



ACTUATED ARCHITECTURE

Driving Healthy Behavior With Design

Laura Brunik



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Driving Healthy Behavior With Design

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

By

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In Partial Fulfillment of the Requirements
for the Degree of
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Primary Thesis Advisor

A handwritten signature in blue ink, appearing to read "David Zook". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Thesis Committee Chair

A handwritten signature in blue ink, appearing to read "Mark M. Bamhorne". The signature is cursive and includes a date "05/12/11" written at the end.

September 2010
Fargo, North Dakota



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Thesis Abstract

The mere sight of architecture can create a behavioral response, so through research, this thesis seeks to develop a better understanding of architecture's impact on health and wellness. Architecture can create sensory responses with color, odor, illumination, vibration, etc. This Lifestyle Center doesn't just provide a program to promote healthy behavior, but its architecture influences healthy decisions.

Key Words: Architectural influence on unconscious behavior, Sensory responses, health and wellness

The Problem Statement

How is a person's behavior affected by architecture?

And furthermore, how does architecture impact a person's wellness?

Empirical Architecture Analysis

The Statement of Intent

Typology

Lifestyle Center

The Theoretical Premise/Unifying Idea

Claim

Well-designed architectural space can create behavioral responses that diminish unhealthy decisions and influence positive health.

Supporting Premises

Architecture can create sensory responses with color, odor, illumination, vibration, etc.

Promoting healthy decisions has an impact on architectural design decisions, such as ethics and expenses. If architecture can reverse these roles, than architecture can create intentional behavioral responses that eventually influence positive health.

Since individuals generate behavioral responses from architecture, designers can take architecture to an advanced level and create behavioral responses that are intentional. Architecture and space will create possibilities to increase activity levels, and promote healthy inhabitants.

Conclusion

Architects should start looking at the impact of their design on human behavior in order to promote a healthier society.

Project Justification

Our society makes behavioral decisions every day that may or may not lead to better health. Choosing poor behavioral decisions may eventually lead to obesity, stress, diabetes, depression, and America's number one killer, heart disease. According to CDC (Centers for Disease Control and Prevention), America's obesity problem has been increasing in the last 20 years. About every 25 seconds, an American will have a coronary event, and about one American every minute will die from one. Well-designed architecture may benefit our society's behavior and help our habits to change unconsciously, because healthy habits conserve sustainable human development.





The Proposal

The Proposal

Narrative

Have you ever noticed that when you sit in a red room you feel hotter than when you sit in a blue room? Maybe you haven't, and that is because you're unconscious or unaware of how the color influences your bodily behavior. One hospital in their waiting room noticed that people were complaining that it was too cold, and when they painted it red the complaints went away, but the temperature never changed. The mere sight of architecture can create behavioral responses. Is it possible to make these responses intended by the architect?

Many people make excuses for being active, for not eating right, and basically for living unhealthy lifestyles. What if the environment in which you work, eat, socialize, influenced your lifestyle habits? You might feel more energized or not crave food as often. Health and wellness is a lifestyle, and this architectural attempt is to influence the psychological and behavioral responses in the lives of a society.

“The trouble with always trying to preserve the health of the body is that it is so difficult to do without destroying the health of the mind.” ~G.K. Chesterton

If architecture can target the mind before the body, then it may reverse unhealthy effect from unhealthy behavior such as increases in obesity, heart disease, stress, depression, sickness etc.

An architecture program for a multi purpose health and wellbeing living center may have what it takes to create healthy lifestyle changes, but architecture should excel to the next level. This thesis proposition will help to conclude whether or not architecture and space can in fact influence unconscious behavior for health and wellness. If architecture can impact the mind, and therefore behavior, then we can sustain human development with healthy habits.

User/client description

The location of the site is near the border of Minnesota and Wisconsin in a small town called Taylors Falls. This location allows the typology of this thesis to target 25.5% of obese population in Minnesota and 26.9% of the obese population in Wisconsin, with a total of about 416,732 people. Of this, 23.1% are children in Minnesota and 36% are children in Wisconsin. This Lifestyle Center is intended for the community, and therefore, will be owned by the State of Minnesota. The State of Minnesota also owns a number of other parks and recreation sites around the area. Taylors falls is home to beautiful landscapes that provide plenty of outdoor activities. The target user is anyone that would like to enhance and maintain his or her lifestyle. The center's main purpose is to provide conferences of all forms to teach participants, families, and their children about enhancing positive lifestyles. The conferences will provide different functions that will be open and organized to all body types and ages wanting to excel at a pace that works for them. With a combination of these functions, this facility hopes to gain its greatest transformation in lifestyles that accommodate everybody.



Major Project Elements

Lobby

A main Lobby will be a good way to welcome new users. It is also a space to pause for any questions and to let the users know that this facility is open to the public.

Communal Area

A couple communal areas will be accessible to people for gathering, relaxing, socializing, or for meetings.

Courtyard Garden

Including a courtyard into the design will help encourage peaceful emotions and settle any stress and negativity that influences a persons health.

Offices

There will be offices for the employers of the facility, such as the lobbyist, nutritionist, therapists, doctors, etc. The offices will be designed to be welcoming for clients and large enough that each practice can be used at its best ability. The atmosphere will be comfortable enough for the patient and the employee.

Conference Studios

Several studios around the facility will be used for conference meetings of how to escape a sedentary lifestyle. These conferences will teach users how to rock climb, hike, canoe, dance, practice yoga, pilates, bike, and other related activities.

Exploratory

Children will be able to use the exploratory as a lab, motivating them to go outside and explore elements they'd like to study. The exploratory is a type of gathering space for children to make friends and learn.

Major Project Elements

Dining

This dining facility is not the usual “eatery.” It will provide users with a kitchen, menu, and occasional servers that will provide and teach people how to eat well and how to prepare meals for themselves.

Lodging

For the users that come in with high ambitions of improving their lifestyle, there is a residential area designed to change their lifestyle. The program will provide schedules and meal plans, and the architecture will help help the users feel energetic and motivated. As many as 12 cabins will be used for the clientele that choose to stay a long period of time. The cabins only including sleeping amenities and no electronics.

Entertainment

There will be little entertainment in the facility because the main focus is to let exercise be a form of entertainment, but for those living in the facility, they will need spaces to collaborate, relax, and be entertained so that their experience is enjoyable.

Other Spaces

Maintenance

Restrooms

Mechanical/Electrical

Storage

Circulation

Site Information

Taylor Falls is located adjacent to St. Croix Falls, Wisconsin at the Dalles of the St. Croix River, an area of forested bluffs and high cliffs. The first interstate state park in the United States, aptly named Interstate Park, was jointly founded by the states of Minnesota and Wisconsin in 1895 and straddles the border of the two states immediately south of the city. Taylor Falls Minnesota is a city in Chisago County in the U.S. state of Minnesota. As of 2010, The population of Taylor Falls is 1,508 people, and since 2000, it has grown by 26.19 percent.



Site Information



Courtesy of Google Maps

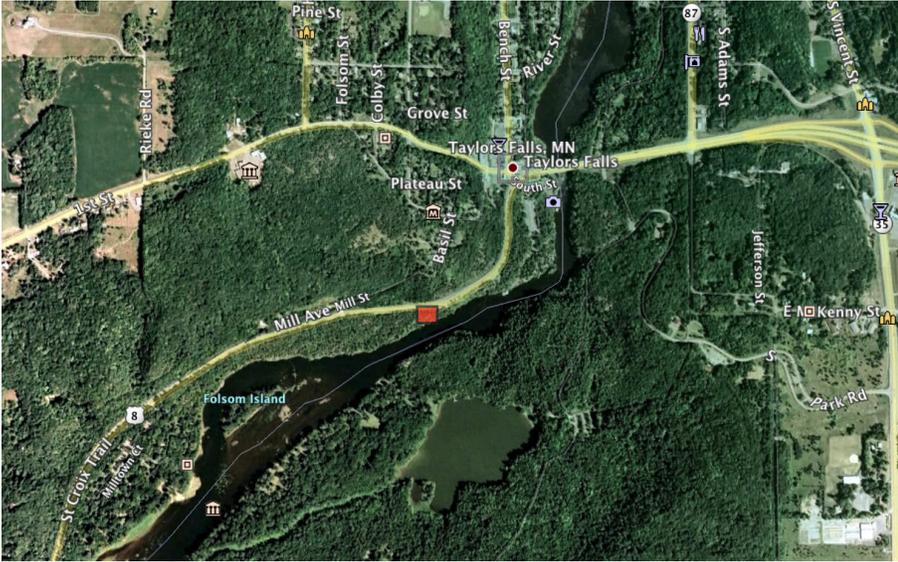
The Proposal

Interstate Highway 95, and U.S. Route 8 run in junction with Taylor's Falls MN. The average one-way commute in Taylor's Falls, MN, takes 32 minutes. 74% of commuters drive their own car alone, 15% carpool with others, 0% take mass transit and 7% work from home.

Taylor's Falls, MN, gets 30.6 inches of rain per year, whereas the US average is 36.5. Snowfall is 40.3 inches, while the average US city gets 25 inches of snow per year. There are 106 days with measurable precipitation.

According to BestPlaces.com, on average, there are 194 sunny days per year in Taylor's Falls, MN. The July high is around 83 degrees. The January low is -9 . Our comfort index, which is based on humidity during the hot months, is a 49 out of 100, where higher is more comfortable. The US average on the comfort index is 44.

Site Information



Courtesy of Google Maps

Taylors Falls is home to 100 ft cliffs, amazing parks, numerous outdoor activities, and the St. Croix river, which runs through it. The scenery alone is amazing. It is about an hour away from the twin cities, however, traveling to the city takes almost that long when living in the suburbs. Crime is low, and there are multiple parks, skiing, a summer water park, boating, fishing, kayaking, swimming, camping, biking, as well as picnicking, summer and winter festivals.



Courtesy of Google Maps

Project emphasis

Through extensive research, this thesis seeks to develop a better understanding of architecture's impact on health and wellness. The proposition of the project is to study and conclude whether or not architecture and space can in fact influence unconscious behavior. Our surroundings have an impact on our mental and physical behavior because they create sensory responses. This design and program will hopefully open a community's mind to living healthy lifestyles and diminishing the negative effects that come with our decisions.

Health and wellness is obtained through a lifestyle, and healthy habits must be acquired through change and development. This program is for healthy living and may help society with its lifestyle changes.

A plan for preciding

Research Direction

Research for this thesis will be conducted to focus on and obtain information on psychological and behavioral responses that are unconscious. Research using different variables will help determine what type of spaces to design to promote more energy. Measuring energy will be accomplished through movement and frequency with controlled daily activities in different environments. Eventually, the data will be used in final design decisions.

Design Process

Understanding the project typology, location, site, context, and programmatic elements will help the design process. Experiencing the site first and doing research on case studies will smooth the design process. The direction of these processes will be driven by the theoretial premise and unifying idea.

Documentation

Throughout the design process, it is important to be clear and concise with documentation because it will help in finalizing the organization and binder. Weekly, and sometimes daily submittals into a journal, as well as photographs, sketches, scanned imagery, and digital or built models, will be recorded.

Previous Studio experience

Second Year Fall 2007: Stephen Wischer

Tea House - Fargo, ND

Rowing Club House - Minneapolis MN

House for Twins - Fargo, ND

Second Year Spring 2008: Mike Christianson

Collaborative Community Design with Individual Emphasis

Third Year Fall 2007: Ronald Ramsay

Agincourt School - hypothetical Agincourt, IO

Moorhead Public Library - Moorhead, MN

Third Year Spring 2008 - Steve Martins

Science Center

Fourth Year Fall 2008: Don Faulkner

High Rise Project - San Francisco, California

Fourth Year Spring 2009: Darryl Booker, Paul Gleye, Frank Kratky

Low-income community - Haiti

School design competition - Lake Tanyznikya, Africa

Fifth Year Fall 2009: Ganapathy Mahalingam

Research Design Project

THEORETICAL PREMISE / UNIFYING IDEA

THEORETICAL PREMISE RESEARCH

INTRO

The essential goal of this thesis is to develop a program through which architecture impacts people's behavior and, therefore, people's wellness. With this aspect of architecture, action can be taken against obesity; especially in children.

In researching the theoretical premise, explaining why we make unhealthy decisions as a society is essential. Looking at what motivates us to make healthy decisions is also vital. It is also important to know what impact this will have on society if these issues are not addressed. What is an architectural solution? How can architects create intentional behavioral responses with architecture in order to promote wellness? Why is it important to address wellness at a young age?

