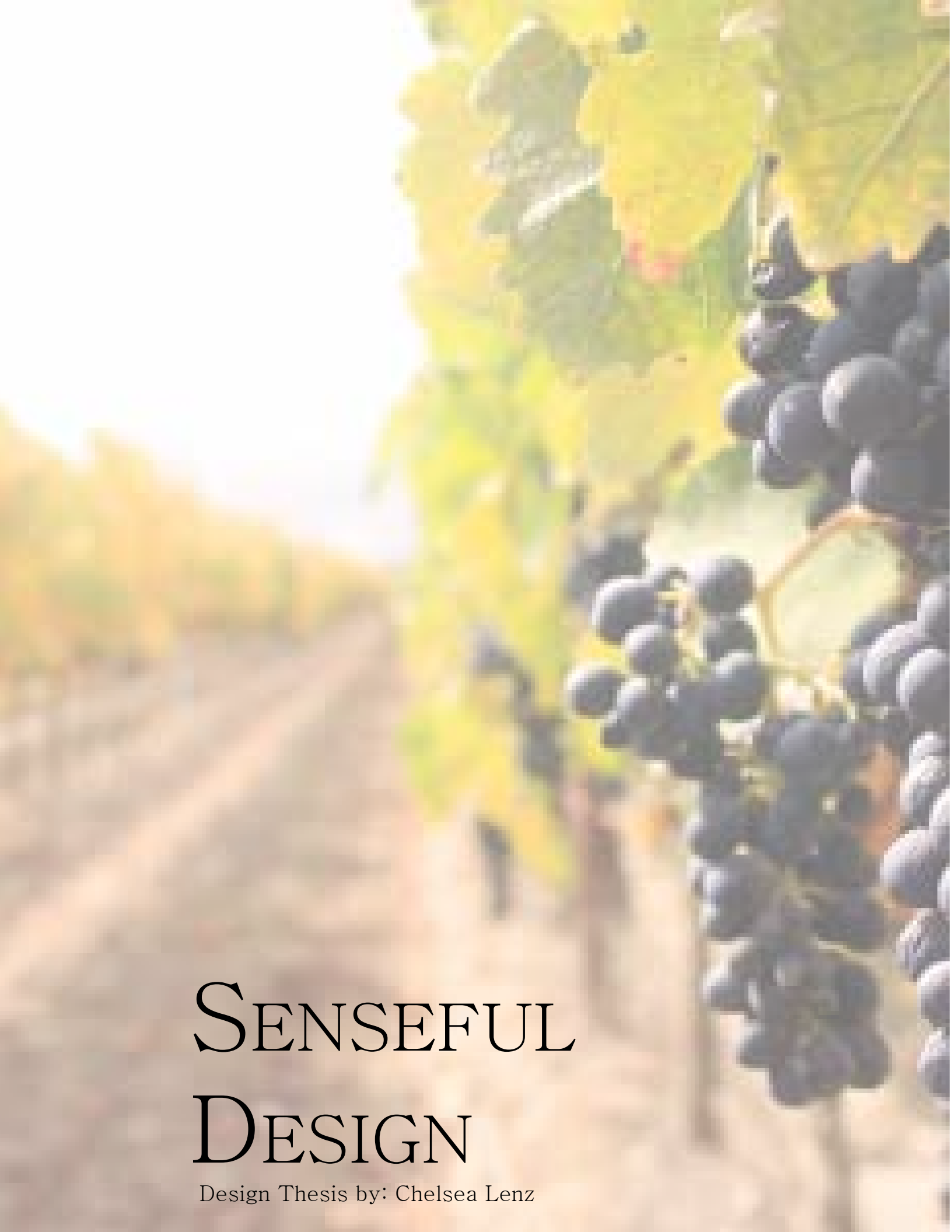

Senseful Design

Design Thesis by: Chelsea Lenz

Senseful Design

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

By

Chelsea Lenz

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

Primary Thesis Advisor

Thesis Committee Chair

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Proposal

Abstract

This thesis – senseful design – explores the relationship that our five senses have with architecture. Can a holistic design for our senses create a more meaningful experience with architecture?

This question is answered in the design of a Winery and Restaurant in Southeast Minnesota that encompasses all of your senses to create a more meaningful and memorable architectural experience.

Typology

Winery&Restaurant

What relationship do our senses have with architecture? Everything we do and experience is all about our senses. Architecture is also all around us, and I believe that a better design can be created if it is designed for all of our senses. The more that we experience each building, the more memorable it will be.

The inspiration for my unifying presence in Senseful Design came from a TED talk by Jinsop Lee "Design for all Five Senses." In this TED talk he states "As designers, we've mainly focused on making things look very pretty, and a little bit of touch, which means that we've ignored the other three senses." He also goes on to explain that our best experiences in life are those that essentially assault all of our senses.

There is a certain creativity that it takes to make food, wine and architecture. And what better way to celebrate this than to design a winery and restaurant? The relationship between the food and wine also joins in the hardest sense to architecture – taste.

When searching for a site. I decided that I would like something along a river because the additional noise of the water would help add to the sense of both sound and smell. Once I had that factor determined, I started looking along the Zumbro river in SE Minnesota. What I found was a site that was still in the city of Rochester, but yet felt secluded because of the surrounding trees and river.

Typology Research: Sattler Winery


Figure 2.1

Architect: Architects Collective
Location: Tadten, Austria
Project Years: 2008-2009 completed in 2010
Typology: Winery
Size: 1,485 sf (built) 990 sf (project site)
Materiality:

- Concrete & masonry
- Glass
- Wood panels for ceiling and walls
- Wood floor terraces


Figure 2.2


Figure 2.3


Figure 2.4


Figure 2.5


Figure 2.6

About the Project:

This winery is a low-energy building in the center of the small town of Tadten, Austria. The winery is designed on a small site surrounded by new and old construction. The two basic forms becoming an unique form, create various interior spaces and terraces. This allows capitalizing spectacular views of the surrounding town and vineyard. On the main level Architects Collective created an interesting opportunity to adjust the interiors for a variety of events, by using sliding walls and extra large doors. "The ground floor plan of the new building consists of a rectangle and the first floor of a parallelogram, which is oriented east and west. These two basic forms are connected by a series of spatial diagonals and merged into a flowing overall form, creating a number of diverse spaces, views and topographies which are relating to the sun, the patio, and the surrounding environment."(Architects Collective, 2010, Erich Sattler Winery)

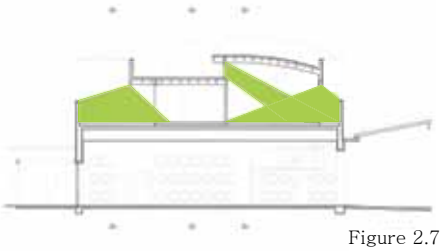
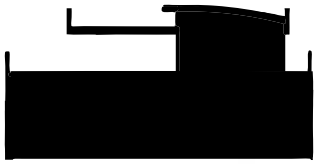


Figure 2.7
Natural Light



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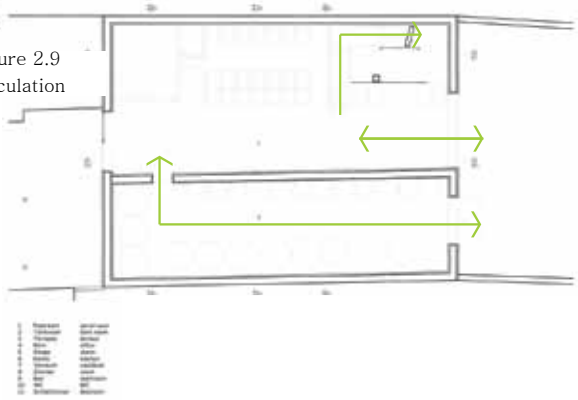
Massing



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Circulation

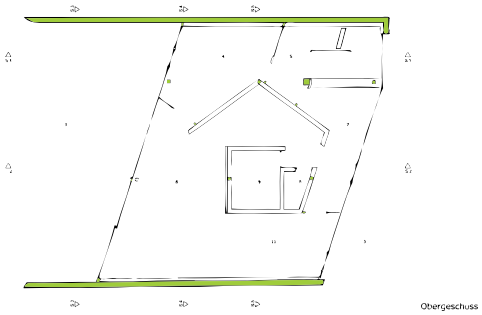
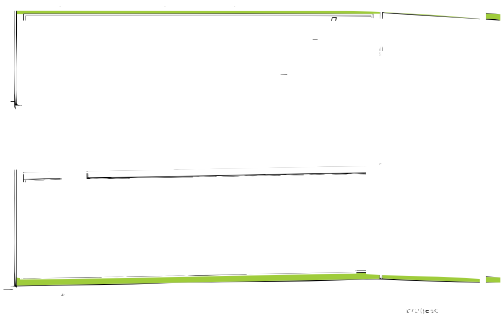


Figure 2.10
Structure



This project is a good example of a small scale winery. It shows most of the rooms I will be needing like the kitchen and event hosting spaces, however is missing the restaurant element crucial to my proposal. The layout for the interior is a creative idea for adapting to the client. I found that the unifying presence is seen in:

Sight - unique form of the building.
Smell - the scent of wine.
Touch - smoothness of materiality.
Taste - the use of wine.
Sound - people talking, the busyness of surrounding town.

Typology Research: Sokol Blosser

Figure 3.1

Figure 3.2

Figure 3.3

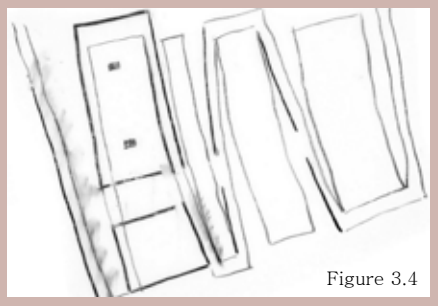


Figure 3.4

Figure 3.5

Architect: Allied Works Architecture
Location: Dundee, Oregon
Project Year: completed in 2013
Typology: Winery Tasting Room
Size: 5,700 sf
Materiality:

- Rough-hewn cedar (interiors)
- Stained and random cedar boards (exterior cladding)
- Board-formed Concrete
- Glass

<u>About the Project:</u>

Located in the heart of Oregon's wine country, this tasting room and event center brings a new and creative architectural style to the region. The design of the tasting room was inspired by the rows of vineyards and can been seen in the layering of the wood.

The form of the building was shaped by the rhythm of the surrounding landscapes. There are three masses of buildings that are "cut" by a break in the roof allowing natural light into the entire building. The building houses a main lobby, kitchen, library (to study wine), cellar, tasting rooms, and a variety of exterior spaces coming together to make this tasting room as unique as the wine created there.

"Inside and out, the building is unified by striated wood cladding that presents a new, organic architectural form derived from the vineyard rows and vernacular wood agricultural buildings of the region." (Allied Works Architecture, 2013, Sokol Blosser Winery Tasting Room)

Figure 3.6

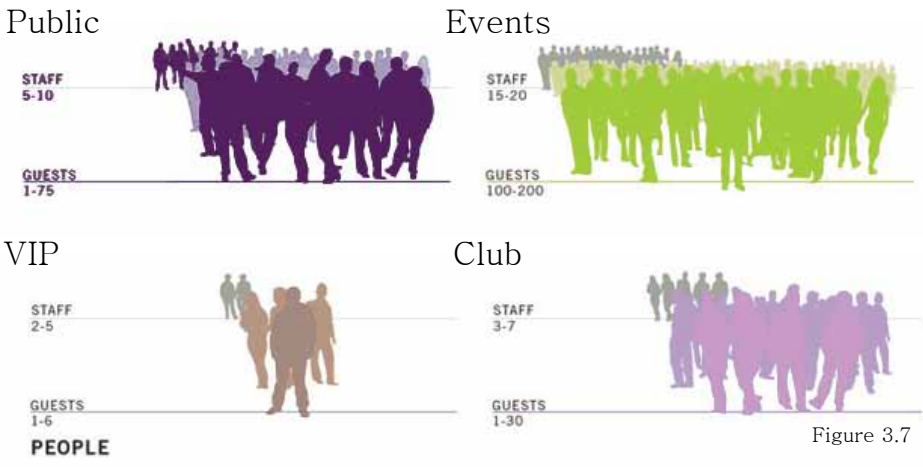


Figure 3.7

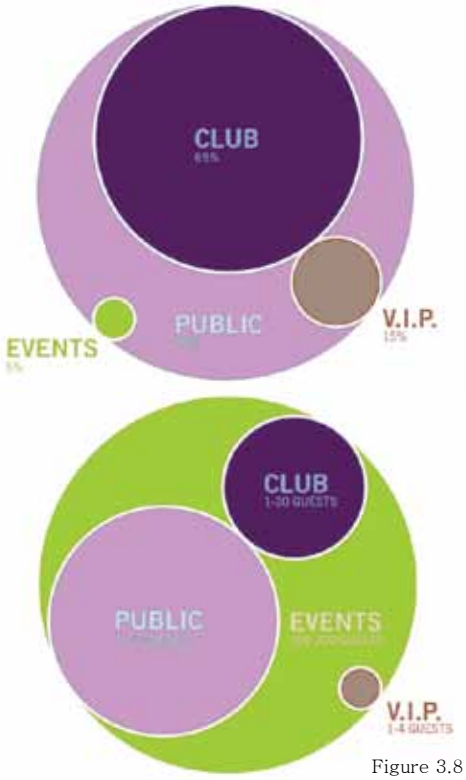


Figure 3.8

Figure 3.9

Allied Works used inspiration to create a design that is both functioned and was beautiful. Through research they determined the amount of people using each space and frequency of use. By doing this they were able to determine a better functioning design.

This tasting room has several links to the surrounding nature. There are several gardens and terraces, as well as connections in the design of the building itself. Guests are free to explore the building, the gardens, the green roof, and even the vineyards.

This design has an exceptional relationship to the surrounding site. The architect used natural light and local materials, despite lacking the actual wine making process within the design. As I move forward, this case study will be a great example for the bar, restaurant and event center.

Figure 3.10
Site plan

Figure 3.11
Natural Light

Figure 3.12
Massing

Figure 3.13
Texture

Figure 3.14
Circulation

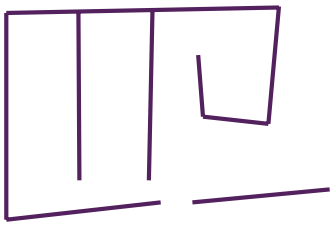
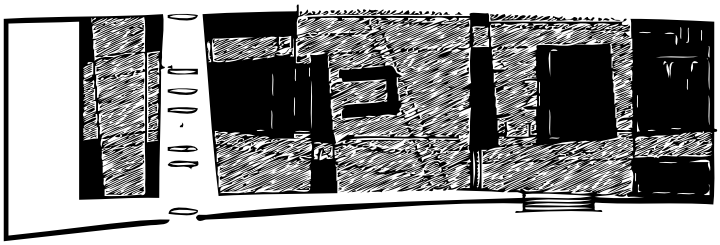


Figure 3.15
Structure



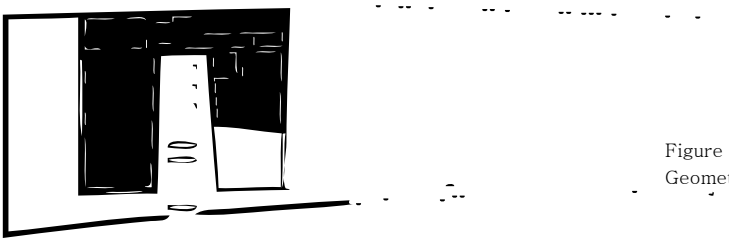


Figure 3.16
Geometry

This is a good example of how designing for our five senses can enhance the architectural experience that a user may have. Looking more closely at this I found the following:

Sight - the relationship with the views and natural light.
Smell - the smells of the cedar wood and the scent of wine.
Touch - textures of the ceder wood on both the interior and exterior.
Taste - the use of wine and food.
Sound - people talking, wind whistling through nature.

Typology Research: Odette Estate

Figure 4.1

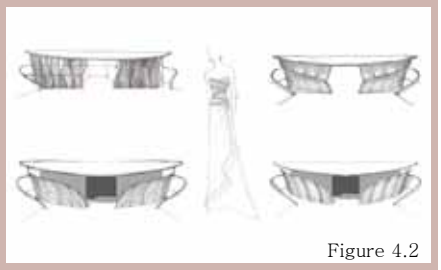


Figure 4.2

Figure 4.3

Figure 4.4

Figure 4.5

Figure 4.6

Architect: Signum Architecture
Location: Napa Valley, California
Project Year: completed in 2013
Typology: Winery & Vineyard
Size: 7,210 sf
Materiality:

- Green Roof (Vines)
- Solar Panels
- Aluminum (Exterior Facade)
- Dark Wood panels (Interior)
- Concrete Floors

About the Project:

Odette Estates was inspired through the Tchaikovsky Ballet, and a character in it called Odette. The sweeping shape of the winery was to represent the curve of a swan's wing. This shape was also chosen to respond and flow with the surrounding hill-scape.

This winery is a great example of using nature to ensure a LEED Gold building. There is a living roof that is used to grow grape vines. It appears as though the building was pushed up from the earth. Interestingly the Architect used two reclaimed shipping containers for office and Lab space. By doing this they were able to create a separate area within the building, while still having it connected. This Firm also specializes in wineries, and is a very good resource for a variety of winery sizes.

"This unique production building adds an organic element to the light and modern hospitality facilities already on the property. The round footprint responds to its location, tucked into a natural cove made by hillsides on three sides." (Signum Architecture, 2013, Odette Estate Winery)

Figure 4.7
Massing

Figure 4.8
Sections

The advantage of this winery is that it is a great example of how LEED can be incorporated into the project. It also greatly helps with sizing for equipment for wine preparation, fermentation, bottling, storage, etc. Alongside this wine making building, there is a tasting room, and fifty acres of vines.

Sight - blending with surrounding nature.
Smell - the scent of wine.
Touch - smooth aluminum contrasting the surrounded earth and vines.
Taste - the taste of wine.
Sound - people talking, wine making equipment working.

Typology Research: Port Phillip

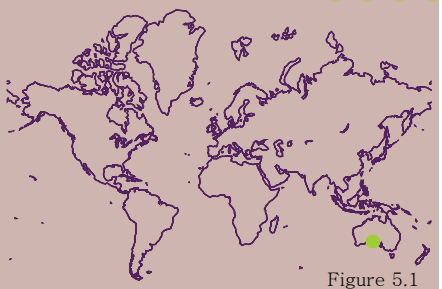


Figure 5.1

Architect: Wood/Marsh Pty Ltd Architecture
Location: Red Hill, Victoria, Australia
Project Year: 2009
Typology: Winery, Restaurant, Vineyard
Size: 12,730 sf
Materiality:

- Rammed Earth
- Burnt Timber
- Glass


Figure 5.2

<u>About the Project:</u>

Port Phillip Winery is a very interesting project that I believe connects all aspects within my thesis. The architect designed this winery with local materials that celebrated the coastal landscape. These materials create a contrast in colors and textures that enhance the character of the winery.

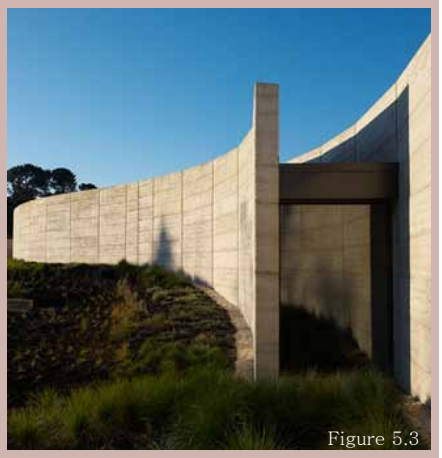


Figure 5.3

They knew that water to keep up the grape vines may become an issue, and designed an integrated collection system and dam, so that water could be used for both the building and the grapes. By placing the cellar and the wine making equipment below grade they created a naturally cooled cellar and workspace.


Figure 5.4

“Spiralling out of the ground and slowly rising to form a 328 foot long wall with one opening. This abstract, sculptural form conceals much of the mass and various program within the building, presenting a bold and simple gesture to the public.” (ArchDaily, 2010, Port Phillip Estate Winery)


Figure 5.5

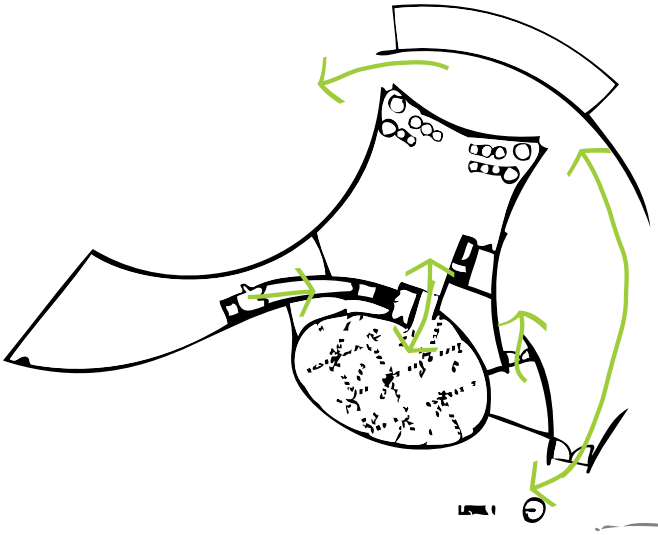


Figure 5.6
Level 1 - circulation

Figure 5.7
Level 2 - Structure

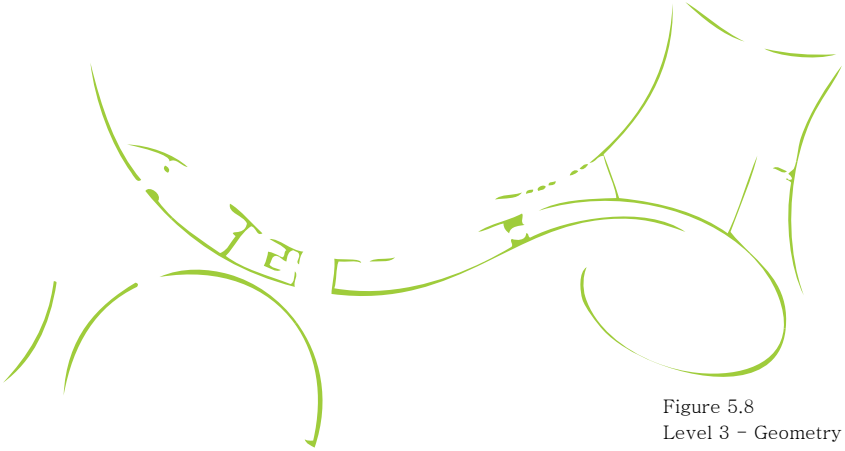


Figure 5.8
Level 3 - Geometry

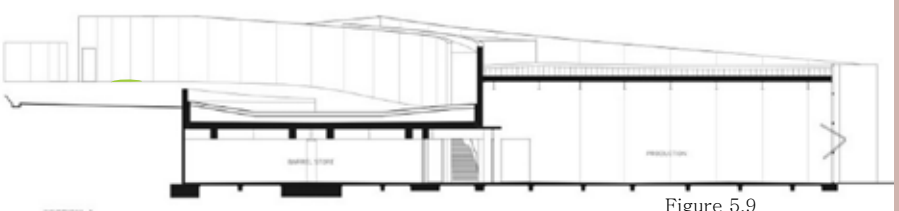


Figure 5.9
Section

I chose to study this winery not only because it had a large restaurant, but also because I found that it met all aspects of my unifying presence better than the others. It also showed the potential that my site could have if I include a phase two, including guest suites and an expanded cellar.

Sight - unfolding from the site. Contrasting Materials for character.
Smell - The water nearby, smell of earth (from the rammed earth) and smells of food.
Touch - Smooth texture of the rammed earth versus the rough texture of the burnt timbers.
Taste - pairing of the wine and the food.
Sound - people talking, water from the bay nearby.

