

**Experience Choreographed Through Light:**

Exploring the Emotive Nature of Daylighting

A Thesis

Submitted to the

Faculty of Miami University

In partial fulfillment of

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Master of Architecture

Department of Architecture and Interior Design

By

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## **Experience Choreographed through Light:** Exploring the Emotive Nature of Daylighting

Elizabeth Nahrup  
April 15<sup>th</sup> 2013  
4:20-5:05 Atrium



I would like to thank my family, both immediate and to-be, for all of their  
love and support throughout this process.

To my parents for always believing in me and encouraging me to follow my dreams,  
even though these dreams lead me far from home.

And to Damon, for loving and encouraging me through the all the late nights and stressed filled  
weeks and never letting me give up on myself. For these reasons and so many more, I love you.

It is because of you that I have accomplished what I have today, and I am a better person for it.



# **Table of Contents**

Thesis Questions(s)

Written Thesis Document

Process Work:

Site Analysis

Climate Data

Site Photos - Both Sites

Yellow Springs: 321 Xenia Avenue Site Information

John Bryan State Park Site Information

General Process Work

Yellow Springs Site

John Bryan State Park Site

Final Design - Presentation Documents

Conclusion

\* Site Experience Videos may be found on disk





## **Thesis Question(s):**

Can light invoke an emotional experience for the occupant of a space? And, used as a material to enhance the experiential quality of space, can lighting be the foremost strategy in the design process?



## **ABSTRACT**

Winston Churchill once said, "First we shape our buildings, thereafter, they shape us". This speaks both to how we design a building, and to the effect that design has on us. The challenge that is presented to us as architects is to develop a design concept that combines both the technical and aesthetic requirements of an environment. This may sound simple enough, however designing spaces that are visually intriguing, comfortable, and psychologically satisfying is indeed a challenge. This paper discusses light as the most powerful material and design tool we have as architects, and one that is not always thought of first as a solution to many, if not all aspects of this task. By manipulating light in a way that harnesses moments of tranquility or creates an emotive experience, we transform a space. The intensity, focus, color, and even source of the light, has the ability to change the environment around us. This paper highlights case studies and research of successful spaces and experiences from around the world, challenging some common design practices of today. The relationship of light quality to the quality of our experience of place and space must be considered in the environments we create. How light is used to reveal, reflect, and enhance our environment is in direct relationship to place, culture, and individual needs. If we used natural light as the primary strategy in the design process, it would result in spaces to which we can relate to, experience, and emotionally connect with as participants of an environment, instead of merely occupants.

# Architectural Lighting: Designing the Experience

## INTRODUCTION

As the morning sun rises, its rays filter through the trees bringing light into the A-frame cabin, and the day begins. My grandmother's A-frame cabin is filled with sunlight filtering in through the trees. I have many fond memories of my childhood in this cabin. Even though I was just a child, the most vivid part of my memories there is the sunlight, and how it danced through the cabin. The east wall of the cabin was lined with windows, some which had colored glass hanging in front of them, allowing the sunlight to filter through and fill the living room and the loft. I remember many mornings when the warm sunlight would fill the loft and hit my pillow; this was nature's alarm clock. I would come downstairs to a kitchen table filled with plates of French toast, hot maple syrup and fresh fruit, all bathed in warm light. My grandmother would stand in the kitchen. The sunlight would cast her shadow across the floor as she brewed fresh coffee and squeezed fresh orange juice. In these memories, the sunlight seemed to pour in from what seemed like every direction. To this day, these memories allow me a mental retreat from the everyday, and it is funny how seemingly unrelated moments bring me back to the sun filled cabin.

It is the brief moments when we can mentally escape the everyday happenings of our hectic days that allow us to re-energize, appreciate the space we are in, and truly experience the world around us. Designing spaces that have these types of moments that allow people points of brief mental retreat throughout the day, make for more complex, and engaging spaces that are exciting and welcoming. We

spend the vast majority of our lives inside buildings. From our homes, to schools, church, and work, our buildings are our environments. There are many different opportunities in which to incorporate different types of light into our spaces, and how we are able to manipulate that light is what transforms a space into an experience. Light in its many forms is both powerful and beneficial to the building as a system and more importantly beneficial to its occupants. Light not only affects our mood, and how we see and view things in our everyday lives, but also affects how we as humans connect with a space. Light affects our perception of the world around us. The relationship of light quality to the quality of our experience of place and space must be considered in the environments we create. Therefore, rather than designing lighting for how a building functions, can light invoke an emotional experience for the occupant? And, used as a material to enhance the experiential quality of space, can lighting be the foremost strategy in the design process?

## METHODOLOGY

The lighting described in the experience in the A-frame cabin was merely a portion of the experience. This memory would not be the same or have the same last effect if even one element were absent. All the other aspects that were described in the memory enhanced the lighting, and it is the summation of all these senses that creates the experience. This is not to say that the lighting itself did not and does not play a key role in experiences. The intensity, focus, color, and even source of the light, has the ability to change the environment around us. The smaller pieces of the puzzle are combined to create

moments, which then converge to create an overall experience. These multiple dimensions make up the integral part of the psychological experience, and allow us to connect with the spaces we occupy. Using light to create drama, or evoke a certain mood or create an experience is an art and requires careful attention to detail. The psychological and physical needs must also be the focus of the design. Lighting is not only about tasks and function; there are so many more dimensions to be explored.

In order to establish criteria for designing with natural light, I need to first identify spaces that are intriguing, engaging and offer both psychological and physical benefits to its occupants. I will explore a series of case studies and analyze works of Alvar Alto, Tadao Ando, Lisa Hescong, and others. I will also evaluate a few cultural differences to examine the effects of balancing natural light as well as the impact it has on people within their environment.

### **ARGUMENT**

The experience of our bodies, from what we see, touch, smell, or hear is not anchored in the present, but is recollected through time. The significance of memory in our built environment has been overlooked and cast aside as pure "nostalgia".<sup>1</sup> Memory gives us the ability to extend and enrich our experience of our environment and architecture. It allows us to bring in our emotion and to connect with a place, allowing that space to be set apart and have meaning. Each of us has a different collection of memories that make up our past, and these memories make us unique. Even though we may walk through and see the same building and space, our memories provide a different experience to each of us through recollection of our past. Buildings are a part of our everyday lives, sometimes they affect us emotionally and provide a feeling of joy or happiness, while other seize to

have meaning. Today, many of the new building techniques have detached our relation to the building by eliminating the importance of designing with light. Each building has the ability to offer a unique and profound experience if we can relate to it.

Architects must ask themselves if a design enriches the space and life of the occupant, or if it simply fulfills the basic needs, leaving much to be desired. Everything from the volumes, colors, lights, materials, heights, openings, orientation, reflectance, etc., must be considered.<sup>2</sup> Light is a signal within the human environment that effects physiological and psychological changes within the human body.<sup>3</sup> It is good for us, and sets our biological or circadian rhythms, which are our physical, mental and behavioral changes that are on a twenty-four hour cycle. It gives us a connection to nature, weather, and time of day. Ultimately, it keeps us physically and mentally healthy, and allows us to perform visual tasks. Recent studies have produced hard evidence that daylight in schools improves test scores, and daylight in the workplace improves productivity. There are even studies linking daylight and the boost in sales in retail, as well as recovery time for patients in hospitals. Designing with natural light is not simply an aesthetic. Light is used in many fields to signal and signify many different things. In the theater industry, the light creates drama. It tells us as the audience when the show is about to begin. The lights drop. Within that moment the stage and the mood are instantly set. Light is our cue. Light cues us throughout the day, from sunrise to sunset, and yet somehow it is still taken for granted and dismissed as nothing more than a basic need. Using light as a material to define spaces and relationships, rather than simply as a necessity to accomplish tasks, engages the occupants and has the ability to transform an environment and uses light to its fullest potential. How we use light to reveal, reflect, and enhance our environment is in

direct relationship to place, culture, and individual needs.

### Works of Aalto, Ando & Lisa Heschong

Alvar Aalto was a Finnish architect and one of the greatest names in modern architecture. He felt that architecture should be one with nature, and thus designed his buildings with a humanistic and natural ideal in mind, as well as keeping the site of the building in the foreground of design as well. Natural light is one of the most important and prominent aspects of his works. The Municipal Library at Viipuri, which was originally to be located in an urban setting along a main road, was changed to being located within a park. This change allowed light into the building on all sides. Aalto took the simple box form and used conical skylights, about six feet in diameter, to give the spaces a more uniform and diffuse light without the distraction and glare usually given off by normal view windows.<sup>4</sup> The artificial lighting within the library was placed between the skylight openings, following the same principles as the daylighting, which was designed to fall on the work plane or books diagonally and from all directions to prevent shadows.



**Figure 1:** View of Skylights in Viipuri Library  
The Mount Angel Abbey Library, in Salem, Oregon is one of Aalto's most peaceful and spiritual works also uses cool northern diffuse lighting techniques throughout the layered space, filling the chamber-like space with light,<sup>5</sup> through clerestory

windows. The clerestory windows have the added benefit of shielding the space from the heat of the summer but allowing light into the space during the winter months.



**Figure 2:** View of skylights in Mount Angel Library

Tadao Ando, a self-educated architect from Japan, completed The Church of the Light in 1989, in Ibaraki, Japan. This church is a concrete rectangular box, which is then sliced at a fifteen-degree angle by a freestanding concrete wall that separates the entrance from the chapel itself. This creates a threshold between the exterior and the interior sacred spaces. His work demonstrates the importance of the connection between nature and architecture through his use of light versus dark, and solid versus void, to define spaces and relationships. This simplistic and minimalistic way in which he designed this church created an unadorned space inside. The only ornament is the joinery of the concrete, which aligns perfectly with the cross extrusion on the east side of the church. This allows the light to pour in during the early morning hours and on into the day. The orientation of the church was derived from the direction of the sun. As one enters the space, the light penetrates the darkness of the volume through a

cross that is cut out of the alter wall. This contrast of light and dark "raises the occupants awareness of the spiritual and secular within themselves."<sup>6</sup>



**Figure 3:** The Church of the Light

*"Light is the origin of all being. Light gives, with each moment, new form to being and new interrelationships to things, and architecture condenses light to its most concise being. The creation of space in architecture is simple the condensation and purification of the power of light."*

In Ando's work, one can see both the absence of light and the manipulation of light to transform, what would be a dull and dark space, into something that is extraordinarily powerful, and meaningful. He used light as a building material to define the space, not simply as a necessary element to illuminate the space.

Lisa Heschong takes a different approach to the human needs within architecture

and the built environment. She discusses architecture in a new way in her book, *Thermal Delight in Architecture*. She begins by discussing the necessity of thermal comfort within architecture and then compares it to nutritional needs of human beings. She states, "Food is as basic to our survival as is our thermal environment."<sup>7</sup> This same argument can be made for the need for natural light within our environments. She then continues the comparison of food to the thermal comfort when she discusses "a proper gourmet meal."<sup>8</sup> Our qualities of light within our environments should be likened to a gourmet meal in the sense that it has a wide variety of qualities, like the meal has a wide variety of flavors to ensure our senses do not become over saturated so they can experience each flavor or quality anew. Picture a sequence of rooms, each with different qualities of light. As you travel down a hallway and come across the first room, it is mostly dark, but for a small incandescent lamp glowing in the corner. The second room is bright, but lit solely by fluorescent lights from the ceiling above. The third room is bathed in sunlight cascading in from the South facing windows that cover the far wall. The fourth and final room is lit by windows that allow for both sun and shadow to fill the room by directing the sunlight from the windows upward to reflect off the ceiling and control glare. Each of these rooms you imagined has a function and a particular quality of light. Each has its own advantages and disadvantages, but together create an experience. The sunlight lets in warmth, the shadows or darkness allow for cool moments and picturing yourself in each of those spaces invokes a particular feeling. In the words of Lisa Heschong, "The most vivid, most powerful experiences are those involving all of the senses at once."<sup>9</sup>

### **The RAAS Hotel, India and The Church in the Rock, Finland**

A person's perception is related to their past experiences and surroundings.

Natural light can have a different connotation depending on the geographical region and culture. In some parts of the world, daylight is harsh and overpowering, and in other parts sunlight is sparse and rare, so the little that people do see is cherished and celebrated. These differences help to define the building culture in many parts of the world. In Finland, building is an art form. Natural light must be addressed in a very different way due to the scarcity of it, therefore providing illumination into interiors and incorporating nature into designs, if done well, is an art. Climate and seasons are much different than that of North America, their summers bring long hours of sunshine, even into the midnight hours, and winters bring extended periods of darkness. This is what defines the building culture in Finland. In the article, "Lighting up the North", Henry Plummer describes how light is used as a design tool, "Finnish architects pioneered a new kind of space in harmony with the low sun and dim dusk"<sup>10</sup>—creating a mood. They accept the shifting season and weather and incorporate it into their buildings, allowing even the most faint light to play a key role through the use of materials. The Northern Light is something that helps the Finn understand their place and who they are as a people. It helps them be fully human and restores the spiritual dimension of life. Plummer is telling a story of another land and the richness of their culture and poetic aspect of their natural light. The designers of these spaces conducted vast amounts of research and case studies, looking at works by Alvar Aalto and Erik Bryggman to determine the best ways to bring light into the spaces and create moods and spiritual experiences for its inhabitants. This same idea can be applied to a climate and culture such as Iran or India. Daylight is used and designed in reaction to the culture and climate. The angle of the sun in Iran forces buildings or dwellings to have a series of exterior to interior rooms to filter in the natural light, yet not blocking it out entirely. The RAAS hotel is a

wonderful example of the manipulation and filtering of the light to create stunning moments for the guests that produce an emotive experience. They build their structures to be able to block out the heat of daylight, but still absorb and store the heat in the walls to be released into the interior space at night when it is needed for the cool hours, a process also known as thermal storage. Natural light and how it is used within the building environment is heavily driven by culture and climate.



**Figure 4:** RAAS hotel room

In contrast to the RAAS Hotel, there is The Church in the Rock, in Finland. The climate and seasons are much different than that of Iran and North America, as previously discussed, instead of needing to be shielded from the sunlight, they must harness and capture the light. Light, to them, is in itself an experience, and the ways in which they manipulate and use it as a material impact them in many ways. The Church in the Rock was literally built into rock, but still its interior is bathed in natural light, which enters from the glazed dome above.<sup>11</sup> As one can see, the light filtering in through the colored glazing transforms the interior of the church, and creates different responses and emotions for the occupants.





**Figure 5:** TempPELLIAUKIO Church (“Church in the Rock”)

In both the RAAS Hotel and the Church in the Rock, as well as the other examples we have looked at, one can see the effects and importance of light. The balancing, manipulating, and use of light to create drama, or sequence for the occupants, transforms the spaces into experiences.

### DISCUSSION

Architects, developers, engineers, designers, and the public involved with making decisions about the design and construction of our environment we live in, have made assumptions regarding the type of experiences our society does or does not need or perhaps want within our spaces. Light can be used to develop functional spaces within a design, create links to and from other spaces, delineate one area from another, create ambience, and even emphasize architectural features. How we design our environment must change to a conscious effort of collaboration between disciplines to create enjoyable experiences, emotive moments, and impact us as human beings.

Most judge architecture by its external appearance, though there is indeed much more. Every building has an interior, and the interior is just as critical, and has equal impact on the overall experience of the building as the exterior. Architecture is experienced with the entire body, not only with the eye, but also through the

understanding of materials and the scale of the space. Therefore, it is natural that each experience and perception is as unique as the individual. We ultimately design experience, but we do not control it. We decide if the place is going to attract the occupant or users’ attention or if it is to fade into their subconscious. Introducing natural light into a building or space that does not generally receive vast amounts of daylight creates an unexpected experience, which is exciting and yet still fulfills needs.

From the examples of both the RAAS Hotel and the Church in the Rock, one is able to see why cultural differences effect one’s perception or interpretation of a space. If a person is brought up in a hot and arid climate such as Iran where the built environment is designed as a layered to filter the light in order to protect its occupants from the heat and rays of the sun, then darker rooms with controlled amounts of light to them are viewed as a cool, comfortable and as a welcoming space. In contrast, if a person from a much different climate with cooler temperatures, such as Finland, were to enter these spaces in their cooler climate, they would most likely view them as gloomy, depressing, and even unpleasant. Culture plays a key role in design, whether it is a person’s cultural background or the culture or climate we are designing in, it changes the approach, but not the need to create impactful spaces and architecture.

Designing with light is not simply an aesthetic, however, it can create one. It can be a purposeful design decision that is advantageous to the occupants of the building. In the town of San Pedro in the Philippines, electricity is expensive, and impractical during the daytime hours.<sup>12</sup> The people of this town use simple tools to harness natural light. They have developed a way to bring in a natural resource in order to work for them, instead of against them. They use old Coke bottles filled with water and chlorine, which are inserted through their roofs to filter

sunlight into their dark homes, without added heat or the use of electricity. This simple solution, using natural light, has an enormous impact on this community. Perhaps this does not measure up to the emotive quality of light created by Ando in the Church of Light, but to the people in this village that no longer live in darkness, the light has impact and meaning.

## CONCLUSION

Light is the most powerful material and tool we have as architects. The importance of light has always been recognized, however it has not been carefully considered and studied within architecture to provide not only illumination, but to create a visual and mental experience, an ambiance, and a space that impacts us. The challenge that is presented to us is a design concept that combines both the technical and aesthetic requirements of an environment. Designing spaces that are visually intriguing, comfortable, and psychologically satisfying by simply manipulating light in a way that harnesses moments of tranquility or creates an emotive experience like in the A-frame cabin, produces meaningful and poetic spaces and environments. Architecture is for nothing if its occupants are not considered in the design process. People matter and without people, we would have no reason to have architecture. Technology has enabled many new ideas that are able to be implemented in construction and design to be more efficient, yet sometimes these methods and technologies are compromised or sacrificed for upfront financial reasons, and creative solutions are most often overlooked due to the presumed cost. Sometimes, a creative and "out of the box" lighting solution can end up being the most simple of solutions, and ultimately the most satisfying. Simply providing light because it is needed, and not considering the power and effect it has on the space is like buying the best computer in the world with the most up to date technology and

simply using it for email. Light has so many more possibilities, we just need to unleash it and use this material to its fullest potential. Using our resources to create not only environmentally friendly buildings, but also environments that are enjoyable to inhabit and offer physical and mental advantages as well as experience to its occupants, should be the goal. Light is a signal within the human environment that effects physiological and psychological changes within the human body.<sup>13</sup> In 1943, Winston Churchill said, "*First we shape our buildings, thereafter, they shape us*". This statement speaks both to how we design a building, and to the effect that design has on us. It is the impact the design has on us that should concern us and draw our attention. Our design focus should include the emotive experience and the impact the light has on us as human beings. The design portion of this thesis will work to incorporate elements of lighting, which will ultimately create a visually inspiring environment that integrates the emotive quality of light into a building typology that promotes the importance of light within architecture.

## NOTES

### Figure References

Figure 1: <http://www.worldarchitecturemap.org/buildings/viipuri-library> (accessed July 17, 2012)

Figure 2: <http://dome.mit.edu/> (accessed, August 5, 2012)

Figure 3: <http://www.archdaily.com/101260/ad-classics-church-of-the-light-tadao-ando/> (accessed, July 22, 2012)

Figure 4: <http://www.yatzer.com/RAAS-Hotel-Jodhpur-India-yatzer> (accessed, April 10, 2012)

Figure 5: <http://www.gofinland.org/temppeliaukio-church-church-built-in-rock/> (accessed, April 20, 2012)

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- <sup>2</sup> Elkadi, Hisham and Al-Maiyah, Sura. Dec. 2007. Daylight for Strategic Intervention in Historic Towns: The Cases of Cairo and Edinburgh. *Journal of Urban Technology*. v.14 issue 3: p. 83-102
- <sup>3</sup> National Institute of General Medical Sciences, "Circadian Rhythms Fact Sheet", accessed March 18, 2012, [http://www.nigms.nih.gov/Education/Factsheet\\_CircadianRhythms.htm](http://www.nigms.nih.gov/Education/Factsheet_CircadianRhythms.htm)
- <sup>4</sup> Paco Asensio, ed., *Alvar Aalto* (New York: teNeues Publishing Company, 2002), 16-21
- <sup>5</sup> Michael Trencher. *The Alvar Aalto Guide*, (New York: Princeton Architectural Press, 1996) p. 225
- <sup>6</sup> Andrew Kroll, "AD Classics: Church of the Light/Tadao Ando" *Arch Daily*, January 6, 2011
- <sup>7</sup> Lisa Heschong. *Thermal Delight in Architecture*, (Cambridge: The MIT Press, 1979) p.17
- <sup>8</sup> Lisa Heschong. *Thermal Delight in Architecture*, (Cambridge: The MIT Press, 1979) p.19
- <sup>9</sup> Lisa Heschong. *Thermal Delight in Architecture*, (Cambridge: The MIT Press, 1979) p.29
- <sup>10</sup> Plummer, Henry. 2000. Lighting Up the North. *Architectural Review*. v.207 issue 1237: p. 70-73
- <sup>11</sup> "Temppeleaukio Church: Church Built in Rock", accessed April 24, 2012, <http://www.gofinland.org/temppeleaukio-church-church-built-in-rock/>
- <sup>12</sup> "CCTV-9 Report: Solar Bottle Lights in the Philippines", accessed April 25, 2012, <http://www.youtube.com/watch?v=SBWi3NtND68>
- <sup>13</sup> National Institute of General Medical Sciences, "Circadian Rhythms Fact Sheet", accessed March 18, 2012, [http://www.nigms.nih.gov/Education/Factsheet\\_CircadianRhythms.htm](http://www.nigms.nih.gov/Education/Factsheet_CircadianRhythms.htm)

## **Process Work**

## **Site Analysis**

## **Climate Data**

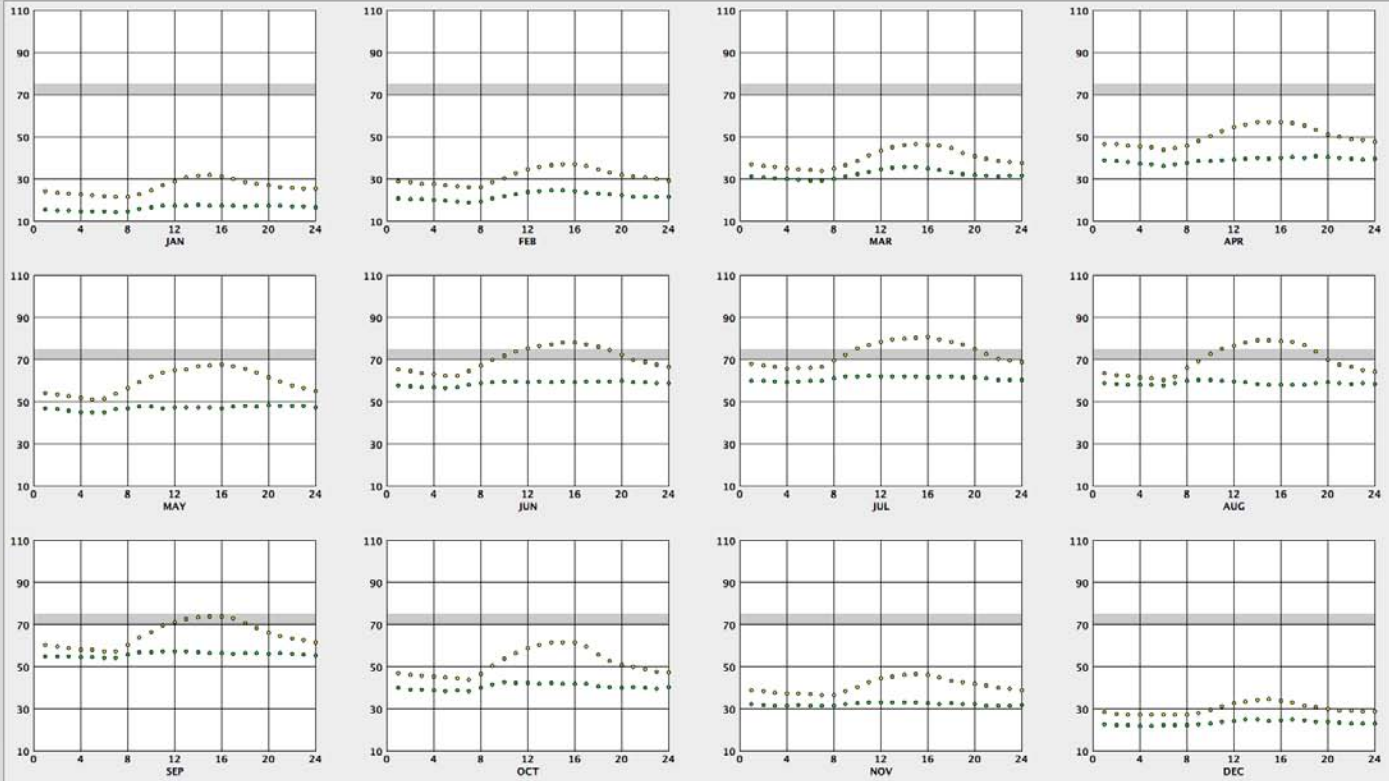
DRY BULB X DEW POINT

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LEGEND

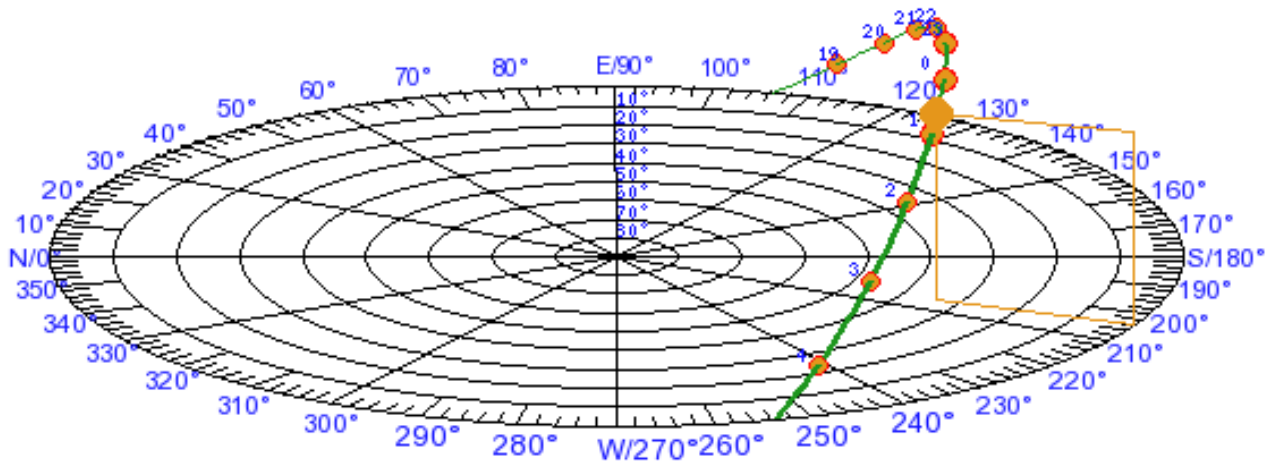
- Dry Bulb
- Dew Point
- Comfort Zone

TEMPERATURE RANGE:  
 10 to 110 °F  
 Fit to Data



Sun:

Local Time: 0:40 10/27/2012:  
 Azimuth = 204.1°  
 Elev. = 34.07  
 Equ. of Time = 16:8 min:sec  
 Sunrise: 18:00:52  
 Sunset: 4:37:30



**SUN SHADING CHART**

**LOCATION: DAYTON, OH, USA**  
 Latitude/Longitude: 39.9° North, 84.22° West, Time Zone from Greenwich -5  
 Data Source: TMY2-93815 745700 WMO Station Number, Elevation 1003 ft

**LEGEND**

- **WARM/HOT > 75°F**  
 (SHADE NEEDED)  
 264 Hours Exposed  
 0 Hours Shaded
- **COMFORT > 70°F**  
 (SHADE HELPS)  
 151 Hours Exposed  
 0 Hours Shaded
- **COOL/COLD < 70°F**  
 (SUN NEEDED)  
 2095 Hours Exposed  
 0 Hours Shaded

**PLOT MONTHS:**

WINTER SPRING

December 21 to June 21

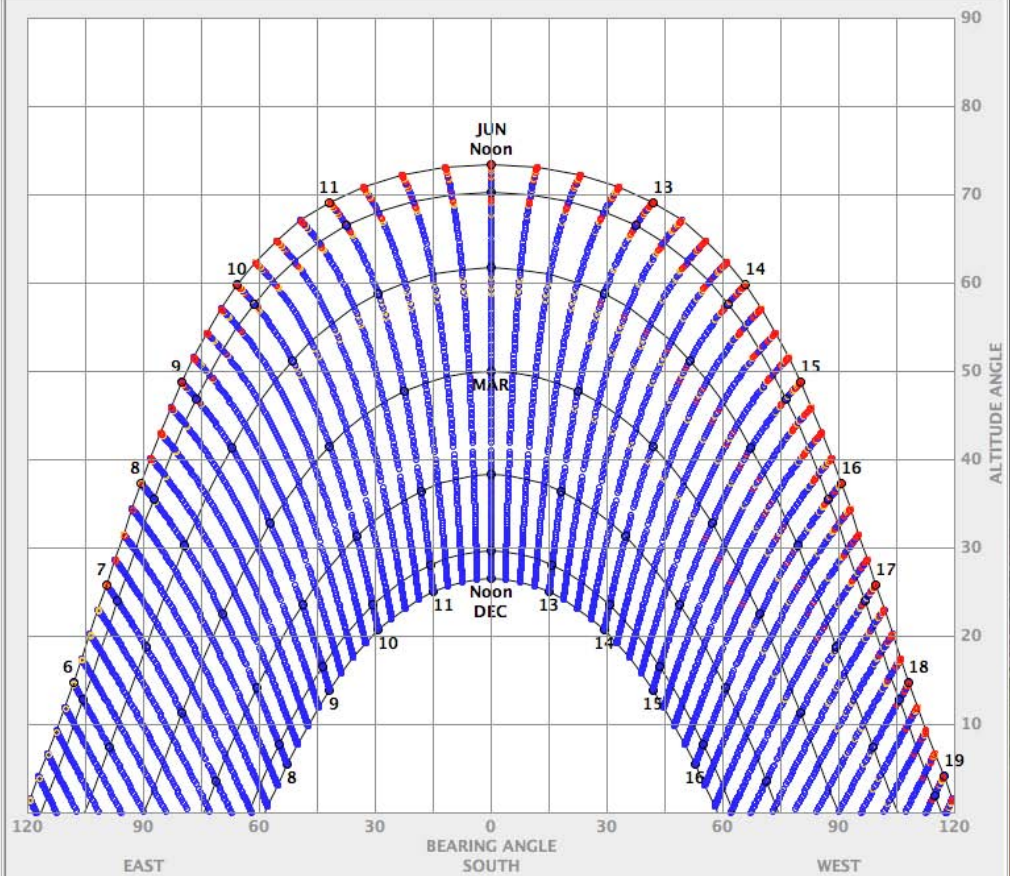
SUMMER FALL

June 21 to December 21

Display Grid

Display Shading Calculator

Display Obstruction Elevation



**SUN SHADING CHART**

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 Latitude/Longitude: 39.9° North, 84.22° West, Time Zone from Greenwich -5  
 Data Source: TMY2-93815 745700 WMO Station Number, Elevation 1003 ft

**LEGEND**

- **WARM/HOT > 75°F**  
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 2095 Hours Exposed  
 0 Hours Shaded

**PLOT MONTHS:**

WINTER SPRING

December 21 to June 21

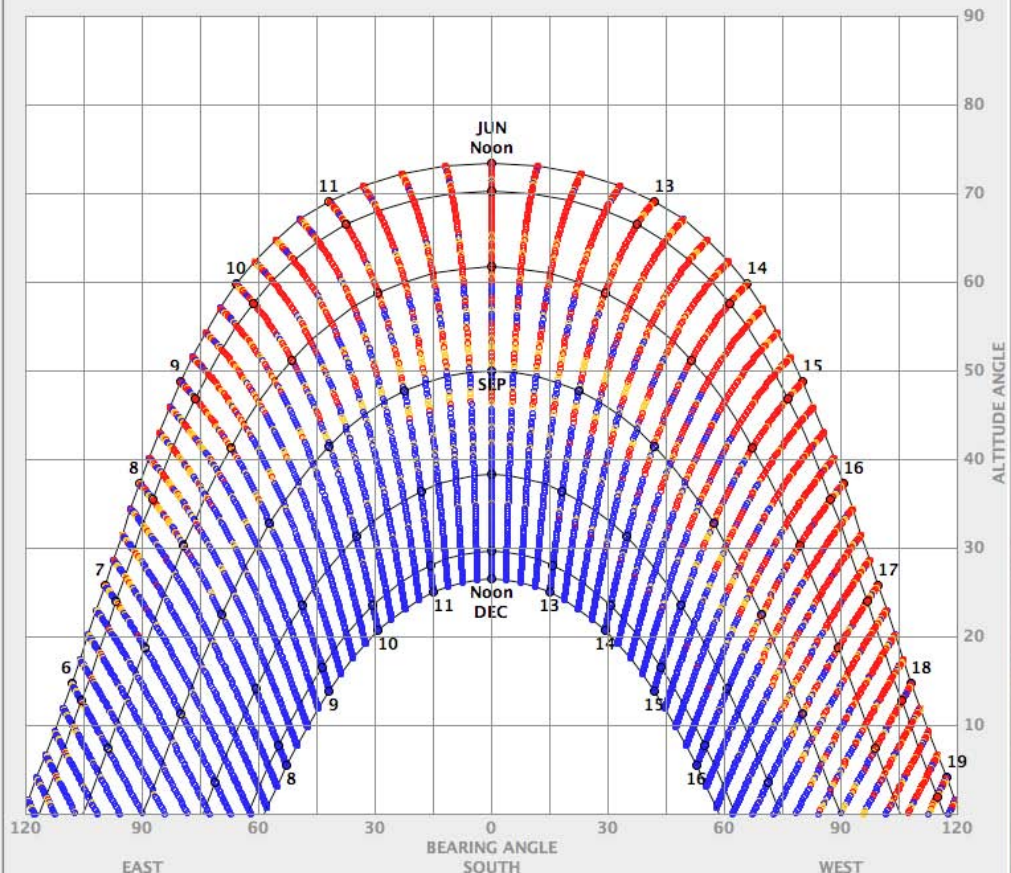
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June 21 to December 21

Display Grid

Display Shading Calculator

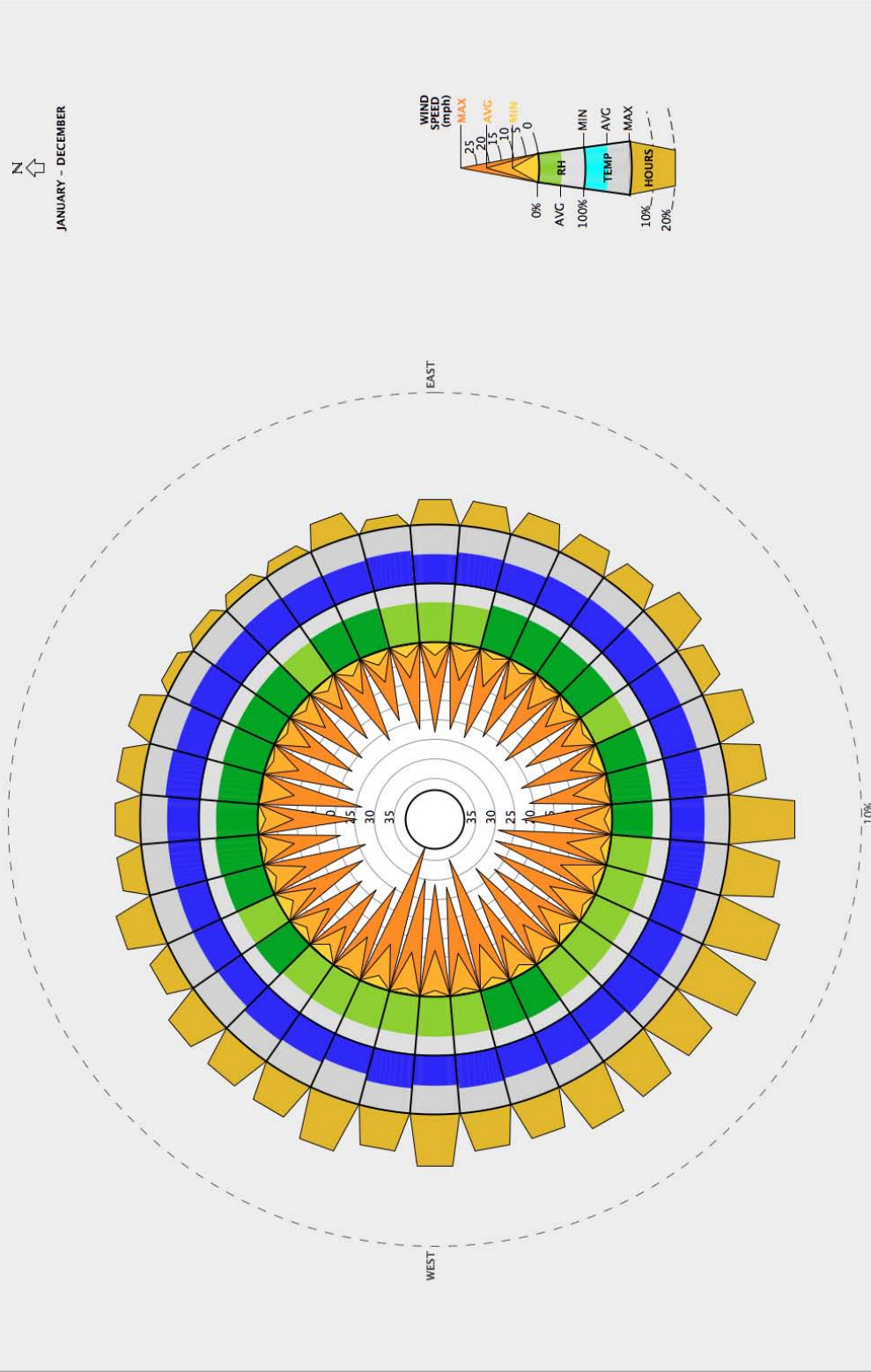
Display Obstruction Elevation





**WIND WHEEL**

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 Latitude/Longitude: 39.9° North, 84.22° West, Time Zone from Greenwich -5  
 Data Source: TMY2-93815 - 745700 WMO Station Number, Elevation 1003 ft



**LEGEND**

**TEMPERATURE (Deg. F)**

- < 32
- 32 - 70
- 70 - 75
- 75 - 100
- > 100

**RELATIVE HUMIDITY (%)**

- < 30
- 30-70
- > 70

All Hours     Selected Hours

1 a.m. through midnight

All Months     Selected Months

JAN through DEC

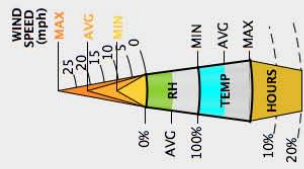
One Month     Next Month

One Day     Next Day

Animate

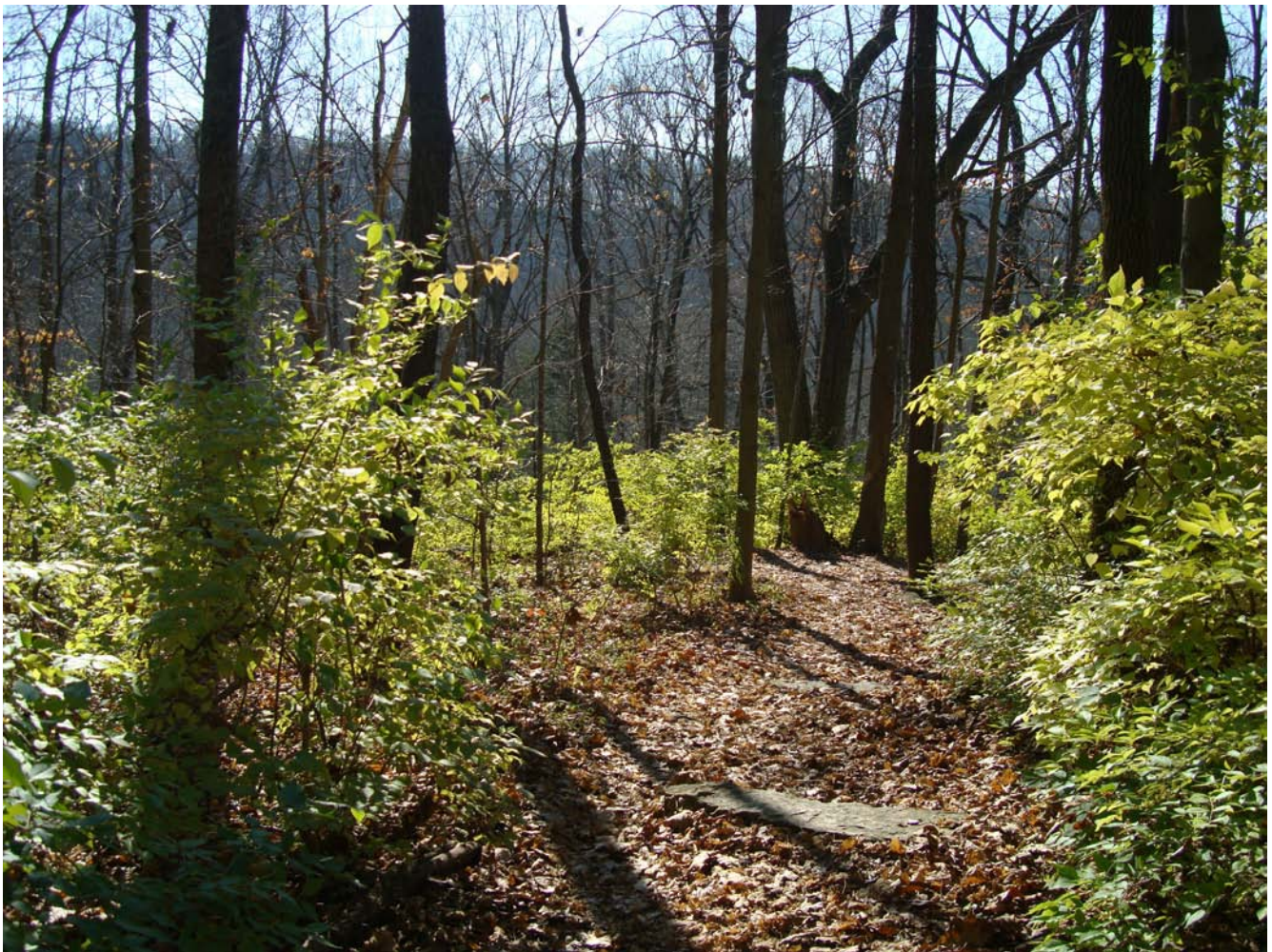
Monthly     Daily     Hourly

Start    Pause    Stop



JANUARY - DECEMBER

# John Bryan State Park Site Photos















# Yellow Springs, OH Site Photos













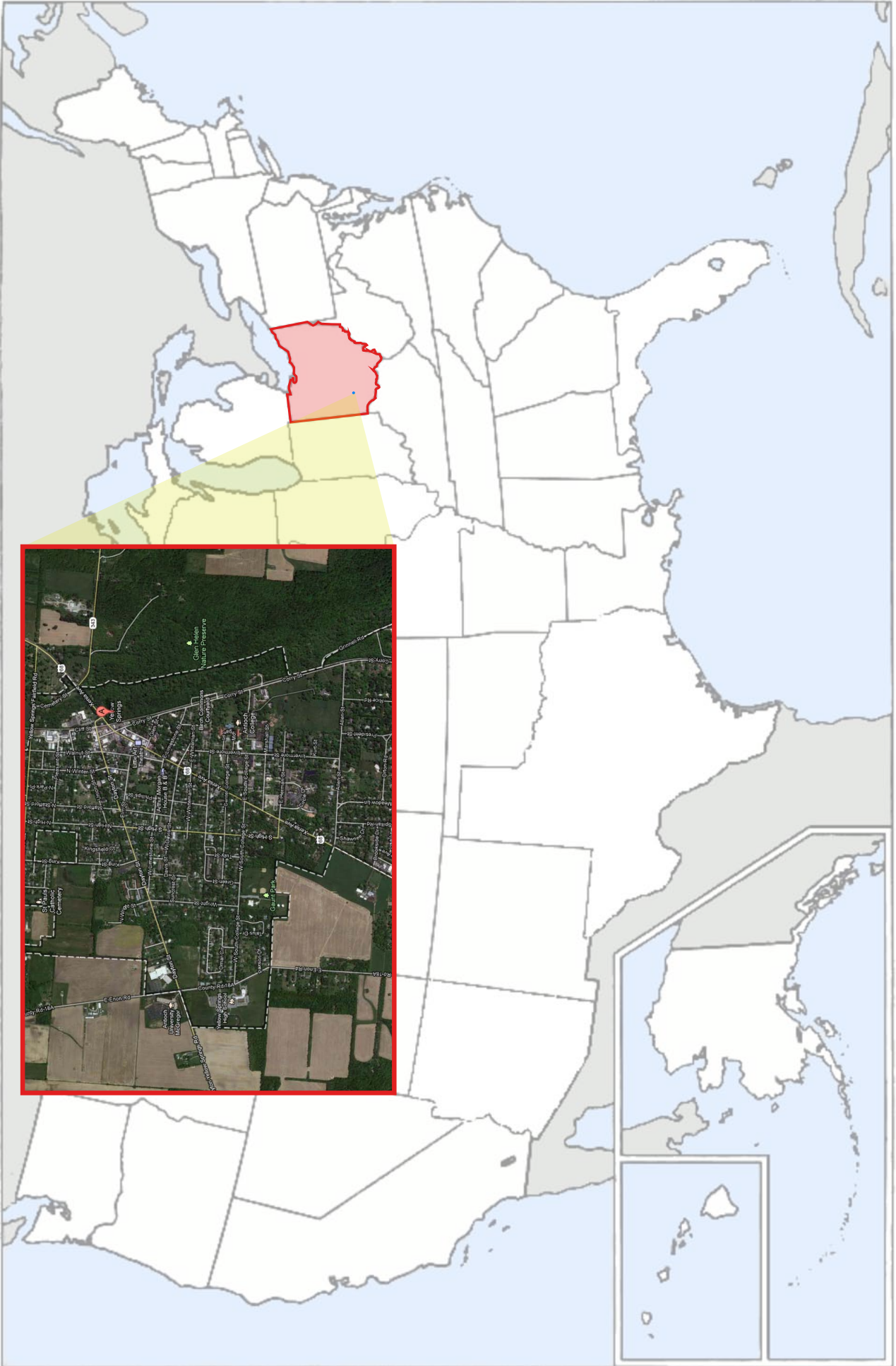








# Yellow Springs, OH Site Information



Find Yourself Here

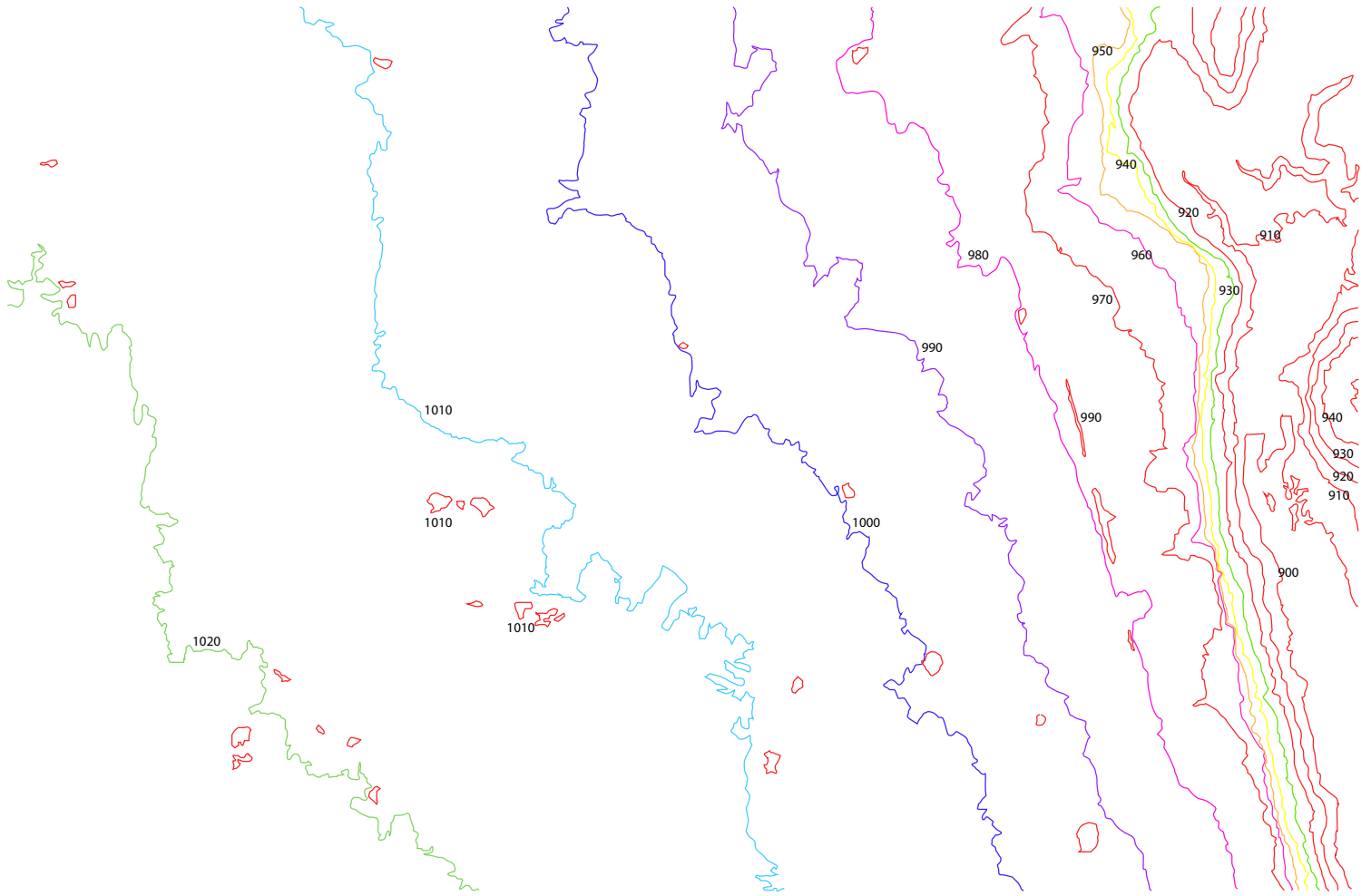


# Yellow Springs

## Street Guide



Street Guide illustration by Harry Millman (937) 767-9902

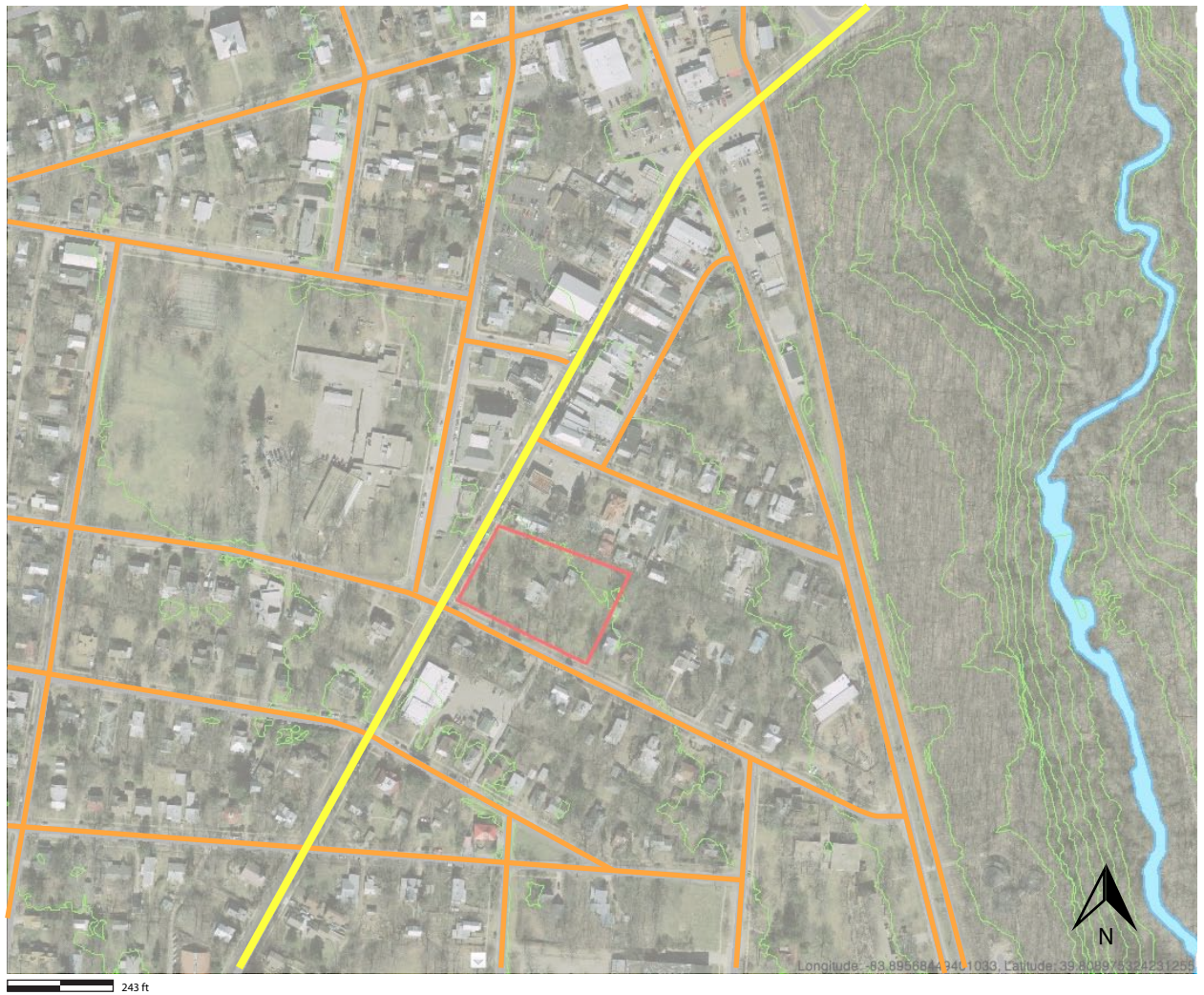






Vehicular Circulation & Traffic

- main vehicular route-Highway 68
- secondary vehicular routes





# Zoning Information



## Yellow Springs, OHIO

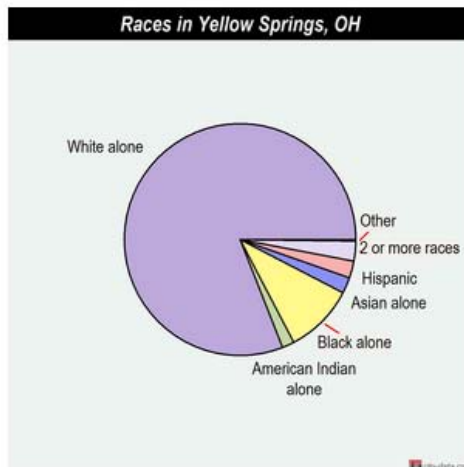
It was first settled in 1804. The way of life and physical setting reflects its history. The waters that gave this community its name, countryside, small built environment, and culture were carved the terrain.

