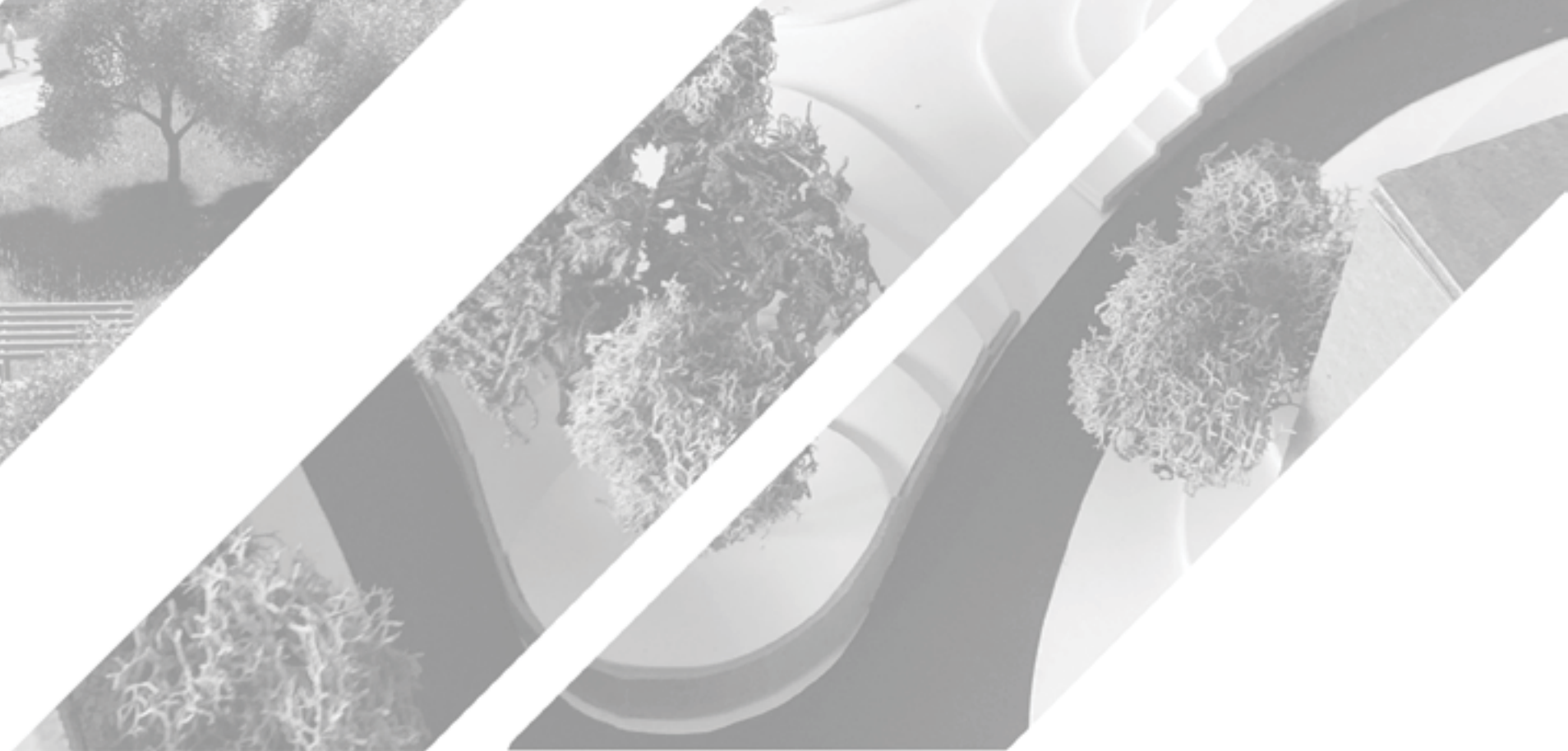




Selected Works Portfolio

Benjamin Boswick
Department of Landscape Architecture
Undergraduate + Graduate Works



Contents		
01_	Gorgonio Sands	01
02_	Design Precinct	19
03_	Aqua Terra Incisura	27
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Gorgonio Sands

Term Summer 2022 **Class** ARCG 7102 - Summer Studio
Instructor(s) Emeka Nnadi **Duration** 4 Weeks
Programs Vectorworks, TwinMotion, Photoshop
Group Members Benjamin Gaudes, Simranpreet Kaur

The design intention of this group project was to create a development that would address sustainable energy production, water supply, food production and urban agriculture, and affordable housing. These objectives were achieved through harvesting solar and wind energy, utilizing groundwater and alluvial melt, urban orchards and greenhouses, and pre-fabricated modular housing. This development is located near Cabazon, California.

Regional Site Plan

Climate

Cabazon, California

- Site Extent
- Well (Water Table 350-450')
- Agriculture (Avocado, Citrus, Olive)

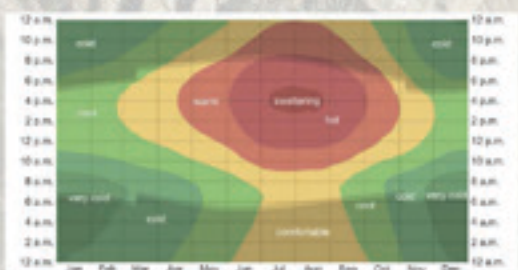
Seismic Fault Hazard Zone

The Alquist-Priolo Act requires the State Geologist (CGS) to establish earthquake fault zones around the surface traces of active faults and issue appropriate maps. Cabazon has its own category, based on the location of the community.

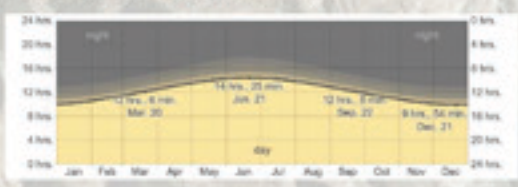
Geological Bedrock Type

Q type rock: Marine and nonmarine sedimentary rocks (Pleistocene-Holocene)
Alluvium, lake, playa, and terrace deposits; unconsolidated and semi-consolidated.

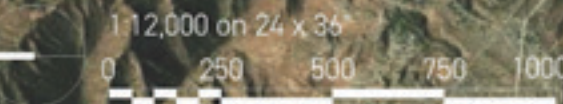
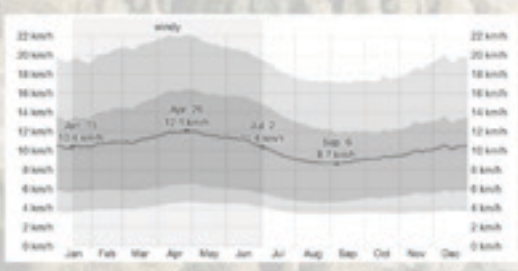
Yearly Average Temperature



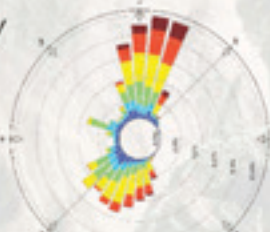
Amount of Daylight Hours



Yearly Average Wind Speed



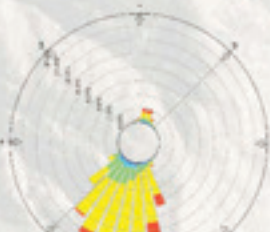
January



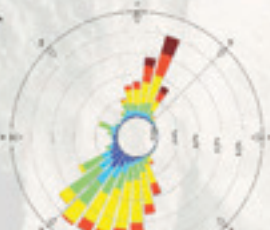
April



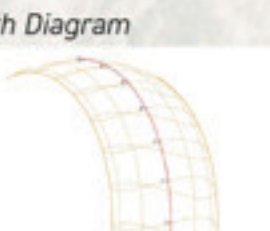
July



October



Sun Path Diagram



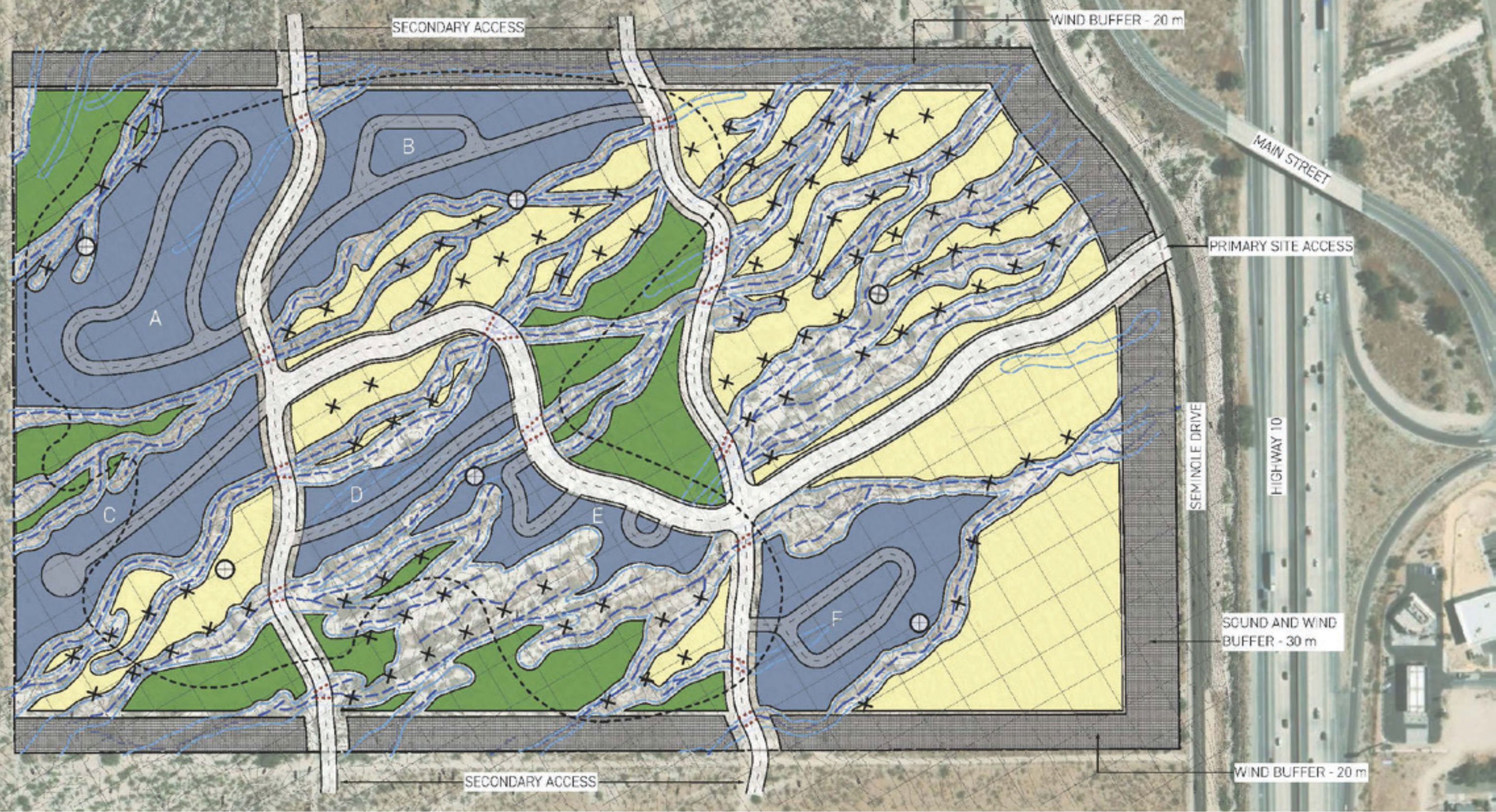
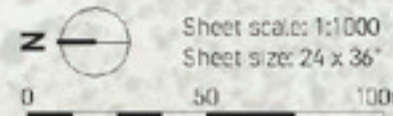
Solar Irradiance

Peak Sun Hours represents the production of 1 kW/m² per hour. On average, Southern California experiences 5 - 7.5 hours worth of peak sun. There is an annual average of 5.8 - 6 kW/m²/day produced in this region.

Site Strategy

Strategies Overlay

Cabazon, California



- Site Extent
- Riverine
- Shorelines
- Primary Road
- Secondary Road
- Water Crossing
- Agriculture
- Housing
- Parks and Recreation
- Parks Pathway
- Wind and Sound Buffer
- Wind Energy
- Potable Water

Land Use Percentages:

37%	Natural Resource Management
22%	Housing
19%	Agriculture
13.5%	Wind and Sound Buffer
8.5%	Park Space and Recreation
100%	

Housing Area + Lot Size

	Area (Hectares)	Units	Lot Size
Housing Area A	1.80	45	0.04 hectares
Housing Area B	1.15	29	0.04 hectares
Housing Area C	0.78	19	0.04 hectares
Housing Area D	0.44	11	0.04 hectares
Housing Area E	0.45	11	0.04 hectares
Housing Area F	0.92	24	0.04 hectares
	5.58	139	



Master Plan

Gorgonio Sands

Cabazon, California



- Site Extent
- Primary Road
- Sidewalk/Shared Road
- Tertiary Road
- Park Pathway
- Pathway Bridge
- Park
- Residential Lots
- Setback
- House
- Greenhouse
- Wind Energy



- Site Ecology
- Movement
- Wind + Sound Buffer
- Agriculture
- Affordable Housing
- Parks and Recreation
- Wind Energy
- Solar Energy
- Potable Water

Master Plan

Render

Cabazon, California



Housing Density = 132 Units / 5.25 Hectares = 25 Units/Hectare

Land Use Percentages:

35%	Natural Resource Management
21%	Housing
21.5%	Agriculture
21.5%	Wind and Sound Buffer
1%	Roads, Sidewalks, + Pathway
100%	

Solar Power Calculations

Average Daily Production per House = 240 kWh / house / day
 Average Yearly Production per House = 87,600 kWh / house / year
 Average Community Production (132 Houses) = 31,680 kWh / day
 Average Yearly Community Production (132 Houses) = 11,563,200 kWh / year

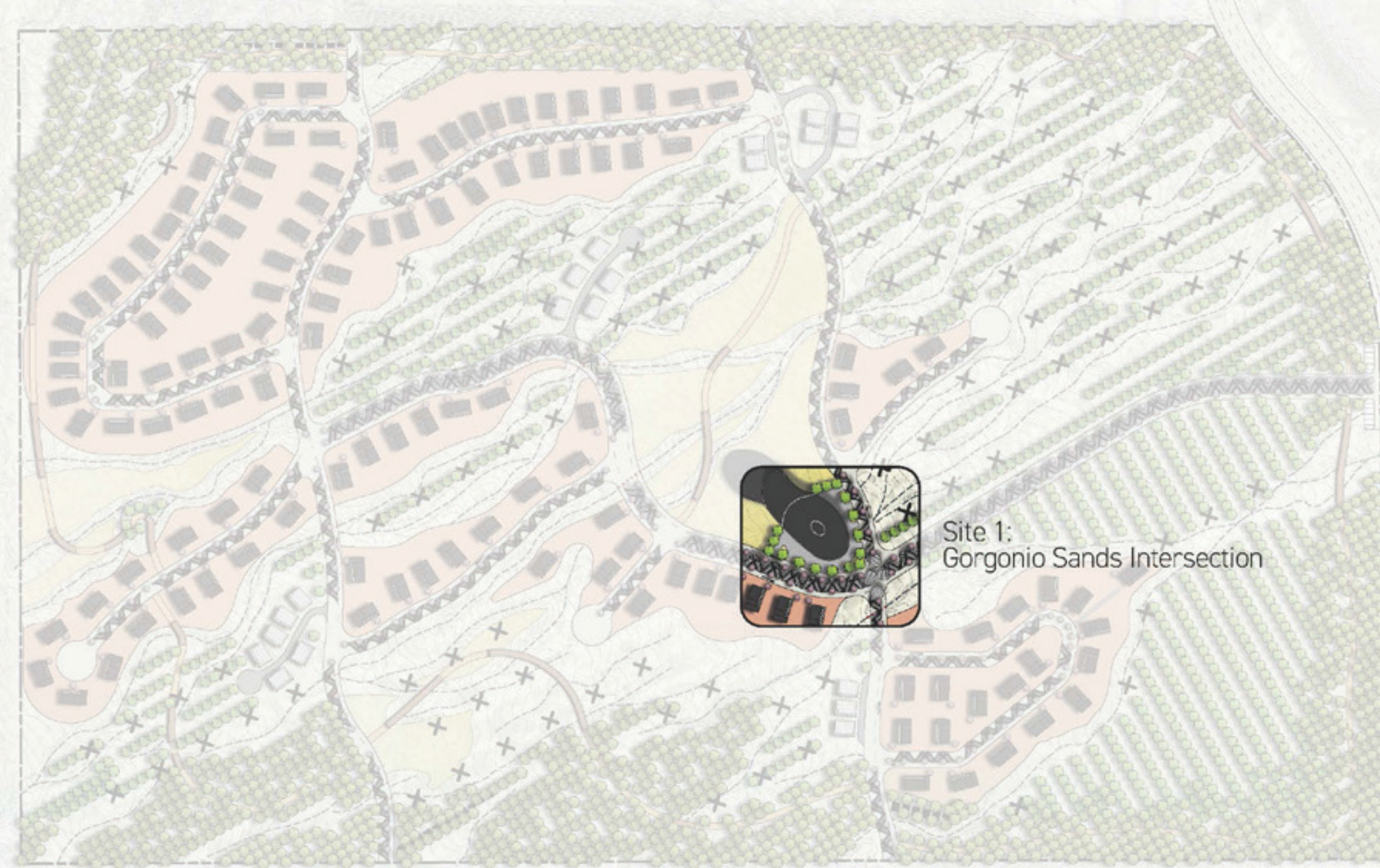
Wind Power Calculations

VORTEX Bladeless Production = 8 W / m² @ 3.6 m/s @ 2.75m Height
 VORTEX Bladeless Production = 0.124 kWh / m² @ 13 km/h @ 2.75m Height
 VORTEX Bladeless Production = 12 W / m² @ 3.6 m/s @ 9m Height

Water Resource Management Calculations

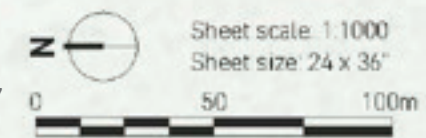
Average Household (4 Person) Daily Use = 200 gallons / day
 Well Volume Yield = 260 gallons // Tripled = 780 gallons
 Minimum Residential Pump = 1.5 hp @ 45' @ 6 gallons / minute

- Site Ecology
- Movement
- Wind + Sound Buffer
- Agriculture
- Affordable Housing
- Parks and Recreation
- Wind Energy
- Solar Energy
- Potable Water



Site 1:
Gorgonio Sands Intersection

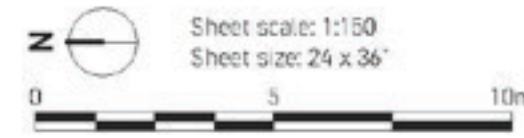
Detail Highlight Site 1: Intersection



- Site Extent
- Primary Road
- Sidewalk/Shared Road
- Tertiary Road
- Park Pathway
- Pathway Bridge
- Park
- Residential Lots
- Setback
- House
- Greenhouse
- Wind Energy

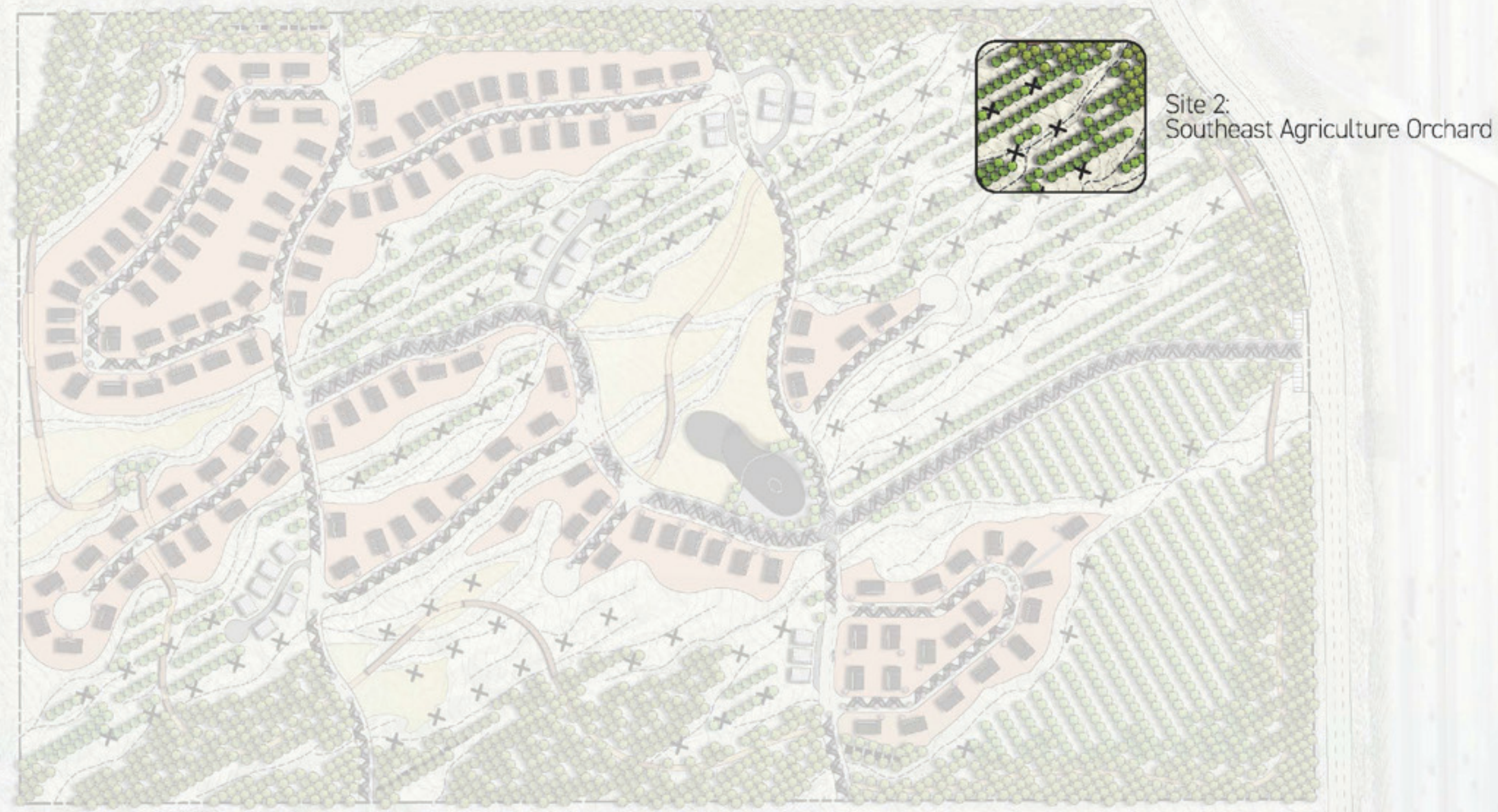
- Site Ecology**
- Movement**
- Wind + Sound Buffer
- Agriculture
- Affordable Housing
- Parks and Recreation**
- Wind Energy
- Solar Energy
- Potable Water

Intersection Detailed Design



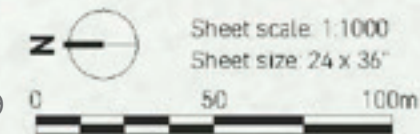
- Street & Yard Trees
- Argyle Apple (*Eucalyptus cinerea*)
- Catalina Cherry (*Prunus ilicifolia lyonii*)
- California Fan Palm (*Washingtonia filifera*)
- Strawberry Tree (*Arbutus unedo*)
- Cape Jasmine (*Gardenia jasminoides*)

- Site Ecology**
- Movement**
- Wind + Sound Buffer
- Agriculture
- Affordable Housing
- Parks and Recreation**
- Wind Energy
- Solar Energy
- Potable Water



Detailed Highlight Site 2: Orchard

- Site Extent
- Primary Road
- Sidewalk/Shared Road
- Tertiary Road
- Park Pathway
- Pathway Bridge
- Park
- Residential Lots
- Setback
- House
- Greenhouse
- Wind Energy



- Site Ecology
- Movement
- Wind + Sound Buffer
- Agriculture
- Affordable Housing
- Parks and Recreation
- Wind Energy
- Solar Energy
- Potable Water

Agriculture Orchard Detailed Design



Riprap to Protect and Preserve Agriculture Area

- Riverine Ground Species
- Blue Elf Aloe (*Aloe 'Blue Elf'*)
- Elijah Blue Fescue (*Festuca glauca 'Elijah Blue'*)
- Matilija Poppy (*Romneya coulteri*)
- Angelina Stonecrop (*Sedum rupestre 'Angelina'*)
- Blue Chalksticks (*Senecio serpens*)
- California Fuchsia (*Zauschneria californica 'Calistoga'*)

- Site Ecology
- Movement
- Wind + Sound Buffer
- Agriculture
- Affordable Housing
- Parks and Recreation
- Wind Energy
- Solar Energy
- Potable Water



Agriculture Orchard Detailed Design

Buffer Trees

Desert Willow (*Chilopsis linearis*)
Australian Willow (*Geijera parviflora*)
Coast Live Oak (*Quercus agrifolia*)

Abacus Planting Blends Buffer and Agriculture Trees

Site Ecology
Movement
Wind + Sound Buffer
Agriculture
Affordable Housing
Parks and Recreation
Wind Energy
Solar Energy
Potable Water



