



# Infilling the Aging

a holistic approach to urban care environments

Peter Kuelbs

# Infilling the Aging

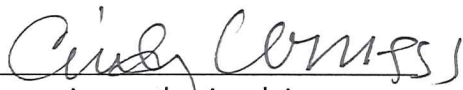
- a holistic approach to urban care environments -

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by

Peter Kuelbs

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primary thesis advisor

  
thesis committee chair

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signature page



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## abstract

**“Infilling the Aging: a holistic approach to urban care environments”** addresses the need for an improved connection between family, community, and those in care-based living. It addresses this issue by questioning the difference between quality of life and quality of living condition. Furthermore, it calls into question the impact that family and community have in promoting an improved quality of life for those who need long-term care. Instead of creating a repository for the elderly, this project seeks to integrate the elderly back into society by defining a new typology that responds to the urban fabric of a community. This improved connection stands to benefit not only the residents and their families, but also the community. Investigating a new typology for long-term care will improve on current traditions of care-based living. By fulfilling this need, new roles can be created and old roles re-discovered among those who need long-term care, their families, and communities. The building typology is a mixed-use senior living facility located in Seattle’s Belltown neighborhood. The building consists of 50 units containing 65 beds in 115,000 square feet.

### Keywords:

Long-term care, Assisted Living, Nursing Home, Elderly, Multi-family Residential, Housing, Community Living, Inter-generational Housing, Urban Elderly Care, Mixed-use, Inter-generational Communities, Integrated Health-care delivery, Aging in Place, Urban Infill



Could altering how the built environment responds to the need for care-based living foster new relationships among family, community, and a growing elderly population?

problem statement





# Statement of Intent

## Typology:

An urban, mixed-use long-term care facility

## Theoretical Premise:

### **Claim:**

The built environment can improve the way people live and interact with each other by creating connections between places and people.

### **Supporting Premises:**

In 21st century America, long-term care facilities are needed to improve the quality of life for our aging population.

To improve quality of life is different than improving living conditions. Quality of life is also linked to a basic need to belong to a family and a community, in addition to improvements in health-care delivery.

Families are often burdened by the decision to place a loved one in long-term care. The family, community, and resident are all potential beneficiaries of an improved system for long-term care.

Connecting places and people create a more complex fabric of opportunities that promote new roles for those in need of long-term care.

### **Unifying Idea:**

Investigating a new typology for long-term care will improve on current traditions of care-based living in America by understanding the relationships between people and the society in which they live.



As the need for long-term care continues to increase and evolve, there must be a method for improving the quality of life for not only the resident, but also the family and community that are impacted by such facilities. By fulfilling this need, new roles can be created and old roles re-discovered among those who need long-term care, their families, and communities.

project justification



# The Proposal

## narrative

The need for care-based living is continually expanding in 21st century America. According to the U.S. Department of Health and Human Services (2012), 70% of Americans over 65 will need long-term care at some point in their lives. Those individuals will need an average of three years of care. (Long Term Care, 2009) As the need for long-term care continues to increase and evolve, there must be a method for improving the quality of life, not only for the resident, but also for their family and community.

Unfortunately, the current system of care-based living doesn't provide for much dignity. Current facilities address the need to improve the quality of living conditions, but don't holistically address the need to improve quality of life. Moving into a care-based facility often causes an abrupt change in lifestyle, living conditions, and social circles. This reason alone causes people to delay the decision, negatively affecting their quality of life. Assisted-living has begun to address the problem. The current model offers more flexibility in care-options in a less institutionalized setting. However, most facilities still fail to recognize the importance of location in the integration of these facilities into cities and neighborhoods.

Integrating care-based facilities back into the urban environment has three main advantages. The first is for the individual. A facility located in a walk-able urban center near many amenities can keep an individual active in the community much longer, as their ability to drive and walk and drive becomes an issue. The second is for the family and friends of the individual. This type of

setting is much more desirable to spend time and interact in. The urban environment offers more variety and interest, instead of being confined to the “campus” of an assisted living facility or nursing home. Creating an environment desirable for guests will potentially increase the duration and frequency of their visits, helping diminish the sense of isolation for the resident. The final reason is for the city itself. Many downtown communities, including the one I am currently looking into in Seattle, have a very narrow age demographic. Residents of these communities tend to be adults, ages 25 – 65. Re-introducing the older demographic will promote diversity and stability in these communities.

Certainly, downtown care-based living is not for everyone. However, it will offer another alternative to the typical model that is currently, “one-size fits all.” This thesis project will uncover the benefits of integrating the elderly back into urban environments for the individual, family, and the city itself.

narrative



## Users

### **Residents**

Residents of this building will include elderly or physically/mentally disabled individuals in need of long-term care. The safety, dignity, and comfort of the residents will have to be painstakingly considered in the earliest stages of design.

### **Visitors**

Family members, friends, or consultants of the residents will be allowed in the residential area of the building. Overnight rooms will be provided for visitors of the residents upon reservation. In addition, the design will include public space to host anyone who desires to use it.

### **Caregivers**

A staff of professionals and paraprofessionals will be available at all hours of the day to assist residents of the building. Dedicated, on-site parking is a necessity for these individuals.

## Client

### **Owner**

The owner of the project will be a non-profit health care organization.

### **Residential**

The residential portion of the building will include various units varying from apartment-style to memory care suites. Dining and living spaces, separate from the units and adjacent to public space, will also be required. Additional space for the staff will be needed, such as training and break rooms, as well as sleeping rooms for overnight shifts.

Extended stay, hotel-style overnight rooms will be needed for guests of the residents. Guests may need to stay anywhere from one day to over a month depending on individual circumstances.

Other recreational amenities, such as pool and activity rooms, will be provided for use by both the residents and their guests.

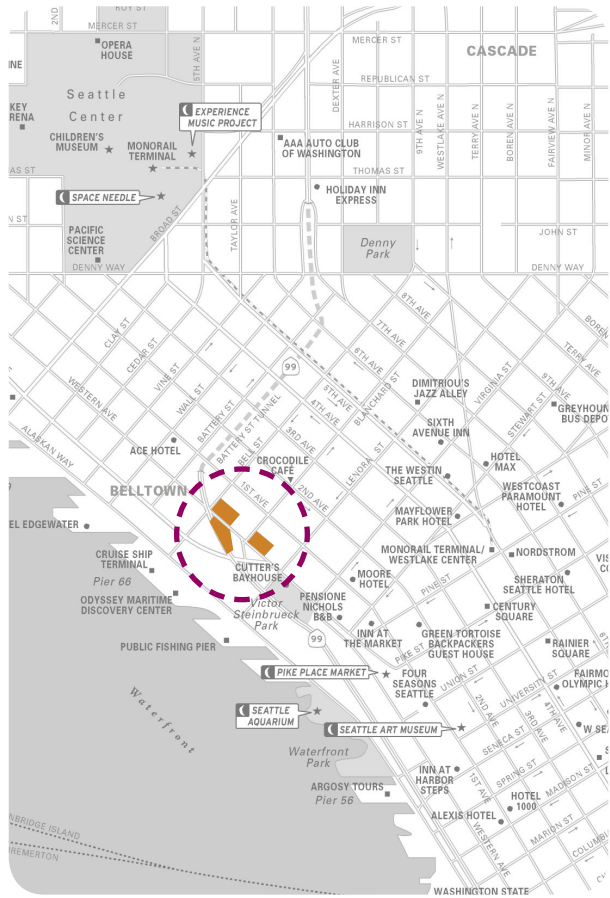
### **Public Space**

Public space will be an important aspect of this project. It will provide the link between a secure living environment and the vitality of life at street level.

### **Commercial**

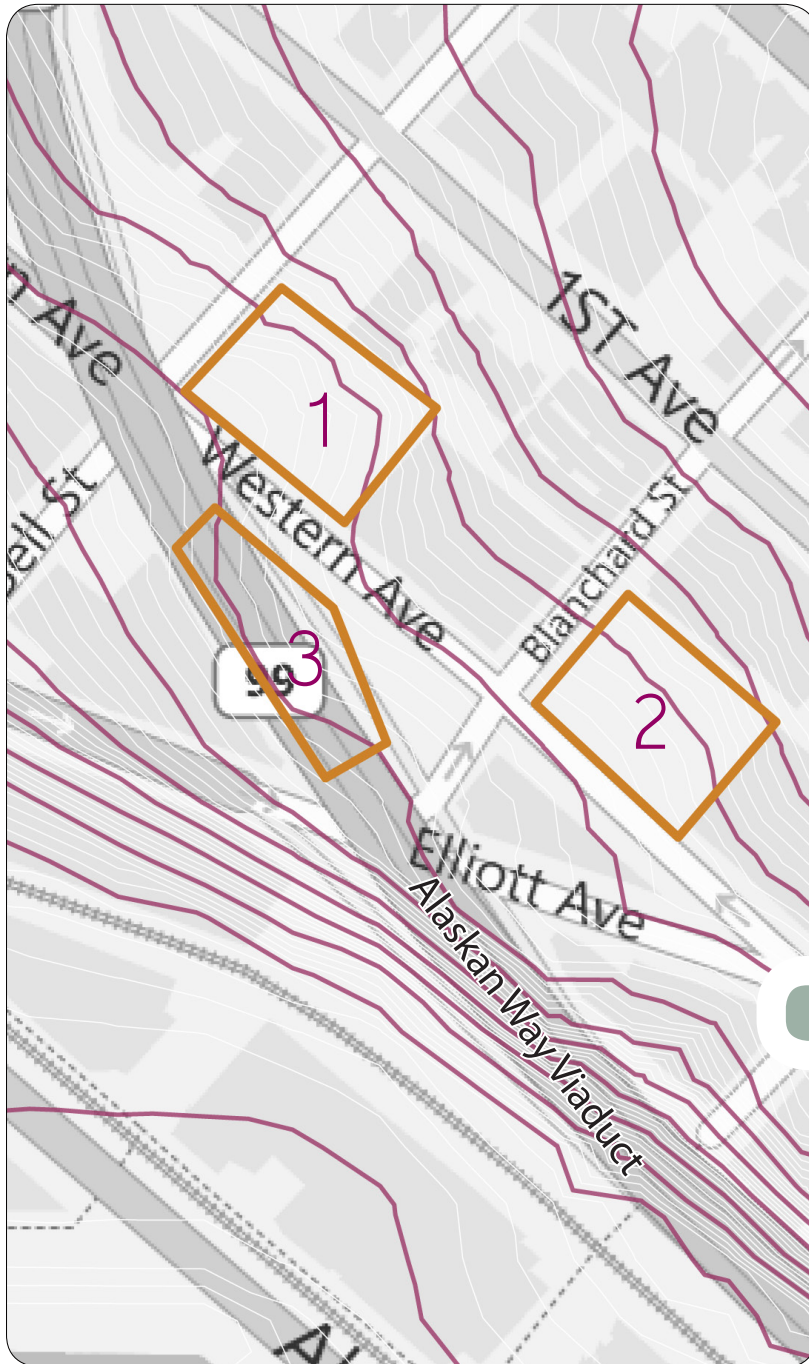
Commercial space will be created to fill rentable space at street level. Ideal tenants to lease this space would be a clinic, pharmacy, eye clinic, medical retailers, small grocery store, restaurant, coffee shop, etc..

major project elements



site-macro



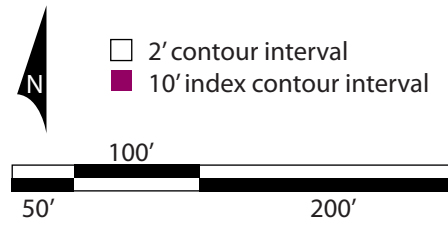


The sites are located roughly half a mile northwest of Seattle's financial, cultural, and retail core in the Belltown Neighborhood. Though it is near downtown, it is in a distinctly residential area of the city. This area is characterized by high population density, and an extremely narrow age demographic. This neighborhood offers life at a more human scale, while still being close to downtown amenities.

Substantial elevation change on the sites allows for unobstructed views of Puget Sound without the need for high-rise construction. The Alaskan Way Viaduct (Route 99) is currently being replaced by a bored tunnel beneath downtown Seattle. The Viaduct is scheduled for demolition in 2016. Because of the site's location near the former double-deck expressway, unprecedented views of Mt. Rainier can be achieved. These sites are adjacent to the future Belltown Bluffs Park which will feature a lookout structure that will take advantage of the same viewshed.

The site located furthest to the west has been designated by the city for sale and future development upon completion of the viaduct demolition.

site-micro



## project emphasis

The focus of this project will be uncovering how the integration of long-term care facilities back into urban areas can positively affect the individual, their friends and family, and the community itself. Discovering how this integration works will be crucial in creating a new fabric of opportunities that will provide the resident with a more vibrant, dignified experience.

After discovering these important urban and human elements, it will become imperative to understand how the built environment can respond to them, while still addressing the needs and challenges that come with living in an urban center. The project will be designed in a way that promotes the safety, dignity, and comfort of the resident while creating a vibrant, interesting atmosphere characteristic of the spaces in many great cities.

## Research Direction

In order to maximize the effectiveness of the project, research will be conducted in the listed areas:

- Theoretical Premise/Unifying Idea
- Project Typology
- Historical Context
- Site Analysis
- Programmatic Requirements

## Design Methodology

A mixed method, quantitative/qualitative approach will be used for the research and design of this thesis. The strategy will be guided by the four premises stated in the Theoretical Premise/Unifying Idea. Both qualitative and quantitative data will be collected simultaneously through analysis of graphic and written works. Analyzation, interpretation, and reporting of the results will occur during this process and will be presented textually and graphically. Integration of the data will occur at critical stages depending on requirements of the theoretical premise.

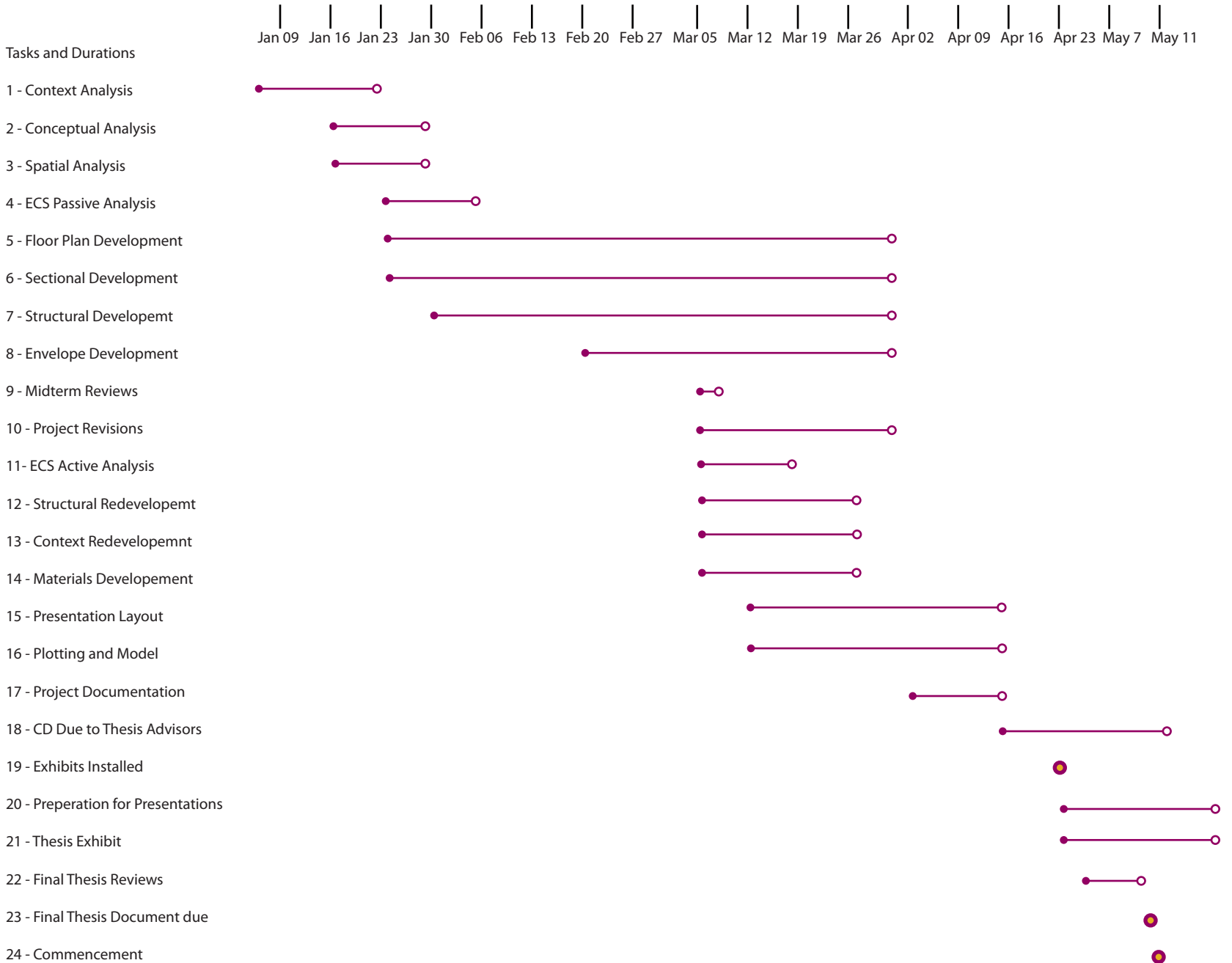
## Documentation

In order for others to holistically understand the project, it is important that the design process be thoroughly documented. All sketches, drawings, tracings, models, renderings, etc, will be digitized at weekly intervals to be organized and to reduce clutter. A digital framework for displaying process material will be created to describe the design process in a succinct and comprehensible manner. This graphic analysis of the design process will be made available during the thesis presentation and in book form.

plan for proceeding



# Thesis Design Schedule



2nd

**Fall 2008**

Professor Darryl Booker  
Tea House  
Boathouse

**Spring 2009**

Professor Joan Vorderbruggen  
Dance Studio  
Sustainable Dwelling

3rd

**Fall 2009**

Professor David Crutchfield  
Probstfield Farm Interpretive Center  
Fargo Analysis  
NDSU Downtown Library

**Spring 2010**

Professor Ronald Ramsay  
Chamber Hall  
Consulate

4th

**Fall 2010**

Professor Don Faulkner  
San Francisco High Rise Studio

**Spring 2011**

Professor Malini Srivastava  
PassivHaus Design-Build Studio

5th

**Fall 2011**

Professor Cindy Urness  
Minnesota Experimental City

previous studio experience



# The Program

*"The design of housing for the elderly is not generally regarded by architects as a glamorous task. The temples of global society have been and continue to be museums of different cultures, the headquarters of powerful financial institutions or showpieces for leisure and culture. The fame of architects such as Ghery or Libeskind, Foster or Ando cannot be attributed to their housing projects and housing does not feature prominently in their work. Instead, technically innovated solutions, spectacular dramatics and event architecture have eclipsed the comparatively everyday phenomenon of living. This situation changes, however, as soon as we begin to reappraise society's actual needs, to focus less on wealth and luxury in society and more on bringing real needs into the foreground. It becomes immediately apparent that there is no greater or more urgent task than to address the living requirements of young people, of families and of ever older generations." (Feddersen & Ludtke, 2009)*

--Eckhard Feddersen and Insa Lüdtkke

The need for long-term care has been well established in much of the developed world. For many reasons, children are no longer able to care for their aging parents. In addition, there is an ever increasing number of elderly without children. Now that the need has been established, the architectural profession has tasked itself with improving the dignity and comfort among those who require long-term care. Improving the model has the potential to benefit not only the resident, but also their families, friends, and the communities they live in. Establishing new connections between those who need long-term care, their families, and

communities, can improve quality of life among seniors. The need for long-term care is growing. The proportion of individuals over the age of 85 is expected to increase 300% by the year 2040 (Moore & Schwarz, 1999). According to the 2000 United States Census, the 85 and over age group was the fastest growing during the decade. (Vierck, 2003). Today, 70% of Americans over 65 will need long-term care at some point in their lives. Those individuals will need an average of three years of care. (Vierck, 2003). Additionally, the effect of the baby boomers on U.S. demographics has been well chronicled.

In January 2011, the first Baby-Boomer turned 65 years old. According to Paul Hogan, Founder of Home Instead Senior Care, over the next 20 years, 10,000 people will turn 65 every day in America. By 2030, the US will have 70 million seniors (nearly double the amount we had in 2000). (Hogan, 2011). Many developed countries in Western Europe and Asia are facing similar issues. Consequently, there has been much response to the need for long-term care.

The question is no longer if we will respond, but how we will respond to the need for improved long-term care. In 1980, institutionalized care in a nursing home was the only alternative to living at home with a family member or friend. Since then, great strides have been made in assisted living and universal design that have made long-term care less institutionalized and more home-like. Refinement of the long-term care model has provided increased safety, dignity, and comfort for millions of seniors. Nevertheless, even with the advances in long-term care, room for improvement still exists.

In their book, *Aging, Autonomy, and Architecture*, Ruth Brent and Benyamin Schwartz state that “Behavioral dependency is not necessarily conjoined with old age. Rather, the environment plays a dominant role in the development and maintenance of dependency among the elderly” (Moore, 2000). A preventative environment integrated with preventative medicine could be used to reduce and delay the amount of time an elderly individual needs to spend in skilled nursing care. Advances in preventative medicine along with increasing knowledge of how seniors interface with the built environment is producing new information and models about ways to improve the living conditions of the elderly. (Feddersen & Ludtke, 2009)

CareMore, a health-care provider based in Cerritos, California is revolutionizing the process of providing care to elderly Americans. Through its approach to preventative medicine, the company has reduced hospitalization rates among its members by 24%. Additionally, the average length of hospital stay is 38% shorter than the industry average. (Main & Slywotzky, 2011) Instead of charging patients for the services provided, patients are charged a flat fee based on their risk profile. This fee structure allows CareMore to be rewarded for keeping patients out of the hospital versus profiting on catastrophic health events often caused by a lack of specific care. The additional profit makes room for the tailoring of innovative and increasingly specific care solutions. (Main & Slywotzky, 2011)

“One of CareMore’s critical insights was the application of an old systems-management principle first developed at Bell



Labs in the 1930s and refined by the management guru W. Edwards Deming in the 1950s: you can fix a problem at step one for \$1, or fix it at step 10 for \$30. The American health-care system is repair-centric, not prevention-centric. We wait for train wrecks and then clean up the damage. What would happen if we prevented the train wrecks in the first place?" (Main & Slywotzky, 2011)

Despite the higher front-end cost of their preventative model, their member costs are 18% lower than the industry average. The principles of their model are relatively straight forward. They ensure patients make their scheduled appointments by providing shuttle service to their facilities, monitor patients more closely by using wireless technology to track bodily statistics, and treat specific conditions with specific methods of care. (Main & Slywotzky, 2011)

This type of care model still has much untapped potential and could be enhanced by integrating itself with architecture using universal design principles. Maintaining a high functioning level of health is a key element in maintaining autonomy as one ages. However, quality of living conditions and health-care delivery are not the only factors that influence quality of life. (Main & Slywotzky, 2011)

Quality of life and life satisfaction are also linked to less tangible environmental and social factors. In the search to create more dignified living conditions for the elderly, the concept of "home" often eludes designers. In *Aging, Autonomy, and Architecture*, the Moore states that "creating a place that is "homelike" doesn't necessarily make it a "home" to the residents. Despite changes made to the physical design of

the building, many residents are unable to perceive the space as “home.” When an elderly individual leaves independent living for some type of long-term care, they give up a level of choice in their daily lives. “Being able to identify with one’s choice is a prerequisite for true autonomy” (Moore, 2000). Increasing choice for the resident is significant in promoting the sense of home in a long-term care setting.

Research has suggested that a beneficial psychological component to aging is the ability to “age in place in a stable living environment” (Brawley, 2006). Often, the idea of a continuing care retirement community is more appealing because the focus is on creating community instead of on illness and declining physical ability. Once a stable environment is established, the task of promoting autonomy by reintroducing choice into daily living becomes paramount in creating the atmosphere of “home.” Brawley, states that, “Activities define who we are. Depression and anxiety often result when a person loses the ability to drive, work, mow the grass, cook, and do other meaningful tasks” (Brawley, 2006).

Researchers have found that it is important to substitute tasks that the resident can no longer accomplish with similar activities. Activities such as music, small-scale gardening, exercise, pets, art, etc.. need to be programmed at the onset of the design process. This ensures that the building promotes a vital facet in achieving higher quality of life among those who need long-term care (Brawley, 2006).

“If we are to meet tomorrow’s challenges of providing care, our assisted living facilities and nursing homes must change to become real homes, with neighborhoods and a sense of community designed to appeal to the evolving tastes of the

baby boomer generation. There is no question that baby boomers will demand different and unprecedented forms of healthcare and social activity. One of the challenges for providers and design professionals is how to offer these services within the community in a place they call home” (Brawley, 2006).

In Europe, some long-term care facilities promote community by creating intergenerational housing. This model integrates family housing in the same building complex as assisted living housing. Such a typology has been met with enthusiastic support by both staff members and family members who enjoy the convenience of living near their place of work or elderly family member (Brawley, 2006).

Research also suggests that family involvement with residents in assisted living is another way to promote a less institutionalized character. However, in order to promote involvement, the architecture of the facility has to lead the way in encouraging family members to participate. The concept is a revolving door. By creating well-designed space to interact with residents, visitors and family members tend to feel more welcomed and are increasingly likely to spend time, further contributing to a facilities non-institutionalized quality. Victor Regnier states, “An environment that resembles the home a resident left is more enjoyable to visit and reduces the guilt a family member might experience compared to a setting that is less attractive or more institutional.” (Moore, 2000)

Darlene Tee-Melichar, professor at San Francisco State notes that geography and proximity to friends and family is among the most important challenges facing future assisted living facilities (Niles-Yokum & Wagner, 2011).

As stated previously, improvements to the current model of assisted living can have an impact on quality of life for both the resident and the family. Advancing the way architecture interfaces with the individual in both medical and social scenarios can foster these improvements. The combination of evidence-based design and qualitative reasoning can lead to new solutions. These can then be evaluated against the current paradigm to foster progress in the evolution of the typology. This progress will be necessary to continue to meet the needs of our aging population. However, the individual and the typology do not exist in isolation.

As architects, we go through great lengths to ensure that the site influences our design. Much less often are we led to contemplate how our built project will influence the context around it. This project alone will not claim to have any substantial impact on the diversity and vitality of the Belltown Neighborhood of Seattle. Nevertheless, it could be used as a tool to extrapolate the potential benefits of similar developments related to the expansion of the age demographic.

The Belltown Neighborhood is home to about 2% of Seattle's residents (nearly 12,000 people) and boasts one of the highest neighborhood population densities in Seattle (Loar, 2011). This large population is host to a very narrow age demographic. Eighty-five percent of people living in Belltown are between the ages of 25 and 65 (Esri, 2011). The neighborhood could potentially benefit from diversifying its age demographic both in terms of amenities offered as well as increased safety.

According to Jane Jacobs, author of *The Death and Life of Great American Cities*, there are four necessary conditions for generating diversity. These conditions include mixed primary uses, small blocks, aged buildings, and concentration of population (Jacobs, 1961). Unfortunately, Belltown suffers from the most difficult conditions to remedy—the large block issue. Fortunately, it has components of the other three conditions. The population is of desired concentration, there is a mix of aged buildings, along with newer construction, and there is some mix of primary uses. The mixed primary uses condition will notice the greatest improvement with the addition of projects that expand the age demographic. According to Jacobs,

“The district, and indeed as many of its internal parts as possible, must serve more than one primary function preferably more than two. These must ensure the presence of people who go outdoors on different schedules and are in the place for different purposes, but are able to use many facilities (amenities) in common” (Jacobs, 1961).

In short, in order to create successful neighborhoods with successful streets, people must occur outdoors at different times. Currently, the neighborhood amenities are limited to bars, restaurants, and boutiques. Furthermore, the largest concentration of people in the district occurs early in the morning and after 5pm (when people are going to and returning from work).

During normal business hours, much of Belltown is vacant due to most of its residents leaving for work. This poses an issue for amenity diversity. The population and demographics

of Belltown alone are not enough to bring in such amenities as a clinic, optometrist, and pharmacy. However, the residents of the neighborhood could stand to benefit from the introduction of such amenities. The introduction of an older age demographic could bring about these amenities.

According to Jacobs, there are three populations that boost commercial activity—residents, workers, and tourists. (Jacobs, 1961) Belltown currently has a large residential population, but a much smaller worker and tourist population. Adding such amenities will help to boost the worker and tourist population. Additionally, the introduction of the Belltown Bluffs Park outlined in Seattle's Waterfront Redevelopment Plan will provide a recreational outlet for all three populations. This influx of people will be economically similar enough to share in similar amenities with the current population. Moreover, diversifying the age demographics of the neighborhood will assist in creating a safer neighborhood during daytime hours ( Jacobs, 1961).

A population that is at home during normal business hours will ensure that there are eyes on the street and in public parks and squares. This added safety can make the neighborhood more appealing for both families and tourists alike. This will also ensure that the Belltown Bluffs Park will not lie idle during certain parts of the day, making it more appealing to potential users. Consequently, many European nations have perceived the benefits of multi-generational neighborhoods and have mobilized government funding to promote such development (Jacobs, 1961)

Local governments have realized the negative consequence of the aging of an entire neighborhood without the necessary services and infrastructure to care for the elderly (Feddersen & Ludtke, 2009). In Germany, cities have promoted urban developments that give residents the chance to continuing living in their neighborhood until they die. Neighborhood developments abide by these principles:

- New housing projects for the elderly, as well as retrofits to existing buildings are qualified for receipt of a grant upon review.
- Ensure services are within the vicinity of the housing development, so each facility doesn't have to provide its own services (saving money).
- Integrated approach to multi-generational neighborhoods is the model for the future by creating different housing options together with an easily accessible neighborhood.
- Encourage the exchange of services between young and old. (Feddersen & Ludtke, 2009)

In the Netherlands, local municipalities have developed "residential care zones" where the goal is to allow residents to live independently as they become less mobile. Many large cities in Denmark haven't seen a dedicated elderly housing

development in two decades. Grant funding is offered to residential developments that use universal design principles. Some of these housing schemes are architecturally designed to adapt to the changing generational structure in the years to come. The sustainable urban development taken on by many European cities is centered on the core principle of Universal Design. A Universal Design that functions like its title suggests—good for everyone. This approach has made many neighborhoods in European cities livable for not only the elderly, but for every age and ability (Feddersen & Ludtke, 2009).

Again, I will stress that one project will not be enough to bring about wholesale changes to the district. The population introduced will not be large enough to make an impact on commercial activity. Moreover, large scale government policy changes would have to be implemented in order to achieve multi-generational neighborhoods as successful as those found in European cities. However, the concept of introducing a broader age demographic to an already dense neighborhood could bring about positive changes for both the residents of the neighborhood and potential visitors and tourists.





## theoretical premise summary

The need for elderly care is well established in America and across much of the developed world. The success of long-term care is still yet to be decided. The “65 and older” age demographic is the second fastest growing only to the “85 and older” demographic. (Vierck & Hodges, 2003) The ability of long-term care to adapt to the challenges of the baby-boom generation will ultimately determine its fate.

“The aversion to even thinking of the likelihood of living somewhere other than home, even in an assisted living community, stems less from the issue of the quality of such facilities than from an unwillingness to face the reality that our bodies don’t seem to support us as well as they used to” (Brawley, 2006).

Changes to health-care delivery will play a crucial role in the design of future long-term care facilities. Remote monitoring, preventative medicine, and guaranteed frequency of care will work together with Universal Design principles. This interdisciplinary collaboration will ensure that with increased life expectancy also come increased years of robust living.

Even with improved health care delivery, we must still recognize the importance family and social networks play in our quality of life. The architectural programming, space-making, and detailing are important fundamentals in making long-term care more functional for family interaction and social networking. By creating well-designed space to interact with residents, visitors and family members tend to feel more welcomed and are increasingly likely to spend time. Interaction with friends and family further contributes to a facility’s non-institutionalized quality.

Similarly, designing for activities is also an important part of creating an atmosphere of “home” within long-term care facilities. It is important to replace old activities with new ones in order to give residents a sense of purpose and satisfaction. Programming specific activities into the design of the building in the early stages is important in creating well-functioning, specific spaces.

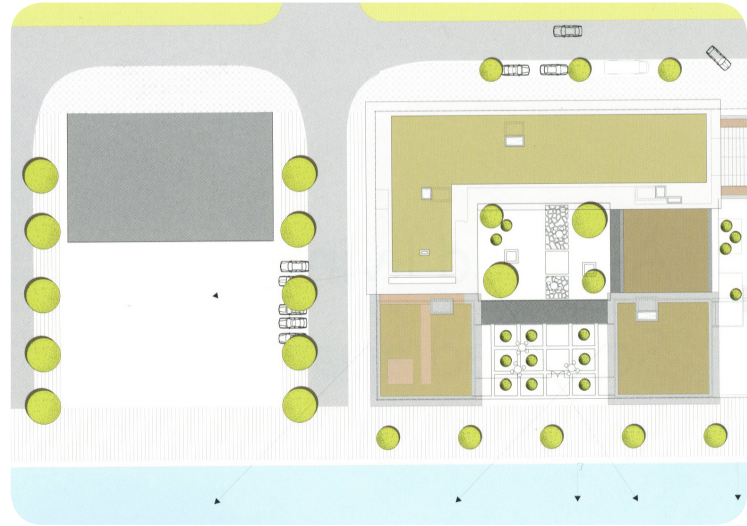
Finally, re-introducing the elderly demographic back into urban neighborhoods can have a positive effect for all members of the community. Universal Design principles and the overlapping of services and amenities provide accessibility and greater diversity for everyone in the neighborhood. An emphasis on universally designed urban spaces and walkable communities ultimately has the greatest affect on the most vulnerable in our society. This important foresight helps to generate neighborhoods that are suitable for young and old alike, thus creating an environment that we can age with, instead of out-of.

New evolutions to the current long-term care model can bring about changes that positively affect the care-recipient, their friends and families, and the neighborhoods they live in. These changes in the built environment can advance the way people interact by humanizing the connections between elderly generations and the rest of society. These improved interactions and interfaces help to enhance the quality of life among the elderly.

## Cronstetten House

<u>Location</u>	Frankfurt, Germany
<u>Architect</u>	Frick.Reichert Architekten
<u>Completion</u>	2006
<u>Useable floor area</u>	8289 m <sup>2</sup> (89,300 ft <sup>2</sup> )
<u>Units/Capacity</u>	75 apartments

case study one







images from (Feddersen & Ludtke, 2009)



## typological research

The Cronstetten House was designed by Frick.Reichert Architekten and completed in 2006. The client and operator is a charitable foundation that has existed in Frankfurt since the mid 1700s. The site is located near a harbor and is part of a larger project to redevelop Frankfurt's former trading port into a residential, commercial, and retail core. The project is nearly 90,000 square feet and is host to 75 apartments. The building is between seven and eight stories tall and is divided into 5 sections or *houses*. Each house has an individual elevator and stair (Feddersen & Ludtke, 2009).

The ground floor acts as a plinth for the building. It houses semi-public functions, such as concierge, an entrance hall, director's office, administration, and care station. Additionally, it houses communal amenities such as an event room, art room, gym with changing rooms, and a club room (Feddersen & Ludtke, 2009).

