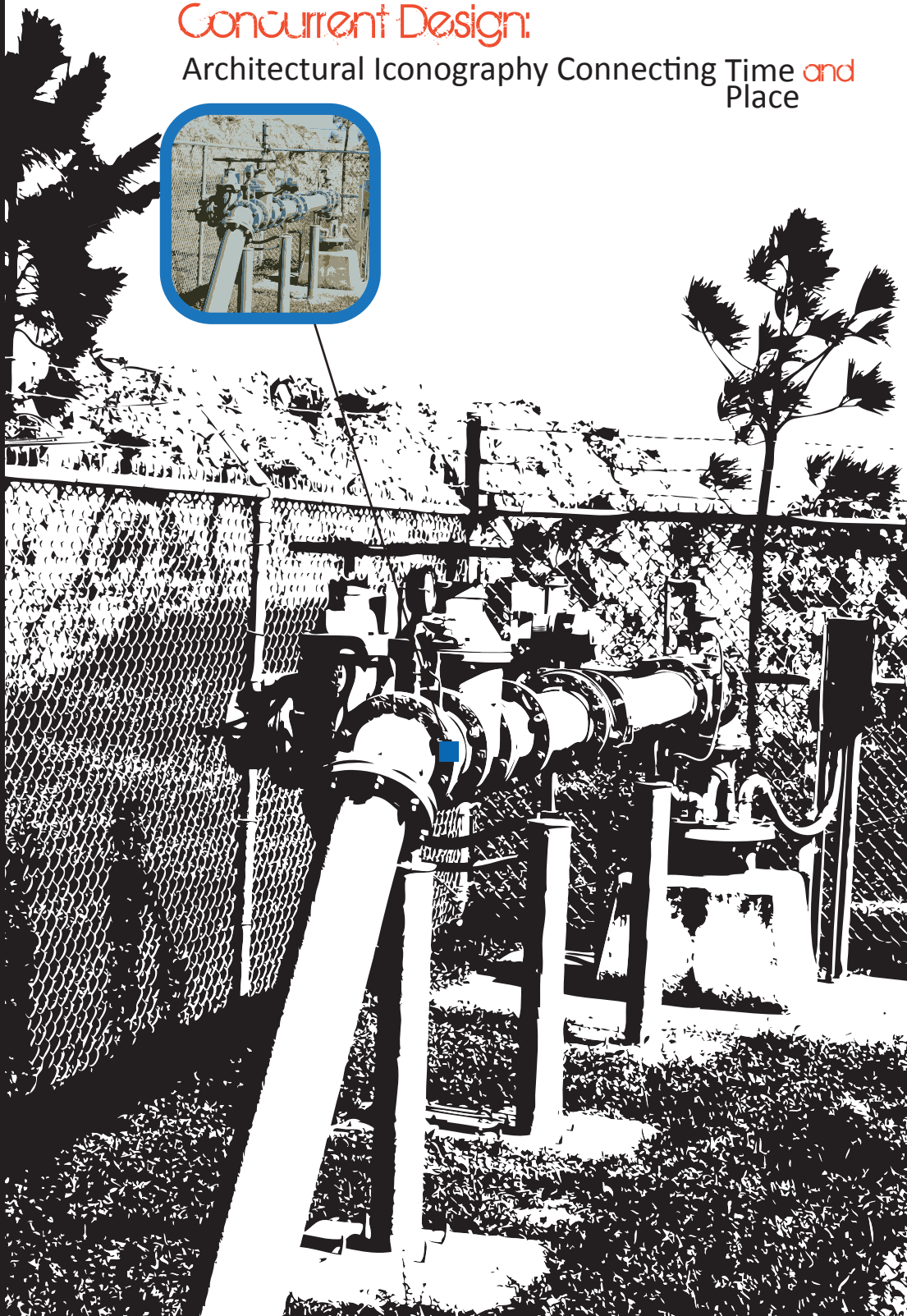


Concurrent Design:

Architectural Iconography Connecting Time and Place



Dedicated To:

The University of Detroit Mercy
2012 Masters of Architecture Class

My family, thank you for all your continued
love and support over this journey.

Concurrent Design:

Architectural Iconography Connecting Time and Place



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It is no surprise that over the last century the earth we have lived on is ever changing. The natural resource supply is being depleted at a rate that cannot be reversed. Many governmental policies are encouraging the consumption rate to be slowed, but it falls on deaf ears. It is common practice to be affixed to the newest and best devices. However, when one loses sight of what was there before them, the affixation becomes like a disease, stripping the inherently beautiful parts of something and makes it uniform. This is the disease; contemporary architecture where numerous things are becoming more and more universal across the nation and even the world. The style of architecture is becoming less about the geographic location and more and more about the time it is sited in. Vernacular architecture of the world is becoming distinct like the dinosaurs that once roamed this world. A regions identity is becoming lost as the region becomes universal, rather than unique, to the world. When an architect takes queues from the time and year, but neglects the place, a vast struggle to continue to search for an identity develops. Architecture is something that needs to be self-reflexive, looking inside itself, being able to distill the processes that are employed in a building. This is the process this thesis examines. Its aim is to understand the way in which people inhabit and construct space in a region and how those processes can form new structure. The goal is to produce architecture in a quality that marries both the technology of the time and the technology of the past. The focus on sustainability is outlined by LEED asking for the use of things in order to improve efficiency, but why follow a model that was created in the last two decades when in fact the historical, vernacular, and preservation architecture are tested and tried, modified for perfection, and have proved their superiority? The question I ask is what is truly more efficient than an adobe house? What if the design of the 21st century was based on restoring the identity of a region by using their historic style and the modern technological advancements? It is the intersection of these two where this thesis begins; the creation of something by understanding where it came from.





- 1 Thesis
- 2 Icons
- 3 Vernaculars
- 4 Program
- 5 Sites
- 6 Design Concept
- 7 Appendix

1

Thesis

Over the last one hundred years, our world has become one of homogenous culture. With increases in the ease of communication, society has become extremely globalized. The interdependence between citizens in all different nations has created a dependent relationship; the well being in a society is completely contingent of the economic, societal, and governmental prosperity of another nation. The common practices of mass production, industrialization, and the immediate gratification of material needs, have facilitated this phenomenon. Paul Virilio's essay, "The Overexposed City," has exposed ideas that "the city separated its 'intramural' population from those outside the walls. Today, people are divided according to aspects of time" (Virilio 384). He speaks of the relationship between the city and the suburb. However, it is something that can be applicable in regards to city-to-city, state-to-state, or country-to-country. The idea of an overly technological society is analogous to the idea of modern architecture. The integration of technology into the architectural design community affects the way contemporary architecture is designed. The idea of archive and memory

in the digital world gives designers the ability to create similar modern buildings by simply looking back at previous works. The uniformity of the modern architectural style is beginning to break the walls of regional, native, and country-wide vernacular styles. Hand in hand with the sweeping trends of industrialization and the mass production of goods and materials, the modern architectural style has become more homogenous across the world as well. Kenneth Frampton suggests, “post-modern architects only feed the social media with gratuitous, quietistic images rather than proffering” (Frampton 80). As architects in the time of post modernism, there is a struggle to grasp the ideas of a regional architectural identity. “Symbiotic instruments of megalopolitan development: free-standing high-rises and the serpentine freeway” (Frampton 78), further express the current loss of culture and focus on society as a whole. It is this fact that even further manifests into a loss of national identity. Chris Abel gathers that “a genuine mass-production aesthetic results from “universal” architectural vernacular” (Abel 4). Modern architecture is becoming more influenced by the place in time that it was created and less influenced by the place itself. The idea that is suggested by Kenneth Frampton about critical regionalism is, “a critical *arrière-garde* has to remove itself from both the optimization of advance technology and the ever-present tendency to regress into nostalgic historicism” (Frampton 81). This concept challenges the search for values in a regional world. But it is the space between both time and place that needs to be explored. How does the conceptualization of the combination of both Virilio and Frampton’s ideas appear? What would the manifestation of a structure that is strictly rooted in the ideas of site, but is completely corresponded to its place in time, look like?

The primary differences between various vernacular styles deal with how they are inhabited and how they are constructed. People of each nation and region identify with a particular layering of family structure, political structure, and social structures. These forces begin to drive the culture into the way a space is constructed. The culture builds a structure to deal with both climate and locational implications. For instance, the location dictates choice of materials. The native materials that the location affords are locally

grown, made, or established, which offers the region's material identity. The climate then orchestrates the way that materials are put together during the construction process. In the construction of the materials, elements like ventilation, form, structure, construction, connections, and space planning reflect the needs of the particular climate. Climate influences the culture that inhabits a space to construct the space in a way that will provide comfort. Furthermore, climate and location together force the orientation to the sun, the relationship to the ground, and the amount of protection needed. But these two, climate and location, are both orchestrated by a culture; culture conducts the entire process of each of these forces.

Architectural identity reaches much deeper than just to a region's style, but to the identity of that region as well. Abel suggests in his work, "[to] compare architecture with a language. Therefore, we implicitly compare a specific theory of architecture with a specific theory of language" (Abel 144). Like a language, architecture is speaking. In any particular region, the message deals with the ideas of a culture that is relative to the site. The culture, as stated before, identifies with the inherent sense of place to a native and an outward expression to a visitor. Replacing that with something that is completely universal does injustice to the inhabitants. Furthermore, Abel observes that, "the Universalist view is founded on the premise that the underlying structure of language is universal and common to all men" (Abel 145), a false statement. It is a perception that all humanity is structured the same. The way that people function is very different around the world. The assumption that people function exactly the same would become an asinine remark. So, in fact, if it is understood that humanity are all created in a similar fashion but are inherently completely different, why does modernist architecture become so closely similar throughout the entire world? If it is okay for a society to reject a formal identity, then that would be adequate to conform to a universalist view, but it is not, the way modern architecture is created may need to be rethought.

Regional identity is defined by many different variables. A region itself has a naturalistic identity: biological, ecological, and geographical conditions. These conditions are influential of people's ideas of a place. In addition, there is a part of this concept that allows people to associate with a location's conditions. Architecture is partially derived from location and climate. Together, the feeling of place is established. In the assimilation, people begin to associate with their land type. The association with something that is outside the human body is naturally complex. In looking at Native American dwellings throughout time, it is evident that they constructed their structures with solely native materials without much modification. So it is a true assumption that humans do associate themselves with a natural typology. Stephen Kellert expresses the idea that humans are an integral part of the environment they live in, stating, "The basic contentions is that the functioning and maturation of the human body, mind, and spirit depend on the quality of people's ongoing experience of nature. Because we evolved in a biological rather than an artificial or machine-dominated world, we have relied on – and will continue to rely on – repeated experiences of nature to achieve our physical and mental health productivity" (Kellert 12), but this is not to be confused with the idea that humans are rulers in the biological world. With that being said, it is the subliminal, unconscious, and unintentional messages that are released through regional and biological identity.

Architectural Concept

In order to place architecture between the ideas of Frampton and Virilio, it is essential to understand what their works mean to this thesis. Frampton speaks to the ideas of understanding architecture regionally and critically. He states, "a critical *arrière-garde* has to remove itself from both the optimization of advance technology and the ever-present tendency to regress into nostalgic historicism" (Frampton 81). This poses the challenge to separate from technology, classicism, and historicism. Virilio's position is to accept the technological world, a world that can become completely virtual. This is positioned in the ideas of the program becoming one that can transfer data both physical and digitally in a network of sites located at varying distances across an entire region.

The architectural style of this project will be completely dependent on cues from the surroundings. The styles will be derived from the distillation of vernacular styles, site, and program. This process will help to define what is important in the process of design. The building will have a sort of tool kit. In this tool kit there will be information about construction methods, room layout, program necessities, and site strategies. All these pieces are necessary for the completion of a project but, it is in the assembly of these pieces that the architect plays a role as the master orchestrator of this process. Yes, the icons that are created will play a large role, but it is the bridge between icons and building where the architect is to intervene.

Site Selection

The selection of a site began with understanding the North American Continent as a whole. It was important to select sites that had similar biomes, relationship to the coastline, proximity to the desert, and climate zones. This enables a clear understanding by narrowing the variety of variables that the site may encompass, by sweeping generalizations of the country. Furthermore, the sites were narrowed to three overall places, the region of New Mexico, the northern Midwest, and the southern tip of Florida. Each of the three sites offered a different set of variables, styles, and conditions to be understood.

New Mexico Site:

This site has a strong identity to the region. The identification of a New Mexico Pueblo is very easy. However, in the current times, many of the ancient ideas and concepts have begun to deteriorate. The populations in those areas have begun to decline. The concept for this site would allow the structures to take the current architectural style and infuse modern sustainability in the style. It would allow the people to continue to maintain their strong identity, but have structures that can withstand the ever changing and morphing climates in the world.

Northern Midwest Site:

This site is native to the northern sod homes that have been scattered across much of the Midwest throughout time. Sod homes have become completely abandoned due to modern construction methods. Because of this, the people that once inhabited have completely divorced their identity from the preceding time. It is essential for a community to look back on its previous architectural style. In this case in particular, they have just accepted industrialization, modernization, and have become mainstream without much reflection on the ideas it was founded on.

Southern Florida:

This site has a series of different architectural styles that have inhabited the area over time. The settlers in this area have included the Spanish, Native American, and English American. With each new settler, a new architectural style has been introduced in the area, ranging from primitive Native American structures, to Spanish Revival, Mediterranean Revival, and even to the Modern Style. The site also possesses many different types of biological, ecological, and geographical differences that need to be adapted with many architectural and architectonic moves. In addition, the climate and weather patterns in the area are changing yearly. The increased strengths of hurricanes, which cause the contamination of both fresh and salt water together, pose a huge problem environmental. The ideas of identity, both regionally and architecturally, will be explored architecturally.

Southern Florida Site Selection

As previously stated, the site has various concerns that can be addressed. The site is selected for the reason that the region has a large amount of architectonics that can be explored in a fashion that directly has made impact on the environment. The site has seen an influx of development over the last century and has seen a depletion in the environment. The

everglades have experienced much reduction over the last 150 years. From a real estate point of view, it is understood why the site was chosen. However, it is the human development that has directly led to this deterioration. As architects, what is the solution to creating a building that is basically off the grid? The site gives a large pallet of program choices as well as a vast variety of architecture interventions. Many of these ideas can begin to manifest into the ideas of Frampton, Virilio, and Abel. Vast architectural styles resonate in Florida. The aim of this thesis is to restore the site with many regional, technological, and identity issues using the tool pallet of Frampton, Virilio, and Abel .

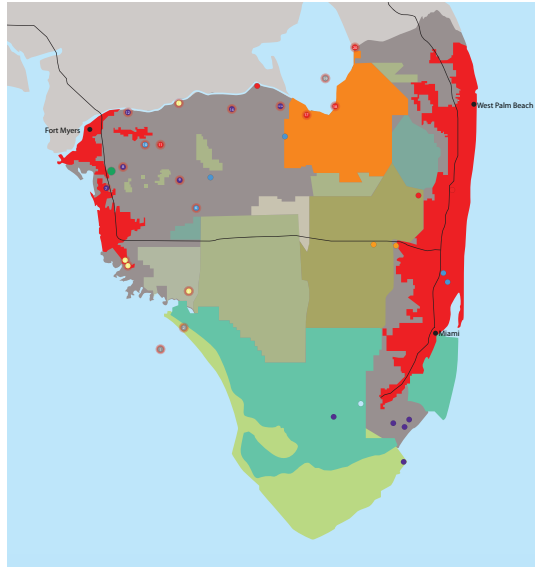


Figure 1.1: Southern Florida site selection. This shows the broad spectrum of the total site selection. Showing the prototypes and base station, see map on page (84-85) for larger detail.

The individual sites were selected first based on their location to an aquifer well head. At the head of these wells, the human disturbance could be minimized because the existing infrastructure on the site could be utilized for a secondary purpose. Furthermore, each site was then analyzed according to a series of conditions dealing with its biological, ecological, and geographical conditions. In order to receive a larger understanding of the region, many of the sites will be located in adversely different conditions. The data for the location of the sites was received from the USGS, as well as an understanding of the amount of aquifer wells and the type of water they store. Upon selection, individual sites, are then combed over to be understood on a microscale

to determine what the sites hold. In addition to the well infrastructure, things like a simple land use chart from an aerial photo, the type of human development, the relationship to water, the percentage of water located near the site, how pervious the site is, the population it supports, and once again, the biological, ecological, and geographical conditions. With a large variety to provide, there is vast amount of research on the problem.

Program

In regards to the region, the site encompasses many different typologies as previously stated. Each of these various locations and typologies are located on many different wellheads. These wellheads service the Floridian Aquifer. An aquifer, as defined by the USGS, is “a formation, group of formations, or part of a formation that contains sufficient saturated, permeable material to yield significant quantities of water to wells and springs” (USGS). In Florida relative to the selected site, there are three types of aquifers that encompass the area: highly mineralized aquifer, sand and gravel aquifer, and Biscayne aquifer. The aquifer’s job is to provide a delicate balance between the salt and fresh water. This provides all the biological diversity in the region. Furthermore, over the past few decades, the need for large developments has heavily impacted the region. In order to meet the needs of current and future surrounding developments, the answer is to drain the surface and ground water. It is this expansion and the effects of that which creates the imbalance in the region. The containment of freshwater in the state allows for a vast variety of biological, ecological, and geographical conditions to be at risk. Without a supply of freshwater, the environmental qualities that this site possesses will eventually be depleted and become extinct to that region. Speaking to the ideas of site identity, the loss of these biological, ecological, and geographical conditions.

Rooted within the Florida Golf Coast University, the program is a series of research facilities located across the southern part of the state. These prototypes will research the local stemming problems in that sub-region of the state, each located on or near the head of an aquifer well. These wells are used to store water in order to either save for later in the year at

a time where there is less rain fall or in order to allow the earth to naturally clean the water. Each site generally holds one of the following types of water: treated drinking water, partially treated drinking water, reclaimed water, raw ground water, or raw storm water in each well. While each of these wells is located in different site typologies, there is usually a different kind of water that is injected in the well based on the surrounding area. In any man made intervention into nature, there is always a disturbance and the possibility for deterioration- this in no different. In addition, as portrayed before, the conditioning and wear of population densification of places stress too. So the program will have placed the sites in different typologies in order to research the human impact on the environment. Furthermore, these facilities will take constant samples of core drilling, soil, water, air quality, and animal waste. Each of these sties will collect data and analyze the data on a site scale. They will have the ability to create a hypothesis and understanding of the impact on the environment at the small scale. The information is then compiled and placed into a storage facility that is shipped to the main station at the University.

The storage crate that is transferred is equipped like the current vernacular style that it is located in. In many cases, the research facilities are located in a remote location that may be impassable by car or truck, alternative methods of transporting must be employed. For instance, the site *Gulf / Collier County / 1* is completely surrounded by water and the most feasible type of transportation may be by water transport. The storage crate may be shipped to a dock where it is then collected by the university and transported by ground back to the large facility to be plugged in and analyzed.

The larger station, based at the Florida Gulf Coast University, will then collectively research the data from all the sites in the area and begin to make conclusions about the region as a whole. The entire program deals with the idea of plugging in. The prototype building is plugged into a specific site. The researchers then plug into that site and collect the data. Once the data is analyzed it is then plugged into the larger station. The network of stations is essential for the success of the program. It takes the research on a micro scale of an individual plot, and a turns it to research on a macro scale of the region as a whole.

The university building will become a facility that will head aquifer research in the area. The students will have the opportunity to understand current issues in the biological, ecological, and geographical concerns in an area in hopes of finding a resolution to the problem. The facility would offer a series of scientific laboratories in order to participate in research outside of the area of aquifer study. A series of lecture halls will allow the students the ability to engage with the professional community to learn about current issues in the world of biological, ecological, and geographical studies. As any current school building, it will contain a series of classrooms and offices. Its main focus will be devoted to the research and celebration of the Floridian aquifer. Under no circumstance is this program architecturally solving the deteriorating and damaged aquifer. It will just allow the ability to research the problem by putting the power to the trained biologists, ecologists, and geologists to solve the biological, ecological, and geographical identity loss that is happening every day.

Architectural Process

The process in which these sites are developed is based on the idea of understanding regionalism, rooted in understanding the architectural movements in style, materialism, form, and asceticism across time and region. A series of buildings were chosen in different places in history and region, from the 1500's Native American Settlements to the 1970's Sarasota School of Architecture creations. Ideas of architecture were traced from their origins in a region over time. For instance, the idea of a thatching. It began as a combined roofing and lateral material in the northern Floridian Tequestina settlements in the year 1506. This material began to transform to a roofing material within the central Floridian Seminole settlements in the 1800's and was then adopted by the Remington shack in the early 1900's as strictly roofing material. This all became a more stringent idea for the making of actual cedar shakes, which lead to certain steel roofing materials, and lastly to the Spanish inspired terra cotta tile roofing. While this becomes very simplistic, it is entail mapping the architectural ideas the have developed region's current architectural style.

Now all of these settlements are analyzed and boiled down to an icon, these icons are indicative of different architectural materialism [*red: roofing, blue: cladding, purple: detailing*], tectonics [*green*], orientation to grade [*brown*], natural ventilation or thermal mass [*red*], primary v. public space [*grey*], and mobility of the structure [*orange*]. As this thesis becomes more developed, it will begin to unpack these icons. This unpacking will then allow a further understanding to the idea of construction and inhabitation native to that region.

This will then become a method in which architecture will be created. In the clear and definitive task of each icon and how is to be employed in a building. The idea will have the opportunity to become divorced from the actual historic nostalgia of the structures and become about why it is used. The creation of this process will allow the current sustainable materials and technologies to be integrated to this building. It will use Virilio's ideas of an advanced society and Frampton ideas of regionalism in each of these prototypes. As a result, every prototype site constructed will be different. The prototypes will become a different style, materialism, form, and asceticism across the region. These changes will allow a building to become true to the style of architecture native to the region.

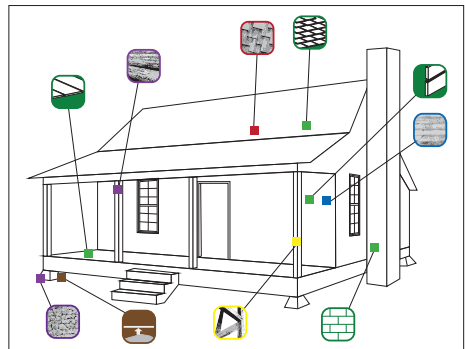


Figure: 2.2: Both phases of exploration and analysis on the Wifaine house. This type of analysis is a primary way in which the homes and dwellings in this project were distilled.

The architectural style is meant to create structures that are not icons of history, but icons of identity and sustainability. They are made in the perception that the focus on sustainability is outlined by LEED asking for the use of things in order to improve efficiency. But to follow a model that was created in the last two decades when in fact these historical, vernacular, and preservation architecture are tested and tried, modified for perfection, and have proven their superiority is the reason architecturally for understanding vernacular styles.

Conclusion

In the attempt to reach and achieve a 21st century regional architecture, the ideas of Frampton, Virilio, and Abel are challenged. The reflection provided by their insights asks the community to reflect on what is known, abstract it, and start to rethink the box. In many cases, it is understood that to reflect of historicism and technology in the same breath is without prospect. Through the development of this project it has provided the architectural community both of these concepts and the look at a body of work in a region as an exercise of inhabitation and construction. In what cases can both be explored at a deeper level? The fusion of this research in many different areas allows for the integration of many ideas. In a functional society, it can be concluded that a strong need for the ideas of regionalism, identity, technology, biological, ecological, and geographical ideas that are all important.

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On Grade



Elevated



Timber Const.



Bearing Const.



1 Thresholds



Steel Roof



Concrete
Detailing



Timber
Detailing



1 Thresholds



Shake Roof



Timber
Planking



Stucco



2 Thresholds



Thatched Roof



Bricking



Thatched Siding



3 Thresholds



Slotted
Grooves



Staggered
Stacking



Gravity
Connection



Natural
Ventilation



Running Bond



Typical Bond



Mechanical
Connection



Thermal Mass



Mobility



Temporary



Permanent

2

Icons

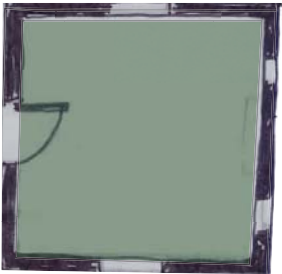
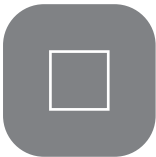
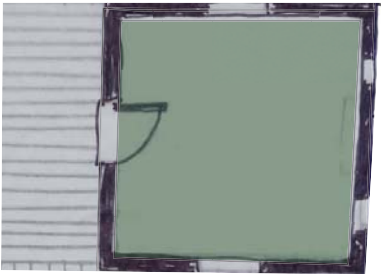
This section begins to explore the understanding of vernacular inhabitation and construction. Each of the following, materials, tectonics, methods, systems, or technologies explore a different part of the vernacular. Each of these pieces are distilled to understand how these pieces are put together so that they can be integrated into to the proposed new structures. This is the tool pallet that can begin to set up a rigor for the what a building should look or feel. However, it is the architects role to connect these pieces to make a complete structure. This bridge between these vernacular icons and the end product is what will be further examined in this thesis.

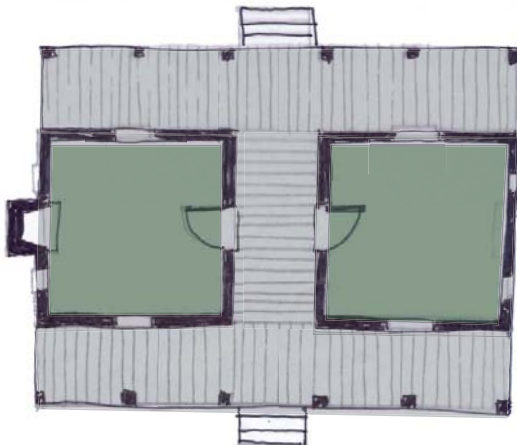
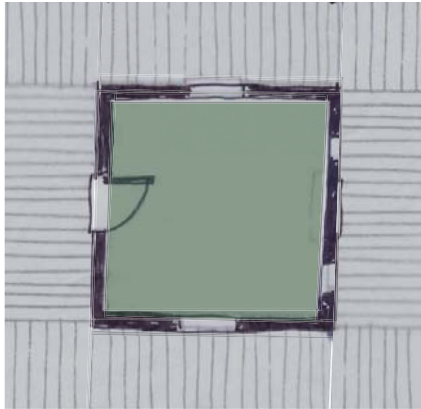
Space Distinctions:



Thresholds

These simple floor plans give insight to way in which people settled. This also helps to set a rigor in the way that the spaces this thesis will create are of a similar fashion from something with a balcony, to a porch, to a dog trot.





Dwelling Permanence



This is indicative of any structure that has the ability to be **mobile**. In many cases these structures were of Native Americans that could move their dwelling based on the current weather conditions, land assets, or the current needs of the population.



This is indicative of any structure that was used as a **temporary structure**. These structures were some what used and left. They could be made from materials in the surrounding area which could be found in area of settlement. Therefore once they were used they could be abandoned knowing that the next place for dwelling could be built.



A **permanent structure** is something that in today's world are most common. They have a foundations and are permanent fixtures in the world. They are built to attempt to withstand tremendous weather conditions, changes in weather and can adapt to the needs of the population.

Roofing Material



Thatching

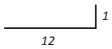
These bundles of either dried or green thatching supported on a structure makes for an enclosed space. Typically the bundles began to connect to the *walls* and make for a uniform system to enclose the space.



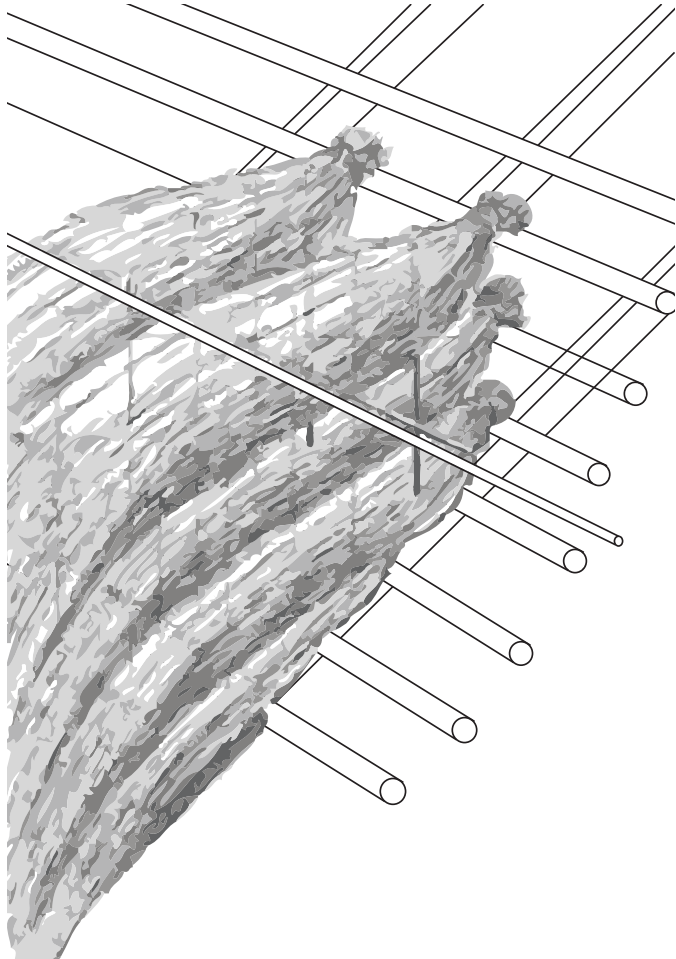
b. structure



c. materiality



d. minimum slope





Cedar Shake

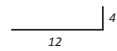
A cedar shake roof is made of a series of smaller parts, the compilation of these pieces make the roofing membrane. This material allows for natural breathing of the space enclosed below. But as shown, less that 50% exposure of the shake in the system makes it imperious to water.



a. sizes

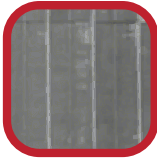


b. exposure



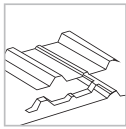
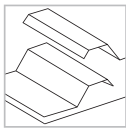
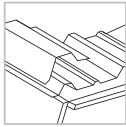
c. minimum slope



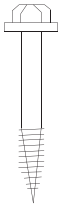


Metal Standing Seam

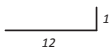
A metal standing seam roof is something that was created through advancements in technology allowing a press to form the metal in to the desired look. It is an excellent material that sheds and directs water. It also allows for superior ventilation through the metal baffles on the roof.