Agriculture Orchard Detailed Design

Orchard Trees

Moro Blood Orange (*Citrus sinensis* 'Moro')
Brown Turkey Fig (*Ficus carica* 'Brown Turkey')
Olive Leaf (*Olea europaea* L. folium)
Hass Avocado (*Persea americana* 'Hass')

Site Ecology
Movement
Wind + Sound Buffer
Agriculture
Affordable Housing
Parks and Recreation
Wind Energy
Solar Energy
Potable Water



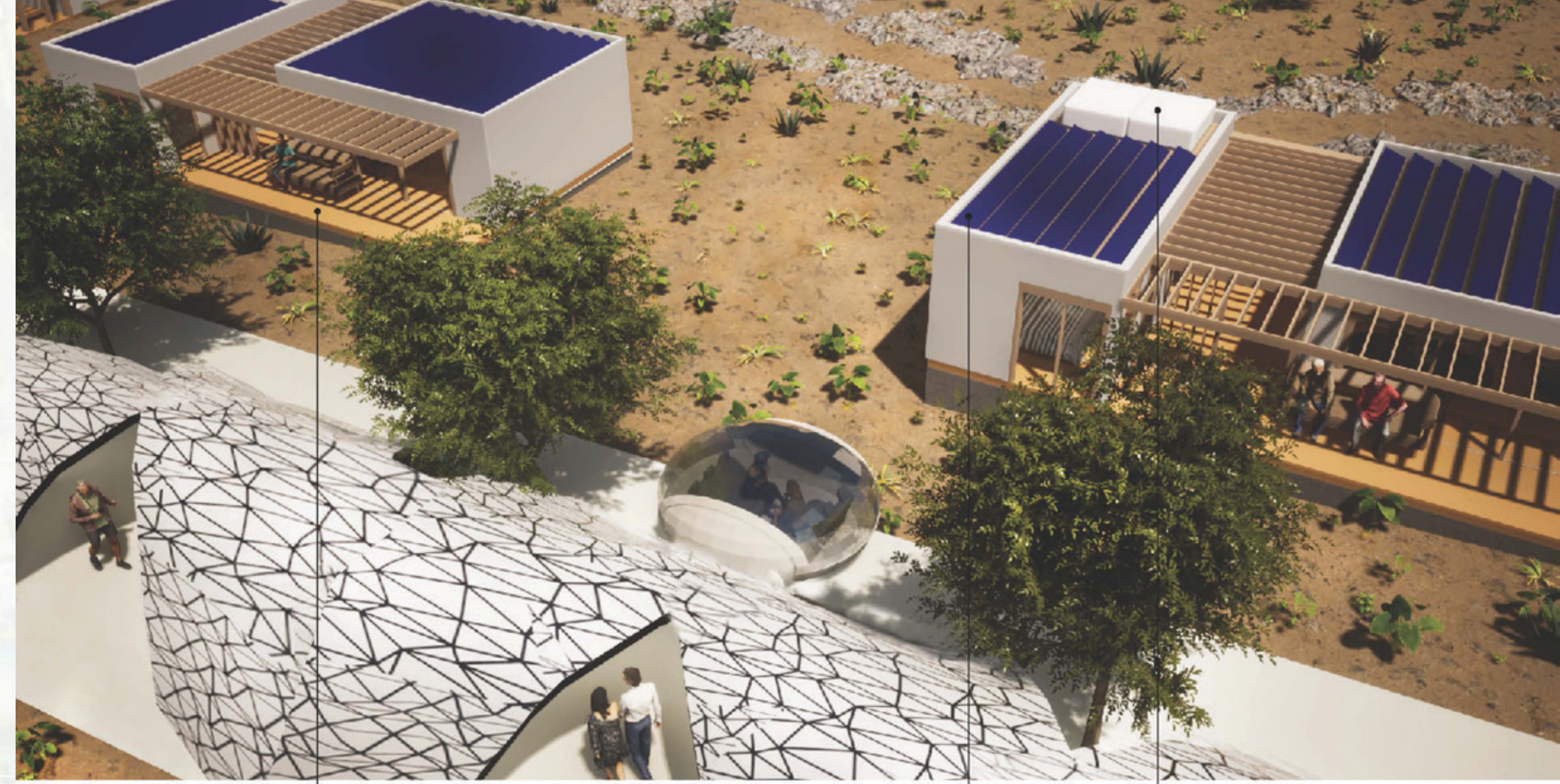
Site 3:
Affordable Housing

Detailed Highlight Site 3: Housing

Sheet scale: 1:1000
Sheet size: 24 x 36"

- Site Extent
- Primary Road
- Sidewalk/Shared Road
- Tertiary Road
- Park Pathway
- Pathway Bridge
- Park
- Residential Lots
- Setback
- House
- Greenhouse
- Wind Energy

- Site Ecology
- Movement
- Wind + Sound Buffer
- Agriculture
- Affordable Housing
- Parks and Recreation
- Wind Energy
- Solar Energy
- Potable Water



Affordable Housing Detailed Design

Housing Patio Space

Solar Panels to Power Homes

Potable Water Tank
For Gravity-Fed Taps

- Site Ecology
- Movement
- Wind + Sound Buffer
- Agriculture
- Affordable Housing
- Parks and Recreation
- Wind Energy
- Solar Energy
- Potable Water

01_

02_

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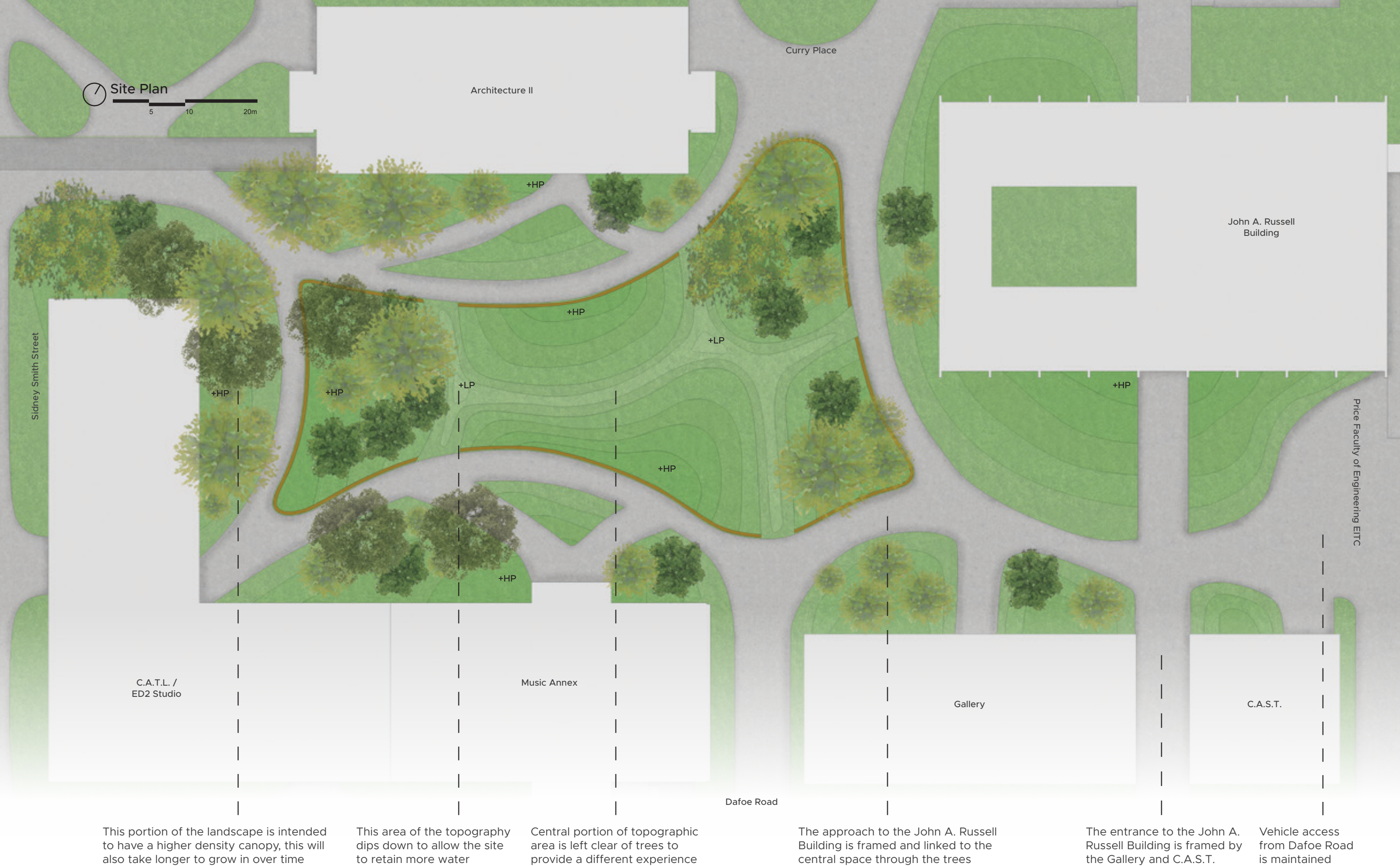
08_



Design Precinct

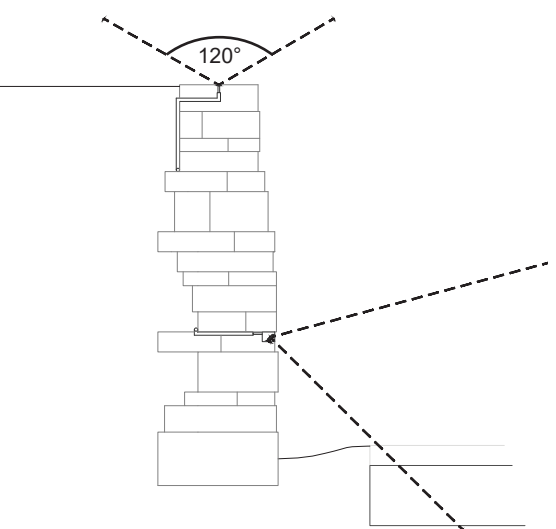
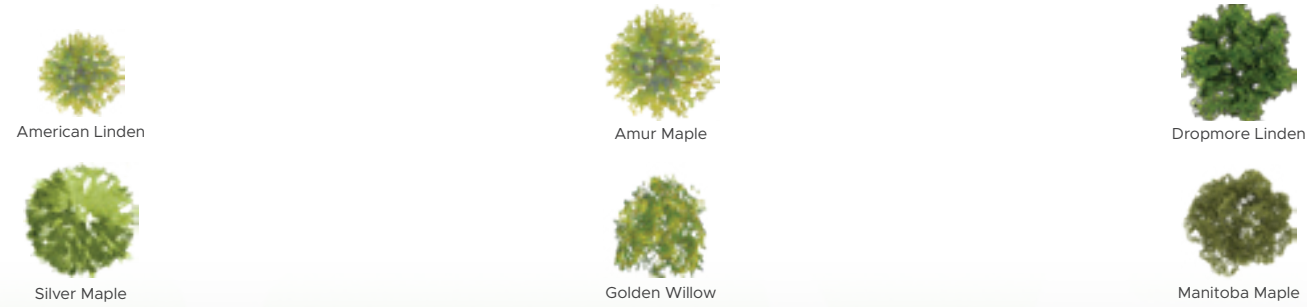
Term Winter 2020 **Class** EVLU 3008 Studio 4
Instructor(s) Brenda Brown **Duration** 6 Weeks
Programs Modelling, Photoshop, Illustrator + Rhino3D

The premise of this project was to design a new “precinct” for the Faculty of Architecture at the University of Manitoba, with input provided from members of the faculty, staff, and students. With this data in mind, sketch models were created to explore the space further. This particular layout was inspired by a plasticine and cardboard model, with the final model being constructed out of Architectural Butter Board and Preserved Reindeer Moss.

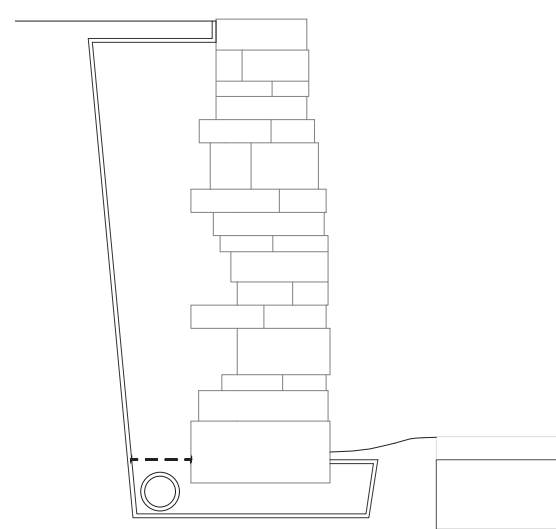


Tree Species Information

Common Name	Scientific Name	Soil Type	Max. Height	Max. Canopy Size	Seasonal Gradient
American Linden (Basswood)	Tilia americana	Well-drained, Moist	80' (24.4 m)	40' (12.2 m)	
Amur Maple	Acer ginnala	Well-drained, Moist	20' (6.1 m)	18' (5.5 m)	
Dropmore Linden	Tilia x flavescens 'Dropmore'	Well-drained, Moist	25' (7.6 m)	18' (5.5 m)	
Golden Willow	Salix alba 'Vitellina'	Moist, Any	50' (15.2 m)	40' (12.2 m)	
Manitoba Maple (Boxelder)	Acer negundo	Moist, Deep	45' (13.7 m)	20' (6.1 m)	
Silver Maple	Acer saccharinum	Well-drained, Moist	80' (24.4 m)	15' (4.6 m)	

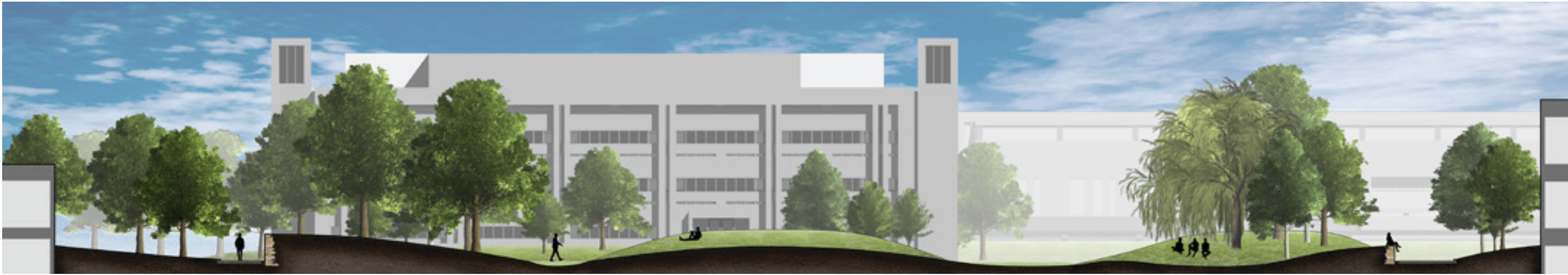
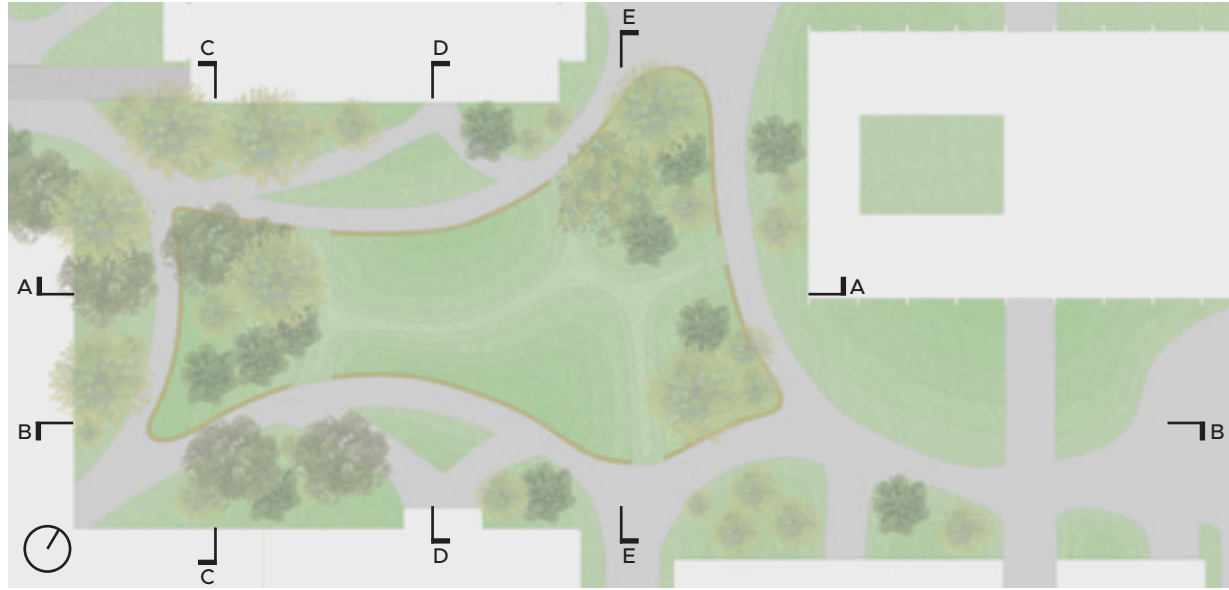


- Flexfire LEDs (Dynamic Tunable) would be used within the retaining walls to provide under-lighting to the trees along curves, and to certain stretches of pathway
- The LEDs have a beam angle of 120° which is similar to a Wide Flood
- This particular type of LED is IP65 graded and would run at 4200K



Sectional Perspectives

The purpose behind these sections is to communicate the spatial experience and the scale of the individual within the site. Elevations of the undulating central landscape are also communicated here, with people for scale.



Section AA | View facing north-west through site



Section BB | View facing south-east through site



Section CC | View of southern portion of central topography space



Section DD | View of central topography space with retaining walls



Section EE | View of northern portion of central topography space



Perspective facing North



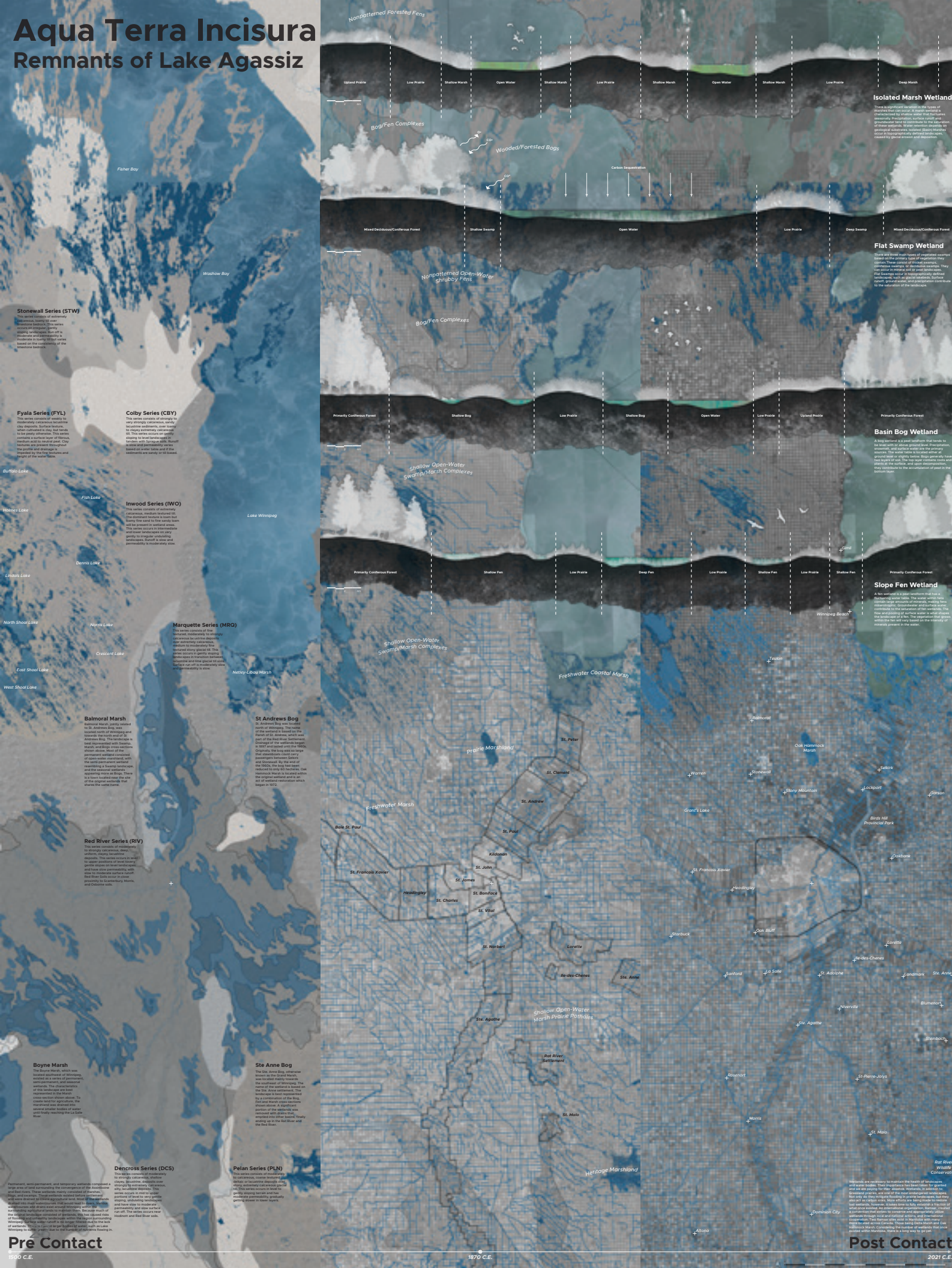
Perspective facing Northeast



Perspective facing South



Perspective facing Southwest



Aqua Terra Incisura

Remnants of Lake Agassiz

Term Fall 2021 **Class** LARC 7340 Studio 4
Instructor(s) Dietmar Straub **Duration** 6 Weeks
Programs Photoshop, Illustrator, QGIS

This project began with research on the ghost creeks that once existed within Winnipeg before permanent settlement within the region. Further investigation led to the analysis of temporary, semi-permanent, and permanent wetlands that would have existed within the area before European contact. To understand the nature of these wetlands, it was necessary to understand the geological history of the lands on which these wetlands once sat and the settlements around them.

Pre - Contact Wetlands c. 1500 C.E.

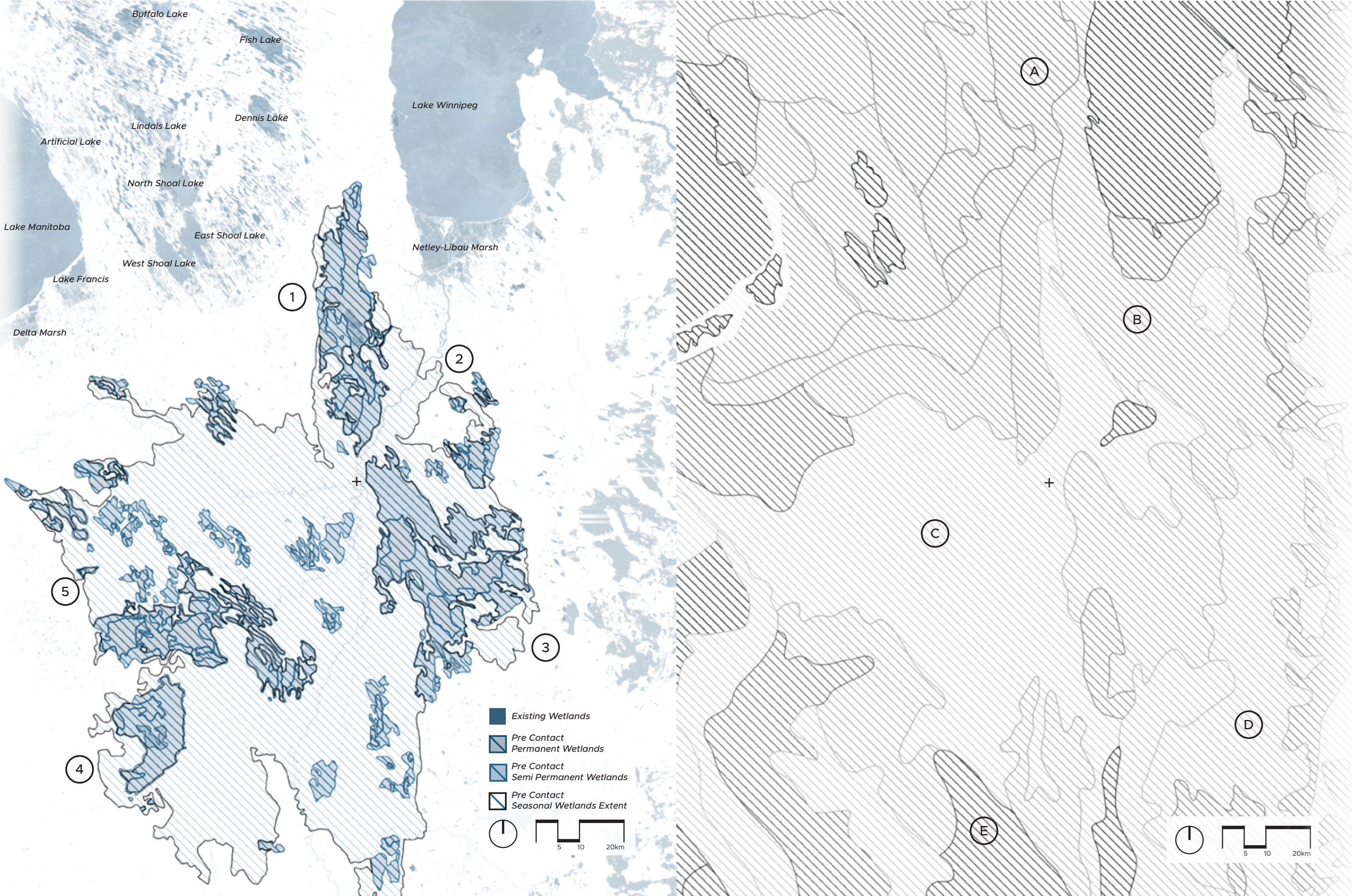
1 Balmoral Marsh
Balmoral Marsh, jointly related to St. Andrews Bog, was located north of Winnipeg and towards the north end of St Andrews Bog. The landscape is best represented with Swamp, Marsh, and Bogs cross-sections shown above. Most of the permanent wetland consisted of open-water marshland, with the semi-permanent wetland resembling a Swamp landscape, and the seasonal wetlands appearing more as Bogs. There is a town located near the site of the original wetlands that shares the same name.

