water is completely different then the world we look at normally. The photos on the previous page cannot be more Texel-like, but at the same time could be everywhere. Water is anywhere around the world. Although it is different everywhere, it is always water, always the same chemical substance. The same water body can be different every day, even every hour. The sea can be cooling on a warm summer day, calming on a sunny autumn day and threatening on a stormy winter day. Ditches can be almost dry, can be full of grass or can flood the entire field. Water can be invisible like ground water or the evaporation particles in the air. It can also be way to obvious present in our lives when we stand up to our ankles in a layer of water when there is a flood in this country partly below sea-level. Water can be a border, a limit, create a distance between things, or can connect or surround. The world in terms of water is different, it is uncertain, but at the same time familiar. This is Texel in terms of water.

Reading manual

This book consists of 3 storylines which intertwine throughout the whole booklet.

- 1) this part describes and elaborates on factories, water, landscapes and social engagement.
- 2) this part consists of a narrative telling about a walk over the island
- 3) this part is an explanatory text about the project. Both the masterplan and the separate building designs will be explained.

Each design starts off with a page which gives an overview of the building; a general description, working of the machine and diagrams which explain the machine and the building design. Each building has received one or two keywords which are based on the working of the machine they house. The words have been guiding for the designs, some more present than others.

The book will begin with the grey pages, after which the walk will start and the project and its building designs will be encountered along the way.

The place of the photos of water on Texel used in the booklet can be found on the map on page 8.

Further explanations about the working of the water machines can be found in the end of the booklet.

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Texel is an island, and therefore has, and always had, more than places on the mainland, its own rhythm and cycles. It has natural cycles like the tide of the sea, and the change of seasons. But also artificial cycles, like the coming and going of the ferry and the tourists. All cycles have their own timespan. However times changes and not all cycles work properly anymore. Many natural cycles all over the world are disturbed because of global warming and depletion of the earth.

A new way of thinking about these cycles is needed. An island is the perfect place as a testing ground for innovations and there new ways of thinking. We unfortunately have to except some irreversible changes due to climate change, however there are other ways to cope with it.

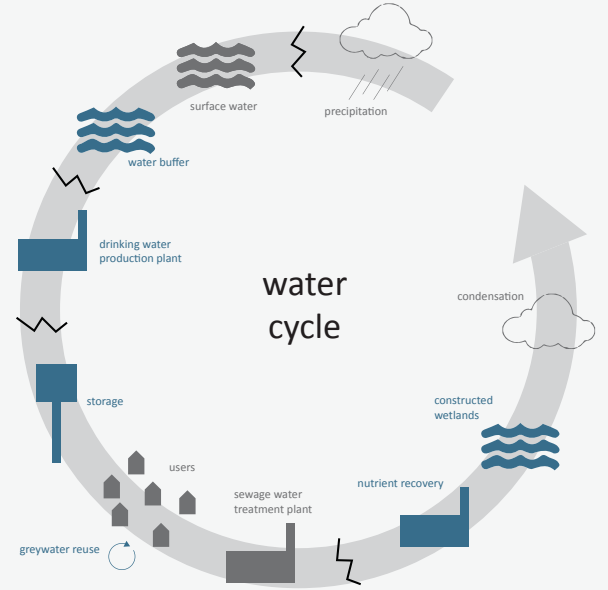
If we as humans want to inhabit the earth and at the same time be met in our high demand, then we have to change some things to make it inhabitable according to our ideals. Factories everywhere around the world produce everything we wish for. Every decade our demands become higher, we want more, higher quality and the newest things. The innovations in many fields of expertise are going faster and faster. But what does this do with our world? New problems are rising just as fast as our innovations. One of the most important resources for life is becoming quickly a problem too, namely water.

In The Netherlands, water is often taken for granted. Water is always there, we never had to worry about it. However, this is not as obvious as it used to be. In large parts of the world there is already a water shortage, the demand for fresh water is much higher than the supply of it.

Partly, due to the battle against water the Dutch have gained a lot of knowledge about water over the decades. Living in a country as the Netherlands where water is a part of our lives and our thinking it is almost impossible to be add something meaningful. Like René ten Bos states in his book water, *“The Netherlands is a country with experts in every little part of- and related to water”* (Bosch, 2014, p. 10).

Architects should not try to be another water expert. They can, however, perhaps give people another perspective on water. How we use it, how we deal with it and how it could be in the future. Could architecture

be a tool to make the water cycle insightful, visible and people aware of the necessity for change? In other words, *how should architecture position itself between machine, landscape and society?*



Landscapes

Many industries need raw materials coming from the landscape. The water industry uses perhaps one of the most ever-present raw materials of the landscape. A landscape with water changes quicker than others, and the Netherlands is a country with a lot of water. Water rises and descents, it can flood landscapes completely or when there is a lack the landscape is dry making vegetation impossible. Water is supposed to have no colour, but in the landscape it is different every time. There is deep water, shallow water, water containing a lot algae, salt water or polluted water. Every type has its own colour, by far never colourless. It changes the landscape when the sun shines, making glistering surfaces on the ground. It can be a mirror, reflecting the rest of the landscape or the sky.

Unfortunate we also need factories, which have unfortunately almost never a connection with the specific landscape from which they use the raw materials. The machines with the shells around it are just thrown down, no connection, meaning or sign with or for the landscape at all.

“But you only see the decay from the railway track. No vehicle gives you a more honest impression of a country than a train.” (Verhulst, 2007)

When riding a train in the Netherlands, one will see all the best and all the worst of this country, all the ugliness and all the flaws of human intervention. The grand rivers and beautiful nature areas, cities and villages. The abandoned areas, messy backyards and industrial sites. You get a glimpse of all the things we normally do not see (and sometimes better not see), including the factories which are built outside our cities, in the border areas.

“How many of these buildings deserve eternal life? This question is essentially forbidden in Europe, where urban context is assumed to be something that should be preserved and respected, not destroyed. In many cases, of course, that is entirely legitimate. But when we looked at these buildings – their materials not intended to last forever, their programs merely articulations of a momentary financial legitimacy – it became difficult to consider them part of Europe in a historical sense. They were not conceived with claims of permanence; they are a kind of provisional – short-term – architecture.” (Koolhaas & Mau, 2001)

Walking around on these industrial sites one can probably find no building which would deserve eternal life. If these are the buildings which will remain of the current time, then this will be a very sad image. All our technological knowledge and incredible innovations can be greater than ever before, but our buildings do not reflect this. Of course, the innovations are going faster and faster, and the factories are not being built for eternalness anymore. However, temporalness does not have to be something bad, but it should not be equal to ugliness.

“There is a scale of things all to do with the land at one end of which are the forces of nature, the perception of which, at any given place, I would call landscape. At the other end of the scale are the local difficulties solved and the opportunities opened, by our use of machines – and somewhere in between are the buildings, which, if conceived grandly and accurately enough, can extend outward to embrace each end of the scale. Landscapes, buildings, and machines.” (Shepherd, 1994)

There was a time, shortly after the industrial revolution, when the relationship between landscape, machines

and architecture was more or less in balance, or at least appeared to be. The scale which Paul Shepherd is talking about is one which has shifted its centre of gravity in the course of the years. In the past the landscape was the most important thing, while in modern times machines have gained a more and more important role, however, the buildings have not changed at the same pace. When a building can extend in both ways, landscape as well as machines, it could perhaps create a platform for architecture to create awareness.

Although landscapes are always there a landscape with water is definitely not the most stable of machines, buildings and landscape. Landscapes accommodate factories, which at their turn shelter the machines, together they dance their dance, collide, ignore and intertwine, and sometimes allow people to be a guest. People can enter the inside of buildings by choice, however the outside of the buildings is something they come across, if they want to or not. Therefore this outside can convey a message, also purposely or not.

“How to inject a new “sign” into a landscape that – through scale and atmosphere alone – renders any object both arbitrary and inevitable?” (Koolhaas & Mau, 2001)

Are factories not always both arbitrary and inevitable? This is also the reason why it is so difficult for architecture to find its place somewhere between machine and landscape.





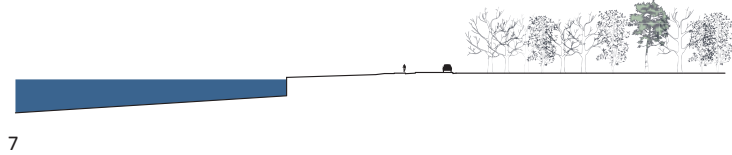
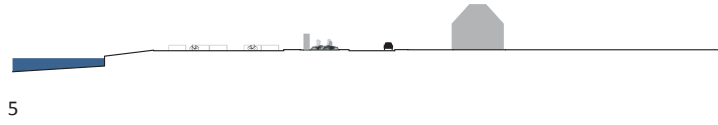
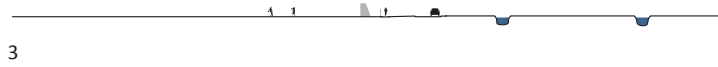
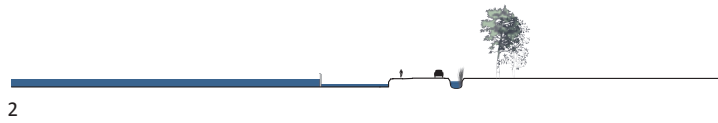
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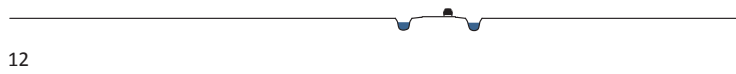
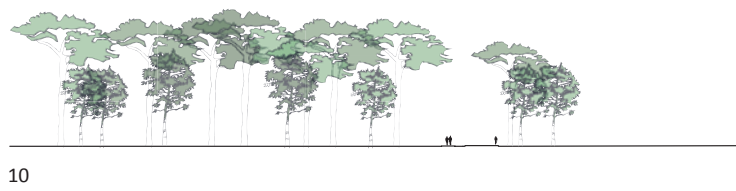
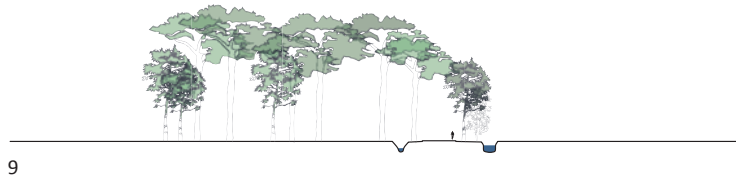
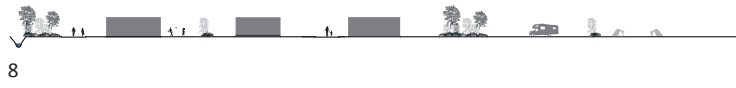
transit from one landscape typology to another. Sea, fields, forest and dunes are never more than several kilometres apart. Water is present in almost every part of the landscape. When intersecting the landscape in several places in the full length of the island one will see the water present in almost every section, though in another appearance every time. Water appearing as salt water flowing into the Slufter in the north [1], captured by a sluice [2], as ditches bordering the fields, the recently constructed pond [7], the ditches slightly covered by leaves [8] and the Mokbay in the south.

Water and the Texel landscape

Texel does not feel like an island, it has all the Dutch landscape features which are present on the mainland. It is the Dutch mainland in miniature. However since everything is smaller, it also is more present. Since the island is smaller one will quicker

Factories can be placed in this landscape, however always with consideration. There should be looked carefully at the landscape features and let the building react to landscape. This could be in a modest, serving way, but can be also in a shouting and distinctive way.





Hidden

Water flows and seeps everywhere through our lives. The Dutch landscape consists of rivers, ditches and lakes. We need it to drink, to wash, to cool and to clean. However, a large part of this water and the processes connected to it are invisible in our everyday lives. The drinking water- and sewage pipes run under the ground and the factories and impressive circular waste water tanks are hidden away on industrial sites.

“Architecture is not everything, but though it is not everything, we must include in it everything that it is. Architecture is the art of the land. As art, it is the manifestation of the human perception of the land.”
(Shepherd, 1994)



Most people view the world for a large part of their lives with buildings as a framework around it or with buildings as props in the landscape. Architecture helps us to understand the world around us, it gives a framework and a background for life. The inside of many buildings we have seen or are similar to other things we have experienced. Houses, libraries, museums or shops, we can enter them or we can more or less imagine what is inside, thus understand. This is, however, a completely different story in the case of factories. That is a mysterious intangible world.

I remember when I was younger, we drove in the middle of the night through Belgium when going on vacation to France by car. When we passed through the city of Liege you could see the factory lights in the night, it had something magical, a world we know nothing about and most of us will probably never do. This metal and mining industry has some mesmerizing quality left, the large tall chimneys and the ever

enlightened flame give a very small glimpse of what happens inside.

Close to IJmuiden are the steelworks, again with the large chimneys, they rise above the dunes. When you stroke your hand along the dune grass it will be black from the soot which the factory exhaust. Although this is of course actually very worrying, it is also something special, something touchable and physical from the invisible processes. People need those things to understand. How do we understand, let alone carefully consider, something which we cannot see?

Water production factories are a type of industry with no distinctive features like the tall chimneys and pilot flames, making it even harder for people to recognise, see and understand what happens inside. Since there are no special spatial building requirements often there has also not been made any effort to distinguish in the design as well.

An exception to the rule are the buildings designed by Wim Quist on the drinking water production site Berenplaat in Rotterdam. The filter building looks like a cathedral for the water, it is incredibly beautiful, however almost no one will ever see it in real life, it is hidden away on a closed industrial site.

The façade of factory building is the only visible part of the industrial process in society. People are generally not allowed to enter the factory buildings, therefore the only messages those buildings can convey is through their façades and their shapes in the landscape.



Steelworks in IJmuiden



Harnasch polder



Texel



Enschede



Amsterdam West



Mastgat



Eindhoven



Spijkenisse



Amsterdam Westerpoot



Susteren



Den Helder



Vlieland



Almere



Maastricht-Boscherveld



De Groote Lucht



The 'hidden' sewage water plants

Signs

Factories are very easy a sign for something. They used to be sign for progress and innovation, very stable and permanent buildings, reflecting the processes inside. But slowly these signs have become weak, what they want to propagate is not very clear anymore.

“The world is full of signs and information, which stand for things that no one fully understands because they, too, turn out to be mere signs for other things. Yet the real thing remains hidden.” (Zumthor, 2006, p. 16)

What is the real thing? Do we ever see it? What is the real thing in architecture? Is it the building itself? Is it the material or are that the social intentions? Factories hide a world of progress and innovation from which normal people often know very little. It is easy to leave people ignorant about what happens, it keeps them calm and they will not object to anything. It is a simple but temporal way to deal with the problems which come along with our manmade world. But at one point these problems will boomerang back to us.

“Buildings stand in mute witness to human events” (Tschumi, 2013)

People have formed the world according to their needs, with architecture as an important feature of this world. We have done so in the last decades, every time improving our surrounding environment a little bit, however, now we are left with the relicts of our progress, which are not always very beautiful or desirable.

Maarten Delbeke states in an interview (De oorsprong van goede architectuur) that buildings are continuously and in very different contexts assessed, by users in professional- but also popular media and in politics. This is done based on their cultural or social relevance. Without being actually clear what we expect from architecture and how architecture, by its design or shape, could fulfil that social or cultural role. (Delbeke, 2009)

People all have their own memories and stories which go with buildings. That is something which has not changed, they are very different from for example books. Books tell their own story, buildings provide a framework for a story. Architecture plays an important role in our lives, since it is everywhere around us. But

what role should it play? Should it only be the backdrop on which life and society happens? Or should it take a stand?

Water buildings are partly guided by the laws of nature. Water flows due to gravity, the best shape to store water in is a circular shape and everything should off course be waterproof.

Water is something which is actually not something we can capture, it is volatile. But this does not prevent humans from trying to hold on and control it as long and as good as possible. Already in ancient times people were able to master this fleeting water quite well.

They are landmarks, symbols or signs. It is possible to bring water from distant sources to the cities and villages, like the Roman aqueducts, to store huge amounts of rainwater underground like the Basilica Cistern in Istanbul, to make wells which ben be reached by descending steps like the stepwells in India, and irrigate a whole island in the case of the Levadas on Madeira. But also more recent waterworks are signs in the landscape, for example the 541 km long central Arizona project, a diversion canal in Arizona or the enormous dams, like the Hoover Dam in the United States, to impound water.

Time, location, and culture are of influence for the role of a building. Water factories in the Netherlands could be a part of the Dutch identity, they could stand for the experts in all water related facets that they are. A water factory in dry lands could have a treasure-like status, being the heartbeat of society. In developing counties it could stand for hope and change.



Roman Aqueduct, Pont du Gard (France)



Cistern, Istanbul (Turkey)



Chand Baori Step well, Abhaneri (India)



Levadas, Madeira (Portugal)



Central Arizona project, Arizona (United States)



Hoover Dam, Nevada/Arizona (United States)

The way of the fresh water

- We take the train from Amsterdam to Den Helder. We left behind the big cities with their large buildings, with concrete, brick, steel and glass. We have entered the land of the wide fields, ditches and occasionally a windmill. When approaching the harbour we cannot see the sea, the kay is filled with structures and buildings. A strange conglomerate of parking lots, steel constructions and a hotel with the name 'lands end' is the last thing we see from the mainland, it gives us a slightly melancholic feeling. It is the end of the summer, it has been warm, the land is dry. However, today is a grey and rainy day. Over a walking bridge we enter the ferry. From the deck there is a wide view over the Wad Sea. An open surface of water with in the distance the contours of Texel, the scrimp fishing boats are the only boats which venture into the sea today. The ferry counts multiple stories; two stories of cars and a restaurant. People can enter the ferry in Den Helder and leave it in 't Horntje without even knowing they have crossed a sea. After only 20 minutes we already have reached our destination. When we leave the ferry we go left where the lifeline of Texel starts. -





The system | the lines

To produce drinking water there is fresh water needed. Currently a lot of fresh water is being pumped out into the sea. More precipitation water should be captured and collected. The system is built up in three levels. Namely, the lifeline, this is a buffer line just behind the dunes where the fresh water is collected. Also the drinking water production is located around this line. At some places there is an actual manmade line or basin to capture the water, in other places the line will fade into the natural landscape.

There is also a line at the east side of the island, this is not so much a lifeline yet, but the advance of salt water is inevitable. Innovations in the field of dealing with the salt and brackish water can be developed at this side of the island.

Between the lifelines run the veins, along these veins are the auxiliary functions located, such as the sewage water treatment, the brewery (or other industrial functions) and there is place for the testing of innovations. Fresh water innovations as well as salt water ones since these veins run across the island they also intersect fresh, brackish and salt grounds. Even less than the lifeline, the veins are not physical waterlines. They are conceptual lines running along the roads across the island. Along the veins the landscape will change from sweet to brackish and salt. The landscape will also change according the type of soil. The place where the salt land starts will change over time, it will probably slowly shift towards the west side of the island.

The last level is the one of the vessels, they serve for provision and storage. These are the existing roads and ditches. The key part of the vessels are the agricultural basins. Farmers are being encouraged to build a water basin for the irrigation of their land. Multiple farmers could share one bigger basin. Here is also aimed to collect water close to the place where it is needed. This is why there are many smaller agricultural water basins, ensuring that the farmers do not have to transport the water over a long distance to the agricultural fields.

Since the goal is to capture almost all the precipitation water in the buffer line and in the agricultural basins, it is not necessary to still have all seven pumping stations which are located at the east side of the island. Two of the stations will remain for times when there falls extreme heavy rain. The rest will be reversed, they will now pump salt water into the land. Pumping station Krassekeet, close to Oost, north of Oosterend, will let salt water in for land fishing. The remaining four pumping stations will pump salt water into basins, in which it will be mixed with rain water creating brackish water which can be used for reversed osmosis. Making drinking water from the salt sea water could be the future solution for the drinking water supply of the island.

Stakeholders

We have to be more careful with the water we have. Not only in terms of how much we use, but also how we treat the wastewater. Wastewater contains a lot of minerals and other valuable substances. One of the minerals is phosphorus. We are depleting our phosphorus sources, they cannot be replaced. For some disruptions in the cycle we have to find new ways to deal, like the salinization, what would that mean for our landscape and surroundings.

Texel does not only consume a lot of water in the summer season due to the many tourists, it also needs phosphorus for the agriculture on the island. There is an imbalance in the water supply and the water demand on the island. In the months with the most water consuming activities, namely, agriculture and tourism, there is the least amount of water available.

The water cycle could be a more closed one if Texel had its own water production plant. A well-organised and systemised water cycle system creates a lot of opportunities and possibilities for other cycles.

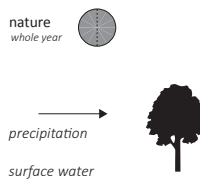
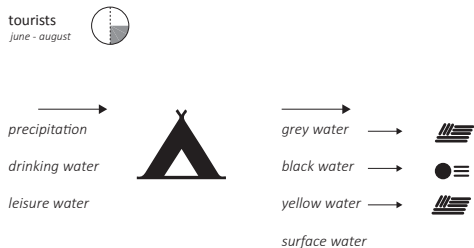
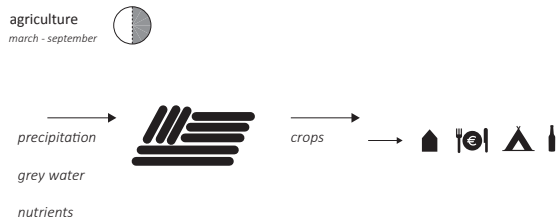
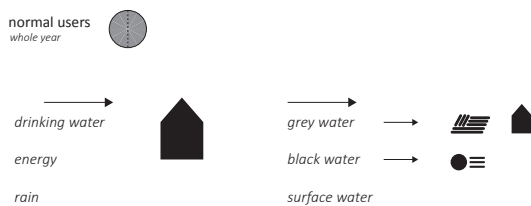
However, well-functioning systems need some rules. Water itself is the guiding factor in this. The perfect

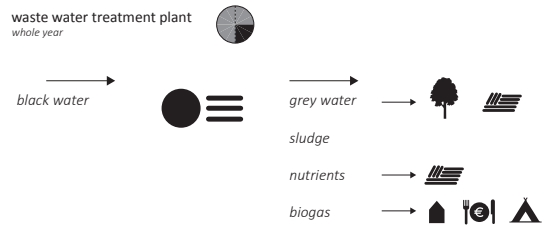
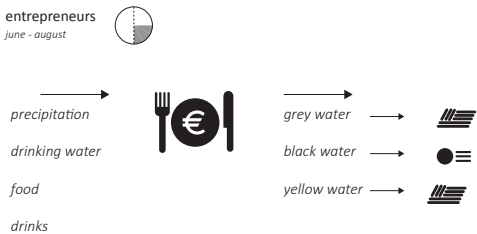
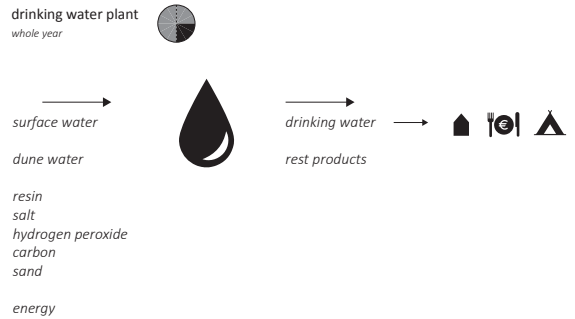
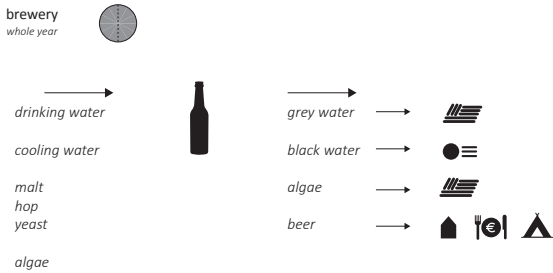
thing to achieve is to have a sudden amount of water on the island with which everybody could live. This water would of course condensate and be supplemented by precipitation.

The tourists are a part of the identity of Texel and therefore should not be excluded. However, they should not completely deplete the island. They are the guests who are highly appreciated on the island, but they should not overstay their welcome. After the extra water is almost used they should leave; the island belongs to the dwellers and nature again. The island can recover from the tourist season. In a dry year the tourist season could be very short, but the island needs also more recovery time.

Several stakeholders can be determined in the water cycle. They use water and produce rest products, however, they could be linked in a more efficient way. Many of these rest products can be used by other stakeholders. Together, these stakeholders can form a well-functioning system, which will benefit the whole island.

figure #:





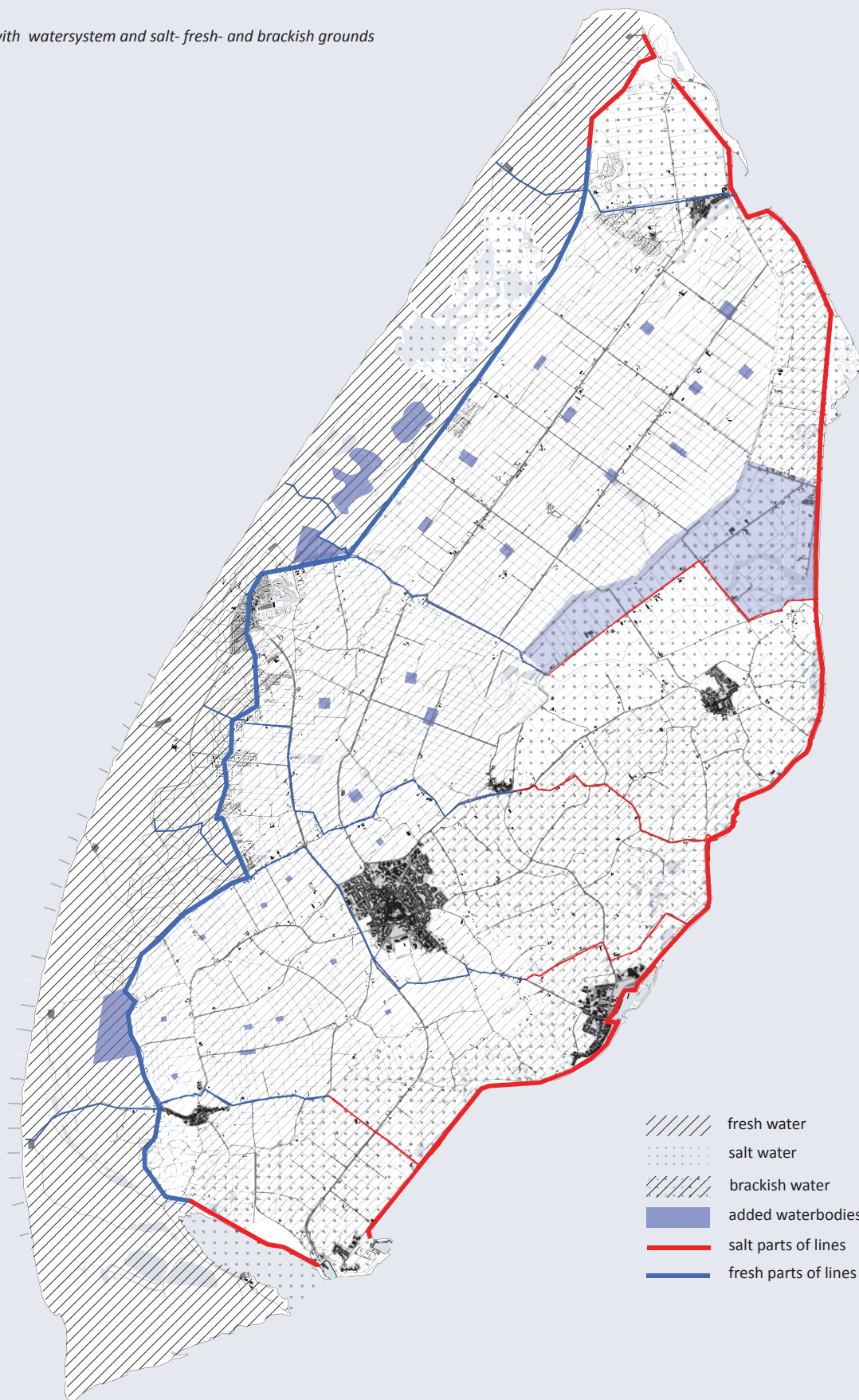
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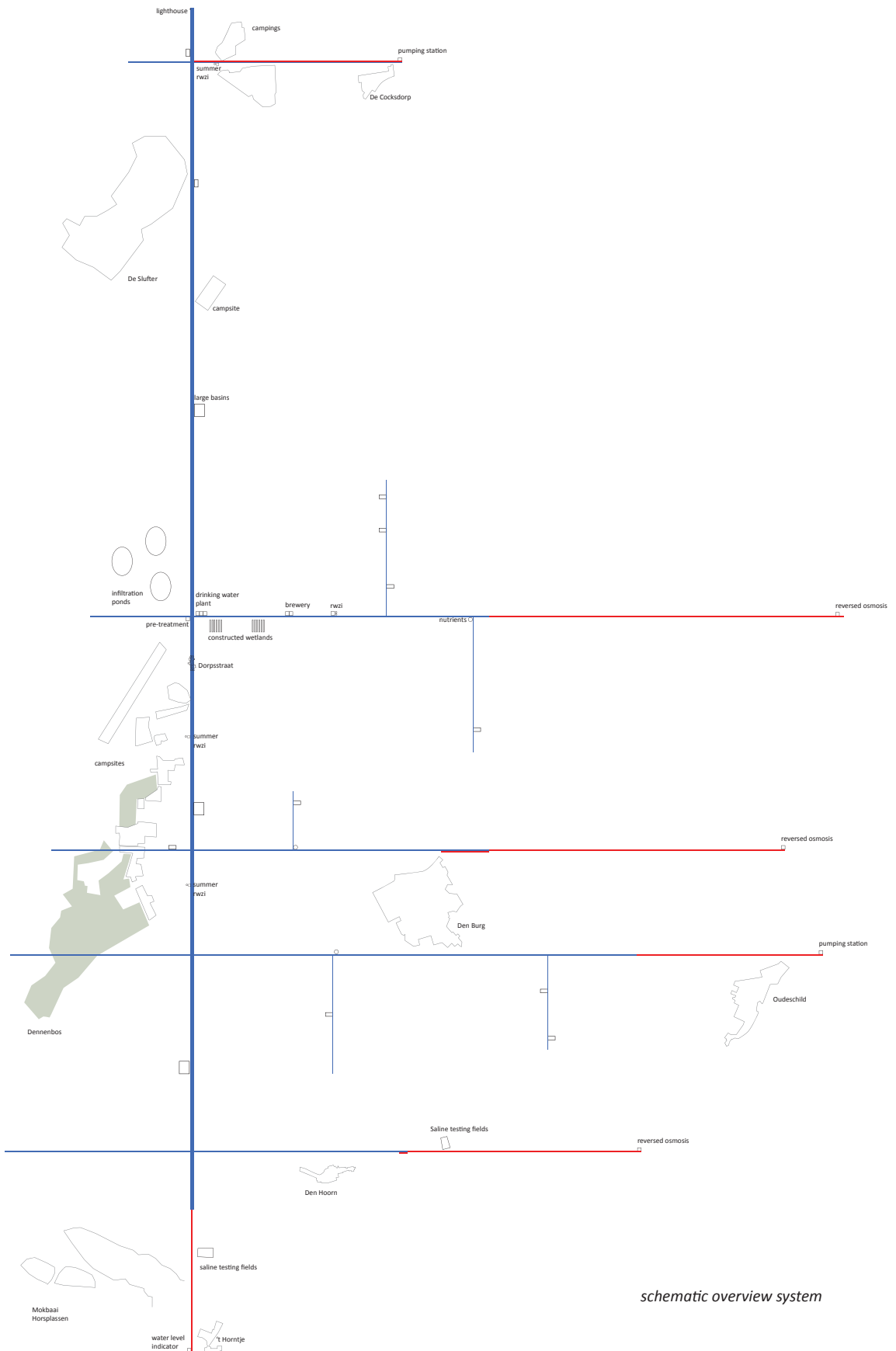
The brewery can be linked in between the water production process and the waste water treatment. The beer can be brewed from real Texel water and the rest products from the beer brewing process can be used to retrieve nutrients. Algae can be used to digest the waste from the brewing process, after which the algae can be used as fertilizer for the agricultural fields. Also other industrial functions could be linked in the water production or the waste water treatment. Rest water can be used for cooling of the industrial machines.

The nutrient recovery can be placed close to the machines of the sewage water treatment and the algae basins from the brewery. The sludge from the waste water, urine from the campsites and the algae from the brewery can be processed here.

The salt which is a rest product in the reversed osmosis process on the east side of the island can be used for the cleaning of the resin beats of the resin treatment.

Urine is a great source of phosphorus and other useful nutrients. To install special toilets which can separate the urine is something which takes many years for the existing housing stock. However at the temporal campsites this is far more easy to apply. Therefore the campsites can have a urine collection tank in their toilet buildings. This can then be collected and processed in the nutrient recovery machine at one of the veins on the island. The grey water from the showers together with the rainwater can also be collected and on site undergo a first cleaning process and then via constructed wetlands be given back to the lifeline. Additional it could make the tourists more aware of the water they use during their stay.





schematic overview system



1

The lifeline

The lifeline intersects many different landscapes and areas and existing waterbodies at the west side. From the salt seawater in the Mokbay to the ditches along the agriculture land, the forest, the many campsites in the south of De Koog, De Koog itself, the Sufter and finally De Krim in the north.

The lifeline will sometimes be a constructed irrigation canal, sometimes using the existing ditches or wells and sometimes widen itself to be a basin or recreational waterbody. Whenever possible the water should be collected close to the place where it is needed.

Adjacent to the dyke the line will collect the water which seeps down [1]. The line has a higher ridge at the side of the road, providing the road from flooding. The line widens at the location of the campsites to serve

as recreational waterbodies and to gather the water coming from the wetlands which have filtered the grey water from the camping's [2]. At the point where it runs along the soccer field there will be room to drain the field when necessary, but also to provide extra water for the grass in dry times. In the forest it will be reduced to a small strip, sometimes even completely disappeared due to falling leaves [3]. The constructed wetlands are when possible located next to the line with an overflow, causing the water to return to the lifeline [4]. The line will disappear when ditches can take over [5]. At the places where residential houses are located adjacent to the line there will be water collected for the watering of the gardens. There are two main points along the line where it will widen in a large water collection basin from where the water cleaning process starts [7].



2



3



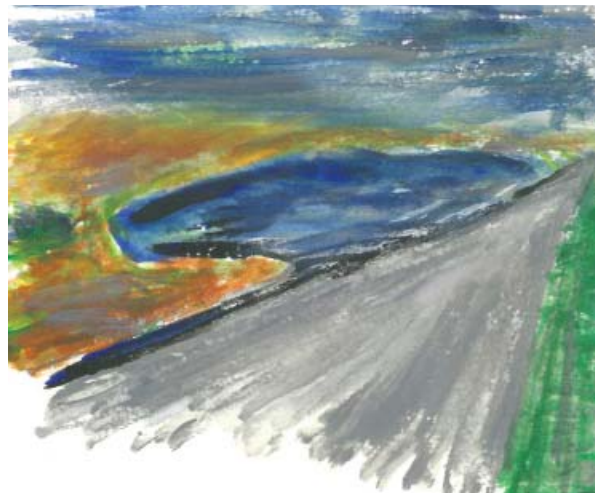
4



5



6



7

Drinking water production plant Heemskerk

A conversation with Ton van der Meij

The water in Heemskerk comes from the factory in Andijk where they get it from the IJsselmeer. In Andijk the water undergoes a first treatment. Here after it is transported to Heemskerk. In Heemskerk first hydrogen peroxide is added and the water goes through pipes with UV light. The light tubes are frequently being cleaned by round elements which shift over the tubes. The intensity of the light can be adjusted according to the clarity of the water. The UV light elements are arranged in four rows with each five elements which shine light on the water. When an element or even a whole row does not work anymore than the rest can take over. Usually only two elements per row are in operation. After the light treatment the water is transported one floor up where it is released in concrete open basins with carbon for a last cleaning before it is pumped into the infiltration ponds in the dunes.

Another process what the water from Andijk undergoes is membrane filtration which consists of two parts, ultra- and hyper filtration. The water enters the factory and is pumped up to the ultrafiltration filters which consist of tubes filled with small porous straws. The water is pushed out and the rest stays in the tubes. Regularly the water stream is reversed and water is pushed through the straws from the outside, cleaning the tubes. 4 times a day the system is filled with chloride. After this stage the water is pumped up again and goes through the hyper filtration. After which the water is ready to be transported to Bergen and Mensink.

- Heemskerk has an emergency basin which allows them to produce water for about 6 hours after something goes wrong. The basin is divided in two, one part of the filtration water and one for the other type of treatment.

The heat produced by the operating system and the pumps is used in other parts of the building for heating. In summer when it is too warm there are shutters in the roof which can be opened.

All the pipes are loose from the floor for maintenance and safety.

The water transported to Bergen is done through gravity because it is close by. The water for Mensink is driven by pumps.

When the factory can no longer produce water there are still ways to provide drinking water, however the hardness of the water changes, many parties have to be informed (hospitals, dialysis, some factories)

TATA Steel has priority for water supply above the normal users for drinking water (steel factory meltdown)

In case of emergency there is a fresh water bubble deeper under the dunes around 30 metres deep. The factory injects water to maintain the level of this water bubble. -



membrane filtration (plant in Heemskerk)



pumps (plant in Heemskerk)

Drinking water production plant Andijk

A conversation with Cees Wiegman

The water from the IJsselmeer is pumped in two basins. This is been done through a point in the dyke around 20 metres deep. The water is cleaner there. From the basin (where it stays for about 9 weeks) it is pumped into the factory where it first travels through drum screens to remove the larger parts. The water is pumped up so it can continue by gravity. The water flows under the walking bridge to the next building. In the next building it is divided between three rows. In the first basin the water enters in an overflow. Iron- or aluminium salts are added as coagulant with which particles form flakes. This basin is about 8 metres deep and consists of three parts, in every part are slowly rotating blades. The water continues through lamellae. The water leaves the lamellae, but the heavier particles sink to the bottom. Now the water is pressed through a sand filter. The dirt particles stick to the sand and the water flows on top (in this plant they use a reversed sand filter). Again the water flows under a walking bridge to a new building, namely the stock basins. The water is there never more than a day. The last phase are carbon filters, after which it can be pumped to the water plant in Heemskerk.

In the new build part of the factory is the complete water producing process present. In the 20 metre deep basin where the water stays for about 9 weeks they inject air to prevent stratification and to reduce the growth of algae. To soften the water the calcium is removed by injecting caustic soda into the water. After the water is pumped up in three lines, it enters drum screens. The dirt remains in the inside of the drums. Then the water is transported to another building, the SIX contactors, an ion exchange system. Here they add resin beads to the water in large concrete basins, chloride ions are absorbed in the resin, during the process the chloride ions are exchanged by organic material from the water. Then the water is pumped to a basin with lamellae separators, to isolate

the resin from the treated water. The resin has now turned brown instead of its normal orangish colour. The resin continues to a 'washing machine' where salt is added and can be used again afterwards. Then hydro peroxide is added to the water and the water is pressed through CeraMac, ceramic membranes in large vessels which remove all suspended matter. Behind these vessels are stainless steel vessels which contain water for the backwashing of the membranes. Now the water has to travel to again another building. Here it receives an UV treatment and finally travels through a carbon filter. After one last time through a drum screen (to remove possible carbon remains) and a small shot of chlorine dioxide, it is ready for consumption. There is a large basin for the immediate surroundings, the rest is pumped to Hoorn from where it is distributed.

- Fish is being taken out of the basins and is returned close to Lelystad.

The water is made too soft and afterwards mixed with some water from a basin which is not softened.

There are large aggregates in case of emergency, in case of a power outage. They have power to last for 10 days. They produces an immense power force, therefore the room has lamellae which can be opened when the aggregates are running.

There is a room with a stock with diesel fuel for the aggregates.

The factory has an atom basement, a remnant from the cold war.

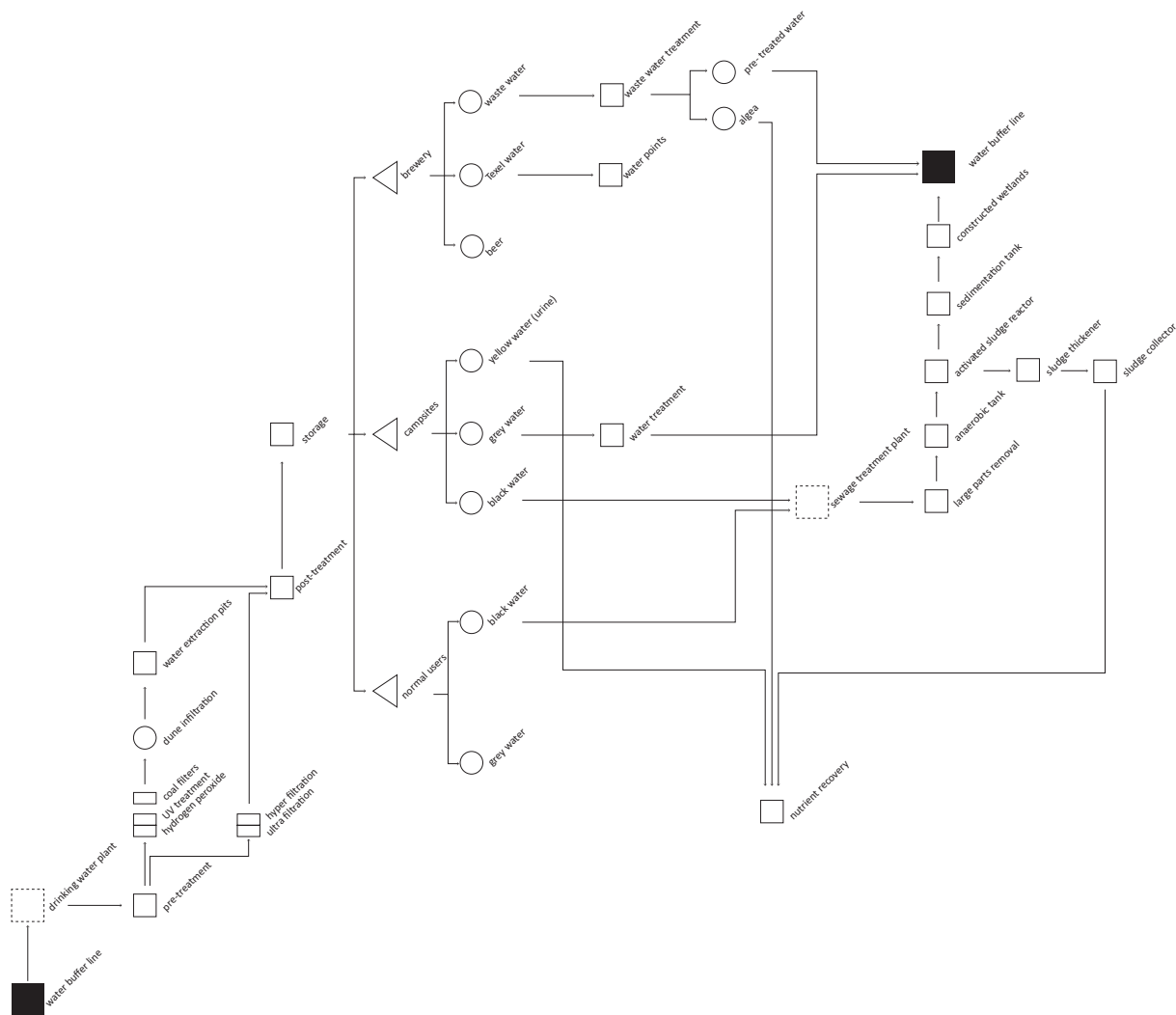
The water is tested 40 000 times a year (more than 100 times a day) -



water storage (plant in Andijk)



Lamellae separators (plant in Andijk)

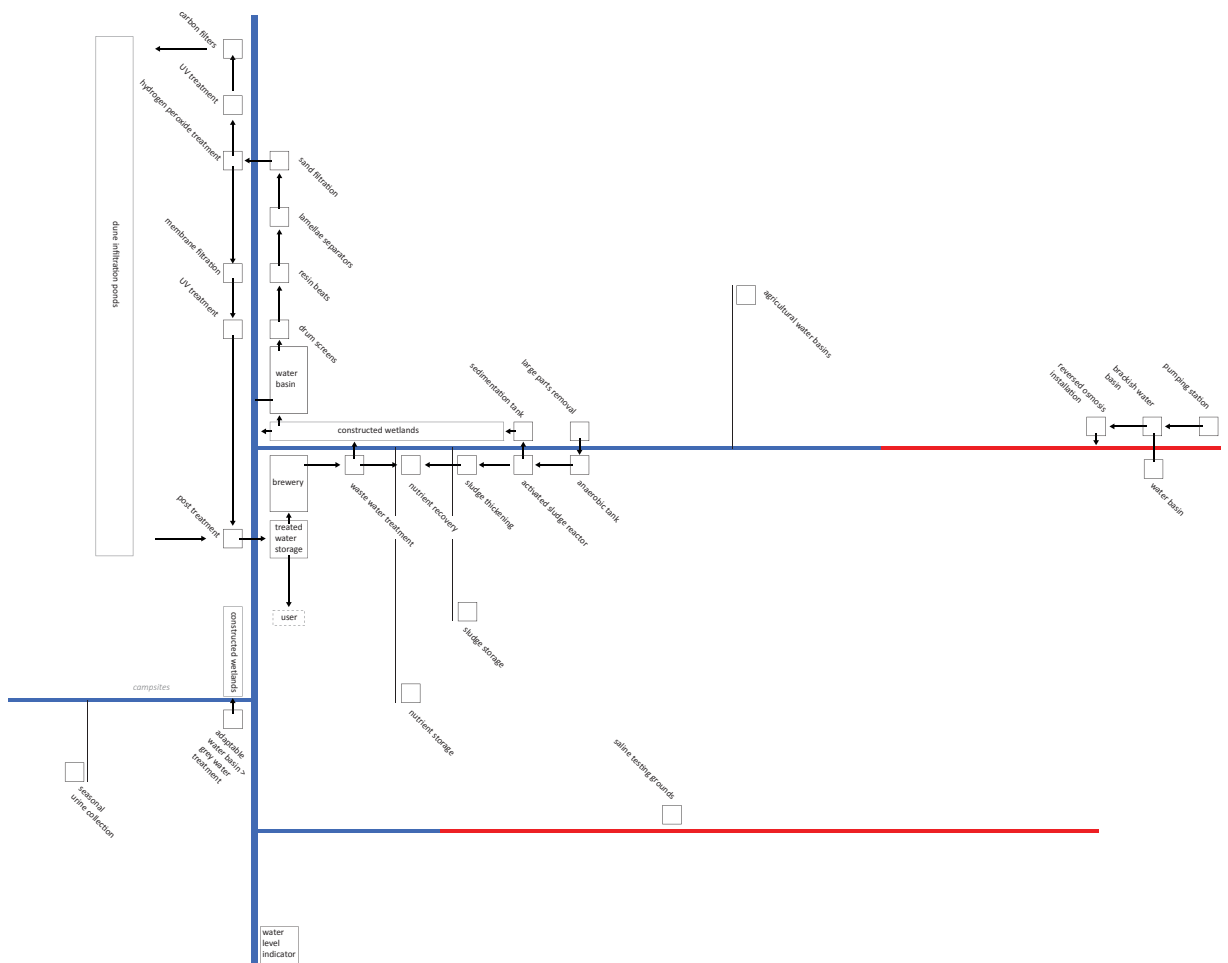


path of the water and restproducts

From lifeline to lifeline

Texel does not have its own drinking water production factory at the moment. The island receives water from the mainland through two pipes which run under the Marsdiep (sea between Den Helder and Texel). The water which people can drink on Texel now comes from the IJsselmeer after which it receives a treatment in Heemskerk and Bergen. Having an own drinking water production would already be a large step in the direction of self-sustainability for Texel. However to complete the metabolism and thus close the circle some other adjustments need to be applied to the water management on Texel. Yellow water (urine) can be used to recover nutrients, grey water is easy to clean with less cleaning steps and the black water needs to go to the sewage treatment plant. Many substances now leave the cycle, causing disruptions in the metabolism. The cycle should be a

sequence of steps from lifeline to lifeline (the black squares in the scheme). The cycle will not immediately, or probably never completely, be a closed one. However this should not stop us from trying to be as close as possible. Every type of water should be looked at separately to gain the most. This scheme is a simplified one, there are more types of water and the cycle is a lot more complicated, however it can help to have a first insight in the water metabolism.



machines in an efficient way located alongside the lines

The bigger picture

The water machines will be spread around the system of lines. With the drinking water production and waste water treatment as key parts, the first along the lifeline and the second along a vein, creating a knot. The tangle of machines should be organised in a way which is both logical for the water, machines and recognisable for the people.

