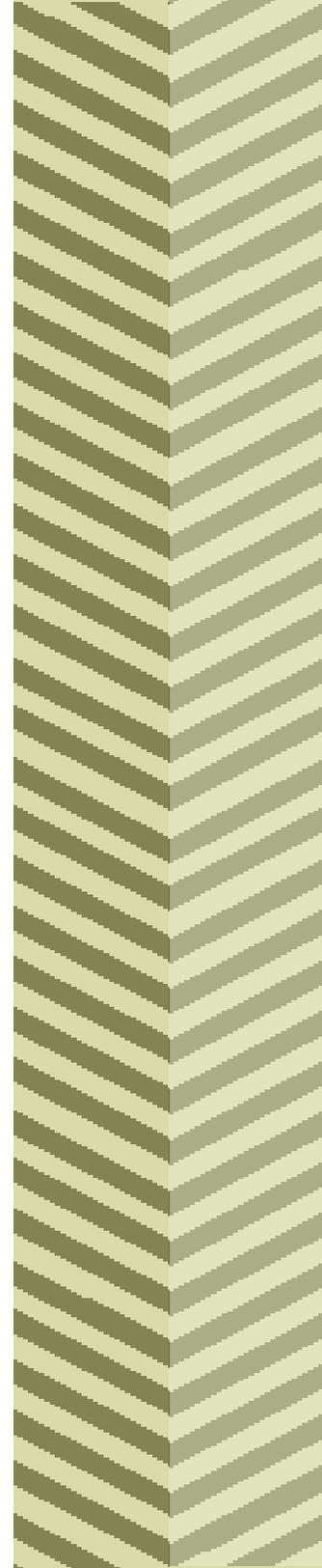




[longevity]

sara.kolpack



[longevity]

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

By

Sara Anne Kolpack

In Partial Fulfilment of the Requirements
for the Degree of Master of Architecture

W. Panagiotis 5/8/2013

Primary Thesis Advisor

Frank M. Bannister, May 13, 2013

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May 2013
Fargo, North Dakota

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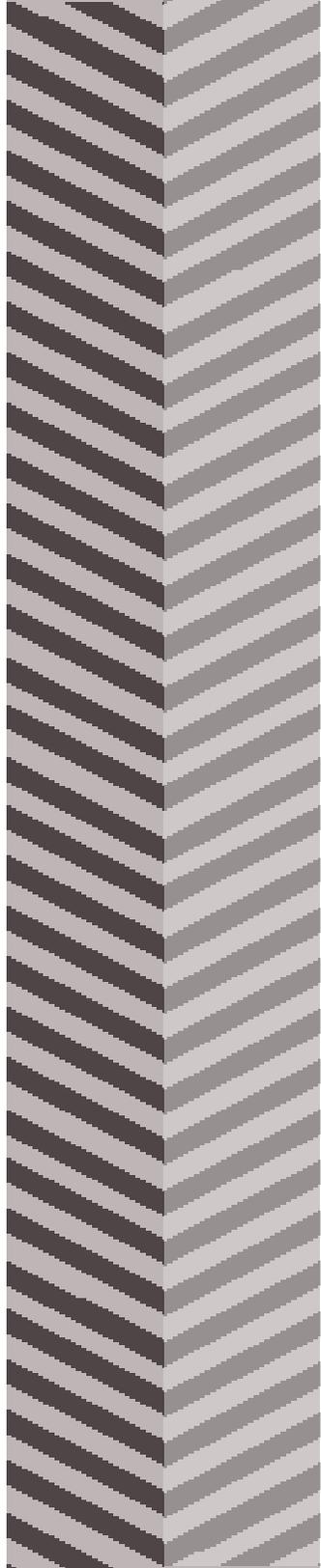


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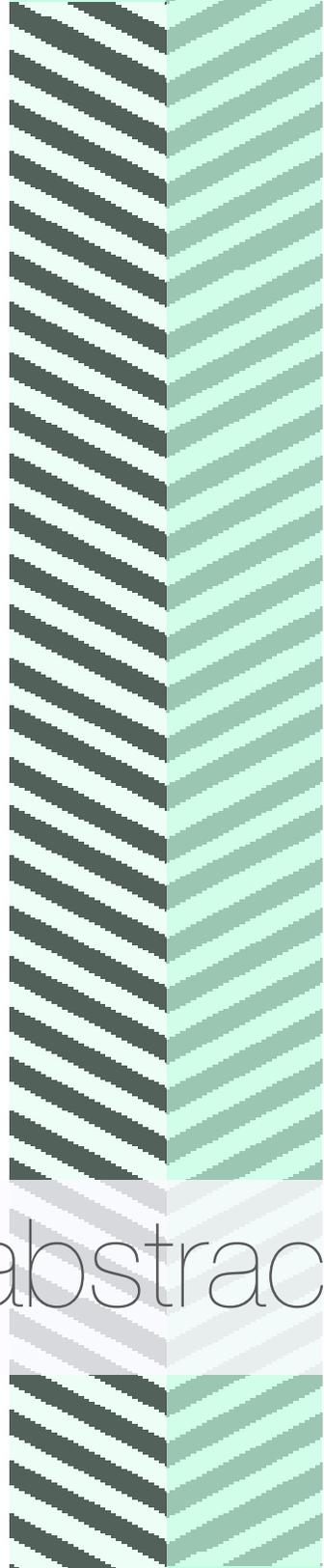
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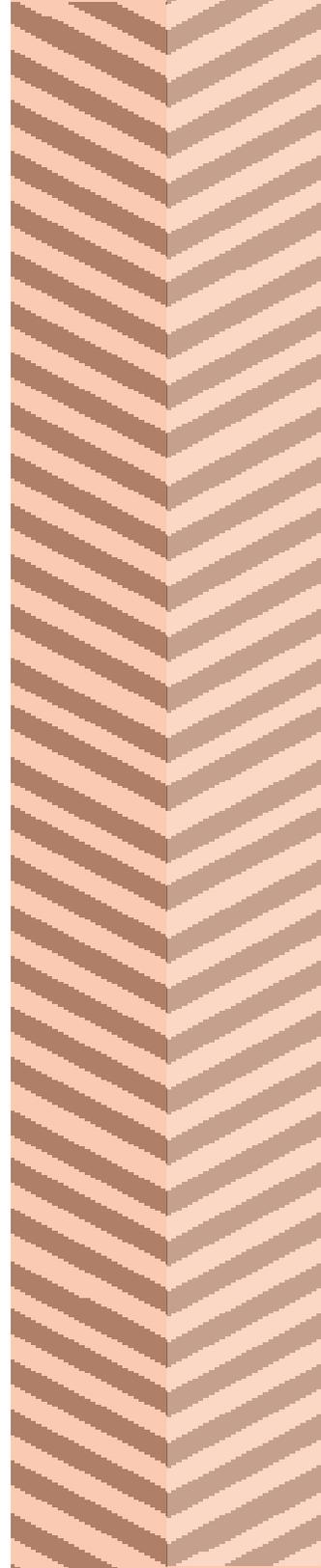


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[thesis abstract]





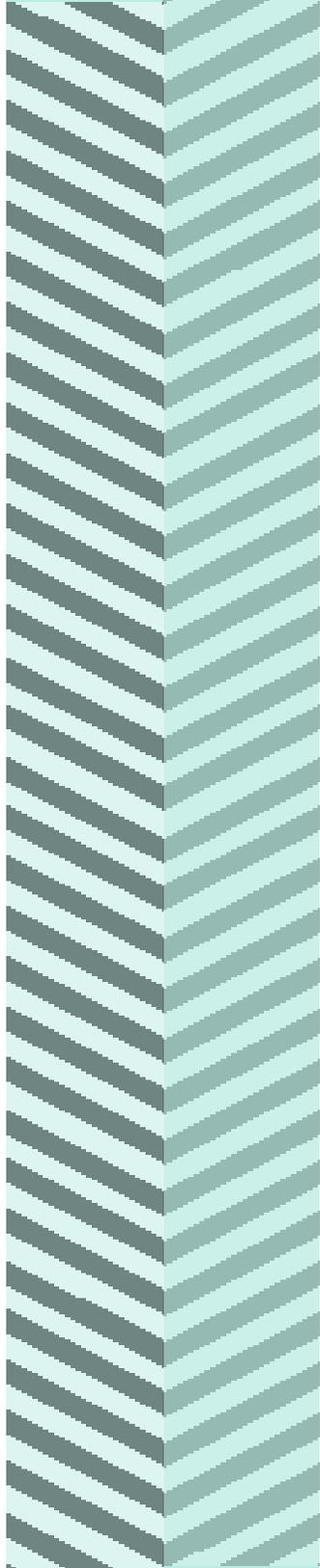
[abstract]

This thesis, Longevity, studies the ability to create a place to dwell that improves the quality, longevity, and ability to heal those that inhabit its walls all the while residing within and urban setting. The typology is a senior retirement facility. It is through design that architecture can adequately accommodate residents, and urge them to continue their independence while offering needed amenities when necessary. With growing numbers of elderly looking for a place to reside, while still possessing the independence in which they strive for, a multi-use retirement complex design is a desired solution.



[Problem Statement]

How can architecture improve the healing,
Living quality, and longevity of those who dwell
in and experience it?



[statement of intent]

typology :

The typology that has been chosen for this thesis is a senior living facility.

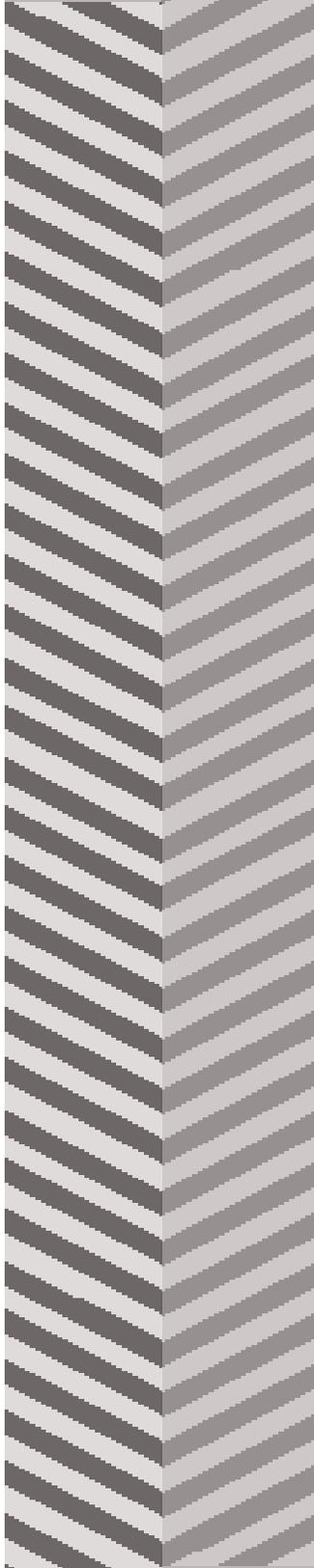
claim :

Architecture is a part of everyday life and has the ability to embrace the health, safety, and prosperity of those that interact with it in a habitual manner all the while imparting qualities that express new advances through design and technology.

premises :

It is through architecture that one can convey the possibility to enhance the life of those who occupy the space through design and technology. Architecture has had the tendency in the past to create a clinical atmosphere for those that inhabited its walls which then put a negative connotation for how to further ones quality of life when needing further personal assistance.

When improving the design of remedial and residential care, one has the ability to help improve the longevity and quality of life. The ability to improve and design a space where residents don't feel the need of assistance from others, but more dependent on their own capabilities to care for their own selves is essential. To achieve this, the design will promote socializing with neighborhood-like housing instead of a single long corridor often like a dorm setting. It will also promote an active and healthy lifestyle with the circulation focusing on the ease of mobility, common outdoor space to move about, as well as ease of access to needed services to promote independence.



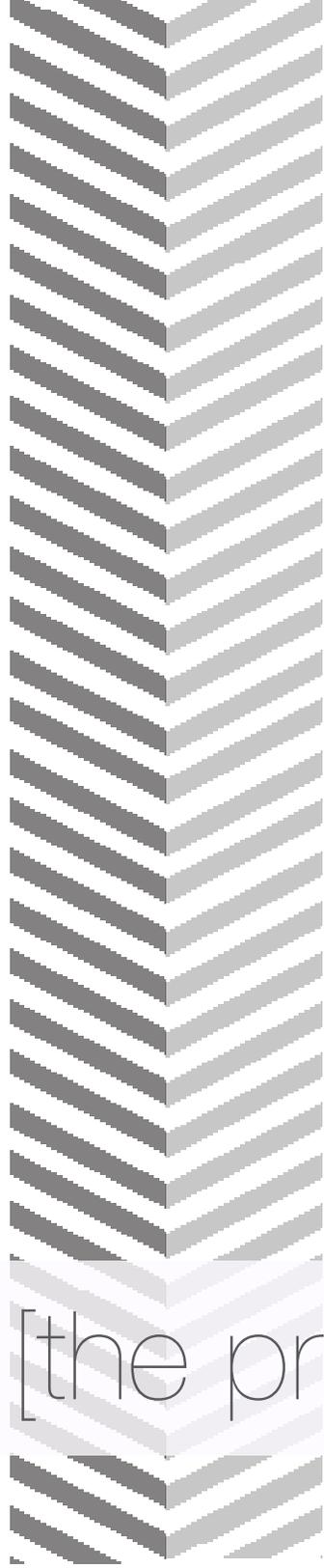
Those that reside in and move throughout the architecture and design will continue their personal growth and prosperity. A place that gives off the need for personal independence to continue ones stable health while still offering needed amenities can put in place the right mind set to live a longer lasting life. We must make our cities and architecture more social, accessible, healthy and add services and volunteering programs that compensate for upcoming social and physical deficits, which will benefit all age groups (Hollwich).

: unifying idea

I feel that this is indeed achievable to successfully design a multi-use complex with a focus on the retirement lifestyle. With the ability to offer the need for independence as well as a sense of community for support through design, future residents will be able to focus on furthering their own personal livelihood.

: justification

I find this to be an important topic of concern due to the increasing number of elderly (baby boomers) needing and seeking for retirement housing, as well as their personal need for independence as they age while still being connected with society, and at the same time removing the clinical and negative connotations around past retirement facility designs.



[the proposal]

: narrative

Aging is inevitable. It is only a matter of time and for persons to feel the effects of their body growing older and older. In the past, retirees have been almost separated from the likes of society, having their own complex of condos and apartments. Sure physical aging and weakness call for certain accessibility needs, but when one's mind is as healthy as it was 30 years before, who is to say they need to end up living a rather clinical and monotonous lifestyle. It is through an urban retirement accommodation where men and women can stay connected socially and through design in which they can thrive as they age.

With the numbers of elderly increasing, mainly due to the baby boomer generation (those born from 1945-1964), there is becoming a necessity for housing. The best solution for this problem is to accommodate those in need with urban housing, where public transportation is readily available and reliable, where one can socialize with their own generation as well as others, and where amenities are easily accessible to help suffice their needs.

Retirement facilities need adapt to the current needs of their residents and user. With advancements in technology, lifestyles have greatly changed since those of even 20 years ago, needing for architecture to follow suit. Architecture has unlimited possibilities to promote and enhance one's life through design.

[user / client description]

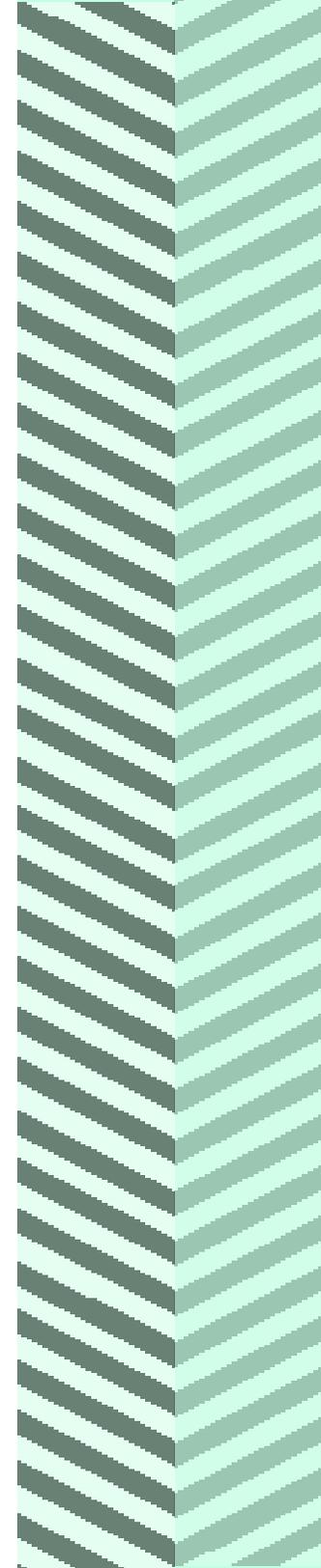
Residents, visitors, maintenance, technicians, business owners, wait staff, clinical staff, customers, clients, general public

owner :

The primary owner would be the developer of the complex in its entirety. Secondary owners would be businesses that would be leased out of the designated mixed-use space. As for peak usage, current residents would occupy the space on a 24 hour basis, but other businesses within the complex would occupy their allotted space during weekly daytime business hours Monday through Friday, and then, depending on certain businesses, open during weekend hours as well. Parking will be resolved by a small parking ramp placed on site available to residents, business owners, handicapped, and other users.

client :

Residents are the primary users and the structure and design will mainly focus on their needs to promote a continued active lifestyle as they age. With emphasis put on the need for ease of accessibility due to mobility being a concern. Being a mixed use facility, the public also has access to a lot of what the building would offer creating a sense of connection between the residents and the urban life around them.



DWELLINGS

studio
1 bedroom
2 bedroom

MAINTENANCE

MECHANICAL

CIRCULATION

COMMUNAL SPACES

lobby
event rooms
library
theater
kitchen
atrium

WELL BEING AREAS

fitness room
physical therapy
pool
locker rooms
exercise rooms
spa
salon

BUSINESSES

retail
restaurant
cafe
small grocery
art gallery/retail

GREENSPACE

community gardens
outdoor market place

[major project elements]



fig. 22.1



fig. 22.2

region :

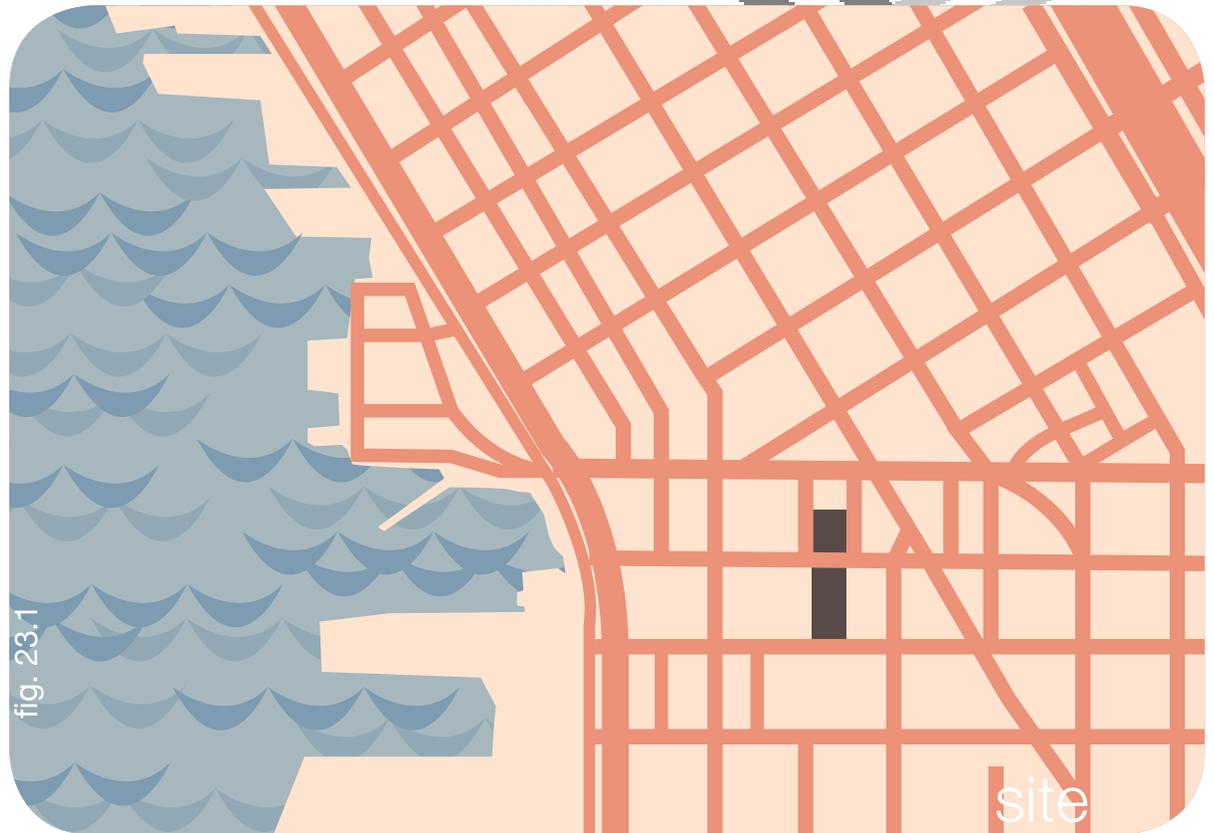
Puget Sound Area of Washington State is my projected location for my site, more specifically the Lower part of the region. Treated as a fjord-like delta it has somewhat moderate temperatures, ranging from about 47 degrees F to 76 degrees F for high temperatures. July is predominantly the hottest month with December being the coolest.

city :

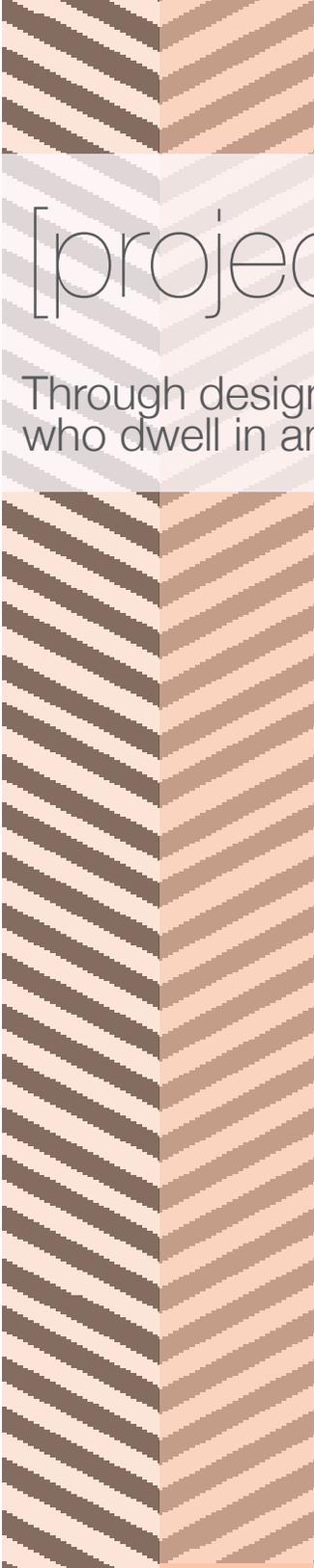
Seattle is the city where my site resides. Its population is roughly 608,660 as of the 2010 census, but is estimated to be currently around 616,500 here in 2012. *

site :

The site is located at the corner of S. Washington St. and Occidental Ave. S. Located near many major public transit hubs creates a sense of ease when traveling around the area. With many attractions in the immediate area (parks, galleries, eateries, etc.) and being a handicap accessible neighborhood, this makes a prime location for the elderly that need just a little assistance moving around. With the high amount of



[site information]



[project emphasis]

Through design we can improve the living quality of those who dwell in and experience it.

direction :

It is through comprehensive research and analysis; there will be full documentation of this thesis. Proper systems and materials used during through the design of this project will be determined by an exhaustive research on the site, climate, and past history of the site. Research on the requirements of accessibility, and elderly housing to better understand how to incorporate these aspects within the urban environment will also be explored.