Obesity is the last socially acceptable form of discrimination. Obese people claim to experience invisibility; people do not look them in the eye the same way they would with a thin person, and professional colleagues, in most instances, do not take them as seriously. This in turn becomes an emotional battle. Food indulgence is perpetual and becomes uncontrollable as life confronts them with daily conflict. Slowly, the weight will gain and the disorder often becomes invisible to the over eater.

It is important to recognize this because obese parents are more likely to have obese children. Children are very responsive to the lifestyles and habits of their parents. Children will follow the same dietary and exercise habits of their parents and making poor lifestyle choices encourages their children to follow the same attitudes and behaviors. These behaviors lead to childhood obesity. Obesity will most likely stay with them into adulthood which will then run its vicious cycle when they have children.

It is important to address obesity as a family matter so that both the adult and child are not devaluing the importance of a healthy, active lifestyle.

Research

CLASSIFICATION

A few extra pounds of weight gain does not suggest obesity. Obesity is a medical condition used to describe a high body weight from excess, unwanted, and unhealthy fat. This fat has unfortunate effects on health and leads to reduced life expectancy and increased health problems. Anyone who is more than 100 pounds overweight or who has a BMI (Body Mass Index) greater than 40 kg/m² is considered morbidly obese. Obesity is caused by consuming more calories than you burn. It is basically a combination of excessive caloric intake and lack of physical activity. The body stores unused calories as fat. Most of the time obesity is a result from bad habits such as eating more food than your body uses, excess alcohol intake, lack of exercise, and medications.

In children, a healthy weight varies with age and sex. Obesity in children and adolescents is not defined with an absolute number. Generally, a child is not considered obese until the weight is at least 10 percent higher than what is recommended for the height and body type.

Reference data was collected from 1963 to 1994, classifying the obese child with a BMI greater than the 95th percentile.

The causes of obesity are complex and include genetic, biological, behavioral, and cultural factors. Obesity most commonly begins in childhood, between the ages of 5 and 6, and during adolescence. Studies have shown that a child who is obese between the ages of 10 and 13 has an 80 percent chance of becoming an obese adult. If one parent is obese, there is a 50 percent chance that the children will also be obese. However, when both parents are obese, the children have an 80% chance of being obese. Although certain medical disorders can cause obesity, less than 1 percent of obesity is caused by physical problems.

Classification

BMI	
< 18.5	UNDERWEIGHT
18.5–24.9	NORMAL WEIGHT
25.0–29.9	OVERWEIGHT
30.0–34.9	CLASS I OBESITY
35.0–39.9	CLASS II OBESITY
≥ 40.0	CLASS III OBESITY
≥ 35 or 40	SEVERE OBESITY
≥ 44.9 or 49.9	MORBID OBESITY
≥ 50	SUPER OBESITY

THEORETICAL PREMISE RESEARCH

CHILDHOOD OBESITY

Causes of Childhood Obesity

- poor eating habits
- overeating or binging
- lack of exercise (i.e., couch potato kids)
- family history of obesity
- medical illnesses (endocrine, neurological problems)
- medications (steroids, some psychiatric medications)
- stressful life events or changes (separations, divorce, moves, deaths, abuse)
- family and peer problems
- low self-esteem
- depression or other emotional problems

Childhood obesity statistics in the United States have caught the attention of every aspect of our nation recently. Between 16 and 33 percent of children and adolescents are obese. Obesity is among the easiest medical conditions to recognize but most difficult to treat. Overweight children are much more likely to become overweight adults unless they adopt and maintain healthier patterns of eating and exercise.

Over the past three decades, the childhood obesity rate has more than doubled for preschool children aged 2-5 years and adolescents aged 12-19 years, and it has more than tripled for children aged 6-11 years. At present, approximately nine million children over 6 years of age are considered obese. Trends in childhood and youth obesity mirror a similar profound increase over the same approximate period in U.S. adults as well as a concurrent rise internationally, in both developed and developing countries.

The obesity epidemic affects both boys and girls and has occurred in all age, race, and ethnic groups throughout the United States. In addition to the increase in obesity prevalence, the heaviest group of children is getting heavier whereas the leanest group of children is staying lean. What this means is that among younger age groups of children 6 to 11 years of age, and to a lesser extent adolescents, the lower part of the BMI distribution appears to have changed little over time.

Research CLINICAL

OBESITY COMPLICATIONS

1. Well-being

- Poor self esteem
- Depression

Brian

- Increased pressure causing headaches and double vision

2. Lungs

- sleep apnea
- asthma
- shortness of breath with exertion

3. Heart and blood vessels

- High LDL (bad) cholestrol
- High HDL (good) cholesterol
- High triglycerides (other blood fats)
- High blood pressure
- Abnormal blood clotting
- Chronic inflammation that damages blood vessels

4. Digestive tract

- Acid reflux
- Constipation
- Gallstones
- Fatty liver

5. Bones and joints

- Dislocated growth plate in hip socket
- Bowed knees (Blount's disease)
- Flat feet
- Pain in weight-bearing joints such as feet, knees, hips, lower back

6. Type 2 diabetes

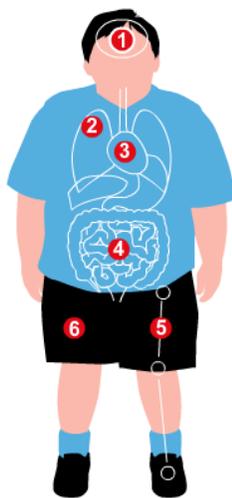
- A condition in which the body doesn't make enough insulin or use the insulin properly
- Early puberty
- In girls, polycystic ovarian syndrome
- Changes in hormone levels induce ovarian cysts, irregular menstrual cycles and excessive hair growth on the chin, chest and abdomen and over the upper lip.

300,000 deaths each year in the United States are associated with obesity.

Obesity is a leading preventable cause of death worldwide. In the 21st century, authorities see obesity growing into a massive public health problem. Many are unaware of the complications that can come with being obese because the extra weight puts stress on all parts of your body. Type 2 diabetes is the strongest link with obesity. Excess body fat is the focus of 64% of the cases in men and 77% of cases in women with diabetes. Along with diabetes, high blood pressure, heart disease, stroke, sleep disorders, breast and colon cancer, depression and osteoarthritis are all medical problems that are common in untreated obese and morbid obese patients. Some people feel that a certain percent of obese have a slow metabolism and eat very little, but there is no evidence to support this theory. In actuality, obese people use a greater amount of energy because their bodies require it to maintain their increased body mass. In cases where obesity is extreme, hypoxemia, a condition with low levels of oxygen in your blood, eventually leads to high blood pressure and pulmonary hypertension. This condition can also make you feel sleepy and lead to right-sided heart failure in extreme cases.

Obese children are at a higher risk for early health complications. Researchers have found that obese children had a higher rate of difficult mask ventilation, airway obstruction, major oxygen desaturation (decrease in oxygen in the blood), and other airway problems such as asthma. They also have more complications during surgery.

Graphics by Sam Ward, USA TODAY



Graphic by Sam Ward, USA TODAY

THEORETICAL PREMISE RESEARCH

PSYCHOLOGICAL

There is a tight link between obesity and the emotions. Many times this is not clarified because of the vicious cycle overeating and emotions take on. What I mean is, did the chicken come first or the egg? Although every relationship is different, the issues of rejections, fear, anger, depression, stress, loneliness, and other emotional disturbances are all tied to overeating. They crave a distraction, reward, gratification, comfort or a sense of being loved. Eventually it becomes hard to distinguish whether there is a legitimate hunger or if the person is simply eating too much. What most people don't realize is that eating only provides a temporary relief from their pain. It is important to evaluate whether or not abnormal emotions were present during eating that triggered the overindulgence. If so, distinguishing emotional distress from earlier years can be the beginning of treatment. Addressing emotions is only the first step, however, because diet and exercise are the most effective management. Most people find that resistance is stressful and fatiguing, so the best way to attack the problem is to ease into an active lifestyle. This will eventually fill a person's mind with purpose, enthusiasm, and clear thinking.

Obesity frequently becomes a lifelong issue. The reason most obese adolescents gain back their lost pounds is that after they have reached their goal, they go back to their old habits of eating and exercising. An obese adolescent must therefore learn to eat and enjoy healthy foods in moderate amounts and to exercise regularly to maintain the desired weight. Parents of an obese child can improve their child's self esteem by emphasizing the child's strengths and positive qualities rather than just focusing on their weight problem.

Child and adolescent obesity is also associated with an increased risk of emotional problems. Teens with weight problems tend to have much lower self-esteem and be less popular with their peers. Depression, anxiety, and obsessive compulsive disorder can also occur. When a child or adolescent with obesity also has emotional problems, a child and adolescent psychiatrist can work with the child's family physician to develop a comprehensive treatment plan. Such a plan would include reasonable weight loss goals, dietary and physical activity management, behavior modification, and family involvement.

Research

DIETARY TREATMENT

The National Institute of Health stated in 2009 that less than 4% of obese persons are able to lose weight needed to come into a “normal” body mass index range, with only 2% maintaining that weight over 5 years by using diet and movement in traditional methods.

Several simple behavioral changes can have an impact on weight loss success:

- start a weight-management program
- change eating habits (eat slowly, develop a routine)
- plan meals and make better food selections (eat less fatty foods, avoid junk and fast foods)
- Eat only at the table. No snacking in front of the TV, in bed, while driving, or while standing in front of the open refrigerator.
- Learn about appropriate portion sizes.
- Choose low-calorie snacks, such as raw vegetables.
- Consider learning meditation or yoga as a way of managing stress, rather than snacking.
- Find ways to socialize and enjoy your friends and family that don't involve a meal or dessert.
- Consider keeping a diet and exercise journal. This may help you identify overeating triggers in your life.
- Find a support group or consider psychotherapy to help support you in the difficult but worthy goal of weight loss.

For obese children and parents

- know what your child eats at school
- eat meals as a family instead of while watching television or at the computer
- do not use food as a reward
- limit snacking

The main treatment for obesity consists of dieting and physical exercise. Diet programs may produce weight loss over the short term, but maintaining this weight loss is frequently difficult and often requires making exercise and a lower calorie diet a permanent part of a person's lifestyle. A combination of dieting and exercise appears to work better than either one alone. Success rates of long-term weight loss maintenance with lifestyle changes are low, ranging from 2-20%. Collaborating support from family and friends is essential in a weight reduction program. It is important to establish a nutritious routine that feeds one often so hunger is not a haunting program. Most people don't realize that even modest weightloss improves your health. Dropping pounds slowly and steadily will increase your chances of keeping the weight off. Lifelong commitments therefore require time, effort, and patience. Reminding yourself about your positive process is also an essential key to mental success.

THEORETICAL PREMISE RESEARCH

PHYSICAL CONDITIONING

Exercise is a major mood lifter, a great way to burn energy, and a way to strengthen your bones. Furthermore, it redirects and diminishes stress, fills wasted time, and replaces craving and relieves the overwhelming guilt of abuse, neglect and domination by food. Exercise is also a great tool for managing high blood pressure, heart disease, or diabetes. Exercise works to raise the metabolism as muscles grow, then calories burn and fat diminishes. Healthy activity also increases the power of your heart and lungs. Backed with a good diet, exercise consistently corrects a hormonal system that eccentric.

Obese children need to have a thorough medical evaluation by a pediatrician or family physician to consider the possibility of a physical cause. In the absence of a physical disorder, the only way to lose weight is to reduce the number of calories being eaten and to increase the child's or adolescent's level of physical activity. Lasting weight loss can only occur when there is self-motivation. Since obesity often affects more than one family member, making healthy eating and regular exercise a family activity can improve the chances of successful weight control for the child or adolescent.

Avoid a stationary lifestyle by increasing your activity level.

- Perform aerobic exercise for at least 30 minutes a day, three times a week.
- Increase your physical activity by walking, rather than driving.
- Climb stairs instead of using an elevator or escalator.
- Always talk to your health care provider before starting an exercise program.
- Don't forget the delight of fulfillment and the thrill of success.

Research

ECONOMICAL

THEORETICAL PREMISE / UNIFYING IDEA

It is important to look at obesity from an economic standpoint, because obesity even affects people who do not have this. In 1998, the medical costs that attributed to obesity in the US were \$78.5 billion or 9.1% of all medical expenditures. Look at this in comparison with Canada (CA\$2 billion in 1997, 2.4% of total health costs). The lifetime medical costs related to diabetes, heart disease, high cholesterol, hypertension, and stroke among the obese are \$10,000 higher than among the non-obese. Because medical costs are higher for the obese and premiums do not depend on weight, lighter people in the same pool pay for the food/exercise decisions of the obese. It is important to have obese prevention programs because they have been found to reduce the cost of obesity-related diseases.