### Demographics

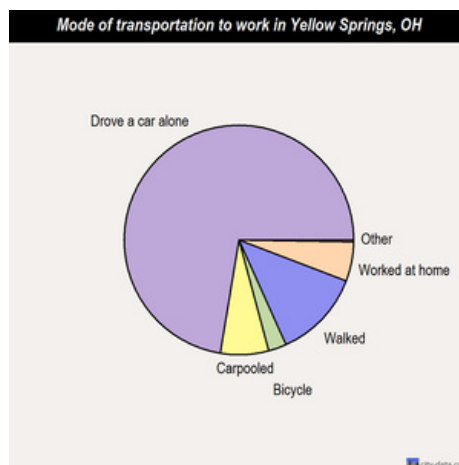
Population: ~4000 people

Median Resident Age: 48.5 years

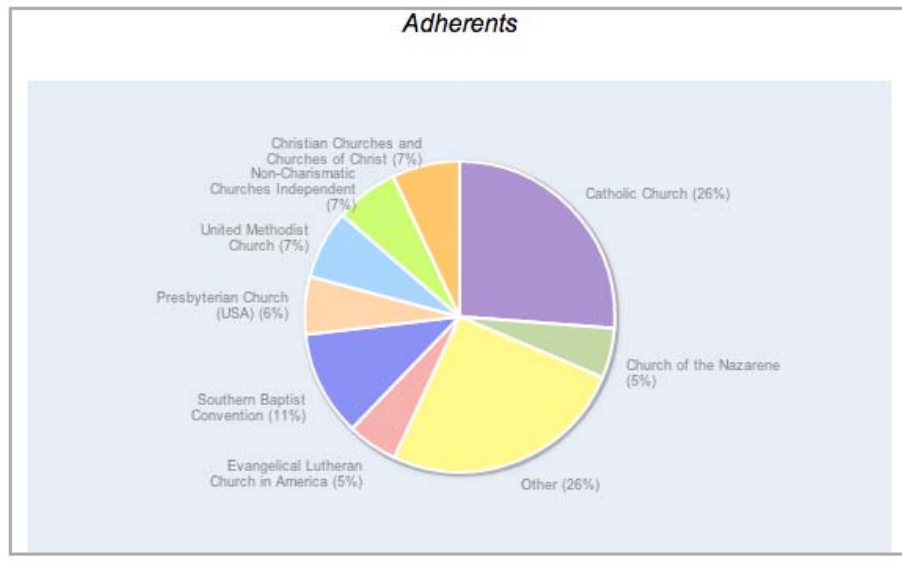
Ohio Median age: 39.3 years<sup>1</sup>



- White alone - 2,672 (76.6%)
- Black alone - 410 (11.8%)
- Two or more races - 250 (7.2%)
- Hispanic - 71 (2.0%)
- Asian alone - 52 (1.5%)
- American Indian alone - 21 (0.6%)
- Other race alone - 11 (0.3%)



<sup>1</sup> <http://www.city-data.com/city/Yellow-Springs-Ohio.html>



**Urban Site:**

321 Xenia Ave., Yellow Springs, OH 45387  
 Parcel ID: F19000100090024800  
 Owned by: Hammond James F. Trustee  
 1.608 acres of land = 70,044.48 square feet  
 Classified: Residential

*Property Significance:*

To the community, the tree canopy and greensward contribute to the community character. The house itself on the property of 321 Xenia Ave. is in heavy disrepair and although many fond memories, it is not historically significant.

This property is a key element of the Southern Gateway to downtown Yellow Springs. It is the transition from the residential neighborhoods to the central business district. It offers a sense of arrival and graciousness.

**Rural Site:**

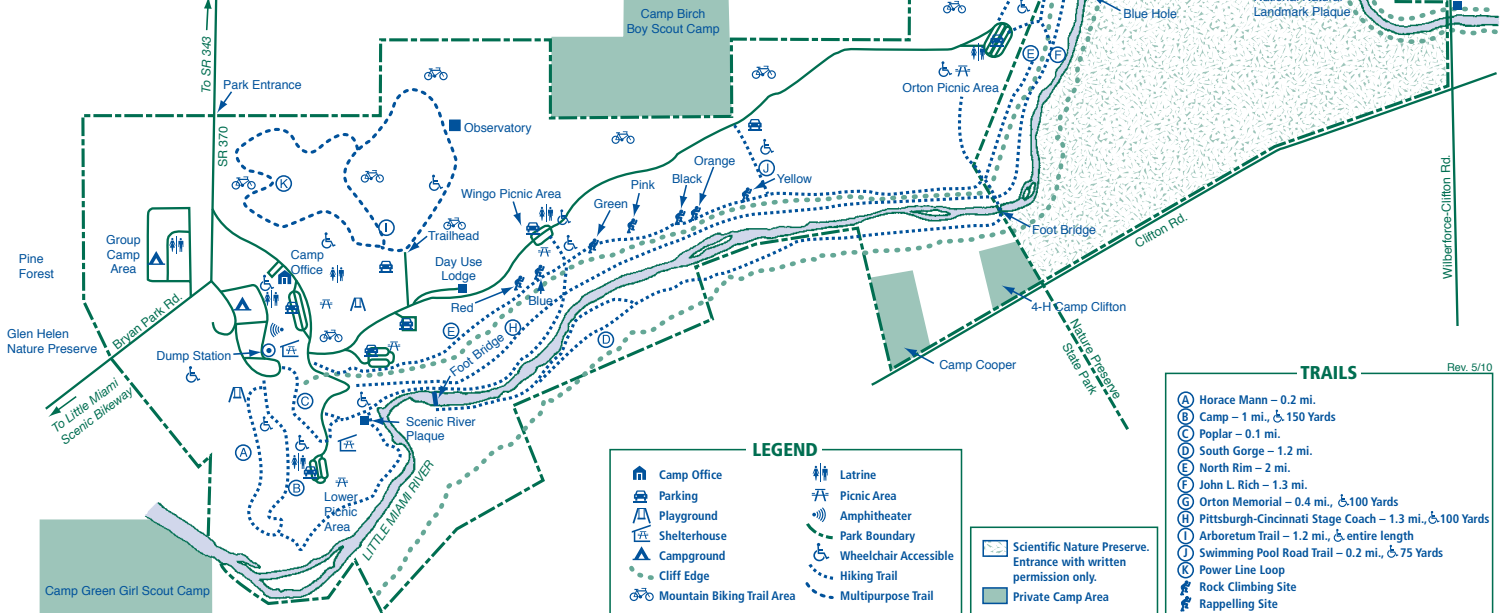
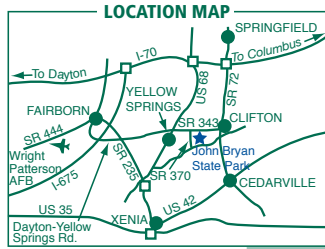
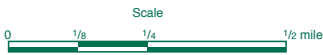
Bryan Park Road, Yellow Springs, OH 45387  
 Parcel ID: F16000100180000600  
 Owned by: State of Ohio  
 297 acres in total, my site is a fraction of that.  
 Classified: Exempt

# John Bryan State Park Site Information

# John Bryan State Park

3790 State Route 370  
Yellow Springs, Ohio 45387-9743

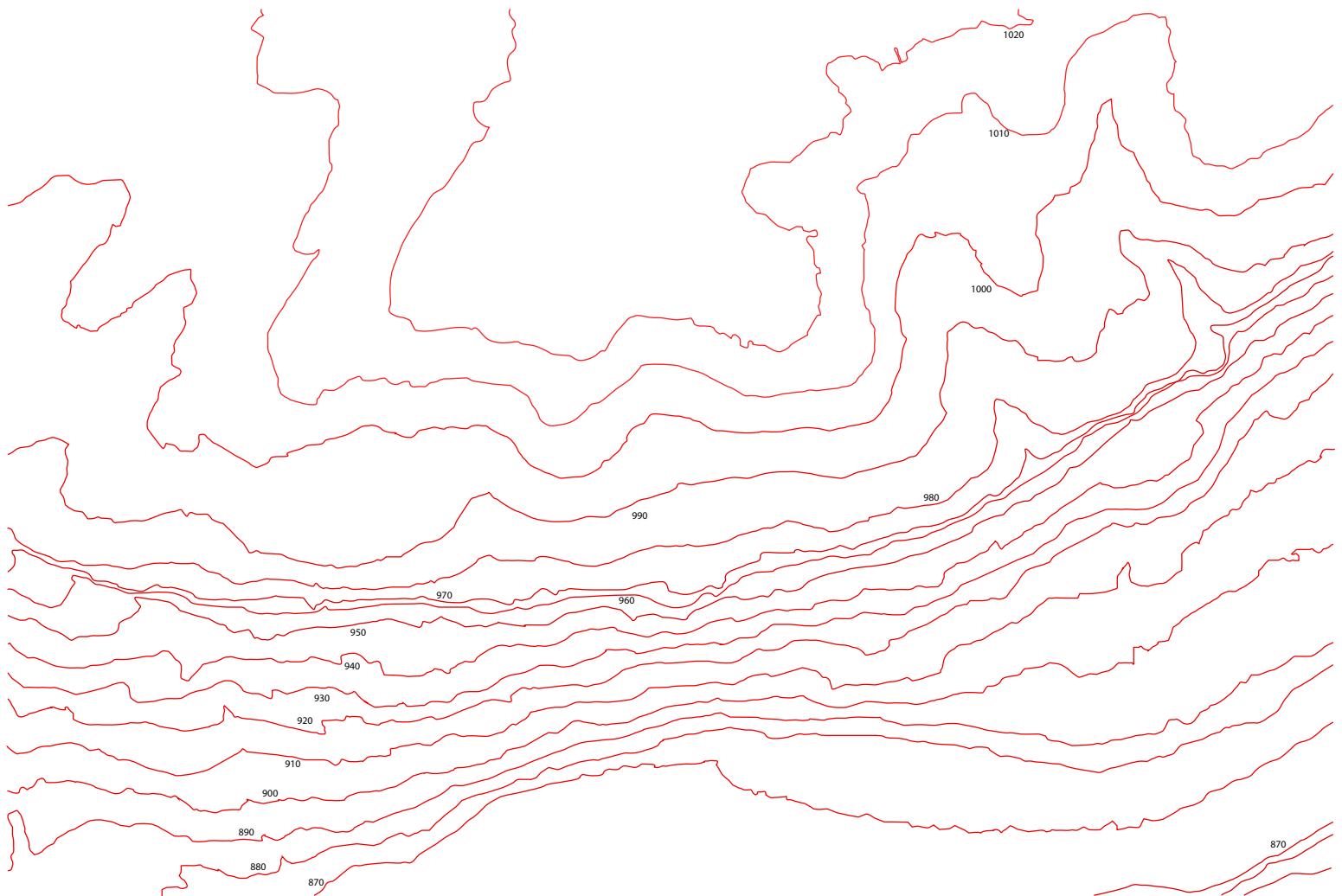
(937) 767-1274 - Park Office  
(937) 322-5284 - Buck Creek Park Office

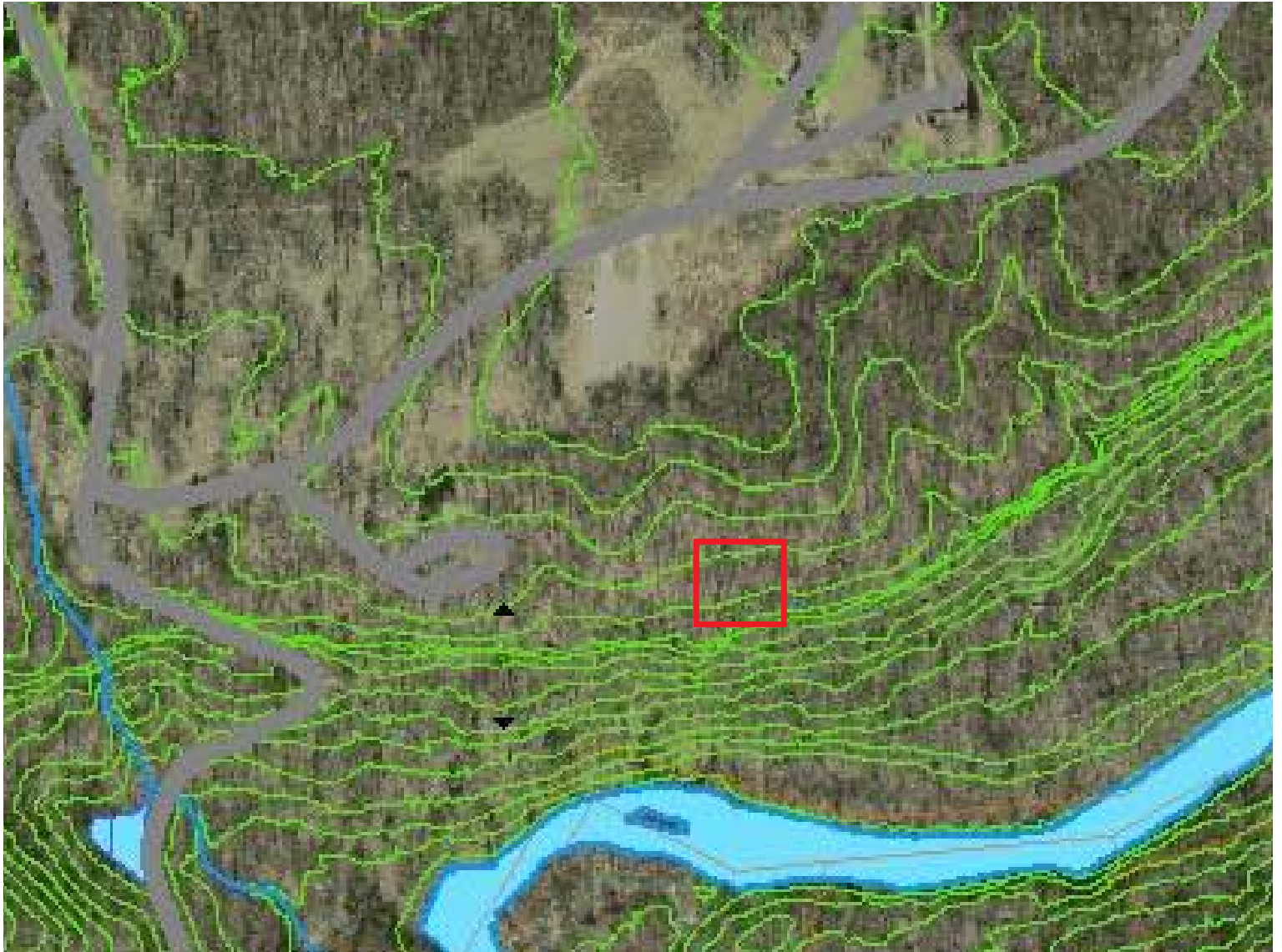


**LEGEND**


**TRAILS** Rev. 5/10

<b>A</b>	Horace Mann - 0.2 mi.
<b>B</b>	Camp - 1 mi., ⚠️ 150 Yards
<b>C</b>	Poplar - 0.1 mi.
<b>D</b>	South Gorge - 1.2 mi.
<b>E</b>	North Rim - 2 mi.
<b>F</b>	John L. Rich - 1.3 mi.
<b>G</b>	Orton Memorial - 0.4 mi., ⚠️ 100 Yards
<b>H</b>	Pittsburgh-Cincinnati Stage Coach - 1.3 mi., ⚠️ 100 Yards
<b>I</b>	Arboretum Trail - 1.2 mi., ⚠️ entire length
<b>J</b>	Swimming Pool Road Trail - 0.2 mi., ⚠️ 75 Yards
<b>K</b>	Power Line Loop
	Rock Climbing Site
	Rappelling Site



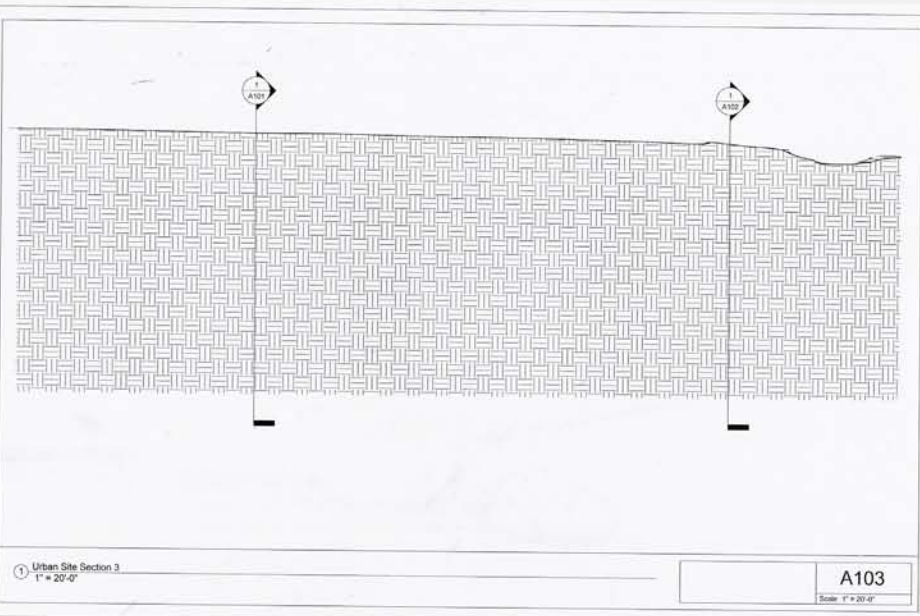
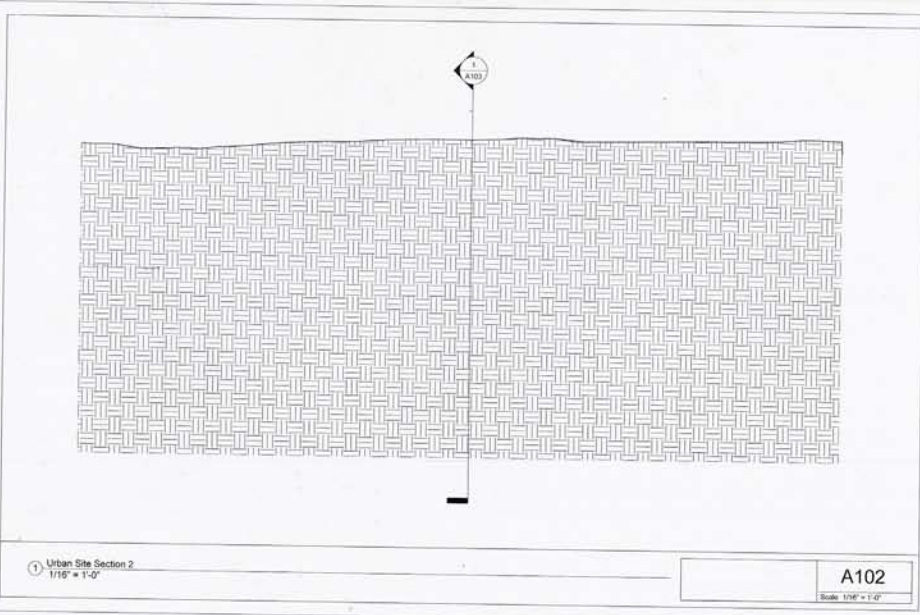
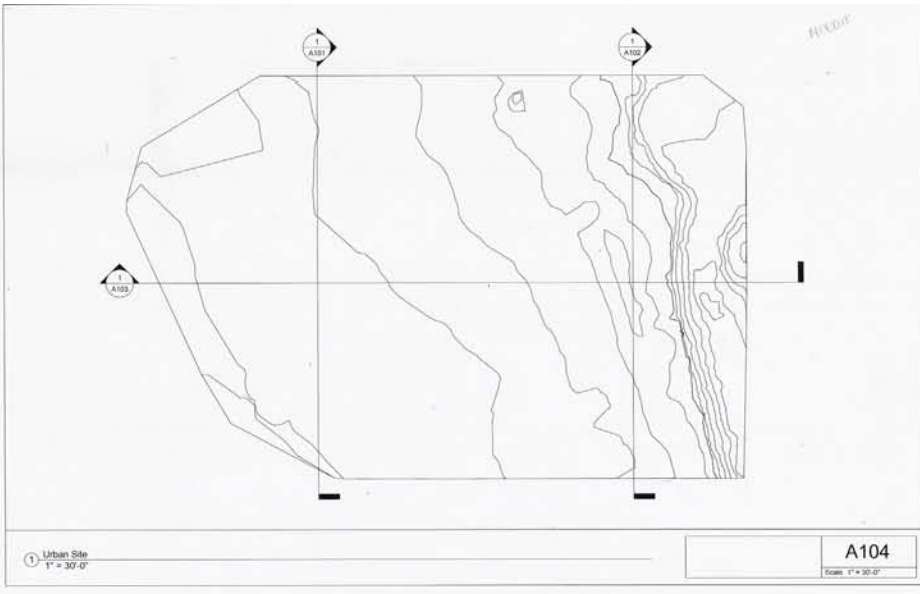


**321 Xenia Avenue, Yellow Springs, OH**



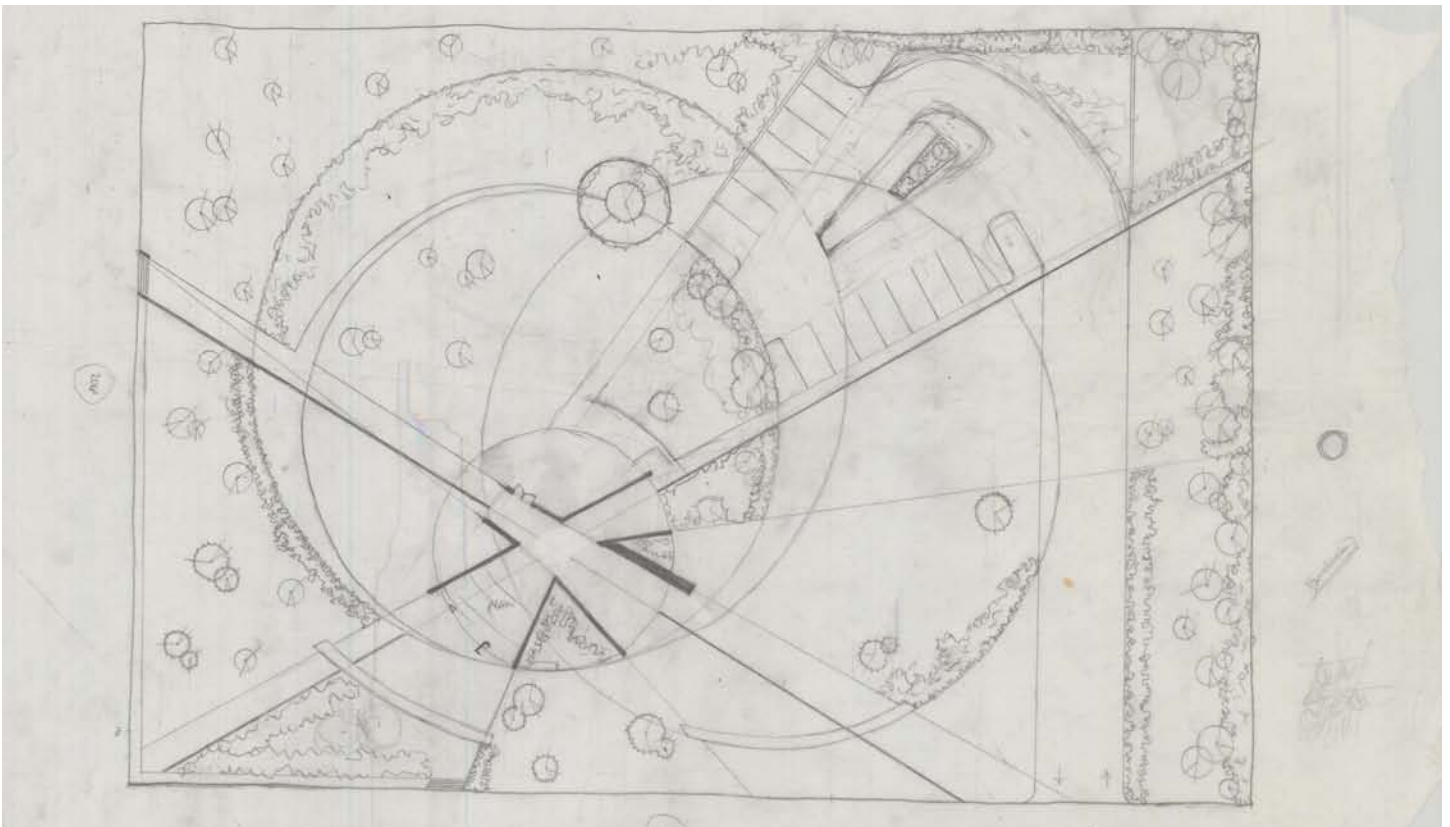
Sun angles on the Yellow Springs Site





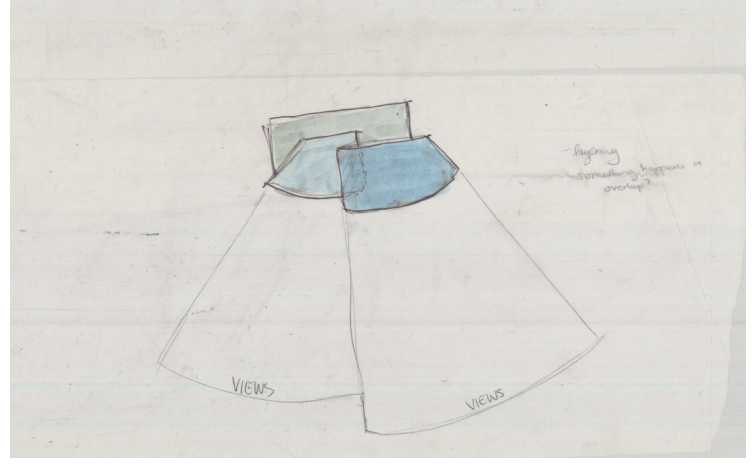
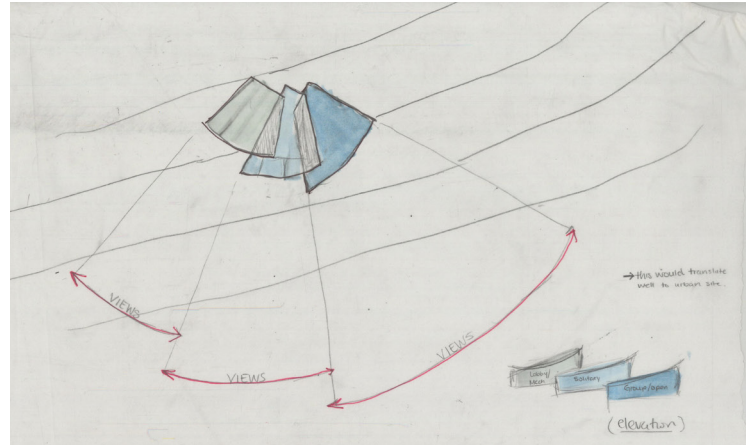
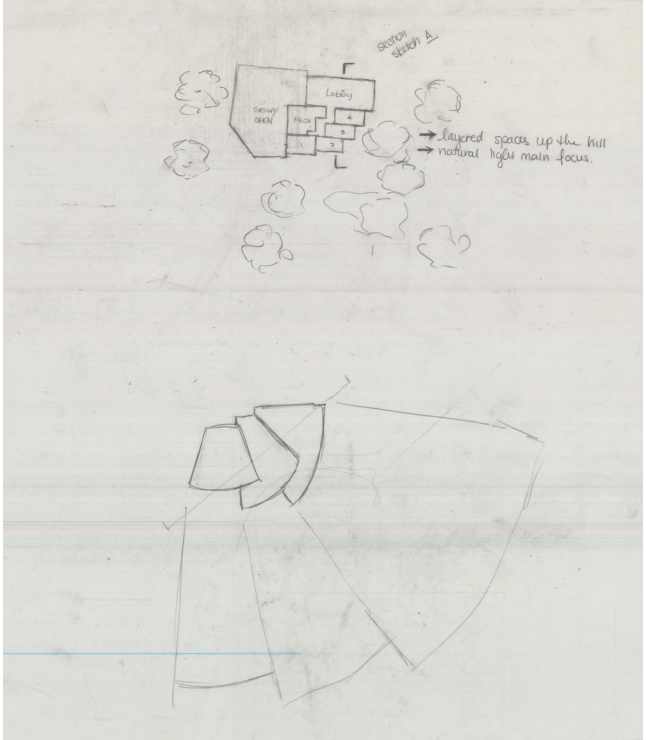
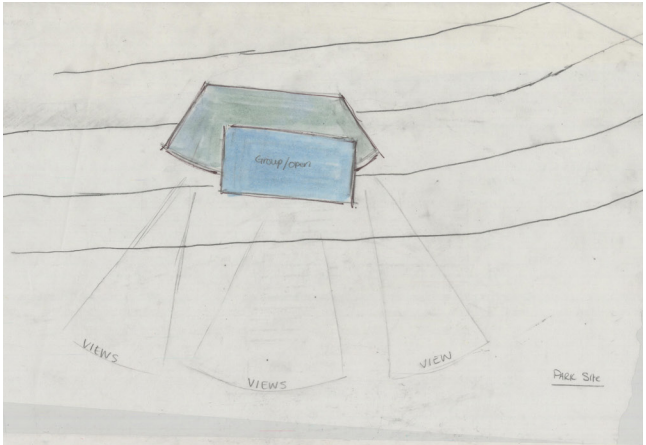


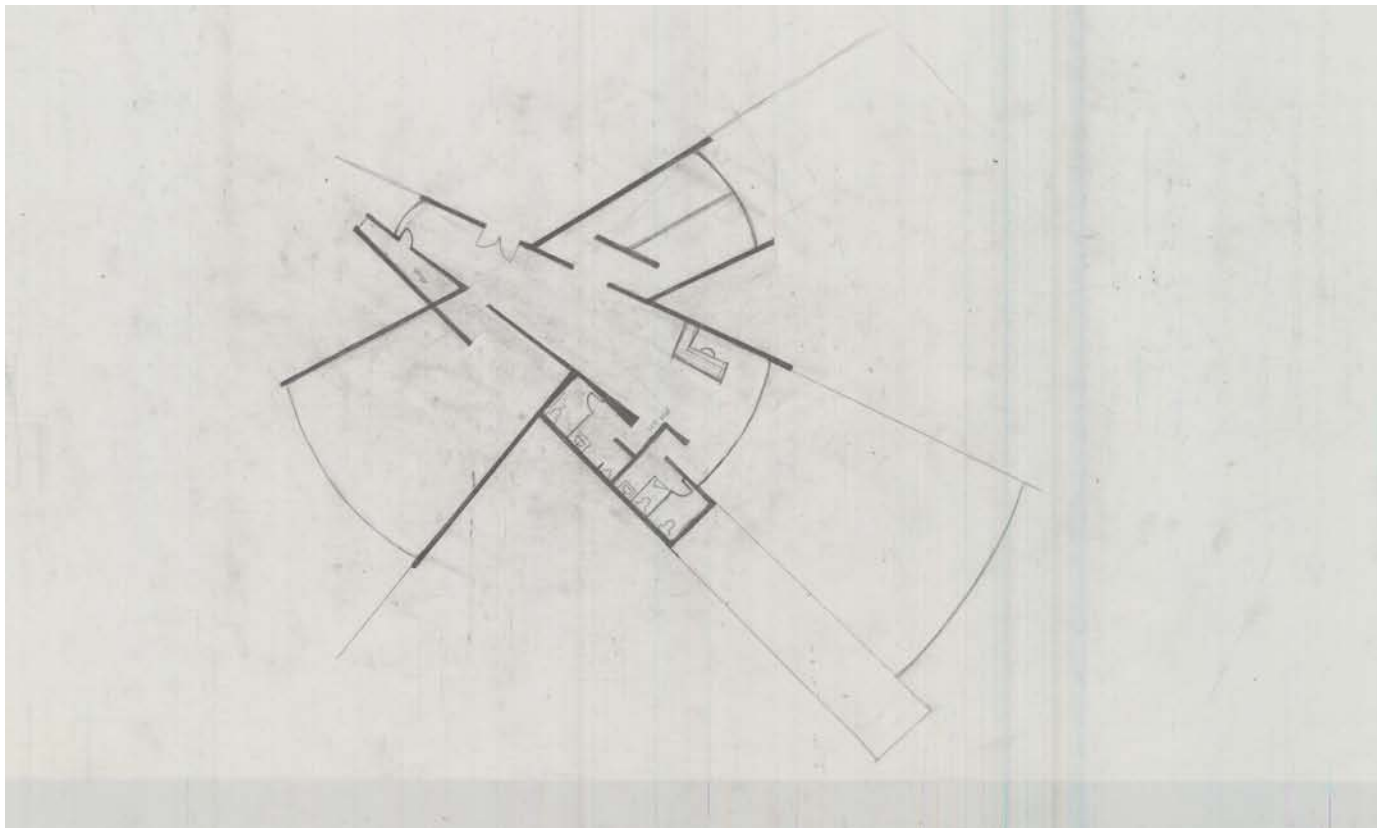
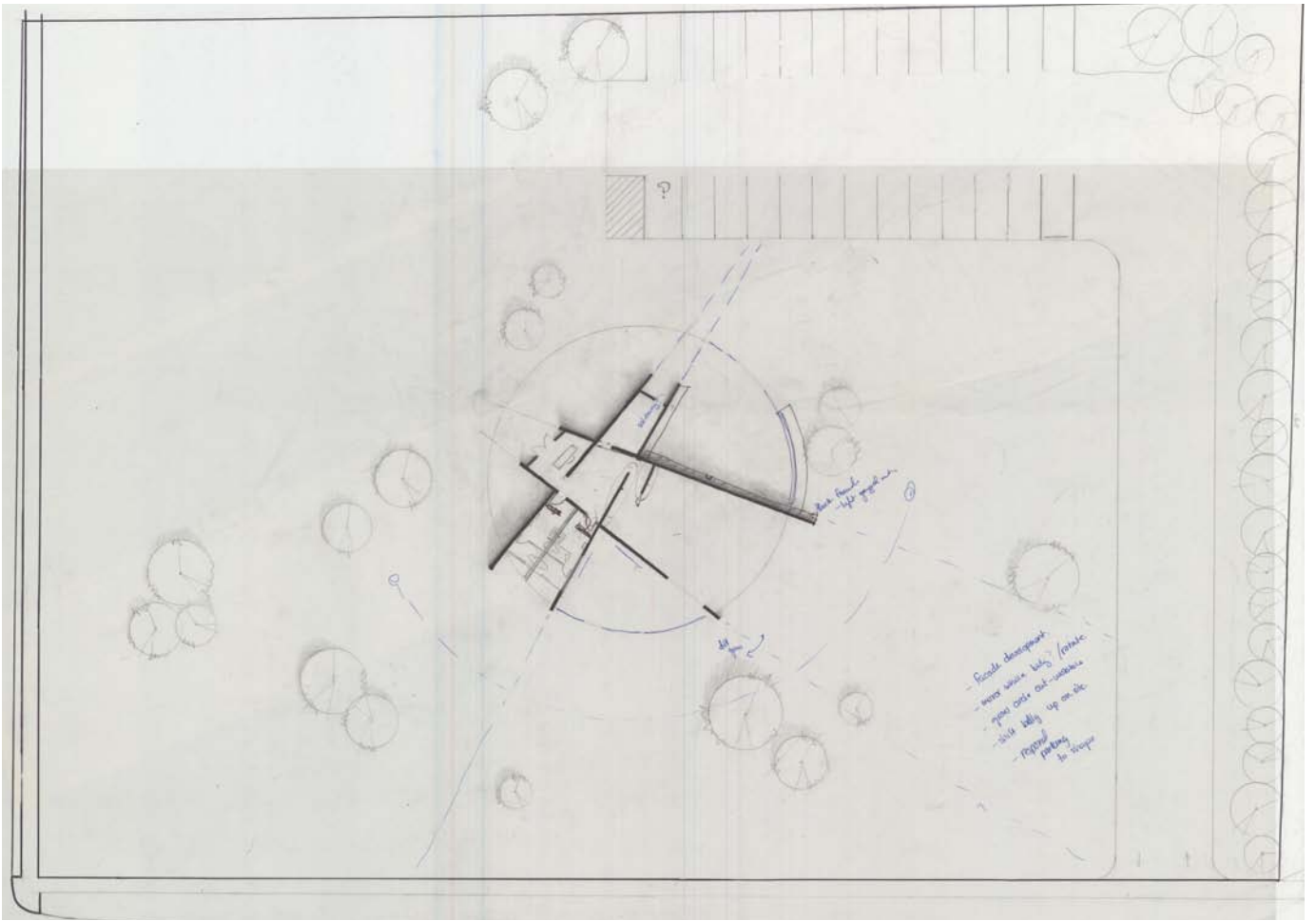
Early site plan option for the Yellow Springs Site

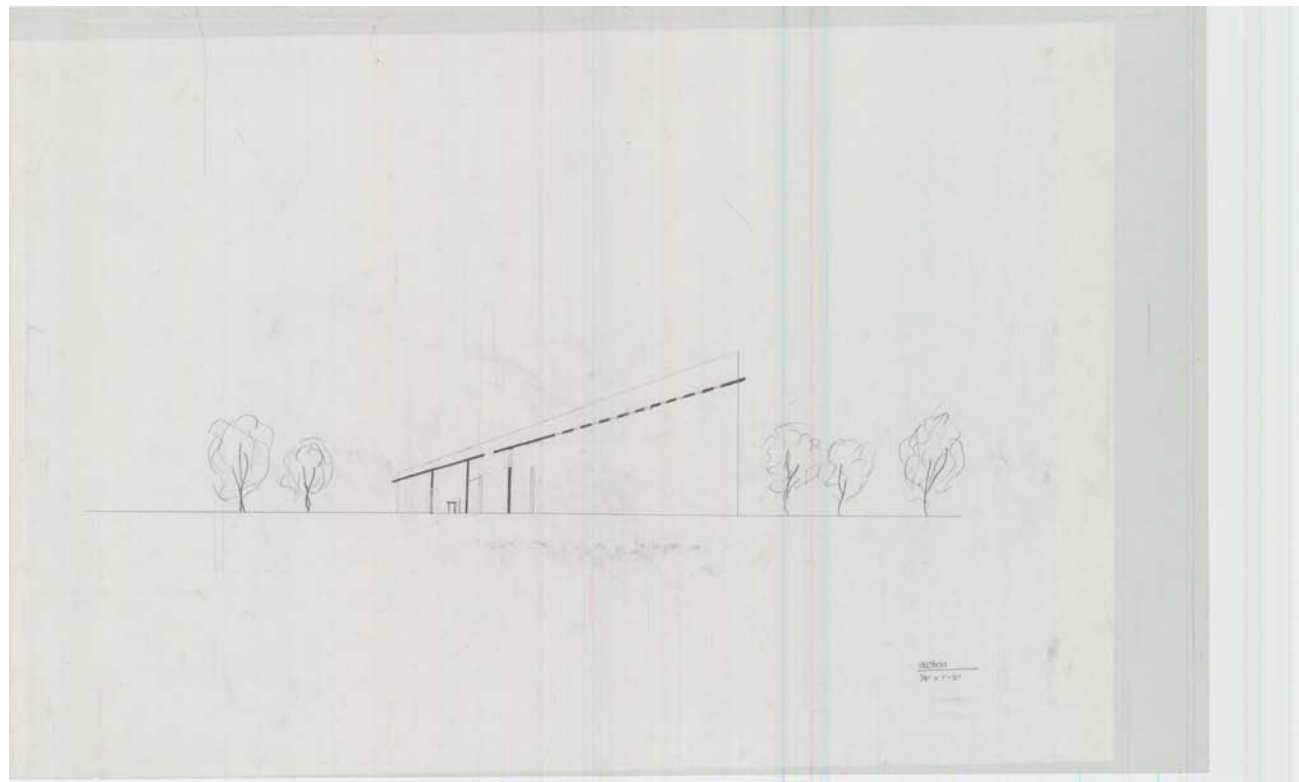
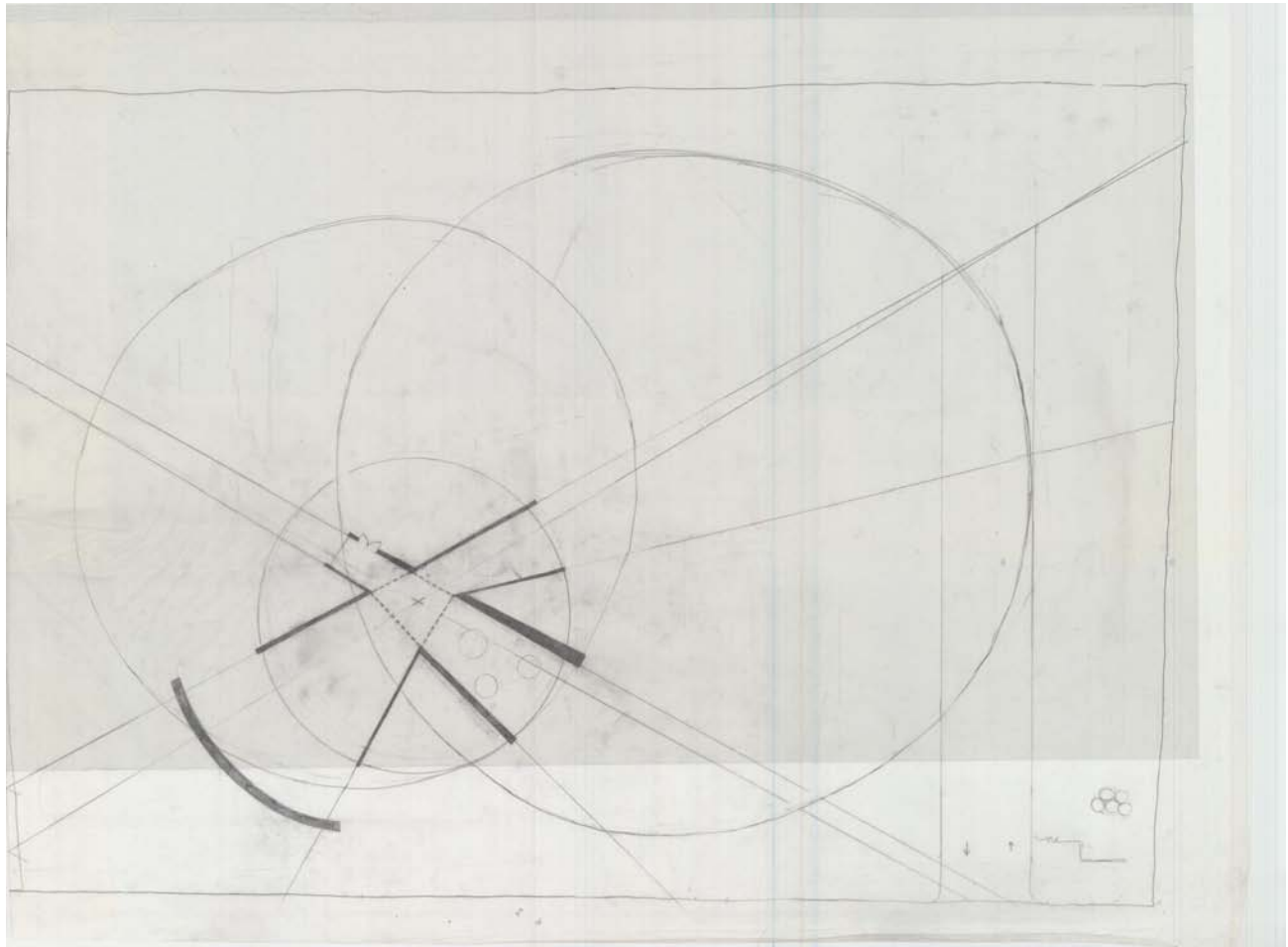


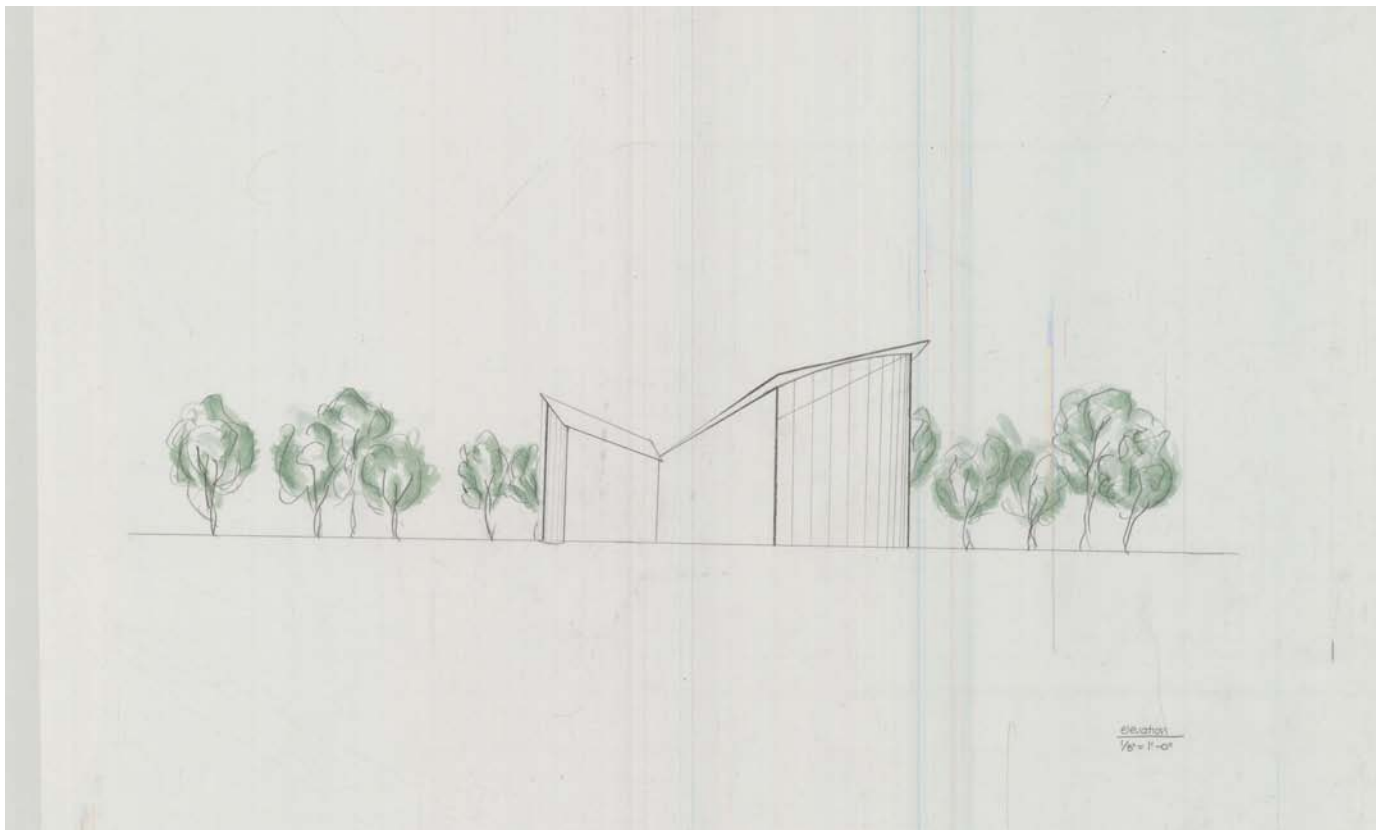
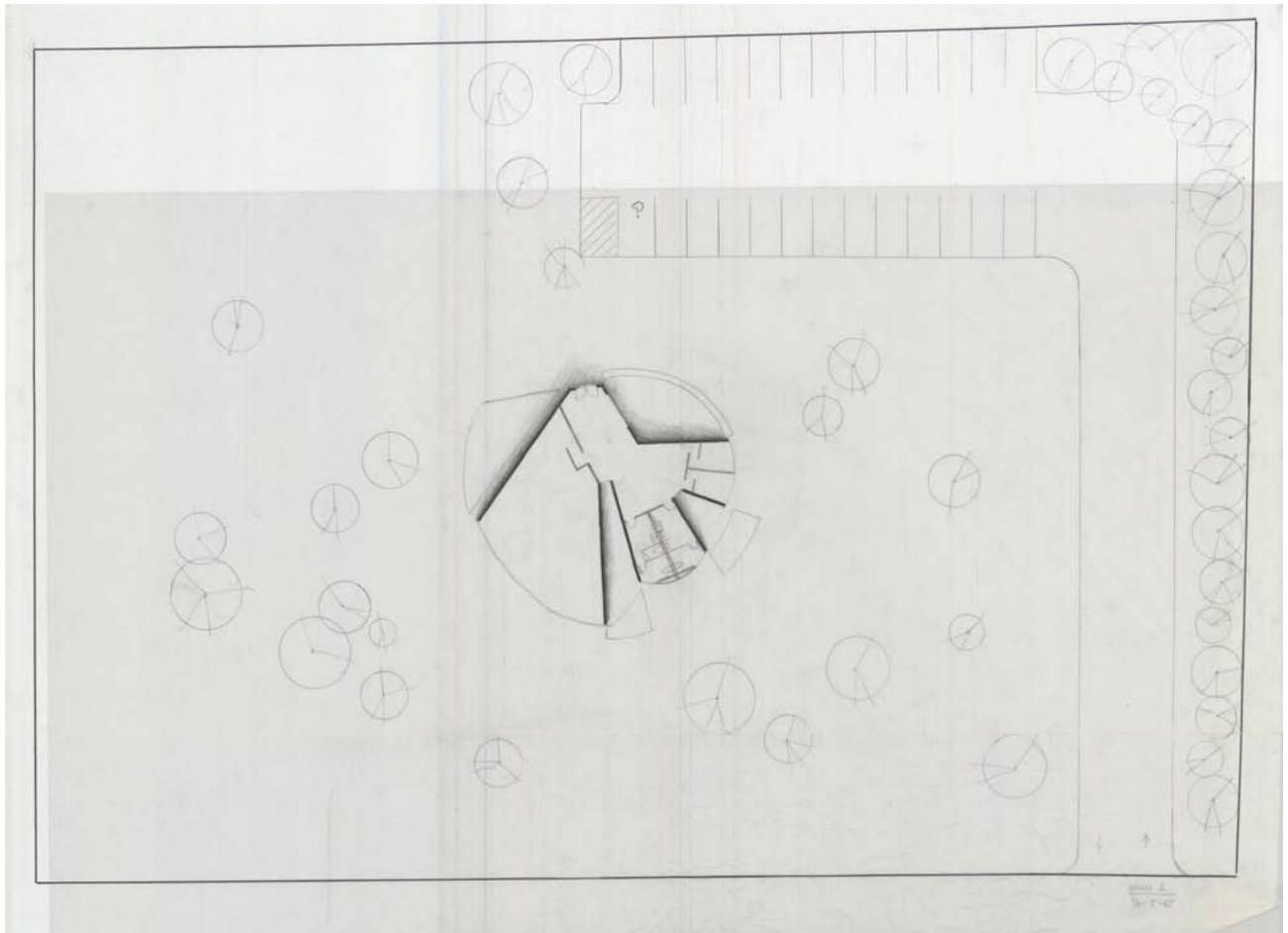
sketch of final site plan option for the Yellow Springs Site

