Heighten the Cliff

Enhancing the Experience of a Place
Through an Architectural Intervention

Daniel Krabbe

Master's Thesis in Architecture & Urban Design
Chalmers Uniersity of Technology

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Department of Architecture & Civil Engineering
Matter Space Structure Studio

Examiner: Morten Lund
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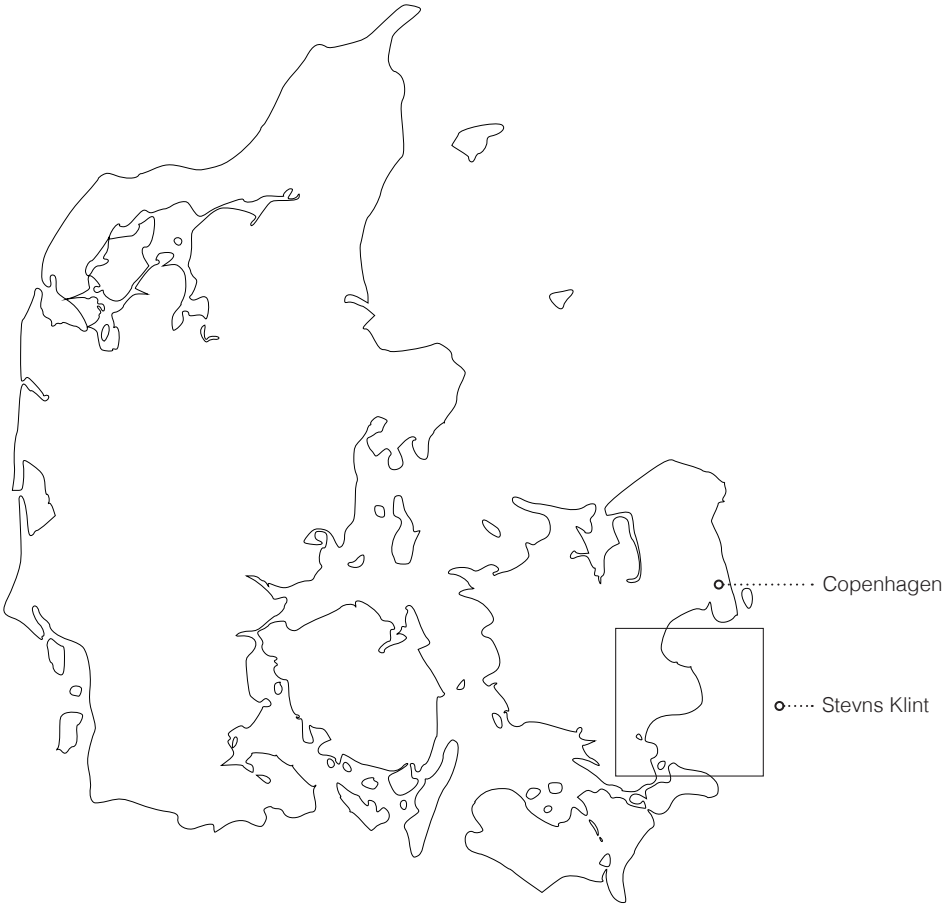
CHALMERS


Copenhagen
Stevns Klint

Abstract

Denmark's coastlines have for centuries been part of the country's strongest tourism potential. Over the past decade however, tourism has become increasingly competitive and international demands for Danish coastal vacations have consequently declined. Comparatively, holidays in Denmark are widely considered expensive and thus, its coastal competitiveness must be based on expected yet evidently missing superior experiences. Coincidentally, Danish coastlines have for almost a century been protected against any developments. It describes an overlooked opportunity of implementing architecture to accentuate the settings, but also a national desire to preserve their natural attraction. Therefore, the purpose of this thesis is to challenge the protection act by investigating how an architectural intervention can enhance the experience of a place by accentuating its existing atmosphere.

Stevns Klint is an eastern coastal cliff-line along the island of Zealand that in 2014 was appointed to UNESCO due to its geological importance. The cliff harbors successional layers of exceptional exposure that tells of how Earth has changed throughout millions of years. This narrative is amplified by the site's present and future situations, as coastal erosion and fluctuating weather constantly change it.

The site is nevertheless almost unknown outside of Denmark. The current facility is mostly ignored because of its seclusion from the coastline and visits are generally short due to barely any encouragement to explore the site. Most visitors are thus oblivious to the phenomena that would otherwise amplify the narrative and experience. Hence, this thesis aims to explore the architectural potential of accentuating the site's atmosphere as a narrator of Earth's ever-changing situation by illuminating its dynamic setting.

The resulting proposal is a journey along the cliff between four diverse structures that prolong the experience and serves the purpose of narrating the dynamic situations through their placement in the landscape and by illuminating the weather. The outcome is a thesis that challenges the implementation of otherwise conventional architecture bound to shelter yet distance visitors from the site, instead proposing a physical and mental journey that uncovers its phenomena, thereby presenting the architectural potential of bringing visitors closer to the cliff's dramatic past, present and future.

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"Daily it is forced home on the mind of the geologist that nothing, not even the wind that blows, is so unstable as the level of the crust of this Earth."

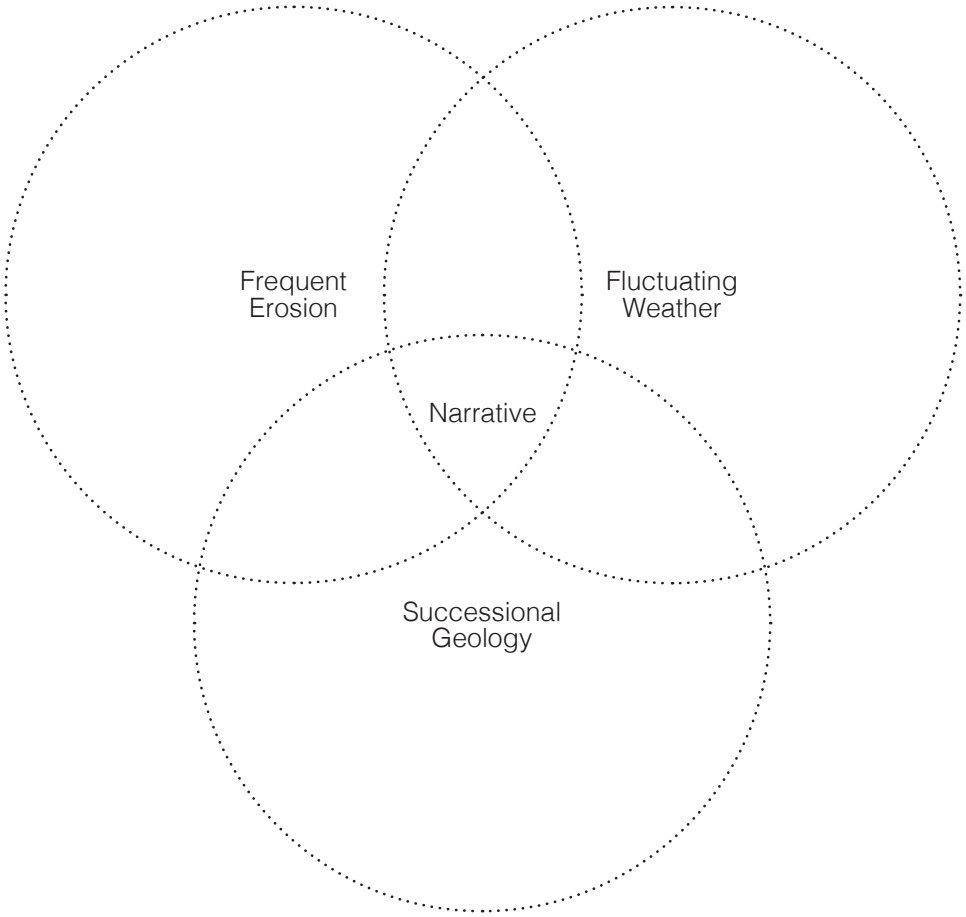
Charles Darwin
The Voyage of the Beagle, 1839.

With today's environmental challenges, it is more evident than ever that Earth is in fact dynamic and ever-changing. Stevns Klint is a physical evidence of this. The geological succession of layers that are frequently eroded by the drastic fluctuations in Danish weather, does not only tell of Earth's changes throughout millions of years, but also its present and future situations.

It is a dramatic narrative that is nevertheless hidden in plain sight for the mere few international visitors that find their way there. The wish of this thesis is therefore to reveal this seemingly hidden narrative, subsequently exposing Stevns Klint to the outside world and attract visitors from oversea.

Stevns Klint is an elevated yet flat and exposed environment. Together with the fluctuating Danish weather, each visitor is consequently open and potentially aware of the elements of nature. Commonly, visitors would to a certain degree wish to be sheltered from the elements. To completely shelter is however to distance oneself from the site's natural attraction and narrative.

That is why the architecture of this thesis is ambiguously proposed to both shelter yet integrate and enhance certain elements of nature. The architecture has accordingly been designed to be robust enough to withstand the daily forces of nature.


Frequent
Erosion
Fluctuating
Weather
Narrative
Successional
Geology

This thesis begins its point of departure in Danish tourism, which for the past decade has been stagnating in an increasingly competitive market. As with most countries, tourism in Denmark is a major economical contributor and plays an important part in creating national growth, revenue and work. The stagnation is therefore troubling, but it also tells of a dual reality. While the international demand for Danish coastal vacations has significantly declined, tourism in the capital of Copenhagen is in fact among the quickest-growing in Europe. This means that the country is not only loosing market shares, but also that its capital is put under pressure to sustain the whole national tourism industry.

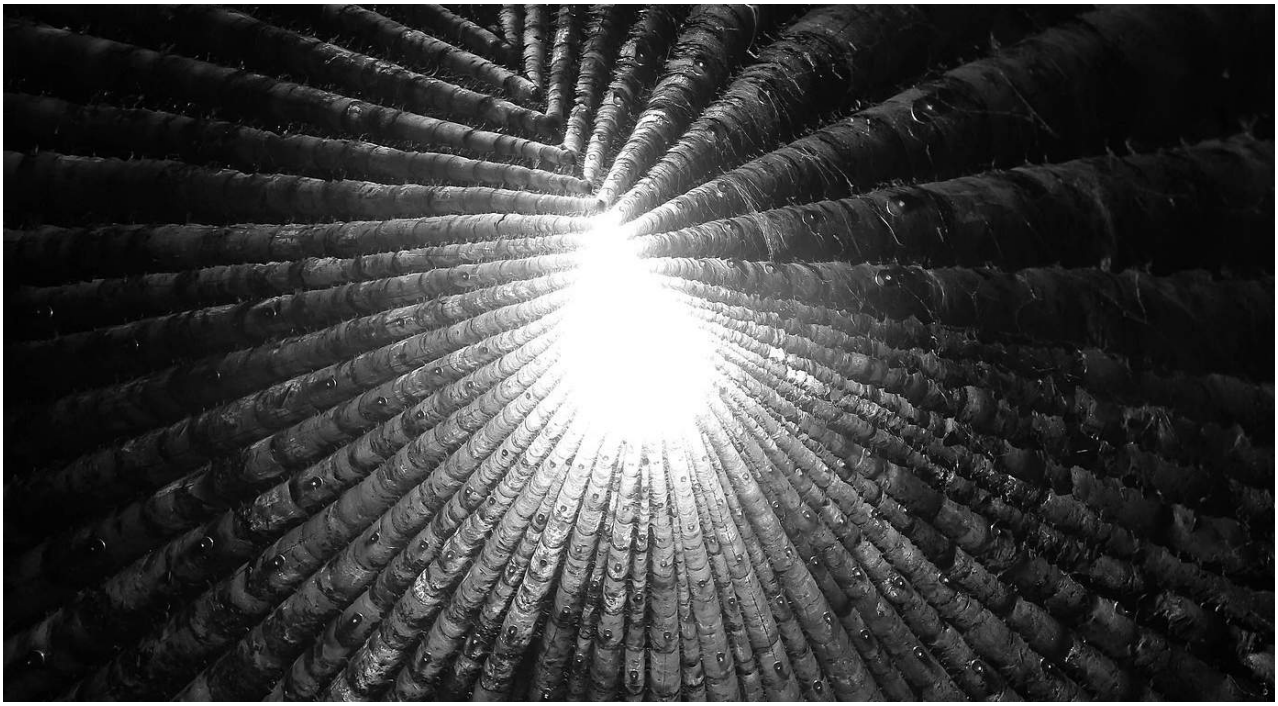
In correlation with the protection act that has kept the national coastline unexploited for almost a century, this thesis concurs with the standpoint of the current Danish Government that an architectural intervention could boost the attraction. Nevertheless, the ten developments that have been accordingly appointed as potential exemptions have sparked a national debate with protestors arguing that exploitations is only bound to pollute the essential coastal appeal, being their natural attraction. The argumentation appears to be based on the implementation of conventional architecture, which is bound to shelter yet distance visitors from the site's weather and nature. On the contrary, this thesis believes that architecture has the potential to bring visitors closer to the site, and aims therefore to investigate how an architectural intervention can enhance the coastal experience by accentuating its existing atmosphere, accordingly advocating a nationally and sustainable tourism industry.

Stevns Klint is among the appointed developments and is no exception to the natural attraction of coastal Denmark. What makes the experience of the site nonetheless potentially exceptional is its seemingly hidden narrative of an ever-changing Earth, which is derived from its successional geology, frequent erosion and fluctuating weather. Illuminating this dynamic setting and subsequently accentuating its narrative has hence been an important criterion if an architectural intervention is to boost the experience.

The changes that occur daily are not however so easily grasped during a short-term visit. That means that the scale of the facilities, the distance between them and the time spent at the site needs to be expanded. This argues for a distribution of facilities, which furthermore ensures that the desired increase of tourism does not pollute the experience and is ultimately the reason why this thesis proposes a journey along the cliff between four diverse structures that each in their own exposes the phenomena and subsequently the narrative of the place.

Heighten a Narrative

References



Bruder Klaus Field Chapel

Peter Zumthor

With this small chapel, Peter Zumthor demonstrates that a strong sense for materiality and construction can achieve a sensuous piece of architecture. The construction was built by local farmers on an open field near the German town Mechernich and began with a wigwam made of local tree trunks on which rammed layers of concrete were poured atop. Once the concrete had hardened, the wooden frame was set on fire, leaving behind a tall hollowed cavity with a skylight and charred walls.

While the chapel's method of construction is arguably its most outstanding aspect, the point of interest lies in its resulting spatial quality. The tall structure is entirely open to the sky and the elements yet has a scarcity in light that only strengthens the necessity and presence of the fluctuating daylight within the dark interior. When it moreover rains, the direction of the wind is also illuminated by which side of the enclosure that stays dry. The ambience of the chapel is therefore dictated by the external forces of weather. Each visit to the chapel will never be the same.

References

Can Lis

Jørn Utzon

With this summer residency, Jørn Utzon manages with a strong sense of materiality to achieve a translation of architectural heritage that goes beyond just the telling of a local material and building method.

The residency is located on Mallorca, which is a Spanish island dotted with houses constructed with a traditional building material known as the marés sandstone. The outer walls and columns in Can Lis have reinterpreted this local material and building method into a contemporary cavity wall construction. Interestingly, the chipped sandstone shifts from sharp to rough surfaces due to its porous stone corroding at an extended amount of exposed areas. These traces of weathering and passing of time gives an impression of impermanence but gives also a broader sense of the place through telling of its climate.

References

Teshima Art Museum

Ryue Nishizawa & Rei Naito

This collaboration between architect Ryue Nishizawa and artist Rei Naito demonstrates how architecture, art and nature can come together in harmony. The museum is located on the scenic Japanese island of Teshima and resembles at first glance of a water droplet at the moment of landing.

The structure consists of an open space gallery that is solely constructed by a thin concrete shell of which two elliptical skylights allow wind, rain and light to enter the interior. Moreover, the surface of the floor is speckled with pinholes in which moisture from water underground seeps through. Consequently, seemingly random accumulations of water dances across the floor, but is in reality guided by the wind that enters the space through the two openings.

”To some extent the character of a place is a function of time, it changes with the season, the course of the day and the weather, factors which above all determine different conditions of light.” (Norberg-Schulz, 1980, p. 14)

”To gain an existential foothold man has to be able to orientate himself; he has to know where he is. But he also has to identify himself with the environment, that is, he has to know how he is a certain place.”
(Norberg-Schulz, 1980, p. 19)

”Man-made places are related to nature in three basic ways. Firstly, man wants to make the natural structure more precise. That is, he wants to visualize his ”understanding” of nature, ”expressing” the existential foothold he has gained. To achieve this he builds what he has seen…Secondly, man has to complement the given situation, by adding what is ”lacking”. Finally, he has to symbolize his understanding of nature (including himself). Symbolization implies that an experienced meaning is ”translated” into another medium. A natural character is for instance translated into a building whose properties somehow make the character manifest.” (Norberg-Schulz, 1980, p. 17)

”The existential purpose of building (architecture) is therefore to make a site become a place, that is, to uncover the meanings potentially present in the given environment.” (Norberg-Schulz, 1980, p. 18)

”The man-made environment where he lives is not a mere practical tool or the result of arbitrary happenings, it has structure and embodies meanings. These meanings and structures are reflection of man’s understanding of the natural environment and his existential situation in general. A study of man-made place therefore ought to have a natural basis: it should take the relationship to the natural environment as its point of departure.” (Norberg-Schulz, 1980, p. 50)

Genius Loci: Towards a Phenomenology of Architecture

Christian Norberg-Schulz

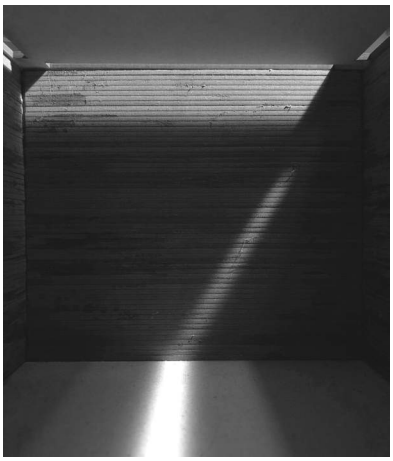
The term Genius Loci translates to spirit of place and refers to the distinctive atmosphere of a location. Within this book, Christian Norberg-Schulz attempts to address its importance to the existential foothold and where it can be identified within the built environment.