2 St Andrews Bog
St. Andrews Bog was located north of Winnipeg. The name of the wetland is based on the Parish of St. Andrew, which was part of the Red River Settlement. Drainage of the wetlands began in 1897 and lasted until the 1960s. Originally, the bog was so large that steamboats could carry passengers between Selkirk and Stonewall. By the end of the 1960s, the bog had been reduced to only 60 hectares. Oak Hammock Marsh is located within the original wetland and is an act of wetland restoration which began in 1972.

3 Ste Anne Bog
The Ste. Anne Bog, otherwise known as the Grand Marsh, was located mainly towards the southeast of Winnipeg. The name of the wetland is based on the Ste. Anne settlement. The landscape is best represented by a combination of the Bog, Fen and Marsh cross-sections shown above. A significant portion of the wetlands was removed with drains that emptied into other basins, finally ending up in the Rat River and the Red River.

4 Tobacco Creek Swamp
The Tobacco Creek Swamp was a wetland adjacent to the Boyne Marsh. Similar to the Boyne Marsh, drainage was undertaken between 1880 and 1889 but was considered incomplete. It was not until 1898 that a plan was put in place to drain the Boyne River and Tobacco Creek run-off into the Morris and Red Rivers. The project was only completed by 1907.

5 Boyne Marsh
The Boyne Marsh, which was located southwest of Winnipeg, existed as a series of permanent, semi-permanent, and seasonal wetlands. The characteristics of this landscape are best represented in the Marsh cross-section shown above. To create land for agriculture, the marshland was drained into several smaller bodies of water until finally reaching the La Salle River.



Select Existing Soil Series c. 1970 C.E.

A Inwood Series (IWO)
This series consists of extremely calcareous, medium textured till. The dominant texture is loam but loamy fine sand to fine sandy loam will be present in wetland areas. This series occurs in intermediate and lower landscapes on very gently to irregular undulating landscapes. Runoff is slow and permeability is moderately slow.

C Red River Series (RIV)
This series consists of moderately to strongly calcareous, deep, uniform, clayey, lacustrine deposits. This series occurs in level to upper positions of level to very gentle slopes on level landscapes and have slow permeability, with slow to moderate surface runoff. Red River Soils occur in close proximity to Scantbury, Morris, and Osborne soils.

B Marquette Series (MRQ)
This series consists of fine textured, moderately to strongly calcareous lacustrine deposits over extremely calcareous, medium to moderately fine textured stony glacial till. This series occurs in gently sloping landscapes in transition between lacustrine and lime glacial till soils. Surface run off is moderately slow and permeability is slow.

D Pelan Series (PLN)
This series consists of moderately to calcareous, coarse textured deltaic or lacustrine deposits over stony, extremely calcareous glacial till. This series occurs in level to gently sloping terrain and has moderate permeability, gradually getting slower in lower layers.

E Dencross Series (DCS)
This series consists of moderately to strongly calcareous, shallow clayey, lacustrine, deposits over strongly to extremely calcareous, silty, lacustrine deposits. This series occurs in mid to upper portions of level to very gentle sloping, undulating landscapes and have slow to moderate permeability and slow surface run off. The series occurs near Hodinott and Red River soils.

Red River Settlement Parishes c. 1870 C.E.

- 1

St. Laurent
- 2

Portage La Prairie
- 3

High Bluff
- 4

Poplar Point
- 5

Baie St. Paul
- 6

St. Francois Xavier
- 7

Headingley
- 8

St. Charles
- 9

St. James
- 10

St. John
- 11

Kildonan
- 12

St. Paul
- 13

St. Andrew
- 14

St. Clement
- 15

St. Peter
- 16

St. Boniface
- 17

St. Vital
- 18

St. Norbert
- 19

Lorette
- 20

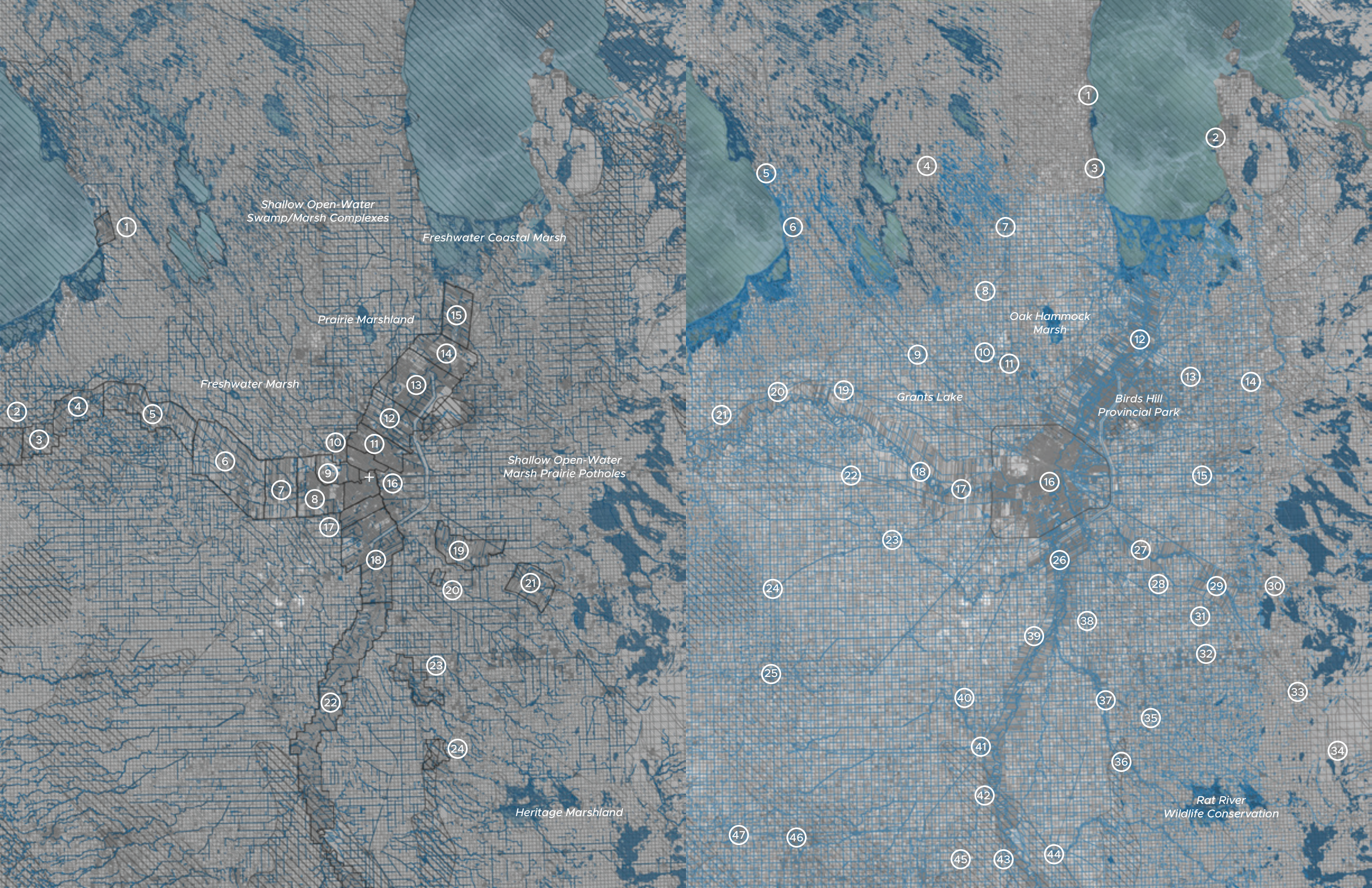
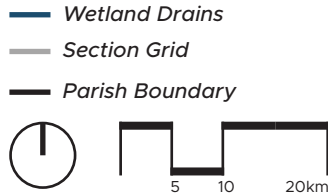
Ile-des-Chenes
- 21

Ste. Anne
- 22

Ste. Agathe
- 23

Rat River
- 24

St. Malo



Existing Urban Settlements c. 2021 C.E.

- 1

Gimli
- 2

Grand Marais
- 3

Winnipeg Beach
- 4

Inwood
- 5

Oak Point
- 6

St. Laurent
- 7

Teulon
- 8

Balmoral
- 9

Warren
- 10

Stonewall
- 11

Stony Mountain
- 12

Selkirk
- 13

Garson
- 14

Beausejour
- 15

Anola
- 16

Winnipeg
- 17

Headingley
- 18

St. Francois Xavier
- 19

Marquette
- 20

Poplar Point
- 21

High Bluff
- 22

Elie
- 23

Starbuck
- 24

Elm Creek
- 25

Carman
- 26

St. Norbert
- 27

Lorette
- 28

Landmark
- 29

Ste. Anne
- 30

Richer
- 31

Blumenort
- 32

Steinbach
- 33

Marchand
- 34

Woodridge
- 35

Grunthal
- 36

St. Malo
- 37

St. Pierre-Jolys
- 38

Niverville
- 39

Ste. Agathe
- 40

Rosenort
- 41

Morris
- 42

St. Jean Baptiste
- 43

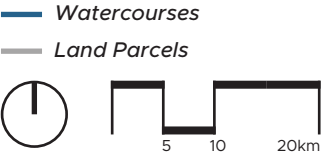
Letellier
- 44

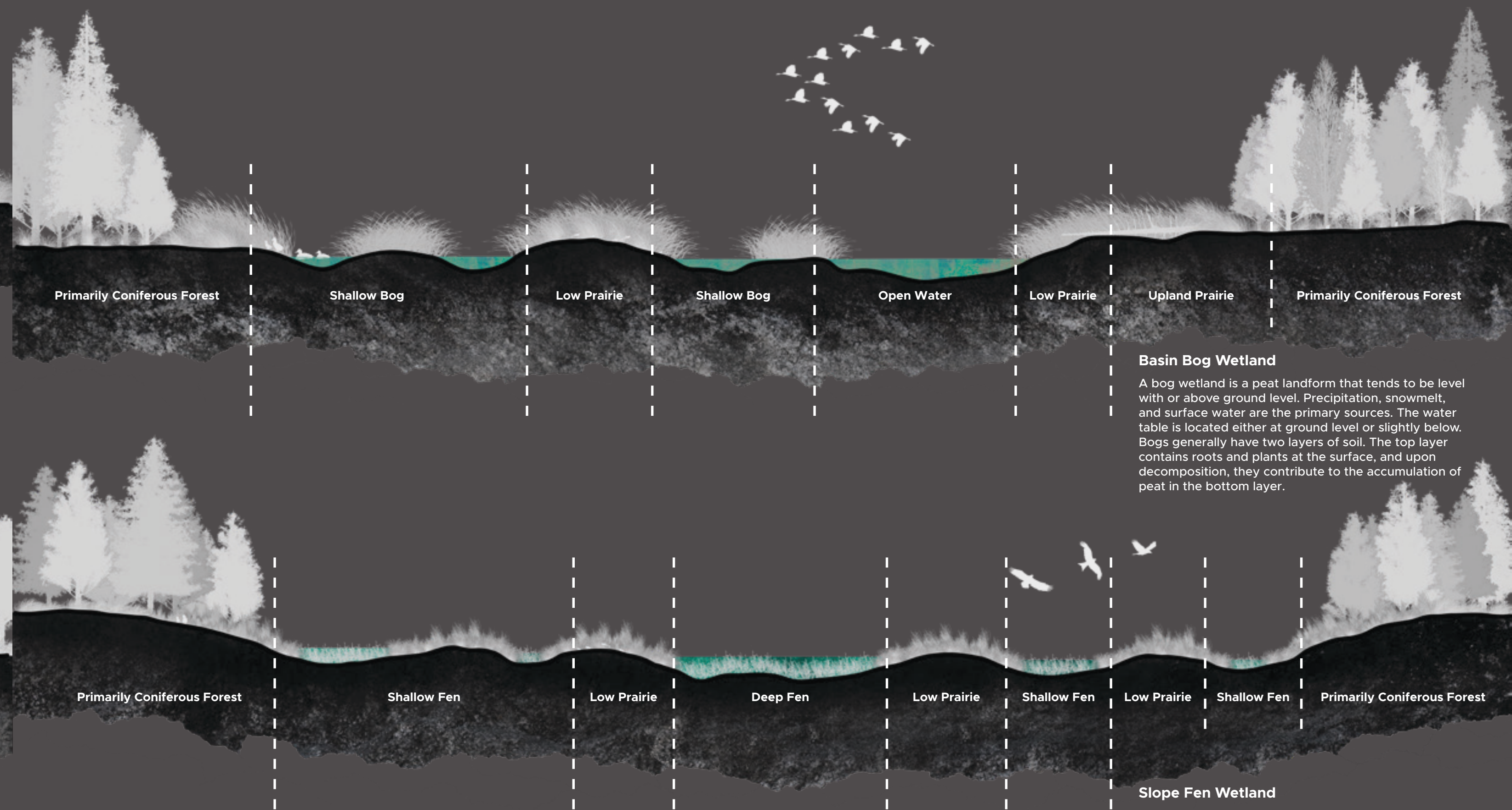
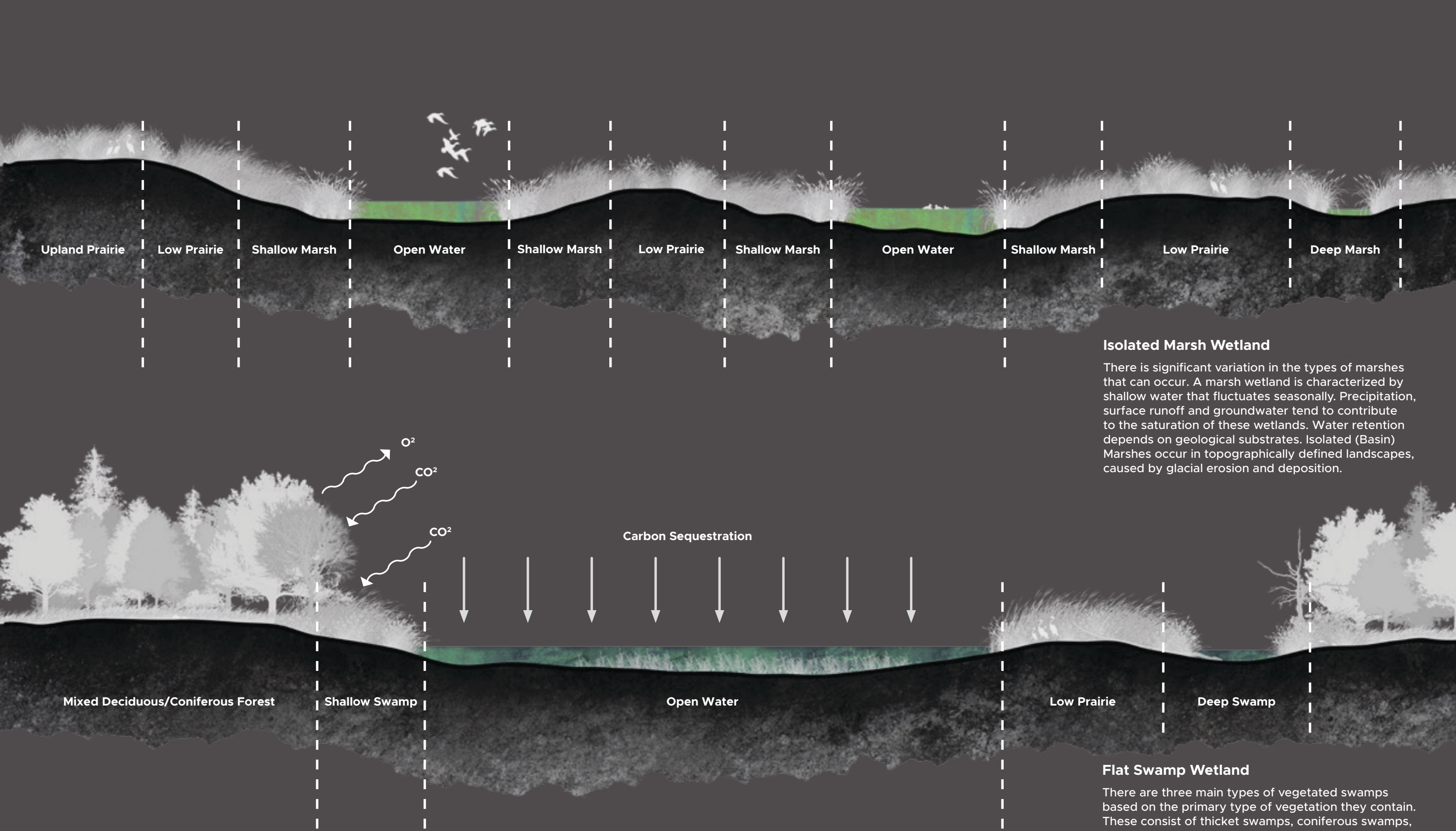
Dominion City
- 45

Altona
- 46

Winkler
- 47

Morden





References and Citations

“Agriculture: Province of Manitoba.” Province of Manitoba - Agriculture. Accessed October 12, 2021. https://www.gov.mb.ca/agriculture/soil/soilsurvey/pubs/description_of_soil_series_in_mb.pdf.

“Conserving Canada’s Wetlands.” Ducks Unlimited Canada, October 8, 2021. https://www.ducks.ca/assets/2020/05/Ducks-Unlimited-Canada_Landowners-Guide.pdf.

“Local Heritage: Special Places.” Carman / Dufferin Heritage, October 9, 2021. <https://www.carmandufferinheritage.ca/local%20heritage/special%20places/loc-her-spec-pl.html>.

Woolison, Garth. “Water Works.” Thesis Practicum, University of Manitoba, 2018. <http://hdl.handle.net/1993/32989>.

MANITOBA PROPERTY ASSESSMENT METADATA

Manitoba Property Assessment
Originator: Manitoba Municipal Relations
Publication: December 23, 2016
Title: MG_ROLL_ENTRY_POLY
Edition: 1.0
Geospatial_Data_Presentation_Form: shape file
Online_Linkage:
<https://univmb.maps.arcgis.com/home/item.html?id=8106acf39b124422a5f03a5c4e55d269>
Abstract: Boundary geometry for all of the assessed property within the Province of Manitoba. The purpose is to provide end users with a digital map of Manitoba’s property assessment boundaries and summary assessment data. This data layer is suitable for GIS georeferencing. The Manitoba Property Assessment Information data reflects the most current mapping data available and was originally uploaded to Manitoba Maps as a feature layer on December 23, 2016.

PRE CONTACT WETLANDS METADATA

Pre Contact Wetlands, Temporary, Semi Permanent, and Permanent
Originator: LARC 7340 Fall 2021 Studio
Publication: N/A
Title: Temporary, Semi Permanent, and Permanent
Edition: 1.0
Geospatial_Data_Presentation_Form: shape file
Online_Linkage: <https://www.flickr.com/photos/manitobamaps/2326505715/in/album72157603347076165/>
Abstract: Shapefile created based on 1974 map – Wet Prairie Zones of the Winnipeg Region Before Settlement and Drainage.

RED RIVER SETTLEMENT PARISHES METADATA

Red River Settlement Parishes
Originator: LARC 7340 Fall 2021 Studio
Publication: N/A
Title: RR_Parishes
Edition: 1.0
Geospatial_Data_Presentation_Form: shape file
Online_Linkage: http://roostertown.lib.umanitoba.ca/wp-content/uploads/2018/10/1.1_ManitobaParishes-Map-V6.jpg
Abstract: Shape file traced from map provided in Rooster Town publication – Red River Settlement parishes, Manitoba, 1870.

SOIL LAYER METADATA

Soil - Land Cover and Surficial Geology
Originator: Government of Manitoba
Publication: N/A
Title: Soils
Edition: N/A
Geospatial_Data_Presentation_Form: Shape File
Online Linkage: <http://mli2.gov.mb.ca/adminbnd/index.html>

Abstract: Soil series in Manitoba.

WATER BODIES LAYER METADATA

1:20 000 Water Bodies
Originator: Manitoba Department of Conservation
Publication: March, 2002
Title: WaterBodies
Edition: 1.0
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage: https://mli2.gov.mb.ca/t20k/meta_files/hyd_bas_20k_py.htm
Abstract: The 1:20 000 scale Topographic Base Map series are digital map layers that show lakes, rivers, streams, marshes, contours, and elevations of surrounding land. Additional features such as classified roads, railway lines, towns, villages and buildings are also shown. This data was collected photogrammetrically from 1:60 000 aerial photography.

WATERCOURSES LAYER METADATA

Hydrography - Watercourses
Originator: Manitoba Department of Conservation
Publication: N/A
Title: Watercourses
Edition: 1.0
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage: https://mli2.gov.mb.ca/t20k/index_seamless.html
Abstract: Digital layer displaying all water courses within the province, including any ditches, drains, diversions, rivers, and creeks.

WATER DRAINS LAYER METADATA

Designated Drain Watercourses
Originator: Manitoba Land Initiative
Publication: N/A
Title: Drains
Edition: 1.0
Geospatial_Data_Presentation_Form: vector digital data
Online_Linkage: https://mli2.gov.mb.ca/water_resources/des_drain_index.html
Abstract: Digital layer displaying all drainage ditches within the province.

WINNIPEG ASSESSMENT PARCEL METADATA

Map of Assessment Parcels
Originator: City of Winnipeg, Assessment and Taxation Department
Publication Date: August 24, 2017 (updated February 24, 2021)
Title: geo_export_7c182e2a-5ea5-401a-a965-ac8eb6289354
Edition: N/A
Geospatial Data Presentation Form: vector digital data
Online Linkage:
<https://data.winnipeg.ca/Assessment-Taxation-Corporate/Map-of-AssessmentParcels/rt7t 3m4m>
Abstract: Map of all Assessment Parcels from the Assessment and Taxation Department.

WINNIPEG GHOST CREEKS METADATA

Winnipeg Ghost Creeks
Originator: LARC 7340 Fall 2021 Studio
Publication: 2021
Title: ghost_creeks
Edition: 1.0
Geospatial_Data_Presentation_Form: shape file
Online_Linkage: N/A
Abstract: Shapefile indicated ghost creeks and previously existing waterbodies within and near Winnipeg. Based on the document created by Garth Woolison, accessible at <https://mspace.lib.umanitoba.ca/xmlui/handle/1993/32989>.

WINNIPEG ROAD NETWORK METADATA

Winnipeg Road Network
Originator: City of Winnipeg
Publication: February 13, 2018 (updated November 1, 2021)
Title: Roads
Edition: N/A
Geospatial Data Presentation Form: Shape File
Online Linkage: <https://data.winnipeg.ca/City-Planning/Road-Network/2eba-wm4h>
Abstract: Single lane road network of the City of Winnipeg. Data includes bridges and address ranges.

Adobe Inc. *Photoshop*. V. 19.1.6. Adobe Inc. PC. 2018.

QGIS Development Team. *QGIS Geographic Information System*. V. 3.10.10-A Coruña. QGIS Development Team. PC. 2020.

Bird of Peace Silhouette PNG. Digital Image. 41.3 x 27.1 cm. https://www.pngitem.com/middle/JmhRbx_silhouette-bird-peace-dove-flying-olive-branch-bird/.

Bird of Prey Silhouette PNG. Digital Image. 33.8 x 18.3 cm. https://www.pngitem.com/middle/iRhxbxi_silhouette-bird-of-prey-hd-png-download/.

Crane Silhouette PNG. Digital Image. 11.1 x 23.5 cm. https://www.pngitem.com/middle/wTxRRx_transparent-crane-clipart-bird-silhouette-clipart-black-and/.

Dead Conifer Tree Silhouette PNG. Digital Image. 11.1 x 39.6 cm. https://www.pngitem.com/middle/Jmibob_silhouette-vector-dead-tree-hd-png-download/.

Dead Tree PNG. Digital Image. 54.4 x 10.8 cm. https://www.pngitem.com/middle/Jmiomh_dead-tree-silhouette-png-transparent-png/.

Duck on Water Silhouette. Digital Image. 27.1 x 14.7 cm. https://www.pngitem.com/middle/xbboJh_duck-on-water-silhouette-hd-png-download/.

Dirt Texture. Digital Image. 33.1 x 26.4 cm. <https://www.sketchuptextureclub.com/textures/nature-elements/soil/ground/ground-texture-seamless-12865>.

Falcon Silhouette PNG. Digital Image. 39.3 x 63.5 cm. https://www.pngitem.com/middle/ixhwRi_clip-art-silhouette-portable-network-graphics-falcon-transparent/.

Flat Field Stone - Stone 148. Digital Image. 210.4 x 140.3 cm. <https://texturelabs.org/>.