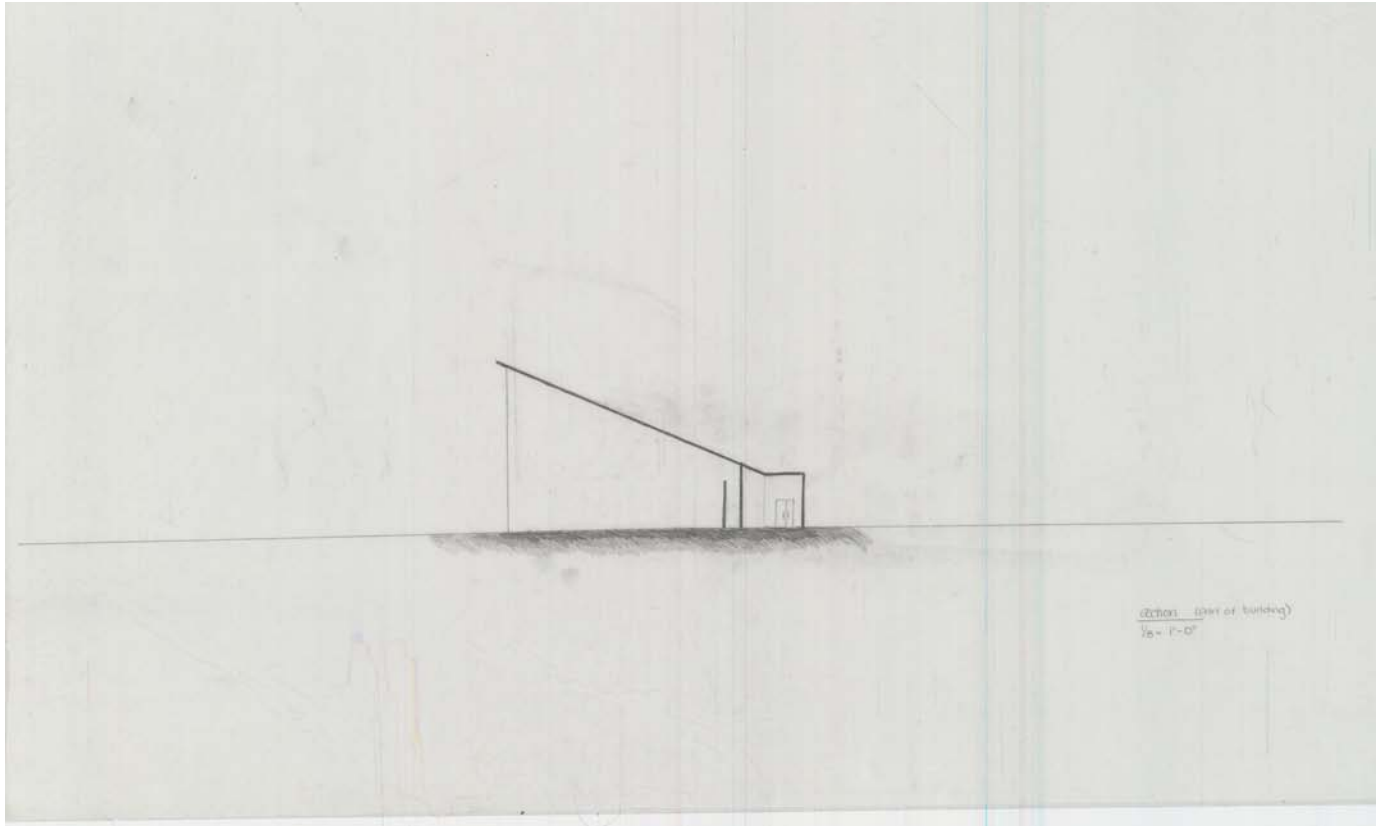
## Building Form Iterations



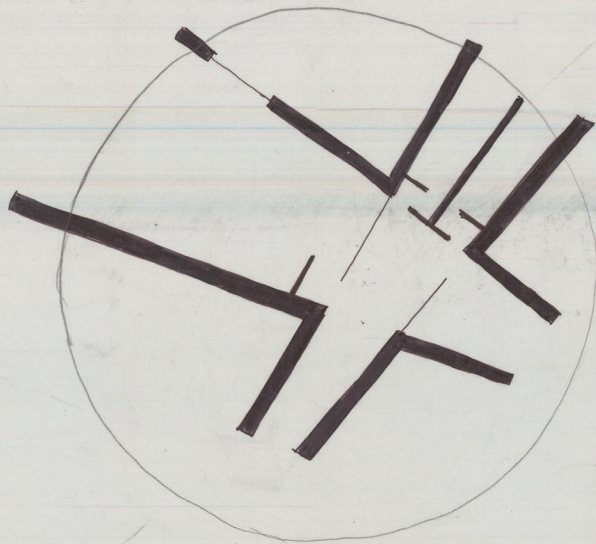
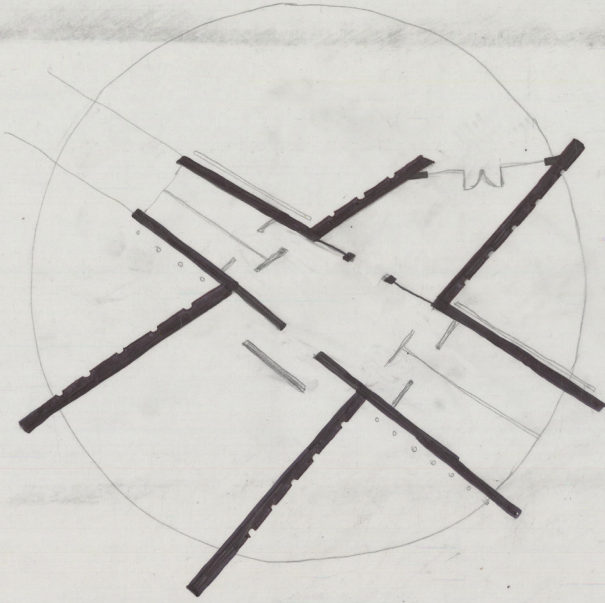


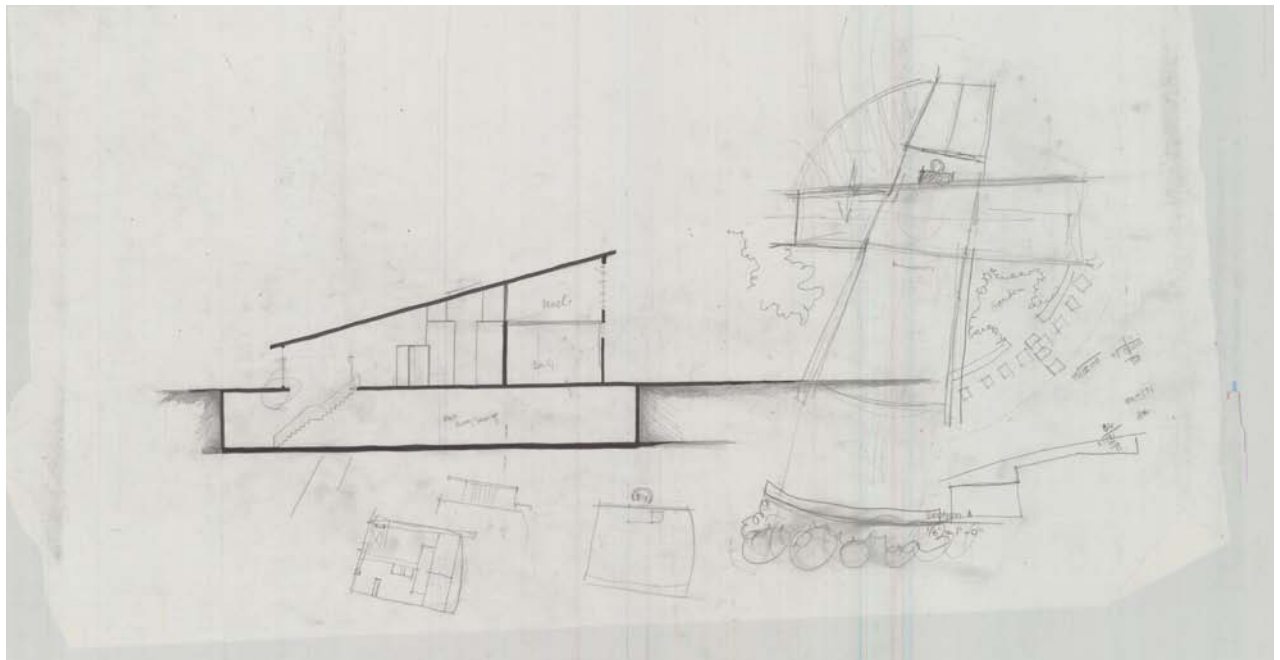
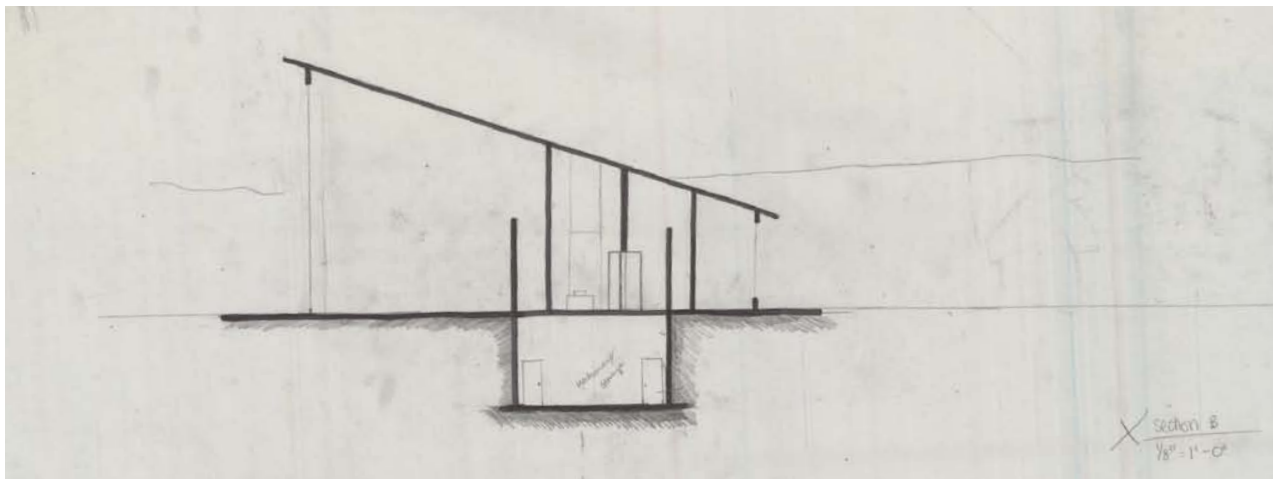
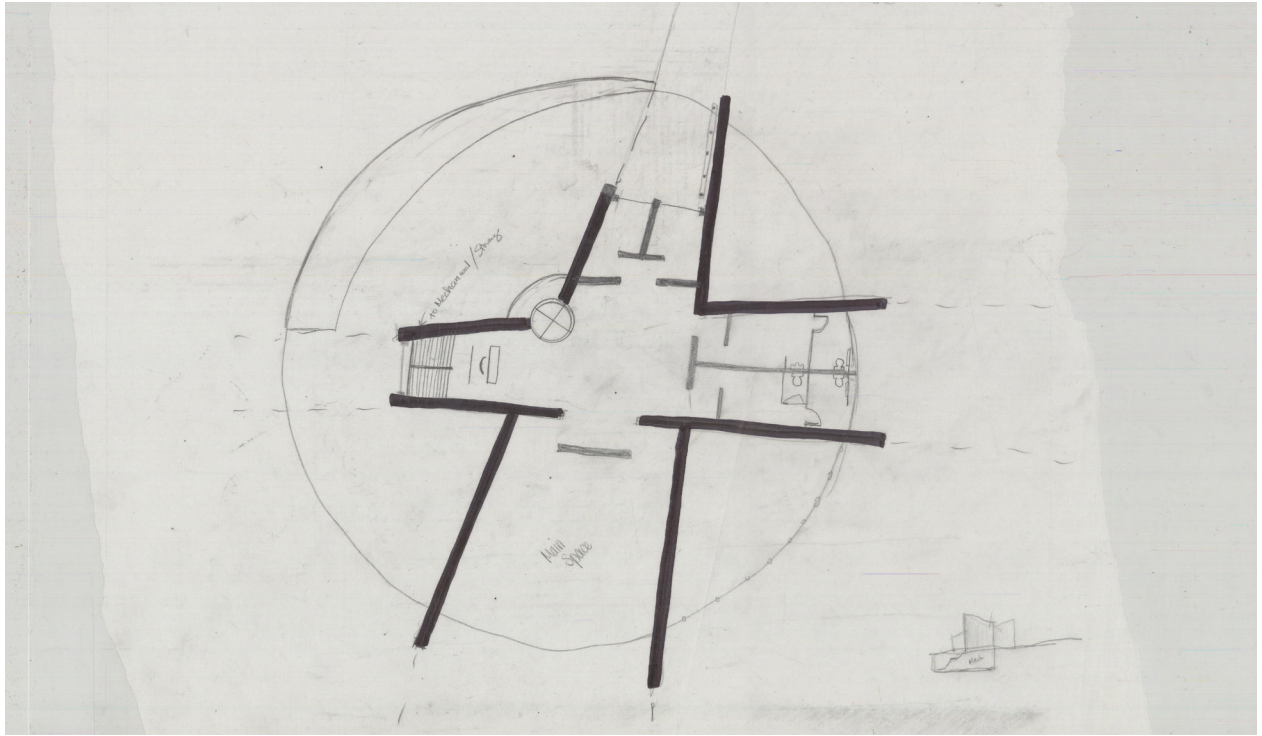


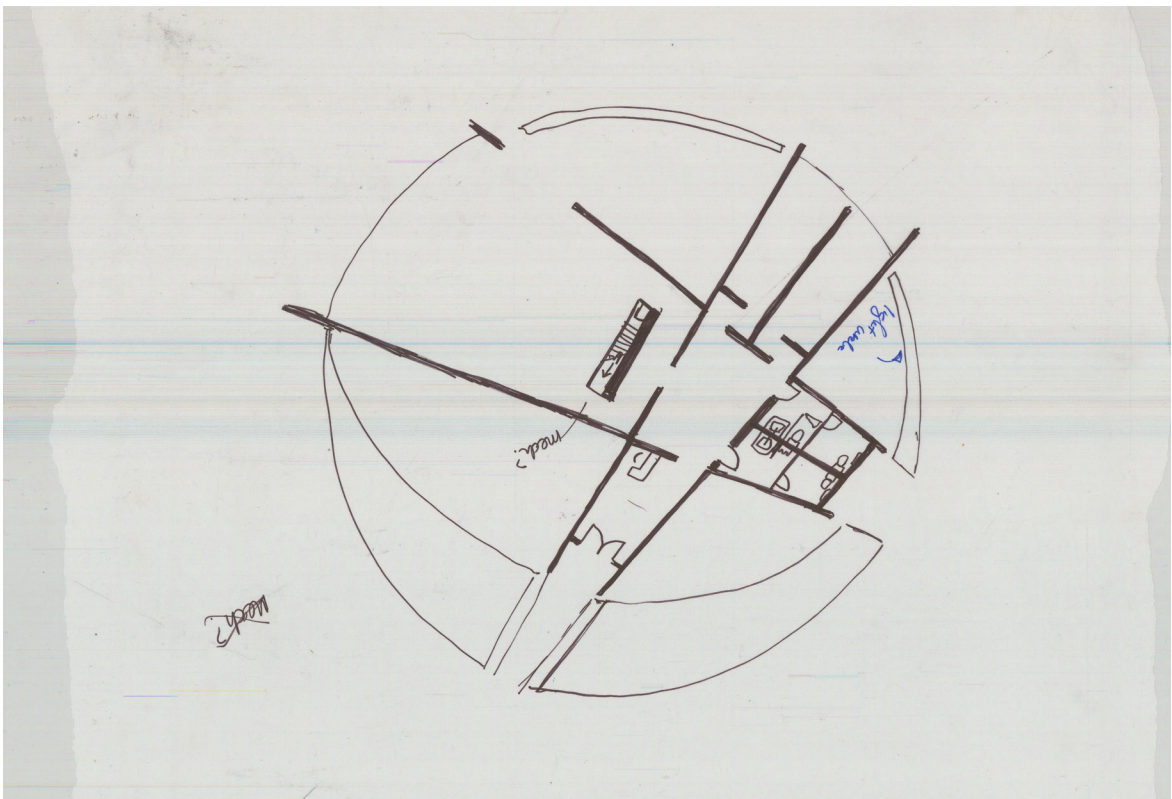
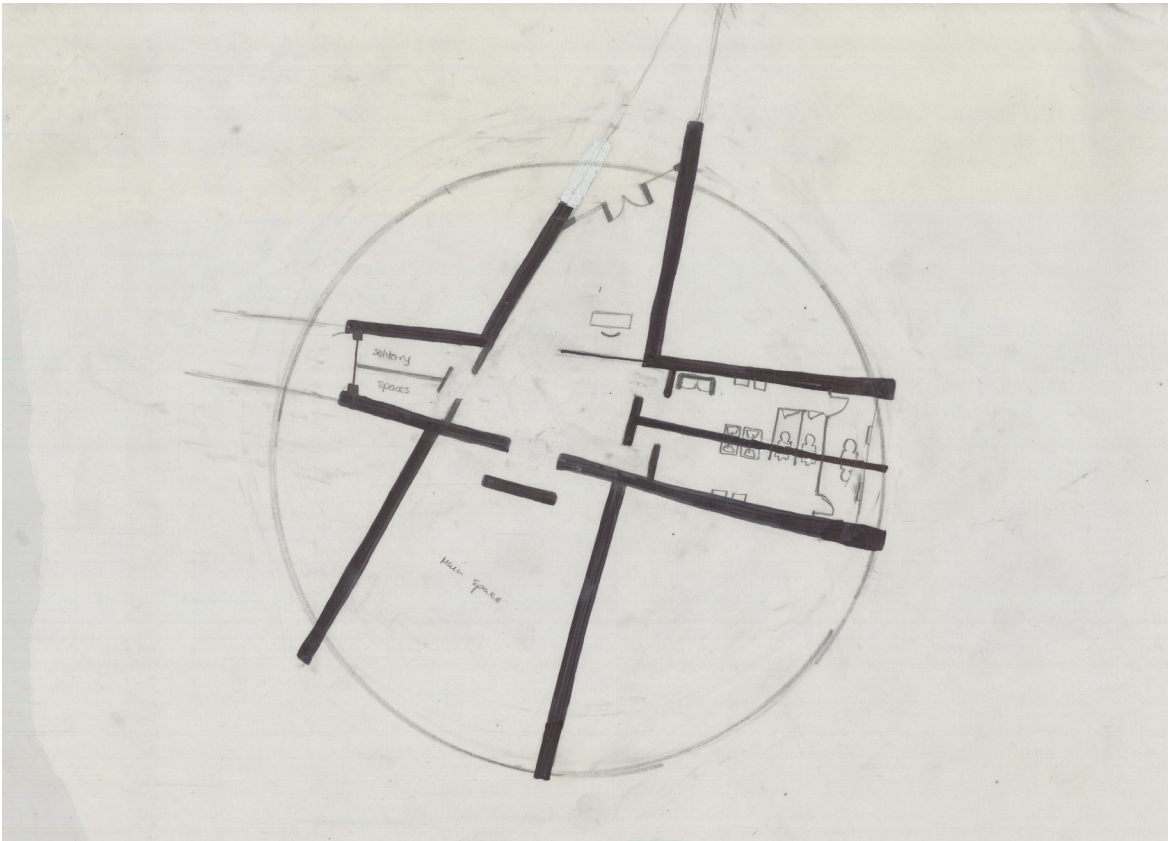


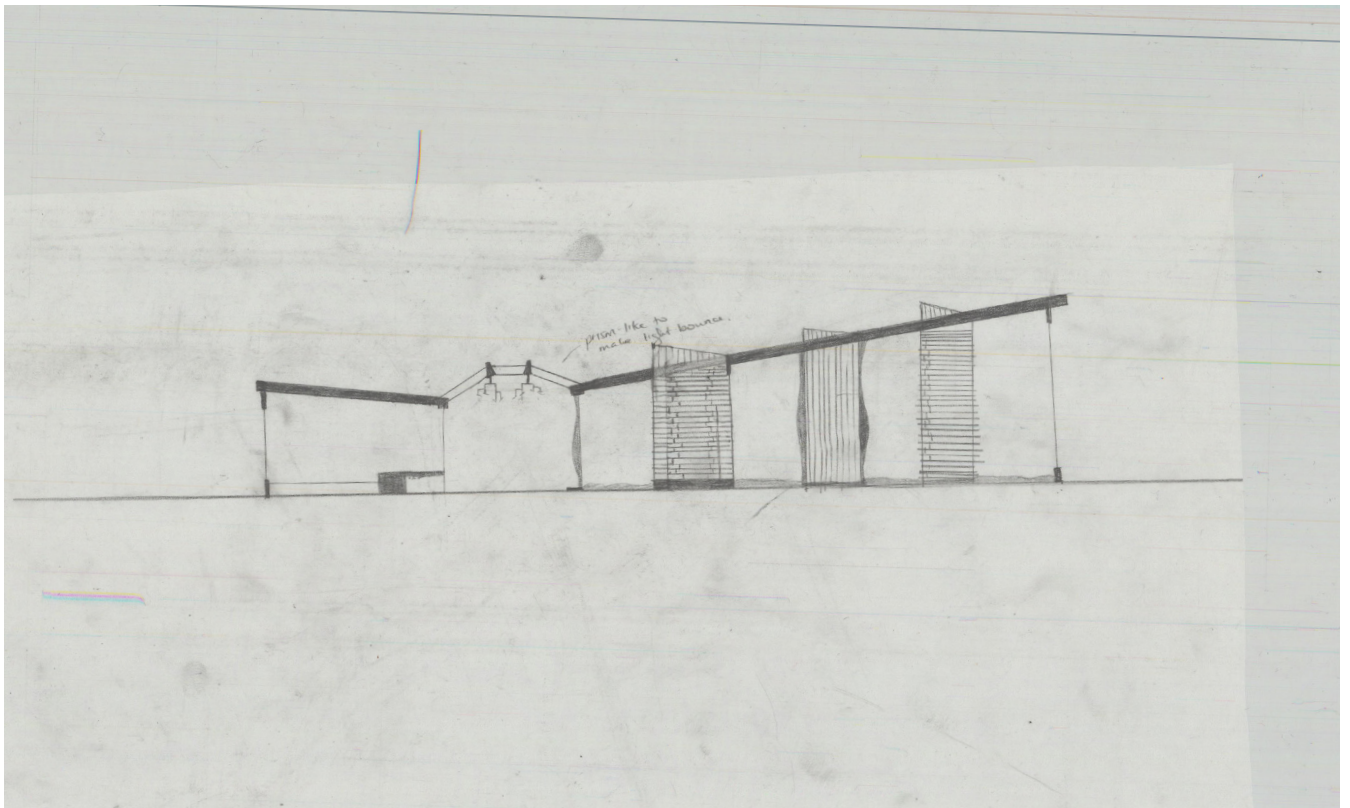
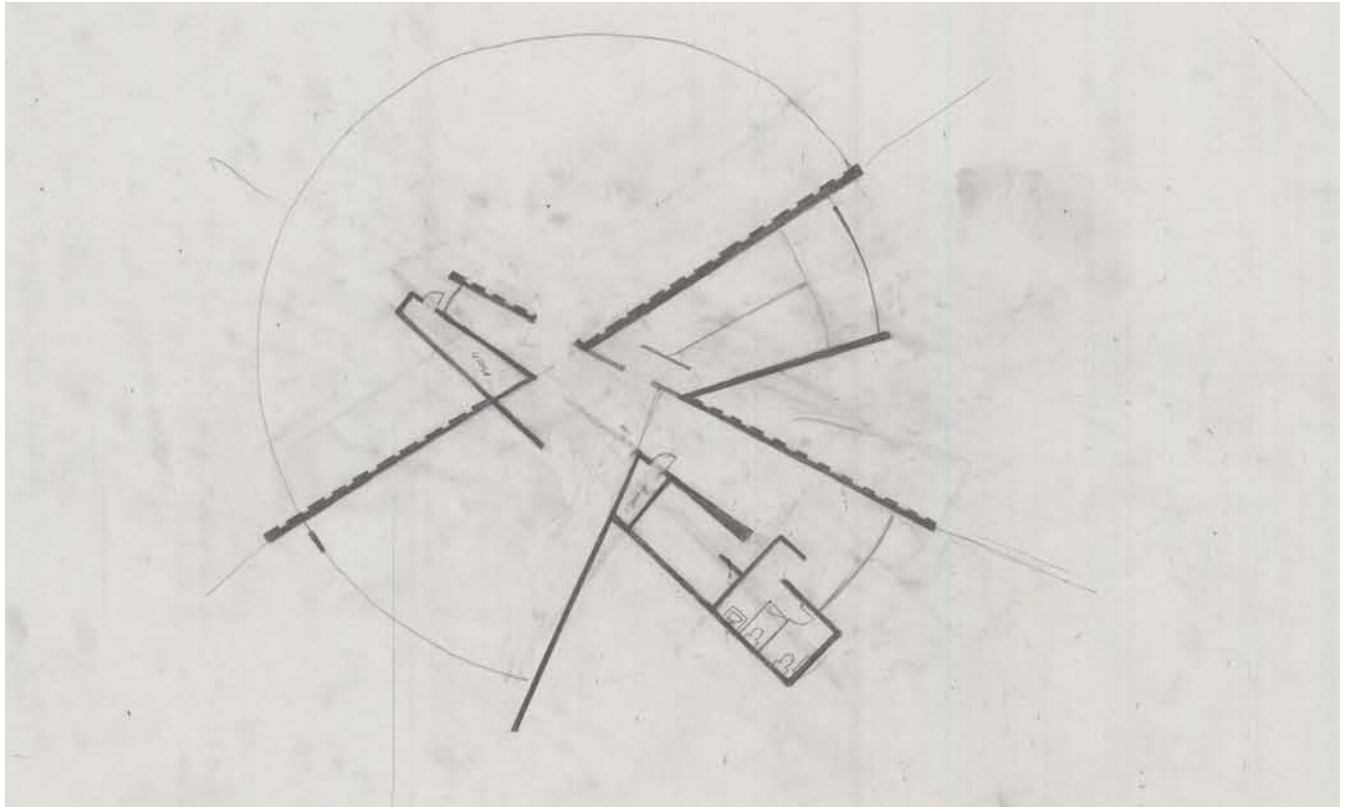


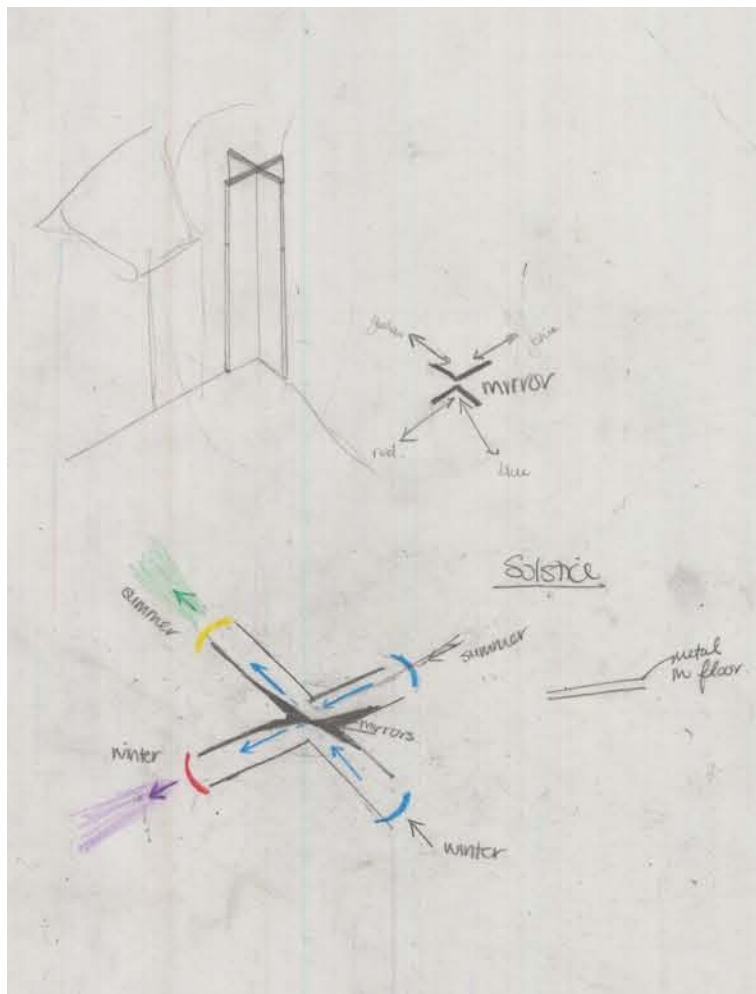
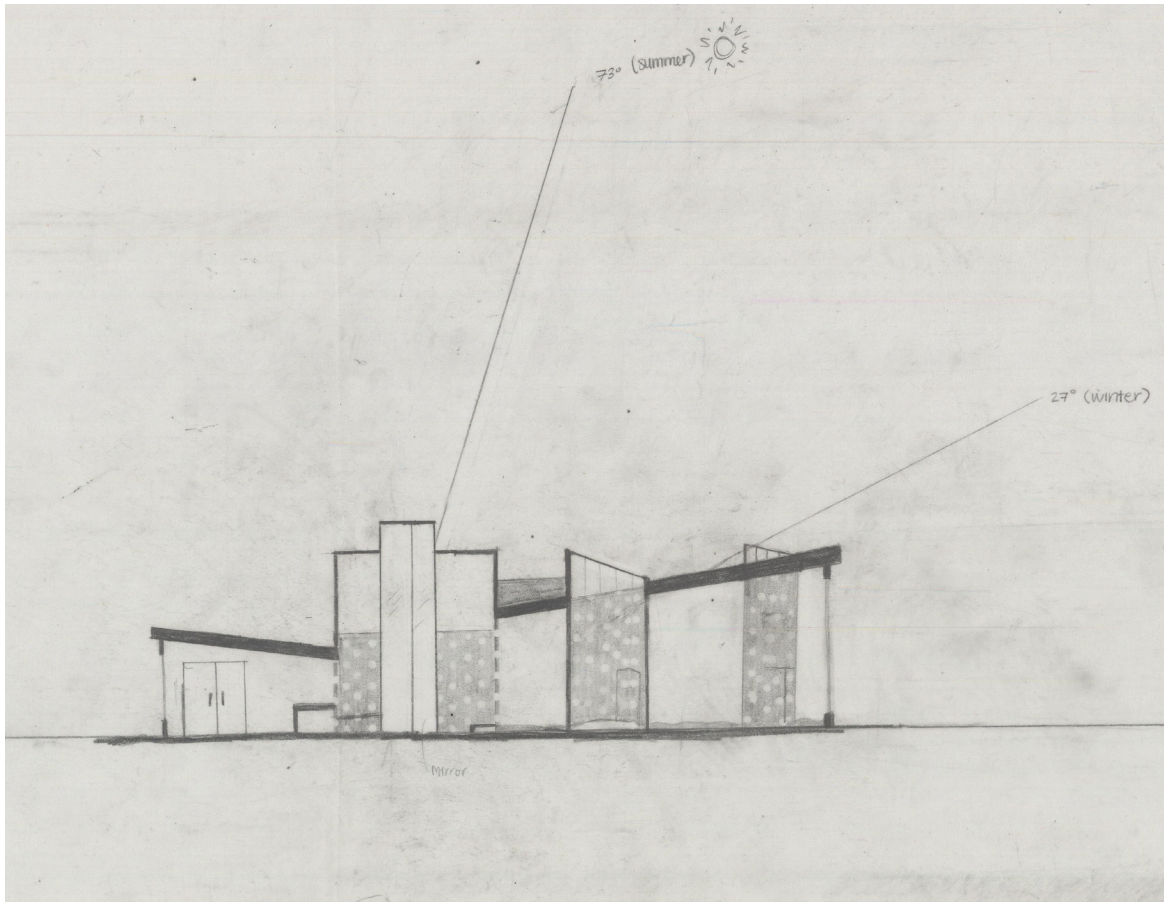


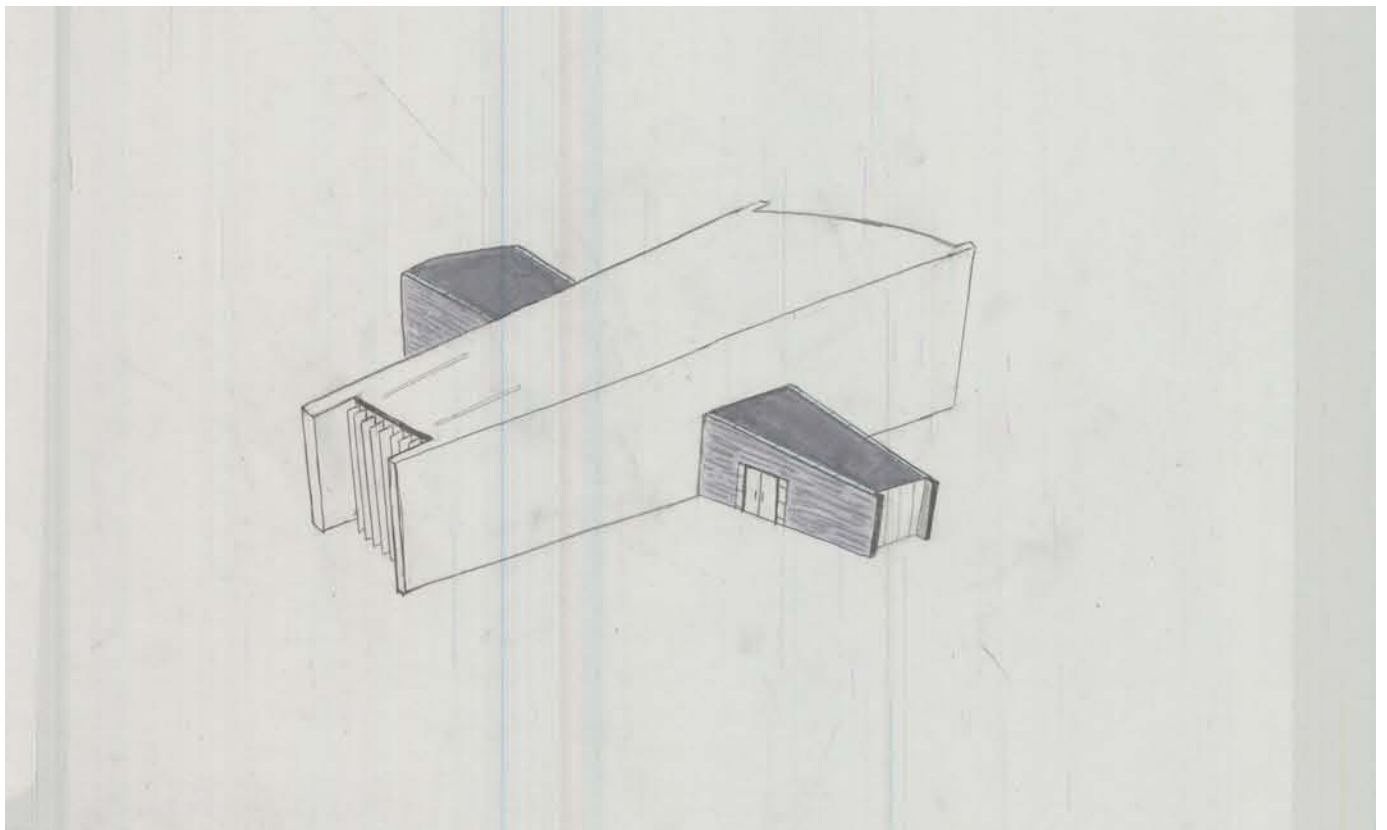
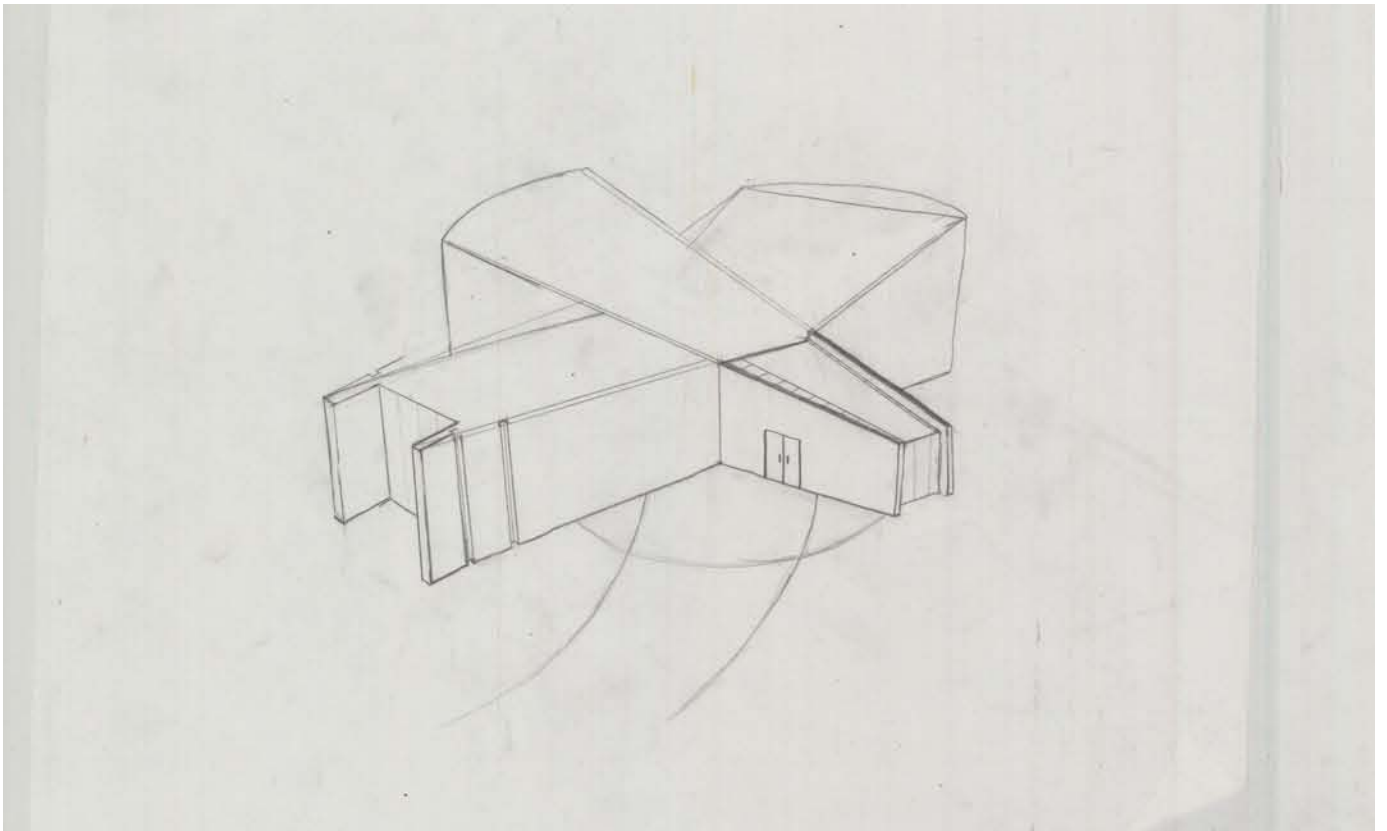


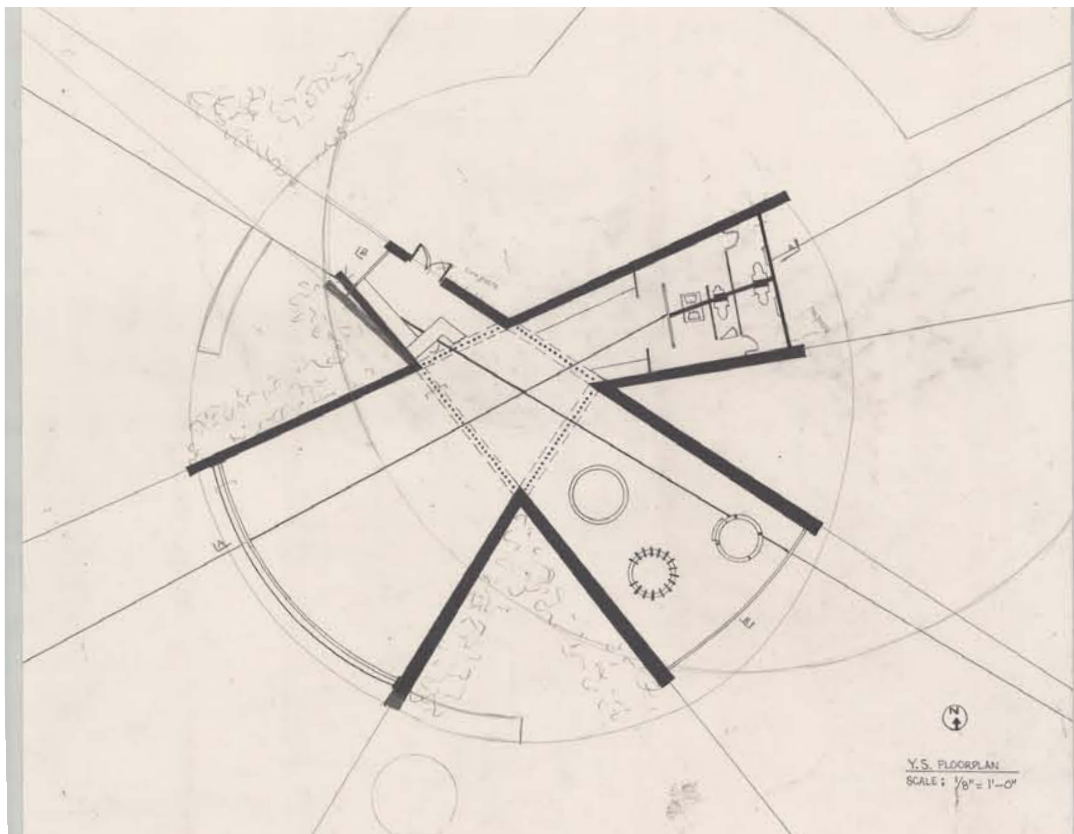
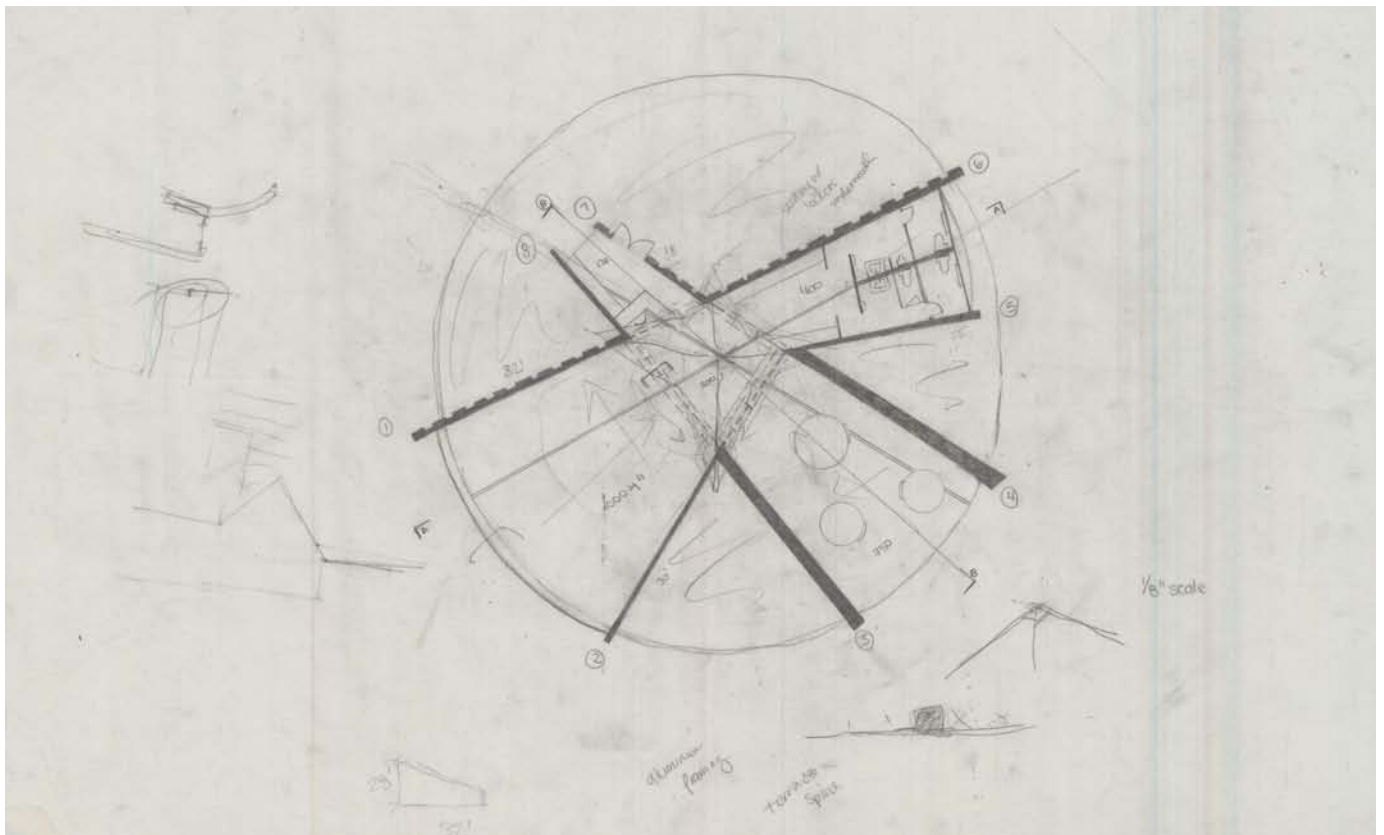


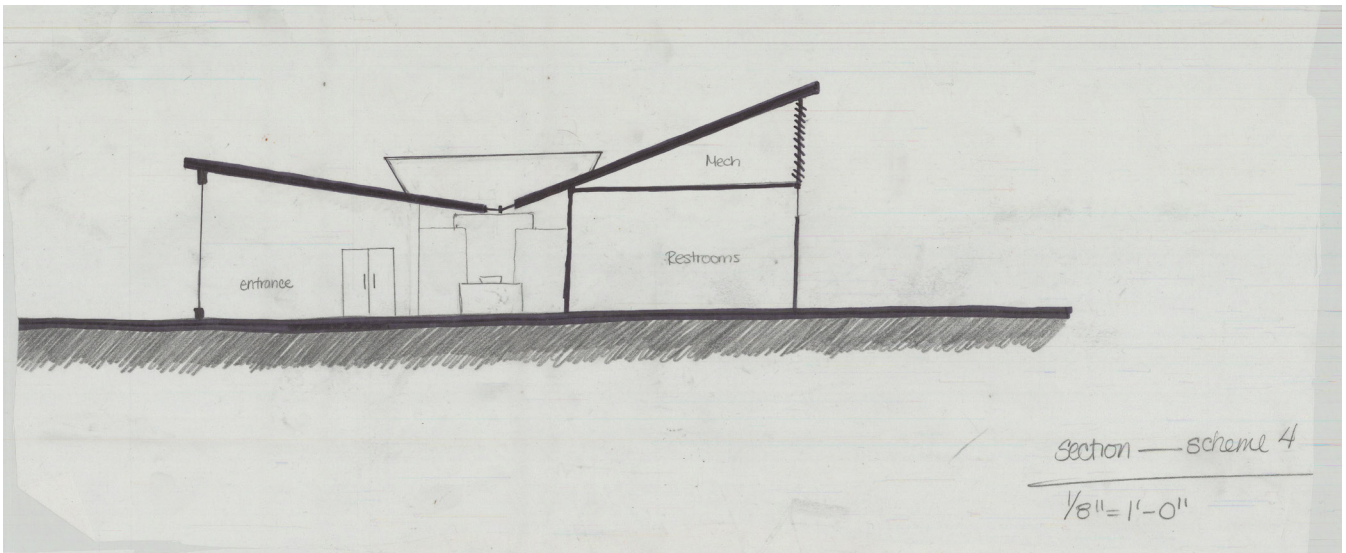




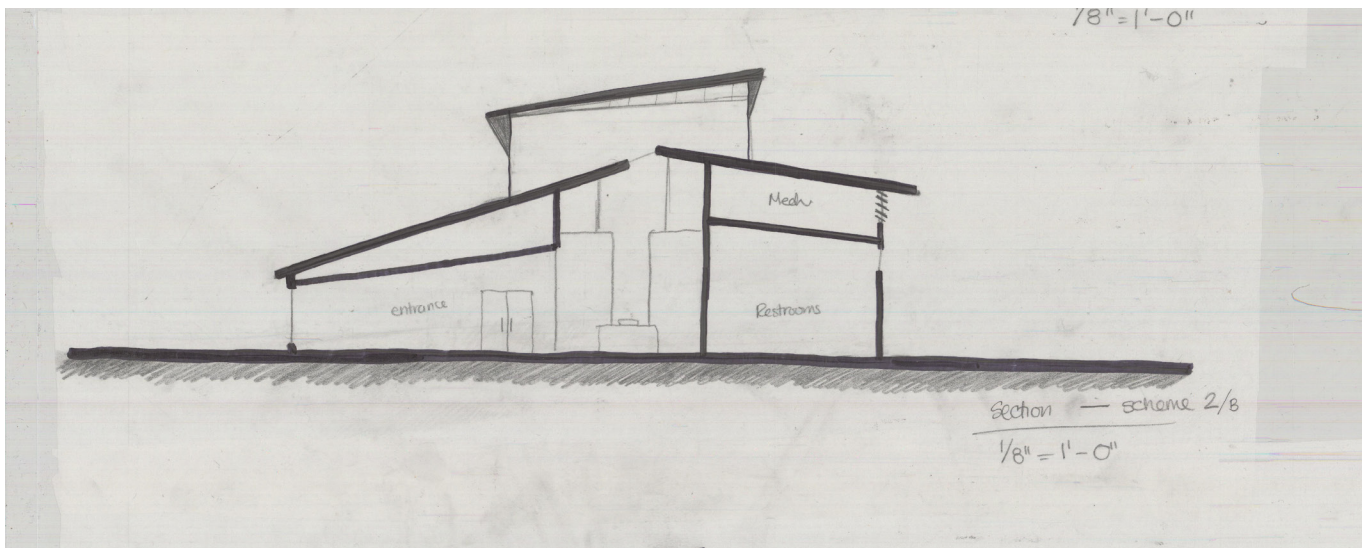
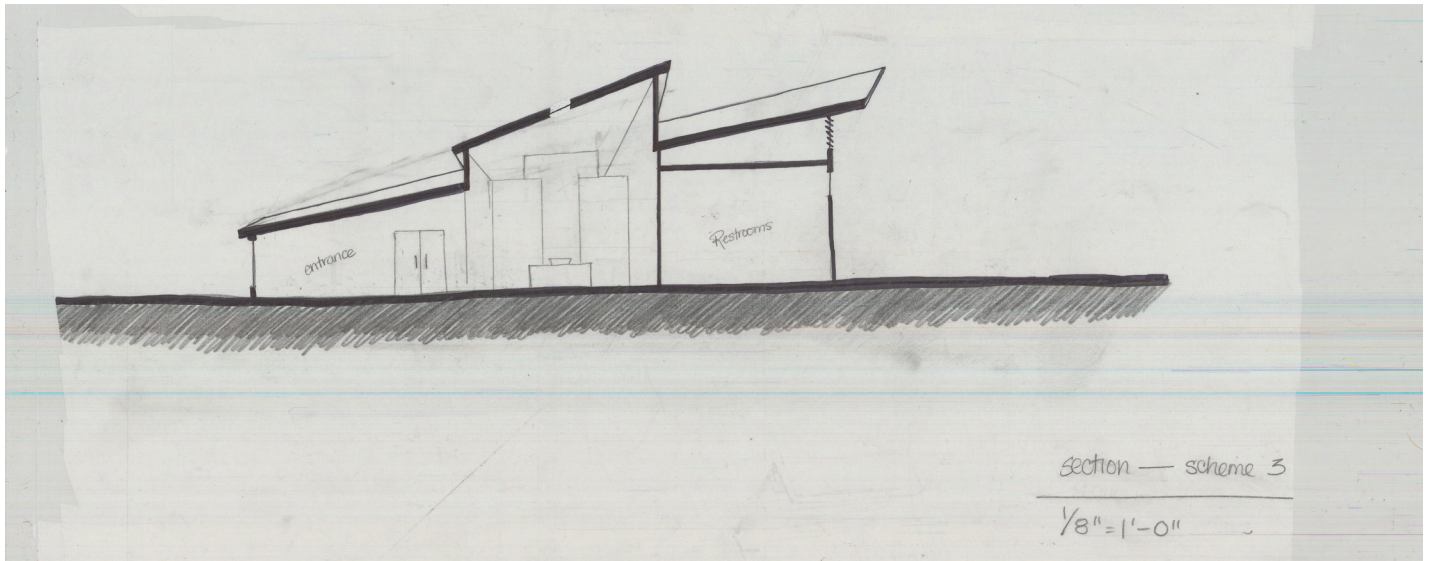


