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*designing with intention to build a resilient and adaptable future, with steadfast sustainable urgency*

**Please visit my website at: <https://www.sarahdevries.co/>**

for more information, videos, projects and creative works related to my full  
portfolio of my studies at the Architectural Association & Ryerson University.



# SARAH ASHLEY DEVRIES

*designing with intention to build a resilient and adaptable future, with steadfast sustainable urgency*

## CONTACT

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| **Work References** |

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Full Name: deVries, Sarah Ashley  
Nationality: Canadian | Citizenship: Canadian

Born and raised in Ontario, Canada.

## EDUCATION

**2015-2020 The Architectural Association School of Architecture:** Graduated in 2020, with a ***Master's in Architecture (M.Arch)*** & AA Diploma with the AA Final Examination (ARB/RIBA Part 2).

I also completed the Intermediate Level which is part of a five-year Undergraduate program with the ARB/RIBA Part 1 qualification, from 2015-2017.

I was awarded a ***High Pass*** for my Technical Studies research thesis in my final year, and granted ***The Holloway Trust Prize*** in my final year for my rigorous efforts and achievements while studying at the Architectural Association.

**2011-2015 Ryerson University:** Graduated in 2015, with a ***Bachelor in Architectural Science (B.Arch)***.

Studies abroad at Ryerson University:

- Frankfurt Studio Abroad; in June of 2014. I was selected among 12 students to attend this month-long design studio.

- Independent Study Abroad; in June of 2014. Developed an Urban Planning Study analyzing the streetscapes of Munich, Berlin, and Paris.

- Independent Study Abroad; in June of 2013. Developed an Urban Planning Study analyzing the streetscapes of British Colombia, Washington, and Oregon.

## WORK

**2020-2021 Upper Canada Consultants Ltd:** *Urban Designer*

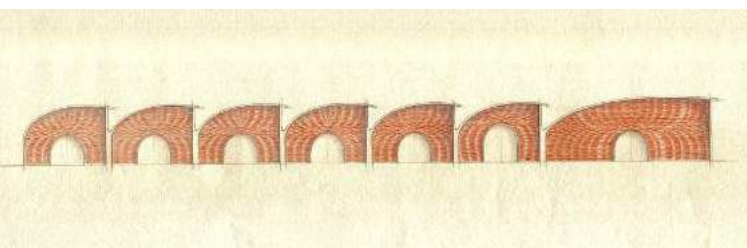
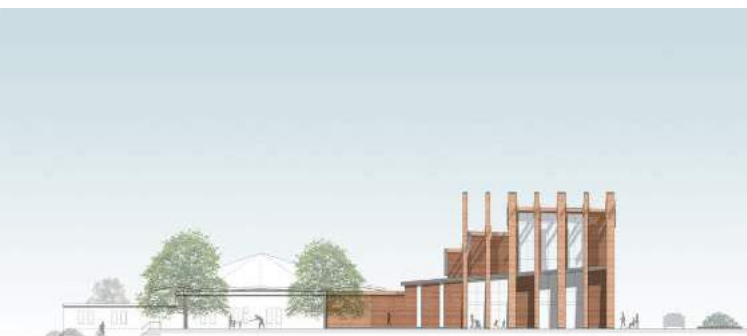
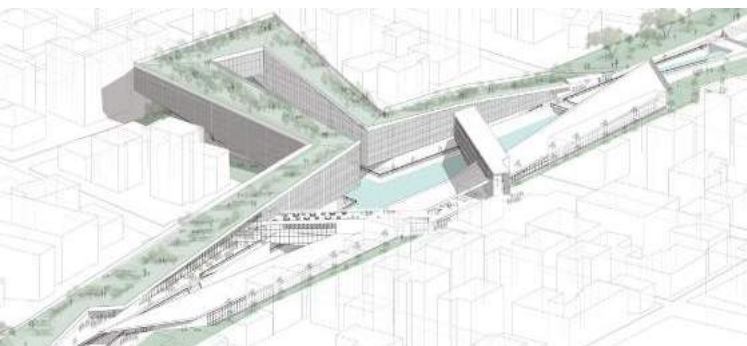
Current job; designing and drafting Concept and Draft Plans for private lots and subdivisions, as well as aiding in technical drawings and visuals.

**2017-2018 West 8 NY: Urban Design & Landscape Architecture:** *Architectural & Urban Designer*

During my year-out of studies at the Architectural Association, I worked full-time throughout a 10-month internship at West 8's New York City office.

Highlights of this job include, working abroad at the Rotterdam office to collaborate on various projects. As well as, being able to work on international projects and competitions with other firms, while working with varying design scales and typologies.

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## ***ARCHITECTURAL ASSOCIATION*** | 2015-2020



Eudaimonia: *sea energy*

01

Project Type: Academic Institution Design & Athens Master Plan Design  
Project Location: Athens, Greece  
Project Duration: 2016 - 2017

Master Plan designed in the city of Athens. Within this master plan a Research Institute was designed with the focus on Hydrological and Agricultural studies.



Let's Talk Shit: *revealing ugly truths*

02

**Innovation of Digero;** *an environmentally and economically sustainable building material.*

3.1 Digero Invention & Supply Strategy  
Process of inventing Digero and the rigorous research behind its sustainable supply chain throughout the United Kingdom.

3.2 Digero Design Application  
Applying Digero in a cultural design, through an actual project proposal, of a Church addition and renovation.

3.3 Digero Manufacturing Facility  
Designing an efficient production facility for Digero in collaboration with the owners at H.G. Matthews Brickworks, by designing an addition on their existing brickyard.

## ***RYERSON UNIVERSITY*** | 2011-2015

Community Centre Village: *health connecting neighbours*



Project Type: Community Centre Facility  
Project Location: Toronto, Canada  
Project Duration: 2014

Collaborative design project of a Community Centre. The design concept divides the building between Mental and Physical Health, while keeping the public continuously connected to private programs.

Frankfurt Studio Abroad: *bridging the gap*



Project Type: Public Square Retrofit Design  
Project Location: Frankfurt, Germany  
Project Duration: June - July 2014

Bridging the divide between economic and societal segregation in Frankfurt, both conceptually and physically, through the design of a pavilion to retrofit and revive the city's centre square.

## ***WORK SAMPLES*** | 2017-2021

West 8 Urban Design & Landscape Architecture



Collection of samples from projects I worked on during my internship at West 8 in New York. These projects showcase a variety of drawings and designs I worked on, either solely or with a collaborative team with the Rotterdam office in the Netherlands.

Upper Canada Consultants Ltd.



Sample of a Colour Plan produced from a collaboratively designed Draft Plan of a Subdivision for Pre-Consultation and approval from Niagara Region's City Council.





# 01 EUDAIMONIA

sea energy

## Project Type: Academic Institution Design & Master Plan Design

Unit: Intermediate 15: The Athens Studio

Unit Tutors: Ryan Neiheiser & Kristina Argyros

Project Duration: 2016 - 2017

Project Location: Athens, Greece

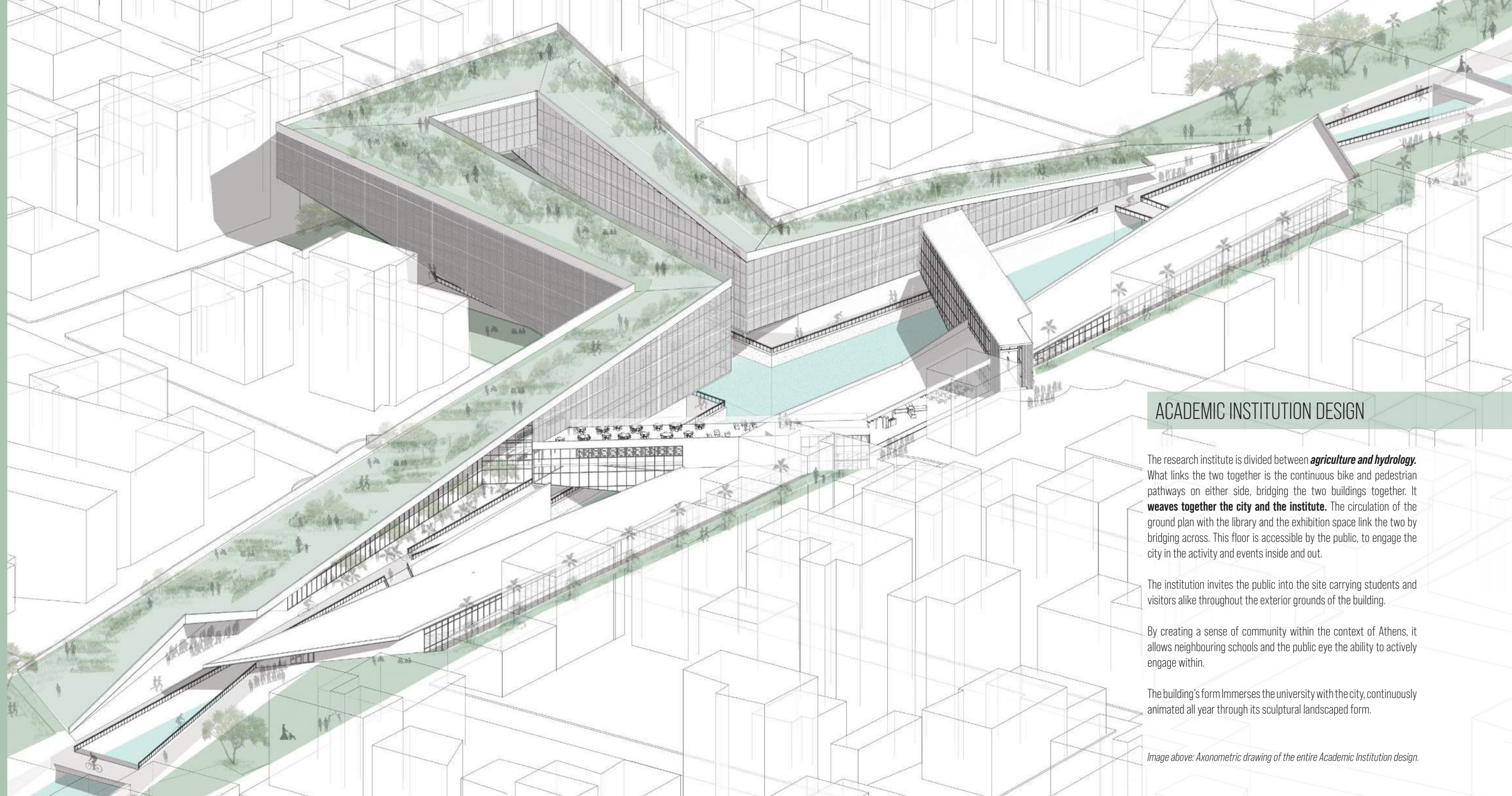
**Eudaimonia**; an ancient Greek term Athenians used to shape their city. It means **human flourishing**. What do we need to flourish? It can be found in the form of great public space, humble sidewalks, parks, bike paths, or maybe in the form of a school.

The objective of this studio was to **design an educational institution within our master plans for specific neighbourhoods in Athens**. The focus of my research institution is the “**Study of Hydrology with a Focus on Water-Related Hazards and Water Dynamics**” as well as the “**Study of Agriculture with a focus on Sustainable Technological Advancement**”. It would become an extension of the Agricultural School and Engineering Programs of universities in Athens.

The Research Institute is located along the Ilissus River. This river was the site for my **master plan** to link the city centre to the waterfront, through means of a **linear pedestrian parkway**. As Athens expanded in the 19th century, the river became neglected and polluted. The river would be rejuvenated to bring back the presence of water and greenery within Athens, as the vital source of fresh water it once was.

Athens has long dry summers and the first significant autumn rains can result in severe flooding. Due to these extreme weather conditions I designed a way to control the water flow through a series of 26 locks. The water of the Ilissus River is polluted; therefore, a water filtration system will be integrated and operated by renewable energy, through means of bridges. These bridges act as a pump to generate clean water, and control the flow and water levels, similar to a canal. Once the water is cleaned, the Research Institute can use it for various programs throughout the campus.

By designing an institution that gives students and teachers alike ownership over their space, as well as respect for their building and its facilities, it ultimately empowers them to enhance their performance, inspiring them to **create and innovate through the production of knowledge**.



## ACADEMIC INSTITUTION DESIGN

The research institute is divided between **agriculture and hydrology**. What links the two together is the continuous bike and pedestrian pathways on either side, bridging the two buildings together. It **weaves together the city and the institute**. The circulation of the ground plan with the library and the exhibition space link the two by bridging across. This floor is accessible by the public, to engage the city in the activity and events inside and out.

The institution invites the public into the site carrying students and visitors alike throughout the exterior grounds of the building.

By creating a sense of community within the context of Athens, it allows neighbouring schools and the public eye the ability to actively engage within.

The building's form immerses the university with the city, continuously animated all year through its sculptural landscaped form.

Image above: Axonometric drawing of the entire Academic Institution design.





Image above: Rendering of the public space within the building where the Hydrology & Agricultural sections of the institution all join together in this open-air gathering space.

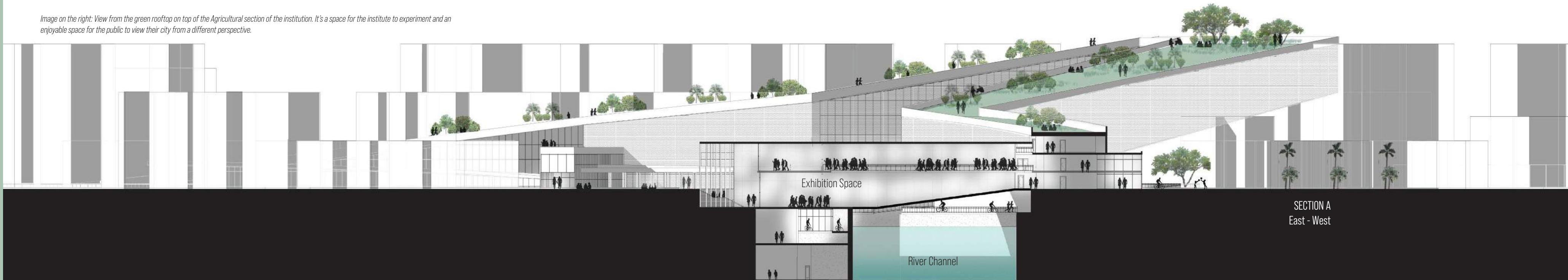


Image on the right: View from the green rooftop on top of the Agricultural section of the institution. It's a space for the institute to experiment and an enjoyable space for the public to view their city from a different perspective.

## SITE CONTEXT DESCRIPTION

This site lies along one of the **ancient rivers, Illisus**. This river was once a vital source of fresh water for drinking, washing, cooking, religious purification, industry and waste removal. As Athens expanded in the 19th and early 20th century, the river became neglected and as a result polluted. It was gradually converted into a rainwater runoff conduit.

Its current condition along the edge of the site has a road lane on either side, a few playgrounds, and very little retail or commercial activity. This results in turning a **forgotten area of Athens, into an area full of potential for the cities growth.**





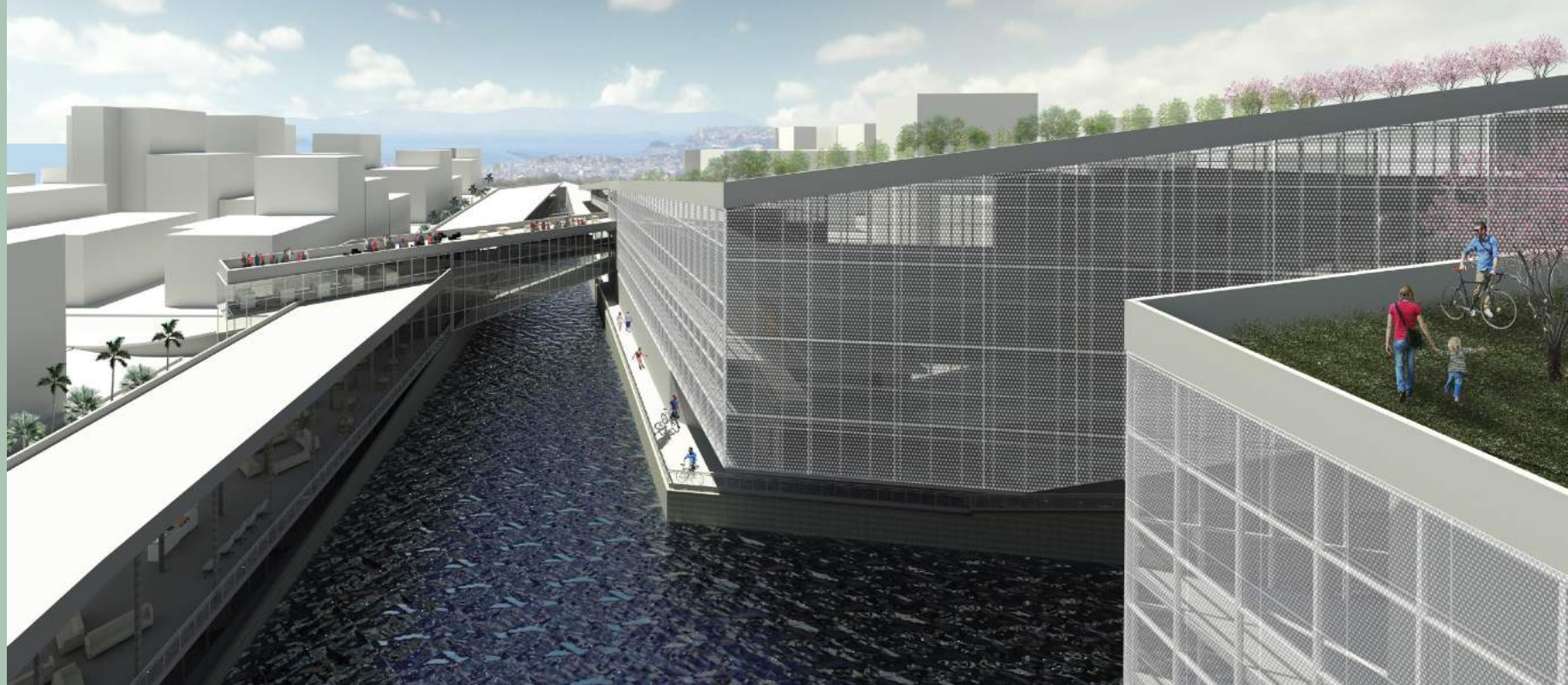


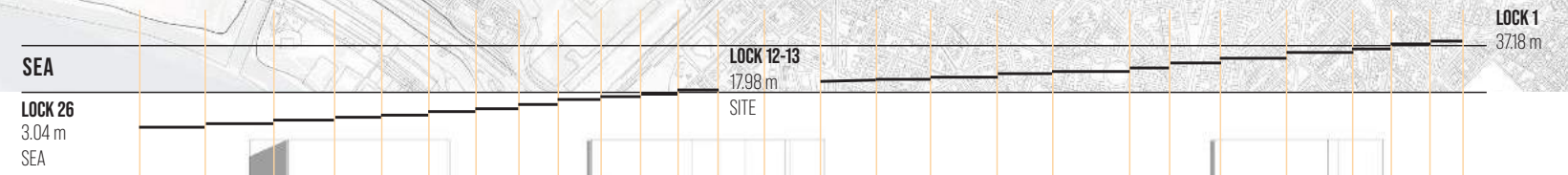
Image above: View from the middle of Institution, looking towards the sea. Left side is the Hydrology section, on the right is the Agricultural section. This view highlights the public spaces that weave the public and institute together.