Outdoor spaces include an arcaded courtyard as well as an elevated courtyard. The arcaded courtyard acts as the center or hub of the building by promoting contact and conversation among the residents. Public facilities, such as restaurants, shops, and supplementary rooms are orientated away from the courtyard and towards the main square adjacent to the building. Underground parking provides space for 51 vehicles, 28 of them using a double stacked system. Entrances and stairways exiting the garage are color coded for way-finding purposes. A unique façade treatment and exterior cantilevered eaves allows the building to be easily recognized at street level. Materials include a travertine plinth (ground floor) and an orange stucco treatment for floors one through eight (Feddersen & Ludtke, 2009).

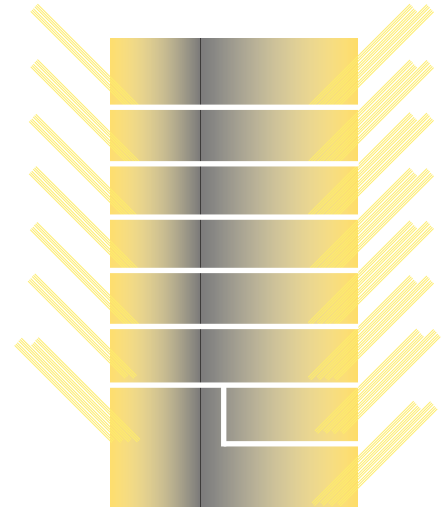
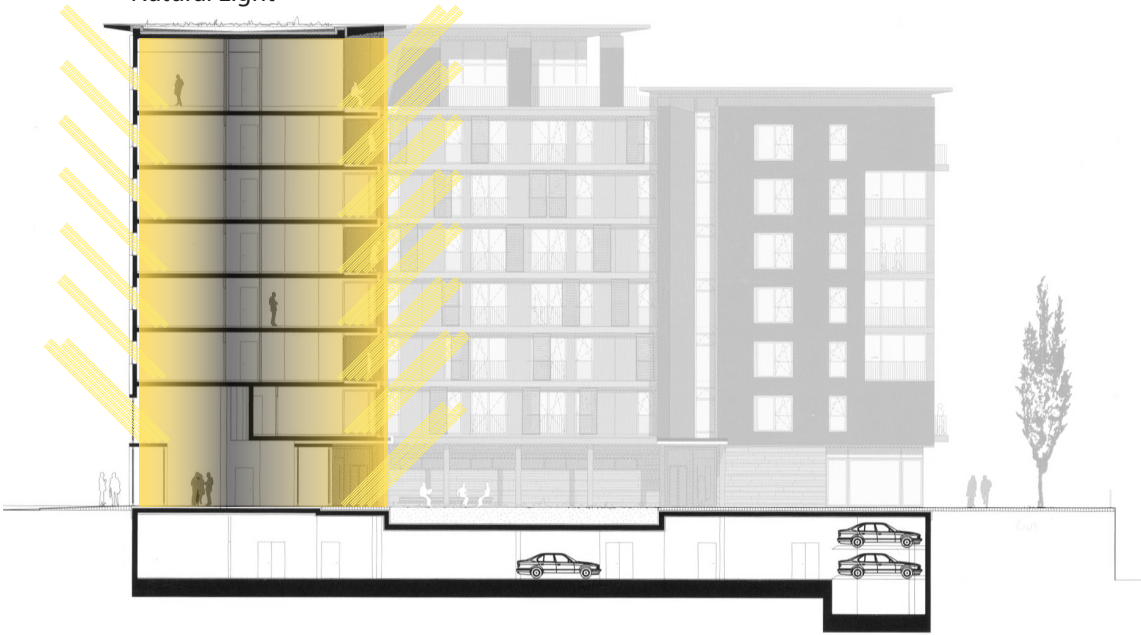
The 1st through 7th floors contain apartments ranging from two to four rooms, which vary in size from 750 to 1500 square feet. High ceilings ranging in height from 9 to 10 feet give the

apartments a spacious feeling. Floor to ceiling glazing offers great views from the apartments even when seated. Because circulation is broken up into five distinct “cores”, the building avoids long corridors. Additionally, this unique circulation scheme allows day-lighting access from both sides of each apartment without the need for stairs within the unit. Each unit has views to the street as well as the interior courtyard (Feddersen & Ludtke, 2009).

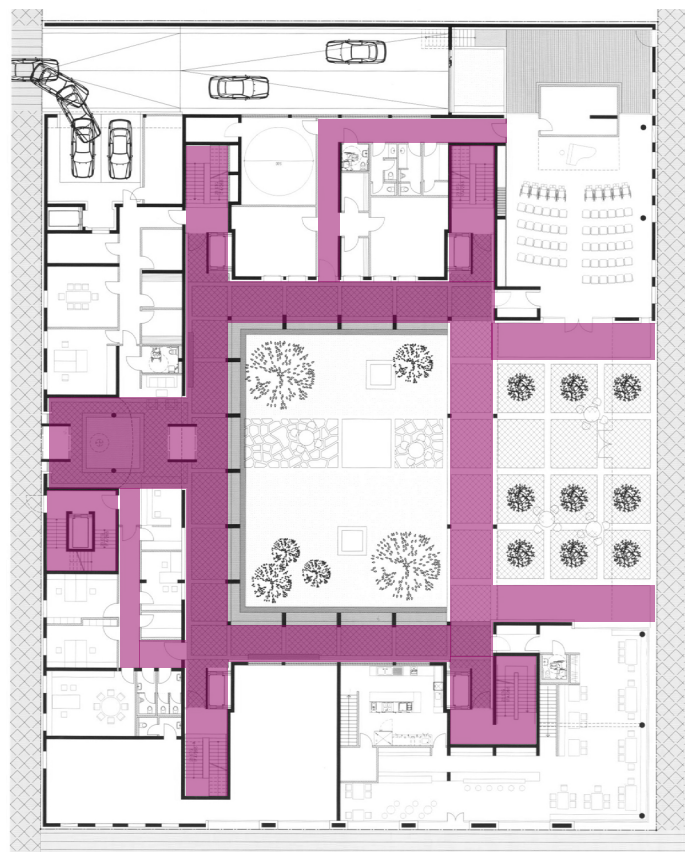
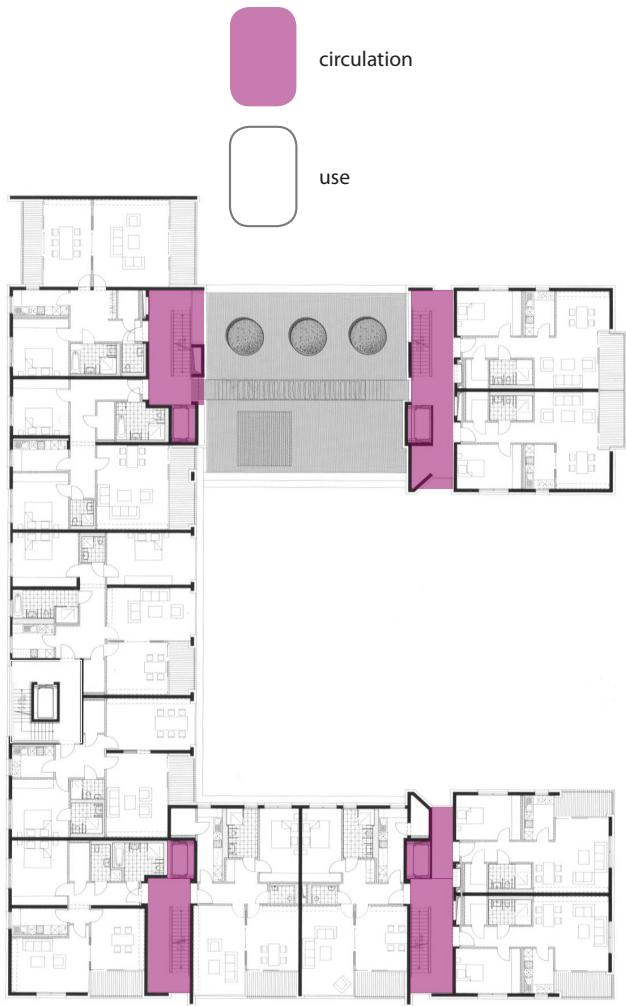
Much like Case study #3 (Generationsenhaus), Cronstetten house is located in a busy urban center. It takes advantage of natural views while still accounting for privacy and quiet in an environment that is capable of overloading the senses. Like Generationsenhaus, this project has a multi-building approach that opens itself up to an inward facing courtyard. Unlike the second case study that takes advantage of a sprawling form in a natural site, this project must work within the confines of a city block. Though the form may not closely relate to case study number two, the day-lighting scheme offers a similar experience. Though it takes many of its architectural cues from historic buildings, it is not a slave to historic context. It has a uniquely minimalist twist that allows it to take advantage of human architectural scale without seeming historic. The building's interior is more closely related to the second case study with its limited palette of materials and simple lines.

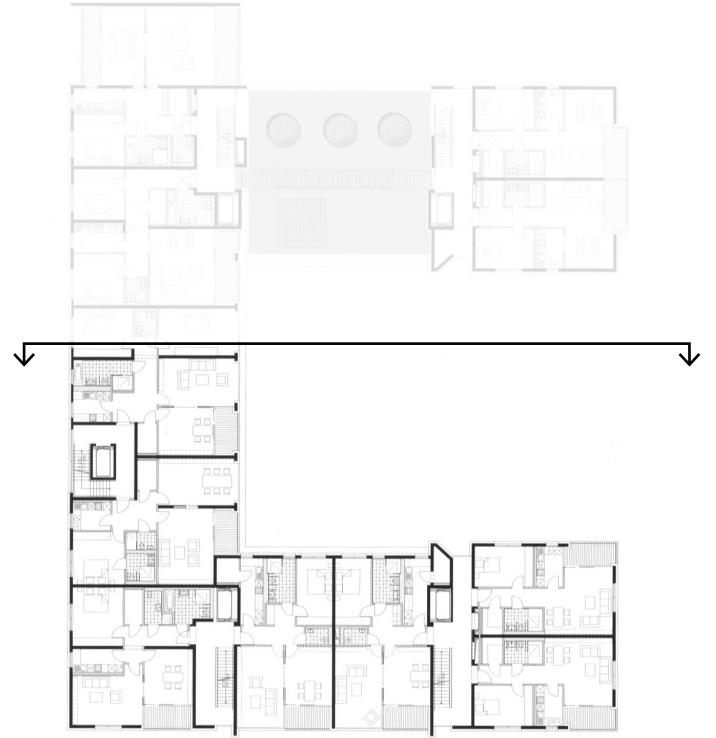
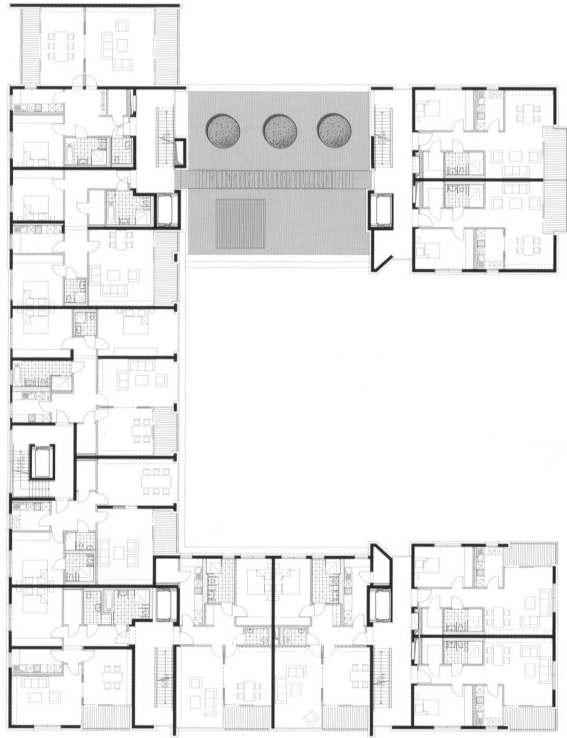
In accordance with my theoretical premise and initial programming, this project allows ample space for family involvement and social interaction. It interacts well with the neighborhood, as well as the adjacent public square, by providing rentable commercial space, which includes a doctor's office and small retail stores. With its lack of long corridors, the building has a distinctly residential feeling that more closely resembles a single family dwelling than an apartment building or institutionalized setting.

Natural Light







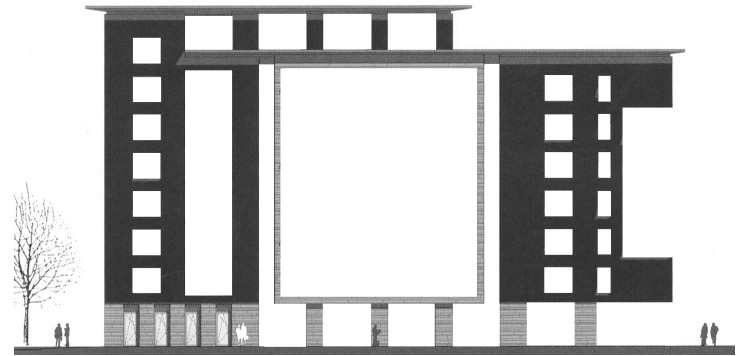


Plan to Elevation

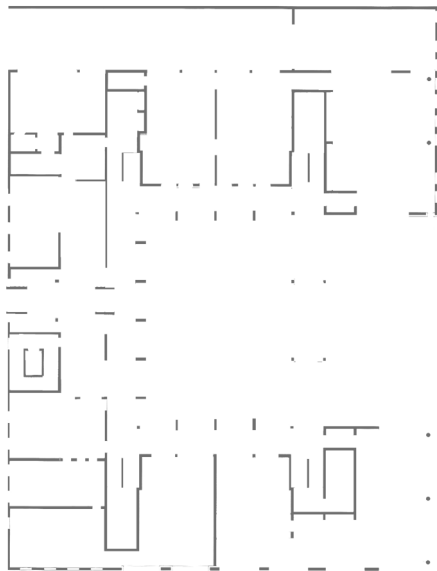
Plan to Section



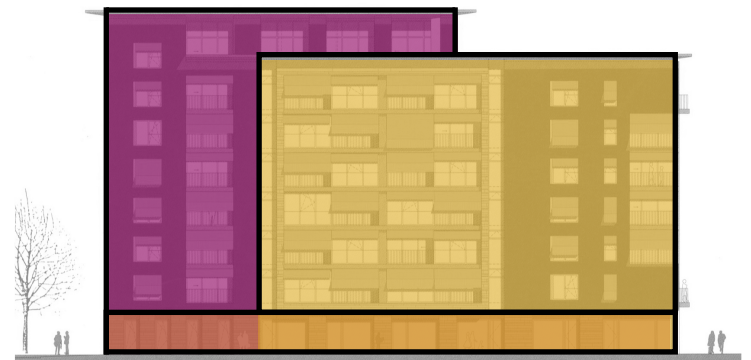
Geometry



Massing



Structure



Hierarchy











## Kenyuen Home for the Elderly

<u>Location</u>	Wakayama, Japan
<u>Architect</u>	Motoyasu Muramatsu
<u>Completion</u>	2001
<u>Useable floor area</u>	4973 m <sup>2</sup> (53 520 ft <sup>2</sup> )
<u>Units/Capacity</u>	20 flats, 75 care places



## case study two



images from (Feddersen & Ludtke, 2009)







The Kenyuen Home for the elderly in Wakayama, Japan was designed by Motyasu Muramatsu and was completed in early 2001. It is owned and operated by a local healthcare organization. The building's size is 53,000 square feet spread over three stories. The residential portion of the building consists of 20 apartments and 75 care rooms. The care rooms are divided into 62 single and 13 double rooms. The semi-public functions include a gymnastics room, swimming pool, and bathing room. There is also a large public area consisting of a fully-glazed two-storey dining area and outdoor terrace. These public and semi-public functions are located in the adjoining central wing or in the perpendicular part of the "Z" in plan.

The large public wing of the building accommodates visitors, families, and friends. The location in its own right is an attraction for many guests. It is located near a national park—a popular tourist destination for many families in the region.

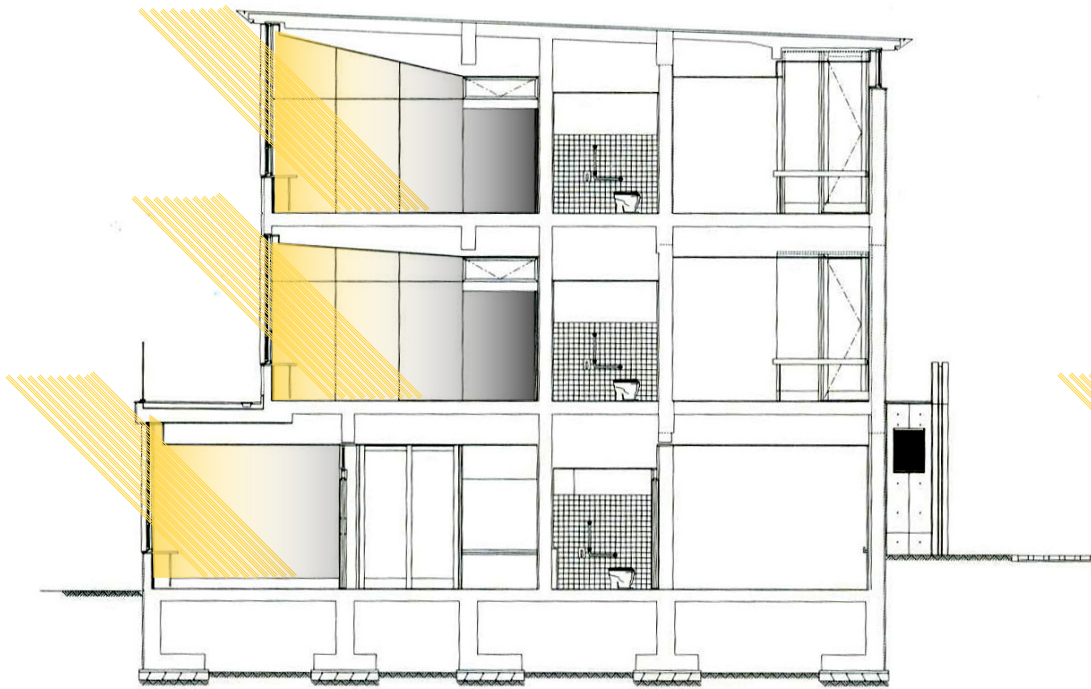
Unlike the other case studies, Kenyuen Home is a single building complex in which all parts of the building are accessible through interior hallways. Hallways become very extensive in this project, because of the elongated form of the building. The material palette is also slightly different from the other two case studies. The exterior palette is very minimal—consisting of only dyed concrete, steel, and glass.

The Parti for this building is more poetic than the other case studies. While the other case studies have more external site factors (city noises, pollution, built context,

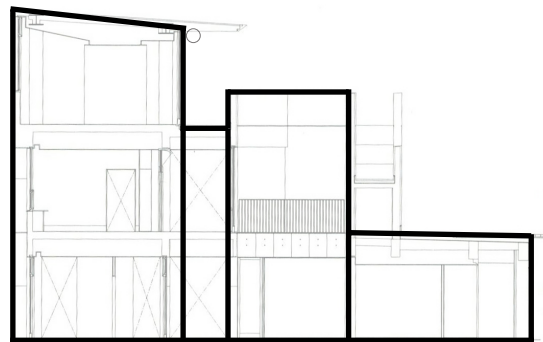
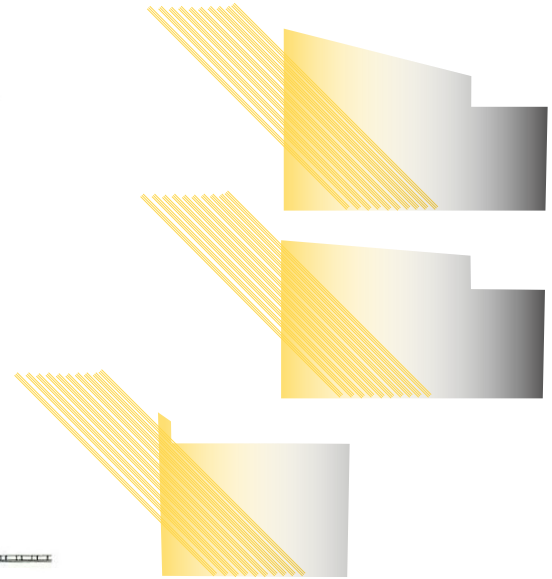


ect...) to contend with, Kenyuen house is situated on a very natural and picturesque site. The architect said he wanted to create a place to retire that was “between the earth and the sky.” The home was created for people whose lives revolved around the “cycles of nature and the rhythm of the sea” (Feddersen & Ludtke, 2009). The minimalist building recedes into the subconscious and lets the focus of the user shift to the views of the sea and landscape. Its elongated, narrow shape helps to maximize views for its residents while taking full advantage of natural day-lighting. Every residence and public function in the building is flooded with natural light throughout most of the day. The architect wanted to allow the elderly to grow old with dignity. Despite its stated *openness*, special care was taken to ensure privacy and noise reduction.

In accordance with my theoretical premise, site selection, and initial programming, this project was designed for a site that would be desirable for family members and friends to come visit. Its program allows for ample public space for families and residents to interact in. The building takes advantage of a strong parti as a guiding force for design. In a typology that has become centered on evidence-based design, the architect shows there is still plenty of room for poetic interpretation.



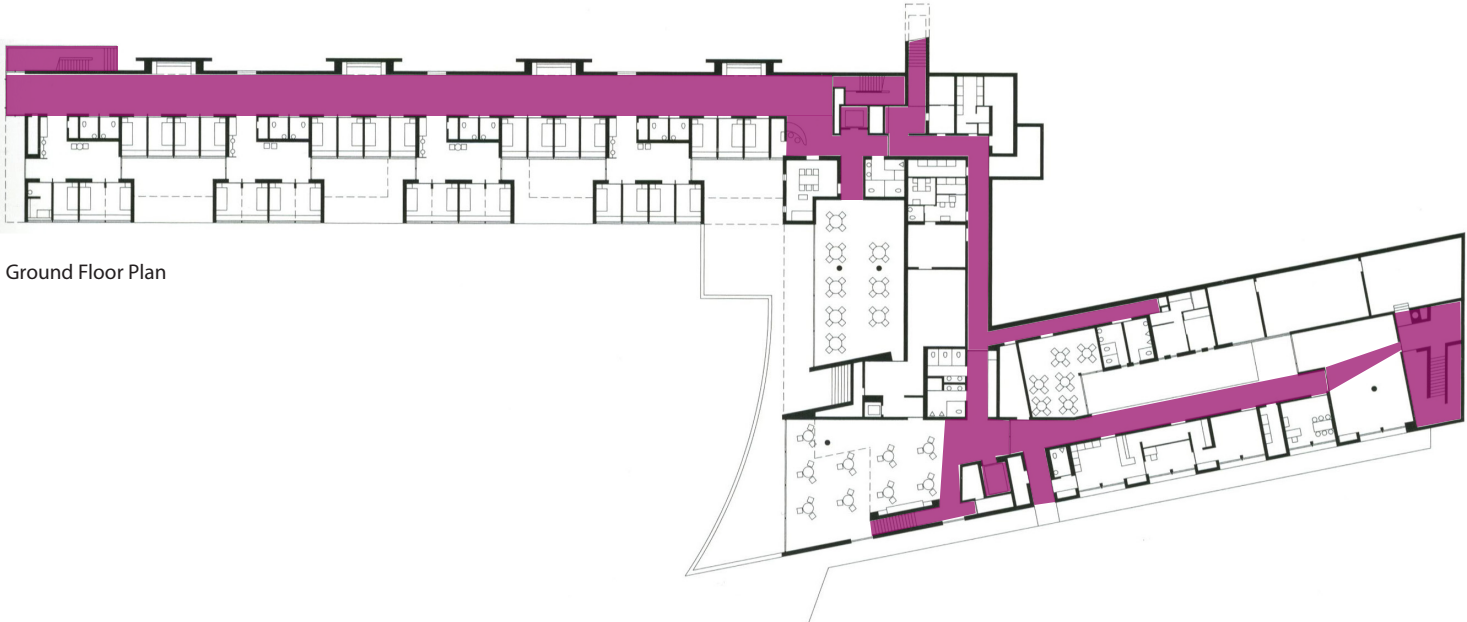
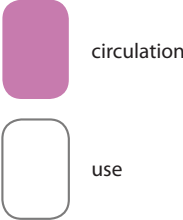
Natural Light



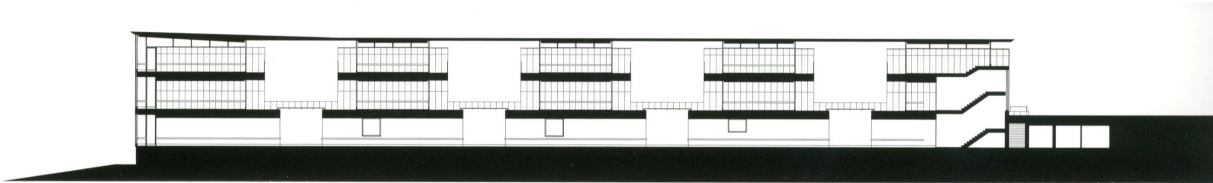
Hierarchy



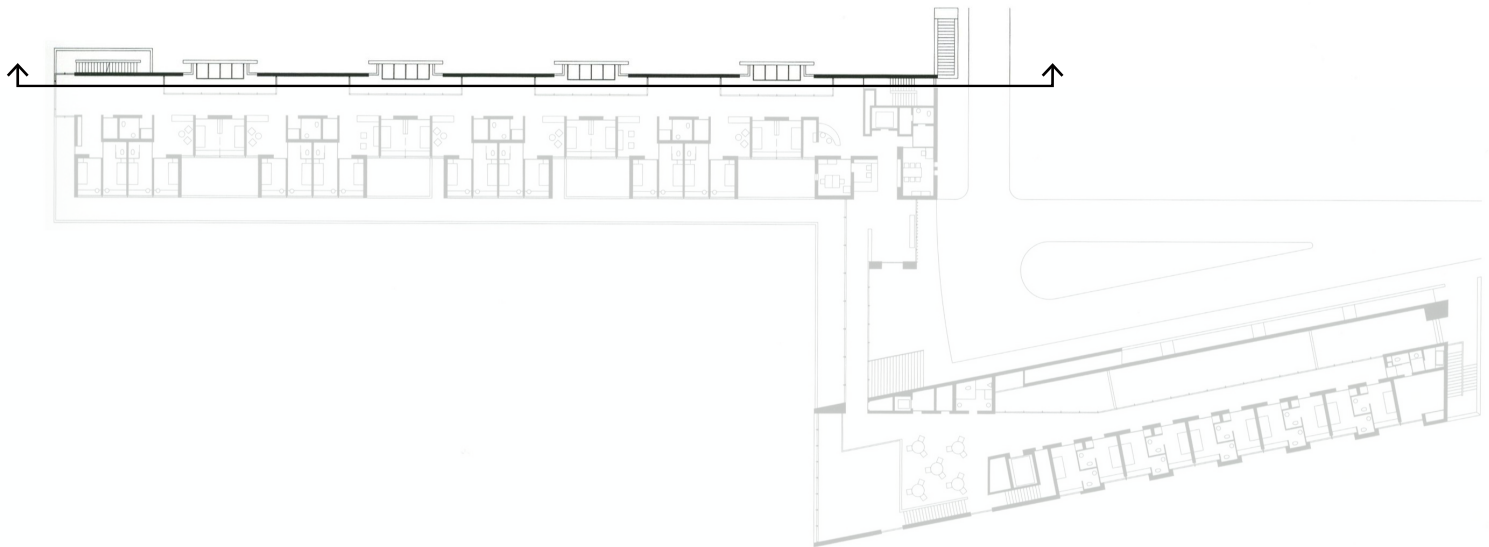
First Floor Plan

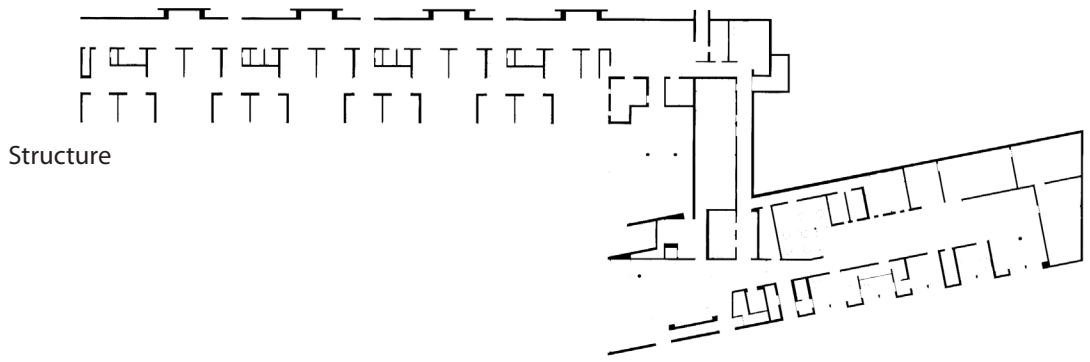
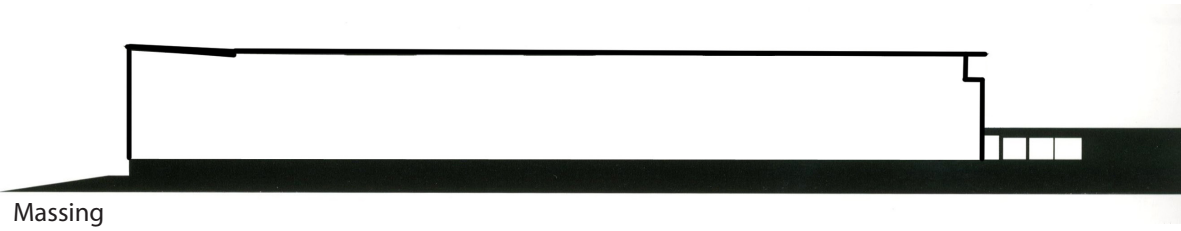
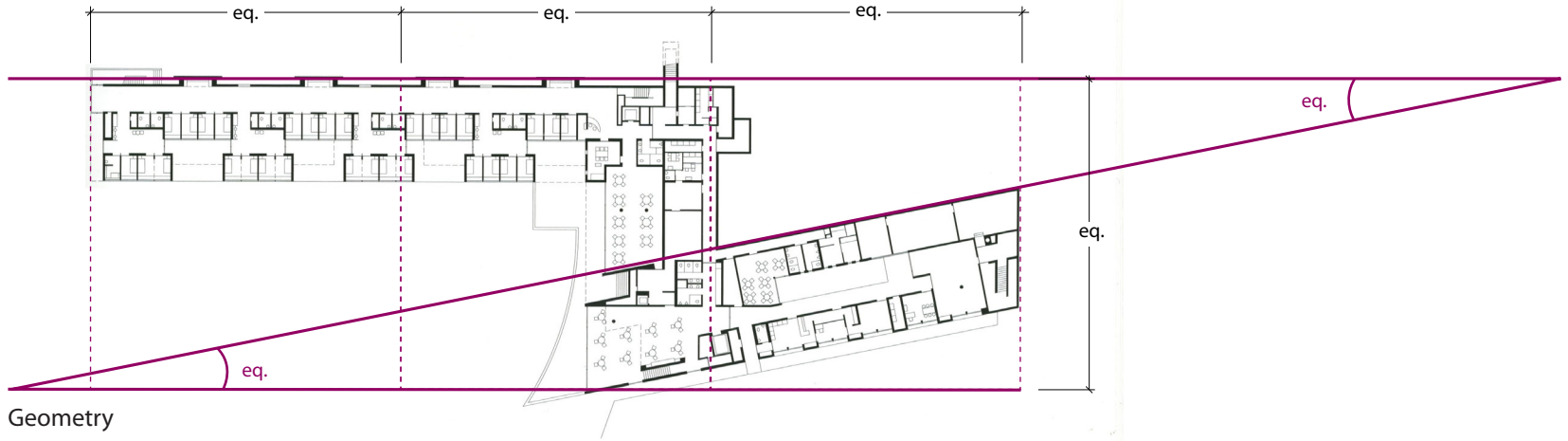


Ground Floor Plan



Plan to Section











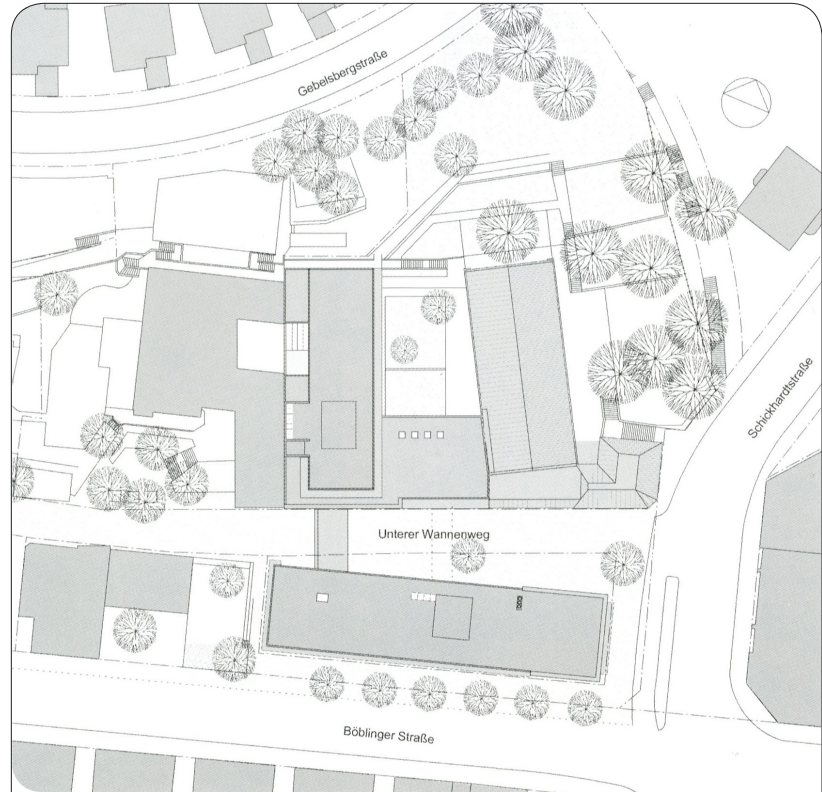




## Generationsenhaus Heslach

<u>Location</u>	Stuttgart, Germany
<u>Architect</u>	Drei Architekten
<u>Completion</u>	2001
<u>Typology</u>	Mixed-use
<u>Units/Capacity</u>	74 nursing apartments

### case study three



images from (Mostaedi, 2003)





## typological research

Generationenhaus was designed by Drei Architekten, Haagem, Haffner and Stroheker and was completed in July of 2001. It is located along one of the busiest thoroughfares in Stuttgart, Germany. This project is a multi-building complex consisting of two new buildings adjoined to a renovated brewery. This mixed-use project is home to 74 nursing apartments for senior citizens and five apartments that are part of an experimental intergenerational living project. The building also provides space for local clubs and projects along with commercial space that is occupied by a bank, doctor's office, and daycare center. The former brewery contains mostly public functions, including a dining hall, space for additional public functions, and a neighborhood center (Mostaedi, 2003).

