LAPLANDS CREMATORIUM

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READING GUIDE

This master thesis is conducted through a series of chapters, each describing a specific part of the project. The individual chapter is introduced with a short description of the content relating to the sequences of the integrated design process, serving an ongoing reading guide to inform the reader about what to expect of the following. Each chapter page is followed by a brief overview upon the individual content in order to pinpoint what it processes.

The master thesis takes It point of departure in the introduction chapter, which gives information about the main objectives and focal aspects of our project. In this section we are trying to state our motivation and approach to the architecture, forming the theoretical foundation from which we built the project. By establishing a core understanding of the project, the following chapters of the report is focused on a wide scope of analyses of the theme, the site and case studies upon the typology giving a notion of the method applied as it forms the transition to the main presentation chapter of the report. The final part presents a series of structural calculations, dimensioning structural elements in the design, followed by the ideation process describing different stages of the design. The Master Thesis ends with the reflections and appendix with all technical considerations.

A B S T R A C T

This master thesis presents an architectural design project, forming the physical conditions of a crematorium for Lapland in the capital of Rovaniemi in Finland. The intention of the project is to form an architecture which strategically gather people by articulating the subject of death. The project is developed on a site in the area of Nivankylä, situated on a sloping topography in the woods and natural environment.

As we strive to utilise an architectural tectonic approach, we intend to do so, through innovative initiatives within thematics involving; Atmospheric & Sensuous Architecture, Tectonic, Architecture & Landscape and Nordic Culture. From this implementation of thematics, it could bring possibilities in the unseen potentials of such architecture, as the architecture could have the makings of fostering an existential architecture that allows humans to commit to the boundaries of living and dead through an architectural articulation of Death.

Through iterations and investigations a foundation on how to deal with the typology of a crematorium was helped by site analysis, teconic studies and spatials and constructive qualities, as they acted as guiding parameters on how to address the site and form an architecture integrated with its surroundings. Furhter studies on acoustics, light, structure and materials guided further iterations in the design of the crematorium.

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The purpose of the thesis is to investigate and identify how a crematorium can be designed in a Nordic context and act as a problem solver, by articulating the taboo of Death, which have left a void in our contemporary societies, leaving our urban spaces emty and segregated, where Death inhabits these areas. To act on this tendency of the spaces intended for the dead, the want to encourage an intersection between the world of the living and the world of the dead, as it is already experience how spaces for the dead in our urban context, posses a wide tension field, by providing both space to for the commune and individual, sorrow, contemplation, quietness and thoughfulness through natural scenes, although the main function of these places are to honor and respect the dead. By giving people the choice of interacting with these spaces of the dead, they become faced with the big question of life, as they are giving the opportunity to promote an opinion of Death.

The crematorium is an architectural building phenomenon, where the identity of such, from a perspective of rituals and program, are continually formed and holds questions, as a result of ignorance to the subject of Death and the extent of what it encompasses. On acount of this, the architectural subject centers first and foremost on how the architecture of the creamtorium, could address the surviving relatives in their greiving process, in pace with the different stages they go through. Being guided by customs and rituals of how griving processes takes place in the event of Death, this has become a motivating force, as these processes both from a persepctive of the atternders and staff places demands on the functionality of the crematorium on account of whom occupies these spaces.

In our daily rutines we encounter the architecture that surrounds us, and experiences how these architectural settings inhabitates different functional purposes, additionally as we live among the architecture, it has potential in appealing to and transforming our emotions and senses, and thereby enhance or influcence the state of our minds, we find ourselves in. No matter if we are conscious of it or not we relate ourselves to the architectural spaces as we engages with them, as a result of the sum of all elements inside that particularity space, both tangible and trandensental elements. As different event takes place in our lives we place different demand of the spaces we engages ourselves with, at times we need spaces for loneliness, community, rest, stagnation, contemplation, or even breaks .From this aspects we find motivation, in highlighting these influencing parameters and the function of the architectural spaces, within the design of the crematorium, that should address the survivng relatives in their visit to the crematorium and their needs in this break in existence as they have lost a loved one.

For this reason the project amongst others aspects evolves around how the design for the crematorium and its interior and exrterior spaces, can influence the survivng relatives through the process and implementation of the totality of architecture, expressed in its atmosphere, composed by tangible elments such as shape, materials , color and course of a space and on the other hand transcendental elements relating to light, sounds and haptic senses.
In the forming of architecture we want to stress the importance of how the architecture ca n act as a powerfull narrator of the stories both visible and unvisble for the attenders and for that reason investigate the power of simple architectural elements - the embracing and surrounding character of light, walls and sound, the sublimity of the dimensions within a space helped by structural and lighting aspects, the earthbound character in regards to how the architecture itself is situated on the landscape, the roof as a protective source, as we seek shelter underneath and at last the door as an element for transition between spaces. We ask ourselves how these architectural spaces inside of the creamtorium could influence the surviving relatives and additional what kind of demand we should place on the architectural spaces in their influence on the surviving relatives in their grieveing moments. This notion of atmosphere is amongst other inspired by German Philospher Gernot Böhme, in how he states that atmosphere is crucial to the architecture, which highlights how the architecture exists in the production of atmosphere. [Böhme, 2017]. Another theorist engaging in the theme of atmosphere is the Finnish Architect Juhani Pallasma:
“There is always more to the artistic image than the eye - or ear, nose, skin, tongue or comprehension - can identify and reveal, because it is expereinced as part of the limitless domain of the real” [Pallasma, 2011] .. “As we open a door, they bodyweight meets the weight of the door, the legs measrue the steps as we ascend a stairway, the hand strokes the handrail and the entire body moves diagonally and dramatically through space” [Pallasmas, 2007]From notion of atmopshere from a perspecitve of the theory by Böhme and Pallasma, these have guided a motivation on how to deal with the totality of the architecute in the design process if the crematorium, whereof the sum of all its elements are placed as the center of attention in the design, to enhance a sensorous architecture, that thorugh settings of different atmosphere could affect and assist the the surviving relatives in the grieving processes.

Nature plays a big part to the life of a Finn as this natural setting dominates the land and history of Finland. From this perspective and a perspective of Nordic architectural traditions the design process is motivated by linking the artchitecutre of the creamtorium to the landscape of Finland. Besides adding to the understanding of how to live as a Finn, the implementation and integration of natural environment in teh architecture holds potential of an inner being, which enhance an architecutre that allow space for contemplation in the continnuum of the nature. Inspiration on how to integrate nature within the design process of the crematorium takes a tectonics aaporach as its point of departure, through the implementation of sitebound structural and spatisl elements and ressources. In doing so this hold potential in formning an architecture which is earthbound and rooted in its site within Finland. From this apporach the architeture would enhance familiar feelings for the surviving relatives in their visit to the crematorium, which we find important in their grievning processes, as the familiar offer secureness, safetiness and initmacy.

CHAPTER 1
INTRO

The objective of the following chapter initiates the focal point and motivation of the project, as this forms the basis of the understanding of Death by clarifying and defining how death is being addressed in our contemporary societies. From this derived understanding of Death - and its rituals, this provides us with knowlegde of what to consider in the development of the programme and later on the initial sketch ideation.
With knowledge of the event of Death this chapter additioanllylays down the framework for how to pursue tectonics investigations, through methods and theories, that emphasises how architecture can be a linkage to the surrounding context. From this perspective, tectonic understanding, could also be narrowed down to the tradiations of Nordic Architecture and the implementation of Genuis Loci.

From a perspective of the Integrated Design Process, [Knudstruo, 2005], this chapter acts as the initial problem phase, as it shed light on the issues of Death in our societies, helping us to decide on the problem which the design for the crematorium should address. Due to such these theories becomes an controlling elements in the project, with regards to its extent and project type.

Besides being formed by the tendencies of Death, the initial problem is influenced by a tectonic understanding of how to deal with architecture, which also add to the problem of how this tectonic approach could be consistent with an architecture addressing the issues relating to Death.

THE CONCEPT OF DEATH | RITUALS IN DEATH | BUILDING THE END | TECTONIC DEFINITION | ATMOSPHERE | NORDIC ARCHITECTURE | METHODOLOGY

THE CONCEPT OF DEATH

DEALING WITH DEATH - SOCIETAL TENDENCIES

Death is universal, and humankind has perennially been a witness to it, as we all at some point face Death in our life, whether it is through the loss of someone close or even ourselves. Hence such, caring for the dead is an essential part of any society, as it marks a break in our existence, which leaves us with a feeling of absence, emptiness, and nothingness [Jacobsen, Michael H & Olsen, Jan B 2014, p.34+45]. As the counterpart to life, Death is an inevitable destination of human existence. However, we experience that Death is a subject which people both in mind and body detaches themselves from. This detachment exists due to how Death has been made an invisible happening in our lives. The basis of such are to be found in how professionalism has attended to the matters of Death, which has protected the surviving relatives from committing to the happening of Death [Sommer, Anne-Louise, 2008, p. 322]. Based on such this also encourages people from keeping their eyes closed towards this unknown aspect of life, which the eyes cannot see. When closing our eyes towards the unknown and absent, we have become in denial of Death. In this denial of Death, Death has become a subject that lacks explanation, which religions throughout years have tried to answer [religion.dk,2018]. But what happens in future societies, when tendencies show, that religious believes becomes a minority and blurred? As a result of this lack of position concerning Death, it has led to an issue where we keep postponing and suppress our commitment to Death and how we wish to deal with it. [Sommer, Anne-Louise, 2008]

AN INDIVIDUAL OR SOCIETAL PROCESS

Society's relationship to Death is changing. Looking back a hundred years, it would have been a great shame not being followed on the way towards Death, by our loved ones, as if our lives did not matter [Sommer, Anne-Louise, 2008, p. 323]. Although tendencies show how the visibility of death was even proportional to respect, respect and love, this tendency ended in 1900. [Sommer, Anne-Louise, 2008]. Death is being deconstructed, in pace with the development of society and the increasing individualization. The meaning of Death is formed under the influence of either social, cultural or historical conditions [Jacobsen, Michael H & Olsen, Jan B 2014, p.48]. From being a topic, which the society jointly was confronted with in the past, to becoming, in modern times due to individualization, an issue which is dealt with individually, poses a challenge for the solidarity of Death in terms of how we as a community are confronted with Death. [Jacobsen, Michael H., 2014, p. 14]. Why culture has become an important part in the processing of Death, should be found in how the specific culture has helped to emphasize methods on how to interact with the deceased as well as conceptualizing the end of life. As humankind lives under these cultural traditions, it is also seen as a method on how to add sense to the meaningless of Death through existential and spiritual cultural conceptions. From these increasing individualized processes of how to cope with death, the meaning of Death is defined by the individual, forcing the individual to commit to the subject of Death, even though we are in denial of it. [Jacobsen, Michael H., 2014, p. 13]. Our denial is expressed through the fact that we have lost a universal language that defines sorrow and social cohesion in the event of Death. This has happened due to our individualization, weakening of religious beliefs and longing for immortality, which have led to the loss of a shared understanding of the afterlife, and resulted in Death being a repressed and tabooed subject in our society. [Rubows, Cecilie, 1993].

PLACES OF THE DEAD

In contemporary societies, places inhabiting spaces for the Dead, tend to become empty and segregated spaces in the urban context. This separation is a result from how we have made a taboo of Death, due to our modernizing society and individualization, that have weakened the identity of these spaces, as the meaning of Death, in an individualized society, are let to the individual. [Verna, Rita 2013-2014] [Jacobsen, Michael H & Olsen, Jan B, 2014]. Through our Thesis, we attach great importance in minimizing this issue of separation, as it leads to voids or emptiness in our urban contexts in those meetings between the living and dead, instead of exploring the potential of these intersections.

In recent years, more focus has been directed towards the use of the cemeteries in Denmark. Studies show that future growth in the population number in Copenhagen will place high demands on the urban spaces within the city. At the same time, new tendencies regarding burial within cemeteries shows, that a higher amount of areas stands empty. From these tendencies, the empty land of the cemeteries would be able to offer recreational spaces that would enhance the intersection between the spaces intended for the living and dead. [Fredslund, A. Annemette, 2015, p.8-10]. When rethinking the design of cemeteries, to be something that also could act as an urban space for the living, studies have shown how the cemeteries could offer peace and quietness, through natural scenery, that gives space for thoughtfulness and immersion, as the living are faced with the big question of life. It becomes a place where the living are given the opportunity to reflect upon how other individuals and cultures manage death and how they pay their final farewells to the Deceased. From this perspective, it would give words to the taboo of Death, by encouraging opinion of Death [Fredslund, A. Annemette, 2015, p.13].

In a comparison between parks, green spots and cemeteries, studies have shown that the aspects separating these apart is Death. The primary function of the cemeteries is to act as a place for memories and sorrow for the surviving relatives and manage the dead in a decent manner reflecting burial traditions and customs of the time, while being marked by a solemn atmosphere, influencing people to behave in a specific way. [Fredslund, A. Annemette, 2015, p.6]. Although the functionality and the atmosphere of the cemeteries need to be respected as its primary features, in future development of these, a balance needs to be found, when rethinking the urban spaces of the cemeteries as urban space and a space for the Deceased. [Fredslund, A. Annemette, 2015, p.13]. While encouraging this intersection is it also considered how the areas of the cemeteries have a wide tension field, providing space to the commune, individual, sorrow, celebration, familiar feeling, alienated feeling and agelessness [Fredslund, A. Annemette, 2015, p.8-10]. From these definitions of the spaces intended for cemeteries, we believe how these terms all are common for areas inhabiting Death, whether we speak of cemeteries, crematoriums, chapels or churches.

OUR INTENTION

In the design process of designing the presence of something absent we ask ourselves what a "good" Death is, and in what way the architecture that supports a "good" Death could envelope the events of it? Ground burial and burning are some of the methods in which populations all over have made use of in the disposal of the deceased. But how can these approaches be managed in a way that would diminish the absent of Death in our society to reduce the taboo of it by making it into something that would allow us to share our grief? [religion.dk, 2018]. From these dead and segregated spaces, we find importance in defining and forming the identity of Death through a funeral and memorial architecture to create an architecture for the crematorium, which both considers the Deceased and the surviving relatives. To create a balance for the urban spaces defined by the architecture of the crematorium, we find inspiration in how the management of Danish cemeteries, strive to enhance a lively, while still solemn atmosphere, as the spaces, seek to inhabit both the dead and living. In our investigations on how to define Death through an architectural piece, we aim to foster interaction, which would allow the spaces of the living and dead to benefit from one another. From this interaction, we strive to make the topic of Death controversial, through an architecture, that would allow Death to become visible in a societal context. In our effort to make Death controversial we aim to give rise to discussions of the topic, and some extent fosters acceptance of the same and thereby dissolve the taboo if it. Additional we intend to show a way of how the living can coexist with the Death, as Death is an unavoidable event in human existence. On account of the issues related to cremations grounds, we intend to take up the challenge of finding and enhancing the potentials of the meetings between the spaces of the living and Dead. To be capable of improving the potentialities of Death and defining Death through architecture, we aim to build knowledge of the history and processes related to Death.

RITUALS IN DEATH

PROCESSING DEATH THROUGH RITUALS

How we die and which settings we establish in the event of Death matters. Both for the deceased and the surviving relatives, as to how we die, lives on the minds of everybody who survives us. Due to these aspects of Death, it has become essential for the humankind to fill their needs through funeral cultures, as they also allow us to cope and bring meaning to the events of Death [krematorio.fi, 2018]. In the attempt of filling these needs, different opinions stand out, regarding which rituals a funeral should possess. When trying to define the meaning and intention of rituals, these are promoted as symbolic actions, which purpose is to guide through a passage from one condition to another [politiken.d, 2018]. It is through rituals, in which humans also form social solidarity through cultural norms and values. [denstoredanske.dk, 2018].

IN WITH THE NEW AND OUT WITH THE OLD?

Since funeral ceremonies go hand in hand with the practice of rituals we also need to bear in mind the relevance of these rituals in present society. Observing tendencies on the funeral rituals, anthropologist, Anne-Louise Sommer, argues that an expansion of these are happening. Cases show that funeral events at times encompass other acts than the sermon from the priest and the ordinary rituals of the funeral, making the funeral more personalized [Sommer, Anne-Louise, 2008, p. 325]. As highlighted in the previous texts about societal tendencies related to Death, it was mentioned how religions throughout years have attempted to find answers on how to explain the event of Death through religious traditions and rituals. But we need to ask ourselves if this approach in dealing with Death fits our modern society and its new tendencies when tendencies tell us otherwise through an increase in individualization? In the text of societal trends concerning Death, it was also emphasized how individualization had vanquished the common meaning of Death and how to cope with it, meaning that the individual has become a strong presence nowadays. This individualization is reflected in how we wish to execute our final-farewells through End-of-Life rituals, as those rituals posses our values and norms [politiken.dk, 2018]. We tend to think of rituals as fixed but they are everything else but static. Else Marie Kofoed, manager of Dansk folkemindesamling, is of the conviction that we intend to oversee the alteration of rituals if we adjust the rituals, so they fit in with the present, as she experiences how we throughout time continuously have been making modifications on ancient rituals of the past [politiken.dk, 2018]. Although when executing these alterations in rituals, it essential that the ritual would be able to fulfill needs and consist of something general for it to gain ground by a larger group, [politiken.dk, 2018].

Through statics, tendencies have shown, that a more significant number of people within Finland nowadays choose to be buried or cremated without any clerical involvement. This tendency corresponds to almost ?% of all funeral ceremonies being conducted within Finland. From these statistics and tendencies, it concludes to some extensions how our religious belief is weakened and that we seek new approach in how to explain and add meaning to our lives and the end of it. Danish Anthropologist, Naja Genet May, is of the opinion that a new funeral culture is breaking old patterns. From such, she finds relevance in establishing new rituals and customs that would substitute for old ones. [politikken.dk, 2018] In the attempt on creating new suitable rituals, she still see potentials in finding roots and inspiration in the religious and traditional rituals, as it would enhance a recognition. In her interpretation of new rituals N. May, make usage of the acts we execute throughout rituals, but outside a religious context. In doing so, the rituals become more concrete rather than foreign and abstract actions [politiken.dk, 2018].

A JOURNEY THROUGH END-OF-LIFE RITUALS

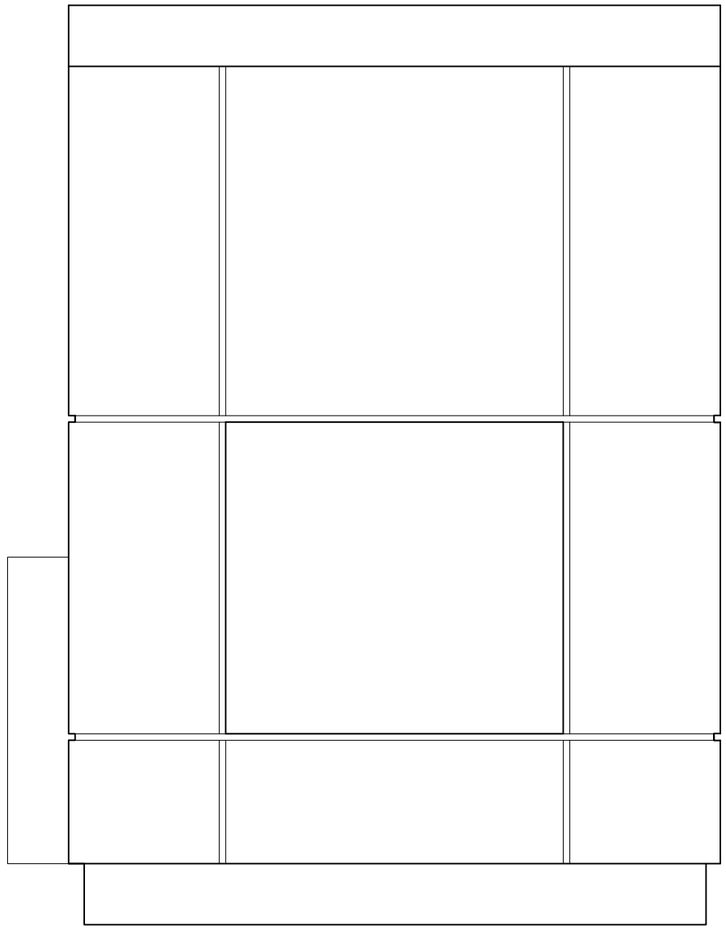
As theoretically studies have brought knowledge of rituals in a contemporary perspective regarding how this practice of rituals have become more individual and been subjected to changes, we seek to enhance general understanding of how rituals address the transition from one condition to another. When doing so, we aim to sort out guiding methods on how to process Death, funeral culture and the transition and rituals it breeds. As the deceased transit from the world of the living to the world of the dead, Arnold van Gennep's theory of rites of passage possesses great relevance of this topic, as he in his theory observes Death and its processes going through a series of stages. [Rubow, Cecilie, 2011, p. 26]. In his theory, Gennep divides the rites of passages into three phases, separations, transitions- and annexations rites. He argues that these phases always to some extent exists in the transition from one situation to another in ritual events [Rubow Cecilie, 2011, p. 27]. When comparing these rites of passages to a Nordic context and its associated Death rites, both through a perspective of religious or non-religious believers, it can be pinpointed that these phases exist and are divided into a final-farewells, interment and memorial gathering [Rubow, Cecilie, 20011, p. 27].

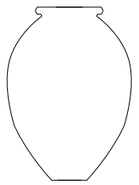
When entering the first phase of Gennep's rites of passage - the rites of separation - is conducted. In this rite, a final farewell is said, and preparations are made for the deceased, as the deceased is being released from its usual settings in the world of the living, now moving into the world of the dead. They way these preparations are manifested in the separation rites, is expressed in the dead body being washed, clothed and placed in the coffin [religion.dk, 2018] & [Rubow, Cecilie, 2011, p.27]. As the deceased is placed in the coffin, it emphasizes the separated circumstances, between the living and dead, as the deceased is laid in the coffin and the surviving relatives step out of their daily lives to attend the afterward funeral ceremony. [Rubow, Cecilie, 2011, p. 28] Additionally, as the body of the deceased is placed in the coffin, this action initiates the second rite - the transition rite. Within this rite the deceased transitions from one status to another. The funeral ceremony gives the opportunity for the living to accept that the deceased ought to find a new place to be a part of, as they acknowledge that the deceased spiritually has become part of the world of the dead. As to which parameters that terminates the rites of transition, this first and foremost happens at the expense of ceremonies being held and when the coffin is carried out in the hearse or the survived relatives leaves the room and the coffin remains. Secondly, the termination of the transition rites also becomes a result of the deceased's final movements moves outside the livings fields of vision, and the living is left with their emotional pain due to the separation. The survived relatives are left in between the living and dead [Rubow, Cecilie, 2011, p. 28] & [religion.dk, 2018]. As transition rites are conducted an terminated, annexations rites follow. The rites of annexations are expressed in the memorial social gathering in honoring and remembering the deceased, as the deceased is placed in the ground and handed over to the earth. From this perspective, the deceased is considered dead on a social level, as the person no longer lives among us, and therefore we have the person in our memory. From this aspects, it is found that the cemetery becomes important for the surviving relatives in their memorial sorrow, as the cemeteries offer a memorial garden of the dead [Rubow, Cecilie, 2011, p. 29 & 99]. In the steps of placing the deceased in the ground, the deceased now become, besides a spiritual part (from the ceremonies) also a physical part of the world of the dead. In honor and remember the event of wake gives the surviving relatives the opportunity to acknowledge, that there is a living world, which they can return to. The world has not come to an end. After the funeral ceremony, the great common manifestations of our sorrow ends, but the closest surviving relatives tend to maintain the relationship to the ritual room in a shorter or longer period. In that context, it clarifies how funeral rites can last for longer than the relation between the held ceremonies and the survived relatives, which shows how places that could provide memories are of great importance.

SUM UP

From this knowledge of rituals from a perspective of transitions, we ask ourselves how we through architectural instruments can fill these needs in the event of Death and the rituals it breeds, that would address more contemporary issues of Death and the increased individualizing of it. In a comparison of different rituals of death, all of these shows how the rituals of death establish and marks the deceased's transition from the living community unto a new role in the world of the dead [religion.dk, 2018]. Architecture cannot change the destiny of life, but it can possess the ability to process Death. In doing so, we question ourselves how the architecture can form potentials to orchestrate the situations of Death and be the linkage between the living and Dead? When the last farewell is said, it can gather people and emphasize a social cohesions at that specific moment. This means that the architecture that houses this kind of farewell possess the potential to set the frames and influence the bereaved gathered at that moment. The person may be gone, but the memories will still stand in the present. It can bring up some unpleasant feelings but simultaneously help and enhance a remembrance of a lost one. From the last farewell to memories of a deceased these acts can be facilitated through two architectural typologies being either a funerary or memorial architecture, which accommodates the moment of the end and the moment of remembrance in the posterity respectively [JaeHong, Lee, 2013]. In trying to understanding these typologies one primarily dissimilarity exists in the utility from a perspective of time. As the usage of funerary architecture exist in the present moment of an event and the utilization of memorial architecture occurs as people return to the memories of earlier events associated with Death, as memories start where history ends - it is made from presences and absences. [JaeHong, Lee, 2013] From the clarification of the two architectural typologies, we aspire to investigate how these two combined expressed in an architectural piece for a crematorium could complement and emphasizes interaction and ties people together to promote social cohesion in a time of grief. When designing architecture in association to Death, and how we can memories the deceased, we question ourselves how we can contribute in the development of collective memory, through a symbolic architecture, accompanied by atmospheric, spatial, transcendental and scenic implements.

From these aspects of how to deal with Death rites, we have looked upon the processes and sequences of those. In our investigation of trying to clarify those, it has become clear to us that aspects such as people, places and time becomes of high relevance when processing Death. Especially they studying these sequences of rites in the event of Death, it highlights the importance of time and how time is seen as a linear forward moving process relieved by forthcoming phases As another parameter on how to accommodate the taboo of Death, we find importance in how Death once again could be an event which we unitedly as a society can cope with and together express Death into words to foster an acceptance of it as we reintegrate a universal social cohesion and sorrow. Although we aim to bring solidarity back into the event of Death, through a social cohesion we still find great importance in keeping space for individualism, that would allow each mourner to find their path in their grieving moments.





COFFIN
RITUALS OF A FINAL-FAREWELL

CREMATION OVEN
RITUALS OF INTERMENT

URN
RITUALS FOR MEMORIALS

BUILDING THE END

THE CONCEPT OF DEATH

As we place intangible questions about Death in terms of why this is part of our existence and how to go about it? Death is meanwhile also companied by concrete and practical issues, regarding how to handle and dispose of the bodies of the dead? In figuring out how to handle the disposal of a Deceased, aspects such as religions, cultural traditions and the human physical conditions in relation to nature have through time been kept in mind. [religion.dk, 2018]. As Death needs a place, both to inhabitant our final moments of farewells and from a perspective of the disposal, how can such place be defined? In the past, historical context and cultural affiliations, have acted as determining parameters in such definition [Sommer, Anne-Louise, 2008].

At present society, both internment and cremation are practiced, but this has not always been the case. Observing the rituals and culture of Death in a modern perspective and how we encounter the event of it, in a Western context, statistics shows an increase in choosing cremation. In the Northern countries, statistics show that 70-80% choose to be cremated, making urn interment widespread. From this increase, the crematorium has increasingly become the place where people say their last goodbyes [yle.fi, 2018]. Although the popularity of cremations increases at present societies, this architectural building phenomenon is a recent typology, as the Christianity expressed criticism of cremation up until 1893. On account of this criticism, cremation was not practiced until 1893, when cremation became legal. [livogdoed.dk, 2018]. [Stegers, Rudolf, ????] Observing the typology of crematoriums in a Western perspective, it is noticeable how a strict separation between the ritual and mundane doings exists. This separation can among others be found in the crematorium of Erik Gunnar Asplund, Woodland crematorium. Although this tendency of strictness, new tendencies spring up in pace with time and the growth of crematoriums. These aspects have influenced our beliefs and customs as they have changed and influenced our way of funeral culture. One of those changes can be found in how we minimize that the deceased is concealed from the funeral rites as we see in Japan, and thereby have allowed both the ritual and mundane doings to become more integrated functions in the entire program of a crematorium. That the deceased has become a display, is shown in the design of Bispebjerg Krematorium. [Stegers, Rudolf,]

THE HISTORIE OF DEATH

Historically, cremation has its roots back in ancient time as a funeral rite. In a Nordic context, The Vikings introduced cremation. Grave findings show that people were cremated in the area that is now Finland, as long ago as the Stone Age [Krematorio.fi, 2018].

Observing history, poor conditions for burial in Europe in the 19th century made significant progress in the practice of cremation. After the French Revolution in 1789 and at the end of the Enlightenment, these periods lead to a reintroduction of cremation in Christian Europe. An attempt to realize an enlightened this reintroduction of cremation should add to a hygienic funeral. Discovery of infection mechanisms was a convincing argument in favor of cremation - A bacteriological acknowledgment that spread of infectious disease could take place through the water that could escape from the cemeteries. Around 1870, initiating medical conferences indicated that cremators had been invented with hot air, heated to temperatures above 1000 degrees could decompose a body to chemically pure ash in a short time without flames having direct access, not being offensive, but rather beautiful and ceremonious. This event precedes the construction of the world's first modern crematorium in Milan, 1876. Since then, the use of crematories has been met, and the controversy over whether the method could be accepted from the country's Christian traditions for ground burial is being dissolved in society. An acceptance that eliminates ash graves being thought of as paganism and considered to be the ultimate form of punishment and inhumanity. However, these controversies became part of the efforts for the bourgeois, religiously neutral rituals and a break with community authorities, including the church and its men.

Various measures were used to prove this form of funeral rites. The first crematories in Europe were listed as a clear new break in relation to the well-known church building to promote the case as an aesthetically pleasing alternative to a funeral. These buildings followed inspiration from Italy and Rome - with columns and halls with niche walls for urns. Christian symbols were deliberately avoided - especially in the ceremony hall. One attempted to organize everything from the cremators to a building that acts ceremonial beautiful and honor worthy, from where the cremation appeared as ordinary purified funeral rites. In 1900, cremation was understood as an equal burial form, under the influence of the Evangelical Lutheran Church. The breakthrough years for the general acceptance can be set in the Nordic capital areas until the 1920-30s where the cremation percentage was increasing. Since then, the individual disengages oneself, while the legislation opens to allow relatives to decide on cremation, which causes the rate to rise further.

When defining the influencing parameters, which have made a taboo of Death, is has been highlighted in previous texts, how a professionalization within the field, increasingly individualization and descending religious beliefs. Adding to the taboo of Death in our Western society, cases of the anthropologist, Anne-Louise Sommer, emphasizes how the act of cremation pays a contributing part. [Sommer, Anne-Louise, p. 322]. The act of cremation has assisted in how Death has been obscured as a part of our existence. Due to such exists in the fact that cremation has helped transform the decomposition of the human body into something more aesthetic through the handling of urns [Sommer, Anne-Louise, 2008, p. 322]. As a result of enhancing Death through aesthetics, the act fo cremation contributes to making a taboo of Death.

From a perspective of being a popular method on how to dispose of bodies, stated through statistics, while contributing to the taboo of Death. This gives rise for dealing with cremation to accommodate and eliminate Death as a taboo, in a search for finding an alternative in how this procedure could put words on Death instead of hiding it, through an architecture, which could have the ability to articulate the events of Death.

THE INTIMATE SPHERE IN THE PUBLIC SPACE

A shift has happened in terms or which intimate confessions are shared outside the home, as more emotional revelations are shared with the public than before. From this point of view anthropologist, Anne-Louise Sommer argues that transparency has become basic terms in our lives. As Sommer sees a tendency in our we initiate the public into our lives; this also applies to the spaces we engage with ourselves. This fact is emphasized in how Sommer contends that we tend to engage with "aquarium-architecture," defined by its visual transparency [Sommer, Anne-Louise, 2008, p. 332]. Within these spaces, everything seems exposed to the accidental passers-by´s unrestrained curiosity. [Sommer, Anne-Louise, 2008].

MEMORIAL CONCEPTS

Evolution in urn burial and memorial spaces underlines how ingrained ideas about the coffin's immersion in the soil are. In the 1920s, public burial places were established for the graves of the unknown. An anonymous approach provided with a common monument that realizes the romantic idea of living together with nature, besides saving space and simplify the care of the grave. The shape of this funeral grows between 1950 and 80 in the Nordic countries and appears as the epitome of the modern displacement of death reflecting the taboo that church circles turned against, being meaningless in small societies.

The spread of this type of burial place is technological, hygienically and economically justified, however, it seems like the society's controlling response to the overwhelming mass deaths beyond the First World War. However, the outer invisibility implies that the openness of death, the horror of the weighty question of absolute nothing, instead moves inside the individual. The common language in the rites of passage is shrunk, and the handling of the dead is increasingly going beyond a matter of mourning therapy. The above-mentioned raises a question about how the rites of passage should be addressed in our modern society and take care of the demographic burden associated with descendants of baby boomers. What do we do after the cremation and how can the values related to absolute purity be maintained?

SUM UP

In our process of making the architecture for the dead fit into the urban and cultural context of Rovaniemi in Finland, we strive to investigate how this building typology could adapt Nordic traditions to soften the statement of Death, in which a crematorium reflects in general, and thereby make it a more approachable topic. As the text has stressed how the procedure of cremation enhanced the taboo of Death, we see the importance in how we could develop an architecture, which could articulate how to manage Death and its rituals and thereby detaboo it. As a way to accommodate how to detaboo Death, we find potentials in how new tendencies of our intimate sphere has become part of the public allowing transparency and view. From this transparency, we see a potential in how it could breed an opinion amongst people, as they will become faced with the big question of life while observing and reflecting on how other individuals manage death in their finals farewells in the procedure of cremation.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BROOKS
MISSOURI
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KRATZKE
PENNSYLVANIA

III. 8 - TACTILITY, TECTONIC & TELLURIC ▸▸▸
Diagram showing how architectural tectonic is acheived through the theory of Frampton.

III. 7 - STEREOTOMICS & TECTONICS ▸▸
Diagram showing how architectural tectonic is acheived through the theory of Semper.

III. 6 - GESTURE & PRINCIPLES ▸
Diagram showing how spatial gestures are acheived on the basis of the constructive principles

TECTONIC DEFINITIONS

A TECTONIC APPROACH TO DEATH?
REFLECTIONS ON THE INTERSECTION OF DESIGN AESTHETICS, CONSTRUCTION & SPACE

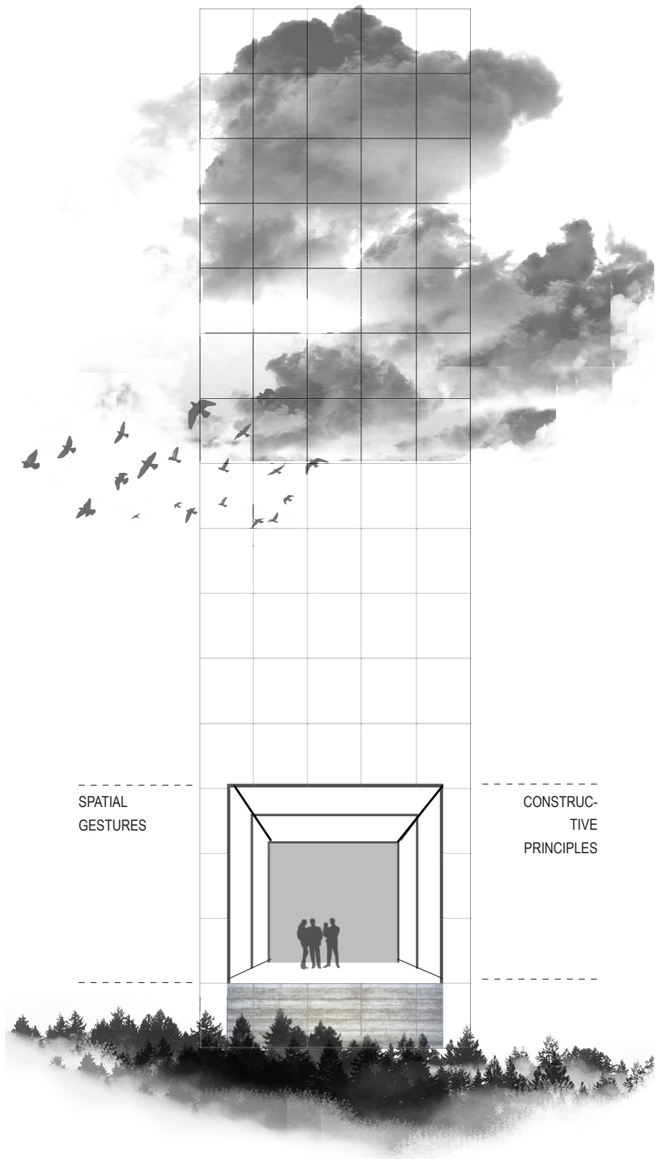
CONTEMPORARY DEFINITION OF TECTONICS

The concept of tectonics has from its origin until today's ideas been subjected to many understandings and interpretations, engaging with the fields concerning architectural construction and aesthetics. [Frampton, Kenneth, 1995]. From being inferred from Tekno, [Greek word] where the definition of tectonic should be understood as the art of construction. To being developed, in modern times, into a term, that defines tectonic as an approach, which aspires aesthetics and constructive perspectives - Expressed among others through Frampton definitions of tectonics, "... poetics of constructions ..." and Adolf H. Borbein's "Tectonic becomes the art of joinings. "Art" here is to be understood as encompassing tekne, and therefore indicates tectonics as an assemblage not only of building parts but also of objects, indeed of artworks in a narrower sense. [Frampton, Kenneth, 1995, p 2]. These contemporary definitions of tectonic illustrate how understandings of tectonic have become interdisciplinarity of aesthetics and construction, as tectonic do not only consist in the assemblage of the physical building elements, which embraces both poetic and cultural meaning [Frampton, Kenneth, 1995].

TECTONIC ARISE FROM THE EARTHWORK - GESTURES & PRINCIPLES

To address the notion of a tectonic method, that would allow the landscape to become the motivating generator and tectonic parameter to accomplish an architecture, a method set forwards by Marie Frier Hvejsel in "A place to sit" - Gesture and Principle - is employed. By employing this method, and allow the landscape to become essential in the development of architecture, we see potentials in how this method would allow a Nordic approach to the architecture, as the site and its resources are considered in terms of spatial qualities and constructive systems.

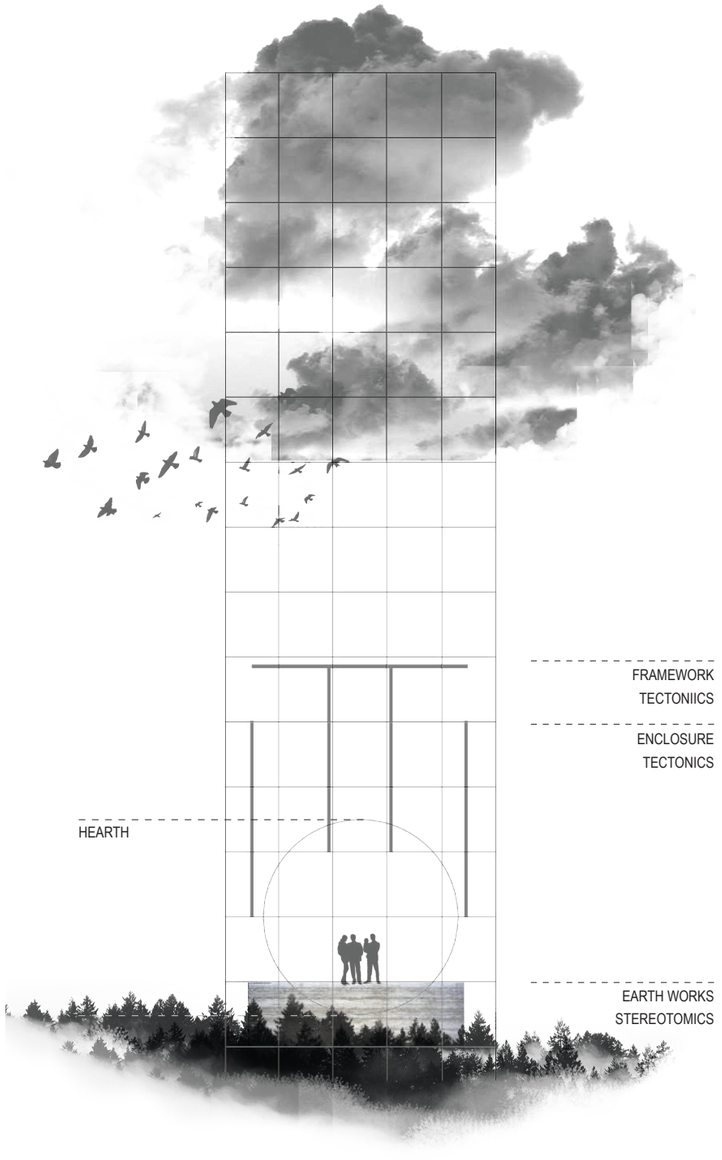
Through employment of Gesture and Principle, we aspire to gain a proper appreciation of how to address tectonic qualities and possibilities within the landscape and how these derived localized principles could be utilized in the architectural tectonic process of the actual building. Gesture, as the pivot of the method, emphasizes that attention should be given to the spatiality of the site, to stress how a tectonic approach should be seen as a method that considers and shows advantages of the spatial characteristics within a landscape. In consequence of a strategy that pays regard to the spatialities of the landscape emphasizing spatial invitation, scale, characteristics, and a sense of place found within the landscape. It enhances that the origin of tectonic exists in the jointing and adaptability between the earthwork and architecture, in how these spatial parameters can be taken into account in the architecture. As additional and advanced studies of Gestures, are found in the studies of the principles within these spatialities. The Principles can be derived and aims to strengthen technical perspectives, that would be consistent with the projected spatial qualities. So to speak the Gestures within the landscape attributes in defining the architectural concept from a perspective of tectonic, while being consistent with principles, which establishes technical aspects that would support the expression of the Gestures projected in the architecture. By applying this method of Gestures and Principles in the initial analyzing phase of architectural design, we see potentials in how such design process could enhance a narrative of aesthetics and construction, through considerations of the native soil and environment and thereby create a linkage to the understanding of Nordic Architecture and its traditions.



STEREOTOMICS AND TECTONICS

From a broad and initiating perspective on how to deal with tectonics linking the architecture to its landscape through spatial and constructional concepts, the theory of Gottfried Semper, German architect, argues how these spatial and constructive aspects interact with one another. With a focus on forming the groundworks of tectonic in architecture Semper finds a reference in the Caribbean hut, separating it into four elements, being the earthwork, framework, enclosure and the hearth. [Schwartz, Chad, 2017, p. xlii]. The earthwork acts as the foundation, which addresses the connection between the human-made structure and the ground, as it receives the building. [Schwartz, Chad, 2017, p.xliii]. Continuing upwards on top of the earthwork is the framework. In his theory, Semper defines the framework as a structure while being space defining in a vertical direction [Schwartz, Chad, 2017, p.xliii]. In his definition of the enclosure, Semper argues how this parameter acts as a space defining element within buildings, as its surroundings the framework. [Schwartz, Chad, 2017, p.xliii]. On account of being a space defining element, Semper distinguishes between two wall typologies, which adds to different characters of the wall, "a massive fortified wall " and "a lightweight screen." [Schwartz, Chad, 2017, p.xliii]. In his definition of the different walls, the fortified wall had the character of being massive through pilling of materials, and therefore serving a continuation of the earthwork. The lightweight wall had the character of cladding, and functioning as a space divider. [Schwartz, Chad, 2017, p.xlv].

In the sum of all these elements - the earthwork, framework, and enclosure, Semper argues how all these, as a unity, should intend to protect the Hearth of the building. In his definition of the Hearth, Semper states how the Hearth should be understood as an integrated part of the earthwork, an act as a social center, emphasizing our human needs [Schwartz, Chad, 2017, p.xlv]. In a more in-depth discussion of those four elements, Semper defines the constructions of these, as he distinguishes between two construction typologies - stereotomic and tectonic. [Schwartz, Chad, 2017, p.xlv]. From Greek, the stereos derive from solid and tomia from cutting through [Schwartz, Chad, 2017, p.xlv]. In Semper´s theory, the hearth and the earthwork exist from stereotomic constructional methods, making them rooted on the site, which they are



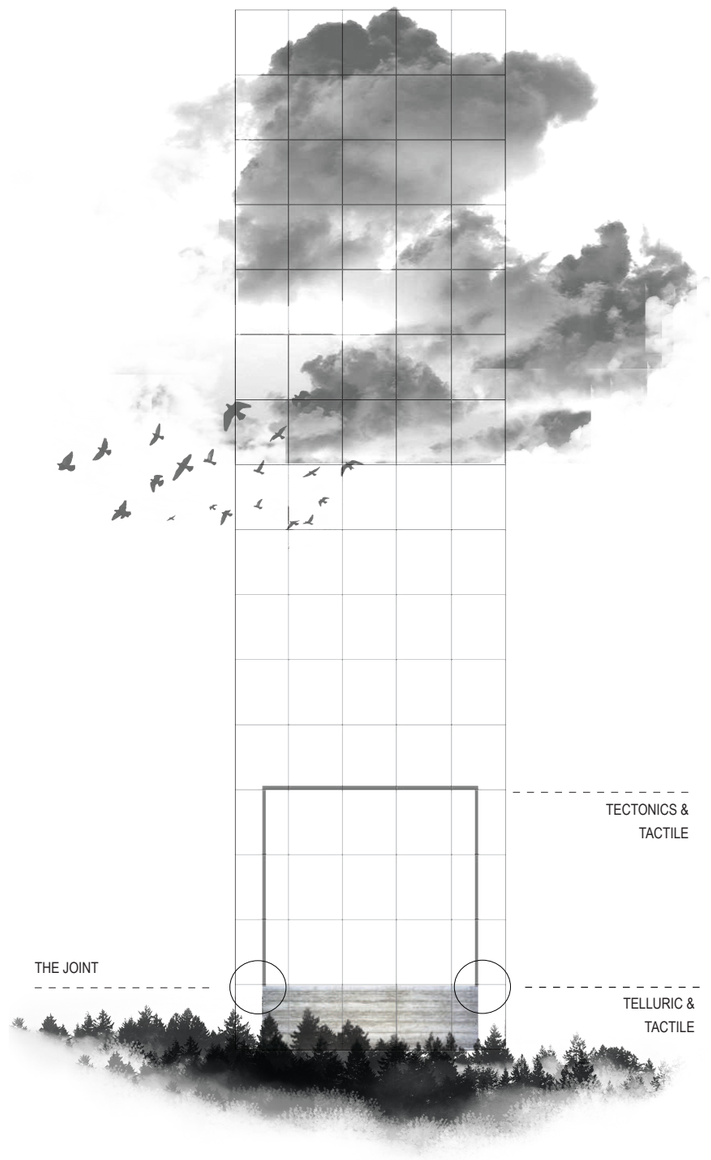
situated on. Being derived from tekton, tectonics, focuses on the practice of carpentry and due to such tectonics refers to the lightweight structures. [Schwartz, Chad, 2017, p.xlv]. As for the four elements in Semper´s theory the framework and enclosure, are produced on the principles of tectonics.

TECTONIC IN THE DETAIL

From an initiating perspective on how to deal with tectonics, linking the architecture to its landscape through spatial and structural. To an aspect, which stresses how the tectonic understanding could be found in the detail, we attend to find inspiration in theory set forward by Frampton, from his book “Studies in Tectonics Cultures” [Frampton, Kenneth, 1995]. In his theory, Frampton looks upon the core elements of architecture and how we can find means to articulate these. In this definition of space as a concept, Frampton sub-categorizes the meaning of it into; the tactile, tectonic and telluric. [Frampton, Kenneth, 1995, p.] The tactile, refers to the materials, tectonic to the structure and the telluric to the earthwork and its laws. [Frampton, Kenneth, 1995, p.]. From this definition of his, tectonic should be understood through the structure and construction. He stresses the importance of clarity in the structure, referring to the details in the jointing system, as this should provide a clear image of how the structure performs without being obscured through the ornamentation of the building. Adding to the performance of the ornamentation, he finds potentials in how these should act as a mean to underline the essence of the structure. [Frampton, Kenneth, 1995, p.] As Frampton stresses the importance of the details in the structure, he makes the jointing system of the structure to the center of attention, as the jointing furthermore also posses the tactile and telluric aspects [Frampton, Kenneth, 1995, p.]. From this, it shows how Frampton creates a movement away from the ornamentation within architecture, towards a more simple architectural language, which states an architecture, where the structure, loads and supports are to be immediately recognizable in the architecture

TECTONICS AND SENSES

As another layer to the understanding of tectonic Juhani Pallasma, a Finnish architect, brings a perspective on how tectonics could be understood in the details of how the construction of the architecture embodies our bodies. To enhance how our bodies could be embodied in the architecture he stresses how the construction and its different elements add to specific atmospheres [Schwartz, Chad, 2017, p.xxvi]. From his quote; “we behold, touch, listen and measure the world with our entire bodily existence” [Schwartz, Chad, 2017, p.xxvi]. From this quotation, it becomes clear how the construction of elements within architecture unites our bodies with the materiality of the world as we engage with the architecture. [Schwartz, Chad, 2017, p.xxvi]



NORDIC ARCHITECTURE

NORDIC TRADITIONS AND TENDENCIES

What does it insinuate to be Nordic or how does one go about a Nordic approach? In our search for understanding how Nordic values have shaped the architecture that surrounds us and our approach to the context, we strive to investigate those interpretations. Through investigations that will explain, analyze, conclude and reflect, we aim to clarify the values and their definitions in a Nordic context. From these investigations, we intend to accomplish a method on how to approach the Nordic in architecture. A way to deal with initially processes through contextual concepts and later on detailing processes expressed in the application of resources. From architectural cases, which seems to emphasize the essence of Nordic Architecture, we strive to investigate what makes these buildings particularly Nordic? From the investigations on Nordic Architecture, implements should give directions in the design for a crematorium with a Nordic perspective upon architecture within a Nordic context.

NORDIC ARCHITECTURE & HISTORY

Nordic Architecture became world known in the 1930's, during the Stockholm Exhibition with Gunnar Asplund as one of the main architects, as well as architects such as Jørn Utzon, Sverre Fehn, Alvar Aalto mainly in the countries of Denmark, Norway, Sweden, and Finland. During the last decade of years, a new culture in Nordic countries has risen, where Nordic architects returned to materials used by their modernist forebears, such as brick, wood, granite and concrete. When speaking of the Nordic societies that are quite similar and reflects certain issues in architecture, sharing a strong social responsibility, which is shown in the importance of the environment and the concern of the context, as in the place, landscape, and nature.

ARCHITECTURE & CULTURE

Our understanding of Culture in collaboration with the natural environment of a place are all essential parts in regards to how we add meaning to the architecture that surrounds us. As this relationship forms traditions that define our relationship to the world surrounding.
When trying to define Nordic Architecture, it is often characterized as a localized architecture linked to culture and identity of the specific context. On account of these concepts, they have all been a cause for wonder to us of how to understand the concept of culture, and additionally how these relate to architecture? [Andersen, Michael A. & Schelde, Jeanne R, 2013]. When searching for the word culture in the dictionary, following definition is found: "the characteristic features of everyday existence (such as diversions or a way of life) shared by people in a place or time" [merriam-webster.com, 2018]. From this and studies of culture, it shows how culture should be understood as what we do in the place we are in - its demonstrated within our customs and rites in association to our surroundings as we interact with it. Additionally, culture should also be found in our transmission of experience and knowledge passed on to generations. From a perspective on architecture in association with culture, culture is expressed in our way of living and how we are united, through the frames formed by architecture. [Andersen, Michael A. & Schelde, Jeanne R, 2013, p.35] When speaking of culture in an extension of Nordic Architecture, words such as authentic comes up. From this term, it highlights how Nordic Architecture puts a phenomenological focus on the relation between the building and the context. This relation is expressed in the attachment to a context and the local aspects such as resources and culture. [Andersen, Michael A. & Schelde, Jeanne R, 2013, p.35, 36].

A PLACE-DETERMINED ARCHITECTURE

When defining the traditions of Nordic Architecture, a place also becomes an important parameter, as this is influenced and fostered by the local culture. As a result of this intersection between place and culture, what makes Nordic Architecture, is how the architecture becomes utilized as an instrument, which forms a spatial experience that fosters a local way of living and gathering while being an extension to the natural environment of the place [Lund, 2008].
"An architecture of the true North, so shaped by climate, light (and its absence), material resources, and our sublime perception of the arctic latitudes as to constitute its own regional construct" [...] This definition of Nordic architecture and its relation to a natural environment is emphasized in Peter MacKeiths, persuasion of Nordic Architecture, as he thinks of Nordic Architecture being an extension and consideration of natural environment and native soil. In his statement, MacKeith argues on how Nordic Architecture acts like a natural rooted product, which has risen from the natural environment, as it communicates the principles of a specific location in its application of local resources.

THE PLACE - GENIUS LOCI

As literature points out the importance of place, when mentioning the defining aspects of Architecture we aim to understand the role of place in relation to Nordic Architecture in general. By doing so, we look into the theories of Christian Norberg-Schulz "Genius Loci - Towards a Phenomenology Architecture." In his theory of Genius Loci, he pays notice to the architecture and place, and how the place should be understood as the underlying basis of the architecture. From this perspective, it becomes clear how Genius Loci has its origin in the natural landscape. [Andersen, Michael A. & Schelde, Jeanne R, 2013, p. 36] [Norberg-Schulz, Christian, 1980]. In his literature of Genius Loci, He emphasizes the importance of creating architecture that is tuned in with the surrounding environment. [Norberg-Schulz, Christian, 1980, p.10]. This attention towards the place is strongly incorporated in Nordic Architecture, as it has a uniqueness to it, through its way of relating to the place. [Andersen, Michael A. & Schelde, Jeanne R, 2013, p. 36]. This connectedness between the architecture and place has become a way to measure the Nordic Architecture and its authenticity. [Hvattum, Mari, 2013, p. 107]. Christian Norberg-Schulz points out that places often are determined through its geographical term, but this understanding of place is in his perspective an insufficient and abstract description of it. Due to this, he argues how places or natural places should be seen as more than a specific location within the landscape. [Norberg-Schulz, Christian, 1980, p.10]. From Heidegger's theory of being on earth implies being under the sky, Norberg-Schulz argues that places are formed by the totality of nature [Norberg-Schulz, Christian, 1980, p.10]. In this totality tangible phenomena exist, through concrete objects with material substance, shapes, texture, and color. [Norberg-Schulz, Christian, 1980, p.6]. Parts of these phenomena exit by their concreteness in our everyday life. This concreteness comes to show in tangible phenomena of the nature such as the sun, moon, clouds, night, day, shifting seasons, wood, earth, forests, trees, stone and the people we engage with. Besides tangible phenomena, Norberg-Schulz argues that a layer of intangible phenomena exists in our understanding of a place on account of all tangible phenomena combined. These intangible phenomena are expressed through the feelings; we have in a place provoked by tangible phenomena. From those different layers of phenomena, Norberg-Schulz contends that it is through those content are added to our life, as they, on the whole, make up a place and therefore influence our way of living. [Norberg-Schulz, Christian, 1980, p.6].

FINNSIH TRADITIONS

The forest constitutes a great part of Finland, covering 74 % of the land [trae.dk, 2018]. Back in time being a Finnish peasent meant living in the forest, making the forest the entire world [Miller, C. William , 2016]. As the way of living, was influenced by the forest, architecture as well was marked by it. This influence was expressed in how the architecture paid attention to the forest and acted as a representation of nature, through the use of natural materials, sense of teactility and the dynamics and rythme of the forest. From this fasination, it stresses how the Finnish has a "forest mentality", that would furhter add to the design of space and forms within the architecture. Besides acting as place which contributes in the arts of architecture, the forest was also seen as a place that would allow figments of the imagination and encourage place for reflection and comtemplation.

SUM UP

In our conclusion of Nordic Architecture, through our studies of the theories, we see a tendency in how its local surroundings condition Nordic Architecture, reflected in both culture and place, which combined brings a local identity to the place and the architecture situated within the place.

ATMOSPHERE

COPING WITH DEATH THROUGH ARCHITECTURAL SETTINGS

As mentioned in previous texts, Death is inevitable. Nevertheless, we tend to look past what is an inescapable part of life - its terminal. This reaction has become a reality as we outdistance ourselves from the topic of Death and intently work against the destiny of life. What this opposes towards Death is a result of our fears, ignorance or the emptiness, loneliness, and exclusion Death breeds from the loss of someone close as we mourn them [Kragh, Birgitte, 2003]. Through this increasingly search on how to control Death, the understanding of it has become even more estranged to us, as Death has been turned into a taboo. [Jacobsen, Michael H., 2013, p.12]. From this point of view one might argue that to cope and co-exist with Death or grasp and accept the notion of it, we need to raise the sensitive subject of Death and the emotions it breeds. To manage and to detaboo the subject of Death through architecture, we aim to build questions on how we would succeed in achieving such? So, when trying to question how we can accommodate the taboo of Death, we might need to realize that we cannot grasp the unknown of Death and its universe. Instead, we might need to understand the emotions we are left with, as they seem more tangible in our existence when one encounters Death. In this realization, we ask ourselves if acceptance and grasping of our emotions assisted by the architecture for the crematorium would make it easier for humans to co-exist with the universe of the Dead, as they go through the transition between life and death while mourning the Deceased. In doing so, it intends to bring the body of the surviving relatives in the center of the architecture and intentional form platforms for different atmospheric feelings, that would be a reflection of the state of mind corresponding to the different parts within the building programme. In doing so, we ask ourselves how architectural atmosphere can be defined and generated through architectural instruments?

In the following, we strive to investigate and define how the human body experience the aspects, which combined adds to the atmosphere. To achieve such we aim to clarify the definition of the atmosphere within architecture through the theory of the Finnish architect, Juhani Pallasma “The Eyes of The Skin” and the German philosopher, Gernot Böhme, “Atmospheric architectures - the aesthetics of felt spaces,” as the point of departure.

JUHANI PALLASMA

From the theory of “Eyes of The Skin,” Juhani Pallasmaa, tries to discuss the critical phenomenological aspects regarding the human sensory experience in architecture. In his arguments of sensory experience within architecture, he criticizes how the senses of the vision have gained a dominating role in architecture, as this suppression of our other senses decreases the plasticity and complexity of our perception and thereby gives an incomplete image of the world and architecture surrounding us. Besides the visual architecture of the eye, Pallasma states how there also exits a haptic architecture of our skin. From his point of view and own experiences, Pallasmaa tries to define how he sees the interplay of the senses in the real [Pallasmaa, Juhani, 2007, p.39].

“Every touching experience of architecture is multi-sensory; qualities of space, matter and scale are measured equally by the eye, ear, nose, skin, tongue, skeleton and muscle” [Pallasmaa, Juhani, 2007, p.41]. - These are his seven realms of sensory experience, which all interplay and infuse with each other. Besides the visual architecture, a haptic architecture exits, which Pallasma refers to as the architecture of the muscle and skin- the tactile senses. Additionally, architecture also provides space for the senses of the hearing, smell, and taste. [Pallasmaa, Juhani, 2007, p.70]. When experiencing distance and separation the sense of vision becomes essential, as the eyes seek to investigate and control the visual experience of a space, while on the contrary nearness and intimacy are experienced through the sense of touch, which calls for humans to approach a space to caress it. [Pallasmaa, Juhani, 2007, p.46]. When being subjected to emotional experiences, Pallamas argues that humankind tend to decrease the sense of distance, as this allows us to think clearly due to how our thoughts travel in an unfocused gaze [Pallasmaa, Juhani, 2007, p.46]. In an example of dark spaces, Pallasmaa refers to the council chamber of the Finnish Architect Alvar Aalto’s Säynätsalo Town Hall and stresses how the darkness can be experienced as an architectural mean to promote a sense of solidarity and furthermore strengthen the power of speech. [Pallasmaa, Juhani, 2007, p.47,48]. When addressing an emotional mindset, Pallasmaa argues that the senses need to be approached in more primitive manners, which he stresses as he exemplifies the contrasts from light to shadow, vision to hearing and touch to smell. [Pallasmaa, Juhani, 2007, p.48].

In his comparison of the senses of vision and touch, he brings awareness of how the two jointly experienced gives a complexity of space and that they together enhance the diversity of the sensory experience. Further, in his studies, Pallasma compares the differences of the visual and auditory senses. In his comparison of these senses, he argues how the visual sense seems to separate, while the hearing sense stands in contrasts as it includes, which is expressed in his quote, “Buildings do not react to our gaze, but they do return our sounds to our ears.” [Pallasmaa, Juhani, 2007, p.49]. Every building or space has its characteristic sound of intimacy, monumentality, invitation or rejection, as space can be understood through its echo, even as much as through its visual form. Besides being including, Pallasma stresses how the sense of hearing also act as a crucial part to achieve what he phrases as tranquillity. In his statement of calmness, Pallasma emphasizes how peace and calmness serve as an essential experience for the audience. It is in this experience that we focus on our existence and fundamental solitude. [Pallasmaa, Juhani, 2007, p.49]. As we are in constant interaction with our surrounding environment, Pallasma stresses how our body becomes the center of our experimental world, through what we behold, touch, listen and measure. [Pallasmaa, Juhani, 2007, p.65]. In his understanding of architectural tectonics, he contends how the construction to the sense, should add to the meaning of tectonics. [Pallasmaa, Juhani, 2007, p.65].

GERNOT BOHME

From the theory of Gernot Böhme in “Atmospheric architectures - the aesthetics of felt spaces,” he clarifies his definition of atmosphere in architecture, as “the sphere of felt bodily presence” [Böhme, Gernot, 2017,p. 69]. In his definition, he wants to highlight how the atmosphere feels in the spaces one finds oneself in [Böhme, Gernot, 2017,p. 69]. Further to his definition of atmosphere, Böhme argues how the atmosphere is part of our fundamental perception, which shapes our relationship to our surrounding environment, other people, and objects. Due to such, he finds the work of atmospheres crucial in the design of the architecture, which also stresses how the architecture exists in the production of atmospheres, as people engage and access the architecture. [Böhme, Gernot, 2017,p. 70]. Similar to Juhani Pallasma, Böhme highlights the importance in how architecture should be more experienced through more than the senes of the vision, as atmosphere, contains a high degree of complexity, which not necessarily can be perceived visually. Furthermore, he stresses that it is not always through the senes of the vision we should access the architecture but through the bodily presence [Böhme, Gernot, 2017,p. 70].

In Böhmes further discussion of atmosphere, he argues how each atmosphere has its distinct characteristic, and how these different atmospheres are produced by material constellations [Böhme, Gernot, 2017,p. 118,119]. When working with this material constellation, to address atmosphere through spatial experience, Böhme argues how geometry is less essential in comparison to the application of materials and the placement of objects. In a more concrete example of how to deal with the placement of an object, he finds inspiration in how the source of light and sound can feel distant or close in our spatial experience and enhance a specific spatial atmosphere [Böhme, Gernot, 2017,p. 75]. As Böhme degrades the effect of geometry in relation to appealing to our emotions and mind through the atmosphere, exists in the fact that the atmosphere both exists in and around the architecture and by, what he calls “non-objective means,” such as light and sound. [Böhme, Gernot, 2017,p. 76]. From his understanding of spatial experience, he argues how light in itself can create space, to emphasize his idea he refers to the light from a street lamp creating a cone of light and thereby creating spatial boundaries. Light, which fills a space can bring a specific atmosphere to space, as the light can make the space serene, buoyant or gloomy, festive or homely [Böhme, Gernot, 2017,p. 76]. Another non-objective mean that can form spaces is the mean of sound. [Böhme, Gernot, 2017,p. 76]. As sound consumes a space, it can possess the ability to reflect a space, which seems oppressive, energizing, fragmented or even compact [Böhme, Gernot, 2017,p. 76]. From this Gernot highlights how space can be defined through its sound. As it has been clarified from the theory of “Atmospheric architectures - the aesthetics of felt spaces” atmosphere can be produced through architectural means, being the light, sound, colors, movement, and volume. Although atmosphere does not only exists from these architectural means, we also experience how the function of space are influencing parameters, when it comes to atmosphere. [Böhme, Gernot, 2017,p. 119]. The reason of this exists in how we consciously produce atmosphere, through our associations to the functionality of space - for instance, the atmosphere of a theatre, promenades or boutique, etc. [Böhme, Gernot, 2017,p. 119].

SUM UP

As we strive to address the atmospheric aspects of the architecture of the crematorium, we ask ourselves how this could be accomplished? How can we through spatial dimensions, material, sound, light, and form enhance an architecture which places the body as the center of the architecture?

III. 11 - DIAGRAM OF METHOD & VISION ►
Diagram showing the vision of our project and all the layers evolving around it, which emhasise an integrated design process.

METHODOLOGY

TECTONIC THINCKING IN ARCHITECTURE

In the making of architecture a design process contains multiple layers, which combined adds to the complexity of the architecture, therefore to secured that the totality of the architecture stands out as a holistic solution, Mary Ann Knudstrup has developed a method called "Integrated Design Process", [Knudstrup, 2005]. From her theory of how to manage the architectural process, which both considers techinical, functional and aestical aspects, she places focus on the architectural project and illustrates how all influencing parameters to such are layers to the architecutral project are is the periphery of the core. From her theory, it becomes clear, how an architectural project can be assisted to progress through varoius phases, although it lacks a clarification of how to reach and find the purpose of the architectural project, both in terms of astethic and technical perspectives. Therefore we wich to introduce the method of Gesture and principle, as this method through the processing of an architectural project sets forwards the notions of an archtectural idea and objective thorugh the means of atesthis and technical aspects.

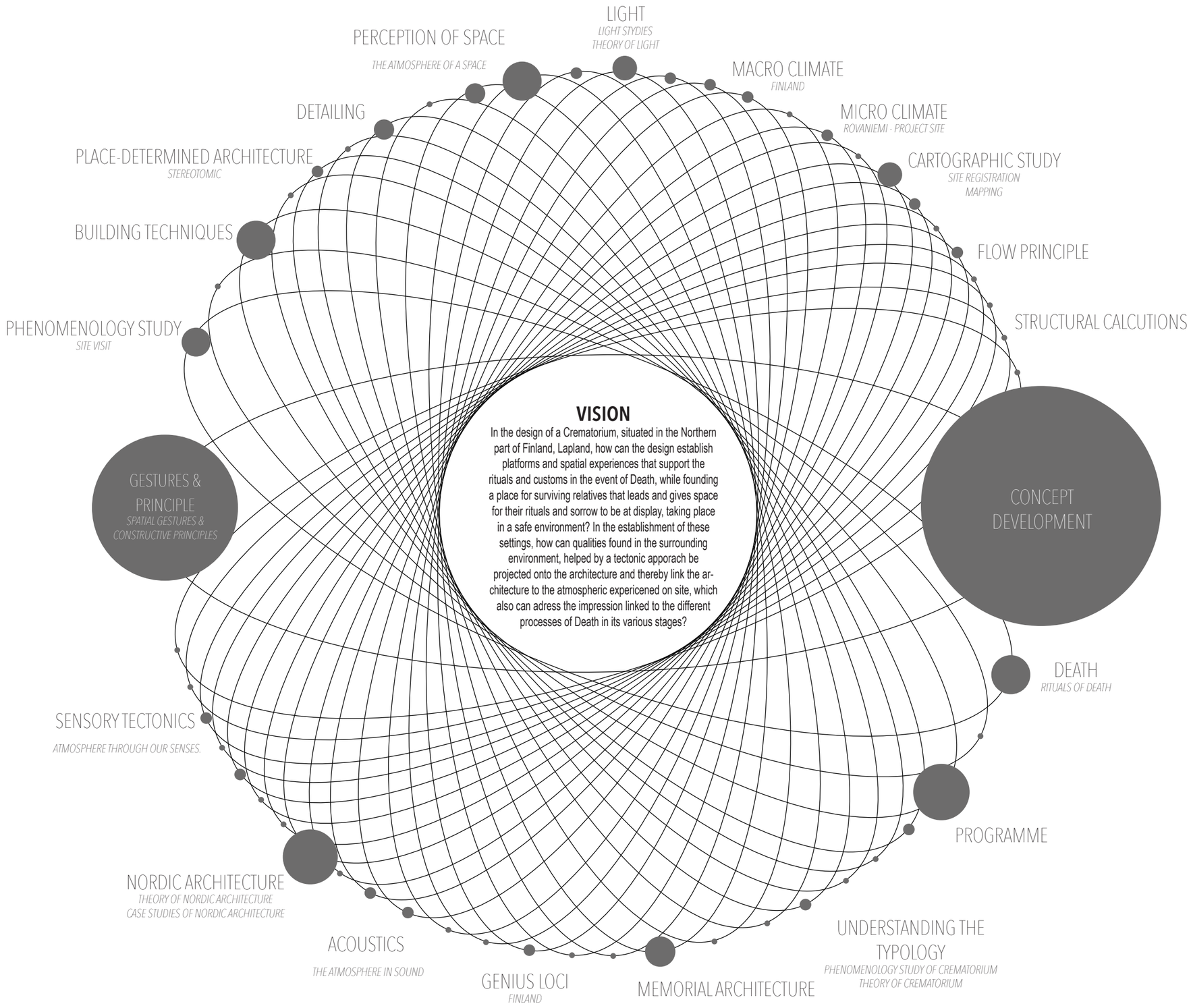
Architecture can be articulated through numerous concepts and methods, but which interpretation does these terms encompass and how could they be converted into an architectural idiom that combines the sum of all architectural aspects - in this case the astethic and technical ones. Throughout our project of a crematorium, in a Nordic setting the core methodology applied makes for a tectonic architectural approach, in the attempt to investigate and challenge the understanding of tectonics in a Nordic association. Through the investigations of tectonics, we intend to understand and clarify how tectonics can be or have the potentials to be achieved in the modelling of a space, an object or in relation to the landscape in coherence with a perspective on Nordic architecture. In a interplay between the method of Integrated Design Process [Knudstrup, 2005] and Gesture & Principles [Hvejsel, Marie, 2014] we intend to have the method of Gesture & Principles to act as a generator to establish an objective and conceptual idea, which enhances the integrated design process, in its combination of both asteheic and technical qualitites. As a substitute for this initial design process, we find potiential in how the method the Integrated design process, could promote progress in the arhictectural project, while adding further layers to the initial conceptual idea and its objective.

As the setting for the crematorium is sited in a Nordic context, great importance have been attached to the field of Nordic Identity and how architecture is addressed within a Nordic perspective in association with a tectonic understanding. From the studies on Nordic architecture we aspire to gain knowledge of the qualities and instruments utilised in Nordic Architecture, as a method on how to engage with a project in the Nordic context, Finland. The ability to relate to and balance nature, surrounding environment, light, climate and site resources in architecture are all qualities seen in the Nordic architecture traditions. Inasmuch Nordic architectural traditions treats the ideals of being an extension and consideration to the surrounding native soil and environment, these studies have helped clarified how we interpret the origins of tectonic in Nordic architecture - A notion that emphasizes tectonic as localised principles, which has arised through the interpretation of the site and settlement within it. This notion is further substantiated through Framptons perspective on the Nordic architecture, that stresses how a place-determined approach can be translated into Nordic architecture, that brings an architecture which shows regard to place, landscape and nature. "The idea is to integrate the influence from the universal civilization in an architecture that originates from characteristics of a particular place. It finds its inspiration in elements such as natural light in a place; in a specific method of building; in tectonics, or in the topography of a given area" [Thostrup, 2006. P. 40]. The consideration of the nature and its resources states how creation of the shape shows attention to the surroundings within the site. It forms the culture that defines history, traditions and defines our relation to the world with a strong relation to a specific place defined by local characteristics. Architecture becomes the spatial instrument by which to create places of significance, since culture is the primary mean by which to foster an identity of place.

