

TRANSCENDING BORDERS



HELEN JOHNSON | 2019-2020 | GANAPATHY MAHALINGAM

TRANSCENDING BORDERS

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

By

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THESIS ABSTRACT

Despite the popularity of border issues in today's media, the spatial transformation, which borders create remain unrecognized. The Thesis discusses the relationship between architecture and borders. Borders are much more than a thin line that divides two nations, they are instrumental transitions between social and personal experiences that are essential in structuring psychological processes. We cross borders every day, whether it is psychologically or physically. The year 2020 has arrived. If 20/20 vision is the goal, then what should the year 2020 entail? Inclusivity? Peaceful opposition? Let us take one step back to look ten steps further into the future. Borders: enabling their transcendence, creates common ground where exclusive societies can cross borders as one. This is architecturally expressed as a museum on a historical site intersecting national and international borders. The thesis proves, through qualitative and historical research, that borders can transform design by creating spatial unity and community while maintaining a cultural identity, diversity, security, and a sense of place.

HOW CAN BORDERS TRANSFORM DESIGN TO CREATE SPATIAL UNITY AND COMMUNITY WHILE MAINTAINING CULTURAL IDENTITY, DIVERSITY, SECURITY, AND A SENSE OF PLACE.

NARRATIVE OF THE THEORETICAL ASPECT OF THE THESIS

It's an instrument, a finely tuned tool that manages, calibrates, and governs crossings. Borders: enabling transcendence.

Memory | Reality Inside | Outside Light | Dark

6 Most often, we think of a border as a thin line on a map. I grew up in the Northland near one of these thin lines and made many trips across it. When one crosses this line, the dialect changes, miles per hour changes to kilometers per hour, and one's perspective is mirrored. Mirroring your perspective creates infinite realities, which fuels controversy. This border, which divides Canada and the United States, was first drawn after the Revolutionary War, tearing a once interwoven patchwork of commerce, friends, and family into individual quilting swatches.

Looking at a border through the lenses of a designer offers a variety of perspectives into the different ways' in which individuals and societies cross borders. From this perspective, they are no longer looked at as a physical line, but as tool, which humans created to bring order to chaos within the mind and the physical world. Maybe this is also describing architecture? Architects program spaces to be just that, a floor with walls that organize space. What if each wall in a plan was treated as a border? What if each transition was intentional and created a social, personal, and cognitive experience which effortlessly drove the user into

PROJECT TYPOLOGY

Museum: a building or place where works of art, scientific specimens, or other objects of permanent value are kept and displayed.

Education: the act or process of imparting or acquiring general knowledge, developing the powers of reasoning and judgment, and generally preparing oneself or others intellectually for mature life.

Recreation: a pastime, diversion, exercise, or other resource affording relaxation and enjoyment

**“Museums should be enjoyable, curious, allow us to see beauty, and fill us with wonder.”
-Maria Balshaw, Director, Whitworth Art Gallery**

Museums have been significant throughout history, as the first one dates to 530 BCE which contained artifacts from earlier Mesopotamian civilizations. Throughout time, museums have shifted from preserving artifacts to creating a visitor experience. In a time of technological advancements, museums are having to shift once again by creating a mix between collections (physical and digital) and self-directed experiences.

In a thesis regarding inclusivity, it cannot be ignored that a museum is seen as “exclusive.” Many people believe that there is a standard when walking into a museum and does not want to stand out in a crowd. Creating a museum that is inclusive, that leaves the visitor feeling inspired, all while enjoying their pastime becomes the goal of the modern museum on Lake Champlain.

THE INTERNATIONAL PEACE GARDENS

TYPOLOGY: CULTURAL ARCHITECTURE

LOCATION: STRADDLES THE 49TH PARALLEL

NORTH DAKOTA + MANITOBA

SIZE: 2,390 ACRES

“It’s purpose is to foster and support the material expression of a world ideal concerened in the interest of International peace and its benefits to humanity. It recognizes that wars between nations have been humanity’s greatest curse; that its glofies are a myth; and its continuance an aborrence to the Creator.”



Figure 01 | *Peace Gardens* | Helen Johnson

PROGRAM

SOUTH DRIVE

1. International Music Camp: This camp is a sign of music is a common language to the entire world. Students from 75 countries stay at the camp to practice and grow in 40 different programs of music, theater, dance, visual arts, and creative arts.

2. The Masonic Auditorium: This Auditorium can host large gatherings.

3. The Historic Lodge: The significance of this lodge lies in the time in which it was built and the materials that were used to construct it. The Conservation Corps workers built this lodge during the Great Depression. Granite from throughout North Dakota was used as the foundation and the base, while timbers from Manitoba's Duck Mountains were used in the Lincoln-log structure.

4. International Athletic Camp: This camp is one of the finest athletic camps for school ages children in North America. It hosts over 500 athletes in eight sports.

5. The North American Game Warden Museum: This is a unique museum that displays illegal taxidermy that has been confiscated on international borders in North America.

6. Lake Udall – Hand dug in 1934 and named after W.V. Udall of Boissevan Manitoba

NORTH DRIVE

7. Lake Stormon: Man made lake named after Judge John Stormon of Rolla, North Dakota

8. Eric Willis Pavilion: This pavilion is a romantic setting for wedding ceremonies. It invites the guests to rediscover the meaning of peace and serenity.

9. Ducks Unlimited Dam

FORMAL GARDEN

10. Peace Chapel: The chapel is nestled within the ground on the West end of the gardens. The walls are made of Manitoba Limestone and are engraved with quotes offering insights into peace from international leaders, writers, and philosophers.

11. Peace Towers: Dismantled in February of 2017 due to freeze/thaw failures, the four – 120-foot concrete towers once stood to symbolize the coming together of all people from four corners of the world. An architectural competition took place after the demolition to replace the Peace Towers. GPP Architecture of Winnipeg submitted the winning design that was voted on by members of both sides of the border. The design is creatively inspiring as it joins Canada and the United States into one rising monument.

12. 9/11 Memorial: Actual steel girders from New York City's former Twin Towers reminds us of how fragile peace can be and that we must always look for a Promise of Peace, even at our darkest moments.

13. Bell Tower: The 14 bells were cast in Croydon, England and were first used at a church in Brandon, Manitoba before they were donated to the Gardens after the church was reorganized. It chimes gently to remind of of the hour and the quarter hour spent in the garden.

14. Interpretive Centre & Conservatory: The interpretive center is home to a café, gift shop, and a horticultural reference library, and conference/meeting rooms that are open all year round. The Centre's Atrium hosts banquets, square dances, exhibits, art shows and can be reserved by groups to hosts their meetings/event. The Conservatory invites visitors to explore more than 6,000 cacti and succulents grouped into their native regions.

15. Sunken Garden: This fenced in garden is located at the midway point of the 1.5 mile walk through the form gardens. The fence creates a barrier between the perennials and ornamental shrubs that are favorite foods of the deer, elk, and moose that live in the area. Signage throughout the sunken garden helps visitors identify their favorite plants to become inspiration for their own personal gardens.

16. Promise of Peace Sculpture: Artist Arthur Norby was commissioned to develop a monument of peace to replace a fiberglass and aluminum peace sculpture that had worn due to the weather and climate. The 6 foot tall, 330 pound stainless steel structure was delivered to the Gardens in 2015. Its open, upturned hands are releasing a dove to symbolize a Promise of Peace on the 49th parallel. Facing West, the dove is ready to take flight with its message of hope and peace to share for generations to come.

17. Peace Poles: Presented by the Japanese Government. "May Peace Prevail."

18. Formal Garden: The main garden stretches from the East entrance to the Peace chapel in the West (about 1.5 miles). It is home to many masonry shelters and gazebos for picnic stops and is the site for two historic interpretive centers.

19. Floral Clock: Each year, as many as 150,000 flowering annuals are planted to create the 18' diameter Floral Clock. It is a duplicate of the original Bulova Floral Clock in Berne, Switzerland.

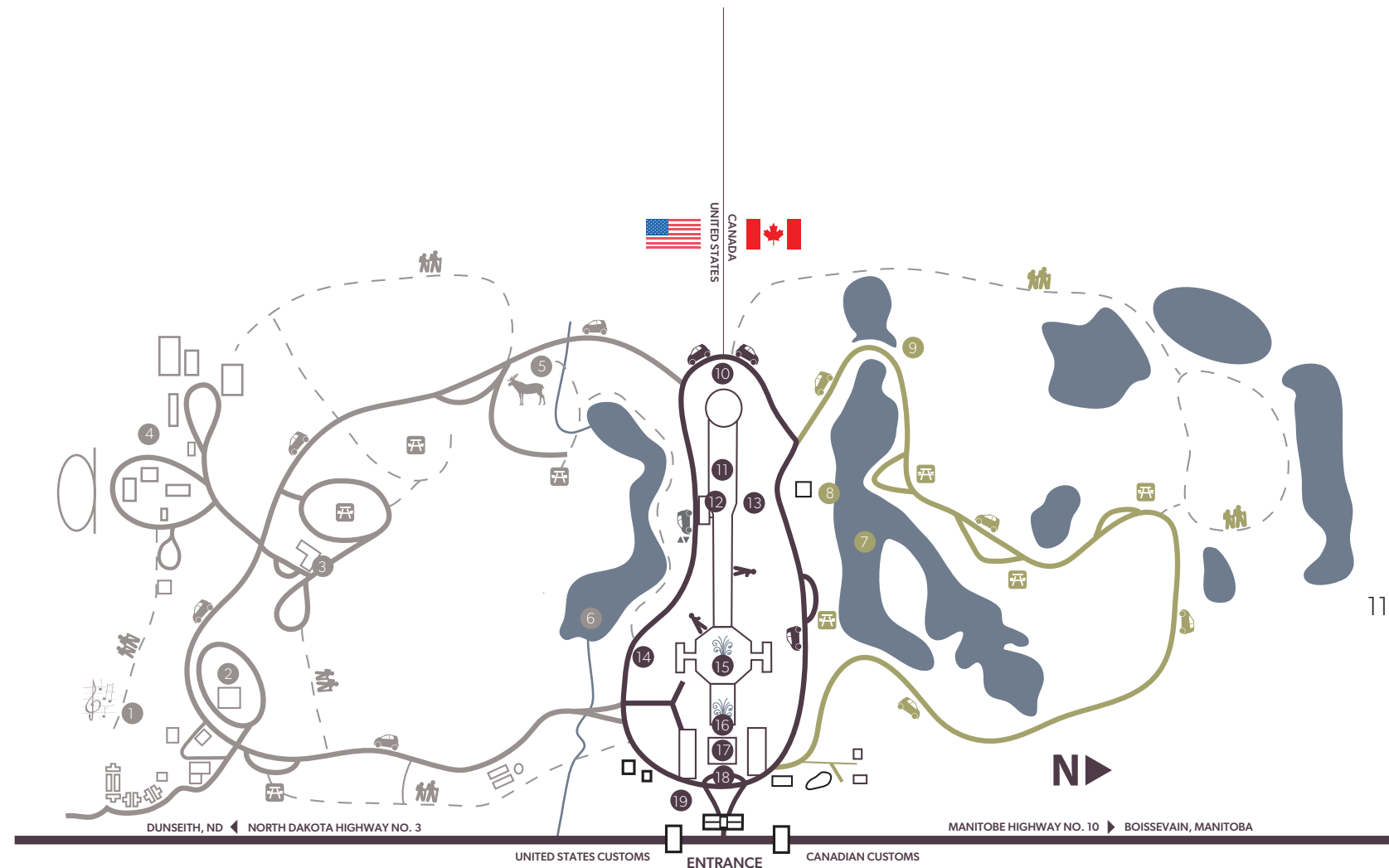


Figure 02 | Visitor Map | Helen Johnson



Figure 03 | *International Border*

The International Peace Garden responds to its site environmentally, culturally, politically, and socially. The designers, as well as the yearly gardeners, have continued to pay their respect to the northern climate and the Midwest region. The garden is a sanctuary for thousands of plants and trees that are native to the northern region and the short growing season. The buildings on site are no exception. They are all constructed using sustainable materials found throughout North Dakota and Manitoba landscapes such as limestone, timber, and granite.

The rich cultural history of the Turtle Mountains and the surrounding areas can be seen throughout the Gardens. The Garden design pays homage to the French traditions and culture in Canada. Many comparisons can be drawn between the Peace Gardens and a French formal Garden, which is a "style based on symmetry and the principle of imposing order on nature. The timber lodges on the site were built with regional timber, like how the Norwegians and Germans built their

structures. Interwoven, the competition winning design for a new peace tower, is inspired by Native American dwellings and connects the two nations into one piece of architecture.

Creating the Peace Gardens was a unique political task for the Minneapolis landscape architect, High Vincent Freehan. The site chosen on the Canadian and United States international border highly respected the friendship that the two countries honored. The design takes into consideration the two unique forms of government but unifies them into an overarching friendship shown in the axial symmetry of the Garden.

The Garden creates conversation. A conversation of what a border could look like. It is a place where an alien does not require a passport and where visitors aren't greeted by metal detectors. I believe the International Peace Garden was the first step and that it is our calling as Americans and Canadians to continue illustrating how borders can be designed between friends.



Figure 04 | *Interwoven* | GPP Architecture

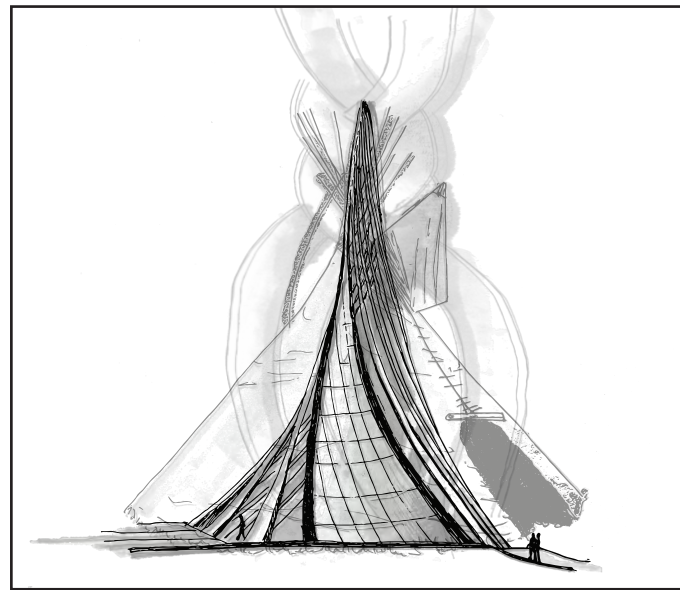
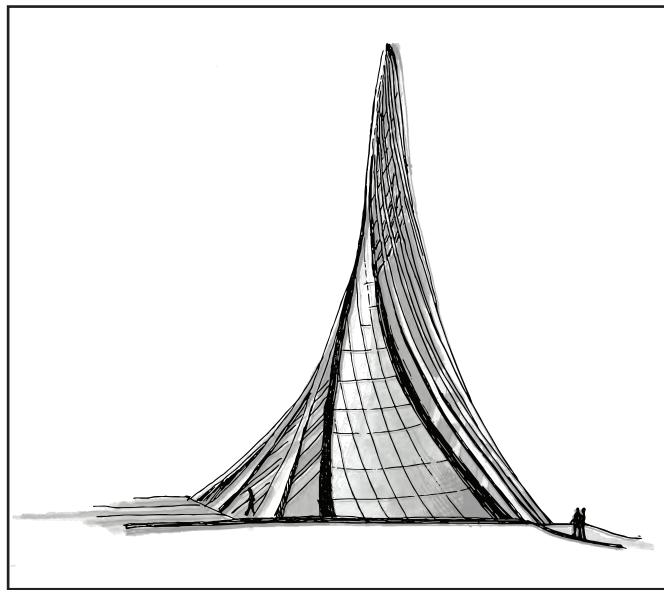
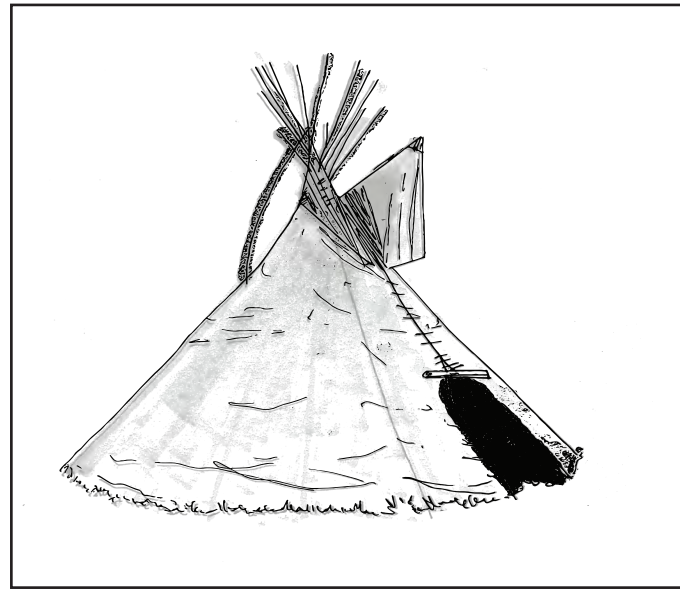
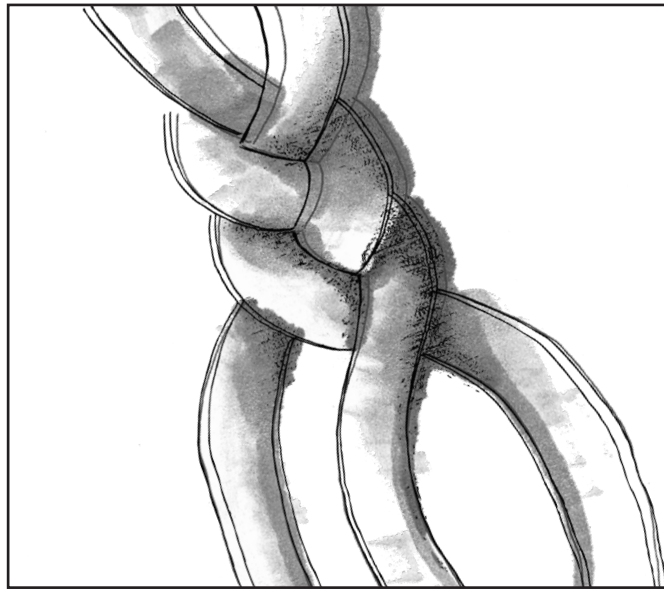
INTERWOVEN

ARCHITECT: GPP ARCHITECTURE | WINNIPEG
 LOCATION: INTERNATIONAL PEACE GARDEN
 HEIGHT: 178 FEET TALL
 COMPLETION: TO BE DETERMINED

The Peace Towers were once a symbol of international collaboration. Due to the every changing weather of the North, the towers had to be disassembled. This created opportunity for an international competition. In 2016, the selection committee awarded Interwoven as the winner of the competition.

ARCHITECTURAL ELEMENTS AS BORDERS

Borders are very apparent physically and conceptually within the project. Physically, the international border cuts right through the base of the project and becomes the entrance. Conceptually, Interwoven honors cultural borders by resembling a Native American inspired design in a modern style.



Figures, Left to Right: Figure 05 | *Braid* | Helen Johnson; Figure 06 | *Tipi* | Helen Johnson;
Figure 07 | *Interwoven Elevation* | Helen Johnson; Figure 08 | *Inspiration Combination* | Helen Johnson

ARCHITECTURE AS SCULPTURE

Interwoven is a great example of how to design for culture and the site context. Without knowing a great deal of information about the project, one can make a few assumptions:

1. It represents the joining of different subjects; togetherness
2. It resembles a Native American Tipi

After researching more about the project, I was pleased to discover that these two assumptions were the inspirations and goals for the project. Creating a design that can illustrate a story to visitors who are not designers or artists is an important task when creating a landmark. It creates an overarching understanding of its purpose.

I believe it is important to note the continuity, simplicity, and elegance of the structure. These three characteristics transform architecture into a sculptural masterpiece.



Figure 09 | Chapel | Helen Johnson

PEACE CHAPEL

“We believe – as you do that – that the problems of our time cannot be solved by military strength alone. Peace – can be won only by the quality of infinite patience. We may differ on the “hows,” but never the “whys.” You may depend upon us as faithful friends and comrades.”

Vincet Massey – Gov. Gen. Of Canada to Congress of U.S.A 1965

ARCHITECT: UNKNOWN
 SPONSORED BY: GENERAL GRAND CHAPTER
 ORDER OF THE EASTERN STAR
 LOCATION: INTERNATIONAL PEACE GARDEN

The Peace Chapel is one of my favorite stops at the Gardens. This is a place to contemplate. There are quotes on the walls from international leaders, writers, and philosophers that share experiences and insights into peace. It is comforting to read these walls in silence and know that humankind has one goal - to love and live in peace with one another.



Figure 10 | *Inscrits of Peace*

ARCHITECTURE AS BORDERS

As a visitor makes his or her way through the Formal Gardens, they are greeted with all the noises of nature as well as the sounds of the Northern wind. As the visitor reaches the end of the path, one opens the doors to the Peace chapel, and silence fills the space. This creates a physical border of noise and silence. The image to the left illustrates the hard material selections that were chosen for the interior. In a space of contemplation, this may sound like a mistake since most times, designers would have picked soft materials to absorb the sound. In the Peace Chapel, concrete, masonry, and limestone are the main material choices of the interior. This recipe amplifies one's voice and quickly silences the visitor. It forces one to silently read the inscriptions around the room and to just think to themselves.

The visitor crosses an emotional border, represented by color (see figure X), when entering the chapel as well. The natural daylight is overcome by a sea of orange light, created by the stained-glass windows. According to the book, "Color Image Scale," by Shigenobe Kobayaashi, the color orange extracts emotions of friendliness, lightheartedness, richness, and enjoyable.

“That long Canadian frontier from the Atlantic to the Pacific Oceans, guarded only by neighbourly respect and honorable obligations, is an example to every country and a pattern for the future of the world.”

-Winston s. Churchill



Figure 11 | Conservatory

CONCLUSION

**“Where peace is unknown.
To make it welcome. Where
peace is fragile. To make
it strong. Where peace
is temporary. To make it
Permanent.”**

**-Richard M. Nixon | President - United
States of America Inaugural Address
1969**

One of my goals in my thesis project is to continue the legacy of the International Peace Gardens. Within the case study, we explored four different borders that are seen architecturally throughout the Gardens, including political borders, cultural borders, acoustical borders, and emotional borders. We also experienced four borders throughout the site design which included, environmental borders, international borders, political borders, and social borders.

The border crossings that were used throughout the project will contribute to my catalog of borders as well as throughout the museum program.



Figure 12 | "Under" Severe Storm Watch | Ivar Kvaal

UNDER

TPOLOGY: RESTAURANT

ARCHITECT: SNOHETTA

LOCATION: LINDESNES, NORWAY

SIZE: 5,328.14 SQUARE FEET

COMPLETION: 2019

CASE STUDY

2.

x

“As a new landmark for Southern Norway, Under proposes unexpected combinations of pronouns and prepositions, and challenges what determines a person’s physical placement in their environment. In this building, you may find yourself under water, over the seabed, between land and sea. This will offer you new perspectives and ways of seeing the world, both beyond and beneath the waterline.”

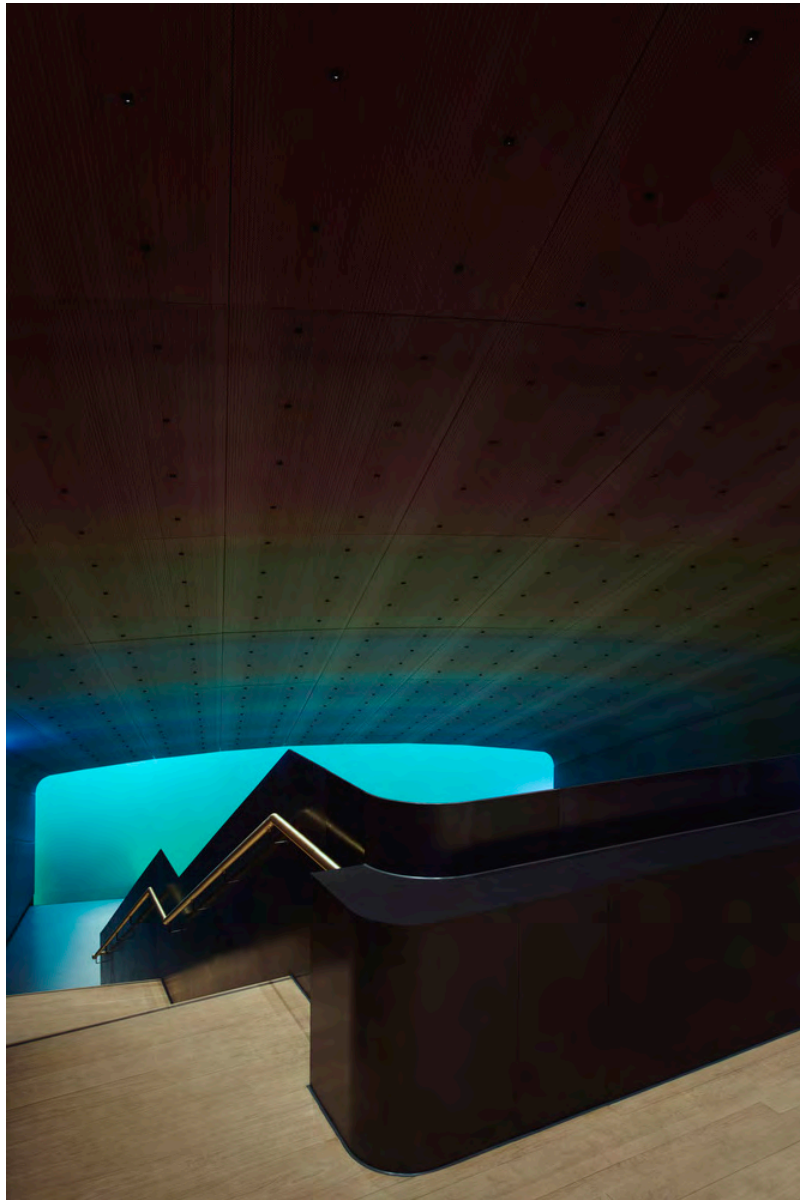


Figure 13| Sea Cinema | Ivar Kvaal

ANALYSIS

“We wanted to avoid all sense of anxiety in an underwater restaurant.”

-Project Architect, Rune Grasdahl

Would you want to eat in a restaurant that’s underwater? The architects at Snohetta were aware of this fear and needed to come up with a solution avoid the sense of anxiety. An approach, like a movie theater was discovered. Project architect, Rune Grasdahl shares that wherever the guest is in the space, one can orientate themselves to the sea and sky. In a movie theater, the further one goes down the stairs, the closer one is to the screen. Section A and B illustrates this movement as well, but instead getting closer to the movie screen, the guest gets deeper and closer to the large acrylic panel that showcases the sea life.

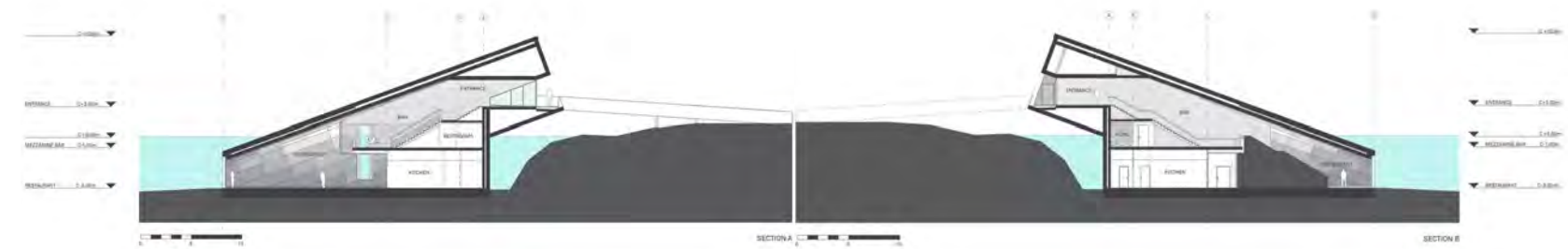


Figure 14 | Section A, drawing credit | Snohetta

Figure 15 | Section B, drawing credit | Snohetta



Figure 16 | *Under* | Aldo Amoretti

“UNDER” CONSTRUCTION

The site for the underwater restaurant was chosen due to the need to achieve the strongest possible connection possible. The rock shoreline accomplishes this duty, even when the ocean is at its wildest point. The process to construct a habitable underwater structure with minimal impact on the environment took some brainstorming and collaboration between the project teams. Asplan Viak, the structural engineering team, creatively proposed a solution, familiar to the oil industry, that consisted of four major phases.

