



THE GROWING CITY

an exploration in
high density living





AN EXPLORATION IN HIGH DENSITY LIVING

A Design Thesis Submitted to the
Department of Architecture and Landscape Architecture
of North Dakota State University

By

Drew Kierzek

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Primary Thesis Advisor



Thesis Committee Chair

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The goal of this thesis is to explore the effects on a city's density in correlation with the needs of that city. In certain areas, there is a growing need of housing. This absence results in longer commutes and less economic opportunity for the city itself. New housing can result from new developments or the reuse of wasted or unused structures. With proper affordable housing for new residents a city can see happier residents, less congestion in the traffic system, and a boost in economy. Affordable units will be assured through simplistic design and material choices.

How does a regions density
contribute to the needs
of the city and residents?

problem statement

project typology

residential complex

claim

a city's housing development is based on the density of people in a given area, the success of those developments is how that density is accomodated

actors

the population of a city

actions

residential living space

object

lack of available affordable units

statement of intent

premises

actor

either dense or rapidly growing cities need means of housing to accommodate the occupants

action

creating new built living space structures to create living space

object acted upon

city outlook more positive with ample room for present and new residents

statement of intent

conclusion

based on a cities housing needs, new designs need to take action to accommodate for the growing number of people to live and work comfortably. New housing will not only give residents opportunities to flourish within the city, but also for the city through economic growth.

justification

with ample affordable living space, a city can see better successes in resident well-being, economic growth, and city stabilization.

| the proposal

This thesis is an exploration of how affordable housing can be adapted while still retaining a quality result. Affordable housing by definition is housing that middle class or medium income individuals/families can inhabit while still being financially comfortable or stable. Based on a city's density and expansion, new housing is a necessity. One issue with new housing developments I have noticed though is that affordable housing is almost never in ideal locations. Non ideal locations lead to a lost connection between city and resident.

the proposal
narrative

Building within the city, in locations under utilized, will bring people into the heart of the city where they can become a part of the city's community. This will not only strengthen the city economically, but also uplift the residents living there. The question is though, how do you get middle class people (which make up most of the population) into the city where they can thrive. These individuals or families can not afford the astronomical prices people pay to live within a city.

the proposal
narrative

My answer would be affordable housing, designed and built in a way that quality is not lost. This can be done through unique designs, materiality exploration, and making every space utilized to its highest performance. Architecture is able to accommodate new ways of living, giving people a more enjoyable life with the comfort of feeling truly at home.

the proposal
narrative

user

The residents living and working in the metropolitan region of St. Cloud. Ideal candidates would be small families, couples, or single individuals. The age of residents would have a wide range due to the fact that different generations would utilize the city life in different ways.

owner

This building will be privately owned and controlled.

Residential Units

Room units will vary based on how many units a potential buyer needs or wants. The base size for each unit is 10'x10'x40' with 63 space holders for single units within the structure. These units can be arranged to be combined either side by side or up and down based on what is needed. Hallway cutouts or stairs will make these combinations possible, so the outcome for how many units are in the final outcome of the building depend on the needs of the residents.

Retail/Commercial

Ground level will consist of four areas for shops and a bigger area allocated for a restaurant/bar. The reason for this is because in a downtown area, most people would not want to live on ground level and in order for the building to be more profitable it can rent out valuable on street shopping to vendors looking for a location in already successful retail area.

Resident Amenities

Each resident will also have access to a workout facility and a lounge area. The ease of having these types of areas within a building would have be an attractive to most buyers.

Rooftop Terrace

In order to utilize the entire building, a rooftop community space will be created. This space will be exclusive to residents. This space will give the residents a private place to enjoy the outdoors without having to leave the building.

Parking Garage

Downtown parking is obviously always an issue. To compensate for this, a parking structure will be constructed in conjunction with the building to allow residents the ease of returning and leaving the building.



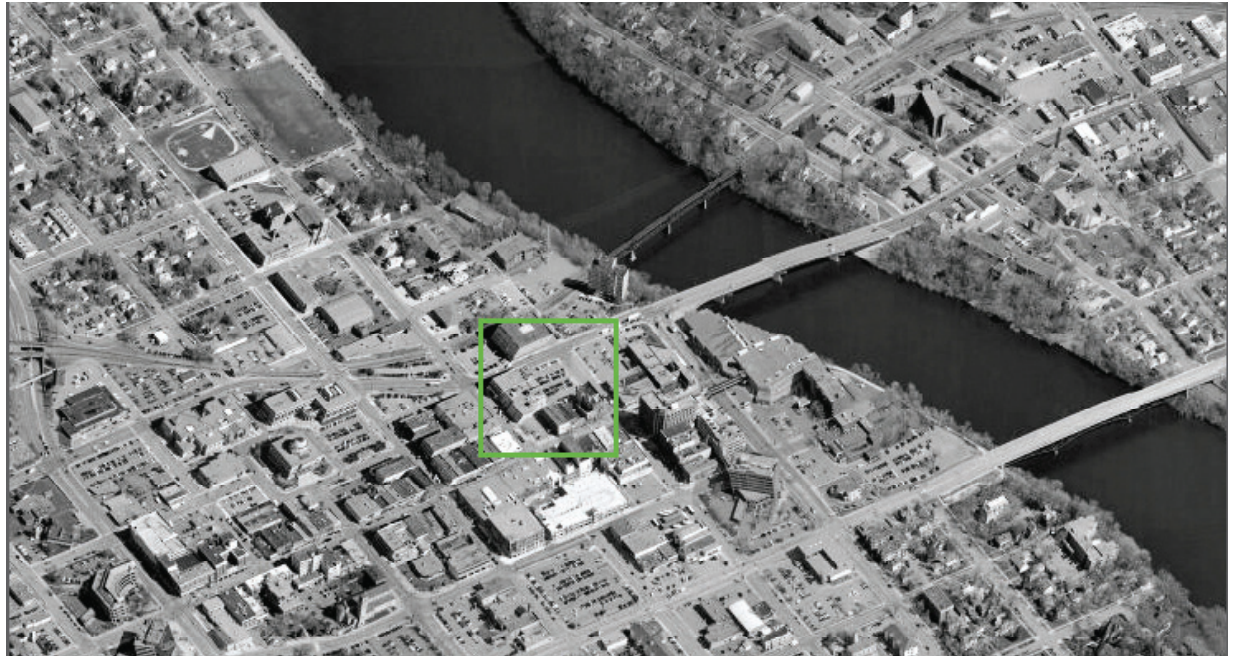
figure 1.1

st. cloud, minnesota

the proposal
site

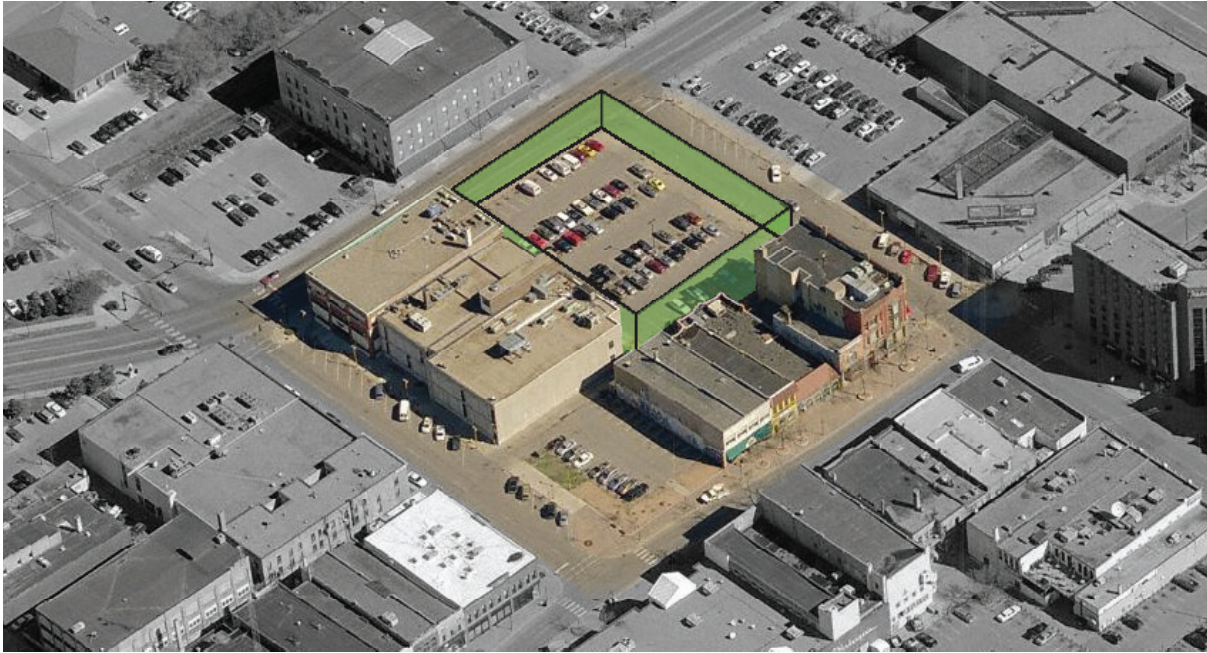
The site is located in the downtown area of St. Cloud Minnesota on the corner of 1st St. N and 5th Ave N. Currently, the site is being used as a parking lot, but with multiple parking lots near by I feel the extinction of this parking lot will hold little complications.

figure 1.2



the proposal
site

figure 1.3



This site holds particular value because of its downtown location. It also is within walking distance or a short commute to the financial and shopping districts in the city. Another aspect of this site is its proximity to the Mississippi River which is just a short walking distance away. There is also a lack of housing units in this area at an affordable price.

the proposal
site

The main focus of this thesis is to explore how to create a residential housing complex that is affordable without losing quality. To ensure this, exploration in unique design and material choices will take place.

Emphasis on this thesis will pertain to how a architect can design with a budget in mind and at the same time create a comfortable living space.

the proposal
project emphasis

Research will be conducted through case studies, literature, accredited articles, personal interviews.

The main focus of the research will be to differentiate between different designs and material choices that are the most cost effective yet still a quality product. Present and past housing developments will be explored in the area to determine different solutions. In-depth site analysis and inventory will take place to see what exactly will benefit the region the most and what is hindering it.

A mixed method quantitative qualitative approach will be utilized during the research process. Research will be displayed graphically, digitally, and through interviews. Statistics will be gathered and processed into figures and tables that are clear and concise.

This documentation process will be an ongoing ordeal. Internet sources will be saved and recorded and also electronically organized in folders based on the found information. Hardcopy information will be either kept on hand or photocopied to ensure it being easily accessible. Interviewed and observed information will be transferred into digital word documents and saved.