The economic cost of obesity in the United States was about \$117 billion in 2000.

THEORETICAL PREMISE RESEARCH

ECONOMICAL

Being obese simply costs more. Services must accommodate obese people with specialist equipment such as much wider chairs. In addition to its health impacts, Obesity leads to many problems including social stigmatization disadvantages in employment, and increased business costs. These effects are felt by all levels of society from individuals, to corporations, to governments. The European Pharmaceutical Student's Association states "some research shows that obese people are less likely to be hired for a job and are less likely to be promoted." They are also paid less than their non-obese counterparts for an equivalent job. Obese women on average make 6% less and obese men make 3% less. When compared to their normal weight counterparts, Obese workers on average have higher rates of absenteeism from work and take more disability leave, thus increasing costs for employers and decreasing productivity. A study examining Duke University employees found that people with a BMI over 40 filed twice as many workers' compensation claims as those whose BMI was 18.5-24.9. They also had more than 12 times as many lost work days. The most common injuries in this group were due to falls and lifting, thus lower extremities, wrists or hands, and backs were most affected. The US state of Alabama Employees' Insurance Board approved a controversial plan to charge obese workers \$25 per month if they do not take measures to reduce their weight and improve their health. These measures started in January 2010 and apply to those with a BMI of greater than 35 kg/m² who

Specific industries, such as the airline and food industries, have special concerns. Due to rising rates of obesity, airlines face higher fuel costs and pressures to increase seating width. In 2000, the extra weight of obese passengers cost airlines US\$275 million. Costs for restaurants are increased by litigation accusing them of causing obesity. In 2005 the US Congress discussed legislation to prevent civil law suits against the food industry in relation to obesity; however, it did not become law.

The obese that do decide to change their lifestyles spend an estimated amount of \$40 to \$100 billion on expenditures of diet products in the U.S. alone.

Research

SOCIOLOGY

THEORETICAL PREMISE / UNIFYING IDEA

While genetic influences are important to understanding obesity, they cannot explain the current dramatic increase with obesity around the world. Though it is accepted that calorie consumption in excess of calorie expenditure leads to obesity on an individual basis, there is still a debate about genetics and the social scale.

There are a number of theories as to the cause, but most believe it is a combination of various factors.

Many explanations have been put forth for associations between BMI and social class. It is thought that in developed countries, the wealthy are able to afford more nutritious food, they are under greater social pressure to remain slim, and have more opportunities along with greater expectations for physical fitness. In undeveloped countries the ability to afford food, high energy expenditure with physical labor, and cultural values favoring a larger body size are believed to contribute to the observed patterns. Attitudes toward body mass held by people in one's life may also play a role in obesity. There is also a correlation in BMI found between friends, siblings, and spouses. Stress and perceived low social status appear to increase risk of obesity.

The correlation between social class and BMI varies globally. Obesity.co.tv says "a review in 1989 found that in developed countries women of a high social class were less likely to be obese." No significant differences were seen among men of different social classes. In the developing world, women, men, and children from high social classes had greater rates of obesity. An update of this review carried out in 2007 found the same relationships, but they were weaker. The decrease in strength of correlation was due to the effects of globalization. Among developed countries, levels of adult obesity, and percentage of teenage children who are overweight, are correlated with income inequality. A similar relationship is seen between US states: more adults, even in higher social classes, are obese in more unequal states.

THEORETICAL PREMISE RESEARCH

SOCIOLOGY

People who are at higher risk for obesity include:

- Lower income groups
- Former smokers
- People with chronic mental illness
- People with disabilities
- People with a sedentary lifestyle

Graphic from nationalnursingreview



Smoking has a significant effect on an individual's weight. Men who quit smoking gained an average of 4.4 kilograms, and women, 5.0 kilograms over ten years. However, changing rates of smoking have had little effect on the overall rates of obesity.

In the United States the number of children a person has is related to their risk of obesity. A woman's risk increases by 7% per child, while a man's risk increases by 4% per child. This could be partly explained by the fact that having dependent children decreases physical activity in Western parents.

In the developing world urbanization is playing a role in increasing rate of obesity. In China, overall rates of obesity are below 5%; however, in some cities rates of obesity are greater than 20%.

Malnutrition in early life is believed to play a role in the rising rates of obesity in the developing world. Endocrine changes that occur during periods of malnutrition may promote the storage of fat once more calories become available.

A sedentary lifestyle plays a significant role in obesity. Worldwide there has been a large shift towards less physically demanding work, and currently at least 60% of the world's population gets insufficient exercise. This is primarily due to increasing use of mechanized transportation and a greater prevalence of labor-saving technology in the home. In children, there appears to be declines in levels of physical activity due to less walking and physical education. The World Health Organization indicates people worldwide are taking up less active recreational pursuits. In the 2008 United States American National Health Interview Survey (NHIS), and 36% of adults were considered inactive, 59% of adult respondents never participated in vigorous physical activity lasting more than 10 minutes per week. In both children and adults, there is an association between television viewing time and the risk of obesity. According to activehealthywell.com "a 2008 meta-analysis found 63 of 73 studies (86%) showed an increased rate of childhood obesity with increased media exposure, with rates increasing proportionally to time spent watching television."

Research

ATTAINABLE GOAL

THEORETICAL PREMISE / UNIFYING IDEA

Wellness generally suggests a healthy balance of the mind, body and spirit that results in an overall feeling of well-being (wikipedia). Healthy, however suggests a state of well-being free from disease (princeton).

Wellness has been defined by the Wisconsin-based National Wellness Institute as an active process of becoming aware of and making choices toward a more successful existence. This definition shows a shift in focus away from illness and sickness as human health, in other words, wellness is a view of health that emphasizes the state of the entire being and its ongoing development.

Wellness can also be described as “the constant, conscious pursuit of living life to its fullest potential.”

“We are all a little off-balance in that we are not perfect. And not all that appears to be misbehavior is misbehavior or needs analysis -- Nothing work, planning, discipline and healthy pride can't fix.”

-Dave Draper

THEORETICAL PREMISE RESEARCH

ENVIRONMENTAL PSYCHOLOGY



Graphic from sciencedaily

Environmental psychology is an interdisciplinary field focused on the interplay between humans and their surroundings. The field defines the term environment broadly as it encompasses natural environments, social settings, built environments, learning environments, and informational environments. Since the beginning of environmental psychology, the field has been committed to prioritizing research which aims to solve complex environmental problems in the pursuit of individual well-being with a larger society. When solving problems with a human-environment interaction, a model must be used to predict the environmental conditions that will cause a human to behave in a decent and creative manner. This model provides assistance in designing, managing, protecting and restoring environments that enhance reasonable behavior and predict outcomes. The research enherently explores complex settings such as the effect of environmental stress on human performance, the characteristics of restorative environments, human information processing, and the promotion of durable conservation behavior. Geographers, economists, geographers, policy-makers, sociologists, anthropologists, educators, and product developers all have discovered and participated in this field. Although “environmental psychology” is arguably the best-known and most comprehensive description of the field, it is also known as human factors science, cognitive ergonomics, environmental social sciences, architectural psychology, socio-architecture, ecological psychology, ecopsychology, behavioral geography, environment-behavior studies, person-environment studies, environmental sociology, social ecology, and environmental design research. Environmental psychology is the link between the person and the built environment.

Research

Results: in summary

The researched architecture examples can be analyzed to support the theoretical premise of this thesis. The underlying theory as outlined by this research and previously in the proposal operates as such:

All the factors found throughout the theoretical premise research explain how obesity is a growing concern within our society. Examining these health concerns and benefits has given me insight into my typology. With the background research in environmental psychology, the conclusion of this thesis is understanding whether the mere sight of architecture can create behavioral responses that assist the promotion of wellness is critical to an architect.

“Architecture can get people talking. It can calm children in the classroom, make passive people more active, and shape corporate culture. It can also encourage people to find new paths and discover new aspects of their city—and of themselves.”

~ Kim Herforth Nielsen

THEORETICAL PREMISE RESEARCH

Results: in summary

If an architect knows what intentional response they want from the inhabitants of their design, then they could decide from a variety of design options depending on the sensory responses of each type of space. The strategy to finding out if architecture can influence behavior is to assess how the users actually respond and behave in particular environments. Sensory responses generally include color, odor, illumination, vibration, etc. and are usually learned responses based on culture.

The typology of this thesis is intended to create a place, not only to offer help for obese inhabitants, but to prevent obesity from happening. This project will target children and their families so that obesity can be attacked at a young age and it will also build up the social support group within the family. The goal to promoting wellness at a young age will hopefully cut the vicious cycle of emotional distress and wellness, and prevent any psychological effects that the person would receive throughout their childhood. The Family Wellness Convention Center will inform the people that there are benefits from your environment that can drive your emotions and your body to become a healthier human, in all aspects of the mind, body and soul.





Typological Research

Case Study 1



The site of Taylor Falls, Minnesota, has stunning cliffs and rocks. It is essential, then, to analyze a case study built in a mountainous and rocky environment.

The Khyber Ridge house was produced in response to an order from the professional snowboarder, Marc Morisset. The Canadian architecture firm, Studio NminusOne, got credit for this design because of its unique, unconventional, eccentric elements that were incorporated into a “floating” design.

Architects: Studio NminusOne

Khyber Ridge Residence

Location: Whistler, British Columber, Canada

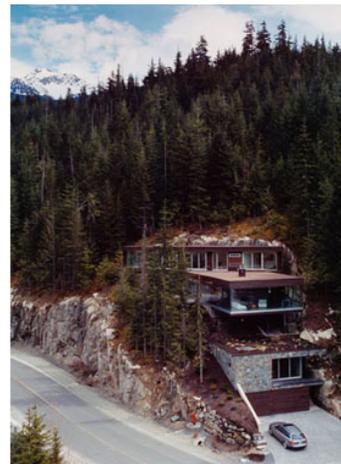
Client: Marc Morisset

Construction Year: 2005

Contractor: Michael McGillion

Engineering: David Strndberg and C. A. Boom

Photographs: Studio NminusOne



It is a three-bedroom, 3,000 sq ft residential chalet located in scenic Whistler, British Columbia. The strategy used in the design takes its cue from the intimate engagement of a shredder following the line of a mountain; The house’s effect is one of maximum engagement with the site. The house is distributed along a steep slope, developing diverse tactical relations to the landscape, the surrounding views and the internal functions or program of the house.



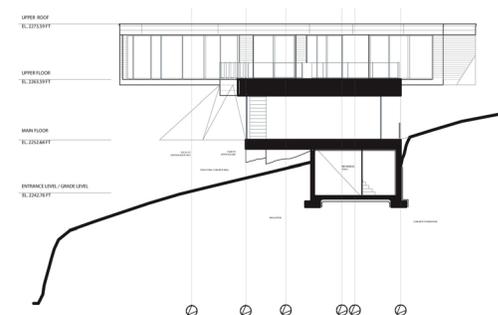
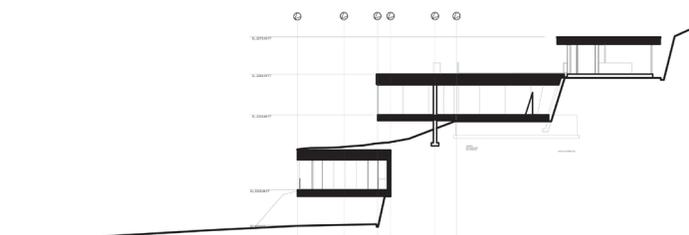
Typological Research



This contemporary residence is enclosed in walls of windows, placing it inconspicuously among the trees and mountains. Inside the contemporary glazed walls, this five-storey chalet cascades down the mountainside, exuding elegance at every turn.

