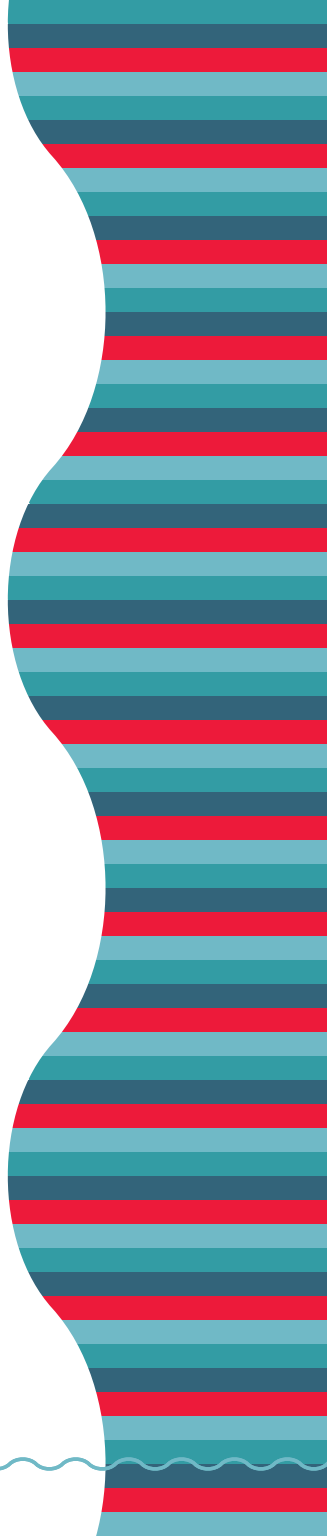




# HEALING BY THE SEA: AN EMPIRICAL STUDY INTO BIOPHILIC DESIGN

Written & Designed by: Ashlynn Zeien





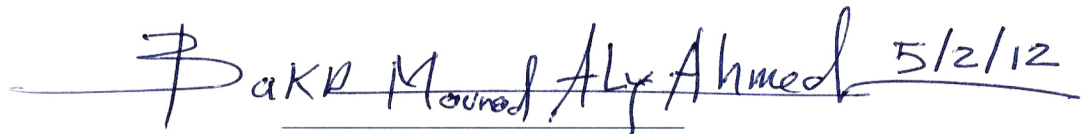
# HEALING BY THE SEA : AN EMPIRICAL STUDY INTO BIOPHILIC DESIGN

A Design Thesis Submitted to the  
Department of Architecture and Landscape Architecture  
of North Dakota State University

By

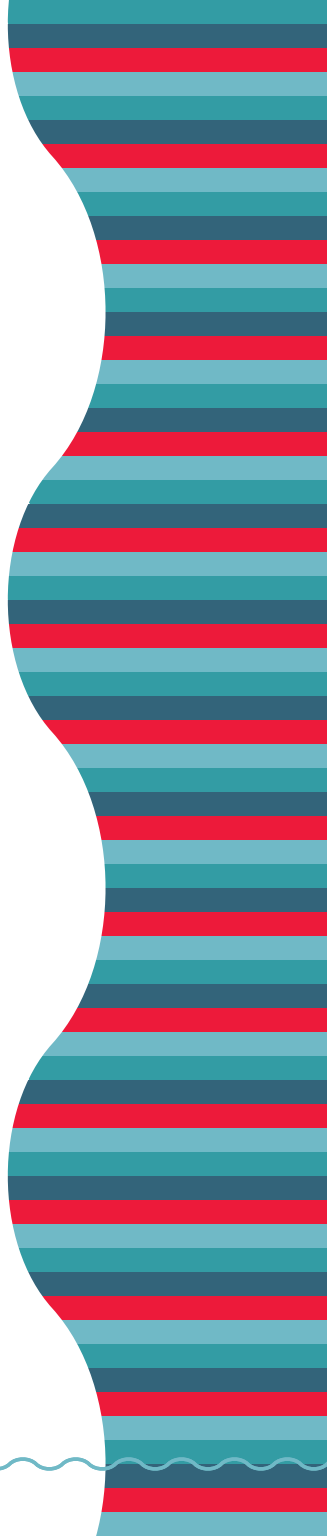
**Ashlynn Zeien**

In Partial Fulfillment of the Requirements  
for the Degree of  
Master of Architecture

  
Primary Thesis Advisor

  
Thesis Committee Chair

May 2012  
Fargo, North Dakota



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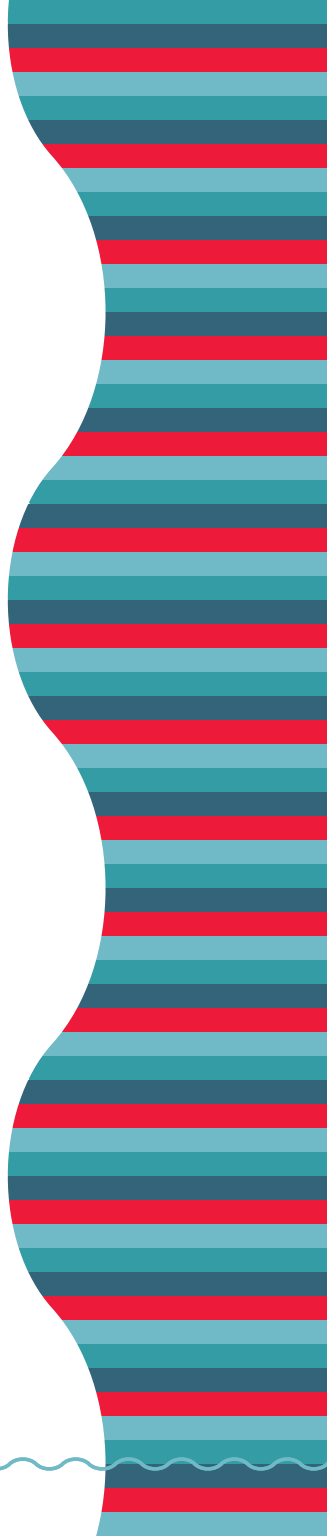
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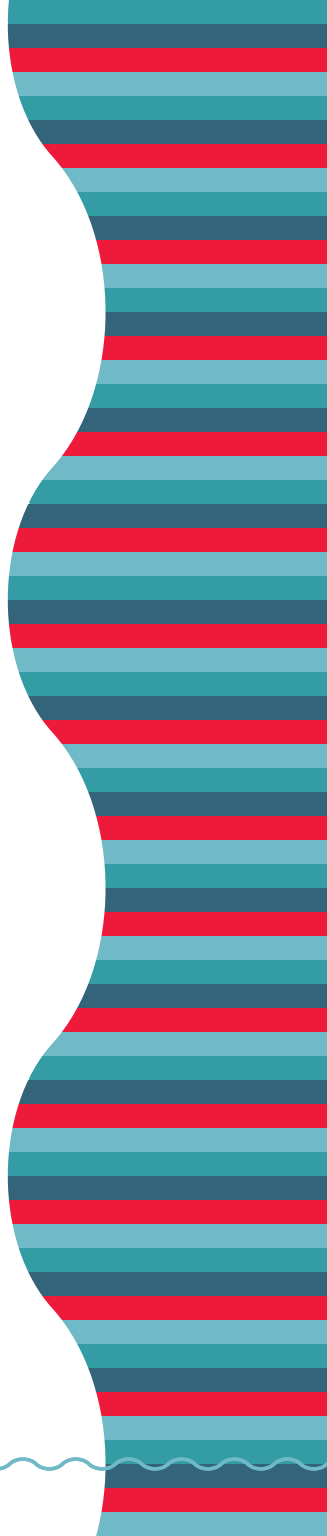
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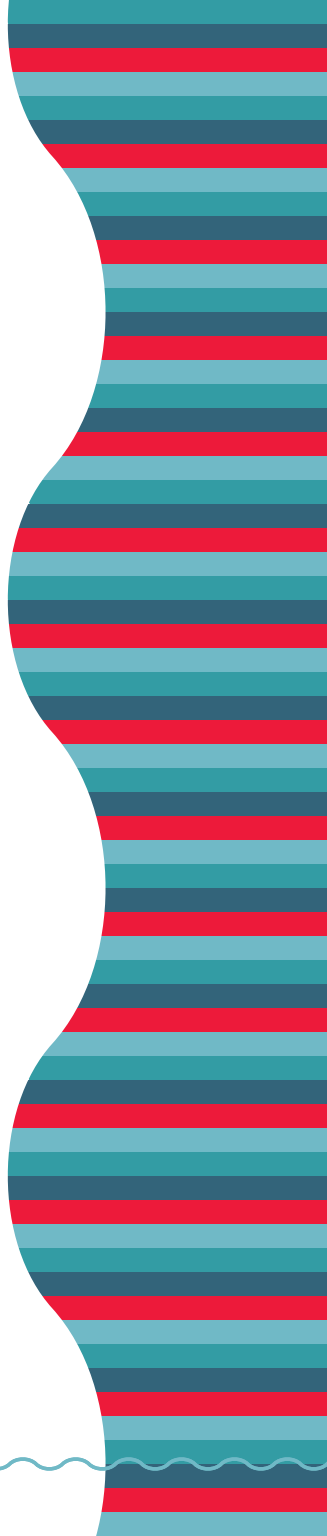




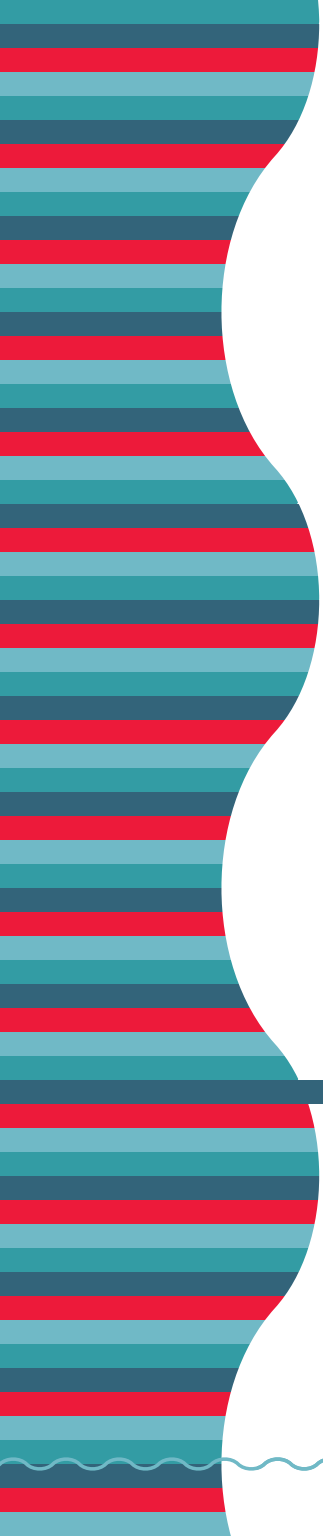
## THESIS ABSTRACT

This thesis will explore the question, to what extent can biomimicry benefit occupants of a tropical biophilic design? The typology under investigation is a tropical resort with design focus placed on biomimicry, positively benefiting mental wellness of guests. It is located in Salem, Runaway Bay, St. Ann, Jamaica. The Theoretical Premise is that vacations, as well as interaction with nature and water, are believed to increase the health of humans. The Project Justification for a tropical resort is the vast amount of knowledge nature has to offer architecture to promote healthier lifestyles; the environment in which the resort is built has an effect on perceptions of the guests. Biophilic design will promote a healing atmosphere for people visiting the resort, benefiting from the natural properties of the coastal area. Two positive elements that are incorporated into this project are the employment of residents, as well as the tourism boost of the economy and local businesses.

**Key Words: Biophilic Design, Biomimicry, Tropical Architecture, Resort, Hospitality, Jamaica**

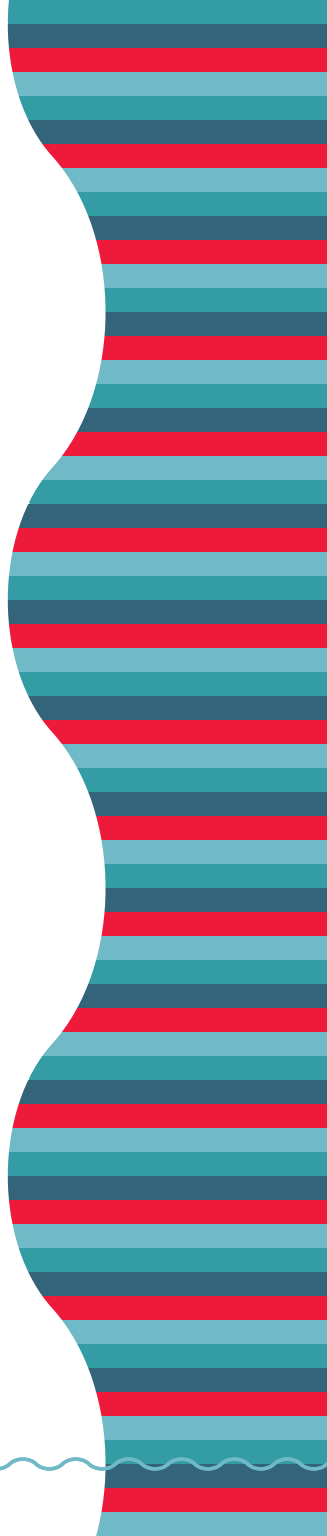


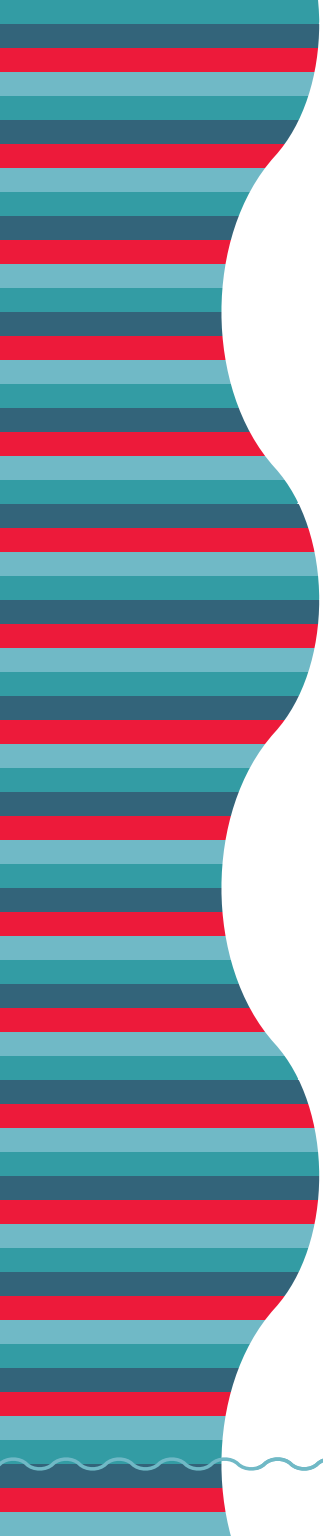




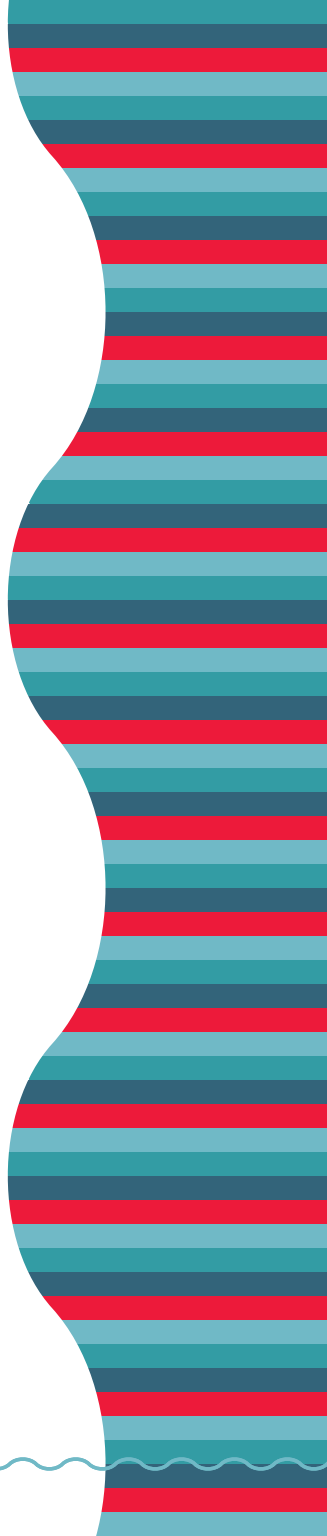
## PROBLEM STATEMENT

To what extent can biomimicry benefit occupants of a tropical biophilic design?





## STATEMENT OF INTENT







## PROJECT TYPOLOGY

A tropical biophilic resort that focuses on the rejuvenation of guests

## PROJECT CLAIM

Vacationing is essential to the creativity, health, and overall well-being of humans. A tropical region offers many beneficial aspects, both environmentally and architecturally, to successfully accomplish these objectives.

## PREMISES

### Actor

World travelers, person(s) on a relaxing vacation

### Action

Vacationing in a tropical region to relieve stress and be closer to nature

### Object

Harness the natural properties of a coastal environment

### Manner of Action

Connect the guests with the tropical environment through biophilic architecture

## THEORETICAL PREMISE/ UNIFYING IDEA

People should have a location where they can express their needs and wants and be revived. The architectural elements erected in such a place can affect the well-being of not only guests, but also enhance the local environment and population by boosting the economy and offering jobs to the local residents.

Humans need vacations to refresh and relieve stresses of everyday life. Connecting with nature can be encouraged through biophilic architecture in tropical regions. The built environment can learn from opportunities provided by fundamental keys in nature, ultimately blending the two with biomimicry.

Biomimicry (from *bios*, meaning life, and *mimesis*, meaning to imitate) is a design discipline that seeks sustainable solutions by emulating nature's time-tested patterns and strategies, e.g., a solar cell inspired by a leaf. The core idea is that Nature, imaginative by necessity, has already solved many of the problems we are grappling with: energy, food production, climate control, non-toxic chemistry, transportation, packaging, and a whole lot more. (Benyus, 2012)

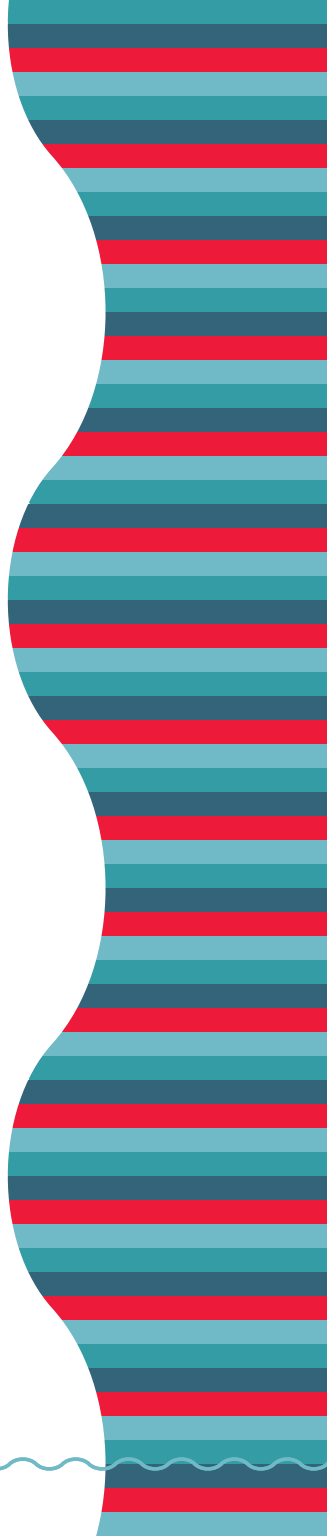


## PROJECT JUSTIFICATION

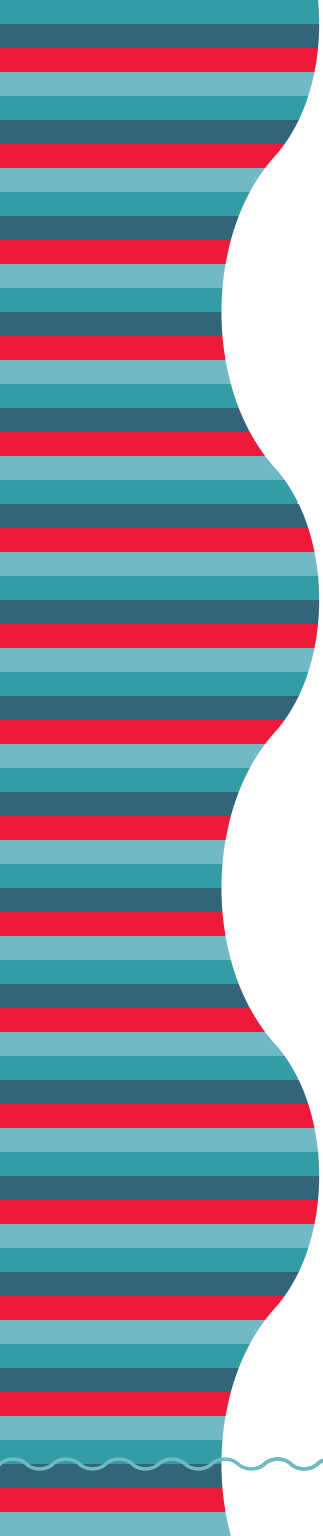
Currently, many people are overwhelmed with daily workloads and stresses. Vacations are essential to get a fresh perspective. Research shows that workers who take time off for themselves and go on vacation are more focused upon returning to the job. According to Robinson (2011), “work-life balance creates energy, focus, and commitment.”