Flock of Birds PNG. Digital Image. 16.3 x 15.1 cm. https://www.pngitem.com/middle/Jimhbb_flock-of-birds-clipart-branch-clip-art-ducks/.

Foaming Water Texture. Digital Image. 74.5 x 55.9 cm. <https://jooinn.com/img/startdownload>.

Jumping Frog Silhouette PNG. Digital Image. 31.9 x 12.7 cm. https://www.pngitem.com/middle/boxxoo_silhouette-of-jumping-frog-jumping-frog-silhouette-hd/.

Ornamental Tall Grass PNG. Digital Image. 15.9 x 13.2 cm. https://www.pngitem.com/middle/bboxww_transparent-ornamental-grass-png-png-download/.

Seaweed Ocean Aquatic Plant PNG. Digital Image. 14.7 x 13.7 cm. https://www.pngitem.com/middle/oohhJx_sea-weed-ocean-aquatic-plants-transparent-aquatic-plant-png/.

Sitting Frog Silhouette PNG. Digital Image. 25.9 x 16.3 cm. https://www.pngitem.com/middle/JoTwRx_frog-shape-frog-silhouette-png-transparent-png/.

Sweet Grass PNG. Digital Image. 27.1 x 6.8 cm. https://www.pngitem.com/middle/hRbxiTo_grass-clipart-green-png-sweet-grass-transparent-png/.

Transparent Tall Grass PNG. Digital Image. 25.3 x 12.7 cm. https://www.pngitem.com/middle/bbxihx_transparent-tall-grass-png-transparent-transparent-background-tall/.

Turquoise Paint Texture. Digital Image. 16.9 x 22.5 cm. <https://ar.pinterest.com/pin/493566440386710645/>.

Winter Tree PNG. Digital Image. 20.4 x 2.6 cm. https://www.pngitem.com/middle/hmJiomR_cutout-winter-tree-png-transparent-png/.

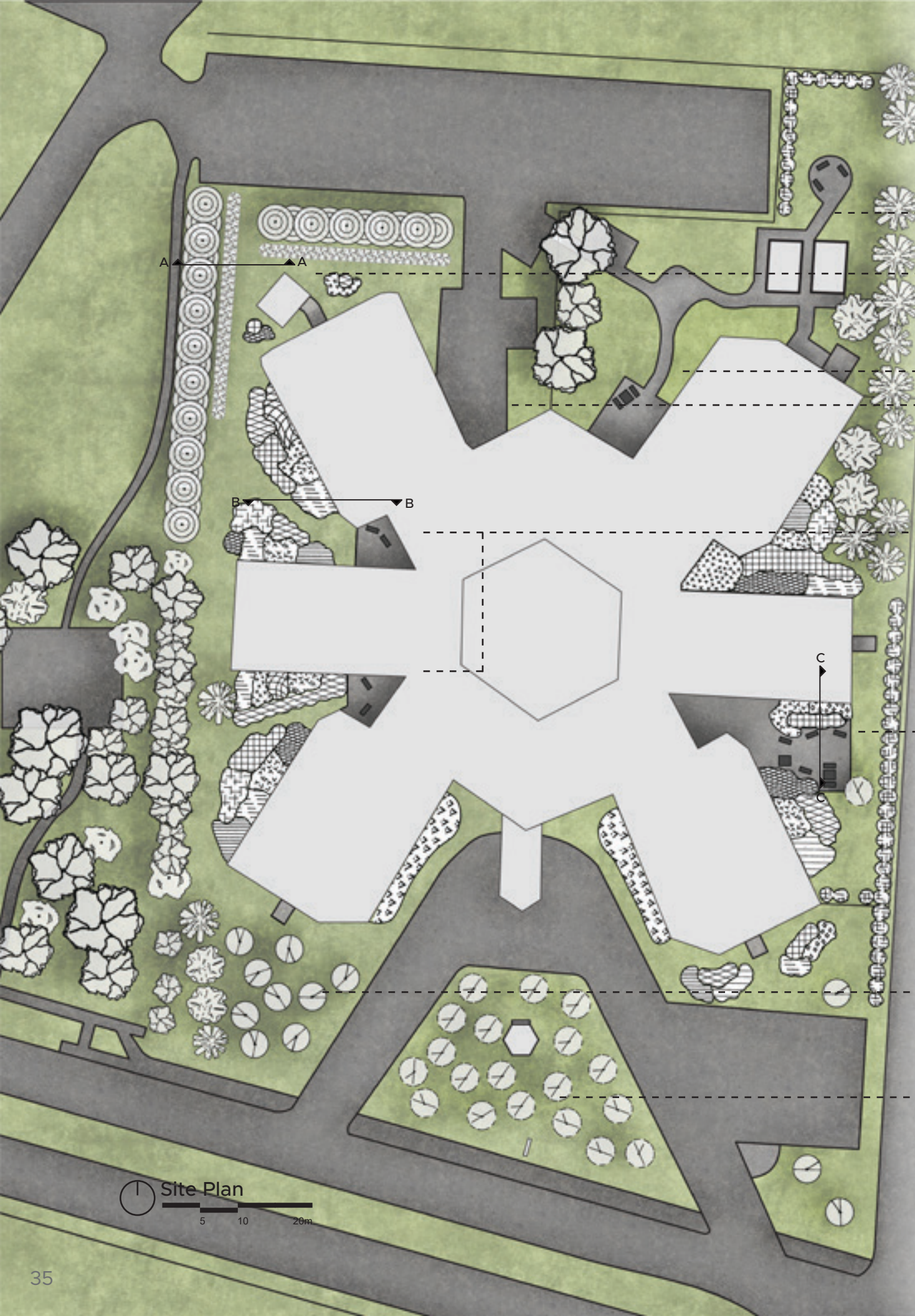


01_
02_
03_
04_
05_
06_
07_
08_

Revera Garden Revival

Term Fall 2020 **Class** EVLU 4012 Studio 5
Instructor(s) Brenda Brown **Duration** 4 Weeks
Programs Hand Drawing, Rhino3D, Photoshop + Illustrator

For this project, a list of select care homes in Winnipeg was provided and it was expected that one would be chosen to be analyzed. Charleswood Revera Care Home on Roblin Boulevard was chosen and a design was developed in response to the landscape around the site. The design intends to enhance the surrounding landscape of Revera Charleswood. An existing park, specifically Bannatyne Grove to the west, was used as inspiration for site development since it was clear that individuals whose windows had a view of the grove tended to open their curtains and take in the views. This is compared to other areas on-site where there was little or no vegetation, where nearly all curtains were closed. Various shrub species are introduced to the site to add visual interest and provide some degree of separation from the adjacent roadways. A new patio space, in addition to the existing northeast recreational area, is also specified. This space allows residents, staff, and potential visitors to experience the landscape up close.



Existing, accessible garden space

Visitation Centre, constructed from recycled shipping containers provided by province (6.1m x 2.43m x 2.89m)

Existing hardscape

Existing service access

Additional, smaller seating areas, with poured in place rubber pavement, with existing building access

Patio space with moveable furniture, with poured in place rubber pavement, with existing building access

Continuation of Autumn Splendor Buckeye grove, but with Littleleaf Leaf Linden trees, adjacent to the existing Bannatyne Grove

Grove of Autumn Splendor Buckeye trees with gazebo, adjacent to Roblin Boulevard

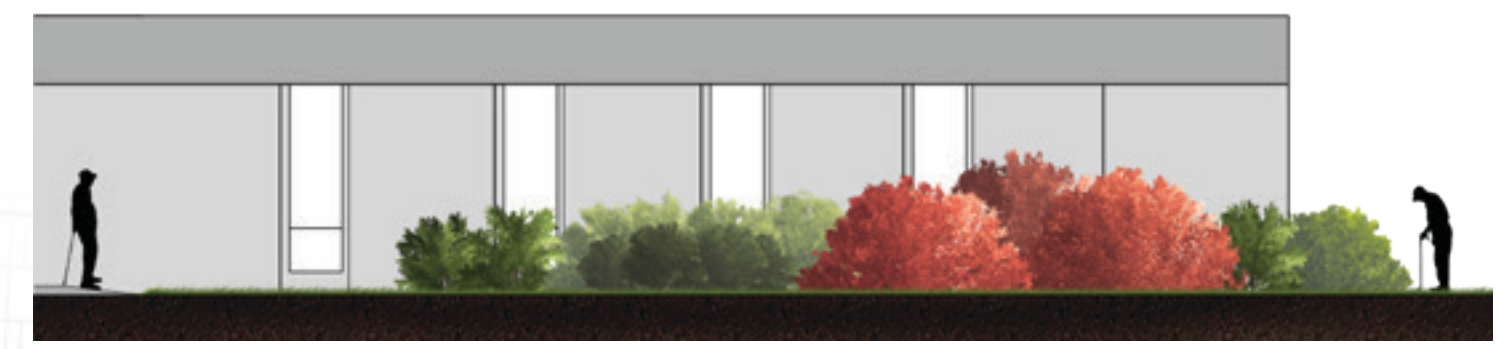
Context within Winnipeg
0.5 1 2km

Alpine Currant	Galahad Mockorange	Manitoba Maple
Diabolo Ninebark	Globe Caragana	Amur Maple
Dwarf Blue Leaf Arctic Willow	Goldenlocks Red Elder	Autumn Splendor Buckeye
Dwarf Broom	Goldflame Spirea	Golden Cascade Littleleaf Linden
Dwarf Turkestan Burning Bush	Ivory Halo Dogwood	Sundancer Poplar
Redosier Dogwood	Chokecherry	Scots Pine
Russian Almond	Colorado Spruce	
Calgary Carpet Juniper		



Section AA | Sectional elevation through shelterbelt

1 2 4m



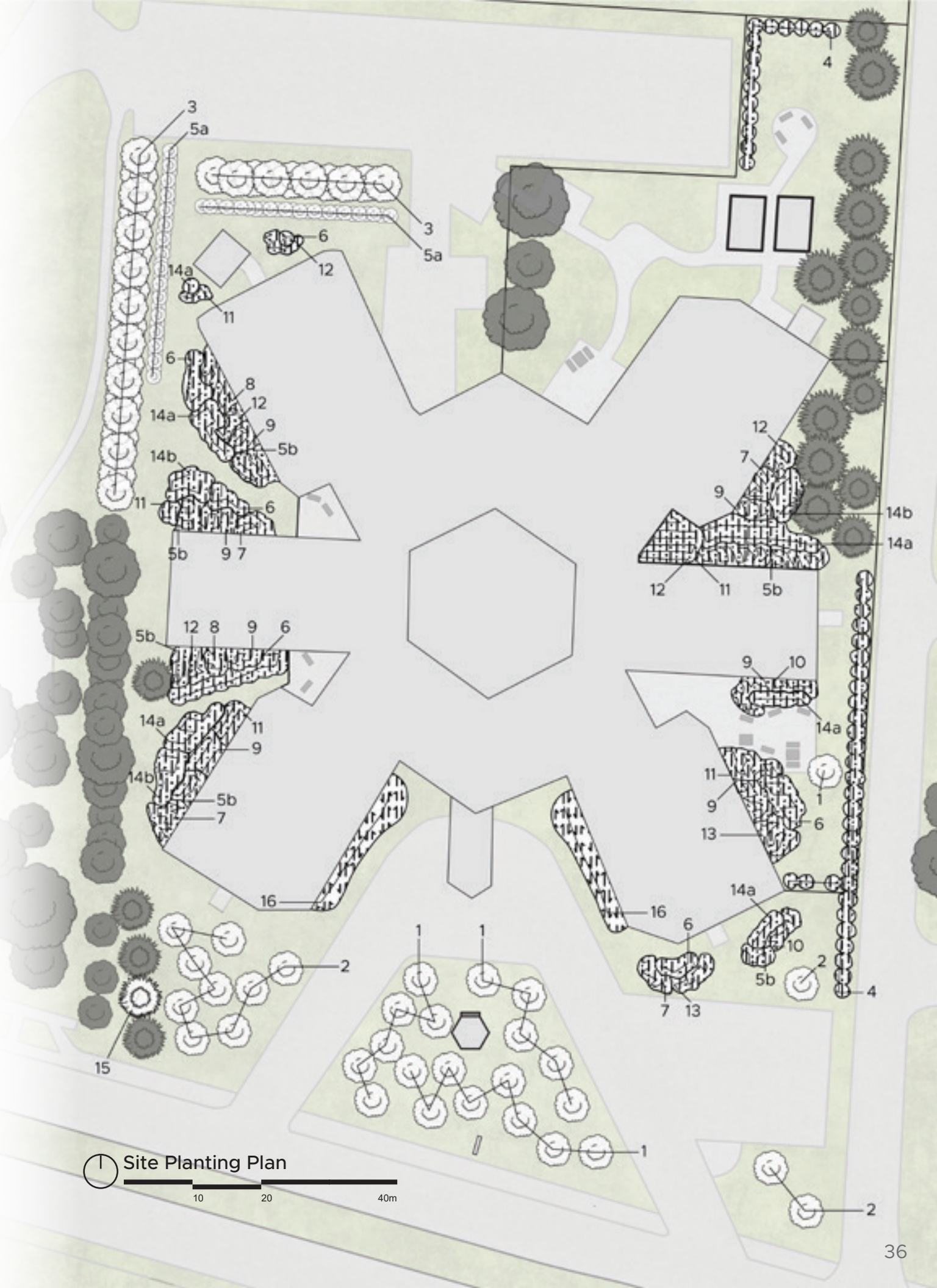
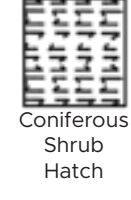
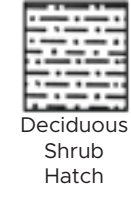
Section BB | Sectional elevation facing side of building

1 2 4m

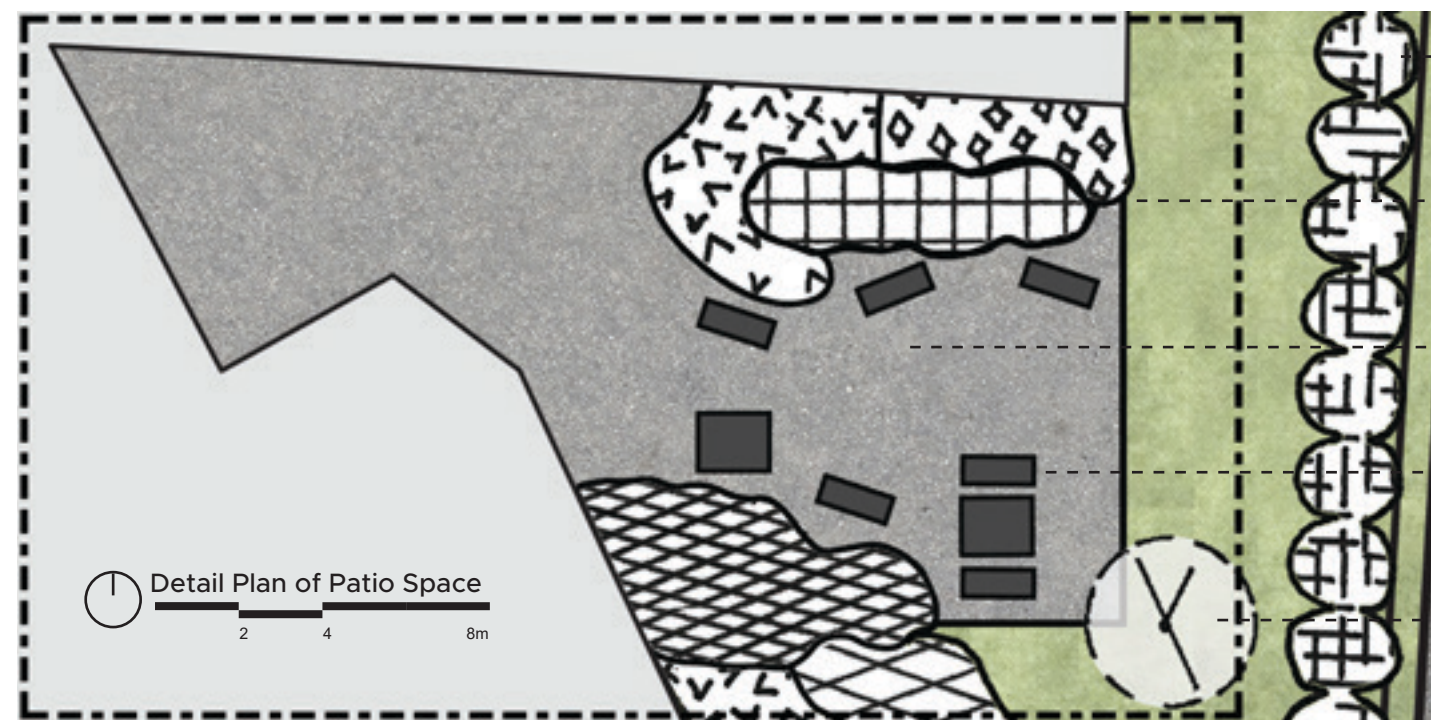


Section CC | Sectional elevation through patio space

1 2 4m



Site Planting Plan
10 20 40m



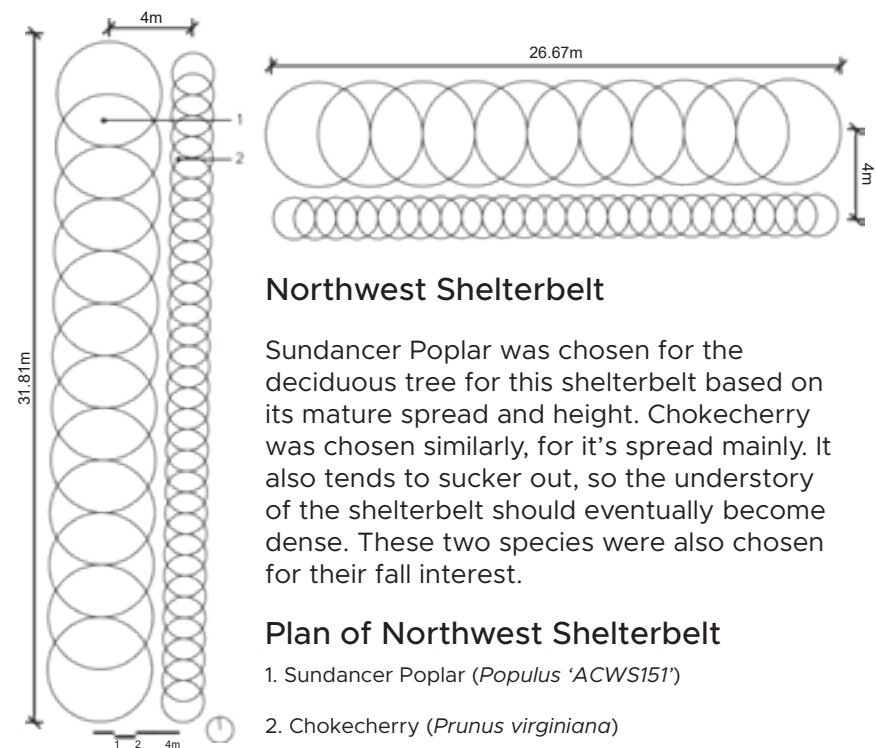
Alpine Currant hedge creates a visual barrier between patio space and side road

Planted shrub bed provides visual interest to interior and exterior space

Poured in place rubber pavement

Light, moveable patio furniture

Autumn Splendor Buckeye provides shade in the late morning/early afternoon

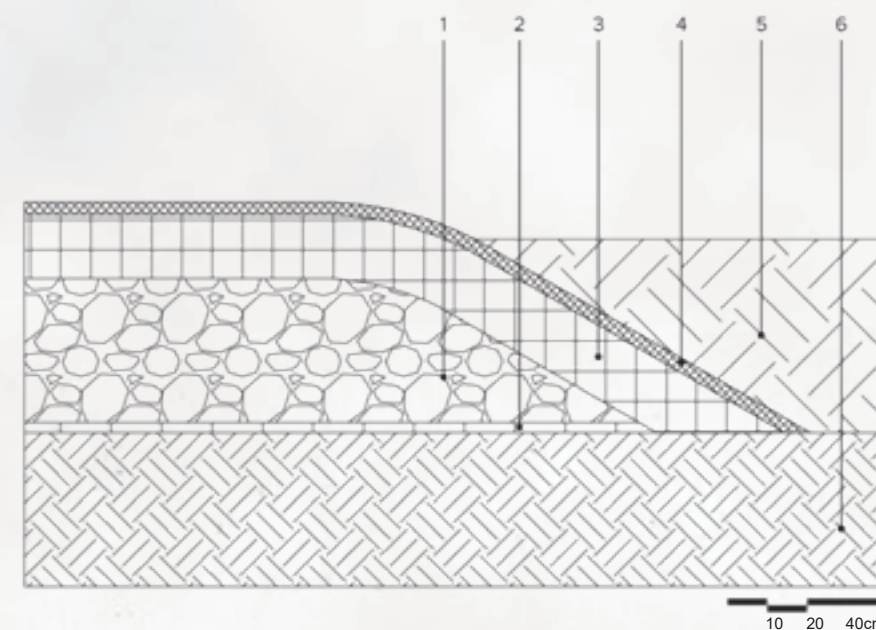


Northwest Shelterbelt

Sundancer Poplar was chosen for the deciduous tree for this shelterbelt based on its mature spread and height. Chokecherry was chosen similarly, for its spread mainly. It also tends to sucker out, so the understory of the shelterbelt should eventually become dense. These two species were also chosen for their fall interest.

Plan of Northwest Shelterbelt

1. Sundancer Poplar (*Populus 'ACWS151'*)
2. Chokecherry (*Prunus virginiana*)



Pour in Place Rubber Pavement

The top EPDM rubber layer can withstand the typical weather conditions that are experienced in Winnipeg and can flex and move slightly during freezing and thawing periods. The SBR Impact Layer suggested in the drawing above is created at a specific thickness based on a Critical Fall Height.

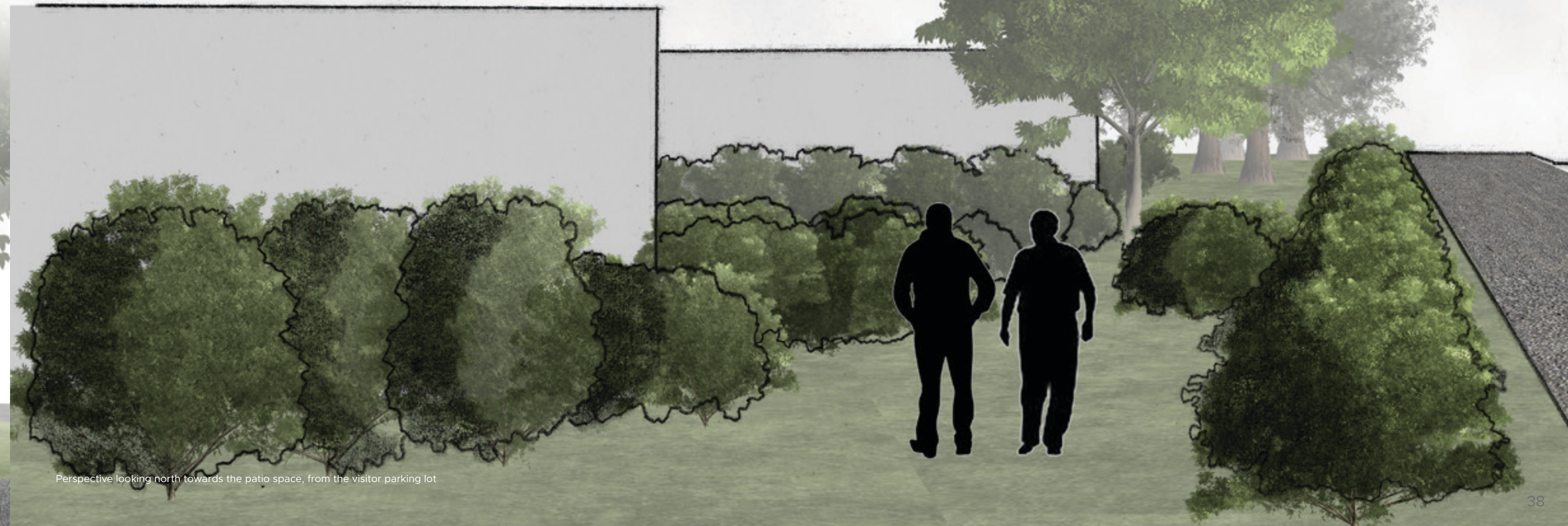
To properly anchor the material and its base layers, an optional "gutter" may be created to prevent any disruption of the base materials, and ensure a proper seal for the surface layer.

Section of Rubber Pavement Edge

1. Compact Stone Base (15.24 cm)
2. Geotextile Fabric (1 cm)
3. Styrene-Butadiene Rubber (SBR) Buffering Impact Layer (6.35 cm)
4. Ethylene Propylene Diene Monomer (EPDM) Rubber Top Layer (1.27 cm)
5. Compacted Top Soil
6. Compacted Soil



Perspective looking south towards Robin Boulevard and the gazebo



Perspective looking north towards the patio space, from the visitor parking lot



Carlton Grove
CentreVenture Development

Term Winter 2022 **Class** LARC 7330 Studio 3
Instructor(s) Alan Tate **Duration** 6 Weeks
Programs Photoshop, Rhino3D, TwinMotion, QGIS

The entire studio studied the CentreVenture development area of downtown Winnipeg, with groups of individuals having a specific aspect of analyzing. As a result, a personal framework for the area's development was produced, followed by site selection. Carlton Grove is located east of the RBC Convention Centre, bordered by York Avenue to the north, Hargrave Street to the east, and Carlton Street, the namesake, to the west. The nature of the on-site climate, mainly summer sunlight and winter wind, informed the site's layout, including the orientation of trees, boardwalks, and pathways.

