

MICHAEL BLANK

NORTH DAKOTA STATE UNIVERSITY

FALL 2013

MAYO GARDENS

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

By

Michael Blank

In Partial Fulfillment of the Requirements For the Degree of Bachelor of Landscape Architecture

Primary Thesis Advisor

an Vordertons

Secondary Thesis Advisor

September 2013 Fargo, North Dakota

TABLE OF CONTENTS

| Abstract | 1 |
|------------------------------|-------|
| Chapter 1 | 2 |
| Project Typology | 3 |
| Introduction | 4 |
| Research Questions | 5-6 |
| Site Information | 7 |
| Opportunities and Challenges | 8 |
| Literature Review | 9-10 |
| Case Studies | 11-19 |
| Chapter 2 | 20 |
| Research Approach | 21 |
| Measures | 22-23 |
| Site Introduction | 24-28 |
| User Client Description | 29 |

| Chapter 3 | 30 |
|------------------------|-------|
| Site Inventory | 31-72 |
| History | 31-32 |
| Demographics | 33-40 |
| Building Analysis | 41-44 |
| Architecture | 45-46 |
| Parking Lots | 47-48 |
| Sidewalks | 49-50 |
| Streets | 51-52 |
| Subways and Skyways | 53-54 |
| Parks | 55-56 |
| Plazas | 57-59 |
| Group Involvement | 60-62 |
| Climate | 63-68 |
| Plant Materials | 69-72 |
| Findings From Research | 73-76 |
| Applicable Values | 77-78 |
| Plan for Proceeding | 79-84 |
| Design Goals | 85 |

| Chapter 4 | 86 |
|---|-------|
| Opportunities and Limitations of Research | 87-98 |

| Chapter 5 | 100 |
|--------------------------------------|---------|
| Opportunities and Challenges of Site | 101-104 |

| Chapter 6 | | 105 |
|-----------|---------------------|-------------|
| | Site Analysis | 105-107 |
| | Design Process | 108-111 |
| | Design Deliverables | 112-119 |
| | | |

| References & Appendixes | |
|-------------------------|--|
| Bibliography | |
| Annotated Bibliography | |

ABSTRACT

This thesis is an urban design project hybridizing architecture and landscape architecture. The relationship between landscape architecture and architecture reveals three basic modes which will be studied: contrast, merger, and reciprocity. These design principles will be implemented in designing a multilayered space that is innovative and explores the relationship of indoor and outdoor spaces. The transition from indoor to outdoor will be the primary area of focus in the design. The Mayo Clinic in downtown Rochester, MN is in need of an innovative landscape design that compliments the architecture of the Mayo Clinic. By integrating a landscape into the architecture it will create an iconic place for people to enjoy. The design responds to the existing architecture in form and materials to create a harmonious relationship. The circulation of the Clinic's 40,000 employees and patients via skyway, street level, and subway will provide the opportunity for a multilevel design. Rochester's historical architecture and modern medical facilities provides an opportunity for a unique design that explores this dynamic relationship between the two contrasting styles of architecture.



CHAPTER 1 PROJECT TYPOLOGY LITERATURE REVIEW

Image taken by: Michael Blank

PROJECT TYPOLOGY

This thesis is an urban design project hybridizing architecture and landscape architecture. The project also focuses on creating a sense of entry and identity for a medical campus in the Midwest. This identity will be reflected in a landscape design that adopts the same principle's that make up the identity of the medical campus.



INTRODUCTION

Mayo Gardens is an urban design project hybridizing architecture and landscape design. "The history of architecture and landscape architecture reveals three basic modes of relationship: contrast, merger, and reciprocity" (Rainey 4). These relationships are studied in works such as Frank Lloyd Wright's Falling Water where he design's in the powerful contrast of nature and architecture.

Designs exploring this relationship of architecture and landscape design have been explored for centuries. Villa d'Este was constructed near Rome, Italy in the 1500's. (Image on previous page) This romanticism design creatively integrates the landscape into the architecture in a literal manner. On the contrary a modern park that uses space very efficiently and creates a multi-level space is the Namba Parks in Osaka, Japan. The Japanese deal with problems of extremely high densities in their cities and designed vertically as a response. Integrated indoor/outdoor spaces create an intriguing place that one cannot clearly define as architecture or landscape, but rather a hybrid.

The urban setting of the Mayo Clinic provides an opportunity to study these relationships in downtown Rochester, MN. The Mayo Clinic is a place rich with history but also a place with a modern feel to it with high technology buildings. This is a unique characteristic of downtown Rochester that could be captured in a design embracing these relationships of 'high tech' and historical.

RESEARCH QUESTIONS

How can a sense of entry create a positive identity for the Mayo Clinic?

Hypothesis: "People often modify their physical environment to reflect who they are" (Gosling, 2002) and "observers often use the clues in those physical environments to form judgments of what the occupants may be like" (Brunswik, 1956). For the Mayo Clinic this image of how people judge their medical care is extremely important. Landscape Architects have the opportunity to influence how one enters a space and views that they want to expose or hide. "People may assume the kind of care, the type of physician, and the level of comfort a medical building might offer based on its exterior appearance." (Devlin , 2008) In the book Medical Facility Facades and Assumptions about Care and Comfort they investigate a medical facilities exterior appearance and how people create expectations of quality of care and comfort based on its appearance.

How can an urban setting be a place of healing?

Hypothesis: Numerous amounts of research have been done studying healing and what influences quicker healing. Roger Ulrich, a Professor of Health Facilities Design at Texas A&M University, has done numerous studies related to health care and how people's recovery times are affected by simply looking at water or greenery. The field of Landscape Architecture has an opportunity here to embrace views of an urban setting by using elements of biophilic design. The book Biophilic Design provides a guide to designing these spaces by implements naturalistic elements.

How do skyway/subway networks affect the street level activity?

Hypothesis: Minneapolis is recognized as a city that over utilizes its skyways and subways. The massive numbers of people that use these skyways have negatively affected the downtown. (http://www.minnpost.com/politics-policy/2007/11/urban-designers-minneapolis-should-dump-skyways) The mayor of City of Minneapolis R.T. Rybak said "They (skywalks) are both the best and worst things that ever happened to Minneapolis," The importance of these skywalks and tunnels must not be ignored. It will be a challenge to incorporate these different levels of circulation to bring people back to the street level.



This list below is the chosen criteria for my site.

- 1. ADA Accessibility- Must be accessible to people with disabilities.
- 2. Visual Greenery- Views to greenery and effects of healing.
- 3. Urban- Context of a downtown setting with existing architecture.
- 4. Medical- Qualities of the medical field and how they influence design.
- 5. Views- Controlling how people view and experience the site.
- 6. Indoor/Outdoor Hybridizing the field of Architecture and Landscape Architecture.
- 7. High Technology/Historical- Capturing the dynamic of space that embraces history and technology.
- 8. Multi-Use- A space that is functional with several uses.
- 9. Sense of Entry- An iconic entry to influence the psychology of visitors.
- 10. Multilevel Design- Complexity in redefining how landscape architects use space.
- 11. Seasonal Use- A place that is not just used a few months out of the year.
- 12. Long term/ short term- The amount of medical care and their length of stay at the health care facility.
- 13. Healing- Elements of healing in an urban setting.
- 14. Water- Utilize water in a way to encourage interaction and healing.

OPPORTUNITIES AND CHALLENGES

With this list of 14 criteria I have chosen the site to the Mayo Clinic because it offers the challenges of an urban setting with the opportunity to bring elements of healing to help speed recoveries. Water and greenery are studied in books such as Healing by Design. By adding these elements such as greenery and water designers can influence people's psychology. This is important for the Mayo Clinic to influence psychology while they are at the clinic. The challenge is that Rochester's downtown density has created these buildings with limited green space that patients can access and have views to. The vantage point of a tall building where a patient may be viewing out of gives the unique opportunity for designers to create a view from such a perspective. An additional challenge will also be addressing the seasonal use of Minnesota's winters. People tend to avoid going outside in much of the downtown due to access via skywalks and sublevel walkways(http://www.minnpost.com/politics-policy/2007/11/urban-designers-minneapolis-should-du mp-skyways.) Planting design and utilizing plants with winter color can be quite beautiful and attract people from the confines of the medical buildings.

Biophilic Design

Water- Biophilic Design dedicates a chapter to water and how it relates to biophilic design. Biophilia is defined as," an innate and genetically determined affinity of human beings with the natural world."

LITERATURE REV

(http://www.oxforddictionaries.com/us/definition/english/biophilia) Martin Mador, the author of this chapter, is a researcher on biophilic design at Yale University and takes part in several environmental organizations. Mador looks at water beyond its physical properties and realizes it is what connects all life on earth. Water incorporated in the physical environment up to this point has mostly been used as superficial entertainment. Things such as fountains or water parks are too common where people take little appreciation for its value in a larger system. "Water offers a host of opportunities for enhancement of the built environment. It is critically important that biophilic design recognizes three opportunities for design: the urban and natural surroundings, the structures, and the connection between the two." (Kellert, Heerwagen & Mador, 2008) Expressing water in design is a potential element that could be used to connect spaces in an indoor/outdoor transition space. Expressing the characteristics of water can be used in many ways: Surface, sunlight, fauna, flora, moving water, and interaction with natural materials.

Judging a Book by Its Cover: Medical Building Facades and Judgments of Care

Sense of Entry, Medical, High Tech/ Historical

This book is analyzes a study investigating whether the exterior appearance of a medical building can influence expectations of quality of care and comfort. The book's key concepts:

- consists of pictures with positive and negative comments,
- examined the studies parameters and rated the quality of care based purely on appearance
- research method used for study
 - demographics
 - geography
 - gender
- Analysis of results
- Conclusion

Ann Devlin, author of Judging a Book by Its Cover: Medical Building Facades and Judgments of Care, is a Professor of Psychology at Connecticut College. The psychology of an entry space directly affects peoples judgments based on Devlin's research. Applying the same principles to an entrance as the building itself would complement the architecture and re-enforce the psychological judgments of the client/user. "People may prefer medical facility facades that include both high-tech architectural features and the familiar comfort and scale of residential buildings." (Devlin 2008) Taking a "high tech" approach to a design in the field of landscape architecture is a unique route to explore with the Mayo Clinic. The Mayo Clinic does take pride in its history (mayoclinic.com) and several historical elements are critical to preserve in this transition to a "high tech" environment.

CASE STUDIES Case Study I

Project Name: Namba Parks Designer: Jerde Partnership Location: Osaka, Japan Size: 8.3 acres Year: 2006





Project Type

- Multilevel
- Visual Greenery
- Urban
- Multi-Use
- Views
- Indoor/Outdoor
- Sense of Entry

This plan illustrates a view from the adjacent residential tower. A view such as this exposing greenery could be a valuable selling point for investors trying to sell or rent space in this 30 story tower. From a medical stand point this may also serve as a functional healing space and not just an aesthetic view.