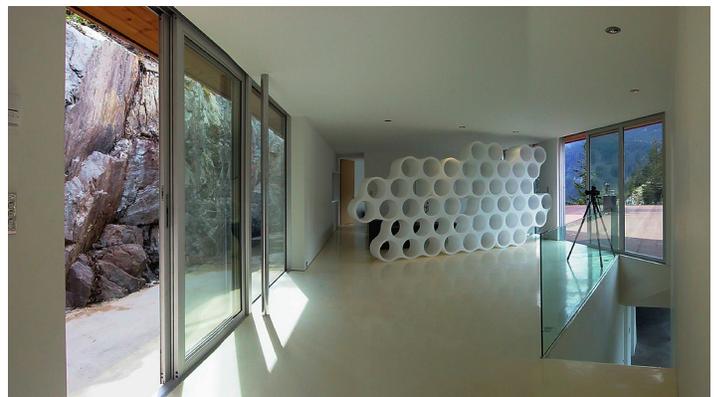


In the winter, the flat roof of the living level retains the snow. The snow then acts as an insulating blanket keeping the temperature close to 0 degrees Celsius. In the summer, the flat roof becomes a necessary flat surface for outdoor living, leaving the rest of the sloped site intact.



Case Study 1

Rock walls really make you feel as though you're a part of something truly majestic. Clean, modern lines and simple furnishings that border on art complete the look.



Made up of five levels, the lower level, a guest house is embedded in the rock for maximum privacy. Its green roof blends in with the landscape.

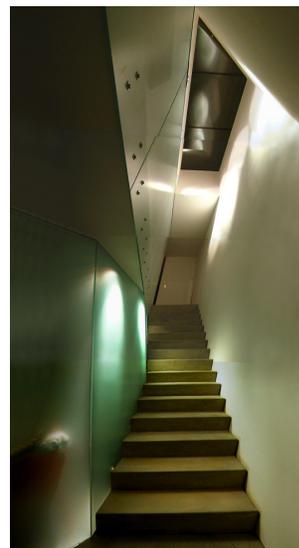
TYPOLGICAL RESEARCH

Typological Research



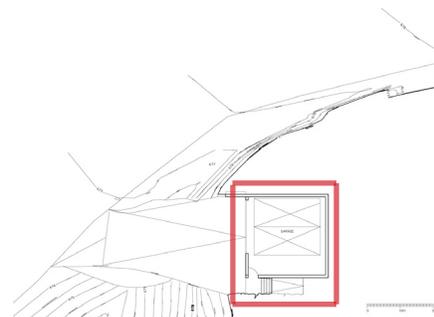
The upper level bedrooms retreat back along the contours of the mountain, producing discreet relationships to the surrounding views. As the inhabitants navigate these volumes, they continuously weave in and out of the terrain.

In contrast, the main living volume is formed by a cantilevering roof with a suspended floor projecting out of the slope. The cantilever is anchored by four 3 foot deep steel beams drilled directly into the rock face; its floor is suspended by four, 1 inch diameter stainless steel rods. With its glass enclosure, the effect created is of a floating open platform, revealing the full impact of the surrounding mountains when occupied. One is literally suspended in space and surrounded by the foliage of trees.

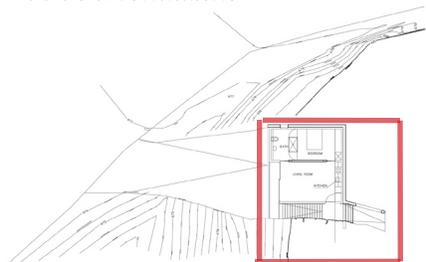


Case Study

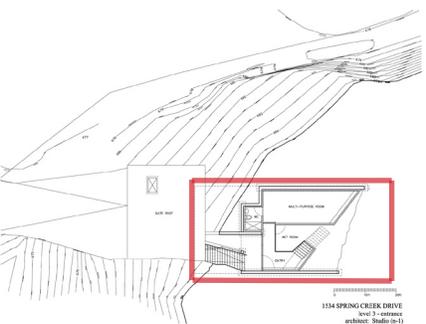
Analysis



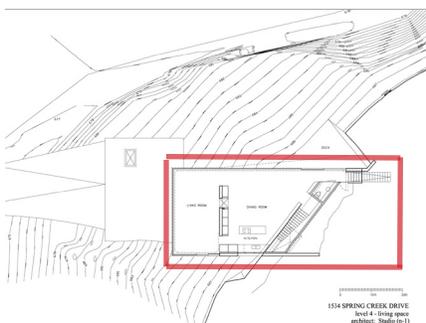
1534 SPRING CREEK DRIVE
level 2 - suite
architect: Studio (n-1)



1534 SPRING CREEK DRIVE
level 3 - entrance
architect: Studio (n-1)



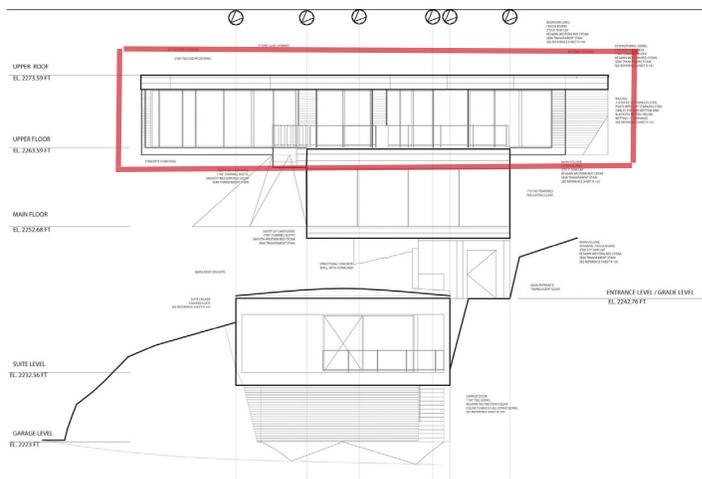
1534 SPRING CREEK DRIVE
level 4 - living space
architect: Studio (n-1)



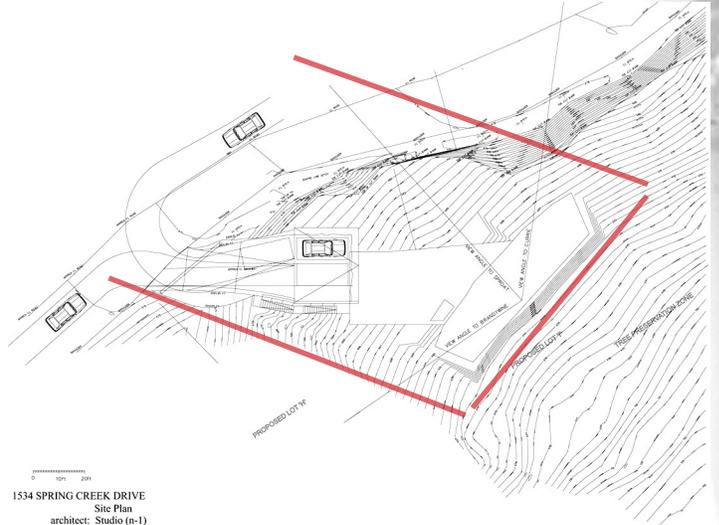
1534 SPRING CREEK DRIVE
level 5 - bedrooms
architect: Studio (n-1)



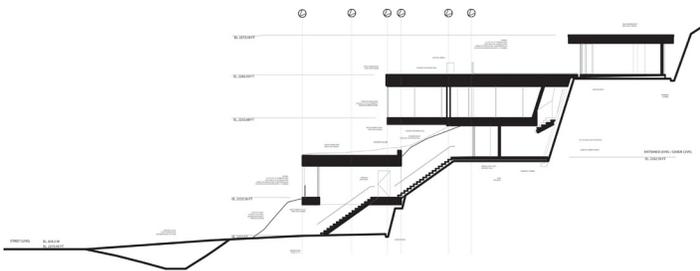
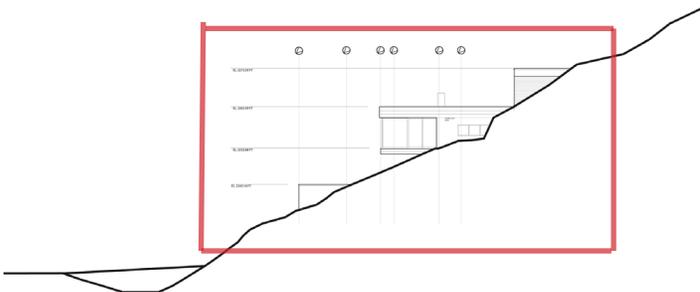
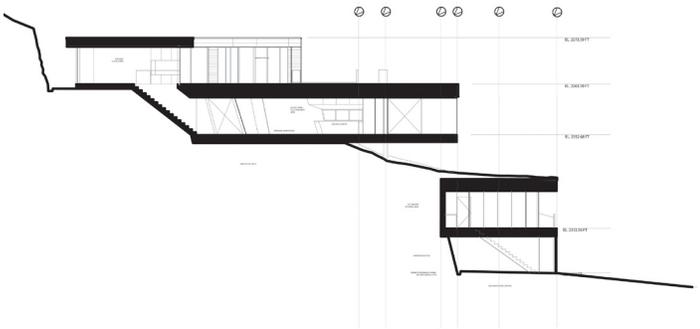
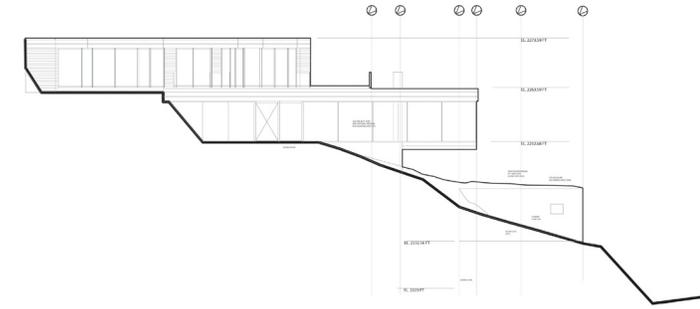
As you enter into the garage on the first floor, you are immediately tucked into the landscape, as you move up each floor you progressively feel one with-in the building. The second level is a den for guest residents, giving privacy to them and the owners. The third floor is still tucked away to provide a wet room and multi-purpose room. As you increase up the landscape the living room and dining room are on the fourth floor. As you can see in the elevation, more lighting flows in through the building as you move up each floor. You can also see from the plans that the first four floors are stacked linearly on top of each other, and the final floor is angled and floats within the landscape. The importance of each function grew through each floor.



Typological Research

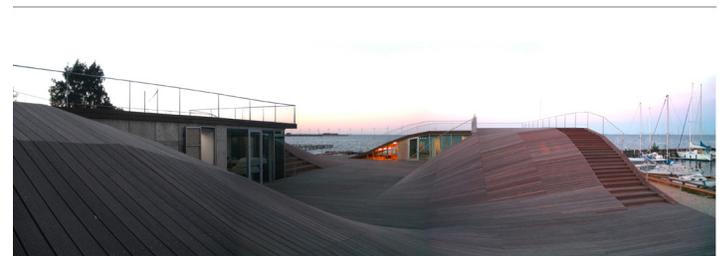


As mentioned earlier, the site is oriented away from the cliff and faces extravagant views of the landscape. However, the architect also thought that the rock and cliff, on which the site is situated, was just as important and was used for views within the building. You can see how the architect tucked the building away in elevation, and in section, you can see how much of the building is actually there, behind its “nature.”



Case Study 2

This case study is based on its requirements to accommodate a youth center into its design, which will hopefully inspire The Lifestyle Center.



The site for the Maritime Youth House was originally polluted. Instead of using their budget to remove the pollution, the architects decided to cover the site with a wooden deck. The left over budget was therefore used for the buildings' social functions. It ultimately turned into a beautiful public landscape surrounded by water on all sides.

