Environments for Aging

Stephen LaGrange

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

By
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In Partial Fulfillment of the Requirements
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Primary Thesis Advisor

Thesis Committee Chair

Cover: Figure 1
Getty Stock Image
(Edit: Stephen LaGrange, 2014)

Previous: Figure 2
Bryant Lake Park
(Stephen LaGrange, 2013)

September 2013
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Abstract

This thesis examines alternative living environments for the fast growing population of baby boomers heading into retirement. The main idea is to use sustainable design within a natural environment to stimulate the well being of this new generation of aging adults. This project will be explored through the typology of an assisted living facility. The size of the project is 22,250 square feet and the site is located in Eden Prairie, MN.

Key words: *Sustainability, Aging, Assisted Living, Natural Environment, Stimulating, Baby Boomers*

Problem Statement

How do we meet the needs of an aging population?

Statement of Intent

Statement of Intent

Typology:
Assisted Living Facility

Claim:
Sustainable design within a natural environment can be used to facilitate the needs of an aging population.

Actors: Residents
Action: Creating a healthy living environment
Object: Assisted Living Facility

Premises: “By 2030 the number of individuals older than 65 will more than double to 71.5 million” (Andrew & Harold, 2005). Many of these people will require an assisted living facility.

New facilities must to meet the needs of a generation that is comfortable with green living .

Sustainable design has the power to completely change the overall experience and perception of assisted living. Facilities should be a healthy and enjoyable environment for residents and staff alike.

Unifying Idea: Sustainable design can provide a happy and healthy environment that stimulates the well being of an aging population.

Project Justification:
There is a large population of aging adults that will require an assisted living facility within the next ten to twenty years. We must push the envelope to discover how these types of facilities will need to change in order to accommodate new group of aging adults. In order to meet the need of the residents these facilities must examine all future and current technological, environmental and social standards. Innovative sustainable design is going to be the future senior living that will create an environment that is positive for everyone evolved.

Proposal

Narrative

Growing up in Minnesota I have always appreciated how beautiful the natural environment can be. Being in the natural environment is when I feel the most alive and peaceful. When I was younger my parents would take me to the many parks and preserves around the Twin Cities. This is where I experienced how natural environments can have a very powerful effect on the body and mind. Happiness, love, and peacefulness are just a few feelings that the natural environments seem to be able to evoke from us no matter what the situation. There is really no other substitute for the feeling of being outdoors and that is something that is something that will never change no matter how old we get.

This thesis examines how sustainable architecture, nature, and technology can help to improve the health and wellbeing of an aging population. Aging is a difficult process that most people are going to have to deal with at some point in their life. This should be a time when life is celebrated by enjoying the natural wonders all around us. Medical science is doing everything possible to keep people alive as long as possible, but is anyone looking into how architecture may be able to help facilitate aging as well? As an architect I believe there is a lot of opportunity to not only help people live longer, but also help them live happier more fulfilling lives. Architecture has a way of keeping peoples spirts alive that medications and treatments really can’t.

User / Client

Resident:
The residents are the people that will live within the community. Residents will have the option to live independently or with assistance. Some residents will live permanently and some temporally.

Owners:
Residents will have the opportunity rent or own their living unit. Third party investors will have the option to buy units to rent out.

Guests:
Residents will have the opportunity to have guests come and go as they please. The public will have the opportunity to visit to learn more about the sustainable community

Employees:
The community will be operated and maintained by a local staff. These employees include caretakers, nurses, managers, cooks, custodial staff, and transportation staff.

Major Project Elements

Assisted Living Complex:
This building complex will serve a maximum of twenty residents that will require a minimal amount assisted care. The building will be primarily used by assisted living residents and staff, but friends, family, and the public will also be able to access various parts of the building.

Main Areas of the Building:

- Living / Sleeping Units
- Reception / Waiting Area
- Kitchen / Dinning
- Hr / Nurse Offices
- Large / Small Gathering Spaces
- Spa / Wellness / Workout Center
- Staff Area
- Storage Areas
- Mechanical Area
- Outdoor Patio / Balconies
- Cafe / General Store

Site Information

Bryant Lake Regional Park
6800 Rowland Road
Eden Prairie, MN 55344

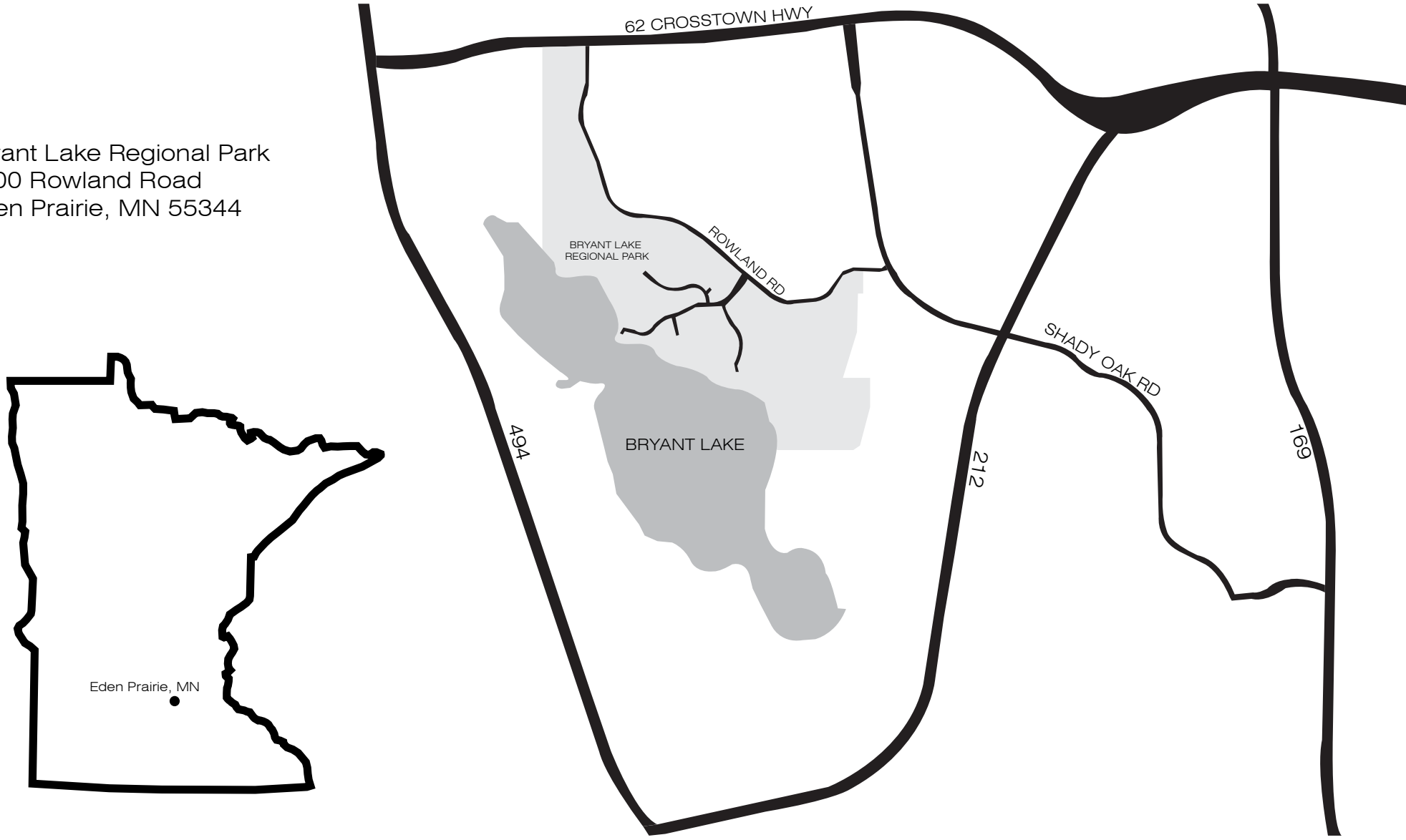


Figure 3, 4, 5
Map of MN, Eden Prairie, Bryant Lake Park
(Google Maps, 2014)

Site Information

The site is located in the Midwestern area of the United states in Eden Prairie Minnesota. Eden Prairie is located in the western suburbs of Minneapolis within Bryant Lake Regional Park. The area has seen a lot of development in recent years but the park has remained mostly undeveloped and natural. The site is great escape to natural beauty of Minnesota with easy access to surrounding cities and amenities.

Emphasis

The emphasis of this project is to explore natural and sustainable solutions for future living environments. The goal is to show how sustainable architecture and the natural environment can promote a healthy lifestyle for aging adults. The project will study people, natural environments, sustainable materials, and technology to better understand how future generations of aging adults can live happy, healthy, and active lives.

Plan for Proceeding

Research Direction:
Research for this project will be an on going process for the duration of the project. Research will focus on the greater understanding of how sustainable design can help improve peoples lives. Study of the project typology, site and climate, historical context, and programmatic requirements will also be a major focus of research.

Design Methodology:
I will follow the mixed method approach for the design methodology of the project. Quantitative data will be in the form of statistical and scientific data. Qualitative data will be gathered through direct observation, survey, archives, and interviews. Quantitative and qualitative data will be presented in text and graphics.

Documentation of Design:
The documentation of design will be an on going process for the duration of the project. Aspects of the project are going to be documented digitally. Physical models and hand drawings will be documented through photos and scans. A digital copy of the documentation will be available for review.

Schedule

Task:	Duration:	Start / Finish
Project documentation	89	1/14/14 - 5/16/14
Context Analysis	14	1/14/14 - 1/31/14
Conceptual Analysis	12	1/16/14 - 1/31/14
ECS Passive Analysis	5	1/27/14 - 1/31/14
Spacial Analysis	13	1/29/14 - 2/14/14
Floor plan Development	10	2/03/14 - 2/14/14
Structural Development	10	2/10/14 - 2/21/14
Section Development	11	2/12/14 - 2/26/14
ECS Active Development	10	2/17/14 - 2/28/14
Envelope Development	10	2/17/14 - 2/28/14
Materials Development	10	2/19/14 - 3/04/14
Context Redevelopment	5	2/24/14 - 2/28/14
Structural Redevelopment	8	2/26/14 - 3/7/14
Mid Term Reviews	7	3/10/14 - 3/16/14
Project Revisions	26	3/10/14 - 4/12/14
Spring Break	5	3/17/14 - 3/21/14
Prep for Presentations	5	3/24/14 - 3/28/14
Energy Modeling	10	3/31/14 - 4/11/14
Renderings	19	3/31/14 - 4/24/14
Presentation Layout	8	4/17/14 - 4/26/14
Model Building	11	4/14/14 - 4/27/14
Plotting	4	4/23/14 - 4/27/14
Exhibits Installed	0	4/28/14 - 4/28/14
Thesis Exhibit	3	4/28/14 - 4/30/14
Final Thesis Review	6	5/01/14 - 5/08/14
CD due to adviser	0	5/12/14 - 5/12/14
Final Documentation Due	0	5/16/14 - 5/16/14
Commencement	1	5/17/14 - 5/17/14

Theoretical Premise / Unifying Idea Research

The underlying goal of this project is to continue to develop a quality living environments for aging adults that informs the future on how assisted living facilities can be adaptable, sustainable, and desirable. Simply stated by Victor Regnier, AIA "Assisted living is a long term care alternative which involves the delivery of professionally managed personal and health care services in a group setting that is residential in character and in appearance in ways that optimize the physical and psychological independence of residents" (pg, 1). After working as a student intern in the Health and Life Sciences division of an architecture firm for the last two summers I have learned a lot about the industry and the development of assisted living facilities. I know from first hand experiences with Architects, Clients, Owners, Developers, Caretakers, Building managers, and many other professionals that everyone wants what is best for the resident. Development of assisted living facilities has already come a long way from the design of the first facilities, but many of the negative connotations associated with these historic facilities still exist. Most of these negative connotations can be attributed to what Regnier describes as the "Medical Model"(4) In the most basic terms the medical model is a facility that is modeled after a hospital physically and operationally. These facilities are considered very efficient and safe, but there is a serious lack of privacy, freedom, and dignity that ultimately creates a very negative perception to the resident and community. The medical design model is based mainly on making the care for the resident efficient, with little focus on the environmental needs of the resident. The "Residential Model" of assisted living has been the best example of a healthy living environment for seniors to date. Many Residents of these facilities now experience the same comforts that they would find in any home with the addition many life enhancing amenities. These facilities have come a long way in the last twenty years to get away from the medical model, but there are still many things that can be done to help prepare for the next generation of aging adults.

Theoretical Premise / Unifying Idea Research

Currently most assisted living facilities are serving residents from the greatest generation and the silent generation and as of 2010, 13 percent of the U.S. population is 65+ (Anderson, 1). The U.S. Census Bureau projects “by 2030, all of the baby boomers will have moved into the ranks of the older population. This will result in a shift in the age structure, from 13 percent of the population aged 65 and older in 2010 to 19 percent in 2030” (Anderson, 1) Needless to say this is a fairly significant amount of people that will need assisted living in the next ten to twenty years. What the data does not tell us is how different the future generations of people will be from the current generations. This is one of the main reasons why it is important to begin to examine how future assisted living facilities should look and function to accommodate the needs of a very different generation. One of the new trends practiced by many from the baby boomer generation is called active aging. Where previous generations transitioned from a life of work to a life of leisure, baby boomers will tend to want to balance a life of work and leisure into their later years. Assisted living facilities must adapt to accommodate for the way that residents plan to live. Architecture can help to facilitate active aging by incorporating technology, sustainability, and opportunities to be active and social into the design of the building.

Theoretical Premise / Unifying Idea Research

Probably the biggest change from the older generations is the use of technology. Baby boomers are much more tech savvy and will expect their living environment to reflect that. Wireless internet and computer use is already becoming pretty standard in assisted living facilities and will continue to be a big part in the future. Technology will also help to monitor the safety and the security of residents now that they will be leading more active lifestyles. Technology can also be used to regulate temperature and electricity to save on energy costs and create the optimal living environment for residents. The monitoring resident's health will become much more remote with the use of technology. Instead of having a medical team on staff future developments will have fewer staff and more monitoring from remote locations. This will give the resident more independence and privacy with the same quality of care.

In addition to facilities being more technologically advanced they will also have to provide more amenities to promote an active and engaging lifestyle. Education, gardening, weaving, exercising, aquatics, games, and sports are just some examples of activities that seniors may want to engage in. These activities are in many ways therapeutic to a resident and the more options available will give residents greater opportunities to connect with the community. The active aging generations aging adults see themselves more as individuals that require an environment that reflects their personality. It is important to allow residents to bring some of their own belongings and allow them to personalize designated areas. Providing an environment that reflects these needs of a new generation will help facilitate the transition into retirement

Theoretical Premise / Unifying Idea Research

Regnier claims that architecture plays two important roles in furthering the development of assisted living. The first describes how architecture impacts a space based on its function and intended purpose. This can be evaluated by measuring how well rooms encourage social exchange and how effectively equipment, fixtures, materials, room layouts, furnishings, etc. facilitate accessibility and comfort. This is the more general and understood role that the architecture plays. The second roll influenced by association is often the more overlooked but potentially more powerful influence affecting behavior and attitude. This role describes how architecture can be emotional and how there is a certain degree of psychology when it comes to the look and feel of a building or space. The appearance of an environment establishes how the environment is perceived by anyone that sees or enters it. It is especially important for assisted living facilities to project a residential environment to help the resident feel like they are at home right away. Humans often develop a role based on the environment that they are in. The more the environment reflects an institution, the more the resident will play the role of a patient. Likewise the more the environment resembles a home the more the resident will play the role of a resident. Architecture is in many ways a symbol of a belief or expectation that is reflected by its use.

Green living is something that people have been practicing for some time now, but green retirement is somewhat of a new phenomenon. Some assisted living facilities have begun to receive LEED certification from the USGBC. Sustainability is a trend that is going to continue to dominate the industry, and for good reason. Many seniors and soon to be seniors have been environmentally friendly their entire lives and desire to be part of a green community. Sustainable living environments have become more desirable environments for almost everyone with seniors included. Nate Kredich of the USGBC says “Logically, our senior citizens are the ones most concerned about the benefits that green homes deliver; namely, saving money from energy efficiency, and living in a healthy home”(Walker, 1). Sustainability designed facilities are almost always the best environments to live in. This is largely attributed to the design work of the architect. The architect is the main personal responsible for implementing sustainable design elements and creating the overall feel of the environment.

Theoretical Premise / Unifying Idea Research

There has been one trend in the United States that seems to have encouraged the separation of facilities from the surrounding community. “Our system lacks synergism and identity that concepts like co-location have generated in European models” (Regnier, 8). European models tend to add to the social welfare of a community by sharing common services such as swimming pools, restaurants, health services, recreational programs, meeting places, etc. Having a co-location of services and amenities can significantly change the perception of the place. These facilities are no longer places exclusive to residents, but a community resource that can be enjoyed by people of all ages. The European model creates a much more powerful environment by including a social opportunities for residents to be a part of a larger community. Keeping residents involved in the community is one strategy of the European approach of keeping seniors as independent as possible for as long as possible. Northern European systems in health care and social care are considerably more advanced than the United States counterparts. With that being said there are a significant amount of factors such as zoning and code requirements that limit development of United States facilities. There is still much that can be learned from European examples to help improve future developments in the United States. In addition to being a healthy living environment for the residents it is also important that these environments are attractive to the resident’s families, friends, and other members of the community. Design is the key to facilitate the development of environments for aging.

Case Studies

Day Center For Elderly

Baena Casamor Arquitectes
Barcelona, Spain
Year: 2008

Case Study

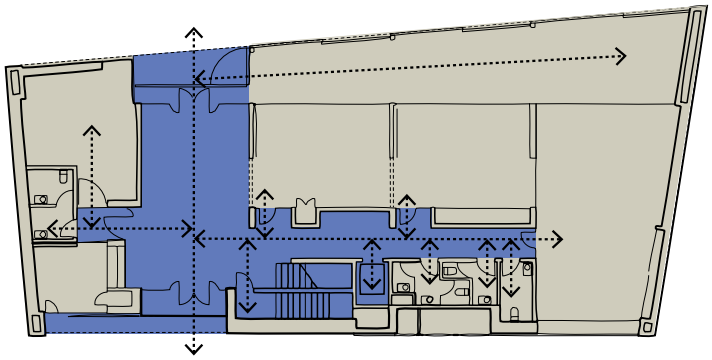
Day Center For Elderly

Baena Casamor Arquitectes
Barcelona, Spain
Year: 2008

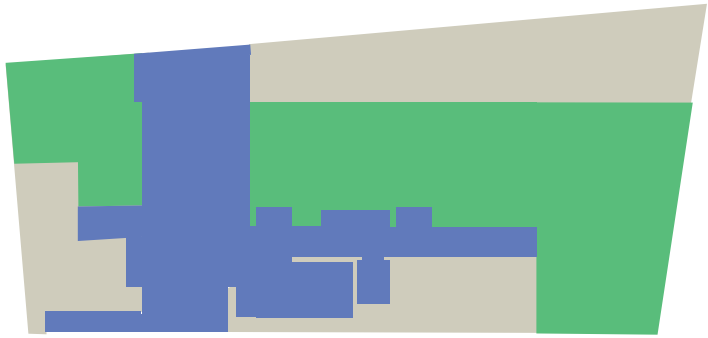
The Day Center for the Elderly is located in the heart of Barcelona Spain on a plot of land in the Prince of Girona Gardens. The building is 1,144 square meters and was built in 2008. The building is indented to be a temporary residents, community center and gathering space for elderly individuals. The shape and orientation of the building was designed in correlation with the adjacent park. The building acts as a permeable gateway between the park and the street running on the opposite side of the building. The building was designed to allow residents to have a view of both sides of the building. The lower level provides a large multi use gathering space that is only accessible by stairs and one exterior door. The main level is the permeable level that provides access from the park to the street. The upper level floor plan is very similar to the main level. The upper level is only accessible by stairs and is a more private setting that has a partial kitchen. The main objective was to create a place that has comfortable setting that seniors can identify with. The use of wood and ceramic building materials and finishes help to create a natural domestic setting that is very attractive. The wooden façade that wraps the building helps to filter the sunlight into the spaces to brighten up the interior.

