



# Gateway Education Center



Bridging the Gap between Gray and Green



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# Gateway

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## Portland's Regional Center

Gateway sits directly east of Portland's downtown district and has been designated as one of Portland's Regional Center. Due to its proximity to the city and access to transportation, the majority of Portland's future growth is predicted to occur in East Portland. With two major freeways, I-84 and I-205, running past Gateway and 4 major TriMet lines, Gateway is an ideal location for transit oriented developments and future economic growth.

Before Gateway was established as a regional center, it was known for its farming. With access to the city and an abundance of sprawling rural land, Gateway became an ideal location for suburban growth after WWII. Veterans moved with their families to a place where land was cheap and lot sizes were large, beginning the trend of migration out of the city. Coined by Mr. Fred Meyer himself, "Gateway" was established to be the "gate" to the city and to eastern development in the 1950's. Today Gateway represents the tragedy of urban sprawl; large "big box" stores, continuous parking lots and an automobile reliant society. Yet it possesses infrastructure that makes it possible to change the image of the district and redevelop it as a thriving regional center.

The negative effects of urban sprawl have contributed to the current issues in Gateway, **abundant impervious surfaces, lack of pedestrian connectivity and absence of parks and habitat areas.** For these reasons, Gateway has been selected as one of Portland's five Ecodistrict Pilots. While these issues drive the need for green development, Gateway possesses assets that make it an ideal candidate for this sustainable development at the neighborhood scale. These include its large transit center, access to highways and its predicted expansion.



Gateway and Surrounding Neighborhoods

# Why Gateway

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## Gateway's Assets

Gateway is currently characterized by its flaws yet possess assets that make it unique from other areas in Portland. The assets aren't currently recognized, but the addition of a facility that could link these characteristics together, it is possible to achieve the image of the thriving green regional center that Gateway hopes to become.

## Transportation

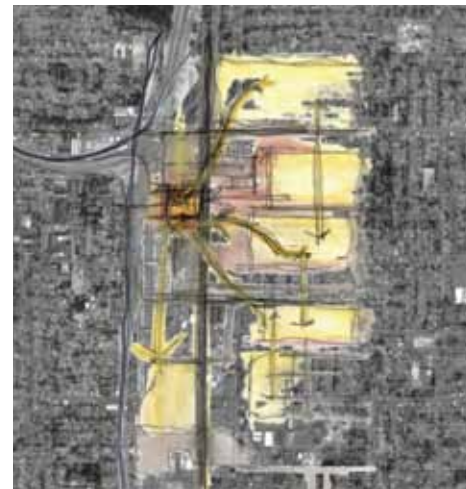
Gateway has become a hub for transportation, linking it to the city, Gresham, Clackamas and the airport. It not only has a Transit Center supporting these Max lines but it is located at the intersection of I-205 and I-84 making it just five minutes from the airport. Millions of people pass Gateway every year but have no reason to stop. This ideal access to the city can help to establish Gateway as a 20 minute community.

## Culture

Due to Gateway's relatively inexpensive housing, large school districts and access to downtown Portland, it has become an attraction for international community. Gateway's Immigrant and Refugee Community Organization (IRCO) served more than 30,000 individuals last year. Over 34 different ethnic groups have been involved in IRCO's activities and the organization continues to involve more community members and groups. There are approximately 67 different languages spoken in the local school district. The result of this is poor community identity, creating the district as a place to pass through rather than a destination.



Max Lines







# Thesis Statement

## Transforming Gateway from Gray to Green

With an abundance of public transportation and culture, Gateway has the potential to become a bustling regional center for Portland however, due to the district's planning, the area has become a forgotten neighborhood of Portland. Large block sizes, big box buildings and an automobile reliant society contribute to the lack of pedestrian connectivity, green space and identity in the community. This project proposes a facility that would be the first step towards the development of a greener Gateway. By providing a catalyst project for the district, investors would see development opportunities in Gateway and help to contribute to the ultimate goal of the community; the transformation to an Ecodistrict.



The project would take the form of an education center, becoming a satellite school for Park Rose School District, David Douglas School District, Mount Hood Community College, Portland State University and Warner Pacific. It would provide a means to stimulate the economy of Gateway by educating the both youth and adults in areas that have direct applicability to sustainability related jobs and fields thriving in the Portland metro area. Through sustainable design and the introduction of a college campus, the education center would become a beneficial green space for the community. In addition to the campus, the creation of a pedestrian oriented, green street would aid in the connection of the neighborhoods to the campus and the transit center. Together they would begin to take the form of an Eco District, introducing the community to the possibilities to come.



# Project Goals

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## Socio-Economic Vitality

Establish a place that facilitates cultural interaction by providing the support and amenities needed for small business development, language translation/barriers and career path building.

Develop a walkable, green campus that encourages safe pedestrian, bicycle and non-motorized transportation, and that supports the neighborhood and community interaction. The campus will provide green outdoor space in hopes of gathering youth and promoting outdoor activity and play.

Cultural collaboration will be encouraged through the development of programs that overlap the common grounds of all cultures such as food, health and sustainability.

Spur on economic development in the area by educating the youth in a manner that has direct applicability to jobs and the working field. A strong economic community will help to sustain the neighborhood and encourage local shopping, small businesses and community development.

## Regional Connections

Create an icon for the Gateway regional center by visually connecting to highways and to the neighborhoods. The icon will help to attract the attention outsiders and investors.

Allow for connections to develop in the east to west direction along Pacific by expanding site to the east. Currently the primary circulation is north to south along 102nd. The development of the site will begin to connect, both physically and visually, the transit center to 102nd and beyond to the neighborhoods.

Facilitate and educate about storm water management, through the use of landscape and streetscape elements.

Provide green space to increase the number of parks and outdoor space in the district.



## Ecological Sustainability

Address PoSI's 9 Ecodistrict Performance areas, community vitality, air quality and carbon, energy, access and mobility, water, habitat and ecosystem function and material management, on the site through visual representation.

Educate community about the importance of sustainability at all scales, beginning with individual sustainability to the neighborhood scale. By demonstrating the benefits of a sustainable life style, efforts to transform gateway into an Ecodistrict will be understood.

Connect education of sustainability to the community, such as wind turbans on Gateway Green, PV panels on Fred Meyer and other "big box" stores, and waste water management.

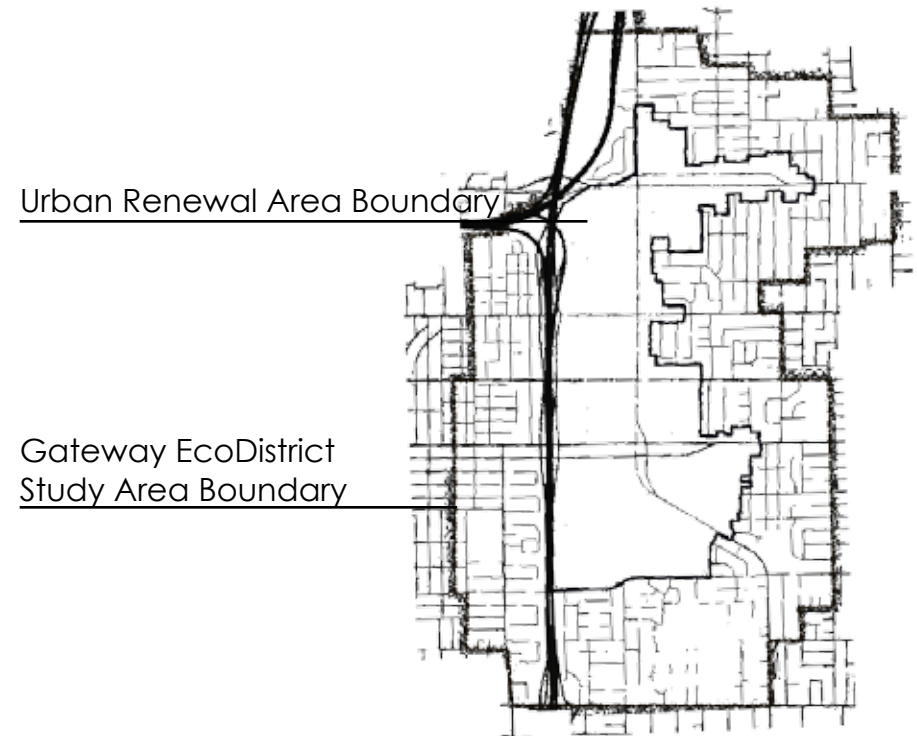


# Gateway Analysis

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## Assessment of Current Conditions

In an effort to analyze the current conditions of Portland's five pilot Ecodistricts, Portland Institute of Sustainability (PoSI) developed 9 performance areas in which each Ecodistrict would be assessed. These performance areas included, energy, air quality, water, access and mobility, placemaking, social cohesion, habitat and ecosystem function, material management, and equitable development. In order to better understand Gateway's current condition in these areas, 7 rough diagrams have been developed to analyze the qualitative condition of each area. (Note; diagrams for material management, social cohesion and equitable development have been omitted.)



## Energy

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Based upon land use type, the commercial district offers the possible of creating an district energy source. It also allows for heat exchange and other shared energy.



## Air Quality

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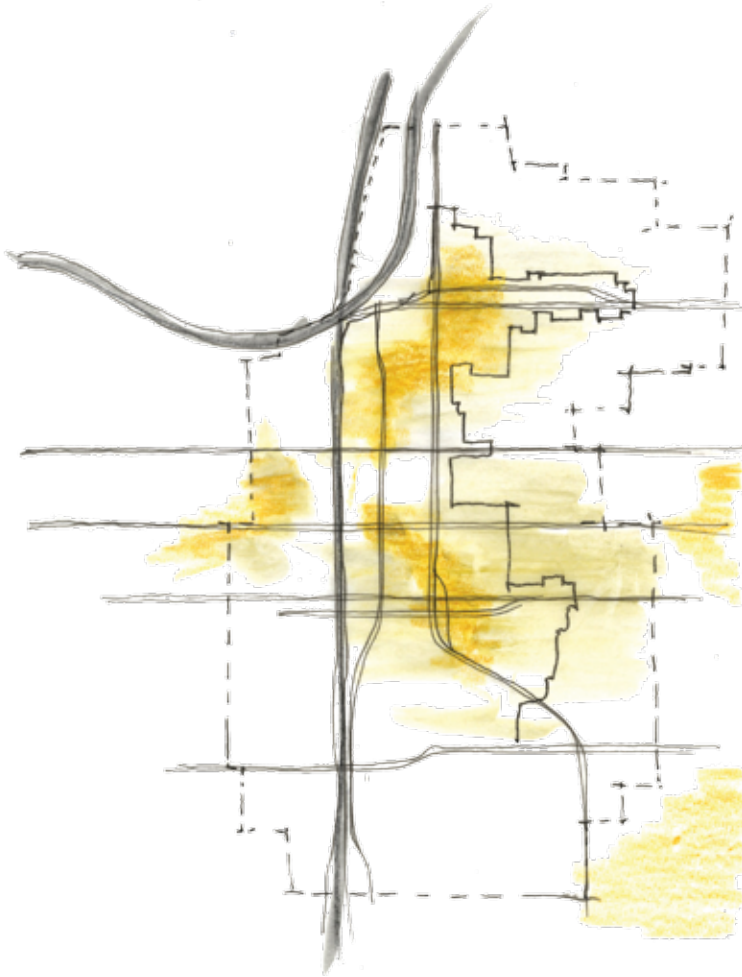
Gateway has a lack of canopy coverage, coinciding with the large percentage of impervious surfaces.



## Placemaking

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Areas that have easiest access, attract the most people and provide the ability to expand upon as gathering places.