The Namba Parks is a transit oriented design in the heart of Osaka, Japan. The park was originally a baseball stadium known as Osaka Stadium. The city closed down the stadium which created the opportunity for a new mixed use commercial and residential space. The Namba Train Station is directly next to this site and offered a exclusive opportunity to create a space that served as a gateway to Osaka. The Kansai airport which is one of the city's major airports is one stop away on the train, so the stadium would be one of the first things you see as you enter the city. Jerde Partnership, the firm that designed Namba Parks, viewed the site as a place to change the cities identity.

Osaka has very dense population and harsh urban conditions. This park is considered by Jerde to be an "Urban Oasis" and offers highly visible greenery component to the city. This greenery along with rocks, cliffs, and waterfalls is meant to create an inviting atmosphere for the residents and visitors. Beneath this natural looking green space is a meandering canyon design that carves a path for people to explore an indoor/outdoor mall with places for dining, shopping, or just relaxing.

The multilevel design is influenced by population densities in some of these major cities especially in China and Japan. Japan's population density according to World Bank reports 349 (people per square kilometer) and to put this into perspective the United States density is at 33.82.

(http://www.tradingeconomics.com/united-states/population-density-people-per-sq-km-wb-data.html.) This means that Japan is forced to design vertically. "Density obliterates figure-ground in the city, and in turn re-defines public-private spatial relationships." (Solomon, 2013) Although Rochester, MN population does not compare to Osaka's 2.7 million people its density is at 315.88 (people per kilometer)(

http://www.city-data.com/city/Rochester-Minnesota.html) which comes fairly close to Osaka's 349. The multilevel design in the Namba Park is also justified by taking into account the several layers of accessibility to the site. These layers include connection to existing architecture, subway systems, ground level access, and connection via skyway. The Mayo Clinic's medical facilities downtown have connections similar to these with underground tunnels, skyways, and ground level access such as sidewalks. Understanding the site circulation in three dimensions and having circulation at all levels would provide optimal accessibility.

This design begins to mesh the fields of Landscape Architecture and Architecture. The landscape responds to the architecture in form creating an indoor/outdoor transition space. Reuben M. Rainey, a Professor of Landscape Architecture at University of Virginia School of Architecture, specializes in designing health care centers and studying the relationship of these two professions. "The history of architecture and landscape architecture reveals three basic modes of relationship: contrast, merger, and reciprocity" (Rainey 4). He states "The contrasts, tensions, and ambiguities brought about by combining these various modes not only enhance the appearance of a work but also allow it to embody a rich complexity of meaning." (Rainey 4) The contrast is the single mode that defines the space in Osaka which is being green space in the heart of a dense city. Also the contrasting forms of geometric shaped buildings and the smooth flowing curves of the park. Reciprocity is also integrated into the Namba Parks. The primary focus is being indoor/outdoor spaces. These are the key transition spaces that can promote activity or interaction with the landscape. Designing an entry space for the Mayo Clinic utilizing these same modes of relationships can be implemented to give the clinic its positive identity it strives for.

CASE STUDIES Case Study II

Project Name: Mercy Medical Center Designer: Mahan Rykiel Associates Inc. Location: Baltimore, Maryland

Project Type

- Multilevel
- Visual Greenery
- Urban
- Medical
- Views
- ADA Accessability
- Historical
- Healing



The Mercy Medical Center is located in the heart of downtown Baltimore. The original hospital on site was the Baltimore City Hospital which was built in 1874. In 2000 the hospital was facing problems of an outdated medical facility. The aging infrastructure was an important historical feature that was to be preserved. The Landscape architectural firm Mahan Rykiel Associates (MRA) made it their mission to expand upon the historic hospital. MRA created a master plan for the Mercy campus, street level landscape, and green infrastructure. The expansion was an 18-story hospital known as the Mary Catherine Bunting Center. The three tiered roof top garden and streetscape were all parts of the design that MRA worked closely with the hospital employees and patients to design. They create a direct visual connection to the pre-existing Preston Gardens across the street. The roof top gardens are open for patients and visitors to explore with access from the 8th and 9th floor. "All three gardens were carefully designed to provide visual interest not only at the ground level, but also from above, as they are visible from every floor of the hospital." (Kimball, 2013)

The image to left shows this direct link between the roof top gardens and the Preston Gardens at street level.

The design of the rooftop gardens is a site specific design that had many of the challenges of maintaining views and integrating green space in a dense urban setting. With human health care at the core of the design strategy a place for healing was a primary design goal. In the article, View through a window may influence recovery from surgery. Roger Ulrich investigates healing in urban environments. "Roger Ulrich, PhD, is perhaps the most cited and influential evidence-based healthcare design researcher in the world. His studies have been lauded for their scientific rigor, and his findings continue to be readily implemented by healthcare managers, clinicians, design practitioners, and policy makers in the United States and abroad." (Marberry, 2010). Many of his findings relate back to stress levels and how living or being in an urban environment can create stress. "Investigations of aesthetic and affective responses to outdoor visual environments have shown a strong tendency for American and European groups to prefer natural scenes more than urban views that lack natural elements. Views of vegetation, and especially water, appear to sustain interest and attention more effectively than urban views of equivalent information rate." (Ulrich, 1984)

"How does the built environment affect the natural environment?" (Kellert, Heerwagen & Mador, 2008) Questions such as these study these relationships between the built and natural environment. The Mercy Medical Center incorporates elements used in Biophilic Design to lower stress levels. Researchers measure blood pressure as way to gauge stress levels. The researcher's question was "Why might natural environments better serve physiological, emotional, and attentional restoration than urban surroundings?" (Wolf , 2012) Participants in the natural environment had a decrease in blood pressure, and increased levels of 'happiness'. Although this study was conducted in a natural environment and not an urban setting it proves a valuable point. Elements of nature through materials or form can affect the way people feel.

CHAPTER 2

iaza

Dead

i

RESEARCH APPROACH

The Mayo Clinic's downtown campus lacks a dominate place of entry. Several factors such as circulation, population densities, building usage, and views influence this choice. Identifying the optimal location for this entry will guide the rest of research based on its context. An optimal location would be one that matches up with the most predetermined criteria. Once a location is selected the next objective would be to conduct an inventory and analysis on the site and its immediate context. The Mayo Clinic's downtown campus system must be analyzed as a holistic system and not just the site I choose because people are constantly circulating between different buildings. This will affect the dynamics of the site and must be considered throughout the design process.

MEASURES

The methodology portion of this project will involve collecting both qualitative and quantitative data. As the inventory begins more data will be studied based on what can be retrieved.

Quantitative Data

- Building function
- Population
- Head counts on people entering/ exiting
- Sound Levels
- Long/short term stay
- Circulation
- Accessibility
- Existing green spaces

Qualitative Data

- Views
- Architectural form
- Building Appearance/ materials
- Walkability

Data Collection

The quantitative and qualitative data will be collected from three primary resources: personal site visit, Mayo Clinic public relations department, and online resources. The quantitative data such as head counts, building function, accessibility, and their short/term long term stay will be gathered from the Mayo Clinic's website and contacting their public relations department. Other information such as existing green spaces, circulation, and populations will be will be accounted for from online resources. These online resources are credible websites such as state/county GIS surveys, city webpages, and the Mayo Clinic website. The qualitative data is taken from the inventory of the site on a site visit in early November 2013. Architectural forms and materials used will be noted. Photographing the possible sites and the context will allow for further analysis for things such as view sheds. Walkability will be assessed from a scale used on http://www.walkscore.com/cities-and-neighbor hoods. This website ranks walkability of cities across the world and calculates a score based on certain criteria which are covered later in this thesis.

Data Analysis

The analysis of this information will help to determine an appropriate site based on the criteria. By mapping functions such as building usages in ArcMap, which is a GIS mapping program, one can overlay information to narrow down site options. For information that is unavailable as GIS compatible files resources such as Google Earth provide data on physical elements. This data may be analyzed by a couple techniques. First hand graphics can portray information such as circulation routes quite effectively. Next computer software such as Adobe Illustrator or AutoCAD (Computer Aided Drafting) can be utilized to convert the data to shape files (.shp). Once the data is a shape file it is compatible with ArcMap and one can display their findings digitally.

SITE INTRODUCTION

Minnesota



Image courtesy: www.olmstedcounty.com

Rochester



Downtown Region



Saint Mary's Campus

Downtown Campus

Saint Mary's Campus



Downtown Campus



With the criteria taken into account there are three potential sites. The first two proposed sites are in the heart of downtown Rochester as shown above. The third site is west of the immediate downtown area ½ mile. These sites are all related in the respect that they are all part of the Mayo Clinic's campus.

Site proposals one and two are both possible entrances to what is the existing Ghonda building. This modern building is the tallest and largest building in the Rochester area. This site is appropriate for this research because it is seen from miles away and offers views for patients or employees to green spaces that other buildings cannot offer. The Ghonda building meets several criteria with large numbers of patients, visitors, and employees circulating through this site every day. The building connections through skywalks, underground tunnel system, and street access make this site very accessible. The challenges of this site would be for vehicle traffic to see this entry way design. The third proposed site is Saint Mary's hospital which offers very different opportunities. This large and complex facility is unlike the first two sites because it does have existing green space surrounding the structure on east side (St. Mary's Park). It does not offer the same accessibility that the downtown offers, however it does allow for a more prominent entry right along a primary corridor which connects the downtown to Saint Mary's campus (2nd Street N). More vehicle traffic would certainly be exposed to a design along 2nd Street North. A different dynamic in this site in comparison to the first two would be this site's employees and patients which would be staying at this hospital for much longer periods of time.

Site Proposals

Image Courtesy: Google Earth



USER CLIENT DESCRIPTION

Choosing a site in the context of the Mayo Clinic gives a designer unique opportunities and constraints. The Mayo Clinic's 34,223 employees in Rochester, MN and 1.5 million visitors each year seek medical attention at the clinic. ("Mayo clinic," 2013) These statistics are important to comprehend because the clinic sees a wide variety of people that must be considered in a design. Such as special needs of certain patients will be a challenge in the future, but accounting for these special needs is something in the field of landscape architecture that people often forget about. People with allergens or patients that are immobile and constrained to a wheel chair will become a challenge for designing a space they can experience. The scale of users in Rochester's urban context is also one that may be deceiving. Rochester's population in 2012 according to the United States Census was 108,992. This means approximately 1/3 of Rochester's population is Mayo Clinic employees. These 34,223 employees do not take into account patients or visitors using the Mayo Clinic in the downtown. This statistic of how many people are in the downtown at one specific time is tough to estimate but is a statistic to retrieve during the inventory. These large numbers of users make a multilevel space viable and can serve multiple functions from an entry, to a green space viewable from a patient's window.