Framework Overview

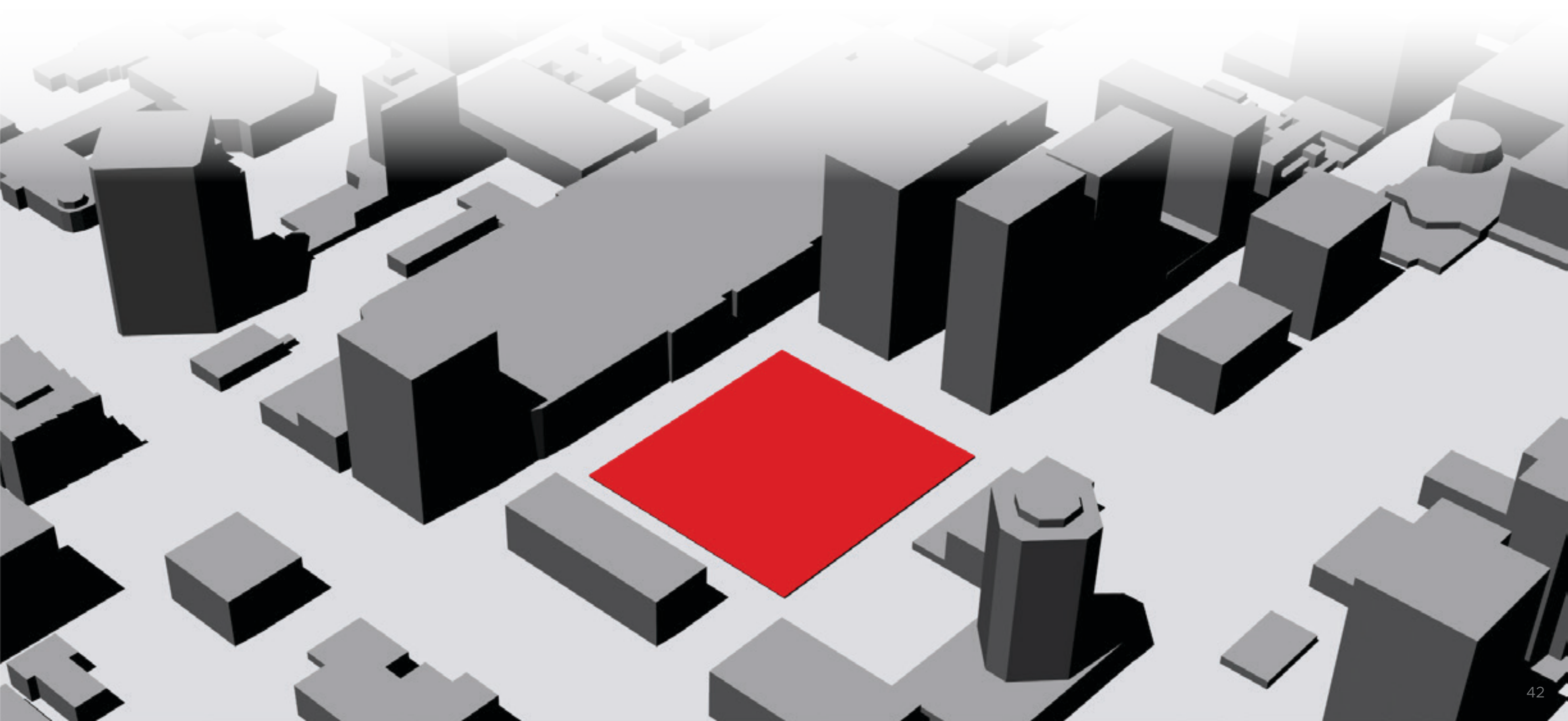
Buildings
Paved Roads
Surface Parking



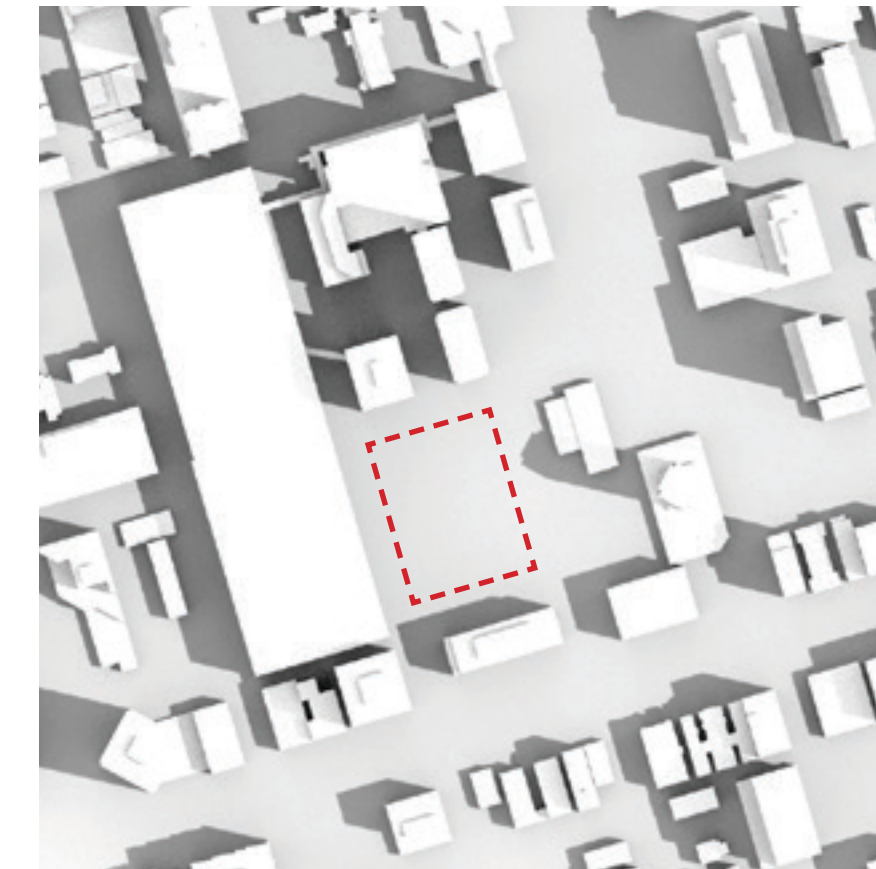
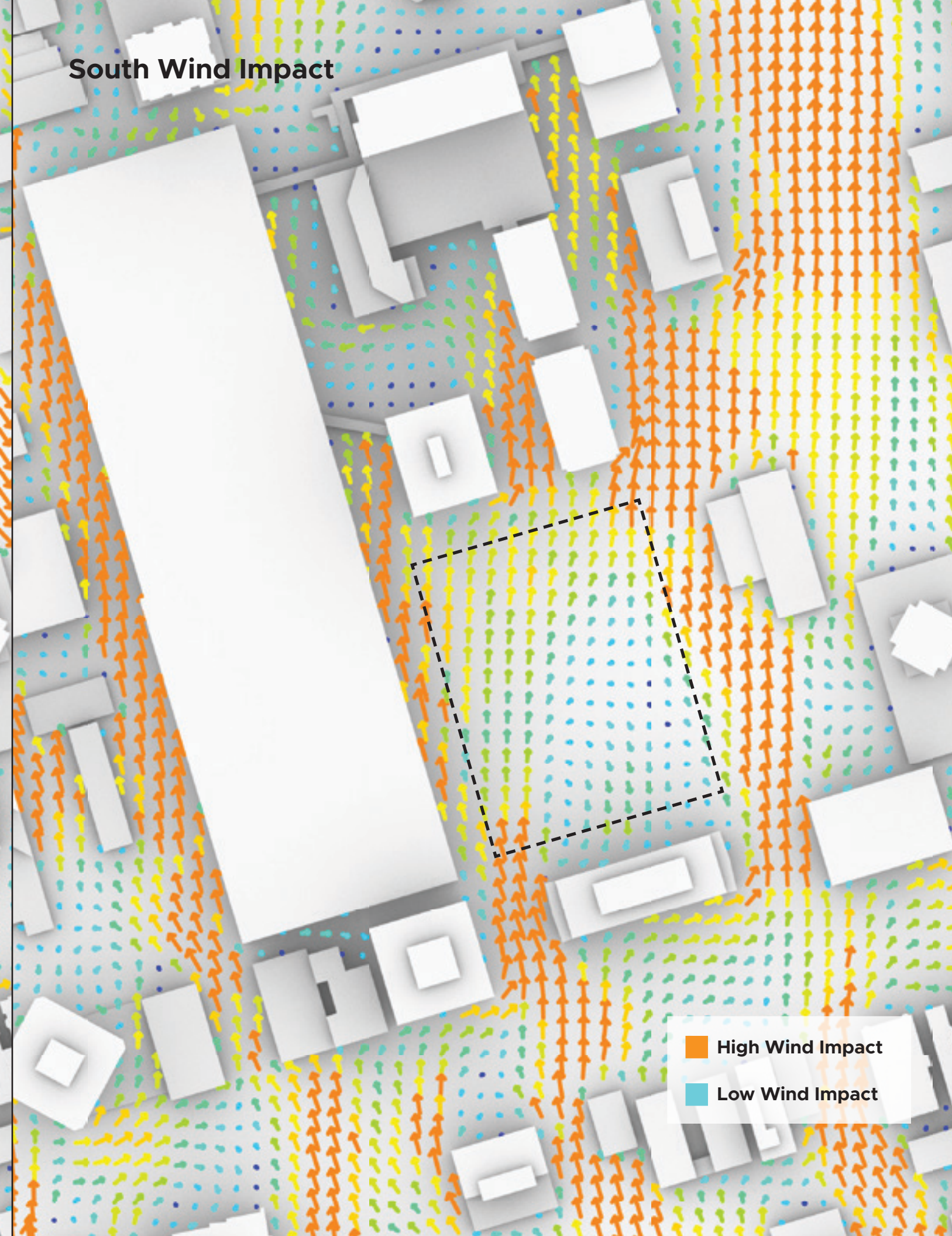
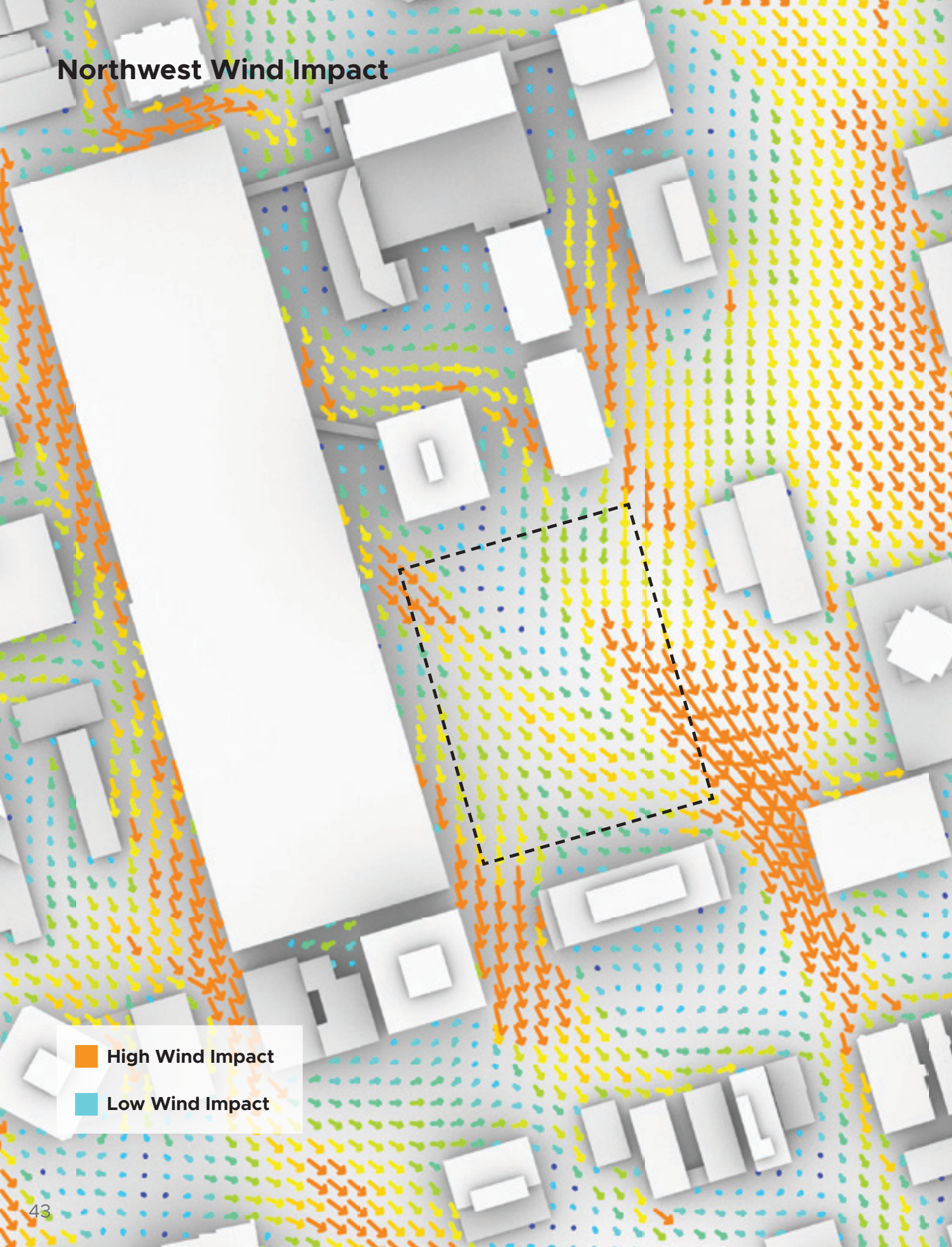
This framework addresses the CentreVenture region of downtown Winnipeg. The framework looks to reform the nature of vehicular and pedestrian movement within the downtown and public transit. A movement system that classifies vehicular streets as either Arterial or Support routes will inform the amount of traffic allowed on these routes. Existing repetitive streets create Active Routes, a network exclusive to pedestrian and cyclist access. Adjacent to these routes is surface parking lots, some of which have pre-existing proposals for building developments. The lots adjacent to Active trails will be recommended to develop public green spaces, which will be required every number of square kilometres in the downtown. It is expected that environmentally conscious design practices will develop these sites. Native species and reinforcement of the urban canopy are encouraged. At the same time, many surface parking lots will be retained for use by residents, businesses, and offices adjacent to Arterial and Support routes. The Winnipeg Transit Master Plan will continue to be executed with modifications to several lines' courses.

Site Development

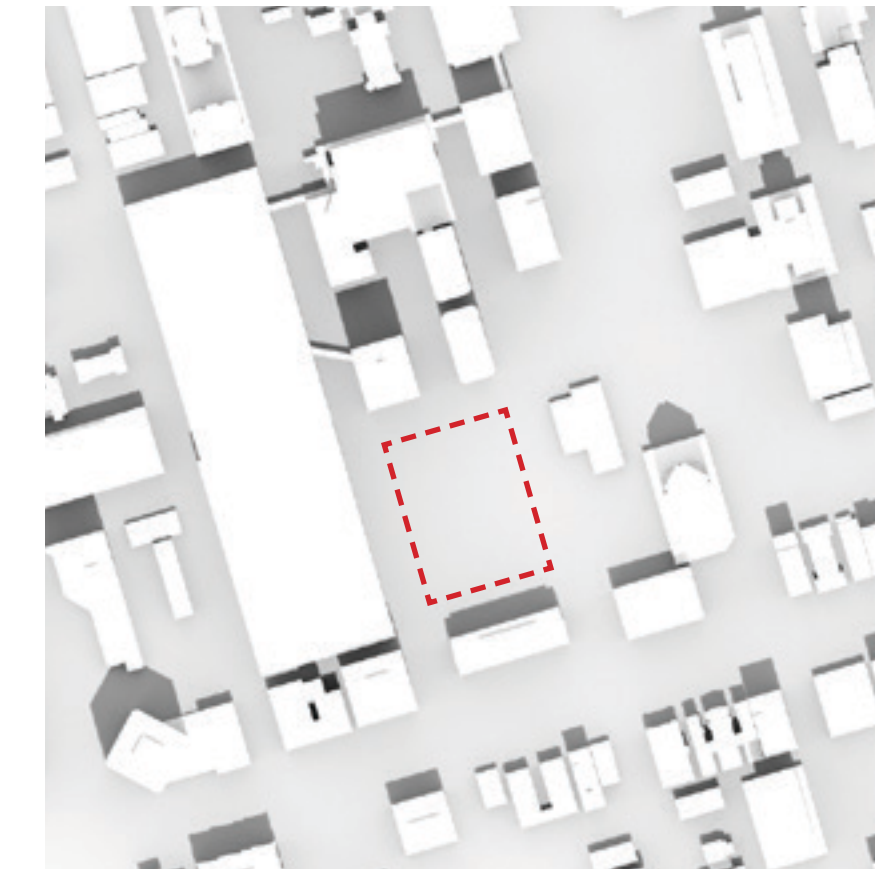
Buildings
Movement Routes
Development Lots



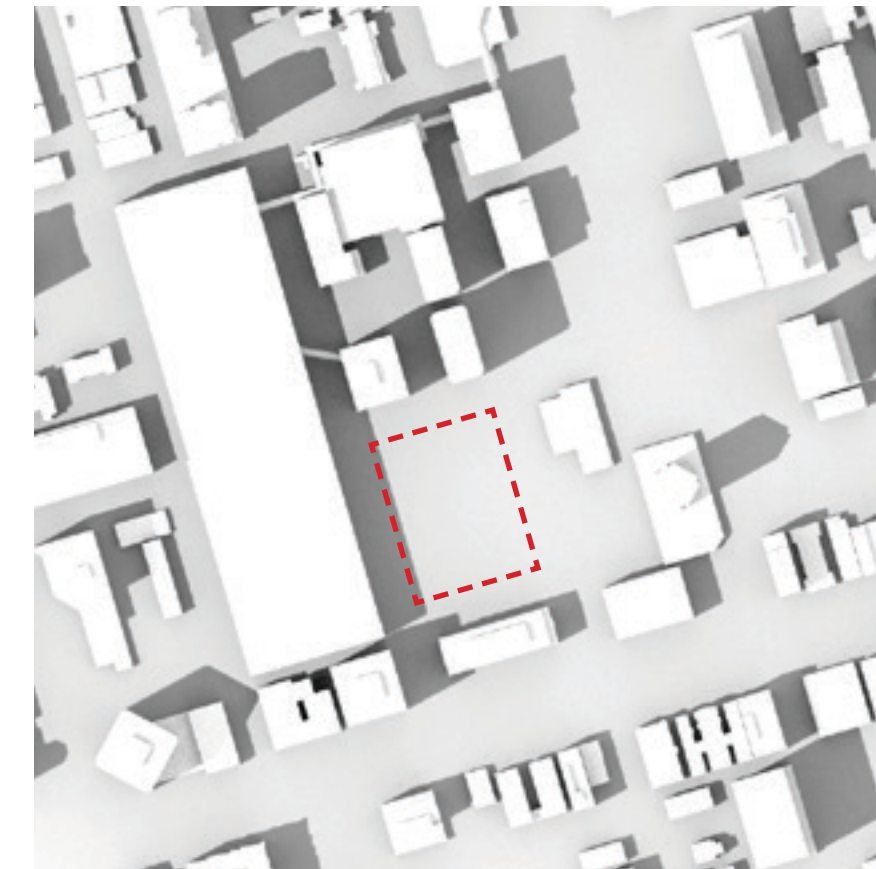
To the east of the RBC Convention Centre and north of Broadway, this surface parking lot will be developed as a public green space to serve as a precedent for other site developments within the CentreVenture region of downtown Winnipeg. Since there is an Active Route to the east of the site with other lots slated for development, the design of this site should break down the borders created by the presence of the previously existing roadway. This site was selected because of its proximity to Broadway and centrality within the neighbourhood. In addition, it may serve as exterior expansion space for the RBC Convention Centre.



