Elements of the Office Workspace

Michael Stueven

ELEMENTS OF THE OFFICE WORKSPACE

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Department of Architecture and Landscape Architecture
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By

Michael Stueven

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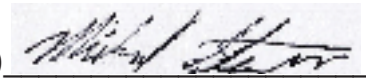
(Students Signature)  (Date)5/11/10

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Abstract

When examining office buildings in the world today, it is proper to look deeper at the correlation between productivity and the environments in which people work. In analyzing the office spaces, studies have shown that elements, such as the amount of natural light and views seen from each individual space can influence productivity. Designing an office environment in a manner that incorporates the natural environment works toward increasing productivity of workers occupying the building.

Focusing on the qualitative aspects of the working environment, this research is directed towards the productivity of the office environment in relation to the natural environment.

This thesis study is a geothermal office headquarters, located in the Maple Grove, MN. The focus of the office headquarters will be directed on sustainability and the comfort of the workers in a work environment.

Keywords: Productivity, Natural environment, Office environment

The Problem Statement

How does the natural environment affect work conditions in the built environment?

Statement of Intent

Typology
Commercial Corporation Office Structure

The Claim
The working environment constitutes the building, partitions, furniture, and finishes as well as the daily interactions people have with these elements; therefore, enhancing productivity in the work environment must consider a great number of factors that can potentially affect worker performance.

Premise
Employee productivity is influenced by the conditions inside and outside a work environment.

Productivity of an office worker will stem from the interaction with space, materials, and elements of the work environment.

The layout of spaces in a workplace can enhance the quality of work for some, while hindering the quality of work for others.

Space of a workplace is a commodity that is experienced differently by everyone. Every space in the building is used every day and will affect the means of performance of employees.

The Theoretical Premise / Unifying Idea
Productivity in a workplace depends on the quality of the space within a working environment and the interaction with the people who work there.

Project Justification
Having a working environment which is relatively equal to every worker could greatly change the quality of work. How people feel about the work space could change if the community, interior, exterior, and surrounding environment is acknowledged and the space of an office could be designed to increase productivity.

The Proposal

The Narrative

The environment of an office structure provides potential qualities for a profitable corporation. Productivity measures the amount of success and effectiveness of work in a given corporation. Looking at the built environment in office structures today, the question is posed: do we as the occupants of buildings think enough about the quality of the working environment, or are we more concerned with creating quantity to accommodate the company needs.

An employee is defined as a person who works for a company and is hired to do a specific job within the corporation. In today's society, people think of work as showing up to work, completing the tasks required of them, and leaving at the end of the day. We must also consider how we as architects can allow the building to interact more with its users as well as the users being influenced by the building and become a more integral part of the work performed in the space.

There is a special connection with the office work habits and abilities with the space in which the employees work. Employees have a specific space to work, but the building can be lacking collaboration with the employees. Human beings are constantly interacting with objects, so buildings should be constructed in such a way that they blend in well with other daily human-object interactions.

Each workspace will be experienced differently by each user based on their relationship to coworkers, other building elements, employee age, and cultural background, ect. in the space. Looking into the building and how it could connect with employees allows us to create a workspace that will influence employee productivity. In today's common workspace environments, there is a typical theme of lining up cubicles in an area of the building which is mostly lit artificially. Office workspaces can be changed to better combine interaction with outside elements while keeping the same feeling of a working environment.

As previously mentioned, the working environment is a place used every day and by many people to accomplish the tasks of the corporation. From a survey performed, it was found that 90% of respondents believe improvements in office design can increase employee productivity and 97% said the investment would be worth the costs if a correlation could be made to productivity (Heerwagen, 2000). How can architects design spaces that can strengthen the effect of the environment and create an opportunity for a variety of ways employees engage with the workplace that might enhance productivity. Studies over a 20 year period in the UK report that comfort and perceived productivity are greater in buildings where occupants have more control over the environment and in mixed mode buildings that have both natural ventilation and air conditioning (Heerwagen, 2000).

There are interactions which play a part in the working environment of the employees within a corporation. Specific design tactics can be used to create a means to incorporate an office productivity into the work environment. From a designer's point of view, the solution to a problematic office work performance is the creation of a space that works with productivity and the users rather than a space which only houses people while they do their work.

User/Client Information

The building will house business and operations of a geothermal corporation in the midwest region of the US. The use of a on site heating and cooling systems will cut costs in the short term and will drive the expansion and knowledge of energy savings into the future as well. This building will be used for a wide range of activities from business ideas to implementation of the products. Other aspects involved in the business process would include marketing, directing, and research.

Users of the space will vary within the different operations of the company. Different operations include: those who are working in the business aspect, research, and technology of products.
Incorporating sustainable strategies into the building design will assist in educating employees and business clientelle about environmentally responsible solutions.

Major Project Elements

The major elements of the office structure are typical of a corporation with this type of office layout having different workspaces for many different departments of work.

Reception / Gathering
The reception space will act as the first impression most of the visitors will see. This space will be mostly open for welcoming and direction into the building for the visitors and employees.

Office / Work Space
The office setting in which employees will work will be divided into multiple areas for departments. However, the separate spaces will be closely related for correlation among different departments and executive positions.

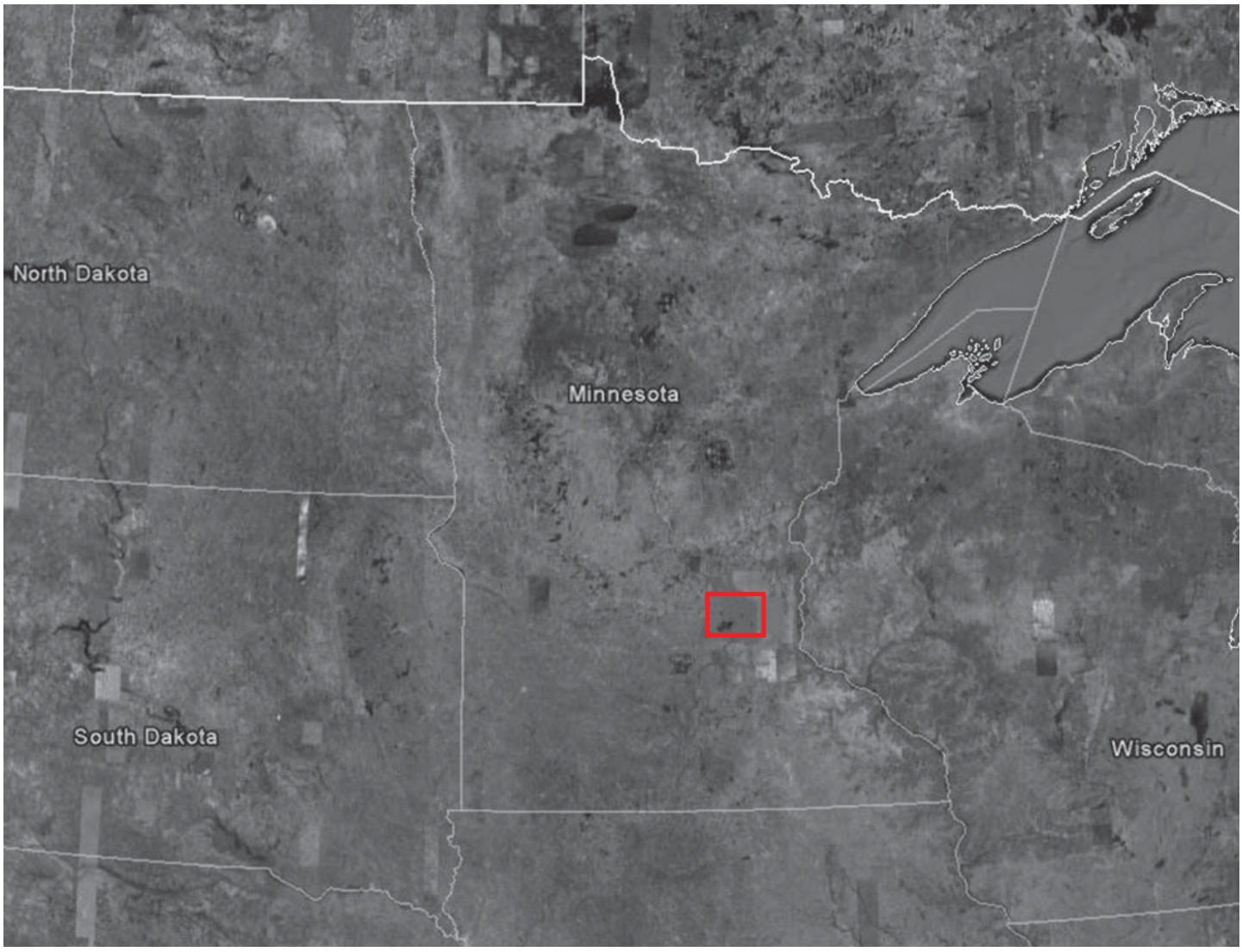
Conference
Multiple conference spaces will be used for various activities ranging from group discussions and collaborations, to meetings and conference calls within the corporation.

Storage / Filing
This space will be dedicated to filing systems for the corporation's documents.

Dining / Cafeteria
This will serve as a place for dining in the building and also as a place where workers can take lunch breaks.

Delivery
This will serve as a place for product delivery services to the corporation and mail coming and going from the corporation.

Site Information



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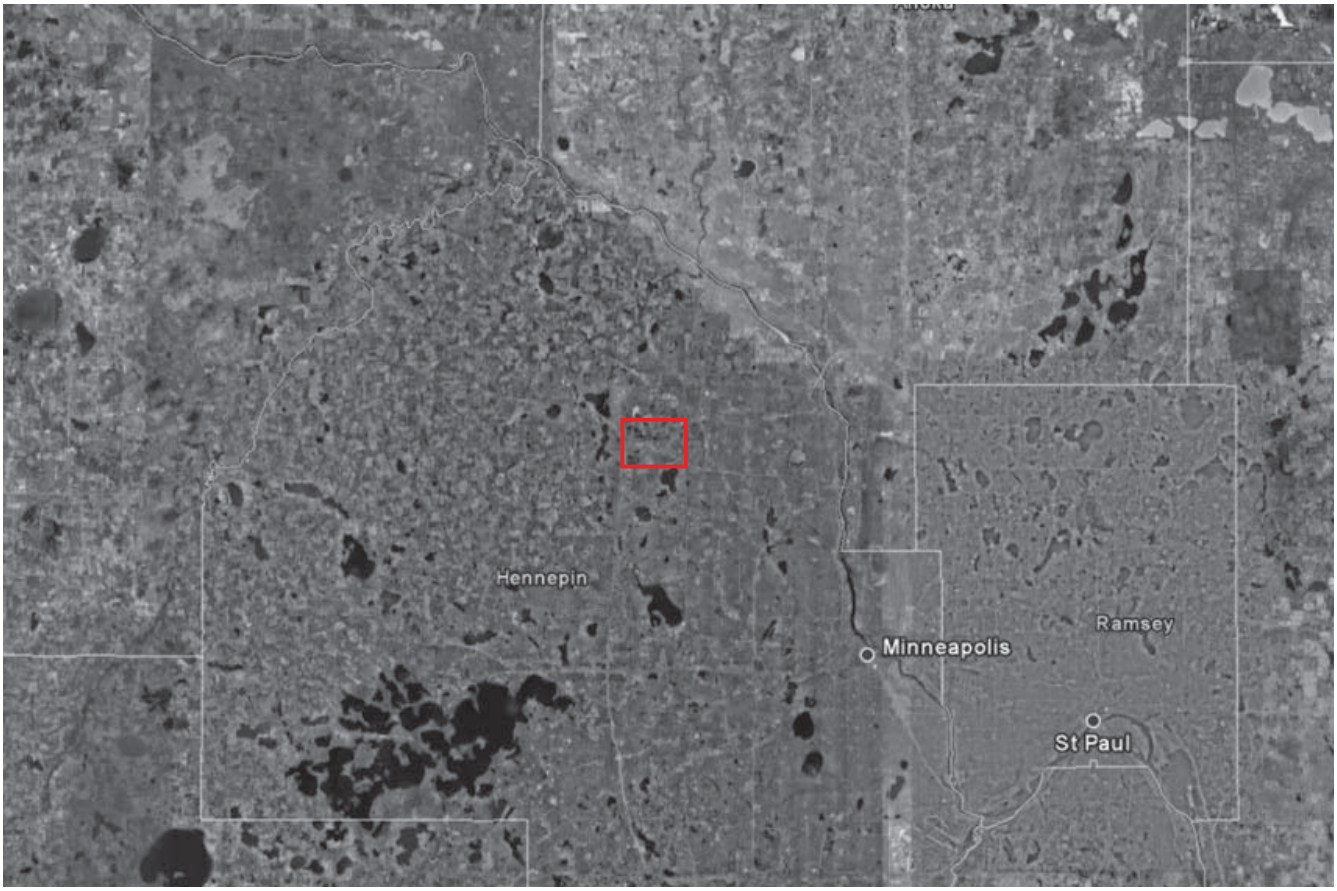

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Site Information

The site is just outside of the Minneapolis area of Minnesota, in the suburbs of the Maple Grove. This is a community which is starting to expand in a way that coincides with the residents and the environment.

The site is located near a major highway intersection in the Minneapolis suburb area. The intersection of three highways creates an entrance to the city from the area northwest of the Twin Cities.

The area around the site is part of recent development which has progressed in the past ten years. A community plan has been set up to include multiple different typologies of structures to accommodate residents as well as visitors.

On the adjacent sites there are many other buildings including an outdoor shopping mall, restaurants, commercial buildings, and other office structures. Within a few blocks from the site, living units such as townhomes and single family homes have been incorporated into the city plan.

The location of the site, which is just north of the highway intersection, is situated at a major intersection in the community. This site is the only undeveloped land of the intersection with the other three sites containing medical offices to the west, restaurants to the south, and a jewelry store to the southwest.

The location of this site is crucial to the development and growth of the community. Different building typologies on the three other corners of the intersection have led to developing and defining the fourth corner.

Project emphasis

Productivity of employees in a corporation is a very important aspect of any working environment. This thesis is going to focus on the qualities of the working environment. The interaction people have with the outside environment is considered beneficial to productivity. However, this important aspect is sometimes ignored in the development of design and use of buildings.

Cooperation of design and use of the building and how it works with the environment will direct how this thesis can change the working environment to better help and improve the employees' work qualities and productivity.

In the world today, there is a need for designers who think about the environment and the future. With a commitment to the future of the natural environment, as well as the health and well being of the occupants of the built environment, I will focus this thesis on finding strategies to improve the office work environment and worker productivity.

Plan for Proceeding

Research Direction

To ensure that the direction of this thesis is complete and accurate, research will be gathered in various different areas including: the theoretical premise and unifying idea, project typology, historical context, site analysis, sustainable issues, and programmatic requirements.

Design Methodology

The method of research used will be a mixed method approach with the focus on both quantitative and qualitative information. Research for the quantitative aspects will include statistical data gathered, measurements, and factual data reliable and relevant to the stated project emphasis. The direction of the qualitative research will be focused on observations gathered regarding the theoretical premise and unifying idea. Both quantitative and qualitative data will be gathered simultaneously pertaining to the project emphasis to ensure a strong direction in the research for this thesis. All data will be gathered, documented, analyzed and reported. Throughout the research process, the information will be presented in both text and graphics.

Documentation of the Design Thesis

Research information and design process will be collected and gathered in a digital format to ensure that the quality of the information is preserved for later evaluation and use. All images, text, and data will be gathered in a digital format for easy access upon later review. If the information is in a hard copy format, it will be scanned and saved in a digital format to comply with the quality of this thesis presentation.

The information gathered will be made available in the thesis book and project to be documented for use for future scholars. Some of the major project elements important to the design solution will be presented in the final presentation at the conclusion of the thesis.

Documentation of information and design work will be gathered in a timely interval of two weeks to be sure the information gathered is recorded and accessible for review at any time during the thesis process.

Previous studio experience

Second Year

Fall Semester 2006 l Arch271 l Joan Vorderbruggen
- Tea House - Fargo, ND
- Boathouse - Minneapolis, MN
- Mountain Dwelling - Bear Lake, CO

Spring Semester 2007 l Arch 272 l Darryl Booker
- Montessori School - Fargo, ND
- Dance Academy - Fargo, ND

Thrid Year

Fall Semester 2007 l Arch 371 l Ronald Ramsey
- Daily Plantaganet Printshop - Agincourt, IA
- Great Stone Barn Concert Hall - Mt Lebanon, NY

Spring Semester 2008 l Arch 372 l Steve Martens
- Children's Museum - Fargo, ND
- Mixed Use Downtown Structure, Fargo, ND

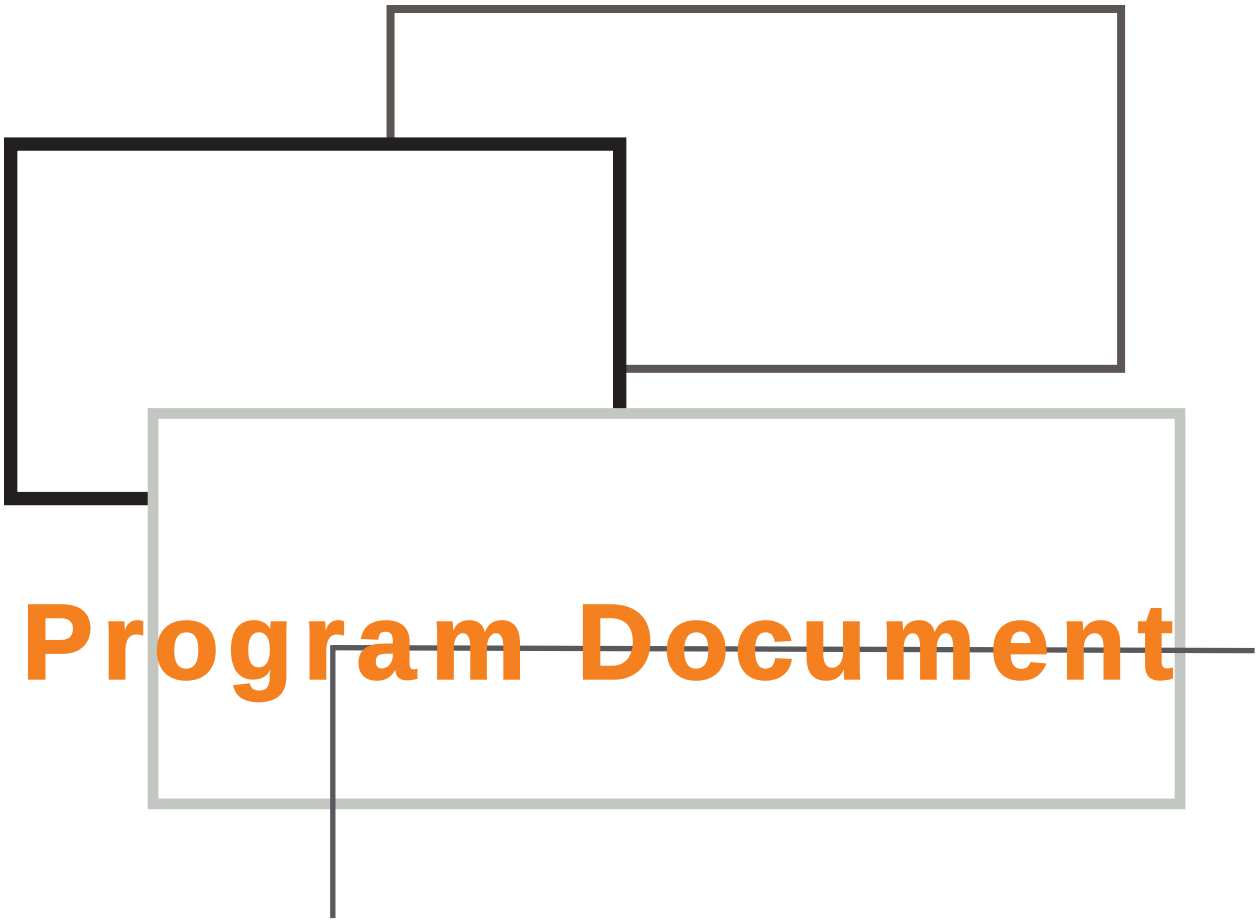
Fourth Year

Fall Semsester 2008 l Arch 471 l Don Faulkner
- High-Rise Design Competition - San Francisco, CA

Spring Semester 2009 l Arch 472 l Frank Kratky
- Creating Viable Communities - Santo Domingo, DR
- Housing and Market for Santo Domingo - Santo Domingo, DR

Fifth Year

Fall Semester 2009 l Arch 771 l Regin Schwaen
- Hotel/Motel - Fargo, ND



Program Document

Research Results

Productivity in the the Office

Productivity of the office environment is ever-changing with the advances of technology and the more advanced means of accomplishing a task. There are many programs and technologies in existence to assist the employees of a business to accomplish work more efficiently. More importantly, these technologies can lead to higher productivity in the business setting in which employees work. The majority of many companies' expenditures is the salaries paid to the employees over time compared to an initial cost of the building and maintenance costs. Comfort and accommodations of the employees are going to be leading factors in overall employee productivity.