Typology Research: Summery

After completing the first three case studies (Sattler Winery, Sokol Blosser, and Odette Estates) I felt that many parts of the winery were well represented, however I felt that one aspect in particular was not – the restaurant. Therefore I decided to do a fourth case study (Port Phillip Winery) that did have both a winery and a restaurant. Each of the four case studies had positive aspects in using the five senses.

Common/Uncommon Characteristics:

I found that the four case studies all utilized wood as a material, in my opinion this is because of the relationship that wine has/used to have with fermentation in a wood barrel. Another aspect that I found to be important in all the studies was the use of light. Certain rooms in the wine making process need less light, and rooms with the public need more, with beautiful views.

Each of the case studies had a different set of rooms and spaces within the winery for a different focus. Sattler winery was the most flexible, as they had shiftable walls to adapt to different events. Sokol Blosser had focus on the tasting room and private events. Odette estates focused on the wine making process. And finally Port Phillip was a great example of them all together.

Effect of Site:

Each of the four wineries are greatly influenced by the site that they are located on.

Sattler Winery – is located on a site that is small and within a city. To compensate for this the architect used a unique transition between the levels.

Sokol Blosser – used the form of the hill-scape to influence the form that created the tasting room.

Odette Estates – built to seem as though the winery

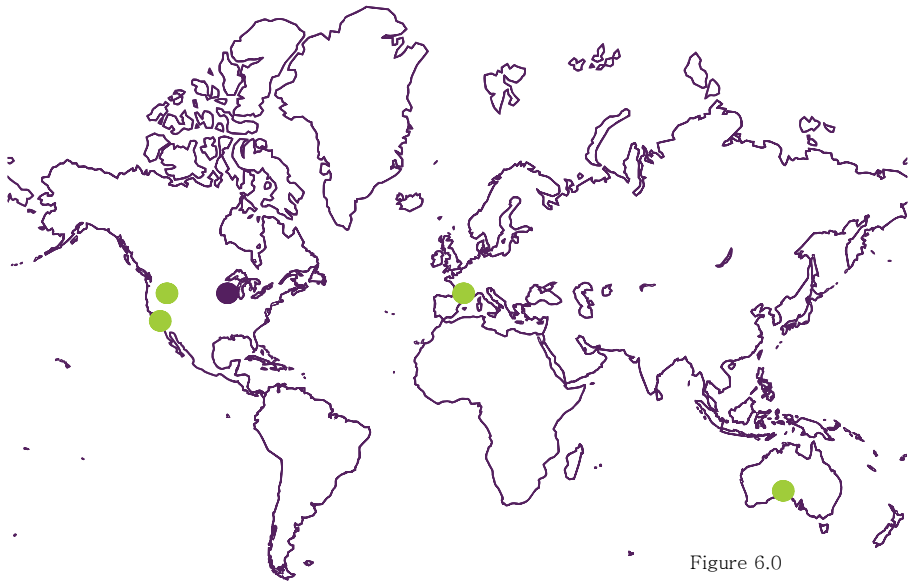


Figure 6.0

is coming out of the ground. Uses the site as a green roof so space for grape vines is not destroyed.
Port Phillip – has used the site itself (rammed earth) to make a sweeping wall to cut through the site.

Issues:

Each of the projects has its problems. Sattler, lacked a variance in texture. Sokol Blosser had a beautiful tasting room, but the winery itself was off site. Odette Estates was the opposite and had the wine making, but the tasting room was at a different location on the site. Port Phillip has a climate that is extremely different from Minnesota.

Unifying Presence:

Together, I believe that these case studies show great emphasis on the five senses. I believe that Port Phillip Winery had the most connection to all five senses. The others seemed to lack in taste and sound, where as Port Phillip excelled in these areas. They had great reviews on the pairing of food and wine in combination with the calming noise of the nearby water.

Major Project Elements

Restaurant&Bar

Dining Area
Bar
Kitchen
VIP Tasting
Storage
Refrigeration
Rest rooms
Parking

Winery

Storage
Wine Prep
Fermentation
Bottling
Grape Freezer
Wine Cellar
Shipping/Receiving
Off-site Vineyard

Event Center

Dining Area
Bar
Kitchen
VIP Tasting
Event Room
Storage
Rest rooms
Shipping/Receiving
Parking

Future

Extended Cellar
Guest rooms
Wine Research/
Library

User&Client

Owner

This client will be in charge of all day to day organization and upkeep of the winery and restaurant.

Public

The restaurant will be available to all members of the public and guests of private events. All areas of the winery and restaurant will be designed to accommodate all mentally and physically handicapped users.

Staff

Wine making staff
Knowledgeable on strategies of making wine.
Wait staff, chef, kitchen staff
Will be on-site during restaurant operation hours (lunch and dinner everyday). The staff will be knowledgeable in the pairing of food and wine.
Event staff
Available for private tasting events and other private events.

Viticulturist
Oenologist
Vinter (maker)

Involved in the research for new wine recipes, for making wine and growing grapes. All lab and wine equipment will be state of the art and efficient. All workers involved with the use of these products will be sufficiently trained.

The Site

The site is located in Rochester, Minnesota, along the Zumbro River. The only major road along the site is West River Parkway NW. This site was chosen because it is along the river and near the center of the city, yet is secluded and intimate enough for a winery and restaurant.

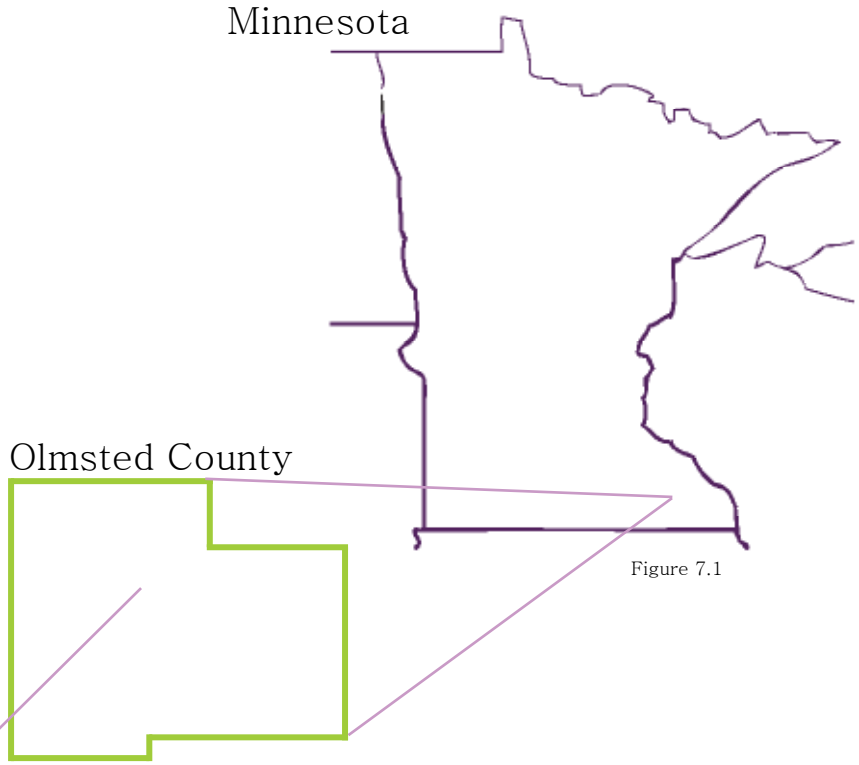


Figure 7.1

Figure 7.2

Figure 7.3

Best view of the river from the site. This would be a great view for the dinning room/ bar in the restaurant. Another plus is this is where the river moves fastest on the site and will provide a soothing “babbling”.

Figure 7.4

Best view of the vastness of the site. With the building near the river on the site, this openness to the sun will provide a great area for gardens and a crop of grapes.

Figure 7.5

The bend in the river towards the end of the site would provide a beautiful view for guests of the winery and restaurant.

Project Emphasis

The focus of this thesis is to explore the relationship that all five senses will have with architecture and to create a design that is both senseful and beautiful. This design will meet its unifying premise by studying climate, lighting variety, materiality, and spatial organization, as well as the relationship that the food and wine will have on the design.

The question arises, how do you use all five senses within architecture? Is this something that the architect can control? I believe that through research I will find my answers. Some of the senses will be easier to locate within architecture, while others will not. Sight is one of those that is essential to all buildings, and their forms. Touch will be explored through the use of varying materiality. Smell and taste will be more of a challenge, but with research on the relationship between food and wine, as well as the smell from the nearby river and the grape vines. Sound, however,differs from the rest, and will be more challenging to incorporate. It is both in materiality research and the social aspect of a bar and restaurant.

Goals of the Thesis

My main goal of this project is to create a design that emphasizes the use of our senses to make a more meaningful design with architecture.

To do this I will use the collective knowledge of all that I have learned through my five years at North Dakota State University. With advice from professors, books, and my classmates, I believe that this proposal can come to life.

A very important goal to this project is for my personal and academic future. I would like to use this thesis to portray to future employers my skills in comprehensive design, creativity, and layout design. I would like to put together a cohesive presentation that displays all aspects of the project, and everything that I have learned in the past five years while studying architecture. There will be a physical display of the project via printed boards and a model of the design. With this I would like the design to be able to speak for itself and show the viewers my intentions. An oral presentation will be used to explain and defend my design decisions, and hopefully prove the overall completeness of my design and the incorporation of the unifying presence.

Within the project itself I would like a design that employs the use of innovative technologies and strategies. By doing this I believe that the building will be sustainable. By going through the LEED checklist I will be able to improve the sustainability and show how it works. The design will also be functional, and use the site and design to create appropriate spaces within the winery and restaurant. In addition to the design, I would like to do a "Future Plan" for the restaurant – including an expanded wine research, cellar space, and guest suites.

Another goal for the project is to create a structurally sound building. I plan to use local materials drawn from Minnesota. I would like the design to be unique and powerful, and I will use the unifying premise and research to obtain this goal.

I would like to create a design that provides a space that uses the five senses to enhance the architecture and create a more meaningful experience for the potential users. Each aspect of the unifying premise will be studied and displayed in the final presentation.

Plan for Proceeding

Definition of a Research Direction

The main area of research will be based on the unifying idea, site analysis, and concepts of the typology.

Design Methodology

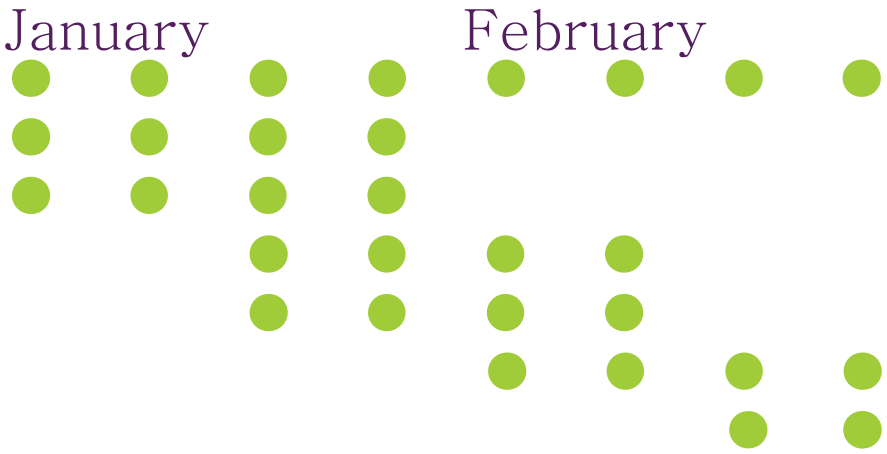
To create the most appropriate design for this thesis it is imperative that a variety of methods are used. Both quantitative and qualitative research will be done on the typology, graphic analysis, wine making strategies, and growing grapes in a cold climate. I will be conducting interviews with wine makers and winery owners to better understand their needs within the typology. An extensive site analysis will be an important factor in the design in order to maximize sustainable strategies, and enhance the site.

Documentation of the Design Process

All handwritten (i.e. sketches, writing, site notes) documentation shall be scanned as needed and saved for further use. Digital information will be organized by topic and saved with the date in the name.

This process will be done on a weekly basis. The final product will be available in the NDSU Library's digital Collection.

Schedule



Project Documentation
Context Analysis
Conceptual Layout
Passive&Active Systems
Context Development
Structural Development
Floor Plan Development
Building Envelope Materiality Development
Section Development
Evaluate&Adjust
Rendering
Presentation Layout
Digital Project Due
Plotting&Preparation
Installation
Thesis Reviews
Thesis Documentation
Graduation

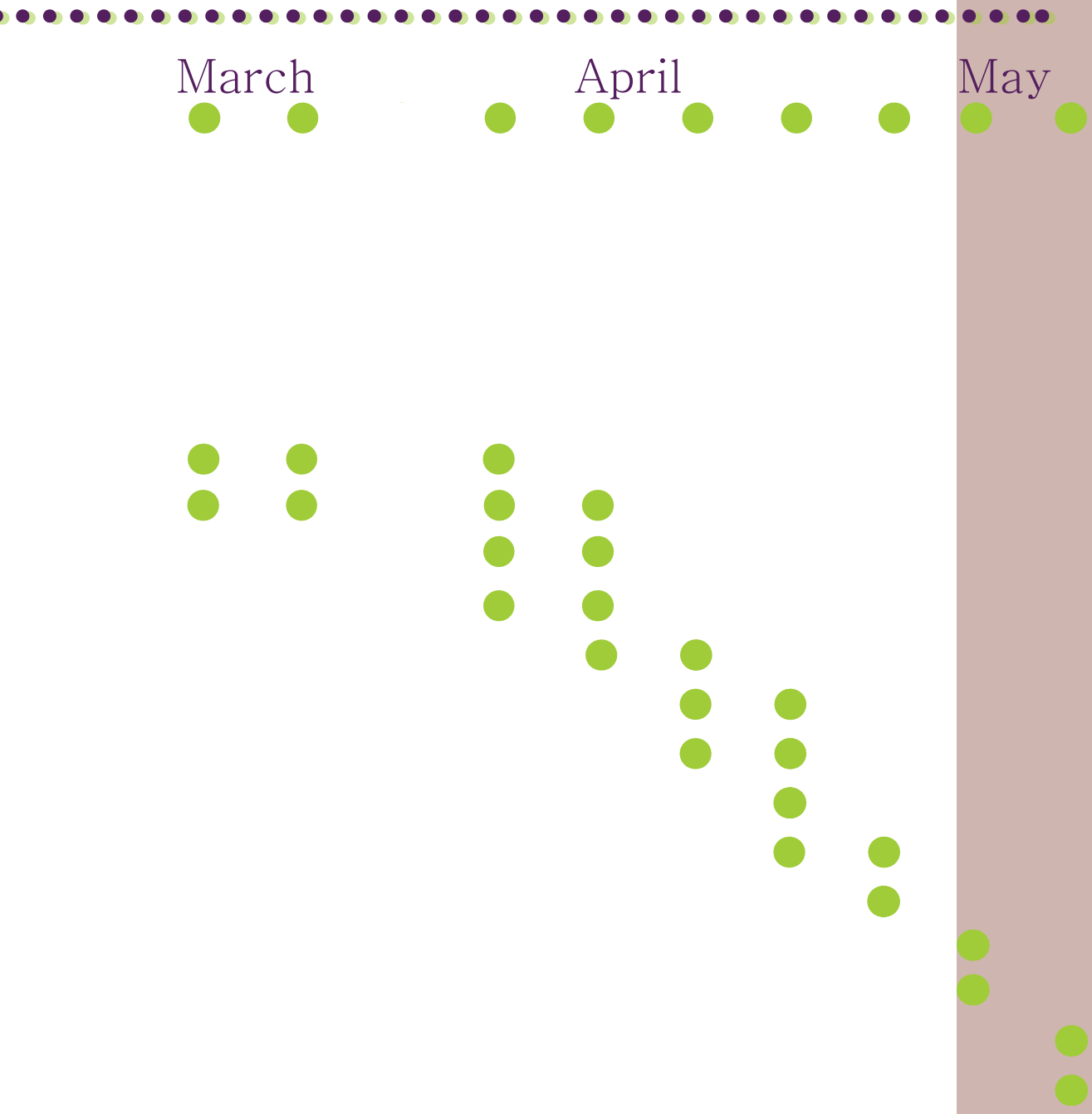


Figure 8.0

Programming

Literature Review: Unifying Idea

Intro

The unifying idea for this thesis involves completely incorporating the five senses into architecture. "Architecture involves several realms of sensory experience which interact and fuse into each other." (Pallasmaa, 2005) I believe that by incorporating all senses into architecture the perception of the space will be more useful and memorable to any and all users. "Architecture is essentially an extension of nature into the man-made realm, providing the ground for perception and the horizon of experiencing and understanding the world." (Pallasmaa, 2005) This will also make the design more accessible to those who are missing a sense.

While studying architecture I have realized that many designs only accommodate the visual sense. Designers want buildings to be beautiful. However, there are four other senses that add to our perception of a building. This is not to say that architects don't think about the other senses, it is only to say that often they become overlooked in the built environment. By designing this winery and restaurant for a sensory experience I believe the art of the architecture will show through.

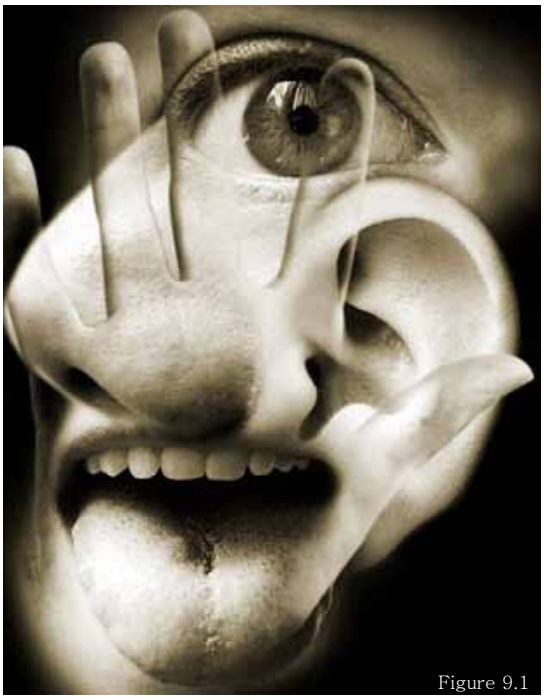


Figure 9.1

Visual


Figure 9.2

There is more to the sense of sight in architecture then one might think. Sight can lead the user to many other conclusions about a building. "The sense of sight may incorporate, and even reinforce other senses modalities." (Pallasmaa, 2005) First, let's focus on how sight enables each of the other four senses. In a research article concerning Visual Perception of Texture, authors Landy and Graham state that when looking at a material, a person will automatically search for a paralleled material to determine the feel. (Landy, Graham, 2002) For example, when looking at a wall you determine that it is brick. Subconsciously, you will remember the feel of brick. In a psychology study at UCLA scientist Ladan Shams stated "This study shows that at least in regards to perception of moving objects, hearing and sight are deeply intertwined, to the degree that even when sound is completely irrelevant to the task, it still influences the way we see the world," (Shams, 2011)

Sight in comparison to taste and smell works by the perception being influenced by sight. The following study was conducted by Dana Small to relate taste, smell and sight. "Researchers colored a white wine red with an odorless dye and asked a panel of wine experts to describe its taste. The

connoisseurs described the wine using typical red wine descriptors rather than terms they would use to evaluate white wine, suggesting that the color played a significant role in the way they perceived the drink"(Small, 2008) Sight truly does fuse our senses, and help the user to better perceive.

Another aspect of the perception of sight is the use of shadow. No matter what time of day you are in a building you need shadows to fully see the depth within. Pallasmaa mentions the book In Praise of Shadows and quotes "even Japanese cooking depends on shadows, and that it is inseparable from darkness: 'And when Ykan is served in a lacquer dish, it is as if the darkness of the room were melting on your tongue."(Pallasmaa, 2005) This furthers my earlier statement of the fusing of sense. Many buildings today don't see the beauty of incorporating shadows into their designs. Entire façades of windows provide light, but when accompanied by artificial lighting, sometimes diminish essential shadows.

Tactile

Touch within architecture is something that can be defined by the texture, the feel, and the sight of the surrounding materials. I find that for the tactile sense to be fully embraced by architecture the materials should encompass a variety of textures. In order for the user to understand the tangible sense it is important that they are encouraged to interact with the materials. This concept is explained in an article on using texture in architectural design. It states, "Expressing the true quality of materials,

Figure 9.3

shaping an interior space or simply to articulate a pattern; texture is a fundamental tool existing to some extent in most all buildings – both good and bad." (Lehman, 2009) The article talks about how architects can use texture as a means of speaking their architectural language. Because texture is something that is very versatile it is easy to speak in terms of color, pattern, scale, and even structure.

Auditory

Acoustics are the sound track to architecture. Ears will take in noise from every direction, because of this, the sense is very important to knowing where you are and what is around you at all times. "We are not aware of the significance of hearing in spatial experience, although sound often provides the temporal continuum in which visual impressions are embedded." (Pallasmaa, 2005)

It is also important to remember that sometimes silence is the loudest thing you will hear. The tranquility of silence is meant for certain situations, a walk through a garden, a church, or a sunset, etc. Silence gives a person time to focus on hearing what is in themselves.

Smell

Figure 9.4

Smell is a sense that is most closely linked to memory and emotions. What is the best way to harness the use of smell to create a memorable experience within architecture? What is the smell of space? “Why do abandoned houses always have the same hollow smell; is it because the particular smell is stimulates by emptiness observed by the eye? Helen Keller was able to recognize an old-fashioned country house because it has several levels of odors, left by a succession of families, of plants, of perfumes and draperies.” (Pallasmaa, 2005)

Like any of the senses, smell can also have a negative effect on architecture. If small details are overlooked the smell within the design might bring up an unpleasant feeling, and therefore have a negative presence while experiencing the architecture. Smell is something that is prominent in every building, yet highly overlooked. “Smell is notoriously difficult to measure: unlike environmental sound which we can record, or visual appearance which we can photograph or sketch, it is very difficult to capture a smell and even more difficult to recreate.”(Henshaw, 2014) The combination of smells from materiality, the grape vines, wine, and restaurant will all be an important factor in my design.

Taste

When comparing architecture and taste people most often think of the Gingerbread house in the fairy-tale Hansel and Gretel, this house however, is not real architecture. So the question is how does taste actually refer to architecture? First, as I plan to design a winery and restaurant, what is the relationship of food/drink to the sense of taste. "To our brains, "taste" is actually a fusion of a food's taste, smell and touch into a single sensation. This combination of qualities takes place because during chewing or sipping, all sensory information originates from a common location: whatever it is we're snacking on. Further, "flavor" is a more accurate term for what we commonly refer to as taste; therefore, smell not only influences but is an integral part of flavor." (Small, 2008)

While food and wine are an important part of the experience of this building, they are not purely related to architecture. Therefore, if the purest terms of taste are removed from the definition, can it still relate to the aesthetics within architecture? Perhaps, when taken less literally, architecture will have taste. For example, "Certain colors and delicate details evoke oral sensation. A delicately colored, polished stone surface is subliminally sensed by the tongue." (Pallasmaa, 2005) We now know that taste, while less prominent, is present in architecture in more ways than one. In this typology in particular, it is the taste of the food and wine, and just a hint in the materiality.

Senses Undefined

"Architecture has its own realm. It has a spacial physical relationship with life. I do not think of it primarily as either a message or a symbol, but as an envelope and background for life which goes on and around it." (Zumthor, 2006) For a moment let us forget that there are five claimed senses. When we undefined the way that we think about our senses we realize that there are more senses then we can know. We have the sense of time, sense of direction, sense of balance, sense of love, and many more. All our senses intertwine, they work together and apart so that we can perceive our world. Think of your senses as a tool of perception. Think of the architecture as a personal tool to perceive.

