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GeoFutures l Urban Integration

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GeoFutures: Anthropocene and the City | Urban Integration

Request for Approval of Thesis Research
Project Book Presented to:

Elizabeth Martin

and to the
Faculty of the Department of Architecture
College of Architecture and Construction Management

by

Adam R. Leicht

In partial fulfillment of the requirements for the Degree

Bachelor of Architecture

Kennesaw State University
Marietta, Georgia

Spring 2018

Table of Contents

Thesis Statement

Bring nature back to the city. Integrate neglected migration patterns in sprawling cities such as Atlanta. Mend urban fragmentation. The purpose is to make a cleaner environment in the city.

My project looks at the Anthropocene as a fence. And how place has been fundamentally "displaced". Resulting in a boundary or separation between man and nature.

To study and research the Anthropocene (age of man) and how man has taken over as the main force behind the change of the environment. Looking through an architectural lens of ecology, how can we use this lens to help us slow down society getting to the tipping point that so many scientist have been warning about for years.

A Special Thanks

I would like to thank my family for being with me every step of the way.
Mom, Dad, and Katherine, I'm glad to have made it.
The Renshaw Family for being my second family with just as much love
and support.
Professors Elizebeth Martin for guiding me through my thesis, Ed Akins
for showing me my passion for ecological urbanism and Amin Farooq
for being a tough yet insightfull professor.
Along with Andrew Kastenburg and Dr. Steve Swagert for showing me
the fundementals.
And a special thanks to all brothers of Alpha Rho Chi fraternity for
making this journey worth while.

An·thro·po·cene
/ˈanTHrəpə.sēn/

noun

Refers to the new geological epoch in which humans have become
the dominant geologic force actively and continually altering Earth's ecological system.

THE AGE WE LIVE IN
THE ANTHROPOCENE

It has been speculated that it was the first nuclear detonation in Alamogordo, New Mexico. One of the biggest impacts we have had on the earth is with our advancement of geoengineering.

Figure 1

Objective:

Figure 2

Observe....

That over the course of the Earth, there have been many different big events that the earth has gone through. One name for this term is called an "epoch" which is defined as "a period of time in history, typically one marked by notable events or particular characteristics." In our age it's not hard to mark our notable events and characteristics. Nuclear power, high rise buildings, the ability to talk to someone across the planet. Without a doubt we are in a new epoch. The name of this new era is called the Anthropocene.

The Anthropocene is a new proposed epoch that we are in. Coined by Eugene Stoermer and popularized by Paul Crutzen. It dates back to the first significant impact humans have had on the geology and ecosystem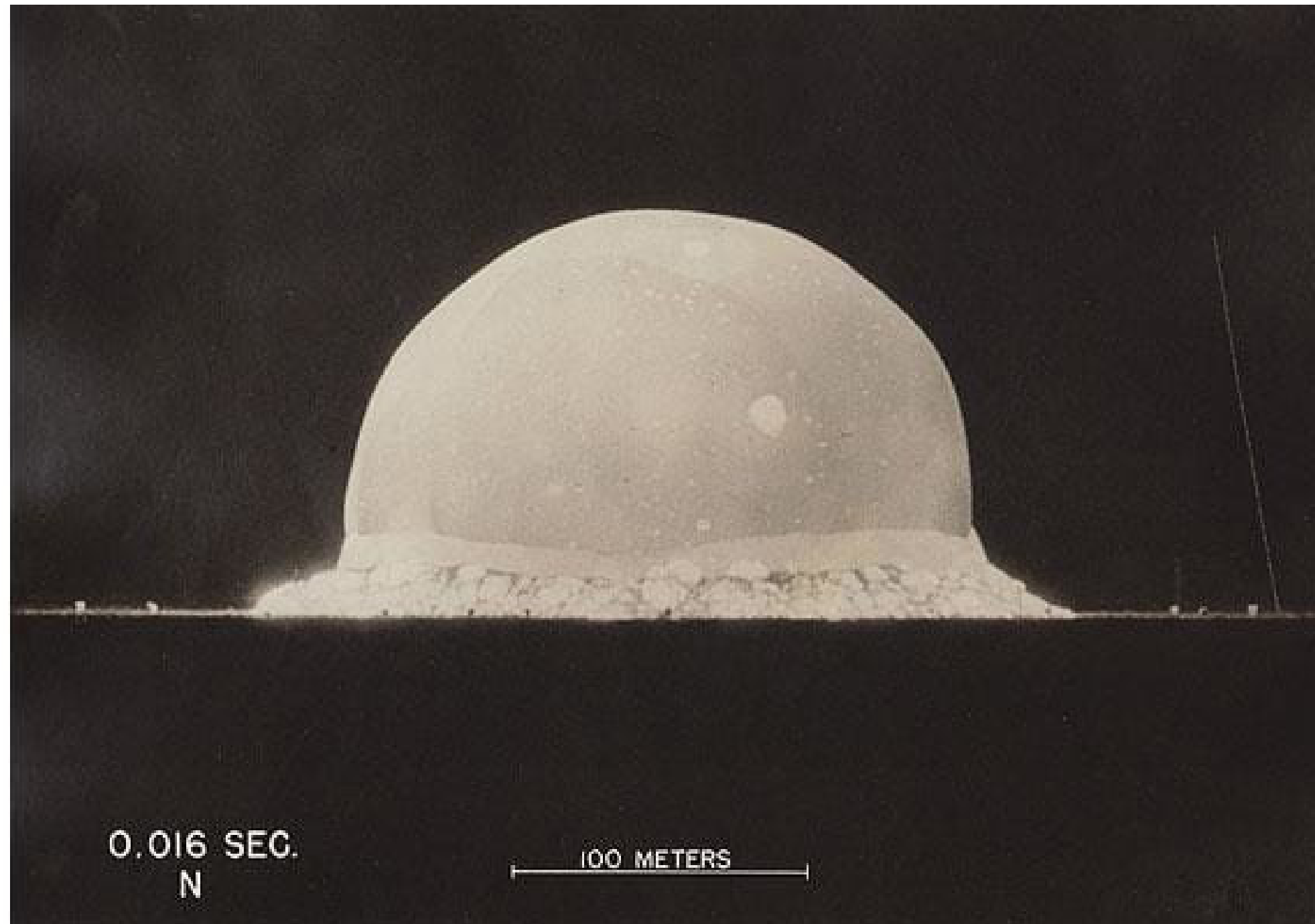s. Though the exact moment in time when we crossed over to this age. It has been speculated that it was the first nuclear detonation in Alamogordo, New Mexico. One of the biggest impacts we have had on the earth is with our advancement of geoengineering. Right now, human beings have a profound influence over the Earth, the atmosphere, and the oceans. By 2005, humans have converted nearly two-fifths of Earth's land area for agriculture. And one-tenth of Earth's land area is used for urban areas. (1) Another is a look at the sedimentary layers. Many geologists who agree on the Anthropocene Epoch agree that the effects of the changes mentioned above will create unique signs in the layers of rock. With the increased rate of soil erosion from agriculture and land-use, a different kind of mark will be left. "Many preexisting carbonate formations will dissolve in response to increases in ocean acidity, leaving a signature of striking dark layers of carbonate-depleted rock."(1) Tens of thousands of years of pressure has created different layers of sedimentary rock. And already, geologists have discovered a new layer that has been created by the new materials that are falling on to this world. We have defined eras based off these layers. Here, we have a new age.
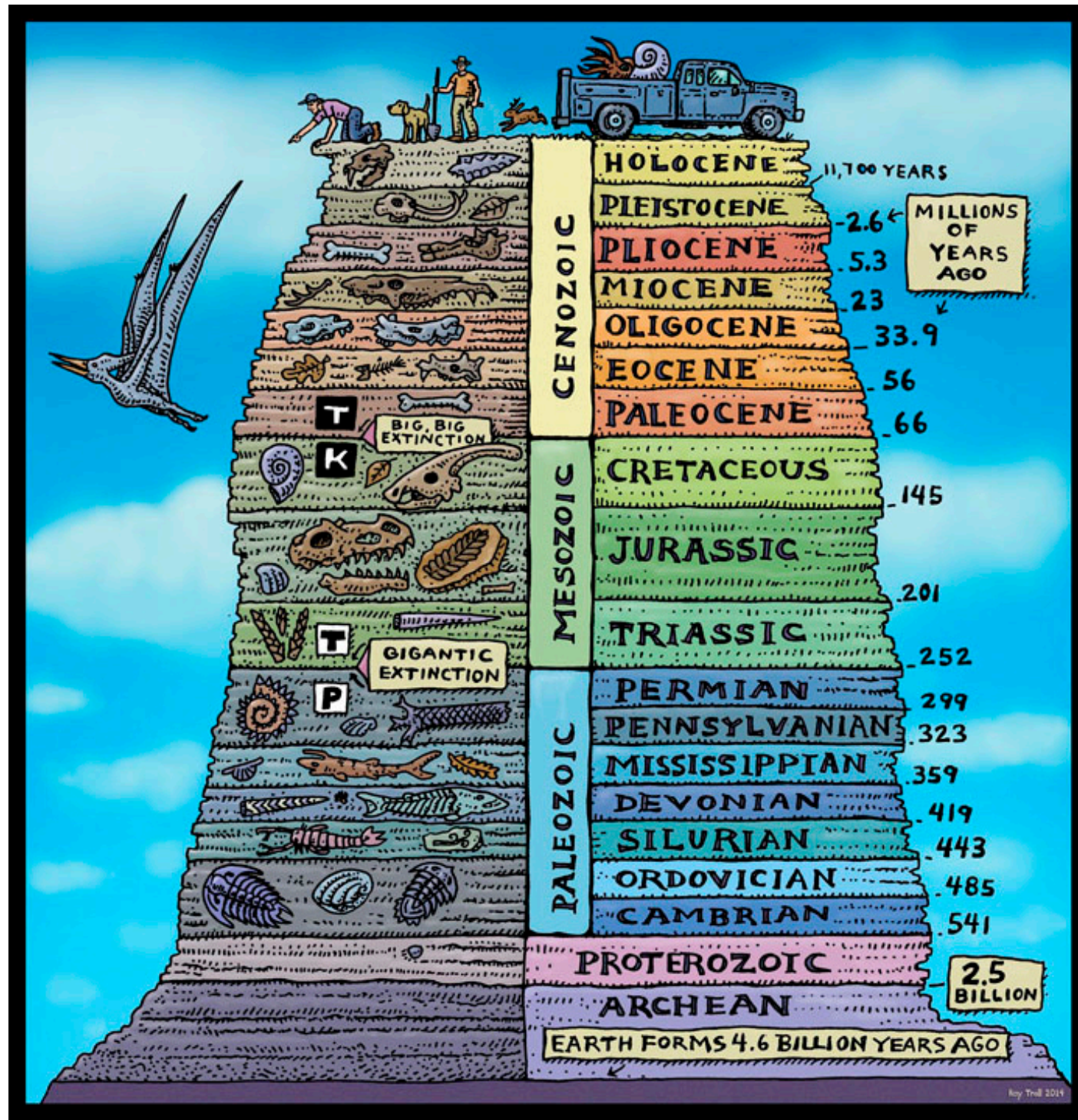
1. See "Observe" in relation to "The Anthropocene and the Epoch"

Figure 3

A brief description

My project looks at the Anthropocene as a fence. And how place has been fundamentally "displaced". Resulting in a boundary or separation between man and nature. According to the Oxford dictionary, a fence is: "a barrier surrounding an area of land to prevent or control access or escape. " Within an urban environment a fence separates man-from- nature; and also, man-from-man. Causing urban fragmentation to form. In his book Architecture and the Anthropocene, Etienne Turpin explains that : "we began to recognize its impact not only on spaces of settlement and habitation, but also on the scale of geological time. This new proposed age has come about because of significant human impact on: biodiversity, climate, geography and etymology. It has minimized and sometimes removed natural animal migration patterns, fresh air and clean water out of the cycle, resulting in an ecological system that favors man, while diminishing nature.

My thesis establishes the Anthropocene as primarily a conversation about humans and our action; and, a major problem space for architecture and urban life as we know it. My argument is that architecture in the Anthropocene requires a fundamental understanding of each individual's connectedness to urban systems as well as the highly complicated relationships between these systems. Looking through an architectural lens of systems thinking, how can we use an ecological lens to help us slow down society from getting to the tipping point that so many scientist have been warning about for years.

I believe the understanding of man and nature working together as a system will help us work toward possible alternatives. My project will look at how these factors have caused urban fragmentation to increase and will also look at the environment at how these factors have caused biodiversity to decrease. My goal is to create an urban fence mending project. Building upon the existing "Stitch" project and the Atlanta connector as a test case, I will mend this urban fence by designing a Geofutures Biodiversity Center and demonstration park. Exploring man and nature working together as an ecological system.

