LA CITADELLE VISITOR CENTER

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TITLE PAGE

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SYNOPSIS

The project examines the potential of developing tourism in Haiti in relation to The National History Park. The project focuses design a visitor center at the site including exhibition of the modern Haitian art and the Haitian history. In addition to this center the project also developes accommodation facilities for international and domestic tourists.

The buildings are design in relation to providing the guest not only an experience of the exhibitions but also a profound experience of the landscape, and the architecture works with revealing and referencing the beauty of the nature through its form and choice of materials.

Anne Gram Højbo

Sigrún Gu n Halldórsdóttir

"Jeg tror på den haitianske befolkning. Det, der slår mig, er deres livsvilje. Det ser jeg ingen andre steder. De er altid i stand til at klare det. Det er noget, der er meget karakteristisk for haitianerne. Det giver mig håb for Haiti" Jørgen Leth [www.politiken.dk]

READERS GUIDANCE

To make it easier for the reader to understand the project, the report will not be in the chronological order it was conducted in. The report starts with a short introduction to the project and reasoning for the chosen subject which is based on a thorough background analysis on Haiti which is documented, and can be found in the end of the report.

The first chapter contains the context analysis followed by an analysis on the subject relevant for this project. Then the final product will be presented and hereafter explained throughout the sketching phase and the synthesis phase. Finally the entire backgrund analysis can be found.

References are used in accordance to the Harvard Method [Author, year] for books and articles and [designated name] for web pages and ilustration references are indicated by continuing numbers [ill. #]. The references can be found at the end of the report.



ILL 01: Map of the world

TABLE OF CONTENT

INTRO		
READERS GUIDANCE INTRODUCTION METHODS MOTIVATION INITIAL PROBLEM STATEME DETERMINING THE PROJECT PROJECT BREIF PROBLEM STATEMENT	5 8 9 1 1 7 1 1 1 1 1 1 1 1	5 3 2 10 11 13 14 15
CONTEXT ANALYSIS: NORTHERN HAITI MILOT NATIONAL HISTORY PARK THE PATH INTERVIEW THE SITE CLIMATE		L6 20 22 26 28 30 36
ANALYSIS SUSTAINABILITY IN A HAITI, HOT AND HUMID CLIMATE EARTHQUAKE AND HURICA THE VERNACULAR HAITIAN MATERIALS CONCLUSION VISION DESIGN PARAMETERS ROOM PROGRAM	AN CONTEXT	38 10 12 16 18 52 54 54 56
PRESENTATION SITEPLAN VISITOR CENTER ACCOMMODATION		56 58 52 70
SKETCHING PHASE PLANNING THE AREA INITIAL SKETCHING THE FUNCTIONS PLACEMENT ON SITE FLOW STRATEGIES THE CONCEPT DEVELOPING THE CONCEPT ACCOMMODATION THE ROOF	8 5 5 5 5 5 7 7 1 1 1 1 1 1 1	36 38 90 94 96 98 102 104 110

6

SYNTHESIS PHASE	120
DETALING THE FACADES	122
DETAILING THE STRUCTURE	126
NATURAL VENTILATION	140
CONCLUSION	142
REFLECTION	144
SOURCES	
146	
SOURCES ON ILLUSTRATIONS	148
ΑΡΡΕΝΠΙΧ Α	150
APPENDIX B	172
APPENDIX C	174
APPENDIX D	176

INTRODUCTION

The recent financial crisis has struck the architectural world hard. [Lepik, 2010] Architectural firms are responding to the decreased demand with job cuts and closing of branches. As a result, this crisis seems to suggest a tendency: that architecture might have placed itself too much in the service of economic and political interests and has had too little regard for social concerns. [Lepik, 2010]

While the western architectural world seems somewhat on a standstill, one is tempted to use this situation to evaluate upon the architects field of work and whether it might be time to change location to a place – or field – less developed. Is architecture only a thing for the rich, and already developed world to enjoy, or can it in reality bring joy to people facing much larger problems in their everyday life, or will architectural design seem superficial in such a world?

To answer this question we look at the influence of architecture. In the present day there are no discussion on whether architecture has had great influence on society and that the two are inseparable. In 1923 Le Corbusier claimed it to be true when he stated that the balance of society comes down to a question of building (in relation to the poor unhealthy housing situation under the industrialization, causing tuberculosis): "Society is filled with a violent desire for something which it may obtain or not. Everything lies in that: everything depends on the effort made and the attention paid to these alarming symptoms. Architecture or revolution. Revolution can be avoided" [McLeod, 1983, p. 136]

Hereby stating that architecture cannot be avoided and it is essential for a well-functioning society. Since then the effect of this have been seen in numerous occasions. On a small scale for example, a well-designed school can positively help children identify themselves as a part of a larger community, and on a larger scale there are examples of well-designed urban areas that have enhanced the quality of life and given pride to the inhabitants and the city. [Lepik, 2010] Acknowledging the effect architecture has on society one might ask the question: What proportion of the world is 'great' architecture reaching today?

It has always been the case that the people who are in most desperate need of innovative architectural solutions are precisely those who cannot afford them. According to the United Nations, roughly one out of seven of the world's population live in extreme poverty and three billion people – nearly half the world's population – do not have access to clean water and sanitation facilities. [AFH, 2006]

These ongoing challenges those people face are occasionally brought to the world's attention, high-lighted by catastrophic events such as the tsunami in Thailand, 2004 and the earthquake in Haiti, 2010. In addition to the obvious human tragedy these disasters bring along, they also effects the built environment – homes, schools, hospitals, neighborhoods and villages destroyed. [Lepik, 2010] Faced with such challenges in our environment, questions inevitably arise regarding the role of the architects.

"To increase the social relevance of architecture at the beginning of the twenty-first century, architects must no longer think of themselves simply as designers of buildings, but rather as moderators of change". [Lepik, 2010]

'Great' architecture should no longer solidly be a luxury for the few but a necessity for the many. It is important to remember that architecture alone is in no position to solve the comprehensive problems facing these countries. But even though they require action on a political level, one must not undermine the possibilities of architecture in such a situation. Reverting to Le Corbusier, who was arguing for an expansion of the very conception of the architect's role to embrace the consideration of social problems, we gain some insights on the subject: "Now to create or reconstruct a city is assuredly an issue of national economy, but it's also architecture! To sanitize a tightly populated region, to join a river's banks with a bridge, that's architecture. To plan conveniently a locale, to study the inhabitant's social customs and needs to ease their labor, their education, their

rest - that is, to involve oneself with individual and collective psychology that's still architecture" [LeCorbusier, McLeod, 1983, p. 136]

The physical design of our homes, neighborhoods, and communities shapes every aspect of our lives and from this there can no longer be any question about the architects' role in relation to people in need. As Cameron Sinclair, co-founder of 'Architecture For Humanity' says when asked to comment on the architects' role in our world: ""Architecture or revolution. Revolution can be avoided." Le Corbusier got it wrong – what we need is a revolution in architecture". [www. worldchanging.com]

On January 12, 2010 Haiti suffered one of the largest earthquakes in the Caribbean region in the last 150 years. The earthquake measuring 7.0 on the richter scale was centered near the country's capital, Port-au-Prince, and destroyed nearly the entire urban infrastructure, homes, commercial and institutional buildings in the country. It is estimated that over 230,000 lost lives, 100,000 homes destroyed, 200,000 homes damaged, 1,500 schools and health centers collapsed along with numerous other buildings and neighborhoods ruined or uninhabitable. The challenges facing the people of Haiti to rebuild their country are monumental, [Bradford, 2010] Today, one year after the devastating earthquake, many organization, as well as individual through-out the world, have responded to the situation in Haiti with focus on search and rescue, emergency aid and meeting people's basic need and shelter. Temporary houses and schools have been build throughout the country but the need remains for sustainable viable solutions.

This project takes its staring point in the hidden treasures lie in this area, treasures that can be usable in the rebuilding of Haiti and its economy. This project will utilize these treaures as a way to attract attract tourism to the country, with the hope of thereby having laid the ground stone of a sustainable future.

METHODS

This project is based on creating a building design through an integrated design process (IDP). This strategy contains four phases; Analysis phase, Sketching phase, Synthesis phase and Presentation phase, and promotes the integration of aesthetic, functional and technical parameters, which through multiple iterations will lead to an integrated design.

THE PROGRAM

In this phase the entire problem is analyzed through contextual analysis and user profile as well as how sustainability can be used in the 3rd world. The gathered information will give an understanding of the problem and lead to a vision for the project and define design parameters to be used for the sketching phase. The research is made with the empirical analytical methods when gathering factual information.

THE SKETCHING PHASE

The information gathered in the analysis phase is used to generate an architectural design proposal containing aesthetical, technical and functional aspects through sketches. In this phase the main concept emerges. The tools used in this phase are hand drawings, models, AutoCAD, revit and Sketch-Up.

THE SYNTHESIS PHASE

Here the concept is detailed and thorough calculation adjustments are made based on optimization of the parameters. Architectural and functional needs flow together with the constructional and environmental needs to form the final design.

THE PRESENTATION PHASE

In this phase the final design proposal is presented and drawings, illustrations, physical models and renderings are conducted.

The tools used in this phase are Auto CAD, 3DS Max, Revit Architecture/Archicad, Illustrator, Photoshop and In-Design.



ILL 02: The integrated design process



MOTIVATION

The motivation for this project is the interest of working with contextual design in a third world context. With this thesis we desire to explore how architecture can contribute in developing a sustainable future for the people of the developing world. Sustainability is a commonly used term in present day architecture along with other fields. We have on previous semesters investigated the term in order to comprehend it in a Danish context. In this project we want to challenge the term in a different context. We want to challenge our selves by using design methods and knowledge gained during the bachelor and master program of Architecture and Design to work with architectural design in a totally different context since all of the previous projects have been in Denmark. We find it appealing to research another country and acquire the fact and knowledge necessary for creating contextual architecture, to try to understand the venacular architecture and building methods of this country. We chose to work with Haiti because of the recent earthquake and the severe consequences. We find it very appealling to try to understand the impact of this natural disaster and look for problems that architects can help solve. The challenges facing the people of Haiti to rebuild their country are monumental and as architects we feel that we can contribute to the reconstruction of Haiti as a flourishing nation.

In our search for this project we found a two-stage Ideas Challenge, held by The Association of Collegiate Schools of Architecture (ACSA), the United State Agency for International Development (USAID), and Howard University's, School of Architecture and Design, focusing on providing permanent solutions to the rebuilding of Haiti. A summary of the competition can be found at the end of the report as well. This raised the following initial problem statement:

INITIAL PROBLEM STATEMENT

How can we use the power of architecture to help rebuild a sustainable future for Haiti that responds to the contextual needs of the country? *"It is not earthquakes that kill people - it's buildings that kill people. Buildings that aren't designed and build to withstand earthquakes"*, Robin Cross, Director of projects, Articel 25 and Outreach International [www.politiken.dk]



ILL 03: The earthquake has left a mark on the Haitian ground



ILL 04: The rebuilding in Haiti

"It would be a wonderful thing if the transportaion permitted every Haitian child to come here, they would learn about the greatness of the country's history."

Bill Clinton, at The Citadelle [http://anwe.com]

DETERMINING THE PROJECT

As described in the previous, the theme of this project is to investigate how we as architects can use our professional knowledge to help the rebuilding of Haiti as a flourishing nation. In order to do this it is essential to fully understand the problems prevaling in Haiti in order to see the possible solutions. Therefore a thoroughly analysis on the country, its history, culture, economy, population and earthquake consequenses, where conducted. The entire analysis can be found at the end of the report.

After the analysis we could start to evaluate how we could help the rebuilding. We brainstomed on the problematic issues we felt we could try to solve with our specific knowledge. The following is an evaluation of these problems, and the foundation for determining the project brief for this master thesis.

From the analysis of the history of Haiti we have learned to be careful with implementing western systems without any respect to the Haitian way of living, because they will not adopt these systems. In other words, we cannot just dump an architectural shell around them and suppose that they will adapt to it; we need to design architecture in their spirit. From their economic crisis we saw a need for creating new jobs in order to stabilize their agriculture and assist the rural areas in order to prevent migration to the already overpopulated capital. From their culture we have seen a possibility for Haiti to reach the rest of the world through their art. We also found examples of beautiful historical buildings recently obtaining World Heritage Status which could help generate a tourism industry in the country. Furthermore we found that the Haitian government, and the Haitian population actually was very interested in creating a tourism industry and saw this as a way out of poverty. Finally we saw a need for rebuilding schools and houses.

We are now able to identify specific problems in Haiti where we believe that we can use our professional competence as architects to help the rebuilding process, these are primarily Education, Housing, and Public institutions. One may say that housing and education are the two obvious problems to be solved in this context. However after having analyzed the current situation and future plans for the country we realized that many NGO's and architects are already working in this field, both on short term and long-term solutions. The need for housing and school are so fundamental that it is hard to look past it, but with focus on sustainable solutions for the country we decided to use our distance, from the chaos prevailing in Haiti, to zoom out and look for more innovative and sustainable solutions. As MacCormack, President of Save the Children, stated in relation to the current situation in Haiti, we want to teach them how to fish instead of just giving them a fish. By teaching them how to fish we mean we want to help generate a tourism industry they can benefit from on long term basis.

"The fortress could be "one of the No. 1 things to see in Haiti if not the Caribbean... I've been there. It's incredible."

John Weis, the Royal Caribbean Cruise line's private destinations director [www.welt.de]

PROJECT BRIEF

Before the analysis our knowledge of Haiti was limited to what has been reported in the media in relation to the earthquake and the image was rather depressing but after the analysis a different image of Haiti appeared. An interesting image filled with possibilities and creativity. We wish to focus on the qualities and opportunities that we see in Haiti and its inhabitants and believe that we can use our specific architectural knowledge in the field of helping to develop a tourism industry in Haiti by focusing on the qualities the countries possesses and taking advantage of these. Haiti is a very beautiful mountainous country with tropical climate and great beaches perfect for tourism. Haitians are excellent artists and this is something we want to show the world. Haiti was the first independent black nation in the history and could be a really interesting tourist attraction, especially with focus on the northern region, with its landscape and historical monuments, recently declaimed a World Heritage Site. The World Heritage Site consists of one of the first Haitian kings palace (Sans Souci Palace) and the large fortress of the Caribean (The Citadelle) placed at the top of a mountain which is hard to reach because of its placement at the top of a steep mountain.

We wish to make these monuments accessible and open the eves of the world to this spectacular site by creating a visitor center located near The Citadelle as an attempt to generate more tourism at the site. The visitor center will attract international tourism by telling the world another story than the traditional tales of poverty, political chaos and natural disaster. Through creating awareness of the hidden treasures in the Haitian architectural history the hope is to create an opportunity for them to reach the world on another level and thereby planting a seed for a tourism industry that could, along with other factors, help rebuild Haiti. The visitor center should exhibit the National History Park, arrange guided tours and give information on the site, as well as promoting present Haitian art through exhibitions. Haitian school children should have the opportunity to visit this center in order to gain knowledge about their history and the Haitian art and create their own art in different workshops.

The placement of the building will be carefully considered in relation to the context and respect for The Citadelle, but also with focus on creating an interesting and alluring experience of the landscape. The experience of the context is a central element for the project in order for it to reveal and present the landscape in the best possible manner for the tourist whilst communicating the history of The Citadelle.

Considering the beautiful landscape that is the setting for the Citadelle we want to give the tourist the opportunity for overnight stay. It is quite an effort to reach the Citadelle since the site is only accessible by foot or horseback riding which makes the introduction of a hotel relevant.

Out of the two functions in this project, the main focus will be on the visitor center and the hotel facilities will be understood as an additional choice for the tourists and will therefore not be detailed.

This will be done by an integration of climatic design principles inspired by Haitian venarcular architecture implementing materials and a structural system that can resist hurricane and earthquake in order to create a sustainable visitor center in a haitian context. These aspects will form the base for defining the vision for the project which will be at the end of the analysis.

PROBLEM STATEMENT

How can a visitor center, including accommodation facilities, be designed in order to enhance tourism in The National History Park?



ILL 05: The Citadelle

CONTEXT ANALYSIS

In order to solve the problem statement raise in the previous chapter an analysis and mapping of the location of the National History Park is essential. The following chapter starts with an introduction to the site and aims to describe the context of the site, its qualities and characteristics.

The climate, the topography, infrastructure, public buildings, interesting buildings and their historical value and architecture and materials will be analyzed and mapped. The intention of this chapter is to draw some design parameters for the design of the building and to find its ideal location whilst gaining a complete understanding of the site.



NORTHERN HAITI

The northern region of Haiti is the most popular tourism sites in the country due to its spectacular coastline and beaches, and the National History Park. The largest city, Cap-Haiten was where Columbus originally entered the island and where the slave revolution started. The city has traditionally been a resort and vacation destination for the haitian upper class along with the caribbean cruises. Today it has approximately 130,000 residents which makes it the second largest city in Haiti, it also has a small domestic airport. The earthquake left little damage in northern Haiti, but prompted an influx of residents from the Capital and the region is struggling to accommodate them. Many of the northern Haitians live in rural areas or small cities.

[www.lonelyplanet.com]



ILL 07: The area seen from north

THE URBAN AREA



ILL 08: Overall view of the area



ILL 009: Church in Milot



ILL 010: Typical street in Milot

ILL 011: Cemestry in Milot

MILOT

As seen on the illustation on the previous page, The Citadelle is placed on top of the highest mountain in the norther region overlooking the entire region. The Sans Souci Palace is situated in the vally between the mountains with the scenic mountain ridges as an impressive backdrop. The small rural town surrounding the palace is Milot. Milot is located only 20 km to the south of the largest city in the northern region, Cap-Haitien. Milot became an important player in the earthquake aftermath because the town hosts the Sacré Coeur hospital operated by the Sovereign Military and Crudem Foundation. The town is the former capital under the self-proclaimed King Henri Christophe. Today the town of only 5000 inhabitants honors and preserves the legacy of its past, Haiti's most well know landmarks. Most of the residents in Milot live of the tourists that visit the National History Park. [www.travelthewholeworld.com]



ILL 012: The illustration shows a plan of Milot. The rural town have a few functions which are marked on the map.







ILL 013: Pictures from the area



ILL 014: The Palace Sans Souci

NATIONAL HISTORY PARK

The Citadel, Sans Souci and Ramiers, was designated a World Heritage status by UNESCO in 1982 under the name 'National History Park'. It illustrates the historical situation of Haiti at the dawn of its independence. The complex is situated in a splendid natural setting of mountains covered with luxuriant vegetation and is the largest fortress in the Western Hemisphere. These monuments serves as universal symbols of liberty for descendants of African slaves everywhere, being the first structures ever constructed by black slaves who gained their freedom. The following is a description of these monuments.

PALACE SANS-SOUCI

The palace Sans Souci, meaning "without worry", was buildt by Henri Christophe as his royal residence. Henri Christophe was a prominent leader during the haitian slave rebellion and declared himself king of northern Haiti in 1811 during the periode where Haiti was split in two nations. The palace is situated at the beginnig of the tail up to the citadelle close to the church of the town, which was orginally build solely to serve the King's religious interests. The astonishing Sans Souci, construction of which started in 1810 and compleated in 1813, is modelled after the namesake in Potdam, Germany and was

at that time acknowledged by many to be the Caribbean equivalent of the Palace of Versailles in France. Its beauty lies in its combination of different european architectural styles along with a magnificant landscape backdrop. Surrounding the palace is a great garden very usual for palaces at that time, including the stepped gardens reminiscent of Potsdam, a baroque staircase and water basins resembeling those of Versailles. Unfortunately a severe earthquake in 1842 destroyed a considerable part of the palace but according to the UNESCO, World Heritage Convention, these ruins are currently in the process of being restored.



ILL 015: Approaching Sans Souci Palace



ILL 016: Inside Sans Souci Palace



ILL 017: The Sans Souci Palace



ILL 018: Arial view of The CItadelle

THE CITADELLE LAFERRIERE

Eight km uphill from Milot looms the massive stone mountaintop fortress The Citadelle, one of the most impressive fortresses in the world. Henri Christophe, who was a general in the Haitian military at that time, was in 1805, under the Emperor Dessallines, comissioned the construction of this immense fortification designed to protect Haiti from a feared french invasion. This spectacular structure, build from 1805 to 1820, covers an area of 10.000 m2 and was build at the altitude of 841 meters on top of Bonnet a L'Eveque mountain providing an overlook from where Cap-Haitien and the Atlantic Ocean are visible. The fortress



ILL 019: View from The Cltadelle

sits beautifully in exceptional harmony with its mountainous setting and surrenders itself completely to the topography of the mountain leaving the two to merge together.

The fortress was build by stone block lying directly on top of the mountain and is therefore buildt around the shape of the mountain. The blocks where joined by a mortar mixture of quicklime, molasses and blood from cows and goats. Its defensive walls have a height of 40 meters in some places and contains 365 cannons including large pyramidal stackpiles of cannoballs. The fortress also holds dungeons, bathing quarters, bakery ovens and with its large cisterns and food stores large enough to store enough food and water and shelter for 5,000 people for an entire year, if necessary.

Though symbolizing the slaves rebellion, the fortress was ironically build by 20,000 former slaves, now forced to work with little or no pay. Considering its colossal physical dimensions it is evident that it was hard work and caused many deaths during construction. This eventually made Henri Christophe very unpopular and led him to commit suicide in 1820 in fear of being overthrown.

Since its construction, the fortress has withstood numerous earthquakes and been repaired several times due to superficial damage. Therefore the original design remains the same. Today the fortress is a haitian symbol, featured on their currency and stamps.

BELOW, ILL 023: Details of The CItadelle BELOW RIGHT, ILL 024: The CItadelle courtyard



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ILL 020: Canons at The CItadelle



ILL 021: Canons at The Citadelle



ILL 022: View from the top of The Cltadelle



THE PATH



ILL 025: The path from Milot to The Citadelle

The road from Cap-Haitien to Milot can be travelled by car or tuk-tuks. In Milot there is one main street leading up to the church right in front of The Palace Sans Souci. In Milot there are several self-appointed guides encouraging tourist to rent at horse or donkey for the uphill treck to The Citadelle.