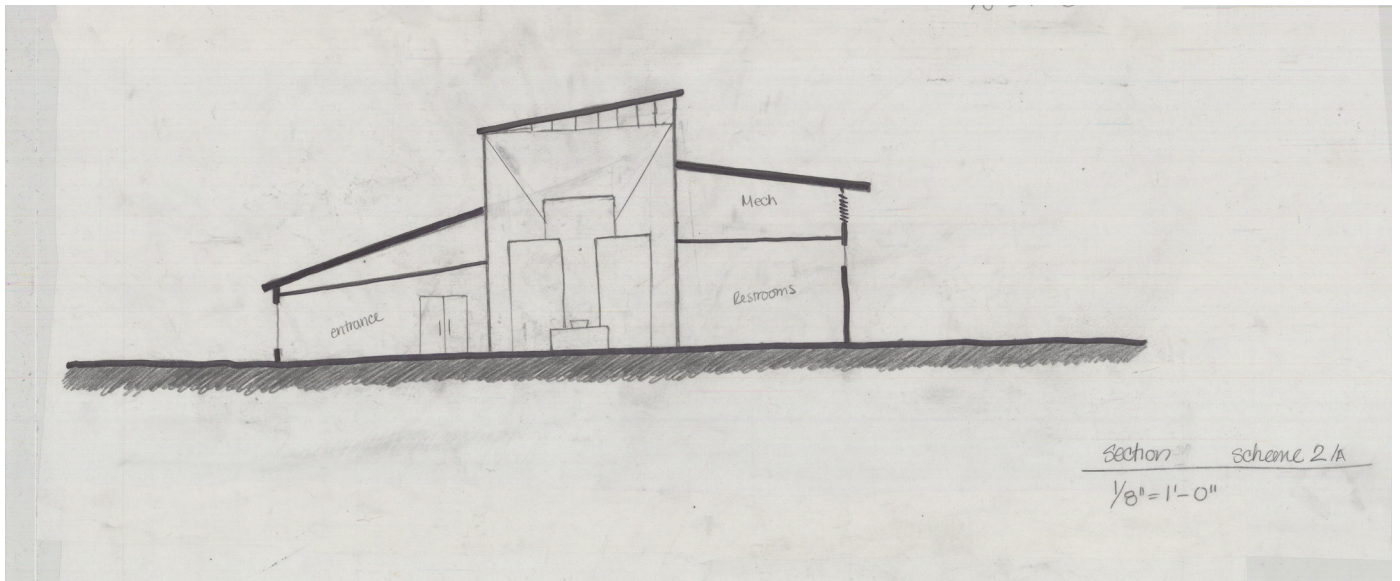
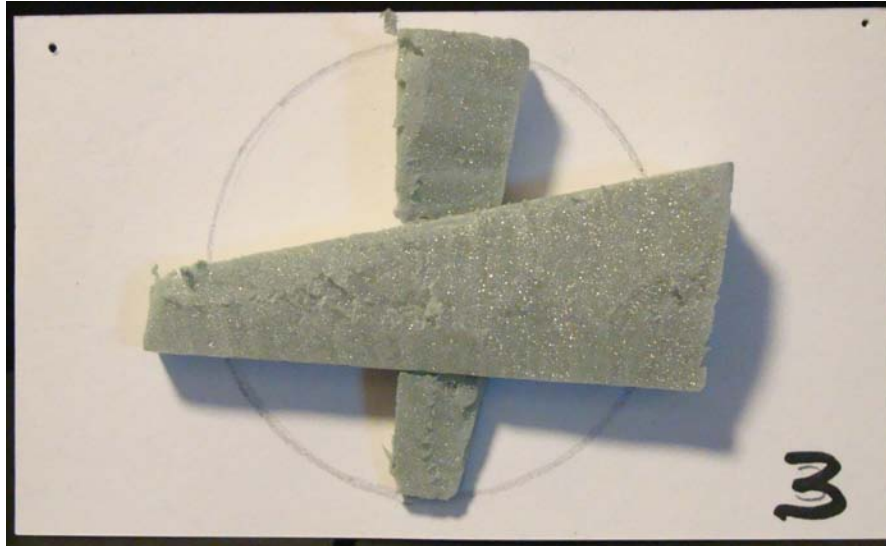


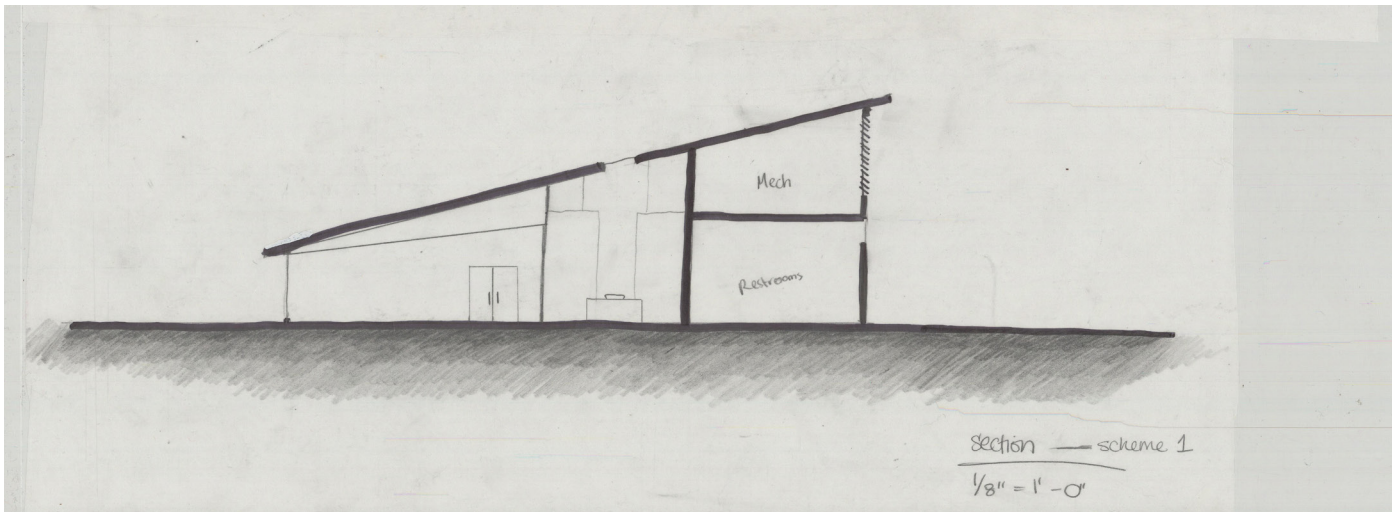
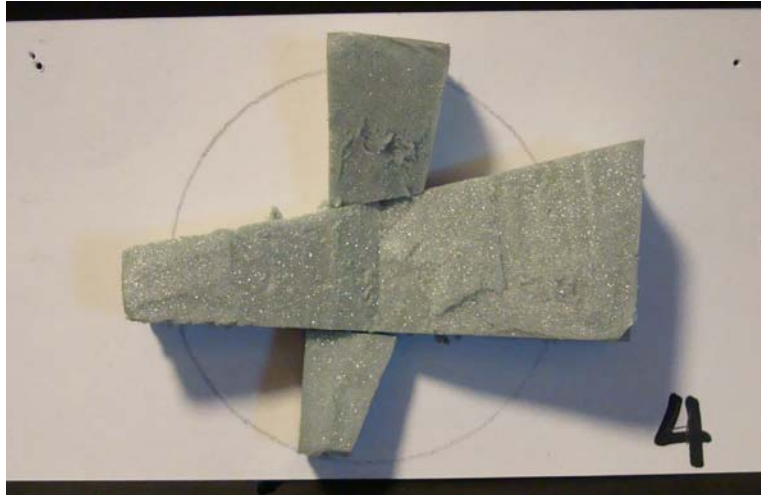


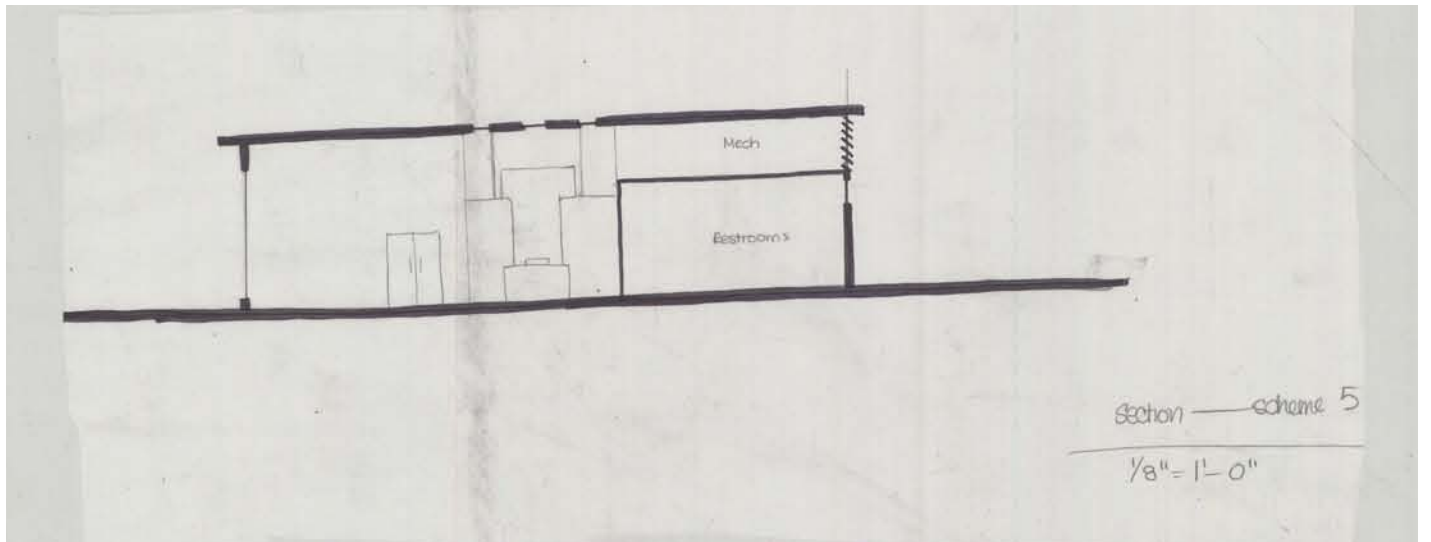
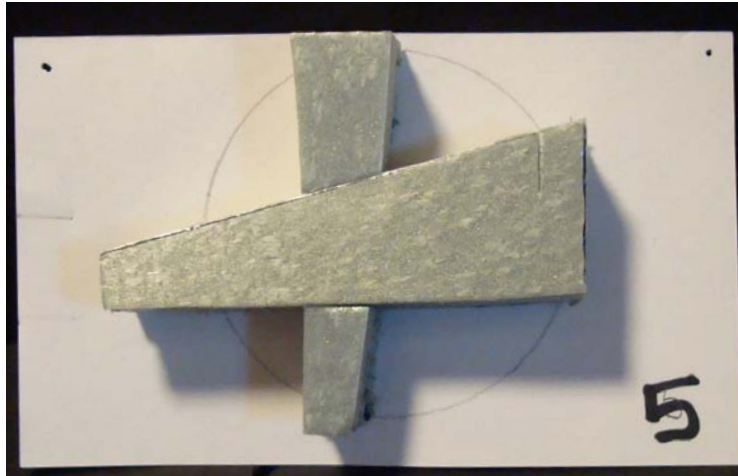


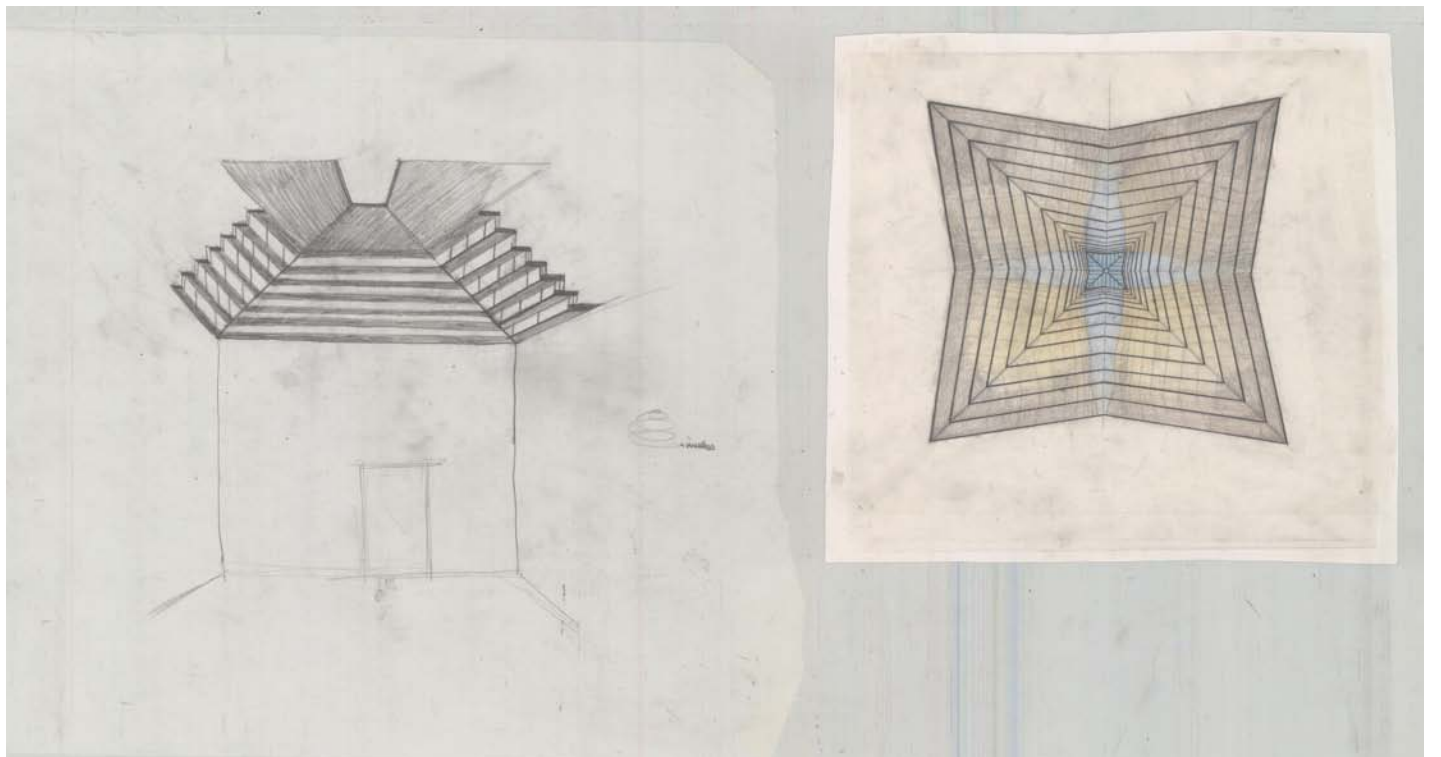
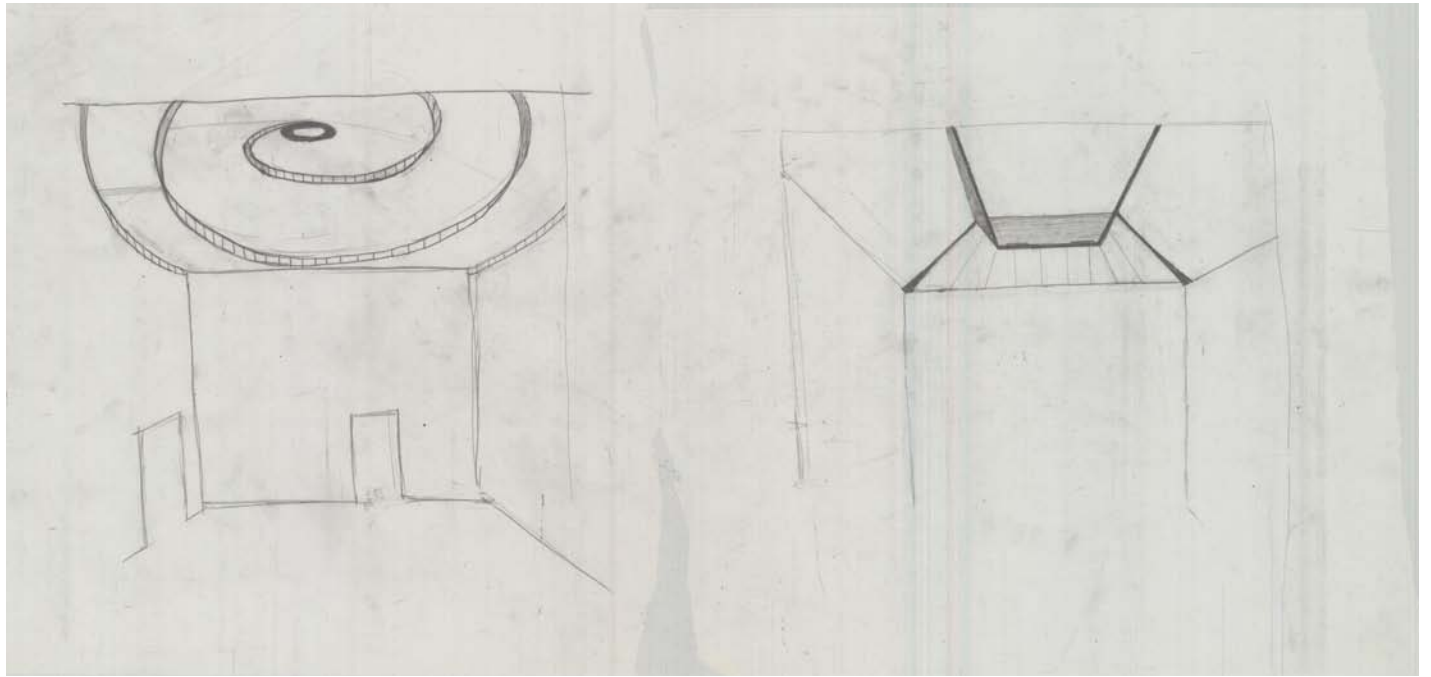




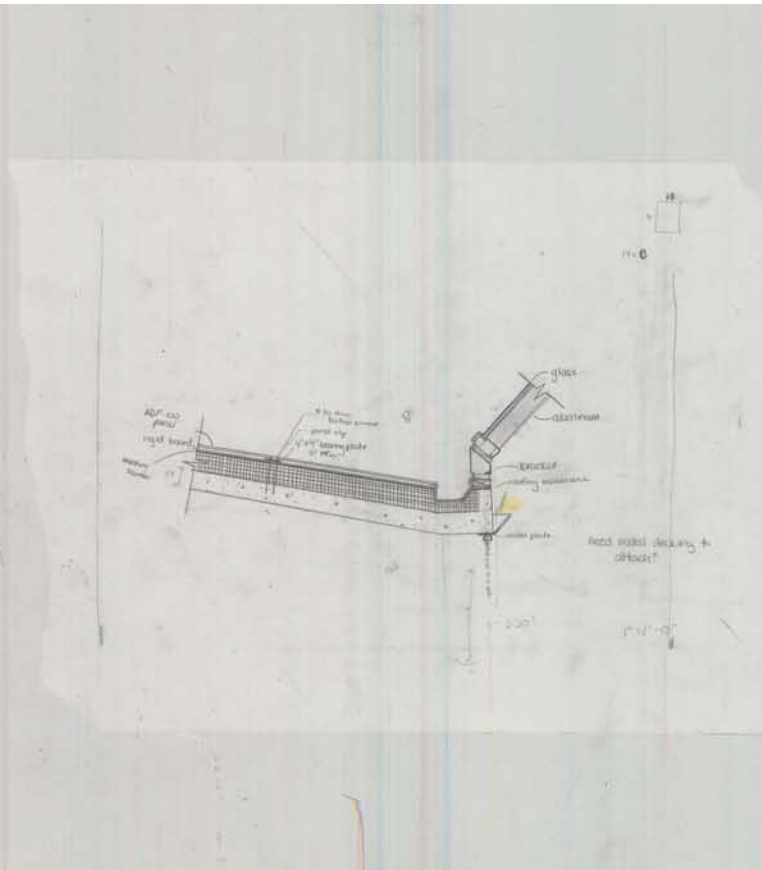
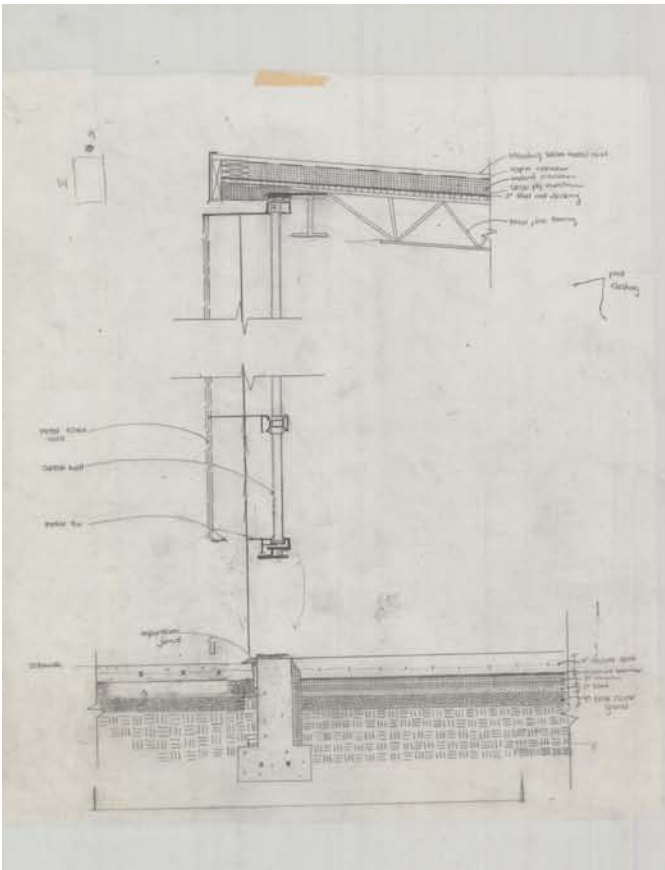


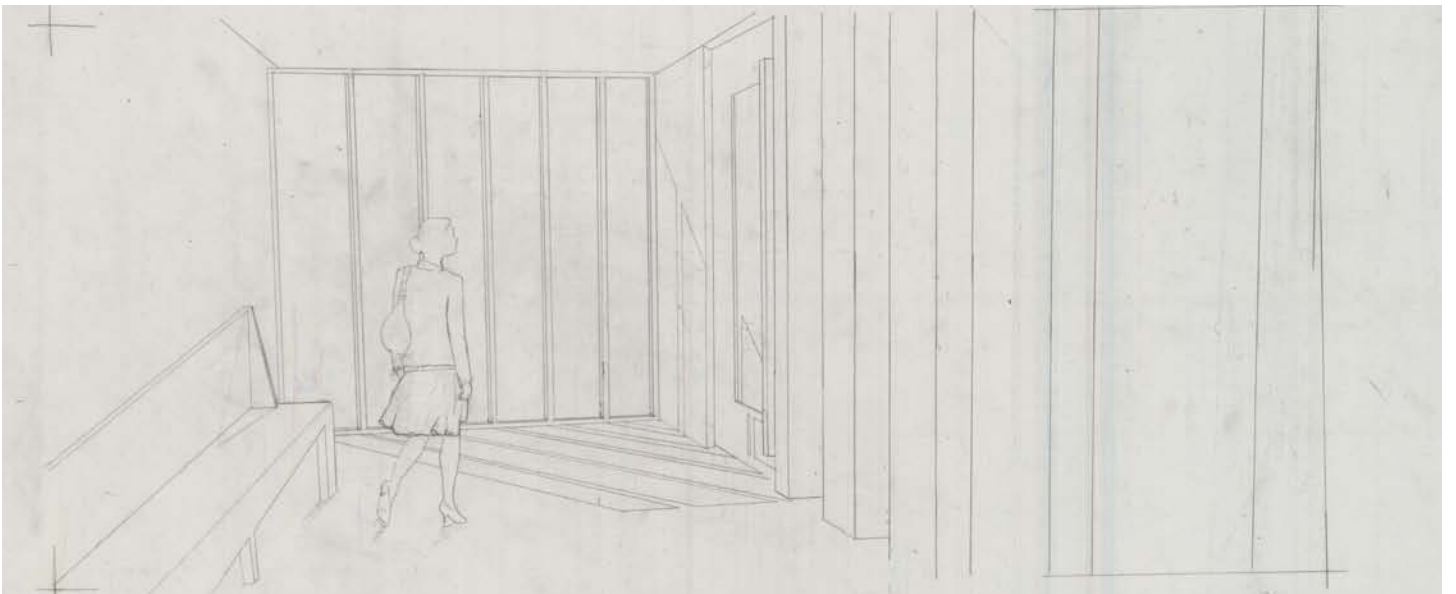
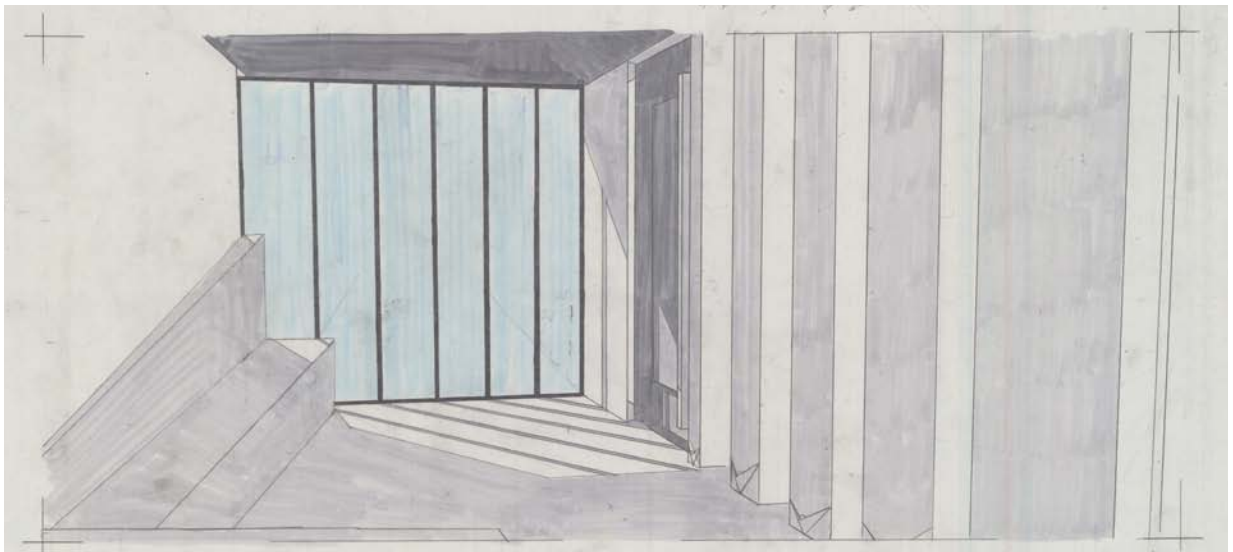
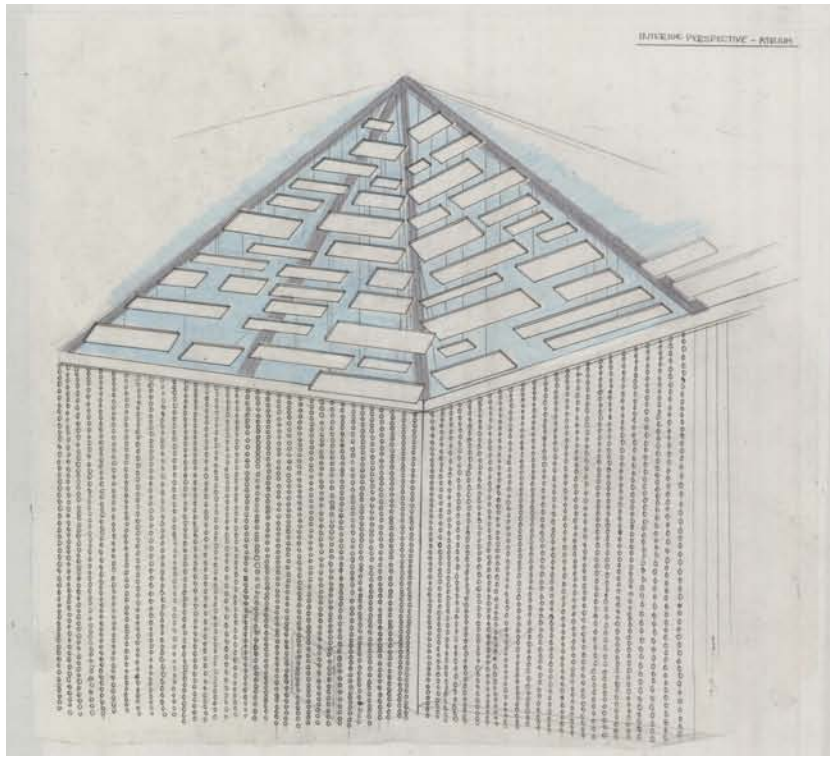




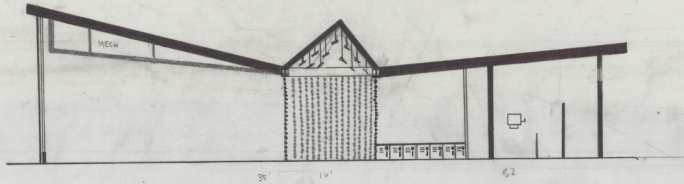


## Final Drawing Sketches

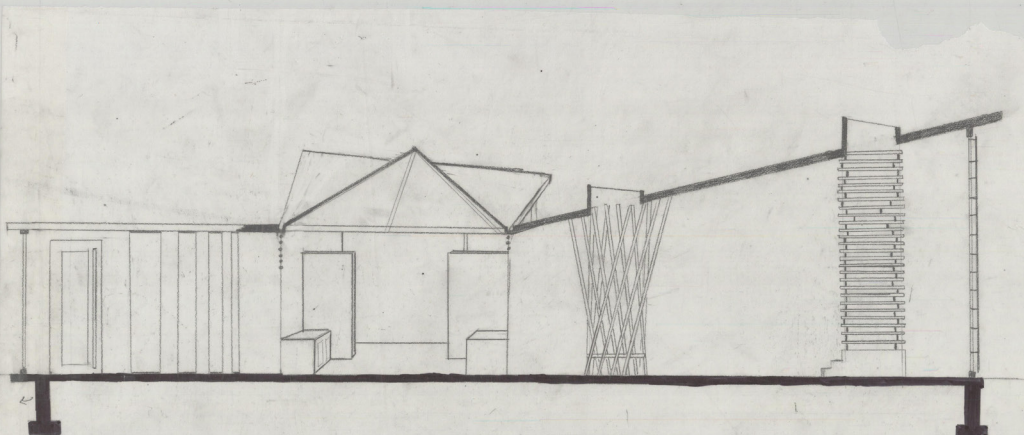
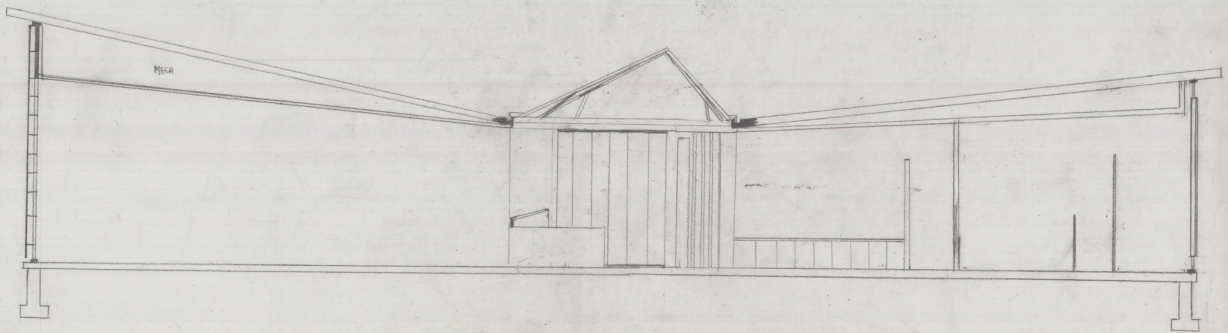




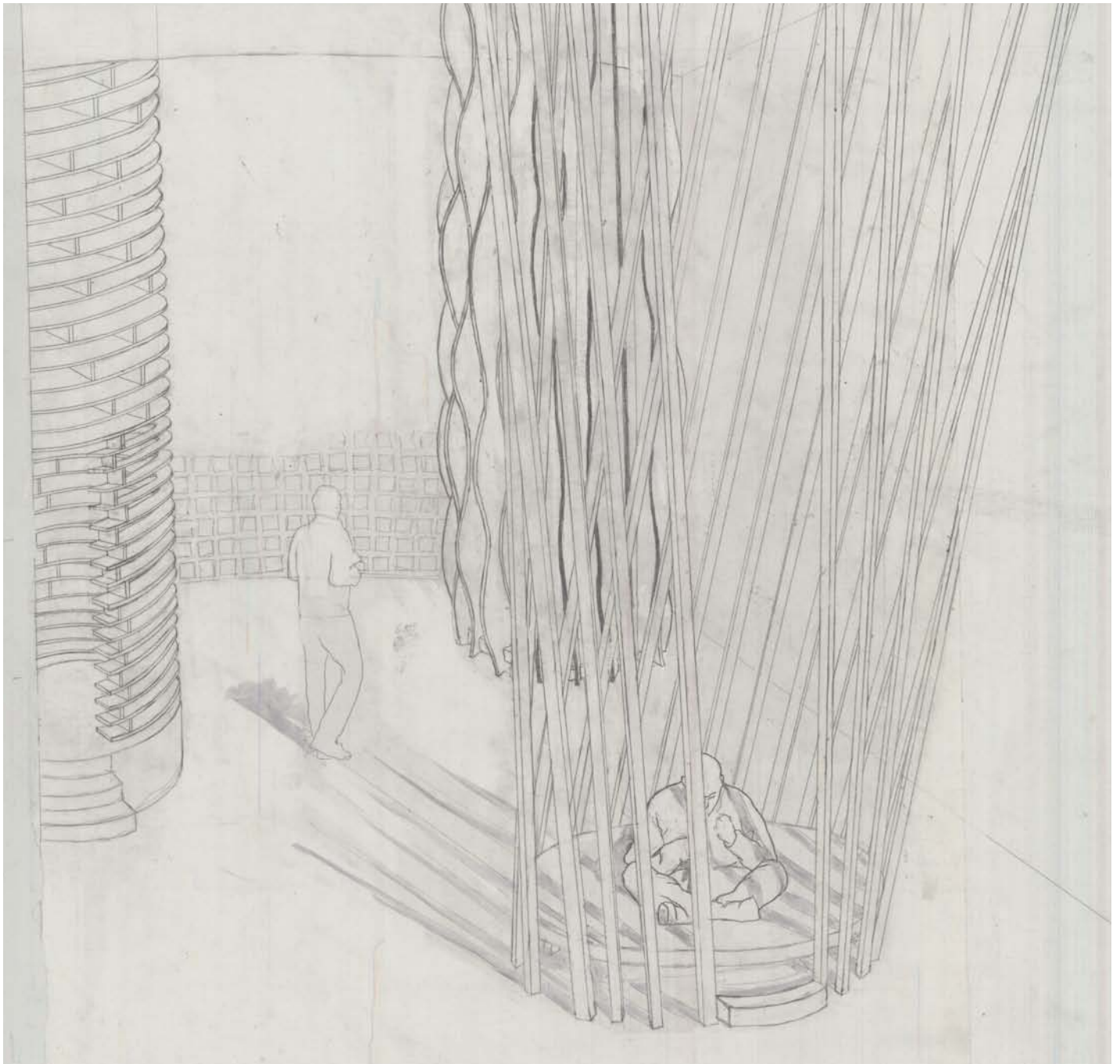


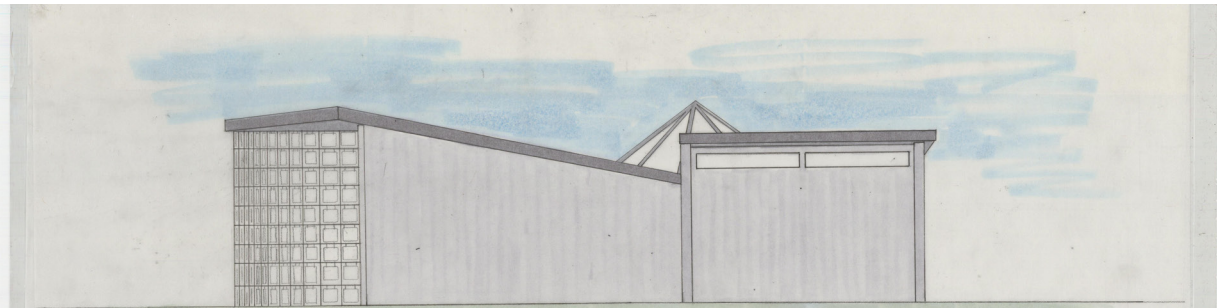


Y.S. BUILDING SECTION A  
SCALE: 1/8" = 1' - 0"

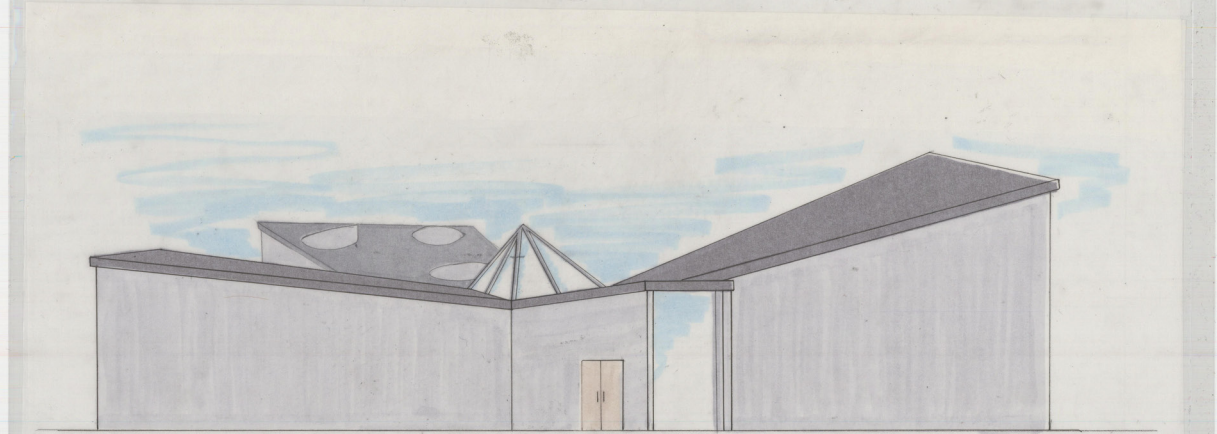


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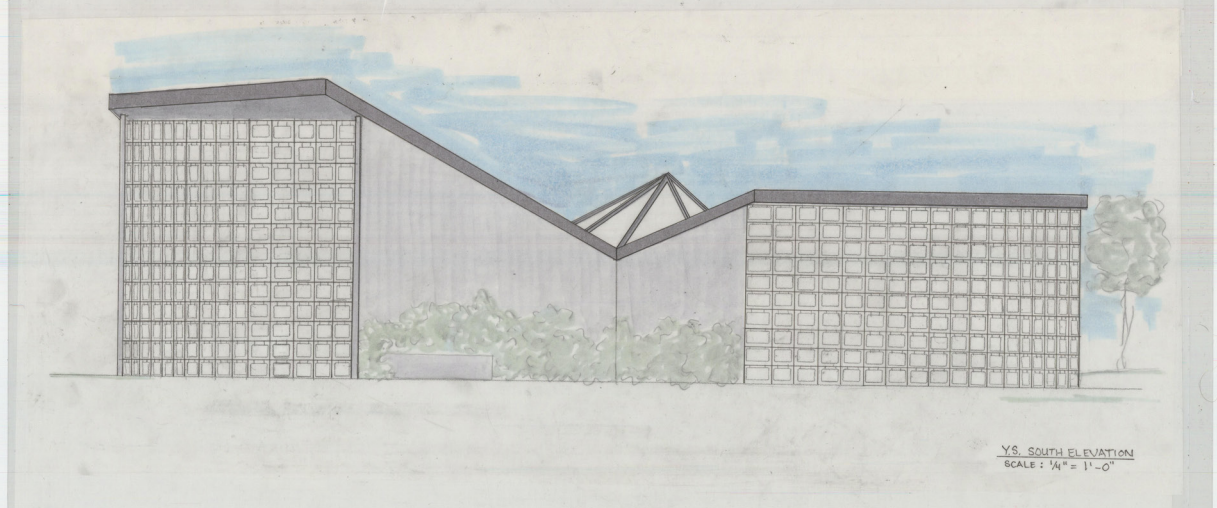




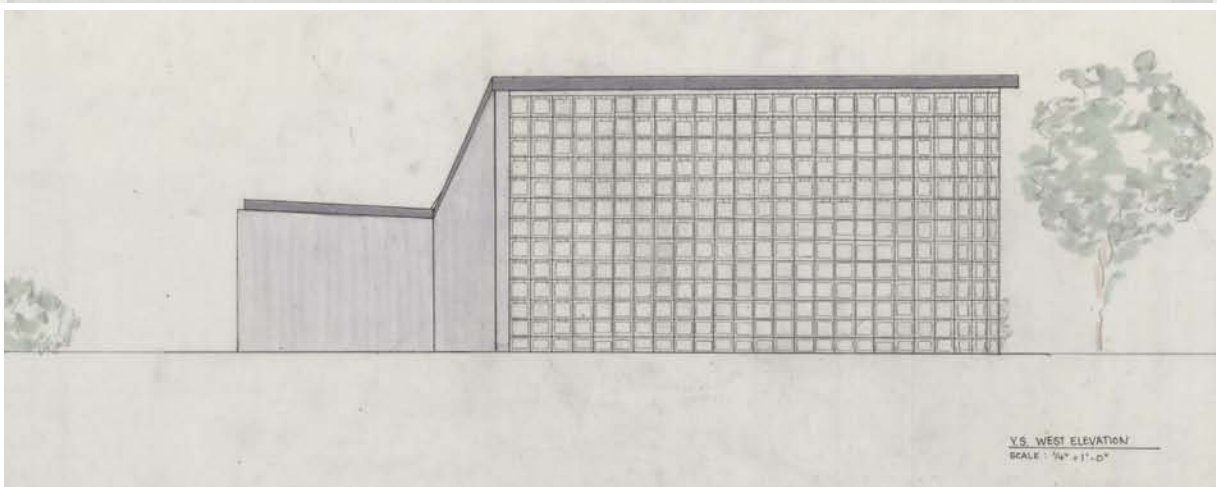
Y.S. EAST ELEVATION  
SCALE: 1/4" = 1'-0"



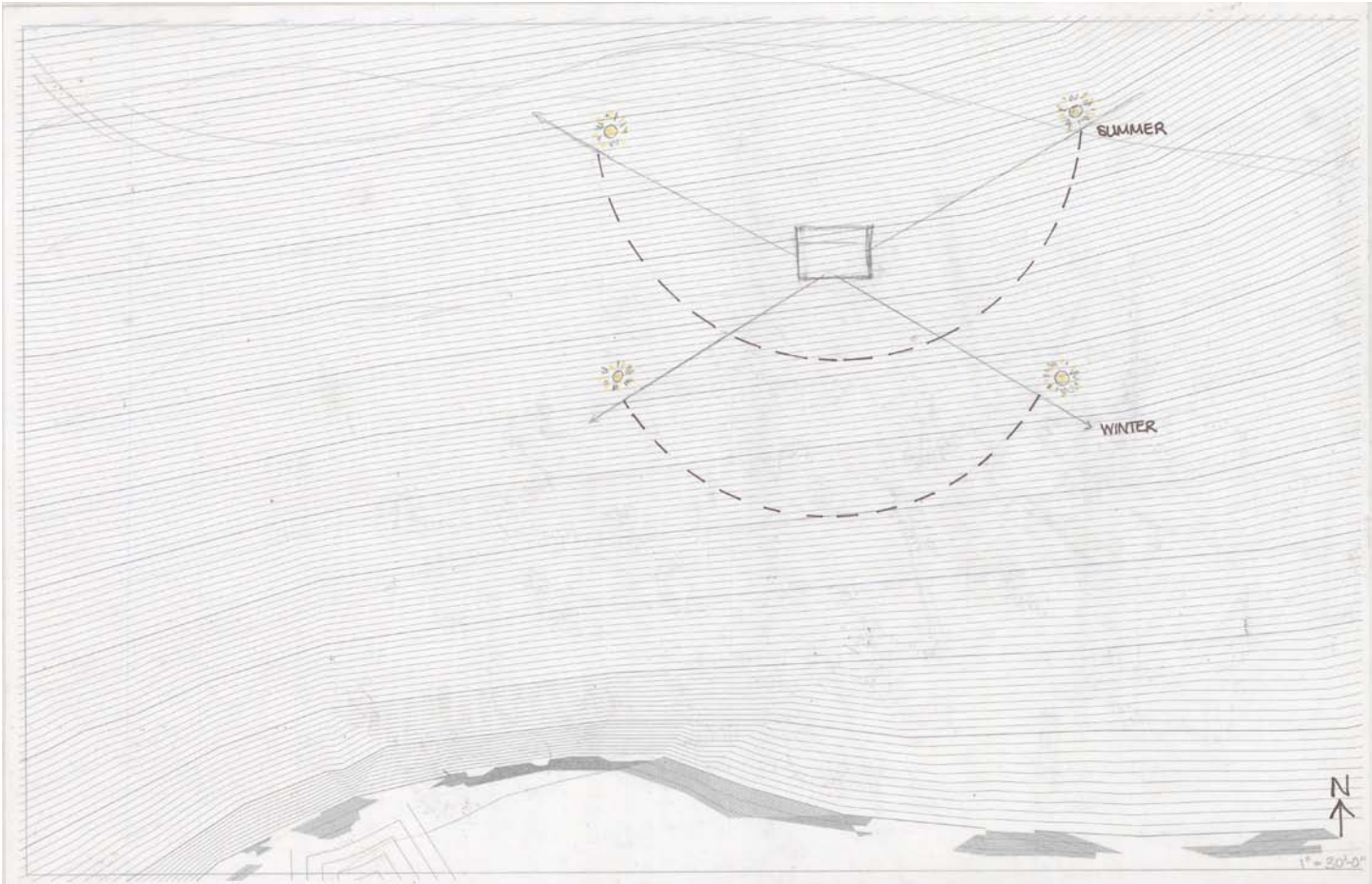
Y.S. NORTH ELEVATION  
SCALE: 1/4" = 1'-0"



Y.S. SOUTH ELEVATION  
SCALE: 1/4" = 1'-0"

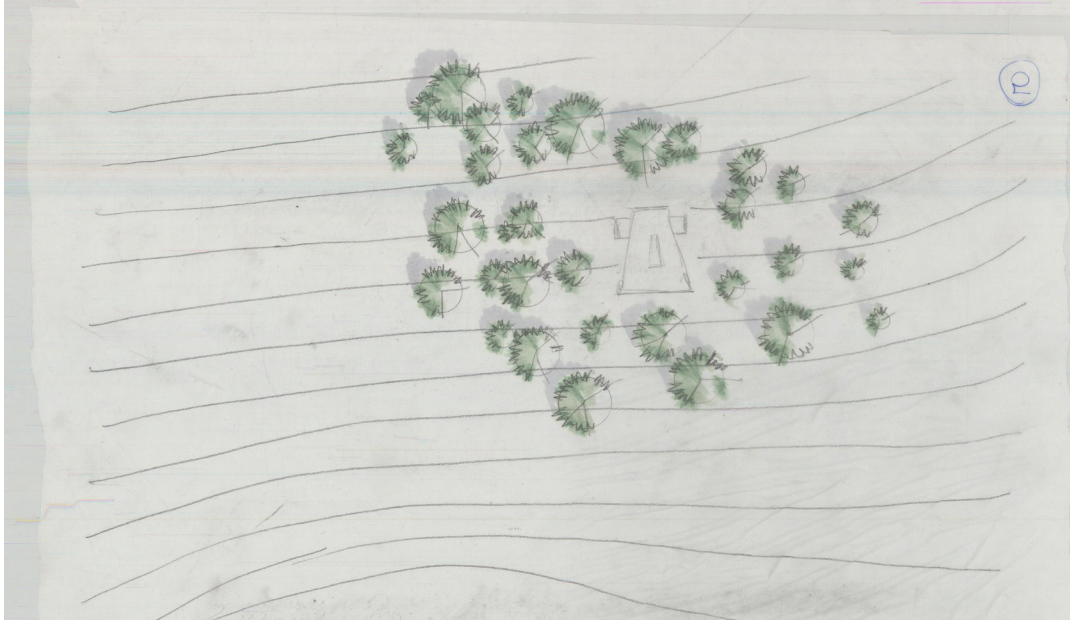
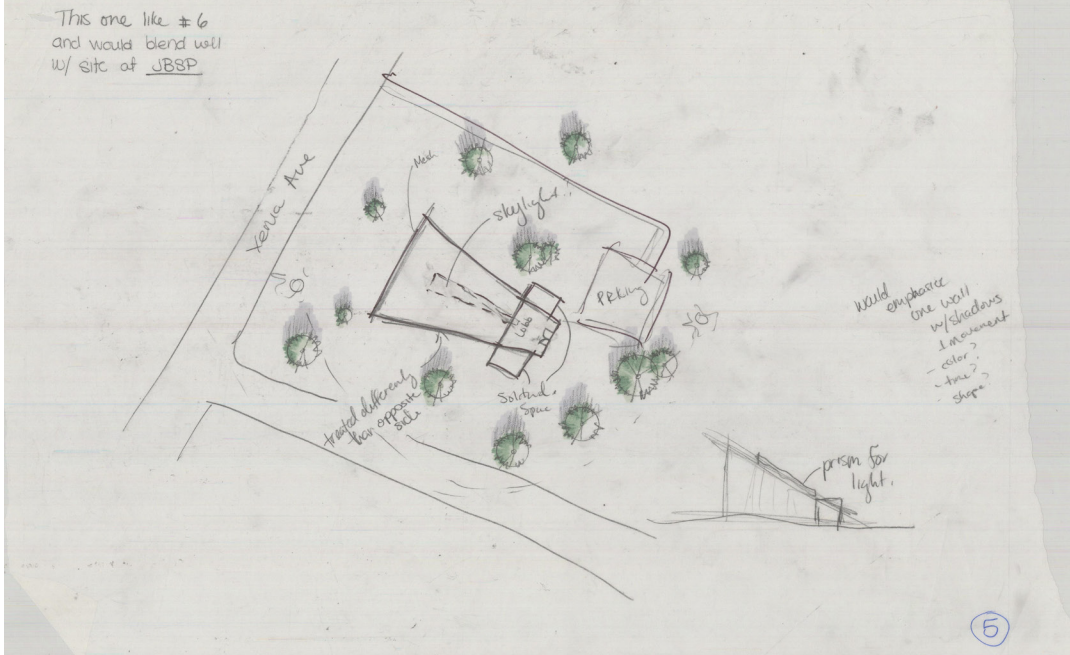
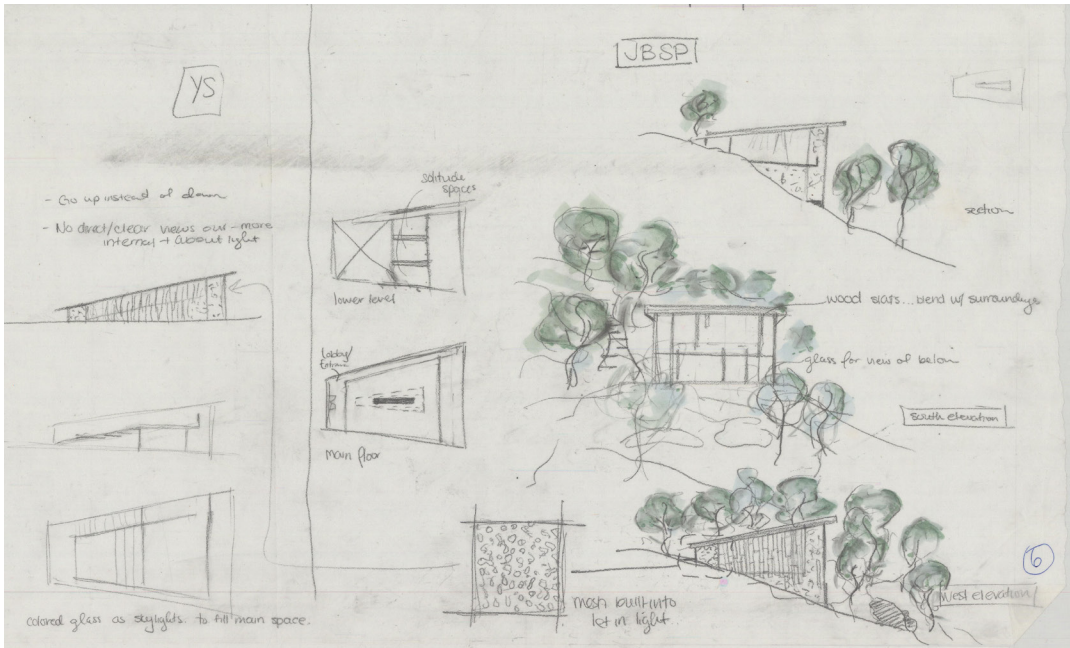


