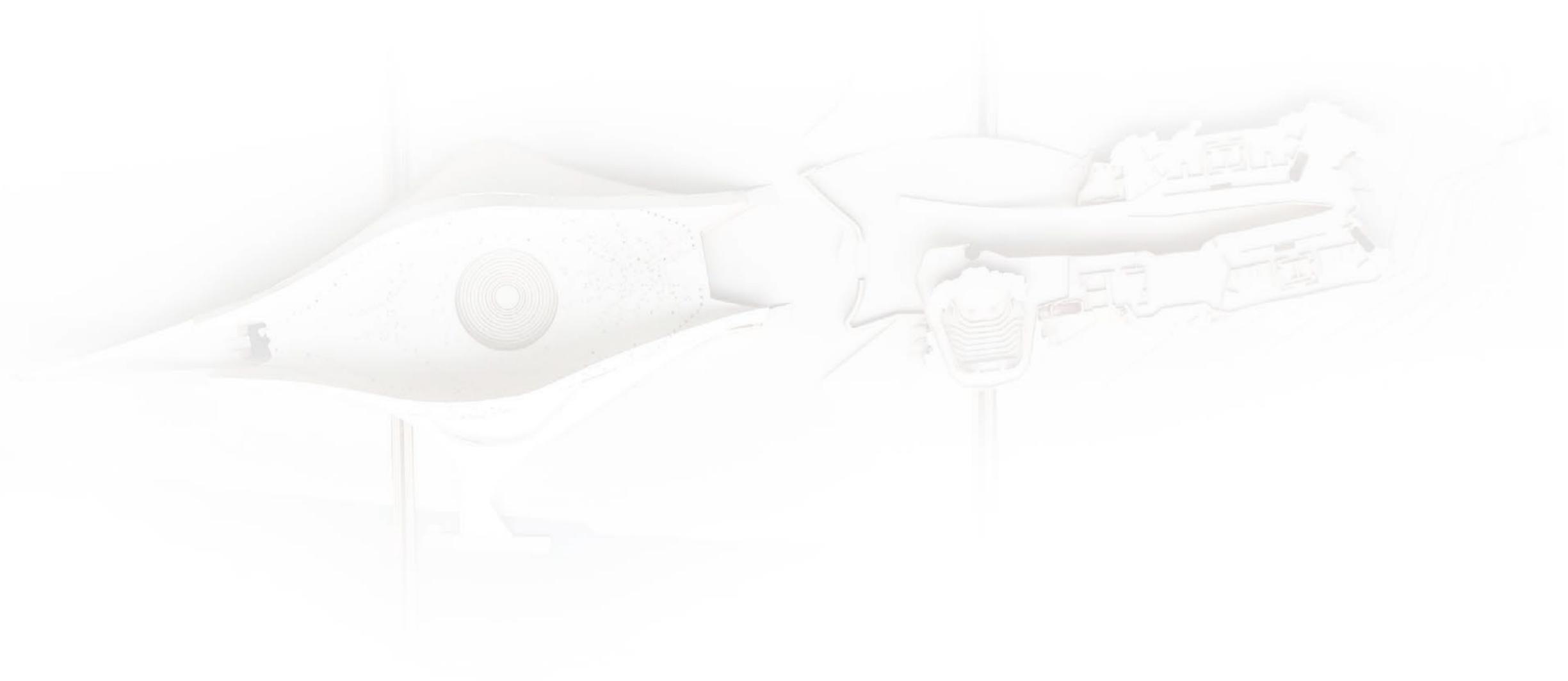


BEN HAYWARD
100782160



BUILDING REPORT
STUDIO4

MEETING OF THE WATERS

My vision for this site is perhaps best conveyed through an image: 'the meeting of the waters'. By this I mean to connote a place of confluence between two different streams of being, two ontologies, or two ways of understanding what it means to be human. One stream might be labeled "Euro-centric", "Western", "Colonial", or "Industrialized": the other "Indigenous", "Subaltern", "Aboriginal", or "Shamanistic". Each set of labels evokes a distinct set of perspectives and prejudices. No set of labels is without serious deficiencies.



Chaudiere Falls 1815, Toronto Public Library

INTRODUCTION

As I approached this project, I felt confident in my knowledge of the site due to countless hours I have spent training at the near by national whitewater paddling. My initial thoughts were to design a new whitewater centre and national sports facility that would serve as my dream training facility. While I continue to dream about designing the ideal whitewater facility, I found the mission too self indulgent with more to focus on hydro dynamics rather than the architecture itself.

Looking for something worthy of good design, I began to look at the neighbouring Victoria Island and the existing First Nation's cultural site that exists there. I began on the idea of expanding their presence with an institute focused on a new approach to resolving First Nation's issues.

Approaching this project as a white male from a colonial background, the confidence I once had was completely overturned and I began to understand this site from a completely naive standpoint. While it was impossible with the time frame of this project to do sufficient field research, I was able to surround myself with experts who have worked actively in indigenous affairs, or in the pursuit of designing for indigenous peoples.



GUIDING BELIEFS

CONSULTANTS

Douglas Cardinal
Regarding the nature of Western and First Nations' ontologies as well as his plans for a cultural centre on neighbouring Victoria Island.



Kimberly Hayward, (Cousin)
Currently completing a Master's of Arts in Native Studies at the University of Alberta and has been working for the past year on reserve with the Fort Nelson First Nation.



Brad Janvier,
Project Officer, Aboriginal Affairs and Northern Development Canada (AANDC)
Regarding current state of Aboriginal Affairs



Denyse Hayward, (Mother)
Currently working to develop literacy programs with the Ermineskin Cree and the Samson Cree Nations in Hobbema, Alberta.



Joan Chess,
Program Manager, Fraser Basin Council, Smart Planning for Communities, who works with provincial, local, and First Nation governments to develop sustainable approaches to community planning and urban design.

Approaching this project with humility and with advise from consultants working intensitvly in this field I was able frame my vision in certain beliefs:

1. There exists on-going unhealthy opposition in Canada (along with many other post-colonial nations) between main-stream society and aboriginal peoples who have been politically and culturally marginalized.
2. Treaties that set the terms, rights, and "reservations" for how both groups should live are often rooted in mandates to assimilate into a hegemonic western society.
3. The two groups can benefit by working together to fashion new modes of engagement that incorporate both western knowledge and indigenous wisdom.

DESIGN OBJECTIVES

Thesis Statement:

Create a multifaceted campus dedicated to establishing a new dialectic between western and indigenous peoples of the world.

The campus is to include:

A Communal Youth Research Based Retreat

A UN-style Parliament

A Cultural Space Open To All

UN-style Parliament

Leaders from western and indigenous communities will assemble at the centre for political discourse and indirect governance.

Delegates will advocate on behalf of their communities, confer, and ultimately develop new recommendations for global policy related to western/indigenous relations.



Cultural Space

The centre will provide a space in which people from both western and indigenous cultures can embrace other ways of understanding humanity, community, spirituality, and place within nature.

It will be a place to fashion new ways of cultural engagement between distinct peoples
It will be a place to forge new shared trajectories for the future.

Communal Youth Research

Youth delegates from both western and indigenous communities around the world will be selected to collaborate at the centre on multi-year initiatives. Delegates will engage with each other and, through social architectural media, with their home communities to address challenges arising out of friction between western and indigenous peoples. Delegates will eventually return to their home communities for the final year of their programs to help champion and implement the solutions they have developed.

DISCOURSE

Current Political and Social Discourse:

Land treaties, negotiated as they were between peoples with such wildly disparate world views, have not been particularly successful as foundations for western and indigenous relations.

The harm that has come to indigenous peoples since western colonization is self-evident. High rates of suicide, murder, drug addiction, infant mortality, incarceration, and disease affect many First Nations communities.

The resentment and outrage of First Nations peoples are similarly self-evident. And yet no means of protest seem to offer much hope of resolving the root issues. Even protests using the latest social media technologies (such as the "Idle No More" movement) have found little tangible success.

Atrocities committed during colonization and uneven division of natural resources, likely contribute greatly to the prevailing disparity between western societies and the indigenous communities they have supplanted. However, I believe the disparity is perpetuated and even augmented by ongoing misunderstandings between communities. I believe that so long as each group continues to exist comfortably within the confines of its own ontology no real progress can be made.

Indigenous Ontology

Through my albeit limited research, I have come to see certain commonalities amongst the world views of many indigenous peoples in Canada and in many cases around the world.

Animals, plants, places, and seasons all participate in a spiritual realm that transcends the physical world. Man considered to be the one being that has been gifted the power of creativity. By this merit, his role is to be a guardian to nature, holding his creativity as a responsibility to create or destroy in a way that establishes balance in the world.

The notion of knowledge is fundamentally different as well. There is not the understanding of 'Tabula Rasa' that is commonly believed in western culture. The understanding is that you are born into the world with a wealth of knowledge from your ancestors that is present in the way that we may define instinct. Much like a deer knows how to walk immediately after being born. Knowledge is then often sought after introspectively or through spirituality.

In contrast to western societies, there is relatively little social hierarchy or class structure within First Nation communities. They are predominantly matriarchal societies where women are recognized to have an understanding in regards to making the best decisions for their families and communities. The role of men are to be the implementers of such decisions. When exposed to western hierarchy where women were considered non-persons up until the 1900s, the two societal structures were diametrically opposed.

Economic structures also differ greatly from those in western societies. For instance, under the potlatch economic system of the Pacific Northwest (rigorously banned by both Canadian and U.S. federal governments), an individual's rank within the community is determined not by what he has acquired for himself, but by what he can give away to others. Also, while communities have ancestral territories, there is little concept of individual land ownership. For many pre-colonial First Nations, the idea that a man can possess land was no more comprehensible than that he could own the wind.

Western Ontology

The European powers that colonized the Americas, Australasia, Africa, and the Indian sub-continent did so with an unquestioned belief in their cultural superiority. Joseph-Ernest Renan, gave voice to these convictions in his treatise, "La Reforme intellectuelle et morale" when he stated that, "The regeneration of the inferior or degenerate races, by the superior races is part of the providential order of things for humanity."¹

Though much has changed since Renan penned those words, western ontology is still rooted in hierarchies. Fundamentally, Judeo-Christian theology preaches that Man has God-given dominion over all creation. The western ontology emphasizes objectification of nature, an inherent opposition between man and nature, and the conviction that nature can be harnessed through a rational scientific process.

Only very recently have western societies begun to understand the limitations of these perspectives.

A New Discourse

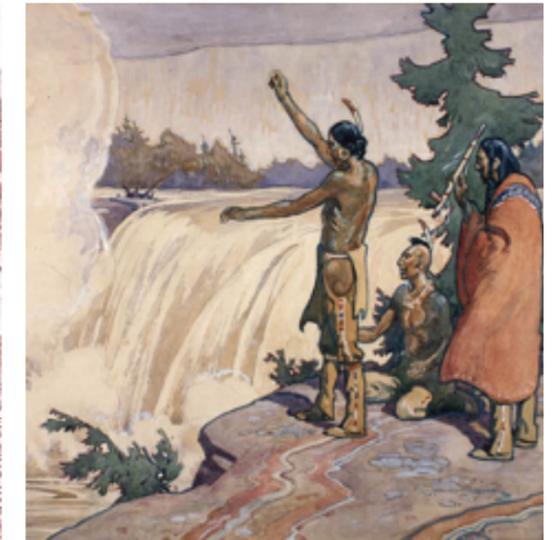
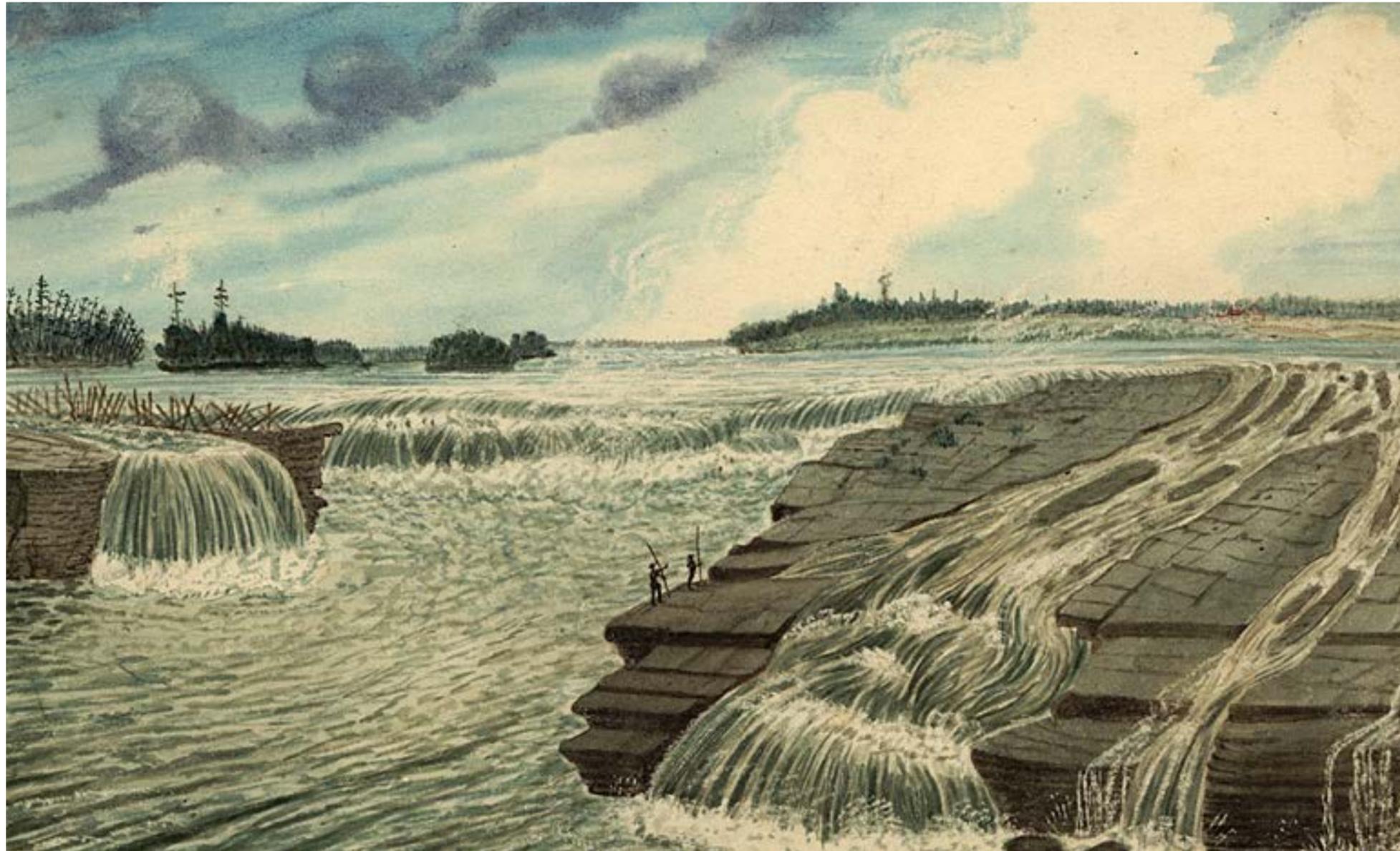
The goal through all three programs that this building is home to is to encourage the dialectic between these two ontologies for a more fundamental understanding of each other.

Indigenous peoples have much to learn and take from western creation such as technology, medicine, and scientific research but I believe that western culture has just as much to gain from an understanding of indigenous social structure, psychology, and guardianship of our environment.

This understanding will also help to contribute to more successful ways to address the issues faced in First Nations communities across the country.