Not only does the environment in which we spend time affect our perception, but the space connecting us with nature is crucial to a successful healthy rejuvenation of mind, body, and soul. Tropical regions and coastal environments have been shown to have healing properties and relief from stress, anxiety, and tension (Aqua for Balance, 2011).

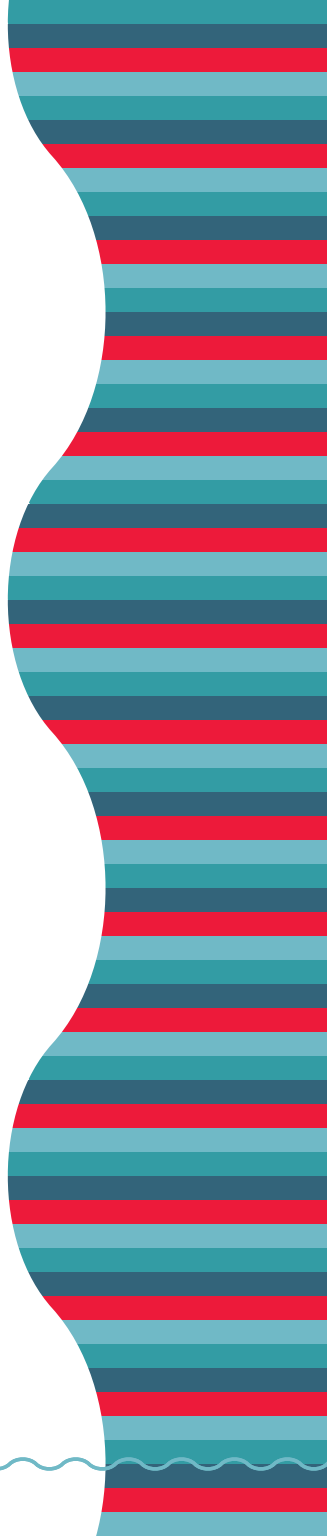
I believe that the connection between the nature in a tropical region and the traveler can be enhanced by biophilic architecture. A successful design can promote a more healthy life not only for the guests, but also the environment in which the design is built. The resort will improve the local economy and provide more job opportunities for local residents.







## THE PROPOSAL





## NARRATIVE

The sun rays glisten off your moist skin, as a turquoise wave crashes on the shore and splashes up onto your feet. The stress from home is melting away with every bead of sweat the humid air creates upon your forehead. There is no other place you would rather be than standing at the edge of the Caribbean Sea, with sand oozing between your toes. The fresh air, the serene sounds, and the awe-inspiring views are nothing short of a healthy boost of energy to rejuvenate your mind and body.

That is how I describe my tropical vacations to family and friends. In the last few years, my family has traveled to a few different tropical areas, taking time away from our busy, chaotic lifestyles to relax and reconnect with ourselves, each other, and nature. It is the best feeling in the world to leave your everyday routine and get lost in time when you are in a foreign culture. My favorite vacation spots are on a sea/ocean coastline. The views are breathtaking, the sounds are calming, and it always feels amazing to dive into the warm, yet refreshing, body of water. When you are immersed in a colorful natural setting, you can not help but take in all that nature has to offer.

## CLIENT/USER DESCRIPTION

The proposed resort is located on the north coast of Jamaica, a beautiful and diverse island that is visited by roughly 2 million people annually. Tourism accounts for 45% of Jamaica's foreign income, and generated \$1.3 billion in revenue in 2000 (FAS Productions, 2008). The accommodations would be utilized by any vacationing person(s) looking for a relaxing and rejuvenating location to reconnect with themselves and nature. Although the resort will cater mostly to travelers, locals may use the facility as well.

## MAJOR PROJECT ELEMENTS

### Guest Villas

The living quarters will be one of the most important elements in guest relaxation while staying at the location. The suites will provide a calming atmosphere, immersed within gardens, where one can retreat from distractions and reflect.

### Beach Front

The connection between land and water is the most attractive aspect of a coastal region. The Caribbean Sea offers healing properties such as the sounds of waves crashing on shore, the views of water extending toward the horizon, as well as the experience the body has upon entering the water.

### Meditation Space

Research has shown that meditation may improve abilities in learning, memory, self awareness, compassion, introspection, and a reduction in stress and anxiety. It is likely that further studies will reveal even more improvements, such as improved energy, sleep patterns, and even happiness (Rhodes, 2011).

### Gardens

Bringing the natural elements into the resort is the focus of biophilic architecture. The gardens will be scattered throughout the property, blending interior with exterior and drawing the attention of the guests.

## MACRO SITE INFORMATION



**CARIBBEAN SEA**

<http://maps.google.com>



**JAMAICA**

<http://maps.google.com>



**SAINT ANN PARISH**

<http://maps.google.com>



**SALEM, RUNAWAY BAY**

<http://maps.google.com>



# MICRO SITE INFORMATION

Latitude: 18°27'48.97"N Longitude: 77°19'28.01"W



## 1. 360 DEGREES FROM CENTER VIEW





## A FEW KEY NOTES

Centrally located on the north coast, minutes away from Ocho Rios

Montego International Airport is 45 minutes to the west

Highway A1 borders the southern edge of the site

Runaway Golf Course is located to the south of Highway A1

A popular scuba diving site is located just offshore to the north

## 2. 180 DEGREE NW CORNER VIEW



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## PROJECT EMPHASIS

The focus of this project lies in the relationship between the built structure and the natural world; in other words, how biophilic design can affect those who use it and the environment in which it is located. Biophilic design is defined as “the deliberate attempt to translate an understanding of the inherent human affinity to affiliate with natural systems and processes - known as biophilia - into the design of the built environment” (Kellert, Heerwagen, & Mador, 2008, pg. 3).

Coastal regions have been proven to have positive health benefits, and therefore is the ecosystem used for this proposal. Locating this design next to the sea is essential in maximizing the benefits biomimicry.

## A PLAN FOR PROCEEDING

### Research Direction

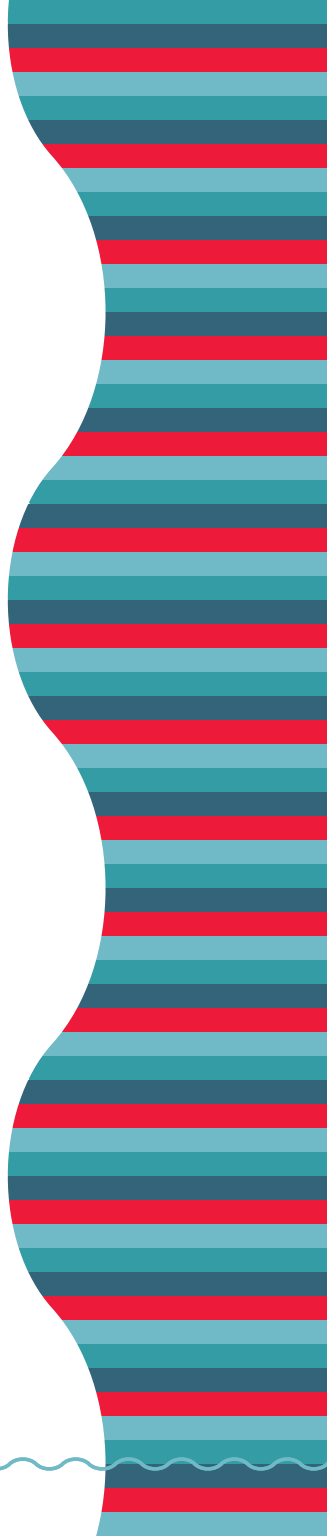
Research for this project will include many different directions. The main focal areas will be biophilic design and biomimicry. Research will also be conducted on the typology and understanding the programmatic requirements of the project. Research will also be done on the specific health and wellness benefits of coastal regions.

### Design Methodology

Throughout the research and design of this project, I will use a mixed method approach. I will be gathering quantitative data, such as climatic information, as well as qualitative data, such as the analysis of resorts and biophilia, following the concurrent transformative strategy. I will continuously incorporate the knowledge gained with the research that has been previously conducted, always expanding on the theoretical premise/unifying idea to create a coherent design.

### Design Process

Compiling information and recording all aspects of the design process is crucial. I intend on using a weekly method of documenting my work; through sketching, writing, and photographing I will make sure each step in the process is shown. The process work may be compiled into a self contained document at the completion of the project, creating a unique way of looking at the work that happened before the result of a final design.



## PREVIOUS STUDIO EXPERIENCE

### Second Year Studio 2008-2009

Fall: Joan Vorderbruggen  
Teahouse, Fargo, ND  
Rowing Club, Minneapolis, MN

Spring: Darryl Booker  
Sustainable House, Marfa, TX  
Dance Studio, Fargo, ND

### Third Year Studio 2009-2010

Fall: Cindy Urness  
NDSU Downtown Wellness Center, Fargo, ND  
ND Center for Excellence for Future Studies, Fargo, ND

Spring: David Crutchfield and Mike Christenson  
Performance Art Center, Austin, TX  
Iteration, Reiteration

### Fourth Year Studio 2010-2011

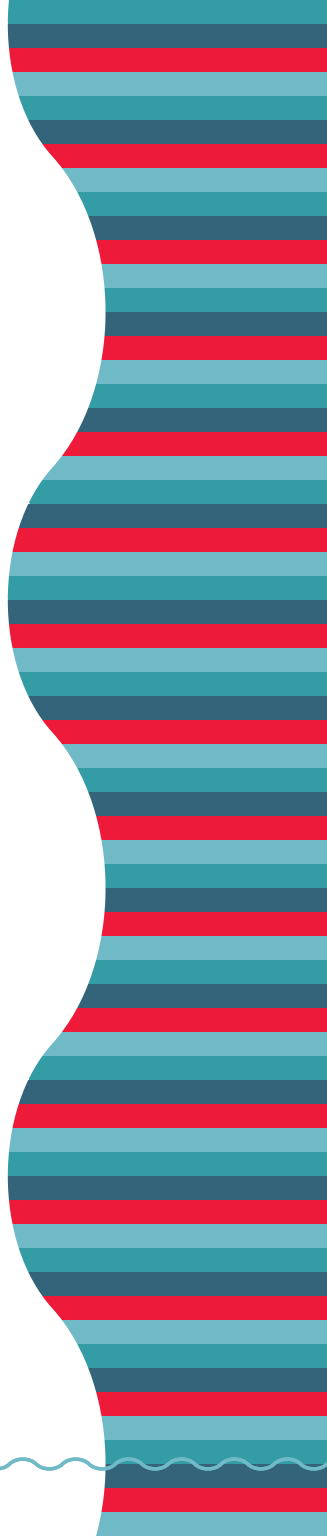
Fall: Don Faulkner  
Vertical Community, San Francisco, CA  
KKE Precious Object Design Competition

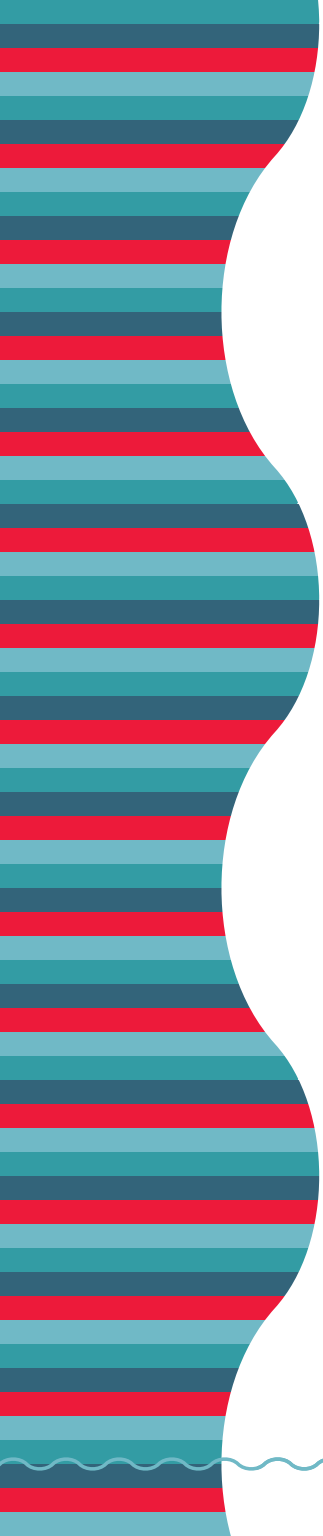
Spring: Don Faulkner and Frank Kratky  
Urban Design - Oil Boom and Bust, Stanley, ND

### Fifth Year Studio 2011-2012

Fall: Mark Barnhouse  
Water Resource Experimental Station, Linton, ND

Spring: Bakr Aly Ahmed  
Primary Thesis Advisor, Salem, Jamaica





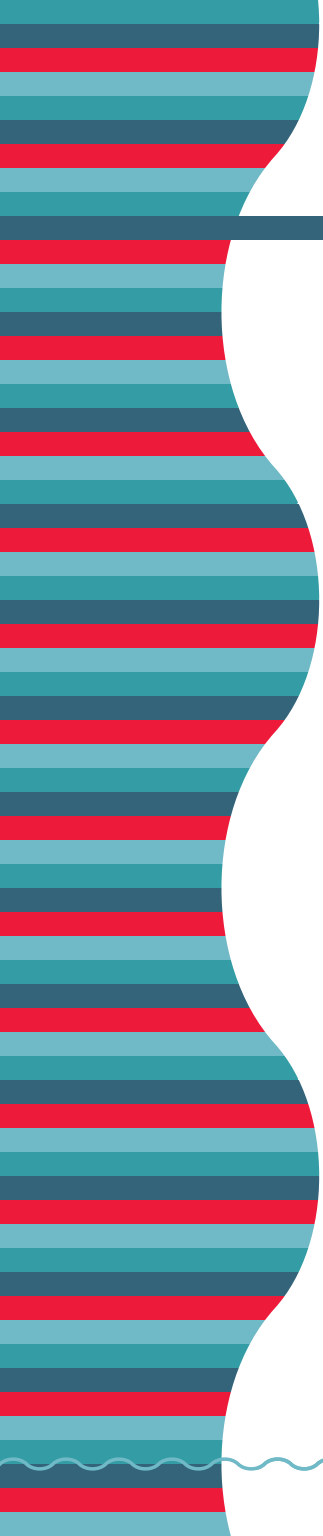
## THE PROGRAM

## THEORETICAL PREMISE/ UNIFYING IDEA RESEARCH

The Theoretical Premise states that the main focus for research will be placed on biomimicry and biophilia; the human aspect, or mental wellness, and environmental concerns, both economic and sustainable. The passage written here is the evidence collected through research and analysis inspecting the idea that time spent in a tropical coastal region, at a well designed biophilic resort, has positive effects on the guest as well as the local community.

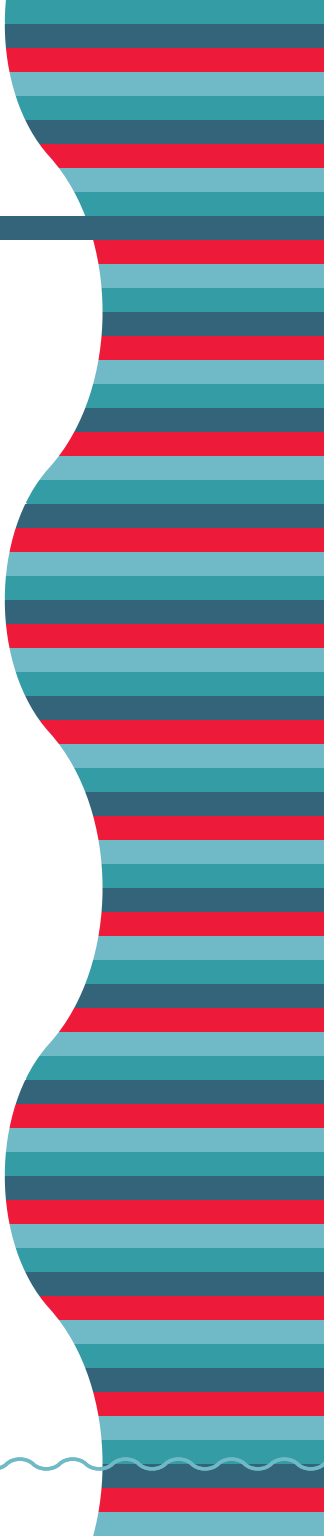
When was the last time you traveled? Your last vacation? Personal time away from work? Americans do not vacation nearly as much as other developed countries. On average, an American begins a job with 8.9 days of vacation, and after 25 years on the job receives, on average, 19.2 days of vacation per year. A major difference between the United States and other developed countries, such as France, Denmark, and Sweden is that other countries have 20 to 25 minimum, mandatory vacation days compared to the few, optional, days given to Americans (Allegretto, 2005). Connections have been shown between service excellence, productivity, and the amount of vacation time a worker receives. The significance of vacationing extends past the office walls into the realm of personal welfare.





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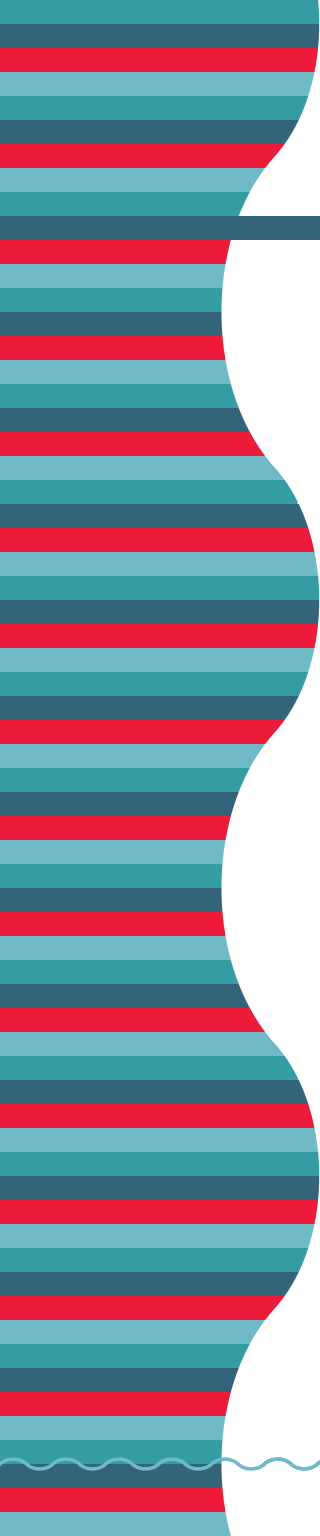
There are many factors to consider when discussing human wellness, both internally and externally. As a designer, deliberate decisions made about architecture affect perceptions. Through the built environment, senses and emotions can be altered and positive mental wellness can be achieved. While researching how to achieve mental wellness through design, I came across biophilic design. Written best by Stephen Kellert himself, “Kellert defines the concept of biophilia in *Building for Life* (Kellert 2005, 50) as a complex of weak genetic tendencies to value nature that are instrumental in human physical, material, emotional, intellectual, and moral well-being. Because biophilia is rooted in human biology and evolution, it represents an argument for conserving nature based on long-term self-interest” (Kellert, Heerwagen, & Mador, 2008, pg. 325).



We care about biophilia in building design – or we should care- for two primary reasons. First, it is becoming increasingly clear that biophilic elements have real, measurable benefits relative to such human performance metrics as productivity, emotional well-being, stress reduction, learning, and healing. And second, from an environmental standpoint, biophilic features foster an appreciation of nature, which, in turn, should lead to greater protection of natural areas as well as efforts to eliminate pollution and maintain a clean environment.


(Kellert, Heerwagen, & Mador, 2008, pg. 326)

The two key terms I pulled from this excerpt are healing and appreciation. The proposed thesis will be intentionally designed to improve occupant appreciation for nature through deliberate decisions. Exploration of structure and climatic association, as well as cultural celebration, will create a lively atmosphere around the resort.