- 1.) The structure constructed offsite
- 2.) Transport structure to site
- 3.) Submerge Structure
- 4.) Anchor structure to the ocean floor.

These phases were accurately carried out through the duration of the construction process. The main structure was constructed on a barge not too far from the final site of the project. Concrete was chosen for the shell material due to its structural strength and its ability to become an artificial reef. After the main shell (concrete and acrylic glass) was complete, the barge brought it to the site and released the shell to float freely in the correct location. Next, the shell was filled with 450 tons of water to make it sink at a 20-degree incline. To continue to minimize the impact on the seabed, dredging and pumping was out of the question. Instead, eight, fifty-two-foot, steel piles secured the concrete structure to the ocean floor. Finally, the water was released, and the shell was sealed.



Figure 17 | Drone | Andre Martinsen

ARCHITECTURE AS BORDER

**“...which crosses a border
between what is breathable
and what is not...”**

“Under” represents multiple dimensions of border crossings. Physically, it crosses from land to sea, and then crosses the border between water and air, which crosses a border between what is breathable and what is not, which consequently crosses the border of life and death. Since it is the first underwater restaurant, the border of architectural knowledge and experimentation are also crossed. Emotionally, borders of fear and anxiety can be crossed by walking down into the restaurant. Water is a fear of many people due to its unpredictability. Dining at this restaurant can put the guest one step closer in overcoming the fear of water. Anxiety due to being claustrophobic or worried about the structure can be overwhelming for many as well. Enjoying the company at one’s table and with the sea creatures passing by the 35-foot-long, 11-foot-high acrylic screen can be a step in the right direction in curing anxiety.



Figure 18 | *Dining Room* | Ivar Kvaal

CONCLUSION

**“... and therefore,
created an addition to
the border catalog...”**

The original intent of this case study was to learn more about the construction process of an underwater structure, since a portion of my thesis project will be under the water of Lake Champlain. The exploration into the design of the project allowed for the discovery of new knowledge and therefore, created an addition to the border catalog, which is a developing research document that outlines a multitude of borders. Growing the research catalog directly expands the program of the proposed museum in my thesis.

KIMBELL ART MUSEUM

TYPOLOGY: MUSEUM

ARCHITECT: LOUIS KAHN

LOCATION: FORT WORTH, TEXAS

SIZE: 16 VAULTS, EACH 100' x 20' = 32,000 SF

x

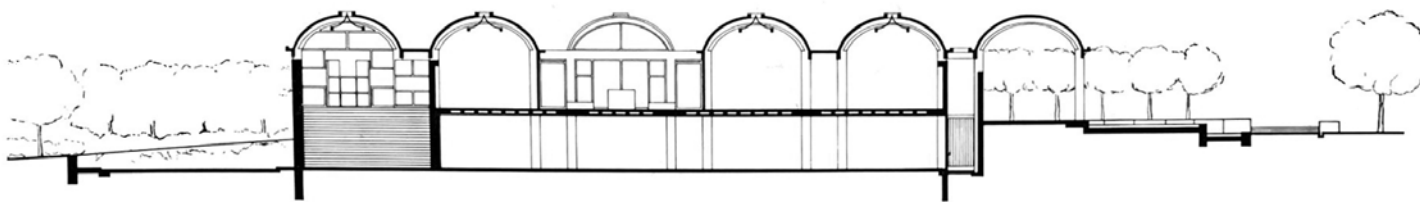
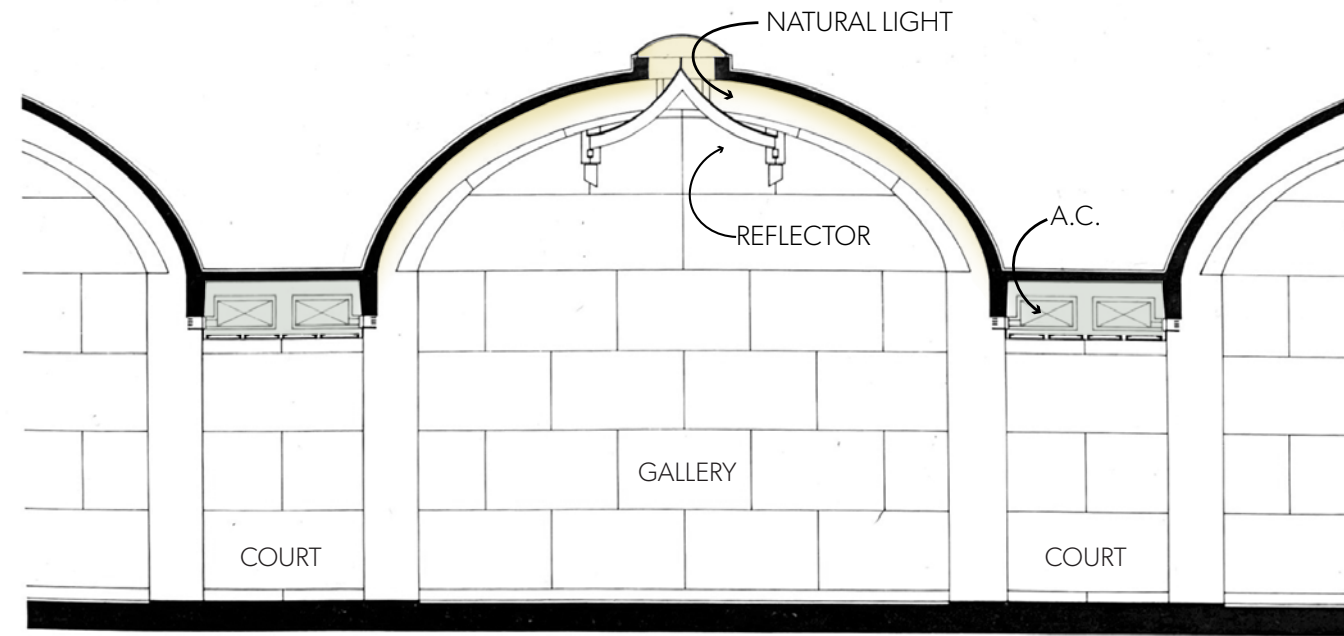
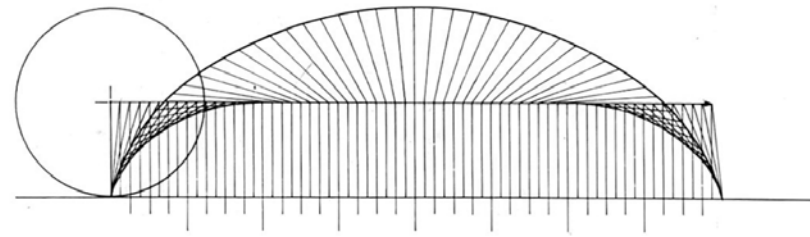
35

**“The museum has as many moods as there are moments in time, and never... will there be a single day like the other.
-Richard F. Brown, Kimbell’s First Director**



34

Figure 19 | North Portico | Nic Lehoux



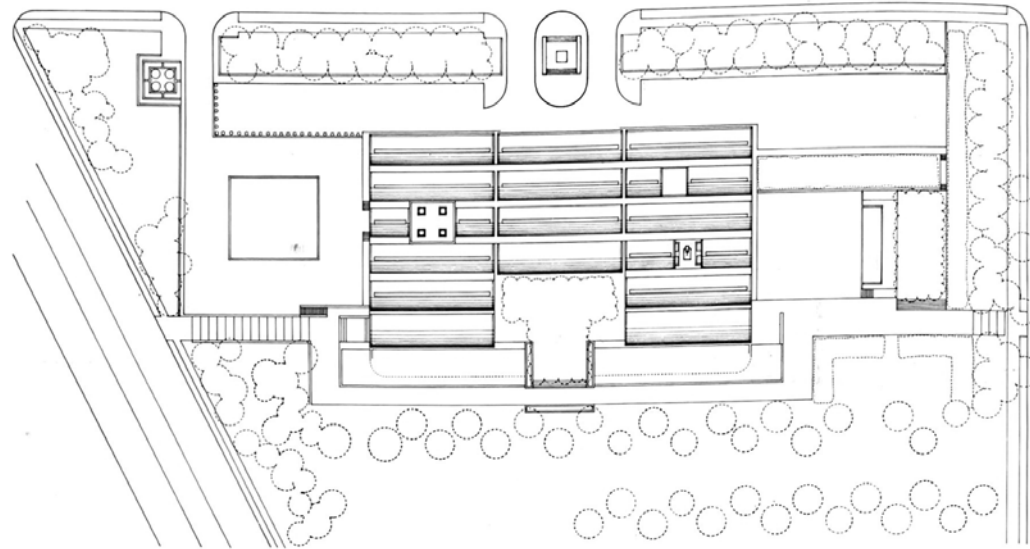
ANALYSIS: LIGHT

“Natural light gives sparkle to the structural articulation.”

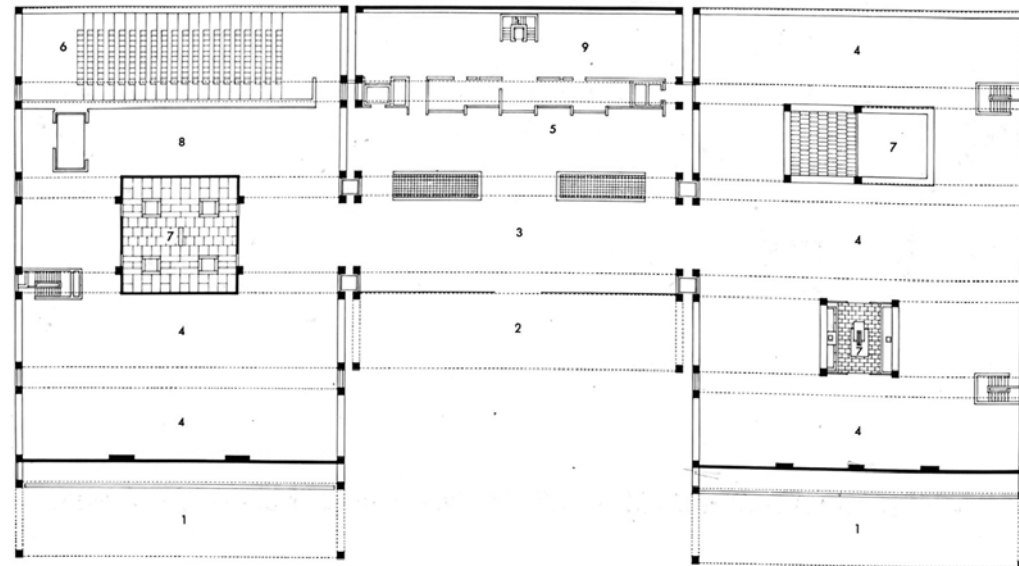
-Louis Kahn

The Kimbell Art Museum is a designed system of integration. How can a form be created that integrates functional aspects of an art museum? In an art museum, the interior program needs to be flexible. It needs to act as a canvas where displays and exhibitions can be rearranged. An art museum also requires detailed attention to lighting design due to the dangers of direct natural light on pieces of art. Louis Kahn integrated these two major goals into one integrated structural system. Marshall D Meyers explains in the Global Architecture issue of the Kimbell Art museum that the structure of the museum consists of 23-foot wide, thin-shelled, post-tensioned concrete cycloids, which is a curve traced by a point on the circumference of a circle that rolls on a straight line without slipping. The cycloids are interrupted throughout the entire length by a wide slot at the apex that admits natural light. Suspended under the wide slot is a curved, perforated aluminum reflector that transmits the daylight inside the space. The curve diffuses the light and reflects it on the concrete cycloid, creating an indirect view of the mood outside the walls. A flat roof is formed where two cycloids meet. This is used as a space to house air conditioning ducts.

Figures, Left to Right: Figure 20 | Section of Vaults | Louis Kahn; Figure 21 | Cross Section | Louis Kahn



Site plan



Gallery level plan
 1 Porch
 2 Entrance porch
 3 Entrance hall
 4 Gallery
 5 Book sale
 6 Auditorium
 7 Open court
 8 Kitchen
 9 Library

“The sense of the importance and appropriateness of a room is the key to what is architecture. Because architecture begins with the room; from it stems the plan, which is a society of rooms.

-Louis Kahn

ANALYSIS: PLAN

The exterior of the museum is very symmetrical in design. One is surprised when they walk inside to see asymmetrical circulation. The visitor moves throughout the space along the 100-foot span as well as at a right angle. This plan is unique in the fact that windows do not exist as interruptions between walls. Kahn explains, “A wall is a precious thing in a gallery, and a window is a source of glare and disturbances to the eye. So we did not want windows that would interrupt the walls. But I insisted on natural light, as t a kind of difference to nature, and to the relationships of nature to man.” His vision was shows through to the solution of the design. Natural light comes from the ceiling where art is displayed and fills large glass walls where it is acceptable for the eye to get distracted.



Figure 24 | Barrel Vaults | Nic Lehoux

ARCHITECTURE AS BORDER

Throughout the investigation, I started to realize that the borders between our attitudes and moods correlate to the borders within the weather. For example, a gloomy morning can make one feel lonely until it is turned around when the sun comes out in the afternoon. The Kimbell Art Museum architecturally represents mood through natural light. Kahn refers to two types of light within the museum, “silver” light and “green” light. Silver light is in the galleries. It is the light that is diffused onto the concrete cycloids from the reflectors. Kahn conveys that this light creates a mysterious and prevalent mood. Green light is through the wall-to-wall glazing in the courts. It is specific and literal. One can see directly where the light is coming from and gives the visitor access to the landscape. Borders that create distinction between the different types of light evoke different types of emotions when the visitor is moving throughout the space.

Borders crossed throughout the time of day evoke borders emotionally. Louis Kahn famously explains that unlike artificial light, natural light illustrates all the moods throughout the day and season. Natural light creates the borders in which we see one day pass, and another begin. It is the border that make one day at the museum different than the next day.

“.. So light, this great maker of presences, can never be in any way brought forth by the single moment of light which the electric bulb has; and natural light has all the moods of the time of day, the seasons of the year, and that year for year and day for day, be different from the day preceding.”
-Louis Kahn



Figure 25 | Power of Architecture | Artsy

“A painting that you don’t see as well one day as you do another has a quality which the painting itself wants you to realize. It doesn’t want you to have the one-shot image of it. Even it was painted in moods. So, there is a definite demand that natural light be manifest. Windows cause glare; so windows were not considered. But light from above, which is the most brilliant, was considered as being the only acceptable light. The window became a slit, and the device for modifying the light spread itself over the vault-like cycloid structure which needed no support except at every 100’ because it could act as a beam.”

Louis Kahn



Figure 26 | Building Workshop | Nic Lehoux

CONCLUSION

In a typology that views natural light as an enemy, Kahn integrates it in art galleries through the creation of reflectors in a cycloid. This was an important goal of his since he believes that natural light evokes moods that change consistency throughout the day, season, and year.

The museum is a series of rooms bordered by natural light. Courtyards have “green” light, which correlates to the direct views of the landscape, where the galleries have “silver” light, which is diffused light the reflectors create.

CASE STUDY SERIES AND THE TYPOLOGICAL SUMMARY

There were three main case studies that were explored throughout the proposal along with three that were undocumented. The International Peace Gardens, Under, and the Kimbell Art Museum were among the three that are explored thoroughly in the proposal while the Louvre in Abu Dhabi by Jean Nouvel, the Twist Museum by BIG, as well as the Renzo Piano Pavilion at the Kimbell Art Museum were also taken into consideration for the case study research but were decided not to be documented. Each documented case study is set up a little differently from the next, depending on unique individual elements that were felt important to the thesis. Similarly, all case studies include an analysis that explores how borders are represented architecturally in the specific project. In the following paragraphs, I will be giving a summary of each case study and briefly describing the borders that were architecturally represented.

The International Peace Gardens was the starting point for my thesis inspiration. Growing up only fifteen minutes from this peaceful border crossing made me oblivious to the fact that not all borders are treated in this way. My travels to Peru and the United Arab Emirates, as well as research into other national border crossings made me have a higher respect for the area and the peaceful international border crossing that I live near. This case study analyzed the context of the Formal Gardens, the Peace Chapel, as well as sculptural inspiration in the unbuilt competition winning entry, Interwoven. Borders represented in these three elements of the Gardens includes political borders, social borders, environmental borders, an international border, cultural borders between Native Americans and Europeans, Noise to Silence, and emotional borders through color.

CASE STUDY SERIES AND THE TYPO- LOGICAL SUMMARY CONTINUED

Under, by Snohetta, was the second case study that was examined. This underwater restaurant is the first of its kind and breaks ground in architectural construction. The construction process was uniquely studied in this case study due to the site of the thesis project being constructed on and below the water. The border analysis of this case study provided more knowledge on the different borders that can be crossed through architecture, and therefore added to the border catalog that I am creating throughout the research studio. Under, represents dramatic border crossings including land to sea, air to water, breathable to what is not breathable, and life and death. These border elements were established through analyzing the circulation in the sections.

The Kimbell Art Museum, by Louis Kahn concluded the case study research. This classic museum creates a new approach to an art gallery by introducing a safe natural light. The integration designed within the cycloid vaults, including structure, mechanical, and natural lighting, were analyzed through section cuts of the vaults and cross sections of the building. This project also created additional border crossings that were able to be added to the border catalog. Border crossings between weather and moods can be architecturally represented through natural light. Louis Kahn believed that an art piece should not evoke the same emotions one day after the next, which is why diffused natural lighting was so important – to create different moods correlating to the time, day, season, and year.

All case studies were equally important to the development of the thesis proposal through individual analysis and the overall analysis of architectural borders. Architectural sculptures, underwater construction, and the integration of structure and natural light were three individual takeaways from the case studies. Overall, twelve border crossings were architecturally represented through the three case studies.

MAJOR PROJECT ELEMENTS

1. BORDER MUSEUM

- Social Borders
 - oPhysical
 - oPerceived
 - oPhysical + Perceived
- Personal Borders
 - oPhysiological (Body)
 - oCognitive (Mind)
 - oPhysiological & Cognitive
- Social & Personal Borders

2. RESTAURANT

- Fine Dining
- “Take & Row”
 - oQuick + Casual
 - oKitchen level with the lake

3. WATER VESSEL DOCKING

- Sailboat Anchoring
- Boat Docks
- Kayak & Canoe Beach
- Barge Dock (for deliveries)

4. RECREATION

- Family Friendly
 - oWater & Outdoor Activities

USER / CLIENT DESCRIPTION

SUMMER SEASON

- International & Local Tourists
 - o Families
 - o Couples
 - o Friends
- Lake Champlain / Richelieu River Cabin & Homeowners
 - o Families
 - o Friends & Family of Residents
- Employees
 - o Museum Staff
 - o Restaurant Staff
 - o Janitorial, Maintenance, & Landscape Staff
 - o Vessel Docking Staff

WINTER SEASON

- Local Tourists
 - o Families
 - o Couples
 - o Friends
- Fishermen
 - o Families
 - o Adults (Male Dominant)
- Cross Country Skiers
 - o Families
 - o Adults
- Lake Champlain Homeowners
 - o Families
 - o Friends & Family of Residents
- Employees
 - o Museum Staff
 - o Restaurant Staff
 - o Janitorial & Maintenance Staff
 - o Shuttle Staff

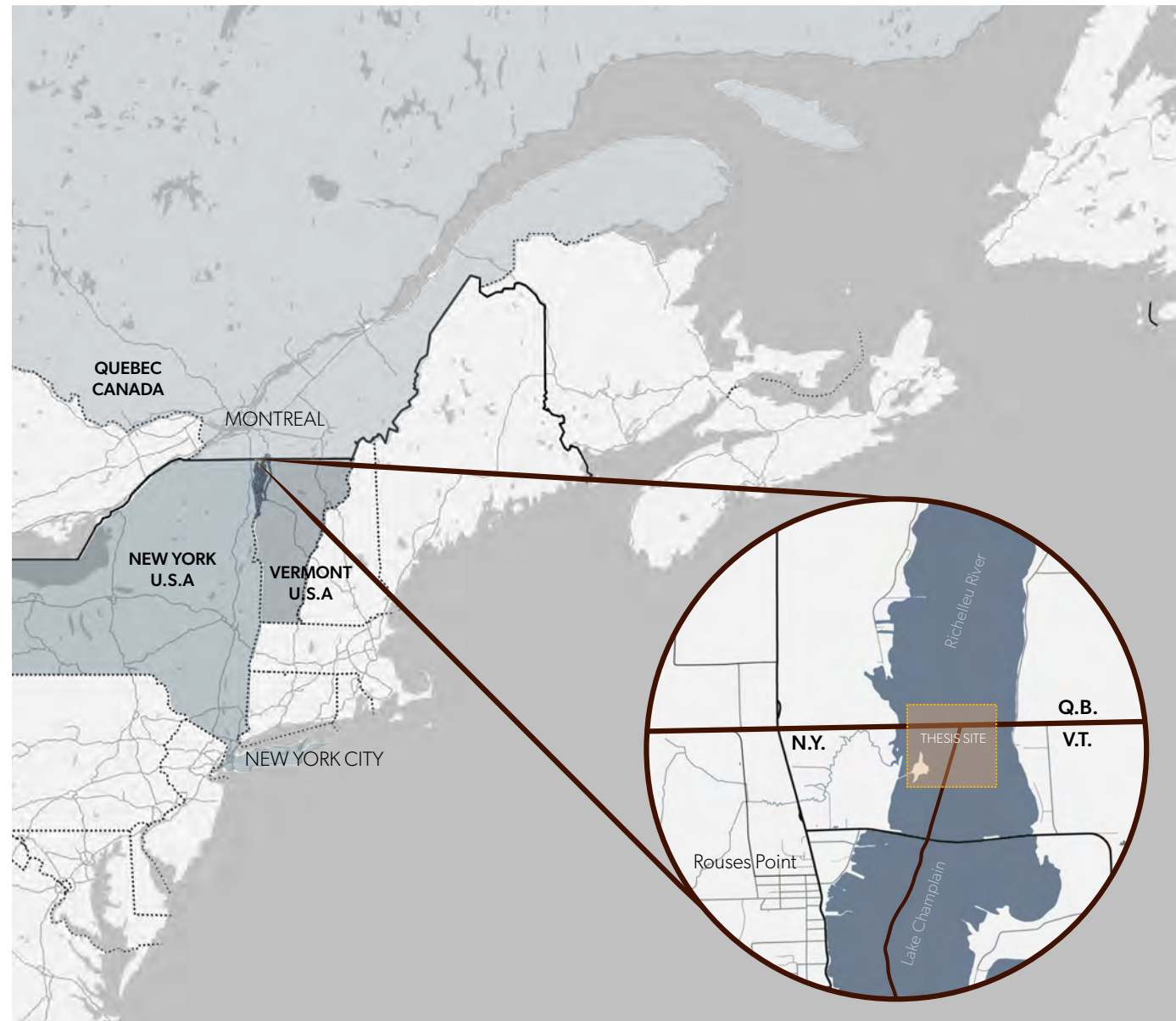


Figure 27 | Site Map

THE SITE

Located on the 45th parallel between Vermont, New York, and Quebec lies Lake Champlain. On the northermost tip of New York, along the west shore of this very lake, lies Rouses Point. This small community of about 2,200 people is named after Jaxques Roux, a French Canadian soldjer who fought alongisde the Americans in the Revolutionary War.

The project will take place on the intersection of these three borders as well as on the abandoned military fort that lies on a private island near this intersection of borders.

SITE SELECTION

The site location was chosen by initially set of criteria, seven to be exact. First, the site needed to be located on the United States and Canadian border. This was important because the project is inspired by the Peace Gardens, which is located on the international border between North Dakota and Manitoba. Secondly, I felt that it was important that the project was located within an hour driving distance of a major city so that it could be easily accessible to locals as well as in the proximity of a major international airport. Being accessible also meant that it needed to be close to a United States and Canadian border crossing. The site is located ten minutes from the border crossing which connects New York City to Montreal. My hope is that people driving through the border crossing will take some extra time to stop at the site on their way through. The fourth benchmark was that the site should be in the North East Region of the United States. While reading the book, *Northland, a 4,000-Mile Journey Along America's Forgotten Border*, the exploration into the beginnings of the International Border took me by surprise. The North Eastern region is where the first border was drawn with

Canada, and consequently where it divided settled families, friends, and businesses.

Another goal of the site was to have it be near a spot with a historical importance. Lake Champlain and the Richelieu River was an important travel corridor from the Saint Lawrence River to the Hudson Bay. It was first used by Native Americans but as one can see from the names of these to bodies of water, they were most recently used as corridors for European commerce and wars. Fort Montgomery is included in the site context as well. It was built during the Civil War in fear that Great Britain (Canada) would join the Confederates.

Access to water was the sixth benchmark. Water can be used as reflection, which would be necessary in the museum, as well as recreation, which would attract tourists to the site. Lastly, the site needed to have the ability to be a "hub" or a meeting place. I believe the site at Lake Champlain has the ability due to its location between New York City and Montreal, its proximity to the border crossing, as well as its accessibility the water and small lake communities around Lake Champlain.



Figure 28 | Ft. Montgomery Aerial View West | Marinas

THE PROJECT EMPHASIS

1. Border Classifications / Experiences

A catalog was created in the research studio that groups and classifies different border types. The museum will allow the visitor to step inside this catalog to experience borders psychologically and physically.

2. Integration of Cultural Influences

54 Creating neutral borders that honor individualism instead of segregating likeness will create an understanding and appreciation of friendship and peace.

3. Architecture as a Border

Borders seen within architecture, whether that is two or three dimensionally, can alter the way we feel intentionally present within a space.

4. Historical Preservation of an Abandoned Border Fort

Fort Montgomery has seen dramatic changes since it was first built in the 1800s. The thesis project will stabilize the fort turn it into symbolization of peace and friendship between the U.S. and Canada

GOALS OF THE THESIS

PHYSICAL

1. Identify an appropriate typology that interweaves the Canadian and United States citizens.
2. Architecturally design intentional borders within the plan and the overall experience of the project.
3. Design transgressional avenues between architectural borders within the project.
4. Create an example that can be used on other international borders.
5. Reclaim the abandoned Fort Montgomery

SOCIAL

1. Educate others on how borders are used around the world.
2. Identify how architecture can positively impact international relationships.

THEORETICAL

1. Create knowledge which other designers can refer to when creating spatial layouts of spaces that hold interwoven purposes.
2. Understand unique and similar cultural influences between the United States and Canada.

PLAN FOR PROCEEDING

At the end of the fall semester, I will be completed with the proposal and program for the thesis project.

The beginning of January will begin the design phase of the thesis. I will begin by examining the best location for the project on the site. This is a very intentional part of my project as its location is the driving factor of the thesis topic.

Once a general location is determined, will begin with sketching and loosely modeling concepts to better illustrate my ideas. After reaching the final iteration, I will begin to focus on how the environment between the spaces will change when crossing spatial borders within the architecture.

Representation of the architecture is one of the most important parts of the thesis. To be successful, the drawings need to tell a descriptive story without words, similar to art. I will begin by modeling the project in Revit and simplifying the plans and perspective with Adobe Illustrator, Adobe Photoshop, and various rendering programs.

At the time of presentations, I will be prepared set the scene for a great story by verbally speaking about the process and graphically showcasing evidence to create a solution for the thesis.

DEFINITIONS OF RESEARCH DIRECTION

1. Formulate a Thesis Premise, Thesis Question, and Thesis Statement

2. Project Typology & Site Analysis
Case Studies
Site Visit & Analysis

3. Research:
Catalog of Border Types

4. Combine project typology with research conclusions

5. Schematic Design

6. Architectural Representation of Design

DESIGN METHODOLOGY

The design methodology will follow an inductive process. I will begin by observing different border expressions from large international borders to cognitive borders humans create in their mind. After I catalog these expressions, I will search for visible patterns which may influence design. I will illustrate these patterns through a literary analysis, hand sketching, and concept modeling. Finally, I will propose an architectural solution that will showcase the findings during my research. I will use computer software's such as Rhinoceros 6.0, Revit, and AutoCAD to represent my research findings.