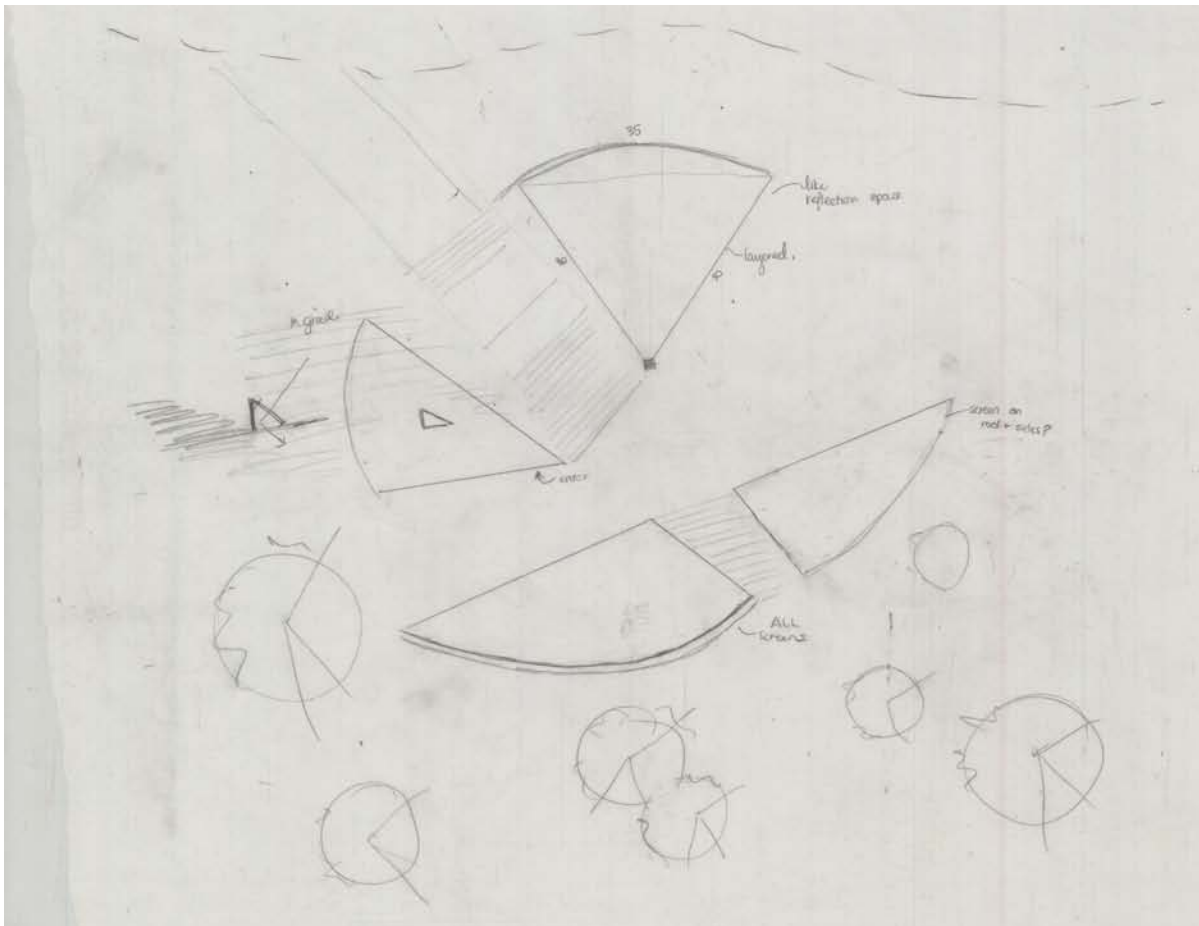
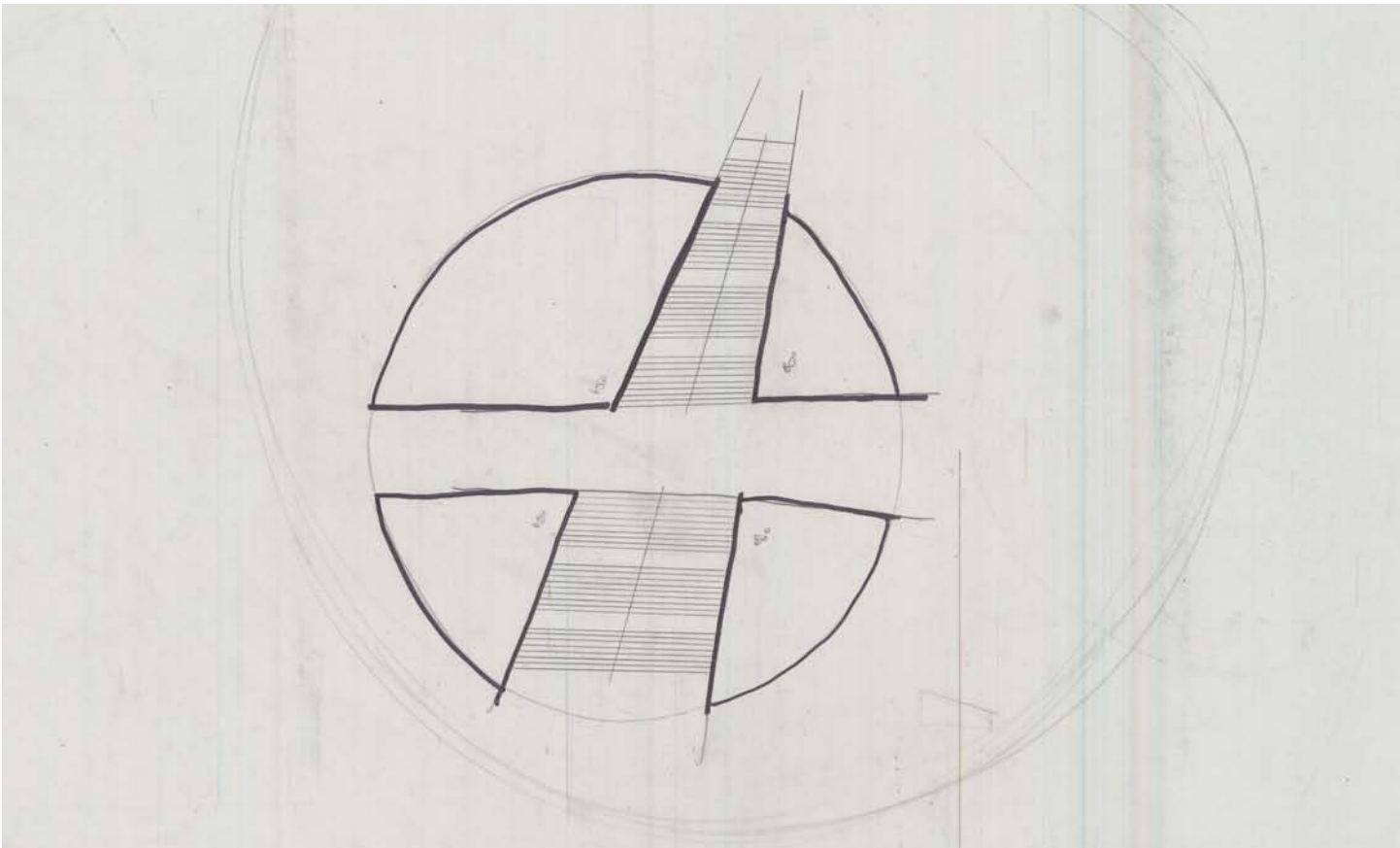
Y.S. WEST ELEVATION  
SCALE: 1/4" = 1'-0"

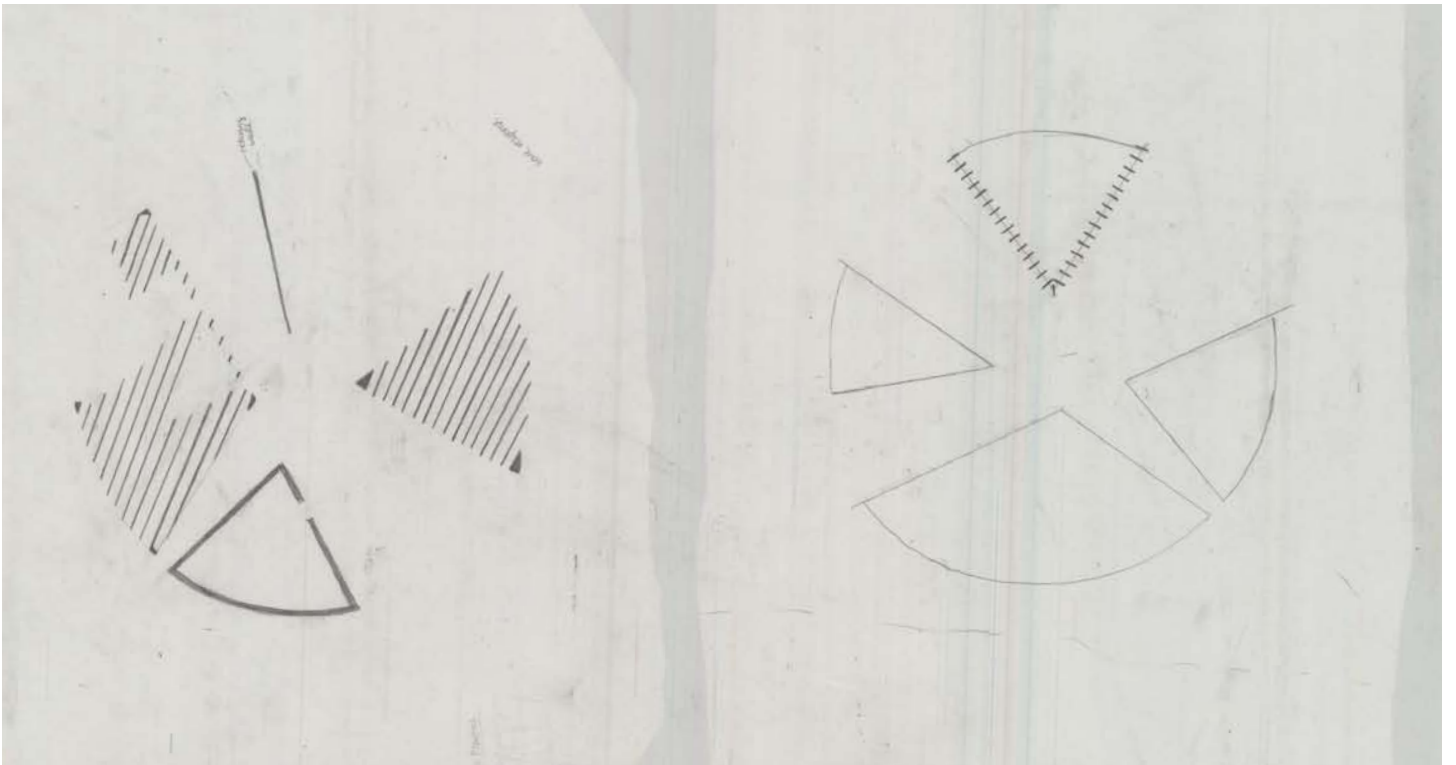
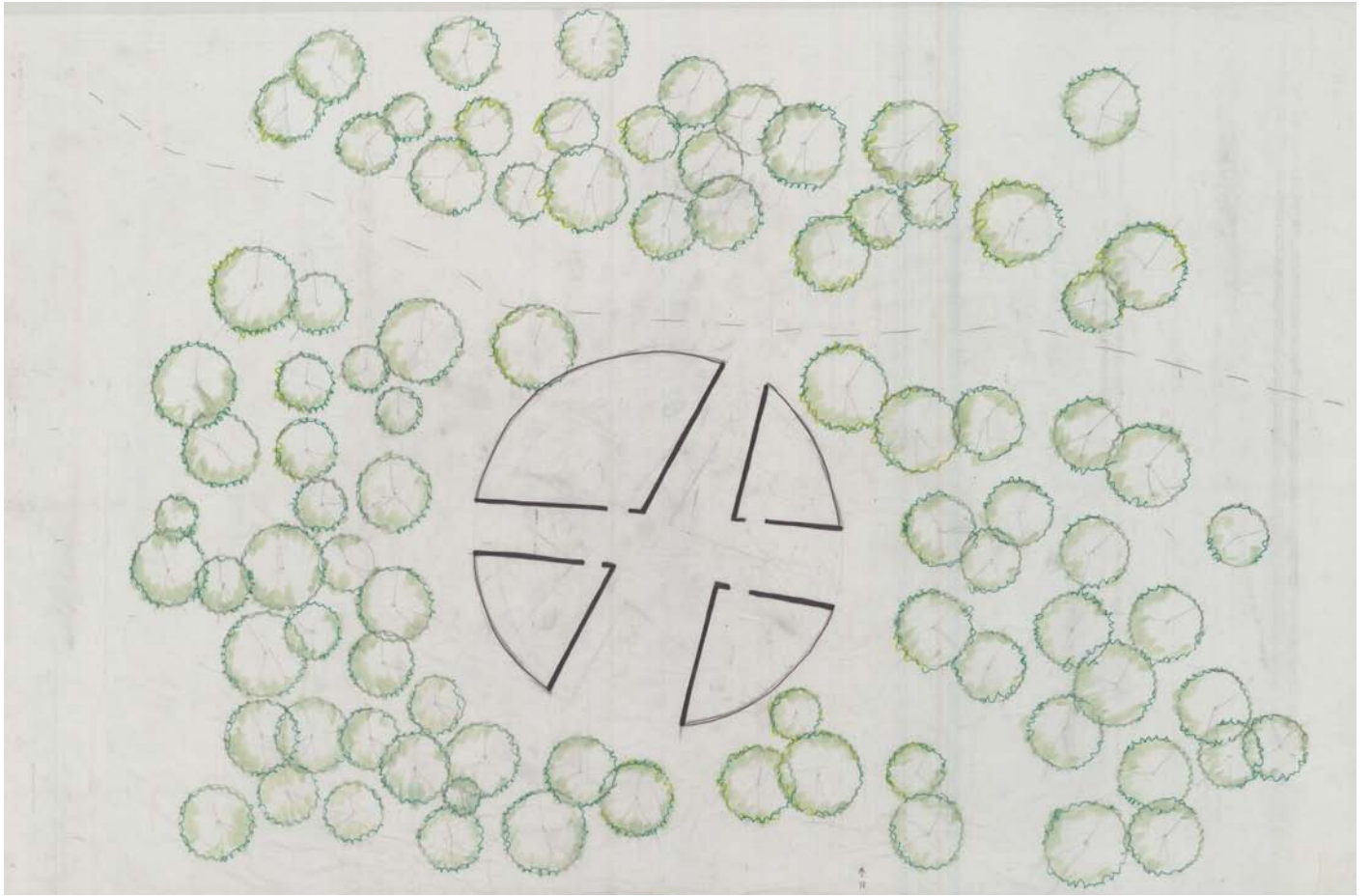


Sun path on the John Bryan State Park Site

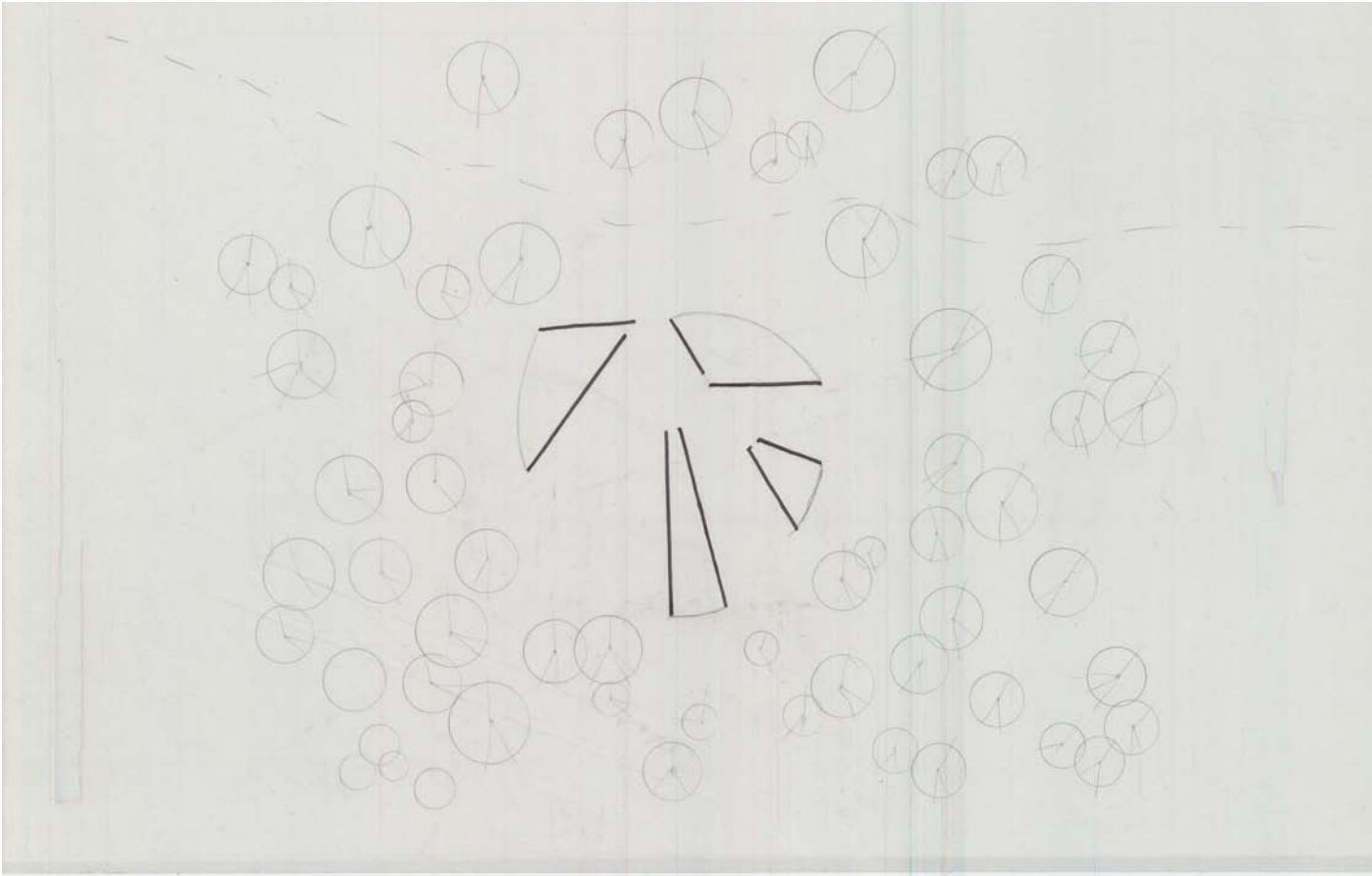
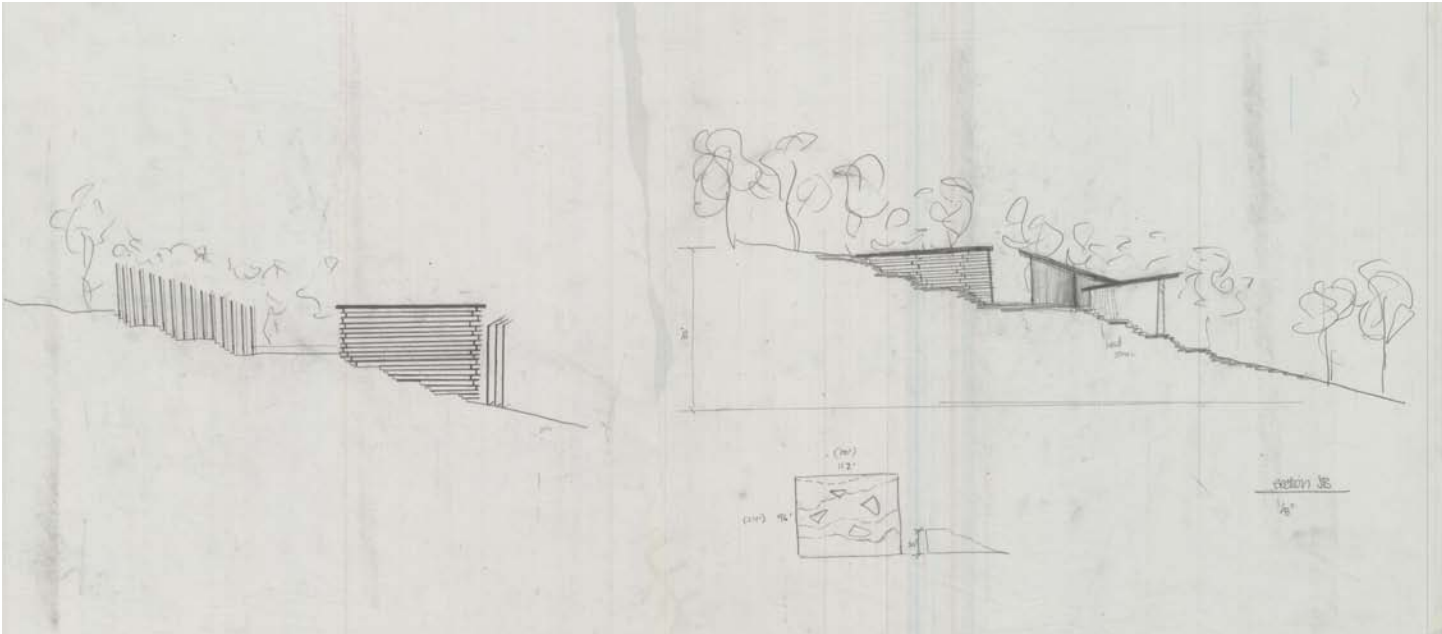
# Building Form Exploration



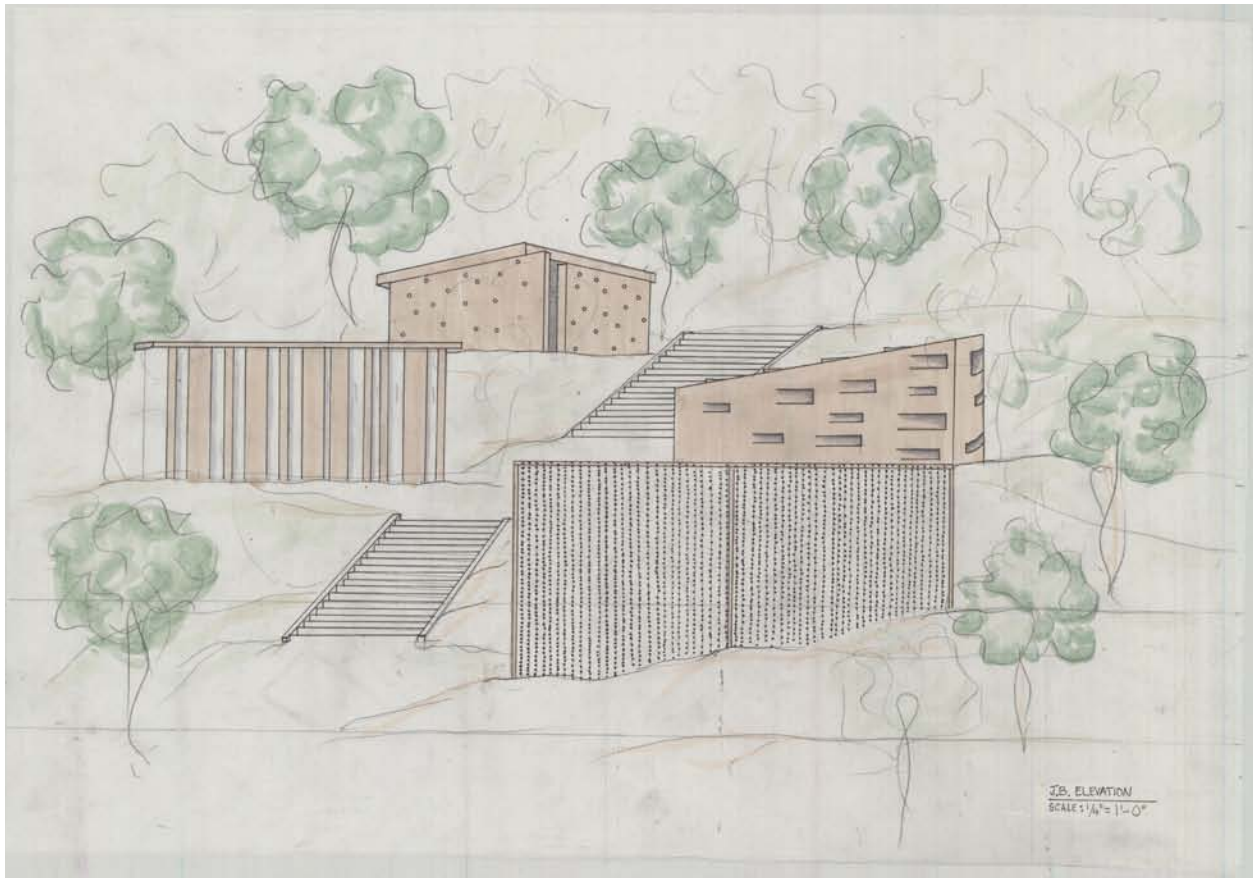
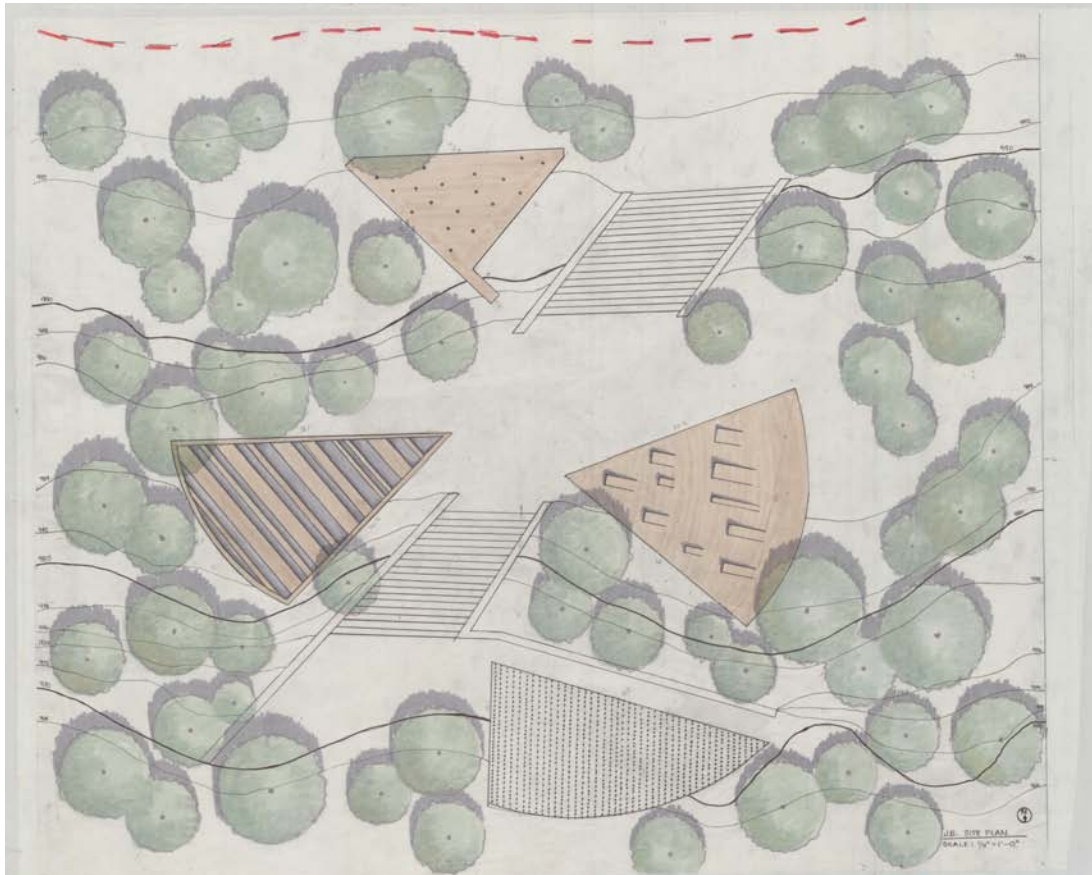


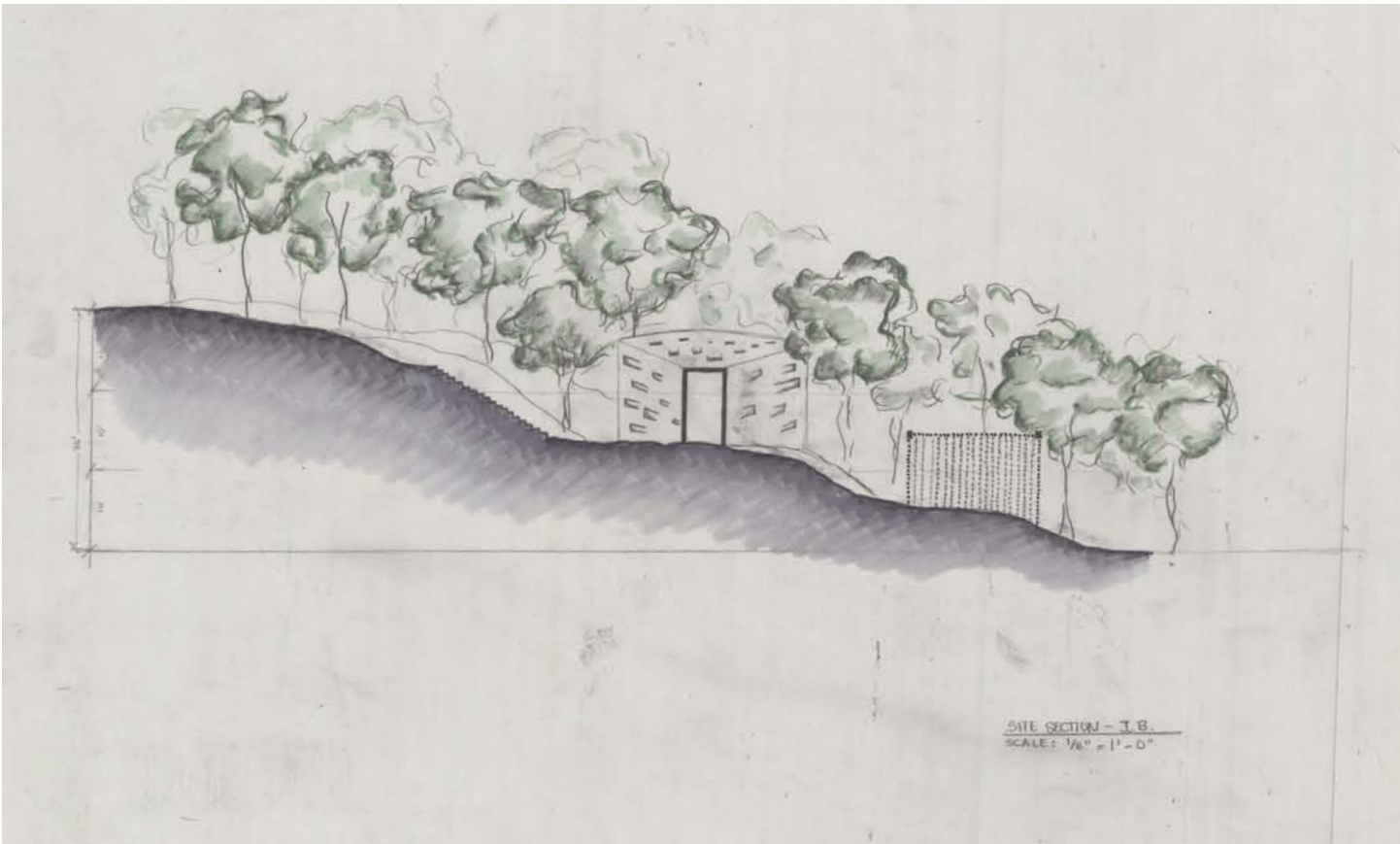
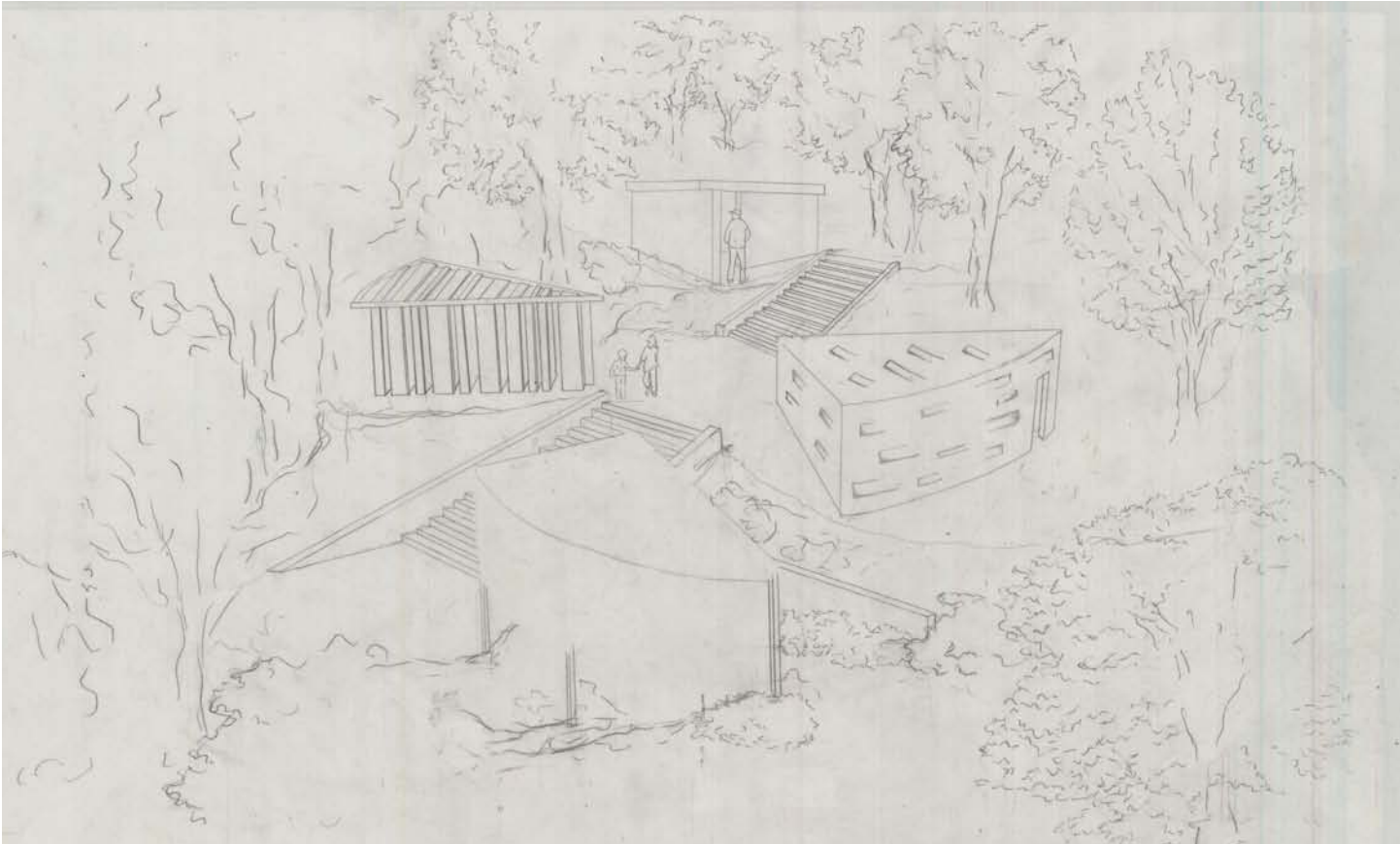




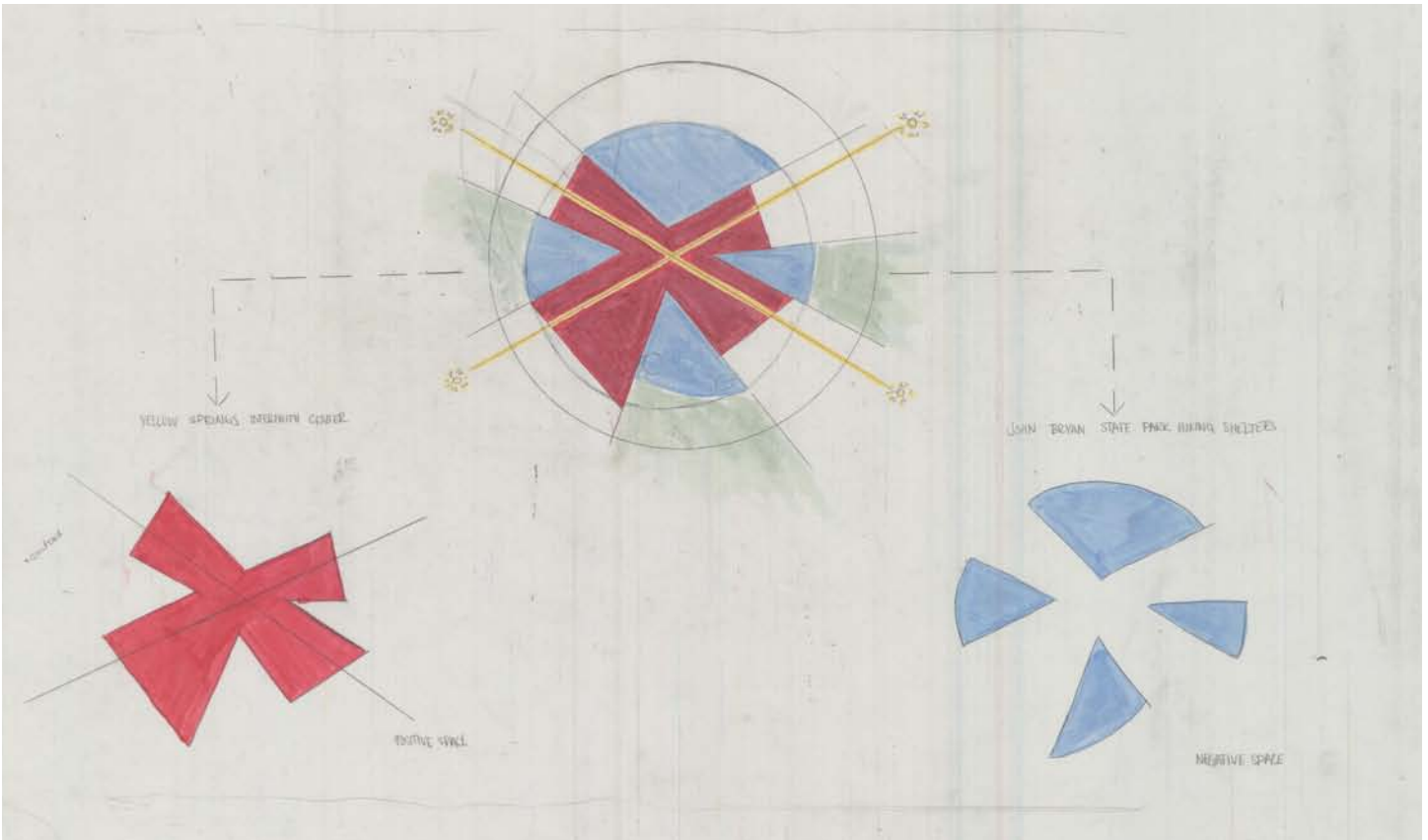


## Final Site Sketches and Exploration

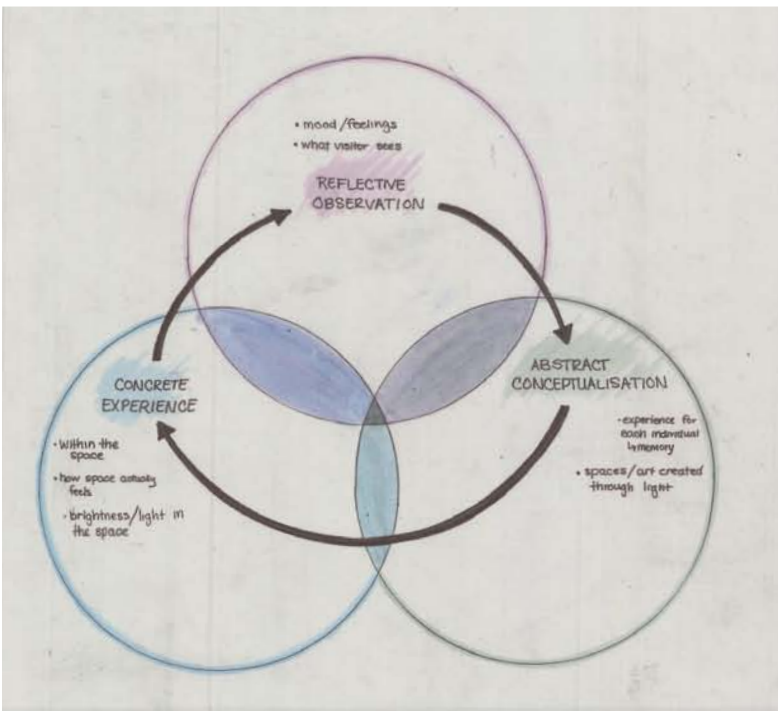




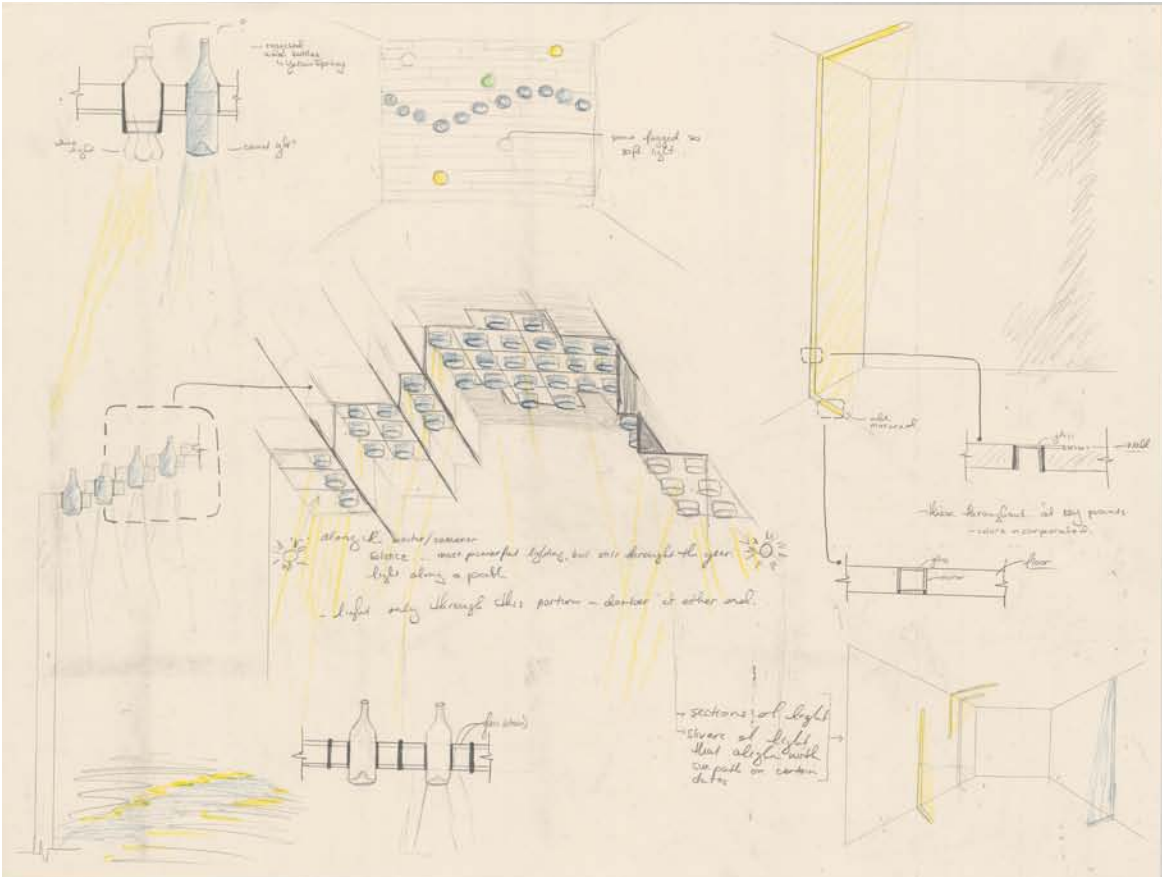
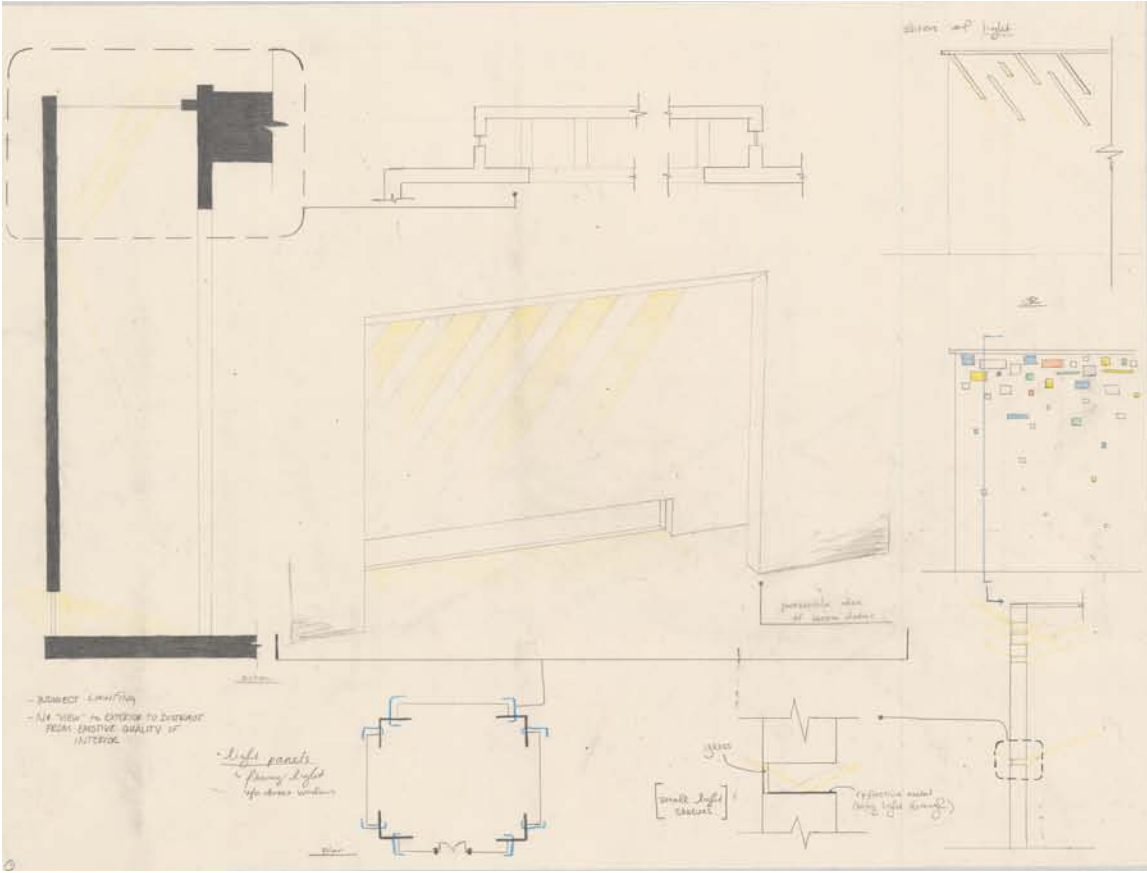
## **General Process Work**



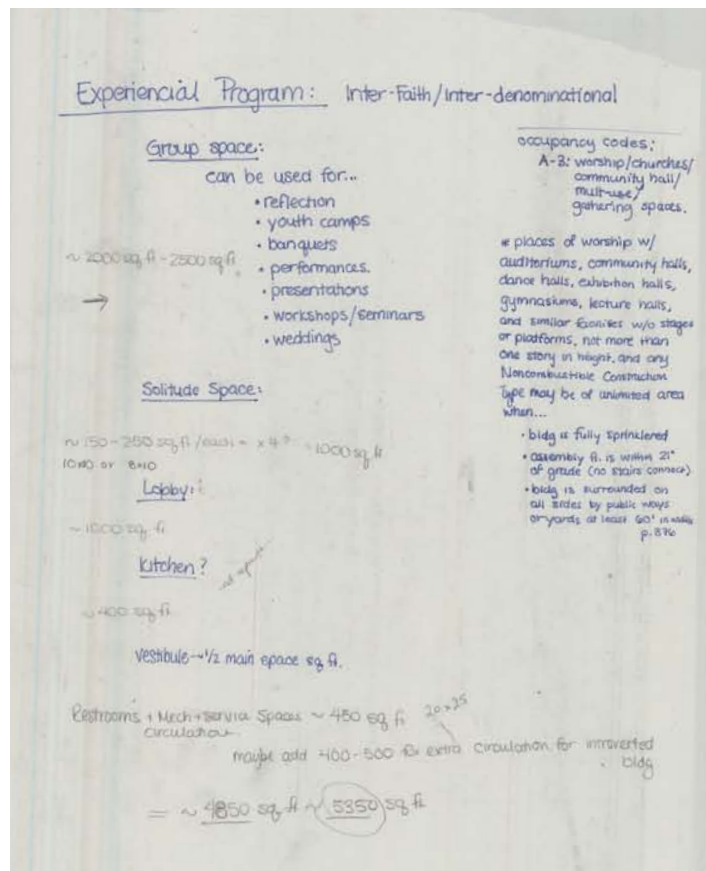
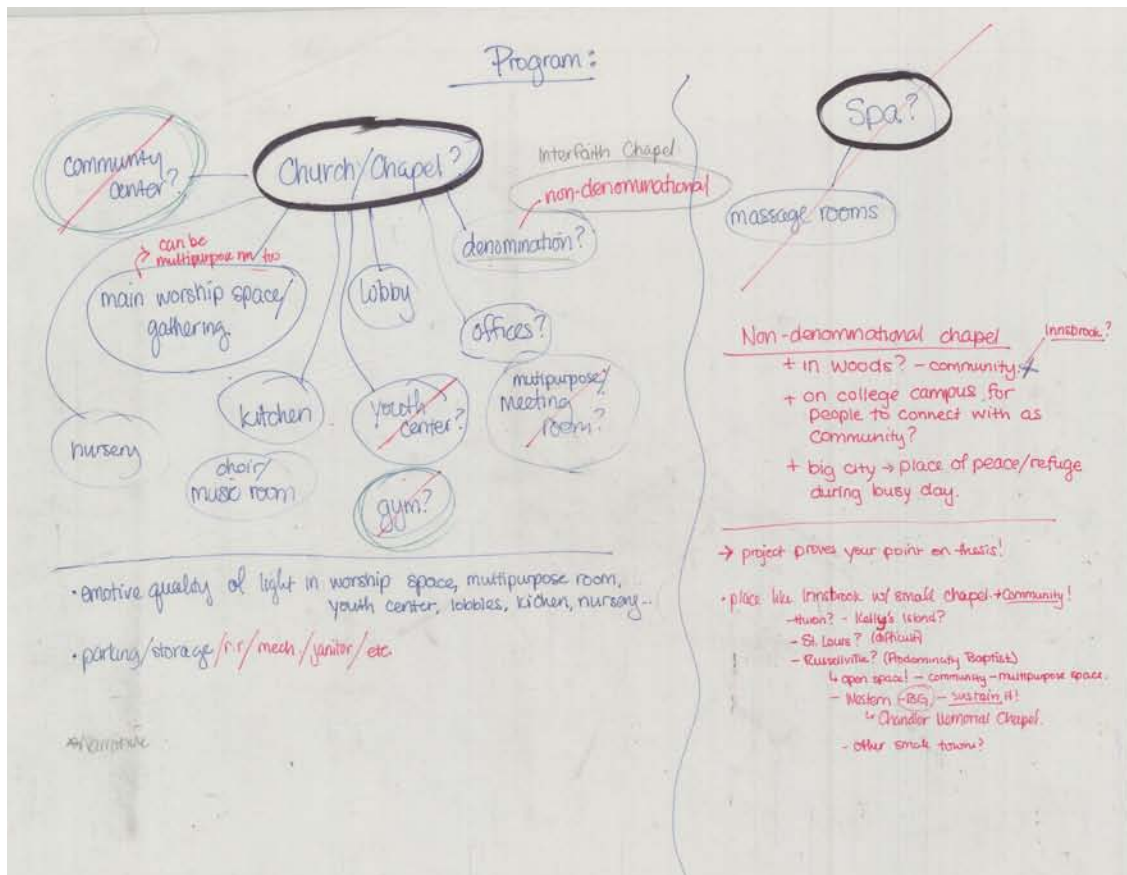
building parti sketch



concept ideas



detail ideas





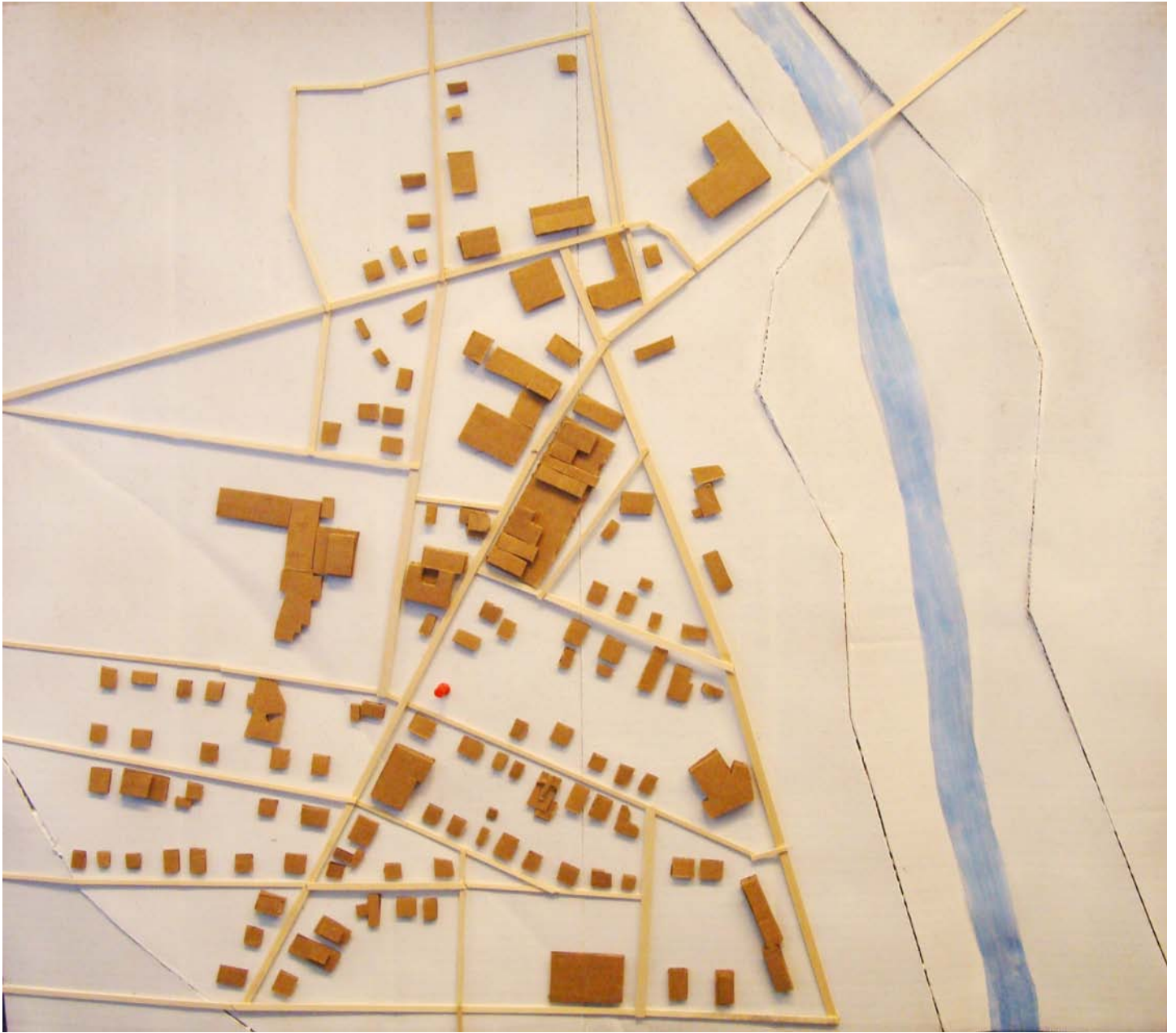
## John Bryan State Park site:

- Sun coming through the trees, painting the surface below
- Silence — sounds of nature and every once in a while hear people walking the trails.
- looking up at the tree canopy — sense of scale (felt small and kind of put in my place in nature/world)
- views breath-taking.
- walking the trails — very peaceful/relaxing
  - ↳ walking through the trees — light + shadow
  - feel one with nature. — no cell phones/contact with rest of the world.
- \* want to preserve NATURAL feeling of being back to basics.
  - materials?
  - enclosure?
    - ↳ does this take away from natural ambiance/peacefulness for those on trails below?
    - ↳ can this enhance as well as blend on exterior, but be something unexpected on "inside"?
- I am not usually a nature person... don't usually feel at peace or comfortable in this type of environment, just never have. But something about sitting on the edge of the cliff on the rock over looking the scene. Perhaps it is what the doctor ordered and what I needed at this point in the semester, but it was like at that moment I had found a spot off the trail where even if I could <sup>hear</sup> others walking the trail, I couldn't see them. I had the place to myself.
- It was an hour of "recharge" I needed. Feeling the warmth of the sun on my face as it trickled through the branches. — not the same as walking along the streets and having the sun peek out from behind a building or structure that is hiding it.
- \* As I looked in EVERY direction, I was surrounded by nature. — Nothing to give a hint of civilization.