The author's main concern lies within the relationship between nature and the man-made, in which he argues that architecture has the possibility and responsibility to gather the properties of a place in order to give a richer comprehension of a location.

References

Heighten the Weather

Architectural Investigations

	Cloudy Sky	Transitional Sky	Clear Sky
Centered Aperture			
Clustered Aperture			
Flanked Aperture			

Illuminating Daylight Through Contrast

The sky in Denmark fluctuates daily between clear skies and overcast. A study was therefore conducted on how to enhance the presence of daylight and its shifting illuminance by contrast of darkness.

Different types of limited apertures with scarcity in light were accordingly studied by changing illuminance.

Each of the apertures achieved a strong presence of daylight, which increased in the moment when the illuminance shifted.

Cloudy Sky

Transitional Sky

Clear Sky

Elongated Aperture

Untainted & Matte

Crushed & Glossy

Locally Sourced Flint

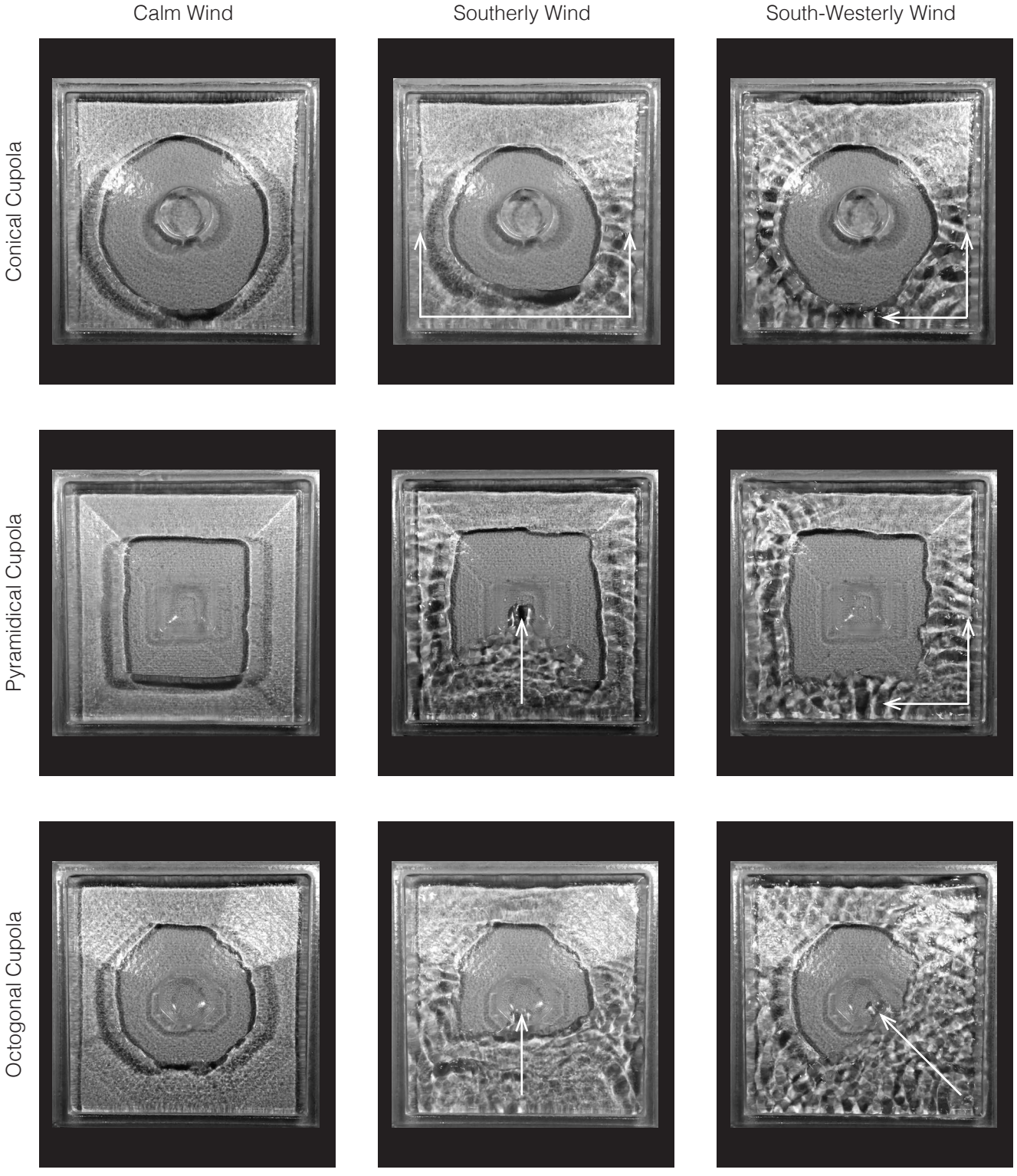
Concrete Cast Embedding

Illuminating Daylight Through Surface Reflection

The following study was derived from a wish to work with a local material. An interest was found in the stretches of flint found along the beaches, as it was discovered that its interior has a waxy surface that reflects light.

The flint was accordingly casted onto the surface of concrete, embedded untainted on the exterior and crushed on the interior.

The resulting material has a marble of reflective surfaces, which illuminates the presence of daylight one step further.


Calm Wind
Southerly Wind
South-Westerly Wind
Conical Cupola
Pyramidical Cupola
Octogonal Cupola

Materializing Wind Through Water

The daily fluctuations in the Danish weather is due to changes in wind direction and speed. A study was therefore conducted on how to illuminate the changing properties of wind by materializing it through its impact on other mediums.

The impact of wind on the body of water was accordingly studied through different shapes of rain-collecting copulas, which were based on allowing gusts of water to intrude through the oculus, thereby informing of the prevailing yet shifting wind direction.

In short, cupolas with octagonal shape are the preferable choice as they inform more elaborately.

Heighten Stevns Klint

Site & Context


Bøgeskov
Holtug Quarry
Stevns Nature Center
Stevns Quarry
Stevns Light-house
Højerup
Stevns Fortress
Boesdal Quarry
Rødvig
Stevns Peninsula 1:60 000

Stevns Klint is an eastern coastal cliff-line along the Danish island of Zealand that stretches twenty kilometers from Rødvig in the south to Bøgeskov in the north. The whole cliff-line is accessible through a simple pathway known as Trampesti, which connects many attractions that tells of how humans throughout history has interacted with the cliff.

The cliff first arises from Rødvig in the south, which is a small port town from where both train and highway leads to the capital Copenhagen within an 1,5-hour drive.

Nearby lies the Boesdal Quarry wherefrom limestone has been extracted since 1920. The quarry tells a part of the cliff's rich industrial history but is nonetheless abandoned today and stands like an open wound in the landscape. All that remains are the ruins of two kilns and a large pyramid-shaped structure for previous storage.

Further up north lies the Stevns Fortress, which tells of the cliff's territorial importance towards the Baltic Sea both during the Cold War but also the former warfare against Sweden. The fortress features an underground system of tunnels that has been excavated through the cliff.

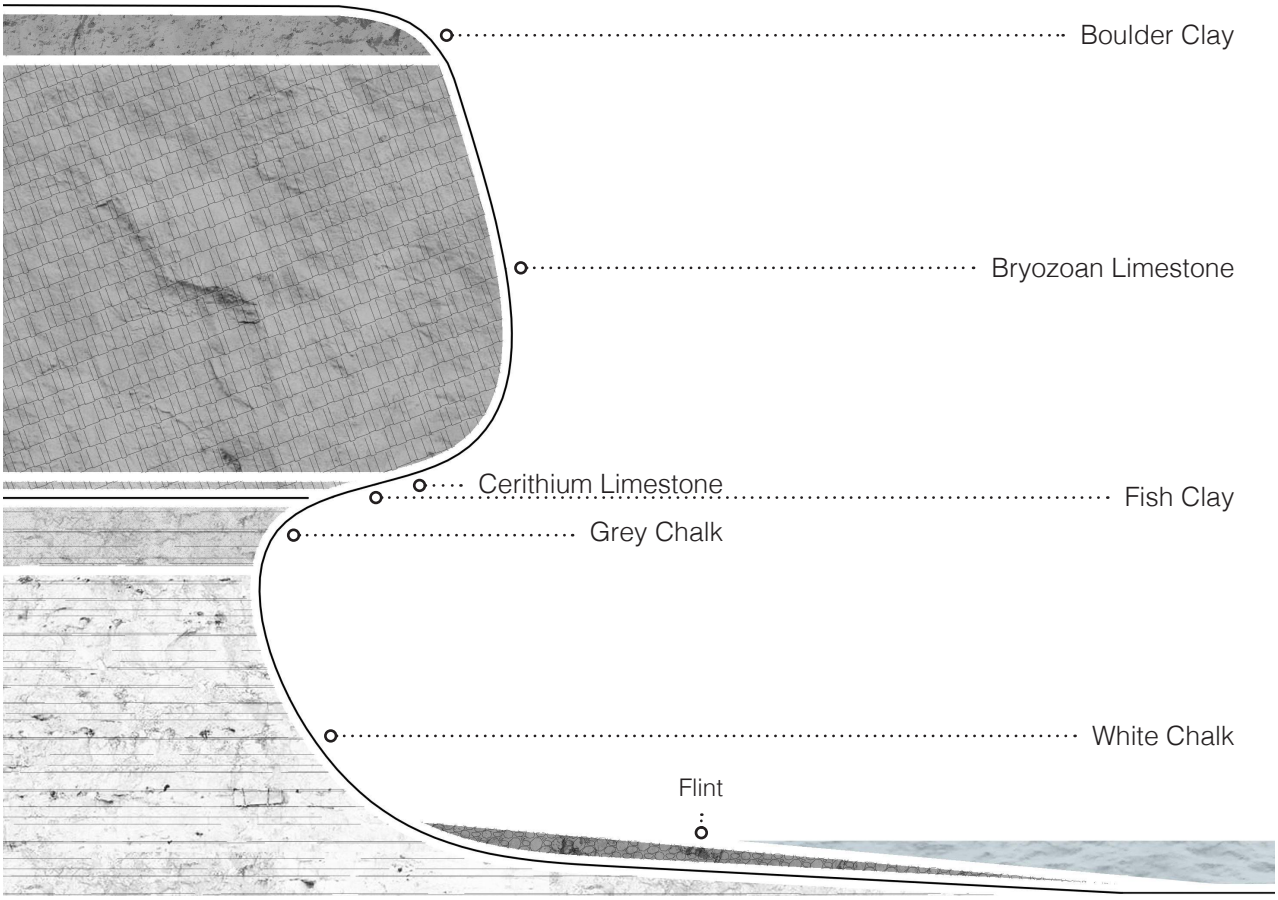
Continuing along the pathway leads to the outskirt of the village Højerup. The village is officially the present location to experience Stevns Klint. In distance from the cliff lies Stevns Museum, which provides visitors with information regarding its geology and paleontology. The most popular attraction is nevertheless Højerup Old Church. It was built in the 13th century with limestone that was extracted from the cliff. The sea has since then continuously eroded the cliff and ultimately in 1928 the choir of the church was overthrown. The church has since then been secured with a concrete base as well as a wave breaker and offers a great view as it stands on the extreme edge of the cliff.

North of Højerup lies the highest point of the cliff. Together with a twenty-seven meter climb up Stevns Lighthouse, this location offers a great aerial view.

Thereafter follows two additional quarries that further contributes to the cliff's rich industrial history. Stevns Quarry is first encountered and is the only quarry that is still active on the peninsula. Holtog Quarry is later encountered and is abandoned since 1972. It has since then been reclaimed by nature and has as a result developed a unique wildlife and flora.

In between the two quarries lies Stevns Nature Center, which provides visitors with information regarding the rich wildlife and flora of the region.

The pathway ends in the small fishing harbor Bøgeskov Havn from where the cliff sets and is replaced by woodland.


Boulder Clay
Bryozoan Limestone
Cerithium Limestone
Fish Clay
Grey Chalk
White Chalk
Flint

The geological layers of Stevns Klint have formed the landscape throughout millions of years by successional yet varying sedimentary materials, and the layers continue to do so as they are partly the reason for the frequent erosion and changing coastline.

The most exceptional layer is the 10 cm thinly grey line of meteor ash that was formed 65 million years ago whereby Earth was struck by the catastrophe that wiped out two thirds of all species. Despite that its named Fish Clay, fossils are rare within this layer. Instead it has a high content of Iridium, a rare element on Earth but commonly found in meteorites, which concluded that the latter was the cause for the catastrophic effect.

The fish clay hence marks a clear boundary between the two geological periods Cretaceous and Danian, moreover shown through their geological differences in respectively chalk and limestone.

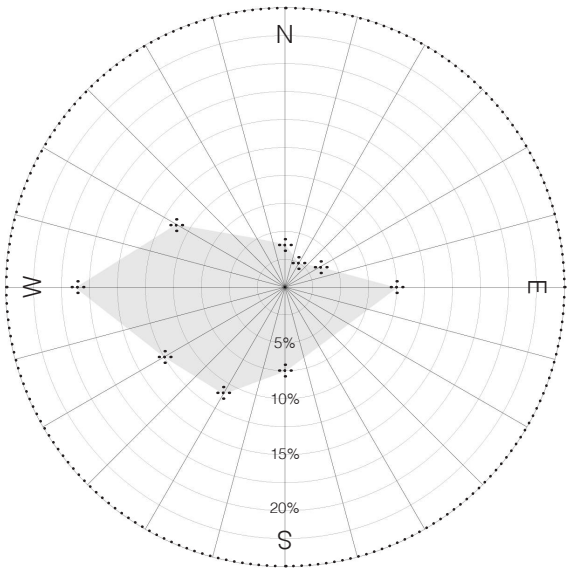
The limestone forms the upper part of the cliff and is made up by the remains of colonial skeletons of tiny animals that are known as bryozoans.

The chalk forms the base and is made up by microscopic shells from tiny algae. It is brightly white and is so soft that it marks one's hand when touched. The softness of the chalk is the reason why the cliff has a characteristic anvil profile and is constantly eroding.

Horizontal layers of flint are also found in-between both materials and were formed by chemical precipitation in voids and on the seabed. Stretches of uncovered flint are consequently what forms the beaches along the cliff.