By designing an institution that gives students and teachers alike **ownership** over their space, respect for their building and its facilities, it ultimately **empowers** them to enhance their performance, inspiring them to **create and innovate** through the production of knowledge.

## MASTER PLAN DESIGN

Throughout this master plan I designed a way to **bring the Illisus river back** through energy and environmental efficient means. A water filtration system will be operated by renewable energy, through the use of these bridges and platforms along the river, cleaning the polluted water of the river. To control the water flow, a **series of locks** are located along the new canal to ensure water is available at the school site all year round.

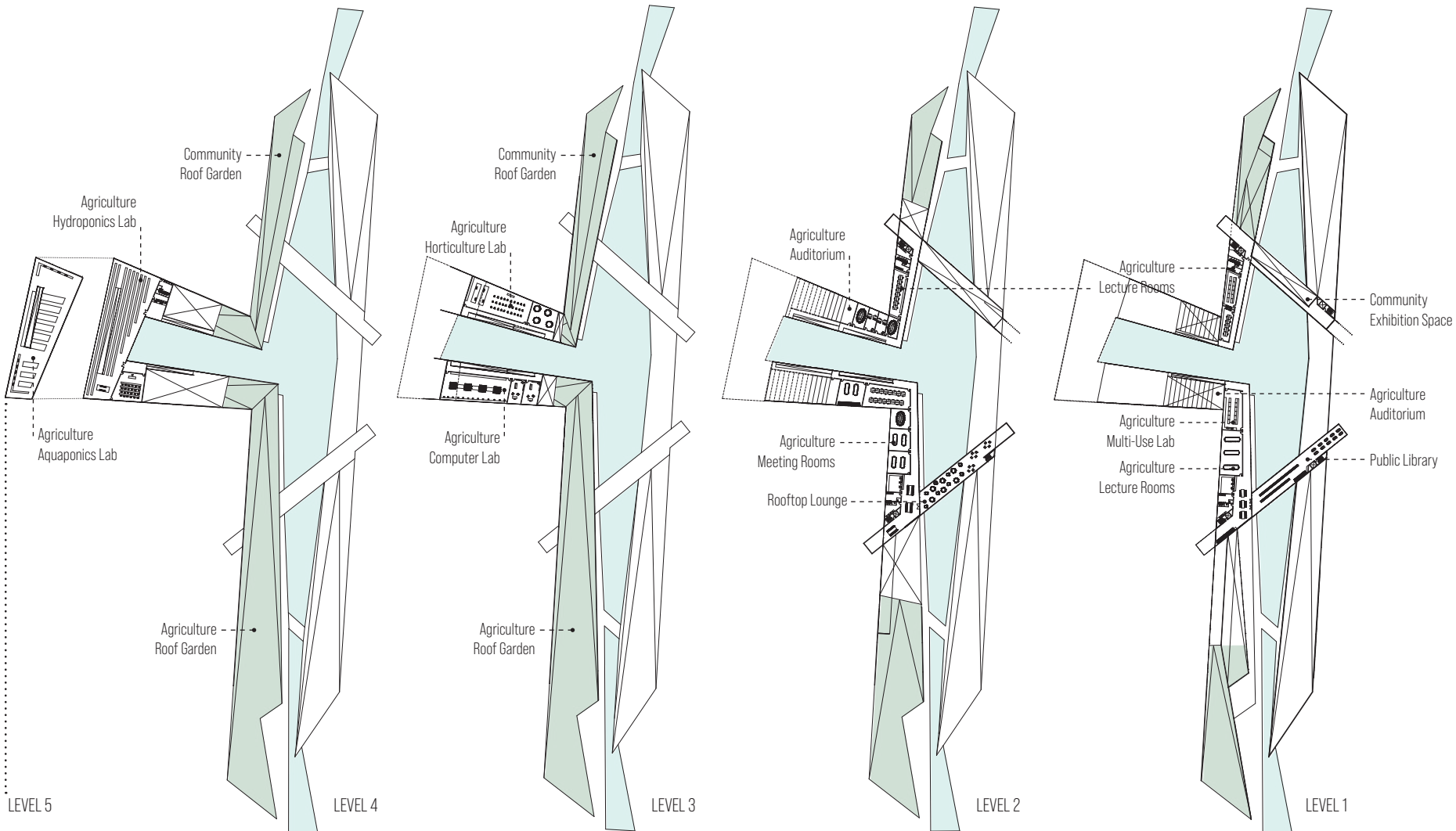
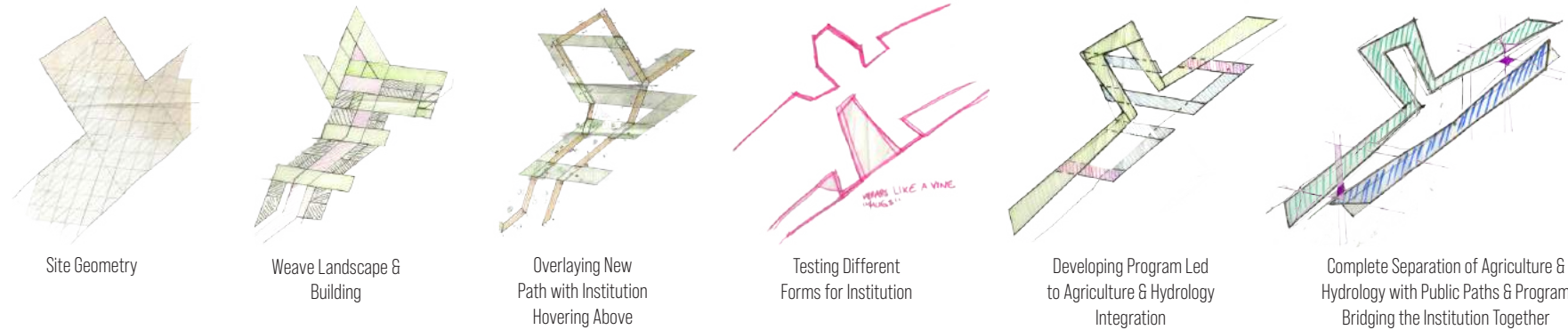
The hydrology programs can use the water for **tidal and wave simulations**. There would be a gray-water system for waste, and drinking water. The clean water will be used to **irrigate** the agricultural institute, to be used for green space to **experiment**, besides the hydroponics, and aquaponics and other labs available.



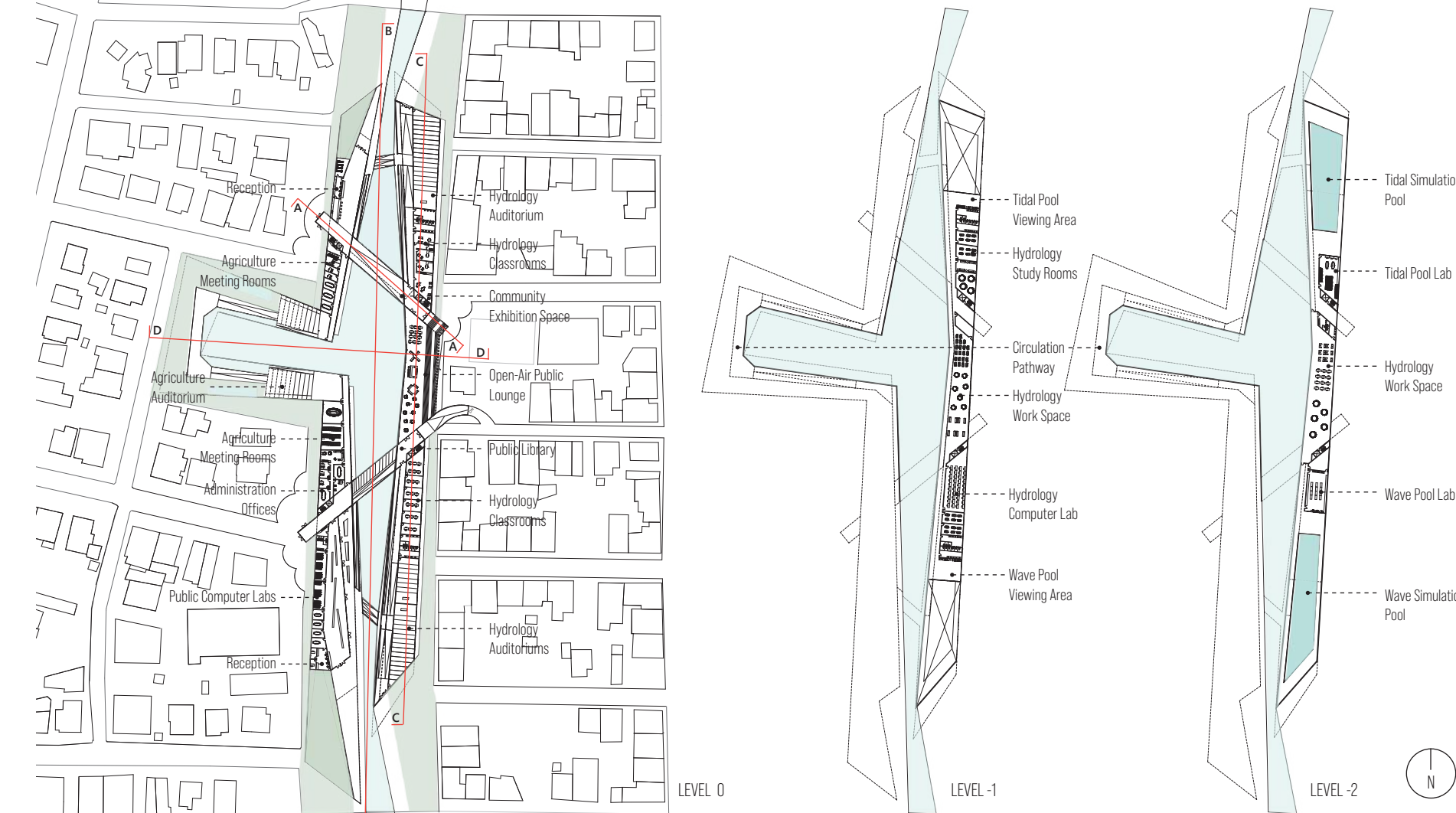
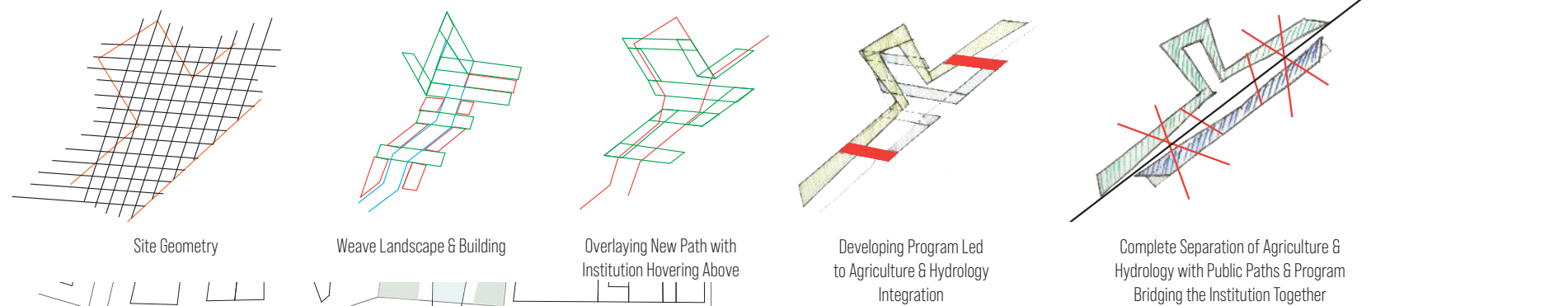
SECTION B  
North - South



DESIGN PROCESS SKETCHES



ANALYSIS OF DESIGN PROCESS







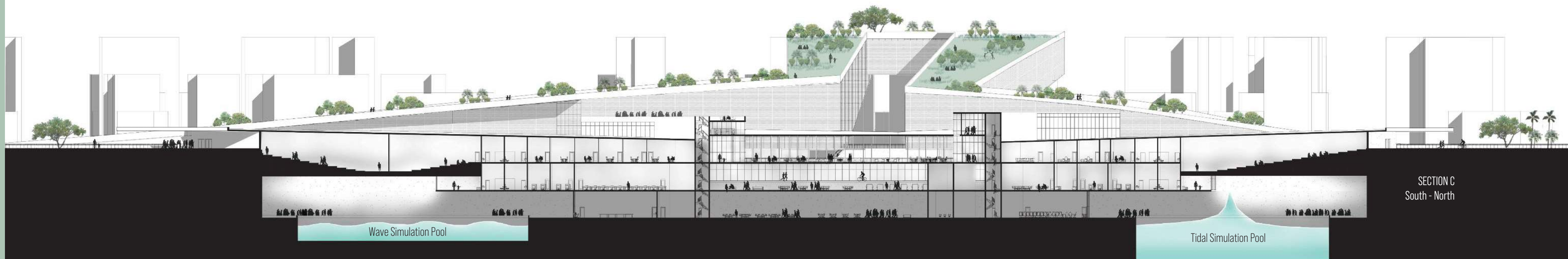
## SECTION MODEL OF ACADEMIC INSTITUTION

This model was produced in the final term of the year. It is a sectional cut down the middle of the institution in the west-east direction, and cut a third of the way towards the south. This sectional cut enables people to understand nearly every aspect of the design, especially how the ***program weaves the institution and the public together.***

This model highlights how the design ***utilizes programmatic organization to create moments of transparency*** throughout, especially at the street level. Allowing opportunities to learn and understand what production is occurring. Putting significance on the ***importance of collaboration***, to gain knowledge, and learn from one another, to further the collective growth of the institution and the city.

Image above: Sectional model viewing institution towards the south, photograph showing the west-east cut.

Dimensions are 170 cm by 85 cm by 60 cm. Scale 1:100



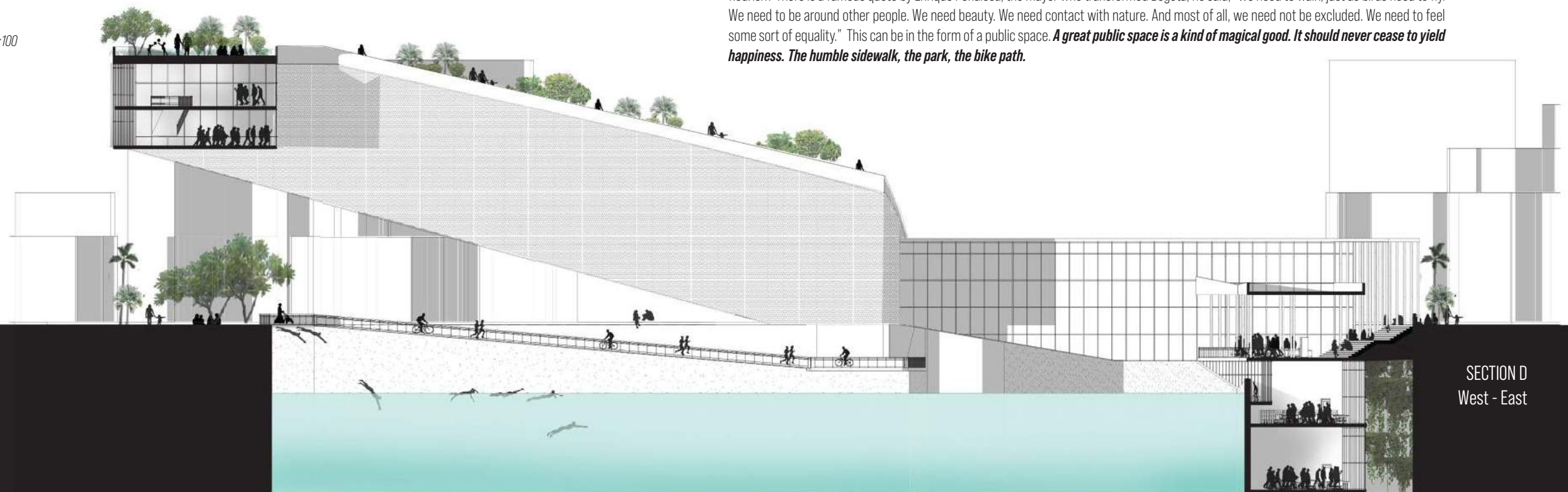




#### SECTION MODEL OF ACADEMIC INSTITUTION

Surrounding images: photographs of specific moments represented in the model, either of detailed spaces, various programs, unique moments and viewpoints.

Dimensions are 170 cm by 85 cm by 60 cm. Scale 1:100



SECTION D  
West - East

#### TO CONCLUDE

**Eudaimonia**; an ancient term Athens shaped their cities around. It can be literally translated as **human flourishing**. So, what do we need to flourish? There is a famous quote by Enrique Penalosa, the mayor who transformed Bogotá, he said, "We need to walk, just as birds need to fly. We need to be around other people. We need beauty. We need contact with nature. And most of all, we need not be excluded. We need to feel some sort of equality." This can be in the form of a public space. **A great public space is a kind of magical good. It should never cease to yield happiness. The humble sidewalk, the park, the bike path.**



## 02 LET'S TALK SHIT

*revealing ugly truths*

## 2-Year Master's Thesis

## Part 1: Material Invention and Supply Strategies

## Part 2: Material Design Application

### Part 3: Material Manufacturing and Facility Design

Unit: Diploma 12: In Other Worlds &amp; Diploma 18: Opalis UK

Unit Tutors: Inigo Minns, Ivan Morrison &amp; Daisy Ginsberg (Diploma 12), Aude-Line Duliere,

Maarten Gielen, &amp; Lionel Devilegner (Diploma 18)

Project Duration: 2018-2020

Project Location: UK & Canada

This thesis involved the **innovation of new building materials** created from fibrous digestate collected from anaerobic digestors, specifically those processing animal and food waste. These can help alleviate environmental and economic stresses, while **challenging the ethics of how we build, perceive, and culturally value materials**.

This change begins by teaching both communities and building professionals how this movement can benefit their area locally, creating a shift that can have global impact.

## 2.1 DIGERO INVENTION & SUPPLY STRATEGY

**The urgency** is the excessive amount of waste produced specifically from dairy cows and the improper recycling of food that globally proves to be harmful environmentally. Anaerobic digestion helps farmers manage waste while benefiting from bio-gas fuel generated from extracting methane for electricity, to reduce carbon emissions and air pollution. A localized material supply strategy was envisioned to locate fibrous digestate.

A 10-tonne shipment of fibrous digestate was provided from GP Biotech, that is 50% animal waste and 50% food waste, to begin testing with various binding agents.