The wing of the building that is new construction is organized by floor. The two lower floors enclose a main entrance, administration offices, and a director's office. The next three floors contain nursing apartments. The top floor contains the five independent apartments that are part of the intergenerational living project. The outdoor spaces include both a private courtyard and a garden. Both spaces have large, existing trees (Mostaedi, 2003).

Unlike the first case study, apartments face either onto the street or into the courtyard. No apartments have both views. Exterior balconies are only available to the units facing the courtyard. Unlike the second case study that opens itself up to its environment, Generationenhaus shelters its interiors from the bustling street and opens itself up to a rear courtyard. Glazing is used more sparingly in the residential portion of this project in an attempt to gain privacy and shield occupants from noise. Many

programmatic and organizational similarities exist between Generationenhaus and Cronstetten House.

The material palette is predominantly brick, glass, wood, and concrete. Special attention was paid to the surrounding built context when selecting materials and proportions. A passive cooling system combined with active ventilation allows for reduction in energy consumption while promoting thermal comfort. Additionally, operable windows allow residents the freedom to manually control their environment.

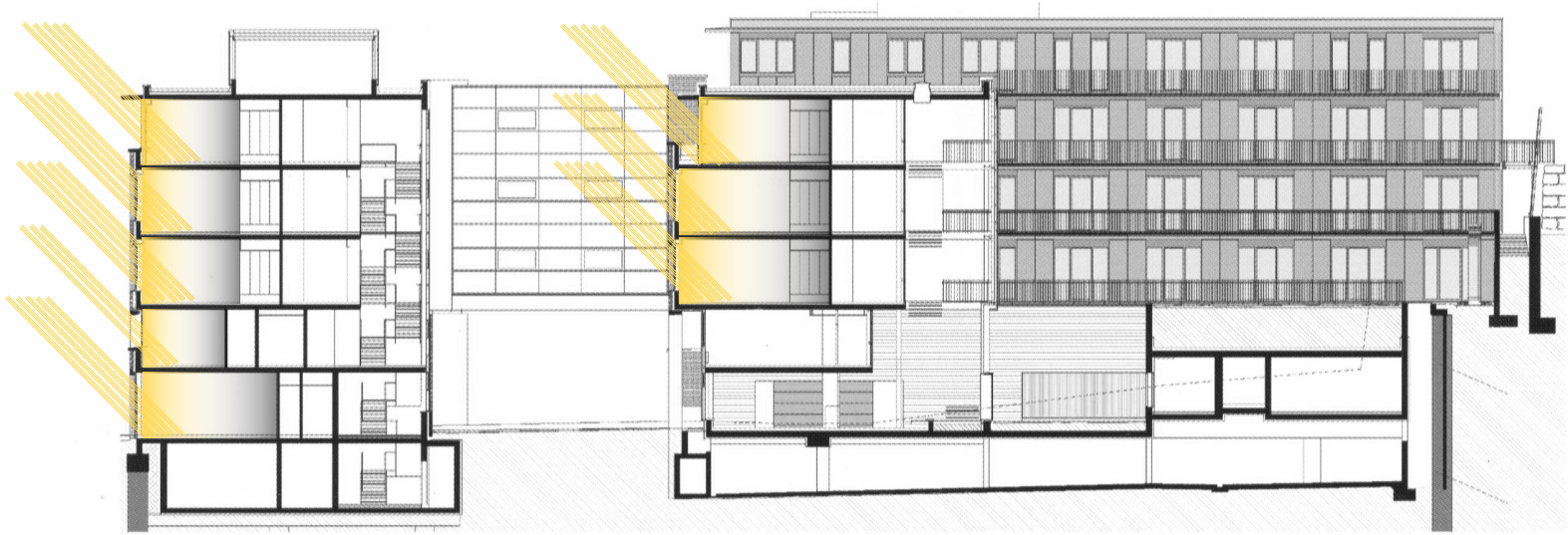
The building design and program is very sensitive to both the surrounding built context and the neighborhood. Unlike the other case studies, Generationenhaus makes a larger effort to improve the community by providing space for shared amenities and intergenerational living. It allows room for a doctor's office, bank, daycare center, and community organization in a neighborhood with a large residential population. Despite being located in a busy urban neighborhood, the project is successful at providing sufficient outdoor space with varying degrees of privacy and noise reduction.

Culturally, the Japanese case study seems to put a larger emphasis on rehabilitation and tranquility in both the site selection and the design of the building. In contrast, the German case studies illustrate the importance of being part of a neighborhood or community despite the potential downside caused by increased noise and pollution. Some measure of tranquility is traded in for the opportunity to create an intergenerational atmosphere that is suitable for all ages. The aforementioned aspects of Generationenhaus are important components to my theoretical premise and initial programming.

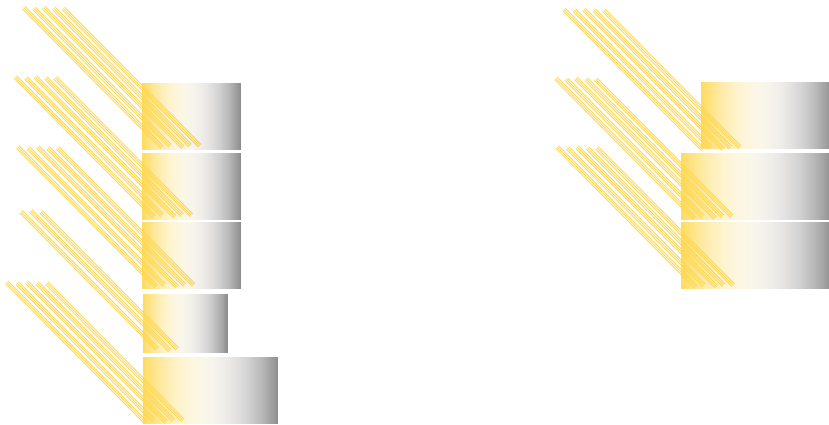


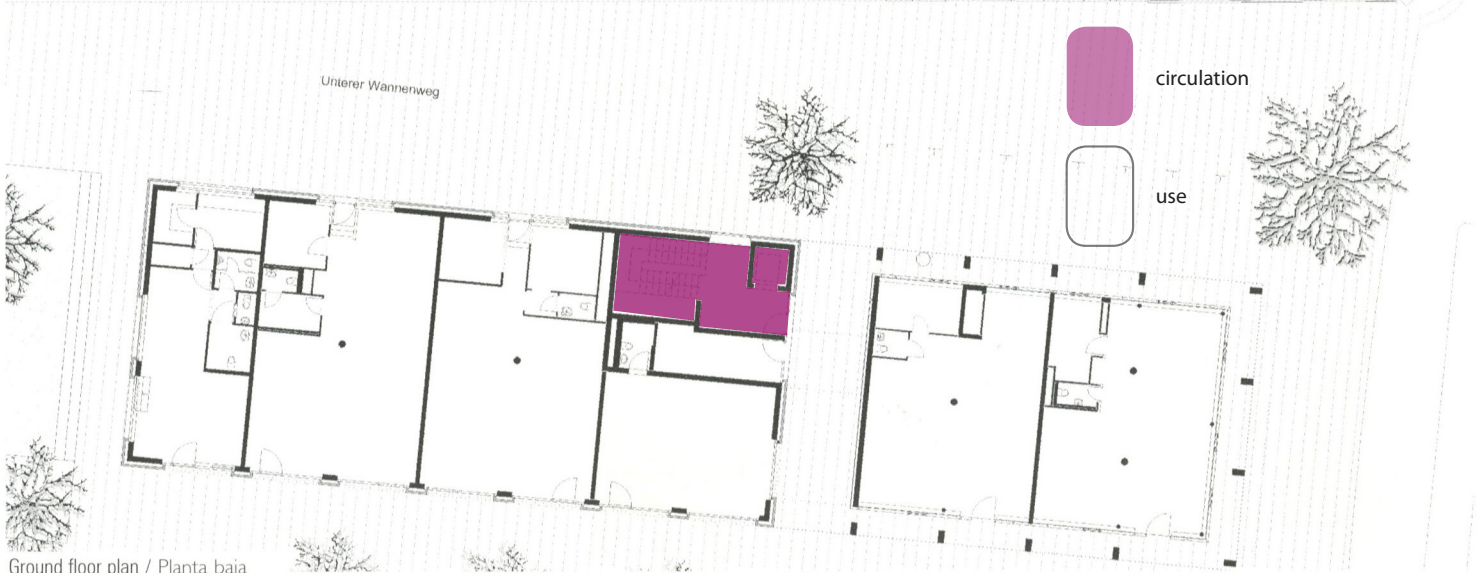
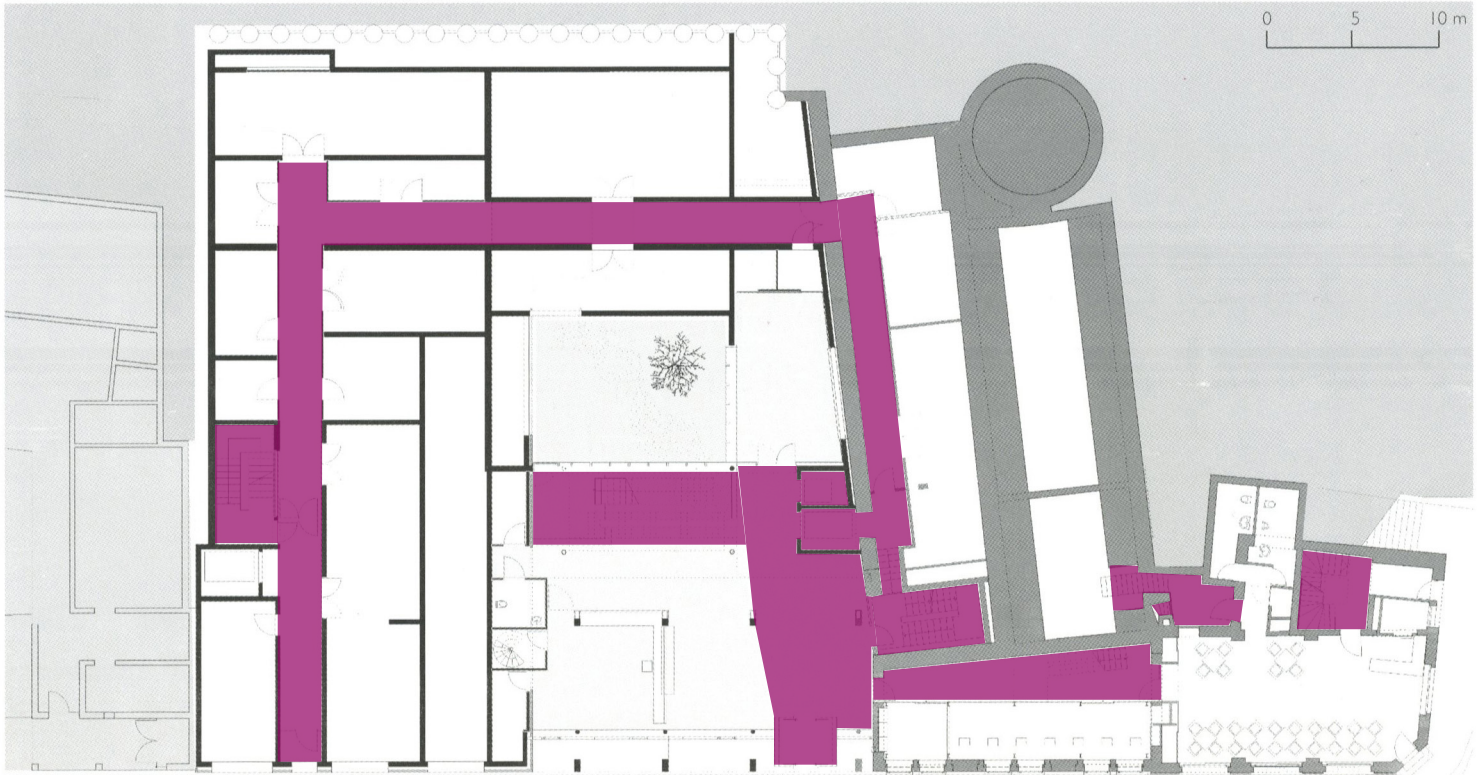
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Section / Sección



Natural Light

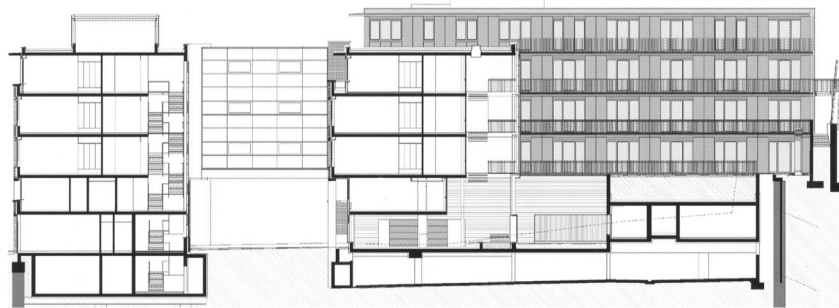




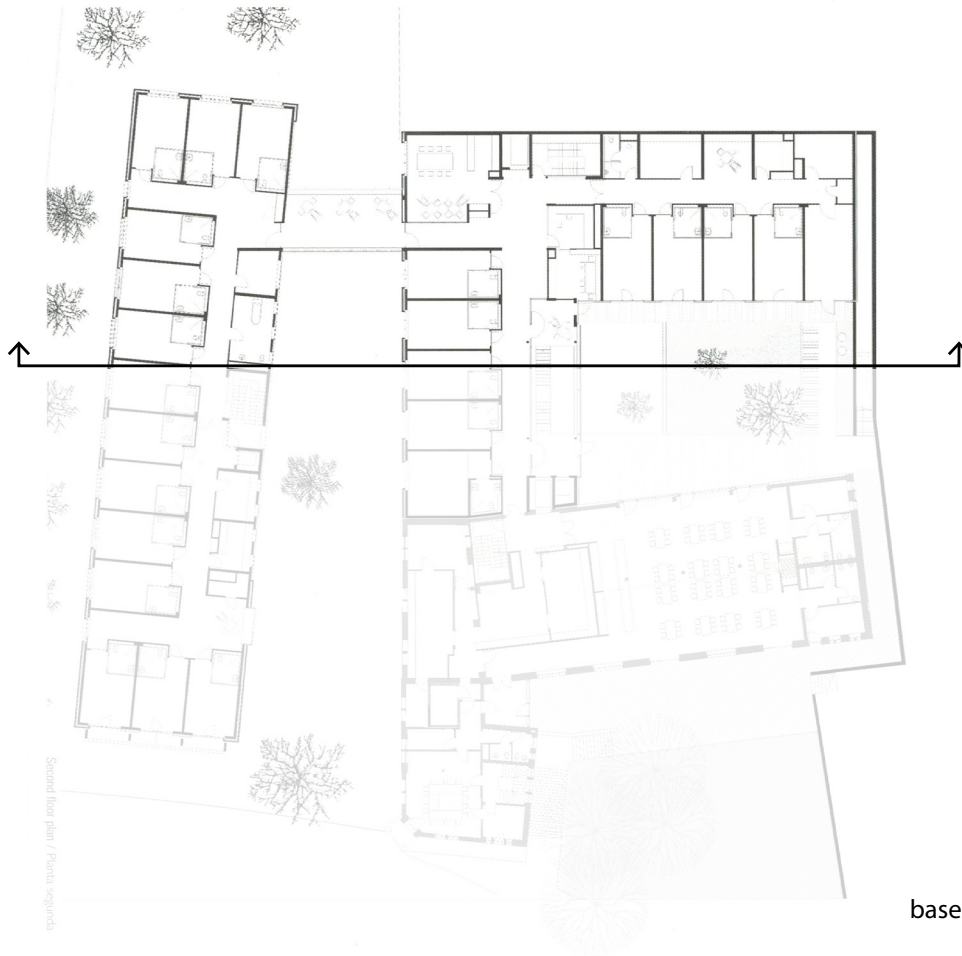
Ground floor plan / Planta baja

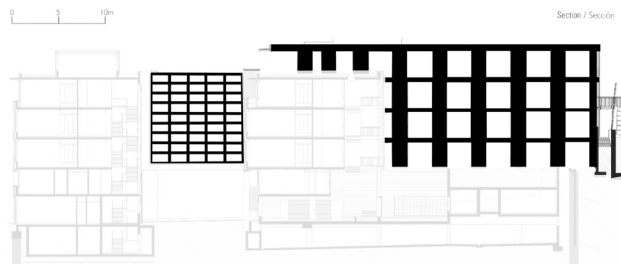
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Section / Sección



Plan to Section/Elevation

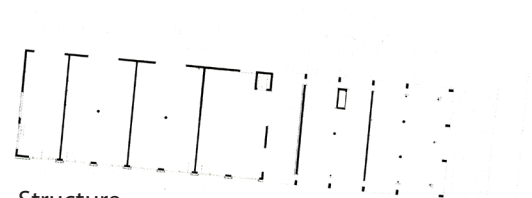




Massing



Hierarchy



Structure









## typological summary

The case study report examined three projects—two from Germany and one from Japan. The Cronstetten House was designated as mixed-use retirement apartments, Generationenhaus as a mixed-use elderly-care facility, and Kenyuen house as a skilled-nursing assisted living facility. These projects were selected for a number of reasons including their variety of global locations, site typologies, building typologies, and mixed-use functions. Moreover, all three projects have exceeded the typical long-term care model in some aspect. The case studies helped to illustrate examples of tangible solutions to the ideas presented in my theoretical premise.

An important aspect of my theoretical premise deals with the role family and community play in creating an environment that improves the quality of life for the resident. Each case study addressed this issue in a different way. Case studies one and three addressed the issue of community by looking at how the building interfaces with the neighborhood. By doing so, they make the neighborhood a desirable place to be more than just the building alone. Case study two took a slightly different approach by making the building and surrounding site a destination in itself for family members and friends. This difference in methods illustrates a few of the many possibilities when considering ways to promote opportunities for the resident to interact with his or her social networks.

Each case study's focus on health care delivery also varies. Case study one is mostly independent living with some tasks being carried out by a minimal staff. However, a doctor's office located in the basement of the building reduces the challenge of getting to the clinic. Case study two integrates skilled nursing into the building much in the same way the typical long-term care facility does. The third case study is a hybrid of the two. It offers a clinic on the main floor in addition to skilled

nursing in the upper floors. The variety of choice that case study three offers is ideal when trying to promote autonomy within such a facility. Such variety gives the resident and his/her family options when deciding on an appropriate level of care without having to weigh factors, such as travel distance or mobility.

The projects located in Stuttgart and Frankfurt (case studies one and three) closely account for the neighborhoods in which they are located. Similarly, the project in Wakayama, Japan (case study two) capitalized on the site's natural beauty through the use of a simple, yet powerful parti. Each project recognized its site and surrounding context in a different, yet appropriate manner. Additionally, all projects seemed to emphasize the importance of family and/or community interaction.

Functionally, the buildings organized themselves in different ways. Case study number one placed on emphasis on organizing the building into separate "houses" in order to reduce circulation corridors and maximize views. This approach worked for this building because high levels of care were not offered. The other two case studies had a greater focus on skilled nursing care, making staff circulation between all the rooms without unnecessary use of stairs or an elevator more important.

Culturally, the Japanese case study seems to put a larger emphasis on rehabilitation and tranquility in both the site selection and the design of the building. In contrast, the German case studies illustrate the importance of being part of a neighborhood or community despite the potential downside caused by increased noise and pollution. Some measure of tranquility is traded in for the opportunity to create an intergenerational atmosphere that is suitable for all ages.



## historical context

Providing housing for the elderly is not a new idea. Through much of the 18th and 19th centuries, it has been the role of the family, a foster family, or the government to care for the aged. However, humanitarian, facility-based long-term care is a relatively new concept. Facility-based long-term care was brought about in the 1930's on account of increasing life expectancy. This development alerted public awareness of expanding needs among the elderly in America. Increased awareness combined with economic hardships during the Great Depression led to increased government funding to social programs.

The history of long-term care in America began with almshouse and public poor houses in Colonial times. When the family could no longer care for an individual, they became the responsibility of the government. Institutionalization in such facilities was thought to be disgraceful and the last-resort scenario. The philosophy of isolating the elderly in society continued to be the leading social policy throughout the 19th century. To illustrate public opinion, a New York State report noted:

“Care has been taken not to diminish the terrors of this last resort of poverty, the almshouse, because it has been deemed better than a few should test the minimum rate of which existence can be preserved than that many should find the almshouse so comfortable a home that they would brave the shame of pauperism to gain admission to it.”

Almshouse population increased rapidly in the 1800s. The elderly in these institutions often shared housing with the mentally handicapped, convicts, and a range of other indigent people (Niles-Yokum & Wagner, 2011). Conditions

in almshouses or *poor houses* ranged from barely tolerable to appalling. Despite the horrific conditions, most people still believed in the system and its *efficient* way of simultaneously caring for the vulnerable in society. Such institutions were thought of as “factories for rehabilitation”. Citing unfit conditions, lawmakers began moving children and the mentally handicapped to separate institutions, but the elderly remained in poor houses for the remainder of the 19th century (Stevenson, 2009).

In the early part of the 20th century, an increase in philanthropy, private foundations, and government awareness expanded the types of institutionalized care available for the elderly. In 1929, the Old Age Assistance Act began to offer funding to families and foster families in order to prevent their loved ones from becoming institutionalized. In the 1930s, Social Security increased the amount of funding available (Stevenson, 2009).

Initially, institutions were prohibited from receiving Social Security funding because they were seen as a state responsibility. The prohibition of funding was also to encourage the elderly to live at home with families and avoid the degrading conditions of almshouses (Niles-Yokum & Wagner, 2011). However, in the latter part of the 19th century, changing family and marital demographics meant many elderly, especially elderly women, were left without families to care for them (Stevenson, 2009). As a result, people were often displaced from public institutions into boarding homes. Gradually, these group-homes began to provide nursing and paraprofessional staff, and the concept of the nursing home was born.

In 1953, nursing homes began receiving direct payment from the Federal Government. Along with increased funding came an enforceable standard of care. During the 1950s, government grants and loans for the construction of long-term care institutions began appearing. Funding and regulation increased again with the creation of Medicare in 1965 and Medicaid in 1967 (Yokum & Wagner, 2011).

Since the 1930s, the number of nursing homes has increased rapidly. In 1999, there were 18,000 nursing homes in the United States. In 1997, it was estimated that 3.6 million Americans would need nursing homes by the year 2018. However, this figure is now suspected as being inaccurate as an increasingly large number of seniors are choosing assisted-living options over nursing homes (Yokum & Wagner, 2011). Results from a study conducted by Duke University demonstrated an overall decline in nursing home occupancy over that last decade, despite the rapidly growing over 65 demographic (Vierck, 2003). In 2005, there was an 11.5% vacancy rate in nursing homes across America (Yokum & Wagner, 2011).

Today, many Americans find the regulated, uniform, and repetitive care in nursing homes to be intrusive and untailed to their needs. Many are opting for assisted-living facilities in which residents and their families are given the option to determine the required amount of care needed. Between 1998 and 2003, the number of assisted-living facilities grew by 50% to nearly 40,000 facilities (Yokum & Wagner, 2011). This comes despite the fact that no government funding is currently made available for assisted-living facilities. As a result, there is currently no assisted-living option for low-income elderly

in the United States. European nations have been facing the problem of an aging population for many more years and have made funding available for the expansion of facilities and neighborhood planning for the elderly (Moore, 2000).

In the 1970's, the Section 202 Program provided a capital advance to non-profit organizations who built new low-income housing to the elderly. However, in order to be eligible for the grant, facilities were required to provide additional rooms in the design of their building. These requirements included dining rooms, community spaces, infirmaries, as well as space for other essential staff services. As a result, the project owners were often unable to guarantee that rent prices would be low enough to avoid re-imbursement of the capital advance (Moore, 2000).

In 1972, the State of Ohio provided a joint grant to owners who qualified for the federal capital advance. This increase in funding produced the first assisted-living facility in America as we know them today. Services included hot meals, salon services, preventive health services, a full-time RN, LPN, part-time physician and podiatrist, and social and recreational activities. In general, modern assisted-living facilities provide 24-hour assistance with scheduled and spontaneous needs; social and recreational activities; three meals per day (in a dining room); laundry, housekeeping, and transportation. (Yokum & Wagner, 2011). Despite its roots in low-income housing, assisted-living is currently among the most expensive forms of long-term care.

Darlene Tee-Melichar, professor in the college of Health and Human Services at San Francisco State University has outlined the future challenges for the assisted-living model:

- Access and availability to assisted-living facilities and the geography and proximity to family and friends
- Affordability (high out of pocket costs and the need for 3rd party re-imburement)
- Quality control
- Qualifications of the staff
- Exploration of the need for federal regulation. (Moore, 2000)

States and some local municipalities have taken on the challenge of regulating the assisted-living industry. Seattle's municipal code has outlined development standards regulating the construction of new assisted-living facilities. Such requirements include a minimum unit size, on-site kitchen, and communal area. The code states that the communal area should be no less than 20% of the total floor area of the assisted living units. Additionally, no service areas, including, but not limited to, the facility kitchen, laundry, hallways and corridors, supply closets, operations and maintenance areas, staff and offices, and rooms used for only counseling or medical services shall be counted toward the communal area requirement. Also, a minimum of 400 square feet of the required communal area shall be provided outdoors



with no dimension less than ten feet (SMC 23.48.035 Title 23-Land Use Code). These attempts help to regulate design of such facilities, but have no effect on the type and quality of services provided.

In addition to nursing-homes and assisted-living facilities, other long-term care typologies also exist. Skilled-nursing facilities are very medically centered and are required to provide services of a physician. Other services include nursing care, dietetic services, pharmaceutical, dental, social services, etc. Government regulations require patients to be visited by a physician every 30 days. Patient care plans are reviewed regularly to ensure patients are receiving all the necessary care. Skilled-nursing facilities can be generally characterized as medical institutions for the chronically ill (Yokum & Wagner, 2011).

Since the 1960's, retirement communities have been part of the long-term care landscape. Most retirement communities are characterized by imposed minimum age limits, complete community planning, low-cost housing, and a high level of amenities. More recently, the creation of "continuing care retirement communities" or "life care communities" have become the more service-focused sector within the retirement community typology. This type of community allows the resident to "age in place" once membership in the community is obtained (Yokum & Wagner, 2011).

In some European cities, the desire to age in place has been approached differently. More emphasis has been placed on creating universally designed neighborhoods that are suitable for all generations. Furthermore, government

funding is provided to housing projects that demonstrate Universal Design principles and that allocate space for services and professional assistance (Feddersen & Ludtke, 2009). This kind of innovative thinking has promoted stability in neighborhoods and families. In some ways, the 19th century American “efficiency in isolation” model for elderly care still exists. Some nursing homes and assisted-living facilities still create a repository for the elderly where a broad range of services can be administered simultaneously. Instead of creating efficiency through isolation, the intergenerational neighborhood model capitalizes on the theory that Universal Design improves quality of life for all ages. Effective intergenerational neighborhoods promote the use of medical, social, and community services to not only the elderly, but also to all citizens.

In the span of a less than a decade, we have seen long-term care facilities become a predominant model for elderly care. Despite the questions of financial sustainability, they typology appears to be here to stay. According to Wagner,

“A greater proportion of the population over 75 years old will require some form of long-term care in addition to basic housing needs.” (Moore, 2000)

Thankfully, this population will have an increasingly wide array of choices when it comes to planning their long-term care future.



## Personal - Academic - Professional

What stimulated my interest in this typology in the first place was the fact that my 95-year-old grandfather has spent every day since turning 90 in an assisted living facility in Redwood Falls, Minnesota. When I visit, I find myself contemplating all the missed potential in the building—a building where he is spending the years that only a lucky minority are ever fortunate enough to see.

Grandpa Isidore and what he stood for has always been a source of inspiration for me. Though his chance at a college education slipped through his fingers during the height of the Great Depression, his enthusiasm for higher education never wavered. He is a large part of the reason I'm writing this thesis document today.

Growing up in an area of the United States that is staunchly socially conservative, Isidore was always a beacon of light when it came to issues of social justice. Having lived through the Great Depression as a young adult, he strongly believes in uplifting those who are marginalized in society. As a result, we were always taught that a real test of society and the individual is how we care for the most vulnerable among us. This project is for him.

Additionally, my background in Freedom by Design has allowed me to witness firsthand the overwhelmingly positive influence a safer, more dignified, and more comfortable environment can have on an individual in need. That brings us back to the typology.

goals for the thesis



Mixed-use elderly care has great potential for creating a positive environment among its users. Those who are less able of body or mind stand to gain the most from a successful project. The typology will challenge me to think beyond the aesthetics and poetics of the building and question deeply how the users relate with it physically, emotionally, and socially. I will need to look at both principles of Universal and Evidence-Based design to accomplish these tasks, without forgetting the importance of the less-tangible, poetic potential of architecture. The typology insists that the lines be blurred between the technical and experiential areas of architecture. This project will direct me to address these issues simultaneously—a task that none of my previous studio projects have yet called for.

This typology in this context has interdisciplinary allure. The future of long-term care exists somewhere between Healthcare and Residential architecture. The future of our cities and stability of our neighborhoods are related to the people that live there. Designing on a site in an urban area will allow me to experiment in an environment I am both curious and inexperienced in. It will challenge me to question both the impacts that the neighborhood and site have on my building and vice-versa. Ultimately, my goal is to bring together the best of residential, assisted living, and mixed-use design principles. In doing so, I hope to create a project that both questions and provides an alternative to current model for long-term care in America.

## Why Seattle?

In order to fully recognize the potential of my thesis question, I needed a city with much to offer. The city needed to have a variety of walk-able amenities, recreational activities, and cultural enthusiasm. Additionally, the place must be somewhere desirable to retire. Natural beauty and a relatively temperate climate played into the decision making process. Seattle proved to be that place. It provided an interesting demographic, climatic, cultural, and recreational backdrop for my project. Having never visited Seattle or the Pacific Northwest before, choosing this site also granted me the opportunity to experience an unfamiliar city and region of the country.

## Why the Belltown Neighborhood?

The Belltown site offered a number of features that made it an attractive neighborhood. Belltown is a distinctly residential neighborhood within half a mile of Seattle's financial, cultural, and retail core. It is less than half a mile from Pike's Market and mass-transportation and only two blocks from Seattle's waterfront. Also, the site is in the heart of Seattle's Waterfront re-development plan.

As stated in the theoretical premise research, the Belltown neighborhood is home to about 2% of Seattle's residents (nearly 12,000 people) and boasts one of the highest neighborhood population densities in Seattle (Loar, 2011). Belltown's density is nearly 50,000 people per square mile

in comparison to the 7,000 per mile Seattle average. This large population is host to a very narrow age demographic. 85% of people living in Belltown are between the ages of 18 and 65. Only about 2% of the population is younger than age 18 and 13% of the population is older than age 65. The median age is 45 years old. Looking at these statistics, we can assume that roughly 300 Belltown residents (2.5%) will turn 65 every year for the next 30 years (Loar, 2011).

When looking at the City of Seattle as a whole, 72% of people living in the city are between the ages of 25 and 65, 16% are younger than 18, and 12% were over the age of 65 (Esri, 2011). However, despite having a comparably large adult population, the neighborhood doesn't offer many long-term care options. There about 275 beds dedicated for elderly individuals in the neighborhood and only 65 of them are provided by a licensed long-term care facility. These realities will pose a challenge for current residents to age in place.

Currently, sites 1 and 2 (as labeled on the maps) are surface parking lots. Site 3 has been designated by the city for sale and future development upon completion of the viaduct demolition. Sites 1 and 2 are 19,500 square feet each and site 3 is 18,200 square feet. The total area of the three sites is 57,200 square feet. All three sites are zoned Downtown Mixed-Use Residential/Commercial (DMR/C) The height limit for mixed-use residential is 85', 65' for commercial.

Substantial elevation change on the sites allows for unobstructed views of Puget Sound without the need for

high-rise construction. The Alaskan Way Viaduct (Route 99) is currently being replaced by a bored tunnel beneath downtown Seattle. The Viaduct is scheduled for demolition in 2016. Because of the site's location near the former double-deck expressway, unprecedented views of Mt. Rainier can be achieved. These sites are adjacent to the future Belltown Bluffs Park, which will feature a lookout balcony that will take advantage of the same view-shed. Site 3 is the only site along the former viaduct that is designated for building. All the other sites will be designated for public space development. This will preserve the view-shed to Mt. Rainier indefinitely.

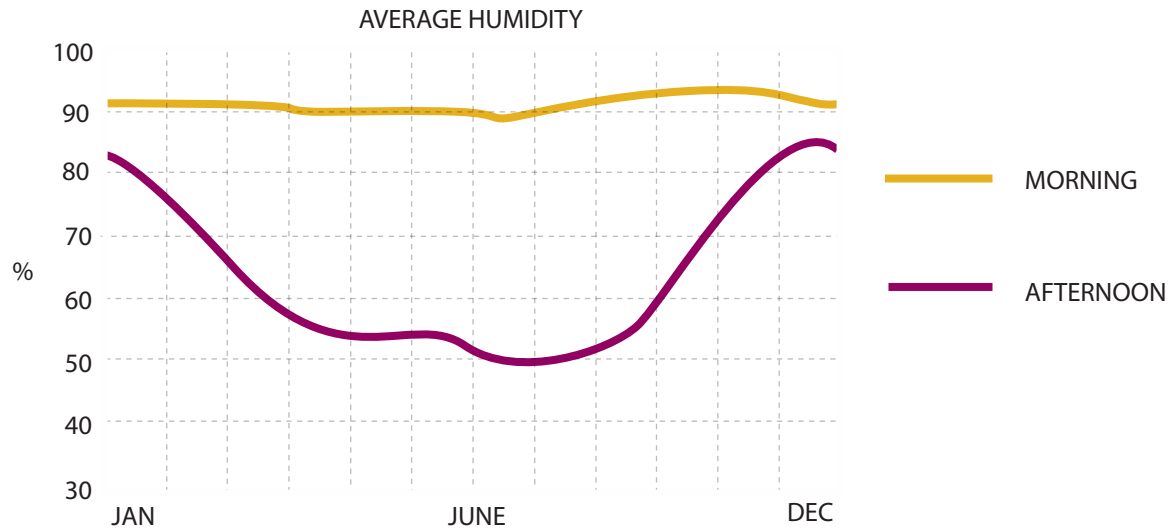
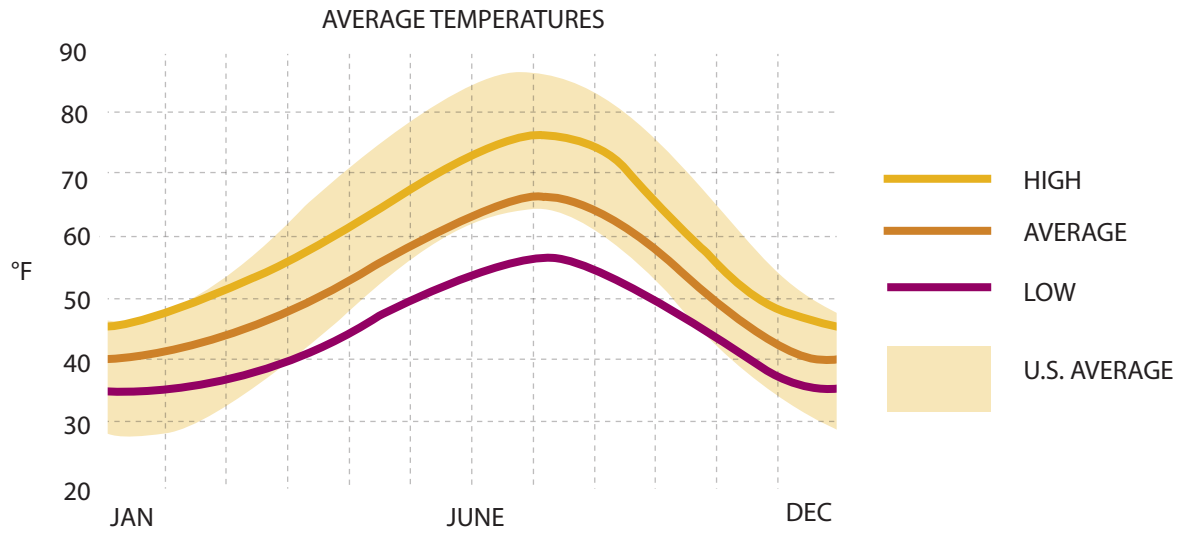
Currently, the viaduct is a cancer on the community. The building stock closest to the viaduct is most depilated. However, the demolition of the viaduct and the transformation of the waterfront will turn some of the least desirable sites in the city into the most sought-after.