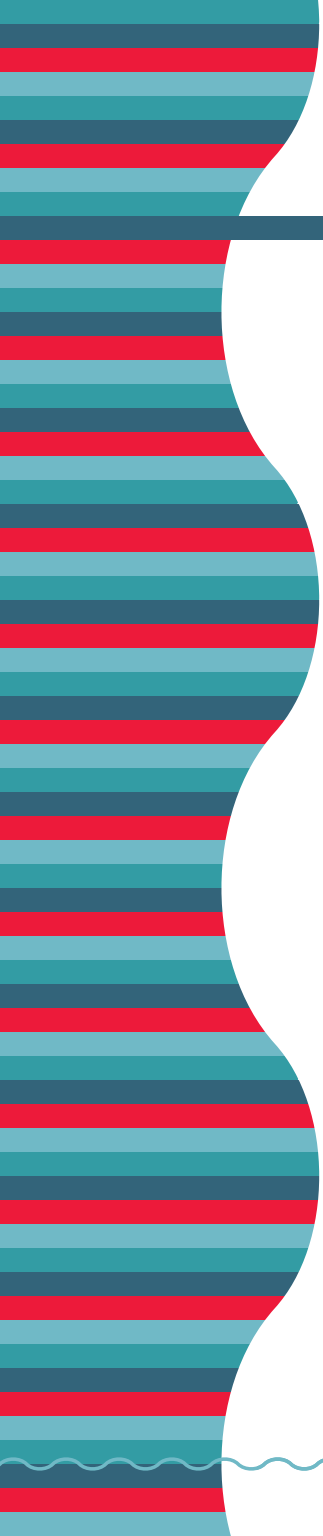
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The two premises (human and environment) are not separate entities, but merely two aspects defined to simplify the approach to analysis. Further connections between the two can be explained through these findings written and summarized by Kellert (2005):

- "People living in proximity to open spaces report fewer health and social problems, and this has been identified independent of rural and urban residence, level of education, and income. Even the presence of limited amounts of vegetation such a grass and a few trees has been correlated with enhanced coping and adaptive behavior." (pg. 4)
- "Contact with nature has been linked to cognitive functioning on tasks requiring concentration and memory." (pg. 4)
- "The human brain responds functionally to sensory patterns and cues emanating from the natural environment." (pg. 4)

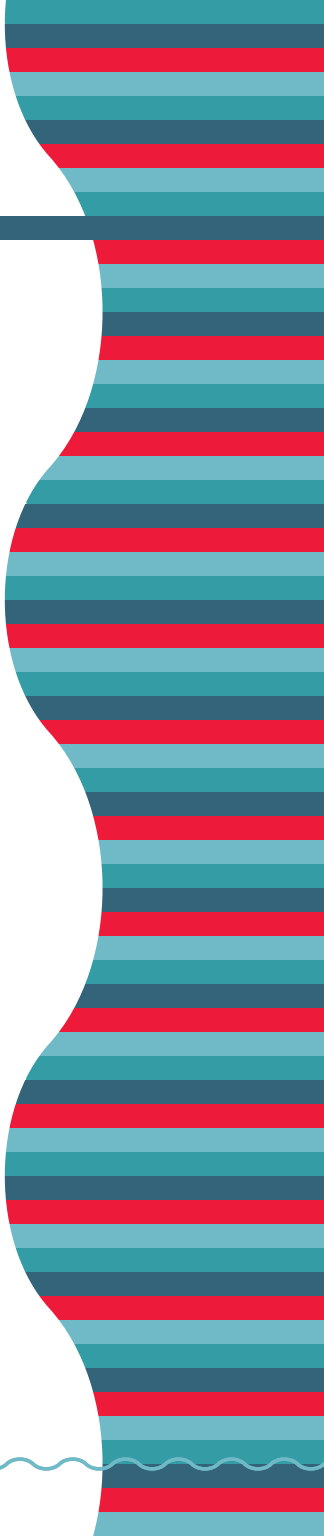


“These studies provide scientific support for the ancient assumption that contact with nature is critical to human functioning, health, and well-being” (Kellert, Heerwagen, & Mador, 2008, pg. 4). Incorporating environmental elements will be accomplished by harmoniously blending the interior spaces with the exterior surroundings. Gardens, as well as paths throughout the landscape, will be designed to connect separate structures and draw attention to nature as a whole. Simple, quaint spaces will allow the guest to focus on the natural experience that occurs in and around the architecture, emphasized through structure. Demonstrations have shown that the wellness benefits of biophilic design stem from the distraction nature provides. Designing a resort that enhances the ability to gain clarity and supply a healthy atmosphere provides improvements for guests, local residents, and the environment alike.



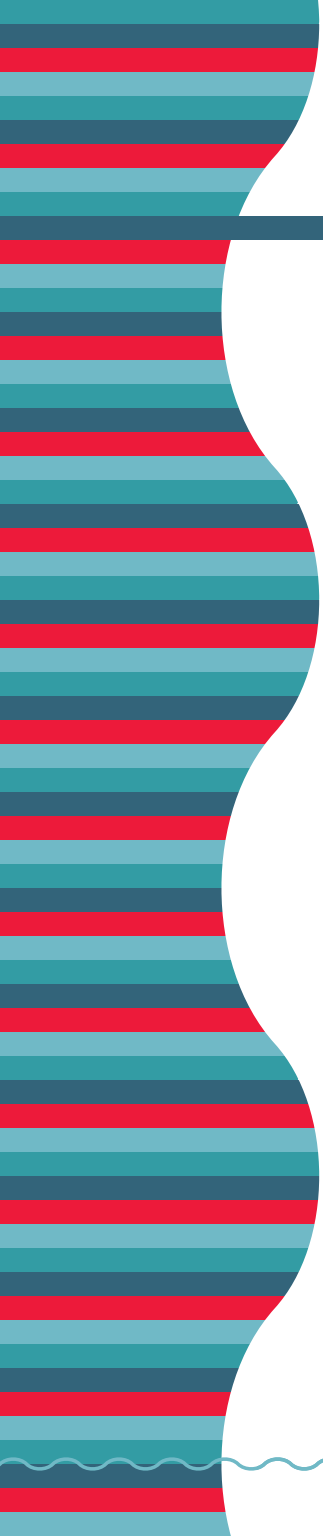
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A biophilic resort of this caliber gives a local economy substantial advantage over surrounding areas. Tourism is a large business, with a mass exchange of currency from all regions of the world. Tourists enjoy traveling domestically and internationally. It may be shocking to find out that in 2010, Americans spent \$526 billion on domestic and international leisure travel, of which \$103 billion was on international travel alone (U.S. Travel Association, 2011). Bringing tourists, along with their capital, to countries such as Jamaica forms a chain of reactions. Namely, the resort employs numerous residents, offering a way to provide for a family. Visitors will spend time in the community, boosting local businesses that provide activities to maintain happiness. Bringing tourism into an area ultimately means bringing guests who will spend money, helping sustain or improve the area's economic state.



Water is a simple structure; flexible and adaptive to its environment. Collectively, water is ubiquitous and is present in all landscapes, living organisms, and the atmosphere. The existence and use of water can be concealed by engineering; examples include storm drains, sewage, and supply drains, or it can be displayed through spas, oceans, and gardens. The qualities of water assist in numerous design goals. The coastal site location is the most obvious connection to water, and will contribute to the healing of guests, support extracurricular activities, and provide passive and sustainable solutions to the resort's needs. In order to succeed, I will rely on the knowledge gained while researching biophilic design.

Biophilia is categorized into six elements, each of which is then broken into attributes. There are more than 70 attributes and more than half of the attributes can be correlated to water in some way. Attributes that fall into the "Environmental Features" group have the most relations. Habitats and ecosystems, geology and landscape, and water form sections that are defined and used as parts of biophilic architecture. This information will be most helpful for the finer details, later in the process. Concentration will be orientated on one element, water.

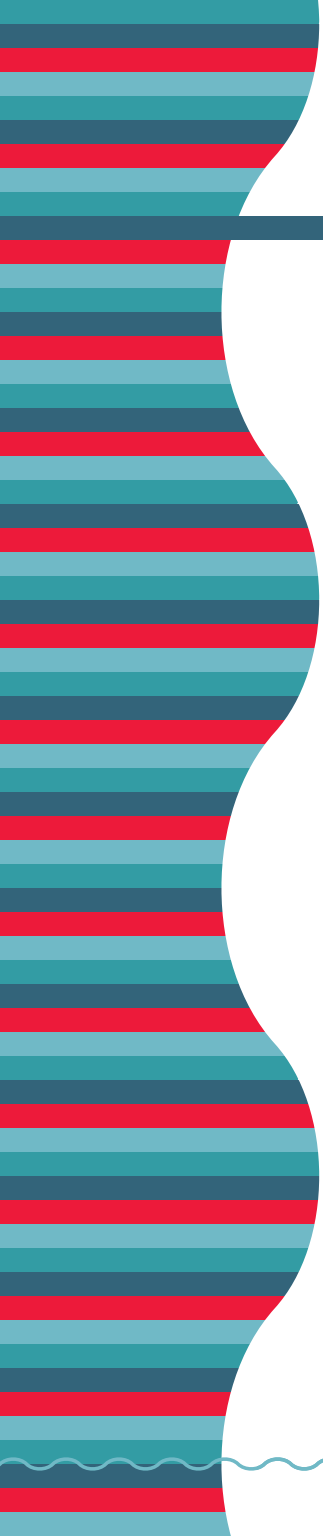


A developing country in a tropical region offers not only an economy, but also a climate to support a biophilic resort. The country would profit from the job opportunities and revenue increase, and in turn the beautiful scenery would encourage the mental wellness of the guests. Tropical, coastal ecosystems offer numerous natural healing properties. One should take in each individual piece of the landscape, gaining exponentially from the surroundings. The sound of waves is calming and soothing to the mind and body. Saltwater contains negatively charged hydrogen ions, which improves the ability to absorb oxygen. The negative ions also balance levels of serotonin, a body chemical associated with mood and stress. Exposure to the sun's UV rays releases endorphins, naturally increasing pain thresholds. The saltwater helps heal wounds and promotes pain relief. "The magnesium content of seawater is significant enough to have a nutritional and calming effect on our nerves, which explains why sea bathing is so relaxing. Potassium in seawater enters the skin and encourages good urinary flow" (Aqua for Balance, 2011). The sandy beach underfoot is a natural skin exfoliate. Designing a biophilic resort in a tropical coastal location, using biomimicry techniques, seems to offer endless opportunities to advance the health of visitors and local residents. In order to do so, one must respond to each aspect as an individual concern and provide the best solution to the purpose of the overall resort.

## RESEARCH SUMMARY

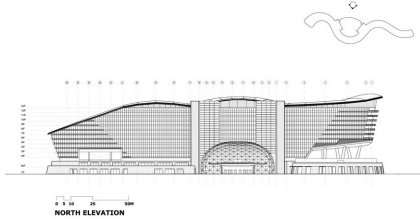
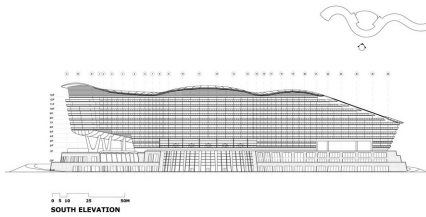
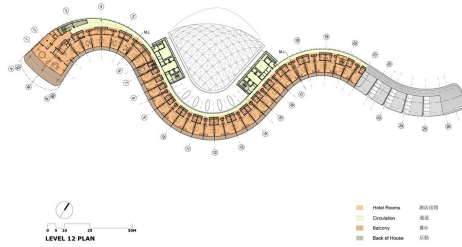
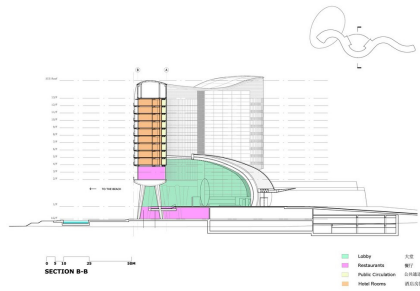
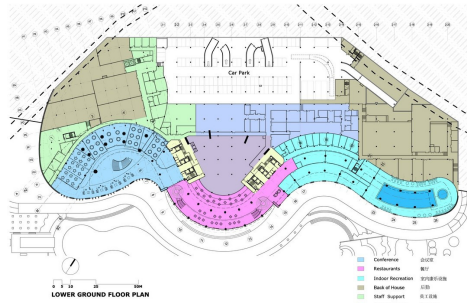
Three goals will be achieved at the conclusion of this thesis. They are healing, productivity, and appreciation of nature. To succeed, a few key design essentials will include the guest rooms, the connection to the shoreline, a meditation space, and gardens. Guest rooms offer a calming ambiance and a secluded space from fellow guests. A private experience will eliminate outside distractions and allow the body to reconnect with the mind. The second element is connection to the shoreline. The continuous presence of water visually, audibly, and physically will strengthen the benefits the visitor experiences. The architecture will embrace the views throughout the site, as well as offering a means of physically encompassing the water. The third and fourth elements are closely related within the design. If the biophilic architecture is well designed, garden and meditation spaces will be located throughout the property, presenting a variety of options to guests. If the spaces are arranged successfully, an innate sense of harmony will be realized subconsciously. Clearing the mind is an organic detoxification, reducing the detrimental forces we face daily.





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To recap, the Theoretical Premise behind this project is that the well-being of humans and the environment can be achieved through biophilic architecture. The human desire to vacation and take personal time contributes to a healthy lifestyle. The complex layers of biophilic design and how biophilia can be the central bond to all concerns related to the health of humans and the earth is the central focus of the design. Tourism and economy related matters rise from the proposed typology. In the end, something as simple as water will link a network of ideas into a unifying, cohesive design; a tropical biophilic resort located on the Jamaican shoreline. The tropical region, the physical proximity to saltwater, and the developing country all offer vital components to the success of the overall design.



## CASE STUDY 1: SHERATON DAMEISHA RESORT SHENZHEN, CHINA



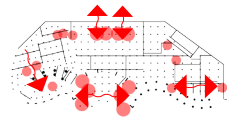
Architect: Terry Farrel and Partners

Construction: Built January 2007

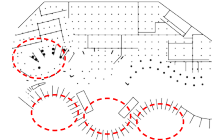
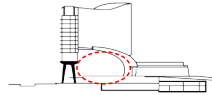
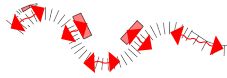
Size: 368 Guest Rooms

Faced with the challenge to design a contemporary modern hotel that would become a local iconic

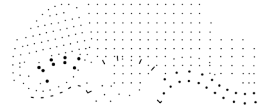
landmark, TFP went above and beyond to give each of the 368 guest rooms breathtaking ocean views, thoughtfully maximizing opportunities with a form that reflects the waves and mountains. The scenery and culture that surround the resort formed a language in which the designers referred throughout the process to generate a certain sense of place. The form is described as organic, and a sense of movement responds to natural elements creating a distinct spirit. Programmatic requirements such as exhibition and conference facilities, restaurants, wellness spa facilities, fitness center, swimming pools, and two extravagant private villas add to the luxury of this property. To best fit the site, the design team used a single-loaded-single aspect building in an east-west orientation. The arrangement of rooms and circulation space best utilize ocean views, southern exposure, and site components.



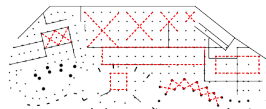
CIRCULATION TO USE



PLAN TO SECTION



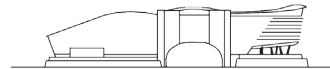
STRUCTURE



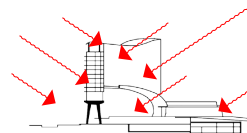
GEOMETRY



HIERARCHY



MASSING

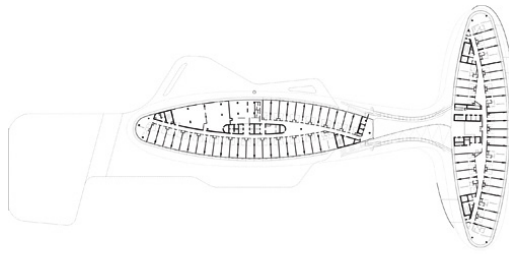


NATURAL LIGHT

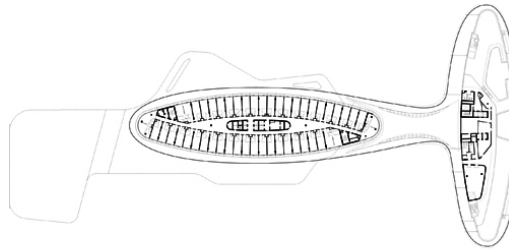
The analysis diagramming showed a few obvious concepts. TFP achieved the iconic form they set out to establish and the site orientation works well. The Sheraton Dameisha Resort responds to the environment with an organic wave-like form, and the rooms face in an east-west position to gain sun exposure. Both of these concepts are evident in floor plan drawings. Elevations and sections begin to lose the curvilinear shape, while maintaining the breadth of orientation. Socially and culturally, the mythologies and inspirations that helped create this unique resort were from Dameisha.

My theoretical premise remains the same after investigation into the Sheraton resort. Environmental concerns played a significant role in this design, as did the cultural sense of place. Although this resort was categorized as luxury and not wellness, both have similar design programs. My conclusions and personal perspectives on this case study are that the surrounding landscape and community should appear prominent throughout all design aspects. In this case the concept, form, views, and structure have all been influenced by the Chinese location of the Sheraton Dameisha.

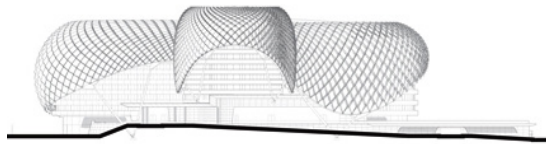




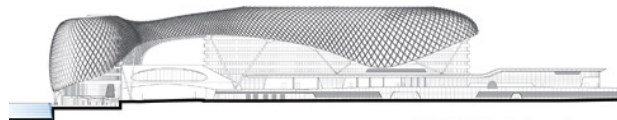
LEVEL 01



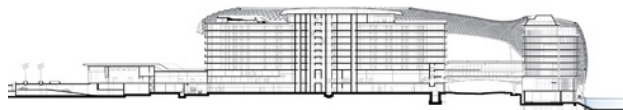
LEVEL 07



WEST ELEVATION



NORTH ELEVATION



SECTION AA

## CASE STUDY 2: THE YAS HOTEL

YAS ISLAND, ABU DHABI



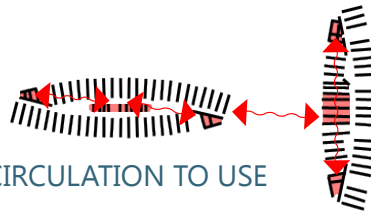
Architect: Asymptote Architecture

Construction: Completed October 2009

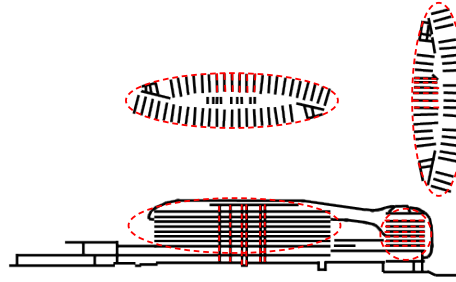
Size: 914,932 Sq. Ft. and 499 Guest Rooms

It is not uncommon for a design team to be asked to construct a form that symbolizes a landmark in the sky. Located on Yas Island, the Yas Hotel is known for becoming the world's first hotel built over a Formula 1 racetrack. One of the two 12-story towers sits above the track, and the other is on the marina. The conceptual force behind the shell structure was Islamic art and craft traditions. The curves are made from over 5,000 diamond-shaped glazing panels, patterned geometrically into the façade. The façade is environmentally responsive, reflecting sky by day, and changing colors at night with the use of an LED system. The program for the Yas Hotel includes some dramatic spaces; a Formula 1 racetrack, eight restaurants, a rooftop cabana, a business center, a spa, a gym, two rooftop swimming pools, and the guest rooms are all incorporated in the steel structure. The allotted spaces are common with most typical resorts, and differ from the specialty program of a resort centrally focused on wellness.

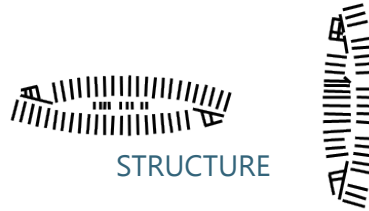
CIRCULATION TO USE



PLAN TO SECTION



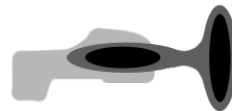
STRUCTURE



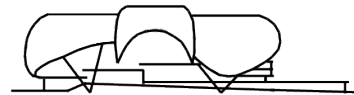
GEOMETRY



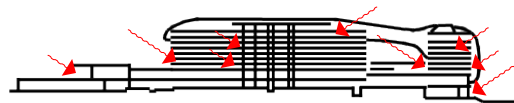
HIERARCHY



MASSING



NATURAL LIGHT

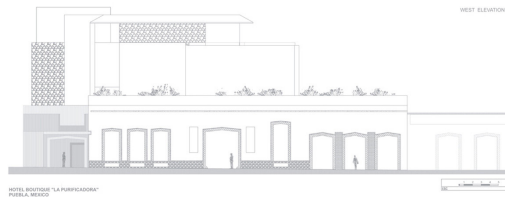




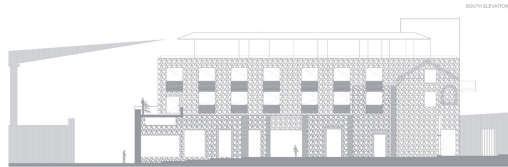
Analysis diagramming visually strengthened intended concepts. The iconic shell form appears to be one from the outside, but is split into two floor plans once inside, visible when comparing floor plans and elevations. One tower sits north-south and the other east-west, spreading the design over a grand site. Socially and culturally, inspiration from ancient cultural Islamic arts and crafts is embodied through façade geometry. This translation is not apparent in the plan, but can be shown with elevations and sections equally.

The Yas Hotel did not change my theoretical premise. Environmental concerns were not the focal point of the overall construction, but a sense of place was established as a result of the local culture. Apparent in the resort design, many spaces included will not correlate with the specialty requirements of this thesis proposal. My conclusions and personal perspectives on case study two are mixed. Regarding concept and structure, I found this study useful. As for the program and the seemingly excessive technology, it all seemed frivolous to me. High end accommodations do not have to be detrimental to the environment in order to succeed at luxury.