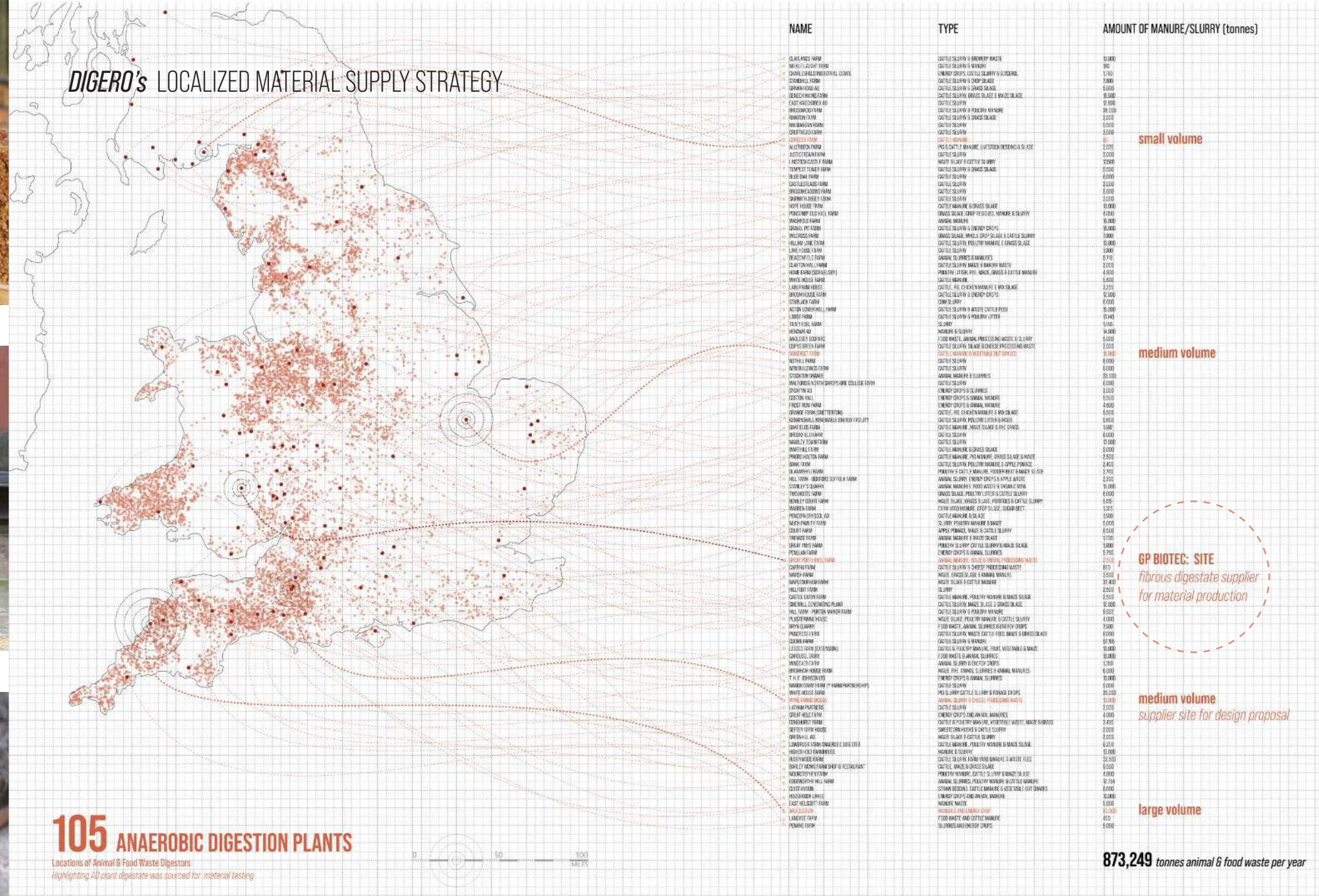
Fibrous digestate was rigorously tested with various binding agents. To distinguish these materials from others, I have named them **Digero**; derived from the Latin term for '**digest**'. Construction techniques applied to Digero are **rammed earth walls, floors and compressed earth structural block, while integrating local resources.**



*Image above: Digero Compressed Structural Blocks drying in the sun.*

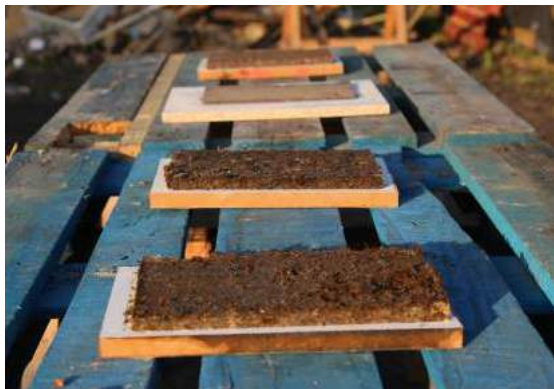


*Image above and below: Digerio Compressed Structural Panels undergoing strength testing.*



By formulating a series of analytical mappings, a **localized material supply strategy** was envisioned to be utilized nationally. Out of the current 579 operational AD plants, it was important to map 105 of those specifically using cow manure/slurry and food waste. There are three types of digestate: liquid, solid and fibrous. Facilities such as **GP Biotech**, produce all types of **digestate that are 50% animal waste and 50% food waste**. The mass supply allows for the creation of the building materials made with it to be **highly affordable**.





## DIGERO: MATERIAL PRODUCTION & TESTING

To distinguish these materials from current ones, I have given it the name *Digero*, derived from the Latin term for *'digest'*.

Fibrous digestate creates the potential for materials to have extremely high thermal mass capacities making them a great insulator. These tests also proved to have high compressive strength and low tensile strength, revealing the materials limitations.

The most suitable construction techniques to apply to *Digero* would be *rammed earth and compressed earth block*, while integrating local resources in my design application (Part 2).

What if we could **change and challenge the ethics of our current building industry** by reducing global carbon dioxide emissions by utilizing animal and food waste through anaerobic digestion to create new building materials? *The urgency behind this project is the excessive amount of "waste" that globally proves to be harmful and problematic for the environment.*



Material tests I conducted were bioplastic, various adhesives, structural block mixtures with concrete, lime & aggregates, and panels with lime and concrete mixtures.

Cow-dung as a stabilizer significantly improves the mechanical strength due to the natural plant fibres it contains from their diet. The presence of cow-dung in the tests, create a material that is resistant to water, ultimately improving its mechanical behaviour.

*Images: Taken at Studio Morrison and the Architectural Association while making and testing the materials. Full documentation can be found on my website ([www.sarahdevries.co](http://www.sarahdevries.co))*





ANALYTICAL MAPPINGS | Proximities of UK Dairy Farms in Relation to Clay & Soil Beds and Anaerobic Digestion Plants

I produced a series of analytical mappings, specifically targeting the UK, to create a localized strategy of where the clay and soil beds exist, in **proximity to the dairy farms that use anaerobic digestion**. This research is ongoing to ensure the production of materials remains local to further **minimize the carbon footprint**.

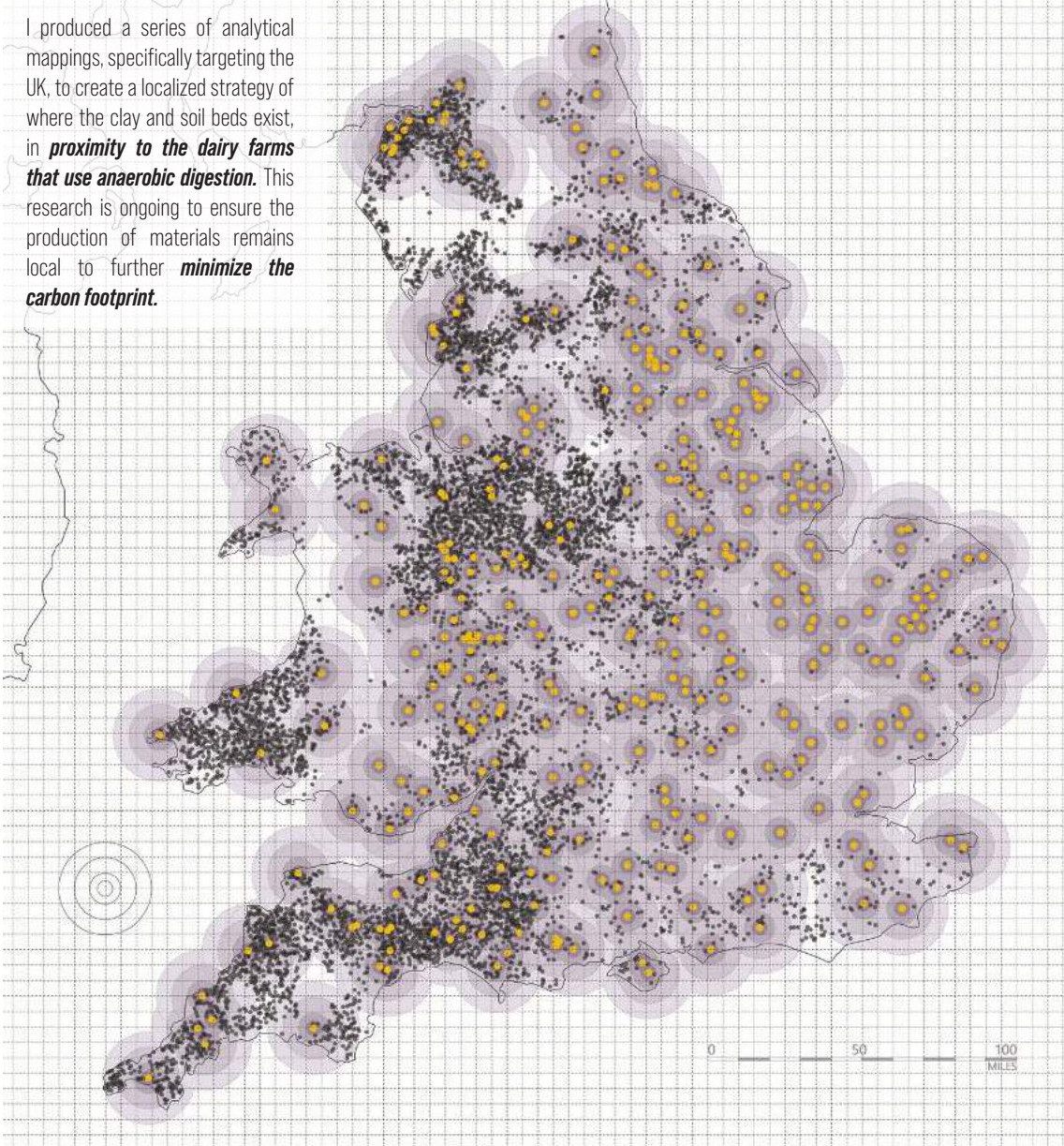


Image above: Map overlaying all the dairy farms in relation to where the AD plants are (yellow dots). The purple rings are the proximities between the dairy farms and AD plants.

During a field research trip to Wales, I met with large and small dairy farmers to discuss waste management from a farmer's perspective. Concluding, anaerobic digestion helps intensive dairy and cattle farms manage waste while benefiting from the bio-gas fuel generated from extracting methane from the waste, which **reduces carbon emissions and pollution**.



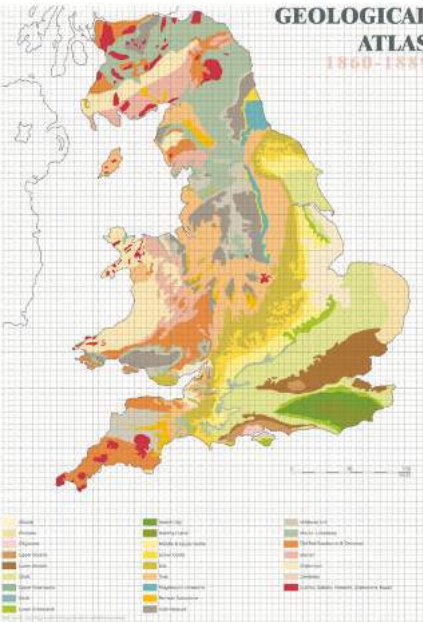
Image above: Taken at Holden Dairy Farms in Wales, while interviewing Patrick Holden, founder of the Sustainable Food Trust.



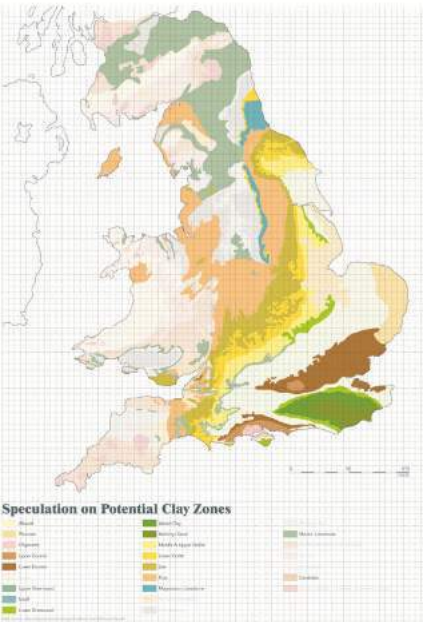
Image above: A 10-tonne shipment of fibrous digestate was organized to Studio Morrison to begin testing the fibrous digestate with various binding agents (image below).



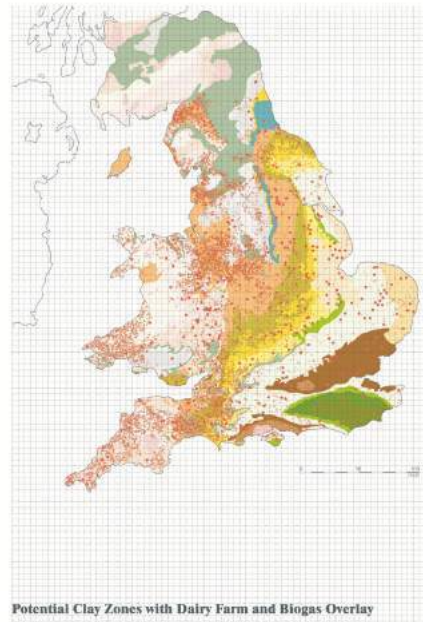
Map produced of all the dairy farms throughout the UK, with the name of all 9,170 farms overlaid on the drawing.



Map produced after sourcing the Geological Atlas to find where all the clay beds are throughout the UK.



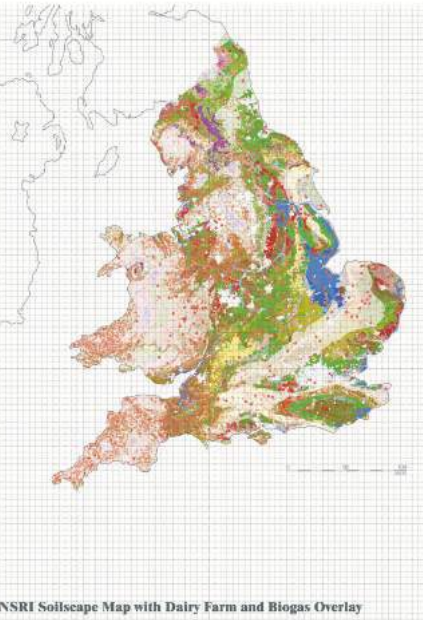
Map analyzing which clay beds are most suitable for brick production. The areas faded out are unsuitable clay beds for brick making.



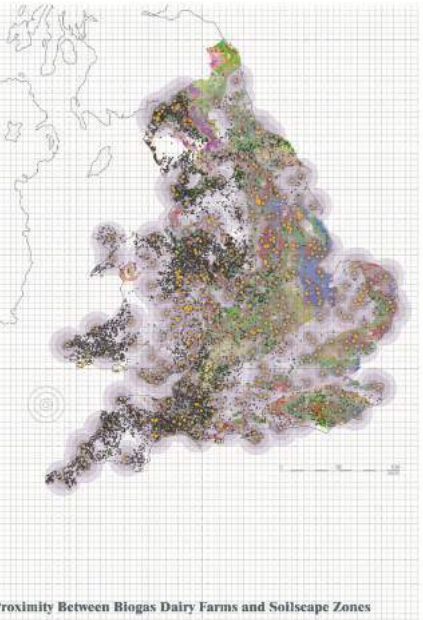
Map overlaying all the dairy farms in relation to where the clay beds are that could be used for brick making.



Map produced after sourcing the NSRI Soilscape to find where all the soil beds are throughout the UK.



Map overlaying all the dairy farms in relation to where the clay and soil beds are that could be used for brick making.



Map overlaying all the dairy farms in relation to where the AD plants are (yellow dots), as well as their relation to the soil beds. The purple rings represent proximities between the dairy farms, AD plants and the soil beds.



Map overlaying all the dairy farms in relation to where the AD plants are (yellow dots), as well as their relation to the clay beds. The purple rings represent proximities between the dairy farms, AD plants and the clay beds.



# LET'S TALK SHIT

## 2.2 DIGERO DESIGN APPLICATION

**Project Type: Church Renovation & Addition**

Unit: Diploma 12: In Other Worlds

Project Location: Niagara, Canada

For **Digero** to create real change, the process begins by teaching communities and building professionals how this movement can benefit them locally.

This portion of the thesis was to **utilize Digero and test its design application to an actual proposed project.**

This was explored and **presented to local leaders** through an actual proposal located at Covenant Church in the Niagara Region in Canada. Knowledge of how waste can be used as a powerful resource will create a shift, resulting in global impact.

Firstly, I needed to analyze and justify how Digero could fit into this new context away from the UK. This required rigorous research into the Niagara Region to source fibrous digestate in relation to local dairy farms and the necessary clay and soil beds available.

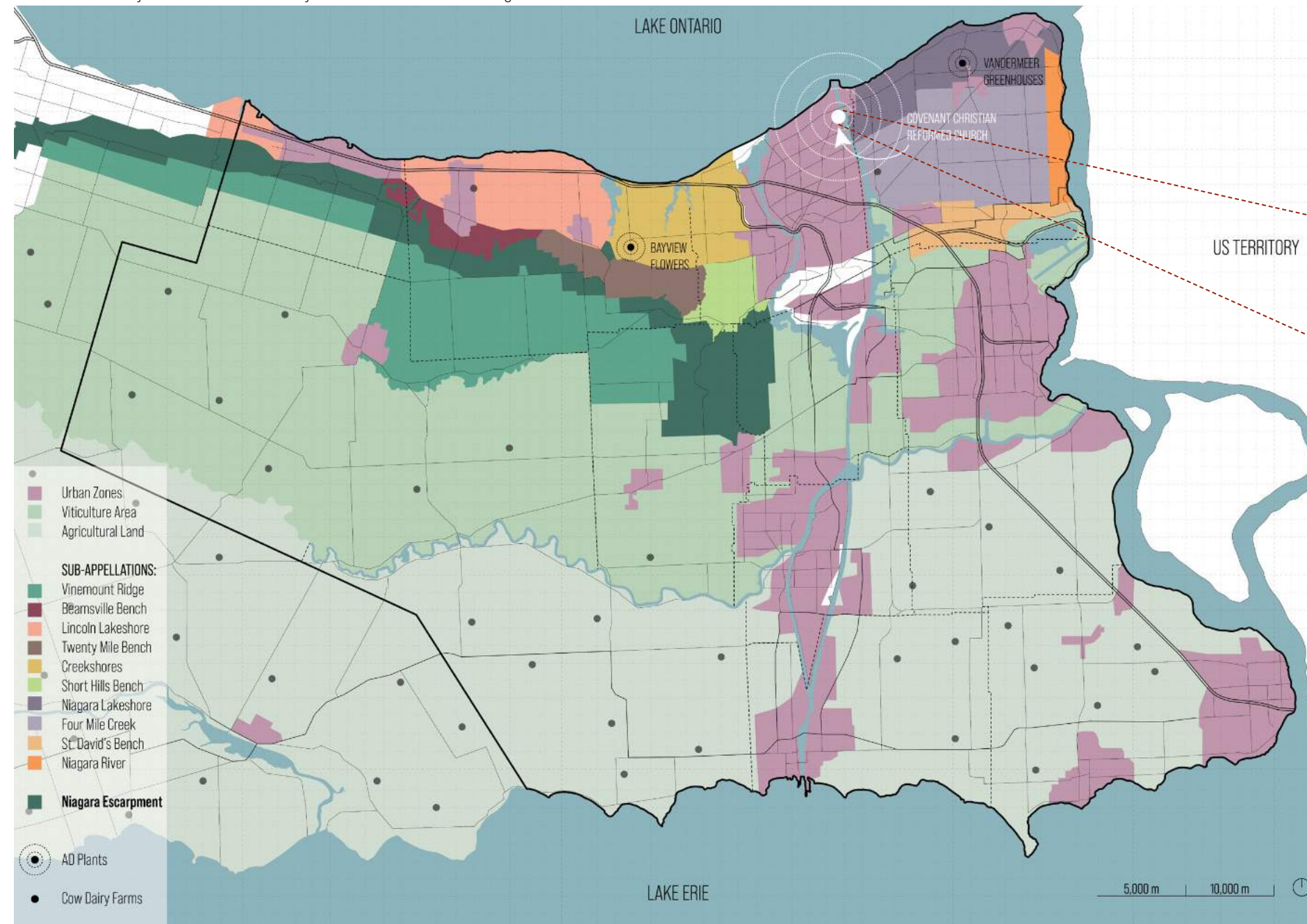
Secondly, the actual proposed project is Covenant Christian Reformed Church. This church has been wanting to renovate and build an addition for a number of years. I applied Digero to every aspect possible in my redesign for the church, while keeping in mind the churches needs and desires for their future growth.