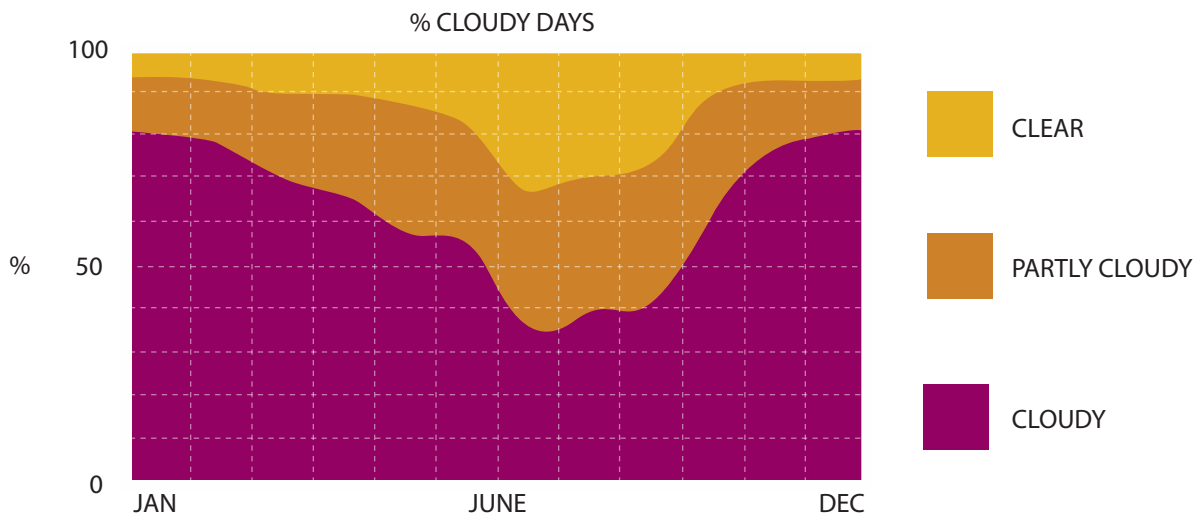
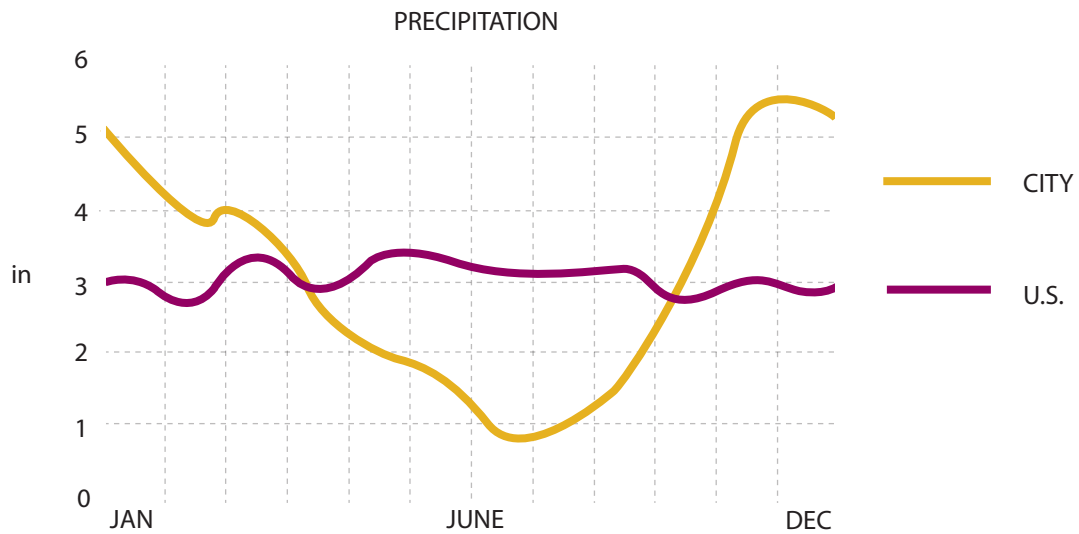




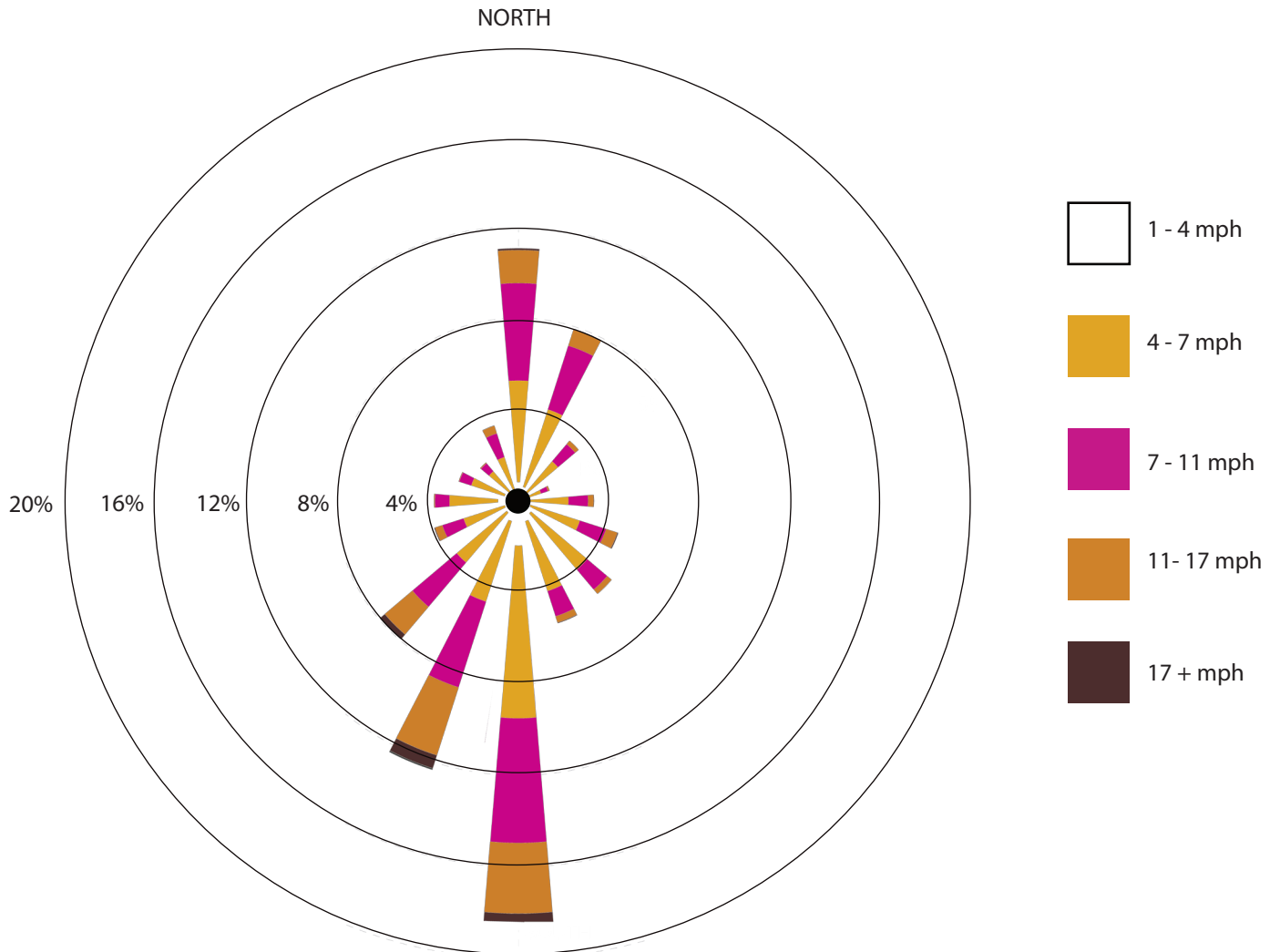
climate sata and site analysis



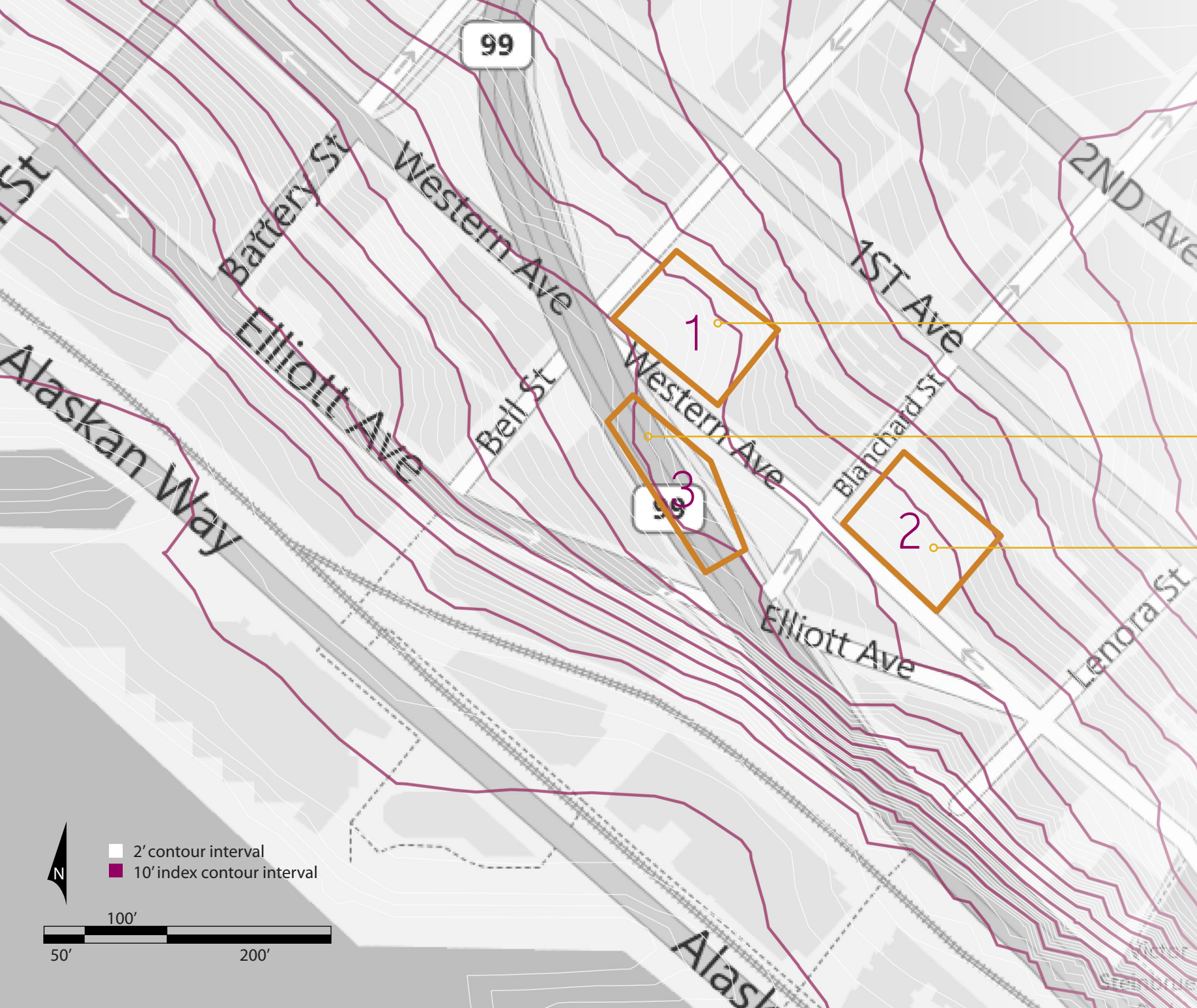




# Wind Speed + Direction







99

99

1

3

2



2' contour interval  
10' index contour interval







### slope analysis

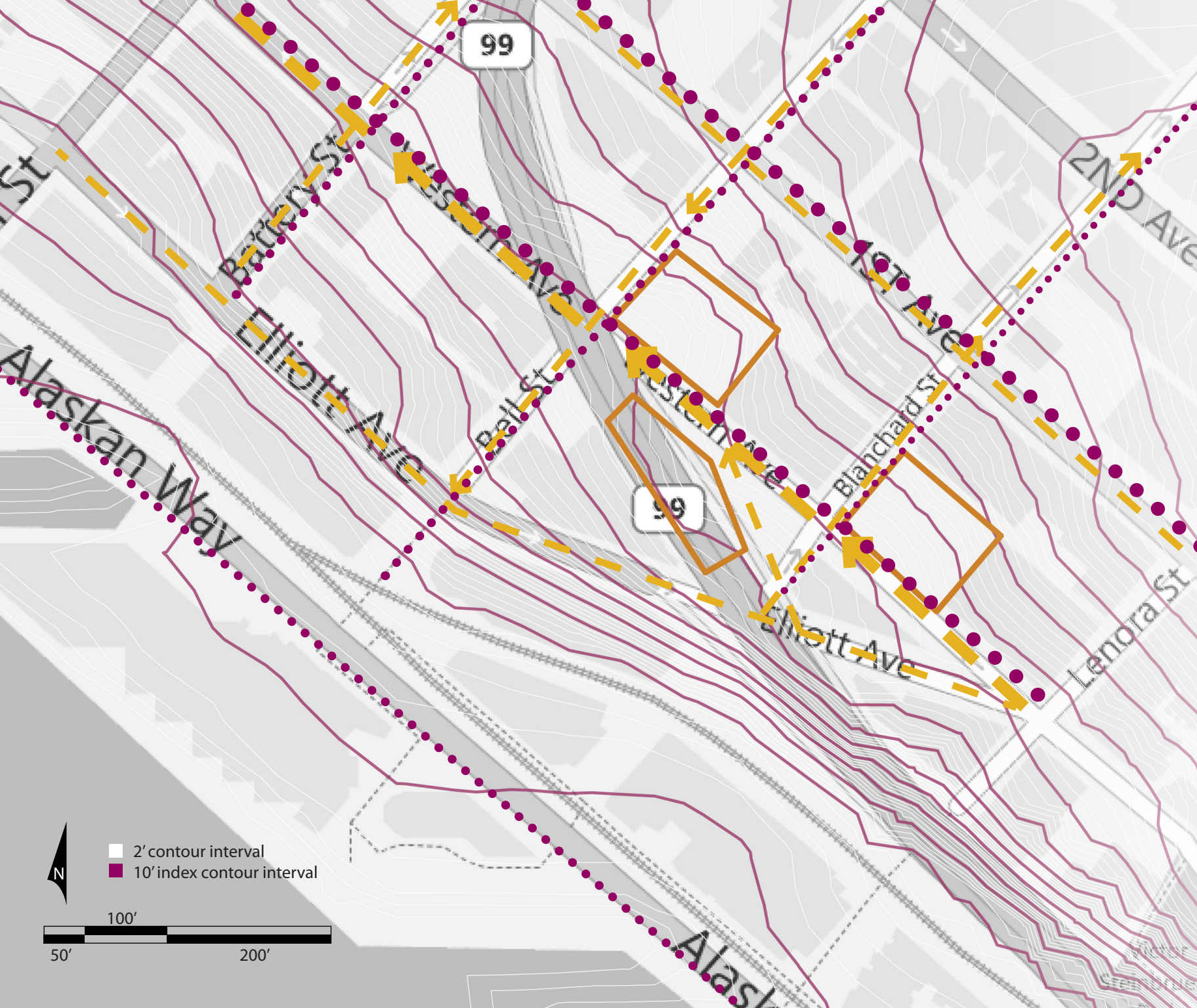
13% grade

9% grade

11% grade

### soil classification

Soils in seattle are poor for large buildings. Often, pilings must extend 80 - 120 feet before encountering bedrock. Sites with extreme grade changes require special retaining walls to prevent landslides.

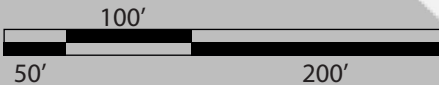


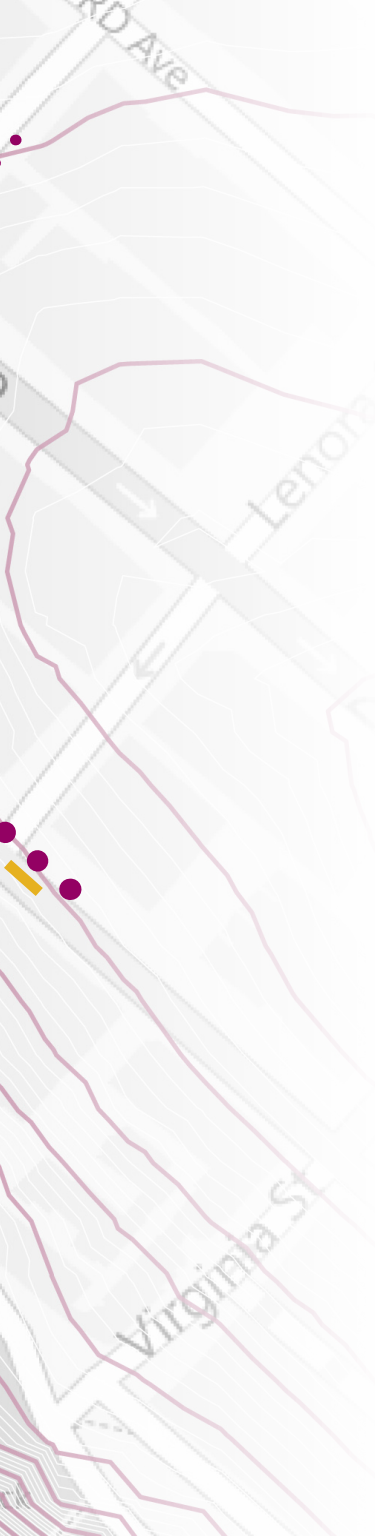
99

99










2' contour interval  
10' index contour interval



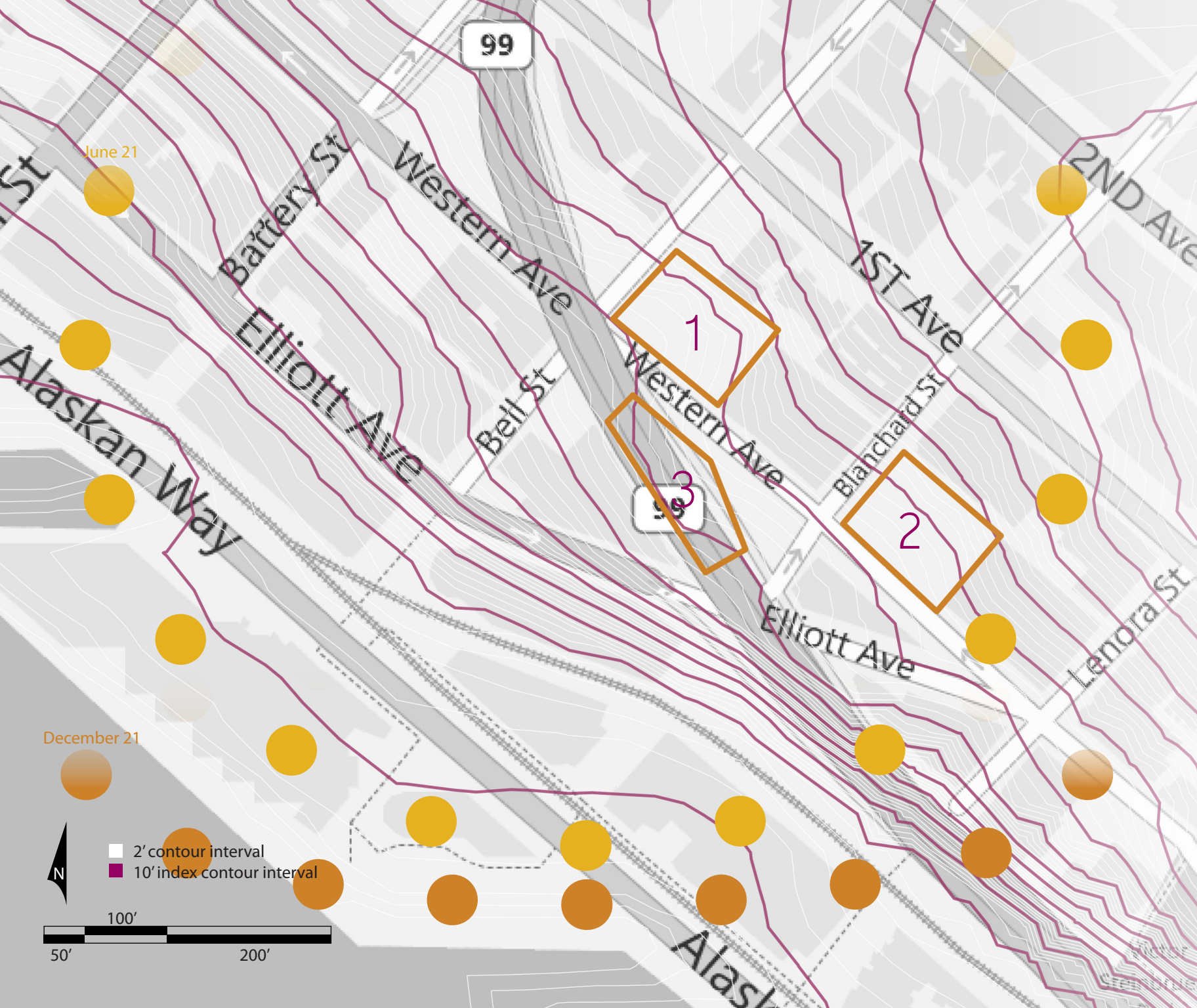


## vehicular and pedestrian traffic

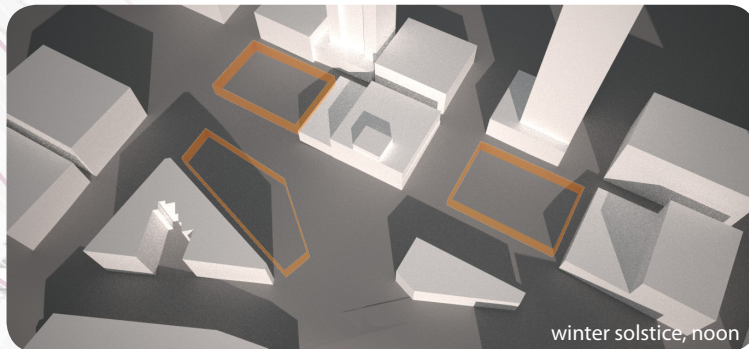
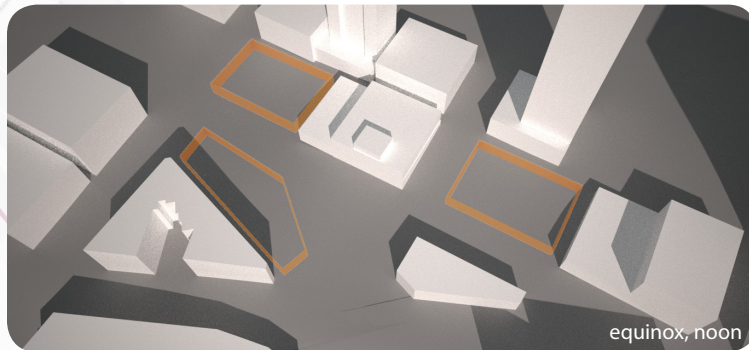
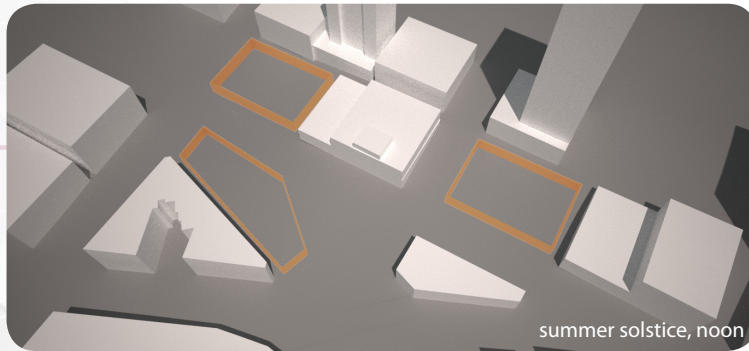
In Seattle, pedestrian traffic is generally much heavier on streets running parallel with the hill, rather than perpendicular to it. This allows people to reach their destination while encountering only slight grade changes instead of the 10 - 15% grade change associated with walking perpendicular to the hill.

-   heavy vehicular traffic
-  one-way vehicular traffic
-   two way vehicular traffic
-  light pedestrian traffic
-  heavy pedestrian traffic





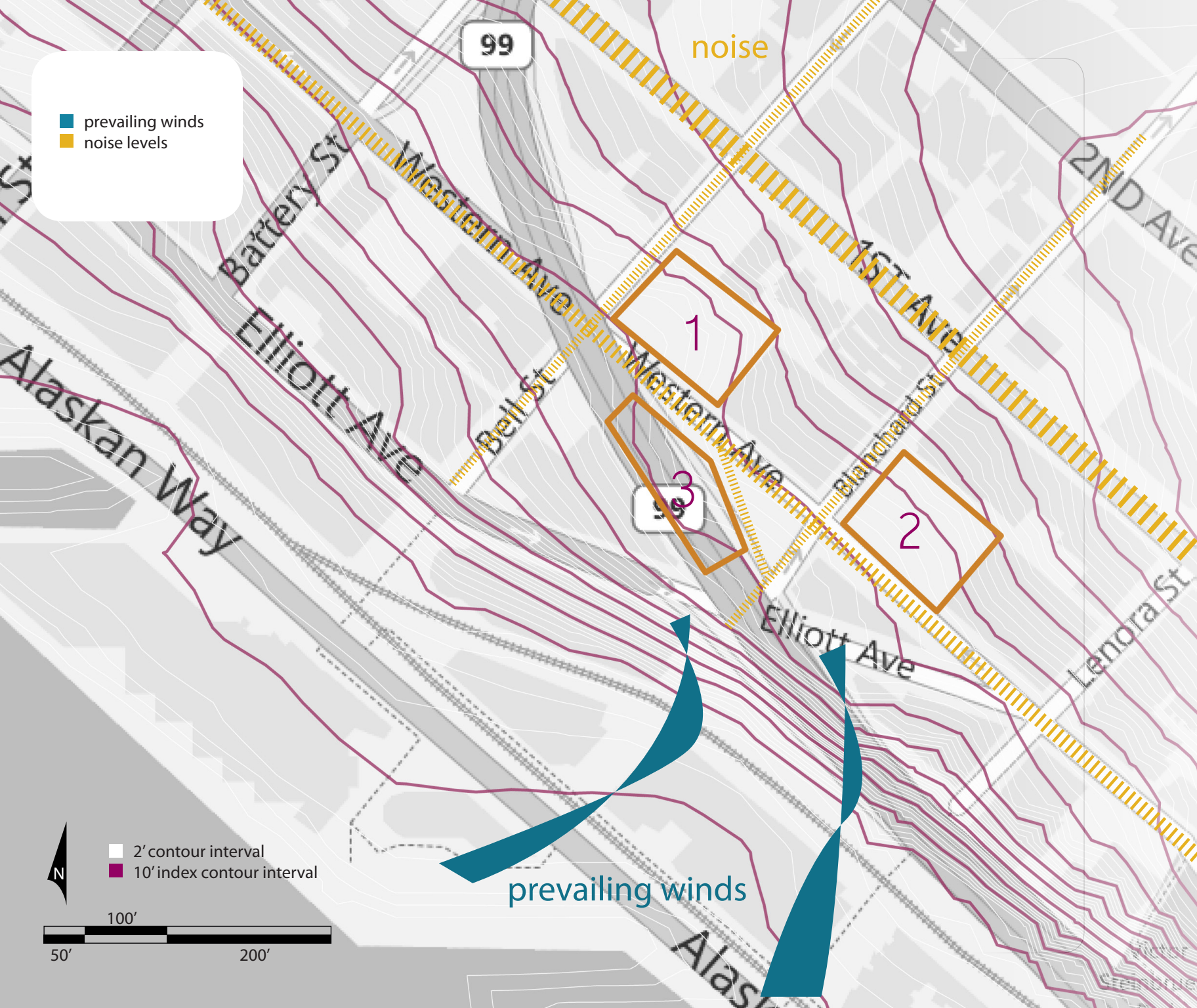
## sun path analysis + shading



## light quality

Light color, temperature, and intensity are very dependent on time of day and year. Because of the site's location on a bluff, much solar access is available during what is usually a very dark time of year in Seattle. Because the city's grid is rotated 45 degrees off due north, orientation of outdoor spaces to maximize sunlight during winter months will be critical and challenging. The analysis of cast shadows will be critical in determining the location of spaces in the building as well as determining the consequence of new shadows on existing buildings.





■ prevailing winds  
■ noise levels

99

noise

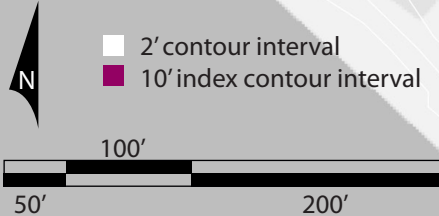
1

3

2

prevailing winds

□ 2' contour interval  
■ 10' index contour interval



100'

50'

200'



## wind

Winds on the site are primarily from the South - Southwest direction. The orientation of the street grid in this area will help mitigate some of the south winds, but will amplify the Southwest winds. The bluff exposes many south-facing facades to wind off-off Elliot Bay. Fortunately, Seattle's wind speeds are well below the national average, ranging from only 5 - 7 mph throughout the year.

## water

The site is located only blocks away from Seattle's Elliot Bay Waterfront. A 3.2 billion dollar project to demolish the viaduct and re-connect the city with its waterfront is currently underway and scheduled to be completed in 2018. This will have a tremendous effect on property values and livability in the neighborhoods closest to the waterfront. The closest areas of development include a new boardwalk and marina.



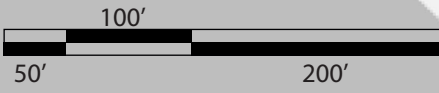


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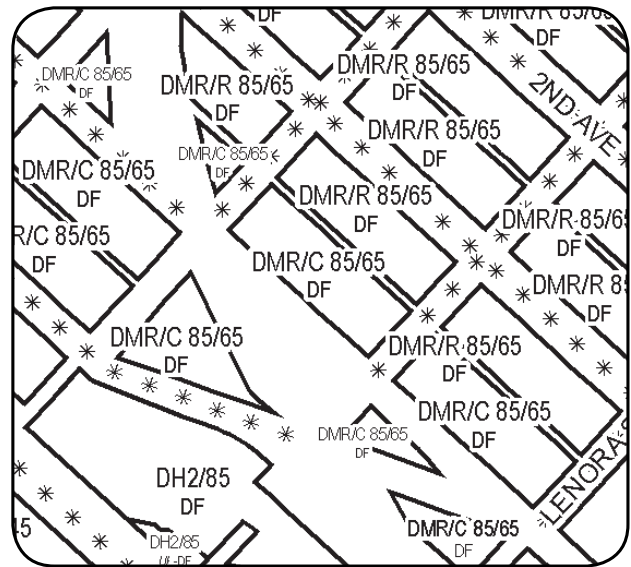
99



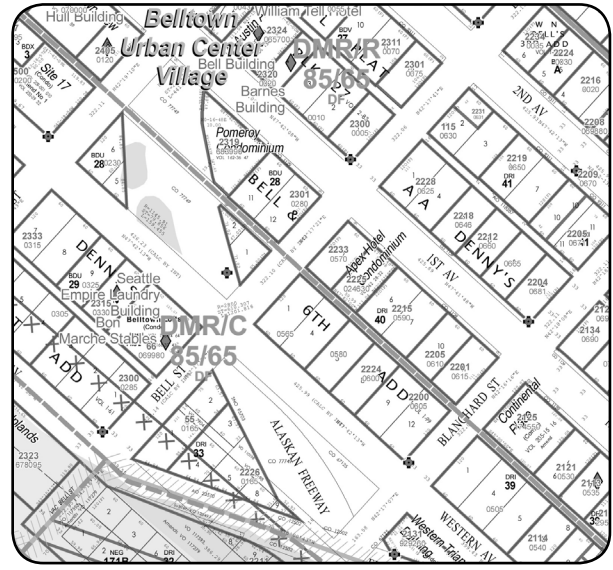
□ 2' contour interval  
■ 10' index contour interval



zoning map



legal lines and boundaries



("Seattle municipal code," 2006)





Elliott Bay

Victor Steinbrueck Park





## surrounding built environment

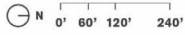
Most surrounding buildings are mid-rise residential buildings with some mixed-use residential and commercial mixed in. Newer residential buildings are pushing the zoned height limits in the neighborhood as the city seeks higher population densities in certain districts. Old warehouses are sprinkled in among the newer residential buildings. The apartment and condo buildings are characterized by their recessed glazing and exposed balconies. The figure-ground study on the left illustrates the density of the built environment.

## city grid + views and vistas

Seattle's street organization is based on a series of offset grids that lie parallel to Elliot Bay. Since these grids are laid down without regard to topography, tremendous views and vistas are available along the roads perpendicular to the bay (similar to San Francisco). The demolition of the Alaskan Way Viaduct will help restore the city's grid and its connection to the waterfront.