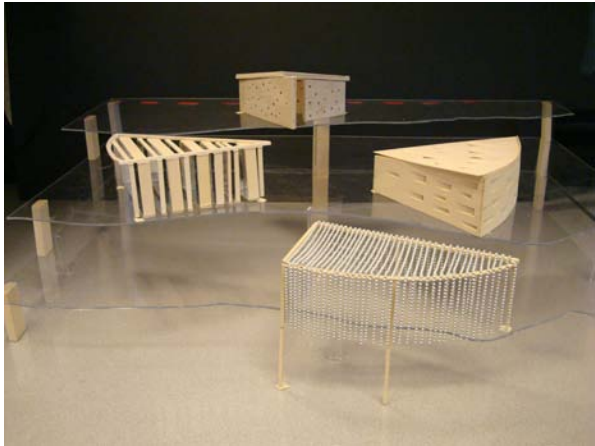
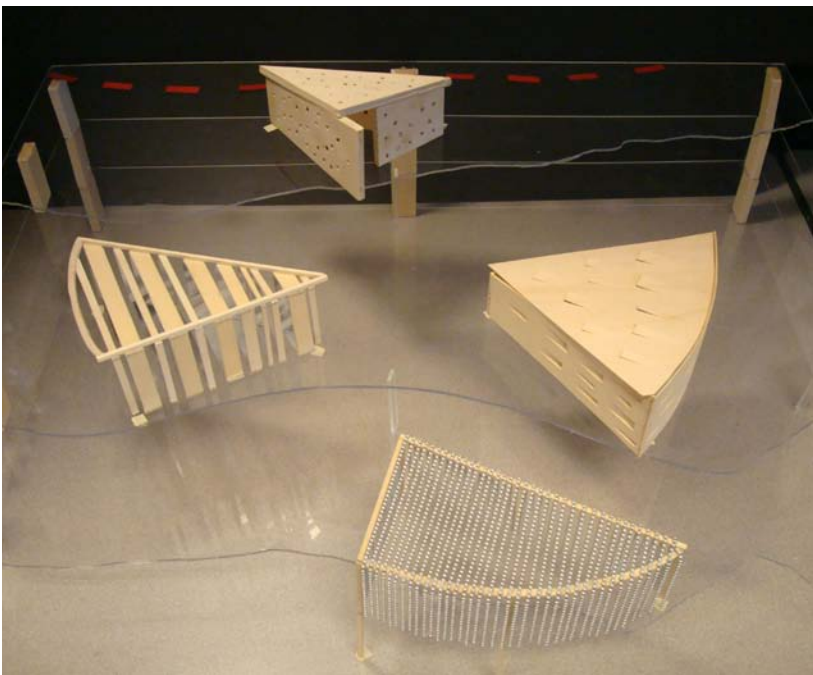
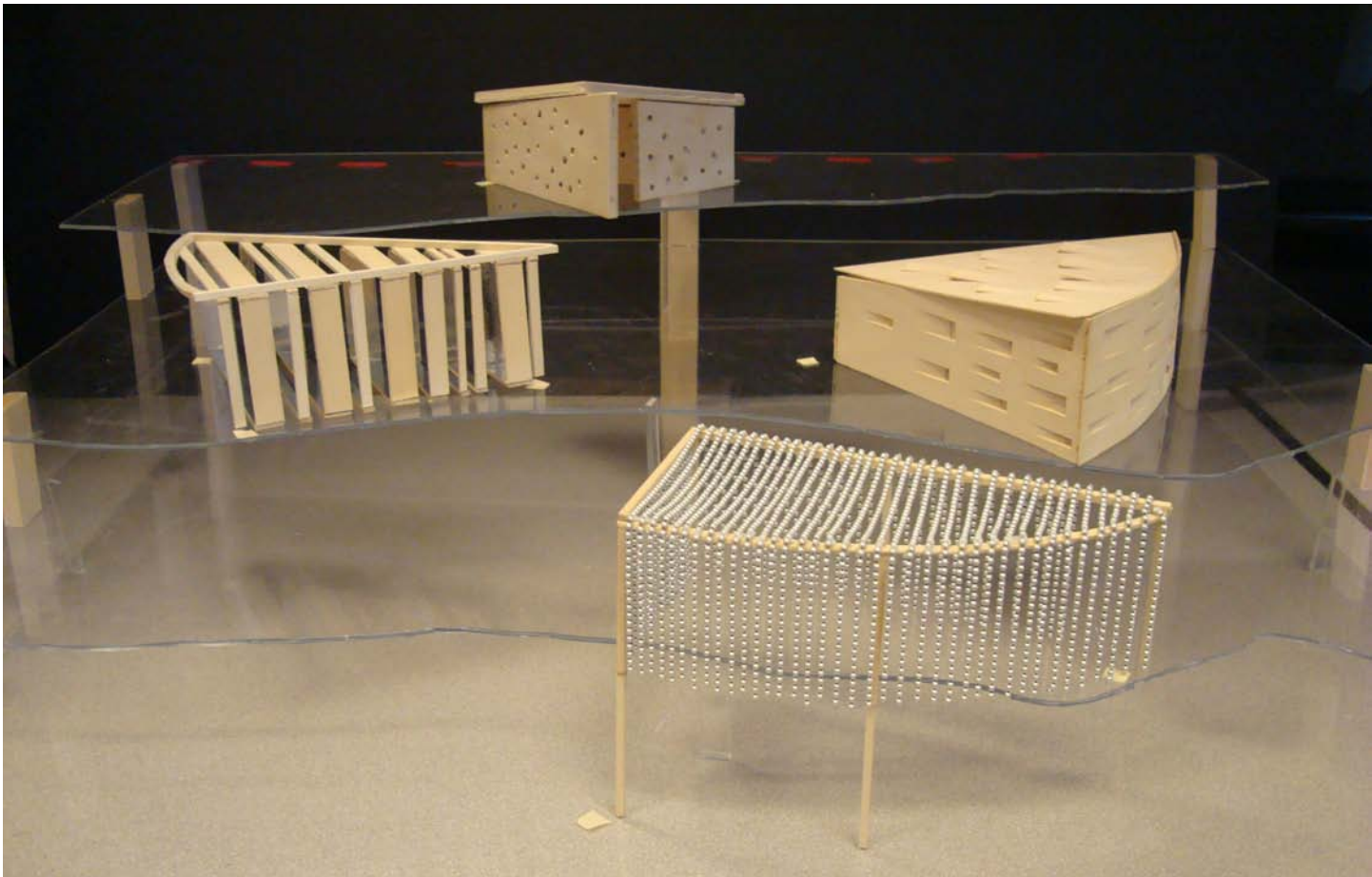
## Barr Property: 321 Xenia Ave.

- At the end of the commercial district... complete OPPOSITE of the John Bryan site. — At street corner. Constant traffic in front of the property. (Foot & vehicular)
- Tree cover/canopy on property gives urban illusion of forest. Different species of trees and not as concentrated.
- site not accessible — FENCED OFF. — NOT for everyone to enjoy.
- Lawn gave a much more suburban/urban view — feeling of nature.
  - ↳ harder to connect with the site
  - ↳ trees try to separate the site as more rural than its context of shops and community that surrounds it.
- Going from peaceful/open natural site to "downtown" site really changed my ~~and~~ mindset very quickly. I was no longer relaxed. I was back and connected to the world.

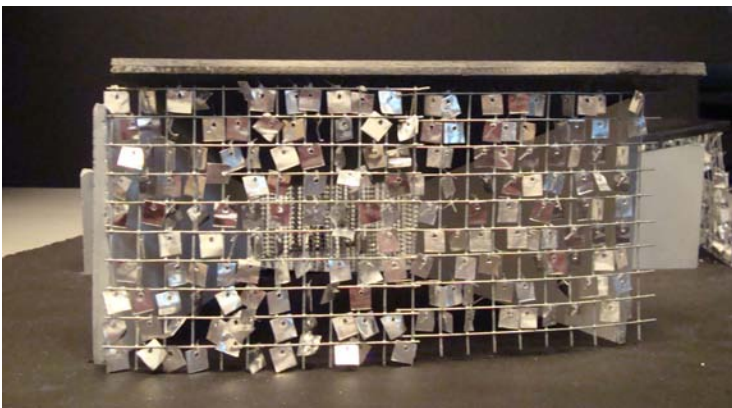
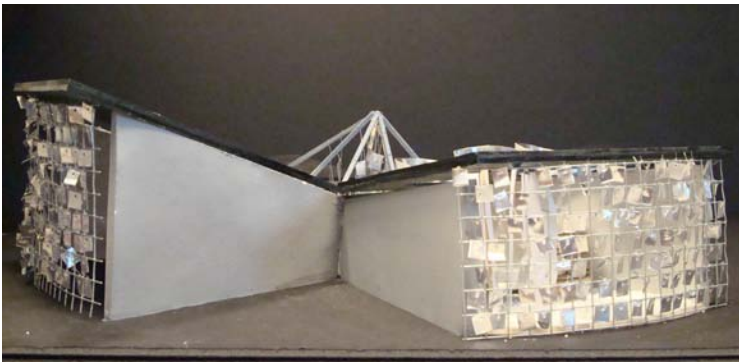
## **Process Models**



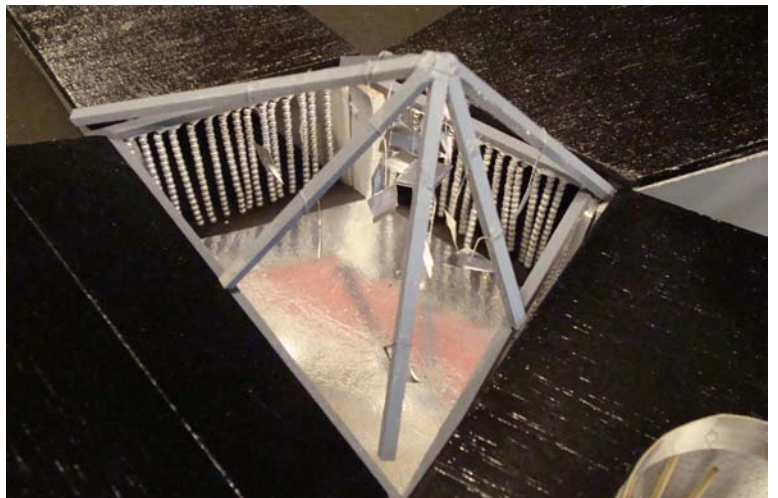
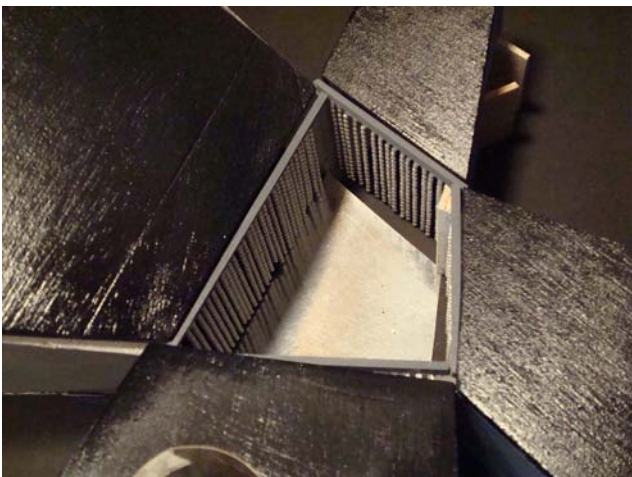
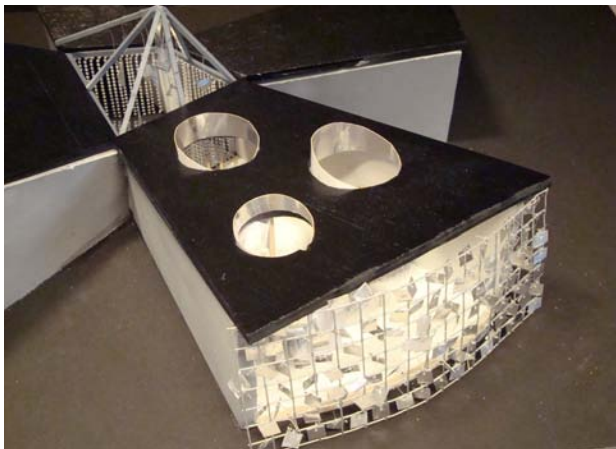
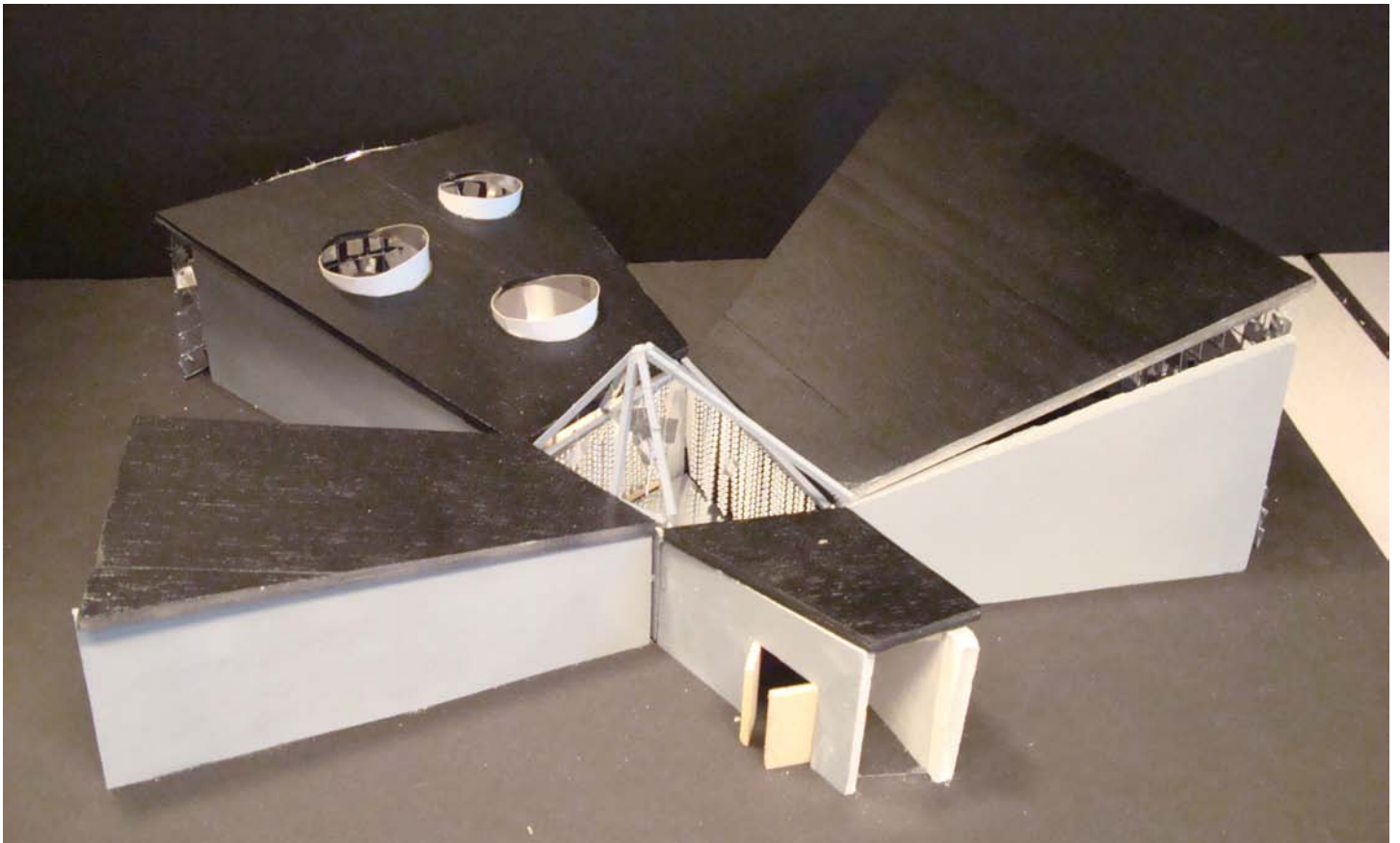
Yellow Springs, OH Site Context Model

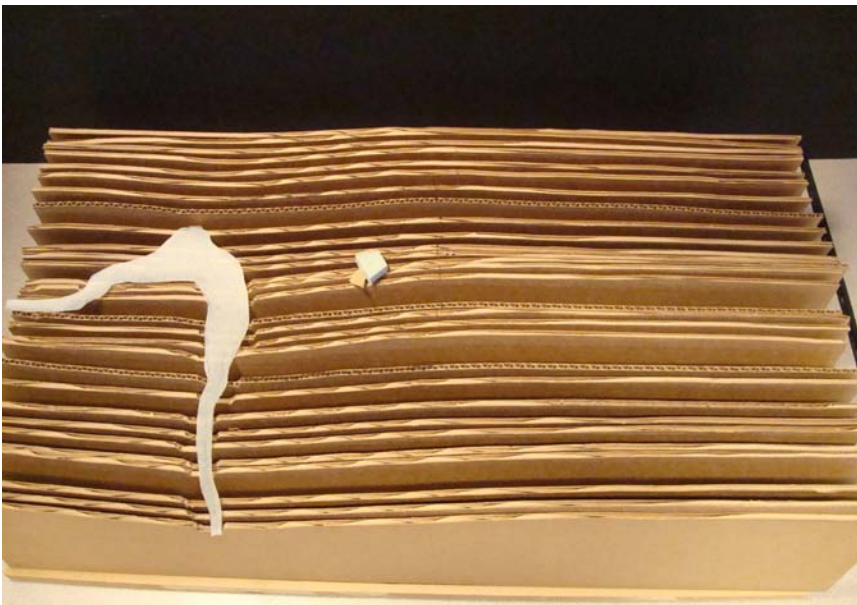
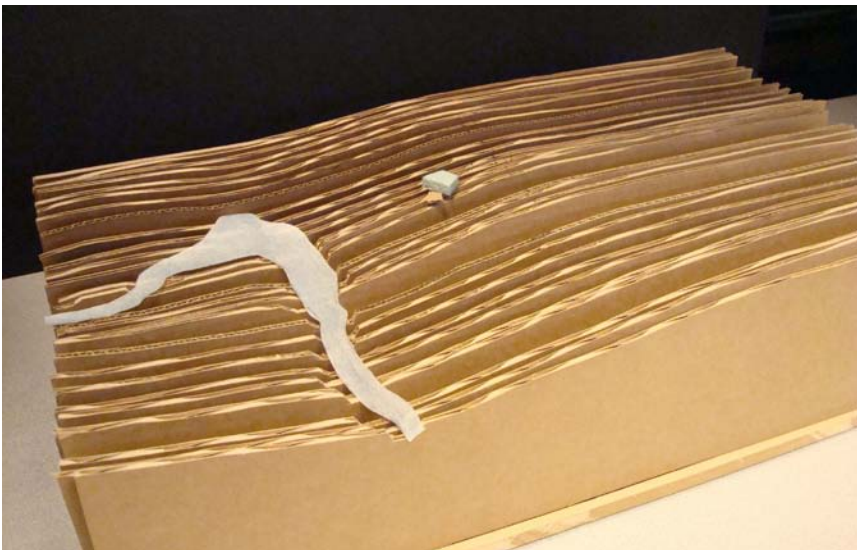


John Bryan State Park Final Shelter Models

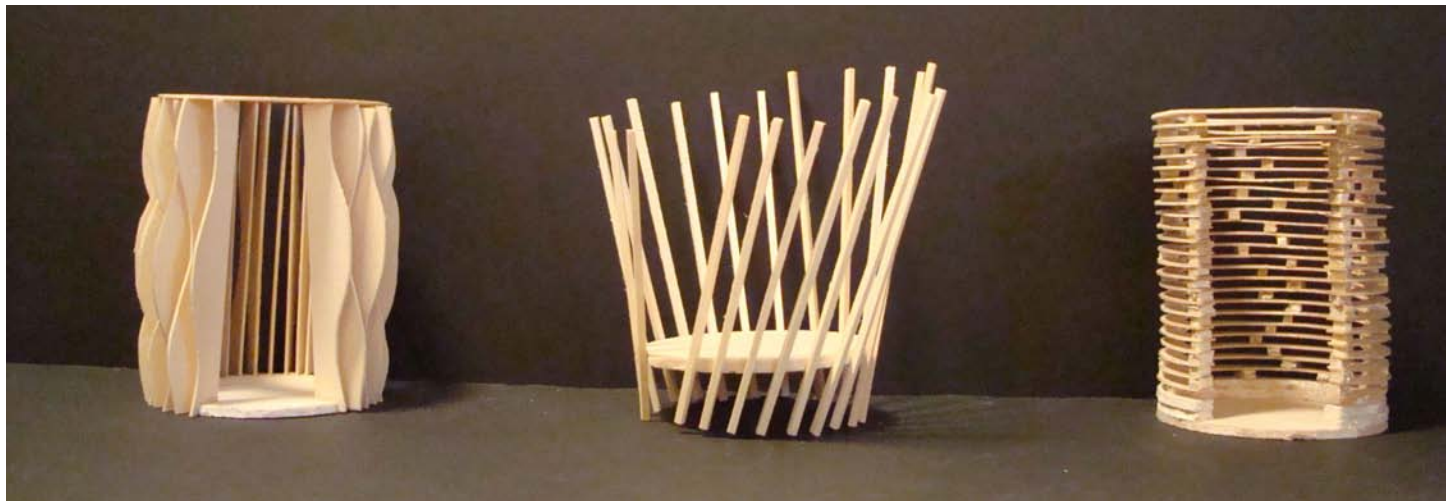
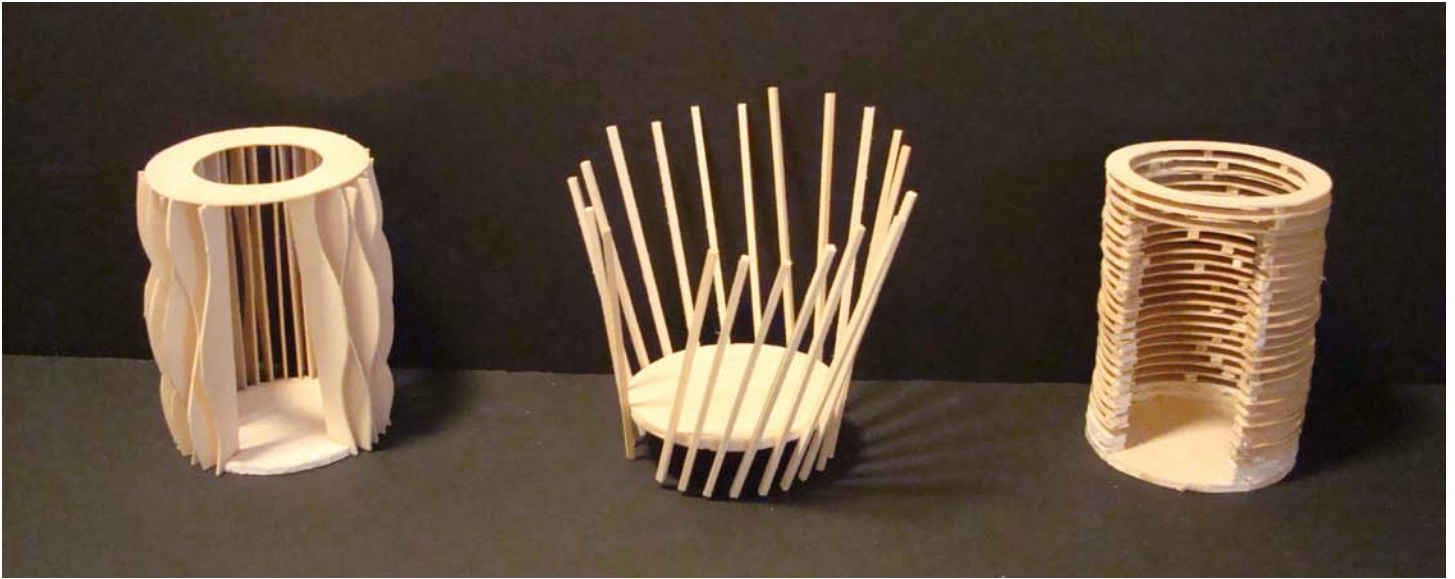


Final Yellow Springs Building Process Model



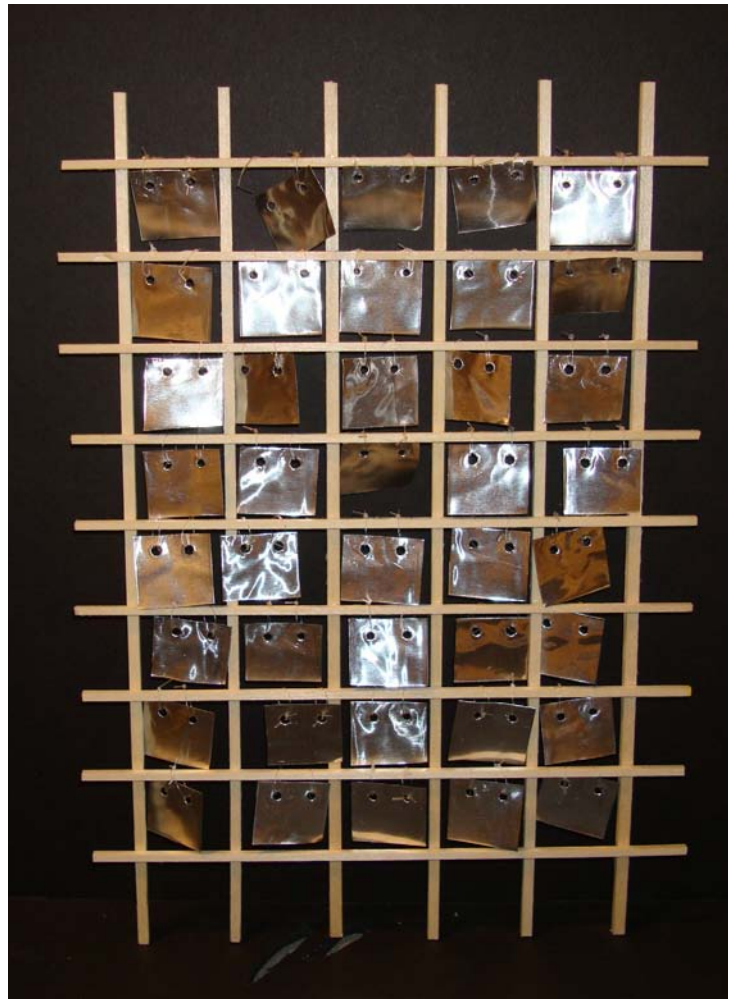
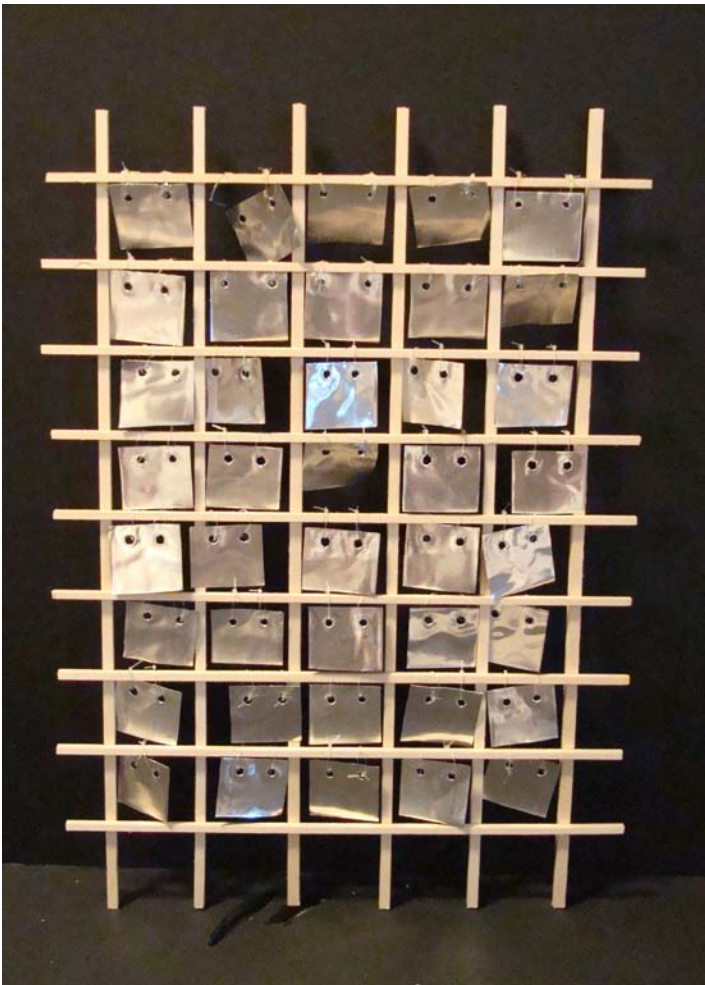
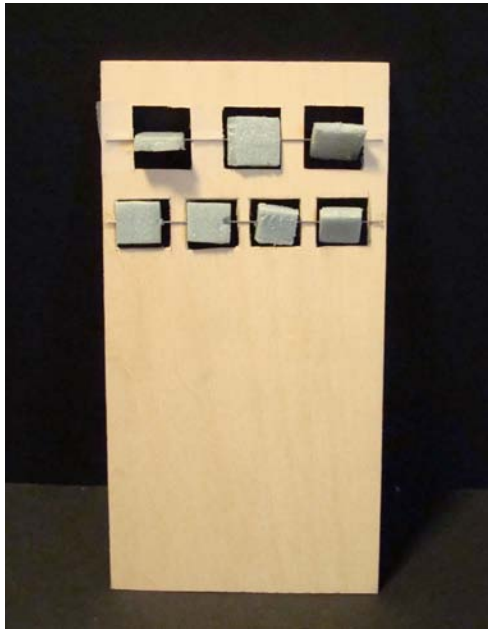


John Bryan Topography Model

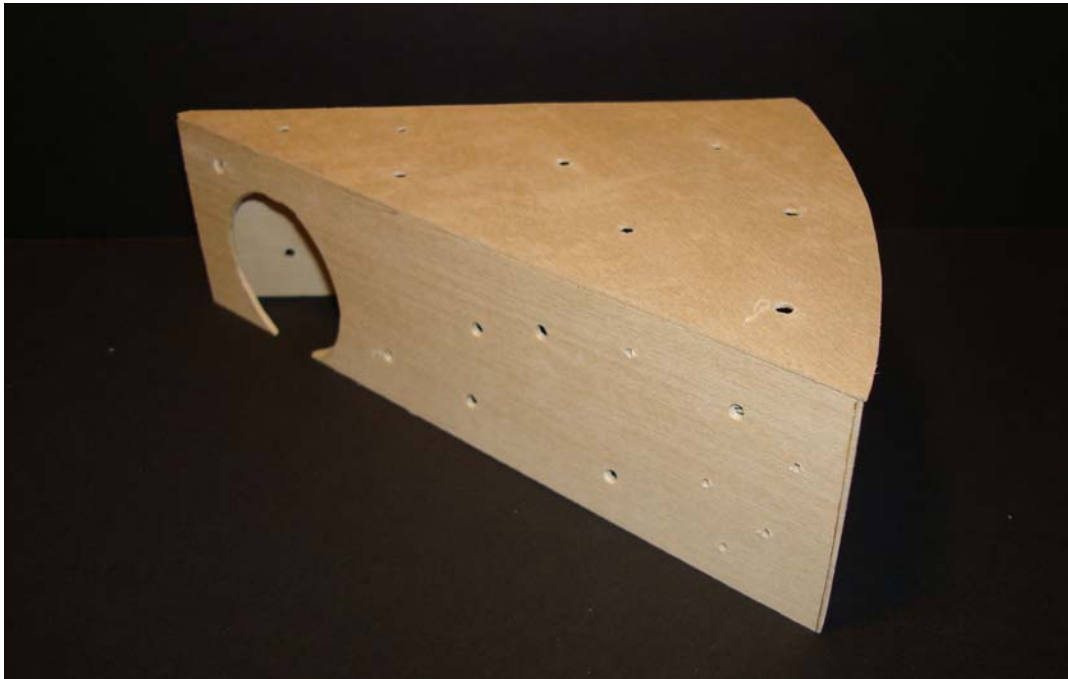
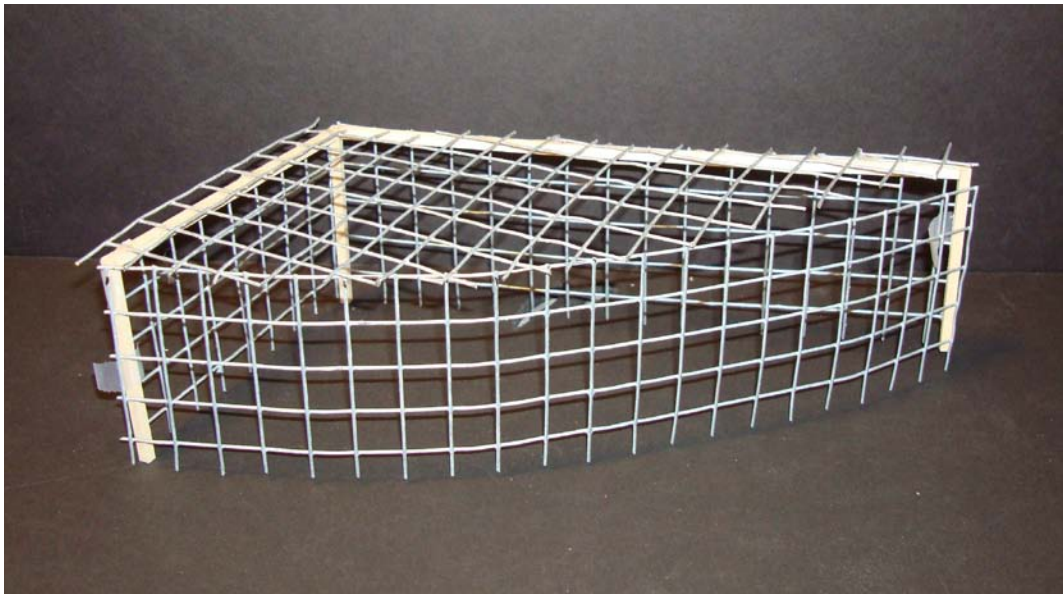


Reflection Pod Models

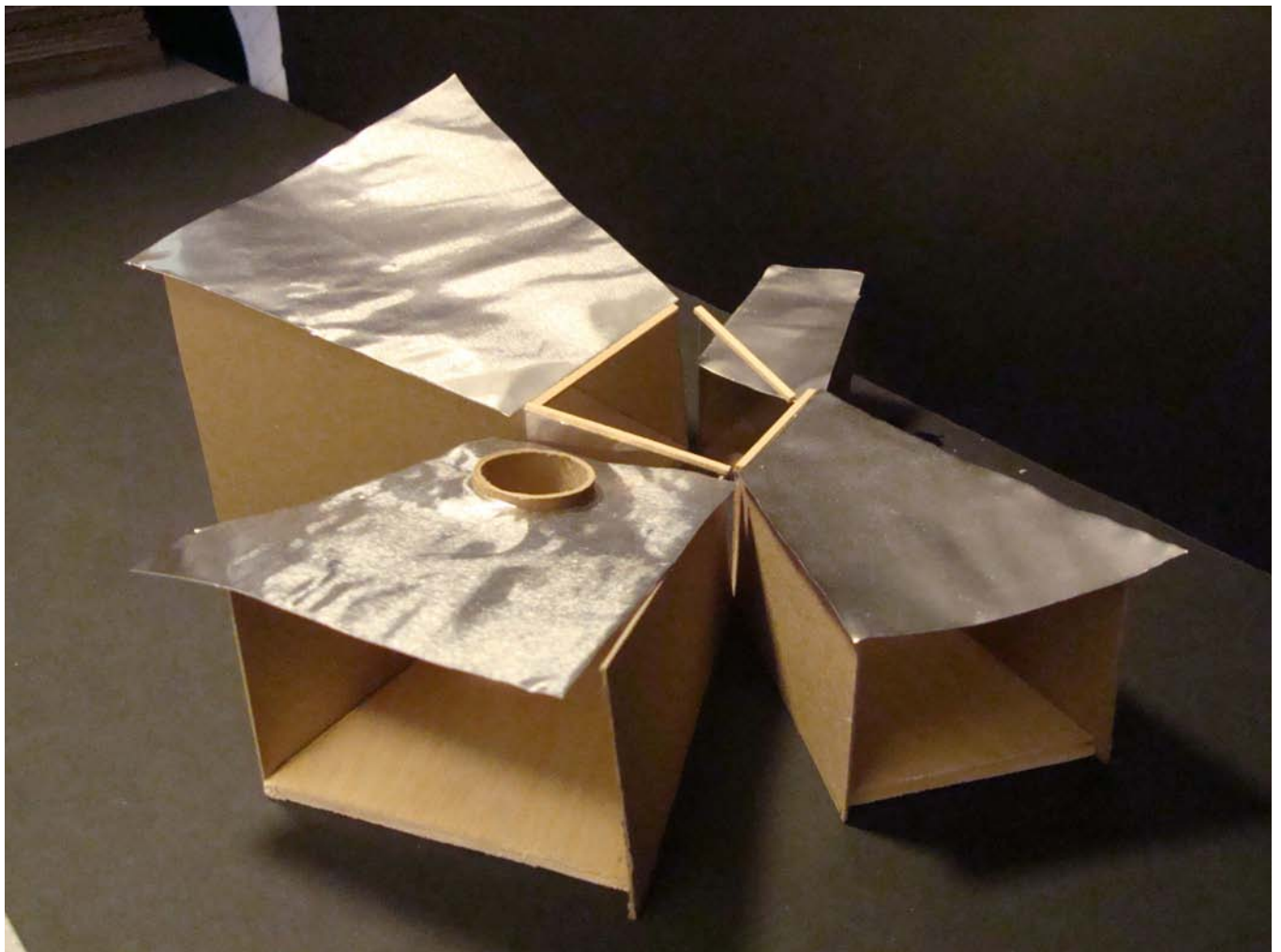
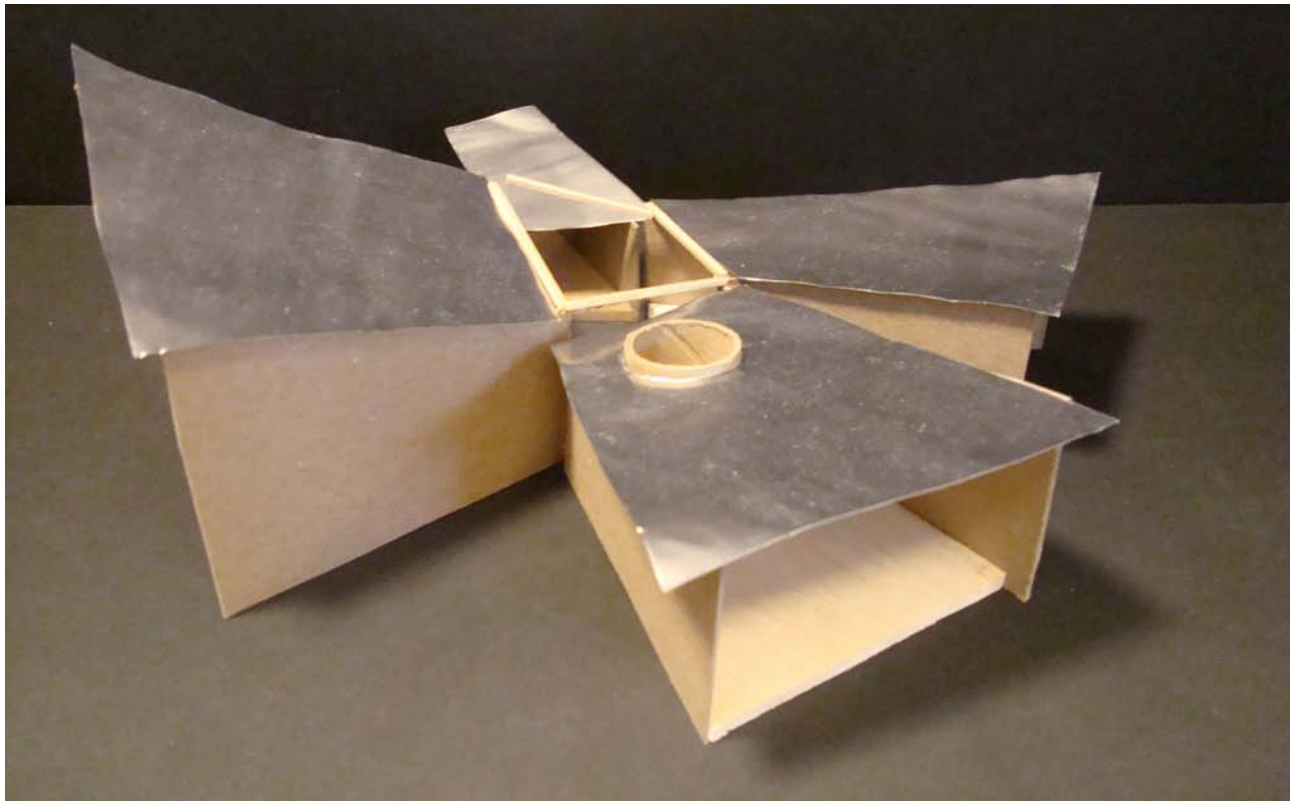




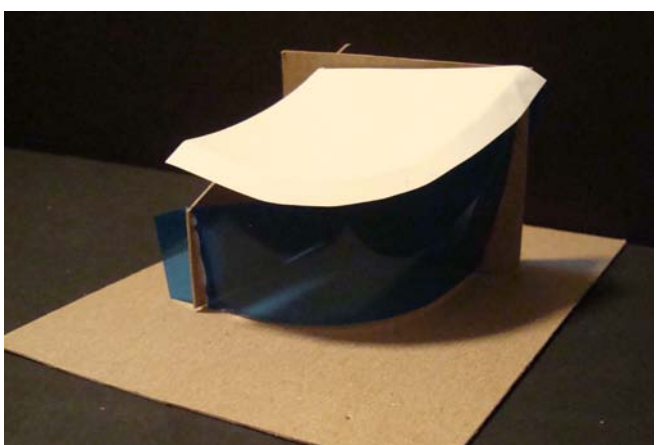
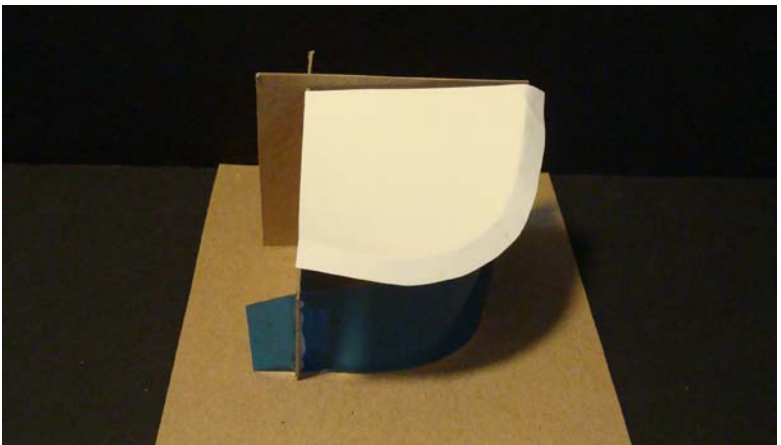
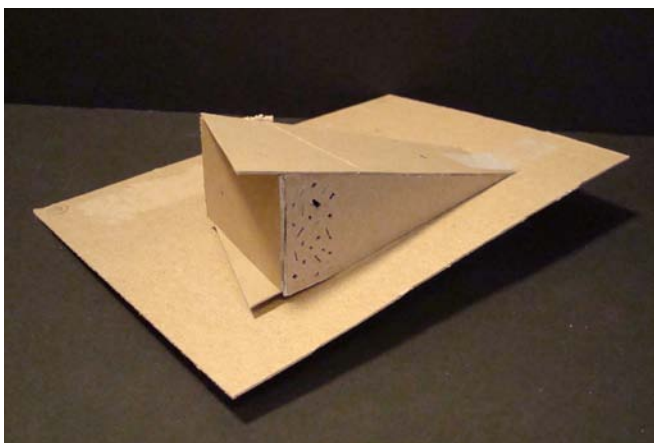
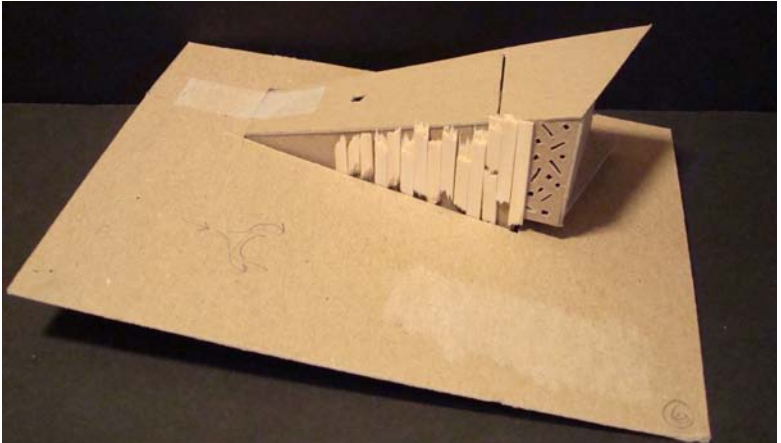
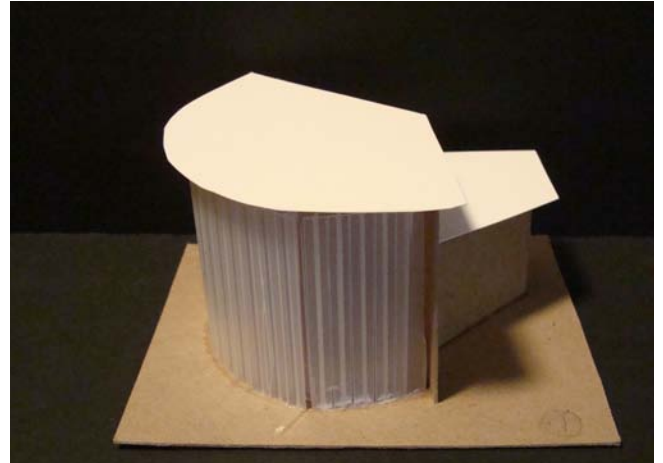
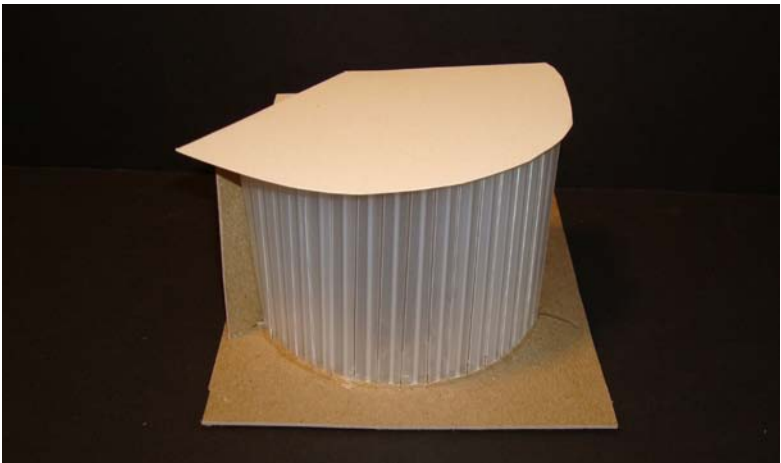
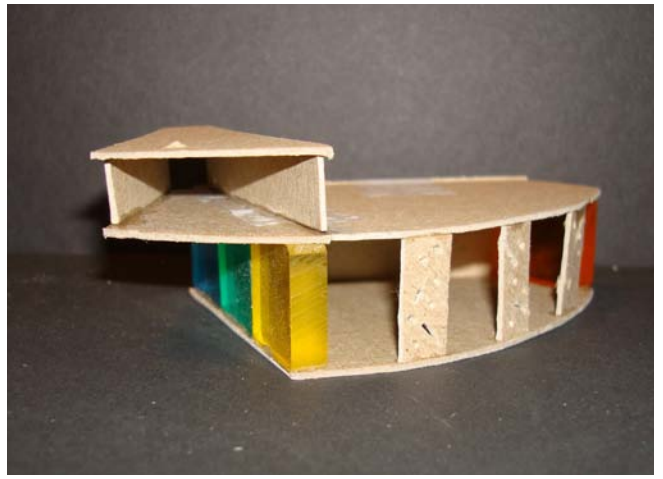
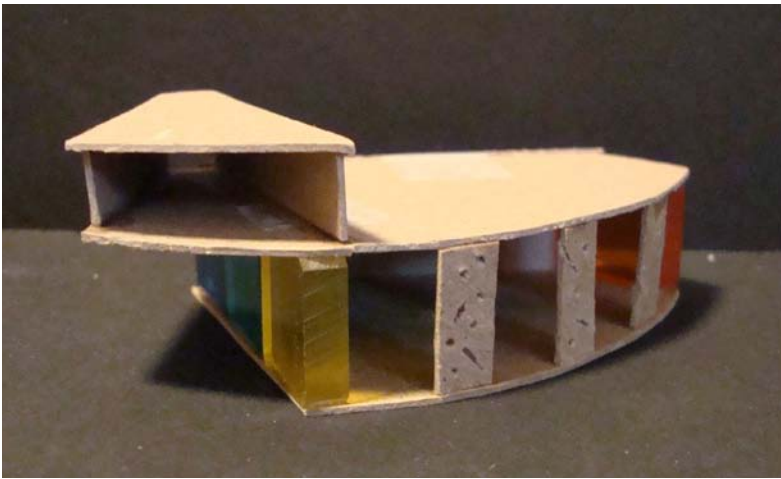
Facade Screen Models