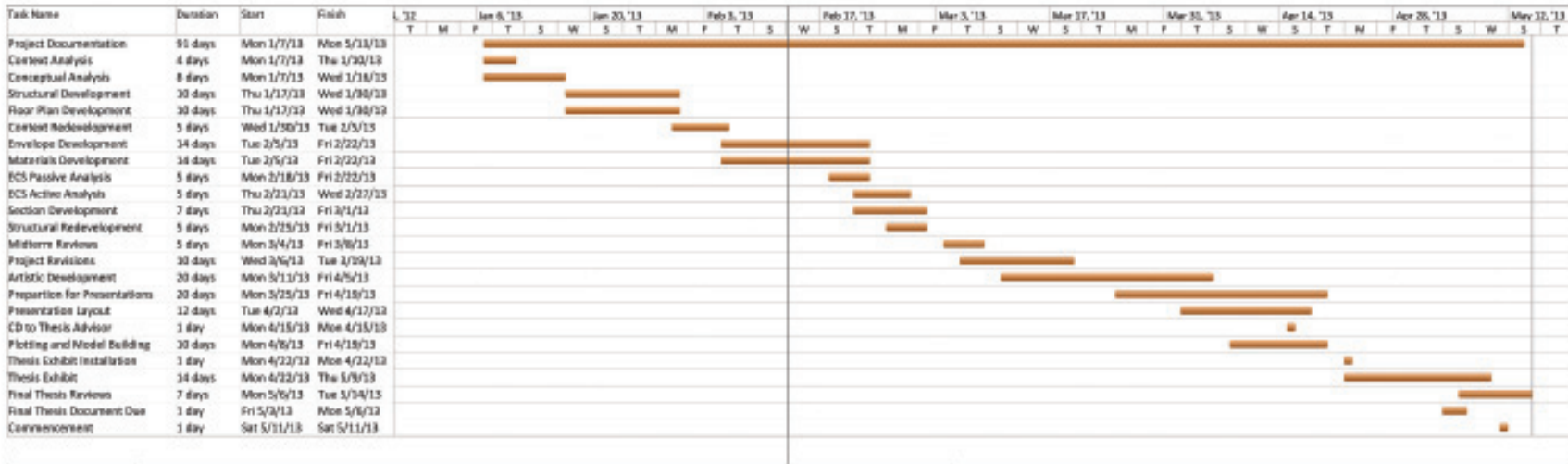


figure 1.4

the proposal schedule/work plan

Fall 2009

Tea House
Boat House

Stephen Wischer

Fall 2010

Outdoor
Recreation Center
Fire Station

Paul Gleye

Fall 2011

High Rise
KKE Competition

Frank Kratky

Fall 2012

Museum Addition

Regin Schwaen

Spring 2009

Montessori
School
Hema House

Phil Stahl

Spring 2010

Homeless
Shelter
Concrete Cafe

Regin Schwaen

Spring 2011

Urban Design
Redevelopment
Lille, France

Paul Gleye

the proposal
studio experience

| program document

Affordable housing is a term usually used in conjunction with low income families. To be considered an affordable unit, renters cost cannot exceed thirty percent of a household's income (Jones). These complexes are commonly home to very stereotypical members of society. This is why I want to extinguish the stereotype and create a structure that can house any member of society. To successfully complete this task, an exploration in materiality and construction techniques must be considered to give a building the quality of modern living but without the price associated with this. Simplistic and minimal qualities of design can be accompanied by lower costs in materials, which therefore will result in lower cost to future renters. Several issues need to be considered when designing in this manner such as, material types, construction techniques, spatial organization, income and demographics of residents.

The concept of high density living is not always accompanied with low-income families. High density living can be classified by just a high number of units in a given structure. More units per acre means lower land costs of each unit. In the long run, this means more profit for the owners of the building because more money can be accrued with a small area of construction. There are obviously some disadvantages of high density living, but these disadvantages can be overseen by specific designs.

One issue would be the close proximity to neighbors. The issue of noise at any hour of the day can be disheartening to some people. With insulation techniques, this problem can be fixed quite easily. Another issue would be uniqueness. This problem is a main aspect of this thesis, the solution is prefabricated units. Individuals could potentially choose from multiple unit types and styles that fits there specific design tastes and needs. The idea of prefabrication would mean that each unit could potentially be built to the needs of each potential buyer off site and then placed together upon completion.

Predominately, affordable housing pertains to a certain demographic of people. Commonly, residents that inhabit these types of complexes are people we all see on a daily basis. "These people often work in the communities where they live, providing goods and services for the town and region. These are relatively low paid, essential service jobs such as teachers, nurses, entry-level firemen and police officers, restaurant workers, farmworkers and mechanics." (Jones). These people are the workforce that keeps a city functioning. The challenge of this idea of affordable housing is why can't it be available on a wide scale. Why does luxury living have to be associated with such a high price tag?

According to Klaus-Dieter Weib, co-author of High Density Housing, " Living in the city offers irreplaceable advantages as soon as the variety of urban life is played with reach right in front of one's own doorstep. City cannot be replaced by suburban periphery or country retreats. (...) It also offers the advantage of spending up to ten years of one's life more freely and productively than being tied with both hands to the steering wheel of a car." This advantage allows people to utilize opportunities the city has to offer with ease such as, public transportation, local restaurants, and super-markets. Normal usage of these types of services will bring more economic value to a city. Also with less vehicle congestion, people who do commute will find travel more reasonable. As stated by Schittich, "Good housing is more than merely the individual building. Traffic links, urban planning accessibility to public facilities, building access as well as the layout and design of green spaces around and between buildings impact the quality of living space and the social interaction of the inhabitants in fundamental ways."

Material choices are a considerable part of the budget when constructing a building. Green materials are becoming more popular, but with the higher initial costs, many owners will shy away from spending more initially. What is usually not considered is with higher costs right away can come high benefits in the end. One major material consideration is the use of insulation. Insulation can be highly beneficial if used in the correct manner, some examples would be thicker insulated walls, and insulated attic spaces. It is still hard though to shy away from the attractive prices of the common timber frame construction in today's building environment. There are constantly new materials being introduced to the public though and one of these is using biobased materials. These materials are created from renewable resources and can hold the same qualities as regular construction material today. Although not as popular, if used in conjunction with common construction practices, these materials will show long term benefits to not only the structure but also to the environment (Calkins).

This idea of well built, low-cost buildings is not something that has never been considered before. "What might happen if well-designed homes for low- and moderate-income families began to flourish in established, even affluent neighborhoods? Could well-designed houses that use materials and methods carefully planned to be environmentally friendly be better not only for the planet but for the families that inhabit them?", stated by David J. Brown, author of The Home House Project. Purchasing homes is a big decision in an individual or family's life. People have to worry about being able to pay a mortgage, utilities, and the general upkeep of a property. This is why apartment or condominium units can be a viable option for many people on the market for a new home. They are drastically cheaper, and with the right design, can still be a respectable and comfortable place to live.

Designing with a sense of size is one aspect that can effect the success of projects of this type. Designing smaller uses not only less overall material, but also can open opportunities of creating more units in a smaller footprint. Comfortable living does not have to mean wide open spaces, a clean simple design that is a lesser square footage can have similar effects to a spacious or luxurious residency design. Designing for a family is a different concern though.

An apartment may feel cramped for a larger number of people living in one unit. Design could compensate for this, taking multiple units and turning them into one unit. This is not a social normality though, so for the most part the idea of large family's living in one apartment unit will not catch on.

Floor plan design, according to Christian Schittich, "must take the changing social conditions into account and respond to the shift in household configurations, as well as to changes within a family." Spaces should be laid out in a manner that each space is not specified for a certain type of family, but instead spaces that can have multiple uses to tend to the needs of a variety of different resident types. Elimination of unnecessary wall breaks can give a living space a open feeling not usually associated with apartments. Higher ceilings can also give the perception of a larger space. Small design changes can make a significant and noticeable changes in a dwelling.

Another construction type that has been considered for this project is the usage of prefabricated construction. There have been many examples of successful prefabricated complexes. The reason prefabrication can be an attractive solution is the fact that most work can be completed off site. This can save a lot in costs associated with labor. Also, most prefabricated designs are commonly very sleek and clean, thus giving a residential unit a feeling of modern architecture at a more affordable price. Prefabrication and modular construction are processes that have been used for many years in the construction field. Often though, it was given a persona that it was poor quality, which it was in early times. With today's technology however, it is growing again in popularity and is a main factor in the productivity of the construction field today. (McGraw-Hill Construction)

Modular and prefabricated construction can have many benefits. The first is a construction schedule. For individuals using this prefabrication, it was found that a project may be completed up to a month earlier than if normal construction would have taken place. Secondly, cost decrease to the budget is a very common attribute when using prefabrication. Less time building, means less time paying workers to construct a given project.

Also, a project that is built in a more timely manner can begin functioning sooner resulting in revenue to the owner or owners of the project. Another advantage is site safety. Workers doing regular construction are often put into unsafe conditions, but because the job needs to get done, most of the time safety is put on a secondary level. When using prefabrication, workers are not exposed to the elements, which is a common cause of personal injury in the construction field. (McGraw-Hill Construction)

Obviously, the American dream is to have ownership of their own house in a comfortable neighborhood. But more commonly today, this is becoming a string of suburban out spurts. Is this really what the dream is today? Ownership may be important but where did individuality get lost in this dream? It has been found that American's spend 10 years of their lives behind the wheel of car (Schittich). Does this sacrifice outweigh the benefits of urban living?

In summary, high density living is a common form of living all around the world. This type of living can meet the needs of all demographics if designed correctly. People who want to live in an urban environment, or have to due to employment, should have options of living. Urban living is usually associated with high priced condos or run down complexes. Why can't living in the city be more reasonable? Why can't designs tend to these needs? The answer is a new way of designing. Stepping away from social normalities and trying a new approach to living within the city.