CHAPTER 3

SITE INVENTORY Results Programming

Image taken by: Michael
Mayo Clinic History

SITE INVENTORY History

The Mayo Clinic started with the doctor, Dr. William Worrall Mayo. Dr. Mayo was considered a pioneer in the field of medicine and decided to settle in Rochester, Minnesota in the year 1863. He was appointed by Abraham Lincoln to examine new recruits for the Union Army. ("Mayo clinic," 2013). In 1883 a devastating tornado strikes the Rochester area and kills 37 people while also injuring an additional 200 people. ("Rochester tornado," 2000) With so many people injured, Dr. Mayo asked the Franciscan sisters to serve as nurses. The Franciscan sisters contributed to this quality medical care and opened St. Mary's Hospital with 27 beds in 1889.

"Dr. William Mayo's dedication to medicine became a family tradition when his sons, Drs. William James Mayo and Charles Horace Mayo, joined his practice in 1883 and 1888, respectively." ("Mayo clinic," 2013) The Mayo brothers (William and Charles) shared the standard of innovation as pioneers in the field of medicine. As demand for medical services increased in the region, the 'brothers' were forced to ask for help from other doctors and science researchers. This became the world's first private integrated group practice. ("Mayo clinic," 2013) In 1901 Dr. Henry Plummer, a prominent internist, joined the Mayo practice. "Hard as it is to believe today, a single concept developed by Dr. Henry Plummer at the beginning of the 20th century changed the face of medicine. The concept was a centralized medical record, stored in a single repository, and capable of traveling with the patient. It meant that doctors had all the facts they needed about each patient to provide the best possible care." ("Mayo clinic," 2013)

The success of this private group practice was evident and this teamwork approach to medicine began to gain acceptance. Patients noticed the caring attitude this system practiced and discovered the advantages of a "pooling resource." A reputation for excellence in individual patient care and technologically advanced medicine attracted people from all around the world for diagnosis and treatment.

Recent History

| 1939 | | The Mayo brothers die within months of each other. |
|------|--|---|
| 1955 | | Mayo Clinic surgeons complete first series of operations with heart-lung bypass machine. |
| 1972 | | Mayo Medical School opens. |
| 1986 | | Mayo Clinic Rochester, Saint Mary's Hospital, Rochester Methodist Hospital integrate. |
| 1987 | | Patient registration number = 4,000,000. |
| 1992 | | Mayo begins to form regional network of clinics known as Mayo Clinic Health System. |
| 2001 | | The 20- story Gonda Building opens to patients. |
| 2002 | | Becomes first federally approved multi-center comprehensive cancer center. |
| 2003 | | Mayo clinic and University of Minnesota enter collaboration called Minnesota Partnership for Biotechnology and Medical Genomics. |
| 2012 | | Largest Concrete pour in Rochester's history occurs for Mayo's proton center at the Richard O. Jacobson Building. |
| 2013 | | Mayo Clinic leaders convince the Minnesota Legislature to approve public funding to support Destination Medical Center plans. Combined, Mayo Clinic, private, city, county and state dollars are expected to total \$6 billion of investment over the next 20 years in Rochester. |

5-17 years

18-64 years

■ 65 and over

Rochester's Demographics

SITE INVENTOR

Rochester MN is the largest city outside the St.Paul/Minneapolis metropolitian area in Minnesota. Rochester's metropolitan area has a population of 209,607 as of 2012. The city of Rochester itself has a population of 106,769. ("Rochester, minnesota population," 2013)

The gender graph to the right illustrates how there are slightly more females than males in Rochester. The population by age graph shows how a majority of the population are of working class ages. 18-64 years old is 62.4% of the population. The median age in the city is 35 years. ("Rochester, minnesota population," 2013)

Population by age and race shows that white people make up 87.5% of the population. ("Rochester, minnesota population," 2013)This is a large percentage of the population however as I investigate the Mayo Clinics user demographics I may find different results.



Gender

Population by Age and Race



Graphic Produced By: http://censusviewer.com/city/MN/Rochester

The household income distribution follows a skewed bell curve with more than half of the population households making less than 60k per year. The median household income was \$57,957 in Rochester which is slightly higher than the national average of \$51,017. (Hargreaves, 2013)



Househould Income Distribution

The map's to the right are 'median household incomes' and 'cost of living' maps. The 'median household income' map shows that people generally living on the outer edge of the city make a significant more amount of money than people living near the downtown region. My site is located in the heart of the downtown region and is in the range of \$20,000 -30,000. ("Rochester, mn," 2013) Relative to the rest of the city these are the lowest incomes.

The cost of living in Rochester shows an opposite correlation with some of the most expensive costs of living being in the downtown region which are between 94 - 96. ("Rochester, mn," 2013) This cost-of-living index is a theoretical price index that measures relative cost of living. Surrounding the immediate downtown is a quick transition to lower costs of living.

Median Household Income



Cost of Living



Work in Health Care



This map illustrates the percentage of people working in the health care industry. The downtown region consists primarily of people working in the health care industry (40-70%).

SITE INVENTORY

"Every year, more than a million people from all 50 states and nearly 150 countries come to Mayo Clinic for care." ("Mayo clinic," 2013)



Graphic created by: Michael blank

Patient Care

"Mayo's unique style of care brings teams of experts together to provide high-quality, compassionate care to each patient." ("Mayo clinic," 2013)

Total Clinic Patients = 1,165,000Hospital admissions = 131,000

Hospital days of patient care = 626,000

Research Personnel









Downtown Rochester has a unique urban form bordering the Zumbro River. Over time Rochester's downtown has evolved with the Mayo Clinic being the core of the downtown. Building's such as the Ghonda building or the Plummer building have characterized the downtown as being dense and tall buildings.

The 'Building Usages' map to the left distinguishes between the different uses in the downtown area. The density follows a similar pattern as shown below. My site is located at the heart of this density. The Gonda, Mayo, and Plummer buildings are the tallest buildings with the most opportunity for site lines to view green spaces.

The density of downtown Rochester can be assessed by studying the building heights. As the size of the buildings decrease so does the density. The downtown transitions as shown:





Downtown Rochester's architecture has an interesting dynamic of having a 'high tech' feel while also embracing its past with historic buildings. With history being such an important element for the Mayo Clinic it is necessary to study the facades of the surrounding architecture. Building taken from ("Mayo clinic," 2013).



Plummer Building- Built in 1926 was tallest building in Minnesota when built. Claimed as a National Historic Landmark in 1969.

Siebens Building- Completed in 1989 it is a 220 ft. postmodern building which was constructed where the original Mayo Clinic building was built in 1914.

SITE INVENTORY Architecture



Gonda Building and Mayo Building

Opened in 2001 the Gonda Building is the centerpeice for the Mayo building program. "The 20-story building is linked with the Mayo Building and the Charlton Building of Rochester Methodist Hospital, forming the largest interconnected medical facility of its kind in the world, more than 3.5 million square feet." ("Mayo clinic," 2013) The architects of Ellerbe Becket designed this building to accommodate evolving technologies and included details in the architecture such as free flowing curves to provide a beautiful and healing environment.







According to the city of Rochester website 71% of commuters travel to downtown Rochester by single-occupant vehicles. Rochester's Downtown Masterplan is a group, which will be discussed later in this inventory, that plans to enhance the downtown's transportation. The goal is to focus on moving more people by carpooling, on foot, on transit, and by bicycle. This group plans to reduce this percentage of people who travel alone to the downtown to less than 50% by 2030("Rochester downtown master," 2010).

Because Rochester has such high employment and visitor numbers downtown this creates a large demand for parking. The result of this has been large and complex parking structures for both public and private access. The Mayo Clinic owns nine parking ramps along with 28 surface lots. These parking structures have the potential to blend into a downtown setting without having uninteresting views such a surface parking lot.

"Accommodating access needs for the Master Plan development scenario at the current mode split would require the equivalent of 7 to 8 full downtown block of structured parking. Clearly more people will need to access downtown on transit, foot, bike and high occupancy vehicles in the future." ("Rochester downtown master," 2010)





The city of Rochester puts a lot of effort into having multiuse path systems that allow bicyclists to reach the edge of the downtown and also travel along the zumbro river. Rochester won the "Bicycle Friendly Community" award form the American League of Bicyclists. "The city is one of only 21 communities nationwide to be honored by the organization and among just five west of the Mississippi River." ("Rochester named bike," 2006)The City of Rochester calls these biker friendly streets 'bike streets'. These bike streets serve as key corridors for both bicyclists and pedestrians. These streets create these environments by slowing automobile traffic and creating buffers from the vehicles.

The Ghonda building boarders one of these key corridors on Center Street. Also to the south of the Ghonda is 2nd Avenue, which is a less busy street but offers the advantage of views to my site.



Image Courtesy: ("Rochester named bike," 2006)



There are several different street classifications in the downtown. The primary traffic roads are Civic Center Drive and Broadway. These arterial streets handle large volumes of traffic and move traffic efficiently. The secondary streets, such as 2nd Street, funnels traffic from Highway 52. Highway 52 connects directly from the Twin Cities to Interstate 90 and is the most significant road in Rochester. 2nd Street's connection to Highway 52 is most likely the route most visitors would approach the Mayo Clinic. These secondary streets are what bring vehicle traffic directly to the immediate downtown. My site is 1 block north of 2nd Street and 1 block east of 4th Avenue which are both considered secondary streets.

1st Avenue, which is considered a main street, provides the most access to retail shops and street parking. According to Rochester Downtown Masterplan this street provides the highest quality pedestrian environment.





The subway and skyway network downtown offers a unique climate controlled environment for people to circulate. These two additional levels of circulation are very important to the Mayo Clinic and the surrounding businesses. An important effect to study from having people circulate through tunnels and skyways is how this affects the environment at street level. Street level is where diners and retail shops attract people and encourage activity otherwise the downtown may feel less active. A less active downtown appearence could affect the safety and vibrance of the setting.

The Gonda building is above the heart of the subway network. The amount of people who travel through these is a statistic I am looking into retrieving. The primary users for the subway system are Mayo Clinic employees and patients. The skyways see similar users and often employees or patients travel east of the Ghonda for dining and shoping. Peak hours of use would also be a statistic that should be investigated.