How infrastructure has divided nature and the city

Downtown connector is a marvelous piece of infrastructure. Over the years, it has evolved into a massive road with 16 lanes of concrete and asphalt. "The Downtown Connector carries more than 272,000 vehicles per day at its busiest point — between Martin Luther King Jr. Drive and Edgewood Avenue, while no portion of the Downtown Connector carries fewer than 236,000 vehicles per day.[2] The area around the connector and associated interchanges are considered one of the ten-most congested stretches of interstate in the U.S.[10] Due to this fact, many motorists often compare Atlanta to Los Angeles, which is also known for its notoriously congested freeway system. "

The Downtown Connector had its origins in the city's original system of expressways, construction of which began in the early 1950s with the Northeast Expressway and the South Expressway. The highway was heavily reconstructed during the 1980s and with most of the Connector's width being doubled from three to six or seven lanes in each direction. Traffic was a bit elevated. Work to increase lanes from six to eight on I-20, I-75, I-85, and I-285 and ten lanes on the downtown connector involved 126 total miles and was phased over 13 years between 1976 and 1988. And the size hasn't changed much since then. Along this stretch of road.

This marvelous piece of infrastructure serves it purpose well. But it's a prime example of how it spawns urban fragmentation. Thousands of roads break off. How can we create an environment that adapts to the landscape and not vice versa?

2. See "History of the Connector" talks about the eveloution of the connector and how many people it accomidate.

Figure 4

Paid for mostly by federal funding. Construction on the Atlanta Expressway began in 1948 using per-interstate highway design standards. The early design standards did not include features such as wide medians improved shoulders, and a lengthy acceleration and deceleration ramps that would be required post 1956 standards.

Around this time, roads though crossable by all wildlife began to experience a new kind of danger with fast moving vehicles. This phase allowed Atlanta t move from a small southern city to an International hub. No more red lights, no more stops signs, only two way moving traffic to ease congestion and help truckers be more efficient.

Figure 6

Around the 1980's the evolution of the connector began to turn the highway system into a sophisticated hub of innovative features. Left hand exiting, elongated enter and exit lanes to. Fixed too step grades, more median barriers, skid resistant surfaces, and more lanes to accommodate the ever growing traffic. These new safety features demonstrated the merit of upgrading old Infrastructure.

At this point, because of the use of guard rails and concrete barriers, animal travel has slowed down. And the ones that do decided to travel this road are doomed to die. But all in all, the new system put in place was praised, and gave local leaders support for positions in government.

Now we are at 2005, and the connector has gone through a plethora of upgrades. The **Handbook of Highway Safety Design and Operation Practices** included thicker medians with 6' high barriers. Sound walls for the residents living near by, crash cushions. More clear exits for recovery vehicles. And a retrofit for shoulders to allow more clearance.

By now, the animals crossing the road have grinned to a halt. A good thing for the safety of traffic. But with no regard to how these animals are going to get from one side to another. They are now left in their fragmented forest.

Figure 5

Figure 7

Figure 8

Urban Fragmentation
Context and rationale

The term Urban Fragmentation has been used since the 1960's when urban theorists discussed the cause and effects of critical characteristics that successful urban environments have on people. Jane Jacobs, and Richard Florida have looked at permeable boundaries, local governments and their municipalities, the relationship between old and new architecture, and spatial adjacencies. And how all of this has been found to determine the activity between various categories of people within the city. (3)

One major conflict with urban fragmentation is that our cities and metro areas are overrun with conflicting, competing, inefficient and redundant organizations. Or the socioeconomic problems are caused by failed or overlooked aspects of building a city. And most of them are theoretical. But some recent studies have been put in place with hard line evidence. And that is that the biggest causes of Urban fragmentation is income equality, population size and density. And usually falls on the fact that the wealthy sort themselves and leave the less wealthy behind. Cities such as Chicago has the highest level of fragmentation, followed by Pittsburgh, St. Louis, New York and Philadelphia.

Traditionally, fragmentation is looked at through a socioeconomic lens. Looking at the connections between the city, their common culture, nationality, race, language, occupation, religion, income level, or other common interests. (1) This thesis looks at it through an ecological lens on how we have minimized and sometimes removed natural animal migration patterns, fresh air and clean water out of the cycle, resulting in an ecological system that favors man, while diminishing nature. It will help to identify types of urban fragmentation.

3. See "Urban Fragmentation" states how it is normally looked at through a social economic lens. And compares to this projects view.

Habitat Fragmentation
Context and observation

Unlike Urban fragmentation, habitat fragmentation is the cause of animal displacement, and defaunation. It results in the division of larger habitats into smaller, isolated habitat fragments. "Habitat fragmentation is one of the most important processes contributing to population decline, biodiversity loss, and alteration of community structure and ecosystem functioning in anthropogenically-modified landscapes" (1). Currently, it is being looked at a more micro level. Understanding the edge effect, patch dynamics and the ecological consequences of land-use change for individual organisms.

Habitat loss and reduction in patch area increase the proportion of habitat edge in the landscape, and expose fragment interiors to external influence (1). Edge effects describe the transition in abiotic and biotic variables that occurs across the boundary between adjacent land-use type.

4. See "Habitat Fragmentation" in relation to defining types of fragmentation and what they mean to the environment.

Figure 9

Defaunation

noun

Origin
1920s. From de- + fauna + -ation, after depopulation

The term defaunation was first given a conservation biology connotation when it was used to describe the impact of human activities on mammal communities and its subsequent cascading effects on tropical forests. (1)

The word Defaunation is a key word in the understanding of how urban development impacts the ecosystem. To fully understand the word will help in fully understanding the thesis.

5. See "Defaunation" in relation to defining the word Defaunation

Habitat Fragmentation
Re-defining

Figure 10

When it comes to habitat fragmentation, studies mostly look at it on a more micro level. Looking at how these changes are effect individual species, rather than the ecosystem as a whole. Some authors consider that fragmentation should be restricted to describing just one of five precise ways in which individual units of habitat are broken up (perforation, dissection, fragmentation, shrinkage or attrition; (Forman, 1995; Collinge, 2009)) While this is a completely goes completely hand in hand with my point of view. These reasons fails to mention the different types of fragmentation caused by the different styles urban development. Factors that define fragmentation are important, but to take things a step further. We need to define the types of fragmentation.

Most authors define habitat fragmentation as the process by which habitat loss results in the division of large, continuous habitats into a greater number of smaller patches of lower total area, isolated from each other by a matrix of dissimilar habitats (1). Species area relations have also been studied because of habitat fragmentation. But what about the solutions to minimizing this effect as much as possible?

The first step is looking at how the urban environment has developed and what it means to the animals. The population levels, the community levels, and how the modification has driven habitat levels down. Finding out these factors help understand how to design for the future.

6. See "RE-defining" in relation to re-defining the phrase habitat fragmentation to suit this thesis.

Urban Fragmentation
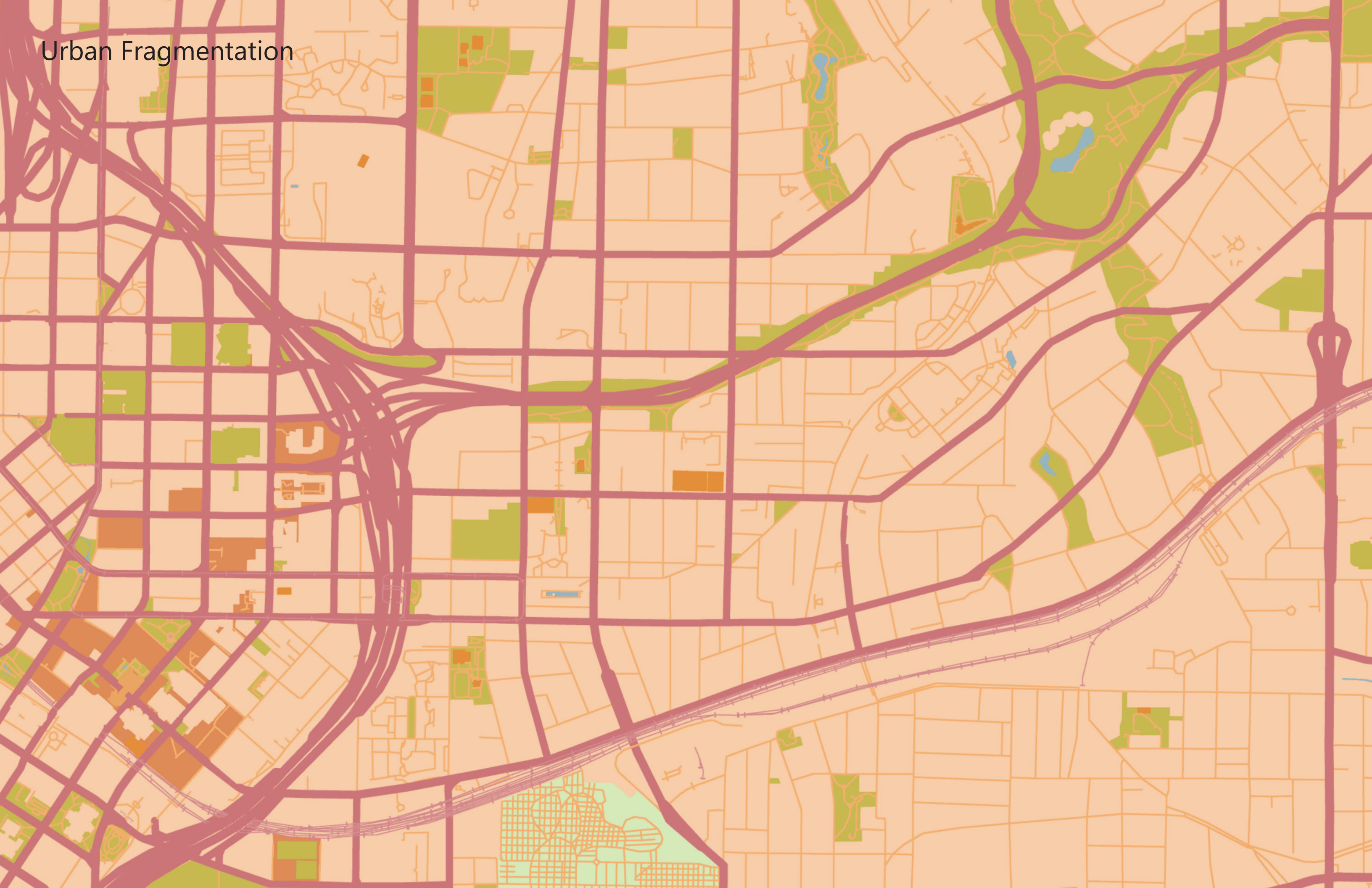
Types of Urban Fragentation

Urban Fragmentation is the way that the city expands. Going from a concrete jungle to a farmland. There are six different types of urban fragmentation exist. Each of a different scenario 1-4. And each calling with it's own different solution. Some do not even require solutions. (Due to location or the extent of growth.) The key characteristics involve location, density, environment, and population. Which is different from density because of nature reclamation.

Figure 12   20

1 Type one you will find Edge conditions, which are boundaries of extreme conditions that typically result in a sudden change of environment. You will also find grids under 1 square mile, population density less than 500 people, and the area is easy for animals to get around.
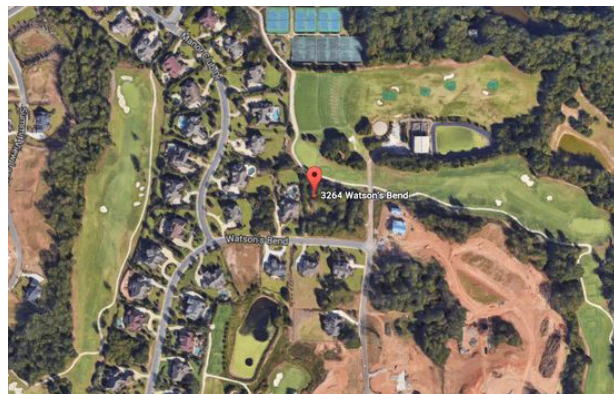
2 At type two habitat fragmentation, you start to see sprawling neighborhoods and animals that will start to have a tough time getting around. Increase in population density, and metro infrastructure starts to develop such as freeways.
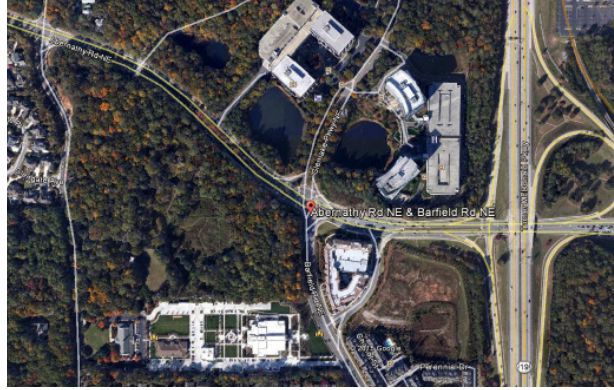
3

At type three fragmentation population density rises, you start to see more urban development such as high rises and more defined edge conditions.
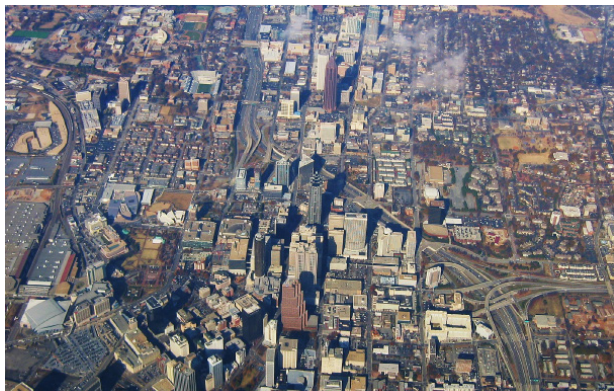
4

At type four, Animals are not able to get through and population density is at it's highest within the metro area. Ten lane roads tear through migration paths and animals are left to either stay where they are, or cross the roads that puts both their lives and ours in danger.