## Water

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Gateway has some incredibly large block sizes, and while they effect mobility in the district they also provide the possibility of storm water collection





## Access and Mobility

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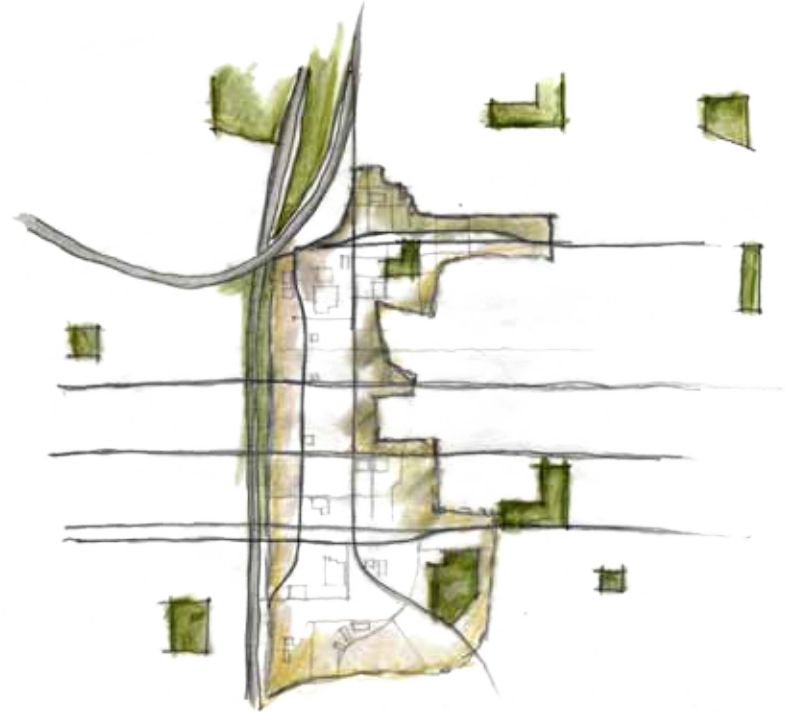
Gateway has a significant amount of sidewalks and buss stops, but is lacking in bike paths.



## Habitat and Ecosystem Function

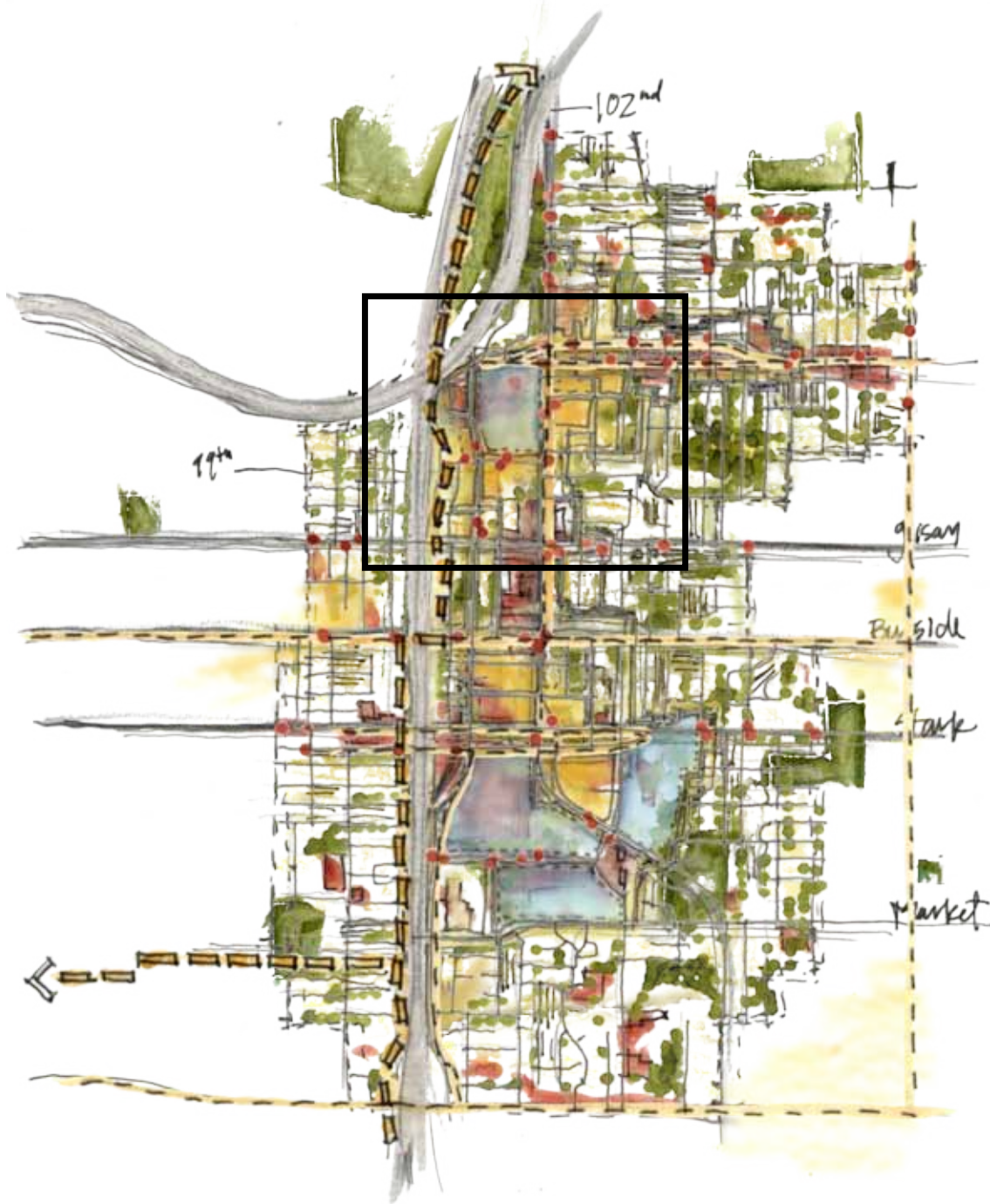
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While there are several parks surrounding the Gateway Urban Renewal Area, there are only two parks that fall within the boundary.



# Site Selection

## Reaction to Performance Areas



Stakeholder interviews and analytical map overlays identified the amenities and opportunities for the chosen project site. The site selected has access to potential district energy, water collection and bike and public transportation. There is a need for canopy coverage as well as more green space. The site allows for the potential linkage of existing green space. As well as these aspects, the site is adjacent to the freeway, giving it ideal visibility to passing automobiles. It is also adjacent to the transit center and provides an opportunity to connect the neighborhoods to the transit center.



# Site Selection

## Site Context



# Site Selection

## Site Opportunities



### Pacific Street- *Local Connections*

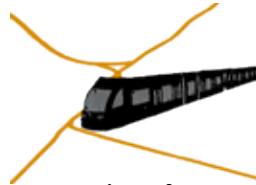
Located just 2 blocks north of the site, the transit center serves multiple max lines, the Blue, running from Hillsboro to Gresham, the red line running from Beaverton to the Airport and the green line, running from Portland State University to Clackamas Town center. Public Transportation has been incredibly successful in Portland, increasing in rider numbers 22 out of the last 23 years. An average of 132,800 riders used the Max during the month of September. Being close to the transfer site will help to activate the site as well as providing a destination in close proximity to this station. It will also assist in bringing more people into the district.



### Gateway Green- *Recreational Oasis*

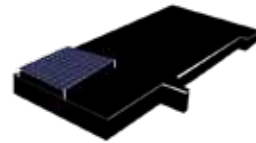
Just north of the site and transfer station, the crossing of I-205 and I-84 creates a 35 acres strip of undeveloped land. While the Multnomah County's Rocky Butte jail used to occupy the site, there has not been anything there since the 1980's. It currently functions as an island, with access only at the north and south of the site, yet it possess natural beauty and the potential for an outdoor recreation center, with bike paths, nature observation and bird watching. The site also lends itself well to the demonstration of green technologies. Currently the project is moving forward involving the community in clean ups and developing base maps for further development.





## Transit Center- Regional Connections

Running from east to west, the northern boundary of the site, Pacific Street can be transformed into a pedestrian friendly green street that connects the commercial street to the transfer station. Gateway is lacking this east to west connection, especially in the form of pedestrian and bike routes. To get to the transfer station, one must travel through the parking lot of Fred Meyer to reach the destination. Pacific Street can provide a safe and green route to the station that becomes an extension of the site.



## Fred Meyer- Utilizing the "Big Box"

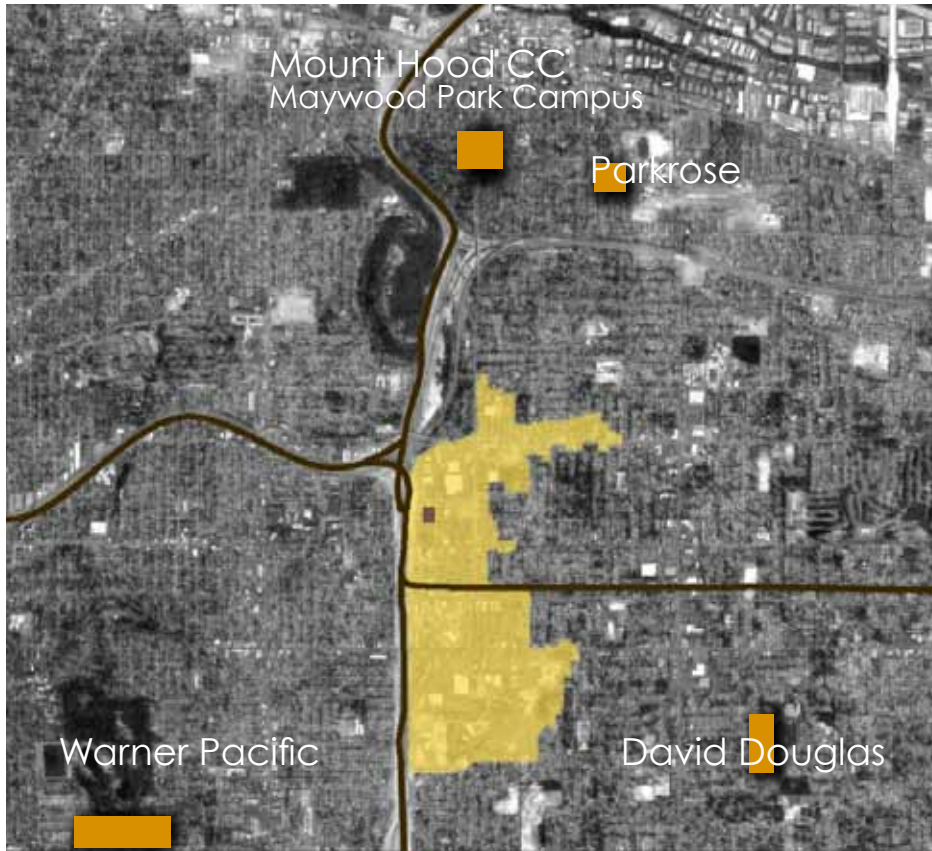
Close proximity to the grocery store is an ideal characteristic especially when considering student housing. While the "big box" concept is not necessarily compatible with sustainable principles, there are factors that can be incorporated into the development of the educational facility. Grocery stores exhaust heat that can be recovered and potentially used at the educational facility. Photovoltaics could be applied to the roofs of the "big box" stores and the high percentage of asphalt used for the parking lots creates an opportunity for rainwater collection.

# Project Program

## Gateway Education Center

### The Issue

One of Gateway's biggest obstacles effecting its future development is the negative public image. Gateway lacks a defining element, which, in return, discourages investment from private developers and financiers. Ecodistrict are private/public ventures so it is crucial to get the support from the private sector in order to move forward with the development as an EcoDistrict. The vision of Gateway as an Ecodistrict has begun to address the issue of an image, yet it is a long term goal. In order to reach the goal, strategic steps must be taken to achieve the goal.



Yellow-Gateway Urban Renewal Area

### The Client

Gateway is composed of two school districts, Parkrose, whose southern boundary encompasses northern Gateway, and David Douglas, which has one of the largest high schools in Oregon, if not the largest. Mount Hood Community College's campus is in Gresham, OR yet it remains somewhat removed from Portland and barely visible. Warner Pacific College is a small private school that has its main campus just west of Gateway and a series of satellite campuses scattered around east Portland. Portland State University's campus is in downtown Portland. The University is hoping for significant expansion in the future that requires more educational space. They are also aiming to have fifty percent of their student population in student housing.