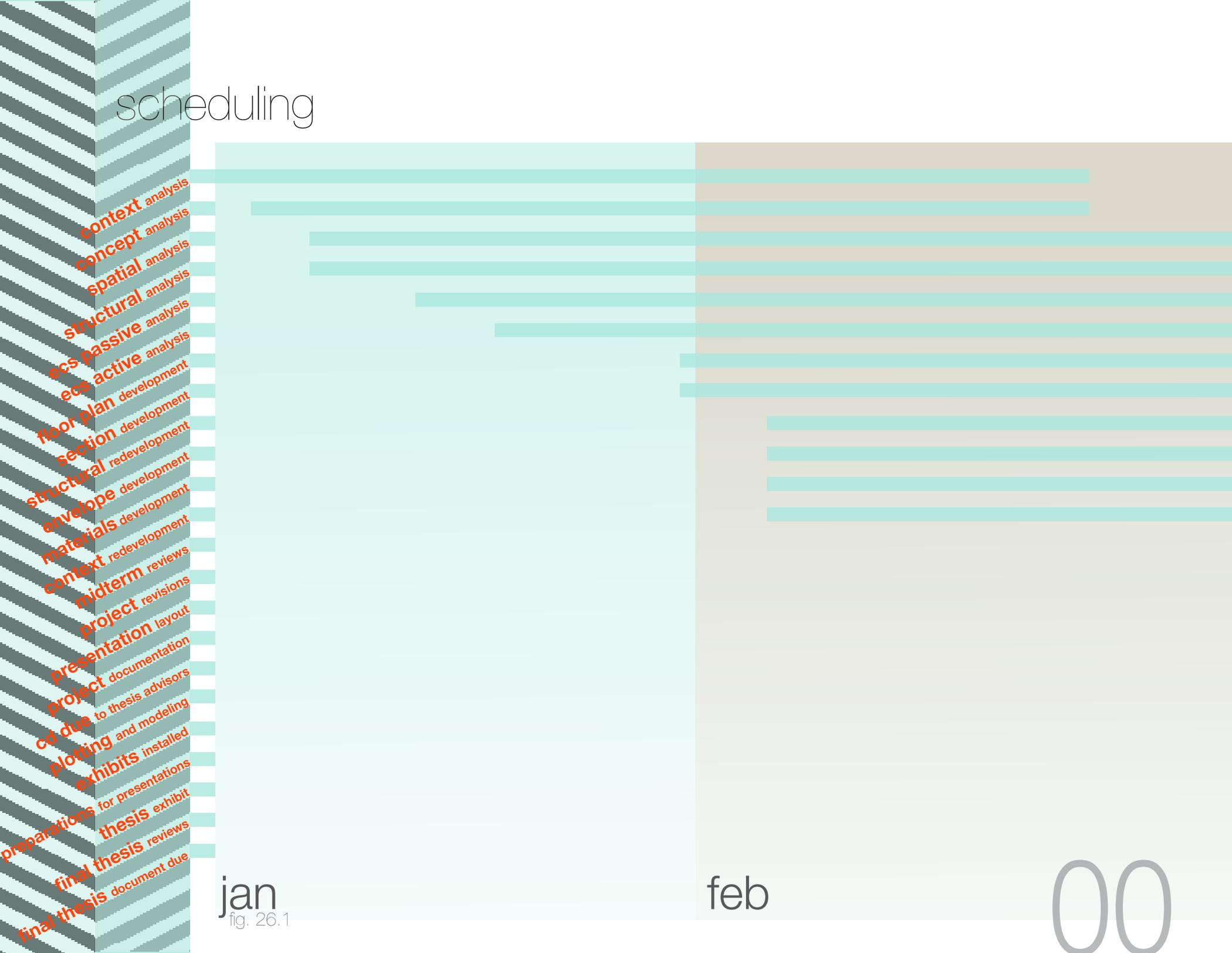
methodology :

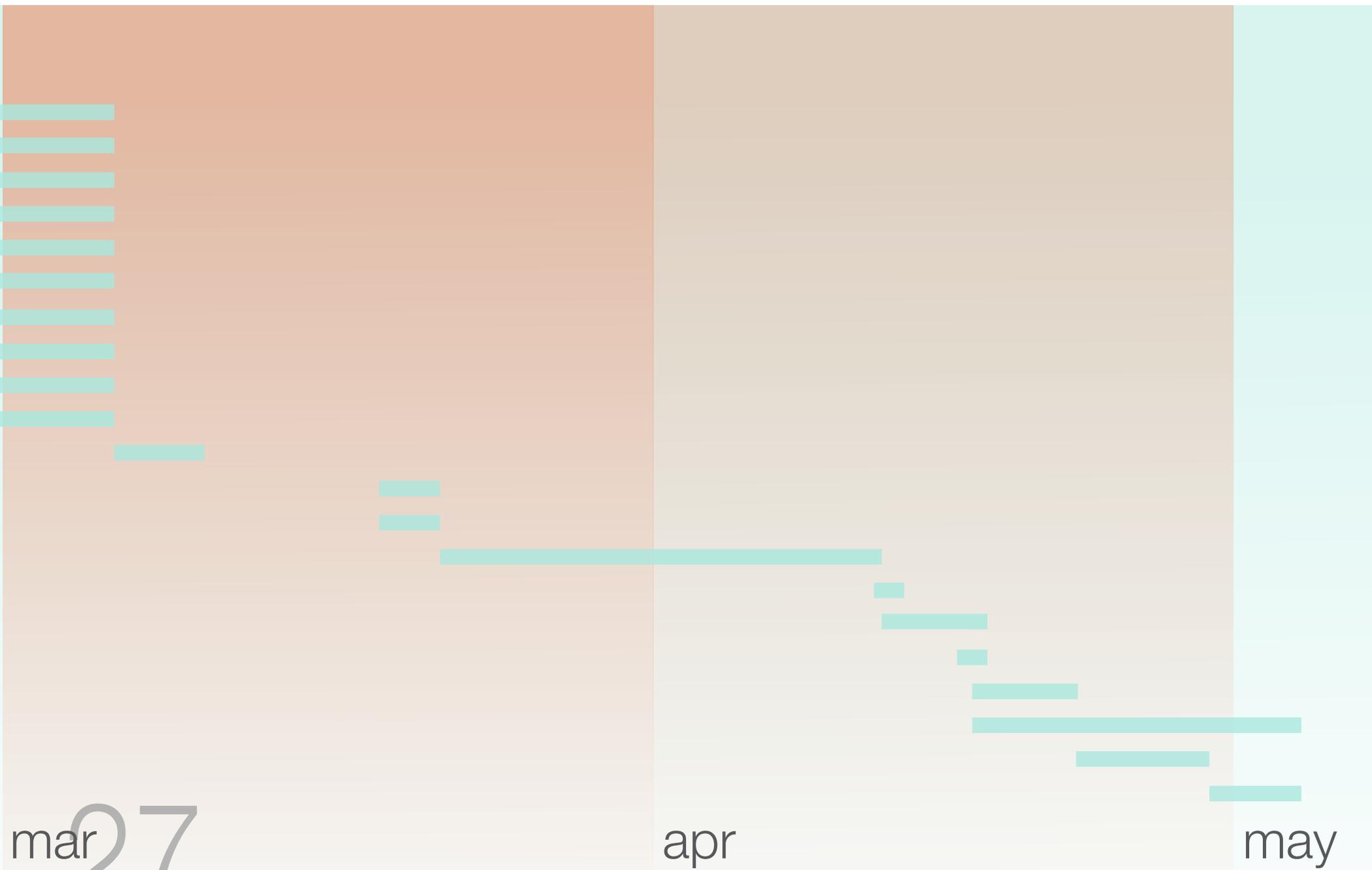
Both a qualitative and quantitative approach will be used in order to find such data imperative to design process. With quantitative analysis and data focusing on the numbers, measurements, figures, and percentages one can gather more scientifically inclined information. Gathering qualitative data involves much more of an aesthetic approach, where data is observed and not measured. It is based on colors, textures, appearance, and perception. Both methods of research collection are necessary for unifying the theoretical premise and project typology.

documentation :

Chronologically recording the process, as well as imperative discoveries made through research, will be documented. This includes process, photographs and scanned drawings, and the filing of any physical and digital sources. With this documentation there should be insight given to design decisions to further legitimize the typology, unifying idea, and project emphasis.

[plan for proceeding]





[previous studio experience]

Fall 2009

Heather Fischer

Tea House : North Dakota

Minneapolis Rowing Club : Minneapolis, MN

Spring 2010

Stephen Wischer

Twin House : Fargo, ND

Hector International Airport Addition : Fargo, ND

Fall 2010

Milton Yergens

Museum : Gloucester, MA

Snow Symposium : Winnapeg, Canada

Masonic Lodge : Farmville, VA

Spring 2011

Steve Martens

Children's Museum : Fargo, ND

Dinosaur Reasearch Museum : Kragness, ND

Fall 2011

Frank Kratky

Mixed Use High-rise : San Francisco, CA

KKE/DLR Competition

Spring 2012

Paul Gleye

Study Abroad : Lille, France

Urban Design : Lille. France

Fall 2012

Regin Schwaen

Museum Addition : Grand Forks, ND

Spring 2013

Mahalingam Ganapathy

Design Thesis



[program]

[theoretical premise research]

“‘Quality of life’ is defined as the degree of gratification perceived from one’s contextual experience, including composite satisfaction with physical, emotional, social, and spiritual environment conditions.” (Crist, P.A. p. 102)

No exception to this statement is that of the senior population. Senior housing has become more and more of a demand as we continue in the future. With the elder population continually growing, the need for housing has become a necessity in the design profession. Previous design strategies have evoked little inspiration and aspirations of the residents that dwell within, but with this need and must-have for a successful senior residence, architects need to step in and take action to fill this current void.

The living environment has a huge impact on the longevity of any one’s life. When the environment creates an autonomy atmosphere the individual resident creates a high sense of self-esteem and better health overall. It is when independence is taken away and the reliance and dependence of others becomes a main concern that the quality of one’s life is altered.

Those that are entering the age of retirement living are also entering a new age of a retirement lifestyle. With many more seniors being better educated than past generations and

desires to make continued contributions to society, their mindset is already in a very active and creative state. (Lawlor, D., Thomas, M.A.) In this state, seniors continue to prosper as a productive person in society. It is when ideals and desires are released that the body and mind reacts and deteriorates, resulting in more dependent care.

Creating an environment that provokes such activity, mental and physical, is crucial to the success of the quality of one's life. This is the challenge. Generating spaces where interaction between resident-to-resident, as well as resident-to-public, encourages active discussion and relationships to be formed. Community gardens, and shared outdoor space compels residents to interact with each other. Location to the many needed amenities of daily use is critical as well. A space where one can be centrally located to many needed daily amenities as well as a place that lends to an existing neighborhood atmosphere is needed to the elderly to continue to prosper on a more independent level.

A study done by the Vancouver School on the 'Facilitators of and barriers to physical activity in retirement communities: experiences of older women in urban areas.' With the ever present encouragement of living an active lifestyle to prevent the body's decline in health, the question was raised if living in a community in an urban setting versus alone had an impact on the quality of life. Ten women, averaging to be about 84 years of age were analyzed through an intensive interview process. The women expressed three main aspects that they believed they needed in order to

prosper, personal health, the physical environment in which surround them, and their social environment in which they live. The conclusion stated that it is the woman's own prerogative to stay physically active, but it is the retirement community in which she resides that influences her decisions; a place that promotes health, the design of the environment as a whole, and the interaction with the local culture. (US National Library of Medicine National Institute of Health)

Another study was completed by Drexel University and Simon Fraser University on the documentation of the physical and social environments in which older adults reside in, with two metropolitan areas being observed. Three views were measured on what the needs were for a prosperous active lifestyle. The view of the seniors themselves, the outside view of professionals who research what those elders need, but then there was the voice of photographs taken that were expressed when used as a research tool. The latter of the three articulates in such a way a straightforward approach to a problem or a solution. There is no debate; it is what it is. Findings were the importance, especially when looking at the photographs. Both cities that were involved with this particular study, Portland and Vancouver, showed positive solutions for these problems, but also both lacked in some areas.

Two themes from this study were compared when looking back at the evidence that was gathered, utilitarian and recreational. There was the importance of business locations and the physical relation to their residence determined whether the individu

als would go out and walk to a specific destination to complete their daily errands. Walks that take about 10-15 minutes are considered more of an enjoyable experience instead of a hassle when needed to complete tasks.

As for recreational activities, the maintenance and up keep of the public parks and urban areas promoted high levels of socialization and, again, became a good reason to walk to specific places instead of driving to a destination. Other forms of recreation that were looked at as being a necessity for an accomplished and successful space were the individuals closeness to fitness facilities, indoor and outdoor, as well as event spaces where community involvement and interaction became of great importance. Places where different cultures and ages can coincide, mingle, and teach one another.

It was “an understanding of what really matters from older residents’ perspectives, as exemplified in this study, can be used as a leverage to identify physical environmental interventions that are grounded in people’s experiences.” (Social Science and Medicine) Photovoltaics acknowledged the importance of how the physical environment either supports or disregards the aging process and it is in the places where age is not taken into consideration where people, not just the elderly, will have a weakened lifestyle.

Continued research has shown that the average lifespan of today's seniors is approximately 80 years. With the newer generations of retirees having a different outlook on retirement from that of their parents, it has become more apparent that after retirement, residents often still have some sort of job or occupation, often out of their home, known as semiretired. With more of a semiretired market, it is up to the design of the facility to provide the space and ability to complete those small scale occupational tasks. It has been shown in market research that developers of retirement communities need to meet the needs of today's retirees. The large amount of baby boomers about to enter the retirement way of life, have proven to be active adults and won't sacrifice the quality of where and how they live just because of their age. Considering those that reside within retirement communities plan on living there for at least ten to twenty years, facilities are given the task of creating substantial environments that meet the desires for the older yet still active generation.

Talking about the importance of technology implementing it within the retirement facility will forever be an imperative aspect to include when designing. With more tech-savvy seniors entering retirement, they often use technology as a means of communication as well as a means to continue learning. Many classes are held within retirement facilities to promote continued mental activity, which research has shown, the more our mental state is stimulated the length of prolonging additional care grows.

With the more and more baby boomers entering into retirement living, we have to consider how the future of these dwellings will effect our society. We have to ask the question “Is a campus style retirement complex, where a macro suburban setting is developed, that spreads over a large amount of land the best solution for retirees. The answer is probably not. Though they provide that independent lifestyle that people are looking for they pose problems as well. With mobility becoming more of an issue the older one gets, when someone can’t move fast or doesn’t have the strength to walk the distance of the entire complex to get their mail, go to a meeting, etc. this creates an error in the design process and then they therefore become almost immobile.

We then look at retirement housing in the urban setting. Creating more of a mid- to high-rise retirement provides current dwellers to be connected to the urban environment around them, staying in touch with their day to day activities instead becoming more and more dependent on others to help them with tasks. They are truly in charge on their own accord, but within the urban setting they are more centrally located if the need for help does arise.

Taking a look into the indoor and outdoor environments of a residence can greatly affect the living quality and longevity of the resident. I'DGO (Inclusive Design for Getting Outdoors) is a research project that focuses on the effectiveness of the surrounding environment for the elderly to help to continue their independence. Their research states that deterioration in health is greatly affected and related to that of their surrounding environment. Interacting with different environments “offers physical, sociological and psychological benefits for older people (Inclusive Design for Getting Outdoors). It is without interaction with the outside world that not only the elderly, but people in general, will find an imbalance within their own homeostasis.

The ability to comfortably interact within the outdoor setting allows for the elderly to continue to prosper, gaining a stronger social network among neighbors and those passing through.

In an OPENspace survey, approximately 270 seniors expressed their influence of the time they spent outdoors and surrounding environment had on their day to day lives. The ability to walk from space to space with ease and the actual pathways taken should be easy to access and walk on. A close proximity to needed amenities and the pleasantness of the experience from point A to point B was important, whether that be through the use of plants and or a friendly social areas. Ultimately, through the survey taken, it is up to the persons themselves if they are going to make the best of the environment around them, but it up to the environment to help positively influence a healthy and active lifestyle for them to partake in, being “sensitive to older people’s different levels of functional capability.” (Inclusive Design for Getting Outdoors)

Researching the demographics of Occidental Park, which resides in the Pioneer Square district, showed that it has a diverse range of ages reside within the district, with just over 15% being in their 50s and 20% from age 60 and up, with the remaining percentage representing those in their 20s, 30s, and 40s, and a small 7% representing children. This results in a pretty well balanced age demographic as a whole. Therefore, lending to the ability that when adding a senior residence to the area there won't be a complete interruption to the current habits and lifestyles of those that already live that area.

When preparing to design a retirement living complex, there are key features that are of interest to your client. Research has shown that older residents want simple adjustments, such as wider doors, nonslip flooring, bathtub bar grabs, shallow to no steps, ease of access to facilities within the complex. Larger fonts and signage to take off strain from possibly decaying vision. Contrasting colors make a difference as well as using sans serifs fonts, which leads to the ability for to desifering

Participating in an active lifestyle creates a better sense of independence and with other factors such as text size and font, bathtub bar grabs, etc. worrying about was were simple daily tasks becomes obsolete, therefore living in a successful environment.

[Theoretical Premise Summary]

Retirement housing is a definite necessity throughout the US as well as many other parts of the modern world. With the older population growing at such fast rate, it is vital that advancement and continued progression of developing more retirement facilities, as well as other long-term care, persists, especially with the high numbers of baby boomers about to enter the retirement lifestyle.

“Retirees are looking for active lifestyles with services that promote convenient living.” (Quilty, S.) It is with an active mentality and physical behavior that the quality of life can be measured at a higher level. With this active mind set, comes the need for independence. The feeling of being able to provide for one’s self has always been a key factor for a successful and meaningful life. No matter the age, it is when independence is no longer an option that the significance of life dissipates.

With the history of retirement facilities having a negative connotation, the need for improvement to the facilities is a must. Often having long corridors, much like that to a hotel hallway and very institutionalized, they were not a place that people wanted to go to when the time came for them to downsize or came to the point in time where they needed extra care.

With this boomer generation expressing their needs for a more sufficient retirement living design, they have become much more influential with the entire process, than the generation before. The need for interaction within the facility is important, but it is the relationships that are made with the surrounding community that make a true impact on the senior, and living within the city setting has the ability to create that environment for interconnecting with that of younger generations.

As technology has evolved, it will forever solidify itself within the retirement residences. With residents who are quite tech-savvy, they make use of the computer on a daily basis, whether that be for a side job they part take in during their retirement, communicating with family members, or for education purposes. It is apparent that technology will forever be used throughout our lives but, again to go with the technology, the need to active is of the utmost importance to the quality of life.

It is the longevity of residents within the facility that we aim to positively effect through design. When designing for both the longevity of the people and building we take inspiration from those who we are designing for, for they are resilient, have endured an entire life's worth of events and make the best of each day to come.



Fig. 40.1

case study :: one

Solarsiedlung am Schlierberg

Location :: Freiburg, Germany

Architect :: Rolf Dsich Architects

Completion :: 2006

Usable Floor Area :: Sonnenchiff : 64,949 sq.ft

59 Energyplus houses : 72,602 sq.ft

Units//Capacity :: 59 houaes ; ~180 people

1 multi:se complex : ~240 people



Fig. 41.1

The solar energyplus community, Solarseidlung which is nestled on the edge of the Black Forest, successfully displays the ability to create a sustainable community within the urban setting. Designed by Rolf Disch, the community participates in using little to no energy off the grid and more often than not produces more energy than consumed. Located in Freiburg, Germany, considered to be the Tuscany of German landscape, Solarseidlung maximizes the ability of gathering the sun's energy through massive photovoltaics.

It is through these photovoltaic panels, used as part of the roof structure that Disch's sustainable design is successful. Within the community itself there are 59 homes situated in such a fashion to gather maximum sunlight while practicing passive practices to minimize energy use and maximize comfort. With the Sonnenschiff, the larger building within the complex, blocking the urban traffic the environment of the community becomes quite intimate and homey. Passive strategies within each home includes thermal massing, low-e triple layer glazing, small north openings, as well as large south openings, and open floorplans.