Precedents

Precedents are chosen because they were observed to have an ecological role in the their design. Either a big part of their design involves the integration of itself with the environment or sole the purpose is for the progression of the ecological system. Each has been analyzed and has been incorporated with the design phase of this project.

The NYC Highline
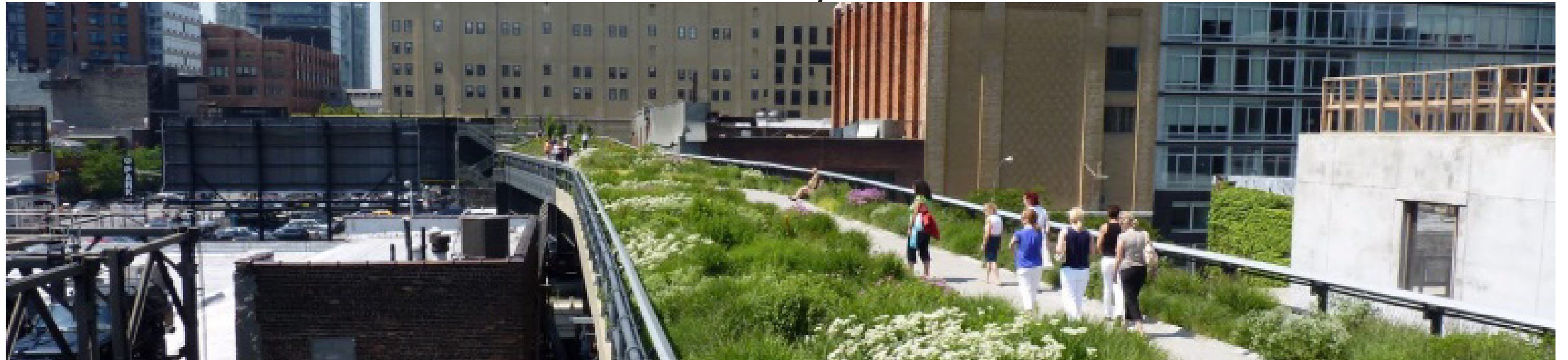
Figure 15.a

Figure 15.b

Figure 15 c,d,e,f
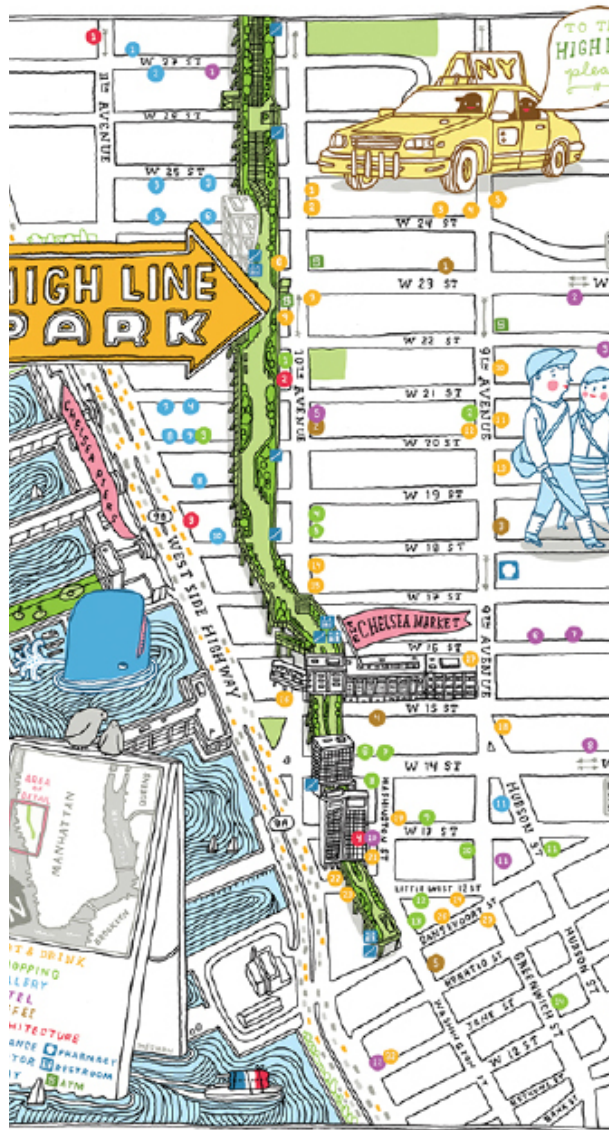
Figure 15.g

The New York City High line is one of the latest in a long trend of turning old infrastructure into an inhabitable environmentally friendly space for all to enjoy. Since infrastructure is already design through a city. They have vital roes to play after their initial use is gone. It is a 1.5 mile long elevated section of a rail line that was decommissioned years ago. It was repourposed into an urban park and opened for the public in 2009. It has been quite successful in spurring the local economies and increasing real estate values around the area. Much like Atlanta's Belt line and Paris's promenade plantée. It has been well received and heavily trafficked. With an estimated 5 million visitors annually.

The project is still growing even today, opening in different phases. More recent projects have allowed for the public to view lower sides of Manhattan, West Side, and the Hudson river. In popular culture, is has been referenced in movies, documented, and sung about in hip/hop songs. Renzo Piano has even designed the Whitney Museum, which runs along the High line.

The idea of the High line is a great example of bringing the environment into the city. Recycling old infrastructure and creating areas of green to run through the concrete jungle of a city. Of course Manhattan is on an island, so the necessity of making it habitable for wildlife is minimal.

Marina City Park

Figure 16.a

Figure 16.b

Figure 16 c,d,e,f

Figure 16.g

Singapore's new nature park is a great precedent for what we can do to integrate nature into the city. A park spanning 250 acres that has been made on reclaimed lands and includes gardens, groves, forests, and lakes. Singapore has already proclaimed itself as a leader in green design with its vertical city. It's sustainable architecture, and its state of the art infrastructure. So what's so special about this project that it needs to be included? It's already shows to the world what it means in implement sustainable architecture in infrastructure. For Example, the super trees. Varying in heights from 25 to 50 meters each tree has tropical flowers and ferns going all down it. The large canopies work as temperature moderators, absorbing and dispersing heat, as well as providing shelter from the hot temperatures of Singapore's climate to visitors walking beneath.

One of the sustainable features of the garden is that the horticultural waste feeds a massive steam turbine and generates the electricity on-site to help maintain the cool temperatures of the biome. All these biomes make up of only 5% of the overall landscaping budget. This Oasis in the city is a baseline on what can be done in the city to make these boring, concrete infrastructure into beautiful and sustainable designs. This location is in an extremely dense urban environment and is apart of the government's strategy to transform Singapore into a "city in a garden."

Montana Land Bridge

Figure 17.a

Figure 17.b

Figure 17 c,d,e,f

Figure 17.g

Humans have been building roads for centuries. It's been recently, however, that these roads have begun to pose a big hazard for animals to cross. Like a deer in headlights. They get hit over and over again. Giant freeways and never ending stretches of road make it hard for them to cross. And the simple solution was already there. Bridges. Montana went and made a bridge that allowed animals to pass over. Connecting a broken migration path to allow animals to follow their instincts without consequence.

Engineers at the University of Montana are working to mitigate the impact of roads on wildlife by building overpasses and underpasses that give a variety of animals the freedom to move safely and at will. Engineers say the project also makes good economic sense: it costs less to build the new structures than it does to pay for repair and cleanup caused by animal-vehicle collisions. (1)

So far, this is one of few solutions that we have to habitat fragmentation.

The Atlanta Stitch

Figure 18.a

Figure 18.b
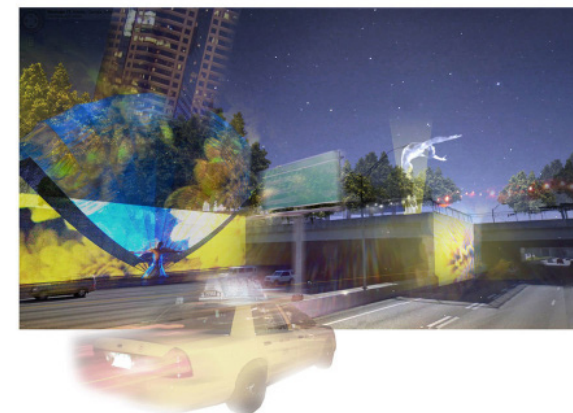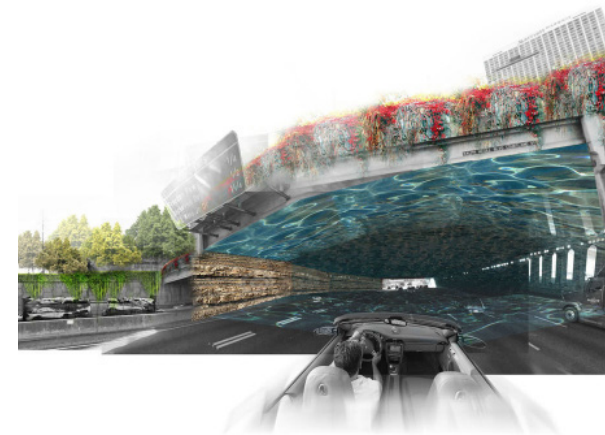
Figure 18 c,d,e,f

Figure 18.g

The I-75/85 connector is a stark contrast of new urban development. The goal of this transformation project is to is to create beautiful, urban design strategies that will make a new, energized pathway through the City of Atlanta. "By re-inventing how we see and care for our infrastructure, the transformation of the Connector serves as a catalyst that can change the perceptions of our freeways. Embedded in our landscapes and urban environments, the quality of our connectors also influences the urban character of adjacent properties, neighborhoods, and the City as a whole." (1)

The Stitch is the first project that comes to mind when I thought of ways to help in the development of Atlanta. When I realized what I wanted to do had already been done. I decided to take the Stitch project and add an environmental aspect to it. Keeping in line with the urban / economic development that project focuses on. This is how the Stitch became the best case study. Since it includes my site, aspirations, and goals. Most architecture integrate society in new ways. Let's work with other aspects of life.