### The Goal

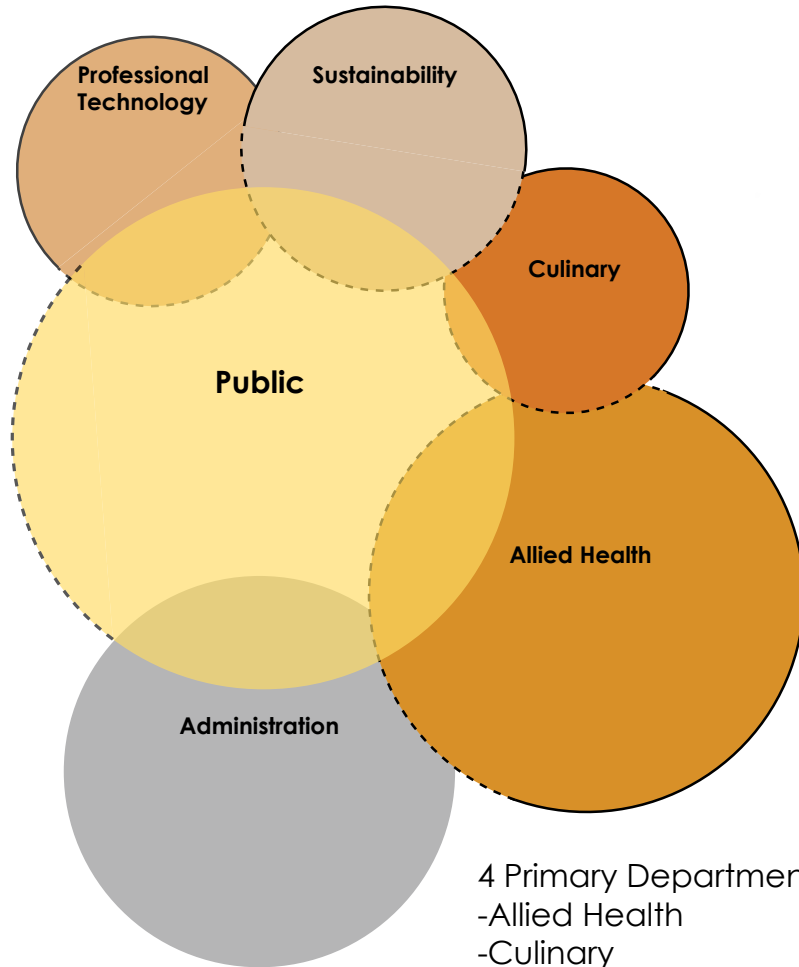
Due to Gateway's position in Portland and its proximity to transportation, it lends itself well to the development of a central campus multiple schools. With the inclusion of a variety of education levels, there is also the potential to develop a 2+2+2 program, 2 years high school, 2 years community college and 2 years university. This sort of educational program is ideal for job creation as well as providing students with a non-traditional higher education path. The facility will include a large public realm, with classes open to the community. The training provided at this center will help to develop the skills necessary to operate and maintain an Ecodistrict. The goal is the this facility will be a catalyst for the green development in Gateway, the students will have the knowledge to help Gateway to become a green regional center.

# Programming

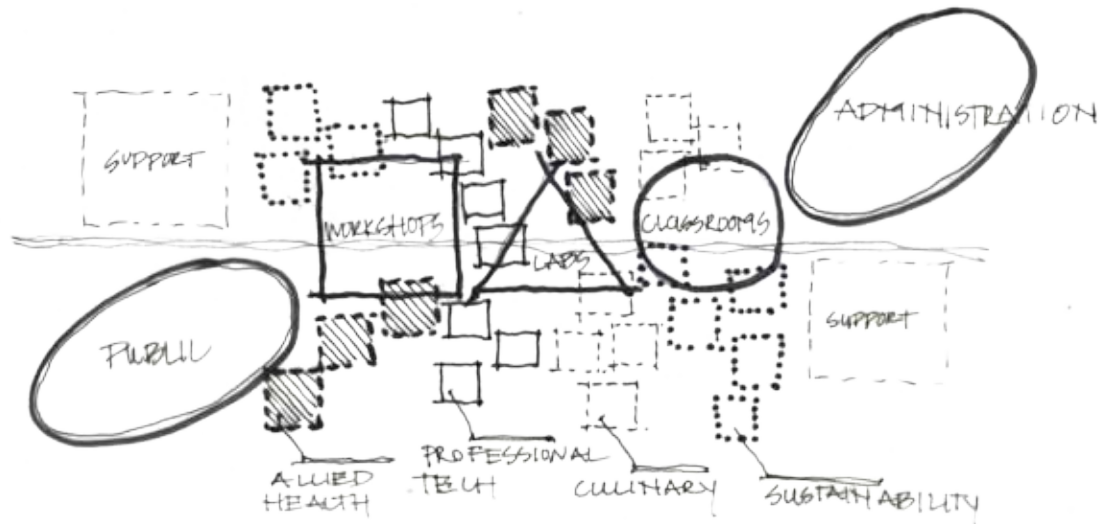
Total Square Feet 95,959.5

Usable Space- 67,340 sq ft

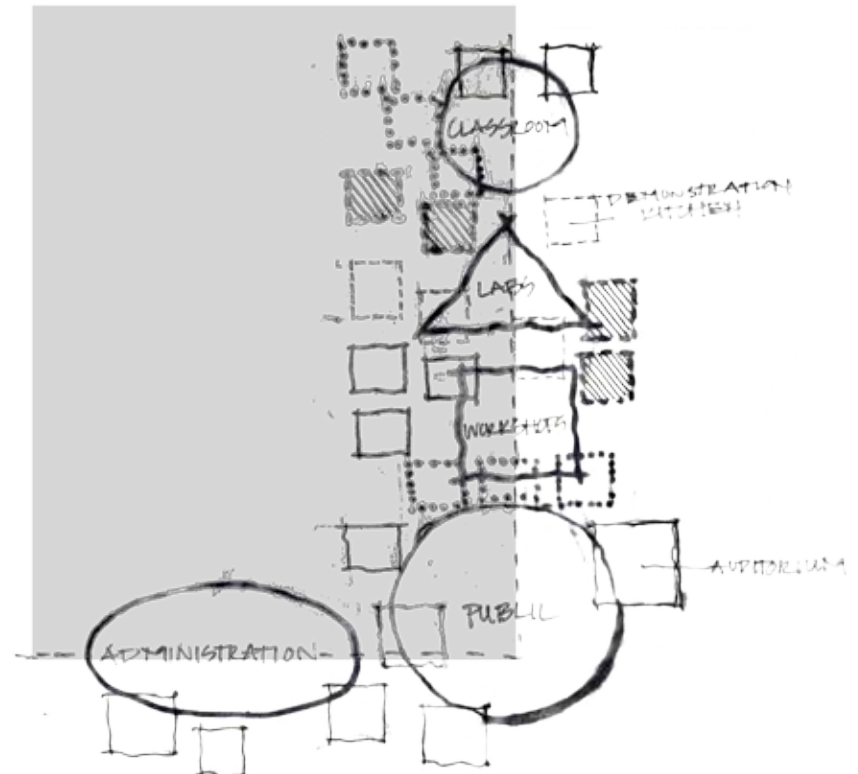
Support Space- 28, 619 sq ft



- 4 Primary Departments  
 -Allied Health  
 -Culinary  
 -Sustainability  
 -Professional Technology  
 Public  
 Administration



Adjacencies Based on Space Type



Organization Based on Day/Night Use

Administration-12,800 sq ft

Public- 21,040 sq ft

Technology- 6,000 sq ft

Lobby/Reception  
400 ft<sup>2</sup> each

Lobby/Reception

Offices-  
8,000 ft<sup>2</sup>

Auditorium  
5,040 ft<sup>2</sup>

Library  
2,000 ft<sup>2</sup>

Meeting  
Space

Meeting Rm.  
1,500 ft<sup>2</sup> 800 ft<sup>2</sup> 780 ft<sup>2</sup>

300 ft<sup>2</sup> 500 ft<sup>2</sup>

Workshops

3,000 ft<sup>2</sup> 350 ft<sup>2</sup>

Workshops  
3 @ 1,000 ft<sup>2</sup>

Labs

Computer Lab  
1,800 ft<sup>2</sup> 600 ft<sup>2</sup>

Computer Lab  
4 @ 600 ft<sup>2</sup>

Classrooms

6 @  
600 ft<sup>2</sup>

Service

W/C  
600 ft<sup>2</sup>

W/C  
600 ft<sup>2</sup>

W/C  
600 ft<sup>2</sup>

W/C  
600



Allied Health- 15,800 sq ft

Culinary- 5,000 sq ft

Sustainability- 6,700 sq ft

Kitchen  
2,400 ft<sup>2</sup>

Urban  
Garden  
2,000 ft<sup>2</sup>

Restaurant  
1,400 ft<sup>2</sup>

Workshops  
4 @ 1,000 ft<sup>2</sup>

Computer Lab  
900 ft<sup>2</sup>

Medical Lab  
5 @ 2,000 ft<sup>2</sup>

Medical Lab  
1,500 ft<sup>2</sup>

7 @  
600 ft<sup>2</sup>

2 @  
600 ft<sup>2</sup>

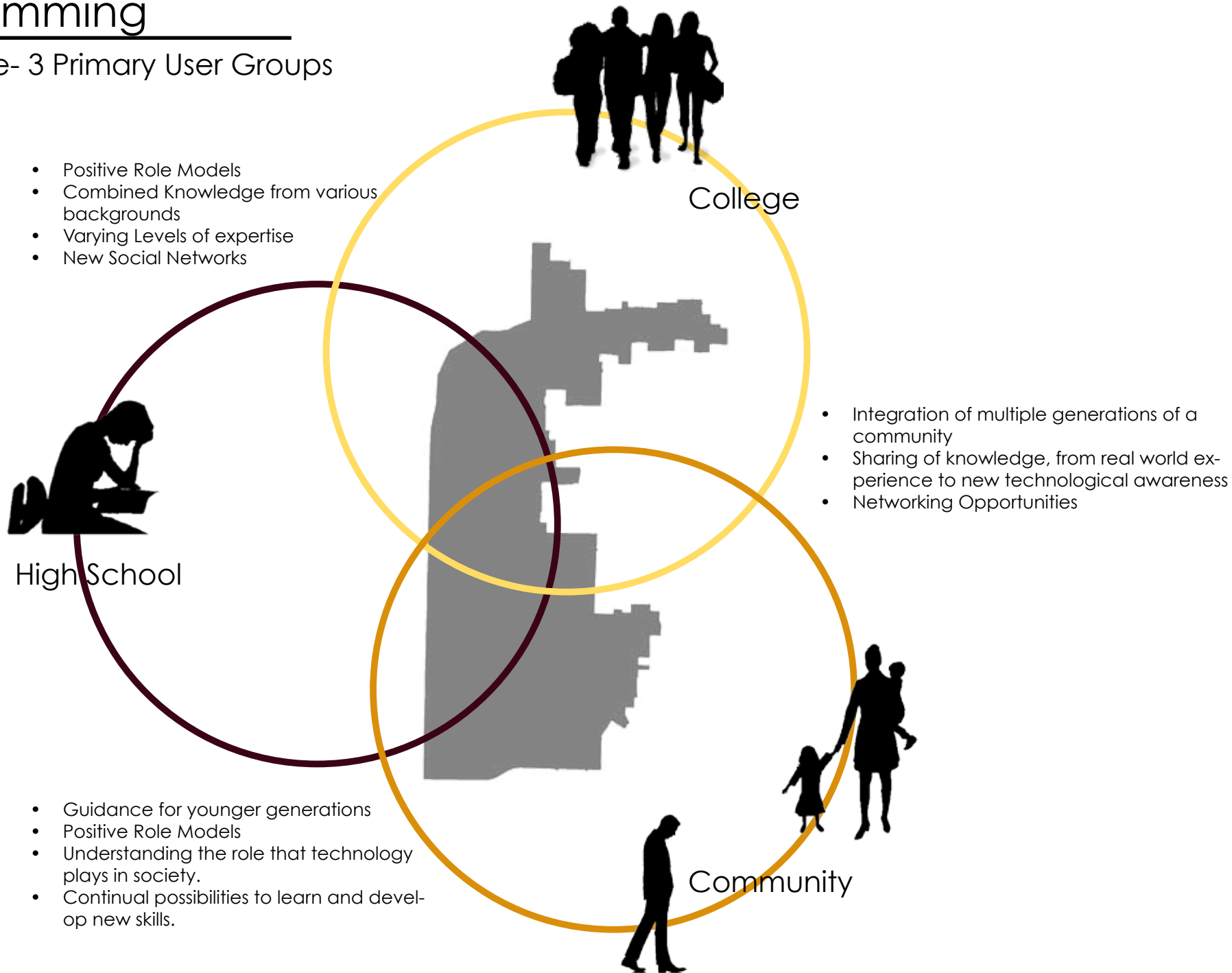
2 @  
600 ft<sup>2</sup>

W/C  
600 ft<sup>2</sup>

W/C  
600 ft<sup>2</sup>

# Programming

## User Profile- 3 Primary User Groups



## Target Users



### College Student

Derrick has just graduated high school and knows that he will be continuing on with his education. His primary concern is that he is unsure about what to study. Derrick is interested in exploring a variety of fields. This education center would provide an opportunity to have hands on experience in subjects that have direct applicability to the fields available in the Gateway, and great Portland, area.