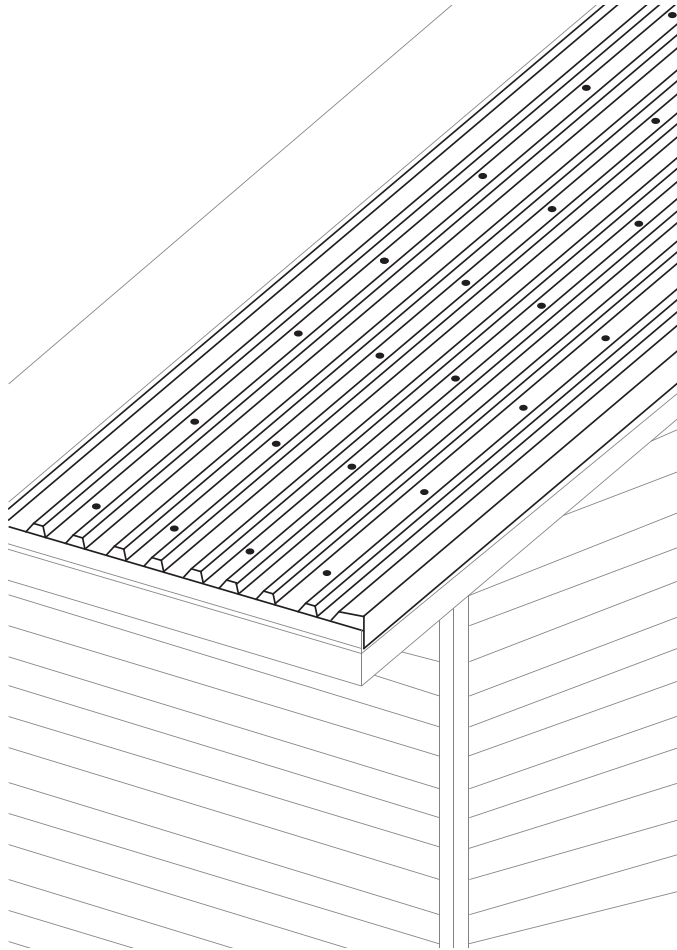
a. connections



b. fasteners
1. lag
2. washer



c. minimum slope



Wall Material!

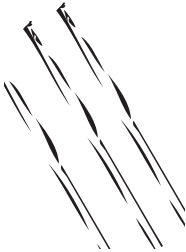


Thatching

These pieces different from the thatched roofing are individually tied as oppose to in bunches. They are stacked in a similar fashion to allow for insulation during the night. But the space can be opened for ventilation in the day.



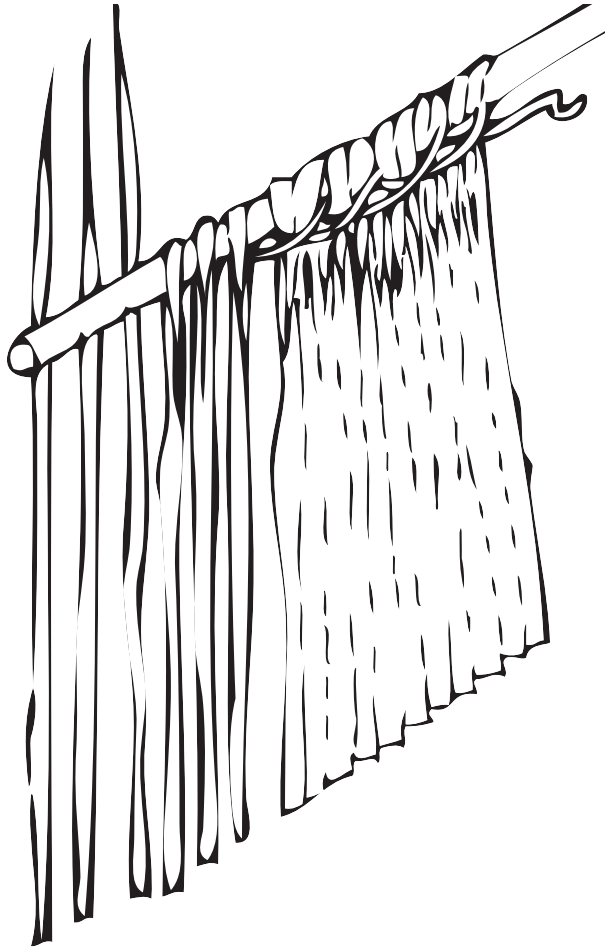
a. connection



b. structure



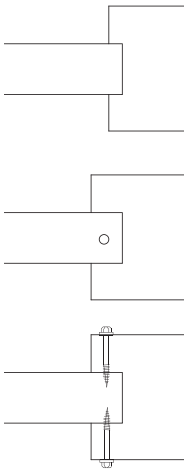
c. materiality





Wood

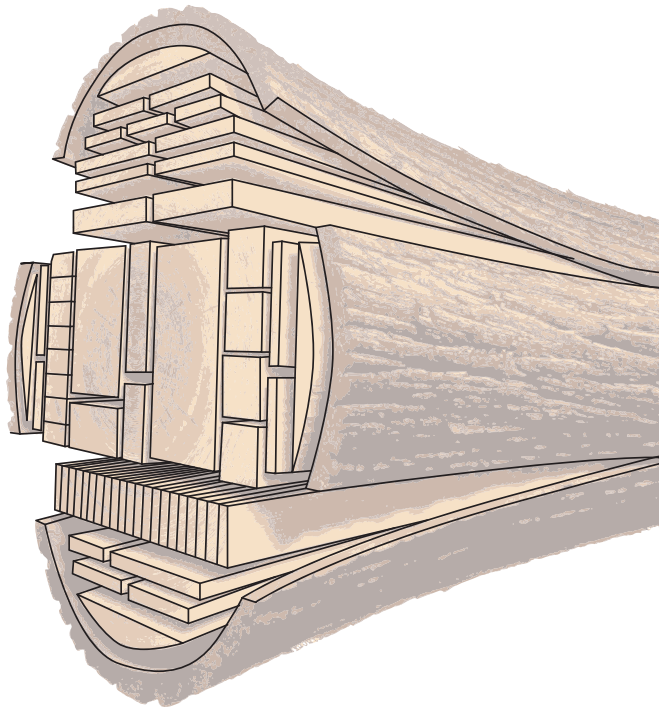
Basically the base structure and material for all the wall materials. This is used on an exterior similar to the cedar shake, it is normally lapped and allows for water to flow down the building while allowing air to enter in the traverse direction; up the gap in the siding and in.



a. connections
1. notched
2. peg
3. mechanical

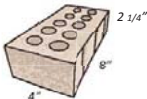
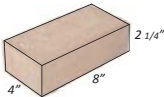
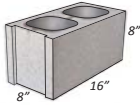


b. materiality

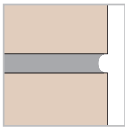
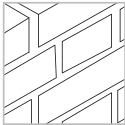


Masonry Block

This is a typical material used today. The strength of the material makes it desired in an area of hurricanes. Furthermore, because of its thickness and make up it has a high tolerance to hold and store heat, used in a thermal mass (p43).



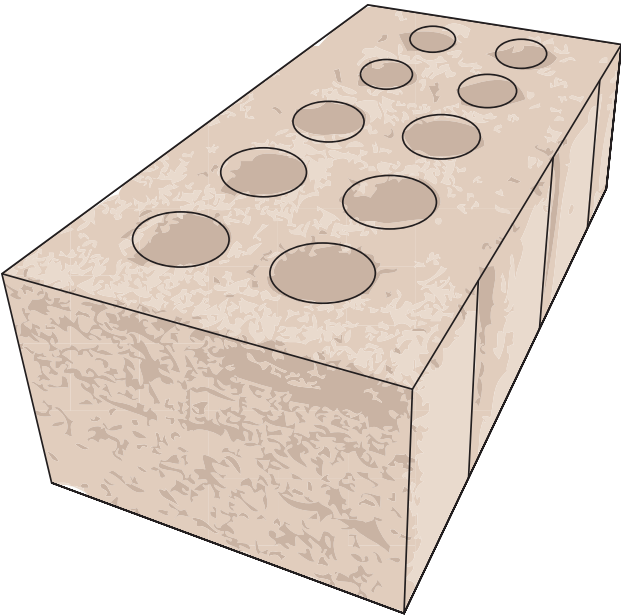
a. sizes



b. connection
1. mortar joint



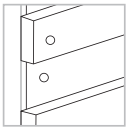
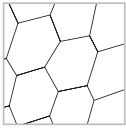
d. materiality





Stucco

Known for its architectural style that originated from a form of adobe, it is used to cover exterior of a building with a superior water barrier. It can be applied to a series of different substrates from wood to masonry.



a. structure

1. wire mesh
2. slot wall

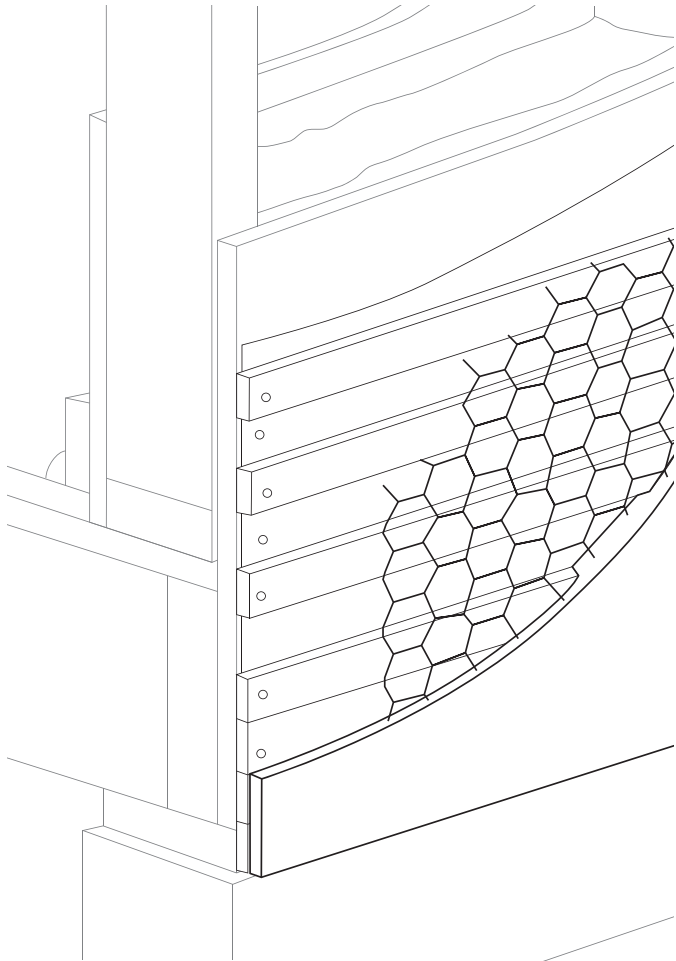


1-2 scratch coat



b. material make up

- portland cement
- hydrated lime
- sand

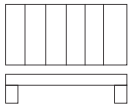


Detail Material



Stone

Similar to aggregate in concrete, a series of smaller stones mixed together with mortar is used for detail for instance as a sill on a window or a support foundation in the event the building is elevated off the ground.



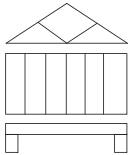
- a. uses
- 1. wall
 - 2. floor
 - 3. footing





Wood

This materials typical use is in hand rails, porch columns, roof supports, foundation piles, and certain planter boxes. With its strength and ability to have a variety of sizes it can be used in many different settings around the building.



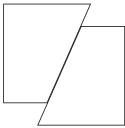
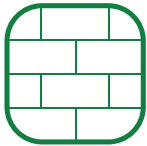
- a. uses
1. roof
 2. wall
 3. floor
 4. footing



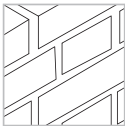
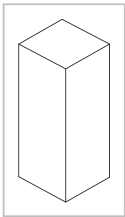
Tectonics

Running Bond

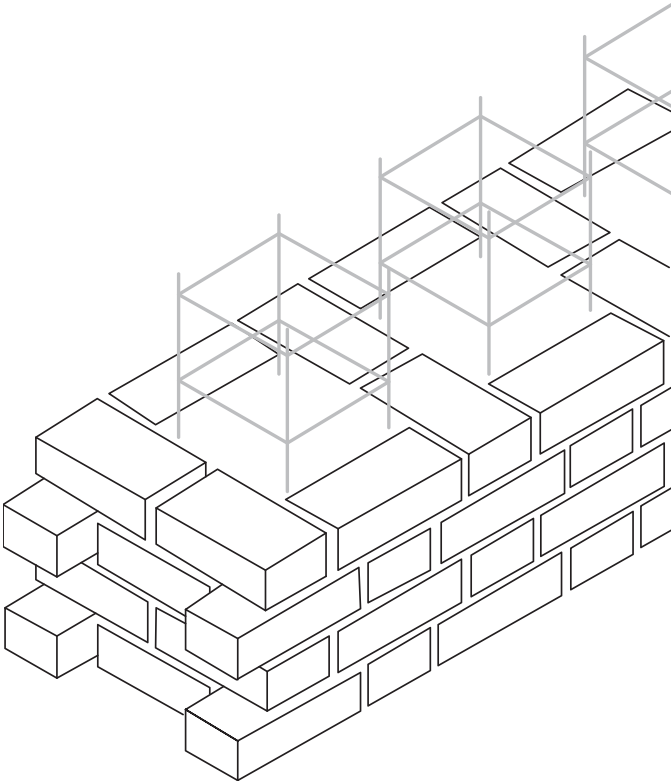
As the primary way of connecting masonry pieces are staggered and stacked to allow for maximum strength. Furthermore there is a solid center core either concrete, mortar, or steel that acts as the support for the whole system allowing for the height to not be limited.



- a. strength
- 1. compression
 - 2. lateral support
 - 3. tension
 - 4. shear



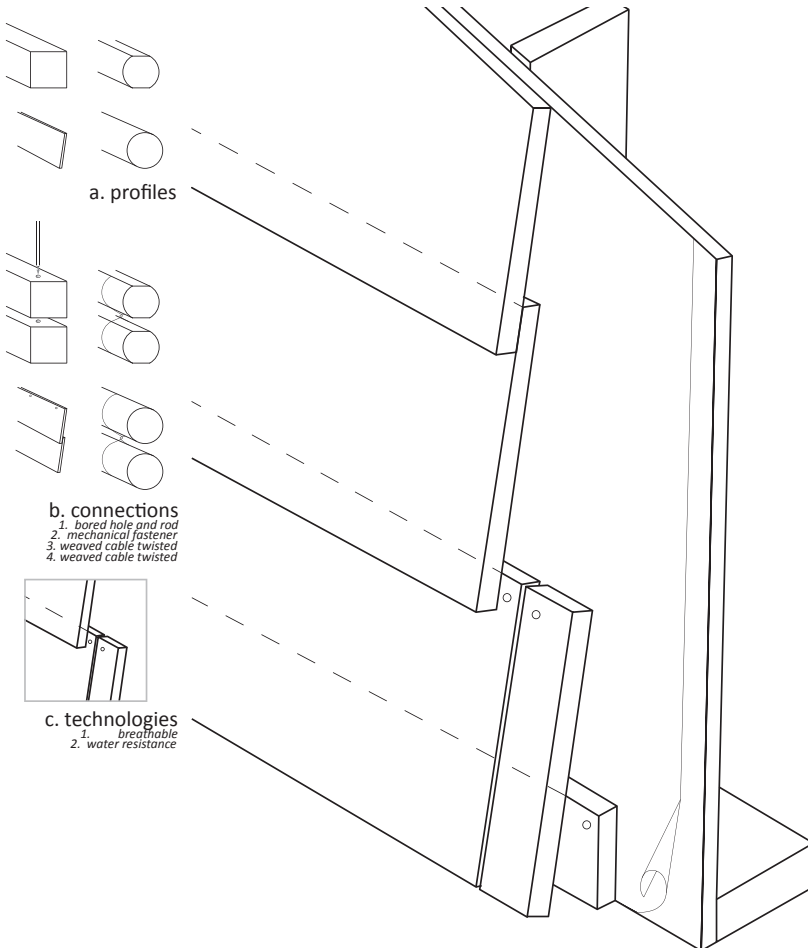
- b. structure
- 1. central cores
 - 2. inner locking

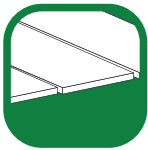




Slotted Grooves

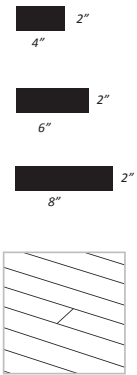
The primary building method of wood, used on an exterior similar to the cedar shake, it is normally lapped and allows for water to flow down the building while allowing air to enter in the traverse direction; up the gap in the siding and in. Felt paper keeps any water out and off of the substrate.



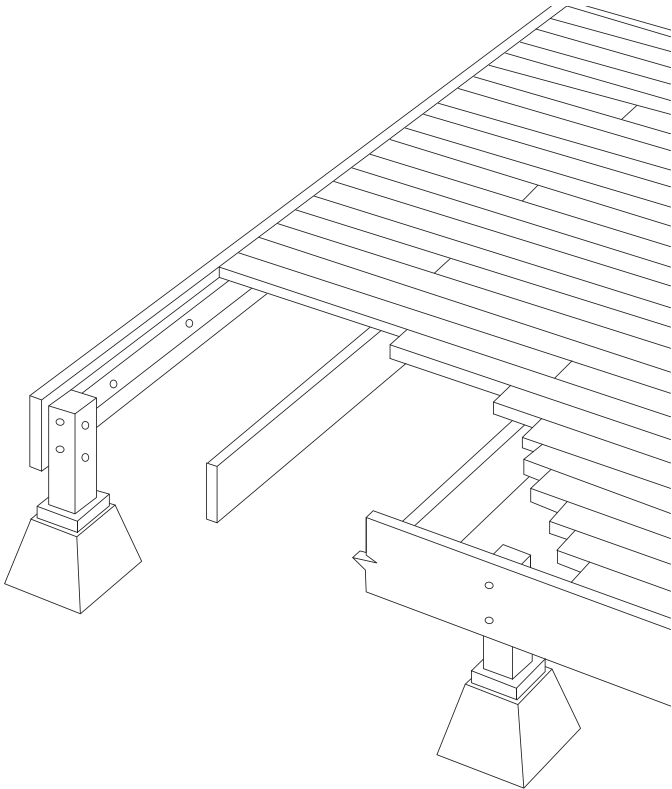


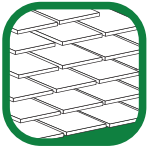
Typical Bond

This bond is used for many materials, shown for wood decking. This application allows for water to drain off the surface while allowing the surface to dry. Underneath the system the lateral ventilation evaporates the water underneath.



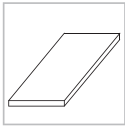
b. technologies
1. breathable
2. water resistance





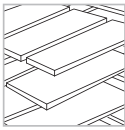
Staggered Stacking

Used as a roofing method for either clay tiles or cedar shakes, these materials shed water off the surface allowing the underside to breathe. This is especially important in the summer when this air is hot and humid, the structure can continue to rid the undesired temperature.



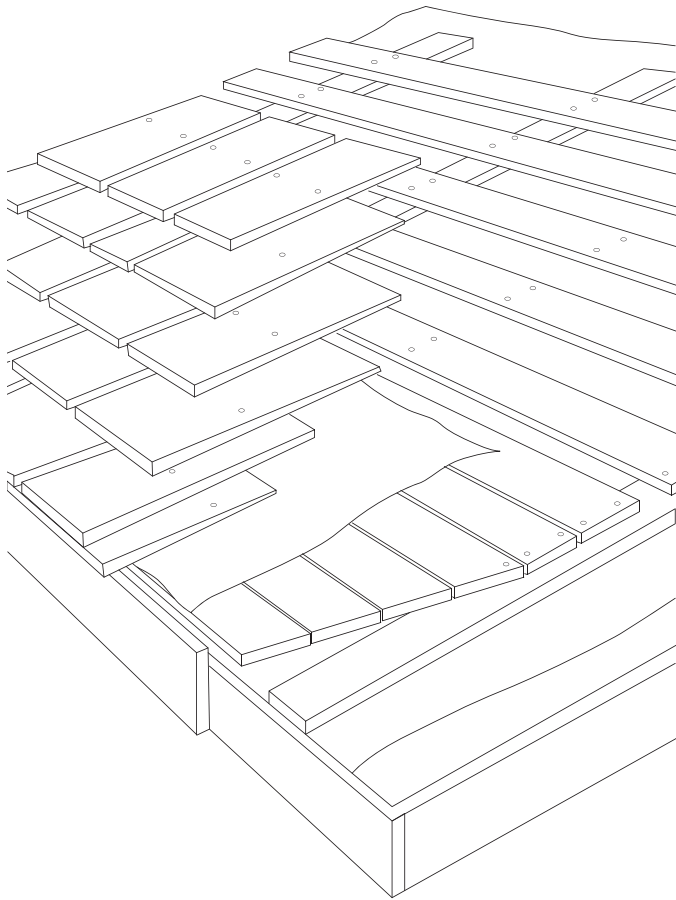
a. profiles

1. clay tile
2. cedar shake



b. technologies

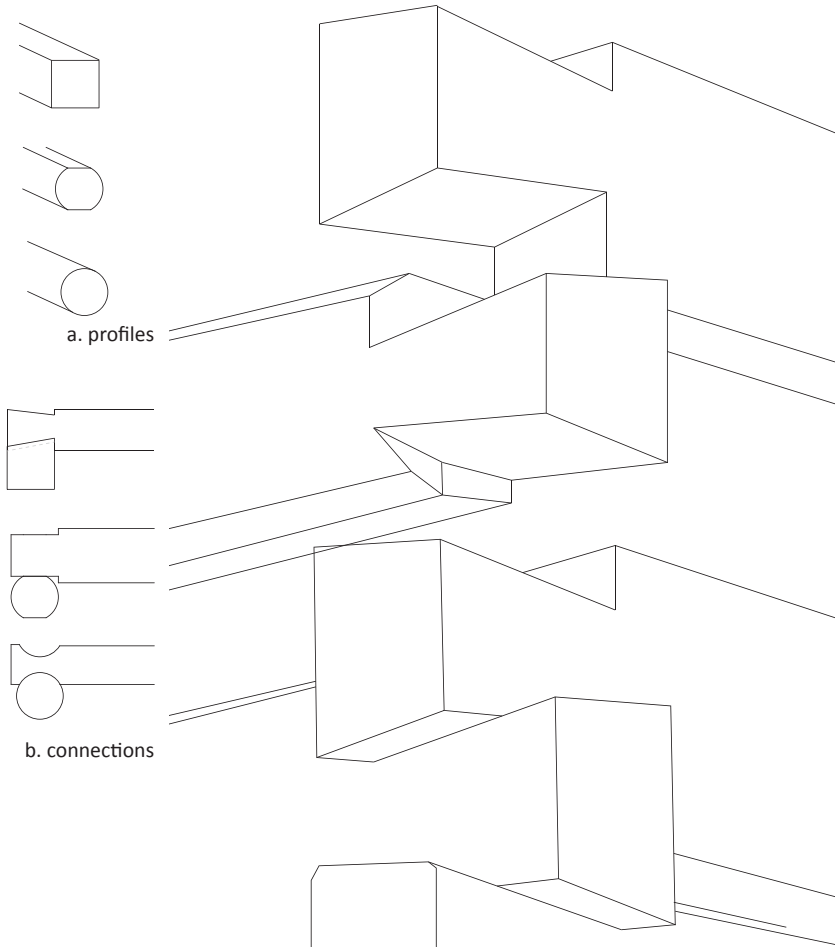
1. breathable
2. water resistance

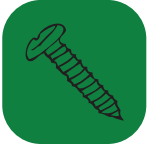




Gravity Connection

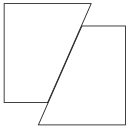
This method of construction takes direct advantage of the weight of the material to hold the walls together. The profile is notched to allow for a puzzle like fitting of pieces. These pieces are typically unmilled or lightly milled pieces of lumber coated in a resin to prevent infiltration.





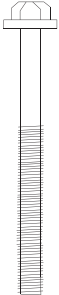
Mechanical Connection

A mechanical fastener is a common construction method today. The pieces are used to connect many materials together such as, roofing, sheathing, structure, detail and ect. This connection makes it possible to join anything together making for versatile construction possibilities.



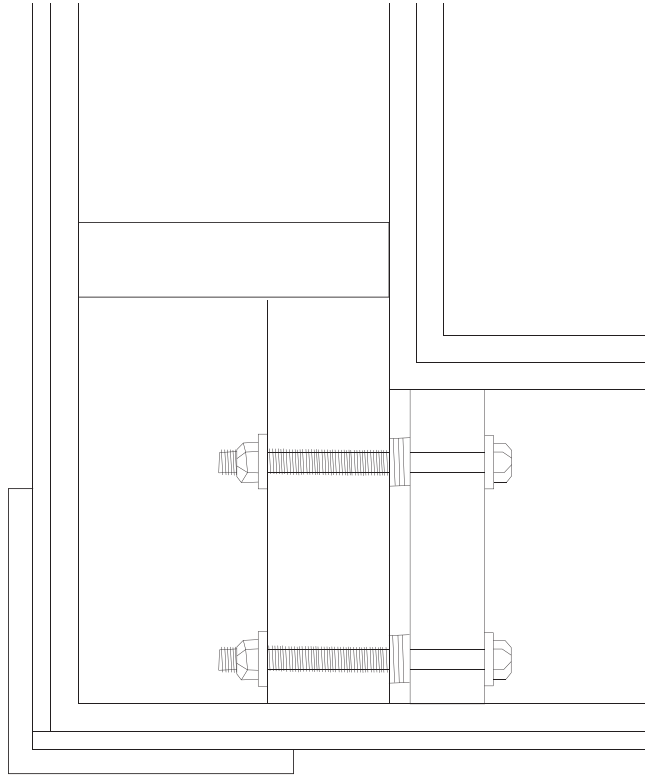
a. strength

1. *compression*
2. *lateral support*
3. *tension*
4. *shear*



b. components

1. *bolt*
2. *washer*
3. *nut*

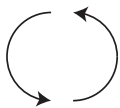


Passive Technology

Natural Ventilation



Based on the dual slope of the roof the warm cooler air moves in to the bottom of the structure and pushes hot air up to the second slope and out of the ridge vent. In coordination whit thermal mass the space is continuously cooled and refreshed with clean air.



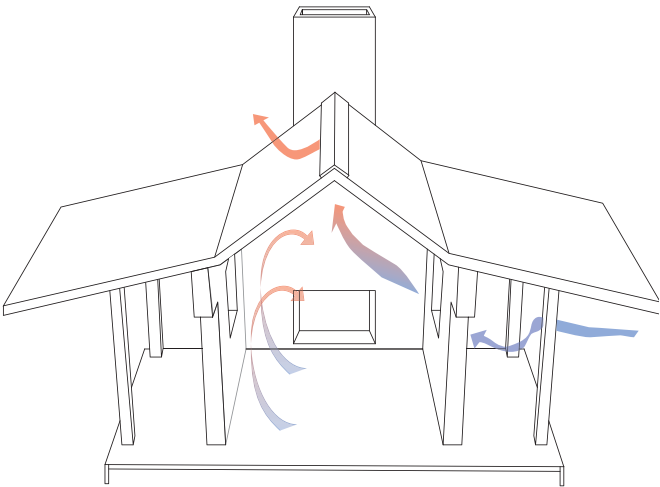
a. convection



b. radiation



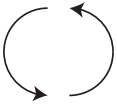
c. ventilation





Thermal Mass

As the warm winter sun warms the wall due to its placement in the sky and slope of the roof, the wall is continuously warmed throughout the warmest parts of the day. At the other cooler parts of the day the wall then releases the heat into the space warming it due to its stored heat.



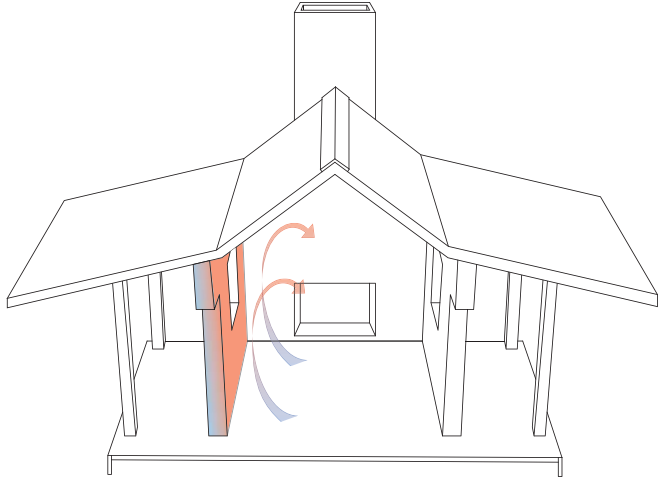
a. convection



b. radiation



c. facilitated by

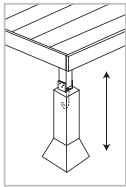
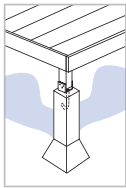
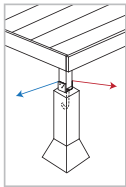


Location

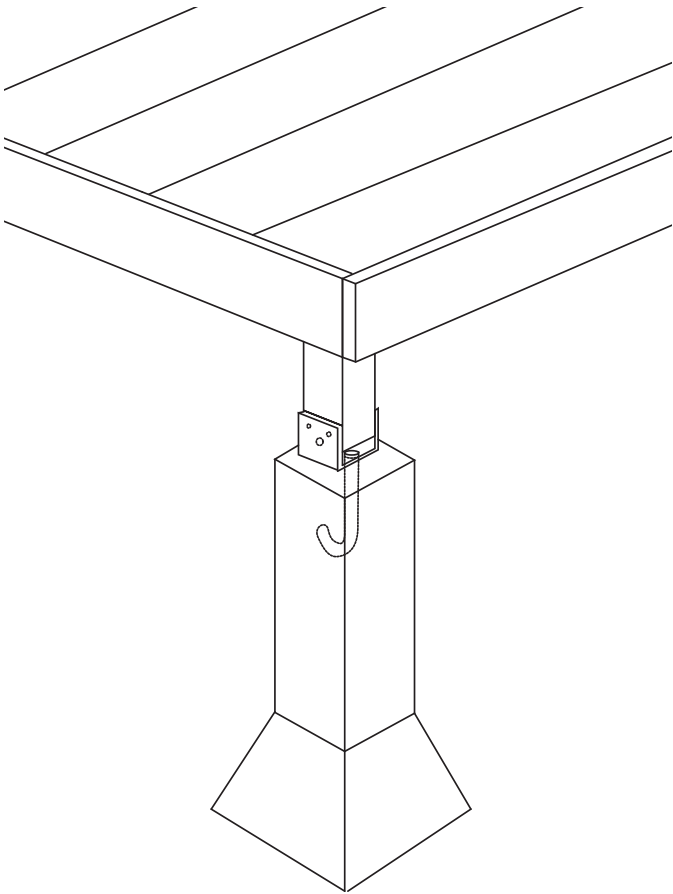


Above Grade

A space is elevated off the ground to allow for water in a swampy to not penetrate the building. This allows for maximum breathability under the space cooling. This provides protection from insects also infiltrating the space.