The technical innovations go faster and faster, making the buildings almost outdated when they have finished the building. Additional, the human aspect in the processes becomes also smaller and smaller, reducing the function of the machine buildings to a protective shell. The buildings should be temporal, without being some sort of disposable architecture. They should be able to arise, dispose and disappear quickly, anticipating on the machines. People see the objects in the landscape, walk by them and therefore notice something is going on.

The buildings can change place, but a logical order and some permanent elements should always be kept in mind. The infiltration ponds are in the dunes, the campsites are for new innovations which can be tested for a season and disappear again. The nutrient recovery and storage should be accessible for farmers enabling them to deposit harvest waste and to collect fertiliser. The constructed wetlands are the last step in the cleaning process and should therefore be located adjacent to the lifeline, at least one of them should be in the knot where water cleaning and water production come together to close the cycle. The innovations which deal with salinization or do not need fresh water should be positioned in the salt and brackish (red lines) parts of the island. When thinking about the system it is always important to keep the bigger, overall picture in mind.

Eternalness?

Water machines are reasonably small, however they need a spacious skin. Water collection and the flowing of it needs room. The buildings therefore consist of large spaces with basins, pipes and pumps, surrounded with a spacious cheap shell.

The human aspect is disappearing slowly from the factories, everything is automated and often solely monitored from a distance. The factories are more and more merely a shell for the machines, this is also the way we built these buildings. We hide them on industrial sites outside the cities, using the cheapest and fastest building material we can find.

Factories and machines in the middle of society or at least noticeable could easier make a change, in our cities or as sculptures in our landscapes. But then again we find ourselves with the question what they should pursue?

“conditions that eventually make it (the sculpture) seem as though it had come, not out of mars, nor out of the mind, but out of its own necessity of being.” (King, 1989)

We can try to create something which will make people be aware of the water and how we use it. However, the water machines and elements do not have the importance which they had in ancient times anymore. Those architectural and civil structures had an important role in society. The water machines of today are fragile technological masterpieces, they are not able to withstand the forces of nature and time. The shells surround the temporal, quickly changing machines, and they are built that way.

“Vitruvius’s firmitas is becoming irrelevant as buildings are torn down after just a few years. The word ephemeral is treated with the respect of its original meaning: that which fulfils its purpose. And that purpose is being fulfilled more and more rapidly leading to an architecture perpetually at the cutting edge.” (Papadakis, 1998)

Is it a bad thing that this purpose is being fulfilled more quickly? It is a different way of designing and thinking about architecture. But does that not fit a lot better with the current fast way of living and progress? A sort of disposable architecture. The first thing which comes up is the strong feeling that we should not desire that.

Arguments about the environment and depletion of the earth are valid. However, it does not have to be bad. We can construct buildings in a way in which every part and piece of material can be used again in another way or place. It can be a global sort of architecture, not connected to a place, ever-changing. But when you think about it, this is a scary thought, this way of building would probably deliver monstrosities of buildings. But what then? We are now left in some in-between era, making ugly, semi-temporal, semi-eternal buildings.

Architecture always used to be something ‘eternal’, buildings outlasted multiple generations. However, these days technology is such a big part of our lives and is changing incredibly fast. Buildings often house these technologies, in that light are the eternal buildings perhaps not the best fit for these uneternal machines anymore, but what will be stable and permanent in our lives then? What will remain of this time when we are gone?

The role of architecture is no longer to tell a story about humanity, we do not built with everlasting materials anymore. Buildings are merely just episodes in the course of human. Every generation has their own innovations, technologies and buildings.

The ancient aqueducts and water temples were made to last for decades, sometimes even centuries. That was possible since innovations processed slower. These days the innovations have already overtaken the building when the construction is finished. So the fact that we do not built the everlasting buildings anymore is not solely due to modern society, but also to progress and innovation.

In the futurism movement architects found change, movement and a fast and dynamic society very important. Every generation should rebuilt their city, creating something new and progressive. Their buildings represented the machines, which were in their vision an articulation of pure movement and progress. The paradoxal part in their thinking was perhaps the way they built their temporal one-generation cities, large monumental buildings which appeared as if they were intended to stay there for eternity.

With the start of the industrialisation many factories were built. Factories used to be the spill of society, a large amount of the people spent most of their time in those factories. The factory was designed for the machines which they had to give shelter to, but also for the people moving along the industrial processes. Nowadays we consider many of these industrial buildings an important piece of our building heritage. The old factories have lost their initial function but are now being redeveloped, giving them a second life and new importance in society. Due to the changed social environment their meaning has altered.

However the past years we have built our new factories outside of our cities. The role of people in most of the industrial processes is reduced to almost nothing. We have built big ugly buildings without room for humans, their almost invisible position in society gives us a chance to just ignore them and also the problems they bring along. However, we are now starting to see the consequences from this building without consideration, large industrial sites and mega stalls loom in many parts of the Netherlands and also the problems they bring along become more present.



Centrale elettrica, Sant'Elia



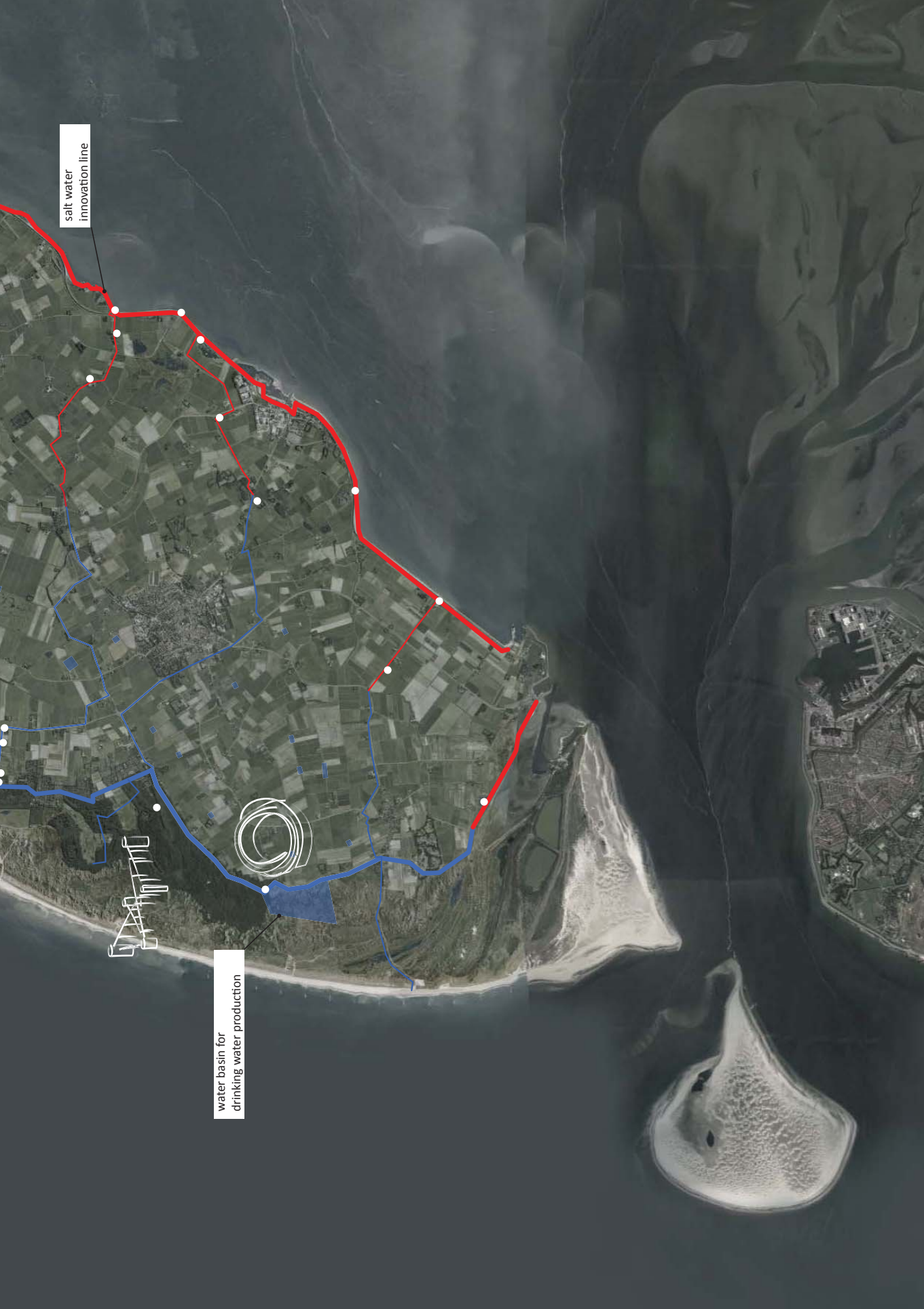
salt water flowing in
> land fishery

basins collection rainwater
for agriculture

water collection
and buffer line

dune infiltration
ponds

water basin for
drinking water production



salt water
innovation line

water basin for
drinking water production



A home for the the machines

General rules

o The buildings are primarily a shelter for the machines, only small and logical extra functions can be added, namely;

- Functions which do something with water
- Functions which have a logical connection with the working of the machine
- Functions which produce or can use rest products

o The buildings are in some way noticeable in the landscape, however people do not have to enter them necessarily

o The water pipes come above ground at the places where they enter the machine buildings.

o For the materialisation is a division made between the buildings where water goes through and the buildings where it resides.

- For the buildings where water resides: *in situ* concrete mixed with different types of metal embedded in a thin top layer of concrete, this will cause erosion over time.

- For the buildings where water goes through: *in situ* concrete with no top layer

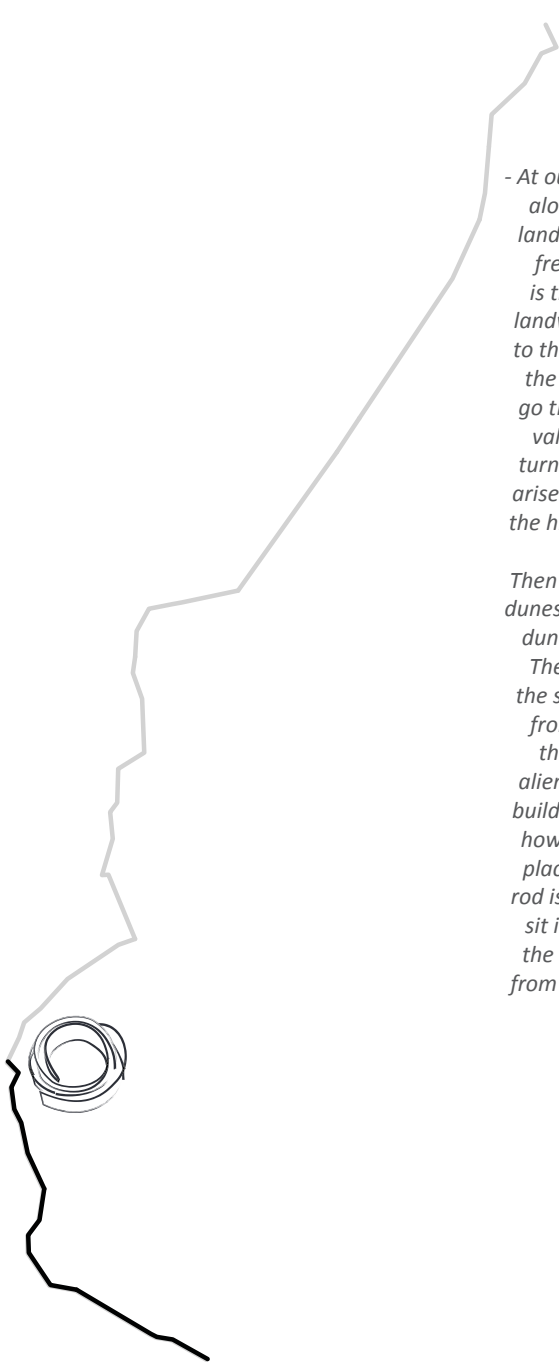
At first there will be no difference visible between the different buildings. After some time a division between the two types of buildings will be noticeable.

The future

The machine buildings will be made out of concrete. A strong and stable material, the fundament where the future water system can be built around. They will be the objects which will remain, the relics of the water. Not like the disposable factory architecture. Even when the machines have left the buildings they can serve as watching point, reflection space, swimming pool, shelter, realm of nature, or just an alien object in the Texel landscape.

Future additions will be made from fungus bricks. The fungus bricks are made of harvest waste combined with fungus. When they are not needed anymore they can be chopped up again and used as fertilizer. People can see these addition buildings, arise, change place, and disappear. Dance their dance around the original water buildings.

The concrete buildings will slowly become a part of the landscape. This will happen in a different ways and in a different pace for every building. The drum screen building will more and more often flood during some parts of the year. The resin buildings will be taken over by nature, plants and trees will nestle in and around the cylinders. The active carbon filter in De Koog will receive an extension towards the middle of the Dorpsstraat just like the other terraces. The pumping station and aeration will be more and more a part of the dunes after the sand has been blown against the walls for some time. Additionally, the erosion and therefore also the division between the two types of buildings will be more obvious.



- At our right side are agricultural fields, framed with ditches. We continue along the waterline and find on our right side De Petten, a salt marsh land with a haze of purple colours. At our left, the waterline collects the fresh rainwater coming from the dyke. On the other side of the dyke is the Mokbay, a bay where the Wad Sea comes into the island, more landward the ground consists of creeks and reed. The road makes a turn to the left and we can see the Mokbay. Even further to the south, behind the Mokbay, are the Horsmeertjes, although very beautiful, we do not go there today. We continue towards the north, leaving De Geul, a long valley where a large Spoonbill colony resides behind us, the dyke has turned into small dunes. On our right side the first houses of Den Hoorn arise from the fields. The mark for the first vein stands almost invisible in the high grass on the roadside, the vein is running across the island, lined with several saline testing fields.

Then we see a water basin at our left, it is a waterbody in a part with low dunes, where the water has positioned itself in a natural way between the dunes. The raindrops create wrinkles in the reasonable flat waterbody.

The line has widened and opened itself into this very large lake. Since the summer has just passed and the lake is a low point, the stairs, going from the line are visible for a large part. At the most northern part of this waterbody is a round building with a metal rod sticking out, an alien object in the natural landscape. The cars and the bikes pass by this building, noticing it, but do not bother to stop and go in. The pedestrians however, are tempted to go inside, since the entrance of the building is placed half on the footpath. We enter the building, normally the metal rod is sundial, however this is useless on this rainy day. For a moment we sit in the middle of the building, just listening to the water tumbling in the machine. There is no roof, the rain is pouring in, the concrete basin from the machine has flooded a bit. It is a calming feeling, just watch the water, sun and time go by. -

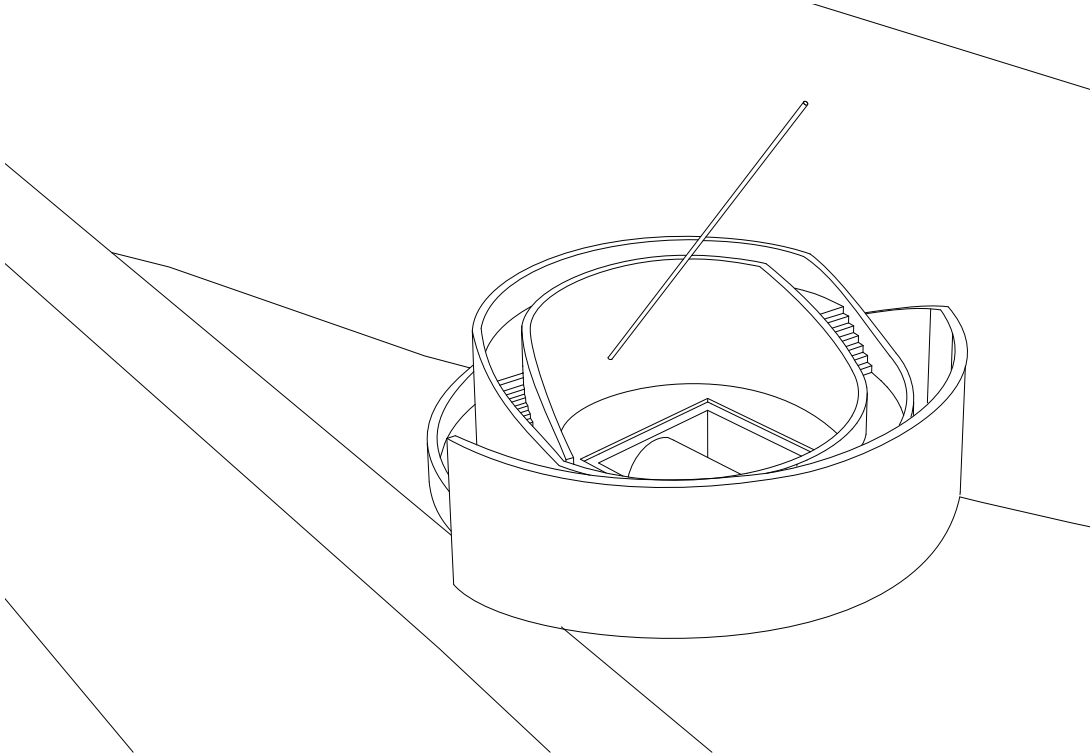




Drum screens

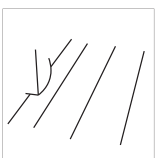
turning

The water turns in the drum screens, the people turn in the building and the place is a turning point from natural water towards mechanical cleaned water. The sundial exposes the turning of the sun. People can just walk around in the building or sit and listen to the water turning in the machine. It is a place for resting and contemplation. Nothing more.

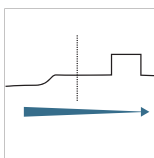


Working of the machine

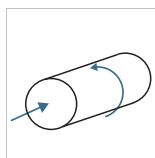
The drum screens are the first step in the cleaning process of the water. Fresh water is collected in a natural water basin, thereafter it flows into a concrete basin, in which a large drum screen is placed. The drum screen has small mazes, through which the water can flow, however larger parts in the water like twigs, leaves and fishes cannot, they are filtered out.



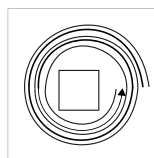
first encounter:
slightly blocking the
pedestrian path



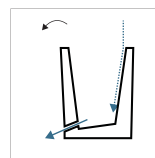
turning point natural-
mechanical



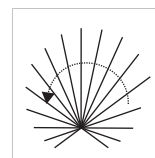
turning of the water



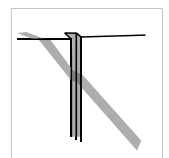
turning of people



turning of the walls
and floors



turning of sun

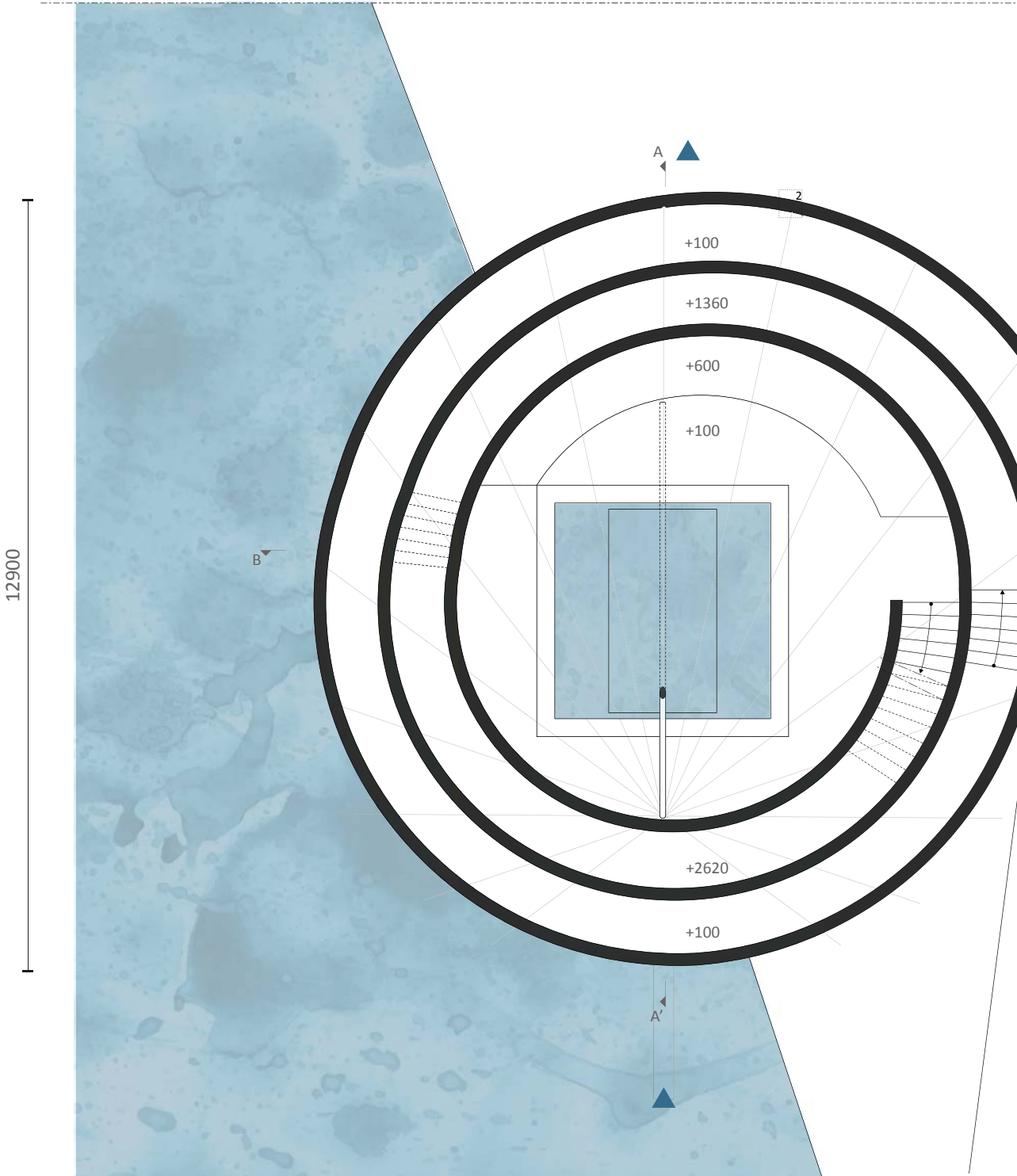


marks for sundial in
walls

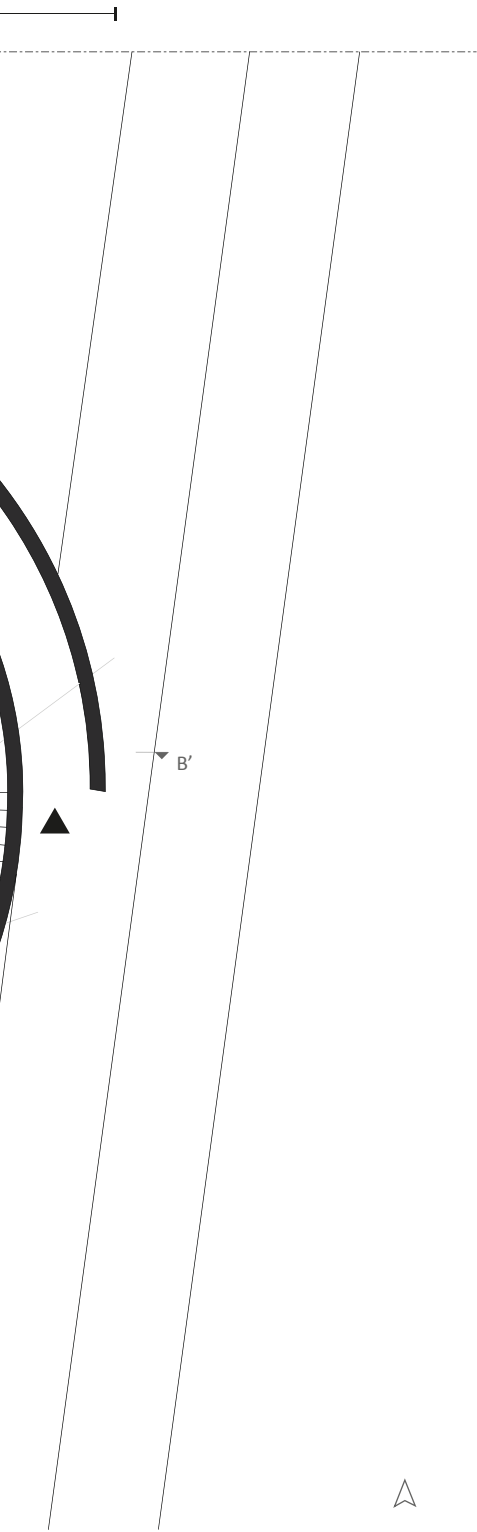




13200



floorplan scale 1:100

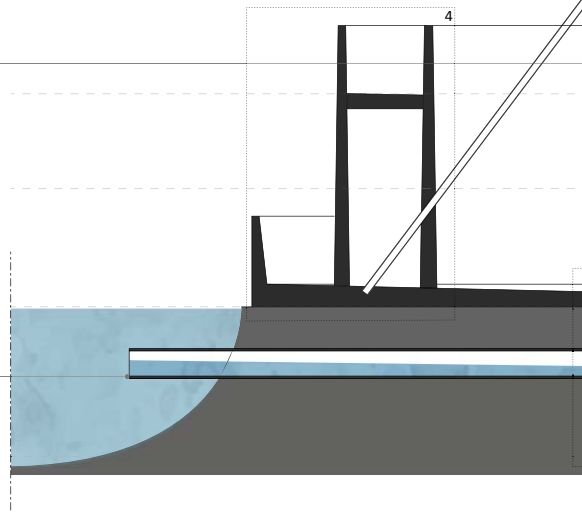


Routing

The entrance is slightly positioned on the pedestrian path. People can walk past the building, but some will enter. One enters the building through a narrow opening with walls on both sides. The path runs in a curve. On sunny days the shadow of the sundial is visible on the wall. After walking half of a circle, the water basin at the southern side becomes visible. The pipe, through which the water comes into the machine, is visible just below water level. After having turned one full circle a few stairs go up. It is now possible to look over the northern wall and see the forest in the distance. After one more turn and a couple of stairs there is an overview over the water basin from a higher point after which stairs go all the way down ending up in the centre of the building where the machine is located.

sundial marks

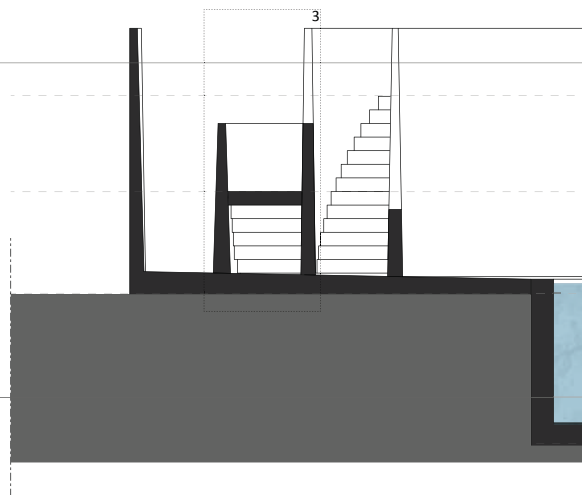
waterinlet from waterbasin



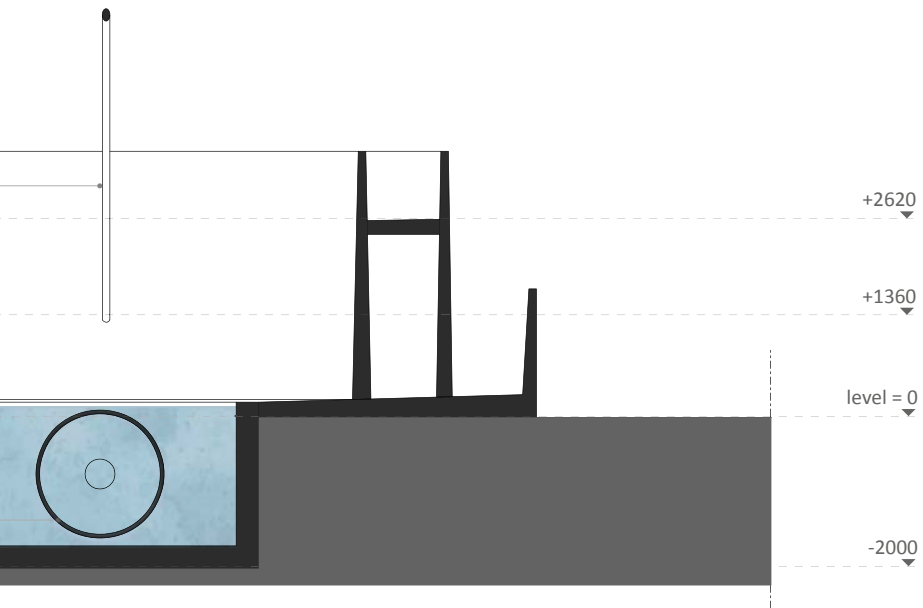
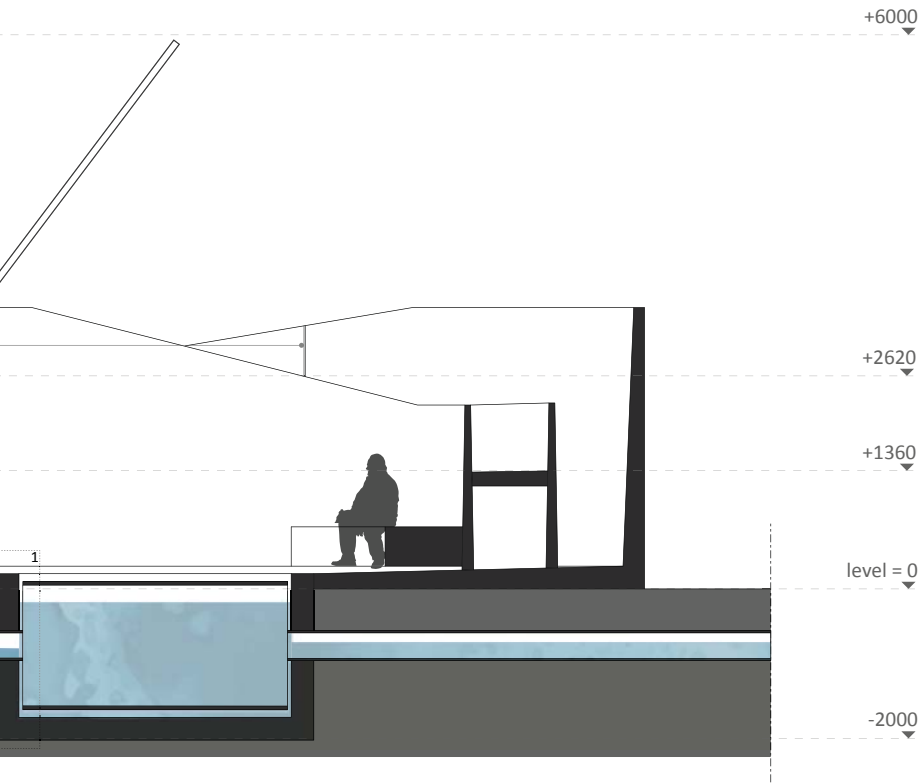
section AA' scale 1:100

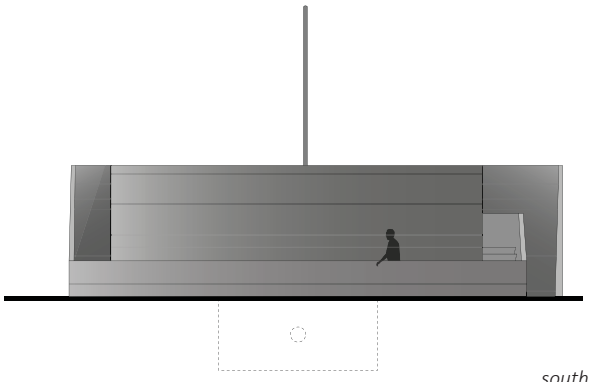
sundial rod

drumscreen

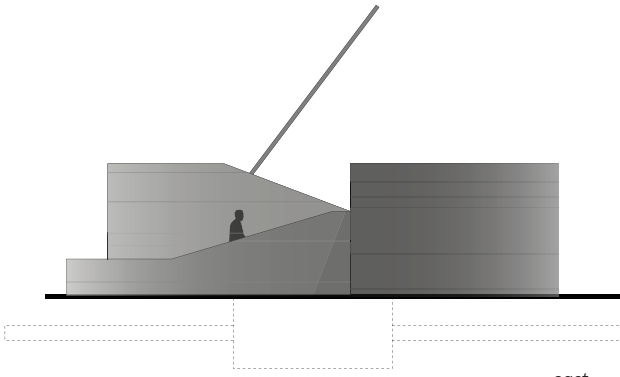


section BB' scale 1:100

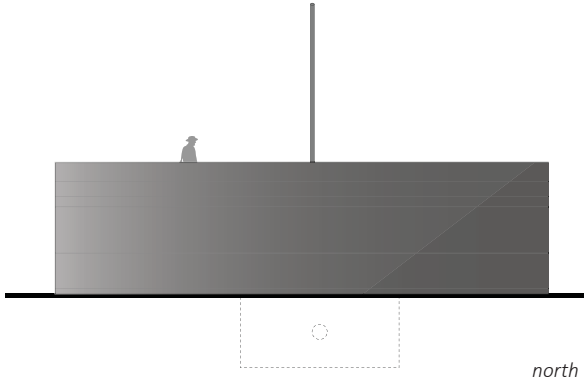




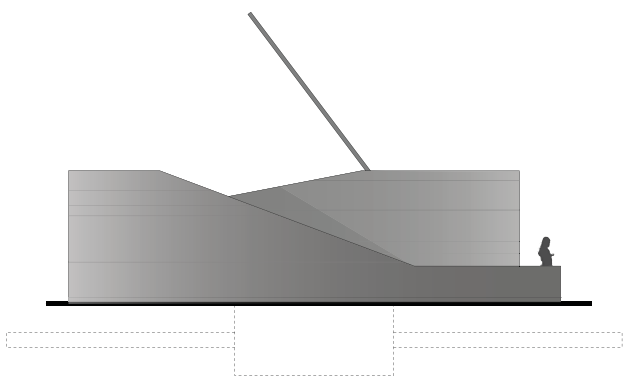
south



east



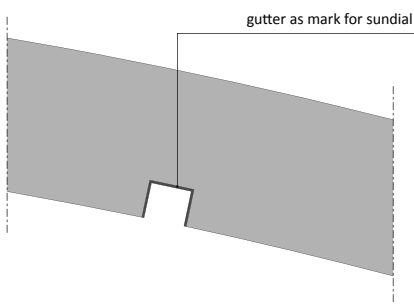
north



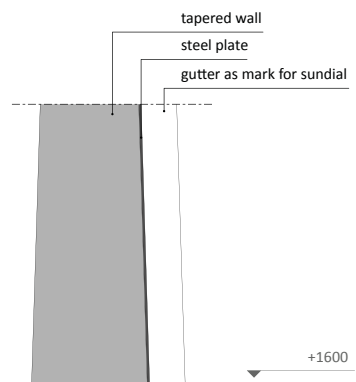
west



elevations scale 1:200



horizontal

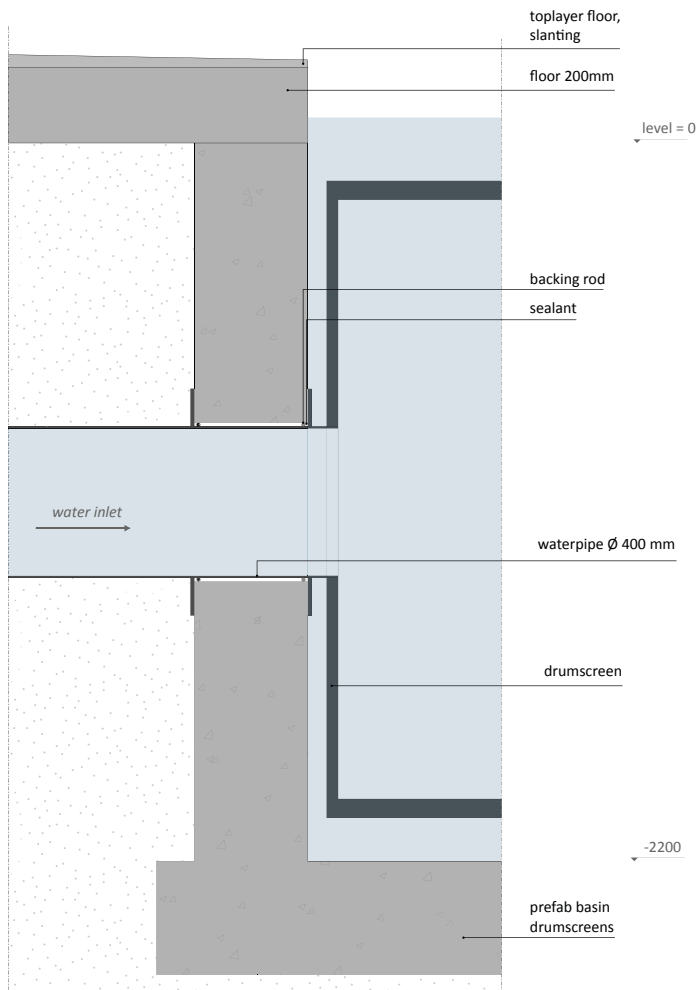


vertical

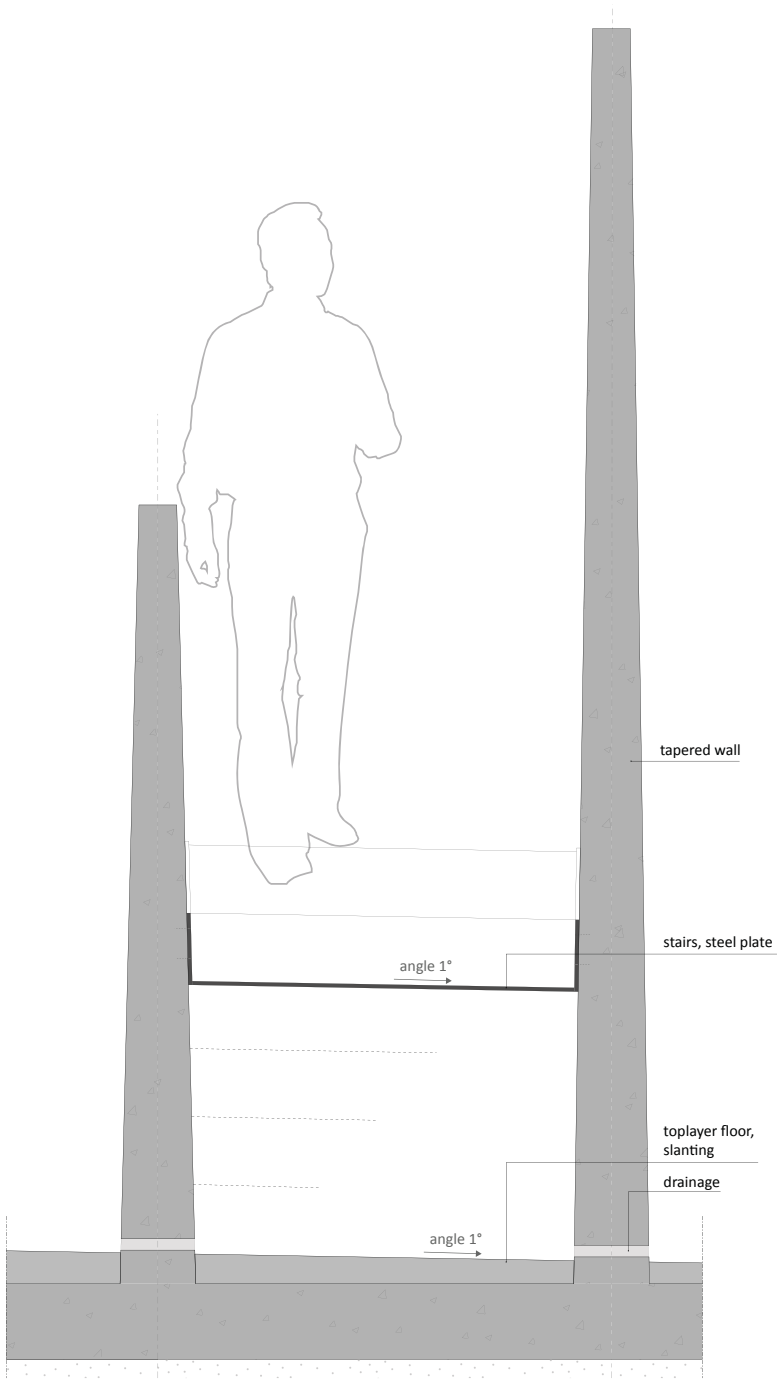
detail 2 scale 1:10 -marking the hours-

Details | Special features

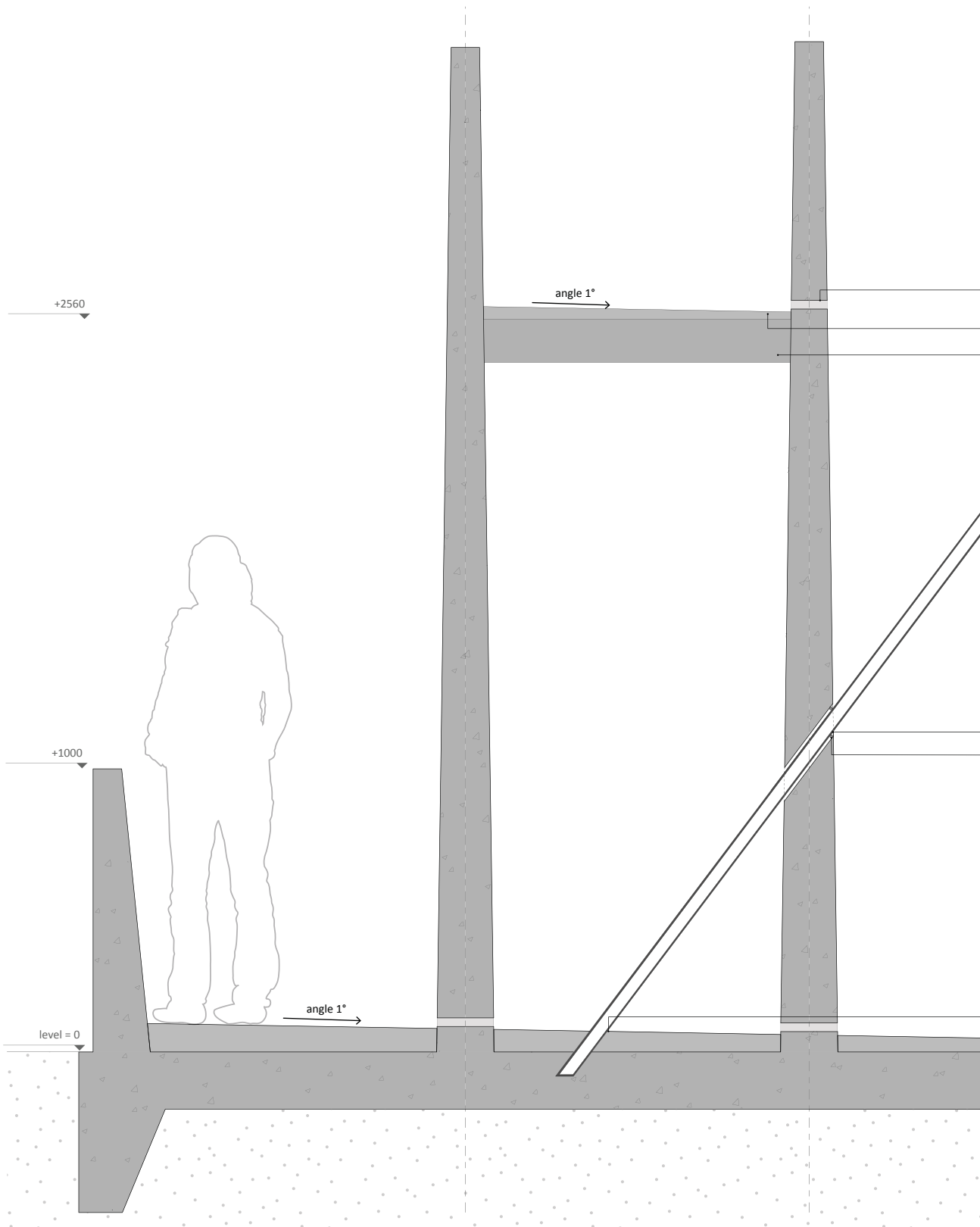
The walls of the different shells are slanting, water can slowly seep down over these walls when it rains. Not only the walls, but also the floors are slightly skewed, people will turn slightly towards the inner wall together with the rainwater. There are openings in the walls through which the rainwater can flow. Since the floors are sloping towards the middle, all the water will end up in the middle of the building. From the most inner wall at the south side sticks the sundial rod out of the wall in an angle of 53 degrees with the floor. The angle is the north latitude which Texel is located on. In the highest most northern wall are milled out gutters with a sheet of metal, which mark the hours for the sundial and through which the water will seep down.