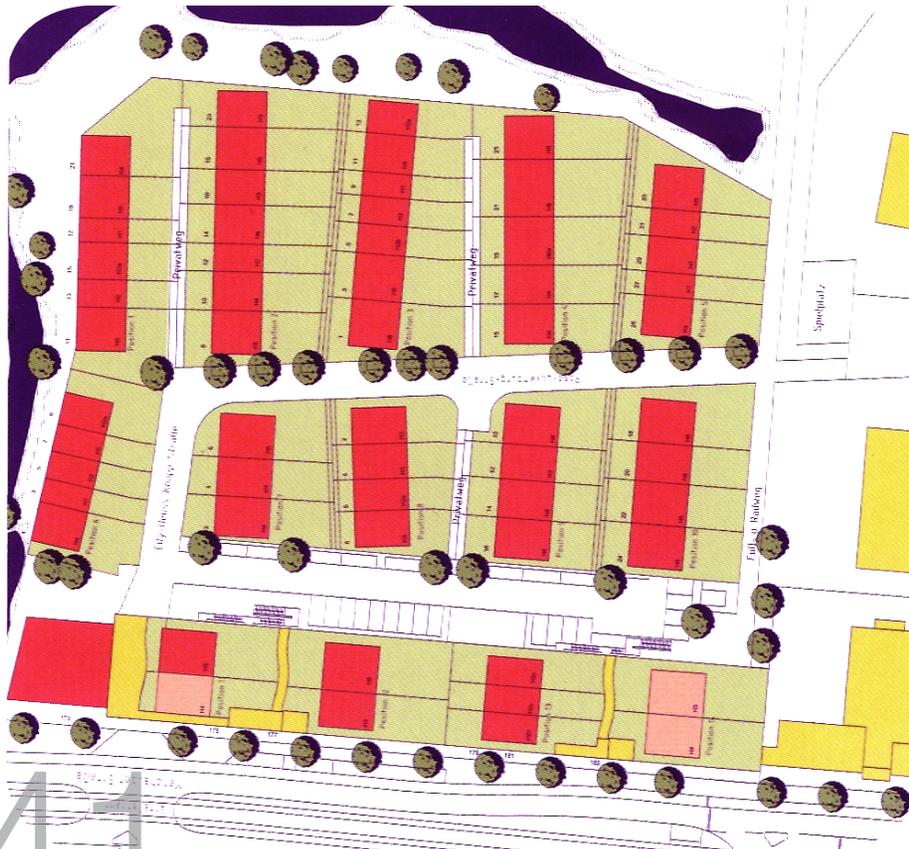


Fig. 41.2

Structure ::

The symbolic photovoltaic roof structure attracts the attention of on-lookers while teaching the values of solar energy and how we can harness that energy. The thick walls and open floor-plans allow for each home to make the best use of passive energy design.



fig. 42.1

Geometry :

In plan, Disch designed a simple layout to create the optimum flow of circulation and air. Exterior patterns were highlighted with the placement of materials in such a fashion to display the raw materials used throughout the complex.

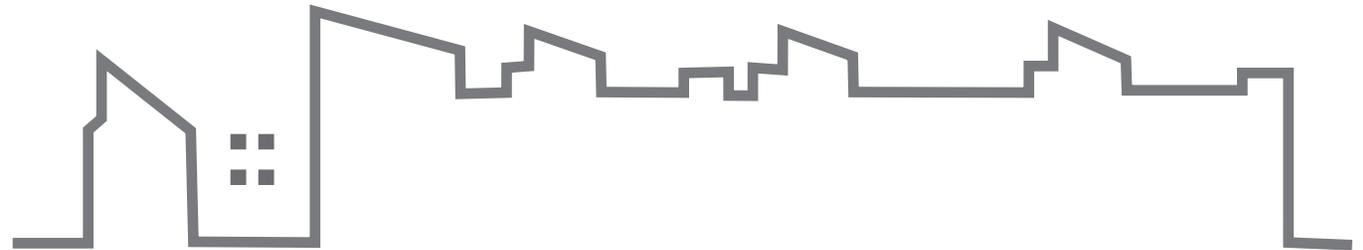


fig. 42.2

Natural Light :

As previously stated, the use of passive strategies is crucial to the success of Solarseidlung. Large, south-facing windows allow for the winter sun to enter for the maximum amount of hours during the day and with the sun shading photovoltaic roofs extending at such an angle allows for the rooms to be comfortable with the high summer sun.

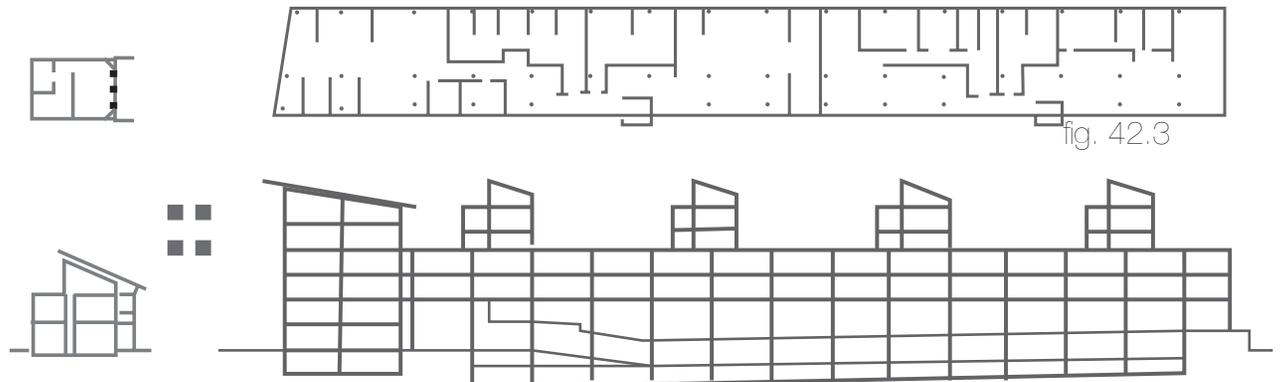


fig. 42.3

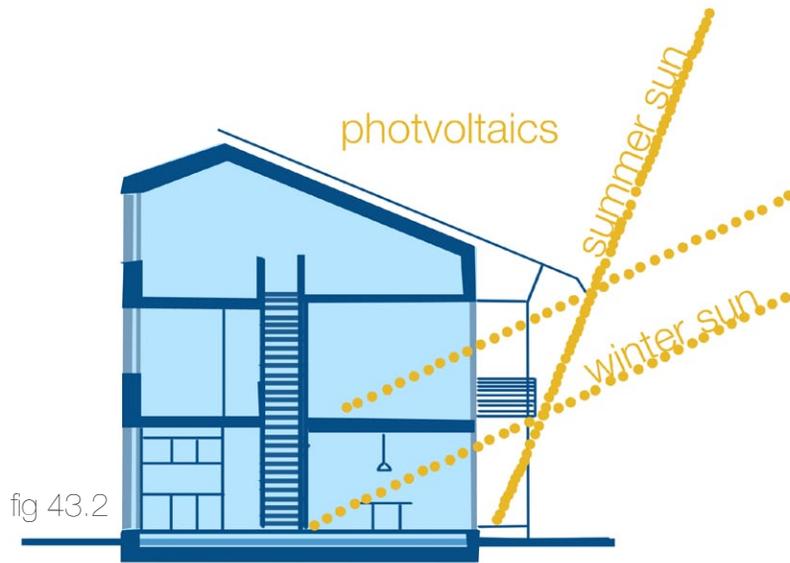


Fig. 43.1

Circulation :

Movement through the complex, from home to home, is pedestrian only, with only service vehicles allowed under certain circumstances. Entrance to the complex is through the North and South side and through the Sonnenschiff multi-use structure.

Section to Plan :

When comparing the plan to section, we can gather that both resemble similar rectangular patterns throughout. Scale and proportions of the homes within the complex are more relatable, but the Sonnenschiff clearly expresses the same principles of the design even though the scale is 90% the size of all housing on the site.

Massing :

With the distinct asymmetrical angles of the roofing photovoltaic systems, the external structure's main shape is determined, and is carried out throughout. Other than the massive Sonnenschiff, there are ten multiplex units housing 50 of the 59 homes created as each one mass, but then through material use those individual masses are each seen as an individual.



Fig. 44.1

case study :: two

de Plussenburgh

Location :: Rotterdam, Netherlands

Architect :: Arons en Gelauff Architecten

Completion :: 2006

Usable Floor Area :: 168,756 sq.ft



Fig. 45.1

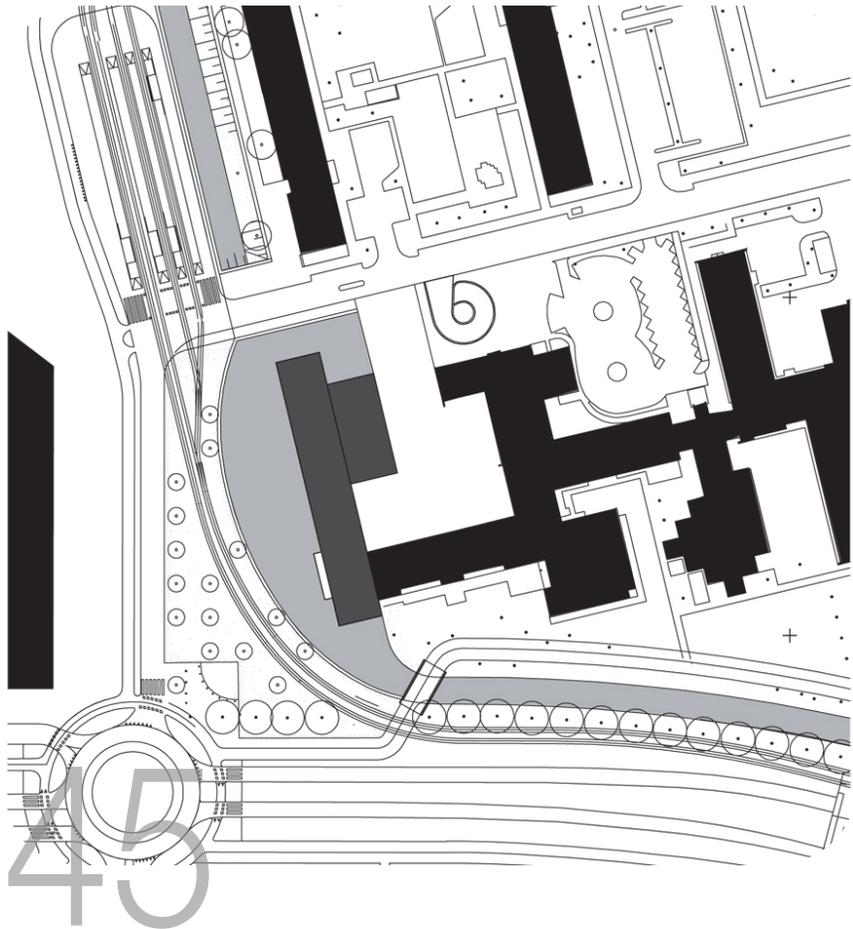


Fig. 45.2

Winner of a 2001 retirement housing competition de Plussenbaugh is a successful addition to the modern cityscape of Rotterdam. Conceptual design proceeded from 2001-2004, with construction and completion following two years later. Aimed to house those who are newly entering retirement, a completely different generation than ones before. With negative connotations often being associated with the housing of those who are entering that senior status, Arons en Gelauff took it upon themselves to create a facility that would embrace the aging process. With the use of bright colors and elevated concrete slabs de Plussenbaugh creates a unique modern living environment for future generations, deterring from those facilities that were lackluster.

With its elevated views it became an intricate work of detail for those residing within as well as onlookers alike. This design aims for residents ages 55 and up and for those that have no intention to fall into the dated and decrepit routine of previous senior living habits. With the modern and bold color scheme and juxtaposition to the surrounding area de Plussenbaugh encourages residents to fully embrace the senior lifestyle

Section to Plan:

When comparing the section cut to that of the basic plan layout, we gather that the exterior openness of the buildings design coincides with the openness of the floorplan. Each allows for easy of mobility



Fig. 46.1

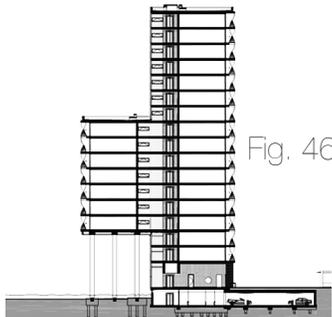


Fig. 46.2

Circulation:

With the ability to easily move throughout the complex and the rest of the surrounding site, this design evokes an active lifestyle for the residents that it houses. With the interesting flow of the floor slabs and colorful panels of glass the, the building figuratively provokes movement.



fig. 46.3

Massing:

When looking at the simplified design of the building as a whole, a clear understanding of how the structure works is apparent. Then there is the aesthetically pleasing exterior view of the structure itself, especially when looking at the basic elements .



fig. 46.4

Geometry:

De Plussenbaugh is bold design design expressed in such a fashion to draw attention to all on-lookers. With the main floor slab elevated that creates an opening un-eath the structure creating an almost airated aspect of the design to promote free flowing movement.

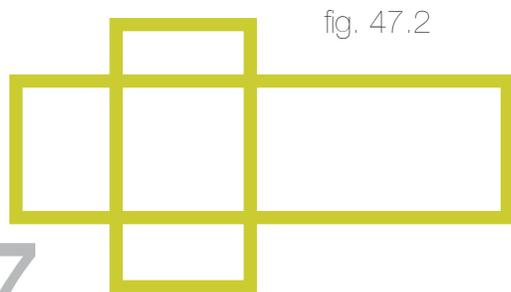


fig. 47.2

Natural Lighting:

It is with the large massive glazing that de Plussenbaugh has the ability to gather large amounts of natural light. With the elevated floors, there is the prevention of shadows as well as allowing for better views of the surrounding cityscape.

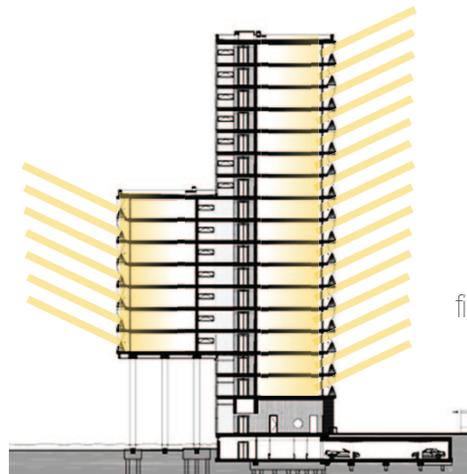


fig. 47.1

Structure :

With three prominent features of de Plussenbaugh, there is the main tower that is covered by 200 different colored panels of glazing, the elevated concrete slab structure with curvilinear design around the perimeter of the floorplan as well as vertical slabs

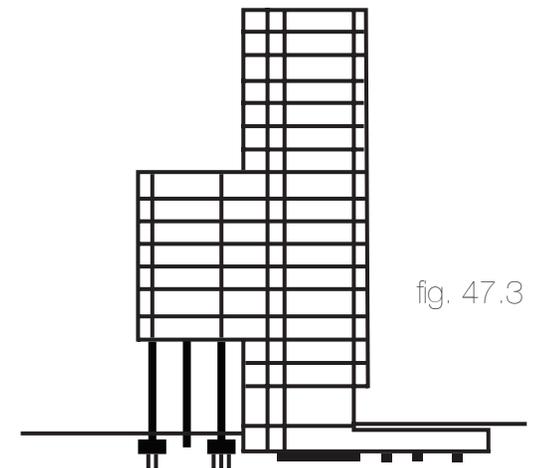


fig. 47.3



Fig. 48.1

case study :: three

Solund Retirement Community

Location :: Ryegade, Copenhagen, Denmark

Architect :: Henning Larsen Architects

Completion :: N/A

Usable Floor Area :: 38, 500 m²

Fig. 49.1



Henning Larsen Architects, design team of the Solund Retirement Community proposal were honored to receive second prize for their efforts. The design for this community was located in one of the bustling areas of Copenhagen, Denmark. Their design, aimed for the new generation of retirees, integrates qualities of the surrounding urban area while creating a sense of “worthiness and well-being” (ArchDaily.com) with its intentions of integrating the lifestyle of the elderly with that of the surrounding area and connecting generations that have otherwise been separated.

Fig. 49.2



The dialogue of the building’s design expresses ease of accessibility from interior to exterior spaces as well from private to public. With individual residences deviating from the usual institutionalized aspect of retirement living where the never-ending corridor is the spine of the plan. It’s with intentional voids, green spaces, and terraces that create those intimate dwellings for residents that still give off the impression that Solund is a “home” and not just an institution to progress through in the later stages of life.

It is with the ease of access between room to room, residence to residence, and the relation to the surrounding neighborhood that Solund promotes an active lifestyle where the residents can be self-reliant and self-assured with their daily tasks therefore creating a better sense of personal living growth.



fig. 50.3



fig. 50.4

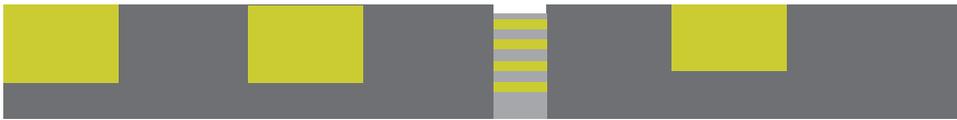


fig. 50.5

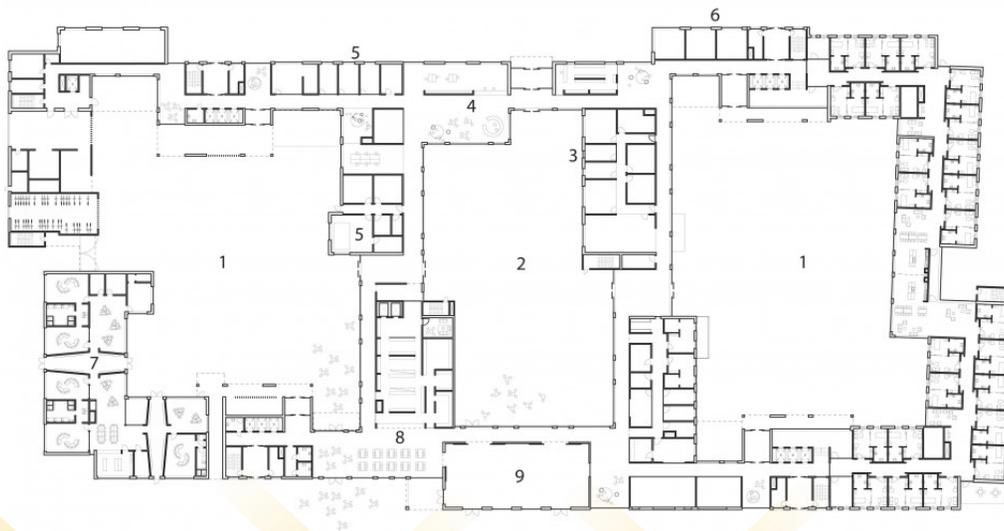


fig 50.1



fig. 50.2

Structure:

The proposed structure of this design was to create framework with reinforced concrete, meshed with wooden paneling to use as the facade

Geometry:

The design is based on intersecting cubes and in the juxtaposition between one another, along with three voids within the complex of the community.

Natural Light:

With the large layout of the community, the design gives plenty of opportunities for natural sun gain, and the green spaces within the center of the complex

Circulation:

Considering this is quite a large structure, it provides the ability to move throughout to gain exercise as well as having open access to the community outside it's walls

Section to Plan:

Similarities and a clear relation between the section and plan can be understood expressing the abilities for movement, ease of access of the sun within the complex and ability to grow and house green space to further promote passive lifestyle

[Case Study Summary]

When comparing these three case studies, each covers possibilities in which to be applied to my thesis. With each case study's development, or proposal, they attribute bold design strategies that have a clear intent on the task they were meant to solve.

As I gather my thoughts there are bits of information from each will help aid in the design process and final outcome of my thesis. Though not all studies were based on the retirement lifestyle it is the success of each structure and design that can be simply understood, no complexities, no secret answers.

Taking a look back at Solarseidlung in Freiburg, the extensive use of solar photovoltaic panels would be extreme for the much cloudier Seattle environment, but the use of even a portion of panels within my design would prove to benefit the outcome due to solar rays still passing through the cloud cover, just not as intensely as the sun's radiation in Freiburg. Other passive strategies within this urban community prove to show that even though one might live in the confines of the urban jungle, they are still able to make a positive impact on the environment. The use of natural ventilation, as well as daylighting can make the world of difference with the ultimate success of the design.

Looking at de Plussenbaugh, the design exhibits the ability for a retirement living community to be as modern as the office building across the way from it. The use of bright colors and open views lends to the resident the ability to feel connected to the younger generation and have a more positive connotation than previous generations of seniors who resided in more institutionalized environment and were more or less segregated from the social world around them. Having a unique connection between the private resident entrance and that of the public space beneath also expresses the us ability to landscape the area around and under de Plussenbaugh.

The Solund Retirement community proposal showed the most promise and inspiration for where I can take my design. Though just a proposal, the concept is spot on for how to creatively use and mix public and private spaces within the confines of the city as well as the importance of the connection for the elderly from residence to residence. Taking away the monotony of the infamous long corridor of the typical retirement facility or assisted living, Solund creates intimate areas of interest through green space, terraces, and voids. The successful use of materials to coincide with the surrounding Copenhagen city adds a level of sophistication and consideration. Ultimately, Solund is a complex that promotes activity and social environment for retirees and seniors. It is through an environment such as this that personal growth can still prosper at an old age.

[Historical Context]

Retirement living communities have been often separated into several different categories and classifications. Facilities have been administered by age, level of independency, or by the basis of creating a community amongst residences. Forms of “senior living” have been around for hundreds of years in Europe, but they really became apparent in the US. Retirement housing and communities were created to provide support to those who needed assistance, as they grew older and less independent. Many religious groups, labor unions, and fraternal lodges took part in taking care of the needs of their elders. (Tsao p.19) It was during the 1920s that retirement in the workforce became more of a necessity due to many workers again beyond what their expected productivity level could handle. With this dilemma, it was in 1935 that Francis Townsend proposed a mandatory retirement age of 60 years of age, with a monthly pension given to those retirees of up to \$200. President Franklin D. Roosevelt agreed to these terms with one exception. Considering that was a high amount of generosity to those retirees and could result in debt for the government, he proposed the Social Security Act of 1935, which resulted in worker paying for their own retirement during their working years.