"A building is not an end in itself; it frames, articulates, structures, gives significance, relates, separates and unites, facilitates and prohibits." (Pallasmaa, 2005) "Authentic Architectural experiences consist then, for instance, of approaching or confronting a building, rather than the formal apprehension of a façade; of the act of entering and not simply the visual design of the door; of looking in or out through a window, rather than the window itself." (Pallasmaa, 2005) Make architecture to perceive the experience.

Food, Wine & the Senses

Taste and smell is a large portion of the way that we sense and perceive the world. However, when eating or drinking all five senses are an extremely important to our enjoyment of the meal. Wine is one of the most sensual drinks you can imagine. To

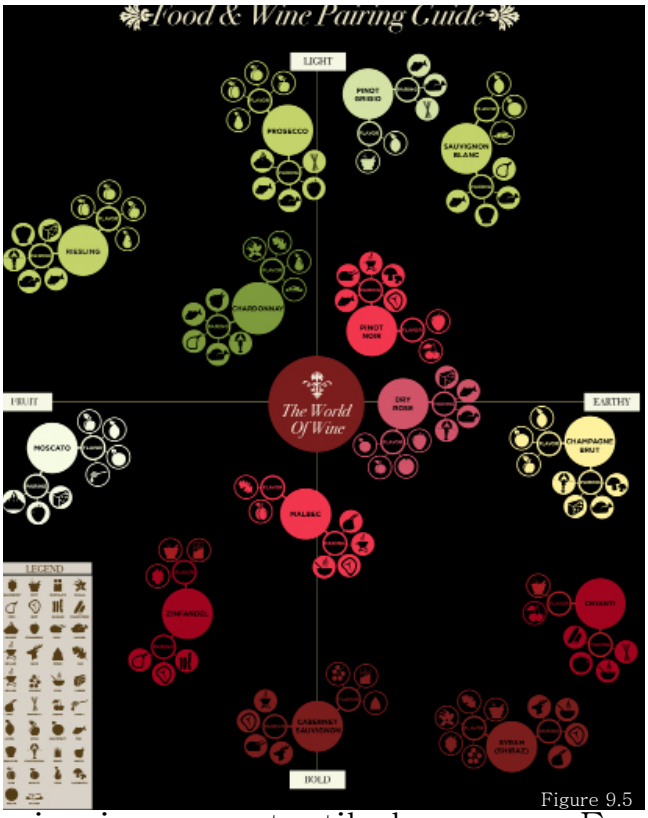


Figure 9.5

fully appreciate a glass of wine all of your senses will be engaged. See the color, white, red or anywhere in between. Smell the aromas. Taste the entire flavor. Even feel the wine, "It may seem strange to say so, but wine is a very tactile beverage. For example, wine's acidity gives it a "frame" or an edge. The opposite of acidity also is a feeling: A wine that is flat or dull." (St. John, 2013) It is even surprising that hearing is a part of the sensual experience of wine, there is a pop of the cork, the swish in the glass, and the clinking of our glasses in "cheers."

The eating experience, similar to wine, includes all of your senses. But, senses are also important to the way food is prepared and served. The preparation of our food should break from the norm. All senses should be utilized while in the kitchen; taste as you go along, texture variance within the food, hear a sizzle or a crunch, have a nice aroma, plate the food artfully. Whether it be food or wine the tasting experience will always play with your senses.

Literature Review: Summary

To conclude, I have found that all of the senses interact and intertwine with each other. "In memorable experiences of architecture, space, matter and time fuse into one singular dimension, into the basic substance of being, that penetrates our consciousness. We identify ourselves with this space, this place, this moment, and these dimensions become ingredients of our very existence." (Pallasmaa, 2005) This, I have learned, is something that many architects overlook. We look only at what there is, a window goes here, a door goes here. Instead, shouldn't one pay more attention to the full experience created within? This is to say that the full sensory experience should be all around you.

Sight, the best ways to engage sight into architecture is to play with all the other senses. Because architecture typically relies on sight, I believe that the best strategy is to design uniquely. I also discovered that shadows and light variance plays an important factor in the sense of sight.

The best way to incorporate touch into an architectural design is to bring the user right up to the art and feel it. The user will not only experience the materiality, structure and art of the building, but they will also experience touch through drink and food.

Listening to a design may seem like something that plays an unimportant role in architecture. However, our auditory sense lets us know where we are, and what surrounds. The way that a building is designed

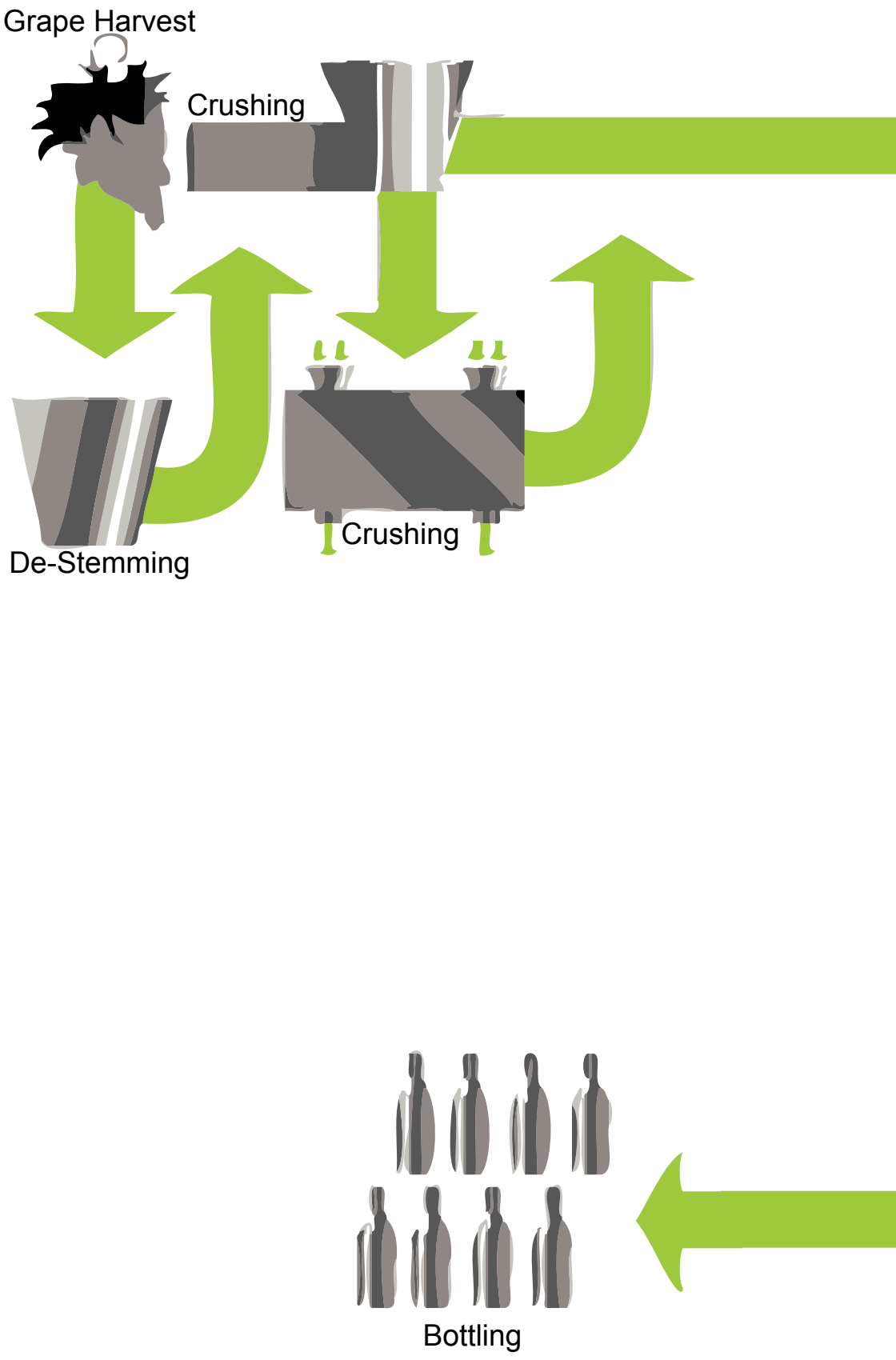
changes the way that the user will hear within the space. The materiality bounces sound waves differently; as does the shape that a space is formed.

Smell is most closely connected to our memory. Because of this fact, every building has its own smell. Sometimes good, sometimes bad. To exploit that the users will react better to a building that smells good, the restaurant and wine will provide a pleasant aroma. The materiality of the building will also have its own distinct smell. Have you ever smelled a piece of wood? Or Stone? If you have you know that it absolutely does have a recognizable scent.

Taste, was a part of the sensory experience that I found difficult to relate specifically to architecture. Most people certainly aren't going to lick the walls. With this typology, taste is present for each user while eating, drinking, and enjoying the space. I found that taste is actually a combination of all of our senses. If something doesn't look or smell good, it probably will not taste good either.

Wine, cooking and architecture all have a sensory manner to them. For this reason, combining them will make this design more artful, and beautiful to all sensory perception. Each building has its own sensory experience. By playing with this a building can be designed that will engage all senses.

Basic Wine Making Process



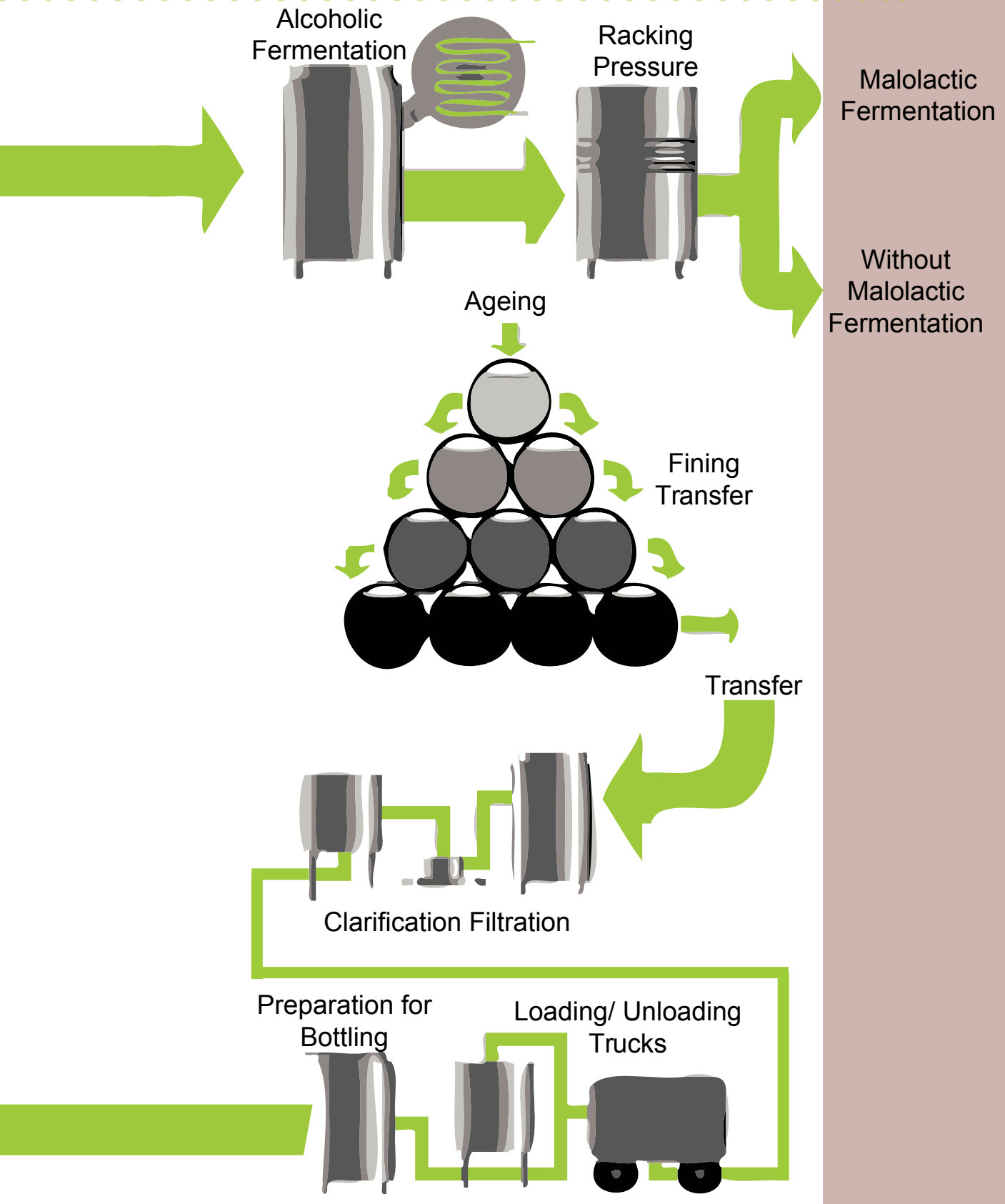

Alcoholic Fermentation
Racking Pressure
Malolactic Fermentation
Without Malolactic Fermentation
Ageing
Fining Transfer
Transfer
Clarification Filtration
Preparation for Bottling
Loading/ Unloading Trucks

Figure 10.1

Basic Wine Guide

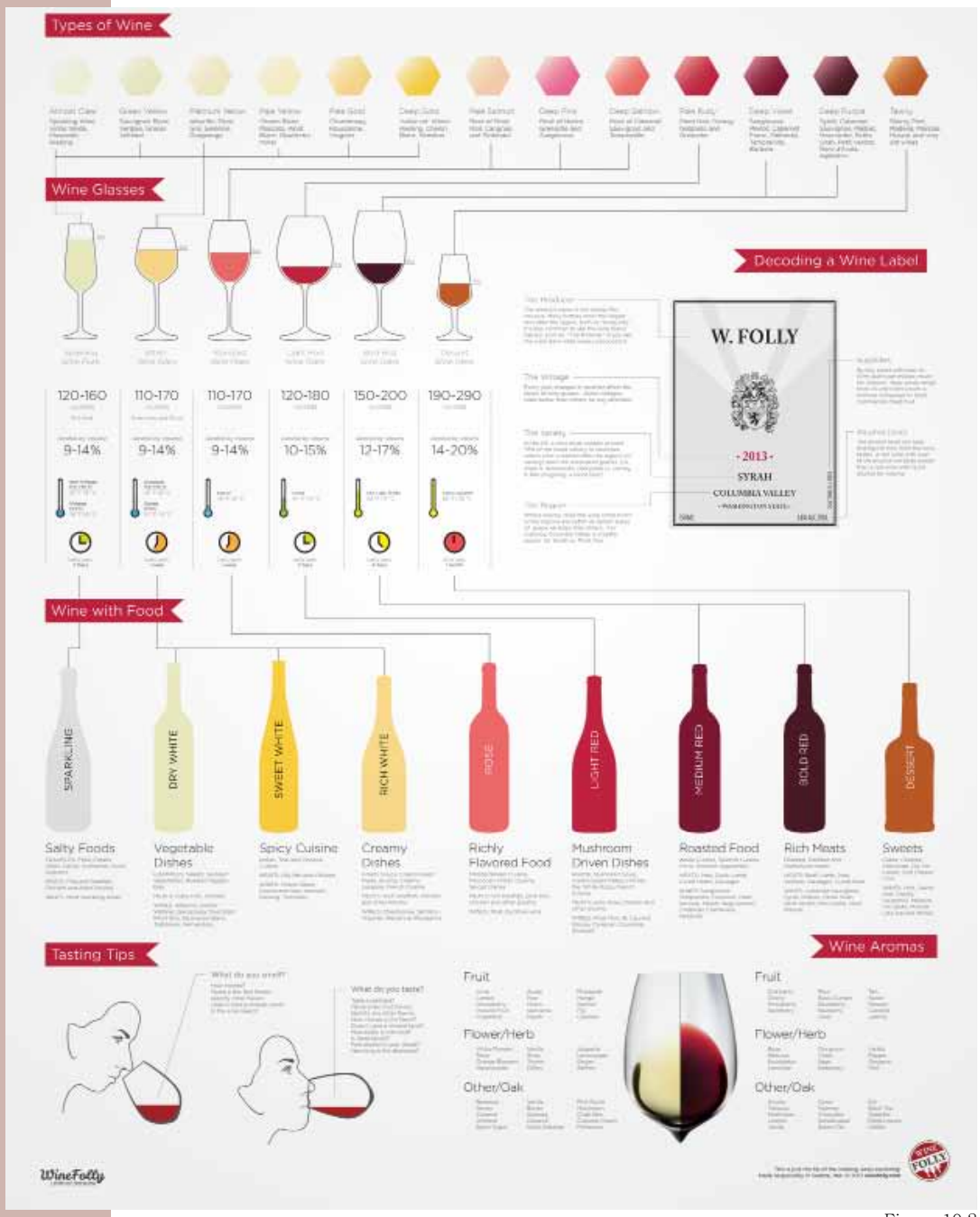


Figure 10.2

Project Justification

How can a complete sensory experience be created within architecture? I believe that the experience established by the architecture for the senses will construct a more meaningful and memorable space. Where all of our senses intertwine is where the best solution to a problem lies. “Buildings that have a strong impact always convey an intense feeling of their special quality. They embrace the mysterious void called space in a special way and make it vibrate.” (Zumthor, 2006)

Speaking in a less spiritual manner, our senses are our tools for perception. These senses at the most basic definition are visual, tactile, auditory, olfaction, and gustatory. These tools of perception will help me to design a solution for a winery and restaurant that the user can interact with in every sense. Not only will each sense be present in the architecture, but they will interact with each other. For example, the materials chosen should use the sense of sight to invite the user over and feel it.

Why a winery and restaurant to explore the use of the senses? I chose to design for this typology for a couple of reasons. Taste and smell are two of our senses that are more difficult to find in architecture. By combining it into the typology of the building, the user will definitely know that the space is sensory experience through architecture.

Historical Context

Wine as Culture

"Alcohol has played a central role in almost all human cultures since Neolithic times (about 4000 BC). All societies, without exception, make use of intoxicating substances, alcohol being by far the most common." (SIRC, 1998) Alcohol in general is present in almost every culture that exists today. Wine in particular has been categorized by many as a 'fancy' drink, meaning it is considered to hold people to higher standards. "Wine has long been and continues to be an important commodity that generates significant interest because of its commercial, symbolic, cultural, and aesthetic value." (Bloomsbury, 2013) This value of wine is more than a numerical value, as Bloomsbury implies. Wine adds to a sense of culture in the area that should be embraced.

"In many cultures, alcohol is shared not only with fellow drinkers, but also with the Gods and with the dead. At Navajo house-parties, drinking begins when one of the older men produces a bottle of wine and pours the first drop as a libation to Mother Earth, before taking a drink and passing the bottle on, and is brought to a close when the last drop is again offered to Mother Earth" (SIRC, 1998) The tradition mentioned shows that wine is used culturally for more than drink. In many religions wine is served. Thus, wine can be a celebration for any and all occasions.

History of Wine

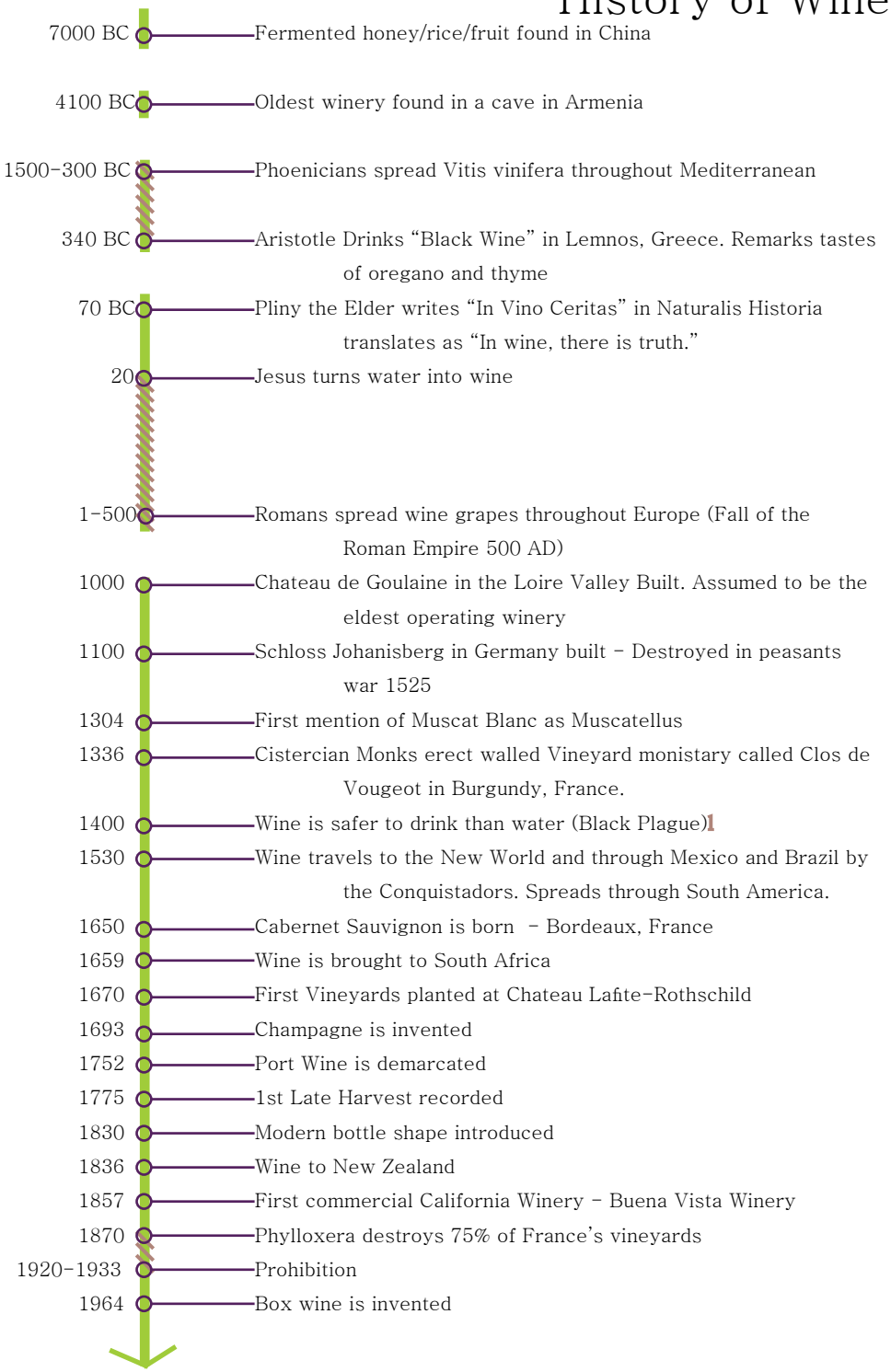


Figure 11.1

Cause & Affect

"The affects provide the "ground" condition through which architecture engages with life and culture. Rather than divulging in the historical search for understanding the meaning of such a "ground" condition, Moussavi's installation is more interested in the affects resulting from people's aesthetic perceptions." (Saieh, 2012) Moussavi created an art installation that explored architectural experiences within our everyday life. This was entitled Architecture and its Affects.