Rochester has many parks surrounding the downtown region. The largest and most well known parks are Soldier's Field to the south of the downtown and Silver Lake Park to the north. These parks draw large numbers of people each year. Parks such as Kutzky Park and Mayo Park are not as large in size but are in close proximity to the Mayo Clinic. Kutzky Park is located along Cascade Creek and runs through residential neighborhoods. Saint Mary's Park is adjacent to St. Mary's Hospital located west of the park. St. Mary's Park is surrounded by historic parts of Rochester with houses that date back to the late 1800's.

The immediate downtown does have small green spaces with the largest being Central Park. These greens spaces are both public and private spaces. The Rochester Downtown Masterplan has a plan to connect these green spaces through a green street as shown below.





Peace Plaza

The Peace Plaza was recently (2007) redesigned by landscape architects at Yaggy Colby and Associates. ("Peace plaza and," 2005) The design linked the two plaza's on 1st Street. These two plaza were previously seperated by 1st Avenue and this space didn't generate much public activity. "The goal was to create a cohesive gathering place for residents and employees of the downtown area, as well as the many patients and visitors of the Mayo Clinic." ("Peace plaza and," 2005)

The image to the right is taken from the Gonda building overlooking the Peace Plaza.

The image below is taken from the far east end of the plaza facing the Gonda building. This space is often used for public venues, weddings, parties, and performances. Surrounding the plaza is a variety of retail shops and diners at street level.





Annenberg Plaza

Annenberg Plaza is on the southeast corner of the Mayo building and just south of Peace Plaza. The Mayo Clinic uses these plaza spaces to provide some green space to relax. The Mayo Clinic also takes the opportunity to display historical elements throughout Annenberg and Statuary Plazas. The Mathews Heritage Dome honors the Mathew's family as loyal patients and benefactors. The dome provides dramatic views of the surrounding architecture from the cafeteria directly below the dome. The statues scattered in various areas offer an educational and historical element to the landscape. The Mayo brothers in the lower right image and Mother M. Alfred Moes in the lower left give people the sense of a historical plaza.





Statuary Park



SITE INVENTORY Group Involvement

Rochester Downtown Master Plan (RDMP)

The Rochester Downtown Master Plan (RDMP) is a collaborative effort by several groups such as:

- City of Rochester
- Mayo Clinic
- University of Minnesota Rochester
- Rochester Downtown Alliance
- Rochester Area Foundation

RDMP is considered to be a partnership which was created out of a realization that Rochester's future as a community was tied to the health and well being of the downtown. To the right is a vision of the what the downtown can become. The plan provides a framework for integrating future development in a way that allows the city to reach its full potential. Image Courtesy: Rochester Downtown Master Plan



University of Minnesota Rochester (UMR)

UMR is a campus of the University of Minnesota System. "The campus community serves approximately 750 undergraduate and graduate students in the heart of downtown Rochester. By continuing to meet the needs of the southern Minnesota region through its programmatic offerings, UMR proudly leads the way to a brighter future for our community, our state, and our world." ("About umr," 2013) UMR focuses on degrees related to the medical profession. This campus is located one block south of the Peace Plaza. This location offers several advantages due to the close proximity of the Mayo Clinic.

Rochester Downtown Alliance (RDA)

The mission of the RDA is: "To be an unique, vibrant, urban experience – a central gathering place – for the community that is attractive, inviting, fun and livable." ("Rochester downtown alliance," 2013) "They are a nonprofit corporation that consists of property owners, business, leaders, the city, and others with a direct stake in enhanced business and economic development condition in the downtown special service district." RDA was formed in 2005 as a public/private partnership.

Rochester Area Foundation (RAF)

The mission of RAF is "to strengthen community philanthropy by promoting responsible and informed giving and to assist donors in meeting their charitable objectives." ("Rochester area foundation," 2013) They use their resources to improve quality of life and assist those in need. They make grants in the fields of arts and culture while also promoting community development, education, and recreation.

Destination Medical Center (DMC)

DMC a partnership between state, local jurisdictions, Mayo Clinic, and community organizations. "Ten years from now, there will emerge just a few medical centers with the reputation for health care excellence and patient-focused outcomes that will attract patients from all over the world," says John H. Noseworthy, M.D., president and CEO of Mayo Clinic. "Mayo Clinic intends to be one of them. ("Mayo clinic," 2013)

Objectives:

- 1. Secure Mayo Clinic, Rochester and Minnesota's status as a global destination for health care
- 2. Leverage Mayo Clinic's economic impact to increase jobs, tax base, and business and economic growth throughout the state of Minnesota
- 3. Create the optimal experience for patients, visitors and community residents

Project for Public Spaces (PPS)

PPS was founded in 1975 as a nonprofit planning, design and educational organization dedicated to "helping people create and sustain public spaces that build stronger communities. Our pioneering Placemaking approach helps citizens transform their public spaces into vital places that highlight local assets, spur rejuvenation and serve common needs." ("Peace plaza and," 2005) Their involvement in Rochester was the redesign for the Peace Plaza. They collaborated with Rochester Downtown Alliance to develop stategies for bringing more activity to the plaza. They also developed a seasonal strategy to ensure the plaza remained a year round destination.

SITE INVENTORY Climate

Rochester's Average Temperatures



Data gathered from http://www.climate-zone.com/climate/united-states/minnesota/rochester/ Graphic created by: Michael Blank

Precipitation



Data gathered from http://www.climate-zone.com/climate/united-states/minnesota/rochester/ Graphic created by: Michael Blank Rochester's climate is classified as a humid continental climate. ("Rochester climate," 2013) This means that the region experiences large seasonal temperature constrasts with hot summers and cold winters. "the changeable nature of weather in all seasons is a characteristic feature of the climate."("humid continental climate," 2010) In the summer Rochester's temperatures are mild and tend to be in the 70's to 80's. July is the warmest month of the year while January is the coldest at 23 degrees. Spring and fall in the upper midwest of the United States are considered to be transitional months often seeing unpredictable temperature swings. A majority of these colder temperatures are brought by chilly northwest winds. These prevailing northwest winds can drop temperatures well below zero and create harsh wind chills that make it dangerous to be outside. Temperature variations between night and day can be as much as 20 degrees Fahrenheit in the summer and winter. The overall average temperature is approximately 48 degrees as shown on the 'average temperatures graph'.

Precipitation reaches an average of 39.1 inches ("Rochester international airport," 2013). Rainfall is evenly distributed throughout the year as shown in the 'Precipitation' graph. Snowfall averages in Rochester tend to be approximitely 48.8 inches per year. The majority of snow accumulation is seen between November and March.

Wind

During the winter months northwest winds bring artic air to the region create less than comfortable conditions. This map below shows wind speeds in the downtown. Wind tunnels are created causing certain areas to be windier than others. My site sees a multitude of wind speeds that may have a whirl wind effect.



Image courtesy: Rochester Downtown Master Plan







Daily Study

The series of images to the left are shadows of downtown Rochester on the date of June 1st. My site sees the strongest sun between the morning and noon hours. As the day progresses my site becomes completely covered by shadow by the 4:00 PM hour. All graphics were produced by Michael Blank by using Sketch Up to produce shadows.



January noon

Year Round Study

January's shadows extend the furthest and provide low lighting conditions for a majority of the downtown.



April noon

As spring approaches days get longer with more intense lighting. My site becomes more exposed to sunlight for longer periods of time.



July noon

Summers sun provides the longest amount of daylight and my site is almost completely exposed to sunlight between 8 AM till 4 PM.



October noon

In the fall lighting conditions begin to get lower and the days become shorter. My site sees very little daylight in the morning hours.
SITE INVENTORY Plants/ Materials On Site





A)

This view shows the terraced planters that consist of a variety of plants. These beautiful plantings also offer a place for employees and patients to relax in the seating area.



Image Taken by: Michael Blank

B)

This view is showing the turf grass lawn that is approximately 1/5 acre. In the southwest corner of space is the Mathews Dome. The existing sidewalk leads up to the dome and overlooks the terraced planters.





Image Taken by: Michael Blank

D)

This view shows the entry of the Ghonda Building. This entry is what thousands of people enter/exit each day. (need specific statistic.)

Image Taken by: Michael Blank



C)

This view is from the 5th floor of the Ghonda building overlooking my site and Annenberg Plaza.

Image Taken by: Michael Blank



Results from Research Questions

How can a sense of entry create a positive identity for the Mayo Clinic?

SITE INVENTORY Findings from Research

The Mayo Clinic's plan to secure its status as a global medical destination would give the clinic an opportunity to explore new ideas for entry spaces. Destination Medical Center (DMC) third objective is to "create the optimal experience for patients, visitors, and community residents. ("Mayo clinic," 2013) To make a place a destination on a global scale a successful identity must be created. The Mayo Clinic has the reputation for health care excellence. This has been the identity of the Mayo Clinic in the past but as health care continues to improve around the world this increases competition on a global scale. According to (Baier, 2013) the Mayo Clinic proposed a 20-year, \$5 billion investment plan to remake its campus in downtown Rochester. With change in the near future for the Mayo Clinic a new identity that embraces these changes should be considered. As discussed in Judging a Book by Its Cover: Medical Building Facades and Judgments of Care people judge the quality of care based on the entrance of a medical facility. The architecture of the Ghonda building has features that have made this building an iconic place. The architects at Ellerbe Becket have used beautiful curves and began to give the building a more natural feel. The entry space for the Ghonda building has become this icon for the clinic. By complimenting these curving forms in the architecture with a bold landscape a new iconic space can be created.

As the space I am considering designing has the potential to create a new iconic entry, this space also has the potential to improve the identity of the Mayo Clinic. This relationship of an iconic entry and the identity of the Mayo Clinic can all be implemented into the plan created by the Rochester Downtown Master Plan (RDMP). The plan of the RDMP incorporates a major green corridor in close proximity to my site. By connecting this entry space to the 'green corridor' it could contribute to this new identity the Mayo Clinic is searching for.



Image Courtesy: Rochester Downtown Master Plan

How can an urban setting be a place of healing?

Roger Ulrich has done numerous studies showing how views to green spaces can improve time of healing. Rochester's downtown has green space around it but lacks green space in the core of the downtown, where a majority of the Mayo Clinic exists. As the Mayo Clinic has built large tower buildings it also revealed the opportunity to use this verticality as an advantage. By bringing people up to elevated levels it allows for better and more view sheds. By designing green spaces directly around these buildings or even on lower roof tops we can create places for healing from more vantage points than if we were limited to one vantage point or ground level. The RDMP does not directly reference this relationship between healing and the urban environment. They have proposed this 'green corridor' for several reasons but by creating this it would give the Mayo Clinic the opportunity to study further into how additional greenery can affect healing rates.

How do skyway/subway networks affect the street level activity?