The 1960s and 1970s presented to be a time when retirement living communities prosper, serving as a place to retreat for those who were a served and worked through WWII. Several factors came into play when this generation decided to progress into a

retirement setting. There were factors with residents that were in the same age category and share the need to fulfill the empty voids due to becoming “empty-nester,” and are just entering into a new age of living.

Then there is the factor of gaining the “senior-citizen” title after retiring from their place of occupation. This sudden shift of values and perspectives on where one’s life is headed from where it started can be a substantial adjustment to cope with. Another factor was the disengagement theory where the retirees of society would slowly withdrawal from society where they could spend their declining days with others in their same state of condition. To oppose the disengagement theory, it is argued that retirees should participate in a more active lifestyle where becoming a “senior citizen” doesn’t hinder the growth a person has in the social world. With that theory comes the factor of age-integration where staying actively involved with the community helps these older adults continue to fulfill their needs for personal growth and life fulfillment.

As time progressed from the 1980s, many different options for senior housing became available to best suit any one resident’s needs. Ranging from modular homes to complexes where seniors are still independent, but have just downsized their living quarters. Then there is shared housing followed by assisted living, CCRC (Continuing Care Retirement Communities), and Nursing homes which from there on out have many different sectors.

As my site is located in Seattle's Pioneer Square district, there provided to be quite an extensive history of which was Seattle's first downtown that was imperative to the growth of the city. With many of the historical buildings erected during the 1870s and 1880s there was the historic and disastrous Great Fire of Seattle in 1889, but with the sudden boom of population and opportunities it was an absolute benefit that buildings were built out of brick and stone and survived the fire enough to where they could regenerate to accommodate the increasing population. These stone structures where a definite benefit and improvement to the previous timber frame structures originally built in the 1800s. It is with the quality and strength of those buildings that many of them are still standing today continuing to education those of Seattle's history.

Throughout the 1900s, Seattle faced a huge influx of population, where there came the need for "newer and better" aspects of living. This resulted in new developments throughout the downtown area, which took away from the proud historical context that first became prominent in Pioneer Square. As with many new developments, they quickly became dated and run-down and proved to not have quite the nostalgic longevity of the original stone and brick buildings.

With the past decade, Seattle has proposed a revitalization endeavor of improving the "once was" historic downtown of Seattle, located in the Pioneer Square district. With the constant bustle of people moving throughout with two professional athletic stadiums to the south of the district, Occidental Park, which herein lies within Pioneer Square, prime location for development and revitalization.

[Goals for Thesis]

When I first began my thought process for a thesis typology, I thought of my Grandma Edna that lived in the Alzheimer's unit of Homme Home, a nursing home in Wittenberg, WI, for the last eleven years of her life. There were so many visits throughout those years and I became to know the facility that took care of my fully dependent grandma, and everytime I visited there was always something that I found off putting about the facility.

Currently in Graduate School, working on my thesis towards my Master of Architecture degree. When I take the time to look back at where I started, I don't think back to my freshman year here at NDSU, but back to fourth grade. I was given a report to do on what I wanted to be when I grew up. Other classmates of mine had more typical report topics such as becoming teachers, professional athletes, doctors, but then there I was deciding to be an architect. I remember my teacher looking at me when I told her my topic, and she gave one of those looks that told me I, she was proud I was going off the beaten path that many of my classmates were taking for their reports. From then on I have had the goal to become an architect and work in the design field.

ACADEMIC // PERSONAL // PROFESSIONAL GOALS

::

As I work on this thesis my academic goals consist of meeting my deadlines efficiently and effectively, whether they are my own, or set by professors and complete all parts on time to avoid rash thinking and producing inadequate work not up to my standards due to rushing the deadline. With the work that I produce I want it to evoke conversation with my peers and professors in order to further improve my production and final outcome of this thesis.

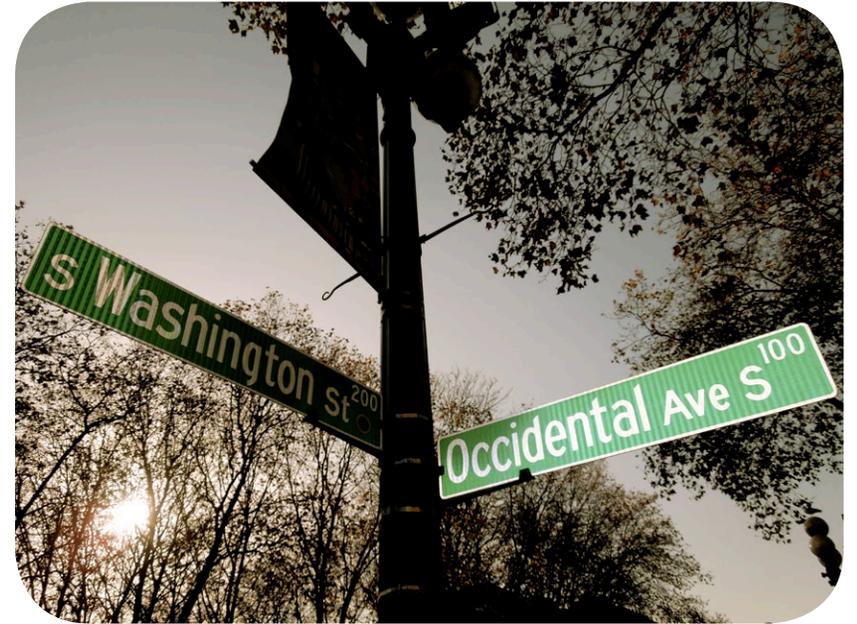
My personal goal would be to further develop my own design style to where I am comfortable and confident through continued practice and application of design strategies.

Professionally, I want to use this thesis to express my interest toward future work within a firm. Having knowledge to offer to my professional peers about the questions they might have about retirement living.

[site narrative]

Deciding Seattle as the site to fulfill my typology's thesis requirements was an almost instant decision. Considering I needed a city with ease of accessibility, whether that be by foot or by public transportation, Seattle provided that environment. The city also promotes an active lifestyle, with many recreational activities to pursue within the city itself and the surrounding Puget Sound area. The many views that Seattle puts forth, whether that be of the city itself, Mt. Rainier, or the Olympics, they seem to never disappoint. Also, with a large demographic in population the city provides one of the most culturally diverse communities in a metropolitan area in the Pacific Northwest. Having been to Seattle a few times previous to this thesis project, I have seen myself become quite attached to the area and was extremely excited to take on a project that could bring me back right to the heart of the commotion.

Choosing Occidental Park within the Pioneer Square district seemed to be the perfect fit to design a mixed use building with it's main emphasis, or purpose, on urban retirement. As Seattle's first Downtown, Pioneer Square and Occidental Park have a high level of history, especially with the prominent Smith Tower overlooking down over them. Many renovations to the area are occurring in hopes to exhibit the historic background of Seattle after a point in time when the square took a turn for the worst in the 1960s due to the construction of the city's viaduct, which decreased a number of the historic buildings. With shops, retail, restaurants, offices, some residential, and of course coffee shops filling in the district, that create an optimum opportunity for seniors and retirees are continually needing to find a new, possibly more condensed living situation in an area where ownership of a vehicle is not a necessity, yet independency for future residents is still a priority.



With the senior population increasing by 72,000 in King County from the 2000 census to 2010, it is evident that the need for more senior housing is a necessity in the Seattle area. With an estimated prediction, the population of senior citizens, those 60+, will go up by a minimum of 25% by 2025. Taking this into consideration, Seattle as a city needs to bring in more housing opportunities for those that are seeking a place to reside in retirement years.

It is with the large numbers of retired baby boomers already and knowing that more are soon to join the retirement lifestyle, the question is asked where to house them. Often there were retirement communities on the outskirts of towns and cities, or completely disconnected from the rest of society, or if there was a type of urban retirement, it acted more like an intensive nursing home where the ultimate dependence on care givers was a necessity, and it is when independence is lost that the quality of life is diminished. It is when housing is integrated within the urban setting that independence can continue to thrive.

With the current construction of the Route 99 Viaduct, there does pose quite a bit of traffic congestion, but once that is completed the current congestion in the area as well as noise levels will go down immensely further making any developments for the elderly a positive investment and positive experience for those that would dwell within the residence. The urban area, will improve as a whole with the movement of the viaduct to an underground level, freeing up views and creating a more pedestrian friendly environment.