Practice / Design Phase

Bio Diversity Center and Demonstration Park

Figure 19
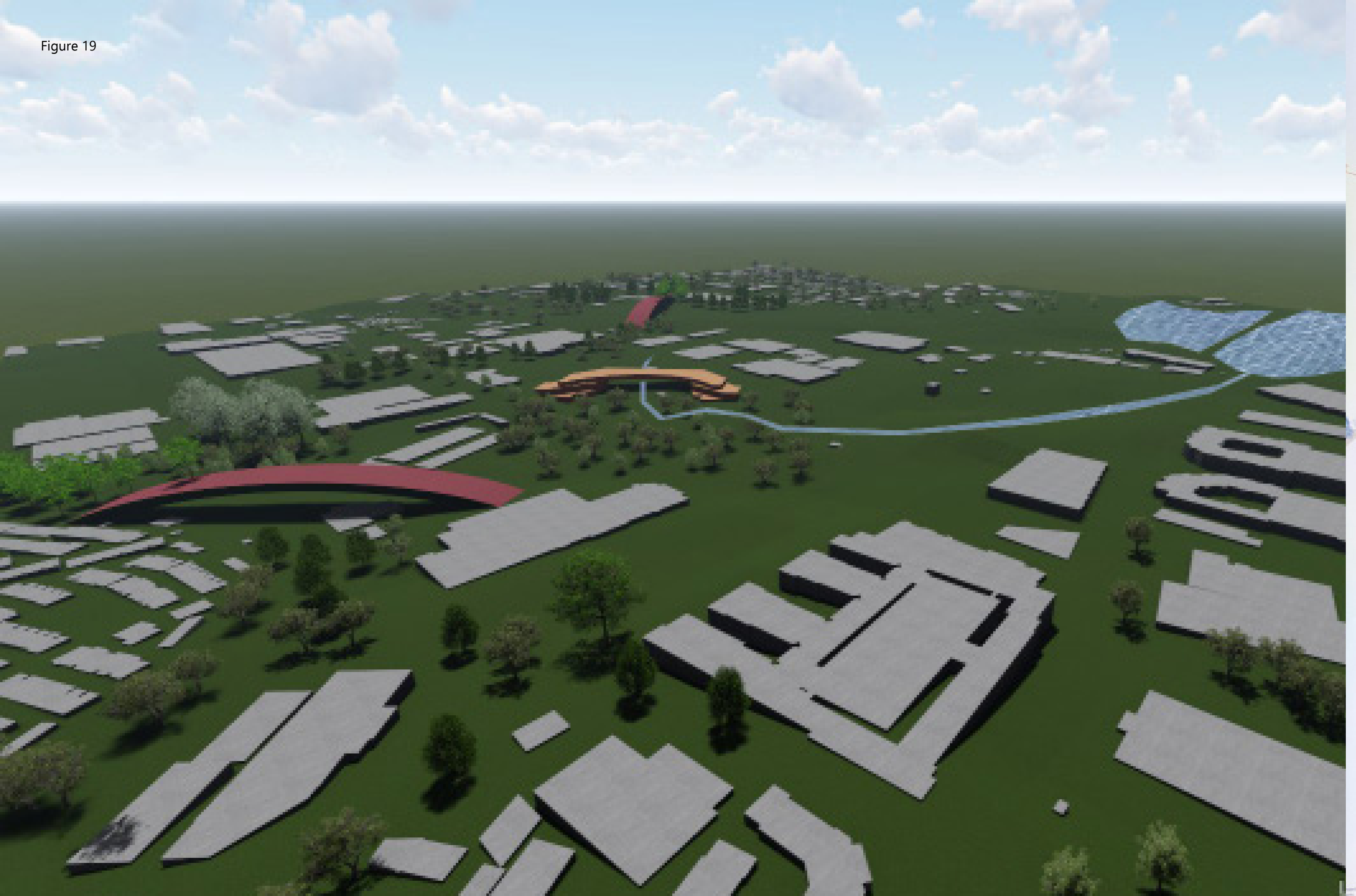
Figure 20

Geo Futures | Urban Integration

My thesis is followed up by a building and landscape design that incorpoates the four types of defined urban fragmentation in the site and the 5 precedents in the program of the building. In then design. Ahead are,

- Site location proposal
- Site analysis
- Program Diagrams and locations
- Detail diagrams of floors and green spaces
- Floor Plans
- Renders

Atlanta ecosystem (in play)

———— Developed area (outside Atlanta)

———— Major Highways

———— Roads serving developed areas

———— Forests
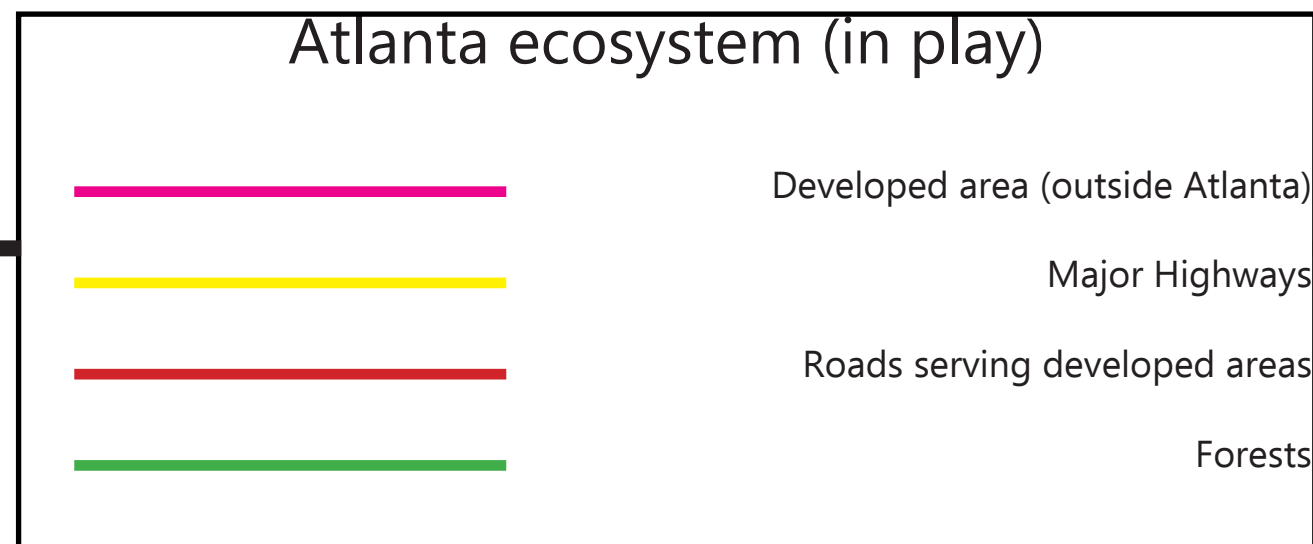
The Atlanta (in play) map shows an analysis of the urban development. The intent is to show the urban evolution not through time but through development. Serving roads are always are an indication of major highways. And major highways led to full on urban development. The goal is to show how everything sprawls out.

Key Words

Urban Fragmentation

Originated from a socioeconomic lens on how different wealthy economic classes separate themselves from lower economic classes.

Key words include: Permeable boundaries, Spacial adjacencies, and Municipal lines

This thesis looks at it through an ecological lens on how we have minimized and sometimes removed natural animal migration patterns, fresh air and clean water out of the cycle, resulting in an ecological system that favors man, while diminishing nature. It will help to identify types of urban fragmentation.

Habitat Fragmentation

The cause of animal displacement, and defaunation.

Results in the division of larger habitats into smaller, isolated habitat fragments.

Habitat fragmentation is one of the most important processes contributing to population decline, biodiversity loss, and alteration of community structure and ecosystem functioning in anthropogenic-ally-modified landscapes.

Urban Integration

Looking at how the urban environment has developed and what it means to the animals. The population levels, the community levels, and how the modification has driven habitat levels down. Finding out these factors help understand how to design for the future.

Defaunation

Origin
1920s. From de- + fauna + -ation, after depopulation

The term defaunation was first given a conservation biology connotation when it was used to describe the impact of human activities on mammal communities and its subsequent cascading effects on tropical forests.

Figure 20
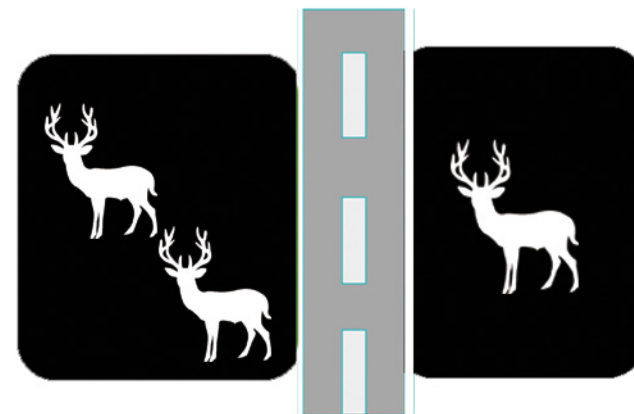
Figure 21

Figure 22

Figure 23

Design Objectives
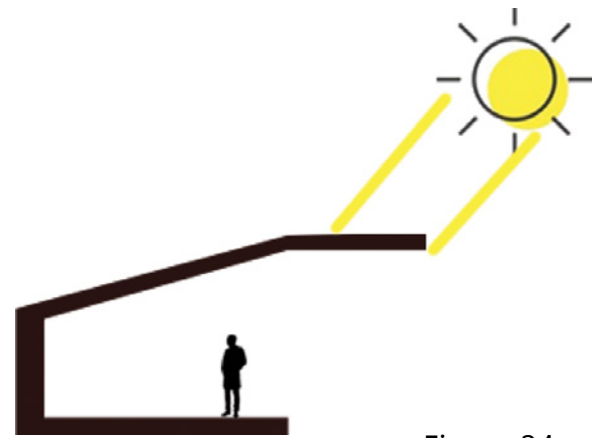
Solar Shading

Maximize the energy efficiency to lessen harsh effects on the environment while increasing sustainable practices.

Figure 24
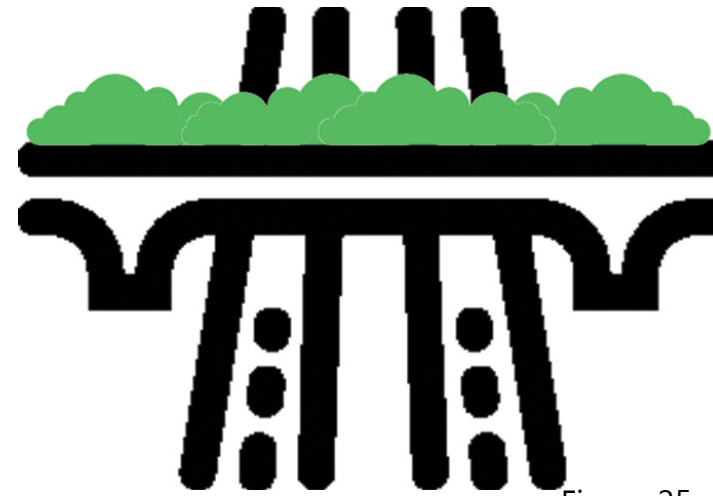
Revamp infrastructure

Integrate new and old infrastructure with the environment. Set a new standard for how urban development interacts with the environment.

Figure 25
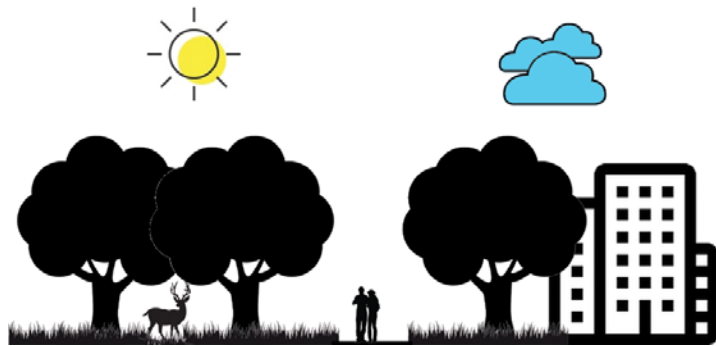
Urban Forests

Provide equal amounts of untouched forests for animals to roam as humans have with urban development.

Figure 26
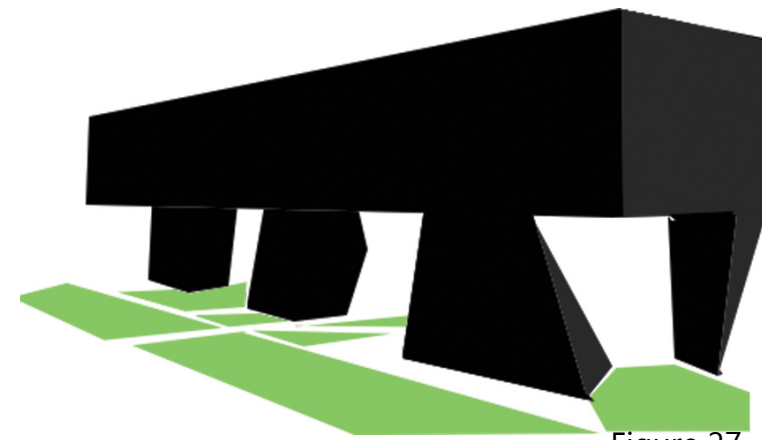
Lofted Building

To allow minimum land blockage from urban development, loft buildings and programs so that animals can safely and easy travel through the urban environment.

Figure 27

Communal Spaces

Provide areas for communal integration. This will allow urban development to flourish in areas where both humans and animals can use.

Figure 28

Site
West Midtown

Thesis Site Selection

A. Minimum amount of deforestation.

B. Maximun amount of undeveloped land for animals.

C. Population density low.

D. Closeness to the city.

1. Dawsonville Ga.
2. Milton Ga.
3. Sandy Springs Ga.
4. Westside, Atlanta
5. Downtown, Atlanta
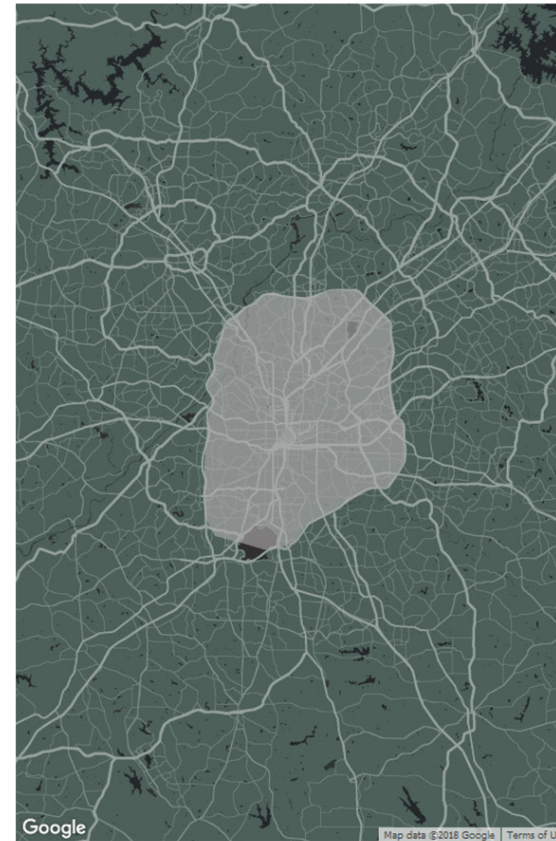
Westside started out as Atlanta's first African-American neighborhood in the city. It is located between Huff Road and Marietta Blvd in what is more commonly known as West Midtown. Founded after the Civil War, Felix Bland was willed the land by his former owner. But, due to not paying taxes, he lost the land and soon developers started to build industrial buildings due to the railroad being so close to the area. The area kept developing even after a 1928 fire that burned 17 buildings. Around 1960 CSX and Norfolk Southern railroads expanded the railroads and the neighborhood was rezoned to heavy industrial. Slowly resident's left and the area went into decline. The elementary school closed, and rezoning back to residential never happened even though it was fought. The last remaining resident Joseph Bibbs, living there until his death in 2004. All the existing homes were demolished and developers started to building again until the 2008 recession. Recently, parts of the neighborhood have been rezoned back to residential and developers are now building housing marketed at over $500,000. A new chapter for the area is just starting.