Figure 6,7
Day Center for the Elderly
(archdaily.com, 2008)

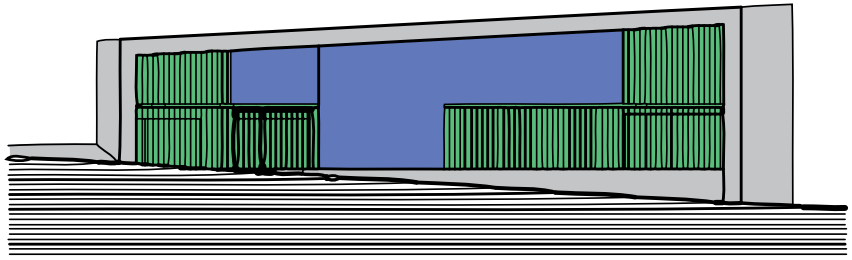
Case Study Analysis



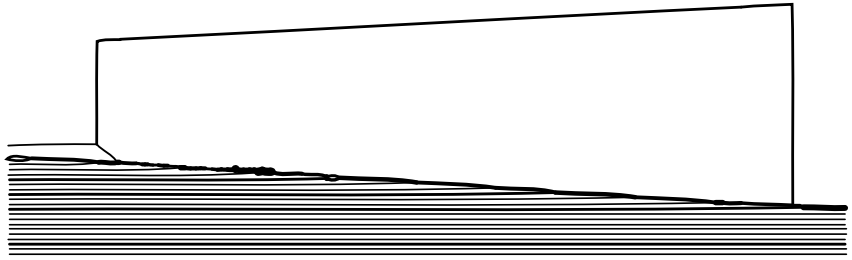
Circulation



Geometry



Massing



Hierarchy

Figure 8, 9, 10, 11
Circulation, Geometry, Mass, Hierarchy
(archdaily.com, 2008)

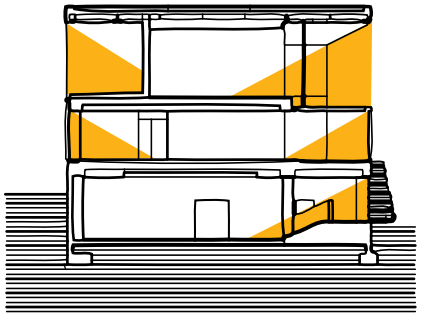
Case Study

Day Center For Elderly

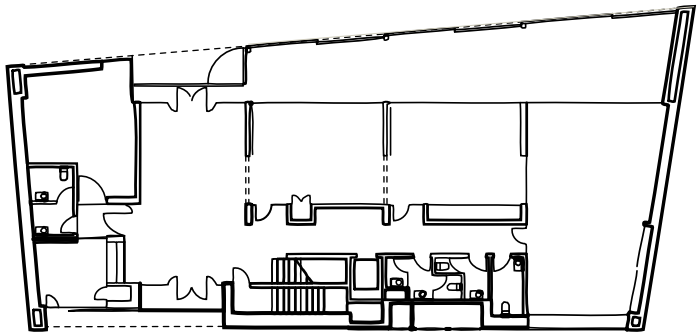
Baena Casamor Arquitectes
Barcelona, Spain
2008

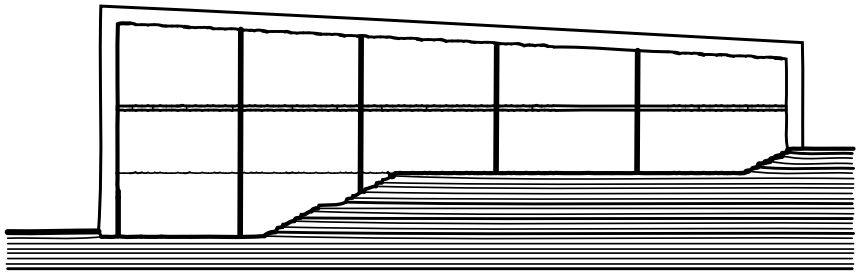
Similar to the other cases this building shows a high quality of design and construction and relates well with the surrounding environment. What makes this case unique is the philosophy of the use and typology of the building. Instead of being a permanent resident this facility is more of local community center. This type of facility is meant to provide people a better connection to the community, public interaction, and the natural environment. Users don't live on the site but rather travel through the city to get to the location. This is important because the simple act of traveling to a location can be having very positive influence on a person. Creating opportunities for seniors to do things for themselves gives them dignity, motivation, and a sense of worth. Being connected to the park is a very important aspect of this case study. The park connects the building to the natural environment which usually very desirable especially within an urban context. The views of the site from the building are essential to keeping the user actively involved with the surroundings. This case study shows how important the overall look and feel of a site can affect the user. It also shows how important it is to have somewhere to go that we can identify with. When we are young we always have a place to go that we can identify with whether it's a ball field, shopping mall, or school. Having a connection to a place other than ones residence is important for people of all ages.

Figure 12, 13, 14
Day Center for the Elderly
(archdaily.com, 2008)

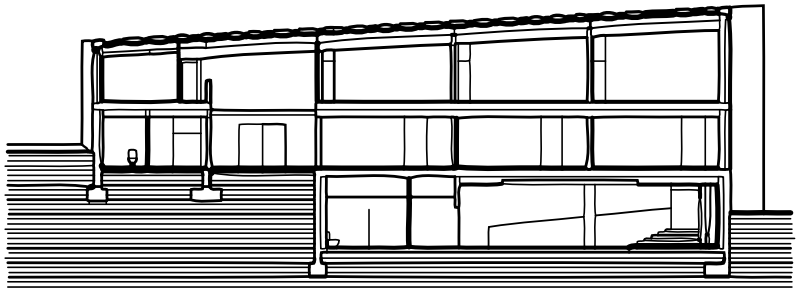


Natural Light





Structure



Plan to Section

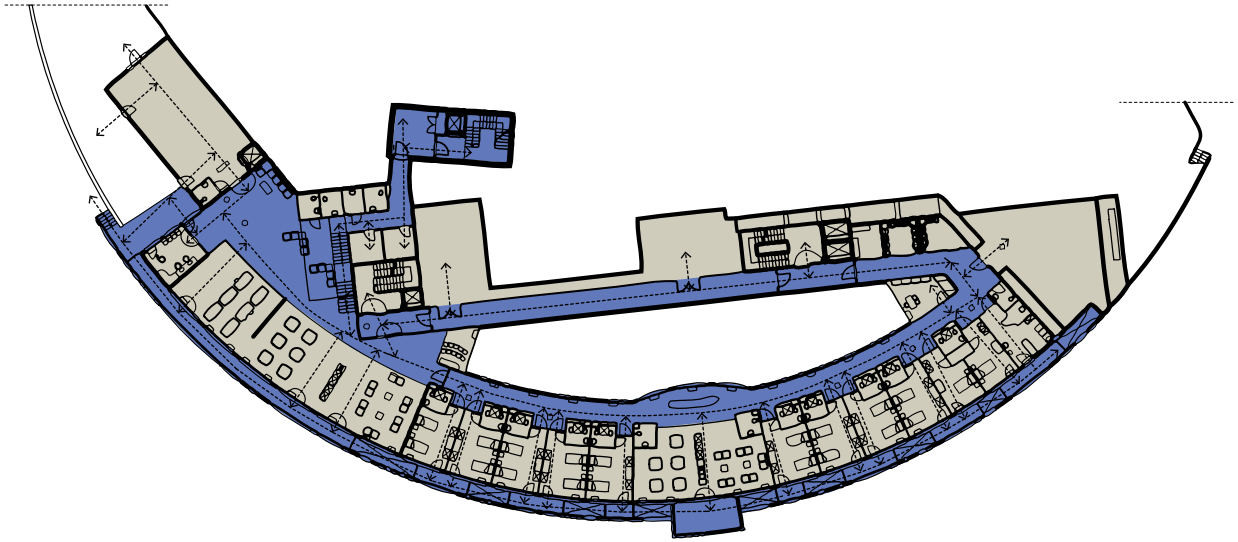
Figure 15, 16, 17
Light, Structure, Plan to Section
(archdaily.com, 2008)

Case Study

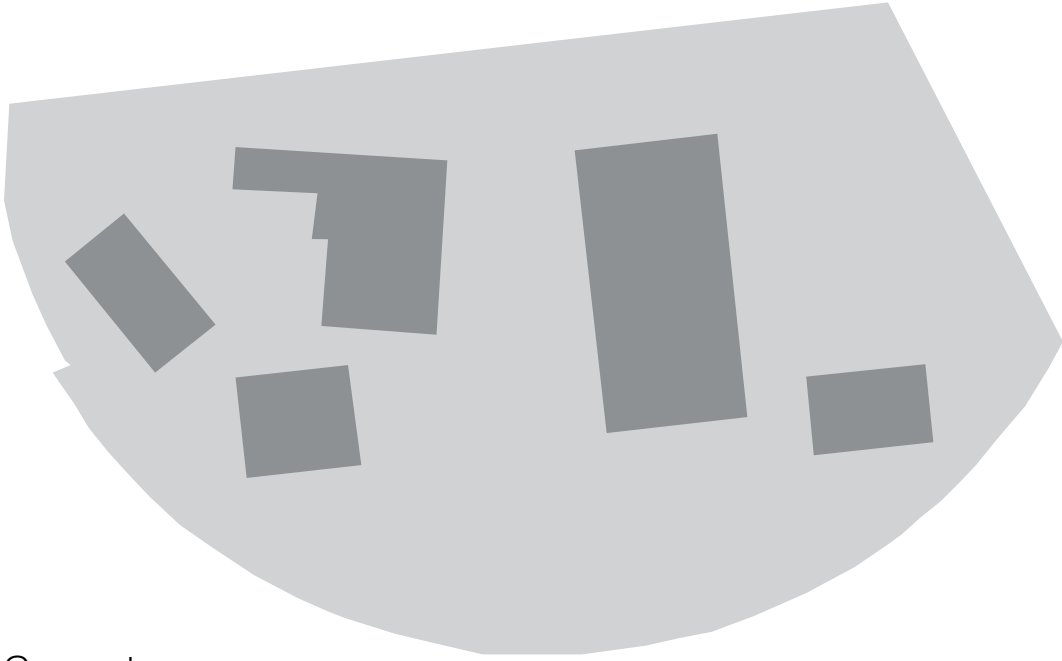
Health Centre and Houses for the Elderly

IPOSTUDIO Architects
Montemurlo Province of Prato, Italy
2010

Figure 18
Health Centre for the Elderly
(archdaily.com, 2010)



Circulation



Geometry

Figure 19, 20
Circulation, Geometry
(archdaily.com, 2010)

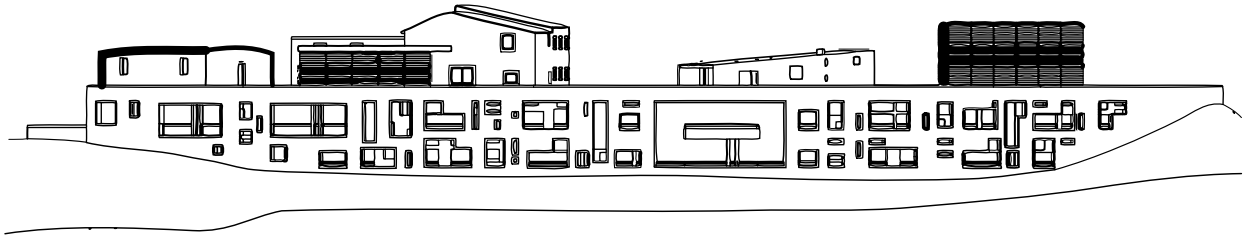
Case Study

Health Centre and Houses for the Elderly

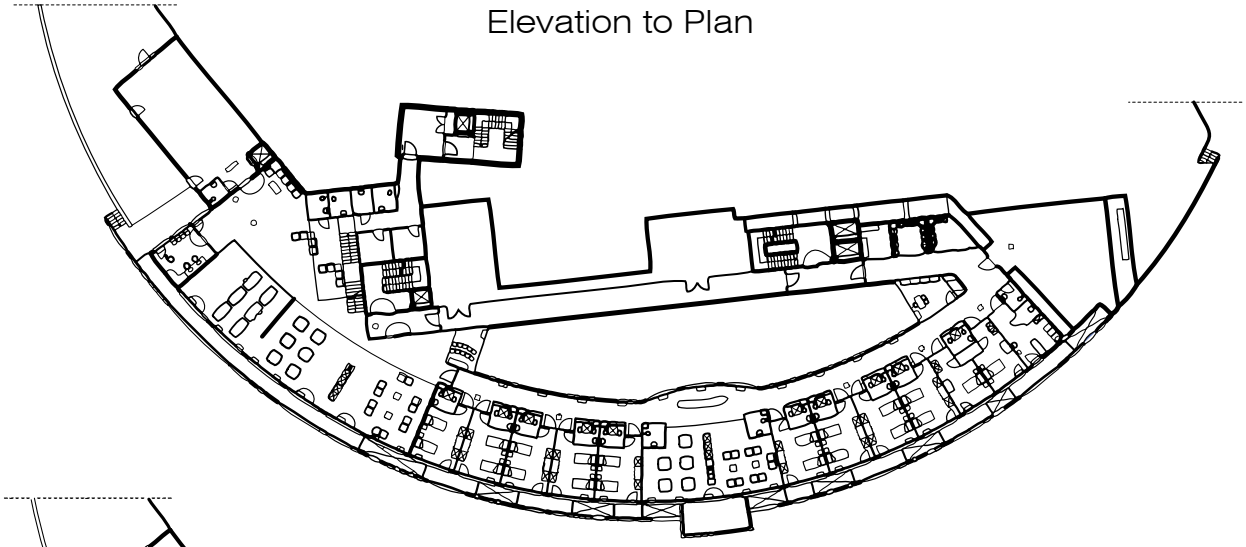
IPOSTUDIO Architects
Montemurlo Province of Prato, Italy
2010

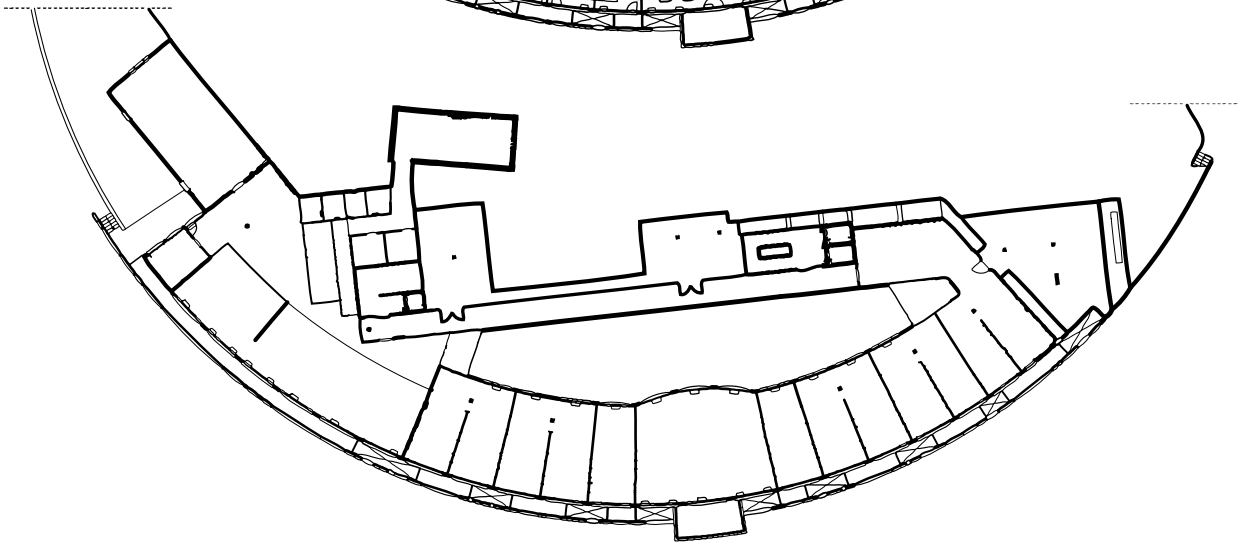
This project is located in the rural country side of Montemurlo, Italy. The complex was developed to effectively re-use existing dwellings on a landscape that represents the agricultural tradition of building and residing in farmhouses on the hills of Tuscany. The Entire complex is 3,660 sqm and is used as a health center and residence for the elderly. The main feature of the building is the use of terraces built with stone found on the site. The large stone wall is two levels high and spans the entire length of the complex resembling the contour of the hill. With the stone wall with random windows on acting as the exterior and the glass curtain wall acting as the interior the wall acts as a double skin. The wall contains the main addition to the site which is a large two story basement with a courtyard in the middle. A large basement is typical for dwellings built on a high incline such as this site. The addition of the basement creates more opportunities for views into the valley as well as rooftop gardens on the pre-existing top level. The top level is connected to the bottom levels by a series of stairs that are surrounded by small huts that are wrapped with wooden slits.

Figure 21, 22, 23
Health Centre for the Elderly
(archdaily.com, 2010)



Elevation to Plan





Structure

Figure 24, 25
Elevation to Plan, Structure
(archdaily.com, 2010)

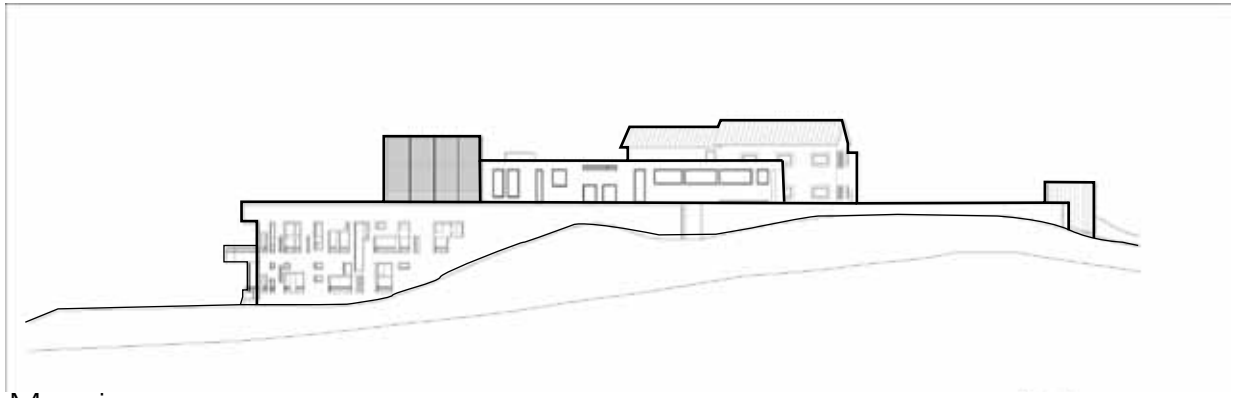
Case Study

Health Centre and Houses for the Elderly

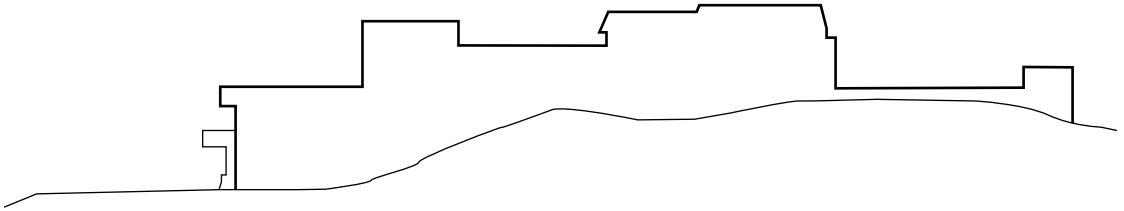
IPOSTUDIO Architects
Montemurlo Province of Prato, Italy
2010

This project is similar to the other projects by utilizing the site to its advantage, paying close attention to the details and creating beautiful natural environment. The entire complex seems to blend right into the hillside that it sits on. The main difference between this case and the others is the overall size of the complex. This building is designed to house a large amount of residents and patients. This is also the only case that reuses an existing site and dwellings. This site is also unique because it is located in a rural area. This could be somewhat of a disadvantage when it comes to certain logistics such as transportation, but being in the country is one of the main ideas behind this complex. It makes sense that patients and residents would want to be in a place that offers exposure to the natural environment. Residing on top of a hill in itself is a symbol of praise and respect that people need and deserve in the later years of their life.