"Viewers were surrounded by changing projections of textures and patterns, structural configurations and facades, which were organized in such a manner as to highlight their affects, rather than their chronological existence or historical references." (Saieh, 2012) This installation caused many people to actually interact with architecture through more senses than sight. "Whereas meanings are dependent on an individual's biographical

Figure 11.2


Figure 11.3

background, affects are pre-personal intensities of built forms. They are solely the consequence of how built forms are assembled: the systems and technology used, where and for what purpose" (Saieh, 2012)

"Any human experience always occurs in a place and our memory of any experience is always place-specific. Emotional response is intrinsic to place experience and place memory."(Aroztegui, 2010) Our senses are directly connected to our memory. This being said, if architecture is designed for our senses, it will be better represented and better remembered. "Representation, when reduced to expressing the visual appearances of space, takes away from place's experiential dimensions. Often designers (and design students) find themselves placed in the crossroads between representing form and eliciting presence." (Aroztegui, 2010) Architecture needs to be perceived and remembered. It needs a connection between what is there in front of you, and what you sense in you. "What is missing from our dwellings today are the potential transactions between body, imagination, and environment. To at least some extent every place can be remembered, partly because it is unique, but partly because it has affected our bodies and generated enough associations to hold it in our personal worlds." (Pallasmaa, 2006)

Sense & Architecture

Figure 11.4

Think of a building, any building. Does it have a smell? A feel? A sound? Every building has a connection to all of your senses, whether you know it or not. “In order to design buildings with a sensuous connection to life, one must think in a way that goes far beyond form and construction.” (Zumthor, 2006) Peter Zumthor designed a Chapel in Germany called Bruder Claus. This chapel exemplifies all of your senses. I have found that this chapel is so simple that it truly does penetrate your senses. “Arguably the most interesting aspects of the church are found in the methods of construction, beginning with a wigwam made of 112 tree trunks. Upon completion of the frame, layers of concrete were poured and rammed atop the existing surface, each around 50cm thick. When the concrete of all 24 layers had set, the wooden frame was set on fire, leaving behind a hollowed blackened cavity and charred walls.” (ArchDaily, 2011) Can you imagine the smell of the charred concrete, the feel of the sun shining through?

"To me, buildings can have a beautiful silence that I associate with attributes such as composure, self-evidence, durability, presence, and integrity, and with warmth and sensuousness as well; a building that is being itself, being a building, not representing anything, just being." (Zumthor, 2006) Another piece of architecture that I have found that brings a person to experience their senses is the Holocaust Memorial in Berlin, Germany designed by Peter Eisenman. It was designed to make the user feel as if they were as lost and disoriented as those murdered and in the camps. While walking through you can hear the echoes of your foot steps off the concrete blocks, and feel the coolness of the blocks.

What is it like to be missing one of your senses? How should this change the way we design? While studying abroad I had the opportunity to go on a Dialogue in the Dark tour. "Visitors are led by blind guides in groups through specially constructed dark rooms in which scent, sound, wind, temperature and texture convey the characteristics of daily environments." (Dialogue Social Enterprise, 2009) As a designer, this experience helped for me to learn that although one sense is missing you do still experience architecture through all of your other senses.

Site

Narrative

Sensory explorations and feelings in the site make me think of a vast peacefulness. There is a gentle babble heard all along the north east side of the site, and trees surrounding the area make you feel secluded. The river adds a nice calming sound and has a subtle smell of 'river.' While exploring near the river I also happened to see a variety of animals that were attracted to the water. Such as geese, a fox, cat, and more. The river provides an interesting aspect to the sensory experience of the site. The river has smell, you can hear it flow, see its beauty, feel the flow of water if you wanted, or even drink it.

One aspect of the site that I did notice to be quite important to the area was that it is commonly used as a place for people walk their dogs. In design, I plan to accommodate this, so as not to completely extinguish it from the site. People's interaction with the site is important, because it is part of the sensual experience. Another part of the site that will

Figure 12.1

be preserved is the natural landscape in the marsh of the river.

The site is modest. It was planned simply as a green space for athletes, children, dogs, etc. I see this simple sight, however, as a clean slate. I noticed several types of landscaping textures while on the site. The openness of the site was because of a low level of grass. When returning to the site in winter there was several inches of snow.

There is a pedestrian path and road, with a small amount of traffic, that moves along the southwest side of the site. Along the path are several cranberry trees. Wild grasses and deciduous trees are grouped near the river. The sun is almost fully present on this site, this makes it an ideal plot for growing grapes. The vine landscape will add a unique texture, smell and sight to the area.

Figure 12.2

Figure 12.3

North

To the north of the site is a small parking lot for dog walkers and park goers. The paving is in fairly bad shape. The north end of the site is also the only location of trash bins on the site. Despite this, it is still a very clean plot. Similar to south and east of the site, the north has a large buffer of trees.

Figure 12.4

South

The south view of the site consists mostly of an open field. At the very south side of the site there is a small netted area for games, with a small bleacher set. Along the property line to this view is a buffer of deciduous trees and wild grasses and flowers.

Figure 12.5

Figure 12.6

East

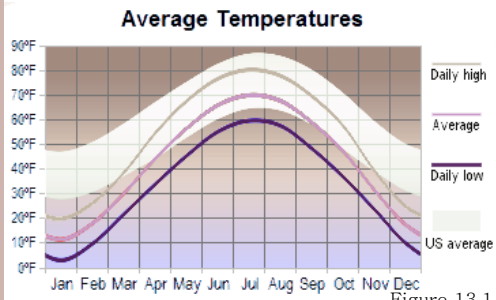
Flowing on the east side of the site is the Zumbro River. This provides a nice view and a soothing noise. There are several feet of marshland between the site and the river. This will provide a great view within the winery and restaurant.

Figure 12.7

West

Along the west side of the site is a two lane road with a medium amount of traffic. Between the road and site is a pedestrian path that is used for bikers, runners, dog walkers, and more. This will provide a nice starting point to bring users into the architecture.

Climate Data



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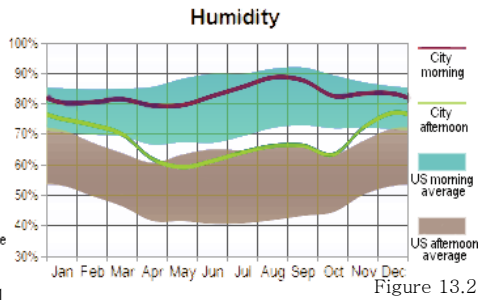

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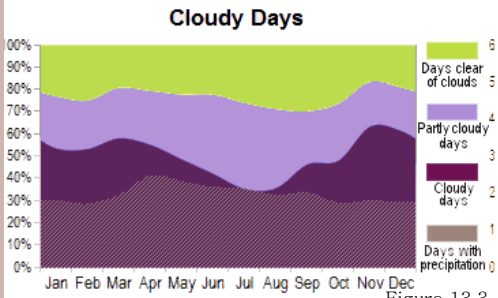

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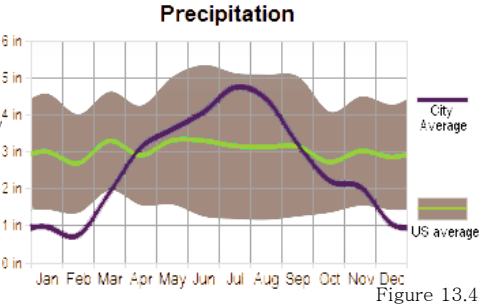

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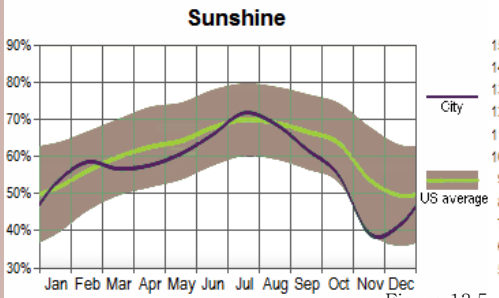

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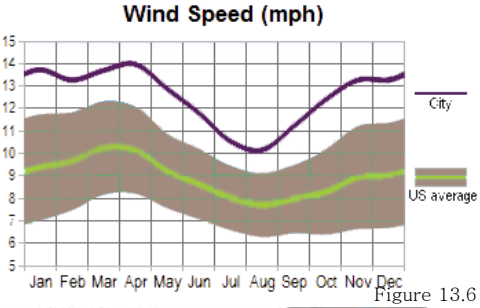

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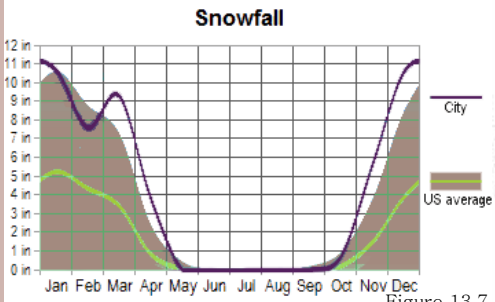

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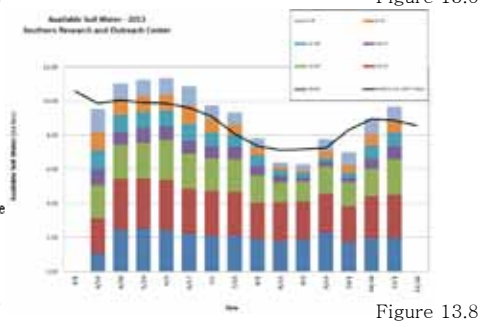

Figure 13.8

Variable	J	F	M	A	M	J	J	A	S	O	N	D
Insolation, kWh/m²/day	1.65	2.53	3.43	4.30	5.18	5.69	5.70	4.83	3.80	2.59	1.70	1.39
Clearness, 0 - 1	0.48	0.51	0.48	0.46	0.48	0.49	0.51	0.49	0.48	0.45	0.43	0.46
Temperature, °F	13.82	18.88	29.59	44.22	57.56	67.44	71.64	69.40	60.91	47.53	31.37	18.23
Wind speed, mph	12.82	12.39	13.42	13.98	12.59	11.81	10.58	10.47	11.27	12.24	12.62	12.39
Precipitation, in	0.83	0.76	1.80	2.84	3.48	3.88	4.17	3.88	3.30	2.21	1.67	1.03
Wet days, d	8.5	7.5	10.1	11.3	11.3	11.2	9.8	9.8	10.7	8.4	8.6	9.4

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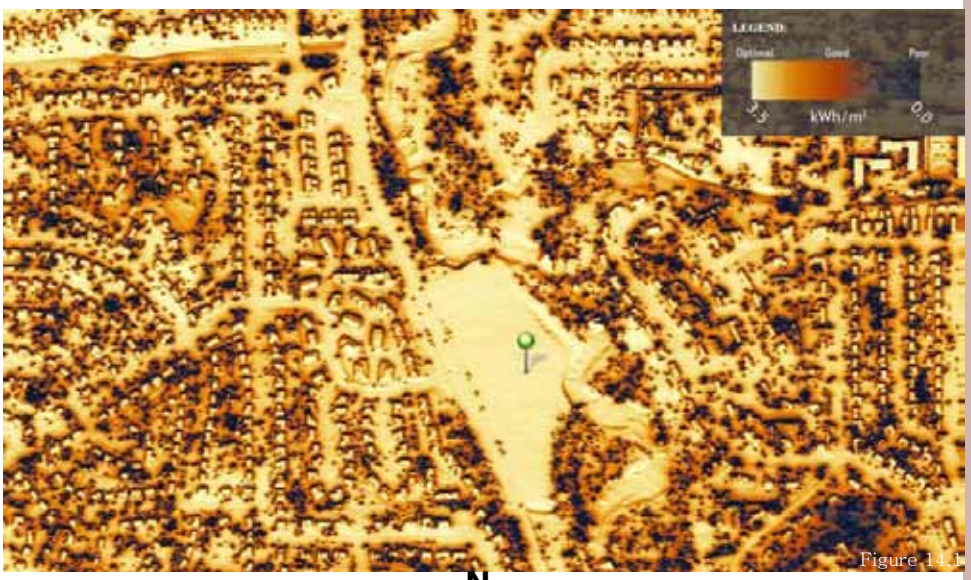

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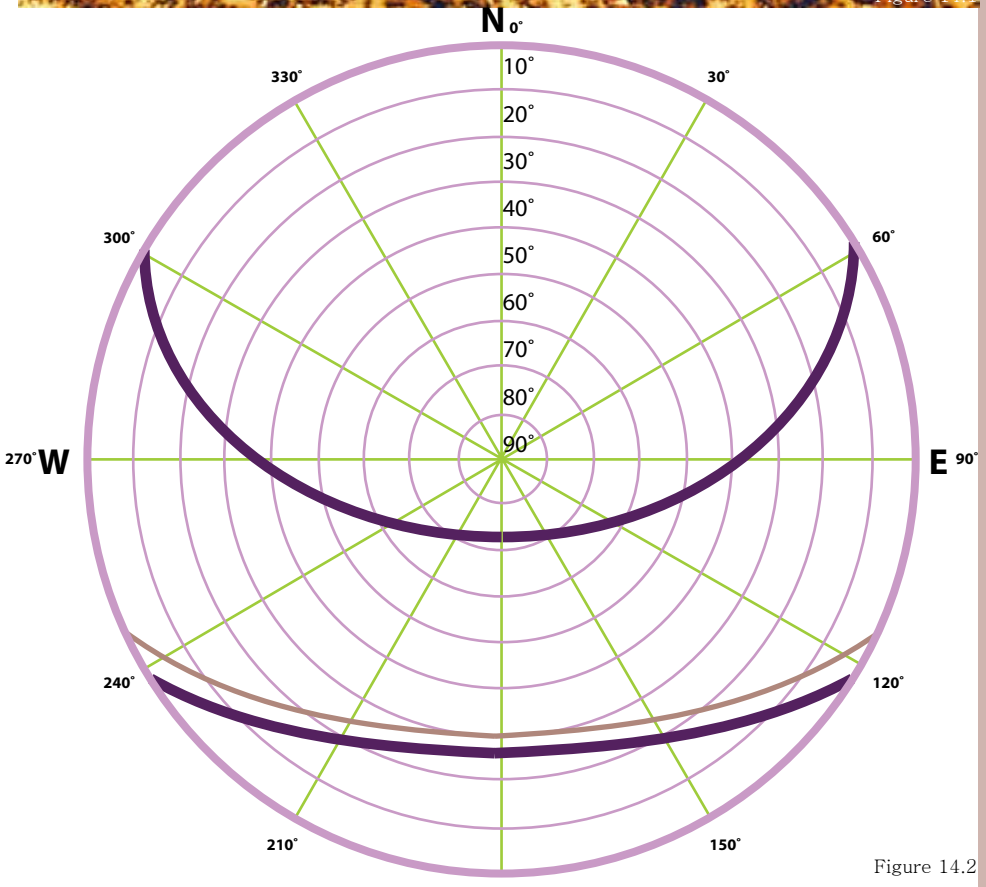


Figure 14.2

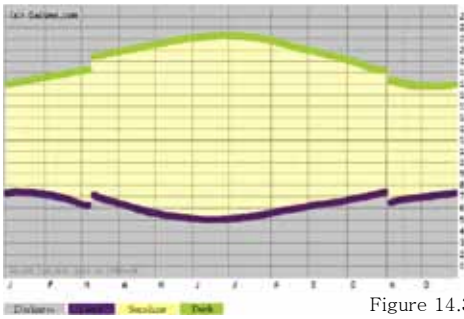


Figure 14.3

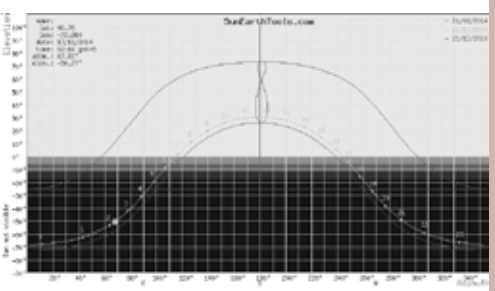


Figure 14.4

Wind

These four wind roses show the varying wind speeds and directions throughout the four seasons. During the summer, the wind from the south and southwest will provide a nice cool breeze and should be designed to take advantage of. During the colder months, harsh winds from the northwest should be avoided.

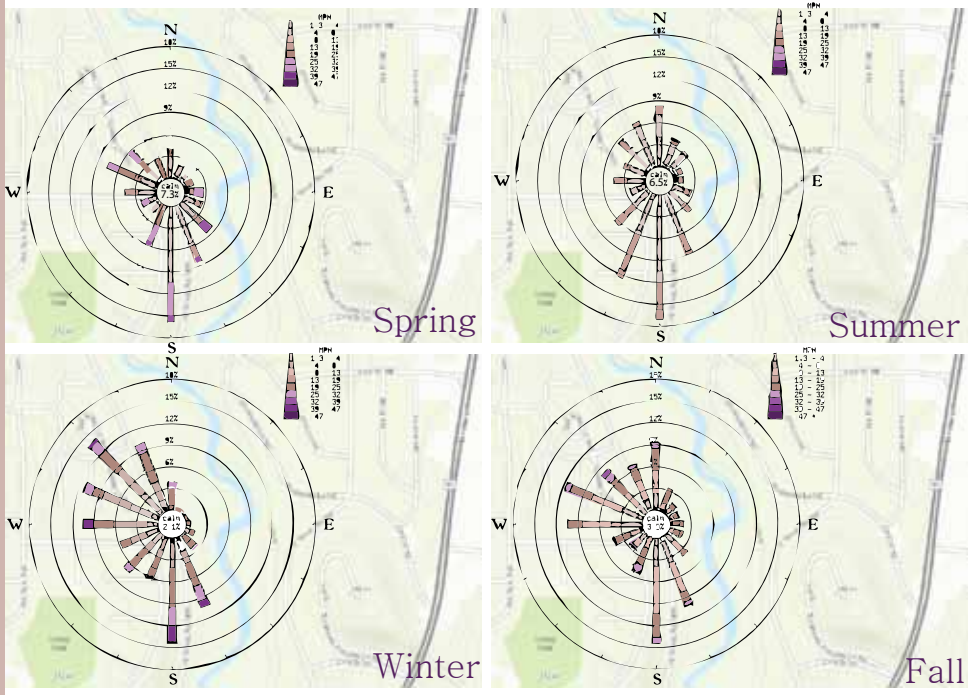


Figure 15.1

Zoning

According to the Olmsted County of Minnesota the chosen site is listed as municipal public service or other for zoning. It also states that the plat of land is “River West” is in a PUD zone which by law are no longer enforced in the county. Therefore allowing for an approved change of zoning in all affected areas.

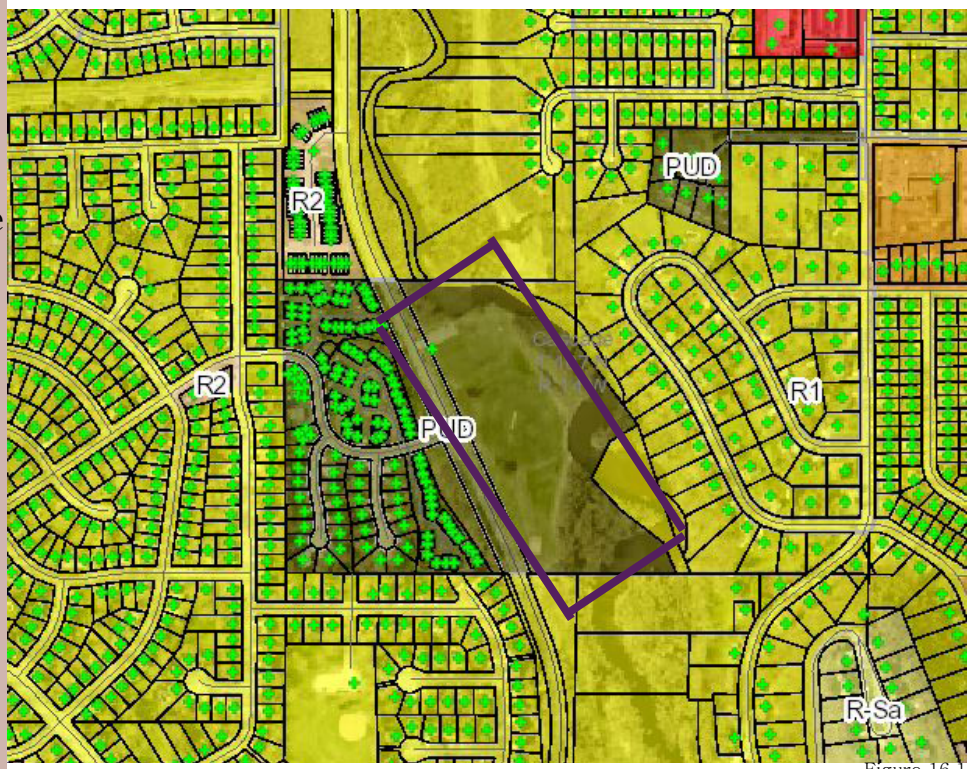


Figure 16.1

Distress

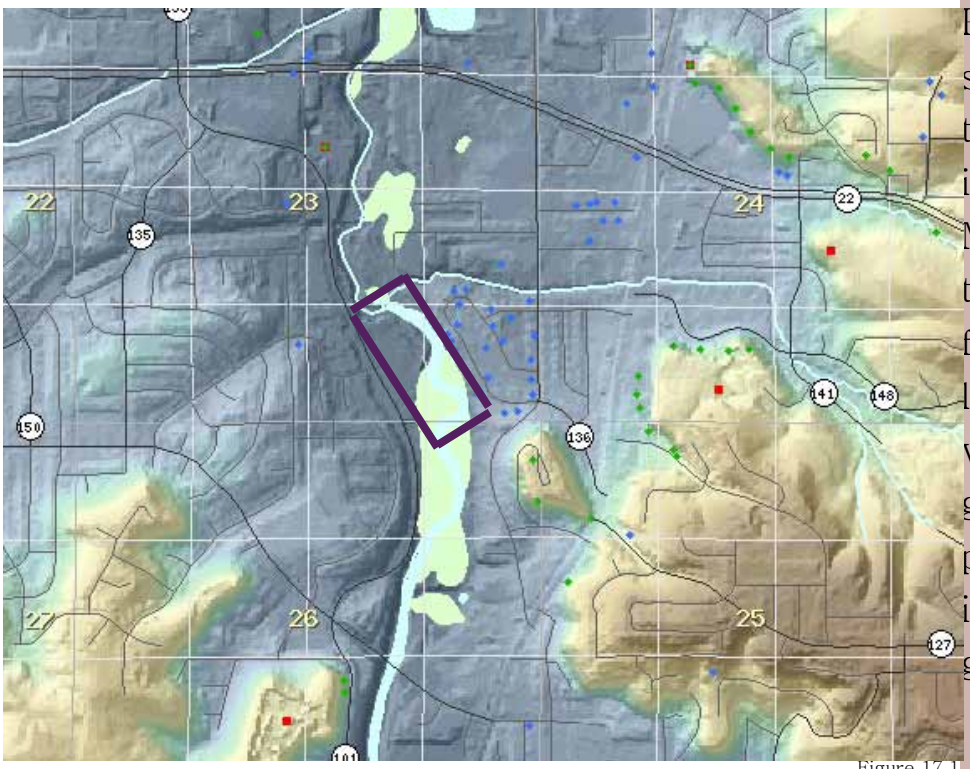


Figure 17.1

Part of the site, on the south side and across the river, is located in a natural wetland. Meaning that parts of the site are subject to flood during high flood levels. This however will not damage any grape vines on site, provided that the flood is not in the height of growing.

Soils

Figure 18.1

There are two main types of soils located on the site. First, Mollisols (dark green) which is typically under grassland. Includes limestone, loess, and wind blown sand. Second, Alfisols (light green) is a clay enriched subsoil. Usually rich in aluminium and iron. Includes suborders of aqualfs, cryalfs, and ufdalfs.