Average	Temperature (°C)	Sunshine (Hours)	Precipitation (mm)	Precipitation (Days)
Jan	- 0.1	42	46	11
Feb	0.0	63	31	8
Mar	2.5	107	38	9
Apr	6.3	164	38	8
May	11.5	217	43	8
Jun	15.0	218	49	8
Jul	16.2	201	62	10
Aug	16.3	194	59	9
Sep	13.3	137	56	9
Oct	9.5	96	52	9
Nov	5.0	56	60	12
Dec	1.8	50	53	11
Yearly	8.1	1546	584	113

Prevailing Wind

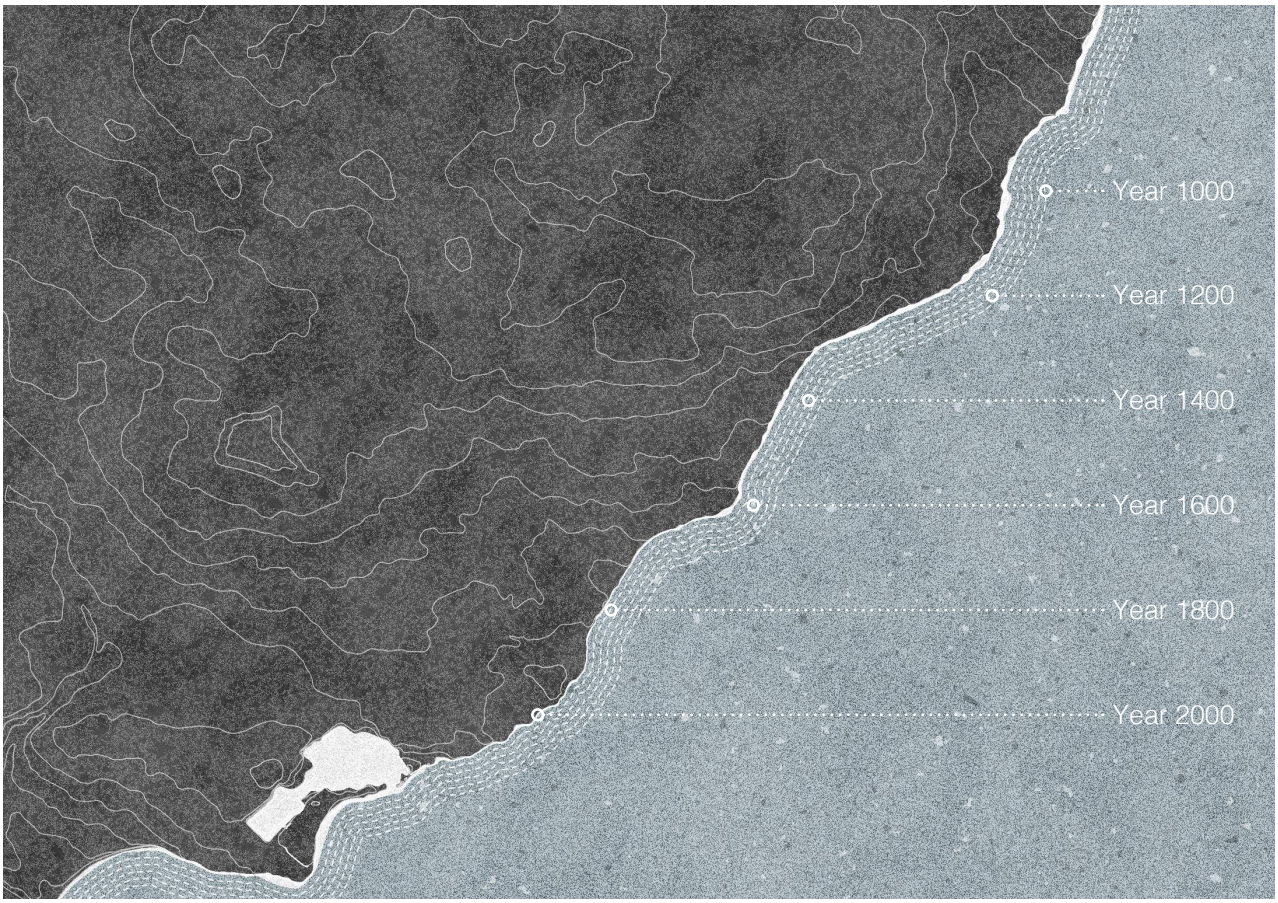


Danish weather is extremely changeable. This is because it is strongly influenced by the country's proximity to both the ocean and the European Continent. This means that the weather changes according to the prevailing wind direction. Thus, together with the season, they are the key factors in describing Danish weather.

The predominant westerly wind from the ocean brings relatively homogeneous mild weather but is always accompanied by clouds, which are often with rain or showers. If the wind comes however from the east or south, the Danish weather tends to resemble what prevails on the continent, which is cold winter but sunnily hot summer. The northerly wind is least frequent and it makes a great difference if it comes from the east or west. They both more closely resembles a colder and drier version of either the typical easterly wind for the former and the typical westerly wind for the latter.

The predominance of the westerly wind also means that overcast and precipitation is frequent in Denmark and is well-distributed throughout the year. The country is moreover relatively small and flat. This does not only means that Denmark is often windy but that there are little climatic differences between its regions. Due to the westerly wind however, more wind and rain is received on the west coast.

The weather that is experienced on Stevns Klint can be conclusively characterized by frequent fluctuation in wind speed and direction, which subsequently results in fluctuations between clear skies and overcast with frequent precipitation. Due to its coastal location, the wind also has an evident affect on its ocean as it fluctuates between calm and strong waves that clashes against the cliff.

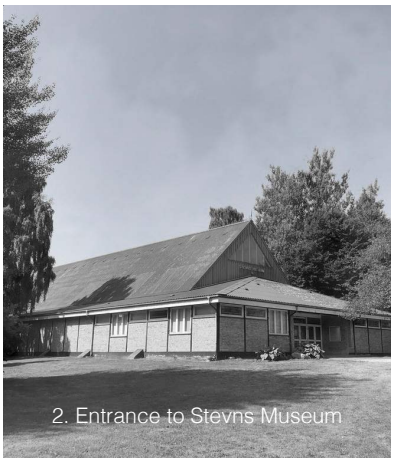

Year 1000
Year 1200
Year 1400
Year 1600
Year 1800
Year 2000

Being an active coastal cliff-line, Stevns Klint is frequently receding and changing its landscape. As previously mentioned, the reason for this lies within its geological composition. Specifically, the chalk that forms the base of the cliff is extremely porous and is hence prone to erode when frequent high waves crashes into it.

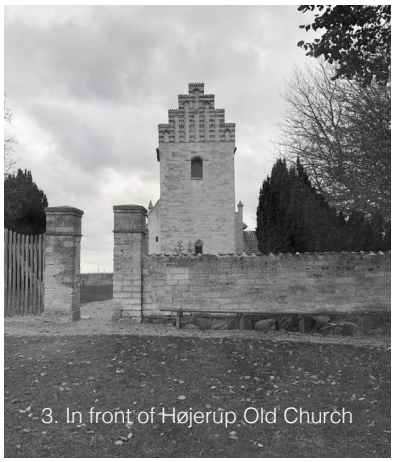
As the cliff continuous to recede with an average of 15 cm each year, residents within the vicinity of the coastline will gradually become affected. Thus, with the cliff being part of the many active coastlines of Denmark, it not only tells of a physical evidence of Earth's ever-changing situation, but also of a National environmental problem that is worth raising awareness of.

The image on the opposite page uncovers the probable coastlines of the past through calculation of the average erosion.

1. Parking Space

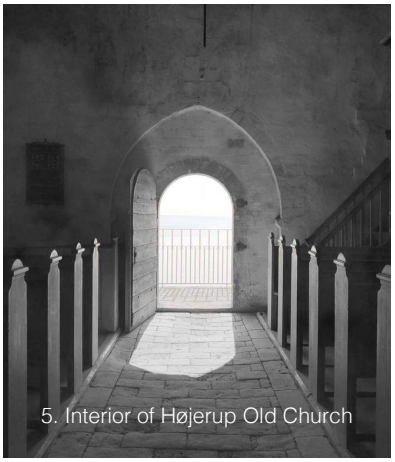


2. Entrance to Stevns Museum

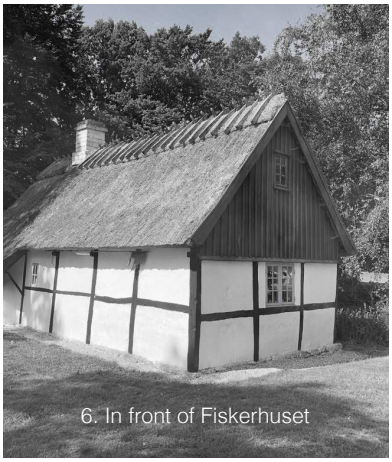


3. In front of Højerup Old Church

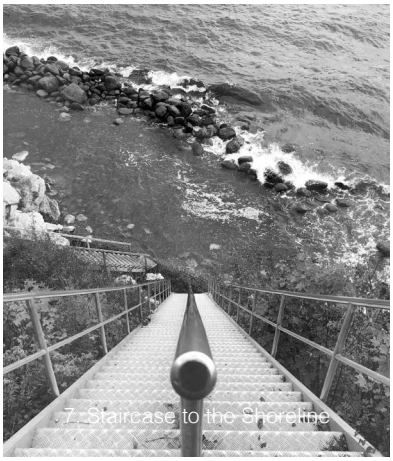
4. Entrance to Højerup Old Church



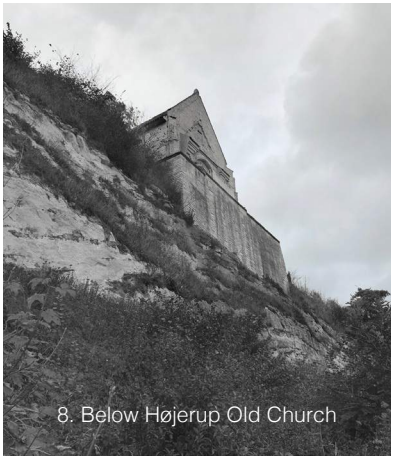
5. Interior of Højerup Old Church



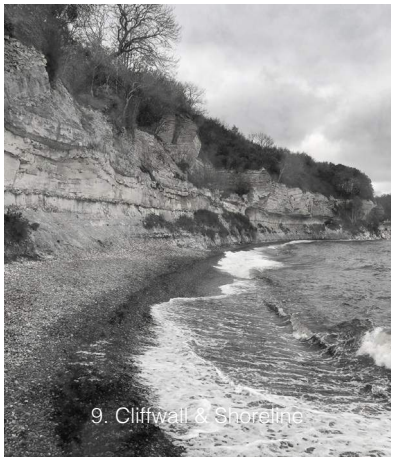
6. In front of Fiskerhuset



7. Staircase to the Shoreline



8. Below Højerup Old Church



9. Cliffwall & Shoreline

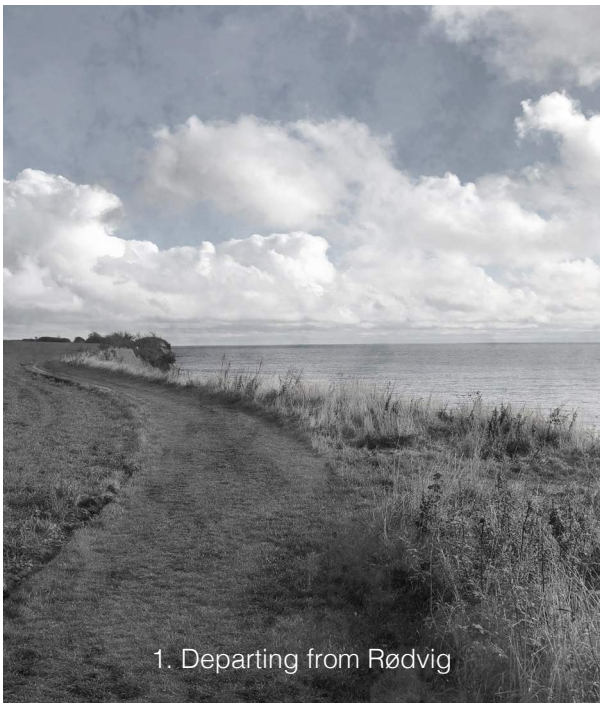
The declining demand for Danish coastal vacations is reflected by the current situation at Stevns Klint. Although the appointment to UNESCO in 2014 has partly lead to an increase in domestic tourism, international visits have been relatively few and unchanged. It tells that advertisements are not enough and that an elevated attraction is necessary.

The present location to experience Stevns Klint is officially situated in the outskirts of the village Højerup and is also adjacent to the cliff and the sea. Most of the village is secluded from the coastline and this is also the situation for the current tourist facility, which is a museum that exhibits the geology and paleontology of the cliff.

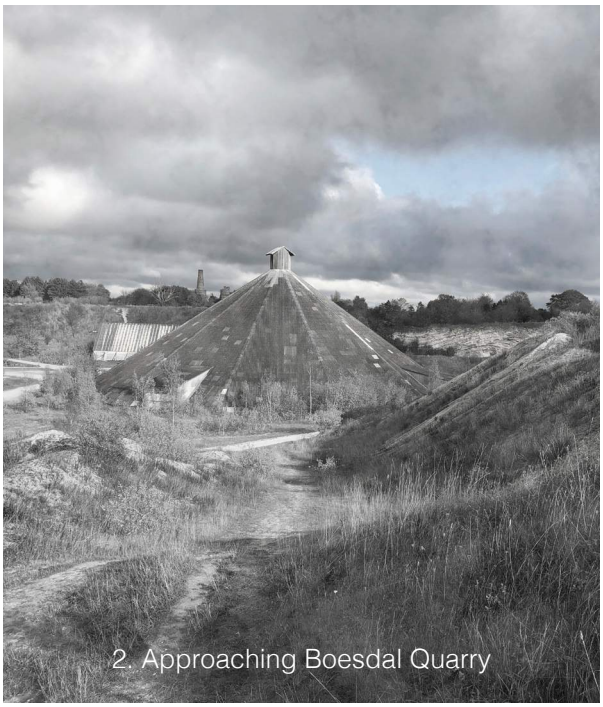
Visitors usually reach the site by car through the main street of Højerup and is therefore first approached by a parking space. The mentioned museum lies south west of the parking space and is hidden by trees upon arrival. Its obscurity and seclusion from the cliff generally results in visitors choosing to ignore it.

Instead, visitors continue towards the cliff, wherefrom on its extreme edge they encounter Højerup Old Church and its missing choir that fell into the sea in 1928. To the south of the church lies a transferred street house of Højerup that is known as Fiskerhuset. It's nevertheless merely used to purchase local goods during restricted days. Near Fiskerhuset lies a steep staircase that enables visitors to access the shoreline to view the cliff and the edge of the church from below.

Together with an obscure pathway along the cliff-line, the restriction at the shoreline nevertheless results in a seeming lack of encouragement to explore the site. Therefore, visits are generally short. Most visitors are thus oblivious to the scale of the geology, the erosion and the fluctuating weather, which altogether would otherwise amplify the narrative and experience.