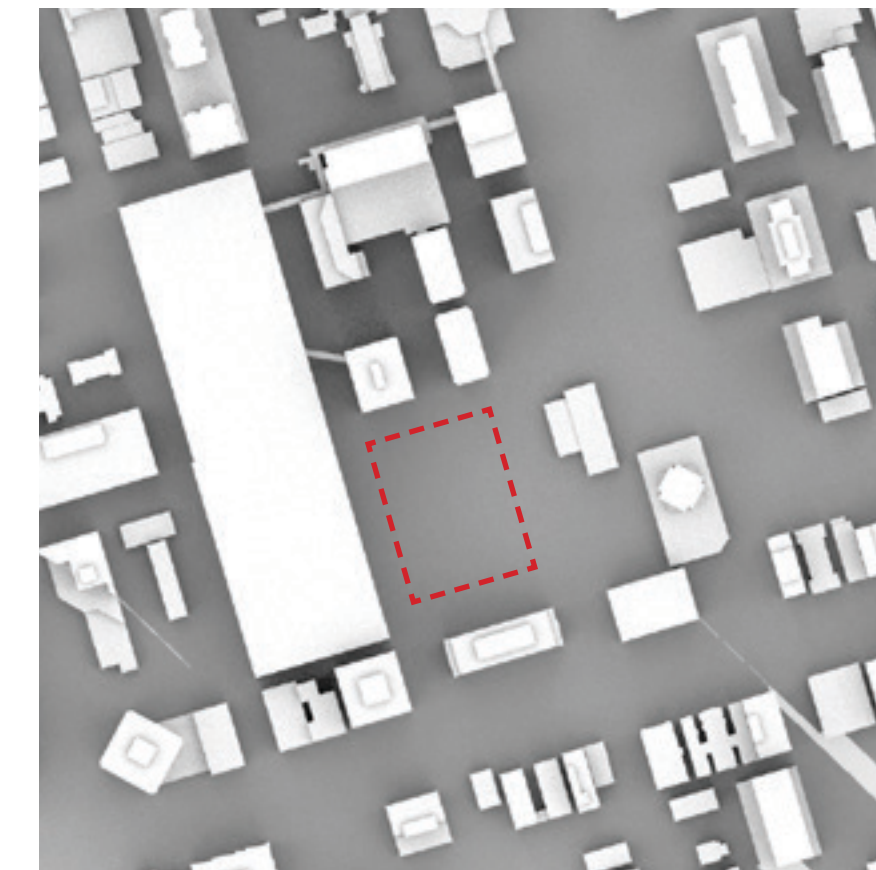
June 22nd - 0900



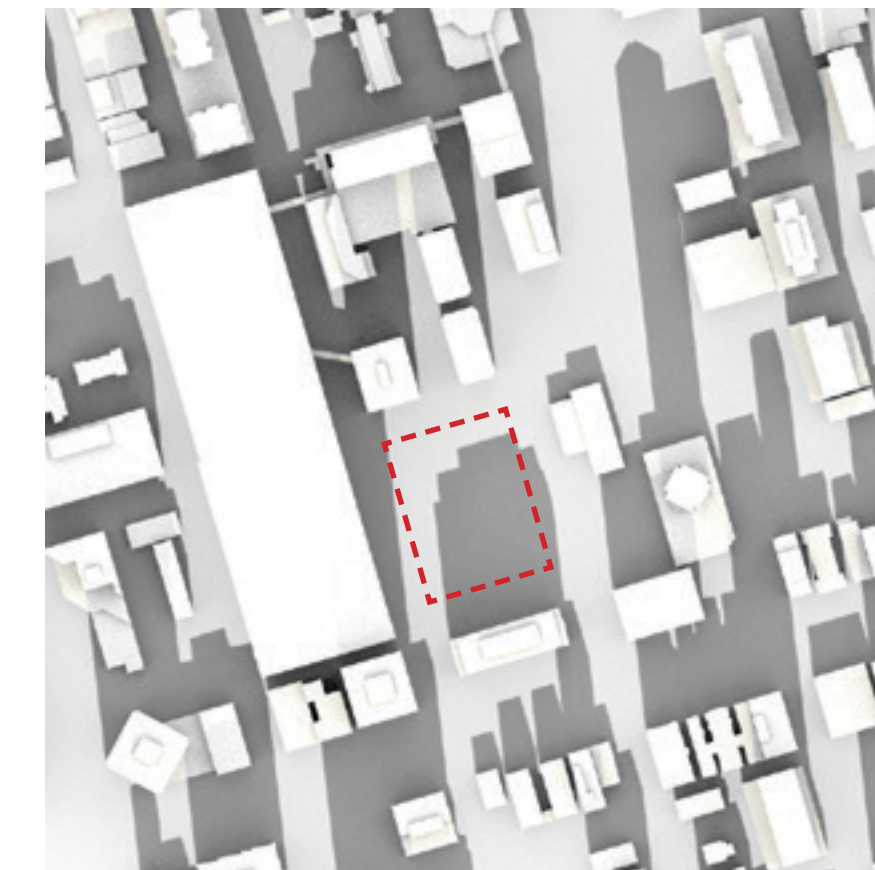
June 22nd - 1200



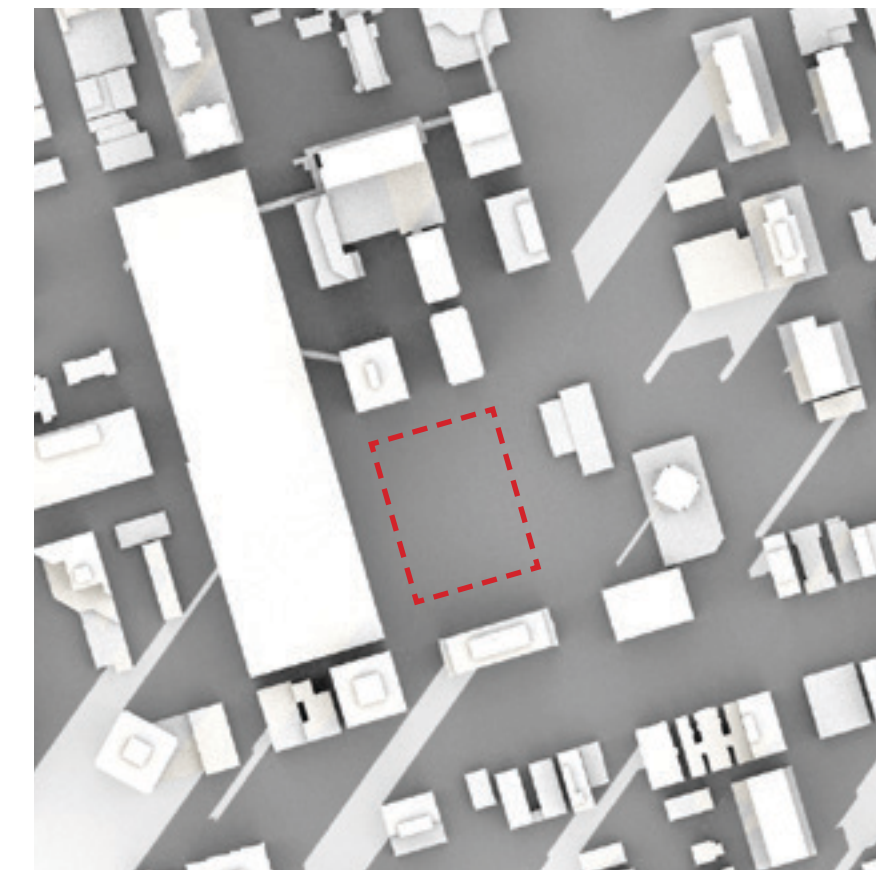
June 22nd - 1500



December 22nd - 0900



December 22nd - 1200



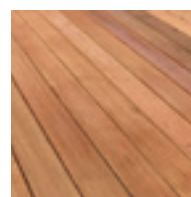
December 22nd - 1500

Site Materials

- ① **Barkman Concrete Paver**
Broadway Plank 100MM Ash



- ② **Dimensional Cedar Lumber**
Decking / Pergola



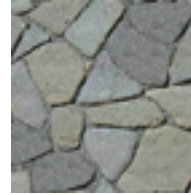
- ③ **Fine Rolled Gravel**



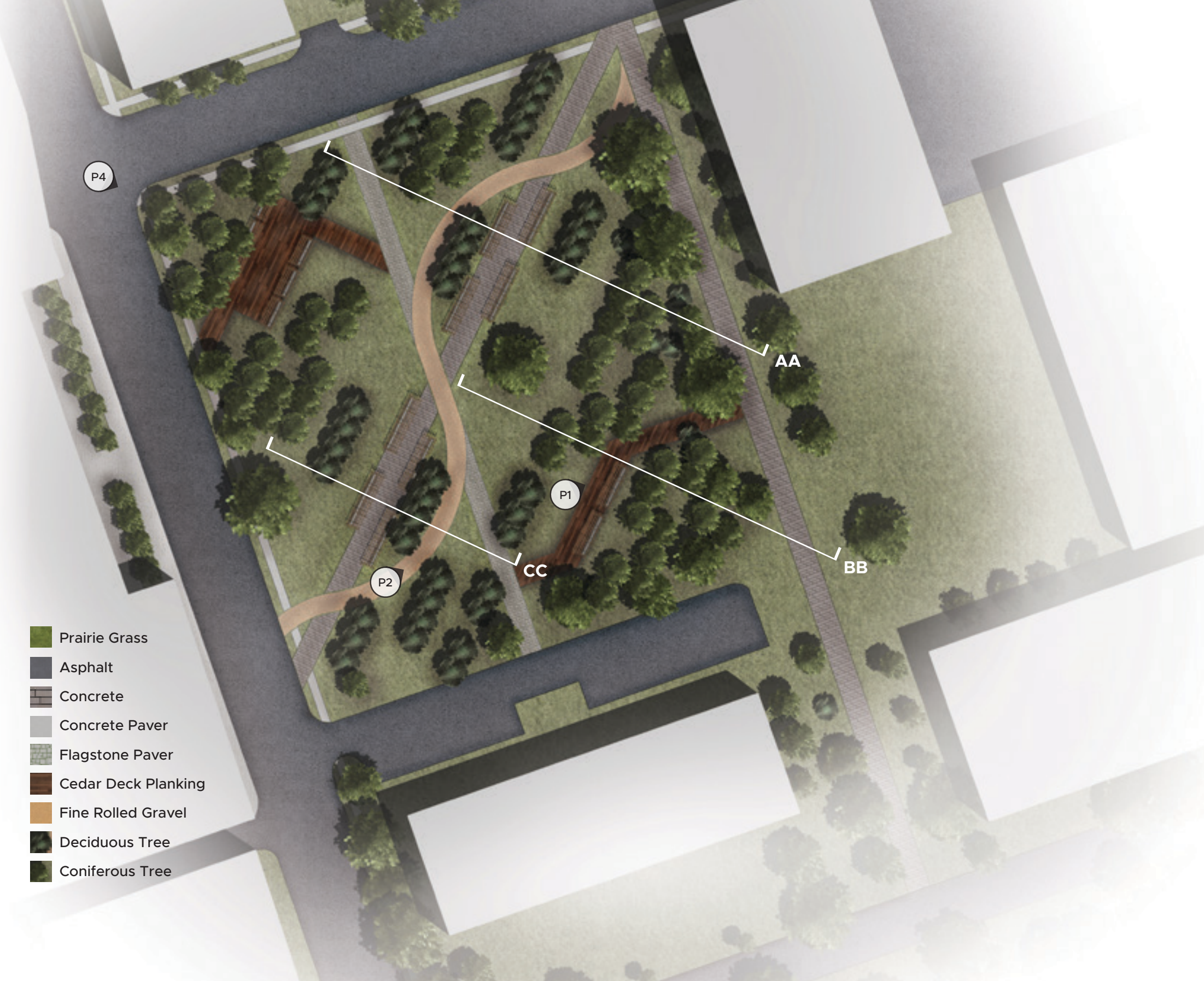
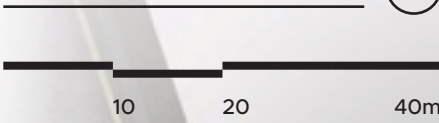
- ④ **Poured Concrete**
Seating and Slab



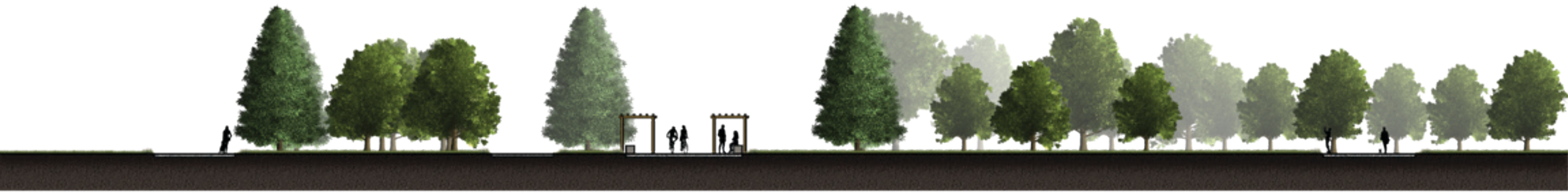
- ⑤ **Repurposed Concrete Flagstone**



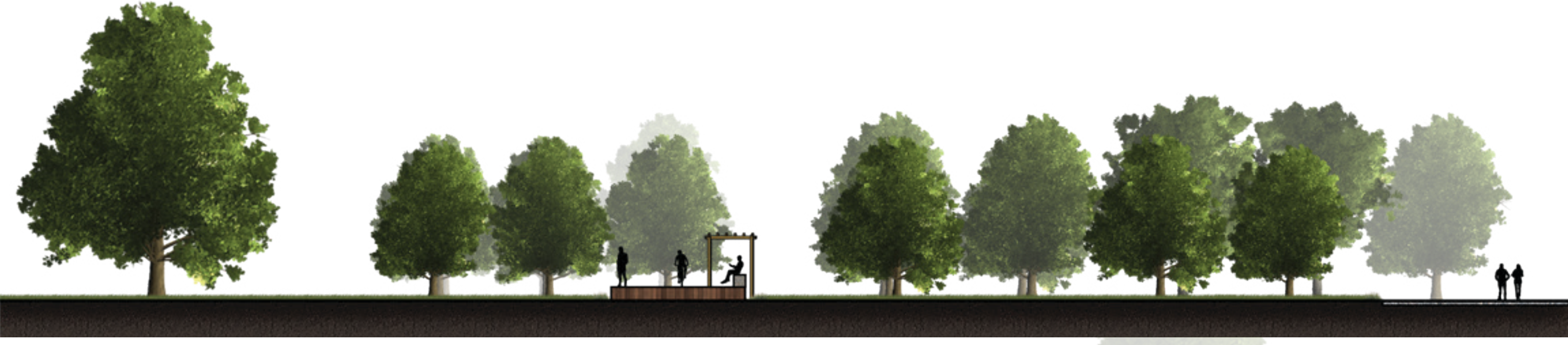
Rendered Site Plan



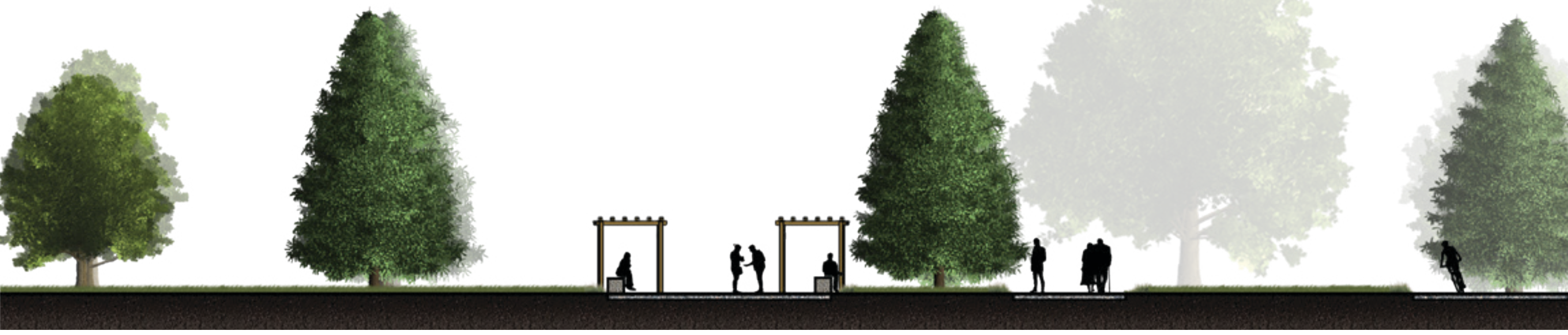
- Prairie Grass
- Asphalt
- Concrete
- Concrete Paver
- Flagstone Paver
- Cedar Deck Planking
- Fine Rolled Gravel
- Deciduous Tree
- Coniferous Tree



Section AA | Through northeast path and seating



Section BB | Through southeast boardwalk and forest



Section CC | Through southwest path and seating



Perspective One | Central Path Facing Northeast

DAY



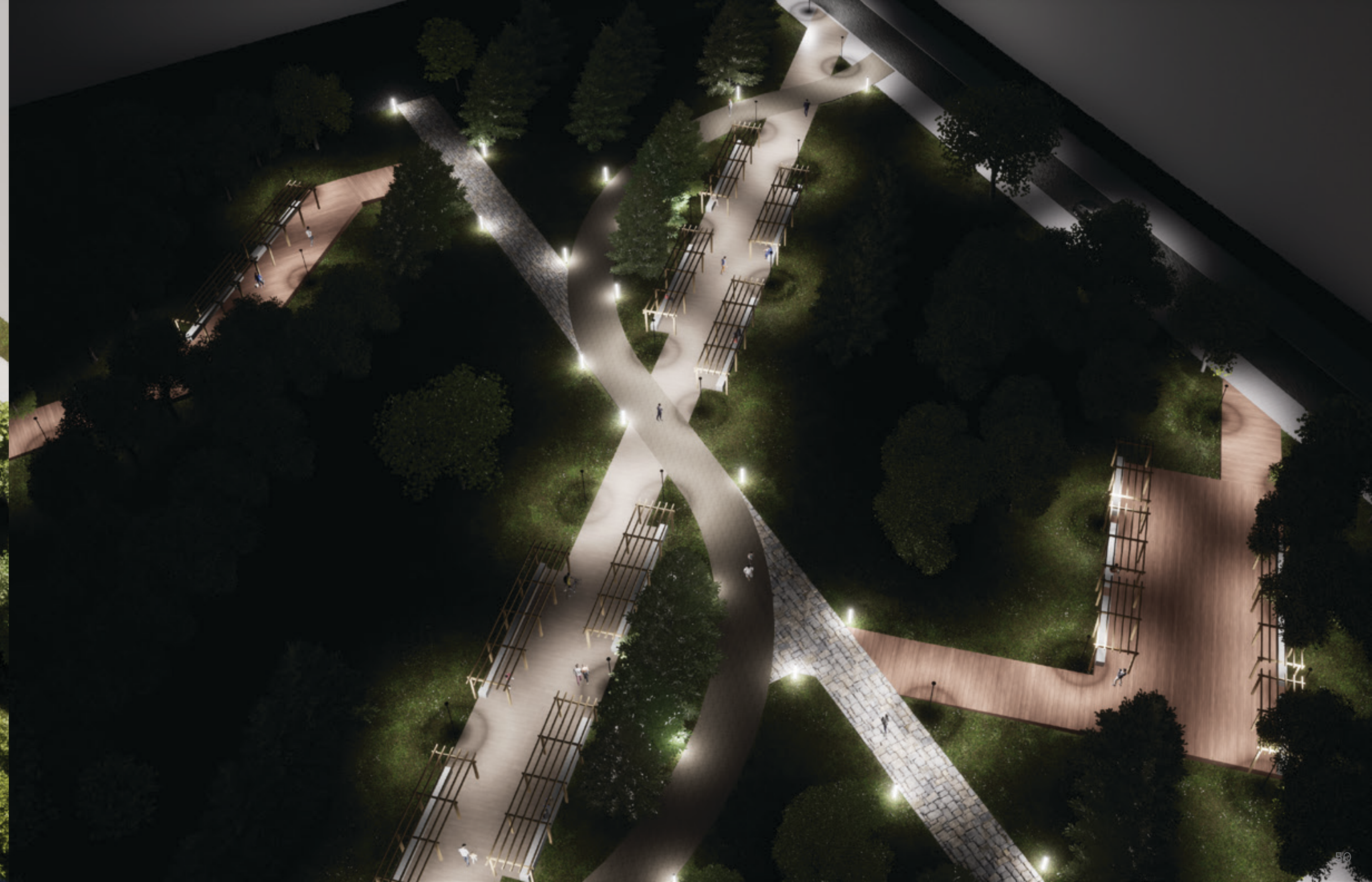
NIGHT

Perspective Two | Curved Path Facing Southwest

DAY



NIGHT



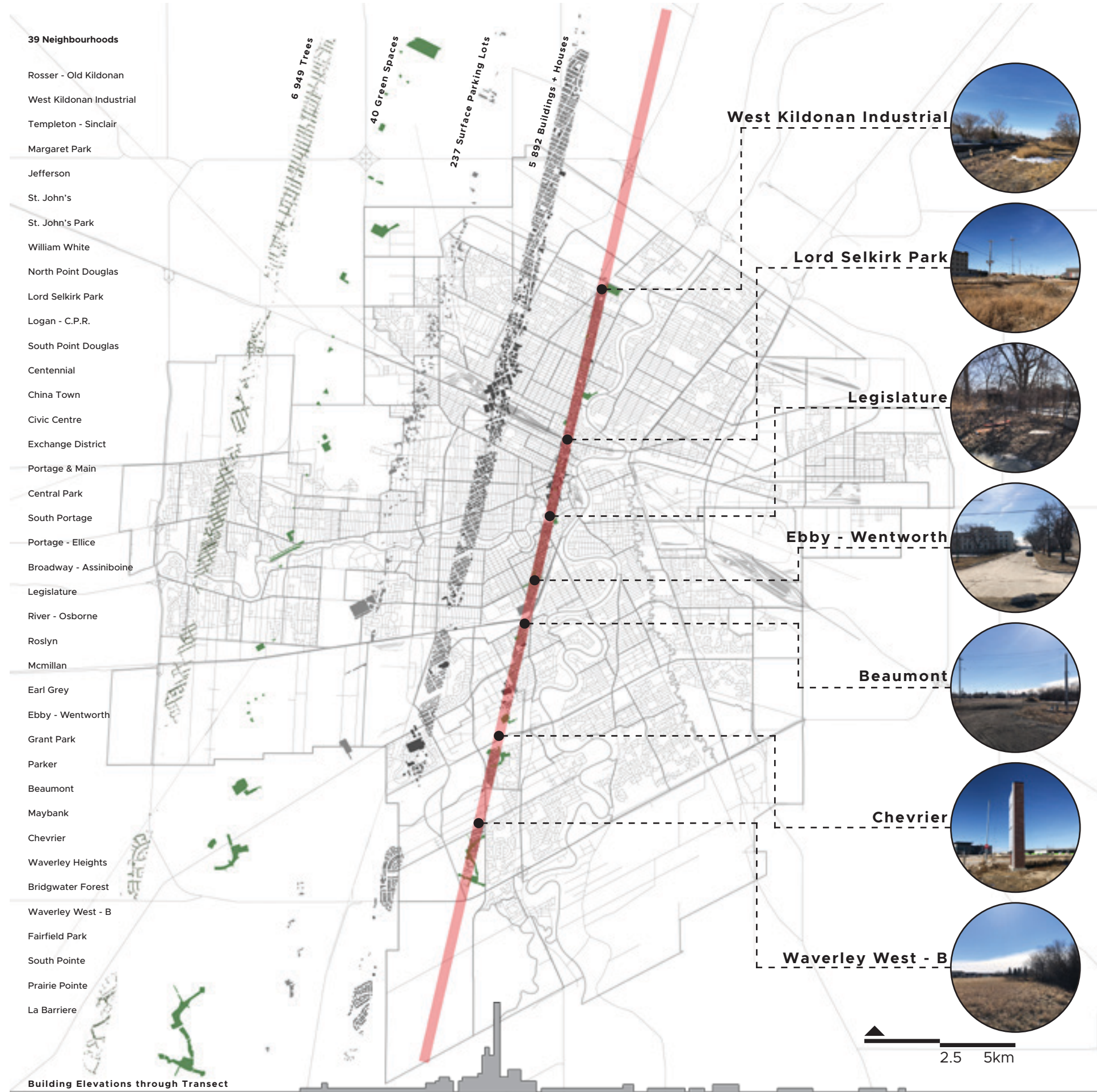




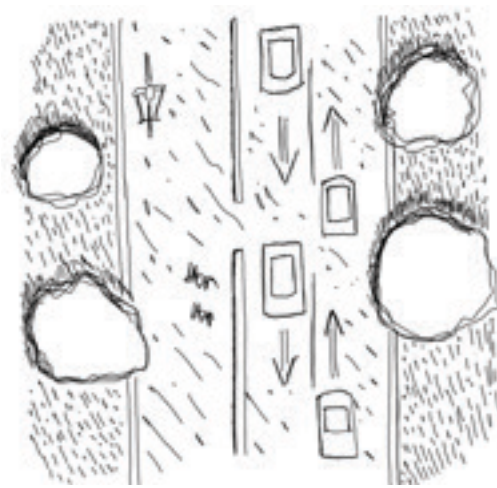
Reconcile

Term Winter 2021 **Class** EVLU 4014 Studio 6
Instructor(s) Marcella Eaton **Duration** 5 Weeks
Programs QGIS, Rhino3D, TwinMotion, Photoshop + Illustrator

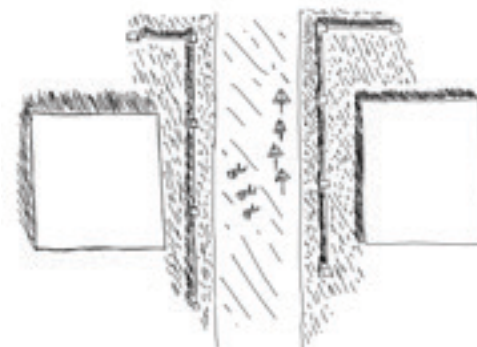
Early on in this project a transect through Winnipeg was selected to capture the variety of the environments encountered within Winnipeg. Through this transect, a path is created that will vary in condition based on the environment that it is in. Additionally, three Paradise Gardens were designed in chosen places that address the feelings of a time before, during and after COVID-19. A focus was placed on the design of the after covid (a.c.) garden, located downtown, adjacent to the Logan-C.P.R. railway to the south and Main Street to the East. The design of the garden imagines life after COVID, where people continue to spend their time outside, within a space that affords many uses. The garden is divided naturally with rows of trees that create secluded spaces. Educational and physical activity are characteristics that are encouraged within the proposed programming of the space. With reconciliation in mind, some of these design characteristics are just potential possibilities.