Downtown Rochester depends heavily on the skyway and subway network. They offer two additional levels of circulation and create comfortable conditions for users to travel through. These connections to different buildings on the campus are very important for the Mayo Clinic. Cities such as Minneapolis have extensive networks of skyways. The reason for these are the below average winter temperatures. The massive numbers of people that use these skyways have negatively affected the downtown. (Berg, 2007) Street level activity dramatically decreased and has impacted retail shops and the overall feel of the downtown. The mayor of City of Minneapolis R.T. Rybak said "They (skywalks) are both the best and worst things that ever happened to Minneapolis," Rochester's network of tunnels and skywalks is not at the scale of Minneapolis's but they do see similar issues of street level activity. The importance of these skywalks and tunnels must not be ignored. It will be a challenge to incorporate these different levels of circulation to bring people back to the street level. But as comes with many challenges often comes opportunity.

As seen in the Namba Parks connectivity at several levels can create a whole new space. By using connections at different levels a space can become much more visually interesting and engaging. The Namba Parks located in the extremely dense city of Osaka has managed to create a place that embraces verticality in landscape. Rochester has the potential to use these skywalks and tunnels as a positive opportunity.

Results from Research Methods

Researching the Mayo Clinic has put into scale how important this company is to the city of Rochester. With more than one million people visiting the Mayo Clinic each year it's economic impact on Rochester has been great. The clinic employs 61,100 ("Mayo clinic," 2013) and makes up nearly half of the buildings in the downtown region. Data collection on streets, parking lots, sidewalks, and subways/skyways has been primarily gathered from online sources. Basic information for downtown Rochester has been fairly accessible. Information regarding the Mayo Clinic and patient information has been a challenge to retrieve. I am still in progress of retrieving data on users of the Gonda and Plummer buildings. Studying the architecture of the surrounding buildings has made me realize a unique dynamic in the downtown. Referring back to Chapter 3 the Plummer building, built in 1926, is one of the oldest buildings in Rochester. Its character of being a historical element next to the fairly new (1990) Siebens building will be an interesting dynamic to capture in the downtown. As I visited the site I realized how important history is to the Mayo Clinic. Statues memorializing historical figures such as Mother M. Alfred Moes are scattered throughout the downtown campus. These historical elements send a powerful and clear message to visitors reminding them that this location has evolved from just a few pioneers in the field of medicine to what the Mayo Clinic is today.

Researching the downtown I also have realized how many groups are involved in the decision making of the downtown. Noted in the inventory, these groups are comprised of property owners, city officials, businesses, and other stake holders. This collaborative effort has compiled one plan called the Rochester Downtown Master Plan. This plan has provided much information and provided a framework to consider future development in downtown Rochester. As I progress to the design phase I must think proactively and consider future development. As the Mayo Clinic recently announced the DMC, 5 billion dollar investment initiative, it would be wise to accept that Mayo Clinic will be improving its campus over the next 20 years. "The multiyear Mayo Clinic DMC investment, combined with additional private investments required to support this global destination vision, is projected to create 35,000 to 45,000 new jobs in Rochester and Minnesota and over \$3 billion in new tax revenues in Minnesota. This represents the largest economic development initiative in Minnesota and one of the largest in the United States." ("Mayo unveils global," 2013) As the Rochester Downtown Master Plan is the most accurate plan I have access to, I should design with this future development plan.

SITE INVENTORY Applicable Values Site and Research

Innovation in Design

The medical field is an ever changing field that is constantly evolving in today's society. The identity of the Mayo Clinic must adapt to this change and be an innovative company. Innovation can also be related to landscape architecture. Landscape architecture sees trends just like any design field. Having a landscape that reflects these innovative principles that the Mayo Clinic strives for could create a new space that has the sense of innovation in design. Innovation is often associated with technology. Technology in Landscape Architecture has changed how we design and our work flow as professionals. Having a 'high tech landscape' can be a challenge to portray to the general public. Because of what happens subsurface people cannot see and make a connection to what is happening. For example, groundwater infiltration through semi-permeable pavers to prevent surface runoff is a function that many people may not realize. To make a landscape have the sense of a 'high tech' landscape. The architect of the park chose certain materials and signage to create this feeling. Material usage and lighting are key components in a landscape that I can use in my future design. The Namba Parks also uses creative form in the architecture and landscape. The creativity of these forms creates a sense of complexity in design. Complexity is also associated with thoughtfulness and technology.

Medical Campus Planning

Implementing a proposal such as the Rochester Downtown Master Plan faces many challenges. These challenges aren't just for the Mayo Clinic but also the community. The Buffalo Niagara Medical Campus (BNMC) has planned for growth and generated a similar plan for future implementation. BNMC is in a downtown setting that involves not only a medical campus but also a downtown community much like Rochester. The economics of Buffalo show similar trends as growth and expansion are inevitable. "The long-range vision for the campus is to become a world-class Community Engaged Academic Health Center (AHC), where clinical care, medical education, health sciences research, practical applications and entrepreneurship are combined into one physical setting." ("Buffalo niagara medical," 2007) The plan for this implementation has evolved over the last 10 years. Collaborative efforts have made changes to develop what is the final master plan for Buffalo. Rochester Downtown Master Plan is not quite as far along in the development as BNMC but certainly continues to change with more involvement from different groups. Rochester's advantage in this situation is that it can learn from previous works such BNMC.

Growth Management

With a major corporation such as the Mayo Clinic it has the potential to strengthen a community by creating connections to other assets around the Mayo Clinic. This symbiotic relationship between the Mayo Clinic and surrounding businesses is key to the success of the downtown. A disconnect between the two could negatively effect Rochester and this has been shown in the past. Toronto Canada has been one city that has experienced disconnect due to urban sprawl.

("Urban growth management:," 2013) Growth management practices in Canada have been limited to predefined policies that have not changed even though urban cores have evolved into more complex urban centres. "It is clearly time to re-invent and vigorously apply thoughtful and coordinated approaches to managing the growth of our communities."(Urban growth management:," 2013) A growth strategy that changes with time is optimal for a city's success. Rochester's growth implementation plan should also have the ability to change as times change.

SITE INVENTORY A Plan for Proceeding

Documenting the design process is an important part of this thesis. By documenting the process you can locate important stages and see how each part relates to the other. By looking at past thesis's I have studied which ones I considered to be the most successful. Success in a thesis is about relating your research to a design solution that makes sense. "Good design is clear thinking made visible." (Bisbort) This quote is by Edward Tufte, an experienced Yale and Princeton teacher of 'information design', simplifies what makes successful design.

As I continue to produce my thesis I am stressing the importance of making connections that are clear. This process is driving my decision making and influencing my future decisions. The research I have done up to this point has touched on many topics with the binding element being my research criteria. This criteria has been an evolving list as I explore more in depth inventory and case studies. A shift in my research occurred as I discovered the Rochester Downtown Master Plan from Paul Sims, an Architect employed by the Mayo Clinic. Talking with Paul he continued to reference the RDMP and referred to this document as the future plan for Rochester. My research now takes on a new collaborative approach where I take into account several groups of involvement.

Moving into next semester I plan to reinforce my analysis results in a clear manner. These results should relate back to my research questions and address a problem or area of concern. Displaying process work is vital in this phase. The better I document progress the clearer readers will connect to my thought process. The design phase should also be a part where my decisions are reinforced through analysis. As next semester approaches there will be changes that affect this rough schedule I have produced. As change happens I must execute an adaptive plan that allows me to finish on required deadlines.

Fall Semester 2013

| Week 1 August 25- 31 | Began to select topic of thesis. Focused on urban design with emphasis on areas in the medical field. |
|------------------------------|---|
| Week 2 September 1-6 | Selected site or approximate location of thesis, which was narrowed to downtown Rochester, MN. |
| Week 3 September 7-13 | Produced an introduction briefly describing research topic and began thinking of how I was going to aquire my research. |
| Week 4 September 14-21 | Focused my search to the Mayo Clinic in the context of Rochester. Developed a statement of intent to begin thinking of how I was going to move forward. |
| Week 5 September 22-28 | Created an abstract to give readers an essence of my research topic. |
| Week 6 September 29-Oct 5 | Started to look into case studies and acquired relevant works from several sources such as the library, professors, and online resources. |
| Week 7 October 6- 12 | Narrowed my site to a specific location by utilizing several techniques in studying where green space was needed. |
| Week 8 October 13-19 | Selected my criteria and met with my secondary advisor (Joan Vorderbruggen) for additional resources. Joan is a Professor in Architecture and proved to be very knowledgeable in the healing aspect of design. She led me in the direction of studying research in health care design, with books such as <i>Biophilic Design</i> . |

| Week 9 October 20-26 | Found a few case studies relevant to my research. Connected my case studies to my research criteria. Also used my literature reviews to strengthen my criteria selections. |
|------------------------------|--|
| Week 10 October 27- Nov 2 | Began to research for my inventory. Referencing my methodology report, I contacted the Mayo Clinic attempting to aquire statistical data from the Mayo Clinic. |
| Week 11 November 3-9 | Aquiring this information seemed to be a difficult task but, I am still currently contacting people trying to retrieve some information. |
| Week 12 November 10-16 | Proceeded to creating a template for my board layouts taking into account required margins and APA format. |
| Week 13 November 17-23 | Started producing my inventory beginning with history and demographics. I chose to do multiple demographic studies: Rochester, Mayo Clinic, and my site's specific location. |
| Week 14 November 24-30 | Created a 'figure ground' to start understanding how the Mayo Clinic connects into the downtown region. From this 'figure ground' I studied: open spaces, structures, parking lots, roads, and circulation routes. |
| Week 15 December 1-7 | Developed Chapters 4 and 5 beginning to analyze the results of my research and inventory. Studied how this project relates to the field of design and the context of the relevant criteria. |
| Week 16 December 8-14 | Chapters 3,4, and 5 are due and begin planning for next semester. |