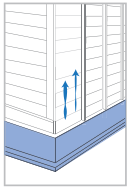
- a. technologies
- 1. *breathable*
 - 2. *water resistance*
 - 3. *insect resistance*





On Grade

This type of construction is used in areas that have a more firm soil capacity. Allowing for the ability to utilize geothermal cooling through the foundations or wall mass. With a continuous footing the building is continuously supported.



a. technologies
1. geo thermal
2. cont. foundation

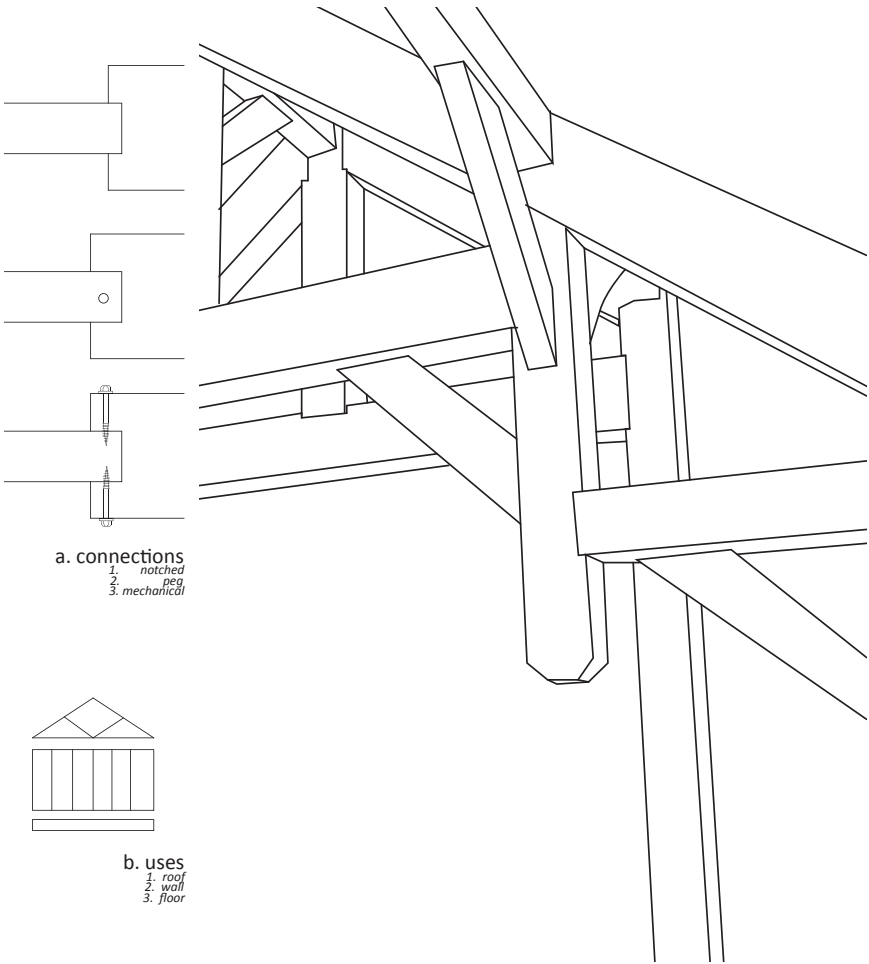


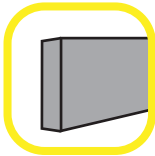
Structure



Timber

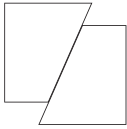
A timber structure is one that can be used for a complete building from footing to peak. This material as stated previous is versatile and can be used in almost any application and any tectonic.





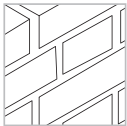
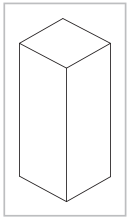
Bearing Wall

While typically used for foundations and walls it is prime for the weather conditions local to this region of Florida. Its advantage is it provides the ability for both thermal mass and natural ventilation due to its material property make up.



a. strength

1. compression
2. lateral support
3. shear

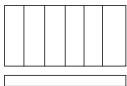


b. structure

1. central cores
2. mass

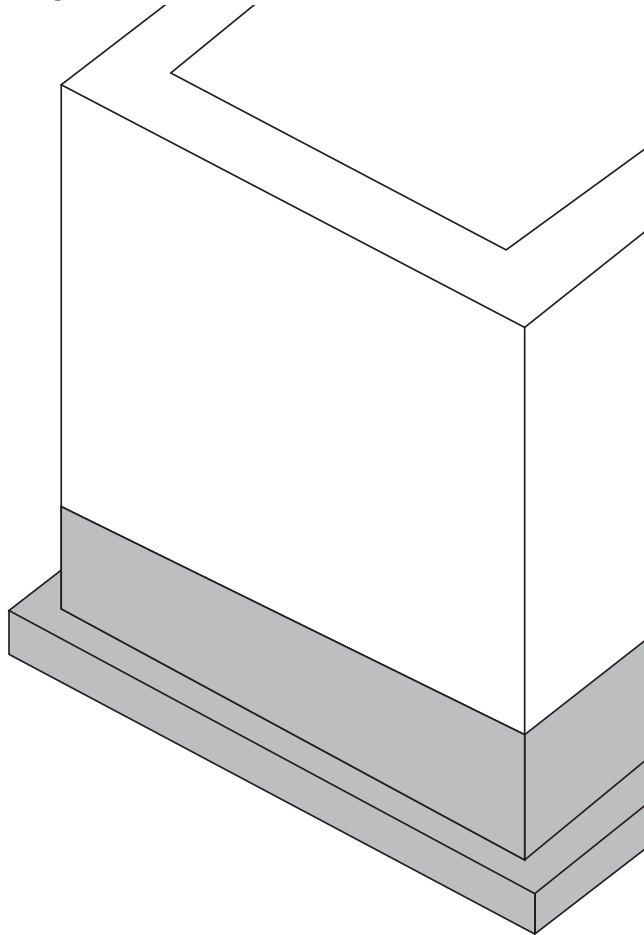


c. facilitates



d. uses

1. wall
2. floor



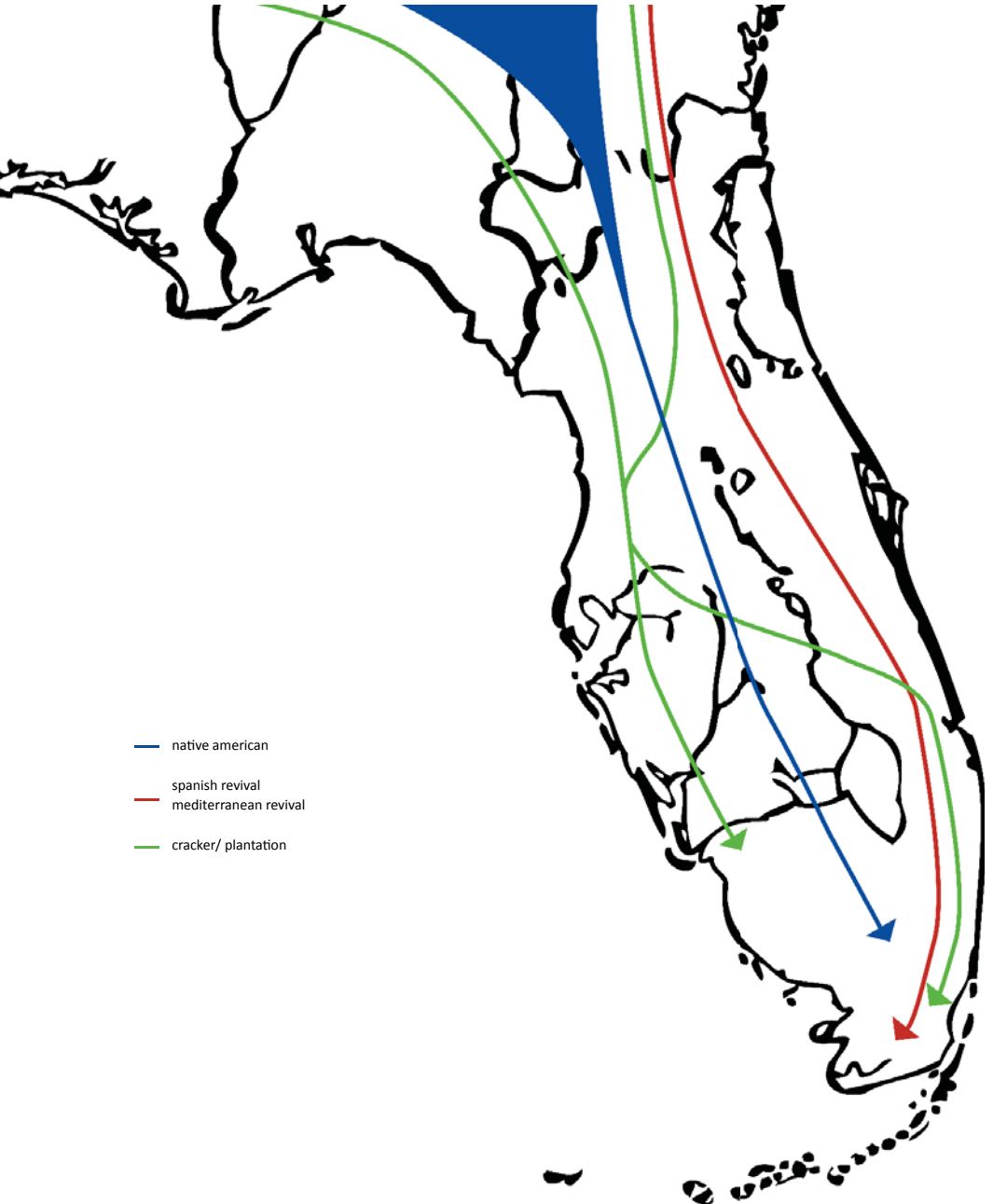
3 Vernaculars

Introduction

Vernaculars

It is important to understanding a regions architectural style(s) and its inherent qualities that are incorporated with these sites, to be shown in **Figures: 3.1-3.24** which are a series of buildings. The exploration of the architectonics, material choice, form, function, use, construction, deconstruction, mobility, systems, and space distinctions are applicable to the clear understanding of the building type and its influence, where it was derived from, and what it will influence. These building types were selected based on a time frame, and then understood where it was constructed and who constructed it. Each has a set of characteristics relative to the understanding of the regional style and the differences between them. They are listed in chronological order from the Tequesta to the McDonald.

Throughout the last century building types have begun to divorce themselves, as stated in this thesis, from a regional identify. Unfortunately this allows for the deterioration of a cultural bond. As shown (right), the region of Florida has been influenced by at least three major architectural movements. These movements are based on people as they begin to move and settle into new parts of the country. It is in the means of manifest-destiny that in the 19th Century people began to spread and move further and further, claiming more and more. This influence has created and allowed the beginnings of mixed architectural vernaculars. For instance, the native crackers began settling in southern Georgia, Mississippi, and Alabama, as perhaps plantation owners. As they move south they move away from civilization and access to the metal roofing they may have used on their plantation. Coming across the Native Americans, while settling in the middle part of the state, they use thatching as roofing shown in the Remmington. Moving further south they may have

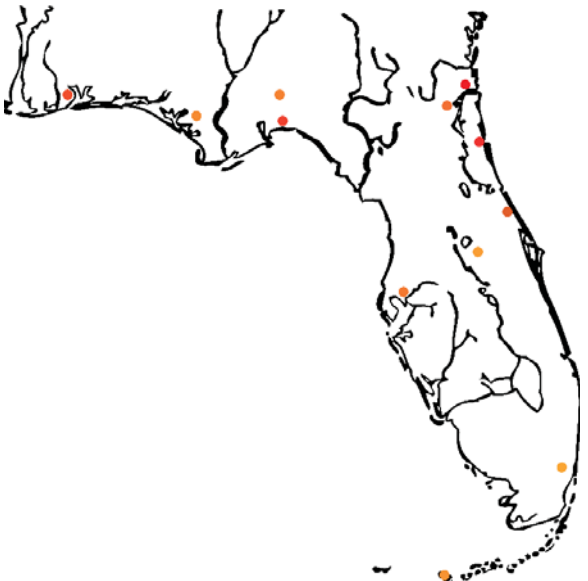


matured this idea in the splitting of logs to make shakes for cedar shaking. It becomes an understanding that as people move throughout space, time, and region things will begin to develop and mature into better ideas, it is common practice of human nature to understand and develop throughout time.

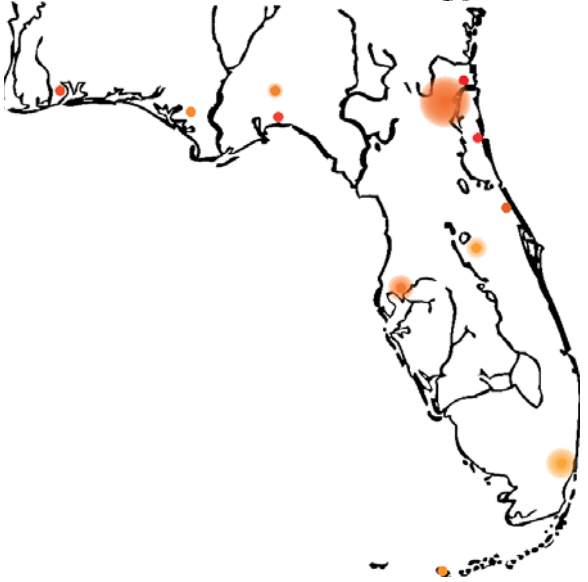
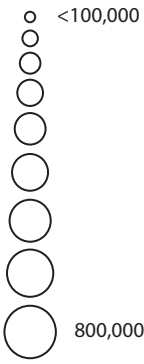
This narrative perhaps slightly exaggerated begins to help one understand the way that these are connected. Using the **Icons** from **Chapter 2** One can begin to connect and infer why and how these next twelve buildings begin to relate and take cues off each other. They begin to act as building blocks in the scheme of vernacular building styles. Each following holds a particular vernacular style, but have different architectonics, material choice, form, function, use, construction, deconstruction, mobility, systems, and space distinctions that make it unique and give it a say in the morphology of the vernacular method. Method relating to the way in which something is constructed because each building holds the particular style of Cracker, Native American, Mediterranean, ect.

The mappings directly to the right are given to help derive some understanding of time and size of settlements. It shows the first twelve established settlements in the state of Florida. The size of the dot is then indicative of the current population of that area. This will help to root the future study on population by proximity. This begins to show and dictate how the map on the previous page traces the architectural styles across the region. Each settlements time frame and current size all act as a dictator to the way in which people will travel or gravitate to a new area. New settlements are blank canvases for new methods to the vernacular style. From the creation of the particular building types it becomes easy to then make a sweeping generalization of the rout traveled by that style, which more formally traces the settlers in that region. This is all traced by closely identifying the architectonics, material choice, form, function, use, construction, deconstruction, mobility, systems, and space distinctions and locating their origination, plotting it, and mapping a smooth curved line. Both of these studies afford an insight to the way in which people move and how that affects their construction methods and inhabitation styles.

settlement date

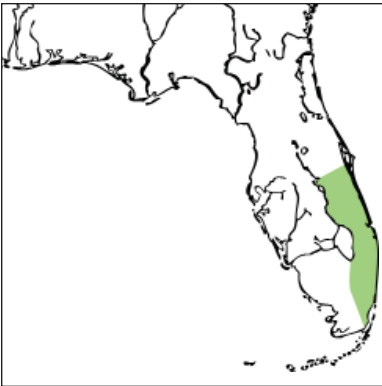


current population size



Tequesta

Native American's



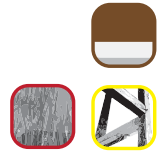
The Tequesta tribe occupied much of what is modern day Miami-Dade County as early as the 1200s. The structures shown in **Figure 3.1** depict what would be considered a typical hut. The structures, built for the ideas of mobility and transportation, are constructed entirely off the fat of the land. All the materials are locally native to the region that they inhabit. The materials in the structure are rather unique. The same thatching that is used in the vertical protection as a wall is then incorporated into

the horizontal roofing. Consistent with Native American structures within the same time frame, the Tequesta hut is a rather homogenous structure. The internal supporting structuring is constructed with twigs and branches holding the thatching up around the house. Furthermore, the structure is placed directly on grade, implying that the protection from both nature and wildlife was an inherent property that was already integrated into the initial design of the dwelling. The material properties are the protecting agent against those external forces. The structure's importance lies primarily in dealing with the importance of one; it is a one room dwelling that combines all the functions into one primary space. It shows the comprehension and fixation of the family unit. Architecturally, this structure expresses the simplicity of the function and form being driving forces for each other.



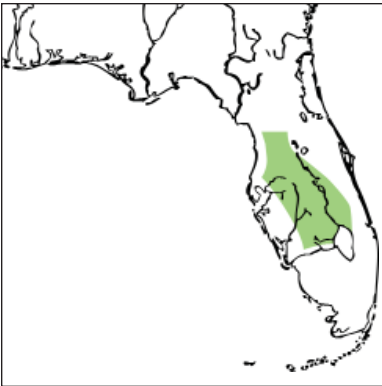
Figure: 3.1: A historic recreation of the typical Tequesta dwellings.

Figure: 3.2: Analysis of vernacular style.



Clausa

Native American's



Ancestors of the Paleo-Indians have occupied much of what is current day Florida since nearly 5000 BC. The development and location of the last known settlements date back to the time of the consolidation of Native Americans in the early times of the United States of America. They are people who lived off the land, much like the Tequestians. However, they have developed methods that can be traced to modern day construction. They are one of the first to develop the water impervious wall cladding.

As shown in Figure: 3.3 and 3.4, a stucco material was used as the vertical cladding. Used for its performance against water and moisture, the stucco is a desired material in the region. More importantly, the Paleo-Indian ancestors primarily settled on riverbanks, the shore line, and near marsh land. At any point the water levels may raise the material which allows flawless protection. The structuring in this typology is a bearing wall that allows the protection and permanence that the Tequesta structures did not. They alone can withstand many extreme climate components know this region, such as hurricanes. However, the stucco does compare to the Tequesta dwellings use of thatching in that it allows for the structure to be passively cooled with a thermal mass wall and a roof open to natural ventilation patterns. These structures are also encompassed into the one room typology.

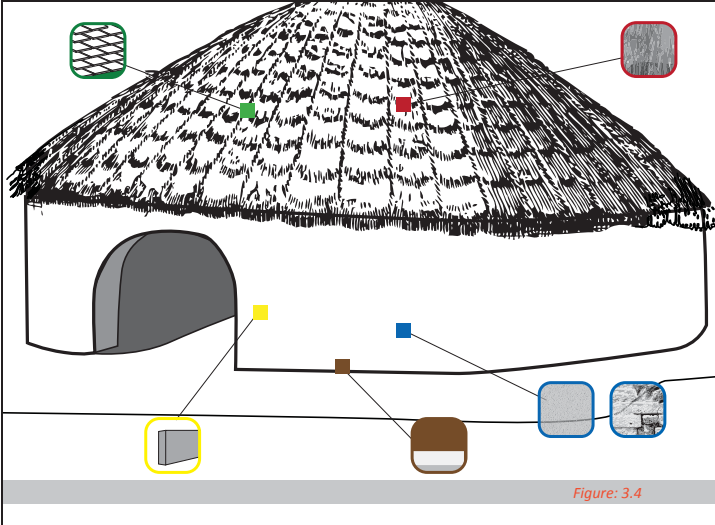
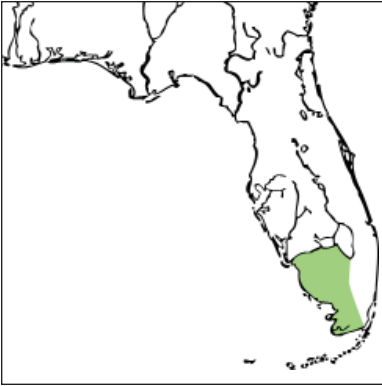


Figure: 3.3: A historic recreation of Clausa tribes typical dwelling.

Figure: 3.4: Analysis of vernacular style.

Seminole

Native American's



The Seminole tribe has historically occupied much of the Midwest. However, similar to the Clusula tribe, they were consolidated and moved toward the southwestern part of the Florida Peninsula. As shown in Figure: 3.3, they began to construct the form in a fashion similar to the Tequesta tribe huts. The primary difference in the Seminole structure is that it is elevated off the ground in order to prevent water infiltration, bug infestation, and animals from penetrating the home. The move of

elevation of the dwelling off the ground is the beginning initiative for many architectural building types to follow. With the structure lifted off the ground, they begin to use modern day planking. With a monotonous and similar manner, these planks are laid side by side to create a decking. The Seminoles begin to create and understand the architectonics of their architecture in that they really begin to explore the way in which something is being constructed. As far as this thesis is concerned, this is the start of what is the start of the modern era of construction. This tribe reflected on the Tequesta structures and embodied the idea of twig construction and thatching. They begin to use the traditional stick build building method in order to erect structures. The moves have begun to develop and manifest into building ideas and typologies that are extremely relevant to today. They have used threads of these methods throughout time.



Figure 3.5

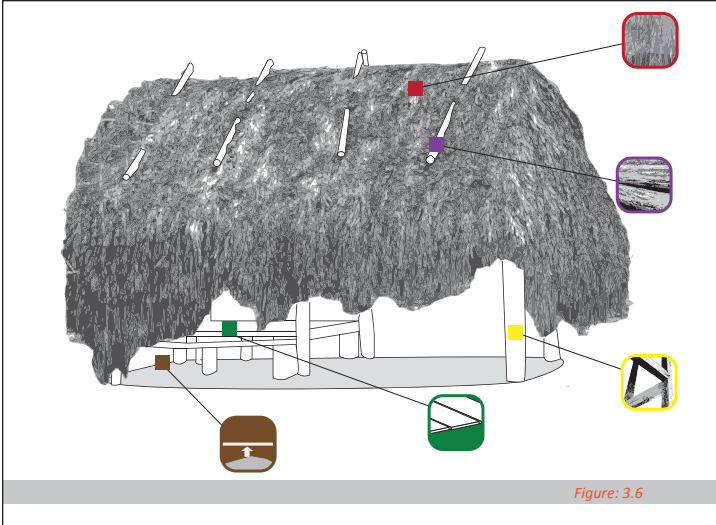


Figure 3.6

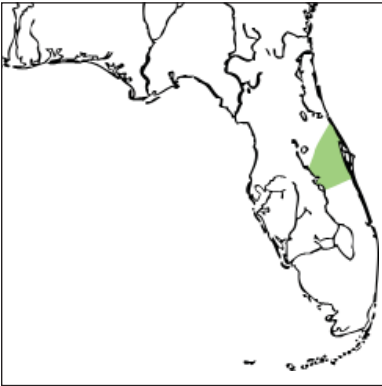
Figure 3.5: Reconstruction of an ancient Seminole Native American dwelling.

Figure 3.6: Analysis of vernacular style.



Remmington

Native Cracker



The Remmington is native to the region between St. Augustine and Miami-Dade County. Its primary function is as a horse corral. However, its function is also used for a dwelling. The native Crackers used the traditional stick build techniques to support the thatched roof that is very common in the previous structures. The walls are less about keeping what is out-out, but what is in-in. This action provides a very different program than the previous structure, leading to the materialistic idea

of fencing. This is expressed in the logs that are indicative flanking in the corral. These logs are not at all changed; they are merely stacked in a fashion that allows structure. These were intended to be constructed and moved, with the many individual parts that make up the whole. The pieces could become easily disassembled, moved, and placed back together. It becomes easy to understand some of the architectonic moves that are made. The logs that make the walls are attached to each other by gravity. They are laid in a sequence allowing dovetailing of the logs together. The logs rely on the sheer weight of the log to act as the connector, as opposed to mechanical fasteners that are used later development of architecture. Furthermore, the logs are also used as the cladding. Unaltered, the log acts as both an interior and exterior barrier. The tectonics in the Remmington are the start of many of what will be considered Cracker style homes.

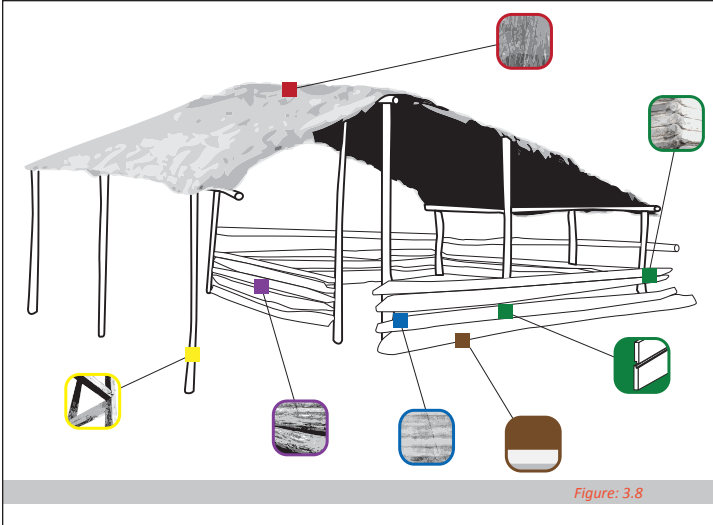


Figure: 3.7: A typical horse corral, native to the first cracker inhabitants to the region.

Figure: 3.8: Analysis of vernacular style.



New Smyrna

Spanish Explorers



These structures are based on some of the ideas of the western neighbors, the Clausa Native Americans. The site functioned as a sugar mill in the early part of the century. It was destroyed during the war between the Seminole Indians and the United States. The building is built on 17 acres and is sited on the coast line, where it has to deal with some of the natural water problems in this region. They are not raised off the ground like many of the structures that are particularly prominent in the

northern and western region of the state. The eastern part of the state deals with architecture very differently than those in other regions for a variety of reasons, but most prominently is in the way the settlers influenced the space. With heavy influence from the Spanish and Mediterranean explorers, there was an inherent use of masonry construction that, in this time frame, was not widely accepted. For the first time in this study to a connection to the Clausan structures. With a strong Clausan, Spanish, and Mediterranean influence in the region, the constructed structures are impervious to the water and placed on grade to perform against the changing climate in the region, all while maintaining the location, climate, and cultural identify. The process involved in the building creates an icon of not only an industrial revolutionary world, but grasps the emotion held in the ascetics.

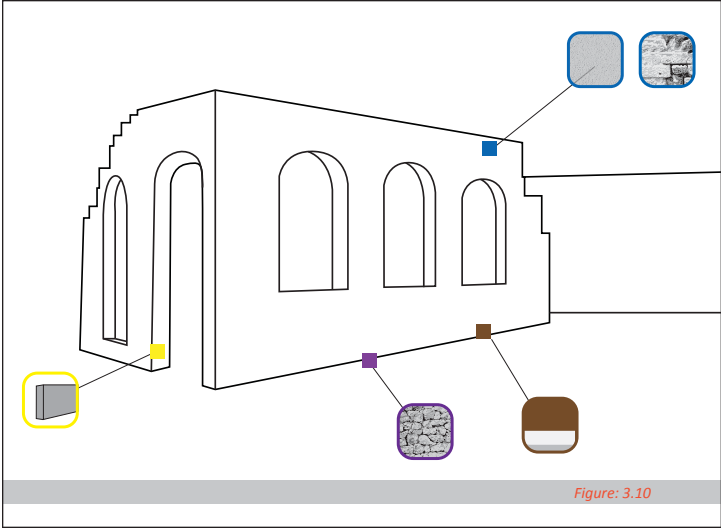


Figure: 3.9: New Syrman Sugar Mill, destroyed in the war between Seminole Indians and the United States.

Figure: 3.10: Analysis of vernacular style.



Tovar

Spanish Explorers



The Spanish explorers settled in one of the oldest settlements in the state of Florida, St. Augustine. Knowingly or unknowingly, their construction of the Tovar house, **Figure: 3.11**, holds many of the features materials, planking and masonry, from both the eastern and western part of the state. This becomes the footing relating the Seminoles structures to the more modern building types. It acts as the bridge between primitive methods and relatively modern methods. The building also uses a series of

tectonic work as a mean differently than any of the previous structures. For instance, the running bond used in the New Syрман Sugar Mill was placed in a fashion where the stones were irregular and placed together so the pieces fit together in a relatively uneven way. Here, the running bond is something typical to what is known today- regular shapes and size that fit together in a normal way. Furthermore, the use of timber in the Tovar house is milled lumber. The pieces are regular and monotonous, but uniform. It is in this way that the dwelling created a standard for materials used in the project. The ability to create a standard for materials and structural elements allows the construction to become one of prediction. They also begin to create other spaces, as the dwelling is divided into many different rooms. Additionally, there is an outdoor space that is enclosed and elevated.

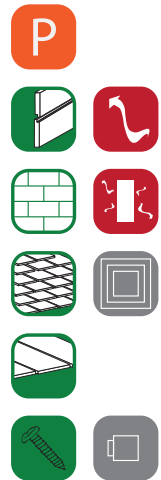
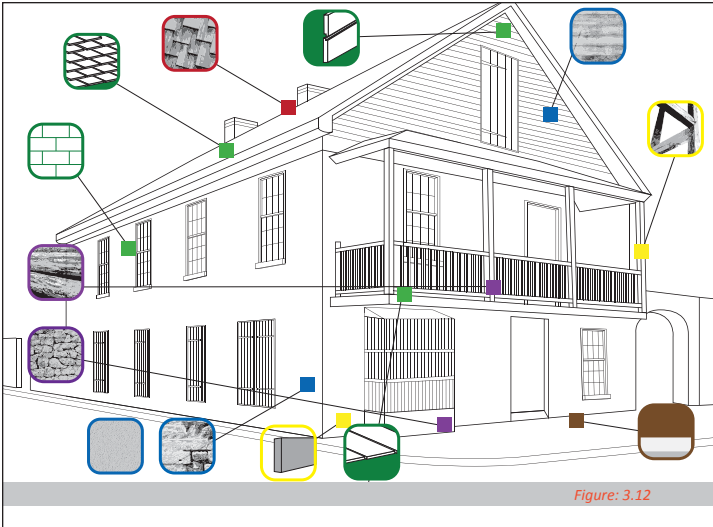
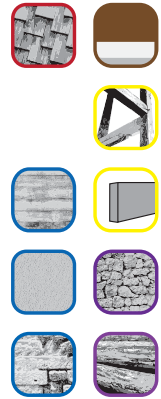
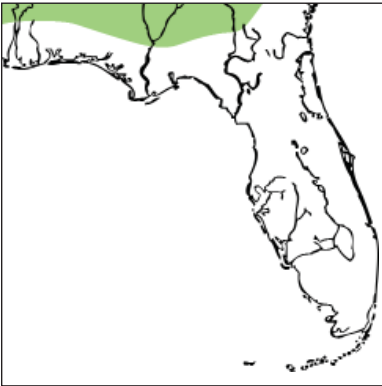


Figure: 3.11: Tovar House located in St. Augustine Florida, one of the oldest cities in the state.