DOCUMENTATION OF DESIGN PROCESS

Design Mediums

Computer Software
Sketching
Modeling

Design Software

Autodesk AutoCAD
Autodesk Revit
Rhinoceros 6.0

Software for Representation:

Adobe Photoshop
Adobe Illustrator
Adobe InDesign

Design Preservation Methods:

Computer files backed up to Google Drive
Research findings documented in sketchbook

Publication of Material:

NDSU Institutional Repository
Hard Cover Thesis Book
Digital PDF of Thesis Book, Drawings, and Boards

Thesis Presentation

Power Point Presentation
Visual Models
Boards illustrating the thesis question and solution

Documentation

Year.Last Name_Phase_File Name
19.Johnson_Schematic_Spatial Bubble Diagram

SCHEDULE FOR THE PROJECT

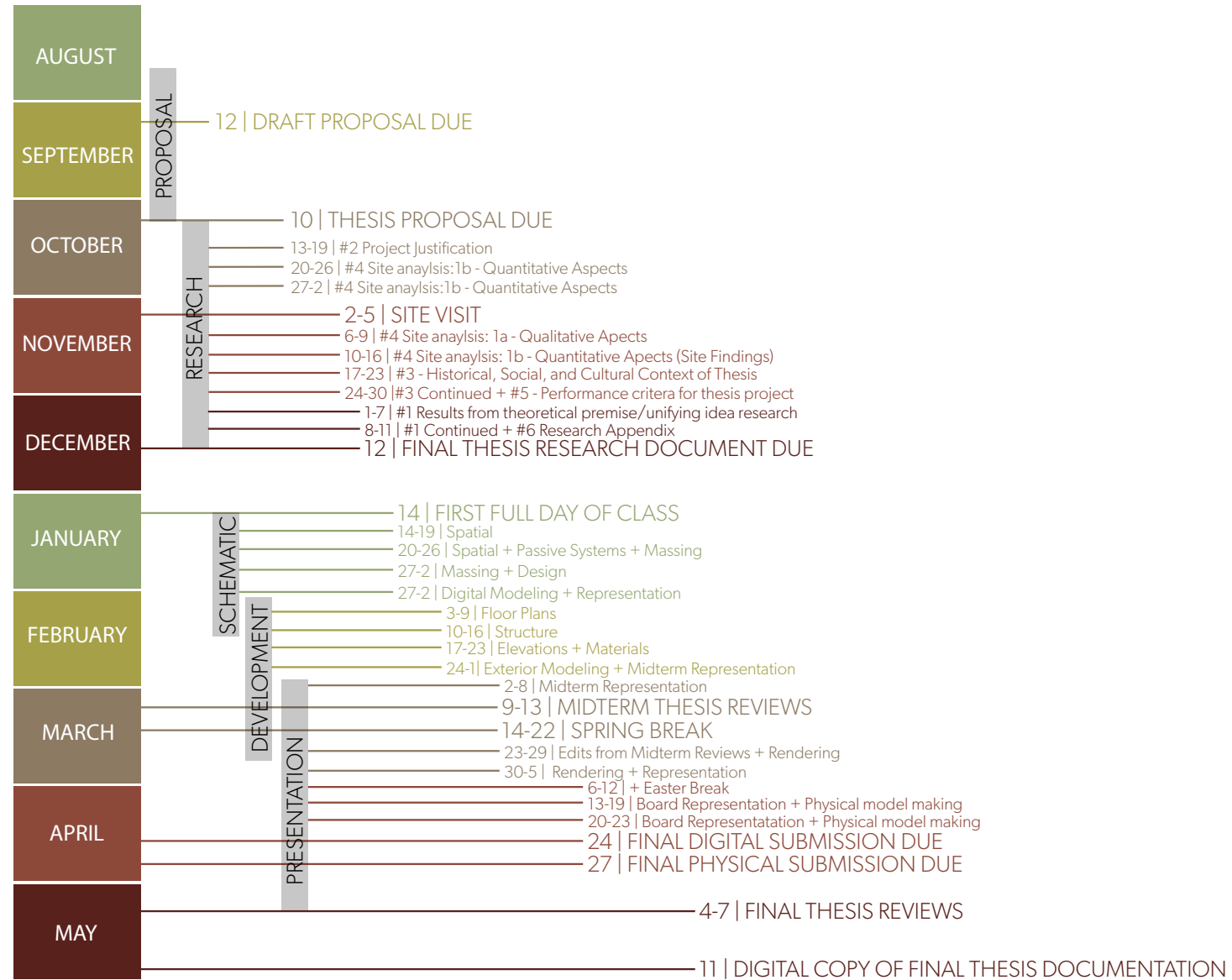


Figure 29 | Ft. Montgomery View North | Marinas

RESULTS FROM THEORETICAL PREMISE RESEARCH BORDERS

Borders create division between two distinctly similar identities. On the border, a person has a direct sense of place to where he or she exists. For example, let's say that we are driving down Interstate 94 in North Dakota. When asked where his or her current location is, that driver may have a hard time explaining where he or she is at if there is not a border (a city or landmark) nearby. Once the driver passes over the Red River (a commonly known border), he or she has an accurate sense of place to where he or she exists. Cultural identity and diversity are celebrated at the border. People who are crossing borders come from all different backgrounds and carry distinct perspectives with them. It is at this place where collaboration takes place and where one can begin to identify all of the different cultures and viewpoints.

What doesn't exist as a border? I have been frequently visiting this question throughout the research. Something that isn't a border exists in the interior or in the center. Diagram's I, II, and III illustrate the relationship between a border and a center to show how the crossing of borders can begin to answer how architects can design spaces that integrate community, security, and unity along with diversity, cultural identity, and a sense of place.

A BORDER ...

- SEPARATES | DIVIDES | ORGANIZES
 - IS CROSSABLE
 - EXCLUDES | INCLUDES
-

Diagram I on the following page illustrates a border's relationship to the center. Let us think of the center as two distinct cultural groups (Culture A and Culture B) that exist in two different physical places (Location A and Location B) to better understand this concept. Citizens in location A feel most connected to the community when they are near their cultural group, or in the center. In this place, citizens have similar views and perspectives with the people around them, which creates unity within location A. Community and unity evolve into feeling secure within the center of Location A. The center is viewed as the ideal place within location A.

Location B is diagramed the same, but from a different perspective. Within the center of location B, citizens are in community with the people around them. They have similar views and perspectives to one another, but these beliefs differ from those of location A. Citizens within location B feel most secure at the center where they are in proximity to familiar people.

Diagram II illustrates the motion of two cultures crossing the border.

Diagram III illustrates the final step to crossing a border. In this diagram, Culture A exists within Location B and Culture B exists within Location A. As the two cultures cross over the border, their views and beliefs become seen in another perspective. This allows for the complete understanding and respect for each culture.

DIAGRAM 1

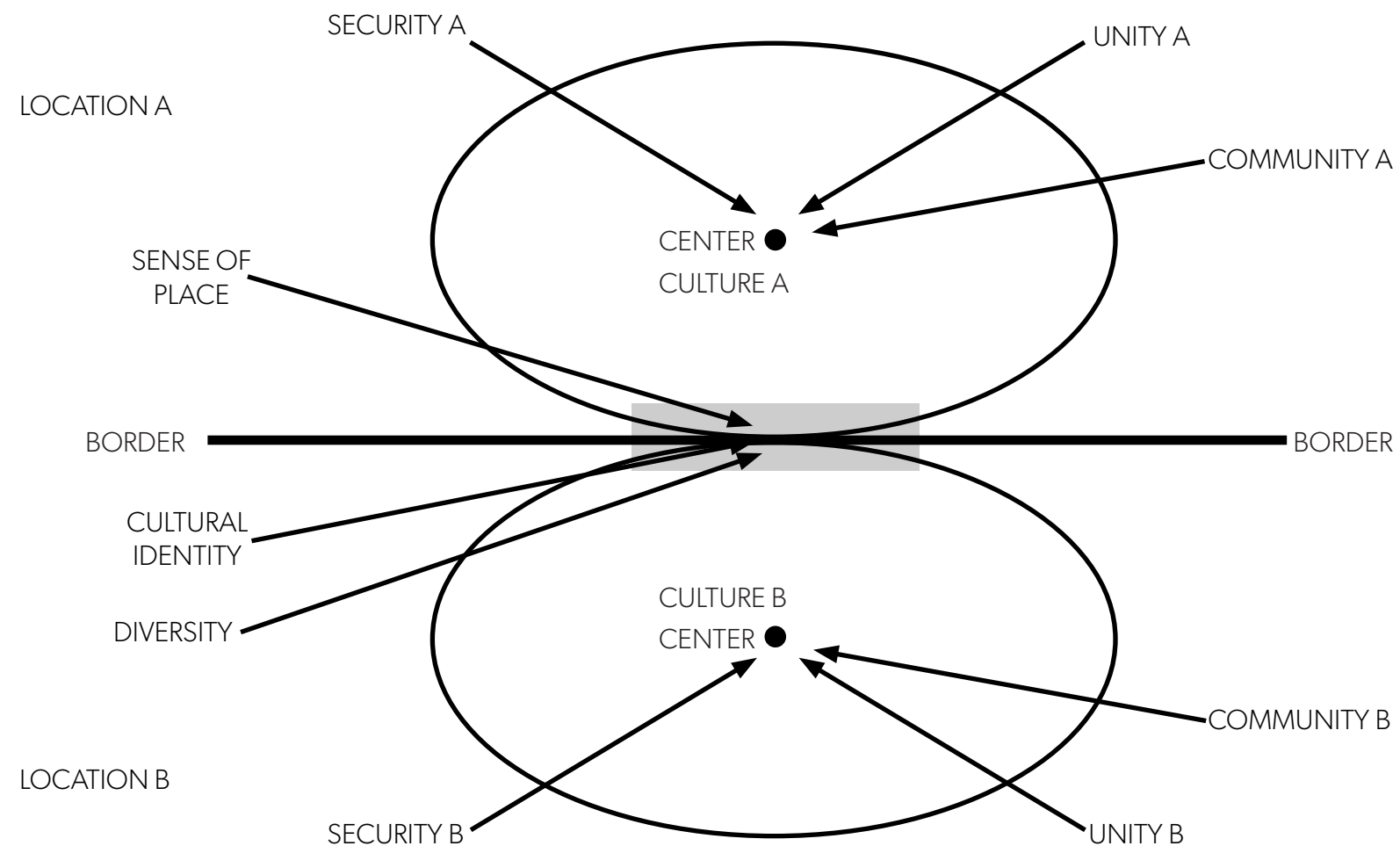


Figure 30 | Border vs Center 1

DIAGRAM 2

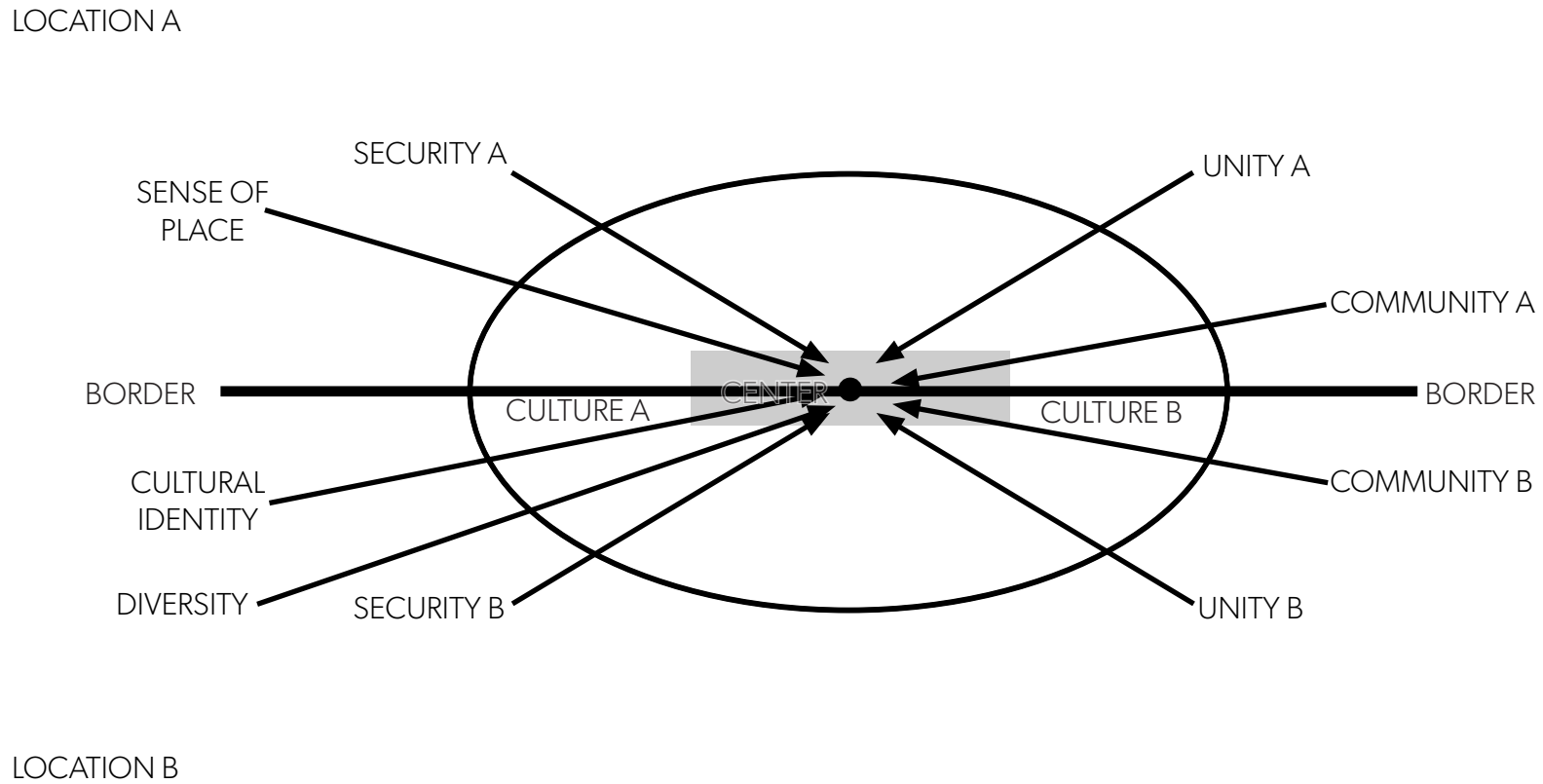


Figure 31 | Border vs Center 2

DIAGRAM 3

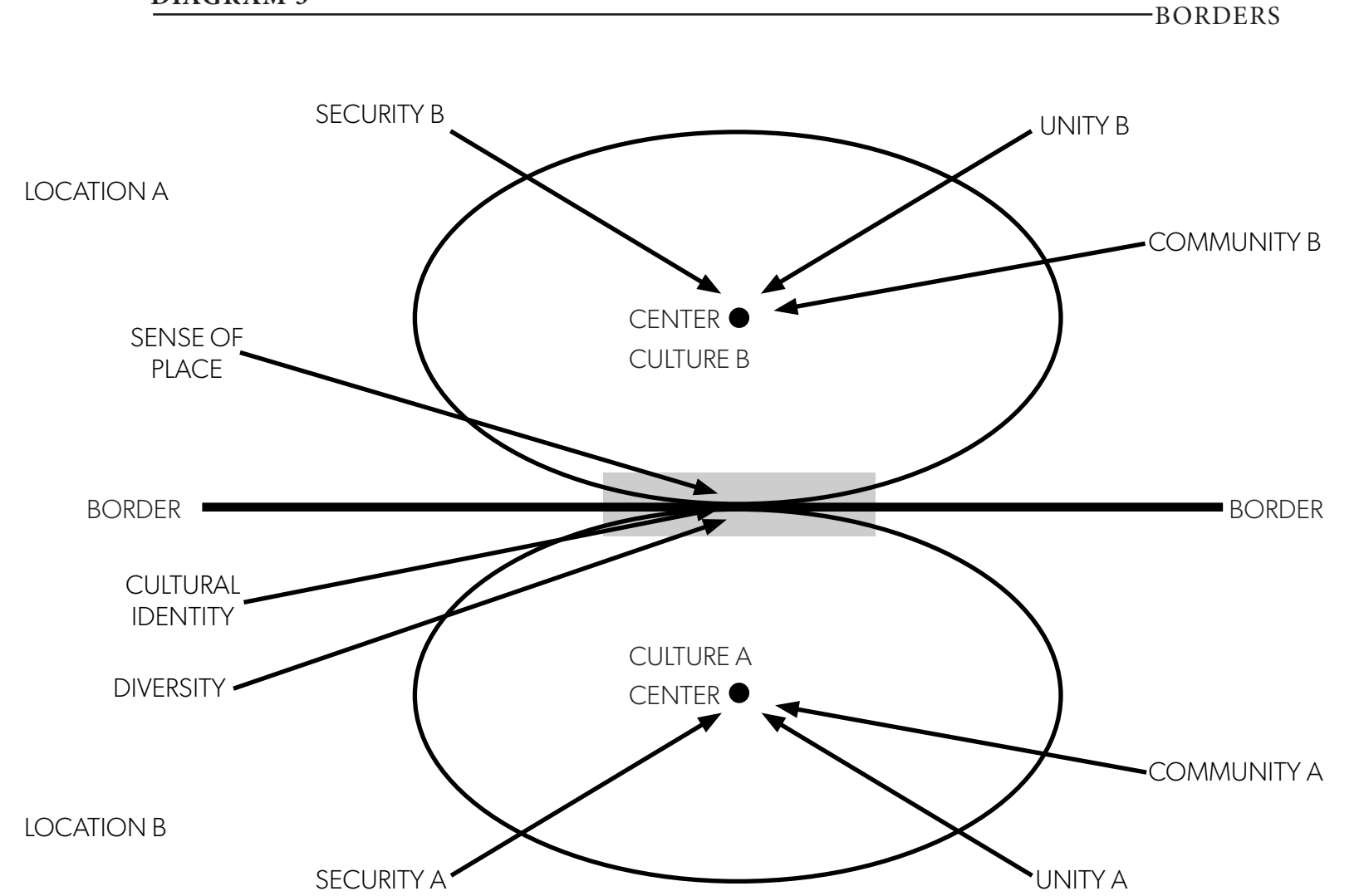


Figure 32 | Border vs Center 3

BORDER CATALOG

The goal of this research project was to produce a catalog of border crossings that correspond to architectural elements. The catalog was created using a combination of research methods. Qualitative research was the dominant method used throughout the catalog creation, while historical research was used as the less dominant method, which was primarily explored during the detailed research of each border type. The catalog was created through a series of steps including documentation, mind mapping, analysis, and vignettes. This process is detailed in the paragraphs below.

The research exploration began by collecting an ongoing list that described different types of borders. These terms were categorized into two different groups, "Virtual Borders" and "Physical Borders." This rough, handwritten document created a starting point for the creation of a mind map.

The mind map was created using "Mindly," a digital mind mapping software. It became an ongoing task throughout the research project to organize and then regroup different border types into their following categories. Throughout this process, three main questions guided the investigation into the different types of borders:

1. How is this a border?
2. How is it crossed?
3. How can this be represented architecturally?

These questions guided the exploration into each border type. The questions were first answered solely based on personal experiences and understandings before diving deeper into research articles to navigate the rest of the study.

The illustrations not only represent how the description is a border, but it also represented the architectural element within the border.

The descriptions, along with the illustrations created the catalog of borders, which was the final goal of this research project. The catalog describes every border type that humanity faces throughout their lives. This catalog will continue to be used throughout the design process of the thesis and will eventually become the program for the museum on Lake Champlain.

In a research project that focuses on borders, it is important to not leave out the byproduct: space. Sandro Mezzadra and Brett Neilson write about the concept of space and border in the fifth chapter of, "Border as Method." The authors (2013) confirm Michel de Certeau's claim that "a space exists when one takes into consideration vectors of direction, velocities, and time variables." Space in this perspective, "is composed of intersections [borders] of mobile elements. It is in a sense actuated by the ensemble of movements deployed within it" (p. 133).

When space is arranged, borders are created. The assumption is made that borders were first created from the human desire to organize space. Contrarily, which has been historically related to borders appears when a struggle is introduced. Mezzadra and Neilson (2013) write, "when the subjective dimension of border crossings and struggles is introduced, the border acquires a temporal thickness and diversity that is not fully discernible within an analysis that systematically privileges spatial qualities" (p. 133). Suddenly, a struggle allows a space to fall within the border – the greater the struggle, the thicker the border, the larger the space within the border, and the longer the interruption of time.

Organization does not stop at space; people inheritably organize everything around them. A border catalog was created as a part of the research to organize borders, in which organize our thinking and everyday life. While the term "border," has many meanings, the action of crossing is relatable concept throughout each definition. The border catalog defines the many different types of borders while describing the struggle and the way it is crossed. To breakdown and organize the types of borders, the catalog organizes borders into three broad categories: Social, Personal, and a combination of the two. Social Borders are organized into three subcategories: Physical, Percieved, and a combination of the two. Personal borders are broken down into three subcategories as well: Phsiological, psychological, and a combination.

70

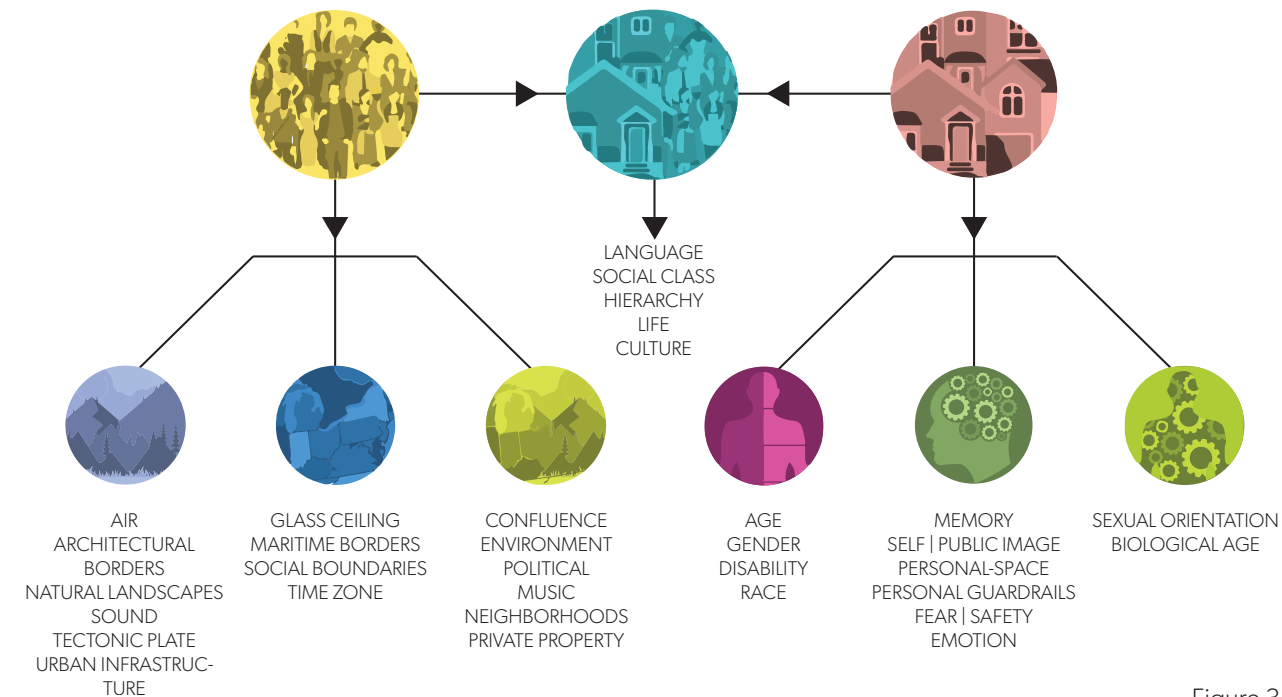


Figure 33 | Border Catalog

Social borders are borders that are recognized by an entire social group. They create a basis for a one-reality perspective because their existence cannot be disproven. Crossing these borders can range in intensity. Some border crossings have a general consensus on the easiest way to cross, such as a door being the simplest way to cross through a wall, while others borders require a more creative and intense method, such as a women bypassing through a glass ceiling within a career. Social Borders contain crossings that physically exist in the world (Physical Borders), others that exist within the minds of society (Perceived Border), and some that physically exist in one scenario but are imagined in another scenario.

Personal Borders are borders that are unique to the individual. These borders are known throughout a society but are crossed at different times and in different ways throughout someone's life, thus creating a perspective with multiple realities. Personal borders contain crossings that an individual cannot control (physiological), others that are created within an individual's mind (psychological), and some that are controlled by one's biological makeup and then transferred to one's psychological processes. Historically, personal borders are the types of borders that cause controversy within a society. Controversy, in this scenario, is the result of a difference in perspectives, which are formed due to the uniqueness of these types of borders. The individuality of these borders is caused by the timing and the overall experience of the border crossing.

Social & Personal Borders are borders that fall into both categories depending on the scenerio. The border types and crossings that are found in this category allow an individual to feel secure when one is with a societal group of people that are experiencing the same border, but when separated from the group, the individual is left find a way to cross the border alone.

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The literature review focuses on two texts that were critical in the development of my theoretical narrative including *Border as Method, or the Multiplication of Labor*, by Sandro Mezzadra and Brett Neilson and *Northland: A 4,000-Mile Journey Along America's Forgotten Border* by Porter Fox. While reading these two books I was searching for knowledge to validate my thesis statement: How can design leverage and transform borders to create spatial unity and community while maintaining cultural identity, diversity, security, and a sense of place?

The literature review is broken into two major parts that correlate with the *Northland* and *Border as Method*. Within the two parts, the books are broken into three parts. First, a summary about the author(s) are provided to give validity into their writing. Secondly, one will find my crafted summary of the book. Lastly, each section concludes with my review, along with my greatest takeaways that I implemented into my thesis.

Border as Method, or the Multiplication of Labor by Sandro Mezzadra and Brett Neilson (2013)

The Authors

The first text I will be discussing is, *Border as Method, or the Multiplication of Labor* by Sandro Mezzadra and Brett Neilson. Mezzadra is an Associate Professor of Political Theory at the University of Bologna where he teaches political theory and is an adjunct fellow at the Institute for Culture and Society of the Western Sydney University. His recent research has focused on relations between globalization, migration and capitalism, on contemporary capitalism as well as on postcolonial criticism.

Brett Neilson is a professor of Culture and Society at the University of Western Sydney. The goals of his research and writings aim to provide alternative ways to think about globalization through social and cultural dimensions while rethinking the significance of globalization due various contemporary problems such as the proliferation of borders.

Summary

Border as Method, or the Multiplication of Labor investigates the ins and outs of a border by treating it as a tool instead of a place. Mezzadra and Neilson use the border to research the validity of the line and how tensions and conflicts arise between the forces of inclusion and exclusion. The book doesn't shy away from the negative outcomes that a border creates, such as division, but strives to shine light through the way borders organize spaces of global capitalism.

Mezzadra and Neilson use and grow from many examples of past works of research and art that focus on similar subjects. One example, in particular, is from the Japanese Artist, Yukinori Yanagi. He used clear boxes full of colored sand to create the image of national flags, which were all connected by small ant tunnels. This art piece helps us visually understand the phenomenon of cross-cultural and cross-border hybridization.

Border as Method congregates a series of contemporary debates to leverage the idea that a border is a tool of globalization. The book uses the term interruption in relation to a border. Mezzadra and Neilson offer perspectives of struggles and successes to create an argument of a border's power.

Review

The text is divided up into nine chapters and four to five subchapters within each chapter. This was helpful in organizing thoughts and notes when reading through the chapters. My thesis research focus drew me to the chapters of the book that directly talk about how a border is a method rather than the multiplication of labor. I felt that the chapters about immigration and labor were a bit off topic for my thesis but did indeed lend knowledge for my research.

The most useful chapter in the book that aided the most information to my research topic was the first chapter, "The proliferation of Borders." This chapter was a key influencer in the development of my theoretical narrative and abstract to begin my research document. It started out by explaining all the borders that an individual will cross in a certain amount of time, in this case, Neilson and Mezzadra explained the borders that a New York Taxi driver crosses such as linguistic, urban, and social borders.

"Borders, then, are essential to cognitive processes, because they allow both the establishment of taxonomies and conceptual hierarchies that structure the movement of thought." (P. 16)

This book was the first text I read that had a similar theoretical premise as my architectural thesis. It did not see borders as only negative social elements or a site, but as an instrument of organization and essential to cognitive processes. It was useful that the authors gave multiple perspectives of borders and not just their own including their own in-depth educational perspective, inclusive and exclusive perspectives, and a wholesome perspective of the public.

Northland: A 4,000-Mile Journey Along America's Forgotten Border by Porter Fox

The Author

The second text is by Porter Fox who lives, writes, teaches, and edits the award-winning literary travel writing journal *Nowhere* in Brooklyn. Fox graduated with a Master of Fine Arts in Fiction from The New School in 2004 and teaches at Columbia University School of the Arts. His first-hand knowledge and account of his experience across the Northern Border helped to understand the term, "border town" and how the Canadian and United States citizens respond to the border.

Summary

In the book, *Northland: A 4,000-Mile Journey Along America's Forgotten Border*, Porter Fox records his thoughts, feelings, and experiences while traveling from the East coast of Maine and across the international border between Canada and The United States to the West coast of Washington. Porter becomes a true explorer through this journey. His travels are unpredictable as he uses various modes of transportation such as canoes along rivers and large freight ships across the Great Lakes.