Architecture plays an important role on the way materials are valued, culturally, aesthetically, and structurally.

By using **Digero in a cultural design**, a larger change is brought about regarding how we **value materials, ultimately elevating the environmental necessity to rethink old perception of how we build.**

### NIAGARA ANALYTICAL CONTEXT MAP

Proximities of Dairy Farms in Relation to Clay & Soil Beds and Anaerobic Digestion Plants



Map of the Niagara Peninsula, locating the dairy farms, agricultural land, and AD plants in relation to the actual proposed project site at Covenant Church.

### CONTEXT PLAN OF DESIGN APPLICATION SITE

LOCATION: Covenant Christian Reformed Church, Niagara, Canada



The **actual proposed project** is in my hometown the Niagara Region of Ontario, Canada. Niagara is a peninsula of land ideal for tender fruit growing. An escarpment follows an east-west corridor through the region, adding to this **unique micro-climate**; to act more as a maritime climate. **Ontario plans to ban organic waste from going to landfill, so AD will have more potential than ever for expansion.**

The actual project site is Covenant Christian Reformed Church. Established in the early 50s by Dutch immigrants who have a long history of farming within the Region.



Current exterior of Covenant's main entrance.



Current exterior of Covenant's side entrance.



Lockside Cove Cafe, property owned by Covenant. Location of new main entrance design.



Image of Welland Canal along the trail near the site.





Image above: Exterior main entrance remains inaccessible and uninviting to the public.



Images above: Sanctuary that has reached maximum capacity. Used for community programs due to lack of appropriate space throughout the church.



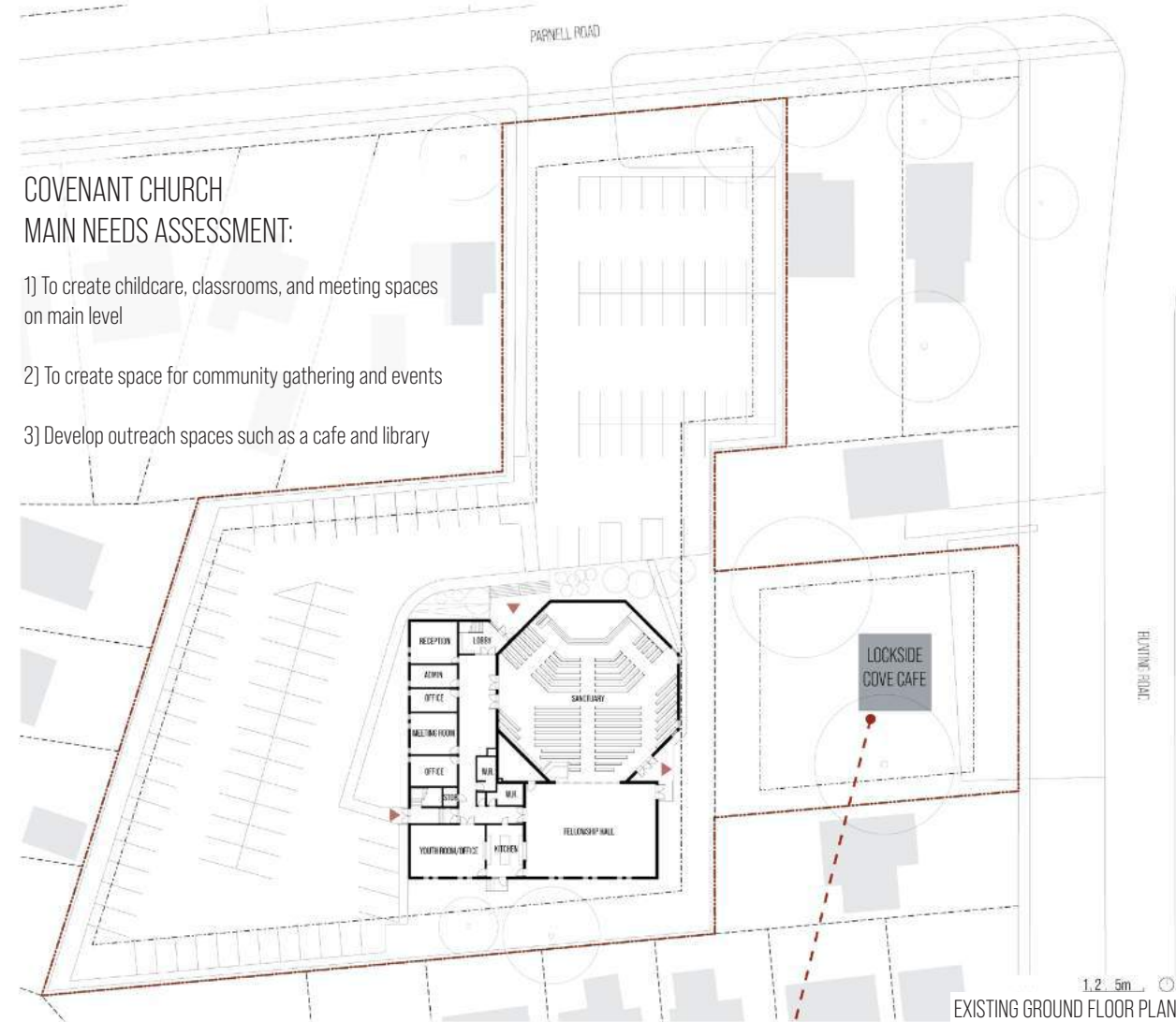
Images above and below: Presenting project proposal to leaders within the church.



## EXISTING SITE

### COVENANT CHURCH MAIN NEEDS ASSESSMENT:

- 1) To create childcare, classrooms, and meeting spaces on main level
- 2) To create space for community gathering and events
- 3) Develop outreach spaces such as a cafe and library



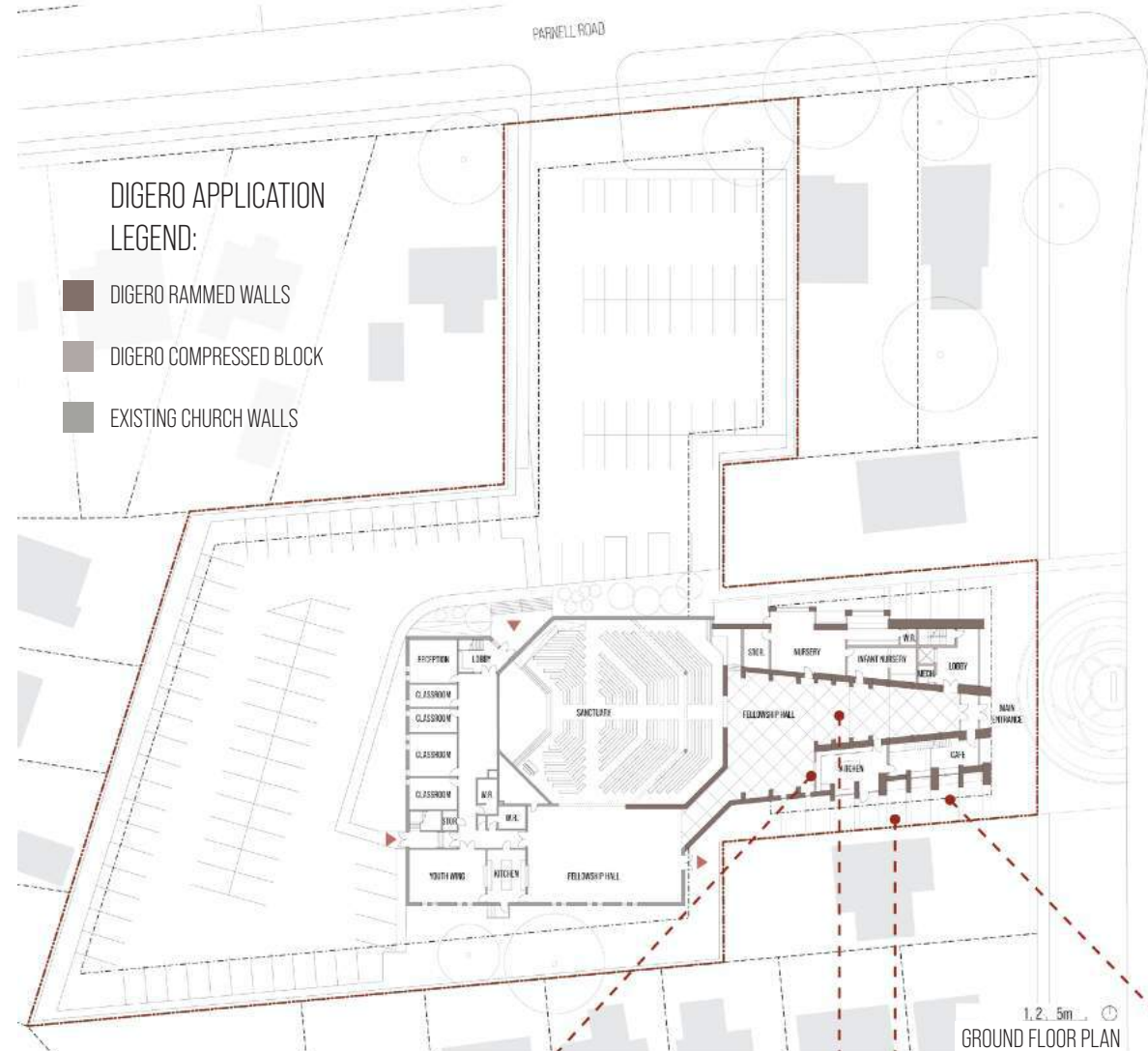
EXISTING GROUND FLOOR PLAN

Covenant owns the property to the east which is currently used as a café, the Lockside Cove Cafe. The addition of the new design takes advantage of this land by placing the **new entrance** on this street front to become more **present within the community** as it's currently hidden from view, while simultaneously attracting the public eye for the awareness of the material use.

The sanctuary orientation was turned 90 degrees and extended towards the east, providing a direct sight line towards it from the new main entrance. Public programs, such as a café, are separated from the private programs, such as the nursery, on the north and south side respectively of the fellowship hall on ground floor. A library is located on the second floor, with classrooms and administration above on both the second and third floor towards the north.

I presented to three leaders within the church, the pastor, head of council, and a member of the design committee. Their background in farming & construction led to a productive discussion of why we need to **build with a sustainable mindset**. Educating community members on Digero's environmental and economic benefits, **created a shift in conversation**.

## APPLICATION OF DIGERO TO NEW DESIGN BUILD



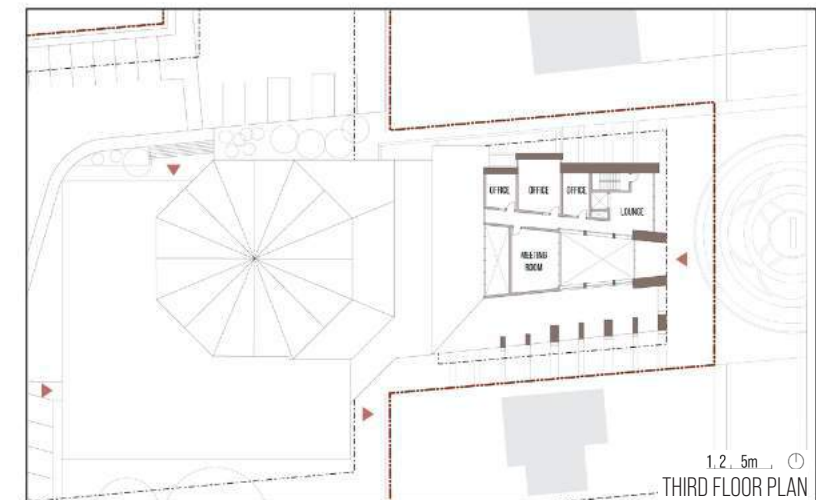
GROUND FLOOR PLAN



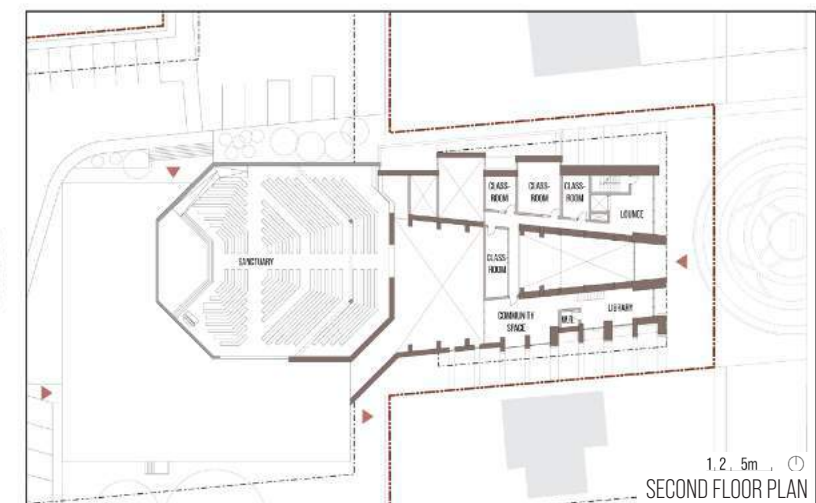
Image: Material test of Digero Compressed Block



Image: Material test of Digero Rammed Flooring Panel



THIRD FLOOR PLAN



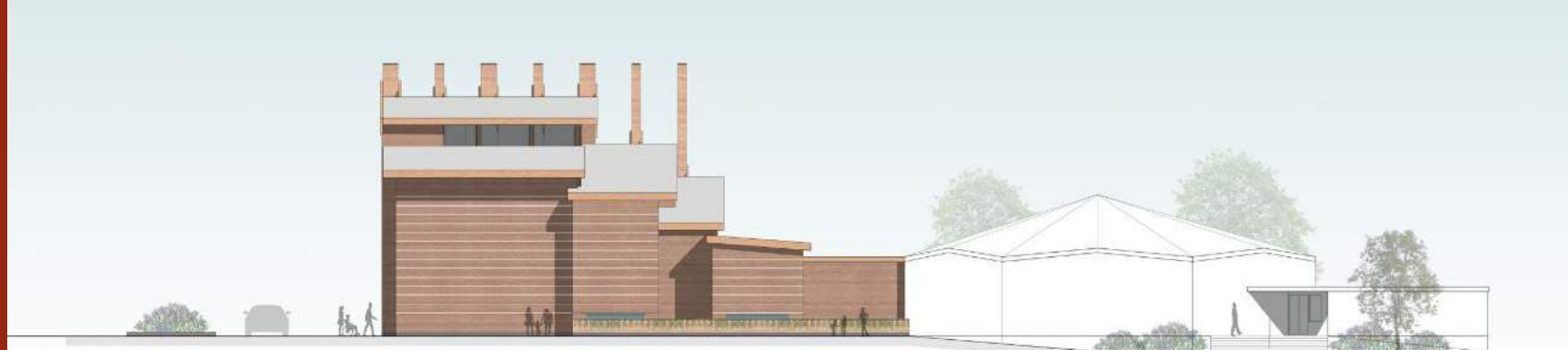
SECOND FLOOR PLAN

The **thickness** of the **Digero Rammed Walls** is determined by how much load it carries. The **thin walls** would be constructed with **Digero Compressed Blocks**. Unavoidably materials must be used for areas in need of tensile strength.



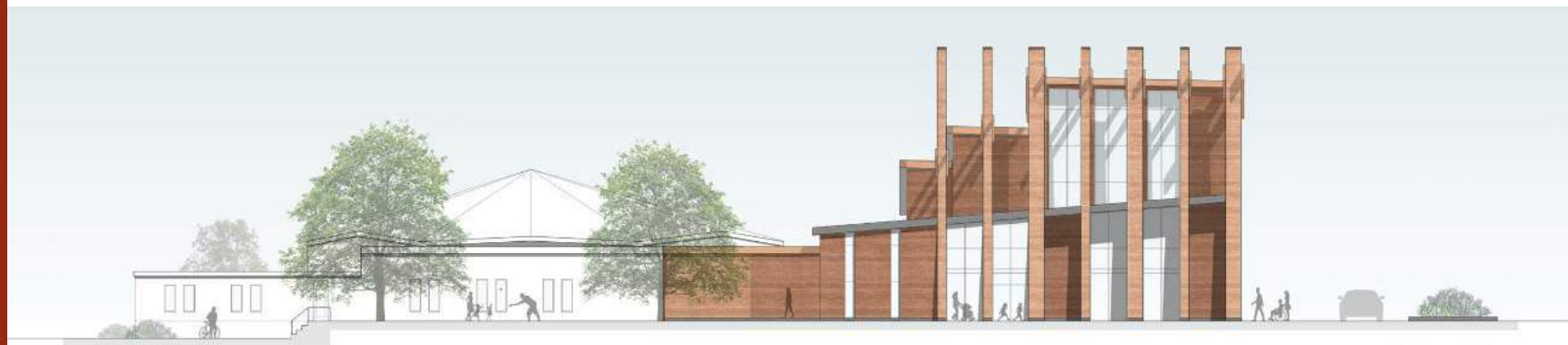
Image: South Facade render; highlighting the Digero Rammed Flooring and the Digero Rammed Walls





The **Digero Rammed Walls** on the north façade would have a trass-lime mortar drip edge to help shed water as most wind comes from the north-west. Low wall openings within the nursery create deep windowsills for kids to play.

1 2 5m  
NORTH ELEVATION



There are 7 bold columns on the south façade that **push the material to its height limits**. Wooden beams are used to help support the columns and the roof, while aesthetically representing a cross to distinguish the building as a church.

1 2 5m  
SOUTH ELEVATION

Within the atrium are wooden columns that line up with the wooden beams above and the Digero rammed walls below. These **walls extend past the floor plate to become the railing edge**. These columns follow the sight line towards the sanctuary, enhanced by the **pattern of Digero flooring panels**.

The **thicknesses of these columns carve out functional spaces within the café and library**. They are oriented to provide shade as well as to capture sunlight to store heat. Digero Rammed Walls in high traffic areas would be rendered with a smooth finish.