Leary

Native Cracker



The Leary house is a dwelling that is situated in the northern part of the pan handle of Florida. Although derived from the early southern plantations, the Leary house is designed on a much smaller scale. The plantations reflected the power of the people living in them due to the magnitude and size of the structure. On the other hand, the Leary house does not. Despite the power and authority the farmers, known at the time as Crackers, possessed, the homes reflected a humble attitude and had a more

appropriate square footage. The heritage of the culture they came from is represented within the structure. This building in particular begins to accept the ever changing ideas of industrialization, specifically in the material of the metal roofing. However, the Leary house acts like the Tovar house, being aware of changing time where the materials and tectonics used in the building do not take away from the manifestation of vernacular identity, but facilitate a better understanding of it. Furthermore, this dwelling also uses the technology of milled wood as sheathing. Similar to the Tovar house, the Leary house has an extended primary boundary that includes a covered porch which is particularly important in hot and humid climates. These outdoor areas, shown in [Figure: 3.12](#), offer the user another area where gathering and living can take place. A building can only be designed with a certain amount of natural ventilation and passive cooling, so the porch acts as a usable space without demand of temperature control.

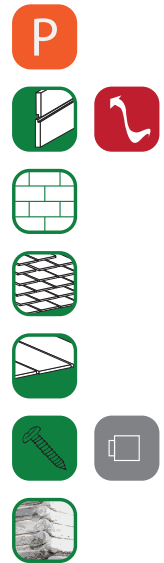
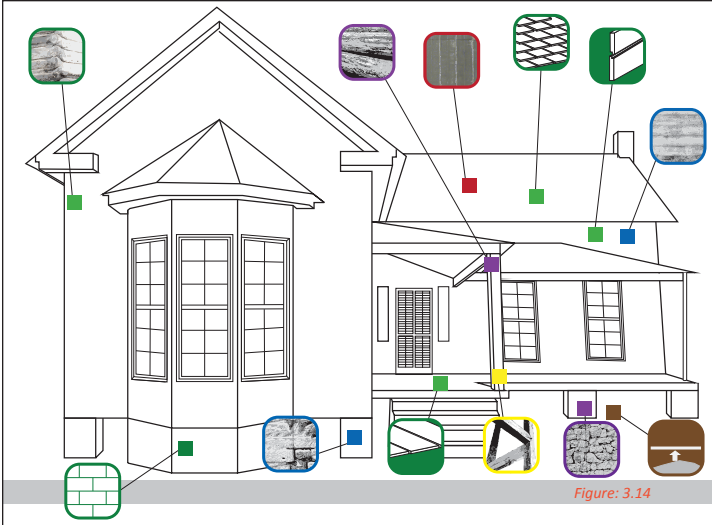
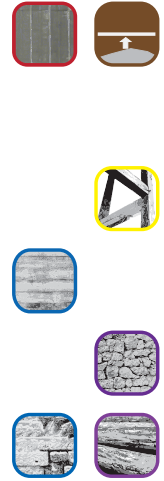
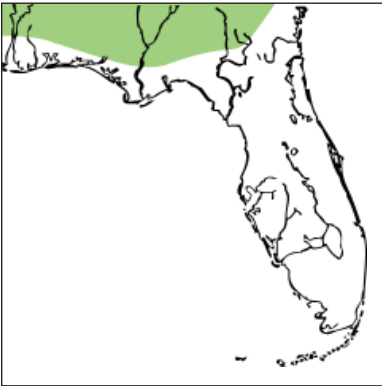


Figure: 3.13: A home in Leary, Gerogia which may be considered a typical Cracker style home.

Figure: 3.14: Analysis of vernacular style.

Cypress

Native Cracker



The Cypress house, located in the northern region of the Florida panhandle, has many of the same principles as the Leary house, with one major exception—a lack of porch. Without the porch attached on this dwelling, much of the activity is taken place within the home. For a variety of reasons this structure may not have a porch, one in particular being the lack of natural resources in proximity. Due to the lack of grade change across much of the state, the residents rely on natural foliage to act as a privacy barrier.

In addition, the Native American dwellings of the south may have played an influential role in the lack of an attached porch on the Cypress house. Despite the lack of a porch, the building has a very similar look and feel to many of the building typologies across the better part of the northern region. Many of the tectonics of the building are similar to the Tovar house, such as the running bond in the foundation footing, the lapping of siding, and milled lumber as exterior sheathing. As shown in **Figure: 3.15**, the Cypress building is elevated, as many structures previously studied were. With the ground looking rather dry and water not directly near to the structure, the elevation is done to provide natural ventilation. The warm air rises up and through the occupied space and out the vents along the peaked sides. Cool air is then sucked through the floor boards and cools the space. This concept is also true for the Leary house.

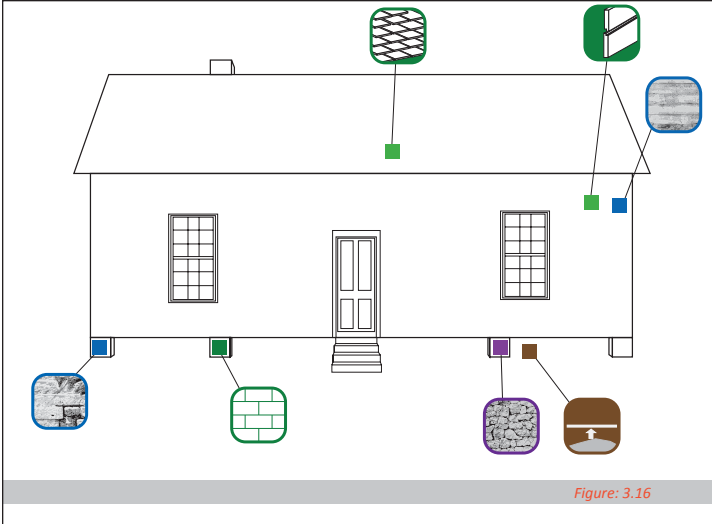


Figure: 3.15: The Cypress home located in Cypress, Florida

Figure: 3.16: Analysis of vernacular style, which followed many of the Leary's characteristics.

Wefanie

Native Cracker



The Wefanie home is an example of the classic Cracker style. Located as far south as recorded, the land in this area is rather unstable, as shown in maps of the deteriorating everglades (cite page). The ground water table is rather high producing soft soils to build on. Therefore, the Wefanie home is elevated off the ground. The roof is slanted at two different pitches in order to create a funnel of the warm air up and out. Nearly similar to the Cypress, the effect of passive cooling through the floor is

somewhat prominent. Furthermore, the materialism in this structure seems to almost identically reflect the Tovar, Leary, and Cypress structures. The only major exceptions are the brick chimney and the cedar roofing. The roofing material is considered the step between the thatching and masonry clay tiles, as used in many of the Spanish inspired homes. This allows for maintenance to the material and system without having to deconstruct the entire roof. One shingle could easily be removed and a new one laid back in its place. The Wefanie home also makes a very different move from the previous structures in that the house is split into two rooms with a walkway, known as the Dog Trot, in between. The Dog Trot system allows for the utility of the home and dwelling of the space to be separate. For instance, the cooking space is separate from the sleeping space. This allows for privacy of the spaces, a concept not established until this style

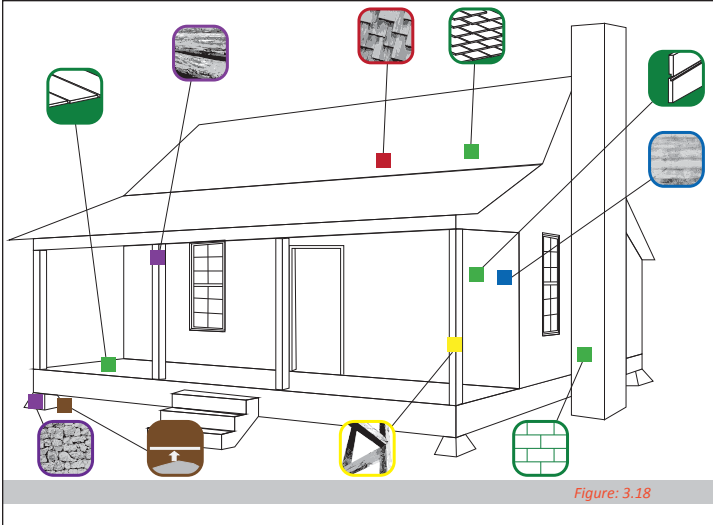
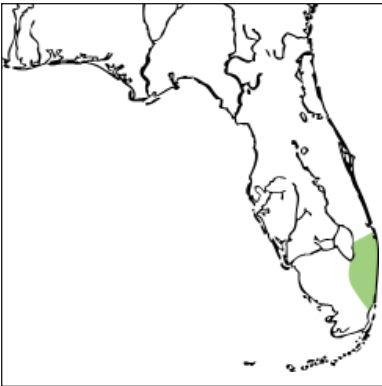


Figure: 3.17: Wefanie house is the typical Cracker style located in the Naples area.



Barnacle

Spanish & Mediterranean



The Barnacle home is the combination between the classic Cracker, Spanish and Mediterranean styles of architecture. It uses architectural moves, such as the two pitched roof and the covered patio, in conjunction with the stucco and masonry normally paired with the eastern style of architecture. The Barnacle home is composed of the paring of many types of opposing archetypes. It includes the exterior detailing work in two materials, native masonry and detailing lumber. However, the

locations of the materials are different. For instance, the masonry is used on grade as footing color and the lumber is used to construct the porch, columns, railings, and decking. Furthermore, the Barnacle combines two types of structuring systems, the bearing wall and the timber supports. Each structuring system provides support to the other. Since the structure is not elevated off the ground, it is supported with a continuous footing. The material choices, stucco masonry, dark colored, wood, and tiled roofing, fit with the time period of construction. The tile roofing material is indicative of the materials used abroad in the Spanish and Mediterranean colonies. This materiality and style are used and applied in the entire peninsula.

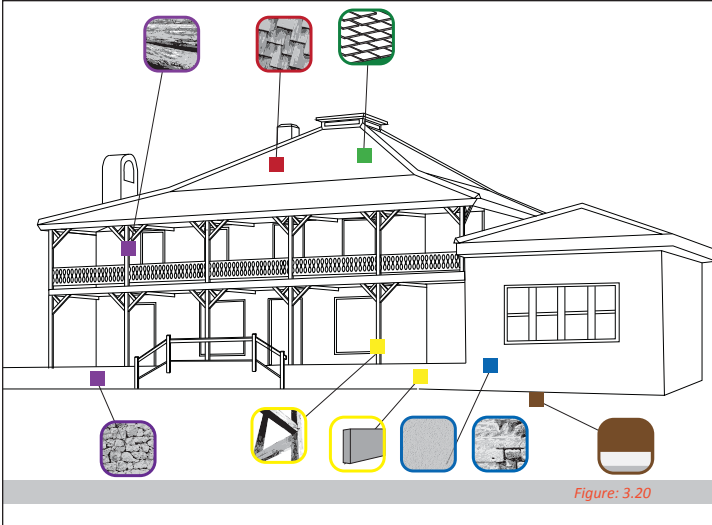
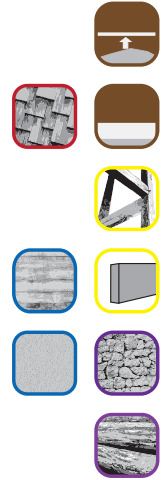


Figure: 3.19: Barnacle home a Classic Cracker, the Spanish and Mediterranean styles

Figure: 3.20: Analysis of vernacular style.

Finney

Native Cracker



The conceptual design of the Finney pavilion portrays some points completely over water. The building is very similar to the modern style of Mies van der Rohe. The columns are spaced at a very rhythmic pattern across the front of the pavilion. With glass spanning the difference between the columns, natural lighting can begin to enter the building. Along the back of the pavilions extended from the roof, a type of shading device. The slatted metal sheets that span outward are vital to the cooling of the space.

Using the ideas of the sun's position in the sky at different times of the year, the pavilion is built to incorporate for direct or indirect sunlight at different parts of the year when the pavilion may be used. The material choices include solid, stucco walls. Due to its close proximity to the water, the pavilion could not use wood that could be easily rotted by infiltrated pores if not treated. Instead, a water tight material was used to protect it from any unwanted water. Furthermore, the columns are metal allowing for a prolonged lifetime of the structure based. It is important to understand that the materials selected in this building type are impervious to all water infiltration. With its permanent direct contact, it must be able to reject all water. As a result, the Finney pavilion is a space that has the ability to stand up to and against the inherent problems in building on or in the water.

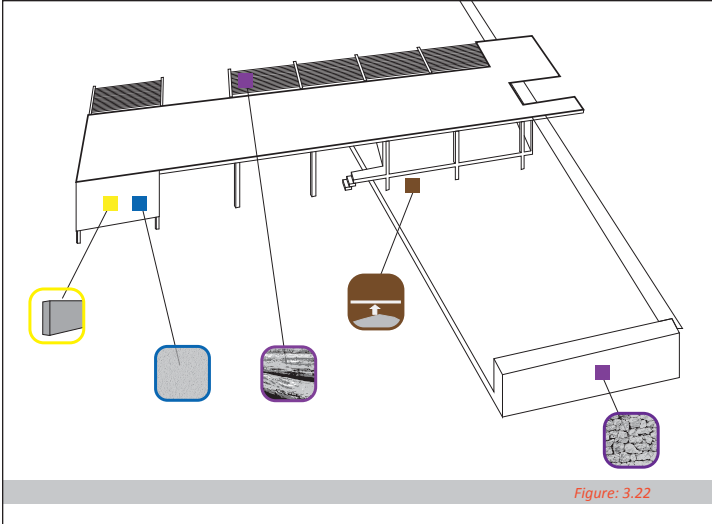


Figure: 3.21: Finney Pavilion created as a conceptual; Figure: 3.22: Analysis of vernacular style. design done by the Sarasota Architecture School

McDonald

Native Cracker



The McDonald house, located directly on the flour sand beaches of Siesta Keys, Florida, is built and constructed as a polar opposite of Finney pavilion. The first large difference is the materiality. This structure is completely made of wood. The exterior walls of the structure are floating six to eight feet above grade supported by the large, tree-like posts. The untreated and unmilled lumber as a structuring system influence from this piece can be directed to the Remmington,. The walls of the structure

are created by sheathing that is most similar to modern day plywood. With the grain in the long direction, it provides a large amount of lateral support between the columns they are mounted too. There is a vast patio that surrounds the entire structure. It gives the users the ability to engage with nature. The McDonald house is suspended on stilts, which allows for the home to be protected from any extraordinarily high tide or water that comes on the beach. For instance, if a hurricane were to strike land and bring storm surges where the water level increased, the stilts would potentially allow for less damage. Also because of this natural phenomenon, it is almost mandatory that the connections are of a mechanical fashion. This provides a strength that cannot be paralleled to the strength of gravity.

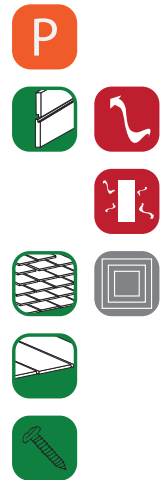
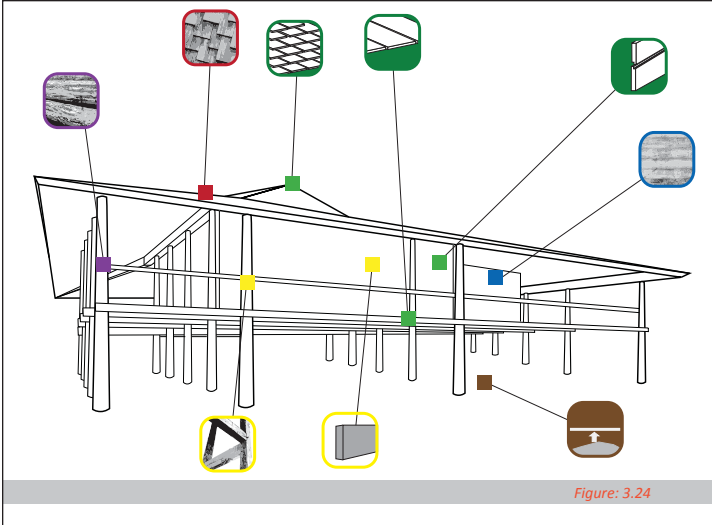
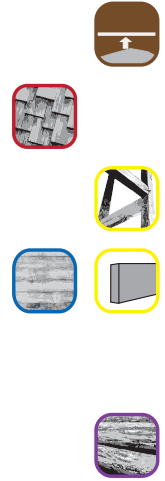


Figure: 3.23: McDonald House was created in the 50's for an aspiring doctor on the beach of Siesta Key.

Figure: 3.24: Analysis of vernacular style.



Cleanliness



Workstations



Water Heater



Meters



Mechanical



Transportable



2 Dimensional



Single Corridor



Expansion



Bay Depth



Battery



Emergency



Fan



Freezer



Refrigerator



3 Dimensional



Clustered



Flexibility



Bay Width



Insulation



Uninterrupted



Computer



Fume Hood



Public Space



Semi-Public



Private



Normal Power



Artificial Light



Natural Light



HVAC



Air Exchange



Ext. Access



Door



Garage Door



Grade Access



Hatch



Transitional



Air Lock



Lab Shower



Lockers



Storage



Data



Well Head



Water Pump



Testing



Plumbing



Drilling Rig



Core

4

Program

This section begins to explore the understanding of inherent qualities that will be embodied within the larger thesis program. Each piece is distilled to understand how these pieces are put together, so that they can be integrated into the proposed new structures. This is the tool pallet that can begin to set up a rigor for the way a program should perform. However, it is the architect's role to connect these pieces to make a complete structure. Creating the bridge between the vernacular, program, and site icons is the role of the architect.

The architecture begins to deal with the way a building reacts to the site and program conditions. These conditions become a driving force in the system of the building. For instance, any building constructed is made for a specific purpose and this purpose or function becomes part of the framework for the constructing of spaces. These spaces are equipped with the human necessity for the size, mechanical, structural, and architectural solutions for the problem known as space development. The developments

of this program, as well as the spaces, were developed in conjunction with traditional laboratory design and the holistic approach to facilitate the research of the deteriorating aquifer. Figures 4.1 & 4.2 begin to show the ecological problem in the south eastern part of the state of Florida. The everglades, shown as dark grey and blue, decreased in size over the last one hundred and fifty year, strictly a devoted responsibility of the work of human hands. The development in this area has caused the everglades, water table, and aquifer to be drained allowing for development. Without any sort of remediation or mitigation, these naturalistic pieces suffer. The hardship suffers through a series of chain reactions, beginning with the research done within an ecosystem, the initial disturbance, to the natural series of repair to the system allowing for accommodation for the disturbance, and finally to a complete change. However, if the changes are so rapid that there is not time for the system to repair, the end result will be a catastrophic deterioration, death, and a cease to exist in these area. The natural pieces to our built environment, animals, plants, and ecosystems cannot be reversed.

This thesis is predicated on creating a series building systems that will allow the problem to be researched. With each of the sites demarcated on the map (p.84-85), the understanding becomes that these prototype sites are part of a larger network and that their existence is contingent of the whole system functioning together. The research that is collected from each site is from a broad range. For instance, the studies would involve core drilling samples, soil research, water testing, and the decomposition of different natural organisms. Each of these spaces would be involved in a series of research that need to be completed in part to fix the aquifer. Many of these spaces become part of a collaborative series of research. The spaces can begin to be shared and grouped by necessities, such as access to running water, computers, and other functions that are all similar in program allowing their adjacency. Each space has a series of criteria that will also involve architectural solutions such as wall color, material choice, and mechanical or passive technologies in the building. All parts to this program are delicately thought out in order to facilitate research and architectural solutions.

The chart on the left begins to speak of the process in which these

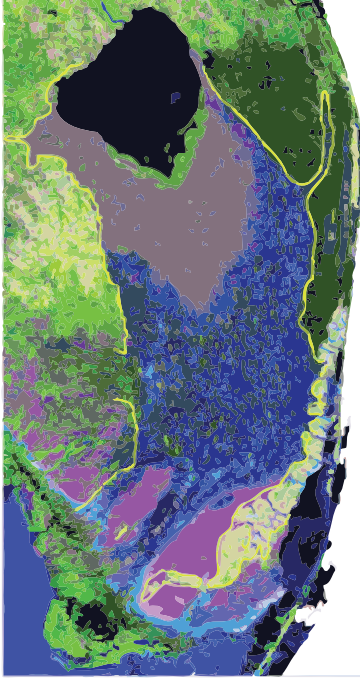


Figure 4.1: 1850's reconstructed satellite image of the Florida Everglades.

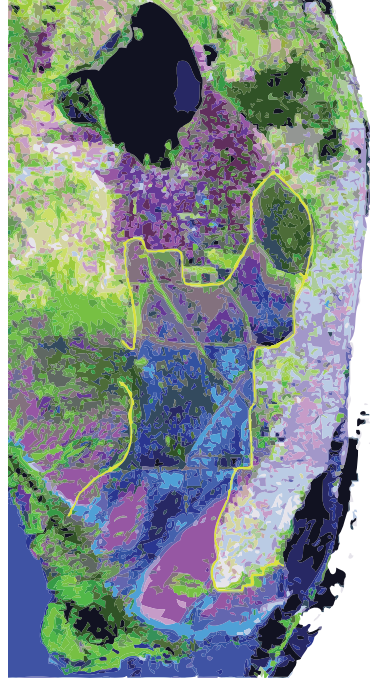
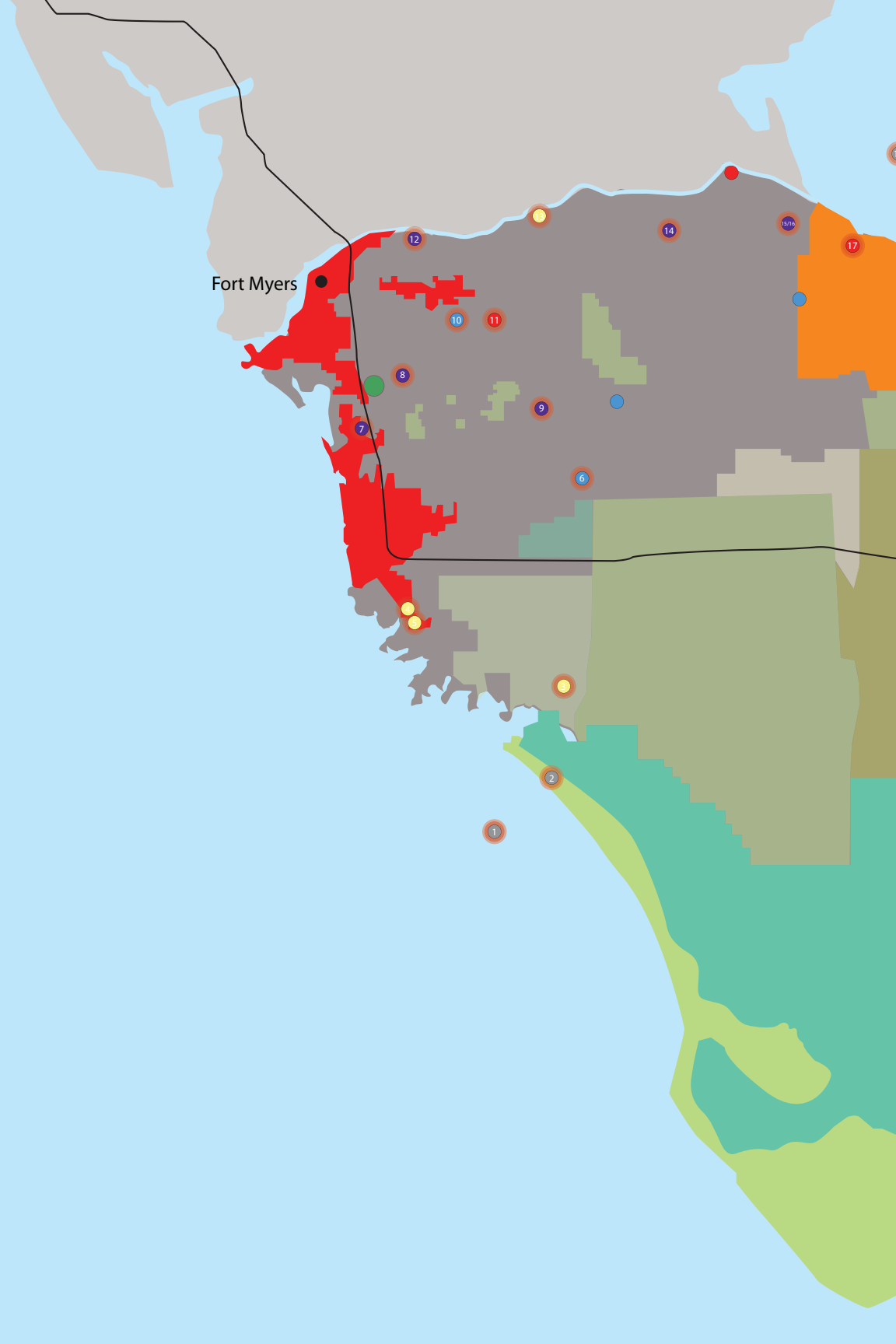
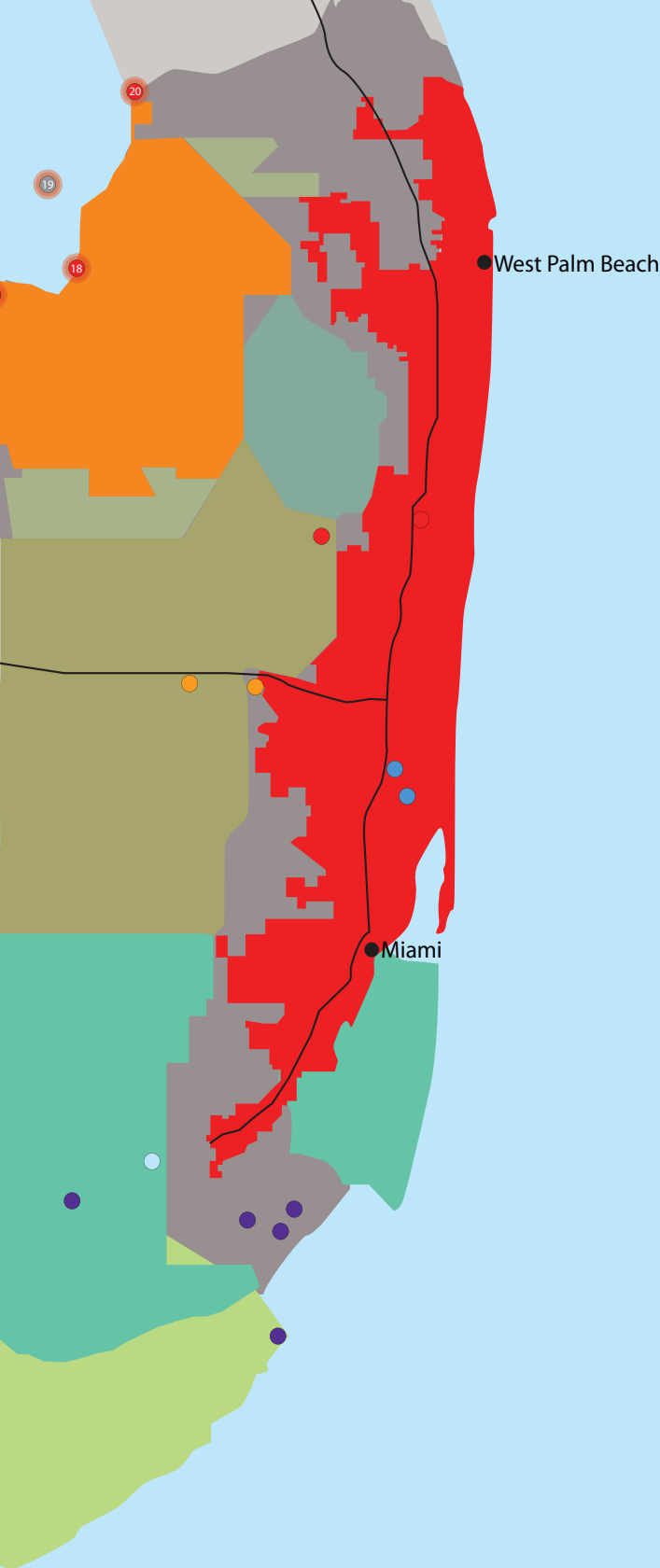


Figure 4.2: 2009 actual satellite image of the Florida Everglades.







key

Geological Typologies

- Urbanized Area
- Water Conservation Area
- Everglades Agricultural Area
- National Park
- National Preserve
- National Wild Life Preserve
- Indian Reservation
- Rural or Less Developed Areas
- Interstate Expressway

Aquifer Storage Facilities

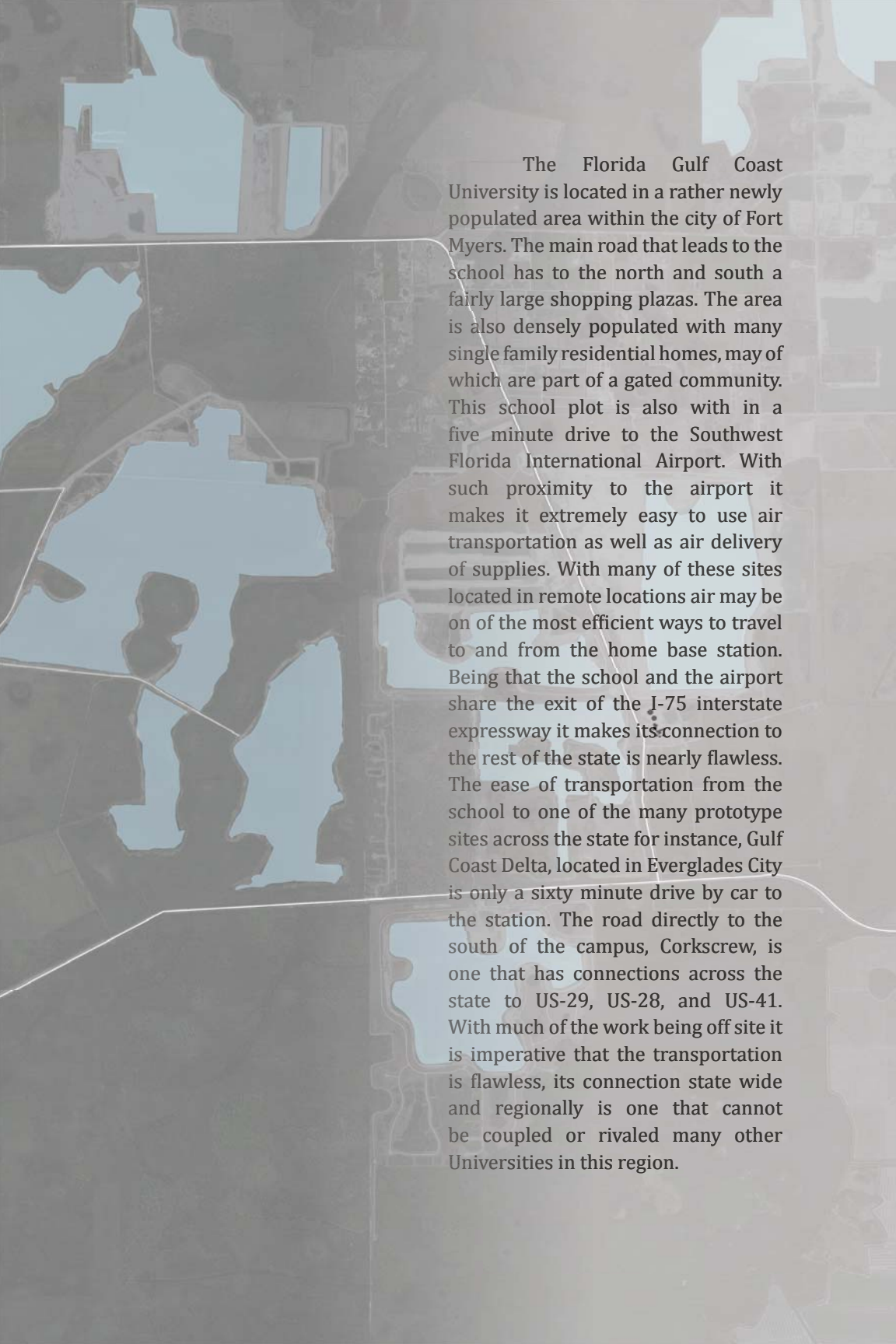
- Tier 1
- Tier 2
- Tier 3
- Tier 4
- Tier 5

Site Indication

- Proposed Home Base
- Activated and Studied Sites
- Additional Prototype Facilities

Sites 2, 3, 8, 13, 15, 20 will be explored in Chapter 5 (p.95). The remaining sites will be condensed in Appendix A. The proposed home base station pedagogy will be expressed in the following pages.