Through the journey, Porter encounters many Northerners along the way. Native Americans, local-residents, hunters, and militia leaders show the reader the wide variety of perspectives across the border. He finds that although there are differences across the long length of the Northern border, there are many silenced, global issues that remain constant throughout the journey.

Review

Northland guides the reader on a tour of the northern border. Growing up in northern North Dakota gave me a basis for comparison and contrast while reading the book. It was enjoyable to start reading about the border on the eastern side of the state, a place that I am not familiar with, and make my way towards more familiar territory. The history that Fox learns and shares along the way is easy to understand since it correlates to his location on the map. The geographic organization of history creates difficulty when forming a mental historic timeline throughout the duration of the book.

Fox makes sure to articulate the differences in how the borders were created in different parts of the country. The most surprising contrast that I found from the Midwest to the east coast was when the border was created in terms of development. In North Dakota, the borderlands are a buffer of forests and prairies since it was created before Europeans started to develop the area. On the contrary, the eastern side of the country was developed before the drawing of the border. In this case, many towns, families, congregations, and businesses were split when this occurred.

“The northland was an interwoven patchwork of commerce...” (p.5)

Northland not only takes the reader on a trip, but it also introduces the characteristics and personalities that one may find along the northern border. Fox talks about many positive characteristics of northlanders, but one negative characteristic caught my attention: bigotry, or the intolerance towards those who hold different opinions from oneself. Is bigotry an effect of living near a line that suggests inclusivity? Is it wrong, or does it show pride in one’s home? These are two questions that I formed during the readings and were able to further develop my thesis based on these questions.

COMPARATIVE ANALYSIS

The two books were a great starting point in the exploration of my thesis on borders. Border as Method was a better book for validating my research due to the vast amount of research and references used to write the book. The authors, Sandro Mezzadra and Brett Neilson are both university professors studying political theory and cultures/society. Their background experience, along with ability to do research was very evident throughout the book. The second book, Northland was a book written about the travel experience of the author, Porter Fox. It was a great book to read to get the real-life essence of the imaginary line between Canada and The United States, but it focused more on struggles and history of each region of the border rather than the effects that the border has had in each region, which was a little out of focus for my thesis project.

The two books were had very opposite intended audiences. Border as Method was written at a high reading level and was sometimes very difficult to interpret. A dictionary close by was helpful to understand the common points in each chapter, but it was unrealistic to try and fully grasp each sentence and idea. Northland was written for an audience that is curious about the Northern Border and would like to have a better understanding of the natural and physical environment that exists on this imaginary line. The book was very easy to understand and was enjoyable to read. To take notes while reading, I printed off maps of each region and made notes on points that I thought were interesting as Porter Fox traveled across the border. This made it easier to follow along with exactly what location he was talking about, since sometimes he would jump back and forth within a certain region.

In conclusion, Border as Method and Northland were a great pair of books to begin my thesis research. A final recommendation would be that if one were researching how a border is a tool, Border as Method would be the best choice. If someone was looking for an easy read that takes them on a journey to discover the northland of the United States, then I would recommend Northland.

I feel as though I live on the border, trying to balance the opposing forces that are pulling me in opposite directions. Growing up, I was taught how to best live a life full of love and to create a meaning and purpose with the ways I spend my time. In college, you meet people who have grown up with different teachings throughout their childhood or choose not to follow what they have been taught. I picture these transitional years as a border. As a place where one is trying to walk across a beam without falling.

I also experience borders perpendicular, by crossing them. Crossing borders has become a passion of mine – I love to travel. North Dakota is my center. I feel most comfortable here with my family and friends nearby as well as being around people who have similar morals and beliefs that I do. Throughout college, I have learned the value in crossing borders – from physical political borders to psychological borders that I had created within my mind.

Two experiences that have inspired the project have been my travels to the United Arab Emirates and the International Peace Gardens. While in the UAE, I crossed many cultural borders and obtained an outstanding respect for the Middle Eastern culture. The International Peace Gardens inspired the challenge for the project, integrating borders within design. The project distinguishes a center from a border to create a single space that allows centers and borders to become present in one through the act of transcendence.

Design for Community

Community allows individuals to be in the presence and socialize with people. This is important for professional and personal growth. What does design for community look like? Does it have doors that lock? Does it allow all people to pass through? As architects, we strive to create spaces that allow for personal connections and community growth.

Design for a Sense of Place

In a world that is uneasy, we feel most comfortable in spaces that feel secure and allow us to feel human. These types of spaces can span anywhere from a small table at a coffee shop to a basketball court in a park. In architects, we design to accommodate various groups of people while realizing the spaces will be experienced on a human scale by a single individual.

Design with Borders

The project explains how borders can be used as a design instrument. Architectural border design within allows for the architect to design for community while allowing for a secure space that has a sense of place at a human scale. The project develops the simple idea of a border into a design philosophy.

“I feel like I exist on the boundaries. Somewhere between science and art. Art and architecture. Public and private. East and West. I am always trying to find a balance between these opposing forces, finding a place where opposites meet.”

-Maya Lin

HISTORICAL, SOCIAL & CULTURAL CONTEXT OF THESIS

Borders have been the defining factor of countries since the first establishments in Europe. Colonists brought the idea of private property and borders to North America when they arrived. Previously, the Native Americans had never heard of an idea like this one. Fort Montgomery is just shy of the international border between New York and Quebec. Why would the United State build a fort to defend our friendly neighbor to the North? This was the first question that came to mind when I came upon Fort Montgomery. This history of the fort begins in February of 1763 when the Treaty of Paris was signed to end the French and Indian War between the British America and New France (Canada). The treaty formed an agreement to set the boundary between New York and lower New France (Quebec) as the 45th parallel. The line was surveyed in 1772 and accepted two years later. The borderline was subject to human error due to the lack of modern technology and became a hot dispute and was later addressed in the Treaty of Ghent, which was signed to end the War of 1812.

Lake Champlain has always been an important transportation waterway for Native Americans and colonists from the Saint Lawrence River to the Hudson Bay. Military action started to be seen on small islands North of Lake Champlain just a few short years after the Treaty of Ghent was signed. In fact, the Governor-General of Canada, Gordon Drummond, stated in 1815, "...[the United States'] dearest object is the possession of these provinces." A year later, the President of the United States agreed that a fort needed to be built to protect from northern invasion and a contract was signed to begin the building process on Island Point.

Construction began in the spring of 1817 and created an economic boost for timber, limestone, and masonry suppliers in the vicinity. Tensions between America and Great Britain only grew over the constructed fort. On April 29, 1817, the Rush-Bagot Agreement was signed and allowed both countries to only have one vessel and one 18-pouder cannon on the lake at one time. Throughout this time, controversy over physical location of the 45th parallel were still being debated.

November 21, 1818 | Montreal Herald Announced: "We have just now been favoured with accounts from Lake Champlain by which it appears that the Great Fort built at Rous's Point by the Americans since the peace, and completed last summer, is on the Canada side of line 45° as laid down by the Commissioners appointed for that purpose. In this case the Fort is built on British Territory, and little doubt can be ascertained to whom it belongs" (Millard, 2009, p. 3).

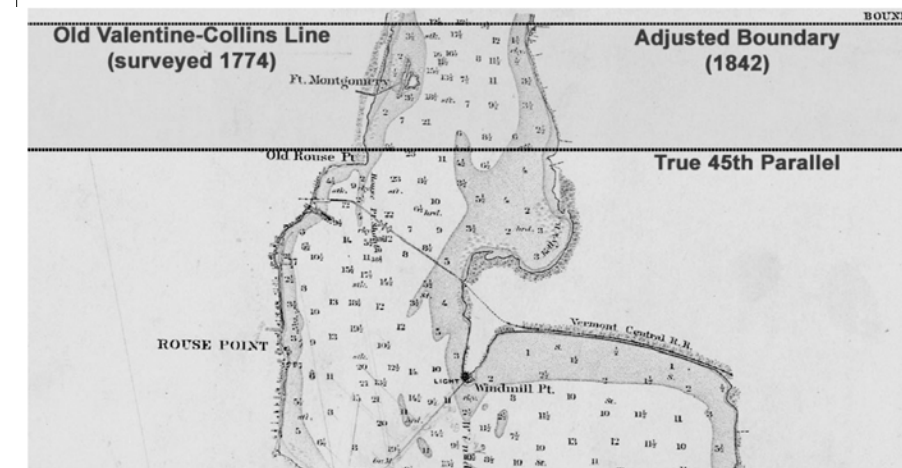


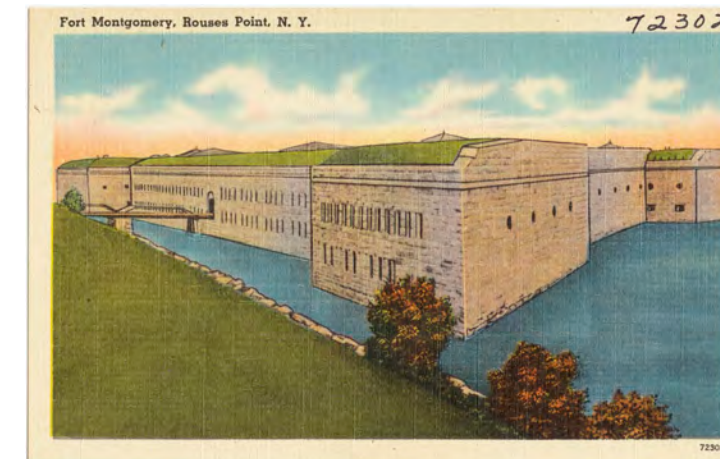
Figure 34 | Adjusted Border | Charles Barney

This dramatic news quickly halted the construction of the fort until the border was further investigated and a year later, Britain started on the construction of Fort Lennox, located nine miles north of the United States fort. The American fort, located on British soil, was never resumed by the British. Many believe that the British engineers found the fort to be structurally weak. The abandoned works at Island Point became a material mine for developers and builders in the area. The locals carried off much of its materials for use in their own homes, stores, and places of worship. Fort "Blunder," as it came to be known, lives on in the walls of some of the more ancient and prominent buildings in the Rouses Point area (Millard, 2009 pg 16).

America, still needing a protection method on Lake Champlain started to analyze different spots on the Lake that would be well suited for a fort. Stony Point and Windmill Point were both suited eligible for fortification. Plans were drawn for the fortification on Stony Point, but the marshy wet land and the knowledge that the Canadians had on the new plans stopped worried the Americans from starting construction.

In 1842, The Webster-Ashburton Treaty adopted to resolve several border issues between Great Britain and the United States, including the border that crosses Lake Champlain. This treaty established the border between Lake Superior and Lake of the Woods, reaffirmed the location of the border between Lake Superior and Lake of the Woods, reaffirmed the location of the border on the 49th parallel in the western frontier, defined seven crimes, called for a final end to slave trade on the high seas, agreed the two parties would share the great lakes, and confirmed Quebec's southern border back to the original surveyed border, the Valentine-Collins Line, which lies a half mile north of the 45th parallel.

After the treaty was signed, all plans for fortifications on Stony Point and Windmill Point were abandoned to start rebuilding on the original site. Construction on Fort Montgomery began on July 13th, 1844 and lasted through 1876. During this time, the American Civil War was taking place. There were rumors that the British were going to intervene against the Union from Canada. These rumors became reality when 21 confederate Canadian soldiers raided the union in Vermont.



Fort Montgomery continued to stay in operation even after the end of the Civil War in 1865. Guns to be mounted on the curtains of the fort were continually transported to Lake Champlain. These years brought many small invasions across the border from the United States and Canada up until 1871 when the Treaty of Washington was signed to settle peaceful relationships between the two countries. This ended the need fo

fortification along the northern border and Fort Montgomery started to look like a waste. In 1914, Thomas Bourke retired from the army and moved up to Rouses Point to be the last Fort Keeper. He came without guns and the fort was in poor condition including fallen in ceilings and failing walls. During the 1920s, the fort stood dark. In 1926 the Clinton County and the State of New York were asked about purchasing the Fort. After appraisal, they turned the offer down and the federal government auctioned the property off in five different parcels to private owners.

Figure 35 | Vintage Postcard

Cultures have been diminishing due to modern globalization, yet borders are now more evident, secure, and powerful as ever. It is by the creation of borders that one has an identity. Humanity can pinpoint a certain location that creates a cultural perspective to one's identity. An example of this is the common question asked to a stranger, "Where are you from?" It is by this question where we are able to start making assumptions based on where borders exist. When asked this question, one can reply by stating the country, state, city, and possible neighborhood or street he or she resides. It is with this information that the general population can make assumptions on cultural values based on one's border crossing experiences and/or knowledge.

In this specific project, the imaginary border line that exists between Quebec, New York, and Vermont create distinct cultures within the population that are unique to each state or province. This separation occurs even though there is not a physical separation dividing them. Language can be a factor that can be used to distinguish culture. Quebec is the only region in the North America that is predominantly French speaking. The French language allows cities in Quebec, such as Montreal, to control the European culture within their borders. By crossing the border into New York, one's cultural experiences starts to change. English is the official language of New York, but Spanish is the second most-prevalent language spoken while Mandarin Chinese is rapidly increasing. It is important to discuss the diversity of cultures that happen within the borders of New York. New York City is home to more than 140 languages and the lifestyle is very fast paced where the lifestyles slow down the further out of the metro one passes. The busy lifestyle is diminished once crossing the border of Vermont, which is America's second-smallest population. Families have been rooted in Vermont since the 1700s, which can be seen in the rural and historic villages that are found throughout the state.

It is important to note that borders create negative effects on cultures as well. Bigotry, an intolerance towards those who hold different opinions from oneself exists in communities, especially cities that are in proximity with a border that is stagnant. Crossing borders physically and mentally can help diminish bigotry. It is by experiencing the opposite side that we are able to bypass borders that one has set up in his or her mind about a particular culture, that one is able to form respect for opposite side of the border. A border that simply exists creates a space for an authentic cultural voice, but it is by the crossing of borders that the voice is heard by others.

**A border that simply exists
creates a space for an
authentic cultural voice,
but it is by the crossing of
borders that the voice is
heard by others.**

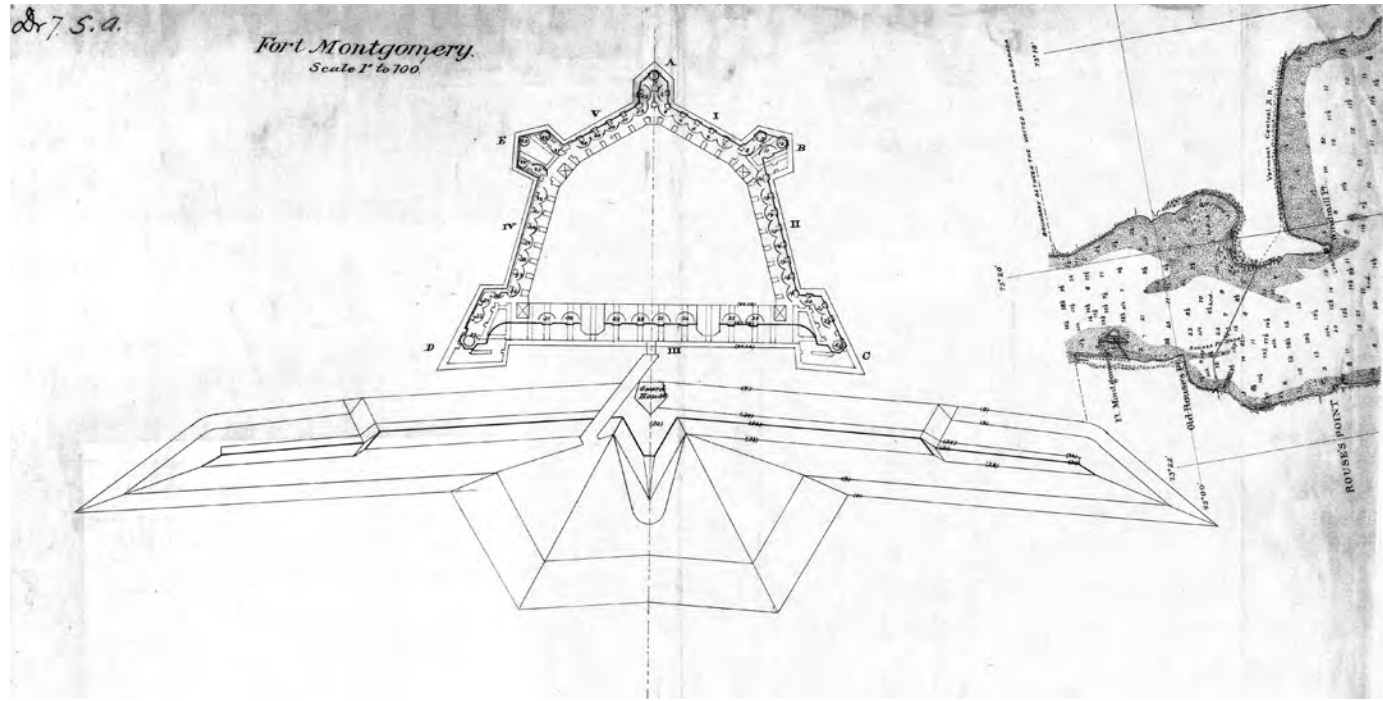


Figure 36 | Drawer 7 Sheet A Scanned | Jim Millard

The historic context surely lies within the artifacts that remain on the site. The images on these two pages are original hand drawings of Fort Montgomery. I will be using these drawings to create the three dimensional model in the design phase of the project.

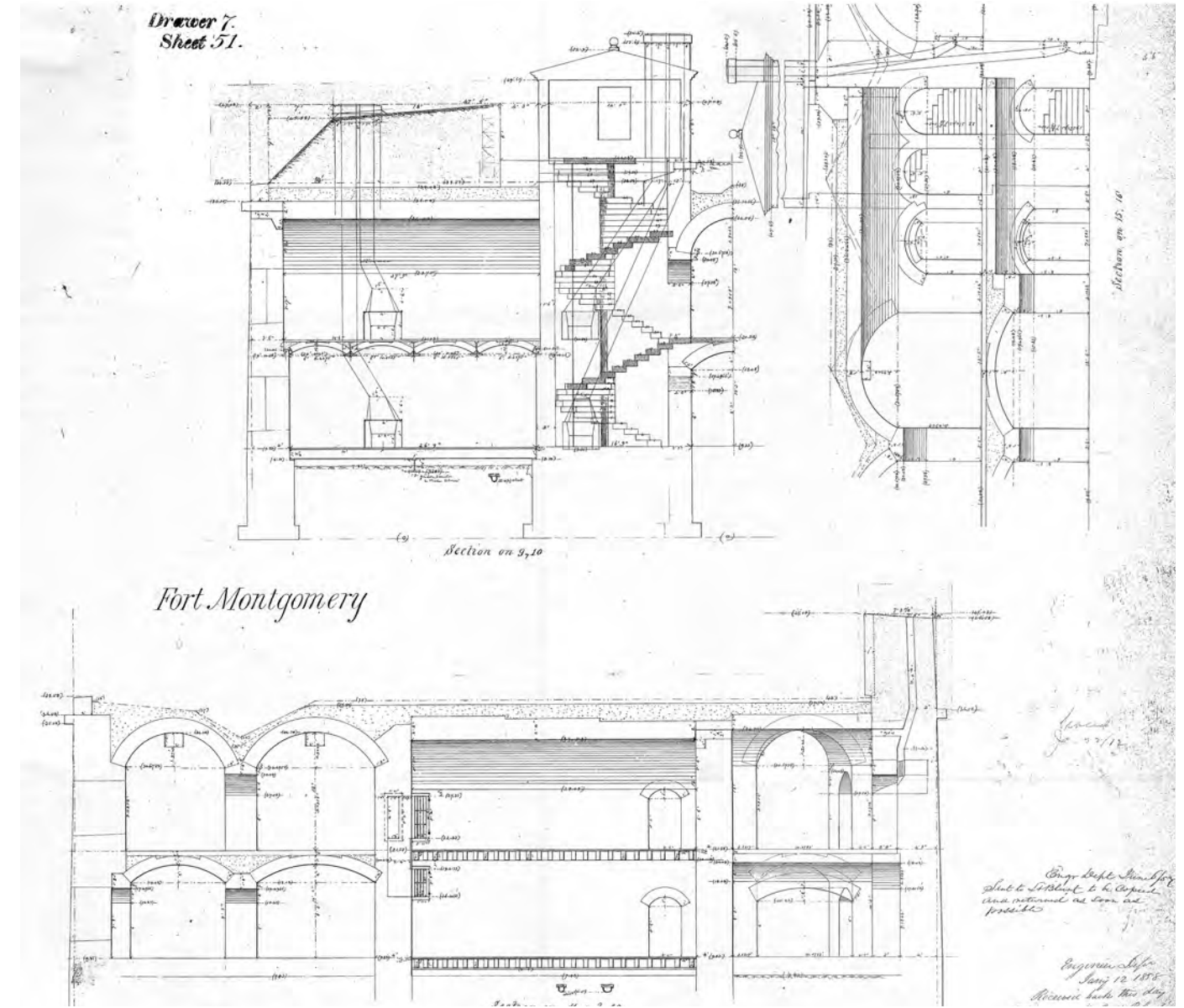


Figure 37 | Drawer 7 Sheet 51 | Jim Millard



Figure 38 | Original Plan on Site



Figure 39 | View NE from Parade | Jim Millard

HISTORICAL, SOCIAL, & PHYSICAL CONTEXT

How does this project relate to similar project undertaken throughout history?

“Historic properties are on the verge of a gold age. Over the next two decades, American will turn to historic houses and sites as a source of learning, enjoyment, and fulfillment.”

A Golden Age for Historic Properties, John Durel & Anita Nowery Durel

1. FORTRESS OF FROTEZZA

architect: mark Scherer with walter dietl
location: fortezza, italy



Figure 40 | Fortress Reno | Alessandra Chemollo

2. OLD BANOS CHURCH RESTORATION

architect: brownmeneses
location: banos, equador



Figure 41 | Roof Over the Walls | Sebastian Crespo

The Fortress of Frotezza is a masterpiece of the Austrian military under Emperor Franz Joseph and was opened by Emperor Ferdinand in 1839 and had an active military presence up until 2003. It was acquired by the province of South Tyrol and was restored to become an art museum and a place for meetings and cultural exchanges. The project combines two architectural movements of the twenty-first century, historic preservation and border crossings. (Jett, 2011).

Brownmeneses was hired by the city of Banos to design a roof over the walls of the oldest church in the city, which dates to 1788. The goal of the project was to refunctionalize the useless and forgotten space into a community center (Valenzuela, 2015).

Travels began on Saturday, November 2nd, 2019. Josh and I flew from Fargo, North Dakota to Montreal, Quebec. Our experience in Montreal was incredible - from an amazing hike around Mount Royal to tasting delicious French food. On Monday, we rented a car and drove 45 minutes South, across the International Border to Rouses Point. The country land between Montreal and the border looked very similar to North Dakota farmland, except for the 100-year-old stone farmhouses that would appear, rather than farmhouses made from wood. As we crossed the border, the border officer was curious to why we flew into Canada and now driving back into the United States... yes, I was prepared for such a peculiar question. After explaining our goals and curiosity about Fort Montgomery, the officer was thrilled. He was very knowledgeable about the site and was excited that two people had traveled all this way to peek at it themselves. He warned us about the large rain that had just gone through, and that the road leading to the fort was flooded...total bummer.

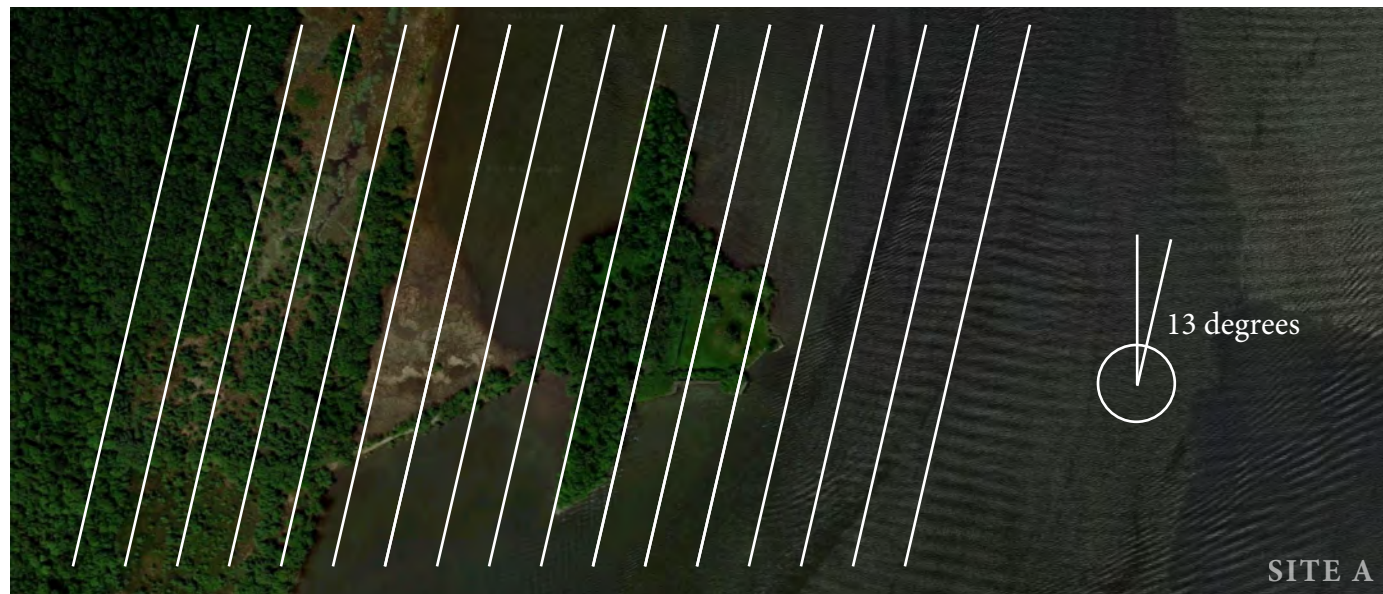
92 Josh and I went on our way across the border. I was so surprised how close the town of Rouses Point was to the border. On a map it seemed a bit further, and from my experience in North Dakota border crossings, the nearest town could be fifteen minutes away. We took a sharp left onto the Veterans Bridge and drove over the majestic Lake Champlain. There, we saw our first glimpse of Fort Montgomery. It sat so vacant and heavy. Heavy with distress and gasping for a breath of fresh air. It seemed almost as if was just a historic photograph in the distance that no one ever pays much attention to. We pulled off into a little viewing spot to take a better look at the fort. The arches of the parade were much larger than I was imagining from the photos that I had looked at before arriving. The large limestone bricks overpowered the fluidity of the lake as they created a composition that felt like it was impeached president that was never given the opportunity to prove himself. The fort, once a place of power and security, now sits as destructed remains and a place for vandalism and trout fishing. We drove into Vermont to get a different view of the fort, where we were able to see more of the large arches that create the structure for the parade. I wanted to see action. I am not sure what kind, maybe some wildlife, but nothing happened. There it sat, wasted. I try to imagine what it would've been like to live in Rouses Point during the Civil War. The canon holes may sit empty now, but at that time, they were very much alive - loaded with ammunition and awaiting an attack.

How did that make residents feel safe? These vacant canon holes are what hold the eeriness of the site. They become a symbol of this ever-growing battle between war and peace.