Total population
Dawsonville: 2,634
Milton: 38,411
Sandy Springs: 105,703
Atlanta: 472,522
Blandtown: 300*

*= no statistical data, only land given by observation.

Deer population:
1972: 253,000
1982: 540,000
1992: 1,211,000
2002: 1,269,000
2012: 990,000

Tree canopy percentage
Dawsonville: 81%
Milton: 48:
sandy Springs: 41%
Atlanta: 36%
Balndtown: 22%
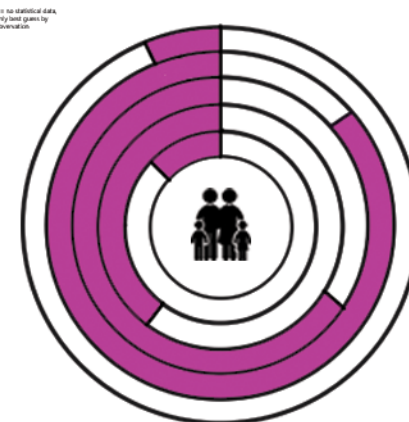
Land Typography
of Westside

2012 U.S. population desnity per square mile. Information gathered from ARC GIS

0 - 500

501- 1,000

1,001 -2,000

3,000+

Lake

River

Deciduous forest

Grass
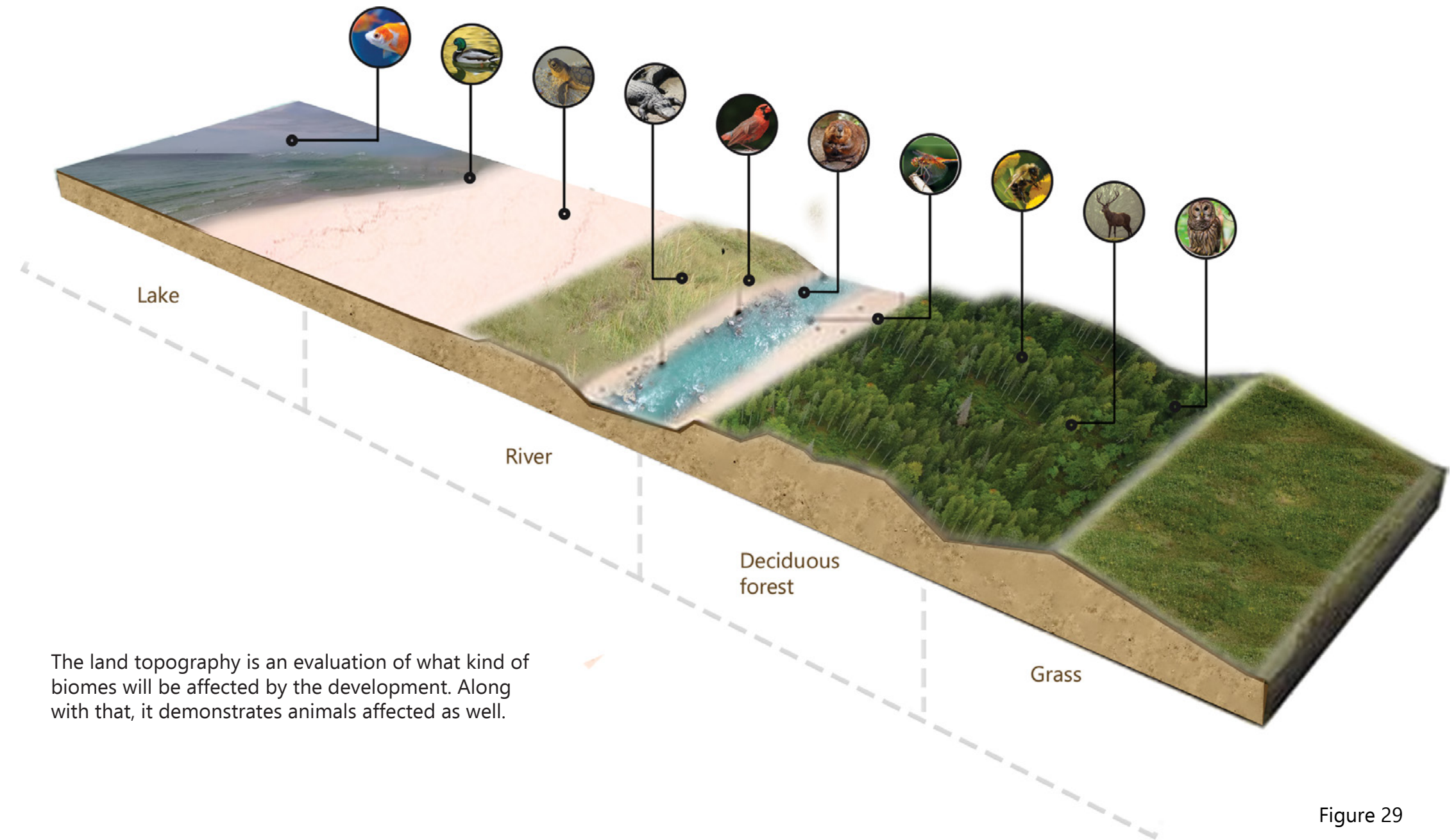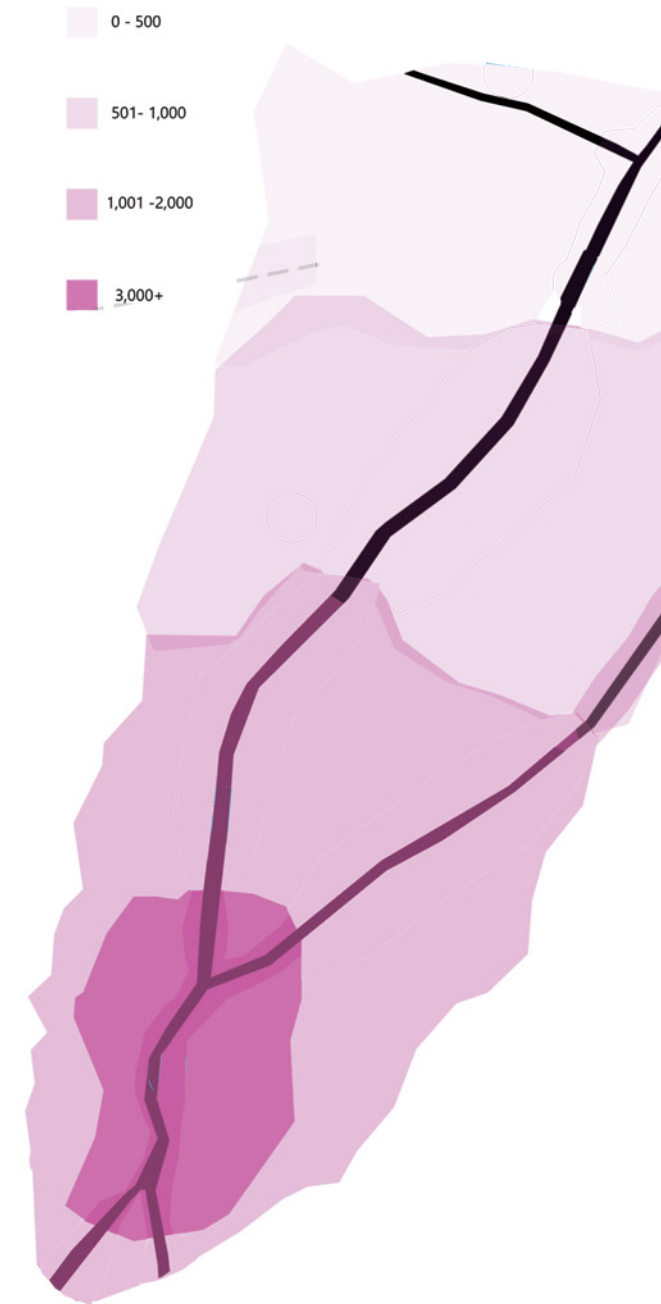
The land topography is an evaluation of what kind of biomes will be affected by the development. Along with that, it demonstrates animals affected as well.

Figure 29

All four zones are impelted in the Westmid town / Blandtown area. Being in the city proper, this area of Atlanta has the most undeveloped areas of land. With a program like a demonstration park, then open land will optimize the programs. Zone 1 comes from the southside of the district, near the quarry. Zone 2 comes from the residential development. Zone 3 is seen in the water treatment plant. And zone 4 is the industrial areas mostly made up of railroads and firms.

Site Fragmentation Composite

At type two habitat fragmentation, you start to see sprawling neighborhoods and animals that will start to have a tough time getting around. Increase in population density, and metro infrastructure starts to develop such as freeways.

At type four, Animals are not able to get through and population density is at it's highest within the metro area. Ten lane roads tear through migration paths and animals are left to either stay where they are, or cross the roads that puts both their lives and ours in danger.

At type three fragmentation population density rises, you start to see more urban development such as high rises and more defined edge conditions.

Type one you will find Edge conditions, which are boundaries of extreme conditions that typically result in a sudden change of environment. You will also find grids under 1 square mile, population density less than 500 people, and the area is easy for animals to get around.

Figure 30
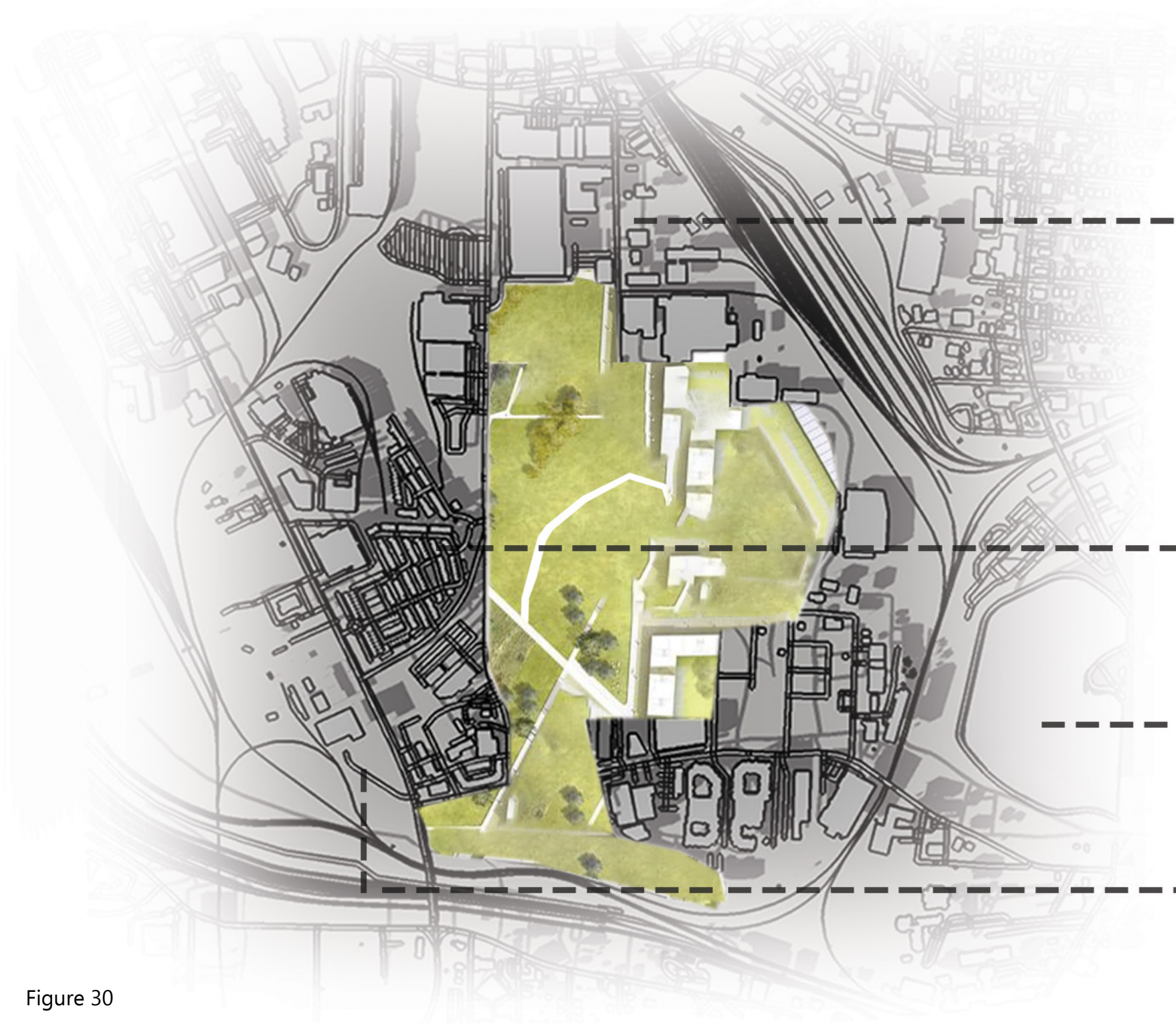
Ecological Forestwalk

Figure 31

Program Analysis and Observation

Cafe and social programs will be included in the building. Social programs can make for bringing in people. And can be inviting for people to see what the space can offer.