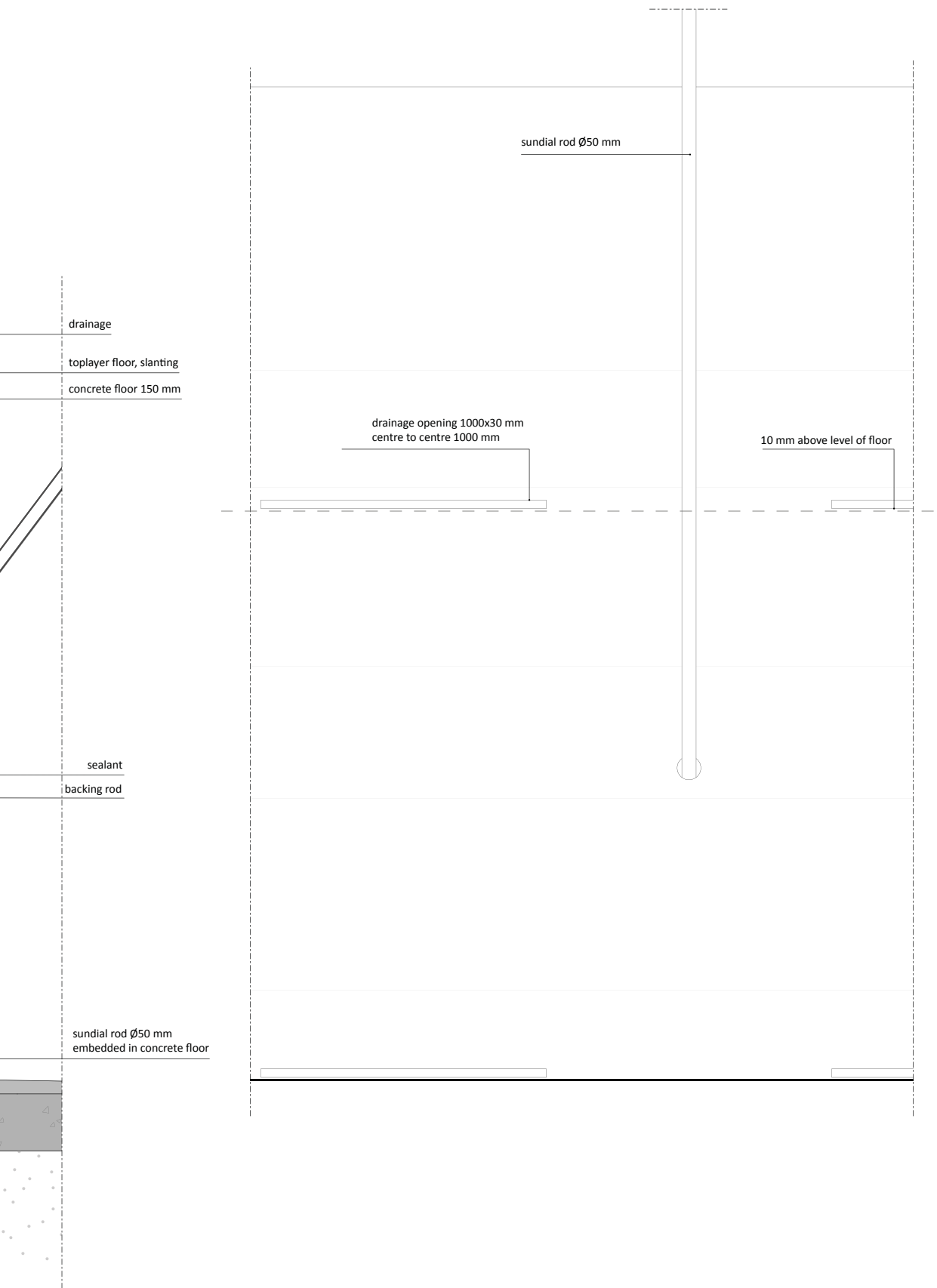
detail 1 scale 1:20 -from natural waterbasin to drumscreen-



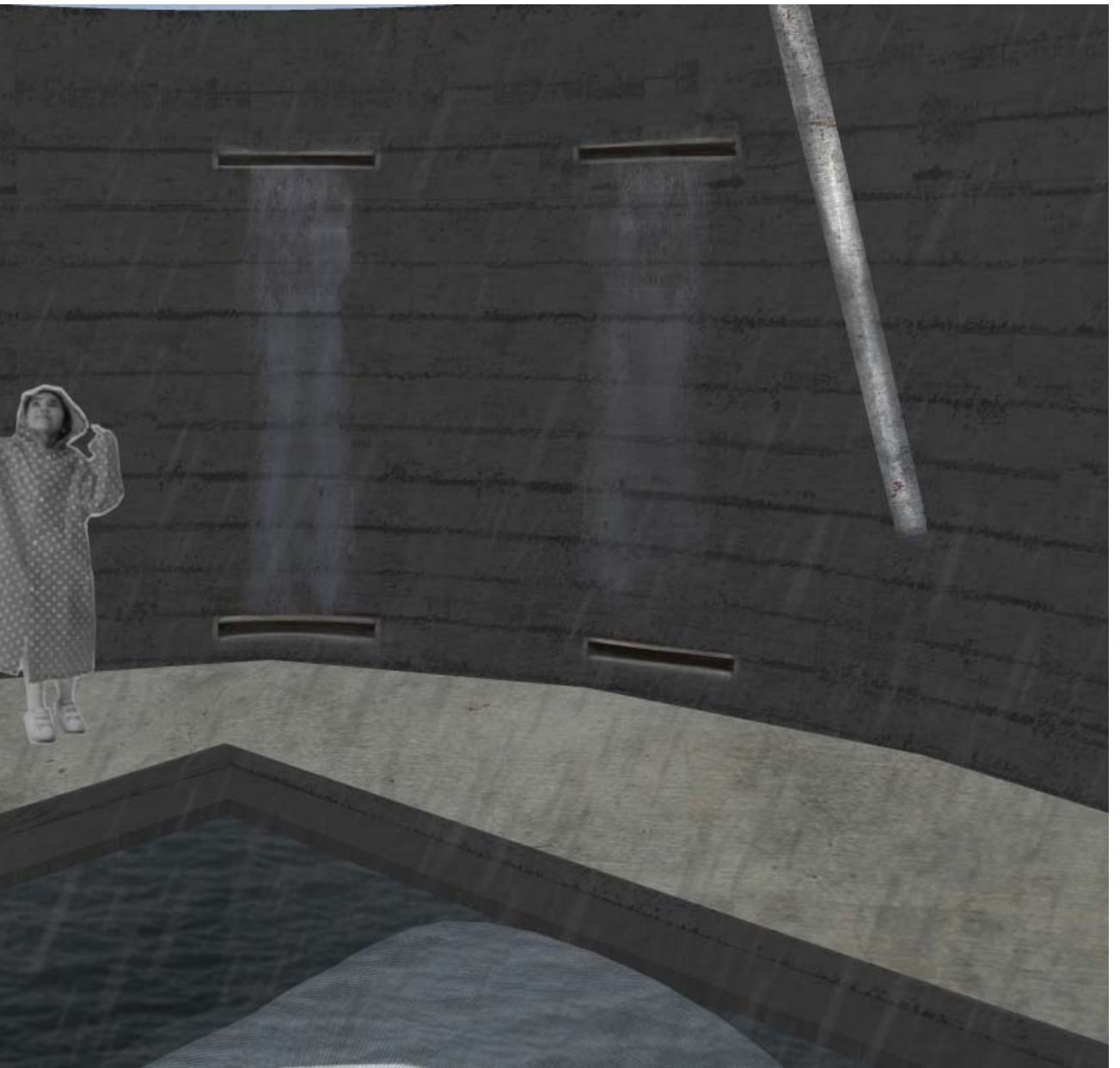
detail 3 scale 1:20 -slanting stairs and floors -



detail 4 scale 1:20 -slanting floors, tapered walls, a sundial and drainages -







Meaning

When creating awareness is the aim of a project, the question can be raised till what extent should, and can architects be involved in social issues. Should architects purposely pursue social engagement? Is it even possible to create awareness with architecture? Perhaps architecture should just be beautiful and nothing more. Or maybe not even beautiful, just functional. People can be happy and can be miserable in the same building. In that sense, the main reason for a building to be there is to give shelter to a person, solely a functional purpose. However, architecture surrounds us and can therefore not escape from some social engagement.

“Cemeteries and memorials are types of built environments that pursue meaning as part of their making, purposefully.” (Treib, 2009, p. 11)

It is easy to let yourself be amazed by churches, chapels or memorials, they carry already a heavy load of memories and stories. It is a room for people to have their own thoughts and memories. People have walked around them, entered them sat between their walls and dreamed in them. The factories are stuck in a somewhat grey area. What do factories pursue? Is it only functionality? Or can it also be an exhibition of all our achievements and innovations? Or a tool for creating awareness.

Architecture is a static and physical aspect in our lives. Many architects try, or at least would like to believe they can change something with their buildings, create some awareness. Some create a building with more or another meaning than they intended. The social climate and zeitgeist is a very important factor in the creating of the meaning of a building.

Leon Krier argues that we should separate a work entirely from the ideology the architect espoused. Speer was admittedly the architect of the regime, however his project for Berlin has its own intrinsic beauty. (Tilman, 2014)

The architecture of Albert Speer has been condemned for his ties with Nazi Germany. Nevertheless, his buildings are impressive. The buildings have stayed the same, their meaning has just altered over time.

Also in more recent times architects, of course in a completely different context than Albert Speer, have been judged for designing buildings for questionable people, countries or governments. Even if an architect has no intention to be social or political engaged, they sometimes cannot escape from it. OMA has been judged for their CCTV tower in Beijing *“it houses and celebrates an organisation which, as the main communications arms of a dictatorship, is not exactly benign”* (The Guardian, 2014). Zaha Hadid has been criticised for the Al Wakrah stadium in Qatar, where there has been a shocking number of immigrant workers. She responds in an interview in The Guardian to these accusations that the migrant deaths were a serious problem but it is a matter for the Qatari government. Should these architects take a stand in the political debates in which their buildings will be built? Should they reject the assignments, or is it alright if they just create something beautiful which can make in its own way the world a little better?

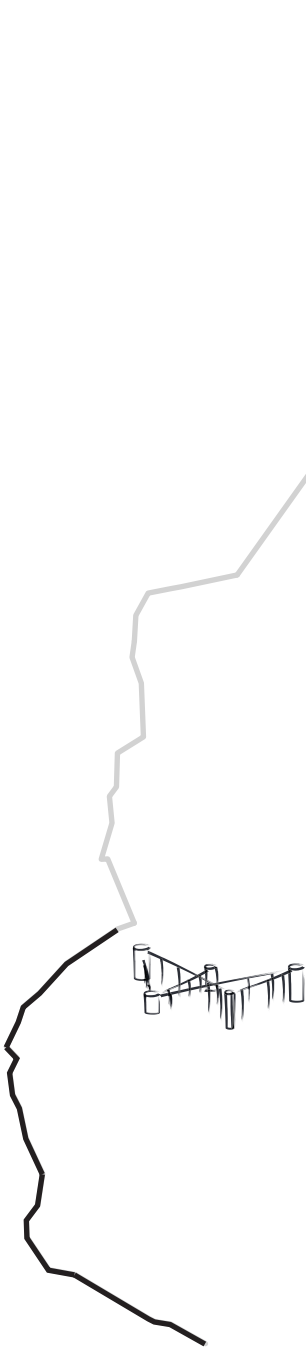
One will not know what the building will mean in the future. It can be the relic of a dictatorship or it can be a symbol for change.

The power of some buildings is its beauty and nothing more, the thought behind it, the continent it is on or the era it was built in, might not even be of any importance at all. Beauty, although for everybody something different, is something people can relate to and hold on to. However, the story behind a building can change how people experience a building, in a good or a bad way.



Filtergebouw Berenplaat, Wim Quist

- We leave the round building and see the landscape in front of us, with the waterline making an endless strip in this very empty landscape, in the distance we can see the line entering the forest. The ditches which fringe the agricultural fields continue also in the forest, however covered with leaves, at the points where the ditches completely disappear the waterline, although only a very narrow strip, takes over. The raindrops thick against the leaves of the forest. The smell of wet leaves is everywhere around us. After some time we suddenly see a huddle of pipes going over the road. When we come closer we can see the pipes connect a cluster of buildings. They are in some way the same as the previous one, but are also very different, this intrigues us. What do they offer, what part in the process is this? The buildings are made out of concrete. The rainwater is lingering patiently on the surface of the concrete towers, waiting till it is heavy enough to drip down towards the ground. There are four similar buildings, only different in height and some slightly wider. The top of the cylindrical buildings is narrower, creating an edge. Birds rest and take a bath in the water in this gutter. We walk towards one of the buildings through the wet leaves, at the backside is an opening we enter and see a steel tank resting on metal beams. The water thickens on the tank and seeps down via the walls of the cylindrical shell. We enter one more building, this one has a roof, we look up and see an infundibular shaped machine. After having sheltered for some time we continue, we save the other buildings for the next time. -



[92]



[4]

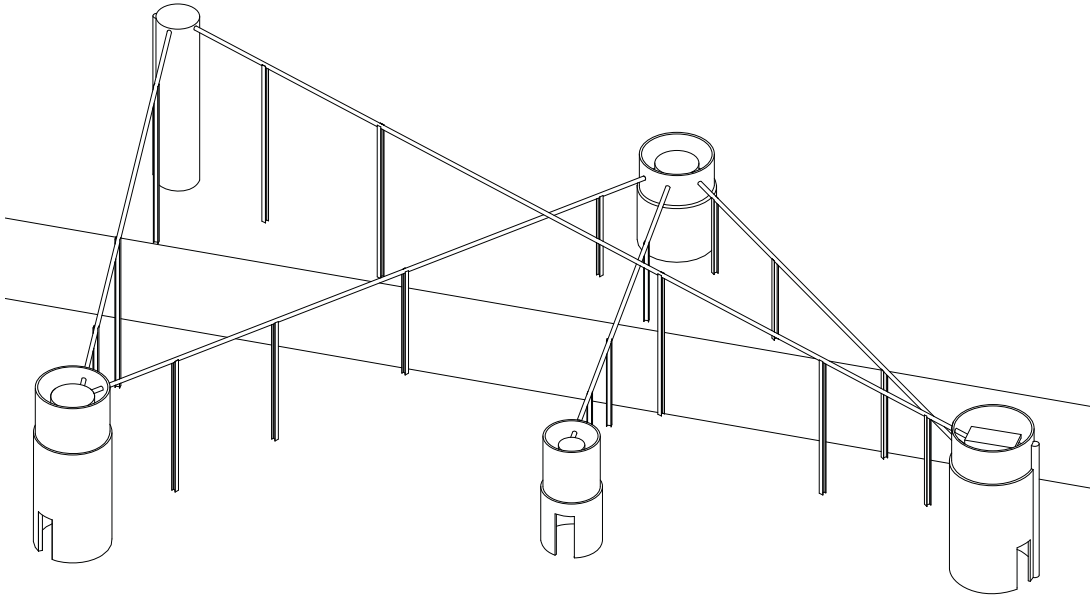




Resin Treatment

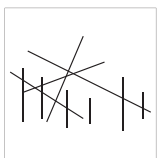
attaching and releasing

A cluster of machines in the cleaning process located in the forest. The pipes go from building to building over the road, supported by a forest of columns. People are a guest in the forest and the nature and connect to the place for a while, but should also separate after some time and continue their journey.

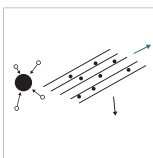


Working of the machine

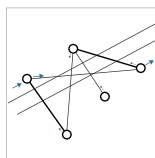
The water arrives in the resin connector; a concrete tank where resin beads are being pumped. The smaller dirt particles in the water will connect to the resin. After the resin connector the water will go to the lamellae separator, a machine which separates the water from the resin. After this machine the water will continue. The resin beads will go to the washing tank where they are cleaned with salt from the salt reservoir tank. After the cleaning the resin beads will go to the resin storage tank and can be used again. The water used for the cleaning can, after a little bit of cleaning (since this water contains only natural materials) be given back to the waterline.



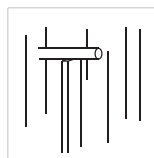
first encounter: pipes above your head and columns in the forest



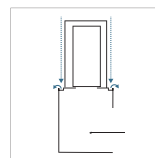
connecting to resin, separating water and resin through lamellae



routing of the water



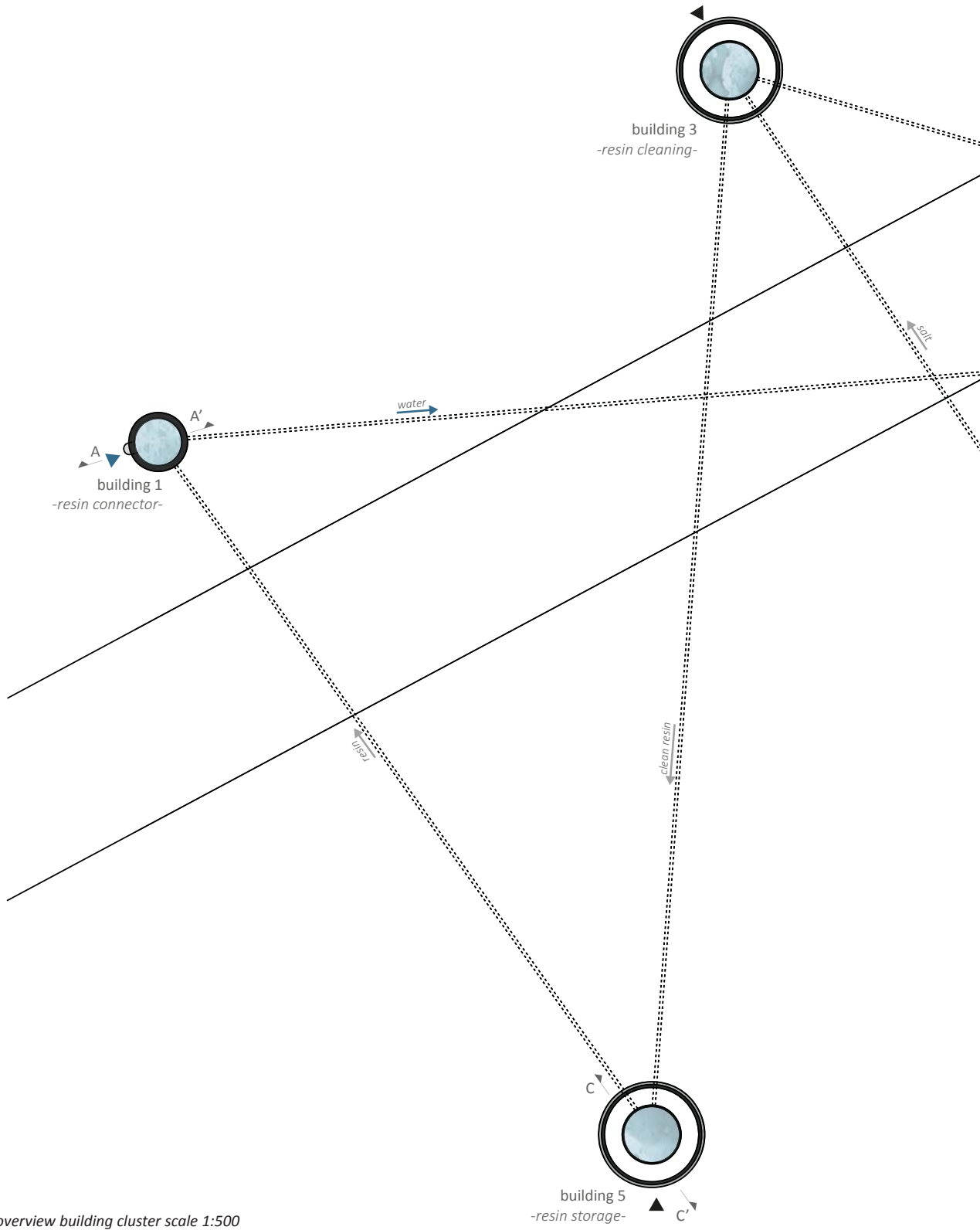
forest of pipe supporting columns in forest of trees



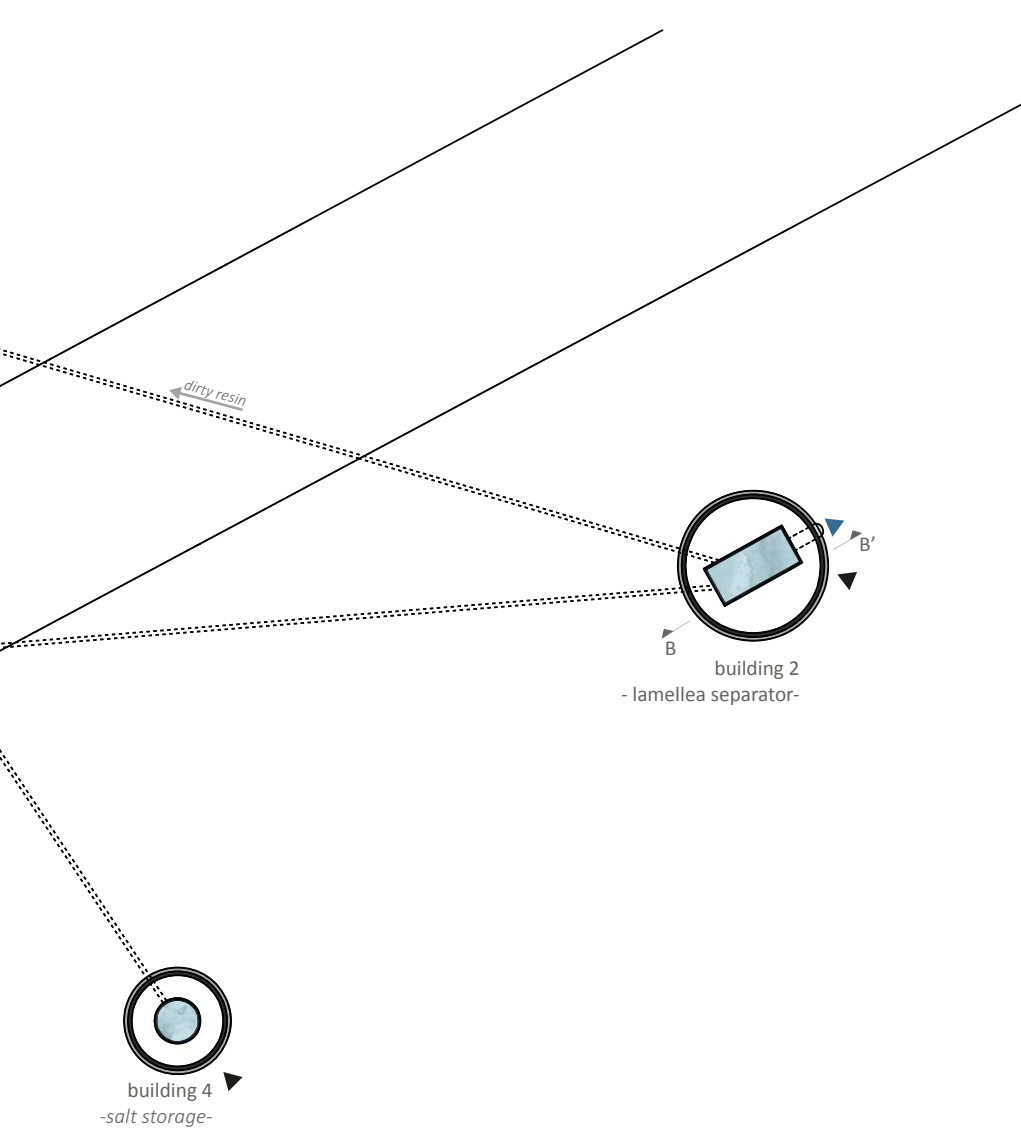
water attaching and releasing and people sheltering





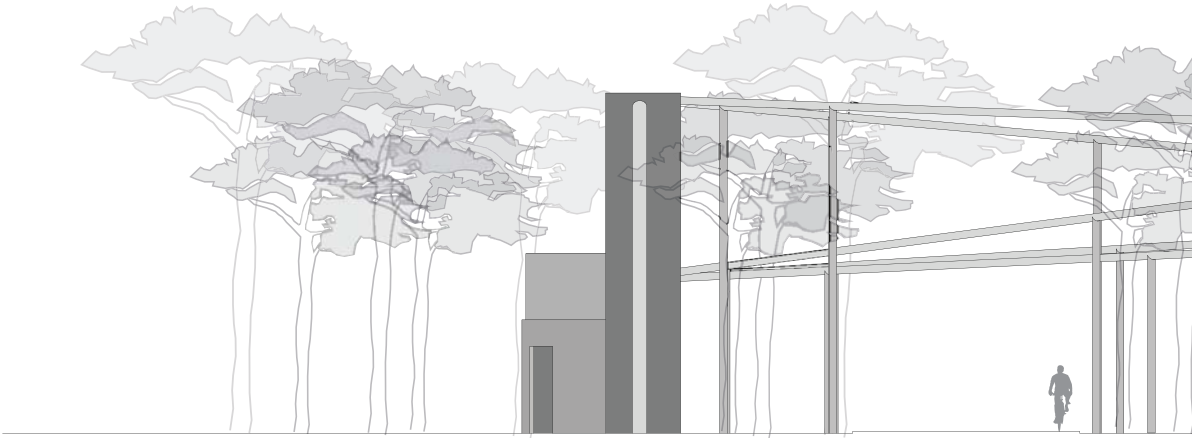


overview building cluster scale 1:500

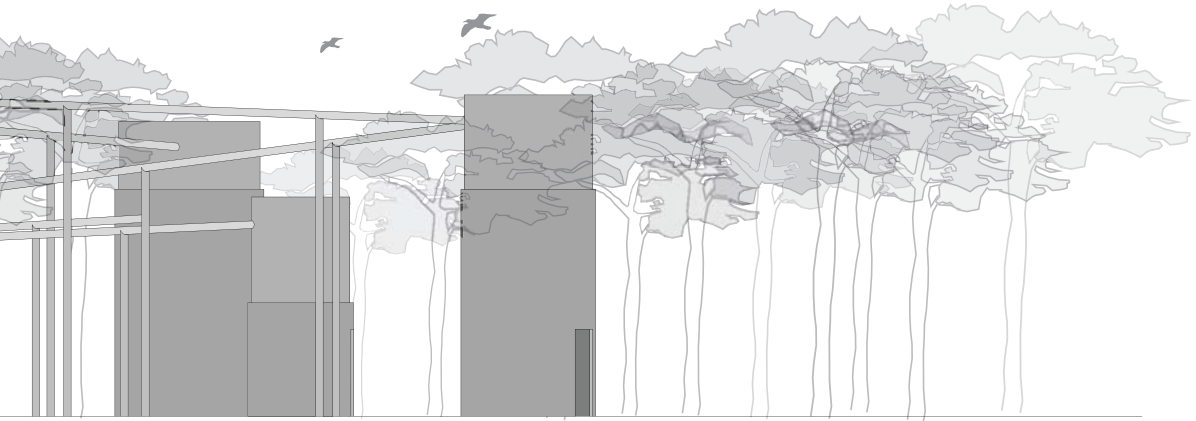


Routing

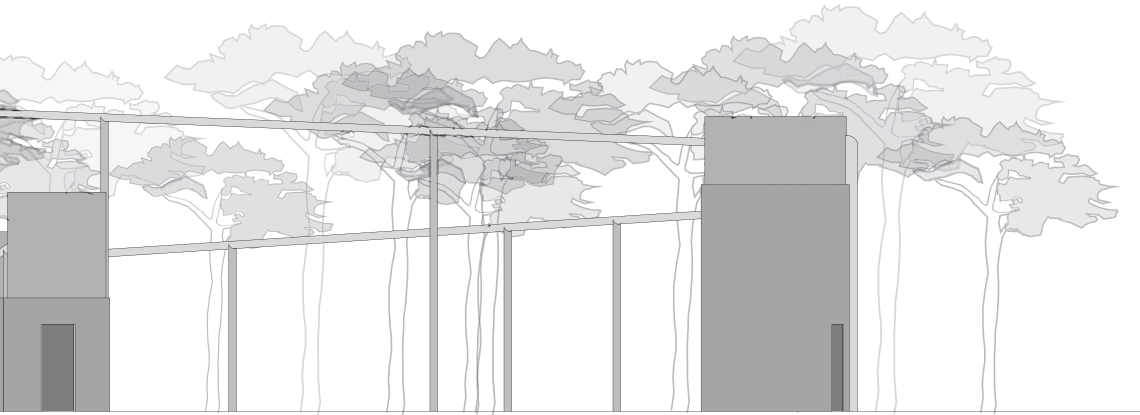
The first encounter with these buildings are the pipes going over the road. Most of the people will probably just drive, bike or walk under the pipes on their way to somewhere else. However some people will stay longer, they walk towards the strange buildings in the forest and find a door in every cylindrical building. When they look up they will see the tanks. In these buildings, humans come after the machines, flora and fauna. There will grow plants in, around and on the machines, animals will nestle or shelter inside. Workers need to be able to get to the machines, therefore there is a ladder placed on every shell.



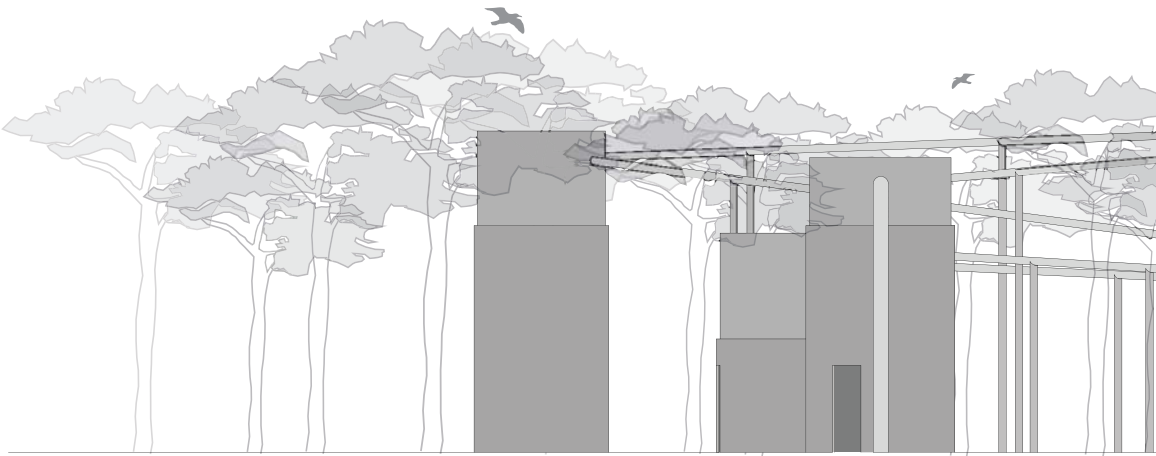
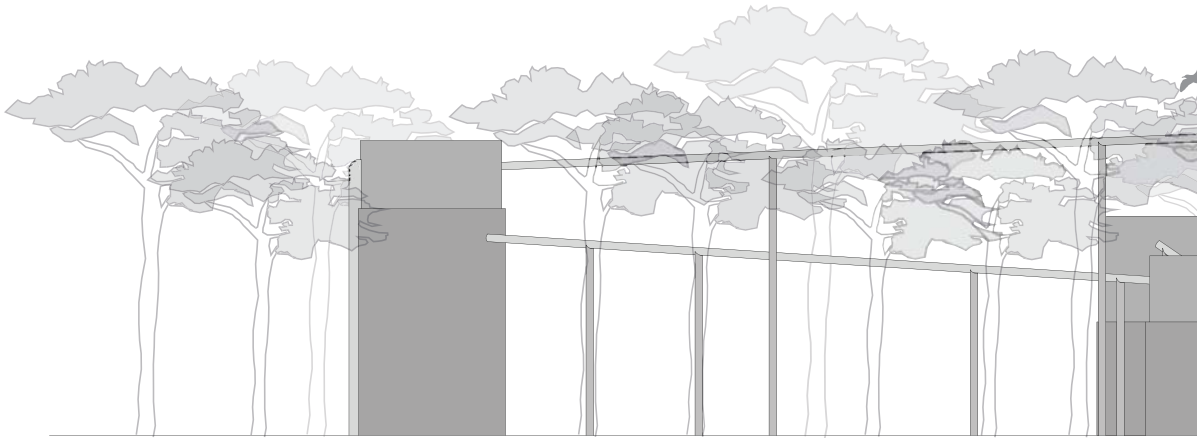
elevations scale 1:200



south



east



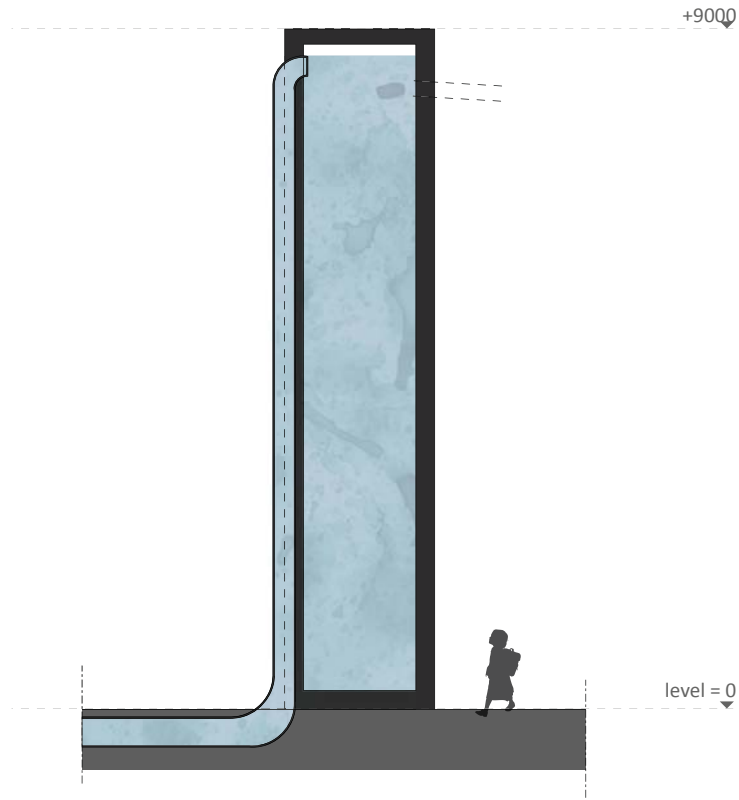
elevations scale 1:200



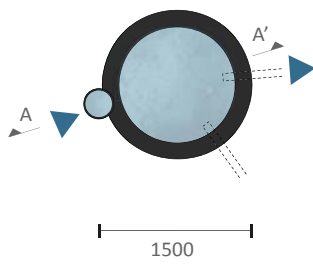
north



west

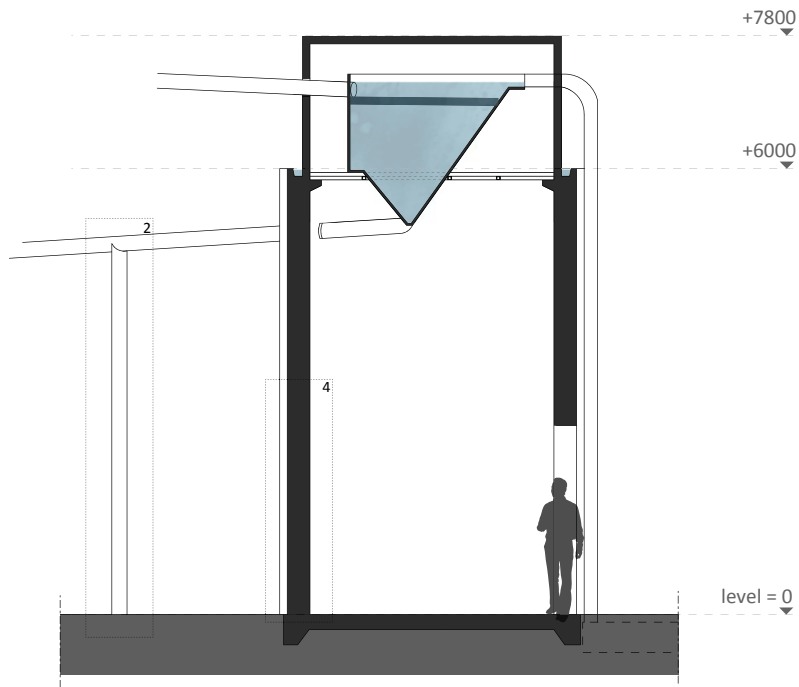


section AA'

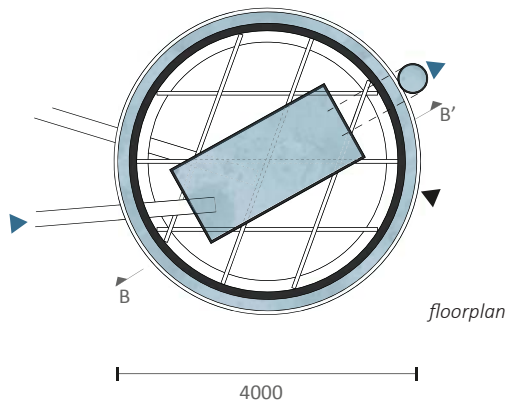


floorplan

building 1 -resin connector- scale 1:100



section BB'

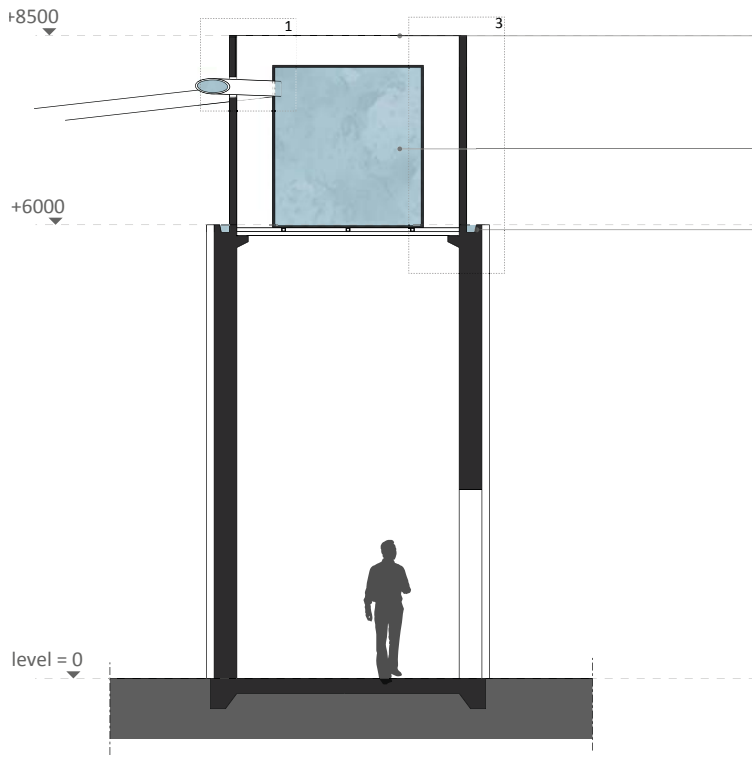


floorplan

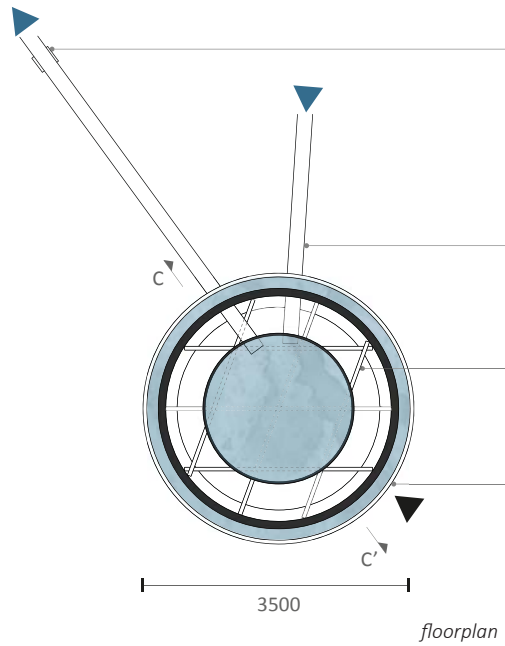
building 2 -lamellea separator- scale 1:100







section CC'



floorplan

building 5 -resin storage- scale 1:100

open roof when possible

machine, reservoir

rim for attaching and releasing water

Details | Special features

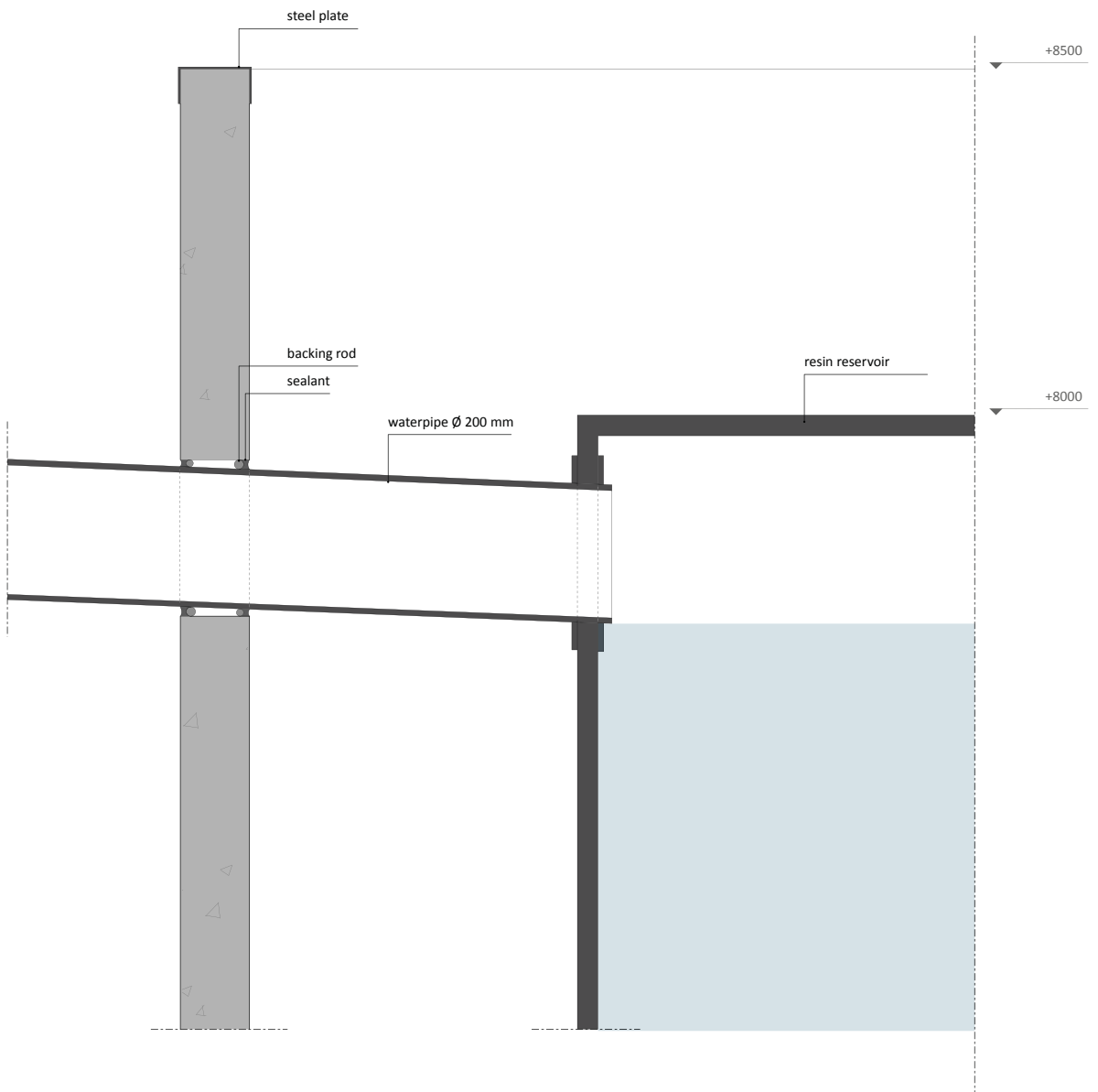
The cylinder is narrower at the place where the machines are placed. Rainwater is collected in the rim that this is created. The gutter is covered with a steel plate. The gutter is shallow, therefore there is not place for a lot of water, it will soon be released again. The ladders can be folded, reducing them to a strip on the wall, similar to a rain pipe. At the inside of the buildings is a rim at the place where the cylinders become narrower. On the rim lie six crosswise placed beams on which the machines can rest. The pipes, going from machine to machine, rest on IPE columns from which a half circle is cut out to provide space for the round pipes.