Property Lines

Figure 19.1

Topography

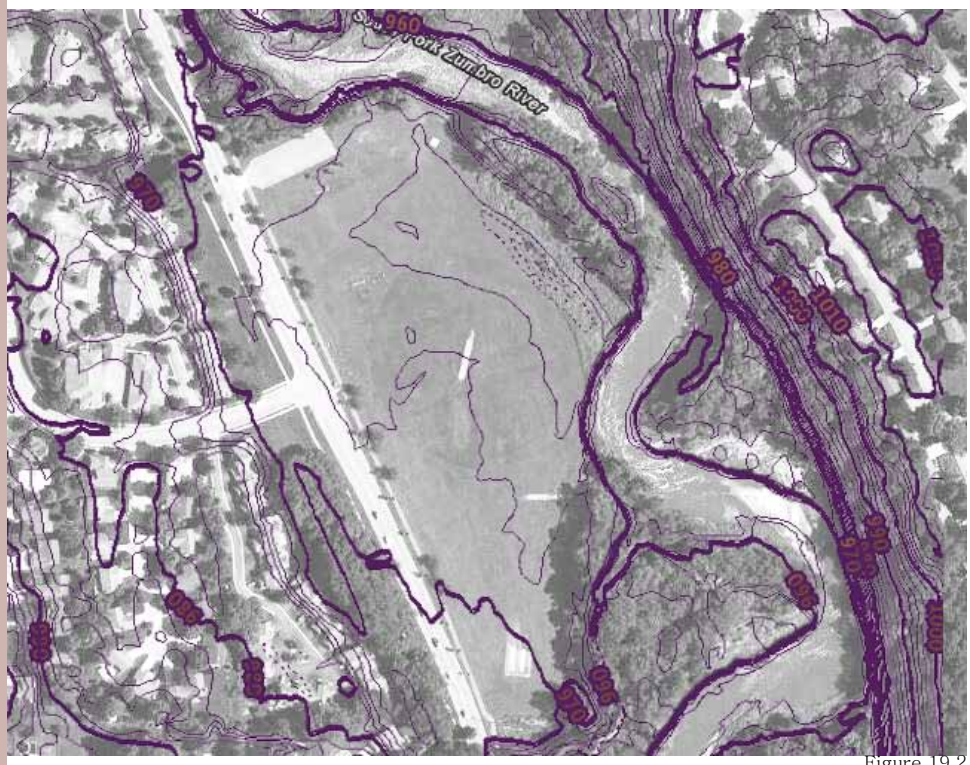


Figure 19.2

Plant Cover

Figure 19.3

Trees

Figure 19.4

Water

Figure 19.5

Utilities

Figure 19.6

Vehicular Traffic

Figure 19.7

Pedestrian Traffic

Figure 19.8

Built Environment

This figure ground map shows the built environment surrounding the site. The buildings to the west of the site are residential consisting of single family homes and multi-unit condos. To the east, on the other side of the river, are some single family homes and the beginning of commercial.

Figure 19.9

Character

Located across the street from the site is a development of town houses built in the last ten years. The site Is a place where children and families come to play, and dogs too.

Figure 19.10

Figure 19.11

Figure 19.12

Demographics

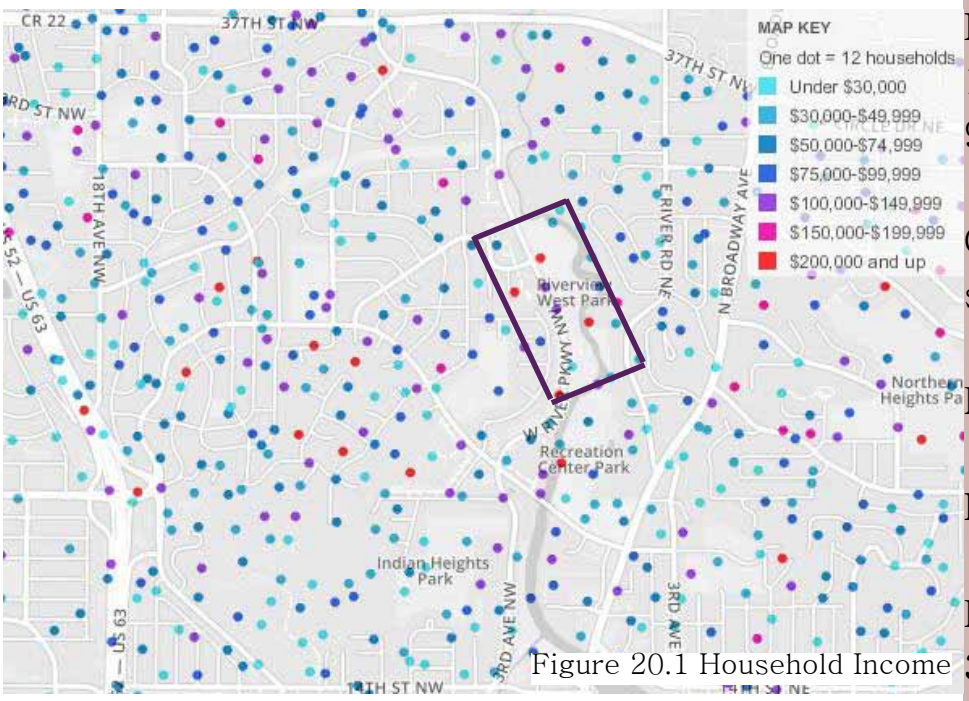


Figure 20.1 Household Income

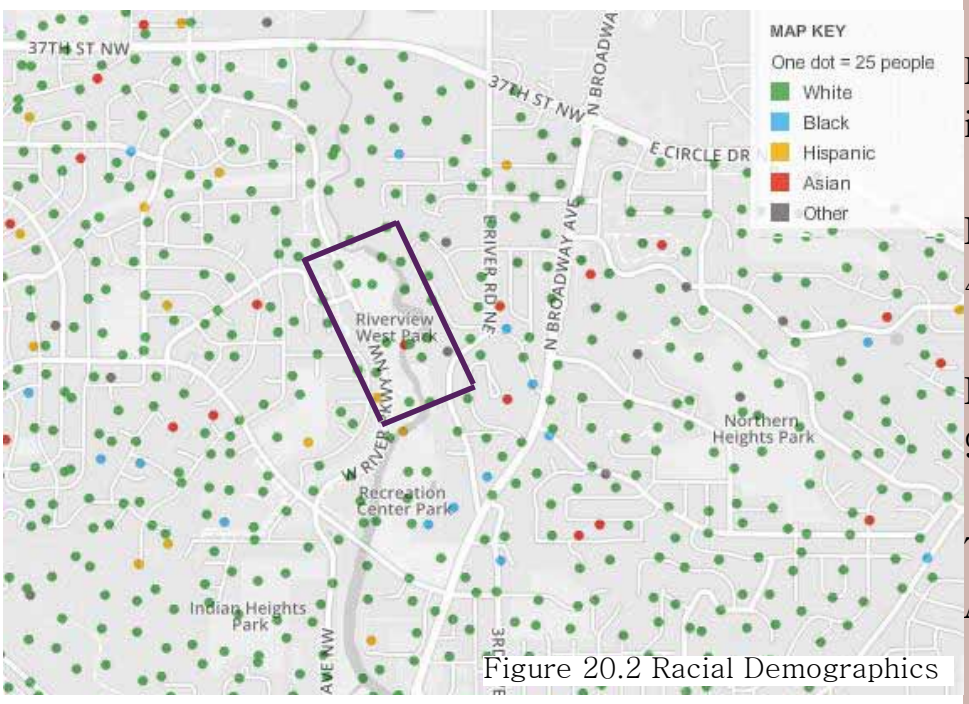


Figure 20.2 Racial Demographics

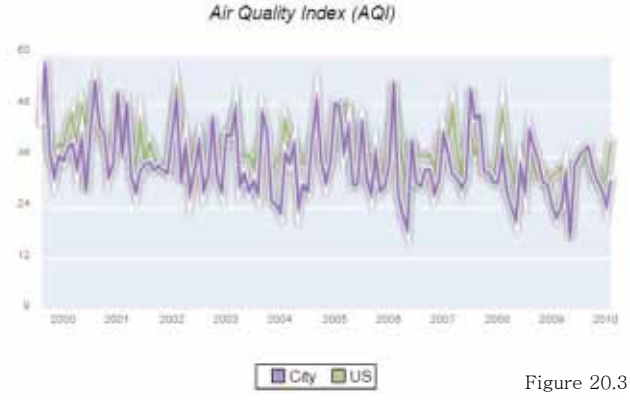


Figure 20.3

Population (2012): 108,992
99% Urban, 1% Rural

Change in population since 2000: + 27.0%

Males: 48.8%

Females: 51.2%

Median resident age: 35

Median household income: $61,741

Latitude: 44°01'18.012"N

Longitude: 92°28'10.992"W

Time Zone: UTC 06:00
Altitude: 1,030 ft

Space Allocation

65,430 SqFt	Vineyard (1.5 Acres)
5,000 SqFt	Veranda/Courtyard
10%	Circulation
500 SqFt	Lobby & Reception
1,500 SqFt	Restrooms
800 SqFt	Mechanical
	Restaurant & Event Center
5,000 SqFt	Dining
1,500 SqFt	Bar
1,500 SqFt	VIP tasting/Event Space
2.000 SqFt	Kitchen (Refrigeration, storage, preparation)
	Winery
500 SqFt	Grape Storage & Freezer
1,500 SqFt	Grape de-stemming & Crushing
2,000 SqFt	Fermentation
3,000 SqFt	Aging (Barrels)
200 SqFt	Filtration
200 SqFt	Bottling
2,000 SqFt	Wine Cellar (Bottles)
1,000 SqFt	Shipping & Receiving
1,000 SqFt	Office Space

*Square footage numbers subject to change during design process

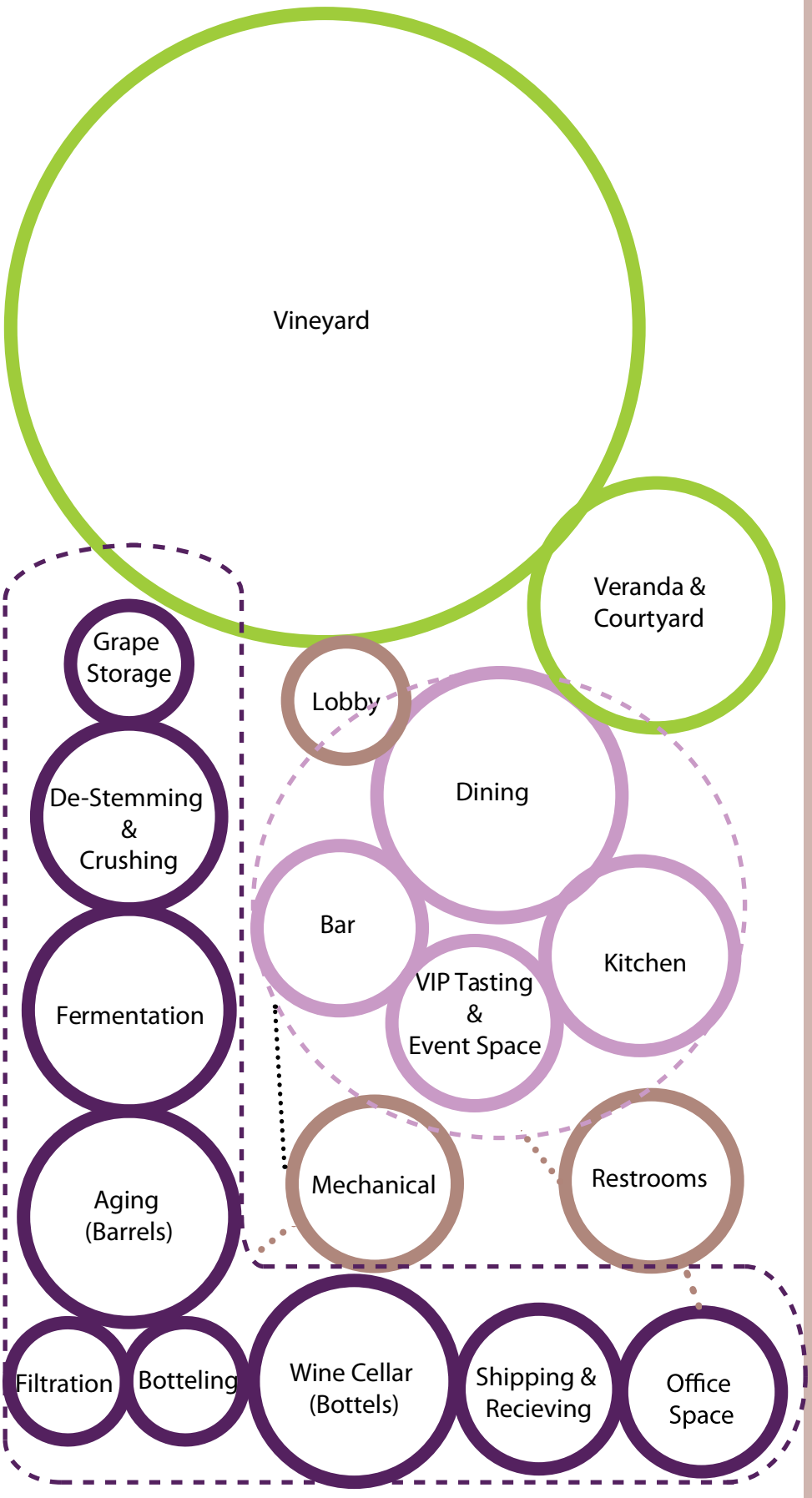
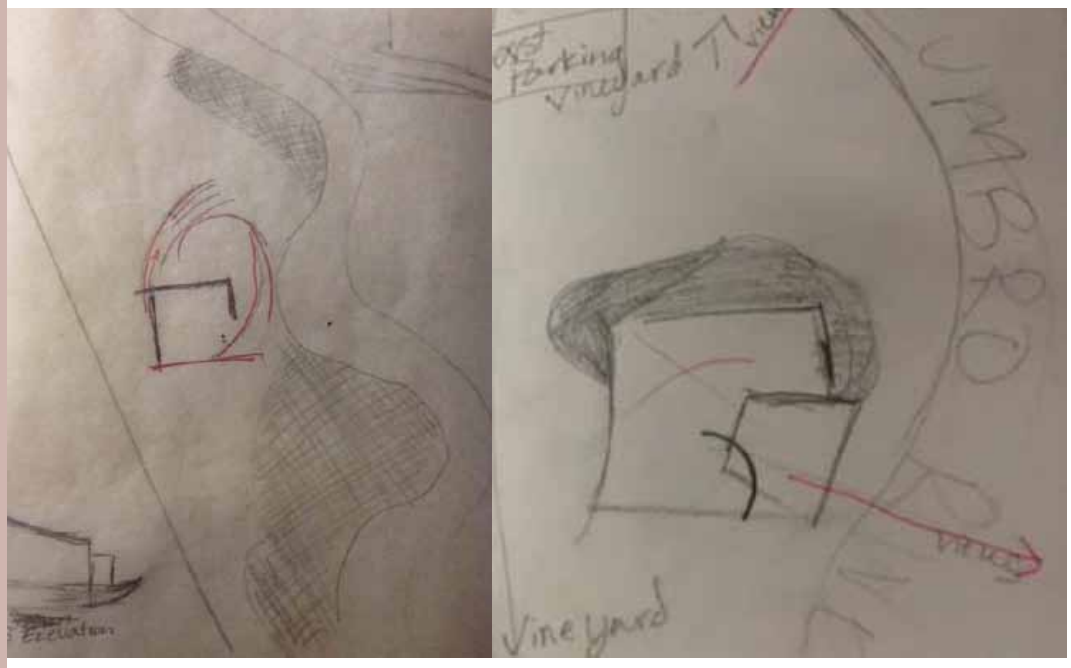

Vineyard
Veranda &
Courtyard
Grape
Storage
Lobby
De-Stemming
&
Crushing
Dining
Bar
Kitchen
VIP Tasting
&
Event Space
Fermentation
Mechanical
Restrooms
Aging
(Barrels)
Filtration
Botteling
Wine Cellar
(Bottels)
Shipping &
Recieving
Office
Space

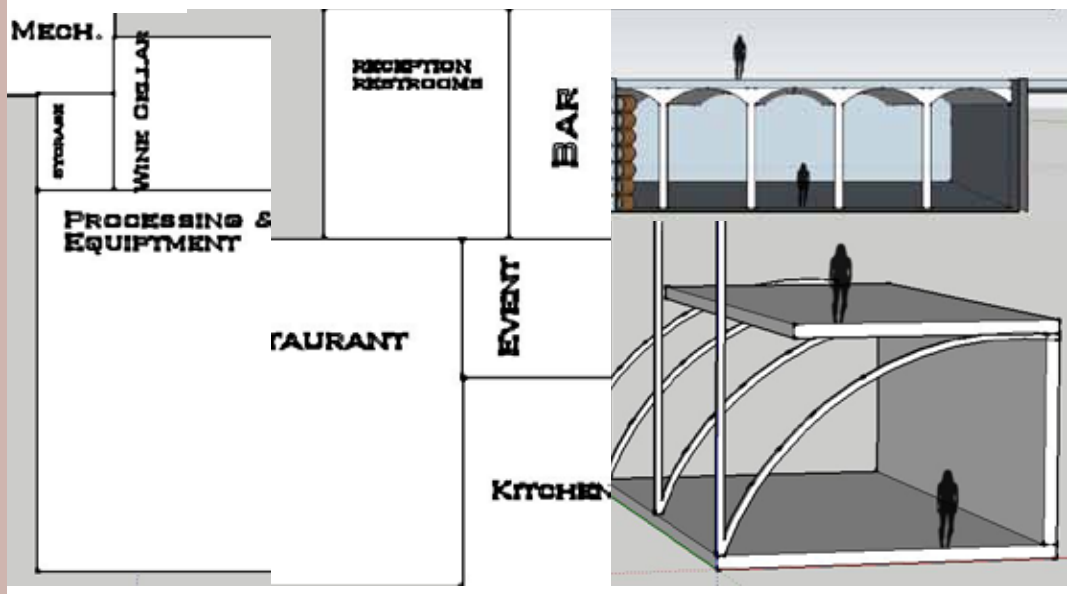
Figure 21.0

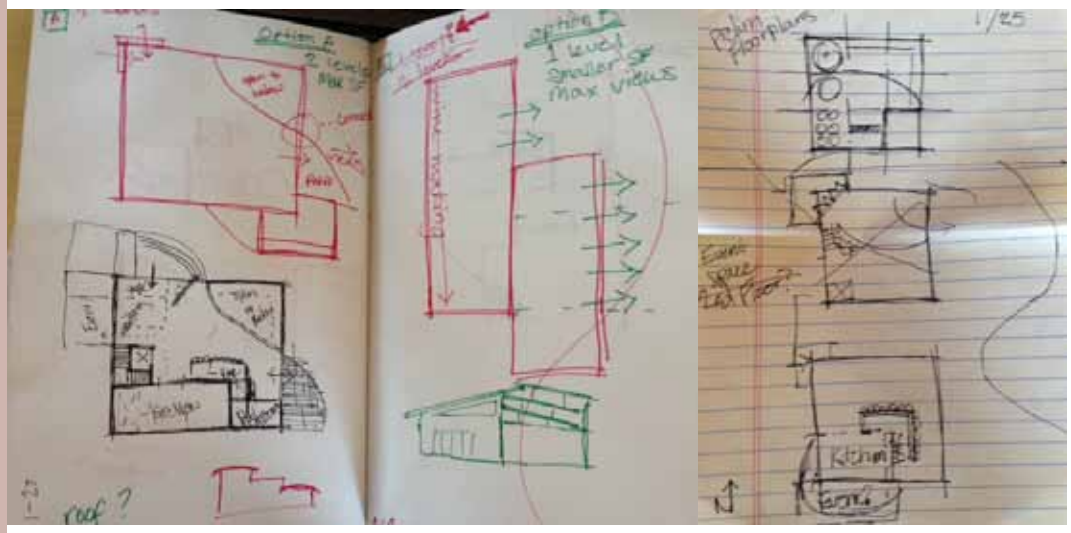
Process

Week 1 (January 23)

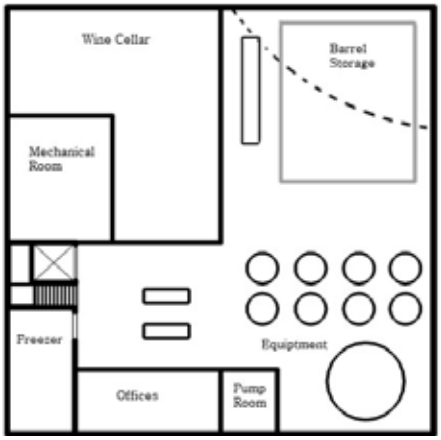
Week one started by working in sketches and basic spacial diagrams. From There, I started to work towards creating a form and a structural system. I also took a closer look at the site, to find where the building should be placed as well as view orientation.







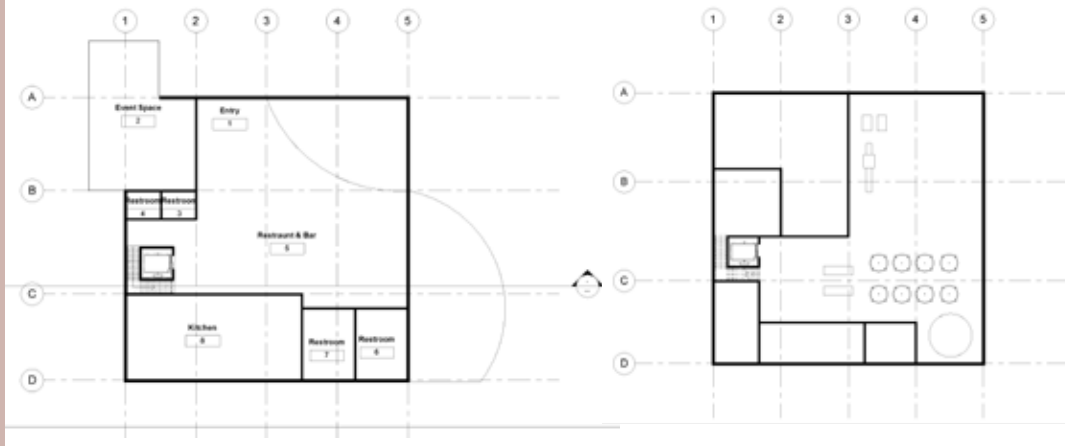
Week 2 (January 30)

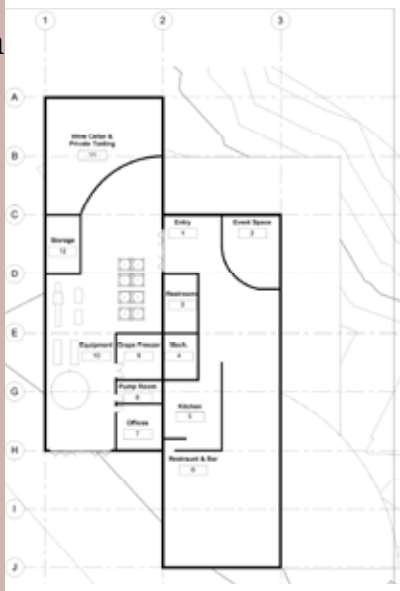


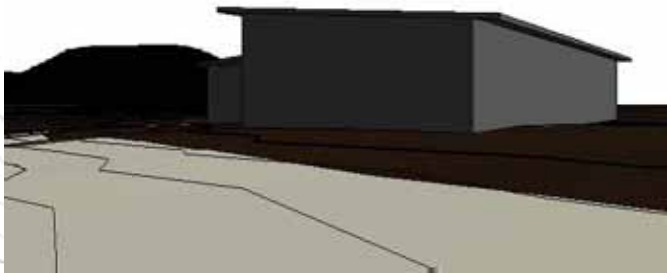
Week two started with a reflection of the views that I wanted the user to experience when approaching the winery. Once this was established, a simple sketchup form and layout was drawn. This layout hid too much of the interior from southern exposure, and the layout seemed to be cluttered, and dysfunctional.