HOTEL BOUTIQUE "LA PURIFICADORA"  
PUEBLA, MEXICO



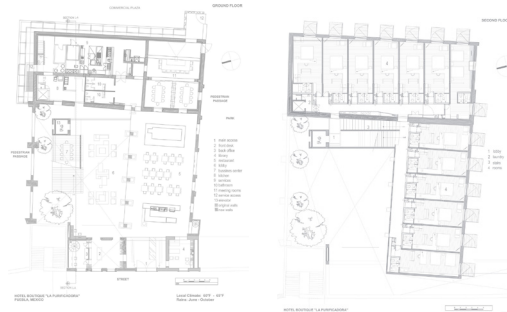
HOTEL BOUTIQUE "LA PURIFICADORA"  
PUEBLA, MEXICO



HOTEL BOUTIQUE "LA PURIFICADORA"  
PUEBLA, MEXICO



HOTEL BOUTIQUE "LA PURIFICADORA"  
PUEBLA, MEXICO



## CASE STUDY 3: BOUTIQUE HOTEL PUEBLA, MEXICO



Architect: Legorreta + Legorreta

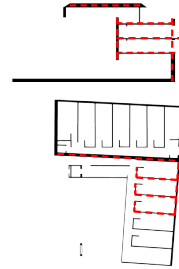
Construction: Completed May 2007

Size: 12,679 Sq. Ft. and 26 Guest Rooms

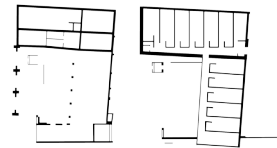
A father and son team refurbished an old water bottle factory built in 1844. The site is listed as a World Heritage site. The original stone walls remain part of the ground floor the structure, with two additional levels. The floor plans depict an L shape, and all spaces line a central open-air patio which houses a grand staircase. The grand staircase travels between the first two levels, and from there a glass open-riser staircase continues to the third level and ultimately ends on the rooftop. Terrace sheltered, one can enjoy views of Puebla, Mexico, and a cocktail at the bar-lounge simultaneously. Described as luxury, this small quaint resort hotel offers a more personal feeling than resorts accommodating hundreds of guests. The site itself has 26 guestrooms, a restaurant-bar, kitchen, ballrooms, patio, meeting rooms, offices and a cave. Relaxing amenities include a pool, terrace, gym, jacuzzi, massage, and a steam room.



CIRCULATION TO USE



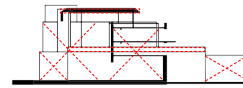
PLAN TO SECTION



STRUCTURE



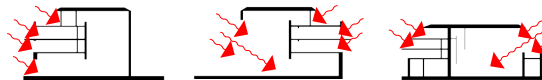
GEOMETRY



HIERARCHY



MASSING



NATURAL LIGHT

The analysis diagrams for the Boutique are featured to the right. The program follows a simple floor plan, while maintaining an elegant beauty. The remains of the factory and the history of the building were conceptually derivative. Located within an urban setting, the site restrictions are more apparent. Views are always carefully considered, and the rooftop offers 360 degree views of the city.

My theoretical premise remains the same with all typological studies. The history of the factory that purified and bottled water seems to have been present from the beginning, and it is part of the hotel, nicknamed "La Purificadora." Many formal agencies had input in this design, due to the heritage the Spanish established in 1531. My conclusions and personal perspectives on case study three are straightforward. A reuse, adaptive project, with quaint form and program offers many things to learn. The historical factor once again shines through as a core inspiration. Relaxing spaces, where guests can clear their minds and rejuvenate, are coupled with both luxury and well-being. In this case, my conclusion about the Boutique Hotel is that less is more. The simplicity of the design lets the guest focus inward, shedding daily distractions and stress.



## CASE STUDY 4: THE OUTPOST KRUGER NATIONAL PARK, SOUTH AFRICA



Architect: Enrico Daffonchio and Associates

Construction: Completed February 2003

Size: 24,757 Square Feet and 12 Units

Enrico Daffonchio needed to design an environmentally responsive piece of architecture with an atmosphere of relaxed comfort in the wilderness. The conceptual idea was to set the resort subtly into the landscape, providing certain luxuries while offering an intense and direct experience with the natural surroundings. The structure touches the ground plane lightly with stilts. This feature is adaptable and can be removed without a trace, a designed bonus for a site located within a National Park.







Information and images are courtesy of the December 2006 edition of *Architectural Record*

## CASE STUDY 5: AMANGIRI RESORT CANYON POINT, UTAH



Architect: I-10 Studio, Marwan Al-Sayed, Wendall Burnette, and Rick Joy

Construction: Completed October 2009

Size: 78,400 Square Feet and 34 Units

Some key elements of this project revolve around privacy, focus, relaxation, minimalism, and purity. This set of words describes the resort as a whole. The project architects focused on nature, and intentionally highlighted it with minimal furnishings. Spareness and purity are dominant, and materials are similar to those of the surrounding desert landscape. "Isolation and austerity meet extravagance of the most refined nature." (Reginato & Stephens) This specialty project, in my opinion, could be classified as a wellness resort.





Information and images are courtesy of the May 2010 edition of *Architectural Record*

## CASE STUDY 6: HOTEL REMOTA PUERTO NATALES, CHILE



Architect: German del Sol Architects

Construction: Completed December 2005

Size: 56,000 Square Feet and 72 Units



Equal parts luxury and folk style make up the Hotel Remota. The site location is adjacent to a body of water, which was used to bring in construction materials via boat. Conceptual ideas are all relative to the environment. Interior spaces are designed low to the ground, with a sense of emptiness. An intense relationship connects the land and the building program. The roofs are planted and are composed of layers 29 inches thick. "This hotel is not an escapist fantasy or a themed environment, but a choice lesson in how a local building culture can inform design without sacrificing contemporary ambition" (Fortmeyer).





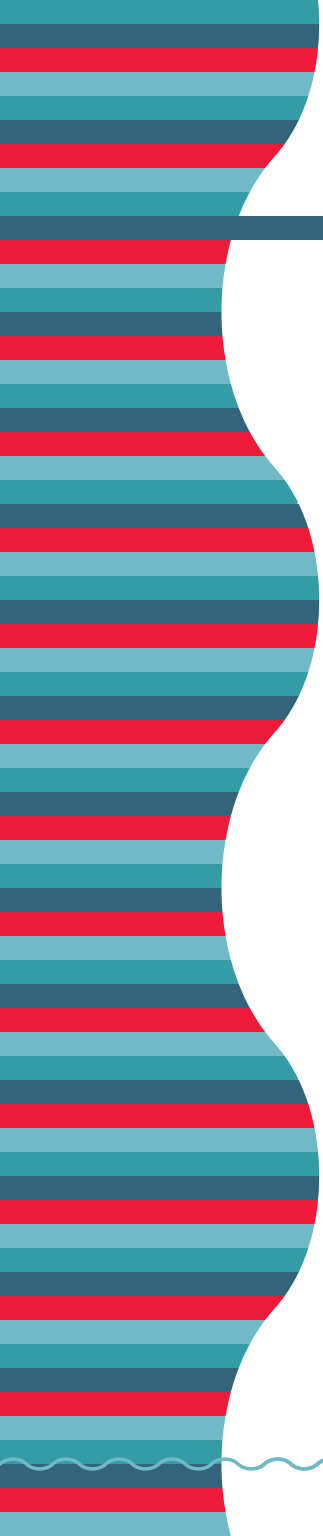


Information and images were courtesy of the December 2006 edition of *Architectural Record*

## TYOLOGICAL STUDY SUMMARY

A review of six case studies was conducted as part of the typological research. Each case offered its own intrinsic value, shedding light on how to accomplish my theoretical premise. Both human and environmental aspects of my theoretical premise are present in all cases investigated. The variety of resorts and hotels provided a wide range of knowledge about programmatic requirements and what I feel is important to include and what spaces will be excluded from a biophilic or wellness resort. I chose to study projects that were designed in hot climates as it will be similar to the tropical location I chose in Jamaica. The deviation in sites was enough to see the cultural and historical differences that inspired most conceptual ideas.

Each of the five hotel categories has separate programmatic schemes. Furthermore, each resort hotel has a vast range of requirements. A luxurious convention center will focus on business-appropriate spaces, and a biophilic resort will focus on rejuvenation and relaxation of clients. All six studies have included a spa feature. The introduction of water as a component in the healing process is also established in the pool, as well as on any coastal sites. Half of the resorts are built next to a body of water. The other half are centered around other natural land forms. The simple elegance of guest rooms was mentioned in more than one article. The minimal furnishings embody a purer atmosphere for the guest to find personal comforts.



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Conceptual inspirations vary from culture to culture, but traditions are highlighted through form, facades, and structure. The most prominent studies were the Yas Hotel and the Sheraton Dameisha Resort. The Yas Hotel is glazed with a geometric design that represents the Islamic art and craft traditions. The Sheraton has a strong curvilinear form that was motivated by the site and mythology. The remaining four cases are stimulated more by environmental concerns. Deserts, National Parks, and remote sites all have certain restrictions, sustainability being just one of them.

In closing, my study angle and approach to the theoretical premise has remained consistent throughout this typological research. I have examined sun angles, site orientation, cultural concepts, and complex programs. I have expanded my knowledge in the hospitality industry. I am encouraged by the research results and excited to begin the schematic design phase.

## HISTORICAL CONTEXT

The history of hotels spans the entirety of the globe and dates back to the earliest of civilizations. As early as 1800 B.C., the Code of Hammurabi established the first rules for tavern owners, and hotels have evolved from merely being a necessity to a luxury for “people’s disposable income” (McDonough, Hill, Glazier, Lindsay, & Sykes, 2001). Presently there is business traveling, but leisure traveling contributes largely to an increase in tourism.

## TOURISM

“Tourist spending is new money brought into the community, and it improves the economic health of every business in the area. Not only do the hotel and motel owners, the restaurant operators, and the gas station people benefit. Tourist money also goes to the farmer, the professional man, and the businessman” (Abraben, 1965, pg. 3). Leisure traveling and touring is one of the fastest growing movements and offers beneficial support to developing communities. Billions of dollars are spent by travelers looking for the perfect getaway. Spending disposable income to experience relaxation, in return, brings monetary wealth to visited locales.



## JAMAICA

A wide range of European nations, such as Spain, England, and France, and other societies, like the Tainos, Africans, Chinese, and East Indians, have all fused into the population of today. This cultural history is evident in the homegrown cuisine, art, entertainment, and architecture over the mountainous terrain (Salmon, 1999).

The island's history is rooted in the sugar plantation economy, going back to pre-Columbian days. Christopher Columbus first landed in Jamaica in 1494 and was said to have settled near the area known today as Discovery Bay. Discovery Bay is on the northern shore, and is a five minute drive west of the site. The Taino Amerindians were one of the most peaceful people in the world (Salmon, 1999). The Tainos lived in thatched roof huts, which differed from the plantation mansions. The history of St. Ann Parish is entrenched in the British sugarcane farmers and African slave stories. One well known settlement was the Seville Estate (1690-1840). Here, rows of huts were constructed to house slaves, who were treated horribly in order for the master to retain control.

Independence expanded the middle class in the 1960s and 1970s (Salmon, 1999). The large quantity of dwellings expressed the cultural growth of the island. Jamaica began to experiment with construction materials, concluding in the 1980s. A balance between architectural styles is an ongoing process, with a visible return to more traditional modes of building.

## DEFINING A CATEGORY

In *Building Type Basics for Hospitality Facilities* (2001), hotels are broken down into five categories: luxury hotels, resort hotels, business/convention hotels, motel and roadside limited service hotels, and casinos. This thesis will be designed as a resort hotel, described in more detail as a biophilic resort. A similar category is a wellness resort, which is defined as “a destination and by its nature must fit into and reflect its surroundings. A successful resort conveys a strong and prominent sense of place and celebrates the culture of its location. These features encourage a greater freedom in design expression through respecting and playing off the local environment.”(pg. 16) There are certain elements that are relevant to resorts, of which two are fit for inclusion: the strong integration of authentic local construction materials and finishes, as well as a strong emphasis on site planning and environmental concerns (McDonough, Hill, Glazier, Lindsay, & Sykes, 2001).





## CREATING A TREND

Every facility is a balance between the host, guest, and place, and over the ages the balance has shifted from one component to another (McDonough, Hill, Glazier, Lindsay, & Sykes, 2001). Each new project has specific elements the designer and owner set forth. Emerging from this is the consumers' demand for environmentally friendly sophistication.

The demand for a cultural or eco-tourism hotel experience will force designers to create hotel properties that respect the environment in which they are built, as well as the fate of those people who live near or work at the property. In addition, guests of such hotels will demand satisfaction that their money will contribute to the welfare of the locale.

(McDonough, Hill, Glazier, Lindsay, & Sykes, 2001, pg. 5)

This movement started in the 1960s and 1970s and has continued ever since. Some owners and operators are reluctant to spend the extra money up front, but the hope is that new advances in technology may eventually offer another solution for creating less expensive ways to produce environmentally-respectful materials (McDonough, Hill, Glazier, Lindsay, & Sykes, 2001).

## WELLNESS AND WATER

Over half of the human body is composed of water. As simple as it may be, water has been shown to have therapeutic benefits with great potential. Aquatic therapy promotes well-being, reduces anxiety, alleviates pain, and relieves stress. Hot water is believed to cause reactions within the body that lessen pain sensitivity, stimulate the immune system, and increase blood circulation. The potential of aquatic wellness is vast, both physically and mentally (Aqua for Balance, 2011).

Water covers over 70 percent of the Earth's surface and is necessary for all life. "Water is indeed the unifying element of nature. Because it is mobile, it connects all aspects of the landscape" (Kellert, Heerwagen, & Mador, 2008, pg. 44). Water provides services that enhance the quality of human life. Water provides a substantial part of our recreational life, provides many venues for contemplation and spiritual restoration, and is also the basis for countless works of art, literature, and music. (Kellert, Heerwagen, & Mador, 2008).



## BIOPHILIA AND WATER

Water is one of the most abundant natural resources on Earth. It also offers a seemingly exuberant amount of healing properties, known to be true by many cultures.

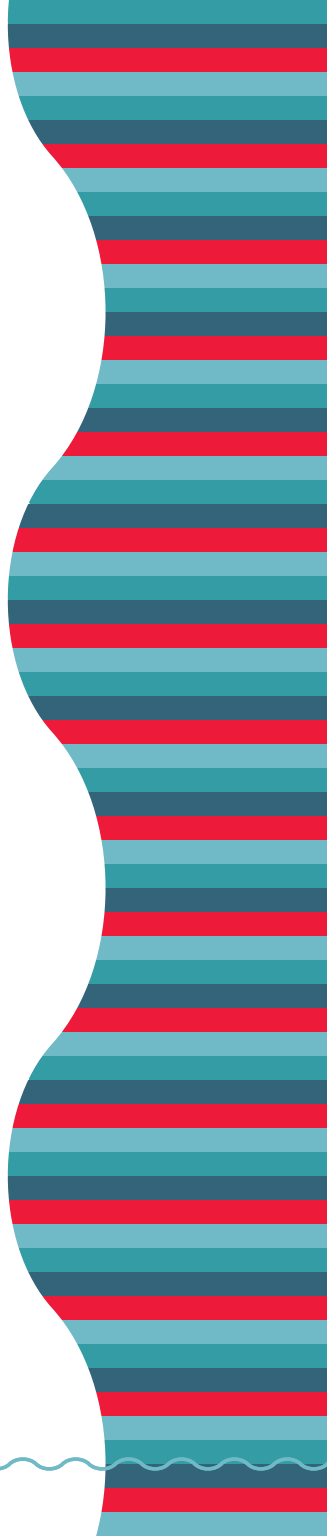
The restorative powers of water have been long recognized. At least since ancient Greek and Roman times, healing baths have been popular. Roman scholar Pliny the Elder (AD 23-79) wrote about healing spas. Geothermal springs, such as those in Japan, Iceland, Lake Tiberias (Israel), the banks of the Danube in Hungary, and natural springs rich in minerals have been valued for their medicinal and healing powers...Hydrotherapy has long been a part of both mainstream and alternative medicine.

(Kellert, Heerwagen, & Mador, 2008, pg. 46)

Bringing water into the built environment can have positive qualities, but in the age of engineering, water has been mostly hidden.

Every site must provide for a potable water supply, wastewater conveyance, humidity regulation, landscaping, storm-water management, and site hydrology. We must now turn to using the biophilic qualities water offers to maximize the opportunities to create pleasant, satisfying, stimulating, and profitable environments for human occupancy.

(Kellert, Heerwagen, & Mador, 2008, pg. 49)





## HISTORICAL CONTEXT SUMMARY

Traveling is nothing new, and neither is staying in a hotel or resort. In recent years, however, these activities have been expanding and changing. Resorts are becoming more specialized; each focuses on certain opportunities to attract guests to their destination. Resorts are known for their strong sense of place and inclusion of local culture. Tourism is one of the fastest growing businesses, spreading money from one region to another. The trend of eco-tourism has been popular in the United States since the 1960s and 1970s. Historically, elements such as water, climate, and economy have all contributed to the success of the built environment. The built environment provides an opportunity to tie all essential elements together. A biophilic design located in a tropical, developing community, which specializes in the well-being of guests, is capable of total integration. Through typological research and personal experience, the goal set forth for this thesis is the design of a Jamaican wellness retreat.

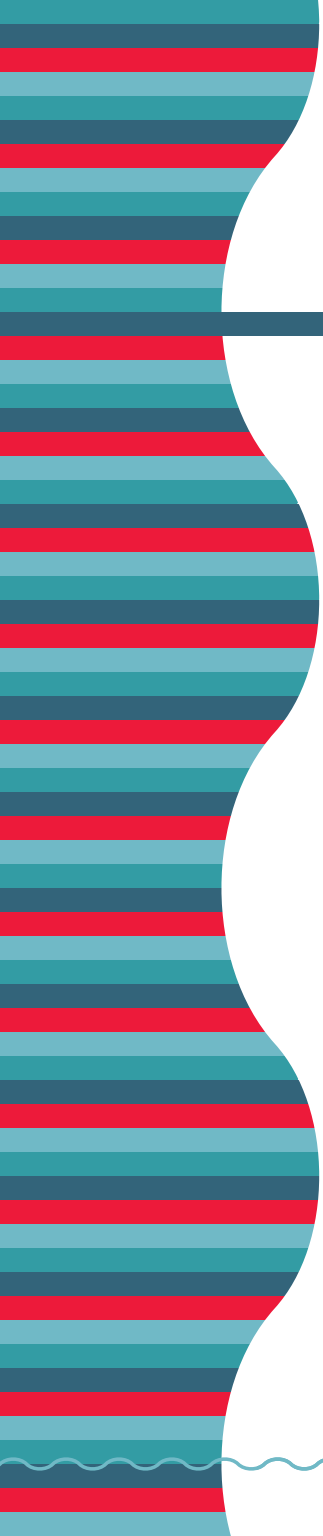
## GOALS

### Academic

The last five years have been a mix of lecture, seminar, and studio courses. I have learned through reading, writing, and hands on approaches that each project has the potential to teach a new set of skills, which I can acquire, and progress my knowledge of architecture. My academic goal for this thesis is to explore the thoughts, theories, and projects of the past. Combining the information I gather, I want to generate new and thoughtful ideas; creating a space that will improve the well-being of guests and the environment alike.

### Personal

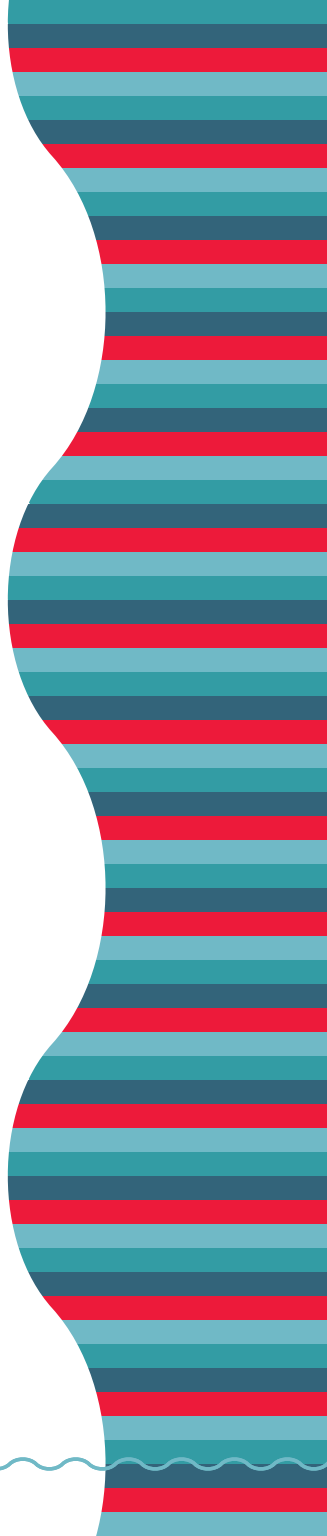
My personal intentions for this thesis will be focused on development and level of detail. One goal is understanding the fundamentals that bridge academia and the work force, fully comprehending the details and construction process at all phases of a project.



I have always been interested in the integration of site planning and the built structure. A strong emphasis will be placed on site and environmental concerns. Ultimately, my goal is to have a visually, graphically, and architecturally pleasing thesis that is comprehensive and complete.