Productivity is the outcome of employees and their work in the business setting, but without the employees or the accommodations for the employees, work can become less effective. The workers and environment in which they work may suffer from a disconnect which brings about the inability to perform at a level of high productivity. Studies have shown that productivity and satisfaction with the job are directly related in that when the satisfaction is high the productivity is also high.

Going back to the idea of productivity becoming more than the relationship between the workers and their satisfaction with the job they have, more focus should be put on the employees and the interaction with the environment in which they are working in on a day-to-day basis. The comfort level of the building in which the employees are working is something which will affect their satisfaction. To accommodate each person as an individual, they will all have a different feeling of comfort in their space whether it is their own space or if it is shared by others. It has been shown that the ability to control indoor environments can lead to an increase in self-estimates of productivity (Juslen, Tenner, & Wouters, 2007).

Studies show the how the outcomes of stress in a working environment can influence psychological and even social outcomes of the employees. “From a clinical perspective, stress is primarily a psycho physiological phenomenon that arises from an individual’s perception of balance between environmental demands and response capabilities,” (Rashid & Zimring, 2008, pg. 155). The psychological aspects of the working environment affect how employees work depending on what type of conditions they like to work in. As previously mentioned, every person within a business has a different way in which they like to work. Without the ability to control the workspace, the psychological feeling of each individual can be changed. “The physical environment is important as it may induce stress by the ways in which it effects individual needs,” (Rashid & Zimring, 2008). There would need to be a connection and understanding of certain needs and how they affect each other and the conditions of the working environment. For example, there may be a strong need for specific mechanical equipment for the air quality, but the amount of noise it produces might induce certain stress on employees causing change of productivity.

The social instance of focusing on productivity in an office is seen through the space in which people work together and intertwine in the same environment. In any business, there must be the element of teamwork and a space in which people can work together and share ideas. The effect of productivity is a factor that is portrayed from one individual to another. As an example, if the productivity of one individual or part of the office is surging, there is typically a positive stride through other working parts of the business. Therefore, knowing that each person feels differently about the environment in which they work in, control for each person in the environment is something to be focused on in the design of an office space.

In past work environments, “socializing among worker, within a moral and management context, became synonymous with wasted effort. People were paid to work, not to talk. Certainly, people were not paid to be comfortable. That was what you did after finishing work. Then you could relax, put your feet up, read the newspaper, have a drink. and talk with friends and family,” (Becker & Steele, 1995, pg. 89). The office environment is ever-changing to accommodate the changes in how people work and achieve most productivity. There are many elements which can affect people in different ways, and a changing office environment working closely with elements of environmental issues are greatly encouraged and evermore practiced.

“Engaging in work tasks, accomplishing tasks, and perceptions of task control have all been identified as intrinsically rewarding aspects of work. To the extent that the individual workspace and the organizational context are designed to assist the work process and provide workers with real and perceived control, the intrinsic rewards for performance will increase,” (Wineman, 1986, pg. xvi). The majority of the working environment depends on being able to control and work at a productive rate; this aspect can be controlled by that of the building itself and how a person is related to the environment instead of the person becoming an entity in a work space who simply leaves at the end of the day.

Environmental Issues in Productivity

Environmental design is an issue in the building environment that will continue to be more prominent in the future of the design field. Certain types of buildings enhance environmental issues, but office buildings instead lack emphasis on environmental issues by providing a general space for free use of office work. Focusing on the issues of what environmental design is in relation to the built environment and how it can be more clearly focused on the work of a business can change productivity. This will be explained later.

Working with the factors of the building environment are the issues which create the controllability for each individual worker. In an article written by Heerwagen, she states that an increase in productivity was found with the use of personal controlled workstations (Heerwagen, 2000). Certain elements of the environment play a role in creating comfort within the office space for employees. The key components of noise, lighting, ambient temperature, and air quality will be discussed later in detail in relation to the correlation of employees and offices.

Noise

Noise is an element of an office which is sometimes completely separate from the environmental issues. Most of the noises occurring in an office setting are from people and equipment in the building. In their 2008 article, Rashid and Zimring say that it is “reported that exposure to noise may lead to decrements in task performance or highly variable performance,” (Rashid, & Zimring, 2008). The noises of an office which deter productivity the most are those of other people and the mechanical or communication operations of a business. Controlling of noise in the office structure gives individuals the ability to decide which noises are appealing and which are distracting from office tasks and productivity. Workers may then choose how much or how little noise they would like to hear in their individual work environment.

The tonal qualities of noise versus sound can require different modes to control sound in a business environment. The fact that noises are the tones that people discourage because they cause discomfort creates a higher need for controlling the noise level in each individual’s workspace.

Lighting (Natural and Artificial)

Lighting is an environmental factor playing one of the most important roles in the office building and structure of productivity. A division of lighting is apparent in many places but is not always used in the kind of way that enhances productivity of the working environment. Both artificial and natural light are elements considered in design, but are not always considered in the business needs of a company and in productivity. When office work is done in a dark environment, workers will typically attempt to find times to seek out different types of lighting, such as breaks and lunch (Rashid, & Zimring, 2008).

Natural and artificial are the two main types of light. Artificial light can be simplified in building discussion as either on or off. A study by Juslen, Tenner, and Wouters stated that, “controllable task-lighting is not standard in the industry, and if a task-lighting system is present, the user can normally only switch in on or off,” (Juslen, Tenner, & Wouters, 2007, pg. 39). Controllable lighting is one way to control the productivity of workers in the business workplace. Juslen, Tenner, and Wouters also note the potential cost of artificial lighting and the additional initial cost of concealable light: “However, the extra investment could be justified were the lighting to have a positive influence on productivity,” (Juslen, Tenner, & Wouters, 2007).

The type of artificial lighting can even have an effect on the personal issues of workers in a business. “Participants exposed to warm white light reported stronger preferences for resolving interpersonal conflicts through collaboration and weaker preferences for resolving conflicts through avoidance than participants exposed to cool-white light,” (Rashid & Zimring, 2008).

“Lighting may affect worker performance directly because of its effects on vision and indirectly because of its effects on attention and arousal,” (Rashid, & Zimring, 2008. pg 166). Natural day-lighting can greatly influence the feeling of people and their work conditions throughout space. In a survey by Rashid and Zimring, it was found, “that approximately 96 percent of respondents preferred to work under natural light as opposed to electric lighting,” (Rashid, & Zimring, 2008. pg 161). When the maximum amount of daylight is allowed into an office space, there is a stronger ability to control the amount of light to fit the comfort of each individual. Having the most amount of light penetrating a work space is the best solution; employees can use shading devices to control the amount of light they prefer in their work space.

How light is used in the space of a building is also dependent on the task of the business. For example, some businesses work well with reflecting natural light into the deepest area of a building. However, if the business involves reading or drafting as a primary activity, the reflectance might become more of a nuisance to personal arousals of light. A specific type of lighting might not always be the solution of the productivity of workers as different tasks require different lighting systems. Instead, the way in which lighting is designed in the space can positively affect productivity.

Depending on the location of the site and building, orientation is going to be the greatest factor in when and how much natural lighting can affect the workplace. During different seasons, there will be a difference of how much light can be captured for working environments and at what times per day. From Rashid and Zimring’s aforementioned study which reported a percentage of employees enjoyment of work with natural daylight, “86 percent of the respondents preferred having sunshine in their office year round as opposed to only one season of the year or not at all,” Rashid & Zimring, 2008. pg 161).

Ambient Temperature

In a study which compared the percentage rates of temperature and complaints, “significantly positive correlations between the percentage dissatisfied with temperature and the complaint rate,” were found (Rashid, & Zimring, 2008. pg. 165). Temperatures that are too warm or too cool in an office can minimize productivity. Although the performance of the task probably does not change as the temperature changes, the feeling of the workers’ self-esteem might hinder the amount of work produced. “Drawing on a review of research on indoor environmental quality... providing workers with temperature control of just three degrees (plus or minus) would result in a productivity increase of about 7% for typical clerical tasks, 2.7% for logical thinking tasks, 3% for skilled manual work, and 8.6% for very rapid manual work” (Heerwagen, 2000, pg. 9).

Looking back on the aforementioned effects of psychological and social qualities on the productivity of work, temperature can improve how a person feels about their work, workplace, and the people they work around on a daily basis. An increase in the ambient temperature can create a feeling of hostility of the entire environment around them.

The effects of a work space being too warm or too cool start to effect the building along with the employees working in an office space. Ambient temperature can dramatically change a building’s quality of air in a phenomenon known as, “sick building syndrome,” which will be discussed in the proceeding articles.

Air Quality

Pollutants are part of a building structure which usually cannot be avoided. They need to be controlled because pollutants can have harmful effects on people and/or their immune systems. Mechanical equipment will change air quality and how it is controlled. However, if air is controlled by the building, it may not be influential to the users of the building because personal preferences are different for each user. According to a study of a British office building by Heerwagen, “surveys over a 20 year period... reports that comfort and perceived productivity are greater in building where occupants have more control over the environment and in mixed mode buildings that have both natural ventilation and air conditioning,” (Heerwagen, 2000, pg. 8).

Working with ventilation of a building will dramatically change certain pollutants in a building and how they can change the productivity of each person. Like many of the previous environmental factors, having control of air quality on a personal basis would be the best way to create an office space for increased productivity.

Air quality can relate to the air exchanges within a building, but depending on how the air is changed before entering a building, certain pollutants can become hazardous to the people inside. The velocity of the air in the direct space where the worker is should be controllable to affect their own preference in comfort and, in turn, produce more business output. An increase in the velocity of the air in a workspace will move the particles away from the worker creating better air quality in his or her personal space (Heerwagen, 2000).

Sick Building Syndrome

A building starts to develop sick building syndrome when it is unkempt with environmental factors and how they relate to the people which inhabit the workspace, (SBS). There are currently no definitive standards of quantifying SBS. The factor of quantity is merely based on the workers within the space and the self-perceived work conditions compared to productivity. In most reports of SBS, the qualities of environmental issues are not quite in balance in the workplace. Relating back to the previous discussions, temperature and air quality are the leading factors causing perceptions of a persons' comfort level. Many studies show that thoughts about SBS vary depending on the location and quality of mechanical equipment. It should be clarified that pollens will be considered in the health of workers and can cause sick building syndrome.

The controllability factor of building performance can still be in effect when wondering about SBS. Change in the performance of employees illustrate, "that daily visual display unit worktime, passive smoking, and psychosocial loads can be relatively strong predictors of SBS," (Rashid, & Zimring, 2008).

Summary

The working environment is always changing to meet the needs of employees through aspects of the natural environment around them. Personal and social elements, along with the physical qualities of comfort for each individual, play the utmost importance in the overall productivity. There is almost never a standard for every person in a place due to the differences in all people of the world. Every person has his or her own feelings, likes and dislikes.

The psychological and social sides of a person in an office stems from what is around them and how they interact with their environment in particular ways. However, there is a certain satisfaction employees need while in the office setting which can prove to show improvement in the productivity and output of an overall business.

A deeper analysis of these topics discovered that how a person feels in the office can correspond in an architectural standpoint to elements of the environment directly around them in their workspace. First discussed were noise and/or sound and hoe these issues related to the type of work involved in the particular setting. Second discussed was the type and quality of light able to be produced in the office space. Third discussed was ambient temperature which creates certain feelings of discomfort and abnormalities being in a particular space. Last, air quality was discussed, which relies on the pollutants that directly affect a person's health.

From the discussion of environmental qualities which influence the working environment, one can conclude that “control” is the leading factor in the influence of the employee on the office space, and more importantly, the office’s influence on the employee. In the future, creators of office spaces and workplaces need to focus on the location of the building in order to accommodate not only the number of people within, but also the quality of life people need in a place for them to survive. Creating a workplace which can influence the people working in it as much as the employees influence the company is going to be more and more crucial in the evolution of the office building.

Control of the office has always been one-sided from a business standpoint, where the more power you have within the business, the more control you have over the people working under you. Control can be distributed among workers in the business; employees may not be controlling people, but instead, controlling their own work environment. Drawing back from the environmental issues, one’s control of these elements to their own standards of producing can directly influence the work output.

Workplaces can be evolved to become an integral part of the business, as opposed to a place to simply house the actions of businesses.

In conclusion, it is important to understand that,

> Offices were once static and sedentary places to work. People sat at fixed locations under the constant gaze of a supervisor. Both management control and technological constraint anchored the office worker to the spot. But in the creative office, movement from place to place is encouraged as people work where they want within the building or campus, supported by cordless technologies. The concept of mobility allows work to become a series of journeys which create chance encounters and informal meetings that are all the more productive because they are spontaneous and unplanned.

Case Studies

ACD World Headquarters

Figure 1.1

The ACD World Headquarters is a telecommunications, global equipment, software, and integration-services company. The project was designed by HGA, Minneapolis for their 477,000 square foot, three-building headquarters office in Eden Prairie, MN. The design of these office spaces focused on the involvement of the workers and what they wanted in a work place for themselves. The headquarters are said to be a collaboration of a light-filled complex designed from the workstations outward.

Conducting company surveys, a consensus was found which suggests that employees wanted more natural daylight in their office spaces. With the focus again primarily on the employees, they are provided with the ability to control the environment of their workplace. Like other projects similar to this one and with the direction of the office in the future, the ADC headquarters create an environment in the workspace to promote social interaction and collaboration. This illustrates an accomplishment in creating a workplace which provides peace for each individual in the building and at the same time focuses on the entirety of the business and complex. The principal architect of these buildings says, “The goal was to design a work environment that provides a sense of place for each employee while reinforcing the notion that everyone is part of the whole” (LaFerve, 2003).

Figure 1.2

ACD World Headquarters

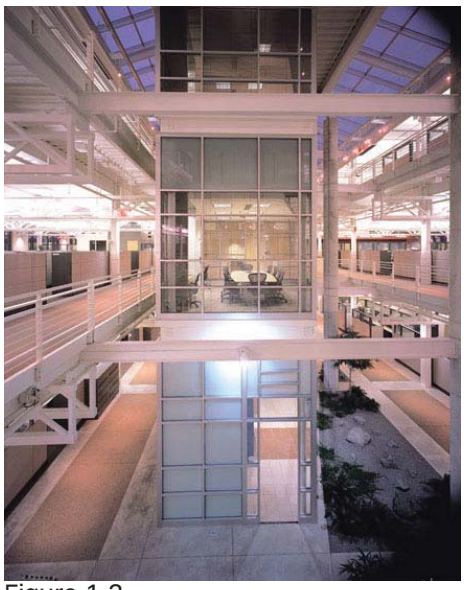


Figure 1.3

There are many elements which work with the employees of the ADC headquarters to enhance their quality and involvement in the workplace. With focus on lighting in the building, almost all of the workplaces are located near or next to an exterior window or one of the many atria. Another way in which designs were enhanced to allow lighting into each space of the work environment was to extend the floor to floor height allowing the maximum sunlight into the interior even in the summer when the sun is at its maximum.

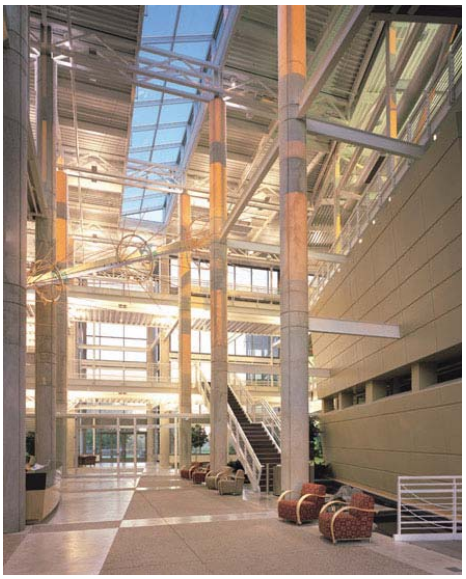


Figure 1.4

In studies conducted by HGA Architects on the exposure of structure in the office, it was found that the structure can define space and an aesthetic in a particular space. In the case of the ADC campus there is quality of the use of exposed structure in the atriums which create a well-understood means of vertical connectivity in throughout the spaces. Throughout the atrium, stairways, and conference rooms, there is a great deal of light which infiltrates each of the spaces to affect collaboration of workers --one of the primary goals of the office space.

ACD World Headquarters

The plans of ADC headquarters are very asymmetrical primarily due to lighting. There is a sense in the floor plans of the multiple facades created from cutting, pushing, and pulling exterior facades to allow the opportunity for more light to enter spaces.

Each of the workspaces in the three buildings in the campus are exposed to the exterior on one side and the atrium on the other. This use of the layout with atria in the middle of office space to draw light into spaces directly corresponds to the linear quality of each of the buildings.

Noticed in the site plan below, the campus is engulfed by wetland, which is positive to the senses of the employees and views to the exterior. In the master plan of the site there are great considerations in sustainability of site and natural resources.

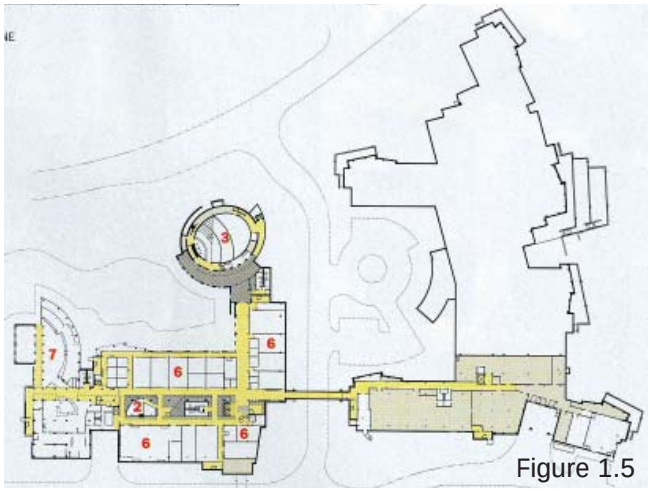
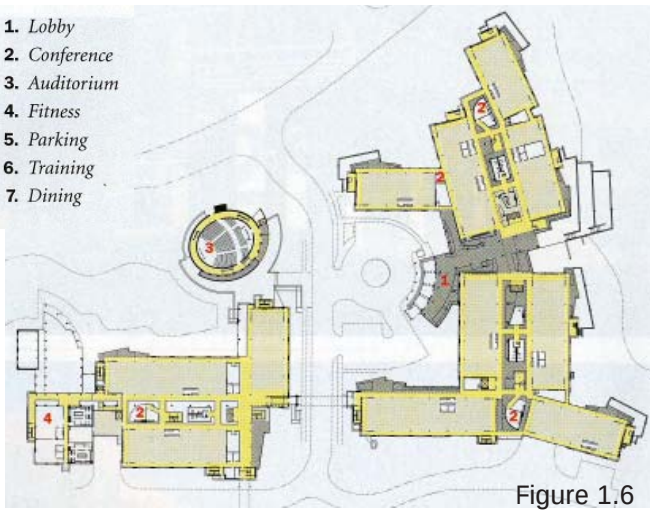


Figure 1.5



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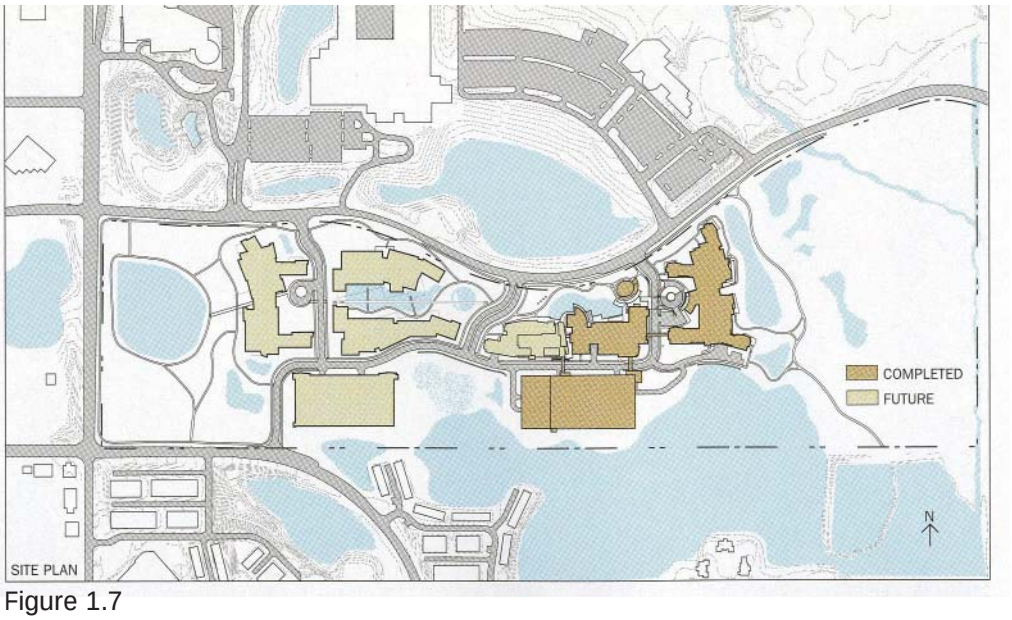


Figure 1.7

ACD World Headquarters

The ADC World Headquarters focuses on the lighting in the workspace and how it can affect the working environment. Ways in which the lighting are able to penetrate into the deepest spaces include: facades, and through the maximum amounts of glass. With focus on the lighting in the office space, the theoretical premise will stay unchanged for the lighting aspect of productivity in an office.