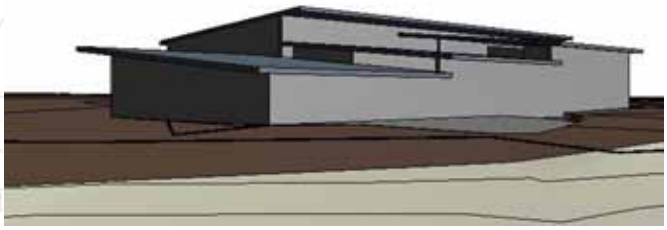
Week 3 (February 7)

This week was utilized to create 3 different options to move forward with in design. All three had good and bad qualities. I chose to move forward with option B (middle) because of the functionality of being on one level, the ability to bring natural light to all of the interior spaces, and the utilization of views to the site.

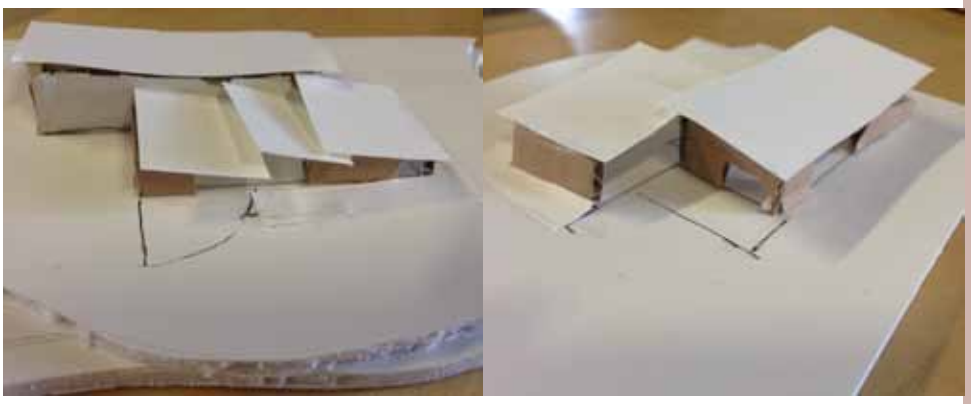


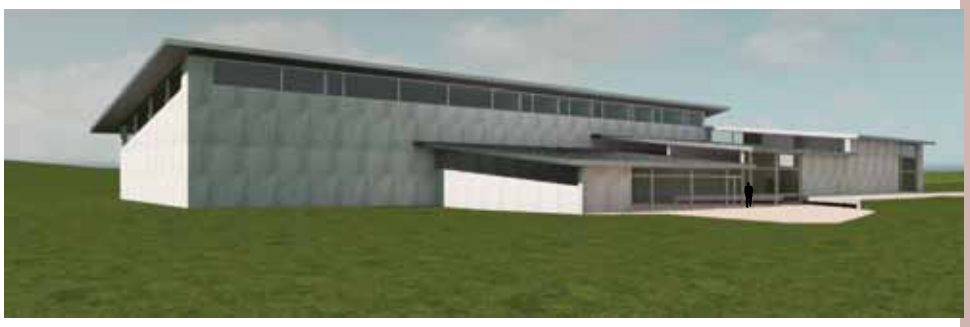


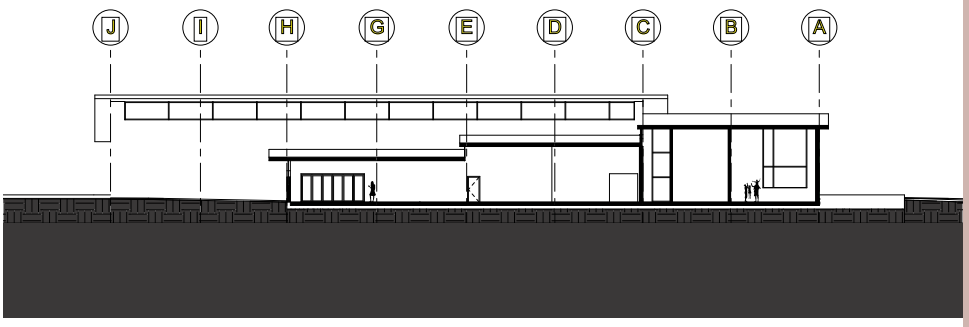


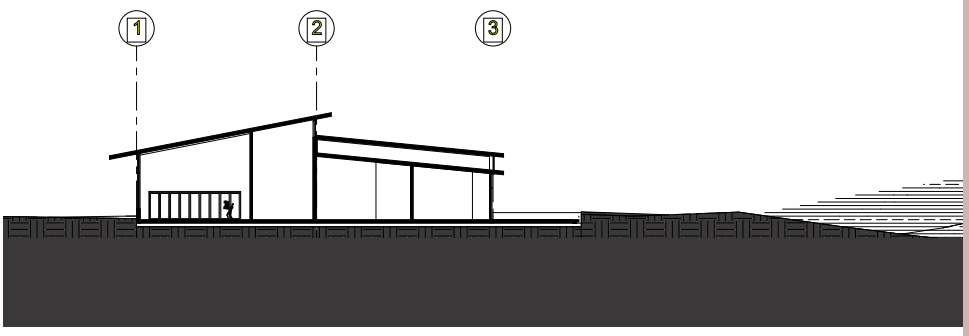


Week 4 (February 13)





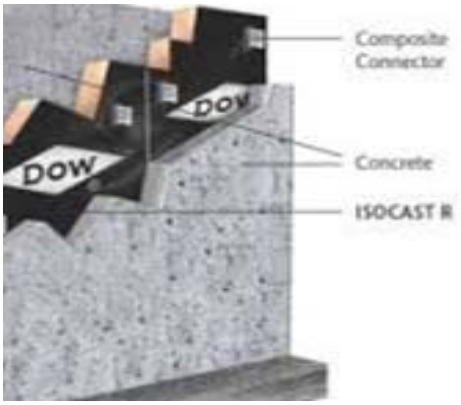


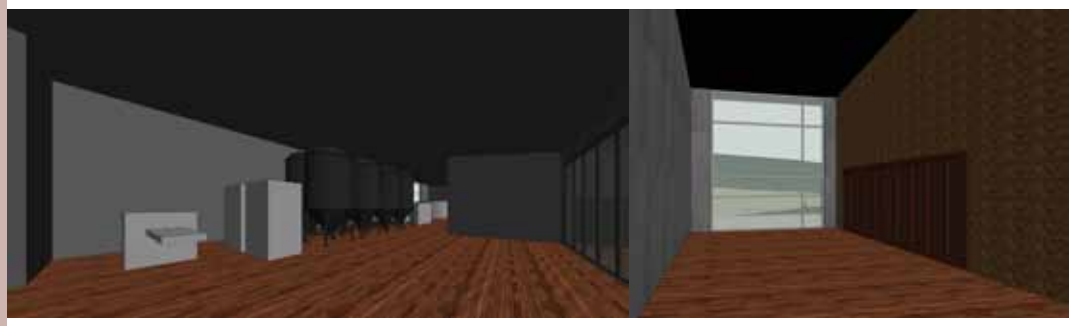


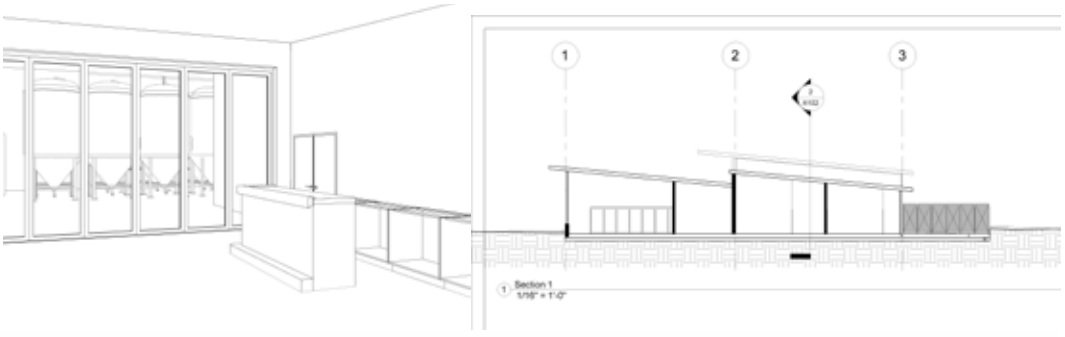
To help determine the best placement for windows I made a small sketch model to test natural light. This helped to inform windows in the digital model. Student reviews during this week helped to determine that the volume of some spaces and the exterior were out of proportion.

Week 5 (February 20)

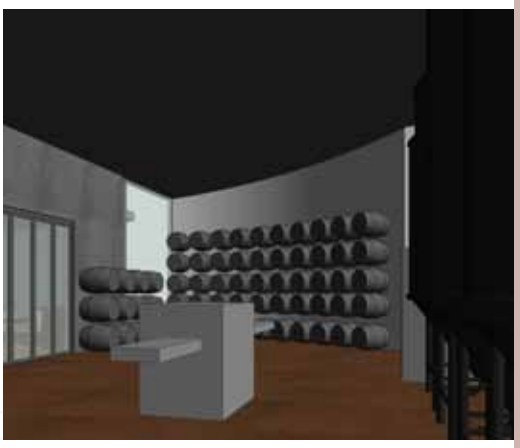
At this time I started to look into sustainable strategies and materials. I decided that using materials native to wine would help bring my premise into the architecture. Working with the materials inside is what will help to make the interiors unique.

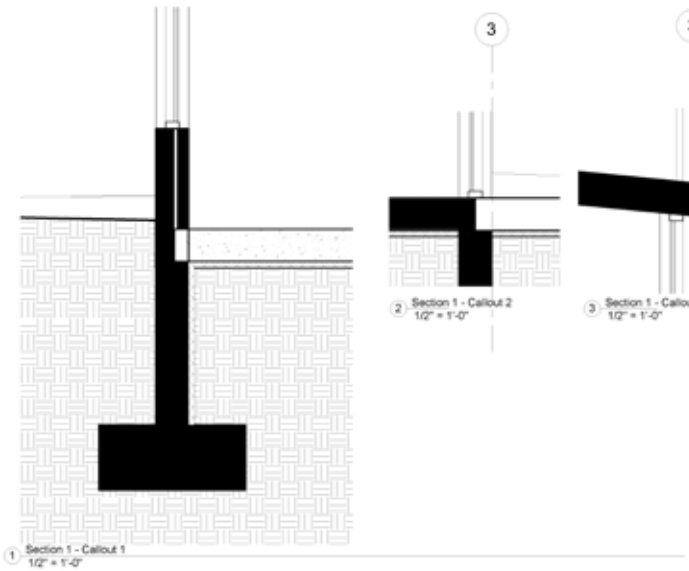


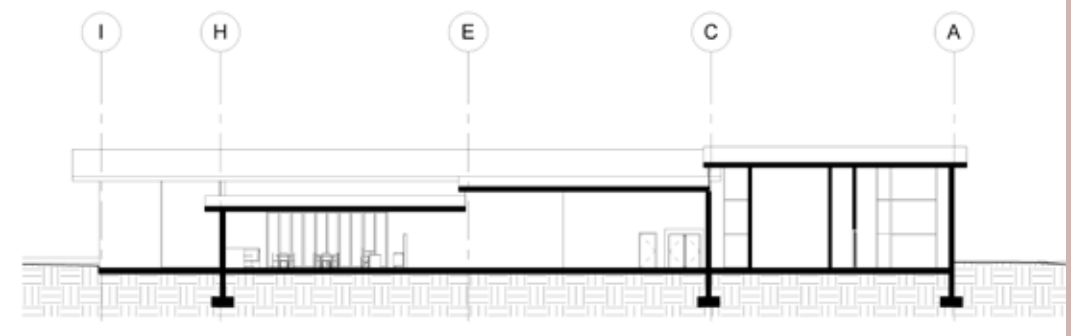




Week 6 (February 27)



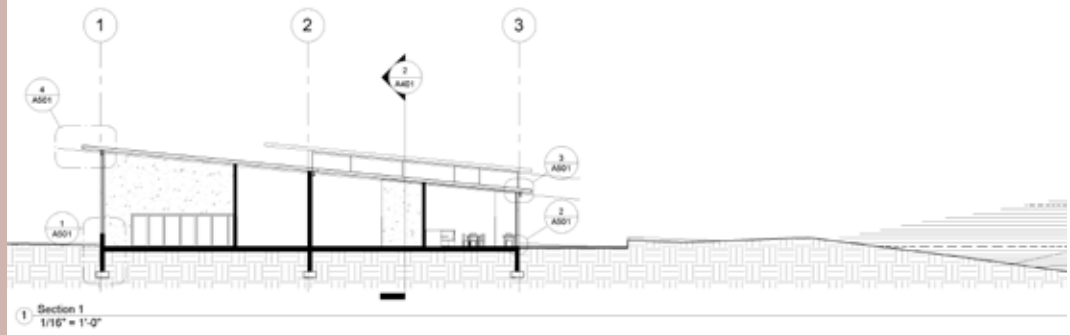


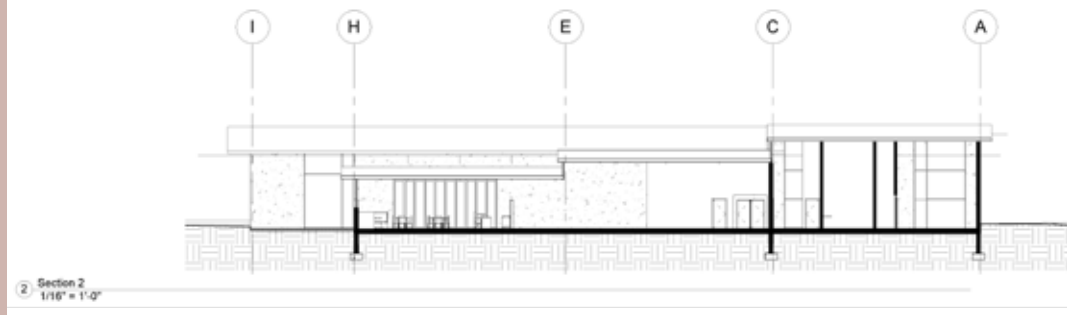


During week 6 I started to work on the structure of the building. This is also where the sections became more developed.

Week 7 (March 6)

This week was spent preparing interiors, exteriors, and the sections for the midterms.





Week 8 Mid Reviews (March 13)


A. Exterior Entry


B. Restaurant


C. Restaurant


D. Barel Storage/ Factory

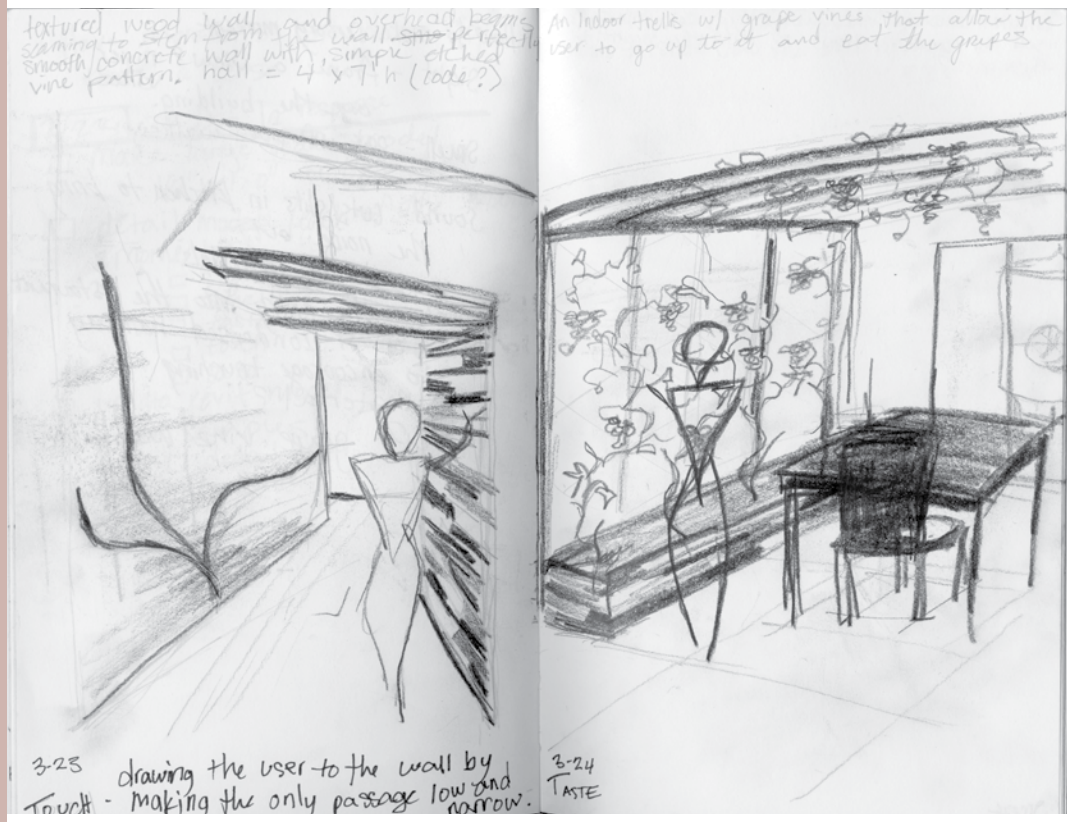

E. Factory

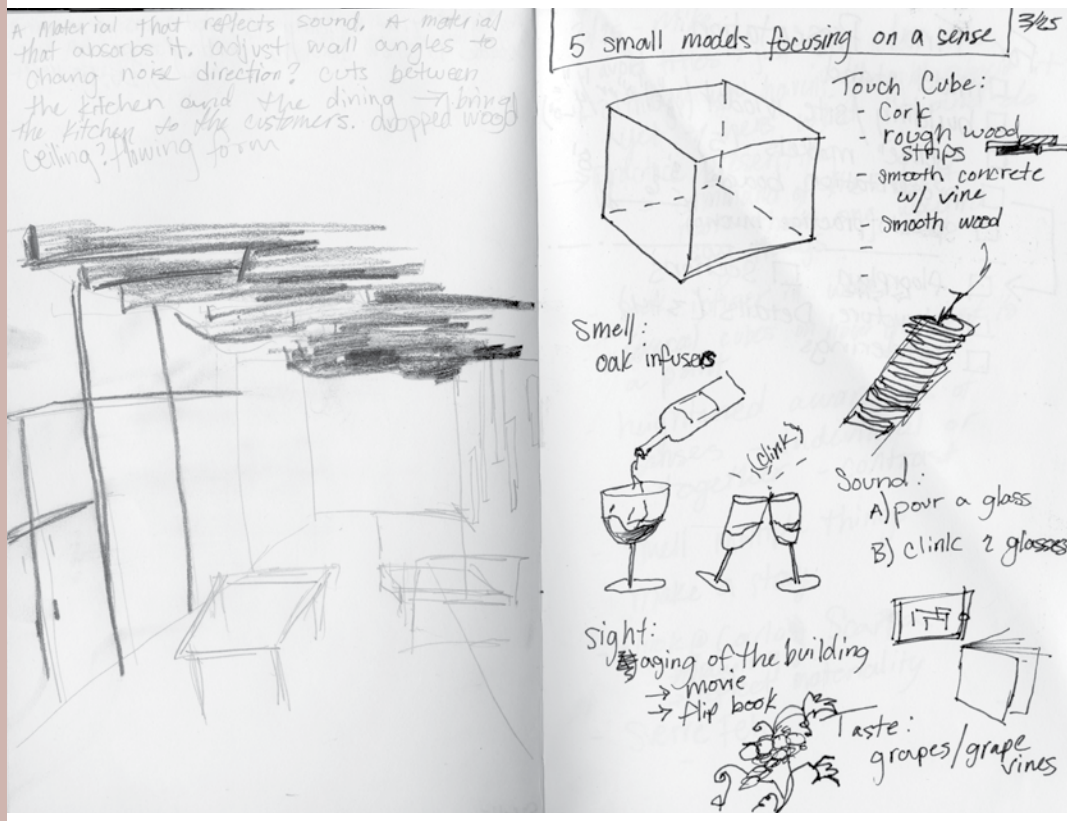

F. Exterior Patio

At the midterm, much of the technical aspects of the project had been developed. Through reviews I discovered that what the project was missing was moments and feelings of the senses that I wanted to convey.

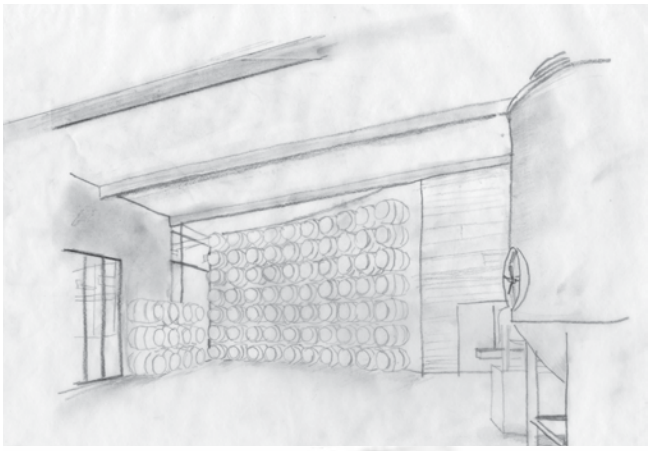
Week 9-10 (March 27)

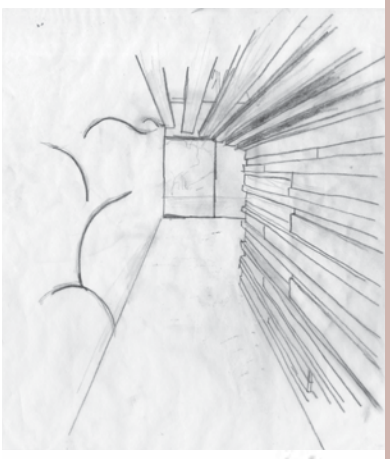
During the weeks following spring break I did a lot of reflection on what my design needed to show and allow the perception of the senses. I also reflected on how I wanted to display these same feelings in the presentation.

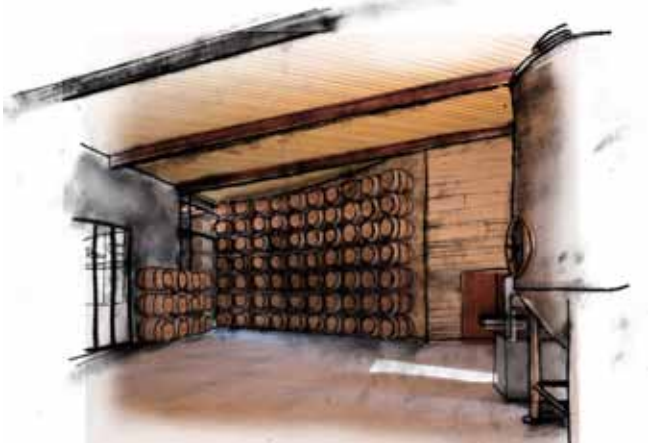




Week 11 (April 3)







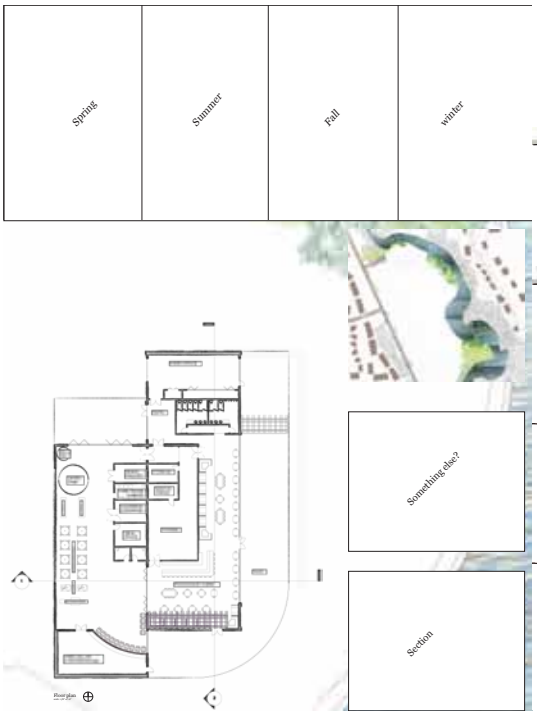
During week 11 I focused on testing rendering techniques. I decided that partially hand drawn and partially computer rendered would add an extra texture and character to the presentation boards.