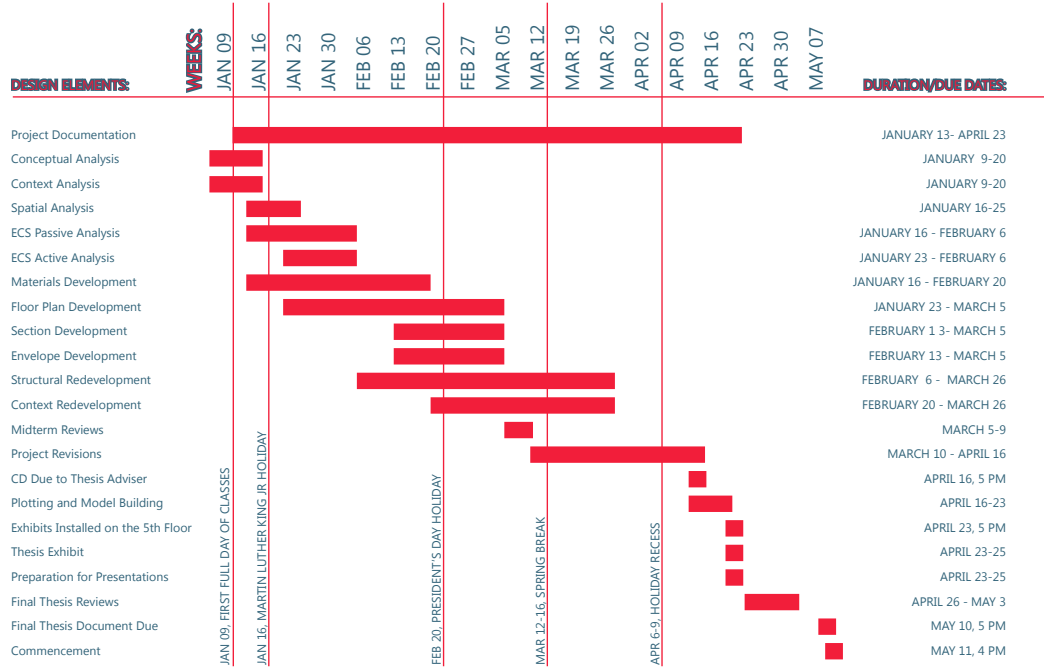
### Professional

My goal for this thesis, which is also my goal for all academic work, is to create a project that is of professional quality. Bringing architecture together with my passion for traveling, I will pursue a typology with aspirations that one day I will be a part of the Wimberly Allison Tong & Goo team, leading in the design of hospitality and leisure architecture. This thesis is my way of exploring a typology that has been interesting to me for many years from a different angle. I have traveled and experienced resorts first hand, I have read and researched case studies through my education, and I have professional goals to continue designing resorts in the future.





# SPRING DESIGN SCHEDULE

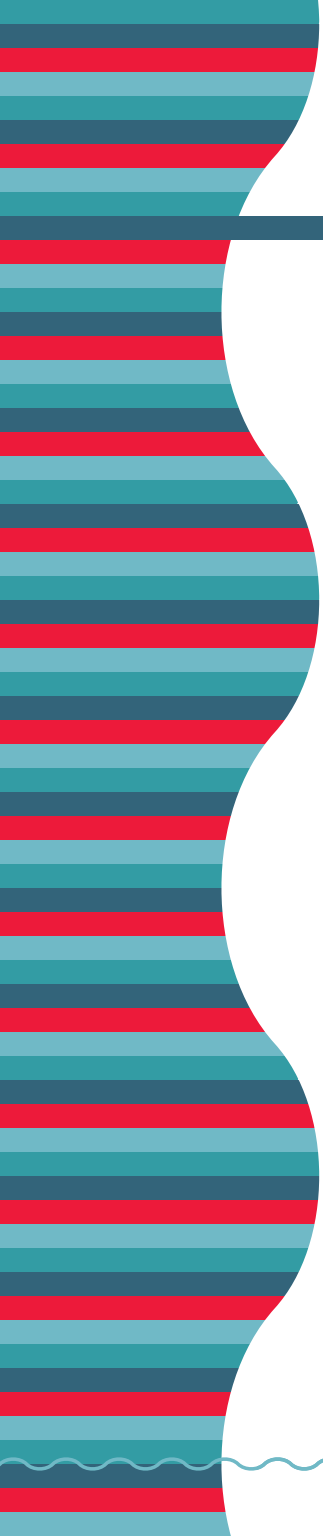


## SITE ANALYSIS

After submitting my problem statement, I was challenged to define a typology. With my growing interest in the hospitality industry, a resort seemed to be the right fit. The biophilia concept was developed subsequently, initiating the need for a specific site. Site selection has been talked about numerous times in this book. The theoretical premise focuses a lot on the correct choice; finding an environment that offers economic, sustainable, and healing qualities needed for the resort's success was my concern.

I remember sitting down in the library, looking through books about tropical architecture and narrowing down choices that appealed to my concept. Jamaica seemed to have the top two fundamental elements I short listed: coastal climate and developing economy. From there, I planned my trip to the island. I was excited to travel to a new location, yet apprehensive to have only a week to find the perfect site. Research cannot prepare you for the personal connections gained from setting foot on the site where your design will be constructed.

Arriving on the island was similar to all adventures, facing the line at customs. After hours shuffling through the airport, I was officially on a quest to find my site, with my family adding additional support. I had chosen a central location for us to reside, with the hopes of having a better chance of traveling the coast. Not knowing this at the time, St Ann Parish would have everything we would want and need during our stay.



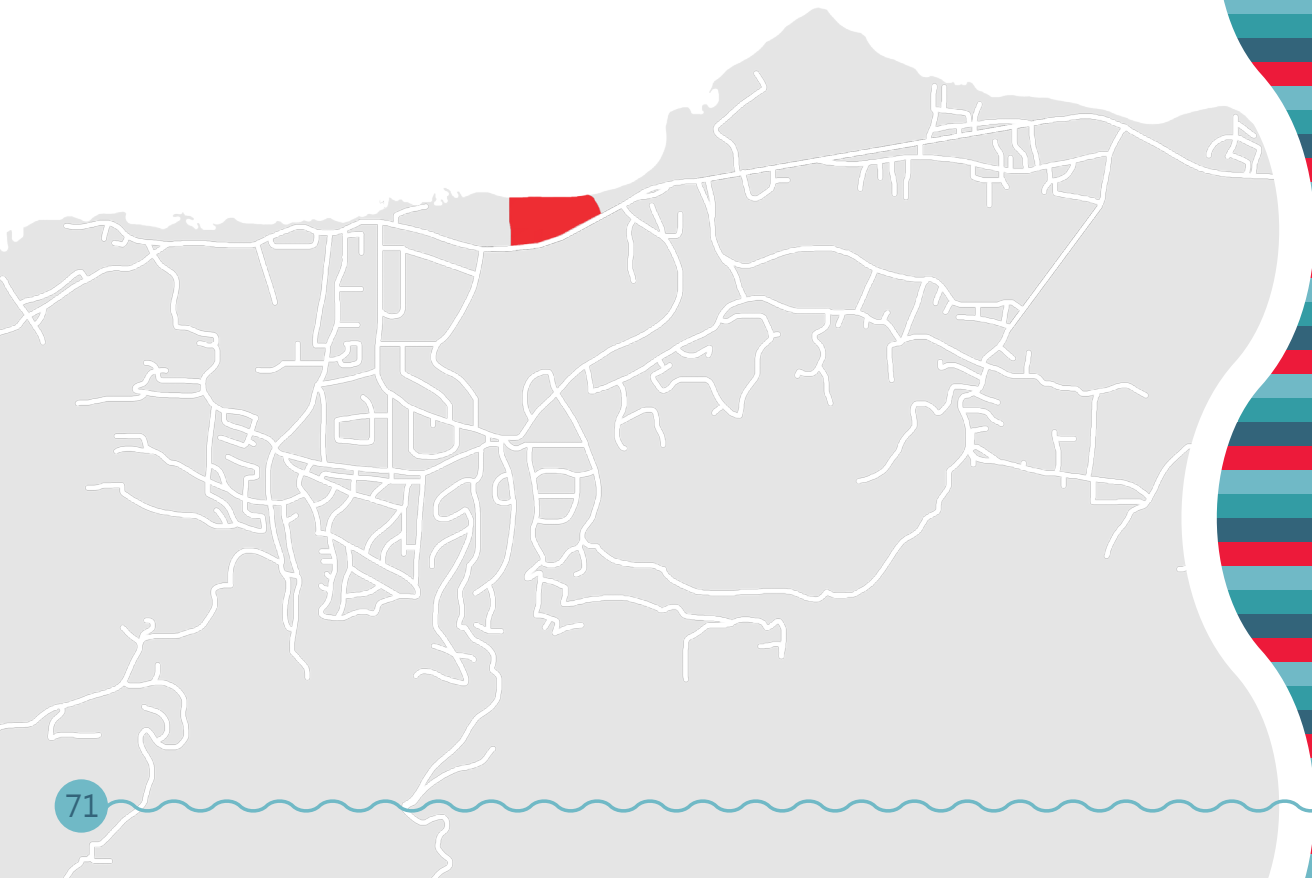
Eager, I went out the very first evening to pursue a site. I remember asking locals for recommended beach front properties that would offer a fairly open piece of real estate to hypothetically develop. I was directed toward various areas, most of which did not appeal to me. The second day on the island, I went to the main road that spans the entirety of the island, and looked for a taxi. I have learned from past experiences in foreign countries that taxi drivers are like local dictionaries, full of knowledge and recommendations. Two miles down the highway from our resort was a public beach known as Flavours. I decided to check it out, and of course my protective parents tagged along. Flavours is positioned next to an 11-acre open field, with for sale signs on the property line.

The site was amazing: spacious, clear of obscurities, beach front, and located within a supportive community. I had an overwhelming feeling of delight when standing on the site for the first time. Visions of endless possibilities began running through my mind. The following section will break down and further discuss the individual factors that make up the site I selected and how they will influence my design.

## EXISTING GRID



The grid below shows the roads that come together within the city of Salem. There seems to be no formal grid system in place. Roads are built where there is a need to travel. The majority of the grid shown here is residential access. Highway A1 runs the entire length of the north shore and is the southern edge of my site.



## PHOTO GRID



WEST



NORTH



SOUTH



EAST



LOOKING SOUTH FROM THE WATER



THE SITE IS CURRENTLY FOR SALE

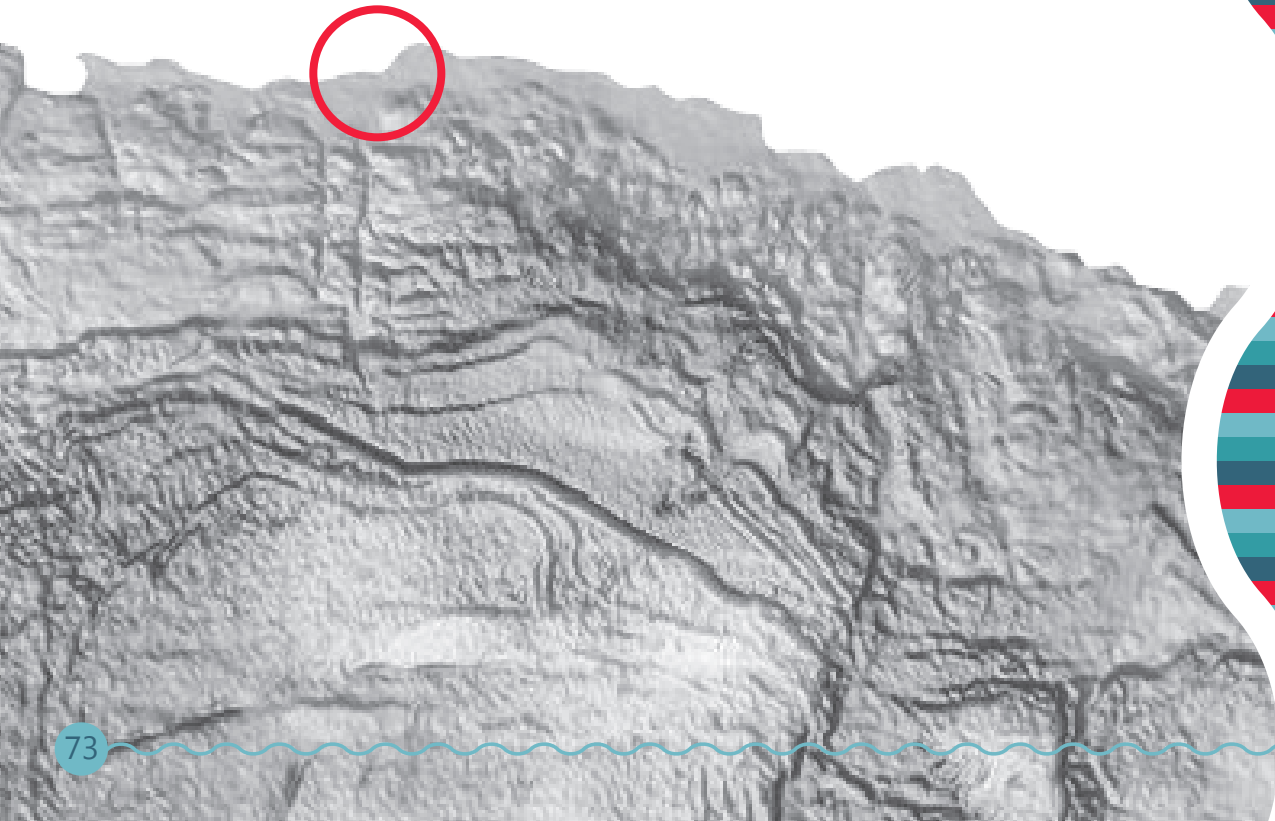


HIGHWAY A1 ON THE SOUTH EDGE

## TEXTURE



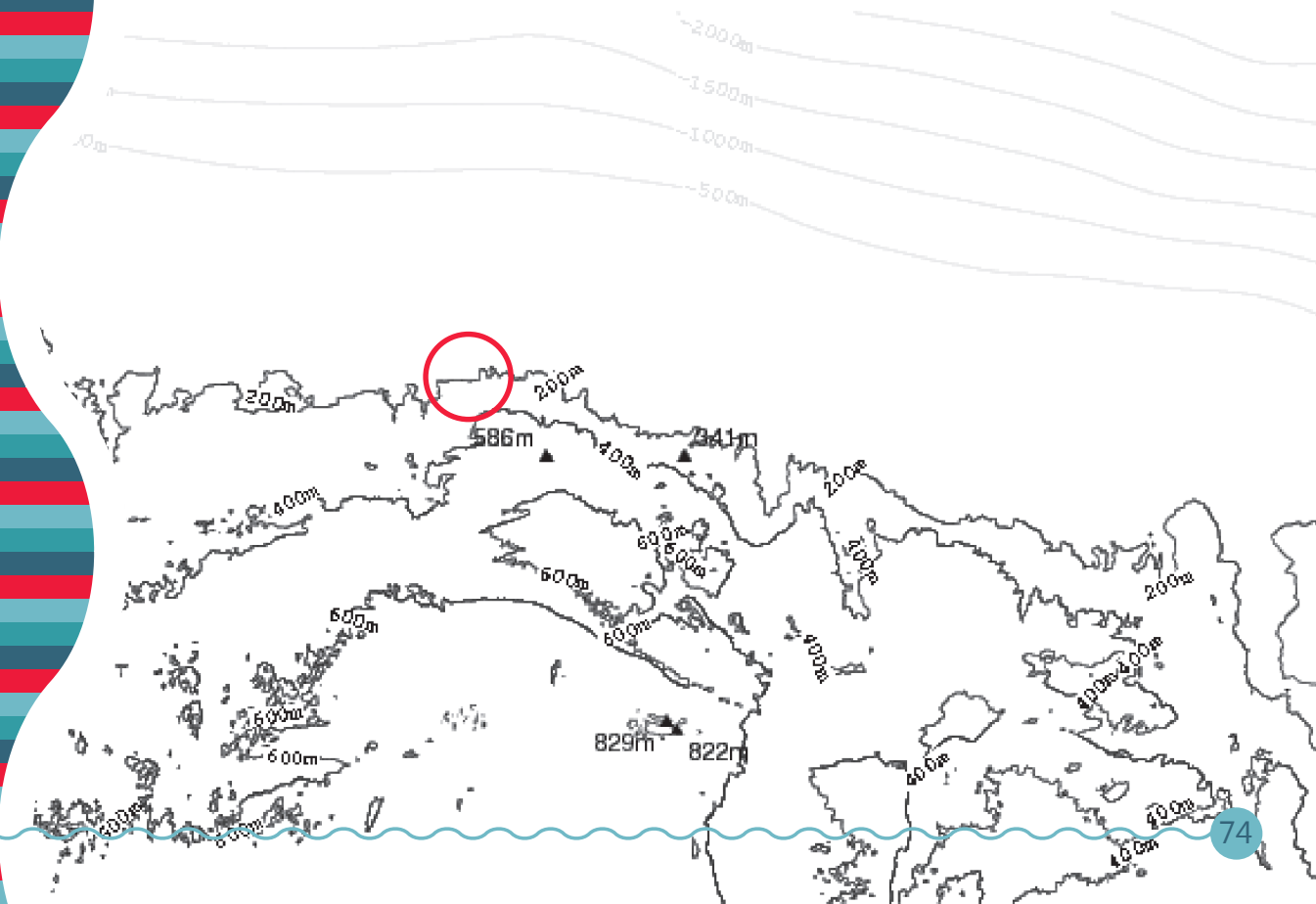
The site composition has a mixture of textures. The natural foliage has grown without any human maintenance, just the grazing of livestock to cut back the overgrowth. Almond trees grow near the rigid concrete and stone retaining wall. The wall creates a harsh boundary between the soft grasses and the sandy beach. The site and the area immediately surrounding it looks relatively flat. Looking across the land, mountain ranges cover the southern skyline, and the Caribbean Sea provides vast northern views.



## TOPOGRAPHY



The island has some dramatic changes in elevation. The Blue Mountain range runs in an east-west direction, with spurs of smaller ranges branching north-south. As the map below depicts, the site is situated on gradually changing topography.



## NOISE

The site is moderately noisy. The sound of vehicles is faint in the distance, occasional horns will blow warning that a driver is on a mission. Flavours has an outdoor sound system which was emitting reggae during all site visits. The white noise caused by waves crashing into the shore drowns out many little distractions. At night, the sounds of crickets and tree frogs amicably blends with the water, which is musically pleasing and relaxing.



Event Stage



Social Gathering



Restaurant



Children Playing



Cattle Grazing



Horse Grazing



Make Shift Shops



## HUMAN CHARACTERISTICS

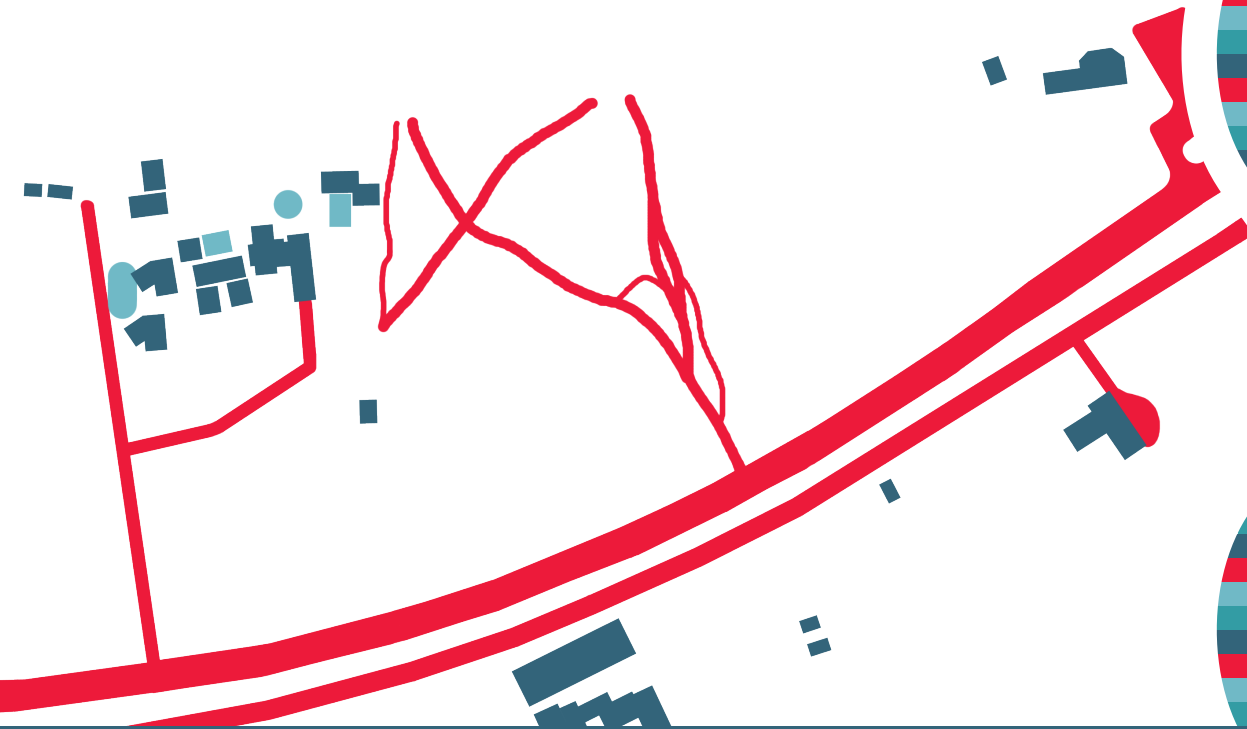
Currently, the site is adjacent to a popular beach used by many locals. The beach is known as Flavours, housing a restaurant and a stage for outdoor events. Children playing soccer and swimming were both common daily activities witnessed on my visits. The site itself is for sale, and is mostly vacant. A local rancher has a few cattle and horses on location grazing. A concrete retaining wall runs along the beach. There are a few makeshift shops along this wall where vendors set up and facilitate business to the passing traffic.