Noting the structure is an influence in the building and how it is exposed to enhance the circulation between spaces and promote collaboration might be something that could be more deeply studied in how it can effect the productivity of work. As previously mentioned, the office environment of the future is changing and collaboration is the way in which some office environments are more productive in their field of work.

Relating the research ideas to the ADC World Headquarters shows can lead to the ideas of open office plans and how they will affect the controllability of the workers in the workspace. With everyone having different qualities of likes and dislikes, there could be a problem with the personal control factor of the collaborative office space.

Summary

M & C Saatchi

Located in London, the M & C Saatchi advertising agency is located inbetween two sites in a public square. The 60,000 square foot building is built tight to the adjacent buildings. Unlike office projects in the U.S., which make use of the site and conditions surrounding the building, this office design uses the building plan to accommodate the entire site.

Figure 1.8

With the office structure changing as time goes on, the M & C Saatchi building in London has no difference in work quality and efforts from employees. There is, like future office structures, an emphasis on collaboration of work through employees.

There is an atrium which brings natural daylighting into the central core of the building and into the office spaces for enhanced work productivity and quality. The main design of the atrium in the core of the building works as both an indoor and outdoor design. At the bottom of the atrium is an indoor courtyard which is just off the main reception. As previously stated, the atrium brings light into the office spaces.

Figure 1.9

M & C Saatchi

Figure 1.10

Open floor plans within the office spaces are used primarily to promote collaboration and communication among workers or in the case of M & C Saatchi advertising, to influence creativity.

With the facade of the agency facing the public square, the entrance of the building shows a design decision to link the two adjacent buildings. This limited the amount of openings and natural light to be allowed from this facade. Through this design, decision emphasis was added on the central corridor of the building.

Figure 1.11

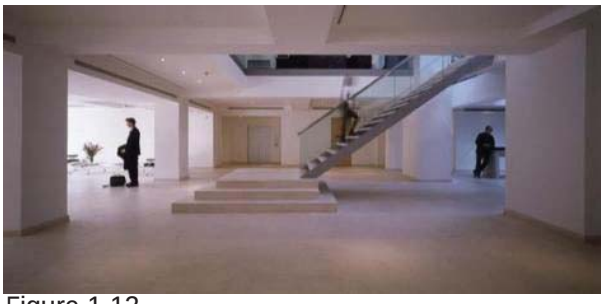


Figure 1.12

Movement is part of the design of the building through the users. The open workspace promote movement for collective working, and the way in which one moves through the building directs people together to centralized spaces such as the indoor courtyard. The staircase pictured below is the link between the entrance/reception of the building where one can relax to the creative workplace of the floor above.

M & C Saatchi

One can see through the section of the Agency that there is a clear process of entering into the building and being greeted by the staircase which leads you directly into the courtyard. The atrium is clearly apparent in the section cut as well, showing how light is able to reach even the lowest portions of the building by way of the central core. Higher in the building, the floors start to be peeled away as though to create more light in the offices and primarily avoid the ability for light to make it down the core to lower levels.

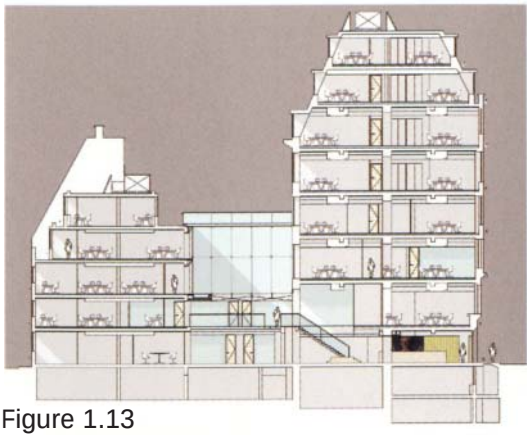


Figure 1.13

With focus on the section of M & C Saatchi's building in London, there doesn't appear to be any longitudinal symmetry through the atrium. With closer examination of the section with the floor plan of the first floor, there is a sense of symmetry as you enter the building.

As you continue through the entrance and into the workspace the symmetry is taken away to create a rotational experience, developing surprise on the journey as people move from commons areas to the work environment.

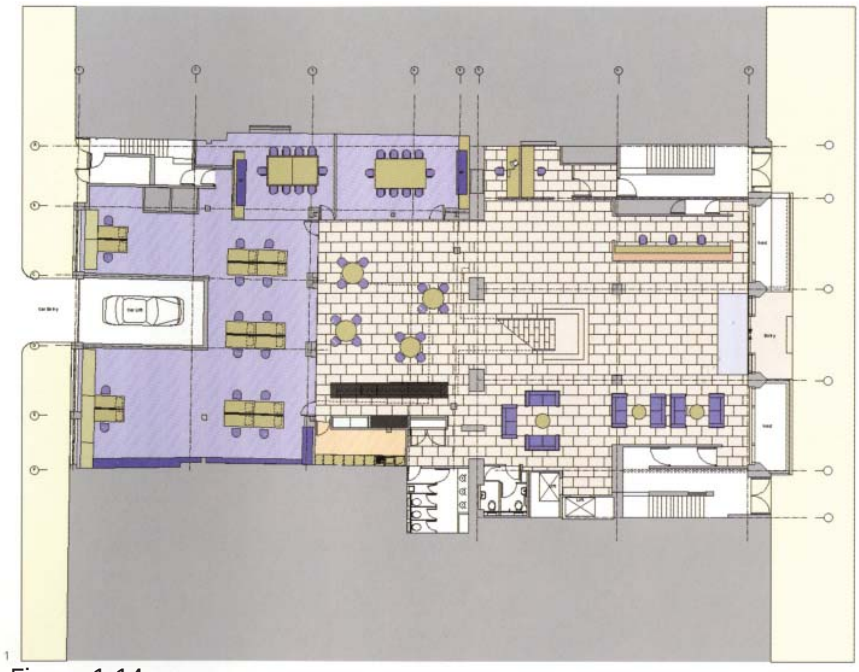


Figure 1.14

M & C Saatchi

The M & C Saatchi company has a few different aspects to the office structure different from an office in the U.S. The ways in which people work and move in the space at M & C Saatchi are unlike that of office in the U.S. because in the U.S., the mindset is usually focused on how fast and productive you can work in your space. Elements of the natural factors are incorporated into the office space like in the U.S. but there is a “face” that is put on to show a difference from to that of the square compared to the rest of the building. Hiding the qualities of the building behind the facade might veer away form the notions of the premise in the way in which subjects such as ventilation can be incorporated.

Like the other case studies, there is definitely a great sense of movement in this building which brings people in and up. This sense of movement almost reveals them into the work space which can change their senses about the work environment and create a better productivity factor.

Summary

Great River Energy Headquarters

Figure 1.15

Just outside of the twin cities in Minneapolis lies the headquarters for the Great River Energy Company. The project was designed by Perkins+Will in Minneapolis for more then 400 employees and innovations in energy efficiency in the building. The building focuses on issues of where office culture and effectivity is going in the future. The company wanted to use this design for a LEED Platinum building to set an example of the qualities an efficient building can offer.

From many innovations studied and tested for the headquarters and then implemented into final design, the building became an icon for the direction where office buildings need to go in the future. Productivity of the office workers and what qualities are effective in a productive space will be discussed in proceeding articles.

Great River Energy Headquarters

The Great River Energy Company headquarters is a building which pushes the limits of what the typical office space is when it is created in the direction of the future of sustainability. The building has broken ground with many energy efficient features. First is the icon of the building from a distance, which appears as the wind generator on the site producing usable energy. The building has many photovoltaic panels for gathering solar energy which is not quite as outwardly noticeable. The heating and cooling is primarily done through geothermal energy from the bottom of an on-site lake behind that building. Even usage of water is kept to a minimum through the collection of rainwater in a 20,000 gallon cistern on site which can reuse the grey water for landscape purposes and toilet water.

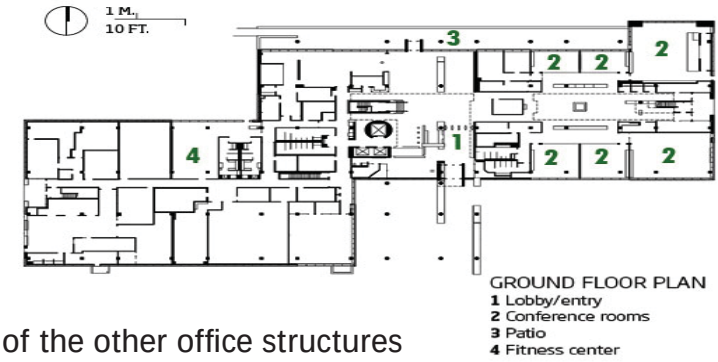
Figure 1.17

Figure 1.18

Figure 1.16

Great River Energy Headquarters

Figure 1.19



As an analysis from many of the other office structures studied, the Great River Energy Company headquarters again has a relatively similar use of atria with narrower floor plans to increase lighting into the workspace for employees to productive. The atiria allow light to reach the inner and lower floor workspace just as equally as the exterior walls.

The circulation space in the building is primarily on the exterior walls pushing the office spaces to the interior closer to the atrium where they still receive plenty of natural daylight. By having the circulation on the perimeter, no space monopolizes the view and everyone can share the perimeter.

The orientation of the building is another aspect, along with the site, which was researched more deeply in the design and efficiency of operations. The building is linearly stretched from west to east, creating most of the southern sunlight that hits the building for a majority of the day.

Figure 1.20

Great River Energy Headquarters

The River Energy Company is going to be the most influential in the elements which affect its workers and their productivity in the office setting. There are many elements in the building which create the sustainable environment both outside of the office and, more importantly, for productivity inside the workplace. Having elements in the building which can control factors of the building and the quality of environmental factors to a person can greatly affect the productivity to the person and/or company.

Through the control of the Great River Energy Company's interior factors and qualities to the employees, there is a better working environment for convertibility. Personal control of the factors in the working space, shown from the theoretical premise research, will change how a person can perform psychologically as well as socially. This aspect of the building with control greatly shows how change in the office for the future is beginning and will continue to grow and change as time goes on.

Summary

Case Study and Typological Summary

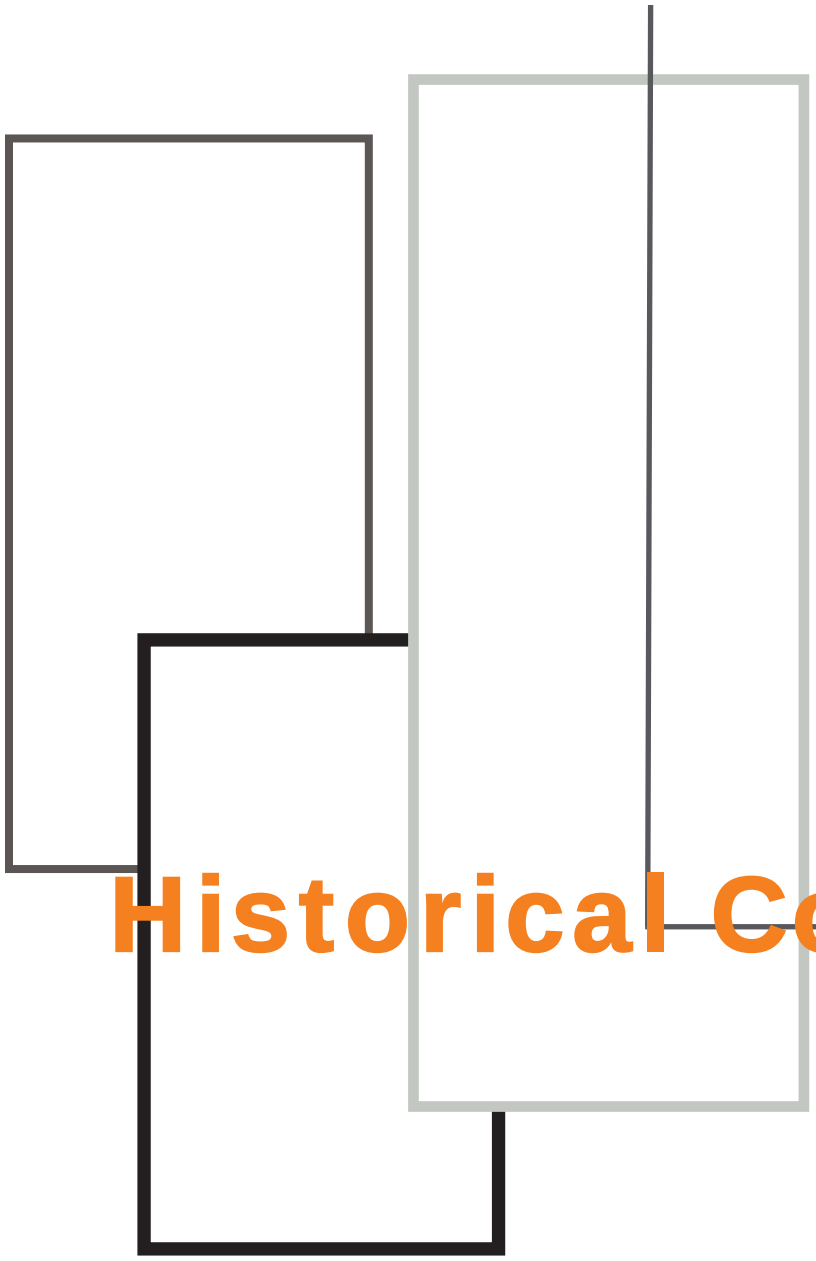
Through the case study research, many design goals are accomplished through examining environmental qualities and their affects on productivity in successful office buildings. From the list of case studies researched, the year in which the building was designed played a factor in what elements are incorporated into the office structure. The office structure is ever-changing and creating productive space for what the future is to bring which is a challenge because there is always going to be better ways to solve the problems of the workspace of today. The theoretical premise and unifying idea which was explained previously, is underlined in the studies of the business offices. Environmental aspects are the leading factor of the quality of space directly affecting the persons occupying the space, which are focused on in the case studies. One area of the research which isn't pointed out in the studies of the buildings is the way in which the workers in the office space can freely change control settings to reach the quality of work environment they prefer.

Through an analysis of the cases, it can be concluded that the effects of environmental issues played a role in the quality of work and by explaining the collaboration in which people can work with others. As found in the theoretical premise, there are social aspects involved where hostility might become apparent when the conditions of the working environment are below what is comfortable to each individual. The case in which this became the most apparent was in the Great River Energy Headquarters, where an influence on sustainability was part of the driving force to create the healthy environment. The healthy environment can be relayed not only to the exterior world but down to the person inhabiting the space due to healthy immediate qualities of a space.

Focusing on the difference between the case studies, one common characteristic of each of the projects is the atrium. There is a difference between two different types of the atria as examples from the case studies. First, the core of the building stretches down from the center of the building reflecting light down to the lower floors. Second was the linear stretched out plan and long atrium space spanning one end of the building to the other. There is higher quality with the linear atrium is there is a larger opening and surface areas for light to enter and be reflected to lower floors, whereas the core atrium is restricted to just maximum efficiency during only certain times of the day.

Sites seem to be of the importance to the quality of work as well. Depending on the site and the environment around the site, the structure can be limited to positively or negatively affecting productivity. From the case studies, three different ways of looking into the site and how the building worked with the site can be discussed. The building in London was so specific that the only views were limited due to the building on both sides. The ADC headquarters were better, where the site and the natural preservation of the site were of upmost importance. Delving into the best site the Great River Energy Building incorporated the most with the site but influenced the actions of the building and the site into one realm. Using the site, the influence and actions of the building is the best way in which a design can combine building and user work and have a great productivity ratio.

Looking into the environmental issues of the case studies, along with the payout and actions of the building, it can be concluded that one's performance in the building can greatly be influenced by the building itself. If the building can work with the persons in the activities of the office instead of a separate entity, contradictions between control and productivity would not be as apparent.



Historical Context

Historical Context

Historically, the office structure has always been reliant on the productivity of work to be produced from the employees to maximize the efficiency of work. The factors of productivity are strongly based on changing how a task can be performed. The structure of the office accordingly, is located in the organization of practical action, rather than in procedural specifications, (Suchman, 1983, pg. 321). Actions and how they are performed quantifies an essence of the office structure. Since the actions have come to mean more, of productivity the business world has evolved and become more and more advanced in the realm of what productivity means to outcome and business goal.

We can start to look as subjects such at technology by looking into the changes of the office structure of the past and relating it to what is produced today as well as where it might go in the future. A visual clarity can be seen in the difference technology makes in the office structure and the procedures of the work performed. As an example of the difference in the technology, the form of data filing stretched from a labor intensive task, taking time to look for filing to what is generally more traditional today as computer filing.

From the past office structure found before technology really became a necessity to the business methods of today, we can see that if the quality of the work stayed constant, the quantity of the work will increase due to the technology enhancing the productivity time of the same tasks.

The office space of the past was that of a workplace of persons doing specific tasks without much interaction in the workspace or the others. The business environment has since changed dramatically to support new business processes. “It includes the ways in which organizational leaders consciously and deliberately make decisions about the form of their buildings: the choice of furnishing; the arrangement of offices and work stations; the layout of circulation; the number and location and character of conference and meeting rooms, stairwell, elevators, cafeterias, and break areas; choices about how and to whom space is allocated; and the nature of the processes used to plan, design, and manage all of these work place elements over time,” (Becker & Steele, 1995).

Looking into more recent history of the office environment, focus turns to a study of space and technology that cooperates with organization of the workspace.

> Organizational; ecology must consider organizational behavior issues such as incentive systems, performance appraisal, promotion, formal and informal communication, corporate culture, organizational structure and size; human factors issues such as lighting, noise, vitiation, and air quality, architectural and interior design issues such as how space is designed and allocated and the nature of furniture, material, and finishes; and industrial engineering issues such as the layout and design of work areas to support the processes. (Becker, & Steele, 1995)

Technology of the office as it has evolved in the timeline with a significant basis toward the innovations of technology, whether it was from the invention of the Xerox machine to the PC. Graphically, in a timeline of the history of the office shown below, one can see how most influencing data is related to that of technology.

1960 Digital Equipment introduces the first minicomputer, the PDP-1, for US$120,000. It is the first commercial computer equipped with a keyboard and monitor. PDP stands for Program, Data, Processor. The minicomputer represents an important size and power step from mainframe toward personal computers.

1967 Pocket calculator invented.

1969 A special computer called an Interface Message Processor was developed to realize the design (space), and the ARPANET went live in early October, 1969.

1970 Xerox announces that it will create a computer laboratory to research digital technology.

1972 At Xerox PARC, Alan Kay proposes they build a portable personal computer, called the Dynabook, the size of an ordinary notebook.

1979 3M implemented a massive consumer sampling strategy of the new product the **Post-it note**.

1983 Microsoft Windows was announced and sells for $100.

1984 The Apple Macintosh debuts.

1984 Hewlett-Packard introduces the LaserJet, the first desktop laser printer.

1985 Adobe introduces PostScript, the industry standard Page Description Language (PDL) for professional typesetting.

1988 Commercial **Email**. Vinton Cerf arranged for the connection of MCI Mail to the NSFNET through the Corporation for the National Research Initiative (CNRI) for “experimental use”, providing the first sanctioned commercial use of the Internet.

1993 Online Services launch for the mass market: the large network service providers, America Online and Delphi, started to connect their proprietary email systems to the Internet, beginning the large scale adoption of Internet email as a global standard.

Early 1990s The personal computer had found its way onto most desktops in corporate America. Electronic documents began to outnumber paper documents and the typewriter becomes a thing of the past.