THE SITE IN CONTEXT

<1613

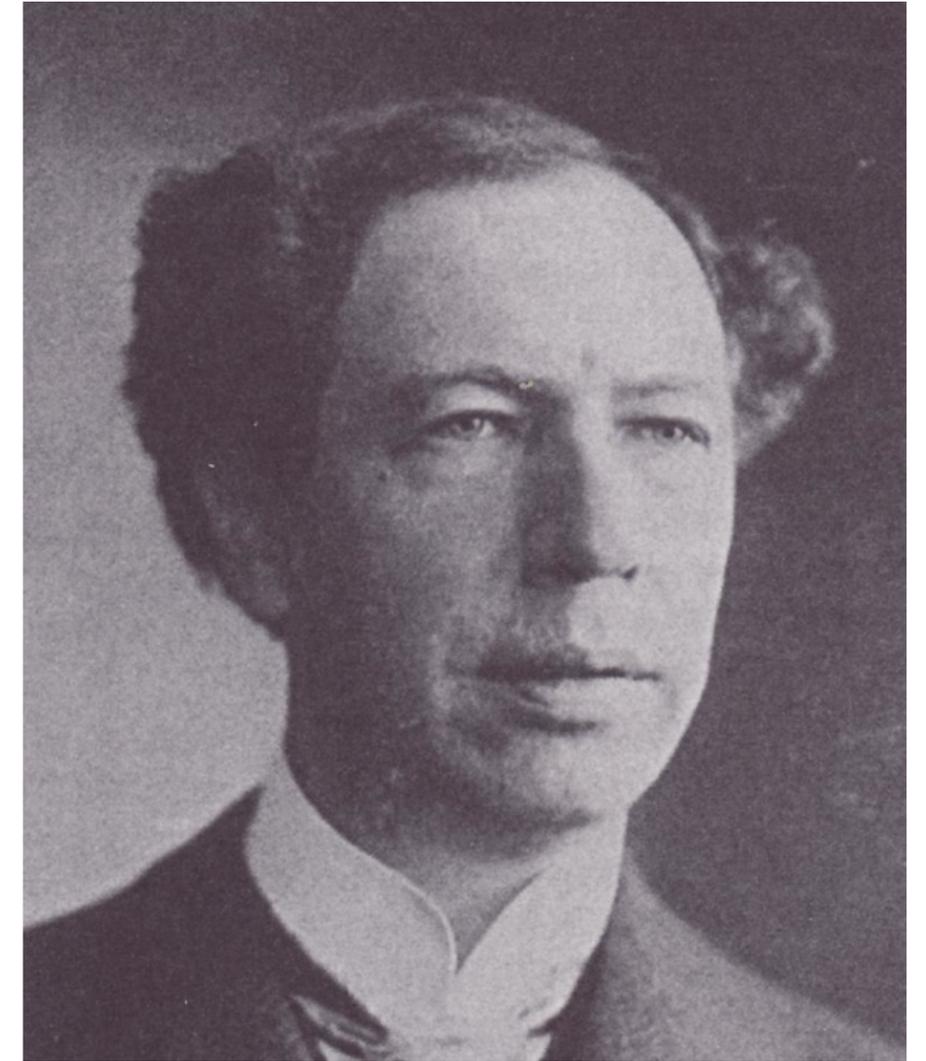


Chaudière Falls of "Asinabka" has been a place of meeting and sacred place for thousands of years. It is one of the earliest sites of human occupation in Canada. It has been the site of cultural convergence between indigenous populations and a space for political evolution and trade route. Revered for the magnificence of the falls as well as the meeting of three rivers.

After the arrival of Samuel de Champlain in 1613 the area remained a significant meeting space between indigenous and Europeans.

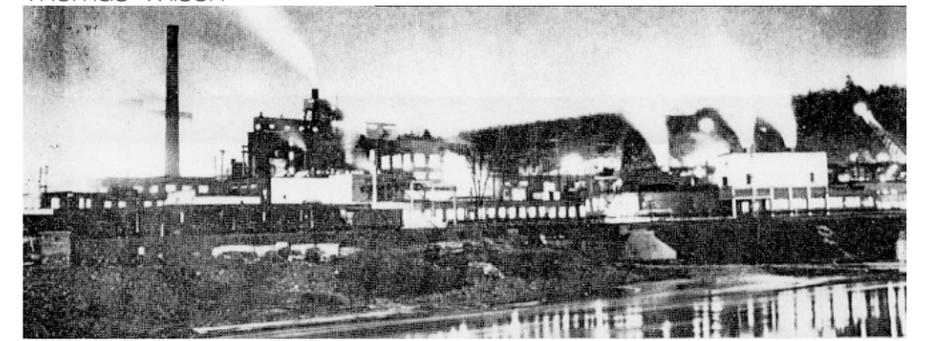
THE SITE IN CONTEXT

INDUSTRIAL REVOLUTION



Phosphate Mill

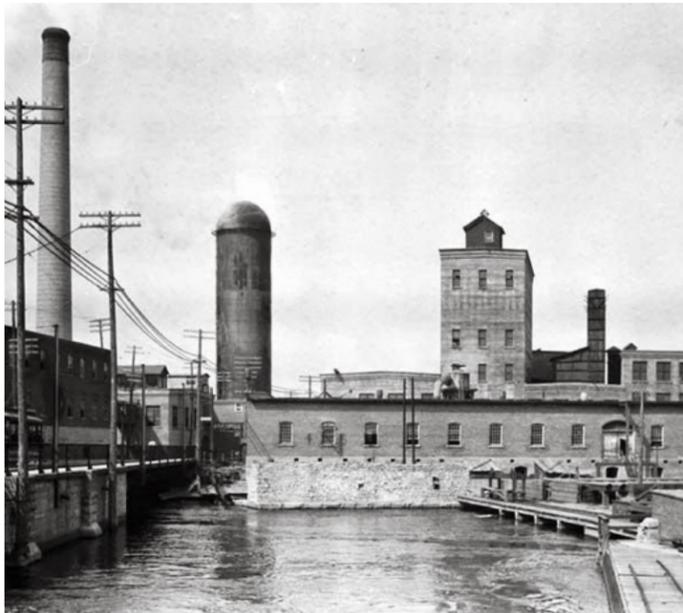
Thomas Wilson



During the industrial revolution, Thomas Wilson's experimental phosphate mill for carbide production, along with a paper mill were built on the sacred site. The Island was renamed after the colonial monarch of the time.

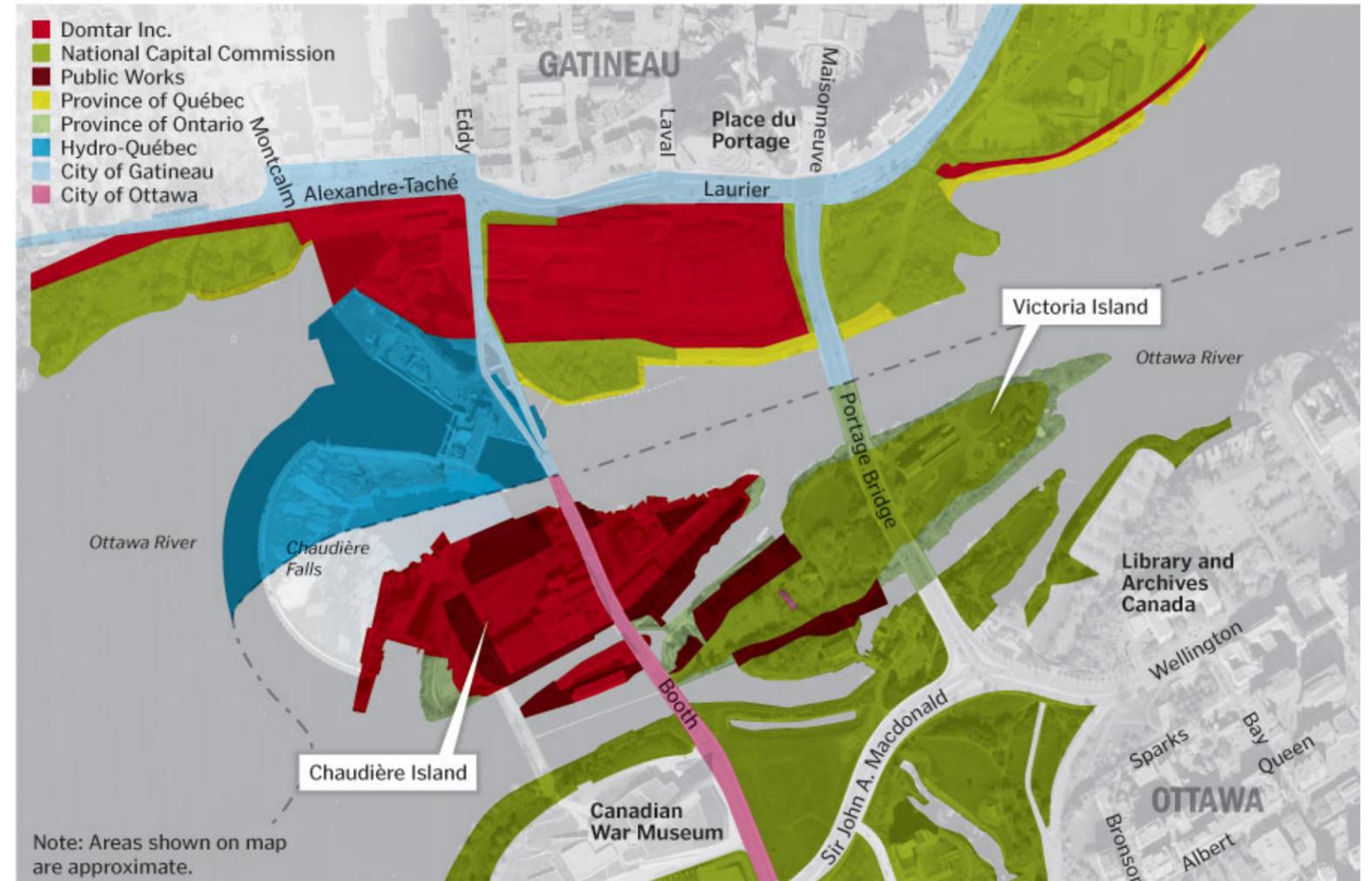
THE SITE IN CONTEXT

RECENT



The Domtar lands

The Ottawa River and island and waterfront property that house Domtar's operations in Ottawa-Gatineau, have such a complicated ownership that they are difficult to delineate, and perhaps develop. A Citizen map, drawn from several sources, shows who owns what.



In the early 1900s, Chaudière Falls were dammed and industrialized. The falls serve to power Ottawa and Gatineau but has consumed most of the land sacred to the indigenous people.



THE SITE IN CONTEXT



PRESENT W/DAY

Today these lands are utilized for the following purposes:

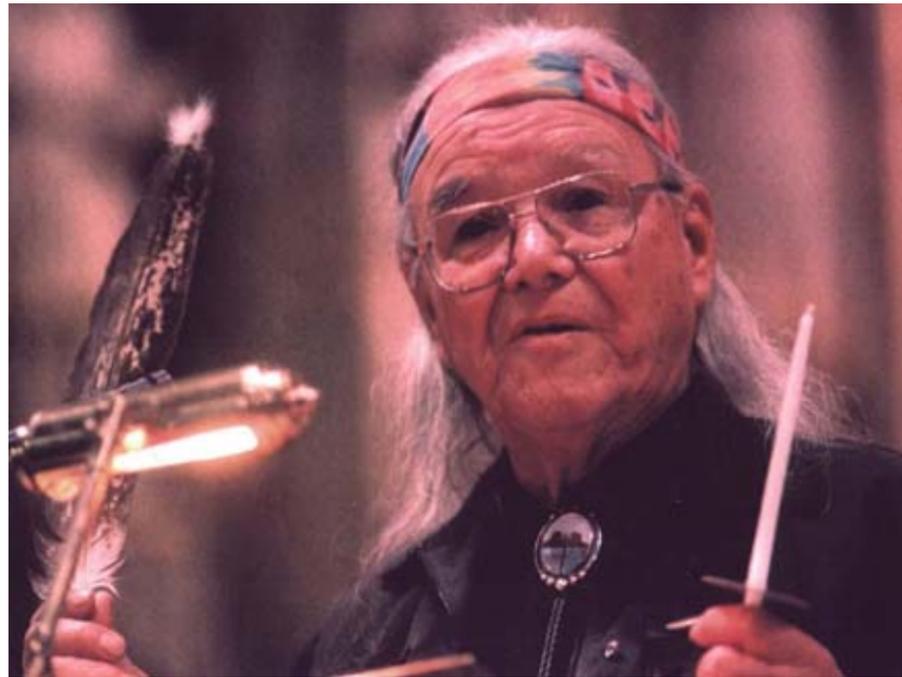
- Parkland and bike routes
- Functioning, abandoned, or repurposed factories
- Electricity production
- And the Asinabka Cultural Centre on Victoria Island.

In particular, the Asinabka Cultural Centre has become a congregation point for First Nation's affairs protests before they begin to march to parliament hill. The space is not designed to deal with politically charged activity and it functions primarily as a living history museum describing past First Nation's culture.

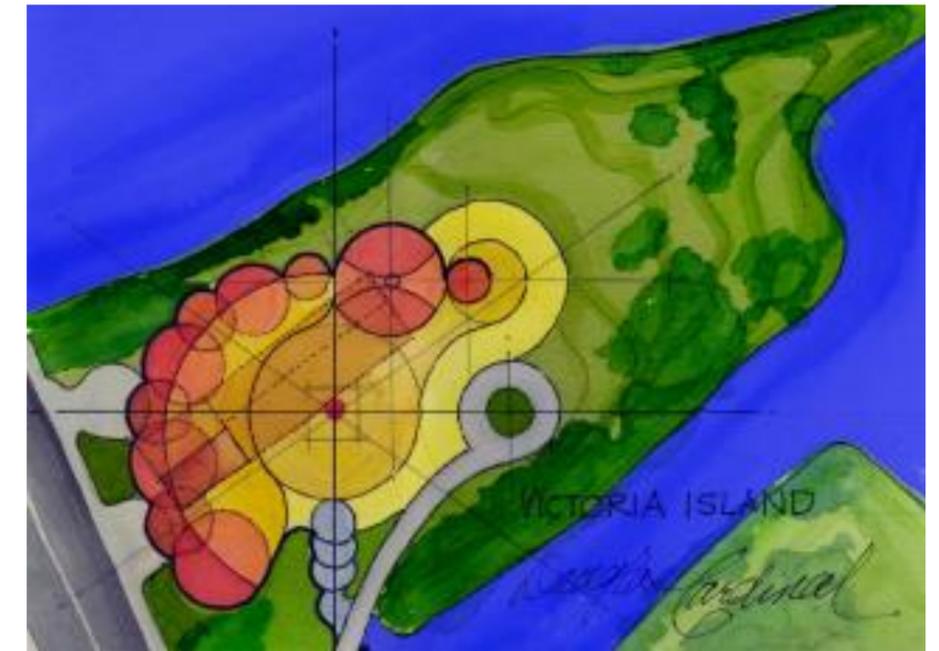
What I hope to bring to this area is a new political and cultural hub to work in tandem with the existing cultural centre on Victoria Island. Congressional space will be provided as well as a space to express indigenous culture of the present future, with little allusion to the past.

THE SITE IN CONTEXT

FUTURE PROPOSAL



William Commanda, Circle of All Nations. Visionary behind an indigenous centre for Victoria Island.