An aerial photograph of Fort Myers, Florida, with a semi-transparent text box overlaid on the right side. The map shows the city's layout, including roads, water bodies, and green spaces. The text box contains a detailed description of the university's location and its transportation advantages.

The Florida Gulf Coast University is located in a rather newly populated area within the city of Fort Myers. The main road that leads to the school has to the north and south a fairly large shopping plazas. The area is also densely populated with many single family residential homes, many of which are part of a gated community. This school plot is also within a five minute drive to the Southwest Florida International Airport. With such proximity to the airport it makes it extremely easy to use air transportation as well as air delivery of supplies. With many of these sites located in remote locations air may be one of the most efficient ways to travel to and from the home base station. Being that the school and the airport share the exit of the I-75 interstate expressway it makes its connection to the rest of the state is nearly flawless. The ease of transportation from the school to one of the many prototype sites across the state for instance, Gulf Coast Delta, located in Everglades City is only a sixty minute drive by car to the station. The road directly to the south of the campus, Corkscrew, is one that has connections across the state to US-29, US-28, and US-41. With much of the work being off site it is imperative that the transportation is flawless, its connection state wide and regionally is one that cannot be coupled or rivaled by many other Universities in this region.

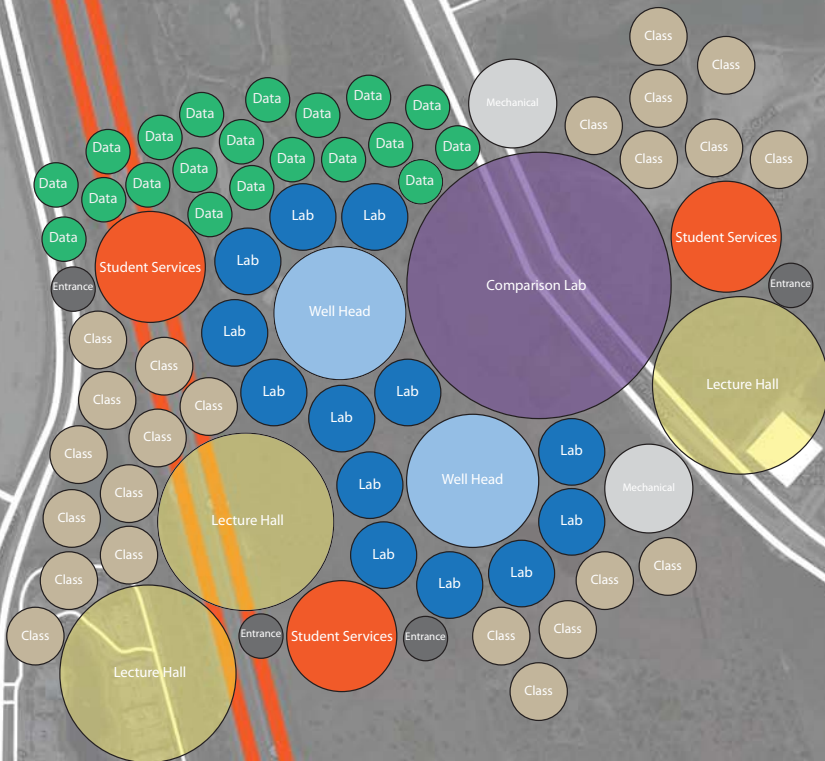


Left: Concept of a crate closed.
Right: Concept of a crate open.

With each of these crates being deployed in to different vernacular regions and typologies as expressed in Chapter 3, each of these crates will change in cladding and aesthetic construction in order to fit and

match to the architectural style that the prototype site is deployed in. However, in some cases the crate may not match the feeling of the base station.

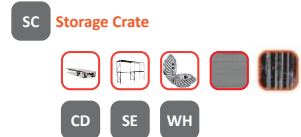
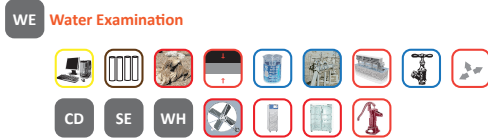
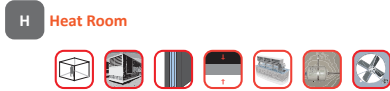
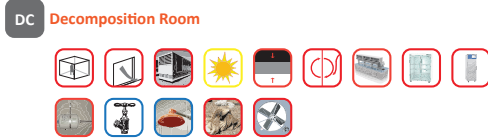
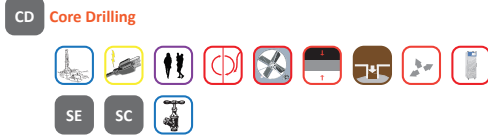
With the location of the base station adjacent to three university roads, similar to the selection of the larger programmatic site. The particular plot is chosen because of the accessibility of dropping the crate off and pulling one out. With the notion that the program is to connect all of the sites together it must be easy to plug the crates back in to exchange data and recharge. Shown above it is the projected space and wall that the recharging center would be located on.

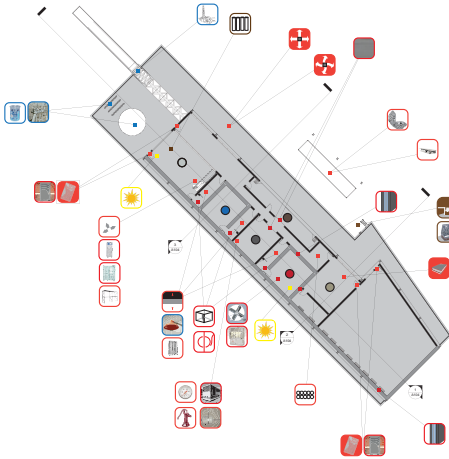




buildings were assembled programmatically. Each space was a combination between the traditional standards for research facilities and the necessary requirements of this thesis' program. The process began by understanding what sorts of qualities the space may need to have to facilitate such specific research. For example, the decomposition room, would as its name implies, allow studies regarding the decomposition of animals, animal waste, fungus, mold, and other forms of decay. Now architecturally the solution is in using large ventilators for an adequate air exchange, direct access outside in the event of an emergency, sunlight so that life can be sustained inside artificially, a typical research laboratory layout, access to water, spaces, and materials that may be cleaned easily, and a transitional space that allows the researchers to shower and change clothes after being inside this space. Each function and piece of this system plays a large role in the creation and distinction of spaces in the building. Each additional subprogram of the space is developed with rigor and understanding how architecturally the needs of each form of research can be manifested.

In conjunction with the specific laboratory spaces, traditional laboratories have other sets of criteria that are necessary in the development of the space. In a laboratory a certain level of security is demanded, which is employed throughout the building. In addition, it is common to have spaces where the public can enter the building or research campus and view the research. This allows for peoples perception's of research facilities to be nonexistent because they inherently know what is going on. Furthermore, it is important to allow this research to be categorized within the facilities library that may be a public or private space. Following that, each researcher should be entitled to their own desk or cubical space where they journal or log information, write or create grants, and partake in a series of personal endeavors and reflections. This may become another space where the public may have limited access to either speak or help a researcher with studies or community engagement. But, it is important to understand that each of these spaces is not a compartmentalized space. The facility is a place of collaboration and that as each of these subprograms begin to take place they

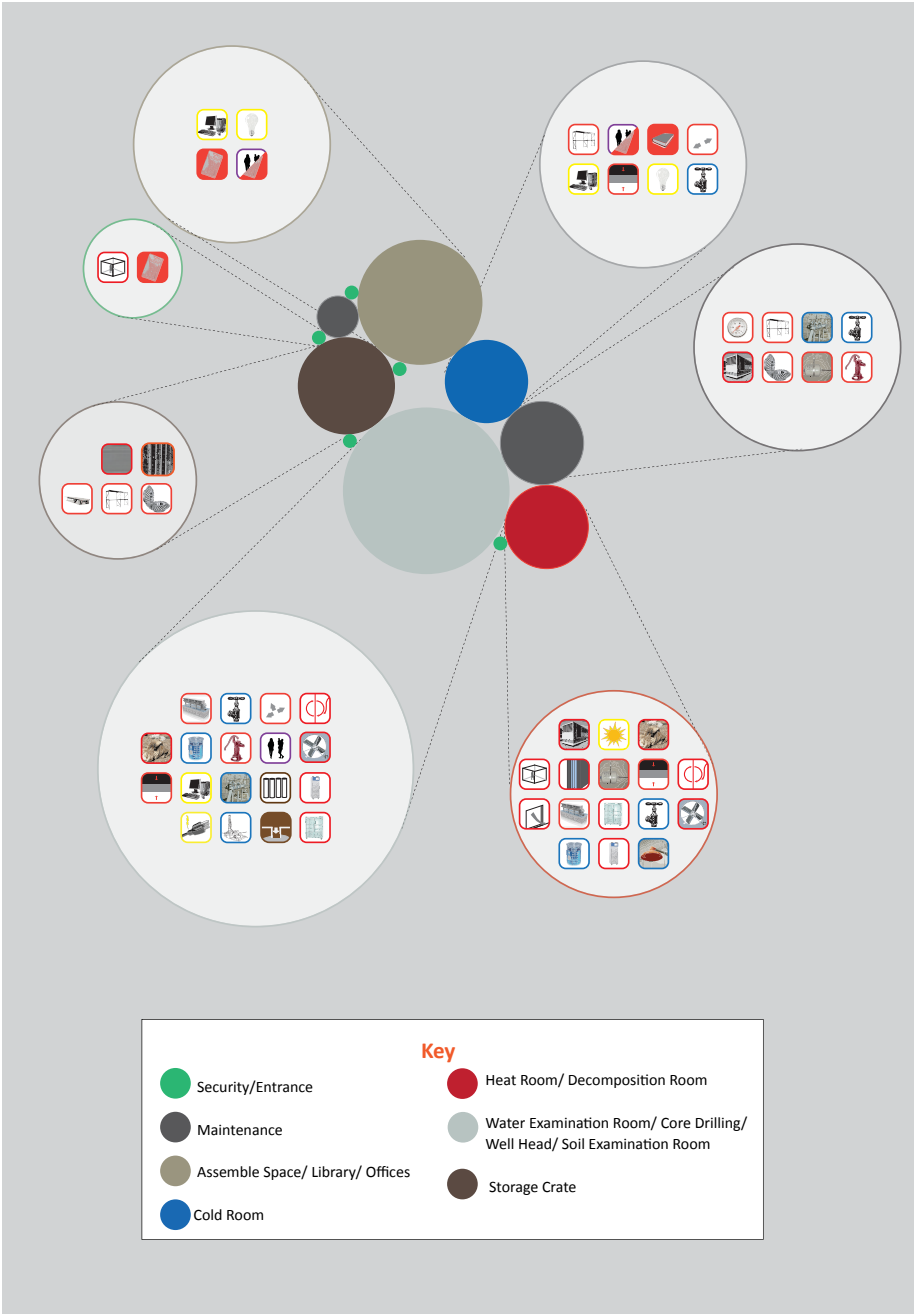


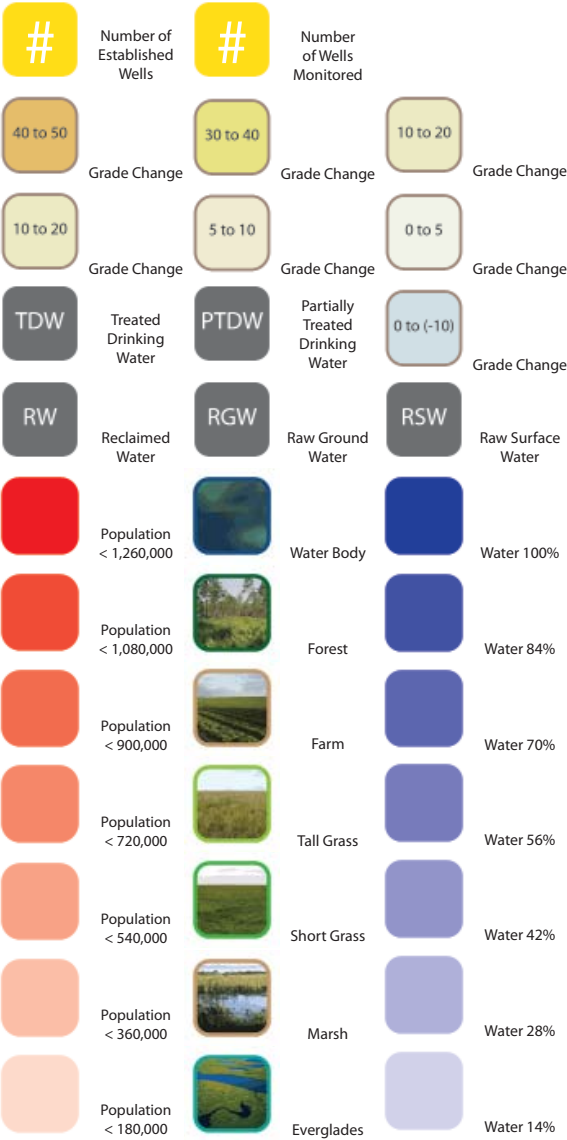


are joined base on similarities of needs. The drilling rig, for instance, has access that may be needed by both the soil examination and core drilling rooms. Furthermore, these spaces have other qualities the begin to overlap allowing them to also be paired with the Well Head and the Water Examination space. This is something true with all the pieces in this building; each space is paired with an adjacent space or subprogram that compliments it or allows a better quality of research to be done. During this phase the

program grew two fold from an aquifer research station, to a space that allowed for a maxim of pieces being put together; research, collaboration, ecology, and community engagement. The growth allows this place to be more than just a piece of a network of prototype sites, but a place understanding a holistic way of researching.

Throughout the program study it is important to remember that now each site will be input with this program or for this fact, framework of program, in which each site may have an additional part attached to it in order to supplement the program. The more remote sites in this thesis will receive a living component while the more urban sites may have a community outreach center. This is where the whole proposal begins to dovetail, the program, the architectural style, and the site conditions which individually allow for an easy remedy, but together pose a much more grappling problem and solution. These building will begin to speak of the inherent design qualities that were conceived through this process. The framework laid down becomes almost as if it were road map to design and this road map has a series of design challenges that allow the architect to bridge them.





5

Sites

The following sites act as the 'test' sites of this thesis. These sites were chosen because they are all adversely different from one another. Some are based in rural areas, suburban areas, urban areas. Each of these typologies will influence the design of these spaces. Each site is accompanied by a series of icons that similar to the vernacular icons help denote and distill certain site restrictions, design elements, or geographical differences. Many sites are located on or near an aquifer well head can utilize the current technology on the site for the purpose of the research. These sites will have a variety different site typologies to deal and work with. Each site is accompanied by a bar graph that denotes the land usage within the window of the site.

Following the site analysis is the beginning of design work. The design of the space is based on what is the current location and climate influences on the site. For instance, the orientation of the **Gulf Coast Delta Site** is based its relationship to the sun. It is slightly turned so that the building faces south/southwest to gain the most solar output from the sun. this makes sure to take the largest amount of resources from the environment.

2

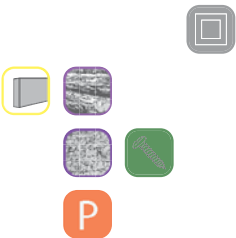
Gulf Coast Delta

Collier County

The Gulf Coast Delta site is unlike any other proposed because it is completely surrounded by water. Much of this area, called the land of 1000 islands, is the last area before it is completely ocean. The murky water color, which indicates many other things that may be suspended in the water, is different here than in many other parts of the state. Along the hundreds of miles of coastline in the state, the coast has a tide which washes water up on to shore and then back out allowing for an even exchange of water from the outer sea to the shore line. However, this is not the case here. Many of the state’s rivers dump fresh water in to this part of the ocean. In addition, due to



the series of islands between the ocean and the proposed site location, there are virtually no waves that crash upon the shore line. It is the stagnation of the water in this area that makes it crucial to study.



Building distinctions of the Finney House which will be employed in the structure located on this site.

Architecturally, the Finney pavilion (Figure: 3.11) is a good starting point for the structure, form, and materials that may be proposed as feasible concepts. Because of its seclusion from more civilized areas, the structure would benefit from an attached living component to provide the researchers a place to stay. The site will also have to embody an alternate route of transportation for the data crate, via either water or air. This will allow the design to be facilitated amongst ideas of function and utility, as opposed to history or aesthetics.

R



S



0 to (-10)

TDW



0 to 5

PTDW

RW

RGW

RSW

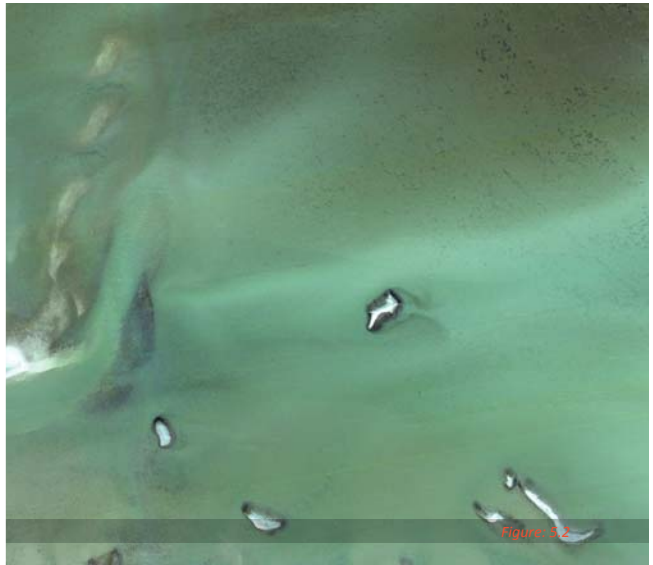




Figure 3.3

This mapping shows the preliminary foot print for the space. The materials on the structure match its inspiration; The Finney pavilion (Figure 3.11).



Figure 5.4

This massing predicts volumetric occupancy for this research station. This building's process continues see [Figure 6.3](#)

3

Big Cypress
Collier County

The Big Cypress site has a very interesting typology. Similar to many aquifer storage facilities, a large amount of water is stored in man made lakes and retention ponds. The man made lakes have a large impact on the surrounding ecosystem. Much of the ground is moved and displaced into other areas, which also creates displacement of any living creature in that area. The impact of displacement on the surrounding area may or may not be independent of the aquifer deterioration in and around the area. However, the land in this area is scattered with some construction debris from the drudging of the lake which may seep contaminants into the ground water supply and the aquifer.



The ecosystem in this area will allow researchers the ability to understand the problem from many different areas. The stilted Seminole structures (Figure: 3.5) would benefit this area because it would lessen the impact to the existing environment by reducing it to the size of the posts in the ground. Furthermore, the fields around the site offer the construction to be completed in a manner that would allow for camouflage. A need for camouflage is imperative since the site is located both north and south of a panther reserve. In order to keep animals like that in this area, the visual differences must be almost unnoticeable. The use of thatching could provide an adequate amount of uniformity to the surrounding land.



Building distinctions of the Seminole Chickee which will be employed in the structure located on this site.

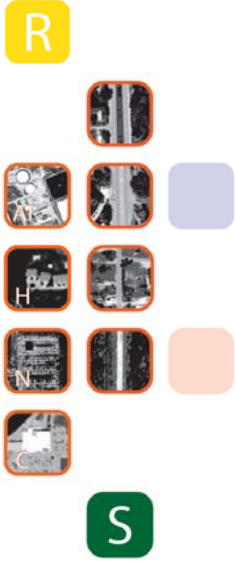


Figure 5.5

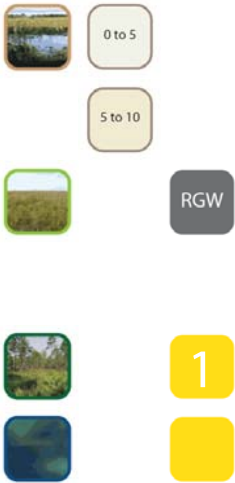
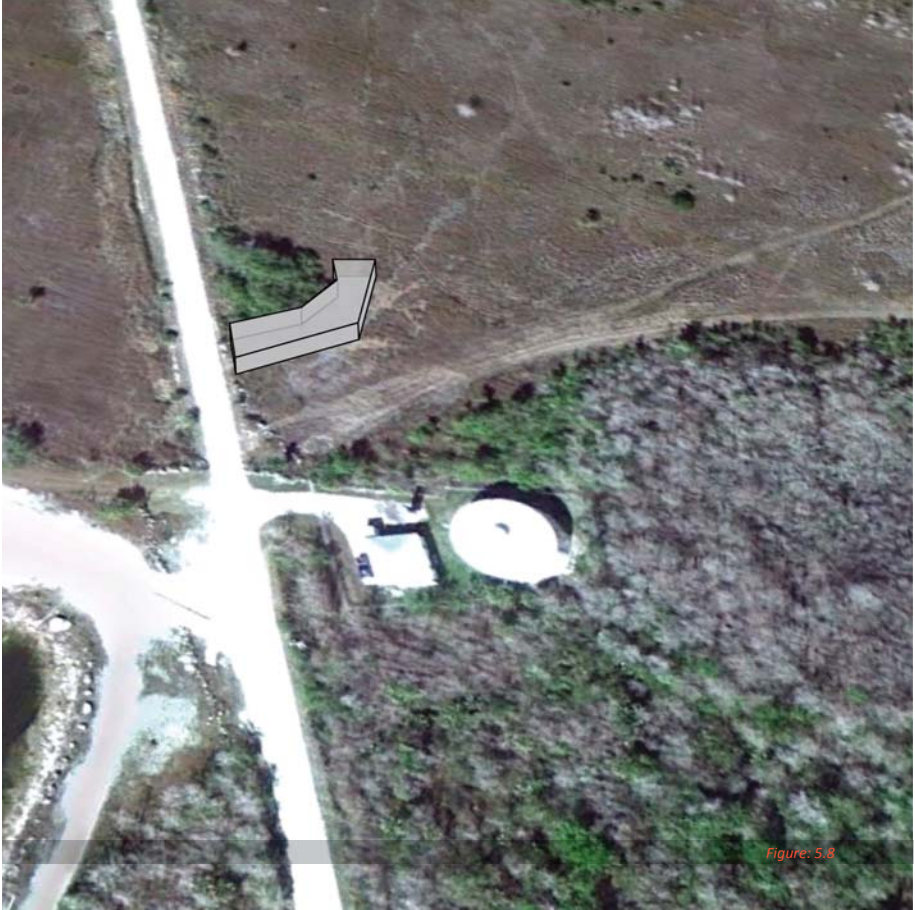


Figure 5.6



This mapping shows the preliminary foot print for the space. The materials on the structure match it inspiration; a Seminole structures (Figure: 3.5).

*Figure: 5.8*

This massing predicts volumetric occupancy for this research station. This building's process ends at massing. Further exploration is done in other building types.



Lee County




Building distinctions of the McDonald House which will be employed in the structure located on this site.

R




U







S

TDW



10 to 20



1





This mapping shows the preliminary foot print for the space. The materials on the structure match it inspiration; the McDonald house (Figure: 3.23).



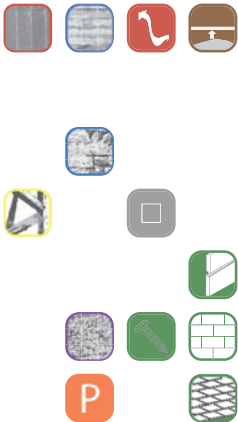
This massing predicts volumetric occupancy for this research station. This building's process ends at massing. Further exploration is done in other building types.

13 South Main Hendry County

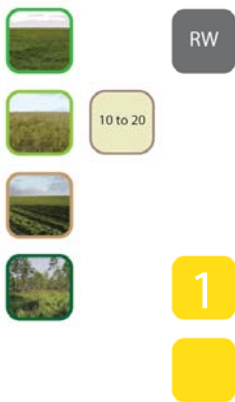
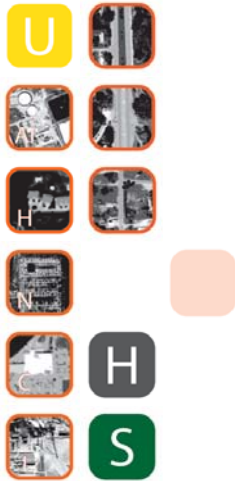
South Main well is located in Labell, a moderately populated area of Hendry County. This well, unlike the Corkscrew well, is not miles from heavily populated areas, but is directly in the downtown. Not only will this site have to deal with the programmatic issues inherent with all the sites, but it will have to deal with the zoning ordinances and codes of Labell. This prototype will deal almost instinctively with an educational component. One of its primary functions will be to educate the people of Labell and the surrounding area of the inherent aquifer deterioration. The analyzed data will provide the citizens of Labell with proof of the ongoing aquifer problem.

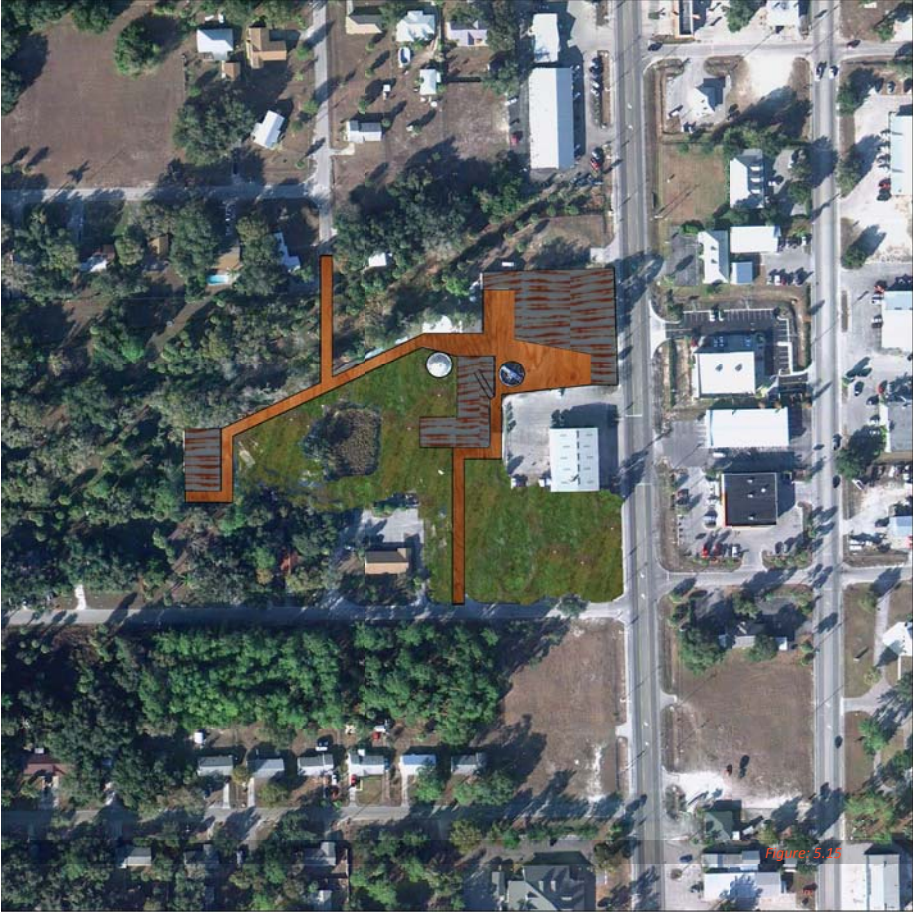
As a result, the people will be motivated to help remedy and prevent any further damage done to the site. The introduction of the program will cause the people to become more aware of their impact on the environment and understand how environmental issues can affect them personally.

The Cypress (Figure: 3.15) architectural style will be employed in this site, not so much for historic reasons, but for a spatial reason. The Cypress has no porch, allowing any visitor to enter right up to the door. Without a secondary or tertiary barrier, the people of the city can be welcomed into this site. The educational component can be placed on a street front where people may have the ability to just walk right up and enter the building, allowing the people to engage with the structure on both an intentional and unintentional basis.



Building distinctions of the Cypress House which will be employed in the structure located on this site.