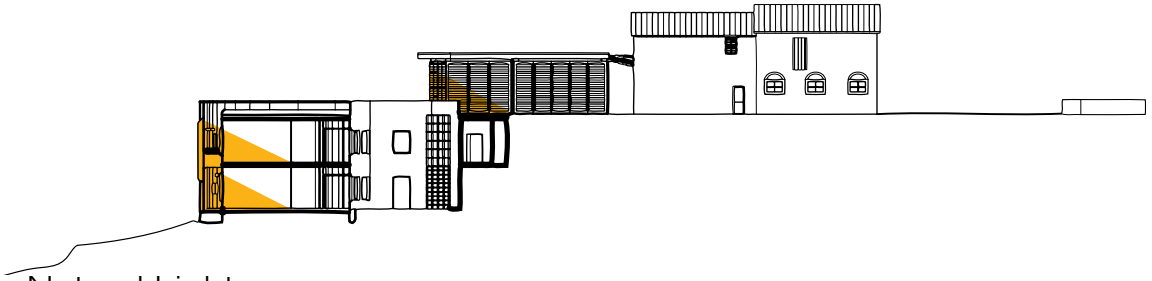
Figure 26
Health Centre for the Elderly
(archdaily.com, 2010)



Massing



Hierarchy



Natural Light

Figure 27, 28, 29
Massing, Hierarchy, Light
(archdaily.com, 2010)

Figure 30
Health Centre for the Elderly
(archdaily.com, 2010)

Case Study

Retiree Home

Firma d.o.o.
Alava, Spain
2011

Figure 31, 32
Retiree Home
(archdaily.com, 2011)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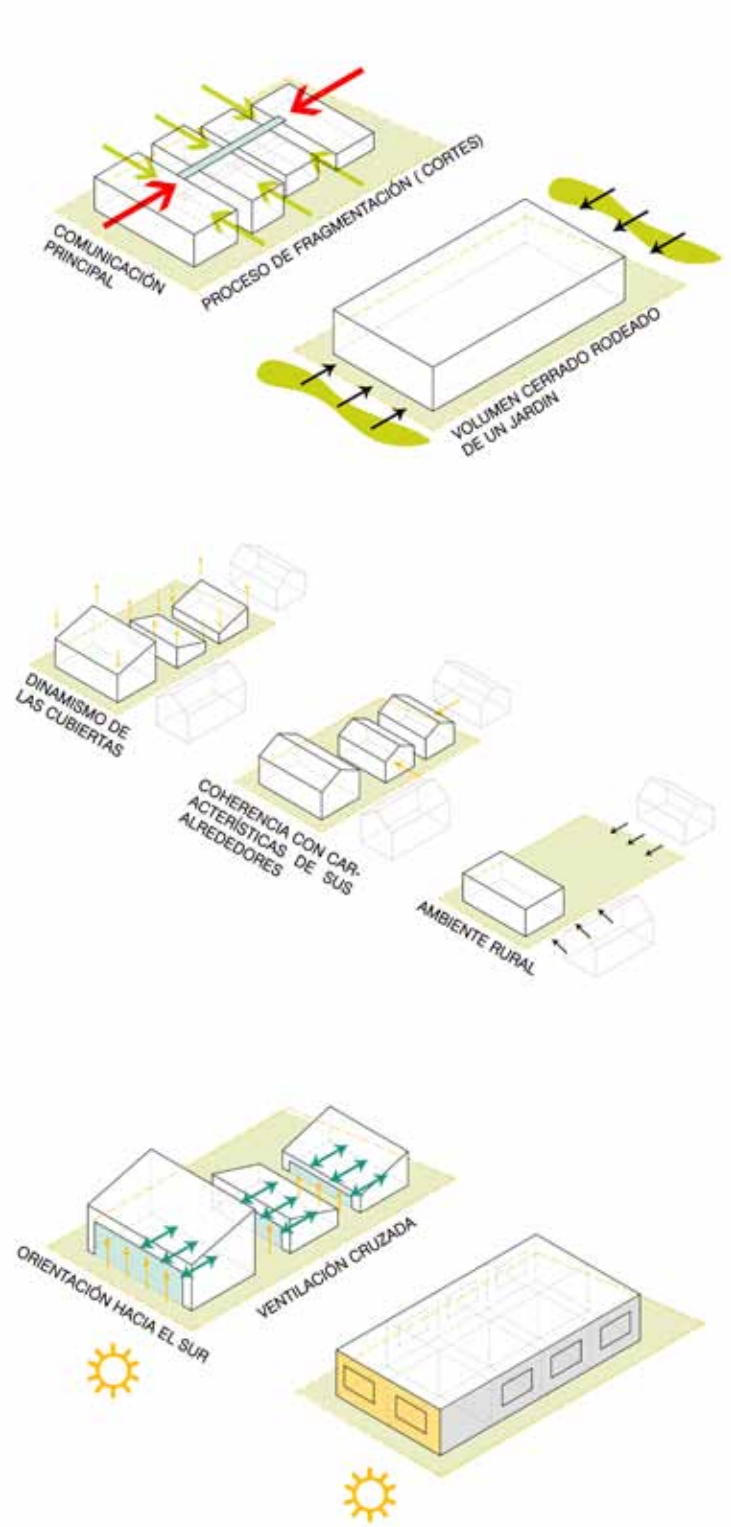
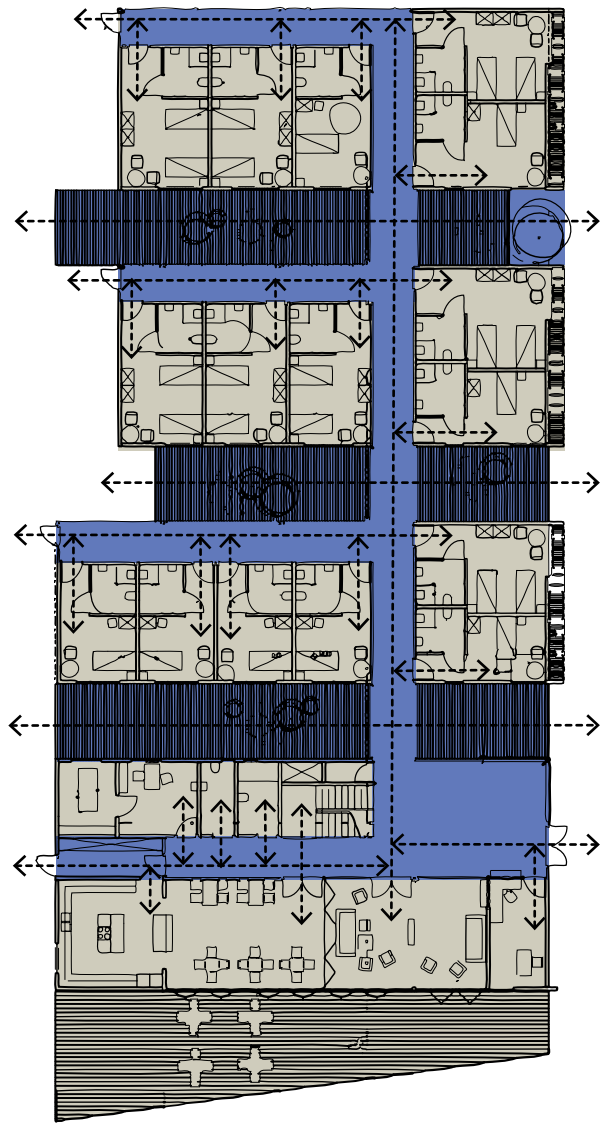
Case Study

Retiree Home

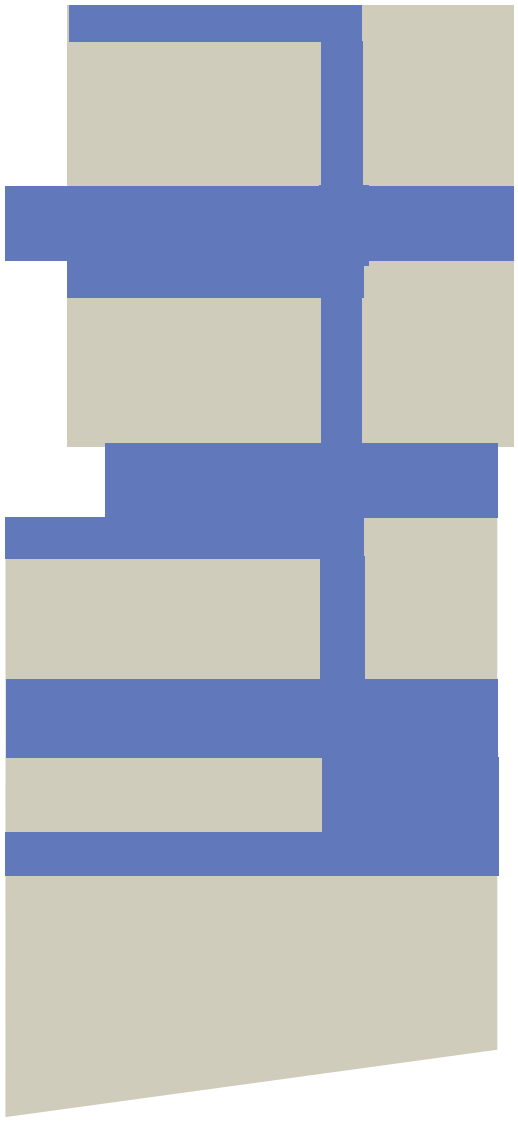
Firma d.o.o.
Alava, Spain
2011

This project was the winning proposal in a design competition that focused on developing senior living community. This proposal details a design that focuses on providing seniors an independent living environment within a small rural community. The natural environment of the site was the main influence in the design of the community. The final product resulted in four fragmented dwellings that are connected together by glass corridors. The idea was to create a tight knit community environment that respects the privacy of the residents. The community space is the largest of the four dwellings and the only one that has two levels. This area is where residents are expected to spend most of their time cooking, eating, and socializing. The individual units are small but provide every resident with a comfortable sleeping quarters complete with a personal bathroom and view into the outdoor gardens. The orientation and shape of the dwellings helps to maximize sunlight and exterior views. The community space is the largest and most prominent shape to help show that it is the main entrance of the complex. The proposal is somewhat of a minimalist approach to senior living, but that is really not a bad thing.





Circulation



Geometry

Figure 33, 34, 35
Sun, Circulation, Geometry
(archdaily.com, 2011)

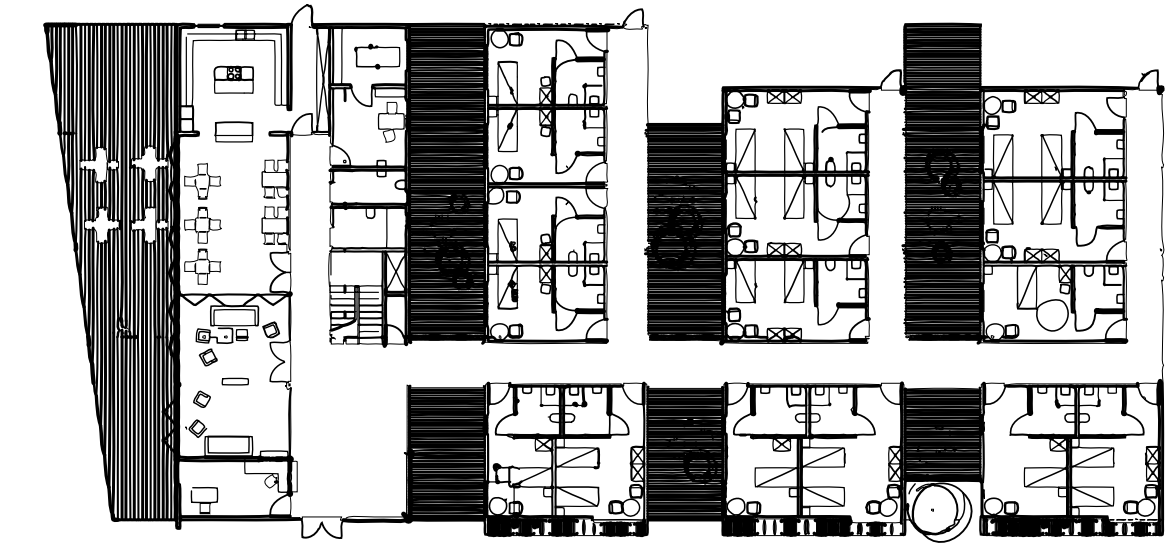
Case Study

Retiree Home

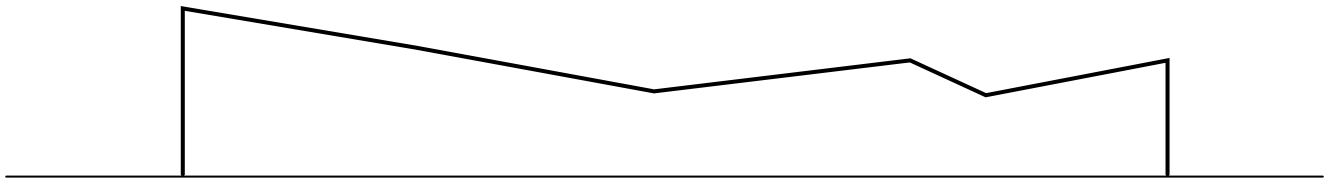
Firma d.o.o.
Alava, Spain
2011

Future generations of seniors are going to be more willing to take a chance on this type of lifestyle. This case is different from the other cases because it is just a proposal and remains un-built. The project is not nearly as detailed as the other projects but the overall design philosophy is strong. It shows similar characteristics from the other projects such as the use of natural materials and strong ties to the natural environment. It's different because it is the only case that is designed exclusively for people to live in. This is a fairly small scale residence compared to other facilities, but because of that it also operates at a very high level of efficiency. Smaller developments almost always tend to be cheaper and more environmentally friendly than larger ones. Mentally people tend to feel better when they are living a healthy life that has almost no negative impact on the environment. This type of project puts a large emphasis on the community and socializing. I would expect that the people living in this type of community would already be familiar with each other for it to work. This is easier to accomplish because of the size, but if the community was any larger it would not work the same way.

Figure 36, 37
Retiree Home
(archdaily.com, 2011)



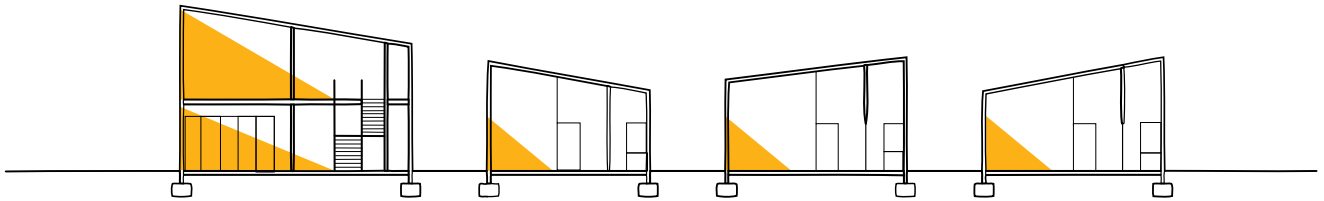
Plan to Section



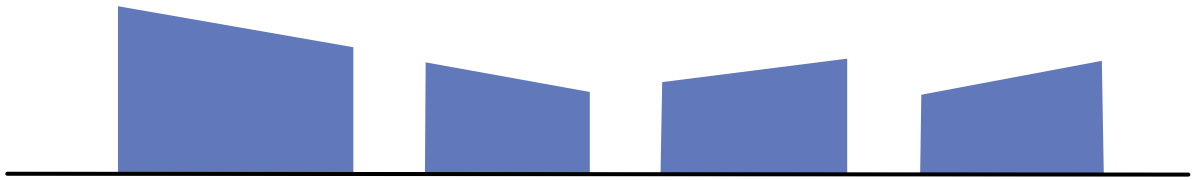
Hierarchy

Figure 38, 39
Plan to Section, Hierarchy
(archdaily.com, 2011)

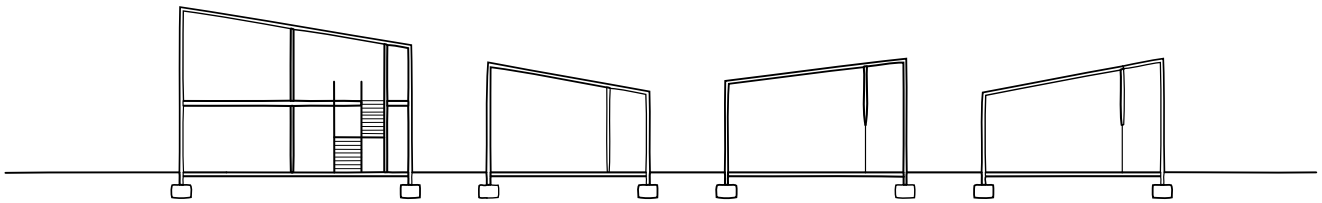
Case Study Analysis



Natural Light



Massing



Structure

Figure 40, 41, 42
Light, Mass, Structure
(archdaily.com, 2011)

Case Study Analysis

These case studies offer many different ideas of what a senior living facility can be. One important trait that all of these cases have in common is a building design that is highly adapted to the site. It doesn't seem to matter if the site is located in the middle of the city or the middle of the countryside, the way the building interacts with the site is very important to the success of the building. There is a high level of appeal when buildings can seamlessly blend into the surroundings. Another common occurrence between the case studies was the use of natural materials on the interior and exterior. These materials not only help the building blend into the natural landscape they give residents a sense of comfort, safety, and beauty. The use of materials is what gives the building sense of identity which is very important when that identity affects the way someone feels about an environment. The use of natural material found on the site (case study 2) is one of the best ways to create an identity that relates well to the site and the residents. These case studies have caused me to change my theoretical premise / unifying idea to focus more on site integration and material use.

Another common trait between these projects is that they are all located outside of the United States. European senior housing design has historically been more superior to that of the United States. I have seen many great case studies from the U.S., but almost all of the European examples were more advanced in almost every aspect. This has a lot to do with the strict regulations in the U.S., but besides that there is no reason we can't have buildings that compete with their European counterparts. The big difference that I can see is the amount of time and effort put into the design. There are a lot of facilities in the U.S. that are the product of limited budget, fast track construction, and cookie cutter design. European design and construction is typically a much longer construction because of the lack of space. As a result the buildings tend to last longer, function better, and I look better.

Many residential buildings in the U.S. tend to put a much bigger emphasis on size rather than quality. Case study three is a great example of a facility that makes up for its size with a high emphasis on design and quality. I would like to believe that people would choose a small functional living space constructed with high quality materials rather than a large wasteful living space constructed with low quality materials. These case studies really show that bigger is not always better when it comes to senior living.

All of these case studies offer characteristics that I would like to implement into my project. In many ways I would like my project to be a hybrid of all three projects. Case study one creates a community space that has an identity that is separate from a residential space. I want to create a residential and community space that is connected physically, but separated by identity. Case study two is not the same scale as my project, but the site is somewhat similar. I want to use some of the same orientation strategies to maximize what my site has to offer. The third case study is a new way of thinking about senior living and how important it is to be part of a community. As important as it is to create a strong sense of community within a senior living facility I believe it is just as important to have opportunities to express individuality. On a large scale a building should reflect the community as a whole, but on smaller scales there are opportunities to give residents the freedom of expression and personal identity.

Historical Context

Historical Context

Senior living in general is a relatively new phenomenon that did not come into existence until the early 1900's. This is due to the simple fact that people did not live as long as they do today. Before major breakthroughs in modern medicine most people did not live past the age of 30. It was very rare for people to live into the elderly years of their life. The over 55 population of the United States went from 9% of the total population in 1900 to 21% of the population in 1980 (AIA). We have already experienced a huge bump in growth of the older population in the last thirty years and according to the numbers the growth is going to continue to make dramatic leaps as the baby boomer generation continues to age. The year 2030 is going to be the year that the last of the baby boomers will be over the age of 65 and Americans over the age of 65 will have increased from 11% of the 1980's population to 18.3% of a much larger 2030 population. Creating living environments and communities for this growing group of the population is clearly going to be a big part of the future industry of architecture and construction.

Like many things in the United States, the stereotypical view of seniors has changed drastically over the last century. Before modern medicine was widespread it was rare to live past the age of 30, and the people that did make it into their older years were normally considered the most highly regarded members of society. Old was considered to be wise and these individuals were often sought after for their advice and consent. People of considerable age in those times were almost always shown the most upmost respect. As modern medicine prevailed and longer life spans began to become more common, negative stereotypes such as infirmity, dependence, and senility began to become associated with older individuals.

Negative stereotypes are never good, and they almost always take more time to overcome them then it does to start them. These negative connotations have also been

perpetuated by our society that tends to put a high value on productivity and youth within the workplace. Many companies and businesses also force many of their employees into an early or mandatory retirement in favor of a younger workforce regardless of whether or not the individual is still willing and capable to work. With the continual surge of the senior population it is becoming more and more important to reverse negative images of seniors. Architecture may be the one of the most effective tools to curb some of the negative stereotypes. Architecture can play a big role in the emotions of the residents as well as the emotions of the resident's family, friends, and pretty much everyone who comes into contact with the building. Creating positive associations with the building is very important part of creating community that people want to be a part of and want to share with their loved ones. If seniors can live in a building that they are proud to be in and still have all of the opportunities to be independent and play a positive role within the community it would be a big step forward for assisted living.

In many ways architecture has already began to eliminate some of these negative stereotypes, but if we look back at the history of senior living facilities it may have been one of the main things that perpetuated a lot of the stereotypes. Before there was any type of federal assistance program, people who could not take care of themselves and had no one else to rely on for help and were sent to places called almshouses to live. These places were considered some of the worst living environments around due to the terrible overcrowding, lack of assistance, and dilapidated buildings. Some states even encouraged the negative stigma associated with the houses in an attempt to prevent people from relying on the system. These types of buildings were basically eliminated with Franklin Delano Roosevelt's signing of the social security act in 1935. This allowed people to find the care that they needed and as a result a variety of

private facilities began to develop. In 1954 a change to a federal law was made to provide grants to build facilities that were in direct conjunction with the hospital. In an attempt to raise the quality of care within these facilities they started to be designed to look and function like hospitals. The idea sounded good on paper and I'm sure the quality of care was much better, but because of the hospital look and feel there was almost no home like qualities within the facilities. Residents were treated more like patients rather than residents of a community.

It was not until the late 1970's that it was finally apparent that these institutionalized environments were no longer acceptable environments for aging seniors and their families. It was clear that there was a serious need of a change within these communities. Known now as the architect of the assisted living model, Dr. Karen Brown Wilson was inspired by her mother (who was living in such a facility) to come up with a better solution. She began to develop her vision by identifying characteristics of the facilities such as shared bathrooms, communal showers, and non locking doors that she believed stripped the basic rights of privacy from the residents. She realized that she needed to come up with a way to continue to provide residents with the daily care that they needed while simultaneously providing them with the respect and dignity they deserved. Assisted living facilities and other hybrid models are now the most popular and desirable models for senior living. Since 1981 there have been over 40,000 assisted living facilities developed within the states (History). These facilities have often been described by residents as the best of both worlds providing all of the comforts of home with all of the necessary care. These types of facilities have become the most successful models of senior living and will continue to become better environments for aging.

Goals

Goals

Academic

Academically I would like to try to investigate some areas of architecture that I have not yet experienced in any classrooms. I want my main area of investigation to be in different methods of creating a video presentation of a digital model. Using animation to present architecture is one realm of study that I have literally had no contact with. This is a tool that could help tremendously to show the overall design qualities of a building without having to explain anything to the viewer. Creating a video will not only help my project be more successful, but it will also equip me with the knowledge and tools to bring digital animation into my professional career.

Professional

I have been working in the industry for two years now, and plan to continue my professional career in the same direction. This makes it very important for me to make sure everything I do is to the standards of the industry. The best way for me to achieve this goal is to ensure that my design proposal meets all of the code and accessibility standards. Professionally it is important for me to prove that I am capable of creating a design that not only looks good and functions well, but also meets all of the requirements for a building permit. It may be a little unnecessary for this project, but it would be great for my professional career to create a working set of construction documents for this project. This will probably be more of a secondary goal, but I also believe that this is something important for me to prove I'm capable of before I graduate.