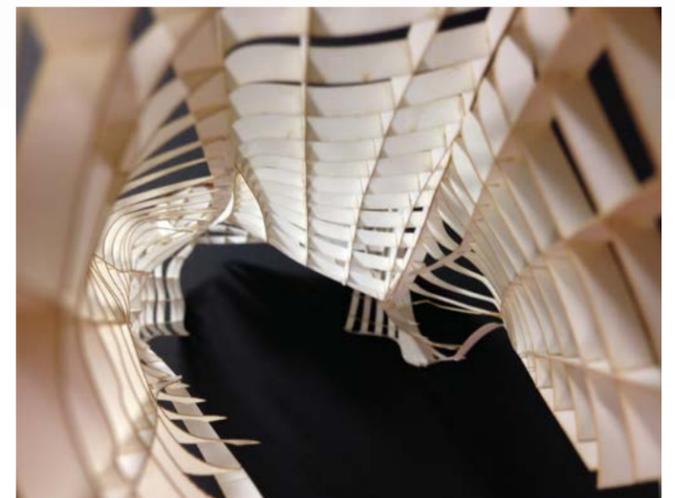
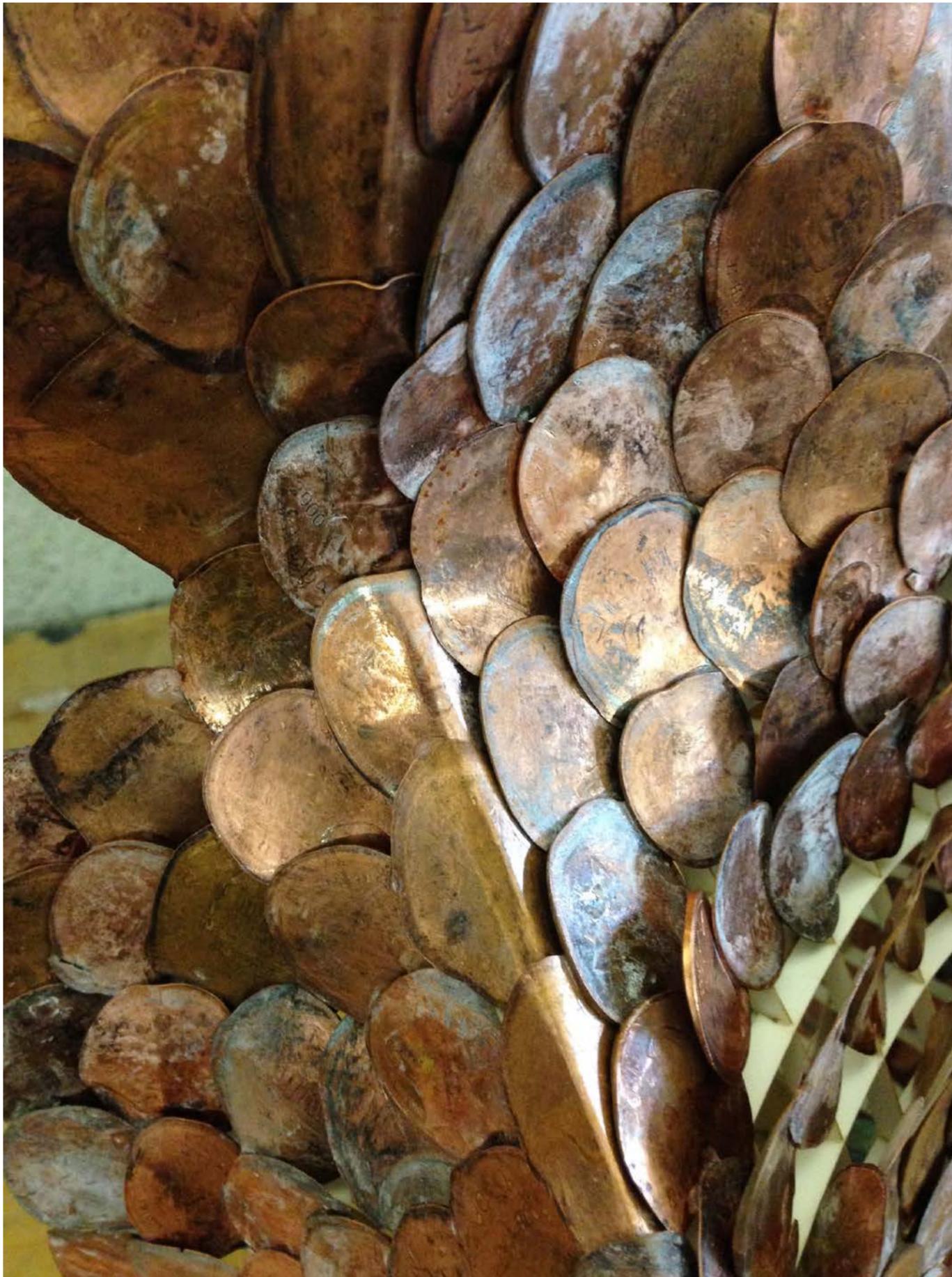
Douglas Cardinal's plan for an indigenous centre on Victoria Island

Halfway through this project, I discovered that there has been a proposal to build a modern cultural centre on Victoria Island. The project's champion was William Commanda. Douglas Cardinal drafted the preliminary designs. The proposal draws many similarities to my own project in its driving goals, yet the program and function of the spaces remain fundamentally different. Both spaces can function well together, if both are built, to transform the area below Chaudière Falls into an indigenous cultural campus.

PENNY MODEL

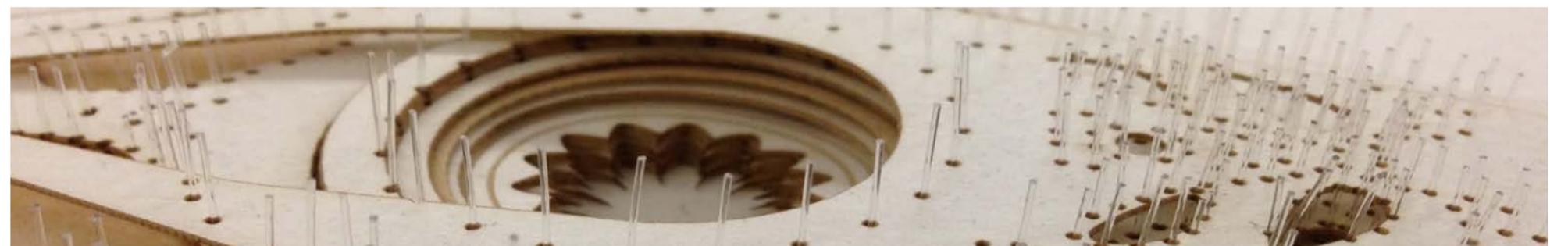
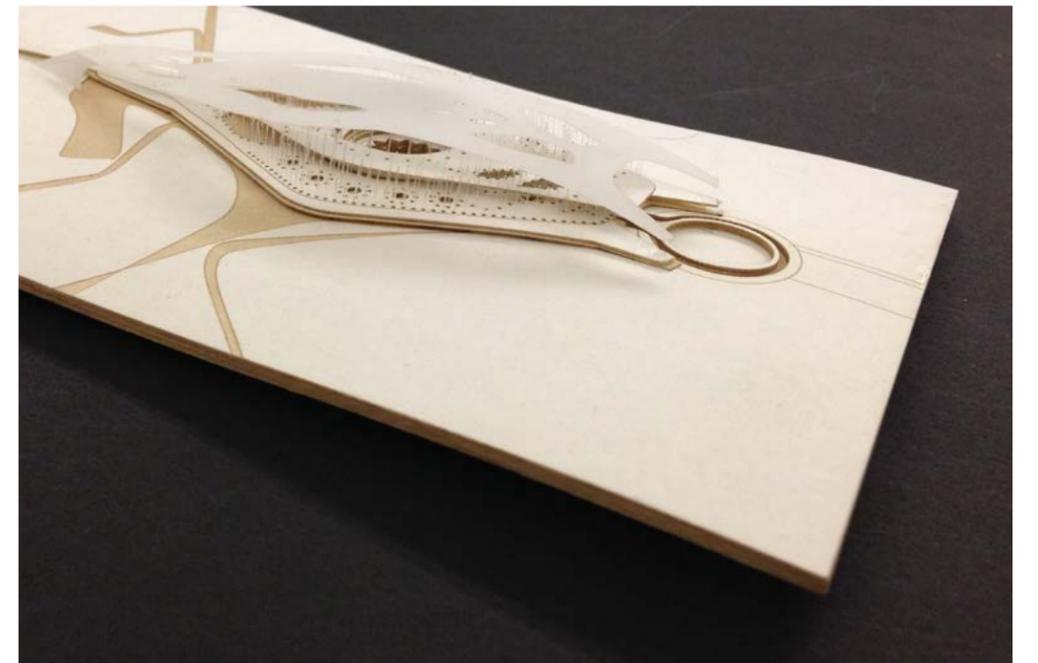
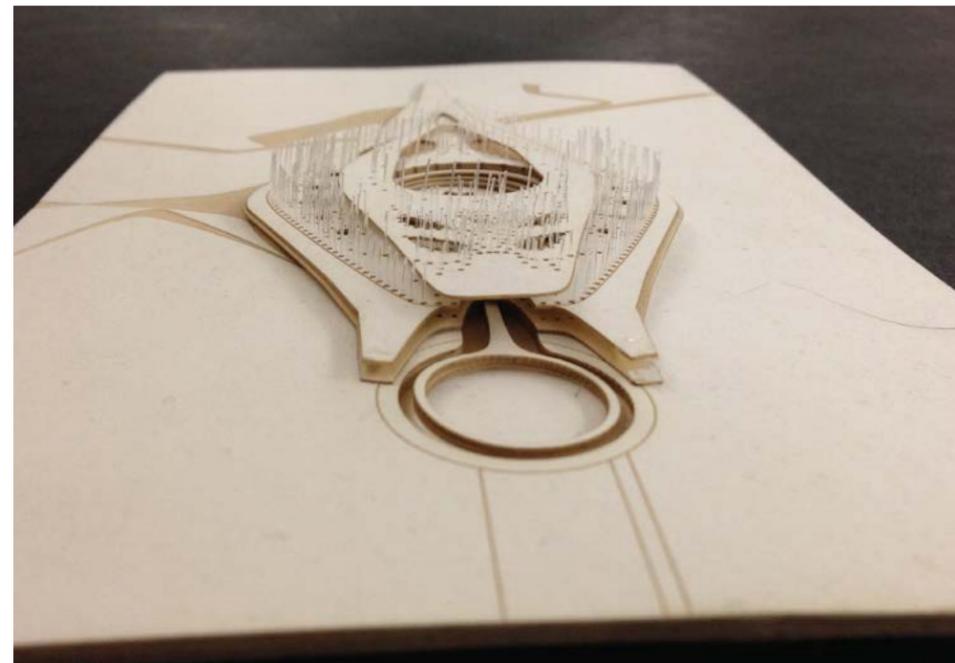
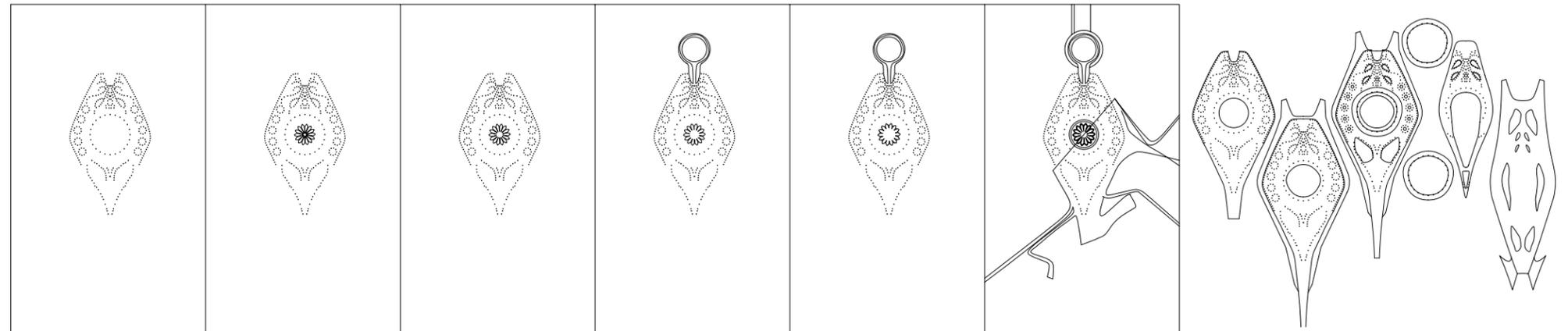
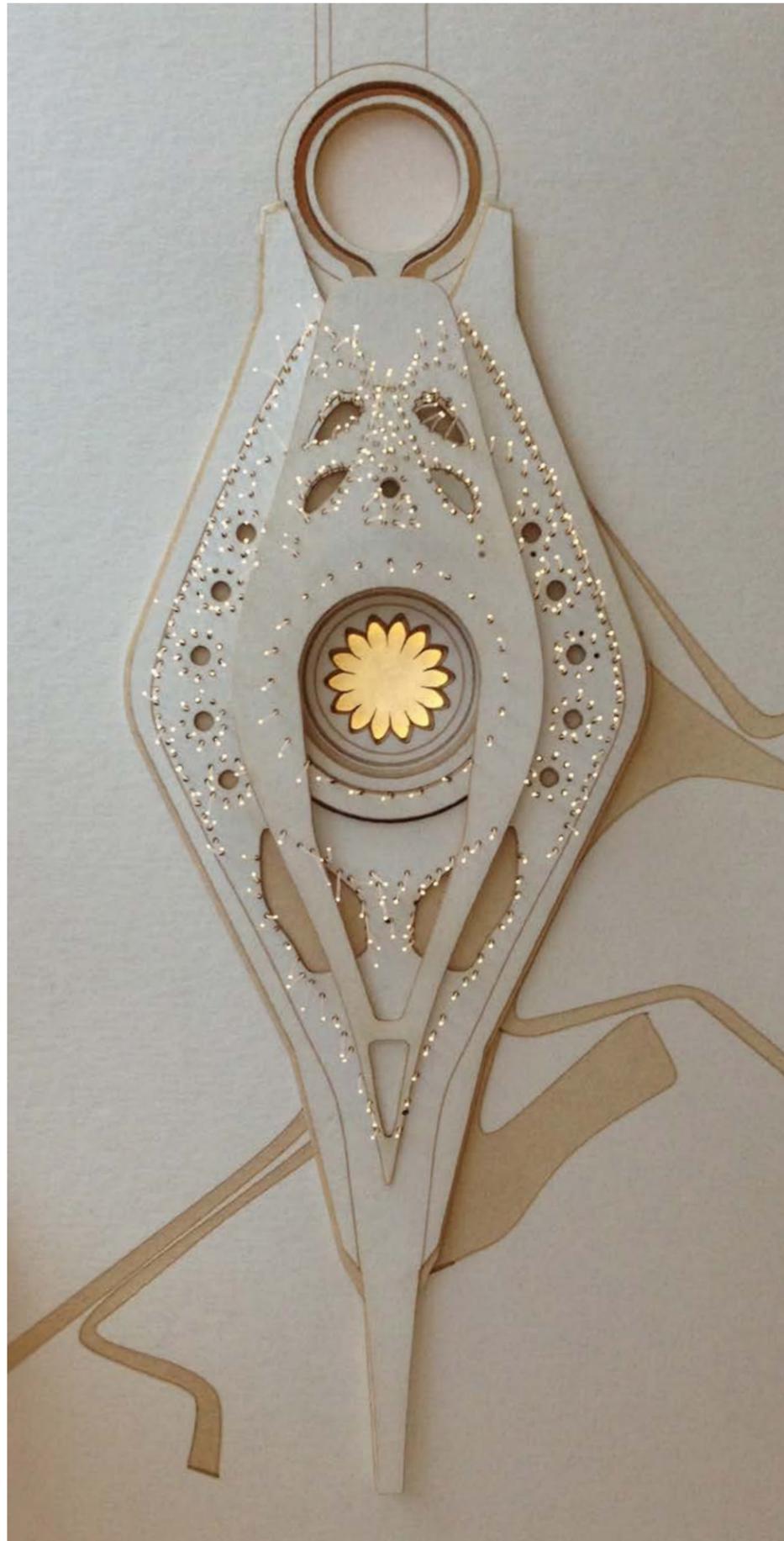
Drawing from the ideas of the thermo bimetal concept, I explored this using a facade study a model of copper scales that could all act as louvers. Copper as a cladding material, allows this building, which is otherwise starkly different to the surrounding urban fabric, to start to make sense as one of Ottawa's prominent national buildings. This is an important motif to follow when building a institute of national importance in Ottawa. Buildings such as the Museum of Civilization, War Museum, and the Government buildings on Parliament Hill have almost nothing in common in style of architecture but are noticeably linked by their copper cladding.