pipes supported by columns

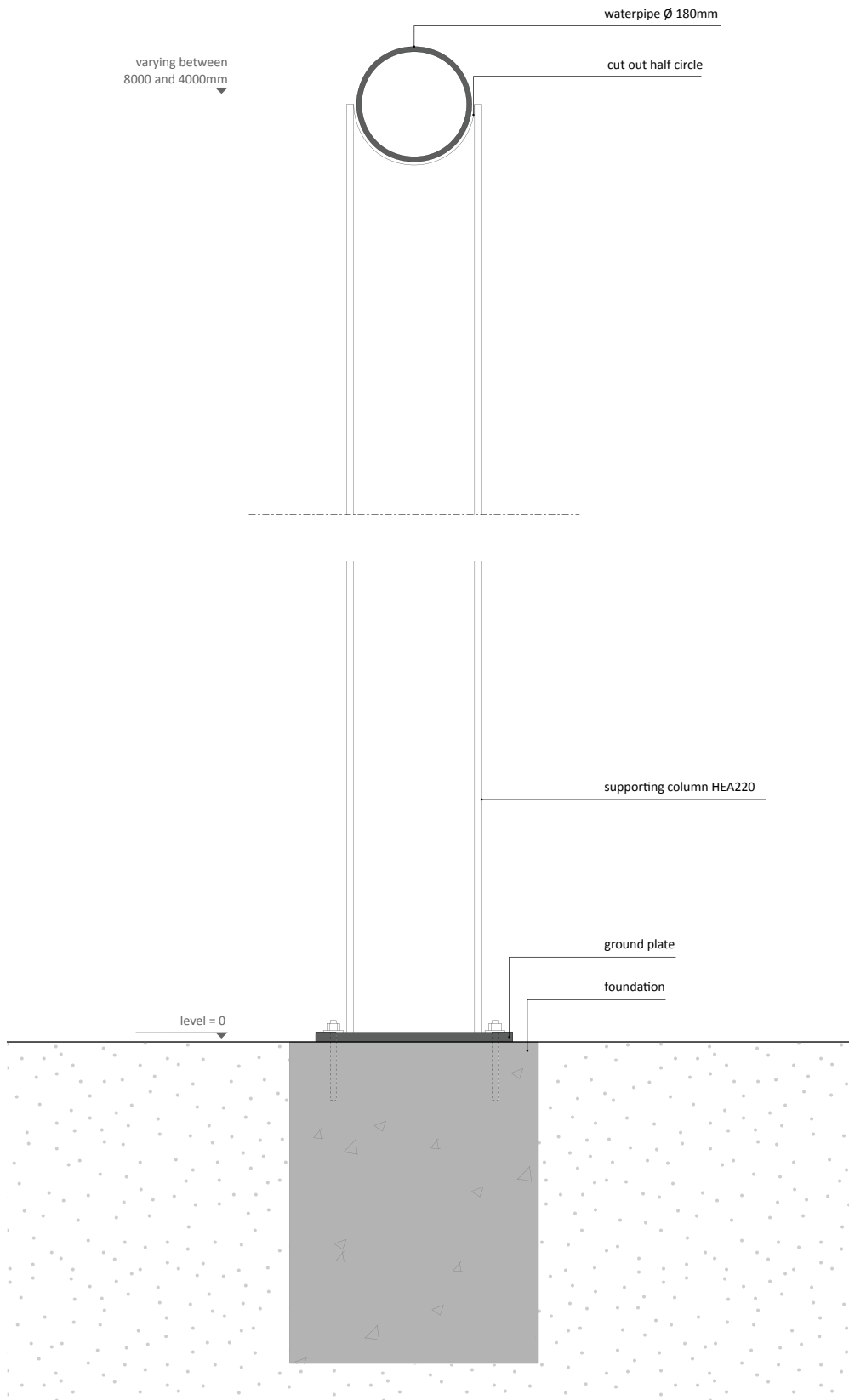
pipes entering and leaving the building

girders to underset the reservoir

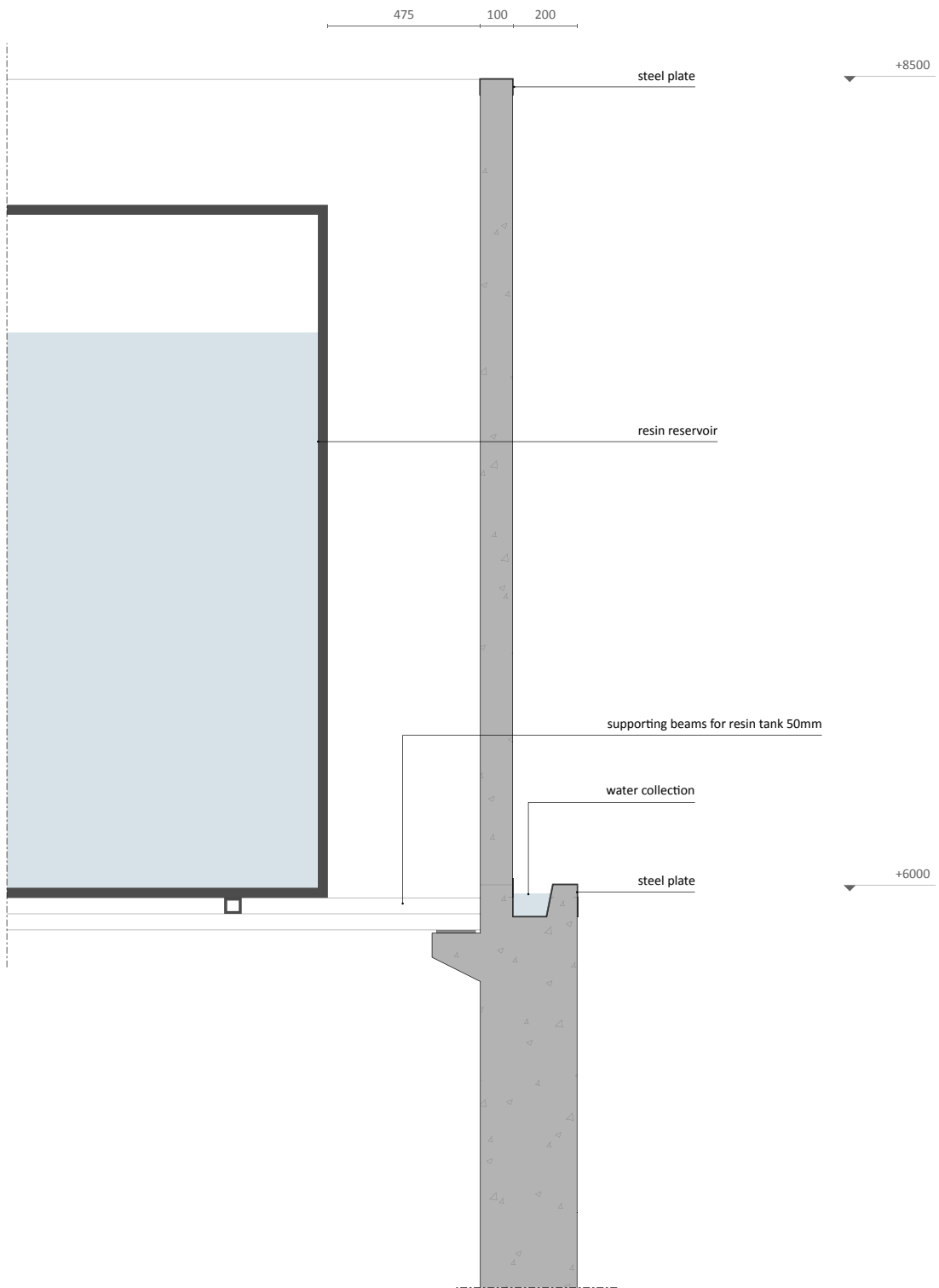
entrance hidden on backside of buildings



detail 1 scale 1:10 - pipes entering shells and machines -

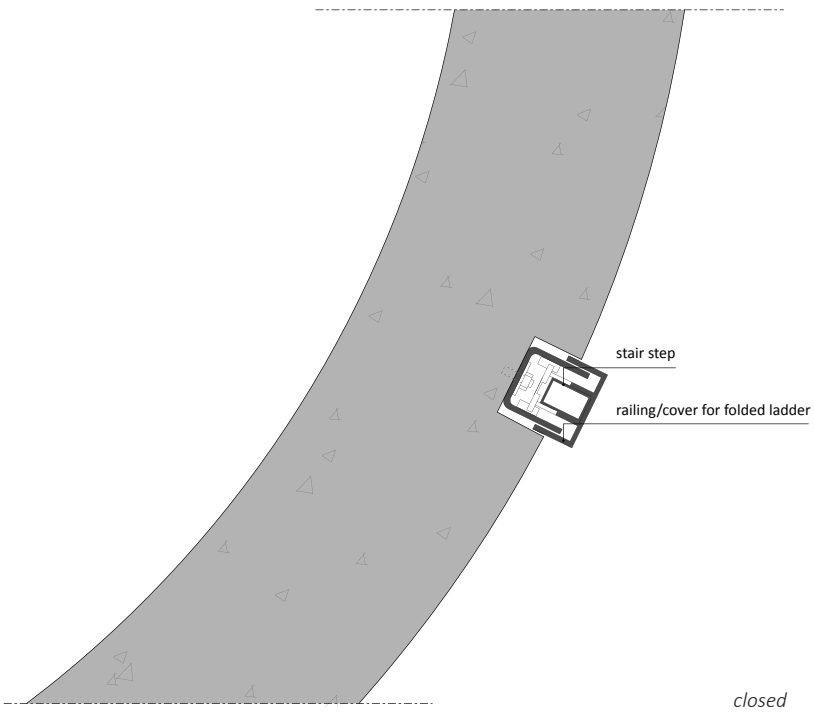
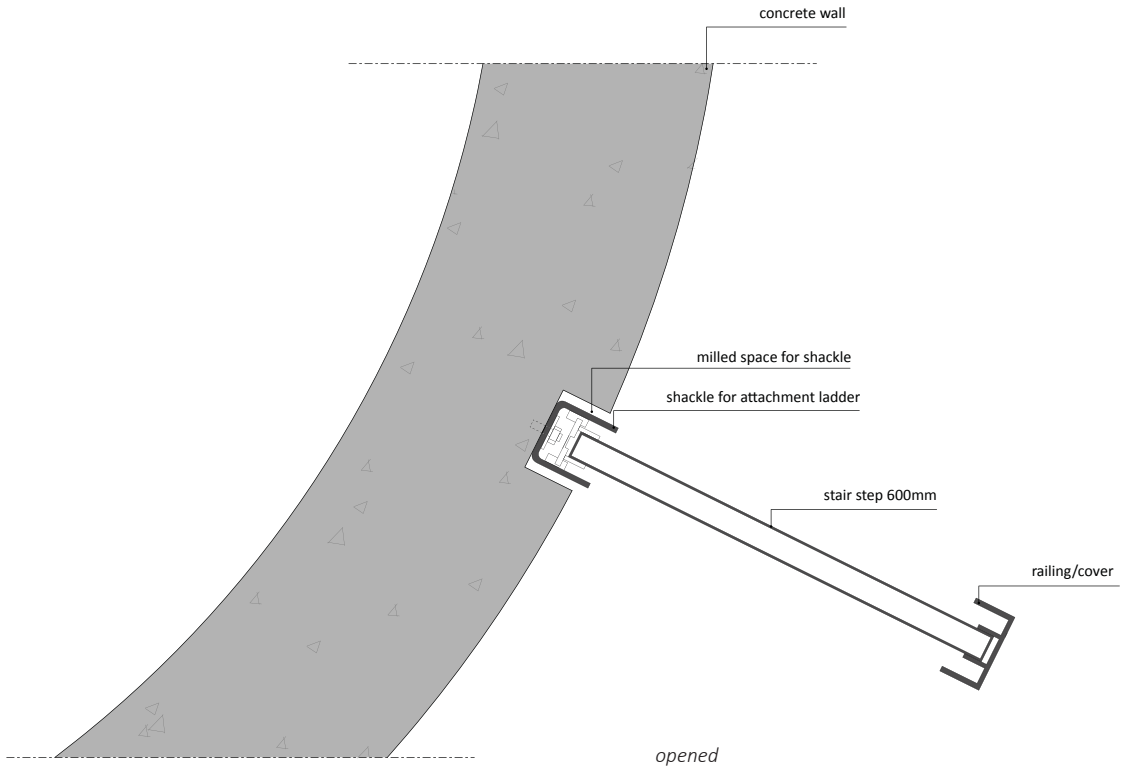


detail 2 scale 1:10 - supporting the pipes -

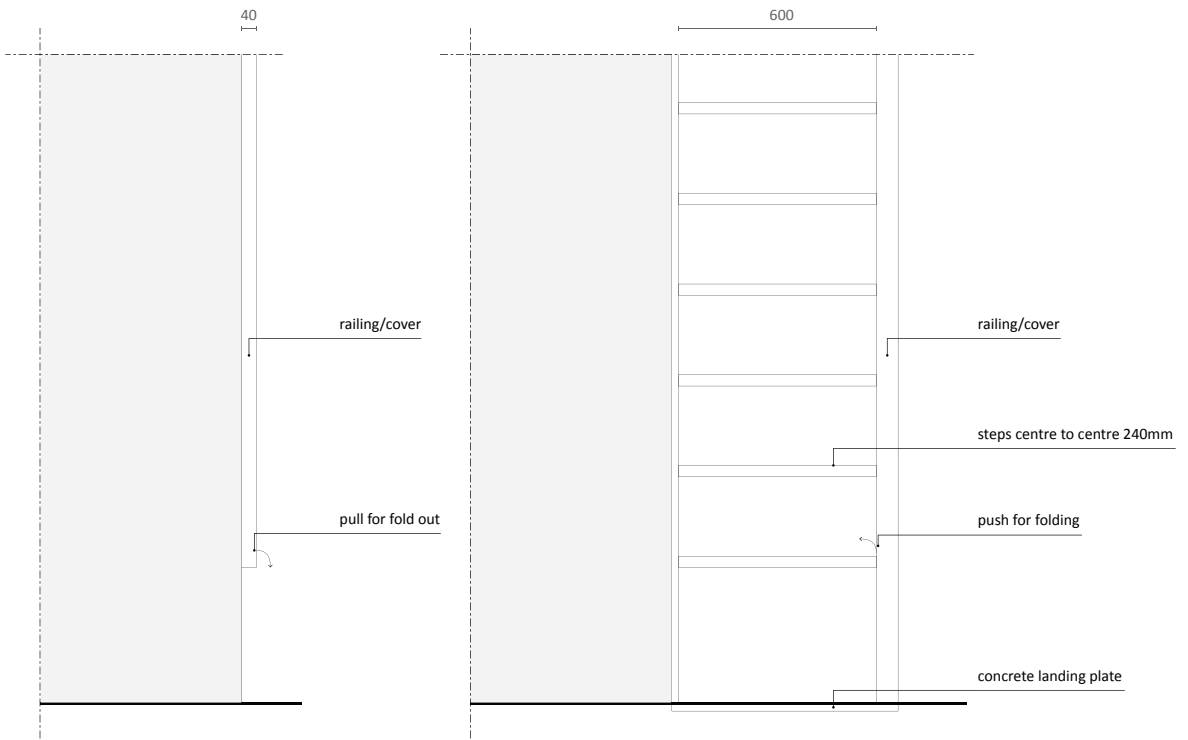


detail 3 scale 1:20 - a shelter for the machine -





detail 4 scale 1:10 - the invisible ladder -



elevation scale 1:20 - the invisible ladder -

- Soon the forest ends, and also the rain. The line enters the realm of the campsites, where it widens at times to provide an extra water collection for the campsites and also to create recreational waterbodies. Children, happy that they do not have to shelter in their tents anymore because of the rain, play now in the widened waterline. The road is still a little wet and shimmers in the sun. In the distance we see De Koog appear. We enter De Koog, the line is now covered with a steel plate with openings. Slowly the sun becomes stronger, making the water drops on the plastic terrace screens or the advertisement signs glare. The bar owners in the Dorpsstraat put their terraces outside again or pull the rain covers in. We sit down on one of the terraces in the sun and drink a Texel beer, made from real Texel water. In the middle of De Koog there is one building which does not join in the circus of themed terraces. It is placed in the same line as the other buildings, however, is more modest. The concrete building has the same height as the other buildings in De Dorpsstraat, it could easily be a narrow house. However, it is completely closed and only has a door on the first floor. Layers of different colours appear after some years, giving the building a sort of growth rings. A large pipe is coming out of the ground and going into the building on one side, and coming out on the other side. On the side of the Dorpsstraat are water taps pouring out real Texel-water. Parents fill the bottles with water again and the children play with the water, causing it to spill, however, this water flows directly via small gutters towards the waterline. At the north side of the building is the beginning of stairs which wind around every side of the building. We quickly go to the toilet before we continue our journey. When we descent the stairs we pass again the four pipes running along the northern wall, we now understand that these pipes are the outlet of the toilets starting the way of the dirty water. -



[26]

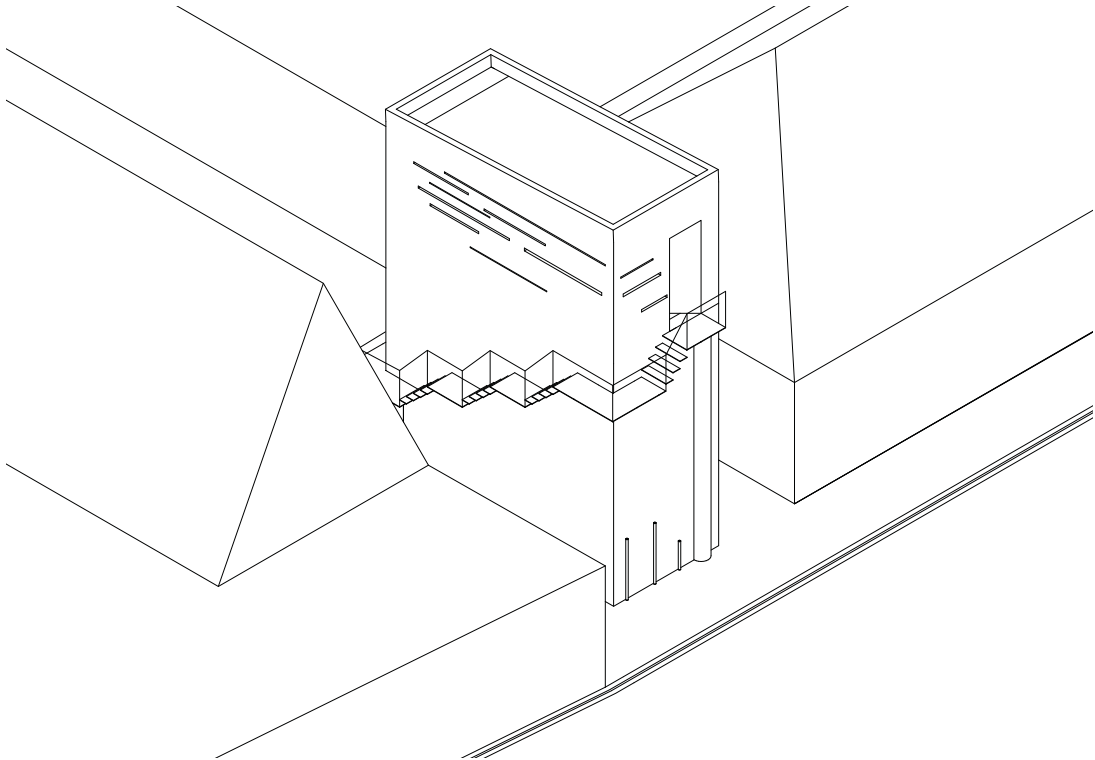




Active Carbon Filter

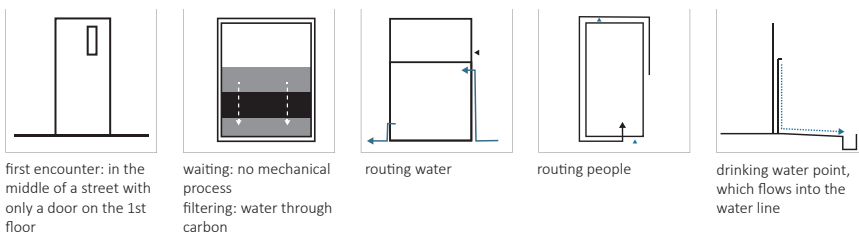
waiting and filtering

At first sight a normal building in De Dorpsstraat, however, the door is above ground, several pipes run along the facades and stairs are wrapped around this rectangular tiny house.



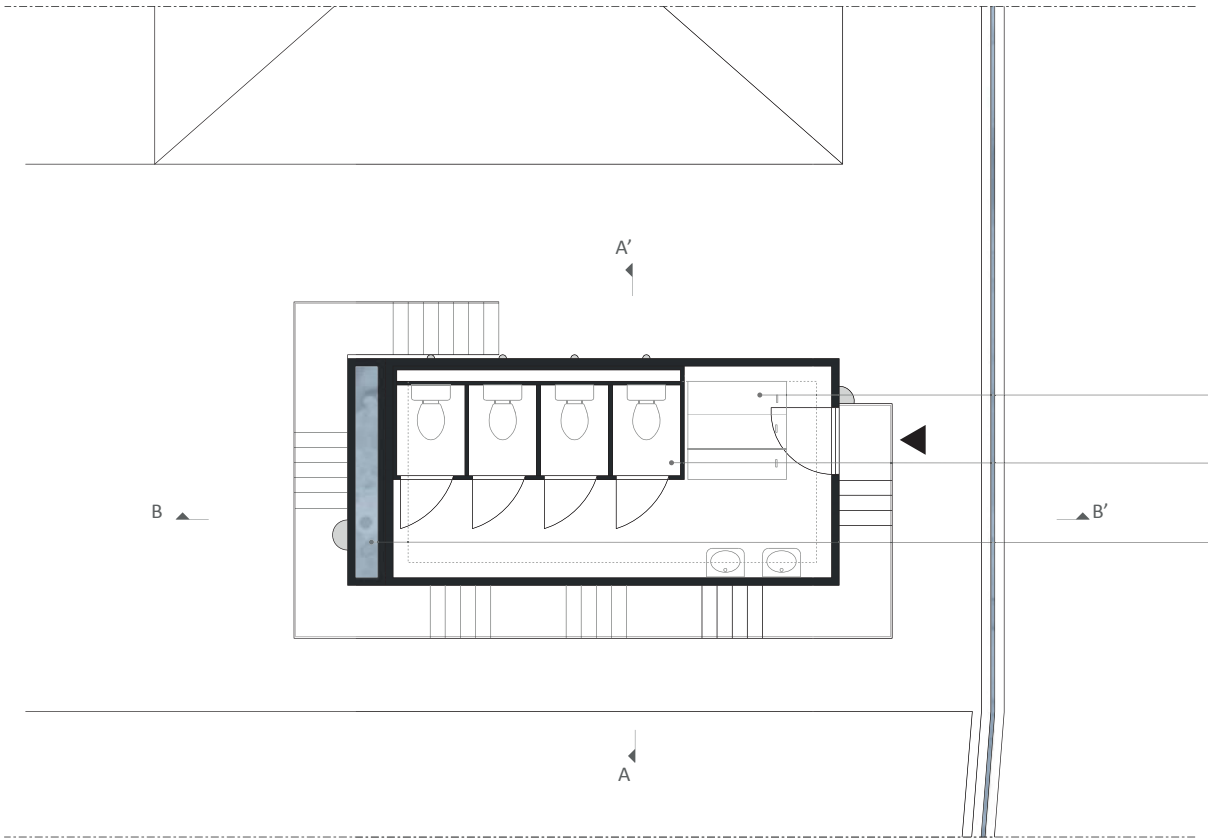
Working of the machine

This is the last step in the pre-cleaning process. The water will enter a concrete basin which is for a large part filled with active carbon. The last dirt particles will remain together with the carbon in the basin, the water will continue to the infiltration ponds in the dunes.

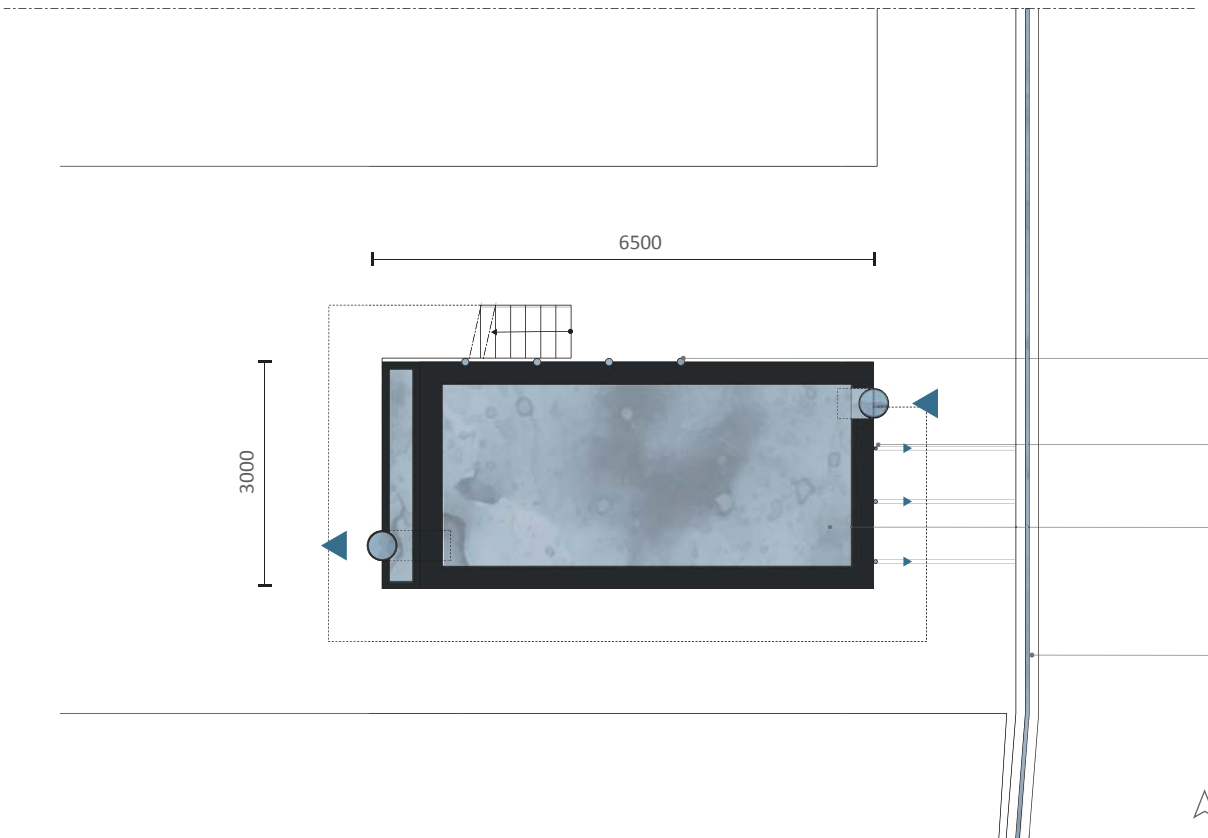








1st floor scale 1:100 - public toilet -



ground floor scale 1:100 - active carbon basin -

Routing

People who have to wait can gather in from of the building and drink some water from the water tap point. The ones who need to go to the toilet can take the stairs which go around the whole building and end up in the space in the top of the building where toilets are situated. Also the mechanics will enter the building this way, in the floor of the toilet is a hatch through which they can reach the basin if necessary.

hatch, acces to carbon basin

public toilets

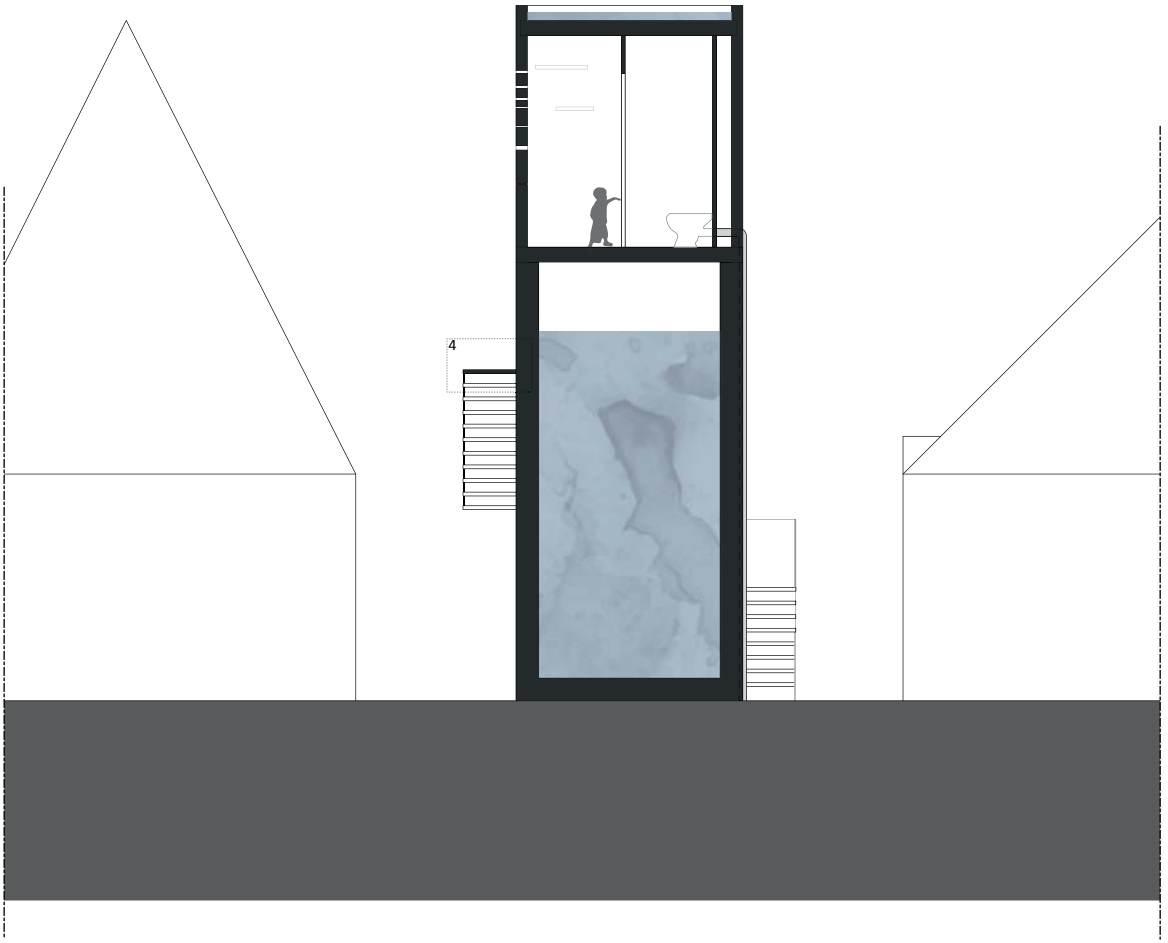
rain water collection

outlet toilets

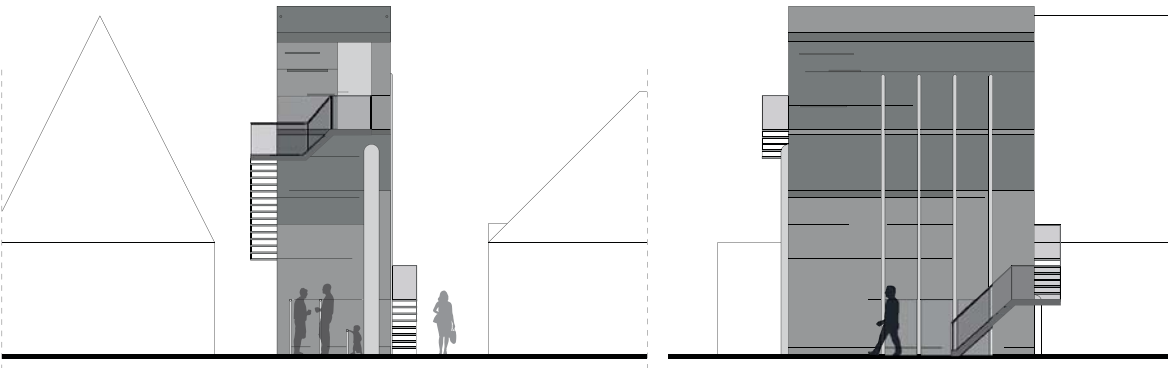
water taps

active carbon basin

waterline



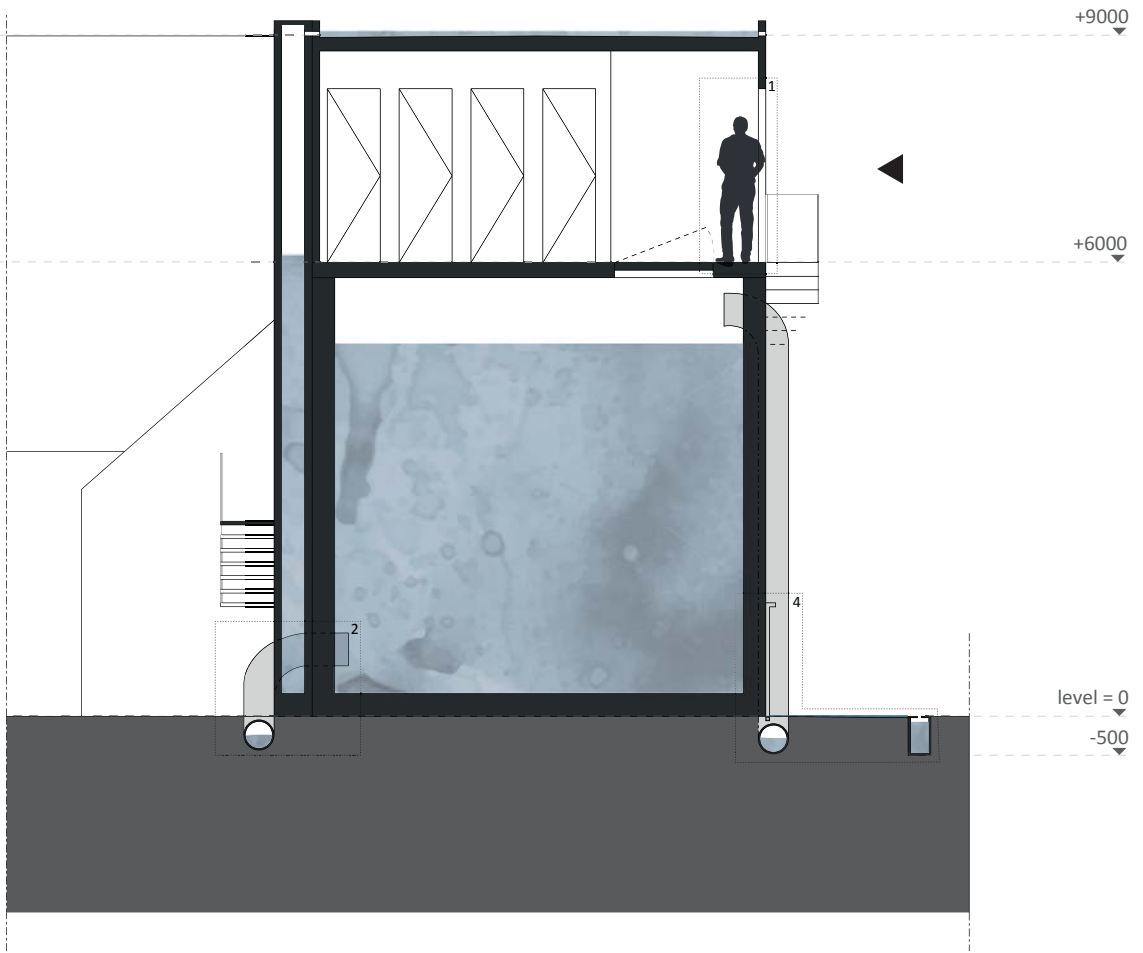
section AA' scale 1:100



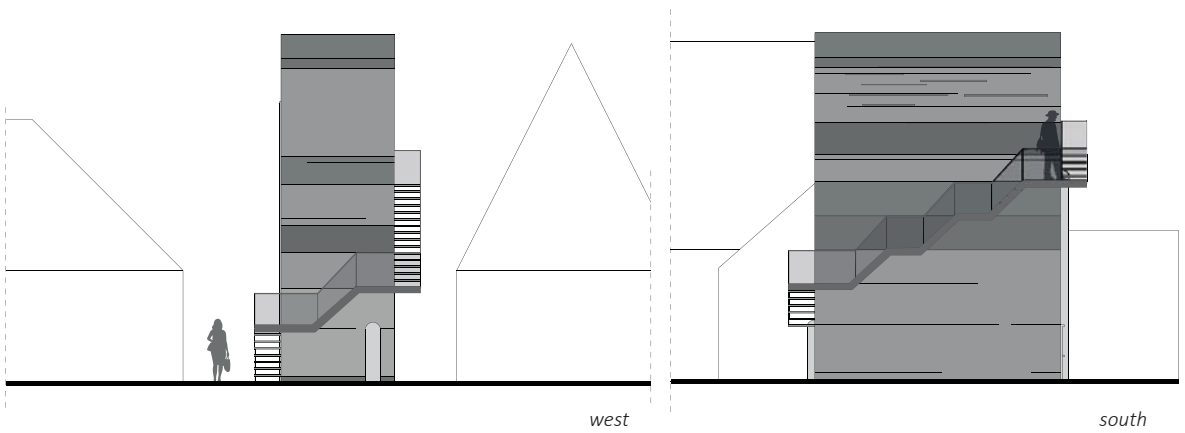
elevations scale 1:200

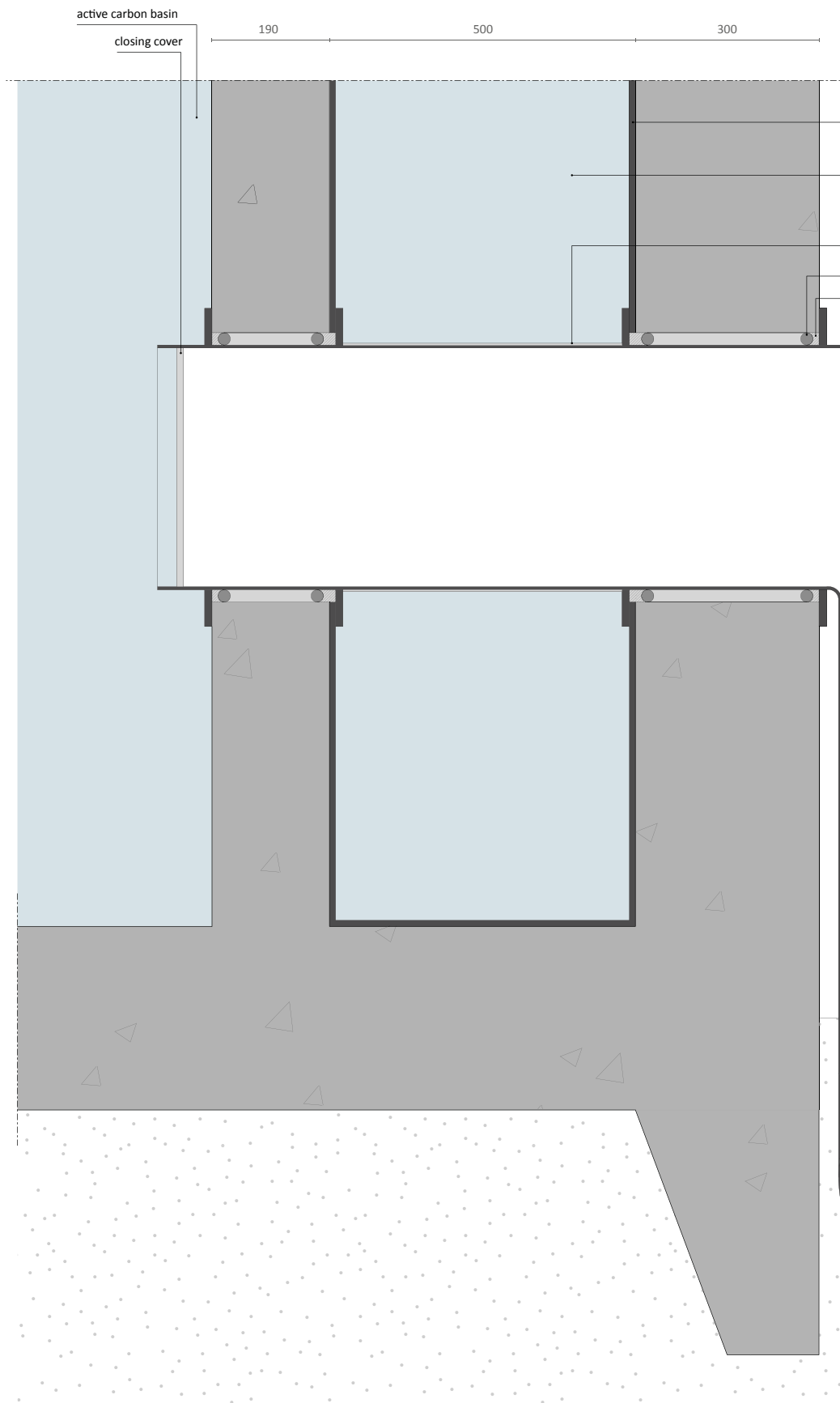
east

north



section BB' scale 1:100



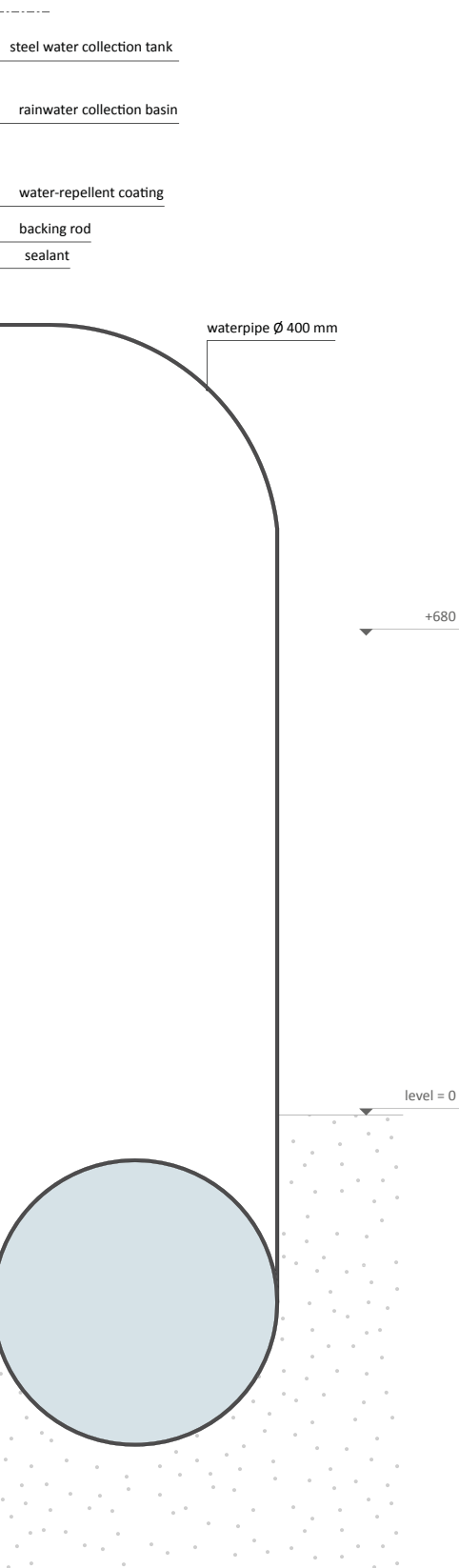


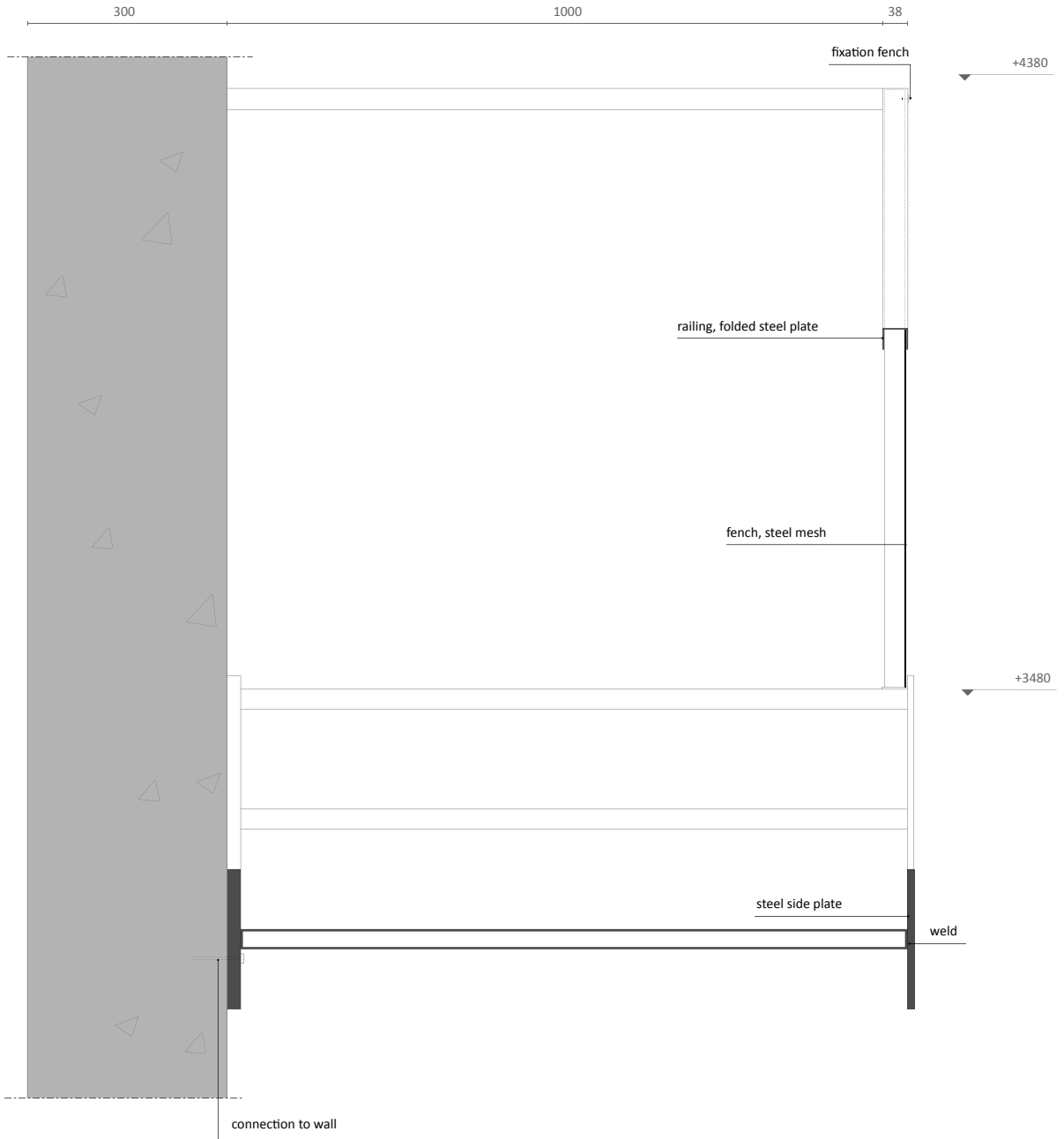
*detail 1 scale 1:10
 - from active carbon
 through rainwater -*

Details | Special features

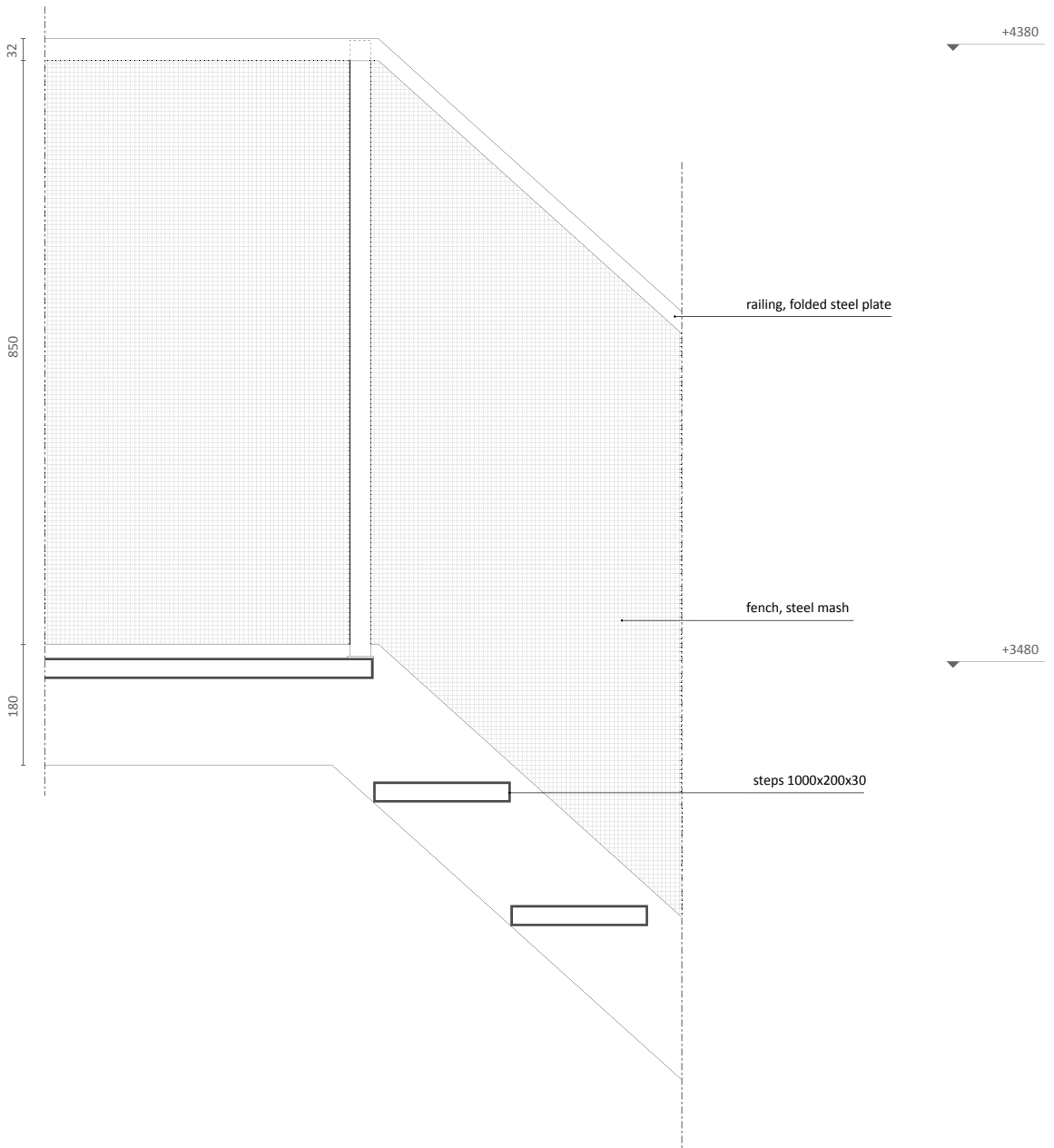
Several types of water come together here. The treated water enters the building at the Dorpsstraat side in the largest pipe. The drinking water comes out of the ground in three small pipes; two higher and two lower ones for children or disabled people. One of each type of pipe provides the user with rainwater collected on the roof, this is of course clearly indicated. This water can be used to wash hands or for children to play in summer. It will make people more conscious when they do use the drinking water tap. At the northern façade are the pipes coming from the toilets. The water which underwent the active carbon process comes out of the wall at the backside, after which the pipe will go underground again.