Whilst applying Gestures and Principles, that allows for an integration of the qualities within Nordic architecture through a specific place-determined approach, that pays regard to the surrounding environment, and contributes to how the features of a specific site can be projected onto the architecture, we aspire to substantiate this method with an approach that emphasises the character and potentials of the specific site. In doing so a method of Genius Loci coined by Christian Norberg-Schulz in "Genius Loci, Towards A Phenomenology If Architecture" is employed. The experience of a place differ from one another and it is not always the easiest thing to put into words why a place appears as they do, whether it is a pleasant or an unsafe place. In most cases these definitions of a place revolves around what atmosphere, feel, expression, history, opportunity for expression or potentials a place contains. [byplanlab.dk, 2018] By applying this method of Genius Loci in the initial analysing phase as a tool to make clear where to locate a crematorium in the neighbouring area of Rovaniemi to should methodical allow us to evaluate upon the potentials on locating a crematorium at a specific site, as the method would highlight the potentials of experience opportunities, spatial and visual elements or characters of the place and how those aspects would be consistent with a design for a crematorium. [byplanlab.dk, 2018].

Through a scientific application of Genius Loci, we aim to observe the project site from three perspectives, being observant towards the site as; "an experience", "an object" and "a social construction". In continuation hereof studies will be conducted on the basis of characteristics of the site in relation to a positivistic approach, where we intend to map out and measure the physical characteristics of the site, a phenomenology approach which should clarify our reflections of the site through our own understandings and emotions related to the "experience" of it. At last a constructivist approach is applied, that are observant in terms of the challenges of the site in order to understand the potentiality of the site. [byplanlab.dk, 2018]. From an interdisciplinary application of these three approaches to understand the Genius Loci of a specific site

The site is essential to architecture, as the definition and construe of it, entails the initials act of the architectural design. When defining the site we observe how the site potentially marks the frames for the future architectural design decisions. [Baudoin, S. Genevieve, 2016 - UNWIN]. In our attempt to conclude on what parameters that defines our site, we have observed domain boundaries of the project site and patterns within different specific scales. As regards to the patterns, studies have been concentrated on those, which we have found critical in terms of pragmatic and conceptual reasons. To fulfil and investigate those reasons, studies have evolves around patterns of vegetation-, infrastructural-, urban sprawl- & development patterns, investigated through a method of mapping.Through the graphic summary of the project site, showing a reductive process of the site and surroundings, this should serve to clarify some of the initial steps towards the site and how the site potentially through a reduced number of components will have directly impacts on the concept, as those components may possess distinct parameters we could work according to. Through investigations of the project site, these should enhance our perception of the site and thereby help us understand what choices are possible to execute based on limitations of the site.


LIGHT
LIGHT STYDIES
THEORY OF LIGHT
PERCEPTION OF SPACE
THE ATMOSPHERE OF A SPACE
MACRO CLIMATE
FINLAND
DETAILING
MICRO CLIMATE
ROVANIEMI - PROJECT SITE
PLACE-DETERMINED ARCHITECTURE
STEREOTOMIC
CARTOGRAPHIC STUDY
SITE REGISTRATION
MAPPING
BUILDING TECHNIQUES
FLOW PRINCIPLE
PHENOMENOLOGY STUDY
SITE VISIT
STRUCTURAL CALCUTIONS
VISION
In the design of a Crematorium, situated in the Northern part of Finland, Lapland, how can the design establish platforms and spatial experiences that support the rituals and customs in the event of Death, while founding a place for surviving relatives that leads and gives space for their rituals and sorrow to be at display, taking place in a safe environment? In the establishment of these settings, how can qualities found in the surrounding environment, helped by a tectonic apporach be projected onto the architecture and thereby link the architecture to the atmospheric expericened on site, which also can adress the impression linked to the different processes of Death in its various stages?
GESTURES & PRINCIPLE
SPATIAL GESTURES & CONSTRUCTIVE PRINCIPLES
CONCEPT DEVELOPMENT
DEATH
RITUALS OF DEATH
SENSORY TECTONICS
ATMOSPHERE THROUGH OUR SENSES.
PROGRAMME
NORDIC ARCHITECTURE
THEORY OF NORDIC ARCHITECTURE
CASE STUDIES OF NORDIC ARCHITECTURE
UNDERSTANDING THE TYPOLOGY
PHENOMENOLOGY STUDY OF CREMATORIUM
THEORY OF CREMATORIUM
ACOUSTICS
THE ATMOSPHERE IN SOUND
GENIUS LOCI
FINLAND
MEMORIAL ARCHITECTURE

CHAPTER 1
CONCLUSION

With knowledge of the event of Death and the areas inhabited by the dead, this has clarified importance issues and aspects on which impacts Death marks our society with. Furthermore the knowlegde of Death has helped define how rituals help us cope with Death in the transition between phases. From this knowlegde this provides us with a understanding on how to work with further iterations in the process of the crematorium.

From the theory and methods mentioned in this chapter, we intend that the architectural project should posses the extent of these theories as they all enhance an integrated design process thorugh a tectonic apporach as this engages with the field inbetween architectural construction and aesthics, which would add complexity to the product of the architecture.

Ill. 12 - FOREST ▸

CHAPTER 2
SITE

In regards to the Integrated Design Process [Knudstrup, 2005] this chapter adresses the phase of analysis. Within this phase the contextual conditions in relation to the chosen site are investigated. Different investigations of remote and close conditions are investigated, further detailed below;

Through the following chapter concerning the site of Nivakÿla in Rovaniemi, Finland, different invitigations should add to our understanding of how to address the site of a Nordic context. The objective of the investigations aim to create a close connection between the built and natural environment on site. In acheiving so, the investigations are formed on the basis of, theories of Nordic Architecture, stressing the importance in how the architecture is of a place-determined character, as it is influenced by localised principles such as, culture, ressources and the place, making the architecture conditioned by its surroundings elements. From this, investigations on Genius Loci also becomes essential, as these should assist in identifying the character of a place, being the tangible and intangible phenomena, derrived from our phenomenological investigation of the site. From this identification, it would allow us to enhance and form these characters and qualities of the place throiugh the architecture.

To maintain a place-determined approach we further seek to applied investigations drawn from the theory of Gestures & Principles, which should assist in making the architecture of the crematorium an enhancement the qualities of the site, when finding inspiration in the spatial and constructional aspects of the site projected onto the architecture. With inspiration from these theories, we seek to form the groundworks for an architecture, which establish a rooted connection to its surroundings.

The method applied in this chapter, is a combination of mapping, oberservations from phenomenological studies and quantitative measurements thorugh statistics. Through the following chapter investigations starts with observing and inbestigation the situation of Finland and their patterns and present situations, within the department of crematoriums. As the basis foundation is settle, we zoom into the area of Nivankåyla, in Rovaniemi, in Lapland, situated in the Northern part of Finland. In our representation of the site we attempt to construer the site, in a way that it will participate in forming the Architecture.

ROVANIEMI NIVANKYLA | **STATISTICS / PATTERNS** | **CLIMATE CONDITIONS** | **GESTURES & PRINCIPLES** | **SENSE OF PLACE**

Ill. 13 - SITE, NIVANKYLA ▸

Ill. 18 - MAP OF FINLAND ◂
Map showing the division of regions and crematoriums in Finland

FINLAND, ROVANIEMI

A NORDIC LOCATION FOR THE CREMATORIUM

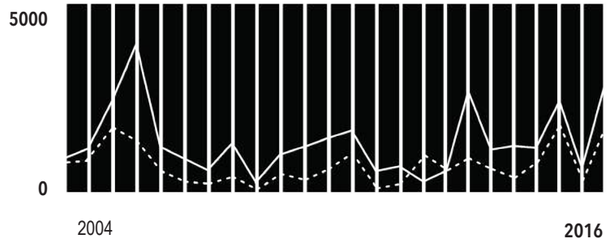
Observing the location of crematoriums within Finland, an observation shows, that there is a lack of crematoriums in the northern regions of Finland [See ill. Map of Finland]. Regarding the development of cremation services in Finland, statistics shows a significant progress, as the amount of Finnish people, who choose to become cremated have increased year by year since 2004 [kilde]. According the death toll in 2016, statistics shows that 53.600 people died nationwide, of whom 27.483 people decided on cremation as their funeral service, [gravplaskultur.no]. From these numbers and the increase from 2004-16 in cremation services, which shows an increase in 49 %, it proves that over half of the deceased in Finland make use of cremation services as their funeral service. These numbers emphasises how cremation services are gaining popularity within Finland, while it is anticipated that the number of cremations will increase yearly by 2 percentage. [yle.fi, 2018] [www.savonsanomat.fi, 2018].

Along the exceptations of an increase in cremation services in the future, statistics concerning Death toll from 2004-16 also shows an increase in registered Deaths. This increase is predicted to continue up until ??, as the numbers on populations shows an increase, as a result of the baby boomers and the average age of the Finnsih person. Since 1950 the population of Finland has increased steadily. Besides the increase in Deaths, increases are also predicted to be experienced in the number of inhabitants. At present 5,535,204 people have permanent resident in Finland, and from statistics a steadily increase can be observed as the population is predicted to increase by aproximately 300.000 people up until 2050. [Kilde mangler]

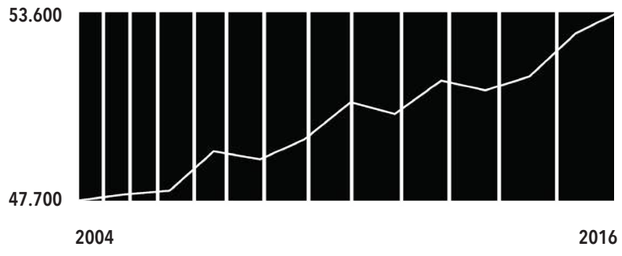
This shortage in crematoriums, the lack of them in the Norhtern regions and their capacity have lead to both a congestion of the already existing crematoriums mostly in the southern part of Finland and long transportation circumstances in the northern part of Finland. [yle.fi, 2018] A contribution to the demand placed on crematorium are found in the increased numbers of cemeteries, which has caused pressure in the already existing crematoriums, which creates a need for new creamtoriums in Finland and to renovate the old ones [www.savonsanomat.fi, 2018]. From studies on where to locate future crematoriums, the government concluded that Rovaniemi shows potentials for a new crematorium, both in terms of geography and amount of cemeteries. [KILDE]

SUM UP
From this growth in cremation services it has caused that the crematoriums in Finland cannot cope with the demands placed on the share of cremation services and that the crematorium in Finland bear the mark of being congested - implying an increasing need for new crematoriums in Finland to eliminate this problematic. On account of the future plans for a crematorium in Rovaniemi laid out by the government, this have narrowed down our location for the crematorium within Finland, to the “capital” of Lapland. [visitrovaniemi.fi, 2018].

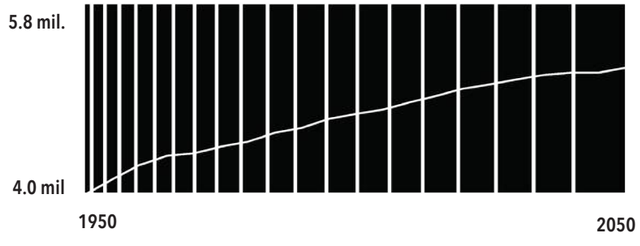
Ill. 17 - GRAPH OF CREMATION RATE IN FINLAND ▾
Illustration showing cremation rates within exisitng crematorium from 2004 up until 2016



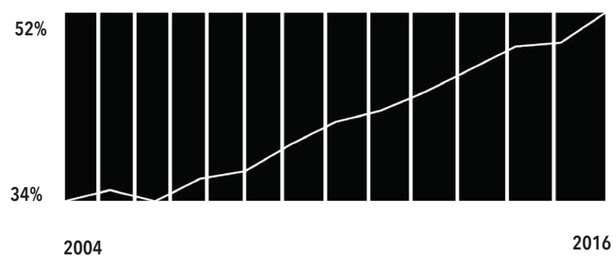
Ill. 14 - GRAPH OF DEATH TOLLS IN FINLAND ▾
Illustration showing Death toll statictis from 2004 up until 2016



Ill. 15 - GRAPH OF POPULATION OF FINLAND ▾
Illustration showing population statictis from 2004 up until 2050



Ill. 16 - GRAPH OF CREMATION RATE IN FINLAND ▾
Illustration showing cremation rate statictis from 2004 up until 2050



Ill. 19 - MAP OF ROVANIEMI ▸
Map showing the entire area of Rovaniemi, and the location of
its center being encircled by the rural and foresty areas of Rovaniemi

Ill. 20 - PICTURE OF OUTDOOR PATHS IN THE AREA OF ROVANIEMI ◂

Ill. 21 - PICTURE OF FROSEN RIVER IN THE AREA OF ROVANIEM ◂◂

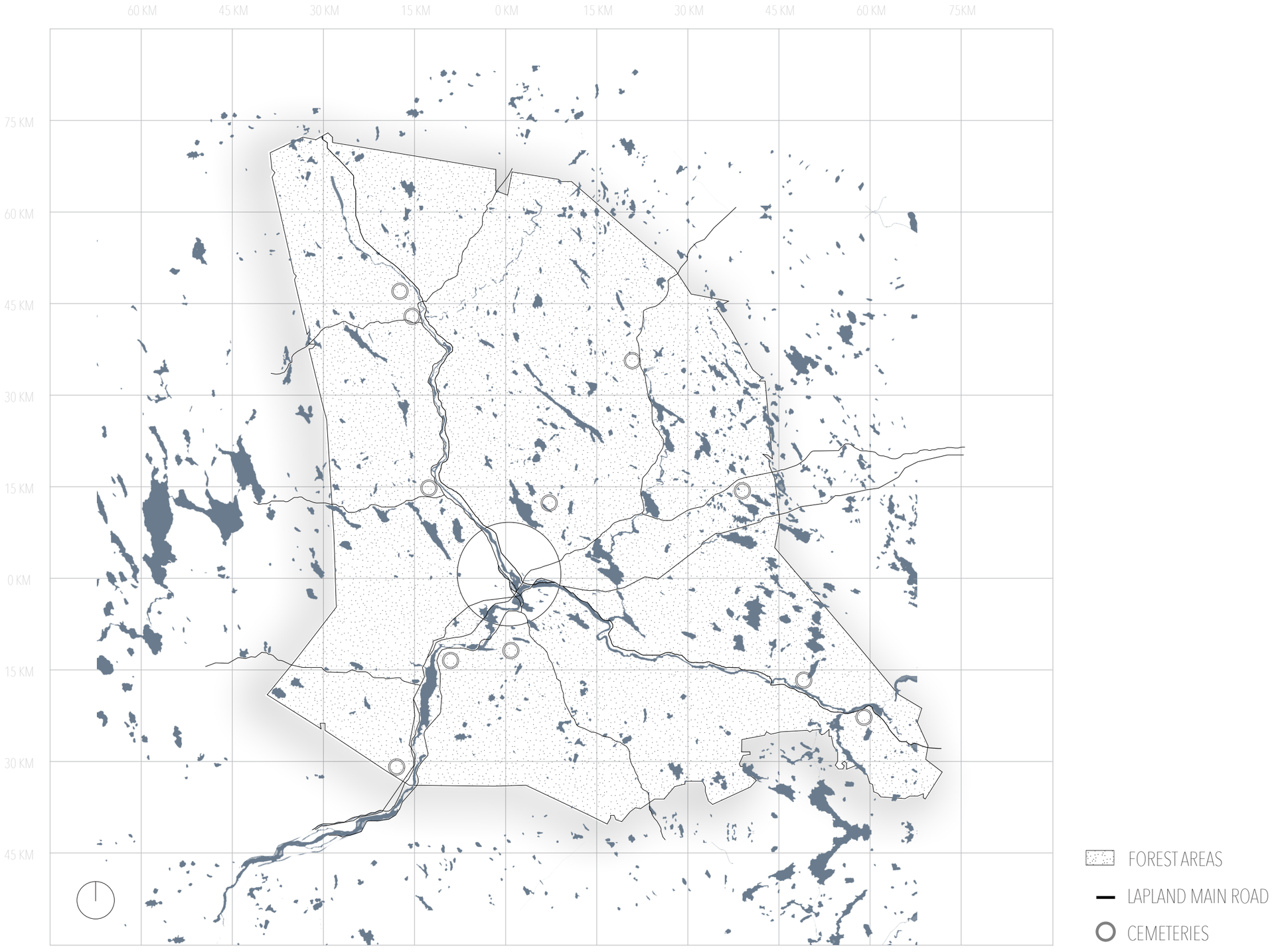
ROVANIEMI

THE PLACE

Observing the map of Rovaniemi, it illustrates how the areas within a distance of 15 km from the centre, is characterised by untouched landscapes, making the city of Rovaniemi encircled by a natural environment. [see ill. Map of Rovaniemi] This rural landscape has become the mark of Rovaniemi, being dominated by natural phenomens such as; forrests, swamps, rivers, lakes, meadows and fields, changing appearence as the seasons shifts. [rovaniemi.fi, 2018].
An alteration in hills and valleys makes the land of Finland dynamic, through the different elevations in the curves of the topography [See ill. Topography of Rovaniemi]. In a comparison with the rest of Finland, Lapland is dominated by a more hilly terrain. [Finland.dk, 2018]

Rovaniemi is the 5th largest city in Finland. It is the administrative capital and commercial centre of Finland's northernmost province, Lapland, with an approximate population of 60,000 people. With a surface area of 8016 km^2, it makes it the largest city in Europe, coved by mostly permenent forrest area. [visitrovaniemi.fi, 2018]. In terms of logistics, Rovaniemi have always been the portal for the region of Lapland. [rovaniemi.fi, 2018]. Located in between the two greatest rivers, Kemijoki and Ounasjoki [see ill. Map of Rovaniemi] [visitrovaniemi.fi, 2018]. Studying the location of Rovaniemi, we find a great potential in locating the crematorium in Rovaniemi due to the capacity of cemeteries and the fact that no crematoriums are built in the northern part of Finland. From this we may assume that the majority are being buried in coffins.

SUM UP
As Finland is characterised by its rural and scenic landscapes, we find that placing a crematorium in the northern part of Finland may contribute in a sustainable manner by minimising the footprint and expansion of the existing cemeteries and sustain the ecological footprint through burials with urns. Thereby the implementation of a crematorium can help preserve the great amount of rural and natural surroundings.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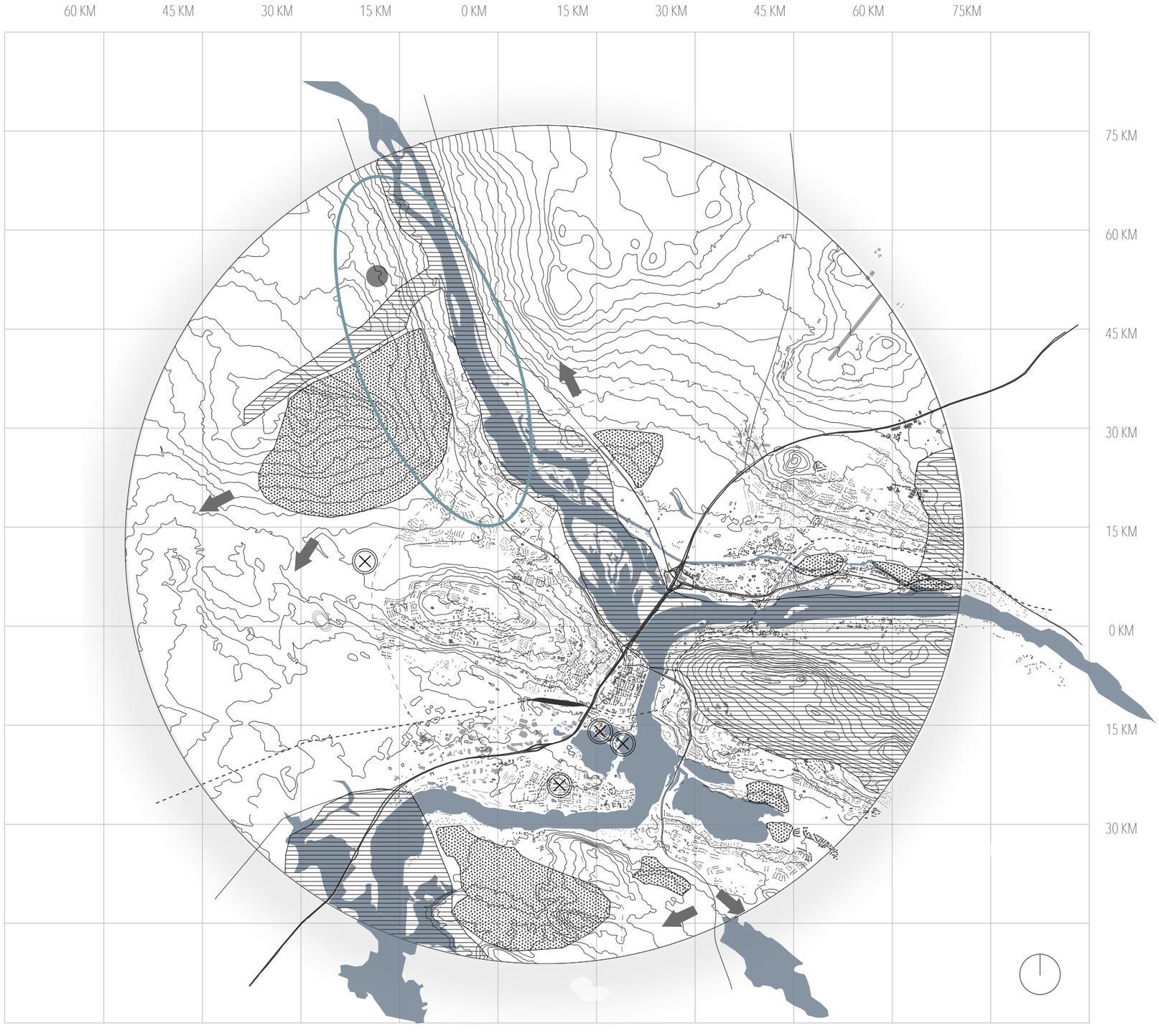
FOREST AREAS
LAPLAND MAIN ROAD
CEMETERIES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SITE
DEVELOPMENT OUTDOOR
DEVELOPMENT HOUSING
DEVELOPMENT DIRECTION
NEW ROAD

III. 22 - PICTURE OF SITE ◂

III. 23 - DEVELOPEMENT PLANS OF ROVANIEMI ◂◂
Map showing how the future development and expansion of Rovaniemi

ROVANIEMI, FUTURE DEVELOPMENTPLANS

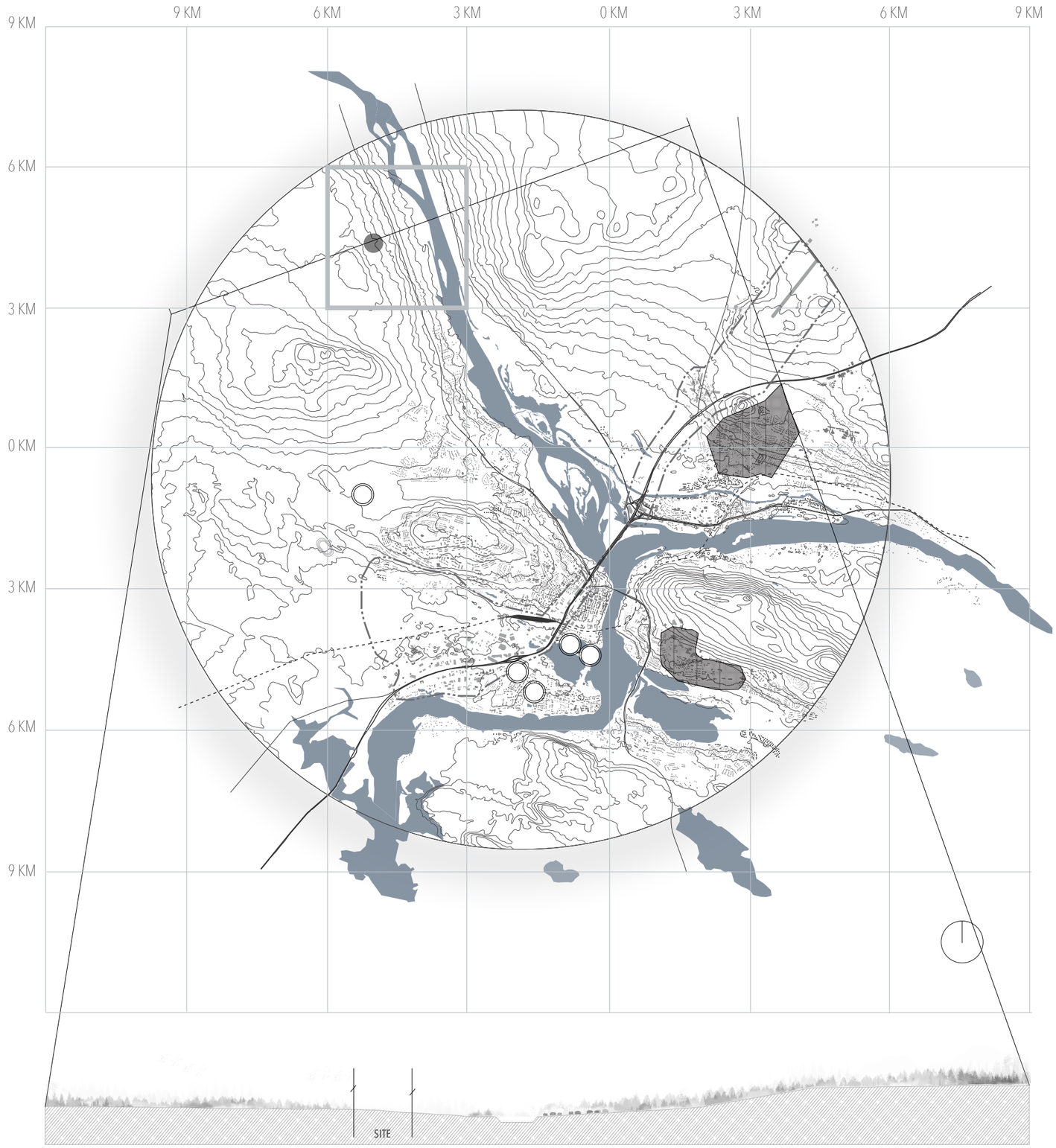
SITE INVESTIGATIONS

From the development plan of the surburban areas of Rovaniemi, the area of Nivankÿla, is situated in the periphery of Rovaniemi, just 11,4 km from the centre of Rovaniemi. The area is dominated by areas of residential-, recreational- and natural environmental characters [rovaniemi.fi, 2018] When observing the development of Rovaniemi, it can be noticed how the intensity of residential areas is at its highest within the centre and as it stretches towards the surburban areas of Rovaniemi the residential areas becomes scattered.

From strategically planning, directions have been givning in terms of how these residential areas ought to be developed, showing two axises of how these areas are scattered. Furthermore the distrubutions of recreational areas is concentrated along the river, Ounasjoki, moving along the shore of Nivankÿla down to the centre of Rovaniemi. From this tracking routes exists between the centre of Rovaniemi to the surburban of Nivankÿla. From the stretch of the recreational ribbion along the river, these ribbons scatters to smaller ones, infiltrating into the forests furhter inland. On account these preserved recreational areas within the city of Rovaniemi, this also establish a barrier in terms of how future housing areas can be developed and directed.
For the furture, two roads are implemented to the infrastructure, providing easy access to the areas of Nivankÿla from within different parts of Rovaniemi [See ill. developmentplan of Rovaniemi].

SUM UP
From further studies on future developments within Rovaniemi, we find potential in locating the crematorium within the area of Nivankÿla. Due to such, should be found in how this area offers a constrats between what is man-made and the natural surrounding landscapes in the interesection of residential areas, adjacent untouched nature and programmed preserved tracking routes. [See ill. developmentplan of Rovaniemi]. Being located in the periphery of the surrounding nature, we find potiential in how the situation of the crematorium, could provide space for thoughtfullness and immersion, in the big untouched landscape of the forest. Additionally, being placed in the periphery of the residental area of Nivankÿla and adjacent programmed tracking routes this brings question of life in their daily or occasionally entercounter with the creamtorium.

Hence such location, we want to investigate how we through architecture can express and acknowledge the connection between the urban context and landscape. Swiss architect, Zumthor, states that time is big in the landscape, whereas the city centers on being here and now and reflect time as dense [Zumthor, Peter, 2017, p. 96].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SITE
RIVER
MAIN ROAD
SECONDARY ROAD
TOPOGRAPHY
CEMETERIES
INSTITUTUINAL AREA
INDUSTRIAL AREA
SITE

‣ Ill. 25 - NIVANKYLA, SITE ENTRANCE

◂ Ill. 24 - MAP OF ROVANIEMI

ROVANIEMI, NIVANKYLA

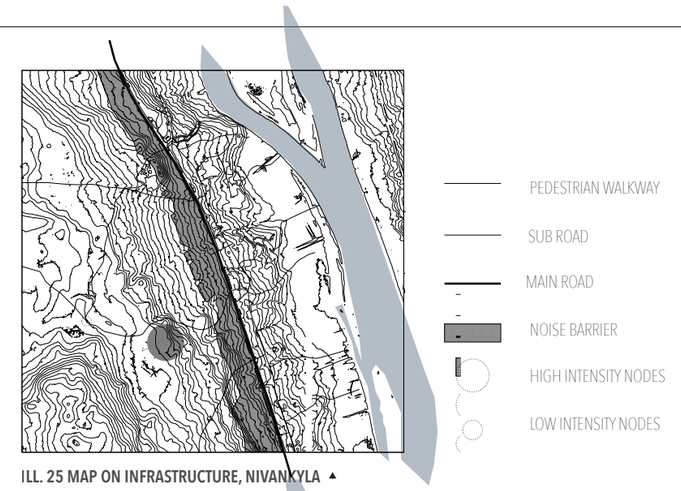
SITE INVESTIGATIONS

Zooming into the area of Nivankÿla, this study should provide us with an understanding, regarding how the project site is influenced by the surrounding context, concerning both access possibilities and the use of the areas within Nivankÿla. Additionally, this investigation should also provide us with an understanding of how the project site in reverse influence these surrounding parameters in the context.

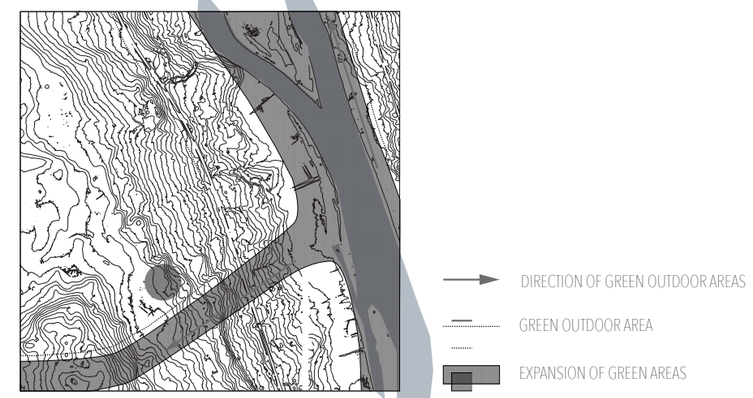
The surburban area of Nivankylä is located north of the center of Rovaniemi. [See ill. Map of Rovaniemi]. Laying adjacent to the river Ounasjoki and untouched forest areas, the surburban of Nivankylä bear the mark of being dominated by natural elements such as earth, forest and water. [See ill. Green ares]. When zooming in on the area of Nivankÿla maps shows how it is covered in birch and pine forest. [See ill. Green areas]. Being placed in the middle of a permanent forest area, this also offers a peaceful atmosphere to the project site provided by the nearness of nature and recreational areas. Looking at the utilisation of the area of Nivankÿla, maps illustrates that is it dominated by residential,- recreational outdoor use. [See ill. housing development]. The residential areas are located adjacent to the river, Ounasjoki, spreading in the future in a south-western direction. [See ill. Housing development].

Observing the logistics of the site, it is located adjacent to the mainroad combining Rovaniemi with the rest of the northern part of Lapland. [See ill. Infrastructure]. On account of a close distance to the mainroad, this gives cause for noise, which is absorped by the barrier of vegetation adjacent to the mainroad. [See. ill. Infrastructure]. A small road is connected to the mainroad, providing access to the site for the creamtorium. From the location of Nivankylä, the infrastructural system provides with access to the project site, from a context, which is larger then the city of Rovaniemi. From this point of view, the location of the crematorium, would be easy accessible and as illustrates future roads will create nodes intersecting with the area of Nivankylä and grab hold on more scattered areas within Rovaniemi and the other cities within Lapland. [See. ill. Developmentplan of Rovaniemi] From observations of the topography, the site is positioned in between a modest hill-side to the west and lakeside to the east. [See. ill. Topography of Nivankÿla] The project site is characterised through a gradually rising earthwork moving upwards from the lakeside and increasing in height in a western direction from 96 m to 148 m. [See ill. Topography of Nivankylä].

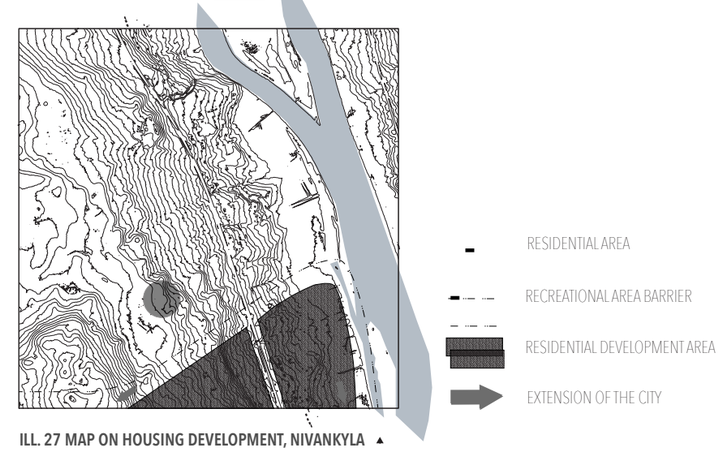
SUM UP
From future development plan, the area of Nivankylä have potiential in becoming the location for a crematorim, both on account of infrastructural systems, city development in terms of residential- and recreational areas.



ILL. 25 MAP ON INFRASTRUCTURE, NIVANKYLA ▲



ILL. 26 MAP ON GREEN AREA DEVELOPMENT, NIVANKYLA ▲



ILL. 27 MAP ON HOUSING DEVELOPMENT, NIVANKYLA ▲

Ill. 26 - SUN IN ROVANIEMI ◂

ROVANIEMI, NIVANKYLA

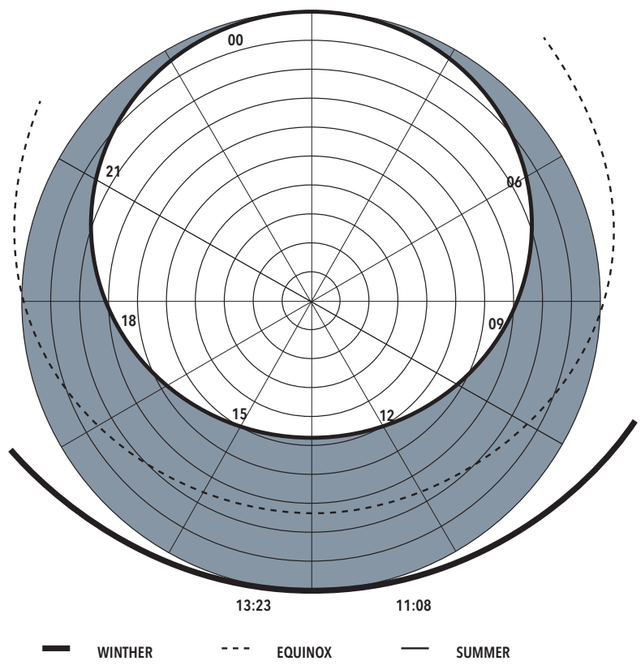
MACRO CLIMATE CONDITIONS

In our studies of the macro climate regarding wind, the wind patterns of the site is determinated by the application of a windrose from Rovaniemi Airport, as this covers the ares of our project site, Nivankÿla, Rovaniemi. Observing the wind patterns, it can be concluded that a prevailing southern wind dominates the project site. [See ill. Wind direction]. In our application of a windrose, this provides us with knowlegde of how to situate the building wihtin the site in order for us to promote natural ventilation strategies to enhance sustainable features within the architectural design. From these studies of the macro climate, it becomes clear how openings placed on southern facades would be benefial in natural ventilation strategies, based on the wind direction- and speed.

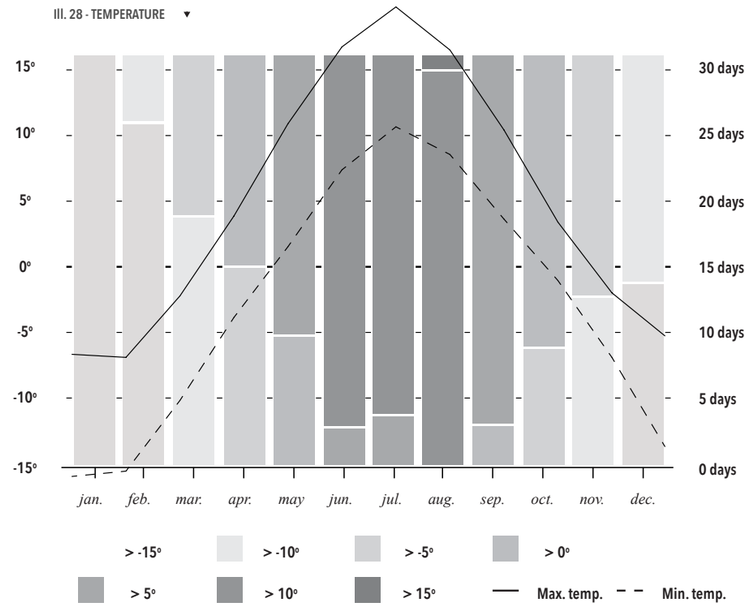
Additional studies of the sun provides us with knowlegde, of how to draw benefits from the macro climate and establish sustainable and sensuours features, while working with the level of daylight drawn into the building that would effect the heating of the interior spaces and the light intensity. The four seasons as we know them is in constant changes in the Nordic countries. Winter, summer, spring and autumn, can all be experienced in the city of Rovaniemi, although from a Finnish perspective, these four seasons make for eight. [visitrovaniemi.fi, 2018]. Mid-winter, as they call it, takes place inbetween january-febuary. In this period the winter peaks, with a mean temperature between -25 degrees to -15 degrees [see ill. temperature]. As the days are short in this period, the darkness leaves the city of Rovaniemi in peace and calmness amongst the natural surroundings, sharpening the senses [see ill. sun path]. [visitrovaniemi.fk, 2018]. As a counterpart to the short and dark days of the winter season, the sun starts to rise higher and shine brigther on the sky during febuary and march, as the first glimpse of spring starts to show [allaboutlapland.com, 2018]. Within this period of time, the landscape is still covered in snow, but the temperature, starts to increase, as a mean temperature of -15 to 5 degrees is reached [see ill. snow & temperature]. The snow-covered landscape of Rovaniemi starts to bath in the sun as solar altitude is positioned at 23 degrees above the horison [visitrovaniemi.fi, 2018] .[See ill. sun path]. As the time and month passes, spring has really gained ground during april to may. [visitrovaniemi.dk, 2018]. Within these months the mean temperature has increased to 5 degrees to 15 degrees [see. ill. temperature]. As a result of such the amount of snow decreases, as it melts from the heat of the sun. [see ill. snow]. When entering the season of summer, during june and july, another weather phenomena occurs, as the the sun never goes down, keeping a low position on the horizon, making the days constant, as the nights do not exits [see ill. sun path]. [visitrovaniemi.fi, 2018]. The mean temperature during summer reaches an interval between 15 to 25 degrees [see. ill. temperature]. With an angle solar altitude of 46 degrees, this increase the amount of light of the landscape of Rovaniemi. [See. ill. sun path].

As August is reached the days starts to shorten with a decrease in mean temperature between 10 to 20 degrees. Within August the season of the Norhtern light also kicks in. [visitrovaniemi.fi, 2018]. From September the Autunm gains its ground in the city of Rovaniemi, leaving the scenery of the landscape in shades of earth colours. The temperature drops down between 5 to 15 degrees. [see ill. temperature]. [visitrovaniemi.fi, 2018]. Between November until January, “kaamoos” occurs, meaning polar night, as the day only bear the marked of being bright a few hours a day, as the inclination of the sun over the horizon is low, and barely to be seen with an angle of 0.45 degrees over the horizon. The mean temperature during winter decreased down between - 15 degrees to -5 degrees [see ill. sun path & temperature] [allaboutlapland.com, 2018]. To lit up the city the snow-covered landscape, from its white and reflective colour [see ill. snow].

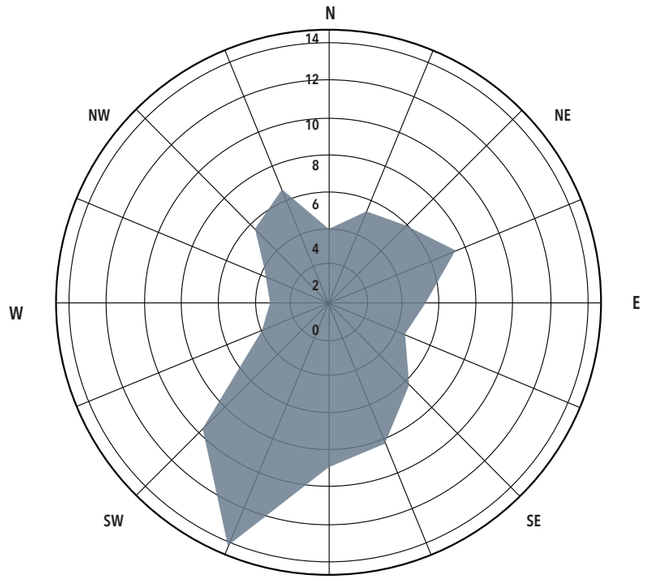
III. 27 - SUN



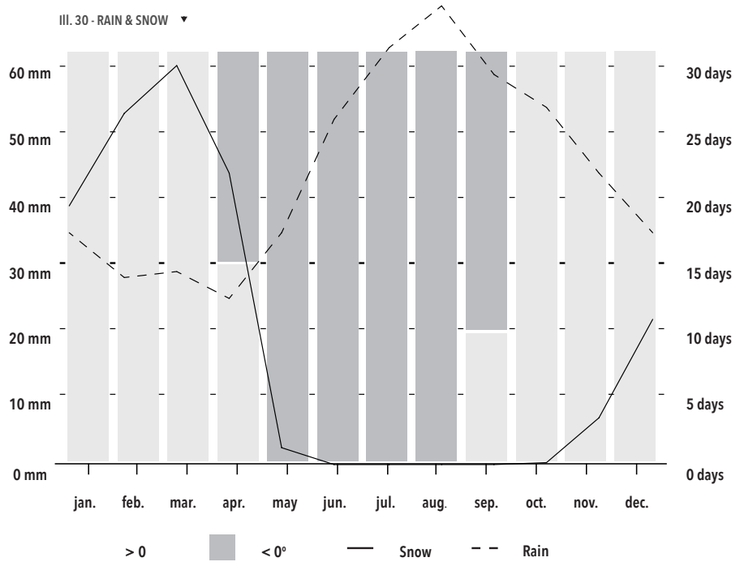
III. 28 - TEMPERATURE



III. 29 - WIND



III. 30 - RAIN & SNOW



III. 31 - SITE ◂

III. 32 - SITE ◂◂

III. 33 - SITE ▸

III. 34 - SITE ▸▸

III. 35 - SITE ▸▸▸

ROVANIEMI, NIVANKYLA

THE SENSE OF PLACE

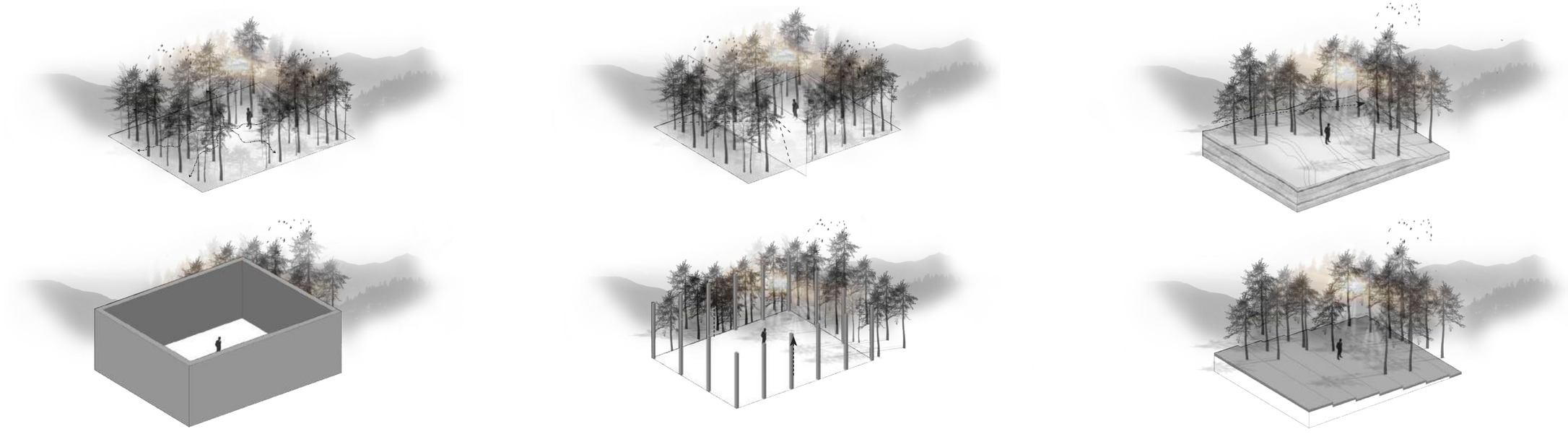
ARRIVAL & ENTRANCE

From phenomenological studies we seek to enhance our knowlegde in regards to the sense of the project site, to grasp an understanding of the information a place can communicate in a process of designing. Through the application of the method Serial Vision, by architect Gordon Cullen, it should provide us with a sensuous understanding of the site, through registrations of the collected on the site and surrounding environment [Cullen, Gordon, 1961].

Being situated 11,4 km outside the center of Rovaniemi, the project site within Nivankylä is located in the perphery of the bustling city of Rovaniemi. When exiting the mainroad of Lapland at the small access road leading to the project site, a dynamic environment appear, expressed through the organic course of the road. On account of this dynamic course, this provides one with an short glimpse ahead, until it is interupted by the next curve provinding one with another view into the inland of the forest. From the exit of the mainroad to the small access road to the project site a shift occurs in the course of the road, as it is narrowed in, givning the space a more initmate and leading character. With trunks on each side of one, the experience is intensified of the space. The road towards the project site takes one along the the gradually risen topography and a shift in pavement indicates that one strays from the noise and constant traffic of the mainroad. Adding to the spatial features of the access road, pine and birch trees emphasises a highrise space being enhanced by the growing topography, as one is led through the road. Getting close to the site the landscapes opens up and provides one with a long view into the clearing in the wood. Furthermore the opening provides one with a framing of the fore- and background of the site, indicating a diversity in spaces. As one enter this clearing of the project site it is rapidly providing the area with an enclosing surface as a result of trees, which encircles the site. The effect of this clearing in the forest, emphasises the density of the forest, thorugh the contrast of open and closed spaces. Additionally, on account of this encircledness, one feels embraced by the site and its physical elements. Standing at the site, trees in its vertical form defines the egdes of the site through their continuously flow. Enhancing the egdes of the site it assisted by the topography of the earthwork, as a heightdifference in 3 meters i experience, dictacting a natural borderline west of the site.On the contrary to the western borderline, this seems dissolved in the eastern direction. When standing at the highest point of the site, one can visually, from a distance, sense how the site is located inbetween a valley, giving the space a sense of expansion.

THE WOODS

As explained, two types of spaces can be experienced on the way towards the site and when entering it - the open and close space. In this contrast of spaces, it hightlight how the forest can be understood through dense and openness. On account of this, the spaces of the forest offers diversity on movements regarding a freely flow in the sunlit and open clearing and a leading and guided flow in the shadows of the narrowed and vertical spaces. From the inland location in the forest, being embraced by the forest, this provides one with the feeling of being protected by the site. In pace with moving further inland in the forest, the sound of the forest is experienced calming, through the trickles of the trees and wind, leaving a big constrast to the bustling city of Rovaniemi.



III. 37 - GESTURES AND PRINCIPLES FOUND ON SITE ▲

III. 36 - GESTURES AND PRINCIPLES FOUND ON SITE ▸

SPATIALIZING SITE

Through a perspective of tectonic set forward in the theory of “Gesture & Principles [Hvejsel, Marie Frier, ..] this application have led to an understanding of how tectonic can be derived from the natural elements and earthwork of the landscape, as it inspire spatial and constructive principles. From this inspiration, tectonic emerges as these principles become generators, for the architecture itself, which strengthen the jointing between the architecture and the surrounding landscape, through the projection of spatial and constructive qualities, which establishes a reference to the site.

SPATIAL QUALITITES

From studies of the projectsite, using the theory of Gesture & Principles [Hvejsel, Marie Frier, 2018], the spatial systems found within the site have become leading parameters in the design of the different parts of the building programme. On the account of these leading parameters we seek to create a building, which projects spatial scale and characteristics found on site onto the exterior and interior of the architecture for the crematorium. Through the retrival and implementation of scale and characteristics we find potential in how they to some extent will allow the architecture to become a reflection of the spatial atmosphere experienced in the natural environment of the forest and bring associations on account of the opaque and visible surroundings, that would lead to either subjective or objective spatial and atmospheric experiences. From this point of view the landscape and its spatial parameters becomes essential for the design of the crematorium. Through our investigation the following spatial characteristics have been recognised;

SPATIAL QUALITITES - THE OPEN & VERTICAL SPACE

On the other hand one could argue that the spaces of the forest seems open and vertical, as the space concurrently is experienced in its vasteness and greatness, as it opens up in all directions due to its dominating vertical elements leading upwards and thereby allowing passageways in between the elements of nature. On account of these counterparts of the enclosed and open space, the space within the forest becomes both open and closed at once. Observing the verticality of the rising trees, this also becomes emphasised as the natural skylight penetrates from above and streches towards the buttom, while illuminating the treetrunks and thereby highlights the verticality. From this penetration of sunligt through the crowns of the trees, his also emphasises the openness in the forest from above.

SPATIAL QUALITIES - THE DYNAMIC SPACE

When moving across the curves and mild slopes of the landscape on the projectsite a dynamic space appears. The dynamic features becomes expressed in how different plateaus emerges in the movement down- or upwards across the sloping site. From the emerge of different plateaus this enhances the telling of how the spaces are connected to the different layers of the earth in pace with the rise of the earthwork and its development. Additional the plateaus defines small niches and more inimate spaces, which also referes to the enclosed spaces of the forest. In the down- or upwards movement of the slopes leading to different plateaus, the view of the nature changes and as a result the space of the forest seems dynamic due to this alteration. Besides observing the spatial qualities of the projectsite, attention has as well focused on the constructive principles, supporting these spatial qualitites. In our investigations of these constructive principles we intend to integrate tectonic through inspiration found in the landscape, as the constructive principles should inspire a structural system, as Frampton sai

SPATIAL QUALITIES - THE ENCLOSED & VERTICAL SPACE

In our attempt to understand the characteristics of the enclosed and vertical space experienced on site, we intend to investigate how this spatial phenomen exists and can be projected onto a physical space of the architecture. Through these experiences they have brought attention to how these spaces exits on the basis of the rising vegetation and topography. As a result of rising natural elements within the forest they have led to a diminished visibility, as the vegetation and topography only allows for a filtred view of the forest. Besides creating a limitation of the view, the topography, posses an embracing character, as it defines voids in between the hillside of the valley, On account of this embracement and limitations in terms of views, the landscape appears as a closed space, which encloses and embraces you as you enter it. As a result of this enclosure, the spatial experience is characterised by great privacy and intimacy as one feels guarded from the sides by the compactness and tightness of the topography and visual boundaries of treetrunks as they overlap from a distance and in that sense bear the mark of being a barrier. Due to the ascepts of feeling guarded through this enclosure, it imitates a cavernous atmosphere from the sides. While being parameters, which filters the views, it likewise has great impacts on the light settings, leaving the buttom of the forest in the half-dark in between the trunks, as the light is filtred through the crowns. As a result of the half-dark environment, the intensity of the natural light is reduced, making the presences of the light seem quiet, which causes a solemn atmosphere. The half-dark and filtred view of the space in the buttom of the forest blur the contours of the landscape, which also emphasies how the forest posses a lack of direction.

CONSTRUCTIVE PRINCIPLES - THE OPEN & VERTICAL SPACE

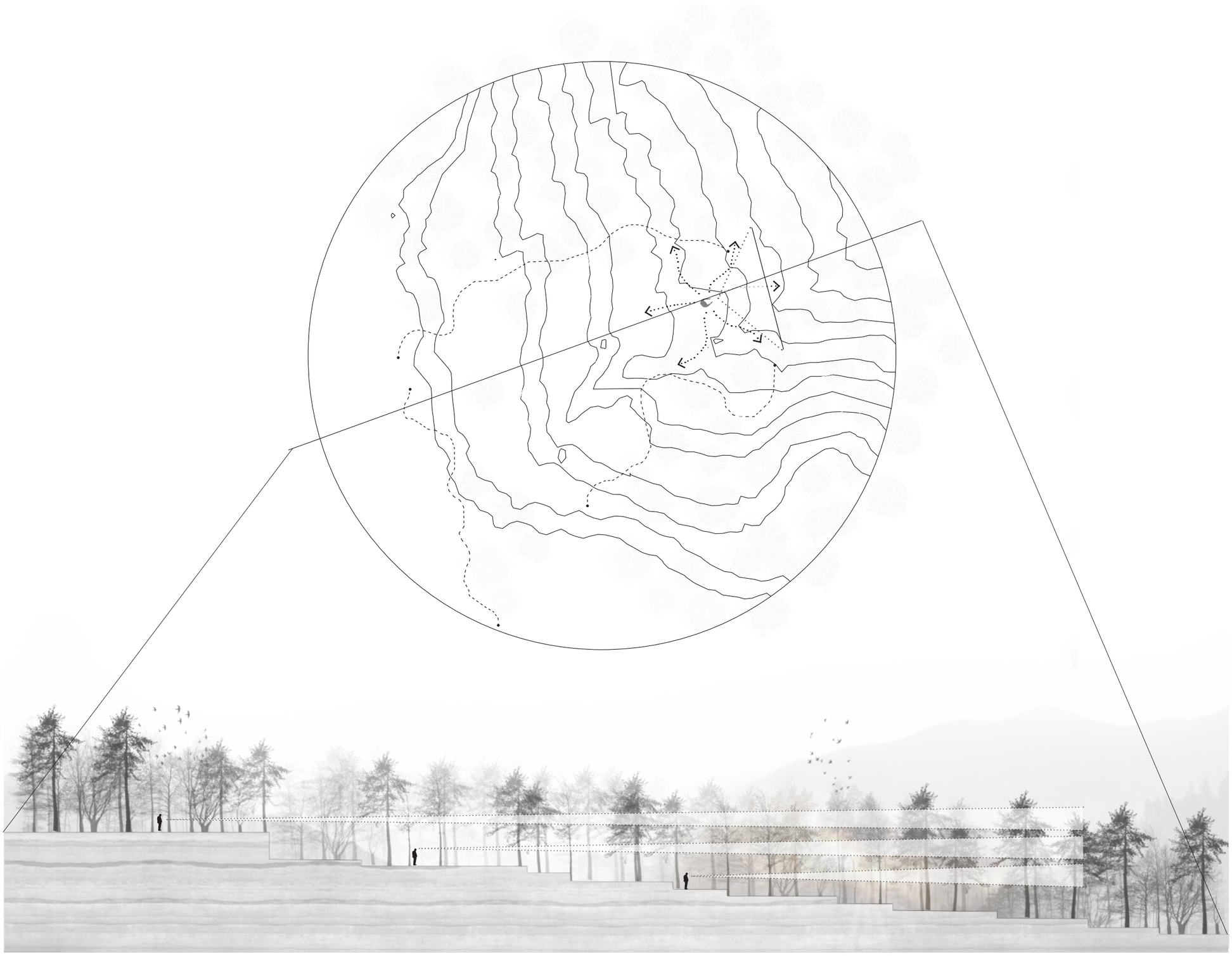
In reference to our understanding of the open and vertical space, the slenderness and height expressed in the treescontributes to a feeling of inviting surroundings in at a close distance, through a transparent and open structure.

CONSTRUCTIVE PRINCIPLES - THE ENCLOSED & VERTICAL SPACE

As mentioned in the section of spatial qualities the enclosed and vertical space emhapises a feeling of being guarded from the sides. When translating this feeling into a constructive principle, that could support spatial qualitity of such enclosed space, a reference should be drawn towards the heavyness of the materials existing in the earthwork of the topoggraphy and the visual compact- and tightness of the treetrunks as they overlap.

CONSTRUCTIVE PRINCIPLES - THE DYNAMIC SPACE

The constructive principles found in the spatial gestures of the dynamic space exits in the masses of the earthwork as the are piled, creating a sloping site, and due to such the dynamic space occurs



QUARZITE

MICA SCHIST

MAFIC VOLCANITE

III. 38 - MATERIALS OF THE EARTH ▲

III. 39 - STONEBED IN THE FOREST ►

MATERIALS

PERCEPTION OF THE PLACE

THE EARTHWORK

Earth composes our entire existence. It determines where we walk, grow our forest and foremost build our dwellings, as it becomes a determinating parameter in terms of location and local building techniques. Eventhough earth is crucial to our way of living, it has become too everyday, for humans for pay attention to, why we do not think of its orgin or emerge. For that reason we want to rediscover the land of Rovaniemi, more precisely the geology, and make use of it in our design for a new crematorium in the centre of Rovaniemi, as we aim to implement a Nordic approach in our architecture through the usage of local resources, while taking the geology into considerations and utililise the tectonic theory of Semper applying the stereotomics.

Looking at the context of Rovaniemi, maps shows that the area composes layers of moraine, coarse soil, silt and fine sand [rovaniemi.fi, 2018]. Investigation the composition of moraine, the material is composed by amount of clay. Looking at composition of clay-morain, this material consists of 35 % of clay, while average ordinary moriane consists of 15 % [denstoredanske.dk, 2018]. The application of earth to constructions, shows potientials in how a buidling of such materials could provide a base for a good fireproof, thermal properties and enclousure through its massiveness. [madehow.com, 2018].

THE TACILITY OF EARTHWORK

Observing the tactility of the earthwork, this materials natural tactile surface both expresses solidness and brittleness. From a distance the materials appears in its solid form, through its density and compactnesss. When moving at closer distance, the appearence of the material shifts, as it appears fragile. Besides how the materials of the earthwork addresses the senes of the vision, we intend to investigation how the materials and its surface could address the senses of our skin, in how we feel the materials. As mentioned in previous chapther on tectonics, Juhani Pallasma mentions the importance in how architecture must address a multi-sensurous architecture, as the architecture could posses the ability to influence peoples behaviour through a specific setting the atmosphere [archdaily.com. 2018]. A cold surface is a characterising feature of earth, both in terms of its thermal behaviour and visual appearance. Being dominated by cavities in its surface, the tacility of earth stands out as rough.
Adding to the sensory aspects of earth, the utilisation of it, is discovered to posses acoustics features, that would decrease reverberation within the interior [Schwartz, Chad, 2017, p.xlv].

PINE

BIRCH

SPRUCE

III. 40 - WOOD MATERIALS OF THE FOREST ▲

III. 41 - WOOD IN THE FOREST ►

MATERIALS

PERCEPTION OF THE PLACE

THE WOOD

71.6 % of the area of Finland is composed by forest. [woodproducts.fi, 2018]. From the belief that buildings should pay attention to the genius loci of a place, we intend to investigate wood, as this is a tangible phenomena of the project site. While dominating the project site, wooden materials is a local ressource, which we wish to draw advantage from, whilce considering Nordic traditions, which seek to establish architecture from its surrounding.

While having had attention towards the earthwork of the site and thereby invetigating how a stereotomic approach can be implemented into the architectural building design, we seek to investigate how tectonic, through the structure could be linked to the properties of the site and adding a natural appearence to the architectural design. In doing so we intend to invesitgate the structural properties of wood, as both pine, birch and spruce are three dominating wooden spicies within the site, whereof pine and spruce is applied in the craft of construction. [woodproducts.fi, 2018].

THE TACTILITY OF WOOD

With the warmth, reflected in the tactile surface of wood, this feature seems to entice human contact. As the primal parameter in why the tactility of wood is experienced as warm, should be found in woods thermal behaviour at the hand. [Nakato, K. & Sadoh, T., 1987].
Adding to the sensory aspects of wood, roughness on aacount of the grains is a crucial parameter as it composes the entire surfaces. Depending on the species of wood the roughness on the surface differs [Nakato, K. & Sadoh, T., 1987].
As a third aspects regarding the tactility of wood, acoustic features shows how wood have the ability to behave opposite the earth, as it is a lightweighted materials with a minimal sound absroption ability. On account of should this feature, wood would increase the revereration wihtin an interior space. [woodproducts.fi, 2018].

SITE 2

CONCLUSION

The upshot of locating the crematorium in the periphery of the urban context offer simultaneously a close relation to Nature, as the nature encircles the city of Rovaniemi. [see ill. Map of Rovaniemi]. From this location it would give a possibility for the architecture to become an extention of the natural environment, or allowing the nature to contribute to the mourning process through architectural initiatives.

From the statement of Peter Zumthor, regarding time neing big in the landscape, we find qualities in how time in the landscape could be adaptable in the design of the crematorium, both within the funeral- and pre- and past mourning processes, giving space and time for the mourners. By locating the crematorium in the periphery we seek to investigate how the grief and sorrow can be put into perspective through the scenic characteristics landscape as time has no scale in the landscape - A place to have remembrance and for the mourners to project their sadnees on.

As mentioned in the text “Dealing with Death - societal tendencies”, it stresses how the spaces intended for the Dead, tends to leave these areas segregated and deserted, but that we need to rethink the use of these spaces, and establish some quiding frameworks of how a space for the living and dead can function concurrent within the same place. To enhance such engagement between the living and dead and give words to the taboo of Death, we see potientials in how a placement in the periphery of the city, adjacent to scenic tracking routes and residential areas, could establish such, as the creamtorium would be perceptible from the city and thereby being a constant reminder of the subject of Death. While being at a close distance to the city, the creamtorium’s extention to nature through movement and spatial qualitites, could posses the ability to offer spaces for thoughfullness and immersion, through an architecture which offer quiet, peaceful and solemn space, as the living would stroll through tracking routes offering encounters with the architecture of the crematorium. Through this encounter with the crematorium, we seek to make it possible for the living as they wander through nature, to reflect upon and encouraging opioins in terms of how to manage Death, through the rituals of others and culture, which would give words to the taboo of Death.

CHAPTER 3
CASES

In our investigation of funeral architecture, we aim to build knowlegde of the functions of a cremations as we look into - Mourners flow and rites, Coffin flow, ash processing, staff flow and technology services. As we through our Thesis strive to acommodate Death and its related taboo, we aim to investigate how this topic of Death can become more spoken of in a societal context. How can space address the Death of our loved ones, while still bring out the remembrance of the same? From this we wonder how Death could inhabit an architectural design, that allows for such conditions to take place? As the topic for our Thesis concerns Architecture and Death, through the design for a crematorium, we aim to investigate both aspects within funeral and memorial architecture. In extension of this we strive to investigate and clarify questions on how architecture could be of use to the mourner and deceased, that could embrace the essences of a final farewell and forthcoming memorial processes.

In our attempt to form the basis of such we desire to understand how the architecture is able to dissolve and be a counterpart to the taboo related to Death - loneliness, exclusion, lack of social cohesion, fears and ignorance. Due to such we wanna question if there are one way to act on Death or if there is a way on how to define the processes of Death? If so, how can architecture and its program be of assistance to those processes of Death, and which responsibilities and roles do architecture hold in these conditions associated with Death? To find answers for these wonderments at Death, case studies are conducted. The objective of the case studies is to understand the usage related to a funeral architecture.
As the topic of Death breeds a lot of emotional aspects, casesstudies on transendental aspects, such as light and and atmosphere, are investigates as welll, which adds on to the layers of the architectural project and enhances the complexity in how we understand the spaces we engages with.

TYPOLOGIES OF DEATH

LIGHT IN ARCHITECTURE

III. 43 - FOREST FROM ABOVE ▸

Ill. 44 - PLAN ▸

THE TYPOLOGIES OF DEATH

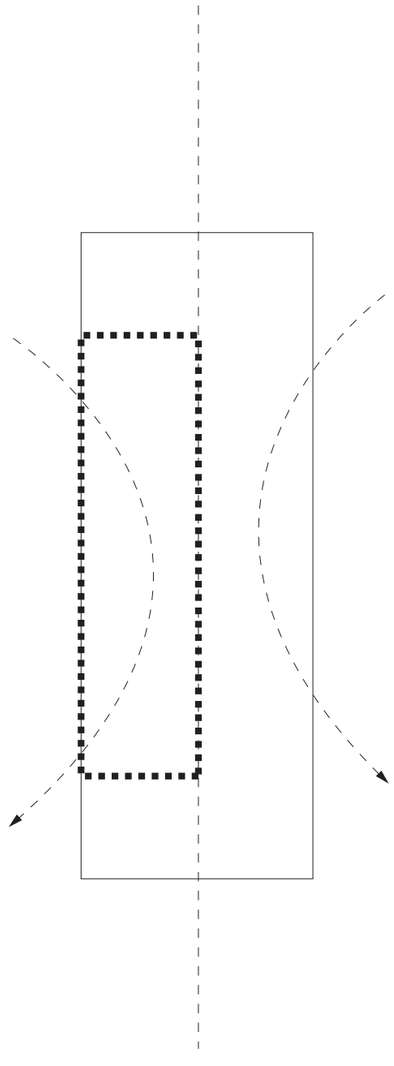
CASESTUDIES

As our Thesis evolves around how to design a crematorium that facilitates the cremation of coffined bodies and associated customs and rites, these aspects have become an important parameter to investigate. To gain an understanding of how these facilities and has been dealt, case studies on The New Crematorium, designed by Johan Celsing, Bispelbjerg Krematorium, by Friis & Moltke Architects and Zorgvlied Crematorion by Group A, has been conducted.

HENNING LARSEN COMMUNAL CREMATORUM
Architects: Henning Larsen
Location: Ringsted, Denmark
Area: 2700 sqm
Project Year: 2013

In the project of the Communal Crematorium, one of the major interests is concentrated on how to design a flexible building, both with regards to function and to non-religious spaces, in order to sensitively accommodate all types of memorial gatherings. Henning Larsen designed the crematorium with consideration for the people who work there. The truly exceptional character of the structure becomes apparent in the plan: rather than focusing on a dominant ceremonial space, the centre of this building is the crematorium facility.

The coffin is first carried from the hearse to a quiet and peaceful room for last goodbyes. From this quiet room, friends and relatives of the deceased have the option to follow the coffin and observe the cremation through a glazed corridor as the coffin is inserted into one of the six furnaces. The 12-meter-tall furnace room is flooded with daylight; brick walls and granite floors are lit throughout the day by windows placed high on the East and West gables, which face the woods. The new furnace room creates good indoor climate and working conditions while also offering a worthy atmosphere for the relatives of the deceased. The idea is that the users of the space are able to enjoy the light as it changes throughout the day and the year. The warm light reflects on the walls and flows in along an undulating ceiling.
From the outside the building volume is long and low, with the tall furnace room in the middle of the complex. The furnace room is inscribed into the base, bringing building to an approachable and human scale. Situated on a 50.000 square meter site, the crematorium is adjacent to the park-like grounds of an historic Danish estate. Furhtermore the design treats a decrease in the carbon footprint - The Ringsted Crematorium is built to meet new standards for flue gas purification and replaces eight former crematoria in the region. In the future, the surrounding site will function as a cemetery, and relatives will be able to pick up the urn from the crematorium and bury it at the cemetery. [Archdaily.com, 2018]

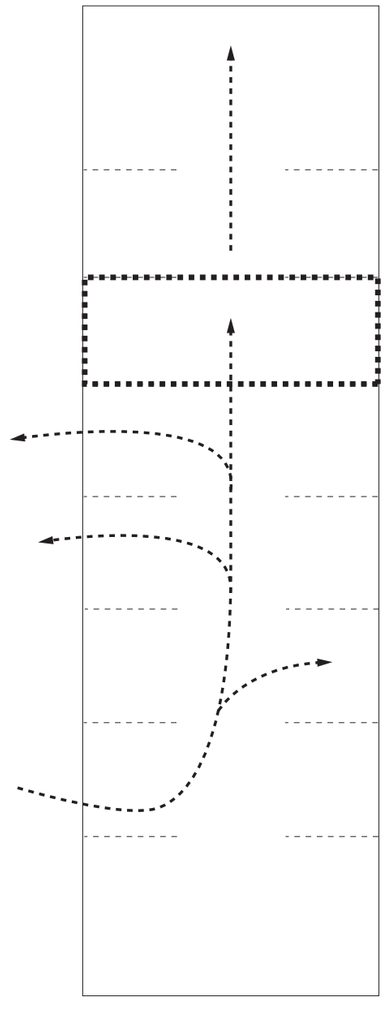


THE NEW CREAMTORIUM, THE WOODLAND CEMETERY
Architect: Johan Celsing
Location: Stockholm, Sweden
Date: 2013
Area: 3000 sqm

Architectural approach
The new crematorium is located in an undulating terrain in a wild wood section of the Woodland Cemetery. Surrounding the building is an area of massive, century old, pines. The building is a compact brick structure about 150 meters away from the major chapel complex by Erik Gunnar Asplund of 1940, which has now served its turn. The new building carries on the tradition and the same architectural stature as the original work devoted by Asplund and Lewerentz, when forming part of the overall Woodland Cemetery composition. In this way the present crematorium is relieved of the technical crematory functions but retained in terms of ceremonial and religious functions, which architecture and landscaping have been a great support to people in their bereavement and in their leave-taking of loved ones.