To make these scales I used 500 pennies, which were flattened, lit on fire and then rinsed with salt water to encourage rapid oxidization. I generated a massing model from water colour paper using Grasshopper to have an undulating, double curved surface to clad.



FIBER OPTIC MODEL

In the first built iteration of the cultural centre on the campus, I wanted to demonstrate in my model how the light tunnel concept from the "Low Line" precedent study would actually work. I scaled my model around the diameter of a monofilament fishing line that would act as a fiber optic strand and allow light to pass through my model. I also experimented with the amount of glow that I could achieve through the water colour paper depending on how many layers I used. My making this model small enough to fit on a post card, and exploring cutting, engraving, and rastering settings of the laser cutter, I was able to build up the knowledge I needed to create a final, large scale hybrid drawing.



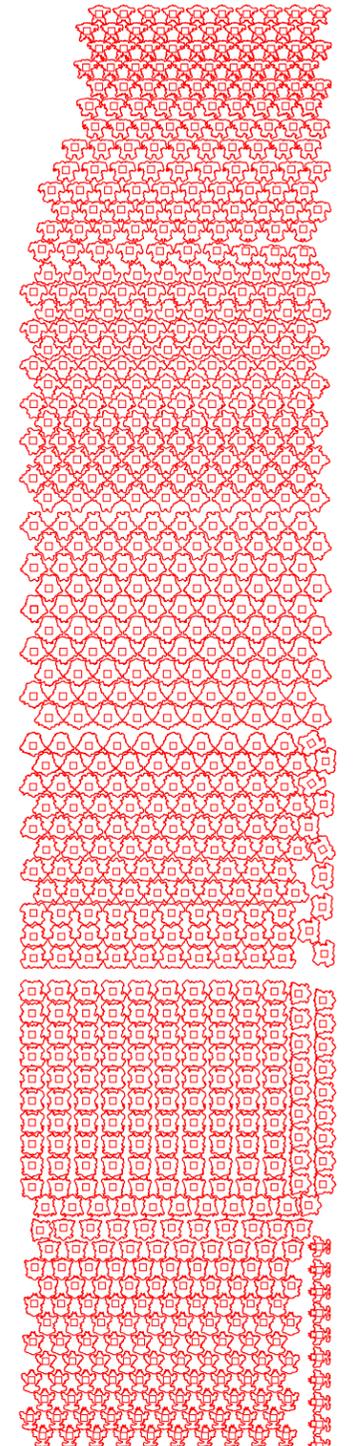
FRACTAL MODEL

When approaching ornament and form in this building I hit a road block. I had chosen to detach from any allusion to indigenous building typology, doing so to reflect a new space for the modern Aboriginal, rather than spaces from their history. I wanted to make the building beautiful, yet completely new from any typology that has been used in other cultures.

In this case I decided to relinquish my control over the ornament and style by using a combination of parametric and fractals to mathematically randomize them. I used a program called Mandelbulb 3D which generates images of 3D fractals. Using a Voxel Stack of images made from animating a camera fly through of this fractal shape, I was able to export a series of two dimensional slices. Using Fiji, an image processing application, I was able to process these images into planes and then stitch them all together using a program called MeshLab. From there I ended up with my fractal as an .obj file with 200 000 000 faces, ready to be exported to Rhino. In Rhino I could then coach this form into the shape of a column and then prepare it for fabrication. It took me three days using four computers simultaneously to divide this 3d model into 814 layers. Once I had this file, I sent it to be laser cut.

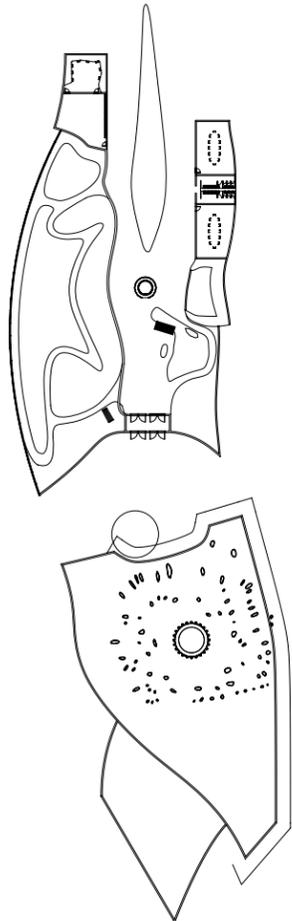
Though we used different softwares, this is a similar method that Michael Hansmeyer used to make his fractal columns for his Sixth Order project.