# BELL HARBOR

- 1 BOARDWALK
- 2 MARINA
- 3 HARBOR BALCONY
- 4 CRUISE SHIP TERMINAL
- 5 CONFERENCE CENTER



# BELLTOWN BLUFF

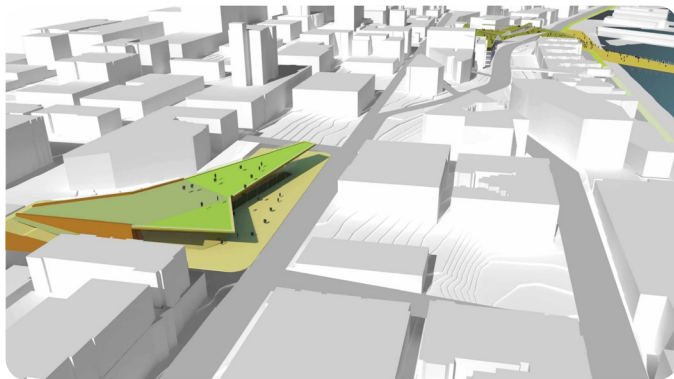
- 1 LENORA ST. BRIDGE
- 2 BLANCHARD ST. OVERLOOK
- 3 POTENTIAL DEVELOPMENT PARCEL
- 4 BELL ST. PARK
- 5 BELLTOWN BALCONY





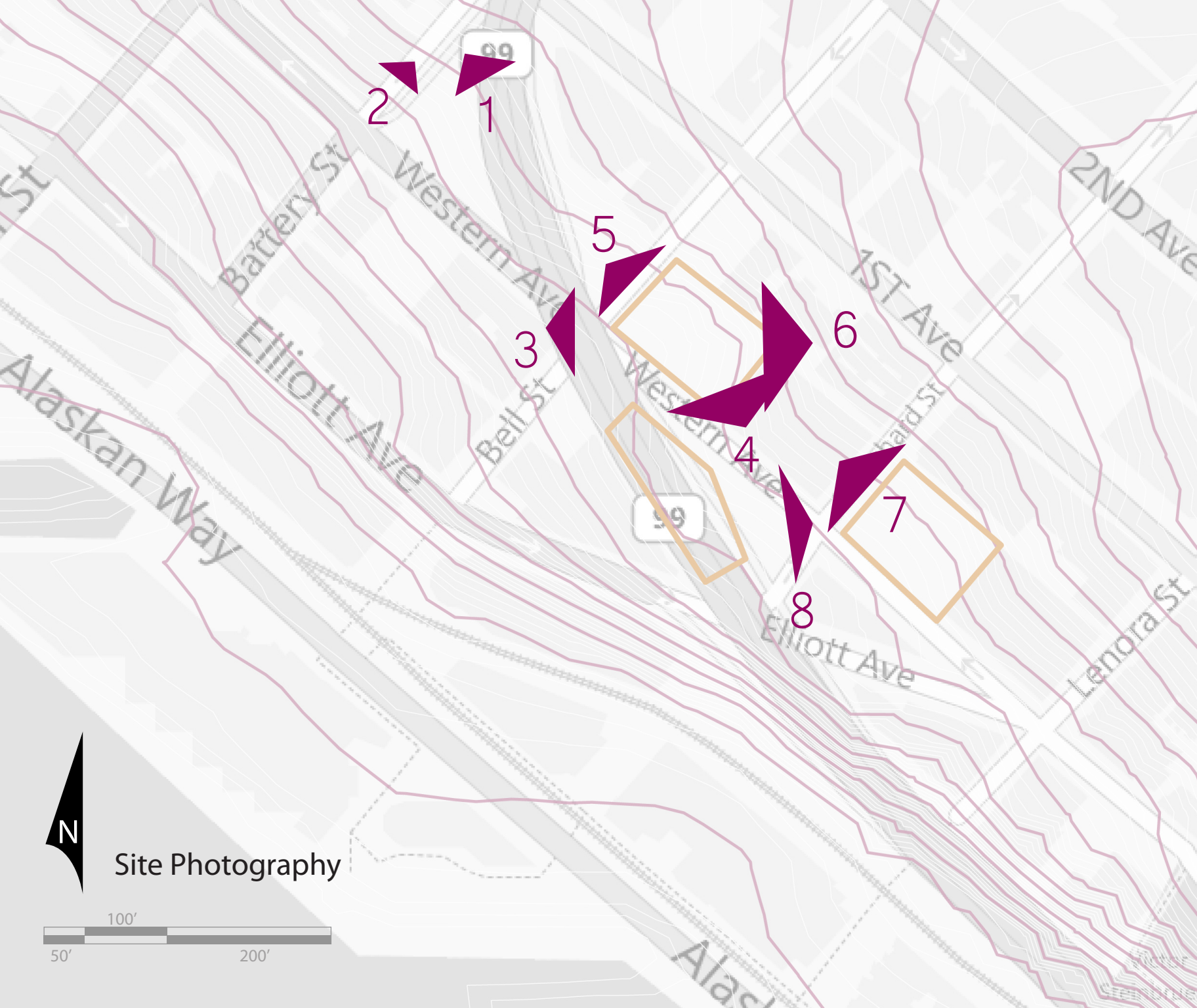
site + human characteristics,  
distress, and future intervention

Since the construction of the viaduct in the 1960s, values of older building stock has decreased. Sidewalks have been neglected and under designed. The sidewalks have few people walking down them and a lack of public space deters people from stopping on their way through the neighborhood. However, after the demolition, many streets around the demolition site will have to be re-worked including the grading and paving of a new Elliot-Western connector (the road that navigates the bluff and connects Western and Elliot Avenue to the Alaskan Way). Additionally, the overgrown parcel where the Alaskan Way viaduct enters the Battery Street tunnel will be redesigned. The tunnel will be capped off and a new public park will occupy the current site. This will dramatically increase the number of people on street-level around the sites. By 2018, the area around the sites will be completely transformed.



images from ("Community meeting 3," 2011)





Site Photography





























8

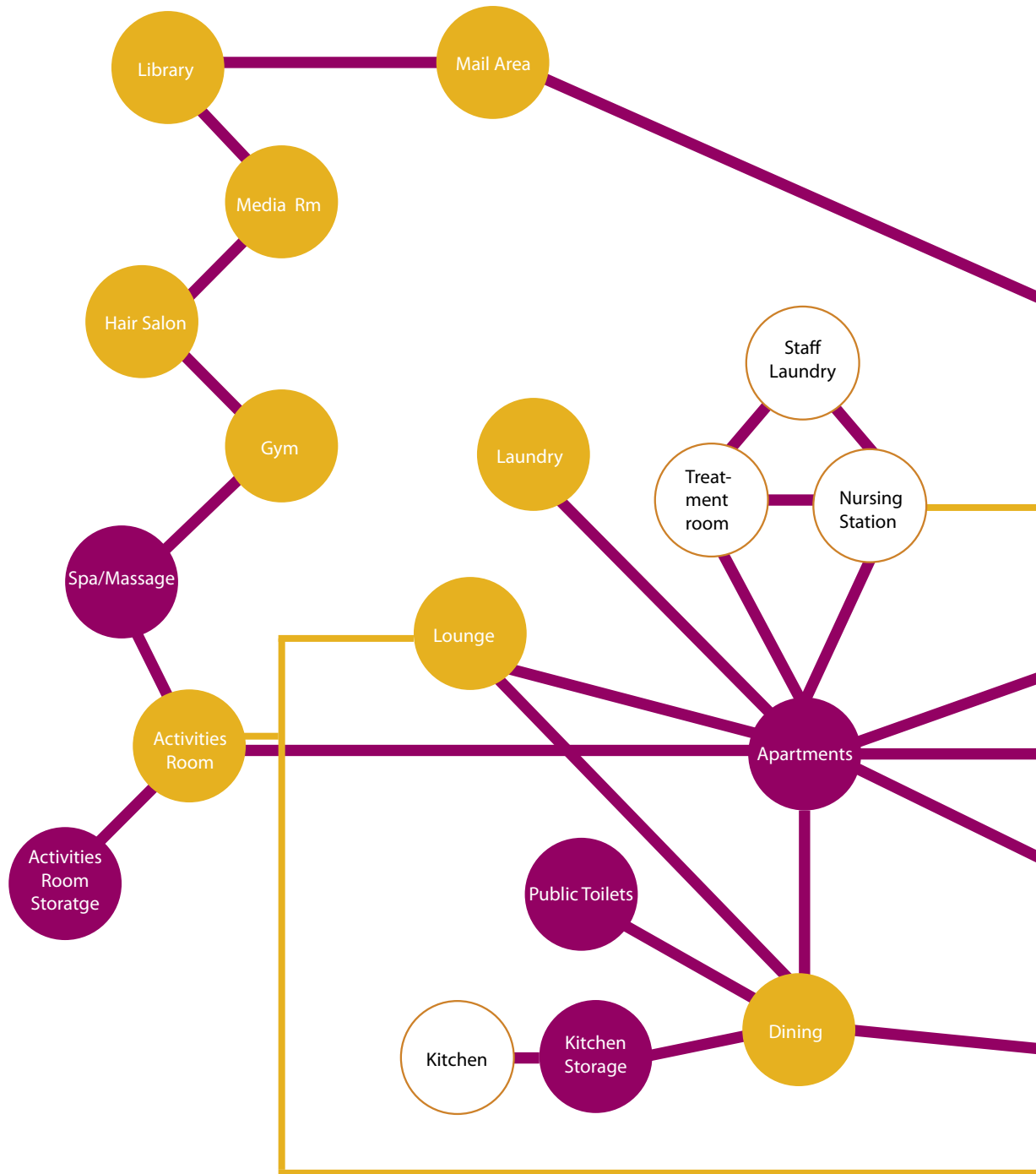
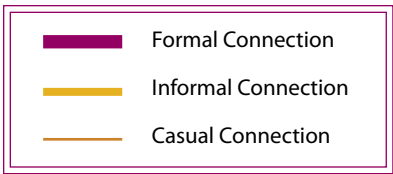
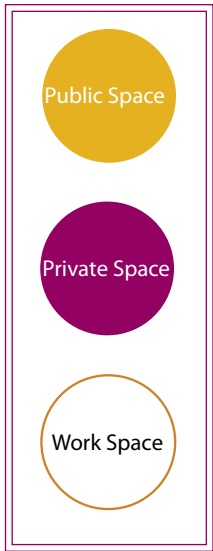




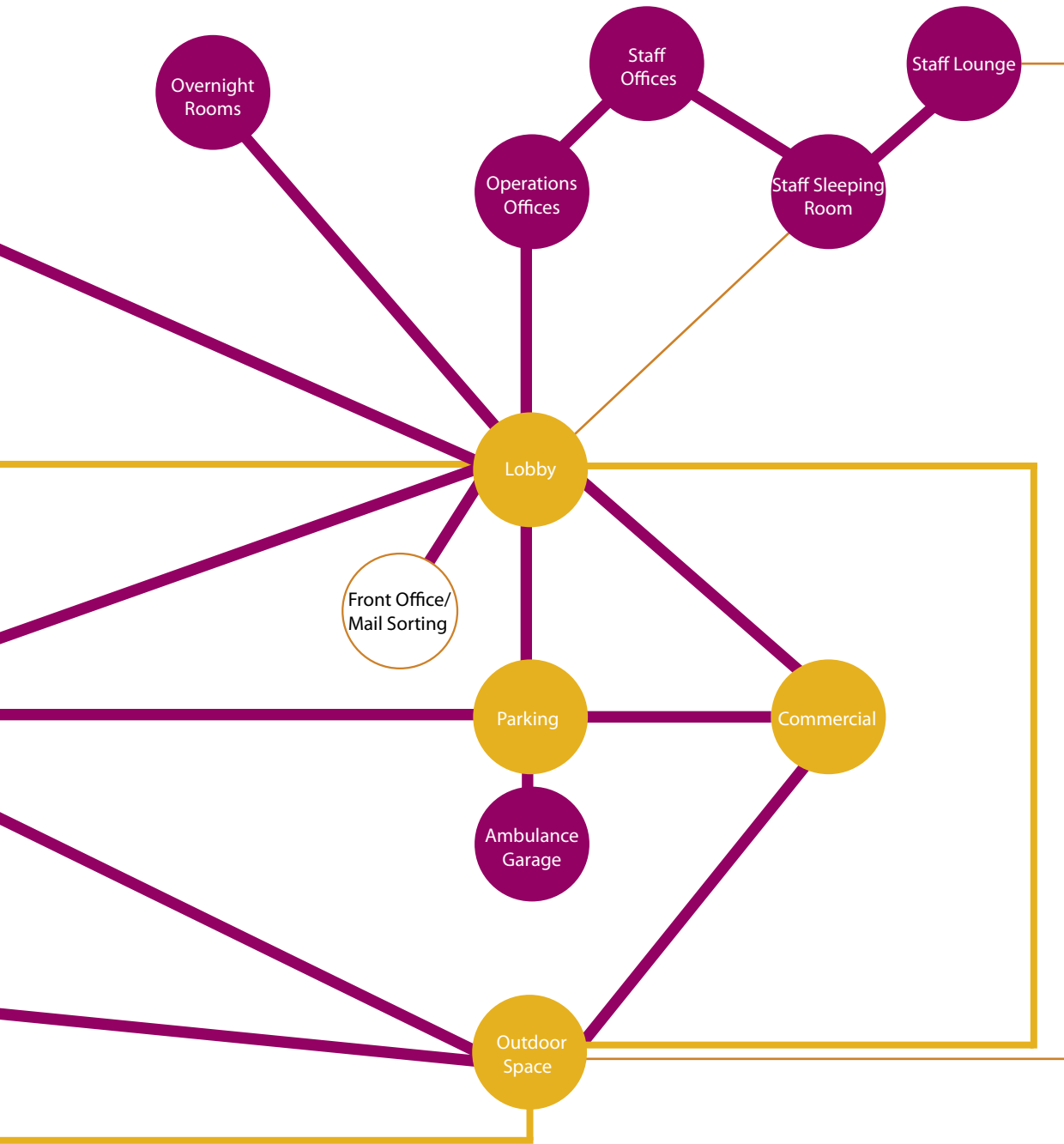


600 sq ft	1) Lobby
T.B.D.	2) SM Gym
300 sq ft	3) SM Library
500 sq ft	4) Lounge
500 sq ft x 15	5) One Bedroom
250 sq ft x 20	6) No Kitchen Studio
320 sq ft x 15	7) Kitchen Studio
600 sq ft x 10	8) Two Bedroom
500 sq ft	9) Kitchen
200 sq ft	10) Kitchen Storage
1000 sq ft	11) Dining Room
150 sq ft	12) Dining Room Restroom
300 sq ft	13) Public Restroom
T.B.D.	14) Parking
250 sq ft	15) Hair Salon
200 sq ft	16) Staff Laundry
200 sq ft	17) Tenant Laundry
120 sq ft x 4	18) Treatment Room
120 sq ft x 5	19) Staff Office
200 sq ft	20) Staff Lounge
850 sq ft	21) Mechanical
25 % of floor area	22) Circulation
400 sq ft +	23) Outdoor Space
400 sq ft	24) Media Room
100 sq ft	25) Mail Area
160 sq ft	26) Operations Office
120 sq ft x 4	27) Nursing Station
300 sq ft x 10	28) Overnight Guest Rooms
250 sq ft	29) Staff Sleep Room
T.B.D.	30) Ambulance Garage
T.B.D.	31) Shared Outdoor Space
1000 sq ft x 5	32) Commercial Space
30 sq ft x 10	33) Custodial Closet
T.B.D.	34) Spa/Massage
400 sq ft x 3	35) Living Room
400 sq ft x 3	36) Activities Room
100 sq ft x 3	37) Activities Room Storage

**Total without circulation: 42,580 sq ft**  
**Total with circulation: 53,725 sq ft**







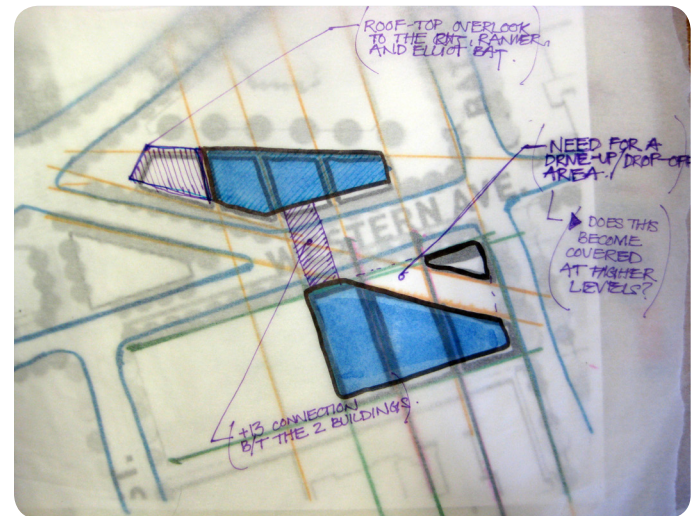
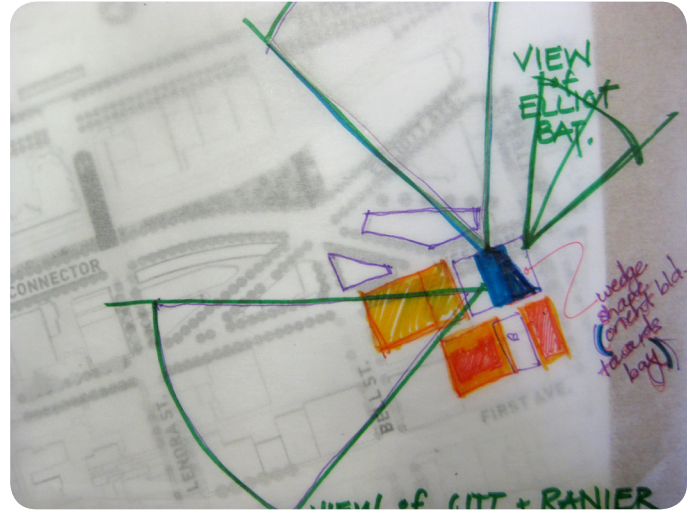
- Essential
- Desirable
- Not Needed

	1) Lobby	2) Lap Pool	3) Leisure Pool	4) Spa	5) Fitness Room/Weights	6) Physical Therapy Rooms	7) Locker Rooms	8) Tennis Courts	9) Raquetball Court	10) Restrooms	11) Studio Space	12) Outdoor Space	13) Mechanical	14) Offices	15) Staff Lounge	16) Lounge/Waiting	17) Game Room	18) Rentable rooms	19) Storage	20) Retail Storefront	21) Small Cafe	22) Circulation	23) Parking	24) Loading Dock	25) Small lecture hall/theatre	26) Walking track
1) Lobby	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
2) Lap Pool	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
3) Leisure Pool	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
4) Spa	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
5) Fitness Room/Weights	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
6) Physical Therapy Rooms	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
7) Locker Rooms	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
8) Tennis Courts	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
9) Raquetball Court	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
10) Restrooms	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
11) Studio Space	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
12) Outdoor Space	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
13) Mechanical	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
14) Offices	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
15) Staff Lounge	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
16) Lounge/Waiting	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
17) Game Room	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
18) Rentable rooms	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
19) Storage	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
20) Retail Storefront	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
21) Small Cafe	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
22) Circulation	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
23) Parking	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
24) Loading Dock	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
25) Small lecture hall/theatre	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
26) walking track	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

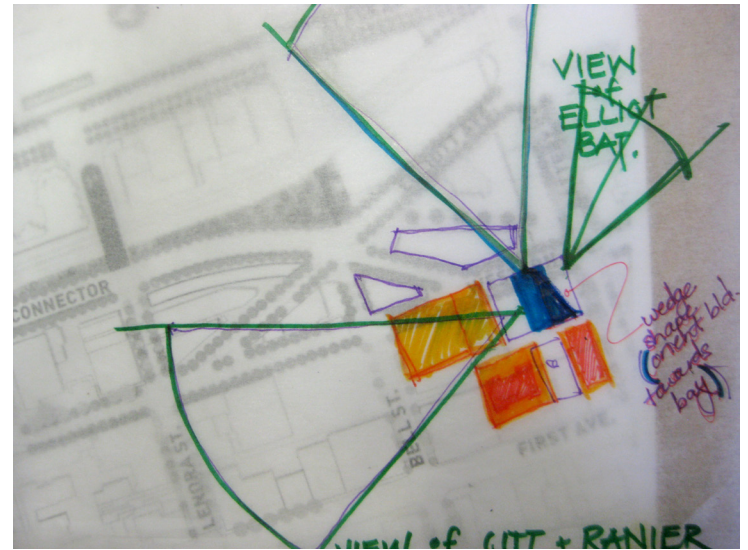
400 sq ft	1) Lobby
3500 sq ft	2) Lap Pool
1750 sq ft	3) Leisure Pool
300 sq ft	4) Spa
1250 sq ft	5) Fitness Room/Weights
400 sq ft	6) Physical Therapy Room
1000 sq ft	7) Locker Rooms
3500 sq ft	8) Tennis Courts
800 sq ft x 2	9) Raquetball Court
300 sq ft	10) Restrooms
500 sq ft x 2	11) Studio Space
400 sq ft	12) Outdoor Space
600 sq ft	13) Mechanical
120 sq ft x 4	14) Offices
250 sq ft	15) Staff Lounge
400 sq ft	16) Lounge/Waiting
250 sq ft	17) Game Room
625 sq ft x 3	18) Rentable rooms
75 sq ft x 5	19) Storage
200 sq ft	20) Retail Storefront
250 sq ft	21) Small Cafe
25 % of floor area	22) Circulation
400 sq ft +	23) Parking
T.B.D.	24) Loading Dock
500 sq ft	25) Small lecture hall/theatre
T.B.D.	26) walking track

**Total without circulation: 20,580 sq ft**  
**Total wiith circulation: 25,725 sq ft**

design process



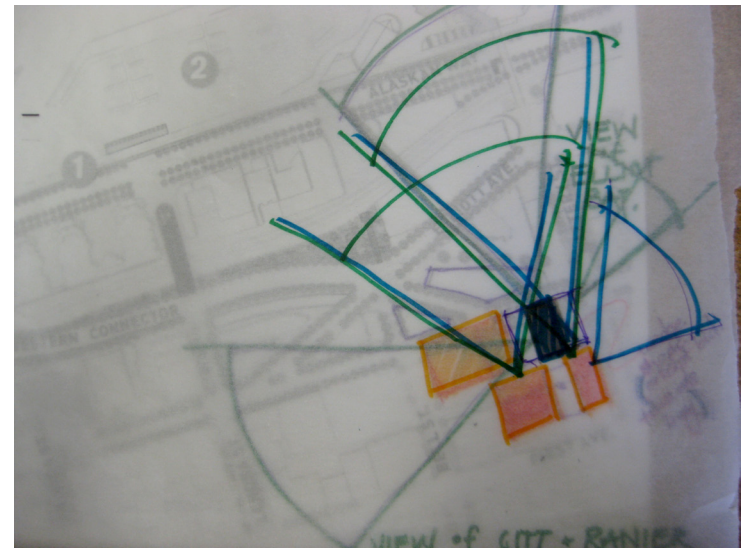




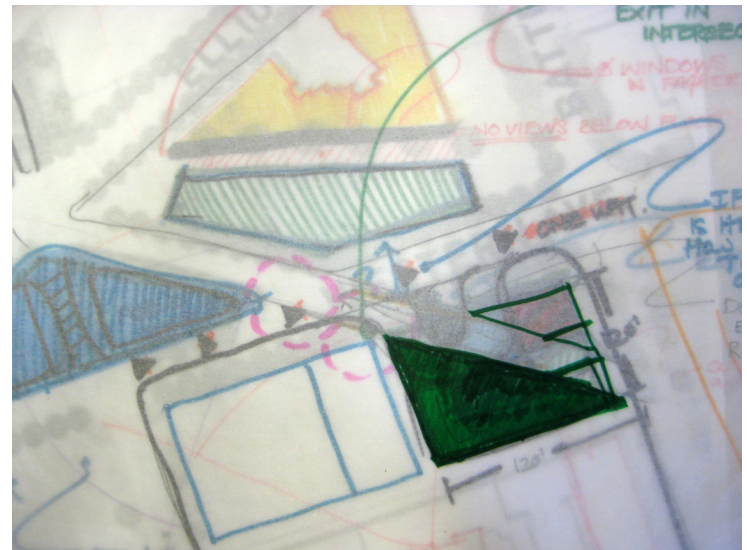
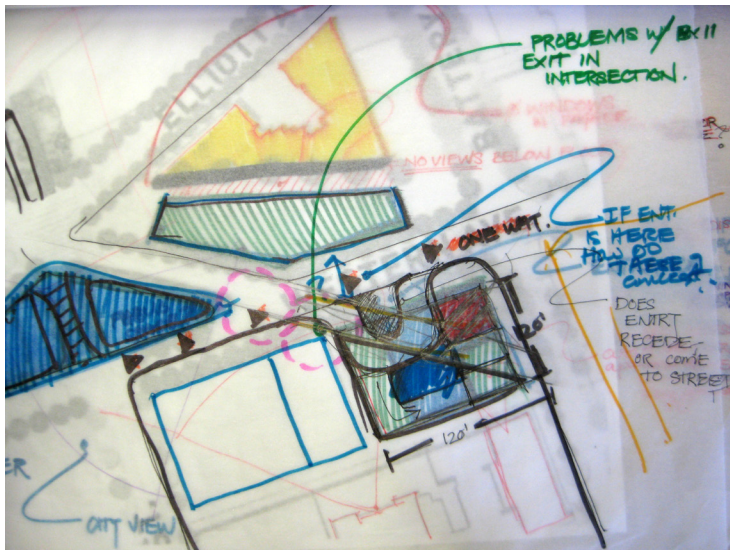
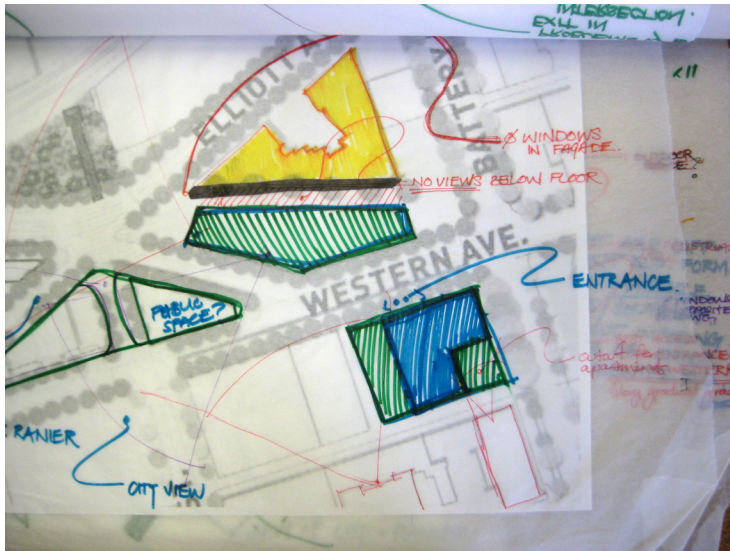
## View-shed Studies

When determining the form of the tower, careful consideration was given to the view-sheds of surrounding buildings. This area of the city is characterized by the shift in the grid from its typical cardinal orientation. This affords great views for many neighborhood buildings to both Elliott Bay and Mt. Rainier.

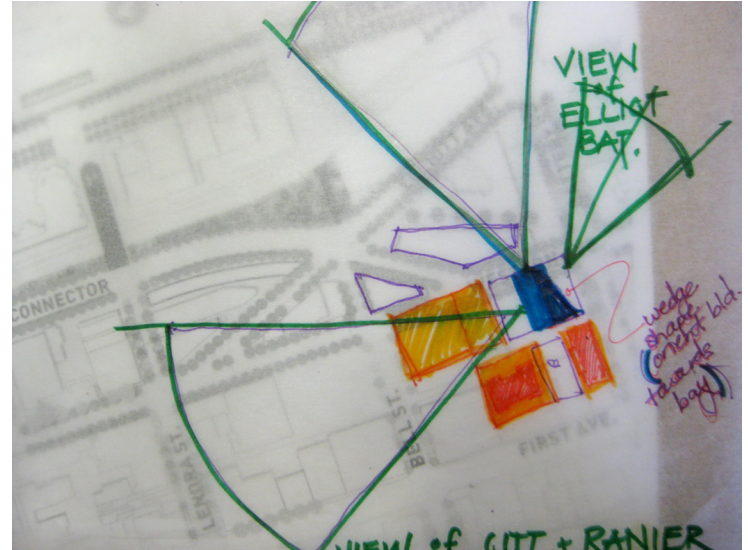
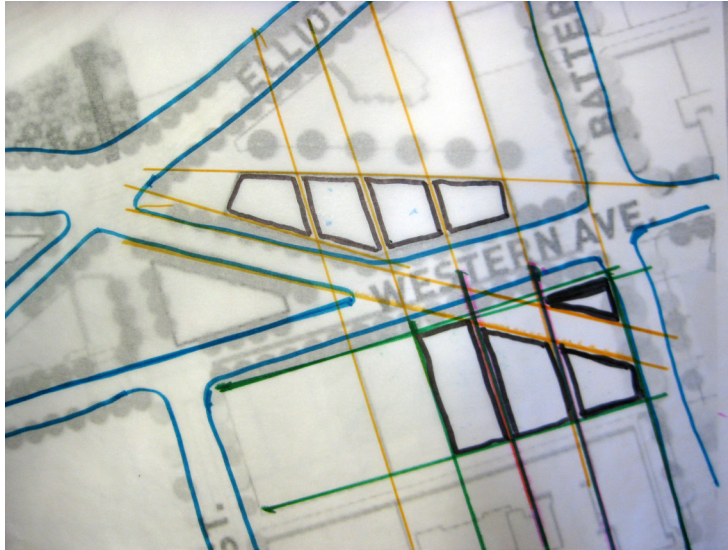
This analysis exercise allowed the proposed building to maximize solar-exposure potential and views while leaving plenty of breathing room for its neighbors.





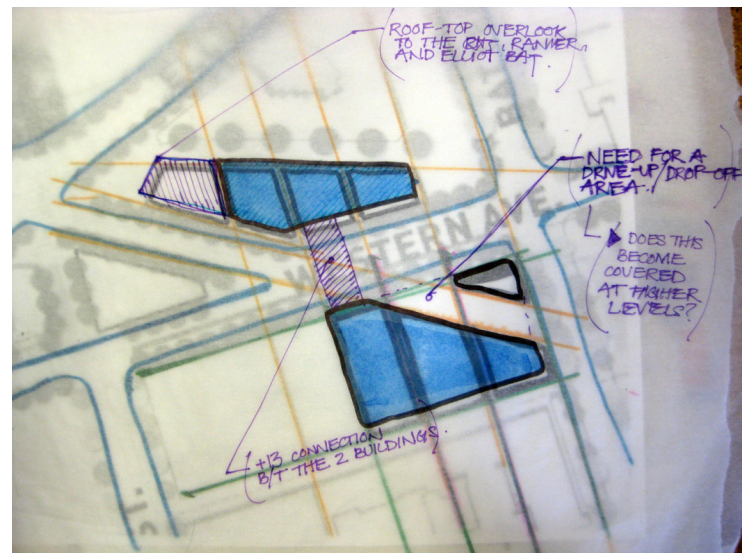


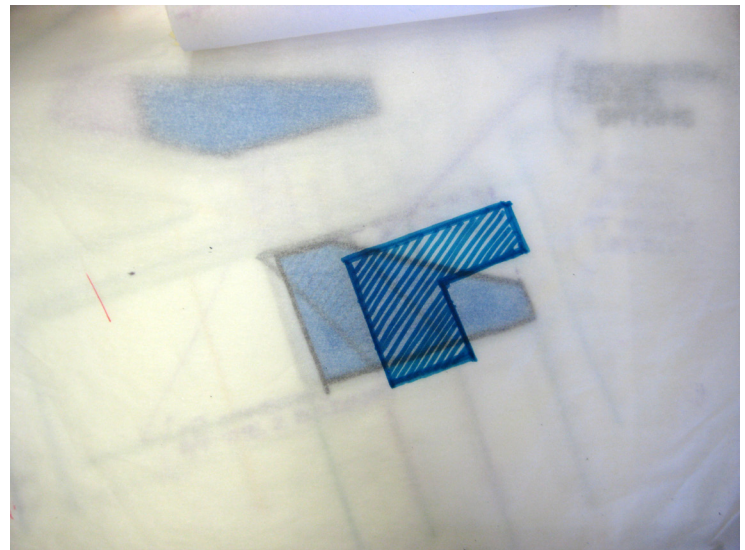
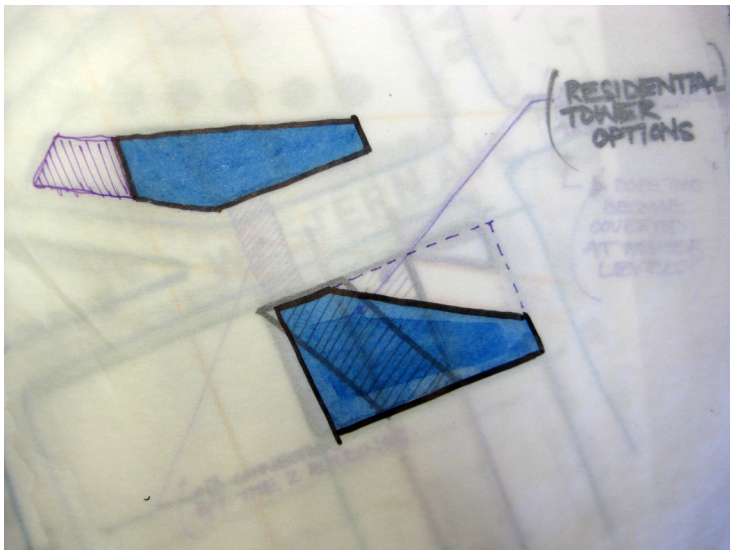
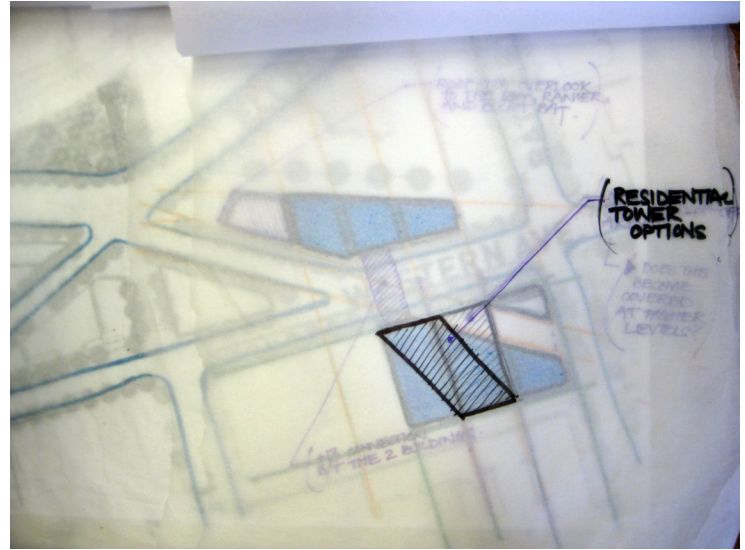
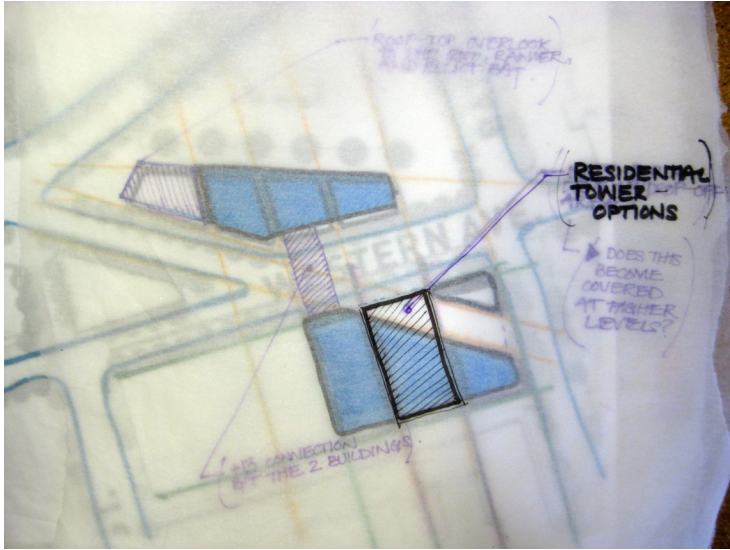




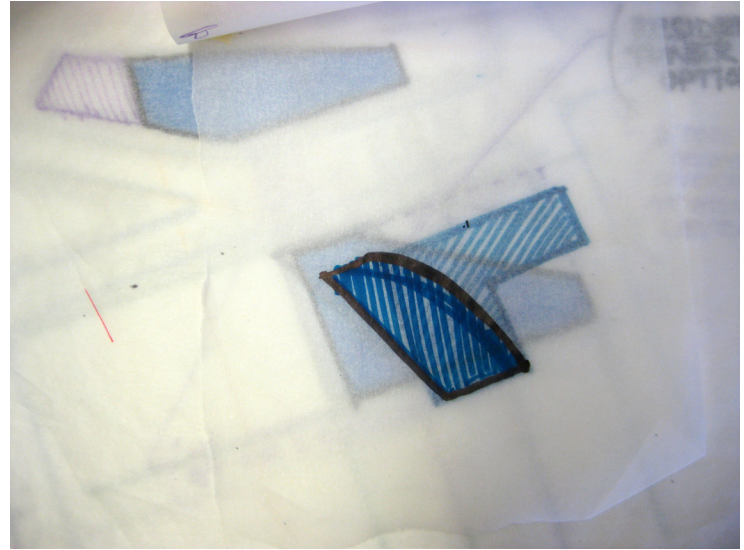
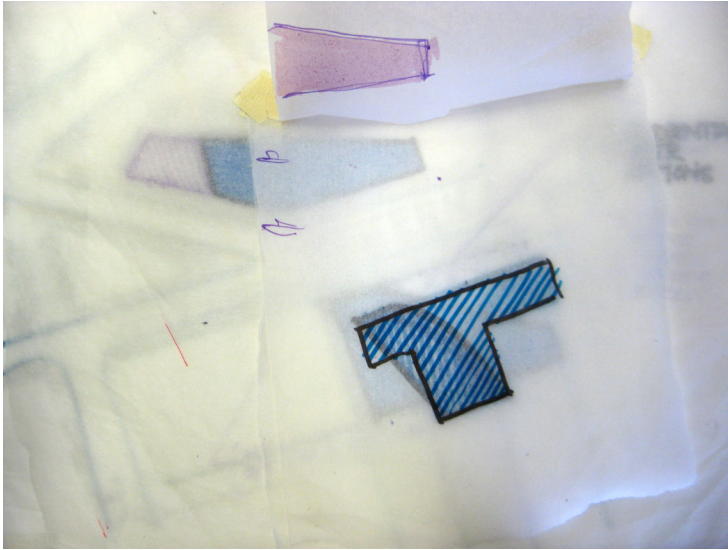
## Site Geometry

Taking a closer look at the underlying geometries of the street grid and surrounding buildings helped in defining the location for the portico share. The gesture of continuing the line of the Elliot-Western connector was key in deriving the form for the rest of the building.