### High School Student

Bored with school, "Alison" has no motivation to finish high school. None of her family has continued onto higher education and many have their GEDs. Alison plans on doing the same. She finds the traditional classroom setting dull and continually struggles to get her work finished. Alison has always enjoyed cooking but plans on finding a job where ever possible. A school that would provide Alison with an alternative path would help to inspire her.



### Out of Work

"Kirk" recently lost his job in the construction business. He has a wealth of knowledge in the building field, but has no desire to return back to the manual labor of construction. He is interested in the new research being done around sustainability and wishes to combine his knowledge of building with his new interests. The education center could provide the opportunity to teach what he knows, and learn about sustainability.



### International

Having recently moved to the United States, "Sasha" has two kids and is struggling getting integrated into the community. She knows a little English but wishes to learn more typing and computer skills. Adapting to the new culture is also challenging, the norms and gender roles are different than what she is familiar with. It is important for Sasha to find work in order to support her family.



# Design

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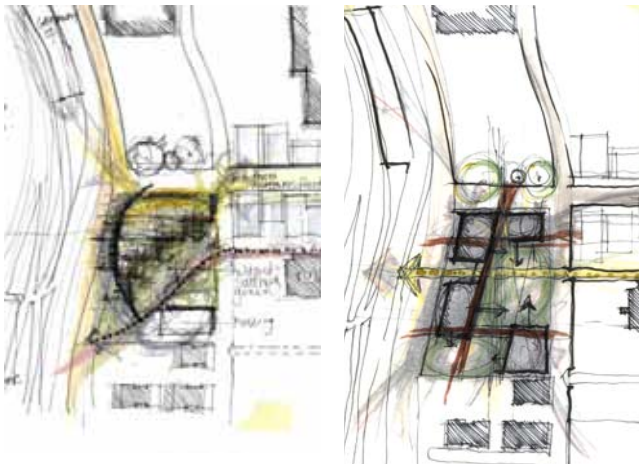
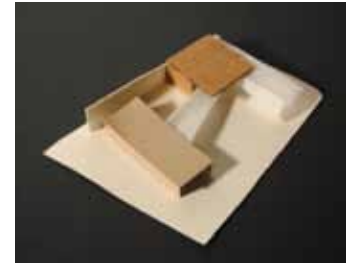
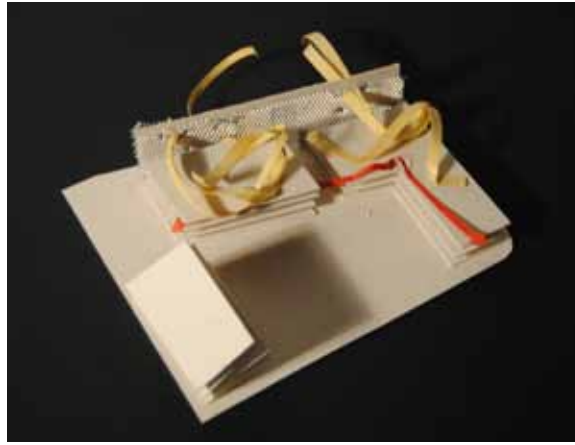
## Bridging the Gap between Gray and Green



# Process Work

## The Concept

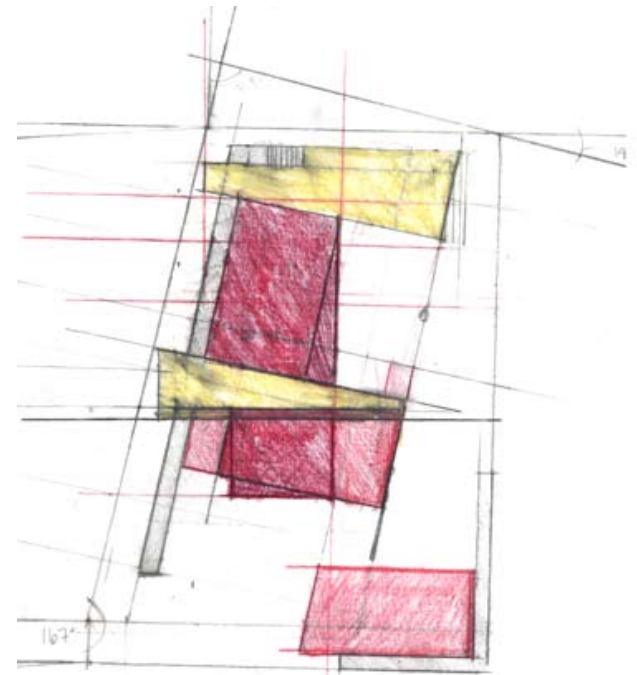
From the beginning of the project the biggest obstacle was addressing the highway. I was immediately drawn to the idea of creating a wall that would become a sign for Gateway but also serve as a boundary for the campus. I was also sure from the beginning that I wanted to create a campus that would consist of multiple buildings to form a central "quad" area. With these two concepts in mind, I began experimenting with models to reach the best solution for the design.



Site Analysis and first schemes

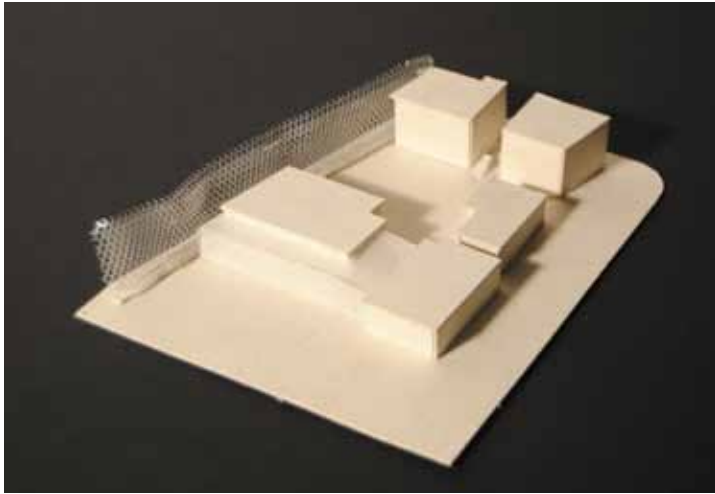


"Life Behind the Wall"- Initial Concept



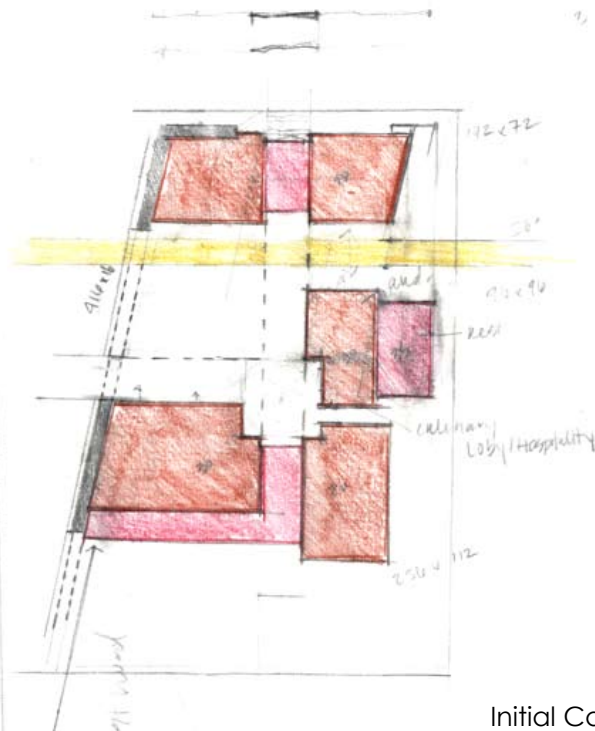
Experimenting with Atrium

# Process Work

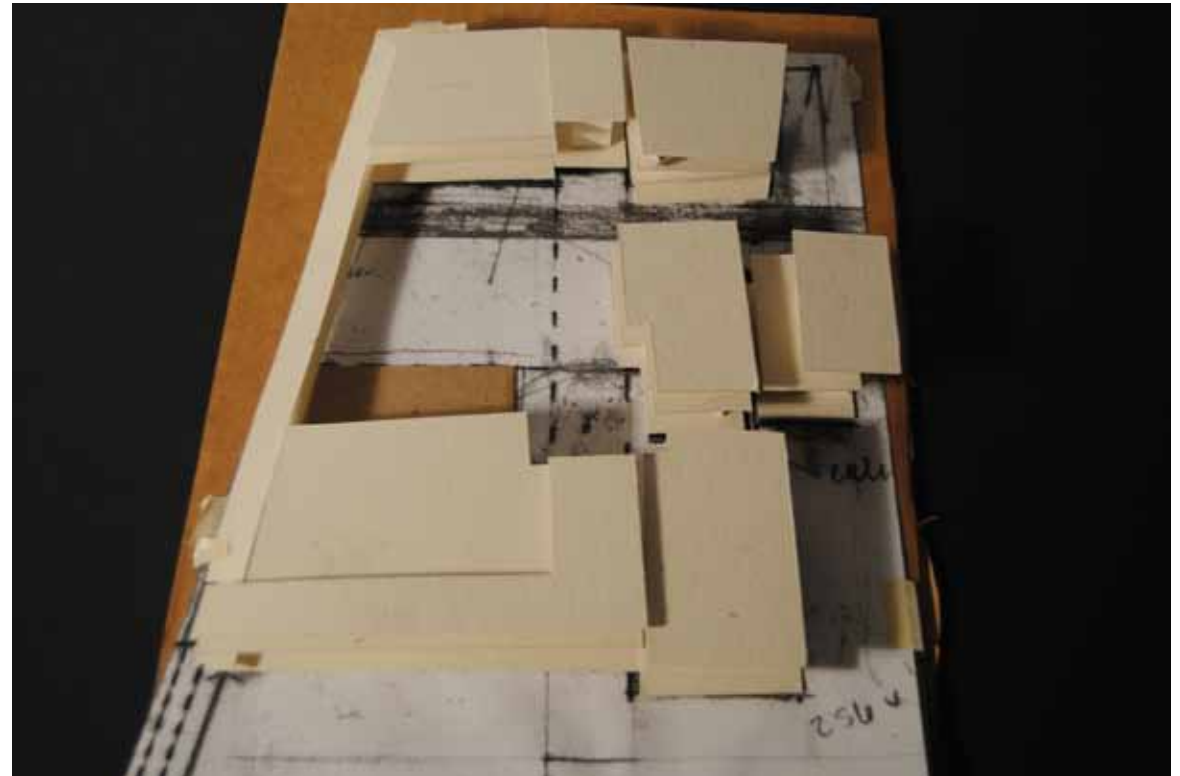


## The Campus

Once I settled on the idea of designing a central quad, I explored how the building might be divided to take advantage of the wall, but also to create the most positive campus environment. I first began with the idea of using the wall to form the primary boundary of the courtyard. The issue with this scheme was that the wall became a separate entity to the buildings. It also created a private campus and I wanted it to feel open to the public.