Architects: PLOT = BIG + JDS

Location: Copenhagen, Denmark

Client: Kwaterloft Copenhagen, Loa Fund

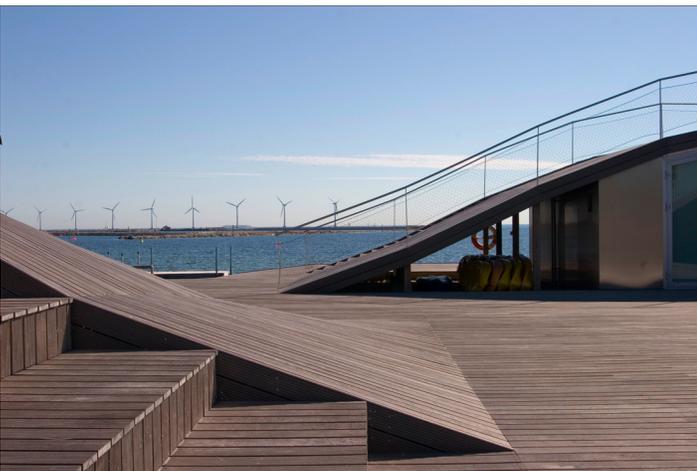
Collaborator: JDS ARCHITECTS, BIRCH & KROGBOE

Constructed Area: 2,000 sqm

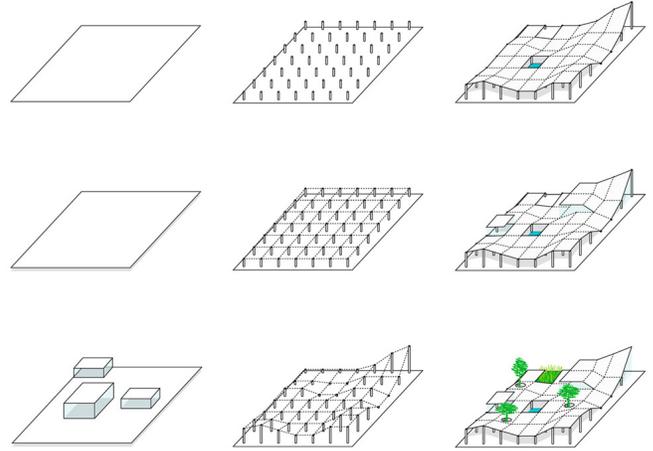
Project year: 2004

Budget: US \$1,950,000

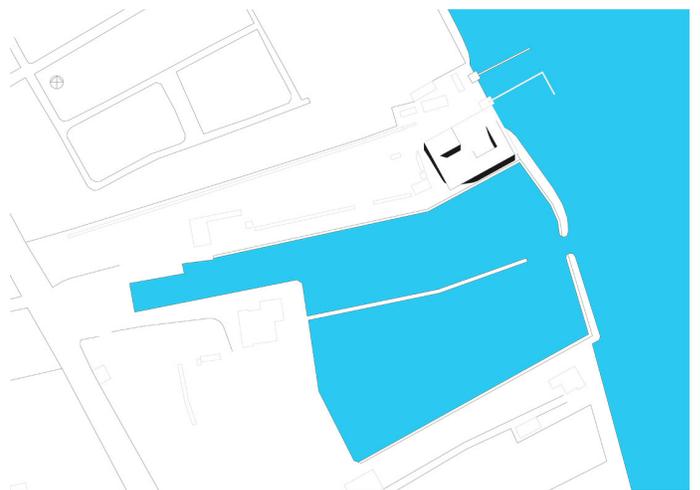
Photographs: Julien de Smedt, Mads Hilmer, Esben Bruun, Paolo Rosselli



Typological Research



Two very different users had to share the facilities: a sailing club and a youth centre. Both groups had conflicting requirements: the youth centre wanted outdoor space for the kids to play; the sailing club required most of the site to moor their boats. The building is the result of these two contradictory demands: The deck is elevated high enough to allow for boat storage underneath while, above an undulating landscape provides an area on which the kids can run and play.

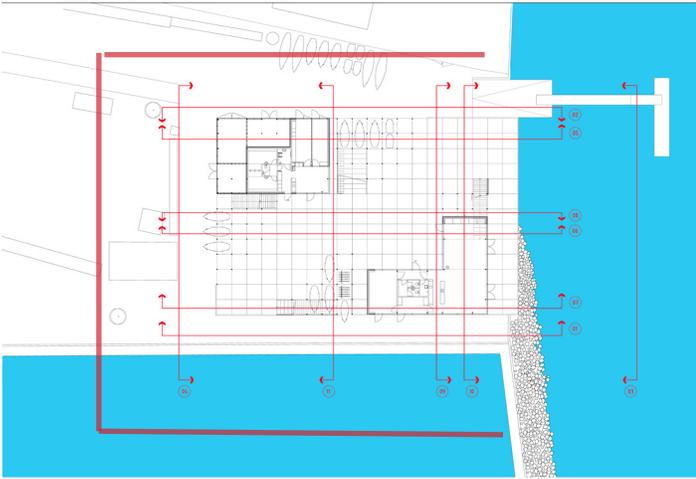


Case Study

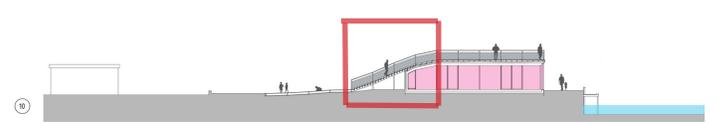
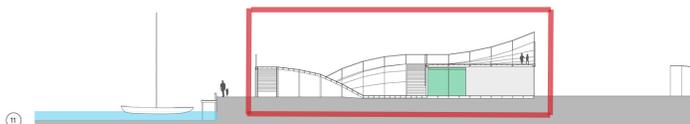
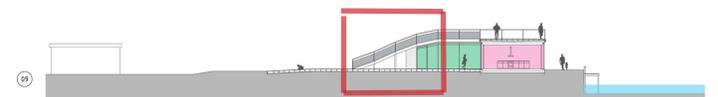
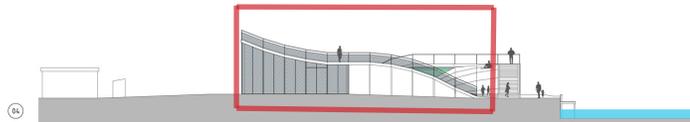
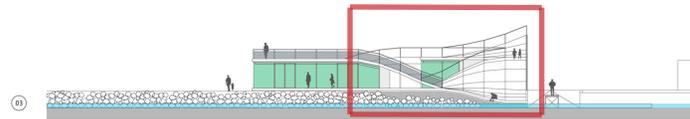
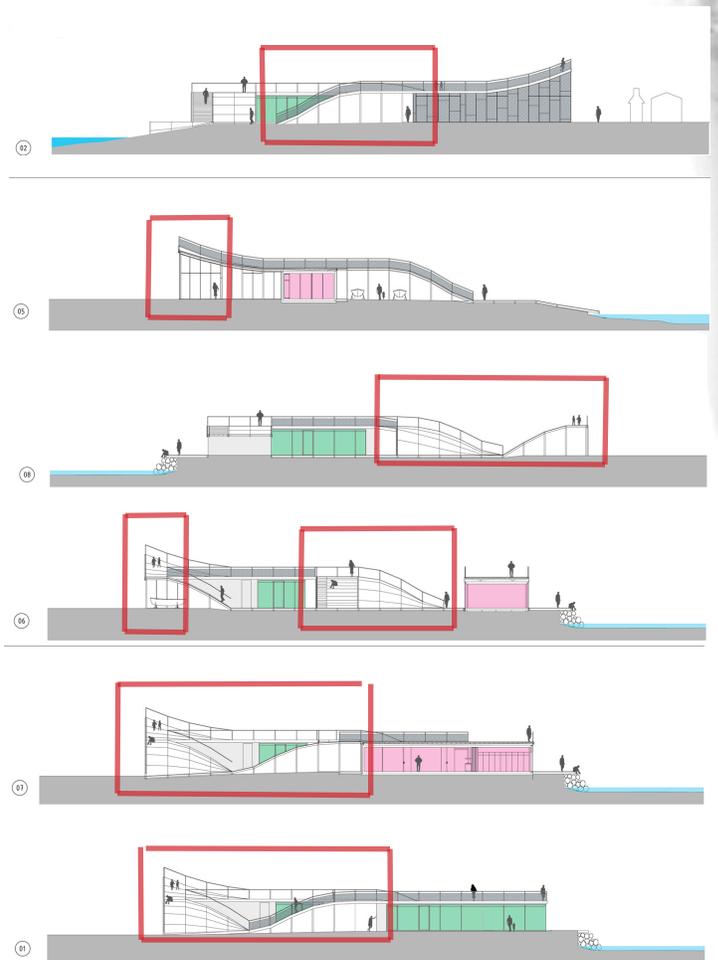
The interior of the building is very low key: the front room, oriented towards the coastline, is used as a common room where most of centre's daily activities take place. It utilizes a higher level of materials and detailing than the workshop and storage areas. The floor in the workshop is a standard grey concrete whereas the commons area has a polished, Aalborg white concrete with white aggregate. The presence of hard surfaces used on the interior is meant to contrast the wooden exterior, an inversion of what is commonly done (wooden interior, concrete and asphalt exterior). This is meant to reflect the dominance of outdoor activities of the youth house. The Maritime Youth House has therefore gained an additional 'room' which IS the wooden deck - it supports all the centre's programs, indoor and outdoor.



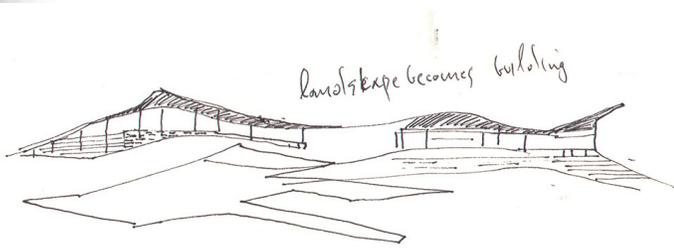
Typological Research



From the site view you can see how the architect wanted to emphasize the view of the water. The shape of the building in plan is nothing like the elevations you see to the right. Although it is a box shape in plan, you can see that there are a multitude of curves and shapes within the building. This was probably to resemble the waves of the water and the uplifting of the sight. It also provides a landscape for the children to play on during summer months.



Case Study 3



This case study is a very close depiction of what the typology for this thesis will be like in a programmatic scheme. This project is a small convention center in the winter months, and switches to become a summer camp for children during the second half of the year.



The flexible, mixed-use design of KLab architecture's Emerging Landscapes allows the project's function to change as the seasons progress. Located in Karpenisi, a small city in the Pintos Central Mountain Range of mainland Greece, the project is situated in a mountainous area that has a strong traditional architectural typology of stone walled and roofed buildings constructed with minimal footprints. Keeping this architectural typology in mind, KLab Architecture's project has a minimal impact on the landscape, while implementing ecological friendly strategies.

Architects: KLab

Location: Lefkada, Greece

Project Team: fzein journeys

Project Area: 2500m²

Construction Cost: €150,000

Project Year: 2007



Typological Research

By analyzing the existing landscape, the new building seems to “emerge from that land and become the new landscape.” There are two main volumes, one houses offices and the small convention center and can be changed to house the indoor activity spaces for the camp; the other volume houses a restaurant and bar. These two volumes are separated by a curved sloping element that forms the roof of the passage from one building to the another. The structure is made from exposed concrete in order to promote biodiversity on the roof.



A quote from ArchDaily says “The main building is interconnected with smaller satellite buildings constructed from wood with stone base elevated from the ground that function as dormitories, explained the architects. Pathways run above the ground on pilotis minimizing their impact on the site in an effort to keep nature “as unspoiled as possible.”

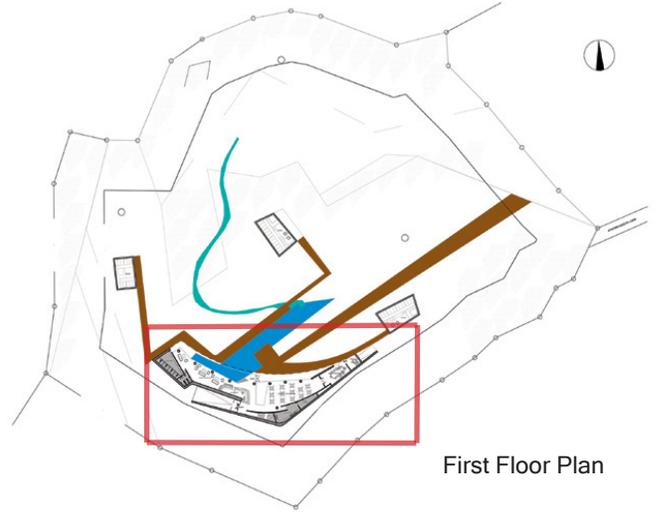


The project also includes a pool that is situated both outside and inside the building, “celebrating the junction between the building and nature.” An outdoor deck area surrounds the pool, connecting it to the rest of the building while also providing necessary room for summer camp activities.