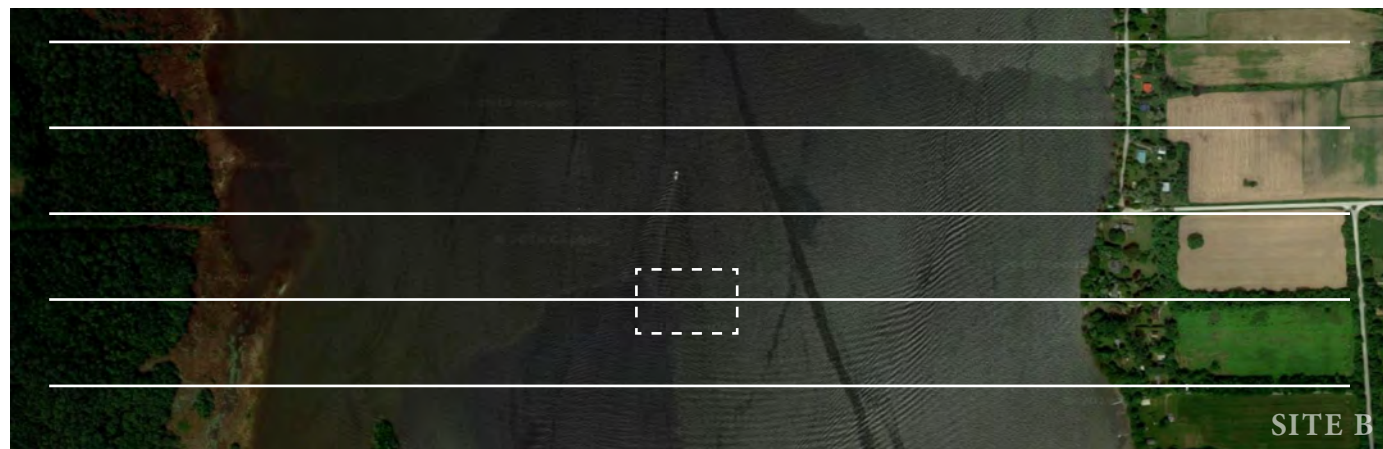
As I was looking at the site from afar, I was trying to imagine what the site could be. Truthfully, at the moment, this was difficult. I soon understood why it has been left untouched. The scale of the remains and the evident darkness that sits like a heavy fog is not the greatest selling point. As I am recollecting my memories of Fort Montgomery, my imagination is starting to break down these barriers. I imagine the Fort as a place for people to explore. I imagine translucent glass that showcases the action of people inside to vehicles passing by over the lake. The people are what will bring this fort to life. I start to think of the canon holes as passageways. I want to stand in one to experience the scale. In the summer, I can see boats pulling up to the docks with families stepping out to go enjoy the scenery and the enjoyment of being on an island on a nice sunny day. In the winter, I think of it as a retreat - a warm and cozy place to seek shelter after a day of ice skating, cross country skiing, and ice fishing. I imagine the fort as a community within the community of Rouses Point and the surround towns along the lake. As a gathering place that people from near and far choose to explore.

Josh and I made our way to go visit with Donna Racine, the Rouses Point Historian. She was an eighty-year-old, small, white-haired lady who was very proud of her hometown. Like any small town, she spoke of the fears that many people have of business closing. She told us that she has no worry that Rouses Point will diminish. Donna said, "As long as the border is here, Rouses Point will be here." Fort Montgomery has been a landmark of the town since it was built. Overtime it has caused controversy, especially when it was demolished by the private owner in order to use the materials on another project. Today, it doesn't strike much conversation in the town, it has sat so long as is, and people just don't know what to do with it.

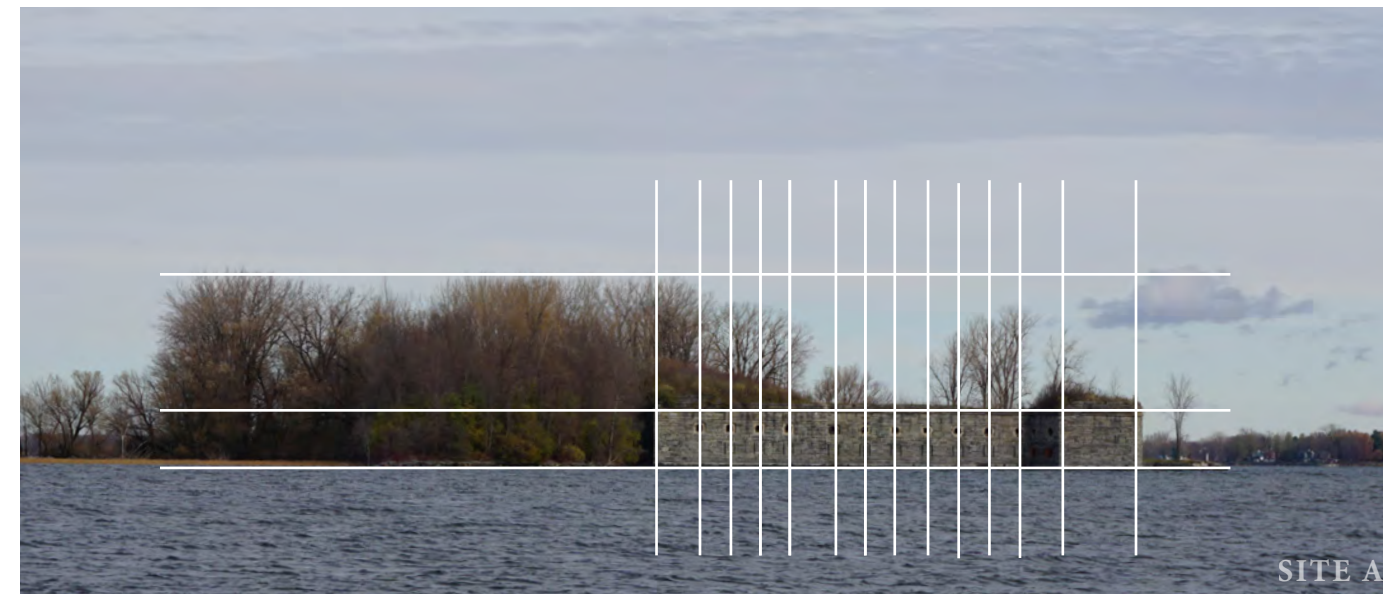
Donna was thrilled that two young people showed so much interest in the fort. She told us that when given the opportunity to go into the fort, she was hesitant. She would rather imagine Fort Montgomery in her childhood years, before it was demolished and vandalized, rather than how it sits today.



The two images the sites in a plan view. The grids on both parts of the site remain one-sided. On Site A, strong vertices follow the shoreline as well as the main axis of the fort. The axes on Site B, follow the international border, which influences the sections of land.



Top to Bottom Figure 42 | Site 1 Plan Grid | Figure 43| Site 2 Plan Grid



The northern part of Lake Champlain is mainly surrounded by small rolling hills. The sectional grids exist at the height of the trees, where the water meets the ground, and in the case of Site A, the existing limestone walls.



Top to Bottom Figure 44 | Site 1 Section Grid | Figure 45| Site 2 Section Grid



Figure 46 | Textures | Jim Millard



Figure 47 | Colored Parade | Jim Millard



The color study extracts the colors that are present within the parade.



The color study extracts the green tones that are present during the summer months.

Figure 48 | Parade View Gorge 2 | Jim Millard

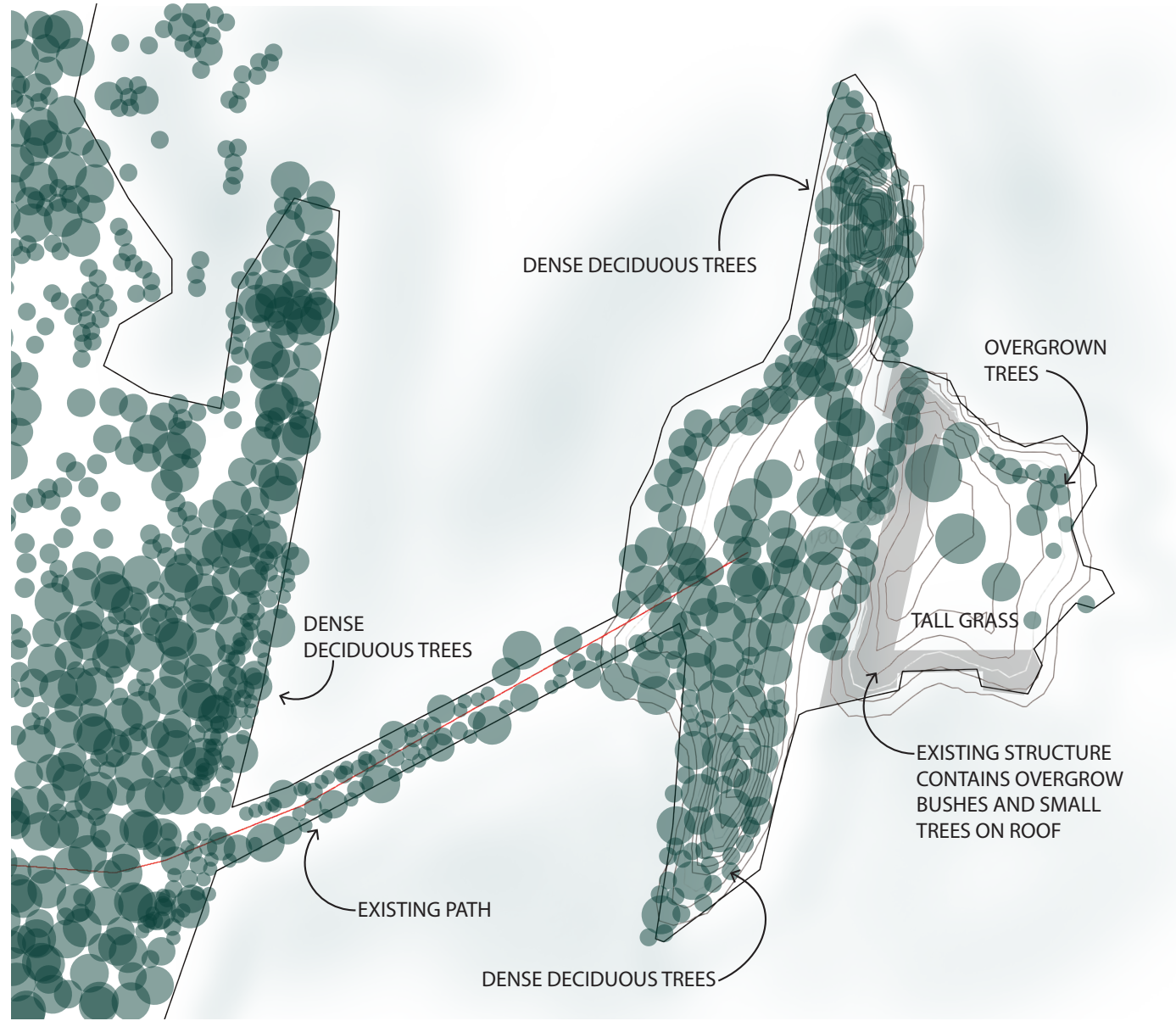


Figure 49 | Vegetation Map

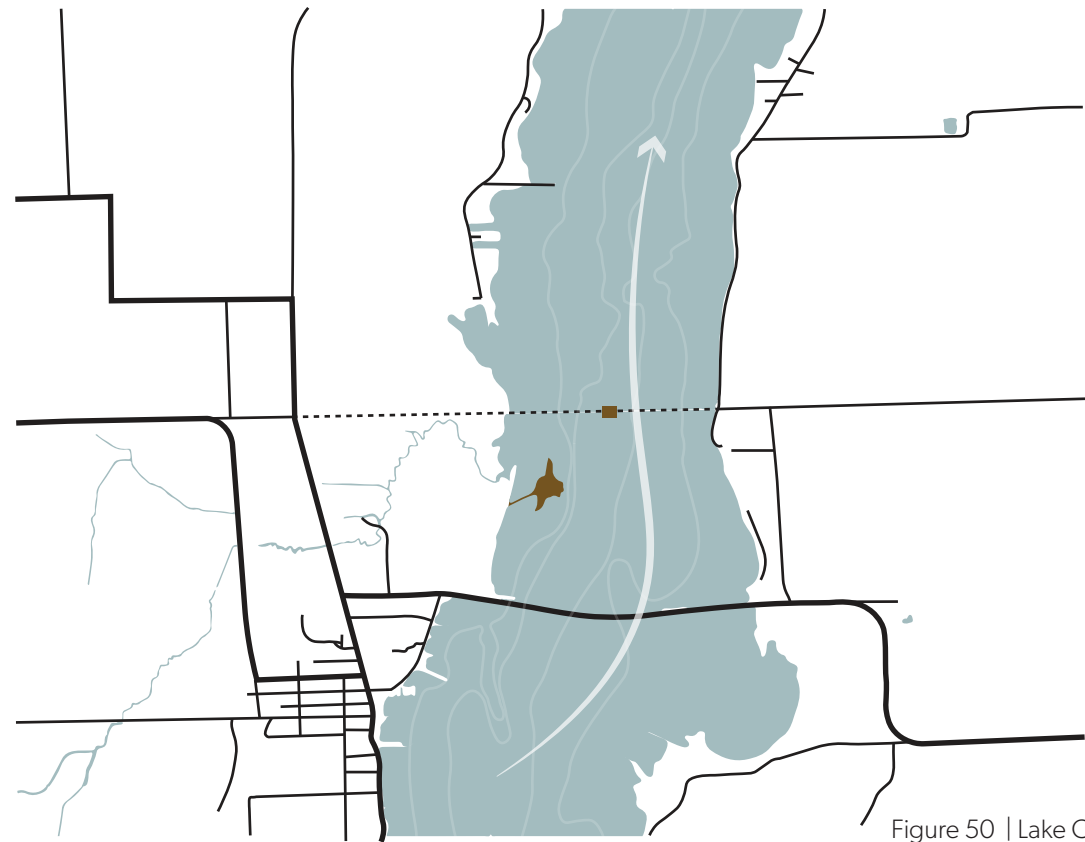


Figure 50 | Lake Champlain Maps

The site(s) are surrounded by water. Lake Champlain is a 120-mile-long lake that flows from Whitehall, New York north across the U.S./Canadian border into the Richelieu River in Quebec, which joins with the St. Lawrence River and eventually drains into the Atlantic Ocean. The lake is rather long and slender and has a maximum depth of 400 feet. Lake Champlain freezes in the winter month. It has been freezing less frequently across its widest part (12-mile width) than it has in the past.

The water in the lake is safe to fish, swim, and drink. Lake Champlain provides about 200,000 people, about 35% of the Basin population with drinking water. There are currently 99 public water systems drawing water from the lake.



Max Depth 400'

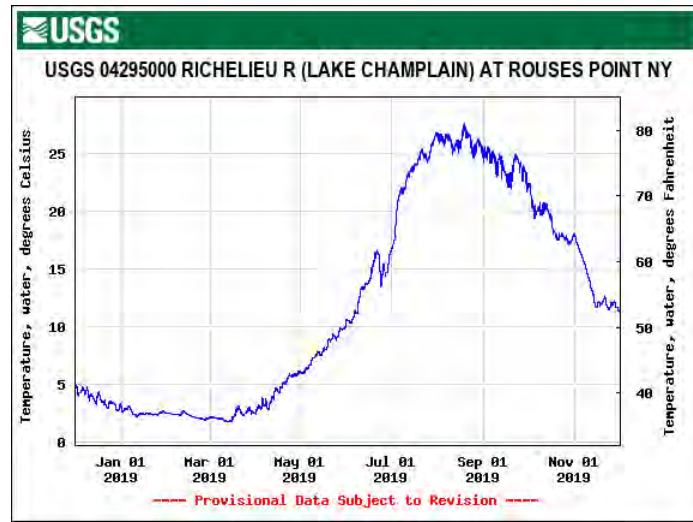


Figure 51 | Lake Temperature | LCBP

The graph above shows a graphical representation of the water temperature from December 1, 2018 to December 1, 2019 at the Rouses Point station.

The Lake Champlain Basin has an area of 8,234 square miles. The Basin program states that 90% of the water that enters the Lake flows through the basin before it reaches the lake. The basin is distributed into three states/provinces including Vermont (56%), New York (37%), and Quebec (7%). 571,000 people live in the Lake Champlain Water Basin. According to the 2000 Census Data, 541,000 resided in the United States and 30,000 resided in Canada. About 68% live in Vermont, 27% in New York, and 5% in Quebec.

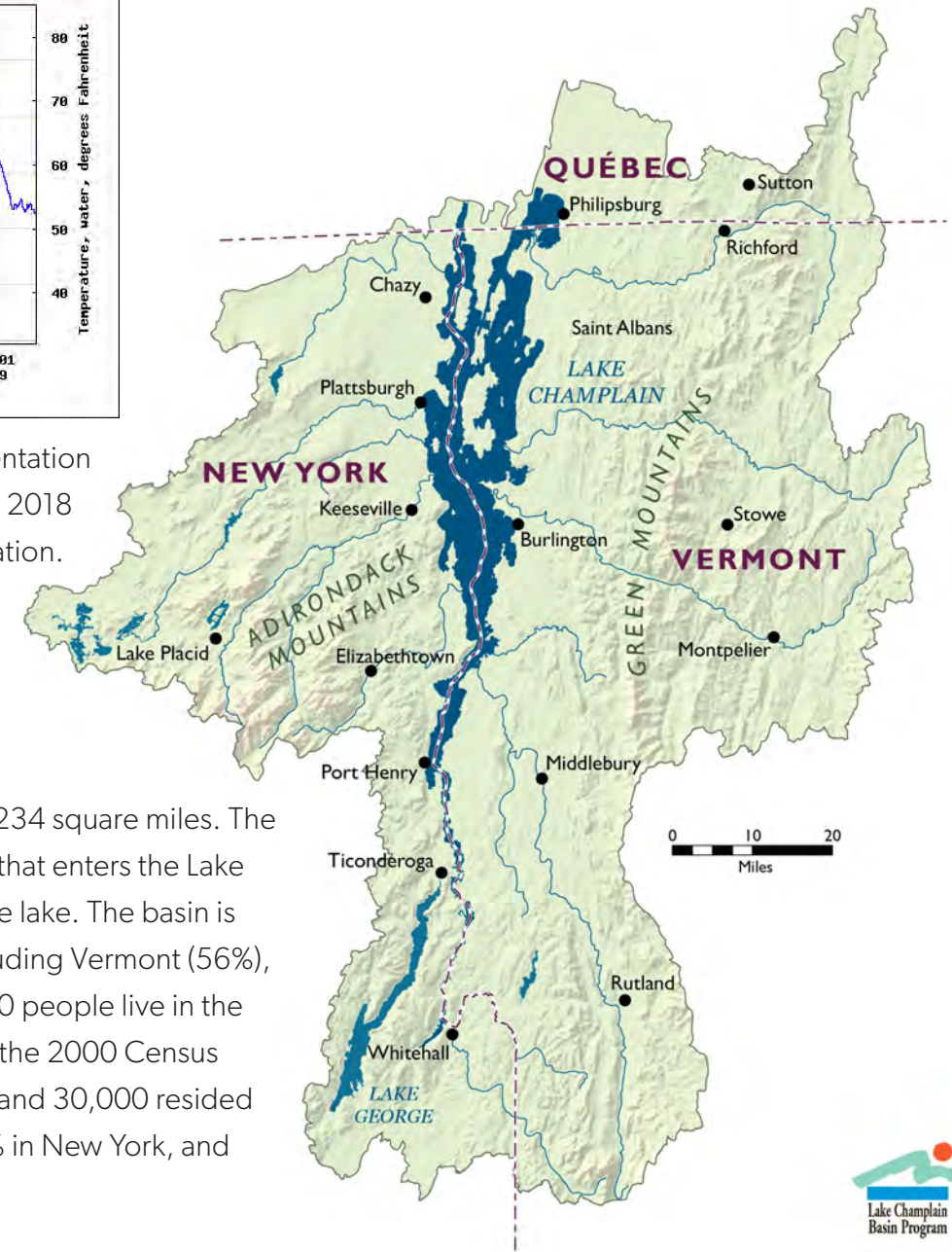


Figure 52 | Lake Champlain Basin | LCBP



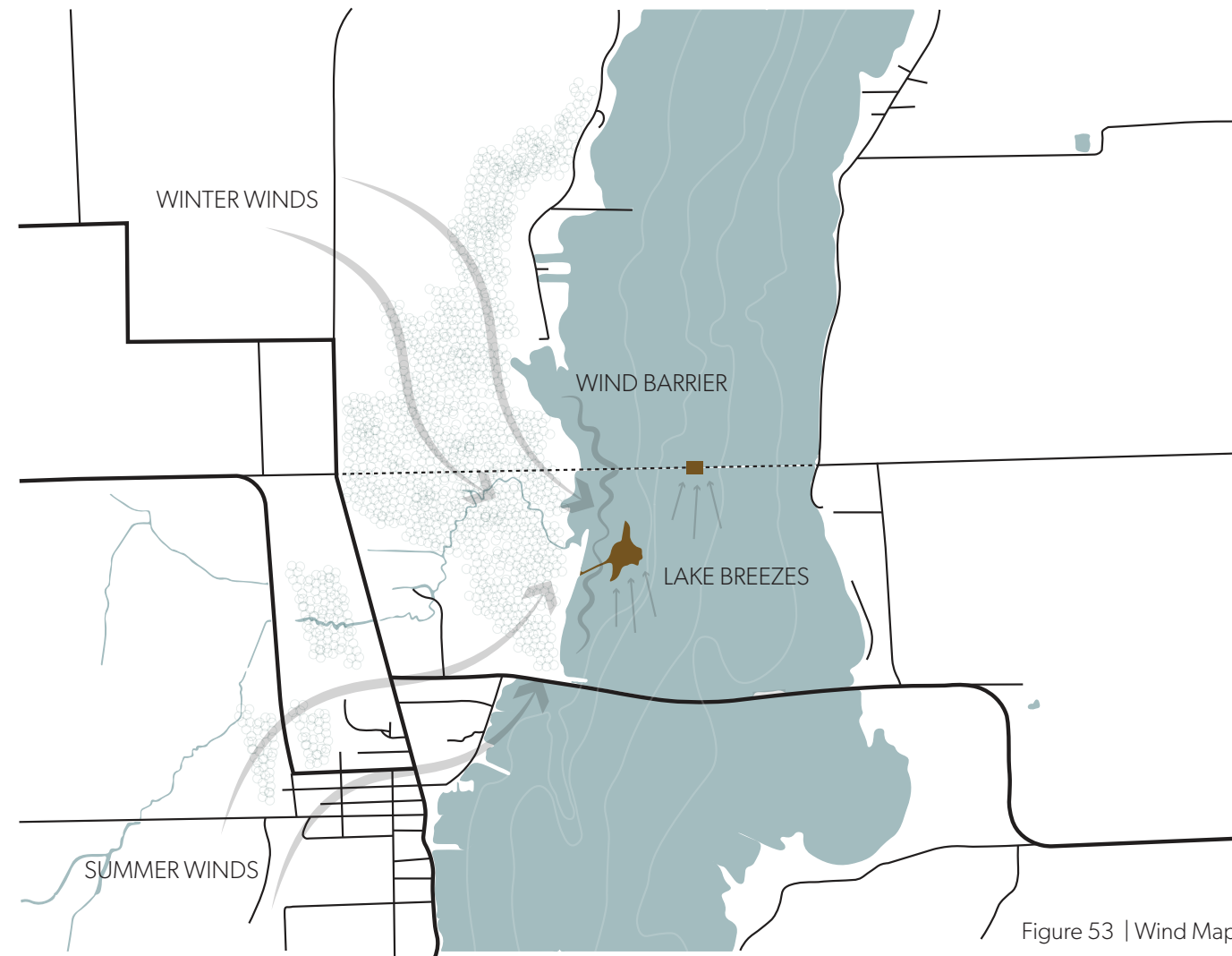


Figure 53 | Wind Map

The graphic above illustrates the different wind variations that affect the site. The summer and winter winds both come from the westerly direction. The Eastern orientation of the site and the trees on the West side of the site allow for protection against the strong winter winds. The Northern flow of the lake creates cool breezes to come off the lake from the south as well.



Figure 54 | Ft Montgomery View NW | Marinas

SOCIAL MEDIA | FORT MONTGOMERY

How is the site being used right now? By searching the location “Fort Montgomery (Lake Champlain)” on Instagram, one can see photos that people post while they are on the site. By looking at the stream of photos, I can assume that the site is currently used by humans as a space to explore remains of history.

The site is private property, which means that trespassing is illegal. We can also assume that the fort is not highly monitored due to the amount of pictures that have been taken on the site in the recent months and the graffiti that has been left behind on the walls of the fort. One post from October 26th was captioned, “Photos of Fort Blunder (Fort Montgomery) I forgot to post from June. I don’t claim to have been on this private property to have taken these photos. Part 1 of 2. #outdoors #adventure #fort #ruins #urbex #urbanexploration #island #lake #lakechamplain #newyork”

It is valuable to see how people are using the site currently to investigate what the site wants to be. Since people are trespassing to explore the site, the museum should exhibit the same essence of “exploring.”

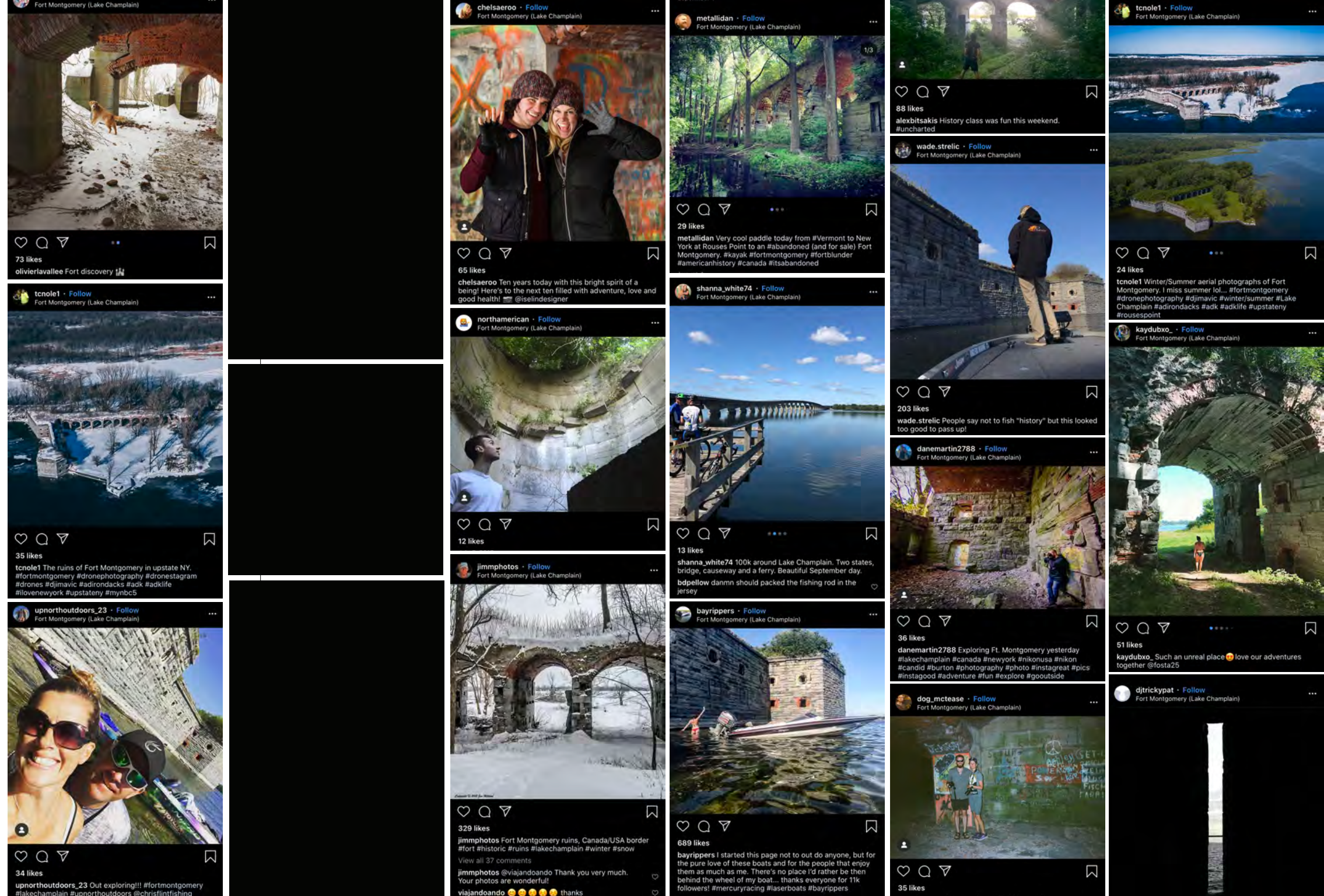


Figure 55 | Ft Montgomery View NW | Marinas

SOCIAL MEDIA | FORT MONTGOMERY

Photos were also collected by searching the location “Lake Champlain” on Instagram to better understand the activities that go on around the lake. From the posts collected, one can assume that the lake is a great fishing lake since a verified account posted a photo of a fishing competition. Seasonal activities such as sail boating, swimming, and ice skating are popular activities as well.