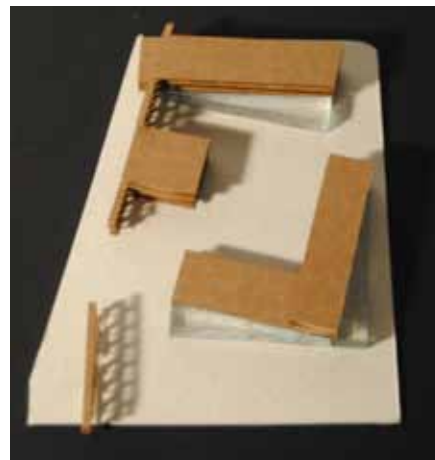
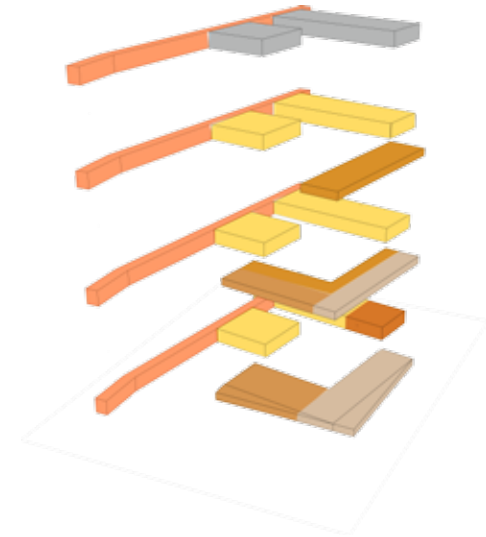
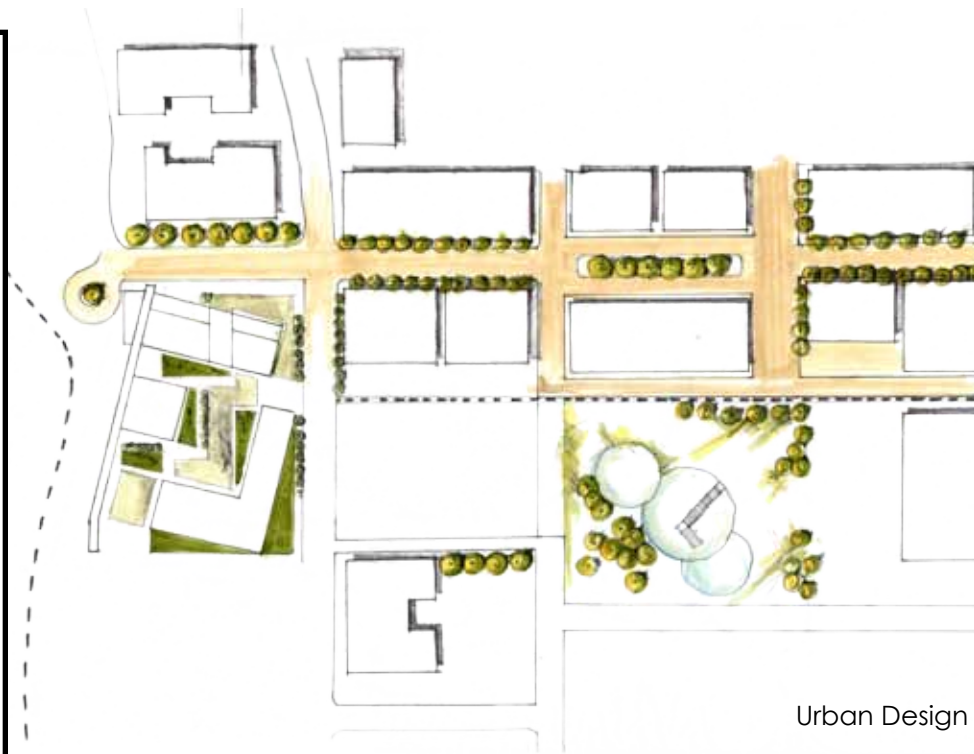
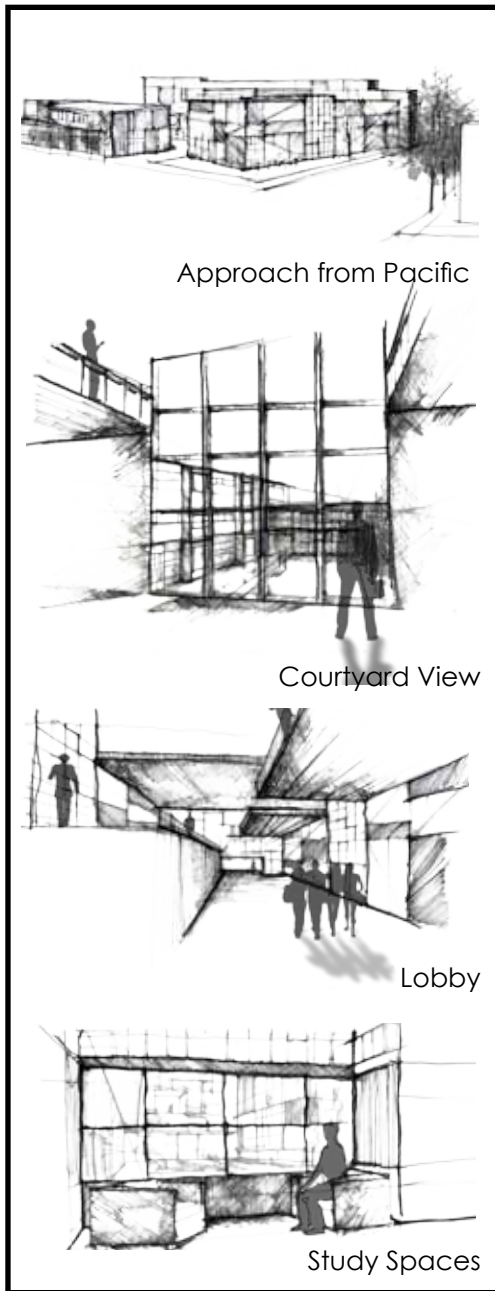
Initial Campus



Initial Campus with levels



# Midterm Review 2.13.12



## Overall Design

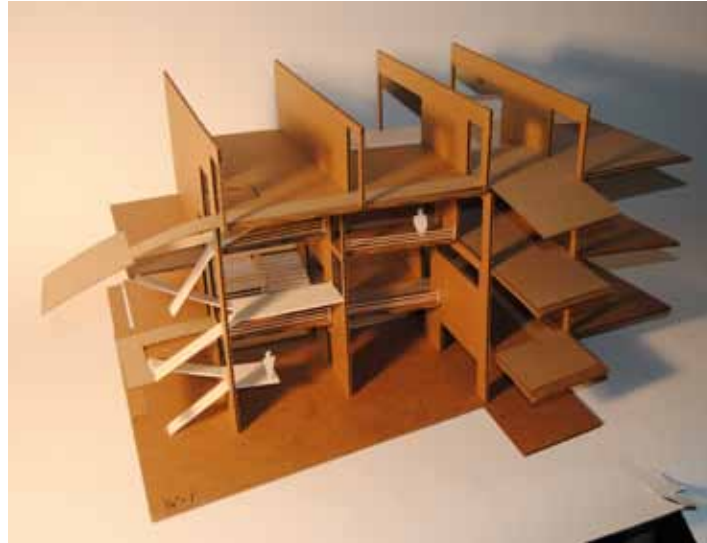
By the first midterm, the campus began to take its form, two building were adjacent to the wall and the third stood alone. I had began to develop and urban plan for the area adjacent to the campus and began to think about the interior spaces of the facility. At this point in time there were still many questions about the campus but I received good feedback about the direction I was heading.

# First Tectonics Review

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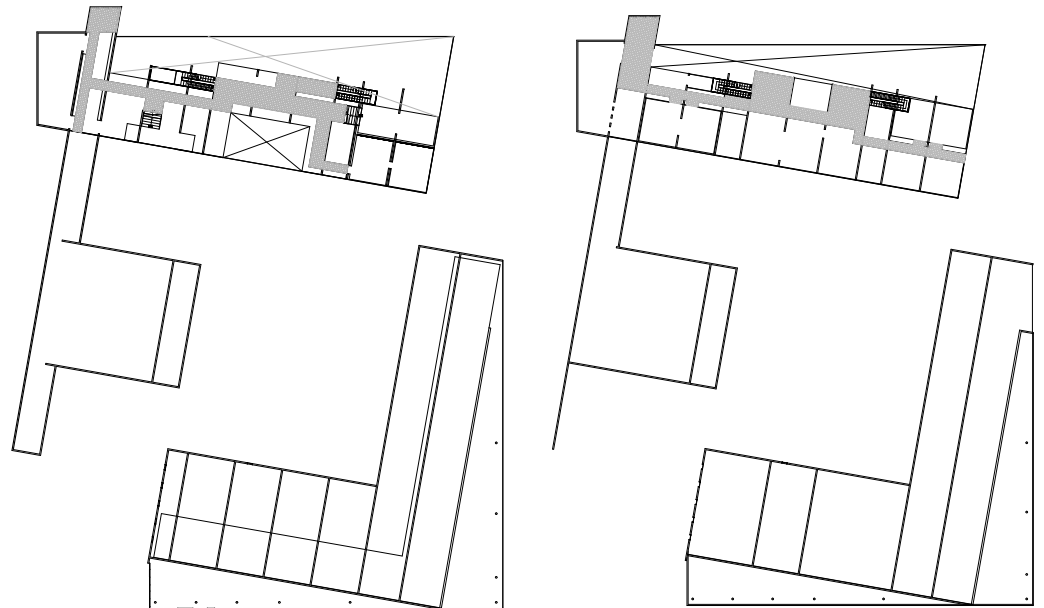
Circulation



## Tectonics Attempt

My first attempt at a tectonics model was not very successful but it was important to try because I learned what not to do. The grip of walls that I designed were too close together and created tight uncomfortable spaces.

Bay Model



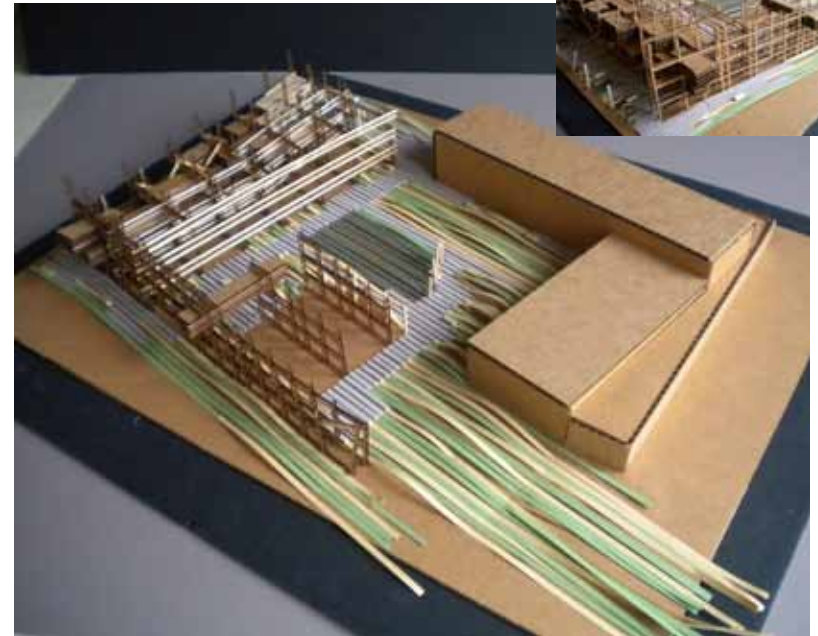
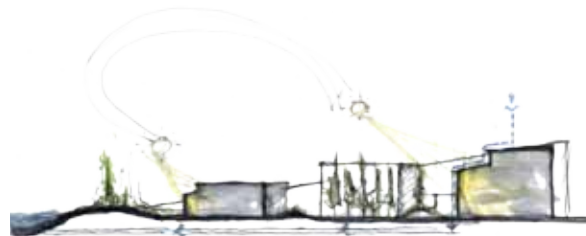
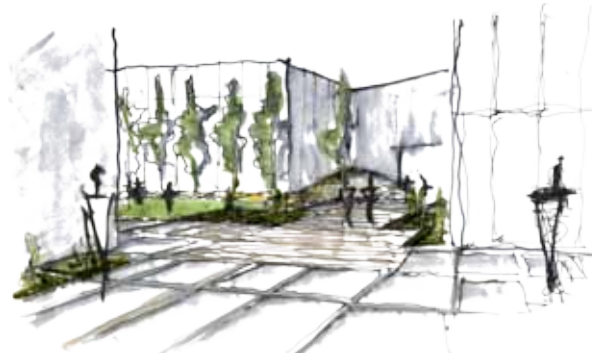
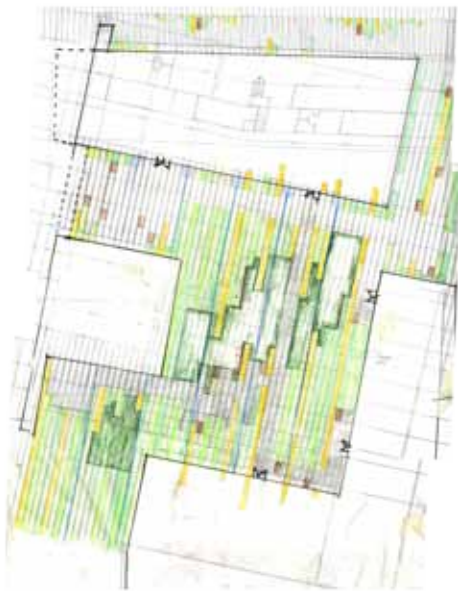
# Landscape Development

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## Bringing Agriculture back into Gateway

I wanted to incorporate some of Gateway's history into the campus and thought that the landscape would be an ideal way to achieve that. My goal was to combine 3 elements, agriculture, campus green space and manicured courtyard space into my site. I ended up having to tone back the 3 ideas and transform them to fit into the concept of "rows"





# First Final Review 3.15.12

## Refining Initial Ideas

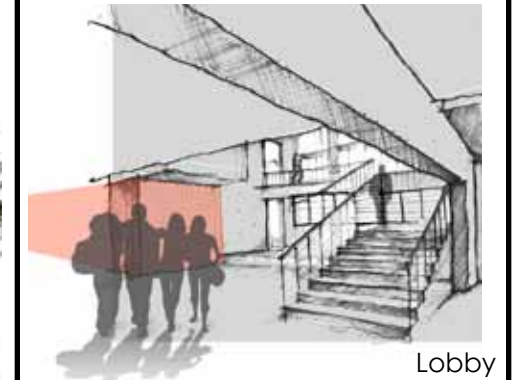
My basic concepts of the wall and the courtyard were well received during the first final review. The issues that I had with the design were based around my facades and how the wall was functioning. The interior concepts were not seen on the exterior and could have a visually compelling on the exterior as well as on the interior.