1 2 5m  
EAST ELEVATION



## NORTH FACADE DESIGN | DETAIL WALL SECTIONS

Rammed Earth Wall 45 cm  
Reed Insulation  
Clay Undercoat and Clay Plaster Finish  
Reinforced Trass-Lime Mortar Lintel

Friction-Fit Bracket Fixed to Load-Bearing Block Wall  
Rammed Earth Wall 30 cm  
Mineral Wool Insulation 14 cm  
Load-Bearing Block 18 cm  
Reinforced Trass-Lime Mortar Lintel

Low-Fired Mud Tiles  
Rammed Earth Floor 8 cm  
Cork-Clay-Trass-Lime Mixture 8 cm  
Reed Insulation 2 x 5 cm  
Concrete Slab  
Bituminous Waterproofing  
Foam-Glass Insulation  
Rich Loam  
Rammed Earth Floor 8 cm  
Cork-Clay-Trass-Lime Mixture 20 cm  
Foam-Glass Filling 20 cm

Low-Fired Mud Tiles  
Rammed Earth Floor 8 cm  
Cork-Clay-Trass-Lime Mixture 8 cm  
Reed Insulation 2 x 5 cm  
Concrete Slab  
Bituminous Waterproofing  
Foam-Glass Insulation  
Rich Loam  
Rammed Earth Floor 8 cm  
Cork-Clay-Trass-Lime Mixture 20 cm  
Foam-Glass Filling 20 cm

DIGERO RAMMED EARTH & REED INSULATION

DIGERO RAMMED EARTH & DIGERO COMPRESSED EARTH BLOCK

50 cm 100 cm

Images Top Left: View of the Fellowship Hall looking towards the new main entrance of the church, as well as the kitchen, towards the east.

Image Middle Left: View of the Fellowship Hall looking towards the sanctuary and the nursery on the right.

Image Bottom Left: View of the cafe viewing the stairs that lead towards the library on the second floor.

## TO CONCLUDE

It is through teaching communities, building professionals, contractors, and builders that this new material can benefit their area locally; creating a shift which would result in global impact. **Knowledge and awareness in how waste can be used as a powerful resource will create a shift that will challenge the current ethics of how we build.**

**Architecture plays an important role on the way materials are valued, culturally, aesthetically, and structurally.** Our role starts by addressing the leaders within our communities with real solutions that could be one step forward in the right direction.



# LET'S TALK SHIT

## 2.3 DIGERO MANUFACTURING FACILITY

**Project Type:** Manufacturing Facility Design  
Unit: Diploma 18: Opalis UK  
Project Location: Bellington, England

For **Digero** to create real change, the process begins by *rethinking and reinventing how we manufacture our building products*, for generations to come.

What materials do we see fit for the future? Should we create a new market that serves a greater purpose for future generations?

Fibrous digestate can be used as a stabilizer within Digero products, and has the potential to be a better alternative to contemporary methods. Digero products reduce the amount of clay and soil needed that would otherwise be extracted from the earth. They would also help alleviate the harm improper manure disposal can have on the environment. This ultimately helps *alleviate the ecological footprint, and expand the lifespan of clay beds*, in comparison to the current standard production of a gross number of building products.

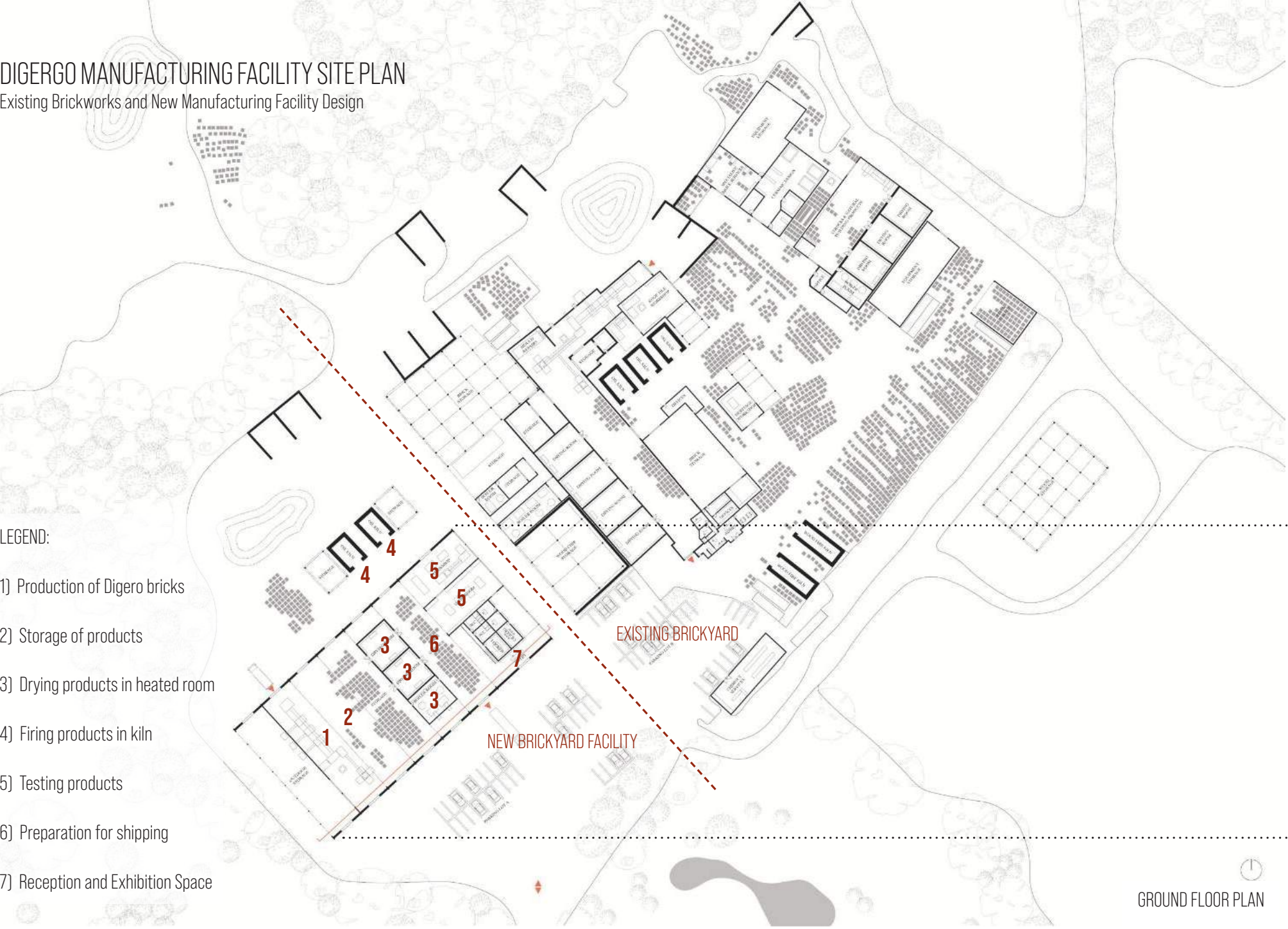
With this research I questioned how Digero products can change the building industry and the environment, specifically targeting the UK as a precedent.

By critically analyzing the geological mappings of usable clay and soil beds, in proximity to dairy farms, one can understand where the manufacturing of Digero products should occur within UK.

The site chosen to explore, test, and manufacture Digero, was at H.G. Matthews Brickworks, where the fibrous digestate would be supplied locally from Arla Foods. A brickyard production facility was designed with Traff Matthews, owner of H. G. Matthews. His time, advice and guidance was highly generous and will not be forgotten.

### DIGERO MANUFACTURING FACILITY SITE PLAN

Existing Brickworks and New Manufacturing Facility Design



#### LEGEND:

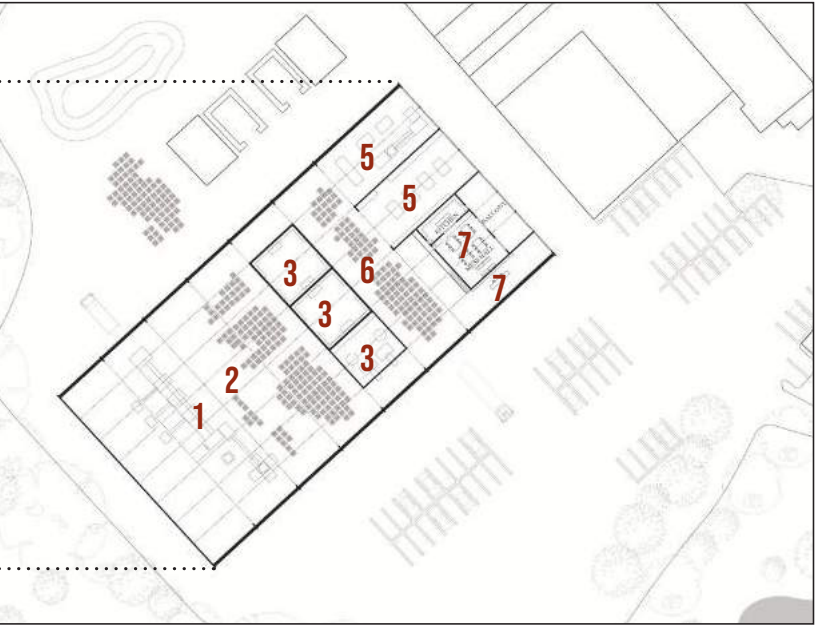
- 1) Production of Digero bricks
- 2) Storage of products
- 3) Drying products in heated room
- 4) Firing products in kiln
- 5) Testing products
- 6) Preparation for shipping
- 7) Reception and Exhibition Space

GROUND FLOOR PLAN

The existing brickyard site plan was generated from numerous site visits. It required **intense site documentation** and time. Through the guidance of Traff Matthews, I was able to critically understand how the brickyard operates, and taking note of how my design could *improve the efficiency of*



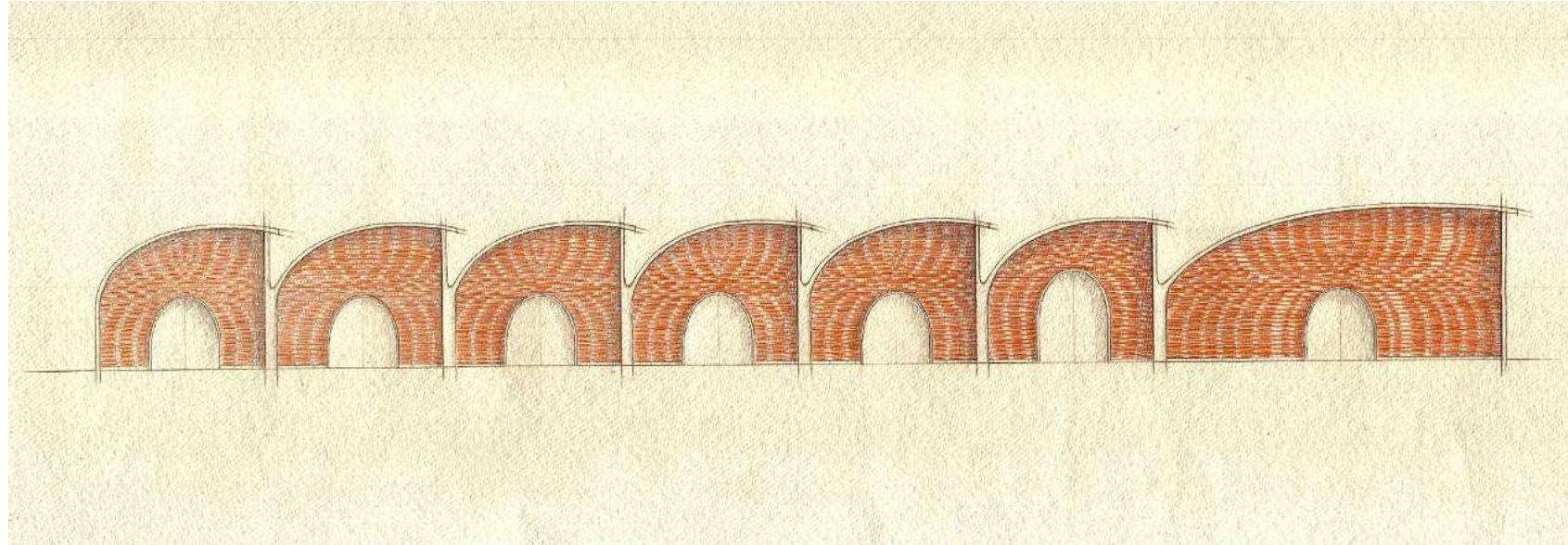
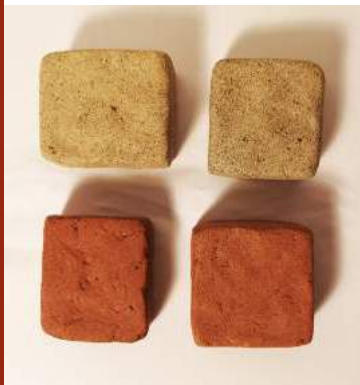
Image above: Context aerial image generated from Google Earth, of the entire H.G. Matthew's Brickworks property.



SECOND FLOOR PLAN

Images on the right: Photographs taken during site visits at H.G. Matthews Brickworks. All images pose significance to the brickyard's history, unique production, and product creation.





Images above: Testing sample bricks for various chemical bonding ratios.

Images above: Testing 1:1 bricks for colour, shape, and size.

Image above: Hand drawing of building elevation on watercolour paper. Dimensions: 120 cm by 60 cm. Scale 1:100

Image above: Exterior render highlighting the design of the brick facade pattern for New Proposed Facility.

Image on the left: Interior render highlighting design elements that enhance brick production, such as the Vierendeel trusses.

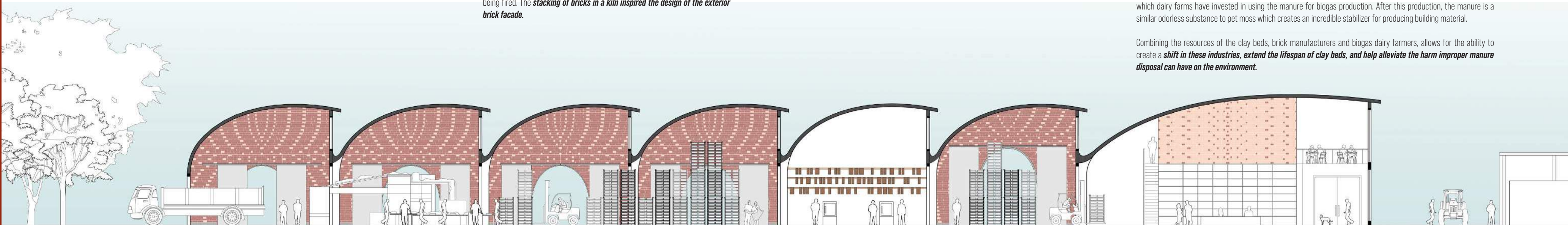
To create the brick design desired, various tests were done to achieve the right shape, colour, and size. **The facade design of the proposed Digero Manufacturing Facility would be mainly built from these two bricks that were designed** in the images above.

This **elevation** drawing above is identical on the south side of the building. It was inspired by the design of the kilns on the existing brickyard. Each kiln consists of 14 tunnels, 7 on either side. Bricks are strategically placed inside the kiln to create an arch around these tunnels to let air flow throughout the kiln while it is being fired. The **stacking of bricks in a kiln inspired the design of the exterior brick facade.**

## TO CONCLUDE

By critically analyzing the geological mappings of usable clay and soil beds, in proximity to dairy farms, one can understand where the manufacturing of Digero products should occur within in the UK. More specifically, investigating which dairy farms have invested in using the manure for biogas production. After this production, the manure is a similar odorless substance to pet moss which creates an incredible stabilizer for producing building material.

Combining the resources of the clay beds, brick manufacturers and biogas dairy farmers, allows for the ability to create a **shift in these industries, extend the lifespan of clay beds, and help alleviate the harm improper manure disposal can have on the environment.**



SECTION OF NEW BUILDING DESIGN ON SITE  
Representing how the brick making process works throughout the open floor plan through the use of Vierendeel trusses.



# 03 COMMUNITY CENTRE VILLAGE

## health connecting neighbours

**Project Type: Community Centre Facility**  
 Course: Third-Year Studio  
 Professors: Russell Richman & Jeff Geldart  
 Project Duration: 2014 - 6th Semester  
 Project Location: Toronto, Canada

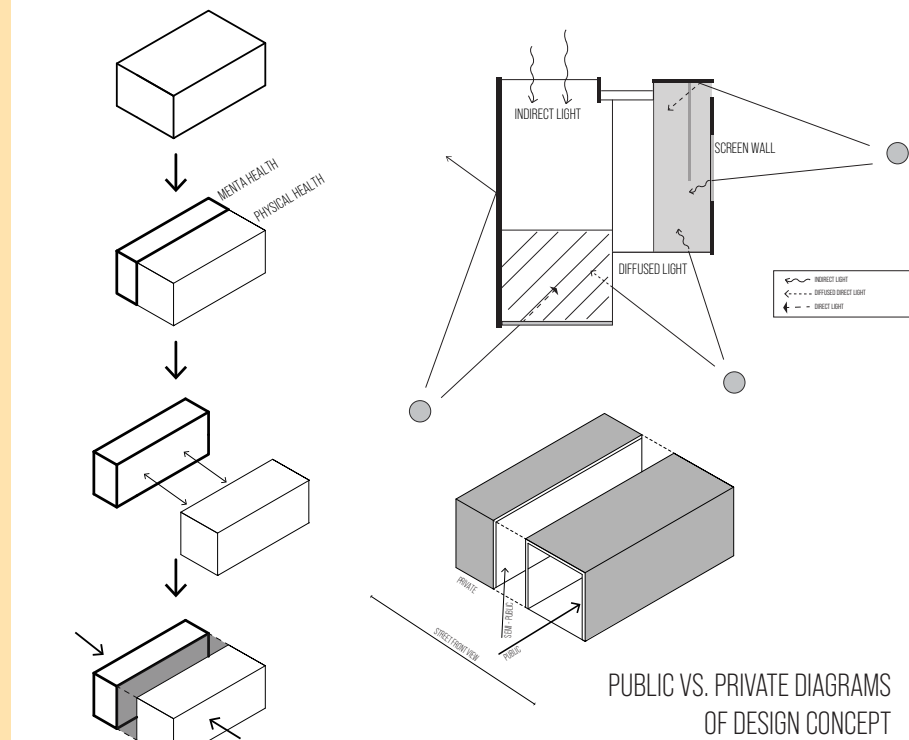
Collaborative design project of a Community Centre. The design concept divides the building between **Mental and Physical Health**, while keeping public continuously connected to the private programs.

This was a collaborative project between my studio partner and I, lasting a semester long. The outline of this project was to choose between our previous community centre designs. We collectively decided to continue to evolve my design (this design can be found on my website: [www.sarahdevries.co](http://www.sarahdevries.co)).