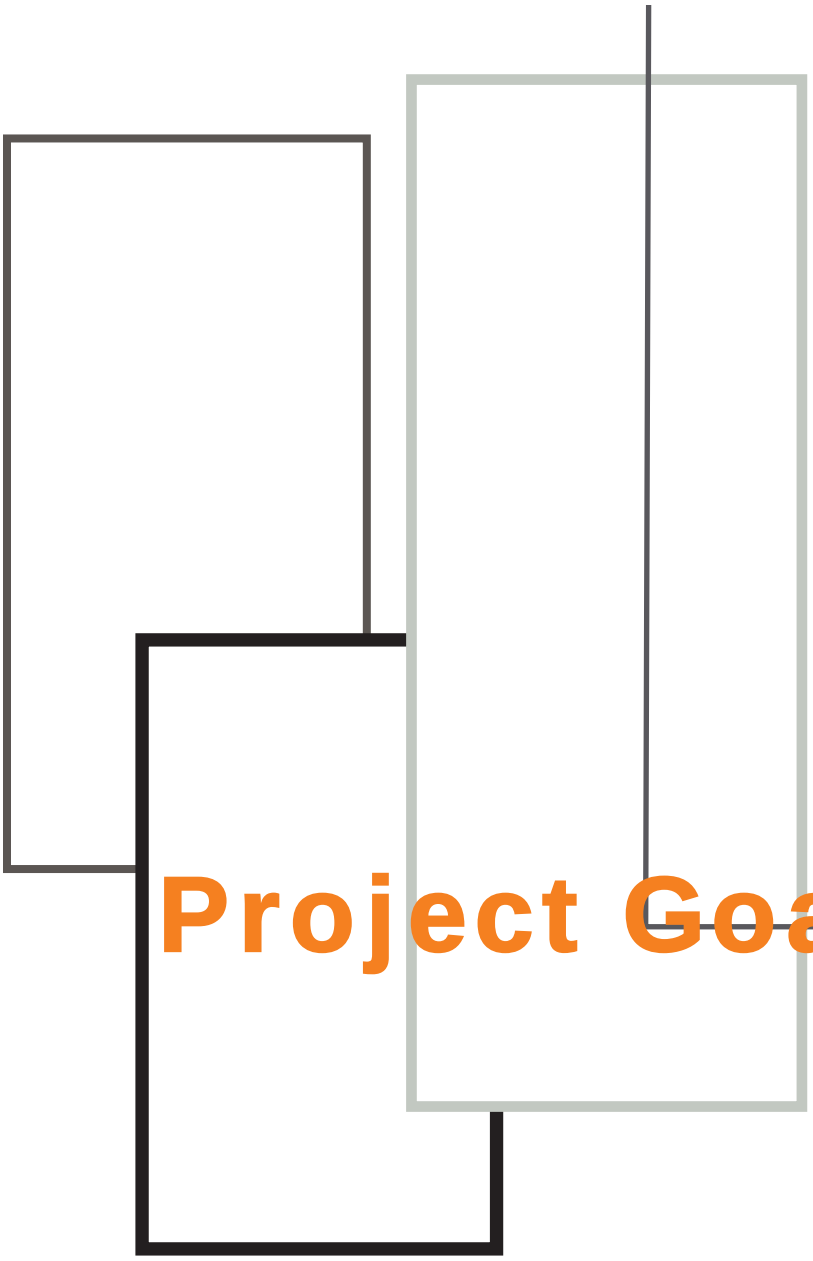
Noticing the impacts of innovations of office since the 1960’s, the impact of the electronic technology has increased from the components of the computer to the development of online communication. In the forms of the technology which has been growing substantially since the development of the computer, a creation of a different office environment has been created.

As the office has developed and become more and more interactive through technologies and design, there is a hierarchy among what is new of the time, what is said to enhance the work environment, and what is user-friendly for employees. A person will be needed to work with the technology on a day to day basis, so the advantages of technology are not going to always be in the favor of every company. For example, in the past leading up to now, the innovations of the computer have been growing constantly. There is a careful eye watching over the efficiency of what the computer technologies can actually bring to businesses. “If the equipment that we design and the systems we build require too great a mental change to be useful, they will not reach their goals, no matter how ingenious they may be otherwise,” (Chorafas, 1982). In this setting, the realization that people will need to understand how something performs and also be able to understand it in a timely matter is what technology in the office needs to accomplish. No matter where technology has gone or is going in the future of the office environment, a human factor is going to be a part of the technology in operation of the machines.

The office environment has made many changes in the setting of productivity of a business. From the analysis, the primary way in which offices have been changing is from technology based influences. Technology will continue to have an influence far into the future as well. Technology has become a necessity for the office setting to work with speed and efficiency. To implement the technology as it evolves, spacial qualities of an office building have changed to accommodate needs.

Space and collaboration are historically different in the office setting due to the factors of productivity within a business. The environmental qualities of the building are in direct relation to the people working and their environmental needs. Through history, changes in the building qualities to work more in line with the people who work in them has greatly affected the design rather than creating an office building with new qualities to influence the work of the employees in the spaces.

As the office has evolved from the past, there has been an equal evolution of how the worker can work with new ideas in the building to enhance productivity. Creating an office structure, both were the needs of technologies and working environments influence what the work does the employees and productivity will continue to evolve the office building in the future.



Project Goals

Project Goals

The goals of this thesis project are to create a building able to exist within three different environments including the academic, the professional, and the personal.

In the academic setting of this thesis project, the work will be focused on a well documented outcome of information gathered through research of the office structure of companies. Looking in the history of what an office structure pertains through other works and documentation, this thesis will focus on gathering information to use in the study of a unified topic. The academic environment is that of the research on the thesis question topic and how it can pertain the what design of the office can be or become in the future.

The academic environment works through the thesis will help in the future as the means for research and understanding information gathered on a particular idea or concept.

In the professional environment of the thesis, there are means of documentating the information gathered in the academic environment. Providing documentation in a meaningful and professional way is a goal which will add more credit to the statements of the work established. Moving into the future of the professional world, this thesis will effectively communicate the professional abilities to complete and properly document work in the realm outside of the academic setting.

Taking the work of the academic environment and applying it into the professional environment will create a sense of the work to be produced in the future of specific design of a topic and idea.

Through the personal environment of the thesis project and documentation, I will see a development in the methods of work produced through documentation and design. I will take the thesis topic, which is of personal interest to me, and understand how it can be studied, changed, and implemented to follow a theoretical premise perceived. Personal qualities of the typology also have an effect in the personal factors in this thesis project, whereas I feel the benefits of studying the outlined topic a necessity of future design.

Site Analysis

Site Analysis

The site is in an undeveloped part of the city in an ever-growing community. As the surrounding sites and community have been developed in the past decade, the intersection of the projected site has become a central hub for traffic around-the-clock and for commuters and the shoppers in and through the area. As more and more housing, corporations, and shopping centers move into the area, there is always an added element of the quantity of traffic, primarily vehicle traffic, and congestion.

Getting to the site doesn't prove to be a challenging task because of its location compared to the interstate system and its proximity to the development of the Maple Grove area. The interstate system in the area is the location of three roads meeting at the corner of the Twin Cities, a metropolitan part of Minnesota. The mall developments in Maple Grove create a strong artery from the interstate to the city. The proposed site is bordered by the artery from the interstate about a quarter mile form the interstate exit. Arriving to the site is going to be primarily from the interstate system whether you come from the cities or the outer suburbs of the cities.

As you arrive to the site of the office structure, there is a strong visual connection to the city as most of the developed surroundings draw you in before you see the one undeveloped corner of a major intersection. The proposed site is currently at the boundary between the shops and businesses to the gravel pits which have been slowly diminishing in the past since the community is growing larger.

The gravel pits around the site are a reminder of what used to cover the entire site and how the gravel hills are slowly being driven away to accommodate the growth plan of the community. As have development around the site has, occurred there has always been the remaining and changing gravel pits which stares at one in the eyes until further development is continued and that original sight is taken away or pushed away.

Getting into the closer context of the site elements themselves, there is a feeling of being exposed but untouched due to the torn feeling between community development and landforms from gravel pits. On the other corners of the proposed site intersection, there is a boundary which is outlined by people, vehicles, and structures, whereas across the flat landscape of the site the landforms of gravel tower as high as the surrounding buildings and call definition to the site itself. The element of feeling untouched comes about from the quality of the landscape and vegetation as the site occurs in the community. The site had never been developed on or used, other than the barrier between the two different community surroundings. Therefore, vegetation at the site has remained untouched for many years, allowing the prairie grass to grow freely. There also is a pond created naturally from the operations of the gravel pits.

The elements of the surrounding sites and elements show the qualities of what was in the majority of the surrounding sites and what is being now created to enhance the community. The proposed site is a great way to enhance the division and become the connection piece to the two very different operations around the area. Looking into the future, however, as the community grows further to the east, there may not be a need for the connection if all the gravel pits are developed upon.

Elevation

A seen the section of the proposed site, the slope through the site is minimal, whereas the surrounding sites have steep gradients. The land on the surrounding site has a general downward slope towards an emergency storm pond to the east and a lake to the west. Also seen in the background of the site section is that of the landform created from the operational gravel pit. The drainage of water on the site plays a role in sustainability as it flows downward to the retention pond.

Shading from surrounding buildings and activity will not be much of a factor on the site as buildings are not any taller then three stories. The roadways which border the proposed site from the surrounding buildings, create enough of a space for minmal amount of shading on the site. The landform from the gravel pit to the north will also not have a factor in shading on the site due to the geographical location since the sun path is to the south all year long.

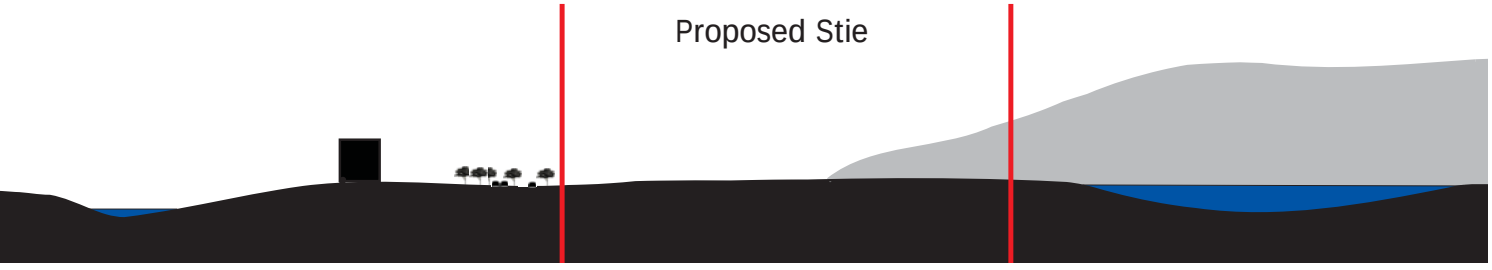
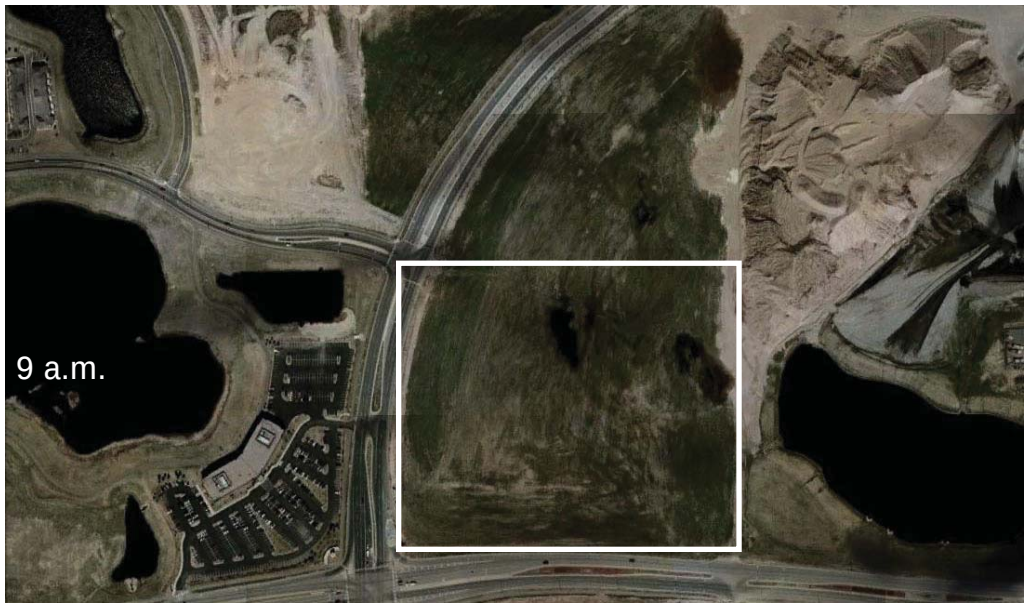


Figure 2.1

Site Shadows

The proposed site has a very slight slope which only leads to site shading in the morning and evening hours when the sun is lower on the horizon. As seen in the progression of the shading photographs taken hourly, the site creates minimal amounts of shading during certain hours of the day, but the mid-day sun being at the highest point will create no shadow form the rolling slopes of the site.




10 a.m.
11 a.m.


12 p.m.
1 p.m.

Figure 2.2

Built Features

There has been no development of the proposed site to date. The location of the site on the corner of a major intersection creates a large density of people passing by the site in the ever growing community. As seen in the map, the community is becoming more of a dense place where people can come to for daily activities and working. The range of buildings on the surrounding sites stem from office buildings, medical buildings, restaurants and shopping centers. As proven in the development of the community, the density of the area is continually growing.

Figure 2.3

Light Quality

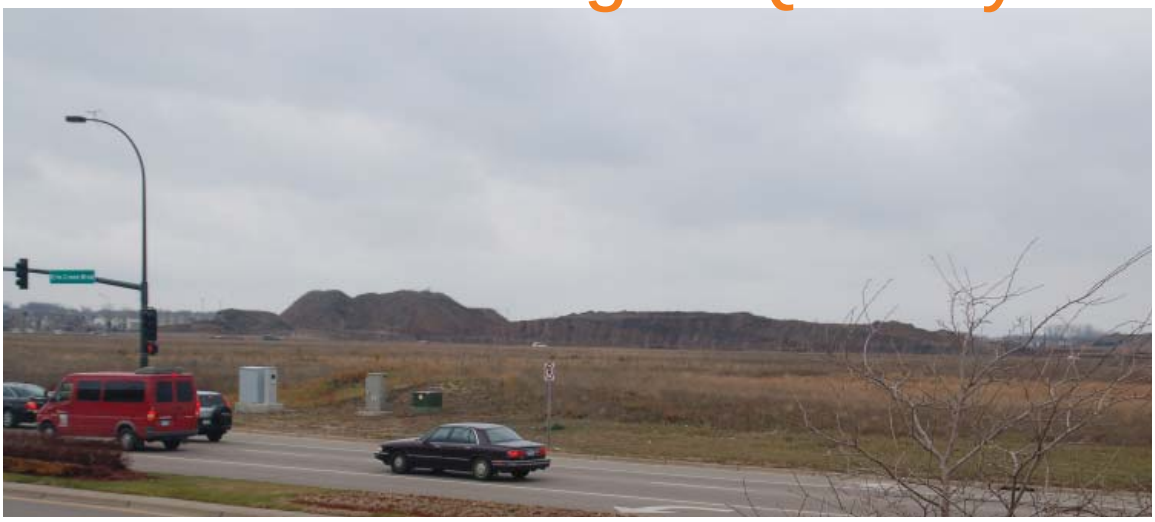


Figure 2.4

The surroundings of the site are the leading factors in the lighting qualities of the site and how the feeling usually stays constant all year long. The majority of the time the colors of the site that those of the vegetation which grows freely without maintenance. Drawing from the landforms of gravel to the north and east of the site, dull colors and warm temperatures are portrayed to the proposed site.

The building surrounding the site primarily follows a theme of using warm colors enhancing less of an intense feeling. There is a uniform temperature of warm color between that man made landforms and the built environment that currently exists completely surrounding the site.

Figure 2.5

Vegetation

Figure 2.6

Vegetation of the site is currently natural growth of the land without disturbance or maintenance. This is a factor which leads into the ideas of sustainability and what types of plants can survive in the harsh climate every year. The vegetation is a strong factor of the site and can possibly be used in the design of the landscape for the proposed building.

Disturbing the vegetation as little as possible is an essential factor of promoting sustainability on the site. The vegetation can work with the soils and climate brings about a quality which can prove to be beneficial. Using the natural growth of the site in the future design plans rather then using exotic vegetation which might be partial to a different soil type and climate then that of the Minnesota will also show a sense of place.

Water

There is no collection of water on the site itself, however, with ponds adjacent to the site, the water source provided an opportunity for use. The water running on the site when there is a significant amount of rainfall follows the natural slope of the land to the pond. The pond had been recognized as a storm pond by city planning for the area.

Since the pond is planned as a storm water pond, it might not be the a permanent solution for collecting water to maximize sustainable strategies. Finding other solutions collect water on the site might need to be incorporated into the design of the office structure.

With close proximity to the site, the users of the building could make use of water collection from the site and the pond for applications related to green design. Knowing that the runoff water from rainfall is purified gray water, the primary use of the water would be used for landscaping and/or toilet use in the building.

Figure 10: Ponds Maple Grove Gravel Mining Area

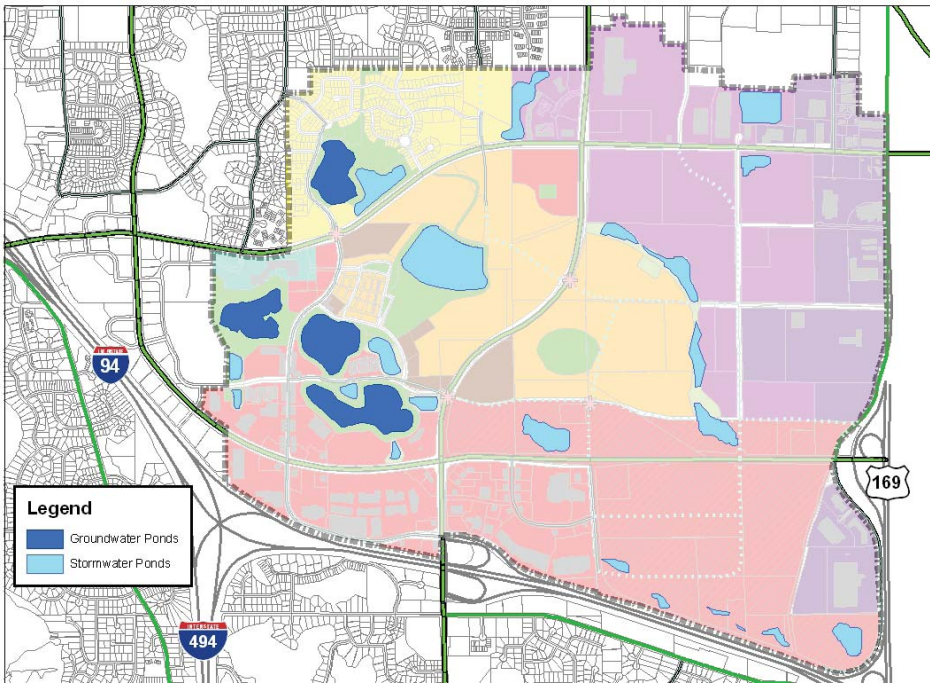


Figure 2.7

Wind

The time of year does affect the wind on the site, primarily through the direction of where is comes from based on the season. Buildings and other landforms do prevent the wind from reaching the site in the directions that prevailing winds lead. The hills and gravel mounds are going to affect the amount and intensity of wind to the site.

Such that of an adjacent site with a wind generator, the winds at higher altitudes can be greater then those at ground level. This might be primarily due to the direction of prevailing wind as it had to travel over the hills and doesn't reach ground level until it passes over the perceived site.

As mentioned in the details of the site, the gravel mound on the north end of the site might also have a negative effect if the wind creates turbulence on the site as northerly prevailing winds sweep over them. This effect was not a problem with the buildings surrounding the site, as they are not of the scale and height to affect wind across the entire proposed site.

Human and Natural Influence on the Site

Due to the nature of the surrounding sites and the development which is occurring around the proposed site, there is no regular human existence on the site, if any at all. The boundary from the site by the main intersection cuts off interaction and connection from the other development. Since there is nothing to the northwest of the site as far as development, there has never been a need for people to inhabit that space.

There is not any existence of human activity for maintenance either. The site has been free of growth to the natural environment. No human influence involving pedestrian or even mechanical equipment has played an effect in the landscape of the site. The natural environment is the leading factor in the change of the site context.

The site has maintained itself with the natural vegetation and watershed without disturbing the context of the location. The distressing factor for the vegetation of the site is the yearly climate change in which the vegetation is present on a annual basis. The watershed of the site again is natural in the nature of controlled flow of storm water. Because of the relatively flat site, there is not much erosion of the ground other then minor directional water flow of storm water that had been naturally created over time.

With the site in the location near to new developments, it is a positive factor that the proposed site was not a wasteland for excavated materials. Since there has been no activity other than the natural environment to the site, it has, become over time, a naturally occurring and self sustaining site without the influence of human activities.

Soils

The land of the site and surrounding sites is primarily from gravel pits. In the soil survey of the site and surrounding land, the proposed site, along with the land to the north and east are labels as gavel pits which don't have the specified soil qualities due to the changing of land on a regular basis. There is sand and soil added and moved regularly, creating a mixture of material composition of the land.

The land to the west of the proposed site is labeled as urban land-udorthents (cut and fill) complex. This is due to the developments of the structure and landscape of the area from the previous land use. This land was once part of the gravel pits of the community and has since been filled and changed for use of development and community growth. Like the gravel pits, there is a mixture of sediments which create the deeper levels of soils.

Gravel Pit Ground Type

Urban Cut and Fill Ground Type

Figure 2.8

Utilities

Utilities to the site are not present on the current site but are available due to the development of the surrounding community. A projected development plan for the gravel pits has been talked about by the city, considering the development of the undeveloped area. Understanding the master plans of where spaces are deemed for a certain project type, the structure of the development creates and underling projected availability of utilities.

Figure 2.9

From the scope of the project with the ideas of sustainability and use of the land, there will be a reduction of the quantity in the utility usage for the site will be due to the ability of the structure to work with the environment for elements utility usage.