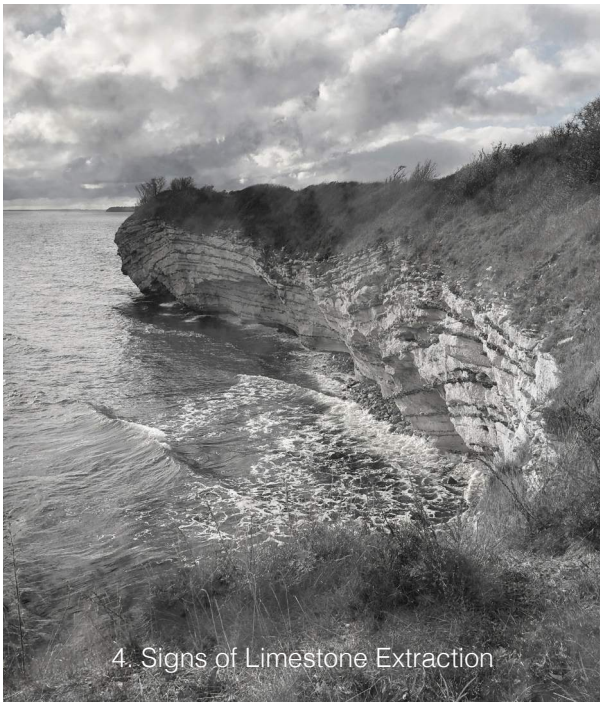


1. Departing from Rødvig



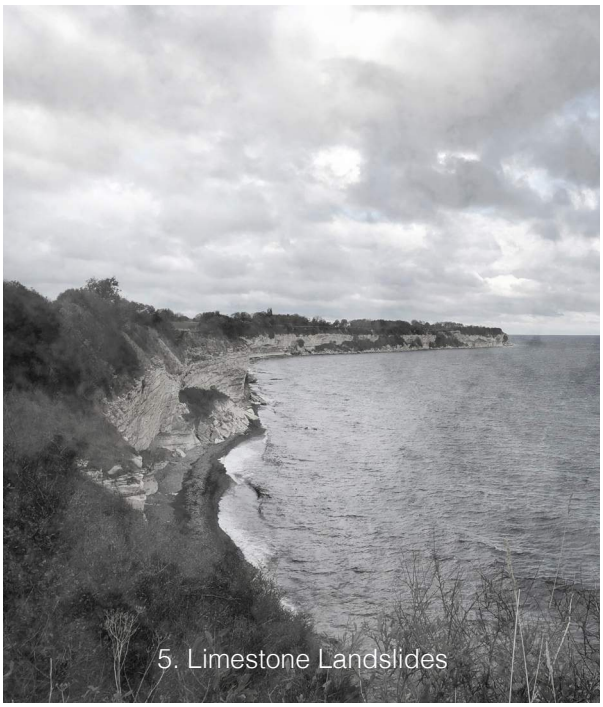
2. Approaching Boesdal Quarry

3. Unstable Gravel Hill



4. Signs of Limestone Extraction

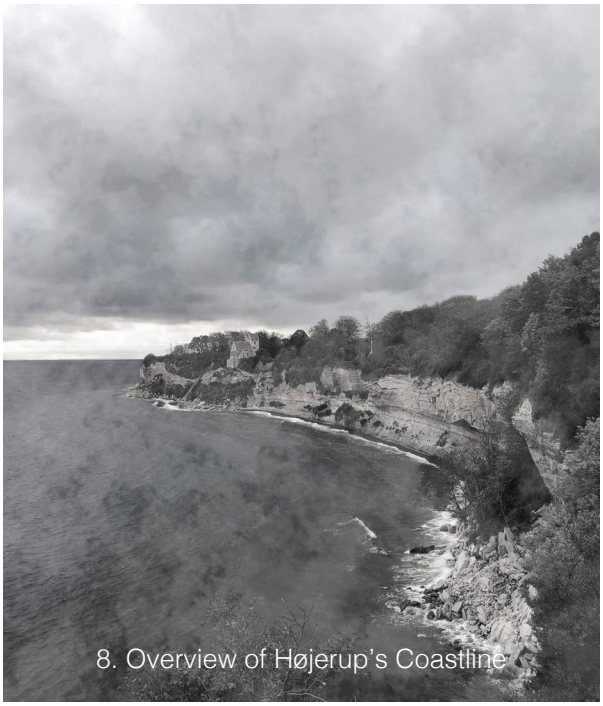
Journey from Rødvig to Højerup



5. Limestone Landslides

6. Approaching Højerup Old Church

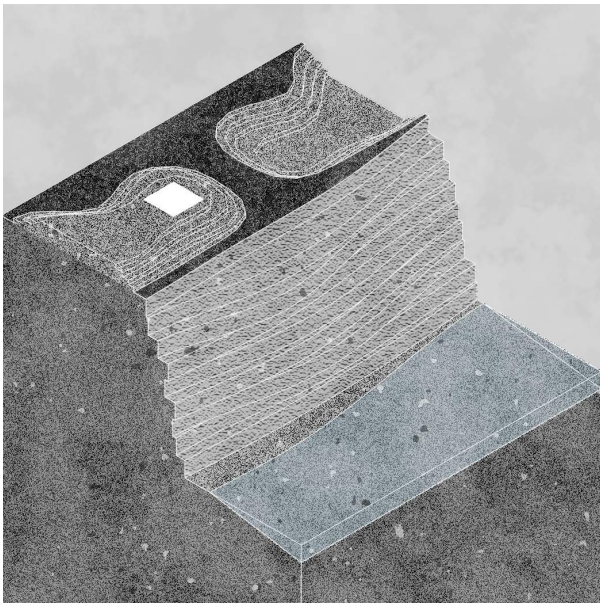
7. Shoreline Below Højerup Old Church



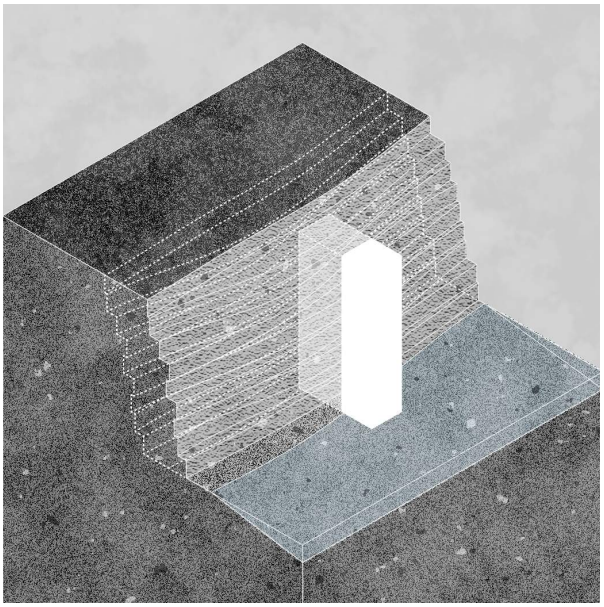
8. Overview of Højerup's Coastline

Heighten the Cliff

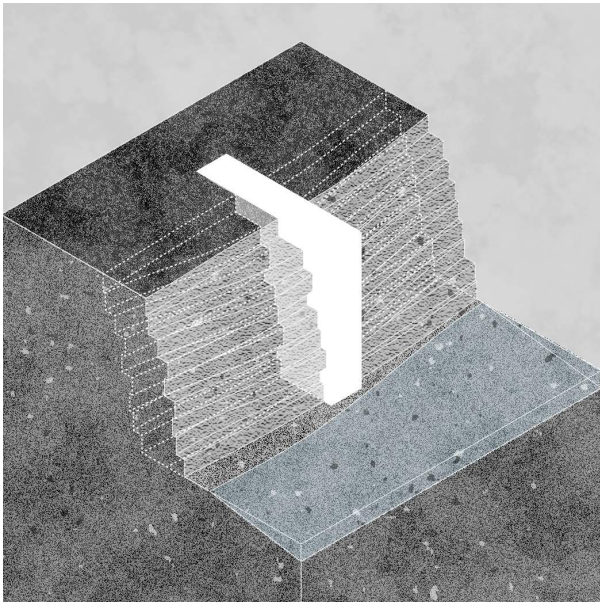
Design Proposal



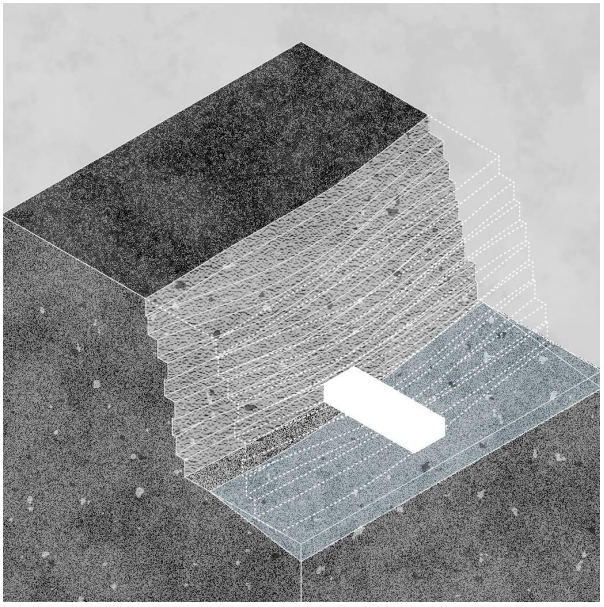
Intrusion
By submersion into the unstable hills of the quarry



Extension
To access the receding shoreline



Exposure
By submersion into the receding cliff-wall



Remembrance
By marking the ocean with the coastline of the past

Illuminating the Past, Present & Future

The thesis proposes a journey along the cliff between four diverse structures, which prolongs and increases the chances to experience the daily fluctuation in weather. Nevertheless, each of the structures serves the purpose of illuminating it.

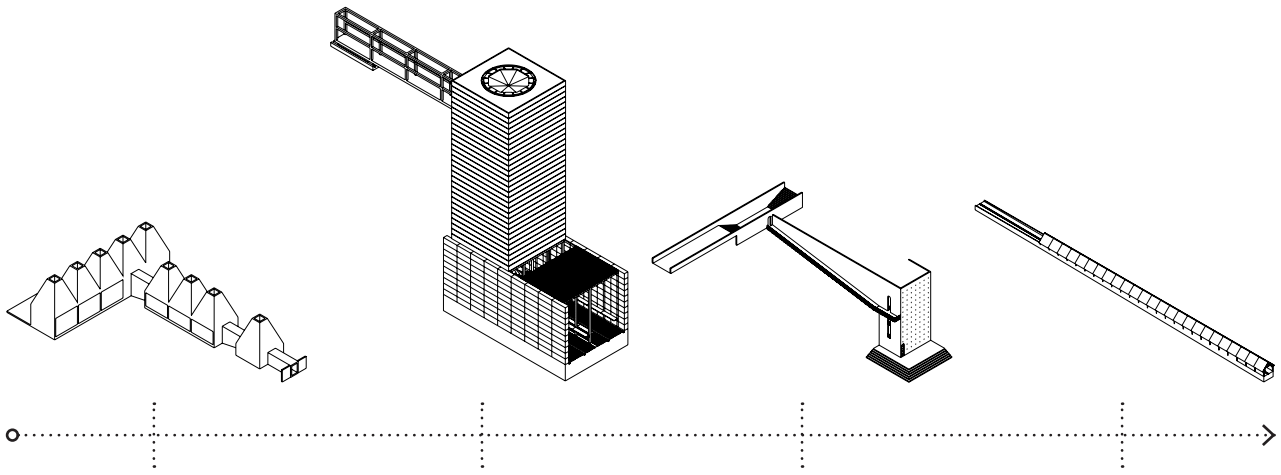
Accordingly, the presence of the shifting daylight is interiorly enhanced by contrast of darkness as each of the structures has been designed with different types of limited apertures.

Additionally, each of the structures illuminates the daylight one step further as they are partly embraced by a concrete embedment of crushed and locally sourced flint with a resulting marble of reflective surfaces.

Lastly, the final aim has been to explore ways to materialize the wind and its changing properties by integrating it into the design of the structures.

The journey itself is proposed as a time travel with the structures meant to frame and uncover each of the periods that makes up the site's million years of history, starting from the human interaction with the cliff and ending with the life that roamed before the catastrophic event.

Each of the structures has furthermore been purposely placed differently within the landscape in order to illuminate the past and future of the frequent erosion.


Quaternary Period
Today - 2.58 MA
Paleogene Period
23 - 65 MA
K-PG Mass Extinction
65 MA
Cretaceous Period
65 - 145 MA

Approximate distance: 6 kilometers
Estimated hiking time: 4,5 hours*

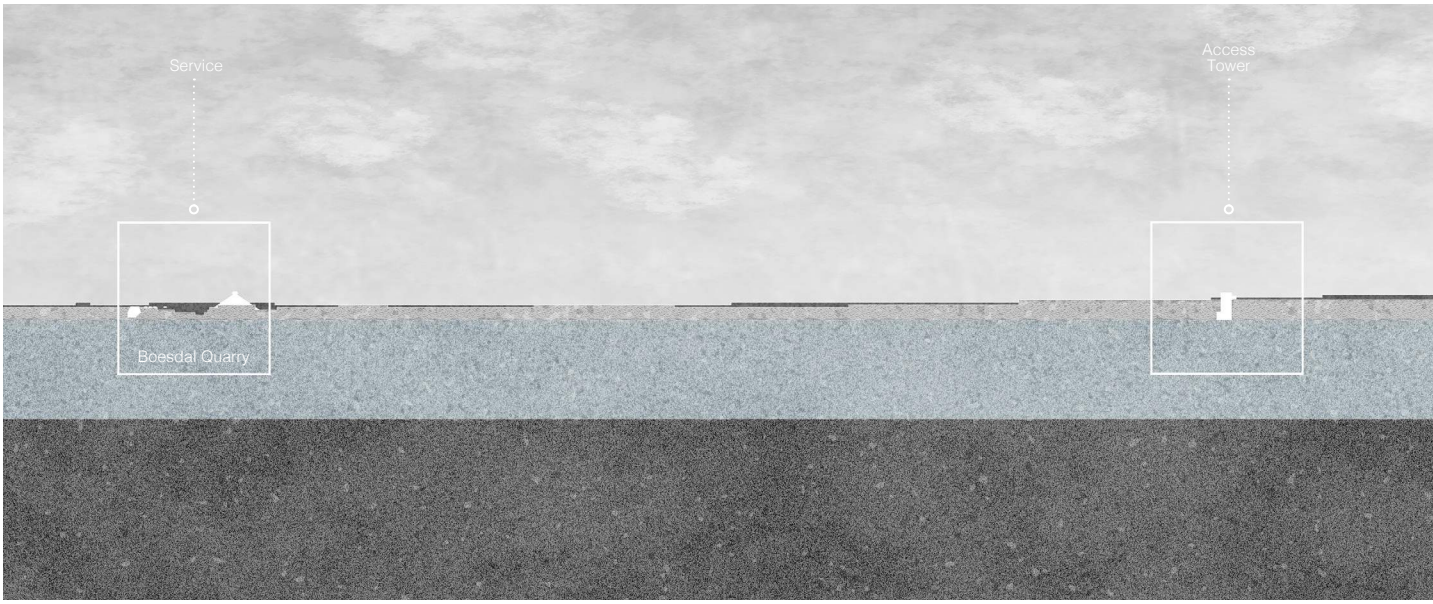
The journey begins its departure from Boesdal Quarry as its vicinity to Rødvig offers visitors the convenience of arriving to the site by train. Boesdal introduces the visitors to the rich industrial history of Stevns as well as their first encounter with the shoreline as they prepare themselves for the journey ahead.

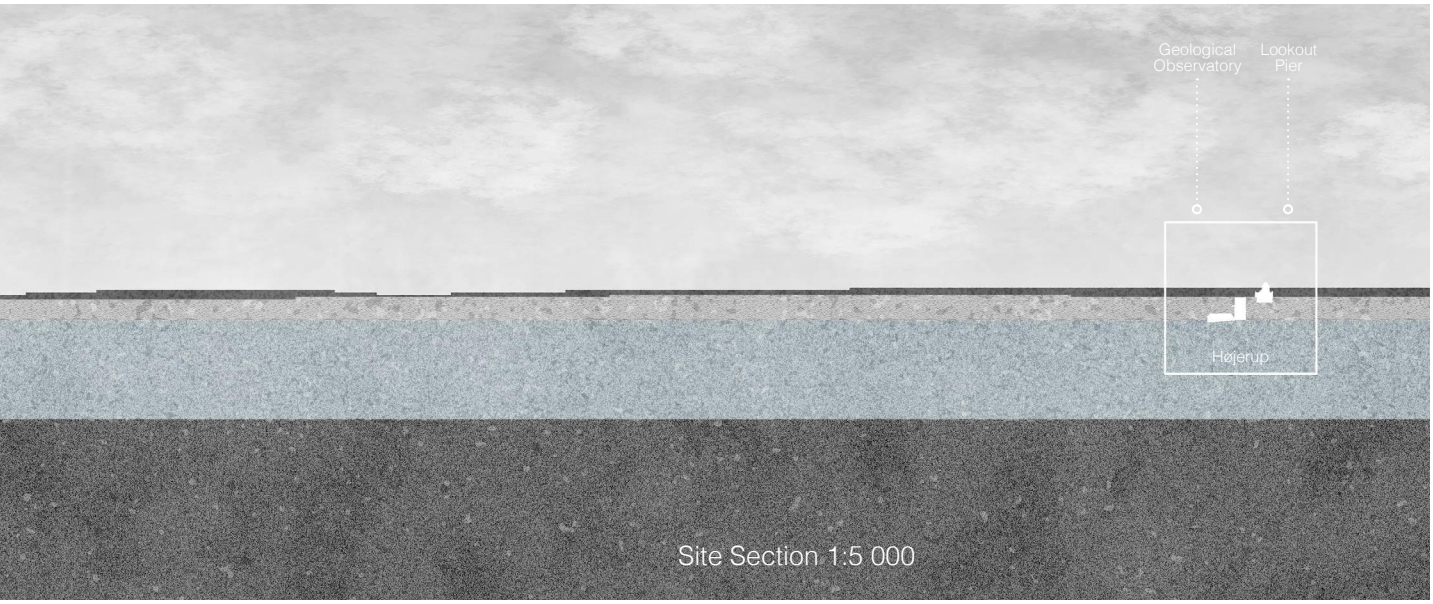
Following the path along the flat and vast arable lands leads once more the visitors back to the coastline. They will here have their first encounter with the many landslides in limestone that stretches along the coast, a telling of the magnitude of the erosion and changing landscape.

Visitors continue up thereafter towards to the outskirt of the village Højerup where they descend to the shoreline in order to witness the 12th century church from below.

The journey ends out on the ocean wherefrom the visitors are rewarded with an overview of the church and the cliff-line before they venture back to finally explore Højerup.

*People tend to walk a kilometer within 15 minutes at a slow pace. 45 minutes is added for every layover at each structure. Other stops are excluded.