This mapping shows the preliminary foot print for the space. The materials on the structure match its inspiration; a Seminole structures (Figure: 3.5).

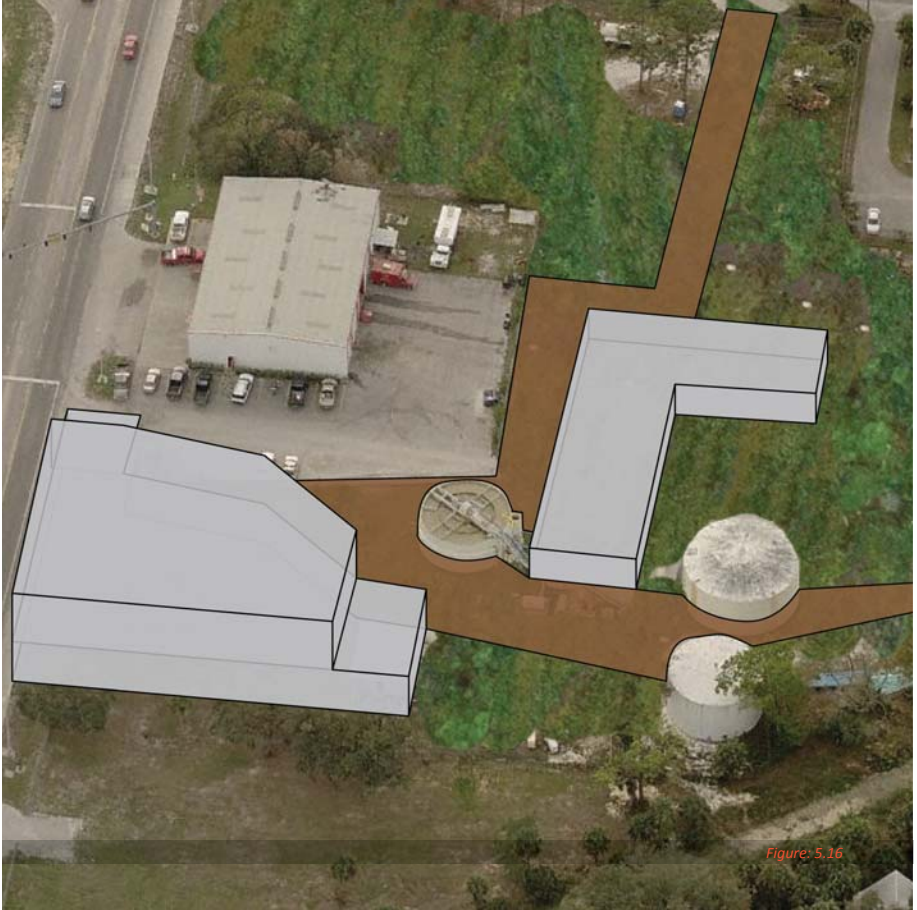


Figure 5.16

This massing predicts volumetric occupancy for this research station. This building's process continues see [Figure 6.12](#)

15 Olympia Road
Hendry County

Olympia Road well head is the macro scale of the Georgia Road well head (16, See Appendix A). However, a large difference between these two sites is that Olympia Road is located in extreme proximity to an industrial complex. As many other industrial complexes that scatter the country, they place an extremely high level of stress on the environment. The site has the ability to monitor the stress on the environment caused by the factory or industrial complex. Furthermore, this is also located within the limits of a city. In a dovetailed fashion, the prototype will have the ability to look at the site in whole scale, how both the human population and the industrial complex alter the surrounding aquifer system.

This prototype site will embody the ideas in the Remmington corral (Figure: 3.7). The variety of potential problems that need to be researched on this site include the different parts of the industrial complex, the city, and the more secluded parts of the site. The site needs to be easily transported to other parts of this subregion. Instead of having a scientist travel to these different parts of the region, the site could essentially move and dock in a particular part for a couple of days, collect data in that particular site, be packed and moved to another location for a few days to collect more data from a different part, and continue on in order to collect a clear cross section of the area.

Building distinctions of the Remington which will be employed in the structure located on this site.

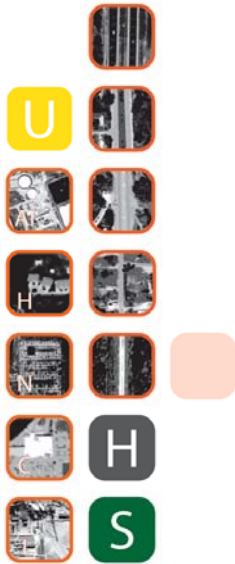


Figure: 5.17



Figure: 5.18



This mapping shows the preliminary foot print for the space. The materials on the structure match it inspiration; the Remington corral (Figure: 3.7).



Figure: 5.20

This massing predicts volumetric occupancy for this research station. This building's process ends at massing. Further exploration is done in other building types.

20 Kanner
Martin County

The Kanner site is located directly on Lake Okeechobee, the main source of fresh water in the state. This site will be as crucial as the Gulf Coast Delta. A large portion of the fresh water flows from this site to both the Atlantic Ocean and the Gulf of Mexico. Scientists will have the ability to research the data and microbacteria from this site and the ocean in order to understand what the water is losing or gaining as it travels to and from the oceans. The scientists can also study the animal and plant life in the area to understand if any health complications are caused by any stemming problem with the quality of the water in either site. The researchers will obtain a baseline for the freshness of the water.



Building distinctions of the Tovar House which will be employed in the structure located on this site.

This site will have architectural features of the Tovar house. The tectonics of the surrounding area will be complimented well with the location of the prototype in this site. These techniques could also be used to create guards and shelter from the climate and weather phenomena, such as hurricanes. The masonry construction and stucco finish will provide superior protection to water and wind in any hurricanes. It also holds some symbolic meaning. This home is the start of many architectural styles in Florida. Many rivers also start at this site, creating a parallel of beginning between the home and rivers. The project is not only a symbolic fixing of the aquifer and nature, but a vernacular reinstatement.





This mapping shows the preliminary foot print for the space. The materials on the structure match it inspiration; a Seminole structures (Figure: 3.5).



This massing predicts volumetric occupancy for this research station. This building's process ends at massing. Further exploration is done in other building types.

6 Design

2 Gulf Coast Delta Collier County

This site when it was designed had a few different obstacles to overcome. Being that it was in the water, the building steps slightly outside of the most ecological solution to this problem. Admitted, that this is slightly the antithesis of the aquifer problem, it understood forthright that this building is meant to research the problem and if in fact we only have one side of the problem, the land side, how will it ever be resolved? Placing this site in a body of water only makes the most sense when measuring the infiltration rate of fresh water into salinized water. Furthermore, this building is sited in a rather shallow part of the land of one thousand islands. The ecological impact will be much less do the lack of depth that this structure may drive piles into. While this may all be part of the criticism of the siting, they are knowingly taken in the balance of understanding and researching the entire aquifer problem.

This building went through a series of revisions due to the fact that the program began to play a larger role in the overall process. The building did not only grow in size, the depth of uses became much larger. The building is separated from public and private based on the uses of the program, and separated physically by a small breezeway. Further, the building begins to then be broken down by program, size of furniture and rooms, and then by smaller programmatic elements. The orientation of this building is based on gathering solar gain facing south/southwest. The building is also equipped with a thermal mass that allows the building to gain energy through the day. This structure was influenced heavily by the passive technologies in the building, due to its siting locations of a space in the water, slightly off the grid.

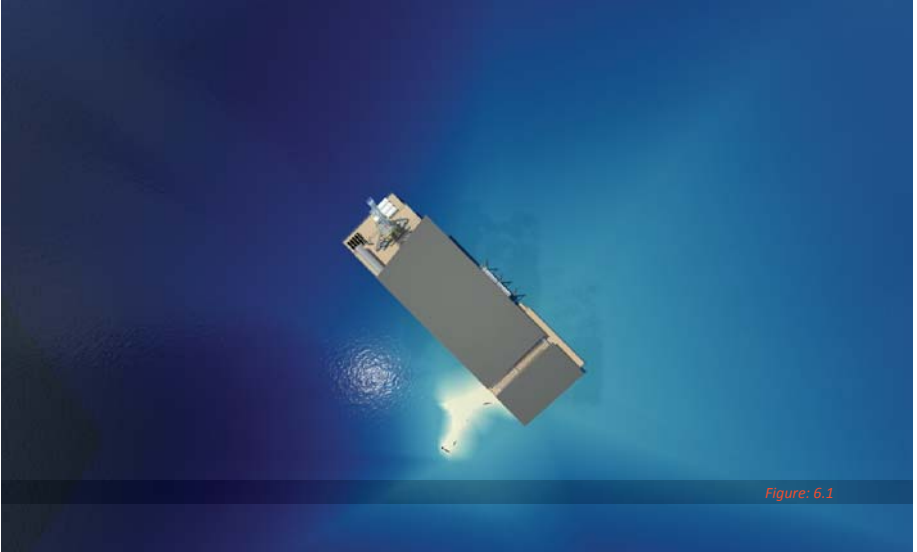
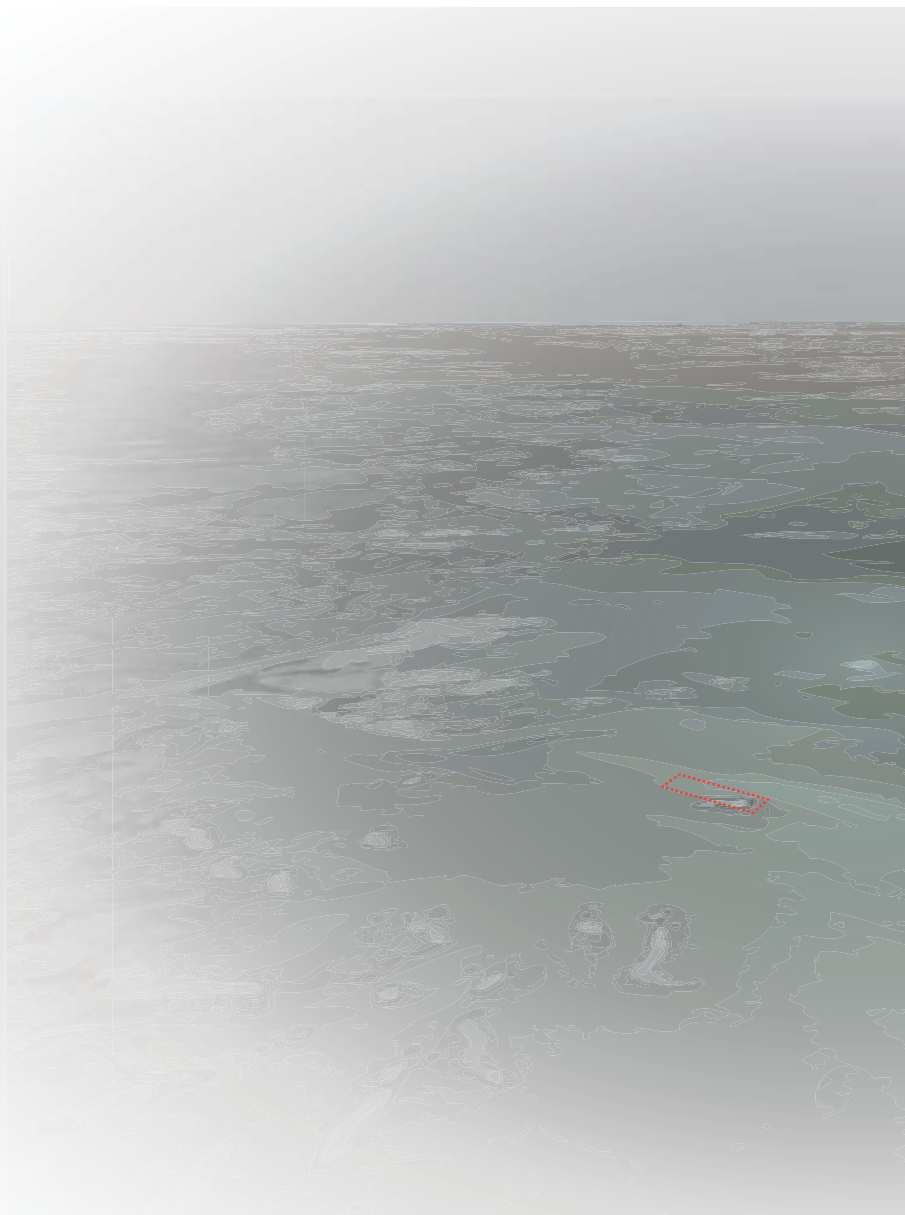


Figure: 6.1



Figure: 6.2



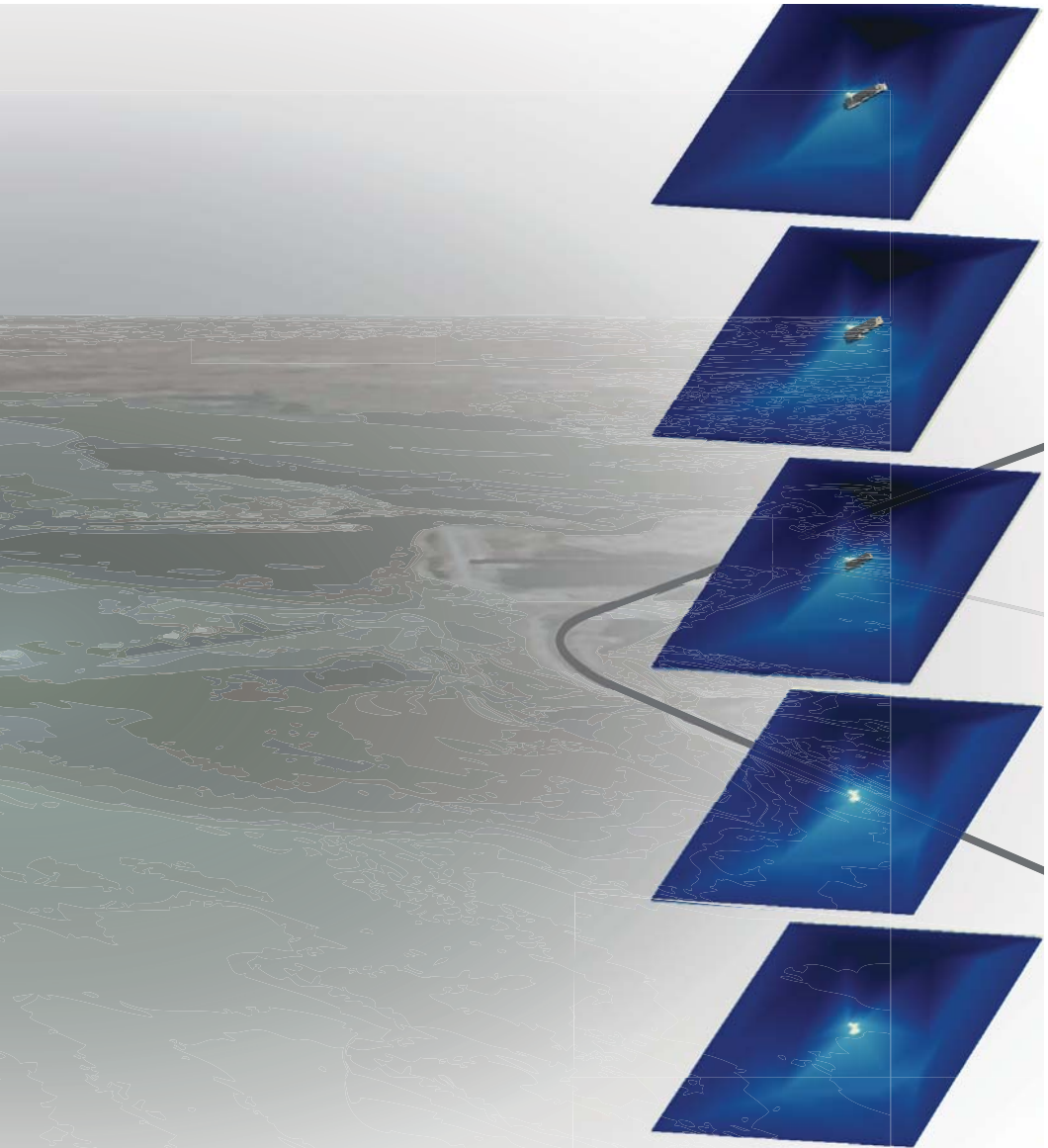
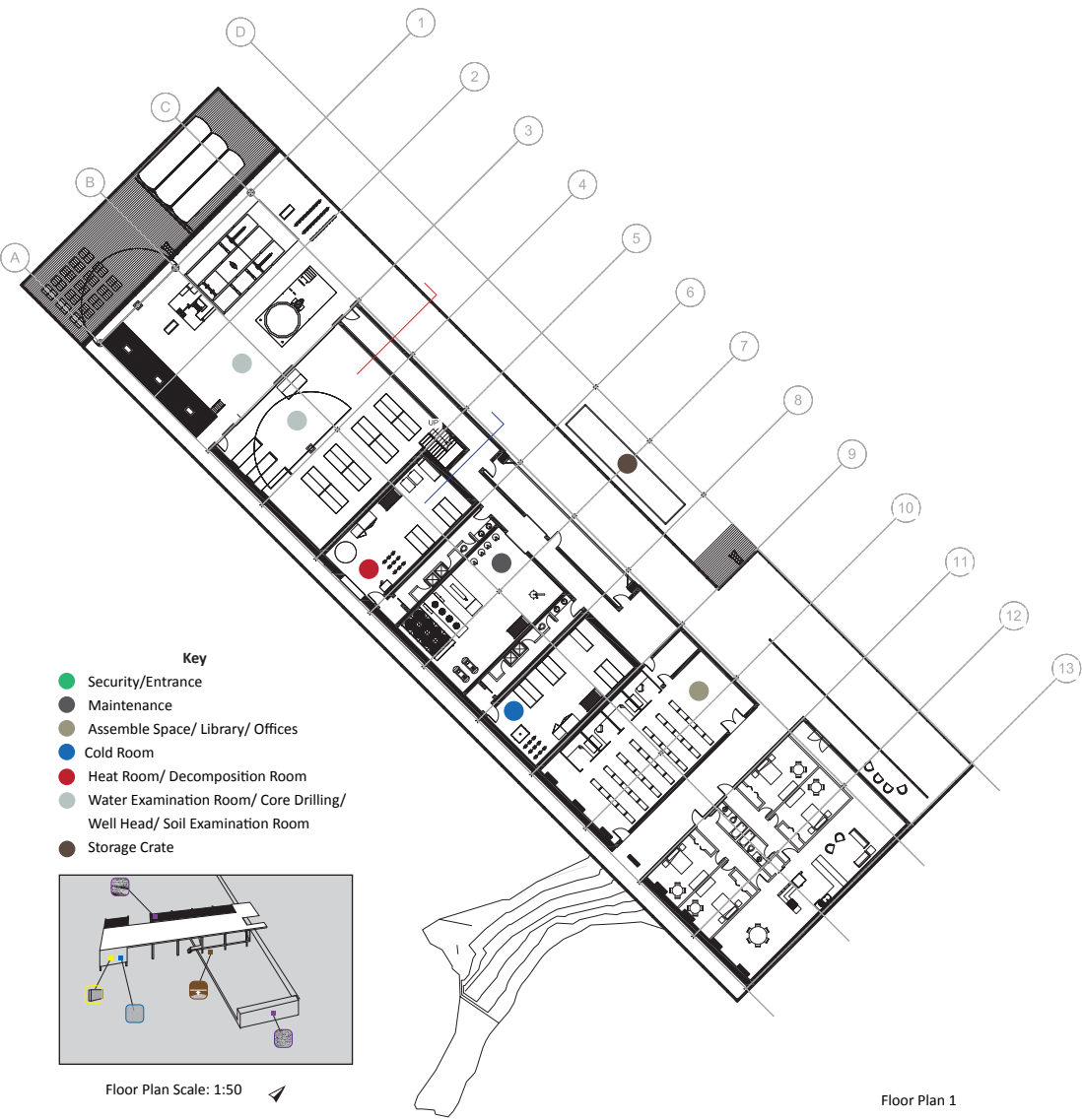
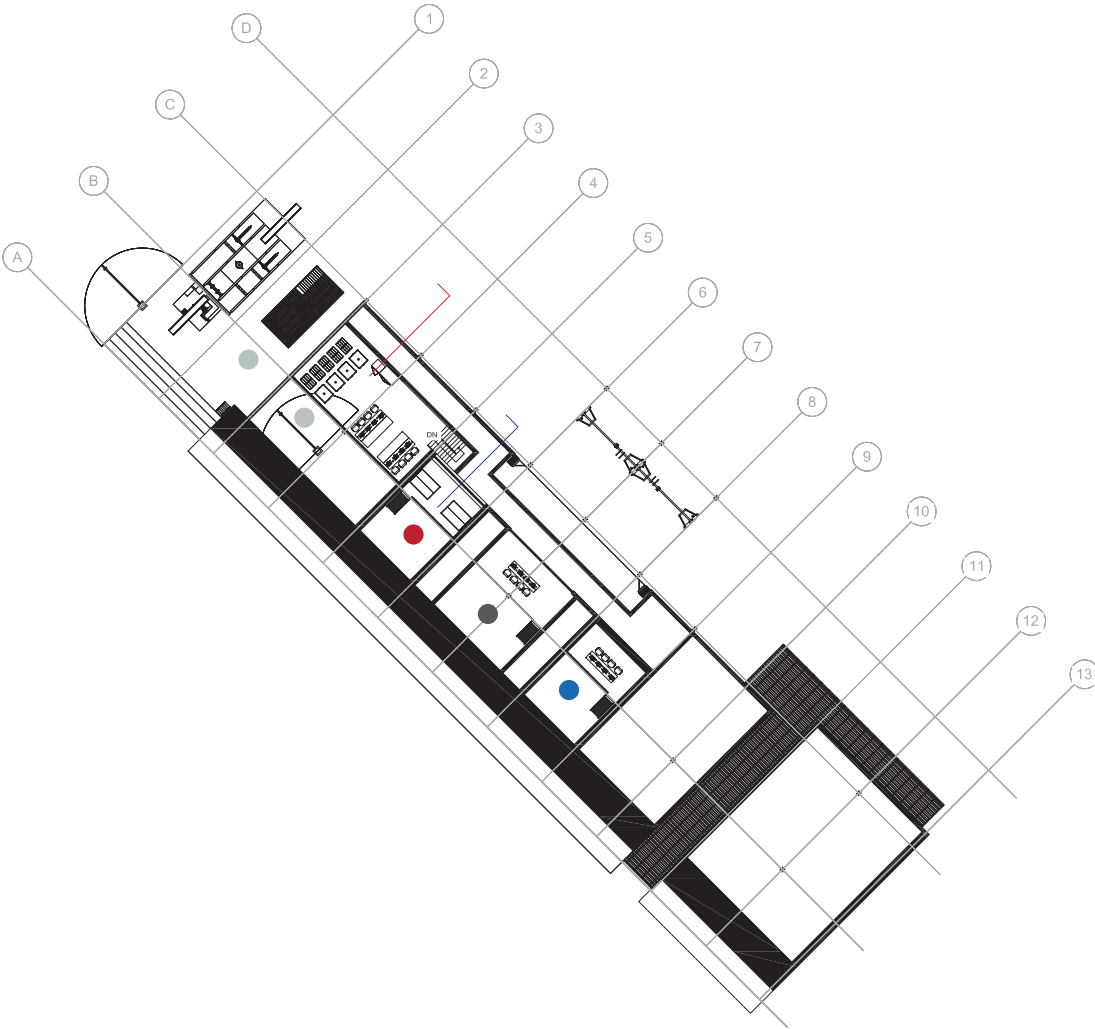
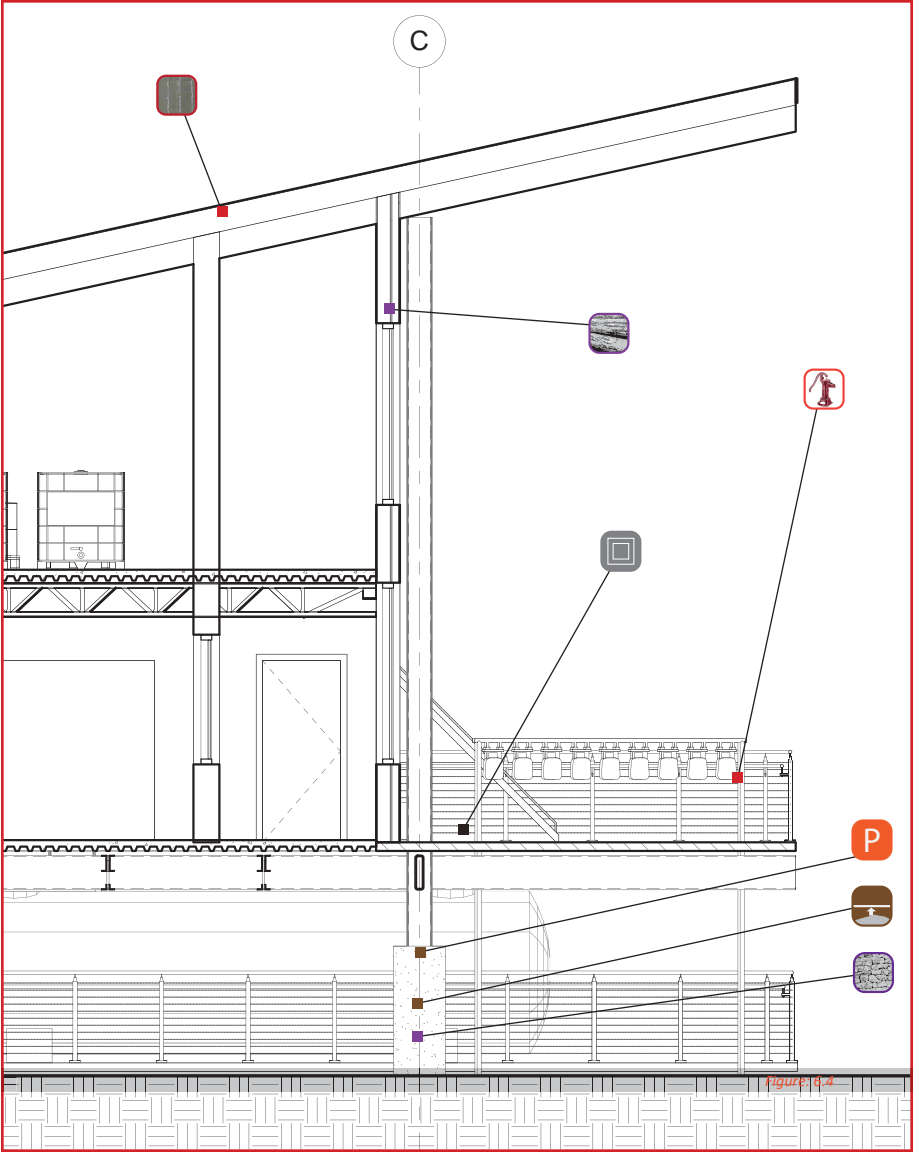


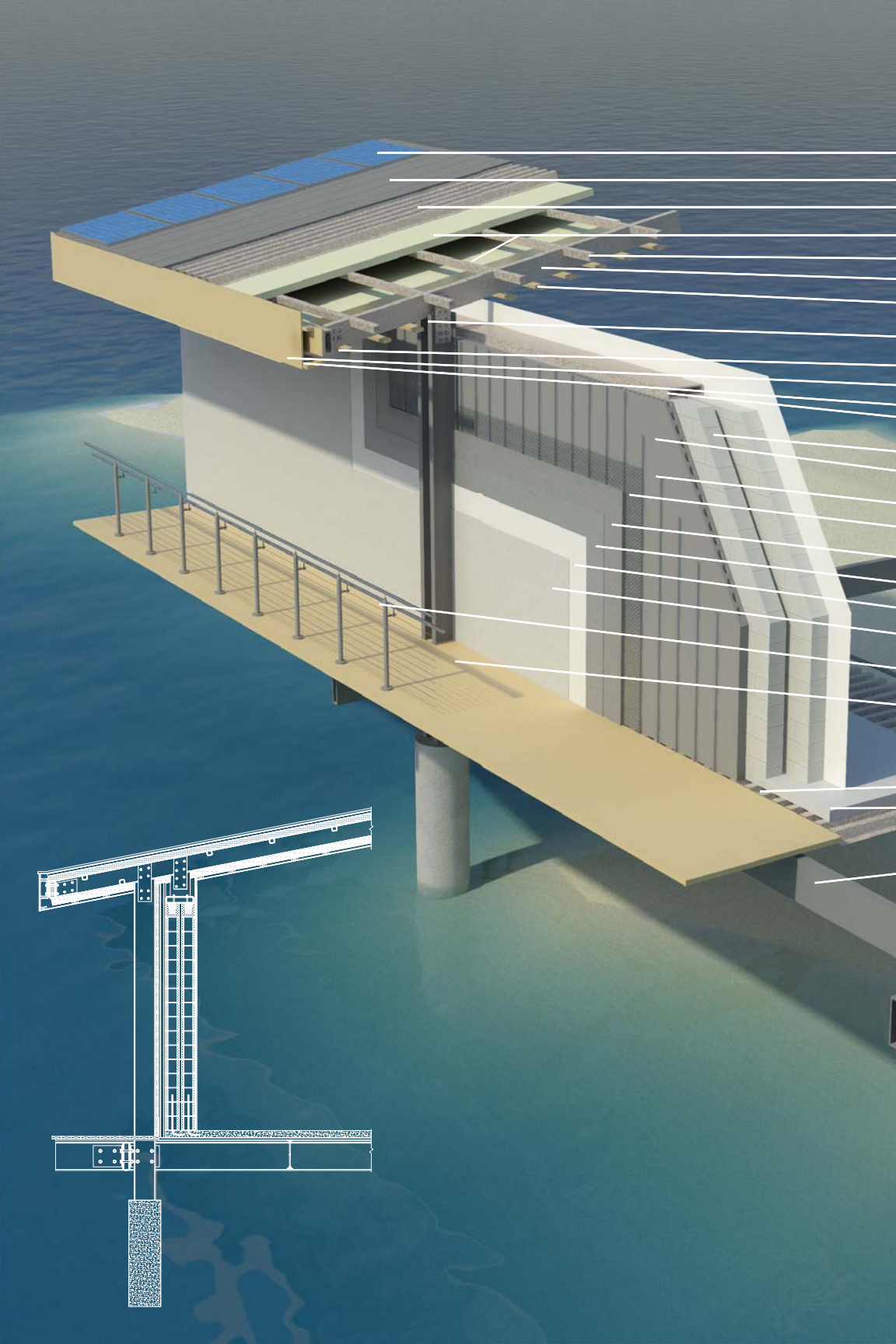
Figure 6.3: This isometric areal, begins to speak of the context in which the site was developed and the different phases and masses that were part of the design process.