Goals

Personal

The main personal goal I would like to have for this project is to simply have fun with it. People have been somewhat surprised about my choice of typology for this project. People have made comments saying that it might be a boring project to work on. I would like to prove the ne sayers wrong and show that this type of project can be fun and give a glimpse into the future of the industry.

Site Analysis

Site Analysis

Bryant Lake Regional Park is nestled in 170 beautiful acres of rolling hills, woodlands, wetlands, and grasslands. The map to the right describes the layout of the park and some of the amenities that the park has to offer.

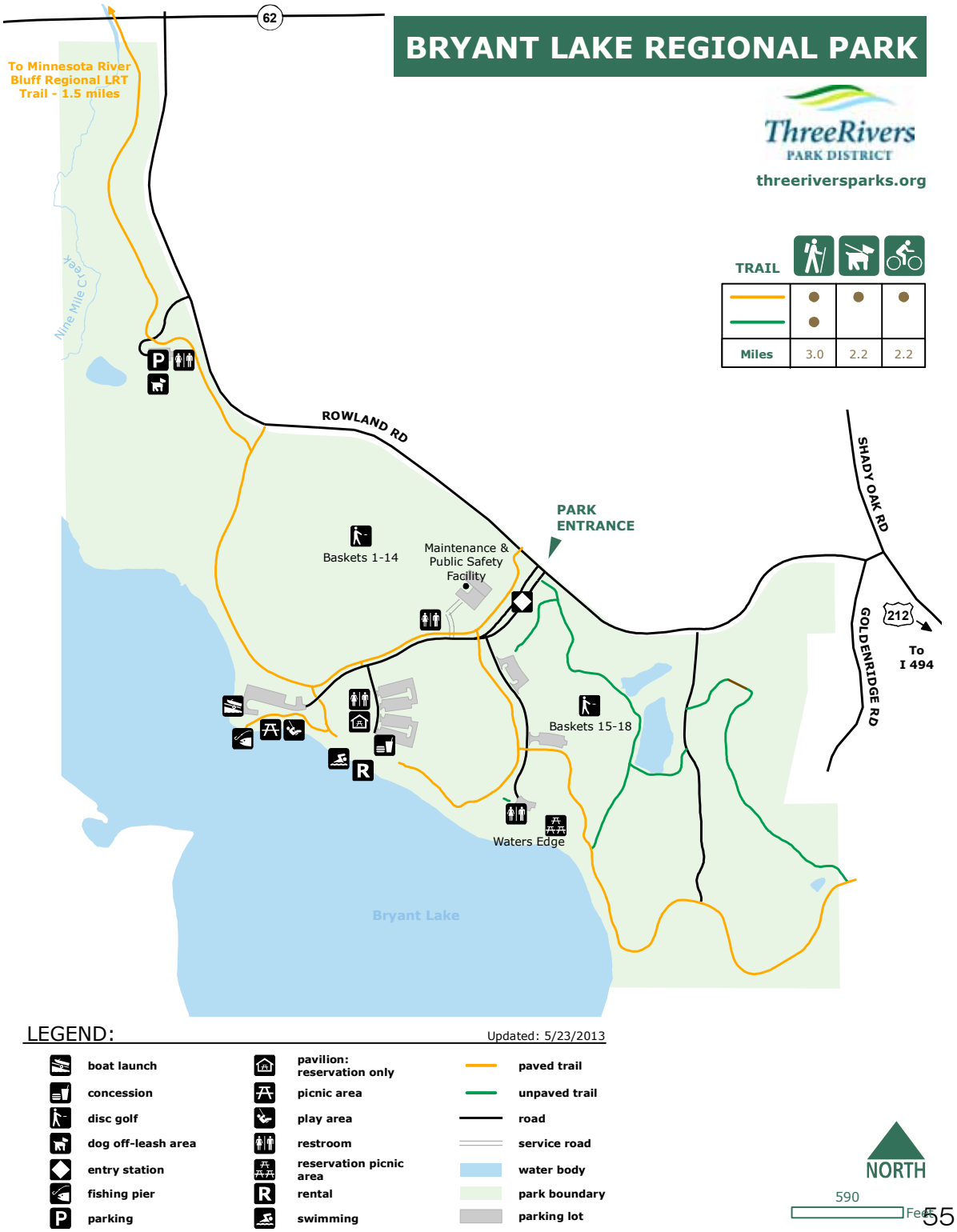


Figure 43
Bryant Lake Park Map
(threeriverspark.org, 2014)

Site Analysis

Narrative

The sun is shining bright shining bright on a summer day as I pulled into a parking lot at Bryant Lake Park. Based on the number of cars parked I could tell it was going to be another busy day at the park. It's not much of a surprise considering the kind of weather we enjoyed last summer. The great weather allowed me to visit the site on weekly bases over the summer and enjoy everything the park had to offer. Hiking, biking. Walking, fishing, swimming, boating, picnicking and disc golf are some of the activities that are offered. The park is mainly used during the summer months, but remains open year round for winter activities such as snowshoeing and geocaching. I've been coming to this park for almost 8 years now and it's become one of my favorite places to spend time. Spending a large amount of time at the park allowed me to cover a lot of ground to eventually determine the optimal location.

This is a site that is hard to fully understand from just one visit. I often made a new discovery almost every time I went to the site. In many ways the landscape of the site reminds me of other lake areas around the Twin Cities. Lake Minnetonka, Christmas Lake, and Lake of the Isles all feature sites that sit high up on a hill that slopes down into a lake providing some of the best overlooking views. Having lake access and view has been drawing people to the state for some time after all it is the land of 10,000 lakes. Having a cabin or home on the lake has been and continues to be a lifelong dream of many people. There is something really special about a site that has that kind of appeal.

Figure 44
Bryant Lake Park
(Stephen LaGrange, 2013)

Narrative

Figure 45, 46, 47
Bike, Hike, Ski
(threeriverspark.org, 2014)

The site is located in the southwest suburbs of the twin cities making it very accessible by car and other forms of transportation such as bike or foot. Right off of the freeway you can get to the site in less than five minutes. A vast majority of the site is very walkable and has areas that are set up as hiking and biking trails to allow direct contact with the natural environment. After traveling through a few different areas of the park it's pretty easy to see that there is a large variety of plant life within the park. The park is broken up into three distinct areas of woodlands, wetlands, and grasslands. The many different types of landscape offer many great natural views and encounters. The woodlands are present in several areas in the park but most importantly in the front of the park around its parameter this is a natural barrio that protects the park from the outside road. The wetlands occur at certain low points in the park creating another unique environment. The grasslands mostly run along the hill that slopes down into the Lake. There are also some areas that have been partially cleared and developed for the disc golf course. These areas have shorter grass and feature scattered trees, shrubs, and wild plants. Site is also going through constant change throughout all of the four seasons. The site can look drastically different comparing it season to season. There is a lot of natural beauty to see on the site, finding it can really give someone a sense of adventure

Site Analysis

Views and Vistas

Making a trip to the site was always somewhat an adventure of its own. Going to the site can create a buildup of anticipation that can make the overall experience of visiting the site even better. Shortly after exiting of the highway a series of winding residential roads leads you to a hill. The excitement really starts to build when start to climb uphill, because the entrance to the park is now very close. The main entrance is located towards the top of the hill and is marked by a large sign. You can now see some of the vegetation that creates the buffer zone between the road and the park. As you finally make your way to the main area of the proposed site, a large view looking out at the lake is finally opens up.

This spot on the site is a great vantage point to see almost everything that is going on around the site. The vantage point offers a full view of the lake and other surrounding scenery. If you look far off in the distance you can see cars going down the distant freeway and the skyline of the surrounding cities and neighborhoods. The site is oriented to the south giving it a fair amount of direct sun. Large clouds can be seen far off in the distance. Bad weather can be spotted very easily from the site. Other areas on the site are dense with natural vegetation and provide a more intimate setting. There are also many opportunities to view the natural wildlife on the site. It's fairly common to spot deer, waterfowl, or songbirds that have made the park home.

Figure 48
Bryant Lake Park
(Stephen LaGrange, 2013)

Figure 49
Nature Trail
(threeriverspark.org, 2014)

Built Environment

Figure 50
Bryant Lake Pavilion
(Stephen LaGrange, 2013)

Figure 51
Pavilion Interior
(threeriverspark.org, 2014)

Other than some key areas on the site a large amount of the site remains natural and undeveloped. Efforts are going to be made to keep the existing site as natural as possible. There is a police station and garage that is located very close to the proposed site. It is in within walking distance of the site is located behind the proposed location. The building is mostly kept out of view by trees and other vegetation. The road that goes between the proposed site and the police station will lily become a shared road with the new development. The police station will most likely play a role in the future community.

Located down the hill from the proposed site there is a large beach pavilion. The pavilion is used as a concession stand, rental shop, eating area, storage area and gathering space. This building is connected directly to the beach area as well as a large play ground area. All of these areas are all visible from the proposed site. Located a little farther down from the beach pavilion is a boat launch and parking area that is used the public. Various parking lots are also scattered around the Park. The largest parking area is located directly below the proposed site near the beach pavilion. There are also some smaller buildings located in other areas of the park that are really of no concern to the project. For the most part the existing buildings will operate the same way that they do now. The major built areas will most likely share connections to the new community.

Site Analysis

Water

Water is a fairly prominent feature on the site. The proposed site does not sit directly on the water, but rather in a place that has a direct view of it. Bryant Lake is on the small side compared to neighboring lakes, but it is large enough to support motorized boats as well as swimming beach. Visitors are encouraged to fish from boats and docks. There are other residential homes located on the lake that share direct lake access with the park.

Besides the lake there are also a few small swamps that are located near the site. These swamps usually form when there is a substantial amount of rain. When there is little rain the swamps tend to dry out completely. The swamps should not interfere with the development of the site in any way. It is going to be important to determine exactly which way the water flows off of the site. Besides some pollution from the motorized boats the water on the site remains collectively clean and is considered safe for swimming and other water activities.

Figure 52, 53, 54
Boat, Beach, Kayak
(threeriverspark.org, 2014)

Site Analysis

light quality

Figure 55
Stone Path
(Stephen LaGrange, 2013)

Figure 56
Picnic
(threeriverspark.org, 2014)

During the day when the sun is shining the light quality is very good. The way the site is sloped and oriented on the site may cause the light to be more intense at certain times of the day. The located below the sight may cause some intense glare from the reflection of sunlight off of the water. There is not very much light on the sight once the sun goes down. Besides some lights that are on the exterior of the buildings and some street lamps in the parking lots and roads the site is fairly void of artificial light and is very dark. On clear nights the moonlight can really brighten up the sight in a very unique way. Far off in the distance light can be seen from cars traveling down the highway and in the skyline of the surrounding cities and neighborhoods.

Human Characteristics

Most of the people that occupy the site are visitors using the site for recreational activities. The busiest time of the year is during the summer months of the year when the weather is good. Other main groups of people that occupy the site are the employees of the park that operate and maintain the park. These employees all wear the same uniform and for the most part are only present during the summer. There is also a police station located on the site so there is almost always a cop on duty patrolling the park as well as the surrounding community. This type of development could be something that helps benefit the people that currently visit the site and others in the surrounding community. The development has the potential to add more jobs at park as well as getting more of the surrounding community involved with the park and the residents. The development has the potential to add more amenities and attractions to the park that will bring more visitors to the site.

Site Analysis

Distress

There is not a lot of really obvious distress that is present on the site. The most obvious forms of distress are small areas of the sight that are temporarily fenced off for construction of various paths and landscaping. The only other visible distress is in areas within the disc golf course that have become worn in to the point of no return. This could be anything from trees missing branches to random paths that have formed from perpetuated use. Besides that and the occasional fallen tree there is not a whole lot of distress on site.

Wind

The wind on the site can vary quite significantly depending on the location within the site and the time of the year. For the most part the wind is fairly mild and gets blocked by the hilly landscape and trees. The wind can become severe when a strong storm blows through. There is also some wind that is caused by the lake pulling air down. During the hot summer days a slight breeze from the south can be somewhat comforting. I would imagine that winds that come from the north during the winter would be mostly blocked by the surrounding landscape. During extreme weather I have seen the wind do a fair amount of damage to trees on the sight. This is always a concern, but most of the trees that do fall are in the denser parts of the woods away from the primary site.

Site Analysis

Utilities

Figure 57, 58, 59, 60
Bryant Lake Park
(Stephen LaGrange, 2013)

The site is located near the metro area so utilities should not be a major concern for the site. There are buildings on the site that have all of the standard utilities on the site so I have to believe that these connections can be used for the proposed design. The primary site location is within fairly close proximity with both of the major buildings on the site making it much easier to run utility lines to the site.

Vegetation

The site has a lot of different types of vegetation and plant cover. There are three main types of ground cover made up of woodlands, wetlands and grasslands. Different types of plant life grow in all of these areas. On the proposed site the vegetation is less dense than other areas of the site. There are many types of wild plants that are visible throughout the park. The types of plants vary greatly in different areas of the park. It is pretty clear that some of the smaller trees were planted on the site fairly recently. There are also some very large trees located in the forest areas on the site. Some of these trees have some very unique growth patterns in the branches. In some areas on the sight mostly on the steeper hillsides there are some undesirable plants such as sticky burs and buck thorns. Luckily these are in locations that are no important to the development.

Site Analysis

Vehicular Traffic

The site is accessed by one primary entrance to the park keeping the traffic on the site down to a minimum. There are roads within the park that lead to the various areas of the park. The main traffic that affects the site are the cars traveling to and from the beach and boat landing. Because the park closes at 10pm every night this road along with most of the site becomes vary quite. Other vehicular traffic on the site would be from the police station and maintenance area located behind the proposed site. This traffic is going to be pretty much out of view to the site and only seen if you happened to be passing by. Maintenance carts are sometimes seen traveling off road on the site. These carts are fairly quiet and don't come on to the site vary frequently.

Pedestrian Traffic

During the summer months of the year there is a large amount of pedestrian traffic around the site. Almost all of the activities on the site involve some form of walking. There are also a lot of hiking and biking trails available for to use. There are many more ways to access the site via walking or biking. The trails connect eventually connect to regional trials that connect to a majority of the metro area. It is very encouraged to access the site in a way that does not involve a car.

Figure 61, 62
Bike, Hike
(threeriverspark.org, 2014)

Figure 63
Nature Trail
(Stephen LaGrange, 2013)

Soils

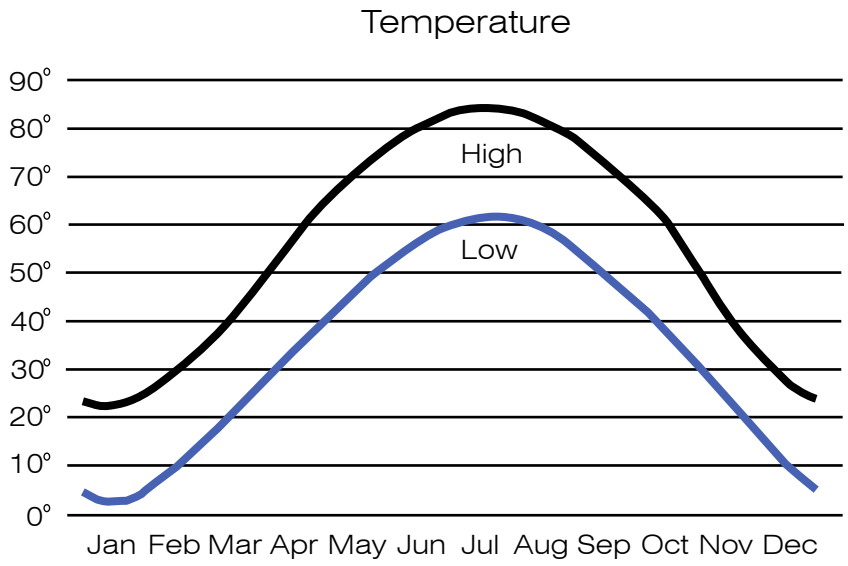
The sediment on the site is primarily made up of glacial till that is primarily made up by Kingsley-Gotham sediments with 6 to 12 percent slopes. The sediment is made up of sand, silt, and clay in matrix. The surrounding area on the site is also primarily made up sand and gravel.The sand is mostly unsorted and coarse gravel can be found in narrow beach deposits. The soil is not the best quality for construction, but should be suitable.

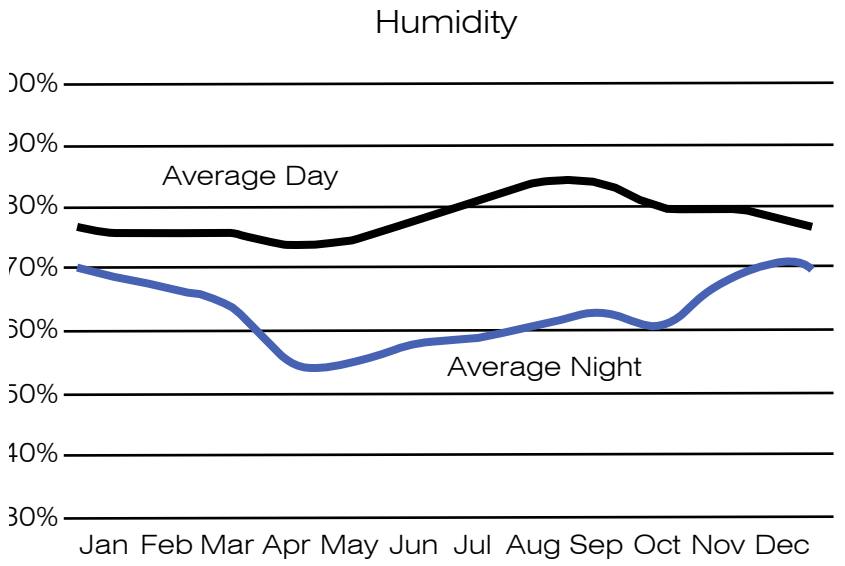
Figure 64
Topo Map
(Google Maps, 2014)

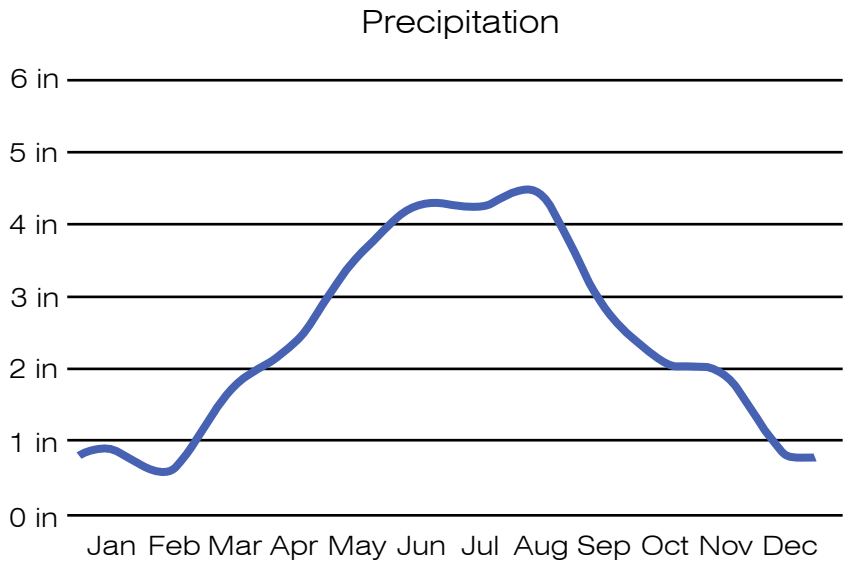
Topography

The site is a series of rolling hills that eventually slope down into the lake. The topography provides a slope that drains water out of the site very well. There is almost no chance for the site to flood out. The area at the bottom of the hill is a relatively flat landscape compared to the landscape at the top of the hill. The topography is higher here than surrounding areas of land giving creating some vary nice views. The higher parts of the site are around 900 ft. above see level and the lower parts are around 60 ft. above.