The two monuments are connected through a small paved pathway starting at 120m above sea level and continuing for 7km until it reaches The Citadelle at 841m above sea level. This height difference results in a climb with several spectalur views along the way. The first part of the path can be hiked all the way up to the mid-level parking lot. This is a parking lot for donkeys and horses which also functions as a marked place. The final climb, a steep cobblestone path, is usually travelled on horses and donkeys that beaten with sticks by local guides. Along the path the locals sell oranges and other things to the tourists. The entire path provides scenic views towards east. Shortly after passing the donkey parking the west view is revealed. It takes approximately one hour to get to the donkey parking and from there one usually rents a donkey for the rest of the climb since the last mountaintop is extremly steep. The twisted path to the fortress reveals different angles of The Citadelle and the structure assumes different geometric forms based on the viewer's orientation. Most of the interior of the Citadelle fortress is accessible to visitors and they can climb the staircase all the way to the fortress's roof free of rails.



ILL 026: Road leading to Sans Souci



ILL 027: Locals selling hats in front of Sans Souci



ILL 028: Approaching Sans Souci



ILL 035: Horsbackriding on the path

ILL 036: View from the path

ILL 037: Finally The Citadelle

"We walked...up and up and up and....! Up to the top of Bonnet a L'Eveque mountain, 3,000 feet up! At first the path incline was average but it did not take long before it became very steep. the views were breath taking along the way. Good excuses to stop and rest too!!! Saw flowers I have never seen before. This was hugh and the most brillant orange!!!! God's creation is so diverse and wonderful to behold! And we finally arrived. Greeted by piles of cannonballs. All this work to build and it was never attacked!!!", tourist at The Citadelle

INTERVIEW

Under normal circumstances a site visit would be beneficial when trying to solve this problem statement, but unfortunately the situation in Haiti during the time periode that this projects is developed complicates such a visit and any travel to Haiti at this time is strongly discouraged. Therefor we contacted people who have been at the site in order to gain a full understanding of the site, Milot and the impact a visitor center would have on the situation. A transcribed versions of the interview can be found in appendix along with a copy of emails.

YVON ST. MARTIN

Yvon St. Martin works as a logistikker for The Red Cross Organisation, at the moment he lives in the Dominican Republic but is originally from Cap-Haitien. He had been at the site twice and expressed enthousiasm towards it and said it was a 'good place'. We talked about his first visit to the site which was a school trip. From that we learned that schools in northern haiti used to have these field trips where they had a tour guide show them the place and they spend the night at the school in Milot. However he says that this is not common nowadays and that people are generally not that interested in the history of the citadelle but he belives that a visitor center would help.

He explained that the people in Milot used to live of the money they made on tourism but after 1986 the tourist deflourised and less people visit the Citadelle. He belives that a visitor center would help the tourism industry and that the locals would benifit.

"It will have a positive impact on the entire contry because a small contribution that can add up to something in the local economy will have an impact on the entire country as well. " (Yvon St.Martin) However he states that the people of Milot are very intrusive and desperate and that they need to learn how to approach tourists.

When talking about the placement of such a visitor center he suggester that it should be in connection to the donkey parking since this would be a conviente time for people to take a break and get out of the sun before the final steep climb.

JØRGEN LETH

We also contacted the danish journalist and film director Jørgen Leth who have lived in Haiti since 1991 to hear his thoughts on the subject. He also expressed problems with the locals and mentioned that they complicated a trip to The Citadelle so much that he was reluctant to go back. The following is an extract of his story when he visited the site:

"Virkeligheden er sådan, at der næsten ingen besøgende er til Milot, der er jo ingen turister i Haiti udover de nævnte cruiseships, og enkelte backpackers.

Og de lokale i Milot er meget pågående og vil gøre næsten alt for at få penge ud af besøgene, forståeligt nok. Borgmesteren er en skurk.

Jeg har f.eks. Ikke været derude de sidste ti år, jeg gider ikke det bøvl

der er. Skal man op på et æsel, eller ej osv.

Jeg har for mange år været ude for at da jeg kom ned fra citadellet fandt

jeg min bil med to punkterede dæk.

Det er jo en lille business. så alt hvad der skal laves handler om også om uddannelse, og en rationel indstilling.

Det sidste er svært at opdrive i Haiti. En god idé er kun god her, hvis den kan bruges til at skimme penge af. Og det gælder helt op til ministerplan."

(Jørgen Leth), see the entire email in Appendix B

From this is can be concluded that in order to develop tourism on the site it is necessary to make the trip easier. This can be done through providing places for rest and relaxation along the path whilst creating defined areas where the locals can sell their things without being too intrusive. It would be conviente to provide some information at the beginning of the path where the tourist can hire a guide and place the actual visitor center near the donkey parking closer to The Citadelle. From analysing the path it became clear that there is a clearly define break at the top of the mountain where the view to the west is revivaled. The experience the visitors gets at this site is magnificent and it would be a very interesting location for the visitor center since it is also conviently close to the donkey parking. It is very interesting to work with the architecture as a way to release the beauty of this landscape.



ILL 038: Local selling articles to tourists



ILL 039: Local children performing at the path



ILL 040: Horseback riding to The Citadelle



ILL 041: Local children following the toursits on the path



ILL 042: The illustation shows the top of the mountain including the path intersection and The Citadelle. The dotted line show the chosen location for the Visitor Center which is magnified on the next page.

THE SITE

In the previous the final site was chosen to be at the top of the mountain. The following will be an analysis of this site in order to understand its character and link these different characters to the different functions. The topography and climate will also be investigated.

TOPOGRAPHY

The site is naturally definded by the topography of the mountain as the clearing on the mountaintop where the terrain flattens and creates a small plateau. The topographic map shows that the plateau narrows in the middle between the larger plateau to the north, which slope up a few meters, and the steep mountaintop that The Citadelle sits on. This narrow plateau creates a defines boundery between the east- and the westside of the mountain. The angles of the sections follows the contour line of the site. From section B it can be seen that the westside has a steeper slope than the eastside. The illustrations shown on this spread thereby provides and understanding of the site where the visitor center will be placed.









"The architect must be attentive towards the place's innate qualities in order to allow for the building and the site to mutally give each other something new. The architecture has to interpret the site's specific characteristics and enhance the viewer's attention on the site through the use of form, materials, room and colors", Peter Zumptor [www.arksiteplus.dk]



ILL 046: Structure at The Citadelle



ILL 047: The path





ILL 049: Pavement on the path



ILL 050: Edges and characteristics

EDGES

The site is defined by vegetation and the topography. The top of the mountain defines a clear and sharp edge between the east side and the west side of the site. This becomes a narrow plateau with very low or no vegetation which created a clear boundary between the surrounding two slopes with more dense vegetation. Placing the building on this plateau will have a smaller impact on the surroundings which is desirable in a site where deforestration is a problem.

Towards the south the site is defined by the last steep mountaintop that leads to The Citadelle.

CHARACTERISTICS

The site is characterised by its vegetation and the shift between dense high vegetation and clearings. This is one of the few places in Haiti where vegetation is still somewhat untouched and the site is filled with a great variety of plants and trees. Occationally boulders of limestone peaks up from underneath the ground and reveals what the mountains consists of.

The clearing on top of the mountain provides a plateau where the character can be describes as exposed, openness, public, large scale and overview. The character of the steep slope on the west side of the mountain can be describes as more private in between the more dense vegetation, proximity to nature, infinity view, intimacy and small scale.



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ILL 051: View towards east
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ILL 052: View towards west



ILL 053: View towards east



VIEWS

The views are the most spectalur experiences of the climb and should therefore be emphasized in the design. The experience one gets from walking up the mountain overlooking the east landscape before reaching the top where the west view is finally revealed should be keepts intact. The two views are different and spectacular in their own way. The panoramic view towards west creates a feeling of infinity. The west side of the mountain slopes down very steep into a large valley before reaching the adjecent mountains that are further away than those to the east. This rather flat foreground creates a dramatic boundery to the background where the mountains again reaches out of the ground. Because of this distance the mountains can seem to be rather simular in height which makes them melt together in a scenic symbiosis that continues for as long as the eye can see. When the sun sets in the west its warm red rays playfully reaches the mountains and bathes the mountain ridge in warm colours before decending. Towards north west the ocean one can see all the way to the ocean and the flat horizon compliments the ridges mountain top beautifully. This characterisc view would be well suited for the placing the accommodation since infinity view invites one to sit and reflect on a veranda and be in harmony with the landscape.

The east view is the one the visitor becomes most familiar with during the climb to the top. Here the adjecent mountains

are must closer to the perceiver and provides a closer view. Therefore the mountains are perceived more as individual mountains in the forground, middleground and background. With the mountains closer a more intimate atmosphere is created and the focus is more inward towards what is happening here and now. This could be a good site for the public functions in the program. The view to the south is straigh on of The Citadelle and once this point of the path is reached it is clear that the focus is now on reaching the building throught the last steep climb. The view towards north is terrain and there is only foreground.

PATHS

The primary path leading to The Citadelle from Milot is already described more thoroughly in the previous. The secondary path starts from the road around the mountain and meets the primary path at the donkey parking and they merge into one. This intersection creates a little break where people will rent a donkey for the rest of the climb. A little further along the path the top of the mountain is reached and the path becomes flat for a little while before the final steep climb. The hike from the donkey parking to The Citadelle takes approximately 45 minuts. The path is paved its twisting and bending around the topgraphy provides a great varieation of the way the site is represented and should therefore be keept intact.

CLIMATE

When designing buildings in harmony with the nature and environment it is placed in, it is important to truly understand the environment. When using its parameters as an integrated part of the design process it is essential to comprehend how the local environment works at the specific site.

Haiti has a hot and humid tropical climate. The temperature is steady throughout the year with average temperature between 26–31 degrees Celsius. The warmest period is during the summer period from May to September. The sun rises around 05:00 in the morning during the summer time and sets around 18:30. During the wintertime it rises around 06:00 in the morning and sets around 17:30 providing Haitians with long lasting daylight all

year long. There are two rainy seasons, April-June and October-November. East is the dominating wind-direction with an average wind speed of 7m/s. The north wind brings fog and drizzle, which interrupt Haiti's dry season from November to January. There are two rainy seasons, April-June and October-November. Northeast trade winds bring rains during the wet season. The average annual rainfall is 140 to 200 centimeters, but it is unevenly distributed. Rainfall decreases from east to west across the northern peninsula. The eastern central region receives a moderate amount of precipitation, while the western coast from the northern peninsula to Port-au-Prince, the capital, is relatively dry. [nationsencyclopedia. com], [britannica.com] [haitibio.com]



VARIABLE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ост	NOV	DEC
MIN. TEMPERATURE, C	23	22	22	23	23	24	25	24	24	24	23	22
MAX. TEMPERATURE, C	31	31	32	33	33	34	35	35	34	33	32	31
AVE. TEMPERATURE, C	26	26	26	28	29	30	30	31	30	29	28	27
SUNSHINE HOURS	9	9	9	9	8	8	9	9	9	8	8	8
Rainfall, mm	32	50	78	156	218	96	73	140	165	164	84	34
PROBABILITY OF RAIN	11%	19%	23%	38%	42%	27%	23%	37%	41%	40%	23%	10%
WEET DAYS (d)	10	7.9	8	8.2	11	10.7	12.9	13	13.9	15.4	11.7	10.7
HUMIDITY	44%	44%	45%	47%	52%	50%	43%	48%	52%	55%	52%	48%
DOM. WIND DIRECTION	EAST											
WIND SPEED (m/s)	6.98	6.9	6.65	5.71	5.89	6.15	7.02	6.52	5.73	5.24	6.7	6.98
CLEARNESS (0-1)	0.55	0.56	0.57	0.55	0.54	0.58	0.58	0.57	0.57	0.56	0.54	0.54

ILL 056: Climate infromation on Haiti

36
"I believe that architecture today needs to reflect on the tasks and possibilities which are inherently its own. Architecture is not a vehicle or a symbol for things that do not belong to its essence. In a society that celebrates the inessential, architecture can put up a resistance, counteract the waste of forms and meanings, and speak its own language. I believe that the language of architecture is not a question of a specific style. Every building is built for a specific use in a specific place and for a specific society. My buildings try to answer the questions that emerge from these simple facts as precisely and critically as they can.", Zumthorz [www.arksiteplus.dk]



ANALYSIS

In order to design a sustainable visitor center in a Haitian context it is nessecary to understand what sustainability is in such a context. This term will therefore be analysed and defined in the following chaper. Furthermore there will be looked at the venarcular haitian architecture materials and building methods as well as different approaches to climatic design in a hot and humid context, along with strategies for hurricane and earthquakes resistant building methods.



ILL 057: A Haitian rural house

SUSTAINABILITY IN A HAITIAN CONTEXT

Sustainable architecture is a widely popular phrase. Like mentioned in the Brundtland commission 1987 "The sustainable development seeks to meet the needs and aspirations of the present without compromising the ability to meet those of the future"[Brundtland commission, 1987] On previous semester we have defined sustainable architecture to be a design strategy dealing with environmental-, social- and economic sustainability priciples simultaneously. However, because of the issues with global warming the focus has primarely been on environmental sustainability in relation to reducing energy consumption in new or renovated buildings without radically changing resident's daily lifes. [Hansen, 2007]

In this project sustainable architecture will be understood as a climatic responsible design where earthquake and hurricane resistant constructions are the most important issue. Furthermore we wish to use sustainable materials that can either be found on site or easily grown. Haiti lies in the Hot and Humid Tropical Climate Zone. In this chapter design for thermal comfort in the hot and humid tropical climate will be analyzed. There are two different ways architects can look at the context they design in – as a problem or as a gift. Architects designing for the Hot and Humid Tropical area should look at the context as a gift. True comfort comes from uncontrolled breezes, and the shade of a multitude of plants. In hot, humid areas trying to shut out the unpleasant weather does not work well. Electricity for fans or air conditioning is unreliable and condensation from humidity causes more problems than the heat. Therefore the design of a building should focus on opening up to the breezes instead. The following is an analysis of how to create climatic responsible design in this climate which will be used in the design process.

HOT & HUMID TROPICAL CLIMATE

THE BUILD ENVIRONMENT

The overall urban design objectives should aim at providing maximum shade and minimise heat gain and the orientation of the building must be based on the interaction with the sun and the prevaling winds. Horizontal surfaces receive the greates intensity of solar radiation and should therefore be carefully designed. Out of the vertical surfaces the east and west surfaces receive the greatest intensity of solar radiation in the morning and the evening, respectively. This is due to the sun's path in this climate. The building should be as open as possible to maximise the potential of natural ventilation. However since optimal solar and wind orientation seldom coincide, compromises will be nessecary, and in hot and humid climate the wind orientation is generally most important. The urban layout should promote openness and the building should be orientated perpendicular to prevaling wind direction. To guarantee proper ventilation, a sustainable planning starts already on the urban scale. [Koch-Nielsen, 2002]

URBAN LAYOUT AND VENTILATION

The positioning of windows, the nature of elevations, the disposition of internal divisions, and the position of external obstructions all affect the passage of air through enclosed spaces. If buildings are laid out on a regular grid, the benefit of wind may be lost altogether. If buildings are staggered, and preferably spaced at least 50m apart, then the flow of air may be maintained, and the wind shadow reduced.



The following diagrams illustrate the effect of various configurations and types of obstruction on the internal flow of air. Note that the objective is to produce maximum flow through the area at body height, rather than across the floor or over the ceiling.



An obstruction set at a distance from the window is likely to produce a more even spread of air movement through the room.



Barrier such as a tree may cause acceleration of air underneath it, with a wider band of moving air beyond.



The combination of a tree and a hedge, for example, may have the effect of reversing the flow of air.



ILL 059: Marika Alderton House Northern Territory by Gleen Murcutt is an example of an open lightweight structure in a hot and humid climate

BUILDING ENVELOPE

In hot and humid climate the air temperature varies little between the day and night which means that the building cannot cool down sufficiently at night to allow the storage of heat during the day. The construction should therefore be lightweight to minimise the heat storage and it should be open and transparent to maximise the cooling effect of air movement.

ROOF

The main function for the roof in a hot and humid climate is to shed the building and the people from the rain and the sun, like an umbrella. The roof is exposed to the greatest amount of solar radiation and is therefore an important element to design with climatic considerations.

Flat roofs will experience exposure to the sun throughout the day and will consequently transfer heat to the building from the whole surface all day long. Arched, domed and pitched roofs moderate heat gains, as parts of the surface will always be in shade. The roof should be constructed of a lightweight material to minimize heat storage and using a reflective material is beneficial since this will reflect heat rather than absorb it. The reflectivity of a material is generally associated with the colour of the material. For example, a bright aluminium surface reflects 90% of the solar radiation and white painted surface 80% whereas brick and concrete will only reflect 20–40%. The transfer of heat through the roof can also be reduced by allowing air to move across the surface and by ventilating the roof space. Ventilation between the roof and the ceiling can be achieved through the provision of ventilated openings. Finally the roof also has to provide rain protection. Large roof overhangs will protect the wall from heat gains during the midday sun.

[Koch-Nielsen, 2002]

WALL

In hot and humid regions the walls should generally be a lightweight construction to reduce heat storage, and transparent in order to continuously ventilate internal spaces. The facade should in general be a flexible open wall structure to maximise air movement. In general thermal mass should be restricted to elements not exposed to solar radiation. [Koch-Nielsen, 2002]

FOUNDATION

The floor can be designed to increase the overall ventilation potential by elevating the floor off the ground. Raising the floor of the ground will provide better exposure to prevaling breezes an protection from heavy rain. [Koch-Nielsen, 2002]



ILL 060: Sun on arched roof

ILL 061: Different option for roofs in relation wind

NATURAL VENTILATION

Natural Ventilation may supply fresh air and air removal of odours and the removal of internal heat, cool the structure and reduce structural radiation as well as cool the body and air. Ventilation needs in hot and humid climates based on passive measures should not be confused with standard requirements for odour removal and fresh air intake which are stipulated by building regulations in temperate climate countries. An air speed much higher that those in temperated climate is needed, especially if cooling of the body is included. Natural ventilation relies on pressure differences to move fresh air through the building. It can occur due to wind generated air pressure differences or due to temperature-generated air pressure differences. In hot and humid climates natural ventilation is normally achieved though horizontal air movement and is based on wind generated pressure differences. It will also depend on the size and placement of the openings in the building. Equal considerations must be given to the supply and the exhaust. The following is an analysis on these stategies.

[Koch-Nielsen, 2002]

SINGLE SIDED

The basic principle is to get a circular air flow in the room by only having an opening in one side of the room. Due to this principle this is only effective to a depth of about two times the ceiling height and the air will therefore not penetrade so far into the room. Since natural ventilation in hot and humid climate is mainly based on horizontal air movement and wind generated pressure, single sided ventilation is not prefered. [Heiselberg, 2006]

STACK VENTILATION

The inlet ventilation openings are based at a low level in the wall and the outlet at a higher level, which means that the ventilation will be generated by thermal buoyancy, taking in cold air at the low level and and using the chimney effect to exhaust the warm and polluted air at a higher level. With this ventilation it is possible to achieve a steady and high ventilation with moderate temperature differences. The air change achieved by the stack effect alone is usually not enough to provide a cooling effect but it can be beneficial when wind speeds are low. [Heiselberg, 2006]

CROSS VENTILATION

Cross ventilation is generated by wind enduced pressure differentials between the two openings on each side. With this method it is possible to achieve a high ventilation rate. Since the air is crossing the room it can be effective for up to five times the ceiling height. In a hot and humid climate this is ventilation stategy will be most efficient. [Heiselberg, 2006]

The orientation should be designed to encourage maximum air movement. Ventilation of internal spaces needs to be continouous throughout the day and night to avoid heat storage by the structure. The structure should be open and openings should be large to maximise cross-ventilation of internal spaces. When winds speeds are low the stack effect could be used.



ILL 062: Different ventilation strategies

44

Below is a collection of design principles to increase the quality of natural ventilation in tropical climates.

- Orientate the building towards prevailing winds to optimize cross ventilation
- Use large windows or vents with low openings to increase natural ventilation in the height of the occupants
- Elongated floor plan and minimum internal partitions creates easy passage for cross ventilation by reducing friction.
- Raising on stilts: help to catch winds of a higher velocity and by shading the ground the air underneath cools and is drawn up through the floorboards
- High ceilings: Hot air rises above the people so the

room feels cooler to its occupants with buoyancy and is infiltrated out via ventilation roof joints. (The stack effect)

- Large roof overhang and verandahs. Both techniques allow windows to remain open so that ventilation can still infiltrate the building during rain periods.
- Verandahs with outside stairs obstruct breezes much less than interior halls
- Make outdoor areas breezy. Keep them open to warmer season breezes, and if possible protected from storm and cool season winds.
 Screen porches or verandahs to allow openings to unscreened windows in the center of the building.

It is important to remember that none of these principles can be adhered to blindly, a combination or compromises will be needed at different sites and should therefore be considered in relation to each specific case. In this relation it can be beneficial to investigate the local builing tradition on the site since this will be adapted to the specific conditions. Untutored builders of the vernacular had an admirable talent for suiting buildings to their environment. An extensive knowledge of the climate and ability to modify their buildings meant various ventilation techniques for cooling and reducing solar gains were incorporated into building designs and the vernacular techiques will therefore be investigated and keept in mind during the design process.



ILL 063: Cultural centre in Nouméa, New Caledonia, by Renzo Piano, is an example of a building where natural ventilation principles have definded the design of the building

EARTHQUAKE AND HURRICANE RESISTANT CONSTRUCTION

When designing a building in an Haitian context, where hurricanes, floods and earthquakes occur frequently it is important to implicate appropriate building construction methods. This chapter aims to collect design strategies for hurricane, flood and earthquake resistant building design. Architecture of Humanity has prepared a rebuilding manual (Rebuilding Manual 101) that seeks to provide basic advice on proper construction methods specific to rebuilding efforts in Haiti after the January 2010 earthquake. The design parameters in this chapter will be drawn up with help of this manual. These design parameters will be considered and implemented during the design process.