Floor Plan 2





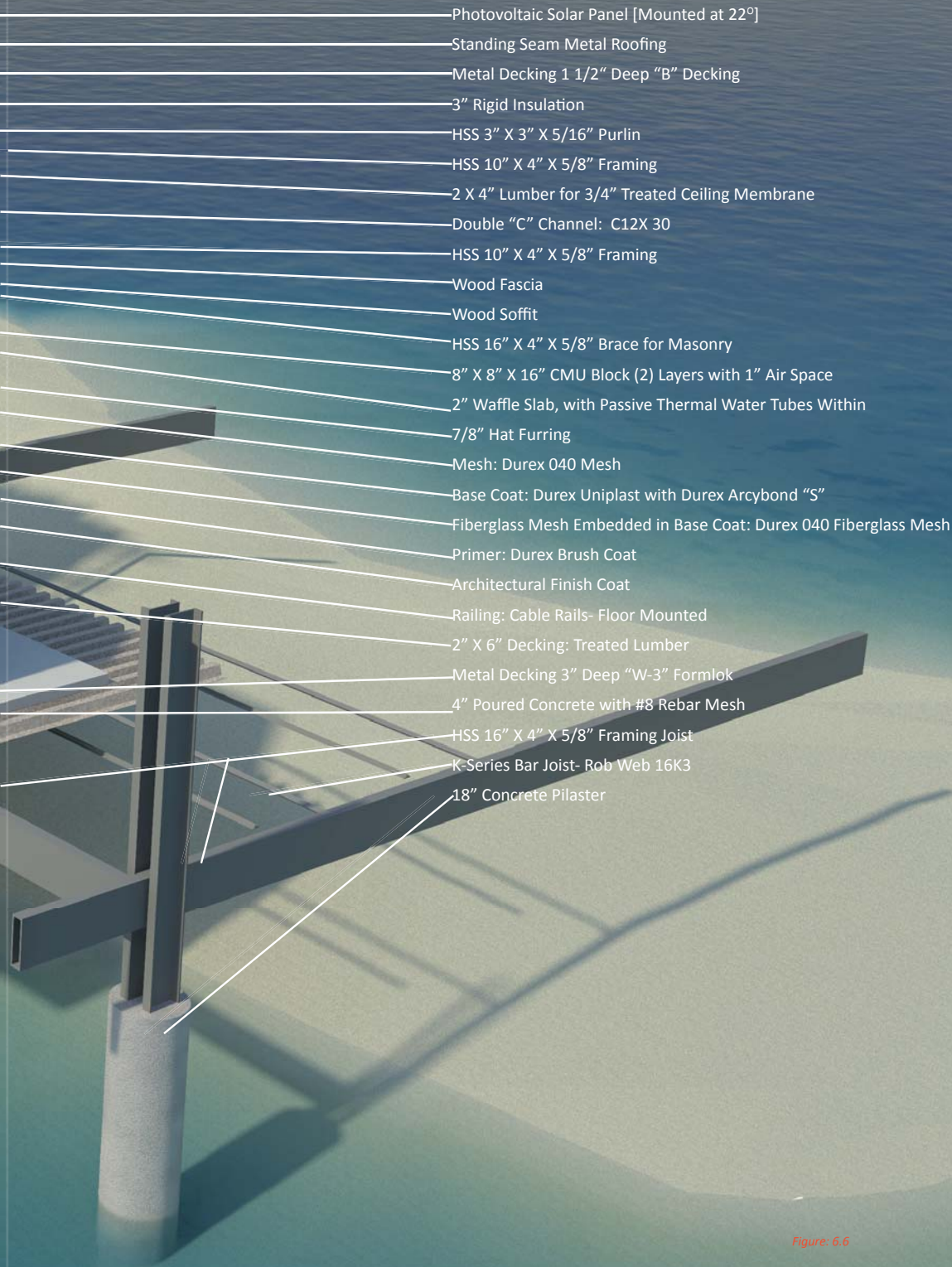
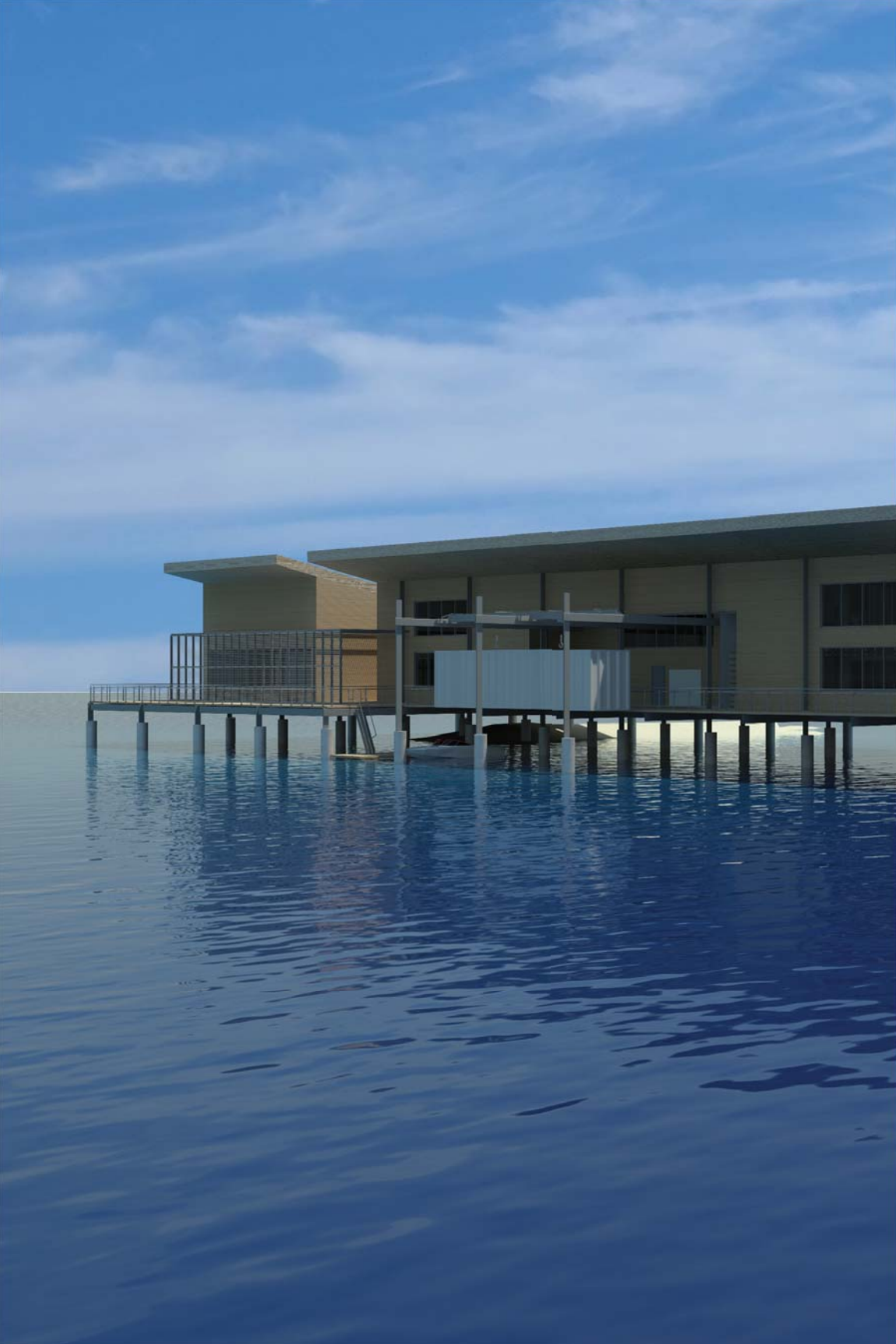


Figure: 6.6



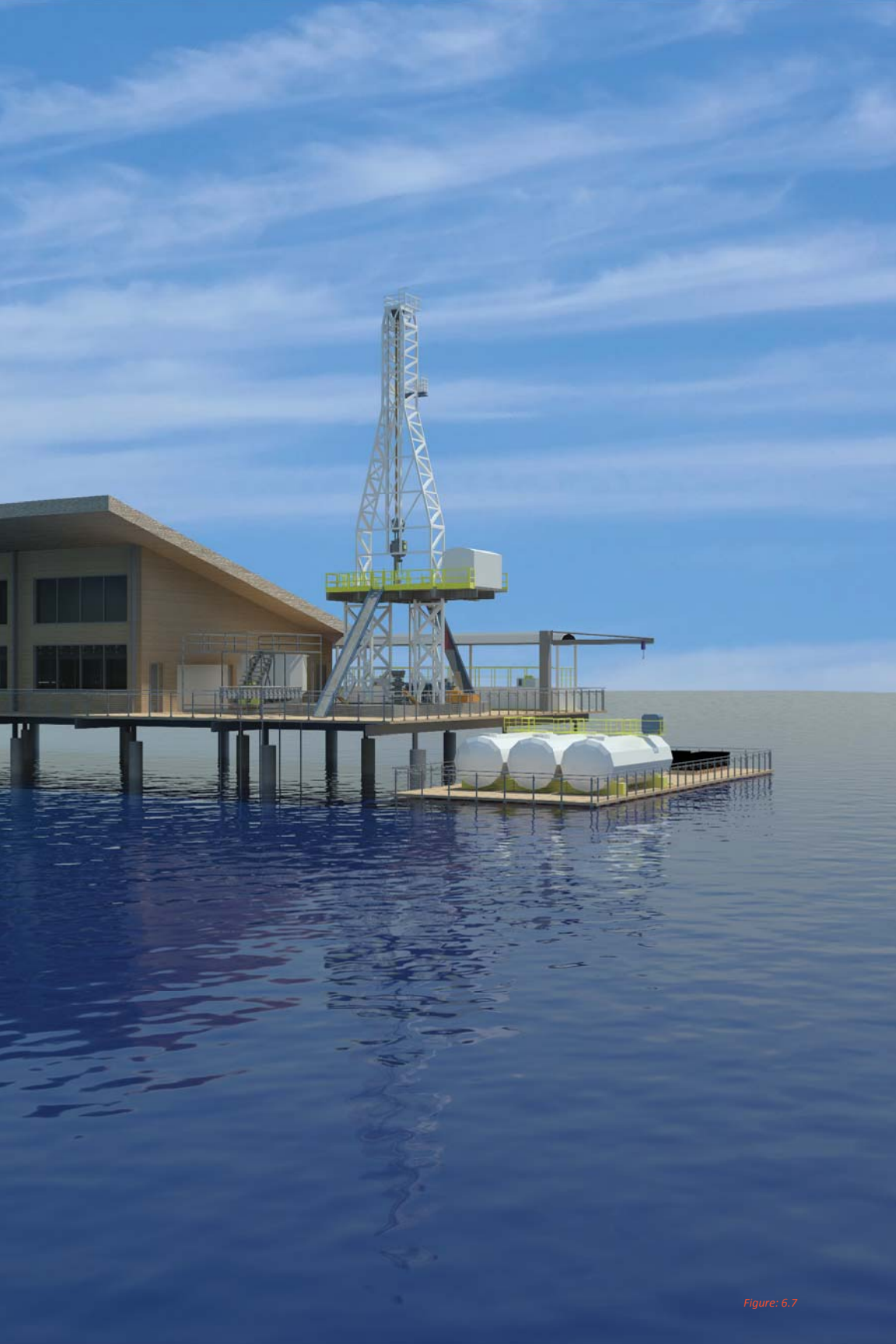
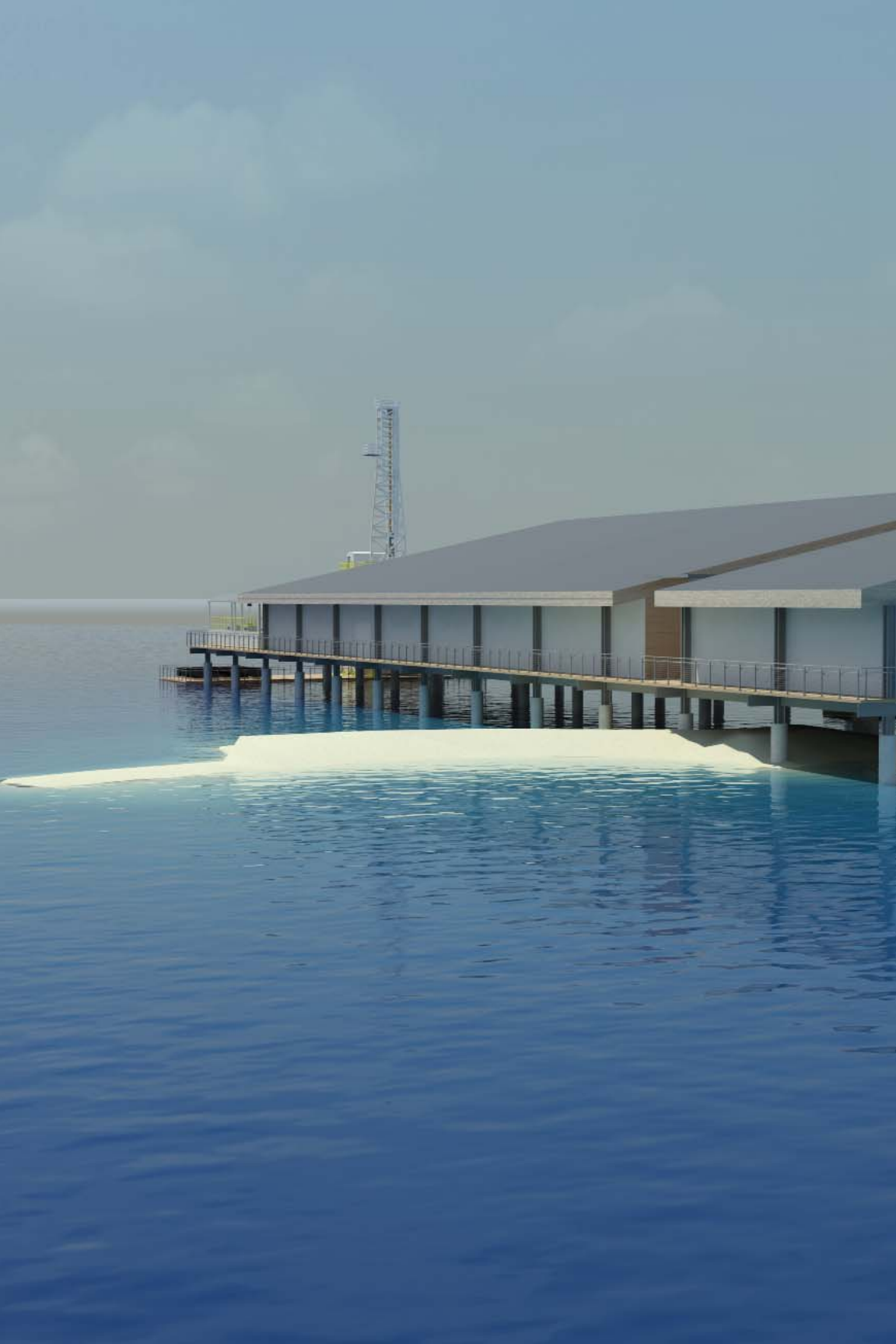


Figure: 6.7





Figure: 6.8



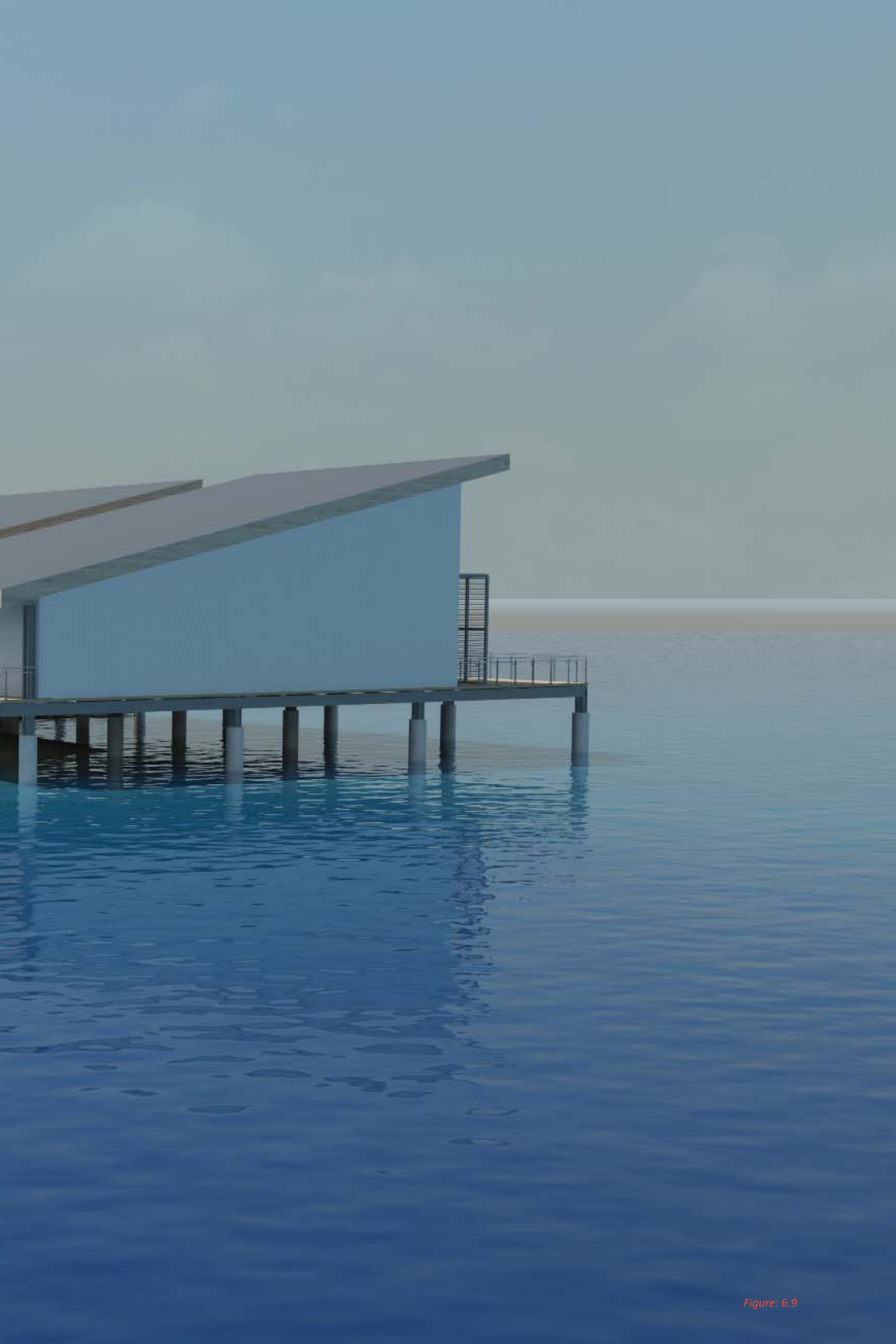


Figure: 6.9

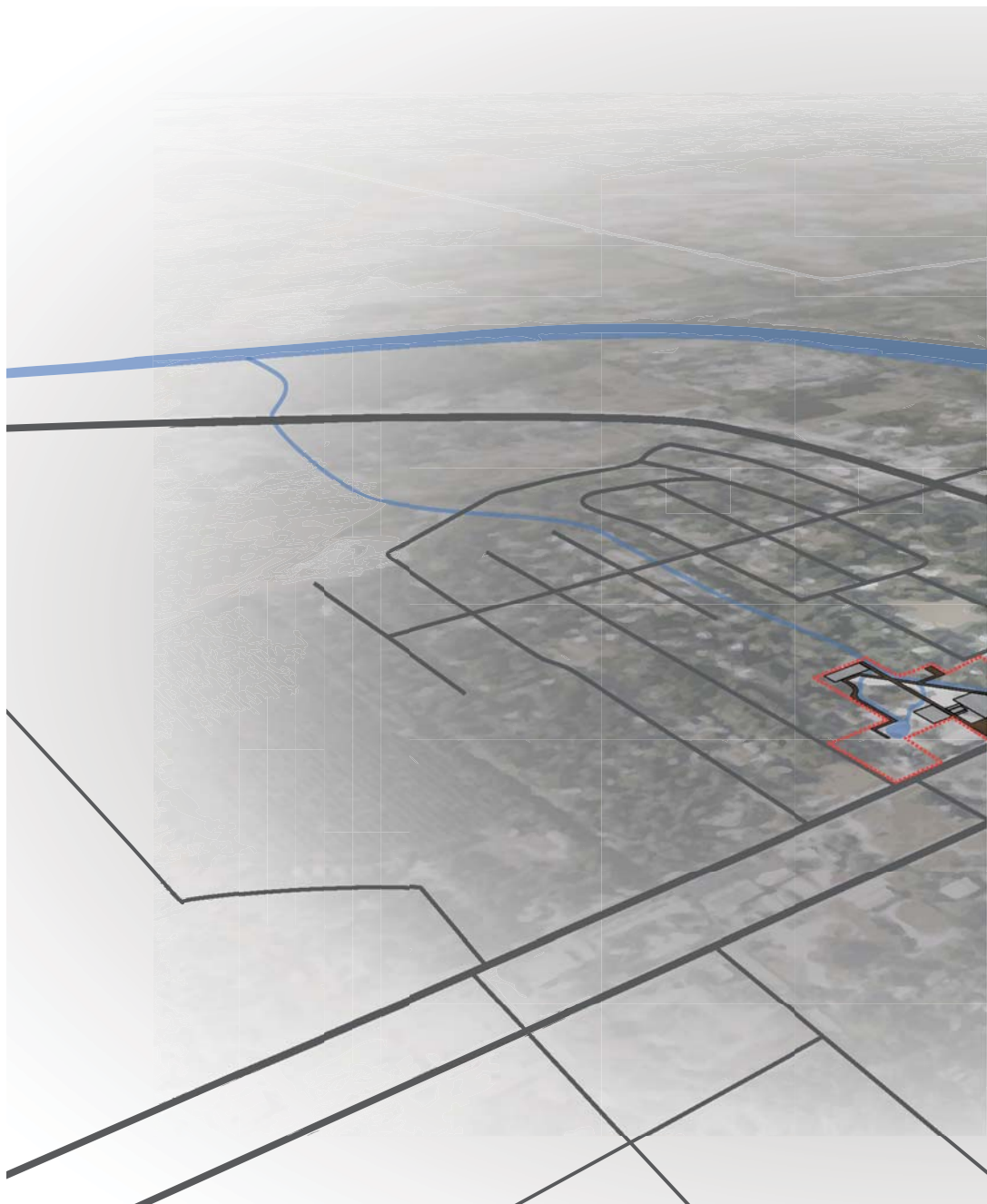
13 South Main

Hendry County

This building takes a much different role than the previous. It is sited in a suburban context with which the research campus' goal is to engage the community. This space is one that will allow people of the community to come to the site and not only check out the research, but to also see the current ecological life. These spaces and boardwalks allow the community to understand the plant and wildlife they may be destroying through further development within this and other areas in this region. This site also, prior to this proposed use, is a water treatment plant. On the site there will remain some of the industrial processes and infrastructure that facilitated its current use as well as its past uses.

The building is also a very large research facility. It could be the hub to a series of smaller transportable stations within this micro region allowing for an even deeper level of research, but its primary function is still to monitor the water supply in the area. This is made possible with many of the wells being recharged with fresh water to allow them to be regenerated. The site will allow that to happen; the drilling rig and size of the facility can employ about fifty researchers working on different shifts through the day and night so that the water system in this area will always be monitored. The building was also designed with a large angular mass that stretches through the site and its apex matches the height of the drilling tower. It was stretched in order to allow some architectural value to the site, but more importantly because it is primarily glass it is used as a large sky light allowing natural light in many of the spaces where people inhabit the structure.





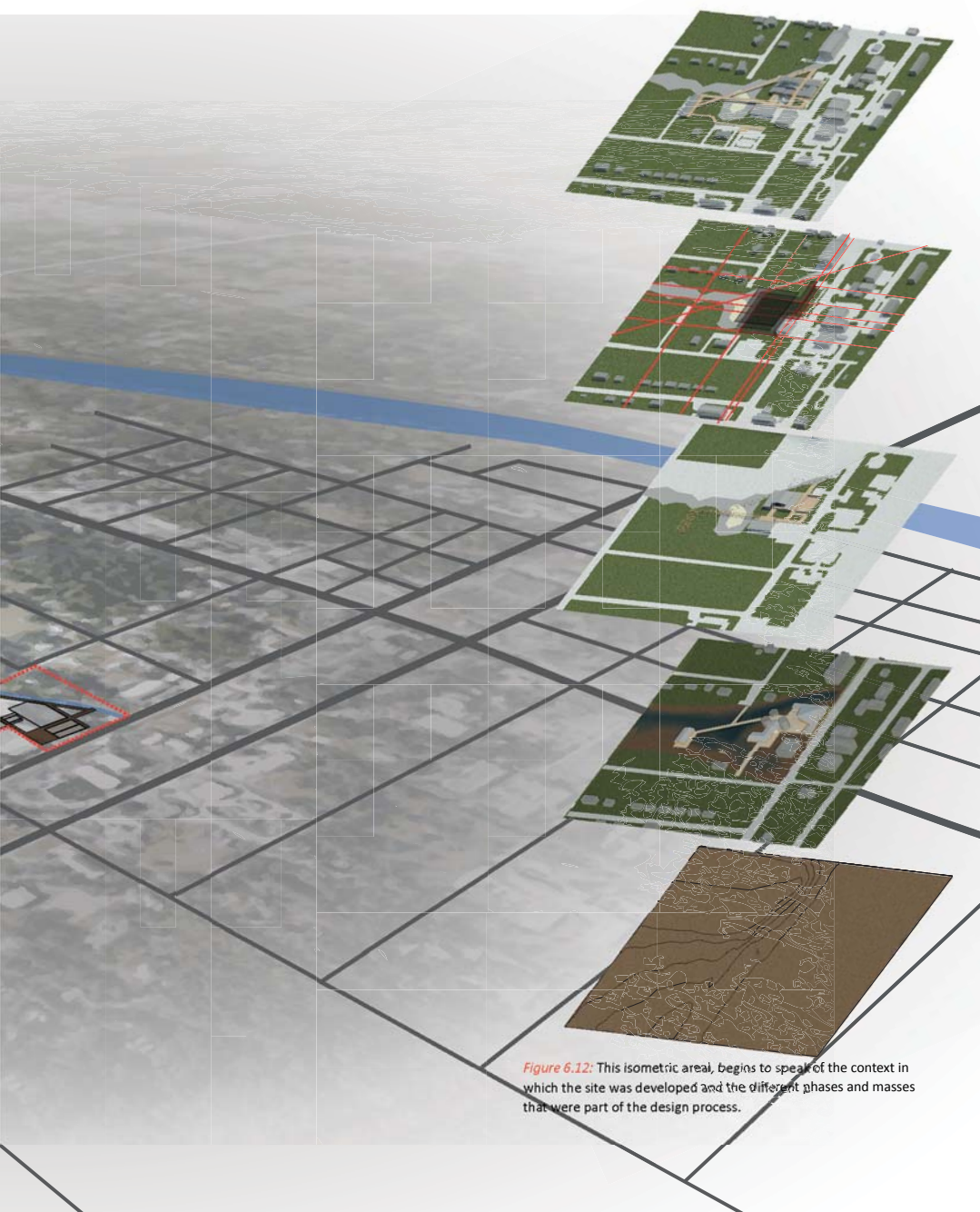
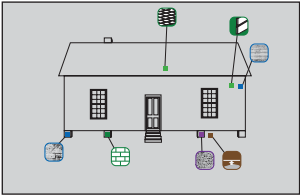
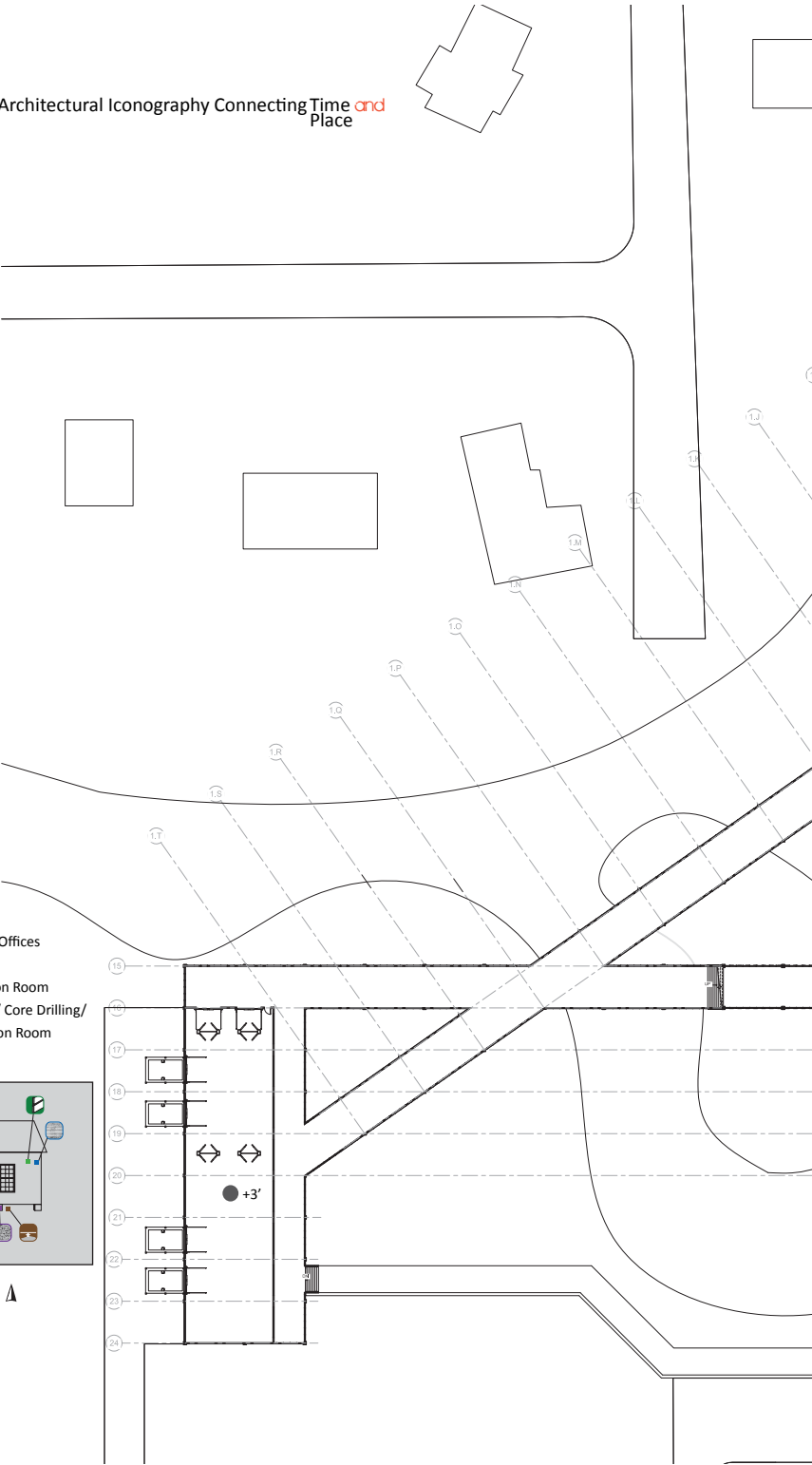