Service
Access
Tower
Boesdal Quarry



Site Section 1:5 000


2,5 km
Boesdal Quarry
1,5 km


Højerup
Lookout Pier
Geological Observatory
2,0 km
Access Tower
Service
Site Map 1:15 000

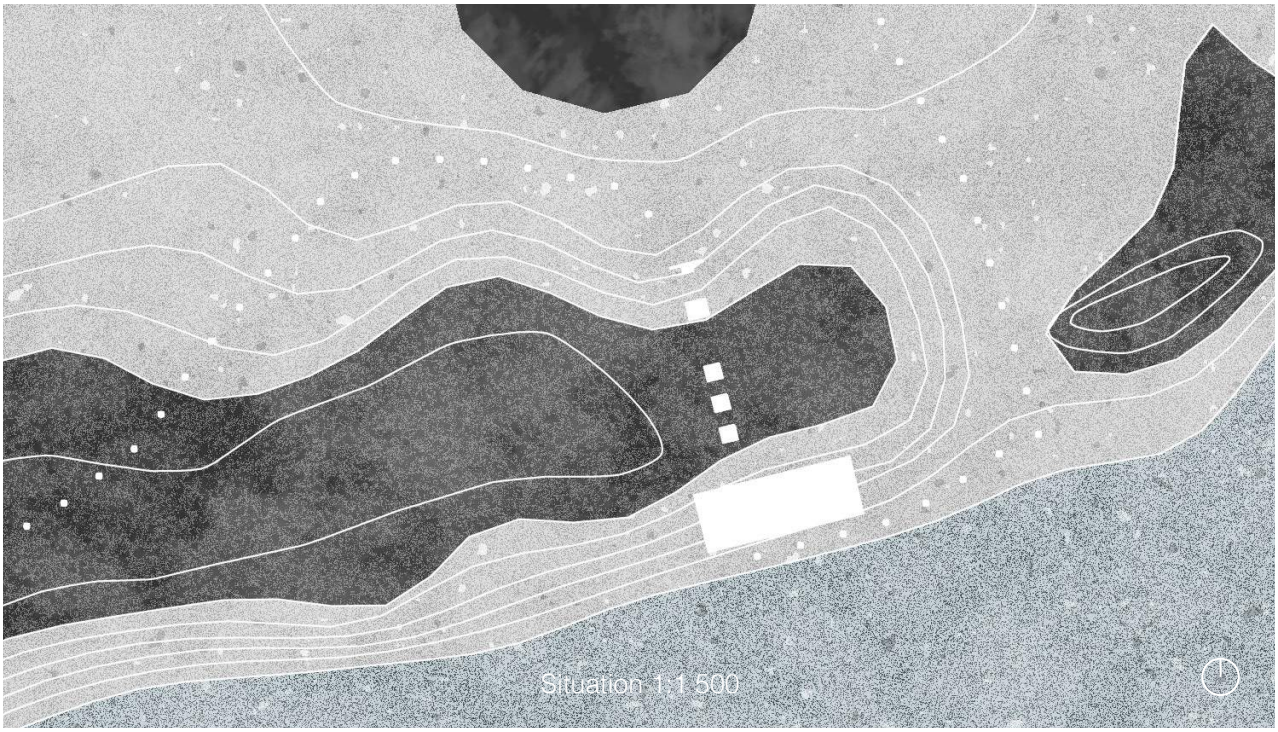

Restroom
Canteen
Exhibition
Antechamber

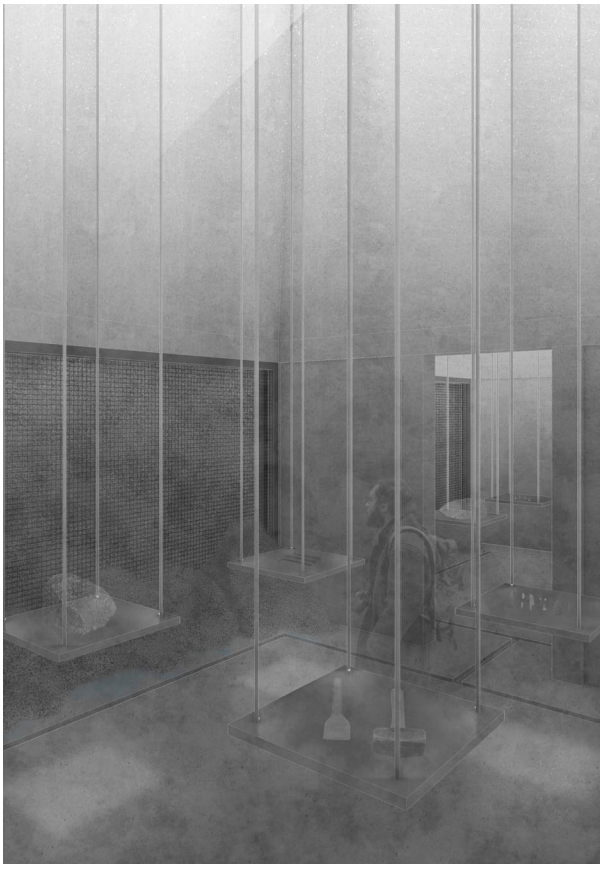
The entrance point of Stevns Klint is located in the abandoned Boesdal Quarry. It is first approached after an initial departure from the well-connected port town Rødvig, which in itself introduces the sheer scale of the cliff-line. After an initial hike surrounded by farmlands, the flat landscape abruptly reveals the quarry wherefrom a large pyramidical structure catches the visitors' attention and lures them in. Once fully descent, visitors will notice that the surrounding hill has been dotted with a set of pyramidical sculptures and a protruding gate. This is the entrance point, wherefrom visitors are provided services to prepare themselves as they begin their journey.

As a visitor, you enter the building through a dark tunnel, which in the distance frames a bright view towards the sea. Just as your eyes begin to adjust to the darkness, streams of light hit you from the elongated aperture above the entered antechamber.

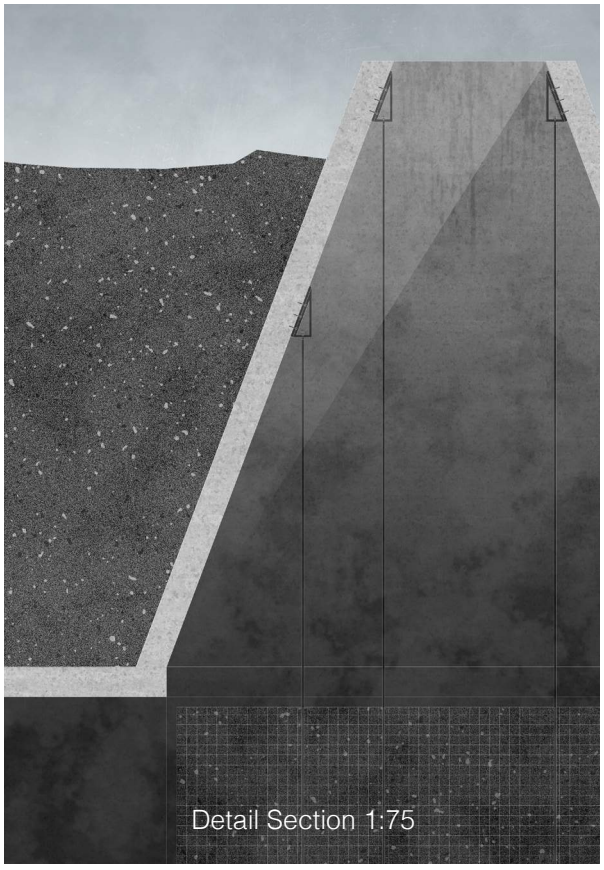
Proceeded by a sloping tunnel, you are thereafter submerged further into the hill as you are led towards the exhibition.

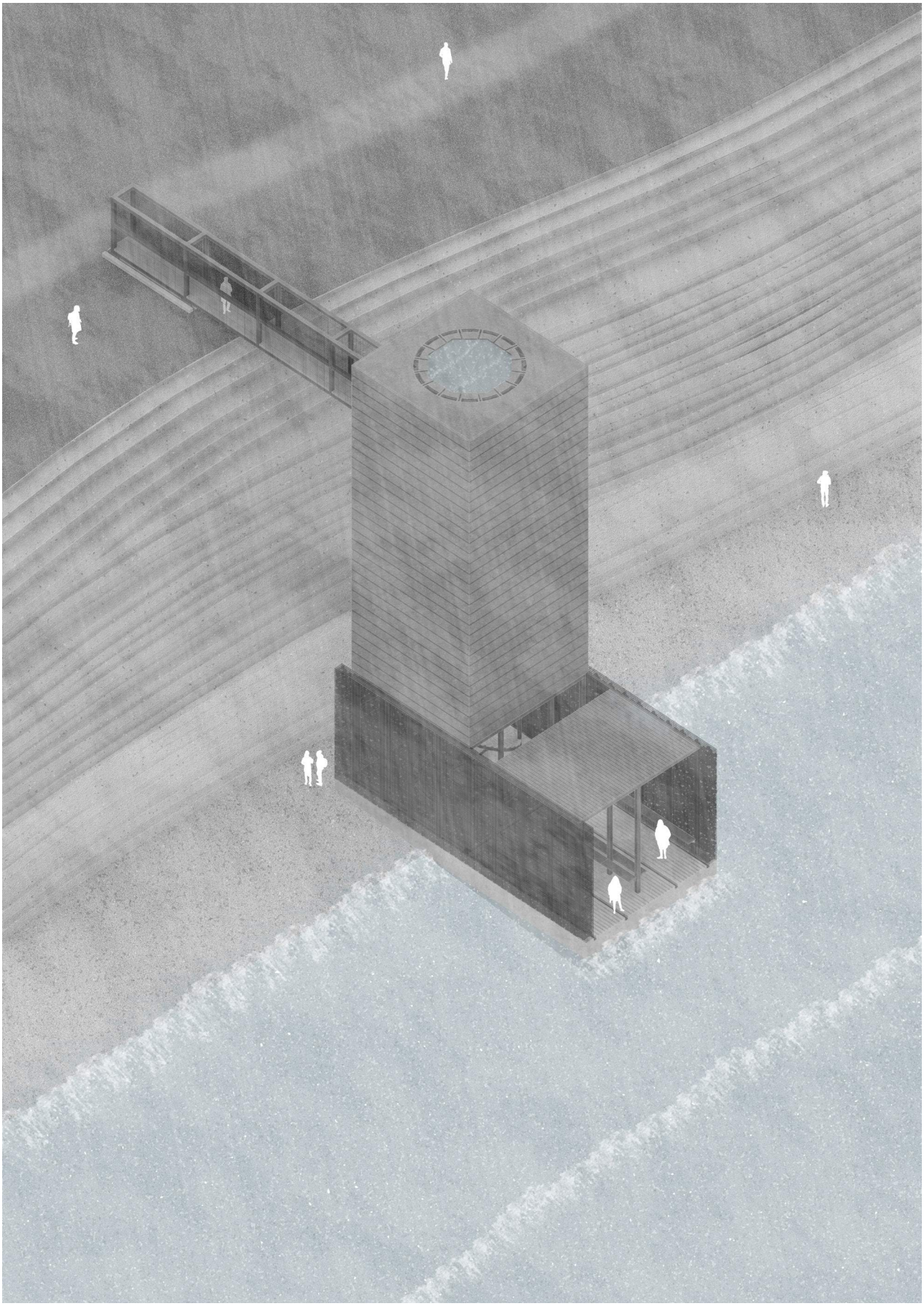
Once entered, you are here struck by the bare gravel walls that embrace you. The hill will through erosion begin to intrude into the exhibition as its gravel filters through a netting. Together with the intruding water and the gusts of wind that will echo down from the apertures, you are here told of the weather's impact on the unstable hill. The water is lead out of the structure through a centered canal, subsequently creating a motion forward that accompanies as you proceed through an additional sloping tunnel. While the tunnel ends by opening up to your first encounter with the beach, the structure itself does a perpendicular turn to inform of the services provided to prepare oneself for the journey that lies ahead.





Section 1:500


Detail Section 1:75



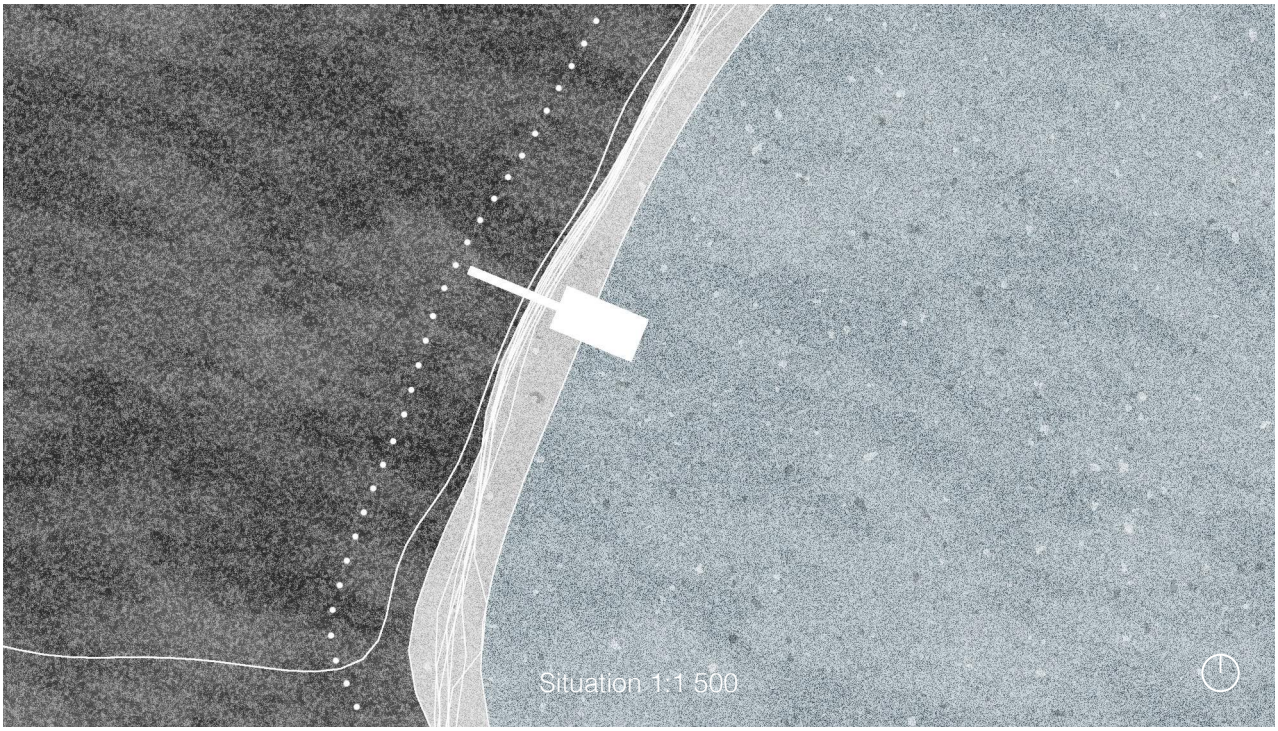
The Access Tower peaks up just as the visitors begin their hike along the stretches of landslides and serves as an access down to the beach for a closer encounter.

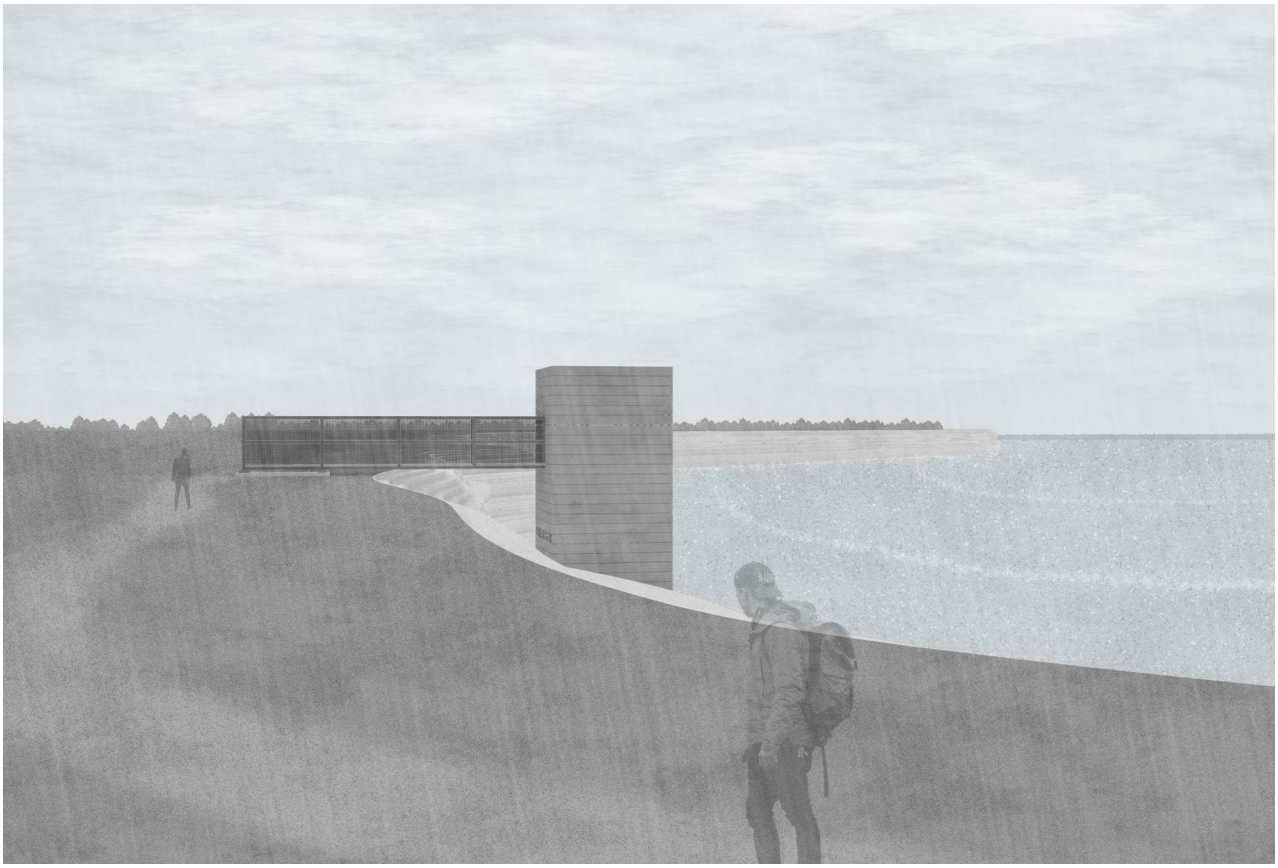
From a bridge, you enter an introverted tower enclosed by metal panels that let fragments of light intrude through gaps in-between. The descent occurs from a centralized spiral staircase that is encircled by suspended chains, in which each floor frames an encounter with the cliff-wall.