SITE SELECTION

Selecting an appropriate site is very important step to ensure building stability. It is important to make sure that the ground is firm and will remain stable in severe weather.



Sites with loose sands, gravel or expansive clays should be avoided.



Buildings should not be built below or above potentially loose rocks or boulders.



Buildings beside or beneath large trees should be avoided, as they may fall in a large storm.



Buildings on tops of hills or in deep closed-in valleys should be avoided because of wind concentration in these areas.



Hurricanes and heavy storms cause floods. Buildings should therfore be located away from the open sea, riverbanks, bodies of water, or slopes prone to torrents or rainfalls. On sides where the risk of flooding is unavoidable, buildings put on knee walls or piles reduce the possibility of damage.



ROBUSTNESS

The most stable buildings have simple layouts and are uniformly built. To secure robust structure, complex buildings should be divided into simpler, structurally autonomous pieces.

Buildings should be rectangular and limited to two or fewer stories. Squares and small rectangles are best. If the footprint is complex, or if the building is of varying levels, seismic separation is needed. The structure should be separated into smaller self-sufficient rectangles.

Buildings should not be designed top-heavy. Heavy roofs are dangerous in earthquakes. It is essential to keep the roof light and flexible and keep large objects or machines off the roof.

A consistent construction type should be maintained for all the building's walls. Failure often occurs at the junction of different construction types.

46

FOUNDATION

The foundation must have a strong grip with the ground. This is usually achieved by building knee walls along the edges of the building. Floor and walls must be securely attached to the foundation by tying rebar from the foundation into the floor and walls.



The depth of foundations should be increased into the ground if soil is loose beneath the surface.



Buildings should be elevated in areas prone to flooding. This can be achieved through a knee wall or, in more dramatic flood zones, reinforced and braced concrete piles.

When piles are used, they must be braced for lateral stability.

Knee walls and piles should be reinforced.

WALLS

Walls are very important in resisting lateral forces of hurricanes and earthquakes. The walls have to be constructed with solid bounds between all wall components and provide wide, unbroken areas of wall along each exterior wall.



Walls must be anchored to the foundation, floor and roof

Walls must resist lateral forces and need to be as continuous as possible. Keep openings 60cm from the corners and from one another. Walls must be at least 2.5m high to the base to the roof. Each wall must have an uninterrupted "shear" section at least as wide as the wall is tall, ideally twice as wide as its height.

FLOORS

Floors are just as important for stabilizing the building against severe events as the walls and foundation. Floors must be uniformly constructed and reinforced, and tied into the foundation and walls of the building.

ROOF

There are few alternatives to a hurricane resistant roof:



Four-slope roofs suffer less damage in hurricanes than two slope roofs.





A rise-to-run ratio of 1:2 for roof slope is an ideal slope against hurricane winds.

Openings between the top of the wall and the bottom of the roof should be avoided.



Eaves should not exceed 50cm. Long overhangs and porches should not be added to the roof, these should be attached to the walls instead.

Keep the weight of the roof as small as possible.

WINDOWS AND DOORS

All openings must be framed and supported by a reinforced lintel.

Glass should be avoided. Glass used in building should be tested against 240km/h winds, be plastic or shatterproof. Leave windows open or faced with a screen.

Doors should swing out. Inward swinging doors can, in hurricane, become unhinged and become an interior projectile.

Hurricane shutters must accompany Glass windows. Hurricane shutters should be attached to the walls of the building rather than to the window frame.



OVERHANG AND PORCHES

Overhangs, while great for shading, can be a hazardous element during windstorms and hurricanes. Large roof overhangs can be lifted by the wind, displacing the roof and causing immense damage. Overhangs must therefore be separated from roofs.

Overhangs should be detached from the roof.

Overhangs with periodic openings can prevent uplift damage during storms. They promote equal air pressure on either side of the overhang.



"Today, great architecture is also designed by instinct and... in unison with nature. The high technology and complicated materialism is just an enormous mantle, which clothes the idea. Underneath, the instinctive solution is still there." Le Corbusier [www.bviguides.com]

THE VERNACULAR ARCHITECTURE OF HAITI

The vernacular is designed by immediate response and has had the fortunate ability to be modified according to suit the occupants thermal needs, resulting in practical and non-stylistic buildings. Le Corbusier's quote above indicates how these vernacular techniques need to be in place before any additional 'complexes' are added. Haitians have built houses brilliantly adapted to their climate and society. In this chapter the vernacular architecture of Haiti will be analyzed with focus on spatial orginisation, construction, expression and climatic adaption.



ILL 064: A Haitian gingerbread house after the earthquake

"...it is to a comfortable vernacular that their residents wish to return. This implies a number of patterns, which are too often overlooked and ignored..."[Edwards, 2010]

After the colony was declared independent the world has left the Haitian people and their culture to develop in relative isolation. In recent years political repression and the country's desperate poverty have conspired to maintain that isolation to a considerable degree. As such the architecture of Haiti, while clearly related to that of the rest of the Caribbean, is still distinct, and its African and Native American roots are pronounced. The basic house type, or caille is a one- or two-room single story dwelling, witch owes its form to both slaves from Africa and to the Arawak and Taino Indians who preceded them. As a distinct house type, the Haitian caille appears to have evolved in Haiti from African and Native American roots. It might be concluded that just as they blended elements of Fon Yoruba, Kongo and other African religions with the Catholicism of their French masters to form the new religion of Voodoo, the African slaves combined memories of their ancestral homes with the houses they found in the New World to form a Haitian architecture. [Fisher, et al., 1987] "The architecture of the Caribbean is first and foremost architecture for life out-of-doors. Daily activities take place in spaces that are mostly outside the framework of the house itself. And even the framework is open to the outdoors, offering protection only from the sun and rain." [Berthelot and Gaume, 2007]



ILL 065: A Haitian rural house, notice the lightweight screen

SITE ORGANIZATION

The haitiand communities consists of several scattered clusters of shelters calles 'lakou-community'. They layour represent the shared feeling of social responibility and the residents are usually related. Haitians often settel on the land of the man's parents when they get married in a new small detached house that represent adulthood. The haitian compound usually have a front porch or a small lawn that faces the road and this is the entrence and when the haitians visit each other they call out greetings asking for permission to enter, the front porch/lawn therefore becomes a very important part of the house. No dwelling is complete without this form of yard/porch since they represent much symbolic meaning and this is also typically when they decorate their house and cenlebrate the entrence.

"he power of the Haitian social system was the great interconnection of mutual responsibility among the members of extended families and villages, communities- 'Lakou' of around 500 people"

[Stouter, 2008]

SPATIAL ORGANIZATION

The characteristic Haitian caille is one room wide and one or more rooms deep. Oriented perpendicularly to road or path, it is entered through double doors at the end, generally from a porch sheltered by the projecting gable. This gable-end is often closed in to form a large storage shelf above the porch and accessible from the front. In practice the basic one- or two-room caille is elaborated in a variety of ways. The living space may be extended by adding onto the back or by adding porches and rooms to the sides. Low adobe or ornamental block walls may further enclose the porches. In its urban incarnation the expansion may be vertical as well. [Fisher, et al., 1987] In Haiti most of life happens outside,

in the fresh air and cooling breezes. A small house just serves as storage, shelter from rain, and a place to sleep. The space defined by the house's shadow may be as important as any room within. [Stouter, 2008]

The Gingerbread house is a more complex edition of the Haitian caille. Originally, the Gingerbread buildings were constructed as single-family residences, mostly for affluent Haitians. The majority of Gingerbread buildings still serve as residences. However, many Gingerbread buildings in current neighborhoods of mixed-use have been adapted for non-residential use, including religious institutions, restaurants, offices, numerous schools, and a prominent hotel. [Langenback, et al., 2010]





ILL 066: A typical plan of a Haitian house





CONSTRUCTION

The caille is constructed variously of wattle and daub, masonry, or wood frame walls, with gable or hip roof of palm thatch or, increasingly, galva-nized steel.

The rural houses are traditionally constructed of twigs of wattles woven on a framework of wood poles and plastered with earthen daub, or of stonemasonry laid with a mortar of mud. [Fisher, et al., 1987] The older houses in and around Port-au-Prince, today known as the Haitian Gingerbread houses are however more complex in their construction. The character and heritage guality of the Gingerbread Houses is a product of design and craftsmanship realized through a number of different construction systems and structural materials. According to the 2010 earthquake mission report, Preserving Haiti's gingerbread houses by the World Monuments Found, there are three primary construction systems utilized in Haitian Gingerbread houses [Langenback, et al., 2010]:

Braced timber frame
Colombage
Masonry bearing wall

Braced timber frame construction is composed of vertical wood members that are mortised into wood sills and top plates of each story. Diagonal timbers are placed at corners and other locations to brace the frame assembly. The construction is then clad with horizontal lapped-wood siding on the exterior. [Langenback, et al., 2010]

The Colombage building technique consists of braced timber frame construction with an infill of masonry. The masonry infill for the Gingerbread Houses is composed of either rubble stone laid with clay mortar or brick laid with lime mortar. Where stone is utilized, it is typically finished on the exterior with lime plaster, finished with paint. [Langenback, et al., 2010]

Masonry bearing walls are principally only used for exterior walls. However, there are cases, usually in larger structures, where bearing walls are used for interior walls as well. The masonry bearing walls consist of three types: brick laid with lime mortar, rubble stone laid with clay or lime mortar, and a combination of the two. Usually the bearing walls are filled in with rubble stone or mortar. There are also examples where brick masonry is used to form building corners, window and door openings, and cornices.

Both in the city and the more traveled rural areas, concrete block construction is increasingly common, and the ubiquitous galvanized steel roof has superseded thatch in most of the newer homes. [Langenback, et al., 2010]





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ILL 067: Pictures of Gingerbread houses in Haiti



EXPRESSION AND ORNAMENT

The Gingerbread houses capture a time of prosperity when Haiti was a vibrant part of the international community, hosting the Paris Exposition in 1900 and adapting and incorporating foreign influences into Haitian popular art and architecture. The brightly painted fret work, ornate balustrades and the cut-outs adorning doors and windows are emblematic of the culture and time. The intricate patterns found throughout these houses are thought to be representative of the traditional 'vévé' patterns traced on the floor to call the spirits to a voudou ceremony. These houses, with their unique Haitian style and native architects are symbolic of Haiti's hard fought independence. While this architecture incorporates elements from abroad, it can truly claim to be indigenous, setting it apart from the mostly colonial architecture in the rest of the Caribbean. [Langenback, et al., 2010], [Fisher, et al., 1987]

CLIMATIC ADOPTION

Due to Haiti's tropical climate, the Gingerbread houses were designed to take advantage of ventilation and shade, and exclude moisture. Large windows and doors allow for cross breezes. Tall ceilings and large attics with ventilators allow hot air to rise, collect, and be expelled. Deep porches that extend from the front façade to the sidewalls provide shading for the windows and allow the living space to extend outside the walls of the house. Heavy shutters on the windows allow them to be closed quickly and securely in the event of a tropical storm or hurricane. Raised first floors help prevent dampness from reaching wood framing and interior spaces, and provide for control of insects. Steep roofs quickly shed water during frequent rainstorms. [Langenback, et al., 2010]





From the analysis on vernacular haitian architecture it can be concluded that the haitian architecture is basically an architecture of outdoor life. The veranda in the gingerbread houses and the rural homes are fundamental for the Haitians as the decorative showplace of the house and center of family life. They always faces the road and are typically raised from the ground and therefor functions as doorman. The counstructions main principle is to keep rain out and things in. It has many large windows and door to allow for breezed to enter the house. They usually have a small kitchen indoors and outdoors. The houses are usually organized to form a social outdoor area.



MATERIALS

Wood: Haiti was once a lush tropical island, replete with pines and broadleaf trees such as walnut and mahogany. Much of this building material was exploited and sent to Europe and North America, and by the late nineteenth century the forests were decimated. The wooden structural members surveyed during the mission were of heartwood of a durable species of softwood, such as Caribbean pine or fir, or sometimes of tropical hardwood. Wood for building construction is no longer locally available and must be imported.

Clay (brick, mortar, plaster, and stucco): There are plenty recourses available of relatively pure clay in Haiti. In the early part of the twentieth century calcareous clay deposits were used in the manufacture of ochre-colored brick and ferruginous clay deposits were used for red-colored brick. The ochre and red bricks that were manufactured were used extensively in construction and can be seen on the Gingerbread houses. These bricks came in rectangular and also decorative shapes in order to form architectural ornament such as water tables and cornices. The brick industry is no longer active in Haiti and has been inactive for quite some time. Clay was also used extensively in mortar for masonry construction, principally with rubble stone rather than with brick in the Gingerbread Houses.

Lime (Mortars, plaster, and stucco): Lime was a necessary ingredient for the manufacture of sugar and the raw material to make lime mortar is plentiful in Haiti, but the manufacture of quick lime from which lime mortar is made has



ILL 068: Haitian mountains at sunrise

disappeared in recent years with the introduction of the manufacture of cement. Limestone deposits found on the slopes of the Haitian mountains, have been further exposed due to deforestation and consequent erosion from rainstorms. In addition, kalk lime was readily available by burning corals and shells. Lime mortars were typically used to lay up the brick in the Gingerbread Houses. Contemporary masonry construction in Port-au-Prince is almost entirely concrete block laid up with Portland cement mortar, usually as an infill to a poured-in-place reinforcedconcrete frame.

Structural Iron and Steel: Iron and steelwork was imported from France and Bel-gium, and can be seen as lateral ties within masonry bearing-wall construction of the Gingerbread Houses.

Concrete: The use of reinforced concrete was introduced into Haiti around the turn of the twentieth century. Some monumental buildings are constructed of reinforced concrete including the Cathedrale de Notre Dame (1912) and the Palais Nationale (1918) (illustration xx). Concrete, concrete block, and Portland cement mortar have been used in many of the Gingerbread Houses for repairs and additions, typically providing a negative result from the earthquake according to structure analysis by the World Monument Fonund. After the middle of the twentieth century. reinforced concrete and concrete block became prevalent for three primary reasons: a) a ban on wood construction was declared in Port-au-Prince in 1925 in response to a number of devastating fires in the city; b) after the 1940s, concrete and concrete block were increasingly seen as the building materials of choice in Haiti because they were considered to be more durable. technologically advanced, and modern, even becoming a status symbol; and c) concrete and concrete block are resistant to the strong wind and rain of hurricanes.



ILL 069: Limestone



ILL 070: Haitian deforestration



ILL 071: Port au Prince cathedral in ruins

52

BAMBOO AS CONSTRUCTION MATERIAL

As already stated is Haiti suffering from deforestration which is why this chapter will focus on finding new sustainable materials to replace wood.

In hot and humid climate a construction material of low thermal storage capacity is required along with design that permits good cross-ventilation in this relation bamboo ideally satisfy these requriments. A bamboo wall cannot be made air-tight or waterproof, which means that cross-ventilation is a natural feature, providing indoor comfort and removing moisture. Because of its tensile strength, approaching that of steel, a bamboo construction will sway and not collapse in hurricanes and earthquakes. It is furthermore one of the fastest growing grasses and will be ready to use within three years which makes bamboo a reasonable choice in relation to sustainable materials.

A drawbacks however is that it has a relatively low durability and low fire resistant if it is not treated. Non preserved bamboo constructions have a lifespan of 2 1/2 years, whereas preservated bamboo approximately 10 years.

Differences between bamboo and wood is that bamboo is a hollow tube, and consequently it is more difficult to join bamboo than pieces of wood. However, due to its hallow form, bamboo is relatively strong and stiff, and it can be cut and split with simple tools. Another advantage of bamboo is its low weight. It can be transported and worked easily, the use of cranes is mostly unnecessary.

Because of the demand for non-polluting sustainable and earthquake resistant materials, the interest in bamboo construtions is now growing rapidly among innovative architects such as Simon Velez and Shigeru Ban.

[www.guaduabamboo.com], [Janssen 1988]







LL 072: Bamboo

ILL 072: Simon Veles



CONCLUSION ON THE ANALYSIS

This chapter sums up the conclusions made in the analysis phase in order to give an overview of the requirements to the following design of the visitor center and the accommodation.

From the context analysis it can be concluded that the design should emphasize the experience of the specific site through the organization of the functions and reference the site and The Citadelle in choice of materials. Furthermore it can be concluded that bamboo should be the material for the construction given its qualities in relation to earthquake and hurricanes. In relation to the climate it is important that the building provides shade from the rain and the sun and allows for cross-ventilation which means that the building should be orientated perpendicular to the prevailing wind direction from east.

All of these factors are taken into consideration when design the visitor center and the accommodation. The following vision for the project along with the design parameters gives the final guideline before the design process begins.

VISION

The vision for the project is to design a visitor center that has a distinct relation to the specific site with a contemporary architecture inspired by the vernacular Haitian architecture. The visitor center with additional accommodation facilities will attract international, as well as domestic tourists by creating awareness of the hidden treasures in the Haitian history and modern art whilst providing opportunity for the Haitians to challenge their creativity. The vision is to let the architecture release the beauty of the landscape through a tight geometry with clearly defined edges complimenting the dramatic landscape and the scenic mountains ridges by contrasting it.

DESIGN PARAMETERS

AESTHETIC

EXPRESSION

Express a contemporary design Expression inspired by haitian venacular architecture Compliment the landscape through a tight geometry Be a refrence to the site's charcteristics (reference the site and the Citadelle in choise of materials) Be organized according to the topography

EXPERIENCE

Emphasize the boundery and the experience Utilize the characteristics of the surroundings (framing view; consider how the building is percieved by the guest approaching it) The architecture should reveal the beauty of nature Emphasize the difference characters of the landscape and view

FUNCTIONAL

SPATIAL RELATIONS

Link the different characters of the site to the different functions Be organized according to haitian vernacular architecture

TECHNICAL

CONSTRUCTION

Earthquake resistant construction Hurricane resistant construction

SUSTAINABILITY

Integrate climatic sustainable principles on a conceptual basis Organized according to prevaling winds Use sustainable materials

ROOM PROGRAM

The illustration on the next page show the room program. As stated in the project brief the project will include a visitor center and accommodation facilities.

ACCOMMODATION STRATEGIES

The beautiful surroundings makes the site an ideal location for a hotel facility where the tourist, that have already traveled a long way to get to the site, can spend a few more days enjoying the landscape. This is a part of making The National History Park more accesible, and thereby more attractive for tourists. This also makes it easier for Haitian schools to plan field excursions even if they are far from the site, giving that they now have the possibility for overnight stays. The facilities should therefore accommodate approximately 50 children, which is the number of students in a Haitian school class, and two teachers. It is furthermore nessecary that genders are seperated.

When not used for schools excursions this facility can be used by other tourist and backpackers and will therefore be designed as a flexible dormitory.

However, knowing that a World Heritage Site usually attracts many different types of tourism it would be adviasble to have variation in the available facilities. For that reason it is desided that the facility should also include private hotel rooms with restrooms.

Regarding the level of this facility, focus is on the experience of the surroundings as well as common areas for socializing, inspired by the traditional haitian lakau-community. Therefore a basis level of comfort should be applied, as the luxurious features of a modern hotel are not necessary. Assumptions are made that the international tourist at this facilities would have visitied the site primarily to see the Citadelle, however some might chose to stay there for the possibility to go hiking, photographing or simply just enjoying the magnificent site and experience and feeling and sense of the place.

VISITOR CENTER STRATEGIES

The visitor center should have two exhibition halls. One permentent for the haitian history and The Citadelle and the other should be temperary for modern haitian art. It should also include a workshop area where haitian school children have the opportunity to learn about their history and challenge their creativity. It should also include a resturant where the tourist can eat lunch. The facility will also be the main base for the guides and it should therefor include facilities for them to drop of their bags and use the restroom if they wish to. The lobby functions not only as the entry to the exhibition, but also as the reception for the accommodation facilities as well. This is also where the tourist can buy a guided tour of The Citadelle and the exhibitions.

The outdoor area in this visitor center becomes important when considering how difficult it is to get to the site. The buiding should therefore be perceived as a 'break' when the tourist can relax for a while before the last steep climb. For that reason it is necessary to provide pleanty of opportunity for outdoor relaxation in the shade. The building should therefore also function as a 'break' for the tourist, that they can visit both before and after The Citadelle to relax and reflect upon the experience.

The visitor center is the main attraction and the accommodation is an additional choice for the tourist, it will therefore also be the focus point in this project, as stated in the project brief. In the planning of the site there will be suggestions for creating information and parking facilities, these are additional functions relation to the overall understanding and placement of the site and will therefore not be detailed.

Facilities	Area ^m 2	Height m
Visitor Center		
Restrooms (10)	50	2,5
Exhibition History	150	5
Exhibition Art	150	5
Cafe/Restaurant (60-100pers.)	100	4
Lobby	50	5
Staff	50	3
Conference room	100	2,5
Storage	100	2,5
Total	750	
Accommodation		
Dormitory for students (60beds) 120	2,5
Rooms with WC (20beds)	150	2,5
Kitchen and dining	50	2,5
Washing and drying facilities	50	
Total	370	
Information Parking		
Information desk		
Lockers		

Marketplace

PRESENTATION

SITEPLAN



SITEPLAN 1:1000



OVERALL VIEW





APPROACHING LA CITADELLE VISITOR CENTER



VISITOR CENTER Plan





VISITOR CENTER SECTIONS







SECTION B-B 1:200





5/30/11 6:26 AM
















VISITOR CENTER EXHIBITION ART



VISITOR CENTER RESTAURANT







DORMITORY Plan





DORMITORY FACADE AND SECTIONS







SECTION D-D 1:200





PRIVATE BEDROOM PLAN AND FACADE





PRIVATE BEDROOM SECTIONS





PRIVATE BEDROOM VIEW TOWARDS WEST



SKETCHING PHASE

In the sketching phase the design parameters are the starting point. The chapter will give an introduction to the initial sketches that forms the designparameters in relation how this projects deals with the issue of architecture and landscape and how it interprets vernacular Haitian architecture. This initial ideas are the starting point for the design process.