PRECEDENT: THE SIXTH ORDER
Michael Hansmeyer

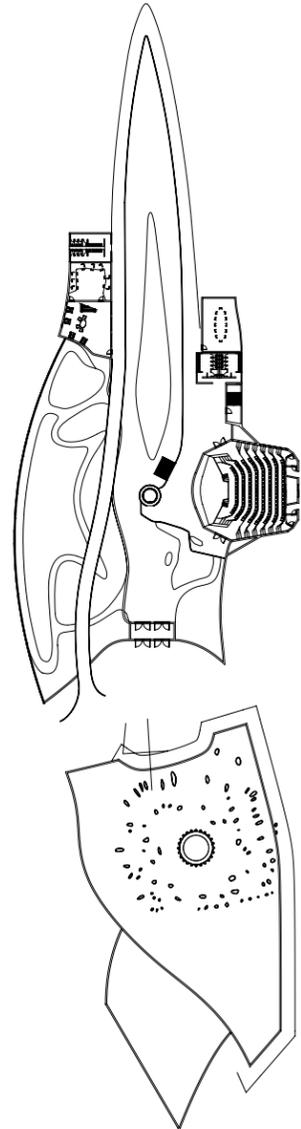


PLANS

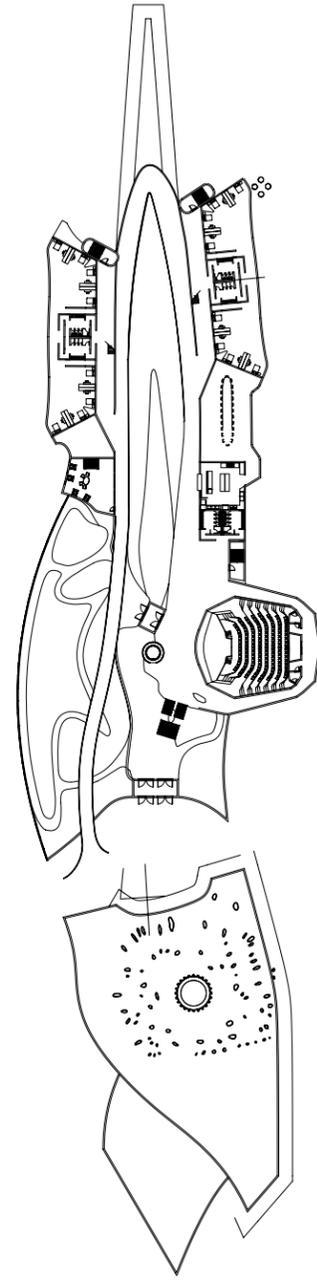
DESIGN DEVELOPMENT



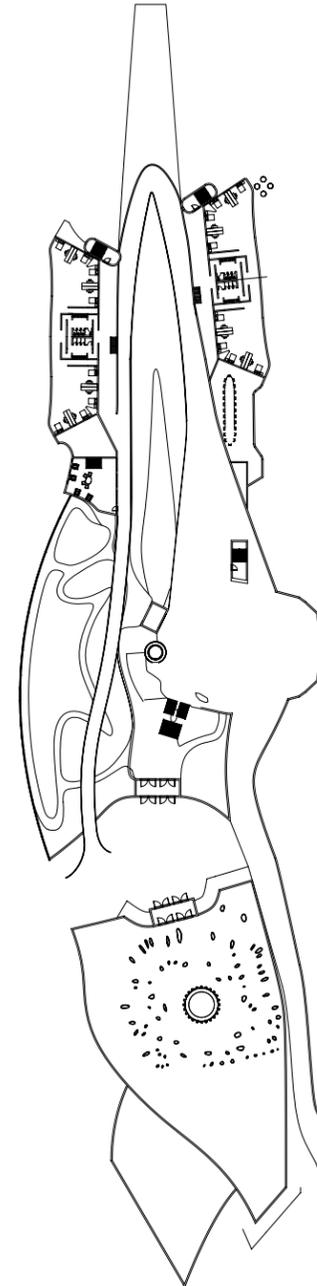
Ground



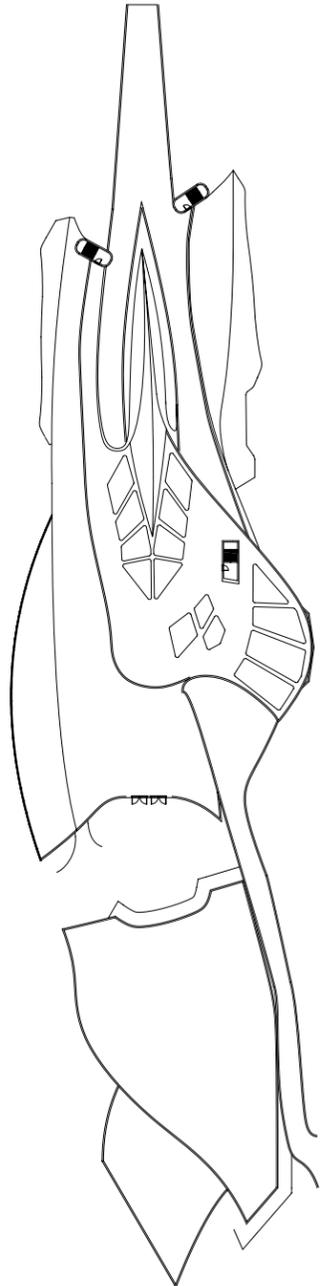
Second



Third



Fourth



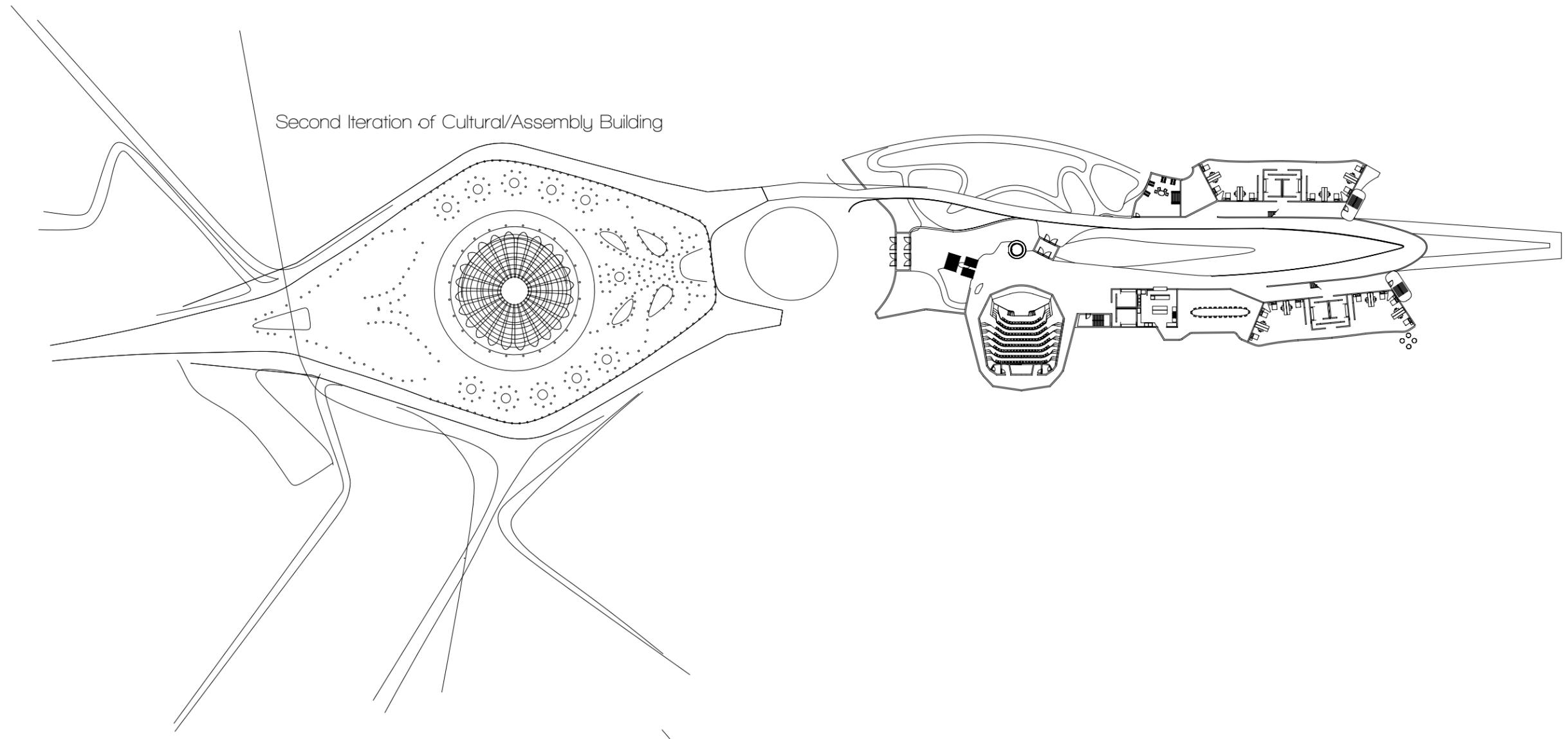
Roof

1:500



PLANS

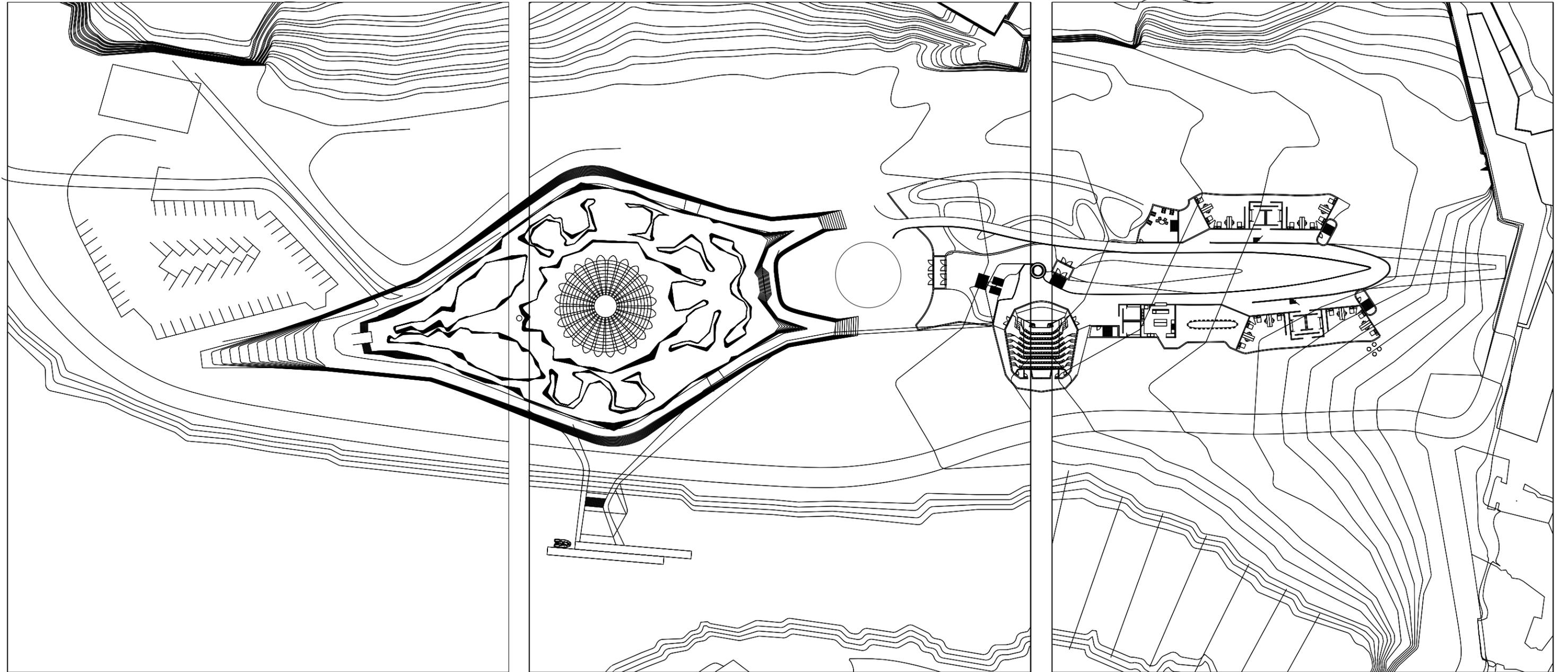
DESIGN DEVELOPMENT



1:400 N

PLANS

DESIGN DEVELOPMENT



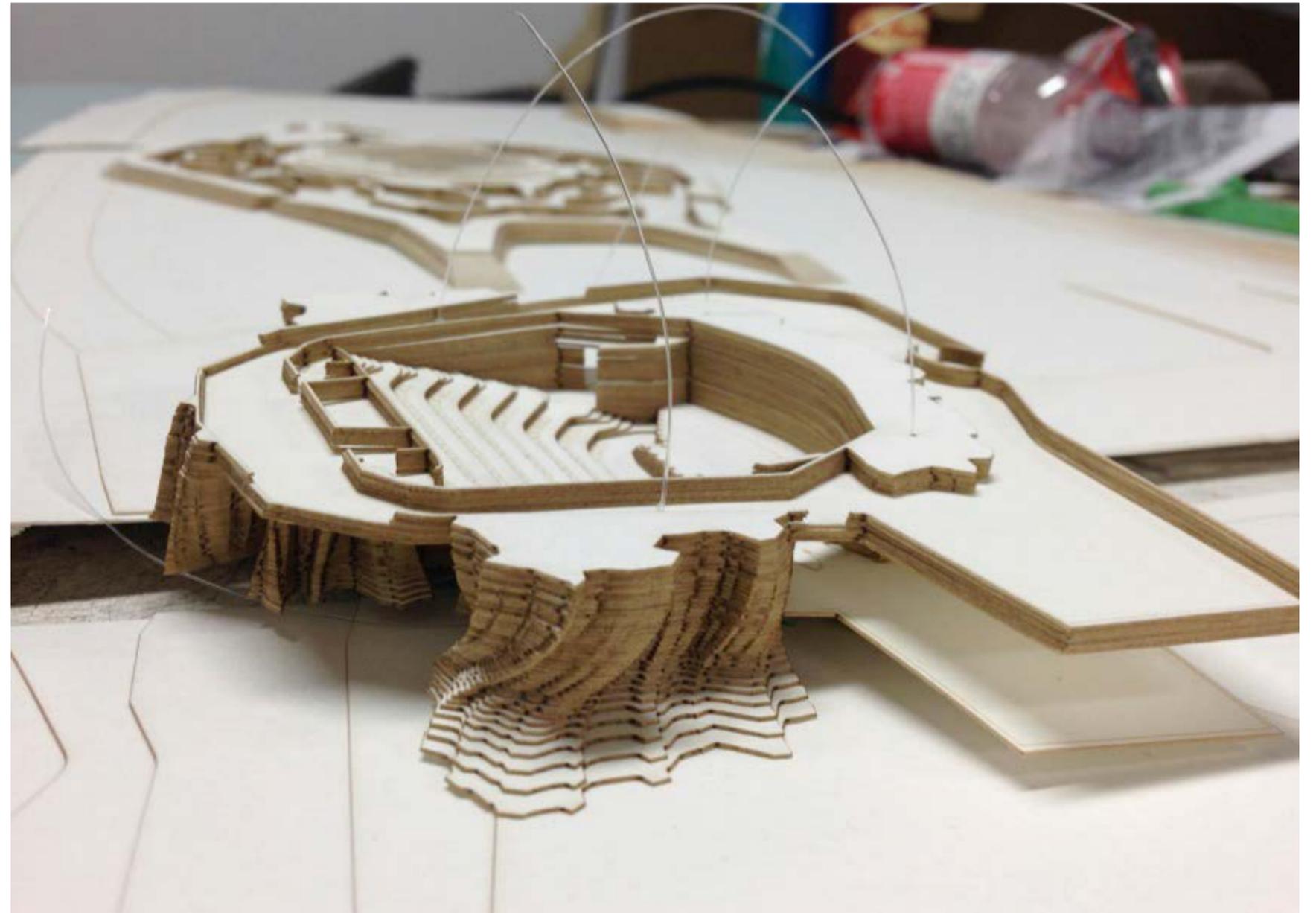
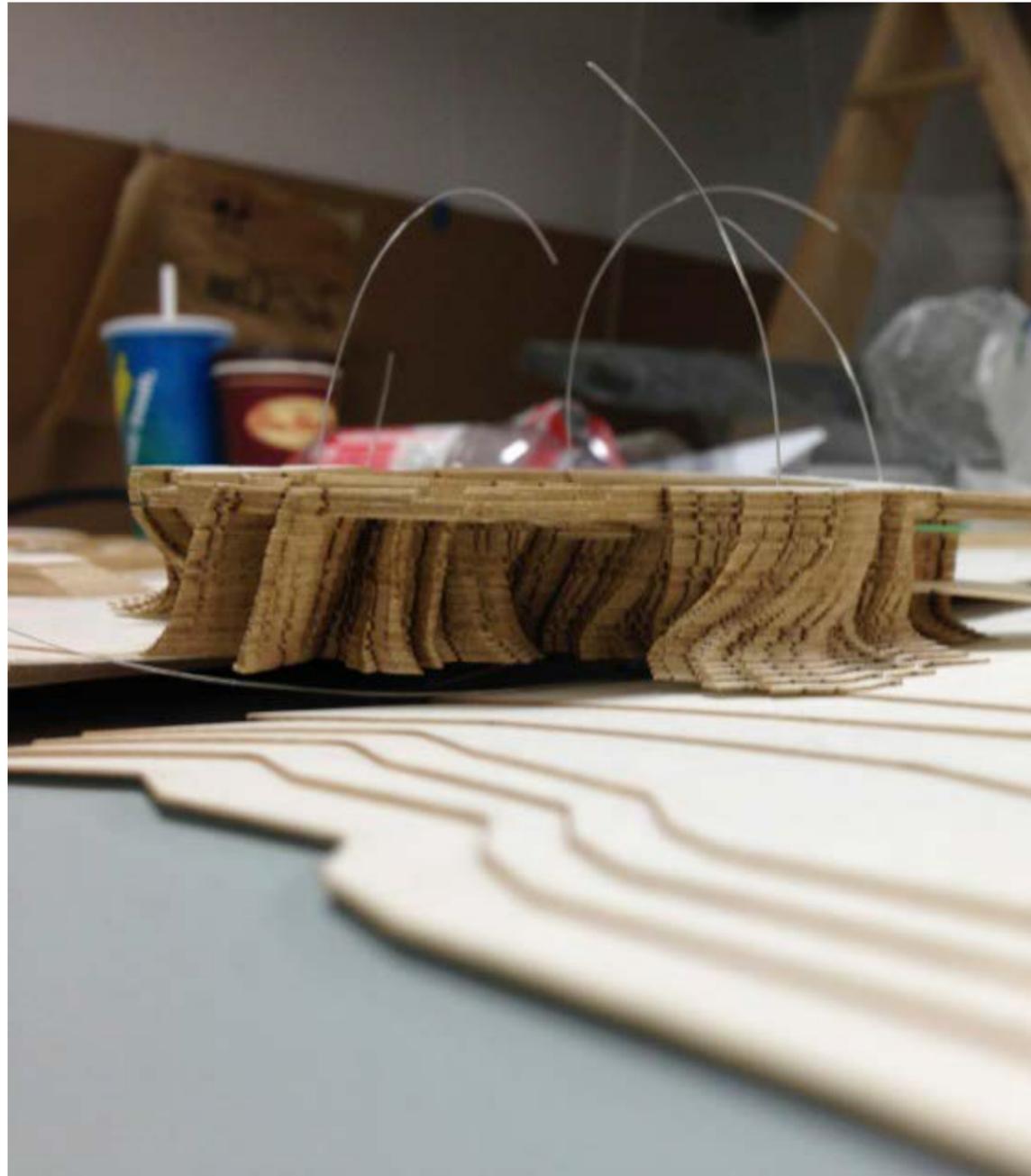
File Used for Hybrid Drawing

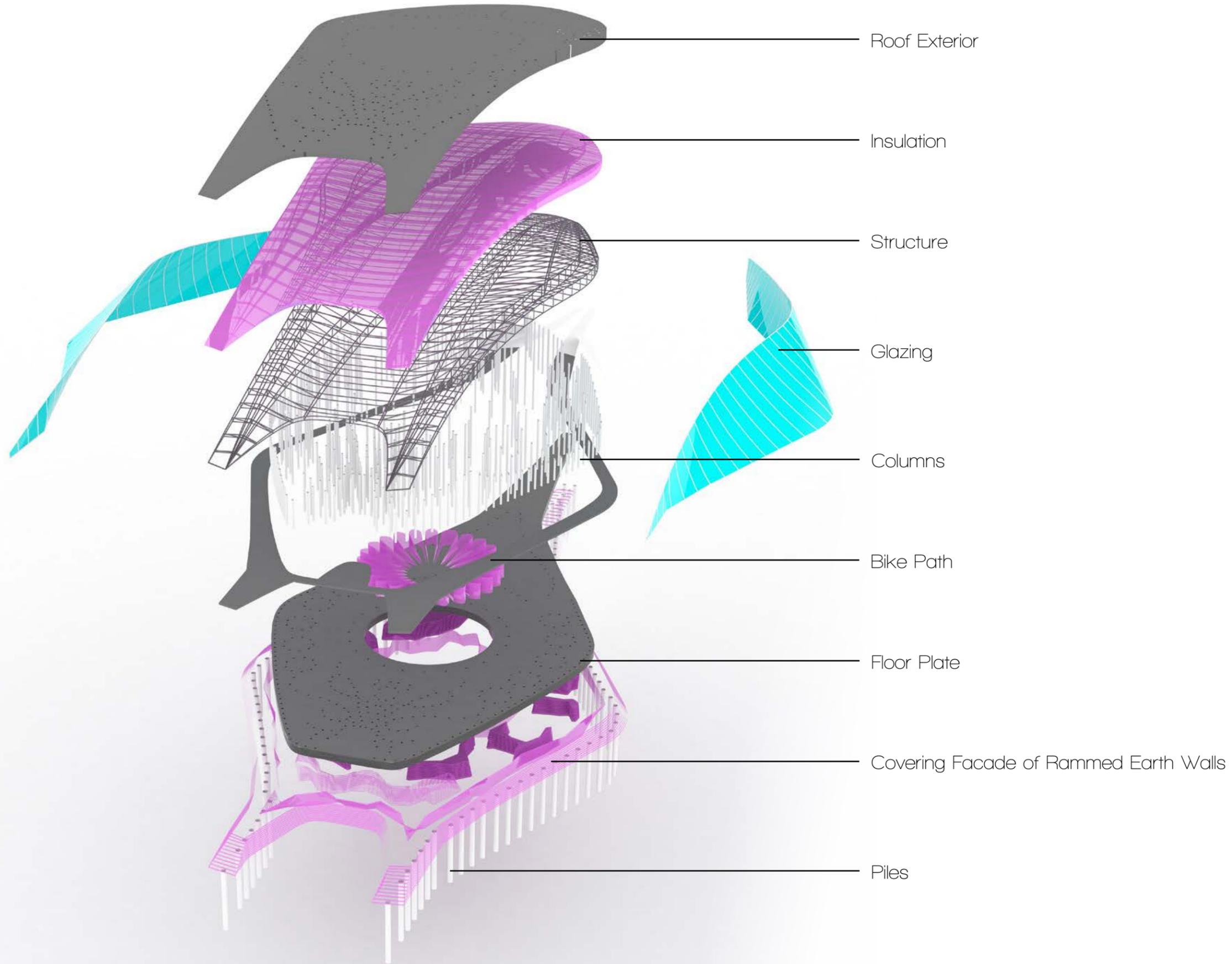
1:400 N

HYBRID DRAWING FABRICATION PROCESS

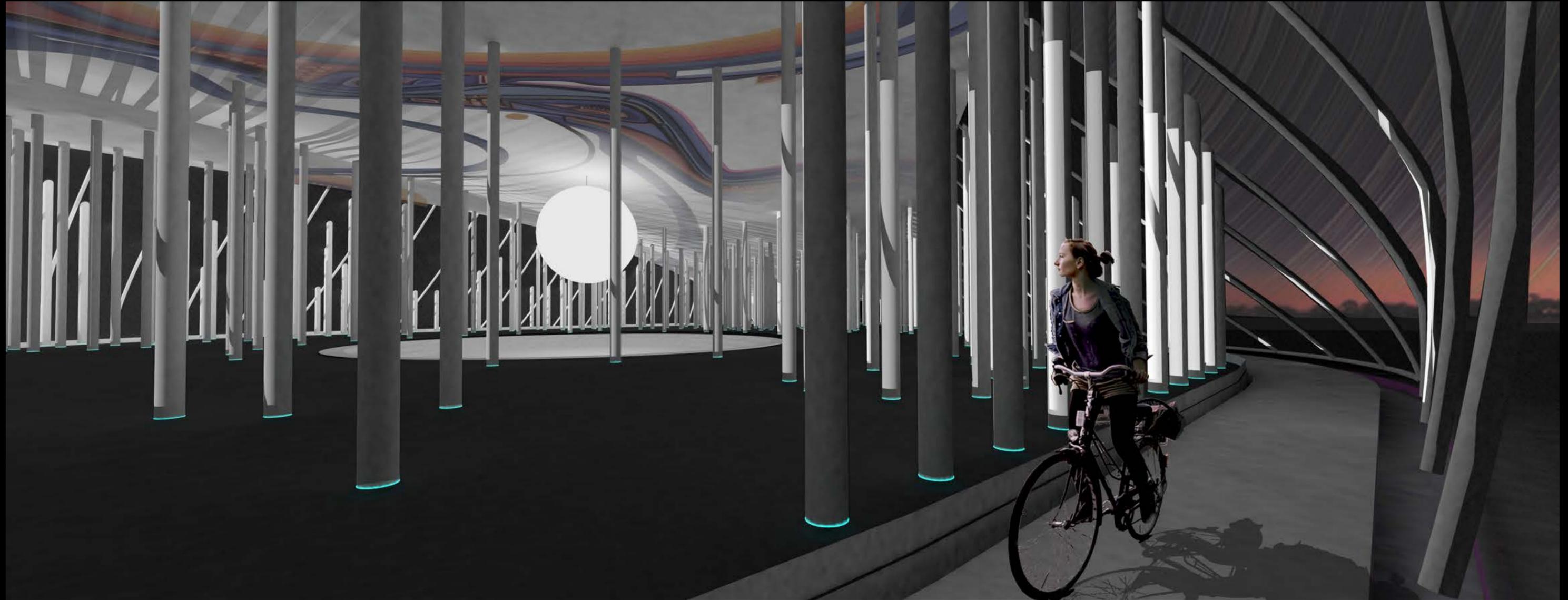
Using Rhino, I established consistent holes to be cut in every layer of laser cut paper. This forced the hybrid drawing to auto-align when I wove fishing line through the holes. This improved efficiency and accuracy as opposed to hand gluing.