Winter Break

| Week 17 December 15-21 | Take a break from thesis. | | | | |
|------------------------------|---|--|--|--|--|
| Week 18 December 22-28 | Do additional inventory and contact Mayo Clinic and hopefully aquire information. | | | | |
| Week 19 December 29-Jan 4 | Add necessary information to previous chapters. | | | | |
| Week 20 January 5-11 | Take analysis from chapters 4 and 5, think of ways to solve existing problems through design. | | | | |
| | Spring Semester 2014 | | | | |
| Week 21 January 12-18 | Identify key areas or access points. Use analysis results to back up my key points. | | | | |
| Week 22 January 19-25 | Explore several design concepts and consider how they would affect not just my site but the downtown as a whole. | | | | |
| Week 23 January 26- Feb 1 | Select best design concept and begin thinking about things such as ADA accessability and sea usage. These aspects are often ignored in design and designed as an after thought. | | | | |
| Week 24 February 2-8 | Develop design solution and adapt the plan to fit into future implementation plans such as the Rochester Downtown Masterplan. | | | | |
| Week 25 February 9-15 | Continue to reinforce the analysis in the design to justify my solution. | | | | |

| Week 26 February 16-22 | Start thinking about details such as materials and lighting. These details can relate back to important research works such <i>Biophilic Design</i> to create a healing environment. |
|------------------------------|---|
| Week 27 February 23-Mar 1 | Model the site in 3D using Sketchup and AutoCad to better understand the design. |
| Week 28 March 2-8 | After raw forms are developed in Sketchup add materials and plants to the model to develop a fully modeled space. Context should be considered to be modeled for site orientation. |
| Week 29 March 9-15 | Add fininshing touches to the model and context. Consider using software such Lumion to explore video creation as this could be used in a final presentation. |
| Week 30 March 16-22 | Render final graphics/ videos, and make changes in photoshop to enhance the images. |
| Week 31 March 23-29 | Design a board layout that is creative but also not confusing. Consider designing the boards in a theme that relates to the overarching theme such as medical innovation and display with a 'high tech' approach. |
| Week 32 March 30- Apr 5 | Deliverables should be assembled and the final presentation should begin to take shape. |
| Week 33 April 6-12 | Produce final presentation and make final changes. |

Spring Break

| Week 34 April 13-19 | Spring Break | | |
|---------------------------|---|--|--|
| Week 35 April 20-26 | Present thesis with proper rest and practice. | | |
| Week 36 April 27-May 3 | Support classmates with presentations. | | |
| Week 37 May 4- May10 | Graduation | | |
| Week 38 May 11- 17 | Finals Week | | |

SITE INVENTORY Design Goals

Theoretical Goals- Designing this space I want to achieve several goals that relate back to my research questions. These goals will coordinate with other groups involved with my site.

- Create strong connections between indoor and outdoor spaces.
- Incorporate connections at multiple levels including subways, skyways, street level.
- Give the space a clear sense of entry that defines the Mayo Clinic's identity as an innovative health care company.

Physical- Physical goals for my site include:

- Use materials that are referenced in Biophilic Design to create a more naturalistic environment.
- Capture views to green space from several vantage points.
- Make accessible to patients, visitors, and employees.

Social- My site has potential to be an iconic place for the Mayo Clinic and downtown Rochester. I have several social goals that could impact the community and the Mayo Clinic.

- Work with Destination Medical Center and Rochester Downtown Master Plan to create an iconic place.
- Generate more research in the medical field relating to healing faster by viewing greenery.
- Protect the historical elements that contribute to Rochester's history and culture.

CHAPTER 4 DISCUSSION

ULER

Image Courtesy: http://www.startribune.com/politics/statelocal/201166011.htm 86

Introduction

The overall goal of my research is to learn about how design can be used in the medical field to portray the identity of the Mayo Clinic. As I learned more about the Mayo Clinic I realized the importance of what the Mayo Clinic means for the city of Rochester. Doing an inventory on the downtown building usages put to scale how big the Mayo Clinic campus actually is.

DISCUSSION Opportunities and Challenges of Research

Separating these spaces by districts allows for a general analysis to find an optimal (elaborate) location for the entry space. This location meets the previously listed criteria and adds different levels of complexity to the research. Prior to this I focused my research and inventory to the immediate location of my site. Zooming out to the entire downtown region allowed for connectivity to be studied. Connections at sublevel, street level, and skyways showed how the downtown circulation works as a system. This system had been designed to accommodate the automobile and focused the downtown circulation on this mode of transportation. The downtown region is seeing a transition from focusing on the automobile to creating more pedestrian oriented environments. The Rochester Downtown Master Plan is leading this collaborative effort to create this environment over the next 20 years. With growth in the near future comes many opportunities and limitations for Rochester.



Verticality

Rochester sees a different urban environment with more existing buildings and less open space to work with. Because of the density of Rochester's downtown, space is very valuable and growth must be thoughtfully implemented. The tall buildings create the sense of verticality. Verticality in design can be a challenge to work with, in part because tall buildings can block key view sheds. My site's location is surrounded by 15-28 story structures.

These buildings create defined corridors. These corridors limit what can be seen from the street. Another limitation to being surrounded by these tall buildings is the shadow cast from them. These shadows offer limited amount of sun light exposure. This limited sun light exposure can influence planting materials selected in the design.



Urban Healing

An urban environment is not the ideal place associated with the term healing. Healing environment include elements of light, space, color, shape, texture, artwork. ("Healing environment," 2013) With t The ultimate goal of these elements is to eliminate stressors such as noise, glare, lack of privacy and poor air quality. Verticality also offers opportunity in this scenario. These buildings create barriers between the surrounding environments. These barriers create a feeling of isolation or protection from the surroundings. This sense of protection comes from being in a space that is quieter than the surroundings. Traffic in an urban core can be loud throughout the entire day and to find spaces that allow you to escape from them can be rare. A healing environment is associated with characteristics of a space that is protected ("Healing environment," 2013). Because this space is sees heavy pedestrian traffic, being a primary entrance to the Gonda building, it doesn't have this sense of privacy that helps with healing.

This presents the opportunity to include a green roof possibility. The image above highlights this green roof which is about 15 ft above ground level on the east side of the Gonda building. Being on a roof gives the user a sense of privacy that creates a healing environment.

Lighting

"Lighting design in healthcare environments is a major factor in creating healing situations." ("Healing environment," 2013) Lighting can highlight elements such as water, vegetation, and forms to bring out naturalistic parts of the landscape.

Greenery

Greenery in an urban environment is very important from the healing aspect. Roger Ulrich studies prove the importance of having views to these green spaces. The tall buildings have vantage points that can offer unique views to green spaces.

Form

The forms used in a space can strongly influence the essence of a space. Principles in Biophilic Design explore using forms such as free flowing curves to capture the essence of nature. Nature in design can be a difficult goal to accomplish. Rochester's architecture primarily involves geometric shapes with harsh edges. Joan Vorderbruggen, Professor of Architecture at North Dakota State University, performed a study asking a cancer survivor what kinds of forms create a healing environment. The cancer patient replied with free flowing curves that resemble elements in nature. Implementing these curves would be a strategy to create a healing environment.

Microclimate

A challenge of having a site in the upper Midwest is dealing with the cold winters. This cold arctic air comes out of the northwest and creates an uncomfortable environment. The tall buildings affect how wind mitigates through the downtown. My site sees a multitude of wind speeds shown in the graphic on page _. Taking this information into account I can design to create a microclimate. Microclimate is defined as "the climate of a very small or restricted area, esp. when this differs from the climate of the surrounding area." ("Microclimate,") Microclimates can be affected by elevation, surface material, buildings or vegetation. These are all elements that designers have control over. The optimal conditions would be a space that is as comfortable as possible in all seasons.



Image Courtesy: Rochester Downtown Master Plan

Subways and Skyways

Subways and skyways are considered by many cities to be challenges to deal with. Minneapolis has the reputation for being a city built by skyways. With nearly 8 miles of skyways in Minneapolis alone (Berg, 2007), it has been a defining element for the city. Jan Gehl, a Danish architect involved with designing public spaces, states "The problem is that skyways violate the first law of successful city-building: keeping people together in a critical mass." (Berg, 2007)

Dispersing people on different levels is something both Minneapolis and Rochester have demonstrated due to the harsh winter climate. "On weekdays, skyways bustle and shops flourish for a few hours a day. But at night and on weekends, people are thrown out onto barren and neglected public sidewalks." (Berg, 2007). This causes safety concerns and affects how people use urban spaces.

The challenge of having this circulation at different levels is that it takes people away from the street level. Street level activity is key for a successful urban space. Tom Fisher, dean of the university's School of Design, is taking the initiative to revive the street level activity in Minneapolis. His suggestion is to create connections to some of the best assets that a city can offer. This can be things such as a parks or waterfronts. By enhancing the street level environment and orienting it around pedestrian traffic a more walkable atmosphere can influence this change.

As tearing down the skyways and subways would not be an option because of their important role to the city of Rochester, it would be an opportunity to study places that do succeed on multiple levels. Japan and parts of China such as Hong Kong offer multiple case studies relating to circulation on multiple levels.

An article titled *Cities Without Ground* studies Hong Kong's complex circulation that involves multiple levels. Simply mapping these dense urban centers creates challenges to spatially understand the space. ("Cities without ground," 2013) Osaka, Japan is also an extremely dense city that embraces it's multilevel nature by elevating some of their parks. Namba Parks is a case study previously introduced in this thesis. This park's success is its ability to connect on all levels including street level, elevated, and sublevel.

Rochester has the opportunity to either neglect the skyways and subways or embrace them. Large volumes of people utilize these skyways and subways and are critical for the Mayo Clinic. To embrace this would mean to create connections to outdoor spaces that would attract people to return to the street level. The proposed 'green street' in the RDMP would be a prime location for the skyways and subways to connect to. My site would also serve as a hub because of its central location. The subway network runs directly below my site and to connect to this would be an opportunity to draw large numbers of people to the street level.

Image Courtesy: ("Cities without ground," 2013)



Future Growth

Future Growth for Rochester is something that must be taken into consideration. Destination Medical Center proposes to bring \$5 billion to Rochester and this makes future growth seem feasible. After discovering this RDMP I added a case study to learn how other medical campus's have accommodated for growth in a dense urban setting. The Buffalo Niagara Medical Campus had the opportunity to add additional buildings and the ability to work from more open spaces. The plan proposes to increase density by adding high rise structures.