In de street surface underneath the water tap point are gutters to collect the water which is spilled and guide it to the waterline which runs in front of the machine. At the first floor are elongated openings in the walls in the same rhythm as the layers of concrete. The roof captures rainwater, which is then collected in a water tank incorporated at the backside of the building. This water can be used to flush the toilets.

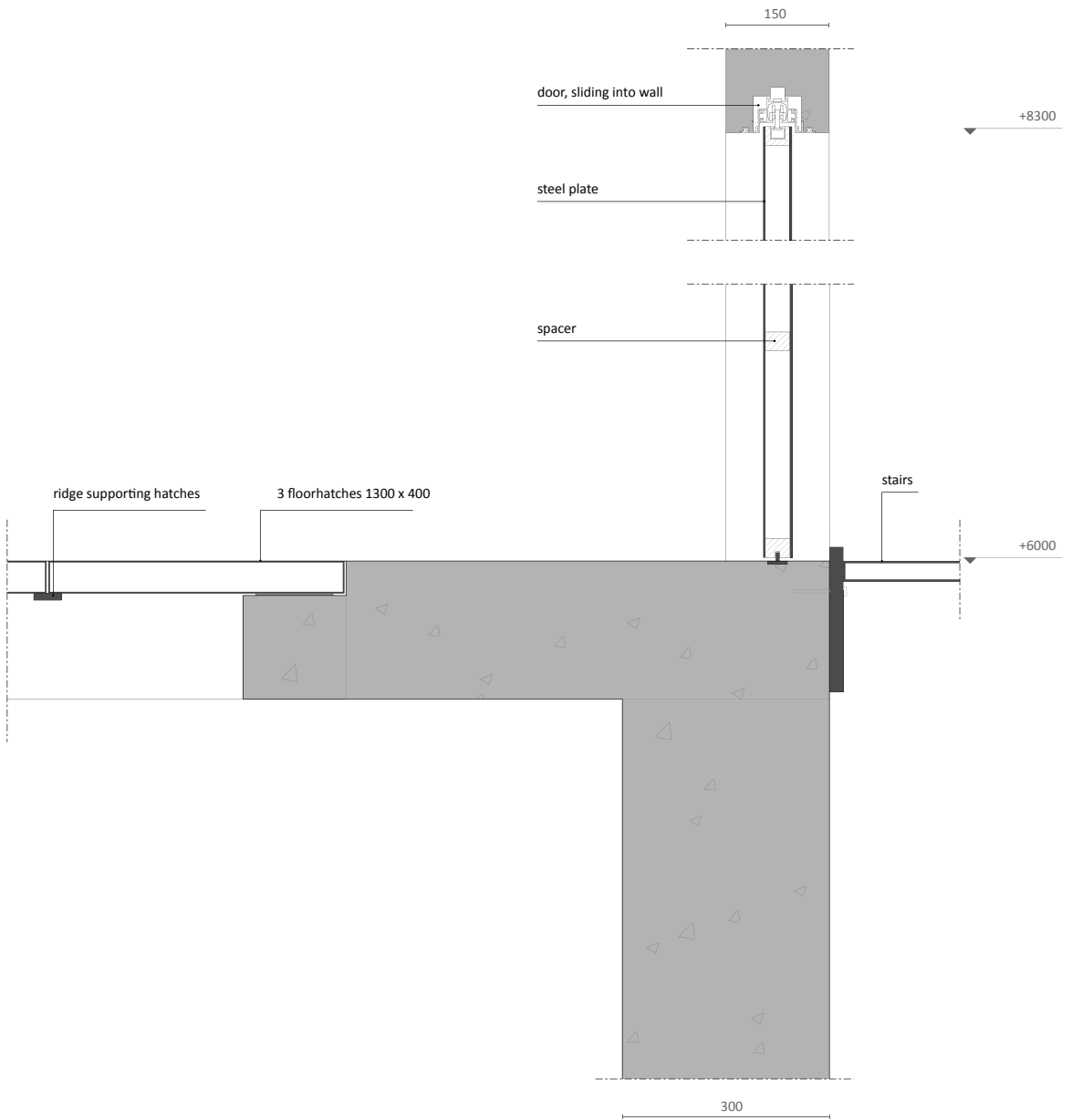




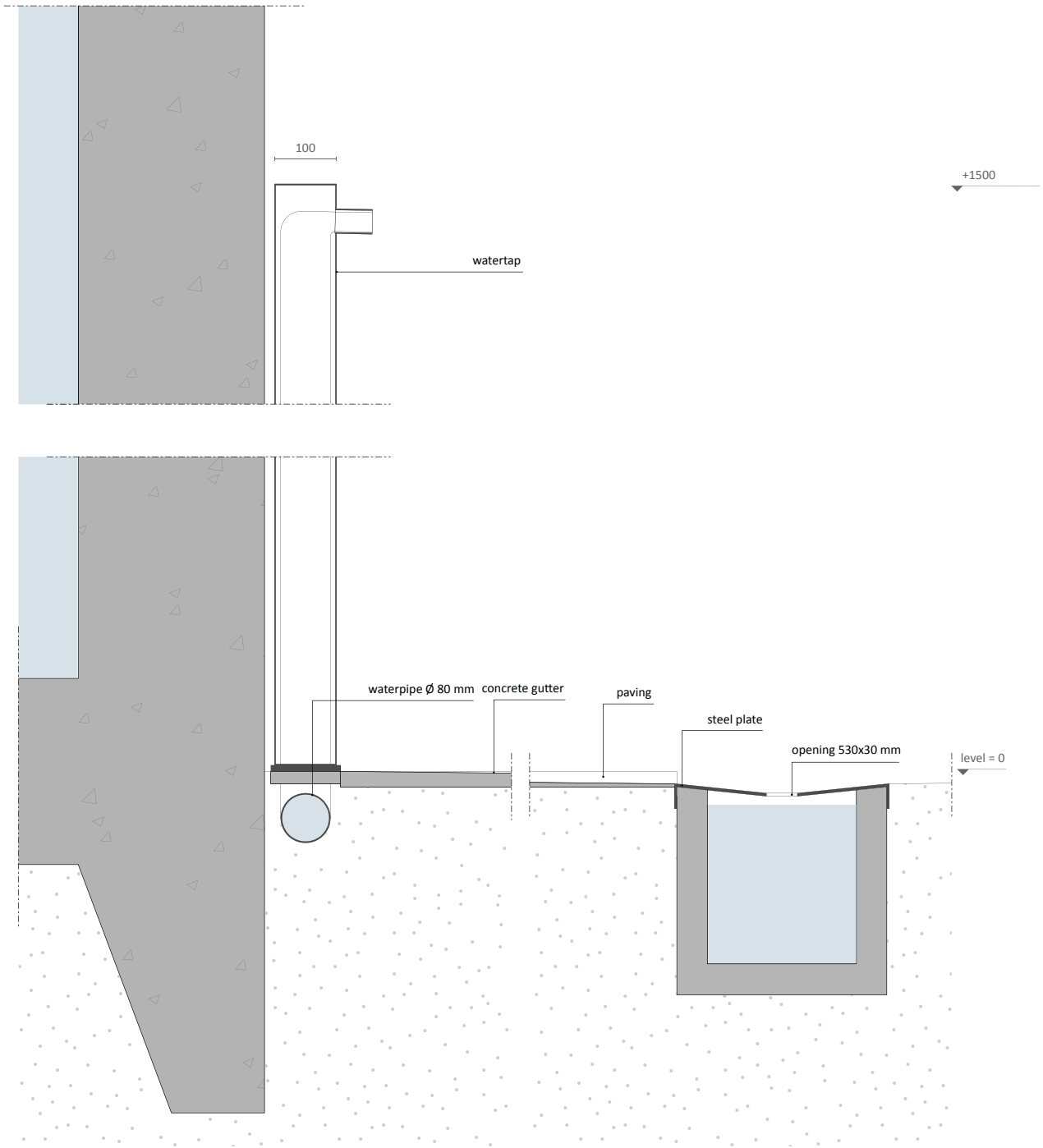
detail 2 scale 1:10 - stairs -



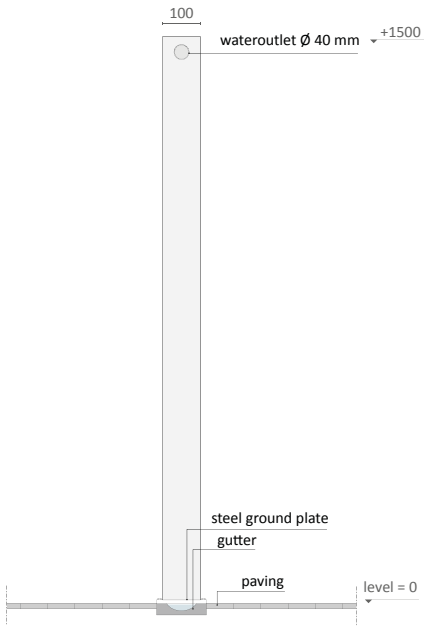
detail 2 scale 1:10 - stairs -



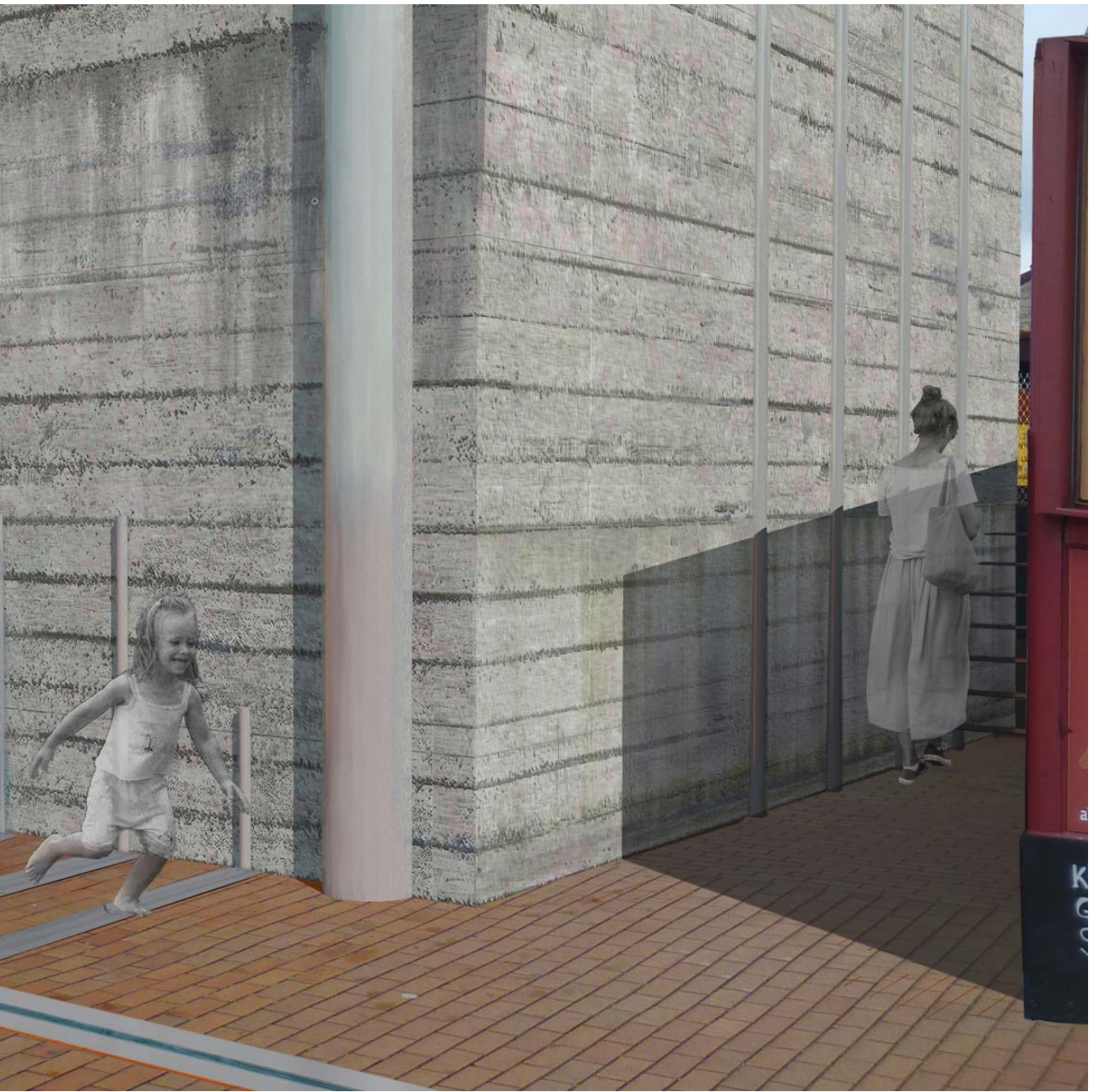
detail 3 scale 1:10 - sliding door and hinged hatch -

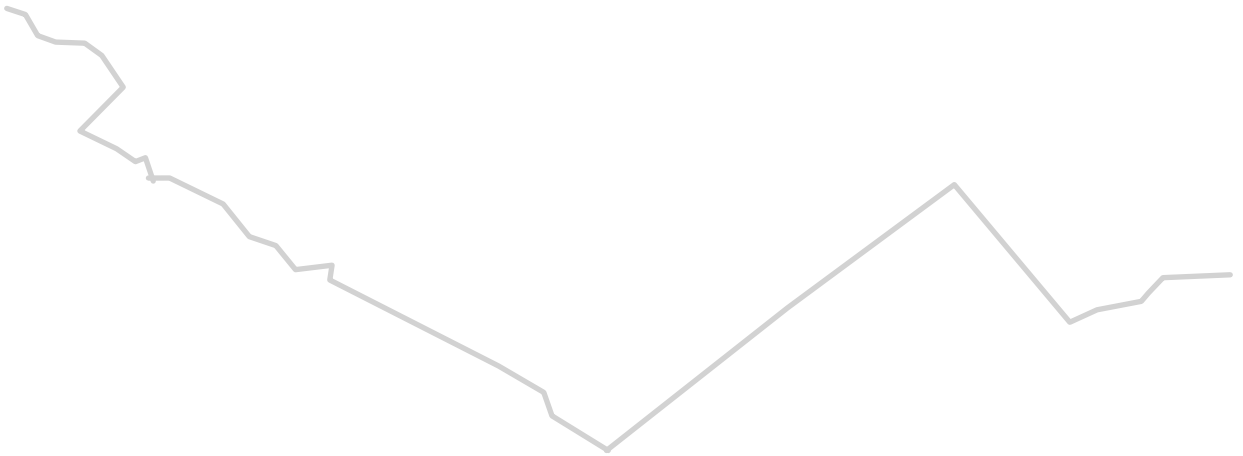


detail 4 scale 1:10 - drinkingwater towards waterline -



scale 1:20 - watertap point elevations -





The way of the dirty water

- At our right, in the distance, we can see the large circular basins of the waste water treatment. We leave the line at the west side of the island for a moment for a walk across the island along one of the veins. After the large water basin adjacent to the waterline we take a right after which we see a whole sequence of buildings in the landscape, the machines of the sewage water treatment. The dirty water from the sewage system is pumped up to the first building. This is a slightly higher machine than most of the rest, which gives us a view towards the next one, which is a large but not very high box, it is the anaerobic tank. The water takes its time and travels slowly through all the anaerobic stages. We do the same and rest for a bit while enjoying the scenery. In front of us extent the agricultural fields of polder Eierland. We can see it has been a dry summer, the fields are yellowish, but the patchwork of squares and rectangles lined with ditches and now and then a farm never gets old. The next buildings are a sequence of strips in the landscape, almost like a barcode. The first one has a higher part, we enter it and find a funnel shaped machine hanging menacingly over us. We climb up and have a magnificent view over the land with its machines. We see the agricultural land with the basins in the north and south, the infiltration ponds on the west and the salt water flowing into the land at the north-east side. Under us we see the farmers and their trucks driving into the building, they drive away with new fertilizer for their land, other trucks enter a different strip in the barcode and bring in the urine, collected at the campsites. On the ground below us are the perfect circular tanks which are so typical for the waste water treatment process. The water is pumped around and air is brought in, a large arm revolves slowly. The last step is also a beautiful circular tank. The water goes around and after some time it will flow over the edge, which makes this tank almost fountain like. After the last circular tank the water will flow towards the constructed wetlands and after that comes back to the waterline and also leads us back to our original walk along the waterline.-





Waterschapsbedrijf Limburg

A conversation with Olaf Durlinger

Waterschapsbedrijf Limburg is developing a modular sustainable sewage treatment plant. The problem with the current treatment plants is the robustness, the write-off time is about 40-50 years. They take up a large space and have to be built underground. It takes multiple years to build one and also a long time to adjust something if necessary. In short, they are not able to anticipate to new changes or developments.

Waterschapsbedrijf Limburg is aiming among others to cooperate with neighbouring industry, reuse more water, disconnect rainwater for the normal sewage and anticipate to things like climate change and demographic changes.

The treatment plant will be open to the fast developing new innovations in the field of water and water treatment. It will be modular and flexible and easy to transport. They will apply a plug and play principle. The treatment plants will be part of a network with which they can exchange parts from its process.

The tanks will be no longer underground, they are now testing which material would work best, also looking at aesthetical aspects.

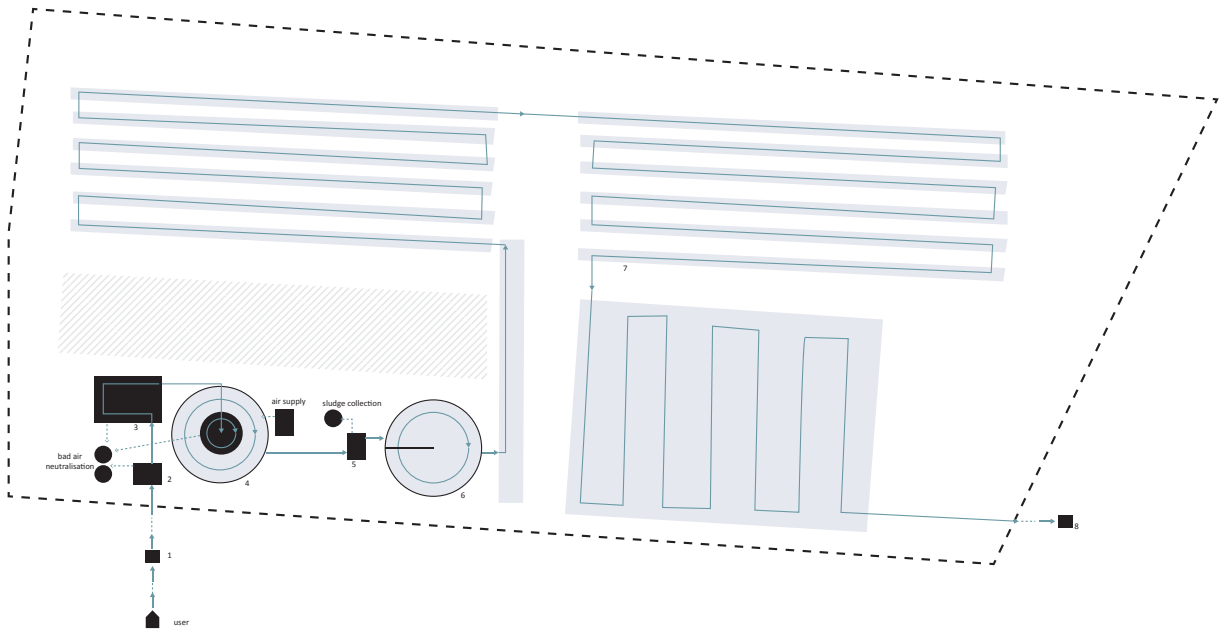
Sewage water treatment Eversteekooog (Texel)

A conversation with Nico Bakker

There are 7 water pressure installations on Texel [1], these collect the waste water from the sewage and when the level in these tanks reaches a sudden height then it starts pumping towards the waste water treatment plant (WWTP). Here it is first pumped to the highest point (about 7 metres), where the large parts are being removed by rake screens [2], this waste goes to the waste collection in Oosterend. Then the water moves to the flow equalisation building where it travels through multiple tanks in which the smaller parts are being removed [3]. In the first circular tank the pollution like soap and oil are removed [4]. The water enters in the middle part which is closed, due to bad smells, when the water has been in this inner circle for some time it goes to the outer circle where air is being blown through the water. This happens through mats on the bottom of the tank (which is about 6 metres deep), the air comes from the building next to the tank. The sludge is being drained from the tank and transported to the adjacent building where some more water is being removed [5]. Now the sludge has the highest thickness it will get at this WWTP (otherwise it will not be liquid enough to be sucked and be moved in a tank truck). The sludge is stored in a small cylinder-shaped building. All the bad air is suctioned to two circular barrels where the

air is cleaned with lava stones. The water is transported to the last circular tank; the sedimentation tank [6]. It moves around till it flows over the edge and leaves the tank. It now enters the natural part of the waste water treatment. It is pumped in a ditch at the back of the site, after this ditch it continues in several smaller ditches, the constructed wetlands [7], before it ends up in a larger pond through which it has to zigzag its way to the end. After this pond the water is clean enough to be pumped into the surface water. It will flow through ditches in the polders towards the eastside of the island where it is pumped out by one of the pumping stations on the dyke [8].

- Nico Bakker does not believe in the self-sustaining ambition from Texel. However, he does believe that there are a lot of valuable nutrients and other substances which could be reused from the wastewater. The wetlands are a good way of cleaning the water. Though, it takes up a very large surface. The municipality has plans for a solar panel field next to the WWTP, but the energy derived from this field is not going to be used for the WWTP, it is cheaper to get energy from another source. -



top: overview Eversteekoog, bottom: photo's Eversteekoog



Social impact

An architectural object should be the spatial fundament for life. Modest, however unwavering, like the bass in music, (Hoekjen, 2003)

To look at architecture as a spatial social fundament is interesting, however, the fundaments of a building have to take the building which is going to be built above into account and also the ground where the fundament is built on is of influence. The type of soil underneath, and the weight of the building on top are of great importance for the fundament. In that sense architecture should consider the political and social environment and era of both past and future. The social ground on which it is built and the debates and changes it has to fit within or for which it will give room. The social environment can cause a shift in the meaning of a building over time.

Social questions have spatial impact, while that same impact makes at the same time the social developments clear and tangible. (Teerds, 2012)

For many people it is easy to ignore the social issues if they are not visible. Architecture, when it is the spatial impact caused by social questions, makes these questions visible especially for the broader public and in our everyday lives.

The architecture world has changed, it is no longer a profession which deals solely with the design of a building and nothing more. Some aspects of the building process have shifted away from the architect, other aspects are gained. Additionally, the world we live in becomes more and more complicated. Architecture and architects have to (re)claim their place in this complicated world.

The necessity to research adjacent fields of expertise for their relevance in architectural design comes according to architect Hans Teerds down to the questions: *“How to shape the world? What does a designer rely on? What does architecture add? And how does an architect get ‘understanding’ about the world in which he intervenes?”* (Teerds, 2012)

Because architecture is such a big part of our lives and surroundings and because our surroundings are so diverse and ever changing, the architect should examine the adjacent fields of expertise. Without adjacent fields

there is no context, no soil to build the fundament on.

Architects are generalists, not specialists. Although architects like to know a lot about different topics, they cannot know everything, and they should not try to. Sometimes the freedom of not knowing everything can be very liberating.

“There is an ur-scene at the beginning of every architectural enterprise: the architect, knowing almost nothing about the situation into which he is dropped, has to convince those who know everything, who have wrestled sometimes for years with the same issues – the most ignorant must persuade the most skeptical. It requires suspension of disbelief from which, sometimes, neither side recovers.” (Koolhaas & Mau, 2001)

Architecture has its limits, it is just like its buildings often a very static profession. Of course, many great and special innovative and new buildings have been made. But were they really able to change the core mis-thinking in social debates or human activity? This could be the reason why architecture alone is not enough to have social impact of great extent.

One does not have to be a reader of poetry or novels to understand the relevance to investigate the borders of the field of expertise like art, philosophy, sociology, anthropology, psychology and technology. The urge to do so is probably every time the same; a combination of the complexity of the architectural context and the sources, together with the large impact of the architecture on this context. (Teerds, 2012)

The context and the world we live in is a built one. One cannot understand difficult and complex problems and questions without understanding the context. Understanding the context means understanding the adjacent fields of expertise. Fields which sometimes could be just as interesting and indispensable.

The moment a building is built a part of the intentions, the dreams and the social engagement, often vanish. It has to make room for other practical things like construction safety, isolation and accessibility. In that sense is the slightly more utopic paper architecture perhaps the best thing to change something, at least in the thinking of people. You have to possess the

confidence that you as an individual have the ability to change something. When a project becomes real, this is not always possible.

In his book S,M,L,XL, Rem Koolhaas explains that the only reason that they were not totally paralysed by the immensity of the Euralille project, is the fact that they did not really believe the project would actually be realised. This is probably a similar way of working as Piranesi with his unreal utopic dream world etchings did. He did not make his etchings with the idea that they would truly be built. It is a way of designing with an unprecedented freedom.

In a world in which everything happens in images and everybody also thinks in images words will not do the trick anymore. The problems of the world need to be made visible. Factories and other misfits of modern times should be in the middle of society. Let people bump their head against them, stub their toe and let their ways be blocked, every day again.

Times change fast, the buildings have their own slower pace. This could cause problems. Can a slow and stable aspect in life like buildings play a role in probably the fastest changing component in our lives, namely the changeable social component? One of the pressing questions of modern times is how to continue our stay on earth. We cannot always keep living like this, we have to find more sustainable ways to provide for our high wishes. Building sustainable is of great importance, but first people need to be aware of the necessity for change.

- Just outside the Koog we come across the second water basin, at our right is polder Waal en Burg with its ditches and the agricultural water basins reflecting the sun. All of a sudden we notice a building sticking out of the dunes at our left side. The walls consist of a series of concrete portals with a narrow opening in between. The sun creates shadows on the walls, since it is already afternoon and the end of summer the shadows are longer. The wall changes together with the cycle of the seasons and the day. We walk to the entrance and pass by an opening in de wall, we can see the pipe going in a straight line towards a basin in the end. We enter the tunnel in a space where the pumping machines at our left side create an echoing sound. We were expecting to go, just like the pipe, in a straight line towards the end, instead the tunnel starts to change and makes a curve. Slowly the openings between the portals are replaced by artificial lights in the ground. The pipe crosses our way, it lies slightly higher than the ground, we step over it. We see the natural light coming into the tunnel again, the portals become wider, allowing the pipe to leave the tunnel. We now stand in open air, this is the place where the water is being pumped into the dunes. Between us and the infiltration ponds lies a narrow swimming pool. The water is completely flat, almost like a mirror. We can use a refreshing dive, so decide to take a quick swim. There is nobody else, the only sound we hear is the plunging sound of our bodies entering the water. The water is incredibly clear since it already underwent a pre-treatment. We swim to the end where the water flows over the edge into the infiltration ponds, and back. After having climbed out of the water and while we stand there dripping, creating darker wet spots on the concrete, we look towards the sea. Behind the infiltration ponds is the Mui; three waterbodies with fresh surface water just behind the last dune before the North Sea. We put on our clothes and go back through the tunnel. -

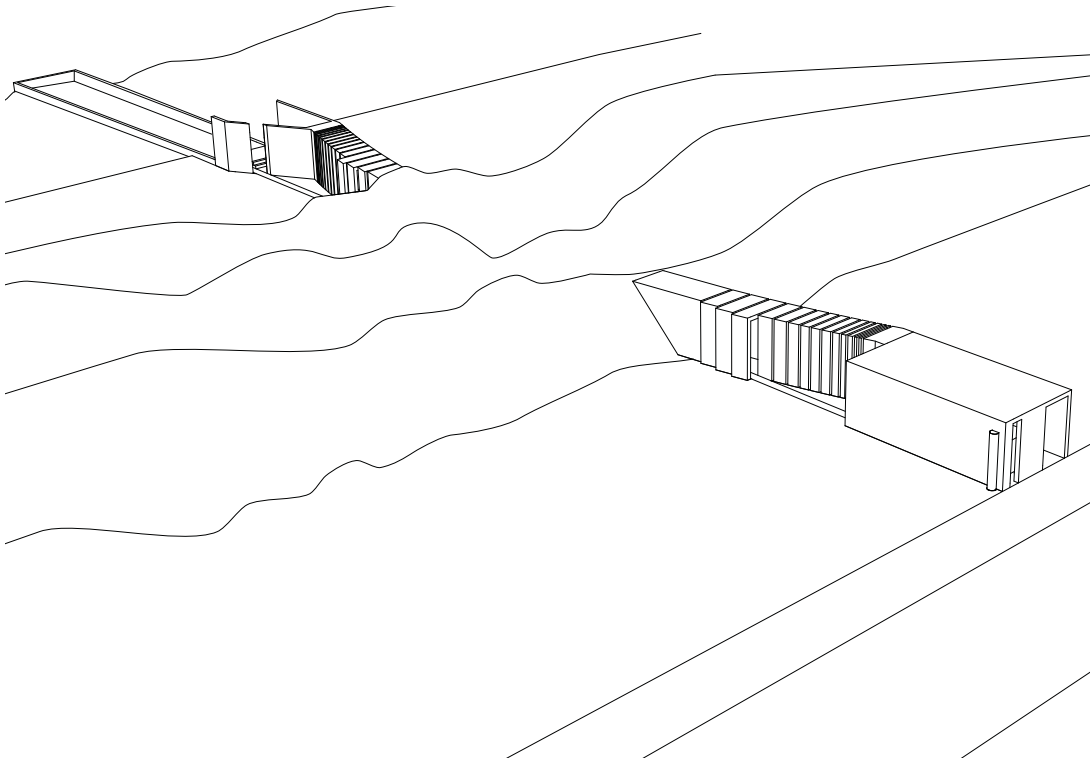




Pumping station

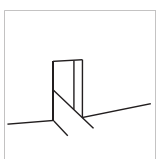
changing and transposing

One can go into this building at one side and come out on the other side with a complete different and changed scenery. From the fields to the infiltration ponds and the other way around.

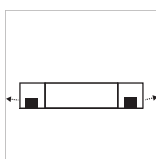


Working of the machine

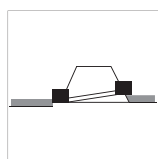
There are several pumping stations in the water system, they all pump another type of water, however the common denominator is the fact that they all transport water to from one place to the other. This pumping station pumps the pretreated water into the dune infiltration ponds.



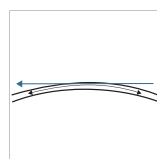
first encounter with building: driving through by bike or



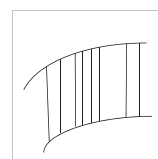
changing of scenery



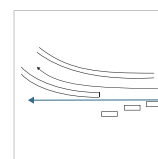
changing type of water



routing of people and water



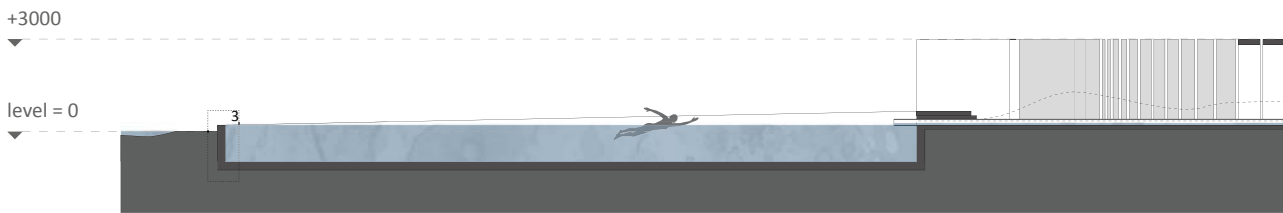
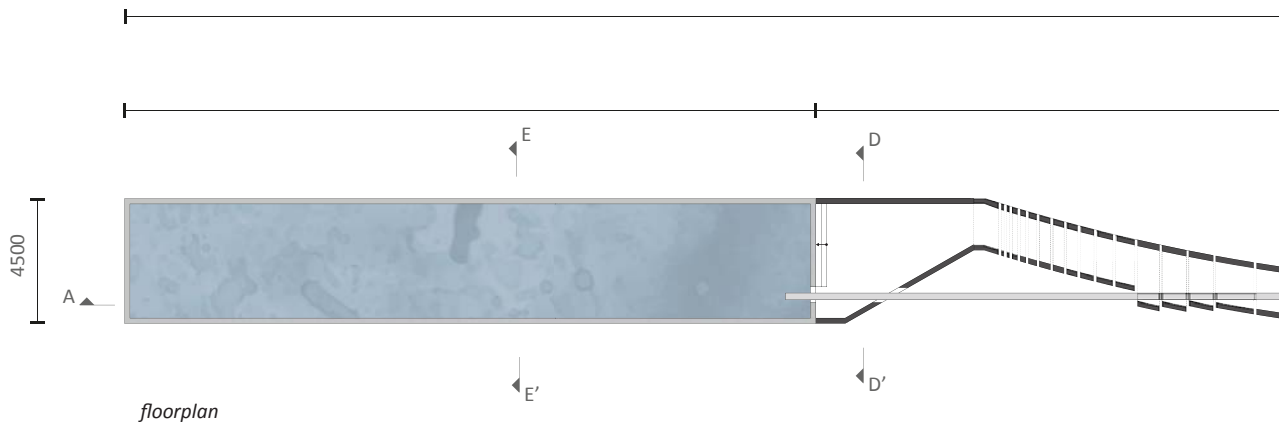
changing atmosphere due to light and openings in the walls

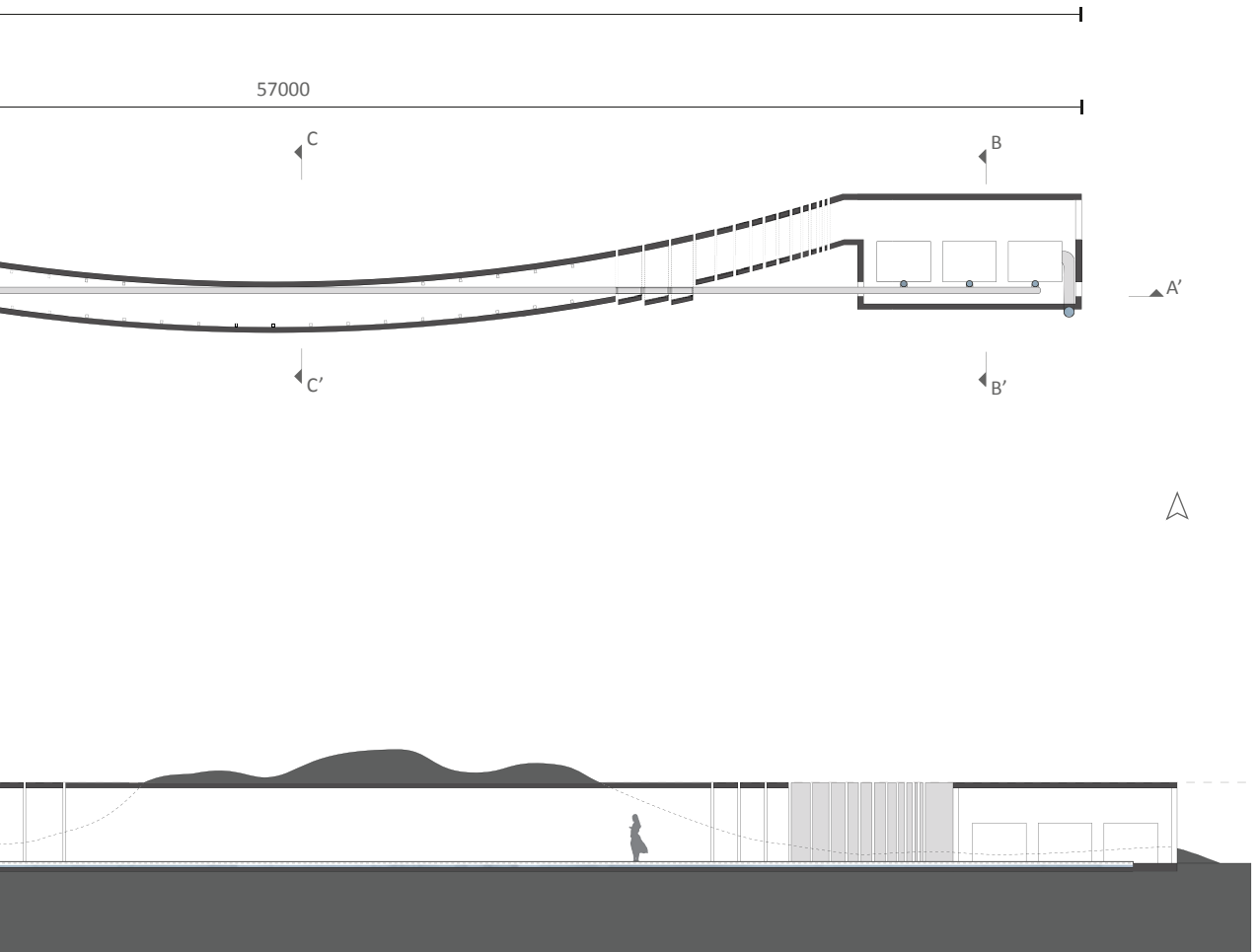


waterpipe goes through wall in a straight line, people





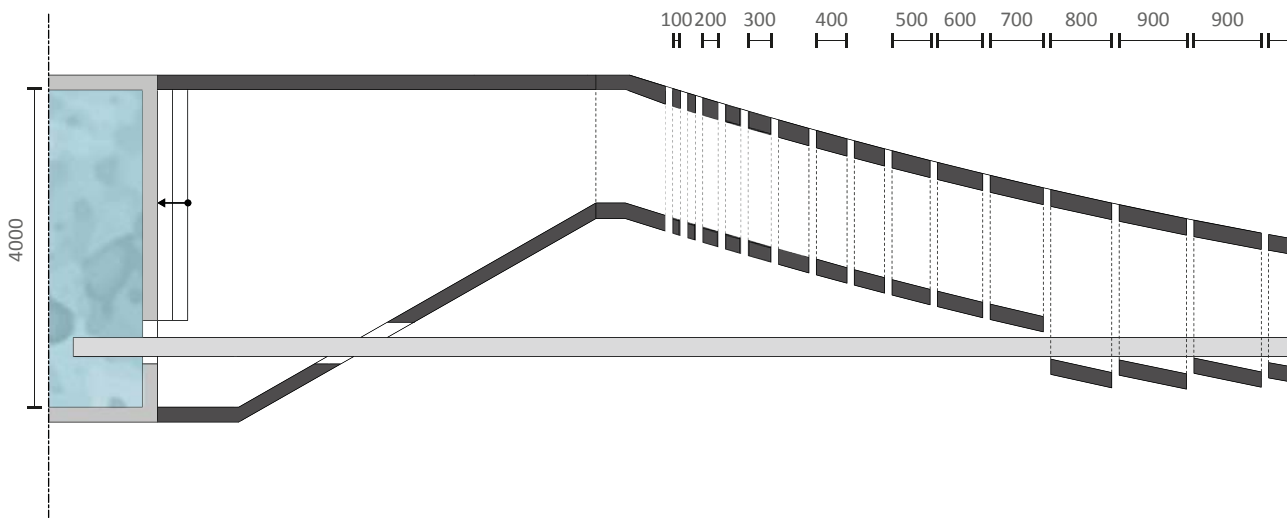




Routing

The entrance of this building is located adjacent to the Ruigendijk. One can already see the water pipe going into a square building, next to it is the entrance. In the square building are the pumps located. Thereafter is a slightly curved tunnel, in the walls are openings which are at a longer distance from each other once you go further into the tunnel. Just before the tunnel enters the dunes and thus goes underground, you see the water pipe coming in. The part of the tunnel under the dunes is lit with artificial light coming from spots in the ground. After a while there is natural light again, the water pipe, which goes in a straight line unlike the tunnel, leaves the tunnel.