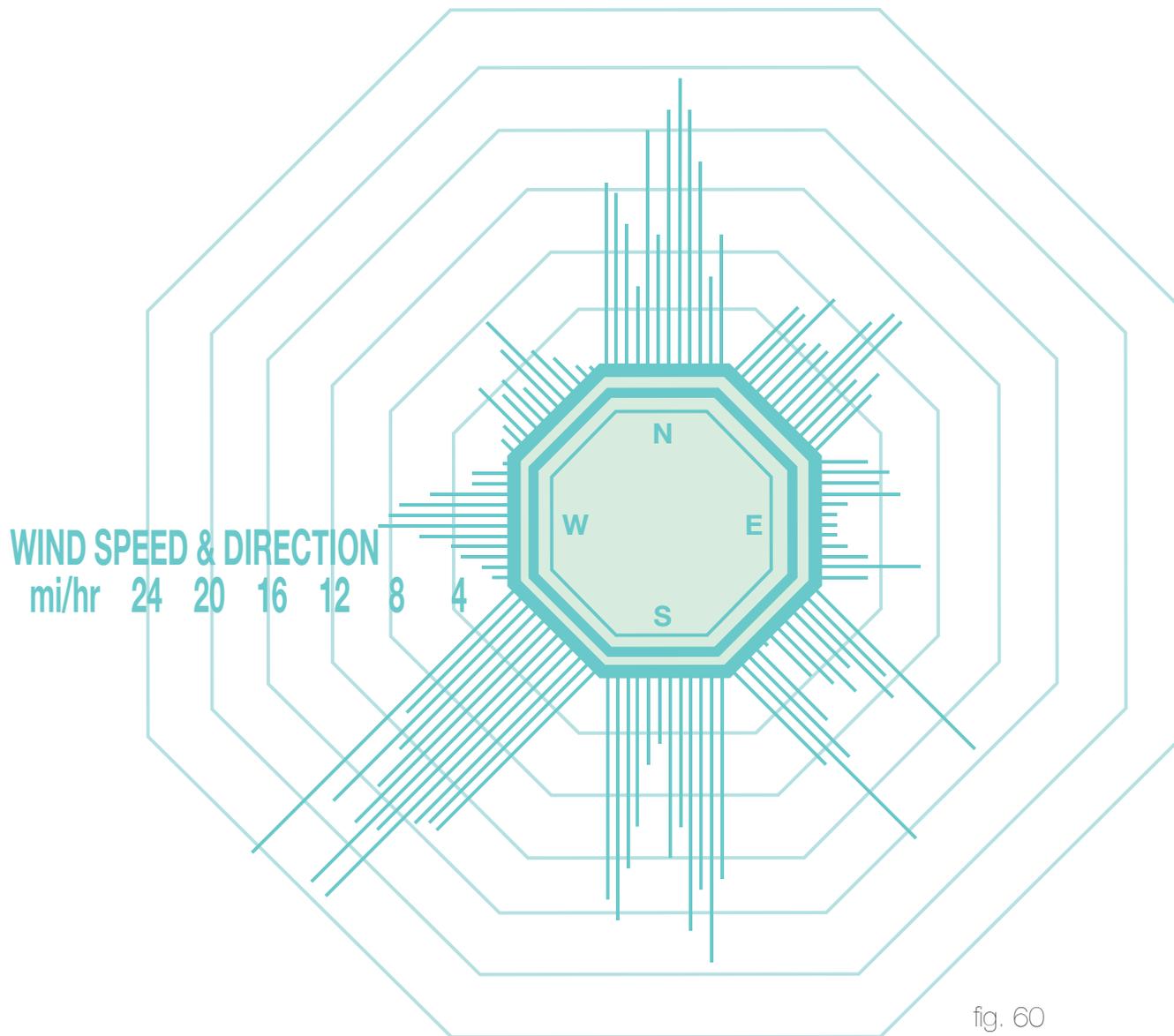


fig. 60

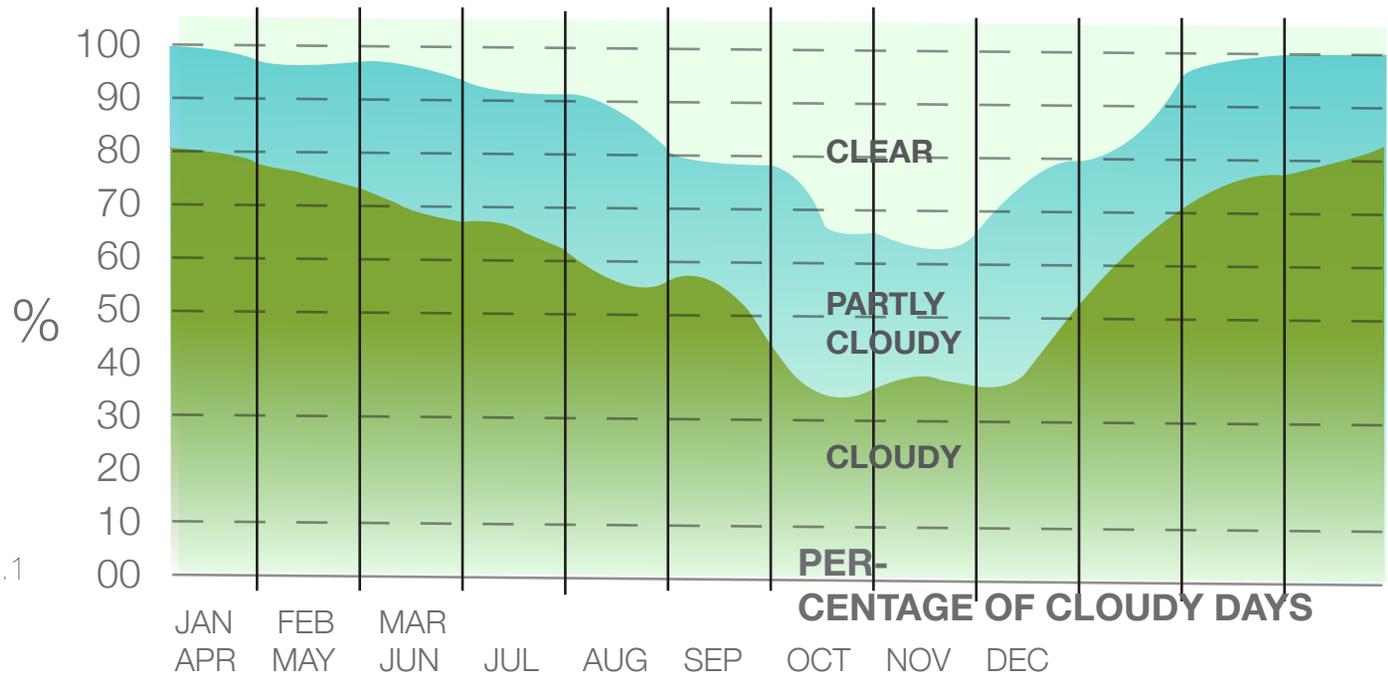


fig. 61.1

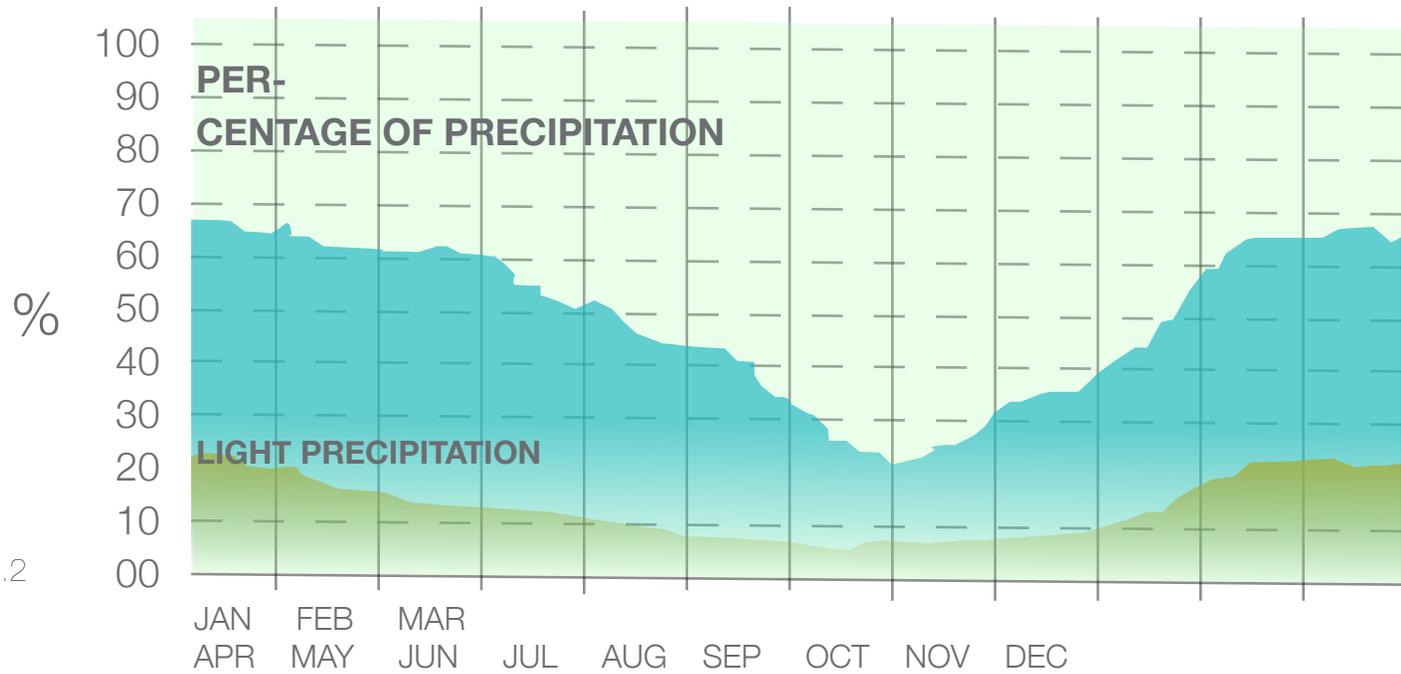


fig. 61.2

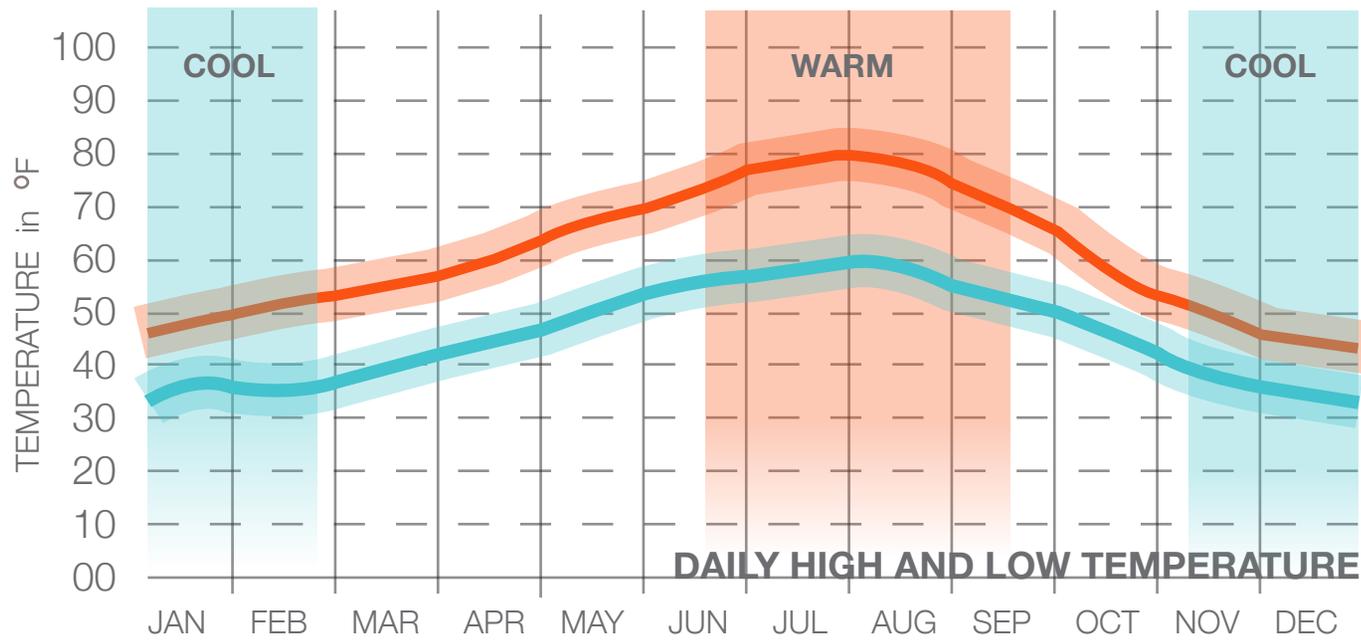


fig. 42.3

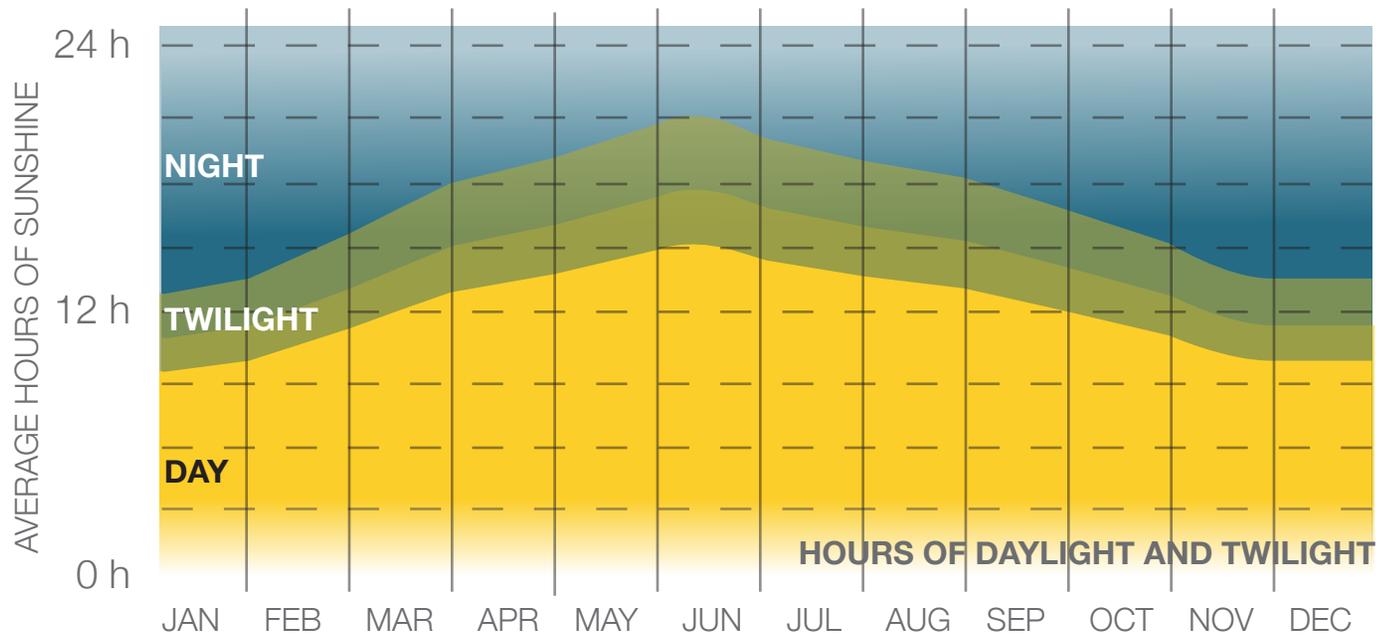
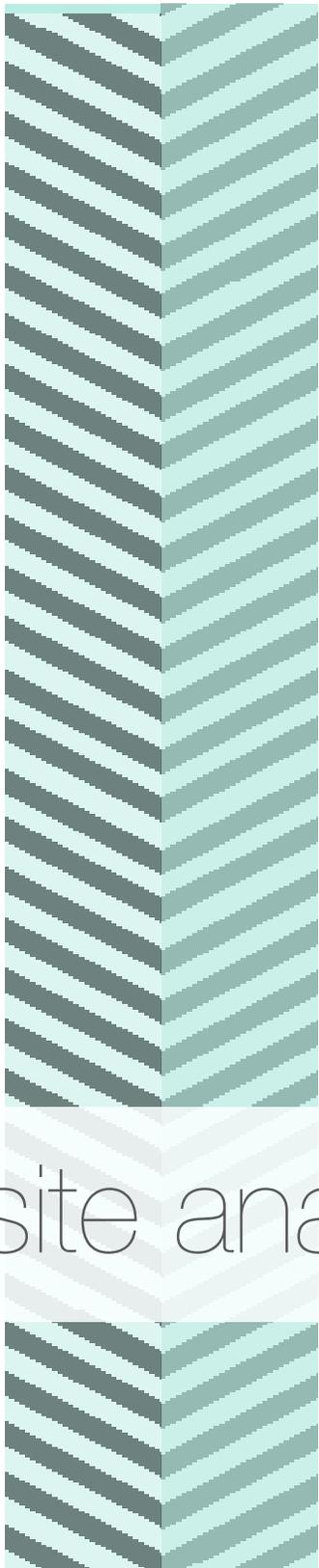
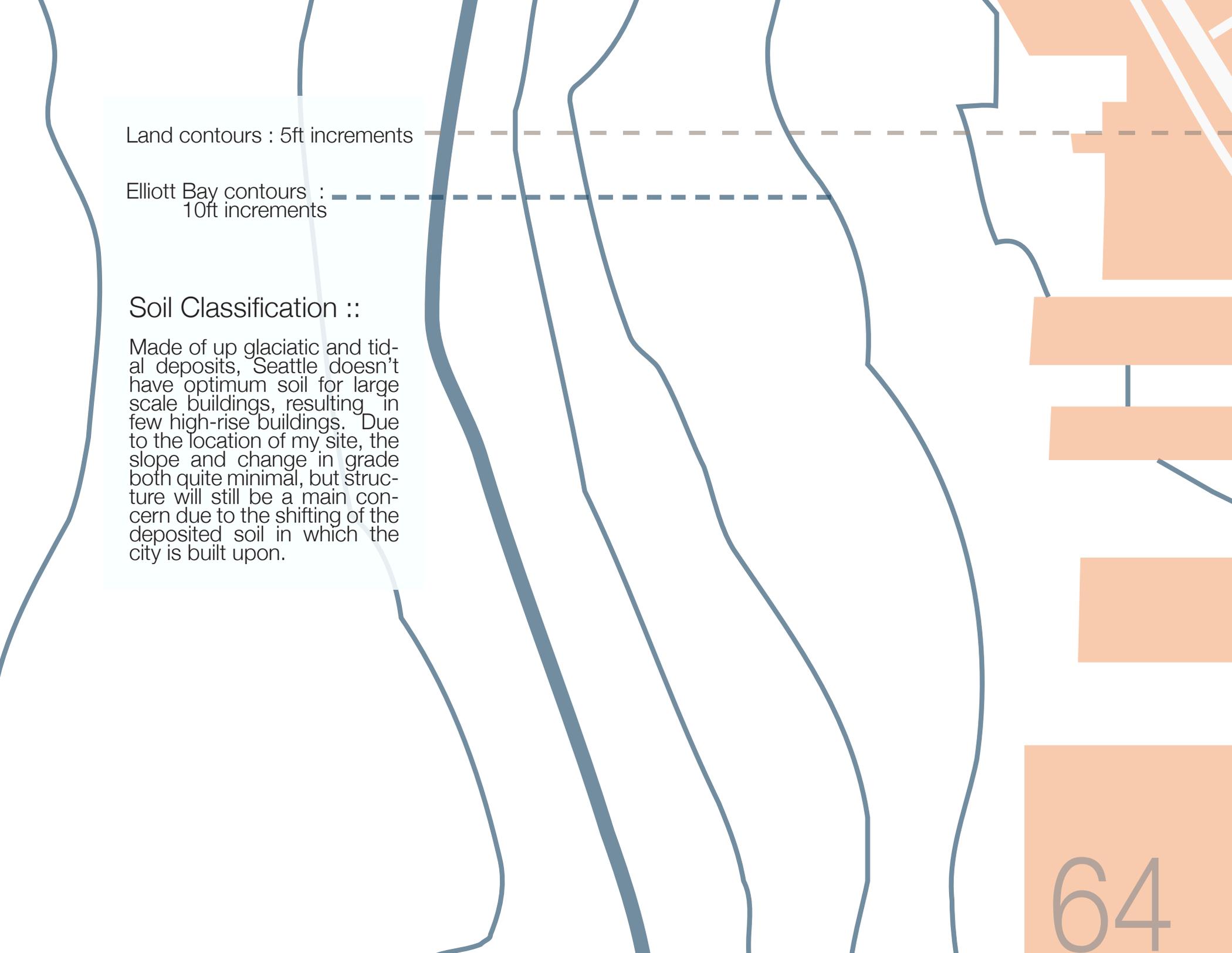


fig. 42.3



[site analysis]

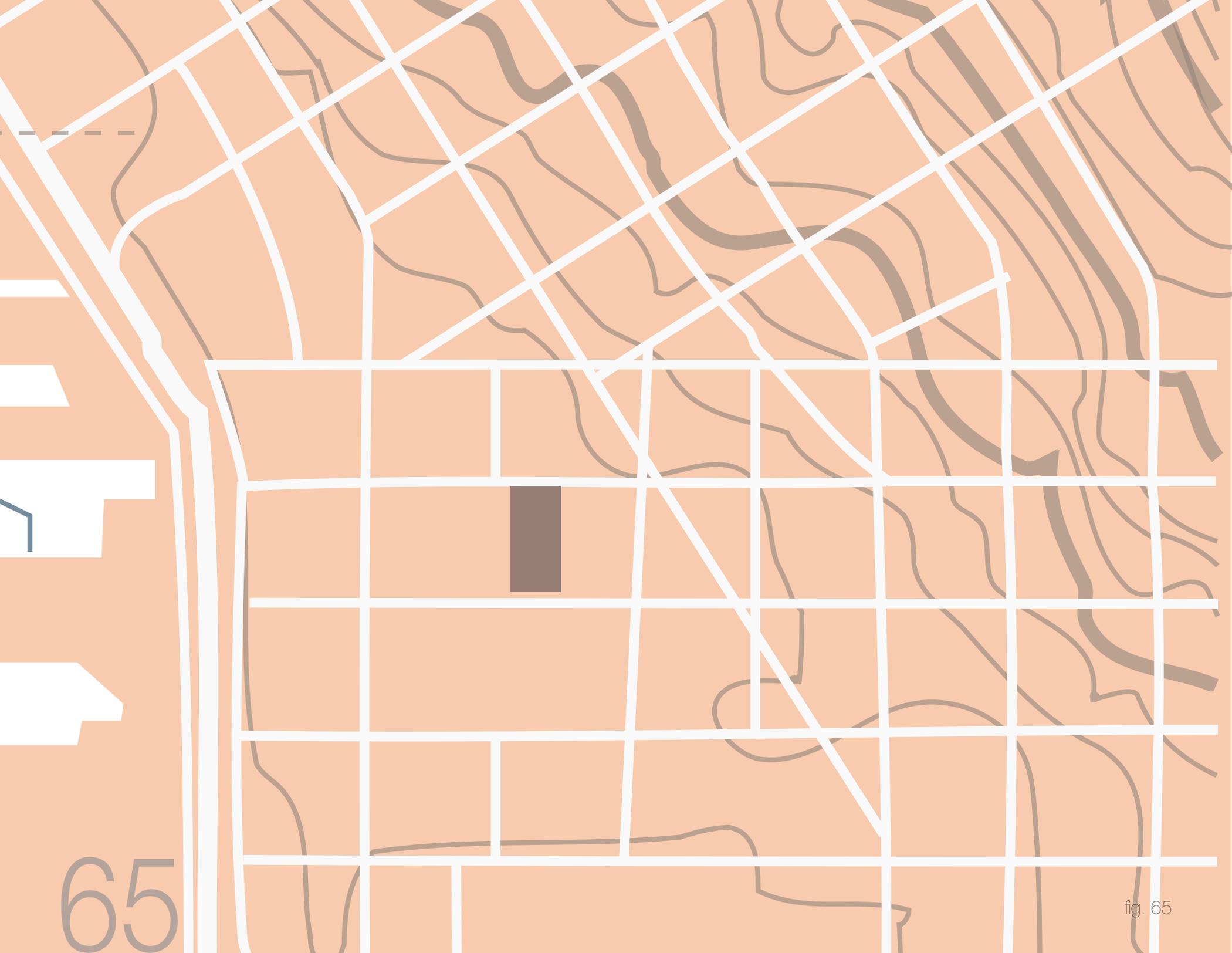


Land contours : 5ft increments

Elliott Bay contours :
10ft increments

Soil Classification ::

Made of up glaciatic and tidal deposits, Seattle doesn't have optimum soil for large scale buildings, resulting in few high-rise buildings. Due to the location of my site, the slope and change in grade both quite minimal, but structure will still be a main concern due to the shifting of the deposited soil in which the city is built upon.



65

fig. 65

Vehicular and Pedestrian Traffic ::

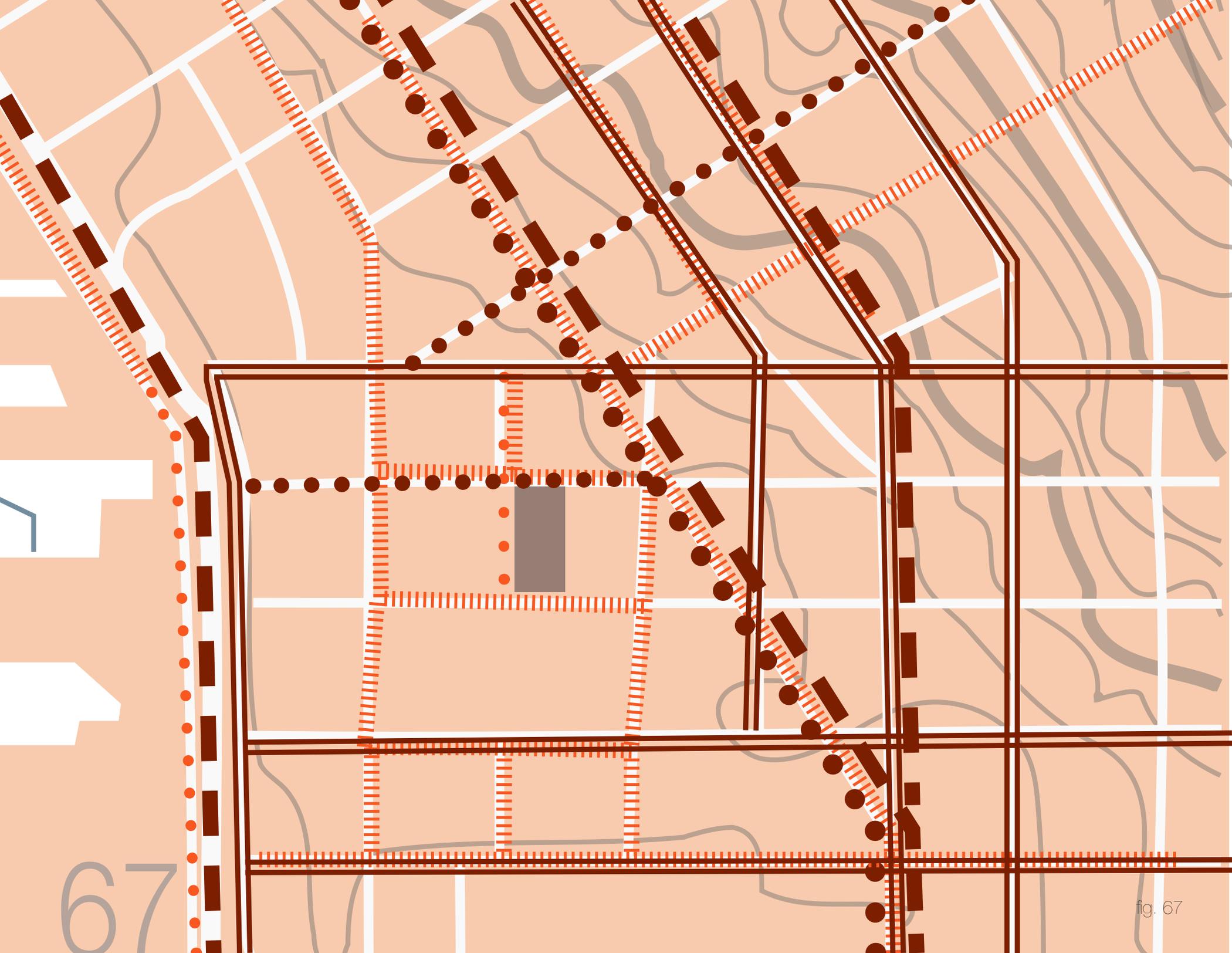
Within the city of Seattle, pedestrian traffic is the primary source of traffic. The grade of the surrounding area of Occidental Park being flat natured compared to many other areas and districts of Seattle, this provides an optimal location for accessibility for seniors and retirees alike.

Pedestrian Traffic ::

Heavy 
Light 

Vehicular Traffic ::

One way 
Two way 
Heavy traffic 



67

fig. 67

Wind ::

Prevailing winds are predominantly from the South-Southwest. With the location of my site, high amounts of wind are diffused due to the surrounding buildings averaging 6-8 stories high. With the city's average wind-speed equalling to 6 mph, well below the national average, the occurrence of high gusts of wind is rare.

Prevailing Winds :

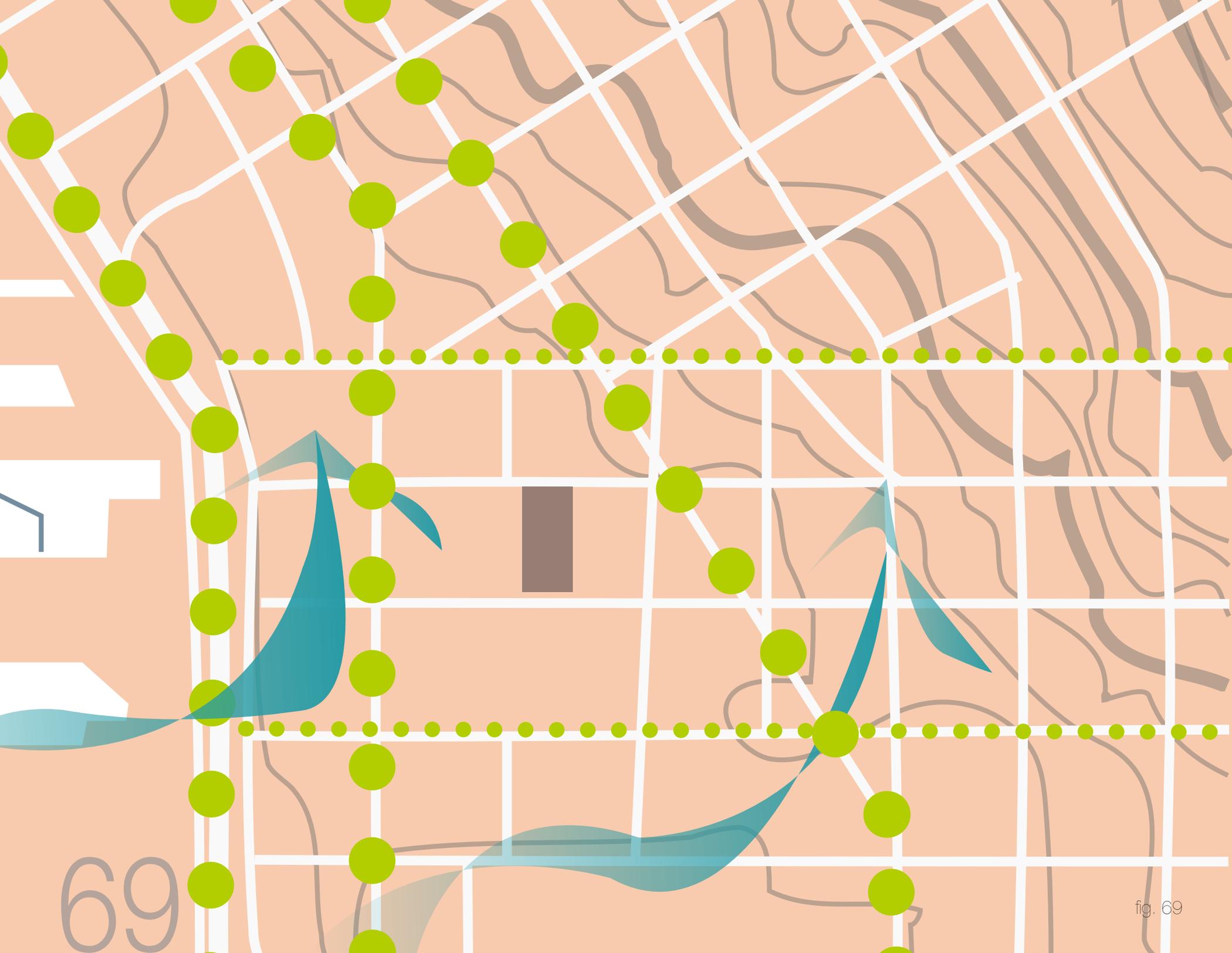


Lower volume noise :



High volume noise :