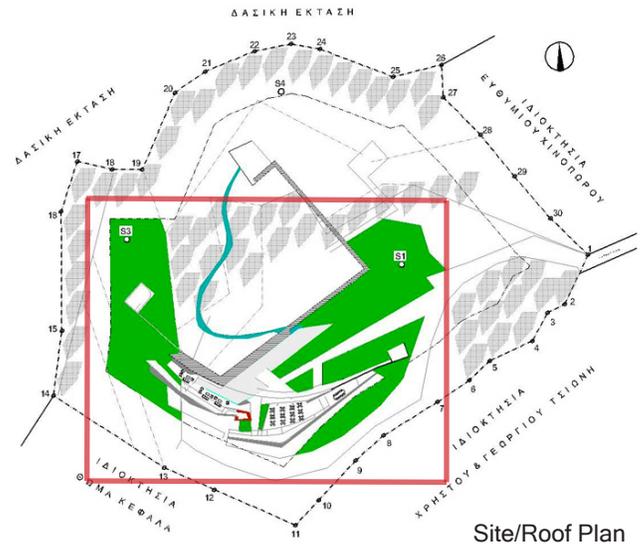


Case Study 3

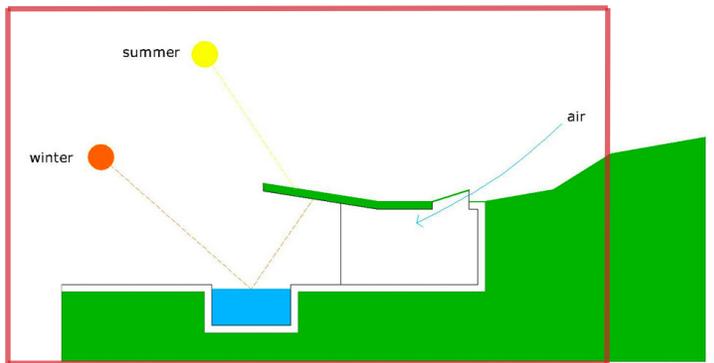
Emerging Landscapes, again, is a case study used to show how a convention center and child camp can be integrated into the landscape. The site plan, therefore, also becomes the roof plan, using a green roof system. The site also provides plentiful walk-ways to inhabit its outdoor space. The walkways also surround a pool that is used for warmth in the winter, which works by using its reflection under the structure's cantilevered roof system above it. The green roof system also slants downward, allowing a view from the interior to face the courtyard.



First Floor Plan



Site/Roof Plan



Case Study 4

Because this case study is owned by the state, and is set in a location near state parks and small villages, it is a good example of what mirrors this final program. It is also another example of a structure located on a hill.

This site is located in Santa Elena, which is a rural farming area up in the mountains, east of Medellín, Colombia. The people of this valley view Santa Elena as a scenic, fresh air place of cool temperatures. The site is located around Arvi Naural Park. It is state owned and protected. Building density restrictions ensure that the area remains a rural setting of rolling hills, great vistas, steams, forests, clean air and water.



Architects: Antonio Sofan

Location: Medellín, Colombia

Project Team: Saul Miranda

Consulting structural and civil engineers: John Jairo Cuartas

Project Area: 106 sqm

Construction Cost: €150,000

Project Year: 2009

Photographs: Carlos Tobon



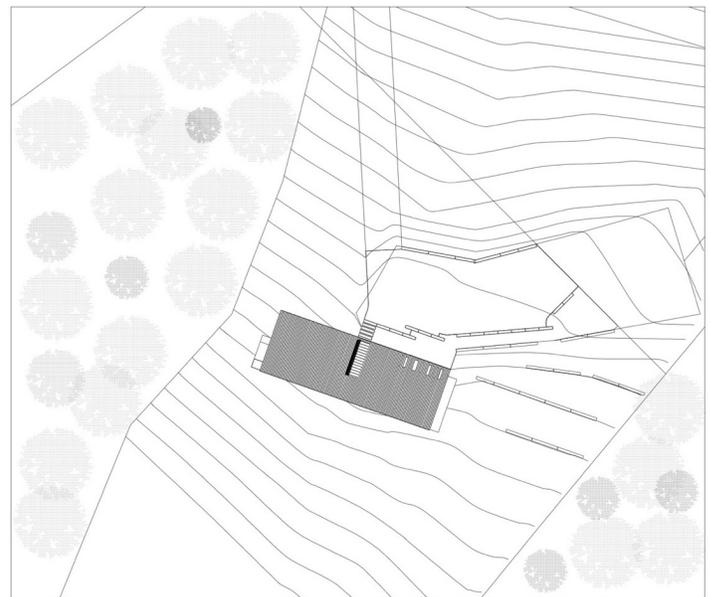
The architect, Antonio Sofan, tried not to make an architectural statement, but instead opted for complementing the suburban view with an almost imperceptible mark to the site. He wanted the natural landscape to continue its course so that the house can be accessed through a very discrete opening on the roof deck emphasized by a pink mosaic wall. The main view facade has an extended roof folding down the wall, stopping at various heights and framing different views.



Typological Research

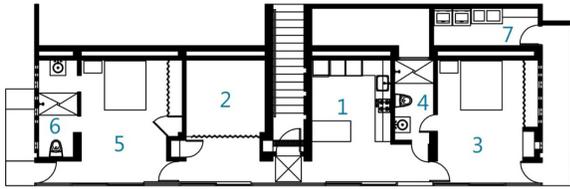


The house is roofed with a waterproofed, very thin and slightly sloped concrete slab. Disposable bamboo boxes were arranged on a brick pattern and used to form the underside of the slab while it was being poured, which is a very traditional method of casting concrete in the area. It also provided an incredible ceiling texture. Storm water is collected to the back of the roof deck against the slope of the hill in a concrete channel drain, which runs the width of the house. The pressure treated wood deck system simply sits leveled on the concrete slab. Planks are separated so the water filters through and drains down.



0 2 5 10M

Case Study 4

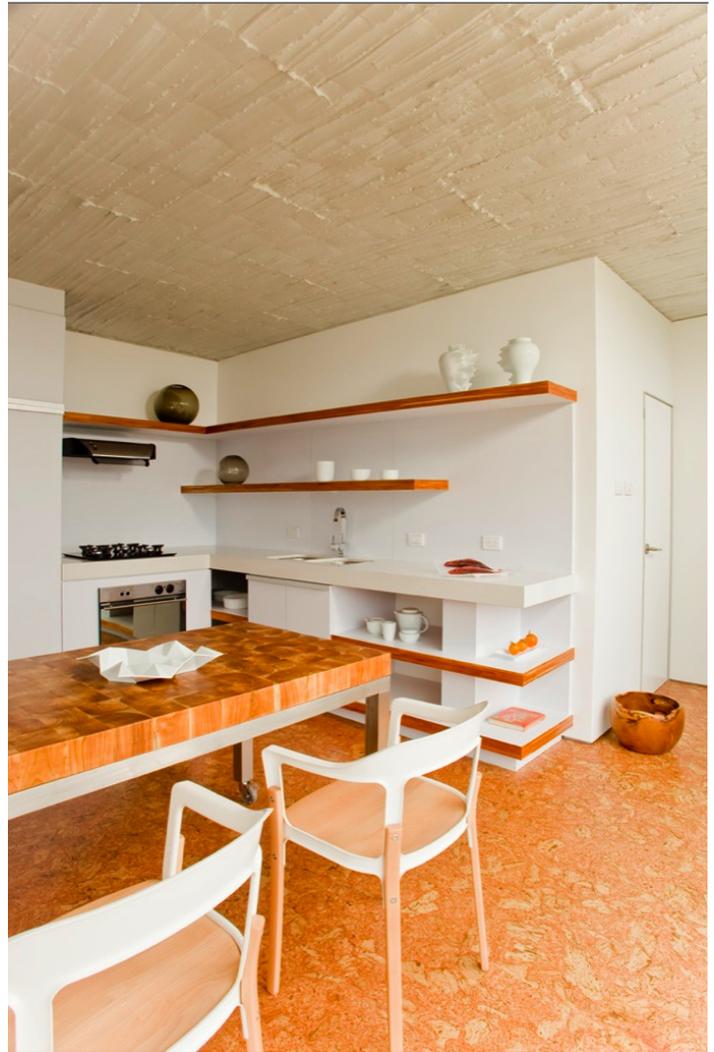


- 1 Kitchen
- 2 Meditation
- 3 Bedroom
- 4 Bathroom
- 5 Master Bedroom
- 6 Master Bath
- 7 Laundry



The client requested a specific program of two bedrooms, (one at each end), two bathrooms, small kitchen and meditation room. They also requested no lounging areas except for the roof deck, which occasionally is used as a platform for yoga.

All of these spaces are linearly arranged and threaded by a circulation facing the view. As one walks along, different versions of the landscape are revealed.

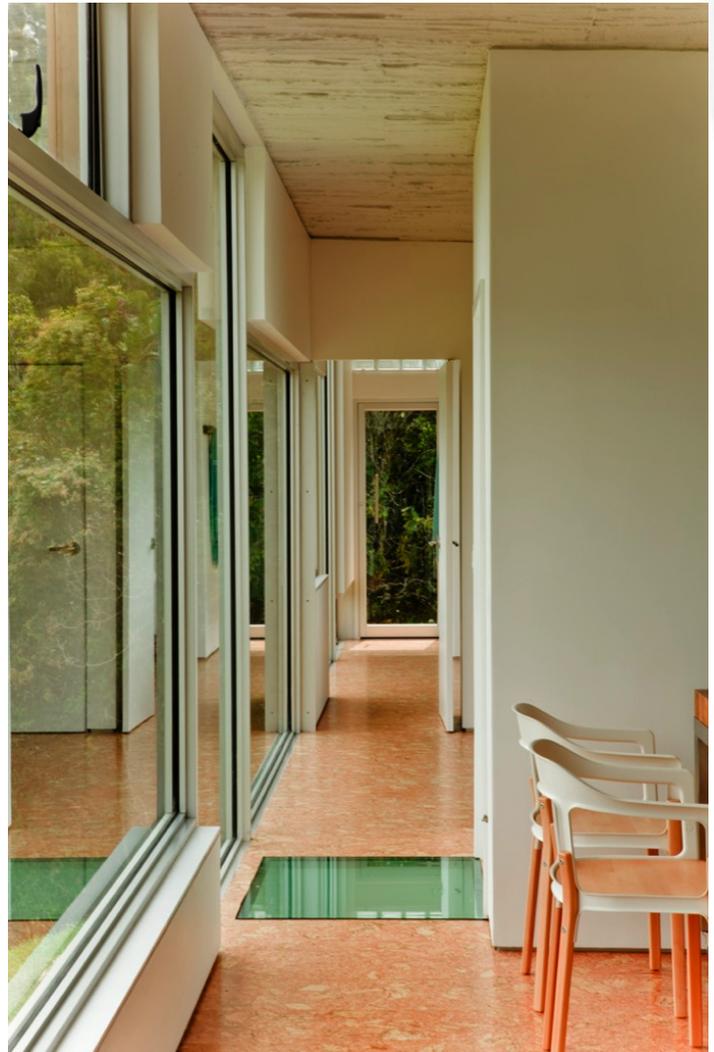


Both bathrooms are at each end so the light coming through is regulated by a pattern of openings with glass block. This is really a pixilated abstraction of the pine tree forests which flank the site on both sides.

Typological Research



Interior details are very simple. All walls inside are painted white and the ceiling is painted a very light shade of cool gray. Doors are flush to the walls, creating a monolithic impression. The bathrooms needed to express dynamism and movement as well. Their walls are tiled with white and three shades of blue glass mosaic, creating a pattern of tiers running in the same direction with all the rest of the materials. The same effect is reinforced with the narrow mirror glass, which folds up to the ceiling. Four blocks of end grain cut teak make the top of the wall-hung vanity on which a vessel sink rests, leaving cleanable floor space underneath. The shower and bath glass sliding doors are silk screened with a digital photograph of a water splash.



Typological Summary

In conclusion, many case studies have a direct focus on aiming more towards designing with intention to integrate with the land. This is important for global sustainability as well as mental and physical experiences within architecture. All of these design considerations aim toward helping individuals to achieve their desired sense of health and wellness.

This thesis project will not fall into a typical typology. It is integrated with all different aspects, some ideas taken from the projects above, to achieve a holistic feeling within The Lifestyle Center. It is important to take from these case studies the integration of nature to relieve people from their sedentary lifestyles, and to promote education to continue their enlightenment into their lifestyles.

Typological Summary

The case studies represent the way other architects think and design. They play with shapes, location, and size to make their building work. The sizes of these case studies are similar, but a little smaller to the size of the thesis program. Most case studies were also set into a hill or cliff. This is an intention for the design of this typology. It will also have a main focus of fitting into its surrounding landscape and use the river as a main view. It will also incorporate energy efficient uses to maintain an economic aspect that will help its nature. Within the circulation of the building, each inhabitant should be able to see sun, open sky, and rock, will make them feel open and not restricted. This will free the stresses of society and begin the process of a healthy lifestyle that the users can improve.