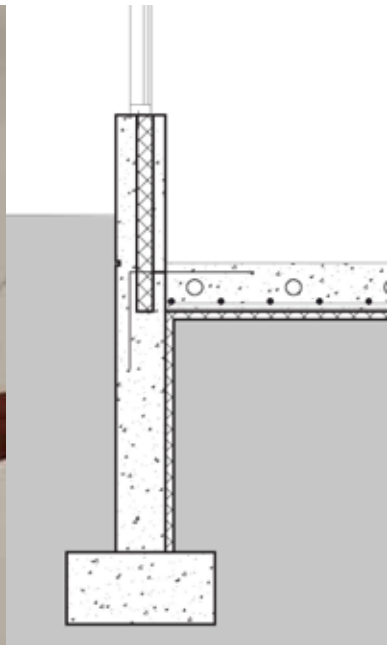
Week 12 (April 10)

At this point of the project it became important to start testing materials in the physical. I casted several forms of concrete to determine what would look, feel, and sound best within my design. I also found cork samples to test next to the concrete. During week 12 I also started putting together diagrams to display different topics in the design.

Week 13 (April 17)

During the final weeks of the project the goal became to produce everything that was necessary to show the thoughtfulness of my design. I created models, renders, diagrams, and practice boards.





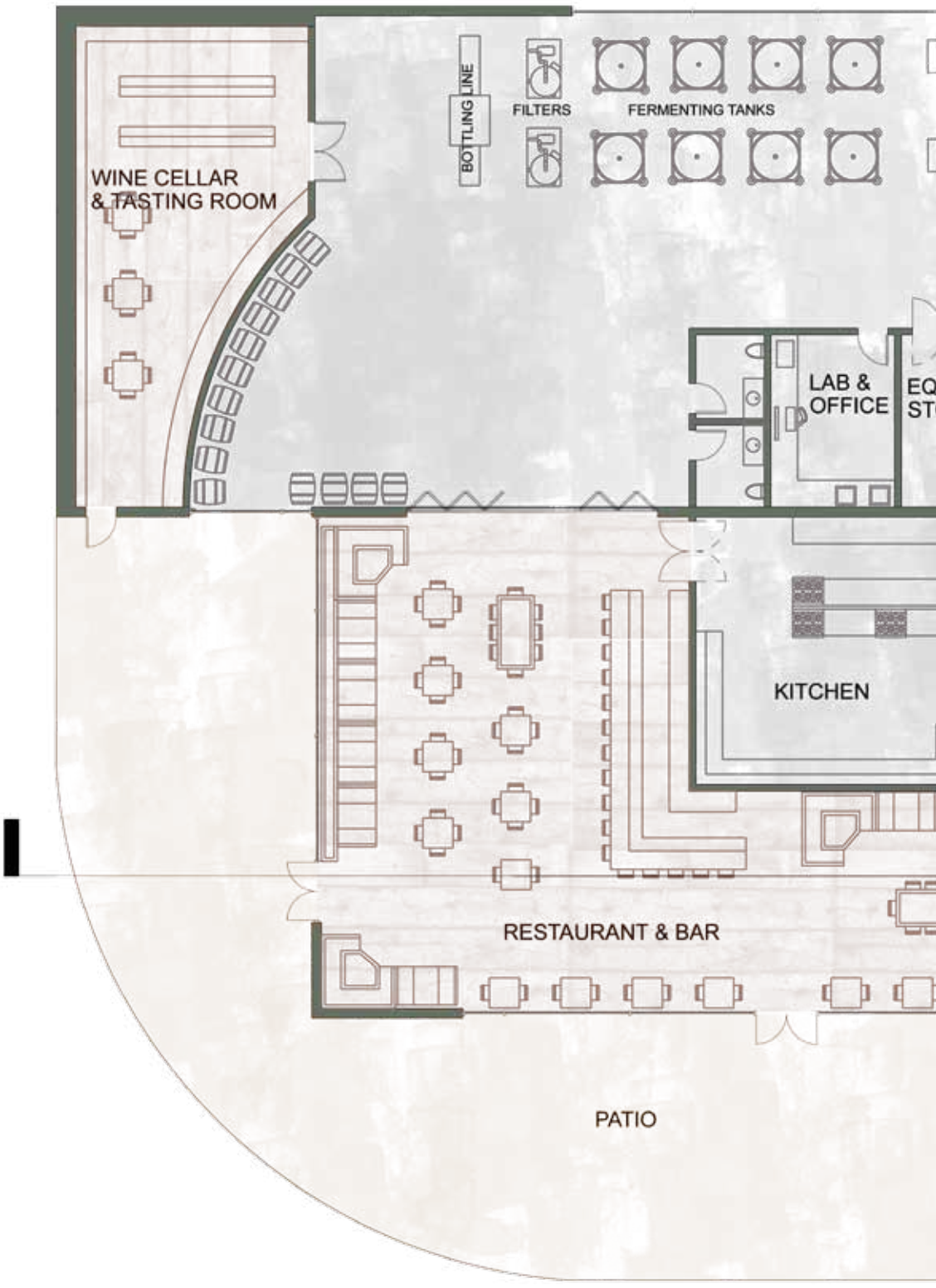
Final Solution

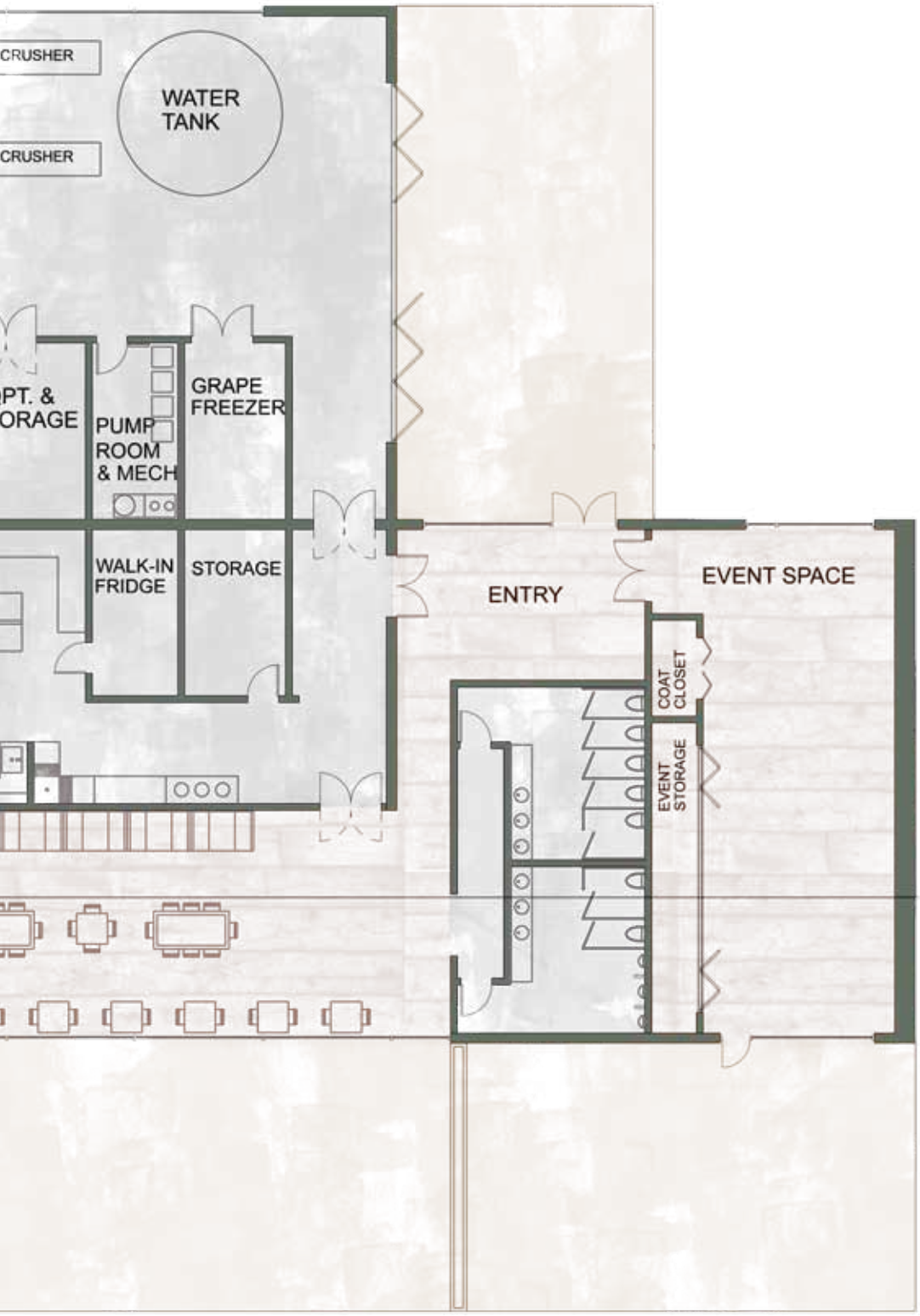
Display

Site Plan

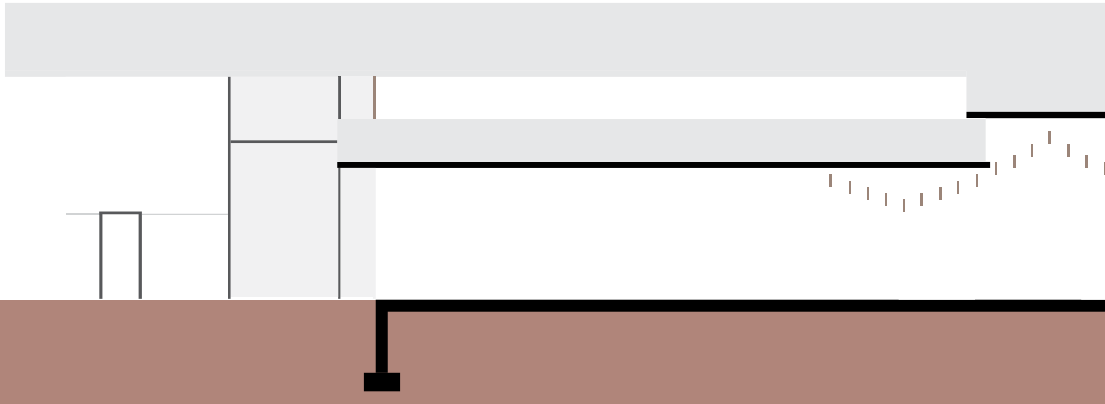
Exterior Renderings

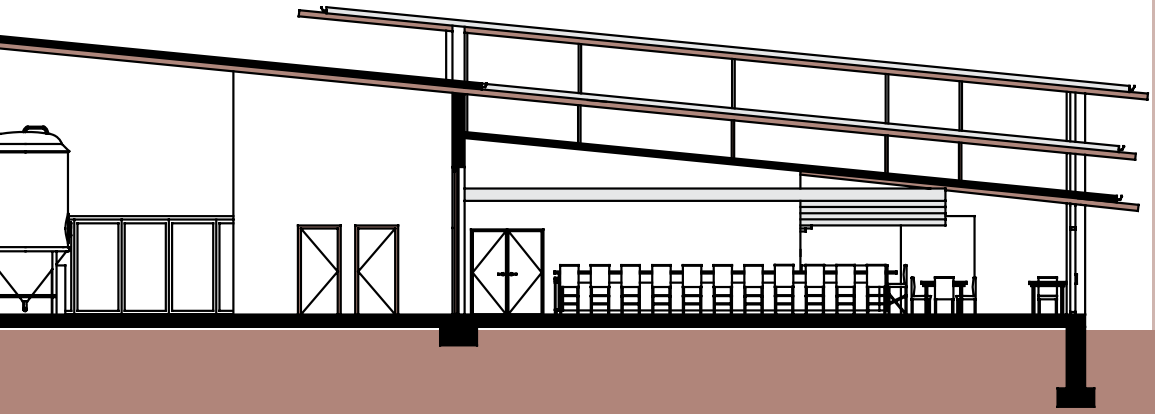
Floor Plan

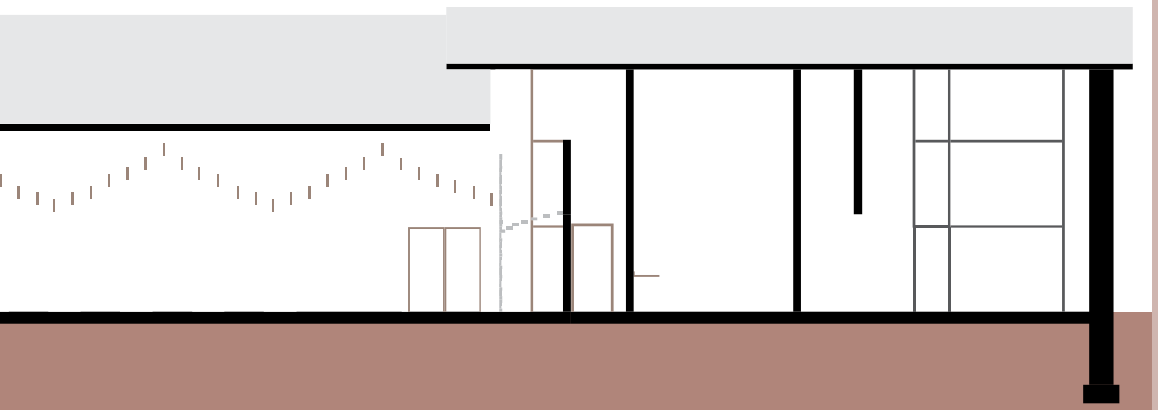

WINE CELLAR
& TASTING ROOM
BOTTLING LINE
FILTERS
FERMENTING TANKS
LAB &
OFFICE
KITCHEN
RESTAURANT & BAR
PATIO


CRUSHER
WATER TANK
CRUSHER
PT. &
ORAGE
PUMP ROOM & MECH
GRAPE FREEZER
WALK-IN FRIDGE
STORAGE
ENTRY
EVENT SPACE
COAT CLOSET
EVENT STORAGE
1

Sections



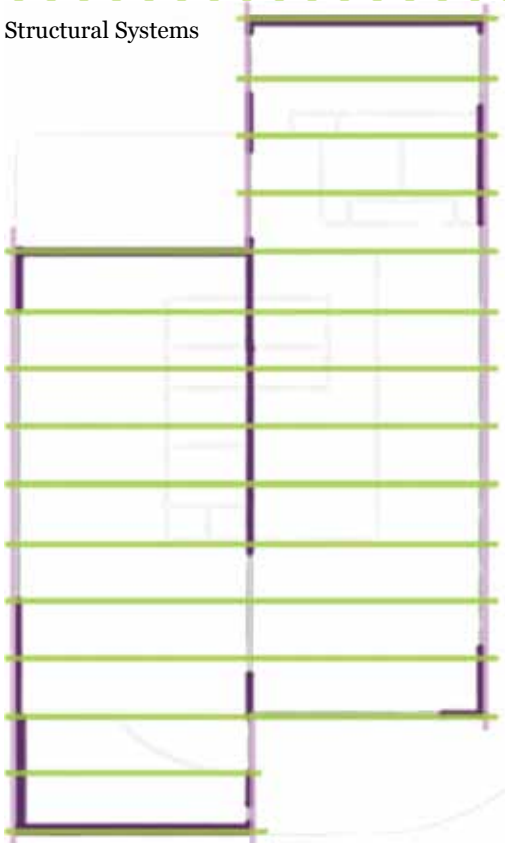




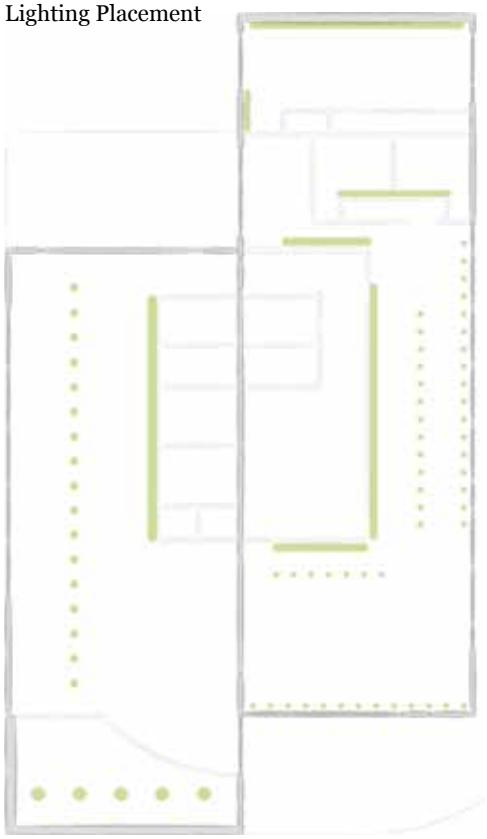
See

The visual aspect of architecture is perhaps the most utilized of the senses, however, it can also be taken for granted. Sight often reinforces our other senses. Shadows, light and texture help to inform and create a unique and interesting experience within architecture. Much like wine, architecture and buildings age, and either could turn good or bad. The aging process of this winery has been taken into careful consideration. Permeable paths and patio will allow the site to continue to thrive. Vines will be encouraged to grow along certain walls, allowing for the architecture and wine to merge.

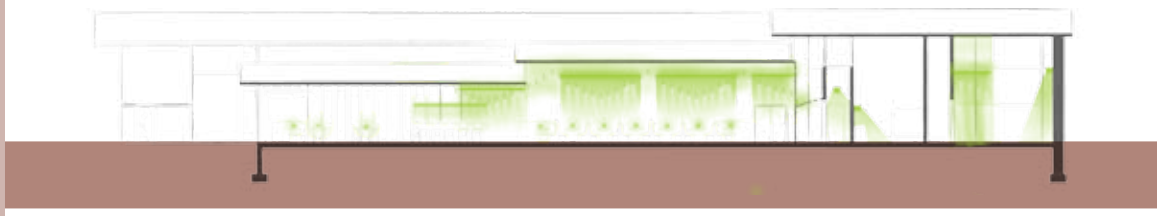
Structural Systems



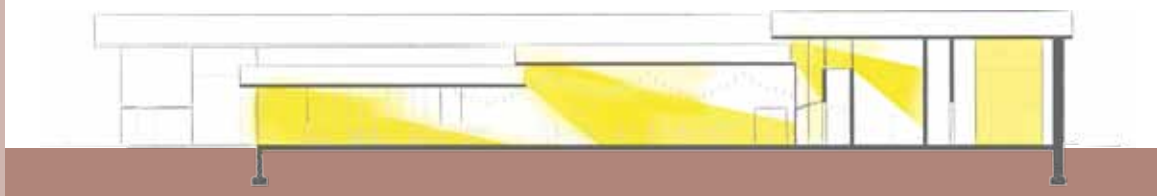
Lighting Placement



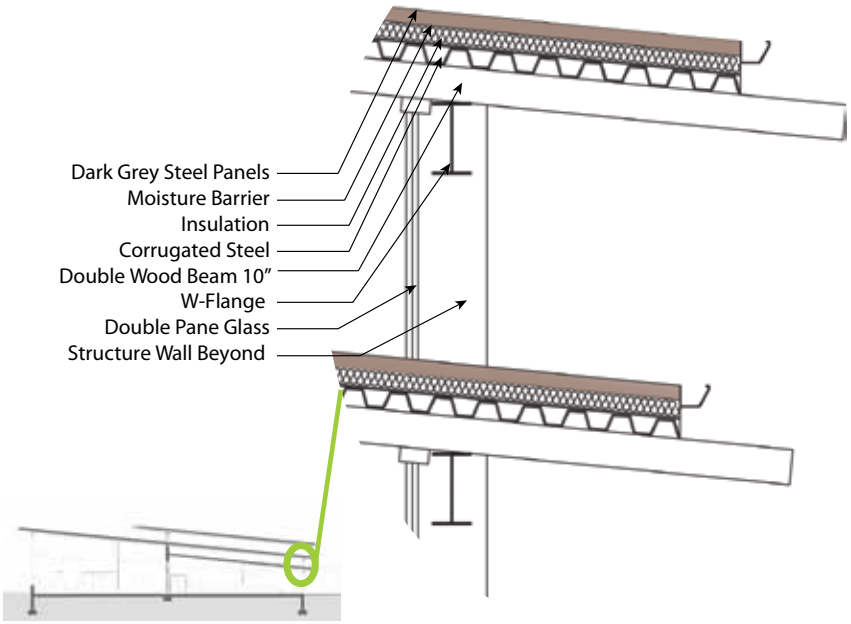
Artificial Lighting



Natural Lighting

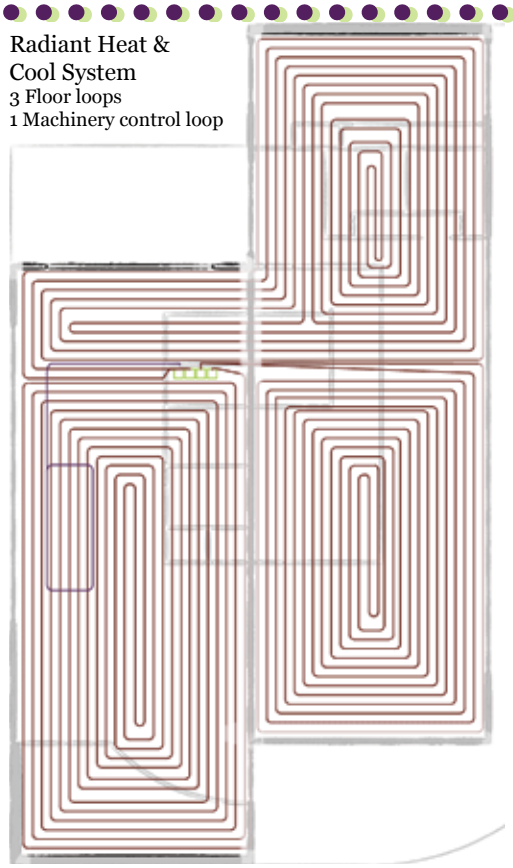


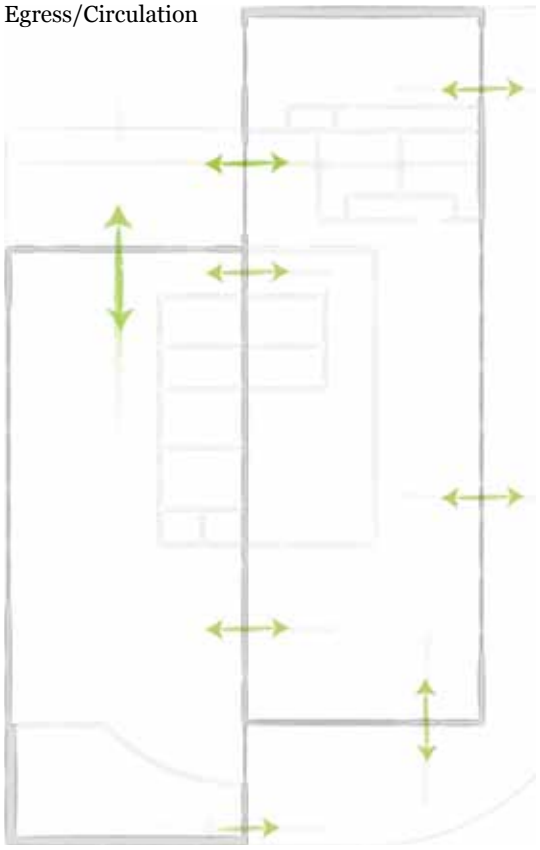
Roof Detail

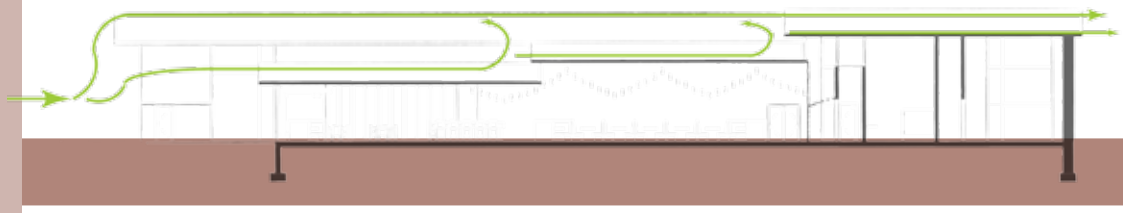

Dark Grey Steel Panels
Moisture Barrier
Insulation
Corrugated Steel
Double Wood Beam 10”
W-Flange
Double Pane Glass
Structure Wall Beyond

Feel

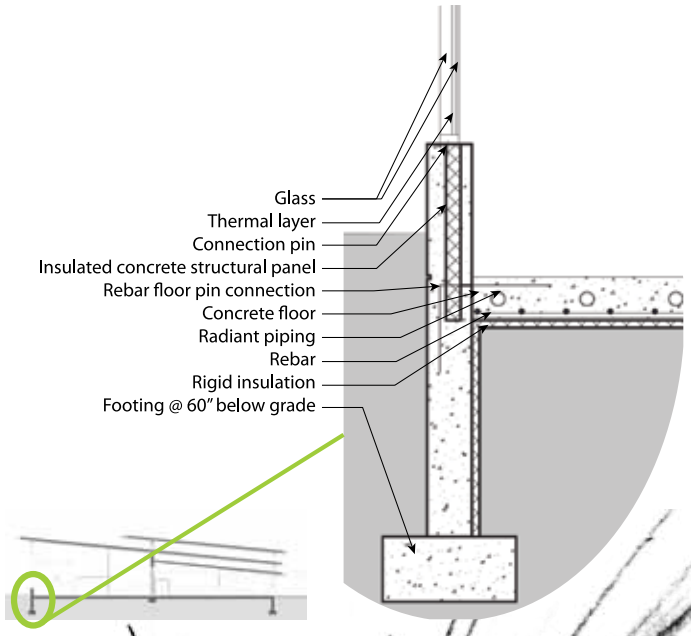
The textures and feel of a building can range anywhere from completely smooth to almost untouchable. To create a moment that forces the user to touch and interact with the building, they are brought from the wide open and airy entry and brought through a low and narrow hall. On one side is a wood wall, made with the varying planks with the wood set at different depths. In contrast to this, the other wall is formed of nearly perfectly smooth concrete, with a simple etch playing off the form of vines. While these textures can be experienced through the whole building in combination with others, such as cork, the moment in entry encourages interaction with the architecture.