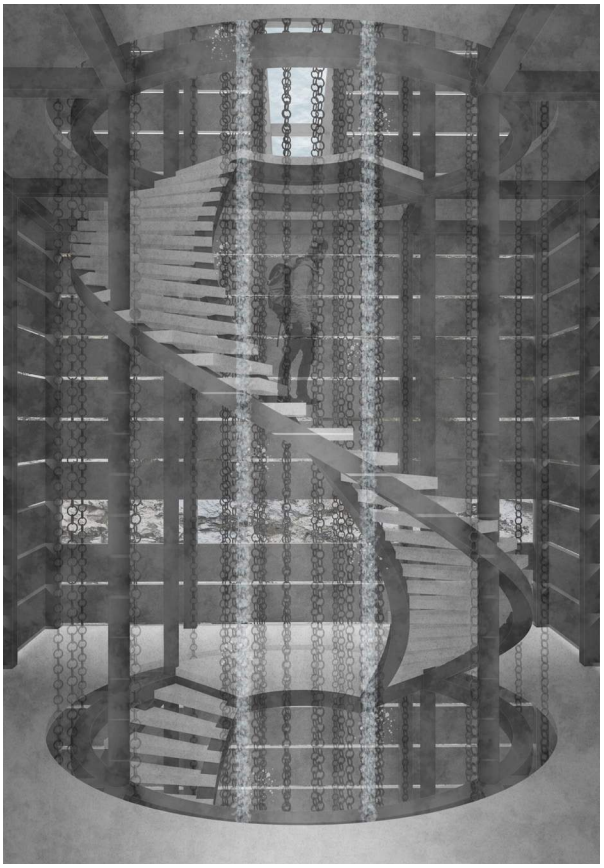
To your surprise, water will at times begin to drip down from some of the chains. This is because they are connected to a rain harvester above, which allows gusts of wind to push small amount of water into the space. The water will drip down differently depending on the prevailing wind and tells you thus of its fluctuating situation.

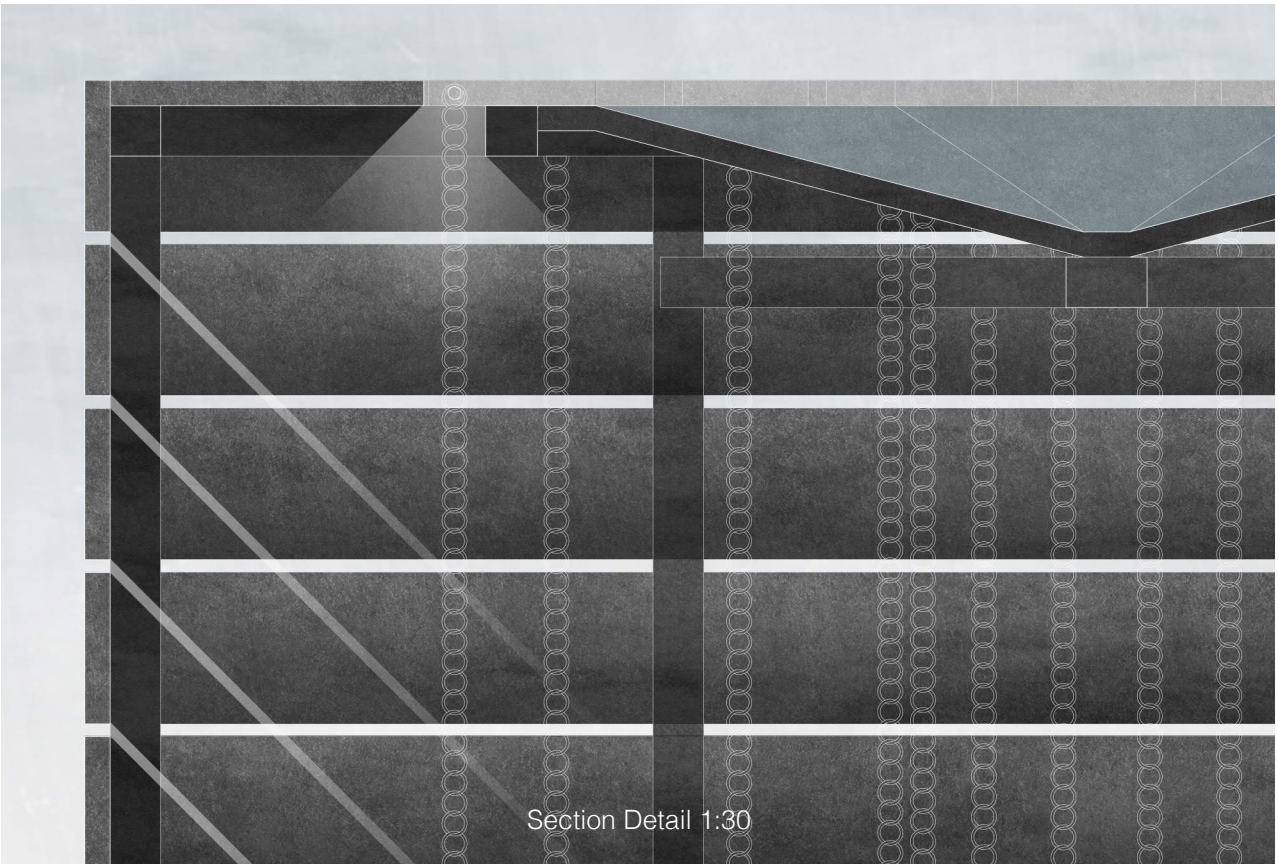
Once fully descent, you enter the exhibition, which is embraced by two gabion walls. As you proceed through the space, you realize that the tower is actually standing on wheels and is in fact mobile.

For every occurring landslide, the tower will move according to the receding shoreline, while the fallen limestones are gathered in an ever-growing extension of gabion walls. Subsequently, this also means that the exhibition space is continuously extending, which will correspond to the ever-increasing number of discovered fossils.

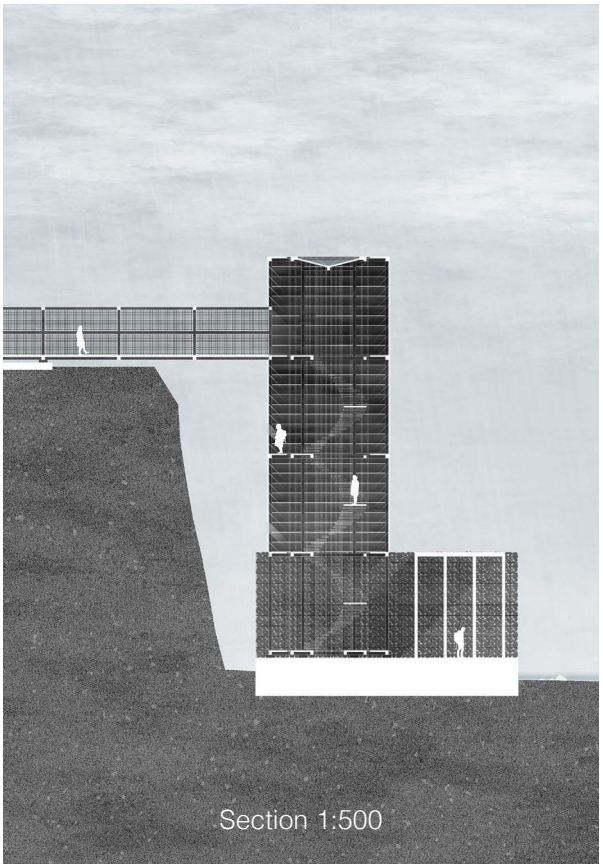








Section Detail 1:30



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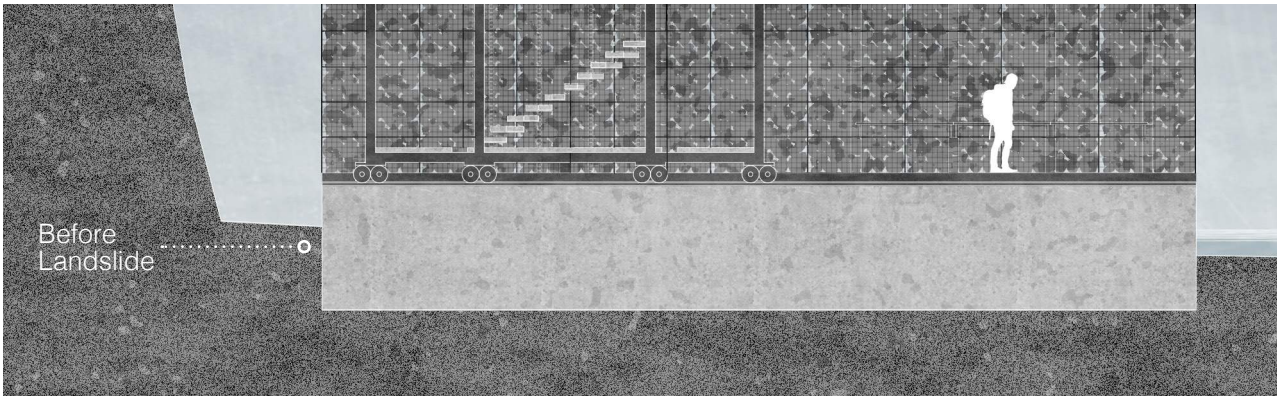
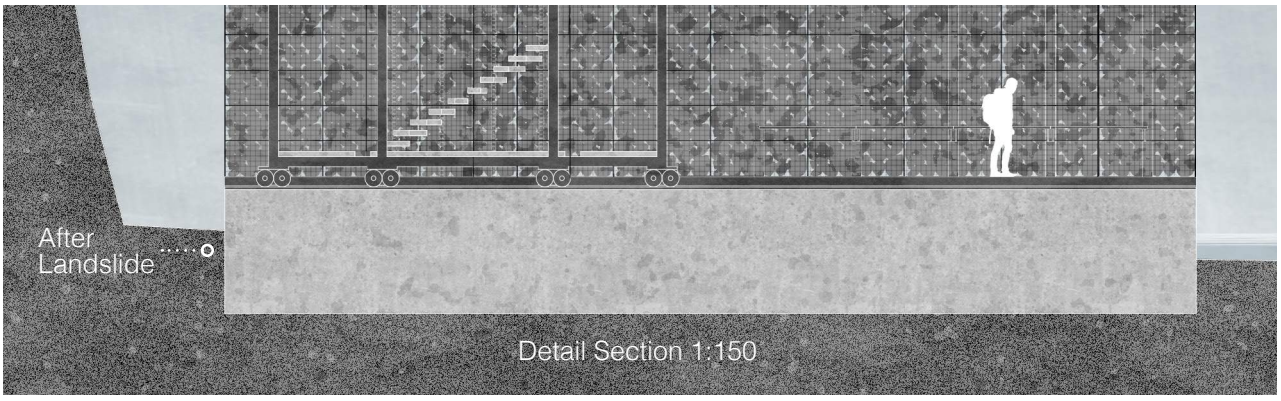
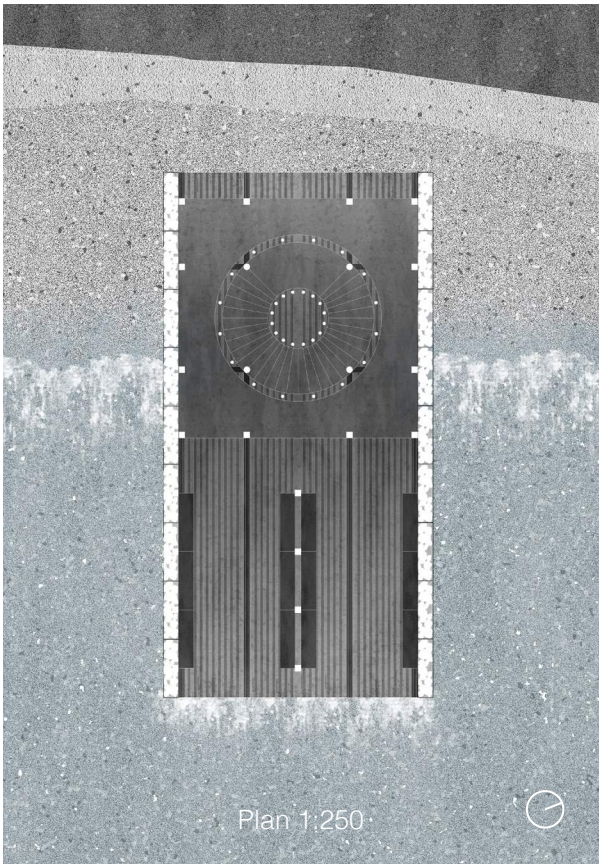




Detail Section 1:150


Plan 1:250

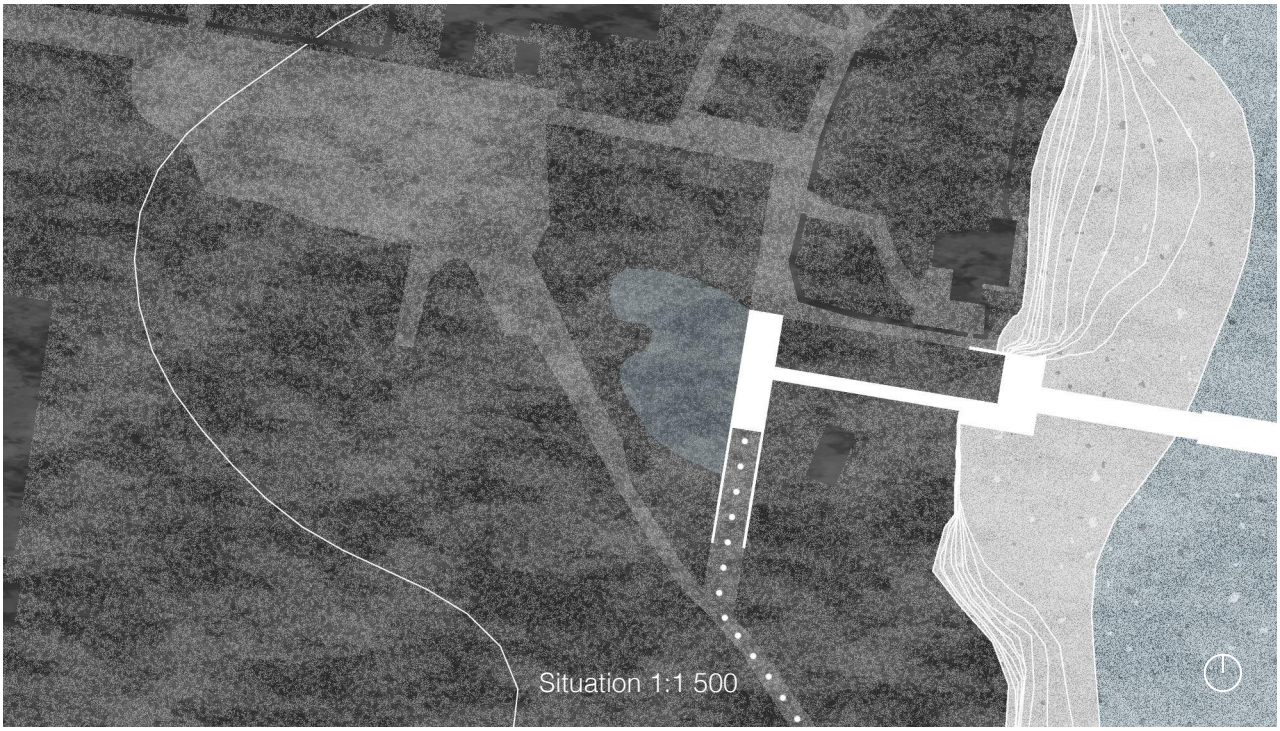
The Geological Observatory is approached just as the visitors are about to enter the small village Højerup to witness the 12th century church.

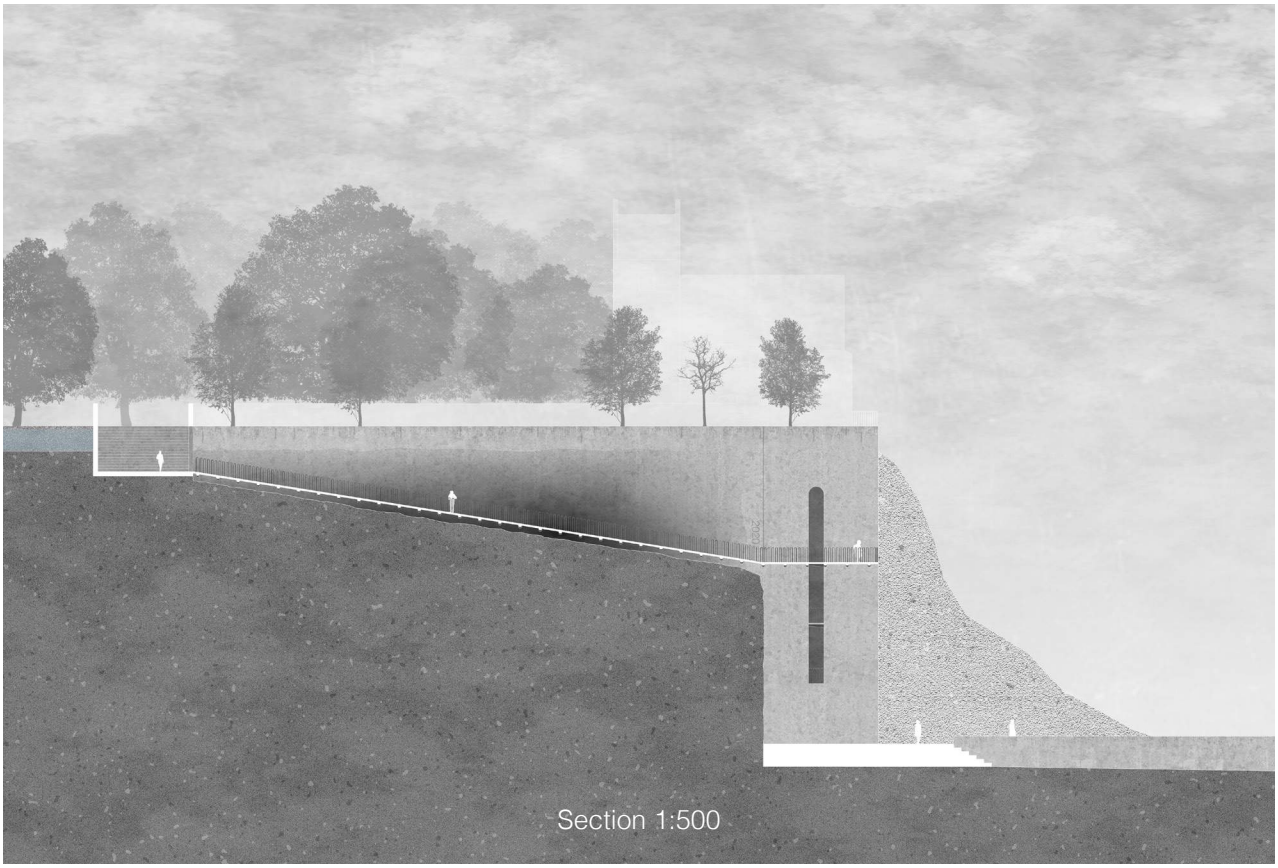
Approaching the village, you are first greeted by two concrete walls that together with the vegetation anticipate glimpses of the church before leading you down to an arched opening in the right-facing wall.