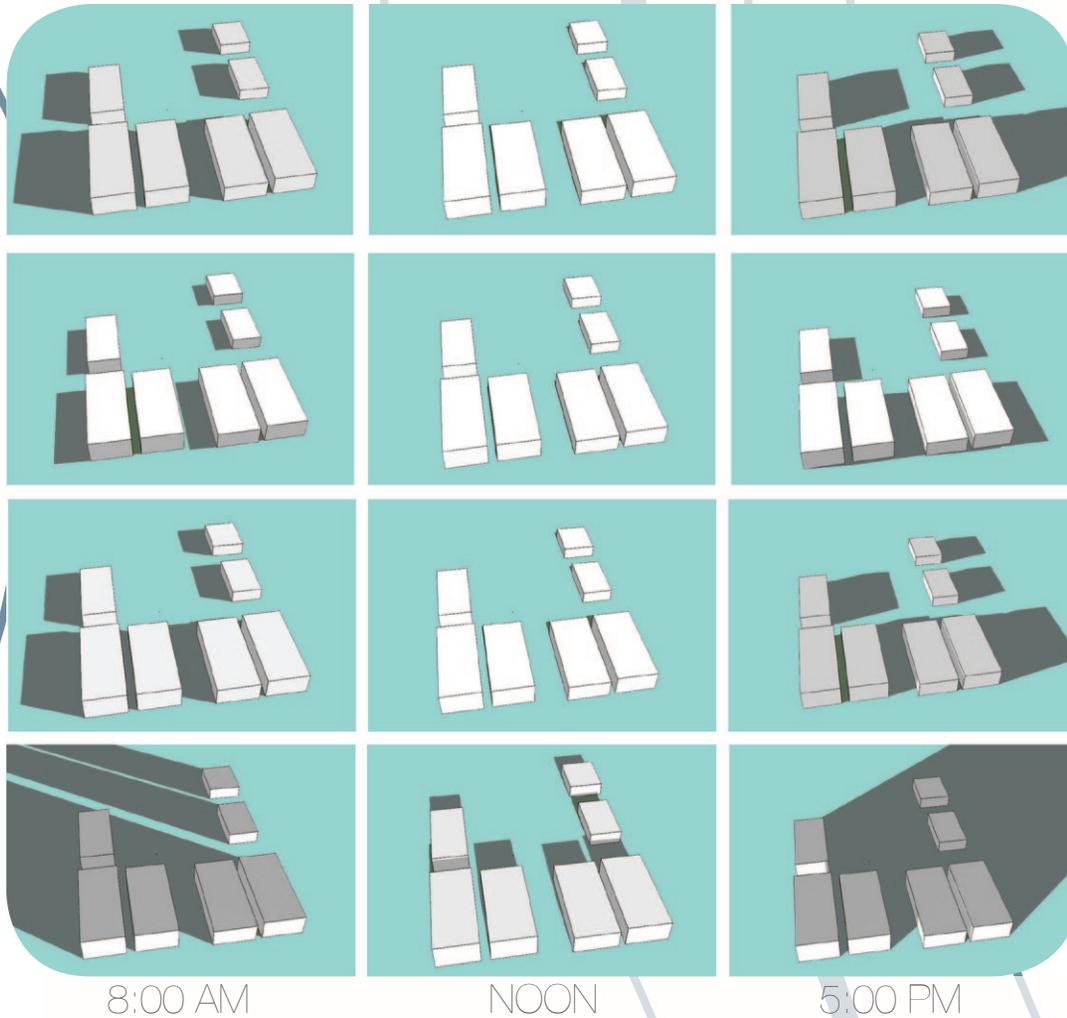




69

fig. 69

Sun Path Diagram + Shading analysis



Spring Equinox

Summer Solstice

Fall Equinox

Winter Solstice

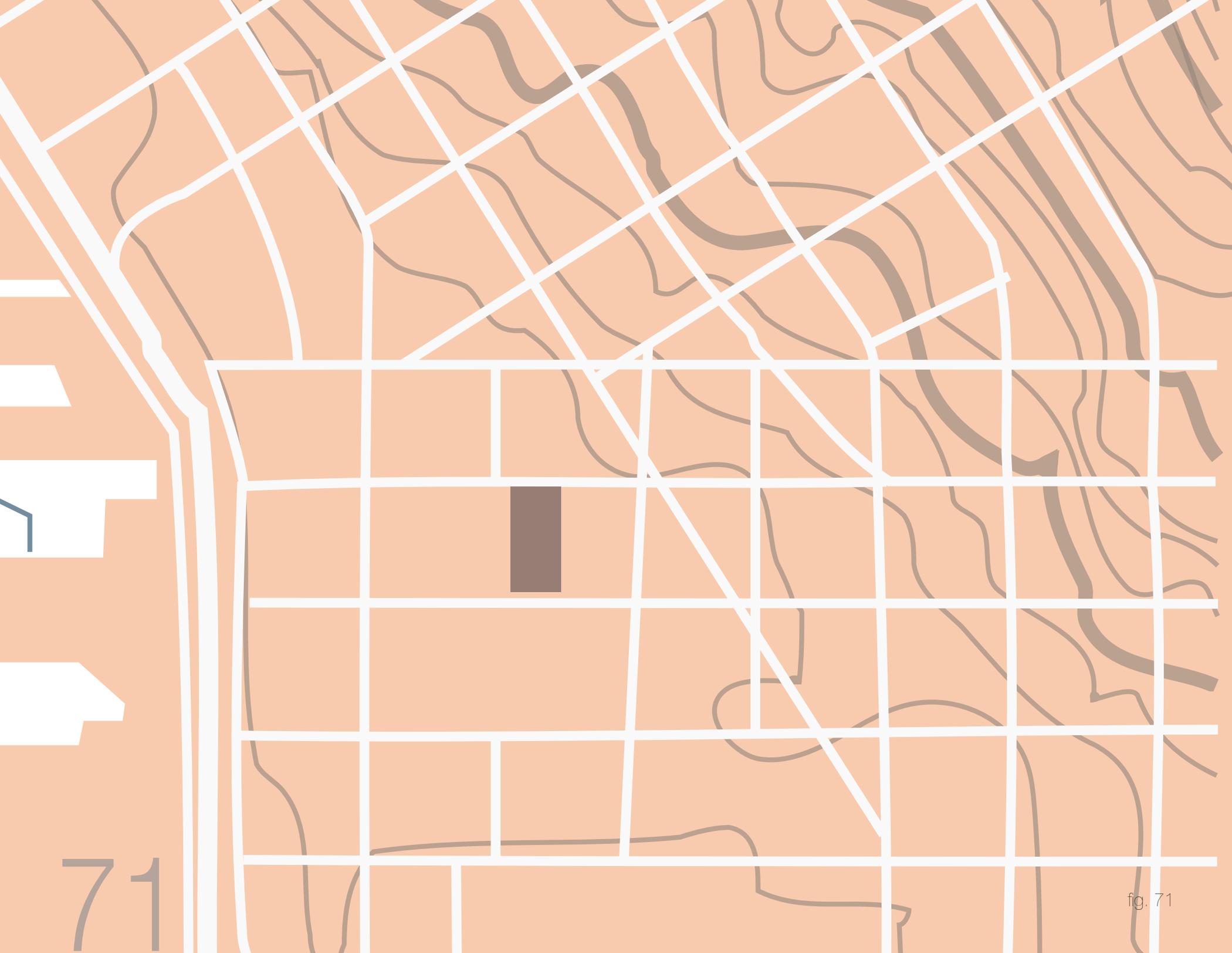
8:00 AM

NOON

5:00 PM

Light Quality ::

Due to the time of year, the light quality varies greatly. With my site nestled within Occidental Park the only time shading becomes an issue during the time of the Winter Solstice, there the entire site is shaded at 8AM and 5PM, but though it is heavily shaded during those times the middle of the days proves to still be open to direct sun.



71

Site Photography ::

Panoramic
view :



Still view :



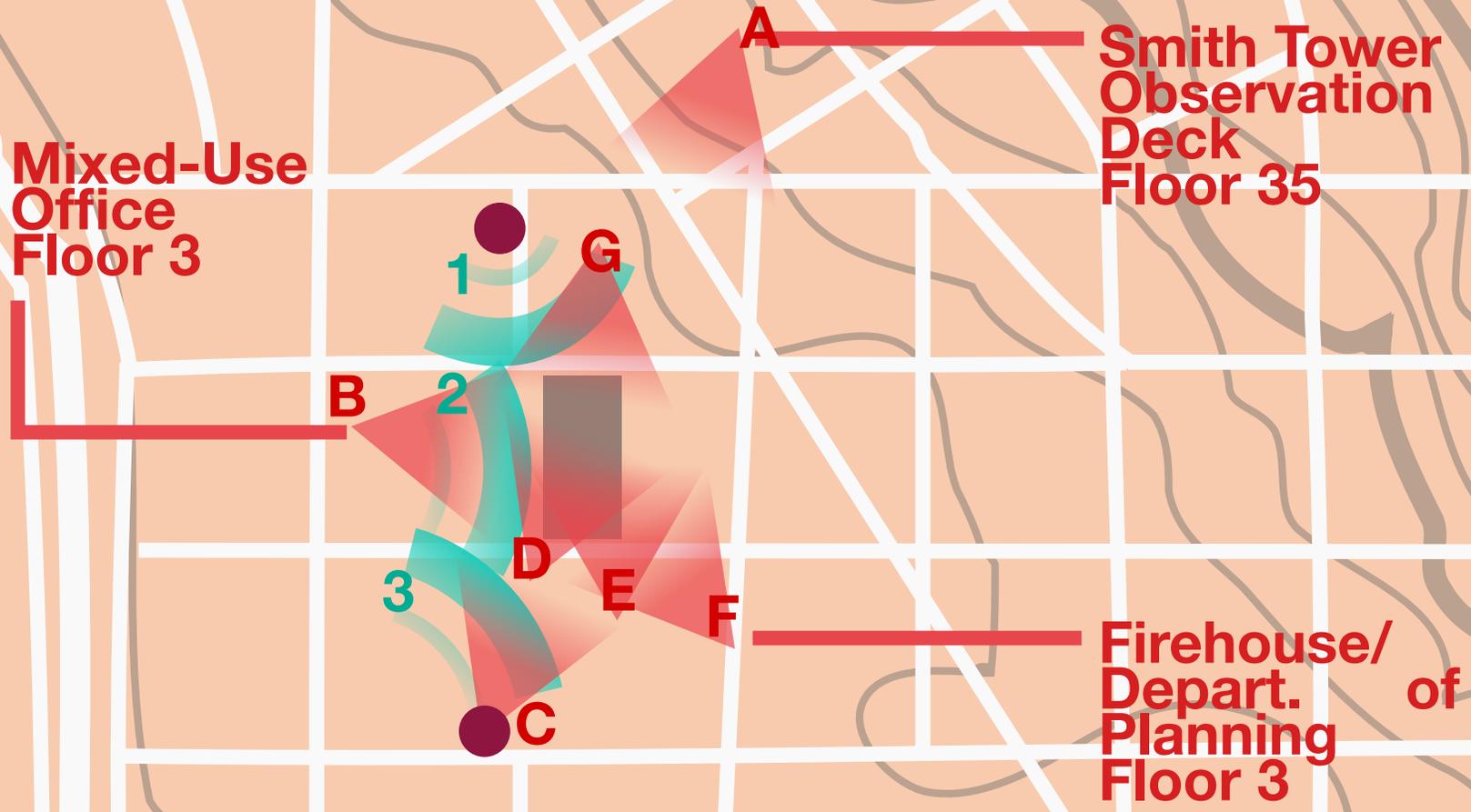
Day / Night
shot :



**Mixed-Use
Office
Floor 3**

**Smith Tower
Observation
Deck
Floor 35**

**Firehouse/
Dept. of
Planning
Floor 3**





A

74

2



1



3



1





D

76



E

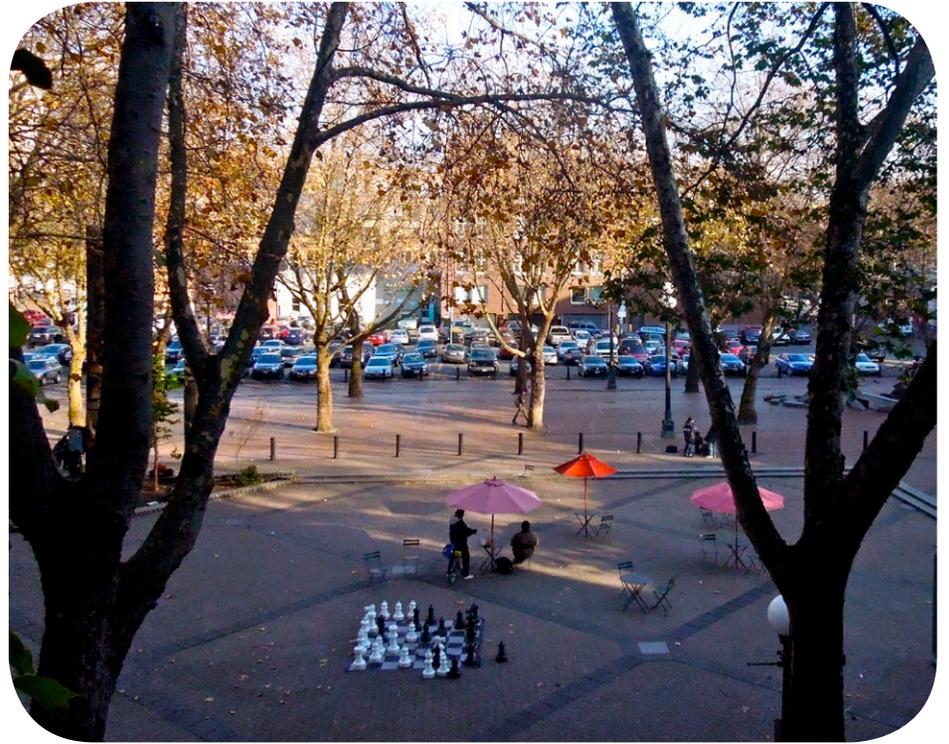


C



F

78



B



G

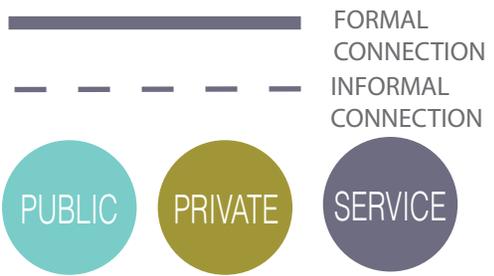
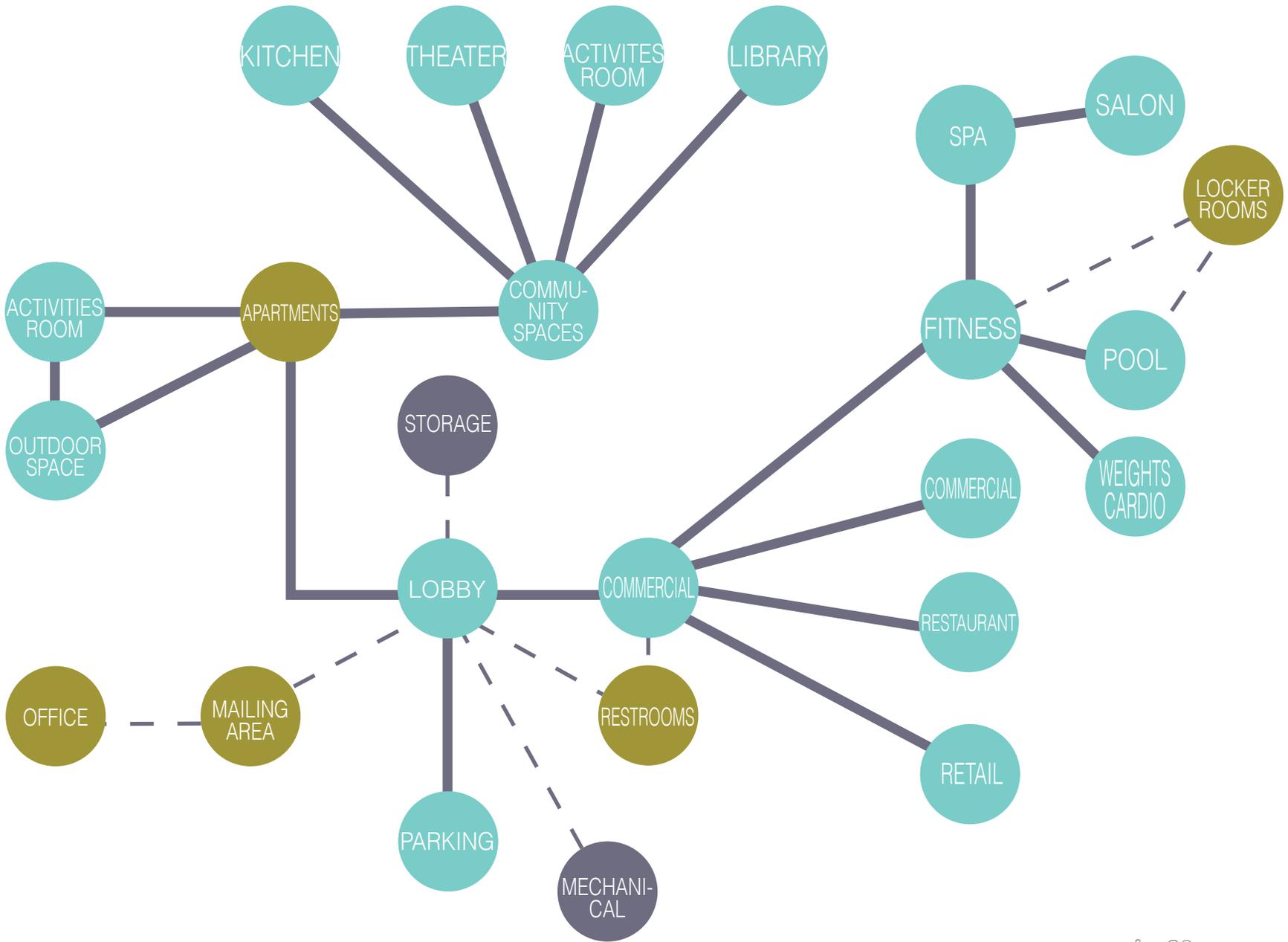


fig. 80

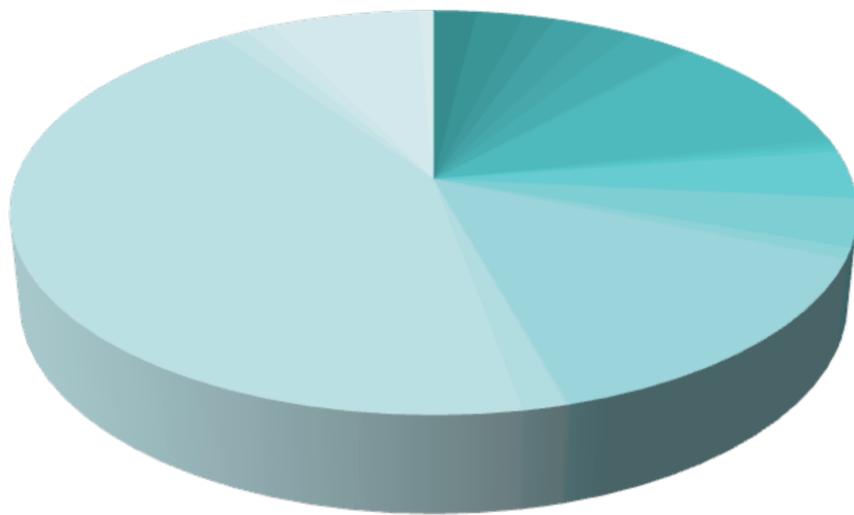


fig. 82

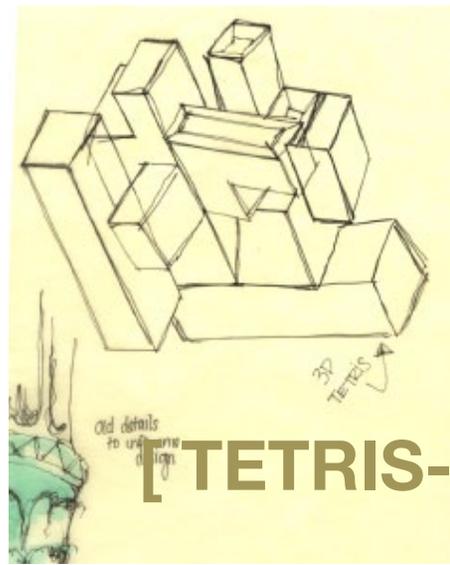
■ 1	■ 2	2000 lobby	1
■ 3	■ 4	2200 pool	2
■ 5	■ 6	1500 spa	3
■ 7	■ 8	2000 PT	4
■ 9	■ 10	1800 locker room	5
■ 11	■ 12	2800 exercise room (2)	6
■ 13	■ 14	300 public restrooms	7
■ 15	■ 16	10000 mechanical	8
■ 17	■ 18	400 offices	9
■ 19	■ 20	300 lounge	10
■ 21	■ 22	400 storage	11
		4000 fitness center	12
		4000 café/restaurant	13
		900 retail	14
		15000 circulation	15
		100 mail area	16
		1500 atrium	17
		45000 apartments (1-2 Bedrooms)	18
		1200 library	19
		1300 greenhouse	20
		7000 community space	21
		700 activity room	22



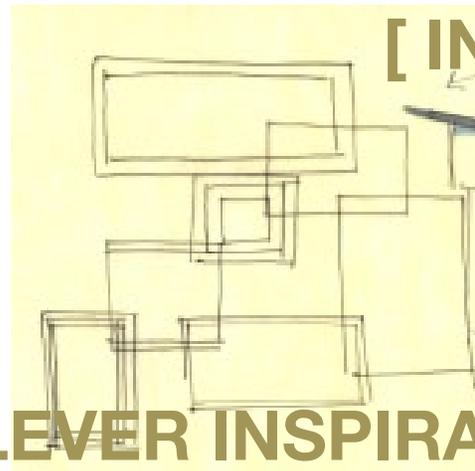
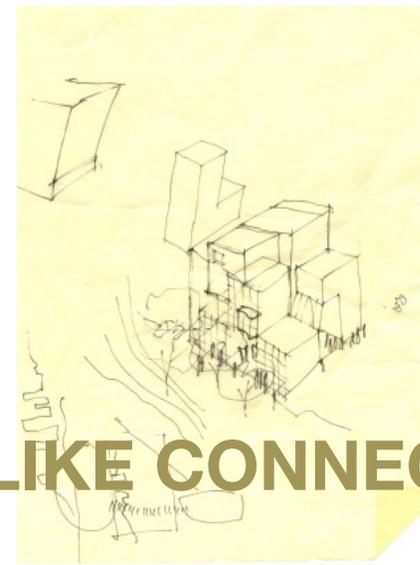
[project documentation]



[INTERCONNECTIVITY]

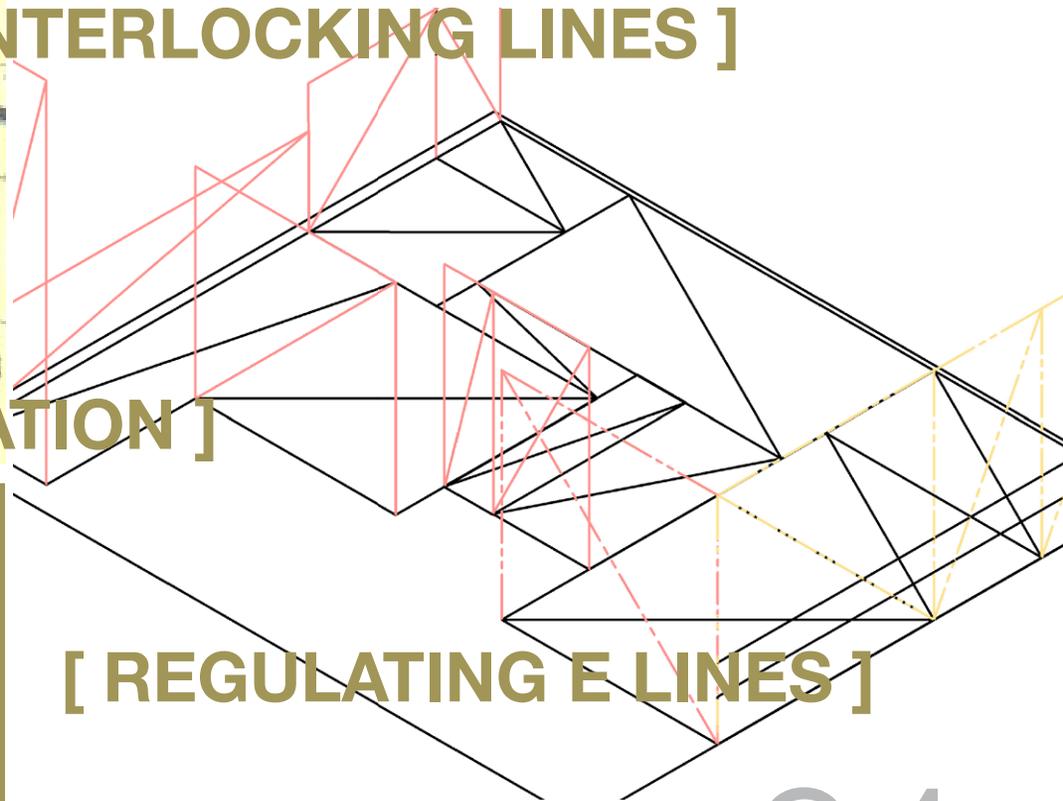


[TETRIS-LIKE CONNECTIONS]



[INTERLOCKING LINES]

[PIER/ CANTILEVER INSPIRATION]

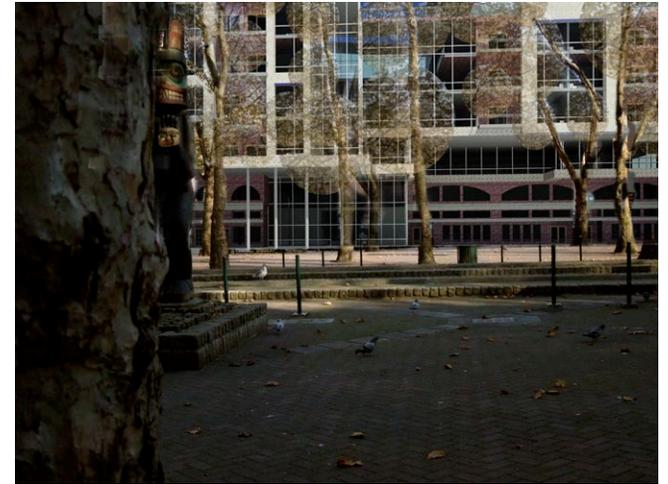


[REGULATING LINES]

process
inspiration



process elevations





process
perspectives





[project solution]

[longevity] :: urban retirement living

This thesis, Longevity, studies the ability to create a place to dwell that improves the quality, longevity, and ability to heal those that inhabit its walls, all the while residing within an urban setting. It is through design that architecture can adequately accommodate residents, and urge them to continue their independence while offering needed amenities when necessary. With growing numbers of elderly looking for a place to reside, while still possessing the independence in which they strive for, a multi-use retirement complex design is a desired solution.