Space and functions
The arrangement of the plan and the characters of the interiors have been major concerns in the design of the new crematorium, where the compact figure of the plan gives the staff overview as well as making a limited encroachment in the precious forest. The greatest proportion of the 3,000-square-metre building is taken up by the operational rooms of the crematorium. A glass-fronted lobby, reception and ceremony hall are positioned at right angles around the entrance, from where the rooms are arranged over one level, although double-height hallways connect the public areas. Public rooms off the hallways have been given a more human scale with the inclusion of single-height doorways and a lowered arched ceiling in the ceremony room, where mourners can have a ceremony by a coffin or urn. For acoustics perforated bricks are used in some interiors, as Being white glazed to reflect and accentuate the light from the openings and slits in the roof. Inside the building block is an atrium open to the sky where staff can get together at breaks without interfering with mourners at the main entrance. Two cold-store rooms sit at the centre of the building, with a covered car entrance to receive coffins to one side and a furnace hall to the other.

Mourners and visitors reach the building on a pathway marked out by large granite slabs that are laid out between the pine forest. At the public entrance there is a generous brick canopy under which mourners may gather or rest in close proximity of the natural woodland. At the canopy all the surfaces are of brick laid on different edges. They are on the facades, on the ground and cast into the ceiling of the canopy. Adding to the surfaces of brick is one massive load bearing granite column. To sum up, it can be noticed how the



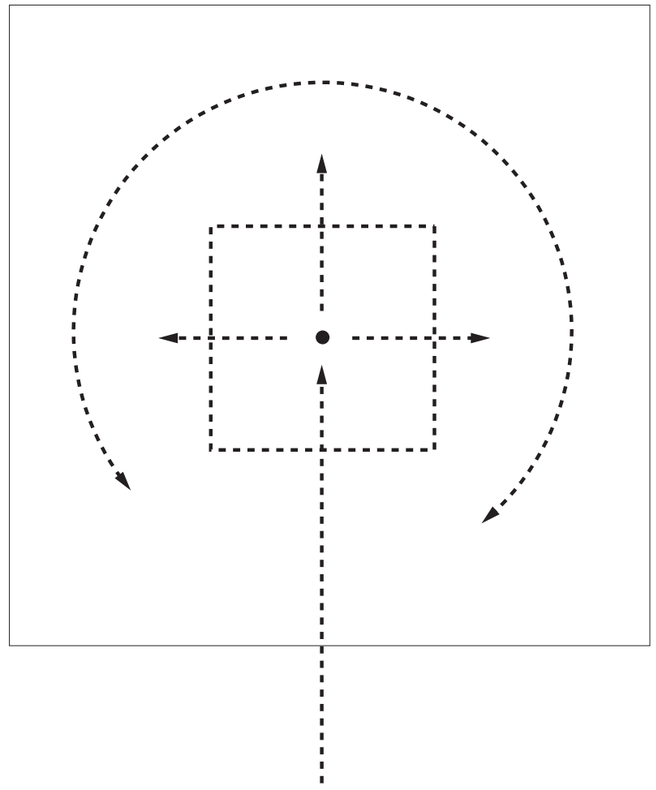
logistics of the new crematorium have primarily to do with the handling of coffins within the building but also with the conveyance of coffins between the new and old crematories. All spaces where coffins are handled, from reception to ash collection, are planned on the same level together with other facilities. Technical services such as fan room and heat recovery are installed one storey below the crematory spaces. The logistical chart is a guide to the main functional connections, where the layout of the building contributes to high-quality spaces both for funeral parties and for the staff whose daily work takes place in the building.

BISPELBJERG CREMATORY
Architect: Friis & Moltke Architects
Location: Copenhagen, Denmark
Date: 2001 - 2002
Area: 1500 sqm

The new crematorium at Bispebjerg Cemetery in Copenhagen is a harmonious and neutral design by Friis & Moltke.
The building appears as a brick building, which refers to the cemetery's old, round chapel, to the Grundtvig church and to the residential neighborhood. The facades are pierced by dark red, soft and coarse rocks with dark joints. The deep indentations and niches help to emphasize the brilliance of the bricks and creates a varied and powerful architectural expression. The roof is made of concrete cassettes molded on the site in a rough formwork, which in a formal and light manner corresponds to the smooth brick walls.

The building, characterized as a visiting-crematory, is located in the middle of the entrance axis on an extensive granite-plot space. The linear trajectory of space creates a floating transition to the view of the landscape and the cemetery. It is divided by a central hallway with visitor-oriented, ceremonial rooms and staff facilities to the south, as well as coffin reception, cold storage rooms and welfare rooms for employees to the north.

The various rooms are given daylight from a number of courtyards. The reception hall and the cremation room itself breaks the hallway axis, which, with its importance and need of space and certain room height, naturally draws the highest point and span above the entire width of the building. The oven hall appears as the spatial highlight where the four ovens in browned copper stand in a nine-meter high room with an asymmetrical hanging ceiling. The oven hall is designed to allow relatives to be present during the cremation, among other things, at the request of new Danes, immigrants with other funeral rituals. We may question whether our design for a crematorium should accommodate more intimate spaces, and if the primary rooms, including the coffin reception and the cremation room, should have as much space as they are often allocated, while still being flexible for all types of funeral rituals.



THE LIGHT OF THE NORTH

CASESTUDIES

Natural daylight is constant in its inconstancy. It alters in time and through seasons, bringing variations of its illumination. Dependent on the season light can alter slowly, steady and smoothly and on the contrary rapidly, a phenomena occurring during summer and winter respectively [Henry, Plummer, 2009]. Natural light states the counterpart between winter and summer, as the days appears covered in endless shade and darkness during winter, and conversely during summer, days seems more Throughout history and ever since the architectural practice has been brought to attention, natural light has acted as a vital part in architecture. As architecture takes usage of the natural light it has concentrated attention on how these combined emphasized the intersection between what is man-made and what has emerged naturally [Plummer, Henry, 2009].

How does one define and go about applying light within the architectural practice? What is light and which fundamentally influences does it posses to our existence as we interact with different spaces? Both from a perspective on physical and visual perception? As for its performance in influencing spaces how could this experience of light be affected by architectural instruments? How does light create spaces and define our physical and sensory surroundings, as they define atmospheres through either dark, light, intense, profane, sacred, or landscape spaces? These are some of the key questions we aim to responds to through theory and case studies of light from an architectural point of view. In our attempt of investigating light, we recognise it as a method that would allow us to integrate both tangible and sensual perceptional instruments of light in our design for a crematorium as they should add to the multi-sensory by appealing to the senses of the skin and eyes.

THE LIGHT OF THE NORTH

From the theory of Christian Norberg-Schulz in his Book Nightlands, he contends that light being brought by the sun and stars through day and night, brings the primary character to an environment, as it informs us of our location [Norberg-Schulz, Christian, 1996, p.2]. When linking our associations to The North and The South, different thoughts emerges. In Nightlands by Christian Norberg-Schulz, he defines the characters of the North, being a description of the environment in the Nordic countries. The cold and harsh environment of the Nordic has through time been linked with the mysterious and indescribable. In his theory he argues how different experiences and associations can be collected from The North or The South respectively [Norberg-Schulz, Christian, 1996, p.1]. The darkness of the North stands in contrast to the illuminated environment of the South. [Norberg-Schulz, Christian, 1996, p.1] In this sense The South and North acts as counterparts to one another, which stresses the importance in considering the environment of a place when dealing with architecture, as the architecture must address, reflect and consider the identity of the environments it is situated within. From his theory we intend to draw inspiration from the features of the light in the North, and implement into our design for a new crematorium in a Nordic context. In his book, Norberg-Schulz defines the north from an expression saying, how the north is to be understood as the land "below" and "under" on account of being distanced from the light of the sun and stars [Norberg-Schulz, Christian, 1996, p.1]. As a reference to the North, Norberg-Schulz stresses the italien definition of it "mezzanotte", meaning "midnight", which also illustrates how the land of the North is described as a land being dominated by spaces which appears in the shadows and darkness. [Norberg-Schulz, Christian, 1996, p.1]. The sky within the Nordic countries, is an element of interest, as clouds is a dominating part of the Nordic sky, creating diffusion in the Nordic environment, as the direct sunlight in reflected. Although Norberg-Schulz stresses how we can never be sure of the light conditions from day to day, we can find assurance in the seasons.

In an in-deeper discussion of the places within the North Norberg-Schulz stresses how these places contains a blurred representations of its geometry without any fixed boundaries. [Norberg-Schulz, Christian, 1996, p.9]. The result of this blurred representation of the places, should be found in what Norberg-Schulz refers to being "the web", being the thickening of the forest and on account of the fading sun and sky being linked to the weather of the Nordic. As a result of these parameters the eidos [form] of space and objects are lost [Norberg-Schulz, Christian, 1996, p.6]. On the contrary to be presented as a place without form, Norberg-Schulz on the other hand also contends that this is not the case, as the Nordic also contains mountainous and plane place giving form the a space, but these have become obscured continuum of the "the web" [Norberg-Schulz, Christian, 1996, p.9]. To accommodate this "web", he talks about creating an opening and thereby create a clearing that would provide room for space, This also emphasis how space is not a continuum in the North but a tight space, but it is how humans provides spaces for settlements within the apertures. [Norberg-Schulz, Christian, 1996, p.6,9]

LIGHT THROUGH THE FRAMEWORK OF THE FOREST

The endless percolation of light in the forest has conditioned the way Scandinavians, the Norwegians and Finns in particular, see their world. Scandinavia's recent timber architecture continues to draw upon primitive memories of the forest, even though it is reliant on industrial methods and standardized lumber. The forest is where people lived and worked, and where they found the raw materials for their dwellings, furniture, boats and toys. For that reason wood was considered as a living material, permeated with myth and folklore, and treated in a manner that reveals and celebrated its innate structure. Such architectural approach originates from the belief that buildings should emanate from their genius loci. The imprint of these patterns on the human imagination has been rewarded with an unsurpassed skill at using sticks to haze over space, carefully proportioning solid and void to tune the quality and degree of splintered light passing through, reminding us that the forest "rustness" visually, as well as acoustically. [Plummer, Henry. 2012].

The tapered and faintly organic wood cave of Matti Sanaksenaho's St. Henry's Chapel in Finland, draws upon equally poetic images that are simultaneously fresh and primeval, with its nearly animate void cloaked in shadows that slowly brightens towards the altar. Faint illumination enters the chapel at either end, only to die away in heavy shadows, at the same time highlighting ribs and tingeing the air a deep reddish-gold - dramatizing the long space as a spiritual quest. The immersion is atmospheric, as well as material, for the continuous timber forms a vessel that collects and concentrates the aroma of wood, and presents a complex but unified whole, vibrant with light modulations, in which every time contributes to the overall ambience. The chapel is nonetheless a new and unprecedented architectural experience. Melding the strangely tapered volume back into the forest is the green patina of its copper skin. The interior by contrast is totally finished with soft wood; pine for the laminated structural ribs, as well as for the untreated boards that line the walls and the waxed planks of the floor, all of which are closely matched to the benches of common alder. In addition to its aromatic and haptic appeal, the woodwork develops a mysterious atmosphere as small amounts of light play over its surface. Adding to the harmony are shadow-marks left by carpenters in the cuts and joints. The atmosphere may not be bright, but it is nevertheless rich in mood, with a tawny glow that evokes the peace of the primeval forest and create an impression of being within the wood itself. [Plummer, Henry. 2012]

TRANQUILLITY IN THE SPACES OF THE FOREST

A plainness architecture, pared down to its essence is experienced in the "Chapel of The Holy", by Finnish architect Pekka Pitkänen. In this work, the interior appears bare, stripped from ornamentations.The repeating in pale concrete materials, has a bleaching effect on the space, enhancing a silent, sombre and atmosphere. On Account of the lack in ornamentation within the interior, light and shades act as ornamenting parameters and the implementation for light outbalances the color reduction, which the raw concrete walls adds to the interior. While being an parameter that adds to the ornamentation, light is always drawn from above, keeping the interior spaces to in touch with the sky, which stresses a solemn atmosphere as it supports the funeral rite, liting up the coffin or priest. Another case on how to deal with tranquillity through architecture is found in the work "Enghøj church", by Henning Larsen, where a combination of timber and concrete is applied. From openings in the roof, light penetrates downwards and lits up the the raw grey stone walls. To outbalance the cool hues, the silhouette
the timber in the roof strucutre, stands in contrast to the grey scale of the walls, adding warmness to the atmosphere. [Plummer, Henry, 2012]

DIFFUSION - SOFTENING OF THE GLARE

The paradigm of nordic architecture as a light catching instrument evolves constantly, since the overriding challenge of natural light is its rarity. The architectural method to harness the nordic meagre light, aims to control and make use of daylight as a limited resource, while minimizing heat loss in an arctic climate, in a manner that retained an intimate contact with nature. The simplest technique that response to the need was the moulding of the buildings overall mass in response to the course of the sun, stretching and folding the envelope into carefully directes channels that would behave as funnels [Plummer, Henry. 2012].
Pioneering this conception of architecture as an optical instrument was Alvar Aalto, especially seen within Aalto's Rovaniemi Library (1968) in Finland where a masterful series of large funnel fan out to a wide swathe of northern sky, maximizing the soft diffuse light that the architect thought essential to the place. [Plummer, Henry. 2012]. His drawings contribute to a search for light at the Arctic Circle, where the fan shaped volume is a recurring motif analogous to the edges of leaves and flower petals which unfurl to gather more light which emphasises the reading room, is this specific case, as the soul of the library. The perimeter of these funnels was a tool for catching and distributing light from very specific parts of the sky. These profiles were sculpted in both plan an section, and worked into rooflines and walls to capture low angles of light, and then convey that illumination to the innermost rooms of a building. Hydraulically shaped baffles, blades and conduits added precision to the management of light and guided radiation as a flowing substance, while eliminating glare by diffusion the rays through a series of reflection that siphon light to the room below. Derived from studies of their optic behavior - each funnel is dimensioned and shaped to diffuse falling light by a series of reflections, and then scatter this illumination off bevelled curves to the room below. Aalto used spreading lines to study the paths of incident rays, showing how radiation was caught within the shape and then widely dispersed in the room. Potential glare was further reduced by dimensioning the height to intercept every solar angle up to its summer zenith, making the optical instrument a celestial superstructure that creates a metaphoric link with the atmospheric Nordic sky [Plummer, Henry. 2012]. Moduled and bent into a kind of periscope, the form was able to capture low angles of light and deflect these rays down into a room, and often further down to lower floor levels. In its rising gesture to reach for the sky a scoop can utterly transform the silhouette of its building and become a space of architectural identity. Its embodiment of a specific climate, latitude and solar course brings architecture into accord with its setting, which is no longer defines solely in physical terms, and thereby helps people to concretely grasp their place in the world [Plummer, Henry. 2012].

III. 46 - FOREST IN LAPLAND ►

CHAPTER 4
PROGRAMME

This chapter contains a decription of the programme for the crematorium. From this description the aspect of the programme are derived from previosly theory on the thematic on Death, Tectonics and Casestudies, which establishes the foundation on which important parameter that needs to be considered in the develop of the programme for the Crematorium, in the Nordic context of Rovaniemi, Finland,

Through the description of the programme important rituals elements are introduced as the main influencing parameters, as they provides us with guidelines on how to form the settings for a crematorium, which considers the layout of the individual spaces and their interrelationship and how these assist in adressing how to cope with the events of Death. In regards to the overall building composition, laid out in the programme, this hightlights the usage of the crematorium and its individual parts and flowpatterns.

LINEAR IMPLEMENTATION | **ROOM TABEL** | **PROGRAMME FLOW** | **PATTERN OF USE**

THREE SEQENTIAL ELEMENTS

PROGRAMME

Regarding how to deal with the events of Death, the theory of Gennep has guided us in terms of, which rituals this event breeds and their cronological order, as the deaceased transits from the world of the living to the world of the dead. On account of such the theory of Gennep has provided us with inspiration to the configuration of the programme. As Gennep stresses the order of rituals through three sequences - rites of seperation, transition and annexation - the programme is influenced by these parameters and their chronological order as they become effective within the different parts of the building. From such we intend through connections within the different parts of the programme, dealing with both pre- and past rituals of Death, to provide an architecture that considers how people deals with Death through their funeral culture in a western world. With our knowledge from the theory of Gennep, combined with a Nordic and comtemporary understanding of these, from the studies of anthropologist Cecilie Rubow, we intend to both initiate religious and non-religious believers througth an reinterpretion of the rites of passages being; rituals of a final-farewell, interment and memorial gathering.
On account of these rituals and their chronological order, the programme for a new Crematorium in Rovaniemi, Finland, is founded on a sequence of ritual processes, influenced by the pre- and past rituals, in funeral services. The pre rituals, becomes effective in the rituals of final-farewell and internment, whereas the rituals of memorial gathering becomes effective in the past rituals of the funeral services. In our interpretation of how these three rituals, could be integrated parts of the crematorium and its functions, the programme entails three key sequential elements, which relates to the rituals of a final-farewell, -interment and -memorial.
To enhance the idea of respectful planning for the crematorium and its attenders, we intend to understand the character of each key sequence, composed by the three rituals of transition, as they could let on the essentials of what the programme should entail to assist the conduction of each ritual, whether the rituals are of intimate or more public character. As supplementary and also essential elements to the programme, an area for those working at the crematorium, is organised in the programme of the new crematorium. In the planning of the area for the employees the programme intends to form the basis of how practical aspects relating to the pre- and past customs of cremations and other funeral ceremonies can take place simultaneous and parallel to the customs of the surviving relatives.

FINAL-FAREWELL RITUALS

Regarding the chronological order of dealing with rituals of transition, the initial rituals concerns how we pay our final farewells. As this ritual becomes the first of several in the processing of this transition between life and Death the programme serving this ritual should form the basis of the surviving relatives first attendance to the crematorium. From the theory of Gennep and further interpretation studies, by Rubow, the rituals of final farewells becomes effective in the programme for the chapels. By forming the basis for a final farewell, this part of the programme is comprised by ceremonial areas, that serves as the opening part of cremation services. In the events of these funerals, it is experienced how they tend to gather and unite the congregation of people attending the event, as they all share memories of the Deeceased and mourn their loss. Besides featuring spaces for the surviving relatives, this first part of the programme offers simultaneously spaces that accommodate staff facilities.

INTERMENT RITUALS

For the second ritual act in the transition between life and death, the crematorium forms the basis for the surviving relatives second attendance and the rituals of interment. In this part of the programme the rituals evolves around physical and bodily aspects of Death, as disposal of the Deceased is dealt with. As the primal feature to enhance the rituals of interment, is it emphasised in how the Deceased moves outside the surviving relatives perspectives, as the ovens inside the crematorium becomes the last destination until the body gets dissolved.

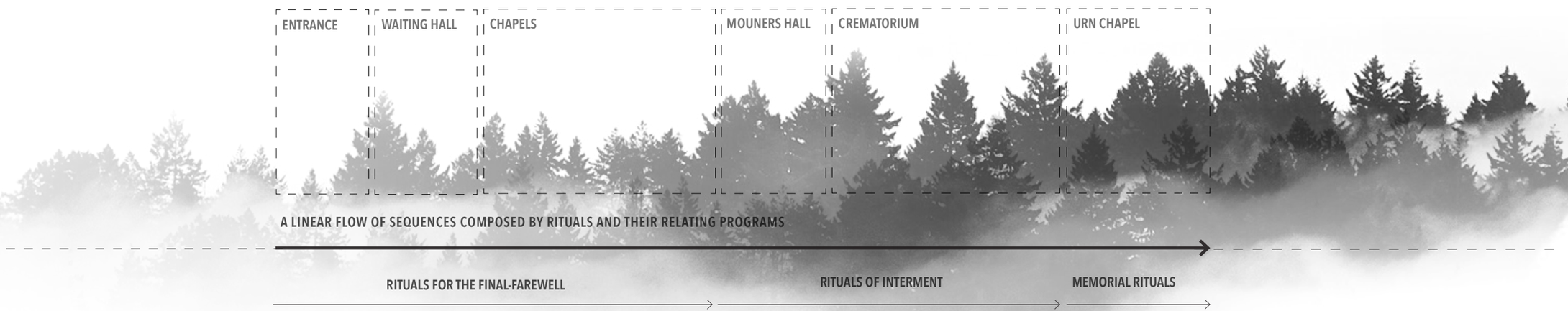
MEMORIAL GATHERING

The third and last ritual of the transition between life and death, is the ritual of memorial garthering. Based on the activites carried out within this ritual as the urn of the deceased is being handed over to the earth, this becomes effective in the programme of an urn chapel. As the urn is handed to the surviving relatives, the bodily remains of the deceased only exists in the ashes in the urn. On account of such this emphasises that only memories of the deceased is left in the minds of the surviving relatives, which stresses the importance in how the space for the urn chapel should provide space the memories to unfold.

THE SURROUNDING OF NATURE

As the design of the crematorium should provide space for the rituals of transition we intend to make use of the surrounding landscape. In this usage of the landscape it should provide calm, peaceful and dignifying settings, when paying our final respect to the deceased. As the programme provides a sequential flow within the building, we intend to enhance the connection inbetween these sequences through nature. In the intersection between the architecture and the nature of the site, the nature should enhance the linear flow of sequences, through a landscape podium, bringing connections in between each sequential elements within the programme. As the podium acts as a parameter, that should intend on bringing nature in a close distance to the architecture we vision the landscape podium rich in its natural scenery, and thereby enhance the spiritual engagement of the building with the surrounding nature. Observing the programme of the nature through the landscape podium, it should allow spatial experiences for intimate quiet reflection, as it would offer spaces for the surviving relatives to rest and pay tribute to the Deceased in between the rituals of each sequential element.

Besides being a space for reflection the landscape podium should be a guiding element towards the three sequences for each ritual. From this application of nature within the building design, we will promote features of the Nordic and in particulary Finnish architectural traditions, as we want to enhance how the surrounding elements within the nature of the place could conditions and attach to the architecture. From a perspective of Finnish traditions, the implementation of nature reinforces how being a Finnish person is influenced by the forest, as the forest would provide spatial experience leading towards the building masses.



PRACMATIC PROGRAM / WORKSPACE

STAFF ENTRANCE
ADMINSTRATION
MEETING ROOMS
COMMON ROOMS
FORECOURT
COFFIN RECEPTION
SERVICE ROOM

CEREMONY HALLS

ENTRANCE RECEPTION
SMALL CHAPEL
LARGE CHAPEL
COMMON ROOMS

CREMATION

FURNACE FACILITIES
INTERMENT
COLD STORAGE
MOURNING HALL

URN CHAPEL

COLLECTION
URN STORAGE
ASH PREPARATION
URN HANDLING

PRESERINV MEMORIES

MOURNING HALL
MEMORIAL SPACE

BUILDING PROGRAM OVERVIEW

SUMMARY

	NO. (PS)	TOTAL AREA (M^2)
OUTDOOR AREAS	1	630
STAFF FACILITIES	1	275
RITUALS OF FINAL FAREWELLS	1	851
RITUALS OF INTERMENT	1	3022
MEMORIAL RITUALS	1	18256
TOTAL M^2 OF BULIDING COMPLEX		**4200**
TOTAL M^2 OF CADASTRE		**18830**

OUTDOOR AREAS
ARRIVAL & FORECOURT

	NO. (PS)	UNIT AREA (M^2)	TOTAL AREA (M^2)	HEIGHT (M)	CAPACITY (PERS.)
MOURNERS AREA					
LANDSCAPE PODIUM	1	33	33	3	120/60
PARKING	38	12	467		180
STAFF AREA					
PARKING & TURNING SPOTS	5	12	60		8
CARPORT & TRUCK RECHARGING POINT (MORTUARY)	2	35	70		2

STAFF FACILITIES
ADMINISTRATION

	NO. (PS)	UNIT AREA (M^2)	TOTAL AREA (M^2)	HEIGHT (M)	CAPACITY (PERS.)
STAFF AREA					
ENTRANCE	1	7,8	7,8	3,5	5
RECEPTION & REGISTRATION HALL	1	18	18	3,5	5
OFFICES	1	27	27	3,5	4
TOILET	2	3,6	7,2	10	2
PANTRY & MEETING ROOM	1	16	16	3,5	6
CHANGING ROOM W/ TOILET	2	22,5	45	3,5	8
LOUNGE	1	23	23	3,5	8
PRINT ROOM	1	6	6	3,5	2
CORRIDOR	1	82	82	3,5	4
SECONDARY COLD STORAGE	1	43	43	3,5	1

COMMENTS

A SUMMARY OF THE BUILDING COMPLEX

The programme of the crematorium in Rovaniemi contains five main elements. Looking into the capacity and area, they all differ in size. The logistics of the new crematorium have primarily to do with the handling of coffins within the building but also with the transport of coffins between the cremation area and ceremony/memorial area. The logistical chart is a guide to the main functional connections. All together the crematorium has an area of 4200 square meters.

OUTDOOR AREAS

The outdoor facilities are divided into parking, access courses and memorial landscape scattered on the site. As a dominating feature of the Nordic landscapes the forest provides movement with and without direction.

STAFF FACTILITIES

The facilities intended for the staff, incoporates pragmatic functions. From the programme it can be concluded how all the main ares intended for the staff, is an isolated part of the building, as the flowpatterns and usage, should be prevented form interfering with the usage and flowpattern of the surviving relatives.

RITUALS OF FINAL-FAREWELL
CEREMONY AREA

	NO. (PS)	UNIT AREA (M²)	TOTAL AREA (M²)	HEIGHT (M)	CAPACITY (PERS.)
MOURNERS AREA					
SUURI KAPPELLI	1	225	225	6	120
ENTRANCE	1	43	43	6	120
GATHERING HALL	1	150	120	6	120
COMMON ROOMS	1	34	34	3	8
PIENI KAPPELLI	1	148	148	6	60
ENTRANCE	1	43	43	6	60
WAITING HALL	1	80	80	6	60
COMMON ROOMS	1	34	34	3	8
STAFF AREA					
ORGAN AND CHOIR AREA	1	11	11	6	6
ROOM FOR CHOIR	1	15	15	3	6
ROOM FOR ORATOR	1	15	15	3	1-2
MOURNERS ROOM	1	48	48	3,5	10
ENTRANCE	1	12	12	3,5	10
COMMON ROOMS	1	23	23	3,5	10

RITUALS OF INTERMENT
CREMATORIUM

	NO. (PS)	UNIT AREA (M²)	TOTAL AREA (M²)	HEIGHT (M)	CAPACITY (PERS.)
MOURNERS AREA					
ENTRANCE	2	14	28	3	6
OBSERVATION ROOM	2	39	78	6	6
STAFF AREA					
CONTROL ROOM	1	35	35	6	3
INSERTION, FURNACE	1	370	370	6	4
ASH PREPARATION	2	50	100	4	4
TECHNICAL FACILITIES	1	1890	1890	4	4
COMMON ROOMS	2	16	32	3	4
COLD STORAGE PRE CEREMONI / CREMATION	2	175	350	4	4
DECORATION & FLOWER DELIVERY	2	57	114	4	4
REFUSE DISPOSAL & CLEANING ROOM	1	25	25	4	2

MEMORIAL RITUALS
URN RELEASE

	NO. (PS)	UNIT AREA (M²)	TOTAL AREA (M²)	HEIGHT (M)	CAPACITY (PERS.)
STAFF AREA					
URN STORAGE BEFORE INTERMENT	1	15	15	3,5	2
MOURNERS AREA					
URN KAPPELLI	1	41	41	4	10
MEMORIAL SPACE	1	18200	18200		

COMMENTS

RITUALS OF FINAL-FAREWELL

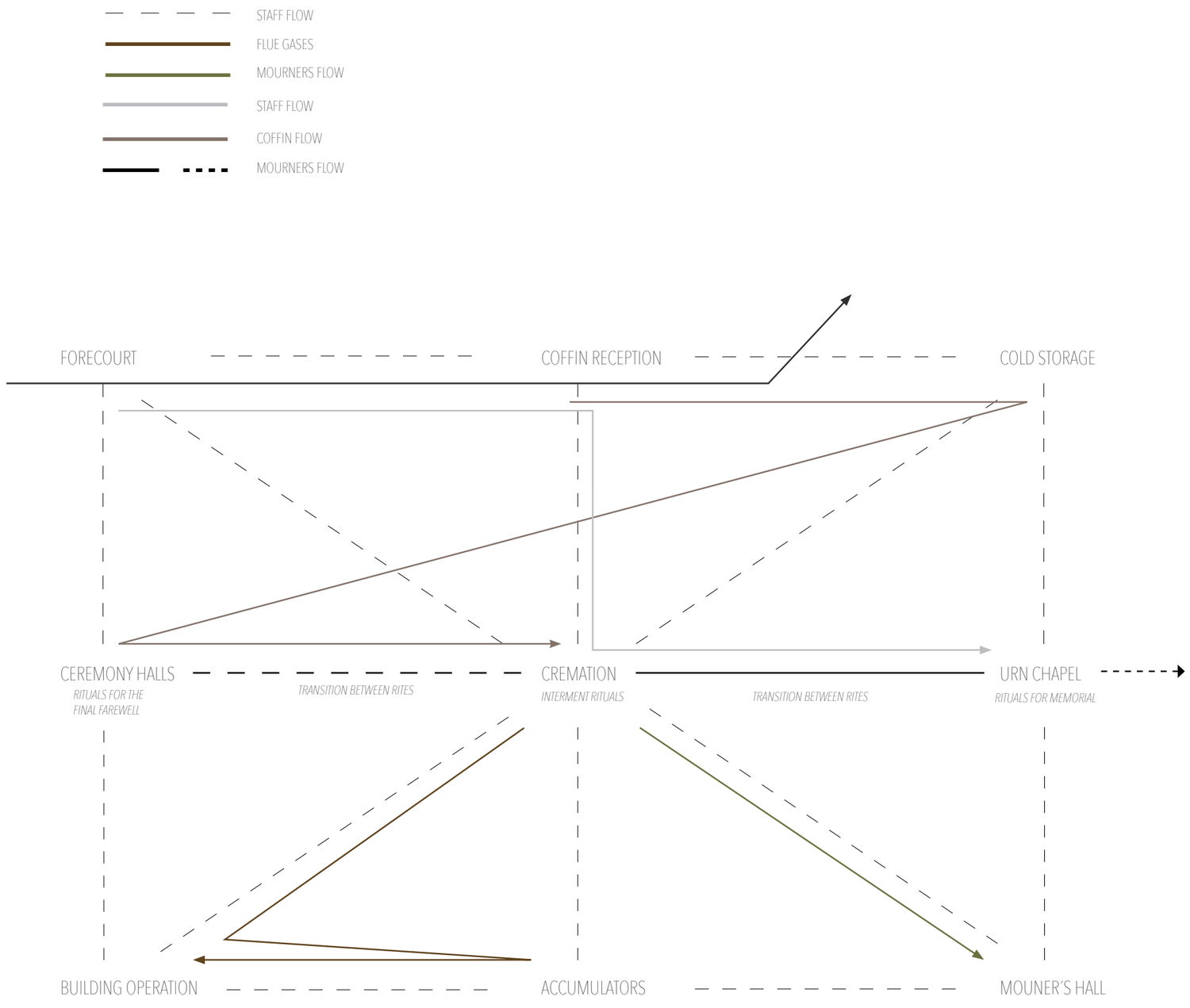
That is, it should be neutral, without losing the expression of solemnity. The entrance to the area should be uncomplicated, giving easy opportunity for settlement of the ceremony where the coffin and the mourners arrive at the same time. In addition to chairs, benches and catafalque space, should the area's fixtures consist of a movable lectern or the like from which the speaker will be staying. The programme intended for the rituals of final-farewell possses the capacity to gather and unite the surviving relatives in their sorrow, as two chapels differing in size and one mourners room, provides a wide spektrum that could address different needs for the surviving relatives in their greving moments.

RITUALS OF INTERMENT

The areas of the crematorium, is intended to the used by the working staff as they manage the cremation process, but also by the surviving relatives, as they are left with the choice of being present at the cremation of a loved one. In the process of cremation, the crematorium should provide a worthy atmosphere for the deceased and survivig relatives as they mourn and attend the creamtion process. While being present in the crematorium, the surviving relatives should be excluded from the noise of the working process related to the cremation, an instead experience a space in calm- and quietness, with a clear view to the process of cremation.

RITUALS OF MEMORIAL GATHERING

Urns will in the first instance be released to funeral contractors but will sometimes be collected by relatives or their representatives. As a place to collect this urn, a space provides natural and worthy settings for the end-destination for this linear process in regards to the rituals of transition.



III. 51 - FLOW & FUNCTION DIAGRAM ◂

FLOW & FUNCTION

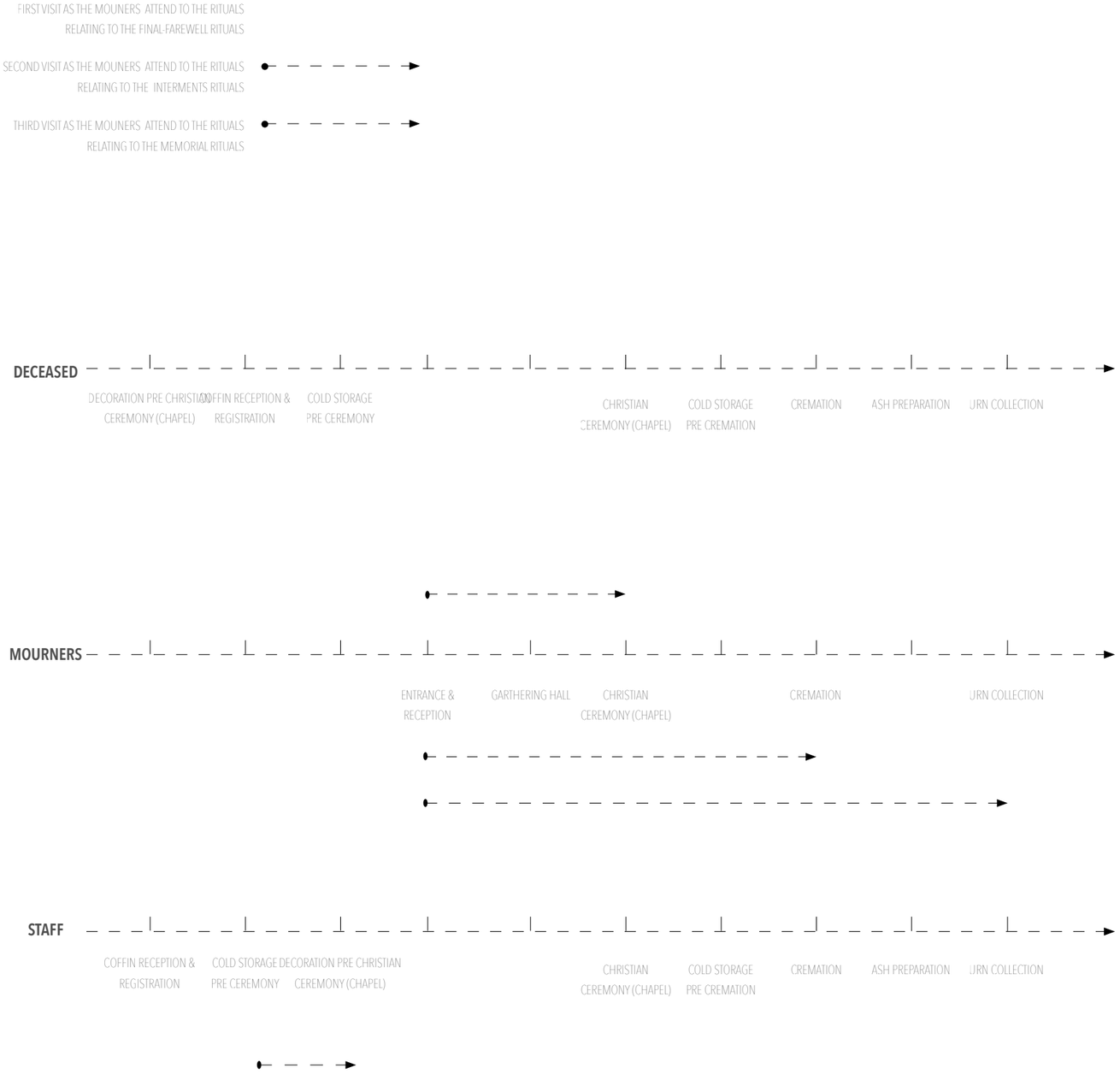
PROGRAMME

FLOW

From casestudies on the different typologies of crematoriums, this have provided us with knowlegde of flowpatterns and functions, distributed within the typology of creamtoriums, for mourners and staff respectively. From these two perspectives on how to deal with flow and functions in the design of the crematorium, the casestudy of Bispelbjerg Crematorium and Wood Crematorium have given us knowlegde of how the flow and functions for the mourner and staff are interweaving.

On the basis of the casestudy regarding Woodland Crematorium, the location and connection between different flows and functions with regard to the placement of the actual space intended for cremation, this have influenced our programme for the creamtorium. Concluding from the planlayout of Woodland Crematorium a compactness through a central placed node adjacent to the space for cremation, stresses the main usage of the building, being the act of cremation. Making the facilites for the staff the center of the planlayout, this provides easy access to all the parts within the programme of the crematorium. From observations of which programs the center of Woodland Crematorium consists of, coldstorages composes the majority. On account of such, the main flow constituting the coffin transportation is made more efficient, as this flow combines easy access inbetween arrival, ceremony and disposal functions. Interweaving with the pragmatic flow and functions for the staff, is the flow and functions for the surviving relatives. From our casestudy on Bispelbjerg Crematorium, the planlayout shows how the architecture for the crematorium promotes a linear progressing flow, providing view onto a longdituional direction, which gives an overview of the distribution of functions within the crematorium. Along the longditutional axis in the hallway corridor adjacent spaces allows the surviving relatives to turn off the main hallway. In the longditutional progression of the flow with the hallway corridor, the development in volmunes determinates the center of creamatorium, being the spaces for cremation.

When interweaving the flows of the staff and surviving relatives we intend through the design for the crematorium to stress a linearity to the flow for the surviving relatives, to offer an overview regarding the application of the entire building, while stressing the forward progresses when dealing with Death. When stressing a linear flow for the surviving relatives, a compactness should dominate the flow for the staff, with the adminstration center in the midst of the building, which which enhance pragmatic logistics thorugh easy accesses onto the different workfunctions distrubutes withint he building.



III. 52 - DIAGRAM SHOWING PATTERN OF USE ◂

PATTERN OF USE

PROGRAMME

Within the usage of the crematorium there are tree seperate flows to be mentioned, being a flow for the Deceased, Mourners and the Staff. The different flows are processed simultaneously, taking its point of departure form the day the coffin arrives to the Crematorium, when being delivered by the funeral director. When the funeral dirctor delivers the coffin, it will go driectly to a place in the cold storage. After being registrated and assigned for cremation in the coffin reception, the pre ceremony will occur by decorating the coffin. This decoration happen prior to the beginning of the mourners flow within the crematorium. As the mourners enter the building site, the first visit relates to the final-farewell ceremonies, hold by either a ceremony within Suuri Kapelli, Pieni Kapelli or the Mourners room, where the landscape podium, entrance and waiting area condition people and prepare them for the upcoming negotiation. As the rites of final farewell are carried through, a relocation to the cold storage for pre cremation will happen for the coffin. Afterwards the cremation and disposal of the body occur, giving the mourners a possibility to accomplish their second visit and attend to the rituals relating to the interment ceremonies. The consecutive stage of the process deals with ash preparation, prior to the third visit where the mourners attend to the rituals relating to the memorial ceremoies where the relatives can collect the urn of the deceased.

CHAPTER 4
CONCLUSION

From the essence of the program derived from previoly studies, two aspects stands out as the first and foremost important once in the design of the crematorium, concening both the surviving relatives and working staff. As the main theme a linear course of the building programme incorporates the processes related to the events of Death, as it strenghten the chronological order of these three rituals of transition. From this the programme sets out a respectful planning and distribution of functions, as the different rituals are seperated, which prevents them from interfereing with one another.

As the second core element with the programme of the crematorium, the functions for the staff needs to be considered in regards to their distribution and flow. Due to such exists in the fact the these facilites needs to be optimzes, as they posses impact on the experience of the surviving relatives as well.

Ill. 53 - MOUNTAIN AREA VIEW ▸

CHAPTER 5
PRESENTATION

From a perspective of the Integrated Design Process [Knudstrup, 2005] this chapter emphasises the phase of presentation, as the concept of the crematorium is visually communicated through; Conceptual diagrams, plans, sections, elevations and graphic visualisations. In doing so, we intend to enhance the understanding of how the architecture of the crematorium addresses the spatial gestures and constructive principles, extracted form the understanding of the site, and how these enhances the Genius Loci, Nordic archtiecural traditions and atmospheres felt within the interior.

To desribe this experience of the crematorium, we will do this from a perspective of the familiy, that should pin-point their state of mind within the different rituals of transition, and how the architecture promotes these feeling.

When a family has lost one of their loved ones, they need to decide on how they should or wish to manage their final farewells in honor of their loved ones and furthermore how they are going to cope with the disposal. In most cases, the deceased has already decided on how he/she wants to be buried and handled in terms of disposal. Throughout the presentation of the crematorium in Finland, Rovaniemi, we will explain the process when a family or deceased has decided on cremation and related ceremonies. Throughout this encounter, we will explain how the rituals of transition is expressed in the architecture, that would promote the mindset of the surviving relatives, looking into the usage, flow and felt atmosphere within the interior and around the exterior.

MASTERPLAN | PLAN | SECTION | ELEVATIONS | DETAILS | VISUALISATION | SECTIONS

III. 54 - THE PROJECT SITE, NIVANKYLA ▸


00
04
05
07
07
01
03
02
02
01

LEGEND

00 LINEAR LANDSCAPE PODIUM
01 ENTRANCE - CREMATORIUM
02 CHAPELS
03 CREMATORIUM ROOM
04 ENTRANCE - URN CHAPEL
05 URN COLLECTION POINT
06 OUTDOOR COURTYARD
07 **ENTRANCE - CHAPEL**

III. 55 - MASTERPLAN 1:500 ◂

THREE SEQENTIAL ELEMENTS

THE EXPERIENCE OF THE CREMATORIUM

CORRIDOR

As the mourners turn the corners of the chapels and leaves the landscape podium, one paths splits up into two entrances for each chapels. The building for the chapels are divided into two separated building volumes, to avoid the risks of different congregations meeting and stirring up painful emotions. As the family approaches one of the two chapels, the architecture conditions their state of mind, through the narrowness and verticality of the outdoor corridor expressed through the width between wall elements and how these seem to continue in the continuum of the sky, as this exterior space is without roof. Through the solidness of the walls, this creates a clearing of their mind. This clearing of their mind becomes a reality, as their view to the surroundings are cut off, and therefore detaches them from the busy live in the world of the living. This first exterior corridor expresses a transition from the busy life of the living towards a world, which centres on the deceased and the surviving relatives through calm and quiet atmospheric spaces.

When entering the building the corridor continues in an interior space and solid wall and roof elements continuously prevent a view to the surroundings and surroundings the surviving relatives. This leaves an even darker space, only lit through small “cracks” and along the corridor and at the end of its. In this space light and its elongated geometry becomes a guiding element towards the glade.

SPACE FOR CONTEMPLATION

At the end of the corridor the space expanse into a plaza, which allows for a larger congregation of the surviving relatives to gather in and share their sorrow. This space is fully transparent, towards untouched nature, which enhances how the space is intended to be a space for contemplation, where the surviving relatives can be consumed by nature and focus on their healing. Due to wider dimensions within the waiting space, which allows for larger congregations to gather, the space also features intimacy, enhanced by the structural system. The structural system promotes the spatial gestures and constructive principles found on site, as they refers to the trees within the forest, which is a dominating part of the site. Through the slenderness and simplicity of the columns, this promotes a warm and illuminated space, as natural light penetrates in between the columns.

CHAPELS

When the time comes for the ceremony to begin, in honour of the deceased, the congregation gathers inside the chapel. Within this space, diffuse light only penetrates from above helped by oliquq copulas, which emphasises the centre of attention, being the deceased. While light emphasises the importance of the deceased, the congregation is concealed by the shadows, which strengthen how every aspects concerns the deceased. As light points out the importance of the deceased within the chapels, this is also helped by the fact that no openings penetrates the walls. On account of such the space of the chapel becomes a very introvert space, which forces the people gathering in it, to only focus on what takes place inside the chapels. As the ceremony draw to a close, the family returns to the space of contemplation, which again places the focus on the family in their grieving moments. When time comes the family leaves the site, to return to the world of the living for at moment.

SPACE FOR CONTEMPLATION

At the end of the corridor the space expanse into a plaza, which allows for a larger congregation of the surviving relatives to gather in and share their sorrow. This space is fully transparent, towards untouched nature, which enhances how the space is intended to be a space for contemplation, where the surviving relatives can be consumed by nature and focus on their healing. Due to wider dimensions within the waiting space, which allows for larger congregations to gather, the space also features intimacy, enhanced by the structural system. The structural system promotes the spatial gestures and constructive principles found on site, as they refers to the trees within the forest, which is a dominating part of the site. Through the slenderness and simplicity of the columns, this promotes a warm and illuminated space, as natural light penetrates in between the columns.

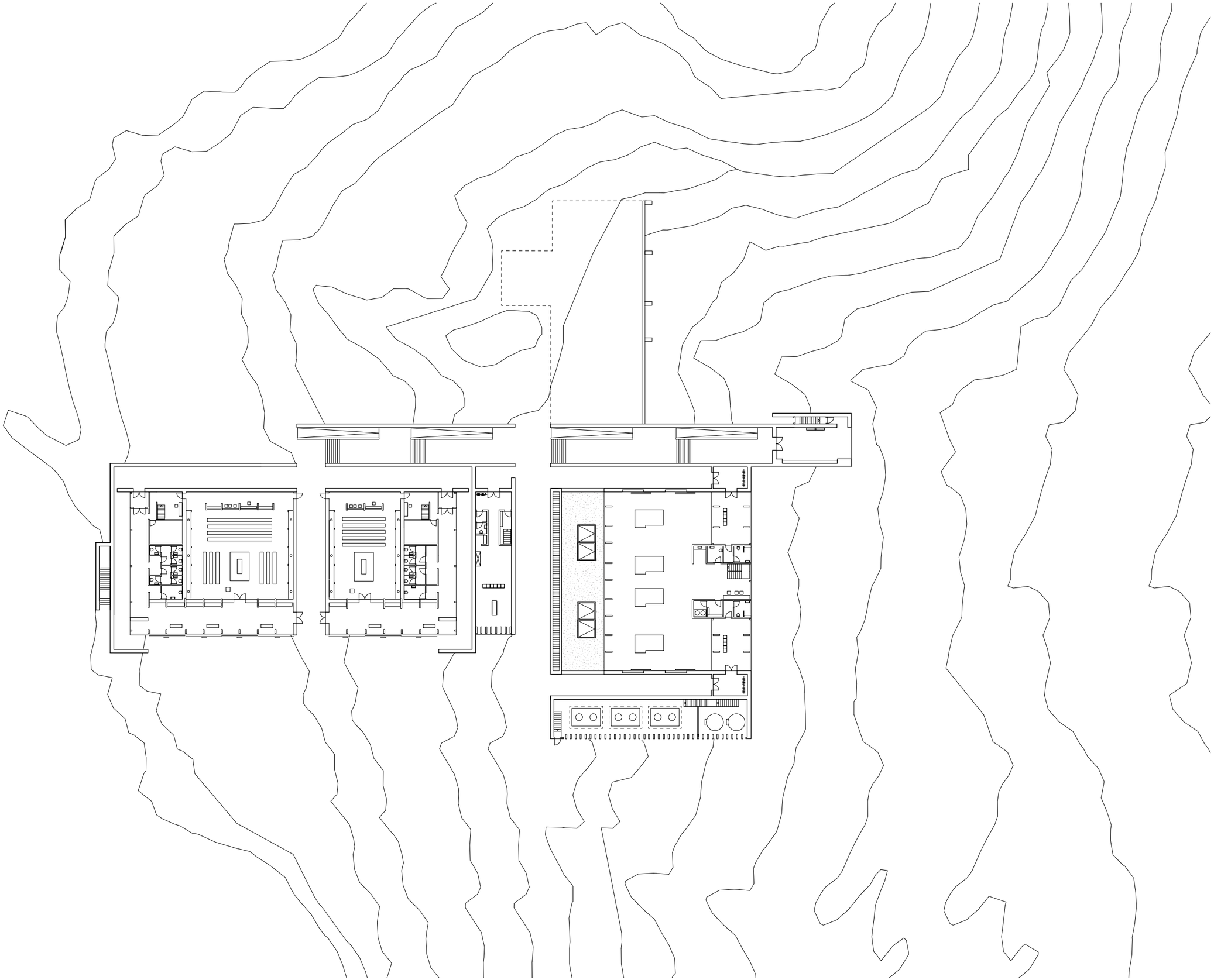
OBSERVATION SPACE / CREMAOTRIUM SPACE

From the elongated geometry of the exterior corridor, the surviving relatives are guided inside of the crematorium, where they are led to the observation space. As the family enters the space it feels as it expanse, on account of its transparency and light structure. Due to this transparency of the space, it provides a view towards the cremators room and the surrounding exterior natural settings. On account of this diversity of views a center of attention is not forced upon the surviving relatives, as a balance should be in between having focus towards the deceased and themselves as they are left to deal with their sorrow. By being part of this observation regarding the insertion of the coffin in the cremators, the surviving relatives see the handling of the their loved one through, which provides them with a relief as they burden of what is going to happen with their loved one is secured in the right and respectful way. The duration of the cremation process takes in average 80 minutes, however the surviving relates can wich to stay for a while if wanted [kk.dk, 2018].

PLAN 00

PLAN 1:500

Ill. 56 - PLAN 00 1:500 ▸

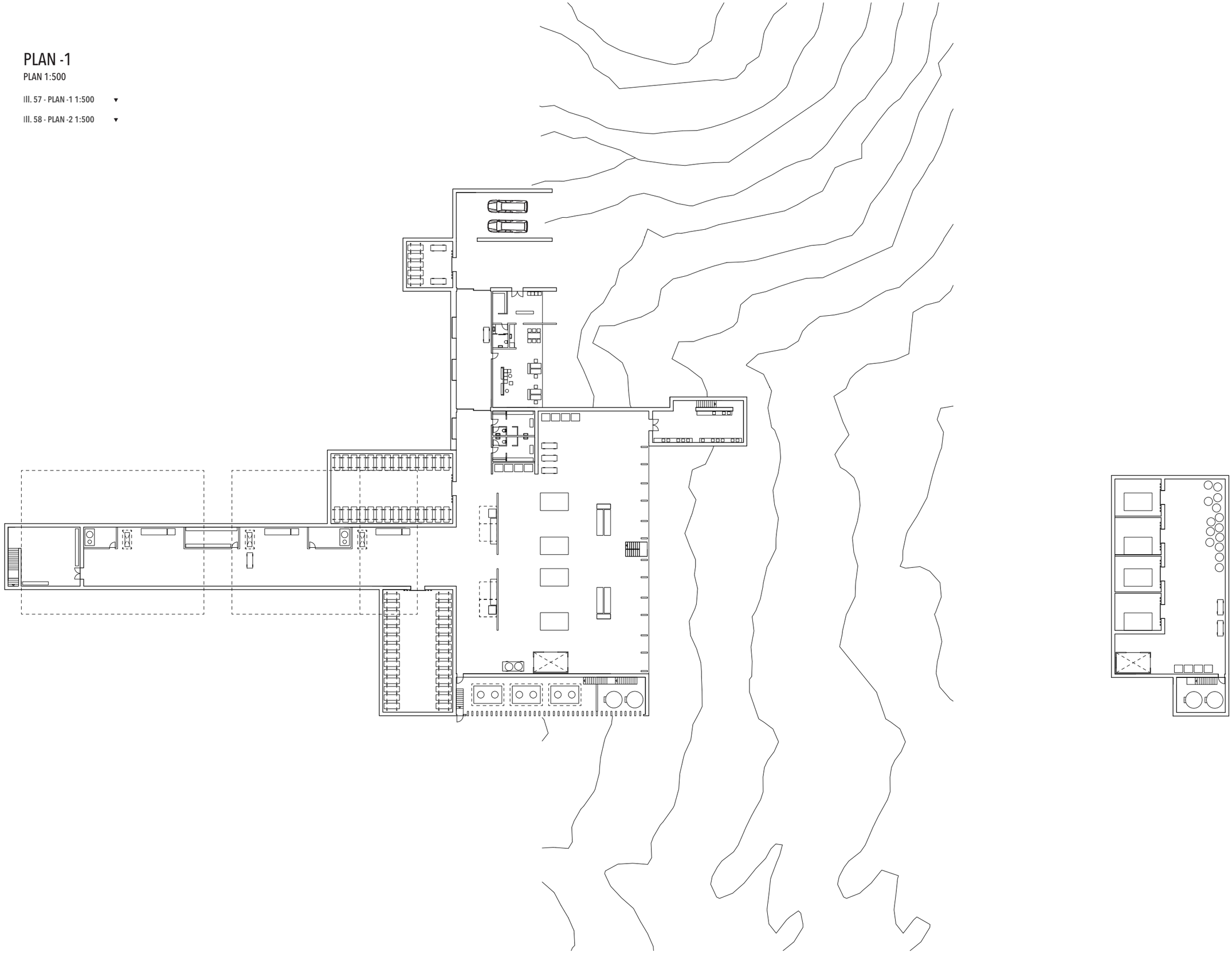


PLAN -1

PLAN 1:500

Ill. 57 - PLAN -1 1:500 ▾

Ill. 58 - PLAN -2 1:500 ▾



Ill. 59 - NORTHERN ELEVATION 1:500 ▲

Ill. 60 - EASTERN ELEVATION 1:500 ▲

Ill. 61 - LONGDITUDINAL SECTION FROM SOUTH 1:500 ▾

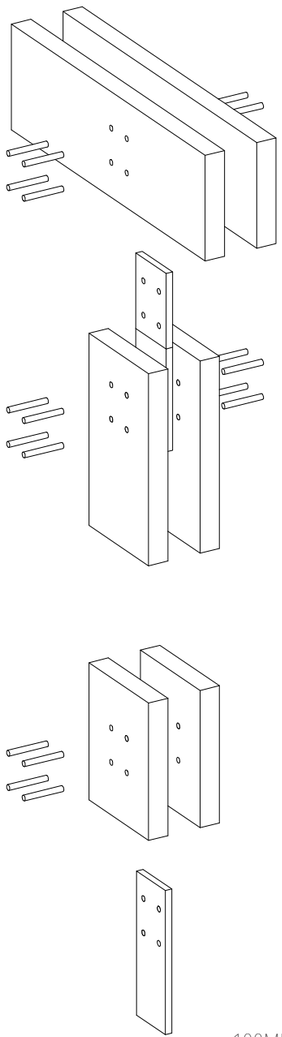
Ill. 62 - SOUTHERN ELEVATION 1:500 ▼

Ill. 63 - VISUALISATION - INTERIOR ENTRANCE CORRIDOR ▶

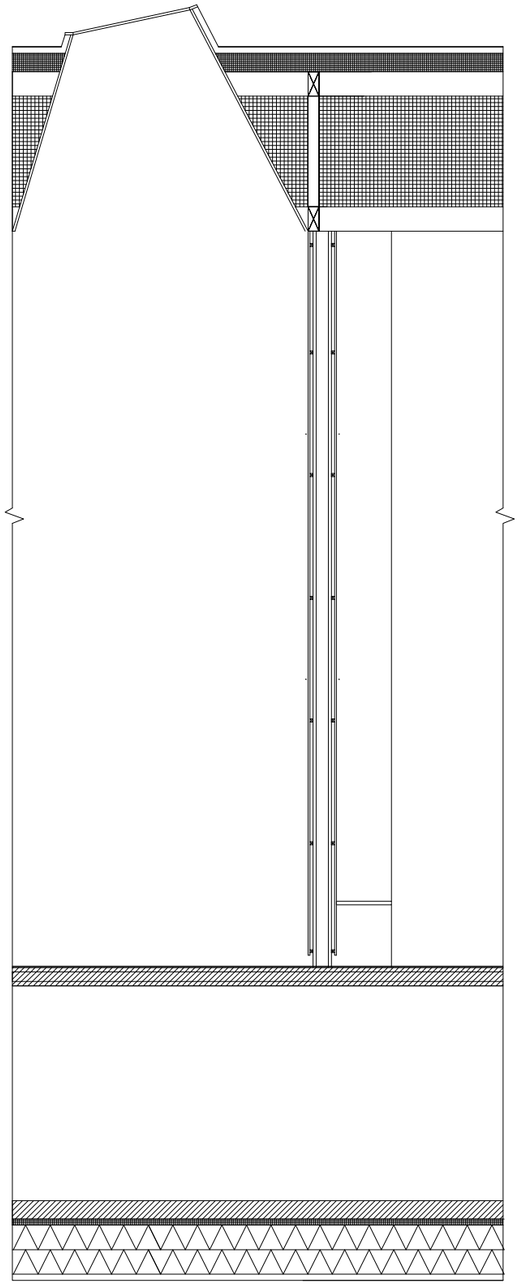
RITUALS OF FINAL FAREWELLS - THE CHAPELS

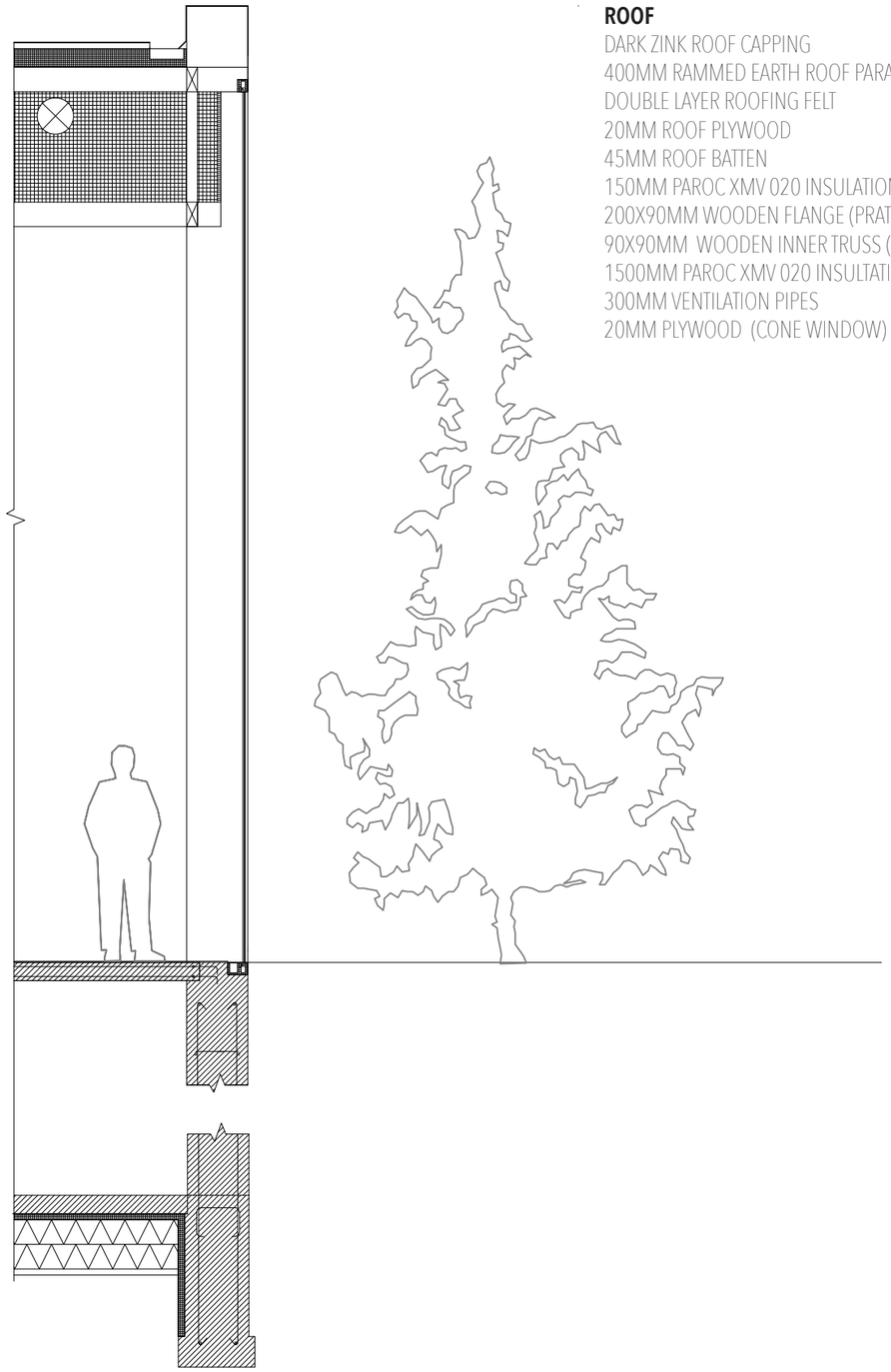
DETAIL 1:50

Ill. 64 - DETAIL - THE GATHERING HALL TOWARDS SOUTH ►
Ill. 65 - VISUALISATION - THE GATHERING HALL ►►



WOODEN INTERIOR WALL
20MM PLYWOOD PLATE
25MM HORISONTAL WOOD BATTEN
25MM VERTICAL WOOD BATTEN
100MM PARAFON CLASSIC ACOUSTIC PLATE
25MM VERTICAL WOOD BATTEN
25MM HORISONTAL WOOD BATTEN
600X90MM WOOD COLLUM





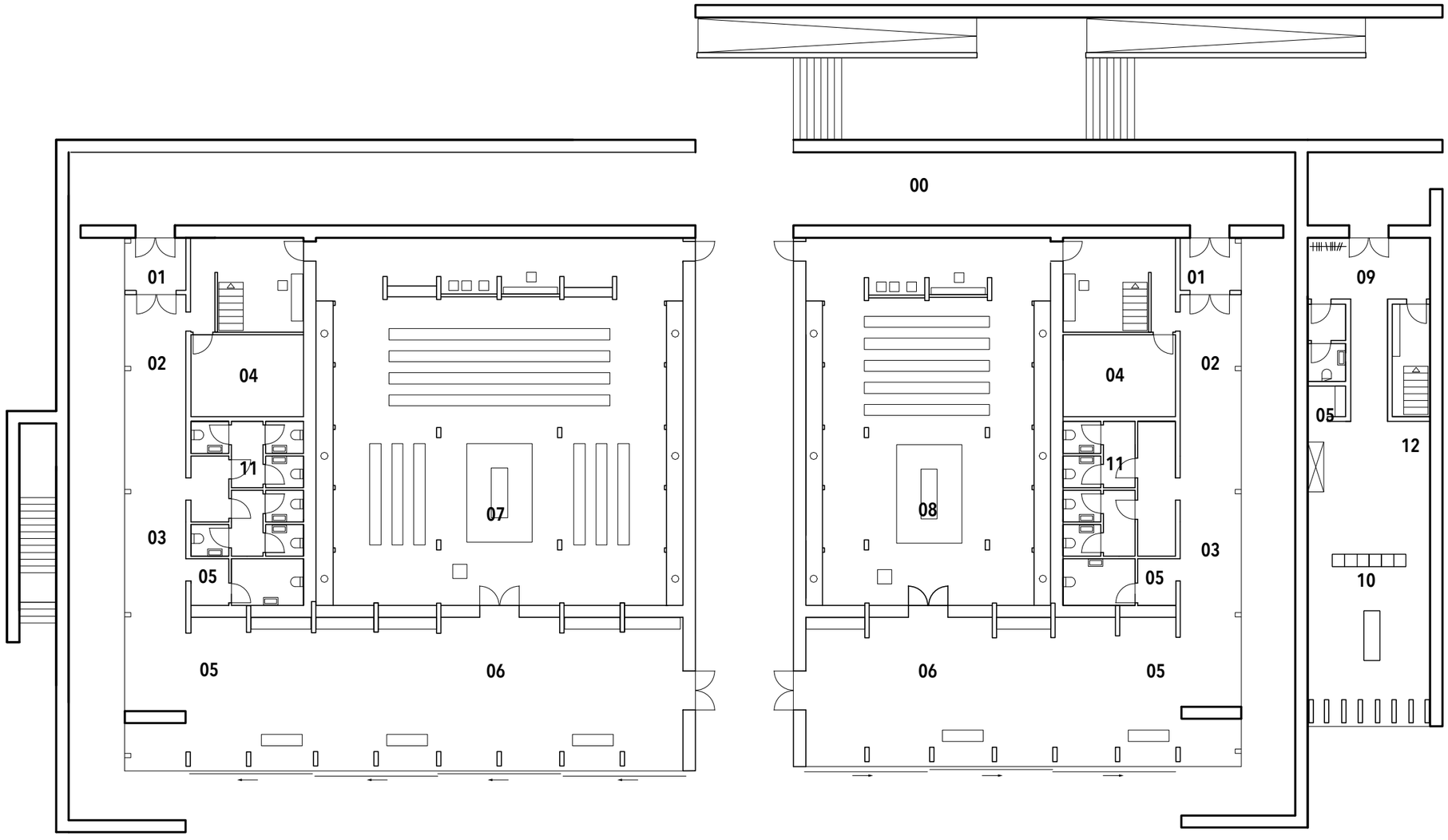
ROOF
DARK ZINK ROOF CAPPING
400MM RAMMED EARTH ROOF PARAPET
DOUBLE LAYER ROOFING FELT
20MM ROOF PLYWOOD
45MM ROOF BATTEN
150MM PAROC XMV 020 INSULATION (AIR/VAPOUR BARRIER)
200X90MM WOODEN FLANGE (PRATT TRUSS)
90X90MM WOODEN INNER TRUSS (PRATT TRUSS)
1500MM PAROC XMV 020 INSULTATION
300MM VENTILATION PIPES
20MM PLYWOOD (CONE WINDOW)

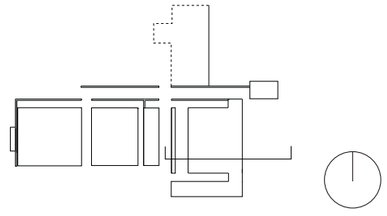
RITUALS OF FINAL FAREWELLS - THE CHAPELS

PLAN 00 - 1:200

III. 67 - VISUALISATION - THE LANDSCAPE PODIUM

III. 66 - PLAN OF THE CHAPELS - RITUALS OF A FINAL-FAREWELL





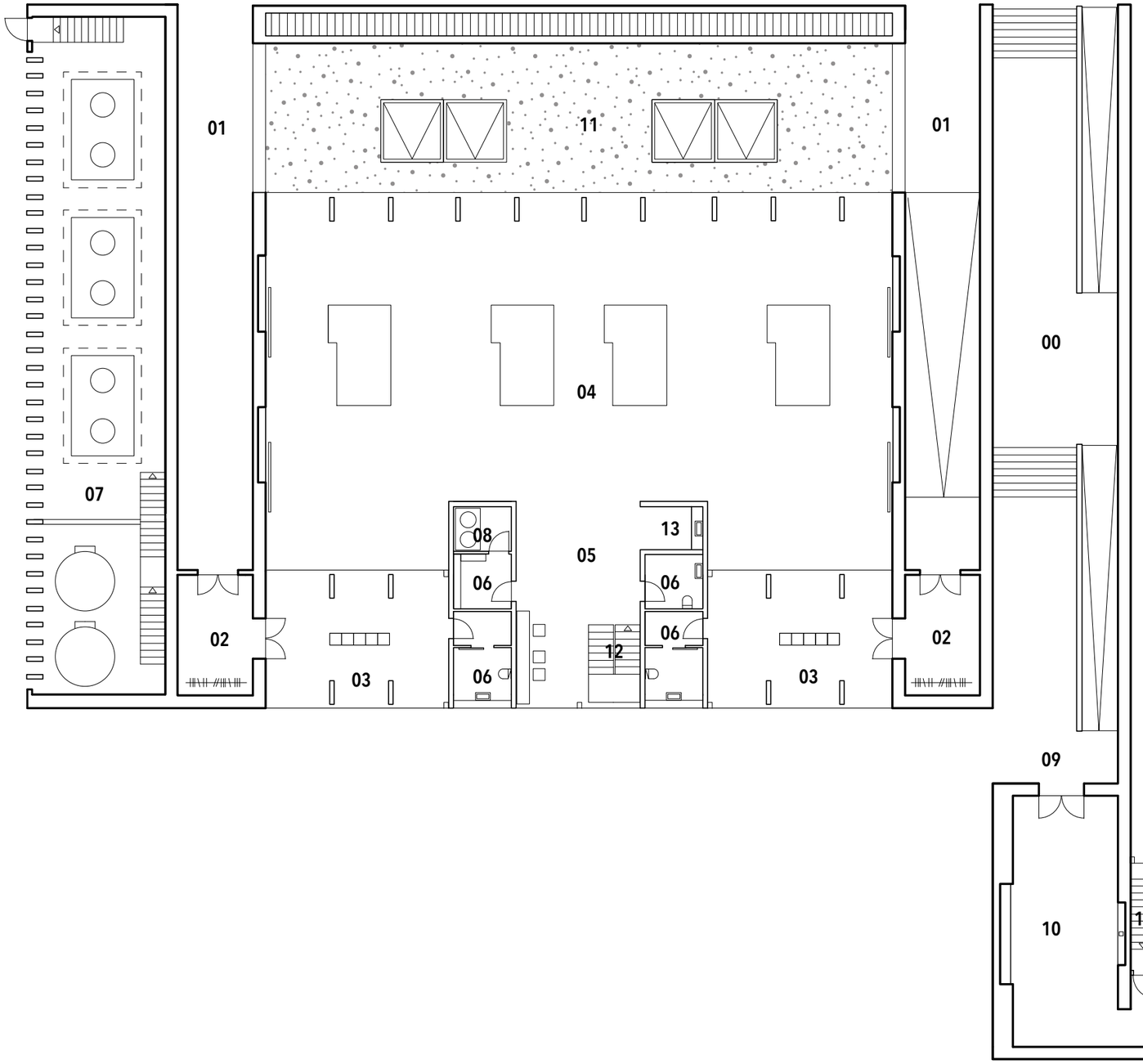
LEGEND

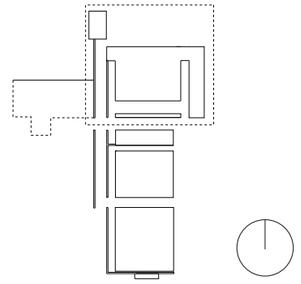
00	LINEAR LANDSCAPE PODIUM
01	ENTRANCE - CHAPELS
02	WEATHER PORCH
03	CORRIDOR
04	ORATOR & CHOIR ROOM
05	COMMON ROOM
06	GATHERING HALL
07	SUURI KAPPELLI
08	PIENI KAPPELLI
09	ENTRANCE - MOURNERS ROOM
10	MOURNERS ROOM
11	STORAGE
12	STAIRCASE TO FLOOR -1

RITUALS OF INTERMENTS - THE CREMATORIUM

PLAN 00 1:200

III. 68 - PLAN OF THE CREMATORIUM ▼
III. 69 - VISUALISATION OF THE CREMATION ►





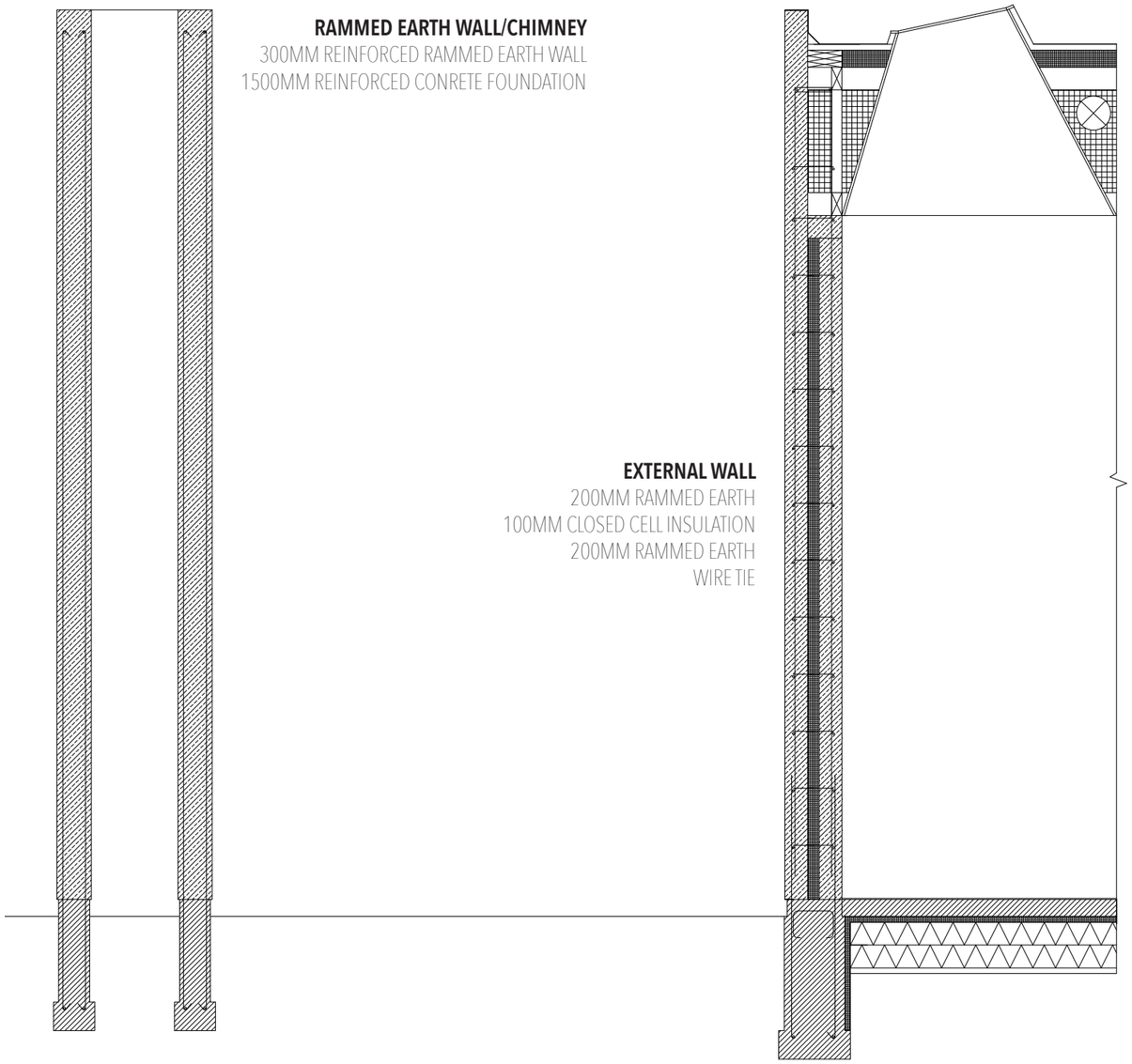
LEGEND

00	LINEAR LANDSCAPE PODIUM
01	ENTRANCE - CREMATORIUM
02	WEATHER PORCH
03	OBSERVATION ROOM
04	CREMATORIUM ROOM
05	CONTROL ROOM
06	COMMON SPACES
07	TECHNICAL ROOM
08	STORAGE
09	ENTRANCE - URN CHAPEL
10	URN COLLECTION POINT
11	COURTYARD
12	STAIRCASE TO -1
13	WORK TABLE

RITUALS OF INTERMENTS - THE CREMATORIUM

DETAIL 1:50

III. 70 - DETAIL OF THE WESTERN FACADEN OF THE CREMATORIUM & CHIMNEY



RAMMED EARTH WALL/CHIMNEY
300MM REINFORCED RAMMED EARTH WALL
1500MM REINFORCED CONRETE FOUNDATION

EXTERNAL WALL
200MM RAMMED EARTH
100MM CLOSED CELL INSULATION
200MM RAMMED EARTH
WIRE TIE

ROOF
DARK ZINK ROOF CAPPING
400MM RAMMED EARTH ROOF PARAPET
DOUBLE LAYER ROOFING FELT
20MM ROOF PLYWOOD
45MM ROOF BATTEN
150MM PAROC XMV 020 INSULATION (INKL. AIR/VAPOUR BARRIER)
200X90MM WOODEN FLANGE (PRATT TRUSS)
90X90MM WOODEN INNER TRUSS (PRATT TRUSS)
1500MM PAROC XMV 020 INSULTATION
300MM VENTILATION PIPES
20MM PLYWOOD (CONE WINDOW)

FOUNDATION
20MM SCREED
250MM CONCRETE SLAB
50MM PAROC XGF 002 INSULTATION (CONCRETE CURING MAT)
2X200MM PAROC XGT 001 INSULATION (WINTER MAT)
50MM SAND
1500MM REINFORCED CONCRETE FOUNDATION

RITUALS OF INTERMENTS - THE CREMATORIUM

DETAIL 1:50

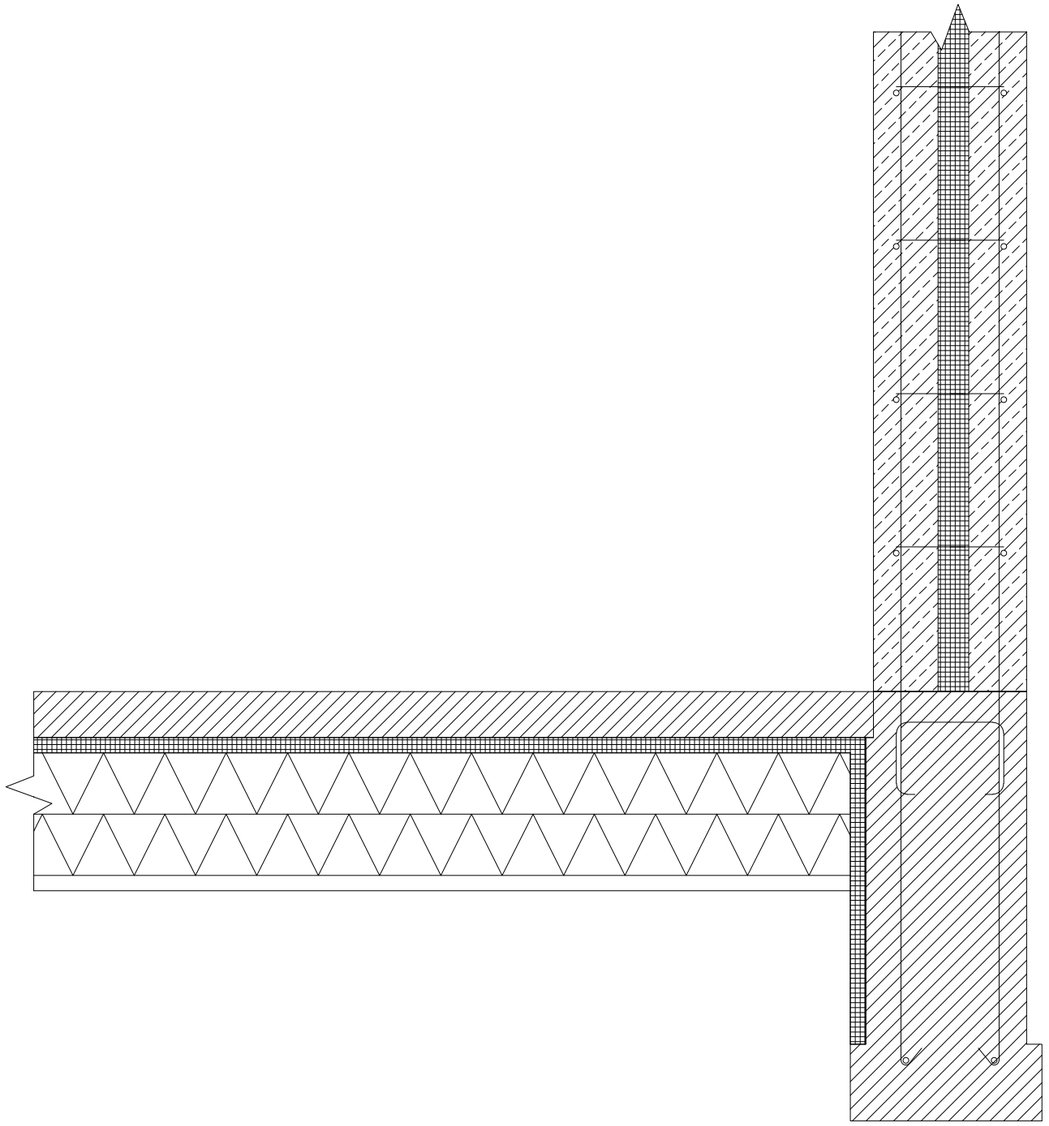
III. 71 - DETAIL OF A RAMMED EARTH WALL

In order to form a close relation between the built environment and the natural landscape of Rovaniemi, the potential of a manmade sedimentary rock technique is investigated. An architecture and technique that establish a strong rooted connection between the built and the natural setting by understanding the existing place in detail. These building technique named “Rammed Earth” will set the framework of a crematorium and its sequence of different areas.