Figure 2.10

Vehicle and Pedestrian Traffic

Vehicular traffic is a growing concern with the surrounding development as the community continues to grow and expand. The intersection on the southwest corner of the site is a main crossing point for the city, which creates congestion mainly through the early morning and evening rush hour times. As the expansion of the development was planned, the roads were originally designed for large amount of traffic.

Moving into the site, there are already a few intersections leading into the site from two different arteries of the community.

Figure 2.12

Pedestrian traffic in the community is minimal, considering a main structure of the paths through the community development is already present. Through the community future plan of the gravel pit area, there is a strong emphasis on the walking distances compared the the nodes of the residential and commercial planning. With the outlining half mile walking distances shown in the map to the right, a sense of the pedestrian transportation is greatly considered to future development. A prevalent aspect of planning imposes the future of commuting within the community.

Figure 2.11

Figure 2.13

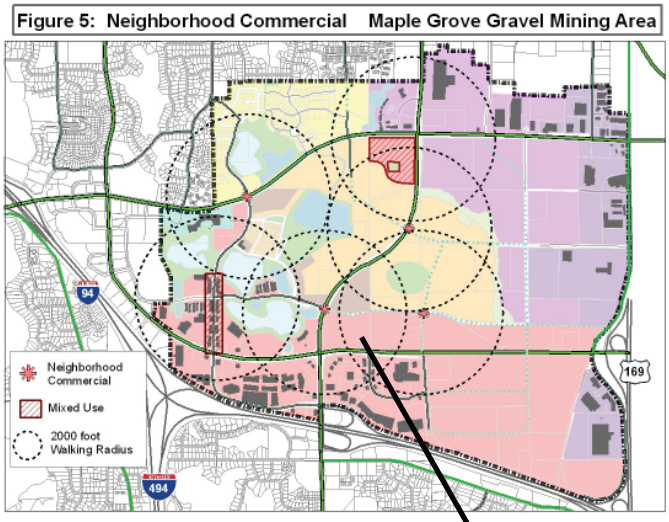


Figure 2.14

Topography Survey and Character

The slope of the site itself is within 4-10% and creates a great enough grade for the watershed without distributing the activities which could occur on the site in the future. To the north of the site there is a significant slope of a hill in the gravel pits. This hill does have significant erosion due to rainwater and the slope. Throughout the site, the slope is in one direction as it slopes downward away from the main intersection of the city.

Possible development of the hill to the north could greatly effect change, the quality of the site, and create a space for general purpose activities. However, with this task there would be a consideration of the eroding hillside and how this could change to make the hill a positive quality to the proposed site.

Figure 2.15

Directly on the proposed site the is not much for character in the current state. With no occupancy of the site from humans, the character becomes that of a vacant landscape. Being the slope of the site has a relatively low slope, there isn't much for erosion. As mentioned above, there is erosion to the north of the site in the gravel pits, which again could eventually play a factor in further development of the proposed site.

Figure 1

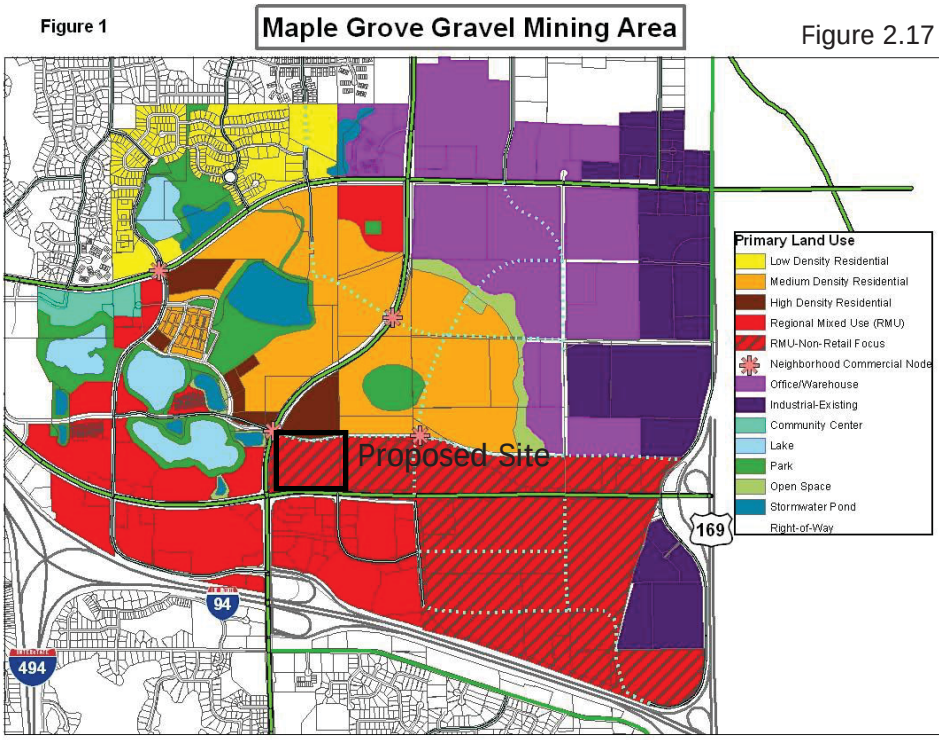
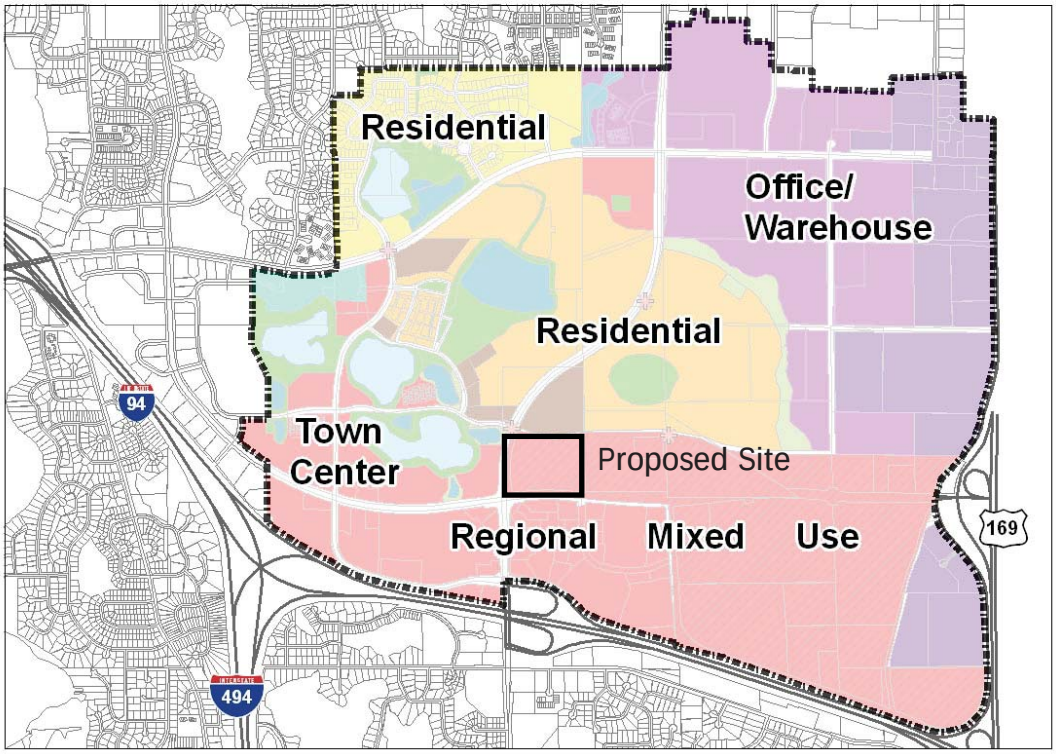


Figure 2.17

Figure 2: Major Uses Maple Grove Gravel Mining Area



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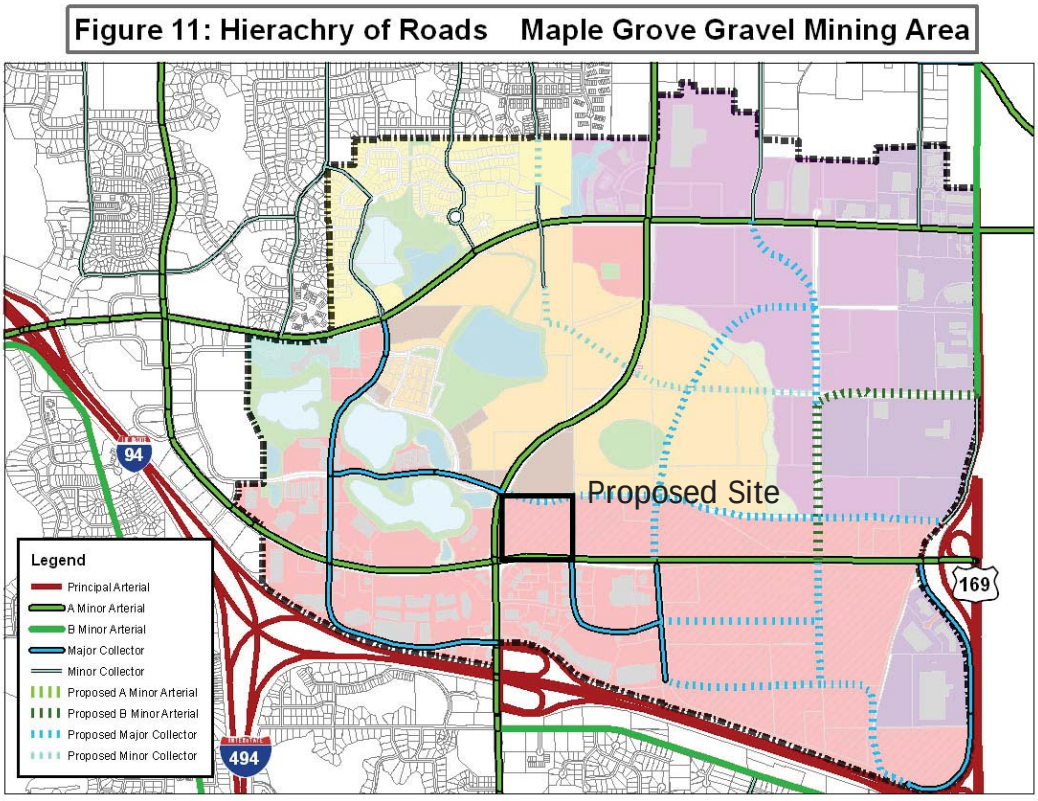

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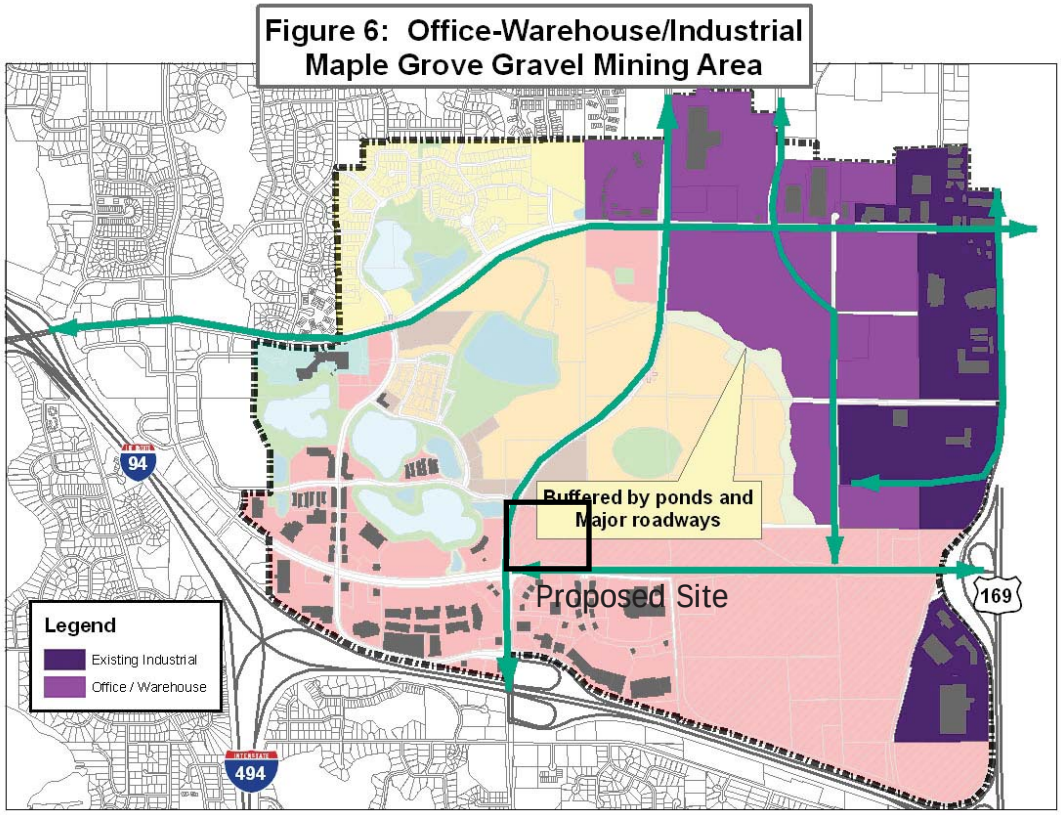
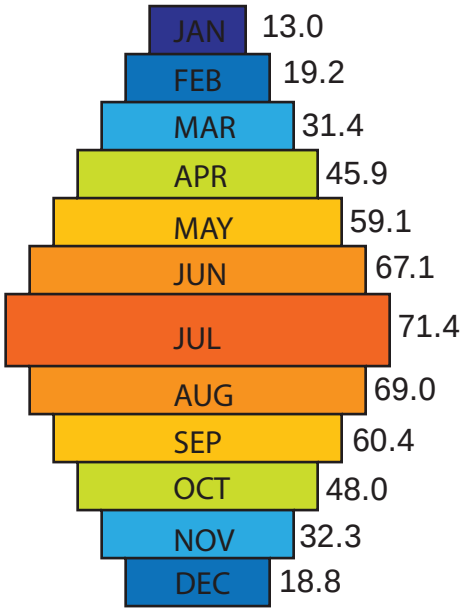


Figure 2.20

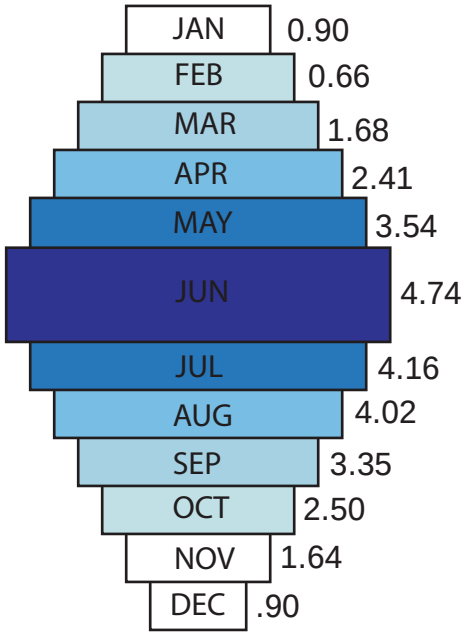
Site Reconnaissance

Figure 2.21

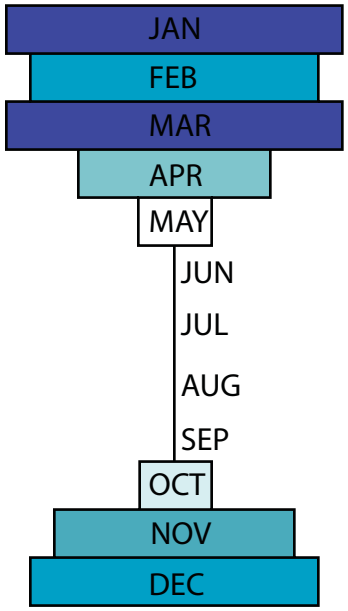
Climate



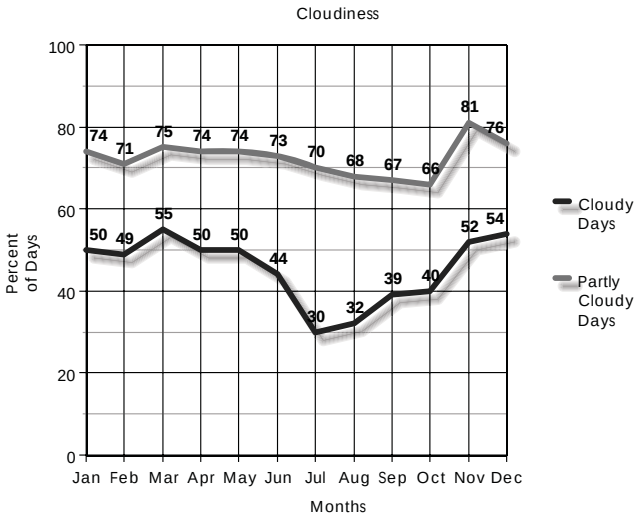
Average Yearly Temeratures
Figure 2.22



Average Yearly Precipitation
Figure 2.23



Average Yearly Snowfall
Figure 2.24



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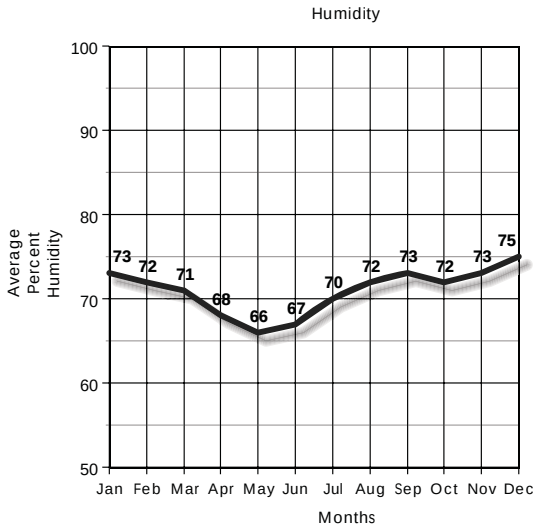

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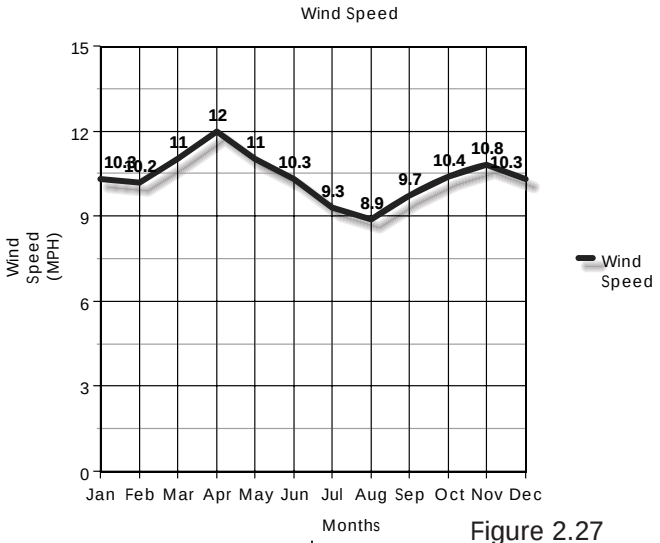

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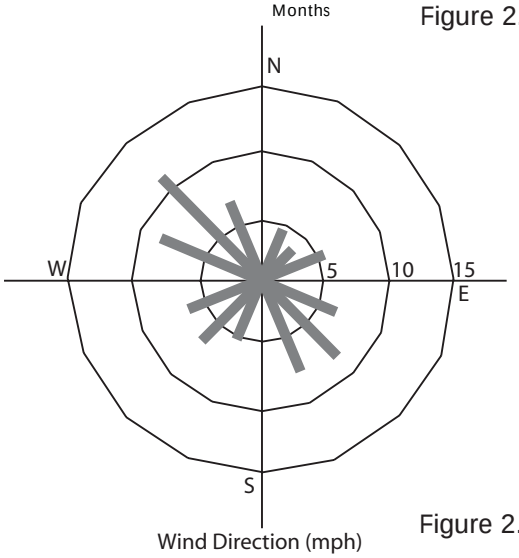

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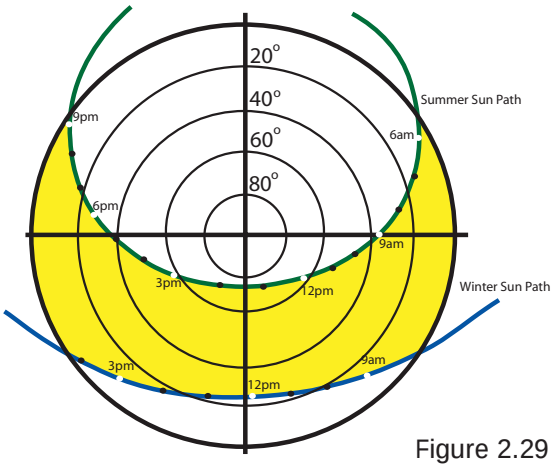