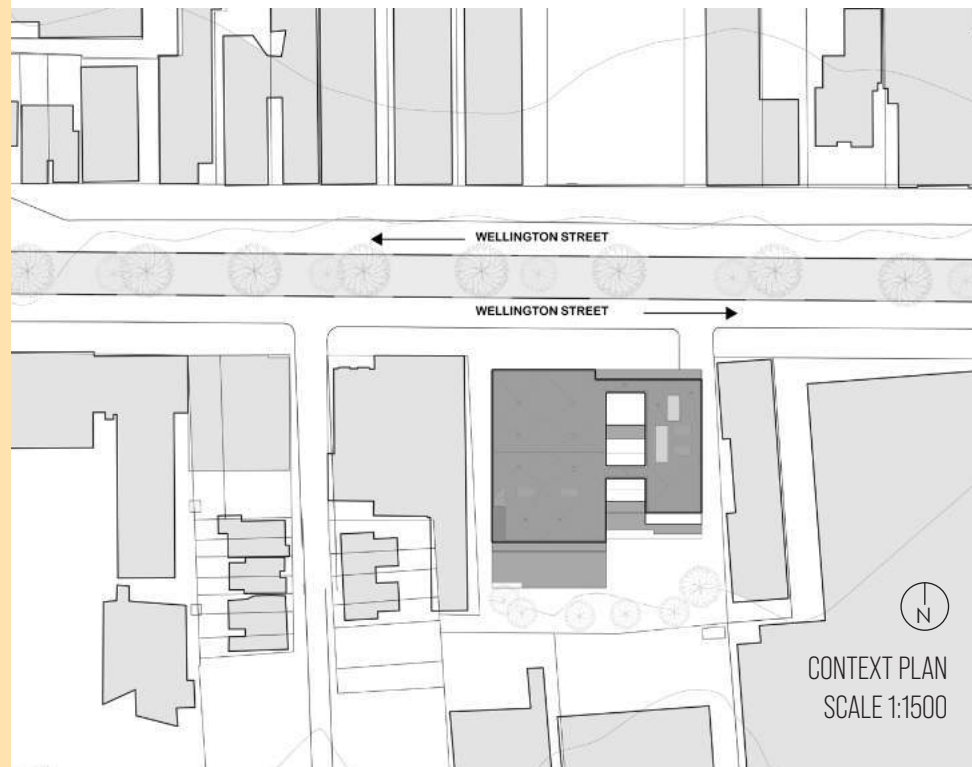
A **full set of construction documents** were produced for this design. **Innovative details** were developed to showcase various aspects of our design. While keeping the same program, we strategized regarding the form of the building to develop an even stronger concept. Many changes in the original decision were made to create a more sustainable design.

The physical and mental health programs were made completely separate from each other in this design. Treating this design as conceptually two different buildings attached by bridges on each floor, and joined on the ground floor.

The material of the facade changed from brick and wood to an aluminum panel. Two different exterior shading systems were introduced; one shading system of horizontal fins has a wider spacing, located on the physical health areas of the building. The other shading system of horizontal fins has closer spacing located on the mental health areas of the building to enhance their privacy. The spacing of the fins allows for a visual connection from one side to the other. This visual connection was important in order to engage people throughout all areas of the building, keeping it an open and welcoming place for all.



Separating public and private programs through the use of architectural design elements of form and materiality.

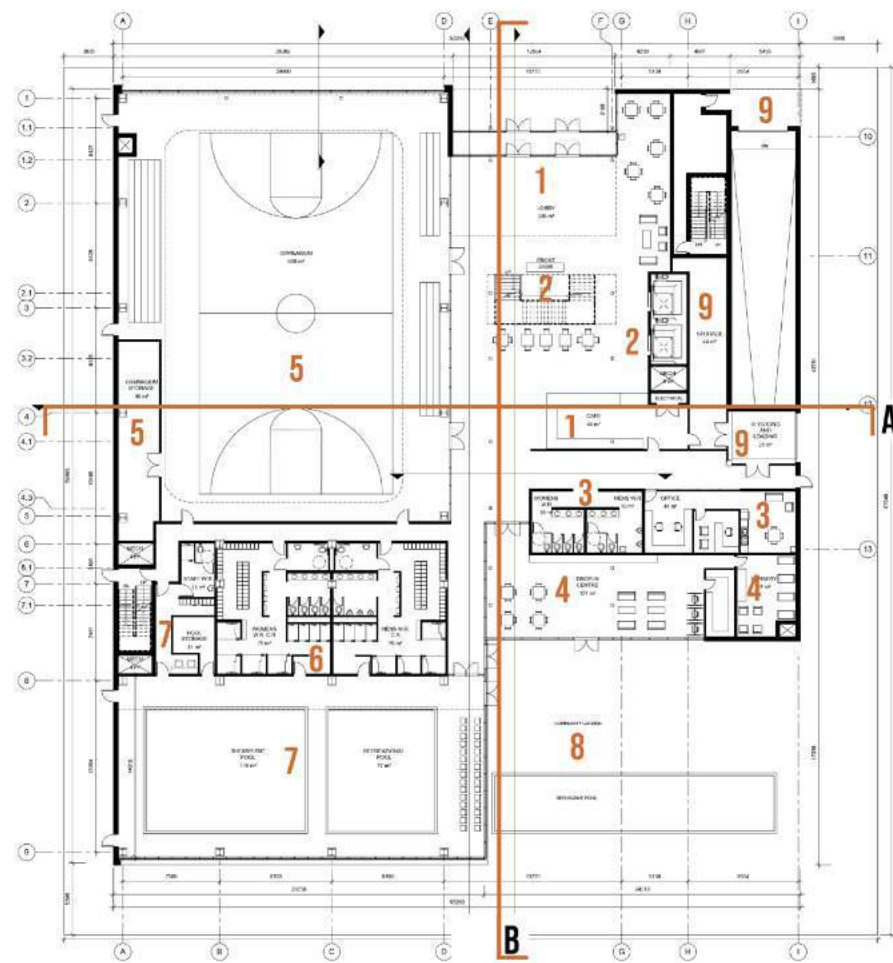


## COMMUNITY CENTRE DESIGN

### SECTIONAL PERSPECTIVE

This sectional cut is taken down the centre circulation corridor in the building. This drawing highlights the bridges that cross from the Mental Health portion of the community centre to the Physical Health side of the building. This drawing demonstrates how people can congregate at various levels throughout the building to enjoy the multiple programs available for the community, inside and outside of the building.

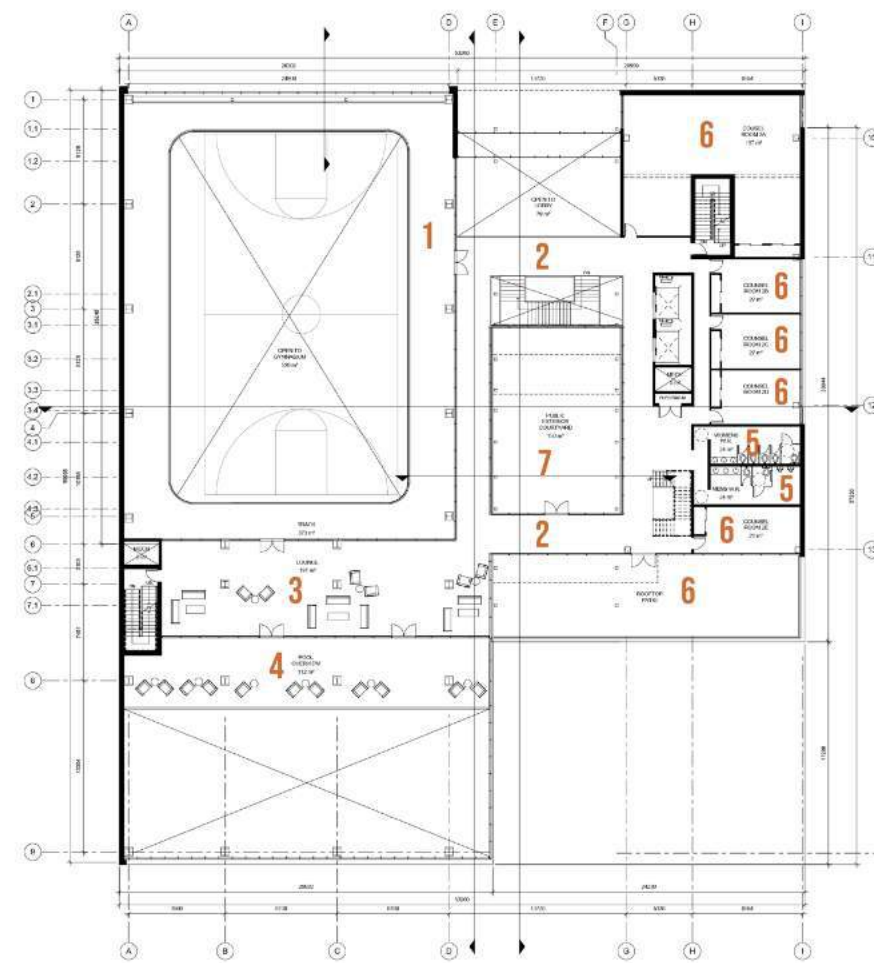




GROUND FLOOR PLAN  
SCALE 1:600

LEGEND:

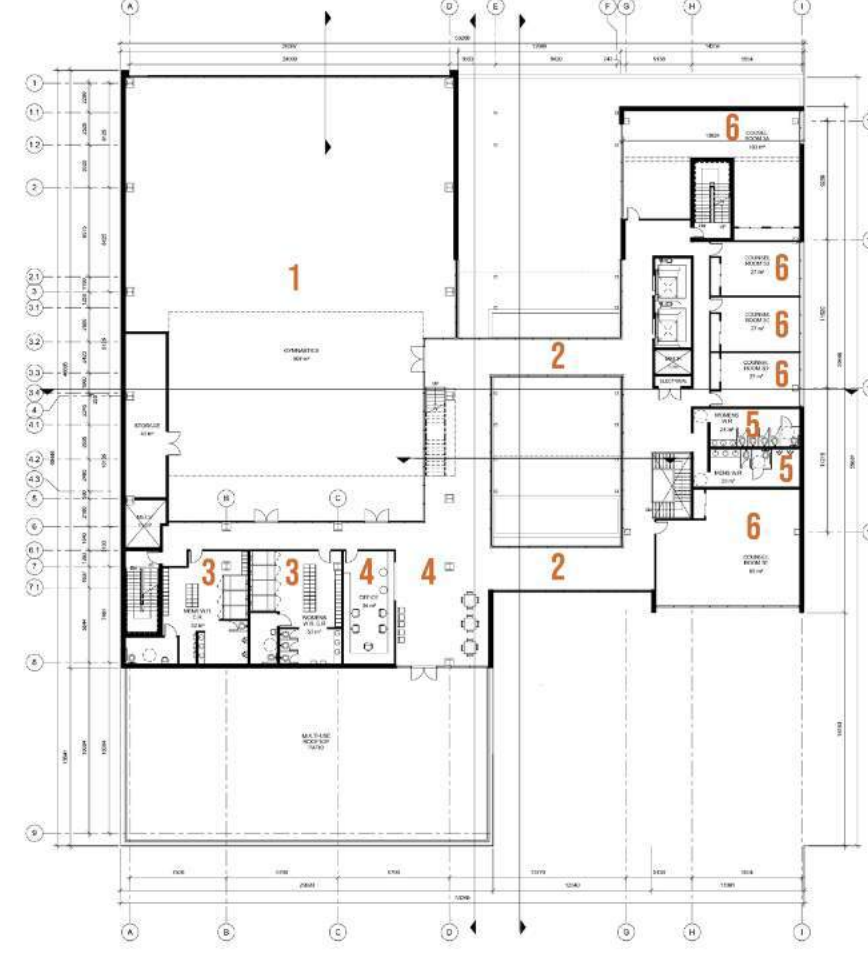
- |                              |   |
|------------------------------|---|
| 1 - Lobby and Café           | 6 - Washrooms/Change rooms              |
| 2 - Front Desk and Elevators | 7 - Pool Area/Pool Office               |
| 3 - Washrooms and Offices    | 8 - Outdoor Courtyard and Water Feature |
| 4 - Drop-In Centre           | 9 - Garage Ramp/Loading Area            |
| 5 - Gymnasium/Storage        |   |



SECOND FLOOR PLAN  
SCALE 1:600

LEGEND:

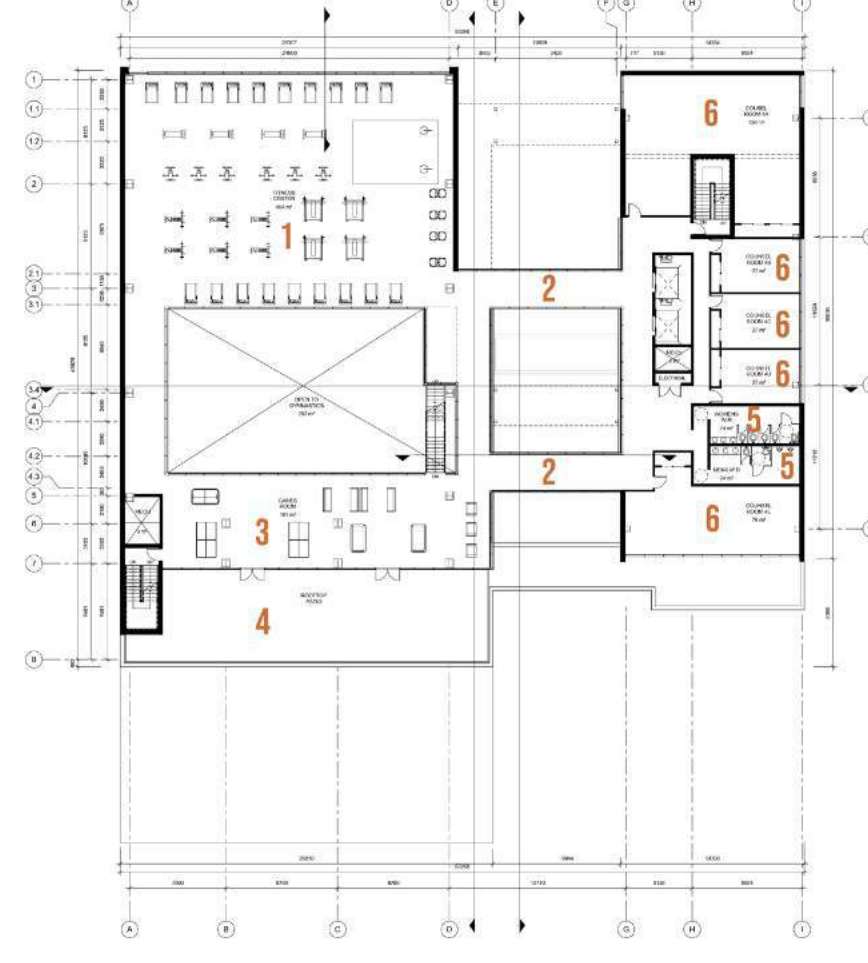
- |                       |                       |
|-----------------------|-----------------------|
| 1 - Running Track     | 5 - Washrooms         |
| 2 - Bridge            | 6 - Counsel Rooms     |
| 3 - Lounge Area       | 7 - Outdoor Courtyard |
| 4 - Pool Viewing Area |                       |



THIRD FLOOR PLAN  
SCALE 1:600

LEGEND:

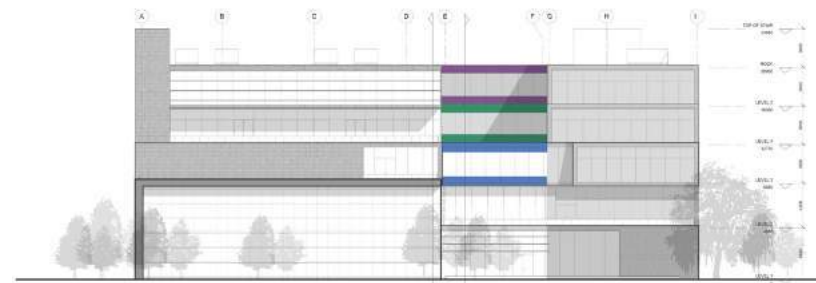
- |                    |               |
|--------------------|---------------|
| 1 - Gymnastics Gym | 5 - Washrooms |
| 2 - Bridge         | 5 - Washrooms |
| 3 - Change rooms   |               |
| 4 - Office         |               |



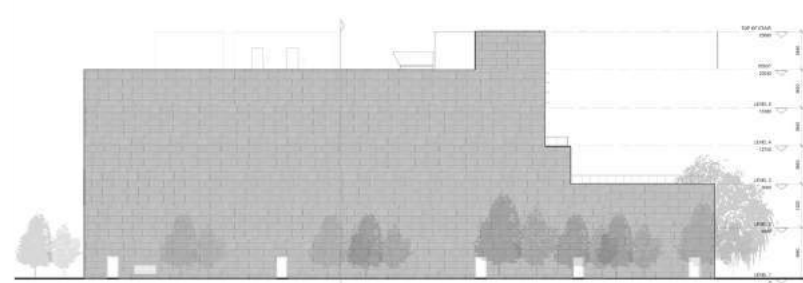
FOURTH FLOOR PLAN  
SCALE 1:600

LEGEND:

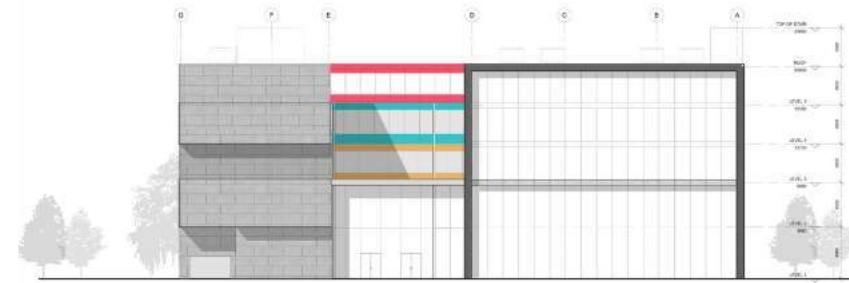
- |                             |                            |
|-----------------------------|----------------------------|
| 1 - Fitness Centre          | 6 - Counsel Room           |
| 2 - Bridge                  | 3 - Recreational/Game Area |
| 4 - Multi-use Outdoor Space | 5 - Washrooms              |



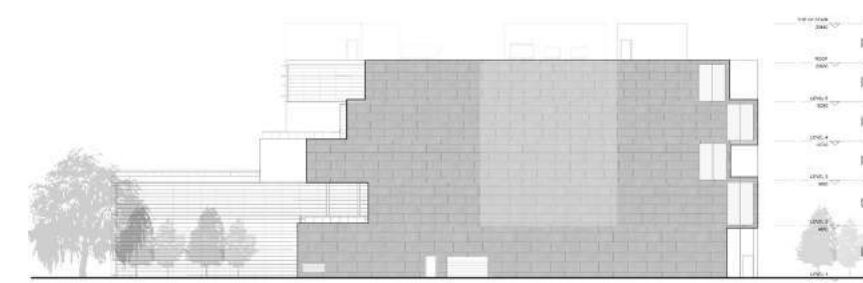
SOUTH ELEVATION  
SCALE 1:600



WEST ELEVATION  
SCALE 1:600

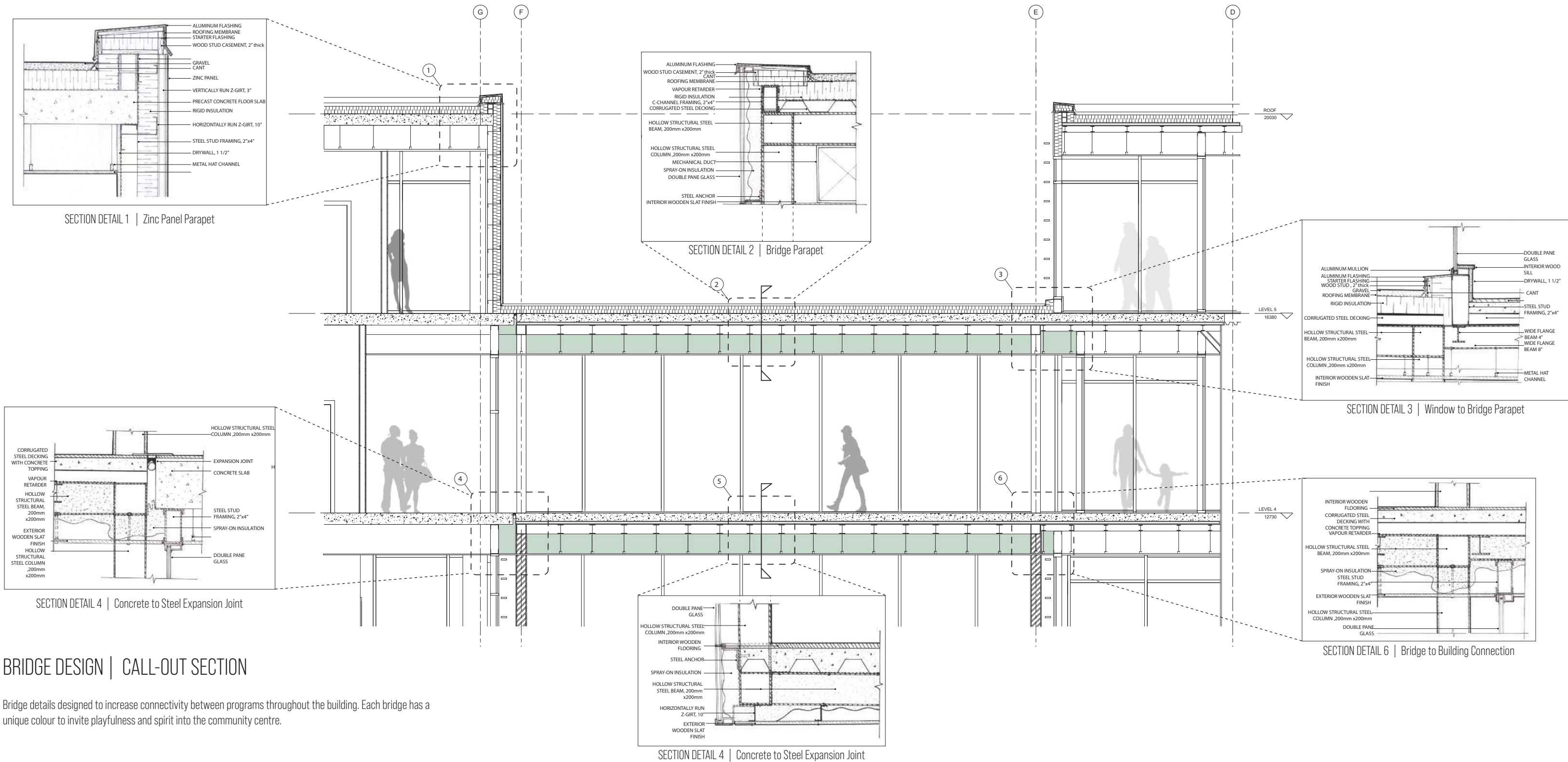


NORTH ELEVATION  
SCALE 1:600



EAST ELEVATION  
SCALE 1:600









Above: View of garden on south-east corner of the site.