A reference to nature is made as rammed earth is a natural time-consuming process, as nature has compressed stone material under deep layers of soil. An ancient building technique that humankind has used to built homes and structures throughout thousand of years. Some may known the technique as “pise de terre” from the Latin origin, which was firstly used in Lyons, France, in 1562. A building principle to construct walls by ramming earth between two parallel frames. When the framework is removed it reveals a complet section of compressed earth as an earth wall. [Downton, Paul, 2018]

Throughout the use of rammed earth the building complex will by the matter of fact been formed form the site. The ecological construction material is made up of earth taken from where the buildings stand and which had to be removed to landscape the area. By mixing the earth with limestone, sand and small quantity of cement and water, it will appear what is better known as stabilised rammed earth, or SRE [architectsjournal.co.uk, 2018] It means that the properties of each wall stand similar to concrete, having a greater strength and performance. The technique is furthermore quick to construct due to the fact of reuse the framework in sections. In an ascetic perspective, the imperfections in the finish wall will simply add character and interest to the overall construction.

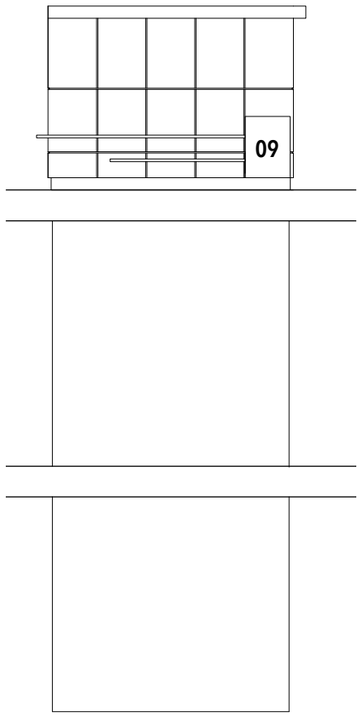
To enhance the performance of a rammed earth construction in the cold Northern climates, the modern solutions is to insulate the rammed earth wall with closed cell insulation. This type of insulation maximise both the thermal mass and its resistance due to a higher temperature which have influence in climates where the temperature variate over a greater range both daily and seasonally. The insulation will furthermore increase the energy efficiency year around as well as it reduce the amount of insulation to a similar light weight structure. Closed cell insulation provides a great noise reduction as the foam doesn’t allow noise to travel through as traditional forms of insulation. The insulation prevent the growth of mould and condensation to the internal walls.

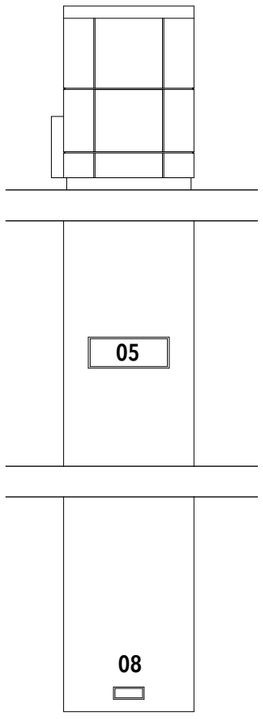


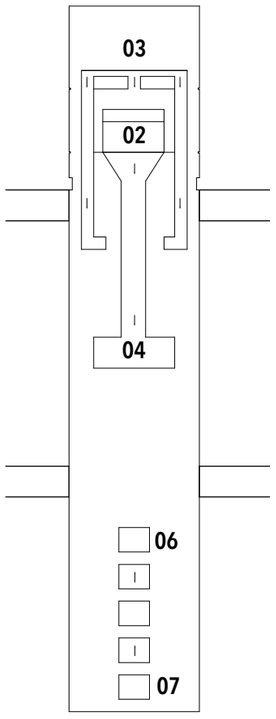
RITUALS OF INTERMENTS - THE OVENS

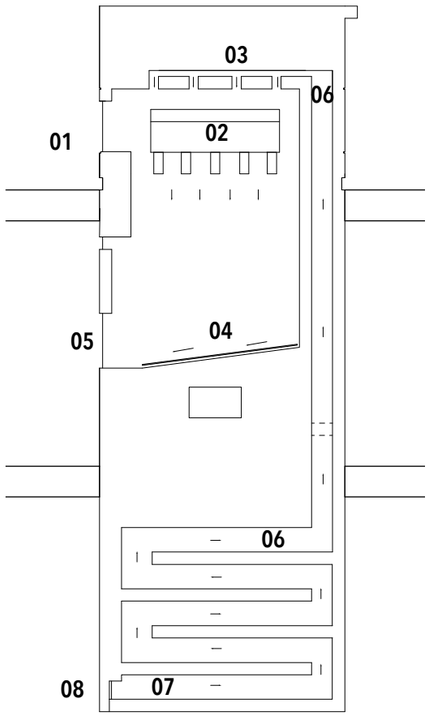
SECTION + DETAIL 1:50

III. 72 - DETAILS - THE OVENS ▾

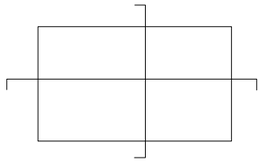








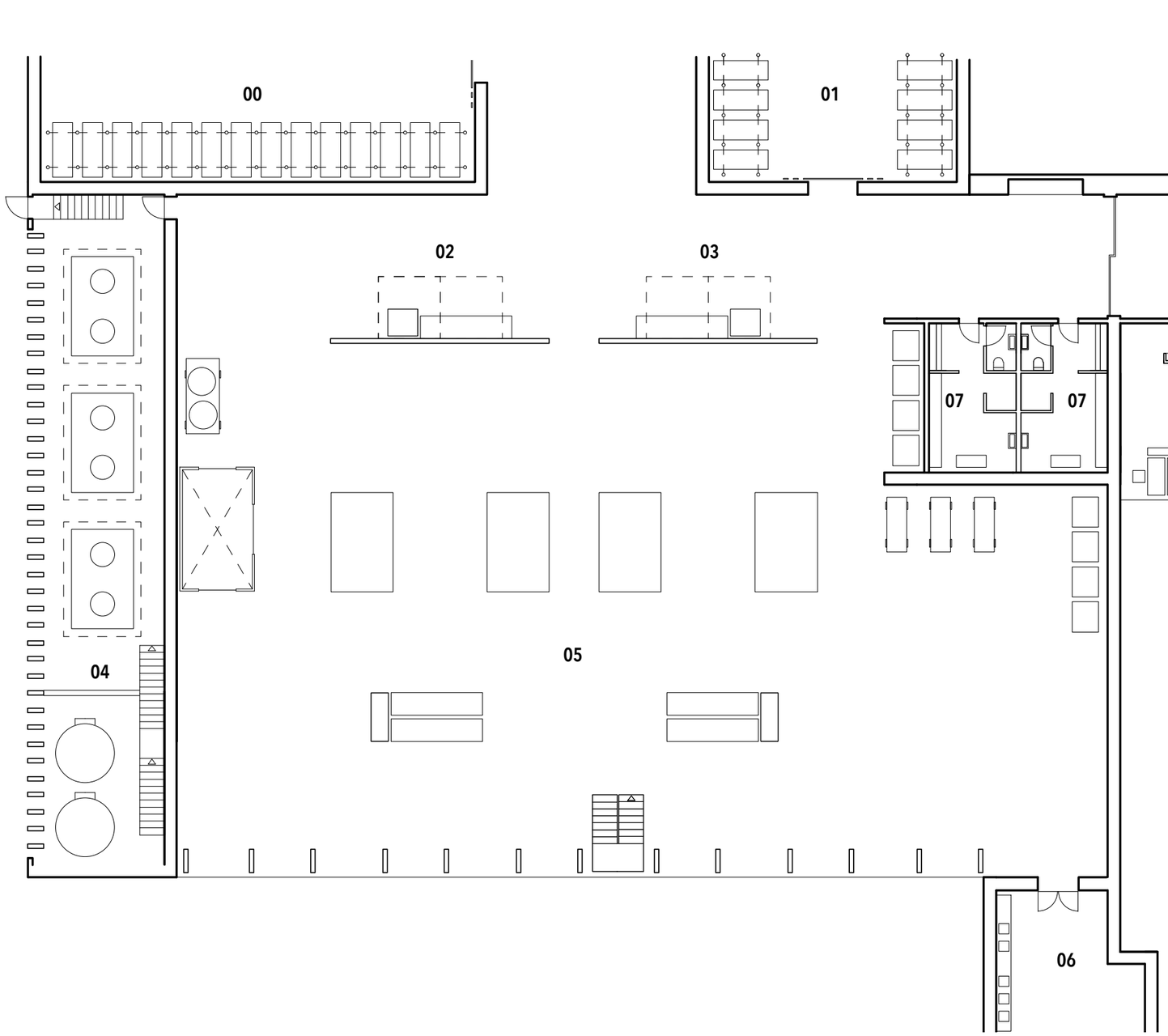
01 COFFIN INTAKE
02 COFFINE
03 FIRESPOTS
04 ASH COLLECTION
05 ASH TAKEOUT
06 WARM AIR
07 COLD AIR
08 COLD AIR INTAKE
09 ASH WIBER

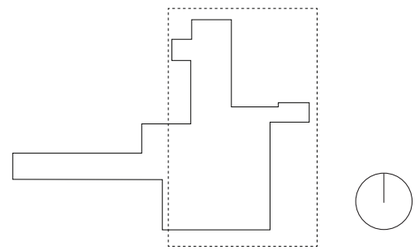


RITUALS OF INTERMENTS - STAFF FUNCTIONS

PLAN -1 - 1:200

Ill. 73 - PLAN OF STAFF FACILITIES ▾



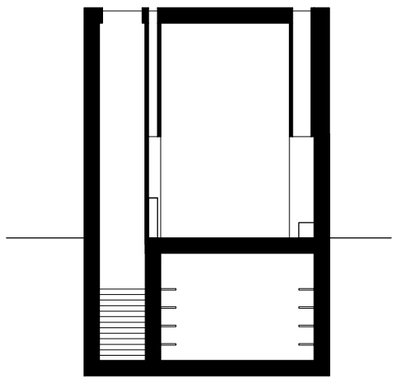


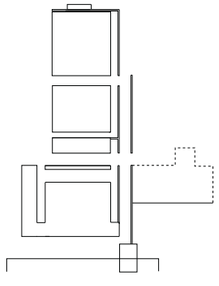
LEGEND

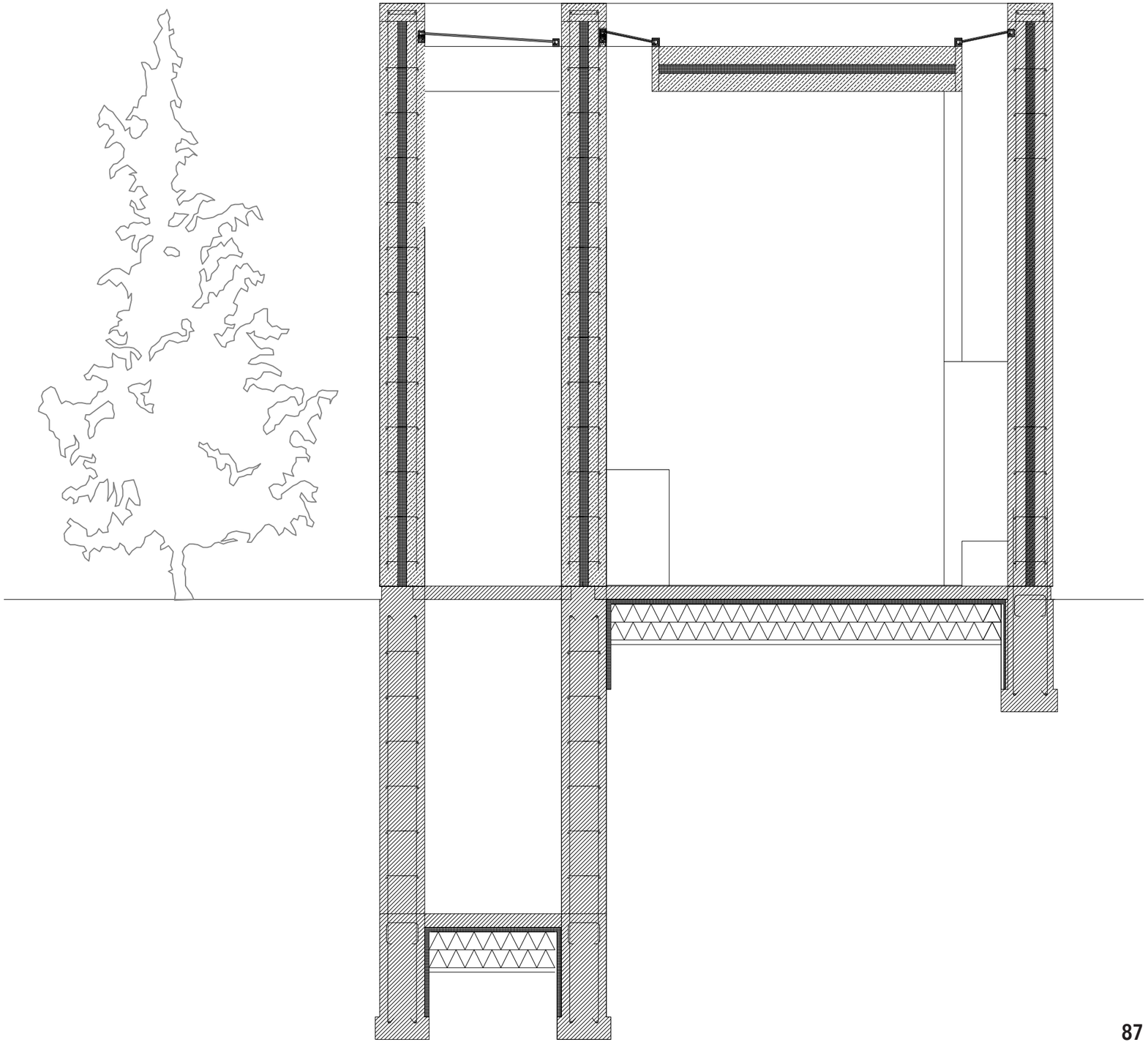
00	COLD STORAGE PRE CERMONY	09	PANTERY
01	COLD STORAGE PRE CREMATION	10	STAFF RECEPTION
02	DECORATION	11	STORAGE
03	REFUSE/DISPOSAL	12	TOILETS
04	TECHNIQUE	13	CORRIDOR
05	ASH PREPARATION	14	COFFIN LOADING POINT
06	URN STORAGE	15	HEARSE GARAGE
07	DRESSING ROOM	16	SECONDARY COLD STORAGE
08	STAFF OFFICE		

RITUALS OF MEMORIAL - URN KAPPELLI

SECTION 1:200 & DETAIL 1:50







CHAPTER 6

IDEATION

The following chapter, is a description of the sketching phase, which illustrates the initial design process of widespread investigation narrowed down to the final configuration, which later on is addressed and detailed in the chapter of the synthesis phase. The design process in this chapter takes the previously analysing phase as its point of departure, as design parameters are formulated on account of these analysis and guides the sketching process. As theories of building typologies and how to cope with Death and have shed light on important aspects to have in mind when designing for the dead and the surviving relatives, a main theme in these initial investigations addresses the different stages the surviving relatives go through as they process their loss of a loved one, expressed in the Rituals of Transition

The order of these rituals takes place i a chronological order - The rituals of final farewell,- Interment & memorial gathering. Based on these and to establish an architecture which helps process these rituals, the following configurations emphasises a linear thematic, that could reflect a chronological order.

Besides addressing the importance in how a crematorium should distribute its programme through form, flow and function. Investigations have also had attention towards how the architecure itself should address tectonic qualitites. From a perspective of initial studies, this is investigates from the method of Gesture & Principles and the theory of Semper, concerning stereotomic and tectonic, which should emphasis how the architecture could a product of the landscape and its features.

III. 77 - THE PROJECT SITE, NIVANKYLA ▸

DESIGN CRITERIS -
FOR THE OVERALL CONCEPT CONFIGURATION

IDEATION

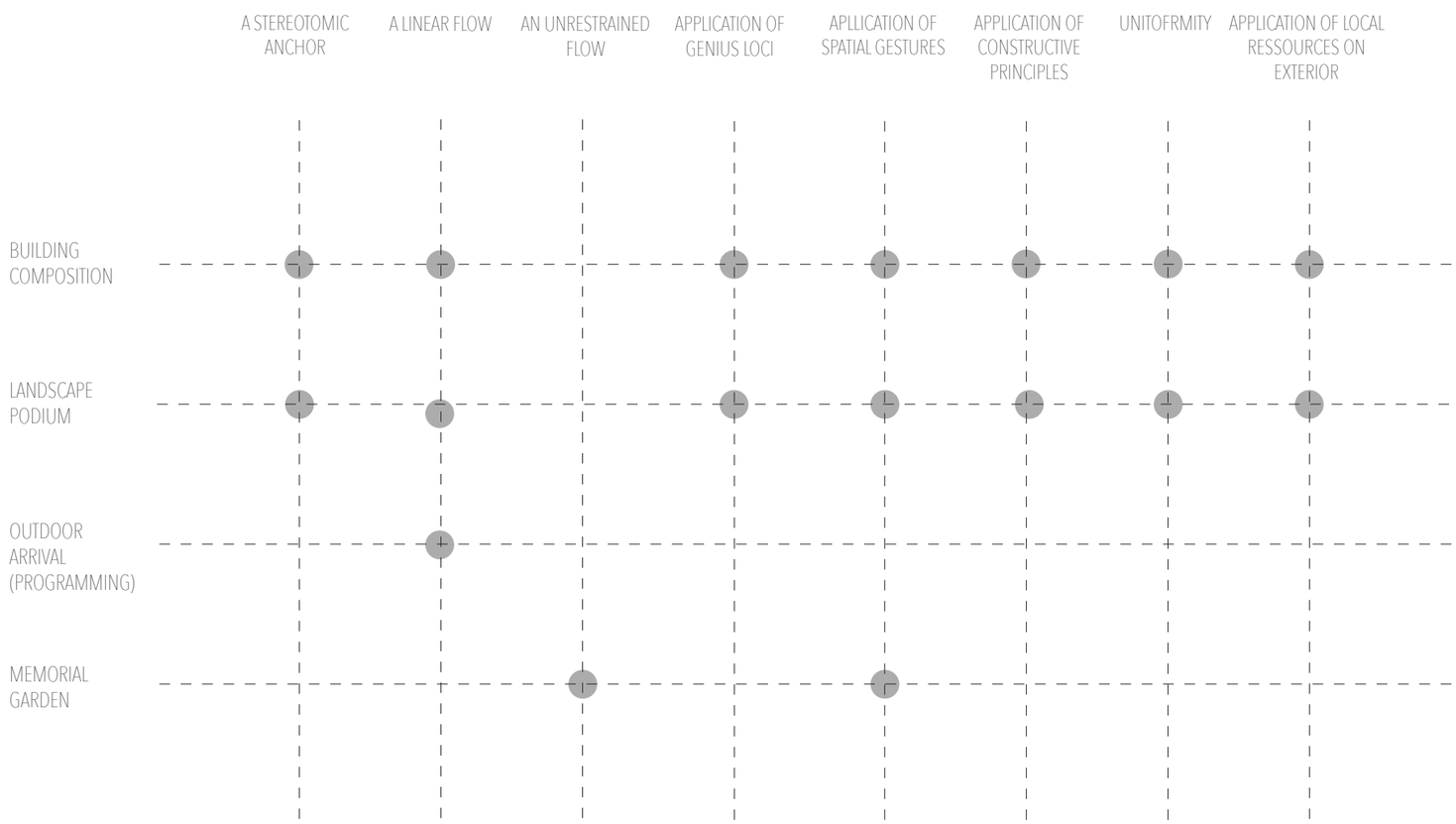
III. 78 - MATRIX OF DESIGN CRITERIA ▸

As some of the initial steps in the development of the architecture for the creamtorium we intend to investigate how the building compostion could be a stereotomic anchor to the site and thereby enhance a Nordic approach by being a natural rooted product of its site. From the application of a stereotomic approach we intend to enhance the link between the architecture and surrounding landscape.

From previosuly studies on the Gestures and principles found within the site we intend to project these aspects onto the exterior and interior of the design for the crematorium. From a perspective on how to address the exterior of the design, we intend to enhance the linkage between the architecture and the site its situated upon, as it should express the spatial and constructive qualities of then enclosed and vertical space found on site. Due to such exists in the events which takes place inside the creamtorium, which bear the mark of being very emotional. From a perspective of this emotional setting within the events, the architecture should through an embracement provide, security, safetiness and initmacy.
From the implementation of features found on site, through inspiration drawn from the spatial and constructive qualitites, anchors the architecture to the site and enhances the genius loci of the specific site.

Contemporary with situating the building on site, arrivals and entrances need to be considered, as they combined contribute to the experience of the building. For the building composition we will implement a linear flow that should promote and enhance the experience of sequences relating to the chronological order regarding the Rituals of Transition Adding to the variation of the flow should be expressed through a flow that is experienced more unrestrained. This unrestrained character should enhance the dynamics in the natural environment and be an end destination of the linear flow, stressing how this chronologcal order in rituals is past history and that the surviving relatives are left to define their own path.

As the entire building complex is composed by several seperated buildingmasses, we find importance in how to enhance a uniformity in the exterior expression, as this shoud serve as the link between these isolated buildings .


A STEREOTOMIC ANCHOR
A LINEAR FLOW
AN UNRESTRAINED FLOW
APPLICATION OF GENIUS LOCI
APLLICATION OF SPATIAL GESTURES
APPLICATION OF CONSTRUCTIVE PRINCIPLES
UNITOFRMITY
APPLICATION OF LOCAL RESSOURCES ON EXTERIOR
BUILDING COMPOSITION
LANDSCAPE PODIUM
OUTDOOR ARRIVAL (PROGRAMMING)
MEMORIAL GARDEN

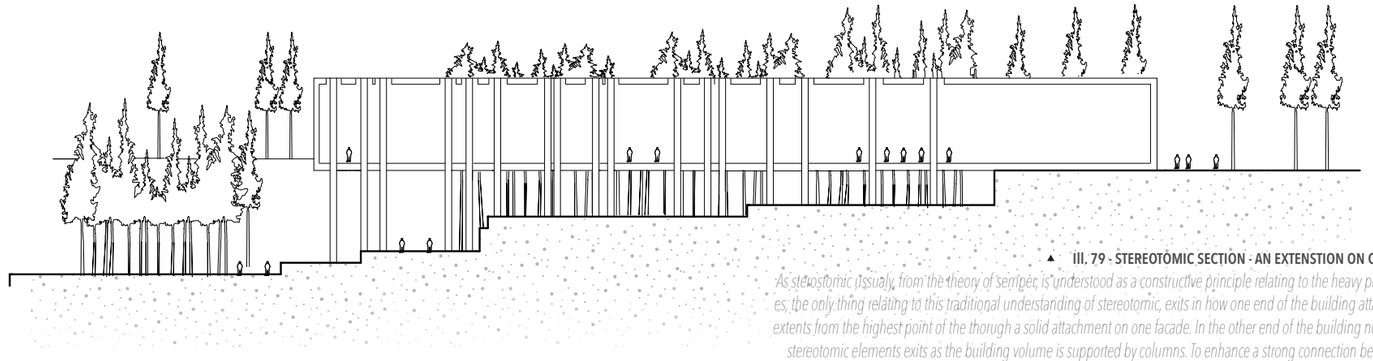
DEALING WITH A STEREOTOMIC SECTION IN THE SLOPING LANDSCAPE

IDEATION

INVESTIGATED ASPECTS

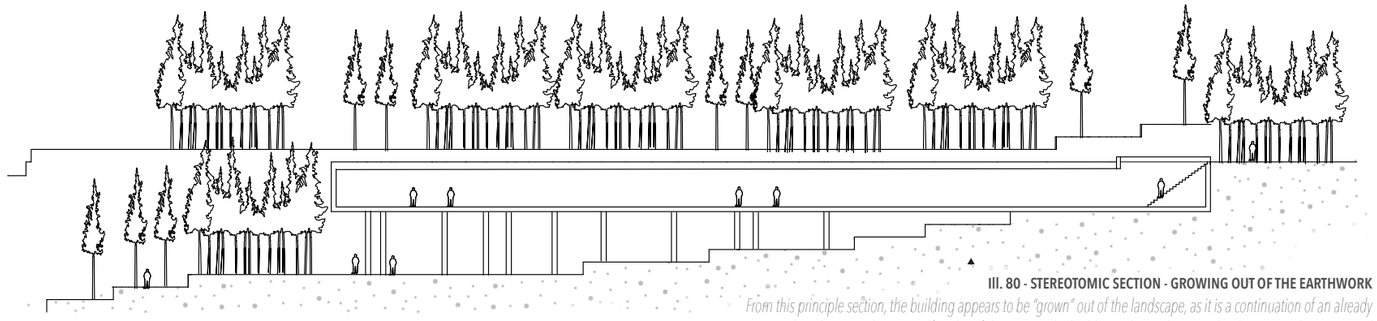
As mentioned from previsouly analysis, the project site is characterised through its sloping landscape towards east, where the project site is at its highest towards west. On account of this characteristic, this have led to an ideation process on how to adapt the building design to the sloping landscape of the site. In the making of these iterations we had in mind a stereotomic approach, as we wanted to strengthen the connection between the built architecture and the surrounding landscape its situated on, which further would address the traditions of Nordic Architecture, by being a place-determined architecture, that would considers its place and nature, with focus on the the natural element of the earthwork.

From the sketches, different proposals are given to enhance an awareness on how the architecture would show the different ways of how the architecture be able to interact with the landscape and earthwork of the site. These sketches therefore serves as the first investigations witin the project site of Rovaniemi, Nivankylä.



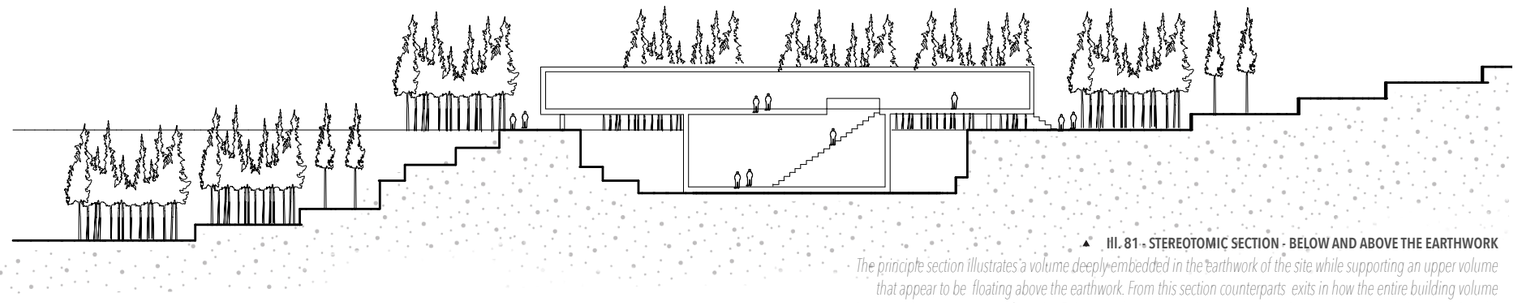
▲ III. 79 - STEREOTOMIC SECTION - AN EXTENSTION ON COLUMNS

As stereotomic usualy, from the theory of semper, is understood as a constructive principle relating to the heavy piled masses, the only thing relating to this traditional understanding of stereotomic, exits in how one end of the building attaches and extents from the highest point of the thorugh a solid attachment on one facade. In the other end of the building no tradition stereotomic elements exits as the building volume is supported by columns. To enhance a strong connection between the the "floating" volume and the earth colmns find reference in the pine woods dominating the surrounding .



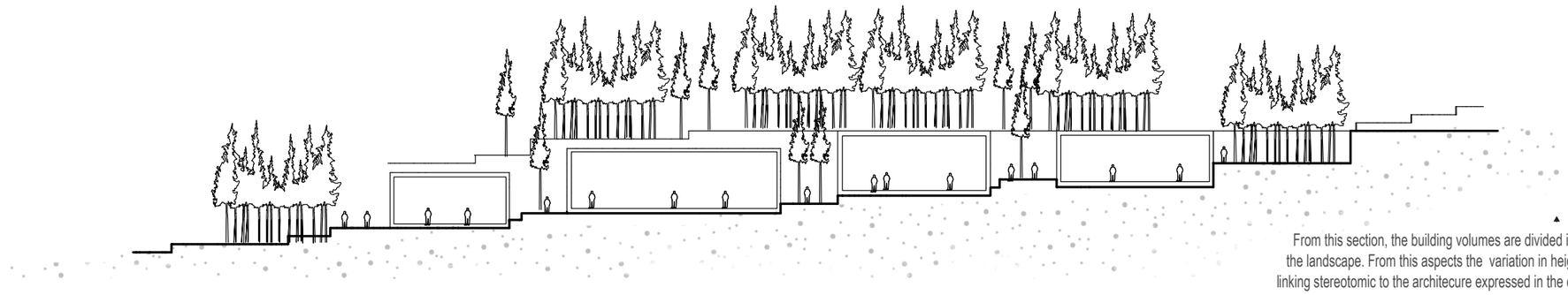
▲ III. 80 - STEREOTOMIC SECTION - GROWING OUT OF THE EARTHWORK

From this principle section, the building appears to be "grown" out of the landscape, as it is a continuation of an already existing egde. Observing the two endfacades of the rectangular building volume, these can be characterised as open and closed. Towards the west most of the facade is situated within the earth and thereby rooted in the landscape making the interior spaces defined by the darkness. As the counterpart the eastern facade is defined by light, as this end grows out of the earth. From this progression in how the building attaches to the earth, the building stands in sharp contrast to the dyncamic curved landscape.



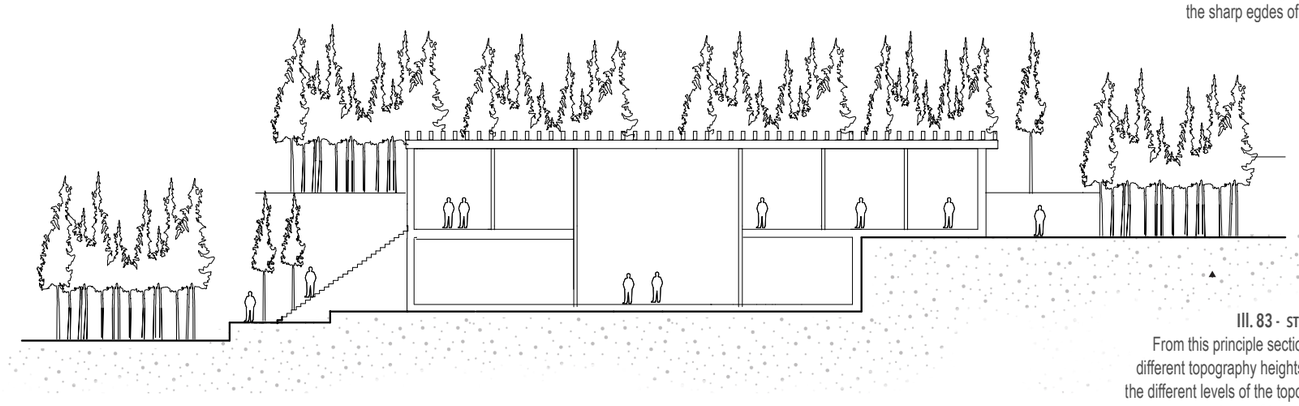
▲ III. 81 - STEREOTOMIC SECTION - BELOW AND ABOVE THE EARTHWORK

The principle section illustrates a volume deeply embedded in the earthwork of the site while supporting an upper volume that appear to be floating above the earthwork. From this section counterparts exits in how the entire building volume interacts with the earthwork of the site. Being deeply embedded in the earthwork, it seems that the building hides its solid connection to the ground , as it is only the upper volume was is erconisable from a distance, which appears as a floating element only touching the ground from where columns meet the earthwork. As one enter the lower volumes the earthwork embraces one.



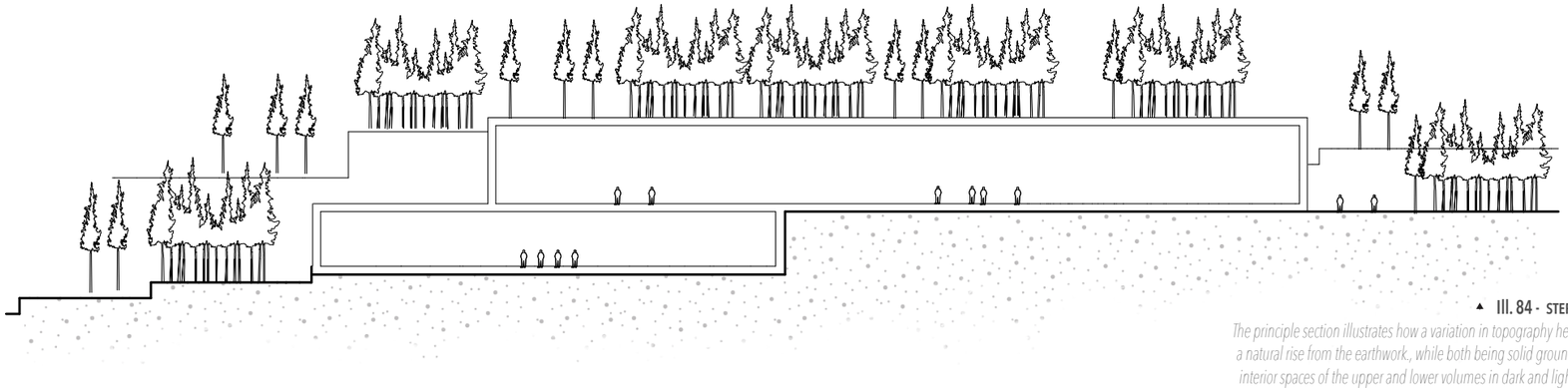
▲ **III. 82 - STEREOTOMIC SECTION - A RISING STEREOTOMIC**

From this section, the building volumes are divided into four, varying in height in pace with the increase of the landscape. From this aspects the variation in heigths stresses the slopes of the earthwork and thereby linking stereotomic to the architecure expressed in the egdes of the roof. Being these seperated masses that rises individually , this should stress of the exterior walls could act as an uprising extension of the earthwork. To enhance a coherence between these seperated building volumes , wall elements rising from the landscape , should stress an expression of unity inbetween these volumes. As the building volumes rises from the landscape in its strict geometric form, this stage-manage the surrounding dynamic nature through the the sharp egdes of the architecture , stresseing how the architecture is an act of the man-made.



III. 83 - STEREOTOMIC SECTION - ENHANCING THE NATURAL RYTME OF THE SLOPING LANDSCAPE

From this principle section, two levels takes roots in the hilly landscape and becomes an extension of the different topography heights. On aacount of such the building volumes enhances a natural flow in between the different levels of the topography. By being a link inbetween the topography the buiilding also stresses the rythme of the sloping landscape through a natural flow from one end of the building to the other.



▲ **III. 84 - STEREOTOMIC SECTION - STEREOTOMICS ON TWO LEVELS**

The principle section illustrates how a variation in topography heights can form the basis of how two volumes can acts as a natural rise from the earthwork , while both being solid grounded. On account of such, this leaves a contrast within the interior spaces of the upper and lower volumes in dark and light spaces. To acommodate a more light space wihtin the interior space of the lower volume a light shaft have to bed implemented.

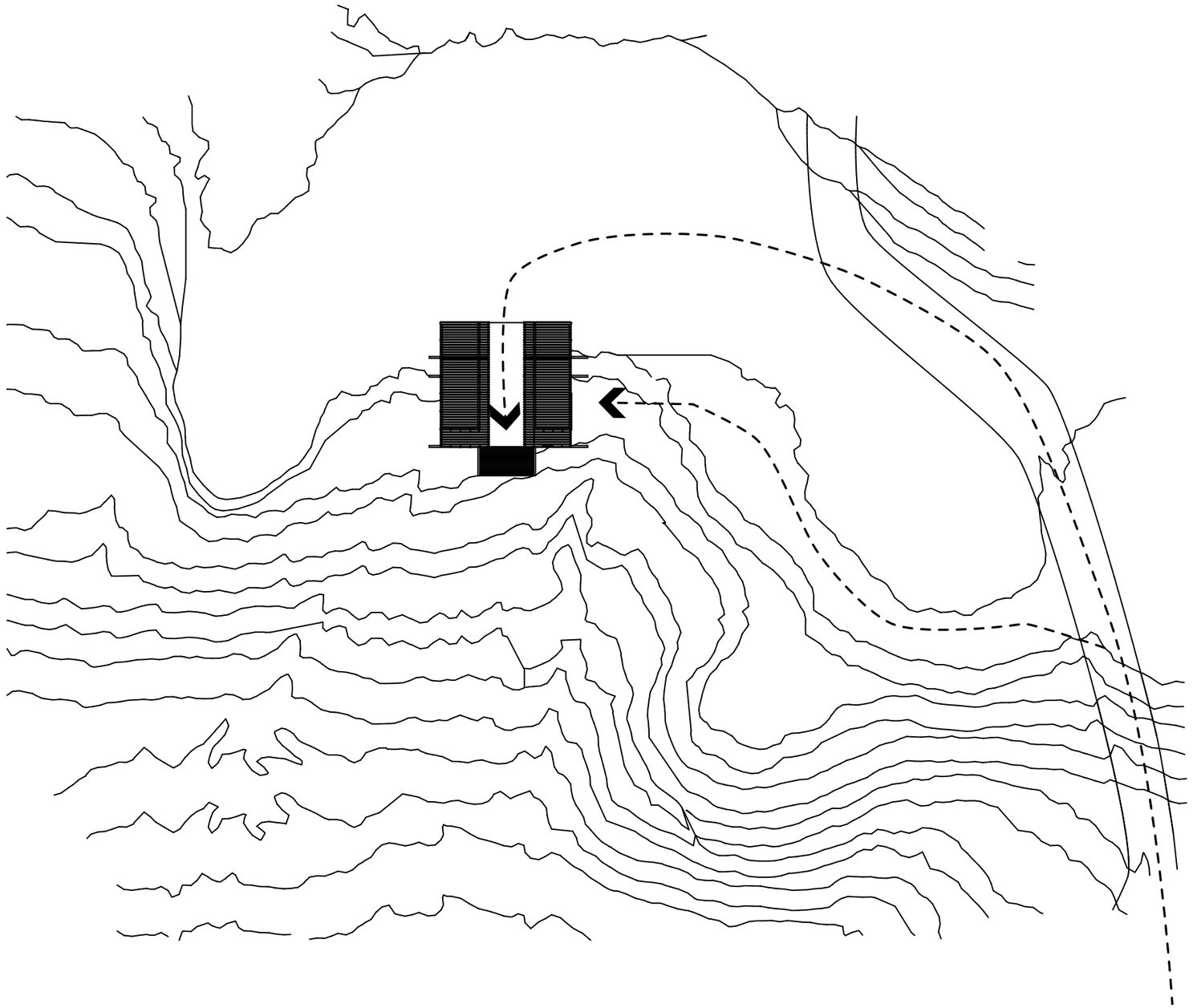
A LINEAR FLOW AND COMPACT BUILDING MASS - 01 CONFIGURATION

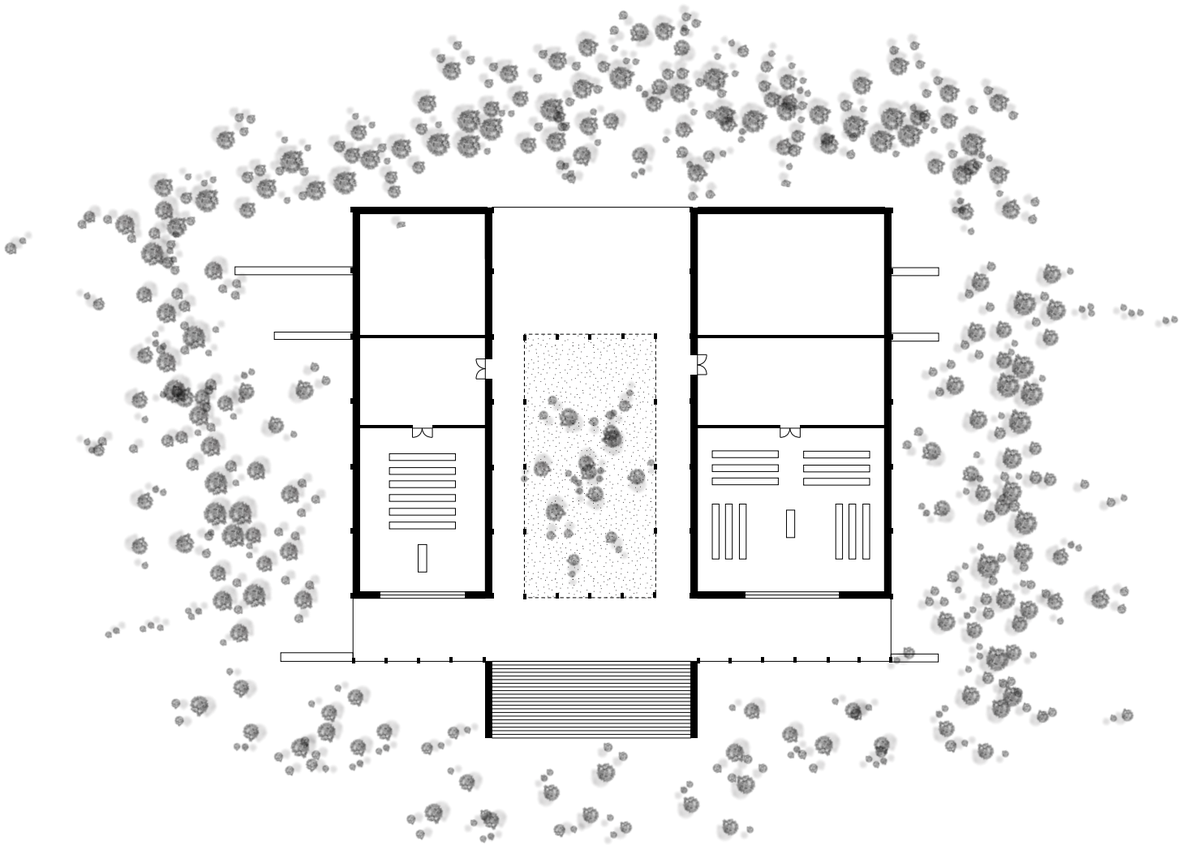
IDEATION

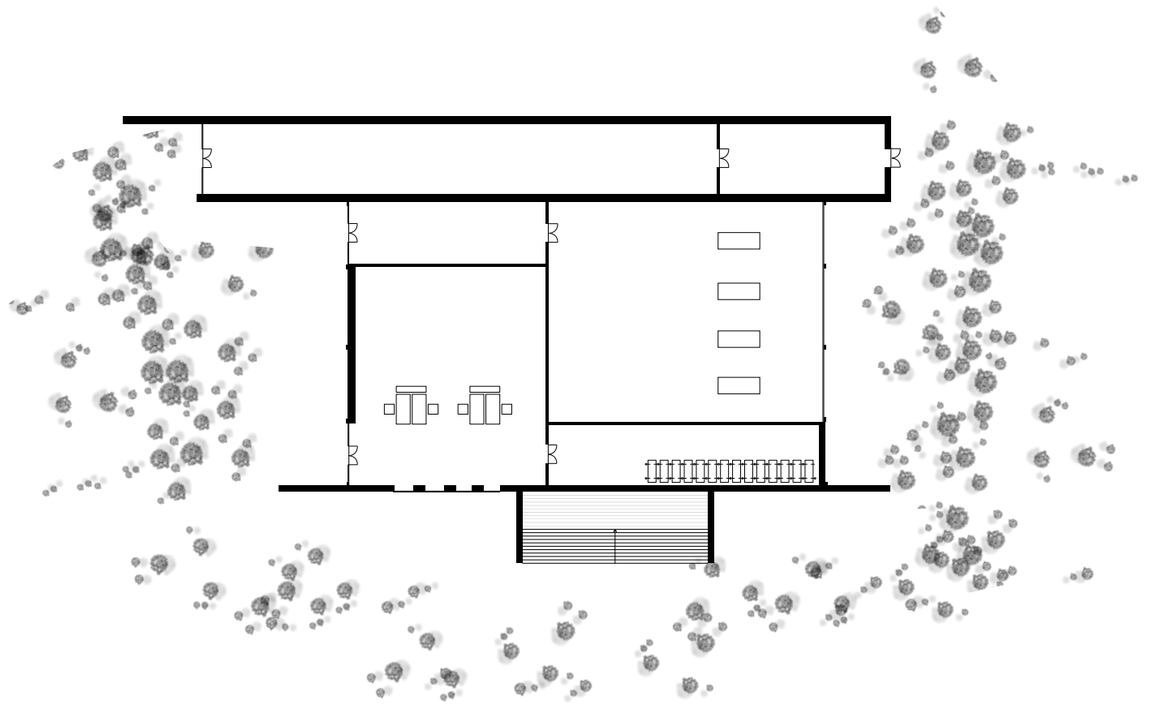
III. 85 - PLAN ON SITE - CONFIGURATION 1 ▸
III. 86 - PLANS - CONFIGURATION 1 ▸

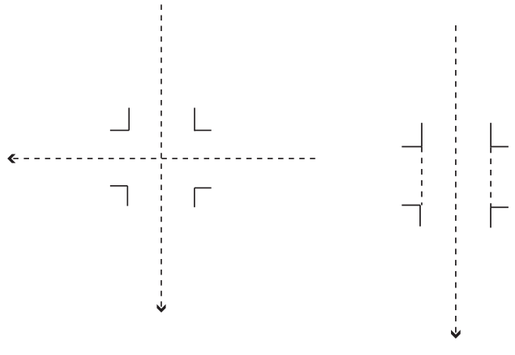
INVESTIGATED ASPECTS

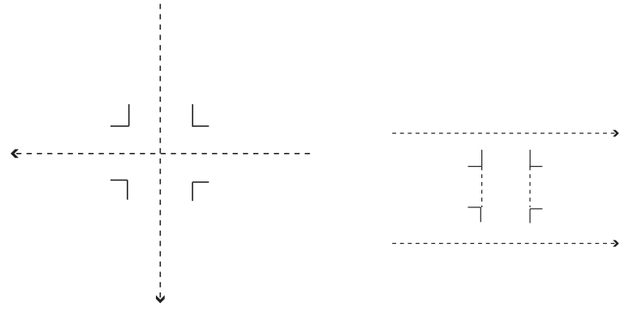
As we will implement the rituals of a final farewell, internment and memorial gathering we want the composition and programme of the architecture to bear in mind the use patterns of a creamtorium, both from a perspective of the surviving relatives and the employees. In doing so the investigations are based upon the main idea of formning a creamtorium, which establishes a linear and chronologic progressing in these different rituals. As a way to deal with this chronological order of rituals, we have investigated how a compact building mass could allow this feature. From this building composition, a linear flow is established in two different levels, whereas the first is promoted through two parallel located building masses, leading people inbetween. As people are led inbetween the buildings, we see a risk in how this could dissolve the linear course, as people instead of being guidet are led to at stay in the center of this compact building composition.











A LINEAR FLOW AND ELONGATED BUILDING MASS
02 CONFIGURATION

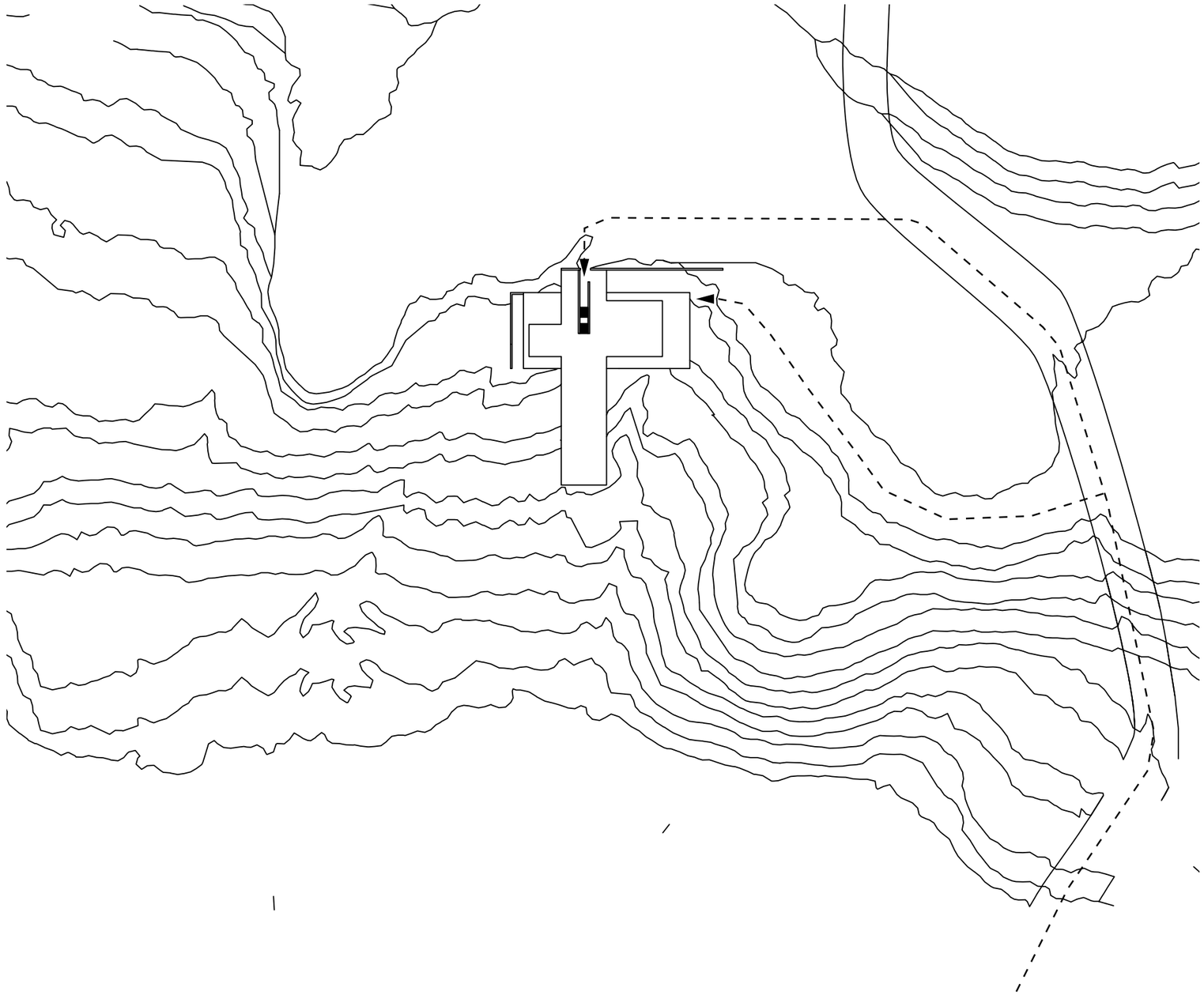
IDEATION

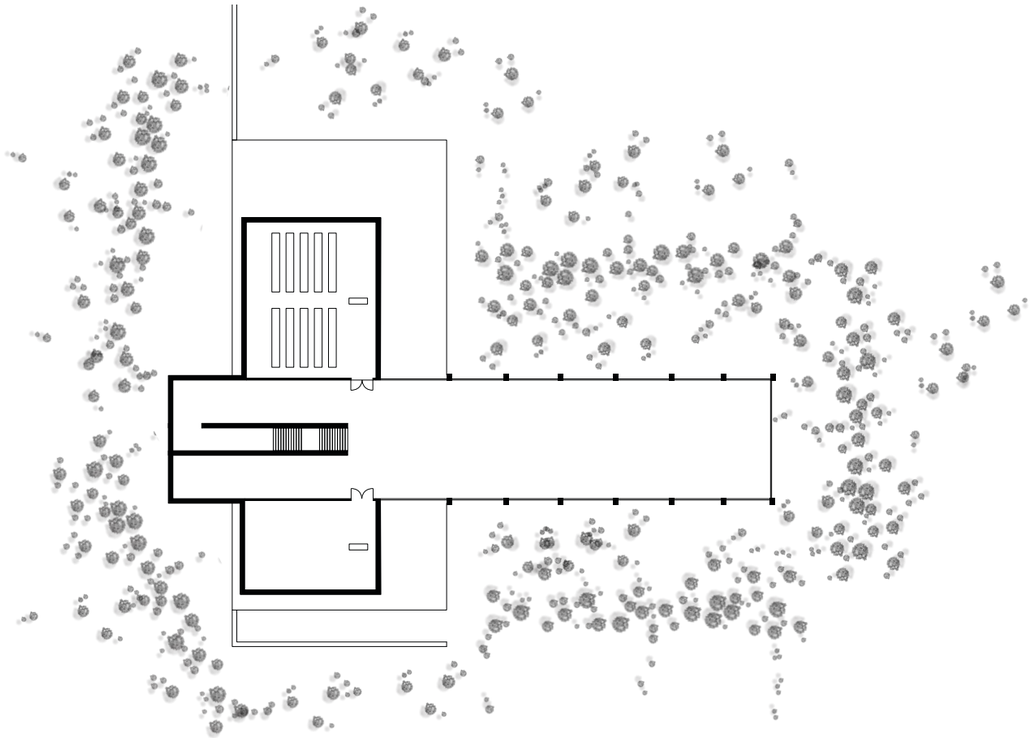
III. 87 - PLAN ON SITE - CONFIGURATION 2 ►

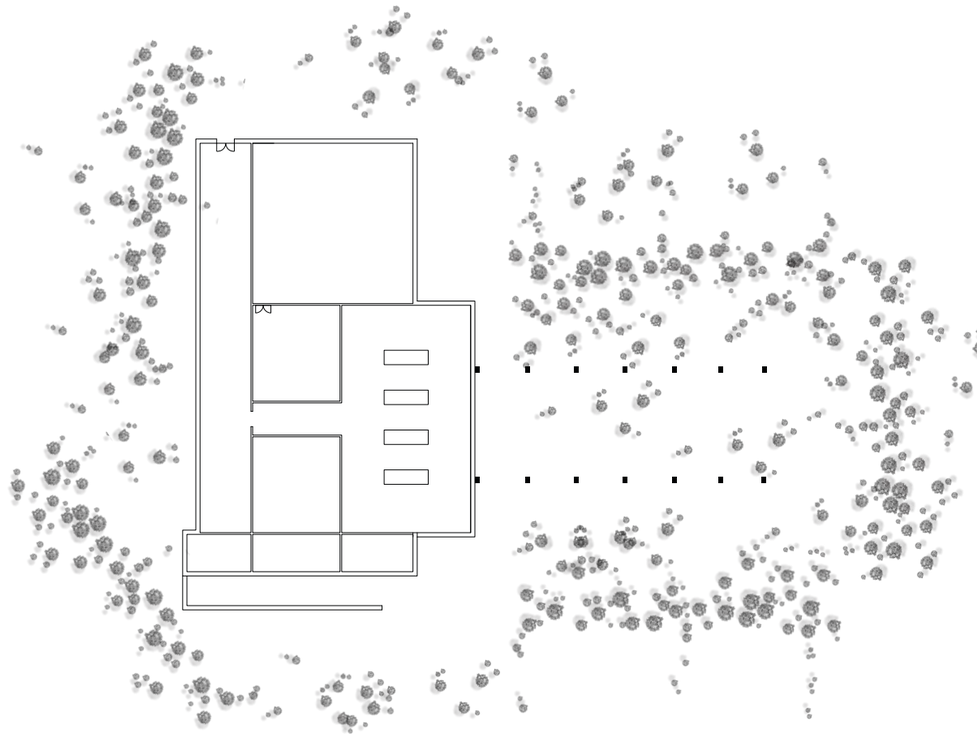
III. 88 - PLANS OF CONFIGURATION 2 ►

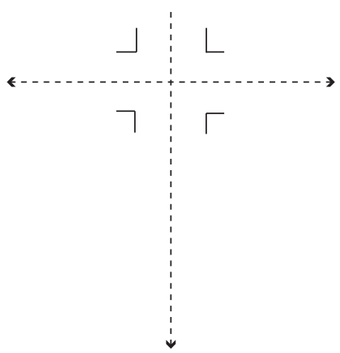
INVESTIGATED ASPECTS

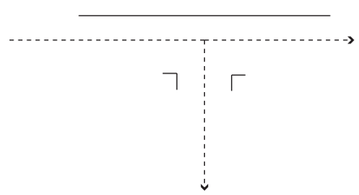
Within the following investigation, before mentioned qualities such as interaction with earthwork, difinition by light, contrast to nature, connection to height and woods, are taking in to account. As seen within the sloping topography towards east, the building composition stands as a geometric sharp building, which acts as a counterpart to the landscape through its stereotomic form. It falls over the curving landscape and blends in to the pine woods from its use of tectonics. The overall building complex leaves shadows in between the buildings masses that reflects the usage and different rites, serving constrasts in views towards the forest from the inside.











A LINEAR FLOW AND SEPERATED BUILDING MASSES
03 CONFIGURATION

IDEATION

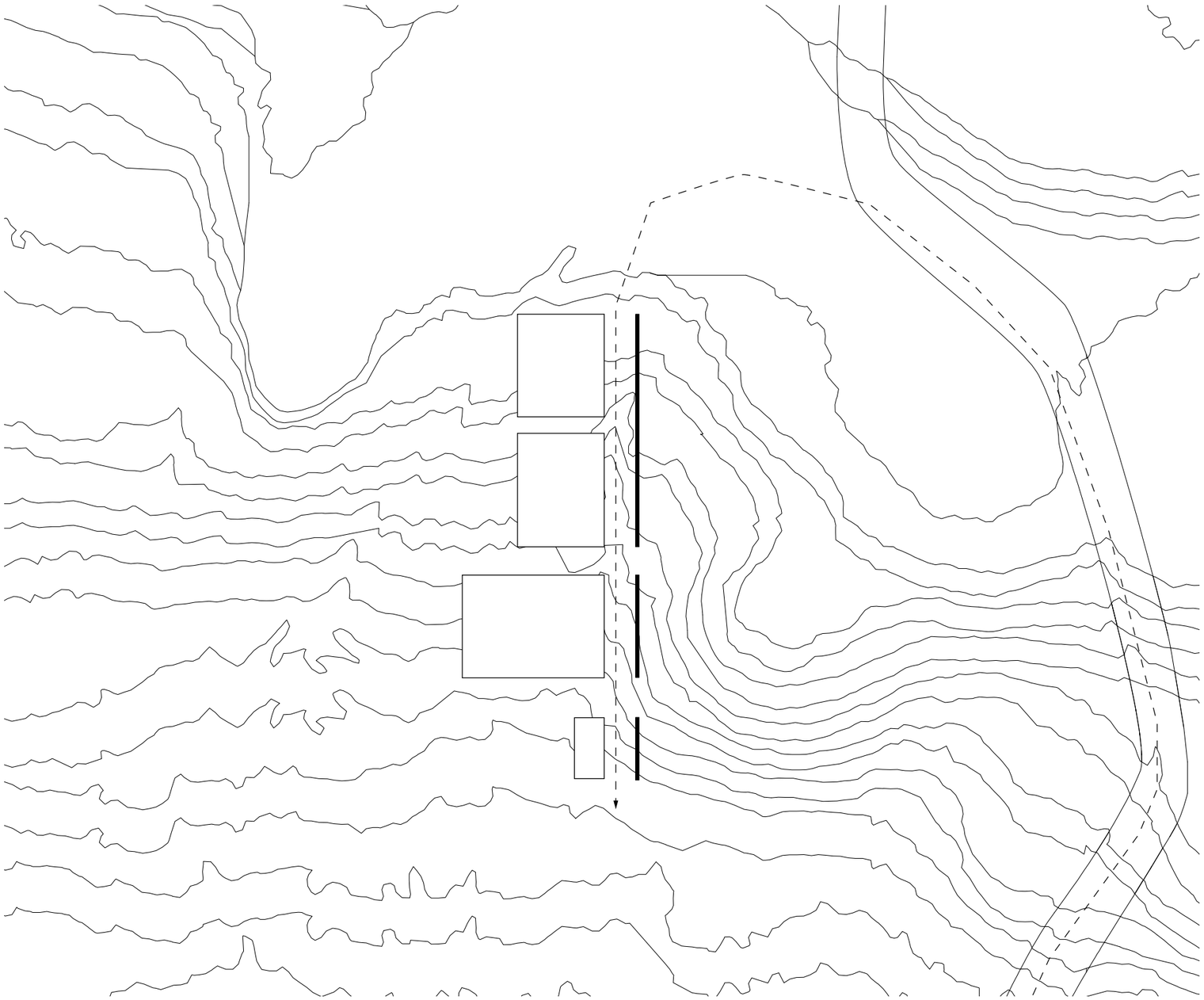
III. 91 - PLAN ON SITE - CONFIGURATION 3 ►

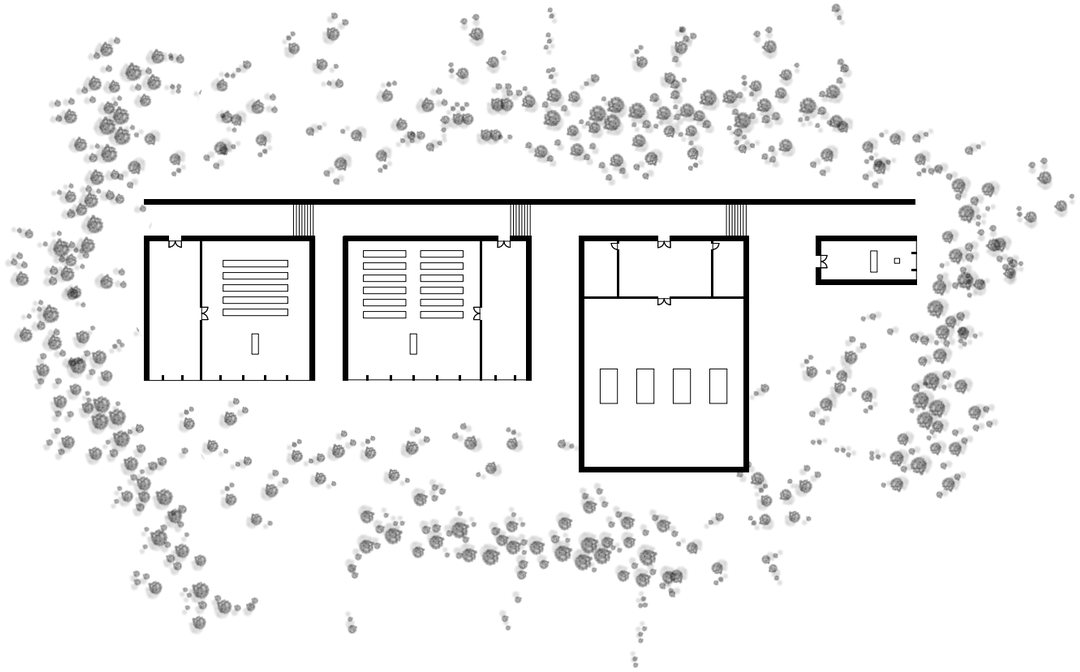
III. 92 - PLANS OF CONFIGURATION 3 ►

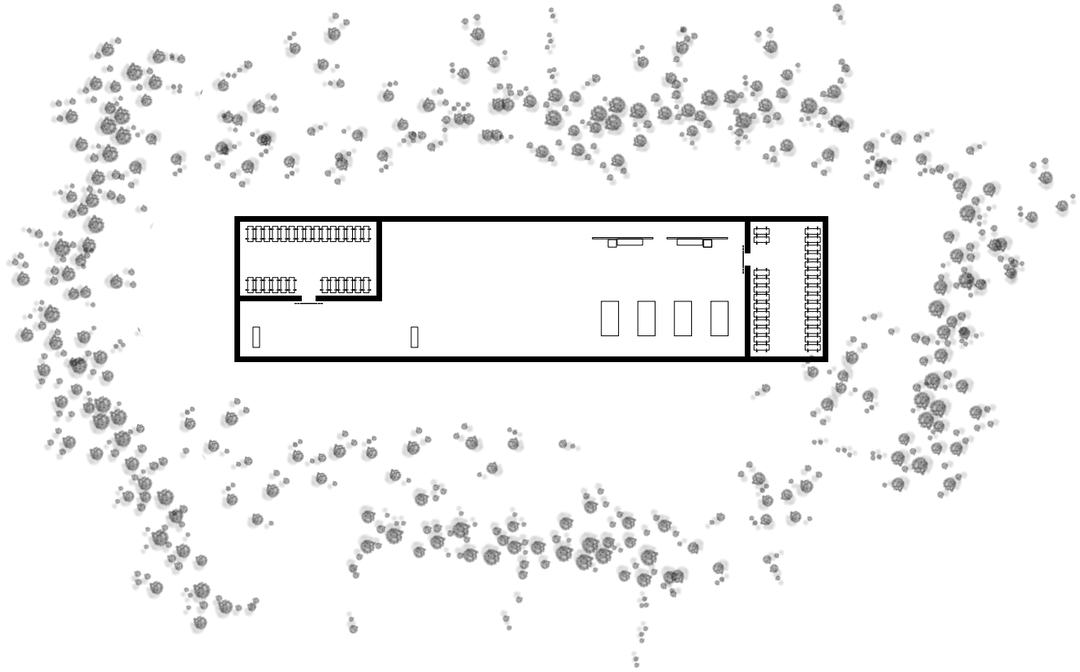
INVESTIGATED ASPECTS

In further studies which have led to a third configuration in the initial development of an architectural design for a crematorium, this presents and narrows down the conceptual notion of the design for the crematorium. As opposed to the first and second configuration the third stands out in its building layout, as seperated building volumes are arranged in a line while rising upwards. On account of these seperated building volumes this leaves a gap in between, which allows for the surviving relatives to get in closer contact with the landscape as circulation in between and around all of these building volumes is possible.