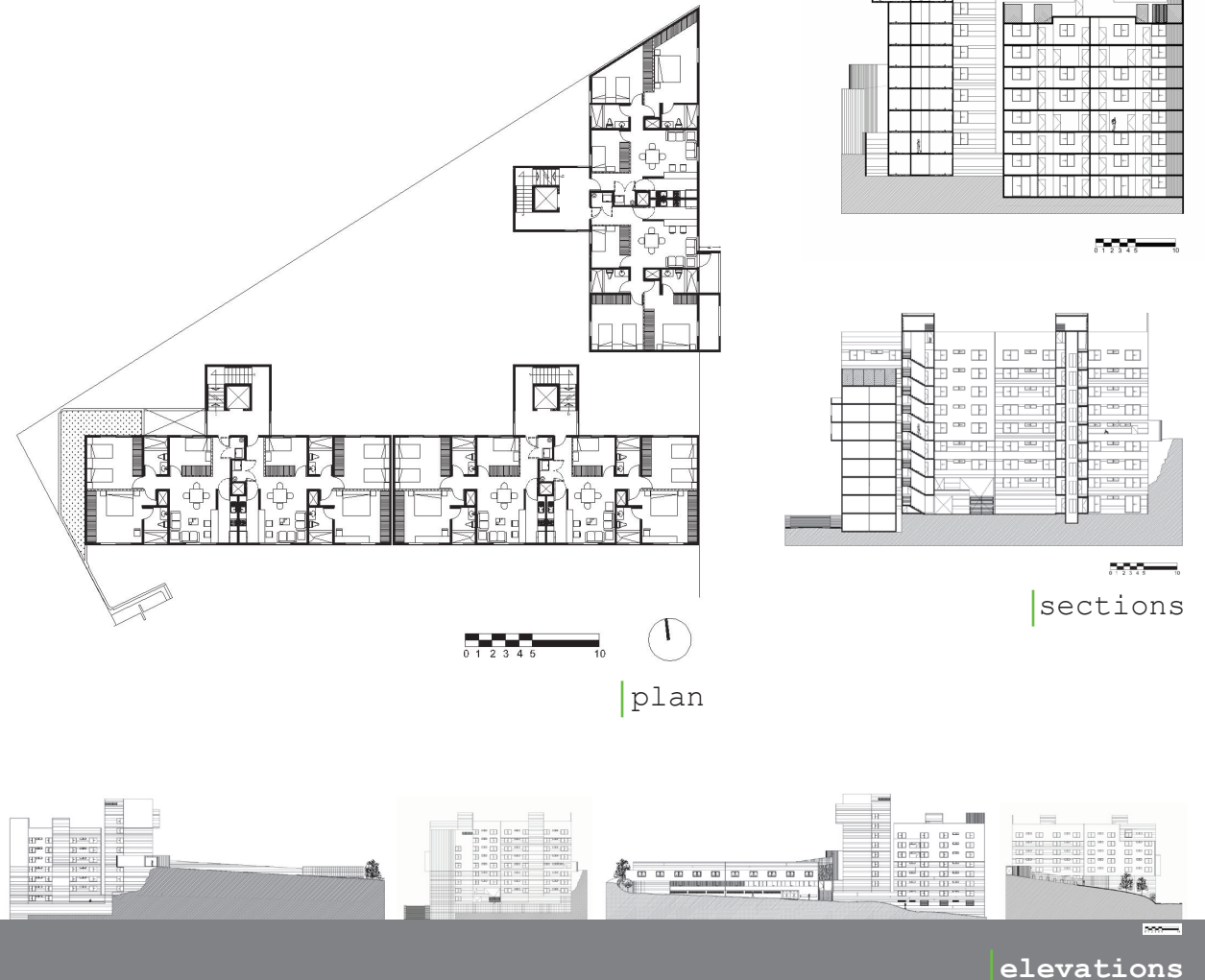
Designing for a condense city does not have to be impossible. Unused parking lots are a great place were high-density complexes can be established. Just because the word high-density is used though doesn't mean it has to be uncomfortable or compact living quarters. Design by means of prefabrication to suite the buyer can be accomplished. Simple designs that keep costs low, utilizing a space to its maximum, and using materials that retain quality. Although challenges will be presented, a design process can be accomplished to suite the needs of urban living.

Las Torres

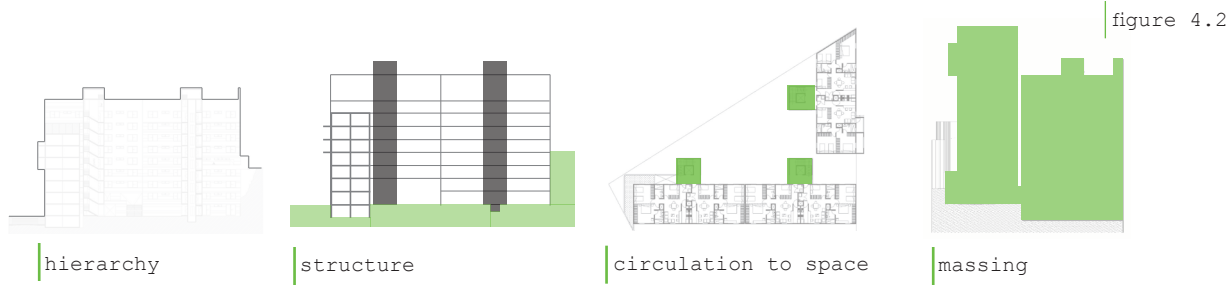
Hierve-Diseneria
Cuautitlan Izcalli, Mexico

Las Torres is located in Cuautitlan Izcalli, just north of Mexico City. The project is low income housing, built in 2010, consisting of 50 apartment units and 10 houses. The project is located on a triangular site approximately 3,100 sq. meters which includes three apartment towers, a housing structure, two courtyards, and parking available for 120 cars. The main concept of this project is to intertwine the built structure with the environment.

figure 4.1



program document
case study one



Las Torres

Hierve-Diseneria
Cuautitlan Izcalli, Mexico

The design of the buildings are simple, straight line, modern style. This design allows for maximum capacity of units. Each of the 10 houses has a two story design, encompassing all the needs of a regular home. The spaces inside are as spacious as possible, eliminating unnecessary room divisions. The apartment units are designed in a similar way just on a smaller scale with a built area of 92 sq. m. New residents have the option of either renting a two or three bedroom unit. The layouts of both the apartments and houses take into consideration natural lighting and ventilation to keep costs low.



program document
case study one

Las Torres

Hierve-Diseneria

Cuautitlan Izcalli, Mexico

The structural system was designed as simple as possible due to financial reasons. Load bearing walls are used in every wall except for the covered parking space. The material used for the facade are tapetate and stuccos all native to the area. This choice of facade blends the building in with the environment instead of creating an eye sore. Using three different facade types though keeps the building aesthetically and visually pleasing. The building complex tries to compensate for the struggles and hardships people encounter living in Mexico City. With a simplistic and clean design, the architects were able to give people in need a place where people can escape the chaos of the city and live a comfortable, respectable life.



an exploration in
high density living

figure 4.3

Rose Bay Apartments Hill Thalys Sydney, Australia

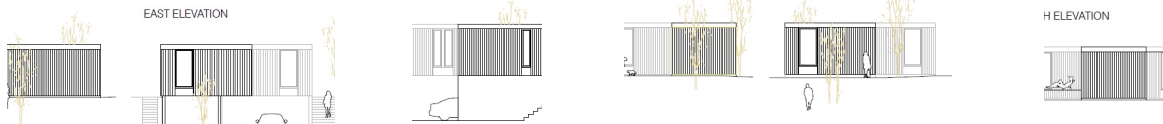
The Rose Bay Apartments are a small scale, 609 sq. m footprint, apartment complex composed of 11 units, 2 shops, and underground parking. Because of the compact site of the urban city, the structure had to compact as many units possible yet still retain comfort for the future residents. The building form allows for both ventilation, natural lighting, and attractive views. Ventilation is a key concept due to the warm climate of Australia. The usage of sun screening panels on the front facade still allows for natural light without the intensity.



sections



plans



elevations

program document
case study two

Rose Bay Apartments

Hill Thalys

Sydney, Australia

One main aspect of designing during this project was material choices and how they work with each other. Material choices were not elaborate: drywall, steel door frames, plasterboard ceilings, tiled flooring. Clean joints and connections of these materials were more important and still can give a look of high quality. The exterior facade is composed of brickwork and exposed structural steel for the sun screen panels. The material choices work well together and gives a look at modern design without the use of expensive materials.



circulation to space



massing



natural light



geometry



plan to section

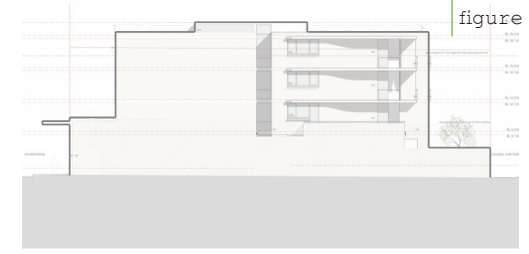


figure 4.4

hierarchy



structure

program document
case study two



Rose Bay Apartments

Hill Thalys

Sydney, Australia

This project's design and size is interesting. Although there was not much space allocated for building, the designers took advantage of the size and created a building based off of straight lines and material choices. The variety of materials is what really makes the building stand out. The darkness of the red bricks and lightness of the concrete makes the building aesthetically pleasing.