PLANNING THE AREA

In the analysis it became clear that improving tourism at the National History Park site require political decisions and involvement on many levels. However, what can be done on an architectural level involves making the site more easily accessible and improving the climb up the mountain. In order to achieve this it is beneficial to look at the entire journey from the drop-off point in Milot to the Citadelle.



INFORMATION AND CAR PARKING

The journey starts in Milot where proper parking facilities for cars and taptaps will be placed. In relation to the parking there will be an information center offering information on interesting places to visit in the area so the tourists are well informed before they start the climb. Here there should be facilities for storage of personal luggage and the tourists should be able to hire a tour guide and rent a donkey if they wish to.

DONKEY PARKING AND MARKET PLACE

As mentioned in the analysis, there is a donkey parking half-way up the path where the local's offer donkeys for rent for the steep path op to the Citadelle. This donkey parking will be preserved. Here the tourists that choose to hike the path from Milot to the parking area, which is not as steep as the other path, will be able to rent a donkey for the rest of the journey. From the interview with Jørgen Leth and Yvon St-Martin it became obvious that there is a problem with the locals obtrusive way of doing business, which needs to be accounted for. Today the locals sell their products all along the path interrupting the experience of the journey. Instead it is suggested to create a well-defined area for market where locals can sell their articles close to the donkey parking, Hereby is the order of shopping restored. This will also be the main place for the hotel guests to buy groceries.

ACCESS BY CAR

In order to deliver products to the visitor center and accommodation it is comprehensive to provide access for cars to the site. The tour from Milot to The Citadelle is a very unique experience, it is therfore desired to preserve it as it is today. Here only light traffic is allowed. Instead, it is proposed to enhance a already existing road. The road is accessed from the highway and is laid all the way to the donkey parking.

LOCATING THE VISITOER CENTER

Some of the first ideas were to spread the functions on the pathway from Milot to The Citadelle so they would become a part of the journey. However the functions would draw to much attention from the spectacular nature of the area, so instead it is decided to assemble the functions in one building, creating a break in the middle of the journey. Instead the breaks on the path should be platforms and banks created to rest and to emphasis selected views.

Next step is to figure out where to place the visitor center. As mentioned in the analysis there is a market place and a donkey parking today in the middle of the journey, before the steep path up to The Citadelle it seems essential to place the visitor center in relation to these facilities

From analyzing the path it became clear that there is a clearly defined break at the top of the mountain where the view to west is revealed. The experience the visitors gets at this site is magnificent and it would be a very interesting location for the visitor center since it is also conveniently close to the donkey parking. It is very interesting to work with the architecture as a way to release the beauty of this landscape.



ILL 074: Overall planning of the area

INITIAL SKETCHING

RELATING THE BUILDING TO THE CULTURE AND CLIMATE

Simultaneously with the analysis, sketches on how the building should relate to the climate and the culture of Haiti were conducted. As a conclusion on these initial sketches on Haitian architecture there will be focused on the design principles described in the following.

The Haitian vernacular architecture typically consists of simple modular layouts put together to form the building. Through research it is concluded that the architecture primarily consists of three elements:



Each element is important and has its own function and together it clearly defines three different zones of privacy and level of openness within the building for different purposes:

THE BASE: Lifts the building up from the ground level and creates a more private zone from the path – the public area

THE BOX: The box contains the introvert and private functions of the building respectively: Bedrooms, storage and sometimes a small kitchen. This room is primarily only used for sleeping, for storage and is a safe place to go in case of hurricane. THE ROOF: The galleri defines a semi public, semi outdoor area containing the extrovert functions of the building: the living room, dining area and kitchen. It is typically constructed of columns that defines the outdoor area and large roof that provides shade from the sun.

Introvert functions: bedroom, storage and small kitchen

Extrovert functions: (outdoor architecture) - Living room, dining area, kitchen

Expression and ornament

- Ornament-Geometric patterns
- Heavy base
- Heavy vs. light materials

These design principles will be adapted and further developed later on in the sketching phase



ILL 075: Sketch of initial ideas



ILL 076: Sketch of initial ideas







ILL 077: Sketch of how the vernacular Haitian house is interpreted and divided up into seperate elements that are used in the design of the visitor center.



ILL 078: Sketch of initial ideas







91

RELAITING THE BUILDING TO THE LANDSCAPE

Simultaneously with the analysis, sketches on how the building should relate to the landscape and the site where conducted.

The initial ideas works with utilizing the intimate atmosphere in the forest and the openness in the plautaeu.



ILL 080: Different ways to deal with the relation between landscape and architecture.



ILL 081: Initial sketch of developing the priciples found in the interpretation of the vernacular Haitian architecture

The list on this spred summarizes the initial ideas into principles on how the understanding of the relation between landscape and architecture will be in the project along with the principles inspired by vernarcular Haitian architecture:

The relation between landscape and architecture

- The architecture should contrast the land scape in form
- Represent the landscape though material choices
- Framing views

Vernacular Haitian architecture

- Simple modular layout
- Large roof overhang
- Extrovert functions on the porch (outdoor architecture)
- Introvert function in volumes underneath the roof
- Columns define the outdoor areas
- The wall as a screen to allow for ventilation
- Heavy base
- Heavy vs. light materials



THE FUNCTIONS

DESIRED ATMOSPHERE IN THE FUNCTIONS

The visitor centre and accommodation contains many different functions that each has its own character; this

has to be kept in mind when organizing the functions in the visitor center and the accommodation facilities.

VISITOR CENTER

LOBBY

The lobby is located close to the entrance and should be inviting and welcoming and should therefore have an extrovert orientation. The lobby is an activity function and is therefore located in the flow line and not designed for stay. Ticket allowing access to the exhibition as well as The Citadelle is sold in the lobby. The keys to the accommodation facilities will also be delivered through the lobby.

WATCHMAN

A watchman is desired in the area during the night to keep guests staying for the night save, this way the guests will be able to contact the watchman if something goes wrong. A room for a watchman is therefore included in the visitor center in relation to the lobby and staff room. The room for the watchman is private function designed for stay and should have an introvert orientation. The watchman quarter includes own restroom and living space but will use the cooking facilities designed for staff.

STAFF

The staff room is a base camp for all of the employees involved in the visitor center, it includes four office spaces for administration as well as space for guides to store their personal belongings. The staff room also includes proper cooking facilities and a small dining area that allow the employees to socialize. Furthermore it includes a separate restroom for staff. The staff room is a private function planned for stay and should have an introvert orientation.

RESTROOM

The tourists have ridden a donkey or walked a long way to reach the visitor center, which is why it is very important to include plenty of restrooms in the building. The restrooms are defined as an introvert function.

EXHIBTION HISTORY

This exhibition hall is designed for permanent exhibition of the history of Haiti. There will not be defined any further how exactly the history will be exhibit. The room will be designed as one flexible hall. The focus in the exhibition hall should be on the exhibited objects and not on the surroundings and should therefore have an introvert orientation. Indirect skylight is therefore desired in the exhibition hall.

EXHIBITION ART

This exhibition hall is designed for temporary exhibitions of Haitian contemporary art. The room will be designed as one flexible hall, which is easy to divide into smaller units with help of partitions. The focus in the exhibition hall should be on the exhibited objects and not on the surroundings and should therefore have an introvert orientation. The indirect skylight is therefore desired in the exhibition hall.

CAFÉ/RESTAURANT

The restaurant is designed to serve breakfast or lunch for both tourists and guests staying for the night. It is also designed as a place to rest after a long walk uphill or as a break on the way down again. The restaurant is designed as self-serving / buffet of local food. It has an extrovert orientation with a great view to the beautiful surrounding nature.

WORKSHOP/CONFERENCE ROOM

The workshop is designed as a multifunctional room that will be used as workshop for school children to receive teaching in history and contemporary art as well as solve small project regarding this. This room will also be used as conference room for meeting regarding the visitor center, The National History Park or for the accommodation facilities. This is a private function planned for stay and has an introvert orientation.



ILL 081: Desired atmosphere on the veranda



ILL 082: Desired atmosphere in the restaurant, Boh visitors center



ILL 083: Desired atmosphere exhibition, The Pin cles Interpretation Center

STORAGE

There is plenty of storage in the building in relation to the different functions. These storages are designed as enclosed rooms and are located close to the function it belongs to.



ACCOMMODATION

DORMITORY

The dormitory is designed in order to ease the opportunity for school excursions to the Citadelle and to give the opportunity for overnight stay. The dormitory is designed as small flexible rooms including a desirable number of beds allowing sleeping opportunity for up to 50 students and two teachers. The dormitory is also offered as a cheap overnight option for backpackers when school children are not using the accommodation. The dormitory has an introvert orientation. There is a public restroom in relation to the dormitory.

ROOM WITH RESTROOM

The room is designed to offer tourists opportunity for an overnight stay in a private room with own bathroom. The rooms are designed with relation to the nature and with a beautiful view to the surroundings. The rooms have an introvert orientation.

KITCHEN

Kitchen and dining facilities are designed in relation to the dormitory and private rooms. These functions have extrovert orientation to the surrounding nature.

WASHING AND DRYING FACILITIES

Washing and drying facilities are designed in close relation to the dormitory and the private rooms. These facilities have extrovert orientation and will be placed in semi outdoor areas.

SHOP - MARKET

Instead of designing a separate shop for guests to buy groceries this will be in relation to the market place where the local people have the opportunity to sell their product.

PLACEMENT ON SITE



ILL 084: Illustration of the character of the site



ILL 085: Illustration of the placement of functions on the site

THE CHARACTER OF THE SITE

When walking up the path the tourist will go through a small dense vegetated area before reaching the small plateau at the top that creates the edge between the two views. On the top of the mountain you are exposed and, for the first time during the long uphill path, the view to the west is visibe. The view to the west is very very different from the view towards east. The view to the west is unobstructed and reveales the ocean, however the view to the east is obstructed by the large mountains in the area. From this location there is an overview of the entire landscape. From the contour lines of the site a distinct edge appears on the top of the mountain which seperates the two sides of the mountain.

The slope to the west is steep, covered with vegetation and the atmosphere is intimate and in proximity to nature. This is different from the slope to the east which basically has no vegetation. Because of the path on the east slope, the two sides of the mountain are very different in relation to the level of privacy.

This difference in character forms the basis for the concept.

LINKING THE FUNCTIONS TO THE CARACTERS

When looking at the characteristics of the site it is chosen to place the accommodation facilities on the west slope of the mountain. This location will provide possibility for creating the desired atmosphere. The tourist will on this location be able to enjoy the view and the sunset in the privacy created by the forest. Considering the characteristics of the plateau this is an ideal location for the visitor center. The functions that encourage the tourist to dwell are located towards the west where the architecture will create an opportunity to enjoy the newly discovered view, which will give the tourist an ideal place for relaxing and reflecting upon their experiences. The main functions in the visitor center are the two exhibitions. These will be placed towards the east and will therefore be the first function presented to the tourists. This seems like a natural order since the tourist will then be able to focus on the exhibition before discovering the west view.



The illustration shows different approaches to the connection between the visitor center and the mountaintop. In the first option the volumes sits on top of the mountain which provides the best view in both directions whilst allowing for optimal cross ventilation. In option 2 the volumes are placed discretely on the side of the mountain which only creates a subtle intervention with the landscape. However this is not the optimal solution for cross ventilation and this location would only work with one view. Option 3 works with hiding the volume underneath the surface in order not to obstruct the naturally defined mountain edge. However this solution would create problems with utilizing natural ventilation strategies and there would be no views from the building. Option 1 is therefore chosen for further development.



The illustration shows different examples of how the building volume of the visitor center can be place on the site. The contour lines of the site create a clear orientation from north to south pointing in the direction of The Citadelle. The flow on the site further emphasizes this orientation and it would therefore be natural to repeat this orientation in the archi-

tecture. In order to allow for cross ventilation it is necessary to orientate the building perpendicular to the prevailing wind direction, which is from east. Option 3 is chosen since this orientation gives optimal possibility to utilize the views and allow for cross ventilation. Furthermore it emphasizes the orientation of the site.



The illustration shows the placement of the accommodation facilities in relation to the chosen orientation of the visitor center. From the analysis it is concluded that different levels of standards in the hotel are neseccery in order to accommodate a wider range of tourists (dormitory and single-rooms). This is the reason for the various volumes on the illustration. In the first option the rooms are located down the mountain from the visitor center, which creates a problem with privacy. Option 2 works with orientating the rooms individually according to different views, which creates an interesting rela-

tion between the landscape and the architecture because the volumes break the order of the contour lines. However, considering the steepness of the mountain, this solution might be too extreme to construct. Option 3 works with the same orientation as the visitor center, which creates a more unified whole. To enhance privacy the volumes are moved further away from the visitor center and they are twisted a little in the direction of the landscape. This creates an interesting interplay between the contour lines and the direction of the volume. For that reason option 3 is chosen.



FLOW STRATEGIES

In the previous the functions are described along with the desired atmosphere in each of them and the placement on the site have been determined. The following are investigations of how to relate the building to the path on the site and how the flow in between the functions in the building should be.

FLOW IN RELATION TO THE PATH

Placing the building in relation to the existing path is looked at in these sketches. Different concepts are revealed in the following.

One option works with spreading the functions out and placing them along the path, another works with assembling the functions in one building adjacent to the path. In the previous it is seen that there is a natural flow on the site that we want to preserve – and stress the experience that is on this flow at this time. Therefore it is chosen to place the building on this path and letting the visitors pass though the building to exit it on the other side in order to continue the journey on the path to The Citadelle. This creates a natural separation between arriving and leaving tourists. This will be helpful in relation to organizing the flow of tourist on days with many visitors. However it is suggested that a secondary path is available for the tourists who do not wish to see the visitor center. This path can also be helpful when considering the variation of visitors in one day in order to let some of the tourists pass the visitor center on their way to The Citadelle and offering the opportunity to see the center afterwards.



ILL 086: Illustrations of how the visitor center could relate to the existing path. The chosen option is marked.



ILL 088: Initial ideas of how the building could relate to the path.

99

FLOW IN THE FUNCTIONS

In relation to the flow in the visitor center different typologies for the flow in other visitor centers and museums

CONTINUOUS FLOW



CONTINUOUS FLOW WITH CHOICES



are analysed to give a better understanding of how these work and which strategy to use in this case.

Woodhead Architects, The Pinnacles Interpretive Center

The flow in the building is predefined by the walls and can only be in one direction. Continuous flow ensures that the visitors experience all of the functions in the center and it is evident which way to go and what to see.

Gleen Murcutt, Bowali Visitor Information Center

The flow in this centre is based on the idea of an open-ended itinerary 'a journey without beginning or end'. Once visitors have reached the large platform they are free to make their way among the various functions. This type of flow will give the visitors the freedom to have an individual experience of the centre.

Renzo Piano, Jean-Marie Tjibaou Cultural Center

The functions in this visitor center are in separated room allocated along a flow. The visitors are given the change to put together their own experience and reflect upon the separate exhibitions before entering the next.

OPEN ROOM



ONE DISTRIBUTION ROOM



ILL 089: The illustration shows different flow strategies.



ILL 090: Nemunoki Children's Museum



ILL 091: British Museum London

Shigeru Ban, Nemunoki Children's Museum

One open scape is often seen in galleries. It gives the room flexibility for different types of exhibitions and the flow depends on the visitors themselves.

Foster and Partners, British Museum London

Here there is a large main area from where the different smaller exhibitions can be reached. This gives the visitors opportunity to choose for themselves.





ILL 093: Plan of Bowali Visitor Information Center



ILL 094: Plan of Jean-Marie Tjibaou Cultural Center



ILL 094: The Pinnacles Interpretive Center



ILL 096: Bowali Visitor Information Center



ILL 097: Jean-Marie Tjibaou Cultural Center



It is chosen to work with a free flow for the further development of the visitor center. The diagram shows the connection between the different functions and whom they are directed to.

THE CONCEPT







ILL 098: The concept

EMPHASIZING THE EX-PERIENCE

The concept is to emphasize the experience present on the site today through linking the functions to the characters and underlining the difference between the two views through the rising of a wall on the edge. This wall will guide the tourist through the building and control when the different views will be presented to the tourists and thereby reveal the beauty of the landscape through the experience of the architecture. The wall will emerge out of the small mound to the north of the site and reach out of the ground pointing in the direction of The Citadelle. It will be made out of limestone to compliment the small limestone boulders in the area and reveal the materials on the site.

The wall as a corridor

In this early idea the wall becomes a corridor leading the guests to the different functions of the visitor center.

Storage incorporated in the wall

Large area of the visitor center is storage. In this sketching proposal the wall becomes storage facilities.

The wall - introvert functions

Further developments deal with the idea of breaking the wall allowing for short views to the vest side throughout the building and thereby give the guests a little appetizer on what to come. When the guests have been trough the exhibition and approach the restaurant the entire view towards vest will be revealed.

These ideas are further developed into the final solution of the plan. Many experiments with the plans and the form have been conducted trough the design process as can be seen on the sketches, but in order to make it easier to understand, the process will be described trough following diagrams. These diagrams show the development from the concept to the final plan solution.



102



99: Initial model dealing with the concept of using the wall as the flow line. ILL



ILL 101: Sketct of how the limestone wall emerges from the mountainside. ILL 102: Initial model



ILL 103: Sketch of how the building is approached

ILL 104: Initial ideas with the wall
DEVELOPING THE CONCEPT

After the concept is established the development of it can begin. These early ideas show experiments with the form in relation to its function. The function of the wall should not only be to emphasize the experience of the nature it should become a natural element of the architecture. Here different experiments on how to emphazise the experience and make it a natural element in the building is conducted.



Introducing a wall that divides the building up in two zones emphasizes the different atmosphere on the site. With the help of the wall the architecture will control the users experience in relation to views.



ORGANIZING THE FUNCTIONS



The functions are organized on the site according to the room program and function diagram. Functions designed for activity are place on the east side whereas functions intended for dwelling are placed on the west site. The functions on the west side enjoy the infinity view towards east. The workshop, the kitchen, the exhibition halls, staff room and restroom

are introvert functions and are therefore designed as 'indoor' functions defined by walls on all sides. The dining area, the lobby, the corridor, dwelling and shop are extrovert functions and are therefore designed as more open and undefined spaces.



Further developments deals with the idea of breaking the wall allowing for short views to the west side throughout the building and thereby give the guests a small appetizer on what to come. When the guests have been through the exhibition and approach the restaurant the entire view towards west will be revealed. The wall that controls the views towards west merge with the extrovert functions and becomes the wall that defines these functions.

BREAKING THE WALL



A porch is introduced to the form inspired by Haitian architecture. Architecture in Haiti is architecture outdoors. The tropical climate allows the building to be relatively open and Haitians prefer to dwell outside in a shade during the day. The extrovert functions represent the porch as seen on the illustration.



INCORPORATING STORAGE

Storage needs to be incorporated in close relation to almost all of the extrovert functions. Different experiments on how to incorporate the storage, water tanks and restrooms are

conducted. The chosen solution is to incorporate the storage as a part of the wall that defines the functions.

106



ILL 107: These plan drawings works with the developing the concept of the wall focusing on creating a connection between the wall and the functions.

ILL 108: Initial sketch of the entrance to the visitor center

BAMBOO SCREENS



Light bamboo screens are introduced to the design to allow for ventilation and to introduce a more flexible wall element to the design. The bamboo wall lightly defines the extrovert functions and adds another dimension to the façade. As can be seen on the following sketches the bamboo screen contrast the heavy limestone walls in its form and materiality. Through the form finding process many experiments have been conducted. See detailing of the screen in the synthesis phase for further information.

THE FLOW



The walls in the introvert functions are broken up to allow for the desired flow in the building. The openings are placed according to functional requirements and in order to empha-

size the views towards west.

108





 ILL 110: Models have been worked out to gain a spatial understanding of the rooms.



ILL 111: Sketch of the different use of the limestone wall and the bamboo screen.



ILL 112: Initial sketch for the location of the accommodation facilities in relation to the visitor center.

ACCOMMODATION

This spread show initial ideas of the development of the accommodation facilities. As stated in the analysis should



ILL 112: Illustration of how the simple layout of the vernacula architecture has been adopted in the design of the accommodation. the accommodation be separated in a dormitory and private rooms.

DEVELOPING THE PLAN OF THE ROOM

The simple layout of the Haitian houses are adopted and developed in the design of the accommodation, as can be seen in the sketches. The bedroom is the introvert function and will be in the box under the roof, same principle as in the visitor center. In the analysis of vernacular Haitian houses it was concluded that they all have a porch facing the road. It is therefore decided that the rooms in the accommodation should also have direct access to a private porch from where they can enjoy the view.



ILL 113: Illustration of how to organise the rooms in relation to each other.

SCATTERED DWELLINGS VS GATHERED

Some of the ideas works with separating the room into individual dwellings scattered out over the mountainside, hidden in between the trees, giving each of them an individual view and experience of the site. However according to the Haitian way of living in the lakau community (see analysis) is it decided to gather the rooms on a veranda, as in the visitor center.





ILL 115: Illustration of how to relate to the contour lines.



ILL 116: Sketch of the relation between the landscape and the accommodation

ORGANISING THE ROOMS ON THE VERANDA

After deciding on gathering the hotel room on a veranda experiments with different organisations are carried out. Some of the sketches works with organising the room around a common outdoor area in order to use the walls of the rooms to create niches for common facilities.

However it is decided to organise the rooms adjacent to each other to provide possibility for a private verandas in front of the rooms.

This is also chosen because of the topography. Because of the steep slope it makes sense to arrange the rooms adjacent to each other to create a rectangular plan that does not cantilevered too much.





ILL 116: Developing the plans of the accommodation.