From a perspective of how to address the notion of the rituals of transitions this third configuration is a strong narrative to the story of a linear course adressing the chronoloigical order of the rituals, through a landscape podium, which besides guides also connects the building and funtions. In the implementation of this landscape podium this also enrich the exterior experience around the buildings.







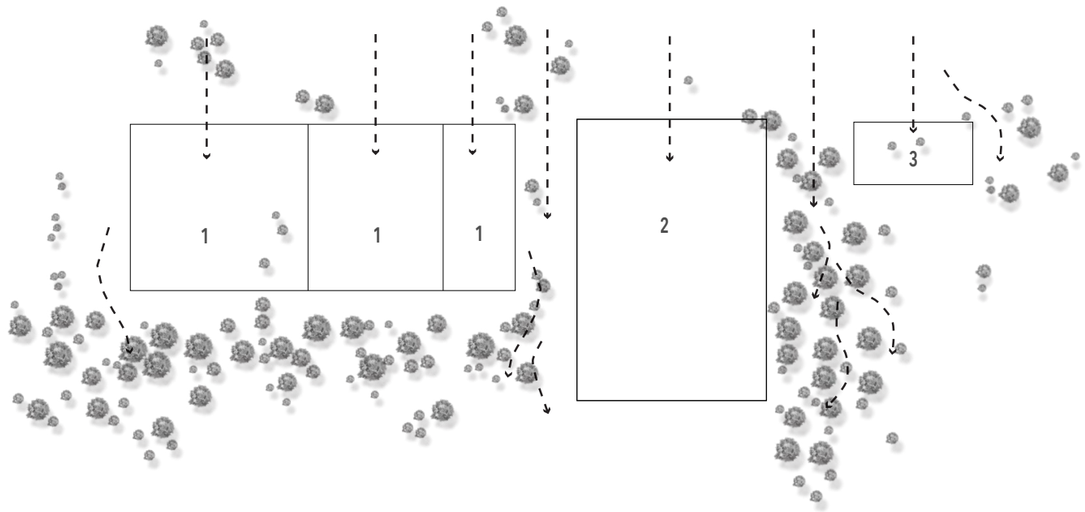
ITERATIONS ON THE CONCEPTUAL DESIGN - RISING STEREOTOMIC MASSES

IDEATION

INVESTIGATED ASPECTS

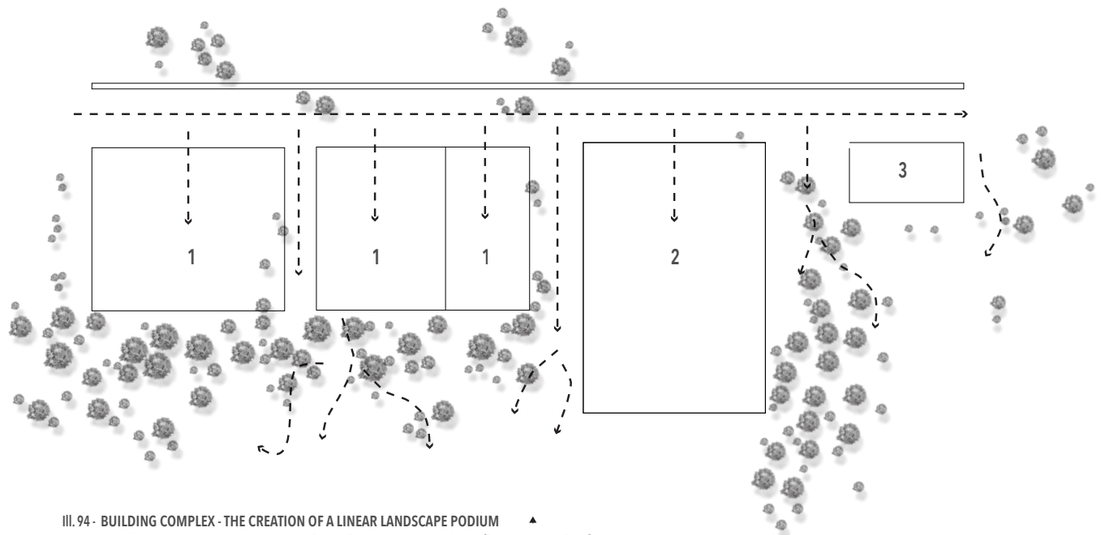
This part investigates further in-deepth, the key elements of the building composition - the walls, three main building volumes and the natural settings of the project site. From the investigations concerning different flowpatterns, it highligted a hierarki in flow axises, as the linear flow was given high priority to, on account of being a leading element towards the functions of the crematorium. As the secondary flow, investigations has emphasised how this exits inbetween building volumes and the undefined path of the forest, as the flow becomes filtrated inbetween the trunks and more unrestrained, as a clear path in hided.

In particular the landscape wall and placement of the building volumes, have been processed through several iterations, as this preserve the strictness of the linear flow. The presented iterations composes a great part in finding the final outline for the layout of the composition of the building volumes, linear landscape wall and their link to the surrounding natural environment.



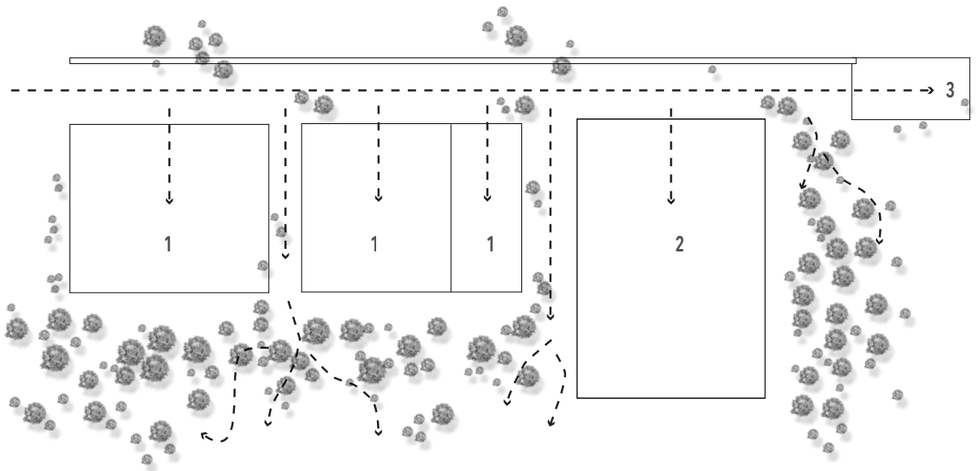
III. 93 - BUILDING COMPLEX - THREE SEQENCES ▲

From this layout of the building complex, seperated building masses stands out in the context. On account of such this reflects how the building posses different functions due to their individuality in their detachment from one another. As a result of this, the layout have the ability to address the different stages , which the surviving relatives go thorugh as they process their sorrow and dispose the dead, which is helped by the Rituals of Transition.



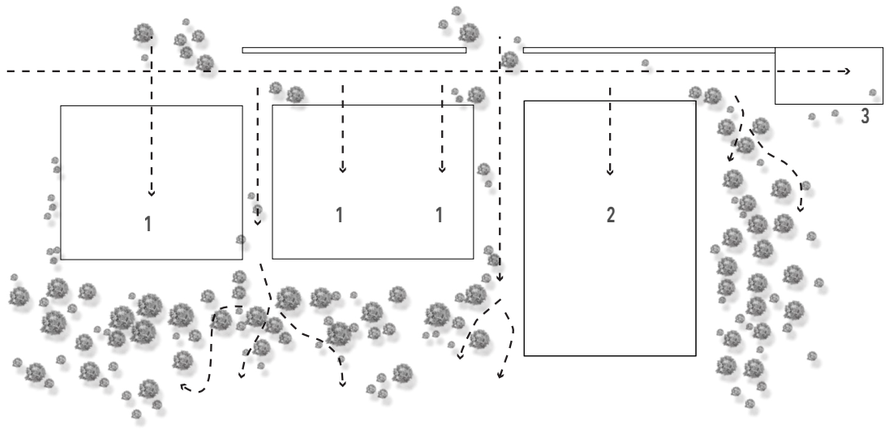
III. 94 - BUILDING COMPLEX - THE CREATION OF A LINEAR LANDSCAPE PODIUM ▲

Eventhough a sequence exists in the building layout and thereby reflect the rituals of transition, as the building masses are divided, this does not enhance their chronological order. On the contrary these seperated building volumes dissolves the chronological order of the rituals, as the flow towards and around the building is not restraint. As a method on how to restrain the flowpatters around the building, a wall element have been implemented. This element maintains a linear restricted flow, which seem to guide the people along the building.



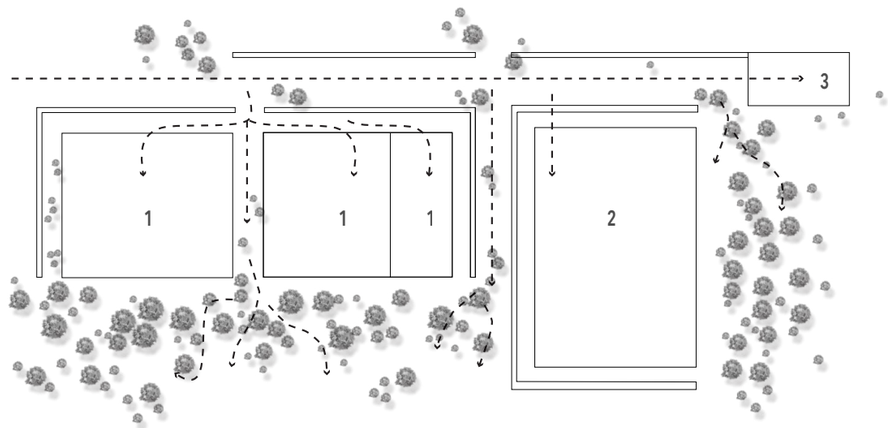
III. 95 - BUILDING LAYOUT - MAINTENANCE TOWARD A DESTINATION ▲

In our wonder on how to deal with the end of this linear flow ajacent to the building complex we intend through the building lyaout in the placement of the urn chapel to specify the end of the process, being the collection of the urn in the urn chapel. It becomes a symbol on the last destinatio on however if the surviving relatives dicides to participate in each of the two previuos rituals



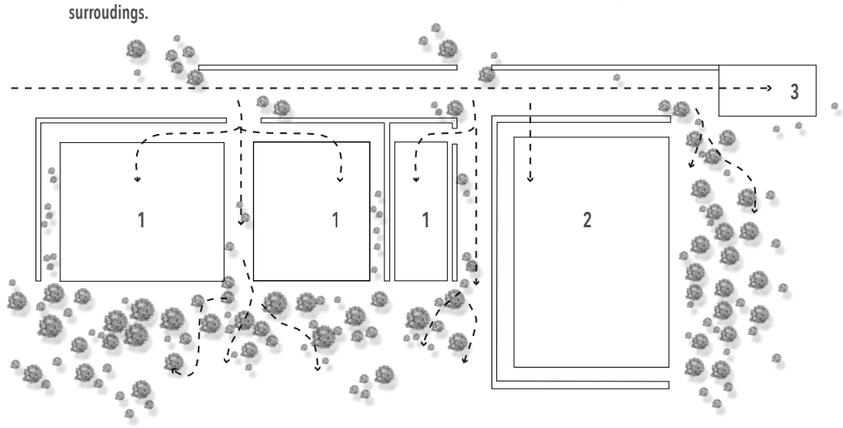
III. 97 - BUILDING LAYOUT - A CUT IN THE WALL ▲

As the placement of the urn chapel focus on how to emphasis the end destination in the process of how to address Death helped by a continually elongated wall element., we see importance in implementing some flexibility in this linear flow along the seperated building masses, as this also should insinuate the different stages wihtin the rituals of transitions, as these cuts in the wall would provide access to the different rituals the surviving relatives are attending to. Additional arguements for why the elongated wall element is cut in between the rituals of final farewell executed in the chapels and the rituals of interment executed in the crematorium, exists in how the processes of the crematorium and the urn chapel are much more interlinked.



III. 98 - BUILDING LAYOUT - AN EMBRACING SHELL ▲

As the next layer of the building layout, investigations concerns the individual building masses. As the events of Death, often are a very emotional process, where a lot of feelings are evoked, the spatial settings requires spaces for privacy. To implement this features of privacy in the building from the exterior, a shell construction embraces the core of each building masses. In the implementation of these shells it links the architecture to the earthwork of the site through a stereotomic mass. In this application of this stereotomic mass, the wall expresses solidness, earthboundness and heavyness, which allows for no view to the interior of the spaces. Due to such this enhances the aspects of privacy. Additional as you enter the buildings it is experienced as if you walk "into" the these earth walls, which gives you the impression of being embraced and enhance a sense of security, as the surviving relatives not are fully exposed to the surroudings.



III. 96 - BUILDING LAYOUT - SEPERATION OF EACH BUILDING MASS.

Throughout the investigation one of the chapels are placed adjacent to the mourners room. Due to such exists in how we intend to promote an equal setting, as we all in the events of death are equal no matter our past. This equal setting should assist in prevent people from feeling at display on account of differences. Therefore thorughout the investigations of the building layout, the small chapel is placed adjacent to the mourners room, to even out the dimensions of between the two chapels and mourners rooms from the exterior. Essentially the chapels and the mourners room posses the same purpose as they all provides space for the rituals of final farewell.

EXTERIOR EXPRESSION -
SPATIAL GESTURES AND CONSTRUCTIVE PRINCIPLES

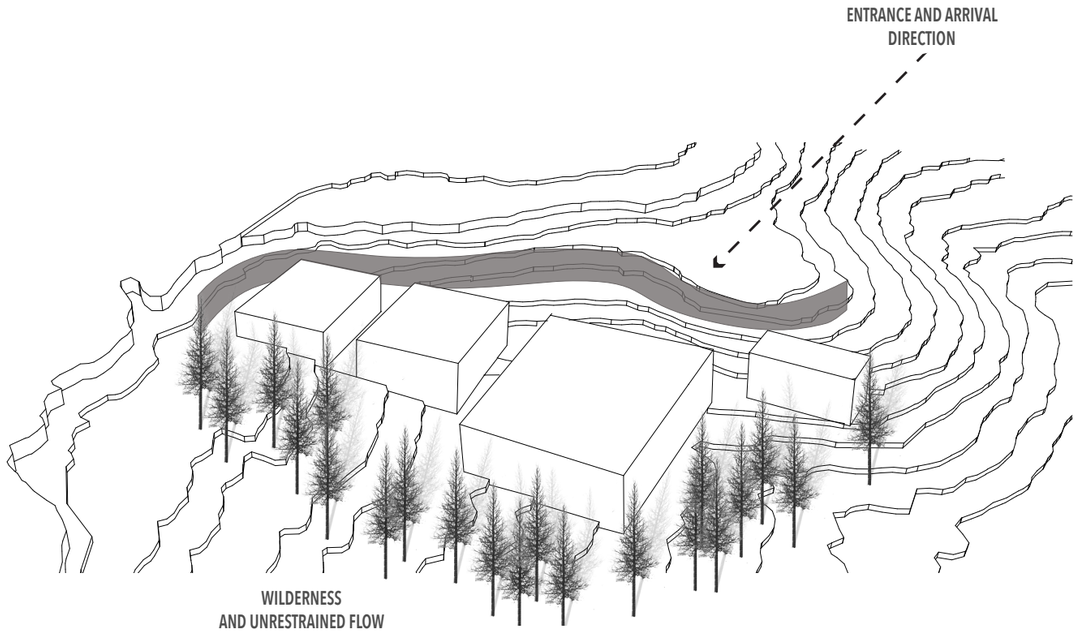
IDEATION

INVESTIGATED ASPECTS

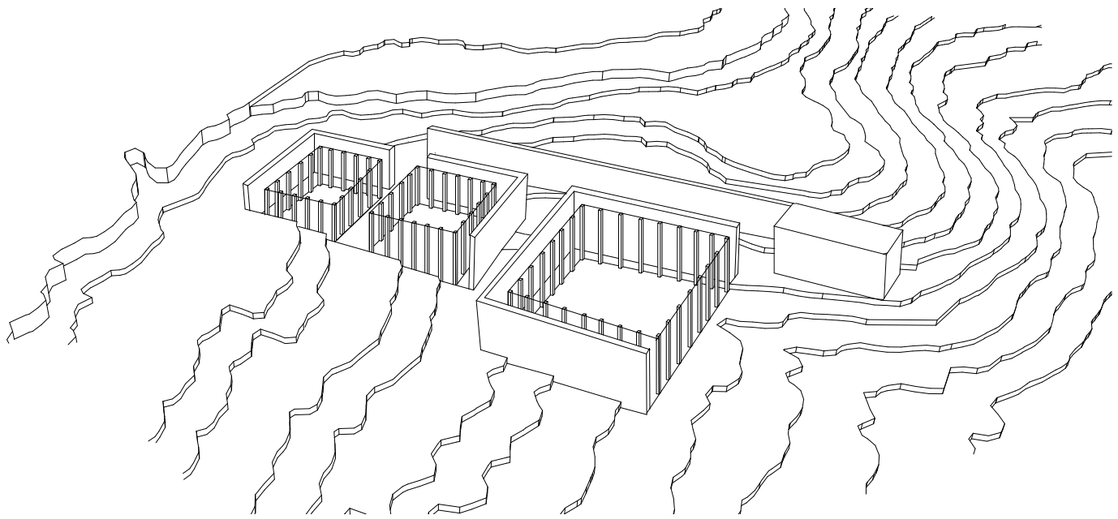
Through inspiration of the surrounding environment and its physical pheonmena experienced in the arrival and entrance to the site, composed by the trees and sloping topography, we intend to implement the spatial features of these elements into the interior and exterior of the architecture, to enhance the Genius Loci of the project site. By allowing rituals of transition to become essential in the establishment of the arrival and entrance to the building complex, they can help define and divide areas, which we believe would strenghen a respectful planning, that would bear in mind the journey of the surviving relatives at the crematorium, as they chronologically deals with the spiritual and bodily aspects of Death, executed through ceremonial farewells wihtin the chapels and bodily disposal within the crematorium.

The investigations of the surrounding environment of the site, should include the method of Gestures & principles. From the previosuly identification of Gestures and principles of the site spatial and constructive qualities such as “the open & vertical space, enclosed and verticalspace and the dynamic space were identified. As a result of such, these aspects enhances the natural characteristics of the landscape in the implementation of these within the architecture.

The main inspiration to the core of the project is derived from the masses of the earthwork, formning spaces which surrounds, embraces and protects as you enter it. As mentioned in previously chapter this spatial quality exits in the sloping and curving topography. This embracing character is expressed in how the earth creates voids as a result of level differences and winding curves. and thereby defines the backbone of the site thorough “a protective pocket” for people to find shelter in. Being this protective pocket inbetween elements this provides intimacy and safetiness through its embracing and enclosing character. Beside implementing an stereotomic approach and thereby states how this part of the building bekongs to be earthwork the contray are experienced on the opposite facade of the building for the creamtorium, as the development of this facade finds element in the open and vertical spatial and constructional qualities found on site.



▲ III. 100 - SPATIAL GESTURES AND CONSTRUCTIVE PRINCIPLES OF THE SITE



▲ III. 99 - APPLIACTION OF SPATIAL GESTURES AND PRINCIPLES ON THE EXTERIOR

SPATIAL DETAILING - CHAPELS
CONSTRUCTIVE PRINCIPLES

IDEATION

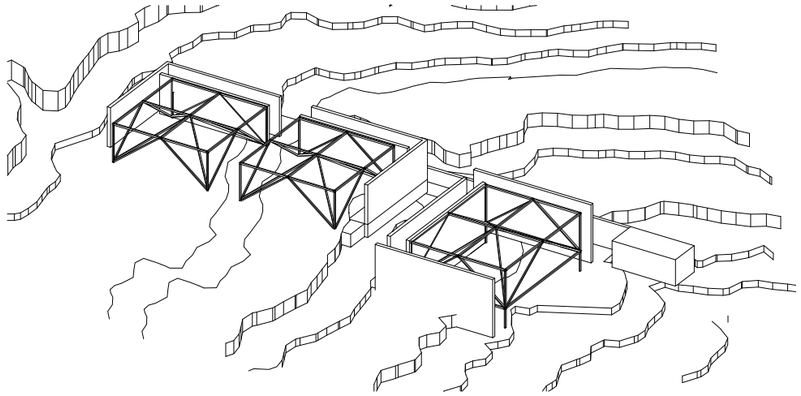
III. 101 - SPATIAL GESTURES AND CONSTRUCTIVE PRINCIPLES OF THE SITE ▲

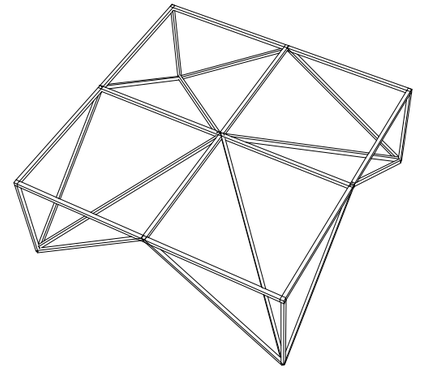
INVESTIGATED ASPECTS

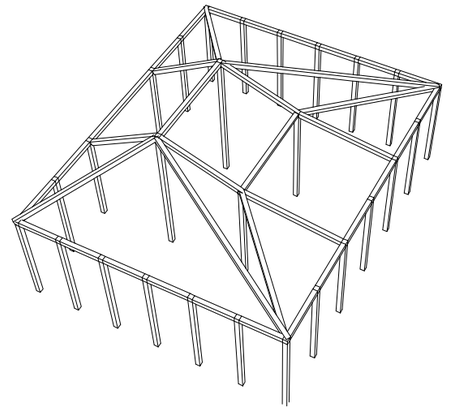
Throughput the process of designing the crematorium of Lapland, different construction principles and constructional details have been developed as a method to enhance the architectural objective through construction and detail besides visualising the structural logic of the built. The illustrations presented in this spread describe earlier configurations, as our constructional considerations upon the tectonic value for the projekt.

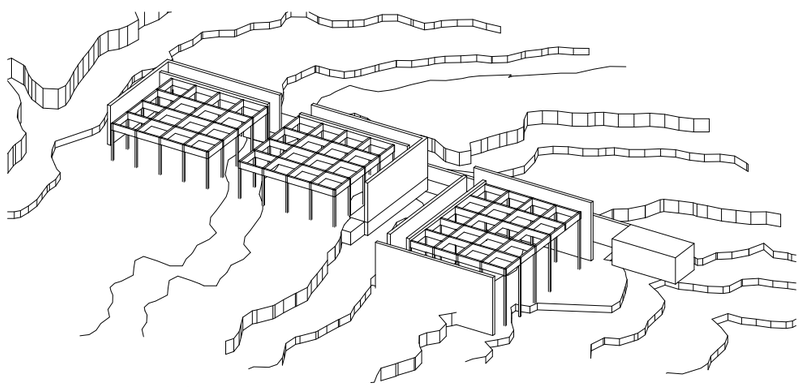
The investigation of the construction within the chapel, considers the method of Gestures & Principles by creating a vertical space which contributes to the feeling of embracement, intimacy and solemness. In particular the placement and structural logic of the elements have been moved around to find a solution of both structural and aestheical quality.

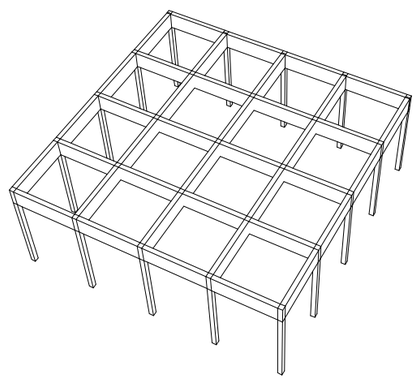
The first two iterations illustrates a construction that serves a center for the space below. Whereas one considers extremity joints in the corners, the other brings down the room height. The third iteration shows how a construction can act more uniform in to the space and create a homogenous surface. On the contrary, such construction type will act as a strict structural logic in the objective to design a slender load bearing system.







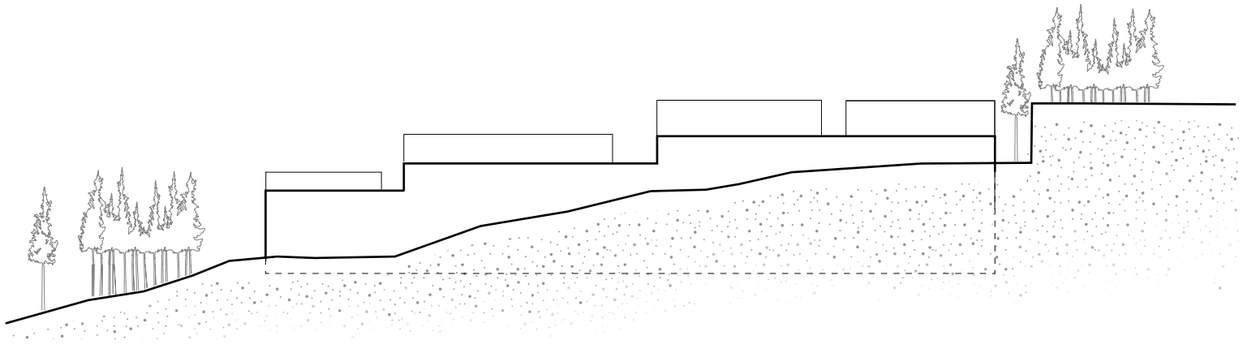




EXTERIOR EXPRESSION
ITERATIONS ON UNIFORMITY
IDEATION

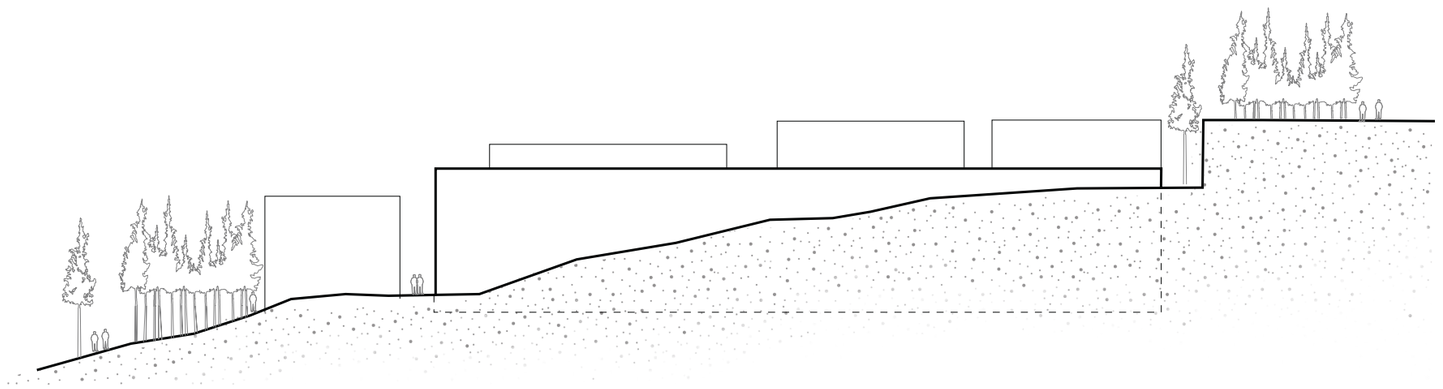
INVESTIGATED ASPECTS

The application of exterior walls takes its point of departure in the linear flow of the building masses next to the manmade landscape podium, which serves a link between the functions of the isolated buildings. This particular quality and exterior expression has the potential to create uniformity in the exterior expression and orchestrate a certain quality of the architectural project found within the linear continuality. Iterations presented in this spread show different approaches on how to express uniformity and react to the building heights and sloping topography in order to enhance the relation between the architecture environment and surrounding landscape.



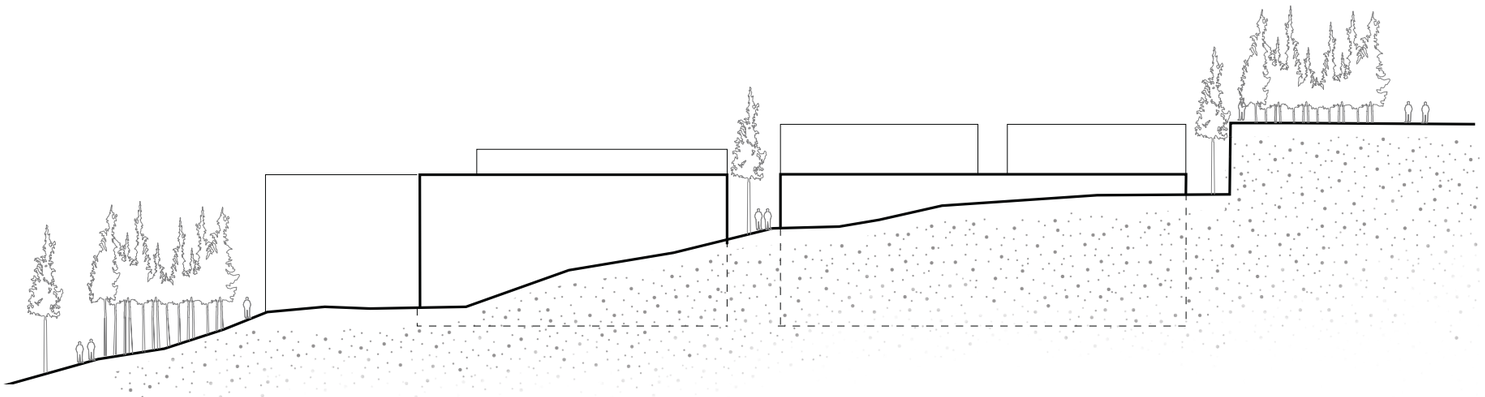
▼ **III. 102 - STEREOTOMIC SECTION - BELOW AND ABOVE THE EARTHWORK**

The principle section illustrates a volume deeply embedded in the earthwork of the site while supporting an upper volume that appear to be floating above the earthwork. From this section counterparts exits in how the entire building volume he



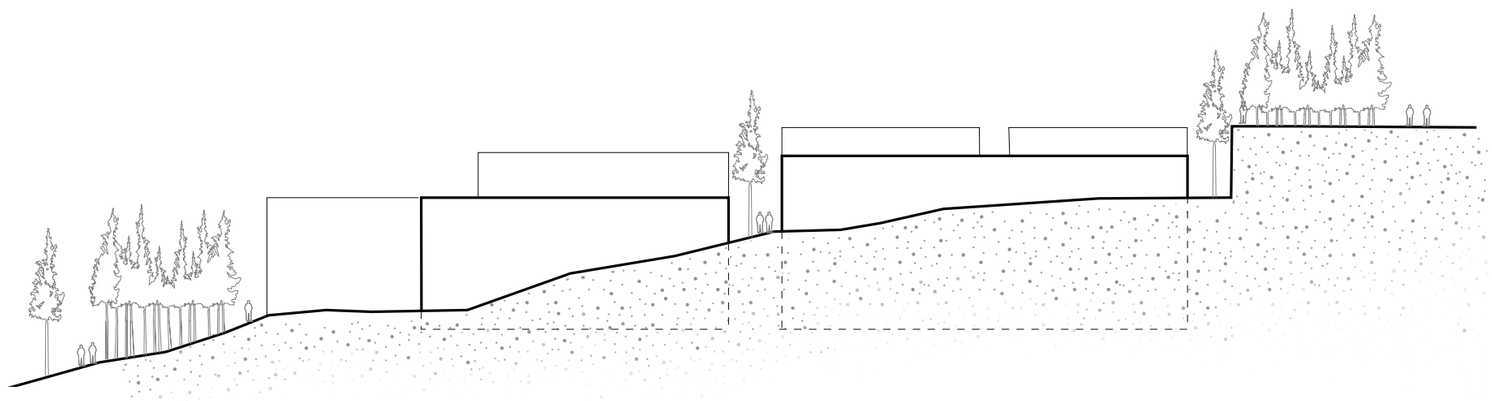
▲ **III. 103 - STEREOTOMIC SECTION - BELOW AND ABOVE THE EARTHWORK**

The principle section illustrates a volume deeply embedded in the earthwork of the site while supporting an upper volume that appear to be floating above the earthwork. From this section counterparts exits in how the entire building volume



▲ **III. 105 - STEREOTOMIC SECTION - BELOW AND ABOVE THE EARTHWORK**

The principle section illustrates a volume deeply embedded in the earthwork of the site while supporting an upper volume that appear to be floating above the earthwork. From this section counterparts exits in how the entire building volume he



▲ **III. 104 - STEREOTOMIC SECTION - BELOW AND ABOVE THE EARTHWORK**

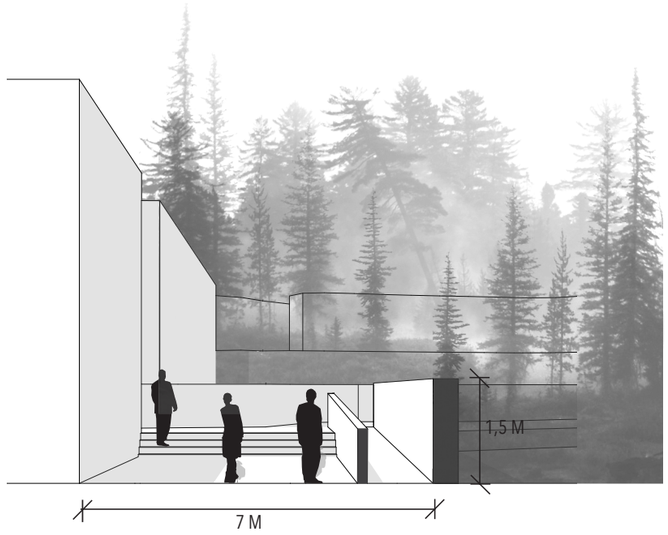
The principle section illustrates a volume deeply embedded in the earthwork of the site while supporting an upper volume that appear to be floating above the earthwork. From this section counterparts exits in how the entire building volume

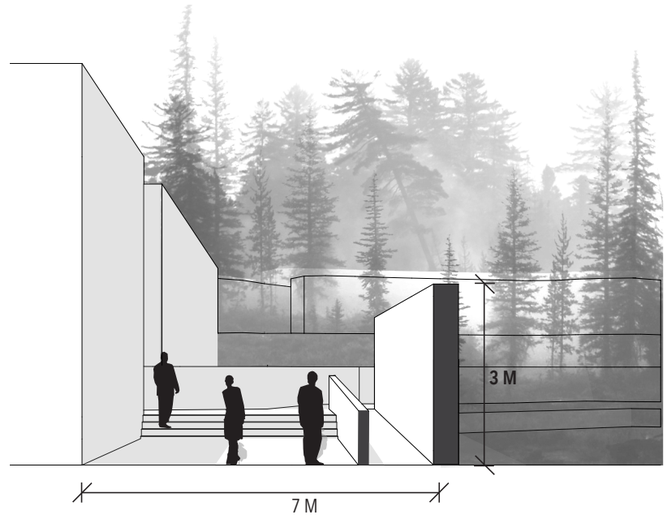
ARRIVAL AND ENTRANCE -
ITERATIONS OF THE LANDSCAPE PODIUM

IDEATION

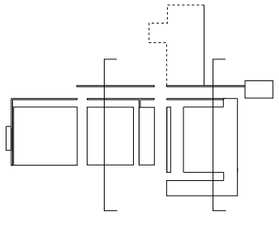
INVESTIGATED ASPECTS

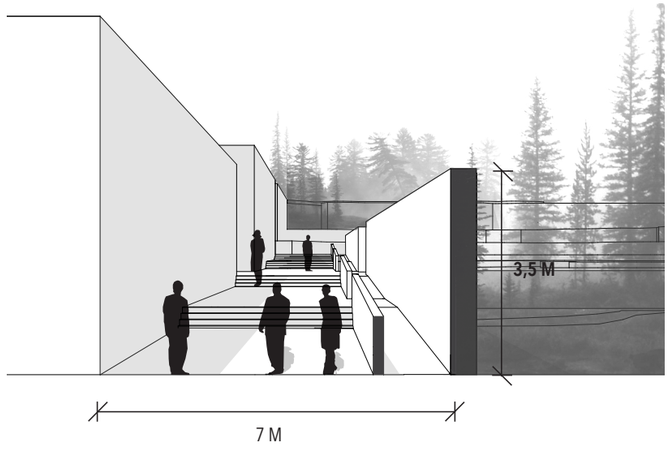
As the main concept evolves around the implementation of the linear flow, which enhances the functions of the crematorium and thereby appeal to the rituals of transition in their chronological order, we intend with this investigation to study the crucial influencing elements of the architecture which establishes this linearity.
In the establishment of this linear flow the landscape wall and building volumes play a crucial part. As this is the case, further investigations highlight the formation of the landscape wall, as this element is essential to the first impression of the entrance spaces to the creamtorium for the surviving relatives.
As we find great importance in enhancing the Genius loci of the project site through the architecture, to acommodate Nordic architectural traditions, we will invesigate how the natural settings of the site can be drawn into the exterior spaces between the building elements, as we pay attention towards the width and height of the space refering to the spaces found within the natural settings, while simultanously paying attention to the people capacity of these spaces.
Investigating the landscape podium and how this could act as a leading, conditioning and intimate feature in the entrance and arrival to the different building volumens, depending on the different rituals, the surviving relatives are processing, investigation of the landscape podium have concerned its width and height.
Looking at the different iterations of the landscape podium, the width becomes an important parameter to the space of the landscape podium, as this determines its character, in terms of whether this exterioir space should be felt as leading or inviting for stay. It can be experienced how a to large dimensions in width present the space as a plaze, whereas if the width is narrowed down, the space becomes a leading path.

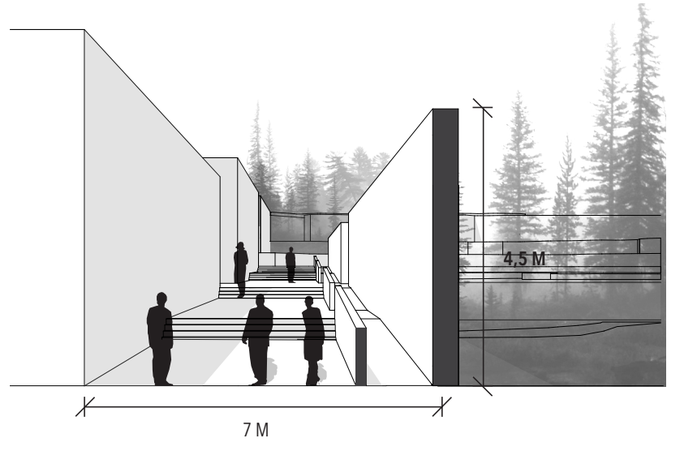




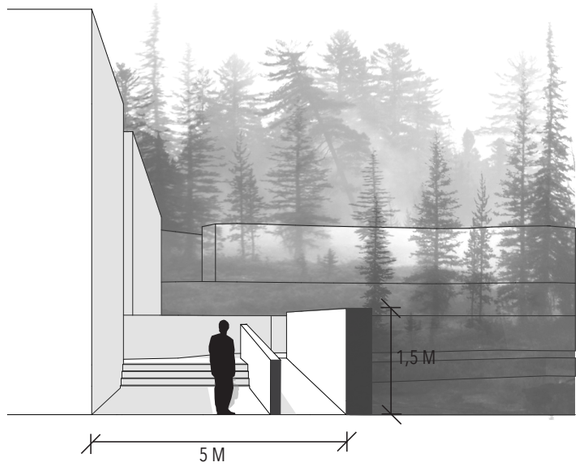
▲ Ill. 107 - LANDSCAPE PODIUM

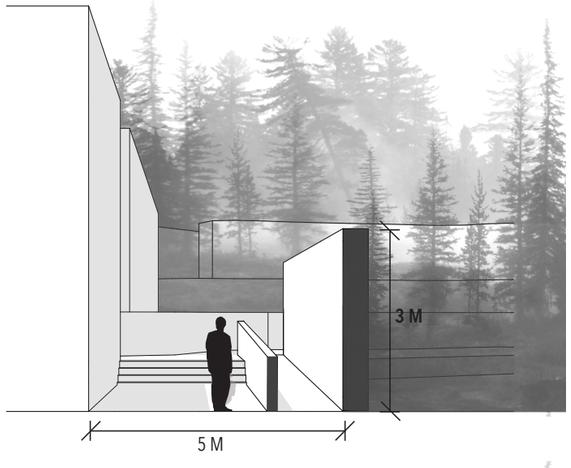




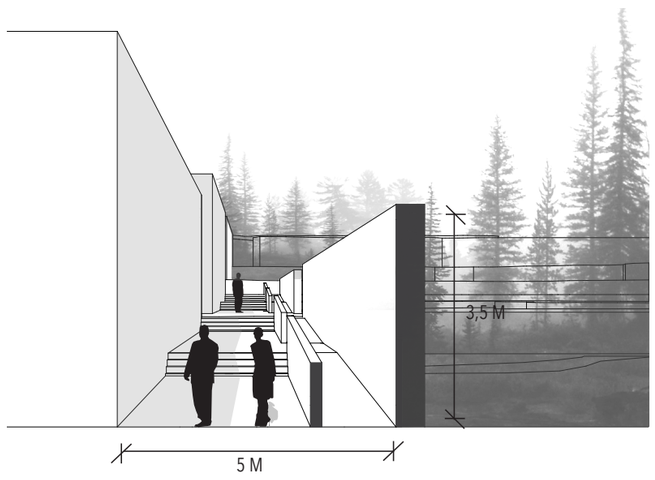


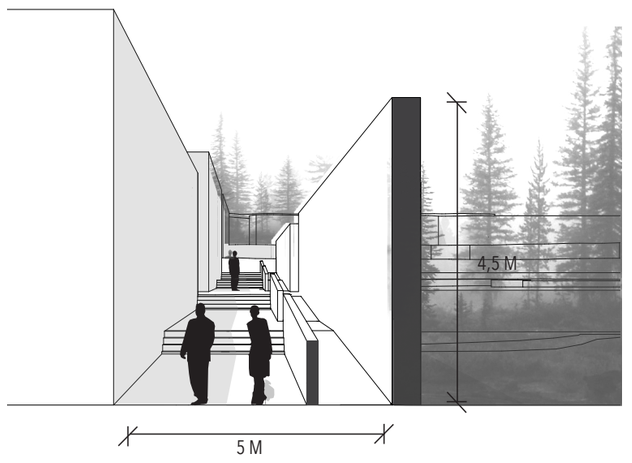
▲ Ill. 106 - LANDSCAPE PODIUM





▲ III. 109 - LANDSCAPE PODIUM

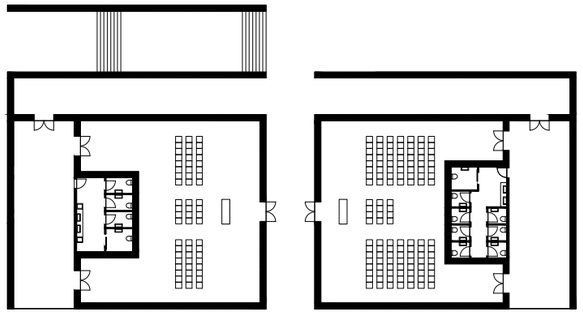




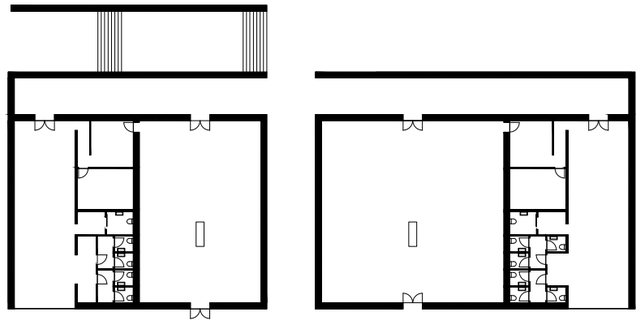
▲ III. 108 - LANDSCAPE PODIUM

PLANS - CHAPELS
ITERATIONS ON PLAN SOLUTIONS
IDEATION

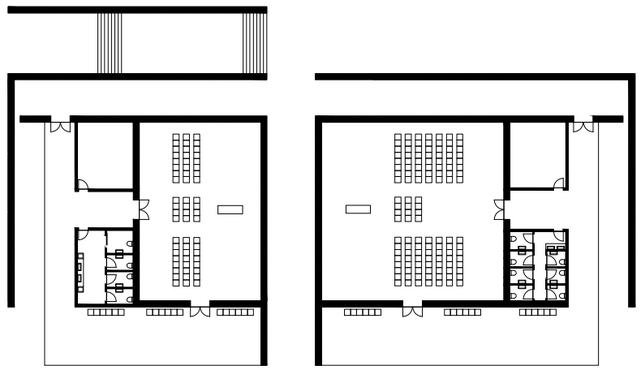
INVESTIGATED ASPECTS
In plan iterations of the chapels, we have investigated the distribution of interior spaces and their interferance with one another. On aacount of this distribution of functions, the course has also been part of these investigations.
From these investigations we intend to acheive a distribution of each functions, which



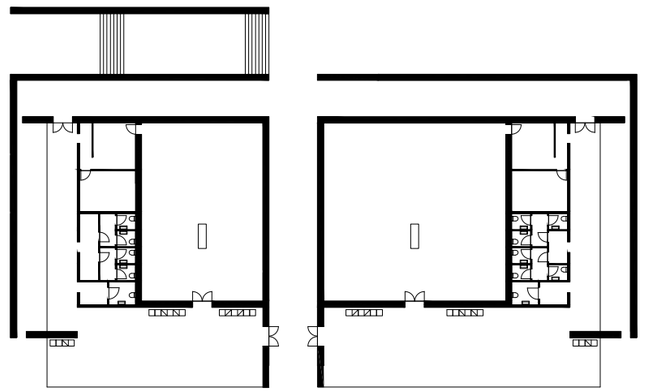
▲ III. 110 - PLAN ITERATION - SEPEATED ENTRANCES



▲ III. 111 - PLAN ITERATION - DIRECT ACCESS



▲ III. 112 - PLAN ITERATION - COMBINED ENTRANCE AND EXIT



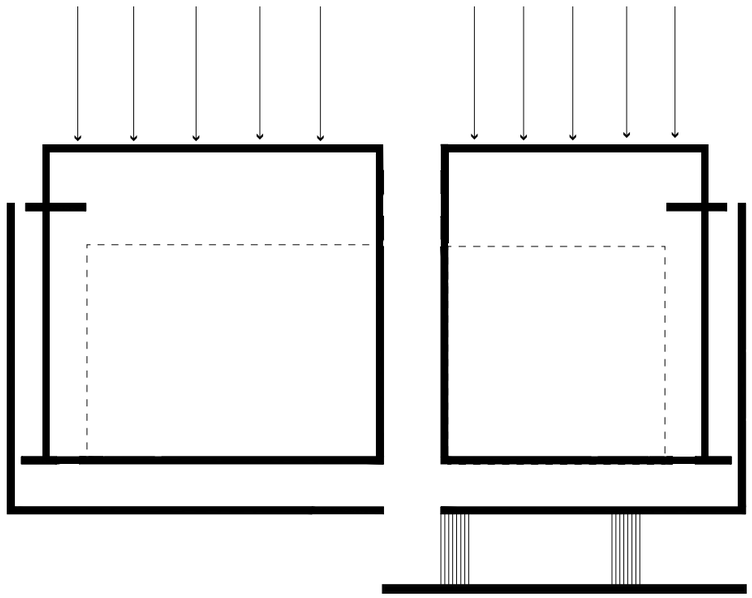
▲ III. 113 - PLAN ITERATION - SEPERATED ENTRANCE AND EXIT

INVESTIGATED ASPECTS

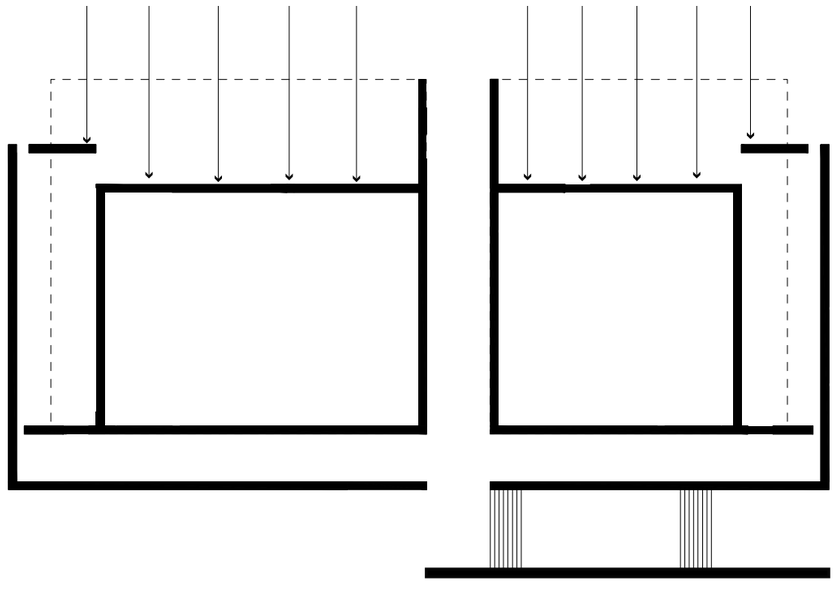
From the development of plan iterations on the left the theory of Semper has been an influencing factor, where we have had attention towards his theory of tectonics, in the process of enveloping elements in the implemtation of both heavy mass walls and lightweight screens, as the studies of the envelope has concerned how this elements could embrace the and form space for the ceremonies within the chapels. From the theory of Semper, he defines the heavy mass walls as elements which protects from the exterior, while the lightweight screens acts as definite envloping elements of the interior.

Through an interpretation of how to implement these enveloping aspects into the architectural design, a surrounding shell in rammed earth embraces the western, eastern and northern facades, and thereby protects the inner core of they building, which in this case if the chapels. Observing the facades toward south the opposite scenario occurs, where the protection of the inner core is expressed through a graduation as the lightweight screens are placed towards the exterior and the solid heavy wall element is situated within the interior. On aacount of such the souhtern facade creates a less defines line in the interesection of the interior and exterior.

An influencing parameter on why the southern wall stands out, exits in how facades is situated towards the untouched natural landscapes.



Ill. 114 - CHAPEL PLAN - SEMPER´S TECTONICS



Ill. 115 - CHAPEL PLAN - INVERSION OF SEMPER´S TECTONICS

SPATIAL DETAILING - CHAPELS
MATERIALS AND LIGHT
IDEATION

INVESTIGATED ASPECTS
As a continuation of the investigations of a combination of the architectural expression and the structural logic a series of models and visualisations has been made to investigate the overall impression of the chapel space that forms the geometry for the rites of final farewell. The complementary illustrations shows the development from a bright and open space to a more uniform, enclosed and focused space that brings focus to the centre of the space through a oblique cone illumination in a grid structure. Such contribution influences the atmosphere and aesthetics of the felt space where the coffin is the focal point, influencing the fundamental perception for the receiving person. Since the function of the chapel space brings focus on the deceased for the final farewell, it becomes a influencing parameter when it comes to the atmospheric experience of the chapel

▲ Ill. 116 - OBLIQUE CUPOLAS WITH PINE WOOD MATERIALS

▲ Ill. 117 - A CENTER OF OBLIQUE CUPOLAS WITH PINE WOOD AND RAMMED EARTH MATERIALS

▲ Ill. 118 - A CENTER OF OBLIQUE CUPOLAS WITH PINE WOOD AND RAMMED EARTH MATERIALS

ACOUSTICS PERFORMANCE -
SUURI KAPPELLI & CREMATORIUM

IDEATION

Acoustics is strongly related to the construct of atmosphere, which is why we are interested in Acoustics and the aspects it influences in architecture. Peter Zumpthor, the Swiss architect, writes in his book “Atmosphere” that interiors are like large instruments: “...collecting sound, amplifying it, transmitting it elsewhere. That has to do with the shape peculiar to each room and with the surfaces of the materials they contain, and the way those materials have been applied” [Zumpthor, 2006, p.29].The overall experience of an architectural space is formed from the complex impression primarily obtained through our senses. This notion is substained by the Finnish Architect Juhani Pallasmaa; “Sight isolates, whereas sound incorporates; vision is directional whereas sound is omni-directional. The sense of sight implies exteriority, but sound creates an experience of interiority. I regard an object, but sound approaches me: the eye reaches, but the ear receives” [Pallasmaa, 2012, p. 53]. Sound is decisive to our very different way of sensing our surroundings.

When investigating the acoustic performance within a room, the focus lies on how the sound is conveyed in a space. Several aspects have to be considered in relation to the acoustics in order to design a space, which fulfills the accuate acoustic requirements.In general, the space needs to be developed specifically in terms of its use and consequently the type of sound source so the compostition allows scattering, transmittion and absorption of sound in different ways. [Long, 2006, P. 698] The Danish Architectural theorist writes about materialising sound: “Can architecture be heard? Most people would probably say that architecture does not produce sound, it cannot be heard. But neither does it radiate light and yet it can be seen. We see the light it reflects and thereby gain an impression of form and material. In the same way we hear the sounds it reflects and they, too, give us an impression of form and material...” [Steen Eiler Rasmussen, 1964, p. 224]. While we often consider light, the most important part of the articulartion of form shape and material - acoustics have a strong presence in everthing we do in architecture and it can be configured by the geometry, the materials, the spatial compositions, the occupansies and the sources of these spaces. The consideration of acoustics becomes a central aspect in understanding a space and determine the atmosphere of a space based on an omnidirectional sensing experience by reception, which is why we as architect are interested in acoustics when designing a crematorium.

OBJECTIVE

The acoustic analysis was initiated by the resaerch of a shape, both fitting the acoustic expectation and the architectural tectonic approach, in the early stages of the project. The main objective of the articulation of acoustics is focused in one architectural situation of the overall building complex, being the chapel. Priliminary studies of the chapel with a simple shape aims to give a general impression to the topic and directions to follow. Since the chapel serves one important purpose where the message is the key, it is neccesary to create the best conditions for the message to be heard. The chapel has a special atmospheric potential and the acoustics of the space is desired to have a character with reverbation time, which will promote a solemn and ceremonious atmosphere. Frequency spectrums for both speech and music should be taken into account for the same space due to varied usages. Overlap in speech and music signal is, in general very strong, which is why there is no ordinary filter that can separate them from each other. Speech covers the spectrum from near 0 Hz to 3500 Hz, whereas music covers almost all frequencies, however the lowest fundamental frequency for music is about 1000 Hz.

METHOD & PARAMETERS

In order to analyse the conditions within the chapel, simulations have been made with the plugin Pachyderm in Grasshopper and Rhino. Overall we distinguish between the reverberation time of a space and the sound distribution from a sound source. Reverberation time should be held low in order for the acoustic to become more precise and sharp, by preventing the sounds not to merge due to short reverberation time. In contrary to a space designed for speech, a space designed for music need a longer reverberation time, making the sounds merge together as one can experience in a church or concert hall. [Long, 2006, p. 697] In such large and open space it is often hard material and surfaces that embraces you. Materials applied to the walls and ceiling within a space needs to be taken into account when readjusting the reverberation time. Hereby it is possible to control the acoustic performance through absorbing and reflection properties. Hard material such as stone and rammed earth on this particular case with a flat and smooth surface has a higher reflection of the sound than a wooden and more scattered surface has. The absorption increases depending on the scattered surfaces. Furthermore the surfaces can be angled and coordinated to provide a good coverage of sound for the receiver in the space.
Besides reverberation time, both intelligibility and clarity of speech is important parameters of a solemn space such as a chapel. The quality of clear sound is dependent of the volume and intention of the room and therefore the clearness matters for the perception and understanding of the sound. [Long, 2006, p. 91] The analysis will focus on the frequecies from 125 - 8000 Hz. For a man’s voice with a fundamental frequency of 125 Hz, there are harmonics at 250 Hz, 375 Hz, 500 Hz. The beforementioned parameters needs to match the energy of the volves in the range 125 - 2000 Hz and consonants in the range 250 - 4000 Hz. It is important to have good hearing across the frequencies, due to strenght variation of unvoiced consonants that lies in the frequency range of 2000 - 8000 Hz. [Al-Shoshan, 2006, p. 108]

INVESTIGATION

The chapel is a space for ceremonies held in different ways. It can be ceremonies with only speech, as well as ceremonies with both speech and music. Those two types of ceremonies require quiet different acoustic charateristics, making the chapel an ambivalent space. Since the acoustics of a room may not change easily, the space needs to be oriented towards a specifik use, that can contribute to the architectural qualities. We decided that the chapels will be a design to enhance the experience of the orator and the speec. Thereby we orientate the acoustic design towards the oration for the ceremony, more than for occasions with music during the ceremony.
For those reasons, the Early Decay Time (EDT), which is the time a sound need to drop of 10 decibel should be within the range of 0,8 and 4,2 seconds, bearing in mind a EDT between 2,1 and 4,2 will be in favour of music activities.

The Reverberation Time (RT30), which is the time a sound drop of 30 decibel after the source is turnes of, should be between 1,5 and 2,5 second, knowing that a RT of 3 seconds is suitable for organ music, whereas 1 second is good for speech.
The intelligibility, defined as Definition (D50), is the ratio of direct and early sound received before 50 ms to the total sound energy should be over 50 percent, implying that the receiver is directly exposed to at least half of the early sound energy. Clarity (C50 and C80), which is the ratio of sound energy, arriving before respectively 50 and 80 ms to the later one, should be within -5 and 5 decibel. C50 is most commonly used to study speech, shole C80 is more suiable for music. When the clarity is low, the sound are not very distingushable and will merge together. On the contrary, when the clarity is high, the sound are more clear, which is more suitable for speech.
The strengh (G), which is the ratio of sound energy measured at a point, to the same sound energy measure in a free field at 10 meters, is closely related to the feeling of loudness. Results within the range of 4 and 7,5 decibel may convey a proper experience for the user of the chapel. [Beradi, 2012] Each shape is set up in Rhino / Pachyderm with one source and a series of 5 receivers in the chapel. The source was selected as a man performing a “competing conversaton”. Material are applyed to the Rhino model, defined by absorption coefficients as a function of thickness and frequency, scattering coefficients and transmittion coefficients.

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED		125 Hz	250 Hz	500 Hz	1000 Hz	4000 Hz	8000 Hz
PLYWOOD PANEL	WALL S,E & W	28	22	17	9	11	13
	CEILING	28	22	17	9	11	13
RAMMED EARTH	WALL NORTH	5	5	5	8	20	20
CONCRETE TILES	FLOOR	1	1	1	1	2	2
ACOUSTIC FOAM	WALL S,E & W	32	68	92	96	100	100
WOODEN LAMELLAS	WALL S,E & W	28	22	17	9	11	13




TABLE 4. ABSORPTION COEFFICIENTS ▲

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED		125 Hz	250 Hz	500 Hz	1000 Hz	4000 Hz	8000 Hz
PLYWOOD PANEL	WALL S & N	28	22	17	9	11	13
	CEILING	28	22	17	9	11	13
GLASS FACADE	WALL E & W	15	5	3	3	2	2
CONCRETE TILES	FLOOR	1	1	1	1	2	2
ALU PLATES	CREMATORS	50	35	15	5	5	0

TABLE 5. ABSORPTION COEFFICIENTS ▲



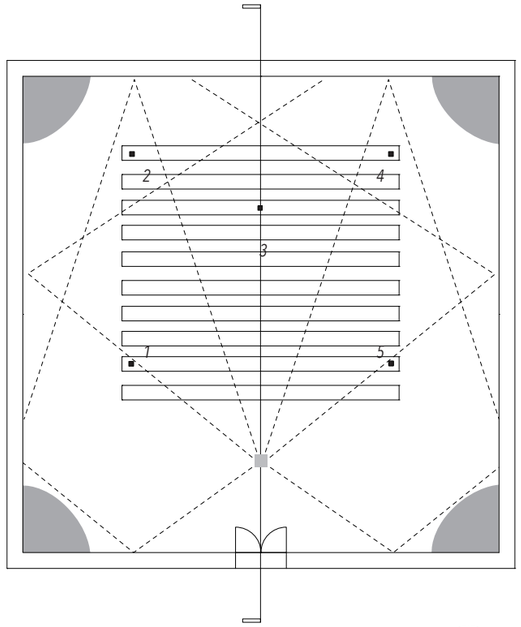

SPATIAL DETAILING - CHAPELS
ACOUSTICS
IDEATION

INVESTIGATED ASPECTS

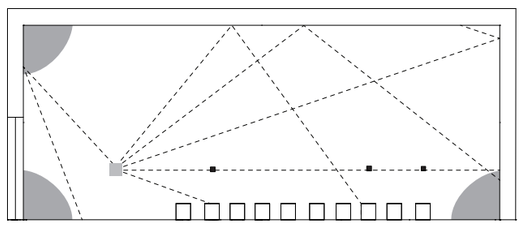
This iteration investigate orientations in a square plan and how such orientation influence the acoustics within the chapel in accordance to the research of shape both fitting the acoustic, technical and architectural expectation. The aim was to work on a simple shape, to have a general impression on how sound is distributed from the orator to the audience. Square vol. 1 have four corners receiving sound, whereas square vol. 2 have tree corners receiving sound. Results upon the simulations can be seen in [Annex 1 - Table 1.1 + 1.2]. Both cases have space for 120 people and have the same material applied, as seen in the scheme for absorption coefficients.

OBSERVSATIONS

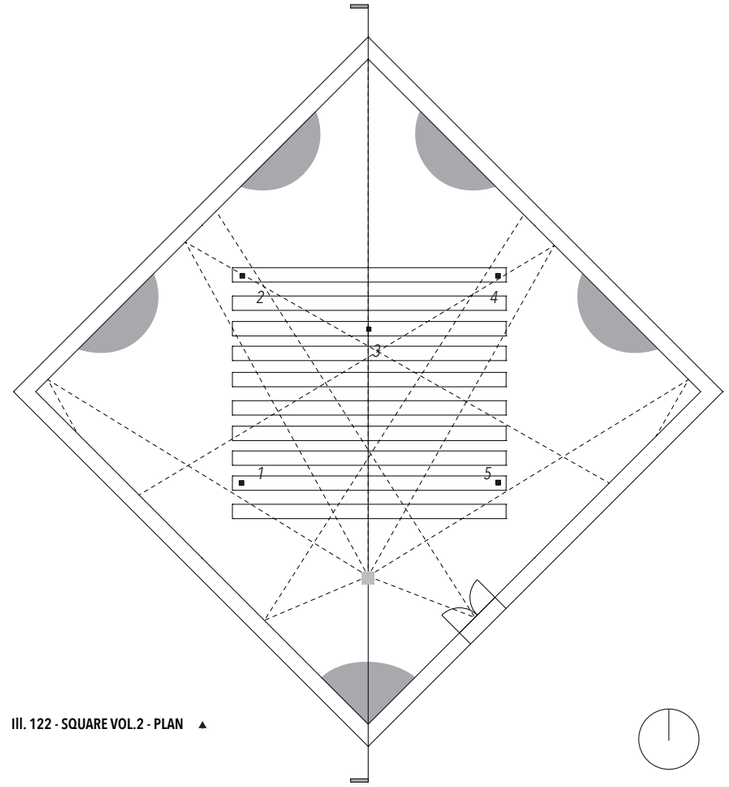
The simulation based upon Square vol. 1 and Square vol. 2 shows that the planar surfaces capture the sound waves, which is then reflected to the audience with a delay. The distribution of sound is seen in the raytracing lines and grey areas, that shows how the distribution leaves areas of the room as dead spaces. This delay is reflected in the numbers for the pachyderm output. [Annex 1 - Table 1+2] Each shape have a too high Early Decay Time around 2-4 sec, leaving Square vol. 1 with the best numbers closest to the attemped value - also being the case for the numbers of Reverberation time, Clarity and Strength. On the contrary, the numbers for Definition gives the best result for Square vol. 2, when having an angle on the wall that projects the sound different to the audience - being above 70 % that indicates an excellent relation between early and total sound. Although the speech seems clear through the numbers in Definition, the strength and Reverberation Time is too high according to the expected numbers, leaving the Square vol. 2 more appropriate for music, and will in shape appear too loud in general during a ceremony. A flat ceiling gives a balanced but not optimal result.



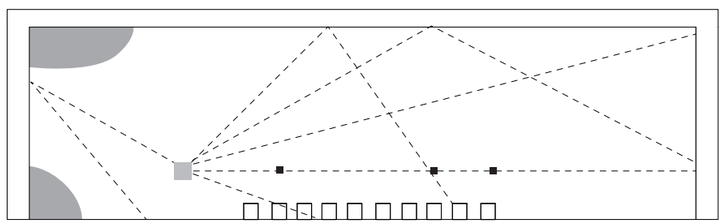
III. 120 - SQUARE VOL.1 - PLAN ▲



III. 119 - SQUARE VOL.1 - SECTION ▲



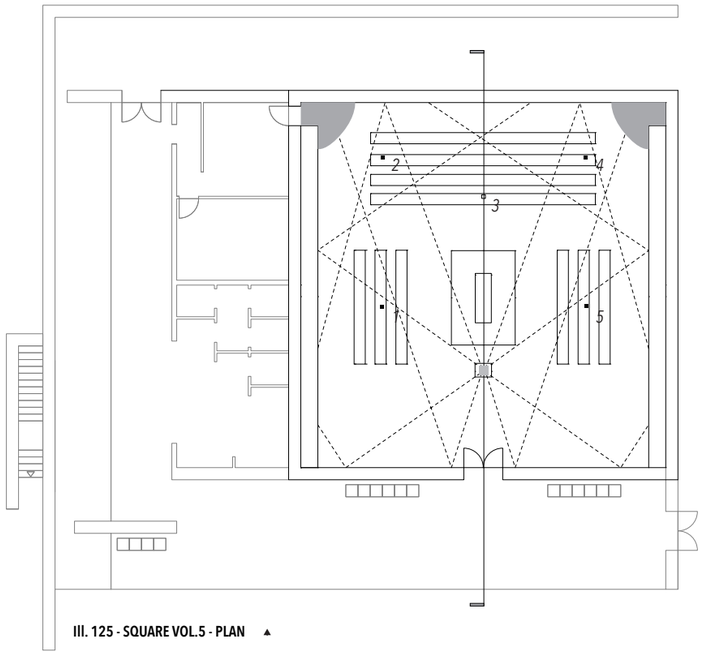
III. 122 - SQUARE VOL.2 - PLAN ▲



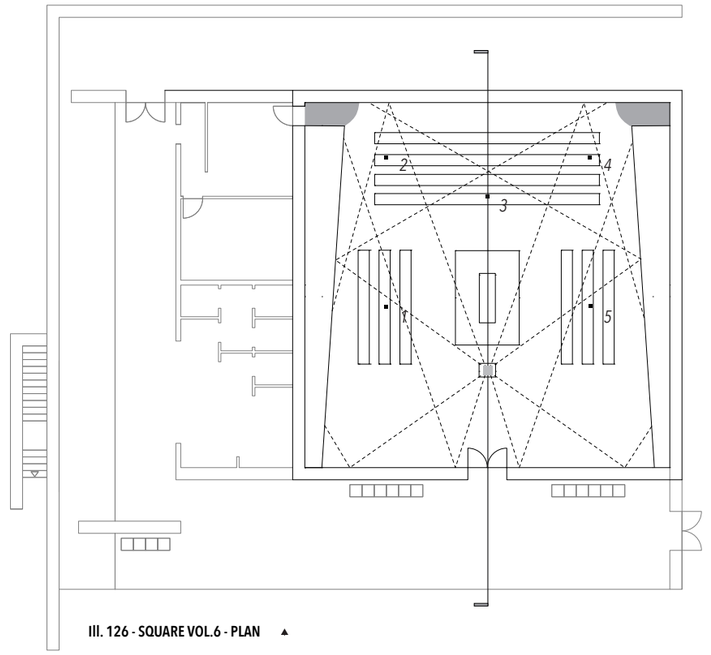
III. 121 - SQUARE VOL.2 - SECTION ▲

SPATIAL DETAILING - CHAPELS
ACOUSTICS
IDEATION

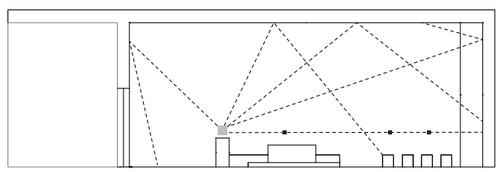
INVESTIGATION
This iteration investigate how the application of technical shafts, as seen in the iterations of the plan, can influence the acoustics in the chapel. Furthermore the seating is changed in position accoring to distributed rays and view towards the coffin and central area of the room. The technical wooden shafts will considerably ameliorate the acoustics in further iterations. *Square vol. 5* shows a plan extension wheras *Square vol. 5* shows an extension with angled corners to the back, giving a direction from the the backside of the chapel towards the orator/source.