The facility will include educational class rooms to educate the population on the integration of the urban environment.
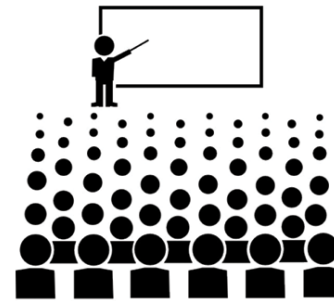
Auditoriums will be included in the program to allow for any mass congregation of people in the Westside area. This can come in handy for and educational setting as well.
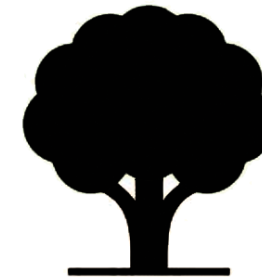
The structure will include many trees. A green roof will be on the building to allow for minimum sunlight to hit the ground.

The building is lofted, To allow for animals to get around the property without being obstructed by development.

The building is designed to house multiple programs to integrate the community. Offices will be included that can be rented.
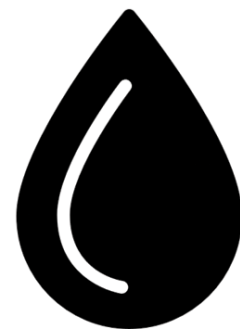
A stream run through the area unobstructed because of the lofted program.

Renewable energy will be implemented with the program to cause as little footprint as possible.

Entertainment will be included in the programs to allow for the surrounding community to get involved with the building.

Since the building is about urban development integrating with the environment. Transportation will be easily designed with the building.

Site Impact

Environmental Protection
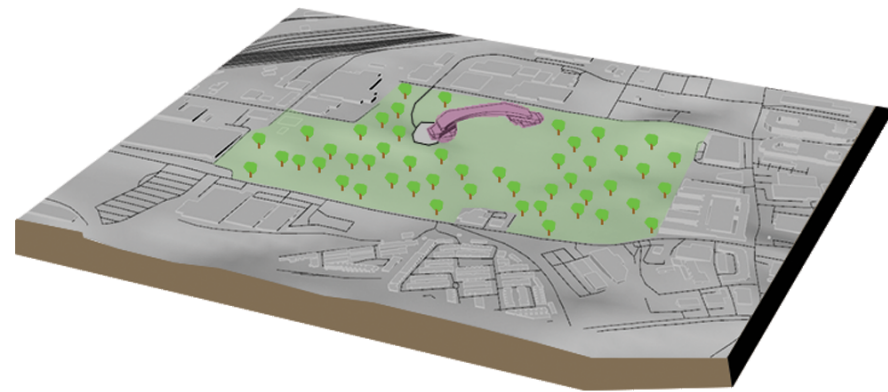
The site is comprised of mostly green space that surrounds the program. Tree Canopy coverage is meant to take over most of the land to allow as much shading and land use for animals.

Precedent Integration
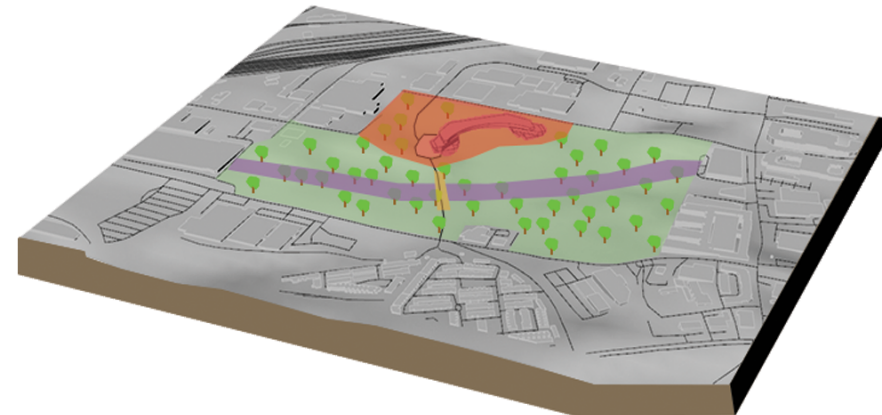
Precedents from the Land bridge, super trees and new Georgia Tech living building come in to play with its-unobstructed nature walk, active shading from trees and a curved facade with solar shader.

Visual Activity
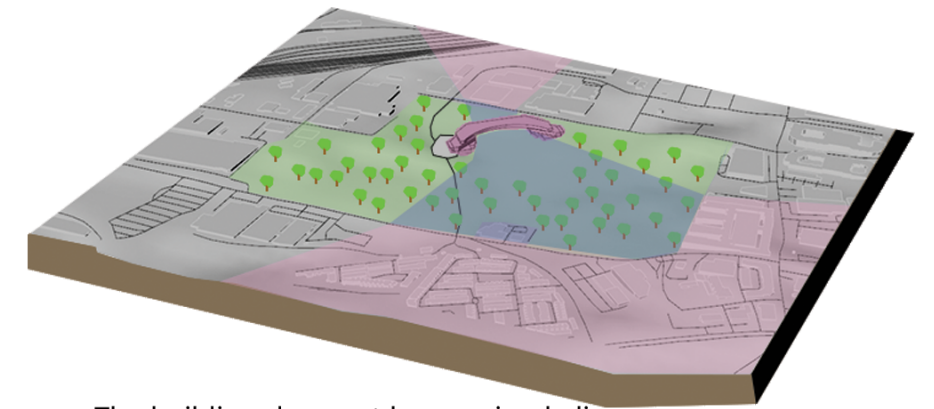
The building does not have a simple linear program. It has been lofted to allow animals to pass right under. Programs are kept relatively inside or on top of the building. The building is concave so it papers to bigger.

Ground Activity
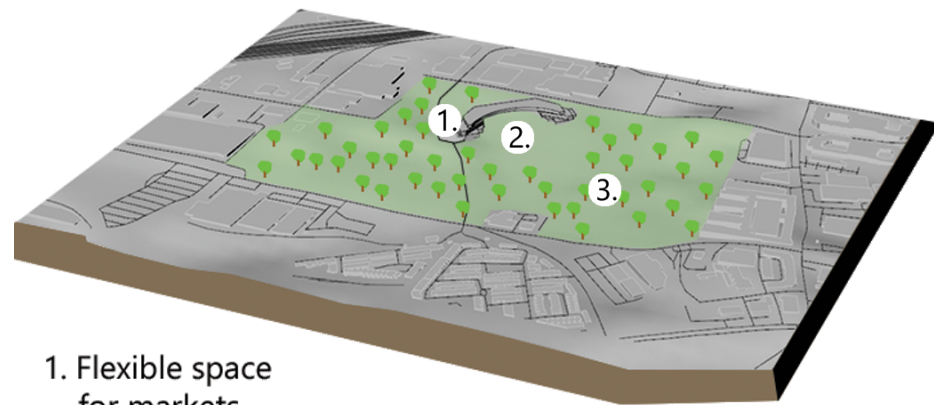
1. Flexible space for markets.
2. Outdoor activites
3. Unmaintained forest for nature walks.

Most of the first level is completely open. It's filled with programs like flexible markets, space for actives and plenty of untouched nature for urban forests walks.

Active Systems
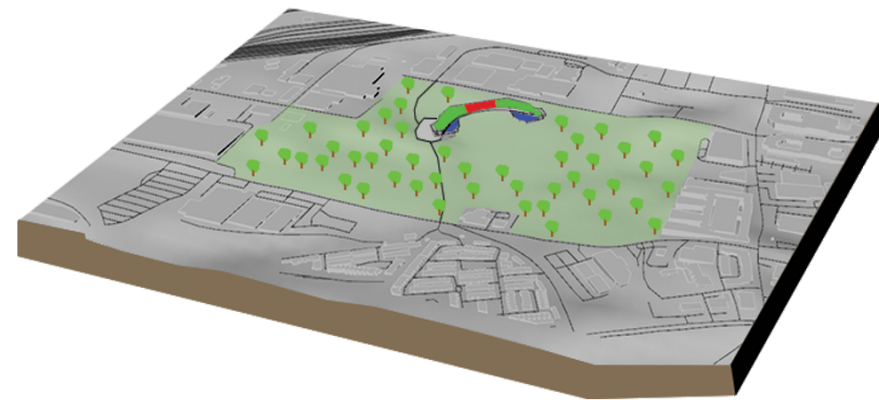
There are a number of active systems that go throughout the biding. They are designed to be integrated with the building so they do not obstruct with the flow of the building.
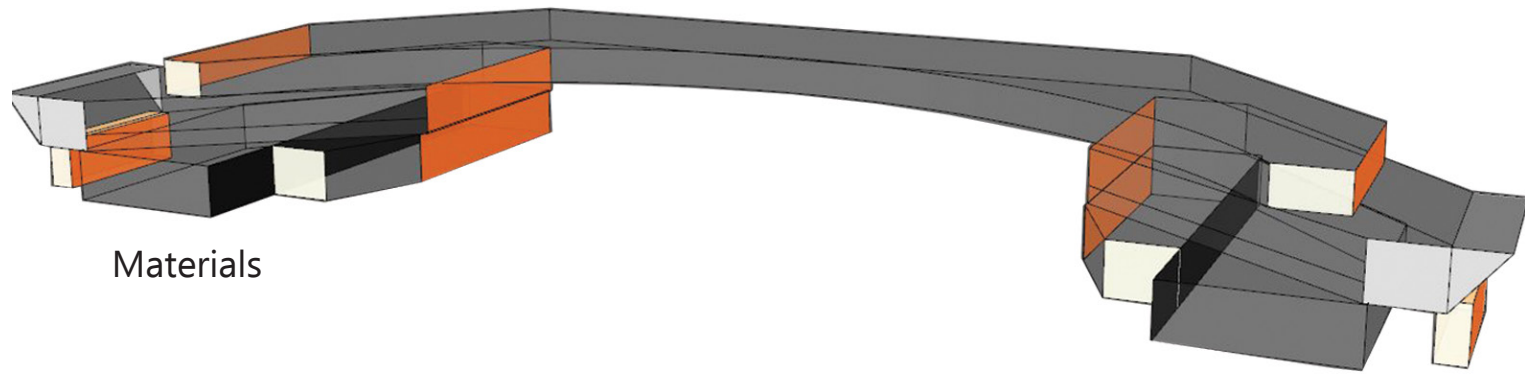
Green Roof
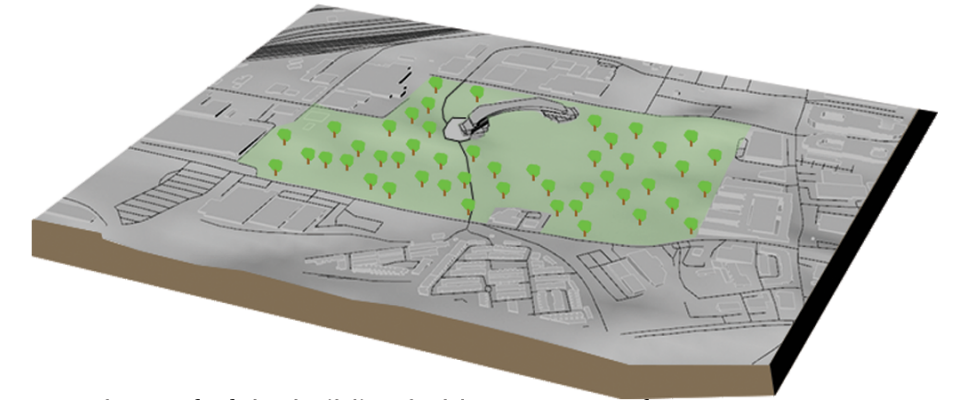
The roof of the building holds a green roof program to keep the greenery continuing. The roof holds active systems and will be used for demonstration activities.