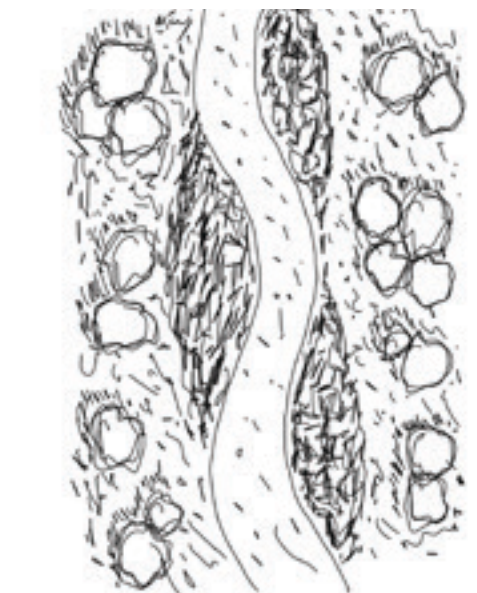
Transect Trail



road condition
the trail utilizes existing infrastructure to achieve connectivity



neighbourhood/urban condition
additional trails are added creating increased permeability



rural condition
trails in open areas are reinforced with vegetation to define the space

Lord Selkirk Park



Ebby - Wentworth



Chevrier



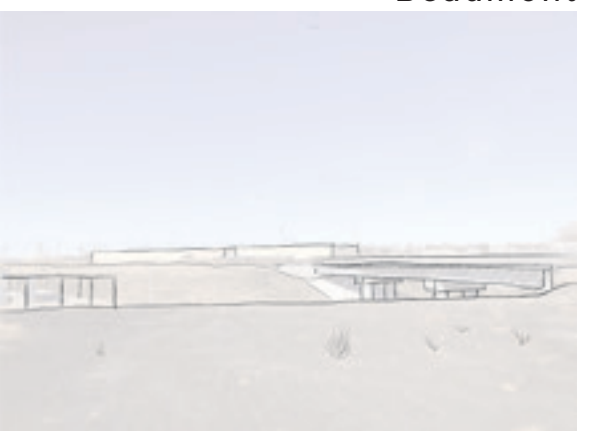
West Kildonan Industrial



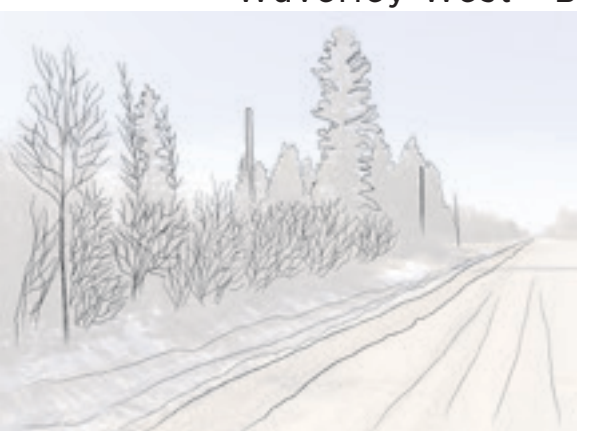
Legislature



Beaumont



Waverley West - B



49°57'03.8"N 97°07'15.4"W

49°52'59.6"N 97°08'37.5"W

49°51'03.2"N 97°09'16.1"W

49°47'37.9"N 97°10'37.7"W

After COVID (A.C.)
67 209 m²

Before COVID (B.C.)
38 315 m²

For COVID (F.C.)
87 648 m²



Before COVID (B.C.) Site Plan



For COVID (F.C.) Site Plan



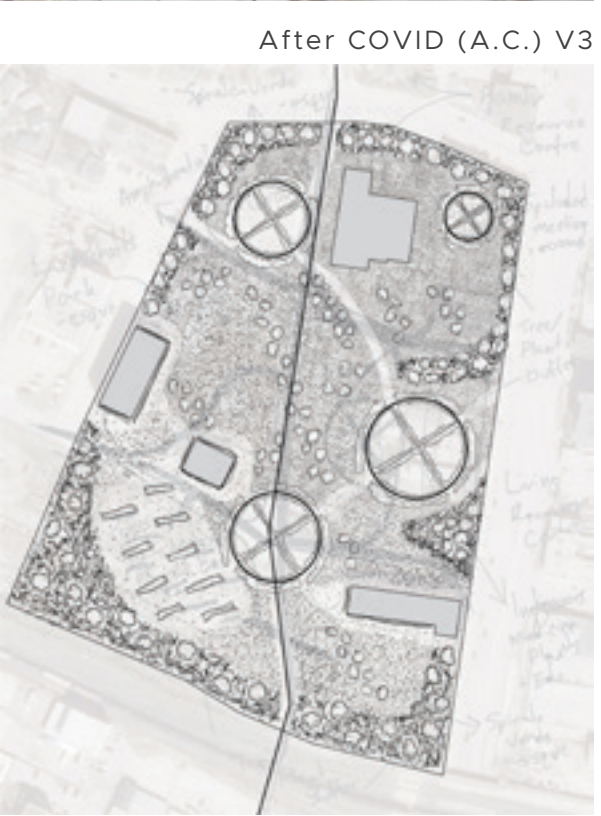
After COVID (A.C.) Site Plan



After COVID (A.C.) V1



After COVID (A.C.) V2



After COVID (A.C.) V3



After COVID (A.C.) V4

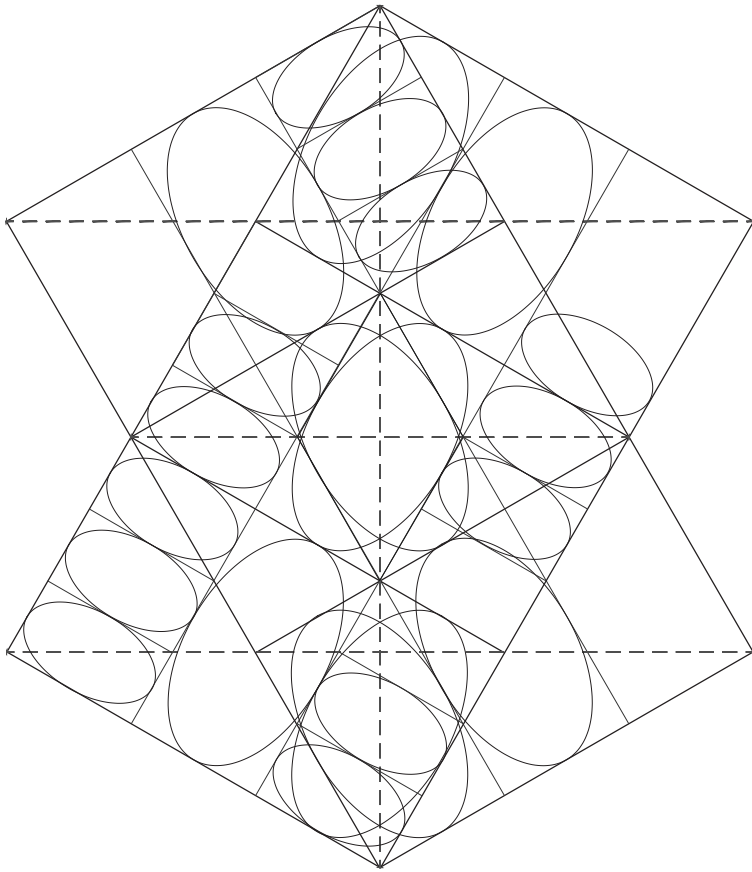
After COVID (A.C.) Site Plan Development

Geometry of the Design

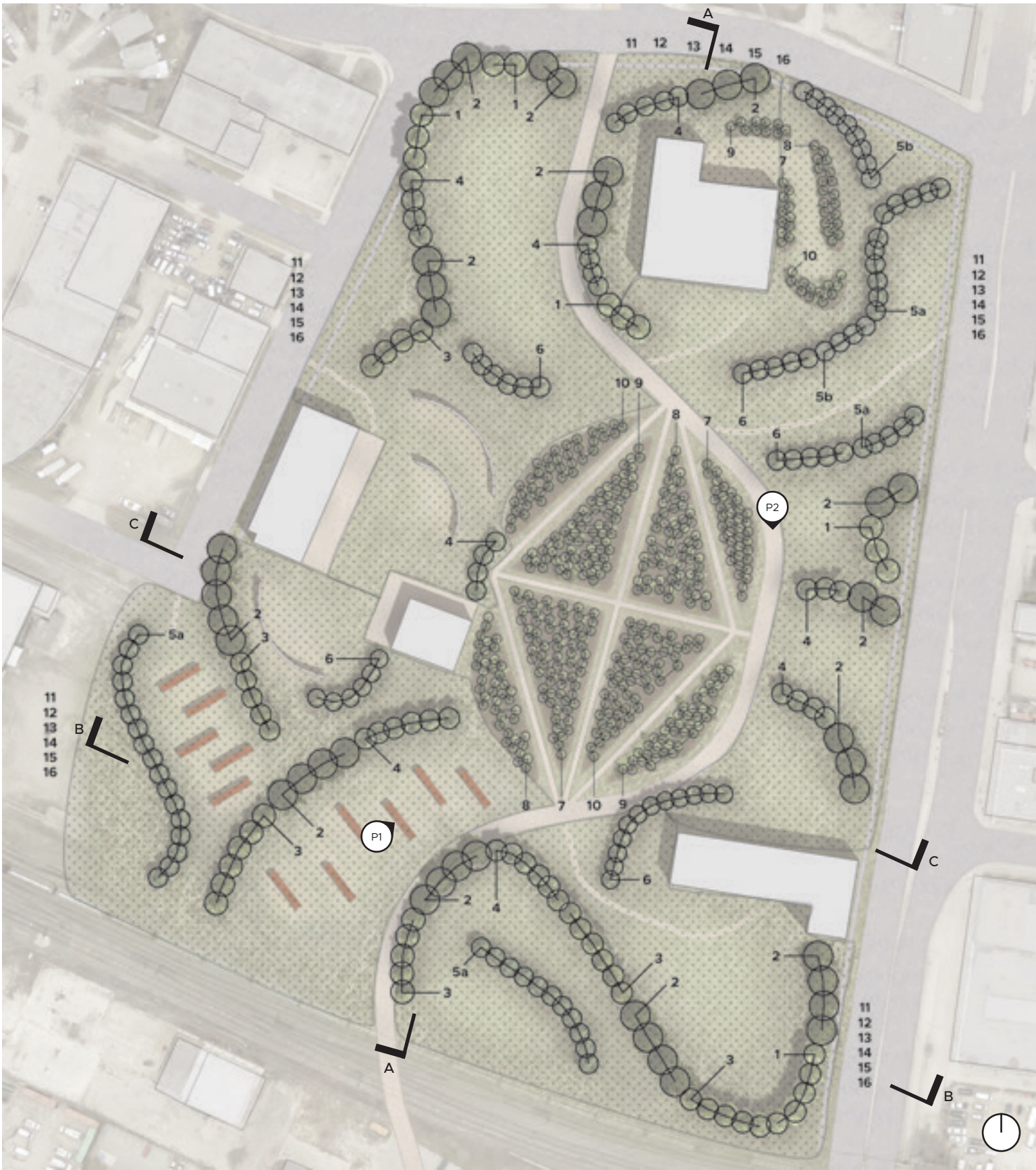
The layout of the garden is based on two overlapping Root Three Rectangles that contain inset Golden Ellipses. These ellipses were used to inform the position of vegetation and spaces within the garden.

The design of the healing garden at the centre of the paradise garden is based on the medicine wheel with equal parts and traditional plantings.

Additional spaces throughout the paradise garden look to educate individuals who may occupy the garden, as well as provide space for recreational activities for all ages.



Deciduous Trees	Scientific Name	Code	Quantity	Sun	Soil	Spread @ Maturity	Height @ Maturity	Spacing
American Linden	<i>Tilia americana</i>	1	16			12m	25m	As Shown
Bur Oak	<i>Quercus macrocarpa</i>	2	42			20m	25m	As Shown
Manitoba Maple	<i>Acer negundo</i>	3	31			12m	15m	As Shown
Trembling Aspen	<i>Populus tremuloides</i>	4	36			8m	20m	As Shown
Coniferous Trees	Scientific Name	Code	Quantity	Sun	Soil	Spread @ Maturity	Height @ Maturity	Spacing
Colorado Spruce	<i>Picea pungens</i>	5a	44			8m	20m	As Shown
Eastern White Pine	<i>Pinus strobus</i>	6	34			12m	25m	As Shown
White Spruce	<i>Picea glauca</i>	5b	13			6m	20m	As Shown
Deciduous Shrubs	Scientific Name	Code	Quantity	Sun	Soil	Spread @ Maturity	Height @ Maturity	Spacing
Diamond Willow	<i>Salix bebbiana</i>	7	118			1.5m	4m	As Shown
Coniferous Shrubs	Scientific Name	Code	Quantity	Sun	Soil	Spread @ Maturity	Height @ Maturity	Spacing
Common Sage	<i>Salvia officinalis</i>	8	123			1m	0.5m	As Shown
Juniper	<i>Juniperus communis</i>	9	122			4m	2m	As Shown
Perennials	Scientific Name	Code	Quantity	Sun	Soil	Spread @ Maturity	Height @ Maturity	Spacing
Canadian Mint	<i>Mentha canadensis</i>	10	112			1m	1m	As Shown
Prairie Grasses	Scientific Name	Code	Quantity	Sun	Soil	Spread @ Maturity	Height @ Maturity	Spacing
Indian Grass	<i>Sorghastrum nutans</i>	11	Natural Occurrence			As Shown	1m	As Shown
Little Bluestem	<i>Schizachyrium scoparium</i>	12	Natural Occurrence			As Shown	0.6m	As Shown
Prairie Dropseed	<i>Sporobolus heterolepis</i>	13	Natural Occurrence			As Shown	0.6m	As Shown
Side Oats Grama	<i>Bouteloua curtipendula</i>	14	Natural Occurrence			As Shown	0.7m	As Shown
Sweetgrass	<i>Hierochloa odorata</i>	15	Natural Occurrence			As Shown	0.6m	As Shown
Switch Grass	<i>Panicum virgatum</i>	16	Natural Occurrence			As Shown	1m	As Shown



Planting Plan and Key Plan



Section AA | Section cut south to north through site



Section BB | Section cut through reclaimed shipping containers and clearing



Section CC | Section cut through clearing and healing garden

Perspective One | View of transect path facing south through site



DAY

Perspective Two | View of space around reclaimed shipping containers



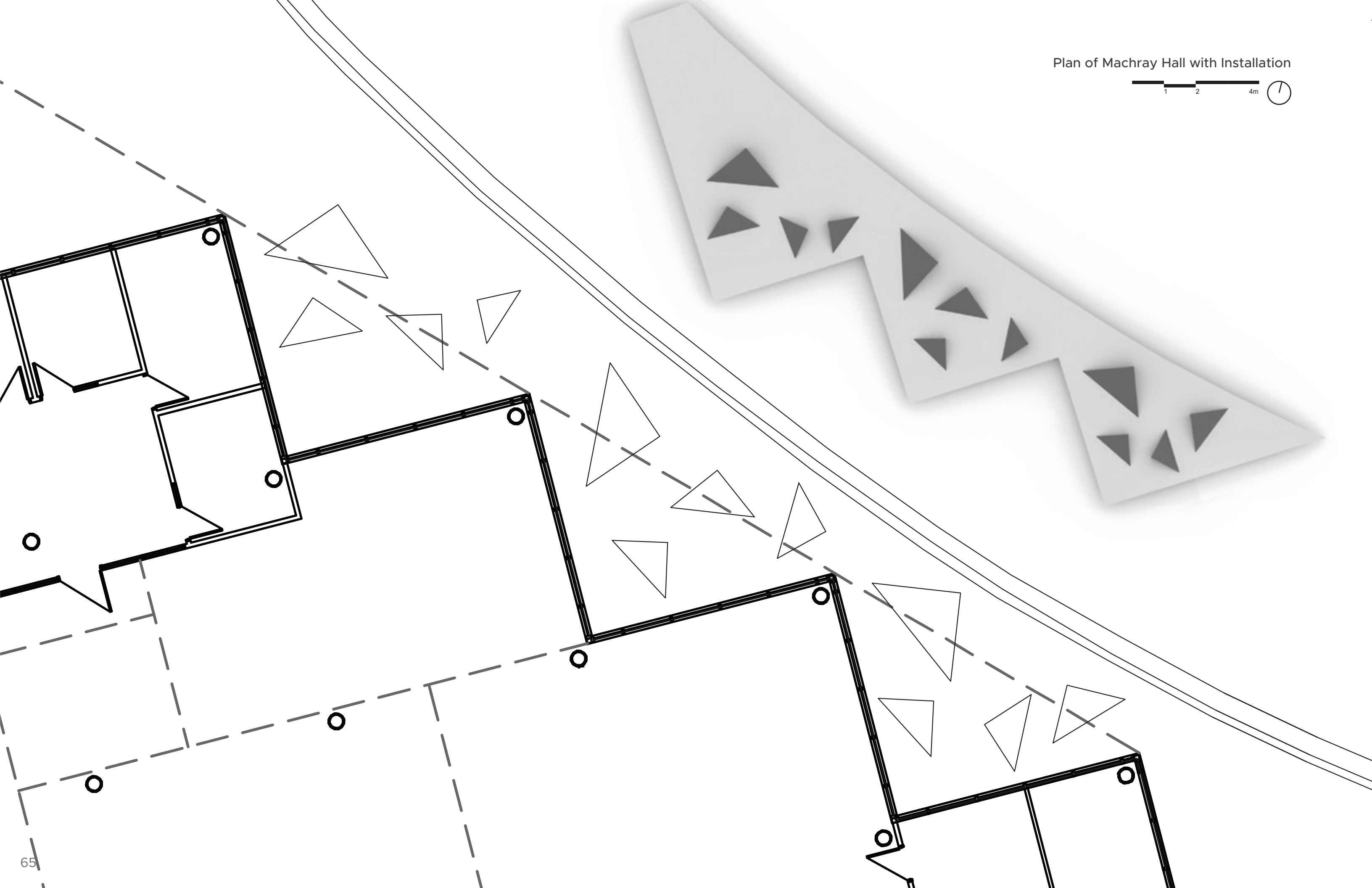
NIGHT



Snow Garden

Term Winter 2020 **Class** EVLU 3008 Studio 4
Instructor(s) Brenda Brown **Duration** 4 Weeks
Programs Modelling, Photoshop, Illustrator, AutoCAD + Rhino3D

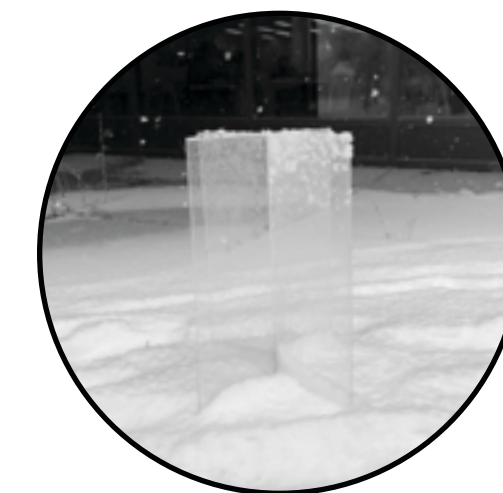
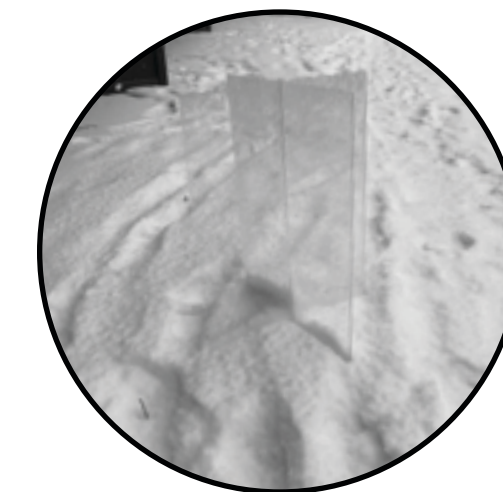
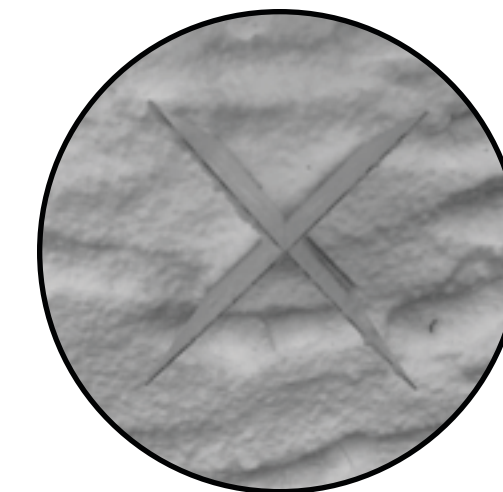
This project began with a rigorous observation and analysis of the interior and exterior environments of our chosen site. Upon constructing a model of the interior portion of the site, a separate exterior portion was added to test layouts of our intervention. Following this, studio reviews were done and a vote was conducted to see which projects would be built. This project was chosen within the first round and was successfully constructed within sixteen hours by a team of three people. This team consisted of Bryce Stovin, Matthew Glowacki, and myself. The shapes were constructed by packing snow into a form that was made using Polystyreen Rigid Insultation. Once the forms were removed the shape was touched up slightly.



Plan of Machray Hall with Installation



Site Study



Device Detail

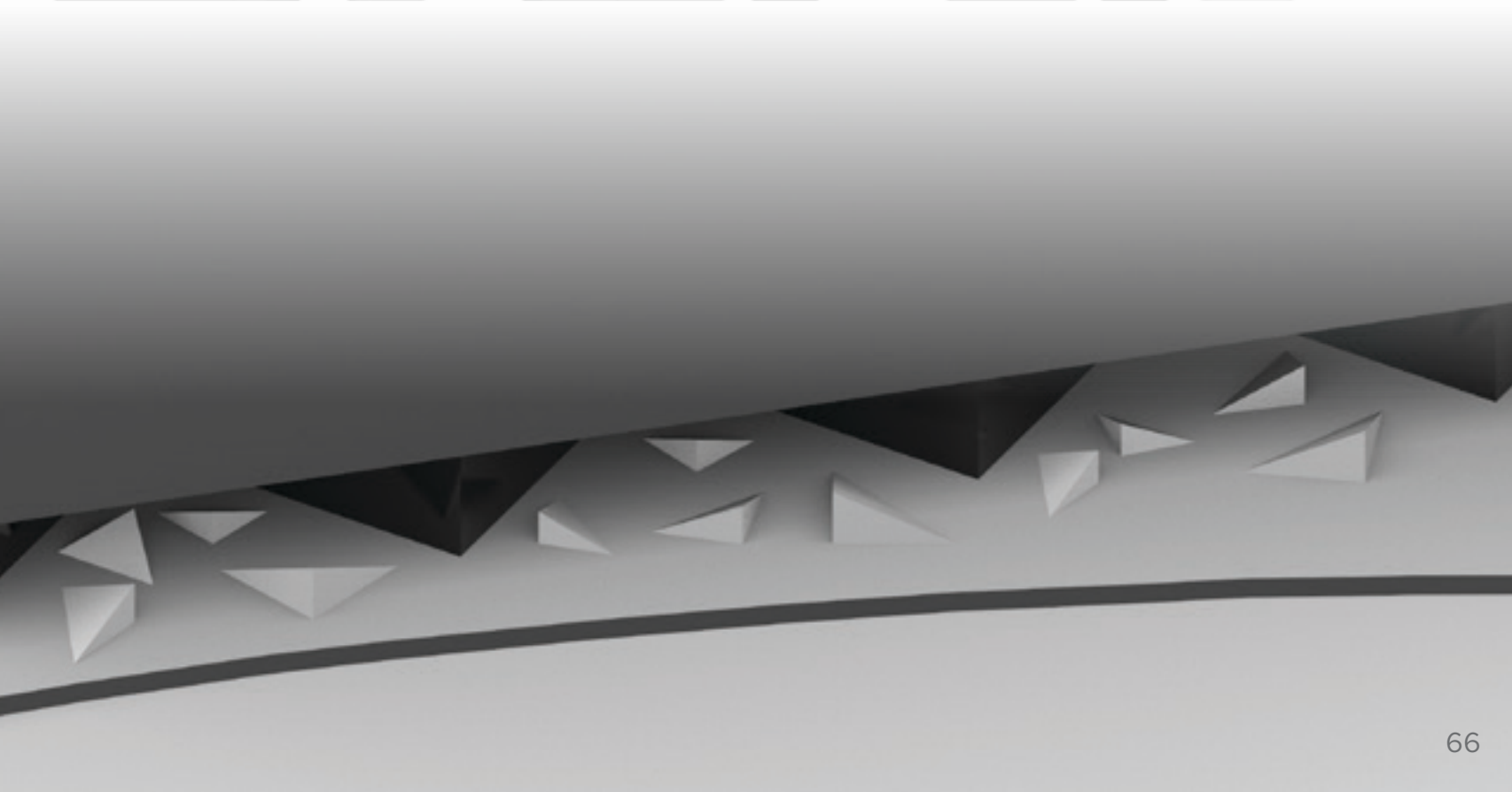
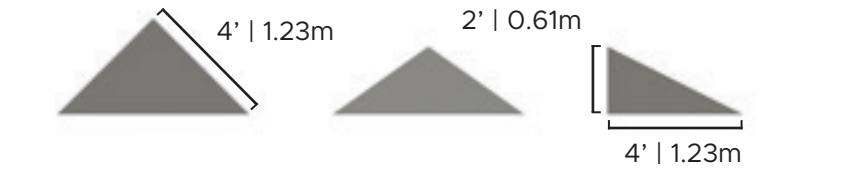


Scale 1:5



Scale 1:15

Measurements



Construction Plan

Timeline

Snow Gathering - 3 Hours (Total)
Mold Packing - 1 Hour (Individual)
Mold Setting - 1 Hour (Individual)
Total Time for Construction:
Approximately 13 Hours

Required Number of People

(2 Individuals + Myself)
1 Shoveler
1 Packer

Required Materials

1-1/2 Rigid Insulation 4' x 8' Sheet (4)
1/2" Plywood, 1' x 1' Piece (2)
Constructed Packer (2)

2 Shovels

Arrangement

2' x 4' Shape (5.3 cu.ft)
3' x 6' Shape (18.0 cu.ft)
4' x 8' Shape (42.7 cu.ft)

Total Volume of Snow
Approximately 213.9 Cubic Ft





Miscellaneous Work

Term Summer 2019, Summer 2020 + Summer 2021
Programs Photoshop, AutoCAD, Rhino3D + TwinMotion

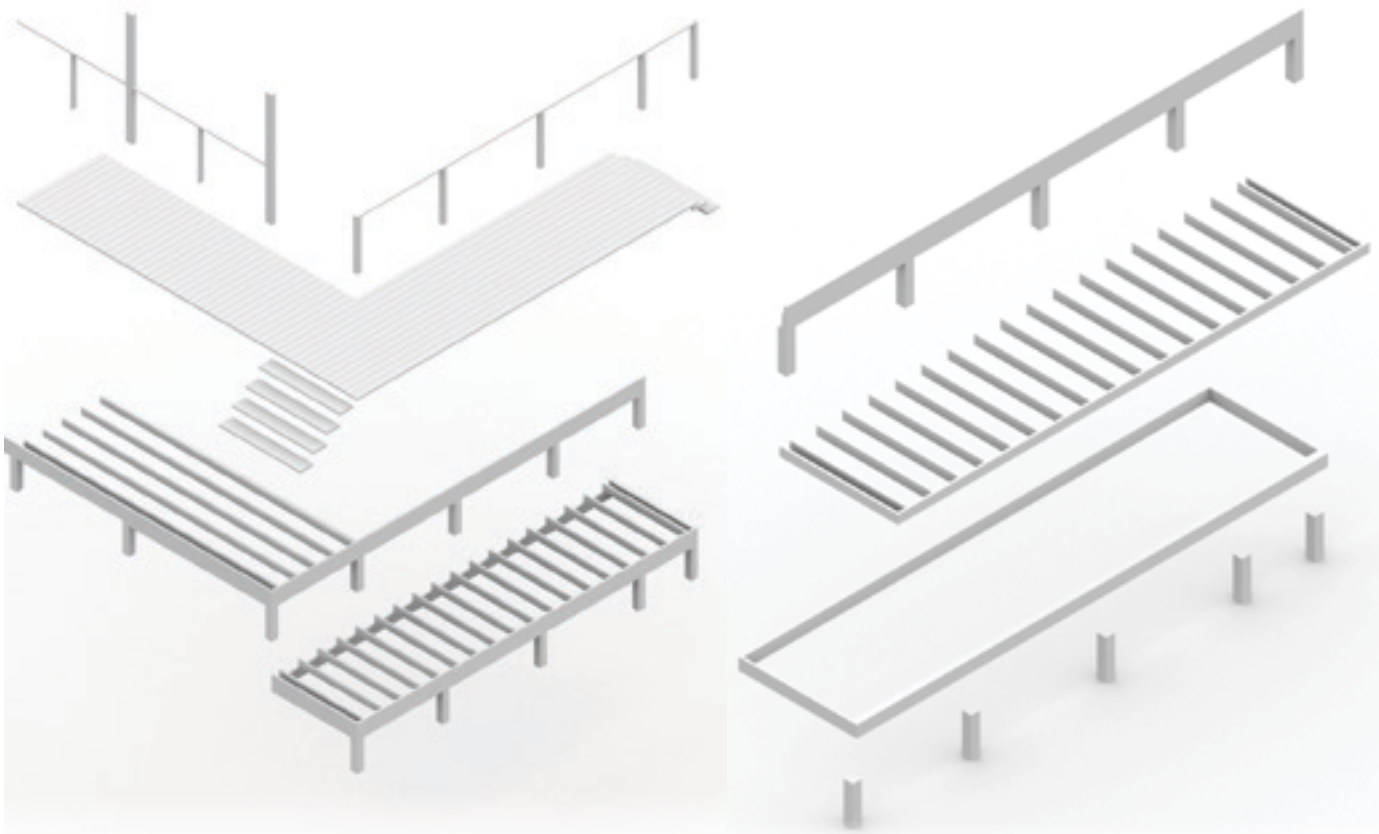
My miscellaneous work focuses on the translation and reimagination of my direct physical environments. This has allowed me to experiment with methods of representation, as well as contribute directly to the design process for several current projects within or adjacent to these environments.