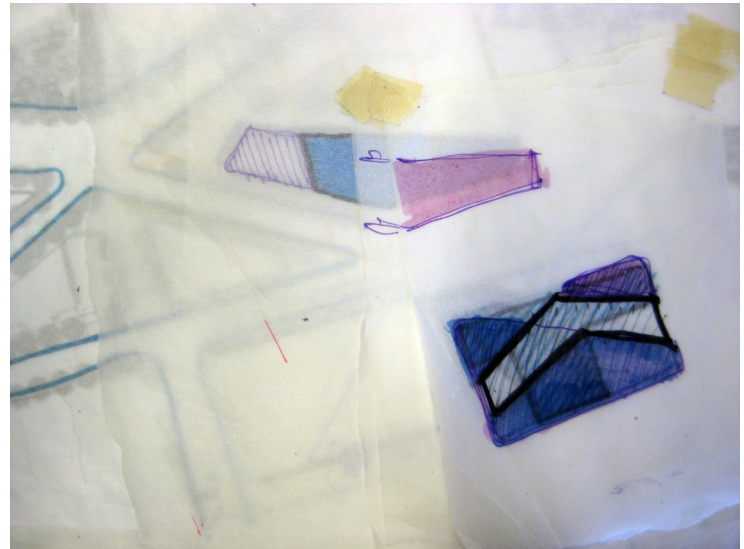


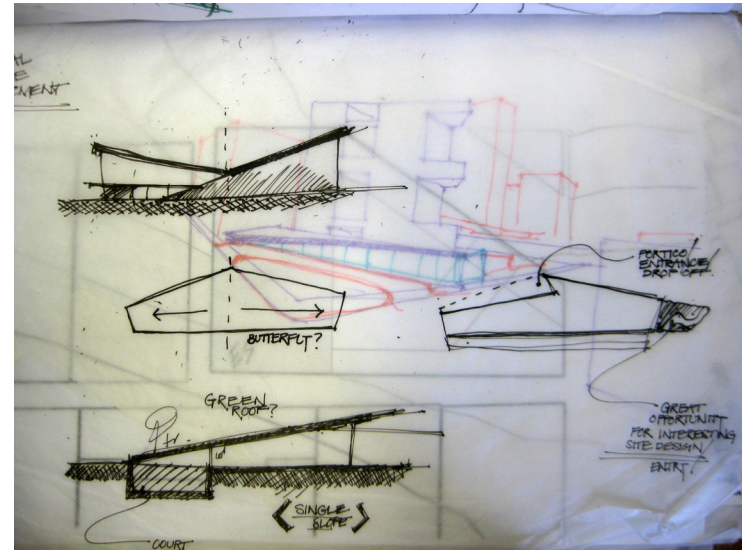
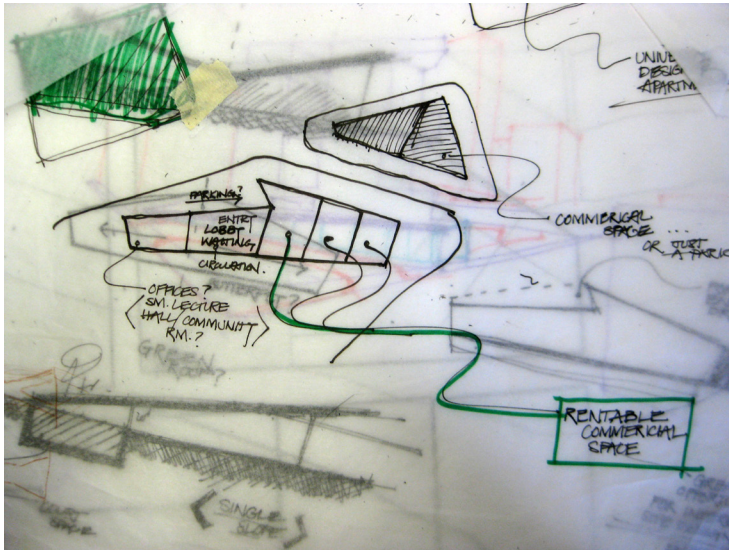




## Tower Form Development

The at this point, it became clear that the building would consist of two main formal components: the base and the tower. The base would act as the connection to the street grid, and the tower would act as the connection to solar access and views.





## Phase II

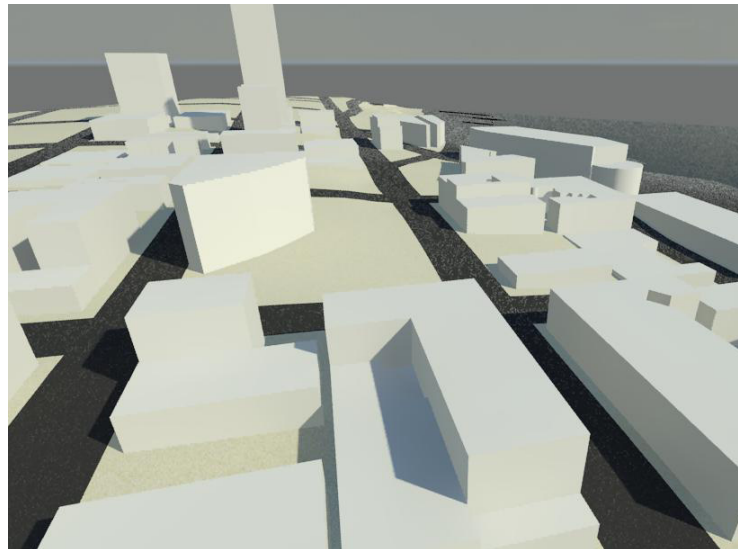
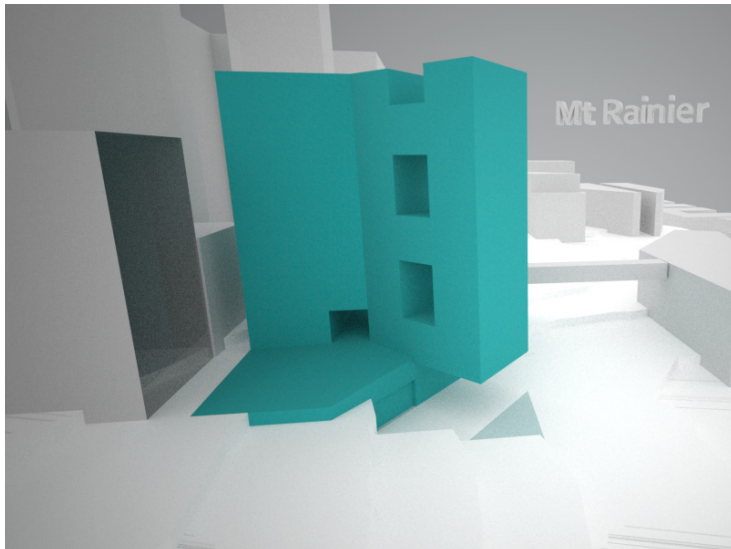
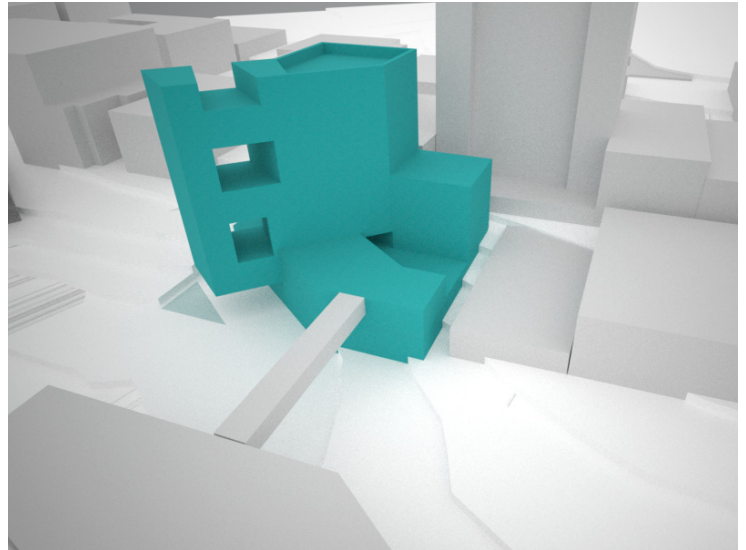
The sketches above show how form-finding began for the building across the street that was to become the community rec center with connection to the residential tower.

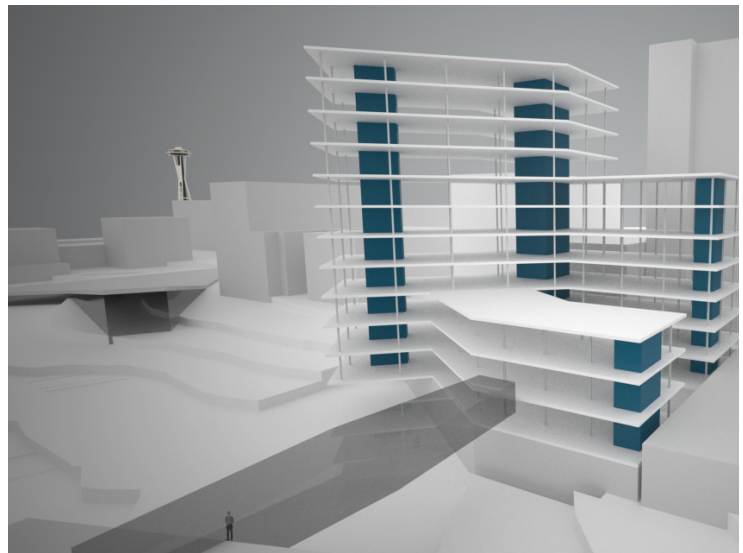
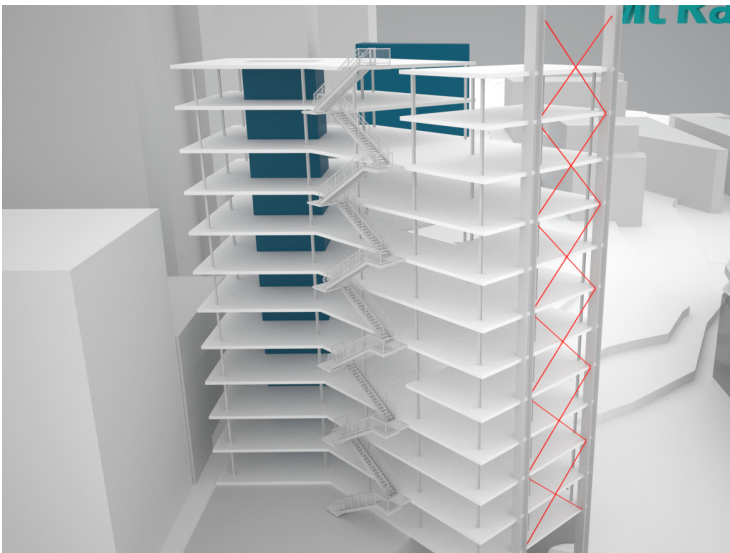
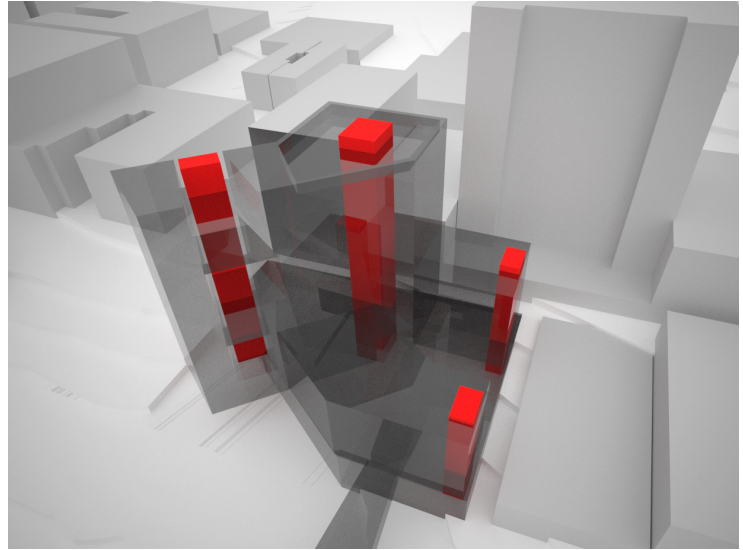
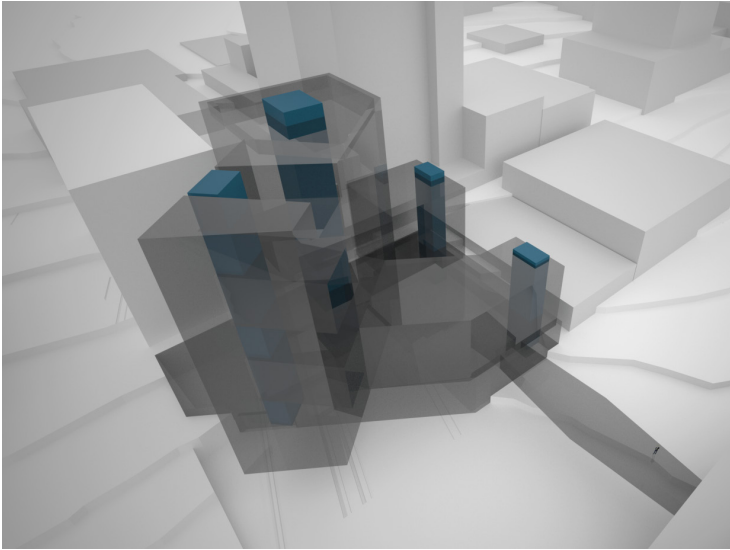
## The Breakthrough

The tower form that proved to be most promising was the one that oriented itself to the Southern Sky. This secondary gesture worked in concert with the primary site-geometry gesture to create the basic two part form for the building.

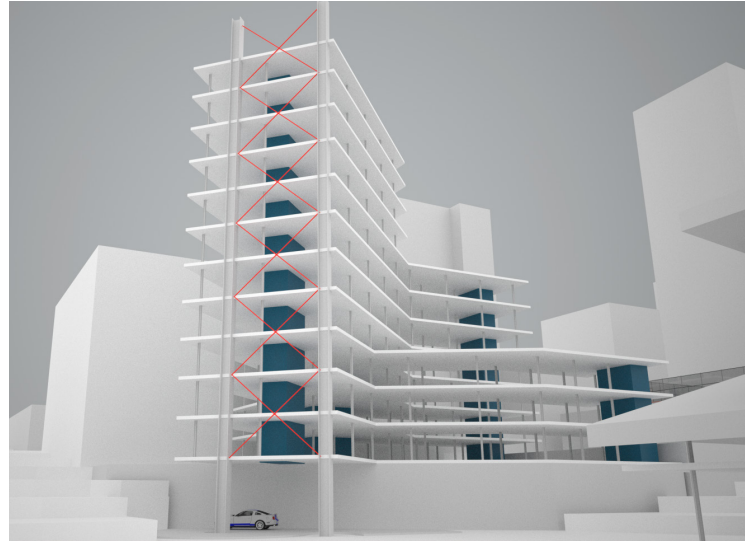
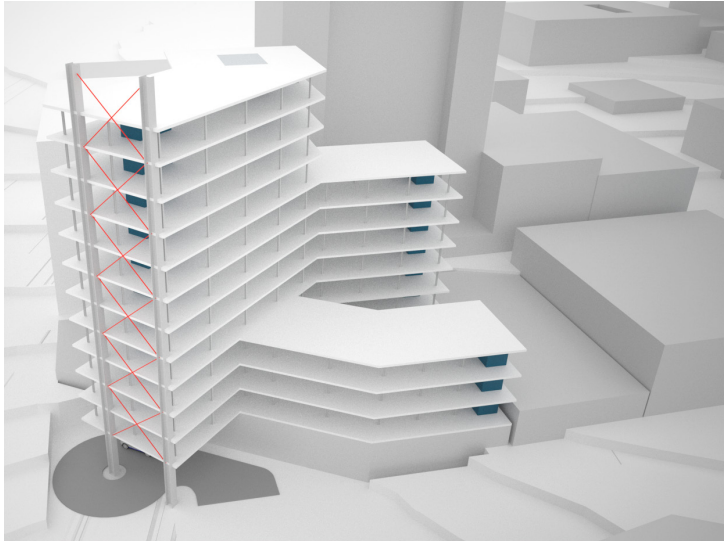






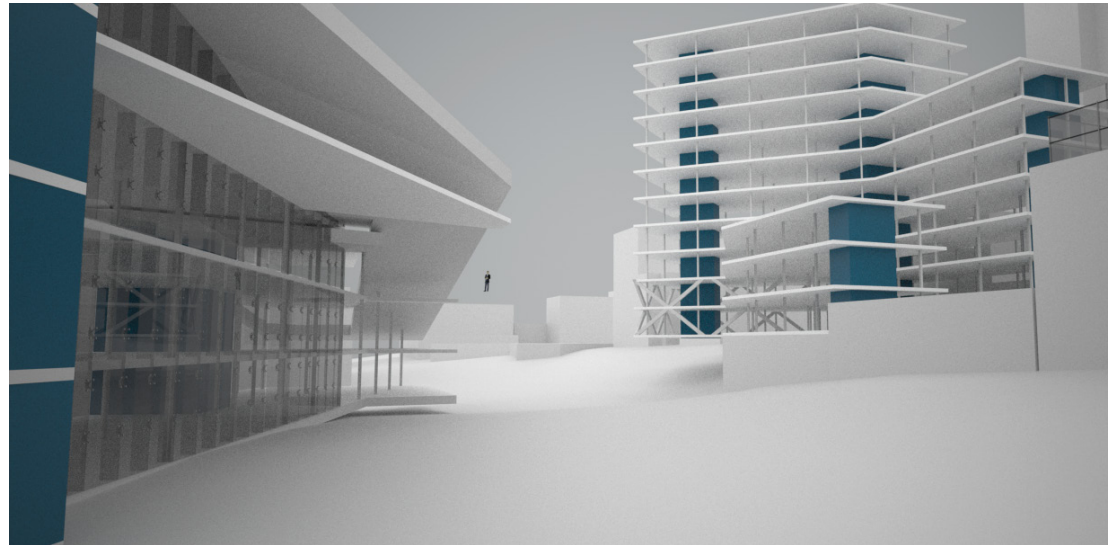


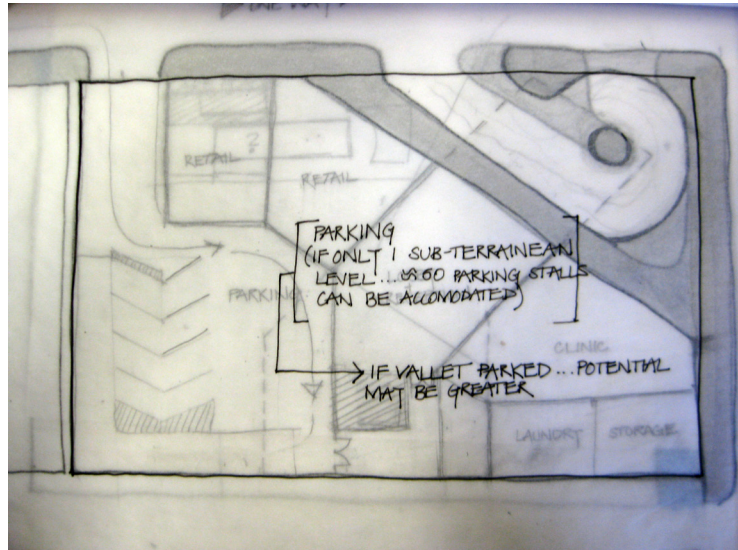
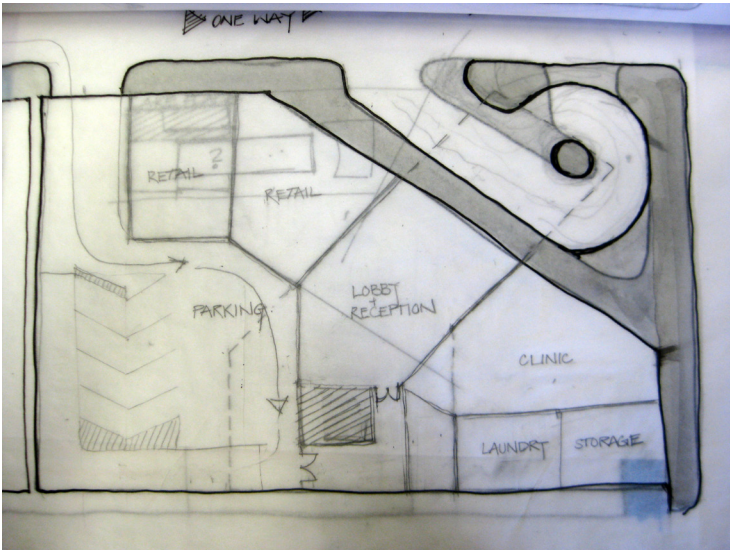
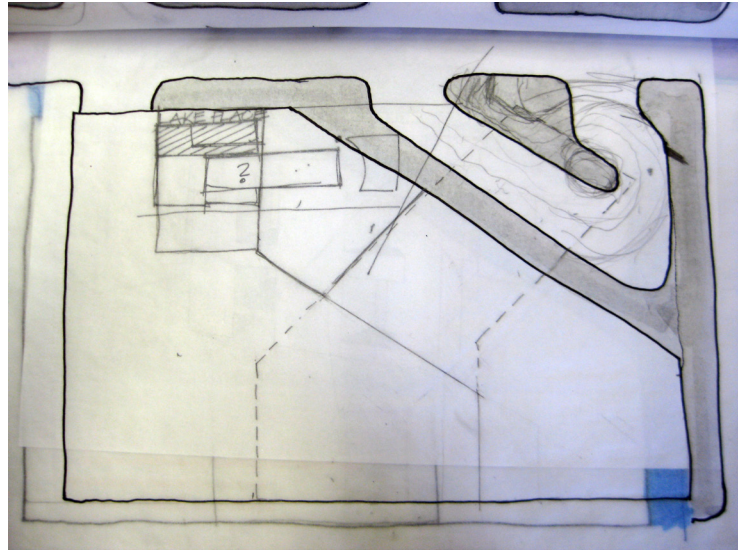
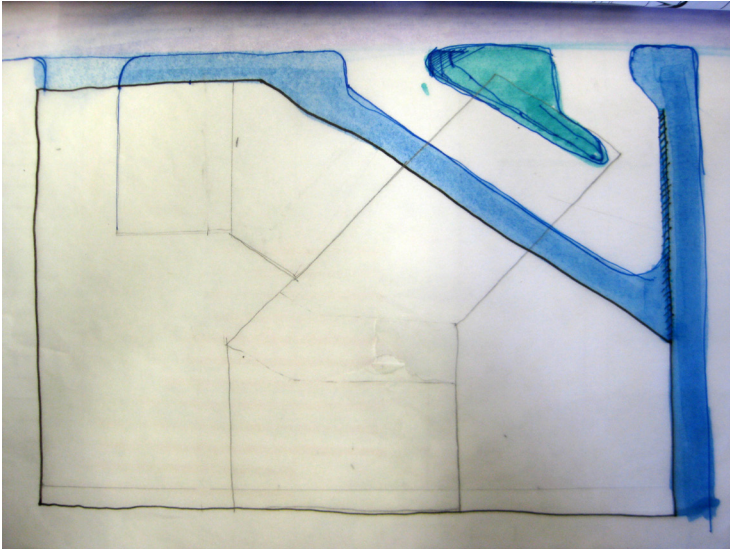




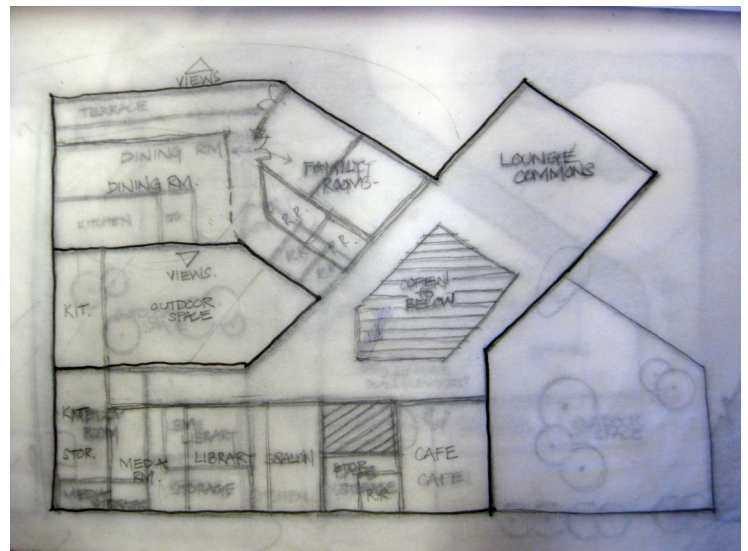
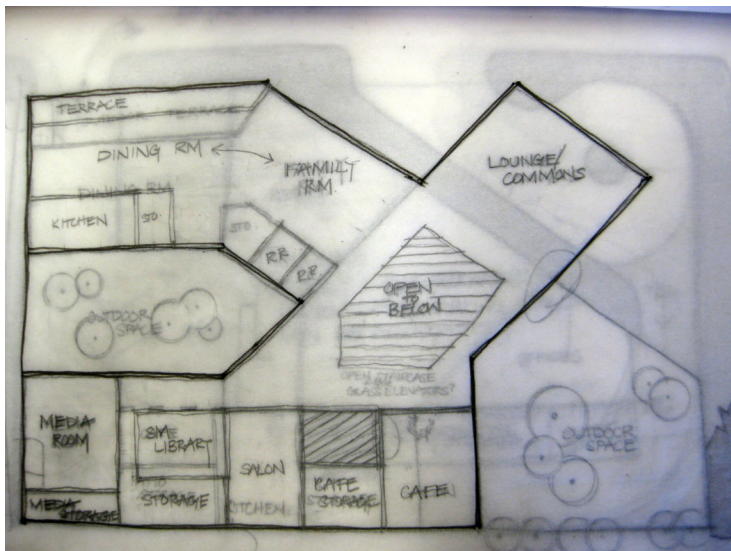
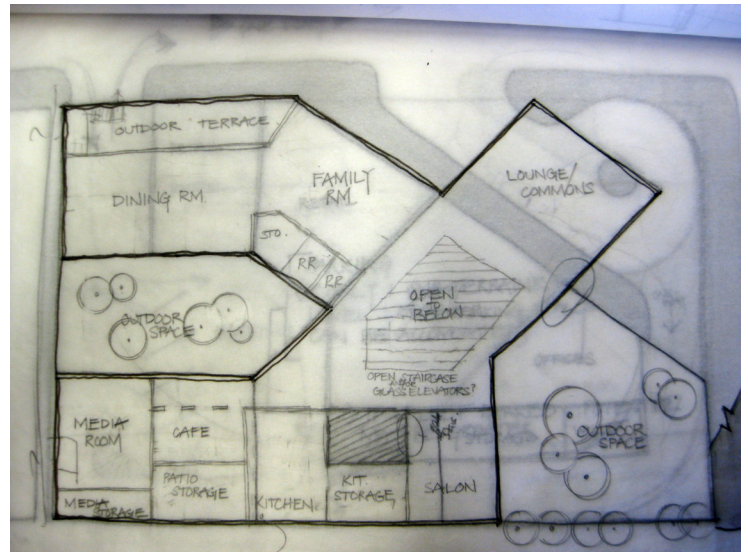
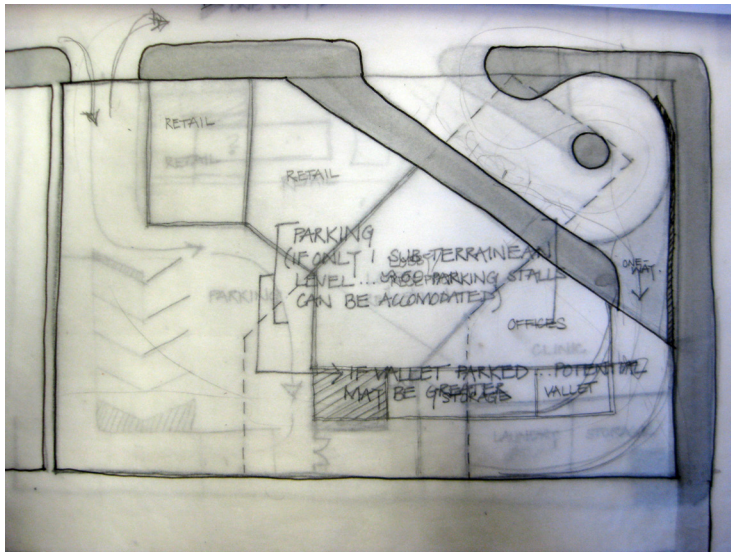
## Core and Structure

These images display analysis of core, structure and exiting strategies. They also represent a refinement of form in response to floor plan and sectional development.