My goal throughout this process was to explore the medium of computer modeling combined with digital fabrication techniques to end up with a showpiece drawing without ever picking up a pencil.

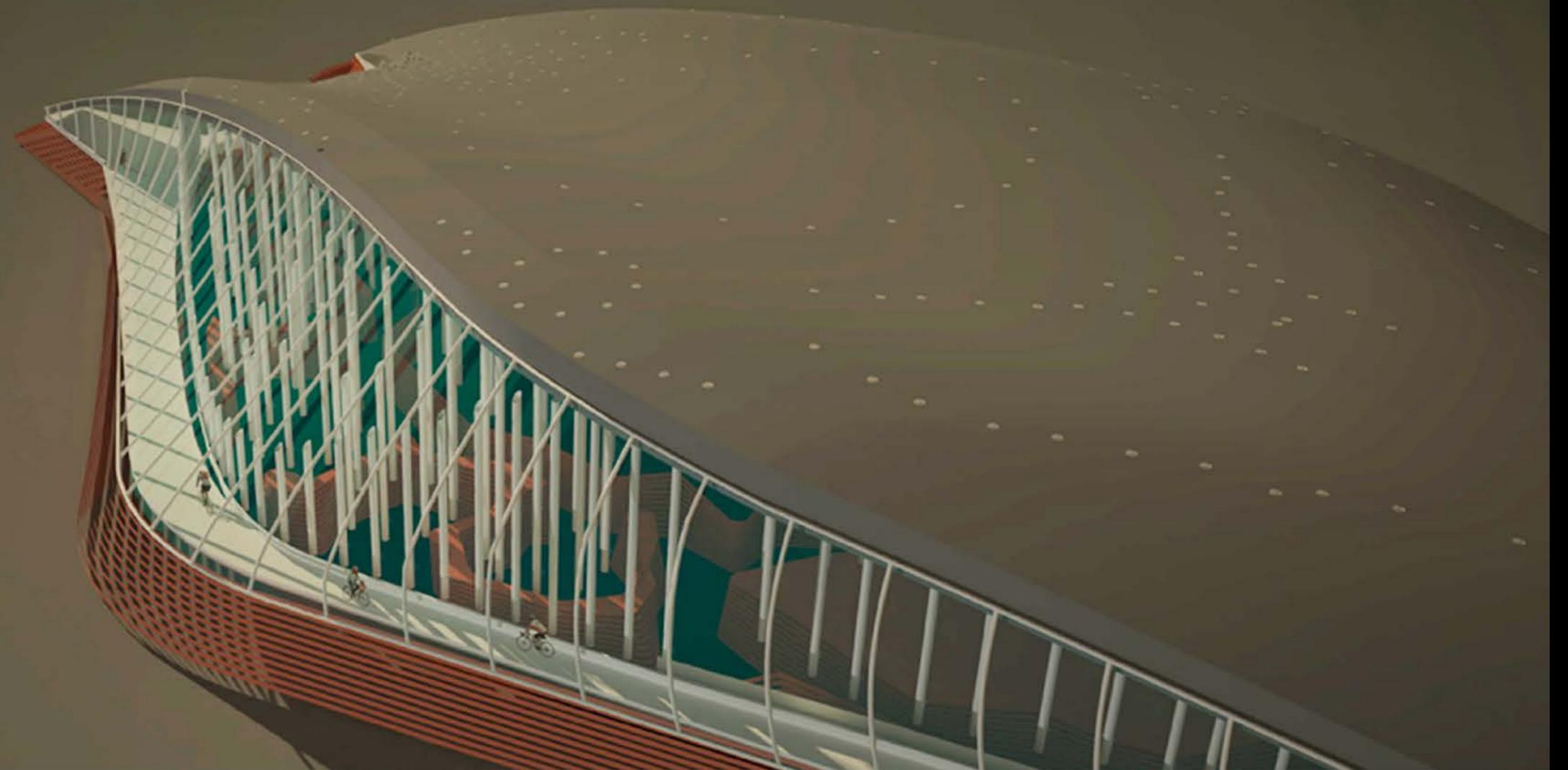




INTERIOR RENDER



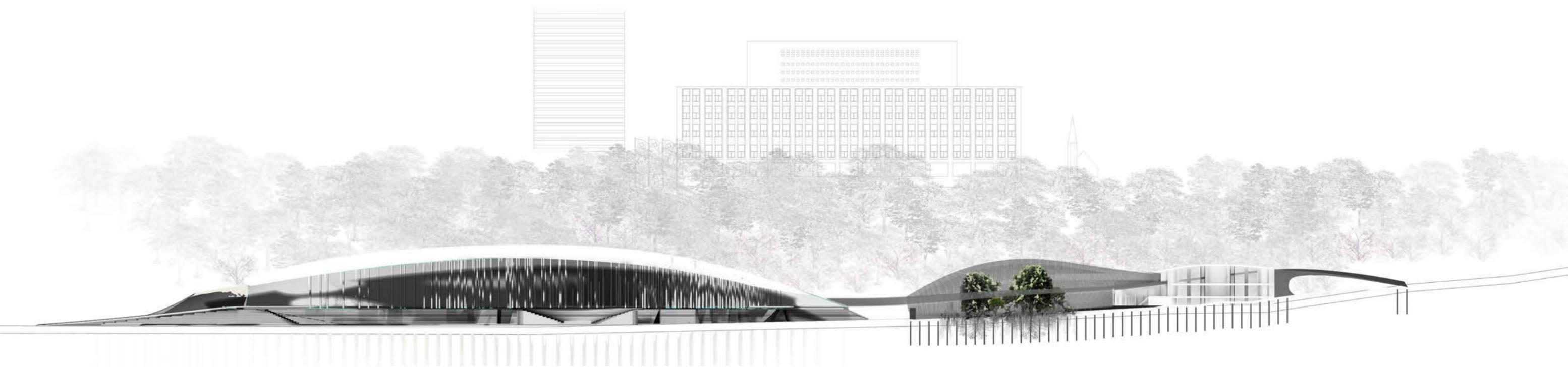
EXTERNAL
RENDER



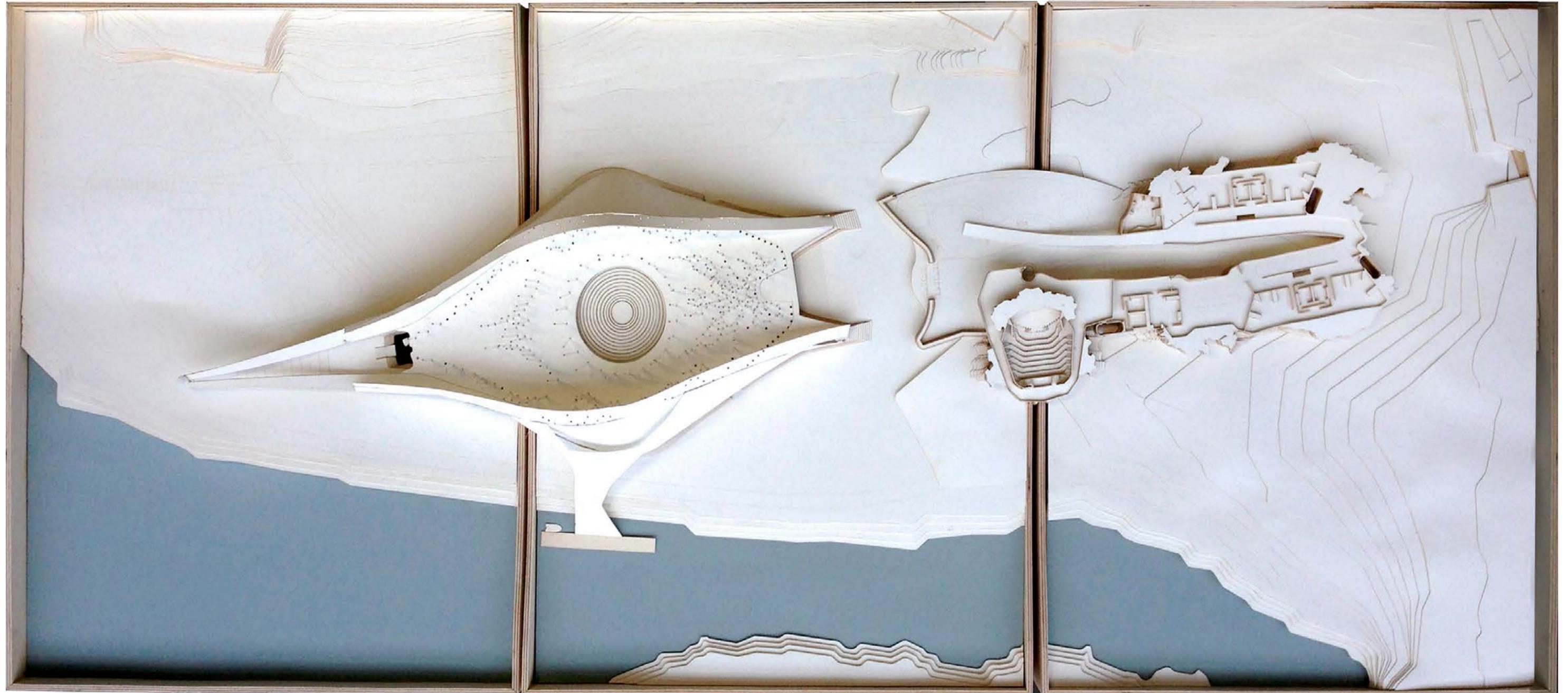
SHORT SECTION



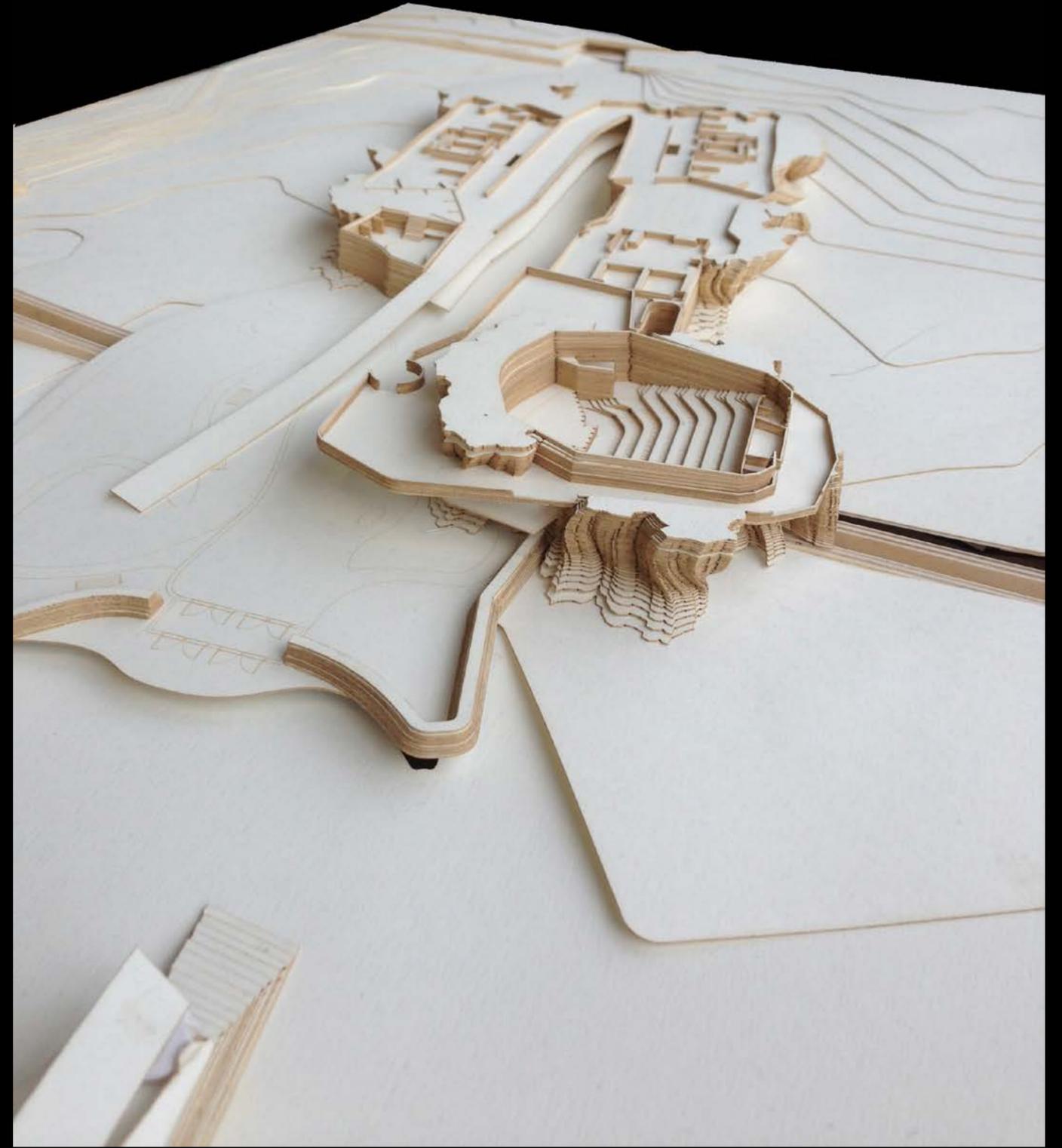
LONG SECTION



HYBRID DRAWING



HYBRID DRAWING



HYBRID DRAWING



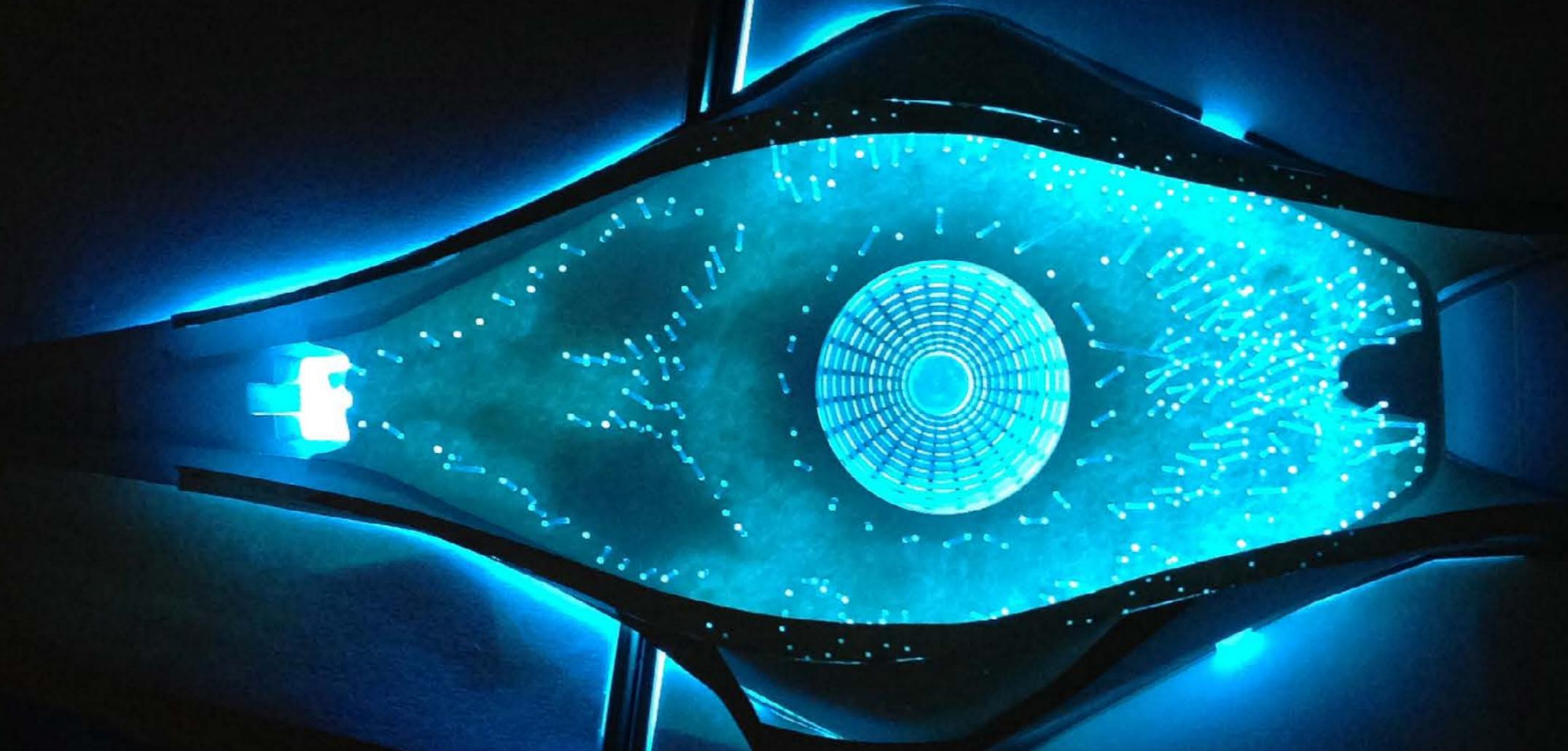
ROUTES OF EGRESS



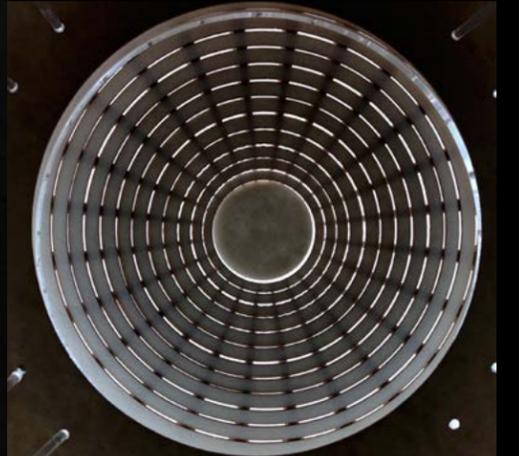
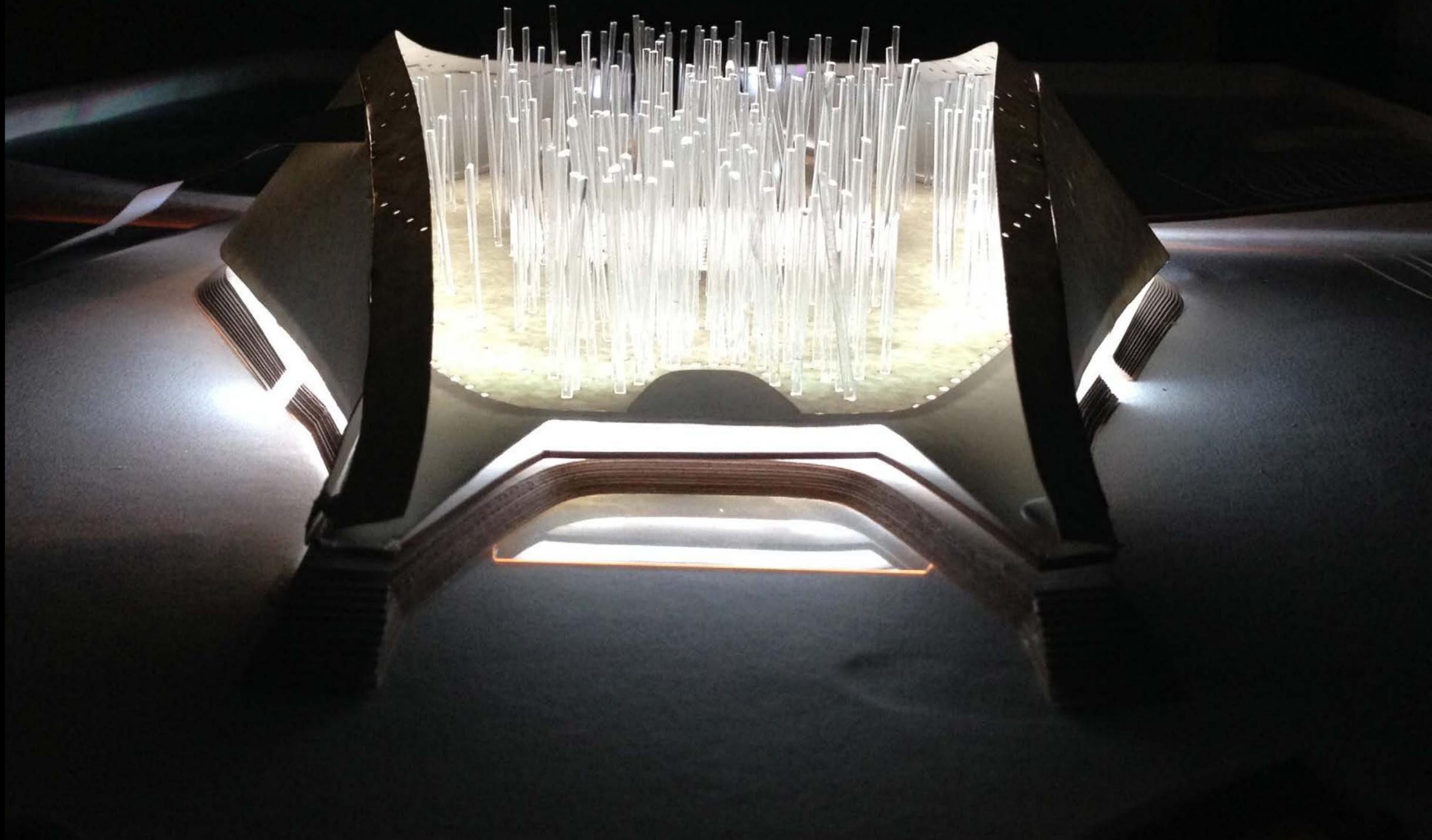
FIBER OPTIC DEMONSTRATION



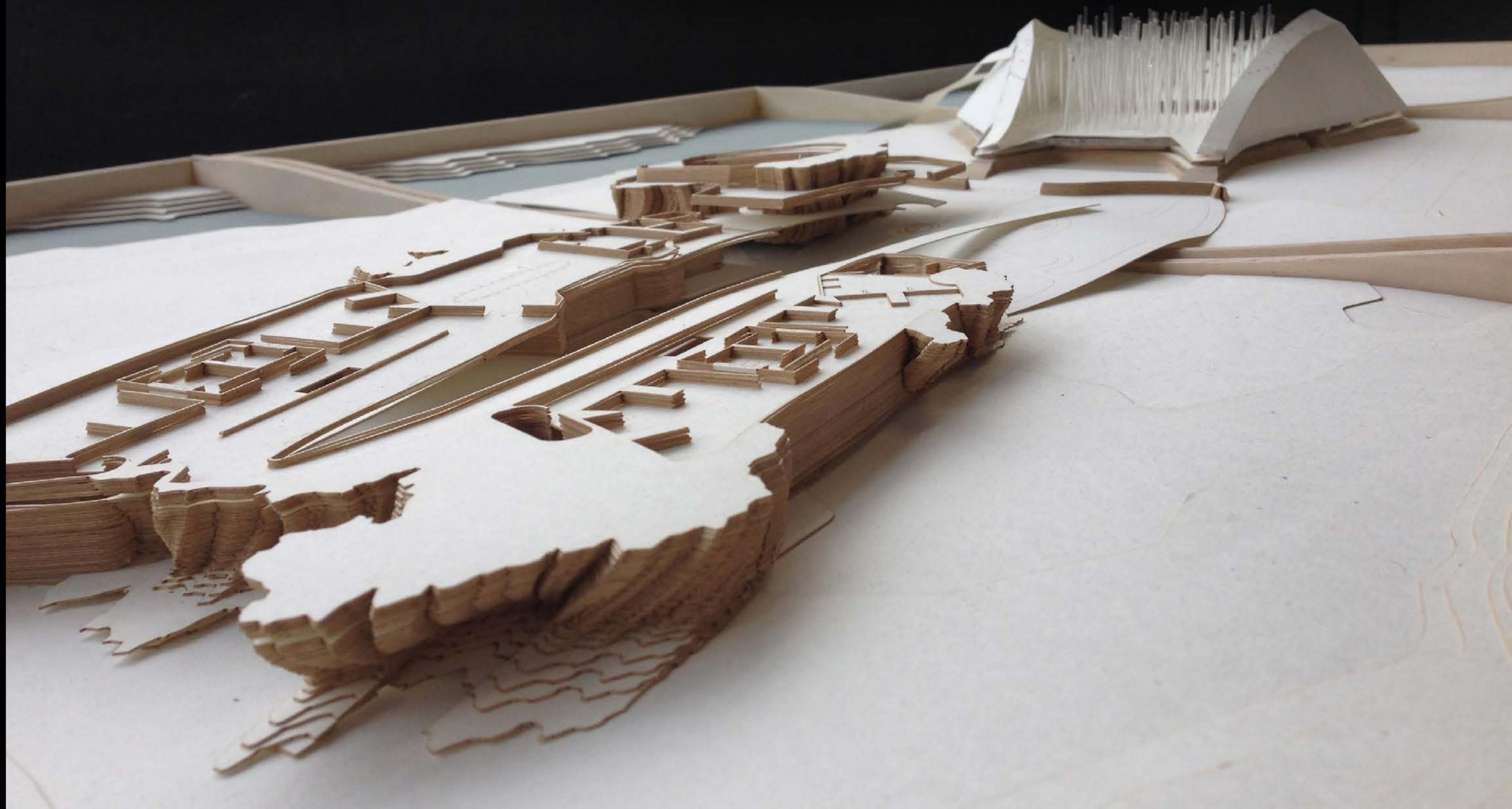
FIBER OPTIC DEMONSTRATION



FIBER OPTIC DEMONSTRATION



HYBRID DRAWING



PROGRAM WEST BUILDING

All activities related to the Youth Institute are focused in the west building. The space has been designed as a retreat-style institute for policy generation, allowing up to 24 people to live and work in the building. Retreat participants are youth activists brought in as delegates from both indigenous and non-indigenous communities around the globe. Delegates address specific problems arising through friction between western and indigenous communities.