GSF



Image Courtesy: ("Buffalo niagara medical," 2007)

| FAR | lot coverage 40% | 50% | 75% | 90% | |
|------------|---------------------|-------------------|--------------------|-------------------|--------|
| loors 3 | 180,000 sf | 225,000 sf | 337,500 sf 2.25 | 405,000 sf 2.7 | |
| 4 | 240,000 sf | 300,000 sf 2.0 | 450,000 sf 3.0 | 540,000 sf 3.6 | key |
| 5 | 300,000 sf 2.0 | 375,000 sf 2.5 | 562,500 sf 3.75 | 675,000 sf 4.5 | FAR |
| 6 | 360,000 sf 2.4 | 450,000 sf 3.0 | 675,000 sf 4.5 | 810,000 sf 5,4 | cer |
| 7 | 420,000 sf 2.8 | 525,000 sf 3.5 | 787,500 sf 5.25 | 945,000 sf 6.3 | 1 acre |
| 0 | 480.000 sf | 600.000 st | 900.000 st | 1 080 000 st | |



mid-range density floor area ratio (not including structured parking) gross square footage 43,560 sl

Image Courtesy: ("Buffalo niagara medical," 2007)

6.0

4.0

3.2

Image Courtesy: Rochester Downtown Master Plan

7.2

Density matrixes such as the one above allow the planners to find the optimal density for the given square footage. This approach to planning allows for the designers to maximize the potential for a site. This plan also sees several limitations such as the development on the perimeter of this site. The site borders several neighborhoods that play a role in the planning process. The collaboration of the different neighborhood groups identified certain areas of concern. "Since each of these "neighborhoods" is quite distinct, they each must build on unique strengths and confront distinct sets of issues." ("Buffalo niagara medical," 2007)

Rochester sees a similar dynamic in the downtown with neighborhoods bordering less than a half mile away. RDMP is not as developed as the BNMC plan. This lack of development can limit how accurate future implications will be. The primary feature of the plan being this 'green street' is a major corridor connecting parks such as Kutzky Park with Soldier's Memorial Field.



This future connection is an idea to build off of. The plan does lack elements such as what kinds of plants will be used or how the street scape will be designed. By using similar materials or streetscape elements spaces could be connected to create a holistic design.

The opportunity of having a future implementation plan already in place is that a design connecting to this idea of a 'green street' has the potential to evolve into a theme for the overall form of the design. For example if I choose to use free flowing curves and naturalistic materials these may become elements used throughout the entire plan to create additional connection.

Image Courtesy: Rochester Downtown Master Plan

Modern vs. Historical Culture

The history of a site often tells a story. This story of Rochester revolves mainly around how the need for medical care brought professionals together to start the Mayo Clinic. The Mayo Clinic became the heart of the community and the downtown region. As the clinic grew so did the downtown. Architecture often tells the story of how a city evolves. The Plummer building and Kahler Grand Hotel are two significant works of architecture that have survived. Both of these building are located next to my site.



These buildings have extensive history with relationships to the clinic. The Kahler opened in 1921 and was accommodated by people such as Muhammad Ali, Billy Graham, King Hussein of Jordan, Presidents Lyndon Johnson and Ronald Reagan. (Stolle, 2013) I mention these names for the reader to capture the importance of these buildings.

The unique architectural characteristics of these buildings make them unique to the downtown. The facades allow people to immediately connect to the buildings age. The contrast of modern architecture to historical architecture creates a unique relationship. A landscape should compliment its architecture, not compete with it. Capturing the essence of both of these styles in one design will be a challenge.

By identifying characteristic of each building I can assemble one cohesive material palette to make balanced selections. Form also influences ones perception on a style. The historical buildings have symmetry to them while the modern style uses asymmetrical design. In landscape the Mayo Clinic has taken a traditional approach to showing the history through the use of statues. These statues represent important historical features that have played an integral role in the development of the Mayo Clinic.

CHAPTER 5 SITE INFORMATION

1

SITE INFORMATION Opportunities and Challenges of Site

The field of Landscape Architecture has contributed to health care design and to how designers can change judgments of medical care based on the design. People create judgments of medical care based on the architecture of the building and the landscape. (Devlin 2008) As a Landscape Architect one can influence the psychology of a user by utilizing elements such as such as vegetation, form, and materials to create a desired effect. The effect I am aiming to achieve is to reflect the same principles in a landscape that define the Mayo Clinic and create the clinic's identity as an innovative leader in medical care.

Innovation is defined as something new and often associated with the term 'high tech'. My research focuses on places such as the Namba Parks and Buffalo Niagara Medical Campus, which are new spaces that are driven on these same criteria as places that are considered 'high tech' and new to the field of design. These case studies are both very different and explore Landscape Architecture in different aspects. The BNMC uses planning principles to study future growth. This planning approach is relevant to the Mayo Clinic and Rochester in the way that it involves similar economic trends that require growth. Future growth implementation plans take into account not only the immediate medical campus, but also the surrounding neighborhoods and communities. Both Rochester and Buffalo involve several groups that combine to form one collaborative effort. This collaborative effort is what drives the decision making process. For Rochester it is a primary goal for the RDMP to connect all groups involved with the downtown region. After researching both implementation plans they have initiatives that promote density increase in the downtown region. Increases in density give opportunity for future growth and makes space more valuable.

The RDMP promotes this new idea of promoting a 'green street' to enhance connections throughout the downtown. The skyways and subways add complexity to these connections. But as the skyways and subways have created problems with street level activity, they also provide the opportunity to develop on multiple levels. This multilevel complexity has potential to be successful in ways that are discussed in the Namba Parks case study.

The Namba Parks is a site specific example of particular space that creates this sense of innovation. Jerde Partnership begins to mesh the fields of Landscape Architecture and Architecture with this design. This multilevel essence of Osaka has embraced existing issues such as sublevel, street level, and elevated connections. These connections begin to create unique relationships with indoor and outdoor spaces. This transition from indoor to outdoor is part of the criteria that directly relates to an entry space for the Mayo Clinic. "The history of architecture and landscape architecture reveals three basic modes of relationship: contrast, merger, and reciprocity" (Rainey 4). He states "The contrasts, tensions, and ambiguities brought about by combining these various modes not only enhance the appearance of a work but also allow it to embody a rich complexity of meaning." (Rainey 4) Contrast, merger, and reciprocity are modes of relationship that I can use to create a design. The contrasting forms of geometric shaped buildings with smooth flowing curves are something that the Namba Parks exploits. Downtown Rochester sees a similar dynamic with a majority of the architecture being based on geometric shapes.

As I begin to study forms in the context of an urban setting, I also look into literature and what makes a healing environment. The book Biophilic Design provides a framework for this design approach. Biophilic design is right on point and the abstract reads "an innovative way of designing the places where we live, work, and learn. We need nature in a deep and fundamental fashion, but we have often designed our cities and suburbs in ways that both degrade the environment and alienate us from nature. The recent trend in green architecture has decreased the environmental impact of the built environment, but it has accomplished little in the way of reconnecting us to the natural world, the missing piece in the puzzle of sustainable development. Come on a journey from our evolutionary past and the origins of architecture to the world's most celebrated buildings in a search for the architecture of life. Together, we will encounter buildings that connect people and nature - hospitals where patients heal faster, schools where children's test scores are higher, offices where workers are more productive, and communities where people know more of their neighbors and families thrive. Biophilic Design points the way toward creating healthy and productive habitats for modern humans." (Kellert, Heerwagen & Mador, 2008)This book will act as a guide as I proceed to begin select materials and forms to create a healing environment.

As I progressed to the inventory I began to study Rochester's urban form and narrow down to a specific site. The site selection process was based on the above graphic and separates the different downtown districts to find where they intersect. This intersection area is located at the east entry of the Gonda building. This intersection zone is a critical transition space between mixed use, medical, and research districts. As I proceed to analysis it will be important to find key points where these spaces begin to transition. For example if a retail store borders a medical use building this spot will be a vital location to study. Another important consideration moving forward is to locate specific sublevel and skywalk accessible opportunities. Connecting to these is a significant goal to bring people back to street level.

As Landscape Architects we must use our information gathered to find applicable results. These results will lead to a design solution that connects to research and accomplishes the goals stated at the end of Chapter 4. These goals will help set design objectives and create the future parameters for my design.
CHAPTER 6

Design Implementation





This study seperates the downtown into different districts that each have unique qualities. The site selected has a diverse amount of building usages including medical facilities, hotels, commercial, and retail/ dining. This diversity provides the opportunity for a multifunctional space.

Rochester has large green/open spaces surrounding the downtown region; however, lacks green spaces in the immediate downtown. A significant green space in the core of downtown would attract more users and create a more vibrant atmosphere.

The site is located at the core of downtown Rochester. This urban core has the highest density in the region. This high density area offers a variety of users the vantage point of a tall structure such as the Gonda Building.

3D ANALYSIS







DESIGN PROCESS

Goal: Create connections at sublevel

+ Sink down space to create connections to the Gonda Cafeteria and the subway network





Goal: Make site accessible to everyone

+ Integrate ramps so site can be accessed from three primary directions

Goal: Capture the essence of biophilic design through form

+ The natural form of a river was mimicked to associate the design with biophilia





Goal: Create spaces at multiple levels

+ Seperated spaces by public and private for varying group sizes at different levels

Goal: Maximize green space

+ Terrace the edges of the design to break up large vertical walls





Goal: Allow for options of different routes to experience the site

- + Additions of bridges allow people to bypass the site
- + By studying circulation, the locations of ramps were strategically placed to explore different levels of the design





MASTER PLAN

The master plan is illustrated in a monochromatic style that emphizes the form of the design. The primary objective of my design is to connect people to nature. This was achieved through immitating the form of a river and biophilic design principles. The river's free flowing curves are emphized in the plan while also giving the design a layering effect captures the essence of a river.

The perspective to the right is a view of the East Entry looking west into the main ramp. This main ramp is at a 5% slope and is 300 feet long. The terracing helps to break up the large vertical walls while also providing opportunity for additional green space. The crescent shaped water features flow seamlessly with the design and create additional seating for users.











PRIMARY RAMP

MATERIAL PALETTE

The materials I selected were based on the principles of 'Biophilic Design'. Biophilic design is defined by Stephen R. Kellert as, "the deliberate attempt to translate an understanding of the inherent human affinity to affiliate with natural systems and processes into the design of the built environment.

CALM WATER

Calm water has reflective properties that are associated with peace and healing. The contrast from calm water to moving water invokes interaction.

FALLING WATER

Falling water creates many biophilic attachments to people. The sound of water falling drowns out surrounding city noise while also giving a calming affect to viewers.

SHADE PLANTS

This site is surrounded by tall buildings and see's limited sunlight, plants that do well in shady environments would be favorable.

WATER LILIES

Water lilies have been used for medicinal purposes for centuries. The aroma and aesthetic of this plant is often associated with healing.

NATIVE LIMESTONE

Minnesota Dolomite Limestone (MDL) is quarried in Winona, MN by the Biesanz Stone Co. only 45 miles away from Rochester. This stone has a warm color which is desired in the winter months.

STAINLESS STEEL

Stainless steel rims provide an accent color while also giving the design a sleek feel. This steel is also used throughout the Mayo Clinic's architecture.