Climate Data







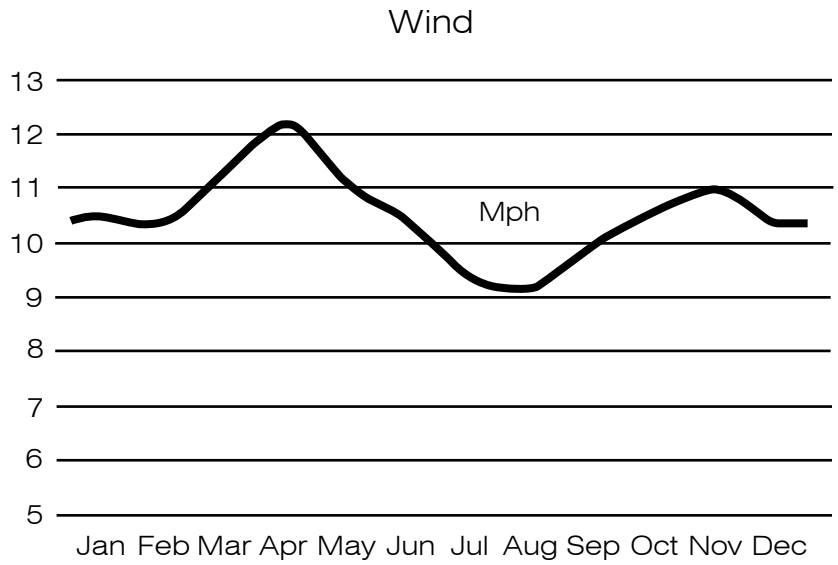


Figure 65, 66, 67, 68
Temp, Humidity, Precip, Wind
(city-data.com, 2014)

Wind Direction

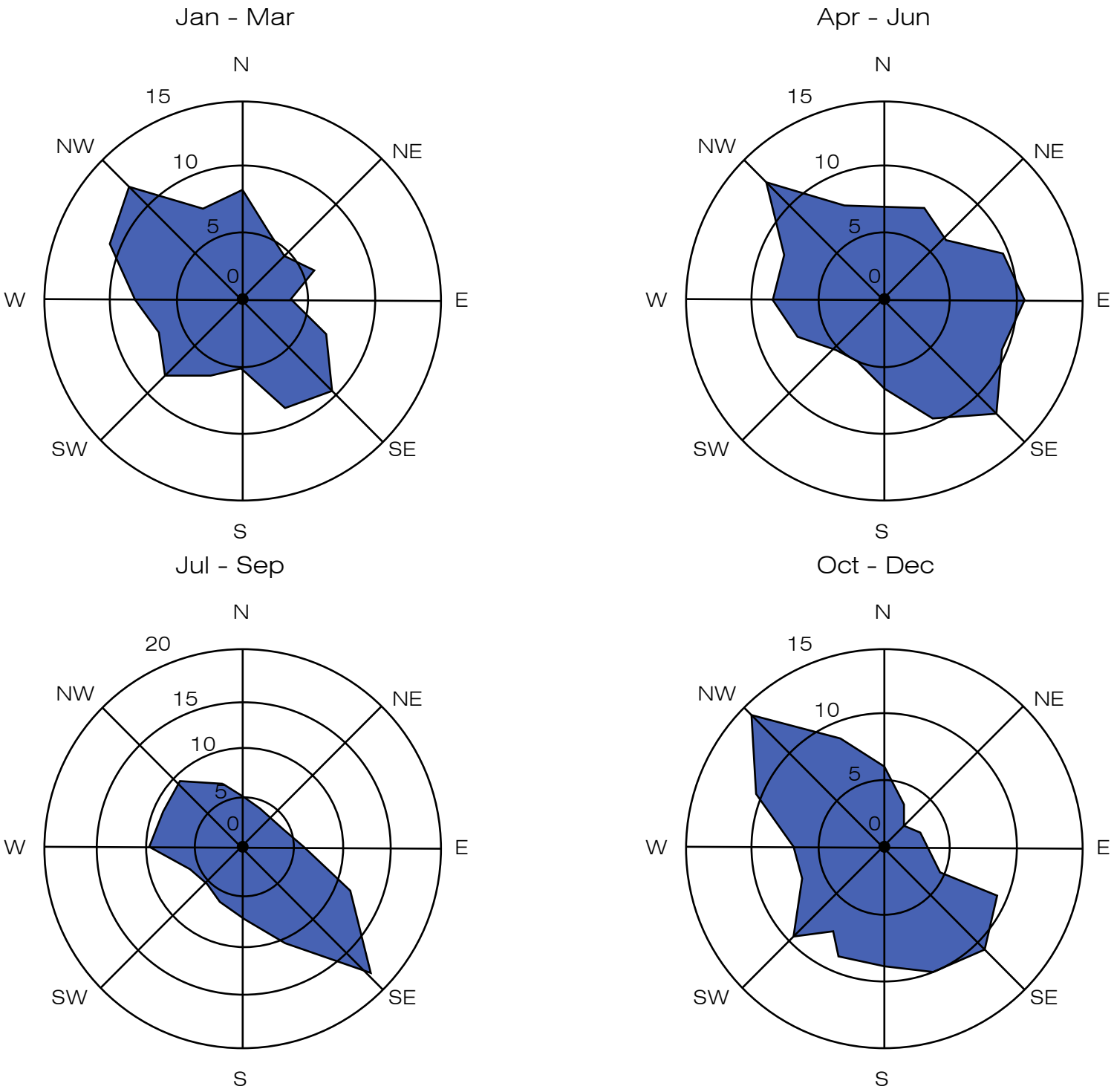


Figure 69, 70
Wind Directions
(city-data.com, 2014)

Cloudiness

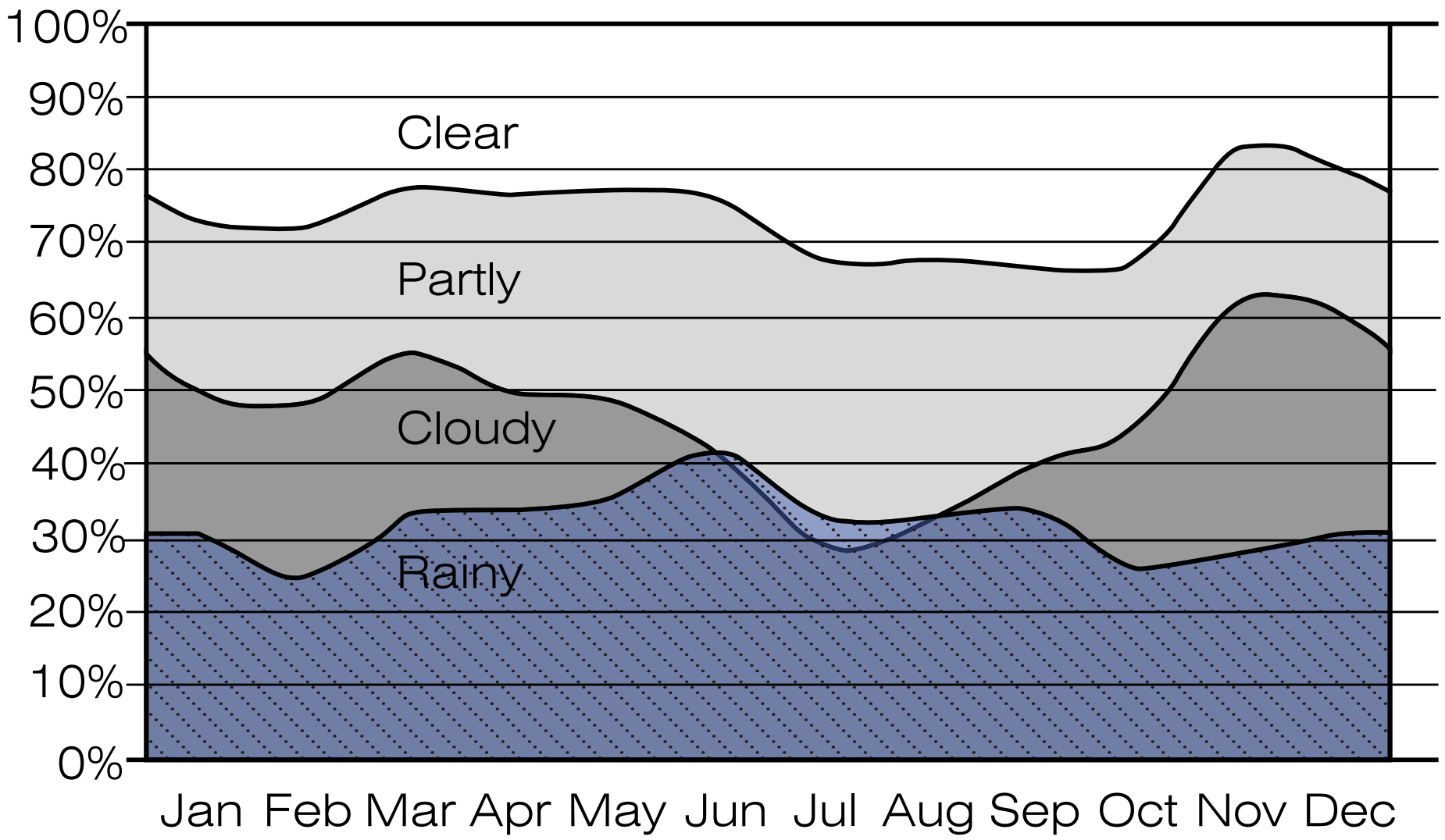


Figure 71
Clouds
(city-data.com, 2014)

Sun Path

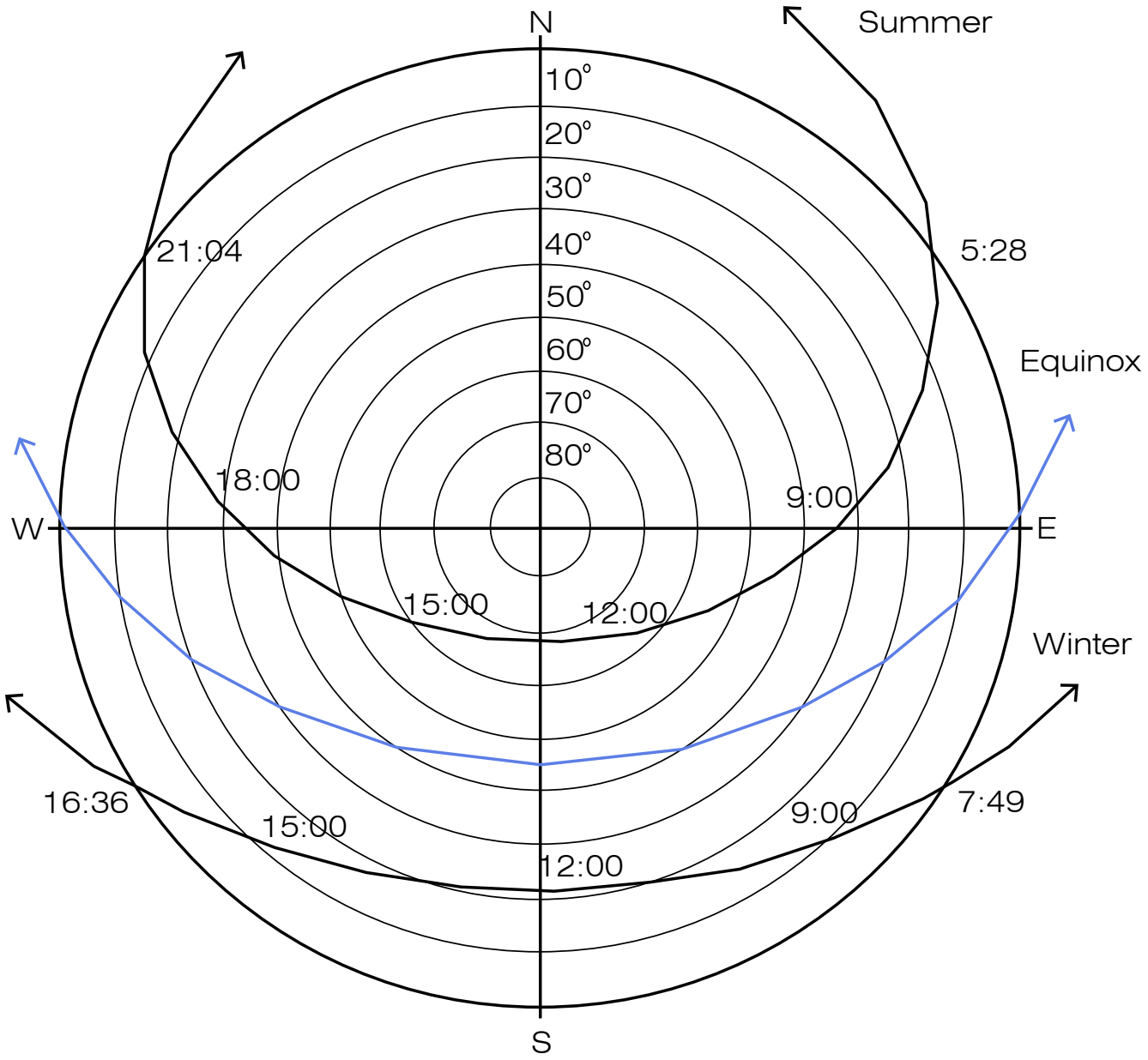


Figure 72
Sun Path
(Gaisma.com, 2014)

Topography.Air Movement.Noise

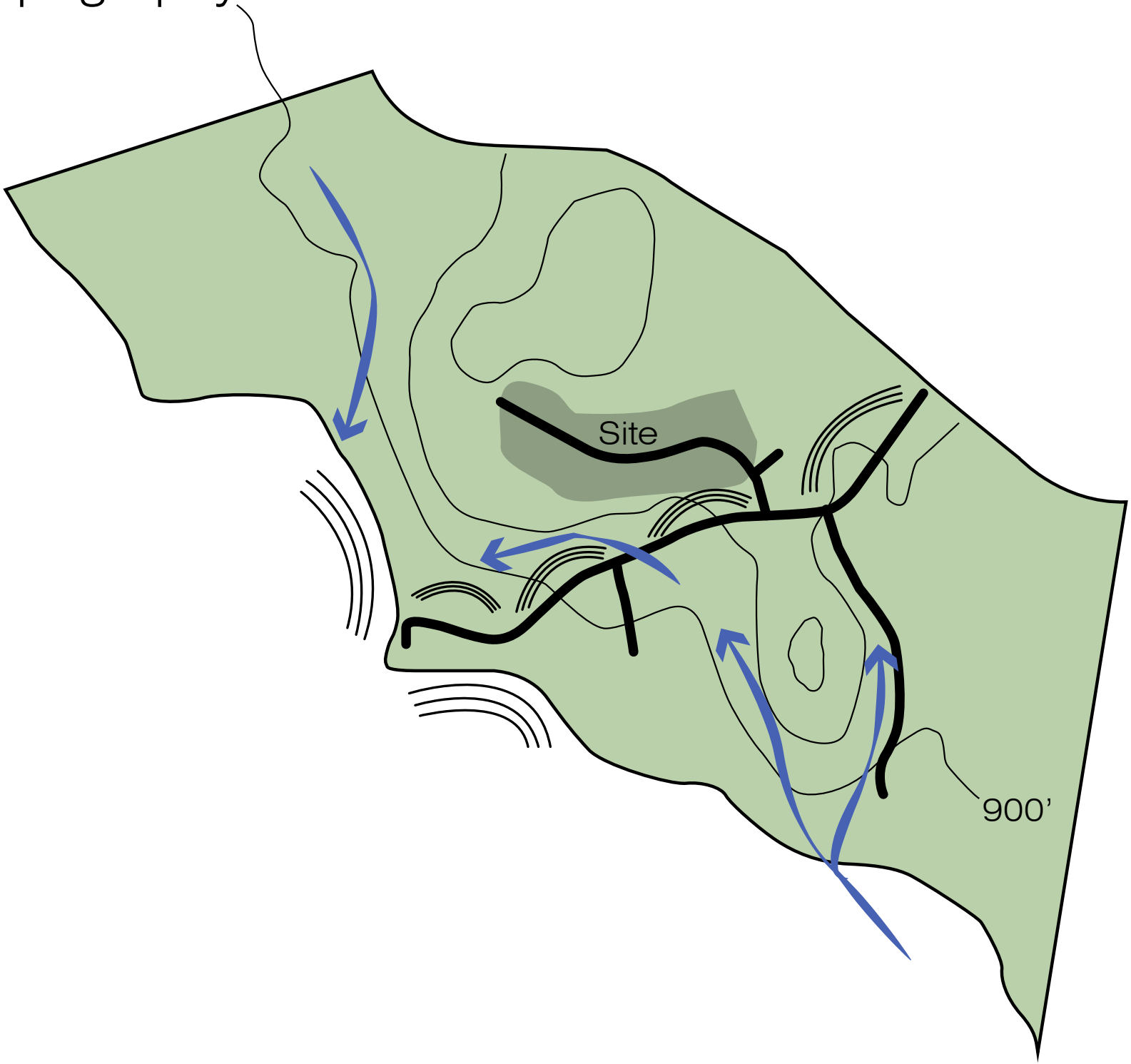


Figure 73
Topo, Wind, Noise
(Google Maps, 2014)

Interaction Matrix

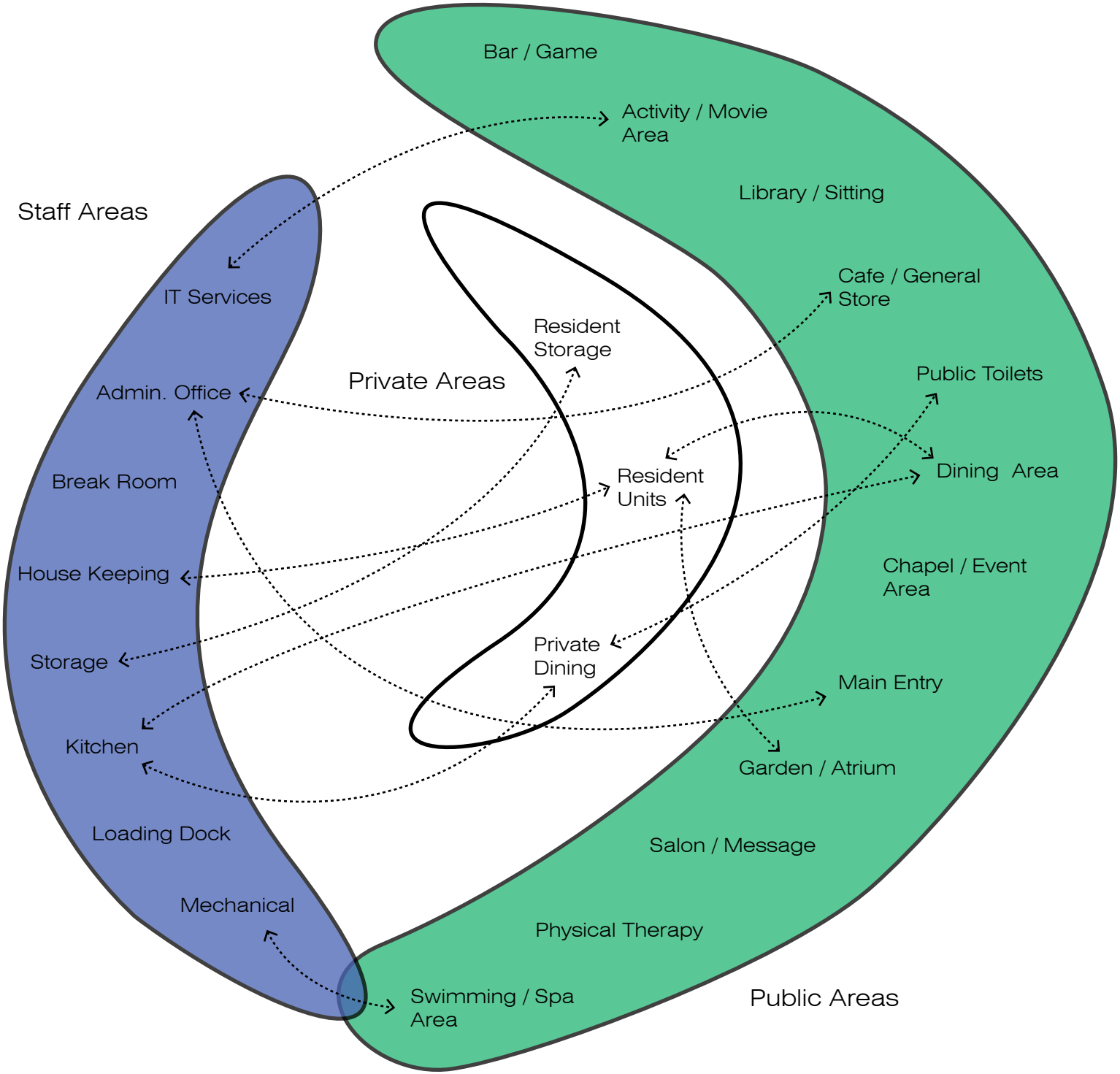


Figure 74
Matrix
(Stephen LaGrange, 2014)

Design Process

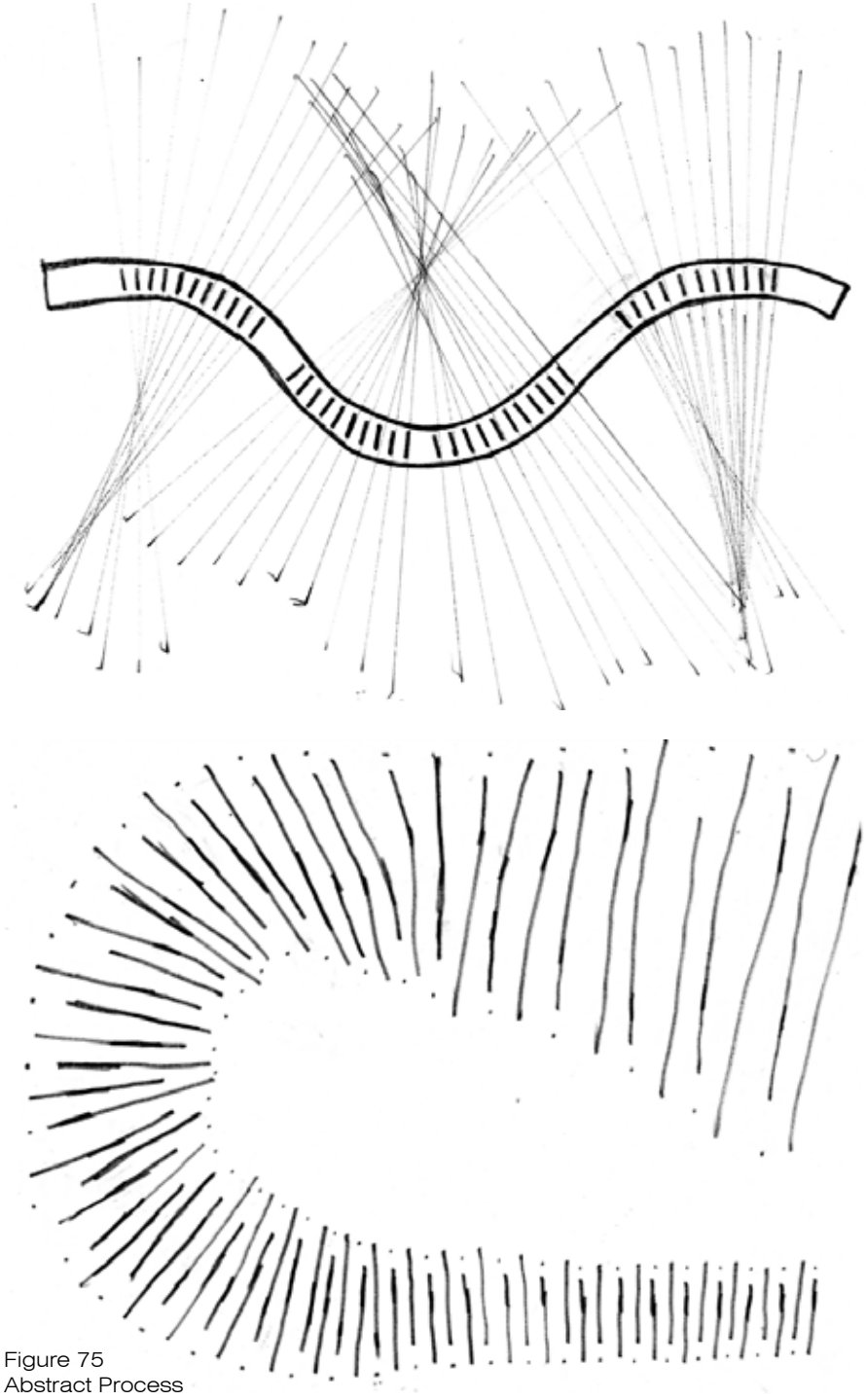


Figure 75
Abstract Process
(Stephen LaGrange, 2014)