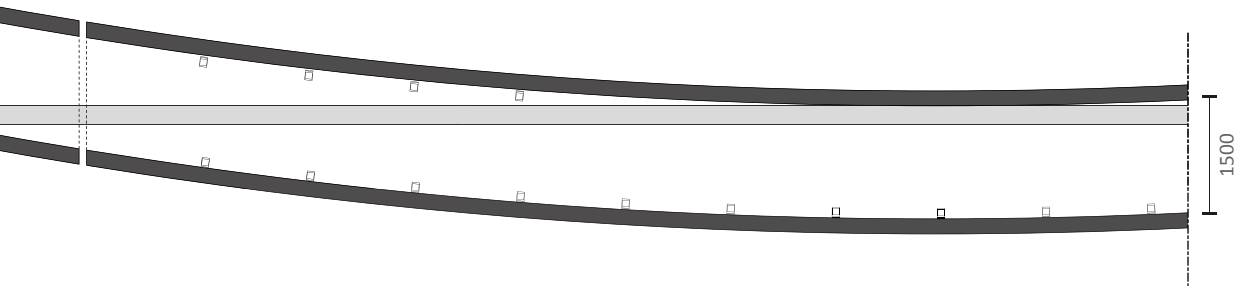
Towards the end the openings in the walls are placed closer together, creating more and more natural light. At the end of the tunnel are the infiltration ponds in the dunes. The water pipe ends in a water basin which can be used as a swimming pool. At the end of the basin the water will flow over the edge and into the infiltration ponds.

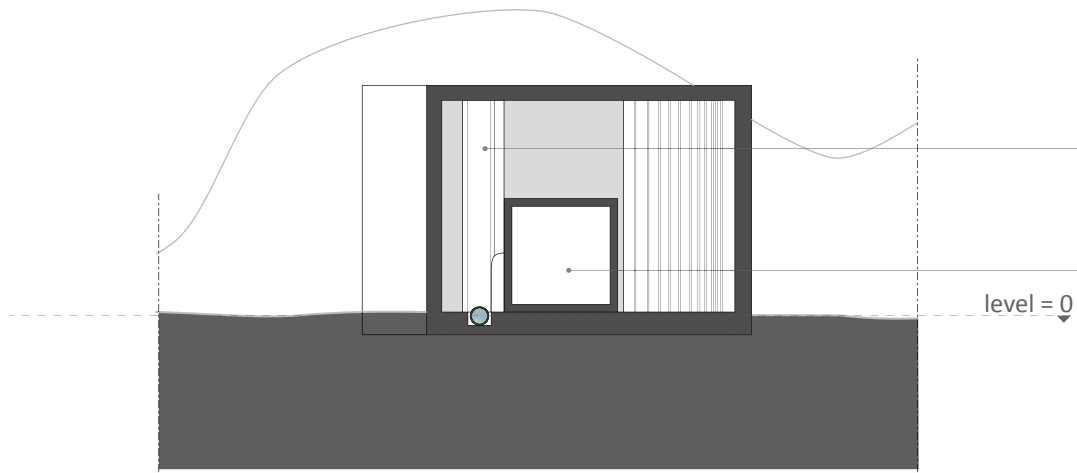


cut out floorplan scale 1:100

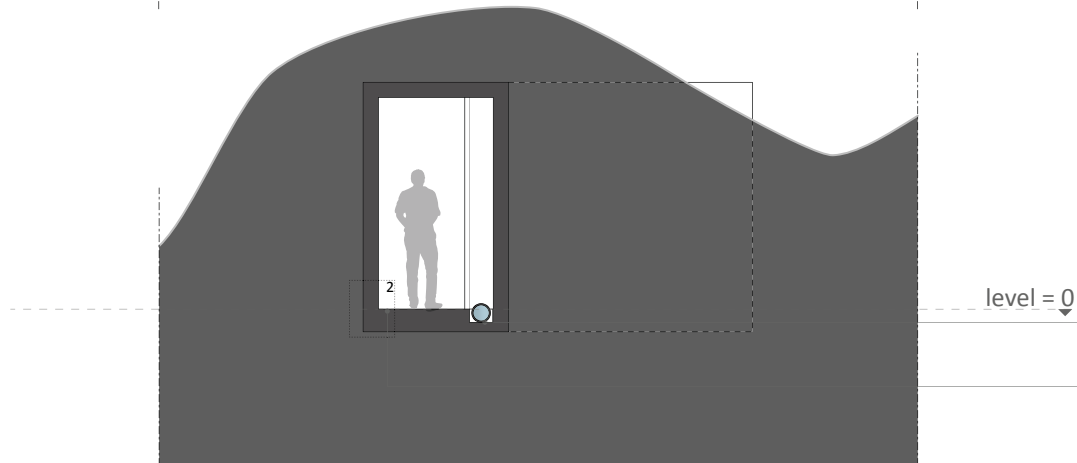


1400

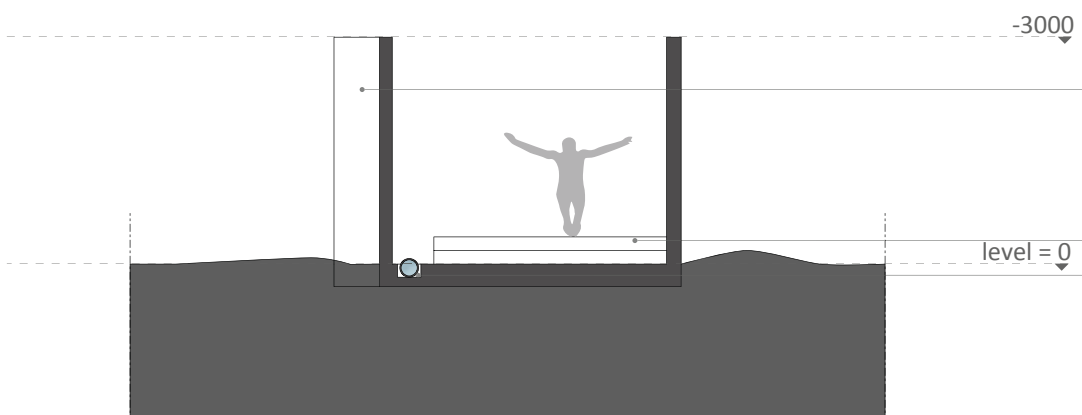




section BB'



section CC'



section DD'



section EE'

sections scale 1:100

it is possible to look all the way to the end of the pipe through the openings and widened parts of the walls

people pass the machines when they enter the tunnel

pipe is submerged into the ground
groundlights provide extra light in the underground part

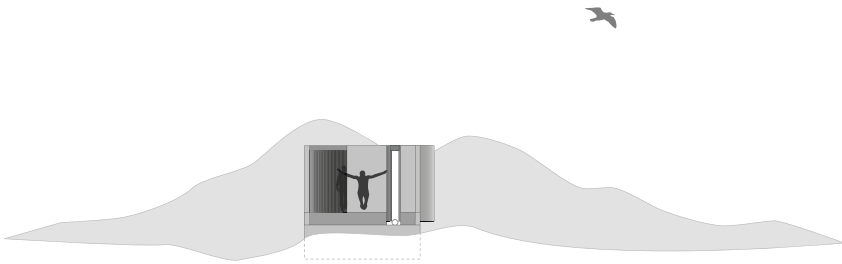
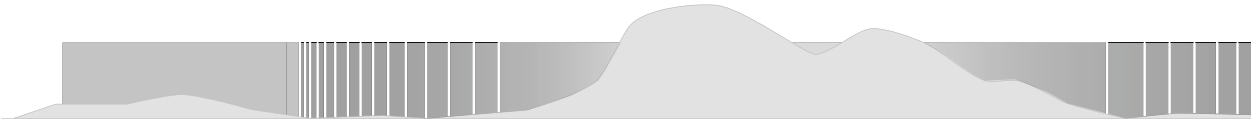
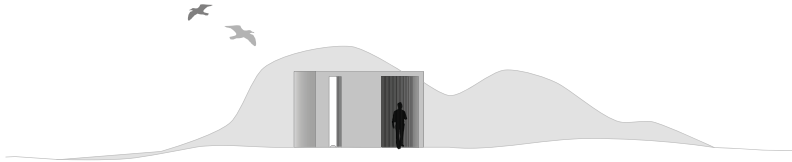
widening of walls to provide a open view towards the landscape

stairs to dive in the pool
pipe for inlet infiltration ponds is visible

pool and outlet into infiltration ponds

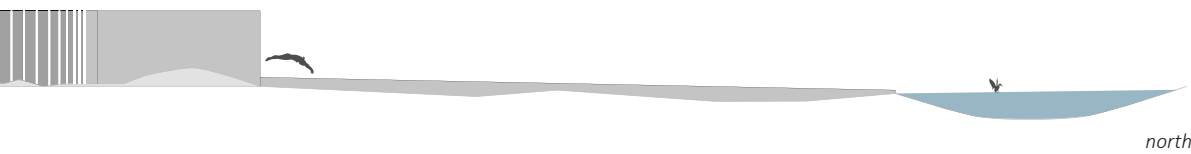
Details | Special features

In the walls which are not underground are openings, the tunnel consists in this part portals, when it rains the rain can seep through the openings between the portals. Due to the openings in the walls the building will change during the day, both in- and outside, since the shadow and light are different when the sun has a different position. The pipe which runs in a straight line towards the infiltration ponds lies in a gutter with only a small part which extends above ground level. The portals become wider at the place where the pipe enters the tunnel. The most outer edge of the water basin is rounded, causing a smooth flow of water going over the edge.



elevations scale 1:300

east

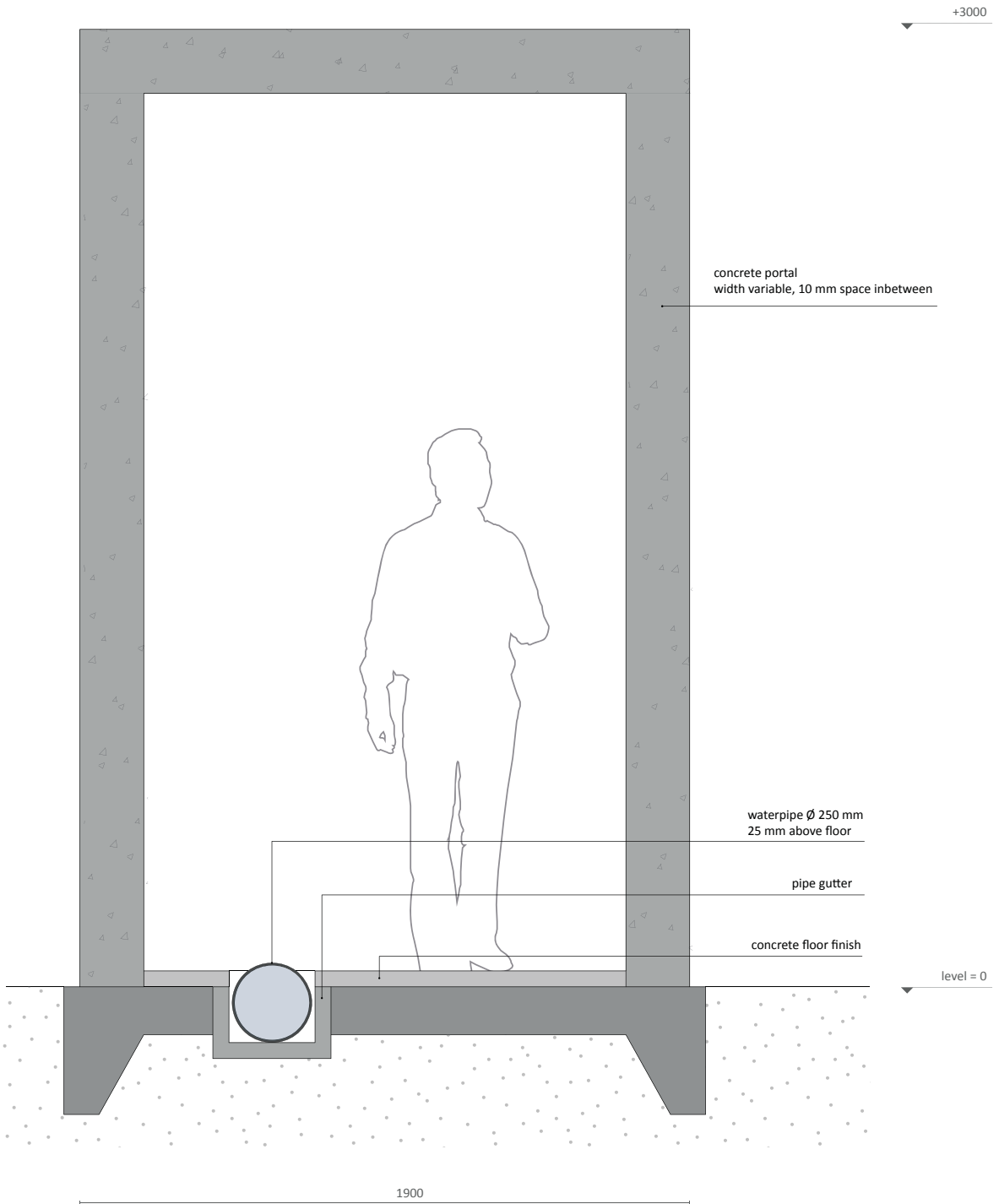


north

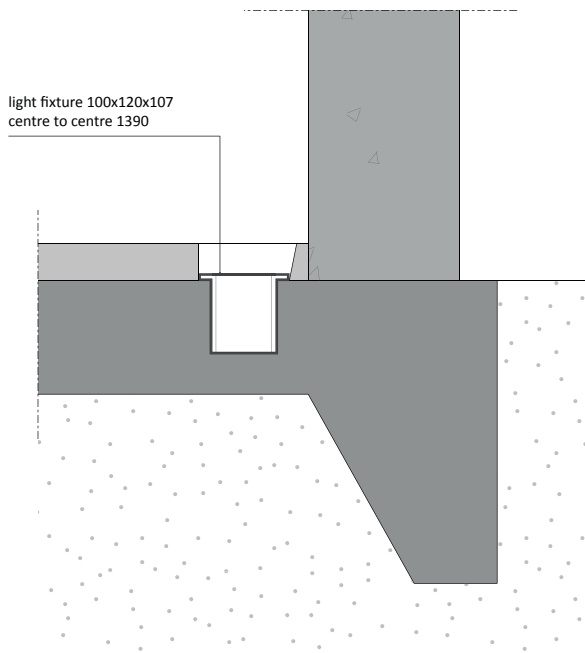
west



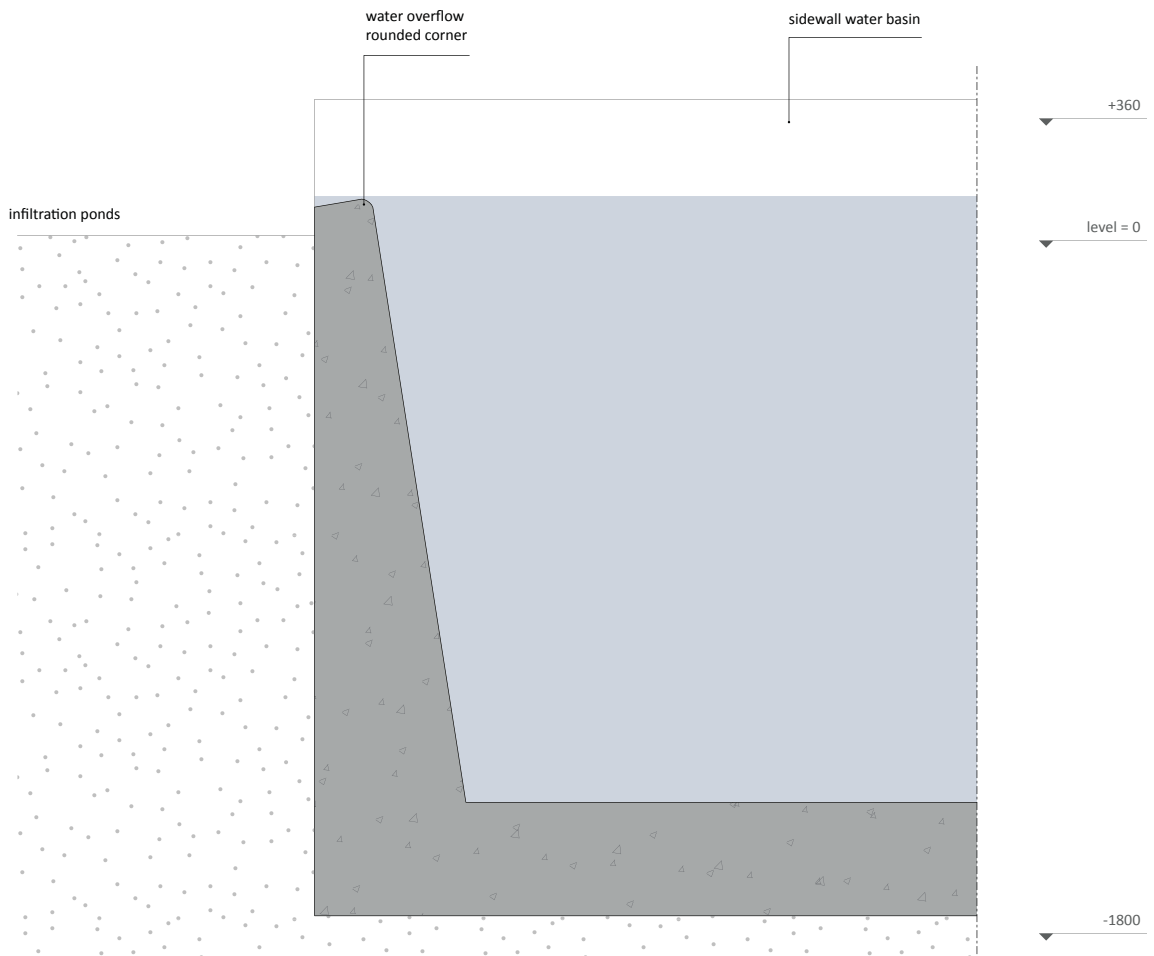
south



detail 1 scale 1:20 - tunnel portal -



detail 2 scale 1:10 - light in the tunnel -

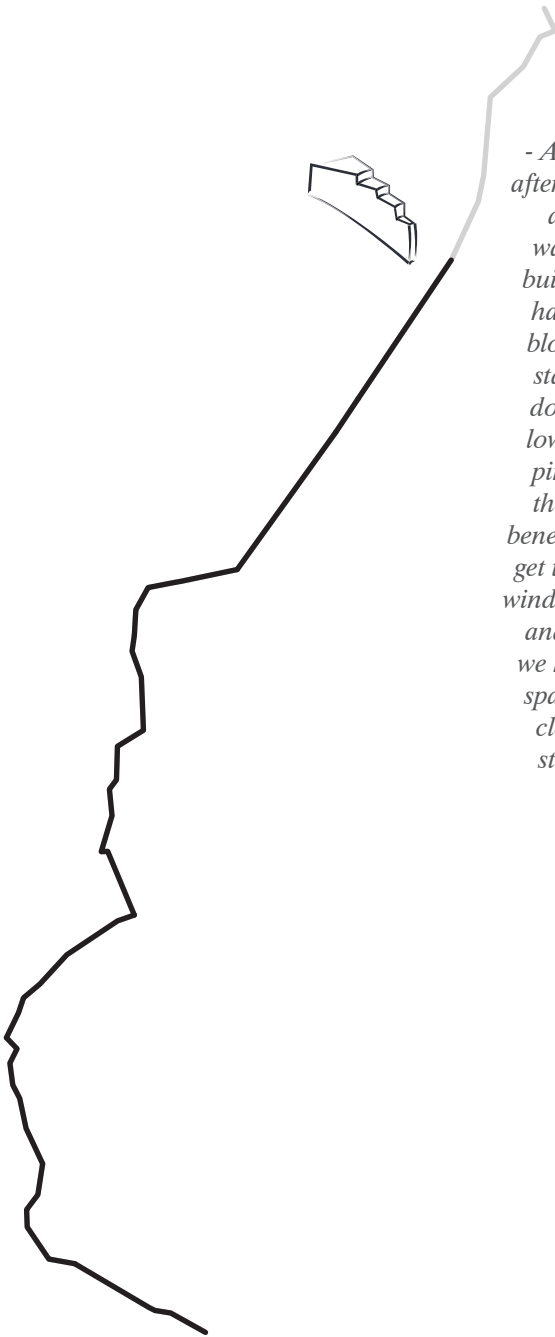


detail 3 scale 1:20 - from basin to pond -





- Apparently not all the water has been pumped into the dunes after the building from De Koog, a part has continued its journey along the waterline. Not long after we continued along the waterline the surface of the road changes. At our left side is a building. The building flatters itself against the dunes, the wind has become stronger, it might start to rain again later. Sand is blown against the walls and a vague glister is coming from the stair shaped roof parts. The water stumbles, falls and clatters down, air is brought in again. We enter through a narrow and low opening. In the walls are openings, however they are more pinpricks, considering their minimal size. We will not descent these stairs like the water does but go up. We climb the stairs, beneath us we can see and hear the water flowing. How higher we get the more open the building gets. With every step we feel more wind against our feet, legs, body and face; there are more openings and the space in between the walls becomes larger. Every time we have climbed some stairs we stop and look back through the space between the roof parts. The water on the roof reflects the clouds and in front of us is a framed view with the meadows stretching out. When we have reached the top we feel the air blowing into our face and we can smell the sea air. -





[34]

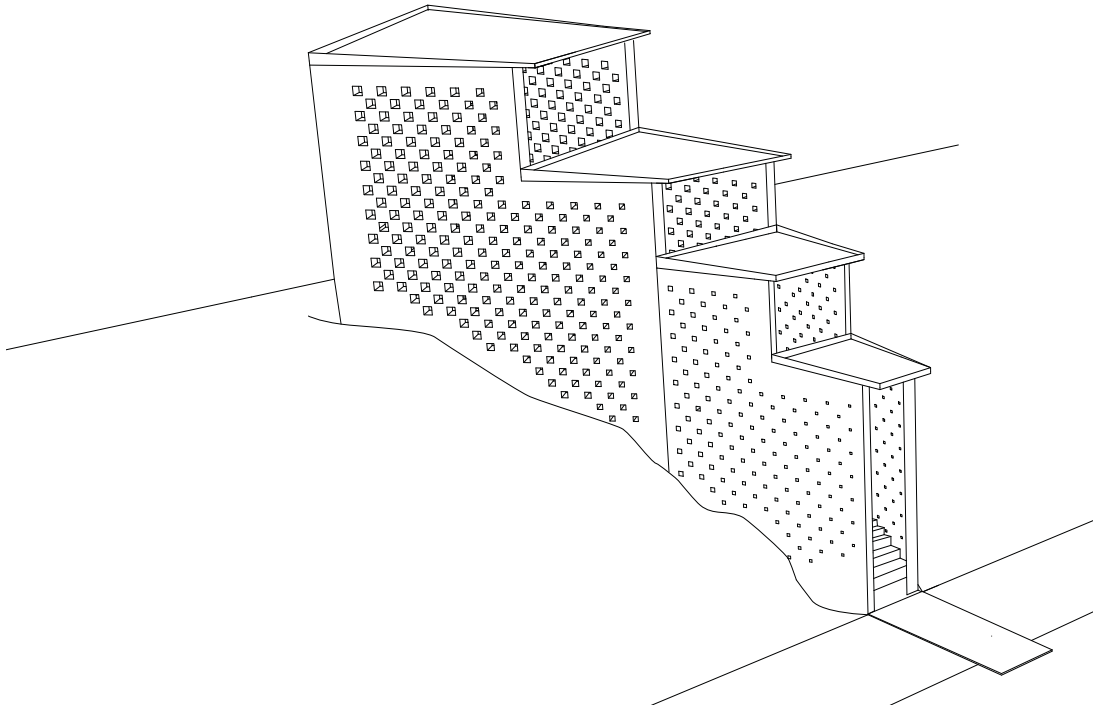


[35]

Aeration

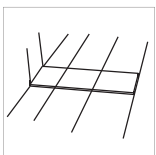
respiring

Just like the water people can respire in this building which opens itself at the top with a view over the dunes. The water will go from high to low, containing more oxygen with every step. The people will go from low to high, offered more and more openness and air with every step.

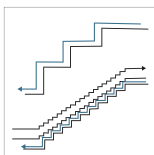


Working of the machine

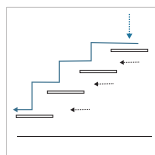
After the water is pumped up from the infiltration ponds it contains less oxygen than it should, therefore it needs to breathe. The aeration of the water is done through stairs which create a waterfall.



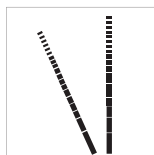
first encounter:
different, higher
pavement



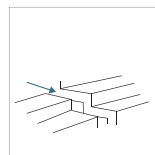
routing of the water
and people



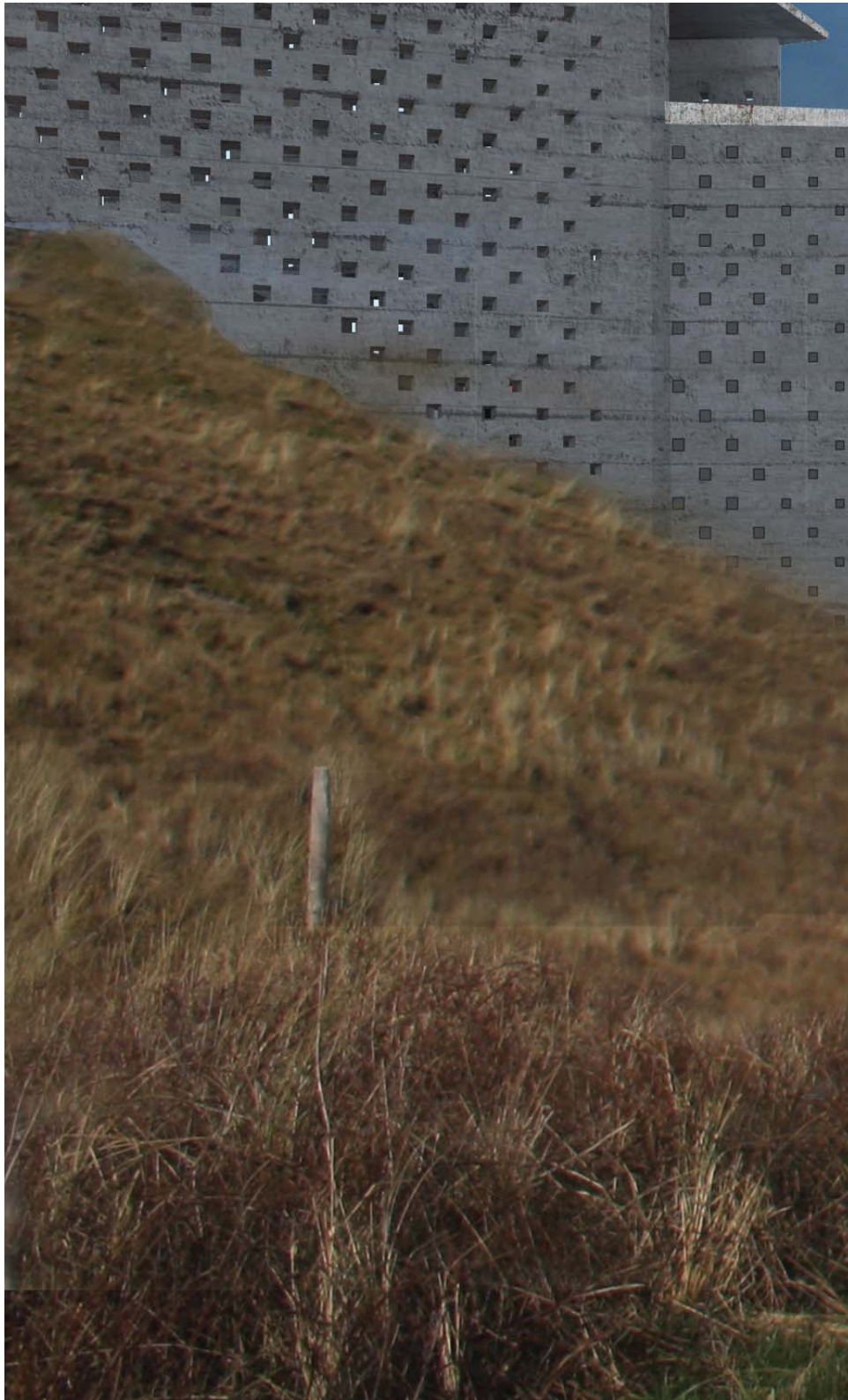
view on rainwater on
roof



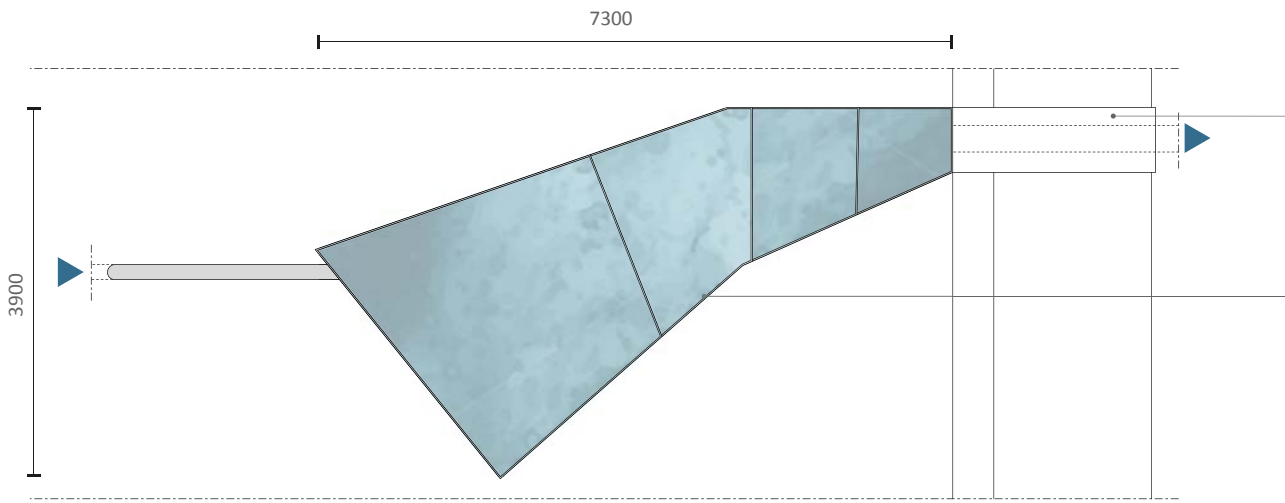
respiring of the
building



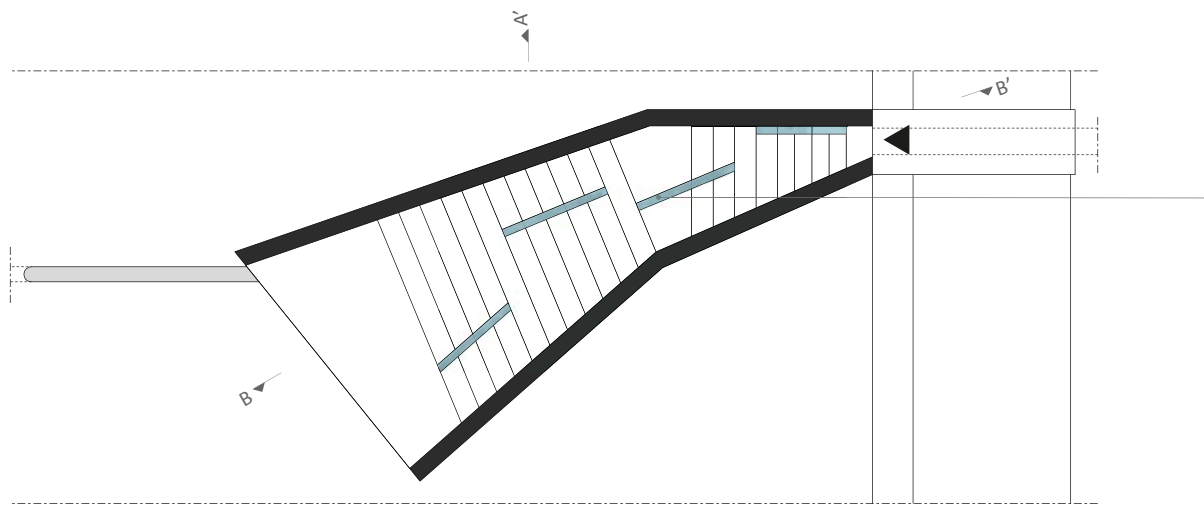
water visible through
gutters in the floor



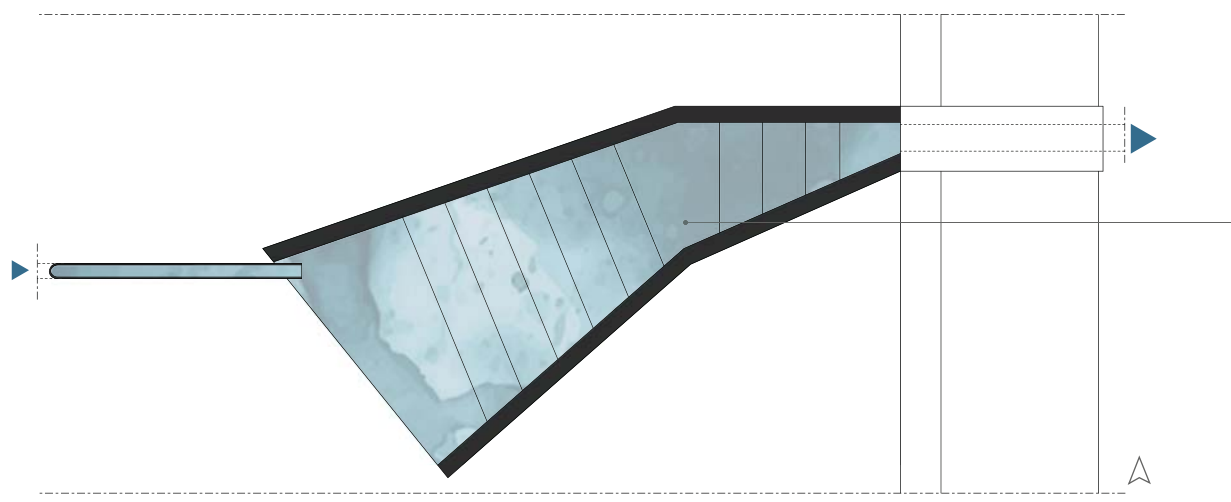




stairs rain water



stairs people



stairs treated water

floorplans scale 1:100

Routing

There are three routings, namely, the route of the rainwater which is collected on the roof. This roof consists of four basins with a lower edge on the east side allowing the water to flow down. The second route is the one of the people. They walk up the stairs, and are offered a view on the water on the roof and the landscape behind them every time they rise a few stairs. The treated water flows over the lowest layer which lies 300 mm under the stairs for the people. At the bottom this water is collected in a basin and then continues through a pipe.