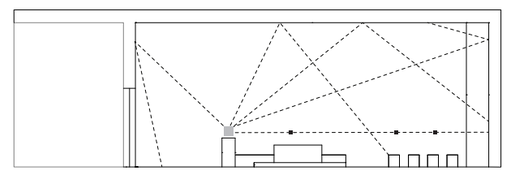


Ill. 125 - SQUARE VOL.5 - PLAN ▲



Ill. 126 - SQUARE VOL.6 - PLAN ▲


Ill. 123 - SQUARE VOL.5 - SECTION ▲


Ill. 124 - SQUARE VOL.6 - SECTION ▲

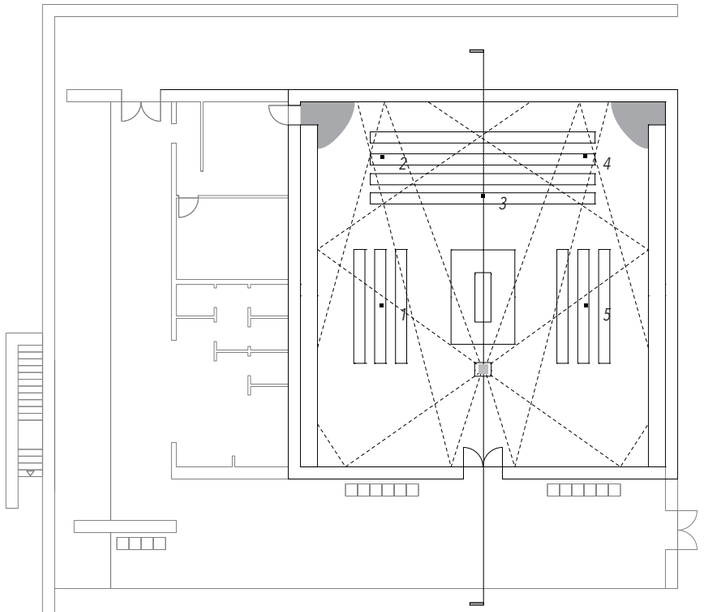
Source
Receiver
Rays of sound
Dead spaces

OBSERVATION
The addition of techinical shafts engender a improved acoustic in the chapel, but it still does not correspond to what is expected for a chapel oriented towards the experience of the orator and the speech. In general, the space stands out to bee a bit too reverabant and load due to the stength of the sound, ecspecially found in the simulations for *Square vol. 5*. On the contraty *Square vol. 4* gives favorable numbers in Definition around 70 - 90 %, with a more homogeneous sound distribution through the audience, leaving out dead spaces. [Annex 1 - Table 3.1+3.2]

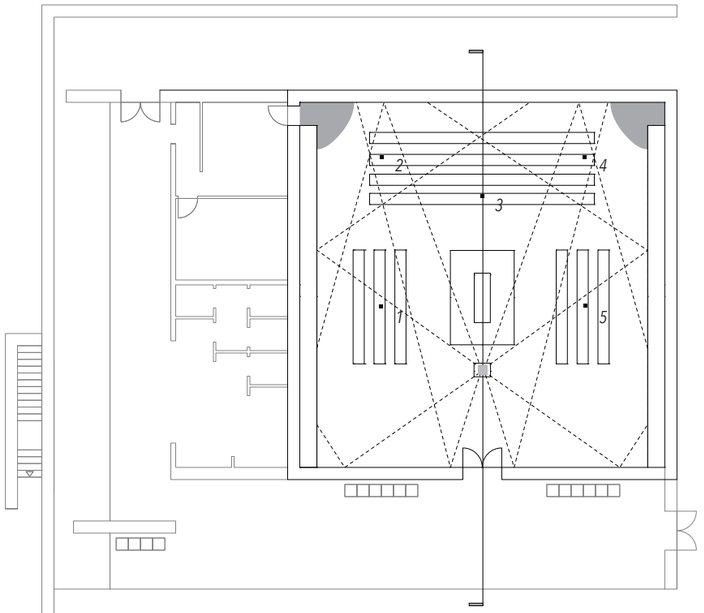
SPATIAL DETAILING - CHAPELS
ACOUSTICS
IDEATION

INVESTIGATION
As a strategy to optimize the acoustic performance of the chapel, the grid-like structure of the ceiling has been shaped as oblique cupolas due to asthetics and acoustic parameters, that ought to improve sound and enhance a quiet space through a solemn atmosphere. The iteration investigates how such shape will influence the acoustics with a reference to iteration 2 [*Ill. Square vol. 3]* where the angle reflect rays of sound. *Square vol. 7* shows the chapel with oblique cupolas as ceiling structure. *Square vol. 8* shows the same case, besides having acoustic panels of wooden lamellas with foam in between, cladded on the techinical shafts in order to see how such application will influence the acoustics and sound distribution.

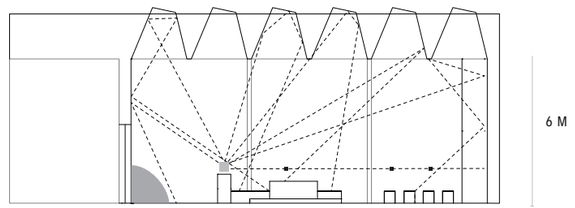
OBSERVATION
The addition of the asorbing material is very beneficial for the definition in the chapel space. [Annex - Table 4.2], compared to the situation and analyzed numbers for *Square vol. 7,* where the technical shafts stands in plywood panels. These excellent values are especially seen for the higher frequencies. Although *Square vol. 8 gives* ideal numbers of definition, the acoustics appear too load and unhomogenious in the other variable paramters. Reverberation Time is too low, according to the different frequiencies, which means that adding acoustic panels of wooden lamellas with foam does not contribute to the overall sound distribution in a space where the message is the key, since it absorbs too much sound. We need to leave out the amount of absorption in order to increase the Reverberation Time.



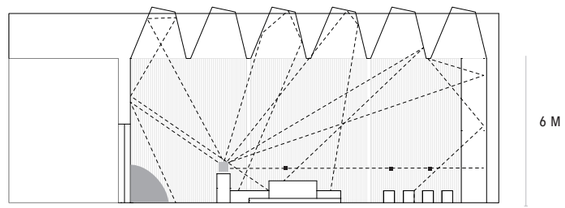
III. 129 - ILL. SQUARE VOL.7 - PLAN ▲



III. 130 - SQUARE VOL.8 - PLAN ▲



III. 127 - SQUARE VOL.7 - SECTION ▲



III. 128 - SQUARE VOL.8 - SECTION ▲

Source
Receiver
Rays of sound
Dead spaces

PLANS - CREMATORIUM
ITERATIONS ON PLAN SOLUTIONS

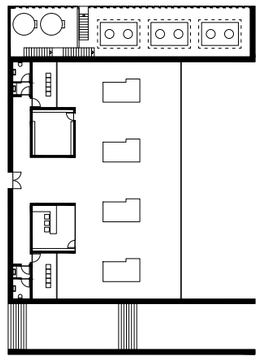
IDEATION

INVESTIGATED ASPECTS

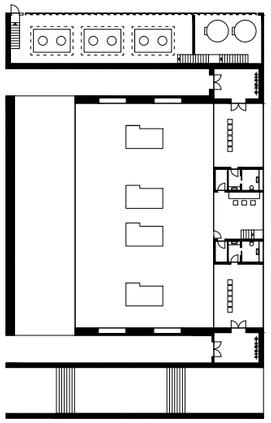
Throughout the process of designing the crematorium of Lapland, different solutions upon the plan layout for the rites of interment have been developed. The plans presented in the following spread present earlier to late configurations, giving an overview of the plan and the design process of a space that need to consider both the surviving relatives and working staff:

The first iteration shows a configuration with direct access to the insertion room. Even though the space seems open and spacious, such plan layout doesn't obtain sufficient value for the observation rooms. The following plan iteration incorporates the chimney and a small courtyard in front of the facade and entrance area. In order to strengthen the boundaries for the mourners towards the insertion room, a barrier is implemented as a reception space, that enhances the visual distance.

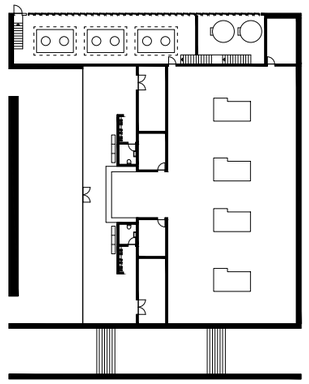
▼ **Ill. 131 - DIRECT ACCES ALLOWING THE MOURNERS TO GO DIRECTLY FROM OUTSIDE AND INTO THE OVENS PLACED AS THE CENTRAL ELEMENT IND THE CREMATORIUM.**



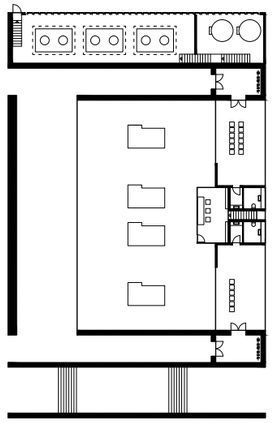
▼ **Ill. 132 - SAME CASE AS DIAGRAM 5, WITH THE STAFF FUNCTION PLACED INBETWEEN THE TO MOURNING GROUPS.**



▼ **Ill. 134 - A COURTYARD ALLOWING CIRCULATION AROUND THE CHIMNEY OF THE CREMATORIUM. A COMMON WAITING AND ENTRANCE SPACE FOR THE MOURNERS AS THEY ENTER THE OBSERVATION SPACE TO THE OVENS**



▼ **Ill. 133 - A RISED COURTYARD ALLOWING CIRCULATION NEXT TO THE CHIMNEY, WHILE CREATING SEPERATE ENTRANCE SPACES FOR EACH OBSERVATION, AND ELIMINATING ALL INTERACTIONS BETWEEN EACH MOURNING GROUP.**



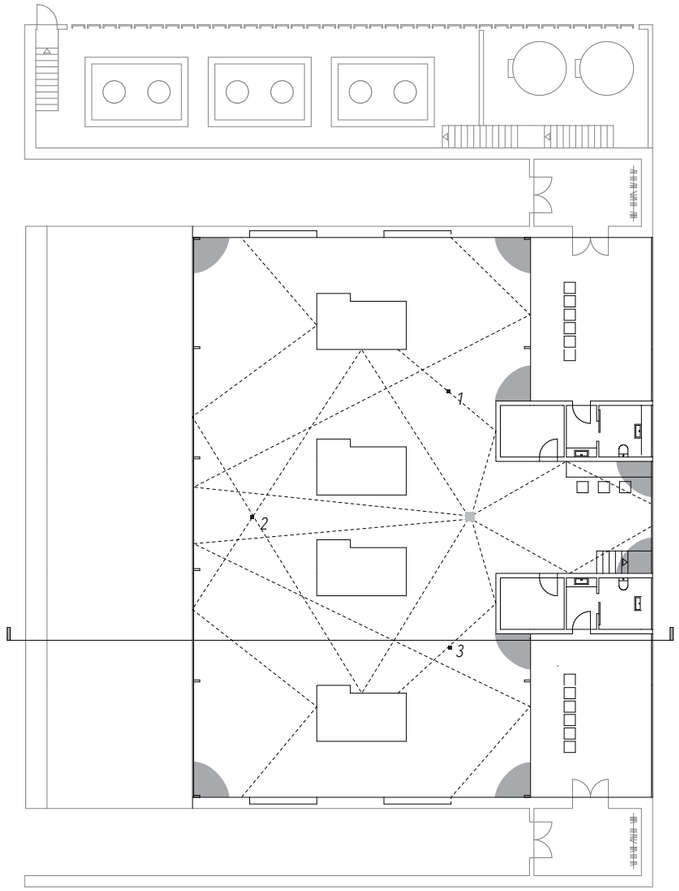
SPATIAL DETAILING - CHAPELS
ACOUSTICS
IDEATION

´ INVESTIGATION

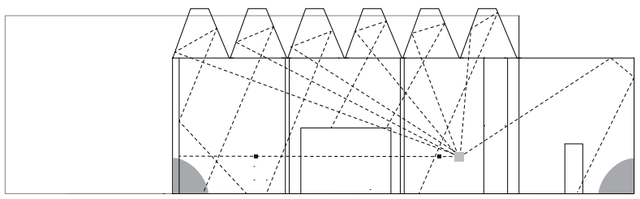
This iteration investigate how the acoustics appear within the crematorium and the abilities of a great room volume where speech is the main source for the working staff. The investigation takes it point of departure with plywood panels on the southern and northen wall, a glass facade to East and West and a ceiling with oblique cupolas as seen in Table 7. Besides having quite reflective materials, the four cremators placed in the middle of the room will certainty create a reverberant space as the surfaces of aluminium plates will reflect sound rays and create a boundary for the sound to be distributed.
Results upon the simulations in Pachyderm can be seen in [Annex 1 - Table 7.1 + 7.2].

OBSERVATION

As seen in the result scheme [Annex 1 - Table 7.1], *Crematorium 1 gives* medium to excellent numbers of definition, however the acoustics still appear loud and unhomogenious in the other variable parameters. When having a loud apperance, the room will act too reverberant according to the expected values for a working area. The clarity of sound is poor. which means that the words will be unclear for the receiver. Since Clarity is dependent of the room volume a method to deal with mentioned parameters can be to add more absorption material in the space. Additionaly, absorbtion material can help to decrease the Reverberation Time and Early Dacay Time, which on the contrary will improve speech clarity.



Ill. 136 - CREMATORIUM 1 - PLAN ▲



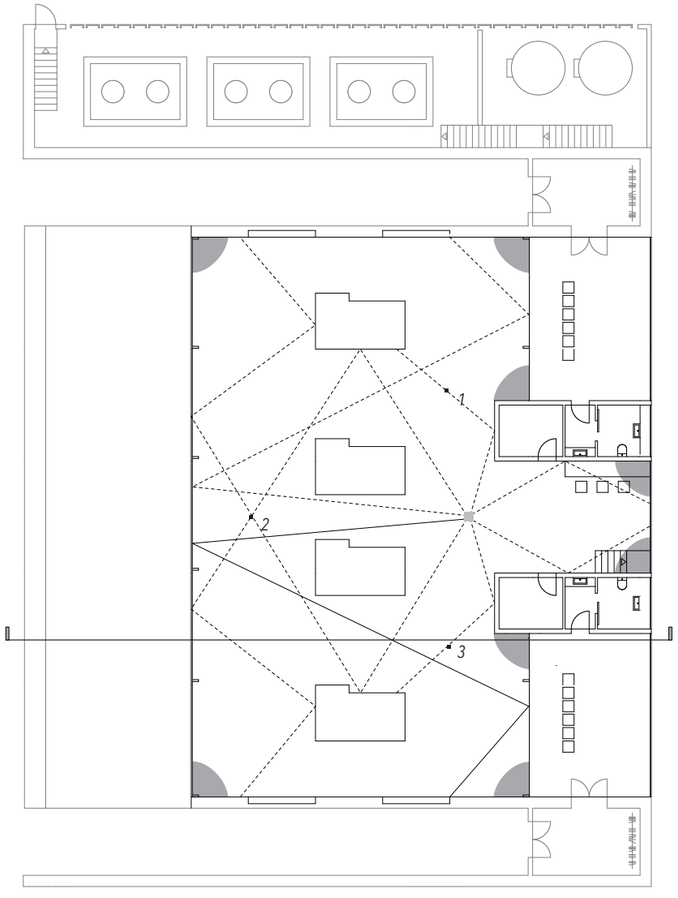
Ill. 135 - CREMATORIUM 1 - SECTION ▲

Source
Receiver
Rays of sound
Dead spaces

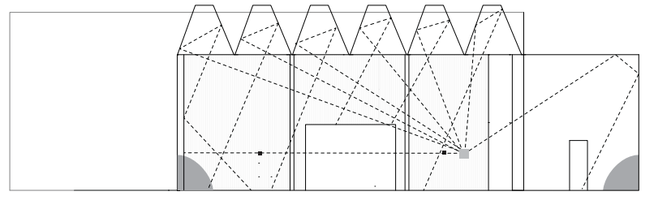
SPATIAL DETAILING - CHAPELS
ACOUSTICS
IDEATION

INVESTIGATION
The iteration investigate if the addition of acoustic panels of wooden lamellas with foam in between, is beneficial for the acoustics and sound distribution in the crematorium space. [Annex - Table 7.2]. Parameters will be compared to the situation and analyzed numbers for *Crematorium 1,* where the Southern and Northern walls stands in plywood panels.

OBSERVATION
On the overall, the addition of the asorbing material is very beneficial for the clarity of sound and anticipated values for Reverberation Time as well as Early Decay Time. All the values stays in the expected range, and appoint acoustic panels as a solution to accomondate a well designed work space for the staff of the crematorium.
Even though the room volume is quite big, a balance is created between absorbing and reflactive surfaces and gives a good acoustic performance. Besides great values of Reverberation Time, the Definition shows very good intelligibility of speech and indicate a clear distribution, which is necessary for the perception and understanding of sound and the desired atmosphere as a open workspace.



Ill. 138 - CREMATORIUM 2 - PLAN ▲



Ill. 137 - CREMATORIUM 2 - SECTION ▲

Source
Receiver
Rays of sound
Dead spaces

SPATIAL DETAILING - CHAPELS
CONSTRUCTION
IDEATION

Throughout iterations on the structural system, iterations have led to a structural design of a pratt truss. As the influencing parameters on why this is the case, exists in how we place demands on the height of our structural system. The reason for these demands exists in how we want to provide spatial qualites through the setting of natural daylight and visually depth in the implementation of Oblique Copulas. In previously studies a simple grid structure was investigated, as the structural and spatial element of the interior, which expressed a clearness, strictness, slenderness and lightness within the interior.
But as studies of light and spatial qualities was investigated, these became the influenceing parameters on a furhter development of a simple grid structure composed by simple beams to a grid structure composed by a pratt truss system due to materialsoptimisation and aesthetics qualities. As previously studies of acoustic qualities within the interior of the chapels and creamtorium, these investigations have limited the detailing of the pratt truss to the width dimensions of the lower flange, as this part of the truss is visible from the interior and acts as the ornamentation of the space.
Being a visible part of the interior, this also stresses the clarity of the structural design as the Pratt Truss streches from a South - North direction and lays on top of the columns.

LOADS
In the synthesis phases involving the detailing process of this pratt truss system, dimensions needed to be determined, to decide on their visual expression. In doing so loads need to be determined. In the determination of loads these are divided into self-weight load, snow load and wind load.

SELF-WEIGHT LOAD
The construction is calculated as a pratt truss, a common system of an upper and lower flange connected with an inner grid system of vertical and diagonal elements. To investigate the construction the calculations are seperated in two parts, a surface loadfor the roof surface and the load for the constructional element of the pratt truss. The division is made to investigate the dimension of the height and width of the truss elements. The construction is an assymetric with unequal span. In the northern part the construction stretches crosswide the chapel room with 15m, which leave the second span with a length of 5m. The division is made to seperate the surface load of the roof elements (tab. 01) and the elements of the pratt truss (tab. 02). The roof construction is placed on top of a grid system of columns, with an overall height and length of the truss: H = 1,5m L = 20m. To make the dimensions of the elements one of the pratt truss is investigated with a surface area of 50m^2, which consist of different elements showed

$$m = \rho \cdot V$$

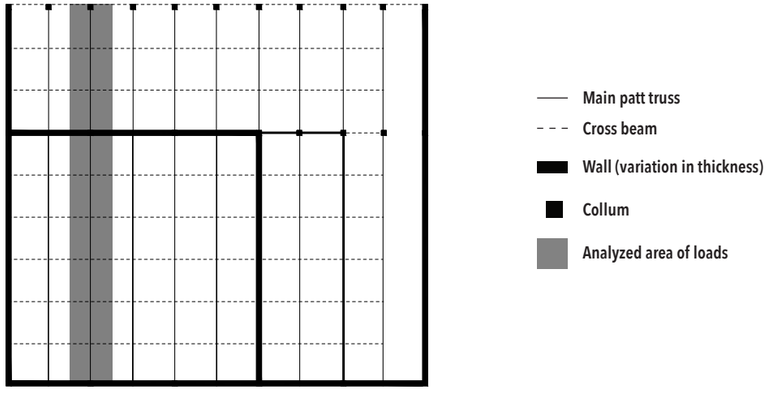
$$q = \frac{m}{A} \cdot g$$

PERMANENT LOAD / TABLE 01 / DEADLOAD ROOF ELEMENTS

DESCRIPTION	NO. (PS)	DENSITY (KG/M^3)	HEIGHT (M)	WIDTH (M)	LENGTH (M)	MASS (KG)
INSULATION	1	80	0,5	2,5	20	2000
ROOFING FELT	1	890	0,002	2,5	20	89
PLYWOOD PANNEL	1	700	0,020	2,5	20	700
WINDOW	6	2500	0,010	1	1	150
WINDOW PANELS	6	700	0,020	2,5	2,5	288
ACOUSTIC CEILING	2	36	0,025	2,5	2,5	11
				TOTAL		**3238**
				LOAD, q_{ROOF}		**0,64KN/M^2**

PERMANENT LOAD / TABLE 02 / DEADLOAD PRATT TRUSS

DESCRIPTION	NO. (PS)	DENSITY (KG/M^3)	HEIGHT (M)	WIDTH (M)	LENGTH (M)	MASS (KG)
UPPER FLANGE	1	700	0,2	0,09	20	252
INNER TRUSS	8	700	0,09	0,09	4,3	195
LOWER FLANGER	1	700	0,2	0,09	20	252
CROSS BEAM	24	700	0,2	0,09	5	756
				TOTAL		**1455**
				LOAD, Q_{CON}		**14,29KN/M^2**



VARIABLE LOAD / WIND

As part of the variable loads stressing the structure, we look into the snow and wind loads as the two variables bringing loads onto the roof structure, which we in this calculation are investigating.
In terms of the design of the roof structure, the inclination is set to 5 degrees, which classifies it as a flat roof. [EUROCODE-1]. To secure the durability and decrease the mainenance of the adjacent vertical wall and windows, the roof have been designed in a manner, so it is encircled by a parapet. Additional the implementation of the parapet do also posses aesthetical reasons, as it conceals the cone-shaped windows that sticks out on top of the roof and prevent them to be seen from the exterior, allowing the building to appear in its sharp-edgy form, being a constrast to the dynamic and organis landscape, and emphasising the constrast between the man-made and natural environment.

Windloads varies over time and acts as a compression force on closed construction's exterior facades [EUROCODE-1]. The wind load is determined by the peak velocity pressure and basic wind velocity.The peak velocity pressure is an expression describing the maximum surface load, which the wind from a given direction can produce on site. The basic wind velocity for Finland is determined to 21 m/s [SFS-EN 1991-1-4, Annex 5, 2018]. In the determination of the bacis wind velocity, the wind orientation and season are influencing parameters. As the dominating wind direction in the area of Rovaniemi is set from South, a orientation factor of 0,8 is given [TEKNISK STÅBI - TAB. 1a]. Looking at the seasonal factor, it is estimated that the building is occupied all year, which gives a factor of 1,0, being the highest given factor. [TEKNISK STÅBI - TAB. 1b]. How to calculate the basic wind speed is expressed through the following equation:

$$v_b = v_{b0} \cdot C_{season} \cdot v_{b,0}$$

Additional the terrain category is determined on the basis of the characteristic of the site, that influence the wind. In the case of the crematorium, terrain category 3 is selected, as the site is classified as an area with regular cover og vegetation consisting of permanent forest. [EUROCODE-1].
The terrain category and combination with the building height defines the exposure factor of the building in terms of the wind. When finding these parameters a peak velocity pressure can be calculated from the following equation:

$$q_p(z) = C_e(z) \cdot 0{,}613 \cdot {v_b}^2$$

$$Q_{lw} = A_f \cdot C_{pe,10} \cdot q_p(z)$$

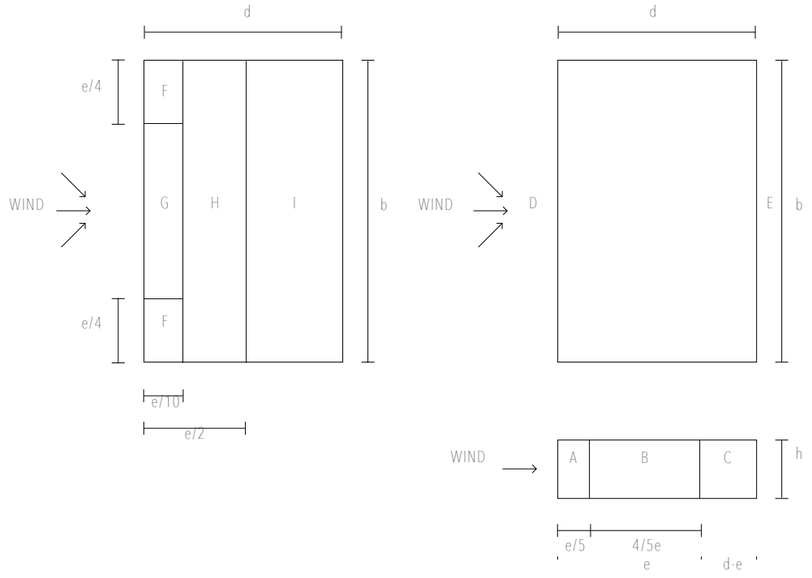
From our knowlegde of the peak velocity pressure and the formfactor the horisontal load of the roof and vertical load of the walls can be found. For the form factor we take $C_{pe,10}$ into consideration, as we look into the overall load bearing construction. In terms of the wind load influencing and stressing the construction tree possible load scenarios are found, a surface load on the facade turning towards south, creating compression. A surface load on the facade towards north, creating tension and at last a load on the roof surface, creating tension

VARIABLE WIND LOAD / TABLE 03 / BASIS OF CALCULATION

DESCRIPTION	VALUE	UNITS	VALUE	UNIT	REFERENCES
SITE BASIC WIND SPEED $V_{b,0}$			21	M/S	EUROCODE
DIRECTION C_{DIR}			0.8		EUROCODE
SEASON C_{SEASON}			1.0		EUROCODE
BASIC WIND SPEED V_b			16.8	M/S	EUROCODE
TERRAIN CATEGORY			III		EUROCODE
BUILDING HEIGHT H			6	M	EUROCODE
EXPOSURE FACTOR C_e			1.2		EUROCODE
ROUGHNESS LENGTH, z_0			0,3	M	EUROCODE
TERRAIN FACTOR, K_r			0,2153		EUROCODE
AIR DENSITY			1,25	KG/M^3	EUROCODE
PEAK VELOCITY PRESSURE $q_p(z)$			0.22	M/S	EUROCODE

VARIABLE WIND LOAD / TABLE 04 / BASIC WIND SPEED

DESCRIPTION	AREA A_f	SHAPEFACTOR $C_{pe,10}$ COMPRESSION		SHAPEFACTOR $C_{pe,10}$ SUCTION		LOAD
ZONE A	14,4		1,2		-0,19	KN/M2
ZONE B	57,6		0,8		-0,13	KN/M2
ZONE C	48		0,5		-0,08	KN/M2
ZONE D	156	+0,8			0,13	KN/M2
ZONE E	156		0,5		-0,08	KN/M2
ZONE F	3,6		1,4		-0,22	KN/M2
ZONE G	24		0,9		-0,14	KN/M2
ZONE H	124,8		0,7		-0,11	KN/M2
ZONE I	364	+0,2			-0,03	KN/M2



VARIABLE LOAD / SNOW LOAD

Another load which determines the dimension on the truss, are the variable snowloads, this is calulated by the formula below:

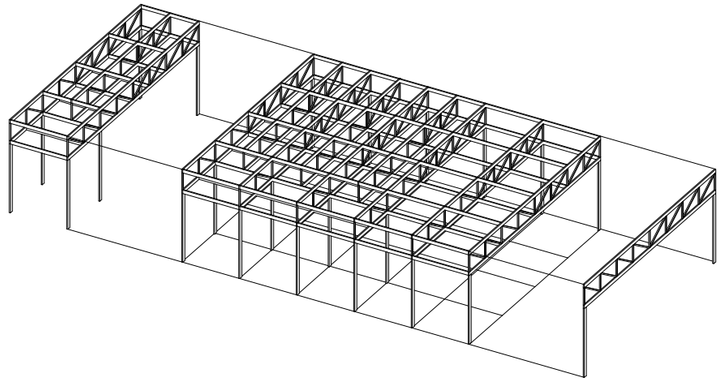
$$s = \mu_i \cdot C_e \cdot C_t \cdot s_k$$

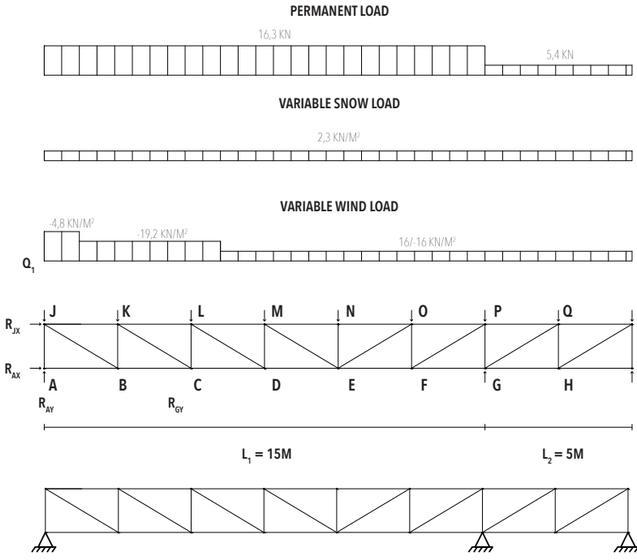
VARIABLE SNOW LOAD / TABLE 05 / BASIS OF CALCULATIONS

DESCRIPTION	VALUE	UNIT	REFERENCES
SHAPE FACTOR μ_i	0.8		EUROCODE 1 - TAB. 5.2
EXPOSED COEFFICIENT C_e	1.3	W/M²K	EUROCODE 1 - TAB. 5.1
THERMAL FACTOR C_t	1		EUROCODE 1
CHARACTERISTIC TERRITORY VALUE s_k	2.23	kN/M²	EUROCODE 1 - CHA. 4.1
SNOW LOAD, s	**2,08**	**kN/M²**	

LOADS / TABLE 06 / LOADS IN EACH POINT

DESCRIPTION	PERMANENT LOAD $P_{ROOF} + P_{TRUSS}$	VARIABLE SNOW LOAD Q_{SNOW}	VARIABLE WIND LOAD Q_{WIND}	LOAD IN POINT [KN/M²]	
R_{JY}	1,69	6,50	-0,87	7,73	KN/M
R_{KY}	3,38	13,0	-1,37	15,69	KN/M
R_{LY}	3,38	13,0	-1,27	15,74	KN/M
R_{MY}	3,38	13,0	-0,39	15,18	KN/M
R_{NY}	3,38	13,0	-0,39	16,18	KN/M
R_{OY}	3,38	13,0	-0,39	16,18	KN/M
R_{PY}	3,38	13,0	-0,39	16,18	KN/M
R_{QY}	3,38	13,0	-0,39	16,18	KN/M
R_{RY}	1,69	6,50	-0,20	8,09	KN/M
R_{JX}			1,50	1,50	KN/M
R_{AX}			1,50	1,50	KN/M
R_{RX}			-0,94	-0,94	KN/M
R_{IX}			-0,94	-0,94	KN/M





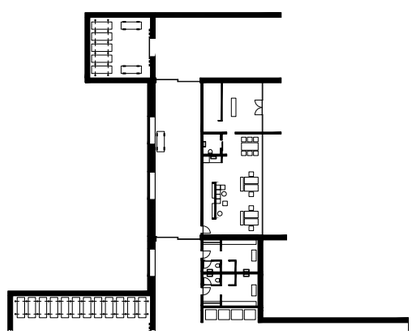
DIMENSIONS OF THE ELEMENTS / TABLE 05

DESCRIPTION	WIDTH (MM)	HEIGHT (MM)	MATERIAL (TYPE)	RATIO	CASE (TYPE)
5x5M GRID					
FLANGE	115	266	C24	0.93	P_{TRUSS-}
INNER TRUSS / TYPE 01	65	65	ST	0.86	$COMB_2$
INNER TRUSS / TYPE 02	90	90	ST	0.70	$COMB_2$
2,5x2,5M GRID					
FLANGE	90	266	C24	0.74	$COMB_2$
INNER TRUSS / TYPE 01	50	50	ST	0.74	$COMB_2$
INNER TRUSS / TYPE 02	60	60	ST	0.61	$COMB_2$

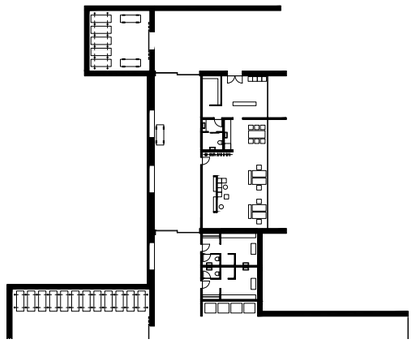
PLANS - RECEPTION & URN CHAPEL
ITERATIONS ON PLAN SOLUTIONS

IDEATION

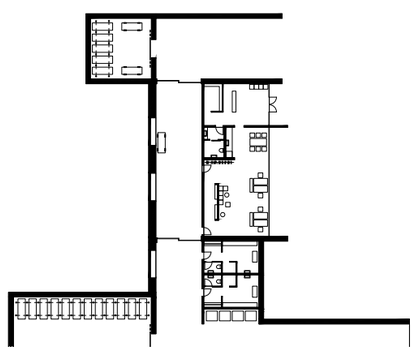
Ill. 139 - STAFF FACILITIES - ITERATION ON COMMON SPACE



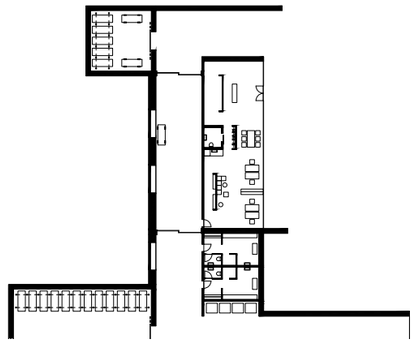
Ill. 140 - STAFF FACILITIES - ITERATION ON ENTRANCE AND RECEPTION AREA



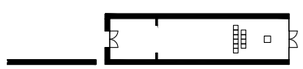
Ill. 141 - STAFF FACILITIES - ITERATION ON PANTRY AND COMMON SPACE



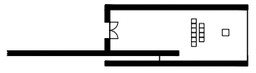
Ill. 142 - STAFF FACILITIES - ITERATION ON ENTRANCE AND RECEPTION AREA



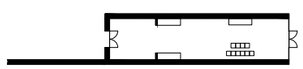
Ill. 143 - 1. URN CHAPEL WITH IMPLEMENTATION OF WALL ELEMENTS



Ill. 144 - URN CHAPEL WITH A CONTINUOS WALL ELEMENT

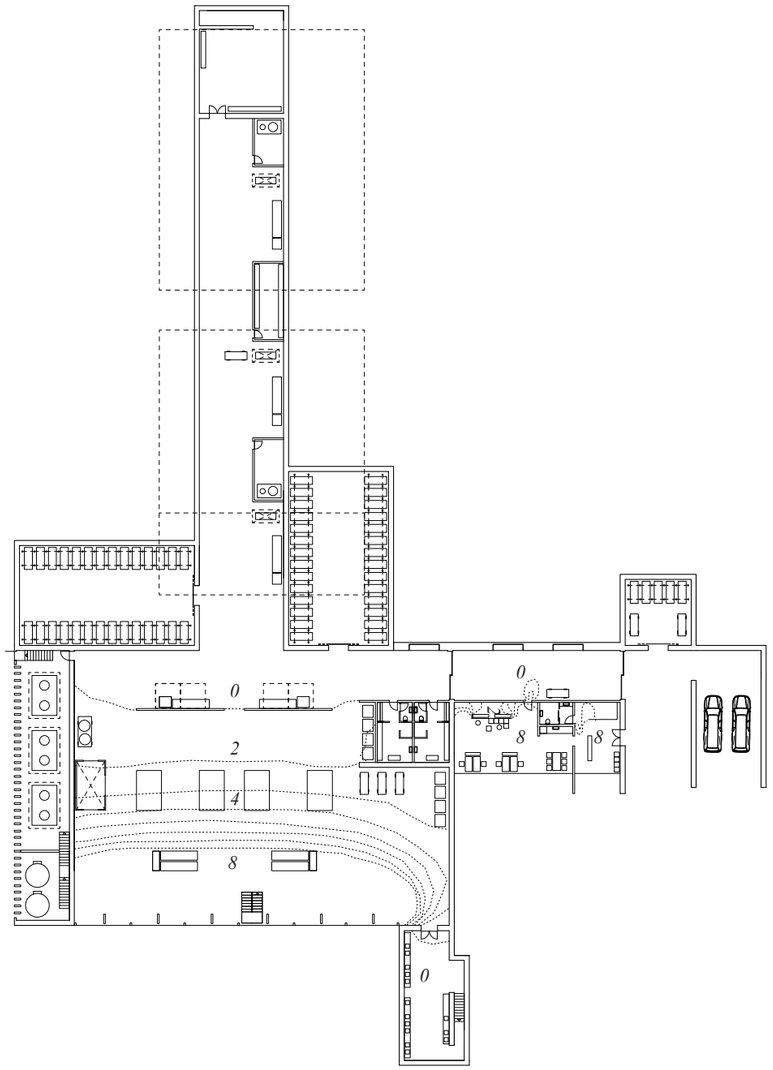


Ill. 145 - URN CHAPEL WITH A CONTINUOS FLOW

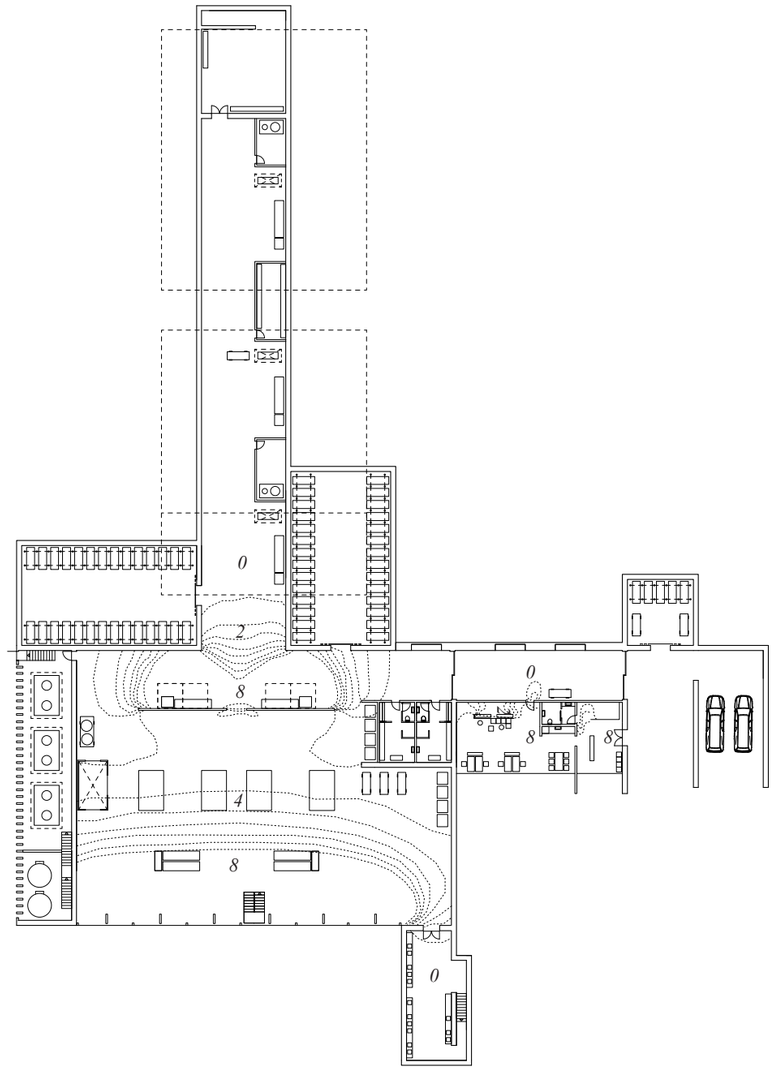


Ill. 146 - URN CHAPEL WITH A FRAMED VIEW

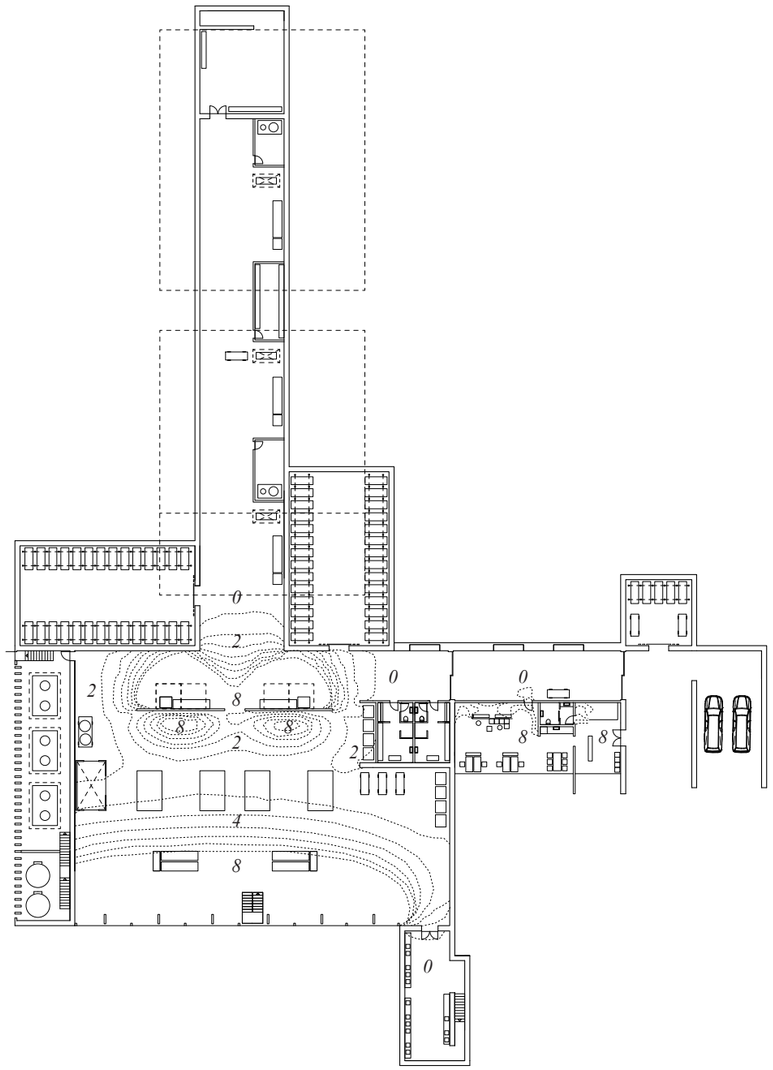
SPATIAL DETAILING - STAFF FACILITIES
DAYLIGHT
IDEATION



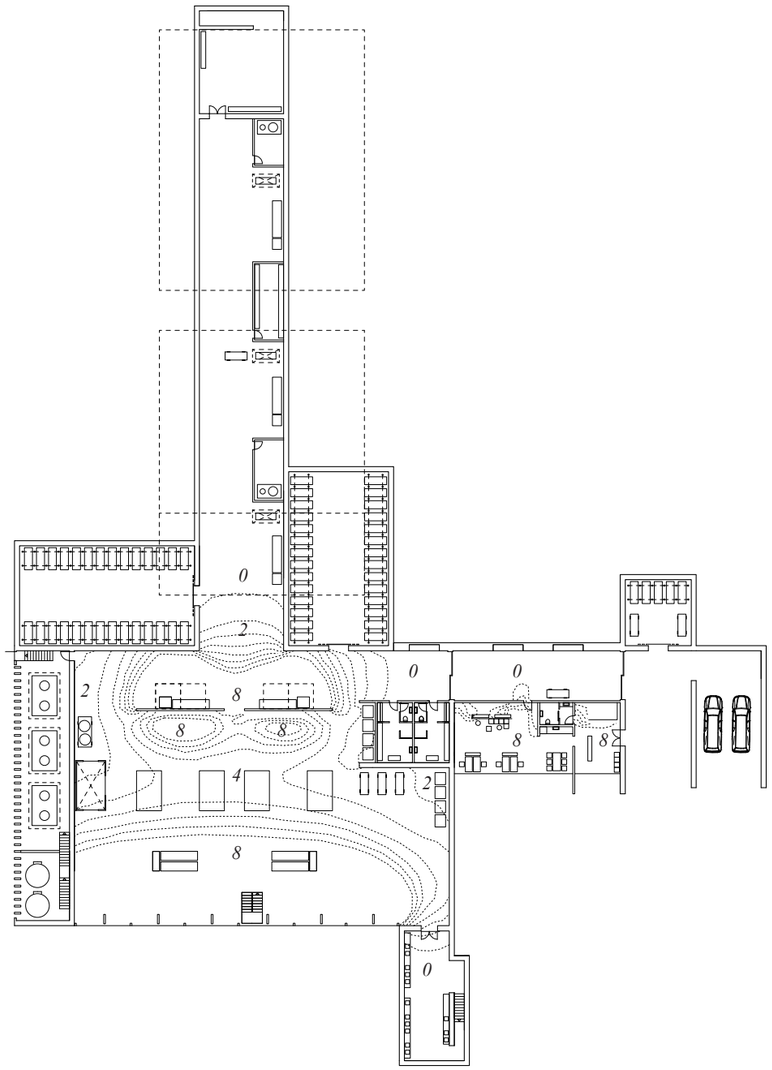
▲ III. 147 - DAYLIGHT STUDIES WITH CONCRETE SURFACES.



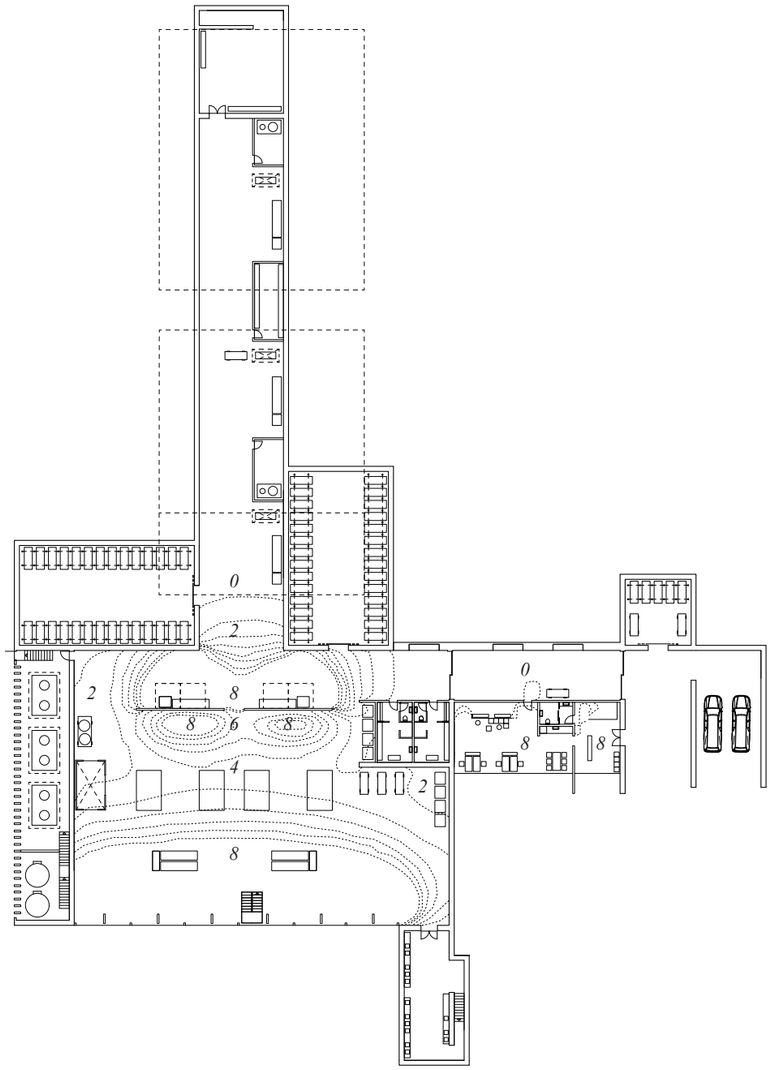
▲ III. 148 - DAYLIGHT STUDIES WITH CONCRETE SURFACES AND A ROOF WINDOWS PLACED BEHIND THE WALLS, SEPERATIING THE WORKSHOP AREA FROM HAVING A DIRECT VIEW TOWARDS THE OVENS



▲ Ill. 149 - DAYLIGHT STUDIES WITH CONCRETE SURFACES AND DETTACHED WALLS TO THE ROOF. THE VIEW IS PARTLY SEPERATED, BUT ALLOW THE DAYLIGHT TO SPREAD AROUND THE WORKSHOP AREA.



▲ Ill. 150 - DAYLIGHT STUDIES WITH FURTHER DEVELOPMENTS ON ILL. 140 WITH GYPSON SURFACES INSTEAD.



▲ Ill. 151 - DAYLIGHT STUDIES WITH WOODEN SURFACES INSTED OS GYPSON OR CONCRETE.

CHAPTER 6
CONCLUSION

Thoughts on how to work with the landscape have evolved on whether the building composition should “fall over” the landscape, be situated on top of it or be deeply embedded in in. The ideation chapter illustrates how the programme is distributed through form, flow an function, addressing tectonic qualities from a knowledge based upon Gesture & Principles to enhance an architecture that act as a product of the landscape and its features.

From the widespread investigations, narrowed down to the final configuration, it can be concluded how the iteration of a rising stereotomic posses aspects from the various other iterations as I possess the strength of the linear flow, in a sharp geometric building mass.

Conceptual design criteria was the driving design method upon the different iterations dealing with a stereotomic section in the sloping landscape in order to stress the intersection with the landscape and earthwork and thereby achieve a place-determined architecture that considers its place. From this approach the presented configurations investigates how a linear flow can be dealt with to address the different stages the surviving relatives will go through as they process their loss in the Rituals of Transition. While baring in mind, advantages and disadvantages of the tree configurations, the linear flow and separated building mass indicates a strong narrative to the story of a linear course, addressing the chronological order of the rituals and connection to the landscape. This concept show how the building works in continuity with the earth, as it stresses the connection to the landscape. It does not melt completely into the landscape, but turns into small statues that stand out in the landscape. The concept takes into account a one-way course that does not intersect with one of the other rituals. Divide the two functions in a linear course above and below the ground. Minor iterations upon the separated building masses determines the final outline and layout, linear landscape wall and the link to the surrounding natural environment.

The final outcome considers maintenance toward a destination, an embracing shell, a cut in the wall and the separation of each building mass. As this point of departure iterations upon spatial gestures and constructive principles led to strict uniform structure that enhances the vertical space that contributes to the feeling of embracement, intimacy and solemness. Iiterations upon uniformity in the exterior expression were conducted, by taking account of the fourth iteration where the landscape wall follows the rhythm and separation of the building complex. When handling the exterior expression, investigations upon the landscape podium clarifies that a width of 5 m accommodate a leading path towards the end destination, adjacent to a wall with a minimum height at 3 m as is relates to the surrounding qualities of the wood.

On the basis of the upshot of configuration 3, before mentioned investigations led to the design process of the different Rituals of Transition. The section for the rituals of final farewell considers the chapels form a perspective on design parameters, within plan solutions, spatial detailing due to light, materials and acoustics - giving a solution that favour enveloping aspects, a separation in entrance an exit, the solemn atmosphere by the distribution of light and sound scattered from materials and structural composition. The same clarification is seen within the section for the crematorium and urn chapel, in order to meet the desired conditions for the rites of interment and memorial rituals. On the contrary, investigations upon the staff area considers the intake of daylight and the distribution of it, since these studies are crucial when designing a workspace providing the staff with visual comfort charactering the work environment below ground.

CHAPTER 7

EPILLOGUE

CONCLUSION

REFLECTION

Ill. 153 - PROJECT SITE ▸

CONCLUSION

As the key motivation within the project has evolved around how to provide an architecture, which establish a platform for the surviving relatives, through the definiton in the usage of the architectural spaces of the crematorium and demands in terms of what these spaces should do to us in our engagement with them. This has initial been sorted out by investigations on rituals patterns and state of mind in the event of Death. - Theory on rituals have stressed a sequential flow in how humans cope with the transition from one thing to another, which also is applicable for the transition from the world of the living to the world of the dead in the event of death, which comes to show in three rituals and their chronological order - rituals of a final-farewell-, interment- and memorial gathering.

To manifest these three sequential rituals in the design of the crematorium, this is expressed in sturdy individual building volumes carving into the topography of the site, from where they also rises towards the continuum of the sky. Being these sturdy masses which carves through the landscape, this emphasises the stereotomic within the architecture and thereby how the enveloping walls belongs to the earth, as they are seen as en continuation of the earth. As a result of these heaverly carving envelope, they becomes a symbol of how the rituals of transitions represent a roothold in how we cope with rituals in the event of Death.

In the arrival to the crematorium, a motivating force has focused on how to form a design for the crematorium, in a way that it would condition the surviving relatives in their engagement with the crematorium as they go through the different stages within the rituals of transition. This condition of the surviving relatives is helped by a landscape wall, which combined with the adjacent building volumes forms the foundation of a landscape podium. In the iterations of this landscape podium parameters have focused on iterations on its course, dimensions and how it preclude its surroundings as these combined should enhance how this podium could be a leading element, which conditions and prepare the minds of the surviving relative in their arrival to the krematorium. We see a great importance in conditioning people, for that reason, that it should soften the transition and preparing stage between the world of the dead and living, which also is emphasised in the investigations, highlighting how time is big in the landscape, which provides an idea of how the landscape is a setting which provide space for the surviving relatives to unfold their reflections as they have experienced a break in existence and how this gives reason for thoughts and consideration which the events of Death breeds. Hence this perspective of how time in the landscape is big, this have influenced the location of the crematorium, while being placed in the untouched forest areas, which lays in the periphery of the bustling city of Rovaniemi, which places the crematorium in the intersection between the untouched natural and man-made environment.

In the development of the gathering hall attention has focused on the relationship between the exterior and interior, as this room gives priority to the surviving relatives and the outside world in their moments of grief, while view to the exterior are dominating the space of the gathering halls. From this it provides the surviving relatives to use the space of the gathering hall to contemplation while absorbing nature and find peace in it, for their own healing process.

On the contrary to the gathering hall, is the chapel. In the design a priority of this room has evolved around how attention should be place at the deceased at all times, when entering the chapel. To achieve such all communication to the outside world has been cut off Specific selected point have been chosen within the roof structure, that would helps penetrate diffuse light down to the space of the chapel, liting up the coffin, while concealing the mourning congregation. By being cut off to from the outside world, also leaves the space of the chapel in quietness. While the walls within the crematorium cuts off view to the exterior, it simultaneously embraces the surviving relatives as they enter it. Adding to this embracing character of the space of the chapel is helped by the sound, as oblique copulas from the ceiling spreads the sound within the space in multiple direction which therefore enhances a feeling of being embraced by the sound.

From this embracement helped by physical elements from the treatment of the surrounding wall and non-physical elements such as light and sound, we intend to form a space which inspires a communal feeling, as se face Death.

The atmospheric contrasts between the space of the chapel and gathering hall are processed in the interior experience of the two spaces, where the space of the chapels relates to the solemn atmosphere, as it reaches towards the continuum of the sky in its way of drawing light down into the space. While the gathering hall reflects being earthbounded to its surrounding in how it posses the features of absorbing nature, through the framing of it.

As the next stage in the process of death, this is dealt with in the crematorium. Within the crematorium and its related spaces opposites are dealt with, as the design of the crematorium both implements exposure to the surroundings and a solid enclosing shall. The implementation of these opposites exists in how the rituals of interment, within the crematorium is about finding a balance on what to keep attention towards, in this case both the deceased and surviving relatives.

To also accommodate the taboo of Death, in this case the process of cremation, the design of the crematorium does not try to hide away the processes of cremation as the building for the crematorium in some directions offer exposure. Although the design offers an exposure it still tries to honor the rituals and process in regards to cremation, i a way so that the surviving relatives are not affect by outside interference. In the way that this has been dealt with is expressed in the proportions of room, the placement of the ovens and the structural system.

As the last part of the three rituals the urn chapels establish the setting of this. As the Urn chapels are defined to behave as the last part of the rituals of transition being the rituals of memorial, this becomes essential as this also marks that the deceased no longer exists around us in their bodily shape, meaning that the only way we can keep our relationship with the deceased is through our memories of them. To establish a setting which would offer space for memories to take place, the detailing and ornamentation of the interior within the urn chapel are kept to a minimum, as the design of the urn chapel shouldn't be experienced as dominating but instead modest. As a feature, that should promote wander in our memories and thoughts, the placement of opening towards the nature should act as a continuum, the surviving relatives could feel drawn into for a moment to surrender themselves to their thought and memories.

As highlighted in our motivation, the project have evolved around how different events in our lives, place diversity in the functions of a space and how it conditions us as we engages with it.

In the events of Death and how the surviving relatives process it, we looked into the atmospheric settings within the architecture, using the theories of Pallasmas and Böhme as a guideline that should single out the important aspects when working with atmosphere - light, sound, materials, dimensions, textures and courses, and how they all influence our senses in the understanding of architecture.

Throughout the development of the project, the design process have centered on integrating a tectonics approach. To get at the tectonics and its understanding, both methods and theories on how to deal with tectonics have influenced the tectonic design of the crematorium.

From a perspective on how to work with tectonics as a method, the application of Gesture & Principles, from "A Place to Sit - Tectonics as A Method in Architectural Education", [Hvejsel, Marie, 2014] have introduced how tectonic can exists in the contexts which the architecture is situated within. So to speak the Gestures within the landscape have attributed in defining the architectural concept, while being consistent with principles, which establishes technical aspects that would support the expression of the Gestures projected onto the architecture. From this perspective and looking at the outcome of the design for the crematorium, the method of Gestures & principles have played a part in the ongoing initial iterations of the design process, in the determination of the overall spatial experience helped by the concept of the constructive principles.

In further understandings of tectonics, this has been helped by the theory of Semper, from his definition of stereotomic and tectonics, related to what belong to the earth and what separates itself from the earth.

REFLECTION

The taboo of Death has throughout the project been a motive force in regards to working with a design for a crematorium, as this should articulate the taboo of it, through a innovative design approach on how to cope with Death in our contemporary society from impressions and experiences giving from the encounter with it. Due to such the placement of the crematorium have been of high priority, as this should give rise to frequent encounters and thereby accommodate the taboo of Death, as people would be faced with the realities of Death, as they through observation of others could form an opinion to Death. Therefore, we think critical about whether the present placement of the crematorium in the periphery can accommodate this vision. Being placed in the periphery of Rovaniemi, the crematorium should also draw benefit from laying in the intersection of the man-made and natural environment. On account of this placement, visioned how the nature would play an active part in how the surviving relatives can draw advantage of the nature in their grieving moments and processes.

As the project of the crematorium takes among others, Nordic Architecture as its point of departure, culture places a great part in how architecture should be understood, as this forms the settings of how we live and are gathered. From this point of view we ask ourselves how this innovative way of coping with Death can fit into our cultural patterns, and how can we promote how people would engage with the built environment of the crematorium from a cultural perspective? As we introduce an element of how to cope with Death we furthermore ask ourselves if the settings we have established in the event of Death in the design of the crematorium is general enhough in the sense that these setting would allows room for the surviving relatives to leave their own mark as they cope with Death?

As the design for the crematorium evolves around a tectonic thinking by the application of first and foremost Gestures & Principles, this method towards tectonics has helped to an ideation of the project as it has generated spatial and constructive concepts drawn from the inspiration of the site. As this method has set forward a notion for the project to be develop on, we place questions on how this generation of spatial and constructive qualities can be appropriate to the design for the crematorium and the demand we place on the functionality of the interiors and exteriors and furthermore how these two spaces should affect us in the process of Death. From these questions and when all is said and done we wonder if this application of Gestures and Principles can be a limitation to the design of the crematorium and its specific events and demands, due to how this method is bound to the site. Therefore further wonderments have evolved around how we as architects can be cable of choosing the right spatial gestures and constructive principles that through is match to the typology of a crematorium would unfold the architectural potential of the architecture of a crematorium.
As we place questions on whether these spatial and constructive qualites include in the design of the creamtorium are of benefit to the needs a crematorium places in the usage and experience of it. As a result of this we see a strength in how the merging between the tectonic method of Gesturs and Principles and the Integrated Design Process would assist in identifying the settings which we establish in the design of the crematorium as the Integrated design process thorugh its iterations and phases helps to form the architecture in a way so it would meets the demand of the different typologies.