DEVELOPING THE PLANS

When placing the accommodation on the site focus has been on providing a sense of a living in between the forest and utilizing the intimate atmosphere that the tree naturally creates.

In relation to materials and constructional principles applies the same concept as in the visitor center. The idea of using the limestone as a the material for the wall that enclosed functions and the bamboo screen for walls that need to be flexible, works well for the accommodations. The limestone wall will in this case enclose the rooms and thereby form a 'back' against the mountain and provide a sense of security and intimate interior atmosphere where the tourist can lean their back on when sitting in their beds to enjoy the proximity to nature.



ILL 117: Proposal for the entrance to the accommodation.



ILL 118: Developing the plans of the accommodation. This option works with organising the bedrooms around the common facilities whist provided view towards west from the bedrooms.



PRIVATE BEDROOM PLANS

In the design of the private bedroom is the main focus on utilizing the 'infinity' view and giving the tourist opportunity to have undisturbed view directly from their beds. The room is developed from a minimalistic idea and is therefore dimensioned to have space for a bed, a small desk and a small closet. The room gives opportunity to have flexibility in relation to dividing the double bed into two, depending on who the guests are.

Focus is on designing a layout of the room that gives possibility for opening the entire west façade up without compromising the privacy.

The porch is a main element in the design and several suggestion of how this should be designed is developed. The ideas generally work with creating different levels of privacy in the porch by separating it in height.

Inspired by the Haitian lakau community it is decided that the tourist will share some facilities, the kitchen and a living area which the tourists can go when they want to socialize.

It is a main focus to keep the privacy of the rooms and the

common facilities separate which is why it is decided to place the rooms closes to the edge of the mountain, providing a sense of security and comfort, and letting the common facilities reach a little more out of the forest away from the mountain edge.

In the final layout of the plan the tourist enter the accommodation in the common facilities that are 0,5 meters below the private bedrooms. From here they can go around the kitchen and the level becomes the path leading them to their room where there are a few steps separating the public from the private.

In order to ensure a certain level of privacy it is decided to only have four rooms to share the common facilities and then repeat the layout again to reach a total of eight private rooms.





ILL 121: Beach House in Malibu California



ILL 122: Malibu beach house



ILL 123: The Juvet Landscape Hotel

ILL 120: Tropical terrace house design



ILL 124: A tropical house in Brazil



ILL 125: Fransworth house

DORMITORY PLANS

The dormitory is primarily design for Haitian school children and backpackers, and focus is therefore on creating common areas for socializing instead of large private rooms. The sleeping room are therefore design in a minimalist way to give room for bunk beds with space for luggage storing underneath.

The focus has been on providing dwelling opportunities in the shade and therefore having a large roof overhang. The layout of the bedrooms are used to create niches and different outdoor areas which is why they are separated in two volumes. The space between the two volumes is used for washing facilities and a small niche for dwelling.

Additionally the outdoor area is also separated vertically to separate the common areas in different zones. In the final layout part of the base have been lowered and the stairs can be used for dwelling. The tourist will enter the facility in the common area including dinning tables and couches.

In both cases is the kitchen area design so that it can be closed of and used for storage area in the event of a hur-ricane.





ILL 127: Initial model of dormitory

OVERALL PLACEMENT

In the overall layout of the facilities is the main focus on the view and it is therefore important that the facilities are arranged so that they are not disturbing each others view.



THE ROOF

EXPERIMENTING WITH THE ROOF

Early in the design process experiments on different shapes of the roof of the building were carried out. The experiments are divided into three types; flat roof, hipped roof and organic roof. The results from the experiments is shown on this spread. The different designs of the roof are evaluated by their aesthetical, technical and functional qualities. The flat roof is chosen for further developing.

HIPPED ROOF



ILL 128: Bamboo hipped roof

FLAT ROOF

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ILL 129: Flat roof

ORGANIC ROOF





ILL 130: Organic roof, SHigeru Ban

116

AESTHETICAL

The roof has a heavy appearance and does not complement the architectural expression of the building. The limestone walls and volumes have a heavy rectangular appearance while the hipped roof has a heavy triangular appearance, which does not complement the expression. The hipped roof creates an interesting room experience with high ceilings. However it disturbs the connection to the surrounding nature more than the flat roof.

Expression: Out of the three options, the flat roof harmonizes best with the architectural expression of the building. It has a linear and light expression that compliments the heavy horizontal walls and volumes. The linear form of the building compliments the wild nature surrounding it and creates a form for harmony.

Experience: The room experience of the flat roof is very defined and sharp. The form retires so the focus is on the nature. The form emphasizes the beauty of the nature and highlights the horizon. TECHNICAL

A hipped roof can be constructed in several ways. There are some interesting examples of bamboo constructions that can be implemented in the design. A hipped roof with a 30% slope is considered as one of the best structural solutions for use in high wind or hurricane prone areas.

FUNCTIONAL

A truss beam is able to span longer than a flat beam, which means it is easier to design a column free plan.

A flat roof can be constructed by laying three layers of bamboo beams on top of each other to clamp the columns in between it. This construction of bamboo forms a structural system that will act well in earthquakes and will be able to resist high horizontal forces. A flat roof experiences an outward pressure or uplift, in addition to some drag forces in hurricane winds and is therefore not the most optimal roof shape for hurricane hazardous areas. It can however be designed to survive high wind pressures by designing columns of strong tensile strength and with good anchorage to the ground.

Horizontal beams cannot span as wide as hipped or curved beams of same dimension. Therefore it can be necessary to support them with additionally columns that divide the room inside. However to achieve an open plan the beam needs to span 16m, which is considered possible without adding supports.

It is difficult to design an aesthetical expression with the organic roof that complies with the architecture. The roof takes an organic shape similar to the surrounding nature and therefore does not contrast or compliment the surroundings. Moreover the organic roof does not harmonize with the walls. An organic formed roof could be constructed of several layers of spitted bamboo similar to what Shigeru Ban has used in his designs of... or as a reciprocal frame. The beams in the roof clamp the columns in between it. This construction of bamboo forms a structural system that will act well in earthquakes and will be able to resist high horizontal forces. An organic shaped roof will act better in hurricanes than a flat roof because the wind will pass over it without generating large drag forces. Curved beam is able to span larger dimensions than a flat beam witch means that it is easy to design a column free plan.



ILL 131: SANAA's 21st Centery Museum



ILL 132: Tando Ando Langen foundation



ILL 133: SANAA park café

DEVELOPING THE ROOF AND THE BOXES

After having decided on a flat roof, experiments with the relationship between the roof and the boxes are carried out in relation to the spatiality, the tectonic principles and the architectural expression.

The initial form concept creates a regular building with a straight flat roof with underlying boxes. Though a simple and tight geometry is desirable in this context, the initial expression is considered too simple. Therefore it needs developing in relation to the room height of the functions in the boxes, as seen in the room program. The illustration shows different examples of how this difference in height can effect the expression in the facade. Some of the examples work with lowering the roof and letting the boxes penetrate the roof as seen in the inspirational pictures of SANAA's 21st Century Museum. This will allow for different strategies in relation to the daylight in the functions, which is desirable. The variation gives focus to the boxes as opposed to the roof and creates an interesting interplay between the two, which also reveals a hierarchy in the different boxes. However penetrating the light bamboo roof with the heavy limestone walls creates constructional problems since the different materials will react differently in earthquakes (see the description of the materials). It is also important to consider



118



from which angle the architecture will be approached. In this case the tourists will approach the building from below as they walk up the mountain and whatever happens above the roof will therefore not be visible by the perceiver as seen on the illustration. The underside of the roof is on the other hand in focus and attention therefore needs to be given to the design of the underside of the roof structure, which will be detailed later.

From this it is clear that penetrating the roof with the boxes is not an option.

Instead different heights of the boxes are experimented. The roof is lowered above the functions that require a lower room height than the exhibitions. This creates a natural hierarchy in the architectural expression without penetrating the roof structure. It is considered important that the roof and the boxes are separated in relation to emphasizing the lightness of the roof in contrast to the heavy boxes. Therefore it is decided to have a gap of 0,5 meter between the roof and the boxes which in relation to climatic design will allow for ventilation, which will be described later.

From these investigations the boxes are chosen to vary in height according to the required room height for the different functions and separating the roof from the boxes to emphasize its lightness. The roof over the kitchen, shop and restaurant (to the left in the façade) is lowered in relation to creating a comfortable spatial feeling in the boxes.







In this phases, aspects that are touched in the sketching phase are further developed into the final proposal.



ILL 134: Bamboo screen



L 135: Bamboo screer

DETAILING THE FACADES

As seen in the previous the chosen materials for the walls are bamboo and limestone that each have their own function. In this chapter it is described how these have been detailed in relation to allowing daylight into the functions and developing the ventilation strategies in the different functions.



ORIENTATION OF THE BAMBOO

The illustration shows different examples of the orientation of the bamboo in the façade. It is chosen to work with the vertical orientation in relation to complimenting the columns as well as breaking the dominating horizontal orientation of the walls.



ILL 136: Kengo Kuma, greet bamboo wal



L 137: Tyin, thailand house deign

DETAILING THE BAMBOO SCREEN

As mentioned earlier the bamboo wall works as a screen that needs to allow for flexibility in relation to openings for ventilation, daylight and access to the functions. The images on this spread gives inspiration to how this screen can be design.

The plan drawing of the visitor center shows where the screens are located and which walls are limestone (the reasoning for this is described earlier). The material is closely determined from how open the functions needs to be, for

example should the restroom be enclosed and is therefore constructed only of limestone walls as oppose to the shop which should be open will therefore mainly have bamboo screens as walls.

The list on the next page describes which specific need the screen will have to meet in the different functions.



ILL 136: The illustation shows where the different materials have been used in the final plan of the visitor center.



THE SCREEN AND THE FUNCTIONS

SHOP:

In the shop the bamboo screen will need to provide possibility for closing the area off once the shop is closed whilst opening the façade up during the daytime. A flexible structure is necessary and it should be open to allow for ventilation and daylight to enter the area. The screen will therefore function as sliding panels.

EXHIBITION:

In the exhibition the screen need to allow for air to filter in the room. It should not provide flexibility for opening up the space since focus in this room should be internal, therefore will the screen in this case not be the sliding panels as in the other functions.

LOBBY:

Same principle as in the shop.

STAFF AND WORKSHOP:

The screen in these functions needs to provide possibility for the staff to open up the façade to allow daylight into the room whilst providing possibility for the staff to exit the room and use the veranda. However in relation to the nessecary level of privacy in these rooms it should not be too open but instead give opportunity for the staff to open the façade without giving access for the tourist to enter the room.

HOTEL ROOMS:

The screen should provide possibility for light to enter the room and be flexible in order to open the façade up and give the guest a direct access to the outdoor area. However it is important that the room still remains private and the same strategy as in the staff and conference is therefore applied.



ILL 138: The illustration shows how the screen works in relation to opening up the façade whilst keeping a certain level of privacy.





2: LOBBY





3: STAFF AND WORKSHOP





4: HOTEL ROOM





125

DETAILING THE STRUCTURE

STRUCTURAL SYSTEM

The building should be able to resist the natural hazards that arise in Haiti. In order to make the construction earthquake resistant the building is divided in several structural elements that are independent of each other to create a robust structure. The chosen materials for the building, limestone and bamboo respond to earthquake in different ways. The bamboo is an elastic material whereas limestone is a brittle material with limited elasticity. Therefore it is important to keep them as two separated structures. The construction of the roof and the columns should be designed to resist strong horizontal wind loads and loads arising during earthquakes. In addition it should be able to carry vertical loads consisting of its own weight, as seen in the illustration below.

In order to resist horizontal forces a rigid frame is necessary. This is achieved by designing the joints between the beams and columns as rigid joints, as seen on the illustation on the opposite page.





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77

BEAM STRUCTURE

As mentioned in the program, ornament and detail is an important part of Haitian architecture. "Haitian architecture attains its fullest expression trough the Haitian penchant for ornament". The tectonic vision for the project is to allow the structure of the roof to become visible and as such become the buildings ornament. As seen in the previous investigations on how the building is approached it became clear that the underside of the roof is in focus which is why the wish is that the roof becomes the element giving the architecture a form of

OPTIONS

STRUCTURAL DIAGRAM



a Haitian expression. The following shows experiments with the design of the beam structure. During the experiments inspiration is taken from ornament in Haitian architecture. Furthermore reference projects where bamboo is used as construction material in architecture are analyzed to get the understanding of how to best utilize the material and how to assemble it (se chapter about bamboo as construction material). The diagonal beam structure is chosen because of its structural and aesthetical qualities.

DESPRIPTION AND EVALUATION



This beam is developed with inspiration from a traditional use of bamboo as a construction material. It consists of several layers of bamboo profiles laid on top of each other until it is stiff enough to resist vertical forces affecting the structure. To resist the horizontal forces diagonal beams have to be implemented or the columns have to be fixed to the roof in some way. The structure can be assembled with rope or similar traditional joints. The structure has the same linear form as other elements in the design.



This beam is developed from the square beam structure above with an influence of repeated patterns and ornament in Haitian architecture. It consists of several layers of bamboo profiles laid on top of each other until it is high enough to resist forces affecting the structure. By fixing the beams in between the grid the construction can resist strong horizontal forces occurring during earthquakes and hurricanes. The structure can be assembled with rope or similar traditional joints (this will be further detailed in the detail chapter). The structure breaks up the sharp linear form of the room with its diagonal lines and gives it an interesting twist.



This truss beam structure is a threedimensional development of a repeated form in Haitian architecture. The columns are fixed in the beam structure in between the two assemble points. The forces are transferred from the beams to the columns as shown on illustration x. However it is more difficult to assemble this structure than the other two and steel joints will be needed in order to assemble it properly. It casts interesting shadows as shown on the following illustrations.

COLUMN PROFILES

Open plans are preferred in order to utilize the room as well as possible and give flexibility in the exhibition spaces. The average diameter of the chosen bamboo specie is only 70-200mm. The columns will therefore have to consist of several bamboo profiles attached to each other. Experiments with different kinds of bamboo columns were carried out with help of several reference projects. The results can be seen below. The triangular column was chosen because of its light expression compared to the two others. The reason why it is chosen is also because of its optimal material use.

OPTION

SOLUTION IN THE DESIGN

ATTACHED COLUMN



TRIANGULAR COLOMN





WOVEN COLUMN



ILL 142: Malibu residence



THE PROFILE

DESPRIPTION AND EVALUATION



This column is seen in many bamboo constructions. It consists of several bamboo profiles attached to each other to increase the diameter. The column is very heavy in its expression and gives a monumental expression of the building, which is not desirable in this case. The material is not utilized as well as in the others since it uses a larger number of profiles but has the same moment of inertia, given that the profiles have the same diameter.



This profile utilizes the material to its maximum. It consists of three bamboo profiles with small vertical profiles between that tie the profiles together so they support each other. The column is relatively light in its expression compared to the others and will require less material. The column could be given a function as well by designing it large enough to utilize the area in between as tables or chairs.



The profile consists of several woven bamboo profiles with a small diameter. It has an interesting architectural expression and daylight can be designed as seen on the reference project. However it is more interesting for columns designed inside of a building rather than in the façade. The profile has a more heavy expression in the façade of the building than the triangle column.

131



ILL 143: Kengo Kuma, Onsen bathhouse



ILL 145: Kengo Kuma, Great bamboo wall

ROOF MATERIALS

As seen in the analysis on climatic design in a hot and humid climate the roof should be of lightweight materials that reflect solar radiation in order not to absorb heat. This is also because the structure is a lightweight construction, which was a design parameter from the analysis on earthquake resistant constructions.

The following is an investigation on which materials to use for the cladding of the roof construction. Besides providing shade from the sun and rain the roof in this design also has to allow diffused light to enter the exhibitions, as stated in the analysis. This will therefore also be a criteria for determining which material to use on the roof.

BAMBOO



Since the construction is made of bamboo it is natural to consider this material for the cladding also. A lightweight bamboo cladding will from an aesthetical point of view in harmony with the roof construction. However a bamboo roof will be exposed to all weather conditions, which will drastically reduce the longevity of the construction. This could be accounted for by adding a corrugated aluminum on top of the bamboo to protect from rainwater, but then the bamboo cladding becomes superficial and its only function is aesthetical. [Janssen, 1988]





ILL 144: Kengo Kuma, Great bamboo wall



ILL 146: Gleen Murcutt, Marika house

ALUMINIUM

Aluminum is highly reflective and will reflect 90% of the solar radiation. Furthermore it will give rainwater protection to the bamboo structure of the roof. However by using this material there will be a need for allowing daylight into the exhibition which means that it would have to be replaced by a translucent material on parts of the roof, for example corrugated polycarbonate as seen in Kengo Kuma's Horai Onsen Bathhouse. From aesthetic point of view aluminum roof will not compliment the bamboo structure and is therefore not chosen for the cladding. [Koch-Nielsen, 2002]





ILL 147: Shigeru Ban, Japan Pavilion





ILL 148: Shigeru Ban, Paper Log House



ILL 150: Devner International Airport

MEMBRANE

Fabric membrane architecture, also called tensile- or tension membrane architecture refers to a structure composed mainly of steel frames with fabric tent-like roofs made of woven material, for example PTFE-coated fiberglass and PVC-coated polyester. It is well suited for sheltering large pubic areas, such as stadiums, arenas, outdoor shelters and airport terminals. The low weight of the material makes fabric architectural constructions easier and cheaper that other building designs.

Many of the fabric architectural structures are designed such that the fabric can be removed if there is a danger of a hurricane. This helps to prevent damage to the structure in a way that is impossible with conventional roof materials. The typical characteristic in relation to solar radiation is that is reflects 75%, which makes the material attractive for this project. It will furthermore allow for a comfortable diffused light in the exhibitions.

Aesthetically this material will illuminate the exhibition halls with a comfortable diffused light well suited for the room, without casting shadows. It will also compliment the bamboo construction by contrasting it and thereby letting the beauty of the bamboo structure be presented in its righteous way, as seen in the "German-Chinese House" by Markus Heinsdorff at the Shanghai World Expo 2010.

[www.tricoshade.com], [ww.architen. com], [www.rubb.com]

From these considerations it is chosen to work with a PVC membrane in the further development of the design.



ILL 151: The German-chinise House



ILL 152: Shigeru Ban

DIMENSIONING THE STRUCTURE



In the previous the different possibilities for the beam structure and the colums have been dissused and determined to be a diagonal beam structure with triangular columns. This chapter is an investigation of the dimensioning of the columns. Ealier in the design process it was concluded that the columes in Haitian architecture help define an outdoor area that functions as a bufferzone between the actual house and the nature. The following examples will be evaluated in relation to their ability to define the proper spatial dimension to this bufferzone as well as aesthetical considerations in relation to the architectural expression.

SIX METER DISTANCE



This option works with six meter distance between the columns which creates a very open bufferzone. This distance will only give little disturbance to the view and will give a feeling of a direct connection to the landscape. But in the case the columns would have to be larger since there are less of them. This is not desirable in realtion to the architectural expression since the 'lightness' of the roof construction will disappear.

Given the large distance between the columns, the buffer-

zone might not appear as well-defined as intended and the boundery between indoor and outdoor might be too blurred. In relation to the architectural expression this option underlines the horizontal orientation of the building which is already dominating and therefore might become too horizontal. This will also require thicker columns which will appear too massive and call for attention and focus will no longer be on the roof.

TWO METER DISTANCE



In order to give to give more focus to the lightness roof a vertical orientation is introduced. This options only have two meters between the columns which gives opportunity to work with thinner columns to underline the lightness of the roof structure as a contrast to the heavy limestone walls and introduces a vertically expression in the building. In relation

to the spatiality the columns appears as a facade and references the forest outdoor. However because of the small distance between the columns they almost becomes a second facade and give a feeling of enclosure rather than openness, and the boundery to the outdoor might appear be too sharp.



FOUR METER DISTANCE

In this option the distance between the columns is four meters which is a compromize between the other two. This will define a bufferzone without the feeling of being behind bars but rather an open structure whilst creating the desired relationship between the landscape and the functions and ensure that the bufferzone creates a link between the two.

THE BASE

Early in the project experiments with the base was carried out in order to determine whether a light or heavy construction is preferred for the base.

LIGHT – BAMBOO



From the analysis on hot and humid climate it is concluded that it can be beneficial to have a lightweight base construction that allows for air to enter the building through the floor. In this case the columns will have different length before reaching the ground, which will give attention to the topography of the landscape at the specific site. However from the analysis on bamboo as a construction material it was clear that bamboo must not be in contact with soil in order to keep it dry and would therefore typically be connected to a concrete foundation with steel. In relation to the heavy limestone wall the light base becomes a problem, since it would not make sense for the light base to carry the load of the limestone walls and they would therefore have to penetrate the base in order to sit on the ground and given the different materials different qualities, bamboo being an elastic material and limestone a plastic (see previous description), they will react differently in



the event of an earthquake and should therefore be kept separate. Additionally, a light bamboo foundation and heavy limestone walls do not coincide from an aesthetically point of view and therefore experiments with a heavy base are carried out.



Wind load

Earthquake

From the analysis on Haitian vernacular architecture it was concluded that they often have a heavy base that elevates the building from the ground in order to create separation. This design works well for this project in relation to creating a large defined outdoor area separated from the landscape in order to organize the flow of people. The heavy base also works well with the heavy limestone walls and they compliment each other. Furthermore the lightness of the roof is emphasized and the architectural expression of the building is a clear symbiosis of a heavy part and a light roof. The lightweight construction and the heavy foundation are kept separate which is desirable in relation to earthquakes.

The heavy base will function as a large multifunctional furniture or platform that can accede the need for outdoor relaxation areas.

From this is can be concluded that the aesthetic qualities with the heavy foundation are considered more valuable than the light foundation and since a light foundation would also require the use of concrete it is chosen to work with a heavy foundation. The climatic issue with a heavy foundation vs a light foundation is not considered a main problem since the

Haitian vernacular architecture, developed to adapt the Haitian climate, works with a heavy foundations.