[final boards]



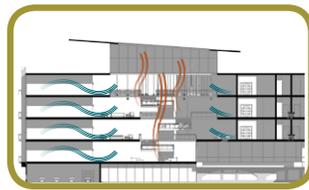
DESIGN CONSIDERATIONS [Interior]

1.] ATRIUM = Creating a light and visually spacious area within the building that opposes heaviness of the brick masonry of the building as well as the surrounding historic context surrounding the site. With the high volume of natural light entering the space, it draws people and residents to a common open space to allow for interaction, escape of their own seclusion. Natural ventilation is greatly used with this atrium as well to better aerate the residential floors.

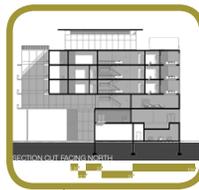
2.] APARTMENT = A more compact living space more suitable for urban living, with sliding pocket doors with bonded glass to allow for maximum amount of natural light to enter the room. The sliding doors allow for the resident to create a more open space or define areas within the room at the while still letting in light. Flooring is a hard surface throughout the rooms as well as the rest of the residential area for ease of access resulting in less accidents.

3a & 3b.] PHYSICAL THERAPY(FITNESS)(b) = Including a centralized location for physical therapy and a fitness center including an exercise pool, in the Pioneer Square district allows for not only residents to benefit from the daily need for physical fitness, but locals from the area can benefit as well.

4.] Greenhouse = Taking the time to interact with nature through planting and gardening has positive effects on one's emotional health, keeping their brain active and having the responsibility to care for something other than themselves. The community greenhouse allows for residents to interact with other residents as well as care for the growth of their plants.



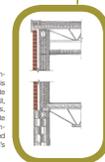
Through natural ventilation, the atrium's main air flow allows for the warm air to rise and be released through openings allowing the cooler air to pass through the building.



Operable windows controlled by timers and current air pressure needs, are used throughout the building to allow for optimum amounts of natural ventilation.



MAIN BUILDING MATERIALS:
Brick
Steel
Concrete
Treated Glazing



Keeping with the historic context of the site, the building is constructed mainly of concrete masonry exterior cladding wall, with open-web steel joists, decking. Through the climate in Seattle is moderately temperate, insulation is needed within the center of the wall's construction.

[final boards]



DESIGN CONSIDERATIONS
[exterior]

EXTERIOR FACADE : When designing the exterior of the building, there was a definite need to stay true to the historic integrity of the site. Since masonry was a key design and material element, it is crucial to incorporate the material in the design. Giving a modern and more youthful approach, glass became a main material as well, allowing for high levels of natural light and to allow for a better visual flow between exterior-to-exterior green spaces as well as exterior-to-interior green spaces.

GREEN SPACES : Designing with intentions to connect surrounding spaces was imperative. Pioneer Square's Occidental Park, just to the west of the site has long been an important place of interest in the Seattle area. With that in mind creating a better flow between the park and the Waterfall Garden (to the southeast of the site) was imperative. In doing so, there is a more harmonious relationship between the two.



[final boards]



[final
 installation
 boards :: model]

[presentation]



[key ideas]

sense of place
interlocking of generations
mixed-use space
relationship between private and public space
old and new
community driven
natural ventilation
natural daylighting
relation to the elderly

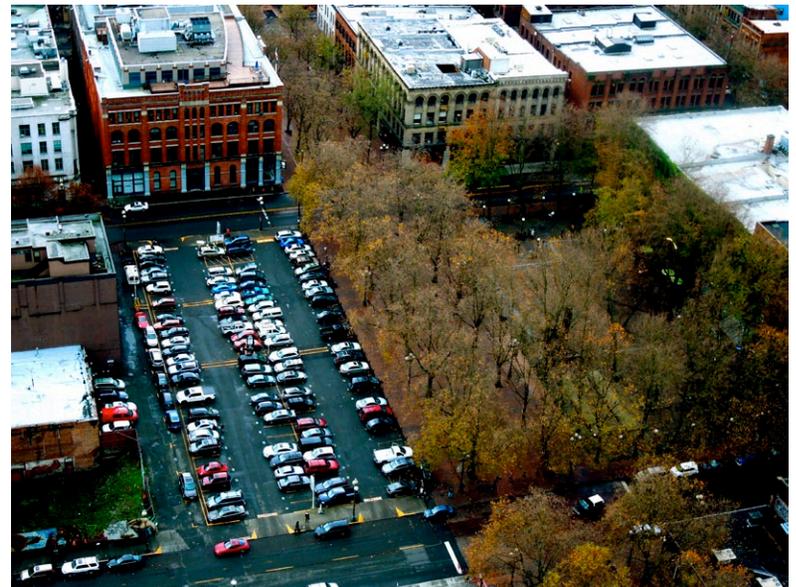
“ Keeping in mind the importance of all of these ideas became crucial. Especially the interlocking of generations, the importance of a community driven atmosphere, and consistently relating back to the relation of each design decision to the elderly because these each gave personal reference, intention, and feeling to the design. It is with these key ideas, along with the rest, that the design accomplished the possibility of living a long and healthy lifestyle while residing in an urban environment. ”

Washington :: Seattle :: Pioneer Square :: Occidental Park



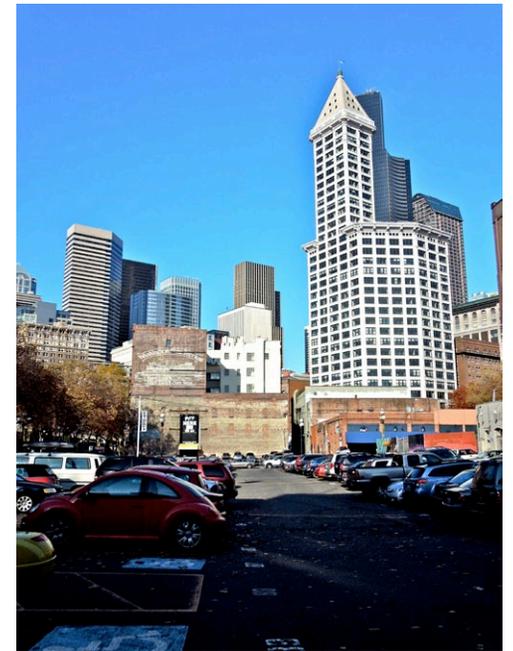
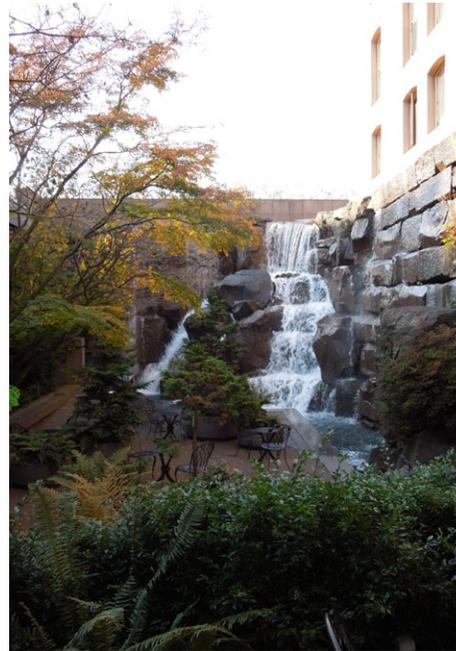
“ Due to the high numbers of today’s seniors choosing to still live in the city center, rather than escape to the outskirts and suburbs (Seattle’s population growing 72,000+ from the the past two census’) this results in the need for urban senior living communities. Choosing Occidental Park, in Seattle’s Pioneer Square District, became an immediate decision. With it’s close proximity to many needed amenities on a flat grade allows for ease of pedestrian access in and out of the site. The high level of park and green space provokes interaction with the surrounding area, which in turn provokes movement and interaction between residents and the public, both of which are key in lengthening one’s personal longevity.

Occidental Park and the entire Pioneer Square district is rich in history. With the Smith Tower, just to the north, looking over the site there is a clear sense of historic pride within the city. ”

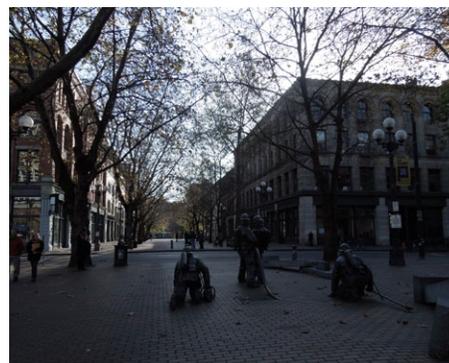


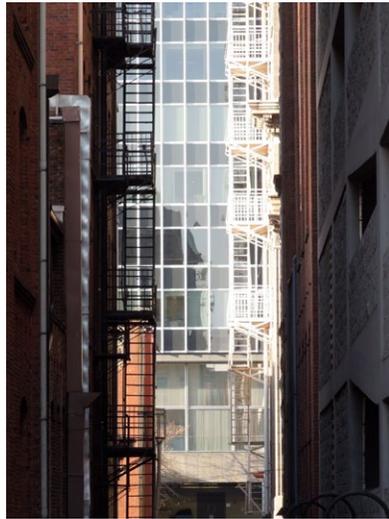


“ The immediate problem with my site is that there is a complete disconnect from the flow of Occidental Park, or Occidental Mall, when looking at the entire length, with the eyesore parking lot to it's east. The interruption from Occidental to the small Waterfall Garden on the other side of my site is hard to visually connect with the parking lot obstruction. Also, within the past few years, there has been a large influx of homeless migrating to the area from the Bellevue neighborhood. This creates hesitation for public to travel through the site during evening hours, but if properly revitalized through design, it can bring vitality and comfort back to the park area ”



“Taking clues from the surrounding area, whether that be from the waterfall garden to the historic Smith Tower, to the high amounts of cultural heritage allowed for many points where interaction between residents could occur and design decisions could draw from.”





major project elements]

residential spaces

- apartments
- atrium
- community greenhouse
- community library
- community kitchen
- activities room
- small activities/craft room
- theater space

public spaces

- fitness center
- spa
- salon
- restaurant
- coffee shop
- grocery
- physical therapy
- retail
- art gallery/retail

minor project elements]

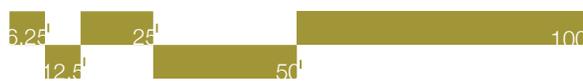
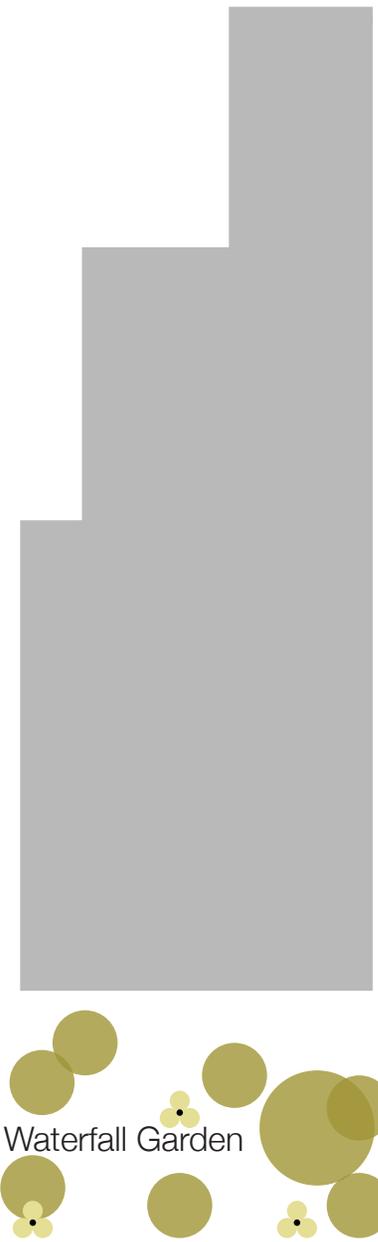
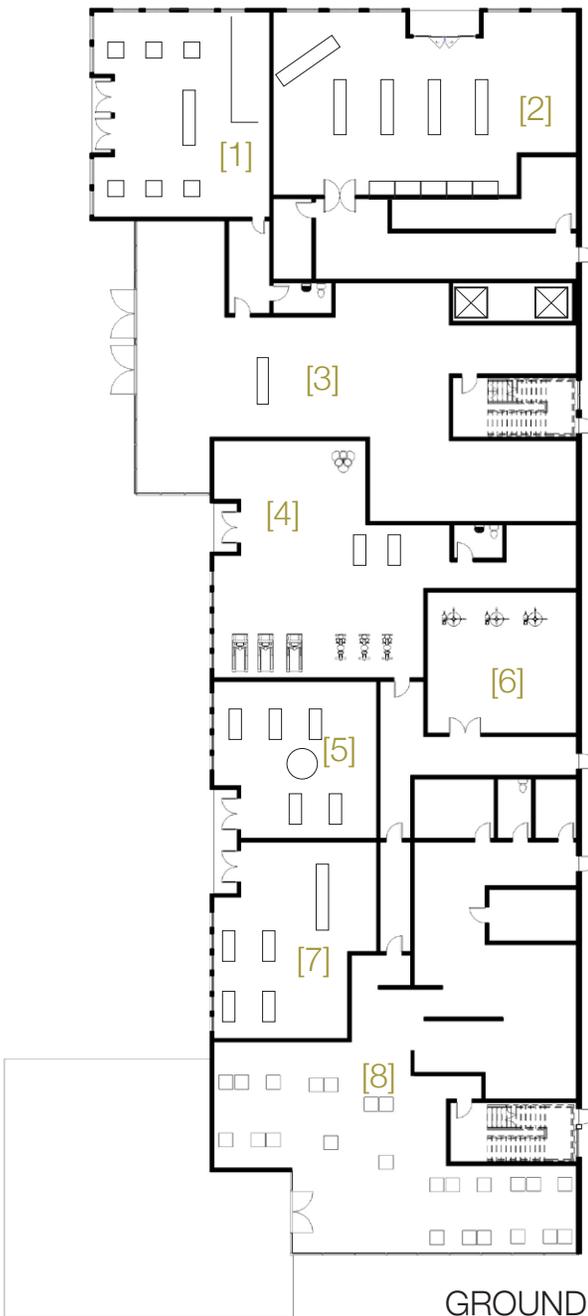
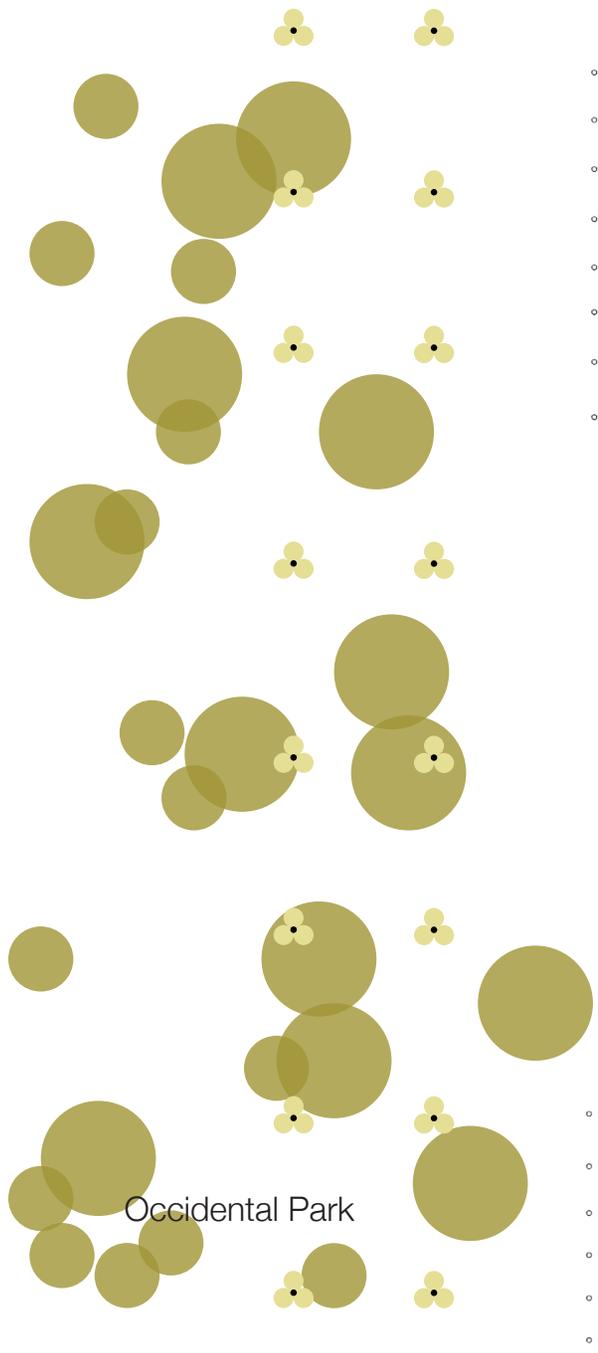
- mechanical
- storage
- public restrooms

“As for material choices, brick and masonry were the main building elements, with glazing being used to juxtapose the heaviness of the masonry. Glazing also allows for maximum natural light, which in turn is most beneficial for the elderly. It also allows for better connectivity between interior spaces to the exterior parks.

Including in my design, the need to add to the neighborhood a small grocery, physical therapy clinic, and fitness center, allows for continued interaction with fellow peers and promotes physical activity, which can be most beneficial.