Image: View of the atrium from the entrance looking south.



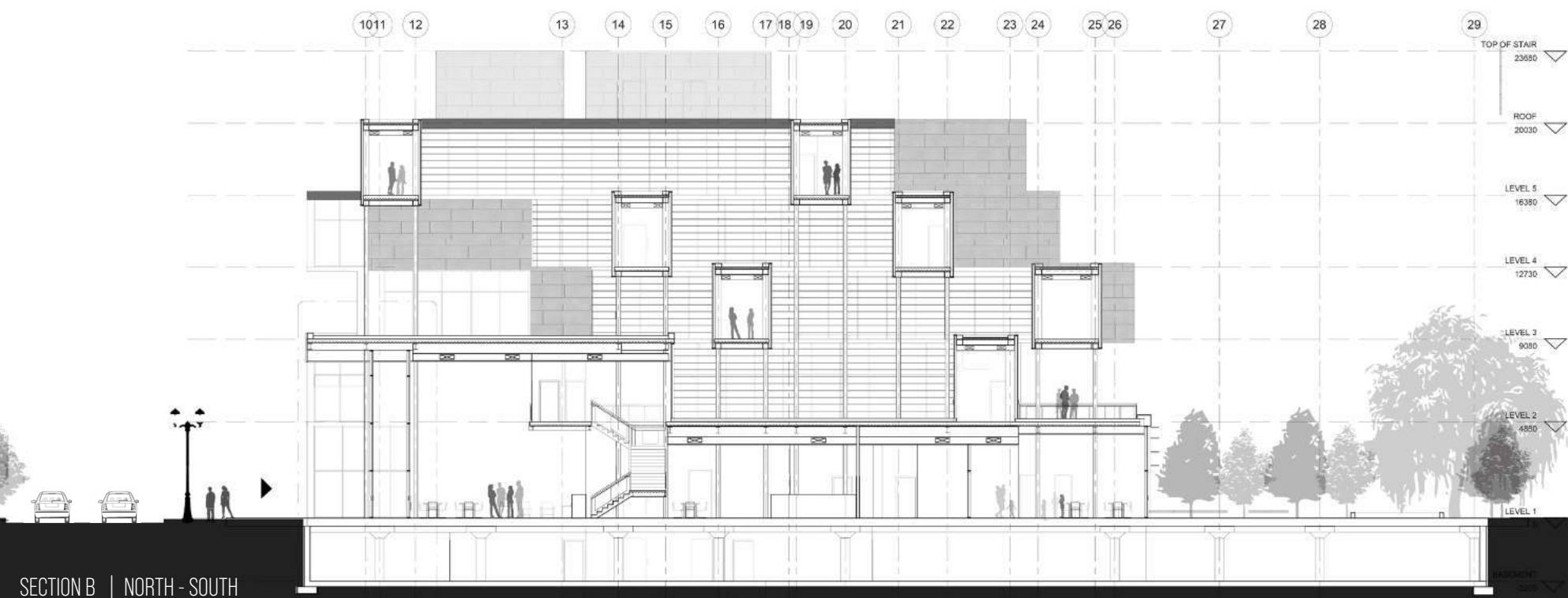
Image: View from street looking south-east



Image: View from fifth floor bridge looking south



SECTION A | WEST - EAST



SECTION B | NORTH - SOUTH



# 04

## FRANKFURT STUDIO ABROAD

### *bridging the gap*

#### **Project Type: Public Square Retrofit Design**

Course: 4th Year Studio, 7th Semester

Professor: Yew-Thong Leong

Project Duration: June - July 2014

Project Location: Frankfurt, Germany

***Bridging the divide and segregation*** between economic and societal classes in Frankfurt, both conceptually and physically, through the design of a **pavilion** in the **city's centre square**.

*Image on the Right: View of Pavilion looking across the water feature design.*

*Image Below: Diagram highlighting Frankfurt's city core and Main River. The orange square highlights the site and the lighter orange highlights the Zeil. The arrows represent the Master Plan and how to bridge the gap of segregation throughout the city.*

CONTEXT MAP | FRANKFURT  
MASTER PLAN DESIGN



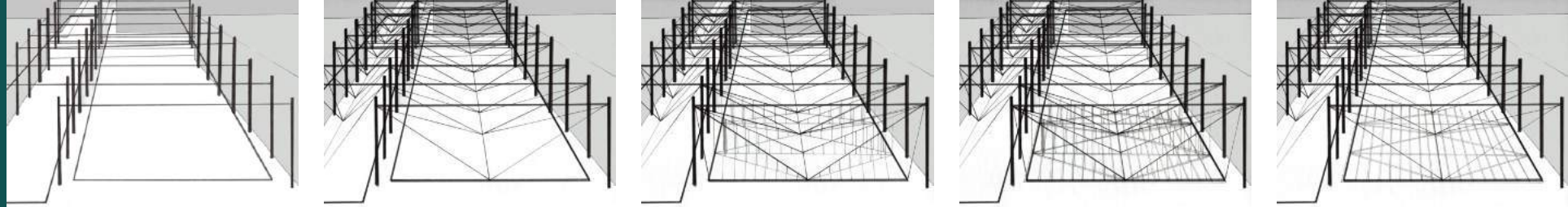
The outline of this project was to **retrofit and redesign a public square** called Konstablerwache located along the Zeil, a pedestrian mall corridor in Frankfurt, Germany. The site was analyzed and documented throughout the month of June.

Some of the main obstacles on the site were the four entrances to the subway line below, the steps raising the site, the location of garbage compost, space for the market held weekly, and location of subway mechanical vents. Another obstacle was connecting the square, Konstablerwache, and bringing its lack of presence to the rest of the pedestrian mall.

The Zeil is located in the downtown core. It stretches from two main squares, Hauptwache to Konstablerwache. The Master Plan of the city is to extend this pedestrian mall both westward and eastward, due to the extensive divide and segregation between economic and societal classes in Frankfurt.

Through this design intervention, that gap is conceptually and physically bridged. It bridges the gaps above and below the human plane, while extending interactions to influence personification through programmatic implementation.

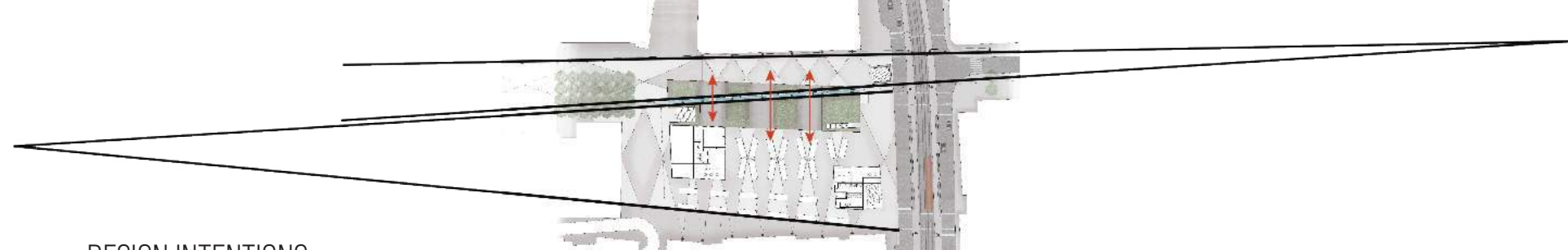
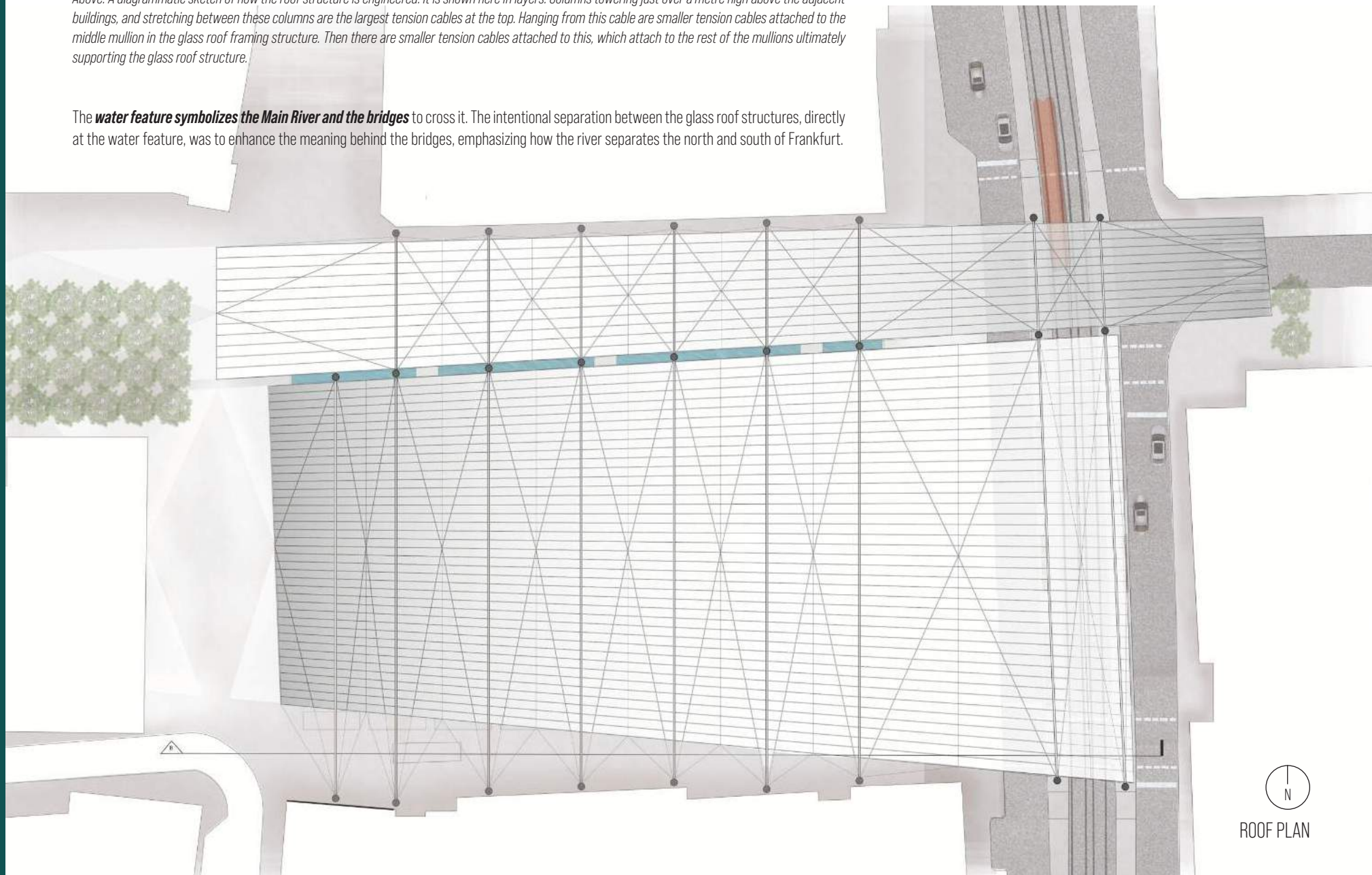




## PAVILION ROOF STRUCTURE DESIGN

Above: A diagrammatic sketch of how the roof structure is engineered. It is shown here in layers. Columns towering just over a metre high above the adjacent buildings, and stretching between these columns are the largest tension cables at the top. Hanging from this cable are smaller tension cables attached to the middle mullion in the glass roof framing structure. Then there are smaller tension cables attached to this, which attach to the rest of the mullions ultimately supporting the glass roof structure.

The **water feature symbolizes the Main River and the bridges** to cross it. The intentional separation between the glass roof structures, directly at the water feature, was to enhance the meaning behind the bridges, emphasizing how the river separates the north and south of Frankfurt.



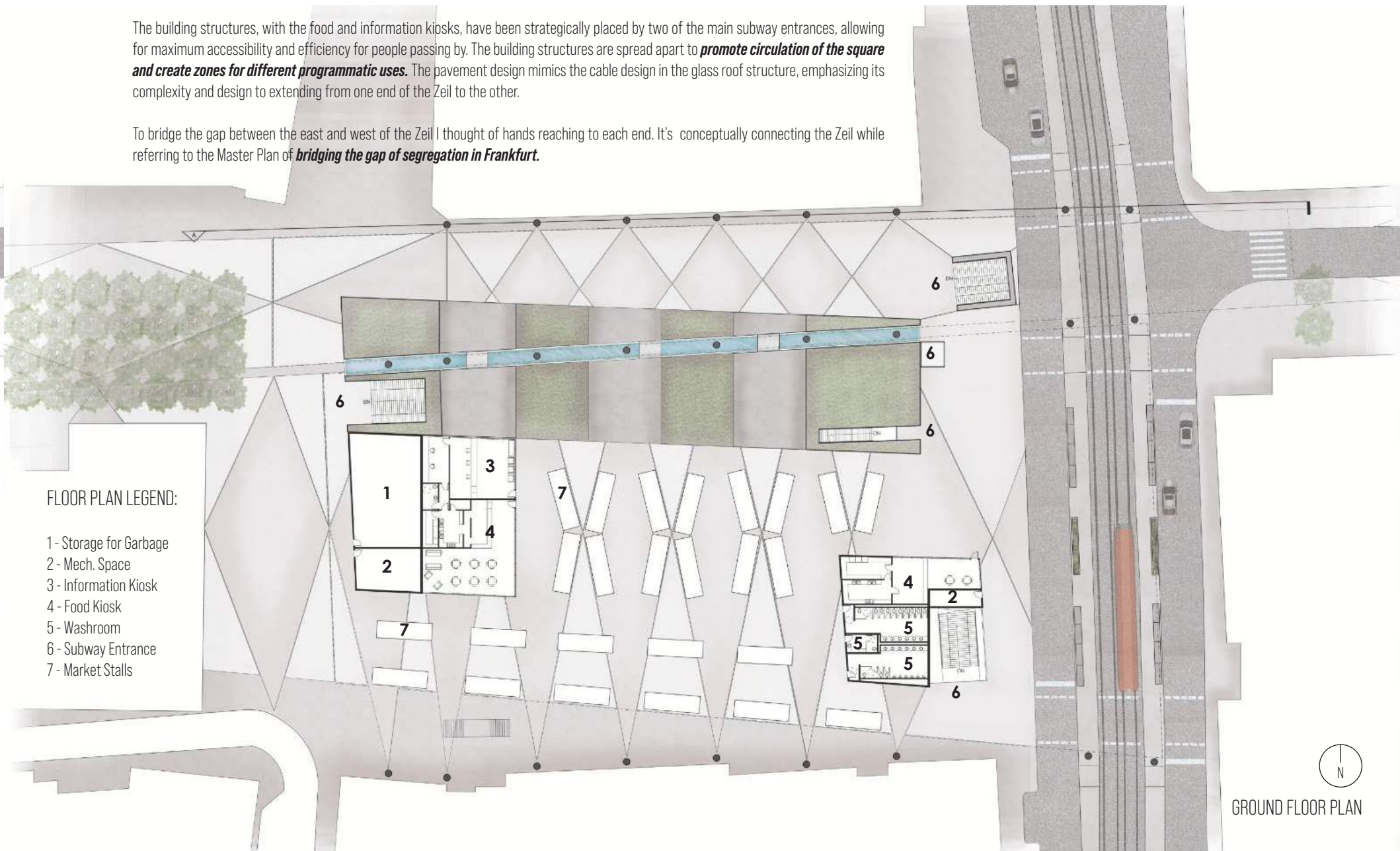
## DESIGN INTENTIONS

The building structures, with the food and information kiosks, have been strategically placed by two of the main subway entrances, allowing for maximum accessibility and efficiency for people passing by. The building structures are spread apart to **promote circulation of the square and create zones for different programmatic uses**. The pavement design mimics the cable design in the glass roof structure, emphasizing its complexity and design to extending from one end of the Zeil to the other.

To bridge the gap between the east and west of the Zeil I thought of hands reaching to each end. It's conceptually connecting the Zeil while referring to the Master Plan of **bridging the gap of segregation in Frankfurt**.