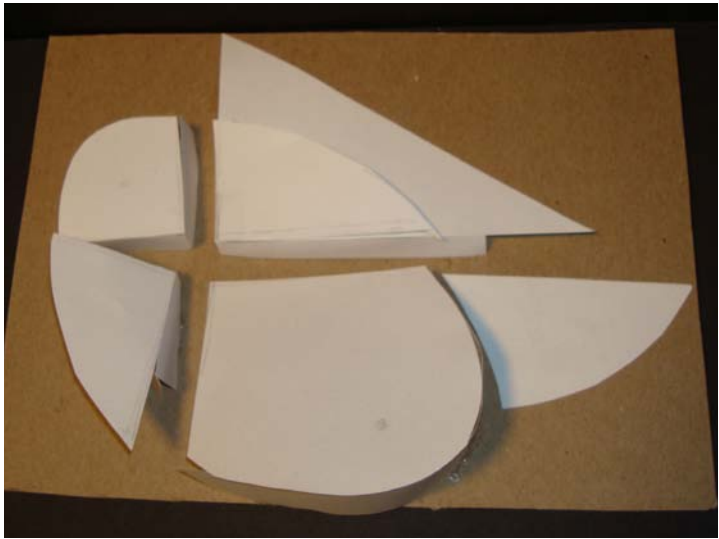
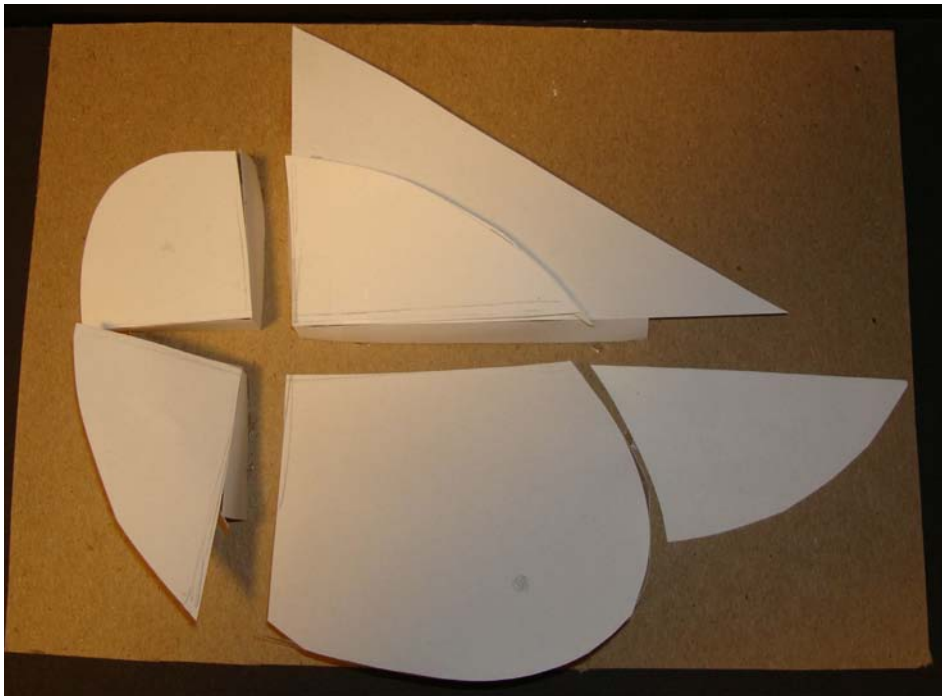
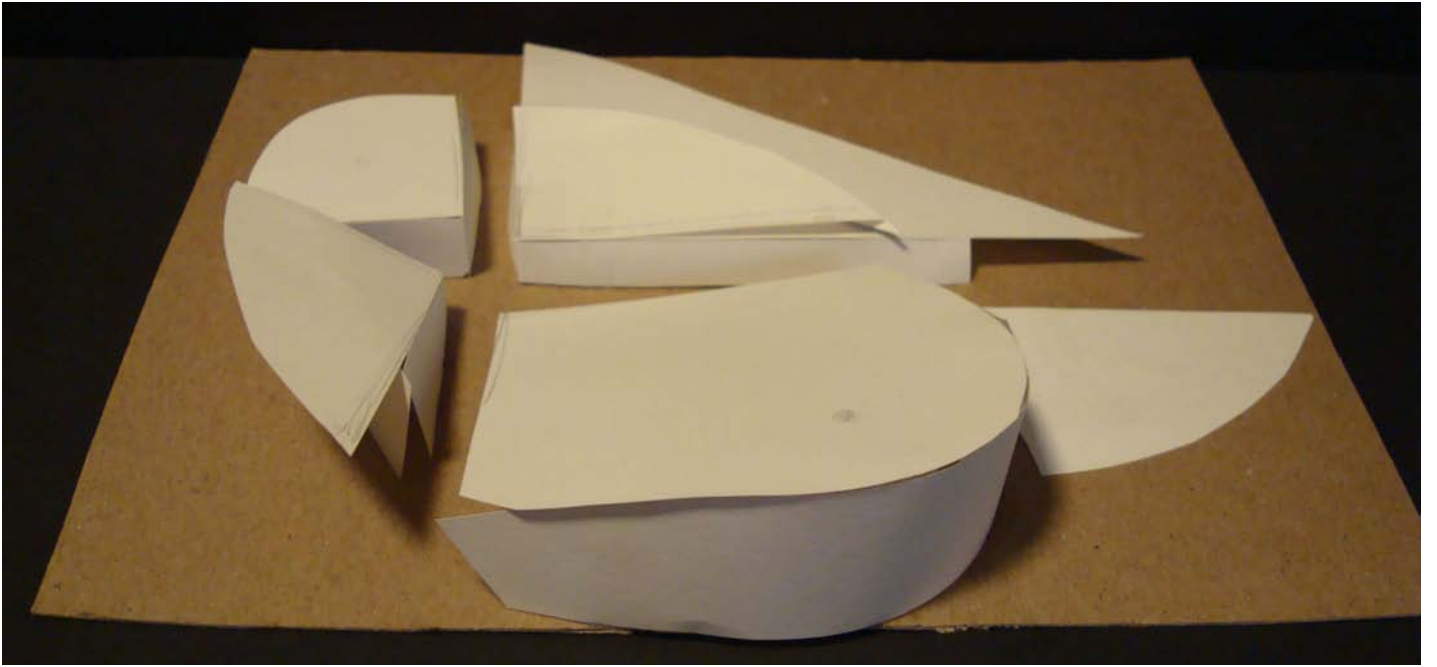
John Bryan Shelter Process Models

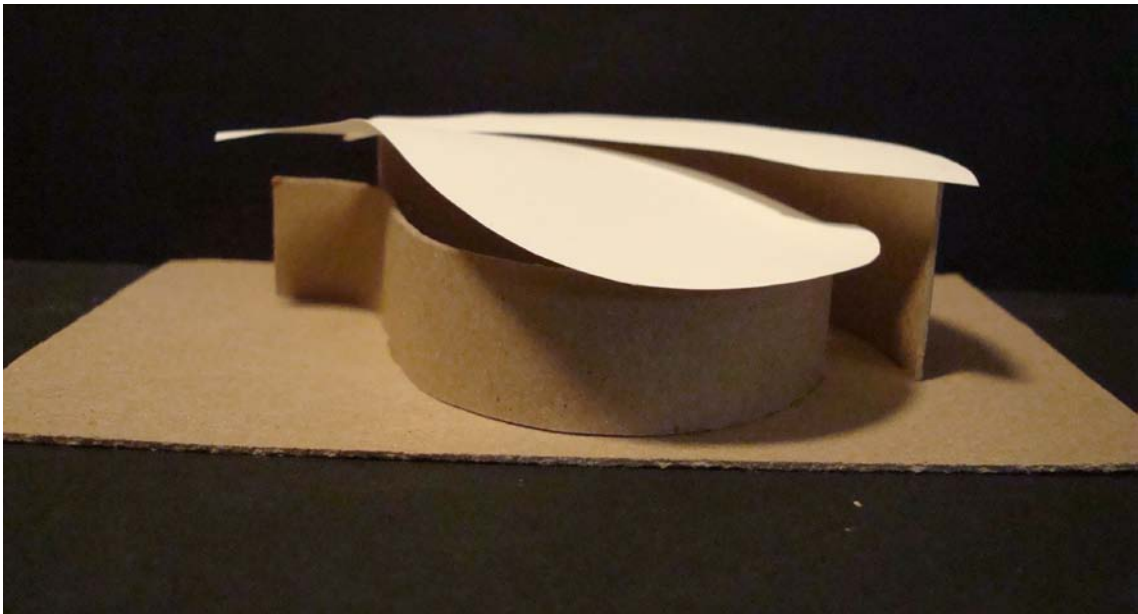
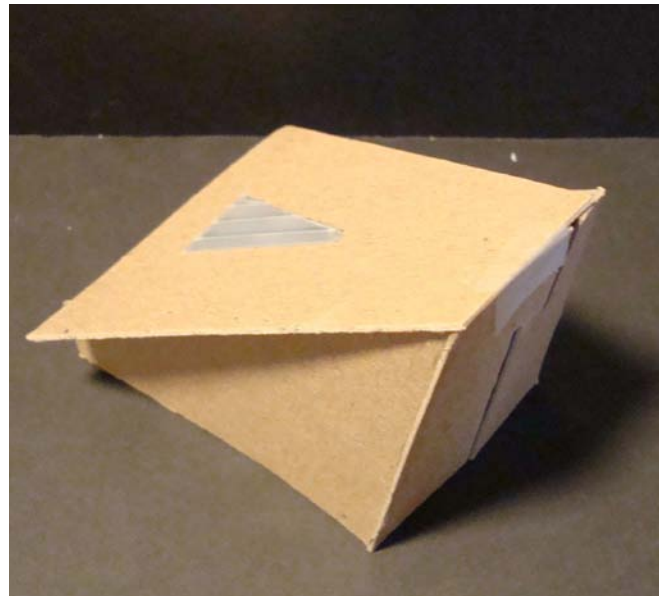
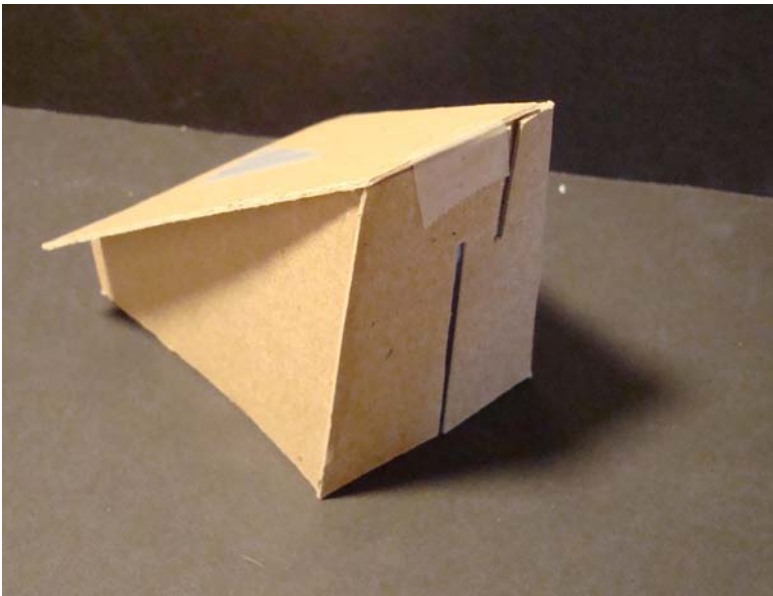


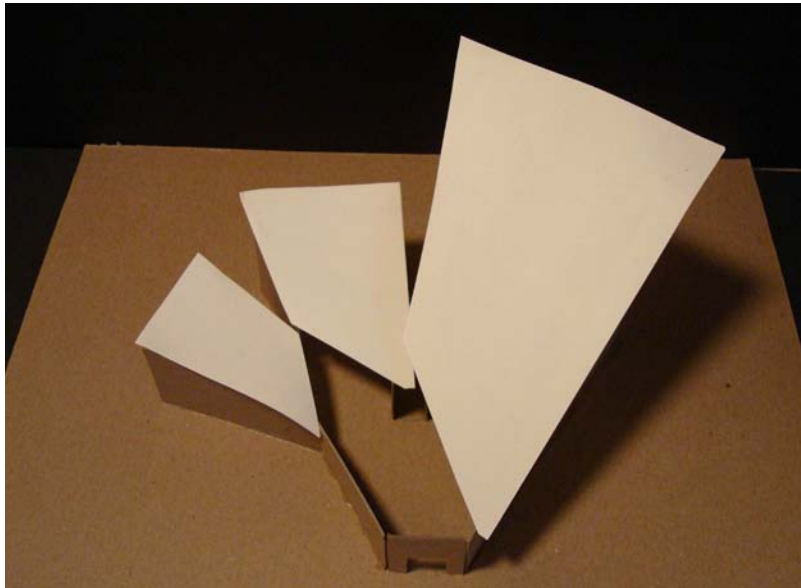
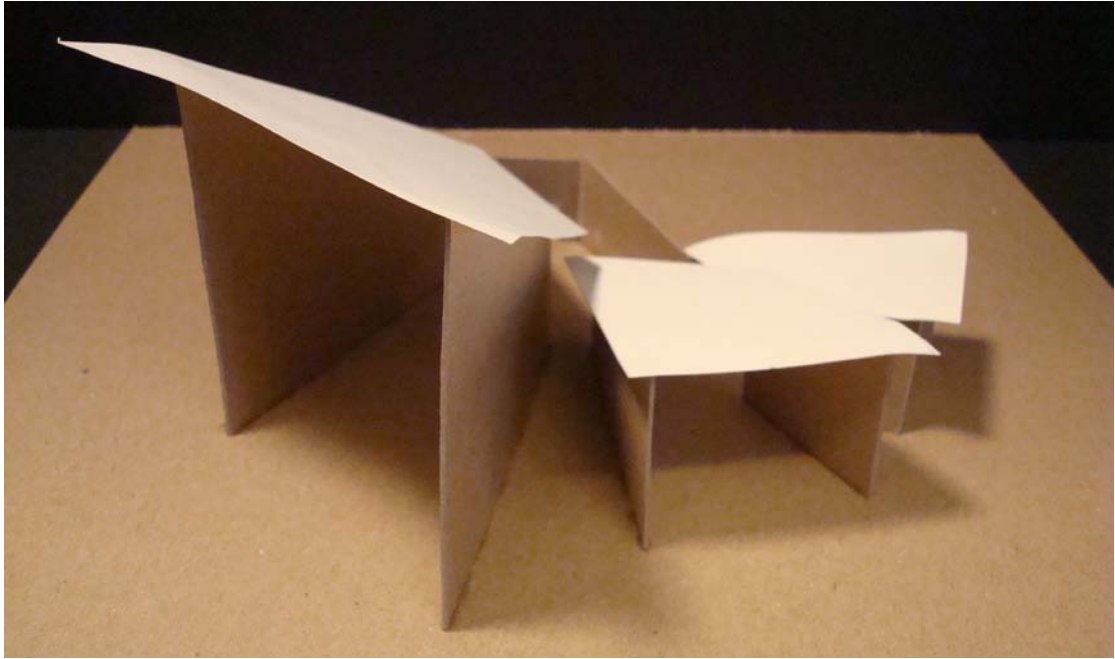
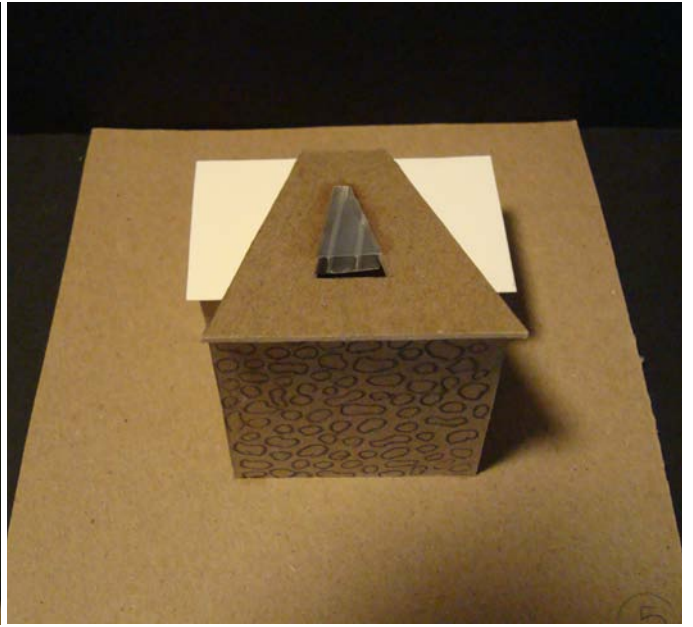
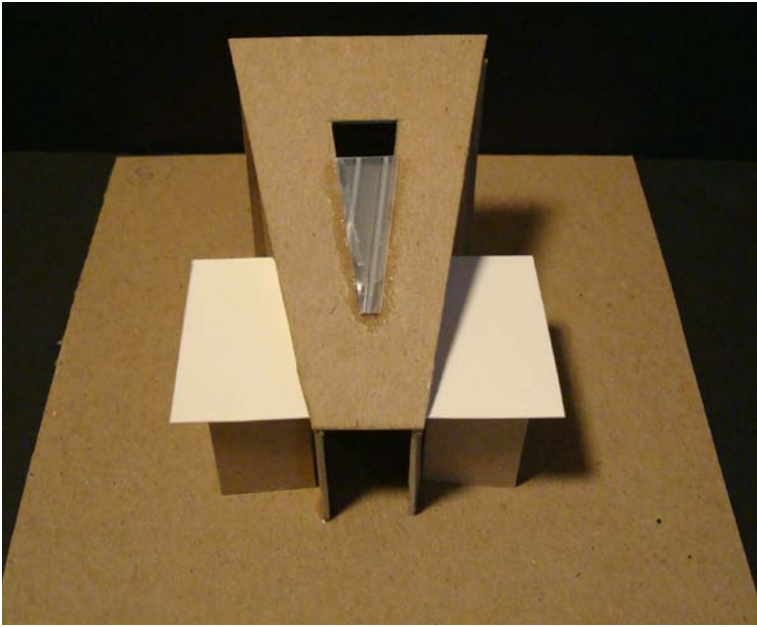
Yellow Springs Building Process Model

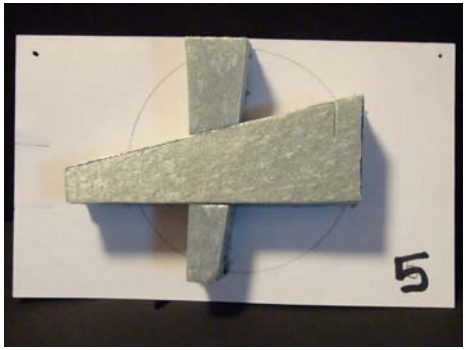
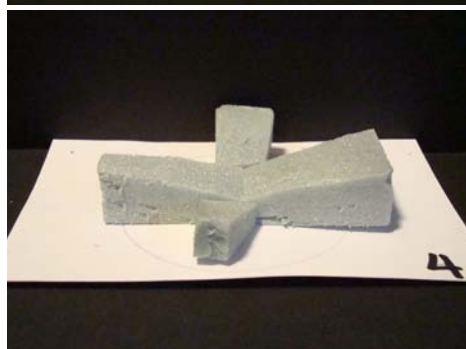
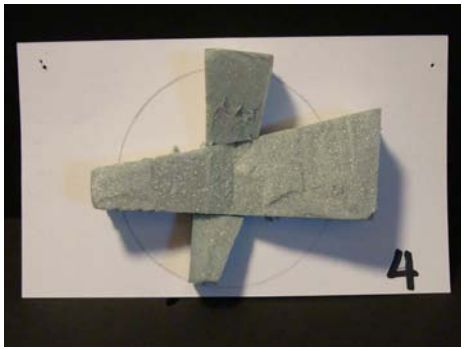
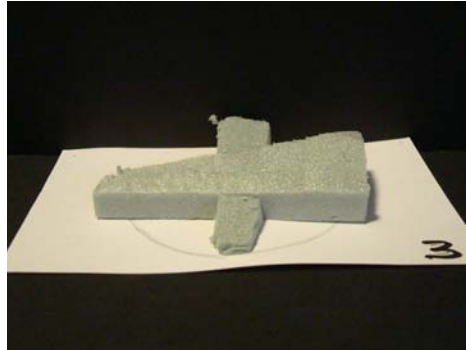
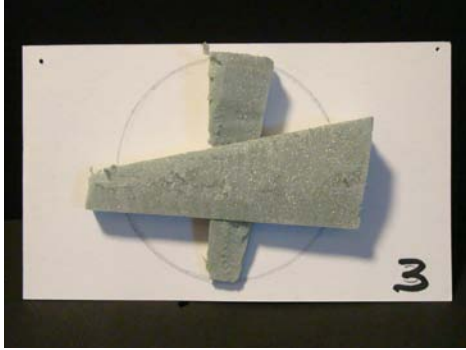
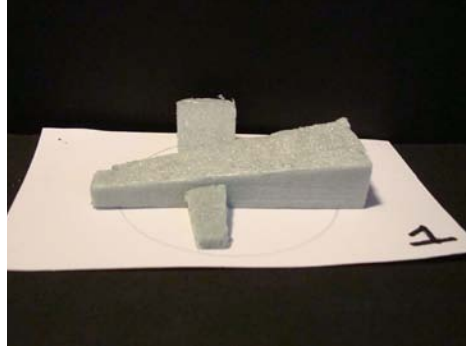
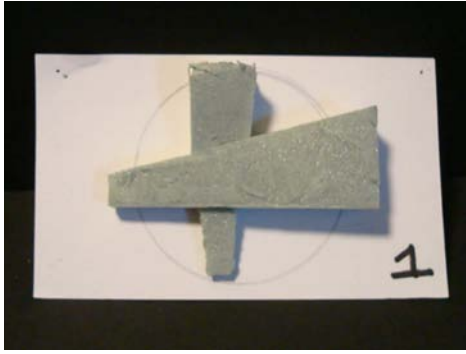


Yellow Springs Building Process Models

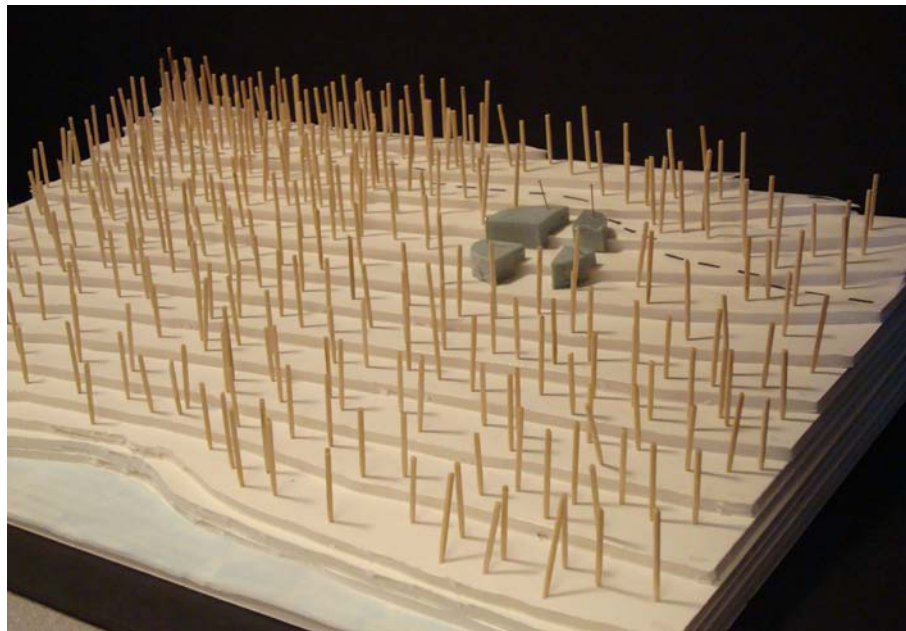
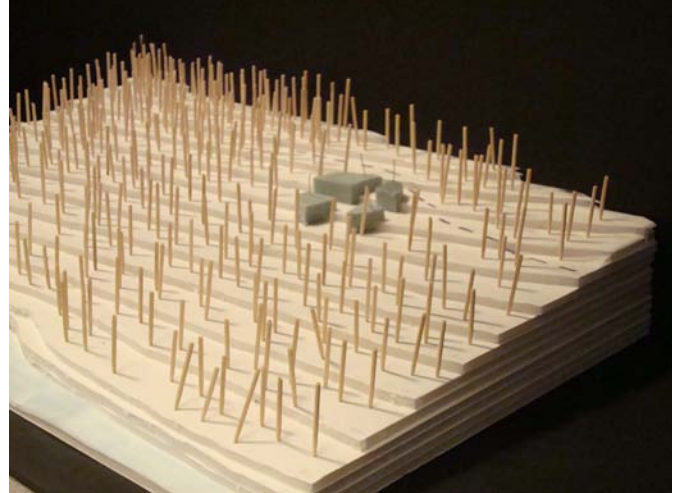
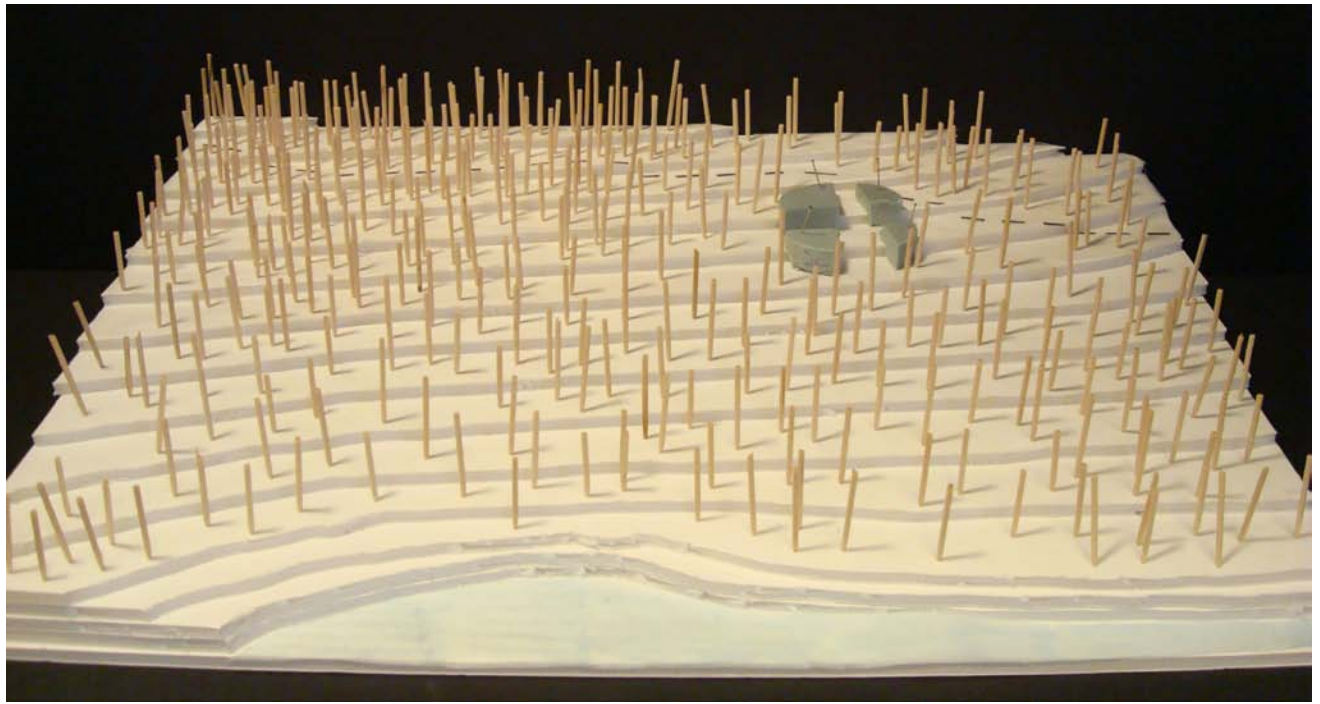


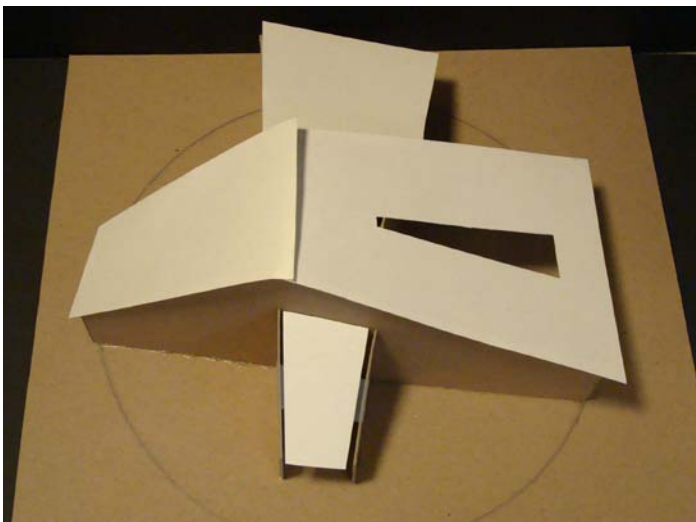
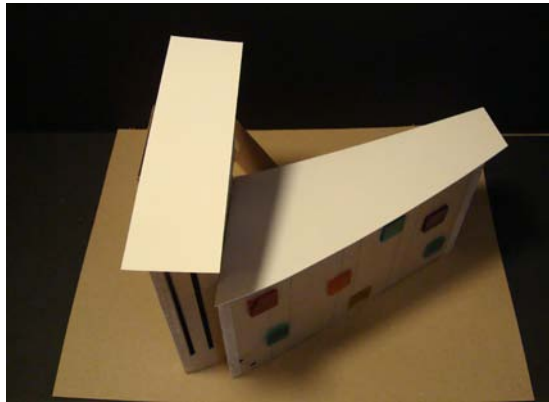
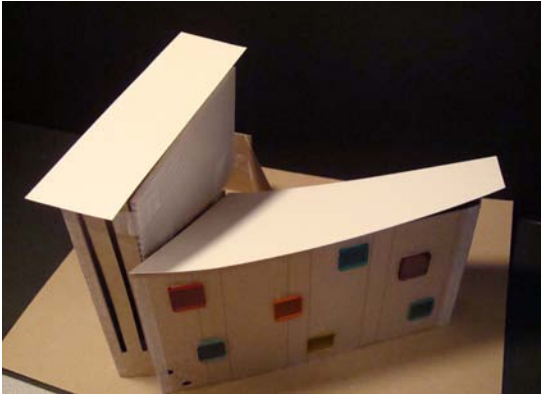
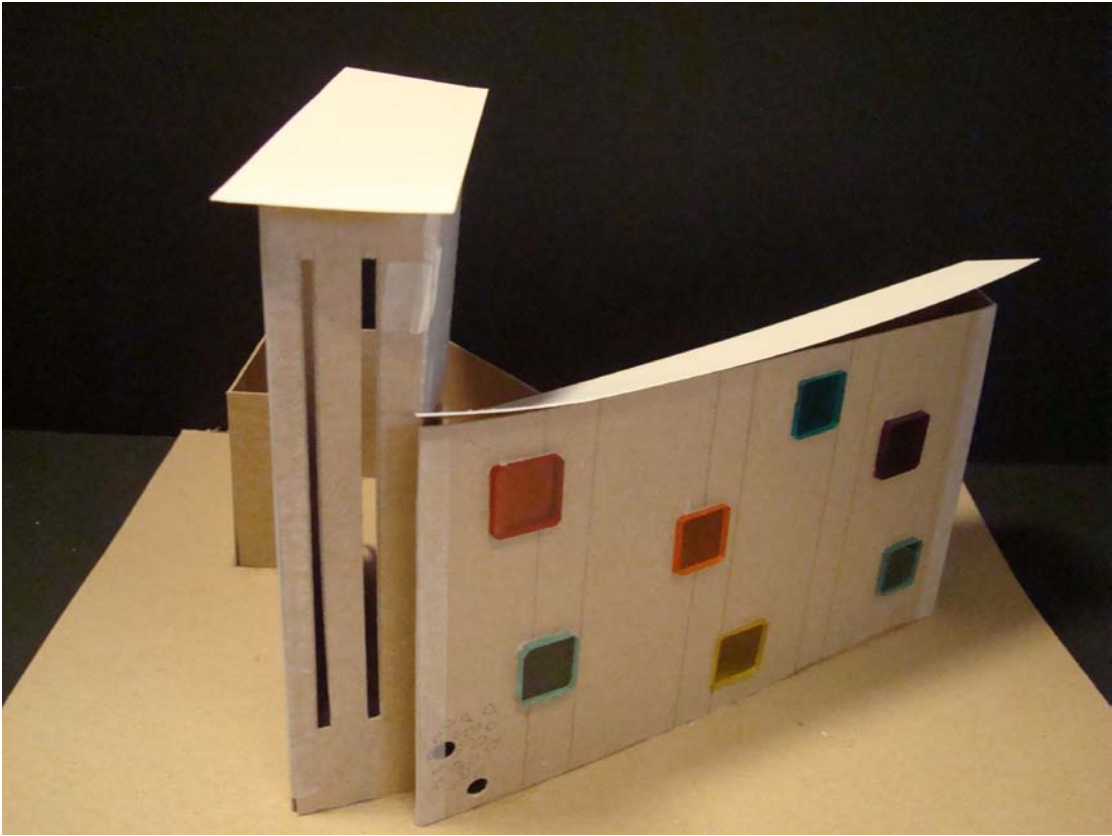


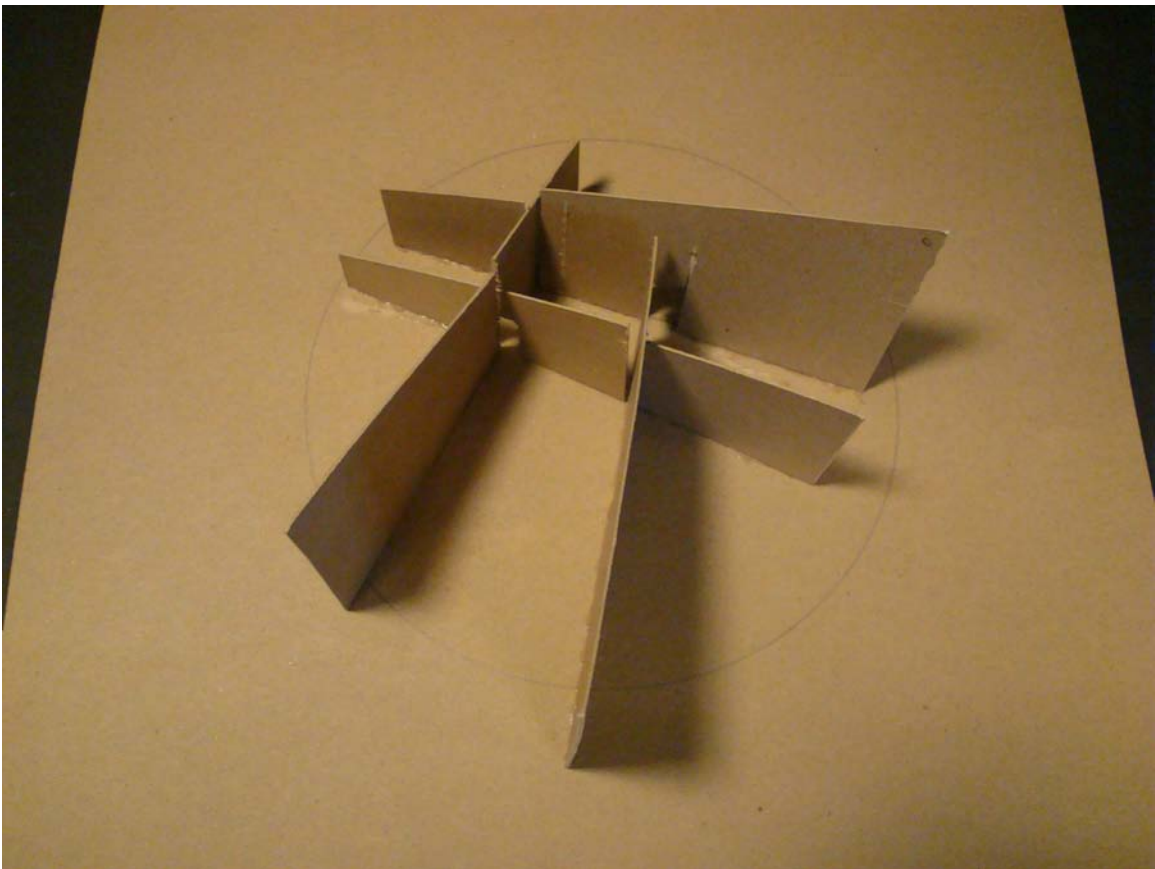
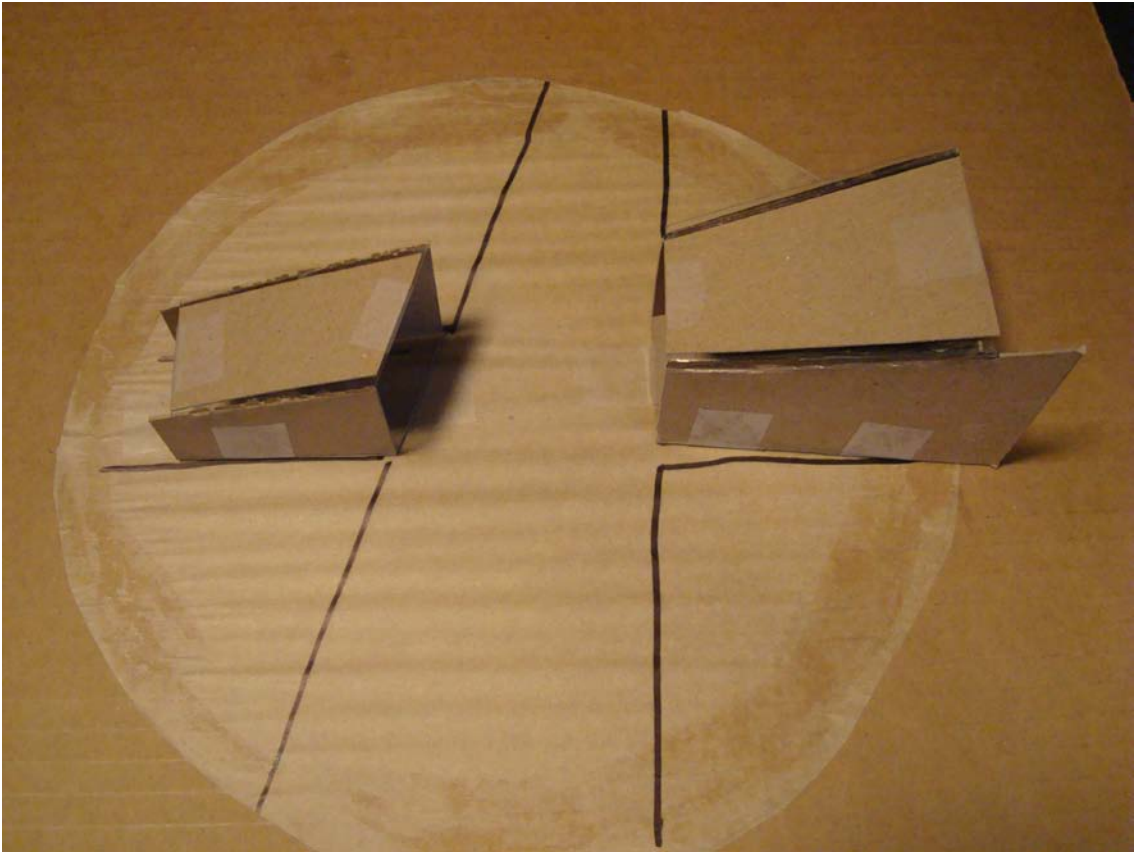


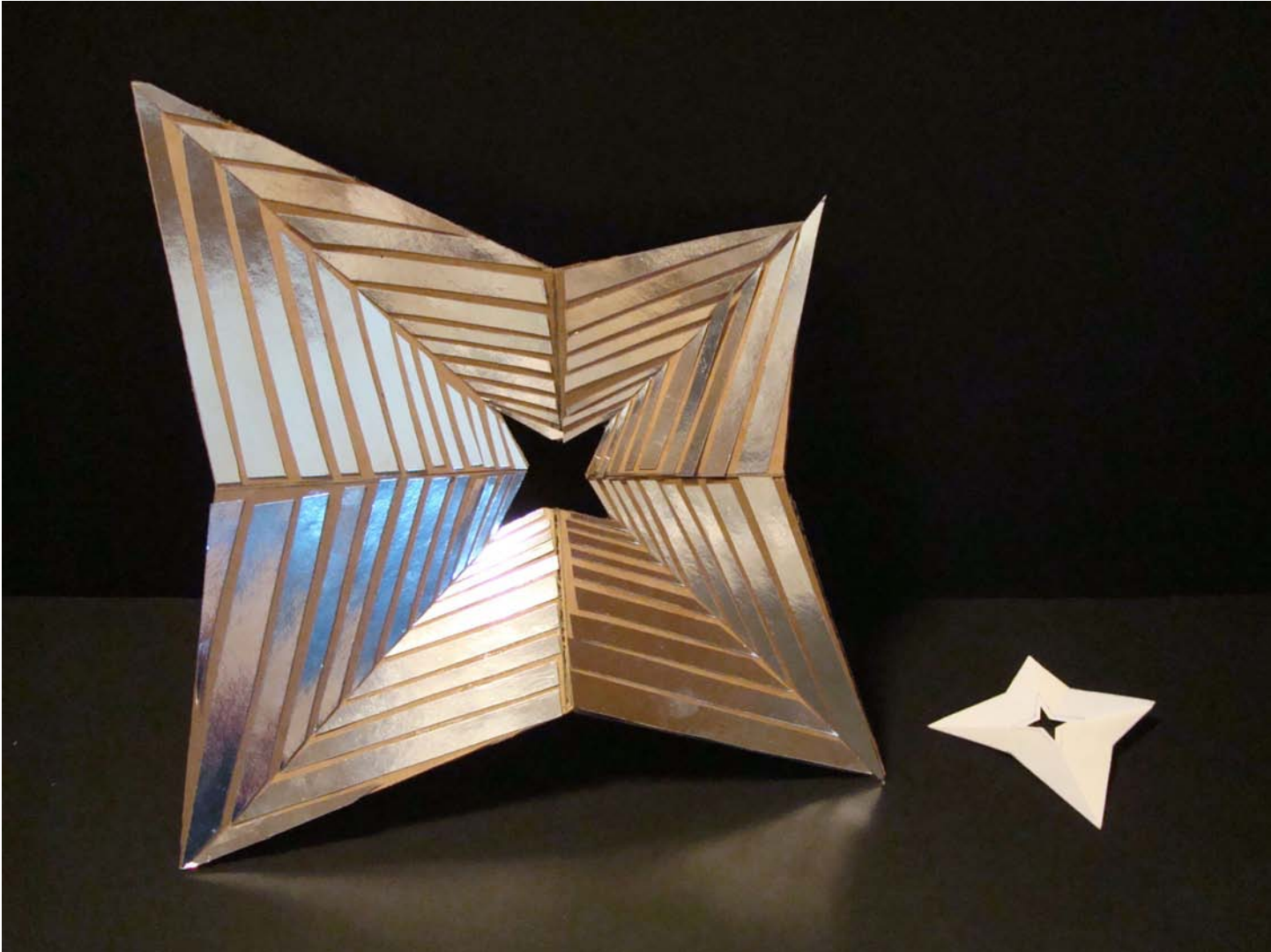






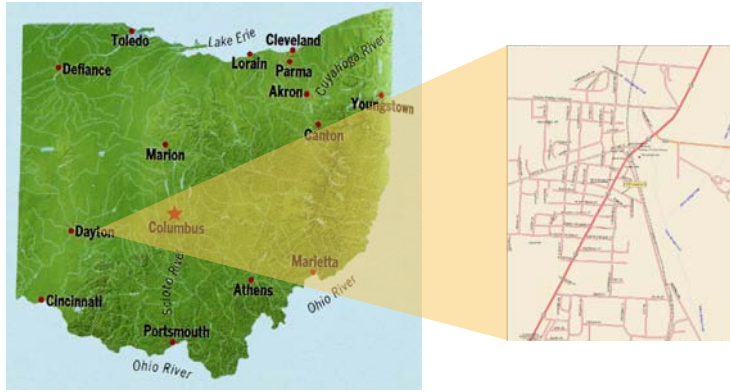






Atrium Process Models

## **Final Design - Presentation Documents**



YELLOW SPRINGS SITE



JOHN BRYAN SITE

scale = 1:400

AREA MAP

YELLOW SPRINGS, OH

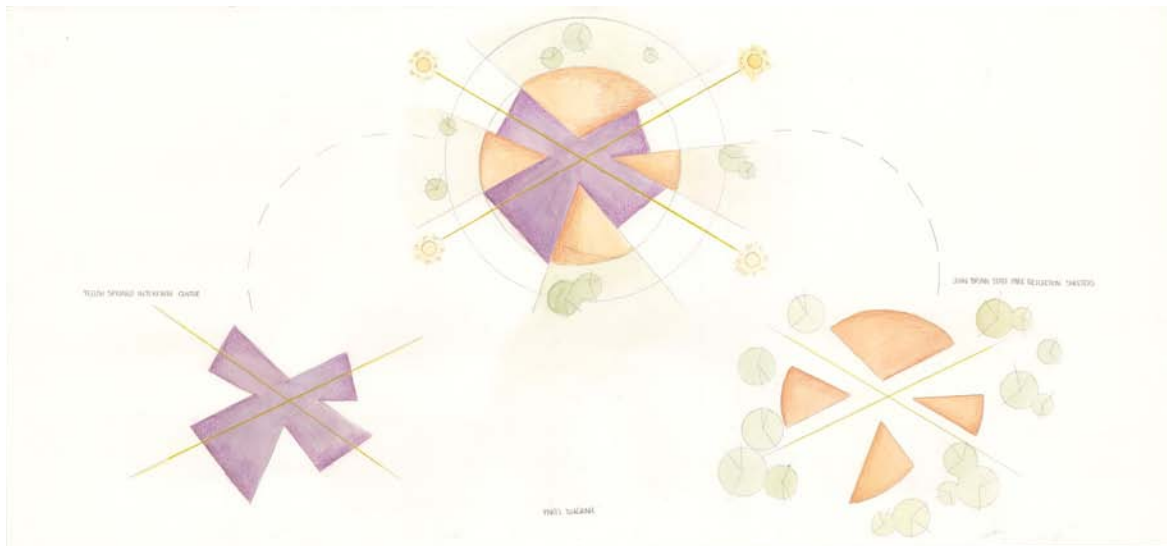
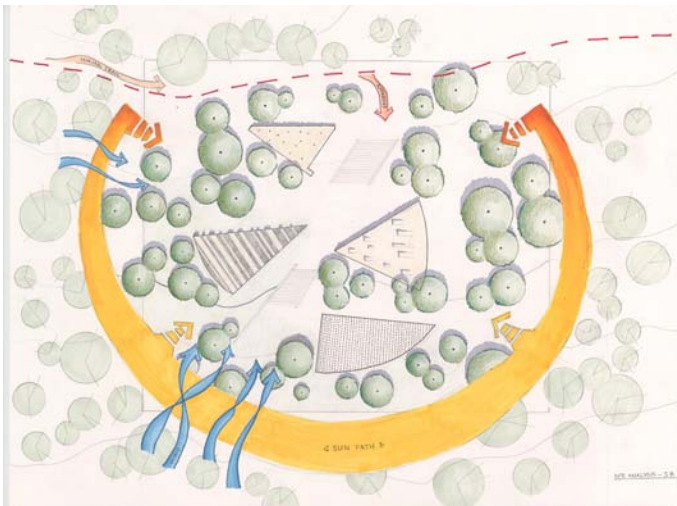
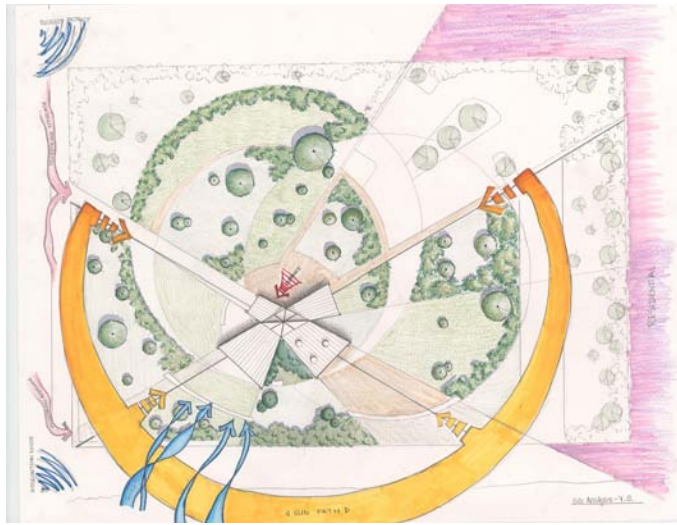