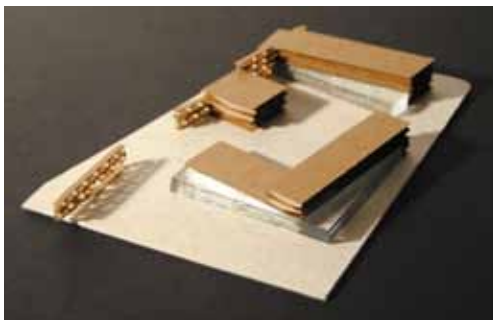
Urban Design



Atrium



Lobby



Updated Massing



Student Common Area



Approach From Pacific

# First Final Review



Axes



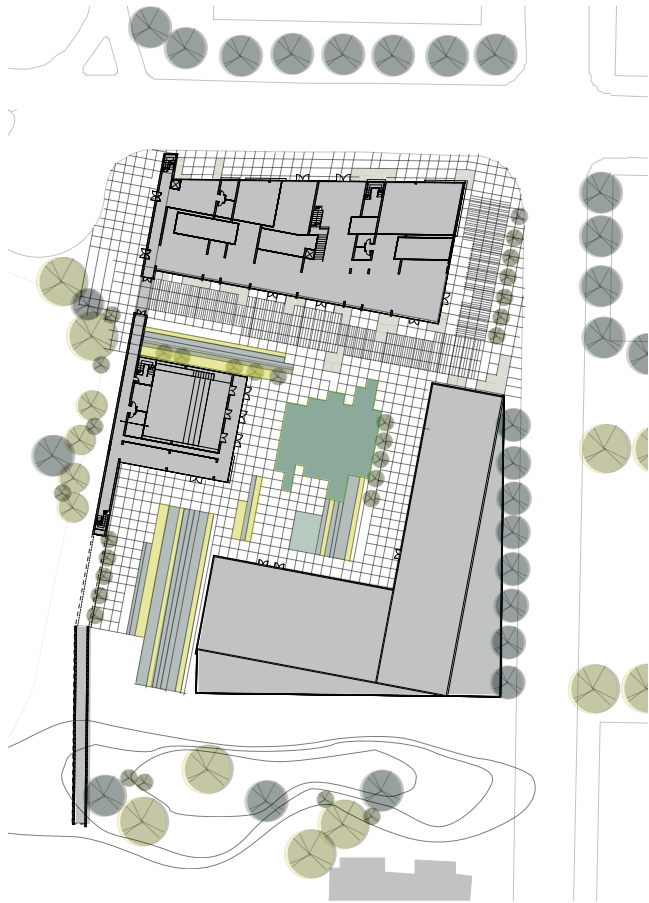
Incorporating Green



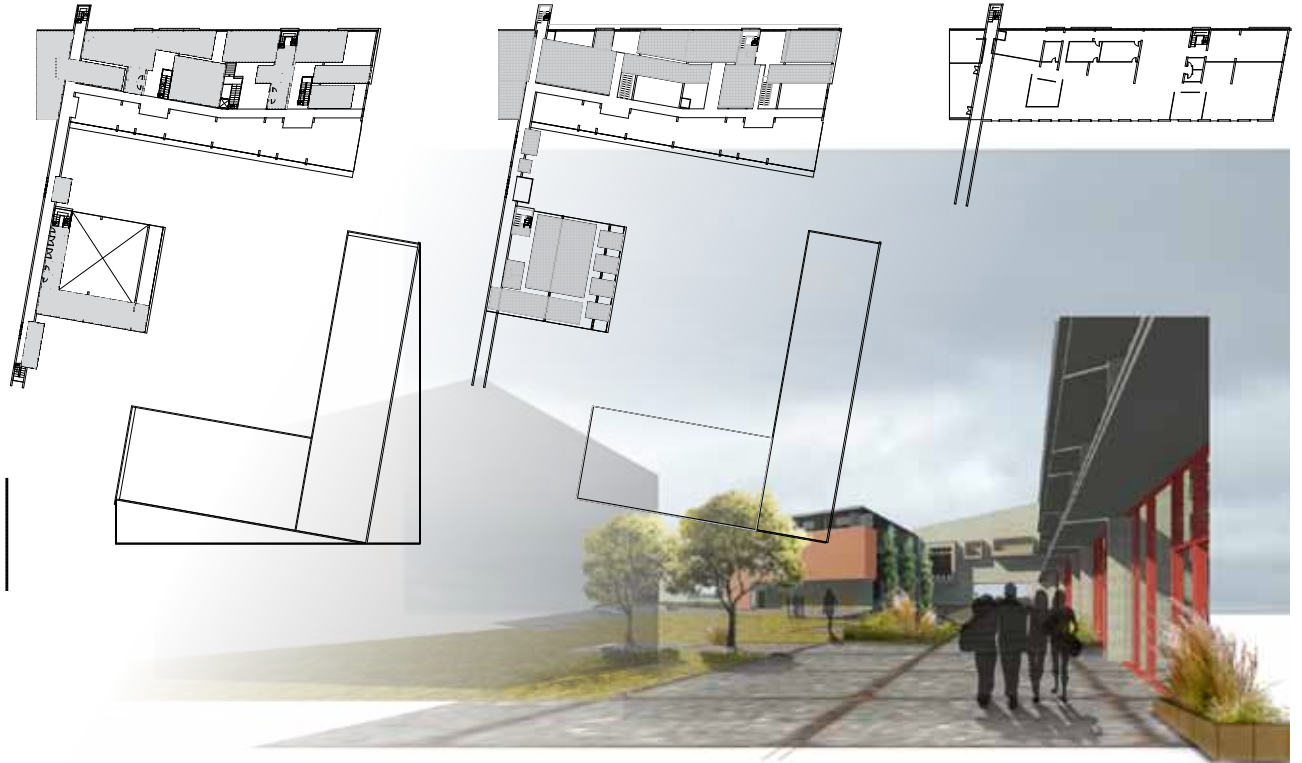
Access and Flow



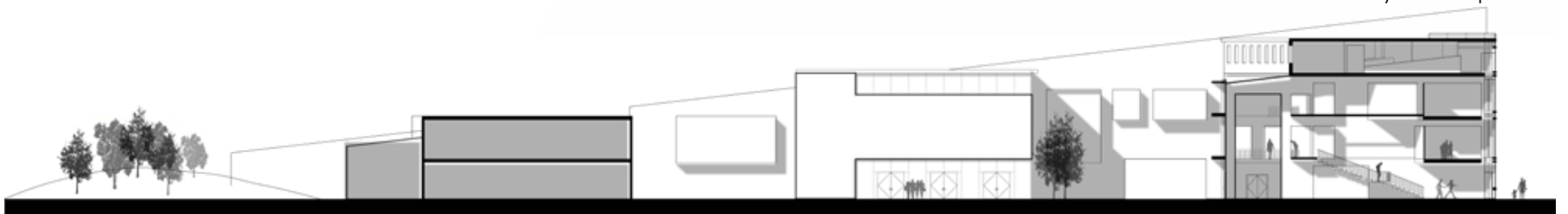
Day lighting



Site Plan



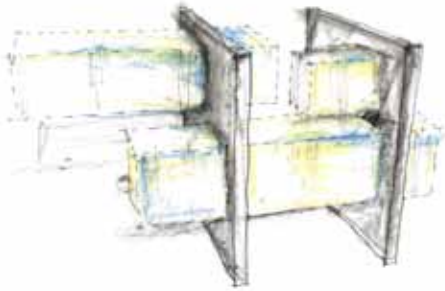
Courtyard Perspective



Site Section

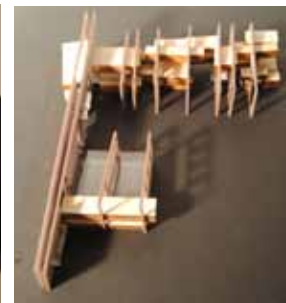
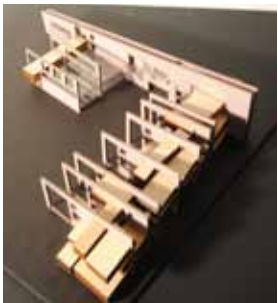
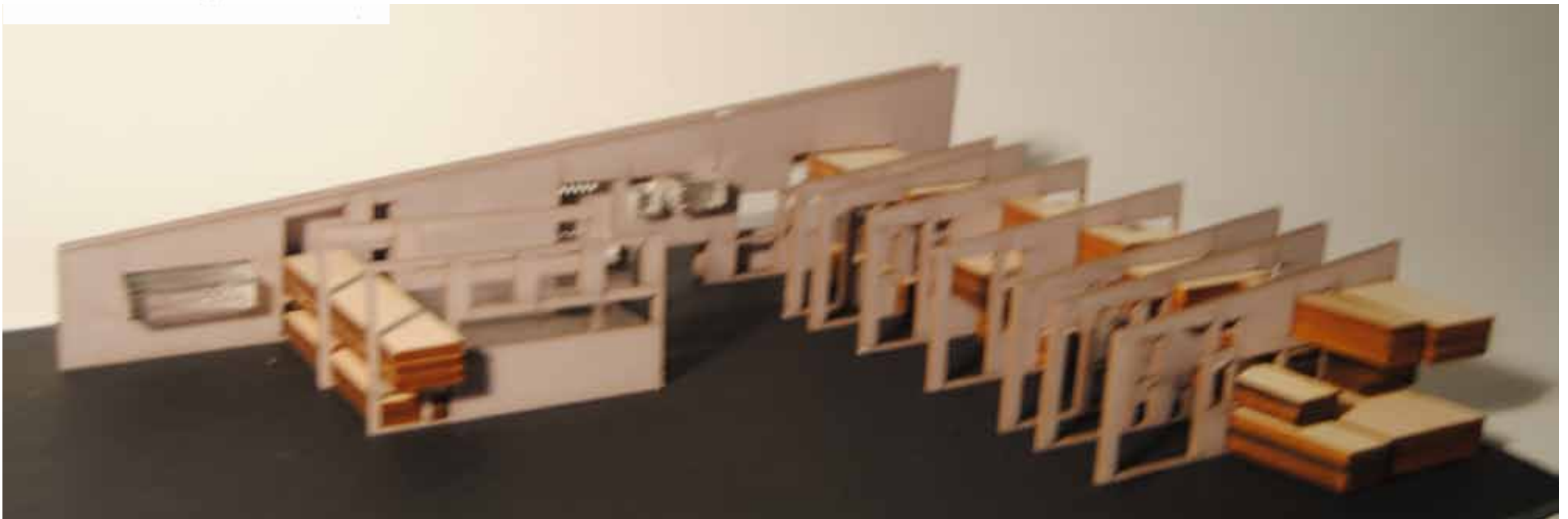
# First Final Review Models

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## Modeling Interior Concept

My initial concept of the interior was created to carry the linear nature of the wall throughout the rest of the campus. To counter this motion, the interior rooms were designed to intersect the walls and become separate entities from the structure. I wanted to create the feel of the classrooms floating within the structure. I thought that the model captured this concept very well. The issue with this concept is that there quickly became excess structure.