This perspective is overlooking the design from the 8th floor of the Gonda Building facing East. Since many patients and visitors end up having overnight stays at the Mayo Clinic and Kahler Hotel, experiencing the site at night would become a reality. I also created a video animation which allows one to experience the site in both the daytime and night. This is the youtube link for the video animation of the *Mayo Gardens*. (https://www.youtube.com/watch?v=wV4rb4nlIlk)





REFERENCES & APPENDIXES

Image taken by: Michael Blank

BIBLIOGRAPH

1 About umr. (2013). Retrieved from http://r.umn.edu/about-umr/ ("About umr," 2013)

Berg, S. (2007). Urban designers: Minneapolis should dump skyways. Retrieved from

- 3 http://www.minnpost.com/politics-policy/2007/11/urban-designers-minneapolis-should-dump-skyways (Berg, 2007)
- 4 Bisbort, A. (n.d.). Escaping flatland. Retrieved from http://www.edwardtufte.com/tufte/advocate_1099 (Bisbort)
- 5 Buffalo niagara medical center. (2007). Retrieved from http://www.bnmc.org/wpcontent/uploads/BNMC-Master-Plan-Update-FINAL_12-3-10.pdf) ("Buffalo niagara medical," 2007)
- 6 Cities without ground. (2013). Retrieved from http://citieswithoutground.com/ ("Cities without ground," 2013)
- Devlin , A. (2008). Judging a book by its cover: Medical building facades and judgments of care.Environment and Behavior, 40(3), 307-329. Retrieved from http://www.informedesign.org/Rs_detail.aspx?rsId=3430 (Devlin , 2008)

Baier, E. (2013, September). Mayo clinic creates agency to guide rochester's growth. Retrieved from
 http://minnesota.publicradio.org/display/web/2013/09/26/mayo-creates-economic-development-agency (Baier, 2013)

- 8 Fausto, A. (2002). Merge : the hybridization of architecture, infrastructure, and landscape. Retrieved from http://dspace.mit.edu/handle/1721.1/37562 (Fausto, 2002)
- 10 Gosling, M. (2002). A room with a cue: Personality judgments based on offices and bedrooms. Journal of Personality and Social Psychology, Retrieved from http://psycnet.apa.org/index.cfm?fa=search.displayRecord&uid=2002-00561-008 (Gosling, 2002)
- 11 Hannen, S. (2007). Healing by design. Charisma Media 2007. (Hannen, 2007)
- 12 Healing environment. (2013). Retrieved from http://www.takingcharge.csh.umn.edu/explore-healingpractices/healing-environment ("Healing environment," 2013)

 humid continental climate. (2010). Retrieved from
 http://www.britannica.com/EBchecked/topic/276210/humid-continental-climate/ ("humid continental climate," 2010)

- 14 Kellert, S., Heerwagen, J., & Mador, M. (2008). Biophilic design. New Jersey: John Wiley and Sons. (Kellert, Heerwagen & Mador, 2008)
- 15 Kimball, L. (2013). Gardens of mercy: Baltimores hospital greenroof. Retrieved from http://www.landscapeonline.com/research/article/17101 (Kimball, 2013)

- 16 Marberry, S. (2010, October 31). A conversation with roger ulrich. Health Care Design, Retrieved from http://www.healthcaredesignmagazine.com/article/conversation-roger-ulrich (Marberry, 2010)
- 17 Mayo unveils global medical center plan. (2013). Retrieved from http://www.mhta.org/mayo-announcesglobal-medical-center-plan/ ("Mayo unveils global," 2013)
- Microclimate. (n.d.). Retrieved from http://www.merriam-webster.com/dictionary/microclimate
 ("Microclimate,")
- Peace plaza and first street promenade. (2005). Retrieved from http://www.pps.org/projects/rochestermn/ ("Peace plaza and," 2005)
- 20 Rainey. (n.d.). Places. 4(4), Retrieved from http://designobserver.com/media/pdf/Architecture_a_1205.pdf (Rainey 4)
- 21 Retrieved from http://www.mayoclinic.com/ ("Mayo clinic," 2013).
- 22 Rochester area foundation. (2013). Retrieved from http://www.rochesterarea.org/learn/about-us.php ("Rochester area foundation," 2013)

Rochester climate. (2013). Retrieved from http://www.climate-zone.com/climate/unitedstates/minnesota/rochester/ ("Rochester climate," 2013)

- 24 Rochester downtown alliance. (2013). Retrieved from http://www.downtownrochestermn.com/aboutus/rochester-downtown-alliance ("Rochester downtown alliance," 2013)
- 25 Rochester downtown master plan. (2010, August). Retrieved from http://www.rochestermn.gov/departments/planning_zoning/pdf/RDMP_Report_Final-8-2010_web.pdf ("Rochester downtown master," 2010)
- 26 Rochester international airport. (2013). Retrieved from http://www.flyrst.com/rochester/climate.html ("Rochester international airport," 2013)
- 27 Rochester, minnesota population. (2013). Retrieved from http://censusviewer.com/city/MN/Rochester ("Rochester, minnesota population," 2013)
- Rochester, mn. (2013). Retrieved from http://www.city-data.com/("Rochester, mn," 2013)

23

124

29 Rochester named bike friendly city. (2006). Retrieved from http://mntrails.com/content/rochesternamed-bike-friendly-city ("Rochester named bike," 2006)

- 30 Rochester tornado. (2000). Retrieved from http://www.crh.noaa.gov/arx/?n=aug211883 ("Rochester tornado," 2000)
- 31 Solomon, J. (2013). Cities without ground. Retrieved from http://citieswithoutground.com/?/authors/ (Solomon, 2013)
- 32 Steve, H. (2013, September). 15% of americans living in poverty. Retrieved from http://money.cnn.com/2013/09/17/news/economy/poverty-income/ (Hargreaves, 2013)
- 33 Stolle, M. (2013). Kahler sale revives downtown hotel's colorful history. Retrieved from http://m.postbulletin.com/news/local/kahler-sale-revivesdowntown-hotel-s-colorful-history/article_07f2f29b-3b3b-5bdc-b1f5-48c0c5454041.html?mode=jqm (Stolle, 2013)
- 34 Ulrich, R. (1984). View through a window may influence recovery from surgery. Science, 224, 420. Retrieved from http://mdc.mo.gov/sites/default/files/resources/2012/10/ulrich.pdf\ (Ulrich, 1984)
- 35 Urban growth management: A policy-implementation disconnect. (2013). Retrieved from http://www.horizons.gc.ca/eng/content/feature-columnist---urban-growth-management-policy-implementation-disconnect ("Urban growth management:," 2013)
- 36 Wolf , K. (2012, February 27). Open spaces sacred places national awards initiative. Retrieved from http://naturesacred.org/wp-content/uploads/TKF-Literature-Review-Report-Feb27-2012.pdf (Wolf , 2012)

ANNOTATED BIBLIOGRAPH

- 1 ("About umr," 2013) University of Minnesota Rochester offers medical related degrees. Being in downtown Rochester offers the opportunity for UMR to work directly with the Mayo Clinic.
- 2 (Baier, 2013) This article describes Rochester's economic scenerio and mentions DMC to talk about about growth.
- 3 (Berg, 2007) Conducts several interviews to study the effects of the skyways in Minneapolis.
- 4 (Bisbort) This online article talks about design theories and justifies what makes a successful design.
- 5 ("Buffalo niagara medical," 2007) A future implementation plan that lays out the framework for future medical campus growth in Buffalo, New York.
 - ("Cities without ground," 2013) An article diplaying maps of Hong Kong's multilevel circulation. The article spatially examines the city.
- 7 (Devlin, 2008) A book that studies the psychology of medical designs. Describes how people judge the quality of care based the facade of the architecture.

- 8 (Fausto, 2002) This article presents the different theoretical perspectives on combining the fields of achitecture and landscape architecture.
- 10 (Gosling, 2002) A pyschology study related to people's judgements on medical care.

- 11 (Hannen, 2007) This book explores physiological aspect of healing and how things such as water affect the body and the way you feel.
- 12 ("Healing environment," 2013) An online article describing healing elements used in designs. Defines what a healing environment means.
- 13 ("humid continental climate," 2010) A collection of different climate information throughout the world.

- 14 (Kellert, Heerwagen & Mador, 2008) A book that studies elements in nature and how people connect to nature in the field of design.
- 15 (Kimball, 2013) This webpage describes the Mercy Hospital design and how its history affected design. Dealing with preexisting architecture and how it offers opportunities in views.

- 16 (Marberry, 2010) This webpage gives a description of Ulrich and his work related to health care design. This also gives a list of academic research done in the field of landscape architecture.
- 17 ("Mayo unveils global," 2013) An online article that summarizes DMC initiatives and how this will affect Rochester.

("Microclimate,") Defines what a 'microclimate' is.

("Peace plaza and," 2005) A group that focuses on public spaces and in this particular case the Peace Plaza in downtown Rochester.

- 20 (Rainey 4) The relationship of landscape architecture and architecture and how indoor/outdoor spaces relate to each other is the main theme in this journal.
- ("Mayo clinic," 2013). The Mayo Clinic website is the official website with statistics on employees and visitor information. They also give data about each facility and its use the Mayo system.

("Rochester area foundation," 2013) Rochester Area Foundation promotes community strength and provides resources to create opportunities for those in need.

22

- 23 ("Rochester climate," 2013) This webpage gives data about Rochester's climate.
- 24 ("Rochester downtown alliance," 2013) An organization devoted to creating a vibrant downtown in Rochester.
- 25 ("Rochester downtown master," 2010) A document providing the future framework for Rochester's growing dowtown. This plan proposes several additions that strengthen connections to green spaces.
- 26 ("Rochester international airport," 2013) The Rochester International Airport provides accurate weather information for the immediate area.
- 27 ("Rochester, minnesota population," 2013) Census Viewer is a goverment run website that allows the user to select different demographical information.

28 ("Rochester, mn," 2013) City Data provides interactive maps that provide demographic statistics for a given region.

("Rochester named bike," 2006) An online article that recognizes Rochester as a bike friendlycommunity.

- 30 ("Rochester tornado," 2000) This article describes the tornado that struck Rochester in the 1800's. This information is cited back to the La Crosse weather center that officially reported the tornado.
- 31 (Solomon, 2013) *Cities Without Ground* studies Hong Kong and how density affects a cities dynamics. Thinking of a city in 3 dimensions is the focus of the writing.
- 32 (Hargreaves, 2013) CNN reports annual income averages in 2010.
- 33 (Stolle, 2013) A local (Rochester) news paper article that elaborates on the history of the Grand Kahler Hotel.
- 34 (Ulrich, 1984) This study is a scientific research approach used by Ulrich to help prove how nature can affect healing. It also gives design criteria for successful healing conditions.
- 35 ("Urban growth management:," 2013) An online article that analyzes the growth of Toronto and justifies how the city's urban sprawl is negatively affecting the community.
- 36 (Wolf , 2012) This is research on nature in cities and statistical information on study participants. Each participants background is considered along with demographics.