”

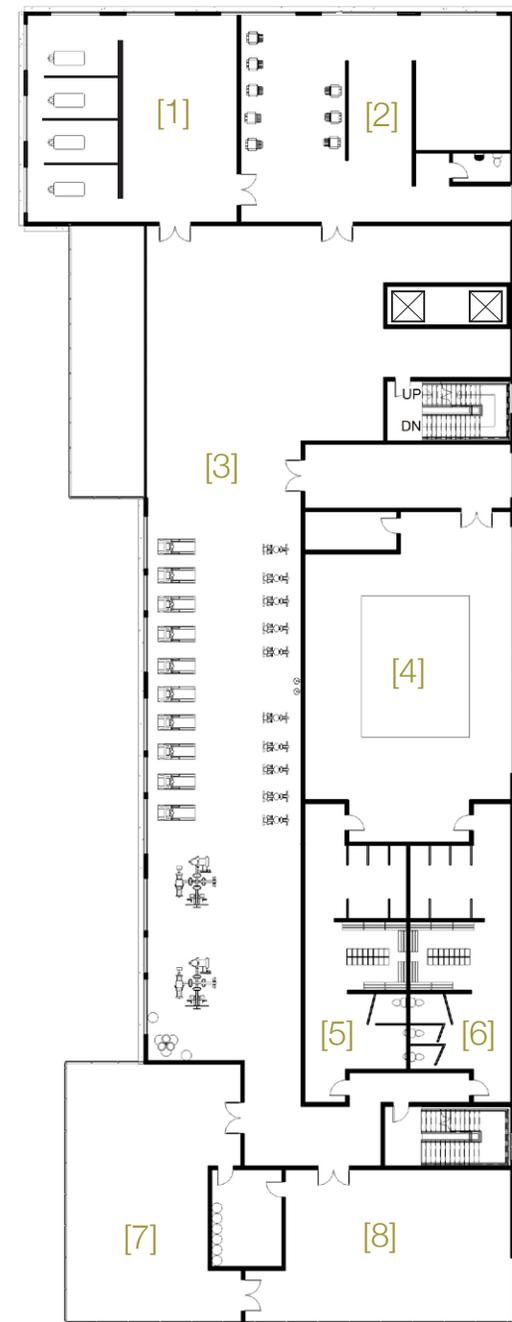




- [1] COFFEE SHOP : 1243 sf
- [2] MINI GROCERY : 1844 sf
- [3] APT. ENTRANCE : 2807 sf
- [4] PHYSICAL THERAPY : 1853 sf
- [5] RETAIL : 873 sf
- [6] POOL MECH. : 760 sf
- [7] ART RETAIL : 1012 sf
- [8] RESTAURANT : 3367 sf



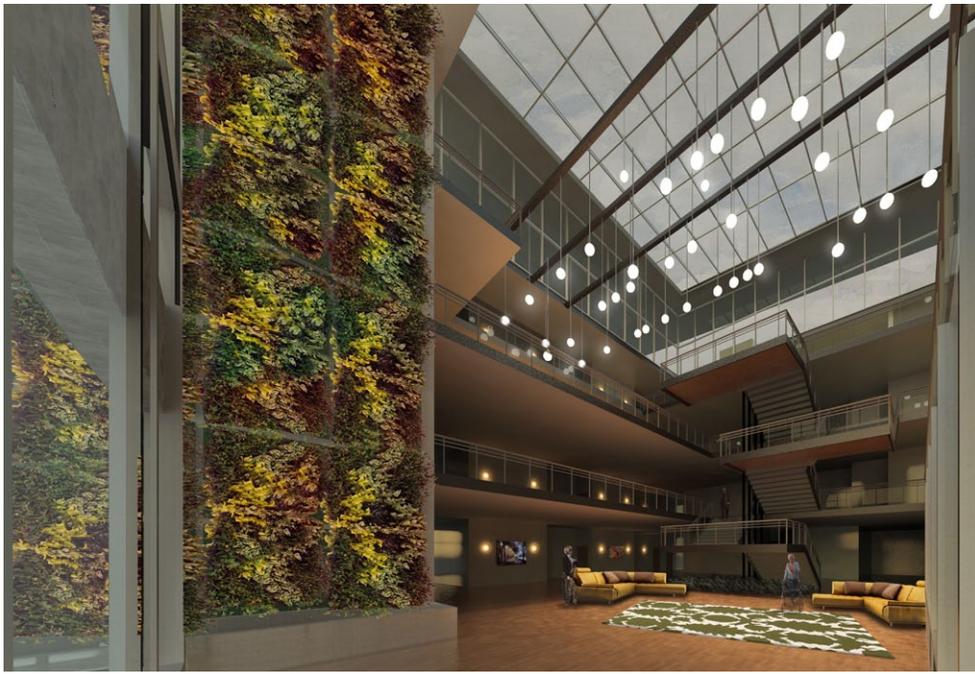
“ Like earlier stated, the use of a physical therapy clinic and fitness center allows for the elderly to get into good physical shape as well, promotes interaction with the surrounding public who also come in to use the space. With that positive interaction between generations there is a stimulation and continued independence created. ”



2ND FLOOR

- | | |
|-----------------------|-----------------------------|
| [1] SPA : 1565 sf | [5] MEN'S RR : 908 sf |
| [2] SALON : 1910 sf | [6] WOMEN'S RR : 908 sf |
| [3] FITNESS : 4002 sf | [7] EXERCISE ROOM : 1505 sf |
| [4] POOL : 2186 sf | [8] EXERCISE ROOM : 1326 sf |

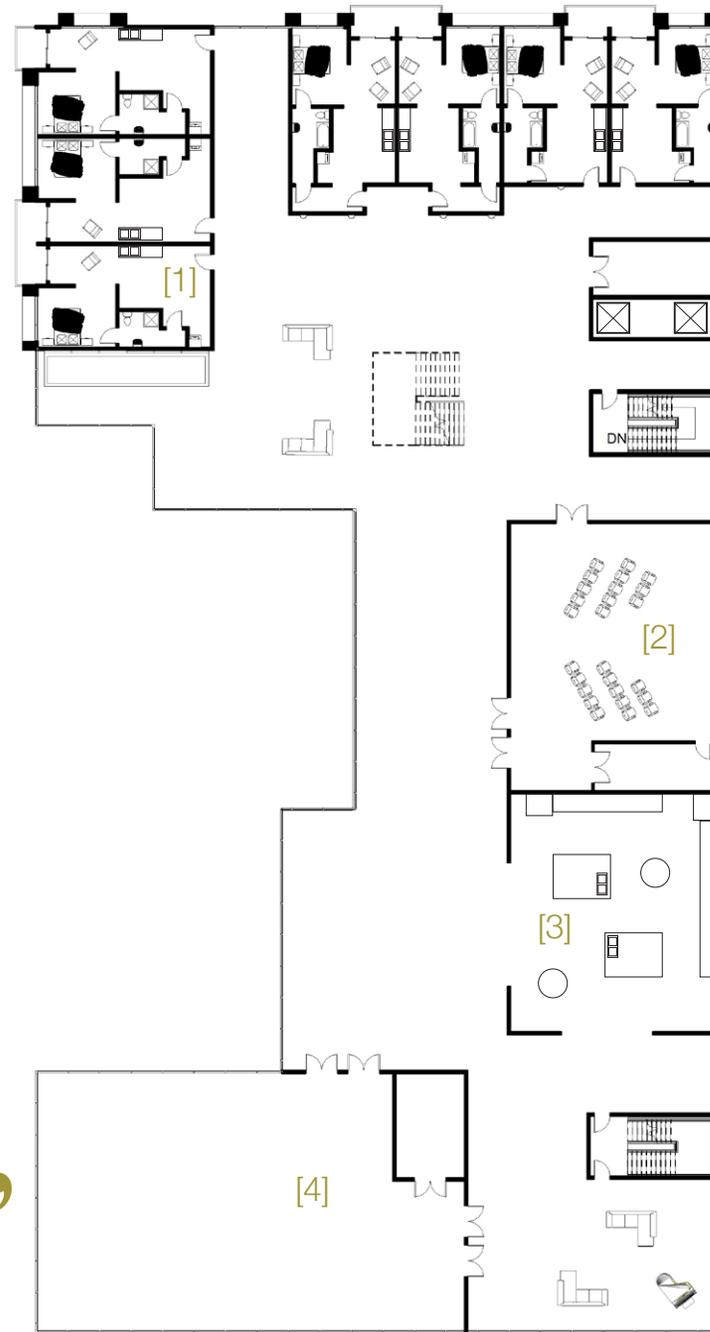




“The importance of natural daylighting is crucial in the decline of depression and poor sleeping habits, which often occurs in current retirement facilities. With large amounts of light gathering in one place, it draws people together, almost creating ‘forced interaction’ between residents. Through atria designs, the ability to use natural ventilation becomes more apparent as well.

Aesthetically, the varying of floorplates and stairs better highlights the area as a whole and with the large greenwall, there is an added visual appeal. It also serves to better cleanse the air and psychologically, the site of plants, elevates levels of positive feelings.

”



3RD FLOOR

- [1] APARTMENT (x 7) : 480- 560 sf
- [2] THEATER : 1767 sf
- [3] COMMUNITY KITCHEN : 1767 sf
- [4] ACTIVITIES ROOM : 3744 sf



“ Having a virtual lab/library allows for seniors to continue to learn about technology as well as continue their independence. Often times, today’s seniors still parttake in small occupational tasks and the ability to practice, use, and gain a larger skillset in that venue continues personal vivacity and independence. With the connection to a public outdoor space only for residents allows for connection to the Occidental Park itself, but on a more semi-private level.

”



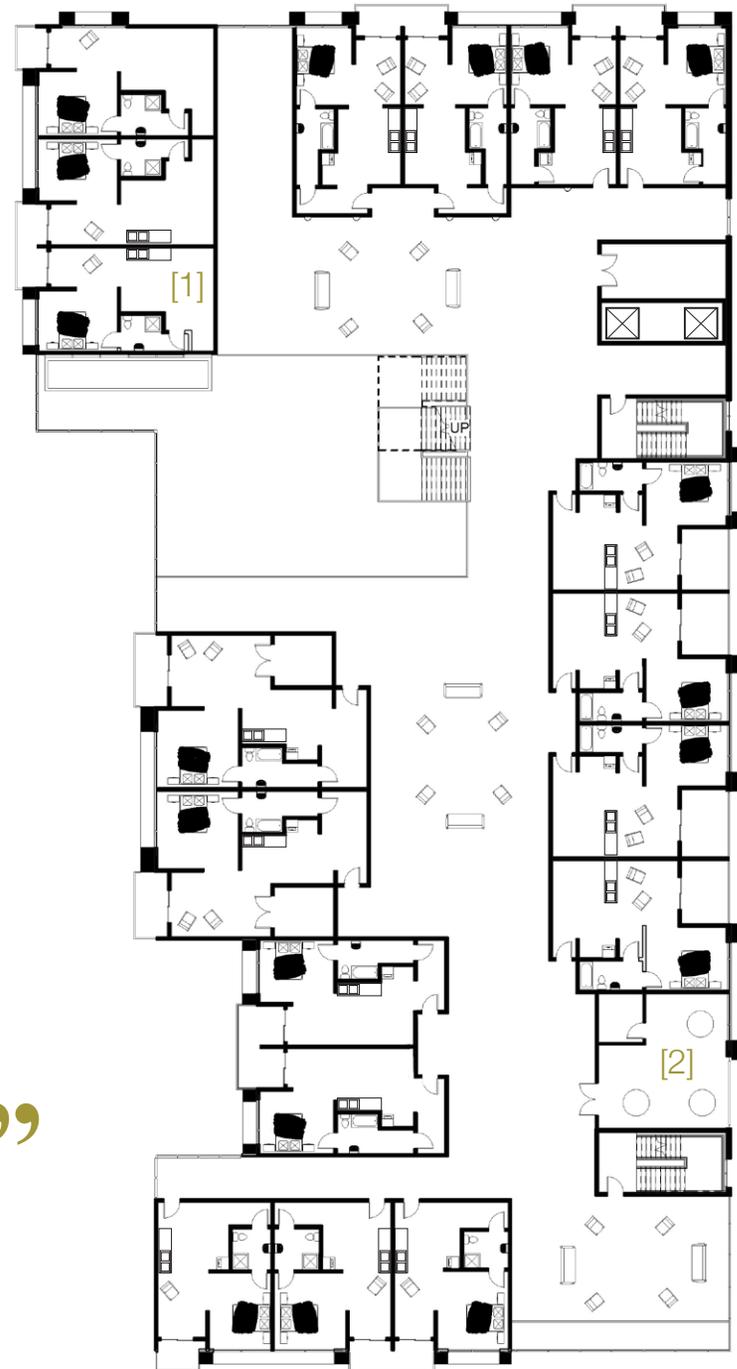
4TH FLOOR

[1] APARTMENT (x 16) : 480-815 sf
 [2] LIBRARY : 1210 sf





“ Each residential room has large windows and a little patio space to allow for the maximum amount of natural light to enter the space. With frosted glass window pocket doors to divide the interior spaces of apartments, the ability for natural light to still enter either space is possible while still creating private defined areas. ”



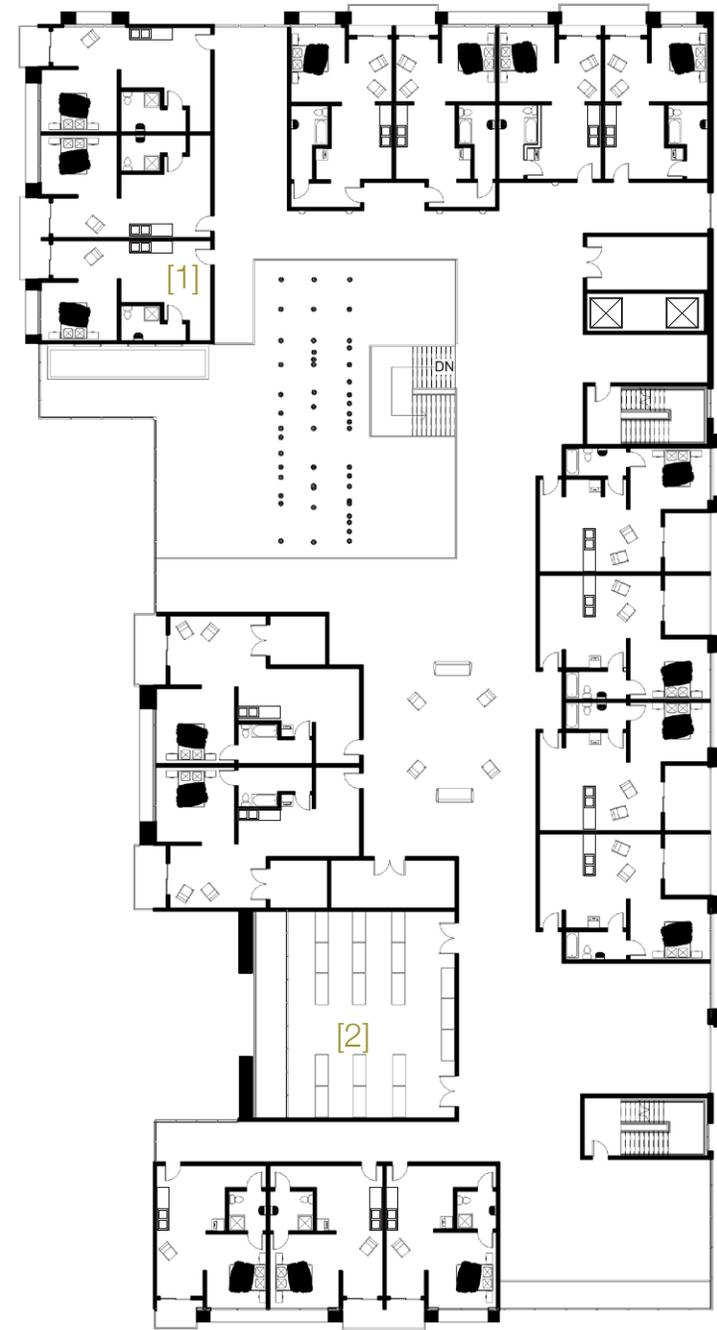
5TH FLOOR

[1] APARTMENT (x 18) : 480-815 sf
 [2] CRAFT ROOM : 625 sf



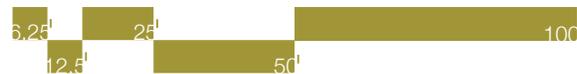


“Community gardens promote care and interaction once again between residents. Due to low amounts of shadow being cast onto the site, a community greenhouse can gain great amounts of light. Through gardening there are positive effects on one’s emotional health.”



6TH FLOOR

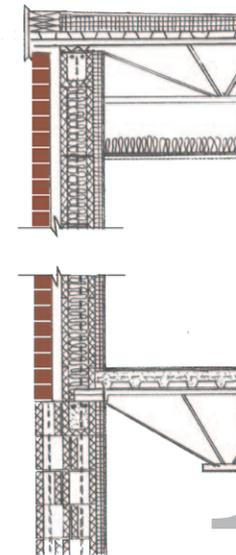
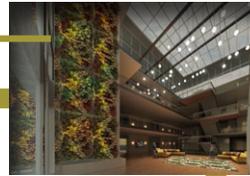
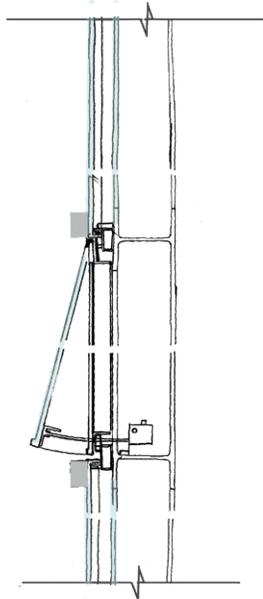
- [1] APARTMENT (x 16) : 480-815 sf
- [2] COMMUNITY GREENHOUSE : 1301 sf



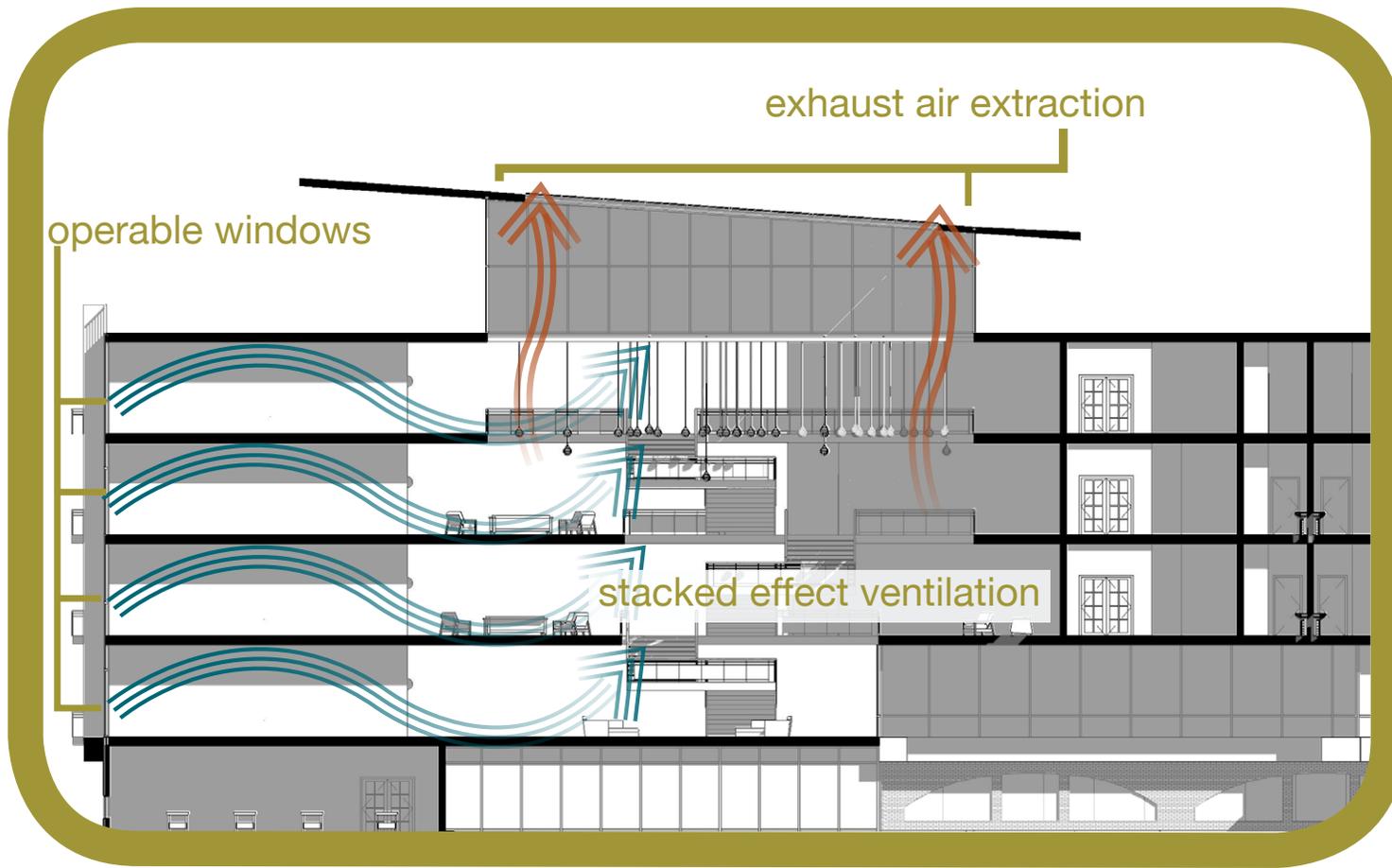
Green wall construction requires vertical irrigation, as well as a framing system to hold up the panels.



Operable windows allow for natural ventilation. Determined to open by the interior temperatures as well as air pressure levels.



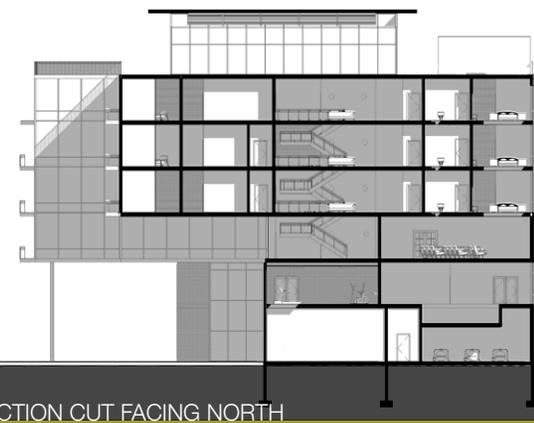
The basic structure would be steel frame as with a masonry facade to relate well to the surrounding buildings.



With atria designs, the need for proper ventilation is necessary. If exhaust systems were not placed directly on the top of the atrium, but they were placed on as bilateral exhaust escapes, there could be the possibility for the warm air to become turbulent and in the case of a fire, smoke would not be released in a safe enough fashion, creating a large hazard for the building as a whole.



SECTION CUT FACING EAST



SECTION CUT FACING NORTH





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Fig. 41.2 ; Disch, R. (Designer). (2011). Retrieved from <http://www.rolfdisch.de/index.php?p=home&pid=281&L=1&host=2>
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Fig. 44.1 : "de Plussenburgh / Arons en Gelauff Architecten" 28 Jul 2008. ArchDaily. Accessed 10 Dec 2012. <<http://www.archdaily.com/3959>>

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Fig. 46.1 "de Plussenburgh / Arons en Gelauff Architecten" 28 Jul 2008. ArchDaily. Accessed 10 Dec 2012. <<http://www.archdaily.com/3959>>

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Fig. 48.1 : <http://www.archdaily.com/293923/solund-retirement-community-second-prize-winning-proposal-henning-larsen-architects/>
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Fig. 50.1 : <http://www.archdaily.com/293923/solund-retirement-community-second-prize-winning-proposal-henning-larsen-architects/>

Fig. 50.2 : <http://www.archdaily.com/293923/solund-retirement-community-second-prize-winning-proposal-henning-larsen-architects/>

[personal identification]



We are what we repeatedly do. Excellence, therefore is not an act but a habit. -Aristotle

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