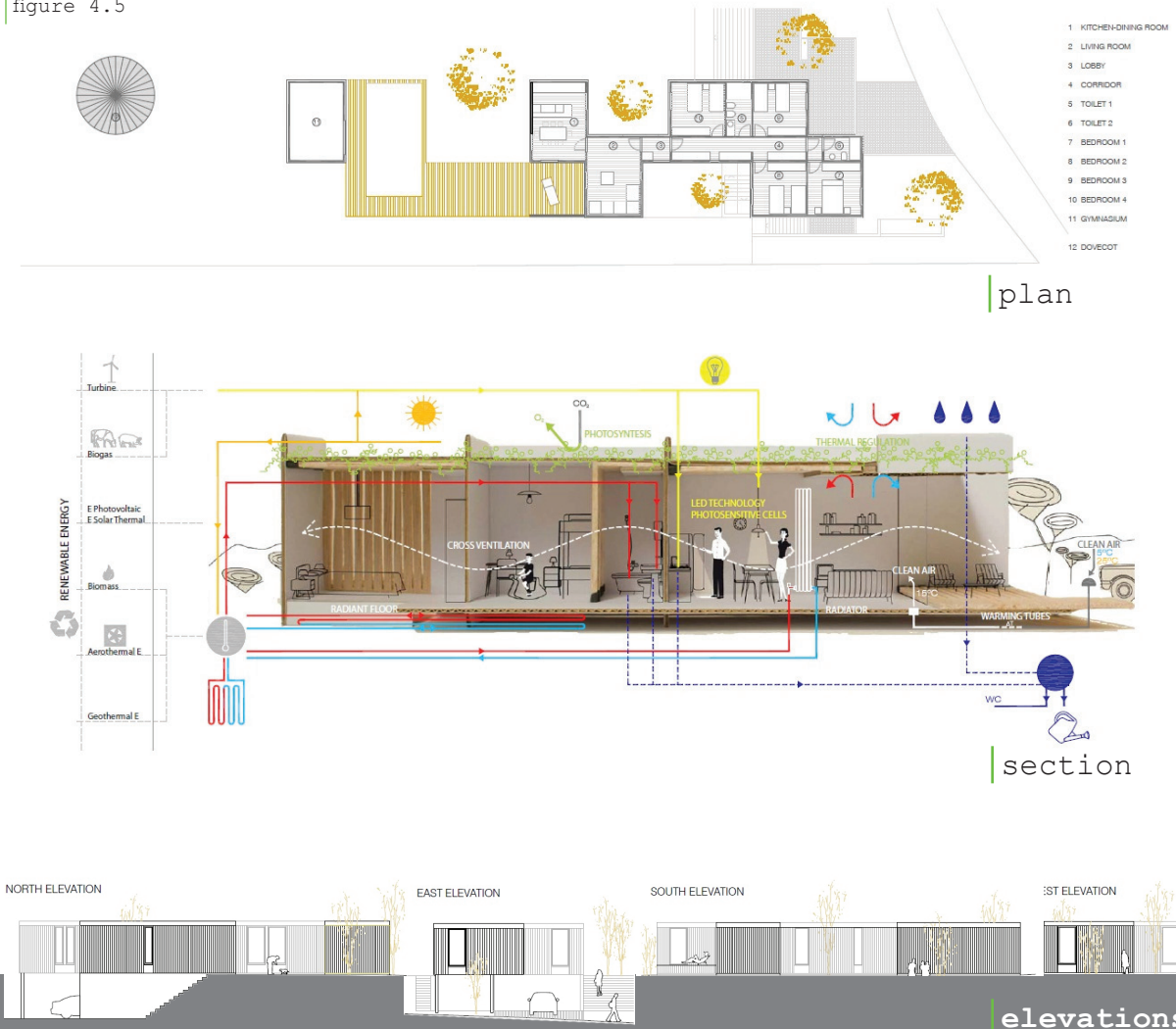
program document
case study two

Seven Modular Housing

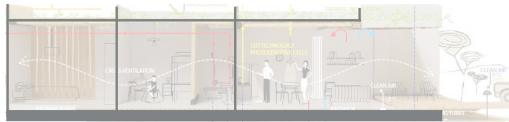
Salgado E Linares Architects
Ames, Spain

This project is an exploration of new kinds personal residential housing. The idea is to make building and designing more simple and cost effective. This idea is not a trend yet though because the way of constructing buildings has been the same way for so many years. It takes a whole new process to construct and design in this fashion.

figure 4.5



program document
case study three



structure



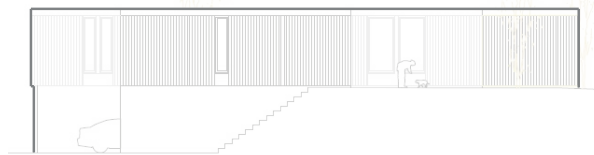
natural light



massing



geometry



hierarchy



plan to section



circulation to space

Seven Modular Housing

Salgado E Linares Architects
Ames, Spain

This case study shows an example of a pre-fabricated house. The idea is simple: build smaller, quicker, and more cost effective. There are many advantages of pre-fabrication including speed of construction, quality enhancement, decrease material waste, less disruption to site, and weather issues would be eliminated. Building homes, or parts of homes, off site can give designers and construction planners less worry about schedules and deadlines. Work doesn't have to stop for weather delays, and because the design is simple and efficient the work gets done much quicker than building structures on site.

program document
case study three

Seven Modular Housing

Salgado E Linares Architects
Ames, Spain

The idea is to treat housing as if it is something you can order online. Individuals can find a design they like and that design can be shipped and delivered. Home owners options can be endless because of the simplicity of the design, changes will not alter the structure of the building. Modification and uniqueness, at low costs, is not something that is common in the design field. Prefabrication does not have to be just for small scale residential structures though. Pieces of large scale buildings can be prefabricated, delivered the site, and pieced together.



program document
case study three

These case studies were very helpful in the informative process of this thesis. Each case study was specific to the thesis itself in a unique way. The first case study was about affordable housing, the second about small scale apartments, and the third about prefabricated construction/design. Taking aspects of each of these case studies will aid in the development of the project's design and programming. Because each project was at much different scales they still did have some similarities. All of the designs engaged simplistic, clean architecture that was cost effective. They all utilized the environment to its fullest whether it be using sunlight as lighting or wind for ventilation and cooling. Also, a budget and cost effectiveness was always considered in each project. Materiality also played a major role in each design, using the most cost effective materials while still retaining a clean professional appearance. Because the thesis is going to be a low-cost, high density, residential unit all of these case studies contributed real life successful aspects to the project.

St. Cloud Minnesota is located in the center of Minnesota along the Mississippi River. Historically, the city used to split into three different sections; upper, middle, and lower towns. The cities many purpose upon founding was a center where people from around the agriculture area could trade and process their goods they had harvested. The name was after Saint-Cloud, France which is near Paris. The city saw it's first large increase in economic and population growth with the installation of the railroad. The main purpose of this was because of a large deposit of granite within the city. The granite quarries are so abundant that the city itself is nicknamed "the Granite City." People began to migrate to the site in aspirations of new job opportunities and economic stability. Neighborhoods began to develop around the cities main downtown area and today St. Cloud is one of the biggest cities in Minnesota. The city of St. Cloud was founded by German immigrants, this is why today almost half of the occupants living on the city are of a German ancestry. The population is 65,842 people, third largest city in Minnesota, and is still growing today.

The location that the thesis is to be constructed is in a growing downtown. It is the central business district area of the city that occupies all major corporate and governmental buildings. There has been a plan to instill more life into the downtown area. A few of the future plans are to embrace the historical values of the area and further the walkability and inviting nature. The plan is to not so much change, but to advertise the vast multitudes of reasons to be in the downtown area; work, live, walk, and shop.

The history of apartment buildings or flats go back to ancient Rome days. Lower class people did not have the luxuries of owning their own homes so they had to live where ever they could. For a lot of people this meant in close quarters above shops or businesses owned by the wealthy. Moving forward in time, upon the establishment of the United States, apartments were not popular. The main reason is because of the lack of running water and sewer systems. Once new forms of construction came along where these utilities could easily be installed, apartment buildings became a popular choice. In today's society living in an apartment is a social normality for younger generations.

The idea for a low cost, high density housing development is not a new design concept. With this thesis though, the most important aspect is the cost and materials. The idea of affordable housing usually is associated with governmental aid, but for this thesis the act of affordability will be through low costs of design/construction. Although the costs are going to be kept low through materiality and prefabrication, the feeling of clean, simplistic, and modern living will not be lost.

Prefabrication of homes and buildings is not a new concept, it started becoming popular early in the 20th century and after World War II. The soldiers were coming back from overseas and the need to housing was high. Although the type of modular homes are not architecturally pleasing, they did serve their purpose and proves the short amount of time and efficiency prefabrication is. Prefabrication recently as become much more sophisticated with major parts of homes and buildings being constructed and pieced together on site. The ability to customize homes or parts of homes has also increased. Homeowners interested can meet with designers and have their own custom design created using modular techniques.

program document

historical context

With the downtown St. Cloud in the shape that it is, there is no reason why there cannot be more comfortable living complexes. With the future goals of the city in mind, it is a perfect environment to bring more people into the city and to be part of the city. Many people do not see the downtown area as a place of interest, or maybe only go there every once. Bringing a high density building, that is affordable to many, could boost the amount of people the amount of people in the downtown area. More people living downtown would mean more people visiting these individuals which will result in a more alive downtown at all hours of the day. More frequent activity will result in a economic boost for the city itself. The idea of a prefabricated building is also a new concept to the St. Cloud area. Arousing a new interest in this type of design for the area could be beneficial economically as well. More structures could be built, big or small, at rapid rate. The beauty of prefabrication, is that units could be built only as the need for them is present. This eliminates vacant units almost completely.

Establish a new way of urban living in the city

Integrate the use of prefabricated construction into the design

Keep a budget in mind

Design quality remains a top priority

Explore the usage of new materials

Design in a clean and simple way

program document
thesis goals

Pay attention to material connections and joints
Design for a wide range of cliental and demographics
Utilize an under used site to its fullest
Contribute to the city
Take advantage of public works already in place
Respect the historic demeanor of the area

program document
thesis goals



program document
site analysis



views

The proposed thesis site is located on 1st St. N and 5th ave. S. Because of its downtown location the views as it is now is for the most part other buildings. The most optimal views would be to the north. The reasoning is because all other views would be blocked by buildings. Although the buildings are blocking views, they still are visually interesting to the NE and SE.

site character

The site has a typical downtown feel at a smaller scale due to the size of St. Cloud. There is a constant activity of traffic, buses, and pedestrians. The site itself is a parking lot used and owned by the city. The parking lot itself has been used for quite some time so there are several areas of distress due to vehicular usage. The business around the site are still currently being occupied.

program document
site analysis

grids

The downtown area of St. Cloud follows a normal city block-like grid. The grid itself is orientated in a way that it is parallel with the Mississippi river. The downtown area grid is unique to St. Cloud because most other commercial or retail areas are much more spread out. This is the one spot in St. Cloud where an individual can park once and walk comfortably from each destination.

water

The Mississippi river is the main water feature in the St. Cloud area. The river itself though is at a much lower elevation so views of the river from the site are not possible at ground level. The river itself is an attractive view which makes the site more desired. Walking paths and bridges make the river easy for individuals to enjoy the river from this location. A short distance away, just south of the site, Lake George is another public attraction with a vast park surrounding the water.



figure 2.1

north



east



south



west



figure 2.2

site reconnaissance

Standing on the corner of the site, I photographed the four cardinal directions. Through the photos it is easily seen that the site is an active area. The most open view would be to the north due to the street being on this side of the site.

wind

The site is protected on almost all sides by already existing buildings. Wind would not be very noticeable until three stories higher than ground level. The strongest winds in the area come out of the north or northwest with slight breezes coming from the other directions.

light quality

The light quality of the area is different throughout the day. Because there are some substantially large buildings in the area, shadows are always present. The site gets good sunlight in the middle portion of the day when the sun is not obstructed by other buildings.

vehicular traffic

Vehicles are always present in the downtown area. Travel is kept at a reasonable speed with a mixture of traffic lights and four-way stops. Bus travel is used in the area with a bus stop and shelter just across the street from the site.

pedestrian traffic

The high density of establishments in the downtown area enables residents and visitors to easily move about the area by foot. Sidewalks are wide and kept in good shape and there are also crosswalks present at all intersections.

human characteristics

The area is used by people at all times of the day. In the morning people are heading to work. In the afternoon people are shopping or going somewhere to have lunch. In the evening hours there is a wide variety of bars and nightclubs in close proximity.