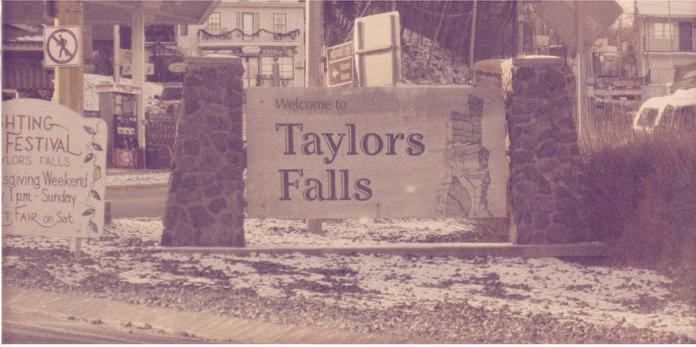




*HISTORICAL CONTEXT
RESEARCH*

RESEARCH

Taylor's Falls



In 1846, Baker and Taylor sold the claim and holdings to Joshua L. Taylor for two hundred dollars. He was born in Sanbornton, N.H., in 1816 and died in Ashland, WI, April 27, 1901. He came to Minnesota in 1840, settling at Taylor's Falls; engaged in lumbering; preempted a part of the site of this village; lived in California, 1849-56; returned there in 1856; and removed to Ashland in 1896. The town was first mapped and surveyed in 1851, at this time the young settlement was officially designated "Taylor's Falls." There were no roads leading to Taylor's Falls, the only "highway" was the St. Croix river, traveled by steamboat, barge or birch-bark canoe. (Now that's a true Adventure Vacation.) The only other means of travel to Taylor's Falls was on foot or horseback through intertwining forest trails. In 1853, a road was finally cut through wooded areas such as Point Douglas, (Hastings) by way of Stillwater to Taylor's Falls and further north to lake Superior. That same year the first bridge was built at Taylor's Falls and was the first bridge to span across the St. Croix River. By 1880, tourism began to travel into the town by train. Reporters from all over the world traveled to take photos of "The Little Switzerland" as it was called, given in reference to the rock formations, sheer cliffs and the glacial gardens. In 1891, the pristine area was established as a Minnesota Interstate park.

The context of this project begins with the history of Taylor's Falls, MN. According to research from Warren Upham's Minnesota place names: a geographical encyclopedia, Taylor's Falls is a city at the head of the Dalless of the St. Croix River in Shafer Township. There is a lot of very interesting history in Taylor's Falls. The Interstate Park dates back to 1837 when the Ojibway (Chippewa) Indians allowed the United States to acquire lumbering rights (Minnesota) to harvest the rich virgin pine tree forest. In 1838, Jesse Taylor and a man named Baker arrived from Fort Snelling to make a claim on the West bank of the St Croix. Jesse Taylor was a pioneer born in Kentucky, and was employed as a stone mason at Fort Snelling. At that time they began construction of the mill complex, which moved to Stillwater in 1846-1853, and marked the beginning of the first permanent settlement.



HISTORICAL CONTEXT RESEARCH

Throughout the history of obesity, its reputation varies among cultures and time from appreciation to the opposite.

Take a look in the history of obesity and we'll learn that this is truly an age-old health condition. Ancient Egyptians are said to consider obesity a disease, as it was drawn on a wall of depicted illnesses. Perhaps the most famous and earliest evidence of obesity is the Venus figurines, statuettes of an obese female torso that probably had a major role in rituals. Ancient China have also been aware of obesity and the dangers that come with it. They have always been a believer of prevention as a key to longevity. The Aztecs believed that obesity was supernatural, an affliction of the gods. Hippocrates, the father of medicine, was aware of sudden deaths being more common among obese men than lean ones, as stated in his writings.

In certain cultures and areas where food is scarce and poverty is prevalent obesity is viewed as a symbol of wealth and social status. To date, an African tribe purposely plumps up a bride to prepare her for child bearing. Before a wedding can be set, a slim bride is pampered to gain weight until she reaches the suitable weight.



Throughout the history of obesity, the public opinion and status changed considerably in the 1900's. It was regarded as unfashionable by the French designer, Paul Poiret who designed skin-revealing clothes for women. About the same time, the incidence of obesity began to increase and become widespread. Later in the 1940's, Metropolitan Life Insurance published a chart of ideal weights for various heights. They also advocated that weight gain parallel to age is not ok. The government and the medical society became more hands-on with obesity by initiating a campaign against it. This was preceded by a study of risk factors of cardiovascular diseases revealing obesity among the high ranks. Since then various diet and exercise programs have emerged. In 1996, the Body Mass Index (BMI) was published. This statistical calculation and index determined if a person was obese or not. At this time, obesity incidences have soared, led by children and adolescent obesity, which have tripled in just a few short years, greater than any number in the history of obesity.

Public perceptions in Western society regarding healthy body weight differ from those that regard weight gain ideal - and both perceptions have changed since the beginning of the 20th century. The weight that is viewed as an ideal has become lower since the 1920s. This is illustrated by the fact that the average height of Miss America pageant winners increased by 2% from 1922 to 1999, while their average weight decreased by 12%. On the other hand, people's views concerning healthy weight have changed in the opposite direction. In Britain the weight at which people considered themselves to be overweight was significantly higher in 2007 than in 1999. These changes are believed to be due to increasing rates of adiposity leading to increased acceptance of extra body fat as being normal.

RESEARCH

The Perspective of Obesity

The Greeks were the first to recognize obesity as a medical disorder. Hippocrates wrote that “Corpulence is not only a disease itself, but the harbinger of others”. The Indian surgeon Sushruta (6th century BCE) related obesity to diabetes and heart disorders. He recommended physical work to help cure it and its side effects.

The first sculptural representations of the human body 20,000-35,000 years ago depict obese females. Some attribute the Venus figurines to the tendency to emphasize fertility while others feel they represent “fatness” in the people of the time. Corpulence is, however, absent in both Greek and Roman art, probably in keeping with their ideals regarding moderation. This continued through much of Christian European history, with only those of low socioeconomic status being depicted as obese.

Etymology

Obesity is from the Latin *obesitas*, which means “stout, fat, or plump.” *Ēsus* is the past participle of *edere* (to eat), with *ob* (over) added to it. The Oxford English Dictionary documents its first usage in 1611 by Randle Cotgrave.

Many cultures throughout history have viewed obesity as the result of a character flaw. The *obesus*, or fat character, in Greek comedy was a glutton and figure of mockery. During times of Jesus Christ food was viewed as a gateway to the sins of sloth and lust. In modern Western culture, excess weight is often regarded as unattractive, and obesity is commonly associated with various negative stereotypes. People of all ages can face social stigmatization and may be targeted by bullies or shunned by their peers. Obesity is once again a reason for discrimination.

Overweight people, such as U.S. President William Howard Taft, have been ridiculed at various times. The principal goal of the fat acceptance movement is to decrease discrimination against people who are overweight and obese.

With the onset of the industrial revolution it was realized that the military and economic might of nations were dependent on both the body size and strength of their soldiers and workers. Increasing the average body mass index from what is now considered underweight to what is now the normal range played a significant role in the development of industrialized societies. Height and weight thus both increased through the 19th century in the developed world. During the 20th century, as populations reached their genetic potential for height, weight began increasing much more than height, resulting in obesity.

HISTORICAL CONTEXT RESEARCH

Obesity and Social Acceptance

For most of human history, mankind has struggled with food scarcity. Obesity has thus historically been viewed as a sign of wealth and prosperity, which was common among high officials in Europe in the Middle Ages and the Renaissance as well as in Ancient East Asian civilizations.

Obesity is stigmatized in much of the modern world (particularly in the West), though it was widely perceived as a symbol of wealth and fertility at other times in history and still is in some parts of the world, such as in Africa. This has become common since the HIV epidemic began.

During the Renaissance, some of the upper class began flaunting their large size, as can be seen in portraits of Henry the VIII. Alessandro del Borro Rubens (1577-1640) regularly depicted full-bodied women in his pictures, from which derives the term Rubenesque. These women, however, still maintained the “hourglass” shape with its relationship to fertility. During the 19th century, views on obesity changed in the Western world. After centuries of obesity being synonymous with wealth and social status, slimness began to be seen as the desirable standard.



RESEARCH

Child Obesity

In the 1950s increasing wealth in the developed world decreased child mortality, but as body weight increased, heart and kidney disease became more common. During this time period, insurance companies realized the connection between weight and life expectancy and increased premiums for the obese.

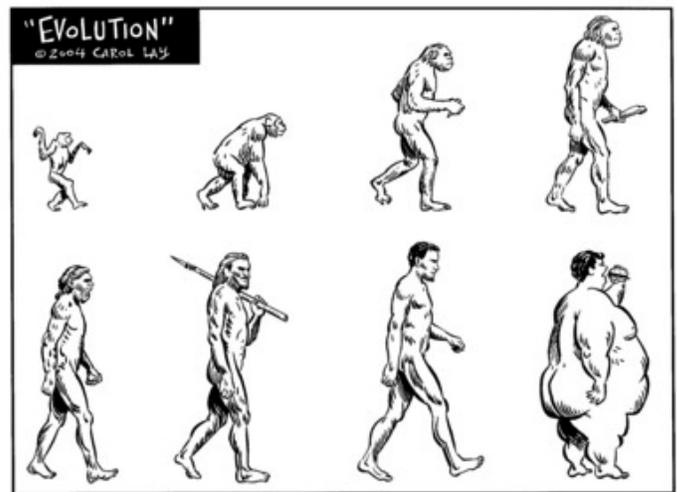
The problem of childhood obesity in the United States has grown considerably in recent years. Between 16 and 33 percent of children and adolescents are obese. Obesity is among the easiest medical conditions to recognize, but most difficult to treat. Unhealthy weight gain due to poor diet and lack of exercise is responsible for over 300,000 deaths each year. The annual cost to society for obesity is estimated at nearly \$100 billion. Overweight children are much more likely to become overweight adults unless they adopt and maintain healthier patterns of eating and exercise.



HISTORICAL CONTEXT RESEARCH

EVOLUTION

During the course of human evolution, intermittent food shortages and an active lifestyle has been the norm. People who did not have the genetic trait to allow for fat accumulation, were better suited to survive. People who did not have the ability to store fat or have the chance to eat more than what was needed for day to day metabolism, typically died during these food shortages and long winters. Therefore, the people who died did not pass on their genetics to the next generation. Conversely, our ancestors who were able to eat more than what was needed for day to day needs grew fat and did survive periods of food shortage, passing the genetic trait for obesity on to the subsequent surviving generations. This is why humans today, having survived the many generations of previous ancestors, indeed have a genetic predisposition for obesity.



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RESEARCH

ENVIRONMENTAL PSYCHOLOGY AND BEHAVIOR

The origins of this field of study are unknown, however, Willy Hellpach is said to be the first to mention “Environmental Psychology”. One of his books, *Geopsyché* discusses topics such as how the sun and the moon affect human activity, the impact of extreme environments, and the effects of color and form.

The end of World War II brought about a higher demand for developments in the field of social psychology particularly in the areas of attitude change, small-group processes, and intergroup conflict. This demand caused psychologists to begin applying social psychology theories to a number of social issues such as prejudice, war, and peace. It was thought that if these problems was addressed, underlying notions and principles would surface.

Although this time period was crucial to the development of the field, the methodologies used to carry out the studies were questionable. At the time, studies were being conducted in a laboratory setting, which caused some doubt as to their validity in the real world. Consequently, environmental psychologists began to conduct studies outside of the laboratory, enabling the field to continue to progress. Today environmental psychology is applied to many different areas such as architecture and design, TV programs, and advertisements.

The earliest noteworthy discoveries in the field of environmental psychology dates back to Roger Barker, who founded the field of ecological psychology. Founding his research station in Oskaloosa, Kansas in 1947, his field observations expanded into the theory that social settings influence behavior. Empirical data gathered in Oskaloosa from 1947 to 1972 helped him develop the concept of the “behavior setting” to help explain the relationship between the individual and the immediate environment. This was further explored in his work with Paul Gump in the book *Big School, Small School: High School Size and Student Behavior*. One of the first insightful explanations was on why groups tend to be less satisfying for their members as they increase in size. Their studies illustrated that large schools had a similar number of behavior settings to that of small schools. This resulted in the students’ ability to presume many different roles in small schools (e.g. be in the school band and the school football team), but in larger schools there was a propensity to deliberate over their social choices. Barker preferred fieldwork and direct observation rather than controlled experiments. Some of the minute-by-minute observations of Kansan children from morning to night, jotted down by young and maternal graduate students, may be the most intimate and poignant documents in social science. Barker spent his career expanding on what he called ecological psychology, identifying these behavior settings, and publishing accounts such as *One Boy’s Day* (1952) and *Midwest and Its Children* (1955.)