Floor Detail

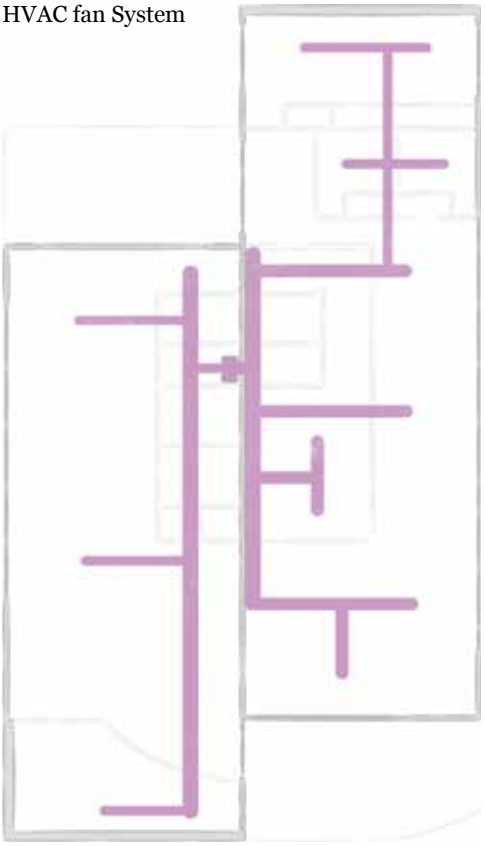


Hear

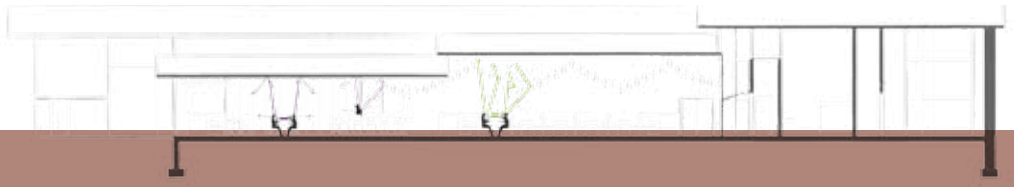
Acoustics are the sound track to architecture. As you approach the building the babbling of the river is the first thing you hear. *Clink* "Cheers!" Clinking of glasses, silverware clanking, and the chatter of people around reverberates through the dining and bar. A glass wall employs a connection to river and echoes the liveliness around the space. In contrast to this, parts of the restaurant portray a more intimate noise level, with cork to absorb, and sound panels to deflect. The materials displayed in winery not only make the spaces unique, but bring traditional wine making aspects such as wood, cork and glass into the architecture.

Sound Panels

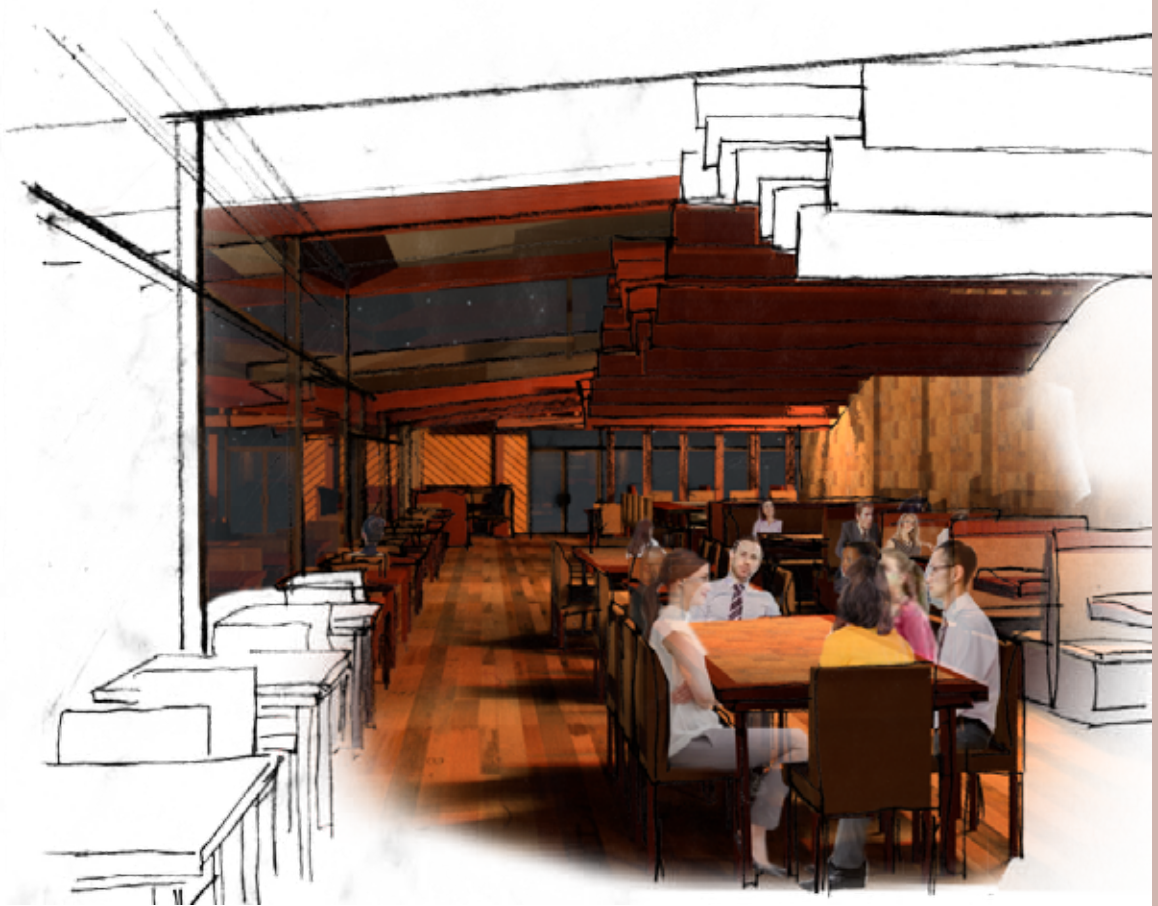
HVAC fan System



Sound Reverberation



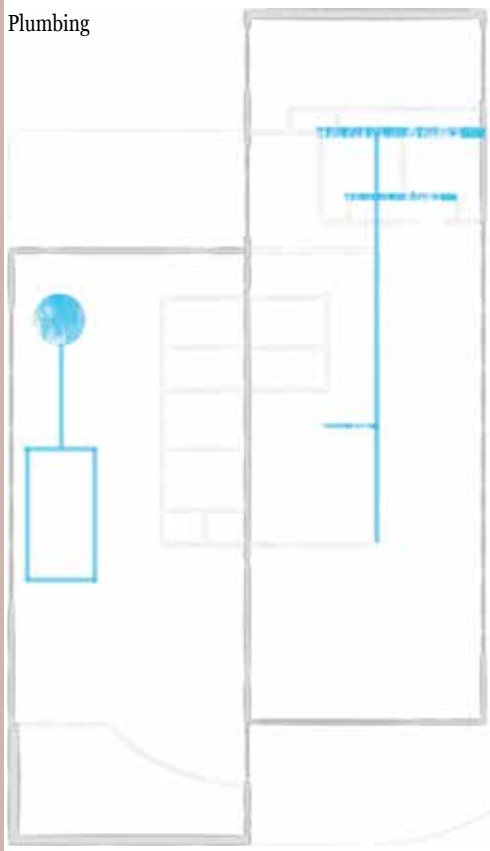

Sound Levels
Quiet
Moderate
Loud



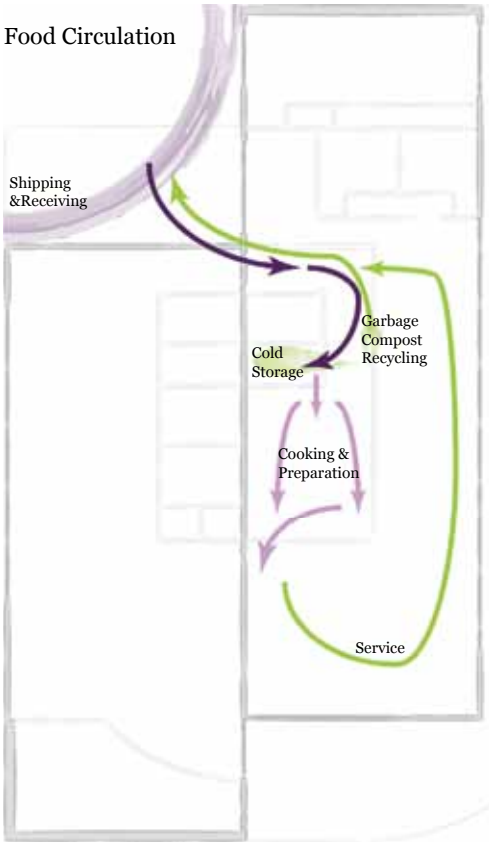
Taste

With taste and architecture, it is important to explore it through more than just the literal. In the dining area there is an interior trellis along the south most curtain wall, growing here are some of the same vines as the vineyard. The guests are able to taste the sweetness and tartness of the grapes that have gone into the wine they are drinking. The psychological experiences of our other senses play a huge part in how we perceive taste. For instance, we associate good smell with good food. Taste also fuses the sensation of touch with the food. The sensory origin of taste is the grape. The fusion of the grape's taste, touch, smell, sound and sight bring the building together.

Plumbing

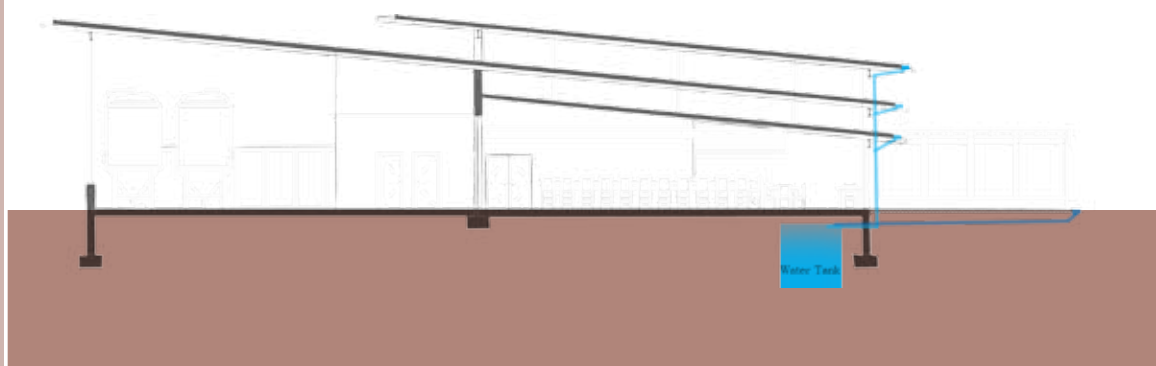


Food Circulation



Vine Seasonal Life Cycle

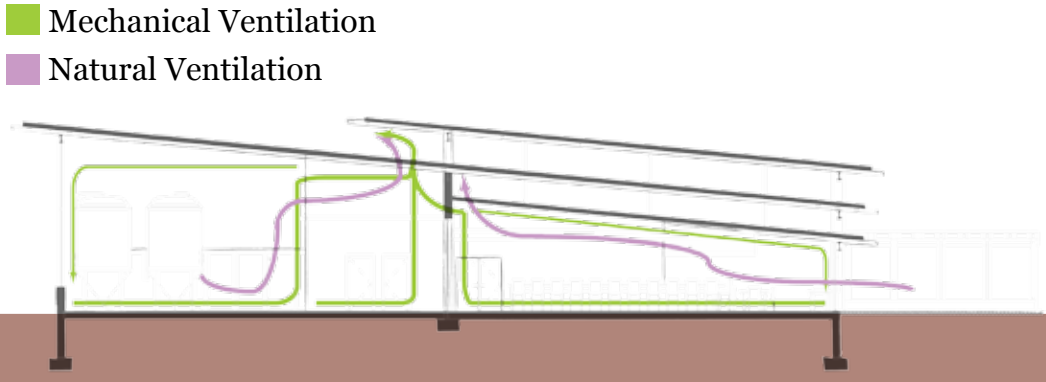
Water Collection



Tasting areas
& Trellis walls

Smell

The olfactory (smell) sense embraces our memories. Imagine the smells of your favorite food wafting from the kitchen, as you enter the building. As you walk through the winery the smell of the cold concrete and metal tanks greats you, and as you continue through the wine process new smells of sweet crushed grapes, and oak surround you. At the heart of the building, lies a wall formed like the curve of a grape, which displays stacked oak barrels. While standing near this wall the rich oak smell, mixed with the perfumes of wine embrace the wine and the architecture as one.




Restaurant Path
Winery Path

References

Allied Works Architecture. (2013, July). Sokol Blosser Winery Tasting Room. Retrieved October 5, 2014, from http://www.alliedworks.com/projects/sokol-blosser-winery-tasting-room/#/overview/1

Architects.Collective. (2010). Weingut Erich Sattler. Retrieved October 10, 2014, from http://www.architectscollective.net/projects

Aroztegui, C., Solovyova, I., & Nanda, U. (2010, January 1). Expressing Sense of Place Through Storyboarding and Animatics. Retrieved December 11, 2014, from http://www.aia.org/aiaucmp/groups/aia/documents/pdf/aiab087181.pdf

Bloomsbury (2013). Wine and culture: Vineyard to glass. Bloomsberg.

Design for all 5 senses. (2013, February 1). Jinsop Lee. Retrieved October 16, 2014, from https://www.ted.com/talks/jinsop_lee_design_for_all_5_senses?language=en

Dialogue Social Enterprise. (2009). Dialogue in the Dark. Retrieved December 11, 2014, from http://www.dialogue-in-the-dark.com/

Esri. (2014). My Map. Retrieved December 4, 2014, from http://www.arcgis.com/home/webmap/viewer.html?useExisting=1

Fine Dining Lovers. (2013, July 17). The Ultimate Wine and Food Pairing Infographic. Retrieved December 3, 2014, from https://www.finediningloversfi.com/blog/food-drinks/wine-and-food-pairing-infographic/

Henshaw, V. (2014, January 6). Smell: Architecture's hidden dimension. Retrieved December 4, 2014, from http://www.bdonline.co.uk/smell-architectures-hidden-dimension/5065549.article

Kirk, D. (2014. Dover Corporation. Retrieved December 6, 2014, from http://www.dovercorporation.com/globalnavigation/our-markets/fluids/pumping-efficiency-from-vine-to-wine

Klinger, P. (2011). Philipp Klinger Photography Portfolio - architecture. Retrieved December 8, 2014, from http://www.klinger-photography.com/portfolio-architecture-4.html

Landy, M., & Graham, N. (2002). Visual Perception of Texture. Retrieved December 3, 2014, from http://www.cns.nyu.edu/~msl/papers/landygraham02.pdf

Lehman, M. (2009, July 16). How Do You Use Texture in Architectural Design - Sensing Architecture by Maria Lorena Lehman. Retrieved December 4, 2014, from http://sensingarchitecture.com/1470/how-

do-you-use-texture-in-architectural-design/

Minnesota Department of Natural Resources. (2014). Aggregate Resource Mapping. Retrieved November 14, 2014, from http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/index.html

Minnesota Department of Natural Resources. (2014). MnTOPO. Retrieved December 4, 2014, from http://arcgis.dnr.state.mn.us/maps/mntopo

Odette Estates Winery . (2013). :: Signum Architecture :: Portfolio. Retrieved October 10, 2014, from http://www.signumarchitecture.com/wineries.html#

Olmsted County Planning Department. (2014). Property Information - Olmsted County, MN. Retrieved November 12, 2014, from https://gweb01.co.olmsted.mn.us/Flexviewers/PropertyInfoPublic/

Onboard Informatics. (2013). Rochester, Minnesota. Retrieved November 12, 2014, from http://www.city-data.com/city/Rochester-Minnesota.html

Pallasmaa, J. (2005). The Eyes of the Skin: Architecture and the Senses. Chichester: Wiley-Academy.

Pliska, D. (2013). Architecture Drawings. Retrieved December 7, 2014, from http://www.feeldesain.com/architecture-drawings.html

Port Phillip Estate Winery / Wood/Marsh. (2010, October 25). ArchDaily. Retrieved October 13, 2014, from http://www.archdaily.com/84032/port-phillip-estate-winery-woodmarsh/

Puckette, M. (2013, October 15). History of Wine Timeline (Infographic) | Wine Folly. Retrieved December 10, 2014, from http://winefolly.com/update/history-of-wine-timeline-infographic/

Rochester, Minnesota - Sunrise, sunset, dawn and dusk times for the whole year - Gaisma. (2002). Retrieved November 14, 2014, from http://www.gaisma.com/en/location/rochester-minnesota.html

Sattler Winery / Architects Collective. (2010, April 19). ArchDaily. Retrieved October 10, 2014, from http://www.archdaily.com/53125/sattler-winery-architects-collective/

Shams, L. (2011, December 9). Study: Hearing and sight are deeply intertwined. Retrieved December 3, 2014, from http://www.news-medical.net/news/20111209/Study-Hearing-and-sight-are-deeply-intertwined.aspx

Shorland, K. (2010, July 12). HEARTICLES: Articles with Heart. Retrieved December 8, 2014, from http://hearticles.blogspot.com/2010/07/importance-of-senses.html

Saieh, N. (2012, September 4). Venice Biennale 2012: Architecture and its Affects / Farshid Moussavi. Retrieved December 10, 2014, from http://www.archdaily.com/269585/venice-biennale-2012-farshid-moussavi/

SIRC. (1998, March). Social and Cultural Aspects of Drinking. Retrieved December 10, 2014, from http://www.sirc.org/publik/social_drinking.pdf

Small, D. (2008, April 2). How Does the way Food Looks or its Smell Influence Taste? Retrieved December 3, 2014, from http://www.scientificamerican.com/article/experts-how-does-sight-smell-affect-taste/

St. John, B. (2013, June 12). Wine and the senses. Retrieved December 7, 2014, from http://articles.chicagotribune.com/2013-06-12/features/sc-food-0607-wine-senses-20130612_1_french-red-burgundy-pinot-noir-wine

Sveiven, M. (2011, January 26). Bruder Klaus Field Chapel / Peter Zumthor. Retrieved December 10, 2014, from http://www.archdaily.com/106352/bruder-klaus-field-chapel-peter-zumthor/

Tasting Room at Sokol Blosser Winery / Allied Architecture. (2014, January 3). ArchDaily. Retrieved October 8, 2014, from http://www.archdaily.com/463414/tasting-room-at-sokol-blosser-winery-allied-works-architecture/

United States Department of Agriculture. (2013, December 6). Web Soil Survey. Retrieved November 12, 2014, from http://websoilsurvey.nrcs.usda.gov/app/

University of Minnesota. (2010, August 26). Minnesota Solar Suitability Analysis. Retrieved December 4, 2014, from http://solar.maps.umn.edu/

WRCC. (2014, January 1). Station Wind Rose Climatology. Retrieved December 11, 2014, from http://www.wrcc.dri.edu/cgi-bin/wea_windroseclim.pl?laKRST

Zumthor, P., & Turner, M. (2006). Thinking architecture (2nd, expanded ed.). Basel: Birkhäuser.

Previous Studio Experience

Fall 2011

Professor: Darryl Booker
Tea house - Fargo,ND
Boathouse - Minneapolis, MN
"This studio taught me the basics of designing by hand and creativity through inspiration."

Spring 2012

Professor: Joan Vorderbruggen
Birdhouse Competition - 1st prize
"Best interpretation of the Architect"
Dance Studio - Moorhead, MN
Dwelling - Marfa, TX
"This studio helped to bring beauty into my designs and drawings. I also learned the importance of using teachers and classmates for help"

Fall 2012

Professor: Frank Kratky
United Faith Church Remodel - Fargo, ND
"First project designed in sketchup. I learned how much information can be shown through diagraming a building."

Spring 2013

Professor: Steve Martens
Brewery - Fargo, ND
Dinosaur Museum - Bad Lands, ND
"First project designed in Revit. Helped to teach us working in groups. The studio focused on using a variety of structural systems including concrete, and steel."

Fall 2013

Professor: Don Faulkner
Highrise - San Francisco, CA
"An important project in learning group work as well as comprehension, and structure."

Spring 2014

Professor: Paul Gleye
Semester Abroad - Brussels, Belgium
MASUI Redevelopment - Belgium - Urban Planning
"Personally one of my favorite semesters. Being in Europe taught me to consider other cultures and senses when looking and designing buildings."

Fall 2014

Professor: Regin Schwaen
Hello Nature Competition - Sweden
"This semester combined an important concept of working in teams and creating a unique idea for a design."

Spring 2015

Professor: Mike Christenson
Design Thesis - Rochester, MN
"This final design is a comprehensive design and a chance to showcase our creativity and everything learned through our 5 years at NDSU"

Chelsea M. Lenz


Figure 22.0

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Home Town
Rochester, MN

"NDSU has been our home away from home. We've survived difficult projects and sleepless nights, but have come out the other side as successful architecture students with priceless memories and lifelong friends."