Program
Diagram

Materials legend:
- Metal sheet / panel
- Concrete
- Curtain Wall / glass
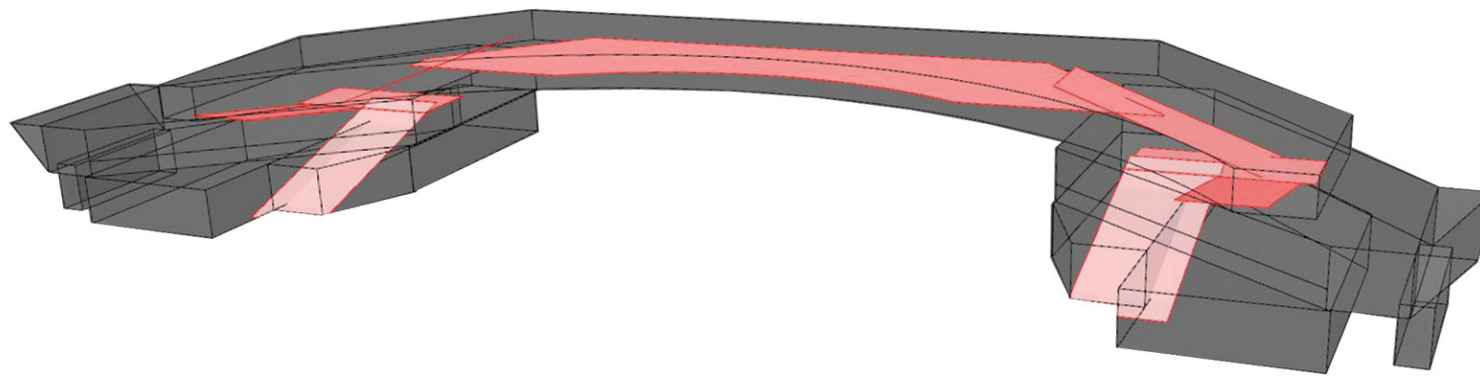
Program Location legend:
- Demonstration Labs
- Biodiversity Classrooms
- Cafe / Flex market
- Auditorium
- Office Space

Materials

Program Location

Path of travel
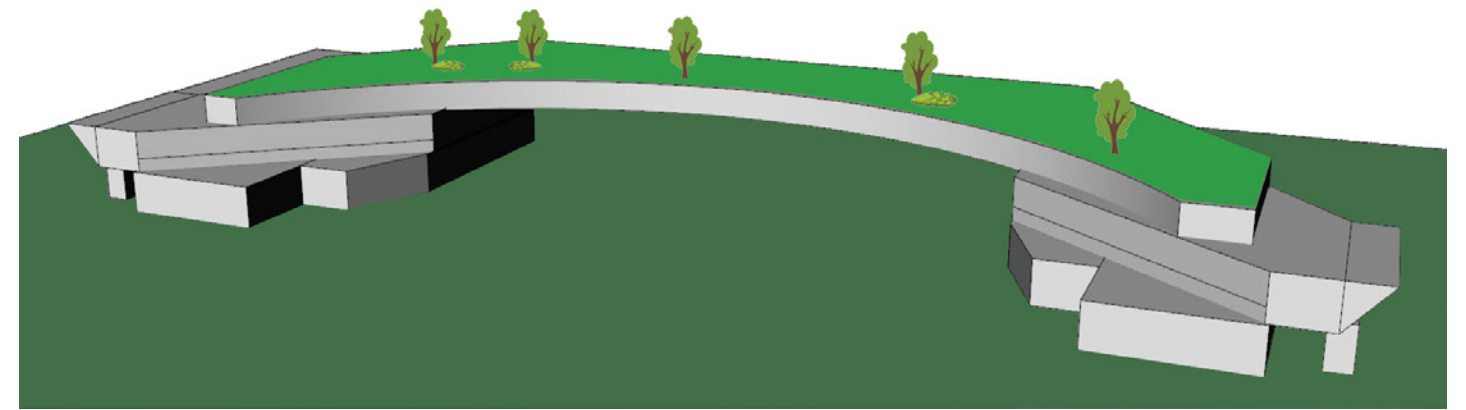
Green Roof Proposal

Figure 32

Green roof layers diagram

Grass
Dirt
Irrigation
Irrigation tube
Trays
Edging
Root barrier
Irrigation
Roof membrane
Drains
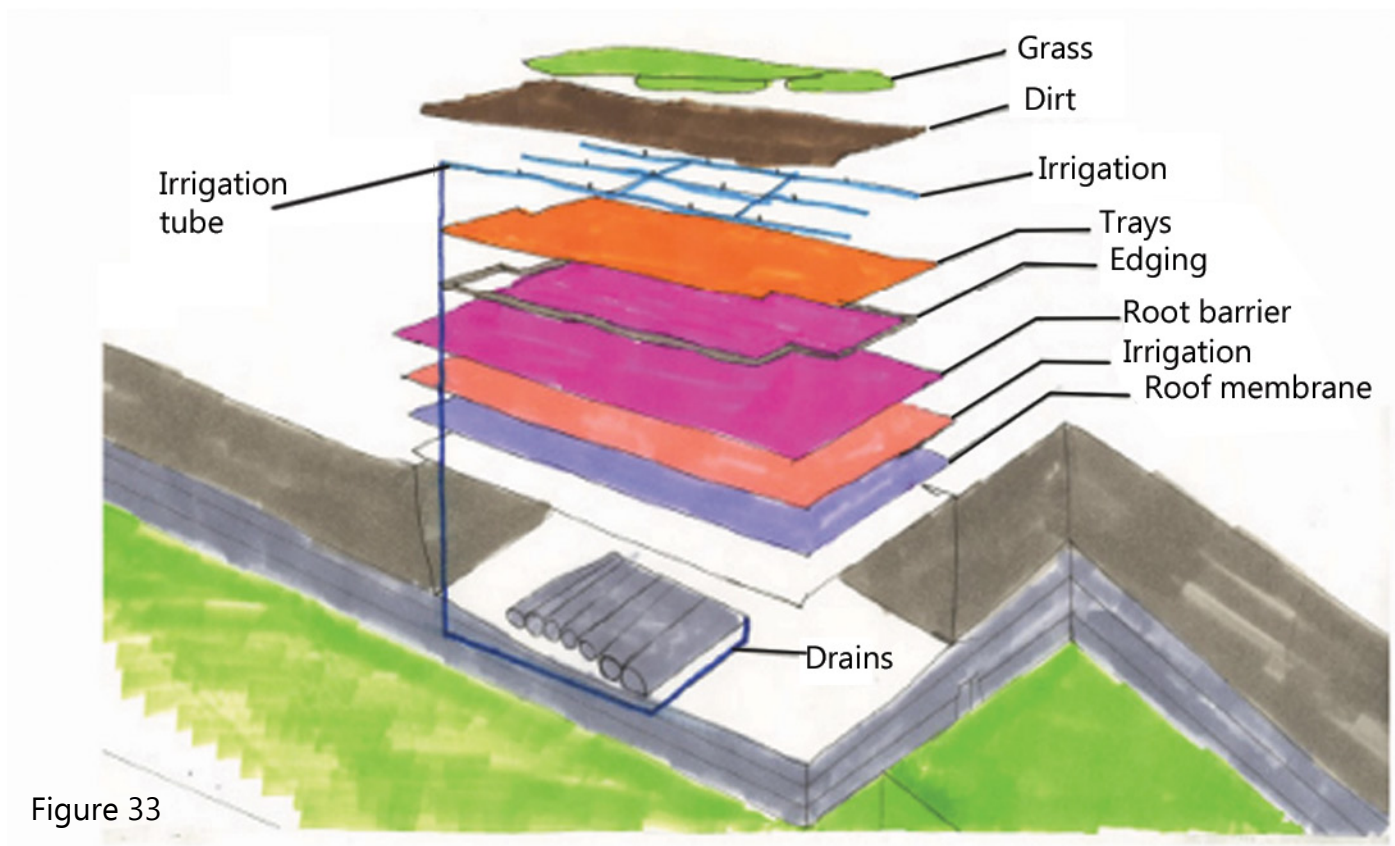
Figure 33

Proposed Shading louvers diagram

Spacing (S)
Width (W)
Mid summer
Mid winter
Set louvres to noon mid winter sun angle
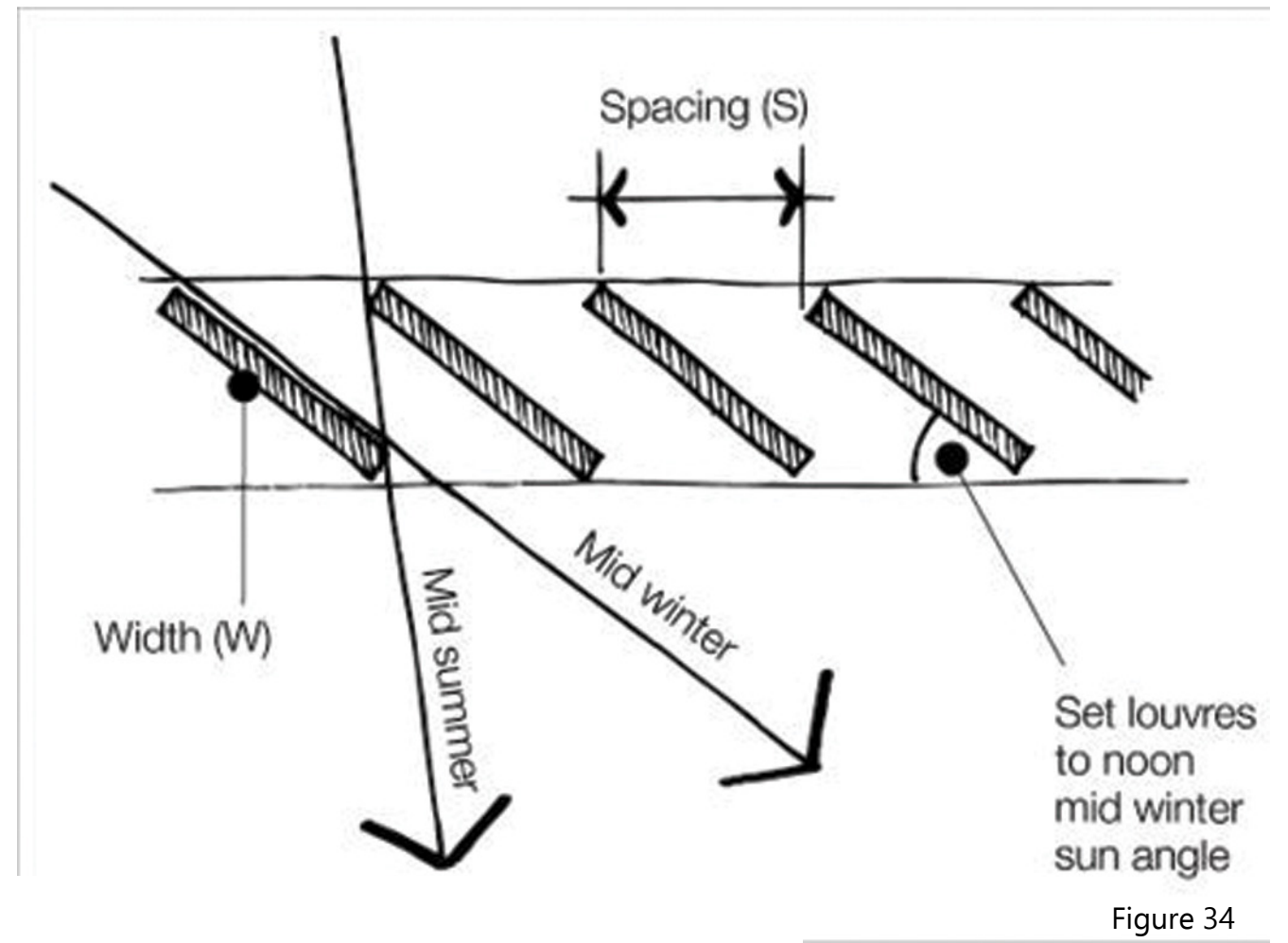
Figure 34