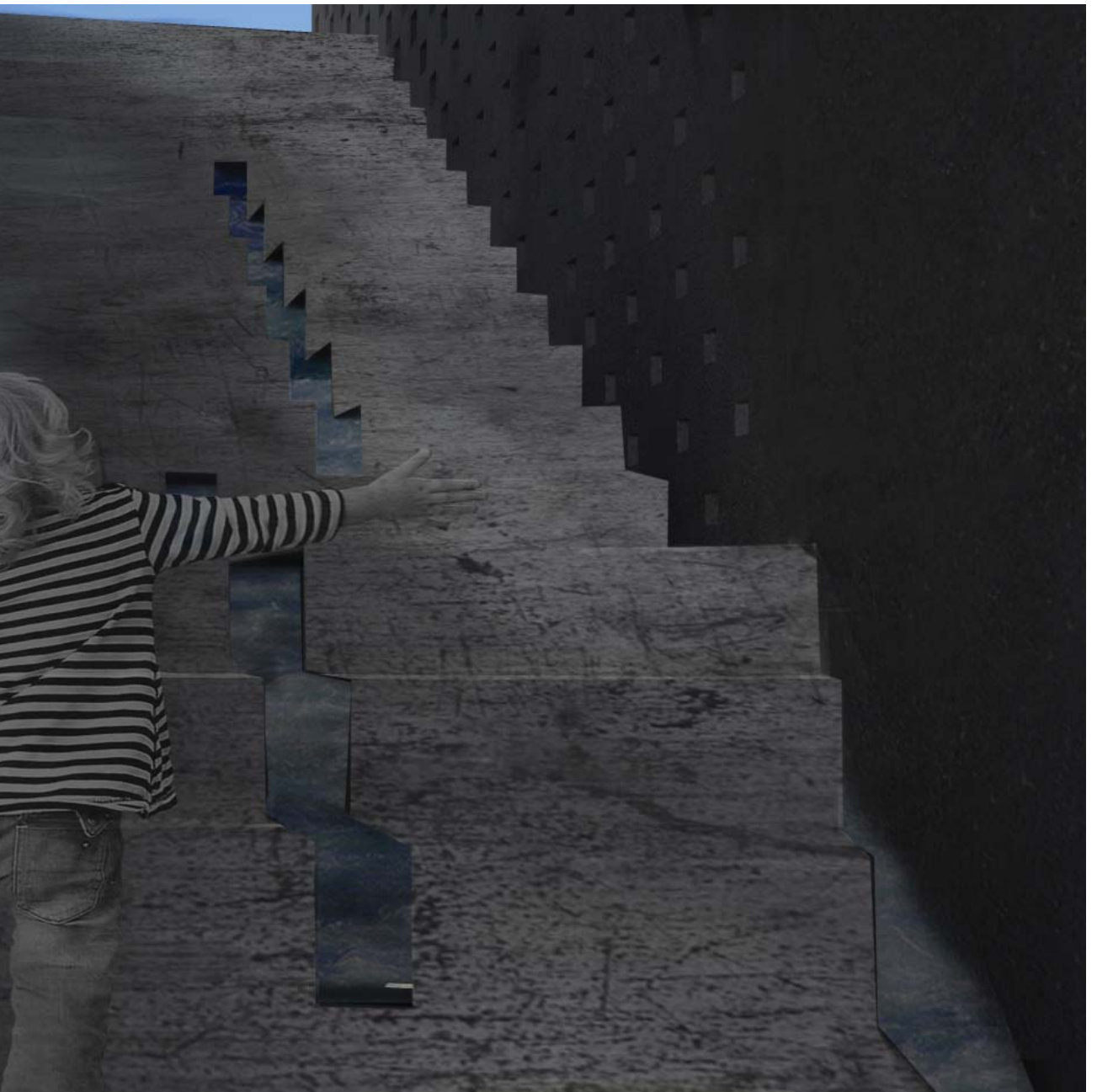
different pavement

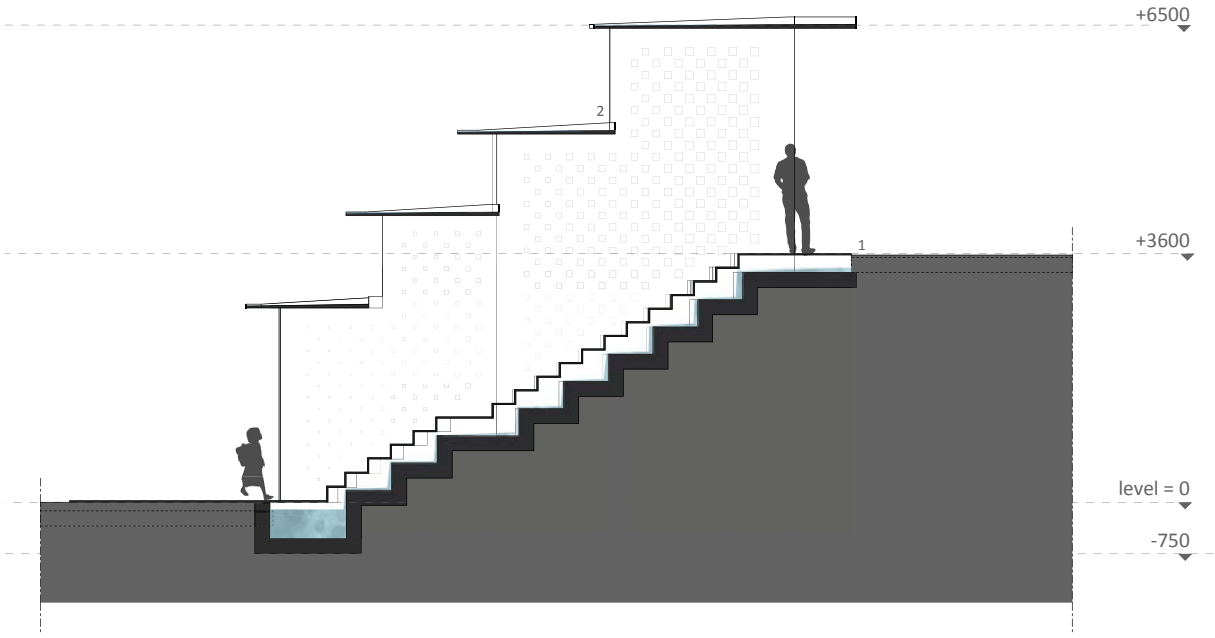
terraces for
rainwatercollection

treated water visible

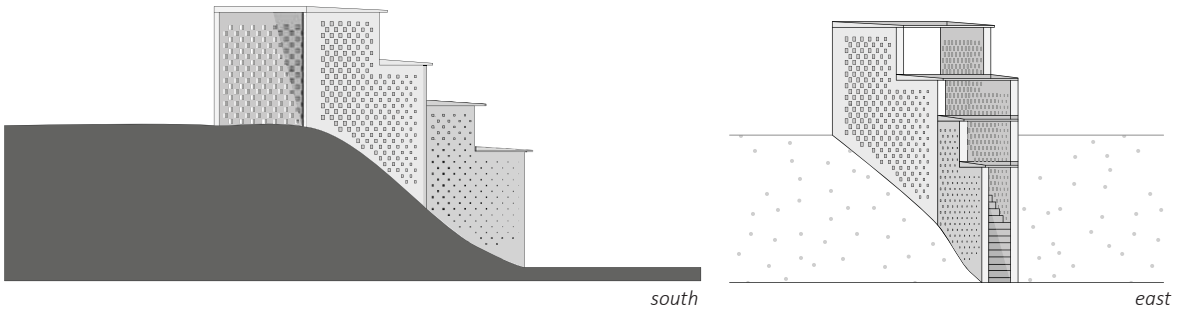
treated water



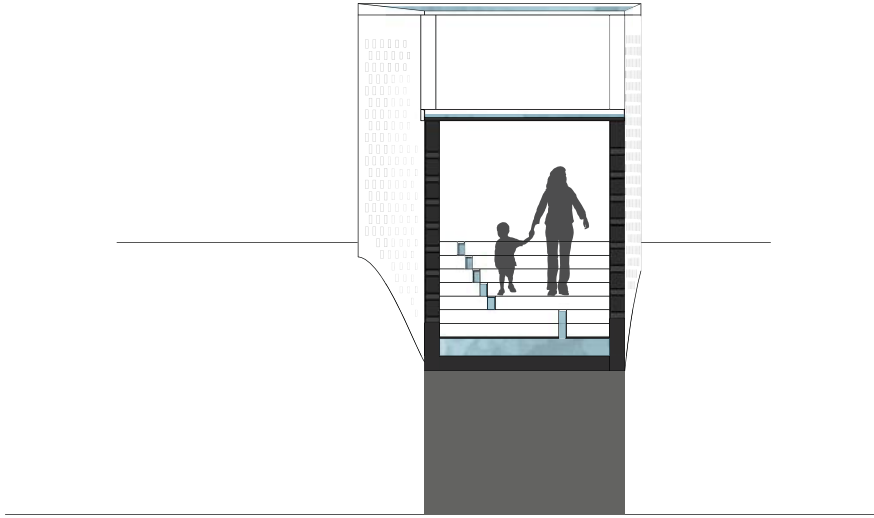




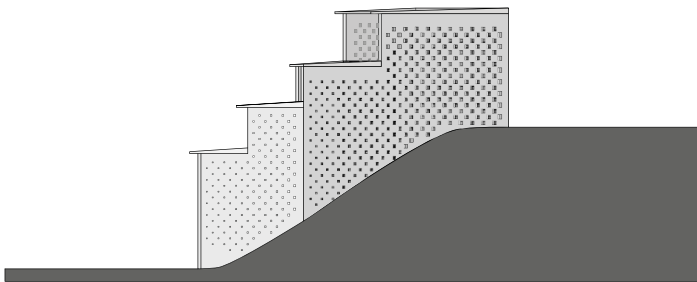
section BB' scale 1:100



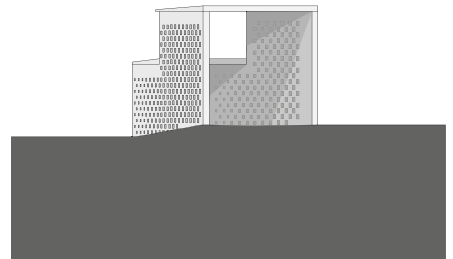
elevations scale 1:200



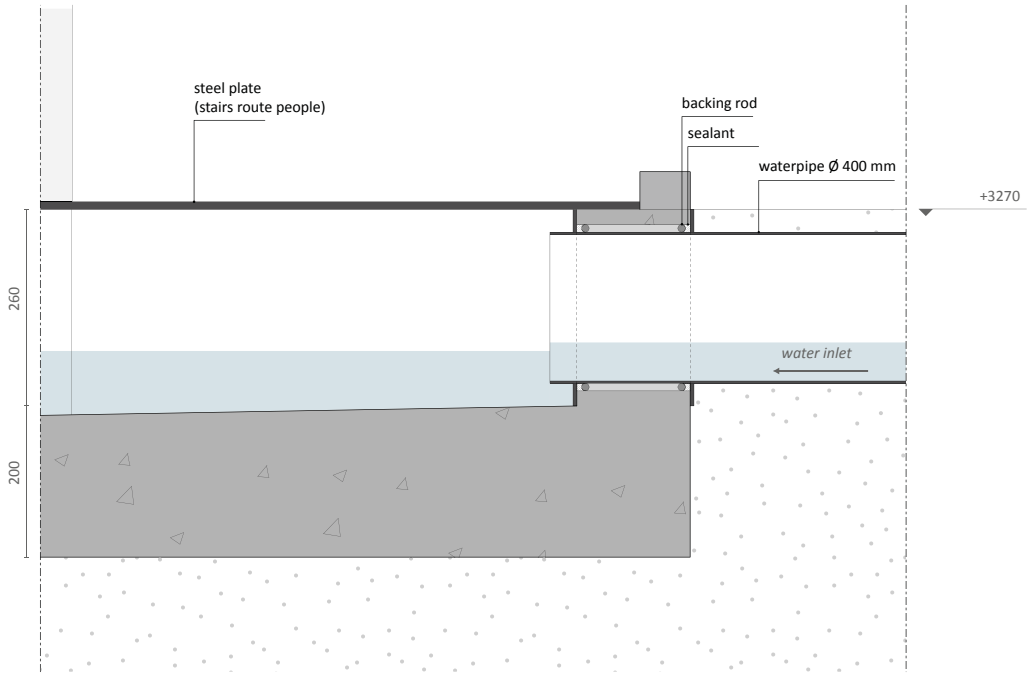
section AA' scale 1:100



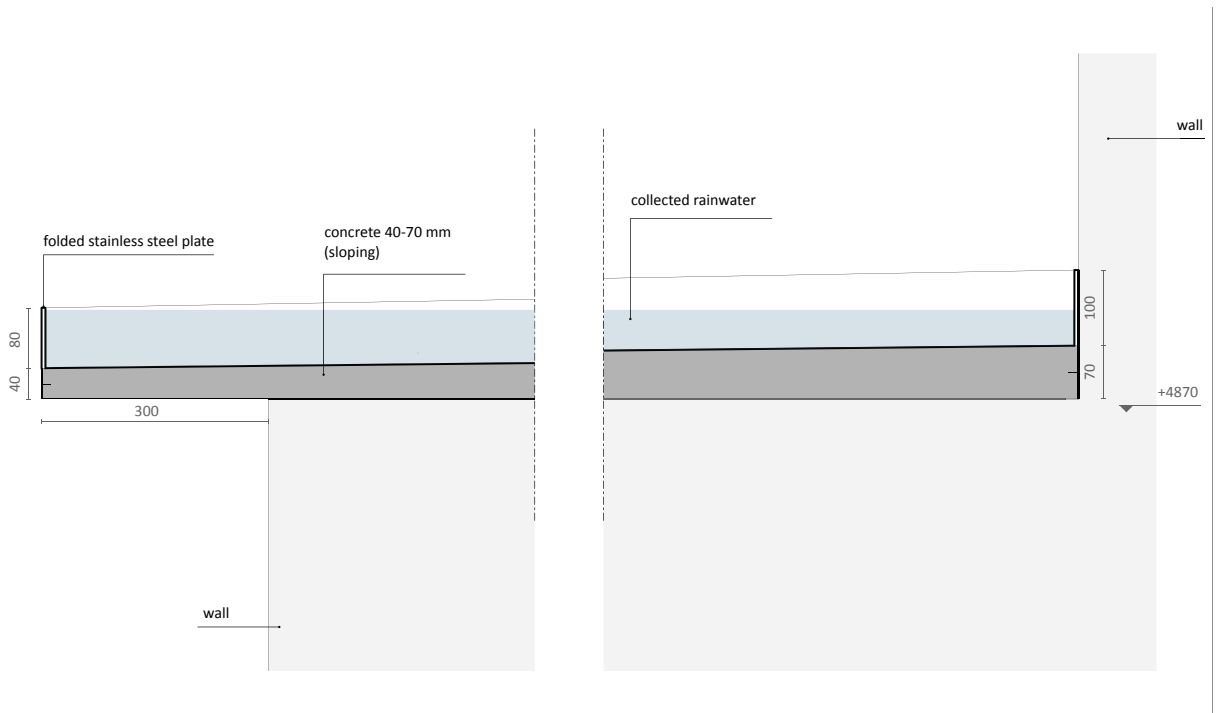
north



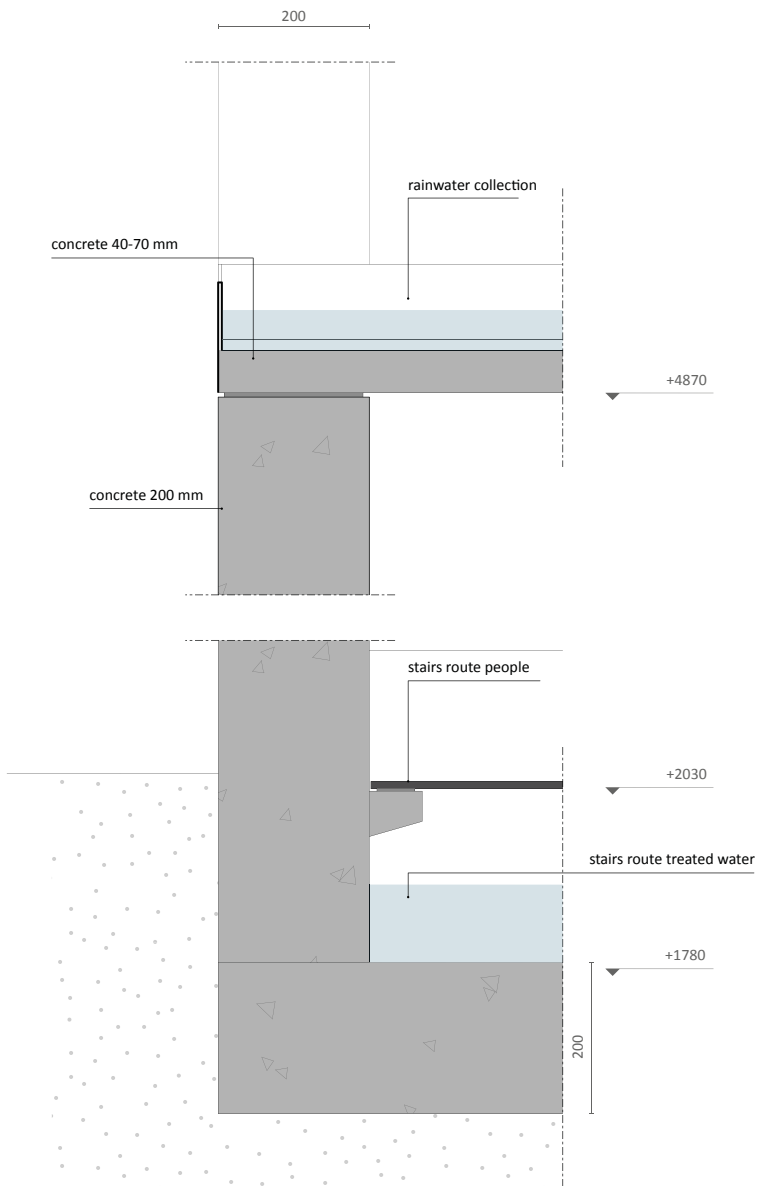
west



detail 1 scale 1:10 - waterinlet -



detail 2 scale 1:10 - watercollection roof -

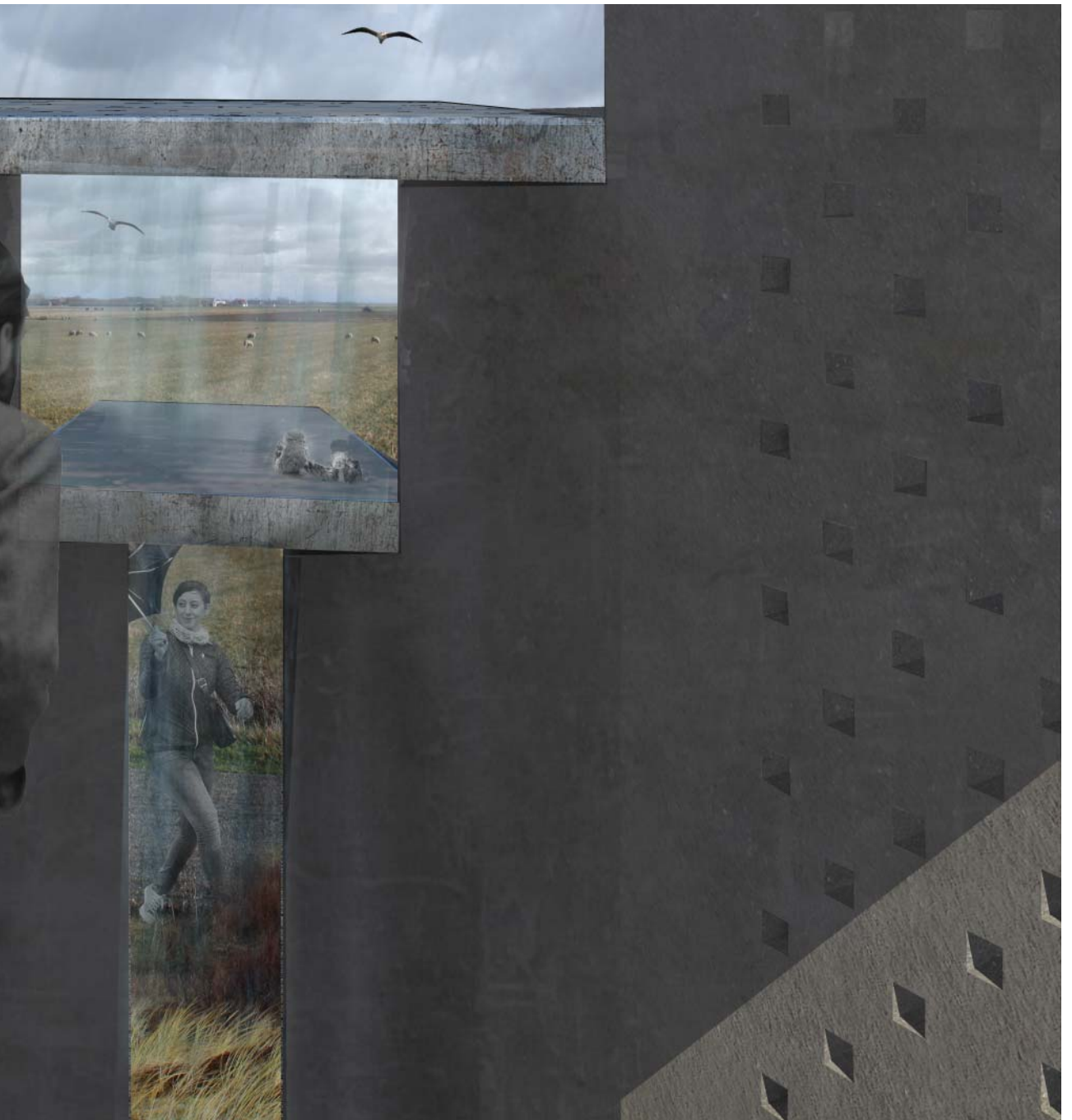


detail 3 scale 1:10 - routing rainwater, people, treated water -

Details | Special features

The walls of this building have more and bigger openings towards the top. At the end the building makes a turn towards the south-west from which the wind comes for the largest part of the time. In the stairs for the people are openings through which people can see the water respiring underneath them. Since the water flows more, and quicker over the roof when it has rained a lot this will mean that sometimes the water will pour down over the entrance of this building, this water will flow towards the waterline.







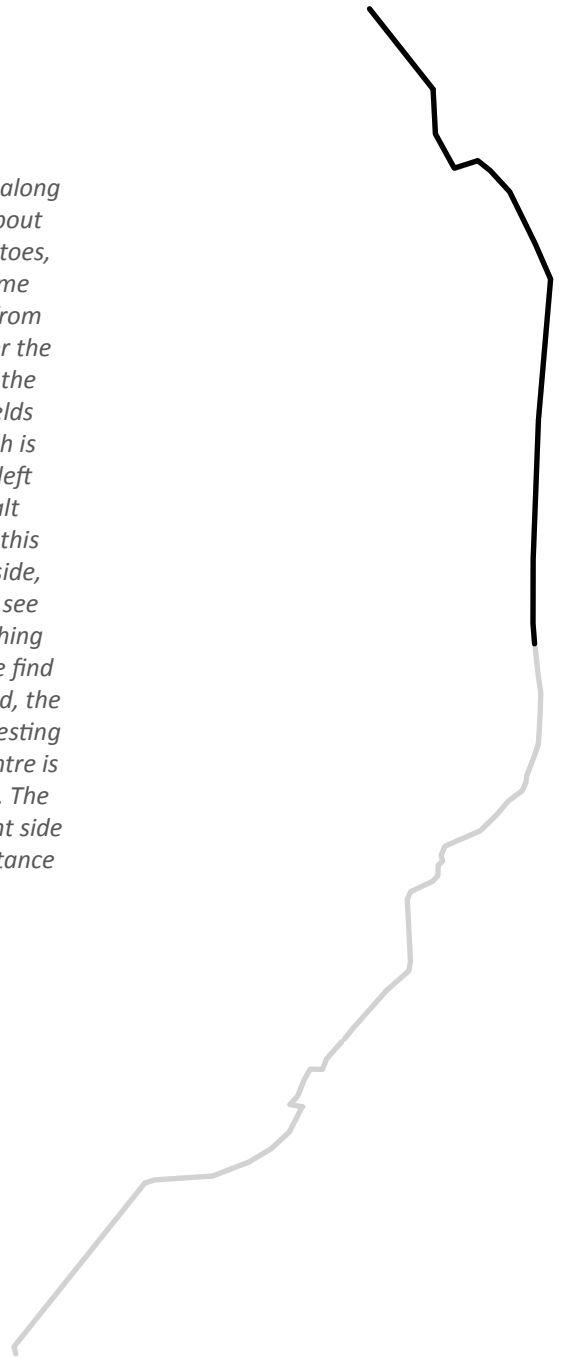


- We have almost reached the most northern part of Texel. The dunes are at our left and agricultural fields at our right. Behind the dunes at our left side is De Slufter with its ever changing landscape when the salt water flows in. When we have left De Slufter behind us, the large northern campsite De Krim appears at our right. Constructed wetlands lay adjacent to the waterline, it widens itself and flows from concrete into a more natural landscape. On the campsites are toilet units which collect the urine and the greywater from the tourists and after the cleaning of the greywater it is released into the wetlands. The end of the waterline comes into sight. It begins to rain again, we watch the raindrops falling on the sea, at this point where North Sea and Wad Sea come together, in the distance we see Vlieland. We stand there for a bit and then leave to our hotel, tomorrow our journey back along the west Side of the island starts. The line with the new innovations, the salt water and saline grounds, the place where the Wad Sea comes into the island. -



The way of the salt water

- We stand at the most northern point of the island. The trip along the eastside, with the Wad Sea always at our left side, is about to start. At our right are fields, it is a saline polder, salt potatoes, sea lavender and other saline crops are cultivated. We come across the first pumping station. The surplus of the water from the Eierland polder is being pumped into the Wad Sea. After the pumping station we see a strip of fresh water intersecting the land, after which the agricultural fields start again. The fields are further landward bordered by the Eierland canal, which is also the border between salt and normal grounds. At our left is a salt marsh. The flood is coming up, we can see the salt water streaming into the creeks, the birds clearly consider this dinner time. After the salt marshes have ended at our left side, a waterbody with salt water also appears at our right. We see farmers harvesting their cockles and oysters in this land fishing area. At the most southern point of this land fishing area we find the place where the salt Wad Sea water comes into the island, the old pumping station is now letting the salt water in. An interesting conglomerate of waterbodies with an old windmill in the centre is a reminder of the incredible waterworks from former times. The neighbourhood Oost has become a fishing village. At the right side of the dyke are areas with small salt waterbodies. In the distance we see the houses of Oosterend. -





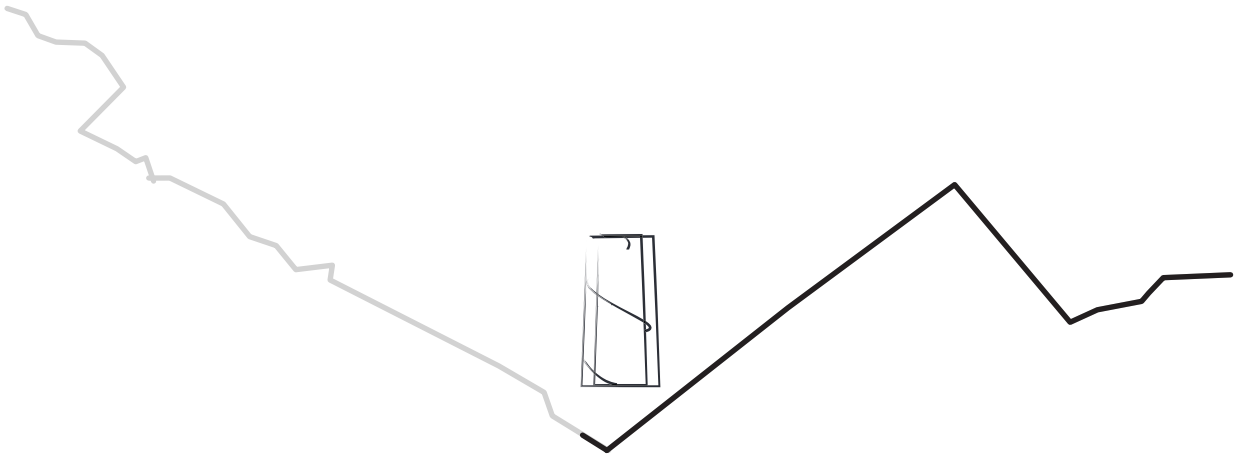
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[68]



[69]



- We take the same line across the island we have taken before, however now from the other side. We have already seen it from other places on the island, the tall concrete tower. When we approach it from the east side, the tower is wide, however when we move to the south side, it becomes narrower. There is a thin layer of fog laying over the fields, making the concrete building look as if it floats. The road we are on is located on a low dyke. There is a man standing with his dog, he looks at the tower. He tells us that he goes here every day. There is metal embedded in the top layer of concrete. He has seen the tower change, seen the time go by. We leave the road and pursue our way on a small path through the meadows. When we are halfway on the path towards the tower, a pipe rises from the ground and accompanies us to the entrance. The building has two layers, the first one opens itself in a long narrow opening running almost all the way to the top. We enter and walk towards a stairs which is wrapped around the inner building, which contains the drinking water. The pipe goes up, alongside the building. It echoes in the between the shells and the walls are still moist from rain or the fog. When we stand still and the sound of our footsteps on the metal stairs has faded, it is possible to hear the dripping of the water. We walk up the stairs, on every platform offers a peak outside towards the different types of water. The fresh water surfaces, canal, ditches, salt land fishing water coming in, and in the distance the Wad sea. After the last turn in the stairs we go through the water tower, and can feel the cold metal of the stairs caused by the cold drinking water. Arrived at the top we have an overview over the whole island. The outer shell continues and forms the railing, in the ridge is a small pool of water, birds take a bath. We can see the different landscapes, the water, and all the machine buildings we have come across earlier. It is time for us to leave, we descent and continue for the last part of our journey. -



[70]



[71]



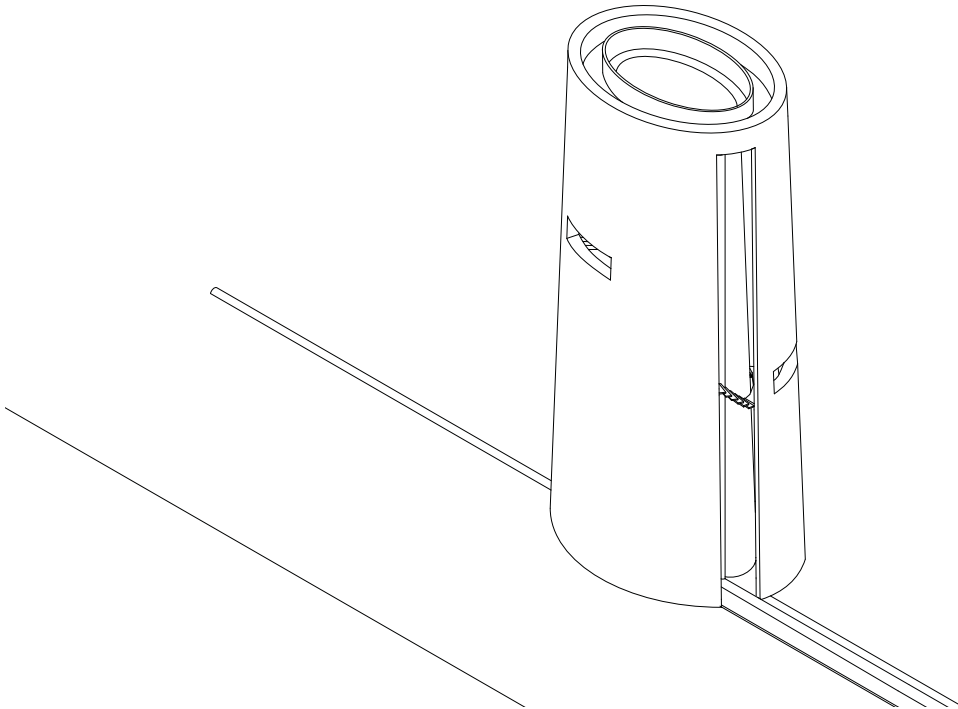
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[72]

Clean Water Storage

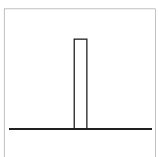
focal point

In this building the treated, clean water, is stored. It serves at the same time as a watching tower and focal point, a place where all the different types of water and the buildings of the water production and wastewater treatment can be overseen. The building consists of a core in which the water is stored, around this storage tower wraps a stairs itself. The most outer layer is a shell of concrete. In time there will be erosion visible on this shell.

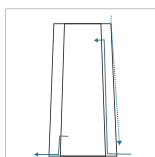


Working of the machine

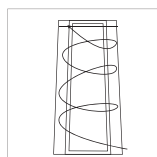
In case something in the water cleaning process goes wrong and to maintain a constant water stream there is a storage, where the water can be stored when it is completely cleaned. This buffer is refilled during the night and can deal with peaks in the water consumption.



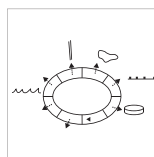
first encounter: high landmark in the flat Texel landscape



routing of water



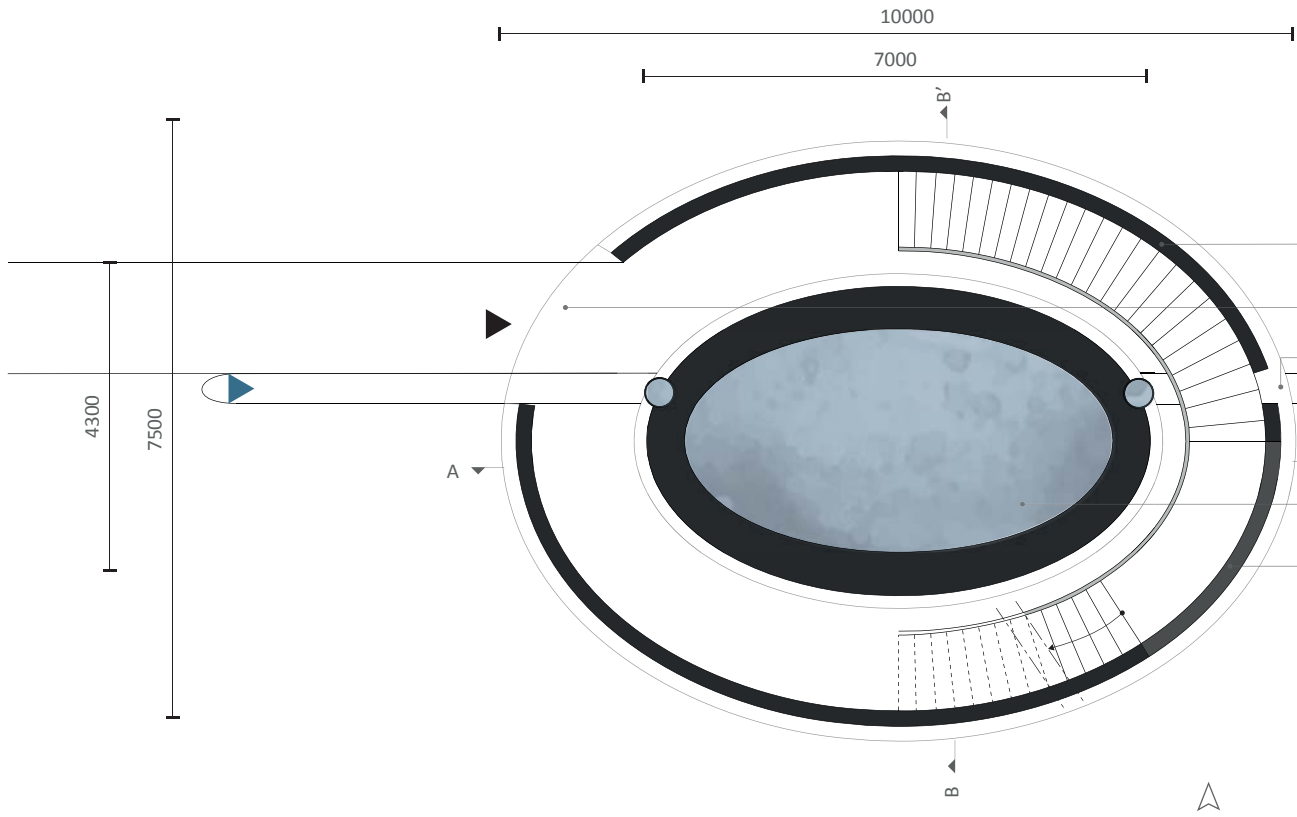
routing of people



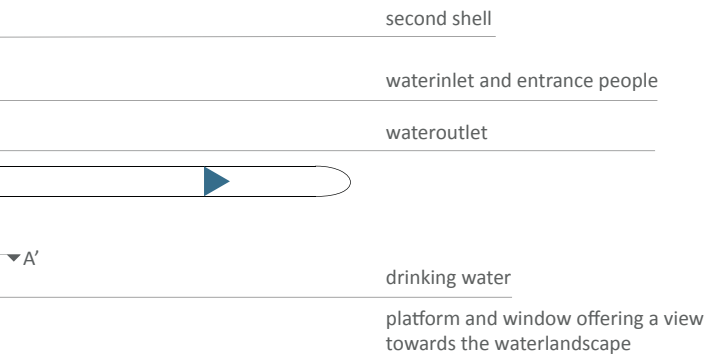
view on different types of water





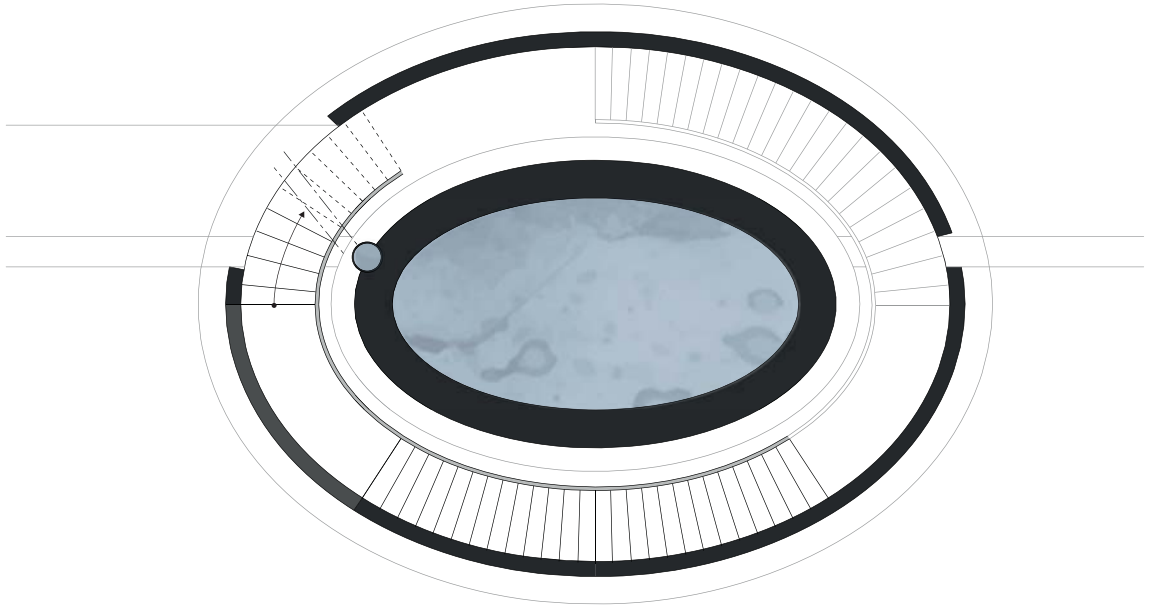


floorplan level +3000 scale 1:100

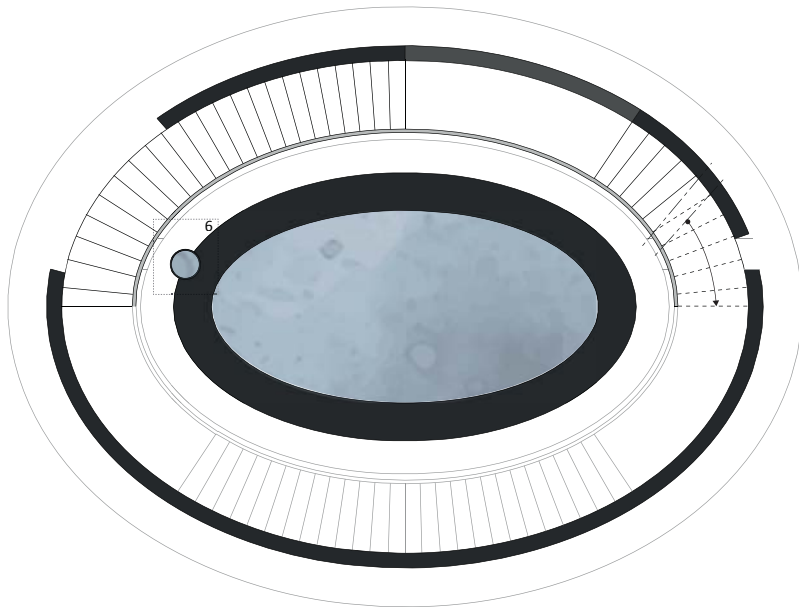


Routing

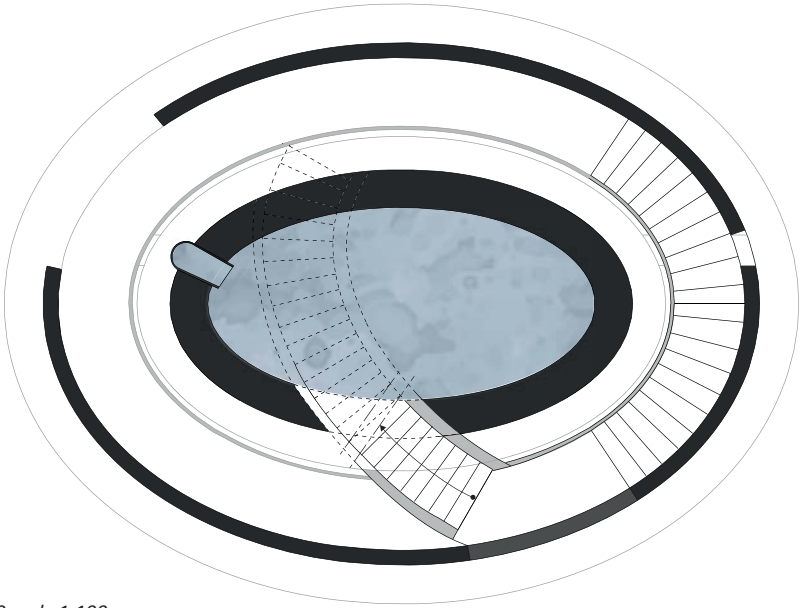
The tower is visible from far away in the flat Texel landscape. It is almost like the tower is crying, due to the erosion on the outer shell. At one place of the entrance this shell opens itself. A walking path is going into the building, accompanied by the water pipe rising up from the ground. When one has entered the shell the actual water tower becomes visible. The water pipe goes up alongside the wall of the water tower. At the left is the start of the winding staircase. After one turn there is a landing with a window. The window offers a view in a straight line with the canal. The next landing offers a view over the nearby surface water. The last turn is sharper than the ones before. It turns into the water tower after which it arrives at the balcony on the highest point of the tower. From here every aspect of the water cycle can be seen; the wad sea, water buildings, brackish land, fishing grounds, fresh surface water, canals, ditches and the North Sea.



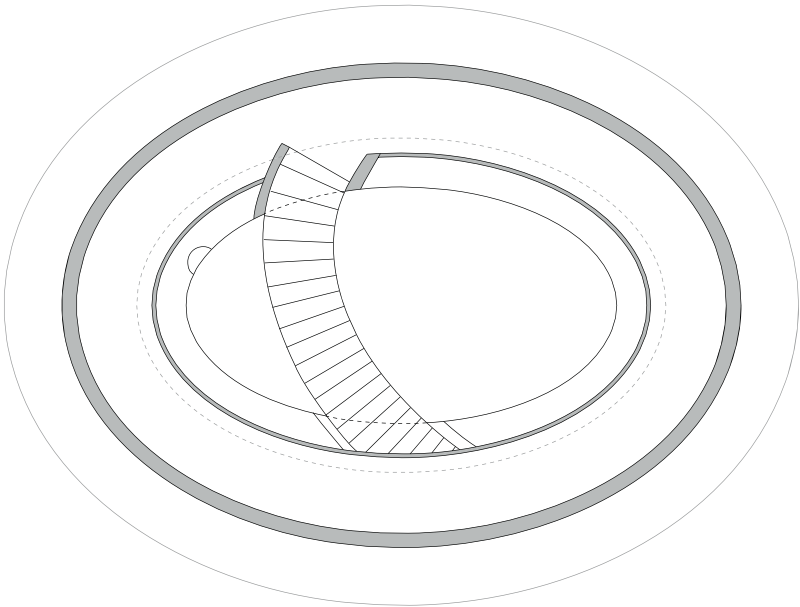
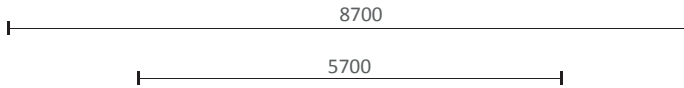
flooplan level +6000 scale 1:100