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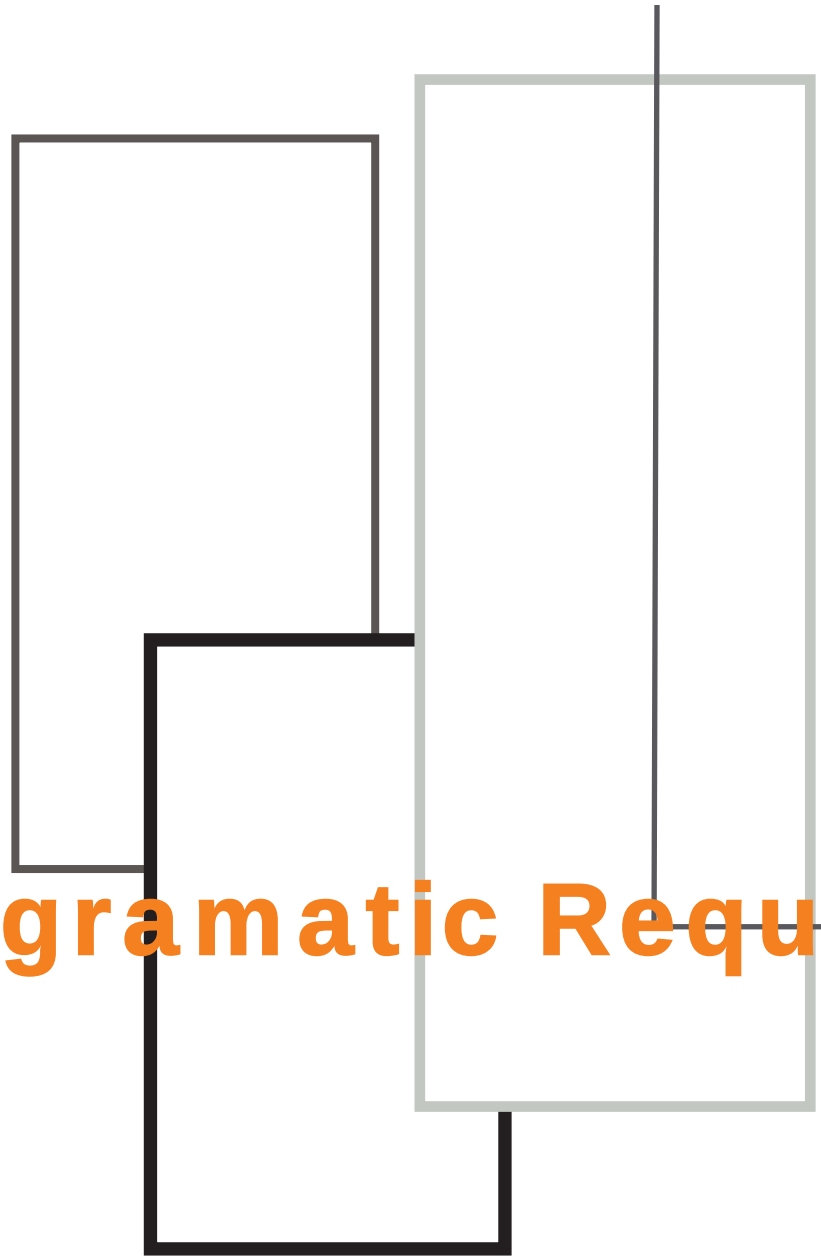


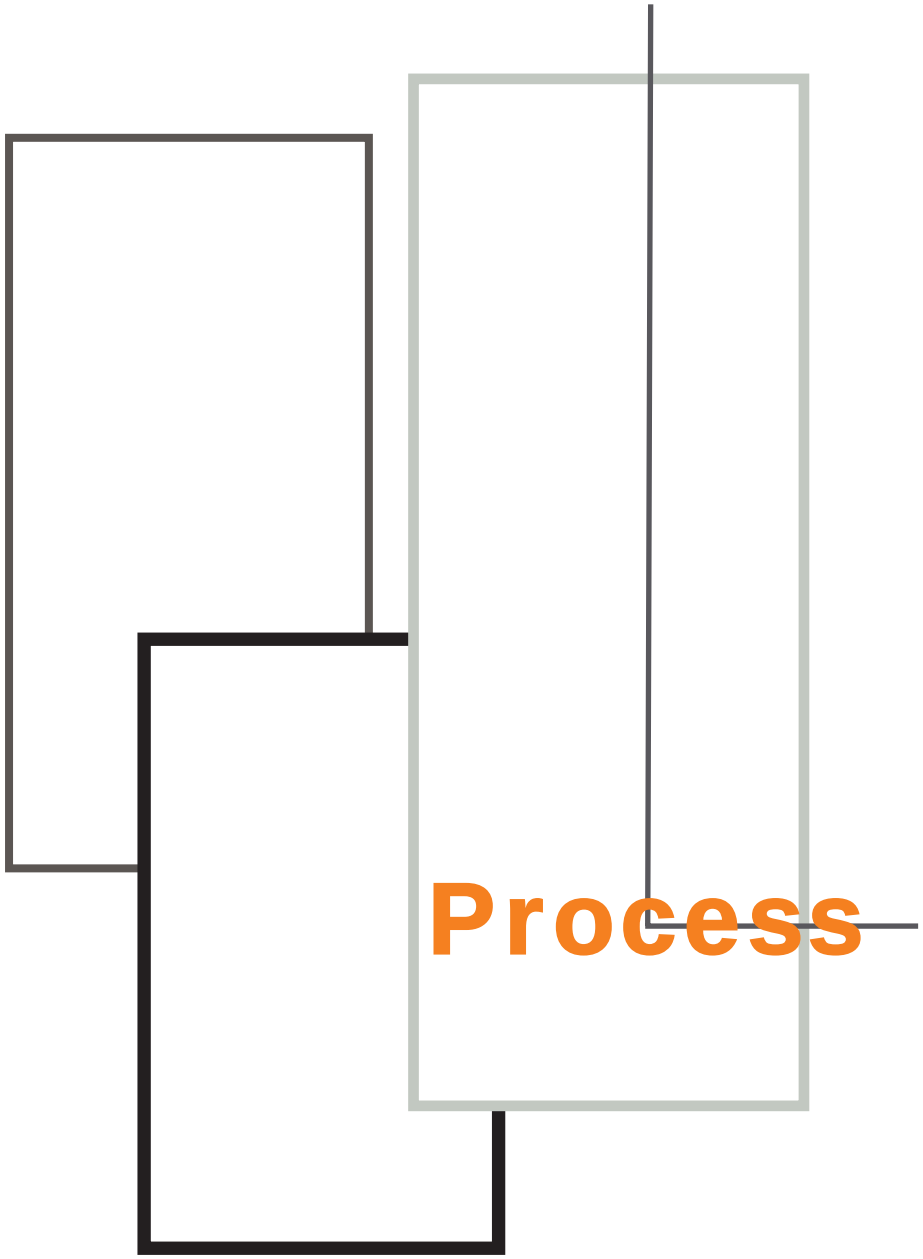
Programatic Requirements

Programmatic Requirements

From the research of the theoretical premise and the case studies considering production, the spaces of an office structure will directly relate to the quality of space. Relating the persons of the company to the actions and working conditions of the building will influence productivity in through a matter of a “healthy” environment.

A major project element deals with the relationships of work space and the interaction of the space with elements such as noise, light and air quality. Focusing on the productivity of persons working in a building will drive the design of the layout of spaces.

Reception/ Gathering	3,000 sq. ft.
Atrium	7,000 sq. ft.
General Use	10,000 sq. ft.
Circulation	12,000 sq. ft.
Open Office	30,000 sq. ft.
Collaboration Space	15,000 sq. ft.
Private Workspace	8,000 sq. ft.
Learning Work Space	10,000 sq. ft.
Outdoor Space	20,000 sq. ft.
Receiving	3,000 sq. ft.
Utilities	7,000 sq. ft
Mechanical	15,000 sq. ft.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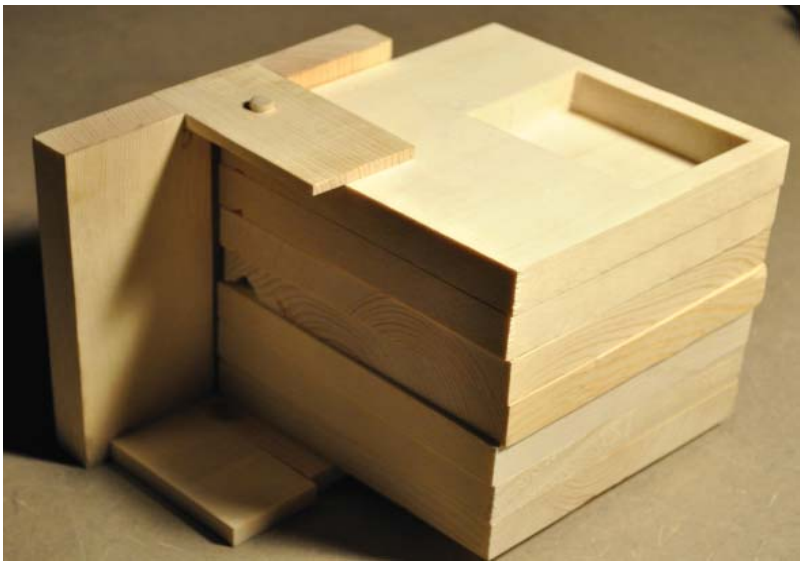
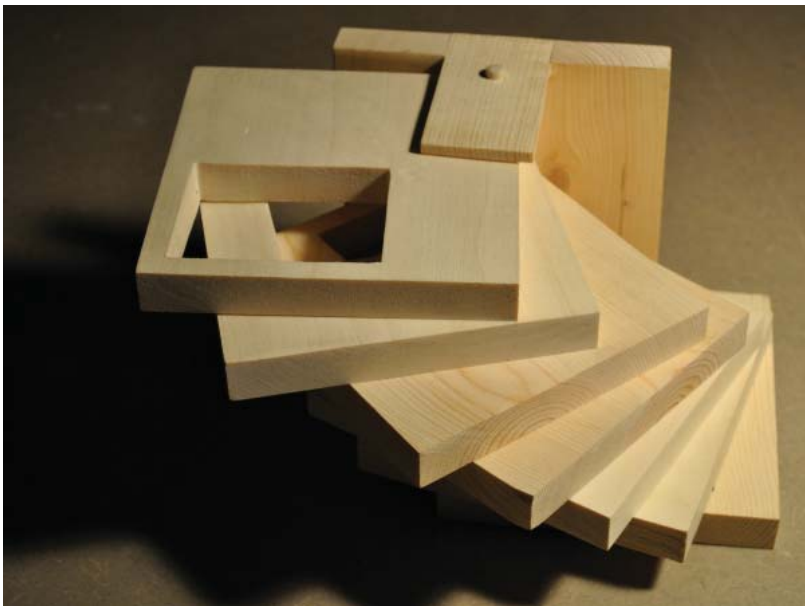
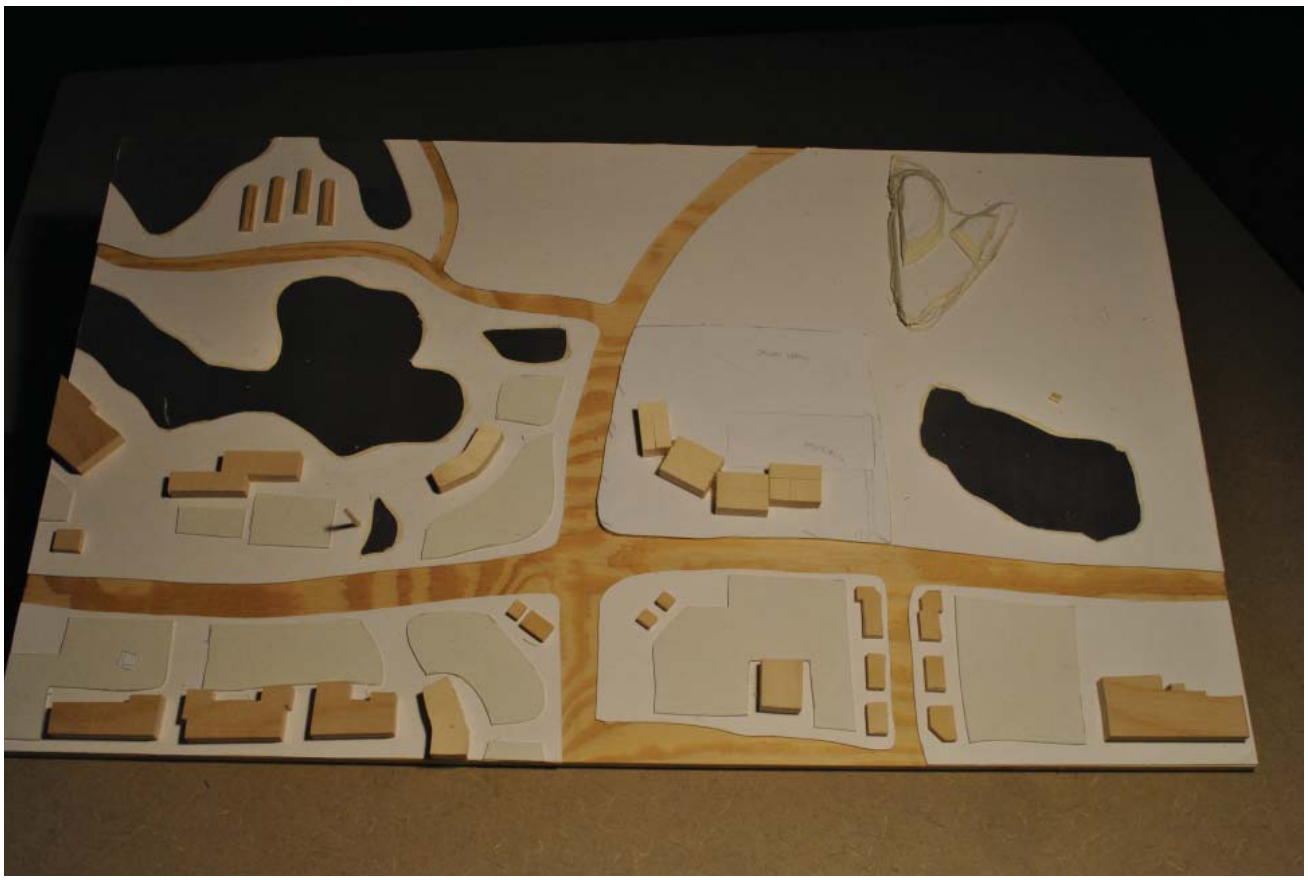
Parti