Airflow diagram

Sunlight
Wind
Wind
Sunlight

Figure 35

Program
Context
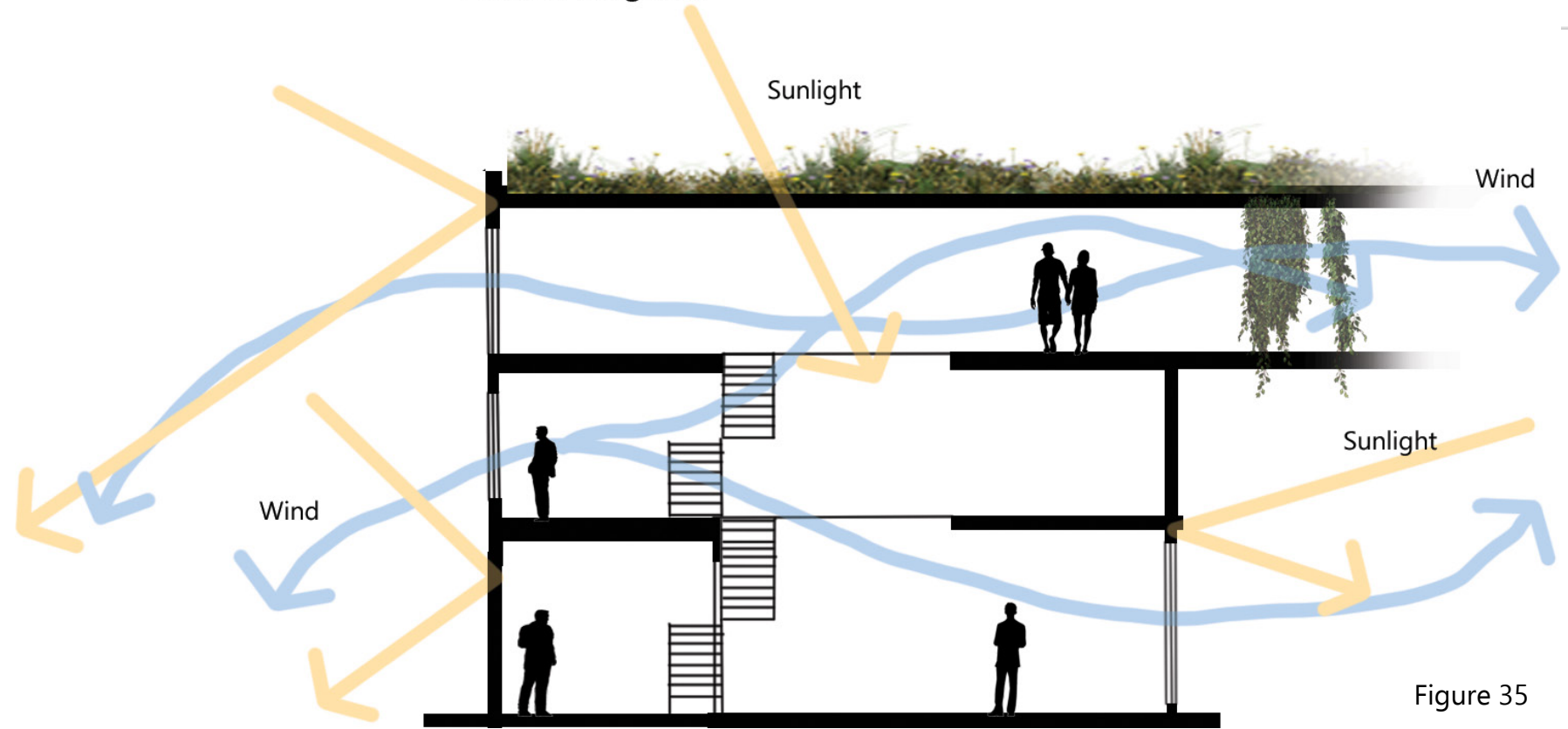Figure 36

Humans
Public Plaza
Recreational Buildings
Commercial and Housing Integration
Demonstration Park
Biodiversity Center
Re-developed pattern for urban sprawl

Plants
Forestwalk
Green Roofs
Bodies of Water
Ample Amounts of Trees

HUMANS

PLANTS

ANIMALS
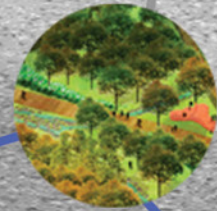
Southeast Capital Companies

DANGER
STEEP DROP OFF
DO NOT GO
BEYOND FENCE
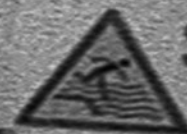
WARNING
SUDDEN
DROP

NO TRESPASS
VIOLATORS W
BE PROSECUT

Animals

Integration of infrastructure for wildlife
Undeveloped areas of land
Safe path of travel

Deer population:
1972: 253,000
1982: 540,000
1992: 1,211,000
2002: 1,269,000
2012: 990,000

Tree canopy percentage
Dawsonville: 81%
Milton: 48:
sandy Springs: 41%
Atlanta: 36%
Balndtown: 22%

Total population
Dawsonville: 2,634
Milton: 38,411
Sandy Springs: 105,703
Atlanta: 472,522
Blandtown: 300*
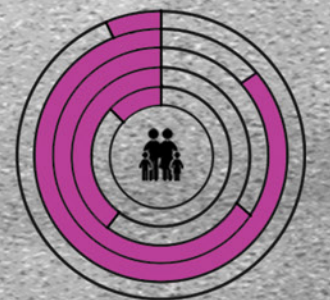
NO TRESPASSING DANGER WAR
IOLATORS WILL STEEP DROP OFF
E PROSECUTED DO NOT GO
BEYOND FENCE

The Biodiversity center and demonstration park come with programs that all come from the precedents. Both on a macro and a micro level. The program is meant to mend habitat fragmentation and set a standard for design that will interfere with the environment as little as possible.

Precedent Locations on Site
1. Manhatten High Line

2. Marina City Park

3. Atlanta Stitch

4. Montana Land Bridge

5. Georgia Tech Living Building

Figure 37

Third floor

Second floor

First floor

Flex
open
market

reception

Flex
open
market

reception

Figure 38

Figure 39

ESSAY

OBSERVE.. PG 7
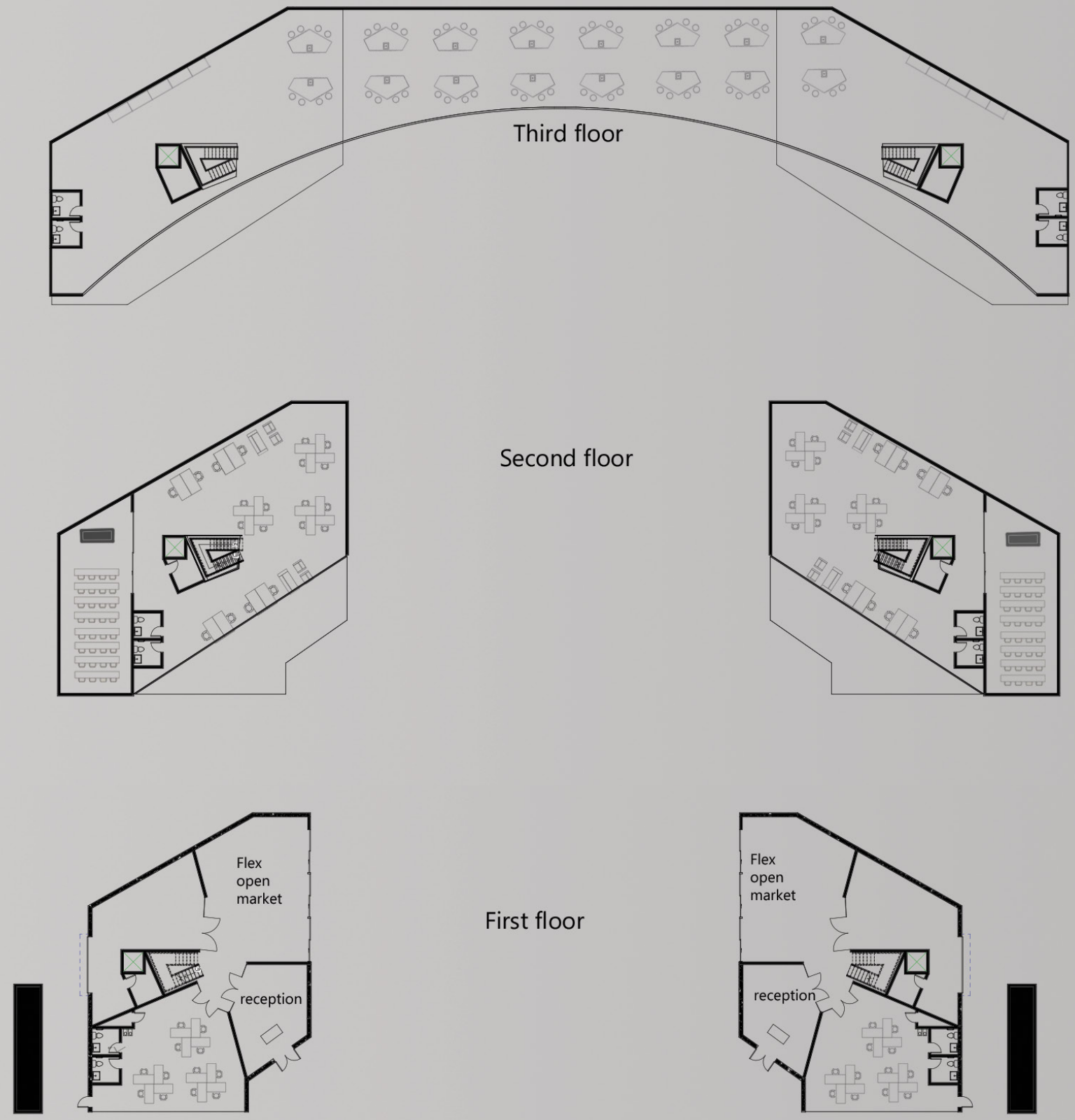1.   Rafferty, John P. "Anthropocene Epoch." Encyclopædia Britannica, Encyclopædia Britannica, inc., 31 Aug. 2016, www.britannica.com/science/Anthropocene-Epoch.

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Additional reads:

Patterns, Causes, and Consequences of Anthropocene Defaunation Hillary S. Young, Douglas J. McCauley, Mauro Galetti, and Rodolfo Dirzo Department of Ecology, Evolution, and Marine Biology, University of California, Santa Barbara, Santa Barbara, California 93106 Departamento de Ecologia, Universidade Estadual Paulista (UNESP), 13506–900 Rio Claro, Sao Paulo, Brazil Department of Biology, Stanford University, Stanford, California 94305;
email: rdirzo@stanford.edu

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Figure 2: Ray Troll / www.trollart.com
Figure 3: MSNBC.com
Figure 4: WBSradio.com
Figure 5: myAJC.com
Figure 6: myAJC.com
Figure 7: https://globalresilience.northeastern.edu/2017/04/fire-causes-collapse-85-atlanta/
Figure 8: cityofchicago.com / edited by Adam Leicht
Figure 9: Kletr Fotolia / Science Daily / edited by Adam Leicht
Figure 10: Coen Wubbeis / BBC.com / edited by Adam Leicht
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Figure 12: All images in page 20-21 are from google maps
Figure 13: All images gathared from snazzymaps.com / edited by Adam Leicht
Figure 14: Illustration by author
Figure 15a: http://www.weekadvisor.com/green-side-nyc-high-line-park/
Figure 15b: dannisawthis.co.uk
Figure 15c-f: http://www.cnn.com/2017/08/09/world/osm-high-lines-paris-seoul-new-york
Figure 15g: https://mir-s3-cdn-cf.behance.net/project_modules
Figure 16a: http://greatruns.com/gardens-by-the-bay-fort-canning/
Figure 16b: https://www.cpgcorp.com.sg/CPGC/Project/Project_Details?ProjectID=1069
Figure 16c-f: https://www.cpgcorp.com.sg/CPGC/Project/Project_Details?ProjectID=1069
Figure 16g: archdaily.com
Figure 17a: http://bigthink.com/ideafeed/land-bridge-gives-animals-right-of-way-on-roads
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Figure 17c-f: http://twistedsifter.com/2012/07/animal-bridges-around-the-world/
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Figure 18a: http://www.swagroup.com/projects/atlanta-i-75-i-85-connector/
Figure 18b: https://www.atlantadowntown.com/initiatives/the-stitch
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Figure 18g: http://www.swagroup.com/projects/atlanta-i-75-i-85-connector/
Figure 19: Illustration by author / Made in Lumion 7
Figure 20: archdaily.com
Figure 21: http:// www.swagroup.com/projects/atlanta-i-75-i-85-connector/
Figure 22: Illustartion by author
Figure 23: https://www.semanticscholar.org/paper/Defaunation-affects-carbon-storage-in-tropical-Bello-Galetti/
Figure 30: Site location... Illustration by author / rendered in photoshop
Figure 31: Forestwalk... Illustration by author / rendered in photoshop
Figure 32: Illustration by author / made in Rhino 5
Figure 33: Green roof drawing.... Illustration by author
Figure 34: http://www.yourhome.gov.au/passive-design/shading
Author Caitlin McGee

Figure 35: Airflow diagram... Illustration by author
Figure 36: Program Context... Illustration by author / Photo by Andrew Mesa
Figure 37: Precedent location... Illustration by author
Figure 38: Floor Plans... Illustration by author / Floor plans made in Revit
Figure 39: Section... Illustration by author