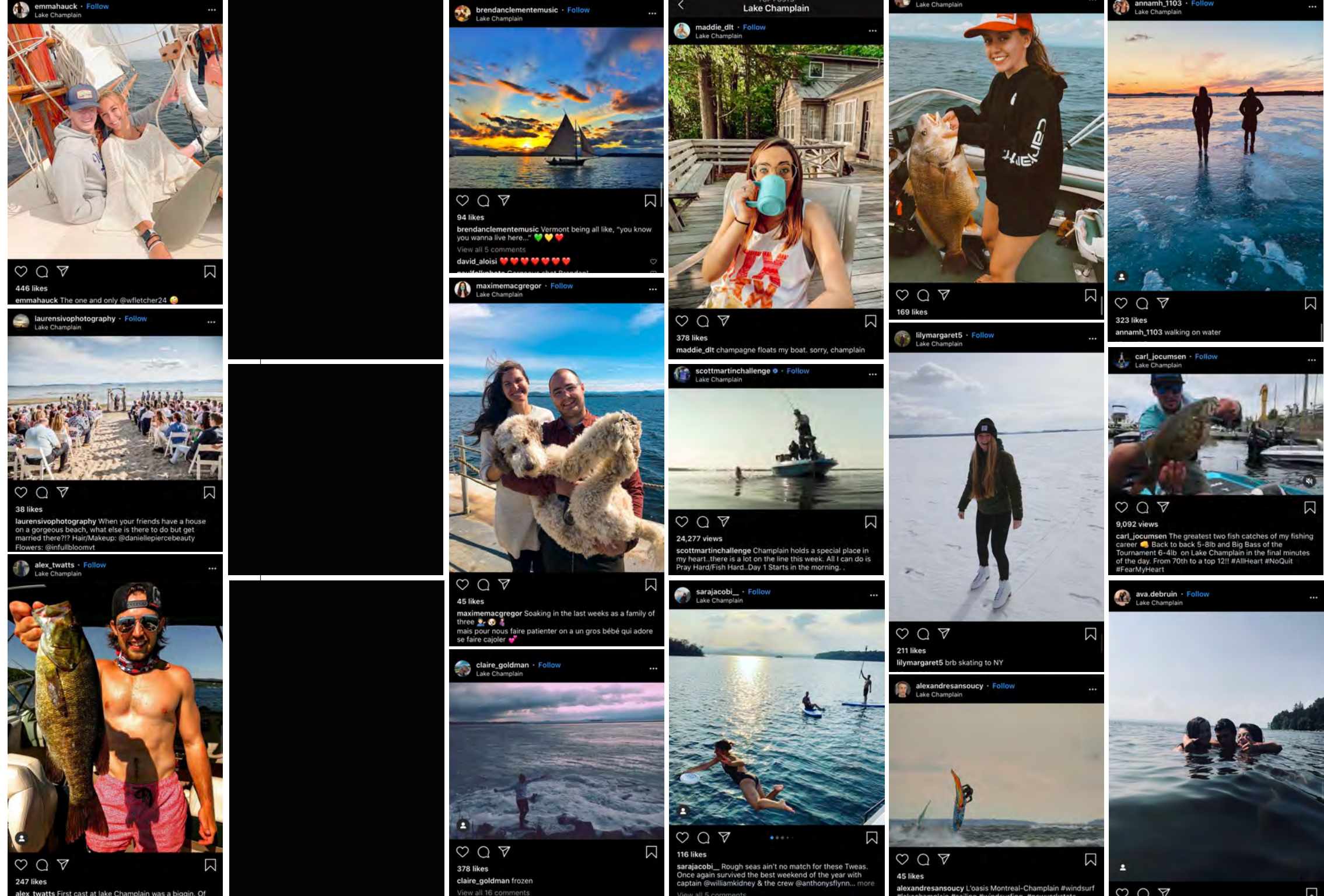


Figure 56 | Ft Montgomery View NW | Marinas

Development: Partially Developed
Title: Freehold
Type: Private Island
Price: \$995,000 USD
Size: 94.00 Acres
Lifestyle: Large Acreage, Lake Island, Historic

It's a mere 45 minutes away from Montreal, 90 from Lake Placid and only an hour from Burlington, Vermont, which means the historic estate is centrally located and yet still miles away from the buzz of city life.”
-Denison Yachting



Figure 57 | For Sale

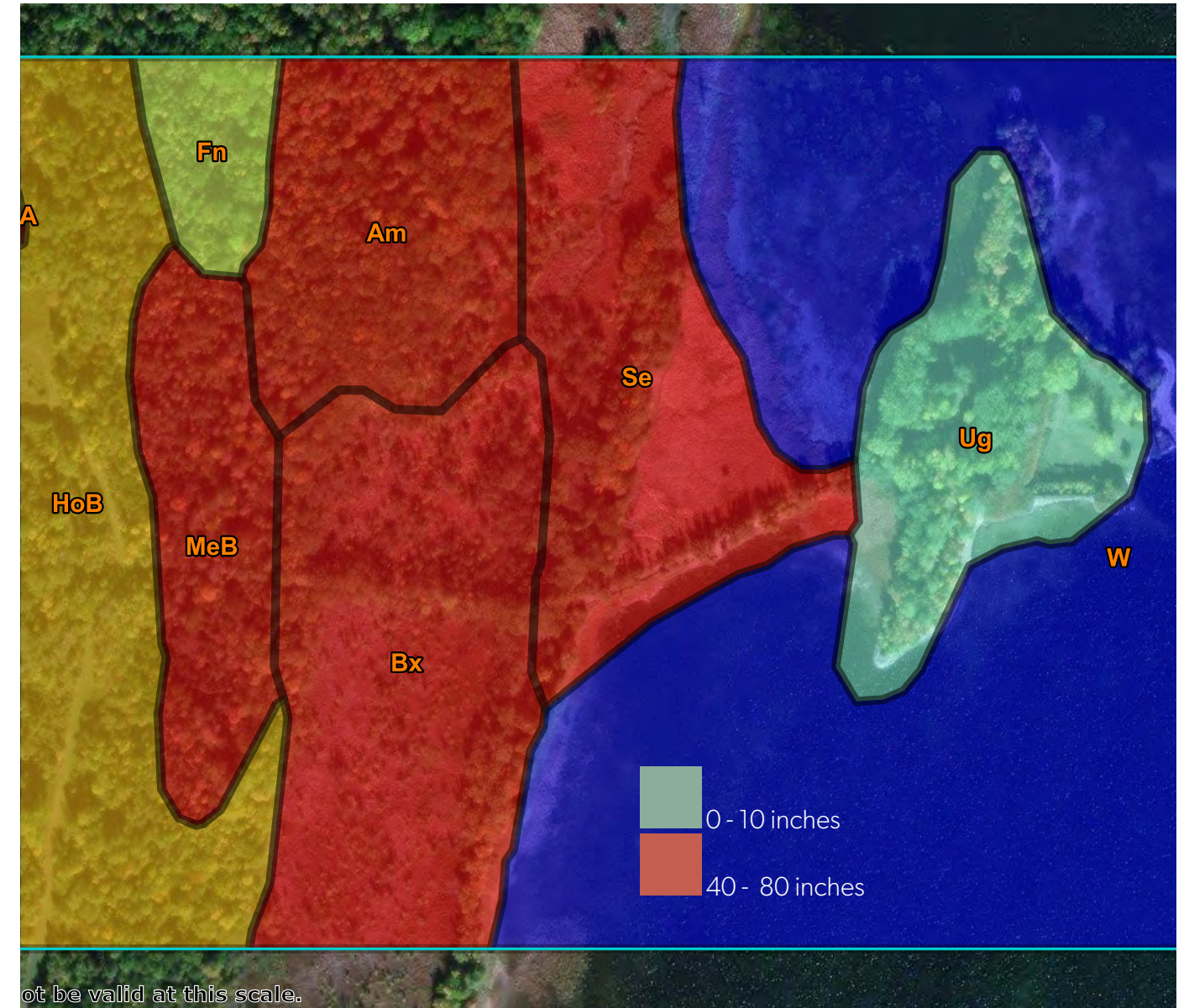


Figure 58 | Soil Classification | Natural Resources Conservation Center

Ug-Udorthents, smoothed soils are stable. Areas with this soil makeup have structures or imperious material on level areas and vegetation on slopes. This type of soil is not recommended for farming. In urban areas, it is suitable for development such as roads, highways, shopping center, and athletic fields.

Properties & Qualities

- Slope: 0-15%
- Depth to restrictive feature: More than 80 inches
- Natural drain class: Well drained
- Capacity of the most limiting layer to transmit water: Moderately low to high (0.06 – 5.96 in/hr)
- Depth of water table: about 36-72 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, max: 3%
- Available water storage in profile: Low (about 5.5 inches)



not be valid at this scale.

Figure 59 | Depth to Water Table | Natural Resources Conservation Center

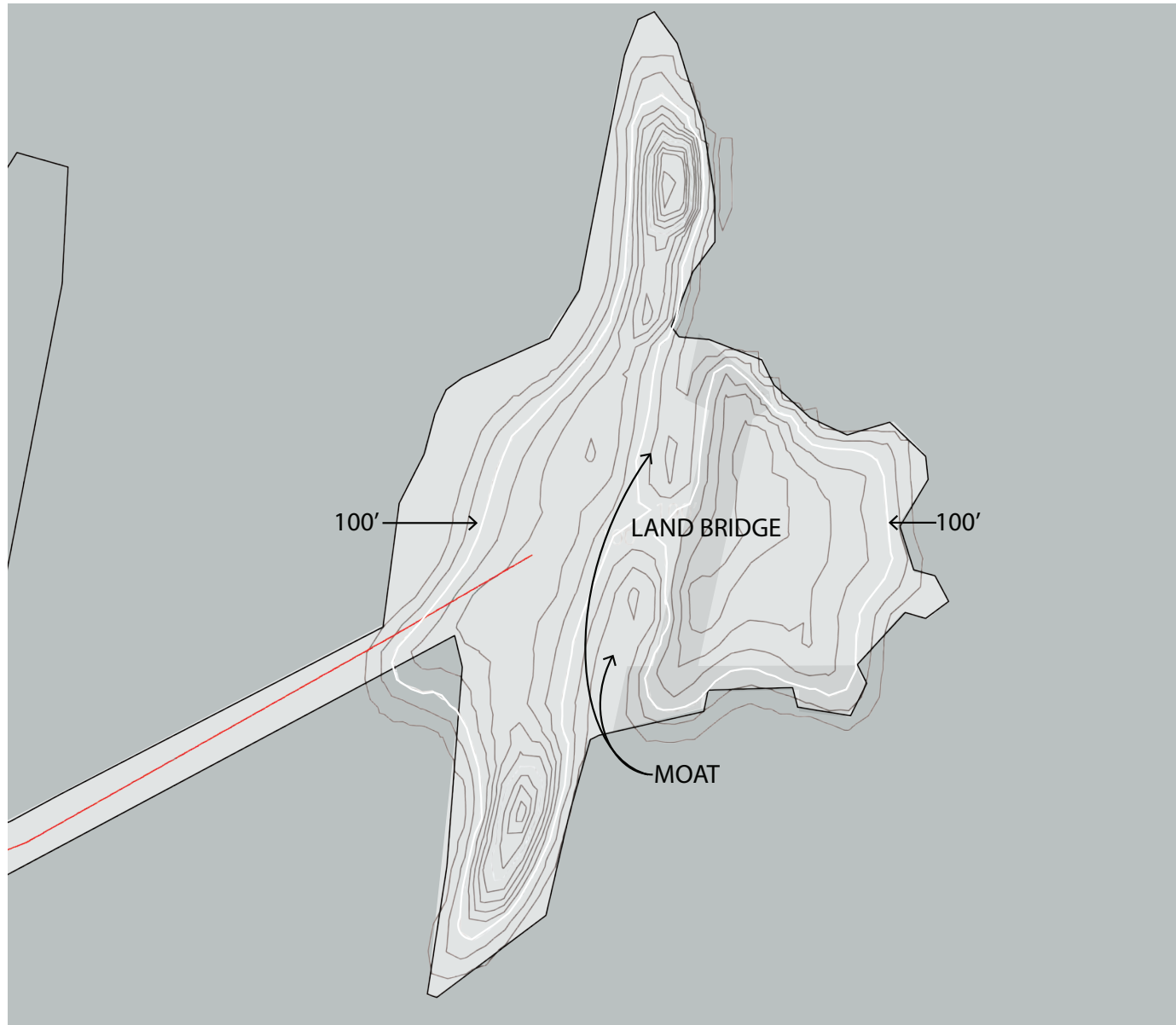


Figure 60 | Ft. Montgomery Topo

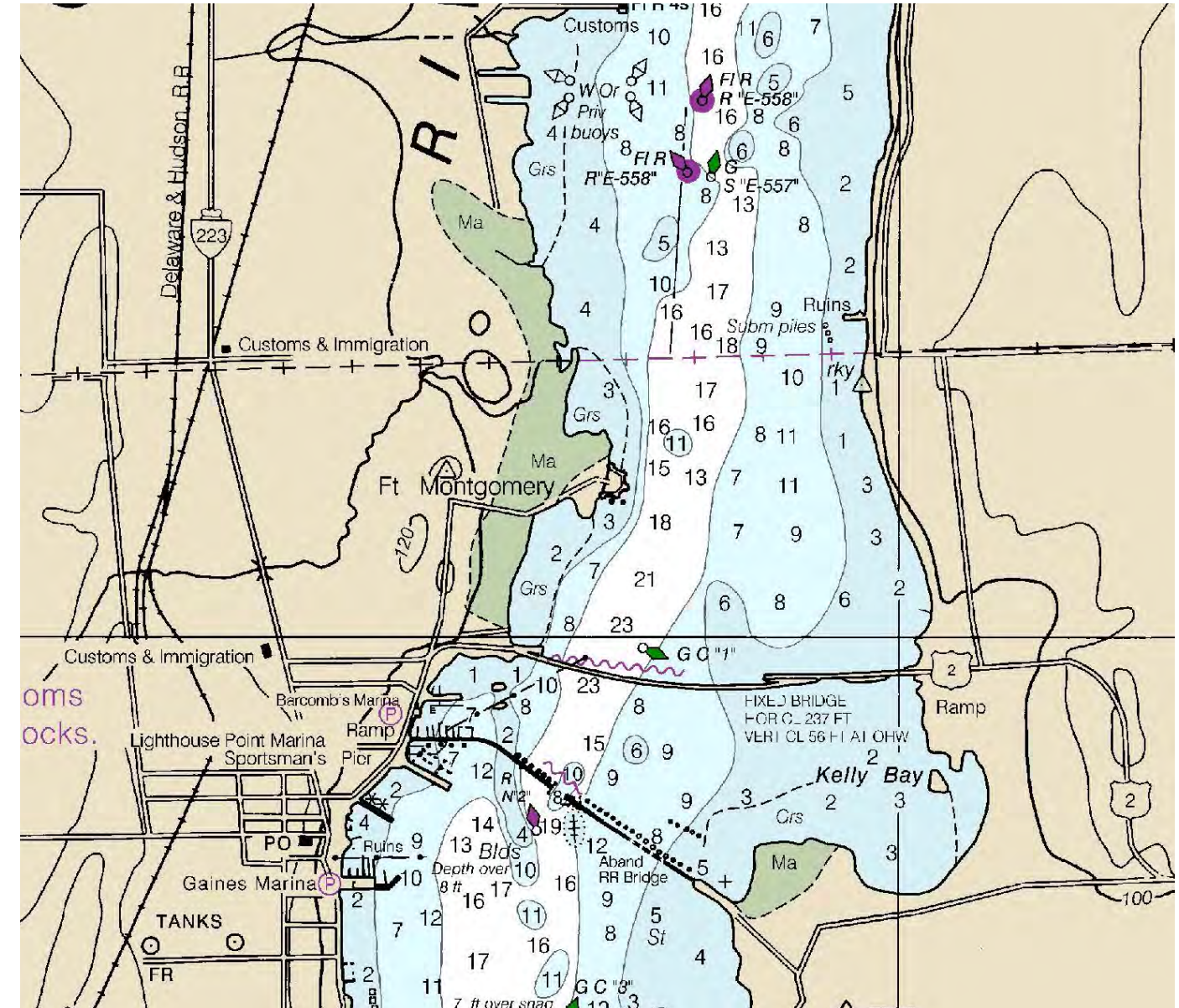


Figure 61 | Lake Champlain Topo | NOAA

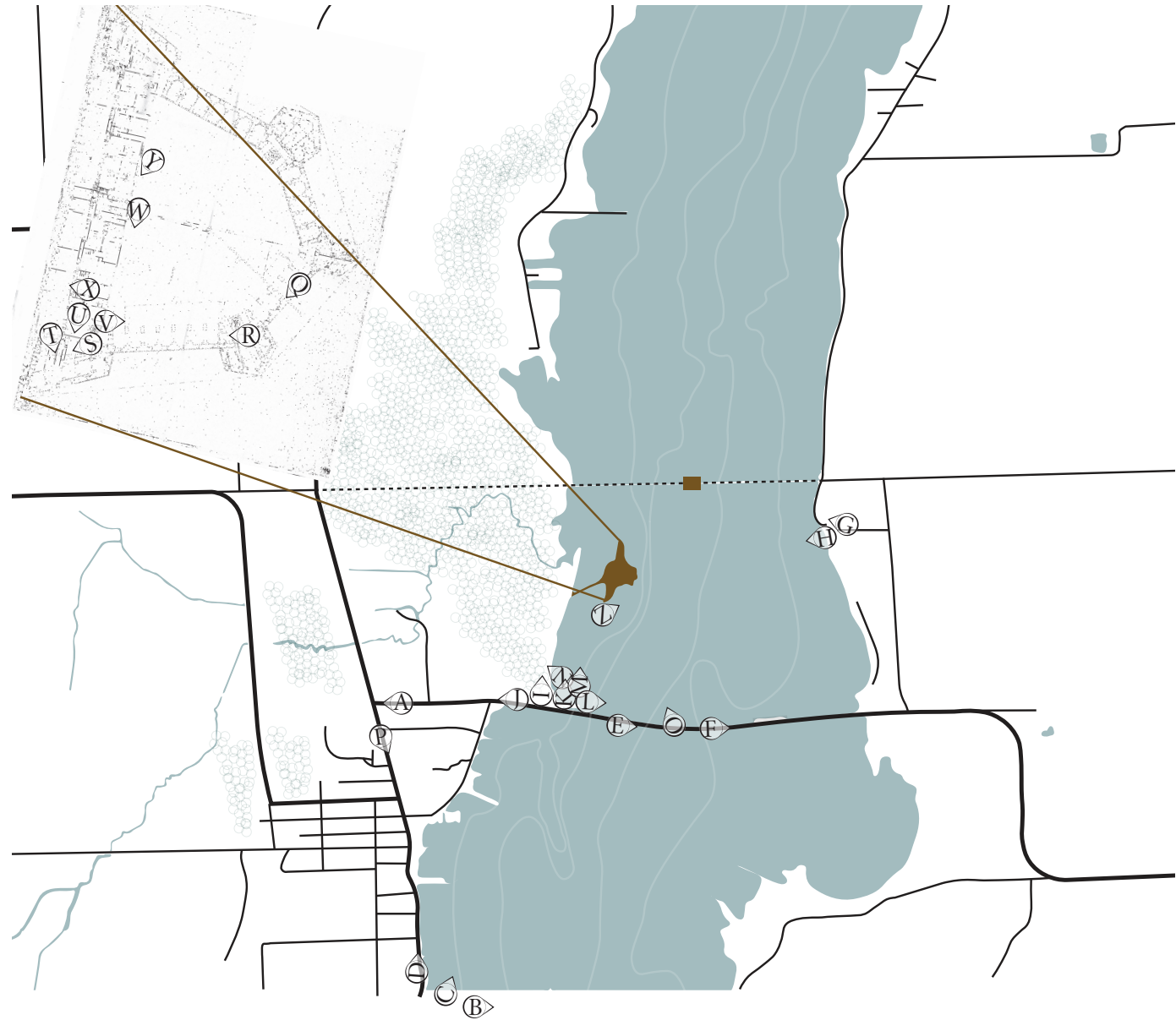


Figure 62 | Photogrid



Figure 63| Hwy 2 & 11 Intersection - Photogrid A



Figure 64 | Stony Point Break Wall - Photogrid B



Figure 65 | Stony Point Looking North - Photogrid C



Figure 66 | Welcome - Photogrid D



Figure 67 | Welcome to Vermont - Photogrid E



Figure 68 | Vermont - Photogrid F



Figure 69 | IBorder Marker - Photogrid G



Figure 70 | Ft. Montgomery, From East - Photogrid H



Figure 71 | For Sale - Photogrid I



Figure 72 | Welcome to New York - Photogrid J



Figure 73 | Tourist Stop - Photogrid K



Figure 74 | Frontage Road - Photogrid L



Figure 75 | Tourist View - Photogrid M



Figure 76 | Swamp - Photogrid N



Figure 77 |Top of the Bridge View - Photogrid O



Figure 78 | Lake Street - Photogrid P



Figure 79 | Bastion B - Photogrid Q | Jim Millard



Figure 80 | Bastion B Tier 1 - Photogrid R | Jim Millard



Figure 81 | Bastion C Tier 1 Interior - Photogrid S | Jim Millard



Figure 82 | Bastion C Tier 2 - Photogrid T | Jim Millard



Figure 83 | Bastion C Tier 2 Loopholes - Photogrid U | Jim Millard



Figure 84 | Curtain II Interior - Photogrid V | Jim Millard



Figure 85 | Parade - Photogrid W | Jim Millard



Figure 86 | Gorge - Photogrid X | Jim Millard



Figure 87 | Parade View - Photogrid Y | Jim Millard

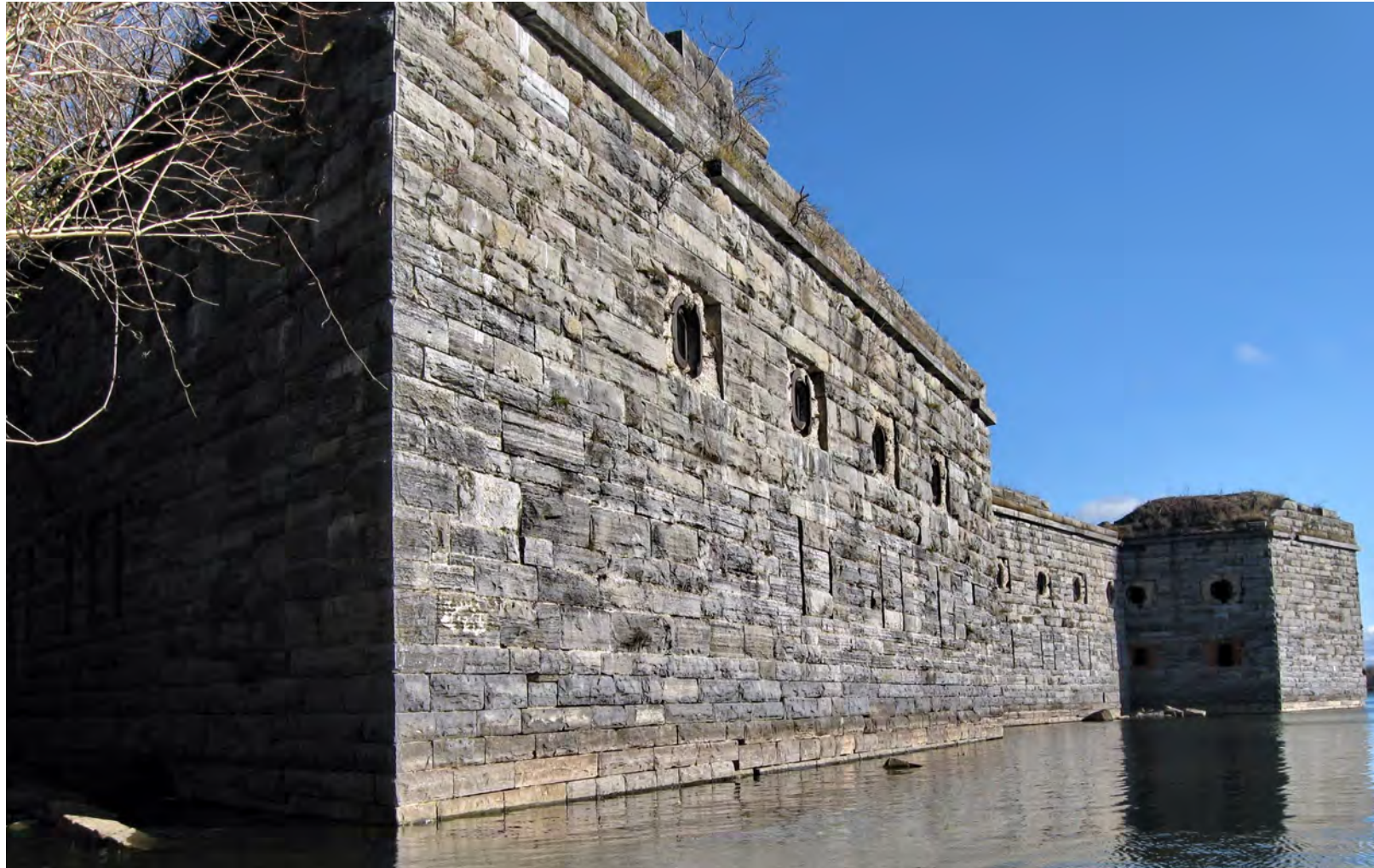


Figure 88 | Bastion C - Photogrid Z | Jim Millard



Figure 89 | NW View from Parade Gorge | Jim Millard

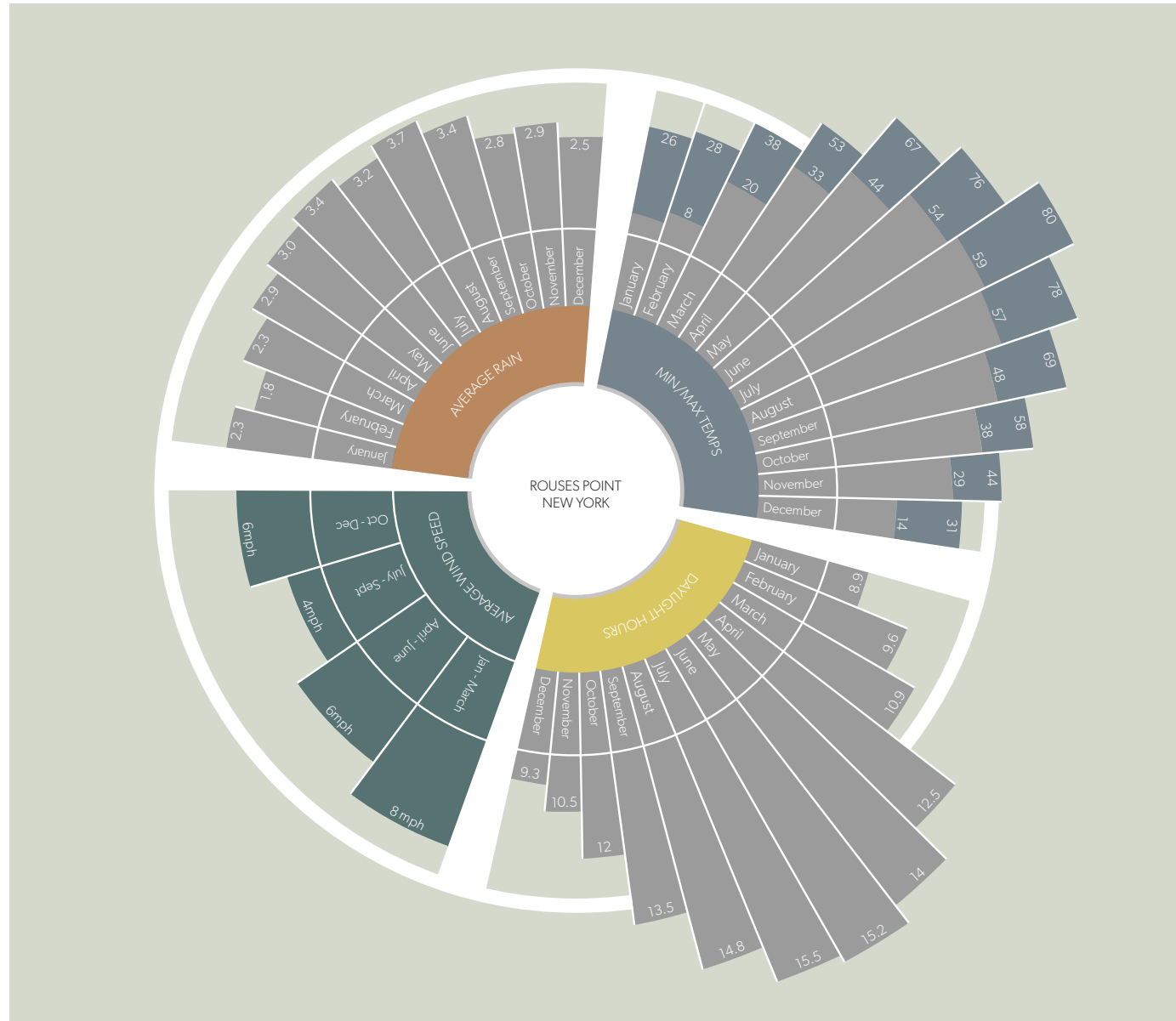


Figure 90 | Temperature

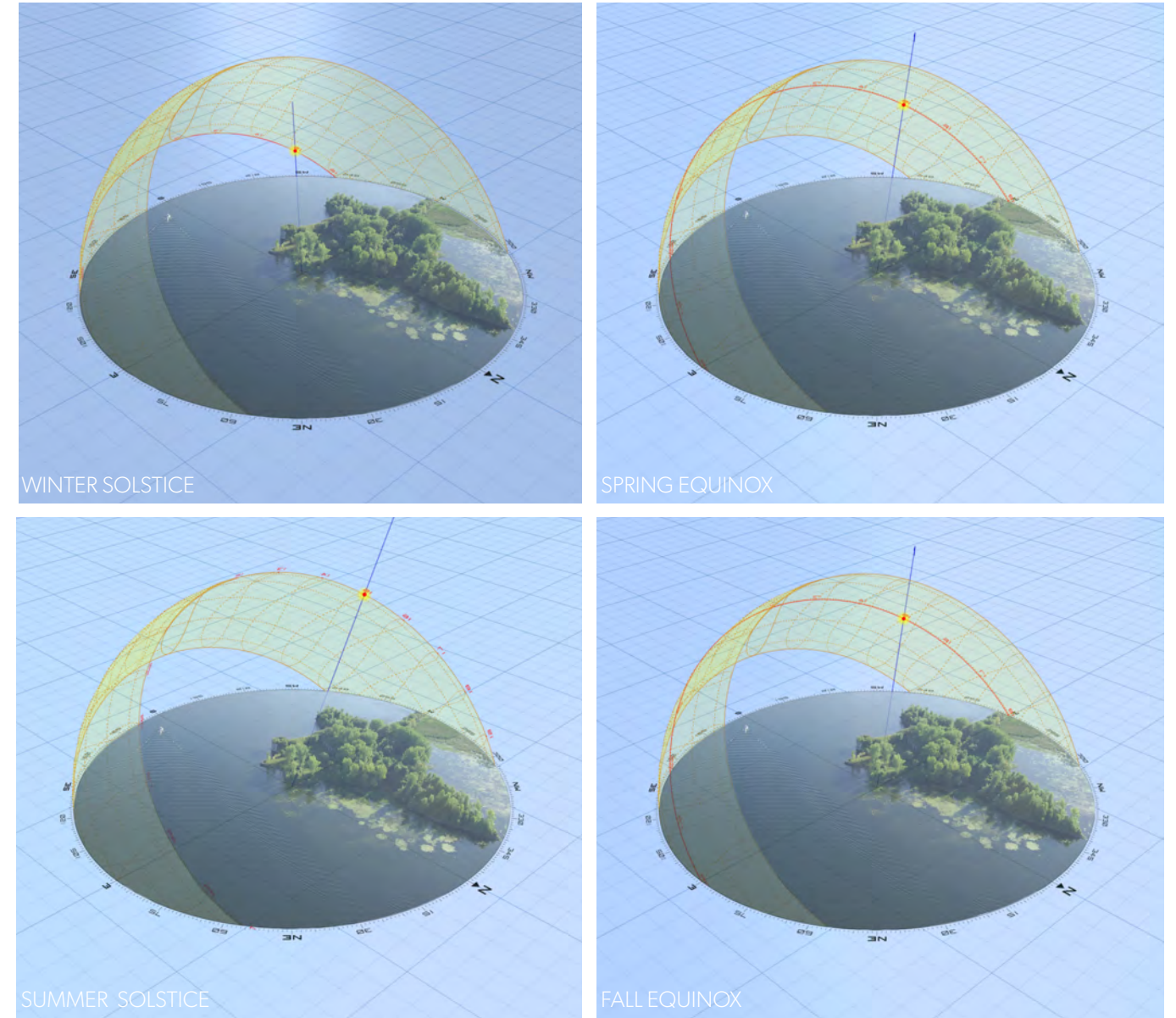


Figure 91 | Sun Path

PERFORMANCE CRITERIA
1. SPATIAL RELATIONS

The relationships between spaces and the borders that separates them is an important factor in the project. The success of the criteria will be measured through the wayfinding of the user within the floor plan. The museum and surrounding structures should be easily navigable without the use of wayfinding signs. The goal will be considered met if 90% of the final floorplan follows the space matrix.