Bamboo construction

Limestonewall

Foundaiton

THE FINAL CONSTRUCTION



DETAILS

FUNDAMENT


NATURAL VENTILATION

The following will clarify the ventilation strategies in the visitor center. As mentioned in the analysis the strategy should mainly be based on cross ventilation.

The natural ventilation will be driven by the wind direction and by thermal buoyancy on less windy days. The dominating wind direction is from east, which is why the building is orientated perpendicular to east. This will create pressure on the east facade and lee on the west facade.

In general it is important to keep in mind that the building is designed to continuously let air move through it. The bamboo screen will ensure a constant air infiltration in the functions in order to reach the same indoor temperature as the outdoor. However on day where more ventilation is necessary, for example on day with low wind speed, the design allows for opening up the façade even more. These openings are calculated in the natural ventilation spread sheet, which simplifies the calculations and the relation between wind speed, placement of the openings and the size of the openings.

As seen in the analysis it can be beneficial in a hot and humid climate to separate the inlet and outlet openings in height is order to allow for stack ventilation when wind speed are low. This strategy is applied in the exhibitions. The idea is to let air in at the bottom of the screen in the exhibition on the east façade and let it rise up and out of the opening at the top of the limestone wall. The results show that the dimensions of the openings will allow for a sufficient air change rate only by thermal buoyancy. (see appendix D for the calculations)



ILL 153: Basic ventilation principle in exhibition







140





ILL 153: The illustration shows ventilation strategy for the accommodation facilities

CONCLUSION

Based on the problem statement raised in the introduction and the following vision for the project, this chapter ends the design process with a conclusion and a reflection on the project to evaluate if the criteria's have been fulfilled.

The focus in the project has been on designing the visitor center and the additional accommodation facilities in order to enhance tourism on the site. However an overall planning for the whole area has also been proposed in order to make the journey to The Citadelle easier for the tourists. By providing information and proper parking facilities at the main access road in Milot, the tourists are given the necessary information to start the ascent and the opportunity to rent a donkey/horse and hire a tour guide. The rent of a donkey/horse will be handled more professionally than the case is today. This will make the rent trustworthy for the tourists and hopefully provide local Haitians a job. The problem with the locals being too intrusive and desperate is paid attention to though the establishment of a market place at the donkey parking, which will provide opportunity for improving the local economy. The visitor center will attract international tourist, as well as domestic and provide an opportunity to experience the site. The accommodation facilities will give the tourists opportunity to stay in this beautiful area for longer.

The design of this project takes its starting point in the typology of the vernacular Haitian architecture and deals with a contemporary interpreta-

tentive towards the site's innate qualities. The architecture appears as a linear contrast to the dramatic landscape and herby compliments it by revealing the topography of the site. It reflects the landscape in choice of material and initiates a dialog with its context whilst providing opportunity for the tourists to encounter the freedom of the landscape in the privacy of the forest. The result is a design that enhances the understanding of the surroundings. The topography of the site is utilized and the visitor center is placed on the top of the mountain before the final steep climb to The Citadelle. This dramatic location provides opportunity for the architecture to emphasize the natural experience of the site where the

view towards west is finally revealed. The tourists approach the building from the path. The path brings them through an enclosed forest where at the end of the forest the visitor center

tion of the principles found in the tra-

ditional way of building in Haiti in order

to create a context related design. It

results in a building typology consist-

ing primarily of a heavy base, a roof providing shade and separate boxes

defining the walls of the introvert func-

tions in the building. In the program

the specific context was analyzed in

order to create architecture that is at-

will appear. When the visitor center is reached the visitors will be met by the limestone wall emerging out from the hillside of the mountain representing the material of which the mountains in the area consists of. The wall will guide the visitors into La Citadelle Visitor Center and provide a sense of direction. The main focus in the design of the visitor center has been on emphasizing the experience of the site, which is why the wall will determine when the view towards the west is revealed. However small cutouts of the wall indicate brief views that function as an appetizer for what to come. When the tourists attend the restaurant the entire view will reveal. The limestone wall guides the tourist onto the veranda and continues through the building. Inside of the building it merges with the functions becoming the walls that define the introvert functions in the building. In the other end of the building it guides the user to the exit, suggesting a direction up to The Citadelle.

The large veranda is designed from the idea of creating a break where the tourist can relax for a while before the final steep climb to The Citadelle. This is why the dwelling functions are placed here, corresponding to the outdoor lifestyle of the vernacular Haitian architecture. The roof, constructed of bamboo, is designed after earthquake and hurricane resistant principles and shades the veranda. The veranda is lightly defined by bamboo profiles that create a 'bufferzone' from the introvert functions to the surrounding nature.

The tourists buy tickets to the exhibition in the lobby where they also find the restrooms. From here they can venture into the clearly defined exhibitions design from an idea of internal focus. After the exhibitions the tourist will exit the clearly defined boxes and the view towards west is finally revealed and the tourist can use the restaurant or the dwelling area to enjoy the view. The limestone wall defines an edge that the tourist can lean on and holds seating opportunity for resting and encountering the infinity of the western view.

When the tourists are ready to exit the visitor center the limestone wall will guide them thorough the shop and out of the building pointing in the direction of The Citadelle.

The visitor center also holds facilities for the staff, including offices, storage, restroom and a private area for the watchman. This means that jobs relating to the entire journey of this site are improved since the guides now have an area to drop of their bags and use the restroom.

The facility includes accommodation that tries to accede to the requirement

of a wide range of tourists and provides opportunity for privacy and socializing. These facilities are placed in the privacy of the forest downhill from La Citadelle Visitor Center. The tourists reach this facility by exiting the visitor center from the restaurant and following the path to the accommodation. The different floor level in the accommodation creates diversity and divides it into smaller niche and functions as a gradient of privacy levels.

The technical focus in the project has been on creating a sustainable earthquake and hurricane resistant construction. The building proposal is primarily constructed of bamboo and limestone. The primary structure, containing the roof and the columns, which carry the roof, is constructed of bamboo. Bamboo is chosen because of its sustainable gualities and its ability to resist horizontal forces arising during earthquakes and hurricanes. Bamboo does not originally grow in Haiti but can be found throughout the Caribbean and in other countries with hot and humid climate. In the present day there are organizations experimenting with growing bamboo in Haiti to prevent deforestation. Limestone is primarily chosen in the light of aesthetical considerations but also because it is a local material, which makes it easy to reach. The construction of the roof is simple and the structure is joined by traditional lashings, which makes it easy for the locals to construct.

In general it can be concluded that the creation of the visitor center with the additional facilities will make a trip to The Citadelle more comfortable for the tourists. The emotional experience of the site is embedded in the architecture and will therefore give the tourist not only an understanding of the Haitian history and art, but also the landscape. The accommodation facilities will encourage more tourism on the site while providing possibility for Haitian schools for children to have an authentic experience when learning about their history. Furthermore it can be concluded that the exhibitions will allow for Haitians to reach the international market and hopefully improve the economy.

REFLECTION

PROJECT

When reflecting upon the project one may reflect upon the initial problem statement raised from the background analysis on Haiti and wonder if this project would truly be an example of how architecture can help the rebuilding of Haiti. It is inevitable that developing tourism in Haiti requires much political involvement and effort to bring the security to a level where the tourists are no longer reluctant to visit the country. Additionally it can be difficult to comprehend who would benefit from the proposal. When considering the system in Haiti, where the elite own approximately half of the country's resources and control the government's decisions through corrupt investment, one is temped to think that they would also find a way to benefit from this project. But even if this happens they would still need labor to run the facility. which will provide jobs for the locals. The creation of jobs in the local community helps the development of the rural areas, which prevents emigration to Port-au-Prince in search of jobs. It is also inevitable that the tourism industry would have a positive impact on the local economy. Through suggesting the accommodation facilities we have found a way to keep the tourist

on the site for longer, providing the locals opportunity for benefiting on their spending for longer. On a national level, the visitor center will bring the international market to Haiti and through exhibiting the modern Haitian art it will provide an opportunity for the Haitian artists to reach the international market on another level. This means that the proposal has the potential to help the rebuilding of Haiti through the creation of the visitor center and the accommodation facilities, which provides the tools for developing tourism at the site.

When reflecting upon the different choices that could have been made in the design process that would have resulted in a different outcome the main change would be to see the effect if the entire building would have been of a lightweight construction. The heavy limestone and the concrete foundation might seem intrusive on the natural landscape in contrast to a lightweight bamboo construction that only touches the earth lightly. This would allow for a more flexible and open structure but from an aesthetical point of view a contrasting material would be missing. The use of limestone in the building has an advantage in relation to providing this contrast to the bamboo, while also referring to the landscape in choice of materials, which is desirable. Furthermore, when considering the dramatic nature it might be comforting to have the heavy limestone walls to provide a sense of stability and security and is therefore preferred. Furthermore the placement of the visitor center is reflected upon in relation to its connection to the existing functions. Seen from a functionality perspective it might have been beneficial to place the visitor center closer to the donkey parking so that the tourist would be able to see the exhibition before renting a donkey for the final climb, but this would compromise the experience of the visitor center. It was a main focus to let the architecture release the beauty of nature and emphasize the experience of the site, which is why the dramatic placement on top the mountain is preferred. Furthermore the natural 'break' happens at this location, where the western view is revealed. At this point the tourist will have climbed the uphill path almost all the way to the top, and put the work behind them and get the sweet release of the break that is created in the visitor center.

PROJECT AMBITIONS

When reflecting upon the chosen assignment for the thesis it becomes clear that a large effort has been put into finding the right architecture problem to solve at the expense of some detailing of the final design proposal. However, it has given an opportunity to solve a very unique project that without background analysis of the country would not have been a choice.

Instead of utilizing the knowledge gained on previous semester to create a similar project in a Danish context where we knew for sure that our knowledge was suited for, our motivation for the thesis was to broaden the horizon and challenge this knowledge in a totally different context.

It has truly been an inspirational assignment to try and solve and learn about a different culture in relation to creating site-specific architectural solutions. However the fact that it was impossible to travel to Haiti at the time where the project was developed was unfortunate and made it difficult to gain a full understanding of the site, which turned out to be very time-consuming task. It required much involvement with researching and contacting people who could enlighten us on the subject. All though it has been beneficial to learn how to collect sufficient material to create design solution from a distance, it consequently took time from the final detailing of the project.

After this project it is exciting to see that we can use the tools and knowledge gained at Aalborg University to create architectural solutions on a global scale. It has been exhilarating to use this knowledge in the analysis of Haiti and try to understand how we can use our profession to help a third world country develop. We hope the situation in Haiti will improve in the future so we can be tourists in the country and get a personal experience of the National History Park.

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149

APPENDIX A

This chapter contains information about the country of Haiti, its history and economics, population and culture. The purpose here is to determine how architecture can help rebuilding Haiti as a flourishing nation. The information gained from this chapter will form the basis for the project.



GEOGRAPHY

CUBA THETORTUNE TAND OCÉAN ATLANTIQUE Portode-Paix NORTH-WEST Cap-Haitian Fort Liberte NORD - EAST Conaives ART IBONITE Conaives ART IBONITE CENTER THE CONVE TAND Port-au-Printe DOMINICA REPUBLIC WEST SOUTH Les Cayes 1 Les Cayes 1 Les Cayes 1 MER DES CARIBES

In this chapter Haiti's location, climate, natural hazards, topography and natural resources will be analyzed.

Map of Haitis regions

Haiti is located in the Caribbean: it is the western one-third of the island of Hispaniola, between the Caribbean Sea and the North Atlantic Ocean, west of the Dominican Republic. Its closest neighboring islands are Jamaica and Cuba. Haiti is divided into several regions, shown in the following illustration. The country has major mountain ranges running east to west with fertile valleys between these. The capital city Port-au prince is located in the interior of the bay well protected from the high seas by the Gonáve Island. The generally rugged topography of central and western Hispaniola is reflected in Haiti's name, which derives from the indigenous Arawak place-name Avti and means "Mountainous Land. About twothirds of the total land area is above 490 meters in elevation. [mangobay. com] [haitibio.com]

Haiti's irregular coastline forms a long, slender peninsula in the south and a shorter one in the north, separated by the triangular-shaped Gulf of Gonâve. The shores are generally rocky, rimmed with cliffs, and indented by a number of excellent natural harbors. The surrounding seas are renowned for their corral reefs. Plains, which are quite limited in extent, are the most productive agricultural lands and the most densely populated areas. Haiti's mountains are mainly limestone, although some volcanic formations can be found. Karstic features, such as limestone caves, grottoes, and subterranean rivers, are present in many parts of the country. A long fault line crosses the southern peninsula and passes just south of Port-au-Prince. Numerous rivers and streams, which slow to a trickle during the drv season and which carry torrential flows during the wet season, cross Haiti's plains and mountainous areas. [mangobay.com] [haitibio.com]

Haiti has a hot and humid tropical climate. The temperature is steady throughout the year with average temperature between 26–31 degrees Celsius. The warmest period is during the

summer period from May to September. The sun rises around 05:00 in the morn-ing during the summer time and sets around 18:30. During the wintertime it rises around 06:00 in the morning and sets around 17:30 providing Haitians with long lasting daylight all year long. There are two rainy seasons, April-June and October-November. East is the dominating wind-direction with an average wind speed of 6m/s. The north wind brings fog and drizzle, which interrupt Haiti's dry season from November to January. There are two rainy seasons, April-June and October-November. Northeast trade winds bring rains during the wet season. The average annual rainfall is 140 to 200 centimeters, but it is unevenly distributed. Rainfall decreases from east to west across the northern peninsula. The eastern central region receives a moderate amount of precipitation, while the western coast from the northern peninsula to Port-au-Prince, the capital, is relatively dry. [nationsencyclopedia. com], [britannica.com] [haitibio.com]

Haiti is one of the most vulnerable of countries to natural disaster, manly because of its location in the Caribbean. Haiti lies in the middle of the hurricane belt and is subject to severe storms from June to October. These hurricanes and severe storms have divesting effects in Haiti. Haiti is also subject to earthquakes and periodic droughts and floods, made more severe by deforestation. Sadly the disasters pounding Haiti are not only natural disasters but also human-caused disasters. Because of deforestation in Haiti there are no trees left to keep the large mass of mountain slopes in tact. Only 1.4% of Haiti's original forests are still remaining today. Because of that it doesn't even take a tropical storm to devastate Haiti. Once there are no trees left in Haiti, Haiti will become a natural deadly weapon to its own people killing thousands every time there is a heavy rainfall. This is scary to even think about. [wonderground.com] [mangobay.com] [Haitibio.com]

FACTS

Location:

Haiti is located in the Caribbean; it is the western one-third of the island of Hispaniola, between the Caribbean Sea and the North Atlantic Ocean, west of the Dominican Republic. Map references: Central America and the Caribbean Geographic coordinates: 19 00 N, 72 25 W Climate: Hot and humid tropical climate Natural hazards Lies in the middle of the hurricane belt and subject to severe storms from June to October; occasional flooding and earthquakes: periodic droughts Total: 27.750 sq km (CAI) Land: 27.560 sq km Water: 190 sq km Mostly rough and mountainous Lowest point: Caribbean Sea Om Highest point: Chaine de la Selle 2680m Natural resources: Bauxite, Copper, Calcium carbonate, Gold, Marble, Hydropower Total renewable water resources: 14cu km (2000) Capital: Port-au-Prince

When designing a building in such a climate it is essential to make use of the natural daylight but at the same time it is very important to avoid the direct sunlight to prevent overheating. Natural ventilation can also be used to prevent overheating. The construction of the building has to be flood, hurricane and earthquake resistant; this has to be an integrated part of the design from the beginning. Among natural materials in the area that could be used in the design are: Bauxite, Marble, copper and limestone. Hydropower could be used to generate energy.









HISTORY AND POLITICS

A throught analysis of Haiti's history is important to gain insight in the circumstances that have create the present situation. In order to find architectural solutions to help the rebuilding it is necessary to understand the origin of the prevaling problems the nations battle with today. Furthermore this chapter will give an understand-ing of the politics in the country and how it affects the inhabitants way of life, both economically and in terms of trusting the system.

THE BEGINNIG - From repression to indenpence

In 1492 Columbus discovered the country and called it Hispaniola. He left approximately 40 men behind who immiditely clashed with the native Taino Indians. Eventhough the indians might have won the preliminary battle they where in no possition to resist the european diseases and forced labor, and finally the discovery of gold on the island sealed their fate and the impacts where drastic. The exact number of native inhabitants is onknow but within 40 years of the spanish occupation the native inhabitants where basically wiped out along with centuries of tradition and culture.

Now the Spanish colonizers needed slaves to replace the native Tainos as a source of labor and for that reason they compleately combed the neighboring islands. However, this was not sufficient and therefore began to import african slaves in the beginning of the sixteenth centery. This was the creation of the future Haitian people. As time passed the gold became exhausted and when rumors of the riches of South America reached the country, the white people left to colonize Mexico. But the Europeans did not leave the black popluation to them selves for long as the French quickly began to penetrade the mainland from the pirate island of Tortuga, and renamed it ST. Dominique. In 1697 the Spanish officially handed over the area to France. [www.globalis.dk]

The French followed the labor patterne founded by the spanish colonizers and during the course of the next centery they brought thousant of African slaves to labor the bursting plantation with sugar, coffee, cotton and indigo as the main crops, and the colony became the most fortuitous, profittable colony of the French.

However as seen so often throughout our history people will eventually rebel when oppressed and on this island it happend in 1791. Over the years some "The wealth was gained from the sweat of the seemingly endless supply of black slaves" [www.sustainablehaiti.org]

of the slaves had escaped and found refuge in the forest practising voodoo, and in August 1791 a voodoo ceromoni held in the norther part of Haiti started the slaves war of liberation from their repressive slave masters. The war finally came to an end in 1804 when the slaves defeated the French and gained its independence. Haiti was the first black republic.[www.sustainablehaiti. org],[www.globalis.dk],[Lundahl, 2011]

THE "RISING" OF THE NEW IN-DEPENDENT COUNTRY

Considering the wealthy plantation society that flourished in Haiti before the war it might seem strange that the country evolved into the present state, but the answers lies in the challenges that the population faced after they won their independence. These where extensive problems that the young country simply did not master.

The French settelers success had dependent heavily on two major factors: labor and capital. The prevalling production of sugar was a comprehensive process that required the right timing of the harvest, the right equipment, along with a large amount of planning and controlling which untimately required a large capital and laber force.

The liberation war significally reduced the available stock of both capital and labor and completely undermined the plantation system. The population size was reduced drastically as a result of the expulsion of the French and losses during the war and many plantations





"In November 1803, almost the entire colony, formerly flourishing, was a big cemetery of ashes and debris" Tadeusz Lepkowski, side 5

where servearly damanged. The impacts of the destruction was revealed in the export statistics from 1795 where sugar exports where down to 1,2% of the 1789 level.

Another problem was that the war had left Haiti with two new groups of rulers after the French. One was a direct product of the war: the upper rank of the military and the other was the *affrenchis*, the product of the french settelers mistresses. Both groups aspired to rule the country which would be the basis of Haiti's political problems.

At the same time, the country needed to protect themselves from a possible event of a French return. This required weapons that had to be bought overseas which made exports of crops necessary, but many of the former slaves considered themselves free from labor, and a non-working surplus of the peasants and a flourishing profittable plantation cannot be recoinsiled. That was when the new rulers started bringing them back to work under military control and now the precedent was set for the furture typical pattern of predatory activity in Haiti.

LAND REFORM

Followering the defeat of the French, Jean-Jacques Dessalines, the leader of the revolution, claimed the independent Republic of Haiti. At that time the population was divided in two groupes, the soldiers and the workers who the soldiers controlled. Again a situation where the many toiled for the few. After his assassination in 1806 Haiti was divided in two rival states, the north governed by Henri Christophe and the south goverened by Alexander Pétrion who in 1809 decided to divide the large estates since the plantation system was not working anymore. The slaves where finally free and the country became a peasant nation. But the countrys inherited laws from Code napoleon favored equal rights on all children which inevitable started a process of subdividing the land for each generation resulting in todays soil erosion.

"in doing so it set the stage for the current erosion drame, where an increasing population is mining the soil, with fatal consequences for future generations" [Lundahl, 2011, p. 8]

Another completely devastating sideeffect of this new land reform was that it created a situation where politics degenerated into a constant fight over the presidiential office and the benifits that followed power. The new non-working upperclass could no longer exploit the peasant with military supervision, but with the power of the presidential of



fice they found a new way of exploiting them through collecting taxes. Therefore Haiti suffered a great deal of coups during the following years, and from 1843 to 1915 Haiti had 22 different presidents, all kleaptocrats.[www.sustainablehaiti.org],[Lundahl, 2011]

ENTER: AMERICANS

In 1915 Haiti had developed a repetitive pattern of predatory state with people hiring mercenary armies to overthrow the president in power to take the thrown and the treasury and if there where non he would simply take a loan in the international or domestic marked and the repayment would be passed on to the following president putting Haiti in a major debt. This prompted the US to occupy the country from 1915 to 1934. They tried to developed the country's infrastructure and educational system, inspired by the westerne system but non of these initiatives lasted. What did last however, was the modern constabulary that they created. An army that could control the destructive forces and depose the president if they found him unsufficiant which created some political stability up untill 1957. [Lundahl, 2011]

THE PREDATORY CLIMAX: THE TWO DUVALIERS

In 1957 another ruler, who would have

a very strong impact on Haiti until recently, entered the drama of haitian underdevelopment. Francois Duvalier (Papa Doc), an educated doctor, was elected president on a populist and black nationalist platform. This was the beginning of a bloody dictorship based on oppressive and authoritarian rule. He developed a supportsystem by creating his own dreaded police force Tonton Macoues (Creole for "bogeyman"), who effectively intimadated and liquidated people who challenged them, and by gaining control over the army by firing his opponents, and their replacements all owed their promotion to Duvalier. This gave him a system solidly packed with supporters. Being an expert in voodoo, Papa Doc used the voodoo clergy as a way to reach the local community by insinuating that he himself had divine powers. In 1964 he claimed himself president for life and in 1971 after 13 years of brutal terror and dictatorship in Haiti where approximately 30,000 Haitians were killed, he died of natural reasons. Before his death he destrowed the presidency upon his son Jean-Claude Duvalier (Baby Doc), who at that time was only 19. Following his fathers footsteeps he maintained a notourisly lavish lifestyle and dictorship. His rhetoric endorsing of economic and public-health reforms where never followed by action and when the African Swine Fever epidemic and AIDS reached the extremely vulnerable country in the 80's, repercussions where huge and he was extremly unpopular. The discontent became more and more widespred and eventually the haitians had endured so severe repression that they repeatetly rioted and demonstrated against the government. In 1986 the haitian people with help from the US forced him to leave. He was suspected to have pocketed 1,6 billion USD.