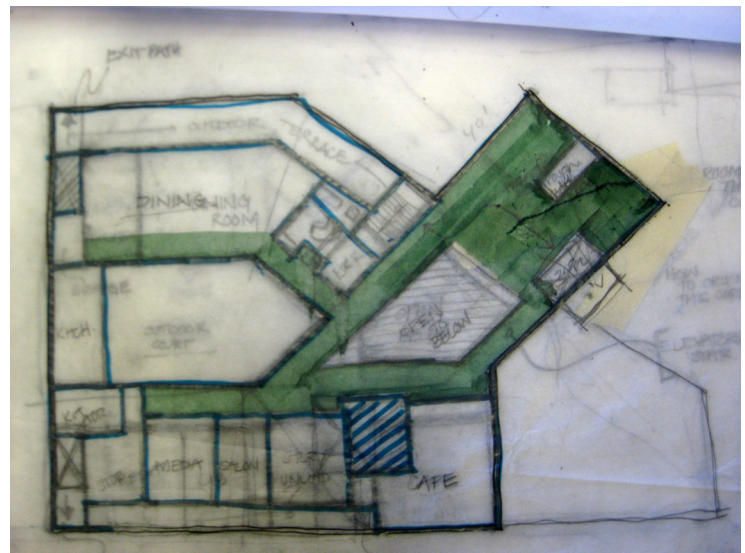
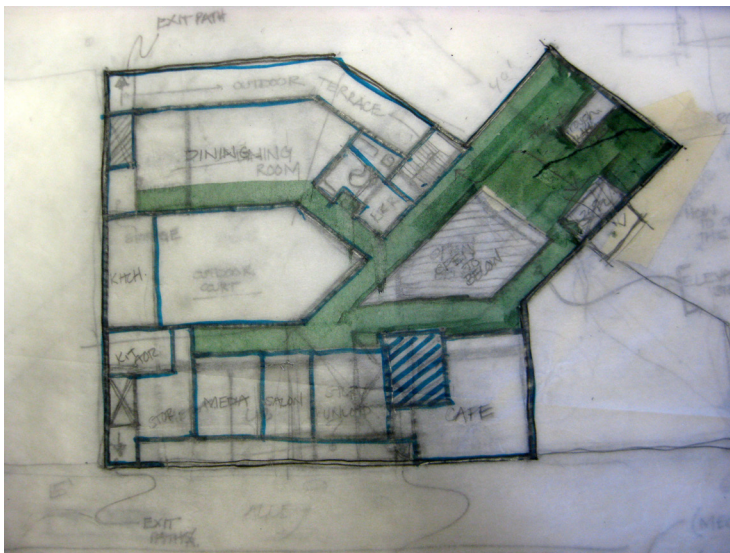
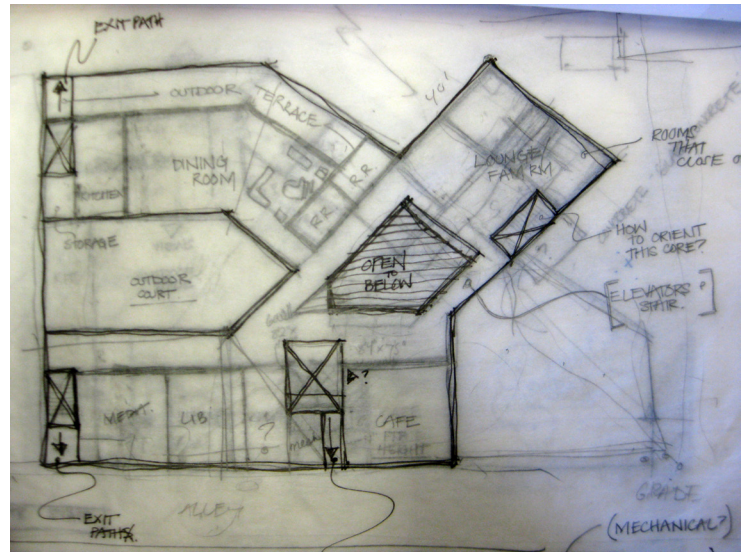
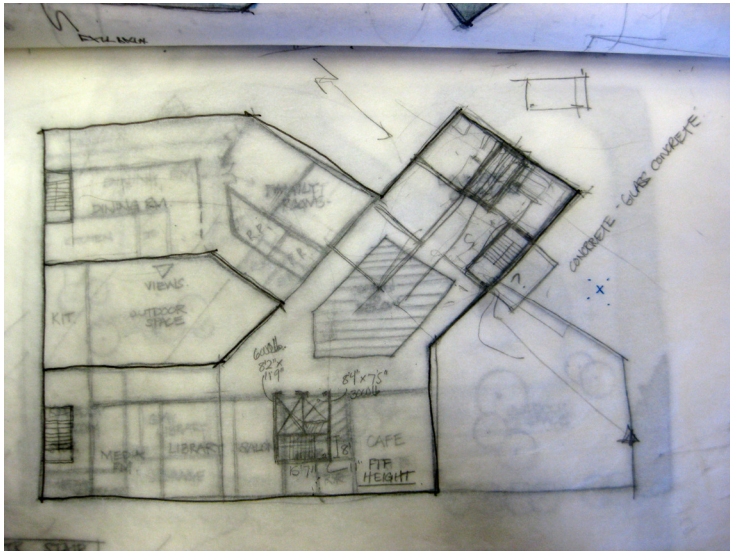




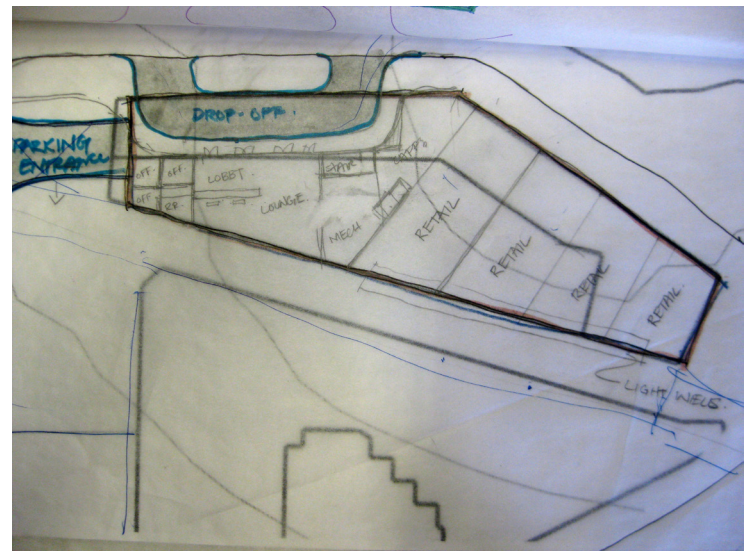
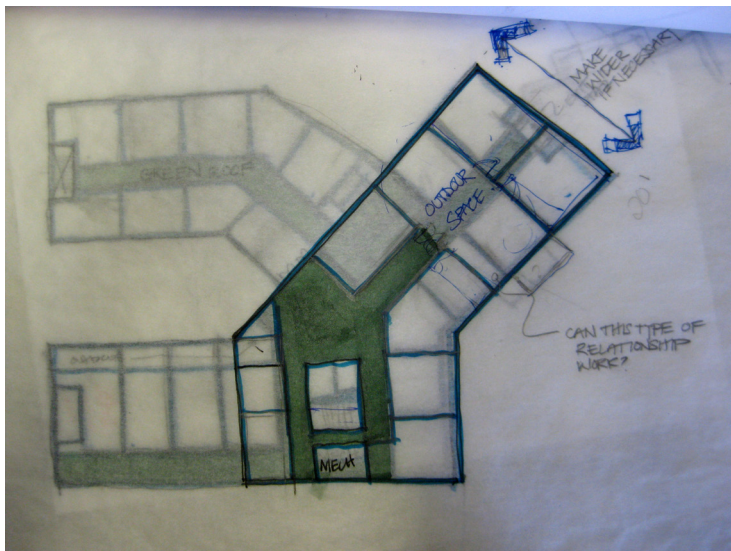
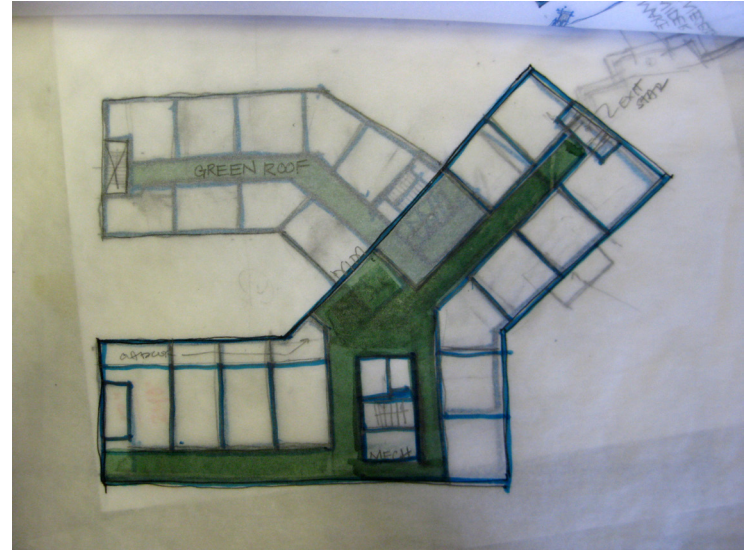
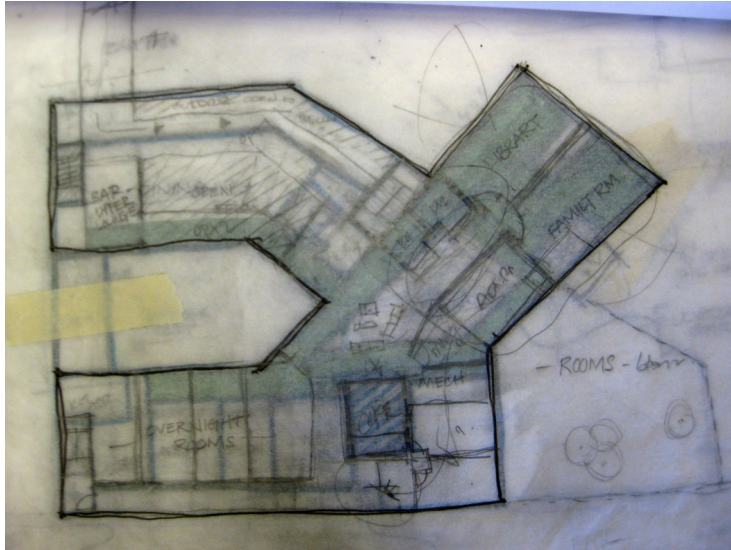








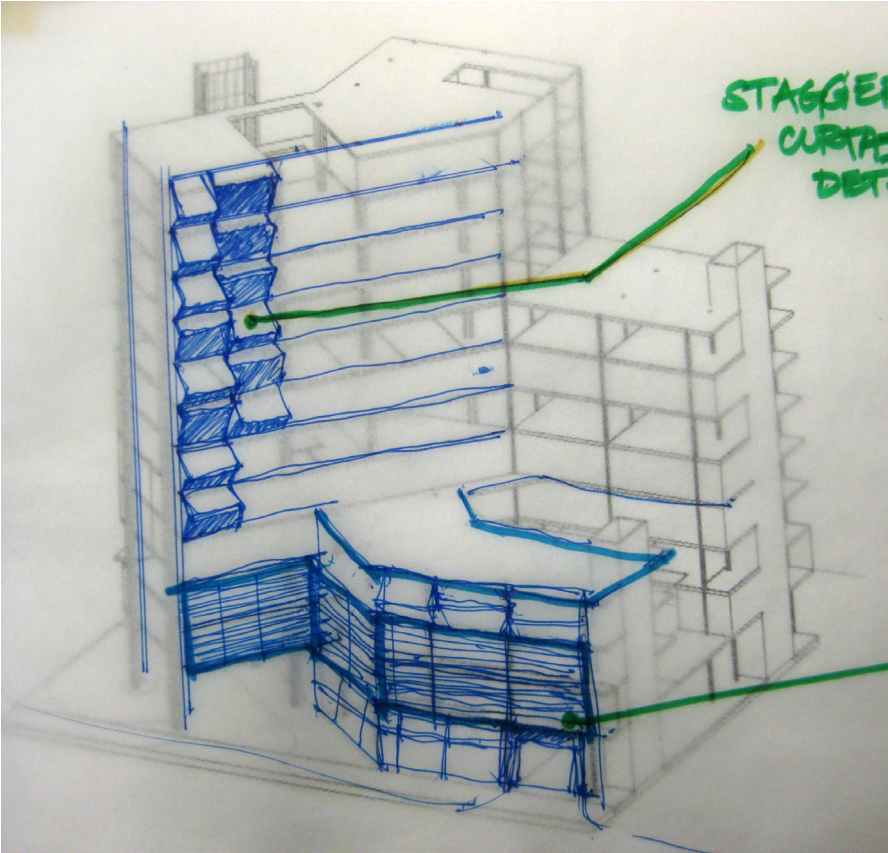
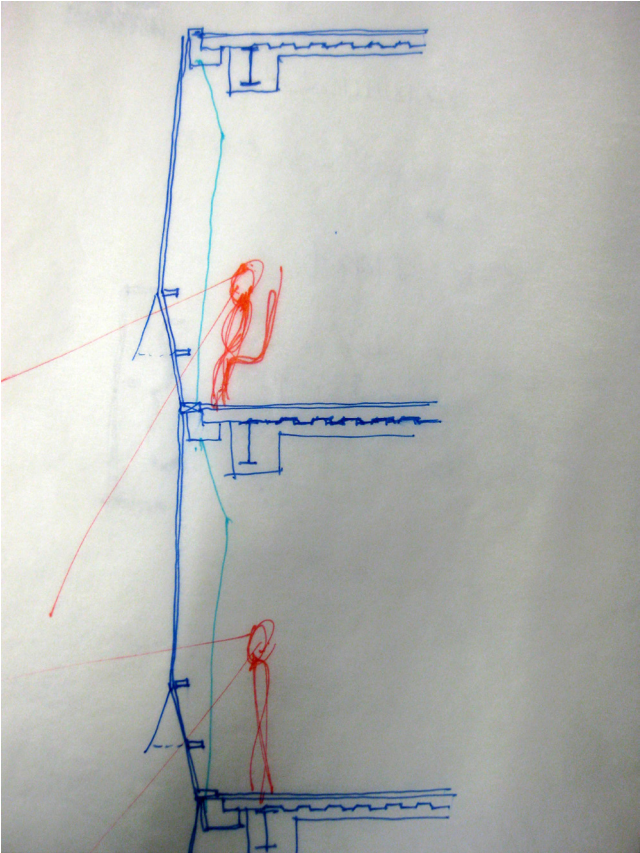




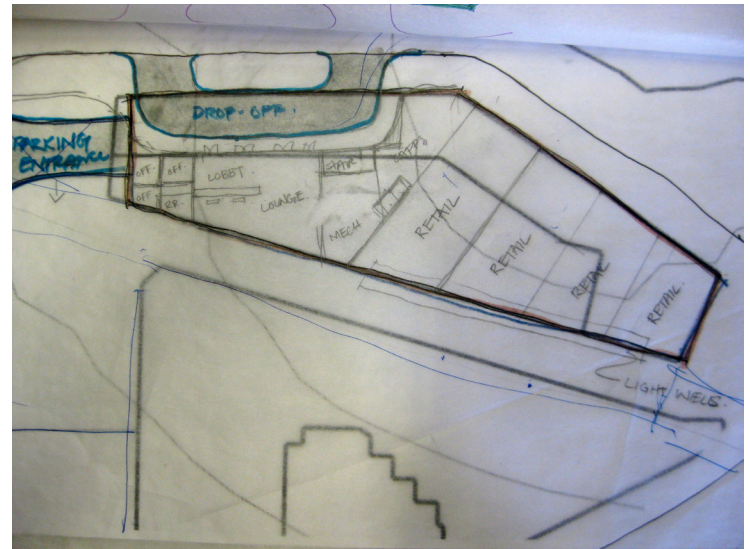
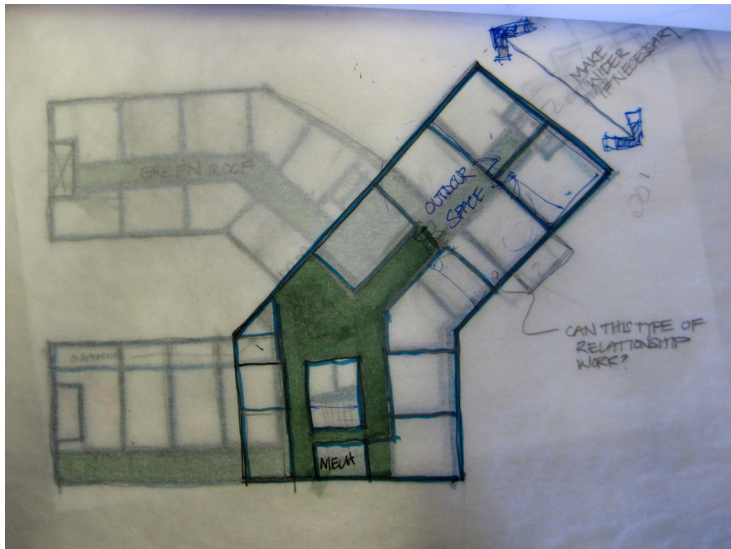
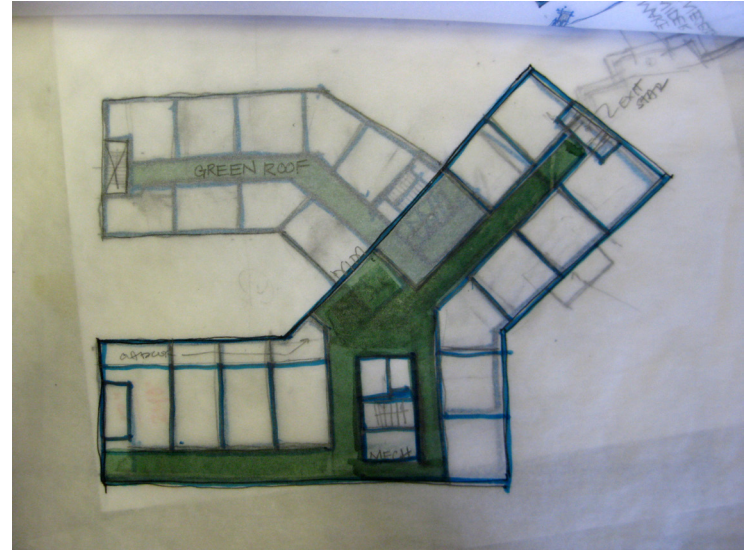
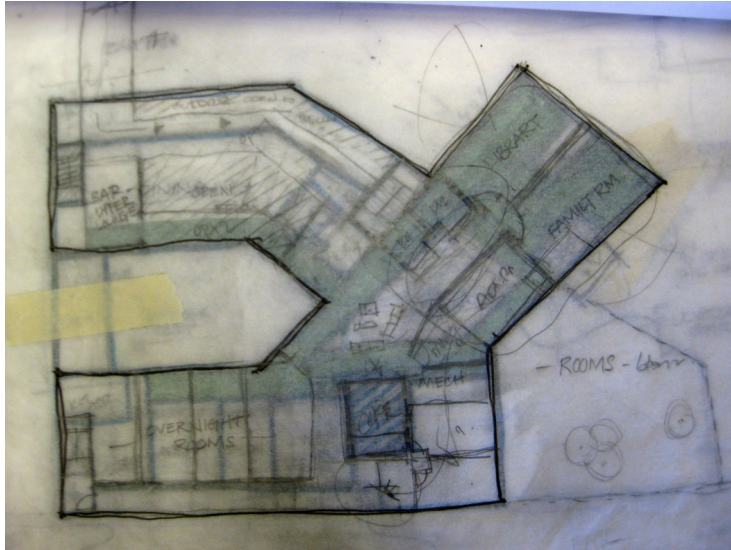


# Building Skin Development

These images represent the exploration into glazing systems that would help maximize views for residents from various bodily positions.



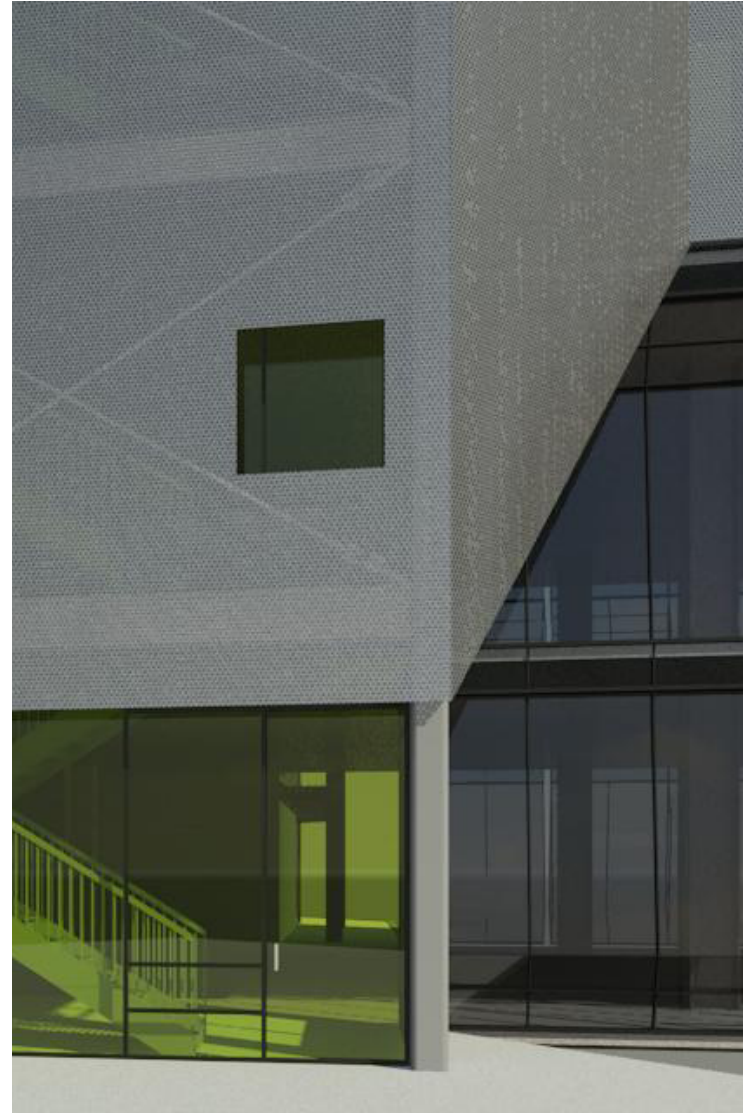




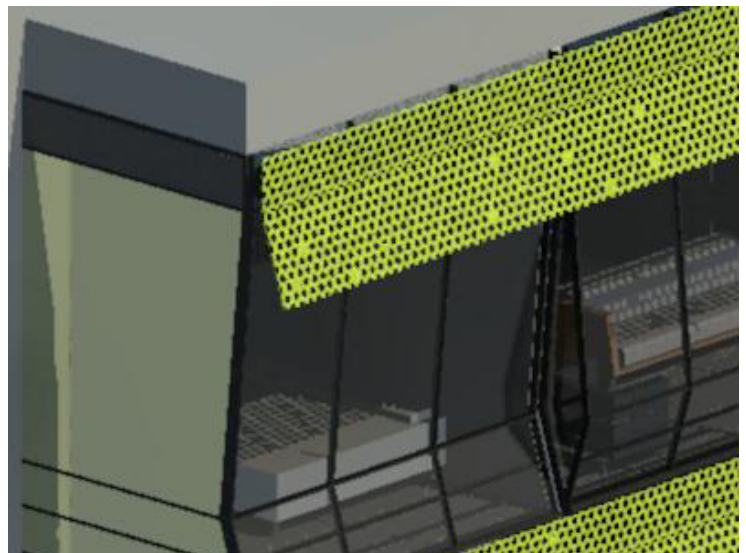
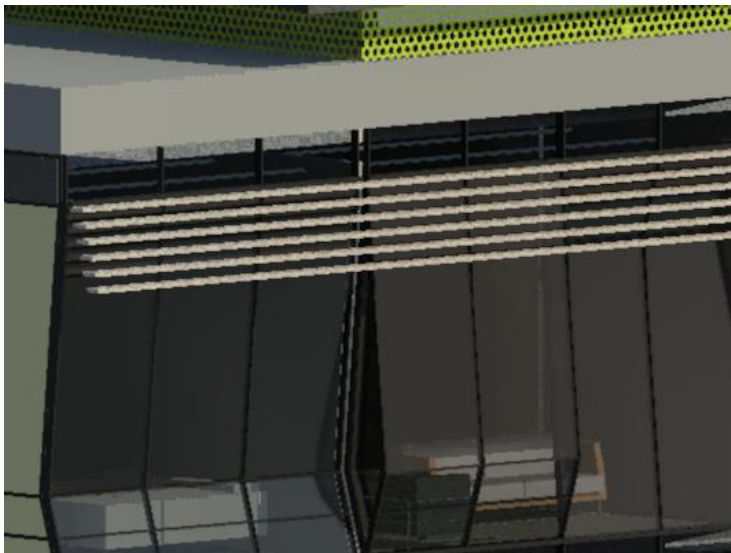


## Façade and Shading Studies

Rendering studies of facade compositions taken from various sides of the building.



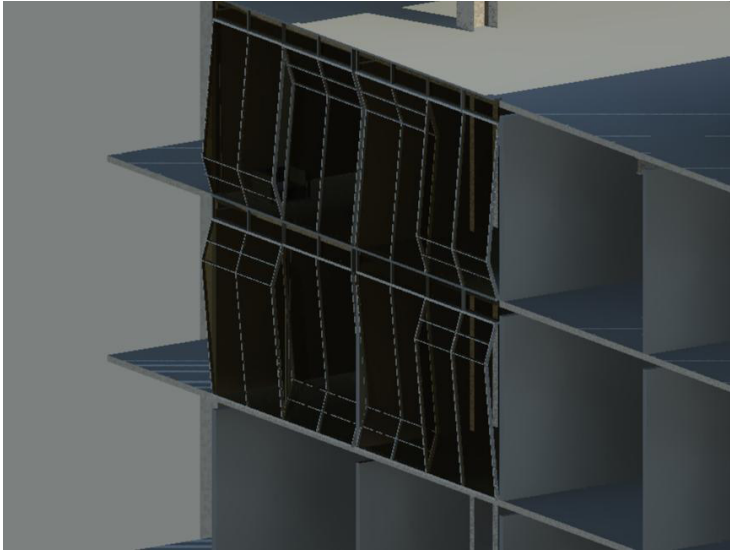


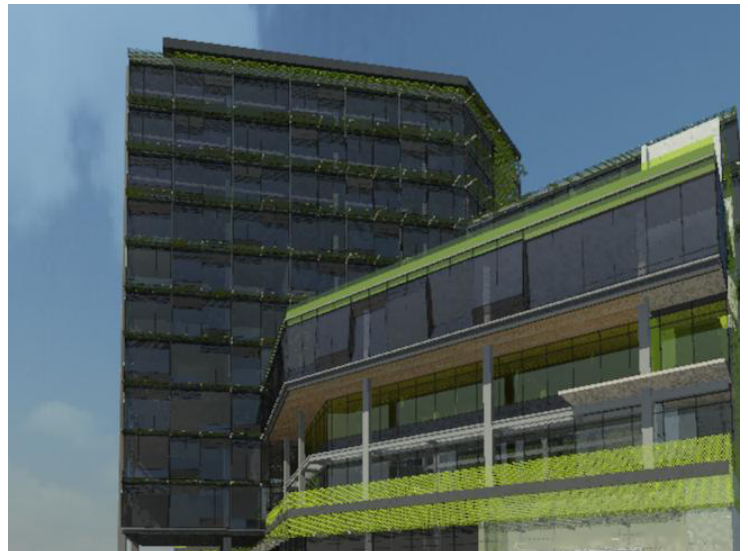




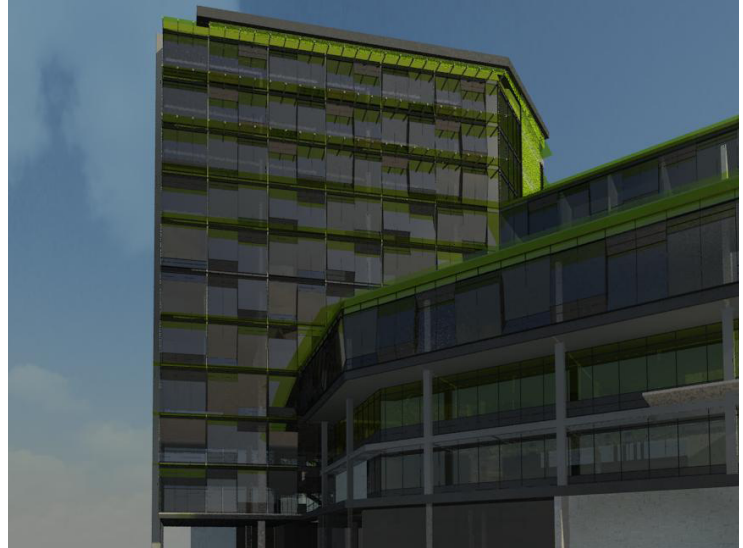
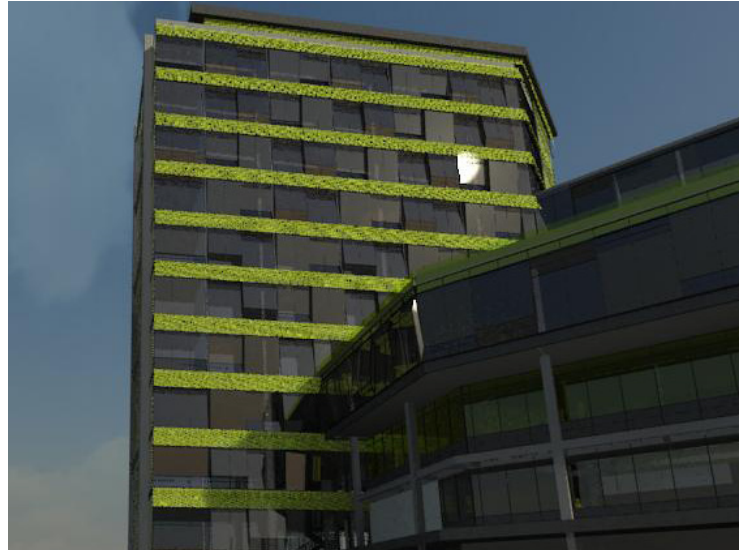






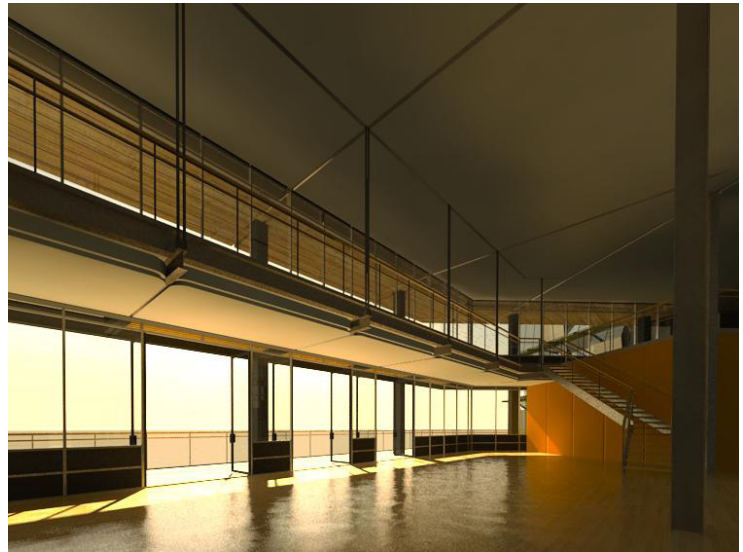
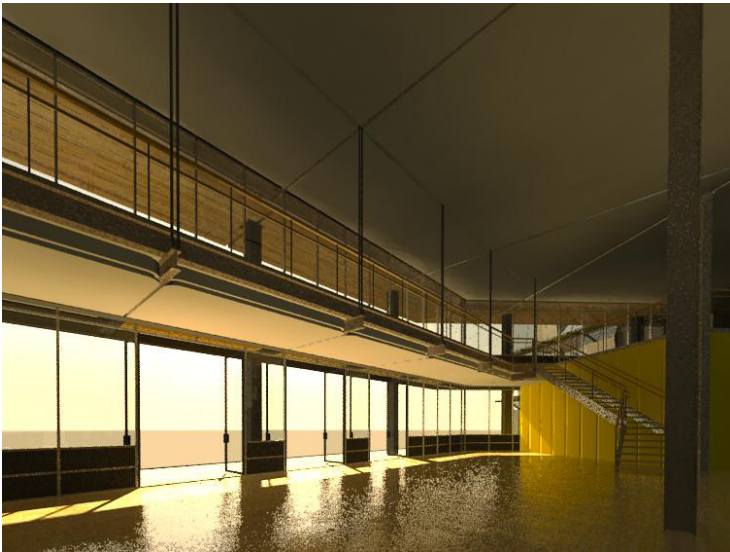
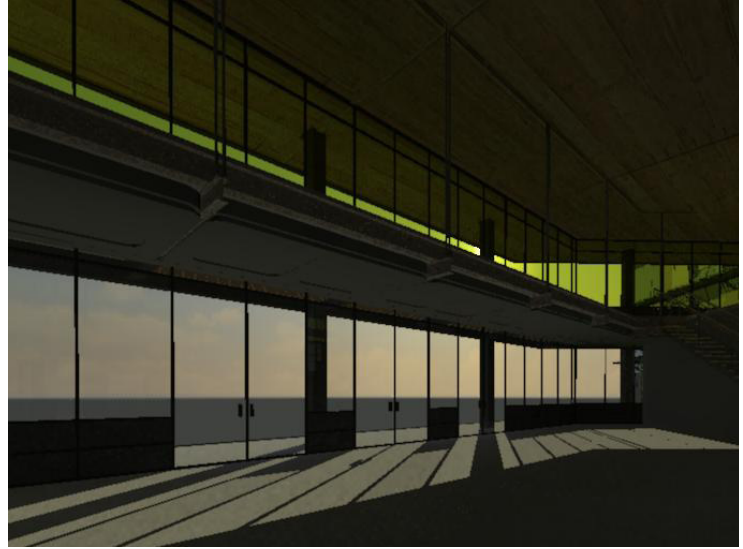




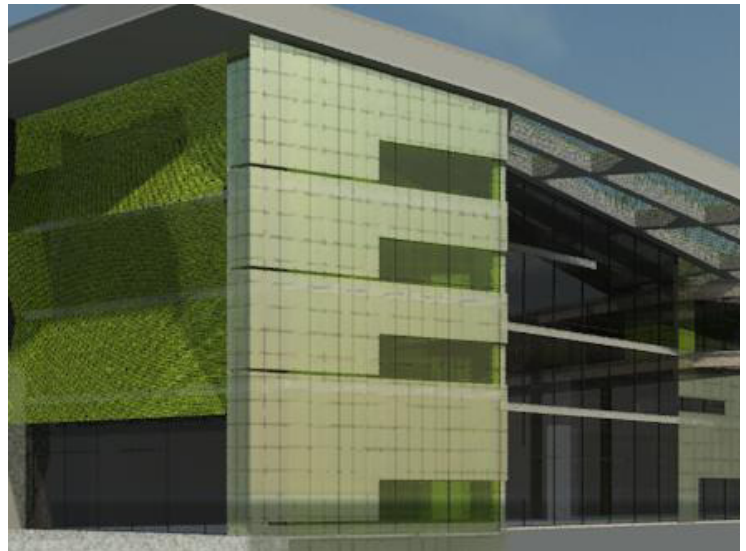
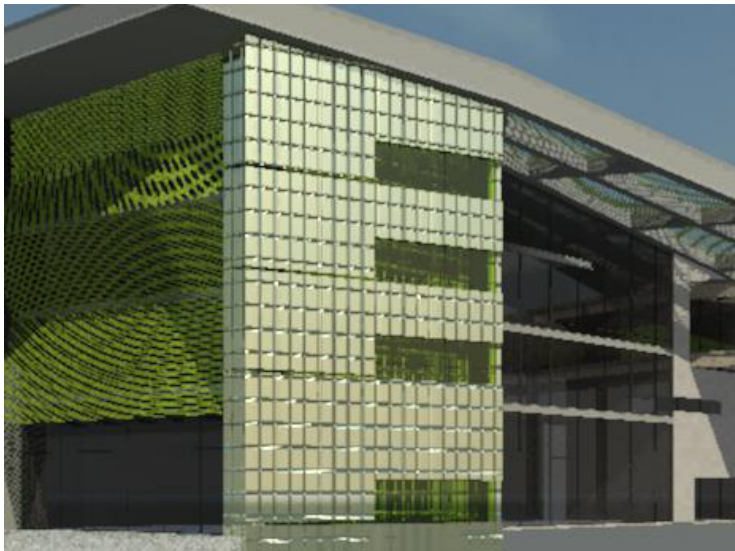
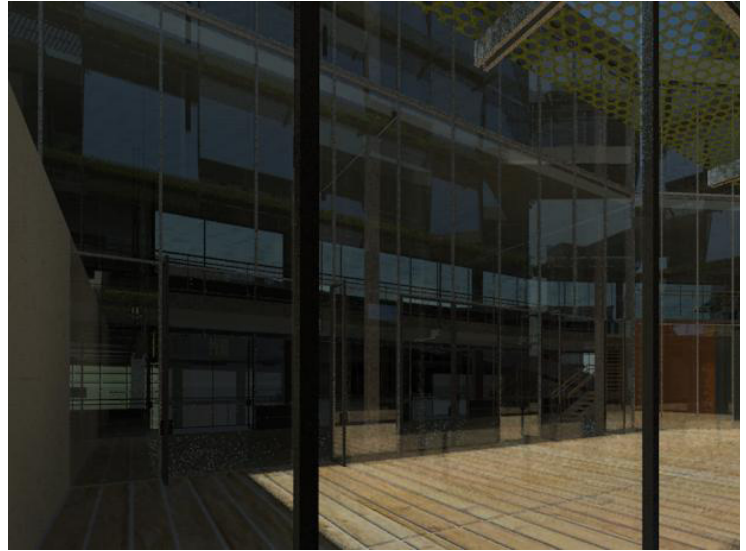














final design













Aging in Belltown makes sense. An abundance of amenities and residences within walking distance make this neighborhood easily accessible, even as driving becomes a challenge.