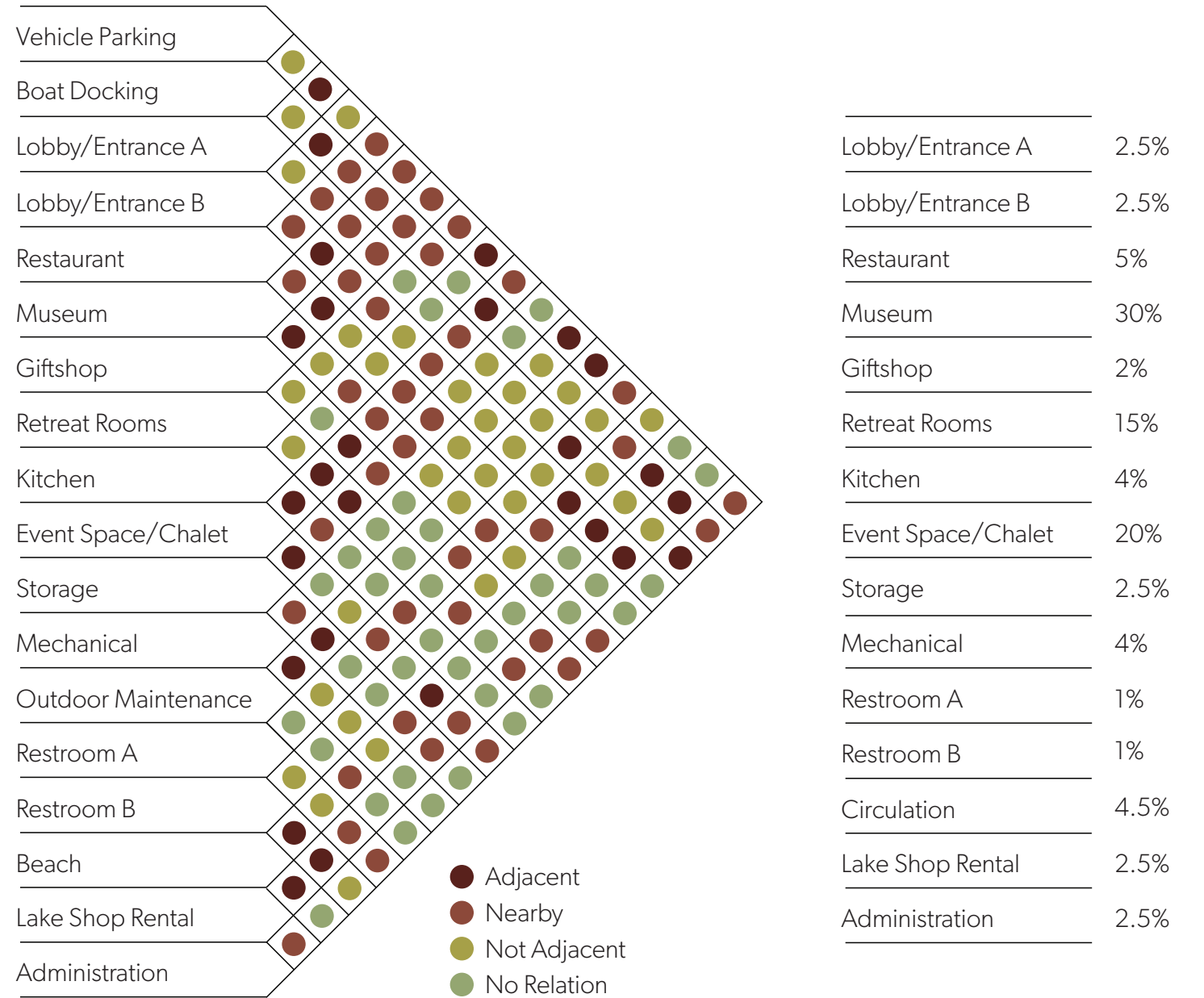


Figure 92 | Interaction Matrix

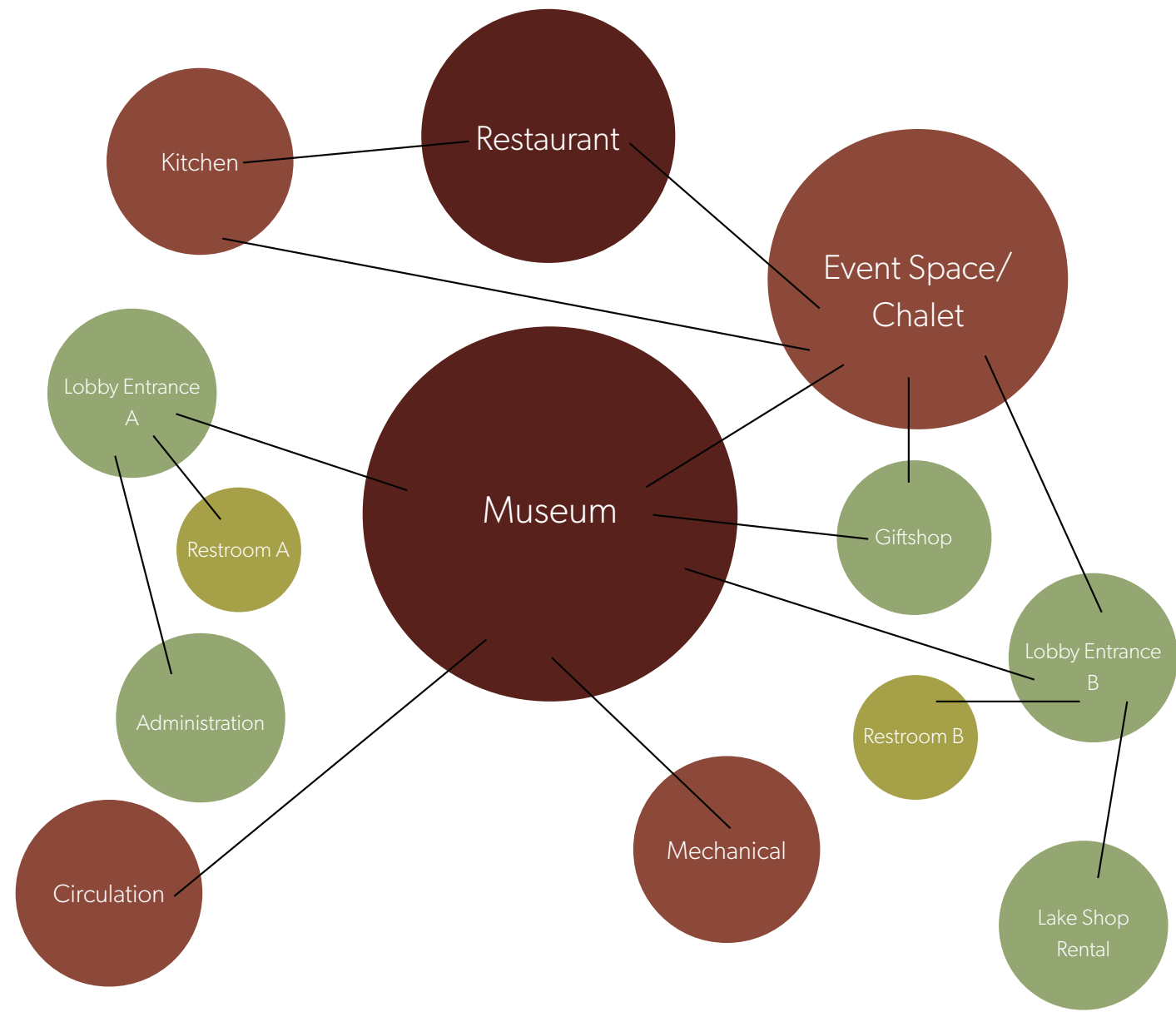


Figure 93 | Interaction Net

PERFORMANCE CRITERIA
2. ENVIRONMENTAL IMPACT

The environmental impact of the project is a serious concern of the project due to its location on a large body of water. Case studies and material specs will be used to make an educated decision on the materials that will be use on the structure that is partly sunken into the water and the feasibility of the structure to be constructed off-site. The goal is considered met if the sunken structure...

... is designed and constructed using sustainable materials that do not cause aluminum and phosphorus contamination.

... creates new habitat for the living creatures in Lake Champlain.

... can be constructed off site and moved into location during the finishing stages.

PERFORMANCE CRITERIA
3. AESTHETIC IMPACT

Aesthetic design goals are important for the integration of the design between two countries. Case studies and architectural/cultural history will be used to make design decisions that cater to the architectural styles and traditions of the United States and Canada. The goal will be considered met if the audience responds positively to the design parti and can follow the Canadian and United States design inspiration to the final design solution.



Figure 94 | Montreal - 58 miles from Rouses Point



Figure 95 | Personal Experience

THE DESIGN

I feel as though I live on the border, trying to balance the opposing forces that are pulling me in opposite directions.

I feel as though I live on the border, trying to balance the opposing forces that are pulling me in opposite directions. Maybe you have felt the same way. Maybe you grew up in a broken home and struggle to keep things equal between mom and dad. Maybe you are the oldest child and try to lead a good example for your younger siblings but still want to break the rules and have some fun at times. Or maybe you always think about others when making a decision and struggle to put yourself first.

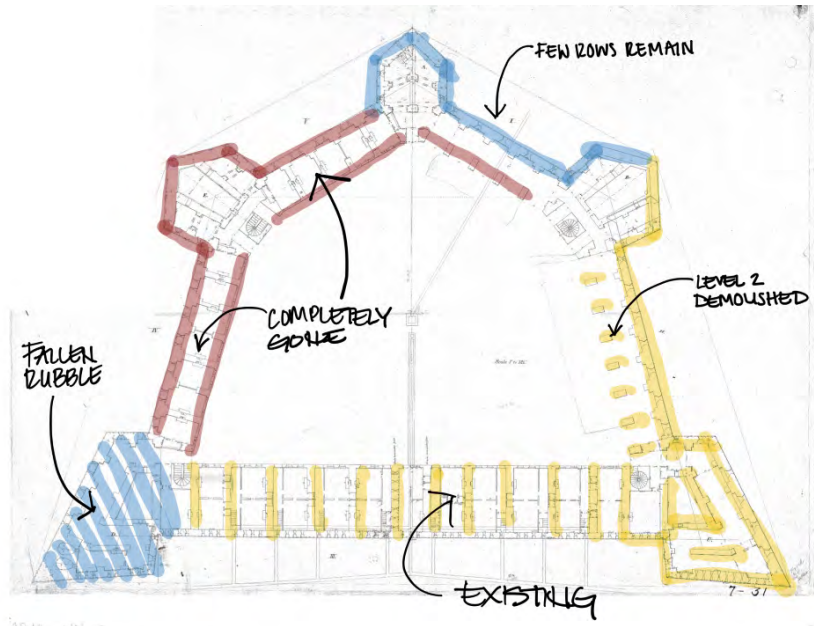
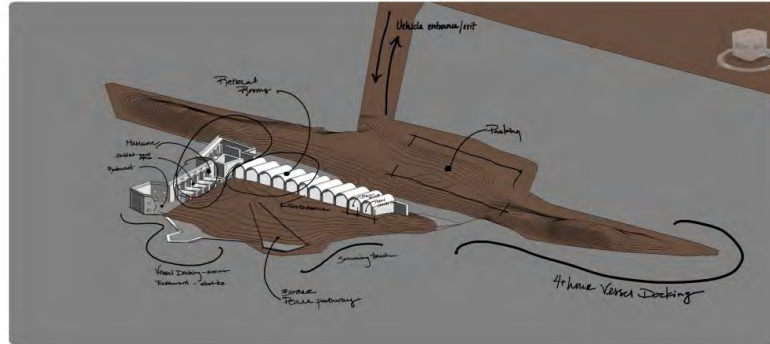
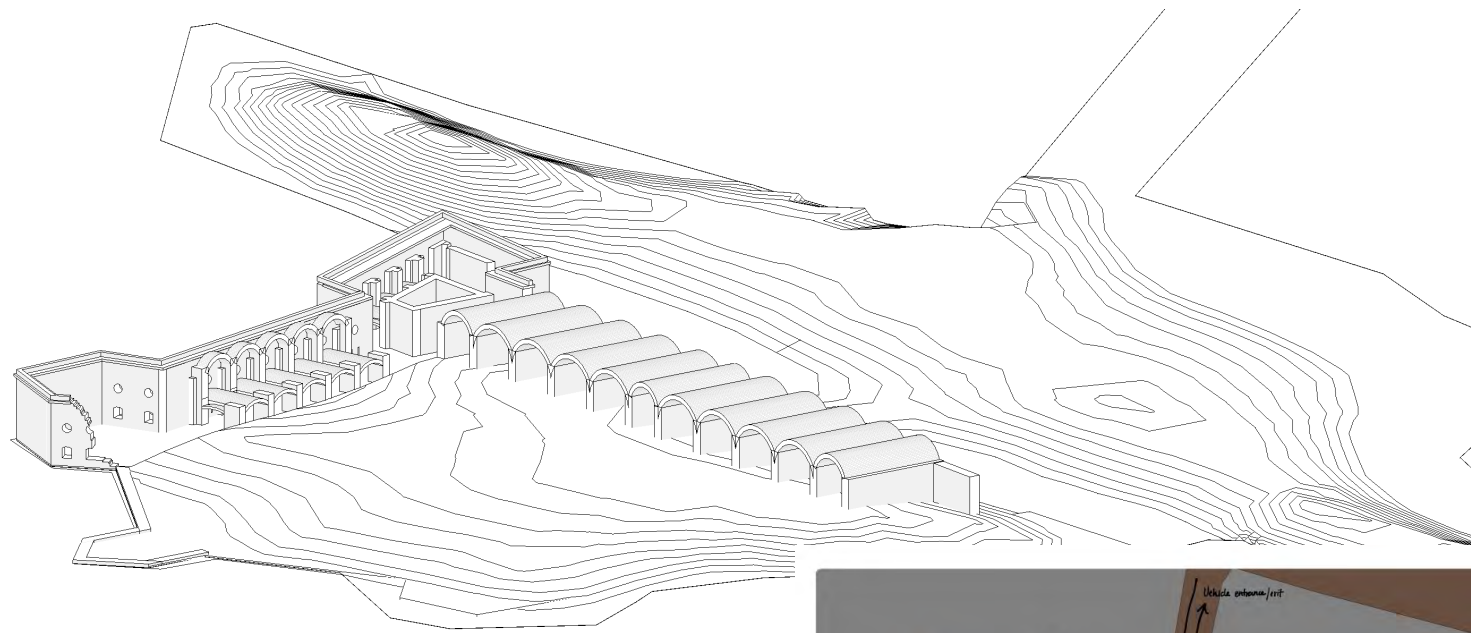


Figure 96 | Final Design

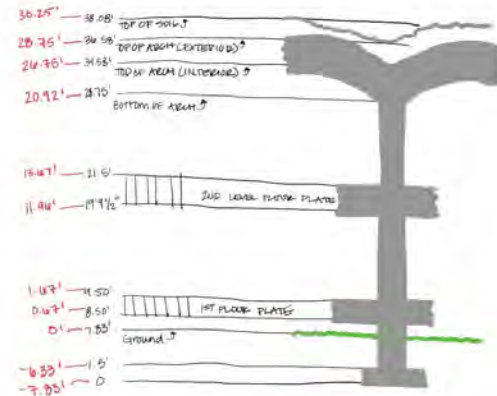
THE DESIGN

Despite the popularity of border issues in today's media, the spatial transcendence, which borders create, remains unrecognized. This thesis discusses the relationship between architecture and borders. Looking at a border through the lens of a designer offers a variety of perspectives into the different ways in which individuals and societies cross borders. From this perspective, they are no longer looked at as a line, but as a tool, which humans created to bring order to chaos within the mind and the physical world.

"Transcending Borders" creates a common ground where exclusive societies can cross borders as one. This is architecturally expressed as a museum, retreat center, and a monument on a historical site intersecting national and international borders. The project demonstrates that the space a border creates cultivates community while maintaining identity, diversity, security, and a sense of place.



LEVELS OF FORT MONTGOMERY



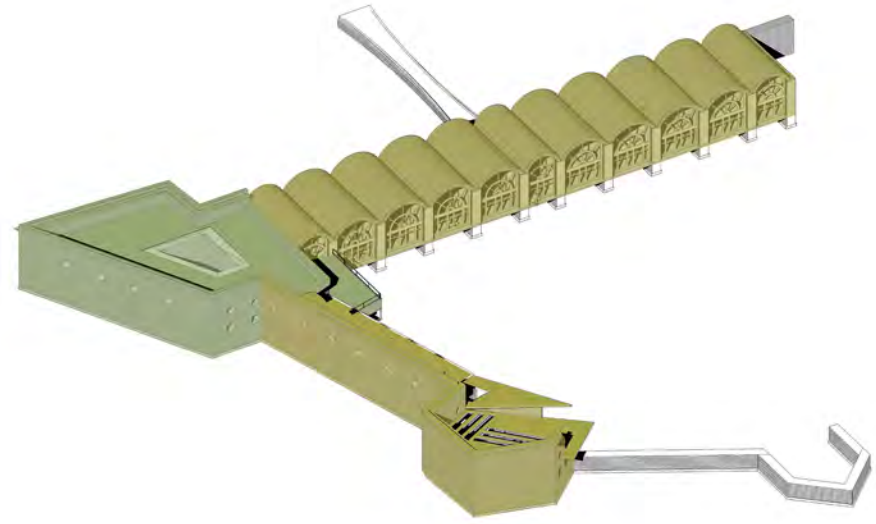
DESIGN PROGRAM

I began the design process by modeling the existing ruins that exist on the site. I used scans of the original drawings to help decipher what had been demolished and what was existing. I received the architectural drawings and photographs after reaching out to the Jim Millard, the author of the book, "Bastions on the Border – the great stone forts at Rouses Point on Lake Champlain."

The sections were helpful for determining the dimensions of different structural elements as well as modeling the existing remains in revit.

Once the remains were modeled, the process of fitting the program into fort began.

Figure 97 | Design Process



- MUSEUM**
 SEPARATES | DIVIDES | ORGANIZES
- RETREAT**
 EXCLUDES | INCLUDES
- RETREAT**
 EXCLUDES | INCLUDES

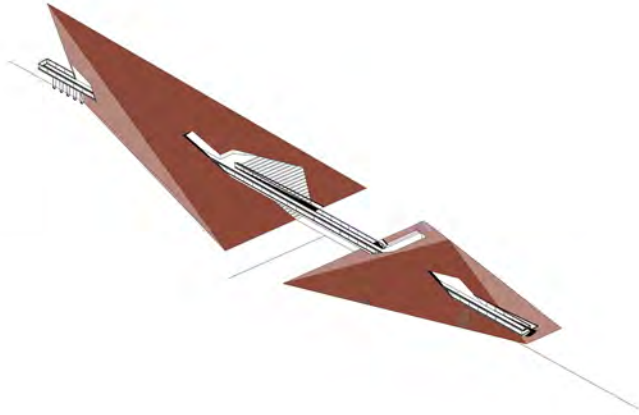
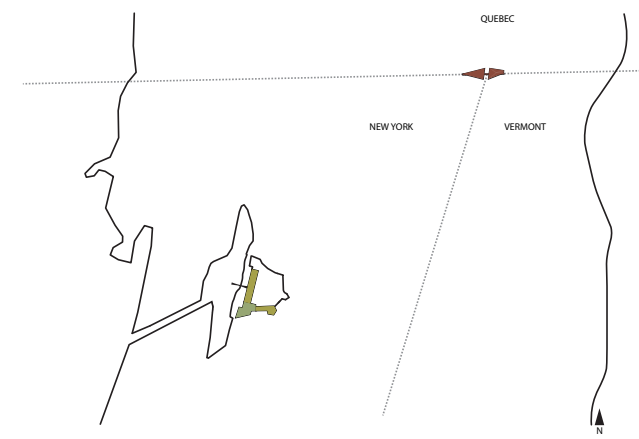


Figure 98 | Program

DESIGN PROGRAM



The program was founded using the three characteristics that defined a border in my research. The museum will define borders through separation, division, and organization. The retreat will define a border through exclusion and inclusion of private and public spaces. The monument on the international border intersection will define a border as being crossable.

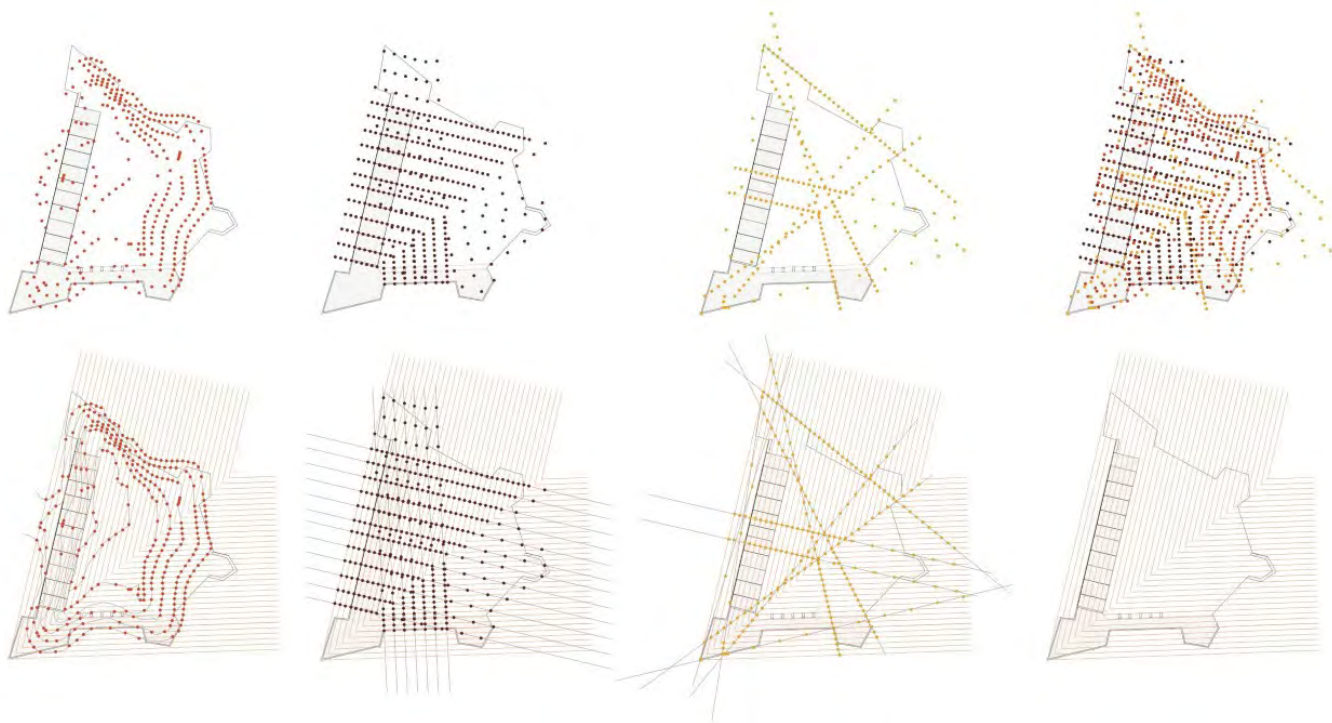


Figure 99 | Design Rhythm

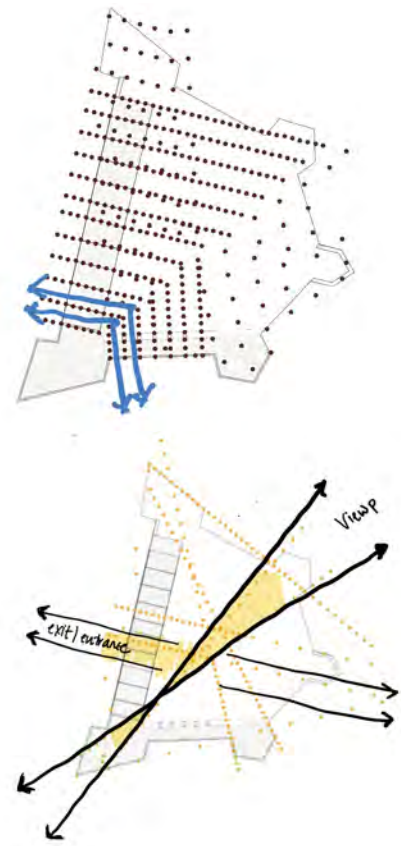
DESIGN RHYTHM

In search of a design rhythm, I did four grid investigations and mapped the intersections between the grids or between the grids and topography. These intersections were marked with a circle. This exercise determined the circulation and the connection spaces between the two curtains of the fort.



Figure 101 | Site Design

SITE DESIGN



Taking a closer look at the site plan, we can begin to understand how the rhythm investigations were used to connect the two curtains of the fort within the site design. The pools form a strong axis from the fort to the monument located at the border intersection.