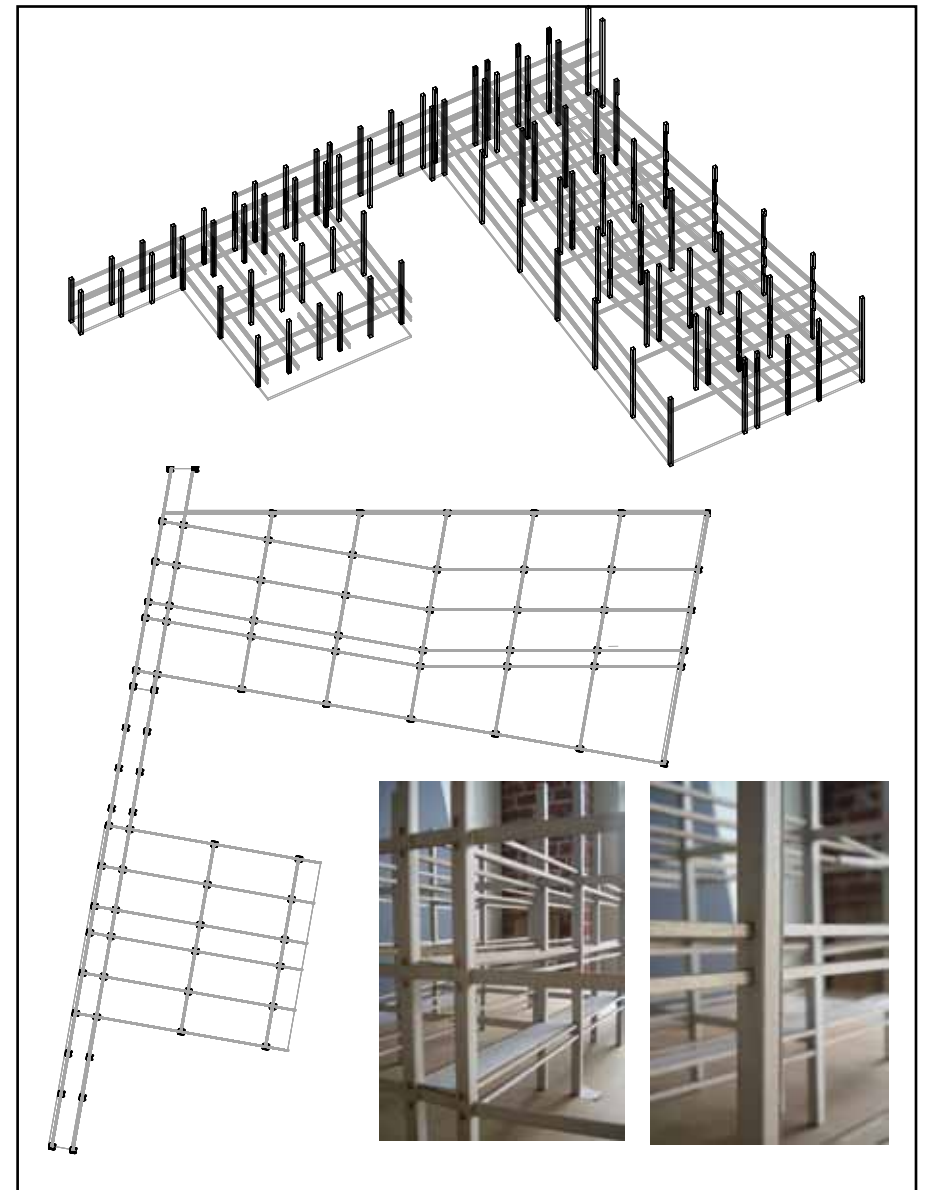
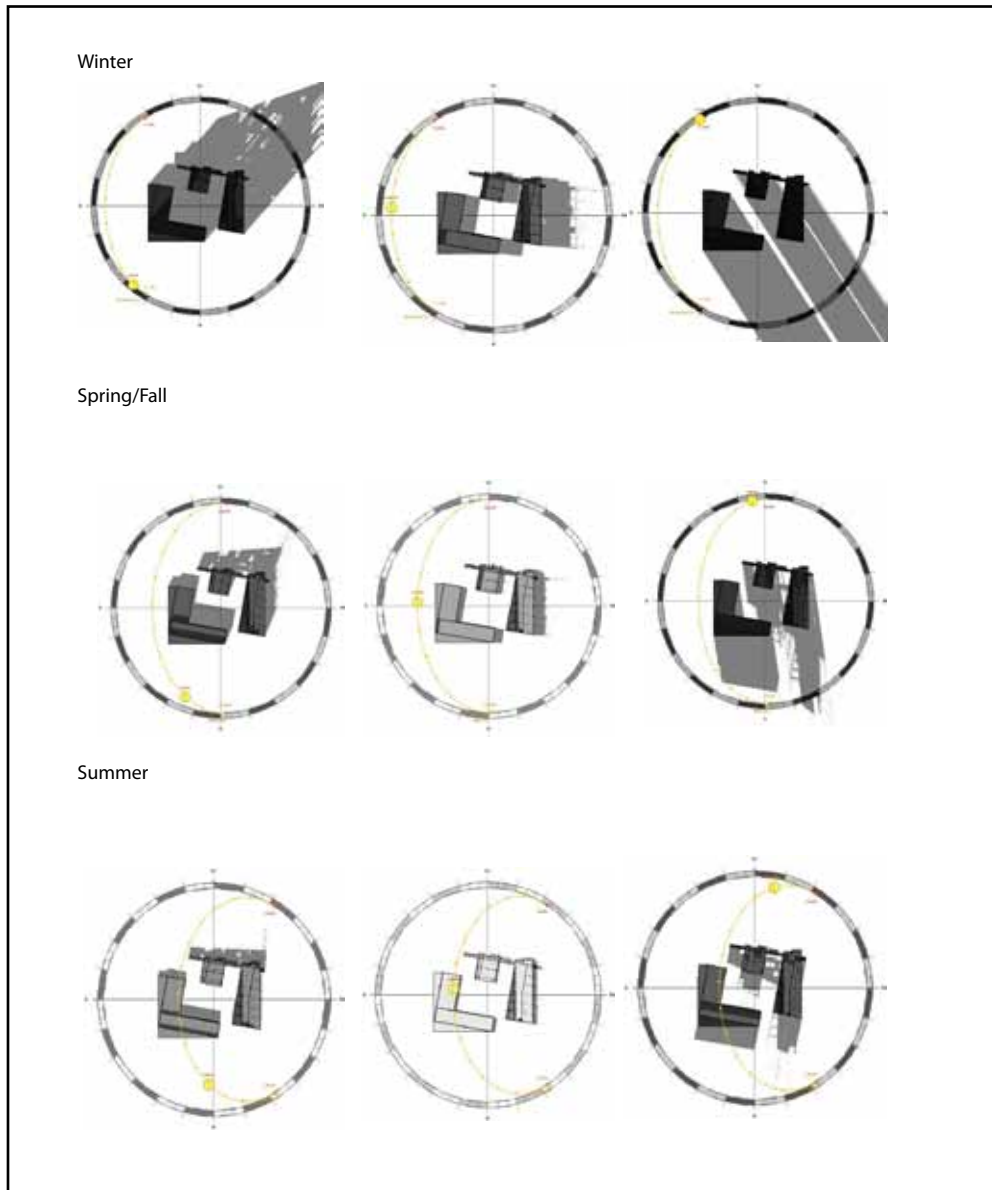




# Shading and Structure

## Testing the Design

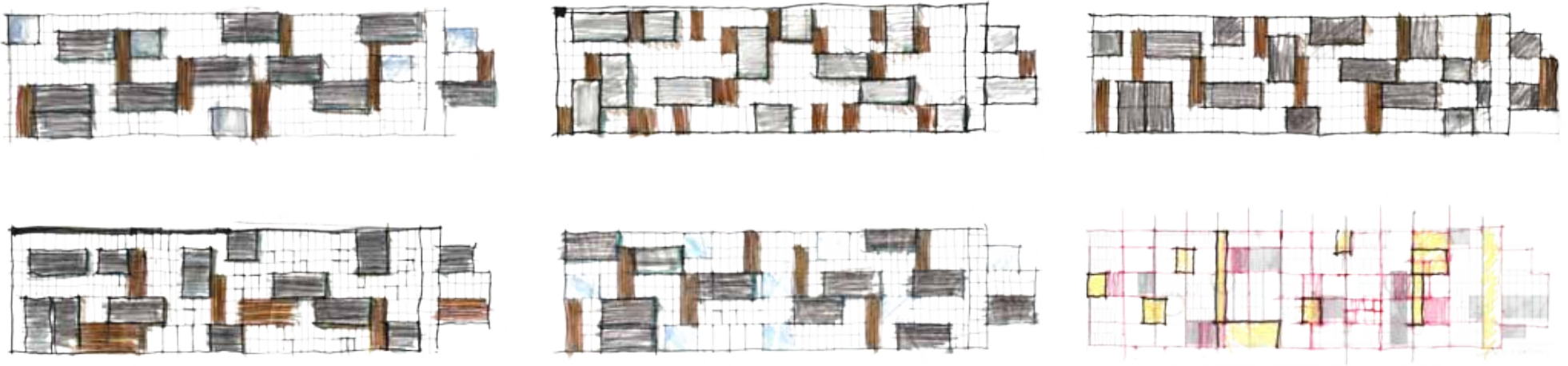
I used basic day lighting tools to confirm that sun would reach the courtyard for the majority of the day/year. The structure is straight forward, a simple column and beam system. Lateral stability is provided by shear cores around the rest rooms and exit stairs. If anything, there is excess structure, but this is my design intent. I wanted the structure to be very visible in the building.



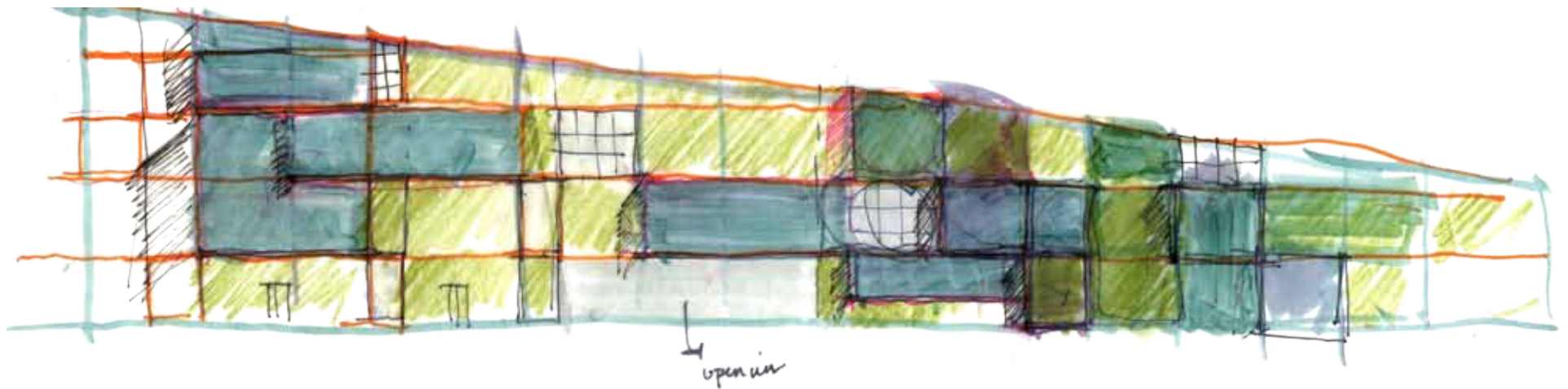
# Facade Studies

## Bringing the skin to life

From the beginning of the project I wanted to create a patchwork like facade that combined varying elements and materials. I experimented with varying geometries and proportions and eventually came up with a design that attempted to carry the ideas of the interior to the exterior. The "green wall" facade played with the ideas of solid and void within a larger grided field.