vegetation

The downtown area does not have much for plants or trees due to that most of the environment has been built on. There are some landscaped areas but not many. The main areas of vegetation would be along the river, and in the north and south residential areas.

distress

There are not many areas of great distress in the area, but it is an older district so many of the buildings are older.



parking

Parking is a major aspect in this area. During the day hours there isn't any free parking, either by meter or parking garage. There is an abundance of available parking options including on-street, parking lots, and two parking garages located within a block of the site.

built features

There are a wide variety of building types around the site. There are numerous commercial, retail, and dining facilities. There is also a newly constructed public convention center just to the east of the site. Most buildings are around two or three stories tall, with the exception of a multi-story hotel.

utilities

The main visible utilities from the site are traffic lights, light poles, and electrical power lines that follow the train tracks. There are no fire hydrants on the proposed site itself.



figure 2.3



textures

The textures of the buildings that occupy two sides of the site are unique. The color range of the reds, blues, and yellows brings a noticeable presence to the site. The materiality of these buildings are for the most part masonry or refurbished masonry. An interesting fact about these buildings is that none of the visible facades in the photo are actually the main entrances to the building.

program document
studio experience

soil

The soil type, highlighted in the darker green, is mollisol as classified by the U.S. Soil Taxonomy. This type of soil are highly farmable. A small percentage of the world has this type of soil which makes it highly desirable. Mollisol is characterized by a high accumulation of humus, a nonliving organic matter, in the surface of the soil. This type of soil is common in the Great Plain Area



figure 2.4

figure 2.5

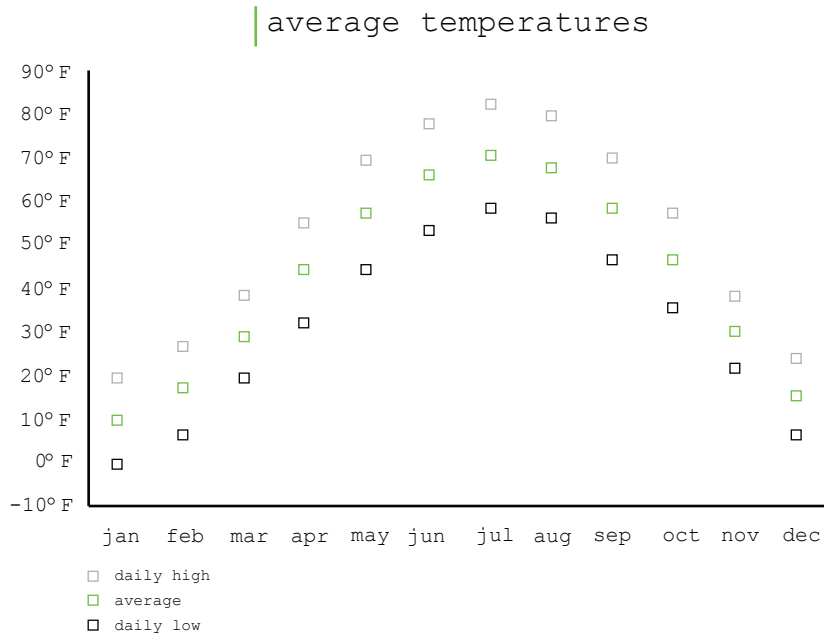


figure 2.6

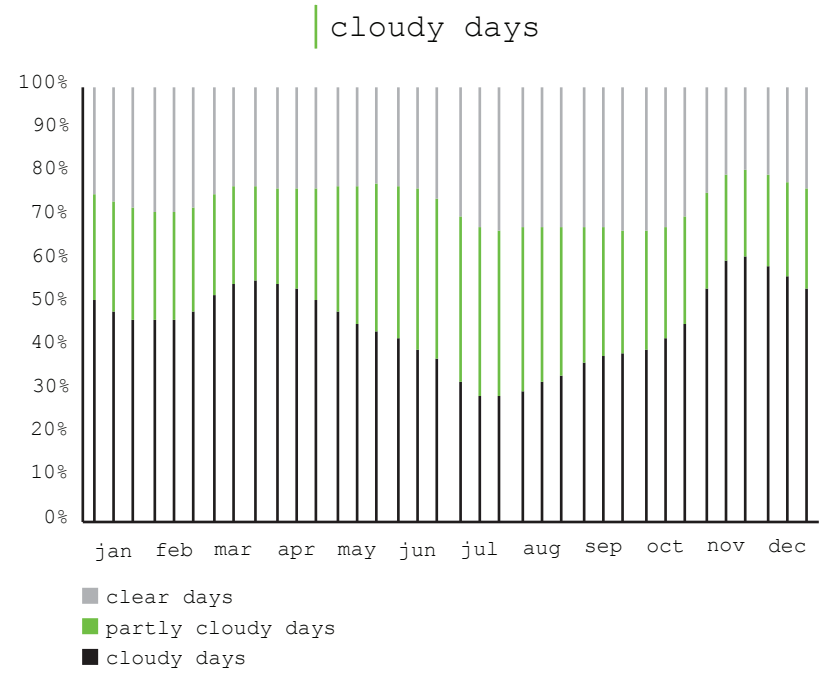


figure 2.7

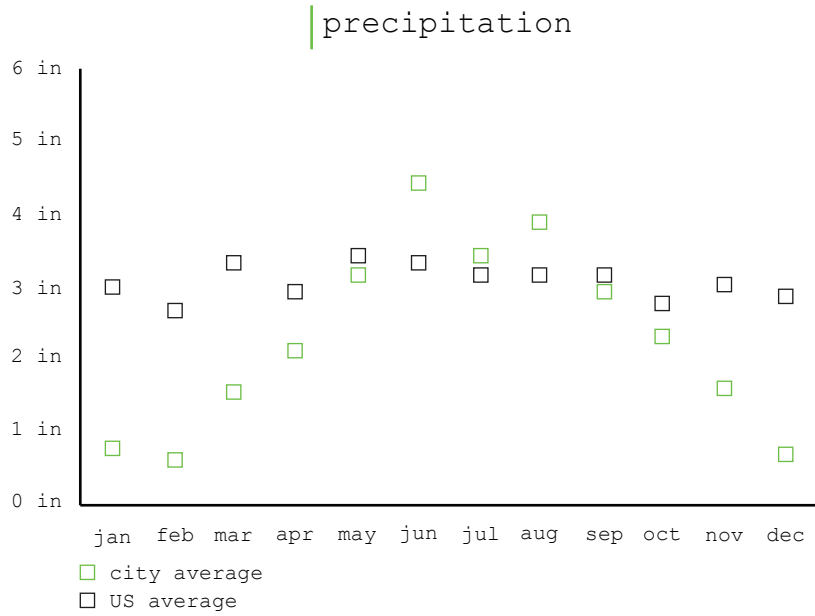


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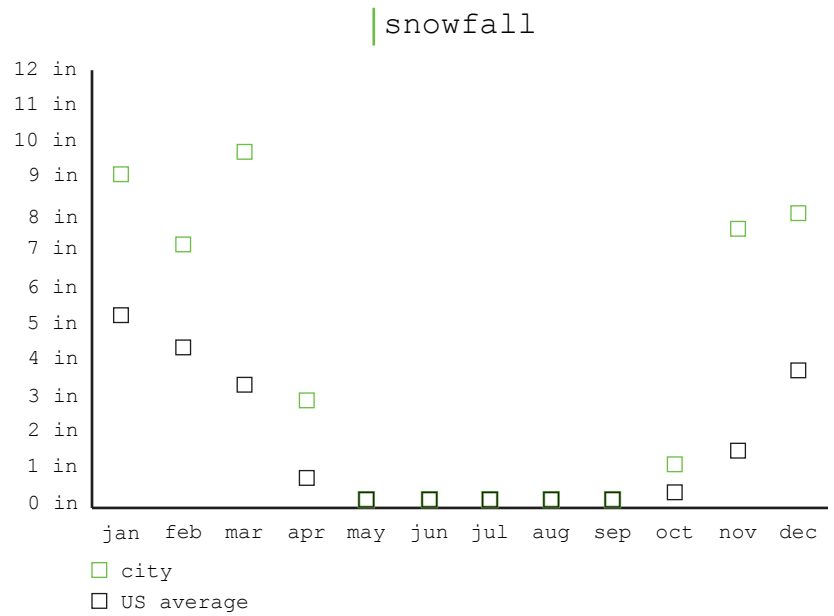