flooplan level +10000 scale 1:100

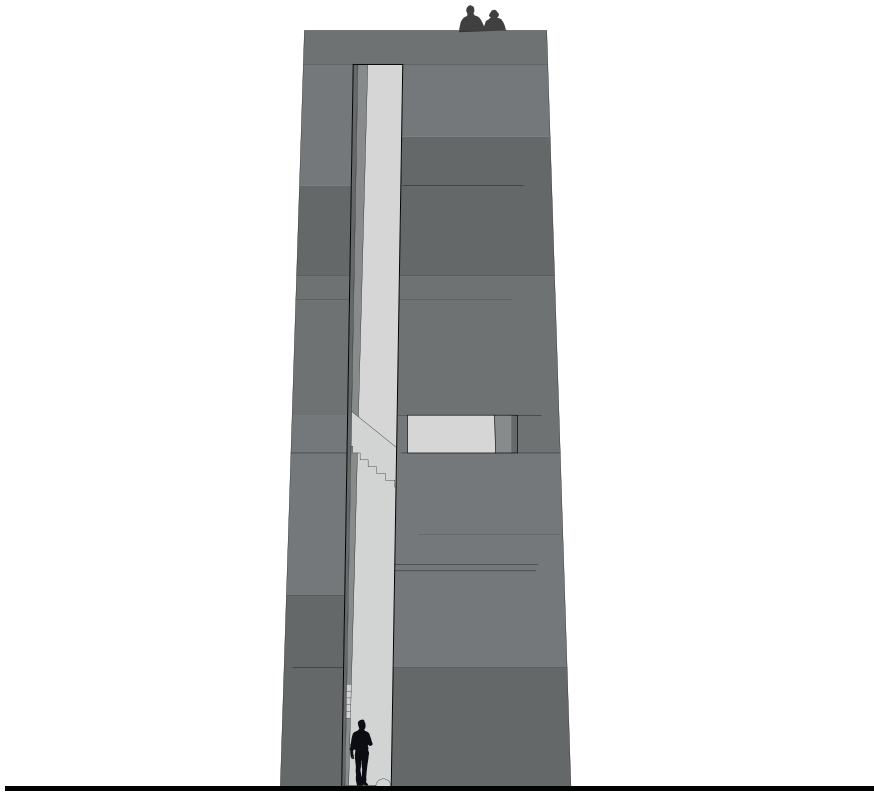


floorplan level +18000 scale 1:100



floorplan level +20000 scale 1:100



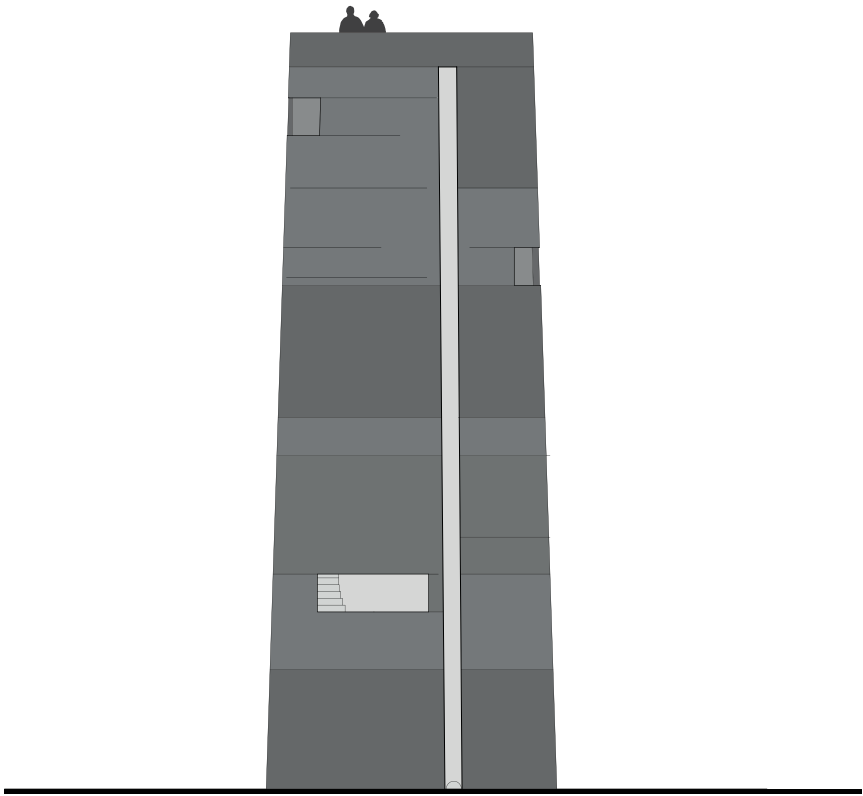


west

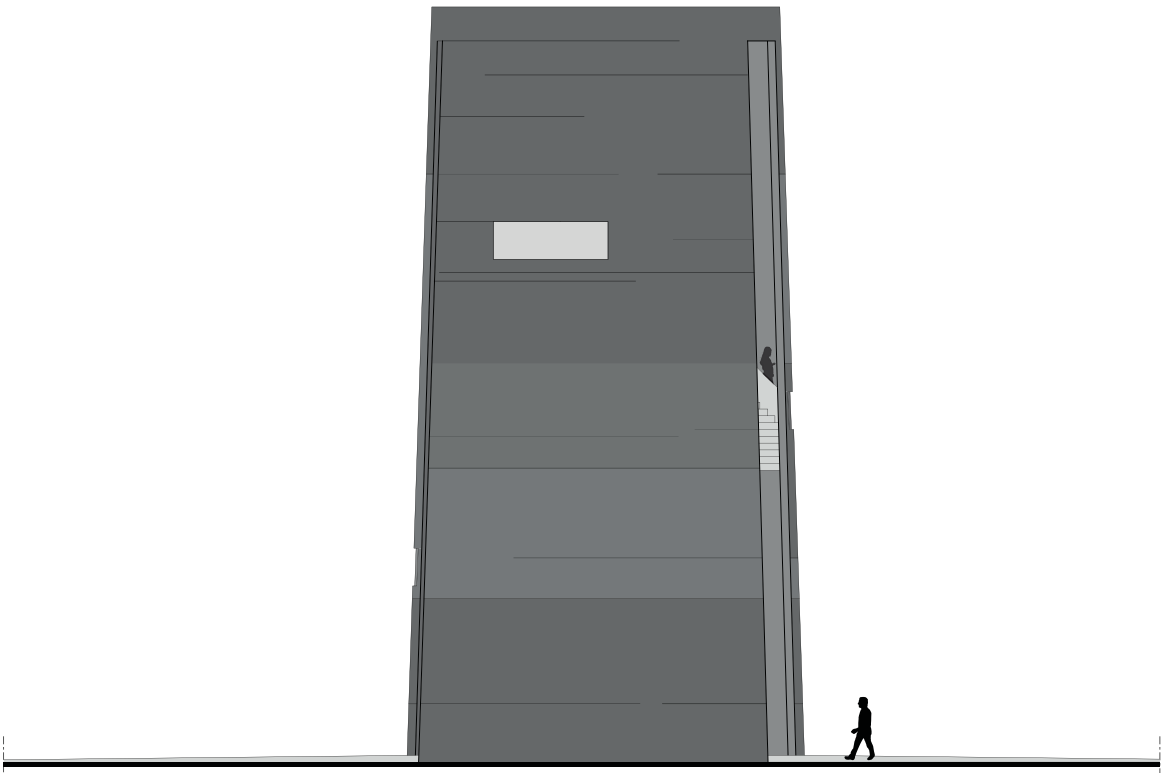


south

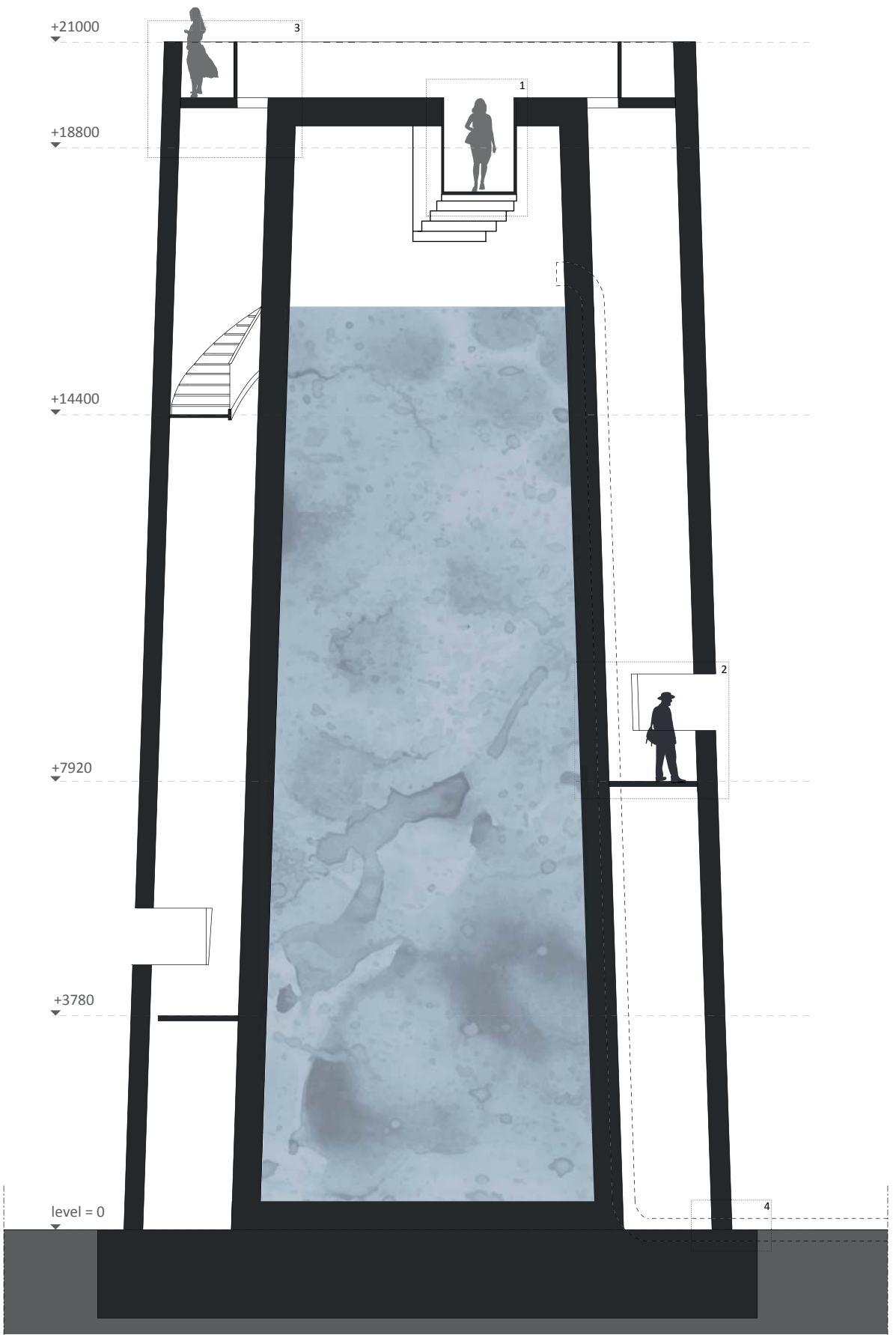
elevations scale 1:200



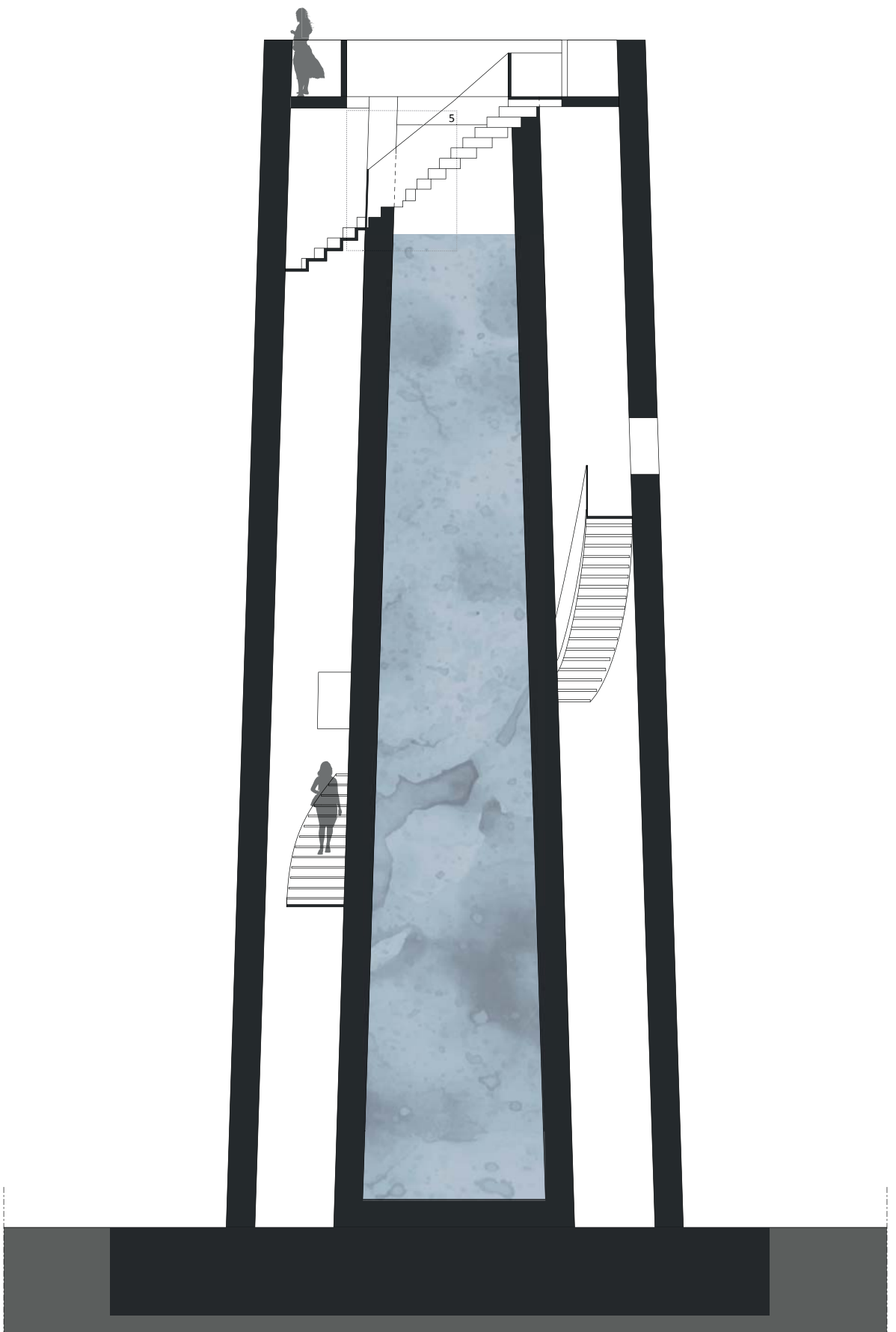
east



north

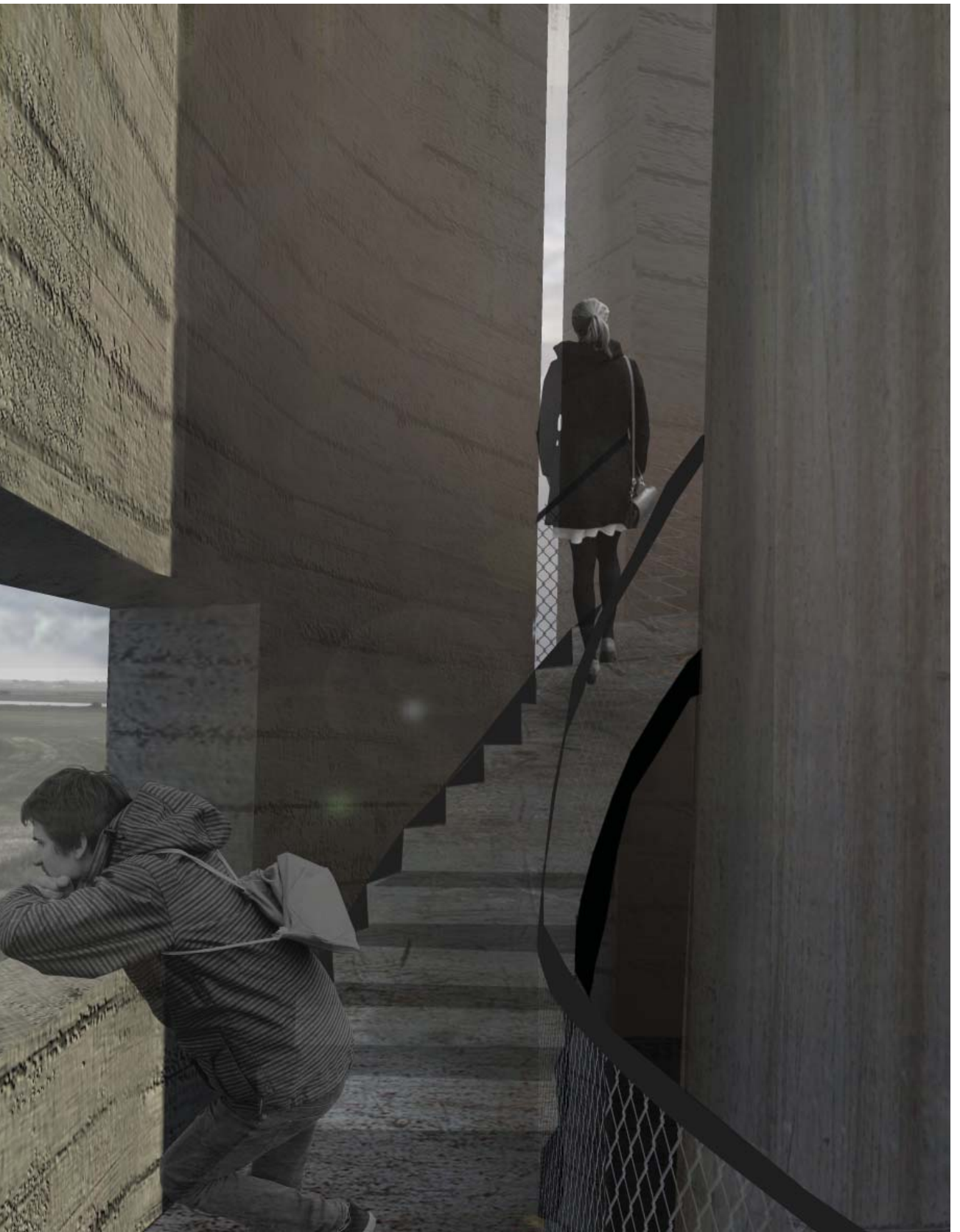


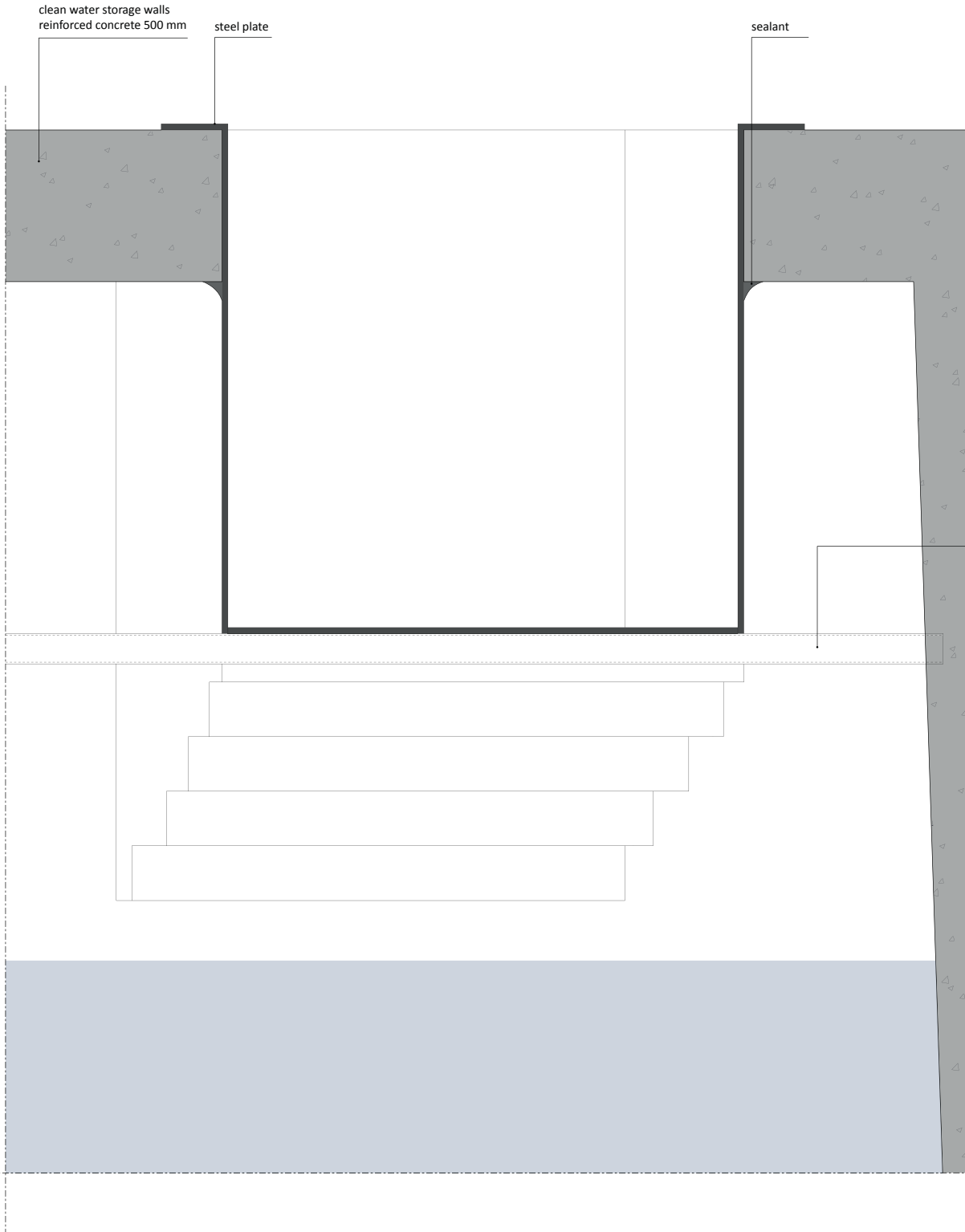
section AA' scale 1:100



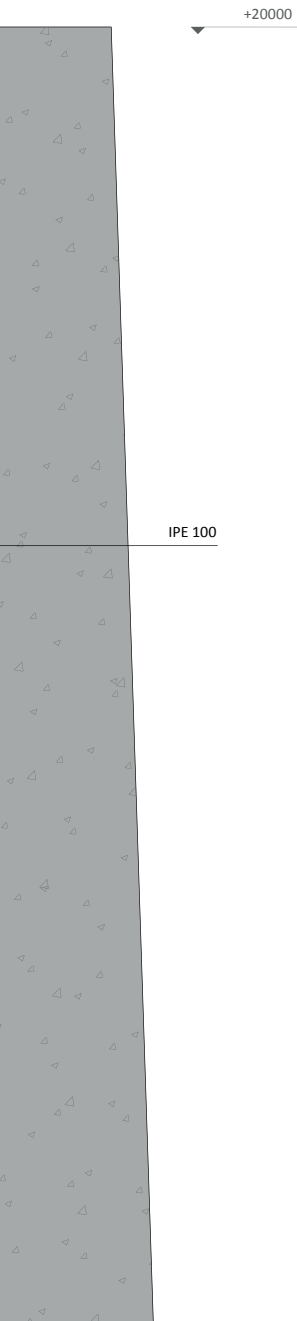
section BB' scale 1:100





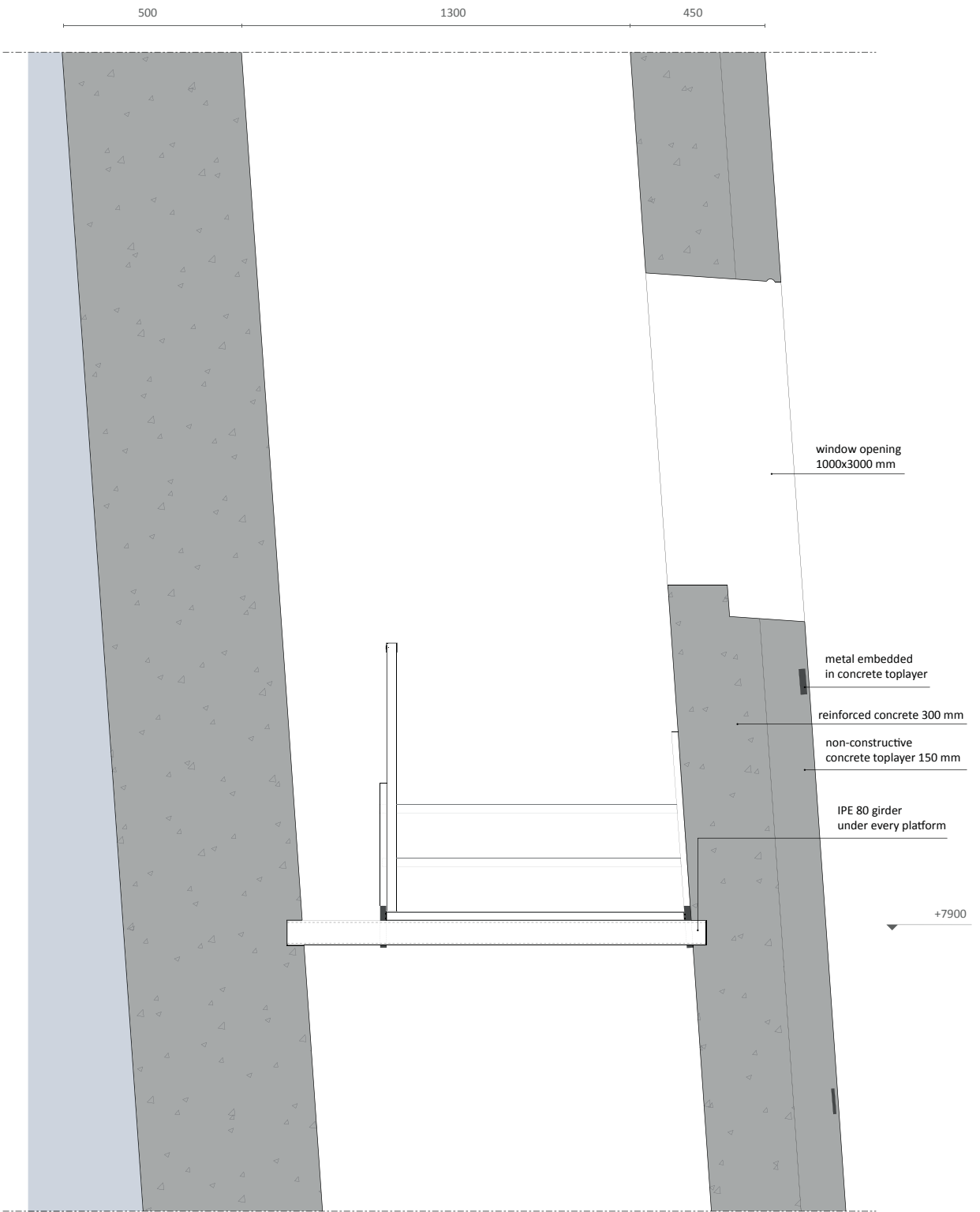


detail 1 scale 1:20 - stairs through the water -

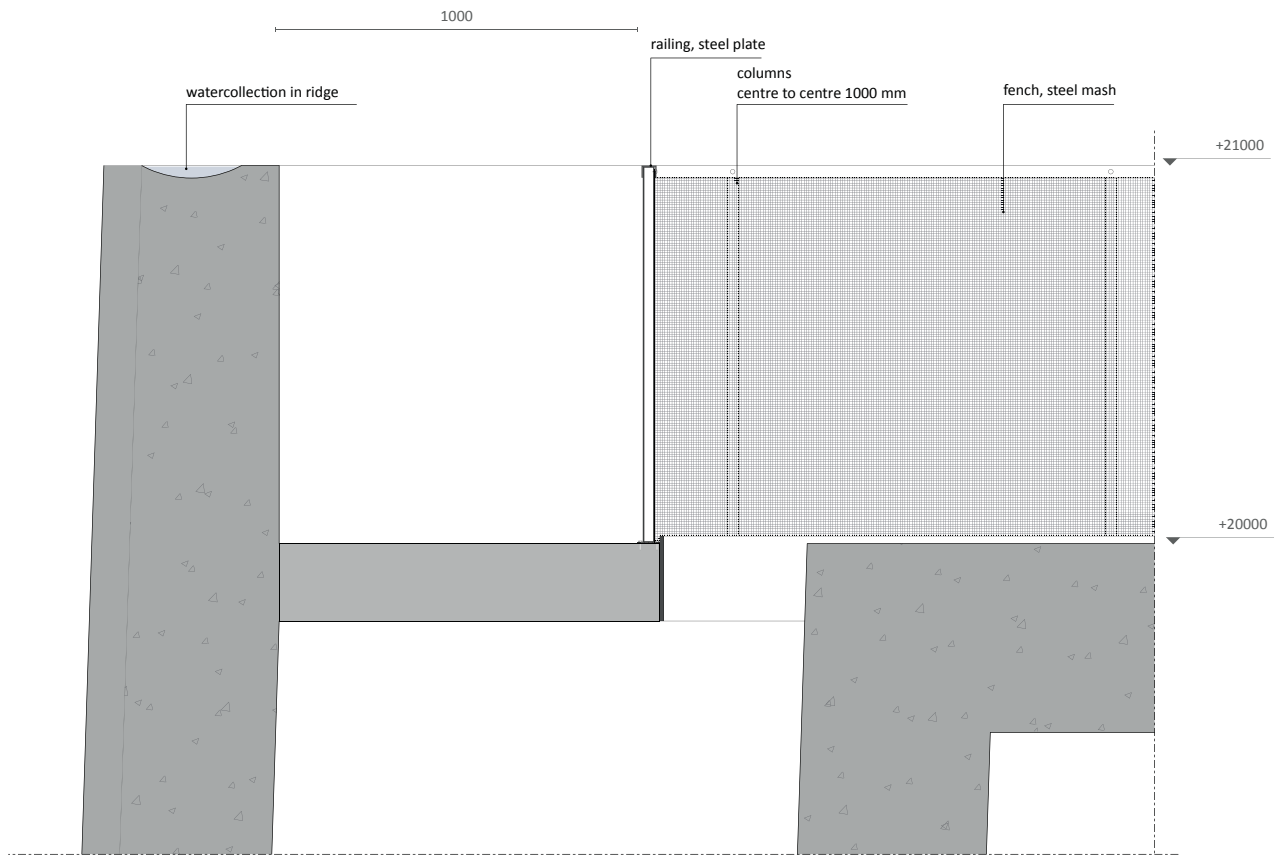


Details | Special features

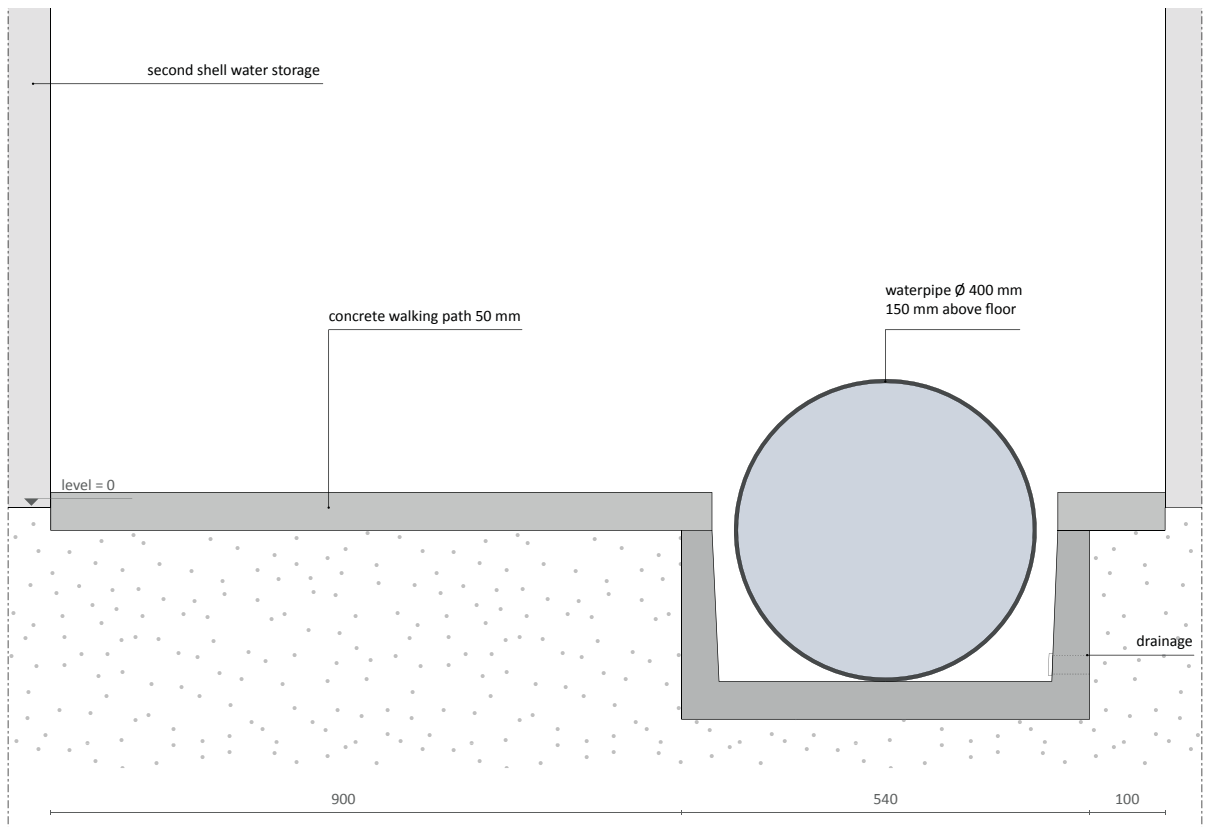
The shell is thick in situ concrete, which is constructed with a climbing form work. The shell will be poured in several layers, which, due to the every time slightly different compound of the concrete results in layers of concrete with different colours, which can be seen from the inside of the building. Placed on the outside of this shell is a second, non-constructive, layer of concrete in which different types of metal strips or pieces are embedded. The metal will cause erosion, which is also an indirect manifestation of water. The erosion will make the building slowly change its appearance. People will come back to see how the building looks the next year. The wall just beneath the window openings is thinner than other parts, offering a better and closer view outside (not with a half metre wide windowsill in between). The stairs are attached to the outer shell, with regularly a beam running between the shell and the water tower to provide extra support. It is an open stairway up to the last turn, then it will become a folded sheet of metal, which stops for a moment at the place where the stairs enter the water tower where the steps are a part of the water tower wall.



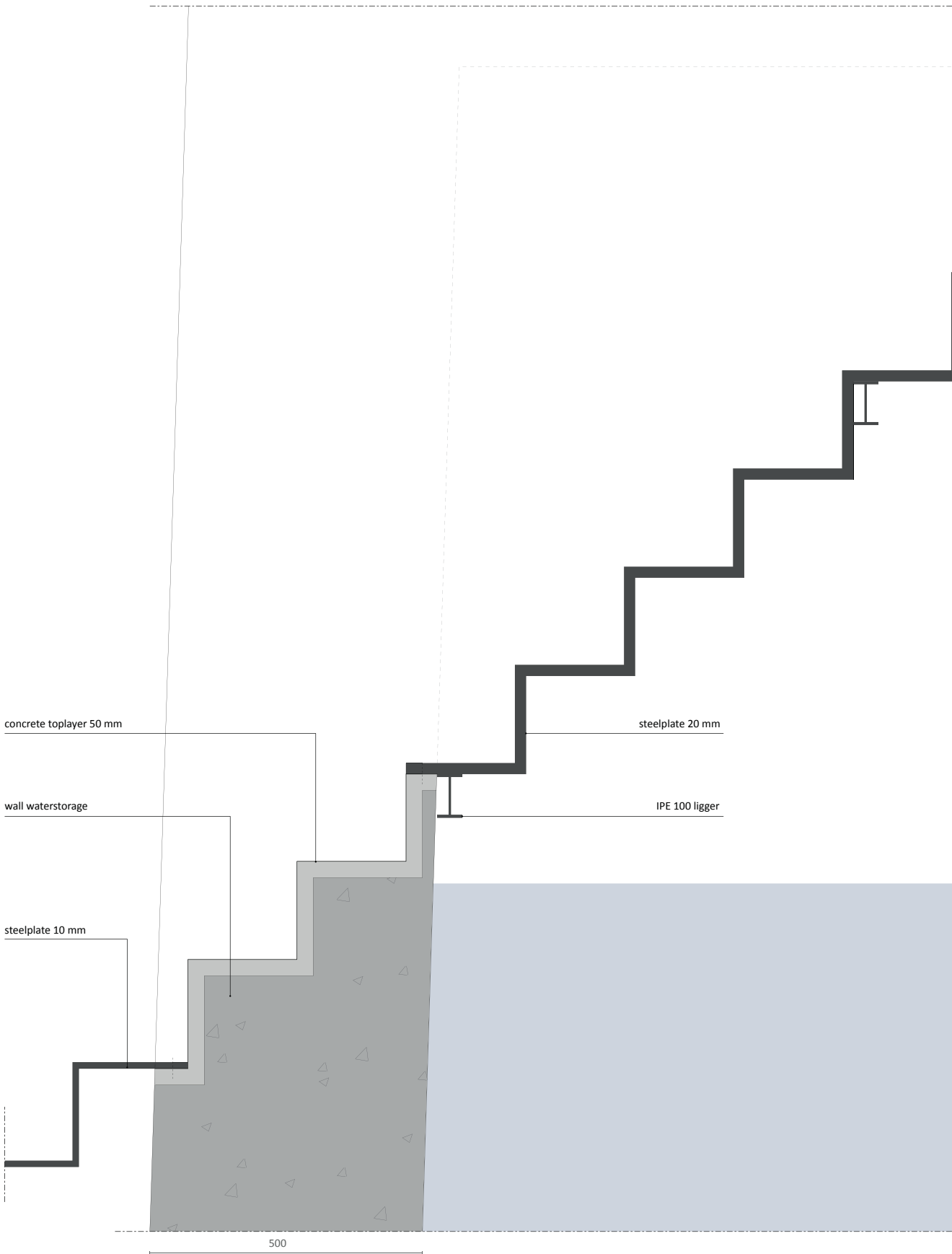
detail 2 scale 1:20 - stairs inbetween walls -



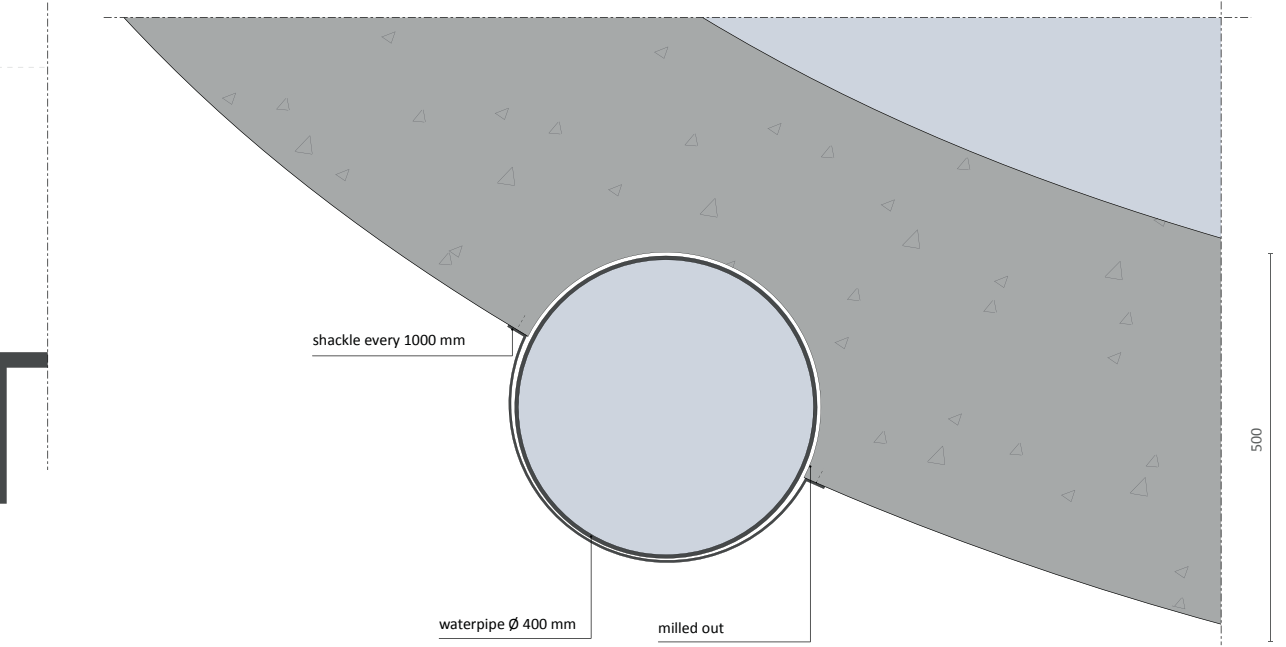
detail 3 scale 1:20 - railing and ridge at the top -



detail 4 scale 1:10 - entering of waterpipe -



detail 5 scale 1:20 - stairs entering the watertower -



detail 6 scale 1:10 - waterpipe going up the wall -

+17600





- After the dyke has made a slight turn to the right we see the next pumping station. This pumping station is also pumping the water in, however here it is collected in a basin behind the dyke and is mixed with a basin in which fresh rain water is collected, the water is now brackish and in the distance we see another building in the saline fields, some passer-by tells us this building converts brackish water into fresh. You can see the he is proud to live on this island with its innovations. From that building the water is going towards the fresh water line. We can already see the next pumping station down the dyke, not very far from this one. Soon we enter Oosterend and its harbour. Last night a storm crossed the island, therefore a large part of the harbour has flooded. The salt water stands as high as the first floor of the buildings in the harbour, the waves crash against the walls. The second to last pumping station is one which still pumps the fresh water from the ditches into the sea. We stand on top and see the fresh water flowing into the salt Wad Sea. Large amounts of brownish water from the ditches in the agricultural fields on the island streams into the Sea. We see in the distance 't Horntje where the ferry is docked, ready to take us back to the mainland.

We have walked the way of the water. From north to south and east to west, we have seen Texel, its landscape, innovations, machines and its water in all appearances. -





Conclusion

To answer the question *-How should architecture position itself between machines, landscape and society?*- I tried to design a new watersystem for Texel and asked the question *Can architecture be a tool to make the water cycle insightful, visible and people aware of the necessity for change?*

Architecture has always been the most stable of machines, landscape and society. Society has already been changeable and intangible since ancient societies. Machines are, under influence of process and innovation, more and more changeable. Landscape appear to be permanent, however this is only on a large and general scale. Landscapes are different every moment. This leaves us with architecture, the most touchable and understandable of the four.

Making something visible is not very difficult. However to make something which will create awareness, and will not only do that today, but also tomorrow and many years from now is more complicated. Architecture can offer the permanent and constant factor, but also needs some rules provided by society. Visibility is something which architecture becomes very quickly, since most people live their lives with architecture as a framework. Innovations in machinery which inhabit the factories is changeable. The most convenient thing to do it to build the factories in a similar way; changeable and not permanent. However, this creates not very infrequent, monstrosities of buildings. Additionally, things and humans need some focal point, something where the changeable and volatile things can float around. But architecture should not be forced in a dull and stagnant position due to the progress of other things. We should, also in architecture, pursue a fast and innovative way of building. However we should not completely abandon our stable and permanent beautiful buildings.

It is important that people are aware of the problem before anything can change concerning. It is easy to ignore something which is not visible. An island is a perfect place to test a new way of thinking, which later can be applied to other places. Texel will be the place for a new way of thinking about water and dealing with machines and factories. However, creating awareness is not something for which a standard recipe can be given. Time, place and culture are of influence. The future of machines and factories is a changeable one. Architects can create something physical and visible, thus in that way address a topic. Architecture can make a difference. Buildings surround us everywhere and therefore also are involved in every part and aspect of our lives. Architects are however not experts in every field, which gives them the possibility to look at things with an unprecedented freedom.

Architecture should position itself carefully in between landscape and machines. Most of the landscapes are already present before the building. The buildings should observe and adjust to every different landscape. Machines inhabit the buildings, which can, but should not always adjust itself to the machines which they offer shelter to. Since buildings are the every present component which society happens in and around, they can provoke thoughts or behaviour. Although not always or for everybody the same.

Texel is unique, just like any other place, therefore this waterline could not be implemented one on one in other locations. However, the way of thinking is possible to use for other places and situations. Always look at a bigger scale if there could be made links or connections. The role and position in the landscape should be observed and assessed for every factory and machine separately. The machines should always be linked in a convenient way. Dividing the machines of a production process in smaller buildings results in more flexibility for the process and a less large impact on the landscape. Factories should display something from the inside process. This can be a very small feature, however it helps people understand and therefore more aware of things. Society will provide rules for living in and around landscape, machine and architecture. Rules to determine when the time of the tourists is over on the island, or which functions can be linked in the system.

Change or awareness is unfortunately often difficult to achieve and not therefore most of the time not the result of architecture. Making things visible and therefore making people notice them is often the best thing architects can do. People can then give their own meaning to the building, sometimes heavy and meaningful, other times just the object in the landscape which the building actually is. For some people it will trigger change and awareness, for others it will do nothing. Even if an architect is in many cases not able to transform anything, they should approach every design as if they could change everything. This is where the paper architecture can be of use, it gives architects the freedom to believe they can change the world. Architects should believe they can really change something, but at the same time have the chance to sometimes make just something beautiful because they can and want to. Not everything in our world needs to be a sign in itself, neither for something else, nor for everybody the same.

This design is not the solution for the whole water problem, but it could make people think and appreciate the water we have more. Like René ten Bos states in his book: *“... water illustrates in all its appearances that it is what it is and also what it is not. One, who thinks the world in terms of water, knows that everything could also be different and perhaps not be at all.”*



Glossary

Black water | *type of wastewater coming from household toilets and therefore contaminated with feces or urine. Blackwater contains pathogens (everything that can produce disease) which must decompose before they can be released safely into nature again.*

Grey water | *type of wastewater which is not contaminated by feces. It comprises water from sources like sinks, showers, washing machine and dishwashers. It is easier to clean than black water and therefore reusable for toilet flushing and land irrigation.*

Yellow water | *type of wastewater which comprises of urine, therefore phosphates can be easier retrieved.*

Sewage water treatment | *process in which contaminants are being removed from wastewater coming primarily from households.*

Waste water treatment | *process in which contaminants are being removed from wastewater coming purely from industries. (this term is also used for sewage water treatment)*

Salinization | *process of the buildup of salts in soil. Plants do normally not tolerate high salt concentrations, making it unable for them to grow on these soils.*

Phosphorus | *chemical element which is mainly used for the production of fertilizer. The human body needs it for storage and transport of energy.*

Nutrients | *components in food which an organism needs to survive and grow.*

Reversed osmosis | *a water purification technology to turn seawater into drinking water by removing the salt from the water molecules.*

Irrigation | *the artificial application of water to the land*

Brackish | *type of water which has more salinity than fresh water, however not as much as seawater.*

Literature

Books

Bos, R. t., 2014. *Water*. 1st ed. Amsterdam: Uitgeverij Boom.

Hoekjen, H.-J., 2003. Architectuur heeft maatschappelijke relevantie. In: *Het architectenboek*. Inside Information .

King, P., as quoted by Auke van der Woud, 1989. *Wim Quist, Architect*. Rotterdam: Uitgeverij 010.

Koolhaas, R. & Mau, B., 2001. *S,M,L,XL*. Amsterdam: Taschen.

Papadakis, A., 1998. *The end of innovation in architecture*. 1st ed. Berkshire: Andreas Papadakis Publisher.

Safdie, M., 2009. *On Ethics, Order, and Complexity*.

Shepherd, P., 1994. *What is architecture? An essay on Landscapes, buildings, and machines*. Cambridge, Massachusetts: The MIT press.

Treib, M., 2009. *Spatial Recall: Memory in Architecture and Landscape*. New York: Routledge.

Verhulst, D., 2007. *De helaasheid der dingen*. Amsterdam: Atlas Contact .

Weibel, P., 2001. *Olafur Eliasson: Surroundings Surrounded; Essays on Space and Science*. Graz: Neue Galerie am Landesmuseum Joanneum .

Whiteman, J., Kipnis, J. & Burdett, R., 1992. *Strategies in Architectural Thinking*. Cambridge: The MIT Press.

Internet

Buchanan, P., 2015. *Architectural Review*. [Online]

Available at: <http://www.architectural-review.com/essays/empty-gestures-starchitectures-swan-song/8679010.article> [Accessed 15 June 2015].

Moore, R., 2011. *The Guardian*. [Online]

Available at: <http://www.theguardian.com/artanddesign/2011/oct/09/rem-koolhaas-oma-progress-barbican> [Accessed 10 June 2015].

Oosterling, H., n.d. *Over Architectuur*. [Online]

Available at: <http://www.henkoosterling.nl/lez-architectuur.html> [Accessed 10 May 2015].

Riach, J., 2014. *The Guardian*. [Online]

Available at: <http://www.theguardian.com/world/2014/feb/25/zaha-hadid-qatar-world-cup-migrant-worker-deaths> [Accessed 10 June 2015].

Teerds, H., 2012. *De Architect*. [Online]

Available at: <http://www.dearchitect.nl/blogs/2012/12/04/architectuur-en-literatuur.html> [Accessed 25 May 2015].

Tilman, H., 2014. *De Architect*. [Online]

Available at: <http://www.dearchitect.nl/blogs/2014/09/kan-architectuur-kwaad-doen/kan-architectuur-kwaad-doen.html> [Accessed 20 May 2015].

Tschumi, B. as quoted by Catharine Lie, 2013. *Urban Memory Archive*. [Online]

Available at: <http://modernutopias.wordpress.com/2013/12/05/urban-memory-archive/> [Accessed 5 October 2014].

Other

Delbeke, M., 2009. *De oorspong van goede architectuur* [Interview] (17 December 2009).

Kipnis, J. & Reinhold, M., 2010. *What good can architecture do*. Cambridge: Harvard GSD [Lecture]

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what	part of system	amount	function
basin type 1 <i>agricultural basin</i>	vessels	many	water collection for agriculture purpose
basin type 2 <i>drinking water basin</i>	life line	1	collecting and storing water for the drinking water production
basin type 3 <i>camping basins</i>	veins	± 6	collecting water in winter and pre-treating grey water in summer
basin type 4 <i>reversed osmosis basins</i>	veins	± 4	mixing the pumped salt water with fresh water, creating brackish water
drum screens	life line	1 building 3 elements	filtering out large parts like twigs, plastic, etc
resin beats conectors	life line	1 building 1 line 6 elements	connecting dirt to resin beats
lamellae separators	life line	1 building 3 elements	separating water form dirt
sand filtration	life line	1 building 1 elements	filtering out last dirt particles
hydrogen peroxide treatment	life line	1	killing bacteria
UV treatment	life line	1 building 1 line 5 elements	killing bacteria
active carbon filter	life line	1 building	filtering out last dirt parts
pump type 1 <i>pre-treatment > dune infiltration ponds</i>	life line or veins	1 building 3 elements	pumping water
pump type 2 <i>dune infiltration ponds > post-treatment</i>	veins	-	pumping water
pump type 3 <i>treated water basin > user</i>	life line or veins	1 building 3 elements	pumping water
pump type 4 <i>Wad Sea > reversed osmosis basin</i>	veins	4	pumping water
ceramic membrane filtration	life line	1 building 3 elements	filtering out dirt

landscape	building specifications	water time	after building	before building
agricultural land <i>accessible for farmers and their irrigation system</i>	± 4000 m ² per ha cheap	varying <i>depending on rainfall and growing season</i>	precipitation	irrigation
adjacent to natural fresh surface water	$\pm 10\,000$ m ² very large and deep	weeks <i>depending on rainfall</i>	precipitation and lifeline	drum screens
campings	± 400 m ² adjustable and movable	varying <i>depending on rainfall and high or low season</i>	precipitation	constructed wetlands
sea and salt or brackish land	± 1000 m ² connected salt and fresh water basin	days	pumping station	reversed osmosis installation
-	<i>machine: 4.2 x 4.2 x 1.9</i> can be in floor surface	minutes	basin type 2	resin basins
-	<i>machine: 2 x 2 x 6 meters</i> eight sided high towers	day	drum screens	lamellae separators
-	<i>machine: 2.3 x 1.2 x 2 meters</i> infundibular shape	minutes	coagulation basin	sand filtration
-	<i>machine: 6.6 x 3 x 6 meters</i> basin with sand	day	lamellae separators	hydrogen peroxide treatment
-	can be included in pipe	seconds	sand filtration	membrane filtration or dune infiltration ponds
light visible?	<i>machine: 7.2 x \varnothing0.9 meters</i> 5 elements attached to pipe, ± 0.7 meter from ground	seconds	hydrogen peroxide treatment or membrane filtration	active carbon basin or post treatment
-	<i>machine: 6.6 x 3 x 6 meters</i> basin with carbon	hours	UV treatment	dune infiltration ponds
-	<i>machine: 2.7 x 1.2 x 1.5 meters</i>	seconds	active carbon basin	dune infiltration ponds
dunes	<i>machine: 2.7 x 1.2 x 1.5 meters</i>	seconds	dune infiltration ponds	post treatment
-	<i>machine: 2.7 x 1.2 x 1.5 meters</i>	seconds	treated water basin	user
sea	existing pumping stations	seconds	Wad Sea	reversed osmosis basin
-	<i>machine: 2 x \varnothing2.5 meters</i> vessel with 200 ceramic membrane filters (1.5 x \varnothing 0.18 meter)	minutes	hydrogen peroxide treatment	UV treatment

what	part of system	amount	function
treated water storage basin	life line	1 building	storing
brewery	veins	1	brewing beer and bottling Texel water
round tank type 1 <i>waste water treatment (brewery)</i>	veins	1	cleaning waste water from brewery with algae
round tank type 2 <i>activated sludge collector</i>	veins	1	bacteria break down the fats, proteins and carbohydrates
round tank type 3 <i>sedimentation tank</i>	veins	1	bacterial activated sludge is separated from the waste water
nutrient recovery	veins	1	recover usefull nutrients from restproducts
sludge thickening	veins	1	extract water from sludge
anaerobic tank	veins	1	development of phosphate-accumulating bacteria
large part removal	veins	1	removing of large parts like paper, diapers, clothes, etc.
storage type 1 <i>nutrients</i>	vessels	multiple	storing recovered nutriens for agricultural use
storage type 2 <i>sludge</i>	vessels	1	collect and store sludge from sewage treatment
storage type 3 <i>seasonal urine collection</i>	vessels	multiple	collect and store urine from campingsites
reversed osmosis installation	veins	4	turn brackish water into sweet water
'natural' elements type 1 <i>constructed wetlands</i>	life line or veins	variable	last water cleaning step
'natural' elements type 2 <i>dune infiltration ponds</i>	-	-	filtrating the pre-treated water
'natural' elements type 3 <i>saline testing grounds</i>	veins	multiple	testing saline tollerating crops

landscape	building specifications	water time	after building	before building
central	$\pm 1000 m^3$ large visible building	2-3 hours max 24 hours	post-treatment	user
hop and barley fields	-	-	treated water storage basin	waste water treatment basin
-	$\pm \varnothing 30$ meters circular	days	brewery	nutrient recovery
-	$\pm \varnothing 40$ meters depth ± 6 meters circular, middle part closed	-	anaerobic tank	sludge thickening
-	$\pm \varnothing 40$ meters circular, open	-	activated sludge reactor	constructed wetlands
-	machine: $\varnothing 3.25 \times 10$ meters infundibular shape	-	waste water treatment basin or sludge thickening	nutrient storage
-	machine: $\pm 4 \times 1.6 \times 1.5$ meters	minutes	activated sludge reactor	nutrient recovery or sludge collector
-	machine: $\pm 25 \times 8 \times 2.2$ meters closed	hours	large part removal	activated sludge reactor
-	machine: $\pm 3 \times 3 \times 5.2$ meters closed	minutes	sewage	anaerobic tank
agricultural land	-	varying <i>depending on fertilising season</i>	nutrient recovery	-
accessible for trucks	closed	varying, weeks <i>depending on amount of sewage water</i>	sludge thickening	-
campsites	transportable and remov- able	varying <i>depending on amount of tourists</i>	-	nutrient recovery
brackish or salt ground	machine: $\pm 4 \times 1.6 \times 1.5$ meters	-	reversed osmosis basin	vein
-	large area available	weeks	sedimentation tank or grey water treatment or waste water treatment	water basin or lifeline or veins
dunes	large area available	8 - 12 weeks	carbon filters (pumps type 1)	extraction wells (pumps type 2)
brackish or salt agricul- tural area	-	years <i>depending on grow seasons of crops</i>	reversed osmosis basin	-