[www.encyclopedia.com], [www. suite101.com], [Lundahl, 2011] [Buss, 2008], [www.travelinghaiti.com]

A DEMOCRATIC REPUBLIC

The following years where caotic, involving many murders, plundering, forming of gangs druck traffiking, and a military regime who once again repressed the population. Most citizendst expressed a desire for democracy but had no real idea of what it was and many of the following elections the military attempted failed. In 1987 however, Haiti officially became a democratic republic and the fundamental laws of the land, inspired by the French and the American system, was approved by a public vote in. The presidents power was limited and a president was now elected for five years only.

Finally in 1990 Aristide, a fomer priest and believer in the philosophy 'liberation theology', is elected president with his popular slogan "haiti's second independence", but is overthrown one vear later in a violent coup and Haiti was now governed by a military junta once again. The US and other nations blockaded Haiti in protect against the military dictatorship which was to no avail and only made the lives of the poor haitians even worse. The Aristide begged the US to help him and in 1994 Clinton administration occupied Haiti with 20,000 soldiers and successfully restores Aristide to role the rest of his elected periode. In 2000 Aristide was reelected president in a distributed election that caused much violence. Aristide also as the previous presidents, encouraged paramilitary forces to intimidate opponents and occasionally co-operated with the Chiméres

ghost gangs of City de Solair. He was originally elected as a supportor of the poor but made no attempt to help them and 2004 people had tired of his lies and a rebellion led to his resignation.

A long avaited successful democratic elections where held in 2006, and the now outgoing president Rene Preval was elected. New presidential and parliamentary elections were due to be held in February in 2010 but where postponed until November 2010. This first round of the election was inconclusive rescheduled for 16 January 2011, but was postponed because of a row over which names should appear on the ballot. The new date is the 20th of March. [www.globalis.dk], [www. cdnedge.bbc.co.uk], [www.economist. com], [Buss, 2008]

As seen throghout the haitian history the political situation has always been caotic and the victims are the population. The haitian politics have been a typical patterns predatory activity where conflicts are often resolved through violence. It has been infiltrate with corruption and the politians have been much influenced by the haitian elite, since they had the money, and gangs in slums such as Cité de Soleil, since they had the power of the people. It can be concluded from this chapter that Haitians have no faith in the government and receive very little political guidance. This, and the extreme poverty, has caused a difficult situation where every man is for himself. The US involvement (early 20th centery) in Haiti demonstrates the problems with implimenting western systems, which is important to remember when creating an sustainable architectural solution that the haitian population should adopt.

"Haiti began 2010 with a natural disaster and ended it with a political crisis." [www.nytimes.com]



ECONOMY

This chapter is intended to gain some knowledge about Haiti's economy and the poverty prevailing in the country.

The Haitian economy has, as already illustrated in the former chapter, been terrible since the country's independence. Thought the French never rebelled their defeat in 1804 they forced the new nation to pay 90 million in compensation for lost properties, which took Haiti 112 years to repay. This was a very fragile foundation to build a sustainable economy on, and the fact that the following leaders where fundamentally greedy condemned Haiti to develope in extreme poverty. Today Haiti is the poorest country in the Westers Hemisphere and the average haitian survives on less that one US dollar a day. Income for the average family has not increased in over twenty years and has declined precipitously in rural areas. Haiti's economy is fundamentally based on argiculture, since this remains the most important sector in terms of the number of jobs in Haiti accounting for more than 66% of the labor force. Service accounts for 24% and industry 10%. It is therefore one of the pillars to the country's stability, but inefficiant exploration has caused severe deforestation and soil erosion as seen

in 'Geography'.

The prevaling poverty preventes them to create a sustainable argiculture because of the growing population. Eventhough the overall rate is only 2,5 % is it still high enough to have disastrous consequences in terms of loss of soil fertility because of the ruggled terrain because unless they emigrate, or are lucky enought to find another job in another sector, the responserbility for the employing them fall on argiculture which creates a labor-intensive mining of the soil. Only 30% of the land is considered suitable for argiculture but more than 40% is worked.



This increases rural poverty each year and has led the starving population to focus on growing food crops instead of export crops. The country is therefore no longer capable of producing enough food crops to feed the nation. Haiti has for that reason become completely dependent on food import, and today over 40% of what the average haitians eats are importet, 7% as food aid. As seen in the history, the boycut of export marked, along with the prevaling large need for food, has created a situation where they almost have no exports and are mainly domestic.

The country is deepely dependen on foreign aid. In 2000 USAID fed 0,5 million haitians daily. Furthermore, the Haitian economy are deeply dependent on annual remittances from emigrants abroad, which is estimated to be as high as 100 million USD.

[www.dr.dk], [Buss, 2008], [Lundahl, 2011], [www.everyculture.com], [Action Plan, 2010]

From this chapter it is concluded that the country is unable to support it self and its inhabitants economically. Larger amount of products are imported than exported and the population is deeply dependent on foreign aid along with cash sent from family members who have emigrated. Haiti's economy is based on agriculture but because of years of erosion and deforestation the country cannot provide the necessary food crops to feed the nation. Knowing the problem with emloying the growing population it would be interesting to investigated an architectural solution can generate new jobs to employ the population.

The poorest country in the Western Hemisphere









ORGANIZATION AND STRUCTURES

The intention of this chapter is to gain knowledge about how the country works along with the distribution of population in rural areas vs cities to understand the current situation.

FACILITIES AND INFRA-STRUCTURE

The infrastructure is not developed in Haiti, which makes it difficult for Haitians as well as tourists to travel around the country. There are no patterne of traffic and no sense of order and driving a short distance can easily take hours. The ruggled topography does not make it easiers. Taxis and horseor donkey-pulled carriages are the typical transportations methods. [www. worldfocus.org]

FACTS

66% of entrepreneurs operate ourside the law

- 80% of people hold real estate assets without legat title
- It takes 683 days to registre a property (31,8 day in the OECD contries)

It takes 5 years for a private person to purchase government land [Lundahl, 2011]

SANITATION

Only half of the population has access to potable water and very few have electrical service. Not everybody has sanitary facilities. NGO's accounts for 70% of health care in rural areas and deliver 80% of the public services. [Buss, 2008]

RURAL VS CITY

Haiti is a classical peasant nation and approximately 2/3 of the population lives in rural areas. The population growth rate in Haiti's rural areas has been lower than the rate for urban areas, even though fertility rates are higher in rural areas. The main reason for this disparity is outmigration. Migration of the rural population moves to the city in search of employment and basic public service. Port au Prince has since the 70's experience a growth beyond control from having a population of 0,5 million to 3,5 today. Approximately 60% of the population lives in informal settlements in reclaimed swamplands and steep hillside communities. Poverty in haiti is more common in rural areas than in in urban areas and 80% of the rural population live below the poverty line (1995). [Lundahl, 2011], [Buss, 2008]



PROPERTY RIGHTS

There is a large problem withland ownership. Since the land reform in 1809 land has been relatively even distrubted but the holdings are extremely small and when a father dies his land is be handed down to his children and divided between them. There is a vigorous land market as rural households often hold real estate assets without official documentation. Nobody knows who owns what which creates a large problem with ownership feelings and the desire to invest in a proper stabile house that cannot be moved if necessary. [Lundahl, 2011],[Buss, 2008], [www.dr.dk]







Haitian are facing widespread unemployment and are therefore trying to find value in the junk littered in the streets, here a man pulls a wheel barrow loaded with plastic bittles the sell to a recycle factory.

THE HAITIAN POPULATION

In this chapter the Haitian population will be analyzed: their average age, life expectancy, health, language, education traditions and employment along with the social structures of the country.

SOCIAL STRUCTURES

There is a major social gap between the upper class and the lower class in Haiti. Social status is shown by the degree of french words and phrases used in speech, number of serveants or ligther skinned. The elite consists of approximately 10-15 families and together they accounts for 1% of the populations. They derive fom the europeans and the mulottos and they own approximately half of the countrys resourses leaving the rest of the population in extreme poverty. The average haitian from the lower class is extremely poor, unemployed and no prospects of getting a job, is unable to read, has no access to potable water or eletricity.

The elite are often, in complete contrast to the haitian lower class, very educated and they often pretend that the peasants do not exist. Eventhough they have no connection to the haitian population they still control them. They know that they will never gain presidential status but they control the country and the politians because they have the money and they finance their elections. This means that the elite have a good foundation and capital to help the nation out of its poverty state but they have no interest in doing so. They feel no social responsibility and only solve their own problems by sending their children to school abroad and buying largers cars insted of developing the educational system in Haiti or fixing the roads. By doing so they restrain the haitians in poverty. This has created a population that have no faith in their system and believes that every man is for himself. This system has created a desire for the population to always wanting to climb the ladder of social status and not having to work is a symbol of status, so the first thing they do when gaining money and status is hiring help. This is fundamentally different from the european thinking where work is consideres status.

GENDER AND EMPLOYMENT

In genreral men tend to monopolize the job market and women are responsible for the domestic activities and marketing. The women of the upperclass have a status equivalent to that of women in the developed countries but in general women are repressed which has led to promiscuity and the abuse of women. The few wage-earning opportunities for women are in heallth care and a few in teaching. Official unemployment rates are 50-70% most of which takes place in the underground and therefore no taxes, job security or benifits can be gained. [www.everyculture.com], [Buss, 20081

FACTS

Population: 9,719,932 **Population Density:** 350pers/sq km Creole, French Religion 80% catlike, 16%protestants and 4%other. 50% practice voodoo Ethnic groups 95% Black, 5% mulatto and white Literacy: (CAI) Definition: age 15 and over can read and write Total population: 52.9% Male: 54.8% Female: 51.2% (2003 est.) Age structure: 0-14 years: 38.1% 15-64 years: 58.5% 65 years and over: 3.4% Median age: Total: 21.1 years Male: 20.9 years Female: 21.4 years (2010 est.) Life expectancy at birth: Total: 62.17years Female: 63.53years Man: 60.84years

EDUCATION

The haitian government have always been to busy with filling their pockets to understand the importance of education the population and has therefor failed to develop a proper school system. Half of the population is illiterate and only 25 % of rural children attend elementary schools. 80% of the pupils goes to private schools because of the bad quality of the public schools, but even in the private schools only 1% of the teachers are formally qualified. The earthquake destroyed half of the educational buildings along with many teachers.[www.everyculture.com], [Lundahl, 2011],[Buss, 2008]

Despite all its misery and caos, the haitian people is a very proud population and they are survivers, capable of overcoming the most impossible situations. They have been subject to numerous natural hazards, which have cost them their houses and family members. They are the poorest country in the Western Hemisphere and have been subject to several political violence but they never give up and always find a way to prevail. [Lundahl, 2011],[Buss, 2008],

[www.everyculture.com] [www.dr.dk]

»Jeg tror på den haitianske befolkning. Det, der slår mig, er deres livsvilje. Det ser jeg ingen andre steder. De er altid i stand til at klare det. Det er noget, der er meget karakteristisk for haitianerne. Det giver mig håb for Haiti«, Jørgen Leth [www.politiken.dk]



THE CULTURE

"Great nations write their autobiographies in three manuscripts, the book of their deeds, the book of their words an the book of their art. Not one of these books can be understood unless we read the two others, but of the three the only trustworthy one is the last" Ruskin

The intention of this chapter is to gain some knowledge of the Haitian culture and religion. The Haitians are very proud of their independence and the expulsion of the French in 1804. The isolation years that followed the independence developed a distinct national identity with traditions in cuisine, music, dance, dress, ritual and religion. Some of which where original African but the Haitian culture today is distinct from Africa.

RELIGION

Catholicism is the official religion in Haiti but the majority of the population also practice voodoo and believe that this can co-exist with catholism. They do not consider voodoo as a religion but more as a way of life and they are convinced about the existing of zombies and werewolf's and they believe that everything happens for a reason. Not a natural reason, but a secret one that they can influence by practicing voodoo in order to keep the terrors away. The Creole word voodoo refers to a kind of dance and in some areas to a category of spirits. [Lundahl, 2011],[Buss, 2008],[www.everyculture. com][www.dr.dk]

FOOD

Most Haitians have a sophisticated understanding of what a nutritional diet consists of and the reason for malnutrition lies in the country's financial problems. They simply cannot afford the food. Even though it is a peasant nation the rural Haitians are not subsistence farmers and most of the family's harvests are typically sold by the women on market and the money they gain is used to buy household food. The national dish is rice and beans.









ART

"Der er en kunstnerisk nerve. Der er en skønhed i dem og en protest. En fantastisk fantasi der er overalt og en skaberkraft. Det er et land der rummer så mange kunstnere og så meget kreativ energi at de kunne sælge ud af det til hele verden, de har en fantastisk energi." – Jørgen Leth [www.dr.dk]

The Haitians are a very creative population and paintings remains the most widely spread tool for expression used in Haiti. Many of the beautiful and colourful paintings reflect the daily life and dreams and the art reflect the populations' African, French and Catholics roots along with its involvement in voodoo. It is therefore considered an important representation of Haiti's culture and history. As Chetan Kuman states in his book "Building Peace in Haiti" when analysing the country's economic possibilities, *"Haitian art alone, if marketed well, could produce impressive profits. Given its small size, Haiti produces a prodigious amount of hauntingly beautiful visual art and music, with overtones of the mystical, that is often sold for a pittance. This art is one of Haiti's greatest assets."* [Kumar, 1998, p. 80]

Before January 12 2010 large portions of this art was exhibited in The Galerie D'Art Nader in Port-au-Prince which vision was to promote Haitian art all over the world, but this was completely destroyed in the earthquake. [www.dr.dk], [www.alliance-haiti.com], [www.galeri-

edartnader.com][www.everyculture. com][http://online.wsj.com]

"Haitian art is what makes the international eye see us.....Every Haitian is an artist. Art, it is us, it's what we are. Even our children are artists." [www.articles.latimes.com]

Haitians are a very religious society and they believe everything happens for a reason. The majority of the population practice voodoo daily and believe that this can coexist with their catholic religion. They are a very creative population and music is of a great importance to them. Haitians practice creative activities in the belief of that it might be able to help them reach the rest of the world and get out of poverty.





CURRENT SITIATION AND FUTURE PLANS

"Rebuilding Haiti does not mean returning to the situation that prevailed before the earthquake. It means adressing all these areas of vulnerability, so that the vagaries of nature or natural disasters never again inflict such suffering or cause so much damage and loss" ([Action Plan, 2010]

The earthquake on January 12th directly effected more than three million haitians and will forever be remembered as a day of national calamity for Haiti. The massive destructions are not only due to the force of the tremor, but due to an excessively dense population in the capital, a lack of adequate buildings standards, the disasterous state of the environment along with disorganised land use and an unbalanced and unstable economy, which truly complicates the rebuilding process. The aim of this chapter is to grasp the complexicity of the situation and gain some understanding of where an innovative architectural solution could be interesting.

One year after the disaster, there has been demonstrable progress in responding to immediate humanitarian needs. The U.N. and NGO's responded quickly with several ways of assistance such as providing shelters, food and clean water and school rebuilding. But eventhough aid organizations say the initial phase of disaster relief went well, the complicated situation, where homelessness is the new normal, has led many to believe that nothing is being done and that the NGO's are operating way to slow. One year later, only 5% of the rubble has been moved from Port au Prince and an estimated 800,000 people are still living in tents. This seems unbeliveable in a country that has been promised more than 10 billion dollars by other countries still has not made more progress, but it is important to remember that only a small amount of these money donated to Haiti has reached the country (10%). Furthermore are many of the NGO's trying to save some money for the actual rebuilding because as, MacCormack, Save the Children President, says:

"Just to deal with getting the 1.5 million impacted people in some kind of stable situation, it's going to be a fiveyear process.... My fear is that the bulk of funds will be spent on this stabilization. It's handing the people a fish, instead of teaching them to fish." [www. nptimes.com]

These are all factores that truly makes this a complicated rebuilding, and the many NGO's might not be as helpful as intended. There are too many NGO's in Haiti and they are not cooperating and it seems to be impossible to figure their agenda out. As Peter Damm, Danish Red Cross, expreses it in an interview with Frank Esmass and Jørgen Leth he wished that there would only be 100 NGO's in the country, they are creating confusion amoung the population. The situation is further complicated by the complete lack of political guidance and corruption which is something Peter Damm faces everyday. He gives numerous exampels on how complex it is to rebuild this country when for examples ambulances cannot be used because they cannot get license plates on them because someone is benefitting from the car rental they have to use in stead. Other examples of harbour mafia further illustrates the complexicity. International Red Cross expresses a problem with finding spaces to build transitional homes in Port au Prince because land records have been destroyed and obtaining clear title is often complicated. The land is often owned by the elite so no politician seems willing to make the necessary decisions of how to redistribute the land. [www.eurasiareview. com], [www.dr.dk]

ARCHITECTURAL AID

In a crisis aid organizations are usually the first on site but as the immediate emergency situation stabilizes other charitable organisations seeking architectural solutions joins the rebuilding process. In Haiti organizations such as Architecture For Humanity and Article 25 are deeply involved in the rebuilding. "We are the last to arrive and the last to leave the place when disaster has struck", Cameron Sinclair, Founder of Architecture of Humanity, [www.dac. dk]

Article 25 has focused on rebuilding primary schools in Haiti and Architecture For Humanity has build a Rebuilding Center in Port-au-Prince that provides technical expertise and counsel to haitian builders as well as distributed their 'Rebuilding 101 Manual' to make haitians entreprenours build back better. They have constructed 7 schools many transitional homes. [www.edgedesignlimited.com]. [Sin-

[www.edgedesignlimited.com], [Sinclair, C, 2010]

INFLUENCE ON RURAL AREAS VS CITY

Another concern of Red Cross is that there have been too much focus on rebuilding Port au Prince. They believe that the situation in rural areas should have been improved much ealier to prevent emigration to the already overpopulated.

"Hvis ikke regeringen begynder at påtage sig sit ansvar, og vi får flyttet hjælpearbejdet fra hovedstaden og ud på landet, vil der gå mange år endnu, før Haiti kommer på fode," siger Anders Ladekarl, Dansk Rød Kors [www. drk.dk]

Althougt the quake hit Port-au-Prince with the greatest force, rural areas have been affected greatly by the influx of refugees who fled the city. They are now struggerling to accommondate the hundered thousands of refugees and have limites resources as it is and not enough jobs for all these refugees. The two areas are interconnected in this disaster aftermath because refugees are traveling back in forth in search of jobs often leaving their children behind with family in the rural areas.

"...So in fact what has happende with the earthquake is if you have just sort of put a magnifiyng glass on what was already there/ dire" Susan L. Bissell, Child protection

"There is a lot of interdependence between the rural and urban communities. Before, money was sent to rural families for support from cities, and now the rural families are sending food to urban communities, and money to support kids in school." [www.nptimes.com]

[Action Plan, 2010] [www.nptimes.com] [www.drk.dk] [www.dr.dk] [www.eurasiareview.com]

It is essential that the rural needs will be meet in the nearest future in order to accomondate the larger population in the these areas to prevent a return to the destroyed. There is focus on rebuilding the educational system and bringing people back in transitional homes, mainly in Portau-Prince desprite all of the corruption problems the NGO's are facing. Success in putting Haiti on the path to a better future depends on longterm engagement.

"This emergency is probably the most complex in history" -Kim Bolduc, U.N. Humanitarian Coordinator [www.nytimes.com]



ACTION PLAN

What the future will bring for Haiti seems impossible to predict but a look at the Action Plan proposed by the haitian government itself gives some insights in what their wish is.

In march 2010 an Action Plan for National Recovery and Development of Haiti was conducted. The plan is divided into two phases, the first 18 months is considered the emergency periode and includes preparations for projects to generate genuine renewal, and the second stage has a time horizon of 10 years during which the reconstruction and recovery of haiti will become a reality in order to start the country's development again, followered by another 10 years to make it a real emerging country. The plan proposes rebuildling in the following four main areas: territorial-, economic-, social- and institutional rebuilding. [Action Plan, 2010]

The territorial rebuilding focuses on a different apperance. Bring together all the regions and better redistributions of population and economic activities requires the consolidation of new regional development centers. The success of regional centres will depend largely on incentives for industrial, commercial and tourist development. "Furthermore, the devlopment of Milot National Park represents an investment that could have an impact on the development of tourism in Haiti. The tourism develpment Plan remains fully relevant to stimulatng the growth of regional centres. This also applies to industries of assembly textile, and residential construction and to the agro-industry. The creation of new jobs is an incentive for the population to settle in the country's regions. "[Action Plan, 2010, P. 17]

Economic rebuilding Focuses on rebuilding argiculture and marketing structures for argicultural products therefore have a significant impact on the country's environment, the vulnerability of the land, and the population since many social and economic problems are related to these agricultural problems.

Social rebuilding focuses on responding to the needs of disaster-stricken populations needs in term of housing, education and health along with social protection, food security and sanitation. It is nessecary to engage in massive job creation programmes as soon as possible. Creating jobs for the public good will restore both meaning and dignity for all haitians who wish to provide for their own needs on the basis of their work.

Institutional rebuilding focusing on relaunching and public administration along with creating justice and security in the country.