figure 2.9

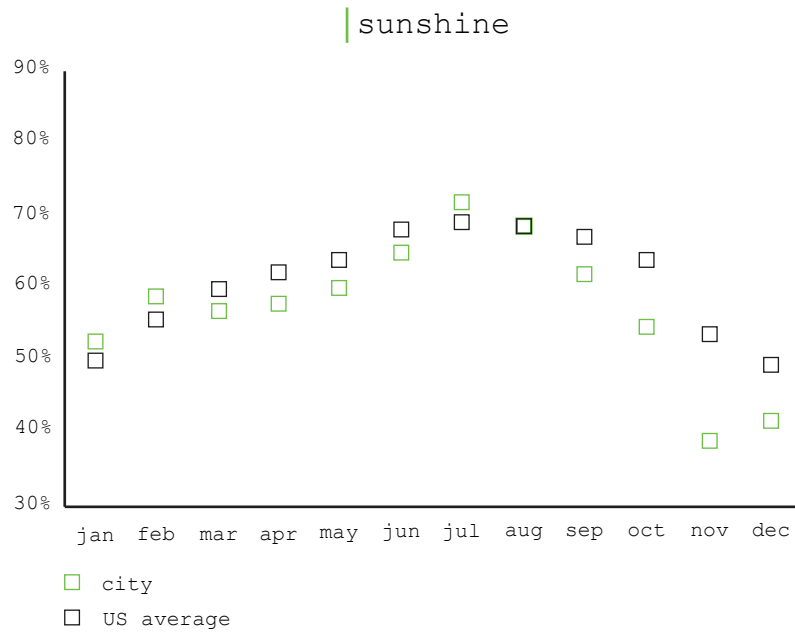


figure 3.1

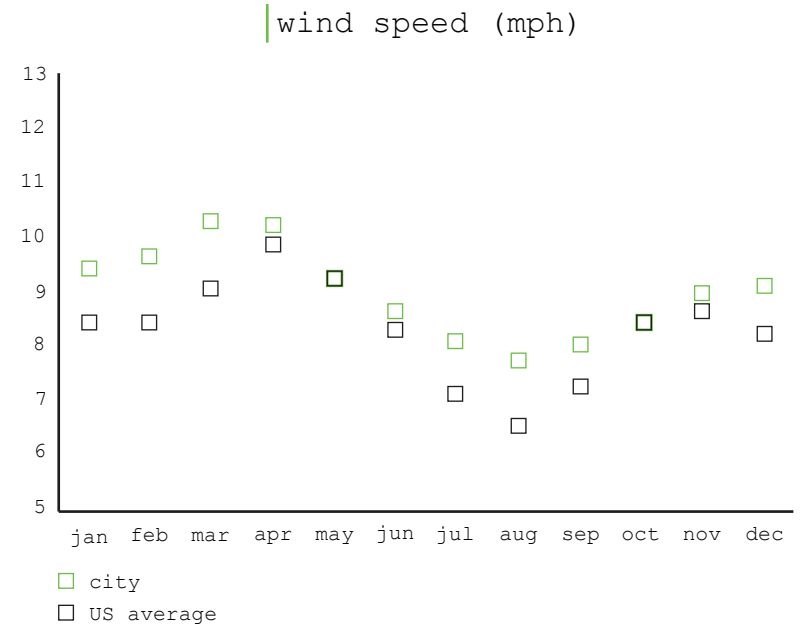


figure 3.2

wind rose

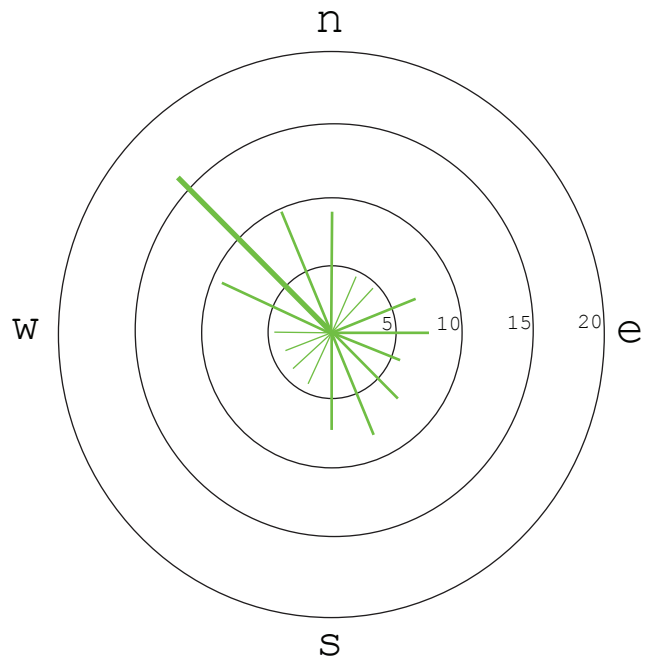


figure 3.3

sun path

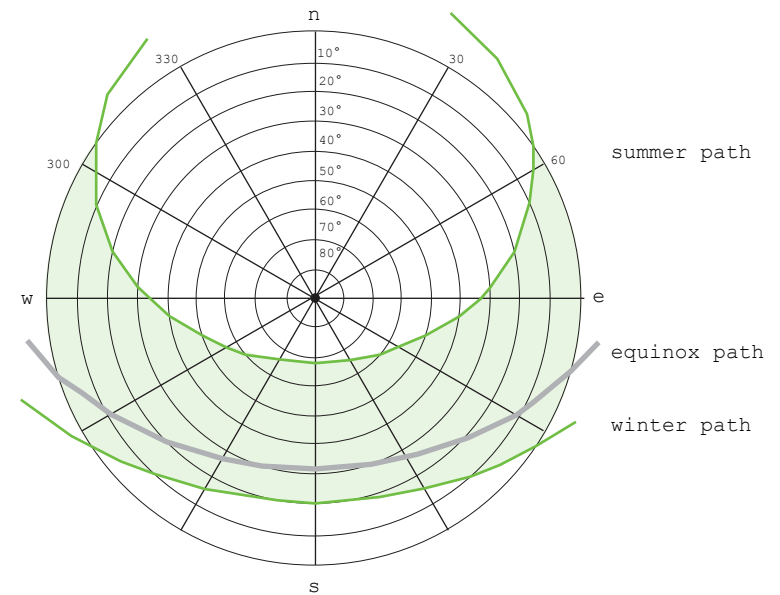
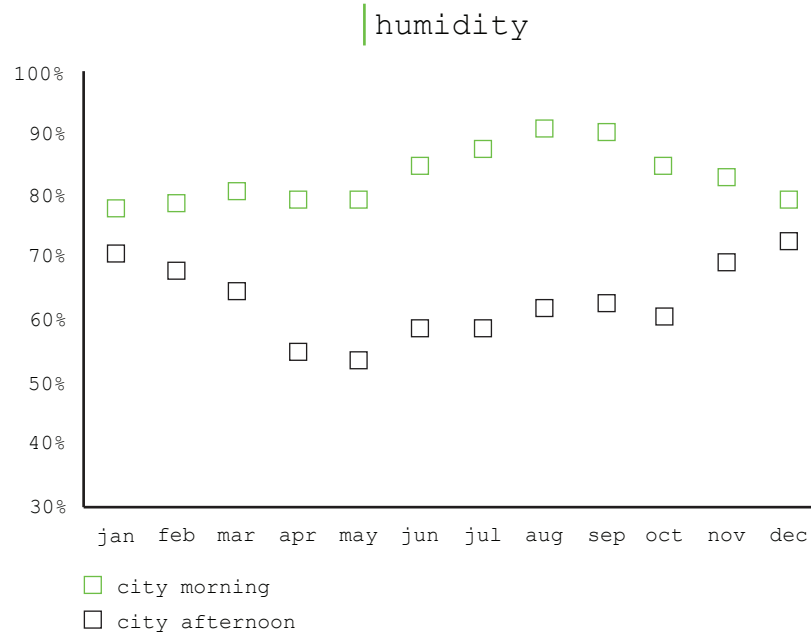