## BRINGING IT ALL TOGETHER

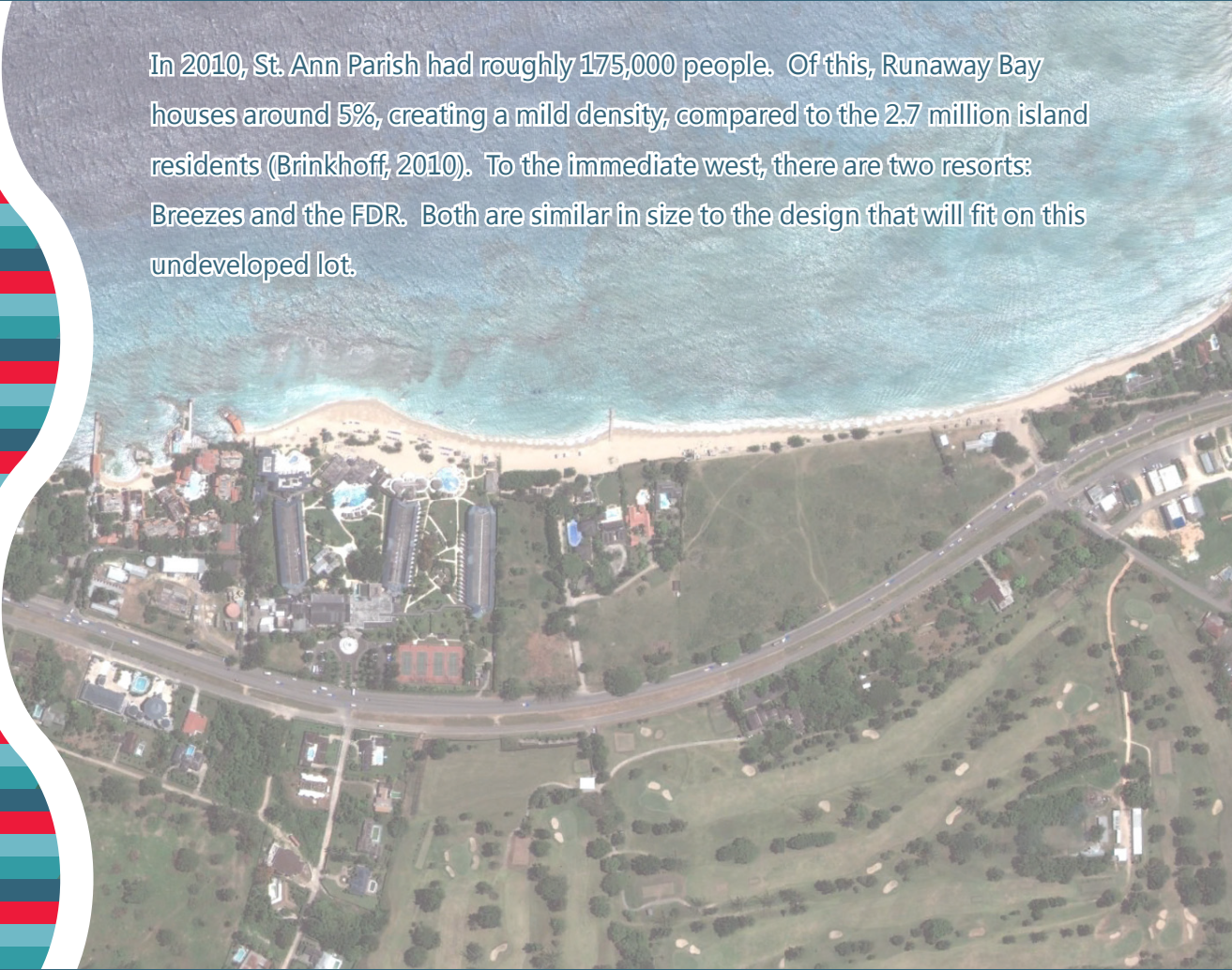


Below is an abstract map of the site. The legal boundaries are shown with a green dotted line. All roads, paths, and the highway are red. A figure/ground of all existing structures is denoted in dark blue, and light blue shows water features.



## DENSITY

In 2010, St. Ann Parish had roughly 175,000 people. Of this, Runaway Bay houses around 5%, creating a mild density, compared to the 2.7 million island residents (Brinkhoff, 2010). To the immediate west, there are two resorts: Breezes and the FDR. Both are similar in size to the design that will fit on this undeveloped lot.





## LIGHT QUALITY

### Color

Intense, vivid colors materialize on the island. Jamaican culture is expressed with extremely bright hues. Facades are painted warm colors to contrast the cool colors in nature.

### Temperature

The environmental color range is mostly cool with pops of warmth. The Caribbean Sea is turquoise, the vegetation reflects a monopoly of greens, and the sky reflects tones of slate blue. Sparks of bright reds, orange, and yellow shine through flowers, and the built structures. The combination is balanced well, and provides a harmonious atmosphere in which to relax.





## WATER

The unifying idea of the theoretical premise is water. Water defines the northern boundary of the site, as it is the shoreline of the Caribbean Sea. The saltwater is known for its natural healing properties and will be an essential element in the resort. I will also introduce water elements, such as spas and pools. These will be freshwater components. Water will have a permanent presence on the property.

## SOIL

### Macro

“The island of Jamaica consists essentially of an east-west core of serpentine white limestone which is surrounded by shale and many different igneous, sedimentary, and metamorphic rocks, which were folded and uplifted at the end of Cretaceous time” (Salmon, 1999, pg. 29).

### Micro

The most pronounced soil feature on site is the sand. The sand extends to the retaining wall, where the soil changes. A barren ground is covered with an acid topsoil, classified as clayey throughout (Hennemann & Mantel, 1995).

## VEGETATION

### Color

As previously stated, the island is full of color. The vegetation is bright year round, thriving in the tropical climate. The site is covered with low-lying shrubs and unattended plants. As seen in pictures, the site boundary is edged with taller trees and shrubs. Palms have been brought in to the east.

### Texture and Patterns

The site is depicted below as open, with organic grass and a variety of unknown natural occurring vegetation. The images are taken facing a south, southwest direction.



## FLOWERS



1. Heliconia
2. Ginger Lily
3. Perry Winkle
4. Bamboo
5. Almond Tree
6. Hibiscus
7. Courtney Plant
8. Lobster Claw
9. Orchid



## DISTRESS

Since the site is barren and for sale, I assume no one has committed to keeping it free of debris. Litter clutters the ground; mostly plastic bottles and packaged products are found on the site. This may be a micro problem, caused by the number of locals that gather at Flavours daily. It may also be more of a macro level problem, caused when the tides change, washing debris further inland.

Along with the trash issue, there are numerous dead trees. This may also be the result of a lack of maintenance. I think the site is healthy, it just lacks the structure and control the resort will offer. Having a planned landscape and employees to maintain the grounds will reverse the damage of abandonment.





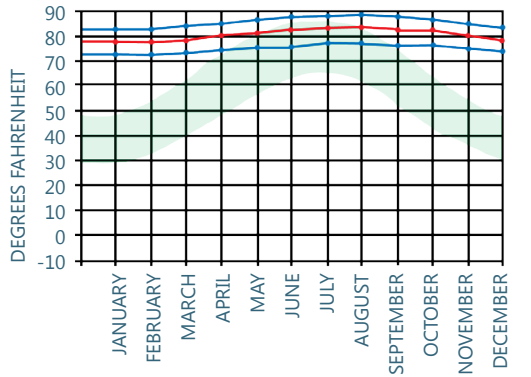
## VEHICULAR AND PEDESTRIAN TRAFFIC

Highway A1 is the southern site boundary. The road is double loaded, and has a frontage road, as well as a sidewalk, through town. This road is constantly busy, both day and night. An interesting side note, Jamaicans drive like Europeans, opposite of American streets.

Paths through the site have been worn into the ground cover over time. Visible in both plans and photographs, there is a two-wheeled track and a few smaller paths that locals use to cut across the open field.

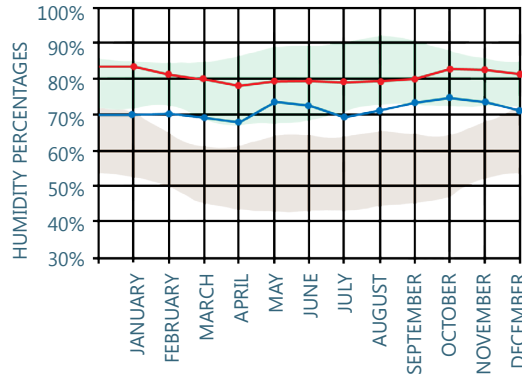


## TEMPERATURE



AVERAGE MEAN TEMPERATURE —●—  
 AVERAGE HIGH & LOW TEMPERATURES —●—  
 AVERAGE US TEMPERATURES ■

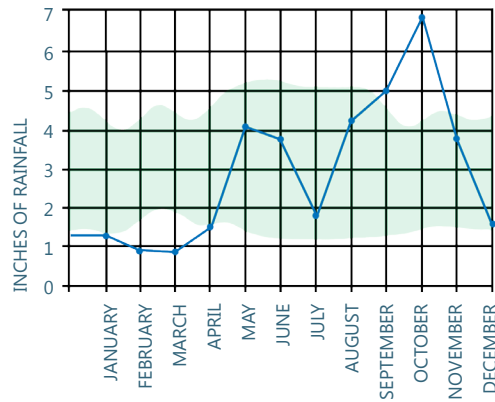
## HUMIDITY



AVERAGE MORNING RELATIVE HUMIDITY —●—  
 AVERAGE AFTERNOON RELATIVE HUMIDITY —●—  
 AVERAGE US MORNING RELATIVE HUMIDITY ■  
 AVERAGE US AFTERNOON RELATIVE HUMIDITY ■

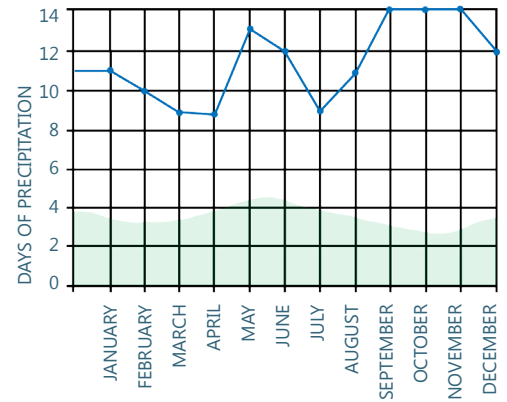
The temperature decreases rather rapidly with elevation, but the extremes, such as occasional freezing temperatures found in high interior valleys, are the result of the invasion of cold continental air from the north, with the topography exerting only a secondary influence (Salmon, 1999).

## PRECIPITATION (AMOUNT)



AVERAGE PRECIPITATION —◆—  
AVERAGE US PRECIPITATION —■—

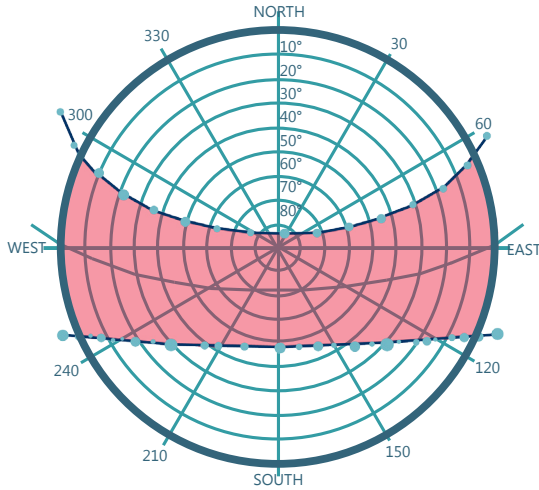
## PRECIPITATION (DAYS)



AVERAGE DAYS WITH PRECIPITATION —◆—  
AVERAGE US DAYS WITH PRECIPITATION —■—

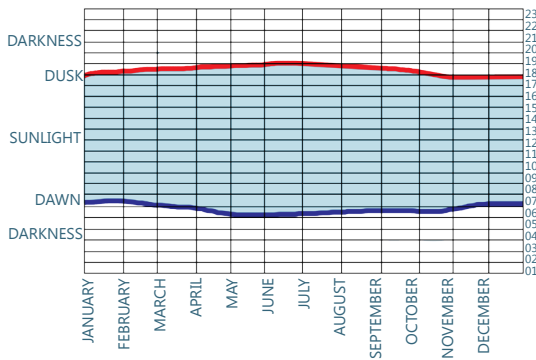
Because of the rugged mountainous terrain of the islands, thunderstorms are frequent, more so over land than over the sea. More rain is recorded inland and over the mountainous area of the island than over low-lying coastal areas (Salmon, 1999).

# SUN AND SHADOW



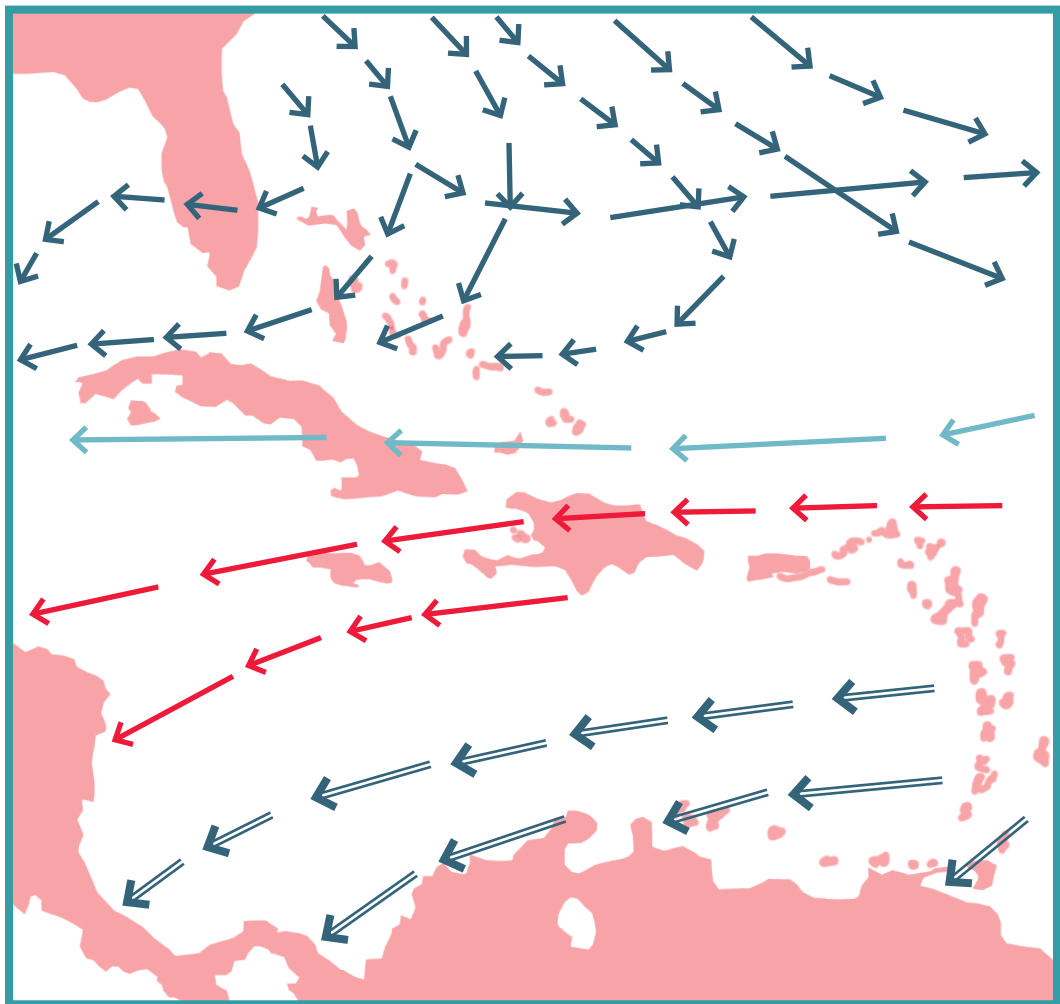
## Sun Path Diagram

Jamaica, like most tropical islands, has many sunny days. Shade is provided by trees and outdoor terraces. Sun angles throughout the calendar year are in constant flux shown below:



January	56°
February	64°
March	72°
April	80°
May	88°
June	96°
July	88°
August	80°
September	72°
October	64°
November	56°
December	48°

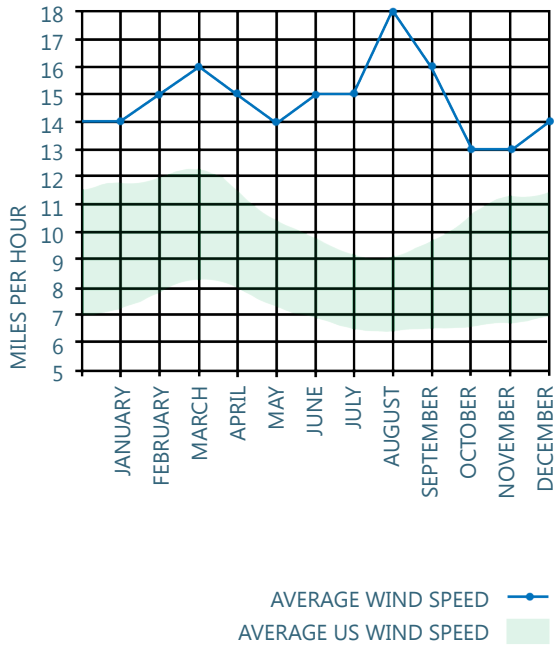
## PREDOMINANT OCEAN WINDS



PREVAILING WINDS MOVE WITH THE ARROWS

(Salmon, 1999, pg. 27)

## WIND SPEED



There are not any southerly components of the wind over the open Caribbean Sea. The average wind speed is generally low, with relatively little deviation from the mean.

The Caribbean islands lie in an area where the prevailing winds (trades) are northeast to east throughout the year, but with frequent southeast winds in the summer and autumn. The wind is strongest in the early afternoon (6 to 8 knots) and weakest just before sunrise (about 2 knots) (Salmon, 1999).



## NATURAL DISASTERS

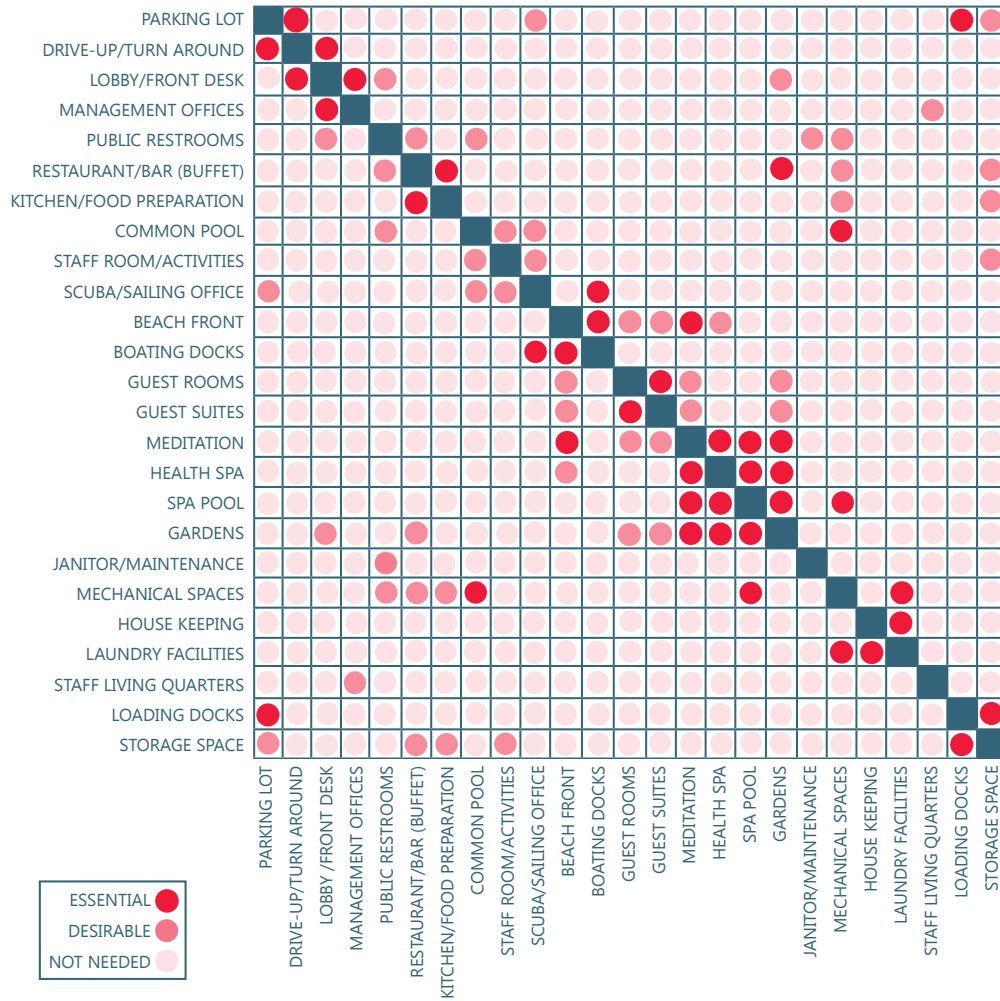
### Hurricanes

West Indian hurricanes pass in the vicinity of Jamaica approximately once every two years. The majority of them cause little more than heavy rain and fresh to strong winds. An occasional hurricane from the Atlantic on the westward course is destructive (Salmon, 1999).