Process Sketches

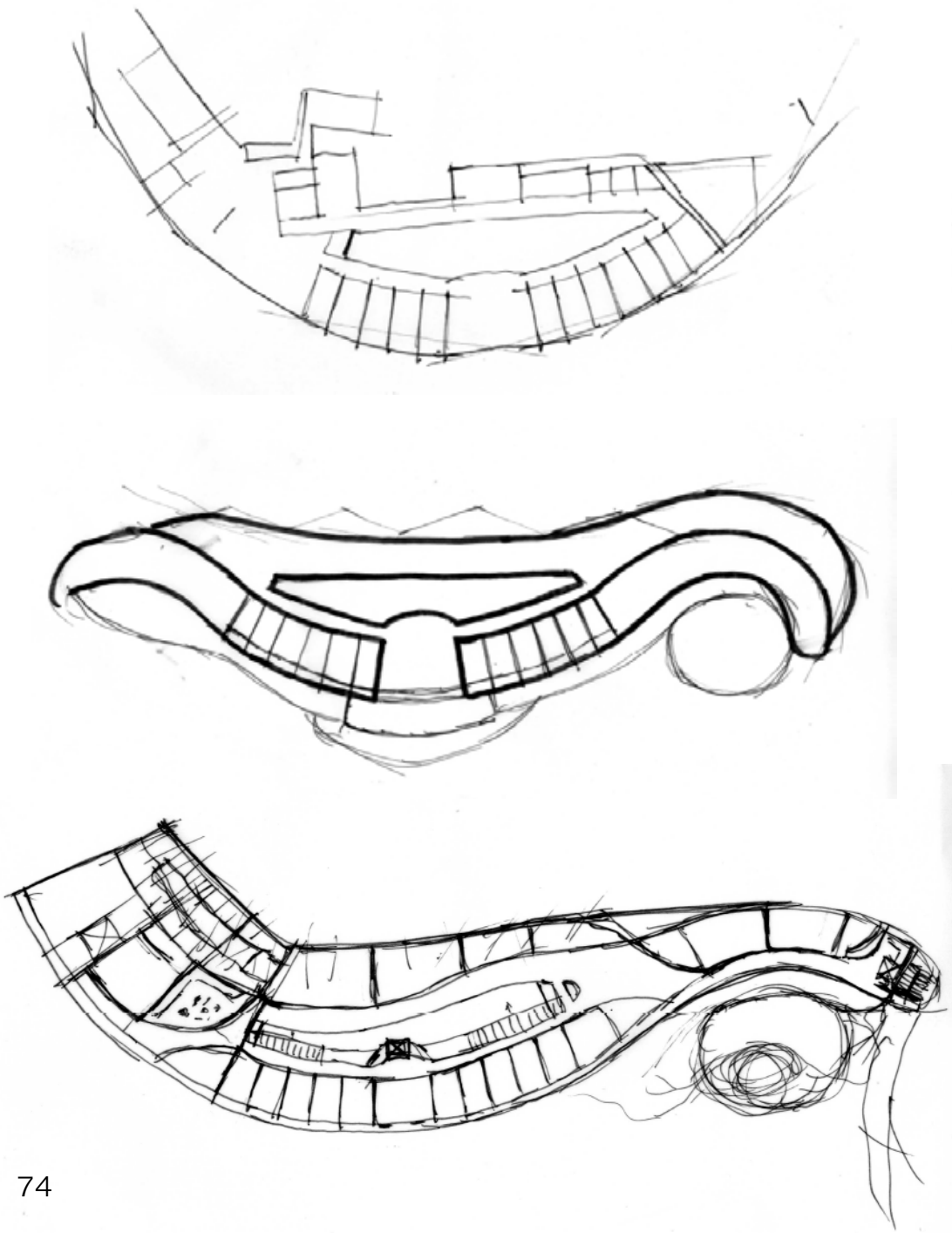


Figure 76
Study Process
(Stephen LaGrange, 2014)

Process Sketches

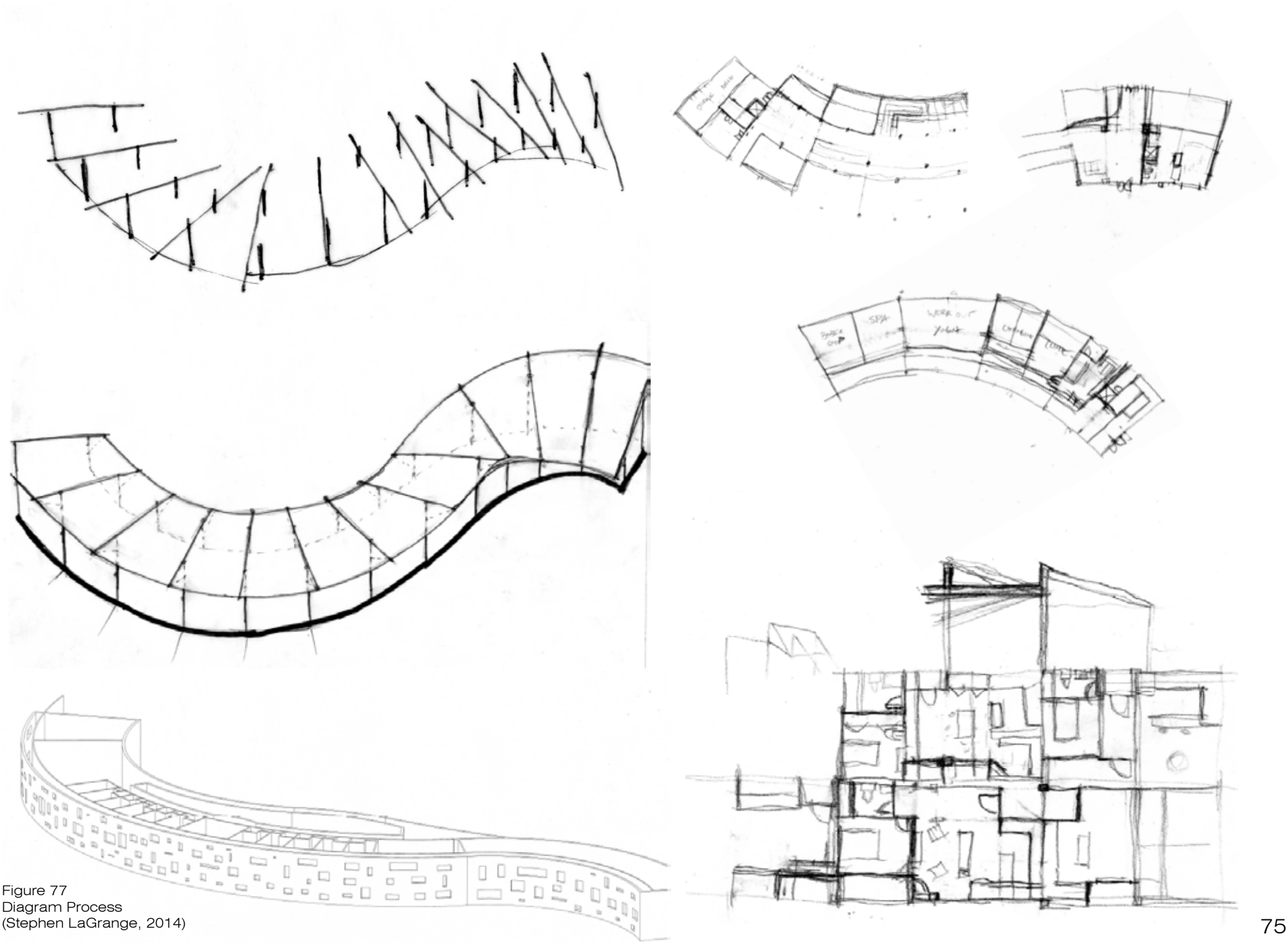
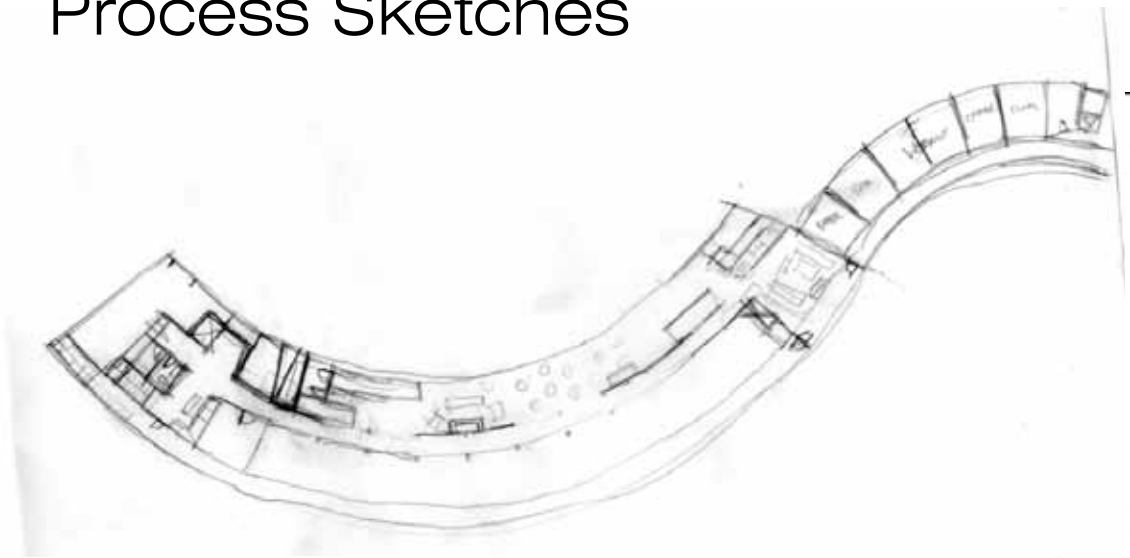
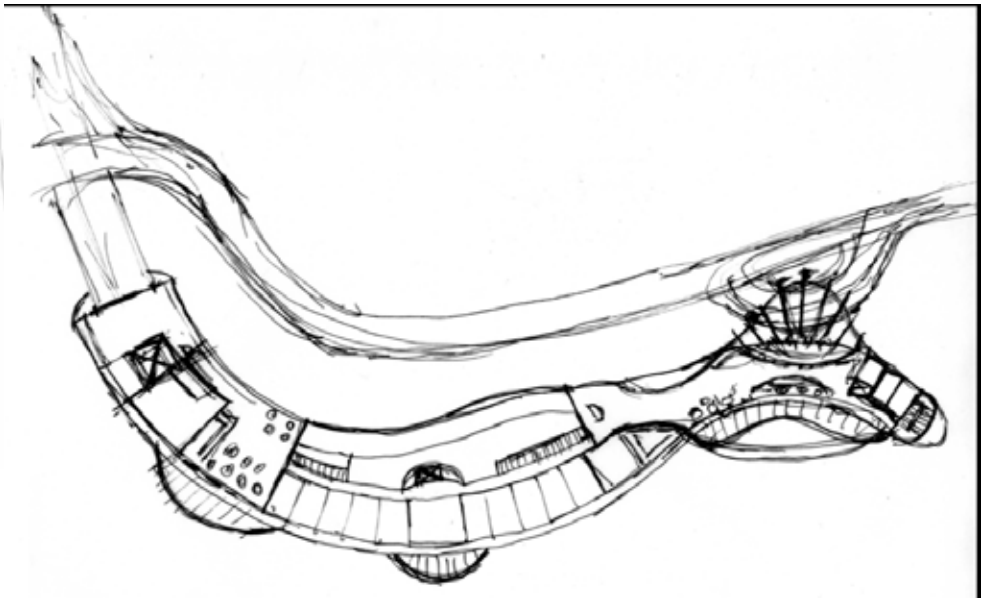
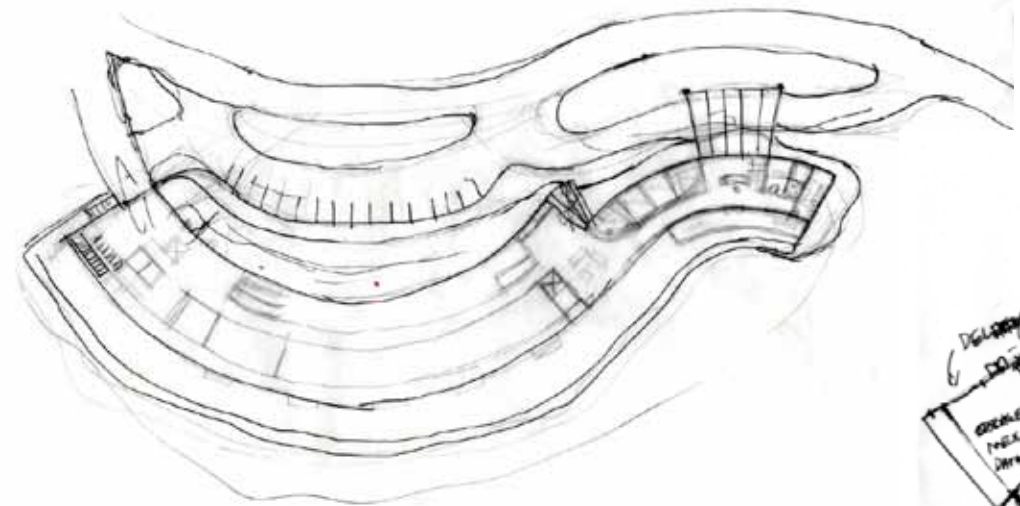


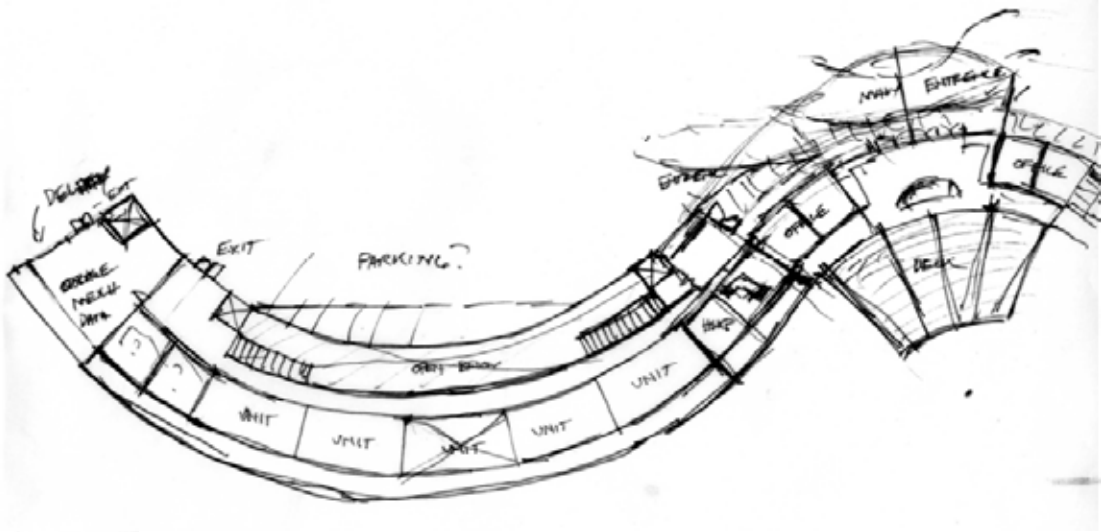
Figure 77
Diagram Process
(Stephen LaGrange, 2014)

Process Sketches









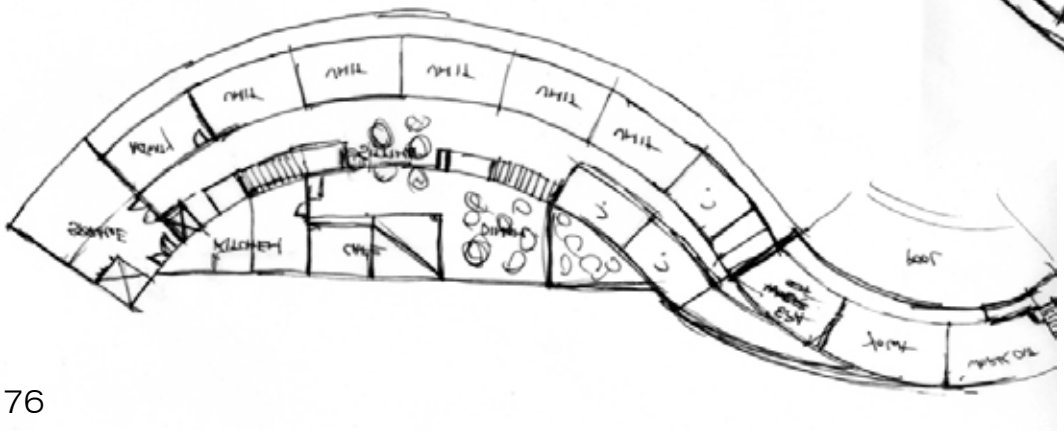


Figure 78
Plan Process
(Stephen LaGrange, 2014)