figure 3.4



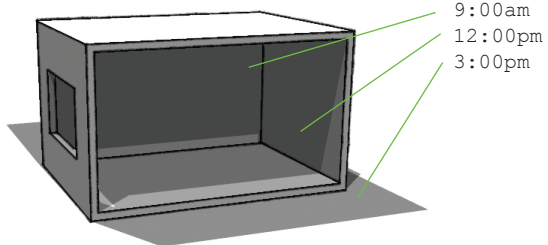
--- noise
--- traffic

site diagraming

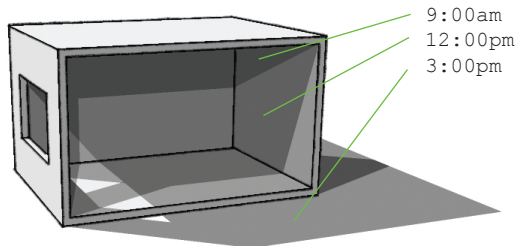
figure 3.5

program document
climate data

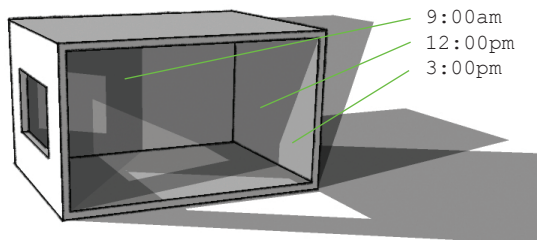
summer solstice



equinox

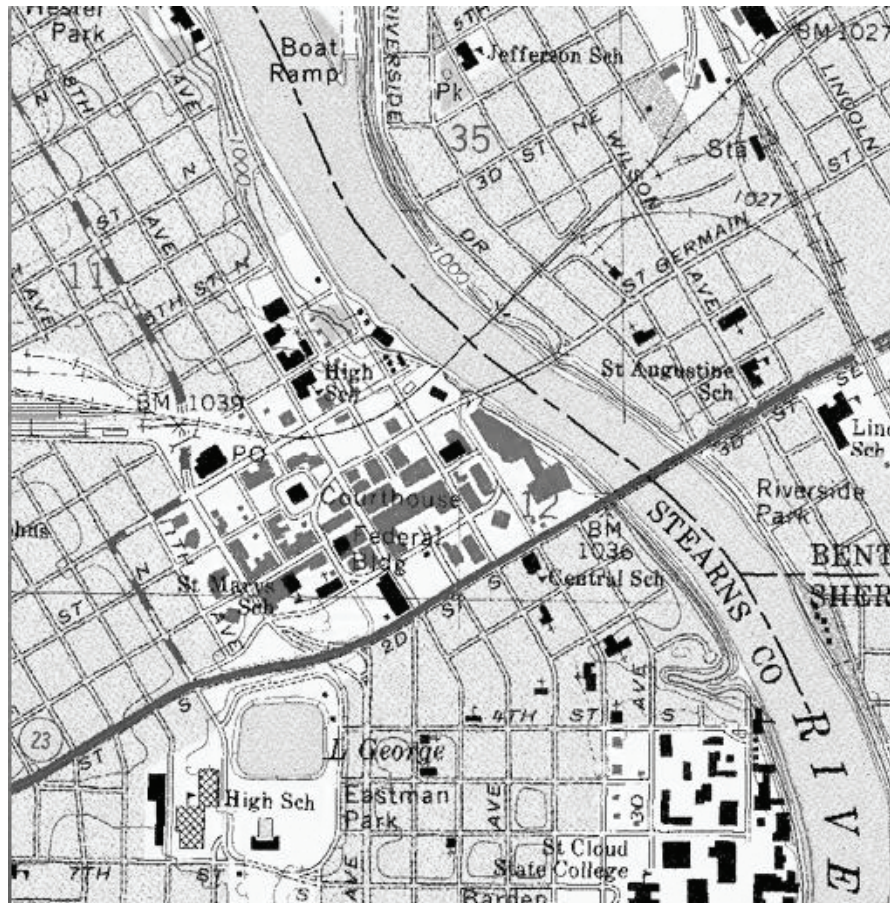


winter solstice



shading study

figure 3.7



topography

figure 3.6

program document
climate data

Top Floor

Units: 3,900 sq. ft

3rd Floor

Units: 7,350 sq. ft

Circulation: 4,165 sq. ft

2nd Floor

Units: 8,100 sq. ft

Circulation: 4,165 sq. ft

Terrace: 4,037 sq. ft

1st Floor

Units: 8,100 sq. ft

Circulation: 4,165 sq. ft

Lounge: 1,725 sq. ft

Workout: 2,060 sq. ft

Ground Floor

Resturant: 3,910 sq. ft

Circulation: 2,050 sq. ft

Retail: 4,080 sq. ft

Parking: 4125 sq. ft

Lower Floor

Parking: 18,900 sq. ft

Circulation: 575 sq. ft

Lower Floor 2

Mechanical: 5,200 sq. ft

Circulation: 575 sq. ft

Total

87,180 sq. ft

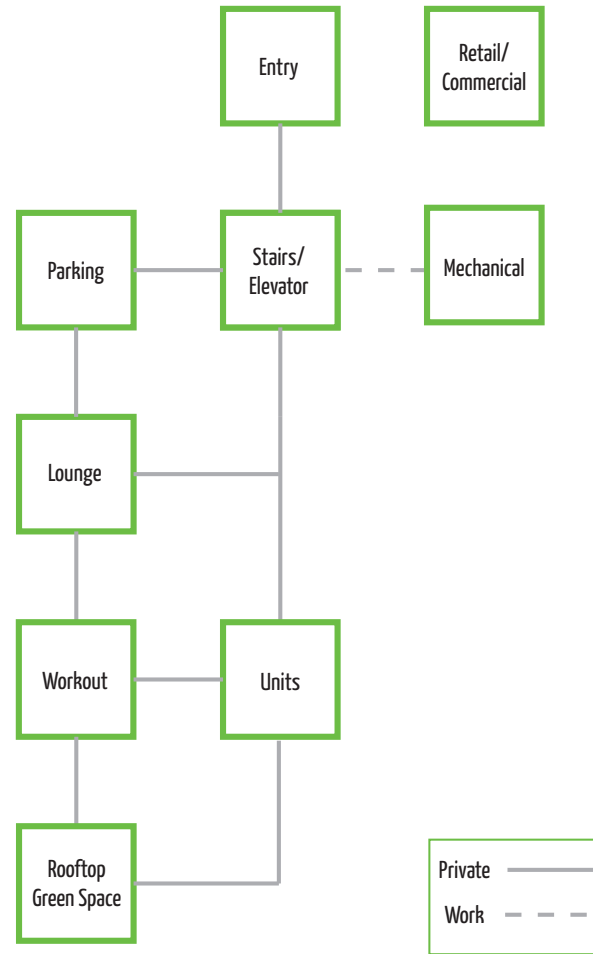
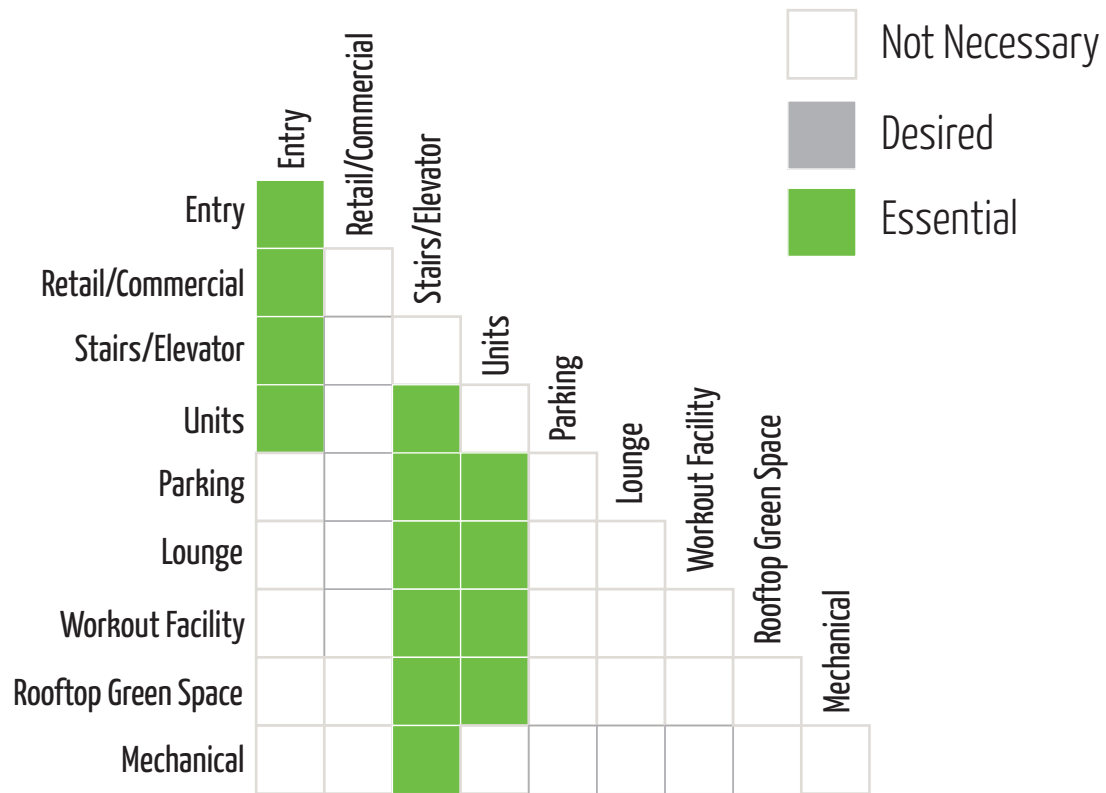
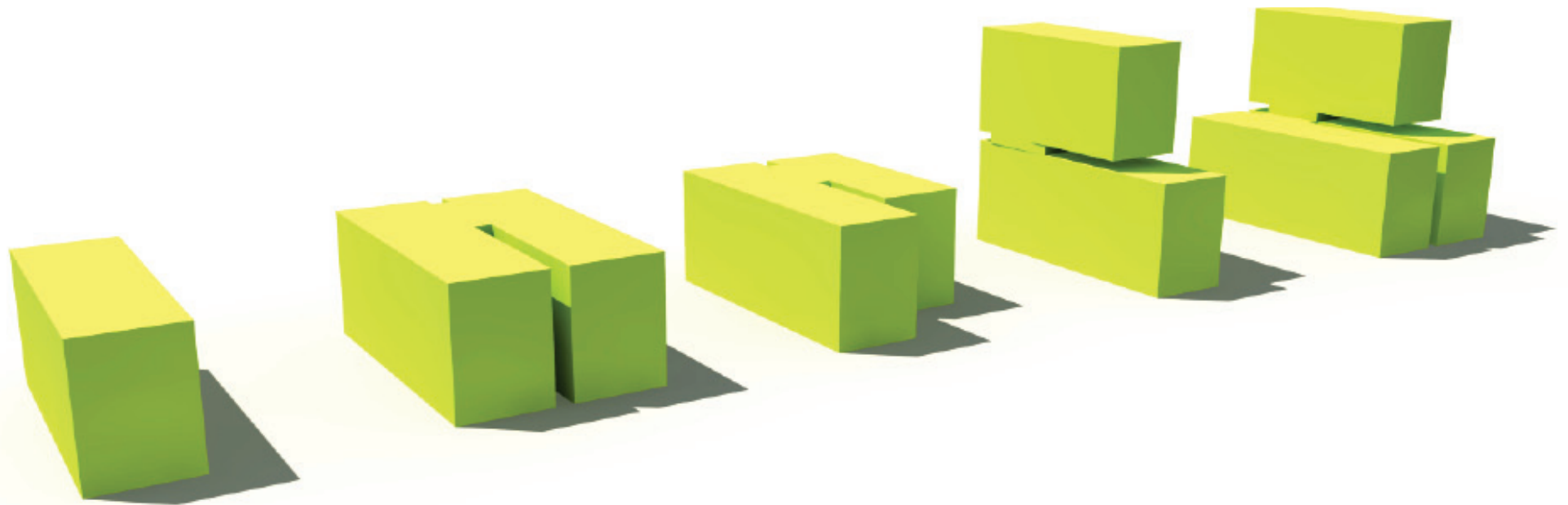


figure 3.8

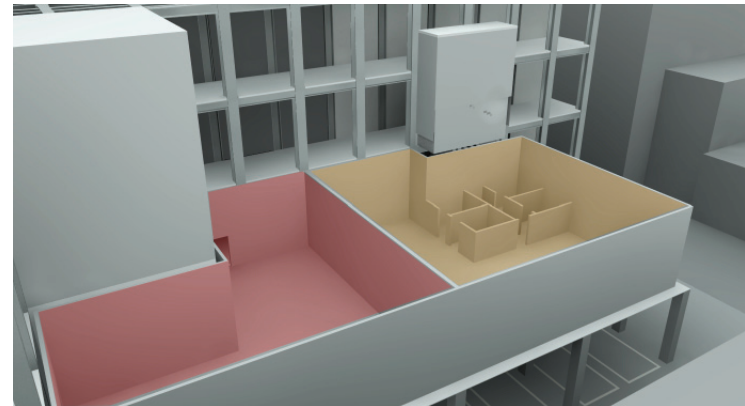
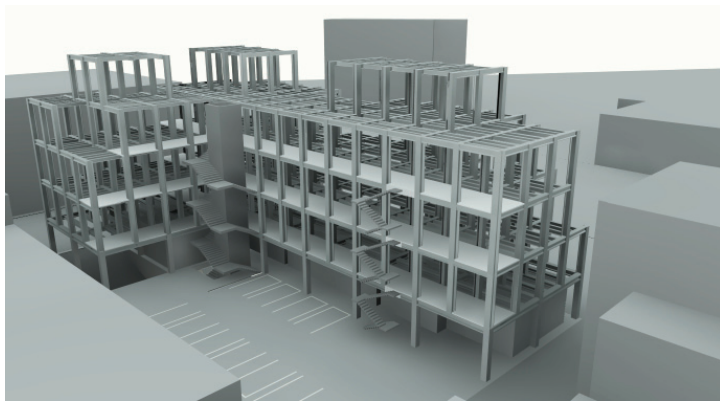
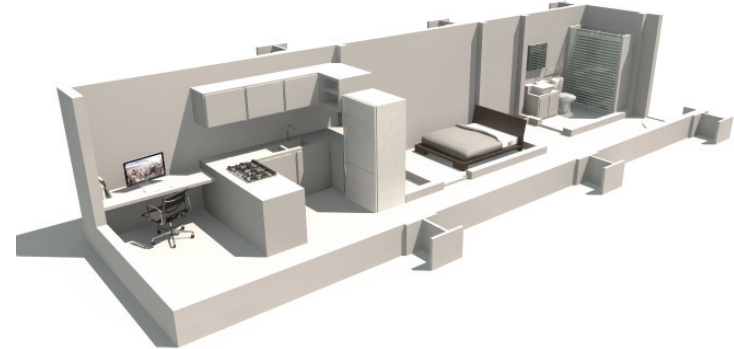
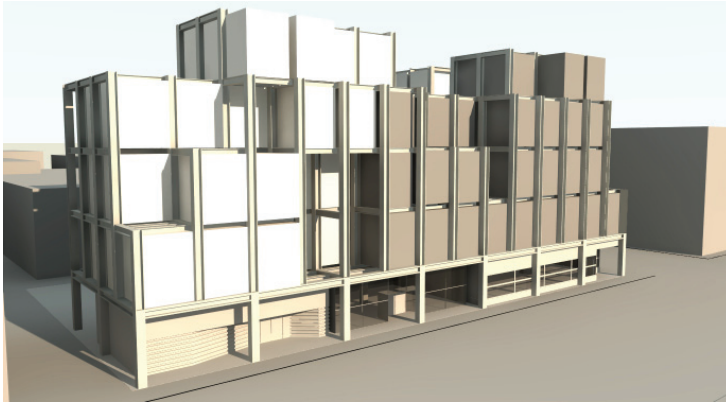
figure 3.9





process

The initial process work started with the idea of small modular homes that could be arranged and stacked in ways that could fit the needs of the owners.