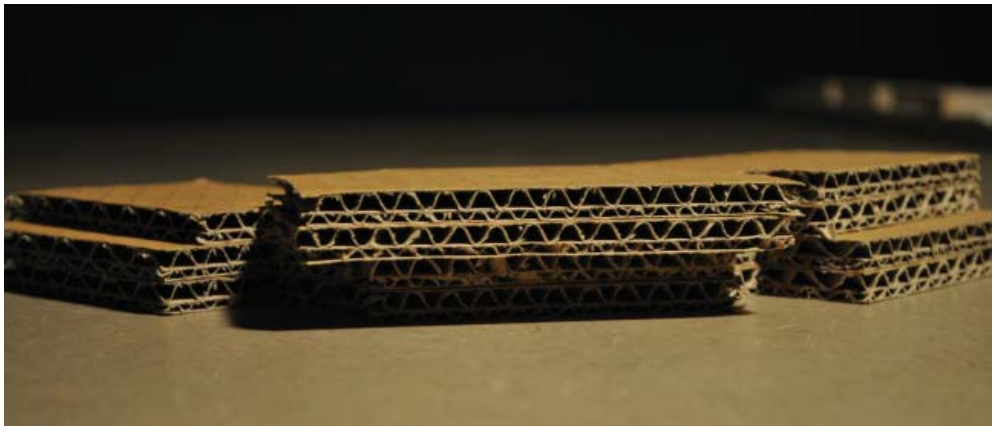


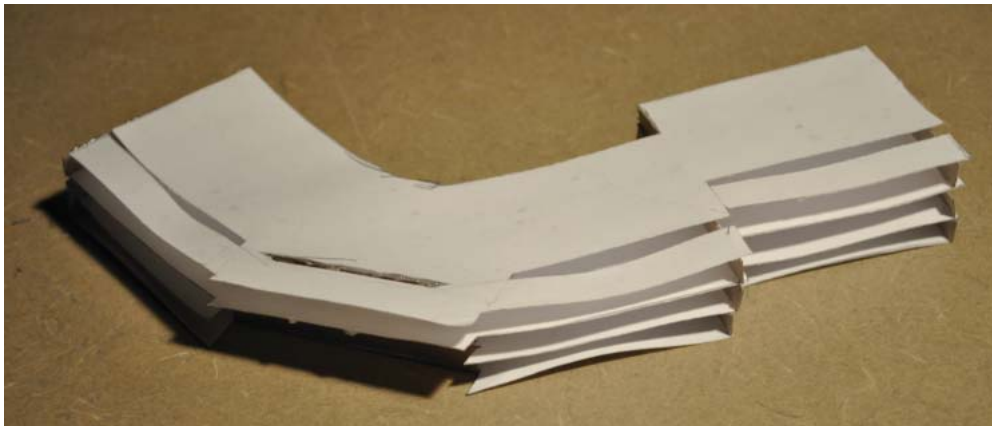


Site Layout

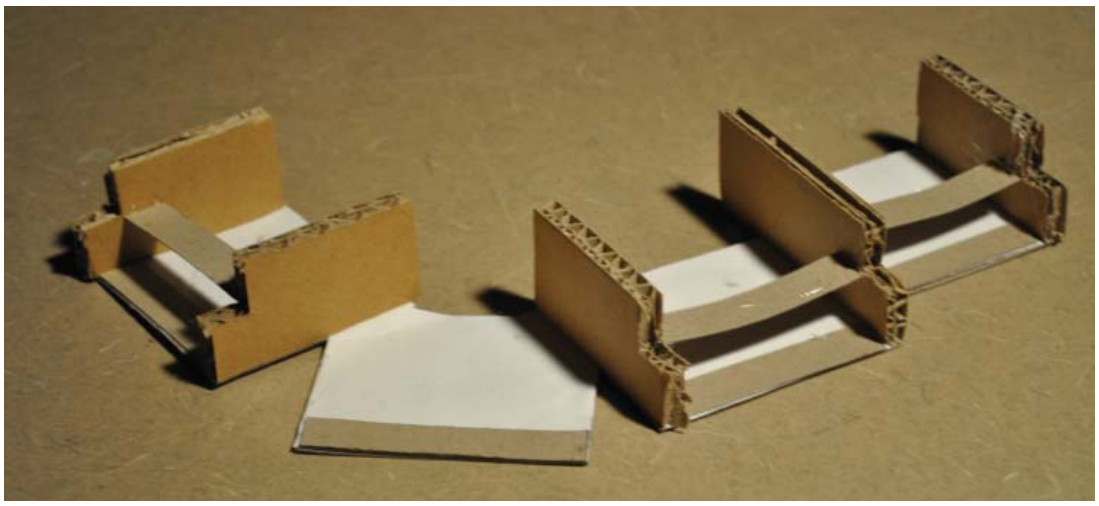


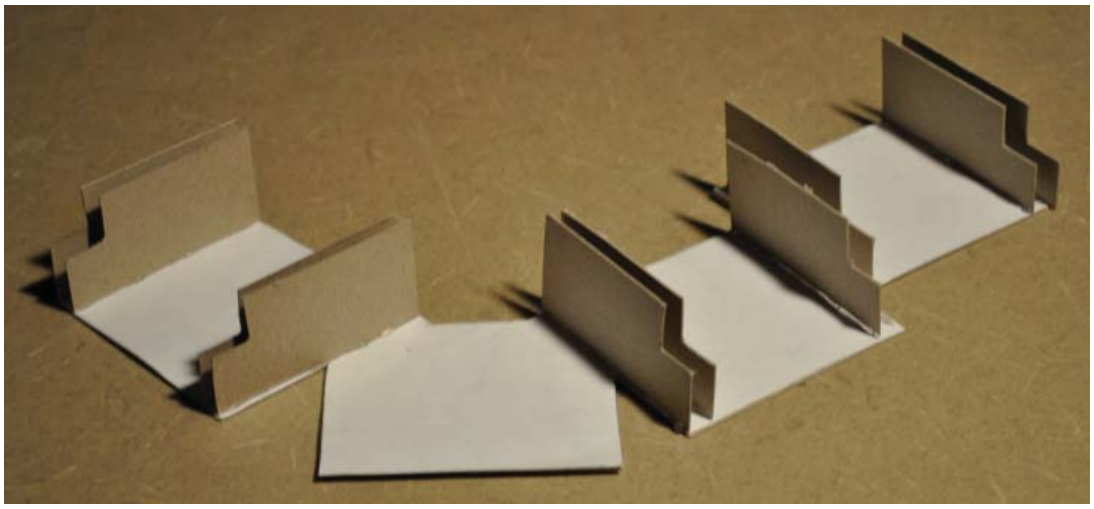
Form and Mainstreet



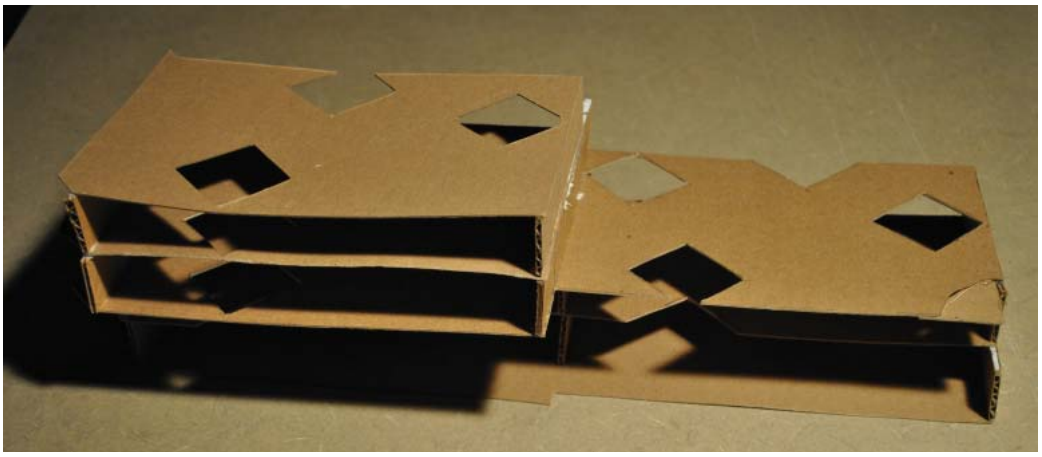


Structure

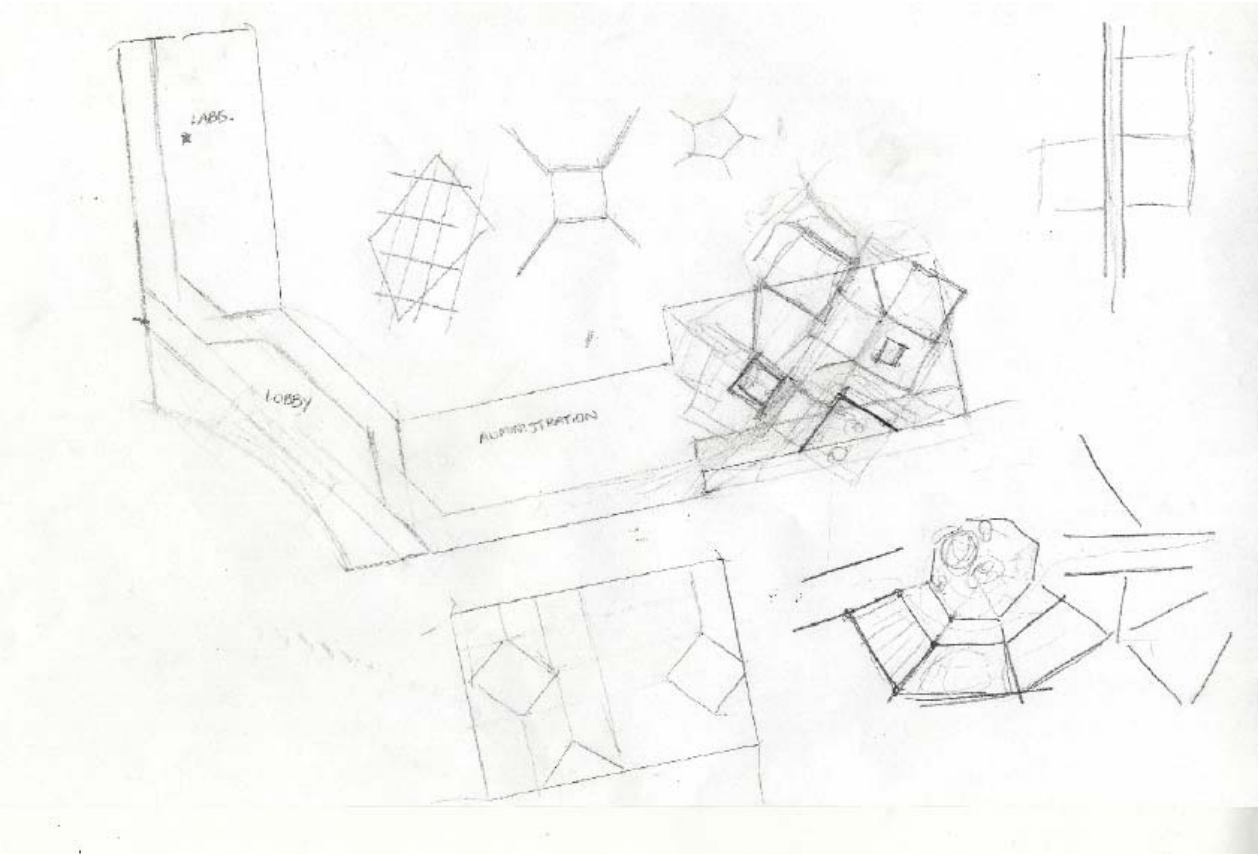




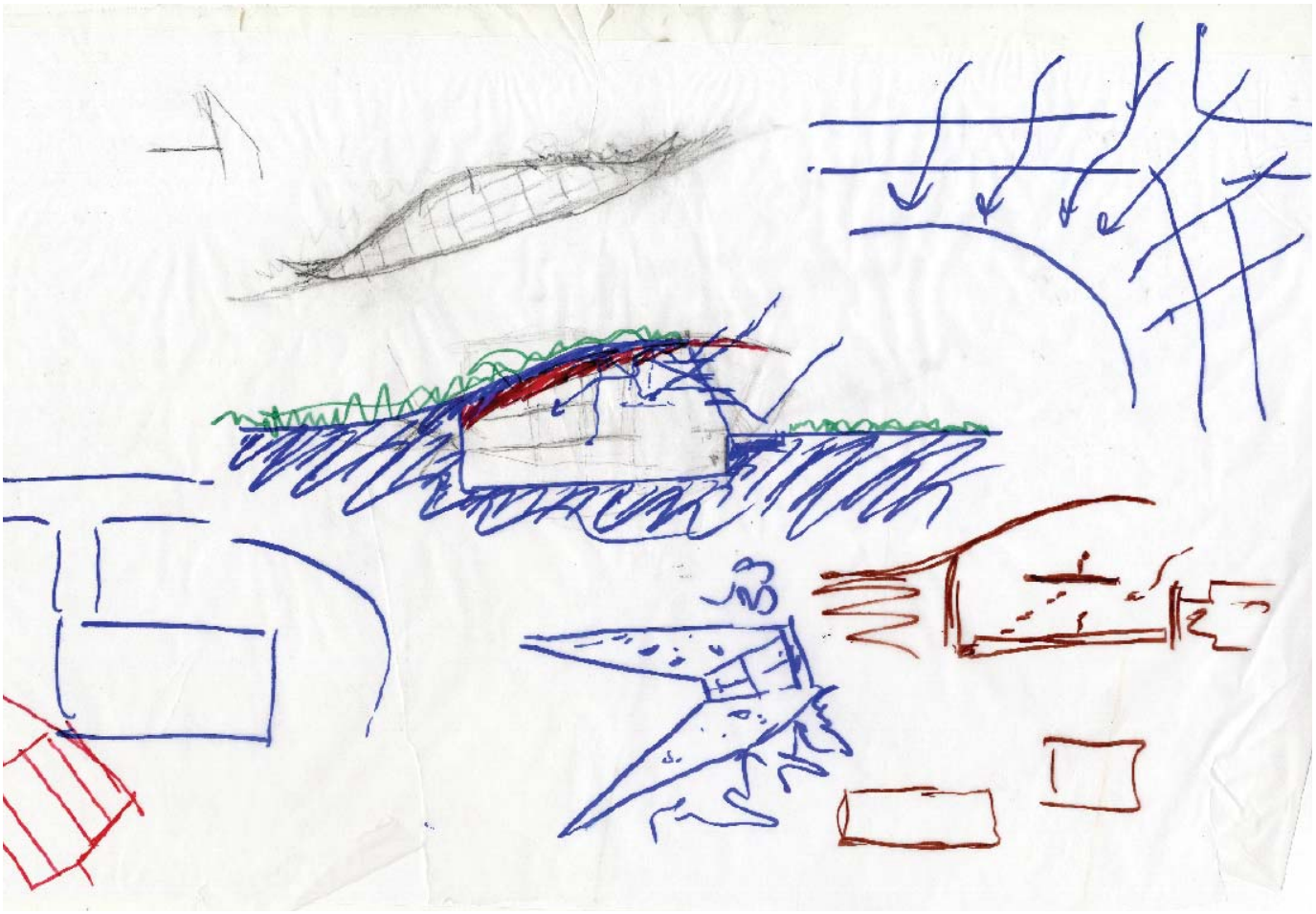
Atrium Study

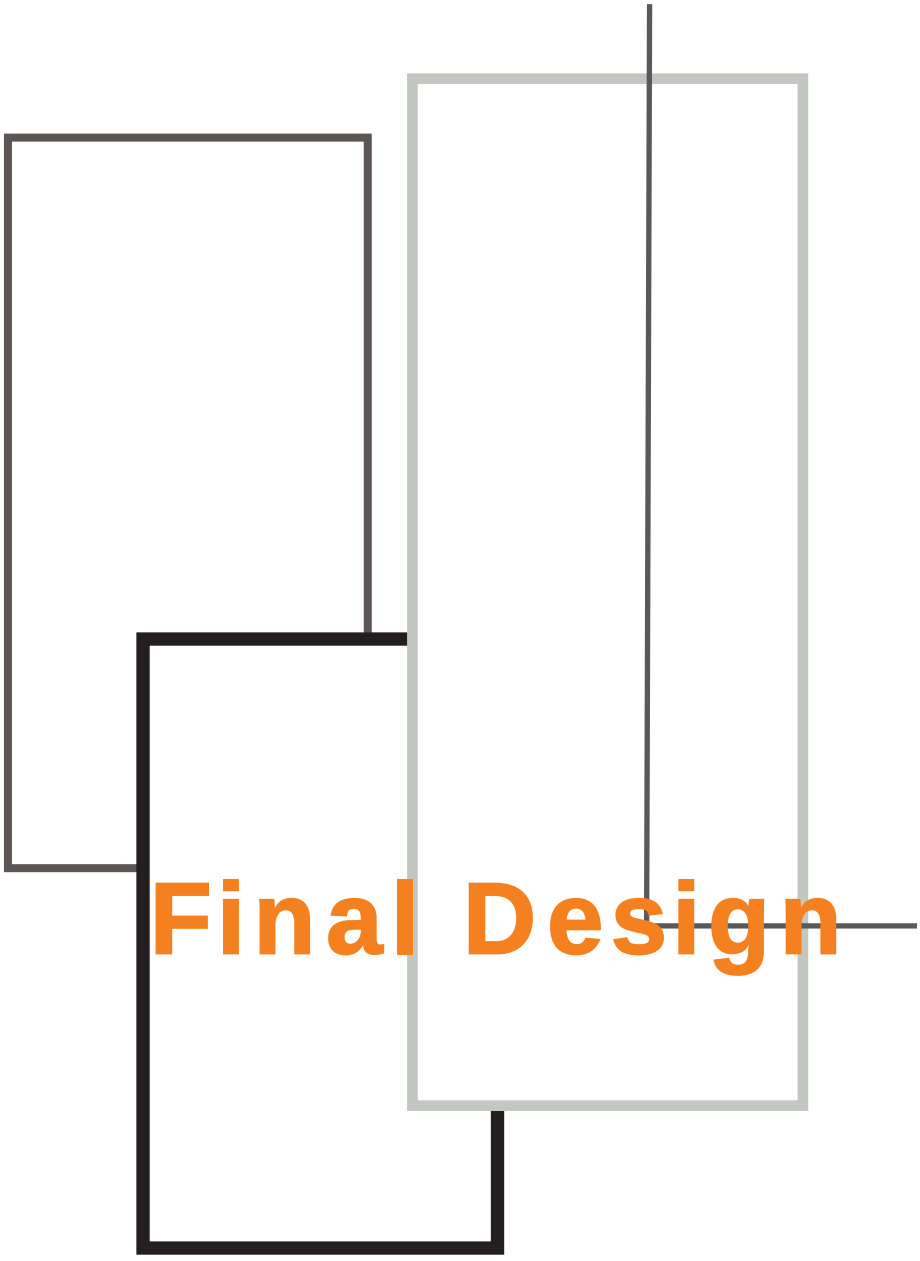


Element Interaction



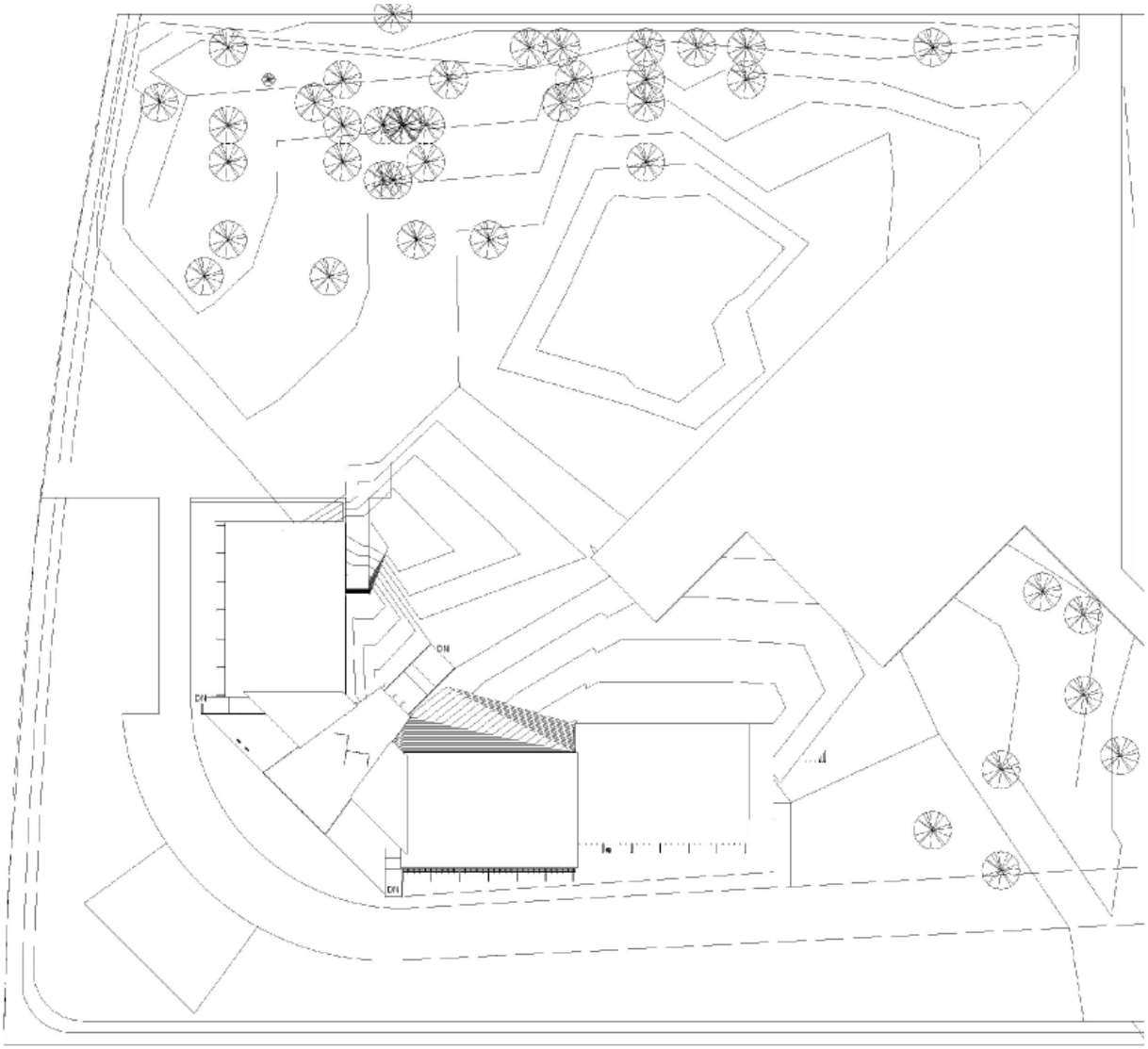
Building Section



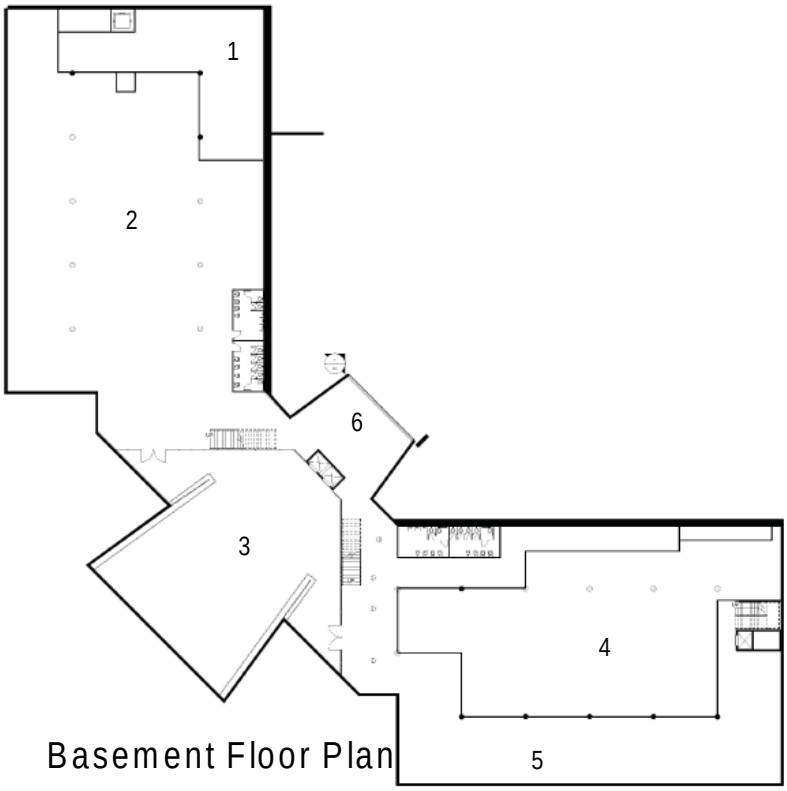


Final Design

Site Plan



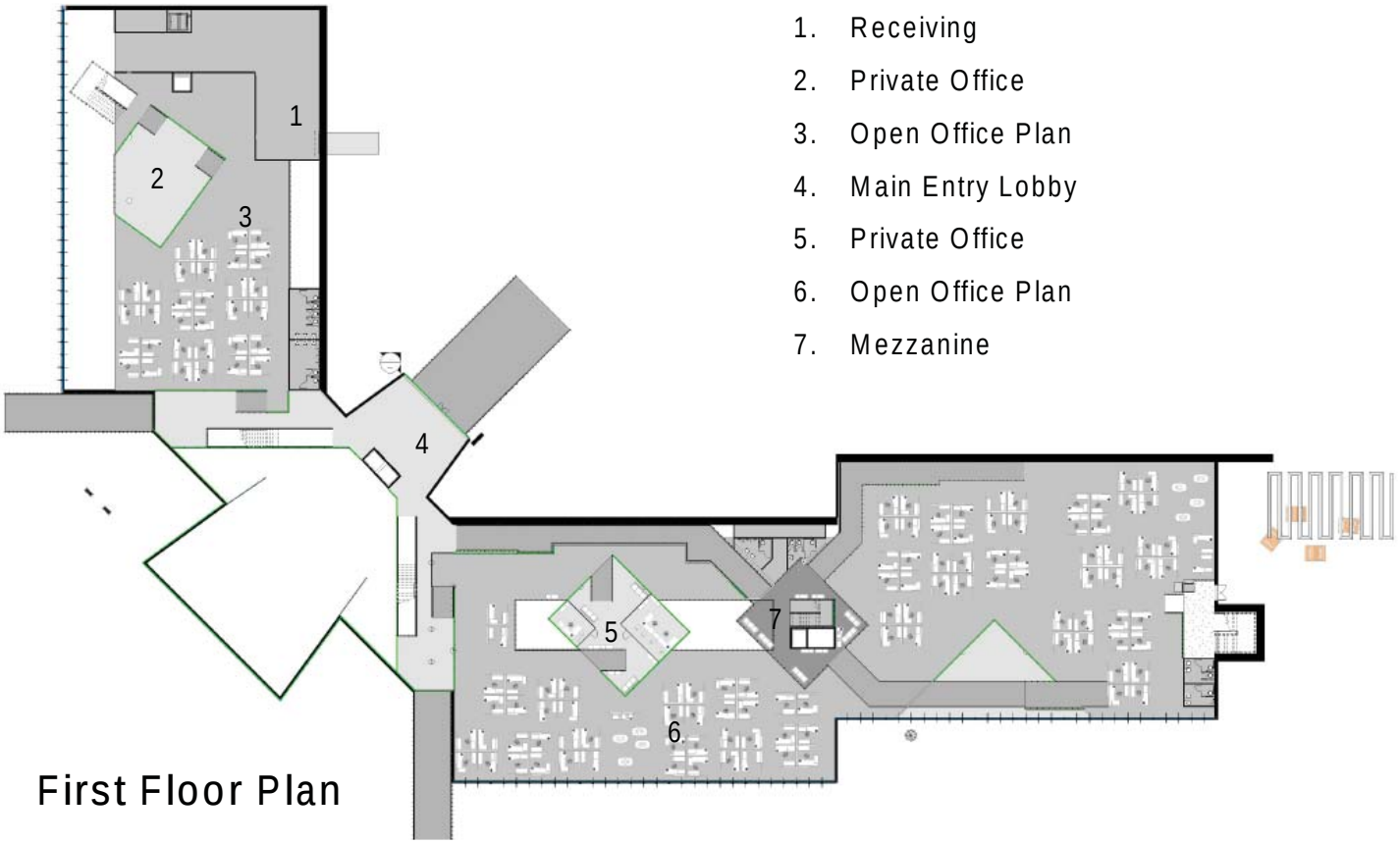
Floor Plans



Basement Floor Plan

1. Storage/ Mechanical
2. Lab/ Experimental
3. Tour Lobby
4. Mechanical
5. Public Tour Circulation
6. Employee storage

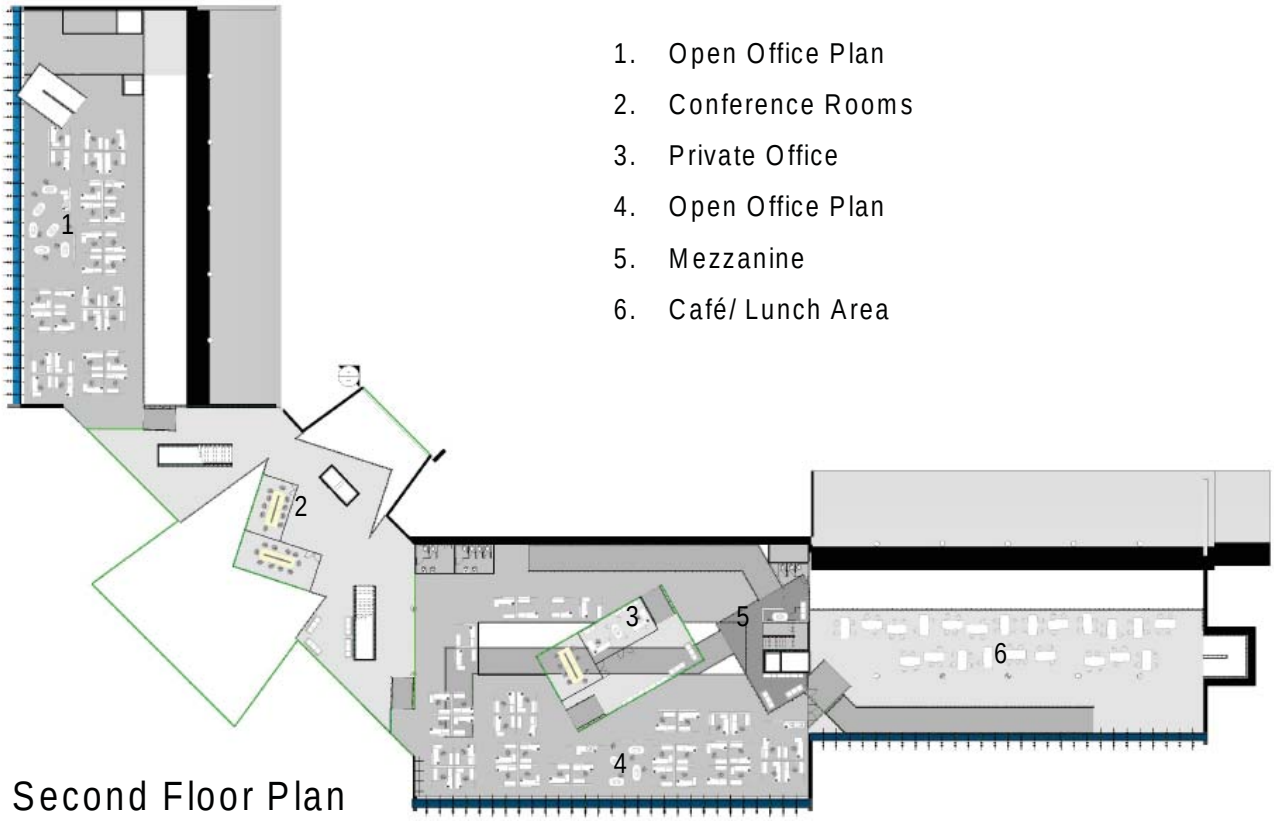
Floor Plans



First Floor Plan

1. Receiving
2. Private Office
3. Open Office Plan
4. Main Entry Lobby
5. Private Office
6. Open Office Plan
7. Mezzanine

Floor Plans