CHAPTER 8

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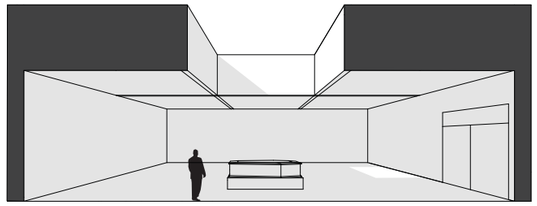
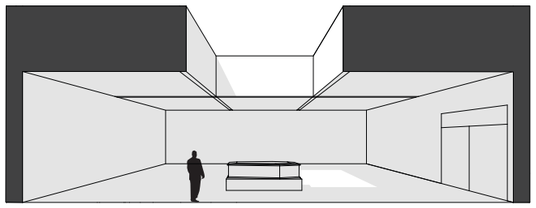
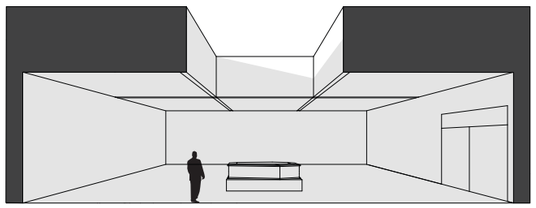
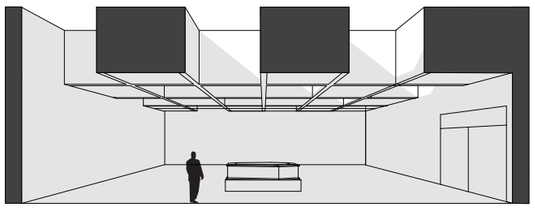
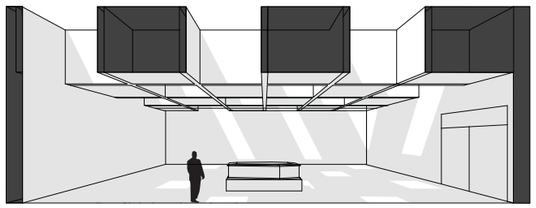
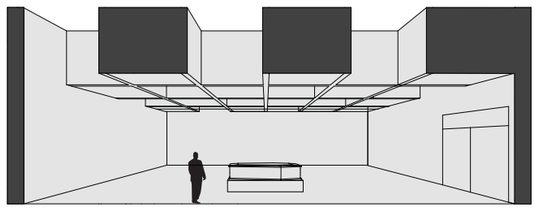
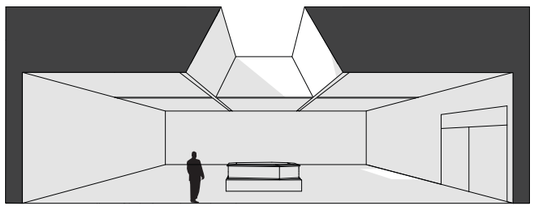
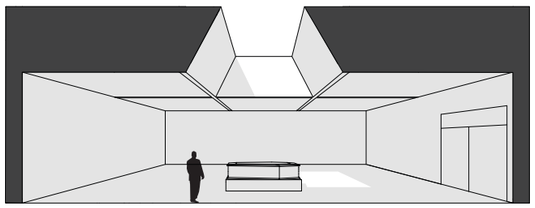
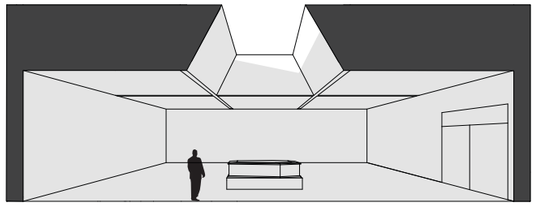
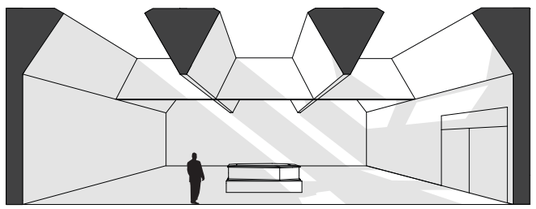
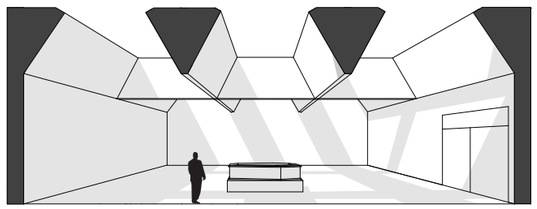
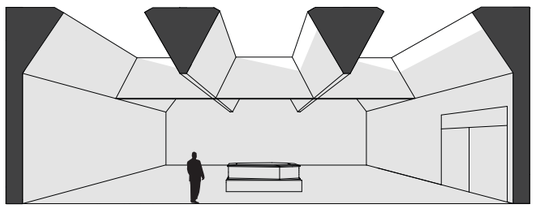
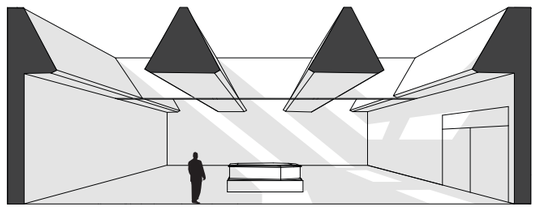
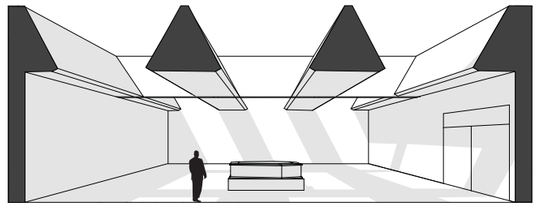
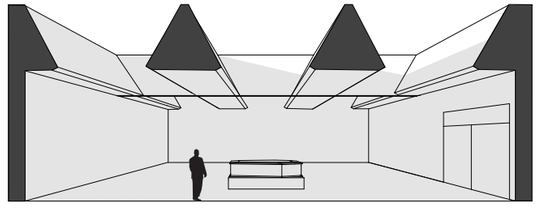
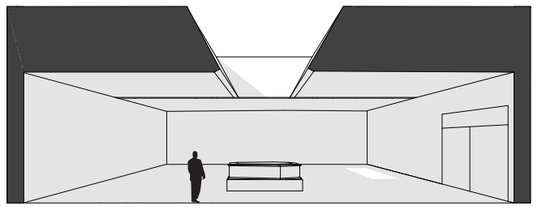
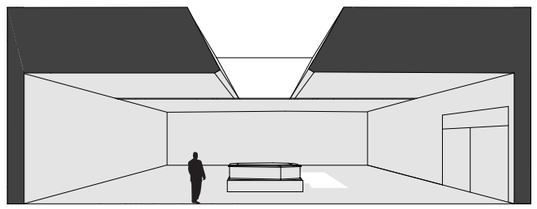
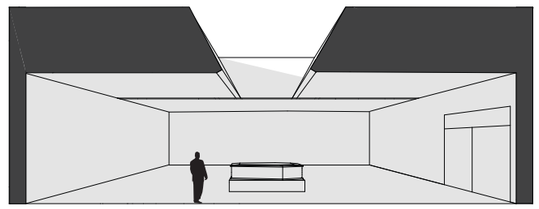
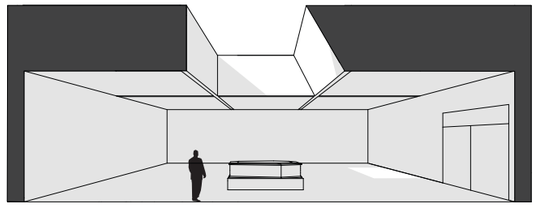
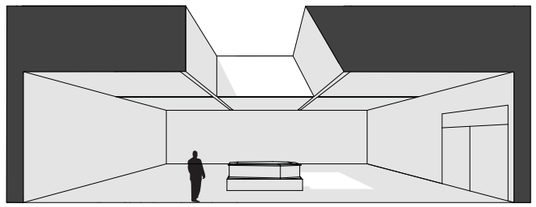
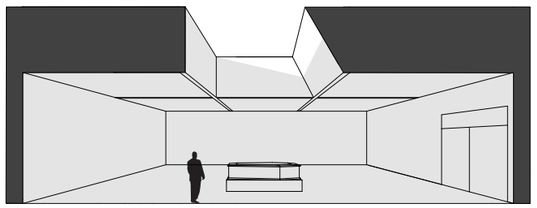
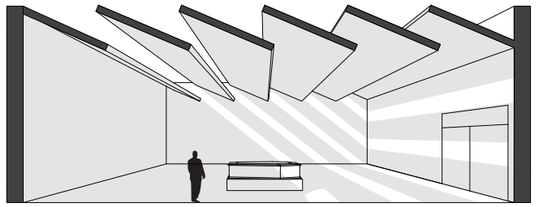
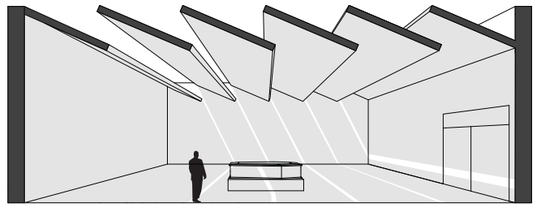
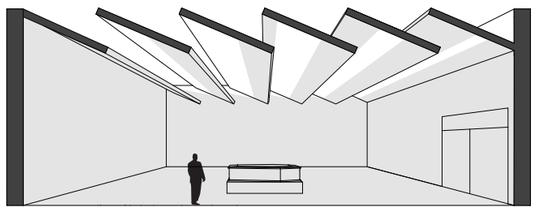
ILLUSTRATION

CHAPTER 9

ANNEX

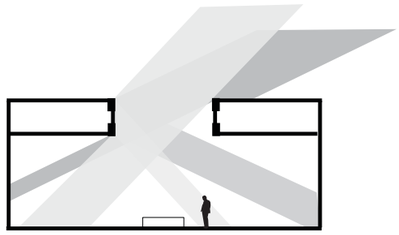













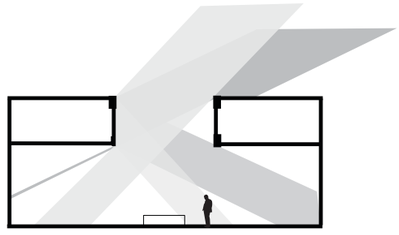
ANNEX 1

SUN STUDIES ON SITE AND WITHIN THE CHAPEL

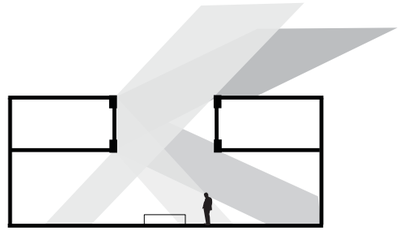
1. CENTRALISED OPENING WITH A HEIGHT OF 1,5 M



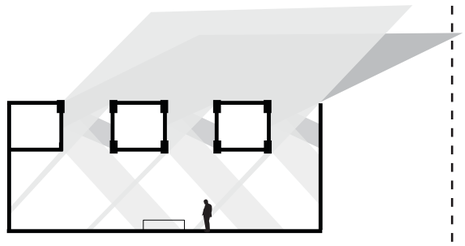
2. CENTRALISED OPENING WITH A HEIGHT OF 2 M



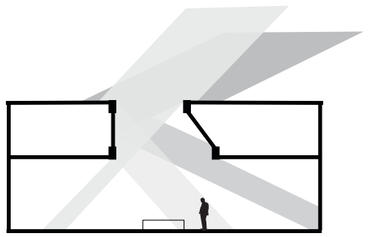
3. CENTRALISED OPENING WITH A HEIGHT OF 2,5 M



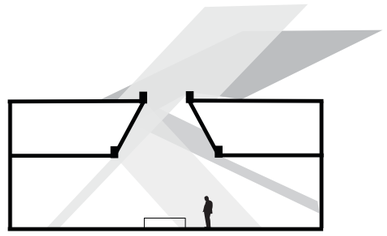
4. SCATTERED OPENINGS WITH A HEIGHT OF 2 M



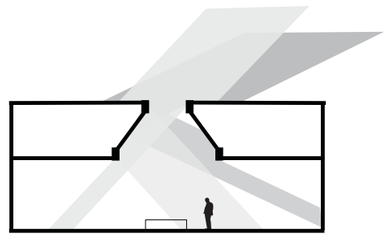
5. CENTRALISED OPENING WITH AN ANGLE INWARDS ON THE SOUTHERN SIDE



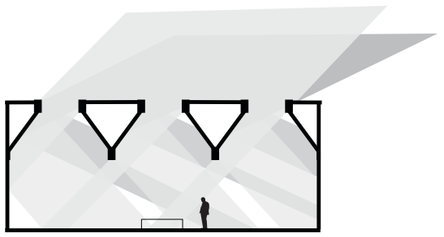
6. CENTRALISED CONE OPENING WITH BEAMS DEFINING INTAKE



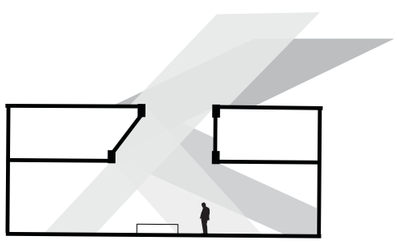
7. CENTRALISED OPENING WITH A CONE SHAPE



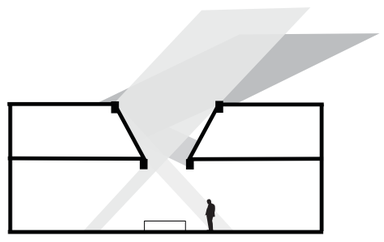
8. SCATTERED OPENINGS WITH A CONE SHAPE



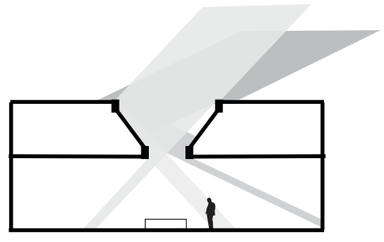
9. CENTRALISED OPENING WITH AN ANGLE INWARDS ON THE NORTHERN SIDE



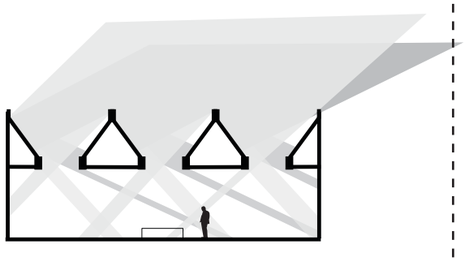
10. CENTRALISED FLIPPED CONE OPENING WITH BEAMS DEFINING INTAKE

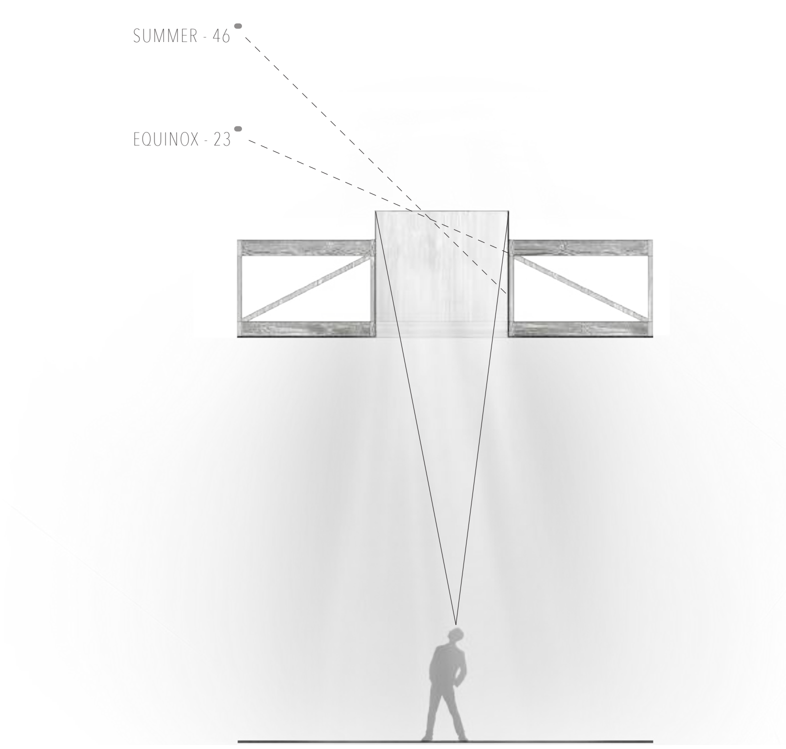


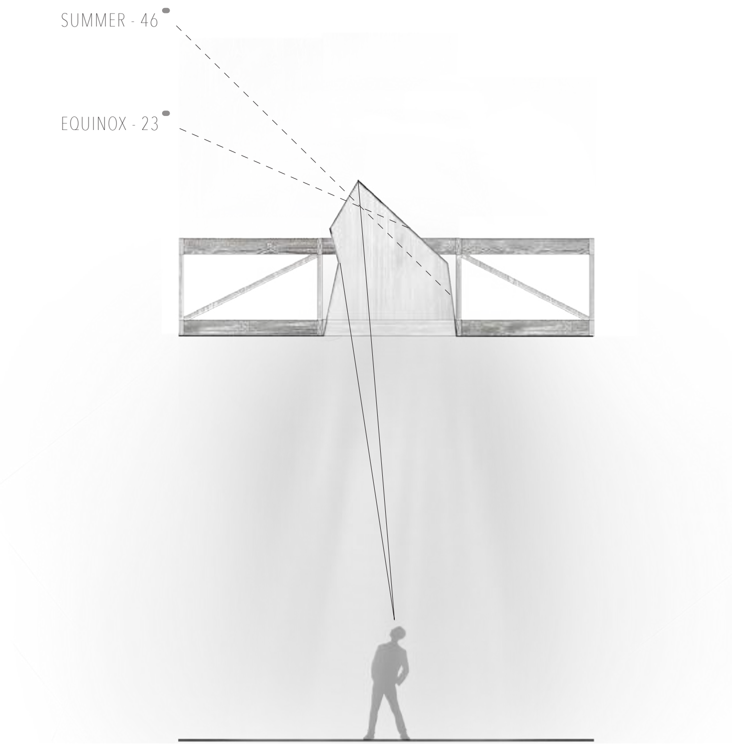
11. CENTRALISED OPENING WITH A FLIPPED CONE SHAPE

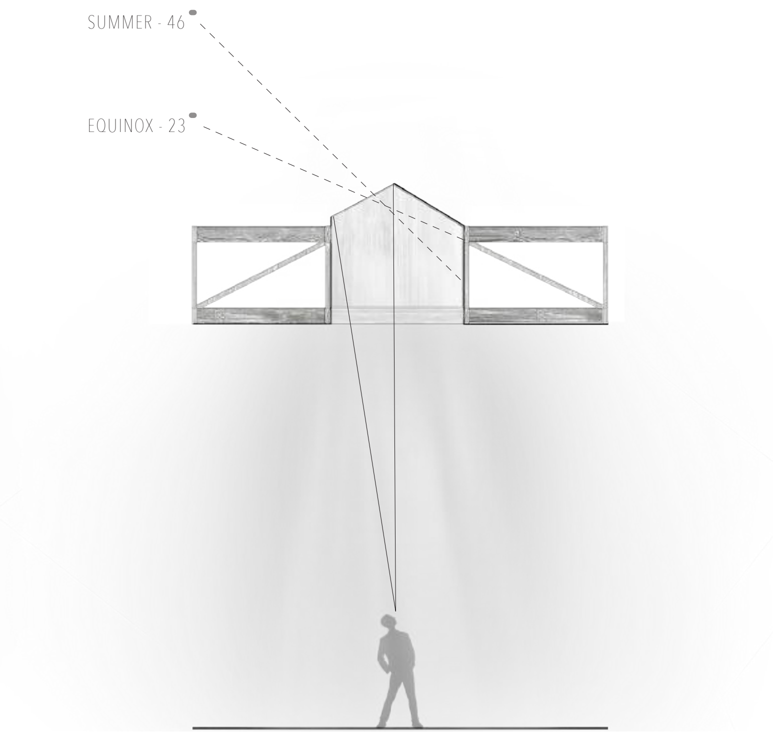


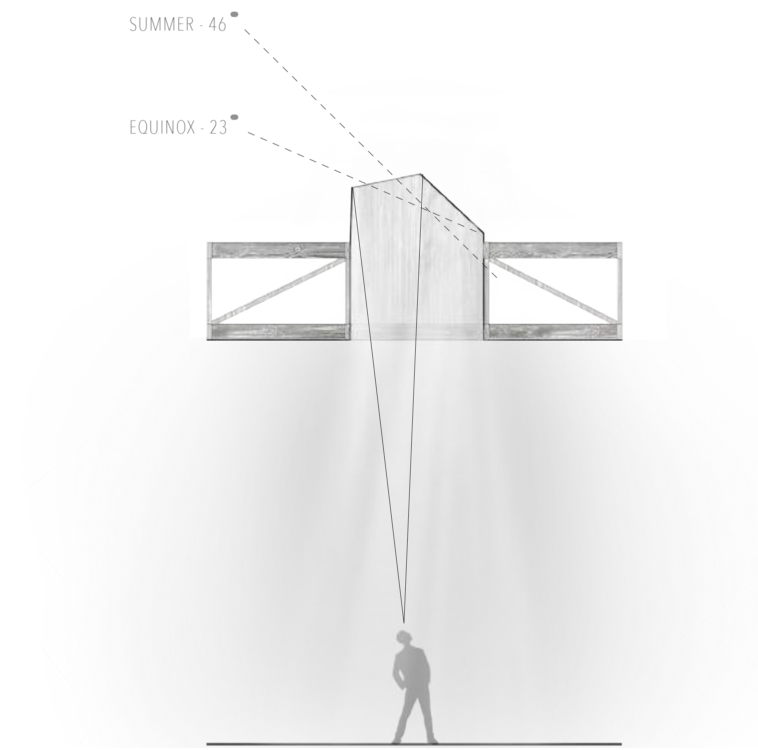
12. SCATTERED OPENINGS WITH A FLIPPED CONE SHAPE

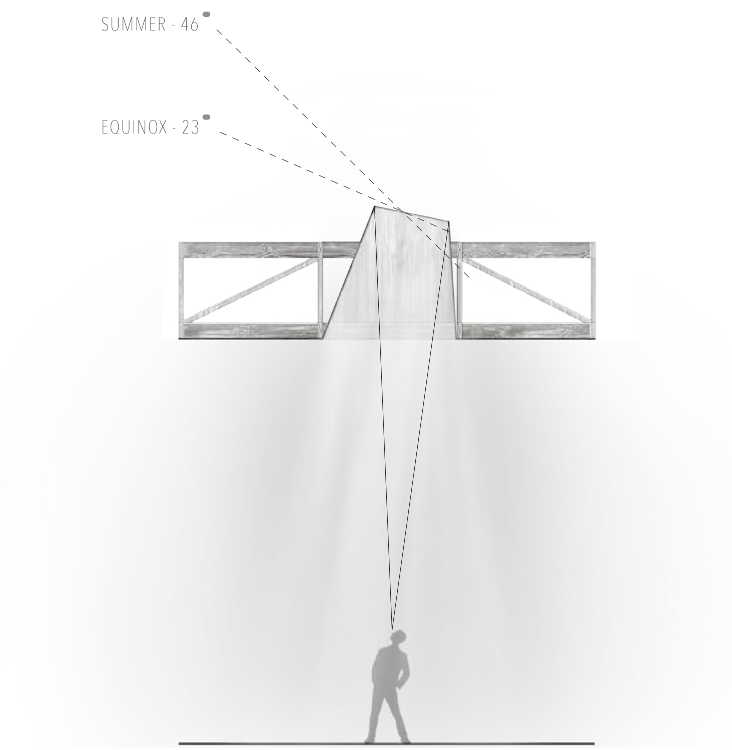


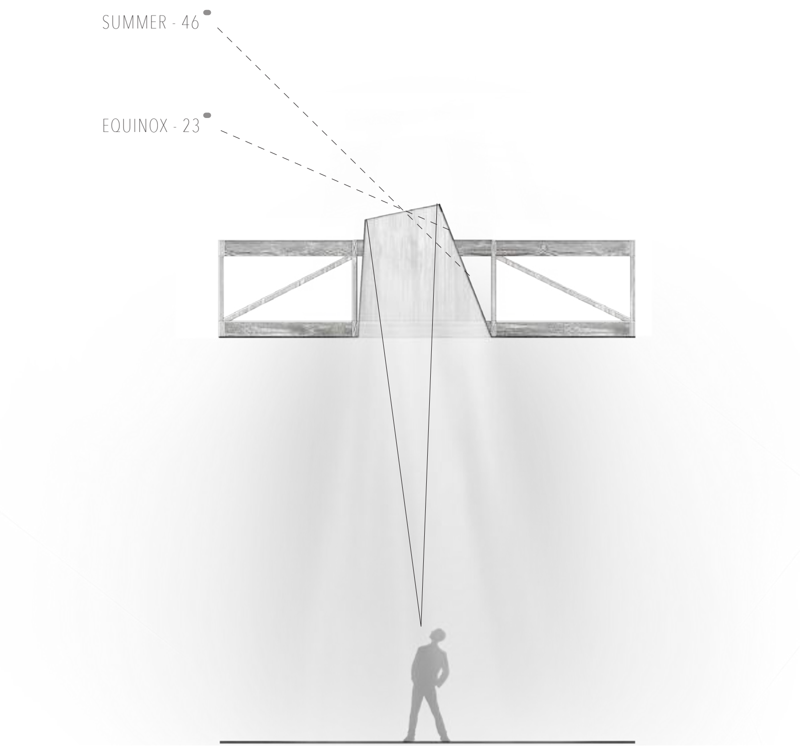

SUMMER - 46°
EQUINOX - 23°


SUMMER - 46°
EQUINOX - 23°


SUMMER - 46°
EQUINOX - 23°


SUMMER - 46°
EQUINOX - 23°


SUMMER - 46°
EQUINOX - 23°


SUMMER - 46°
EQUINOX - 23°

ANNEX 2

WIND ANALYSIS ON CONFIGURATION 3

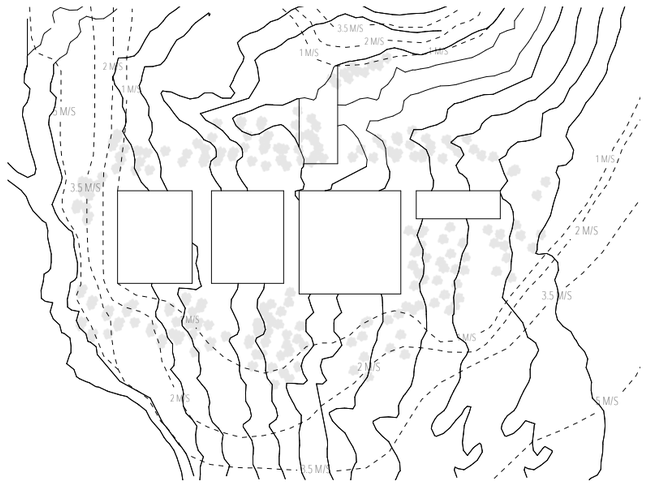
INVESTIGATION

From previous analysis of the macro climate it was found that a primarily southern wind dominated the project site. To grasp a deeper understanding of the specific climate on the site and how the patterns of the climate evolves in a minor and local scale, we look at the micro climate and how this is influenced by the physical opbjects in the ambient context adjacent to the project site.

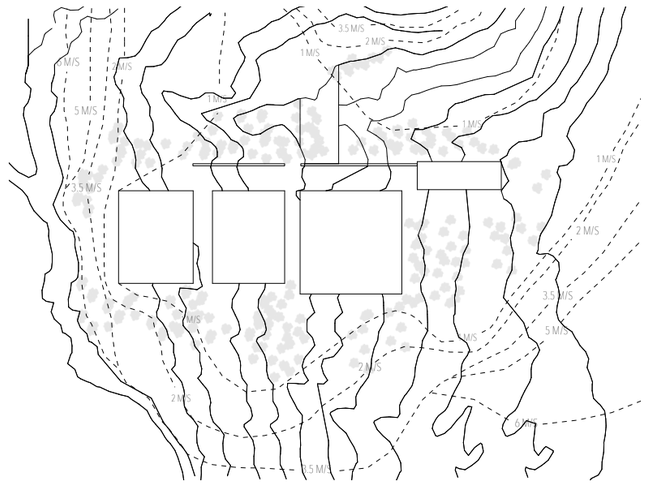
In order to analyse the conditions within the site, simulations have been made in Autodesk Flow Design, on the basis of the average wind velocity 4 m/s during a year, coming from South West. [Windfinder.com, 2018]. With Autodesk Flow Design it is possible to quickly explore how air moves over, between and around the buildings and identify issues that has to be solved early in the design process of the crematorium.

Te following investigation is based upon the gap between the buildings, to verify the distance between the buldings masses and thereby accomondate wind tubulent areas in entrance and outdoor areas.

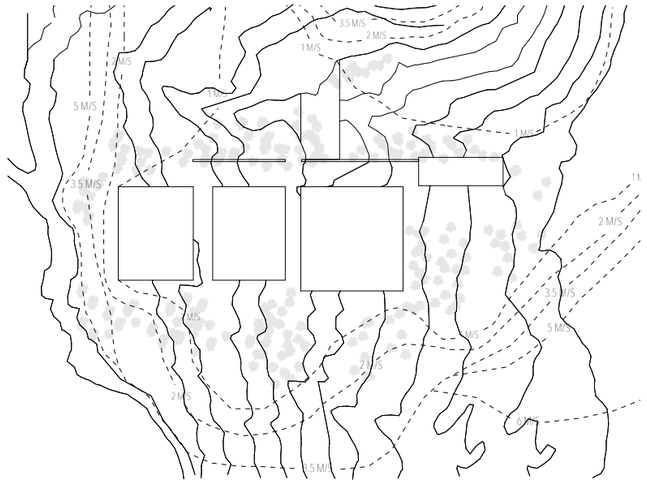
Addtionally the wall next to the landscape podium was added to the model, to see how such implementation willl influence the uban space around the builidng, ecspecially where people enter the building site to visit the crematorium. The safety and comfort of visitors, which is highly dependent on how airflow near and around builings, can thereby be meet and implemented in the design process of the overall building complex.



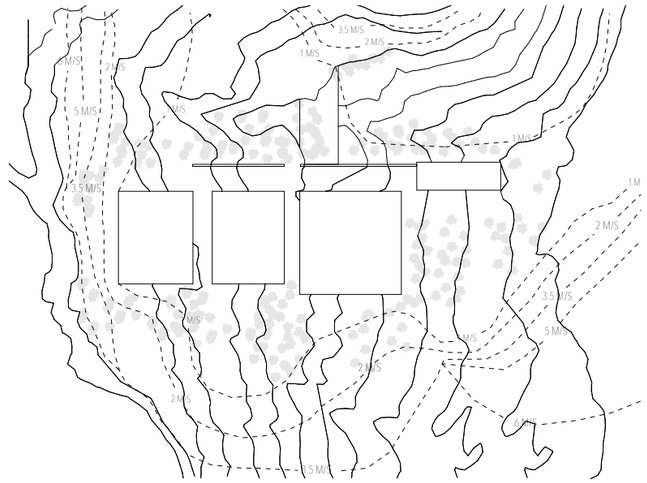
ILL. ITERATION 1 - DISTANCE BETWEEN BUILDINGS



ILL. ITERATION 2 - WALL HEIGHT 1.5 M



ILL. ITERATION 3 - WALL HEIGHT 4 M



ILL. ITERATION 2 - WALL HEIGHT 6 M

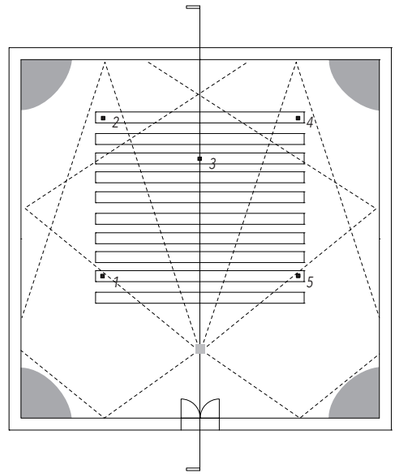
ANNEX 3

TABLE 1.1 - ACOUSTIC PERFORMANCE - CHAPEL

DESCRIPTION	INTERVAL	125 Hz						250 Hz						500 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	0,8	1	1	0,9	0,9	– – – –	1,4	1,4	1,4	1,4	1,4	– – – –	1,8	2	1,9	1,9	1,7
Reverberation Time (T30)	1,5 - 2,5	1,1	1,3	1,4	1,4	1,2	– – – –	2	1,7	1,6	1,7	1,6	– – – –	1,9	1,8	1,9	1,8	1,9
Definition (D50)	50 % <	63	62	67	67	67	– – – –	55	46	55	55	55	– – – –	46	39	49	46	48
Clarity (C50)	-5 - 5	2,4	2,1	3,3	3,1	3,2	– – – –	0,8	0,8	0,8	0,9	0,9	– – – –	-0,7	-2	-0,3	-0,8	-0,3
Strengh (G)	4 - 7,5	11	8	9,8	9,7	11	– – – –	12	10	11	11	13	– – – –	13	11	12	12	13

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			28			– – – –			22			– – – –			17		
	Ceiling			28			– – – –			22			– – – –			17		
Rammed Earth	Wall North			5			– – – –			5			– – – –			5		
Concrete	Floor			1			– – – –			1			– – – –			1		

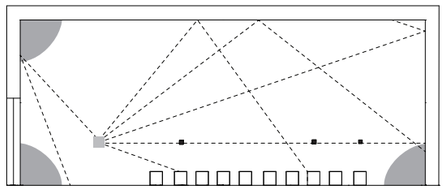


ILL. SQUARE VOL.1 - PLAN

DESCRIPTION	INTERVAL	1000 Hz						4000 Hz						8000 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	3	3,1	3	3,1	3	– – – –	2,4	2,3	2,3	2,2	2,4	– – – –	1,8	1,9	1,8	1,7	1,9
Reverberation Time (T30)	1,5 - 2,5	2,2	2,2	2,2	2,2	22	– – – –	2,1	2	2	2	2	– – – –	1,9	1,8	1,8	1,9	1,8
Definition (D50)	50 % <	34	28	34	31	33	– – – –	42	34	41	40	44	– – – –	47	41	48	46	47
Clarity (C50)	-5 - 5	-3	-4	-2,9	-3,5	-3	– – – –	-1,5	-3	-1,5	-1,8	-1	– – – –	-0,5	-1,6	-0,3	-0,6	-0,4
Strengh (G)	4 - 7,5	15	13	14	14	415	– – – –	14	12	13	13	14	– – – –	14	11	12	12	13

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			9			– – – –			11			– – – –			13		
	Ceiling			9			– – – –			11			– – – –			13		
Rammed Earth	Wall North			8			– – – –			20			– – – –			20		
Concrete	Floor			1			– – – –			2			– – – –			2		

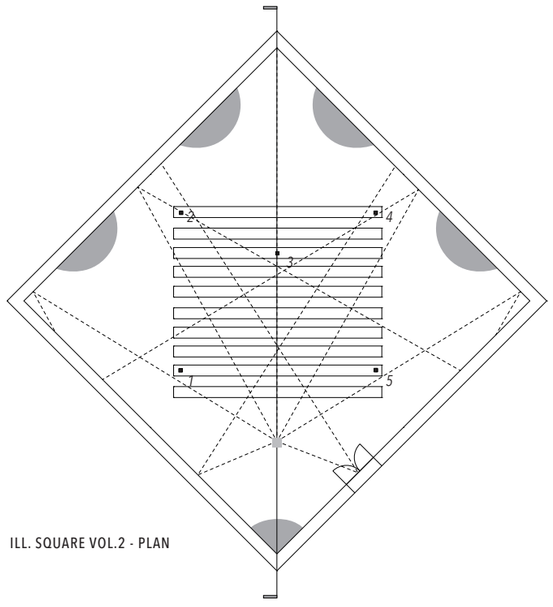


ILL. SQUARE VOL.1 - SECTION

Source
Receiver
Rays of sound
Dead spaces

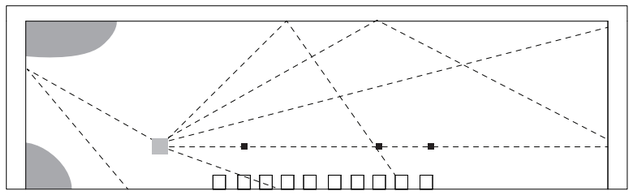
TABLE 1.2 - ACOUSTIC PERFORMANCE - CHAPEL

DESCRIPTION	INTERVAL	125 Hz						250 Hz						500 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	0,2	0,8	6,5	1,8	3	– – – –	4	1,6	5	0,9	0,4	– – – –	3,4	8	1,8	4	4
Reverberation Time (T30)	1,5 - 2,5	3,4	0,9	2,5	1	1,1	– – – –	0,9	1,5	3,4	2	2,9	– – – –	2	3	2,2	1,4	1,8
Definition (D50)	50 % <	95	86	99	72	74	– – – –	85	47	99	83	87	– – – –	73	21	88	44	20
Clarity (C50)	-5 - 5	13	7	33	4	4,5	– – – –	-2	-0,3	26	7	8	– – – –	4,5	-5	8,7	-1	-5
Strengh (G)	4 - 7,5	8	4	20	5	9	– – – –	12	9	21	4	8	– – – –	9	10	22	7	15
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED																		
MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			28			– – – –			22			– – – –			17		
	Ceiling			28			– – – –			22			– – – –			17		
Rammed Earth	Wall North			5			– – – –			5			– – – –			5		
Concrete	Floor			1			– – – –			1			– – – –			1		



ILL. SQUARE VOL.2 - PLAN

DESCRIPTION	INTERVAL	1000 Hz						4000 Hz						8000 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	3	6	0,4	4	0,2	– – – –	2,3	7	6	4,2	0,5	– – – –	3,3	4	6	4,2	1
Reverberation Time (T30)	1,5 - 2,5	3	3	2,4	1,6	3,6	– – – –	1,7	1,2	2,5	2,7	3	– – – –	1,5	2,6	1,8	2	2,5
Definition (D50)	50 % <	30	31	89	19	39	– – – –	40	50	99	26	39	– – – –	90	74	98	25	57
Clarity (C50)	-5 - 5	-8	-3	9	-6	-1	– – – –	-6	0	21	-4	-4	– – – –	-7	4	19	-4	1,3
Strengh (G)	4 - 7,5	9	8	22	11	12	– – – –	15	6	21	11	8	– – – –	8	5	21	9	10
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED																		
MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			9			– – – –			11			– – – –			13		
	Ceiling			9			– – – –			11			– – – –			13		
Rammed Earth	Wall North			8			– – – –			20			– – – –			20		
Concrete	Floor			1			– – – –			2			– – – –			2		



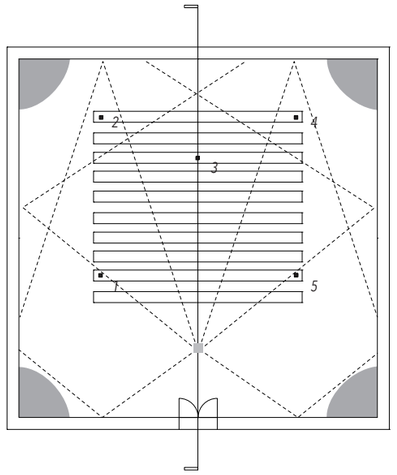
ILL. SQUARE VOL.2 - SECTION

Source
Receiver
Rays of sound
Dead spaces

TABLE 2.1 - ACOUSTIC PERFORMANCE - CHAPEL

DESCRIPTION	INTERVAL	125 Hz						250 Hz						500 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	0,5	1,3	0,4	1,5	0,4	– – – –	0,4	4	0,5	0,2	0,4	– – – –	8	1,8	3,9	5	9,4
Reverberation Time (T30)	1,5 - 2,5	1,5	0,4	1,1	2,4	8,9	– – – –	8	2,1	1,8	3,6	2,9	– – – –	3	1,1	1,5	1,9	2,5
Definition (D50)	50 % <	97	73	90	98	99	– – – –	99	78	99	96	96	– – – –	74	70	89	70	68
Clarity (C50)	-5 - 5	1	4	9,9	-6	10	– – – –	3	5	10	1,4	14	– – – –	4,5	-4	9	3,7	3,4
Strengh (G)	4 - 7,5	7	5,9	6	8,9	7	– – – –	8	5,8	6,5	12	7	– – – –	9	6	7	12	7,5

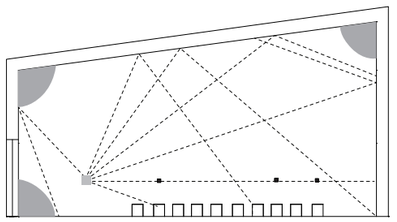
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			28			– – – –			22			– – – –			17		
	Ceiling			28			– – – –			22			– – – –			17		
Rammed Earth	Wall North			5			– – – –			5			– – – –			5		
Concrete	Floor			1			– – – –			1			– – – –			1		



ILL. SQUARE VOL.3 - PLAN

DESCRIPTION	INTERVAL	1000 Hz						4000 Hz						8000 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	0,3	2	3,6	2,9	3	– – – –	1,5	3	2,5	4	3,3	– – – –	0,46	4	0,9	9	0,7
Reverberation Time (T30)	1,5 - 2,5	1,9	1,5	1,2	2,5	1,6	– – – –	2,5	1,7	2,5	1,7	1,7	– – – –	2,5	1,5	1,4	2,5	2,5
Definition (D50)	50 % <	94	52	50	76	60	– – – –	85	63	87	74	66	– – – –	98	65	80	84	88
Clarity (C50)	-5 - 5	-5	-5	11	5	3,4	– – – –	-5	2,4	7	4,7	1,8	– – – –	-7	3	7	7	2,9
Strengh (G)	4 - 7,5	5	6,9	10	14	10	– – – –	8	7	7	13	9	– – – –	7	7,5	7,4	12	8

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			9			– – – –			11			– – – –			13		
	Ceiling			9			– – – –			11			– – – –			13		
Rammed Earth	Wall North			8			– – – –			20			– – – –			20		
Concrete	Floor			1			– – – –			2			– – – –			2		



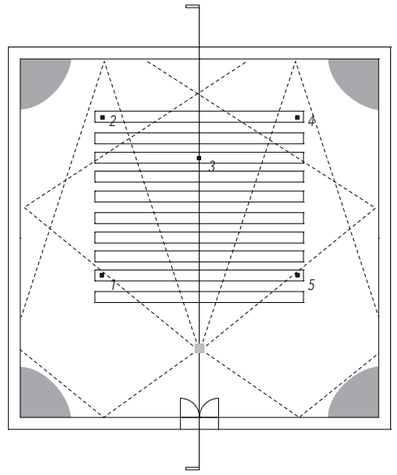
ILL. SQUARE VOL.3 - SECTION

Source
Receiver
Rays of sound
Dead spaces

TABLE 2.2 - ACOUSTIC PERFORMANCE - CHAPEL

DESCRIPTION	INTERVAL	125 Hz						250 Hz						500 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	2	10,6	21	1,2	7,2	– – – –	1,9	12	25	1,2	10	– – – –	1	6,9	2,5	2,1	4,3
Reverberation Time (T30)	1,5 - 2,5	1,8	1,7	2,2	0,8	1,6	– – – –	2	2,6	0,9	1,3	1,7	– – – –	2,1	7	1,4	0,8	0,7
Definition (D50)	50 % <	17,8	89	19	83	84	– – – –	9,5	76	16	84	82	– – – –	12	69	10	72	38
Clarity (C50)	-5 - 5	-6	9	-6	7	7	– – – –	-9	5	-7	7,4	6	– – – –	-8,5	4	-9	4	-2
Strengh (G)	4 - 7,5	15	5	13	22	8	– – – –	17	6	14	22	8	– – – –	16	6,5	16	23	11

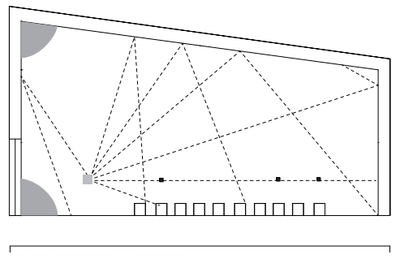
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED																		
MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			28			– – – –			22			– – – –			17		
	Ceiling			28			– – – –			22			– – – –			17		
Rammed Earth	Wall North			5			– – – –			5			– – – –			5		
Concrete	Floor			1			– – – –			1			– – – –			1		



ILL. SQUARE VOL.4 - PLAN

DESCRIPTION	INTERVAL	1000 Hz						4000 Hz						8000 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	1,7	3,1	36	1,2	3,9	– – – –	1,2	43	3	1,2	7	– – – –	1	13	2	1,1	5
Reverberation Time (T30)	1,5 - 2,5	2,6	1	2,2	4	3,8	– – – –	2,1	2,5	3	1,8	2,3	– – – –	1,9	3,4	1,2	1,9	3
Definition (D50)	50 % <	9	11	9	77	33	– – – –	12	9	15	83	78	– – – –	14,3	84	10	85	70
Clarity (C50)	-5 - 5	-10	-9	-8	5	-3	– – – –	-8	-10	-7	6	5	– – – –	-7	7	-9	7	4
Strengh (G)	4 - 7,5	18	14	16	23	12	– – – –	17	15	15	22	8	– – – –	16	5	16	21	9

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED																		
MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			9			– – – –			11			– – – –			13		
	Ceiling			9			– – – –			11			– – – –			13		
Rammed Earth	Wall North			8			– – – –			20			– – – –			20		
Concrete	Floor			1			– – – –			2			– – – –			2		



ILL. SQUARE VOL.4 - SECTION

Source
Receiver
Rays of sound
Dead spaces

TABLE 3.1 - ACOUSTIC PERFORMANCE - CHAPEL

DESCRIPTION	INTERVAL	125 Hz						250 Hz						500 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	3,6	2,6	0,5	2,4	0,2	– – – –	1,2	0,8	0,8	2,9	5,6	– – – –	1,4	2,7	4,5	5,4	1
Reverberation Time (T30)	1,5 - 2,5	1,5	1,4	5,5	1,6	1,4	– – – –	1,5	2,1	1,6	1,5	1,5	– – – –	1,6	2	2,2	2,5	2,4
Definition (D50)	50 % <	98	86	99	89	99	– – – –	87	91	89	88	64	– – – –	65	59	74	61	60
Clarity (C50)	-5 - 5	-5	8	5	-4	2,6	– – – –	-2	1	4,6	-4,2	2,7	– – – –	2	-3,4	-5	2,1	5
Strengh (G)	4 - 7,5	10	6,2	6,8	6,1	9	– – – –	8	6,1	7,5	6,3	11	– – – –	9	10	8	6,3	7,5

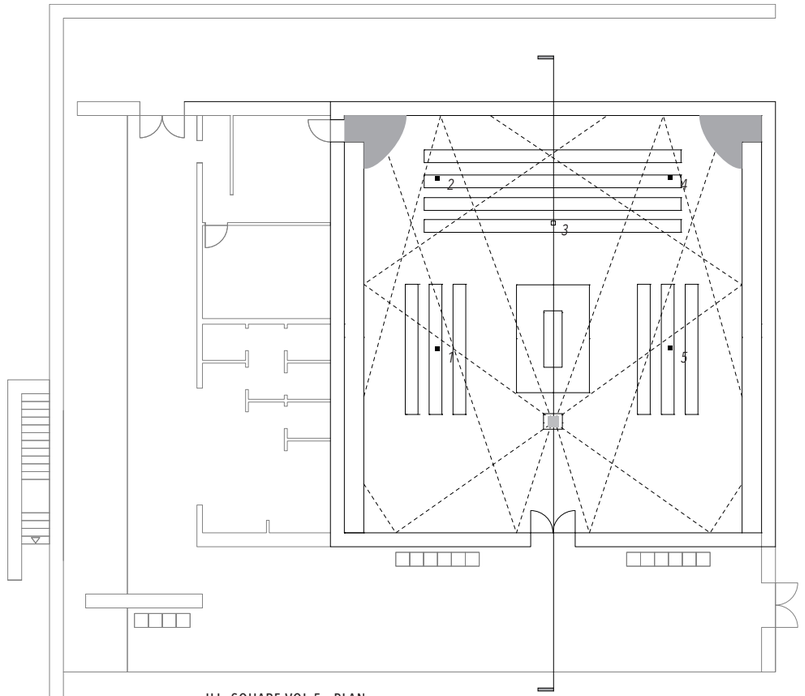
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			28			– – – –			22			– – – –			17		
	Ceiling			28			– – – –			22			– – – –			17		
Rammed Earth	Wall North			5			– – – –			5			– – – –			5		
Concrete	Floor			1			– – – –			1			– – – –			1		

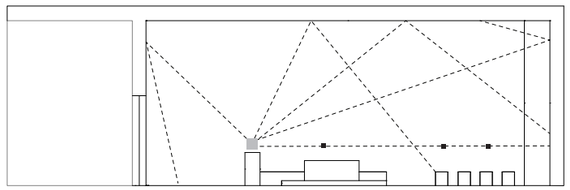
DESCRIPTION	INTERVAL	1000 Hz						4000 Hz						8000 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	4	1,4	2,5	4,5	1,3	– – – –	2	3	2,5	4,2	4	– – – –	1,3	0,2	4	2,5	2,5
Reverberation Time (T30)	1,5 - 2,5	1,5	2,2	2,5	2,3	1,6	– – – –	2,2	2	2	1	1,9	– – – –	2,5	3	1,5	2,1	1,7
Definition (D50)	50 % <	70	50	50	75	79	– – – –	87	63	65	74	54	– – – –	96	92	68	84	60
Clarity (C50)	-5 - 5	-4,8	-1,6	-2,2	-3	-0,9	– – – –	8	-1,3	-2	-3,1	-3,1	– – – –	8	1,2	3,3	-3,6	-1
Strengh (G)	4 - 7,5	9	9	6	7	10	– – – –	8	5,9	7	7,5	9	– – – –	7	7,5	7,4	7,3	8

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			9			– – – –			11			– – – –			13		
	Ceiling			9			– – – –			11			– – – –			13		
Rammed Earth	Wall North			8			– – – –			20			– – – –			20		
Concrete	Floor			1			– – – –			2			– – – –			2		



ILL. SQUARE VOL.5 - PLAN



ILL. SQUARE VOL.5 - SECTION

Source
Receiver
Rays of sound
Dead spaces

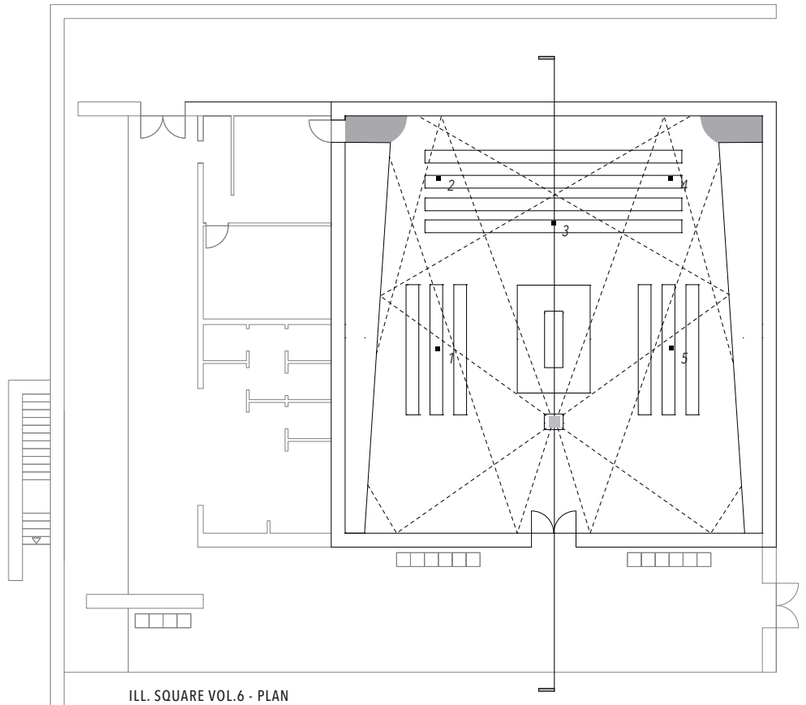
TABLE 3.1 - ACOUSTIC PERFORMANCE - CHAPEL

DESCRIPTION	INTERVAL	125 Hz						250 Hz						500 Hz					
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5	
Early Decay Time (EDT)	0,8 - 4,2 sec	0,2	4,5	0,9	0,6	0,1	– – – –	2,6	5	0,8	2,1	0,8	– – – –	3,3	5	0,9	2,4	8	
Reverberation Time (T30)	1,5 - 2,5	1,7	1,4	0,5	1,9	5,1	– – – –	1,5	2,8	1,9	0,8	2,3	– – – –	3	2,9	2,1	1,7	1,9	
Definition (D50)	50 % <	95	92	92	95	99	– – – –	72	57	63	57	99	– – – –	51	80	90	88	85	
Clarity (C50)	-5 - 5	12	-2	10	12	21	– – – –	4,1	1,3	2,5	1,2	24	– – – –	0,2	6	9	8,5	7,8	
Strengh (G)	4 - 7,5	9	10	14	5	9,7	– – – –	11	8	13	8	9,8	– – – –	12	6	16	6	10	

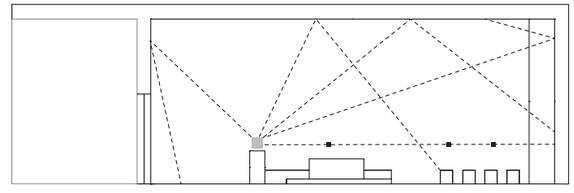
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED																			
MATERIAL	SURFACE																		
Plywood panel (birch)	Wall S,E,W			28			– – – –			22			– – – –			17			
	Ceiling			28			– – – –			22			– – – –			17			
Rammed Earth	Wall North			5			– – – –			5			– – – –			5			
Concrete	Floor			1			– – – –			1			– – – –			1			

DESCRIPTION	INTERVAL	1000 Hz						4000 Hz						8000 Hz					
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5	
Early Decay Time (EDT)	0,8 - 4,2 sec	3,3	3,1	1	2,8	2,9	– – – –	3,1	3,3	3	9	4,1	– – – –	2,2	0,9	0,6	5	0,3	
Reverberation Time (T30)	1,5 - 2,5	3	3	3,7	3	2,4	– – – –	2,2	3	2,5	2,4	2,4	– – – –	1,8	1,3	1,2	1,9	2,3	
Definition (D50)	50 % <	93	53	99	54	50	– – – –	73	81	74	57	72	– – – –	79	89	68	76	90	
Clarity (C50)	-5 - 5	11	2	2,5	-2,4	-1,5	– – – –	-3	6	4,5	1,3	4,2	– – – –	5	9	3,4	5	9,8	
Strengh (G)	4 - 7,5	10	10	18	1,6	13	– – – –	15	8	18	6,1	11	– – – –	10	6	18	6,9	10	

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED																			
MATERIAL	SURFACE																		
Plywood panel (birch)	Wall S,E,W			9			– – – –			11			– – – –			13			
	Ceiling			9			– – – –			11			– – – –			13			
Rammed Earth	Wall North			8			– – – –			20			– – – –			20			
Concrete	Floor			1			– – – –			2			– – – –			2			



ILL. SQUARE VOL.6 - PLAN



ILL. SQUARE VOL.6 - SECTION

Source
Receiver
Rays of sound
Dead spaces

TABLE 4.1 - ACOUSTIC PERFORMANCE - CHAPEL

DESCRIPTION	INTERVAL	125 Hz						250 Hz						500 Hz					
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5	
Early Decay Time (EDT)	0,8 - 4,2 sec	0,8	0,6	2,4	1,4	1,9	– – – –	2	2,1	1,5	0,8	1,8	– – – –	2,3	1,8	1,7	3	2,6	
Reverberation Time (T30)	1,5 - 2,5	1,7	1,5	2	1,7	1,4	– – – –	1,5	1,6	1,5	1,8	1,6	– – – –	1,6	1,8	1,6	1,6	1,6	
Definition (D50)	50 % <	98	82	79	99	98	– – – –	89	99	98	97	95	– – – –	94	86	80	80	71	
Clarity (C50)	-5 - 5	-5	5	-2	2,2	1,9	– – – –	2,9	5,6	3,4	3,2	2,5	– – – –	1,2	0,3	2,6	5,1	4,8	
Strengh (G)	4 - 7,5	5,9	7,5	5,4	5,2	4,9	– – – –	7,5	6,5	6,7	5,3	4,4	– – – –	7	6,4	7,4	5,4	5,1	

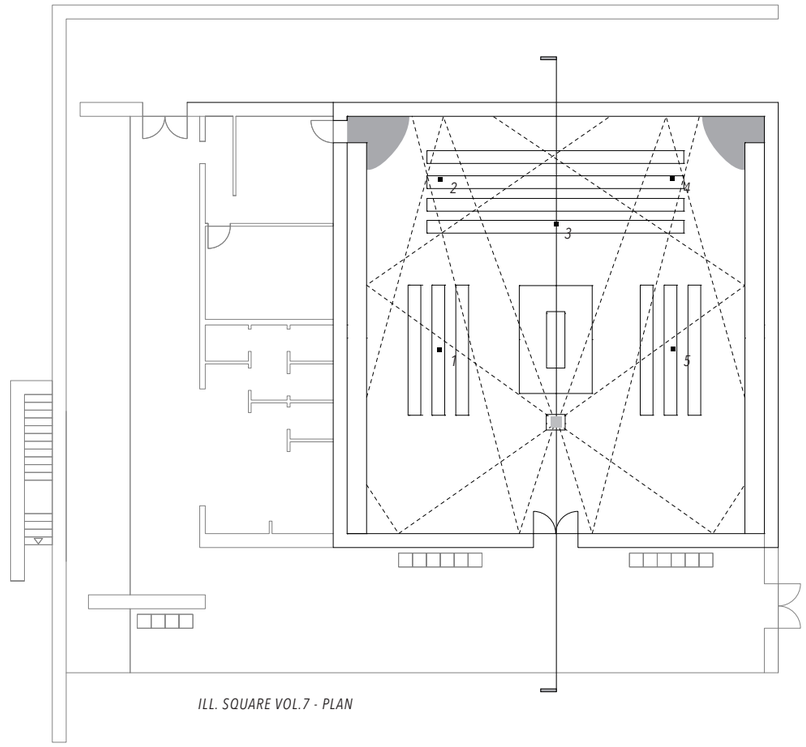
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																		
Plywood panel (birch)	Wall S,E,W			28			– – – –			22			– – – –			17			
	Ceiling			28			– – – –			22			– – – –			17			
Rammed Earth	Wall North			5			– – – –			5			– – – –			5			
Concrete	Floor			1			– – – –			1			– – – –			1			

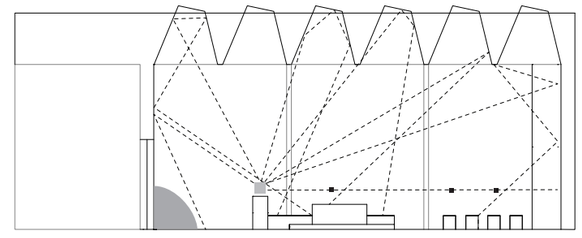
DESCRIPTION	INTERVAL	1000 Hz						4000 Hz						8000 Hz					
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5	
Early Decay Time (EDT)	0,8 - 4,2 sec	1,6	2,8	1,1	4	1,7	– – – –	1	1,6	1,6	4,2	1,4	– – – –	4	3	1,2	4	4,1	
Reverberation Time (T30)	1,5 - 2,5	1,6	1,8	2	1,8	2,4	– – – –	2,5	1,5	1,8	2,5	2,6	– – – –	2,5	1,6	1,7	2,4	1,5	
Definition (D50)	50 % <	74	95	85	99	76	– – – –	88	81	76	80	70	– – – –	99	98	89	84	65	
Clarity (C50)	-5 - 5	4,5	3,2	5	2,9	5	– – – –	2,2	4,6	3,2	2,6	2,9	– – – –	3	5,1	3,3	2,5	1,4	
Strengh (G)	4 - 7,5	6	5,5	7,8	7,1	3,1	– – – –	6,5	5,6	7	6,2	5	– – – –	6,5	5,7	7	6,2	6,2	

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																		
Plywood panel (birch)	Wall S,E,W			9			– – – –			11			– – – –			13			
	Ceiling			9			– – – –			11			– – – –			13			
Rammed Earth	Wall North			8			– – – –			20			– – – –			20			
Concrete	Floor			1			– – – –			2			– – – –			2			



ILL. SQUARE VOL.7 - PLAN



ILL. SQUARE VOL.7 - SECTION

Source
Receiver
Rays of sound
Dead spaces

TABLE 4.2 - ACOUSTIC PERFORMANCE - CHAPEL

DESCRIPTION	INTERVAL	125 Hz						250 Hz						500 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	1,3	0,2	9	0,2	0,2	– – – –	0,2	0,2	0,4	0,2	0,4	– – – –	0,3	0,2	1,3	0,2	0,3
Reverberation Time (T30)	1,5 - 2,5	1,3	1,5	5,8	1,8	1,9	– – – –	0,7	6,9	0,3	1	0,4	– – – –	1,4	3,8	0,9	2	0,7
Definition (D50)	50 % <	76	99	96	99	98	– – – –	98	100	93	99	99	– – – –	95	99	100	99	99
Clarity (C50)	-5 - 5	5	20,8	14,7	25,4	18,2	– – – –	17,5	34	11,9	22,3	25	– – – –	13	33	7,9	26,8	27
Strengh (G)	4 - 7,5	10	5	16	5	9,4	– – – –	9,3	4,5	6,2	4,9	9,5	– – – –	9,3	4,2	4,7	4,5	9,2

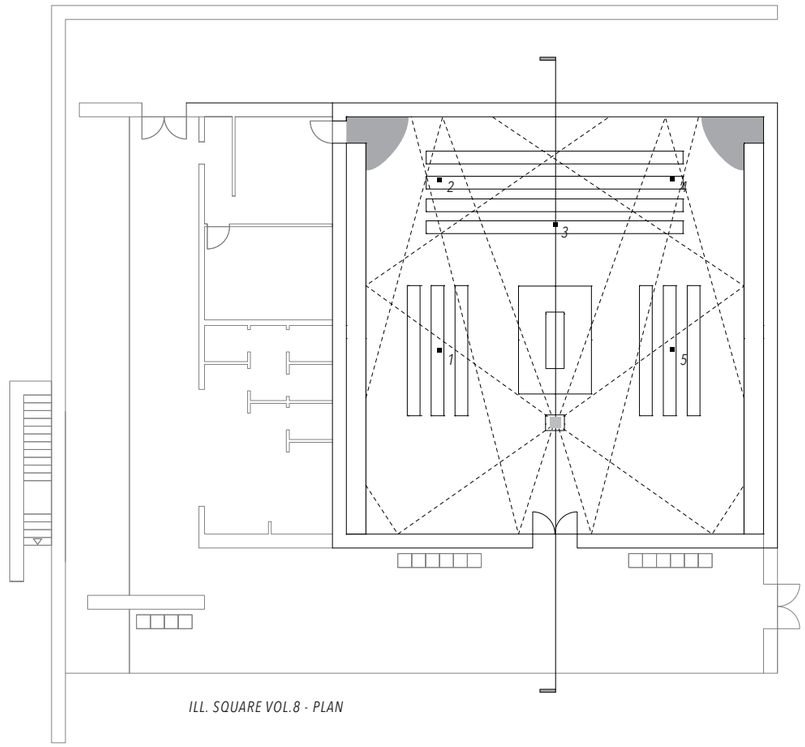
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																	
Lamellas	Wall S,E,W			28			– – – –			22			– – – –			17		
Acoustic Foam	Wall S, E, W			32			– – – –			68			– – – –			92		
Plywood panel (birch)	Ceiling			28			– – – –			22			– – – –			17		
Rammed Earth	Wall North			5			– – – –			5			– – – –			5		
Concrete	Floor			1						1						1		

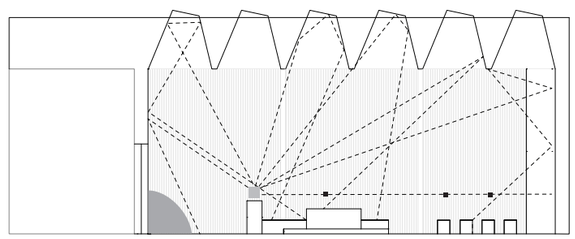
DESCRIPTION	INTERVAL	1000 Hz						4000 Hz						8000 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	0,2	0,2	0,7	0,2	0,3	– – – –	0,4	0,2	1	0,2	0,3	– – – –	0,4	0,2	1	0,2	0,3
Reverberation Time (T30)	1,5 - 2,5	0,3	1	0,8	1	0,3	– – – –	0,3	1	1	1	0,3	– – – –	1	1,6	1	1	0,3
Definition (D50)	50 % <	100	100	86	100	100	– – – –	100	100	100	100	100	– – – –	100	100	100	100	100
Clarity (C50)	-5 - 5	12	41	5	2	54	– – – –	10	10	3,2	2,6	2	– – – –	9	10	3,3	2,5	1,4
Strengh (G)	4 - 7,5	9	4,2	5,2	4,2	9,2	– – – –	9	4,2	4,4	4,1	9,1	– – – –	9	3,9	4,3	3,9	9

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																	
Lamellas	Wall S,E,W			9			– – – –			11			– – – –			13		
Acoustic Foam	Wall S, E, W			96			– – – –			100			– – – –			100		
Plywood panel (birch)	Ceiling			9			– – – –			11			– – – –			13		
Rammed Earth	Wall North			8			– – – –			20			– – – –			20		
Concrete	Floor			1						2						2		



ILL. SQUARE VOL.8 - PLAN



ILL. SQUARE VOL.8 - SECTION

Source
Receiver
Rays of sound
Dead spaces

TABLE 5.1 - ACOUSTIC PERFORMANCE - CHAPEL

DESCRIPTION	INTERVAL	125 Hz						250 Hz						500 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	0,2	1,5	1,7	3,1	1,4	– – – –	0,2	1,4	1,2	0,1	0,2	– – – –	0,3	7,1	1	3,8	1,2
Reverberation Time (T30)	1,5 - 2,5	1,8	1,2	1,4	0,5	0,9	– – – –	1,2	4,4	1,6	0,1	0,2	– – – –	1,4	2,3	2	1,7	2,7
Definition (D50)	50 % <	99	98	95	42	77	– – – –	99	13	95	100	100	– – – –	93	78	89	82	58
Clarity (C50)	-5 - 5	24	17,3	13	-1,3	5,4	– – – –	21	-8	13	3,5	41	– – – –	11	5,6	9	0,8	1,4
Strengh (G)	4 - 7,5	9,8	9,1	6,6	8,9	10,7	– – – –	10,2	14,4	6,8	5,3	9	– – – –	10,2	6,7	7,2	8	1,8

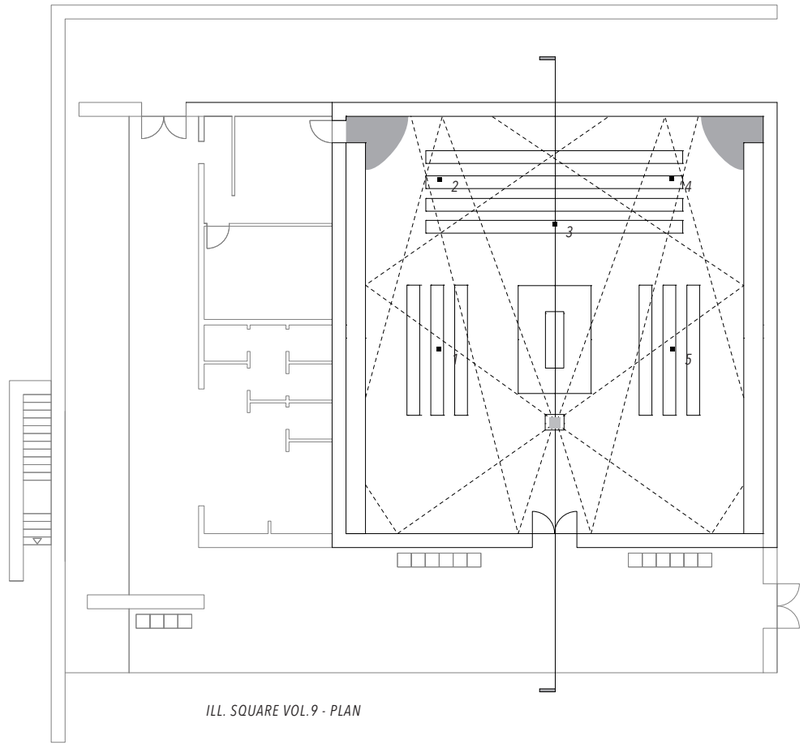
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			28			– – – –			22			– – – –			17		
	Ceiling			28			– – – –			22			– – – –			17		
Rammed Earth	Wall North			5			– – – –			5			– – – –			5		
Concrete	Floor			1			– – – –			1			– – – –			1		

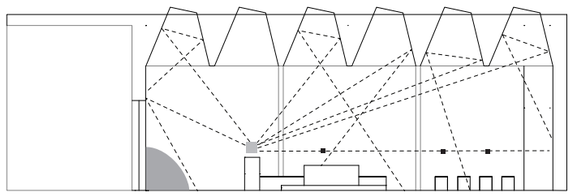
DESCRIPTION	INTERVAL	1000 Hz						4000 Hz						8000 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	0,3	3,3	3,4	1,1	2,2	– – – –	0,3	7,8	0,6	3	0,2	– – – –	0,3	0,9	2,1	1,2	0,2
Reverberation Time (T30)	1,5 - 2,5	1,8	1,8	4,9	2,2	3,1	– – – –	1,5	2,4	2,2	0,9	3,2	– – – –	4,4	0,9	2,3	1,6	2,3
Definition (D50)	50 % <	94	54	89	77	71	– – – –	57	87	82	87	87	– – – –	92	88	73	75	97
Clarity (C50)	-5 - 5	12	0,7	-5	6,6	4	– – – –	10	4,2	6,7	7,8	15	– – – –	11	9	4,4	-2,9	15,2
Strengh (G)	4 - 7,5	12	8,4	7,6	13	9,8	– – – –	13	6,1	7,5	9	9,7	– – – –	12	5,9	7,4	7	7,6

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			9			– – – –			11			– – – –			13		
	Ceiling			9			– – – –			11			– – – –			13		
Rammed Earth	Wall North			8			– – – –			20			– – – –			20		
Concrete	Floor			1			– – – –			2			– – – –			2		



ILL. SQUARE VOL.9 - PLAN



ILL. SQUARE VOL.9 - SECTION

Source
Receiver
Rays of sound
Dead spaces

TABLE 5.2 - ACOUSTIC PERFORMANCE - CHAPEL

DESCRIPTION	INTERVAL	125 Hz						250 Hz						500 Hz					
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5	
Early Decay Time (EDT)	0,8 - 4,2 sec	0,7	0,2	2,2	0,2	0,2	– – – –	0,6	0,2	0,9	0,2	0,2	– – – –	0,3	0,3	1,4	0,2	0,3	
Reverberation Time (T30)	1,5 - 2,5	0,2	0,1	0,2	0,1	0,2	– – – –	0,5	0,2	0,2	0,1	2,1	– – – –	0,2	0,2	1	0,1	0,3	
Definition (D50)	50 % <	100	100	100	100	100	– – – –	99	100	100	100	99	– – – –	100	100	100	100	100	
Clarity (C50)	-5 - 5	33	53	46	41	42,2	– – – –	26	55	28	35	32	– – – –	20	66	51	69	73	
Strengh (G)	4 - 7,5	11	5,2	11	4,9	9,6	– – – –	10	4,8	7,4	4,5	9,4	– – – –	9	4,6	4,9	4,2	9,4	

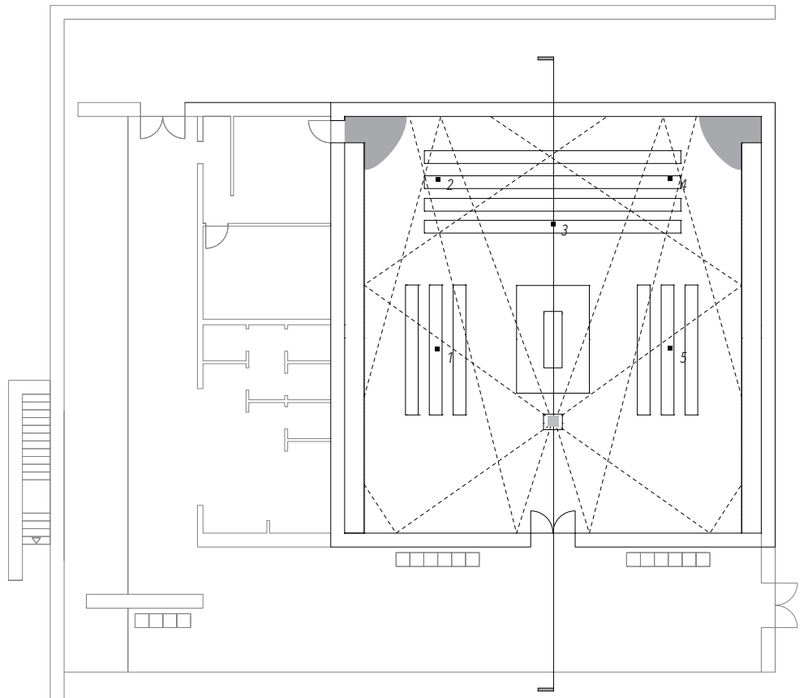
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																		
Lamellas	Wall S,E,W			28			– – – –			22			– – – –			17			
Acoustic Foam	Wall S, E, W			32			– – – –			68			– – – –			92			
Plywood panel (birch)	Ceiling			28			– – – –			22			– – – –			17			
Rammed Earth	Wall North			5			– – – –			5			– – – –			5			
Concrete	Floor			1						1						1			

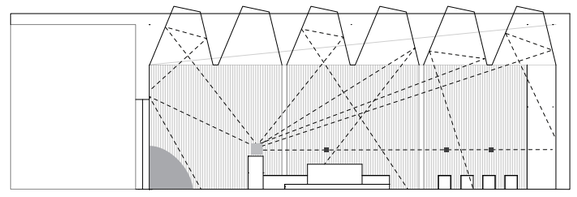
DESCRIPTION	INTERVAL	1000 Hz						4000 Hz						8000 Hz					
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5	
Early Decay Time (EDT)	0,8 - 4,2 sec	0,3	0,3	1,2	0,2	0,3	– – – –	0,3	0,3	1	0,2	0,3	– – – –	0,3	0,3	1	0,2	0,3	
Reverberation Time (T30)	1,5 - 2,5	0,2	0,2	1	1	0,2	– – – –	0,2	0,2	1	1	0,2	– – – –	0,2	0,2	1	1	0,2	
Definition (D50)	50 % <	100	100	100	100	100	– – – –	100	100	100	100	100	– – – –	100	100	100	100	100	
Clarity (C50)	-5 - 5	11	50	45	50	44	– – – –	71	45	40	55	40	– – – –	5	50	43	60	30	
Strengh (G)	4 - 7,5	9	4,4	4,9	4,1	9,3	– – – –	9,5	4,3	4,4	3,9	9,3	– – – –	9,4	4,2	4,2	3,8	9,3	

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																		
Lamellas	Wall S,E,W			9			– – – –			11			– – – –			13			
Acoustic Foam	Wall S, E, W			96			– – – –			100			– – – –			100			
Plywood panel (birch)	Ceiling			9			– – – –			11			– – – –			13			
Rammed Earth	Wall North			8			– – – –			20			– – – –			20			
Concrete	Floor			1						2						2			



ILL. SQUARE VOL.10 · PLAN



ILL. SQUARE VOL.10 · SECTION

Source
Receiver
Rays of sound
Dead spaces

TABLE 6.1 - ACOUSTIC PERFORMANCE - CHAPEL

DESCRIPTION	INTERVAL	125 Hz						250 Hz						500 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	0,8	0,9	1,5	1,7	2	– – – –	1,7	1,9	1,5	2,2	2,3	– – – –	1,3	1,8	1,4	3	1,6
Reverberation Time (T30)	1,5 - 2,5	1,5	2	1,5	1,9	1,7	– – – –	1,6	1,6	1,9	2	1,8	– – – –	1,7	1,8	1,8	1,6	1,9
Definition (D50)	50 % <	98	88	99	99	98	– – – –	95	99	99	98	99	– – – –	68	75	79	91	92
Clarity (C50)	-5 - 5	4,7	3,3	2,5	1,9	2,4	– – – –	4,1	4	3,9	2,1	4,3	– – – –	1,5	4,4	5	3,1	4,2
Strengh (G)	4 - 7,5	8	5,5	7,1	4,3	5,5	– – – –	7,5	5	7	5,3	5	– – – –	7	5,6	7,1	5,4	5,1

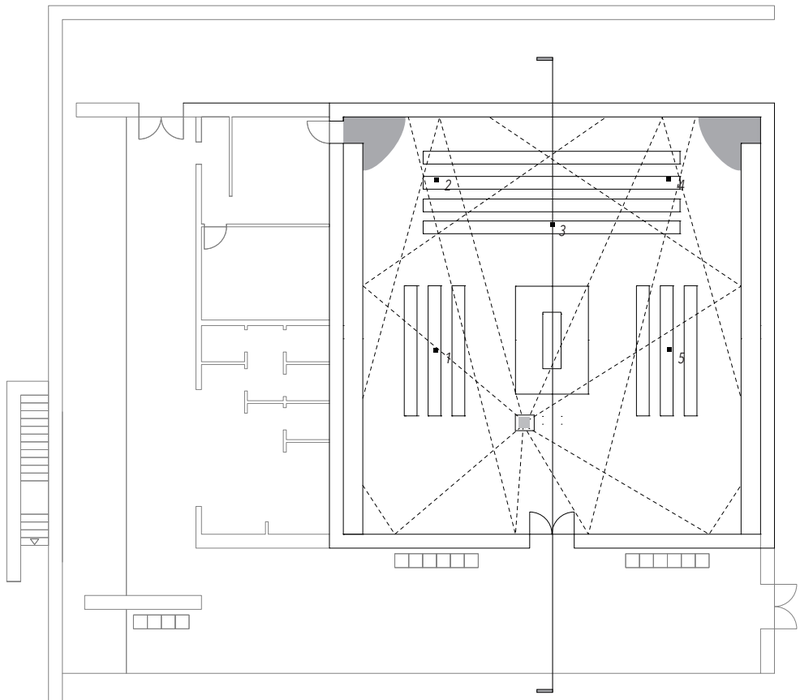
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			28			– – – –			22			– – – –			17		
	Ceiling			28			– – – –			22			– – – –			17		
Rammed Earth	Wall North			5			– – – –			5			– – – –			5		
Concrete	Floor			1			– – – –			1			– – – –			1		