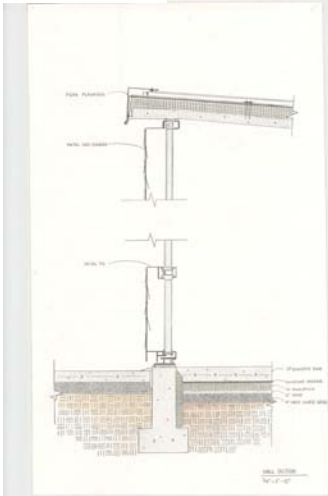
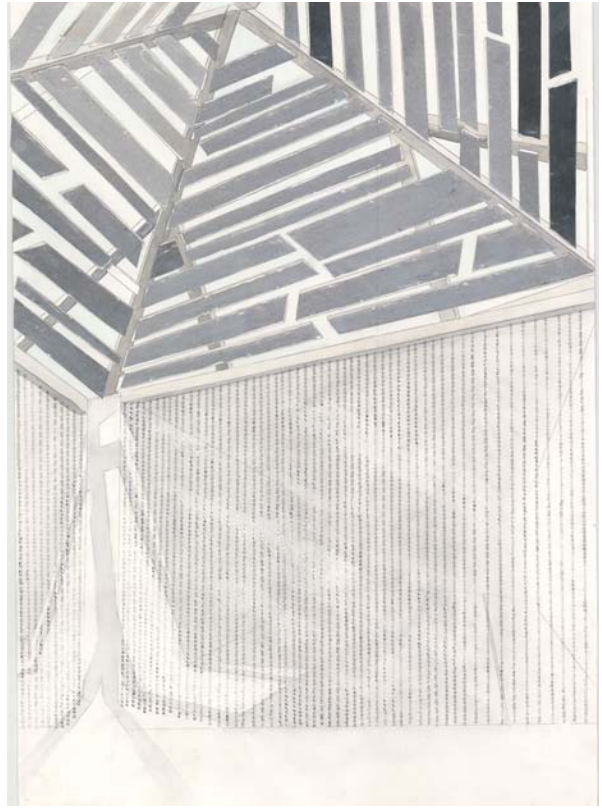
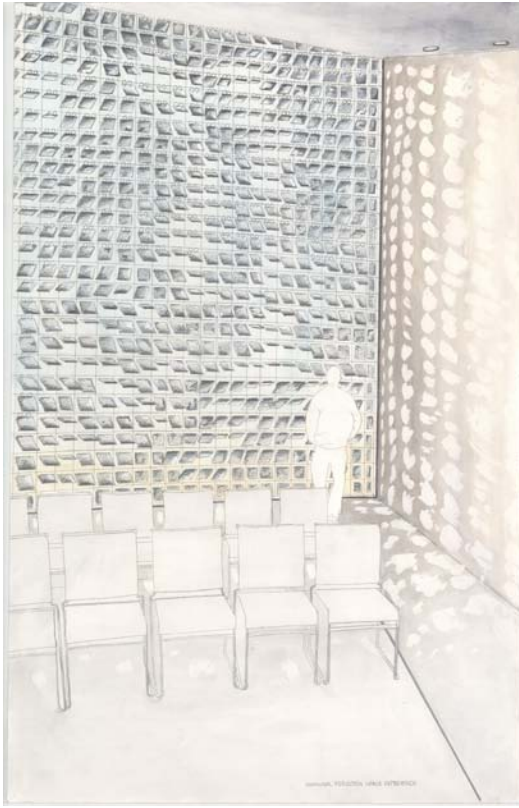
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JOHN BRYAN STATE PARK, OH

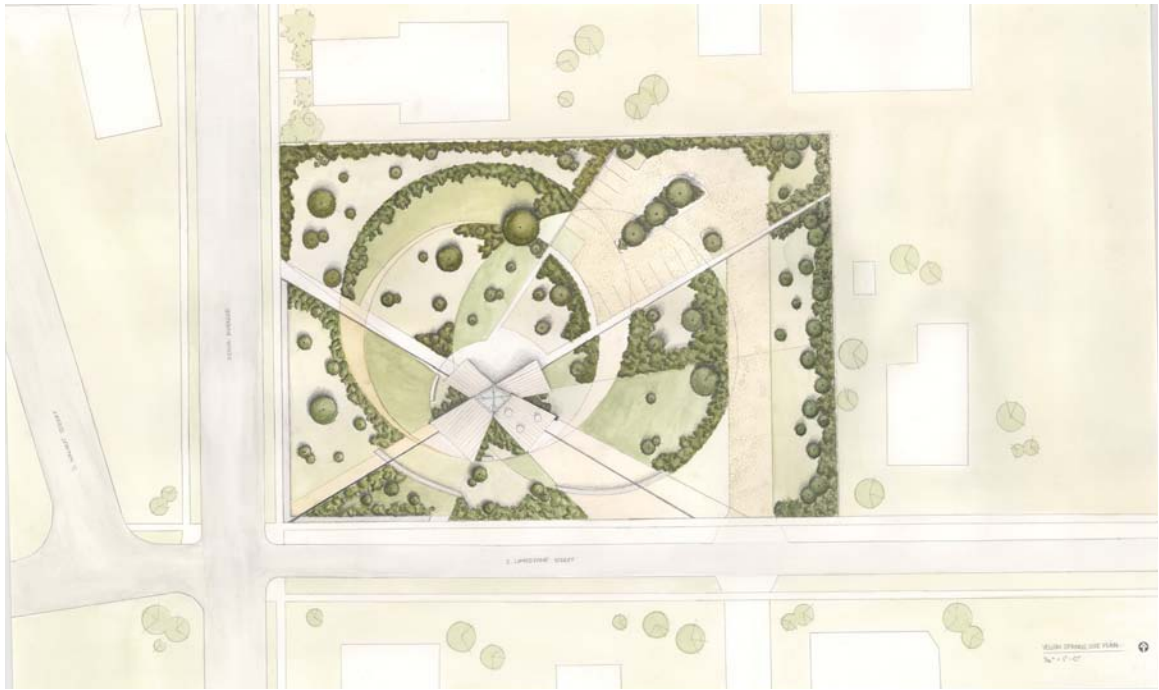


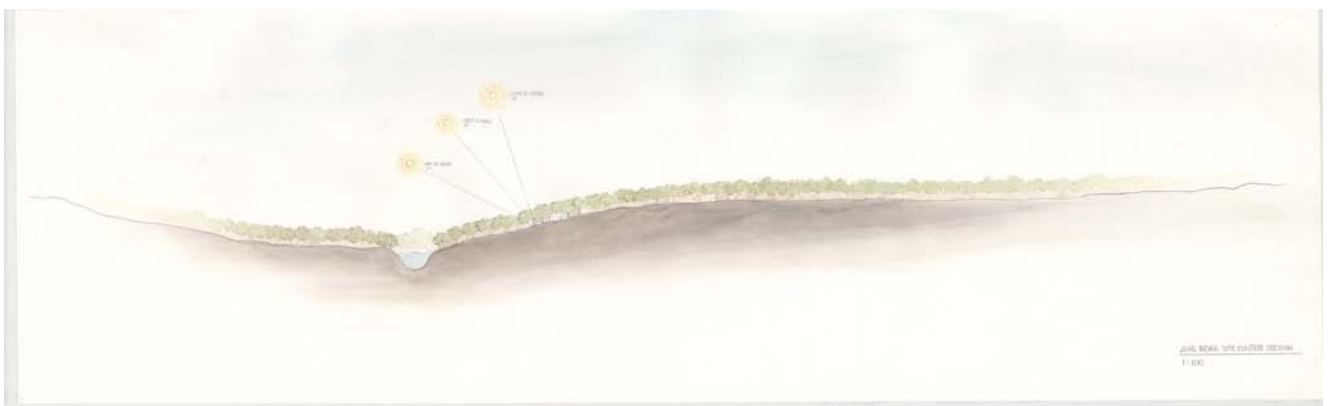
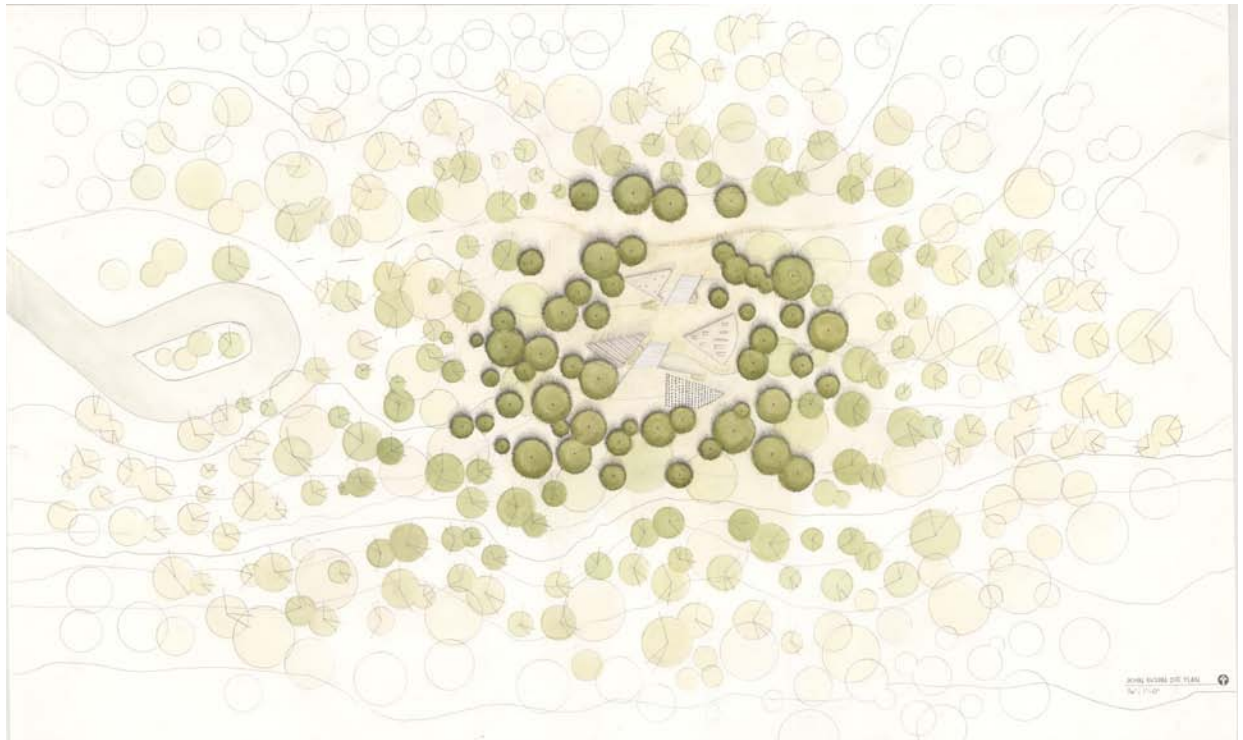
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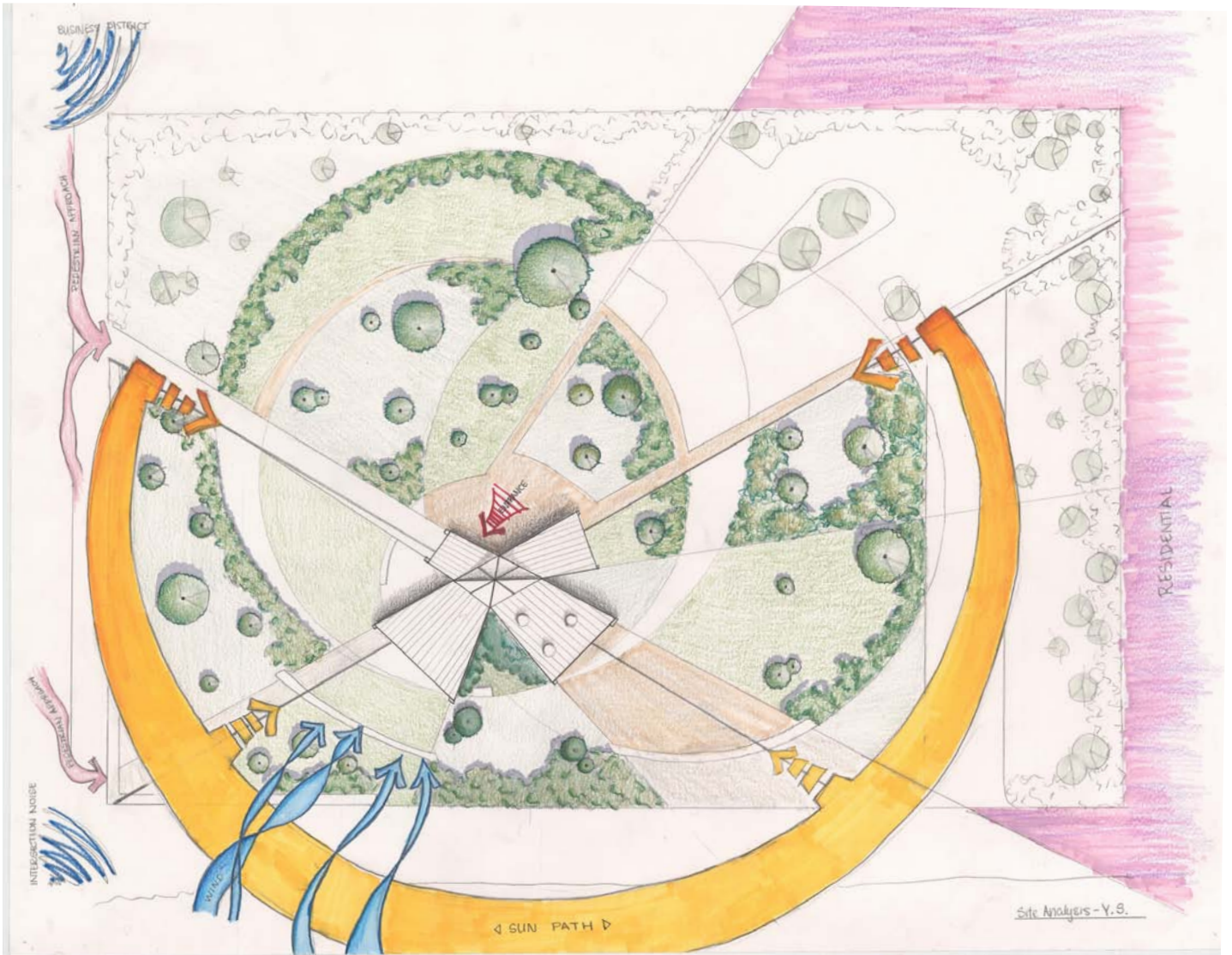




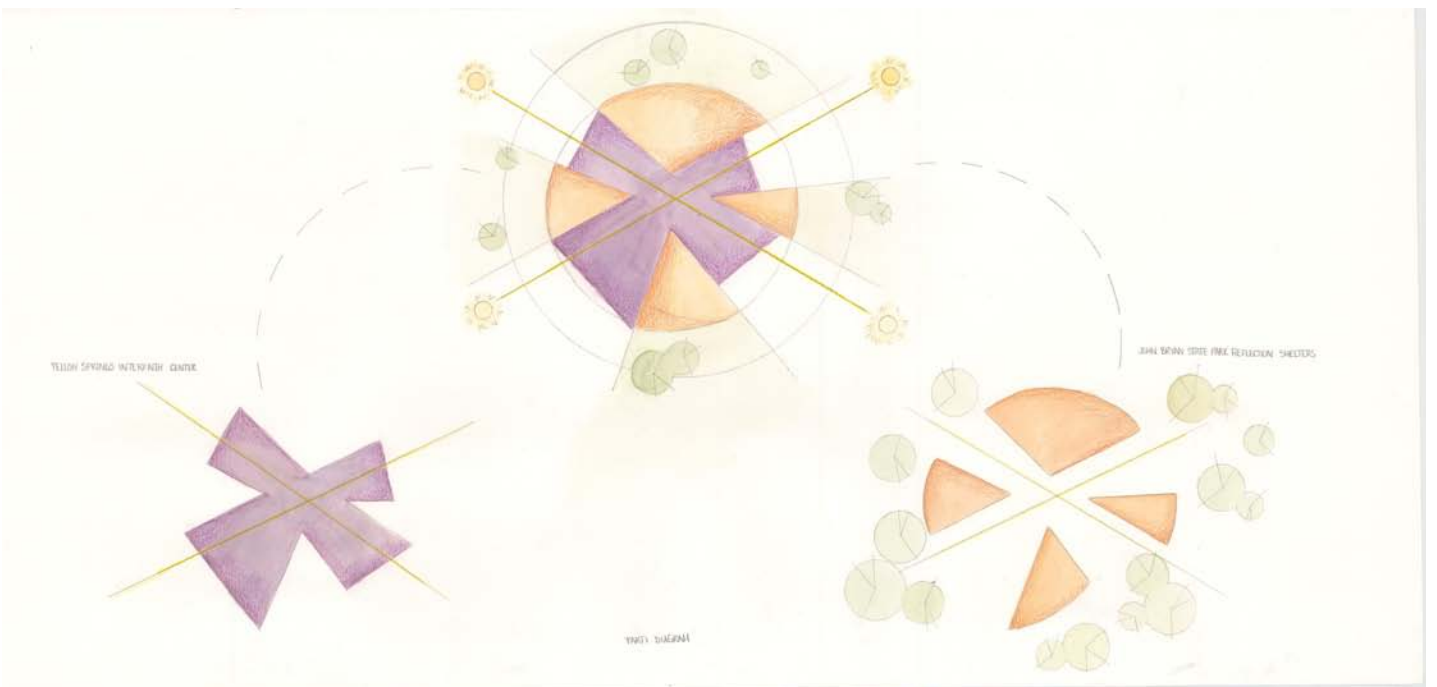
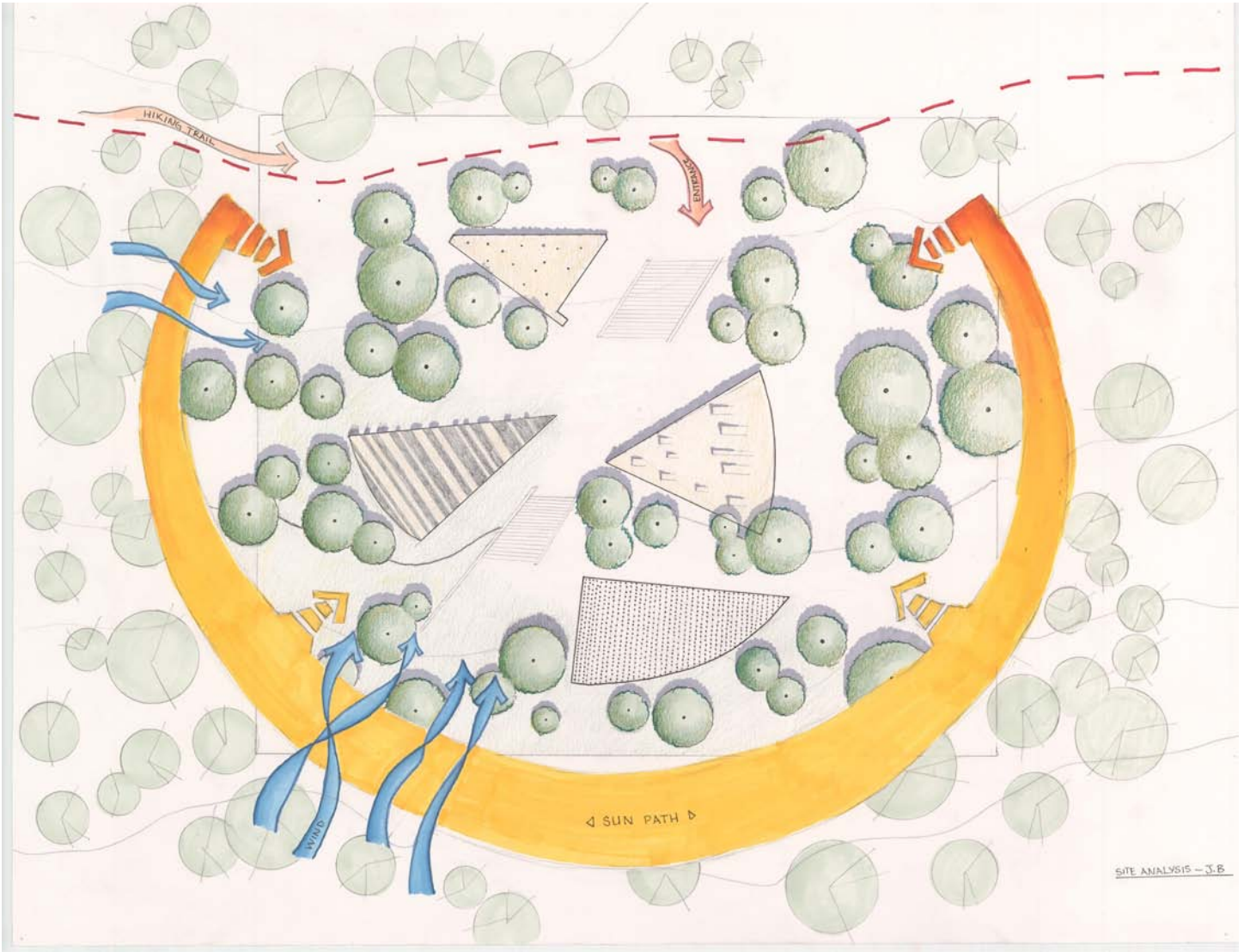


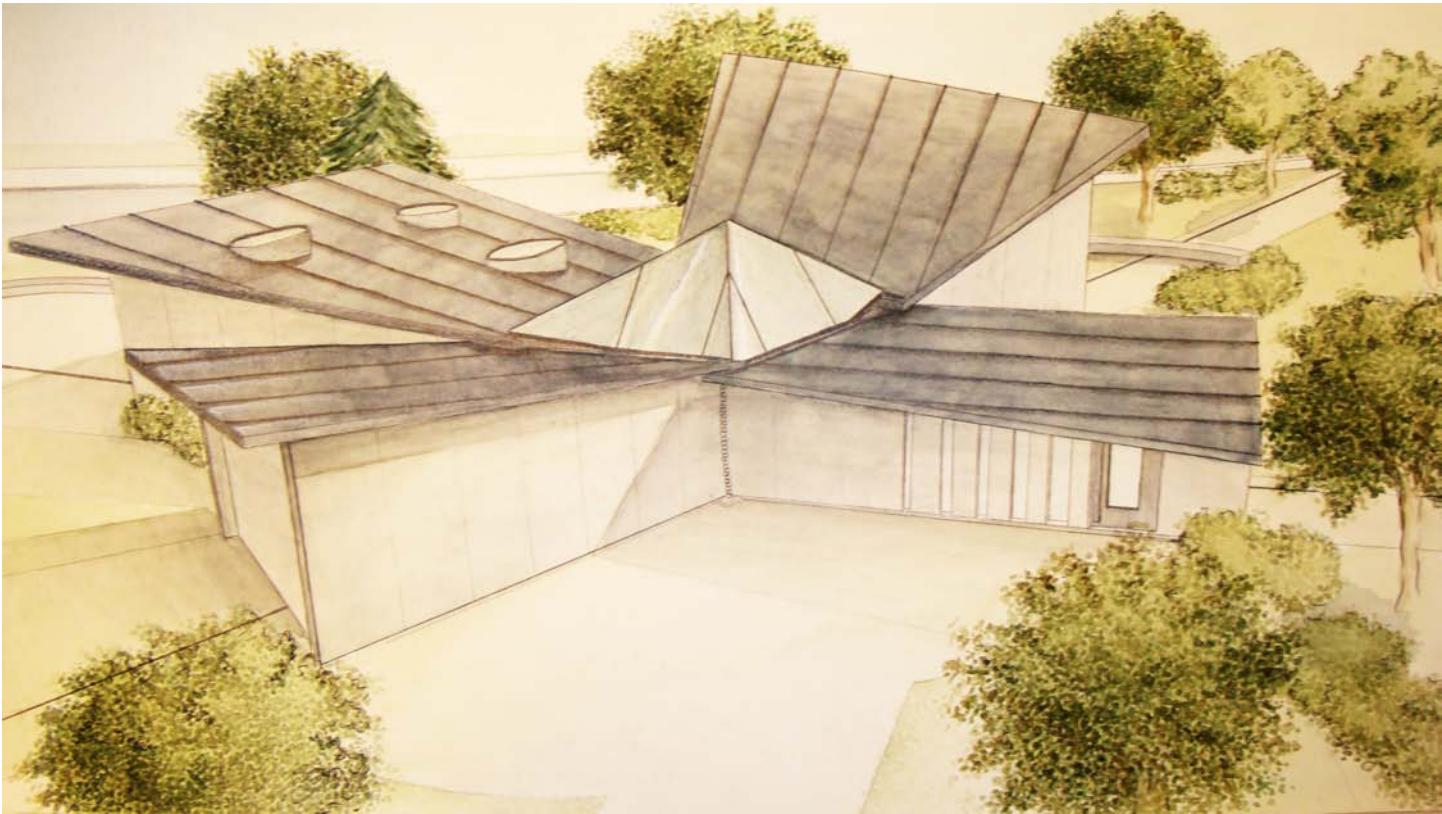


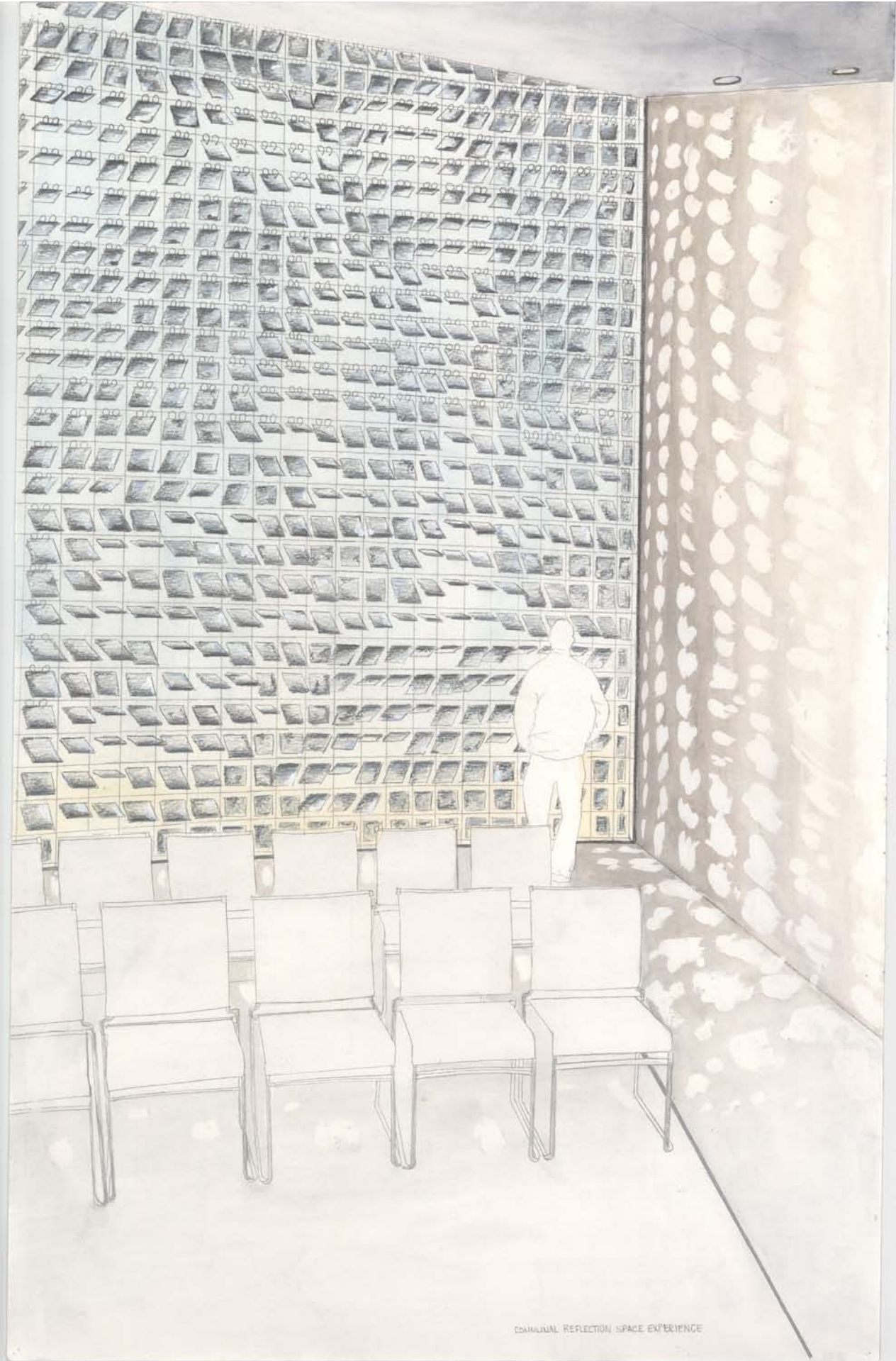




Site Analysis - Y.S.





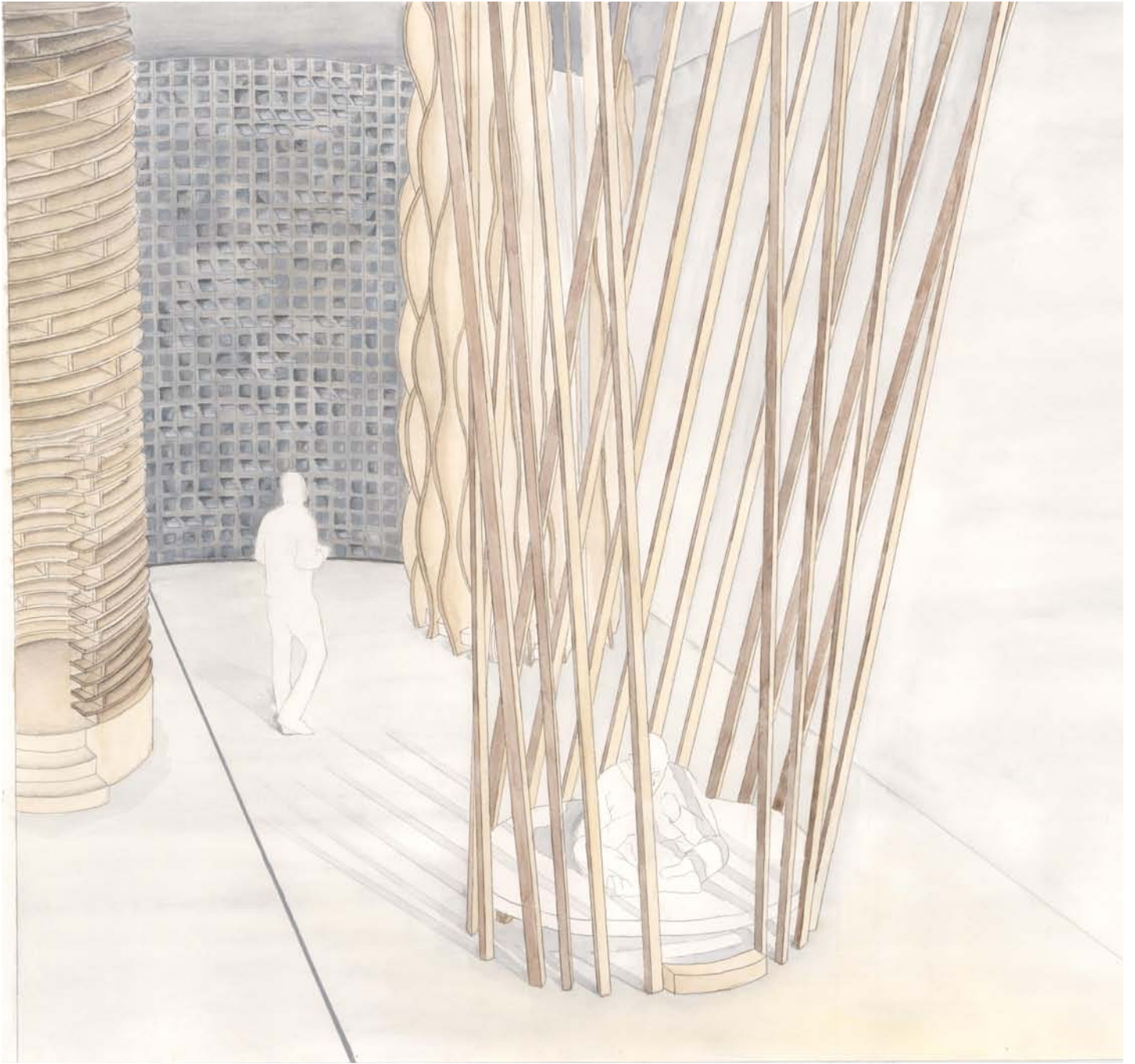


CONTINUAL REFLECTION SPACE EXPERIENCE

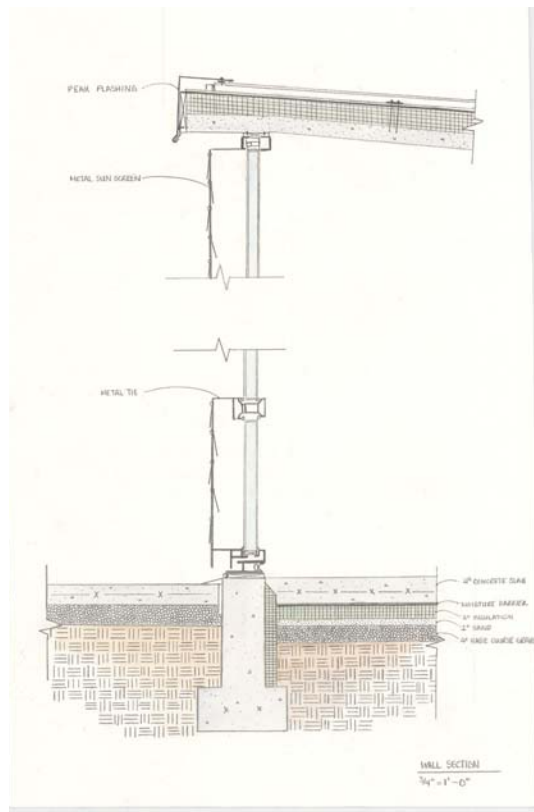
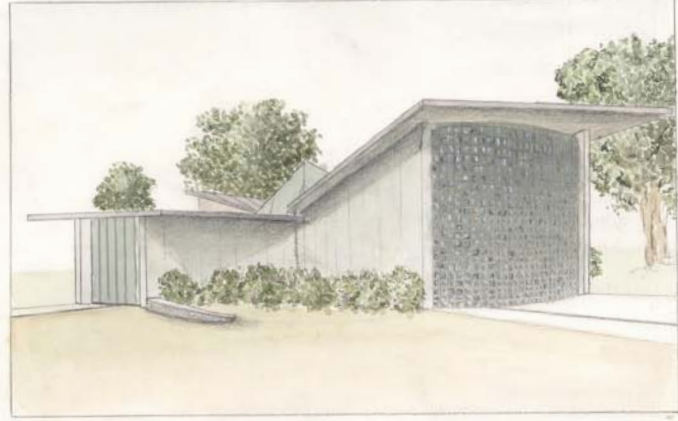
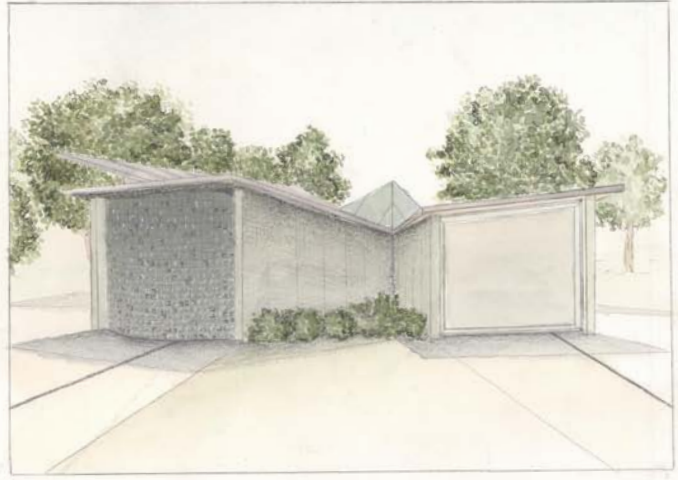


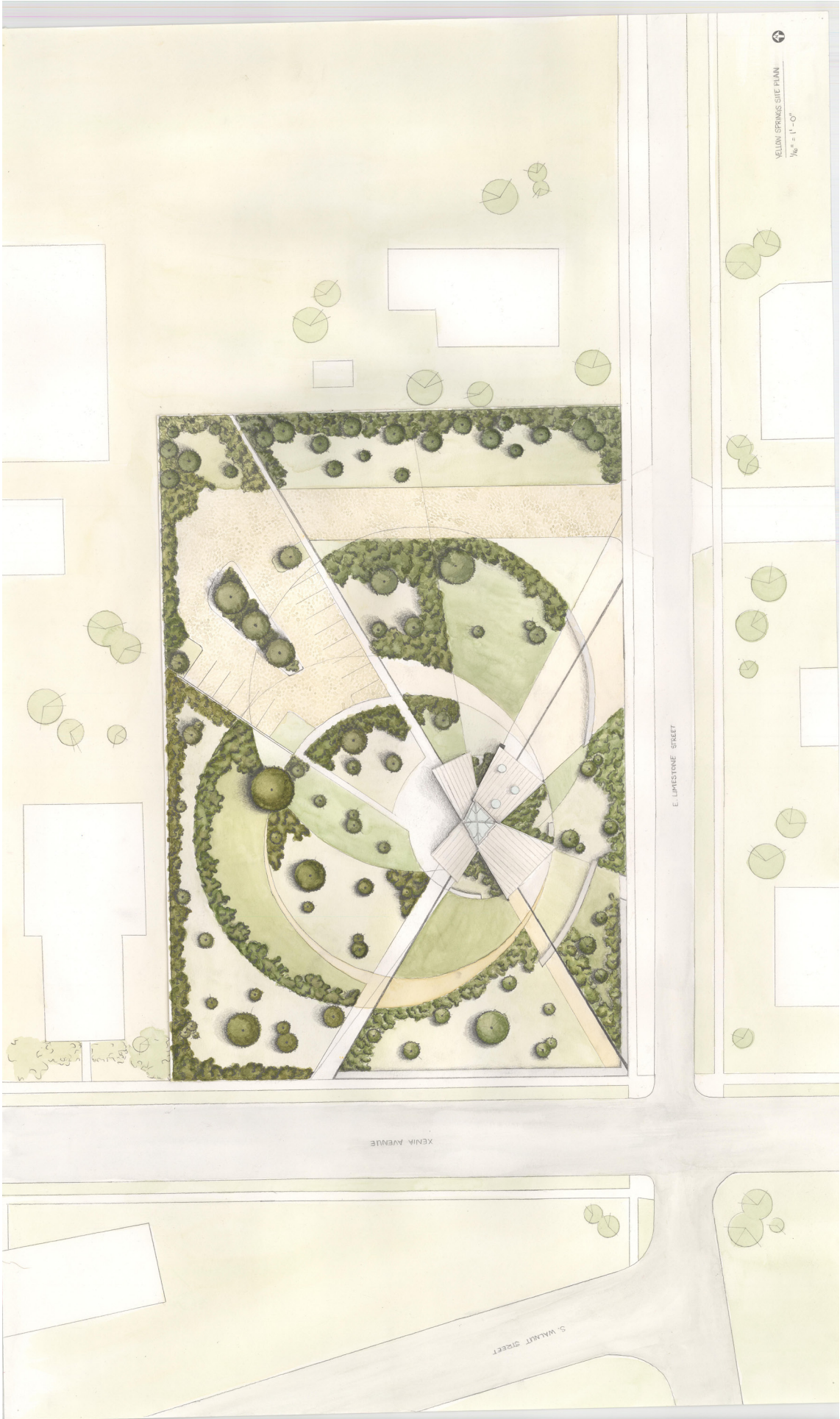
Architectural drawing showing a complex grid structure, likely a ceiling or floor plan, with various rectangular and triangular sections. The drawing is oriented vertically on the page.

Architectural drawing showing a complex grid structure, likely a ceiling or floor plan, with various rectangular and triangular sections. The drawing is oriented vertically on the page.







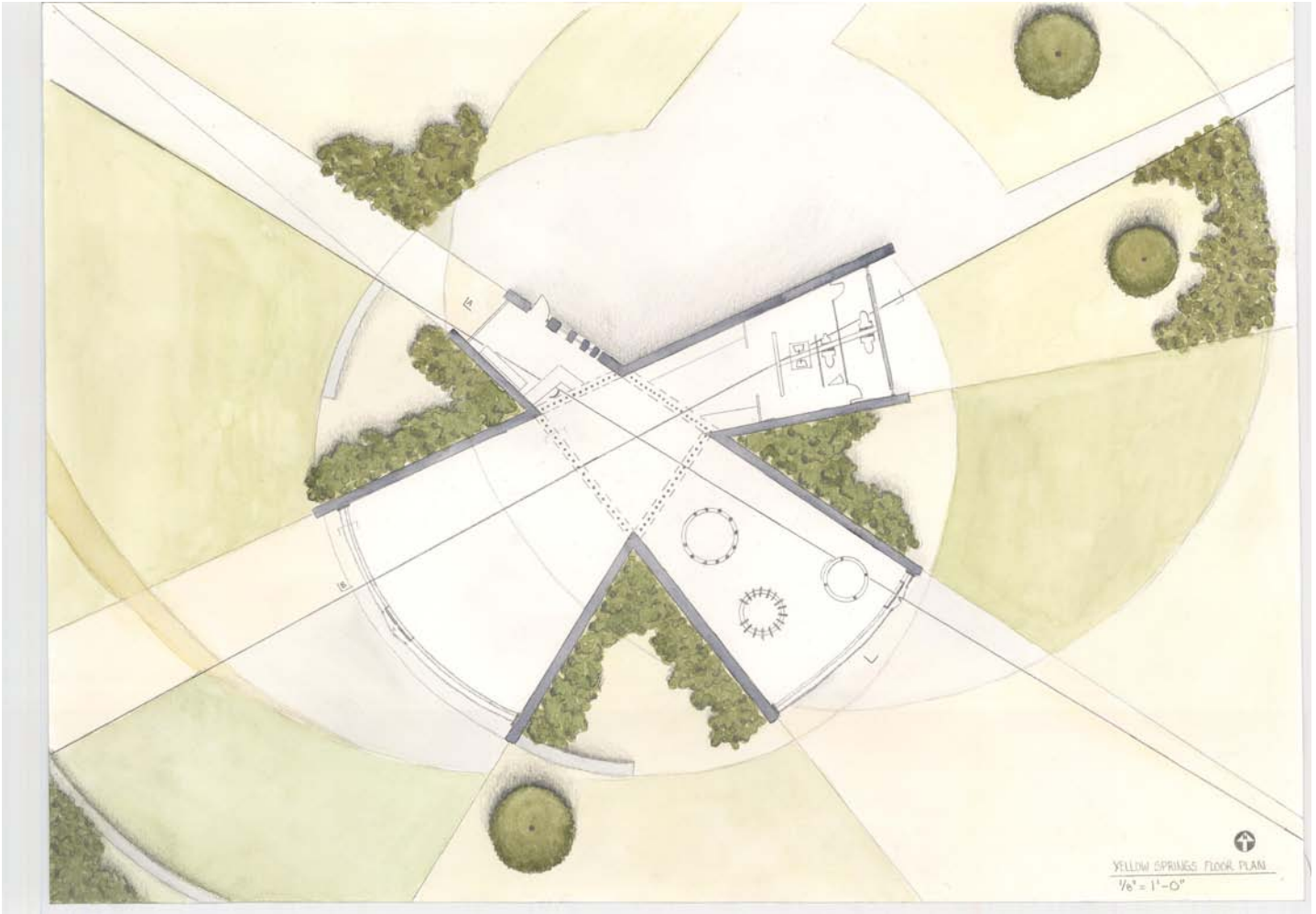


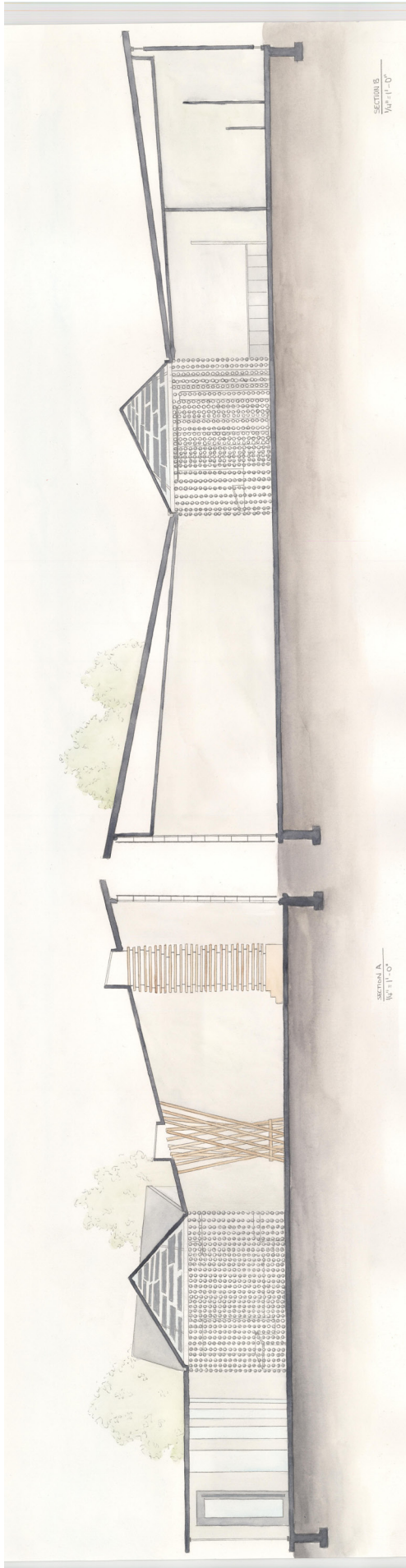
YELLOW SPRINGS SITE PLAN  
1/8" = 1' - 0"

E. LIMESTONE STREET

KENIA AVENUE

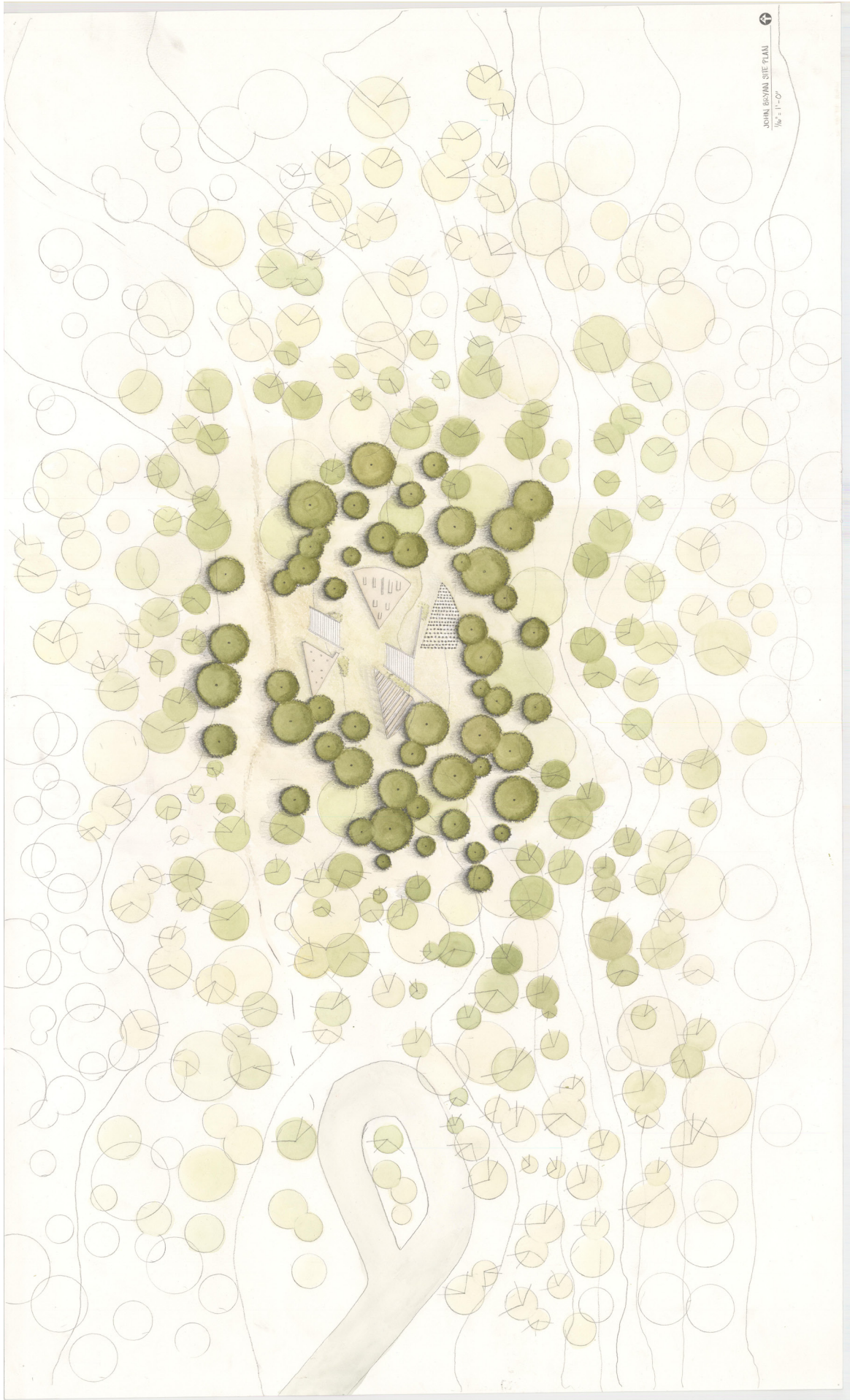
S. WALNUT STREET





SECTION E  
1/4" = 1'-0"

SECTION A  
1/4" = 1'-0"





JAHILI BOWAN - SITE SECTION  
 1/8" = 1'-0"



JAHILI BOWAN - SITE CONTEXT SECTION  
 1" = 100'

## **Conclusion**

My thesis began as an exploration of daylighting within the architectural world by focusing on daylighting as the beginning point in a design, and finding unique ways to incorporate new daylighting techniques into architecture we use everyday. As the exploration continued and I had to narrow down a site and building typology, the focus had to shift slightly. I decided that a chapel would allow me to explore daylighting techniques in many different ways, without the program becoming the controlling factor in the design.

Narrowing down the site location, I could have gone with a rural or urban site, and found no reasoning to choose one over the other. I decided to use this contrast to better my argument and exploration by using both of these types of sites. Choosing Yellow Springs, Ohio, allowed me to design my Interfaith Chapel, due to the type of community that is Yellow Springs, but it also borders John Bryan State Park, giving me the more rural site needed for the contrast.

Through the use of hand drawings, sketches, and many study models I was able to explore many different building forms and daylighting ideas. I used the summer and winter solstices to help develop a building form for both the Yellow Springs site and the John Bryan State Park site. Once I developed the Yellow Springs site and I was happy with the opportunities it allowed for daylight exploration, I worked to connect the John Bryan State Park site building form. I did not want to disturb the land or site as much in the state park, so I developed these buildings more as shelters along the hiking trail. These shelters were formed out of the negative space from the building form in Yellow Springs.

As with every thesis, the exploration could always continue. It was mentioned during the final critique, that the exploration of the site at John Bryan through the incorporation of the solstice lines onto the site, as I had done in Yellow Springs, might have been more successful or beneficial to the overall design. This makes sense. Going back to further explore early ideas I had of capturing certain times within the year when the sun hit on a particular day and time, creating a special moment within a space, might also make for a stronger design. There were so many different directions I could have taken this project, and within this time frame, I was only able to explore this one. The videos of the light experience are on the disk included in the back of this book, giving you a condensed time lapsed idea of the lighting within the shelters. Iterations and new ideas were the underlying themes of this project. There was never one right answer or one exact solution. That is what made exploring these ideas so exciting and challenging at the same time. Therefore, I think of this merely as a beginning. There was a deadline to be made and “final” drawings to be completed, but I would by no means be able to call this project ever completely finished with all its possibilities.

Can light invoke an emotional experience for the occupant of a space? Yes. And, lighting, used as a material to enhance the experiential quality of a space, can it be the foremost strategy in the design process? Yes I believe this project accomplished this. But this was one answer to this very open-ended thesis, allowing for numerous design explorations and investigations.