### FLOOR PLAN LEGEND:

- 1 - Storage for Garbage
- 2 - Mech. Space
- 3 - Information Kiosk
- 4 - Food Kiosk
- 5 - Washroom
- 6 - Subway Entrance
- 7 - Market Stalls

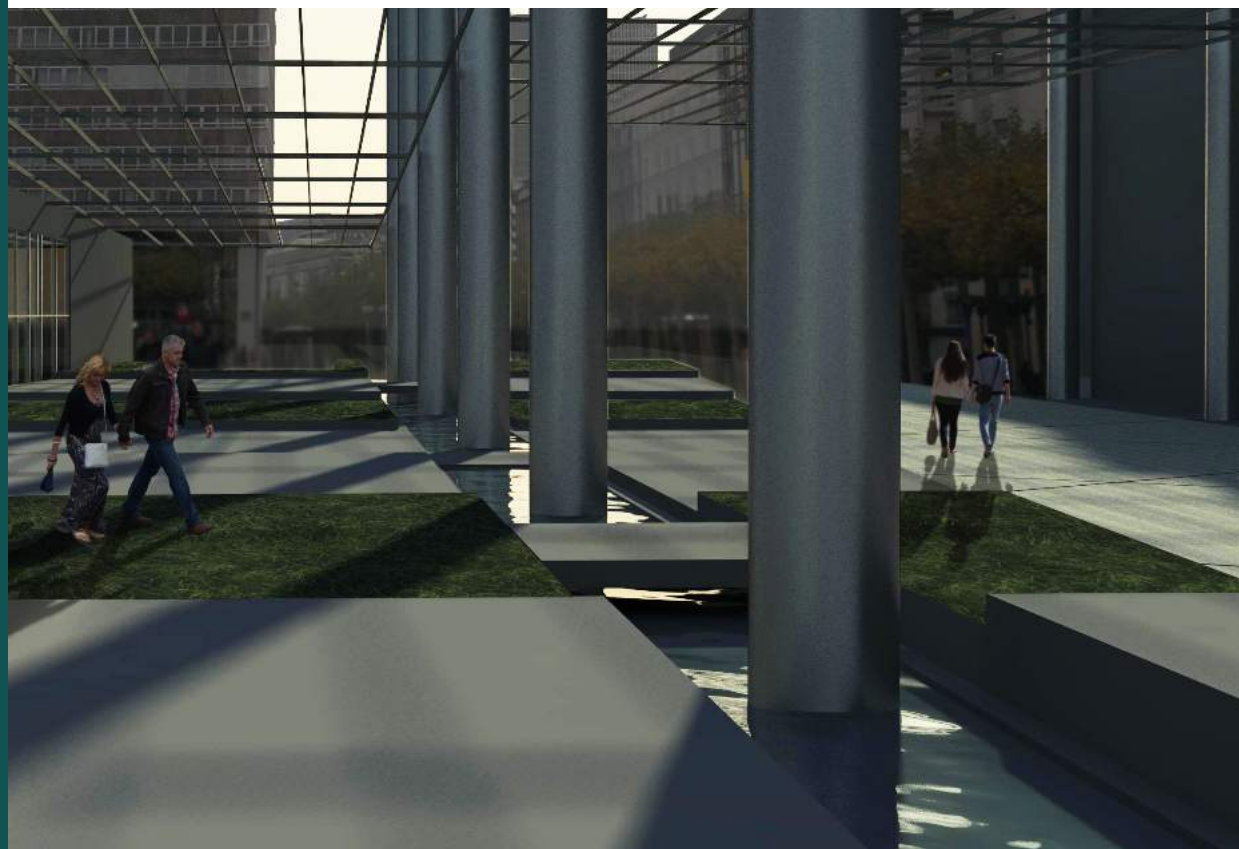






Above: View looking west on the site from across the street. Rendering shows the tunnel view the column placement creates, forcing one to look at the connection from one end of the Zeil to the other.

Below: Up close depiction of the water feature. There are white tiles on the existing square with names of those lost in World War II. Those tiles will be incorporated into the design of the water feature.

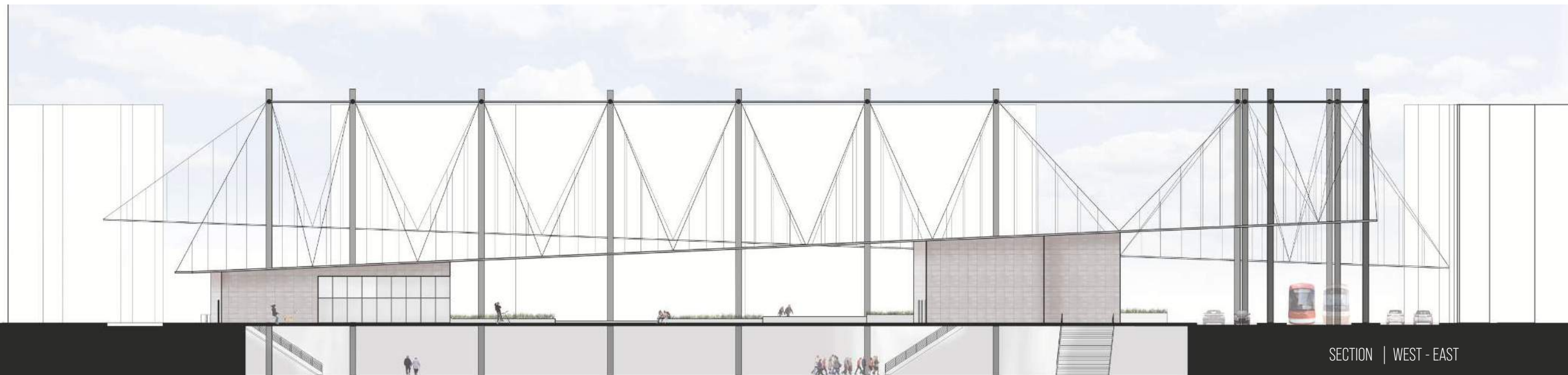


Above: View looking from south-east corner looking north-west.

## TO CONCLUDE

The **concept behind the columns** that puncture through the water, is to **frame a view looking from one end of the Zeil to the next**. These columns reach down into the subway, also directing pedestrians to each end, while giving them a connection to what's going on above (refer to section below). The height and size of the columns create a dominant statement, enforcing the **concept of bridging the gap of the Zeil**. The columns placed on the road barrier platforms would create once again that visual of the glass roof extending across the street. Those viewing from afar, along this street, would be able to see this extension and it will create an awareness of its meaning.

From the northern central axis of the site there are a series of large tiered raised platforms. The **raised platforms surrounding the water feature separate the high flow of pedestrian traffic** on the north side of the site, from the rest of the site which is intended to be used for relaxing, the weekly market, and entertainment. The central platform is a foot higher than the ground level (refer to section). From this platform it raises a foot in each direction, creating **gradual tiered seating in grassy areas and areas to cross over to the other side with small bridges**. These platforms can be used for a multitude of uses, such as a stage for a performance.



SECTION | WEST - EAST

The concept behind the angle of the glass roofs was the image of fingers interlocking. When this happens it creates an 'X' shape, further enhancing the concept behind the hands reaching. When fingers interlock it creates a conceptual bridge, but when the hands pull apart from each other there is a gap. Therefore, the angle of the roof enhances the bridging of these gaps. This concept is not only seen in plan, three dimensionally, but is also seen in section.



# 05 WEST 8 NYC

urban design and landscape architecture

## Job Title: Architectural & Urban Design Intern

Employer: Adriaan Geuze & Daniel Vasini (reference available upon request)

Job Duration: September 2017 - July 2018

Job Location: New York City, NY, USA & Rotterdam, The Netherlands

Collection of samples from projects I worked on during my internship at West 8. These projects showcase a **variety of drawings and designs** I worked on either solely or with a team in New York City, or in collaboration with the Rotterdam office in the Netherlands. Here is a brief description of the **highlight projects** I got the pleasure to collaborate on:

- **Google Headquarters 50-year Master Plan:** Co-developed the context base map for the entire Google Headquarters and its context, to create a design for the 50-year Moffett Park District Master Plan. Responsible for solely designing sites of the master plan and integrating them into the overall vision to be executed.
- **San Pellegrino Piazza:** Design Development drawings and renderings for a piazza design in Milan, Italy. Also co-designed the furnishings, paving patterns, and stair design for the piazza.
- **Olentangy Corridor Design Competition:** Co-led the competition design for the Olentangy Corridor Design Competition in Columbus, Ohio. Developed illustrative master plan design, drawings, diagrams and renderings.
- **Houston Botanical Garden:** Aided in creating the physical model show piece for the Houston Botanical Garden's fund-raiser in Houston. Responsible for transporting the model from Rotterdam. Co-developed illustrative master plan drawing. Co-designed playgrounds, renderings, paving patterns, the entrance pavilion, and created details for architectural and landscape elements.
- **West Riverfront Park Design Competition:** Aided in the design and drawings produced for this competition in Detroit, Michigan.
- **Governor's Island:** Co-designed Governor's Island Outlook Hill in New York City, as well as portions of the Islands street scape design. Drawings, renderings, and details were designed for both the Outlook Hill and Street scape Design Studies.
- **Buzzard Point Master Plan:** Developed axonometric drawings and renderings for this project in Washington, D.C., and co-designed and collated a Master plan Vision document. Co-developed an illustrative master plan drawing and site plan renderings. Developed diagrams such as sun-path, lighting, street scape typology, zoning, and planting diagrams.



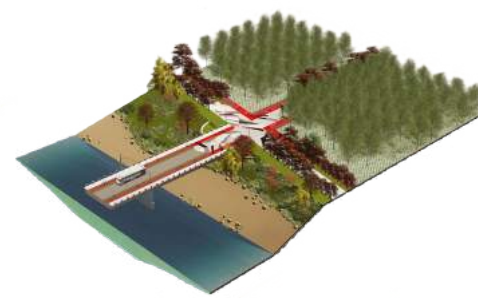
## OLENTANGY DESIGN COMPETITION

PROJECT TYPE:  
Master Plan Design Competition

PROJECT LOCATION:  
Ohio, Illinois, USA

RESPONSIBILITIES:

- Co-led the entire master plan design
- Co-developed illustrative master plan drawing (image to the right)
- Solely designed significant moments throughout the master plan (shown below)
- Developed multiple renderings and diagrams through Rhino, Lumion, and Photoshop



## HOUSTON BOTANICAL GARDEN DESIGN

PROJECT TYPE:  
Botanical Garden

PROJECT LOCATION:  
Houston, Texas, USA

RESPONSIBILITIES:

- Co-developed illustrative master plan drawing (confidential)
- Developed multiple renderings through Rhino, Lumion, and Photoshop
- Aided in creating the physical model show piece for the Houston Botanical Garden's fund-raiser in Houston. Responsible for transporting the model from Rotterdam (image directly to the right).
- Developing designs for significant aspects throughout the gardens, such as paving patterns, playgrounds, and the entrance pavilion alcoves.



## BUZZARD POINT MASTER PLAN

PROJECT TYPE:  
Waterfront Master Plan Design

PROJECT LOCATION:  
Washington, D.C, USA

RESPONSIBILITIES:

- Developed axonometric drawings and renderings through Rhino, Lumion, and Photoshop
- Co-designed and collated a Master plan Vision book documentation that took rigorous planning and team work.
- Developed street scape designs
- Co-developed illustrative master plan drawing and site plan renderings (top two left images)
- Developed diagrams for the Master Plan Vision book, such as sun-path, lighting, street scape typology, zoning, and planting diagrams.



planning and engineering ltd

**Job Title:** Urban Designer

Employer: Martin Heikoop (reference available upon request)

Job Duration: September 2020 - Current Day

Job Location: Niagara, Canada

This is a sample of a Colour Plan I produced of a Draft Plan of a Subdivision, I collaboratively designed, alongside Martin Heikoop and William Heikoop. This Draft Plan is an ongoing project to be approved by the Niagara Region's City Council.

Other responsibilities while working at Upper Canada Consultants, include either solely and/or collaboratively designing and drafting concept and draft plans for private lots and subdivisions, as well as aiding in technical drawings and visuals. All of which include accurate calculations for Land Use Schedules, Zoning Matrix's, Green-Field, Land Division, etc.

All projects are within the Niagara Region. The different municipalities I have done projects in are:

- St. Catharines
- Niagara Falls
- Niagara-on-the-Lake
- Fort Erie
- Pelham
- Welland
- Lincoln

Each municipality in the Niagara Region has their own Zoning-By Laws. This is important to note, as it dictates how different projects are designed, or what information is required to pursue arguments to justify amendments to the law. It is my responsibility at the firm to understand what those laws are to develop accurate and efficient documentations of each project and design put forth.

# WELLAND ROAD SUBDIVISION DESIGN

This project is a **subdivision design** located in Fenwick, a small town within the Niagara Region, undergoing many recent developments and rapid future growth. This development comprises of three owners, collectively and collaboratively joining together to make this subdivision plan a reality. The design of this development has been in the works since 2006.

I had the pleasure of collaboratively working on the entire redesign. I was responsible for laying out each single lot, street townhouse, and apartment building area, within the roadway layout design. I was also solely responsible for developing this colour plan along with a Draft Plan to be proposed to the Niagara Region's City Council for approval.

LEGEND:

SINGLE LOT RESIDENTIAL 

## STREET TOWNHOUSE

## BLOCK TOWNHOUSE

APARTMENT BUILDING

PARK

PRIVATE ELEMENT

ENVIRONMENTAL CONSERVATION

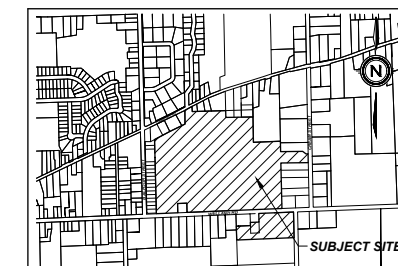
ENVIRONMENTAL PROTECTION

PARKING LOT

DRIVEWAY

ROADWAY

STORM WATER MANAGEMENT POND



## KEY PLAN

N.T.S

## DRAFT PLAN OF SUBDIVISION

**LAND DIVISION**

LAND OWNER	LAND USE	LOT/BLK	UNIT#(F)	AREA(AC)	NO. ACRES
AREA #1 PATRICK AVE HOLDINGS	SINGLE LOT RESIDENTIAL	LOT 1-50	50	2.82	44.3
	STREET TOWNHOUSE	BLOCK 51-55	24	0.55	8.3
	STREET TOWNHOUSE	BLOCK 56	24	1.24	21.0
	PARK	BLOCK 57	60	0.40	6.0
	ENVIRON. PROTECTION	BLOCK 58	20	0.20	3.0
	ENVIRON. CONSERVATION			0.19	3.2
	ROADWAY			1.03	17.4
	OPEN SPACE			0.03	0.5
	TOTAL			98	590
	SINGLE LOT RESIDENTIAL	LOT 1-40	40	1.70	16.8
AREA #2 LUCCHETTA CONSTRUCTION LTD.	STREET TOWNHOUSE	BLOCK 41-54	67	2.46	24.6
	STREET TOWNHOUSE	BLOCK 55-58	40	1.62	16.2
	APARTMENT BLOCK	BLOCK 56	62	0.72	7.1
	PARK	BLOCK 57	0.52	5.1	
	ENVIRON. CONSERVATION			2.00	19.5
	ROADWAY			0.04	0.4
	OPEN SPACE			0.04	0.4
	TOTAL			209	105
	SINGLE LOT RESIDENTIAL	LOT 1-55	55	2.48	21.8
	STREET TOWNHOUSE	BLOCK 56-65	52	1.21	10.7
AREA #3 HERT INC.	STREET TOWNHOUSE	BLOCK 66	19	0.77	6.6
	APARTMENT BLOCK	BLOCK 67	195	2.11	18.6
	PARK	BLOCK 68	60	0.43	3.8
	ENVIRON. PROTECTION	BLOCK 69	69	0.13	1.4
	ENVIRON. CONSERVATION			0.36	3.3
	ROADWAY			3.31	20.4
	TOTAL			321	11.31
	SINGLE LOT RESIDENTIAL	LOT 1-6	6	0.27	8.4
	SWM POND	BLOCK 7	7	2.13	66.7
	ENVIRON. PROTECTION	BLOCK 8	8	0.79	24.6
AREA #4 SWM POND	ENVIRON. PROTECTION			6	119

## LAND USE SCHEDULE

LAND USE	LOT/BLOCK	# OF UNITS	AREA (AC)
SINGLE LOT RESIDENTIAL	AREA 1: LOT 1-50	50	2,202.2
	AREA 2: LOT 1-40	40	1,700.0
	AREA 3: LOT 1-50	50	2,479.4
	AREA 4: LOT 1-6	6	272.8
STREET TOWNHOUSE	AREA 1: BLOCK 51-55	24	1,054.1
	AREA 2: BLOCK 41-54	67	2,464.4
BLOCK TOWNHOUSE	AREA 3: BLOCK 56-65	52	1,211.9
	AREA 4: BLOCK 56-65	24	1,448.0
	AREA 2: BLOCK 35	35	1,817.7
	AREA 3: BLOCK 35	40	1,785.9
APARTMENT BLOCK	AREA 2: BLOCK 56	62	2,714.2
	AREA 3: BLOCK 57	193	2,110.0
PARK	AREA 1: BLOCK 58	40	1,453.1
	AREA 2: BLOCK 57	55	1,914.7
	AREA 3: BLOCK 58	67	2,427.7
	AREA 4: BLOCK 58	8	1,193.3
ENVMON. PROTECTION	AREA 1: BLOCK 58	1,625.4	0.3337
	AREA 2: BLOCK 58	1,186.3	0.2461
	AREA 3: BLOCK 58	0.9887	0.2079
	AREA 4: BLOCK 58	0.3769	0.2137
ENVMON. CONSERVATION	AREA 1: BLOCK 58	2,125.3	6.2970
	AREA 2: BLOCK 8	1,025.8	3.5885
SHM POND	AREA 1: AREA 1	2,094.2	2.5818
	AREA 2: AREA 2	2,094.2	2.5818
	AREA 3: AREA 3	2,094.2	2.5818
ROADWAY	AREA 1: AREA 1	0.0058	0.0046
	AREA 2: AREA 2	0.0058	0.0046
TOTAL	AREA 1: AREA 1	650	30.452
	AREA 2: AREA 2	30.452	100.00

DEVELOPABLE AREA = 26.29 ha  
DEVELOPABLE DENSITY = 24.72 units/ha

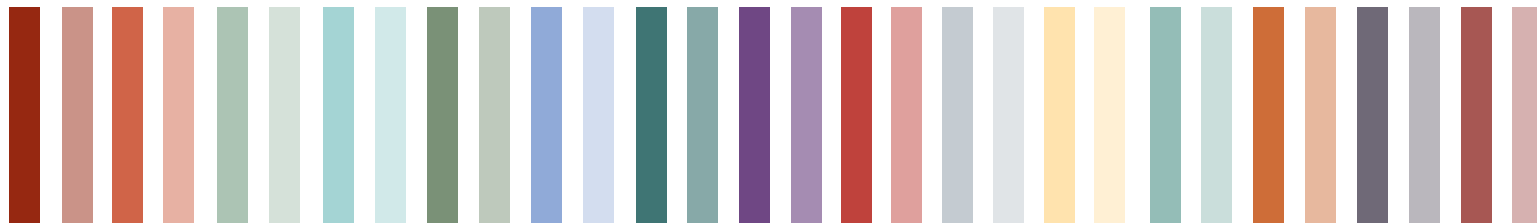
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0	ISSUED FOR REVIEW	2021-01-11	SD
#	REVISION	DATE	INIT



DRAWING TITLE	DRAFTING	SD
	DATE	JANUARY 11, 2020
	PRINTED	JANUARY 11, 2020
	SCALE	1:1500
DWG No.		REV
<b>0678-DP2</b>		

25m | 50m | 100m





T H A N K   Y O U

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**Please visit my website at: <https://www.sarahdevries.co/>**

for more information, videos, projects and creative works related to my full  
portfolio of my studies at the Architectural Association & Ryerson University.