While programming and procedures at the Youth Institute must be developed by its Board of Directors, the current design of the west building makes some high-level assumptions. For instance, I have supposed that a total of 24 delegates are broken into approximately four working groups. I imagine that each working group would be charged with developing proposals for a distinct community issue over a period of six months or more. Over the course of this time, each working group would prepare a proposal for publication and review by the community or stakeholders that sponsored the project. Proposals would include recommendations for direct community action as well as changes in government policy. Proposals would be developed in multiple phases with each phase completed in a three to five week "cycle". Results developed in each cycle and goals for the next cycle would be vetted the sponsoring communities or stakeholders. In cases, where a group's recommendations are actually implemented, it may be desirable to launch follow-on projects to monitor the success of the recommendations and make refinements as necessary.

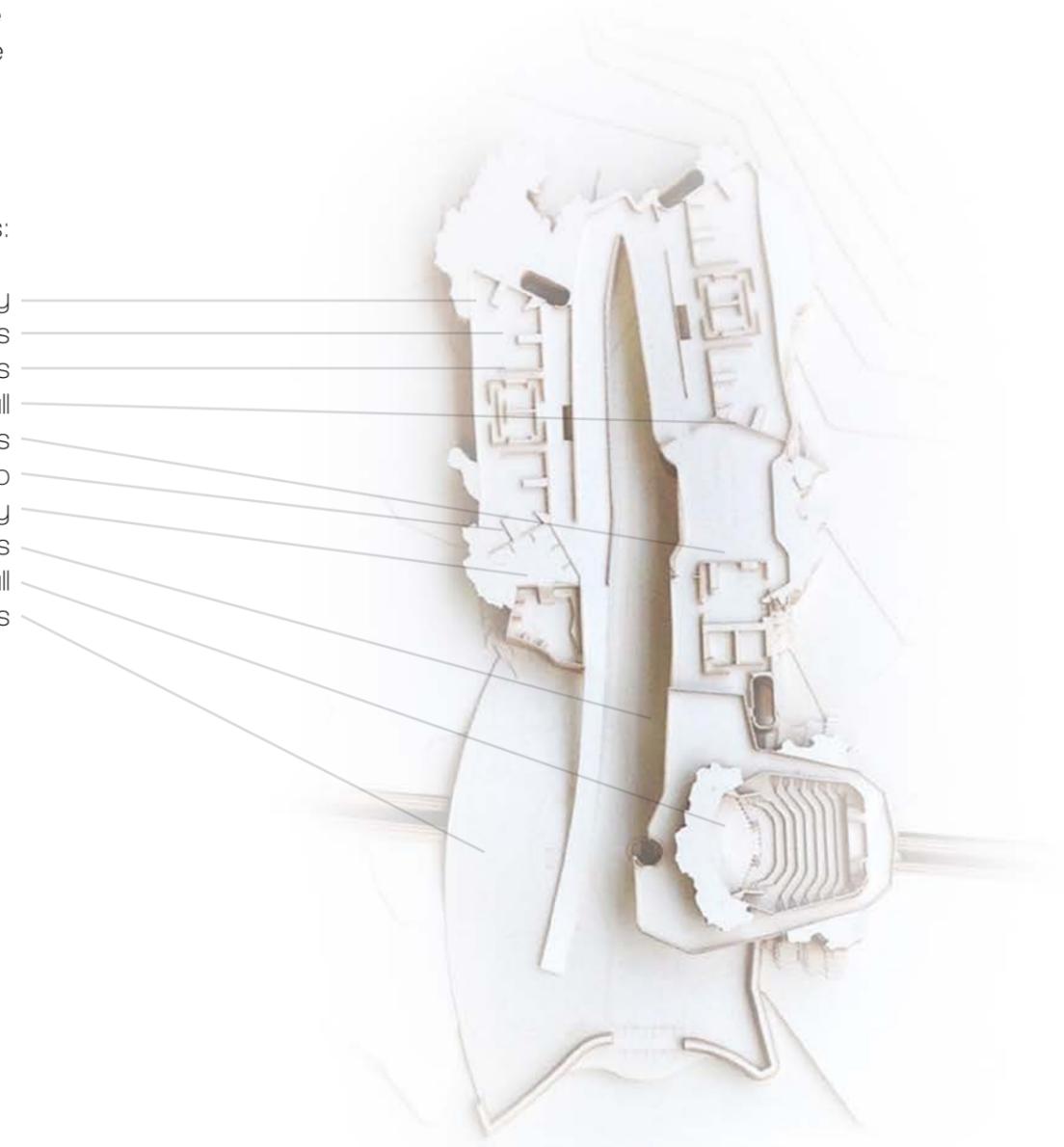
W

Delegates are provided the following amenities:

- Dormitory style sleeping space with partial privacy
 - Restrooms
 - Showers
 - Dining hall
- Kitchen, applicable for catered or non-catered retreats
 - Computer lab
 - Library
- Conference rooms
- Lecture hall
- Interior and exterior gardens for relaxation or informal meetings