Process Sketches

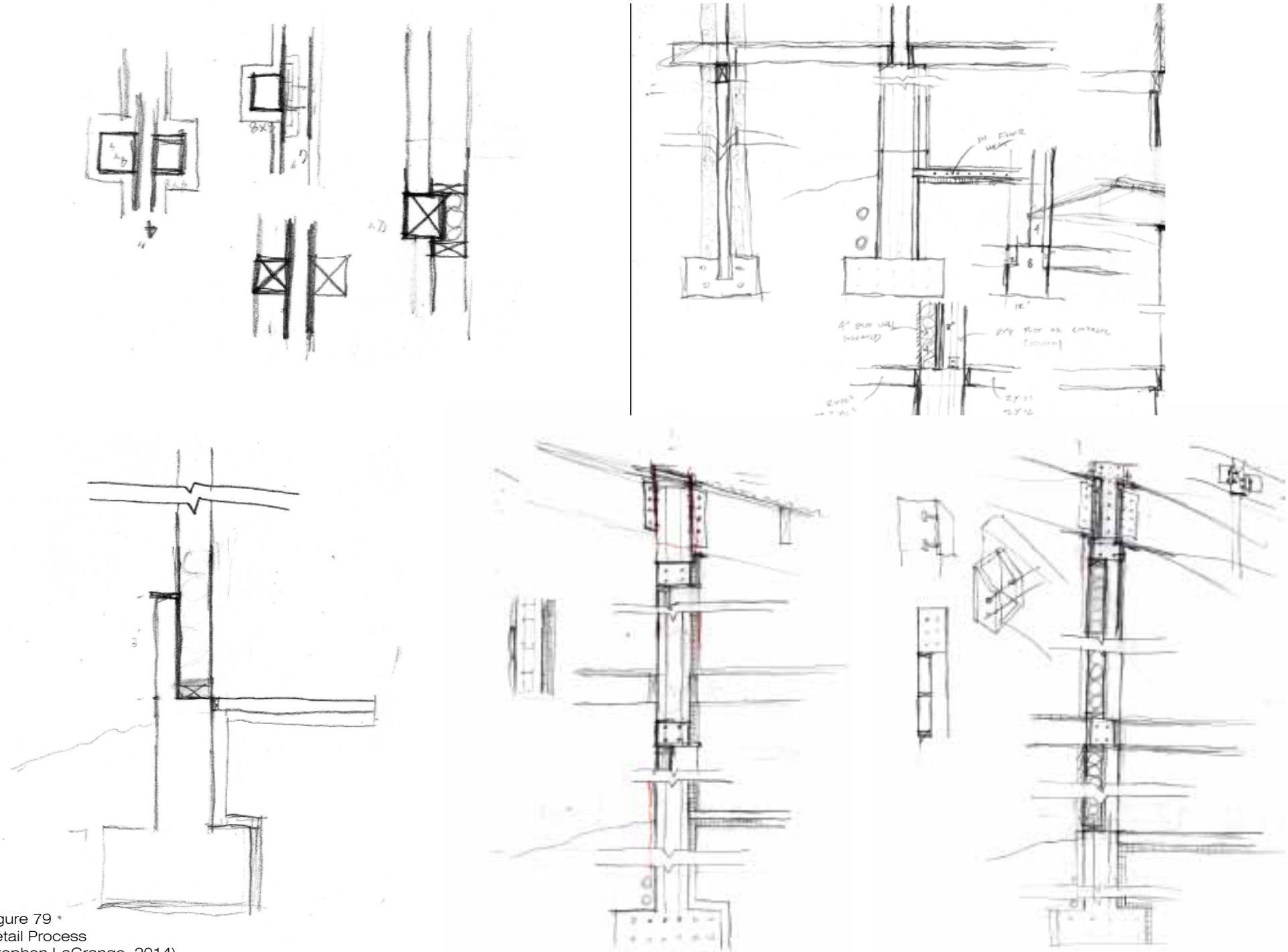
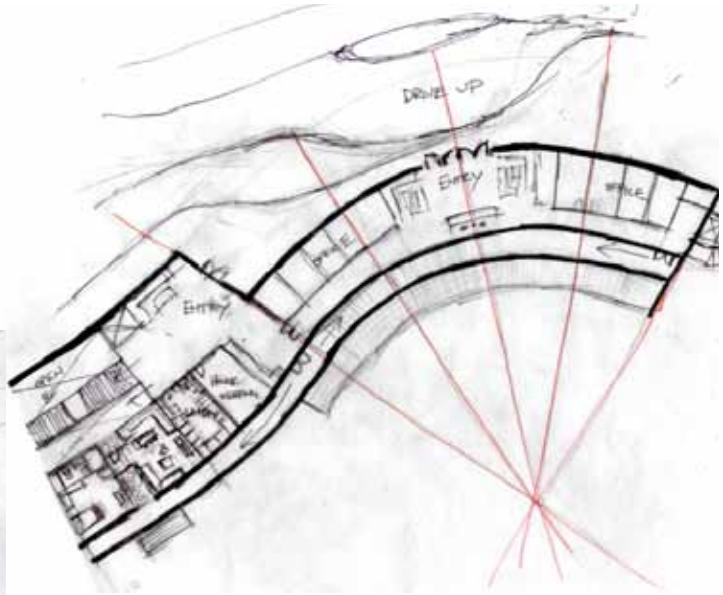
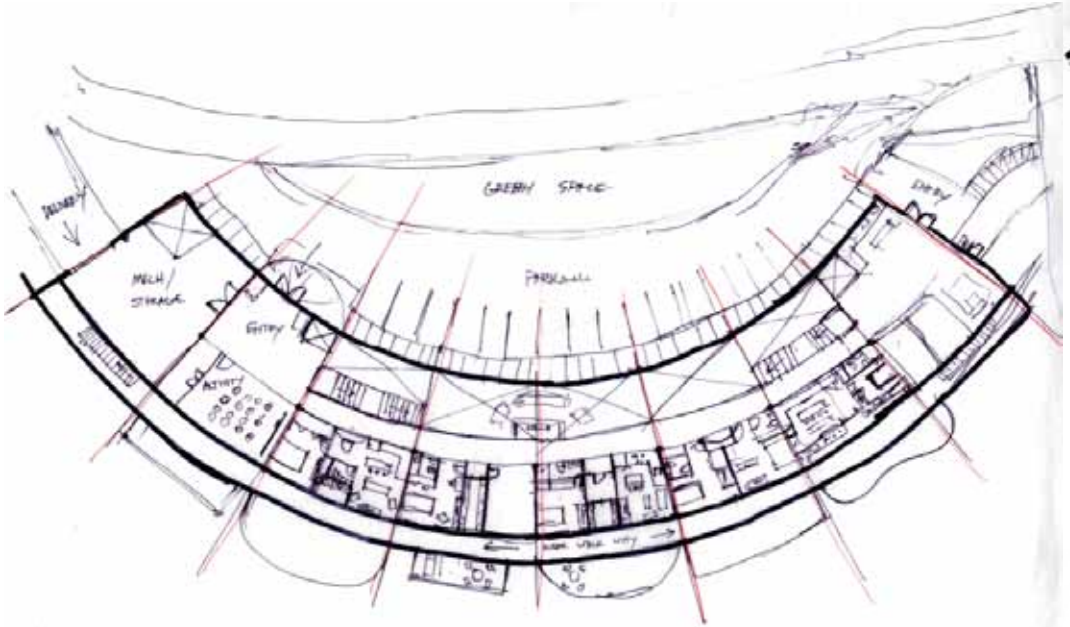


Figure 79
Detail Process
(Stephen LaGrange, 2014)

Process Sketches





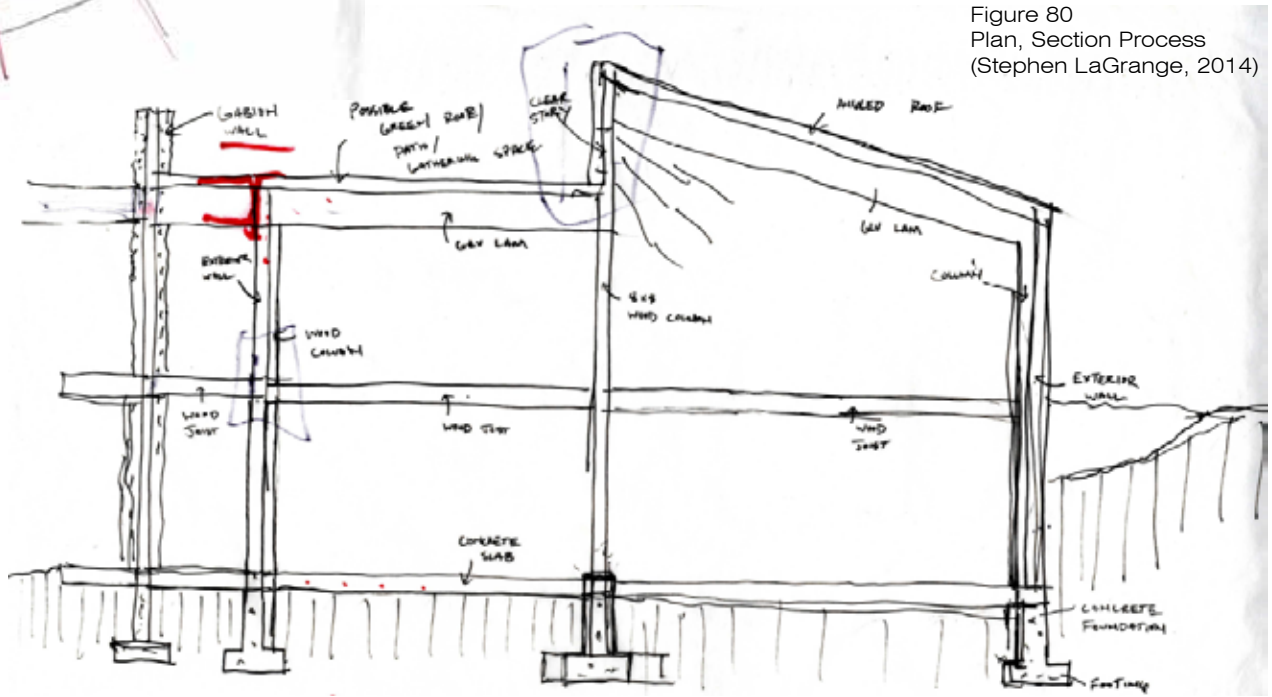


Figure 80
Plan, Section Process
(Stephen LaGrange, 2014)

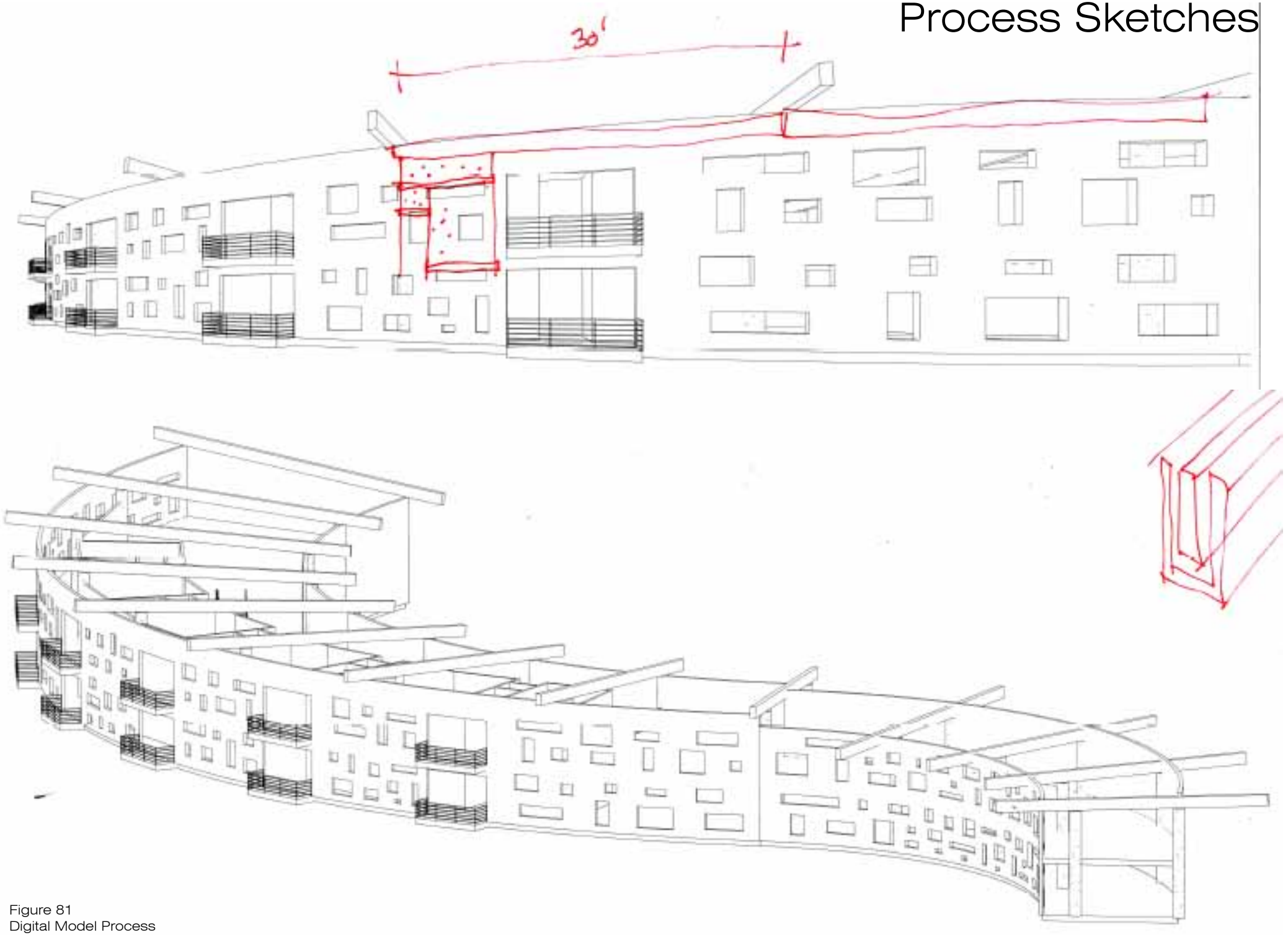


Figure 81
Digital Model Process
(Stephen LaGrange, 2014)

Building Design

Building Information

Typology: Assisted Living Facility

Occupancy: Institutional - 1

Construction: Heavy Timber Type IV

Size: Lower Level - 12,250 Sq. Ft.
Upper Level - 10,000 Sq. Ft.
Total - 22,250 Sq. Ft.

Figure 82
South Iso
(Stephen LaGrange, 2014)

Project Goals

- Promote an active and independent lifestyle

- Create a healthy and sustainable living environment

- Promote community and family involvement

- Create a place residents can feel proud of

Figure 83
North Iso
(Stephen LaGrange, 2014)

Materials

- Gabion Walls
- Wood Framing
- Wood Flooring
- Wood Siding
- Concrete Foundation
- Metal Roof

Figure 84, 85, 86, 87
Materials
(Stephen LaGrange, 2014)

Design Qualities

- Organic Building Form
- Southern Orientation
- Natural Materials
- Cabin Inspired Design

Figure 88
South Perspective
(Stephen LaGrange, 2014)

Design Qualities

- Easy Access For Residents

- Natural Landscape

- Site Based Design

Figure 89
North Perspective
(Stephen LaGrange, 2014)

East

West

Figure 90, 91
West, East Perspective
(Stephen LaGrange, 2014)

Walkway

Figure 92
Walkway Perspective
(Stephen LaGrange, 2014)

Entry

Figure 93
Entry Perspective
(Stephen LaGrange, 2014)

Large Gathering

Figure 94
Large Gathering Perspective
(Stephen LaGrange, 2014)

Patio

Figure 95
Patio Perspective
(Stephen LaGrange, 2014)

Figure 96
Unit Perspective
(Stephen LaGrange, 2014)

Site Plan

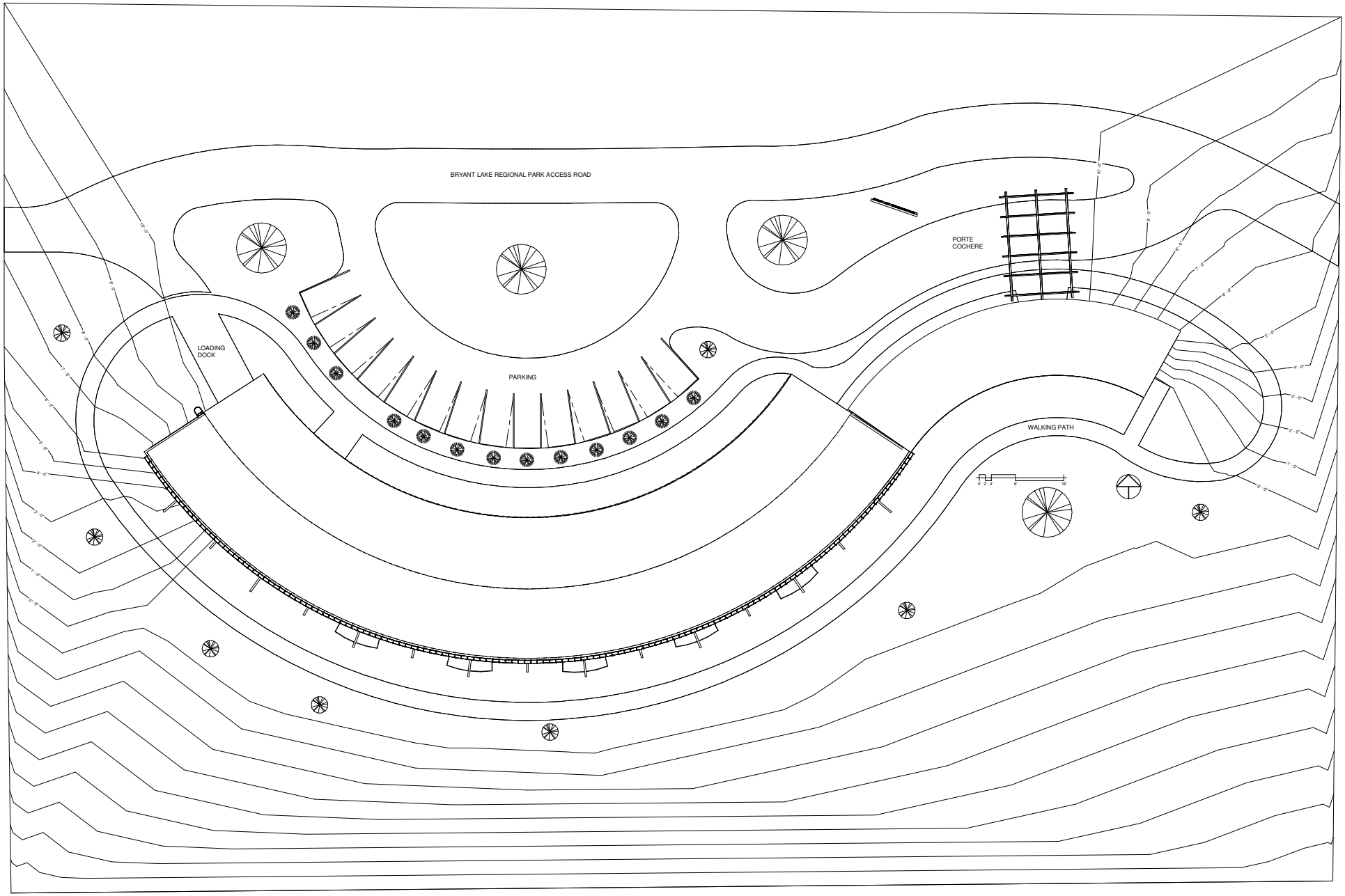


Figure 97
Site Plan
(Stephen LaGrange, 2014)

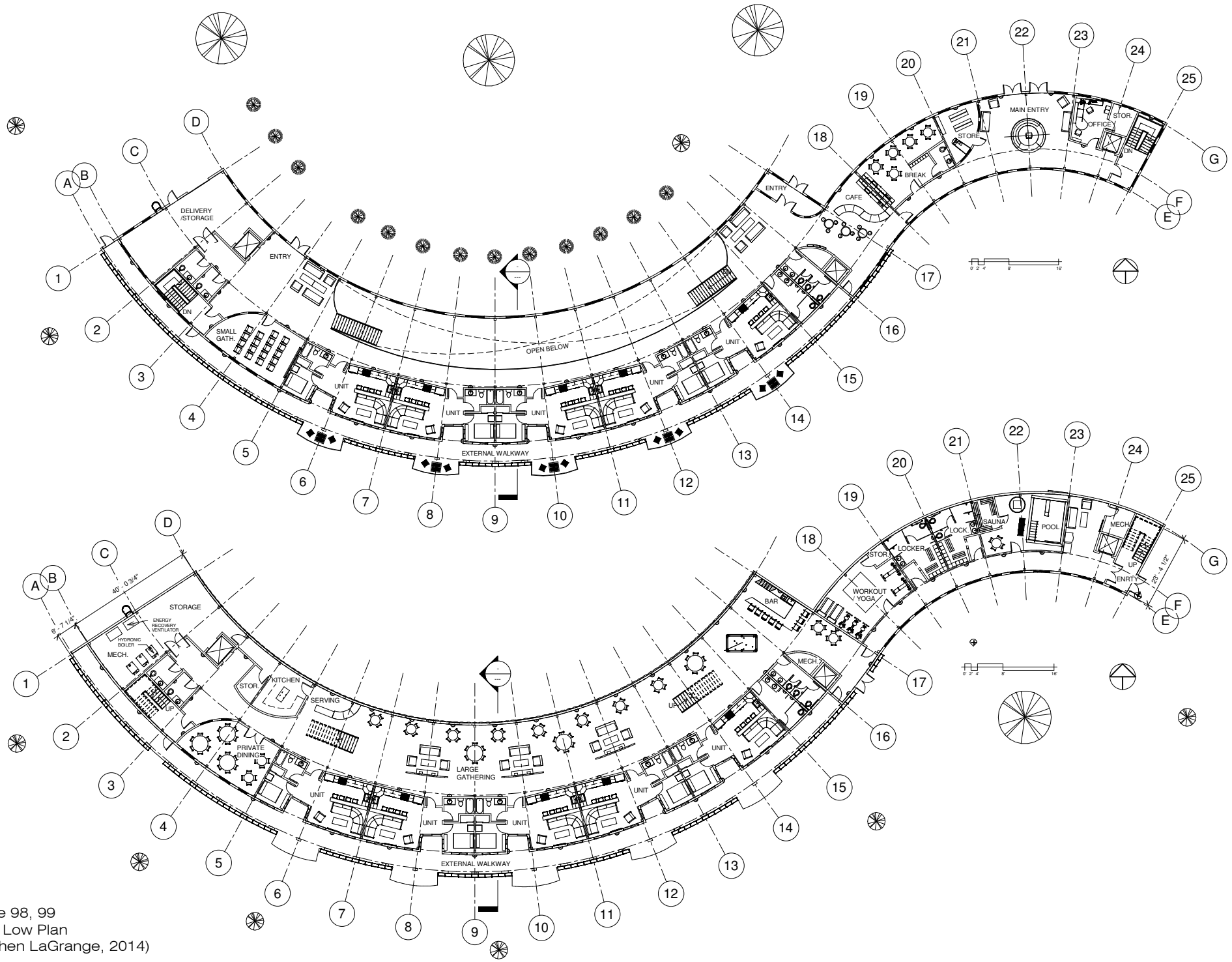
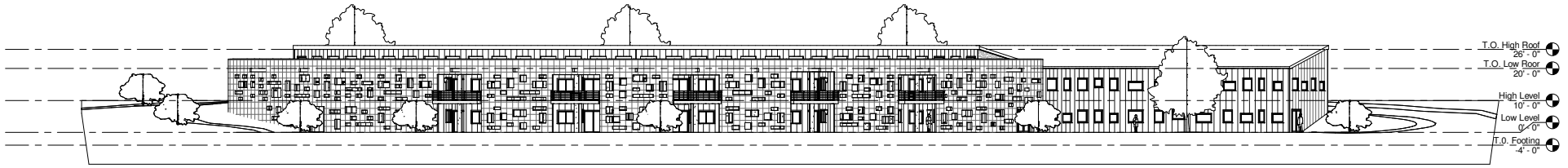


Figure 98, 99
High, Low Plan
(Stephen LaGrange, 2014)