The form of the building stayed very similar throughout the entire design process this was because it was the most efficient use of the site. Each unit was a design challenge in itself in order for them to all work as one whole.

process



5th Avenue UNITS



This residential/mixed use building is located in the downtown of St. Cloud MN. The site currently is a city owned parking lot. The reasoning for this location is because of the lack of housing units in the downtown area. The units themselves would be prefabricated off site and transported to the structure. The units would be purchased and owned by individual buyers and they would be part of the process of designing their unit or combination of units to fit their own needs and preferences. The structure of the building is designed to have placed holders for each 10'x10'x40' unit. Units though can be altered with cutouts for hallways or stairs in order to combine units side by side or top and bottom. The units and structure is designed in a simplistic and modern way to potentially be adopted in other cities with dense housing needs.

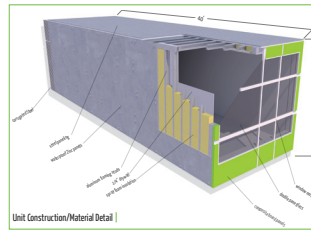


Rooftop terrace |

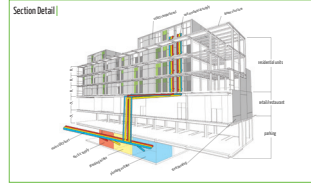
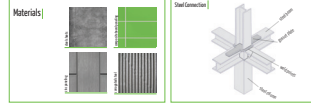
Unit Installation Process



Department of Architecture and Landscape Architecture, NDSD
 1010 17th Avenue, Ste 1000
 The Central City An Expansion of High Density Living, Residential Complex/Mixed Use, 87,000 Sq Ft
 St. Cloud, MN
 Thom Adams, Ron Ramsey
 Software: Sketchup, Revit, AutoCAD, Adobe Suite



Unit Construction/Material Detail |



Section Detail |

Floor Plans



Level 4
3,909 sq ft
residential



Level 3
3,151 sq ft
residential



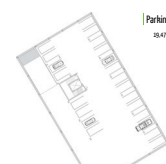
Level 2
3,109 sq ft
residential
multipurpose



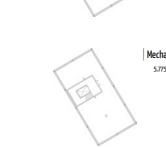
Level 1
31,059 sq ft
multipurpose
worker facility
storage



Ground Level
24,125 sq ft
off-road
multipurpose
parking



Parking
25,475 sq ft

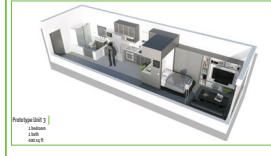
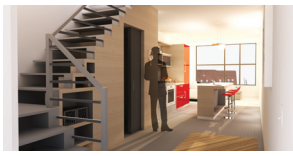


Mechanical
3,775 sq ft

Unit Prototypes



Prototype Unit 4 |
2 bedrooms
2 baths
multipurpose
storage



Prototype Unit 3 |
2 bedrooms
2 baths
storage



Prototype Unit 2 |
2 bedrooms
2 baths
multipurpose
storage

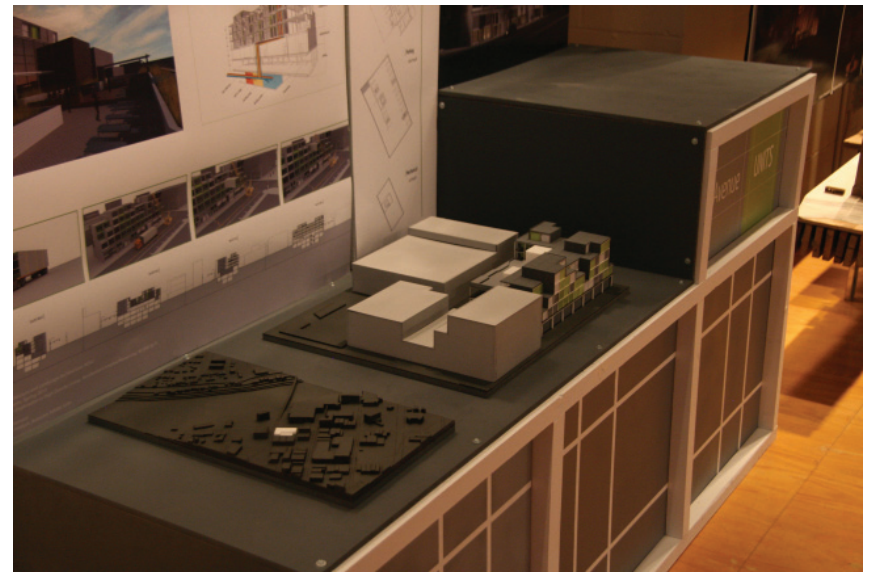
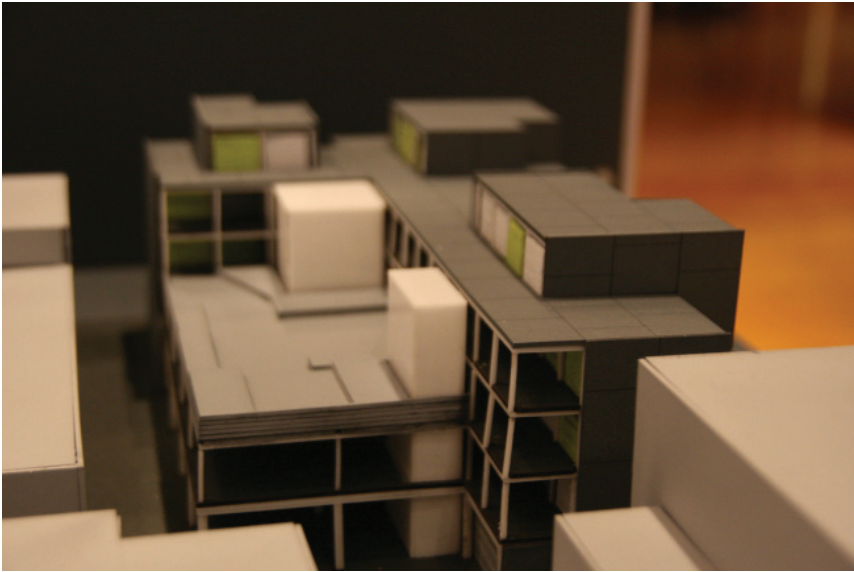
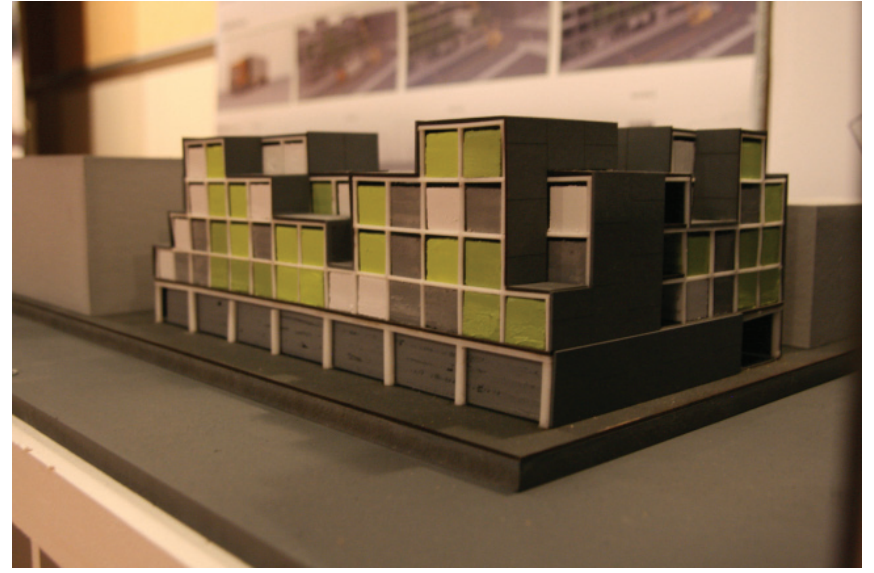
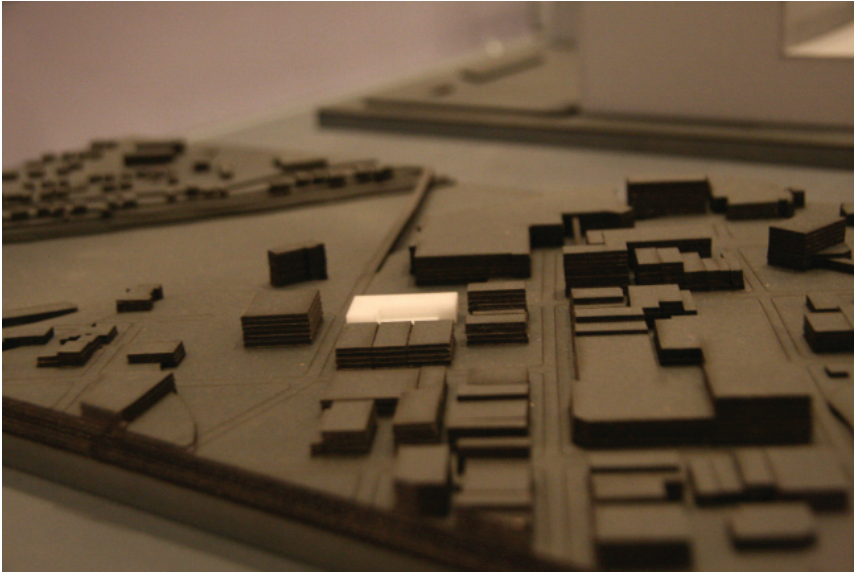


Prototype Unit 1 |
2 bedrooms
2 baths
storage



cut out

project
Solution



project
solution



installation

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Drew Kierzek

2055 Dakota Drive N #407
Fargo, ND 58102

320.267.2132

drew.kierzek@my.ndsu.edu

Hometown: Avon, MN

"Everything is designed.
Few things are designed
well."

-Brian Reed



personal
identification