North Elevation Explorations



Green Wall Study

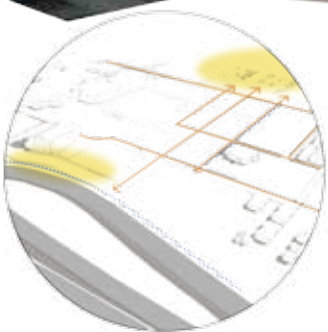
# Final Design

## Connecting all the Pieces Together

My final design brought together all my initial concepts, plus other ideas that were brought together throughout the process. The design transformed my wall into a vertical green wall that became an icon for the community and the campus.

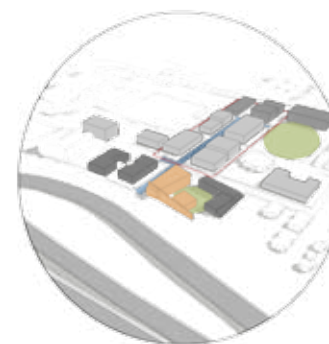


Approach From Transit Center



### Improving Connectivity

Connecting Neighborhood to Transit Center  
Dividing Block Size  
Anchoring East to West Connections  
Addressing the Highway



### Developing the EcoDistrict

- 1- Anchoring the District
- 2- Incorporating civic, recreational and wild green spaces  
Breaking down the "Big Box" Fabric
- 3- Increasing Density
- 4- Filling in the Gaps  
Implementing District Energy Strategies  
District Rain Water Management and Collection



# Designing Public Space



Courtyard View



# Space Development



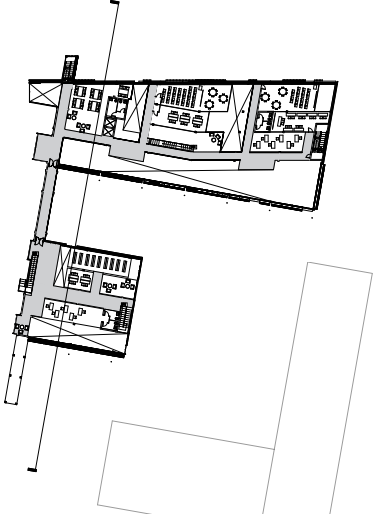
Interior Gathering Space



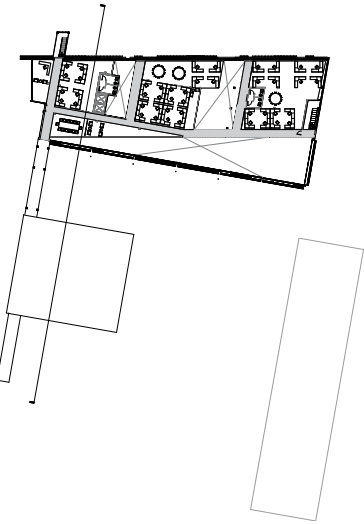
Site Plan



2nd Floor Plan

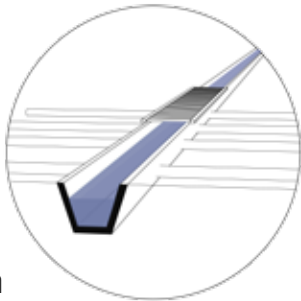


3rd Floor Plan



4th Floor Plan

# Sustainable Strategies



## Rainwater Irrigation

Collect rain water from roof and distributes water to vegetation

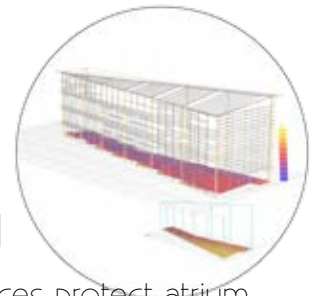
Water stored in drums to be used when less rain water is present.



## Day Lighting

Light wells carry light into the interior classrooms of the building.

Circulation oriented around light wells to provide clarity from floor to floor

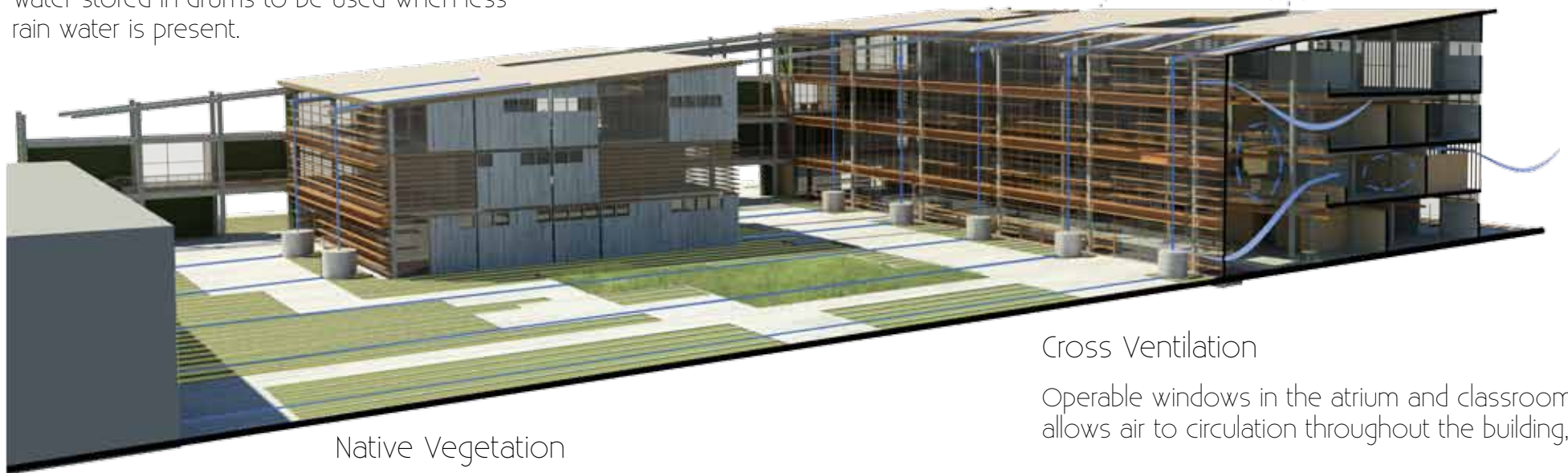


## Passive Heat Control

Horizontal shading devices protect atrium from overheating.

As the atrium get wider, more light enters, therefore more shading devices must be present.

Without devices, lower diagram, atrium will overheat.



## Native Vegetation

Landscape inspired by Gateway's agricultural history

Layia platyglossa, or Tidy tips, is ideal for pollinators and insects.

Pine Bluegrass is a native grass and can survive in both dry and wet site. It is ideal for bird habitat.

## Cross Ventilation

Operable windows in the atrium and classrooms allows air to circulation throughout the building,

Exhausted through openings in the upper stories of the atrium



# Section Development

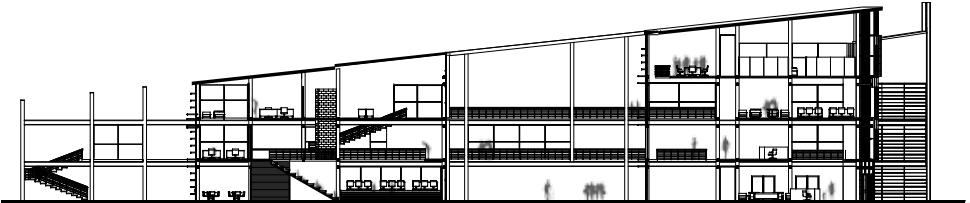


Wall Section

Detailed Section of Atrium Enclosure



Atrium Perspective



Site Section

# Works Cited

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## Annotated Bibliography

Bureau of Planning; City of Portland. Chapter 33.526 Gateway Plan District. 1, January 2009.

This report provides all the necessary regulations for building in the Gateway district. It recognizes that Gateway is Portland's regional center and thus it is designed to withstand a large amount of the cities' growth. Because of this predicted growth, the regulations need to be similar to those of an urban scale. The regulations have to allow for greater connectivity between the streets. The report sets out standards for Gateway in which the regulations should support. These include, compatibility between private and public, expansion to create positive places for pedestrians and those using public transportation, ensure large sites are near open space, and allow for mixed-use development around the light rail. It then gives very detailed regulations for buildings and zoning.

Burayidi, Michael A. *Urban Planning in a Multicultural Society*. Westport, CT: Praeger, 2000. Print.

Editor Michael A. Buyayidi uses the work of scholars as well as historical facts to argue that incorporating varieties of cultures into city planning is necessary for the success at the urban scale. He looks at questions regarding the inclusion of multiple cultures when the ideals may disagree and how you can be sensitive to a variety of cultures. He explores whether it is possible to achieve a unified urban development while incorporating the needs of many cultures. Michael Buayidi explores the issues of communicating across cultures, gathering information, the role of politics and many other issues that create barriers.

DistrictLab. *Gateway Ecodistrict Pilot Study*. Rep. June 2010

This article was prepared by DistrictLab for the Portland Sustainability Institute. This article is especially helpful because it addresses the needs of the community and includes outcomes of public engagement. It outlines the communities' desires and identifies the top three as increasing connectivity, creating an identity and increasing the security and appearance. With the input from the community, DistrictLab selected target areas that could be improved. With-in these areas specific improvements were highlighted and next steps set out for the areas.

Puttman Infrastructure, Brightworks and SERA Architects. *Gateway Ecodistrict Assessment*. Rep. 14 October 2011.

Neill, William J. V. *Urban Planning and Cultural Identity*. London: Routledge, 2004. Print.

William Neill examines the importance of maintaining identity in order to achieve social cohesion and not create an "us verses them" mentality. The book looks at how you can create cultural identity in a spatial realm by using 3 precedents, German national identity in Berlin, racial identity in Detroit and ethnic identity in Belfast. William Neill examines these places based on personal experience as well as looking at other scholars work.



Portland Development Commission. *Gateway Regional Center*.  
<http://www.pdc.us/ura/gateway.asp>

Portland Development Commission is an important player in the development of the Gateway regional center. They have compiled large amounts of data about gateway and composed documents, maps and surveys of the neighborhood. They keep and updated calendar of events in the region and Gateway in the news.

Portland Development Commission. *Opportunity Gateway; Concept Plan and Redevelopment Strategy*. February 2000.

This article looks closely at Gateway as a district and how it can be redeveloped to further develop it as a vibrant regional center to Portland. The article addresses why Gateway has been chosen for further development. The primary reason is for its accessibility to multiple forms of public transportation, its proximity to the airport and to the intersection of I-205 and I-84. It looks at existing Gateway and the changes that need to be made to increase and maintain its activity. The article sets up a concept plan for development, setting up design philosophies and strategies. It identifies the public infrastructure that needs to be improved including, parks, transportation and civic buildings.

–Portland Sustainability Institute. Pilot Report: *Gateway EcoDistrict Development*. Rep. 2010-2011

This article was composed by Portland Sustainability institute and it looks at the steps that need to be taken to develop Gateway as an Ecodistrict. It focuses on district organization, district assessment, project feasibility, project development and district monitoring. Although it does not delve into the areas in depth, the article gives an adequate overview allowing for a clear understanding each component. It gives a rough time line for each category as well.

Smith, M. Cecil., and Thomas Pourchot. *Adult Learning and Development: Perspectives from Educational Psychology*. Mahwah, NJ: L. Erlbaum Associates, 1998. Print.

This book is a great resource because the educational center I will be designing will be targeted at young adult, high school, and above. I am curious how the psychology behind the education of adults differs from that of children and if the architecture can support those changes in learning style. The book delves into adult learning and the psychology behind it.

United States Department of Agriculture. Plants Database. 24 October 2011.  
<http://plants.usda.gov/java/>

This site is helpful for finding native plants of the Northwest and specifically Portland. The site allows you to do advanced searches for specific counties, species etc. It will be especially helpful when looking further into the concept of Biomimicry. By learning what plants are native in the area and how they have adapted to the climate and changing environment it will be possible to carry the principles over to the building scale.

# Image Citation

“Asian Mother and Her Children [IK-2205-00134] Stock Photos | Royalty Free | Royalty Free Photos VisualPhotos.com.” Stock Photos | Royalty Free | Royalty Free Photos VisualPhotos.com. Web. 09 Dec. 2011.

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