Elevations



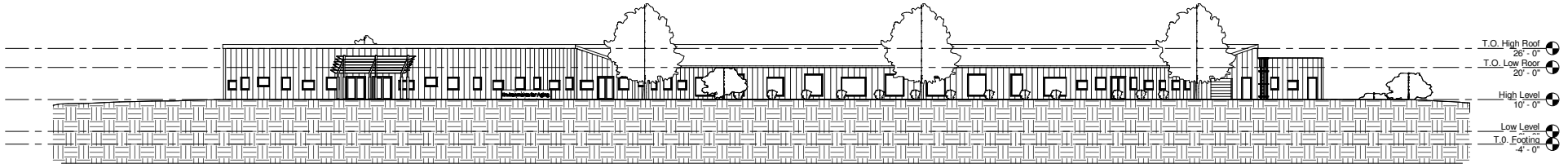
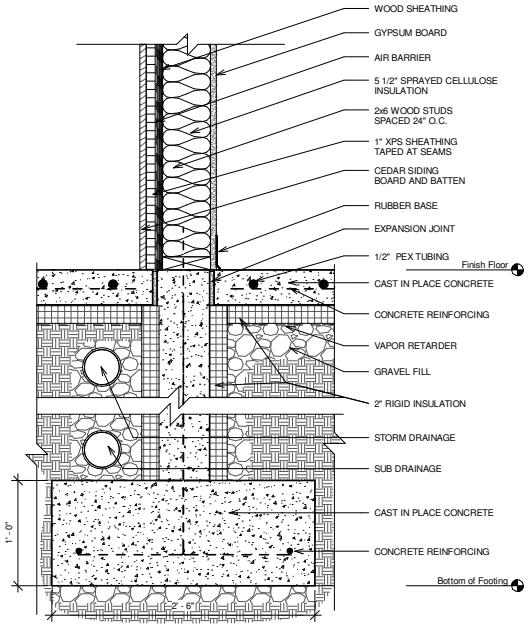
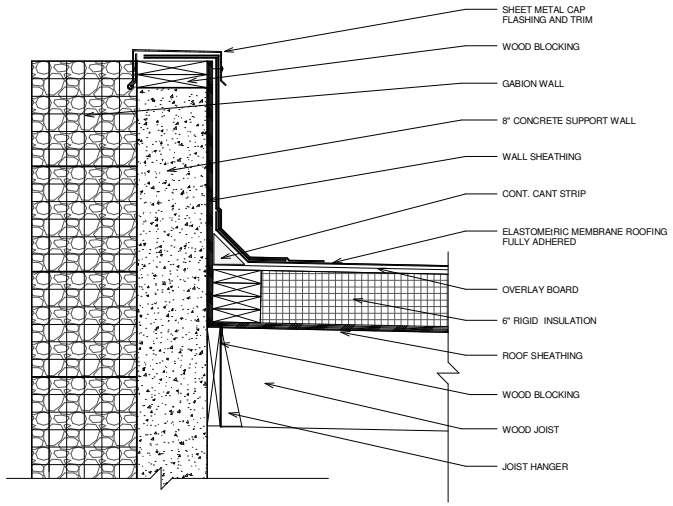


Figure 100, 101
South, North Elevation
(Stephen LaGrange, 2014)

Details





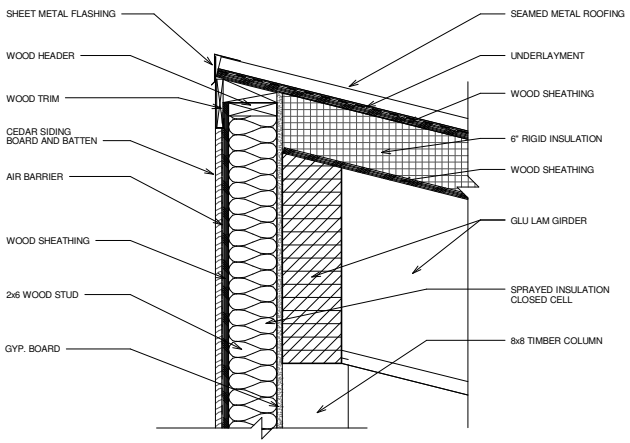


Figure 102, 103, 104, 105
Details, Section
(Stephen LaGrange, 2014)

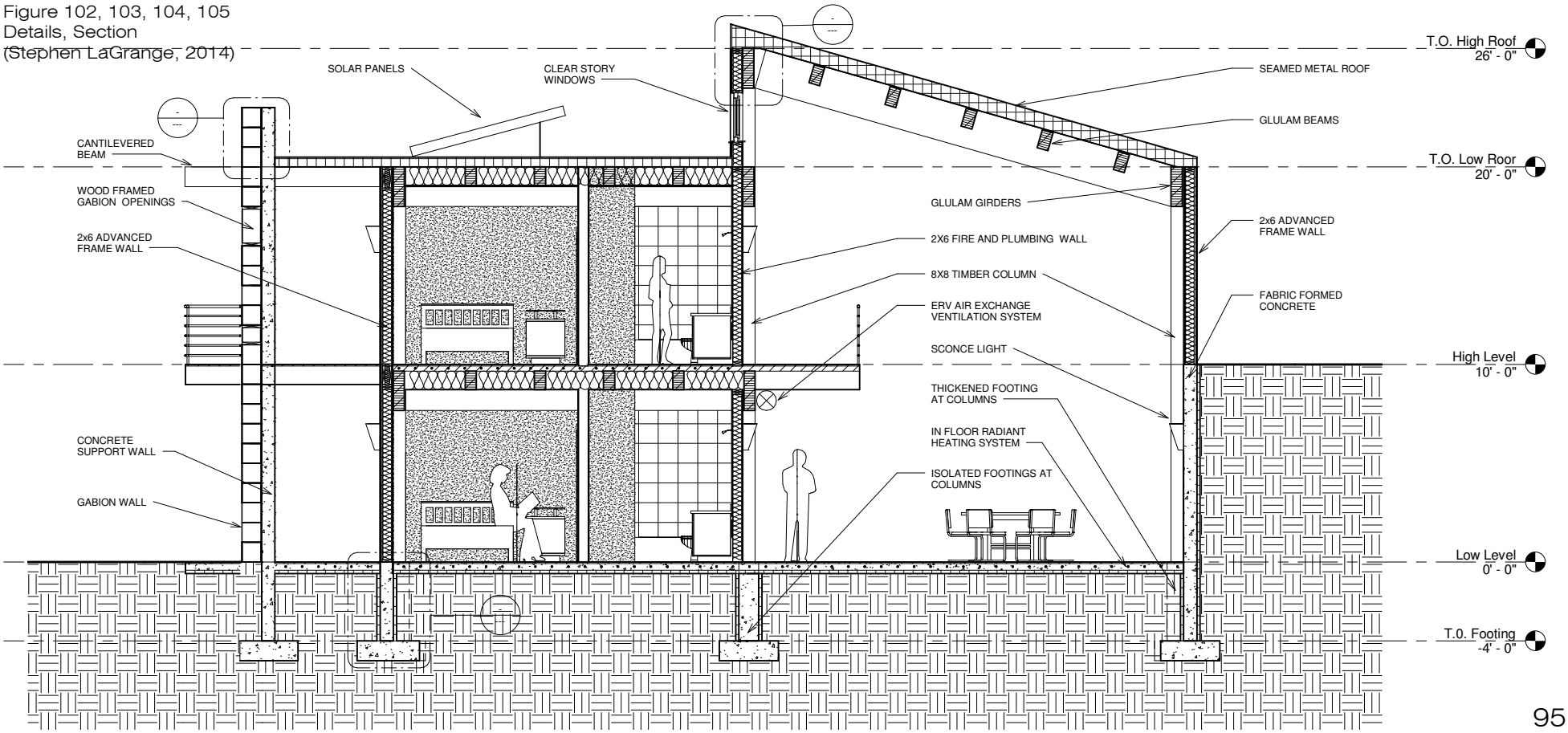


Figure 106
Abstract Perspective
(Stephen LaGrange, 2014)

Physical Items

Models

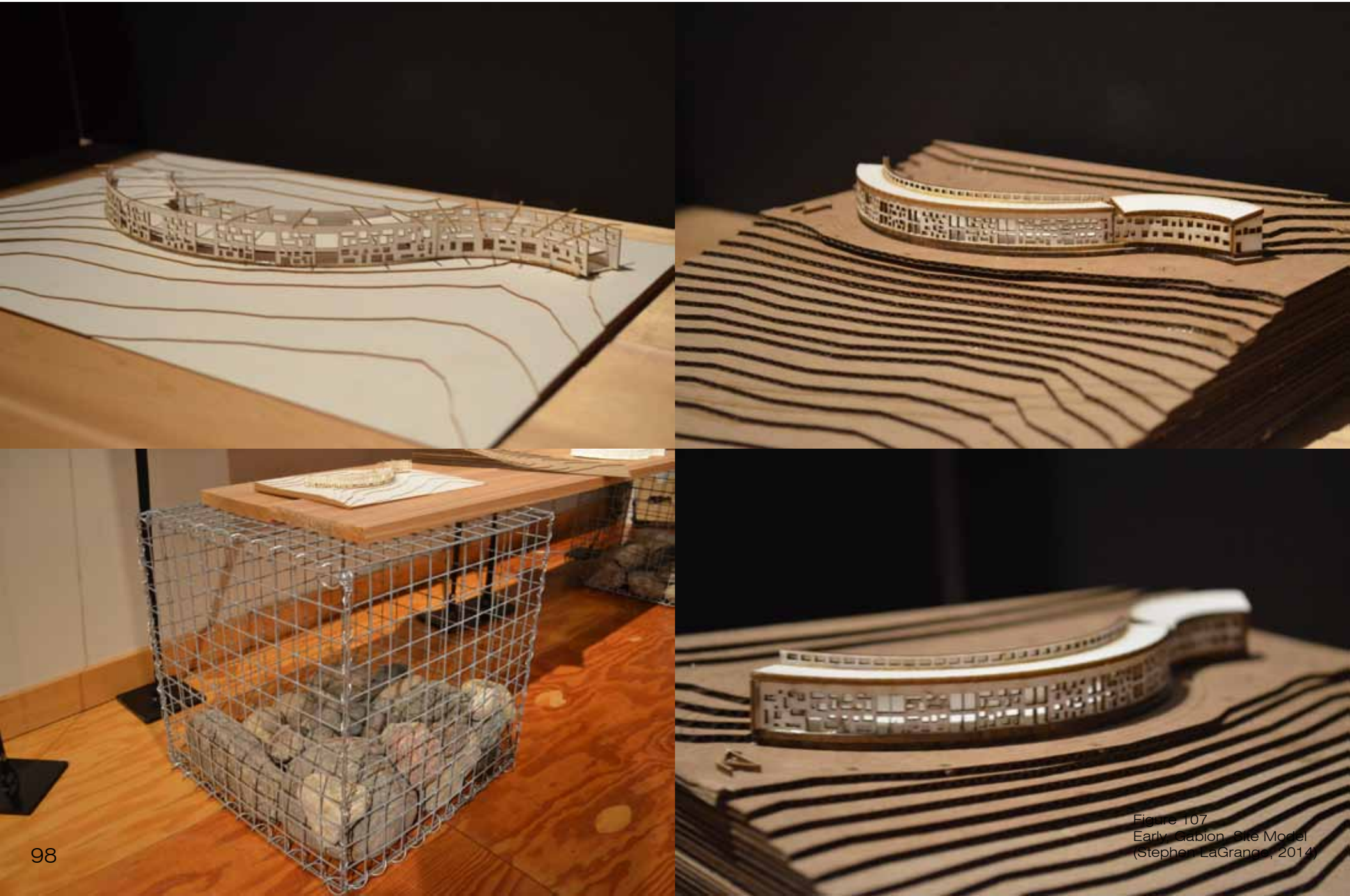
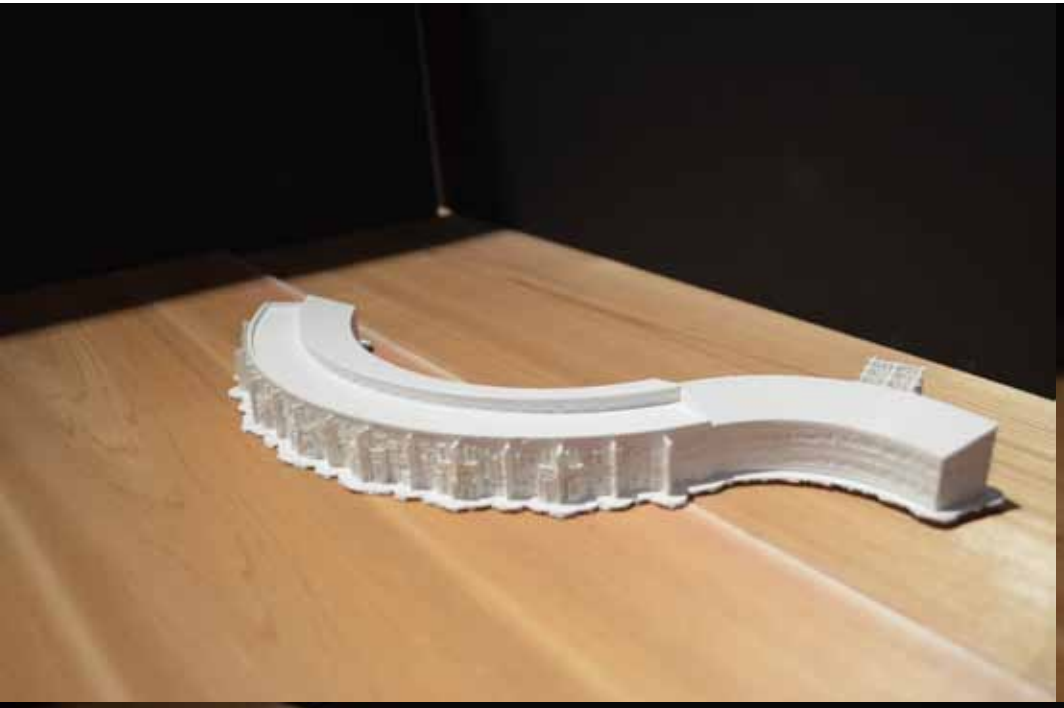


Figure 107
Early Gabion Site Model
(Stephen LaGrange, 2014)



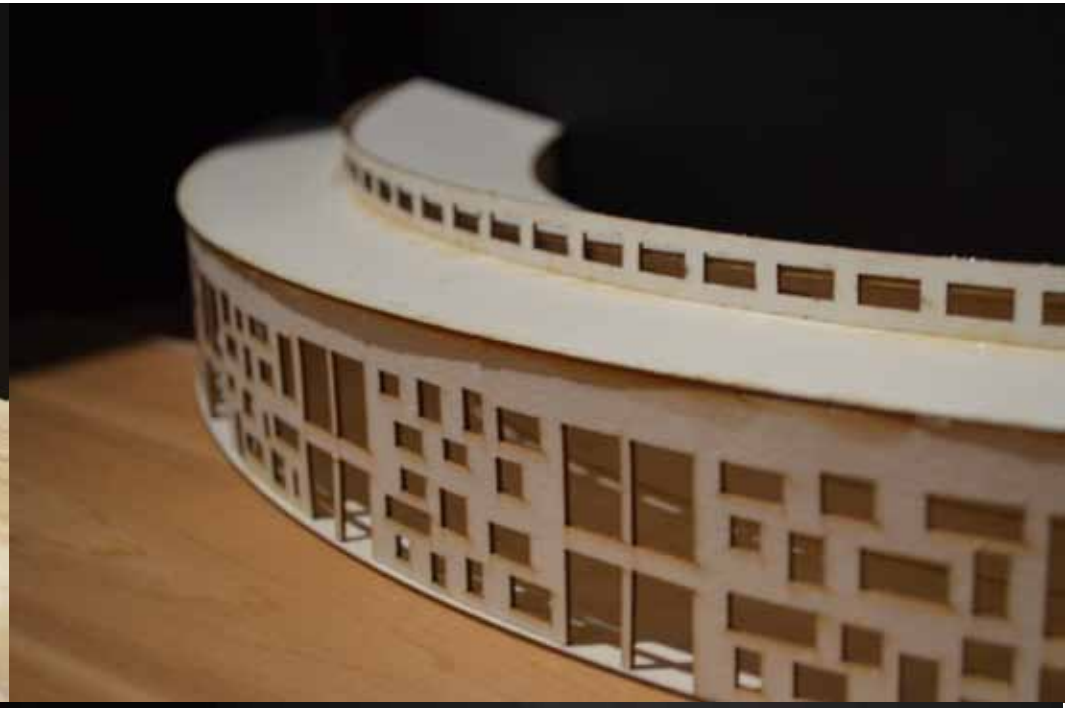


Figure 108, 109
3D Print, Large Scale
(Stephen LaGrange, 2014)

Display

Figure 110
Display
(Stephen LaGrange, 2014)

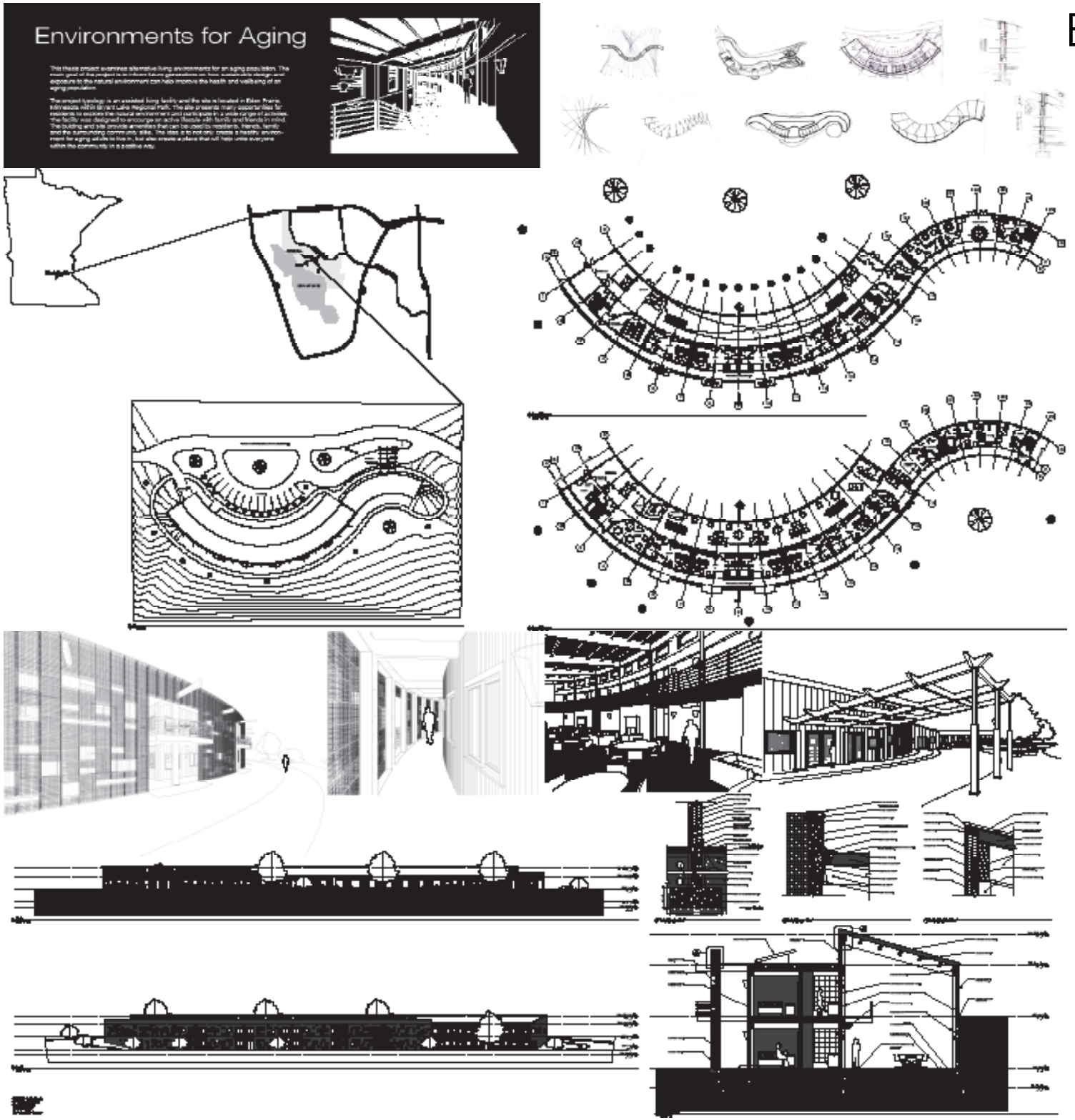


Figure 111
Display Boards
(Stephen LaGrange, 2014)

Studio Experience

Arch 271 - Studio I - Fall 2010
- Joan Vorderbruggen
  - ~ Tea House
  - ~ Boat House

Arch 272 - Studio II - Spring 2011
- Cindy Urness
  - ~ Montessori School
  - ~ Dwelling

Arch 371 - Studio III - Fall 2011
- Mike Christenson
  - ~City Museum

Arch 372 - Studio IV - Spring 2012
- Rhet Fiskness
  - ~ Presidential Library
  - ~ Art School

Arch 471 - Studio V - Fall 2012
- Bakr Aly Ahmed
  - ~High-rise

Arch 472 - Studio VI - Spring 2013
- Paul Gleye
  - ~Urban Design Abroad

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Figure 112
Photo
(Stephen LaGrange, 2014)