### Earthquakes

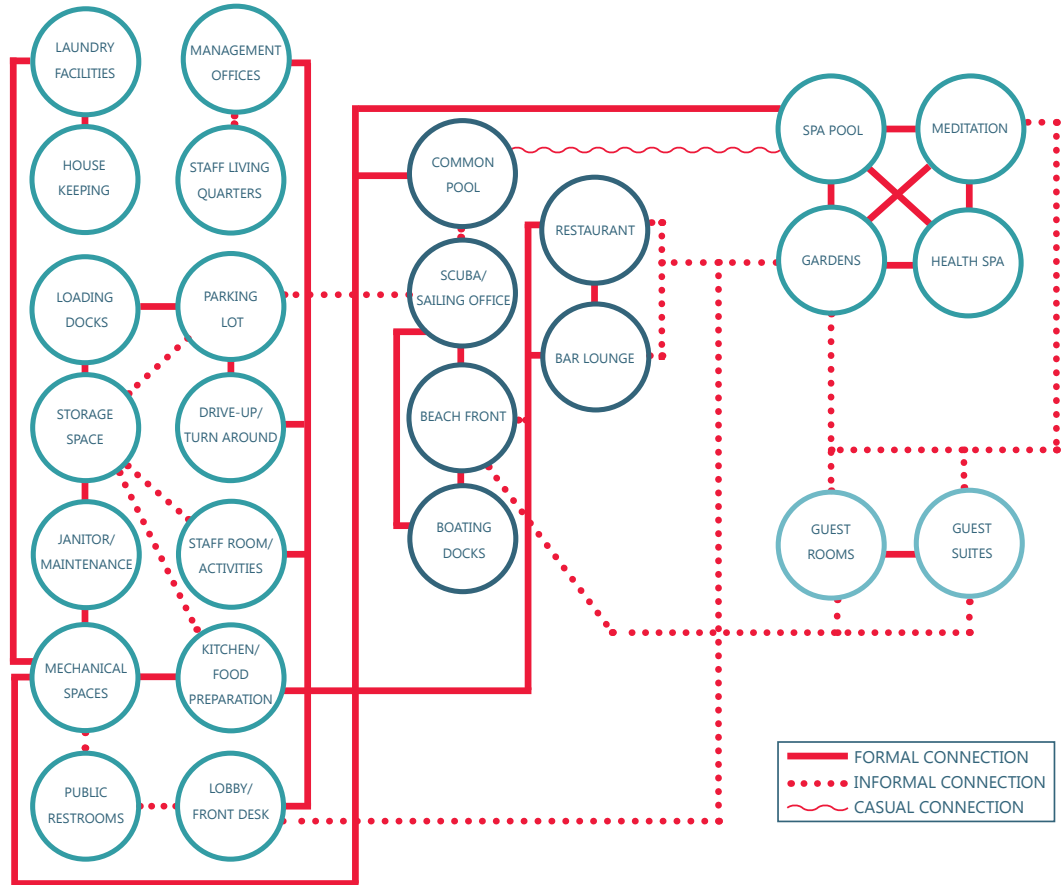
Seismic disturbances have occurred frequently in Jamaica since its settlement, but in general, the shocks have been mild. Between February 19, 1880, and November 25, 1906 (when records were available), 163 shocks were recorded. These disturbances were greatest in the autumn and winter months and least severe in the spring and summer months (Salmon, 1999).

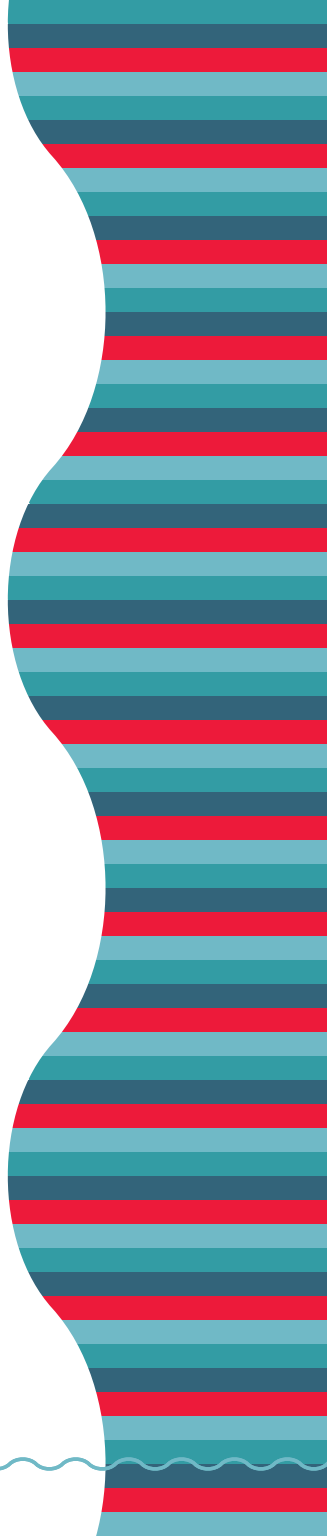
# INTERACTION MATRIX





# INTERACTION NET





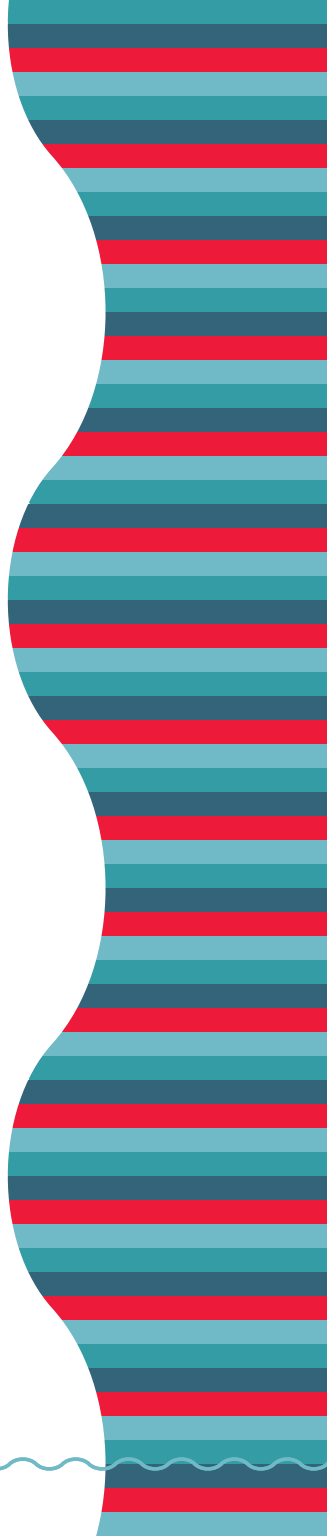
## PROGRAMMATIC REQUIREMENTS

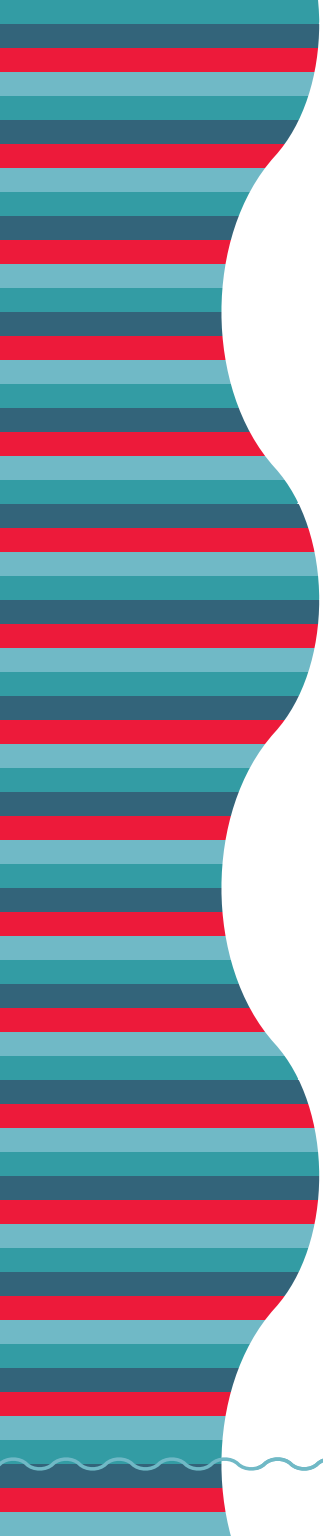
Overall Site	11 Acres or 479,160 sq. ft.
Parking Lot	50 car capacity or 12,000 sq. ft.
Drive-Up/Turn Around	30 ft. radius or 1,000 sq. ft.
Lobby/Front Desk	5,000 sq. ft.
Management Offices	10 @ 115 sq. ft. or 1,150 sq. ft.
Public Restrooms	2 @ 350 sq. ft. or 700 sq. ft.
Restaurant/Bar (Buffet)	6,000 sq. ft.
Kitchen/Food Preparation	4,000 sq. ft.
Common Pool Area	8,000 sq. ft. Outdoor Space
Staff Room/Activities	900 sq. ft.
Scuba/Sailing Office	Shares Activities Office
Beach Front	Not Calculated
Boating Docks	Not Calculated 38750
Guest Rooms	26 @ 415 sq. ft. or 10,790 sq. ft.
Guest Suites	29 @ 850 sq. ft. or 24,650 sq. ft.
Meditation	Not Calculated
Health Spa	1 @ 415 sq. ft.
Spa Pools	3 @ 200 sq. ft. or 600 sq. ft.
Gardens	Not Calculated
Staff Living Quarters	14 @ 500 sq. ft. or 7,000 sq. ft.

**Initial Total** 82,205 sq. ft.

In addition, Loading Docks, Janitor/Maintenance, Mechanical Spaces, Housekeeping, Laundry Facilities, Storage Spaces, and Circulation Spaces results in a total square footage of..

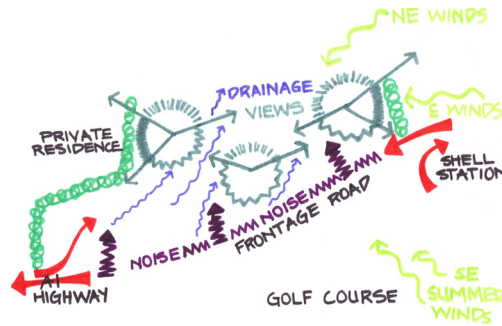
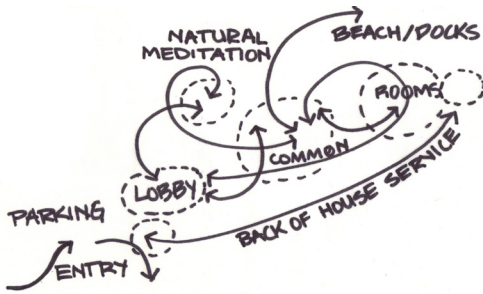
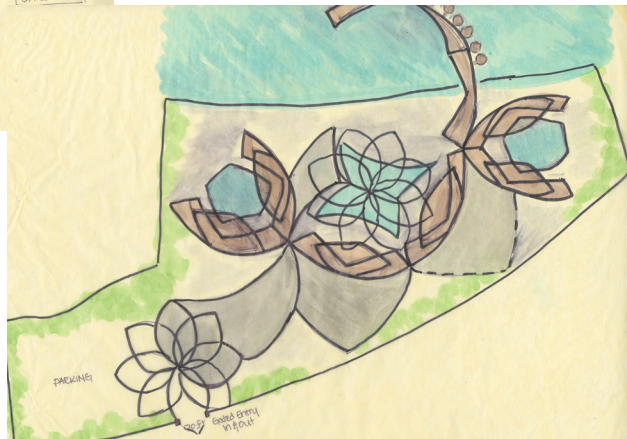
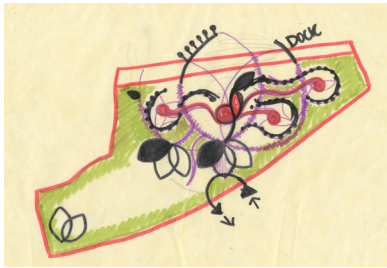
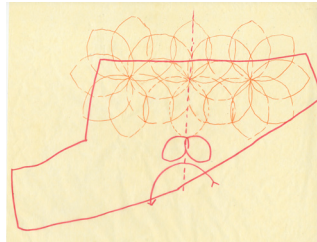
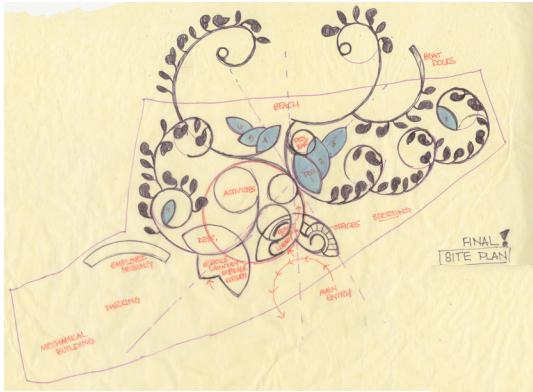
**Total** 100,000 sq. ft.

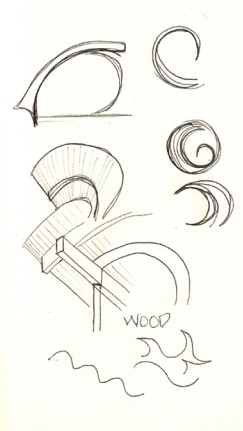
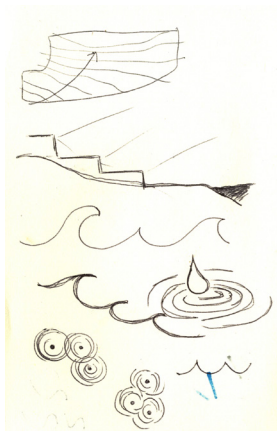
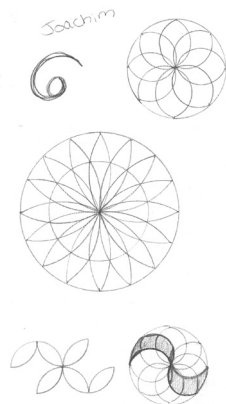




**FINAL DESIGN**

# PROCESS SKETCHES

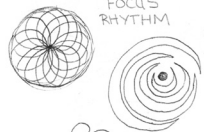




FIBONACCI "WAVES"

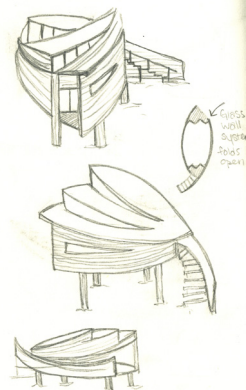


LAYERS  
WAVES  
FOCUS  
RHYTHM



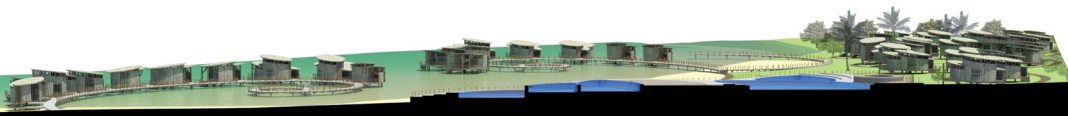
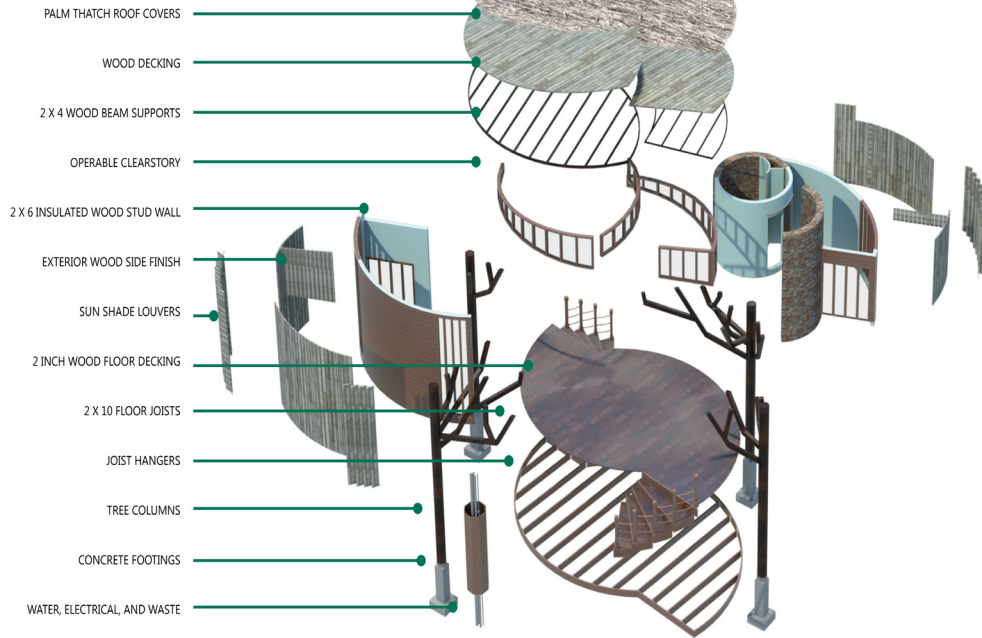
central focus  
nature

focal point / everything  
revolves & returns to nature



# EXPLODED STRUCTURAL DIAGRAM

## TYPICAL VILLA CONSTRUCTION



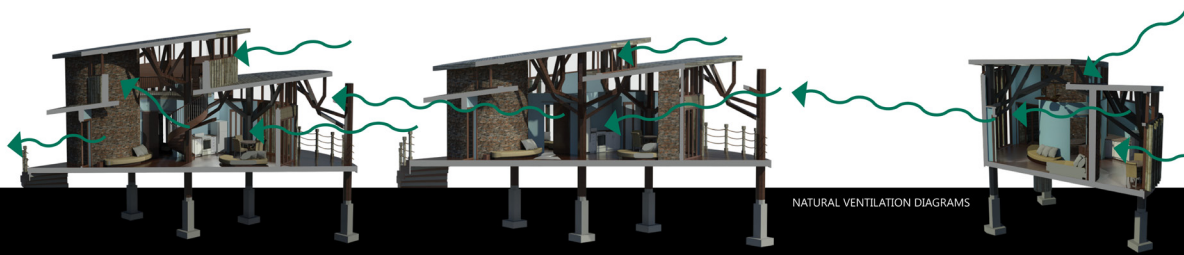
SITE SECTIONAL PERSPECTIVE



# MASTER PLAN



RESORT MASTER PLAN		M
01	BEACH	
02	BEACH SIDE	
03	ORGANIC STORE, LOCAL MARKET	
04	AQUA GARDEN BUILDING	
05	PUBLIC RESTROOM	
06	WELLNESS SPA	
07	ACTIVITY CIRCLE	
08	RESTAURANT	
09	DATE PALM	
10	LANDSCAPE TREES	
11	LANDSCAPE AND MAINTENANCE	
12	DATE PALM AND OTHER PLANT	
13	POOL	
14	TRADING COUNTER AND SERVICE	
15	TRADING COUNTER	
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100	TRADING COUNTER	