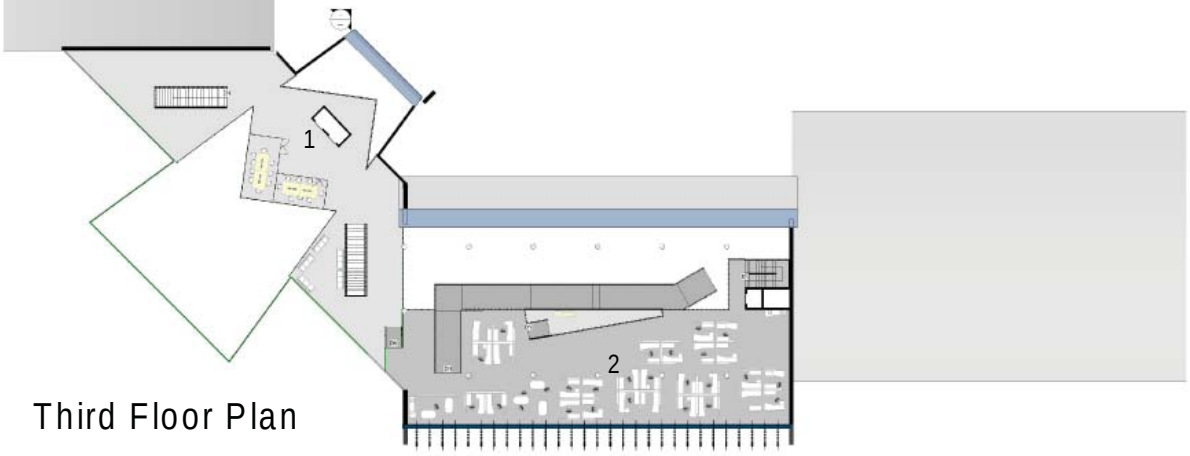


Second Floor Plan

1. Open Office Plan
2. Conference Rooms
3. Private Office
4. Open Office Plan
5. Mezzanine
6. Café/ Lunch Area

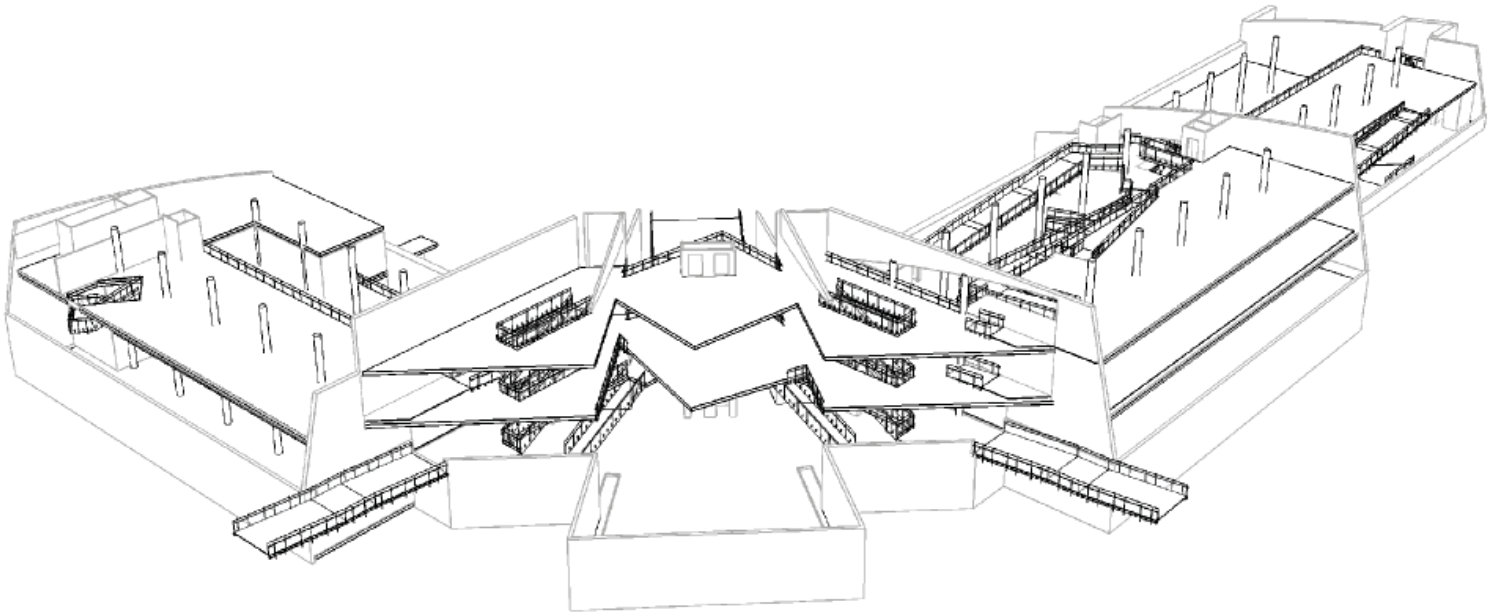
Floor Plans

1. Conference Rooms
2. Open Office Plan

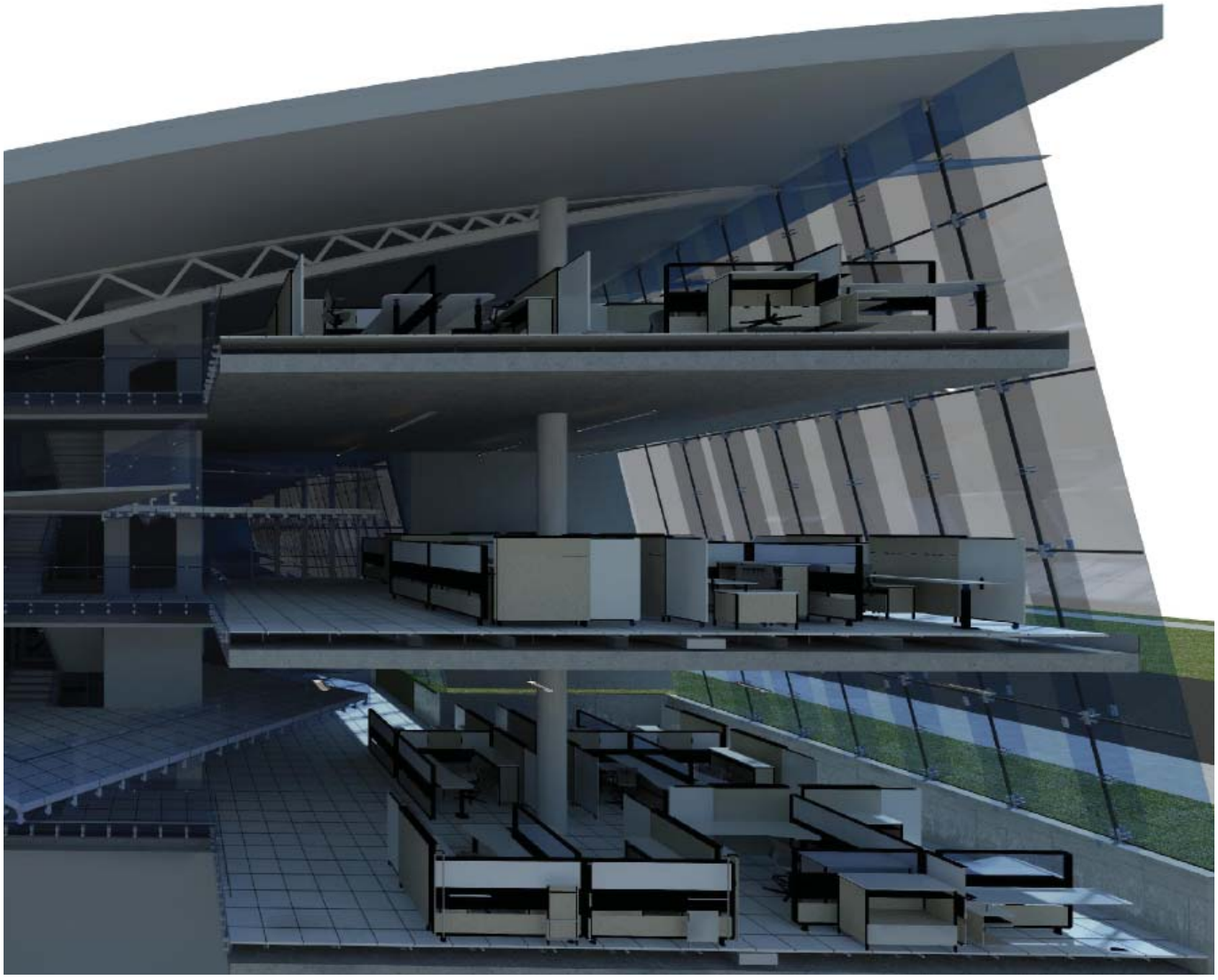


Third Floor Plan

Isometrics Floor Plans



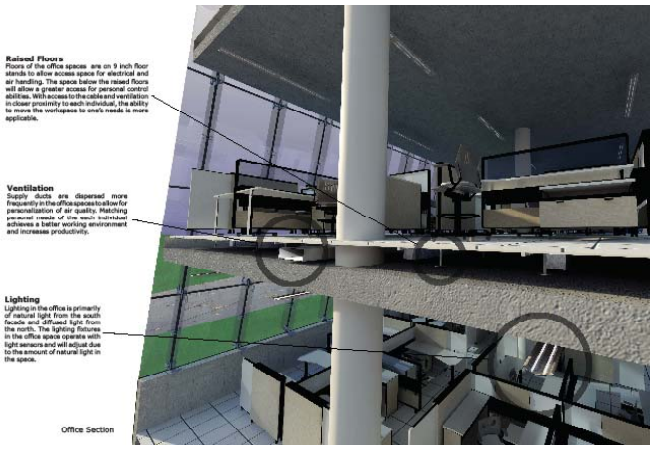
Office Section

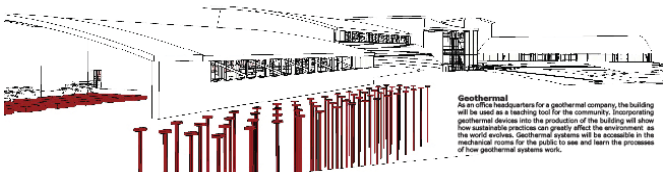


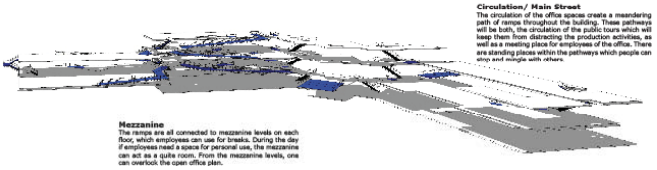
Perspectives

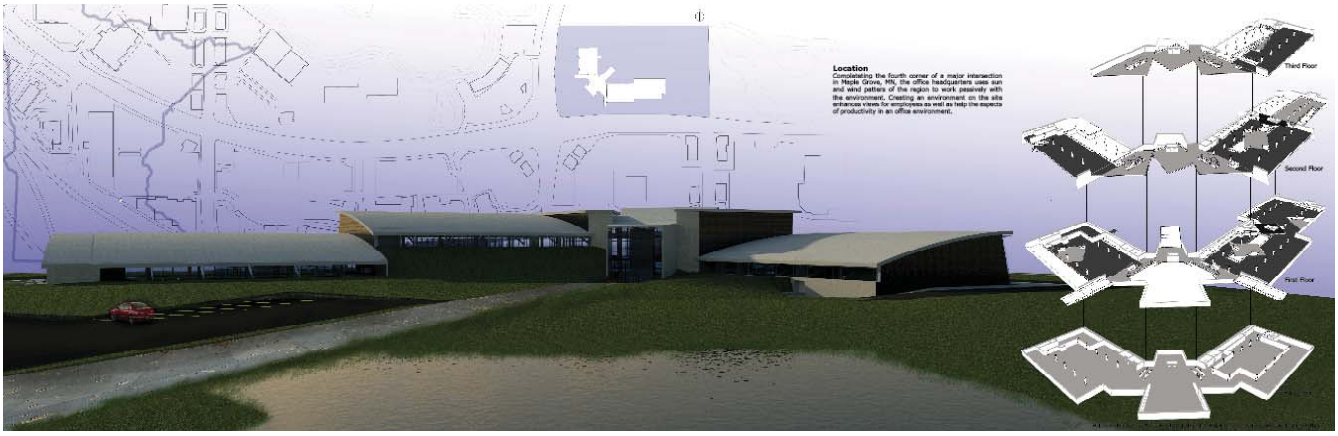
Perspectives

Final Boards

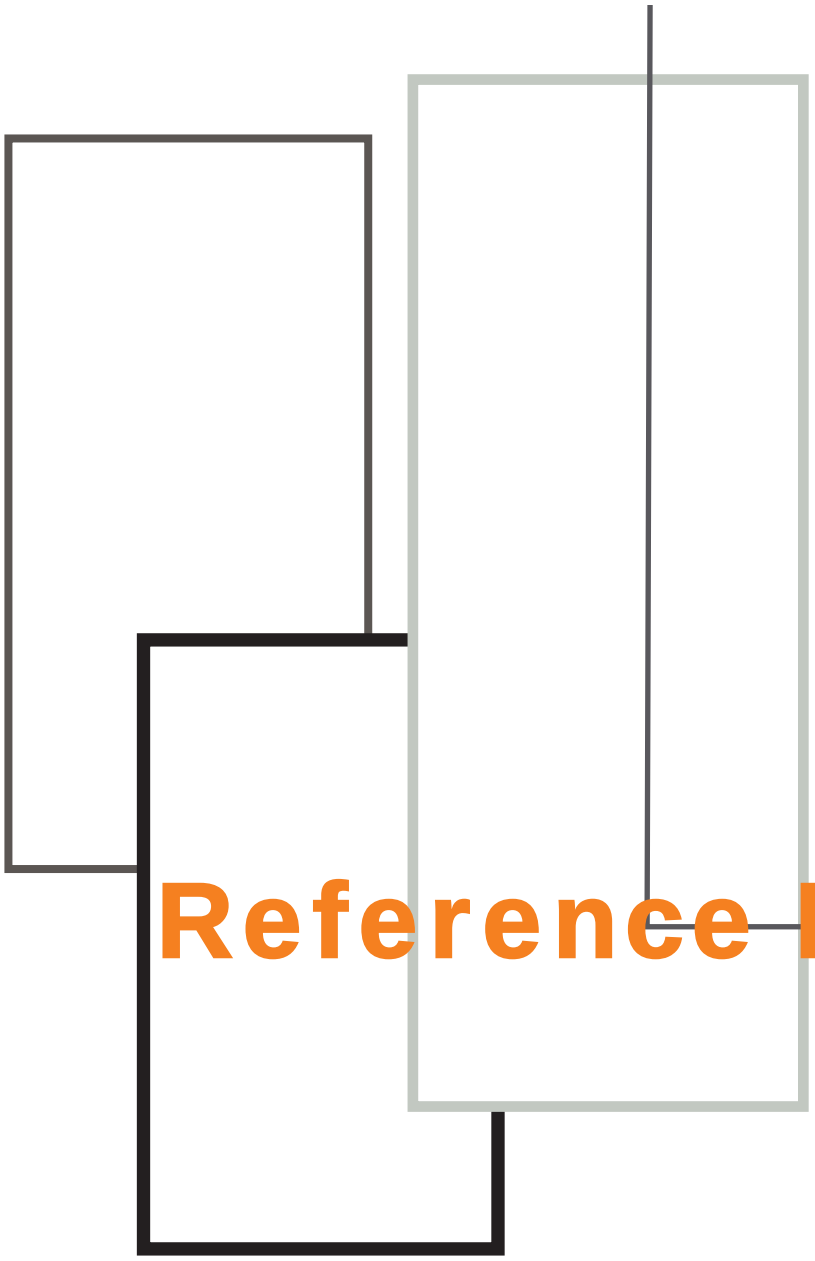








Models and Presentation



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Figures 2.1, 22-29..... Michael Stueven done in Adobe Illustrator

Fugures 2.2-3, 8, 13..... Google Earth Images

Figures 2.4-6, 9-12, 15, 21.. Michael Stueven Personal Pictures

Figures 2.7, 14, 16-20..... Maple Grove City Gravel Pit Mater Plan

Personal Identification