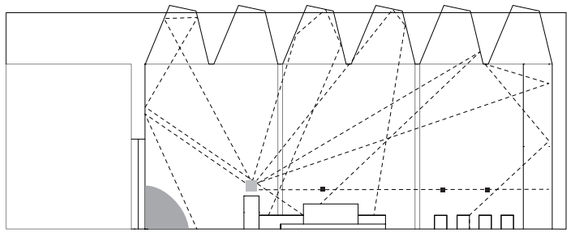
DESCRIPTION	INTERVAL	1000 Hz						4000 Hz						8000 Hz				
RECEIVERS		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
Early Decay Time (EDT)	0,8 - 4,2 sec	1,4	2,6	1,1	4,3	1,7	– – – –	1,3	2,8	3,9	4,2	1,5	– – – –	1,5	2,9	2,5	4	1,6
Reverberation Time (T30)	1,5 - 2,5	1,6	1,9	2	1,9	2	– – – –	2,3	2	2,2	1,8	1,7	– – – –	2,4	2,2	2,2	1,6	1,8
Definition (D50)	50 % <	84	98	87	67	69	– – – –	68	93	89	91	99	– – – –	59	98	90	72	97
Clarity (C50)	-5 - 5	1,6	4,9	4,5	1,9	-2	– – – –	3,3	4,6	5	2,7	-2,5	– – – –	3	5,1	5,1	4,3	-3
Strengh (G)	4 - 7,5	6	5,7	6,3	4	4,3	– – – –	6,5	5,8	6,4	5,9	4,4	– – – –	6,5	5,7	6,5	6	4,5

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE																	
Plywood panel (birch)	Wall S,E,W			9			– – – –			11			– – – –			13		
	Ceiling			9			– – – –			11			– – – –			13		
Rammed Earth	Wall North			8			– – – –			20			– – – –			20		
Concrete	Floor			1			– – – –			2			– – – –			2		



ILL. SQUARE VOL.10 - PLAN



ILL. SQUARE VOL.10 - SECTION

Source
Receiver
Rays of sound
Dead spaces

TABLE 7.1 - ACOUSTIC PERFORMANCE - CREMATORIUM

DESCRIPTION	INTERVAL	125 Hz				250 Hz				500 Hz		
RECEIVERS		1	2	3		1	2	3		1	2	3
Early Decay Time (EDT)	~ 1 sec	0,5	0,6	0,7	– – – –	1	0,6	0,7	– – – –	1,3	0,6	0,6
Reverberation Time (T30)	0,6 -1 sec	1,5	0,3	0,4	– – – –	1,6	1,2	1,3	– – – –	1,4	1,3	1,2
Definition (D50)	50 % <	97	95	99	– – – –	52	97	95	– – – –	82	98	84
Clarity (C50)	0 -4	9	7,2	2	– – – –	5	7,4	2,2	– – – –	6	6,5	3,3
Strengh (G)	4 - 7,5	7	6,1	10	– – – –	8	6,1	9	– – – –	8,3	5,8	8

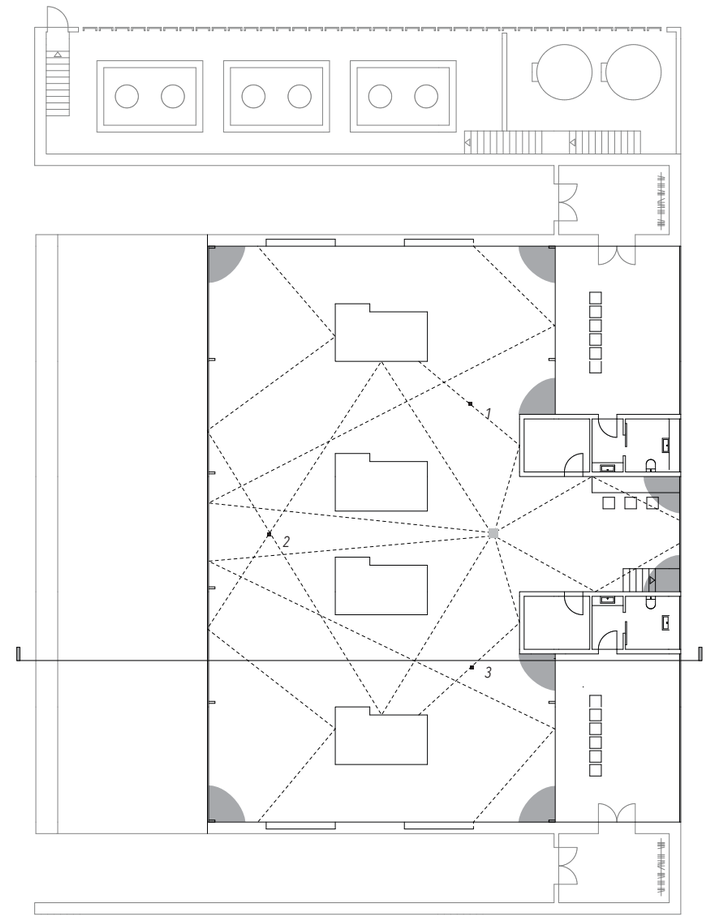
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE					
Glass facade	Wall E,W	15	– – – –	5	– – – –	3
Plywood panel (birch)	Wall S,N	28	– – – –	22	– – – –	17
	Ceiling	28	– – – –	22	– – – –	17
Aluminium plates	Cremator	50	– – – –	35	– – – –	15
Concrete	Floor	1		1		1

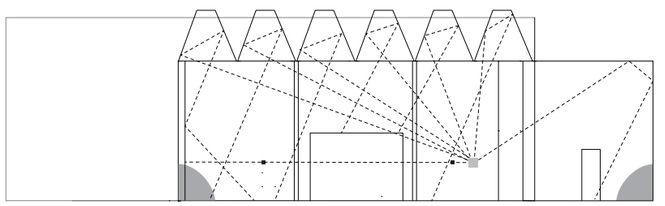
DESCRIPTION	INTERVAL	1000 Hz				4000 Hz				8000 Hz		
RECEIVERS		1	2	3		1	2	3		1	2	3
Early Decay Time (EDT)	~1 sec	1,4	0,6	0,7	– – – –	2	0,7	1	– – – –	5	0,7	3
Reverberation Time (T30)	0,6-1 sec	1,3	1,2	1,3	– – – –	1,3	1	1,3	– – – –	1	1,2	1,3
Definition (D50)	50 % <	42	87	67	– – – –	98	89	90	– – – –	58	90	60
Clarity (C50)	0 - 4	4,8	4,5	2,3	– – – –	4,6	5	2,4	– – – –	5,1	4	4,3
Strengh (G)	4 - 7,5	7,3	6,3	7,8	– – – –	7,2	7	9	– – – –	9,7	6,2	9,5

ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED

MATERIAL	SURFACE					
Glass facade	Wall E,W	3	– – – –	2	– – – –	2
Plywood panel (birch)	Wall S,N	9	– – – –	11	– – – –	13
	Ceiling	9	– – – –	11	– – – –	13
Aluminium plates	Cremator	5	– – – –	5	– – – –	0
Concrete	Floor	1		2		2



ILL. CREMATORIUM 1 - PLAN



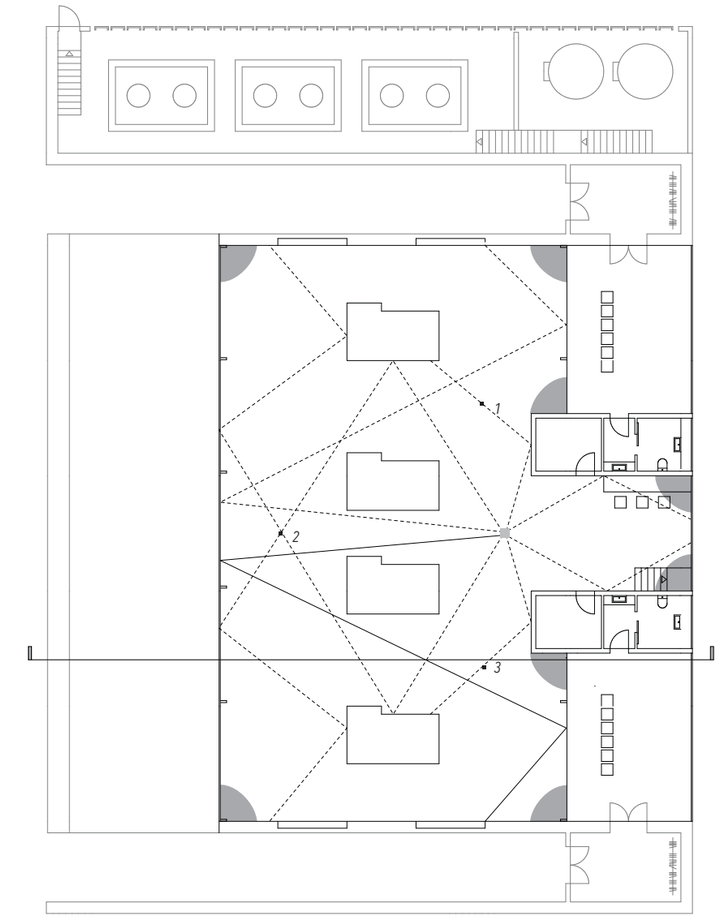
ILL. CREMATORIUM 1 - SECTION

Source
Receiver
Rays of sound
Dead spaces

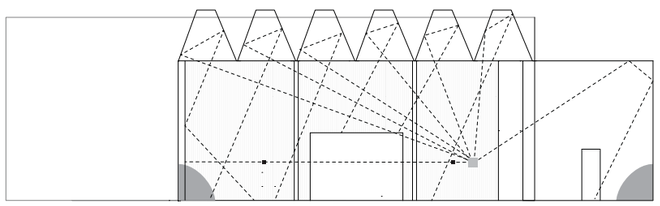
TABLE 7.2 - ACOUSTIC PERFORMANCE - CREMATORIUM

DESCRIPTION	INTERVAL	125 Hz				250 Hz				500 Hz		
RECEIVERS		**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**
Early Decay Time (EDT)	~ 1 sec	0,9	0,6	0,5	– – – –	1	0,6	0,7	– – – –	1,0	0,7	0,8
Reverberation Time (T30)	0,6 -1 sec	0,7	1	1,1	– – – –	0,8	1,1	1	– – – –	0,9	1	1
Definition (D50)	50 % <	98	99	99	– – – –	97	99	98	– – – –	98	100	99
Clarity (C50)	0 -4	1,4	2,6	1,9	– – – –	1,8	2,9	2,1	– – – –	2	2,5	3,1
Strengh (G)	4 - 7,5	7	6,3	4,3	– – – –	7,1	6,3	5,3	– – – –	5,6	6,5	5,4
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED												
MATERIAL	**SURFACE**											
Lamellas	Wall S,N		28		– – – –		22		– – – –		17	
Acoustic foam	Wall S,N		32		– – – –		68		– – – –		92	
Glass facade	Wall E,W		15		– – – –		5		– – – –		3	
Plywood panel (birch)	Ceiling		28		– – – –		22		– – – –		17	
Aluminium plates	Cremator		50				35				15	
Concrete	Floor		1				1				1	

DESCRIPTION	INTERVAL	1000 Hz				4000 Hz				8000 Hz		
RECEIVERS		**1**	**2**	**3**		**1**	**2**	**3**		**1**	**2**	**3**
Early Decay Time (EDT)	~1 sec	0,8	0,8	0,9	– – – –	0,9	0,9	0,9	– – – –	1	0,8	1
Reverberation Time (T30)	0,6-1 sec	1	1,1	1,1	– – – –	1,1	1,2	0,9	– – – –	1,2	1,2	1,1
Definition (D50)	50 % <	100	100	98	– – – –	98	100	99	– – – –	89	98	98
Clarity (C50)	0 - 4	4	3,1	1,9	– – – –	3,5	3,5	2,7	– – – –	3,6	4	4,3
Strengh (G)	4 - 7,5	5,7	6,3	4	– – – –	5,8	6,4	5,9	– – – –	5,7	6,5	6
ABSORPTION COEFFICIENTS - % ENERGY ABSORBTED												
MATERIAL	**SURFACE**											
Lamellas	Wall S,N		9		– – – –		11		– – – –		13	
Acoustic Foam	Wall S,N		96		– – – –		100		– – – –		100	
Glass facade	Wall E,W		3		– – – –		2		– – – –		2	
Plywood panel (birch)	Ceiling		9		– – – –		11		– – – –		13	
Aluminium plates	Cremator		5				5				0	
Concrete	Floor		1				2				2	



ILL. CREMATORIUM 2 - PLAN

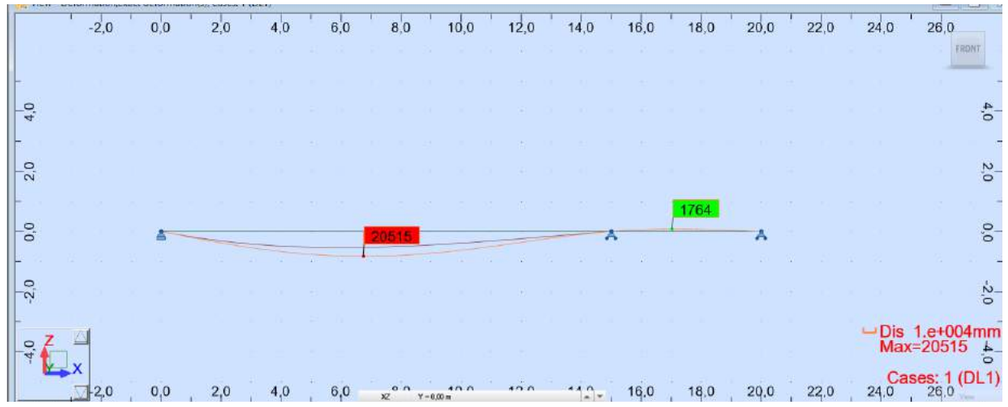


ILL. CREMATORIUM 2 - SECTION

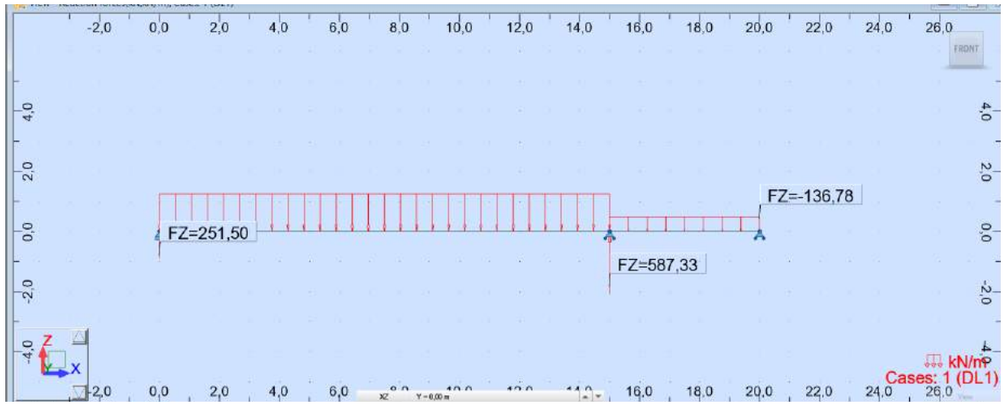
Source
Receiver
Rays of sound
Dead spaces

ANNEX 4

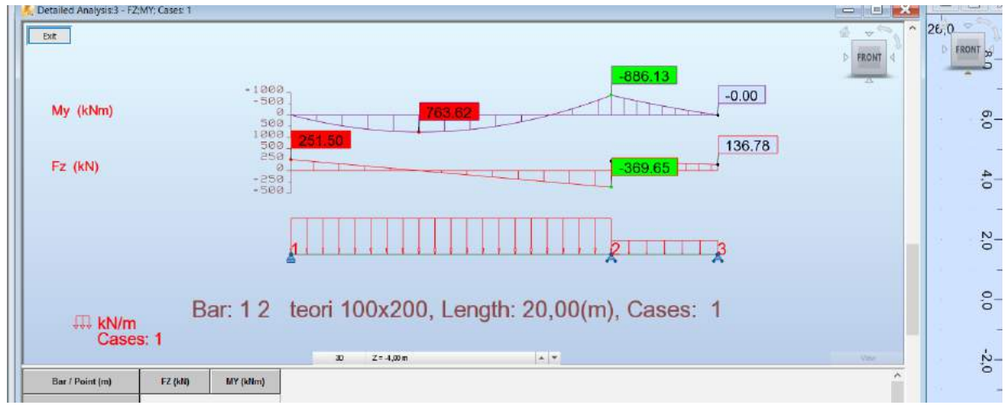
WIND ANALYSIS ON CONFIGURATION 3



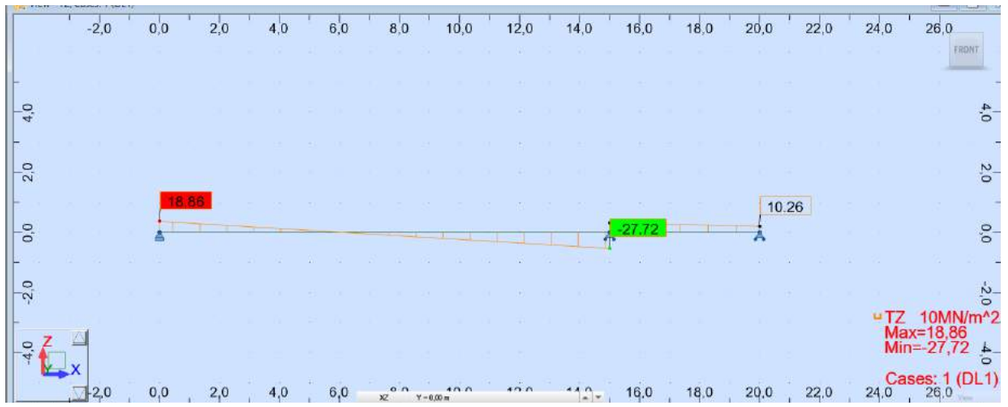
THEORETICAL DEFORMATIONS FOR A SINGLE FLANGE



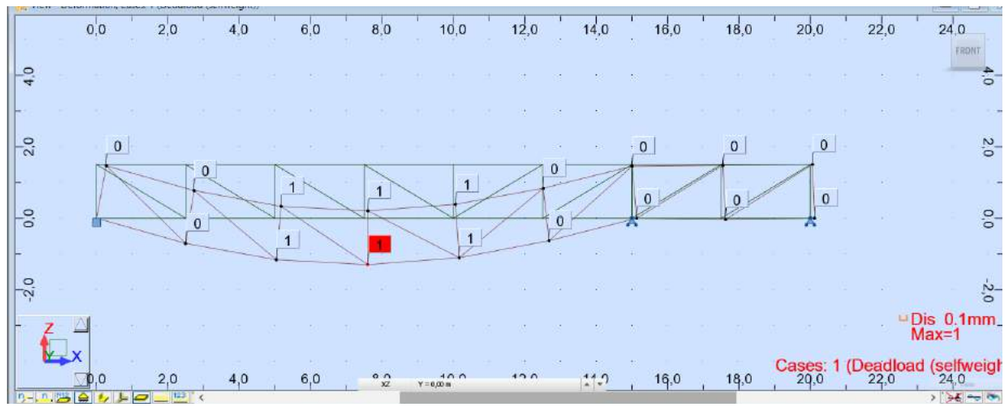
THEORETICAL REACTIONS FOR A SINGLE FLANGE



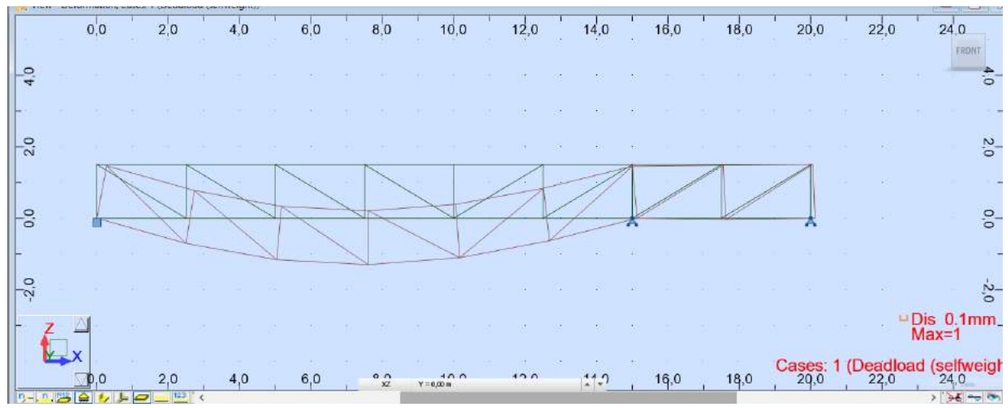
THEORETICAL RESULTS FOR A SINGLE FLANGE



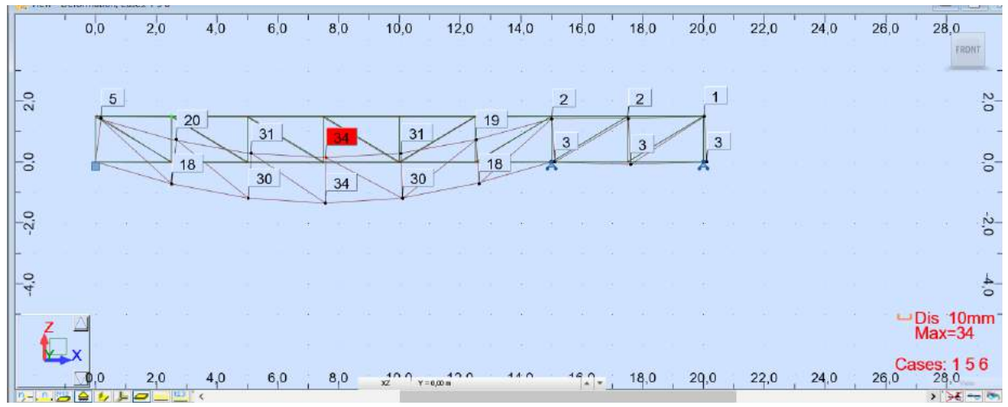
THEORETICAL STRESSES FOR A SINGLE FLANGE



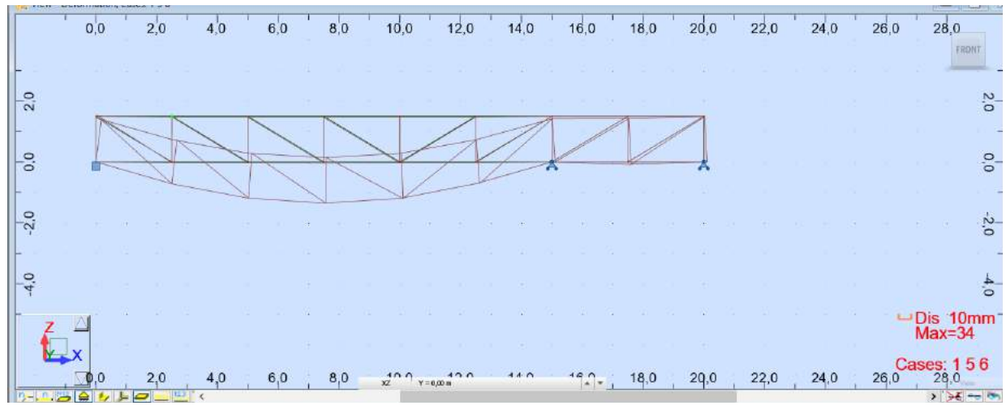
TRUSS DEFORMATION WITH NUMBERS



TRUSS DEFORMATIONS



TRUSS ACCORDING TO THEORETICAL NUMBERS IN DEFORMATION



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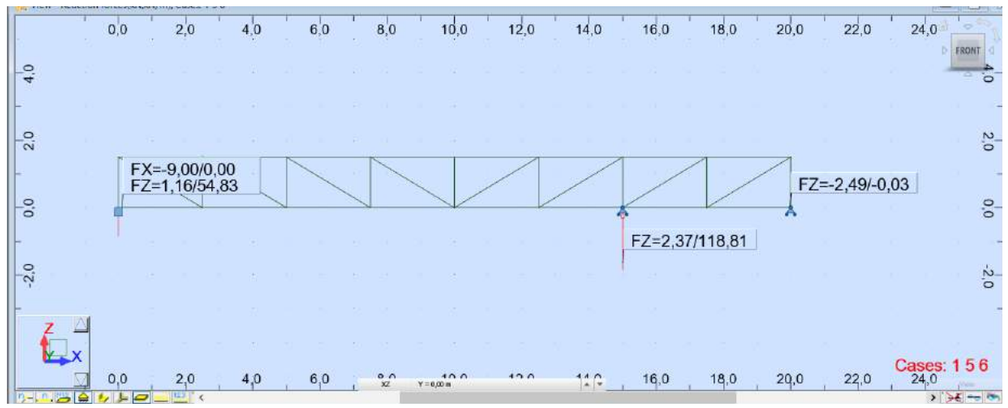
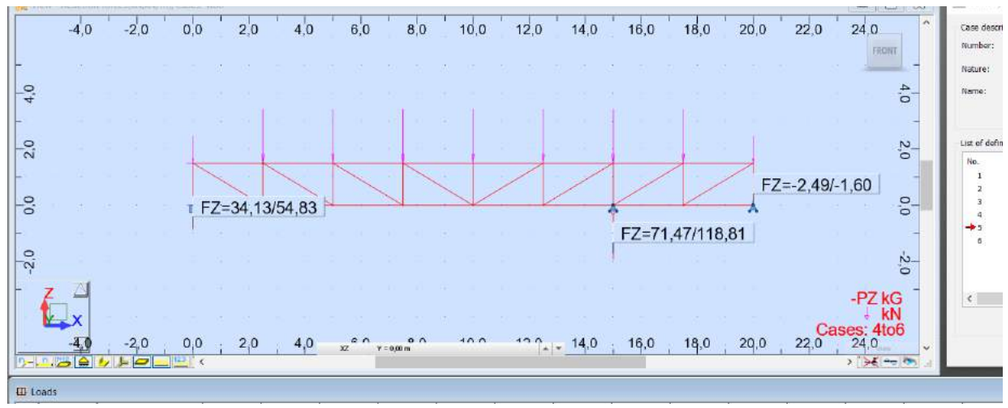
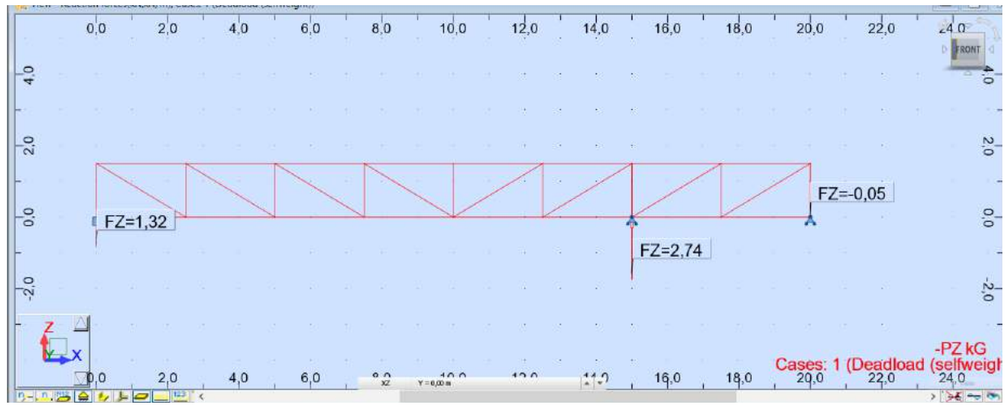


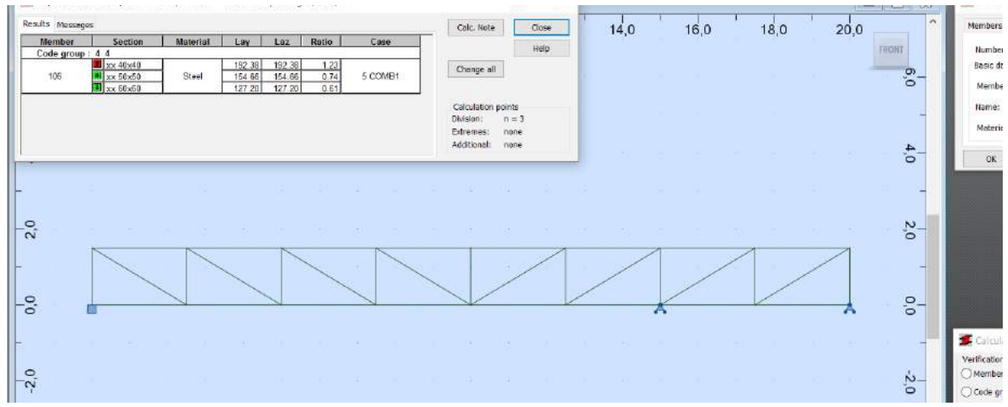
TRUSS ACCORDING TO THEORETICAL NUMBERS IN REACTIONS



TRUSS ACCORDING TO THEORETICAL NUMBERS IN REACTIONS



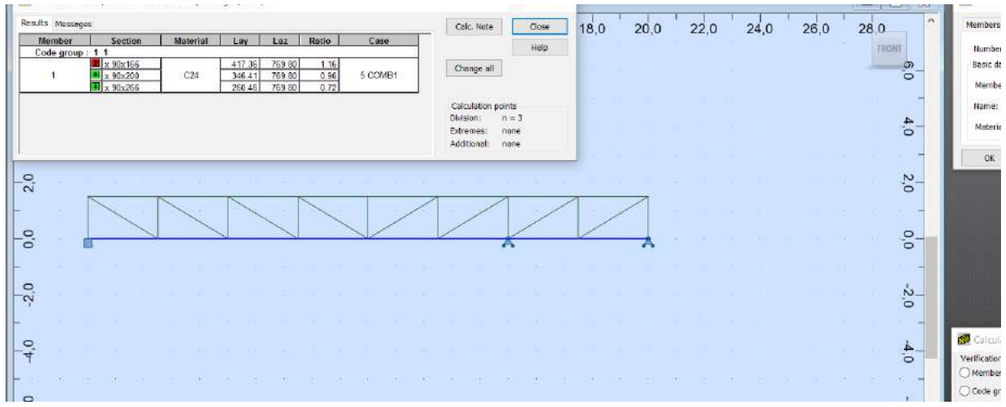
REACTIONS IN TRUSS



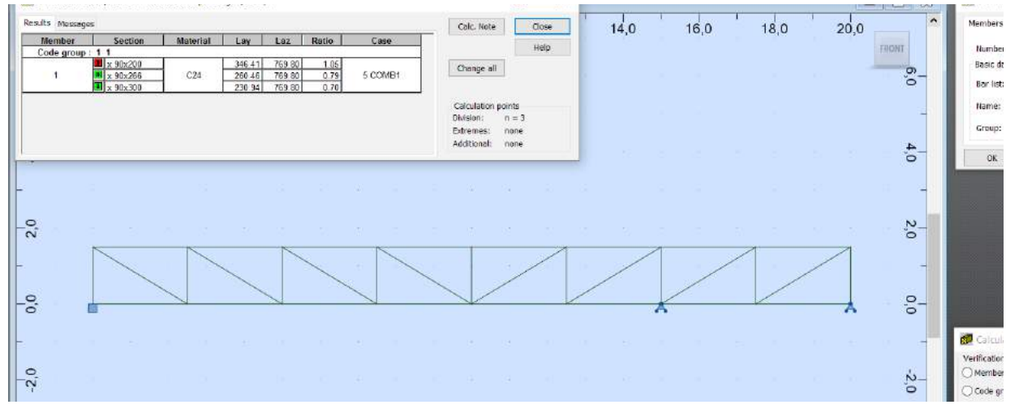
TRUSS IN 2,5 GRID W. INNER TRUSS IN STEEL - ULS

ANNEX 2

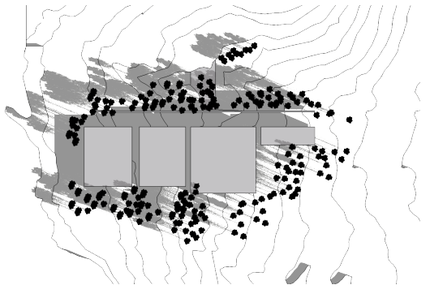
ROBOT STRUCTURAL ANALYSIS



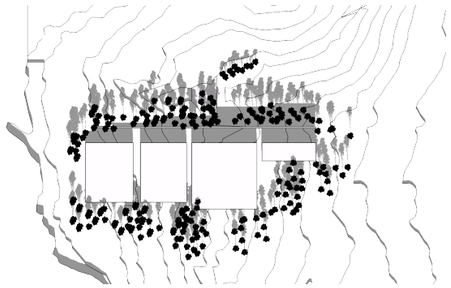
TRUSS IN 2,5 GRID W. INNER TRUSS IN WOOD - ULS



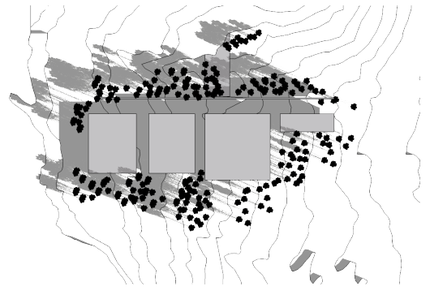
TRUSS IN 2,5 GRID WOOD + STEEL FLANGE - ULS



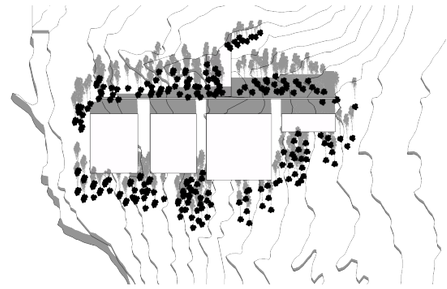
1. LIGHT STUDY - 21TH OF DECEMBER AT 10 AM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 3 METERS DISTANCE BETWEEN BUILDINGMASSES



2. LIGHT STUDY - 21TH OF DECEMBER AT 14 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 3 METERS DISTANCE BETWEEN BUILDINGMASSES

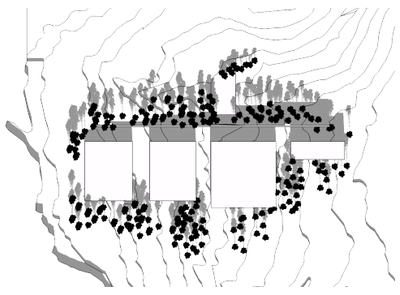


3. LIGHT STUDY - 21TH OF DECEMBER AT 10 AM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 5 METERS DISTANCE BETWEEN BUILDINGMASSES

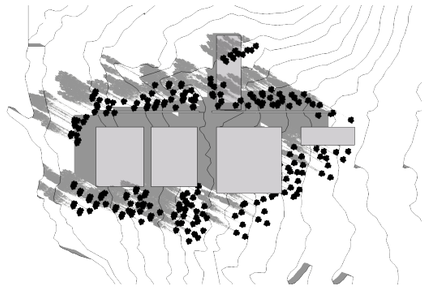


4. LIGHT STUDY - 21TH OF DECEMBER AT 14 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 5 METERS DISTANCE BETWEEN BUILDINGMASSES

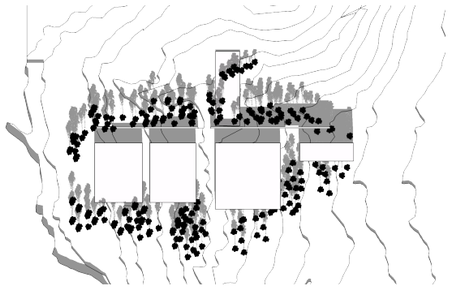
5. LIGHT STUDY - 21TH OF DECEMBER AT 10 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 7 METERS DISTANCE BETWEEN BUILDINGMASSES



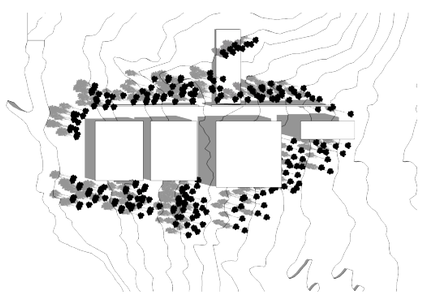
6. LIGHT STUDY - 21TH OF DECEMBER AT 14 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 7 METERS DISTANCE BETWEEN BUILDINGMASSES



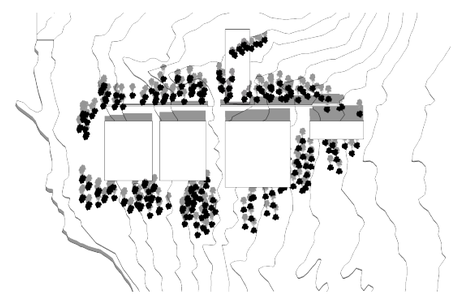
1. LIGHT STUDY - 21TH OF JUNE AT 10 AM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 3 METERS DISTANCE BETWEEN BUILDINGMASSES



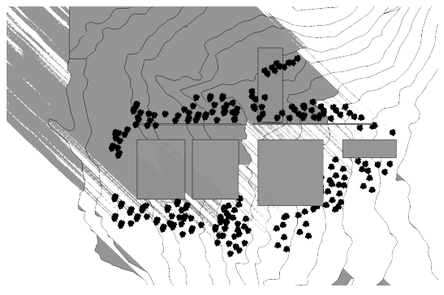
2. LIGHT STUDY - 21TH OF JUNE AT 14 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 3 METERS DISTANCE BETWEEN BUILDINGMASSES



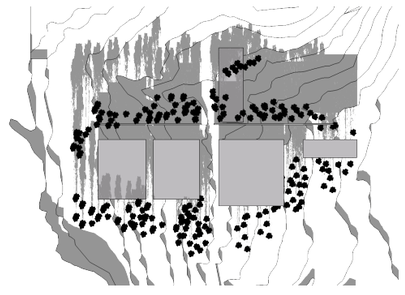
3. LIGHT STUDY - 21TH OF JUNE AT 10 AM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 5 METERS DISTANCE BETWEEN BUILDINGMASSES



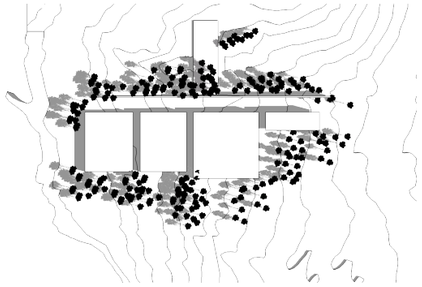
4. LIGHT STUDY - 21TH OF JUNE AT 14 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 5 METERS DISTANCE BETWEEN BUILDINGMASSES



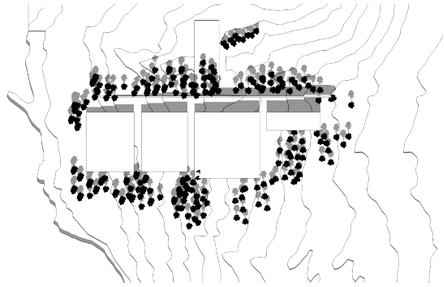
5. LIGHT STUDY - 21TH OF JUNE AT 10 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 7 METERS DISTANCE BETWEEN BUILDINGMASSES



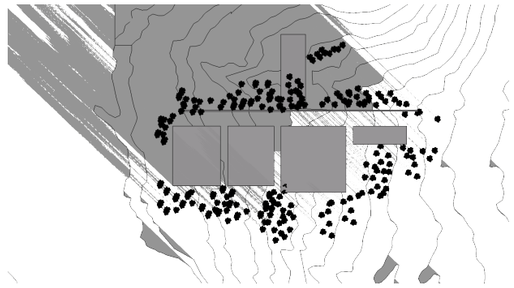
6. LIGHT STUDY - 21TH OF JUNE AT 14 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 7 METERS DISTANCE BETWEEN BUILDINGMASSES



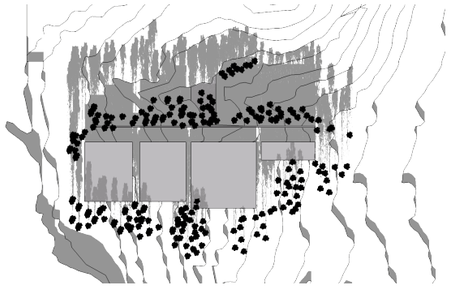
1. LIGHT STUDY - 21TH OF JUNE AT 10 AM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 3 METERS DISTANCE BETWEEN BUILDINGMASSES



2. LIGHT STUDY - 21TH OF JUNE AT 14 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 3 METERS DISTANCE BETWEEN BUILDINGMASSES



1. LIGHT STUDY - 21TH OF DECEMBER AT 10 AM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 3 METERS DISTANCE BETWEEN BUILDINGMASSES



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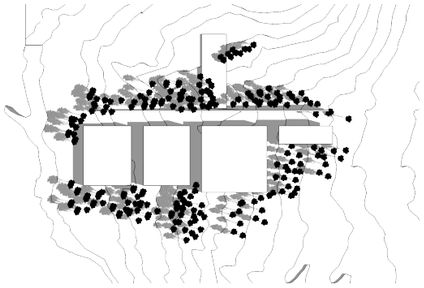
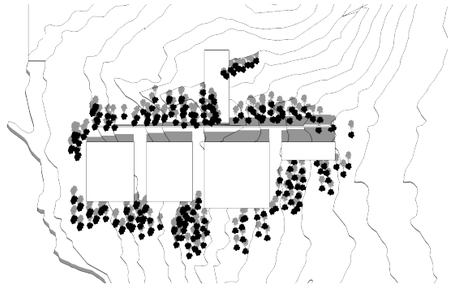
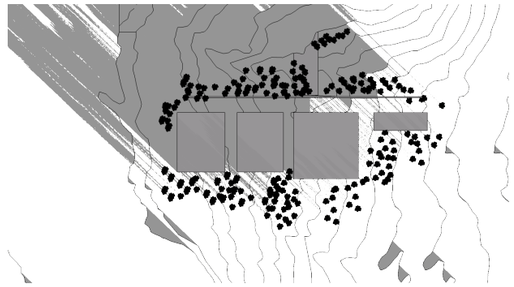
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 3 METERS DISTANCE BETWEEN BUILDINGMASSES



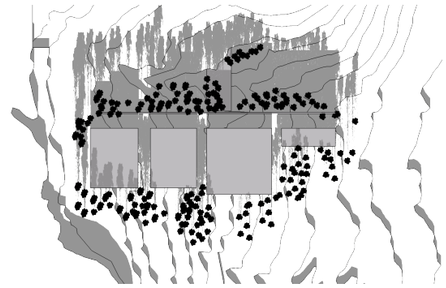
3. LIGHT STUDY - 21TH OF JUNE AT 10 AM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 5 METERS DISTANCE BETWEEN BUILDINGMASSES



4. LIGHT STUDY - 21TH OF JUNE AT 14 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 5 METERS DISTANCE BETWEEN BUILDINGMASSES



3. LIGHT STUDY - 21TH OF DECEMBER AT 10 AM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 5 METERS DISTANCE BETWEEN BUILDINGMASSES



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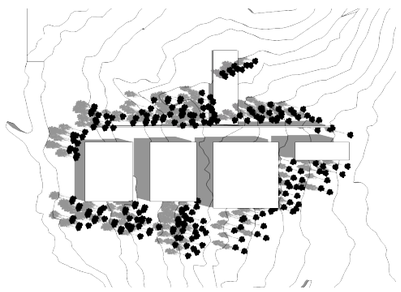
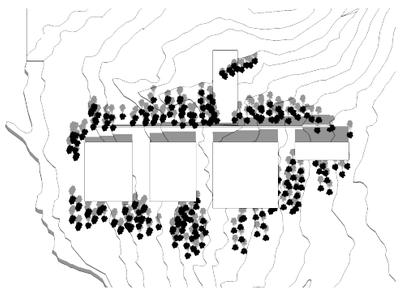
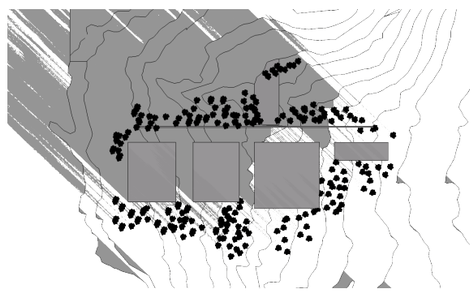
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 5 METERS DISTANCE BETWEEN BUILDINGMASSES



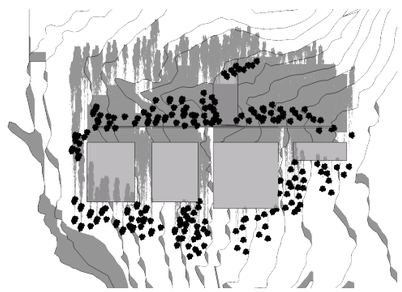
5. LIGHT STUDY - 21TH OF JUNE AT 10 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 7 METERS DISTANCE BETWEEN BUILDINGMASSES



6. LIGHT STUDY - 21TH OF JUNE AT 14 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 7 METERS DISTANCE BETWEEN BUILDINGMASSES



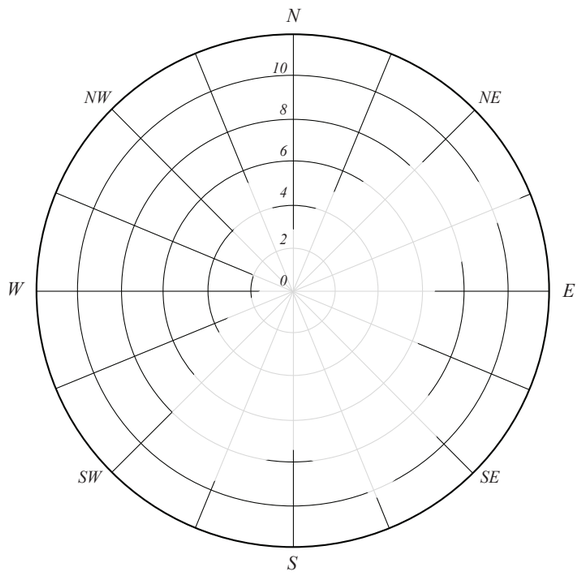
5. LIGHT STUDY - 21TH OF DECEMBER AT 10 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 7 METERS DISTANCE BETWEEN BUILDINGMASSES



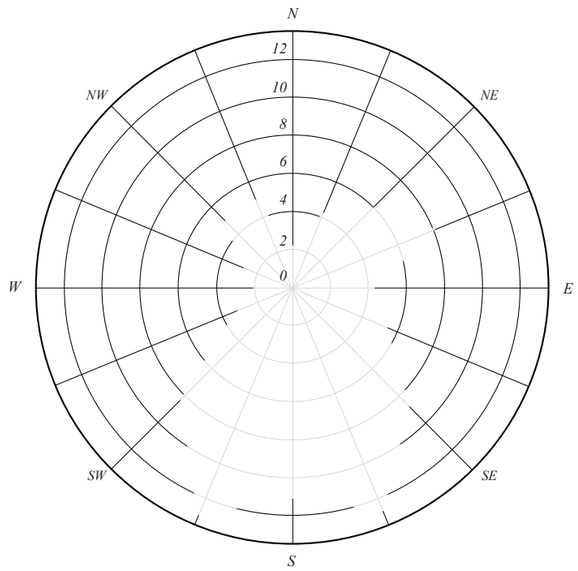
6. LIGHT STUDY - 21TH OF DECEMBER AT 14 PM
UTC: -2.00 [SUNCALC.ORG, 2018]
VARIABLE: 7 METERS DISTANCE BETWEEN BUILDINGMASSES

CLIMATE

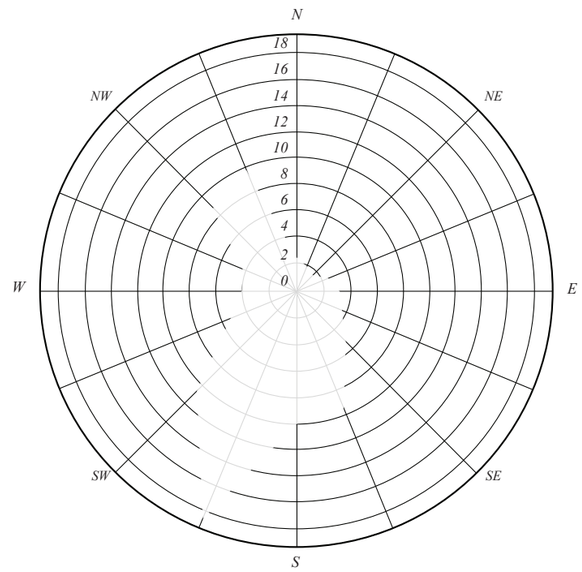
Wind // Direction distribition in %%



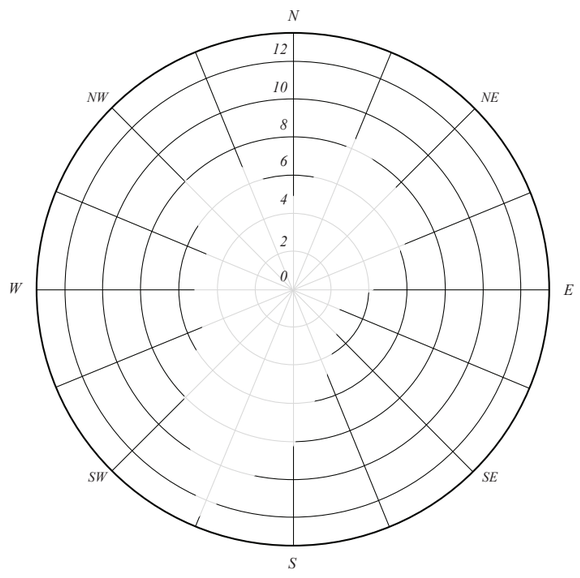
[January, 2017]



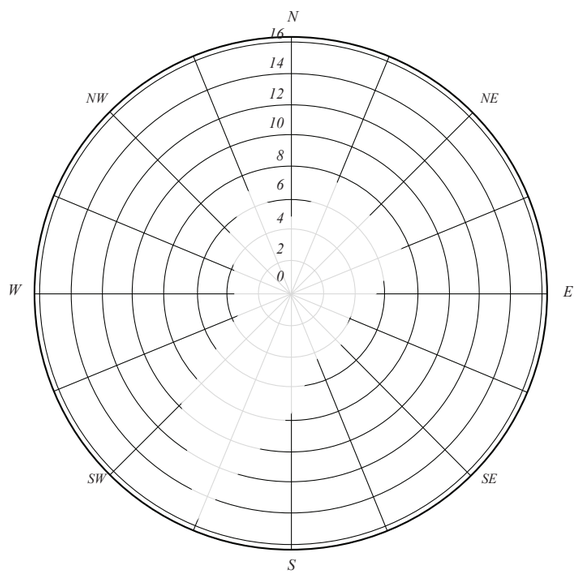
[February, 2017]



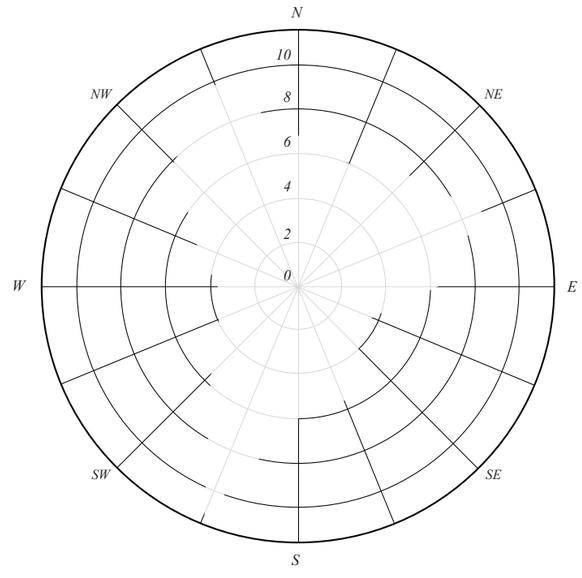
[Martch, 2017]



[April, 2017]



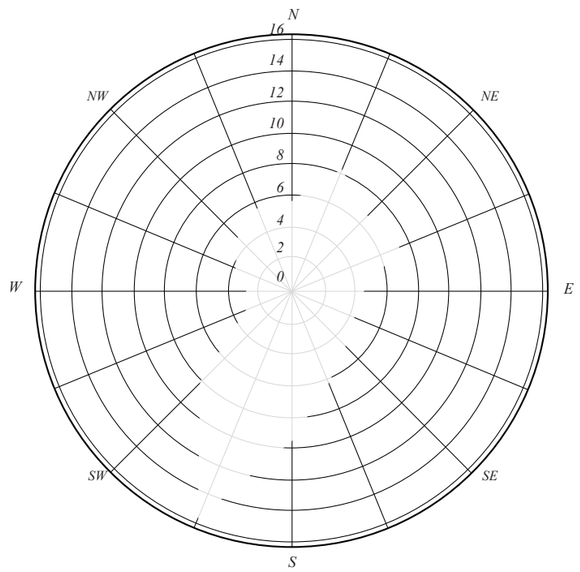
[May, 2017]



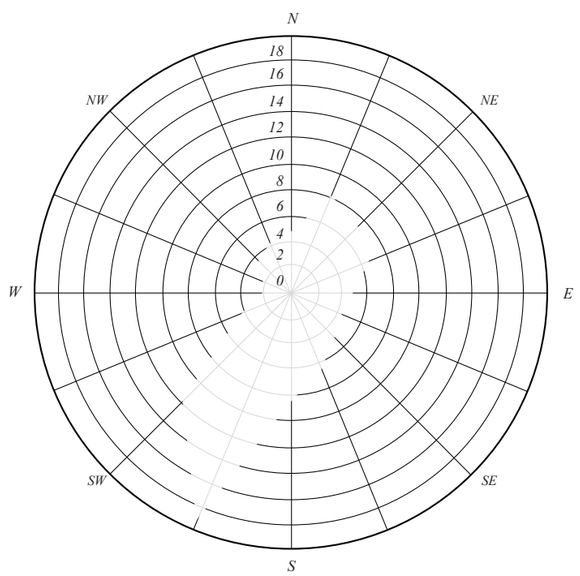
[June, 2017]

CLIMATE

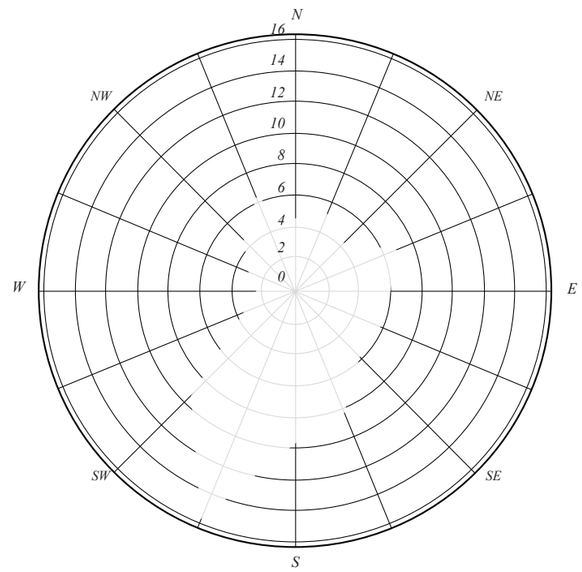
Wind // Direction distribition in %%



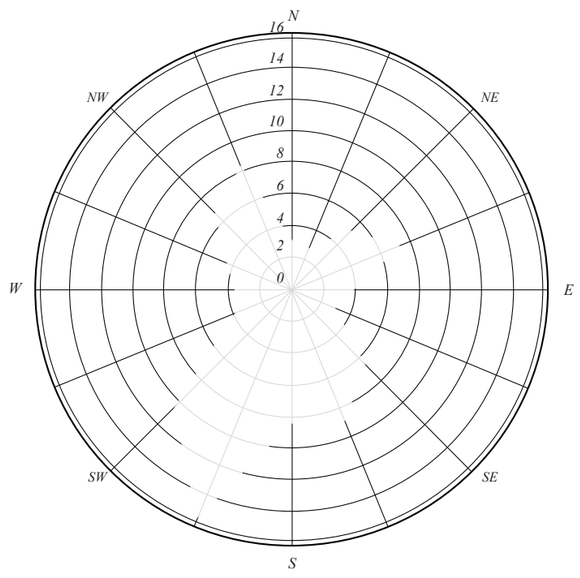
[July, 2017]



[August, 2017]



[September, 2017]



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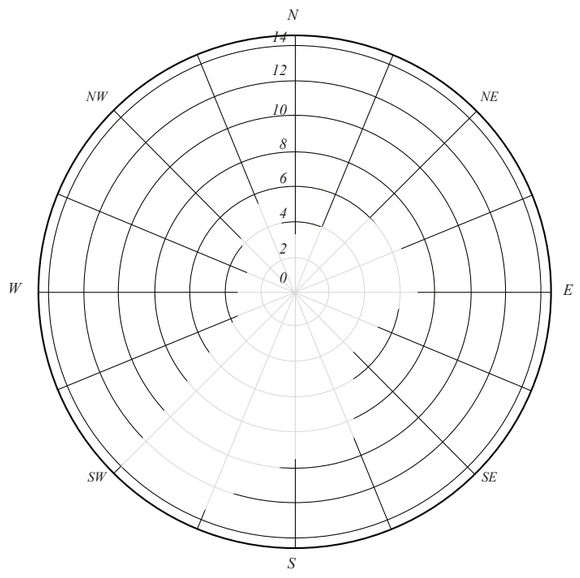

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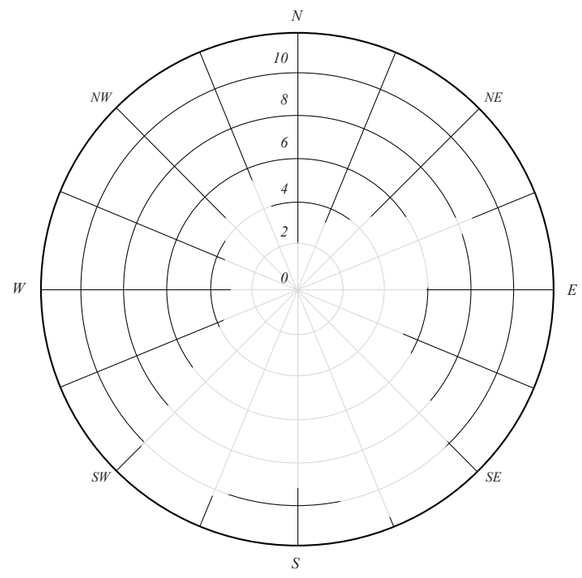
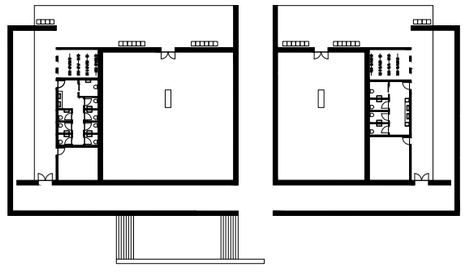


[December, 2017]

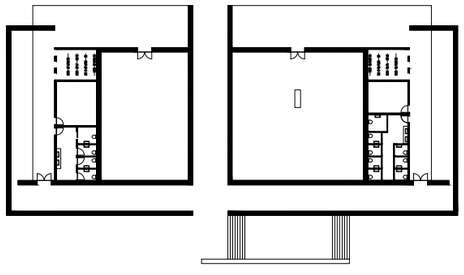
THE CHAPELS

DESIGN ITERATIONS OF PLAN SOLUTIONS

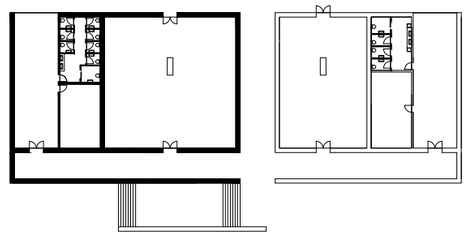
1. NINA HIPPO FED OVERSKRIFT TIL ET HIPPO NINJA COOL KREMATORIE



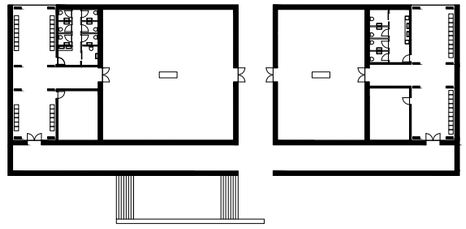
2. NINA HIPPO FED OVERSKRIFT TIL ET HIPPO NINJA COOL KREMATORIE



3. NINA HIPPO FED OVERSKRIFT TIL ET HIPPO NINJA COOL KREMATORIE



4. NINA HIPPO FED OVERSKRIFT TIL ET HIPPO NINJA COOL KREMATORIE



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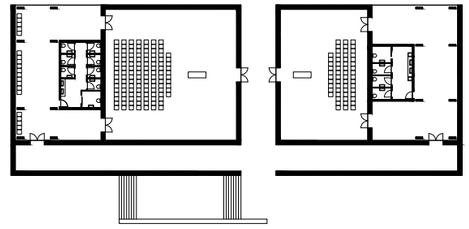
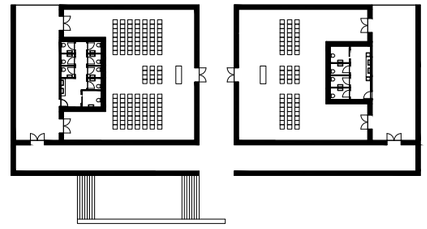
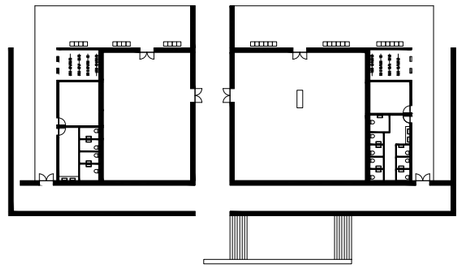


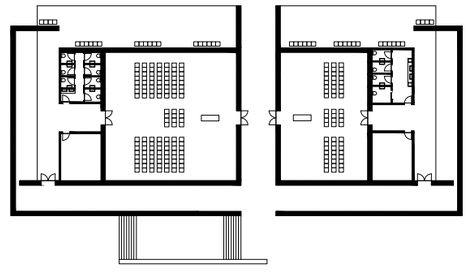
6. NINA HIPPO FED OVERSKRIFT TIL ET HIPPO NINJA COOL KREMATORIE



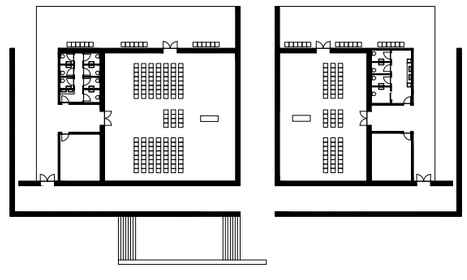
7. NINA HIPPO FED OVERSKRIFT TIL ET HIPPO NINJA COOL KREMATORIE



8. NINA HIPPO FED OVERSKRIFT TIL ET HIPPO NINJA COOL KREMATORIE



9. NINA HIPPO FED OVERSKRIFT TIL ET HIPPO NINJA COOL KREMATORIE



$$M_G = \frac{q_1 l_1^3 + q_2 l_2^3}{8(l_1 + l_2)}$$

$$M_{AG,max} = \frac{1}{2q_1}\left(\frac{q_1 l_1}{2} + \frac{M_G}{l_1}\right)^2$$

$$M_{GI,max} = \frac{1}{2q_2}\left(\frac{q_2 l_2}{2} + \frac{M_G}{l_2}\right)^2$$

$$R_{AY} = \frac{1}{2} q_1 l_1 + \frac{M_G}{l_1}$$

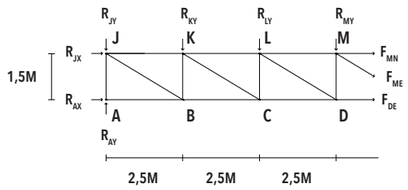
$$R_{GY} = \frac{1}{2}(q_1 l_1 + q_2 l_2) - M_G\left(\frac{1}{l_1} + \frac{1}{l_2}\right)$$

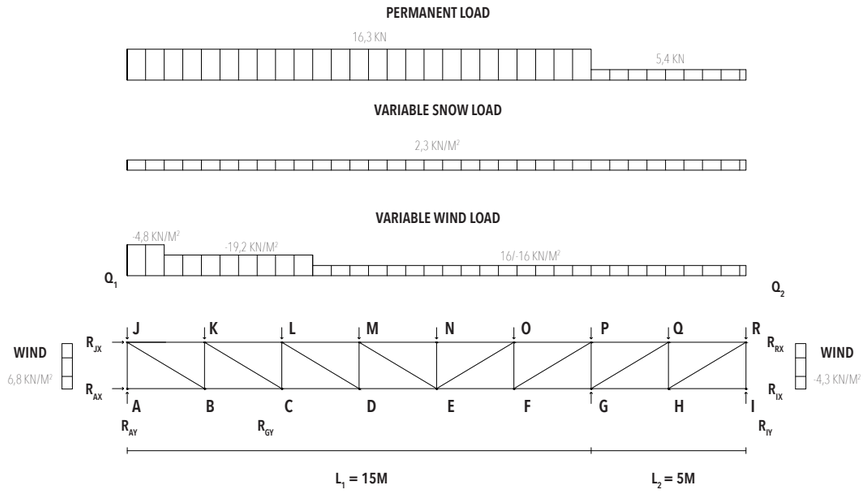
$$R_{IY} = \frac{1}{2} q_2 l_2 + \frac{M_G}{l_2}$$

$$F_{MN} = \frac{(R_{JY} * L_3) + (R_{KY} * L_2) + (R_{LY} * L_1) + (R_{MY} * 0m)}{-1{,}5m}$$

$$F_{ME} = \frac{-R_{JY} - R_{KY} - R_{lY} - R_{MY} + R_{JX}}{\cos^{-1}(\theta)}$$

$$F_{MN} = F_{ME} * \sin^{-1}(\theta) - F_{DE}$$





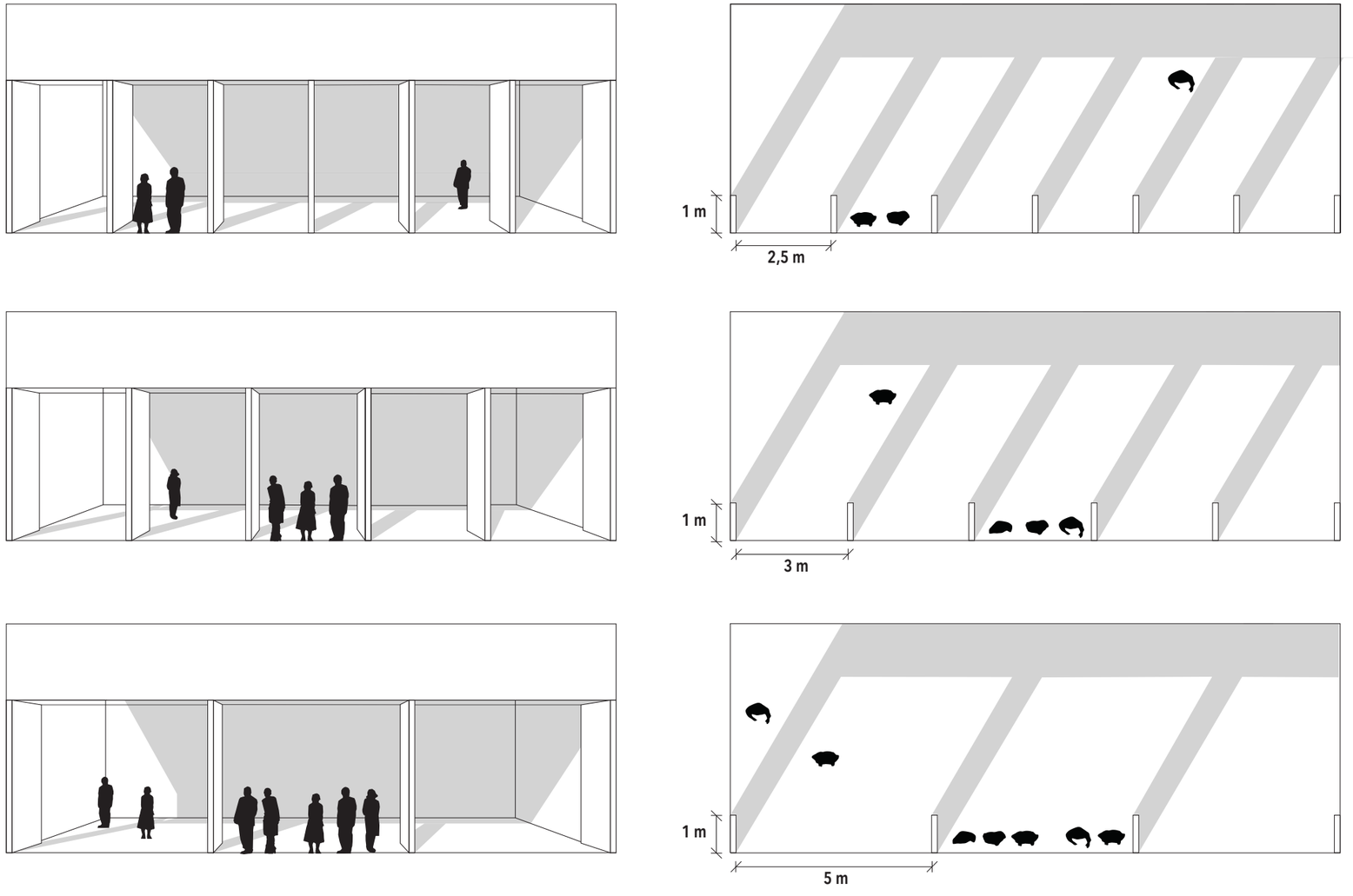
LOADS / TABLE 05 / LOADS IN EACH POINT

DESCRIPTION	PERMANENT LOAD $P_{ROOF} + P_{TRUSS}$	VARIABLE SNOW LOAD Q_{SNOW}	VARIABLE WIND LOAD Q_{WIND}	LOAD IN POINT [KN/M²]
R_{JY}	1,69	6,50	-0,45	-31,69 KN/M
R_{KY}	3,38	13,0	-0,60	-63,76 KN/M
$R_{...}$	3,38	13,0	-0,64	63,86 KN/M
R_{MY}	3,38	13,0	-0,20	64,74 KN/M
R_{NY}	3,38	13,0	- 0,20	64,74
R_{OY}	3,38	13,0	- 0.20	64,74 KN/M
R_{PY}	3,38	13,0	- 0,20	64,74 KN/M
R_{QY}	3,38	13,0	- 0,20	64,74 KN/M
R_{RY}	1,69	6.50	- 0,10	32,37 KN/M
R_{JX}			1,50	2,50 KN/M
R_{AX}			1,50	2,50 KN/M
R_{RX}			-0,94	-1,56 KN/M
R_{IX}			-0,94	-1,56 KN/M

LOADS / TABLE 06 / CALCULATED VALUES

DESCRIPTION	LOAD IN POINT [KN/M²]	
M_G	-886,13	KNM
$M_{AG,MAX}$	46,83	KNM
$M_{GI,MAX}$	167,86	KNM
R_{AY}	251,50	KN
R_{GY}	587,33	KN
R_{IY}	-136,78	KN
F_{DE}	-12,85	KN
F_{ME}	-104,65	KN
F_{MN}	199,43	KN

SPATIAL DETAILING - CONSTRUCTIVE PRINCIPLES
ITERATIONS OF THE GATHERING HALL
IDEATION



▲ Ill. 303 - .