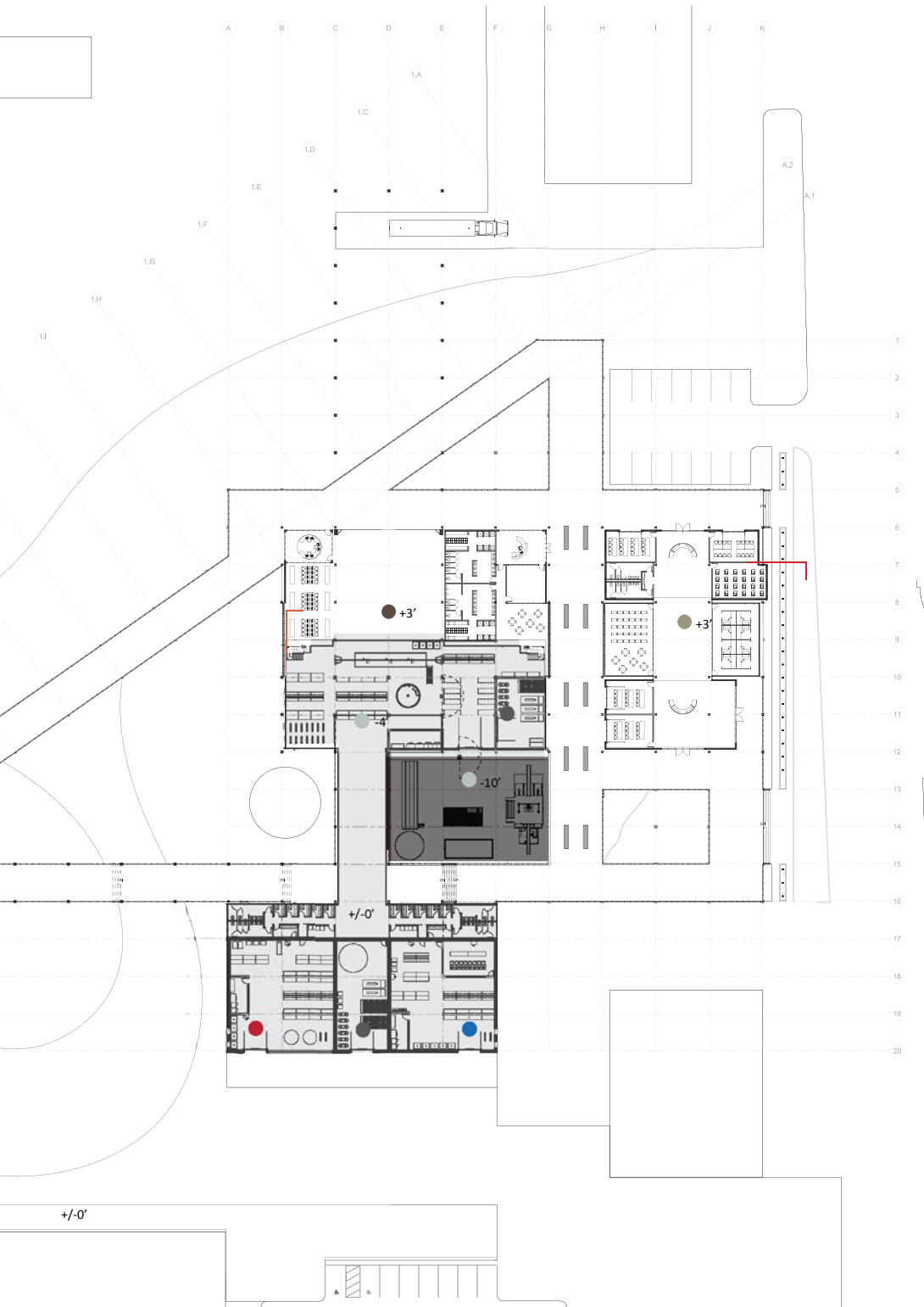
Figure 6.12: This isometric areal, begins to speak of the context in which the site was developed and the different phases and masses that were part of the design process.

- Key**
- Security/Entrance
 - Maintenance
 - Assemble Space/ Library/ Offices
 - Cold Room
 - Heat Room/ Decomposition Room
 - Water Examination Room/ Core Drilling/ Well Head/ Soil Examination Room
 - Storage Crate



Floor Plan Scale: 1:100





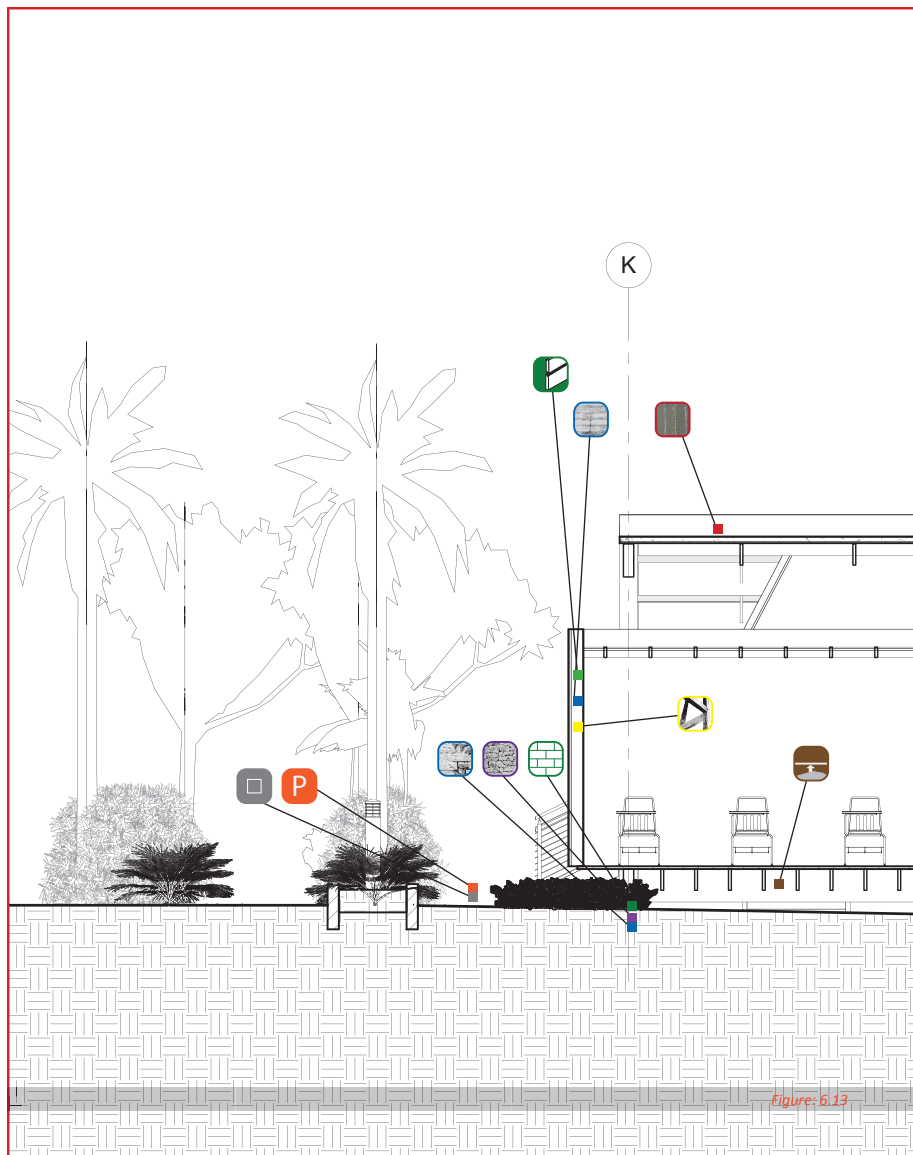


Figure: 6.14



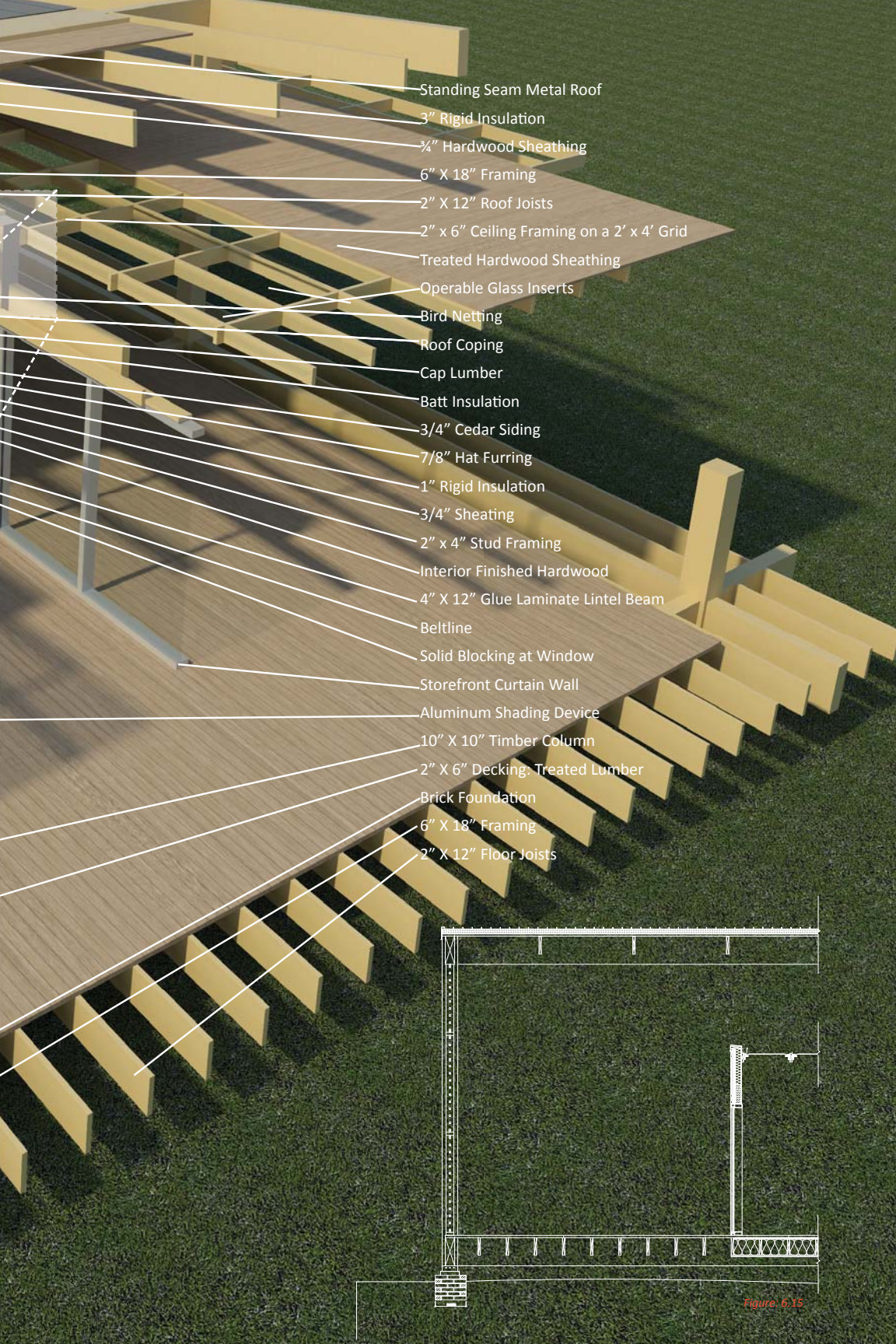


Figure 6.15

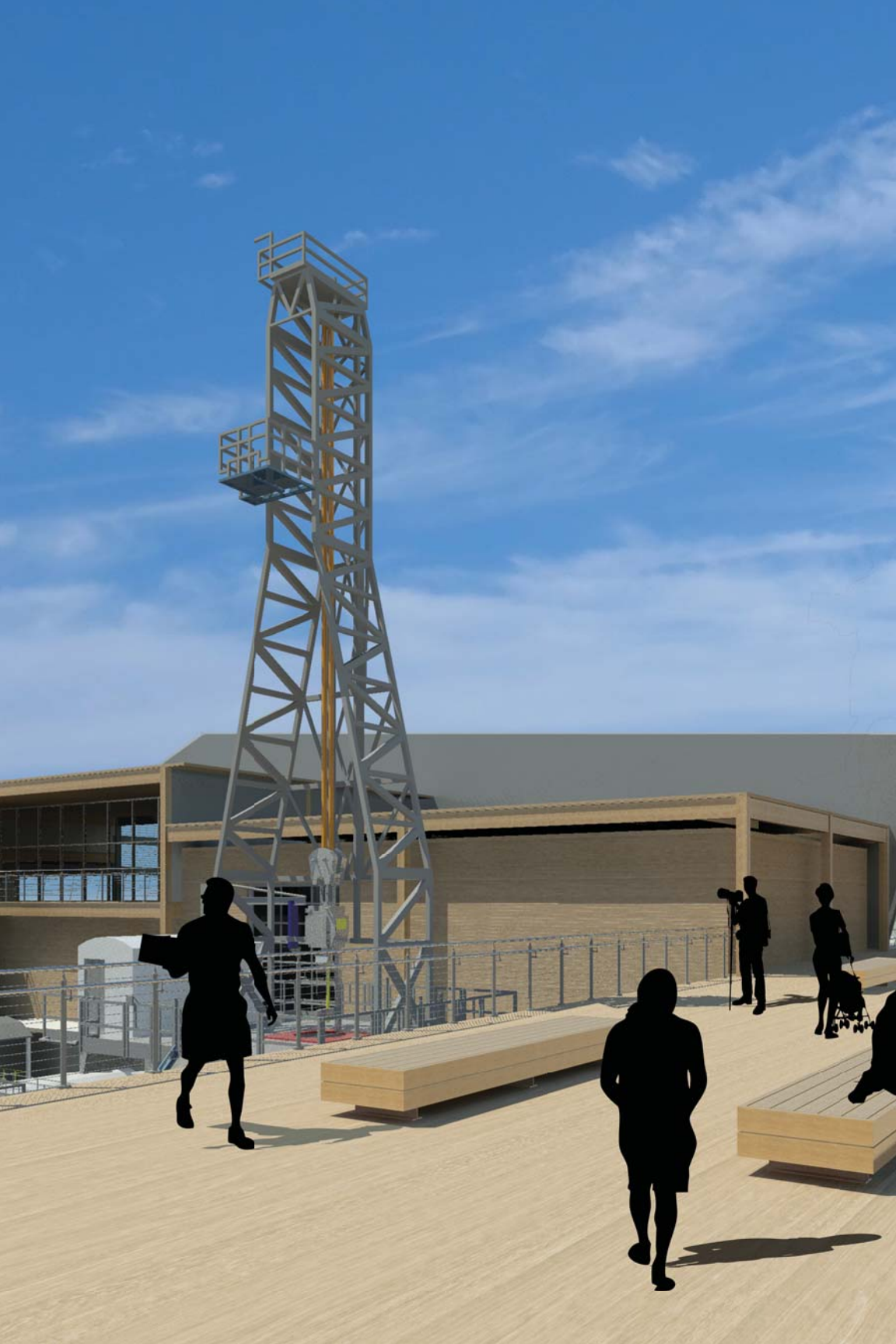




Figure 6.16





Figure: 6.17

Concurrent Design:

Architectural Iconography Connecting Time and Place



This thesis' aim was to understand the driving forces behind much of what we call the built world. Everyday we come in contact with hundreds of built things, all having purpose. Although, how many of these things have a system in which they can be analyzed? That was the goal of this thesis, to find a way to understand the components of a building through architectural style, program necessities, and site conditions. I think that I was successful in finding that balance. The icons in the project are merely a communicative tool in the process in which I developed over the balance of this thesis. However, they mean something to this project specifically. They hold meaning to a process, an item, or a condition in which the site holds. That in no way would be applicable to a school in Arizona, or a temple in Tokyo, but to a network of aquifer research stations in the southern part of Florida it does. This thesis work found what is truly meaningful in understanding Kenneth Frampton's Critical Regionalism. I would say that in the end, this was a completely successful study.

This thesis has meant more to me than anything. It was and will always be something I am passionate about. I have found something I strive to understand more about. However, what I learned the most about was myself. During this process I have poured countless hours of time, along with my blood, sweat, and tears, and not to mention the copious amount of coffee. At this point the junction, between my collegiate and professional career, I find myself standing at the end of this five year tunnel, and realize that every second, minute, and sleepless night was worth it. The people who have helped me along the way have impacted my life, and I could never thank them enough. This educational process is amazing, because today marks the day I've dreamed about since I was five, the day that I become an Architect. That is something truly amazing. I hope you enjoyed this thesis as much as I did because it has forever changed my life.

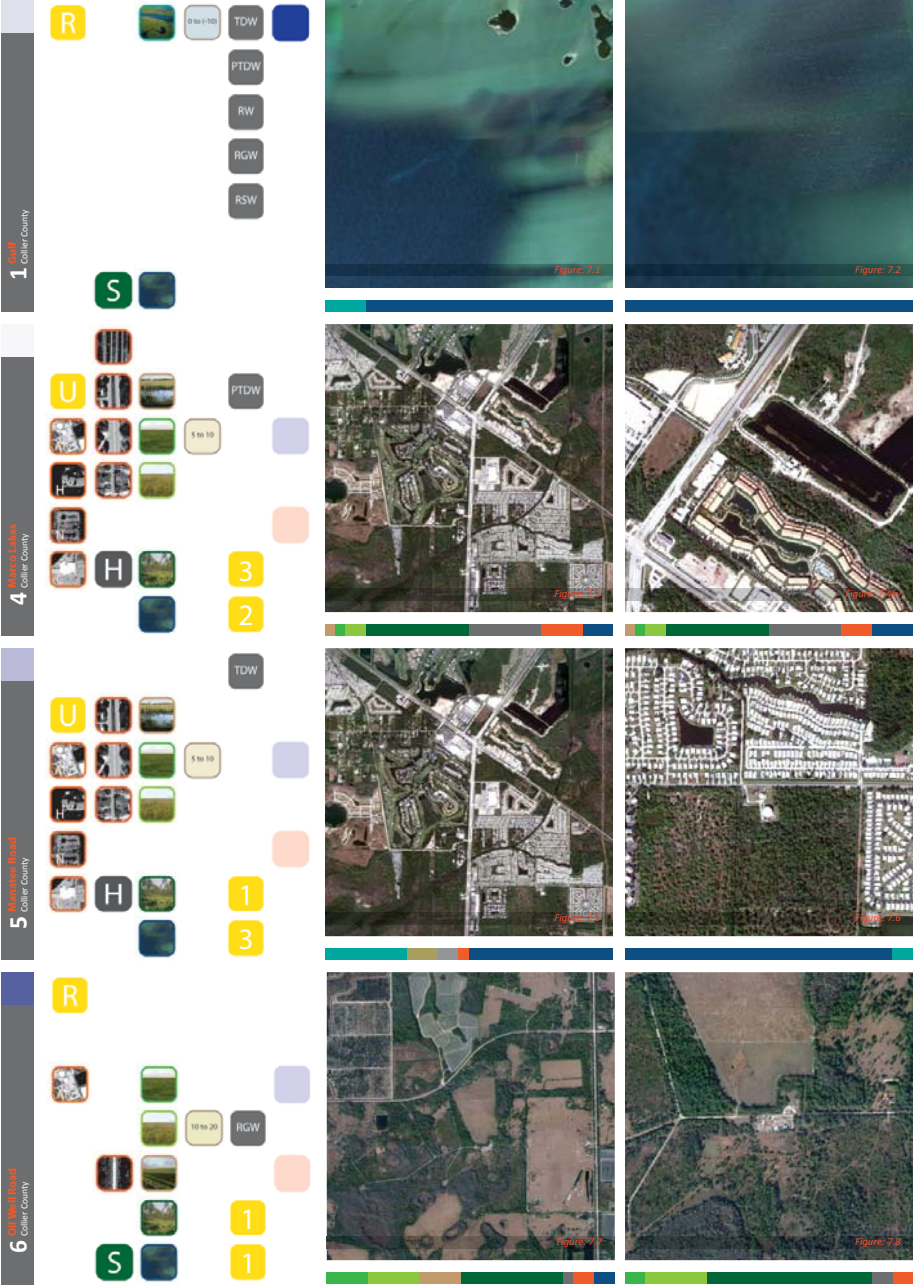
So until next time, yours truly,

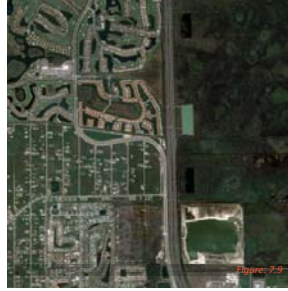
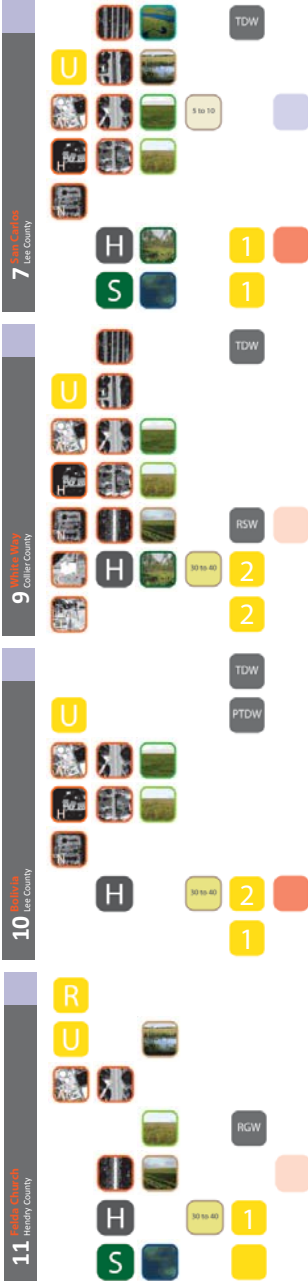
7 Appendix

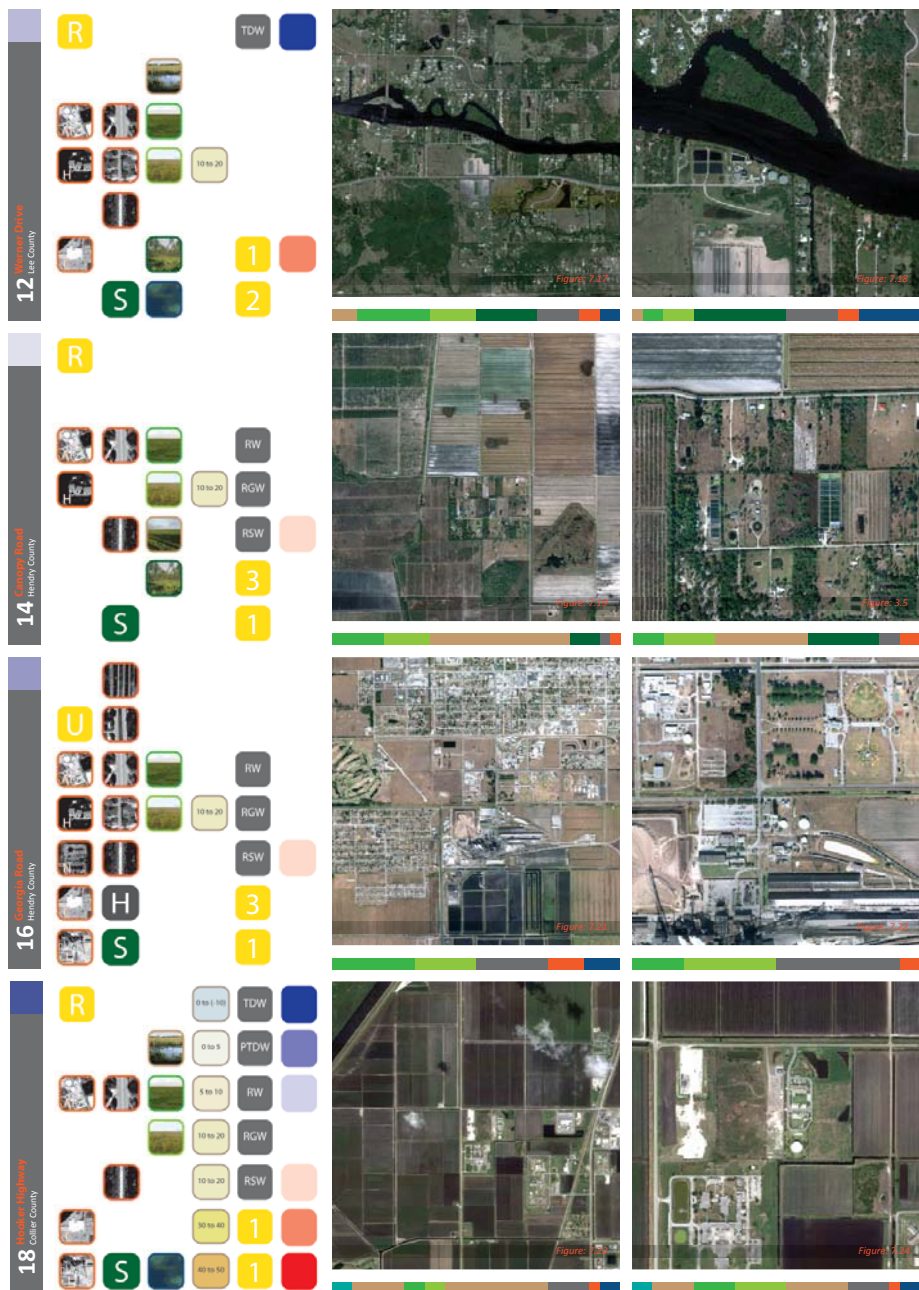


Proposed Sites

Continued from 84-85 & 98-121







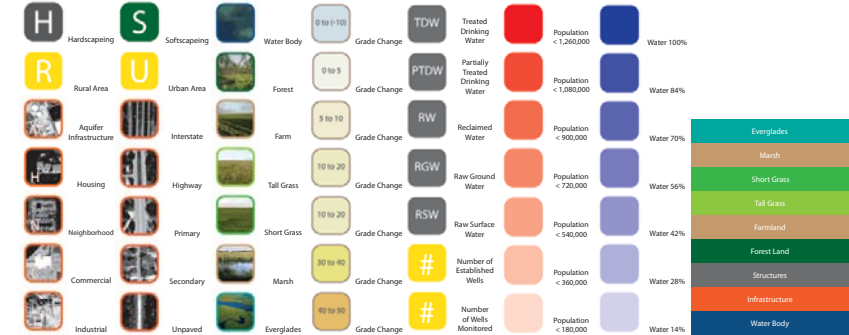
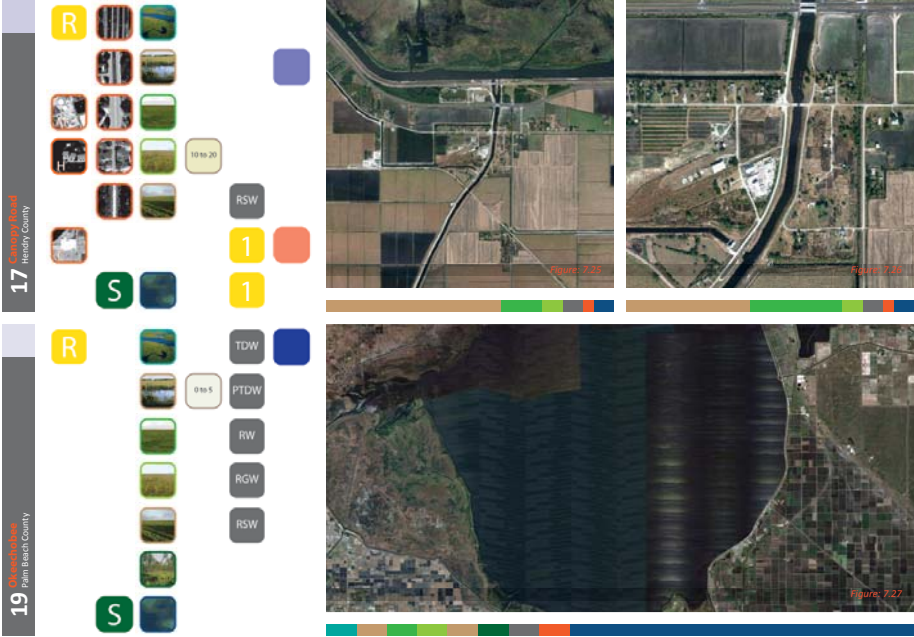




Image Credits

p34: <http://blokkstox.deviantart.com/art/Old-Stone-wall-texture-1-173945979?q=boost%3Apopular%20stone%20texture&qo=210>

p35: <http://arff.deviantart.com/art/Tree-Bark-114375074>

Figure 3.1: http://www.eons.com/photos/group/florida-residents-and-snow-birds/photo/217471?context=browse_taken_at_200902

Figure 3.3: <http://molluskconservation.org/Library/History/Indians.jpg>

Figure 3.5: <http://picasaweb.google.com/lt/photo/p9yO9ylsym26AorsvShh4Q>

Figure 3.7: <http://freepages.genealogy.rootsweb.ancestry.com/~crackerbarrel/Remington.html>

Figure 3.9: http://en.wikipedia.org/wiki/File:New_Smyrna_Sugar_Mill_Ruins14.jpg

Figure 3.11: http://en.wikipedia.org/wiki/File:Tovar_House_St_Augustine_Florida.jpg

Figure 3.13: <http://www.flickr.com/photos/whitneygh/galleries/72157624650788627/>

Figure 3.15: <http://www.panoramio.com/photo/6890237?tag=Cracker%20house>

Figure 3.17: <http://jmhhacker1.blogspot.com/>

Figure 3.19: http://upload.wikimedia.org/wikipedia/commons/1/12/Miami_229.jpg

Figure 3.21/3.23: The Sarasota school of architecture: 1941-1966 by Howey, John, Cambridge, Mass.: MIT Press, c1995.

Figure 4.1/4.2: Live trace based on a map from the National of Sciences

Figure 5.1 or of a similar quality: <http://google.maps.com>