NATURAL VENTILATION DIAGRAMS





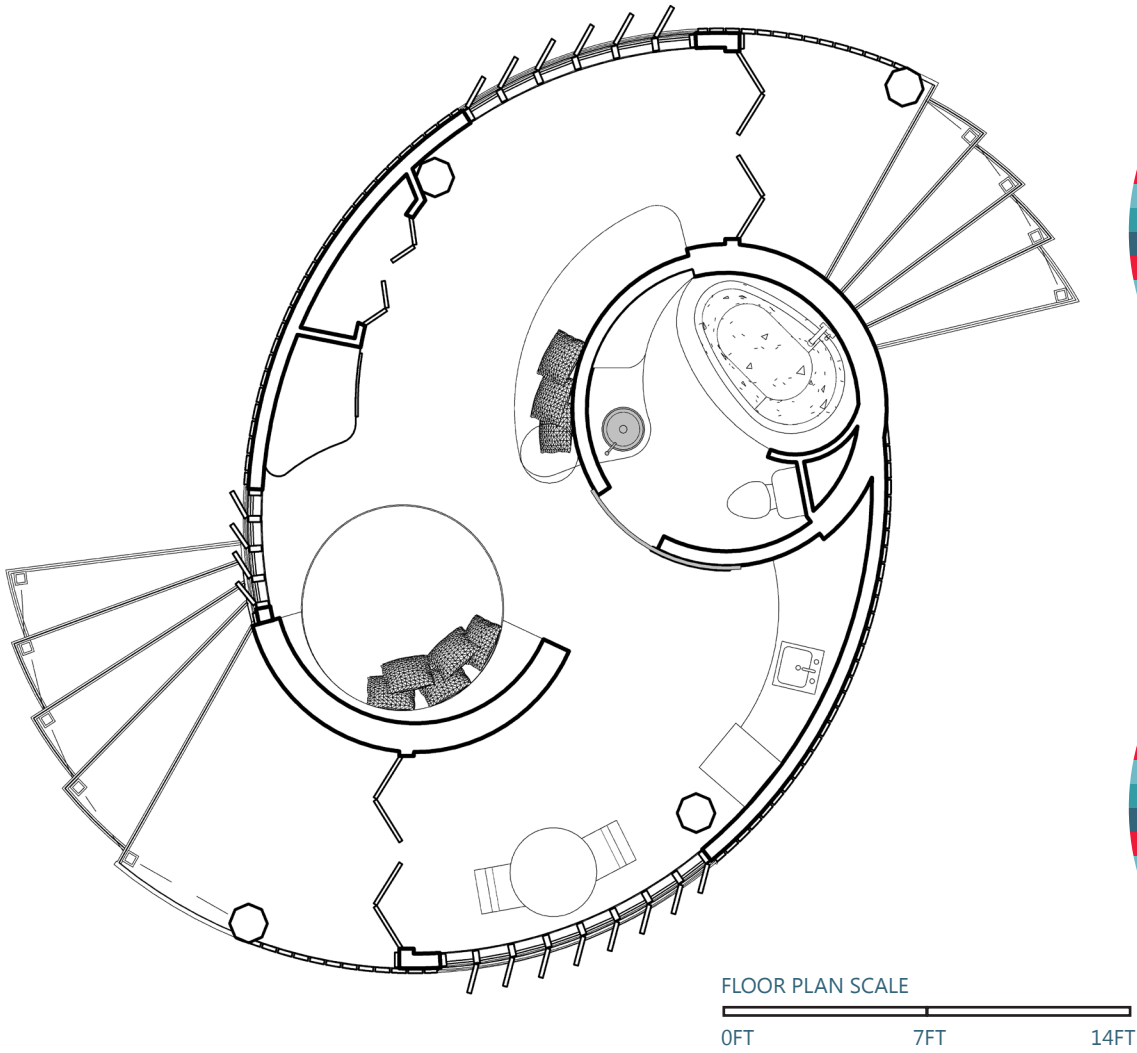




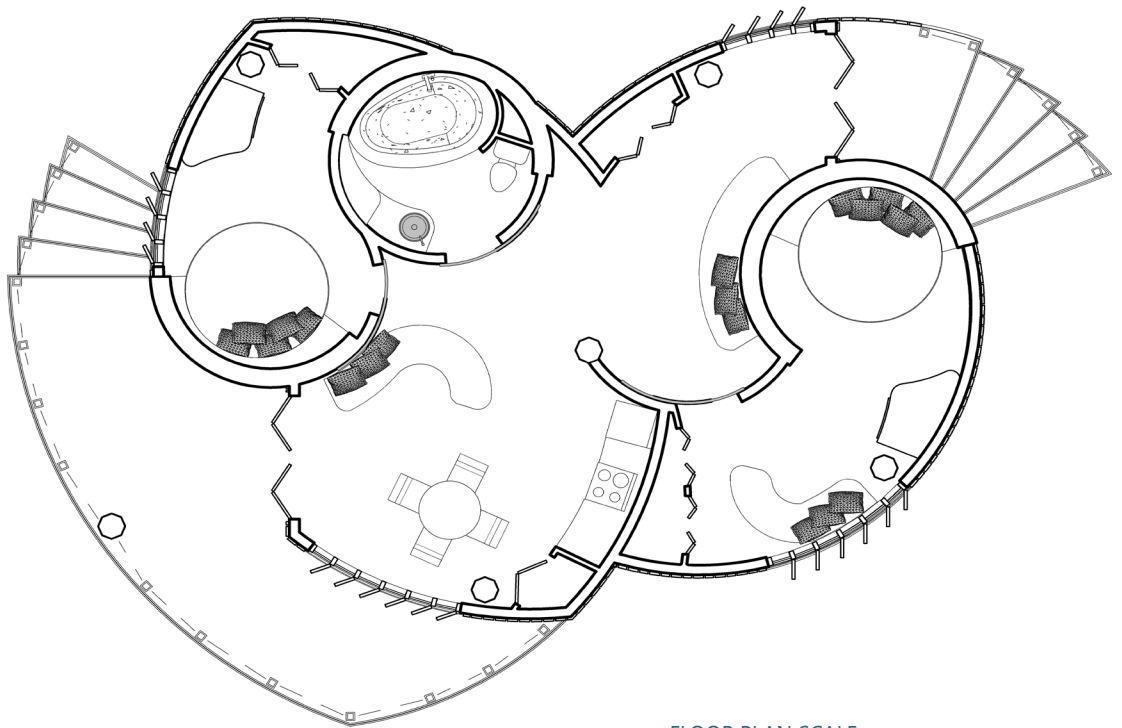




# ONE BED - ONE BATH VILLA



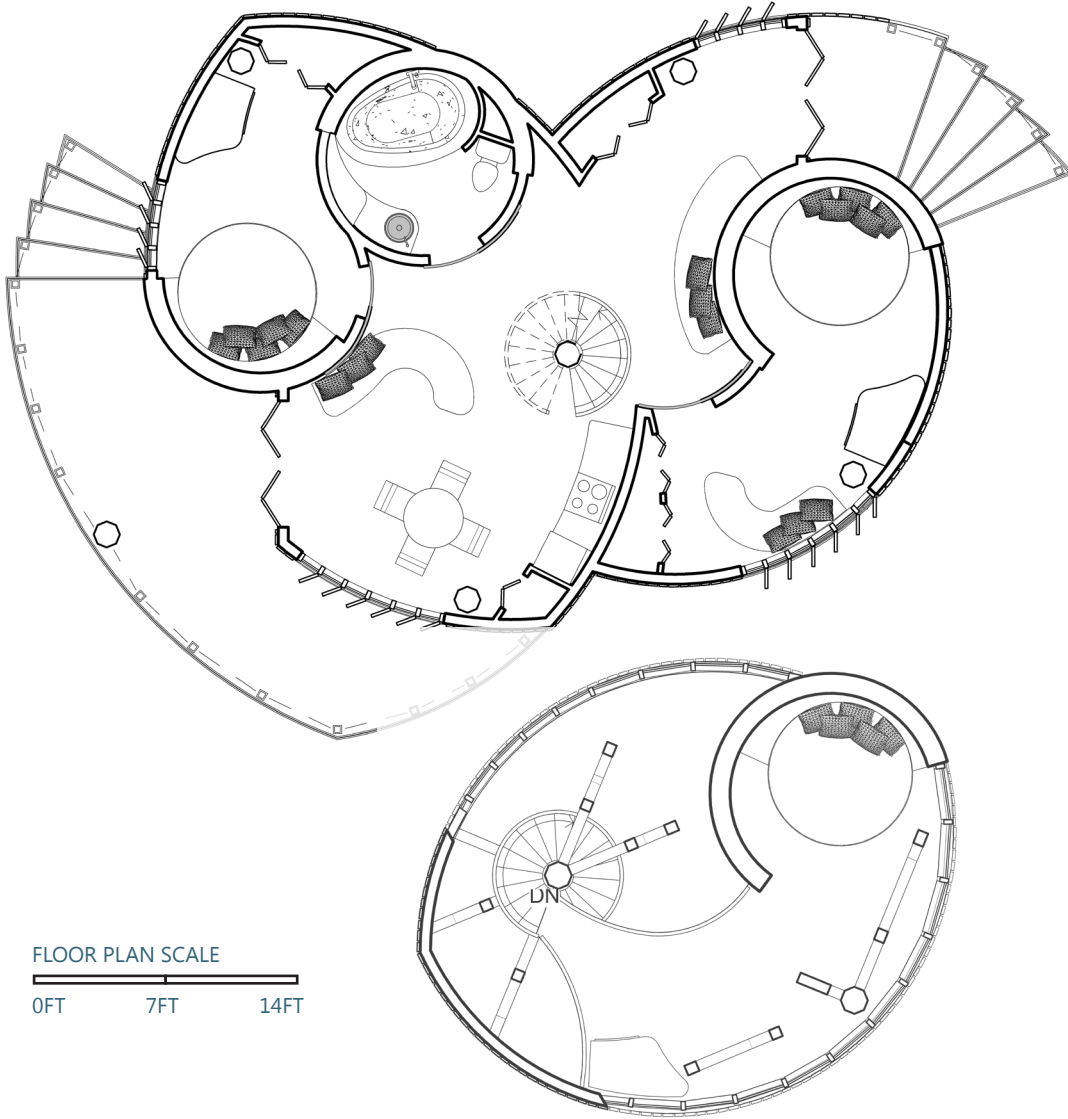
## TWO BED - ONE BATH VILLA



FLOOR PLAN SCALE



## TWO BED - ONE BATH + LOFT SUITE

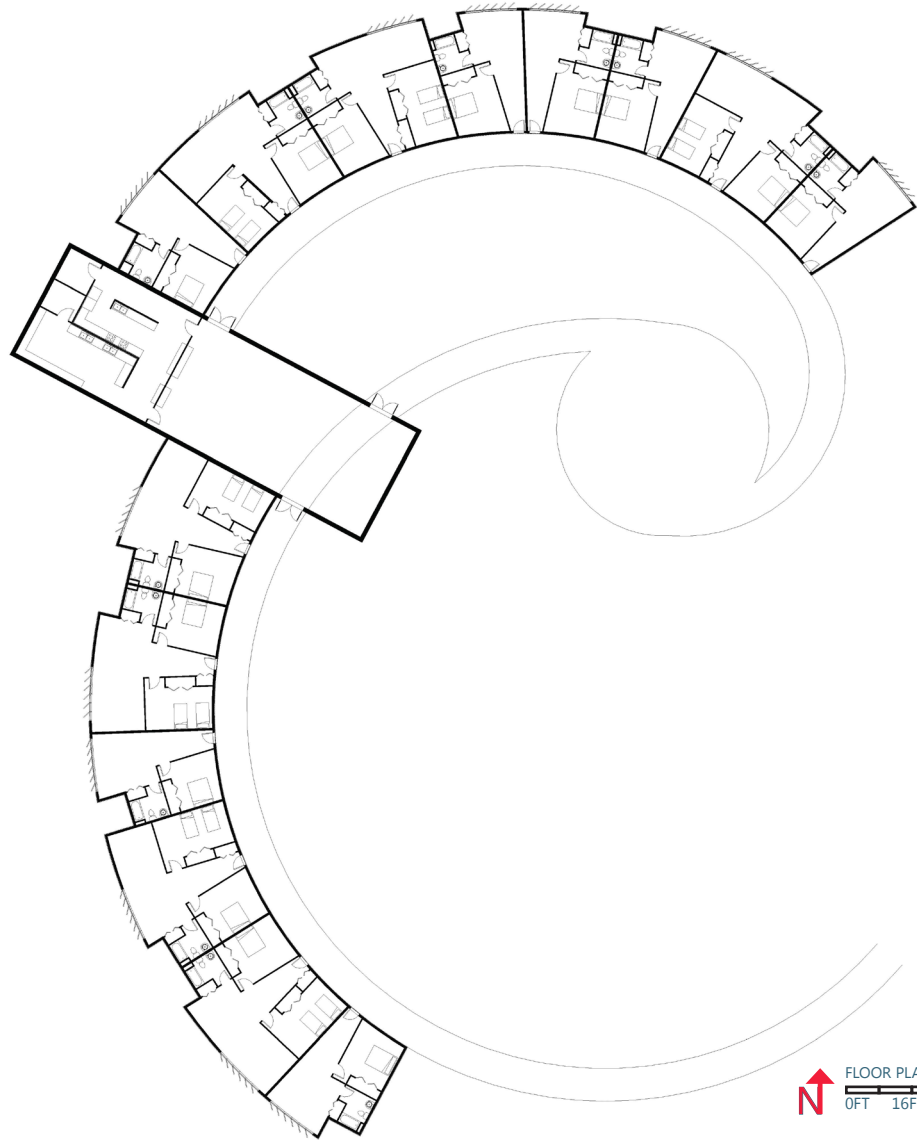


FLOOR PLAN SCALE

0FT 7FT 14FT

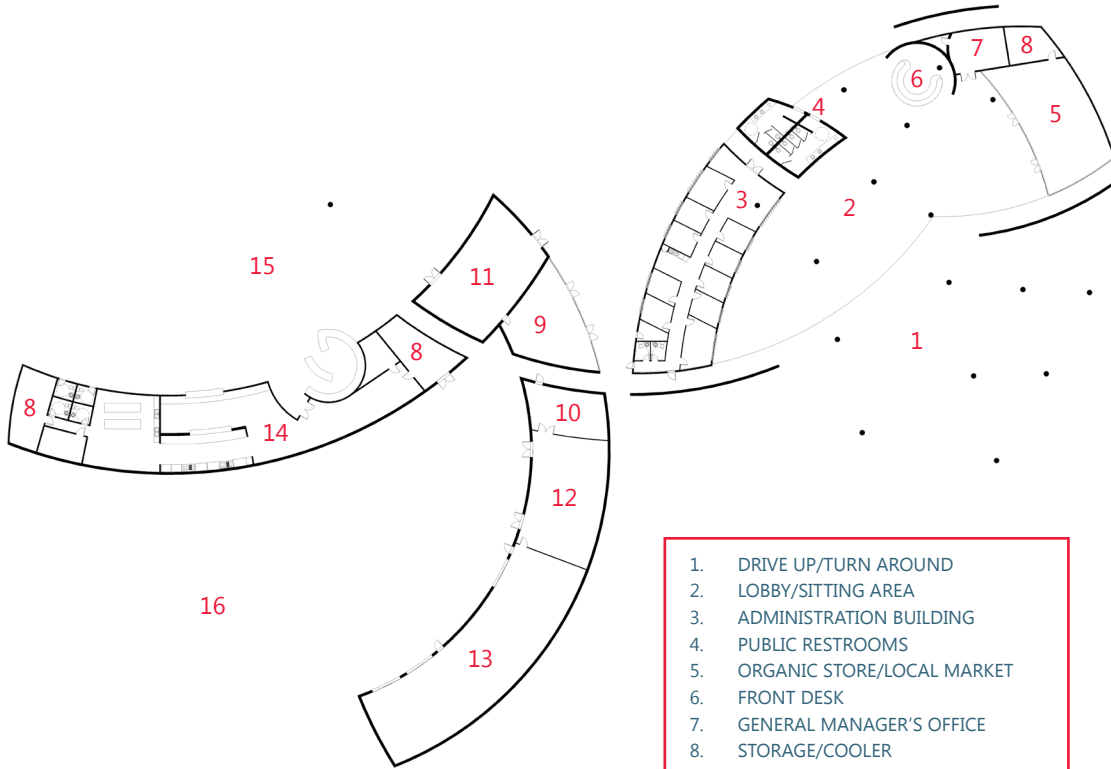


## EMPLOYEE HOUSING



 FLOOR PLAN SCALE  
0FT 16FT 32FT

## LOBBY + BACK-OF-HOUSE SERVICES



1. DRIVE UP/TURN AROUND
2. LOBBY/SITTING AREA
3. ADMINISTRATION BUILDING
4. PUBLIC RESTROOMS
5. ORGANIC STORE/LOCAL MARKET
6. FRONT DESK
7. GENERAL MANAGER'S OFFICE
8. STORAGE/COOLER
9. ACTIVITIES OFFICE
10. STAFF ROOM
11. MULTI-PURPOSE ROOM
12. LAUNDRY/HOUSE KEEPING
13. LANDSCAPE FACILITY
14. KITCHEN/ FOOD PREPARATION
15. RESTAURANT SEATING
16. PARKING LOCATION

FLOOR PLAN SCALE  
0FT 30FT 60FT



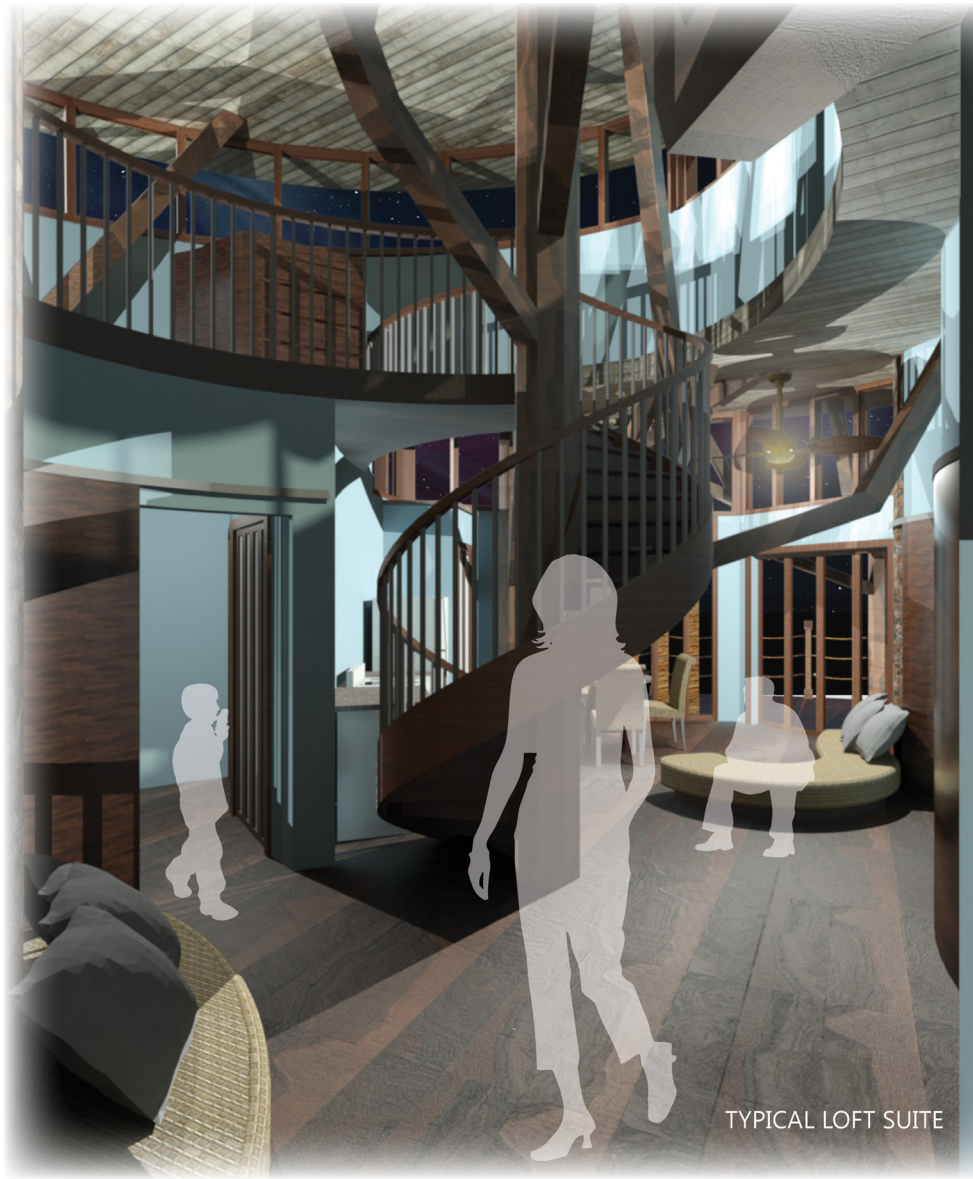
TYPICAL CARIBBEAN VIEWS





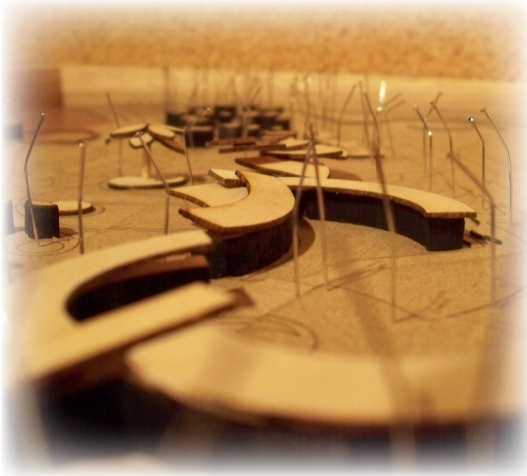
TYPICAL SINGLE UNIT





TYPICAL LOFT SUITE

## FINAL MODELS AND PRESENTATION







## TEXT REFERENCES

- Abraben, E. (1965). *Resort Hotels: Planning and Management*. New York: Reinhold Publishing Corporation.
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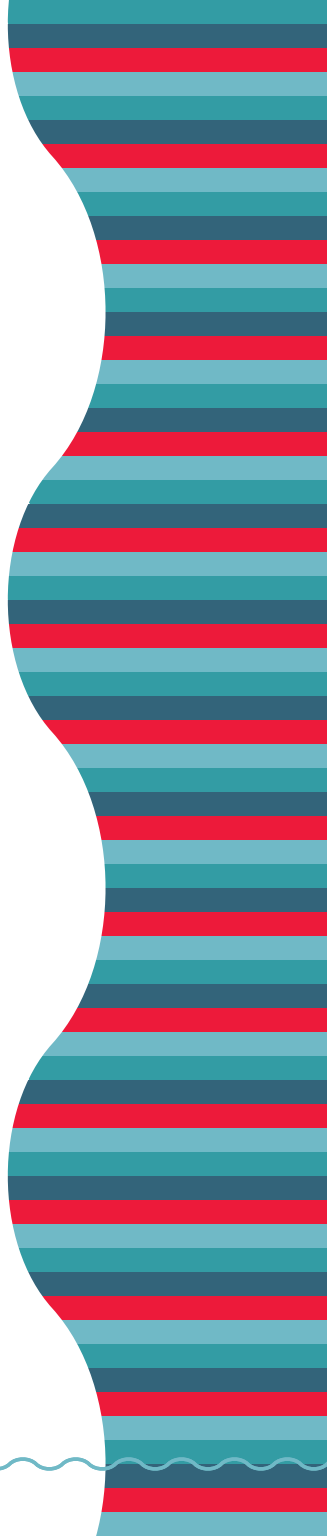
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