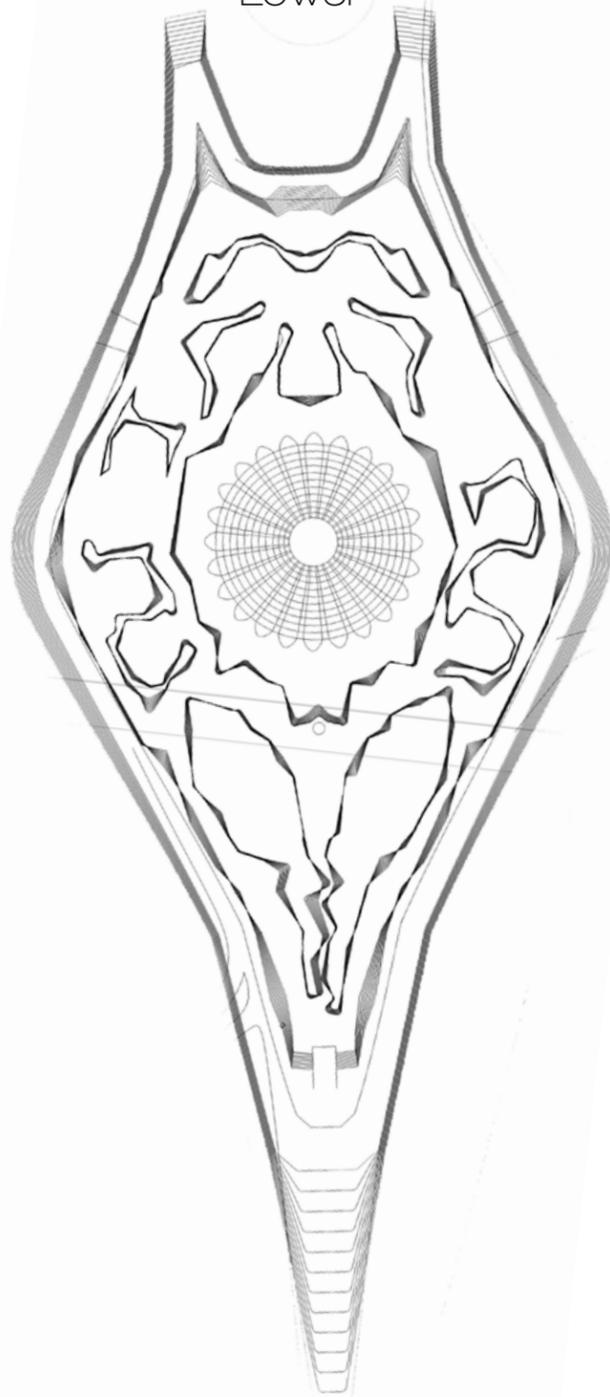
The architecture encourages all types of interactions. Formal assembly, presentation, and critical review occurs in the lecture hall. Meanwhile informal, impromptu meetings can occur in several locations throughout the west building and accompanying gardens. Meeting spaces are designed blur the boundary between interior and exterior allowing delegates to immerse themselves in semi-natural settings as they work. Moderate privacy is given by small partitions in the dormitories, but the sleeping quarters remain communal to encourage even late-night collaboration. The large garden space on the main level offers pathways for small groups or pairs to stroll through while engaged in relaxed creative discussion. Conference rooms and the dining hall as well as the library and computer lab allow groups to research and workshop ideas.

This space is not open to the public nor is it permanently occupied by retreat facilitators. Catering staff, mediators, dignitaries, and coordinators are invited in to the retreat space by delegates. This symbolically elevates the status of the delegates to promote a self-directed method of productivity.



PROGRAM EAST BUILDING

Lower



The east building is the domain for the public and cultural activities of the institution. It too is designed to foster various types of dialogue in relation to modern indigenous culture. This space however focuses primarily on Canadian aboriginal issues.

A vast main hall, located on the second floor, is populated with two hundred columns which mimic a forest. The columns are flanked with large windows to allow light to filter through the columns spaces. A large clearing in the centre provides unobstructed lines of sight for assemblies, performances, lectures, and, at certain times of the year, chambers for a larger, representational council of indigenous peoples of Canada.

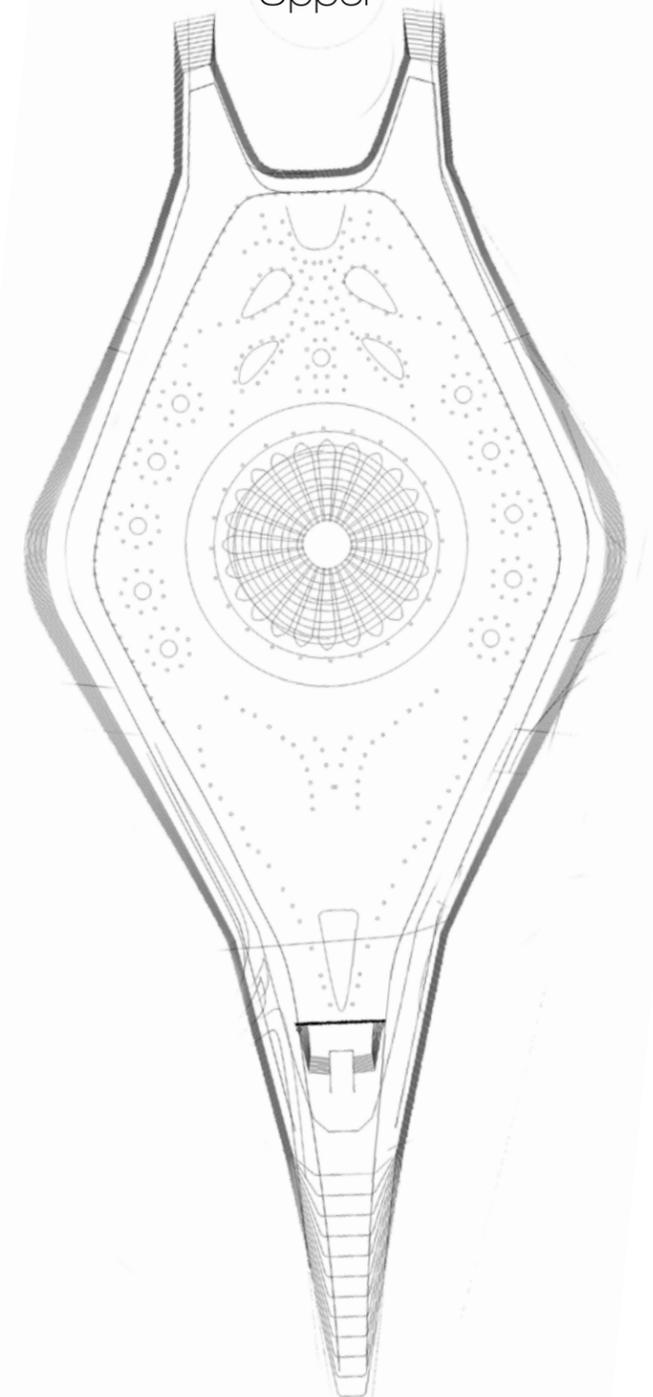
An intimate space, for storytelling and more intimate exchange of information, is located on the ground floor. There are no windows on this floor yet light is channeled from the roof by two hundred columns which are fibre optic light tunnels. Daylight radiates through the lower space until dusk when the process is reversed and artificial light from the ground floor causes the roof to shimmer.

Governance activities in the main hall are carried out by a representational council of indigenous peoples that serve to guide the Government of Canada. Policies voted on by the representational council are positioned as an authoritative source of advice through inclusion of all first nations. Additional governance roles for the representational council may have direct effect within indigenous communities in a fashion analogous to that practiced by the United Nations General Assembly.

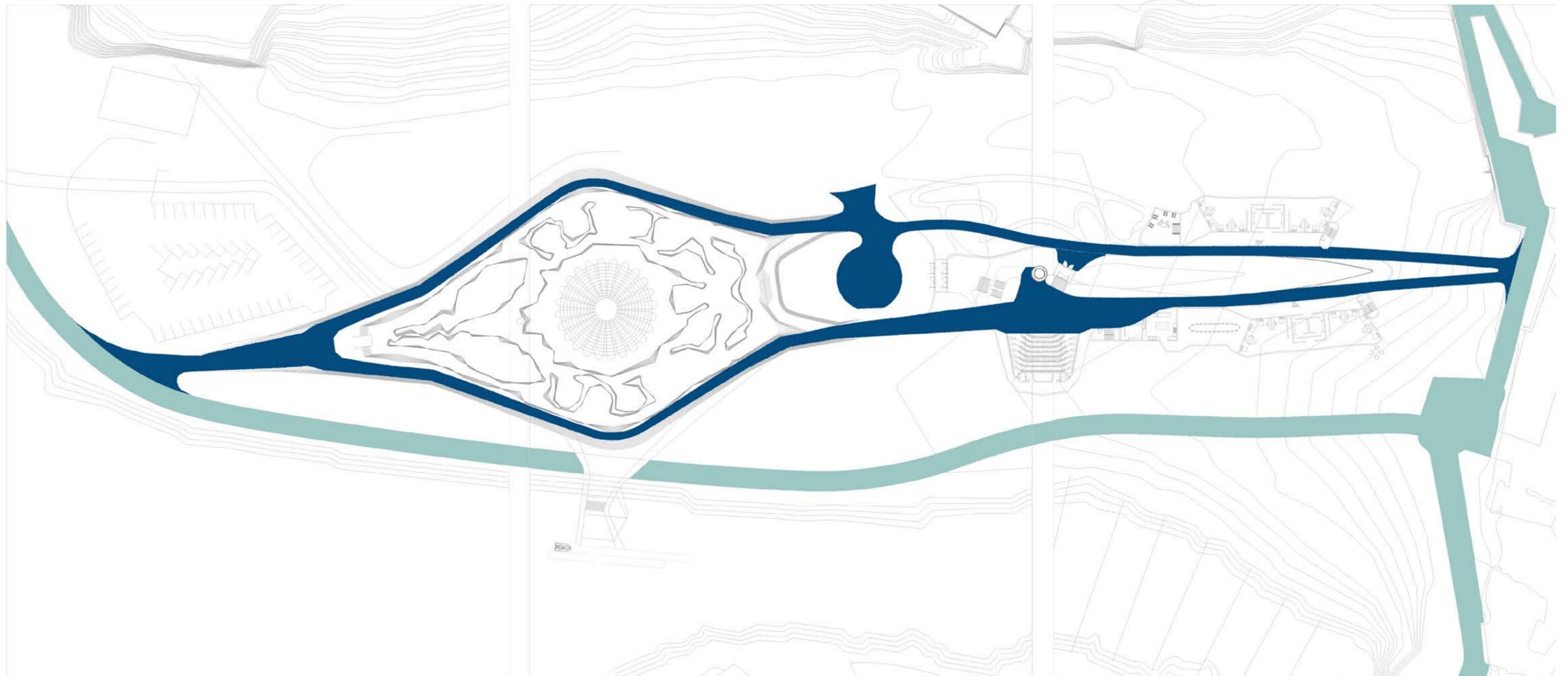
When the space is not politically active, it serves as a place where all people are welcome to engage and participate in modern indigenous culture. In turn, this dedicated space will allow modern indigenous and "post-colonial" cultures to flourish alongside one another, rather than in relative isolation from each other.

The storytelling space allows the transfer of culture and information to take place as it always has in indigenous cultures. A labyrinth of spaces provide various rooms that offer more or less privacy to suit a variety of needs within the centre.

Upper



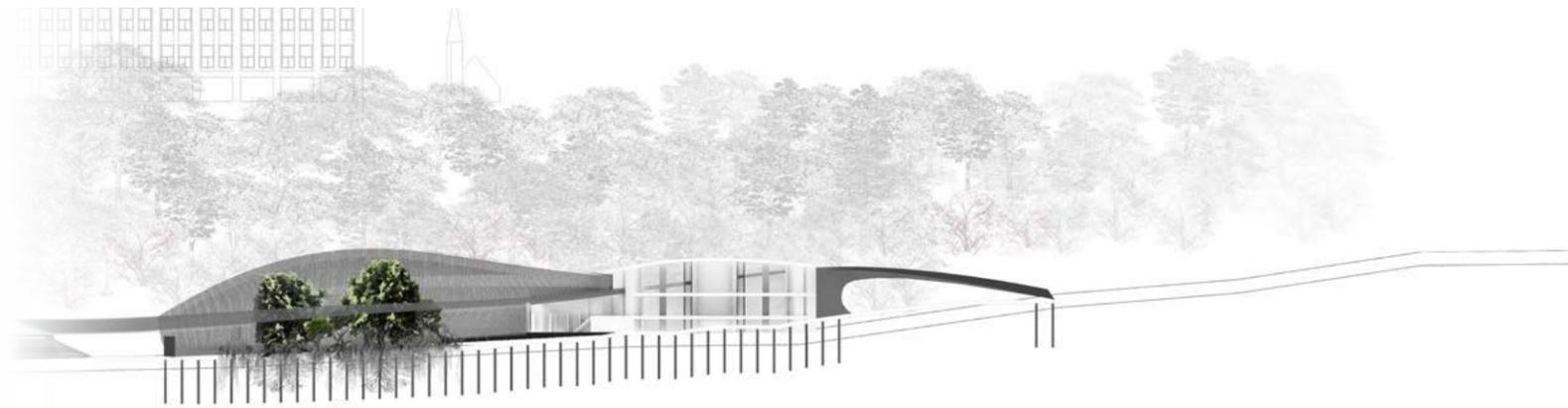
BIKE PATH



One of the building's unique elements is that it incorporates a bike route that pierces through the building. The route doubles as handicap access and allows entry directly to the upper floors of both buildings. Pedestrians and cyclists may pass through the buildings without entering them. This is another of the building's design features to blur the boundary between internal and external spaces. Alternatively, there are sheltered areas to lock a bike and enter the internal space.

The existing bike path along the river bank remains open for cycle and foot traffic to bypass the building if they choose to do so. This is the cultural purpose of this institution, which relies heavily on public interest and engagement. The bike route through the space helps to position the space as one that is inviting and open for exploration.

CONSTRUCTION PLAN



Steel Pile Foundation

Designs such as this are often prohibitively expensive to construct. For this reason I have designed this structure to be built in modular components. Standard rectilinear spaces such as the bathrooms and fire stairs have been built to satisfy the dimensions of a flatbed truck. They have also been sectioned vertically to account for the low underpass of the access road.

Modular construction techniques can take advantage of button-up assembly methods to dramatically reduce erection time. More importantly, in this case, they take advantage of being manufactured, assembled, and finished in a controlled environment that is unaffected by fluctuating weather conditions in a location such as Ottawa. Higher precision and quality can be achieved in such a scenario, allowing for better access to detailed components as well as weather proofing and insulating in a dry, controlled environment.

The site for the west building, containing the Youth Institute, is currently a grassy field interspersed by several small groups of trees. Instead of clearing this area and pouring a concrete foundation, I propose a strategy of "treading lightly on the land." This building is to be constructed on a network of steel piles, driven into the ground. These piles are spaced at 48' X 8.5' intervals to accommodate flatbed truck legal dimensions in Canada. The building is designed to incorporate as much of the existing natural environment as possible. The benefit of this being the ability to change or remove elements of the building with low regeneration time of the occupied area of land.

A cluster of larger trees is semi-enclosed, while not insulated, in an attempt to help blur the boundary between interior and exterior. Grass patches are also used as flooring on the main level while paths are slightly elevated boardwalks that contain some of the building's systems.

Curved components of the west building are strategically broken into modular chunks that can quickly clip together on-site. Unlike the bathrooms and fire stairs, these chunks are not self-contained and only serve their function, of shelter and structure, when acting together with other components.

The east building, containing the cultural and assembly space, contains two main spaces: An upper main floor to be used for public, political, or cultural gatherings, and a lower floor to be used as a more intimate storytelling or meeting space.

It is to be constructed on what is currently a parking lot. In this case, the building uses a slab on grade construction. Waste pavement from the cleared parking lot is used as coarse aggregate in the building's drainage network.

The construction method of this building will be constrained to more traditional site work construction because it requires a long span truss system as well as moving earth/asphalt on site. Internal components of this building have been designed to be modular to take benefit from a controlled working environment.

Detail of Walkway Assembly