Cottage Deck Extension

Located in the cottage area of Grand Beach Provincial Park, the original cottage was constructed in the 1970s. Two previous additions had been constructed in 1990 - 91 to the west and south sides of the cottage.

Prior to the construction of the original structure in the 1970s, another cottage known as the 'Nifty Inn' had existed in southeast corner of the lot, roughly where the existing shed is located.

This extension of the deck would add approximately 144 sq ft. of deck surface to the south side of the cottage. In addition to the extension, the existing deck area would be screened in.

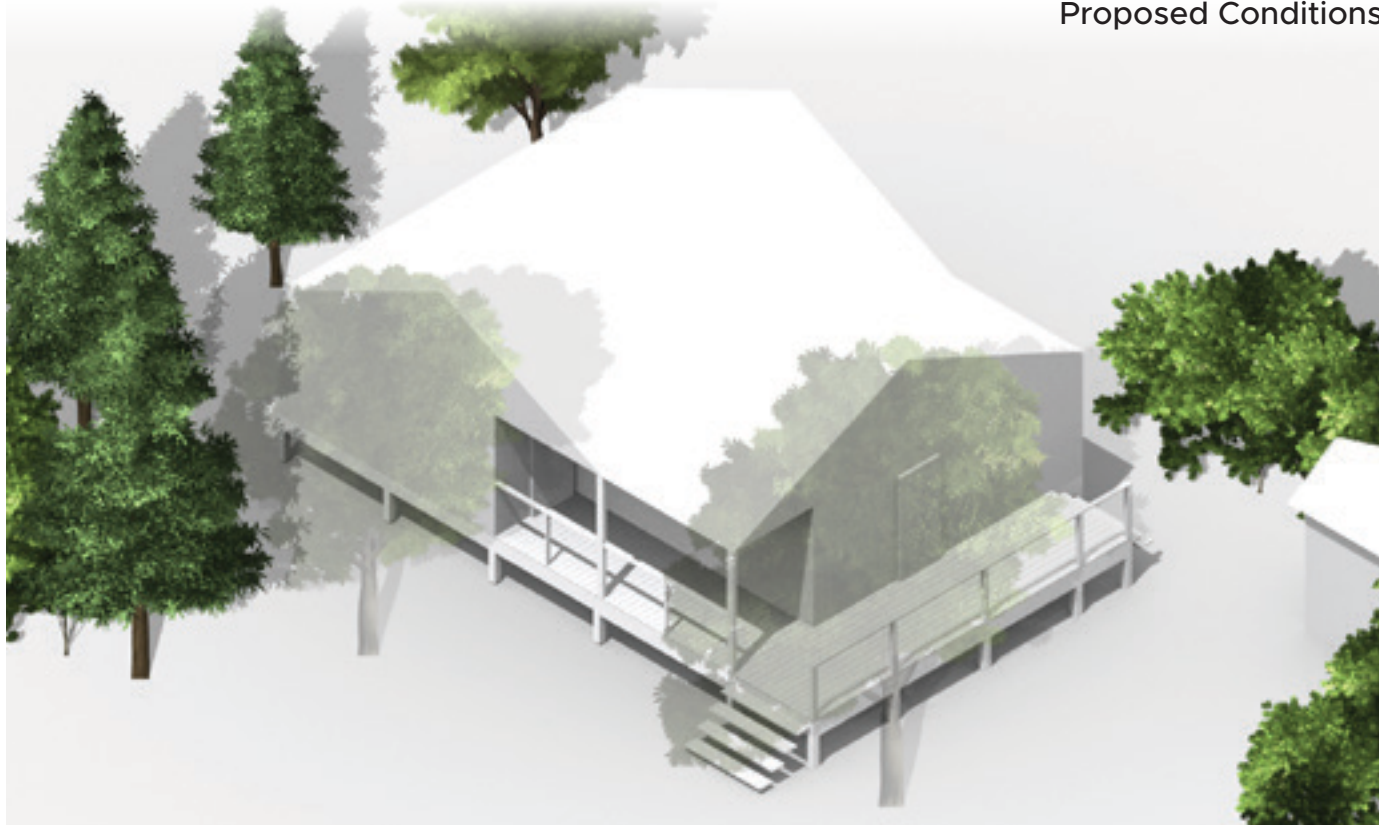


Material Estimation

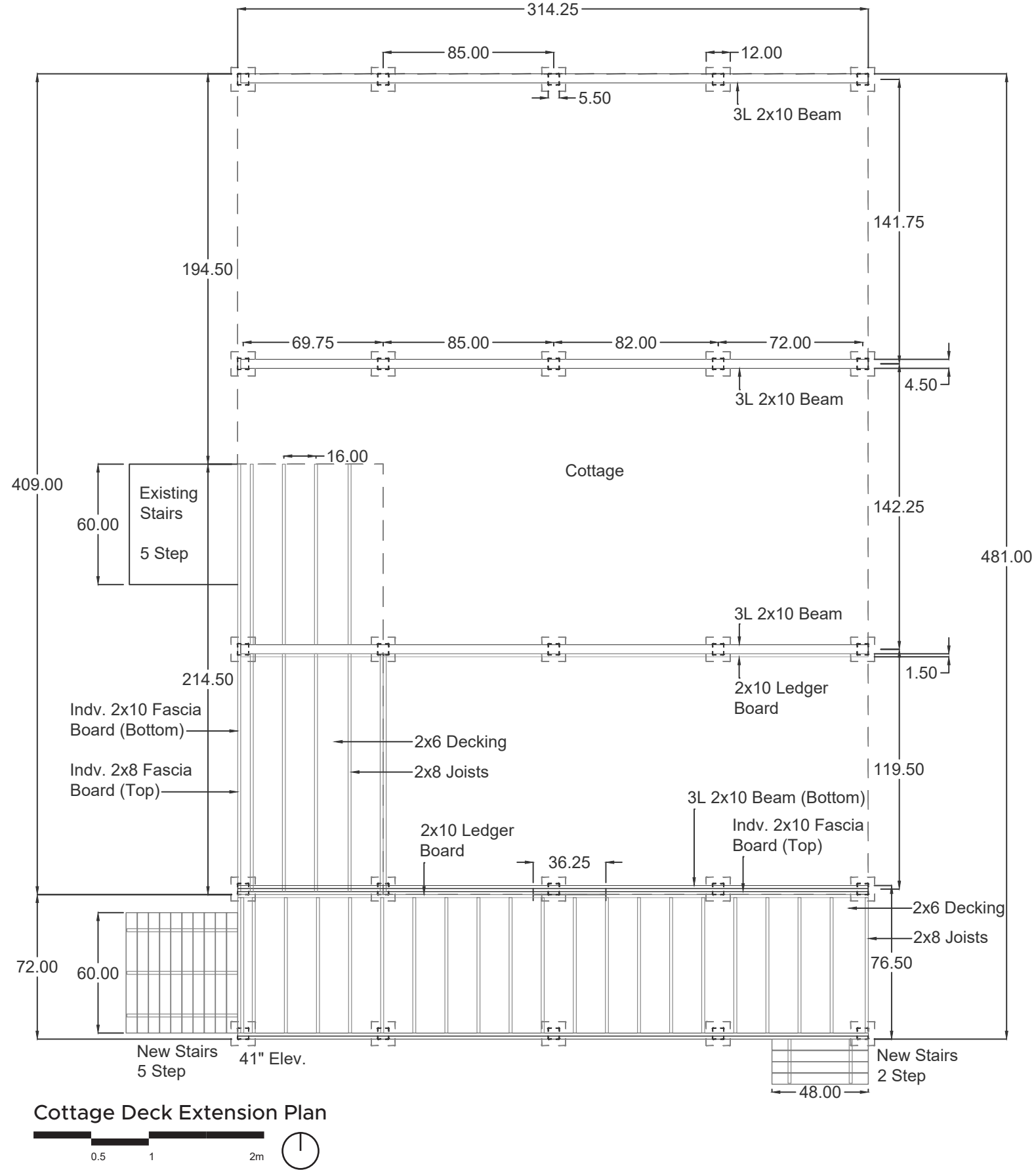
<i>Beams</i>	<i>Posts and Footings</i>
2 x 6 x 12' (2)	6 x 6 x 8' Treated Post (1)
2 x 8 x 8' (4)	18 x 18 x 4 Footing Pad (5)
2 x 8 x 16' (4)	
<i>Deck Surface</i>	<i>Joists</i>
2 x 3 x 8' (2)	2 x 6 x 12' (11)
2 x 6 x 8' (12)	<i>Fasteners</i>
2 x 6 x 12' (19)	2 x 6 Joist Hangers (19)
2 x 6 x 16' (12)	2 x 6 - 2 Joist Hangers (1)
<i>Ledger</i>	1/2" x 5" Galv. Lag Screws (18)
2 x 8 x 12' (1)	1/2" Galv. Flat Washers (18)
2 x 8 x 16' (1)	2-1/2" Deck Screws (±1500)
<i>Railing</i>	<i>Back Stairs</i>
2 x 4 x 12' (4)	2 Step Metal Stringer (3)
* Front Stairs are pre-built	2 x 6 x 12' (2)
	3/8" x 2-1/4" Carridge Bolts (24)
	3/8" Flat Washer (24)
	3/8" Hex Nut (24)



Existing Conditions



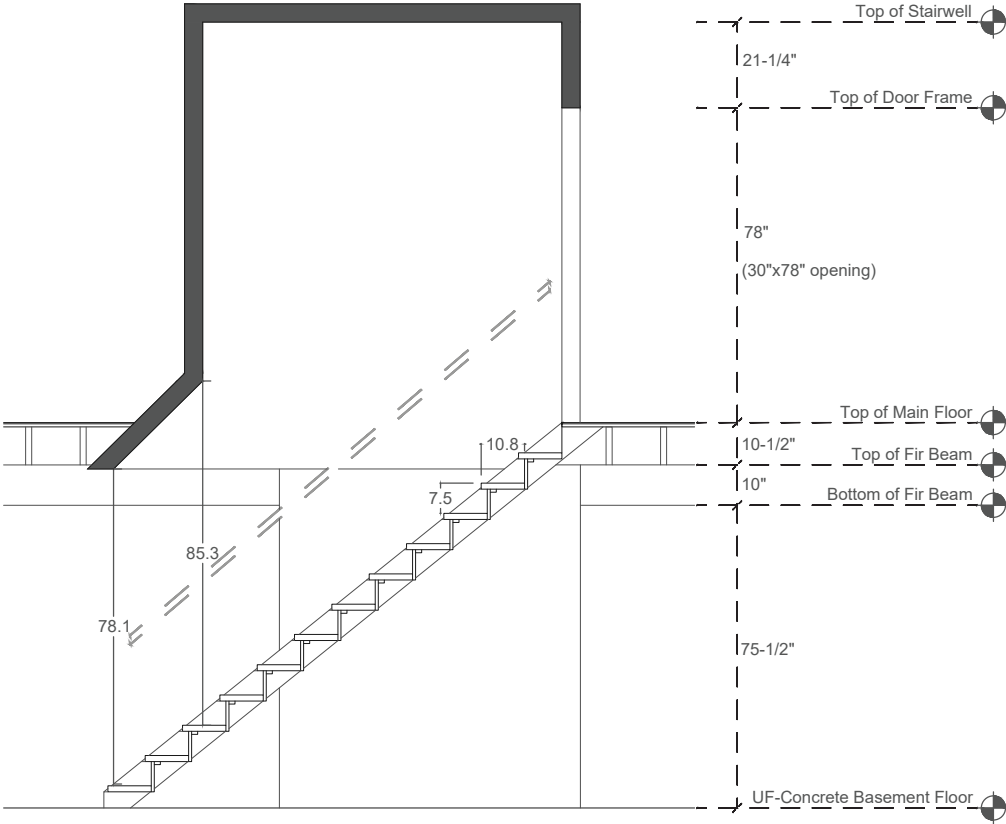
Proposed Conditions



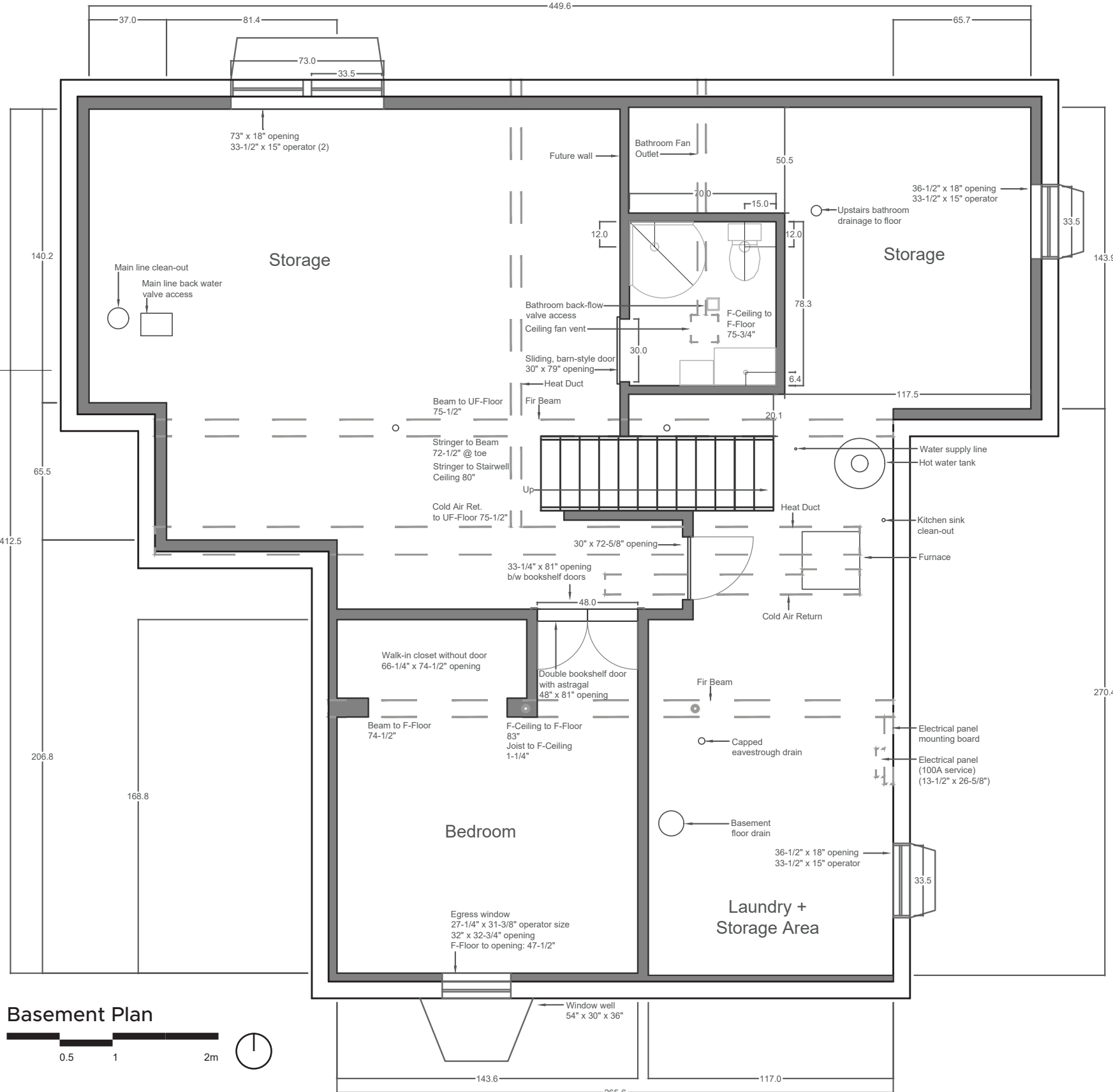
Basement Renovation Plan

A plan of the basement was created to submit for a permit to complete the bathroom. A section of the basement stairs had been requested to ensure adequate access.

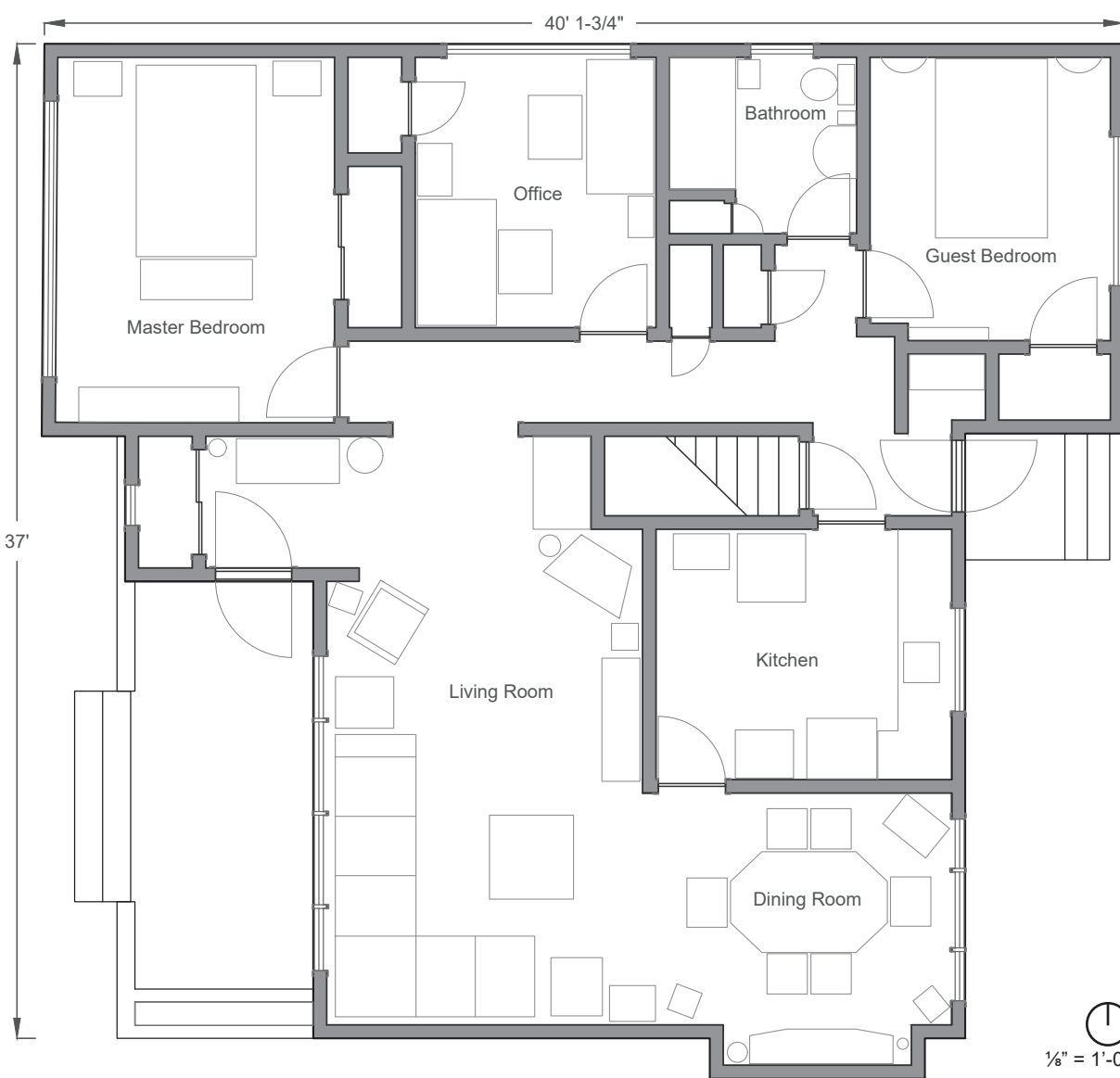
Additional modifications to the plan are going to be made in the future to indicate potential layouts of the entertainment space.



Basement Stairs Section

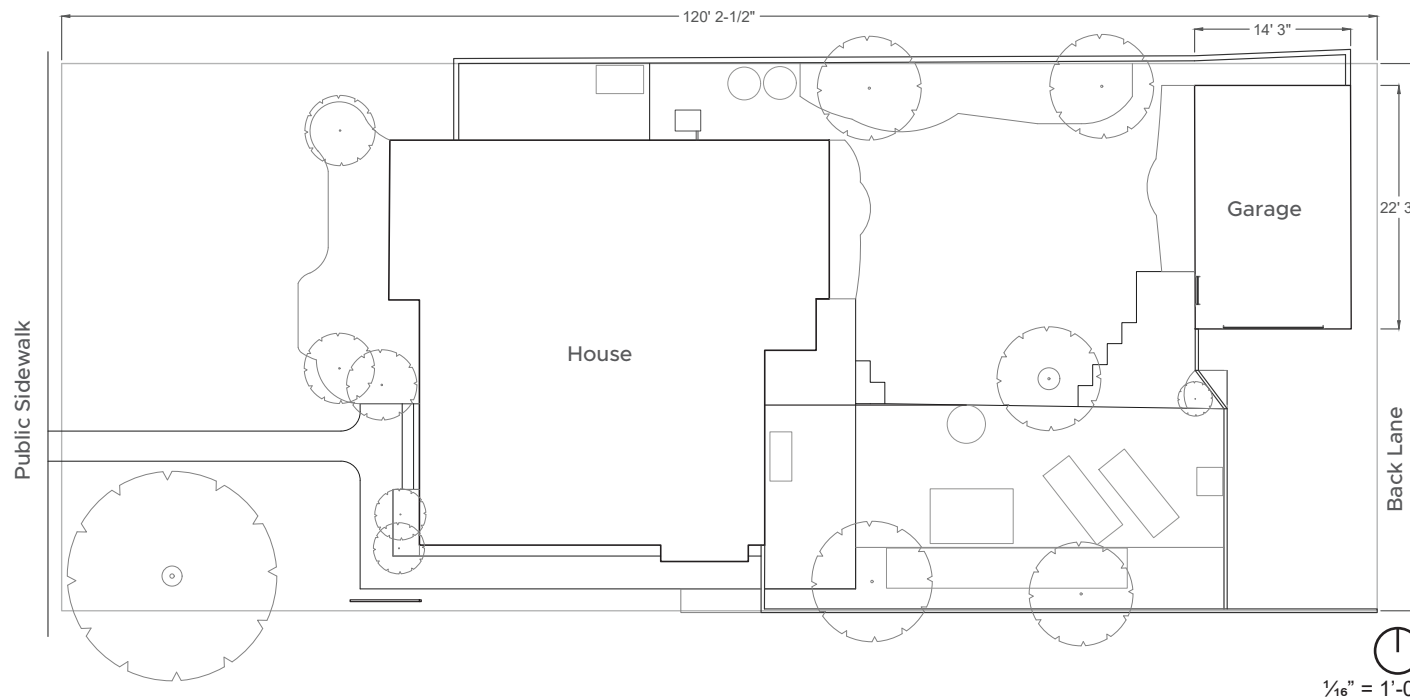
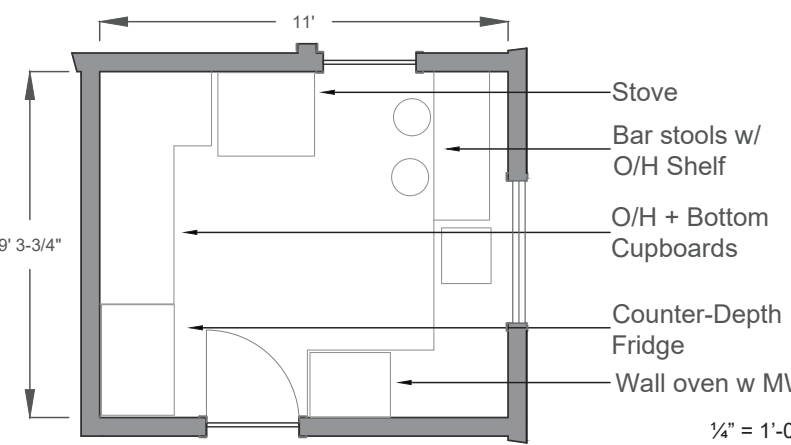


Basement Plan



Kitchen Renovation

This was a planning project that was done to test out possible layouts for a kitchen renovation within a house, based on actual measurements and client requests. Floor plan measured within 1/8" accuracy.



Yard Renovation

This plan drawing and isometric rendering show the current state of the yard after the addition of various elements. These drawings will be used to plan further developments in the future.



1" = 12'-6"
Southwest Isometric Perspective