The opening reveals a large diagonal cut through the cliff that allows you to descend along with the successional geology of the bare limestone. On the left-facing concrete surface, you notice an annual imprint that aligns with the cliff wall, which will in the future tell of the continuous erosion and subsequent exposure of the submerged structure. The descent ends with a depth of nine meters and offers a view towards the sea but also an invitation into a dark and narrow entrance.

Entering the structure, you are able to fully witness the exceptional layer of fish clay before turning to access a descending exhibition scarcely lit by a perforated wall. Proceeding through the exhibition, the space turns once more and reveals a narrow path that invites a tactile experience with the bare wall of chalk.

Once fully descent, you depart from the structure with a framed direction towards the succeeding structure, only to turn around and witness the anticipated view of the church.





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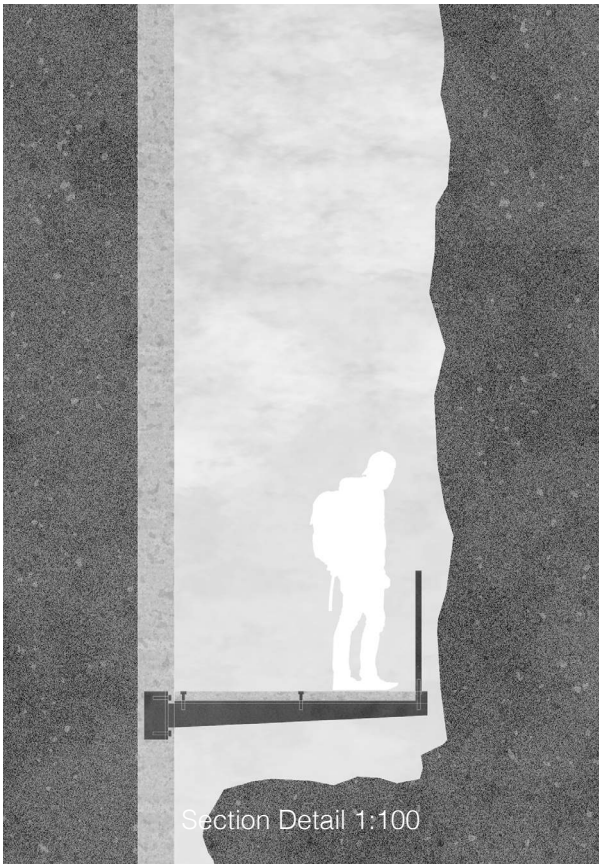
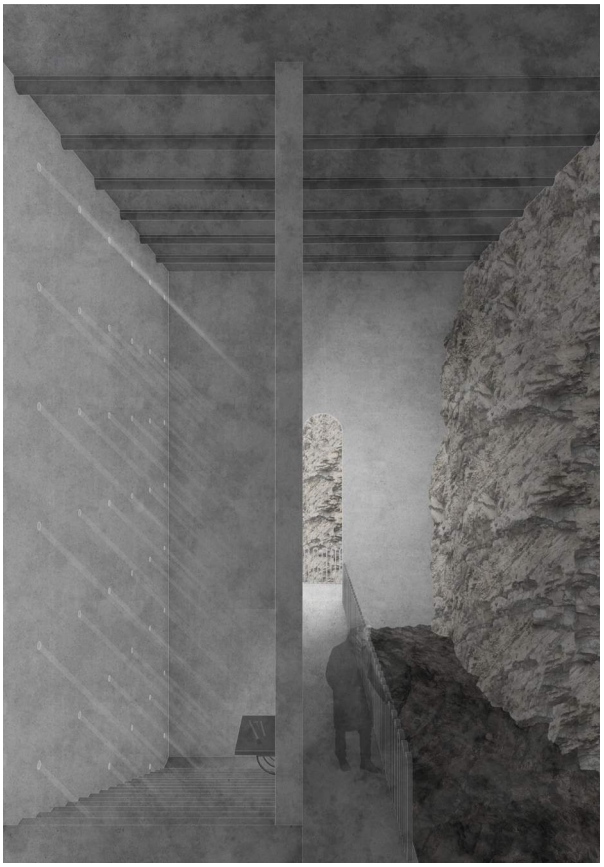
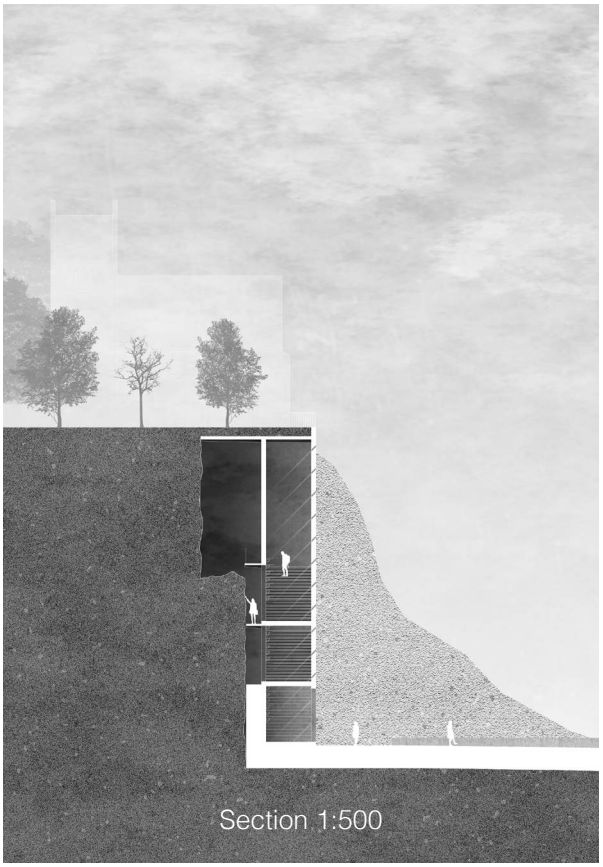
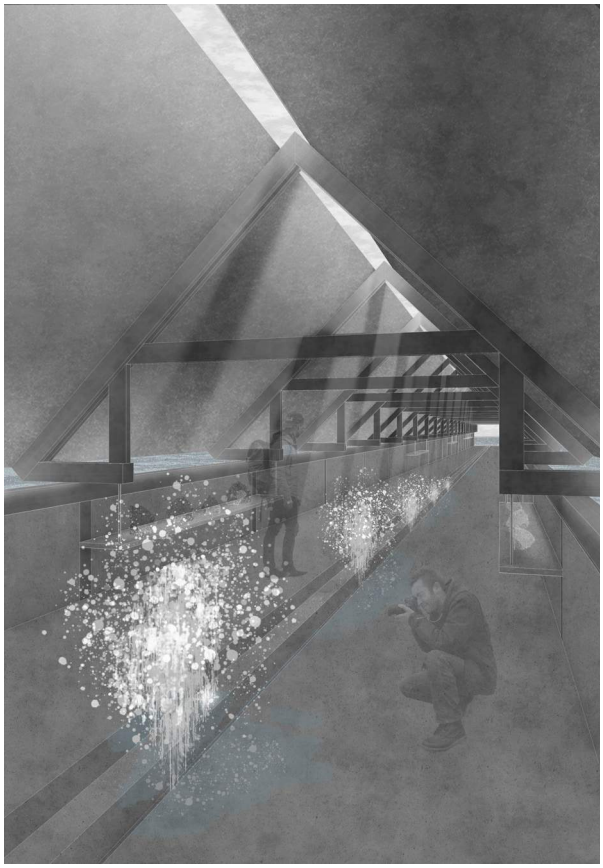
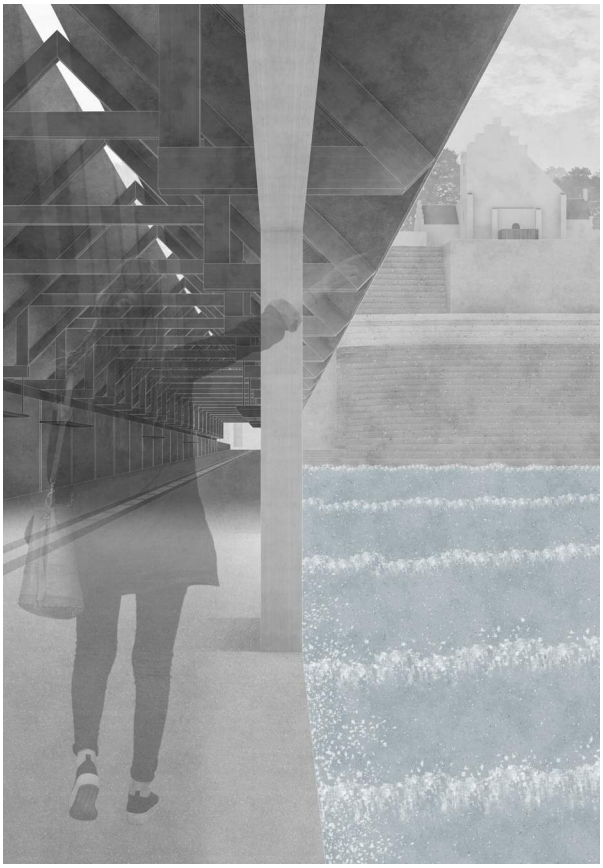

Section Detail 1:100





Section 1:500





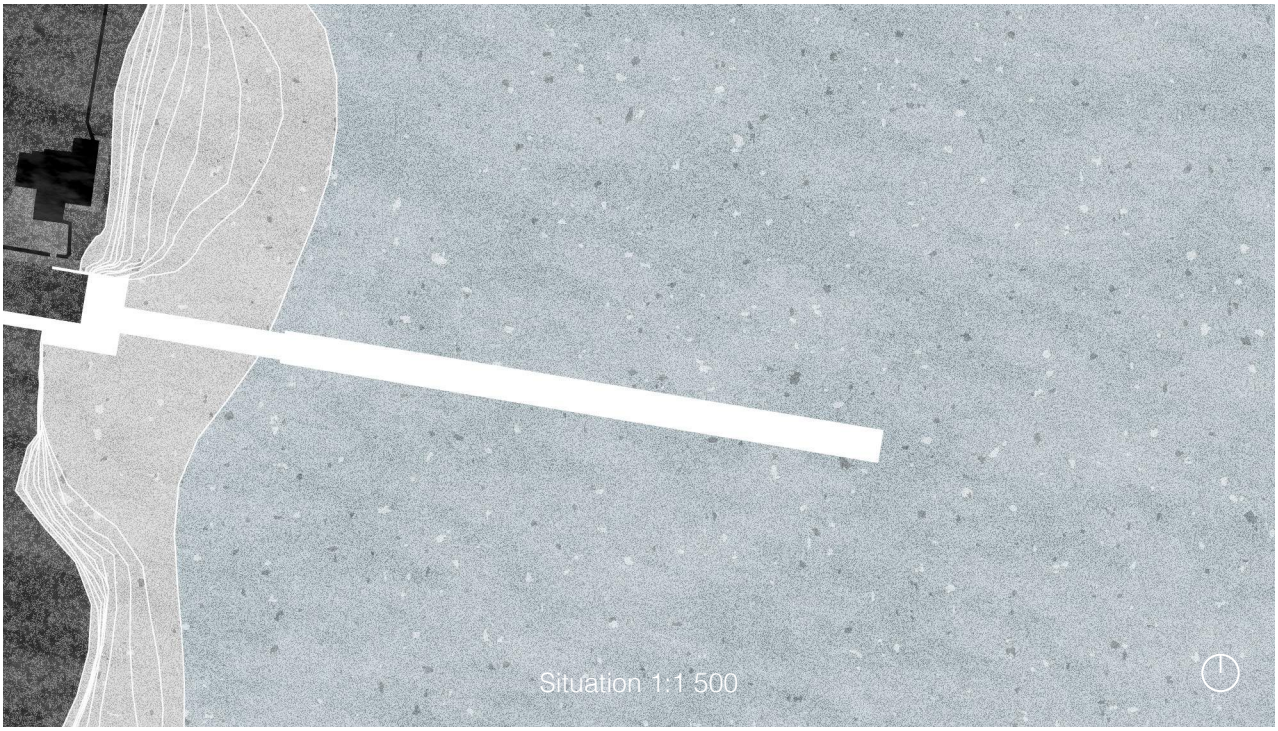
The Lookout Pier is the journey's final destination and is located off the shoreline below Højerup Old Church. The structure provides the visitors with the possibility of accessing the sea for an overview of the cliff-line.

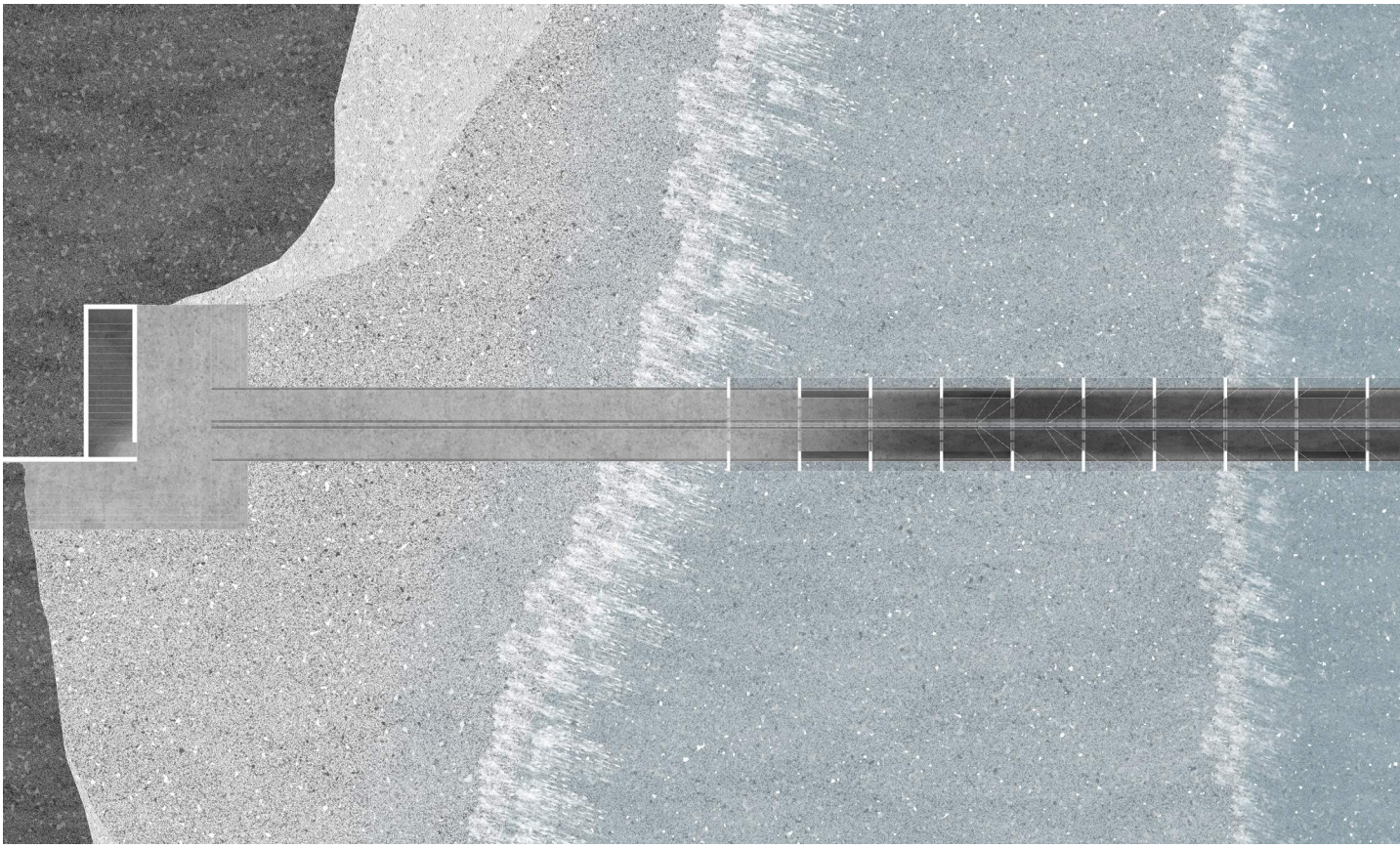
Approaching the pier, you are first greeted by a centralized canal and two low-pitched walls, in which the latter gradually embrace you as the pier descends. As the structure leaves the shoreline, you are welcomed by a pitched roof with a thin thoroughgoing skylight, which together with the walls provides flanking apertures that scarcely light up the exhibition.