Border crossings were taken into close consideration when designing for the type of activities that the site allows. A telescope platform where visitors can take a closer look at the monument and the shorelines of Lake Champlain is located at what was Bastion number one of the original fort. These telescopes allow visitors to take a closer look at what lies across the border.



Figure 102 | Infinity Border

THE SITE

The borders between pools are wide walkways that connect the two curtains of the fort. The fresh water from Lake Champlain and the water from the pools is separated by clear glazing. This thin border allows for uninterrupted views of the lake and monument while still separating the different types of water.



Figure 103 | Wedding Ceremony

THE SITE

As human beings, we create borders around us that make us unique individuals. Once two people are married, the border diminishes, and the two individuals become one. The outdoor wedding space on the site allows two individuals to romantically and spiritually break down borders between each other.

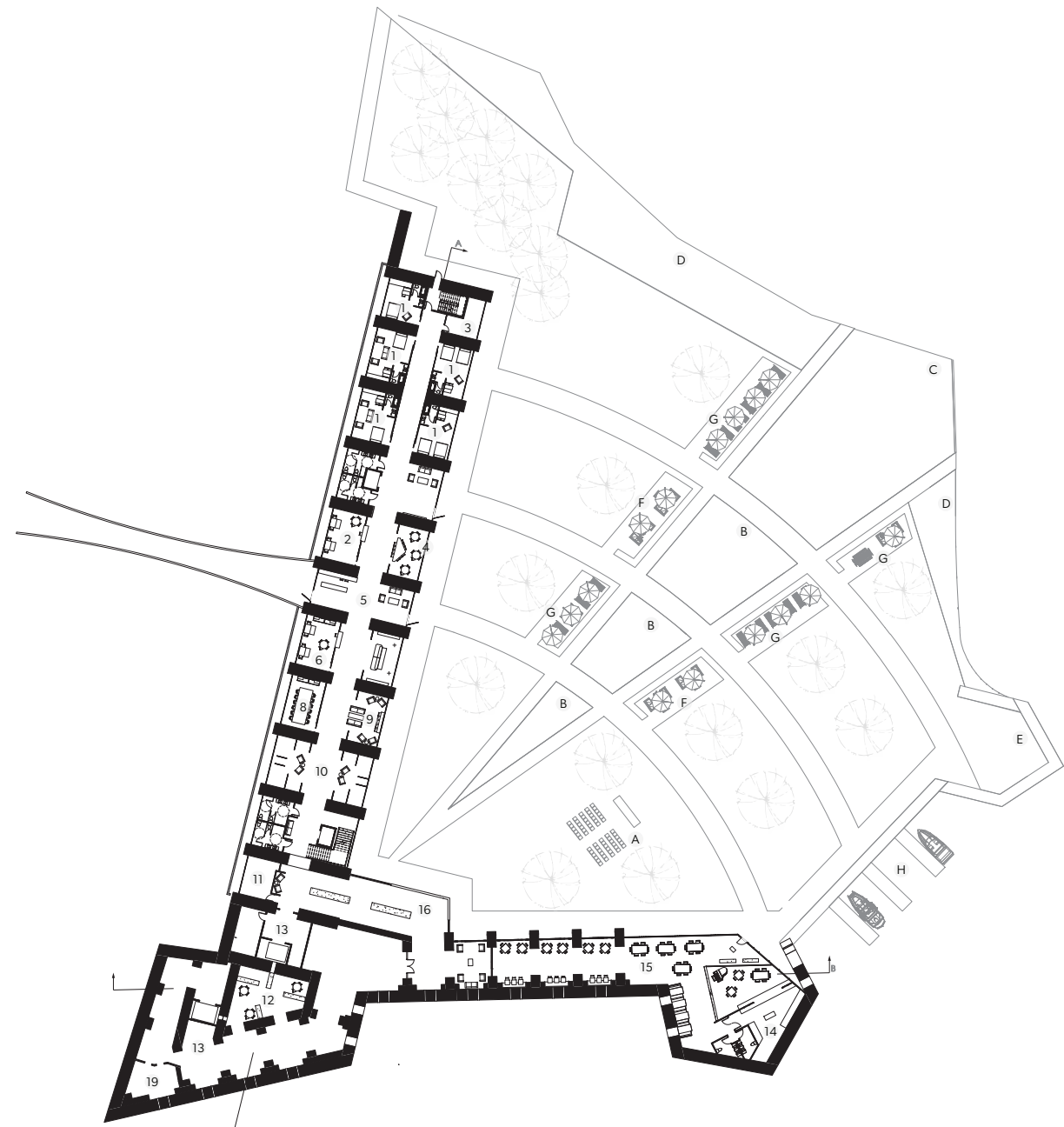


Figure 104A | First Floor Plan

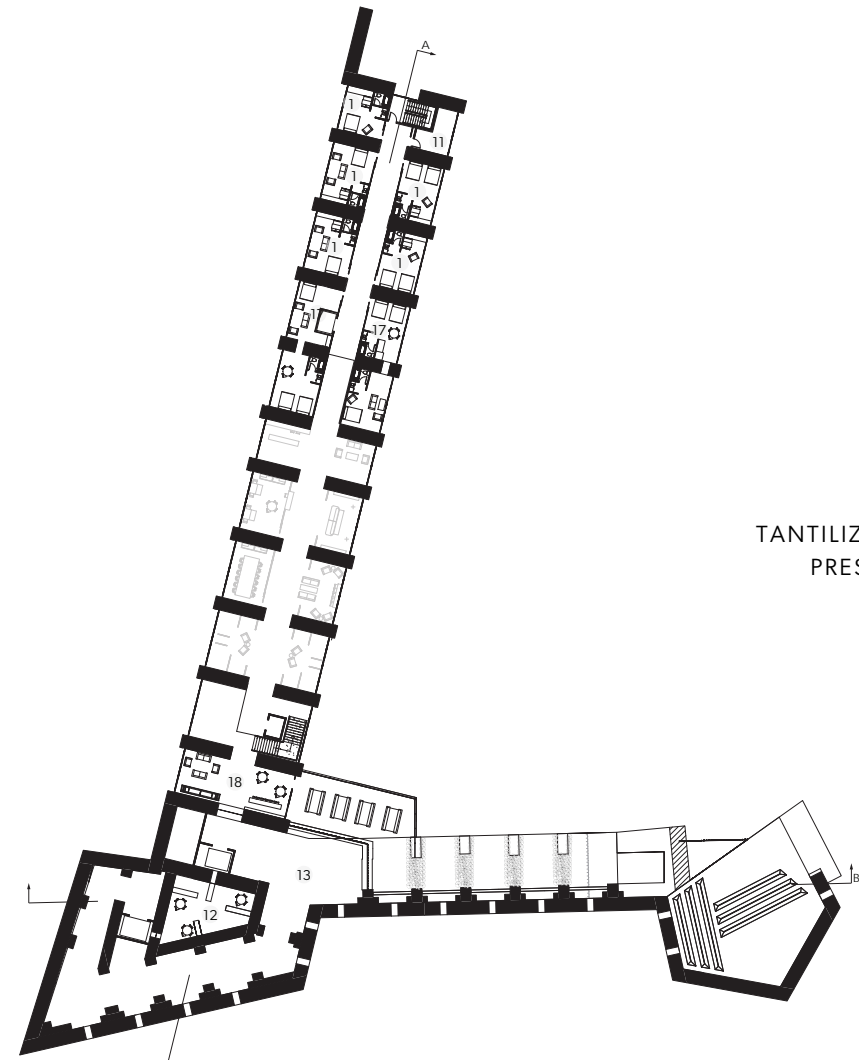


Figure 104B | Second Floor Plan

- RETREAT ROOM 1
- RETREAT OFFICE 2
- LAWN CARE 3
- RETREAT LOBBY 4
- ENTRANCE 5
- MUSEUM OFFICE 6
- MUSEUM GIFT SHOP 7
- CONFERENCE ROOM 8
- MUSEUM LOBBY 9
- GALLERY 10
- MECHANICAL 11
- GUN MAGAZINE ATRIUM 12
- MUSEUM 13
- RESTAURANT 14
- KITCHEN 15
- TANTILIZING MONUMENT VIEWING 16
- PRESIDENTIAL RETREAT ROOMS 17
- SMALL EVENT SPACE 18
- OVEN REMAINS 19



Figure 105 | Fort Entrance

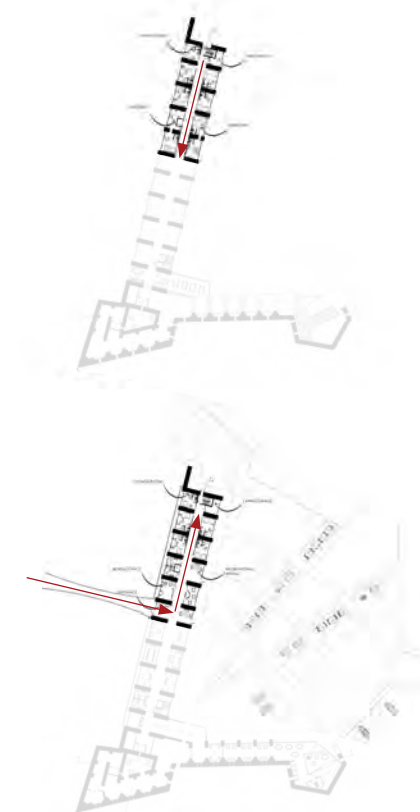
FORT ENTRANCE

Upon entering the fort, the visitor crosses the border over the original moat that flows between the parking lot and the fort. Keeping the archways transparent was an important design goal that was inspired by how the structure remained on the site after demolition. This allows light to transcend through the interior and showcase the life that takes place within the fort.



Figure 106 | Retreat Room

RETREAT | PRIVATE SPACES



The retreat is organized into public and private spaces. The north side is the most private area. A guest at the retreat will enter the fort and take a left to the retreat lobby where they will check into their room. They also have the option to check out the rental shop to see if there are any kayaks available to rent for the day. There are 12 total guest rooms, 5 on the first floor and 7 on the second floor.

The retreat rooms are designed to be small, intimate spaces that allow people to step away from the busyness of the fort. They are places of exclusion that can only be entered if reserved. The large window becomes a physical representation of a border between spaces of exclusion and inclusion, private and public. Retreat rooms that fall on the second floor, such as this one, have the luxury of being able to look down on everyone who occupies the site. This border between level 1 and level 2 is inspired by a commonly known border we experience in the world, the border between hierarchies.



Figure 107 | Fort Montgomery Art Gallery

RETREAT | PUBLIC SPACES



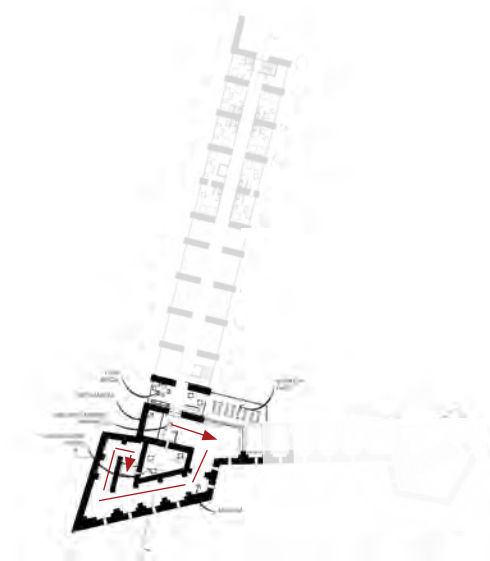
A visitor that is maybe only visiting for the day, enters the fort and takes a right. Here the visitor could either check into the museum, look around the museum gift shop, walk around the Fort Montgomery Art Gallery, head upstairs for a small event in the Club room, or head to the restaurant for a nice lunch or supper.

The Fort Montgomery Gallery is a space that shares the history of the fort including the original architectural drawings, original photographs of the fort, and the photographs of the remains after demotion. This space allows the visitor's minds to step back into history while standing in the present, illustrating the border between then and now.



Figure 109 | Cannon Opening

MUSEUM | SECOND FLOOR



Once the elevator door opens to the second level, the space is filled with natural light that is filtered through a shading screen. The visitor will interact with different types of technologies to understand the history of the fort.

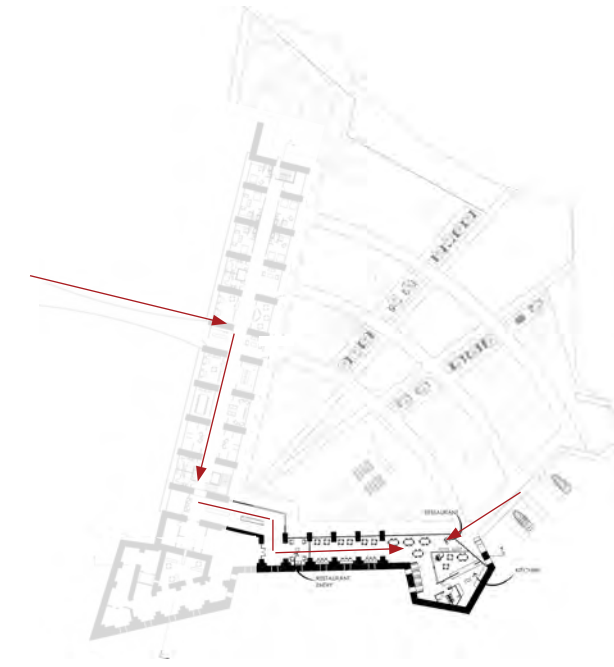
The visitor will then begin to make their way through the archways and be able to look through the cannon holes out onto the lake. These empty cannon holes allow us to reflect on how borders are everchanging. Long ago, they were loaded, pointing to the north, then they were dismantled, and relationships were mended, and now today, the condition of the northern border is completely different then it was when I first started this project.

The further they get into the museum, the darker it becomes. The path is halted by an elevator that takes them down to the first floor. This elevator also has a narrow glimpse of a bright atrium to symbolize that maybe there is light on the other side of this darkness... peace instead of war.



Figure 112 | Restaurant

RETREAT | RESTAURANT



we ate at in Montreal during my site visit. The menu changed everyday and was handwritten in Italian. The restaurant allowed me to experience the Italian culture without even crossing an ocean. This experience has become one of my most memorable meals and was something I wanted to create on the fort grounds. Imagine, walking through the fort, or docking your boat near the northern border to experience the French culture, that is so prominent in this area, through food and drink in this welcoming environment.

The skylights were intentionally placed to showcase the 2nd floor ruins. This also becomes a border between modern and historic construction.

Guests coming to the fort to eat in the French inspired restaurant have the option of entering through the main drawbridge into the fort or arriving by boat and docking on the shoreline.

The restaurant is mostly new construction but sits inside what was Bastion B in the original fort. Instead of pairing the limestone with design elements that are black...like the large mullions in the existing fort...the limestone in the restaurant is paired with white design elements. The color white along with the different filtrations of natural light create an exciting space to share a meal with close friends and family.

The shading screen filters light in fun patterns to create an ambiance that sparks laughter and creates a mood that always says yes to dessert. It is through the sharing of food that cultural borders are crossed. The notion of crossing borders through food was inspired by an Italian restaurant that



Figure 113 | Materials

- RETREAT ROOM 1
- RETREAT OFFICE 2
- LAWN CARE 3
- RETREAT LOBBY 4
- ENTRANCE 5
- MUSEUM OFFICE 6
- MUSEUM GIFT SHOP 7
- CONFERENCE ROOM 8
- MUSEUM LOBBY 9
- GALLERY 10
- MECHANICAL 11
- GUN MAGAZINE ATRIUM 12
- MUSEUM 13
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- KITCHEN 15
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- PRESIDENTIAL RETREAT ROOMS 17
- SMALL EVENT SPACE 18
- OVEN REMAINS 19

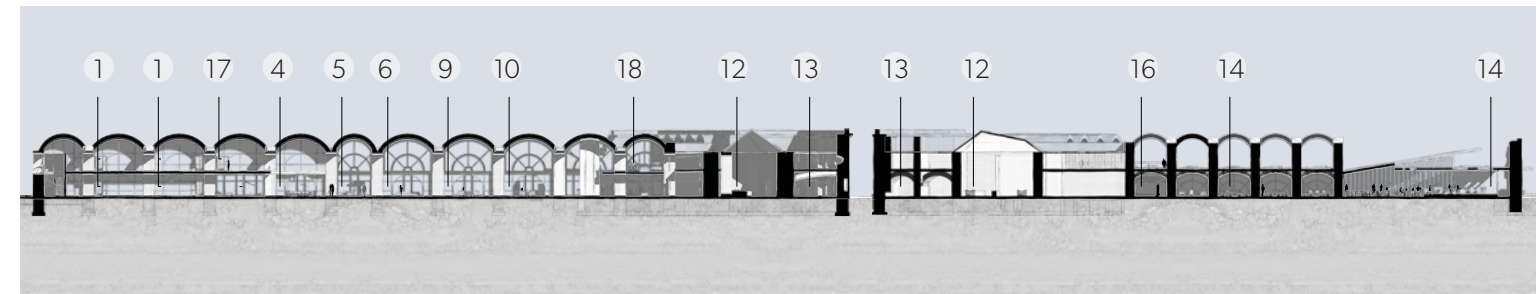


Figure 114A | Section A & B



Figure 114B | Mechanical Section

Here are a couple sections going through the fort. Section A cuts through the Retreat, lobby spaces, and museum. Section B cuts through the museum and the restaurant. We can see the two-story gun magazine within the museum.

During the renovation, the construction crew will excavate below grade to put the HVAC and water lines under the first floor. The warm and cool air will travel up, across the arch, and down the other side.



Figure 115 | Fort Montgomery Retreat & Museum



Figure 116 | Aerial Rendering

Fort Montgomery, once an armed military fort, and then vandalized ruins, is now a symbol of life and friendship between the United States and Canada. Winston S. Churchill once said, "That long Canadian frontier, guarded only by neighborly respect and honorable obligations, is an example to every country and pattern for the future."

The fort now offers a fun and accessible experience where friends and families from near and far can create memories together.



Figure 117 | Monument Silhouette

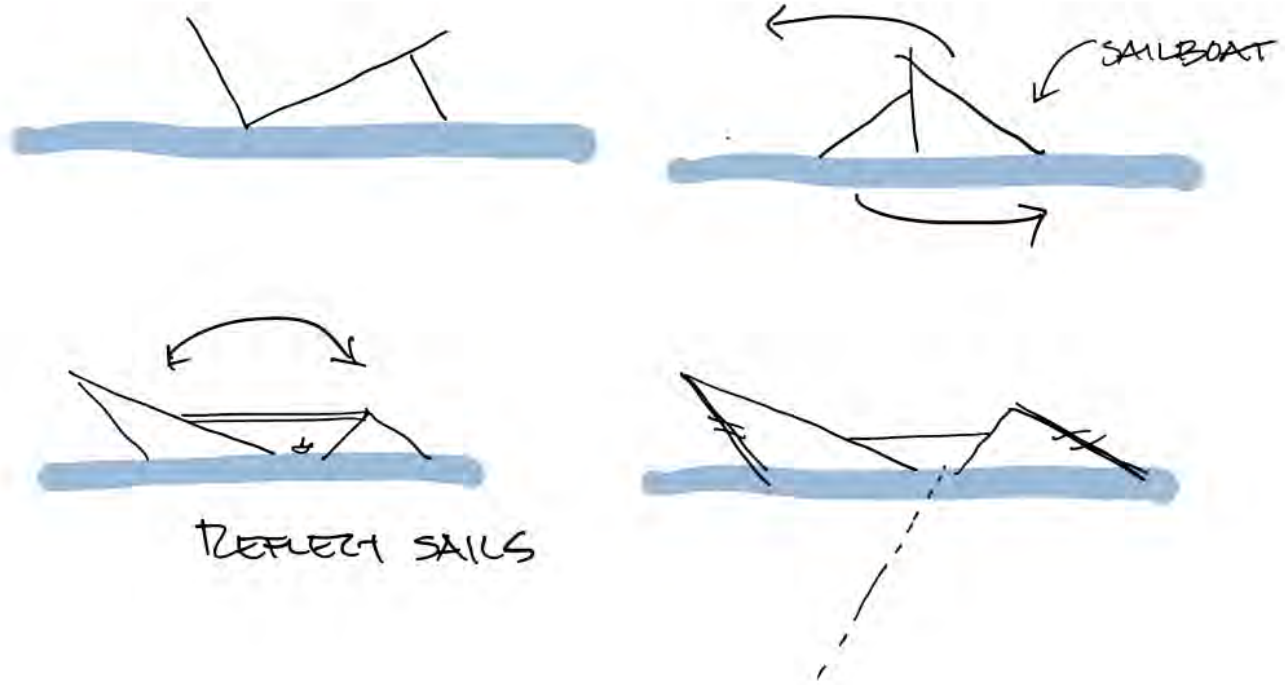
MONUMENT

“I consider the monuments to be true hybrids, existing between art and architecture, they have a specific need or function, yet their function is purely symbolic.”

-Maya Lin

The border monument commemorates the essence of a border experience. It preserves memories of crossing borders. A border passing through the water between Canada and the United States is unique because it can be passed without any type of identification as long as the visitor doesn't step onto the land. The monument was designed with an intention to keep the physical border line fluid and unmarked. The visitor will have an idea where it exists, but nothing will be marking the exact spot.

Figure 118 | Monument Design



MONUMENT

The form of the monument was inspired by the shape of the sails on a sailboat and then reflected across the vertical axis. This allows the New York and Vermont border to stay fluid and unmarked.

This is an illustration of the North and South elevations of the monument. It starts to show the activity and how the visitors can interact with it in the open water seasons. A visitor will dock their boat at the monument and climb up the monumental stairs. At the top of the stairs they will step onto the skybridge that follows the international border and connects the two structures, one in New York and another in Vermont.

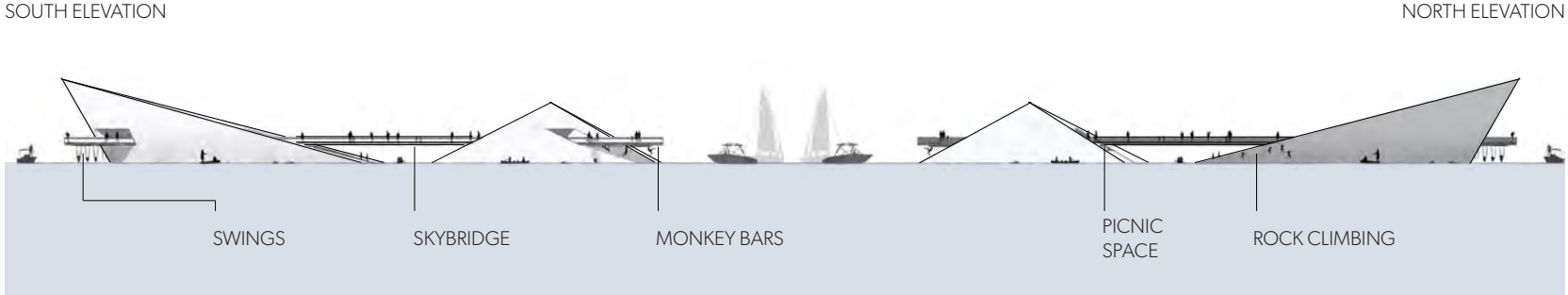
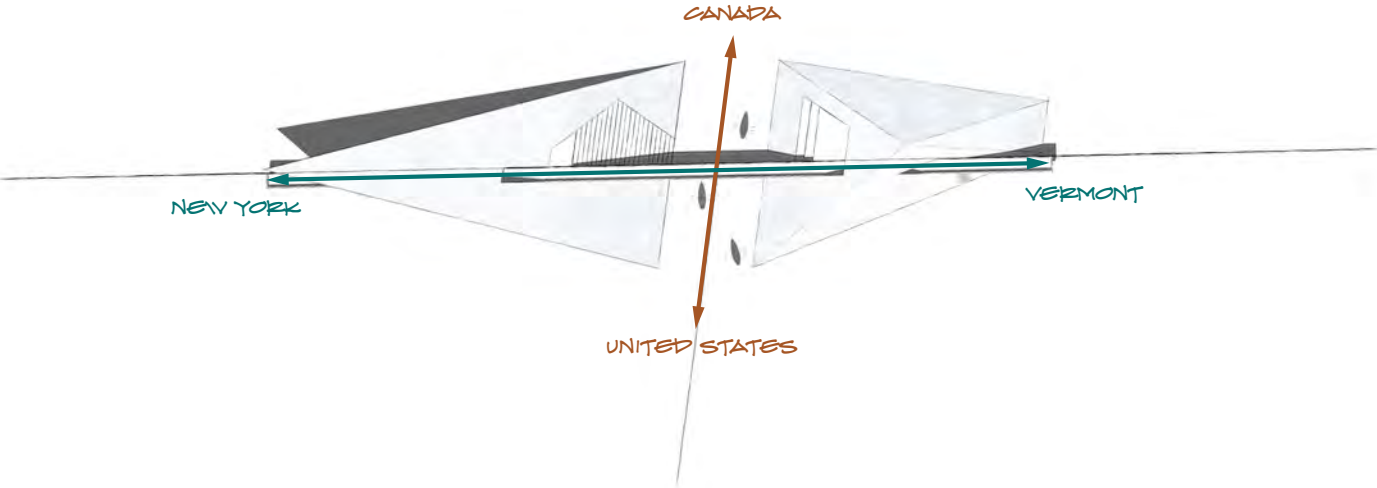
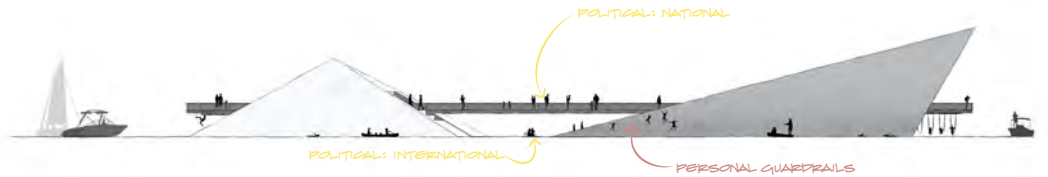
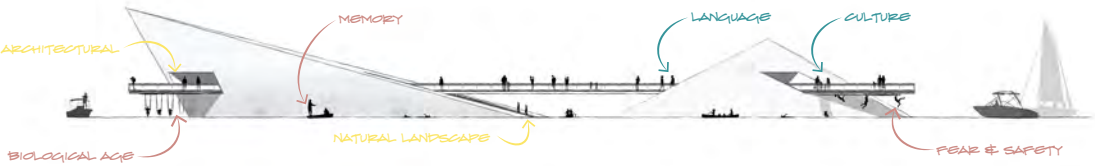


Figure 119 | Monument Border Crossings



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MONUMENT

This illustration shows how the monument is orientated on the border and the two distinct motions of crossing the visitor will take going from New York to Vermont and the United States to Canada.

Borders can be crossed by the activities that are designed within the monument. These crossings were investigated in my border catalog research.

A few to note include the border between fear and safety. This border crossing is designed using monkey bars that are elevated over the lake. Another border crossing that a visitor could experience would be a language border. The path that passes through the two structures long and narrow. This allows for the exchange of "pardons" and "excuse me's to be spoken in many different languages and accents.

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Figure 119 | Monument Swings

MONUMENT

The monument is constructed out of light framed timber and a system of hollow tubes under the water that allows the monument to float and is anchored to the bottom of the lake. The structure is covered with blue thermochromic plastic tiles that changes from a dark blue to a bright white due to the amount of heat gain on the monument.

Swings below the skybridge allows visitors to swing back and forth across the international border. This is a fun way that the monument allows the users to create memories of crossing borders.

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PREVIOUS STUDIO EXPERIENCE



Figure 120 | Renaissance Hall

2nd Year | 2016 - 2017

Fall | Cindy Urness
Tea House | Fargo, ND
Contemplation & reflection design

Spring | Milt Yergens
Dwelling | Cripple Creek, CO
Designing for the client
Bird House
Designing a home for a bird

3rd Year | 2017 - 2018

Fall | Regin Schwaen
Adaptive Reuse + Preservation | Nekoma ND
Adapting a program to a cold war pyramid

Spring | Mike Christenson
IIT Institute of Design | Chicago, IL
Designing for higher education

4th Year | 2018-2019

Fall | Bakr Aly Ahmed
Capstone | High Rise | Miami, FL
Mixed-use, high rise design

Spring | David Crutchfield
Urban Design | Venice, Italy
Urban planning for a futuristic city
Residential Design | Fargo, ND
Marvin Windows Competition, first place

5th Year | 2019-2020

Fall + Spring | Ganapathy Mahalingam
Advanced Architectural Design | Design Thesis | Rouses Point, NY
Alpha Rho Chi Award
Mckenzie Award Finalist