Whether or not this plan has been a driving force in the rebuilding process already conducted, it can be concluded that there seems to be a rather stable foundation for the goal of this project to focus on tourism and that this is something Haiti would like to see developed in the future.

TOURISM

This chapter is intended to gain information about tourism in the Caribbean and the possibilities of a World Heritage site being a generator for tourism in Haiti. (Knowing that Haiti want tourism to flourish we now look at the opportunities that comes with tourism and investigates what these could be in Haiti)

"Tourism is one of the largest sectors of the global economy and a significant contributor to many national and local economies, providing more than 75 million jobs worldwide. It is especially important for many developing countries, being a primary source of foreign exchange earnings in 46 out of 50 of the world's least developed countries". Table Rifai, Secretary-General of United Nation Tourism Development [World Heritage, 2010, p. 88]

The Caribbean has long been considered to be the world's premier tourist destinations. According to the U.N. World Tourism Organization, The Dominican Republic brings in more that 3.5 billion USD and Jamaica, despite of high crime rate, 2 billion USD from tourism each vear. But Haiti's tourism industry earned less than 5% of that in 2005. In many ways Haiti has great potential for being a vibrant tourist destination with its interesting culture, thundering waterfalls, unique scenery, beach resorts and warm climate, but years of political unrest has left the tourist industry in total disarray. Haiti was once a very popular vacation destination and in the 70's, under the oppressive but stable dictatorships. The industry expanded with hundreds of thousands visits each year to its tropical climate and voodoo rhythms, many of whom where Haitian migrants visiting, cruise ship tourist, movie stars and aid workers. Then came the 80's along with political upheaval and AIDS epidemic and the total number of hotel rooms dropped from 3000 in 1981 to 1500 in 1987. The political instability, along with the lack of proper infrastructure, has continually put a brake on tourism. Today the U.S. State Department maintains travel warnings to keep visitors aware of the potential dangers. The country has in average one abduction a day (in 2008), but many Haitians still see tourism as the country's way out of crisis. [www. welt.de]

According to the former Haitian Tourist Minister Patrick Delatour the problem is the capital. He believes the key is to keep people away from Port au Prince and bring them to the countryside instead. He is backed up by the former US President Bill Clinton who during his visit to Haiti in 2009 expressed a desire for expanding the Cap-Haitien airport to take international flights so that visitors can avoid Port-au-Prince. Patrick Delatour further believes that Haiti should focus on improving access to the World Heritage Site as a starting point for tourism and John Weis, the Royal Caribbean Cruise line's private destinations director, agrees. The Royal Caribbean already brings approximately 600,000 tourist to the northern part of Haiti a year, but the cruise only dock at an enclosed and guarded Labadee beach compound and does not brings visitors into the country. However he says that improved transportation and safety at the site might prompt cruise lines to offer tours to them. "The fortress could be "one of the No. 1 things to see in Haiti if not the Caribbean... I've been there. It's incredible." Says John Weis. [www.welt.de]

Bill Clinton's visit in 2009 was an ap-

peal to tourists as a part of his crusade to help the nation emerge from poverty. He was clearly inspired by the Citadelle and it prompted him to phrase it, saying that he thinks it would be a wonderful thing if the transportation permitted every Haitian child to come there. *"They would learn about the greatness of the country's history.*" [http://anwe.com]

Even though many of these statements are made before the devastating earthquake they still witness a possibility of developing tourism in Haiti focusing on the World Heritage Site as the starting point.

"What I would really like to do is offer people from the United States and elsewhere the opportunity to come to Haiti for a week," he said. "Start off with a day or two on the beach and go see the history and the culture and then have a way of going to Port-au-Prince or Gonaives and see how the country works.", Bill Clinton when he visited Milot

[http://anwe.com][www.welt.de], [http://anwe.com] , [http://countrystudies.us]

From this it can be concluded that third world countries have a great possibility to use their World Heritage Site status as a tourist attraction, and that this indeed can help a country to prevail in terms of economic issues. Knowing that this market exists proofs the possibility of focusing on tourism in Haiti to help rebuild the nation and using the National History Park as its starting point. Furthermore the Caribbean is a very attractive tourist destination today, which strengthens the idea of develop tourism in Haiti.

COMPETITION BRIEF

"The Haiti Idea Challenge is not about the immediate design solutions to pressing and mounting housing problems in Haiti, but the long term design of sustainable, culturally appropriate prospective redevelopment of Haiti. It is about designing for the future Haitian communities as permanent, holistic environments that speaks to the aspirations and advancement of Haiti and not just the survival of Haiti. " [Bradford, 2010]

After we defined the subject of this thesis, we consider it interesting and evident to participate in the "Haiti Ideas Challenge". The "Haiti Ideas Challenge", hosted by The Association of Collegiate Schools of Architecture (ACSA), the United State Agency for International Development (USAID) and Howard University's, School of Architecture and Design, is a two-stage competition, focusing on providing permanent solutions to the rebuilding of infrastructure, cities, neighborhoods and structures for residents of Haiti affected by the recent catastrophic earthquake.

With the challenge created by the earthquake comes a new opportunity to repair the fractured, now broken conditions at multiple scale of country wide, to the neighborhood, to the scale of the individual home and submission ideas can therefore focus on a wide range of scale, such as innovative material use, sustainable construction, individual structures, infrastructure, neighborhood design and urban redevelopment.

No specific site is given and participants should chose a project to explore and conduct detailed research of the specific problem/site in order to create sustainable innovative solutions that respond to the contextual needs of Haiti. These solutions should address, or resolve, the problems that where encountered by the earthquake (emergency access, seismically design of buildings, adequate open or public spaces, ect.). They should represent a mature awareness and innovative approach to environmental issues, an articulate mastery of formal concepts and aesthetic values; a thorough appreciation of human needs and social responsibilities; and a capability to integrate functional aspects of the problem. [Bradford, 2010]

The first stage of the Haiti Idea Challenge is about generating these new ideas for further development and the judges will look for proposals that introduce innovative ideas, with potential to address complex problems that will contribute to the rebuilding of Haiti as a flourishing nation. The second stage will connect the wining ideas with local and international organizations working in Haiti in order to realize the ideas.

[Bradford, 2010]

DESIGN CRITERIA

Embrace and balance cultural, environmental, an economic sustainability

Respect and acknowledge the importance of Haiti's culture and historic urban fabric

Create universally accessible design that accommodates the needs of all users and residents.





APPENDIX B

This is a transcript of the conversation with Yvon St-Martin.

Y: I'm in domanican republic

I: Do you live there now?

Y: Yeah, so.. we'll be there for a couple of more weeks but prehaps we will move to Haiti or so

I: How long have you been there

Y: We have been there for 2 months but defending on how things are going we are gonna move again

I: Okay, is it because of the election?

Y: Ehhh.. no, mostly because we work for a international organization but it depends on what we find on the field and we just wanted to leave denmark and live somewhere else. My wife wa offered a position in haiti and I one in another place so we'll see which one is best.

I: Okay, how long where you in denmark

Y: I spend 3 years more or less in demark

I: Working for red cross?

Y: I was on the emergency unit

I: But originally you are from Haiti right?

Y: Yes yes, i'm 100% haitian

I: So can you tell us a little about your childhood and how it was to grow up in haiti

Y: I think it is like normal, because i'm use to live somewhere else, even when i was a little boy i used to travel with my mother and now denmark.. an the only thing different is... the weather and the way people live is completely different way of living, way of buisness and dealing with people. I grow up in cap-haitien the second capital in haiti and i moved to Port au prince when i was 21 till 32 and i worked for World Food Program

I: Have you been to the citadelle

Y: Yes I have been there twice. Yeah this is a good place really good. It was build after the independence... between .. in 1804.. and the citadelle was build by Henri Christophe. It is a good place but it is on the top hill of the mountains which is quite far from walking. You have to take a trip to milot and then walk.

I: Did you walk or ride a donkey or how do you get there?

Y: It depends... if you like climbing a little bit then walking in the mountains is quitefun. But if you don't like walking it is better to take a donkey.

I: How long did it take to get to the top?

Y: Well.. I'd say one hour?

I: All the way to the top?

Y: Ehh no no...there is a place that we call the parking. So from the parking to the mountaintop it is about one hour I can say. What you do is that you get to milot, and normal you tak a picco to milot and then you walk a little bit to get to the paking, and then from the parking you take a donkey because from Milot, the station, the picco station to the parking you can walk but the rest is a little bit hard and this is why people take a donkey at the parking.

I: How long does it take to walk from milot to the parking

Y: Well.. let us say 40 minuts, maximum. Would you like to go there and see?

I: Yes we would like to but we are worried that it might not be possible

Y: Okay, so I think it would be a little bit tough to go there and i would advice you not to go before the election

I: So do you know id there are many tourist on this site today or?

Y: No I think these days there might not be many tourist on the site. Mainly because of the election, i think people fear the site not only, but Haiti. But I think after the election if everything goes well you can find tourist, there is always a couple of visitors.

I: Because what we wanna do is help develop the tourism industry in haiti by creating this visitr center, as you know we emailed you about, dou you think this is a good idea to try to get more people to visit the site?

Y:Yes offcourse I think this is a good idea, so the thing is you help a lot of people from milot to more money. Before 1986 there where many people who used to go there. But after 1986 you have less and less people who go there. And the a lot of people from milot used to make their living from trourist because they made a lot of stuff that they could sell to tourists and stuff like this. But after 1986 with the declining og the security and the departure of Baby Doc it becomes more difficult for people to visit The Citadelle. So I think many people who used to live of tourist will be very happy about that and it will have a positive impact on on the entire country because a small contribution that can add up to something in the local economy will have an impact on the entire country as well. And I think if there is anything that can help the people to develop, not only to have the center but also how to deal with tourist and how to approach them. How to create buisness that tourist can appriciate from the locals that could be really good.

I: That's good to hear. Another thing is that we don't really know where to place the visitor center

Y: Ehh... I think the parking may be the best place to place it because you will force people to get to the parking and encourage them to levae the parking and reach the citadelle. If they get to the middle and the parking I think they would be more interested in going to the cidelle. Because they wioll see that they are halfway. I: We are also thinking about creating a few hotel rooms what do you think about that?

Y: Well the problem would be to get the legal authorisation. So who to get that from the state that is something you have to thonk about, because the economic impact would be good but how to get the authorisation may be tough because it is a historical place.

I: Another facility that we want to put into the facility is a teaching facility. Do schools have tours where they go and see the citadelle today? Do you think it could be good to provide room for this?

Y: Yes offcourse it could be good. They used to do it when I was a litlle boy. Normally your teacher would take you on a trip for one or two days and then you would have a guide that would go with you to the citadelle and guide you through it because you could get lost in the rooms. And then you bring up all your food, your stuff for the stay and they you go back. Prehaps.. depends.. sometimes during weekend and sometimes during the week. But now it has slowed dont a bit because you have less people that are intrested in the history of the country and I think anything like this would be interesting. Every haitian knows about the history of citadelle. In primary school you have to know the history about the country.

I: You must be provde of being the first black republic?

Y: I'm quite dissapointed because... It is good that we where the first country to be independent but i'm disapointed about the way politics are being done in the country. The level of poverty is getting worse everyday because since the independee we had to pay back the french. This is where we started to have a depth to the international sociert. And thoses stuff i sill belive effect the haitians in daily life.

I: Do you think it'll be better now after the new election?

Y: I hope, but i'm not confidend

I: What do you think the situation is now after the earthquake?

Y: It's the same.. so you have a couple of organisation that are providing middleclass settelment for the people, but nothing is really changed to have a good plan to say this is where we start and this is what we are gonna do. Nothing is clear.

Y: The outcome of your project will depend on security. Because the main issue is security. If the country is not potical stabile so you will still have a huge problem with security and the people won't come to the country and then the buisness will become useless. So this is a point that you can mention in your project. That the outcome will depend on the political situation.

APPENDIX C

Mail correspondence with Jørgen Leth

Kære Anne,

Jeg kan svare, at det skulle slet ikke være så svært at rejse til Milot, nemmest vil være med et af de mange daglige fly fra Port-au-Prince til Cap-Haitien (Tortoug'air kan anbefales).

Man kan også køre med bus fra Santo Domingo til Cap, men det er en otte timers rejse.

Jeres projekt er jo godt nok, det er klart Haiti har brug for at udvikle turisme, hvilket er svært i et land med så megen uro af forskellig slags. Jeg har kendt alle de turistministre Haiti har haft de sidste 20 år, også den nuværende Patrick Delatour (som nok ikke holder mere end en uge endnu, efter valget på søndag).

Han er selv arkitekt og har tidligere været chef for Haitis institut for bevaring af histories bygninger, og er specielt interesseret i potentialet med det fantastiske fæstningsværk La Citadelle og ruinerne af slottet Sans Souci.

Det er så meget mere interessant fordi den eneste turistaktivitet er cruise skibene fra Miami som daglig unloader 6-7000 passagerer på et totalt afspærret område i Labadie (ganske nær ved hvor jeg bor, Cormier Plage) hvor de så plasker rundt og kører i tivoliagtige baner nogle timer før de daffer af igen.

Der er en interesse for at skabe guidede ture fra Labadie til de monumentale bygningsværker i Milot. Men det kræver sikkerhed, det bliver måske helikopter ture der ud.

Sådan et kommunikationscenter vil sikkert være en logisk idé. Men det er let nok at sige.

Virkeligheden er sådan, at der næsten ingen besøgende er til Milot, der er jo ingen turister i Haiti udover de nævnte cruiseships, og enkelte backpackers.

Og de lokale i Milot er meget pågående og vil gøre næsten alt for at få penge ud af besøgene, forståeligt nok. Borgmesteren er en skurk. Jeg har f.eks. Ikke været derude de sidste ti år, jeg gider ikke det bøvl

der er. Skal man op på et æsel, eller ej osv. Jeg har for mange år været ude for at da jeg kom ned fra citadellet fandt

jeg min bil med to punkterede dæk.

Det er jo en lille business.

så alt hvad der skal laves handler om også om uddannelse, og en rationel indstilling.

Det sidste er svært at opdrive i Haiti.

En god idé er kun god her, hvis den kan bruges til at skimme penge af. Og det gælder helt op til ministerplan.

Jeg kan evt. introducere jer til en ny turistminister, hvis det bliver en jeg kender.

Men lige nu er det bedre at vente med at være mere konkret.

Det udelukker jo ikke at I kommer og kigger på forholdene.

Det er ikke farligt at være i Haiti, undtagen måske lige de her dage op til valget, som lige nu med Aristides sensationelle tilbagevenden i dag måske bliver endnu mere dramatisk end det i forvejen var..

Jeg bor på nordkysten nu, på Hotel Cormier Plage, det er et godt sted for mig at skrive og forberede projekter.

Jeg rejser herfra 28.marts til filmfestival i Sao Paulo/Rio de Janeiro, derfra til Paris-Roubaix cykelløbet og så til Danmark.

Jeg vender tilbage til Cormier Plage i slutningen af oktober.

I er velkommen til at henvende jer efter jeg er kommet til DK

Med venlig hilsen Jørgen Leth

PS jeg kan anbefale Raoul Pecks nye film 'Moloch Tropical', som er lavet på location på La Citadelle

----- Videresendt meddelelse Fra: Sune de Souza Schmidt-Madsen <ssm@information.dk> Dato: Thu, 17 Mar 2011 10:54:00 +0100 Til: Jørgen Leth <jorgen@lethfilm.dk> Emne: Fwd: SV: kontakt til Jørgen Leth

Hej Jørgen, så er de to unge arkitekter tilbage ... se nedenstående :-)

kh

Sune de Souza Schmidt-Madsen Forlagsredaktør / Publishing Editor Informations Forlag ssm@information.dk Tlf: + 45 3369 6084

----- Original meddelelse -----

Fra: Anne Gram Højbo <ahoejb07@student.aau.dk> 17. mar 2011 10.35.26 Emne: SV: kontakt til Jørgen Leth Til: Sune de Souza Schmidt-Madsen

Hej igen Sune

Tak for du videresendte mailen vi skrev til Jørgen. Vi vil gerne høre om du evt har mulighed for at videresende denne også bare i tilfælde af Jørgen måske får mulighed for at læse den.

Vi er nemlig, i forbindelse med vores arkitektur speciale omhandlende design til Haiti, i færd med at undersøge om vi kan rejse til Milot, Haiti fra Den Dominikanske Republik og vil gerne høre Jørgen om han tror det er for farligt. Og om han evt har en fornemmelse for hvordan vi letteste kan komme til Milot / The National Park? Vi har kunne forstå at det er meget farligt (og besværligt) at rejse til Port-au-Prince og derigennem til Milot, og det er derfor vi nu er ved at undersøge andre veje.

Om projektet:

Til information har vi i den først fase i vores projekt brugt meget tid på at analysere Haiti og undersøgt hvilket muligheder vi som arkitekter har for at hjælpe landet. Vi har set mange eksempler på ny skolebyggerier samt boliger og netop derfor har vi valgt at gå en anden vej. Vi har specielt forkus på den nordlige del af Haiti (Cap-habitan og Milot) da vi her ser stor mulighed for at pege på noget i historien gennem arkitekturen som kan hjælpe landet. Dette sted er et World Heritage Site pga. de flotte historiske Forte og slotte som blev bygge da Haiti fik sin uafhængighed i 1804 og står idag derfor som et symbol på den uafhængighed. Vi ønsker at gøre resten af verden opmærkensom på at Haiti er andet end fattigdom og jordskælv ved at pege på deres historiske arkitektur gennem et nyt besøgs center/kultur center som også skal fungere som _Community Center_ for lokal befolkningen i området, samt et sted hvoor den moderne haitianske

175
kunst kan udstilles. Derigennem håber vi at vi kan hjælpe Haiti med at genetablere en form for turisme der i fremtiden forhåbentlig kan udvikle sig og skabe jobmuligheder m.m. Desuden vil et Community Center i dette område hjælpe med at styrke lokalsamfundet og derved måske være med til at hindre at folk flytter til Port-au-Prince som allerede er totalt overbefolket.

Under alle omstændigheder er vi stadig meget interesseret i en lille samtale med dig(Jørgen) omkring emnet. Evt når du er i Danmark igen i April. Vi er specielt interesseret i at vide noget mere om hvad du mener sådan et sted kan gøre for befolkningne og om du tror på turisme som noget der kan hjælpe landet på fødderne igen i fremtiden?

Mvh

Anne og Sigrun 10. semester Arkitektur og Design Aalborg Universitet

Fra: Sune de Souza Schmidt-Madsen [ssm@information.dk] Sendt: 11. februar 2011 08:35 Til: Anne Gram Højbo Emne: Re: kontakt til Jørgen Leth

Kære Anne, Jørgen er på Haiti, og har lige nu svært ved at tale med nogen, men skriv tilbage når vi nærmer os april, han er i DK fra d. 20/4

kh

Sune de Souza Schmidt-Madsen Forlagsredaktør / Publishing Editor Informations Forlag ssm@information.dk Tlf: + 45 3369 6084

APPENDIX D

haiti e	xhibitior	1										
Pressure	Coefficient			Windfactor	1		Pwind	117,4	ра			
Windwar	0,06			Vmeteo	13,703	m/s	Pmin	0,0	ра			
Leeward	-0,3			Vref	13,703	m/s	Pmax	7,0	ра			L
roof	0		_					_				L
Location	of neutral pl	د 1. م	3 m			Buildingvol.	1350	m3				-
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	-7		o									t
	Area	Eff. Area	Height	Thermal Buoyancy	AFR (thermal)	Pres Coefficient	Wind pressure	AFR Wind)	Wind pressure	AFR total		ſ
	m2	m2	m	pa	m3/s		pa	m3/s	pa	m3/s		
bamboo	20	14,000	0,5	-0,066	-4,55	0,06	7,321	47,917	7,341	47,766		
limeston	9,2	6,440	5	0,306	4,50	-0,3	-34,927	-48,142	-34,907	-47,917		
2. floor	0	0,000	0	-0,107	0,00	0,06	7,321	0,000	7,341	0,000		
2.floor	0	0,000	0	-0,107	0,00	-0,38	-44,316	0,000	-44,296	0,000		L
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Tabl	eA	2.6	51	Wind	P	ress	ur	e	Coefficient Data	
				-	-		-			

Low-rise buildings (up to 3 storeys) Length to width ratio: 2:1 Shielding condition: Surrounded by obstructions equal to the height of the building Wind speed reference level: Building height



Location		Wind Angle										
-		0°	45°	90°	135°	180°	225°	270°	315°			
Face 1		0.06	-0.12	-0.2	-0.38	-0.3	-0.38	-0.2	0.12			
Face 2		-0.3	-0.38	-0.2	-0.12	0.06	-0.12	-0.2	-0.38			
Face 3		-0.3	0.15	0.18	0.15	-0.3	-0.32	-0.2	-0.32			
Face 4		-0.3	-0.32	-0.2	-0.32	-0.3	0.15	0.18	0.15			
Roof	Front	-0.49	-0.46	-0.41	-0.46	-0.49	-0.46	-0.41	-0.46			
(<10°	Rear	-0.49	-0.46	-0.41	-0.46	-0.49	-0.46	-0.41	-0.46			
pitch												
Average		-0.49	-0.46	-0.41	-0.46	-0.49	-0.46	-0.41	-0.46			
Roof	Front	-0.49	-0.46	-0.41	-0.46	-0.4	-0.46	-0.41	-0.46			
(11-30°	Rear	-0.4	-0.46	-0.41	-0.46	-0.49	-0.46	-0.41	-0.46			
pitch)												
Average		-0.45	-0.46	-0.41	-0.46	-0.45	-0.46	-0.41	-0.46			
Roof	Front	0.06	-0.15	-0.23	-0.6	-0.42	-0.6	-0.23	-0.15			
(>30°	Rear	-0.42	-0.6	-0.23	-0.15	-0.06	-0.15	-0.23	-0.6			
pitch)					A							
Average		-0.18	-0.4	-0.23	-0.4	-0.18	-0.4	-0.23	-0.4			
Spring 20	10			Cla	us Topp				57			

180