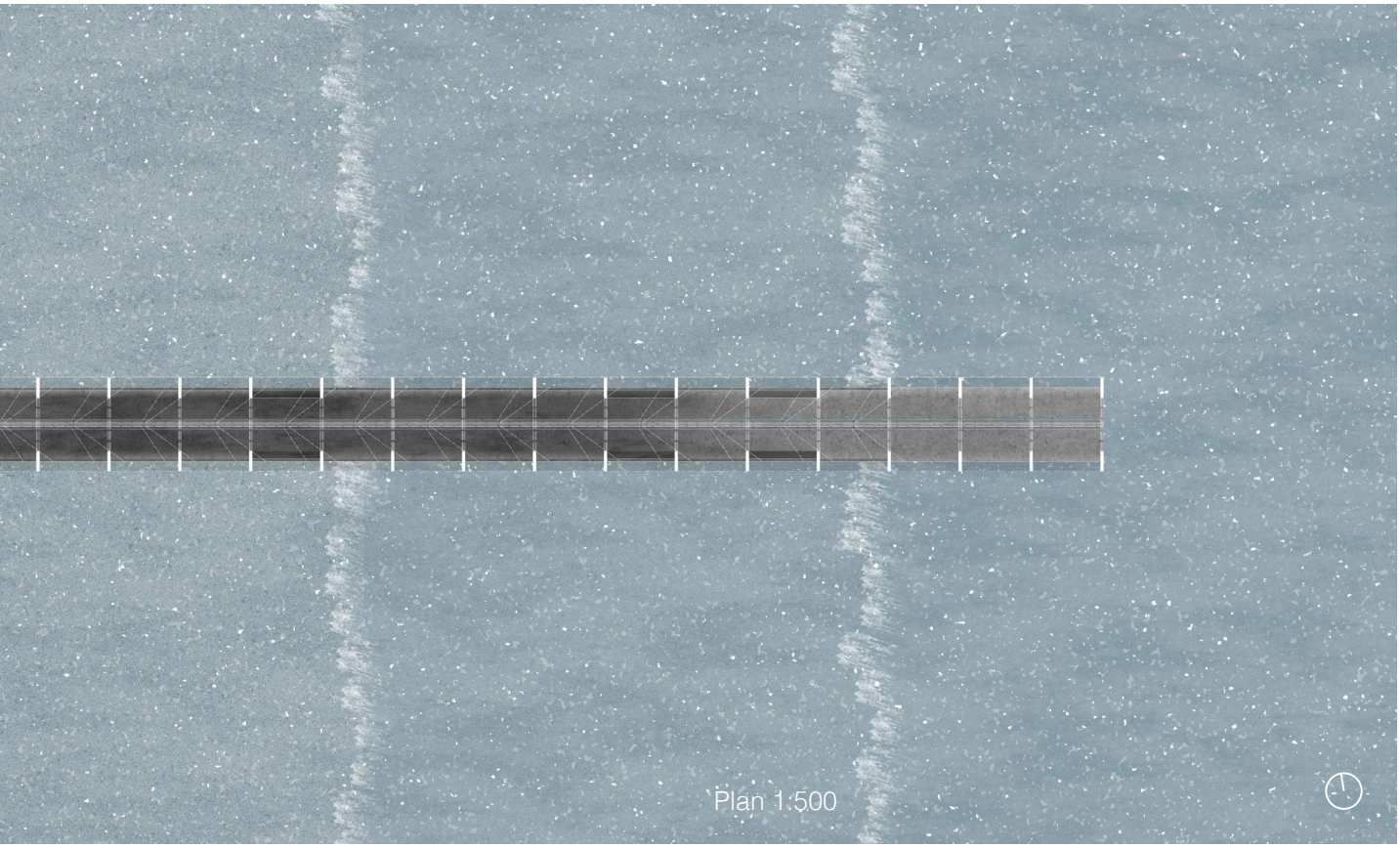
Proceeding further out on the pier, you begin to notice that water from the waves has begun bursting out through holes in the canal. As the bursting water continues to accompany you, its pressure gradually increases and tells you of the winds fluctuating impact.

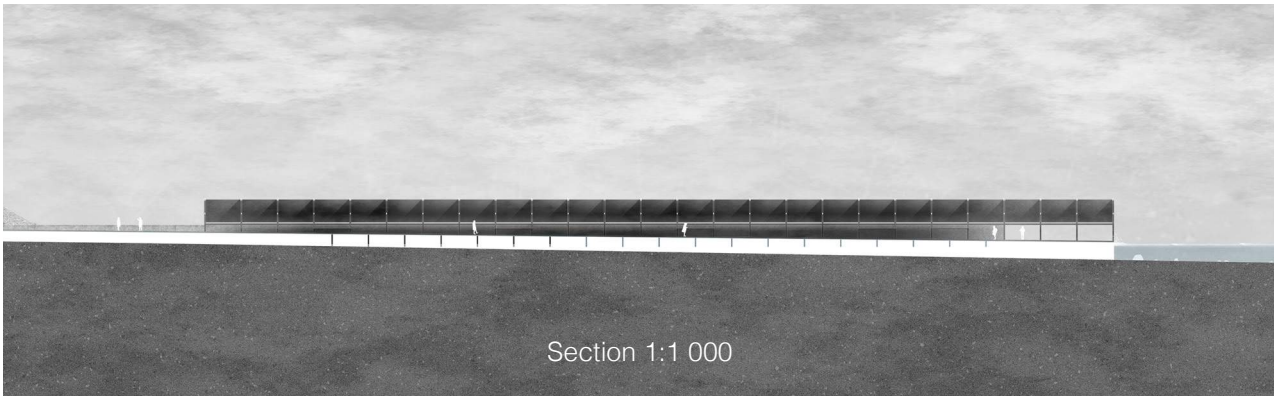
Once the end of the pier is finally reached, you are rewarded with a dramatic overview of both the church and its surrounding cliff-line.

The distance to the shoreline is exactly 120 meters and marks in fact the 12th century coastline, from when the church was built. You hence conclude your journey along Stevns Klint by bodily measuring the magnitude of almost a millennium of coastal erosion.

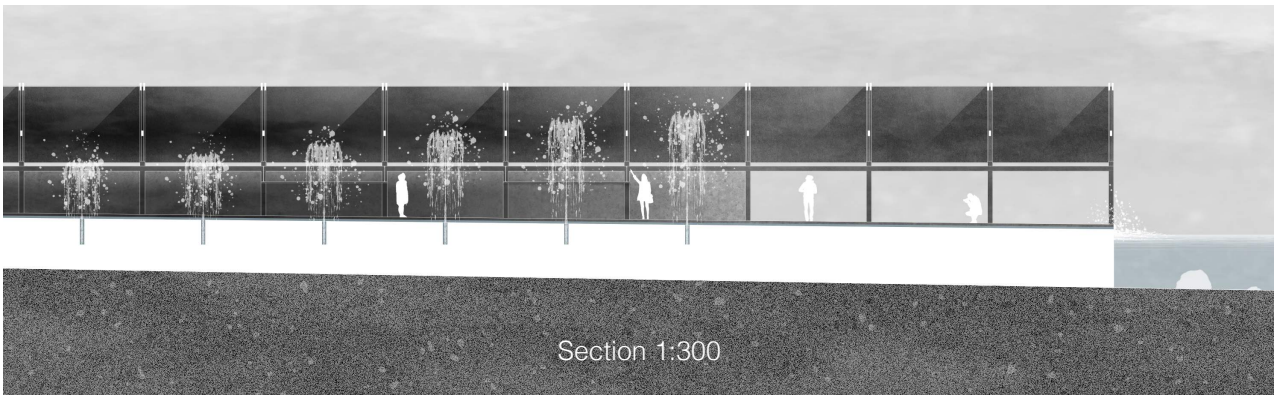





Plan 1:500



Section 1:1 000



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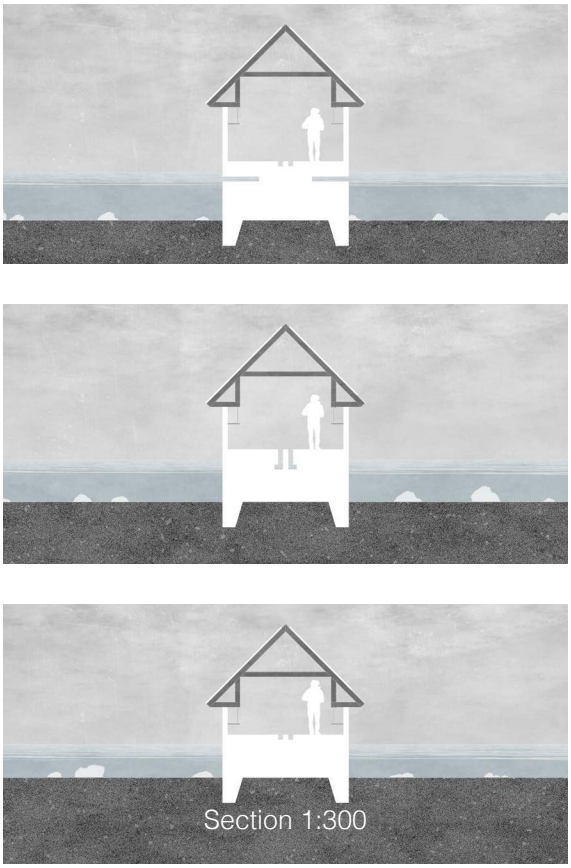

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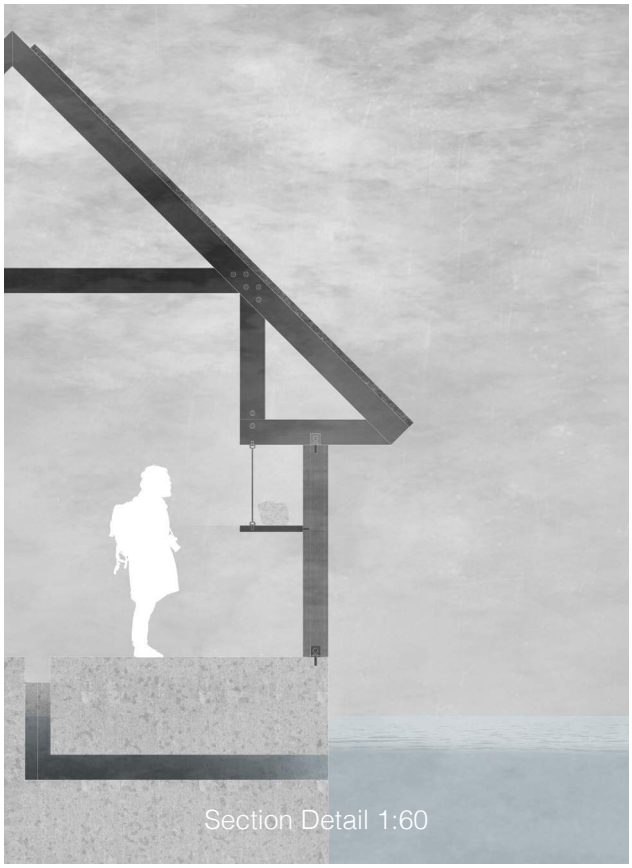
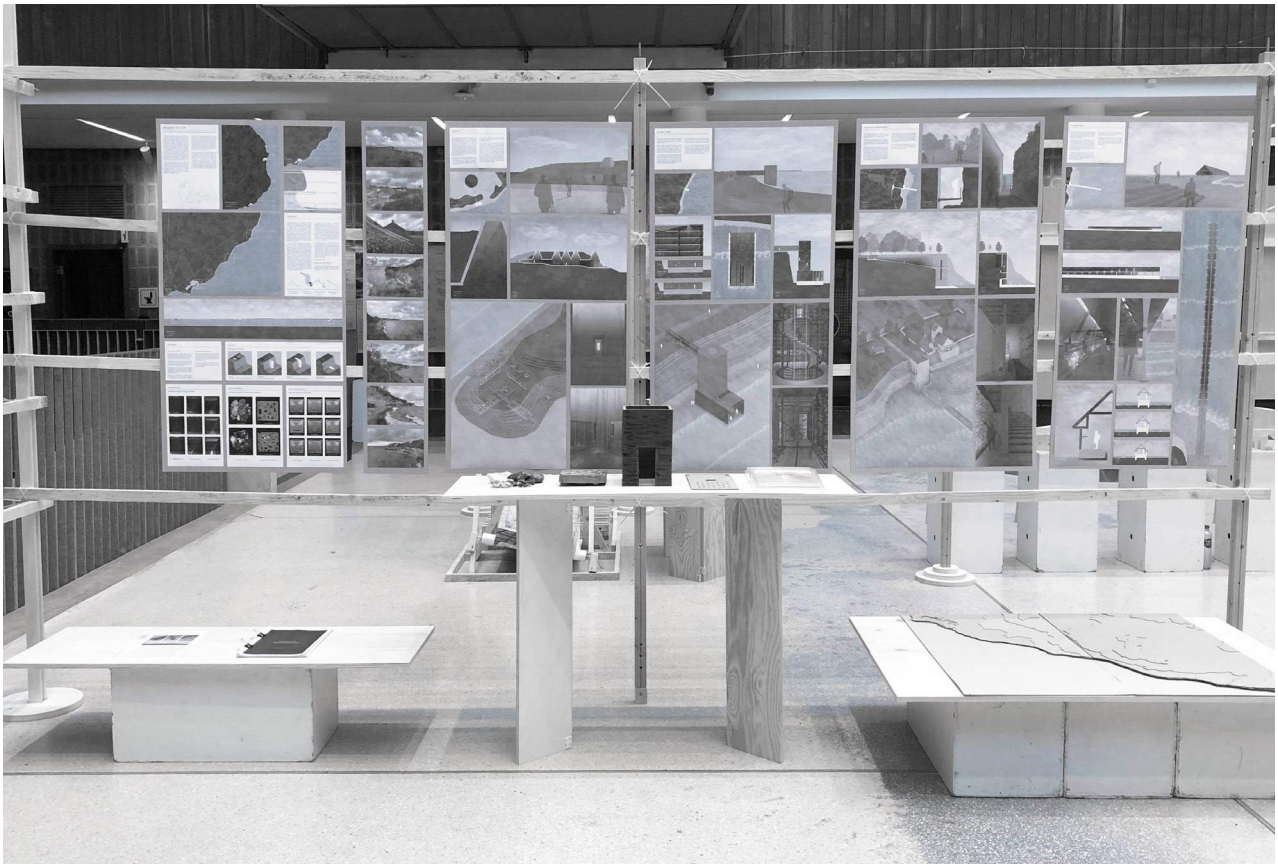


Section Detail 1:60

Heighten the Architectural Intervention

Epilogue



Conclusion

This thesis has investigated the architectural potential of accentuating an existing coastal atmosphere of Denmark. The aim has been to challenge the national protection act through an architectural intervention that enhances the coastal experience for an otherwise decreasing tourism while also appealing to the national desire to preserve the natural attraction.

It has therefore been of importance to investigate the specific characteristics of Stevns Klint in order to discover and illuminate the seemingly hidden narrative. By establishing that the successional geology, the frequent erosion and the fluctuating weather are the most prominent characteristics of the site and that they intertwine into a dramatic narration of Earth's ever-changing situation, the focus has been to explore the architectural potential of illuminating each of them.

The thesis accordingly proposed a journey along the cliff between four diverse structures, which prolonged and increased the chances to experience the daily fluctuation in weather. Each of the structures moreover served the purpose of illuminating the weather through limited apertures and locally sourced flint to respectively contrast and reflect the fluctuating daylight. Discovered ways of materializing the wind have also been integrated into the design. The journey itself was proposed as a time travel in which the structures framed and uncovered each of the periods that makes up the site's million years of history. Lastly, each of the structures were purposely placed differently within the landscape in order to illuminate the frequent erosion.

Framing the complexity of the site into these characteristics and a narrative has not only been rewarding to the design process, but also in achieving architecture that guides the perception of the visitor. Although the mentioned characteristics are possibly specific to Stevns Klint, the process of framing a narrative could be beneficially applicable throughout coastal Denmark.

It also became clear when investigating how to illuminate each characteristic that there are different possibilities in both type and scale. This means that the proposal of this thesis explores exclusively one possibility on how an architectural intervention could accentuate the existing atmosphere of the site.

With this thesis drawing towards the end of its conclusion, its hope is to have contributed with a new perspective regarding a possible development on the Danish coastline, as it conclusively presents the potential of architecture to bring visitors closer to its dramatic yet seemingly hidden narrative.

Epilogue

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