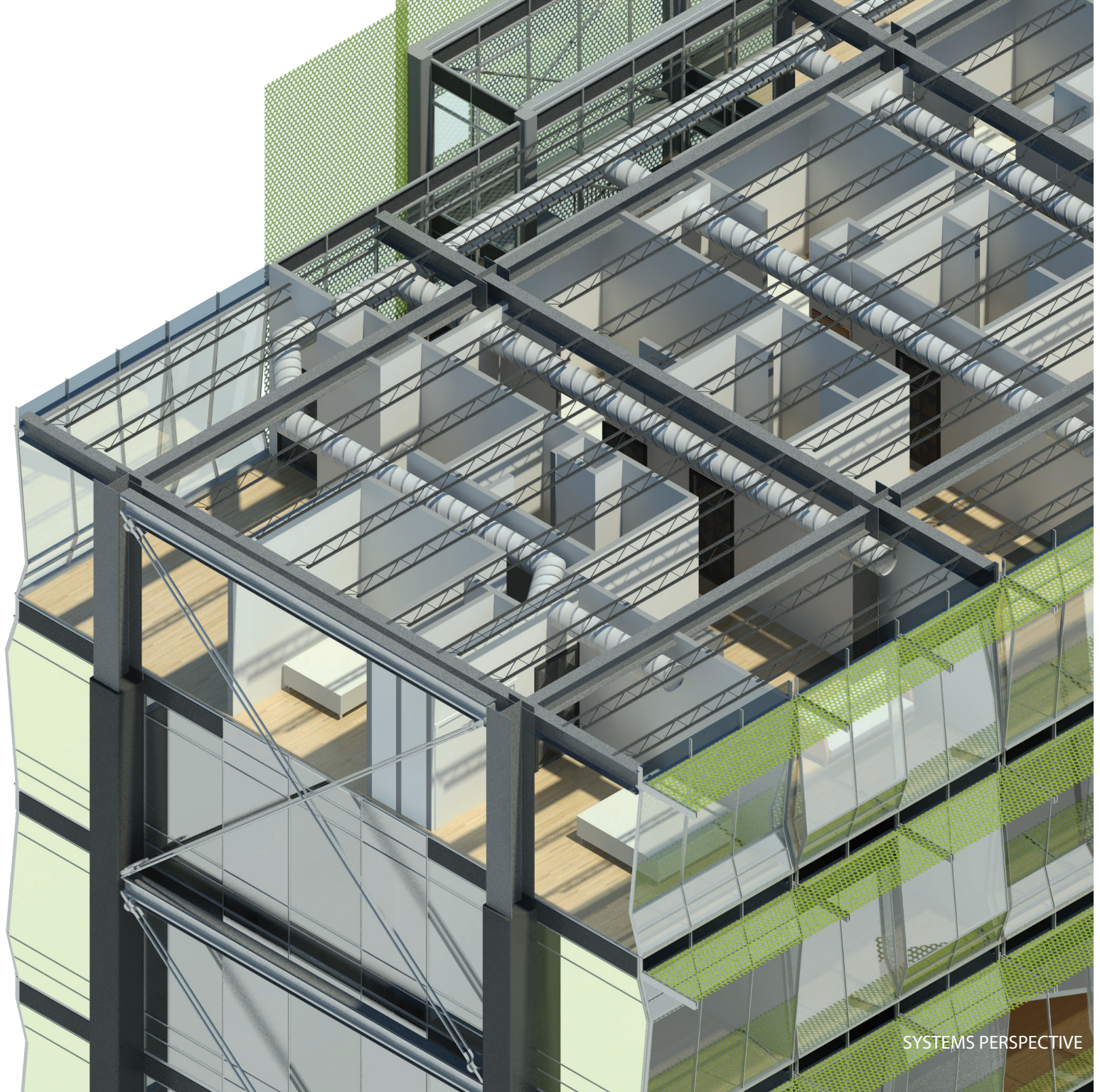
Since normalcy of daily life is not tied to a vehicle, residents of Belltown can avoid the sharp decline in freedom caused by the loss of a driver's license.

Glazing details that promote autonomy: the undulation of the glass within the units allow for a greater field of view than typical perpendicular glazing. Not only are views increased up and down, but also side to side.

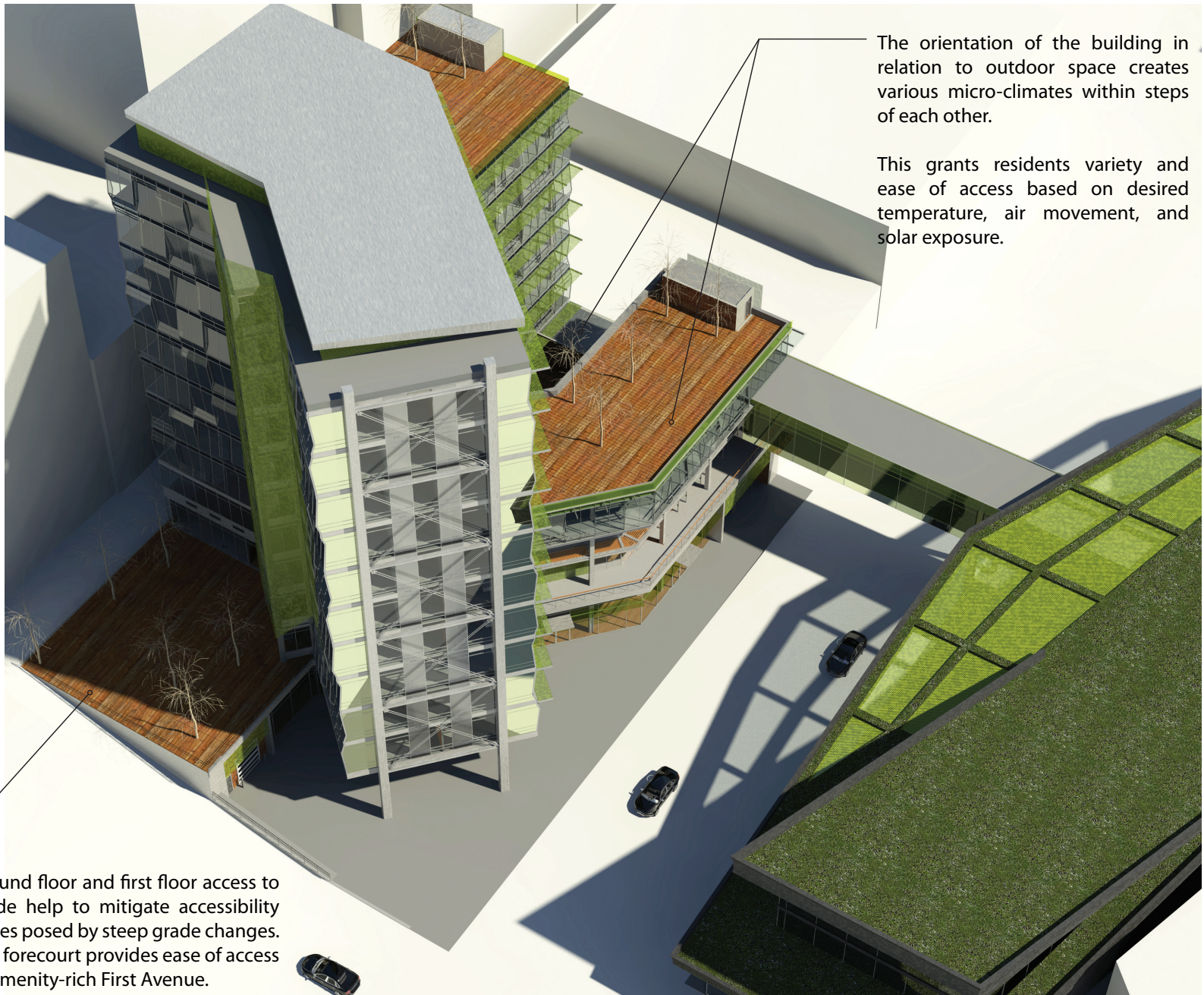
Even from a seated position, residents can visually engage with the street, sky, and sun.











The orientation of the building in relation to outdoor space creates various micro-climates within steps of each other.

This grants residents variety and ease of access based on desired temperature, air movement, and solar exposure.

Ground floor and first floor access to grade help to mitigate accessibility issues posed by steep grade changes. The forecourt provides ease of access to amenity-rich First Avenue.

# For the Individual. For the Family. For the City.

Integrating care-based facilities into the urban environment has three main advantages. The first is for the individual. A facility located in a walk-able urban center near many amenities can keep an individual active in the community much longer as their ability to drive and walk and drive becomes an issue.

The second is for the family and friends of the individual. This type of setting is much more desirable to spend time and interact in. Creating an environment desirable for guests will increase the duration and frequency of their visits, helping diminish the sense of isolation for the resident.

The final reason is for the city itself. Many downtown communities, including Belltown, have a very narrow age demographic. Residents of these communities tend to be adults, ages 25 – 65. Re-introducing the older demographic will promote diversity and stability in these communities.

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## Existing Conditions

The Belltown neighborhood is home to about 2% of Seattle's residents (nearly 12,000 people) and boasts one of the highest neighborhood population densities in Seattle.

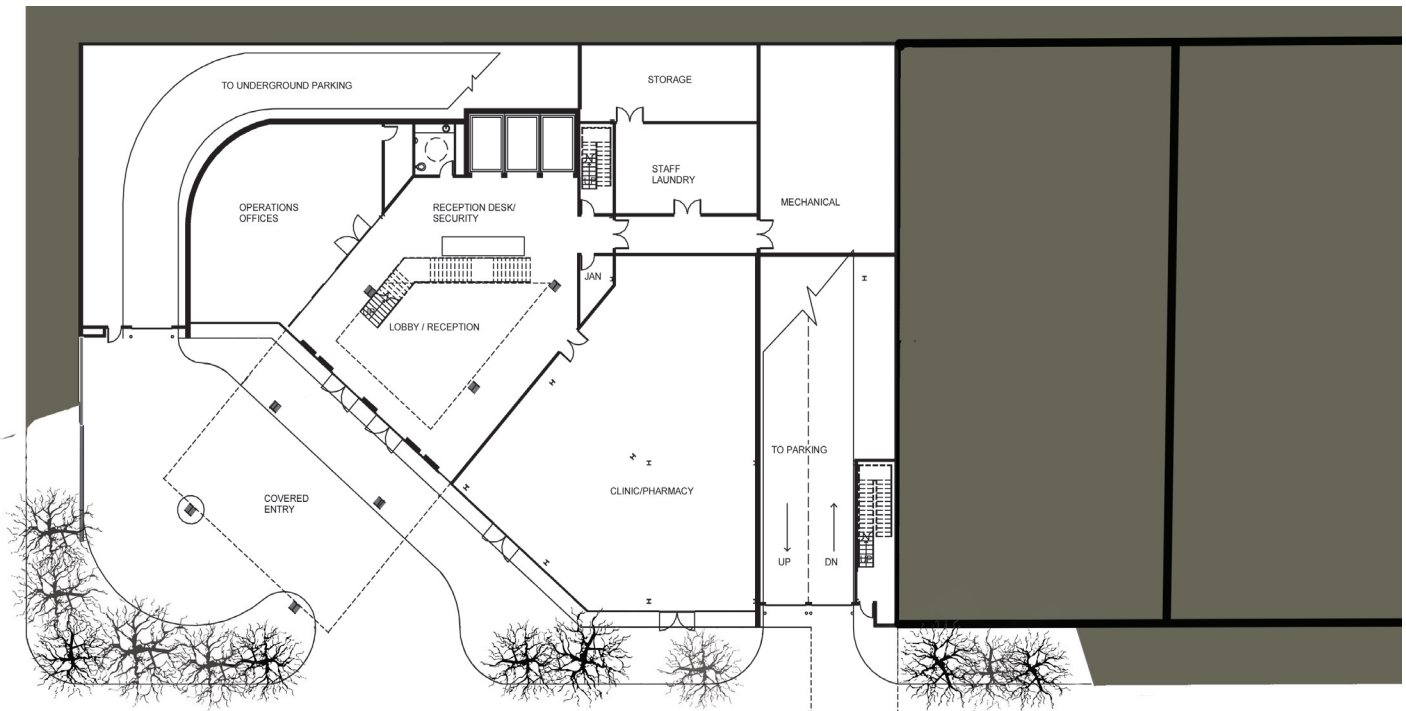
85% of people living in Belltown are between the ages of 18 and 65. Only about 2% of the population is younger than age 18 and 13% of the population is older than age 65.

Because of these tilted demographics, this community will be hit especially hard by the effects of the baby boom generation. 300 Belltown residents will turn 65 every year for the next 30 years.

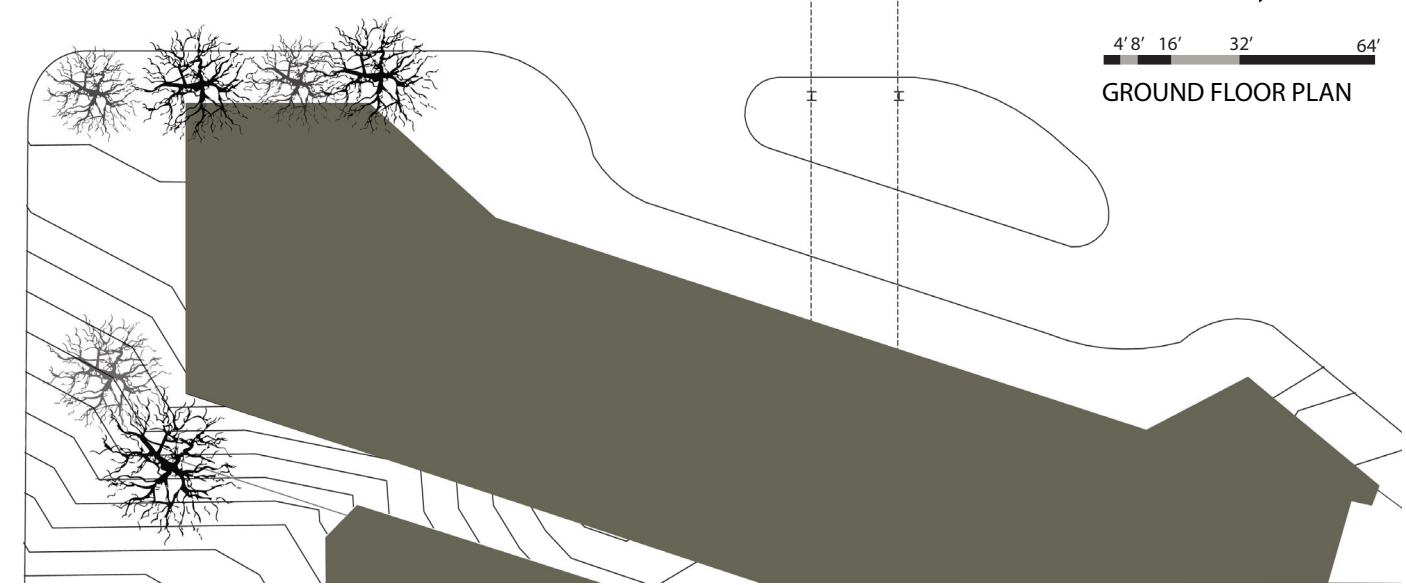
Only 275 beds are dedicated for elderly individuals in the neighborhood -- presenting a significant challenge for residents who prefer to age-in-place.

This proposal will allow those residents to live in close proximity to family and life-long friends--helping to maintain social networks that are often strained by the decision to re-locate to long-term care facilities.

BELL STREET

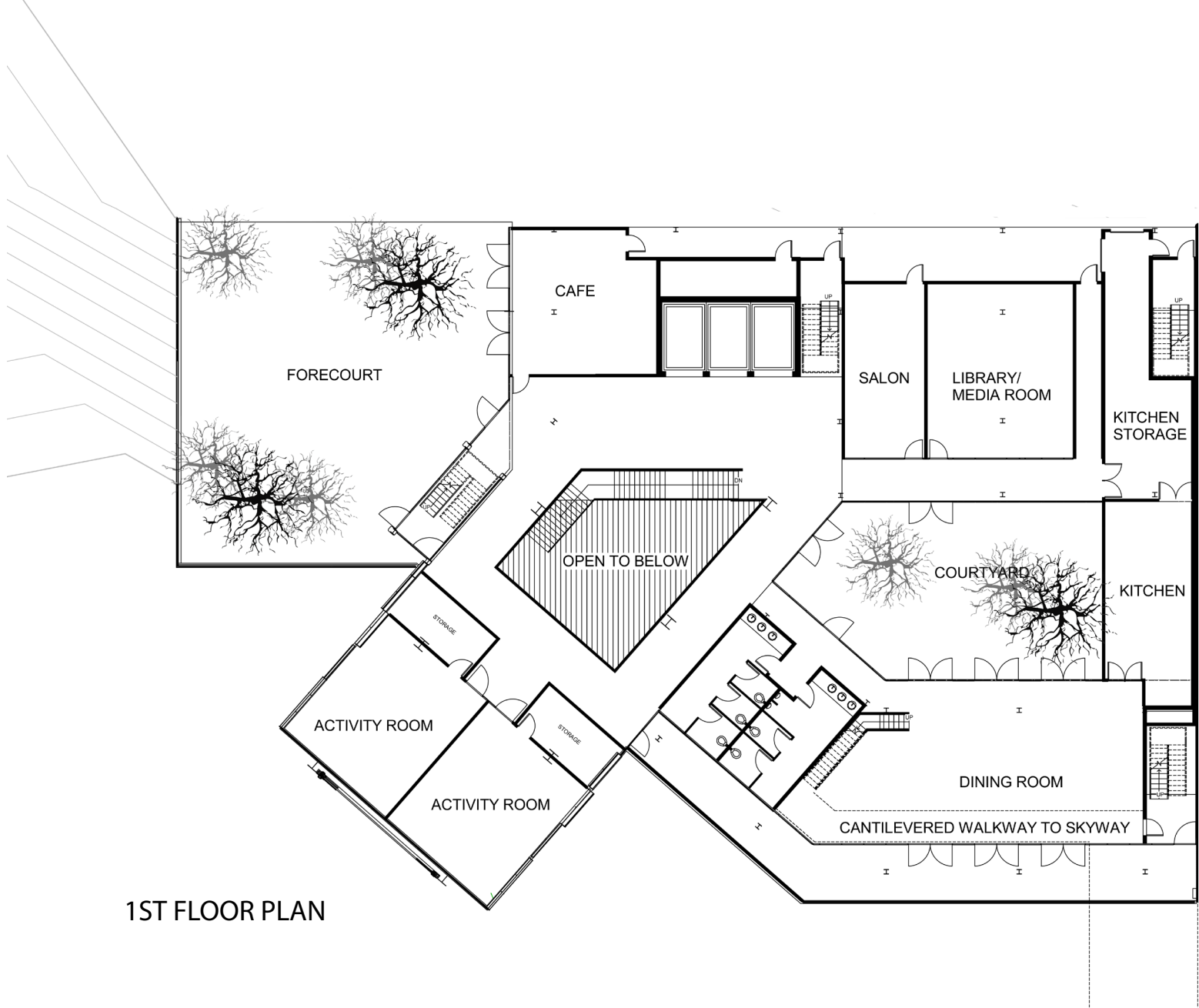


WESTERN AVENUE



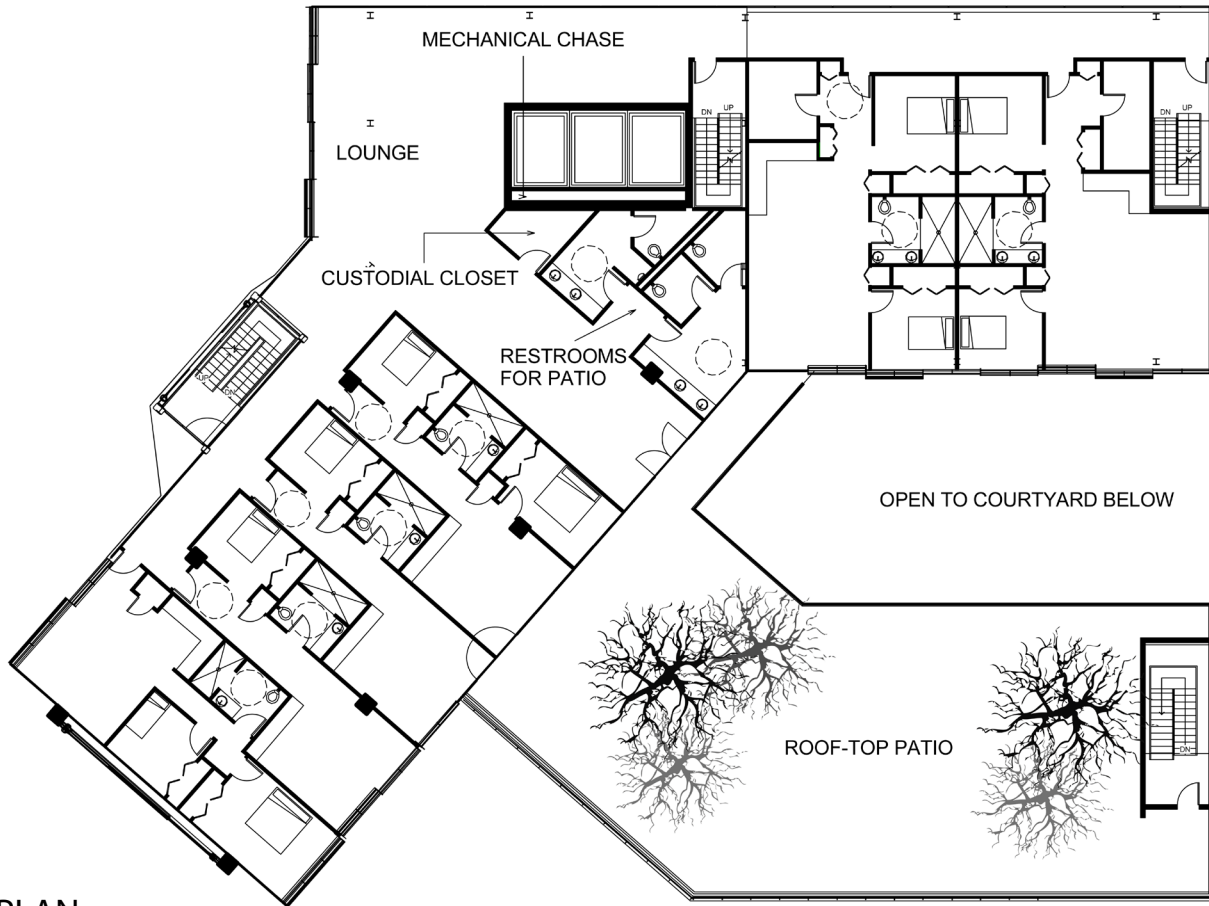
GROUND FLOOR PLAN





1ST FLOOR PLAN





4TH FLOOR PLAN





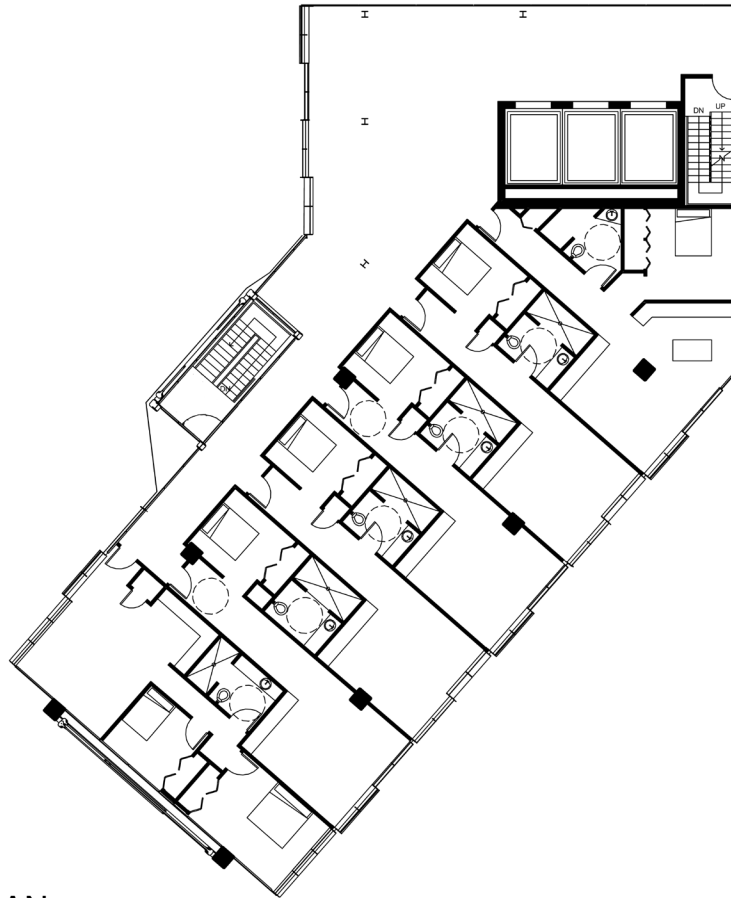
5TH FLOOR PLAN





In a rainy climate, access to sun is especially desirable . Single loaded corridors ensure all tenants will have access to solar exposure--even those with restricted mobility.

Additionally, since many residents walk as part of exercise routines, single loading creates more inviting space in which to do so.



10TH FLOOR PLAN





DINING ROOM PERSPECTIVE





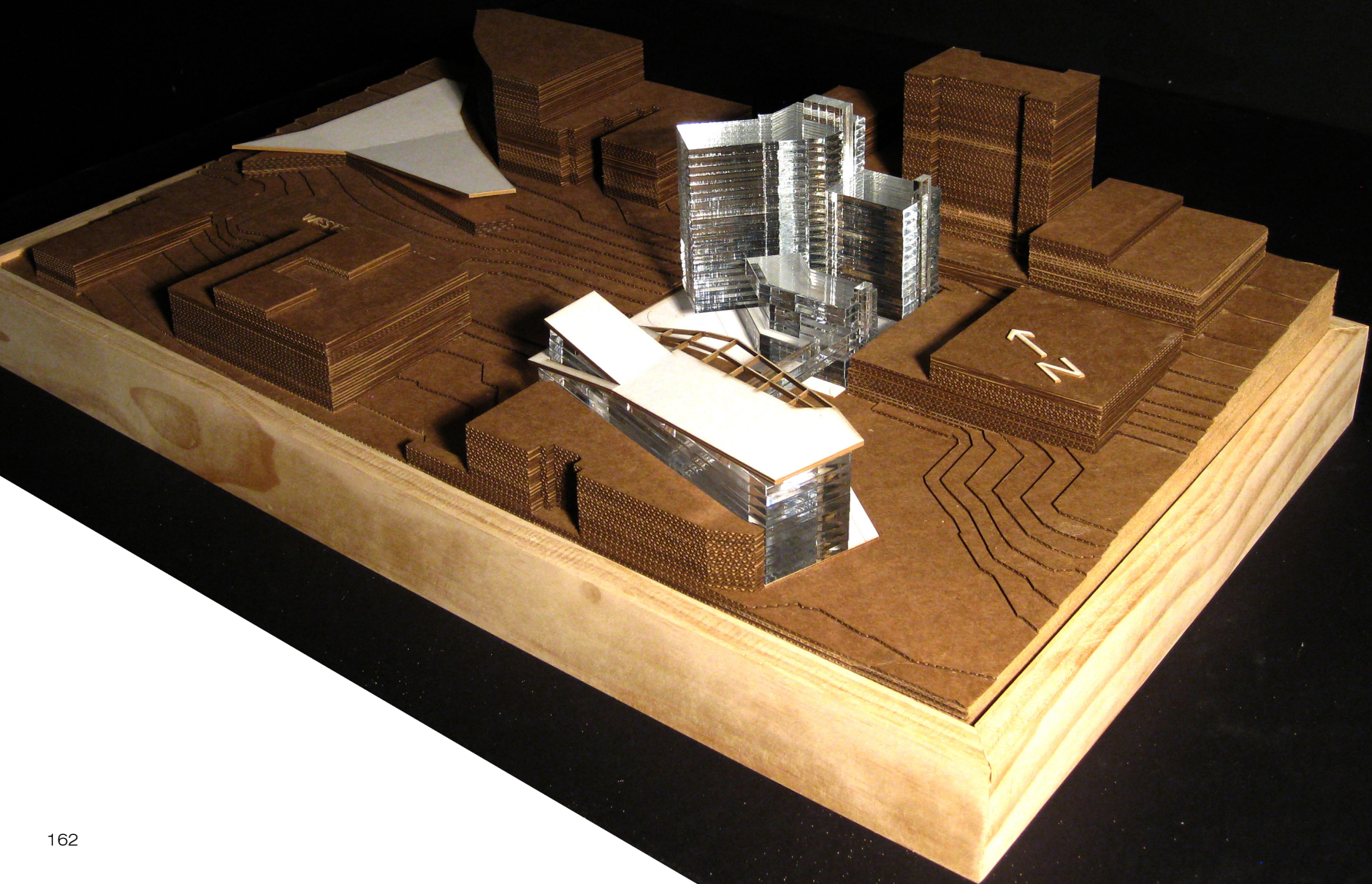
COURTYARD PERSPECTIVE



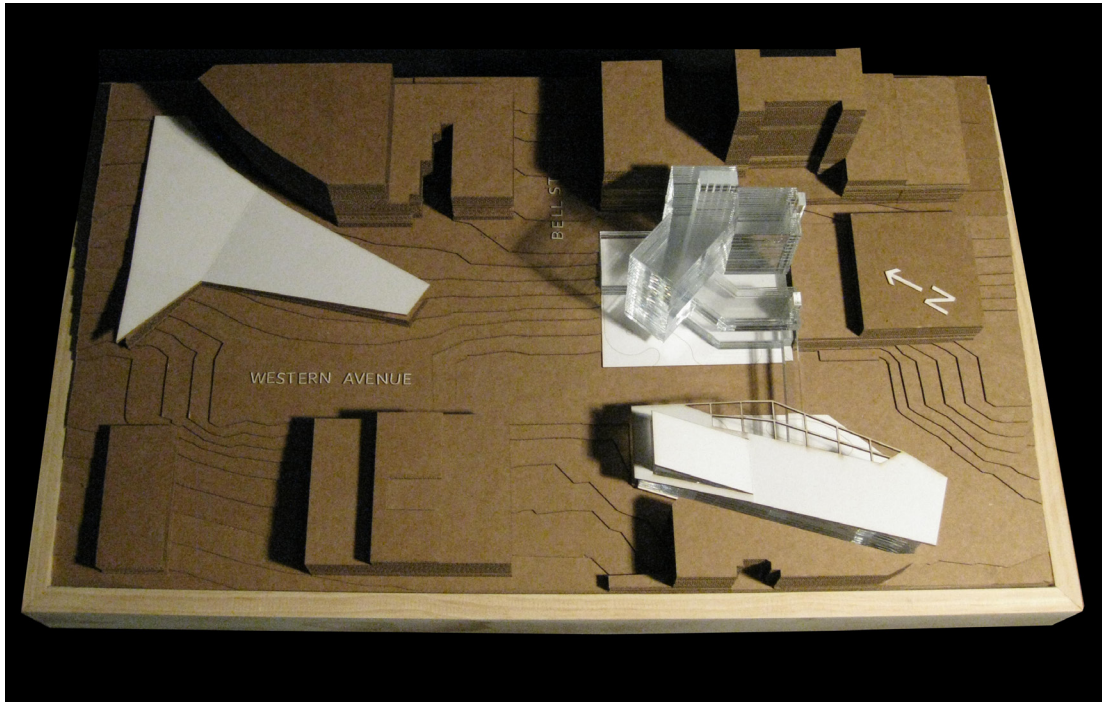
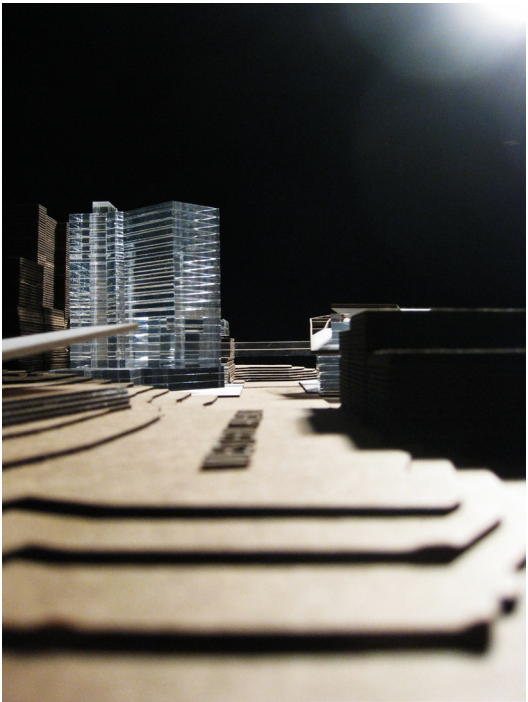


LOBBY PERSPECTIVE











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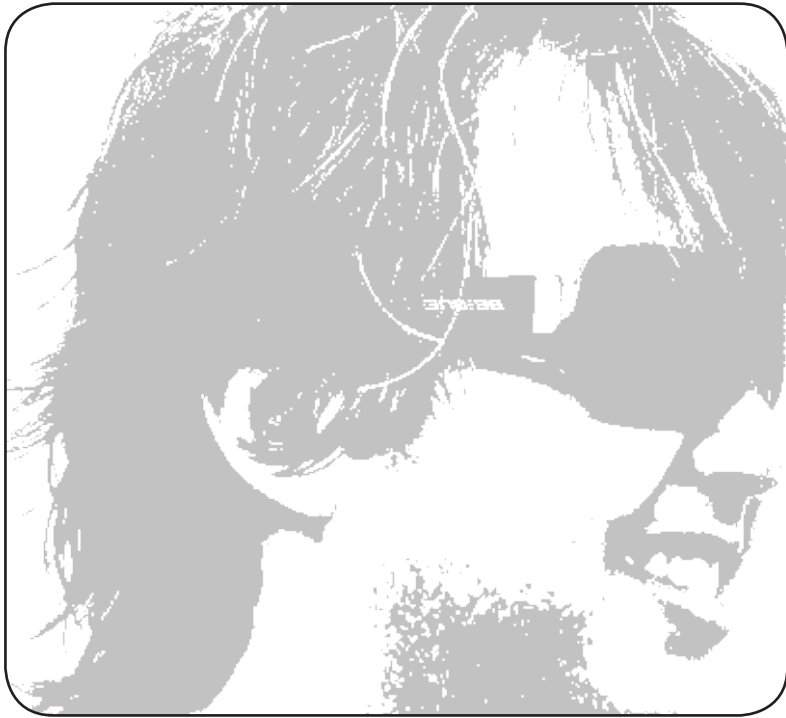
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## references





# Peter Kuelbs

21868 Ocean Avenue  
Clements, MN 56224-1026

507.227.4441

Peter.Kuelbs@gmail.com

"I have no special talents, I am only passionately curious."  
-- Albert Einstein

"Time spent does not equal execution!"  
-- Jason Moore, Drawing Professor, NDSU

identification