GOALS FOR THE THESIS PROJECT

From an academic standpoint, this thesis should clearly explain the Theoretical Premise and provide new, contributing ideas to environmental psychology and architectural impacts on behavior for promoting wellness. The Theoretical Premise will affect and be affected by the research and project revisions.

Clearly defining the typology to its finest potentials is another goal in the process of this thesis. The Lifestyle Center will incorporate the landscape and provide a place where people would strive for activity outdoors.

With a better understanding of research, the academic goals are to execute a sum publication of quality, to clearly state objectives, and to reflect ideas for further advances for areas of my thesis.

Professional goals will only be achieved through a thought-out process and in-depth analysis. Reflection of my process will be a documented display of analysis on light, shadow, color, texture, pattern, material, volumes, spatial organization, and the natural surroundings to help portray the idea for users who want to achieve their full wellness potential.

GOALS FOR THE THESIS PROJECT

There are many goals for this project that are also very personal in the scheme of the process. My time management goal is to work in a timely manner with a strict schedule that won't allow me to waste time. With this, talking to advisors and gaining insight during this time is essential to the production process. I hope to not force myself with time management, but to honor this project and truly be dedicated.

With time management, the design process should therefore be well organized and thought out before producing the comprehensive program, presentation, and thesis book. My previous architectural experience should be utilized in this aspect. The final exhibit drawings, details, modeling, and concepts should be done to my foremost abilities.

Attention to detail in site characteristics is also a goal for completing the most optimal design. Views, micro-climates, vegetation, sun paths, and topography will be considered to enhance design.

The final goal for this project is to stay interested and not get side-tracked. A higher personal quality of work is attained with more interest. Therefore, being proud of the work in the completion of this thesis is essential. This will help me develop a foundation as I transition to a career in the professional design field of architecture.





Site Analysis

Narrative

Can people interact and communicate with architecture? Understanding the context of a building and the people who inhabit the structure may offer up a dialogue that generally persists long after the entire construction is finalized. This is why designing with intention is important. Through investigating a site and asking questions about the inhabitants of the site, architects can find the narrative the building should tell. Architecture is story telling, and the story becomes a progressive concept. Architecture, can in fact, shape the world, if we can make it shape behavior.

Captivating people into an architect's design requires intensive thought from ideas, usually drawn the site. Choosing a site requires an analysis of characteristics that are meaningful in the design process. The distinguishing characteristics at the site of Taylor's Falls are important in the design of The Lifestyle Center for many reasons. It provides views for miles, including a remarkable view of the river to the south and to the west of the sight. This view will provide picturesque sunsets and warmth before nighttime. The landscape has extreme hillsides, cliffs, and rocks, surrounded with grasses and trees that deliver beautiful colors at different times of the year. These views of the outdoors are a major deciding factor for the design because it draws people to activity outdoors.



joyfotos, reflections of autumn, panoramio



ChrisSTP, St.Croix, Panoramio

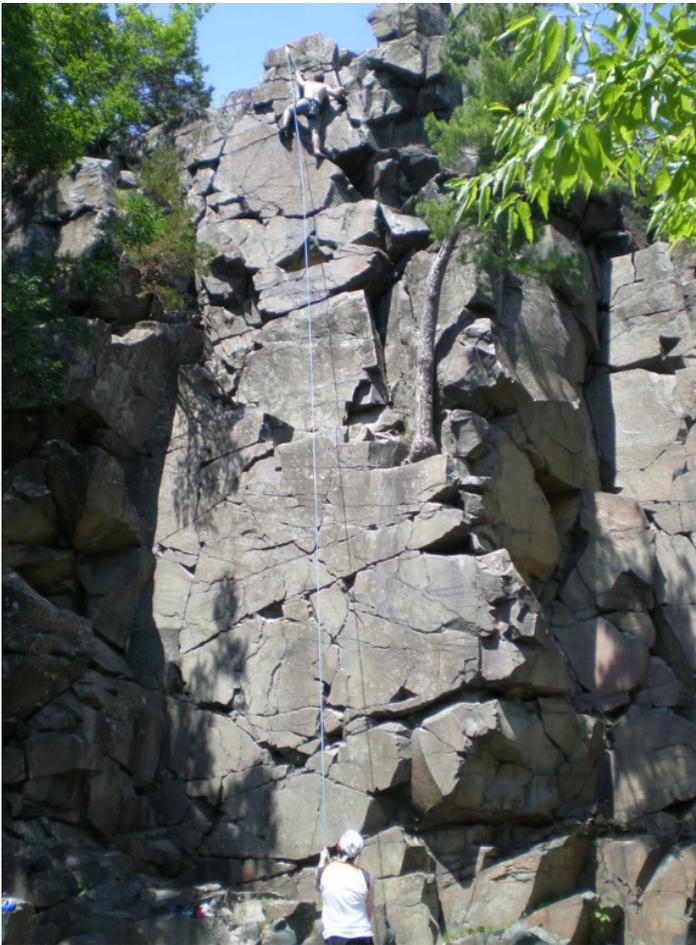
Site Analysis

Site Analysis Narrative

Taylor's Falls is located near many state park and recreation areas which include scenic boat tours, paths, rock climbing, campgrounds, and canoe & kayak rentals. The site is located in the middle of each activity and will also be owned by the state. This will also attract and provide activity for the inhabitants of the program.



Smokey963, Fall Colors, Interstate park St. Croix Falls, Wis., Panoramio



boubs, Climbing, Taylor's Falls Minnesota, Panoramio



afsonnek, Canoe at Interstate Park, Panoramio

SITE ANALYSIS

Located right down the road from the site is a small campground that is also owned by the state. This will be ideal for setting up activities with the anticipated convention center. The campground is also near an island that is calm for swimming, and canoeing, and it is also a place to provide fairy rides on the river.



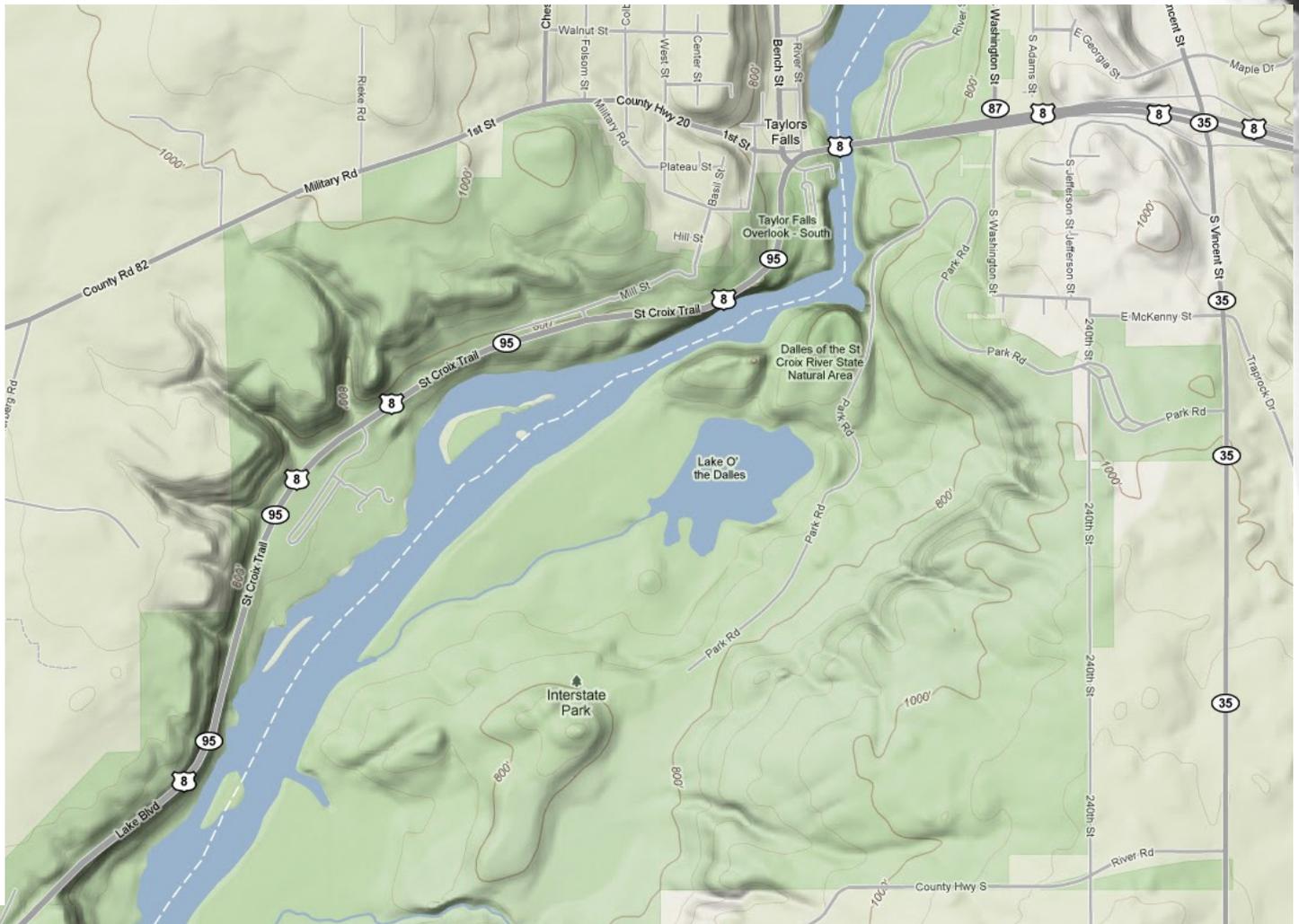
Campground



River Views From the Campground



SITE ANALYSIS



Geography

Region: Midwest
Division: West North Central
State: Minnesota
CSA Name: Minneapolis-St. Paul-St. Cloud, MN-WI
CBSA Type: Metropolitan
CBSA Name: Minneapolis-St. Paul-Bloomington MN-WI
County: Chisago
City: Taylor Falls
Longitude: -92.7
Latitude: 45.4
Elevation: 930 feet above sea level
Area code: 651



SITE ANALYSIS

SURROUNDING STRUCTURES

The surrounding buildings were constructed of materials such as rock and wood. These materials are seen all over the area and their designs also tried to incorporate nature within the building.



SITE ANALYSIS

Taylors Falls is located in Chisago County MN.

Map Unit Description

Chisago County, Minnesota

107DD-plainbo-rock outcrop complex, 12 to 40 percent slopes

Map Unit Setting

Elevation: 980 to 1,640 feet

Mean annual precipitation: 25 to 30 inches

Mean annual air temperature: 39 to 45 degrees F

Frost-free period: 120 to 140 days

Map Unit Composition

Plainbo and similar soils: 60 percent

Rock outcrop: 25 percent

Description of Plainbo

Setting

Landform: Terraces

Landform position (two-dimensional): Backslope, shoulder

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy outwash

Properties and qualities

Slope: 12 to 40 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Very low (about 1.9 inches)

Interpretive groups

Land Capacity (nonirrigated): 7s

Typical Profile

0 to 5 inches: Loamy sand

5 to 23 inches: Loamy sand

23 to 33 inches: Weathered bedrock

Description of Rock Outcrop

Setting

Landform: Terraces

Parent material: Igneous, metamorphic and sedimentary rock

Properties and qualities

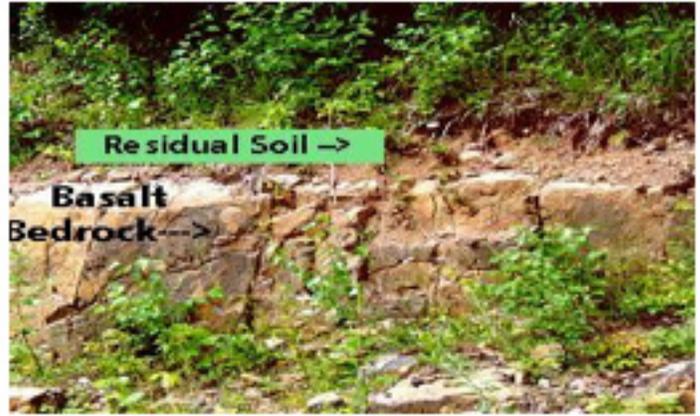
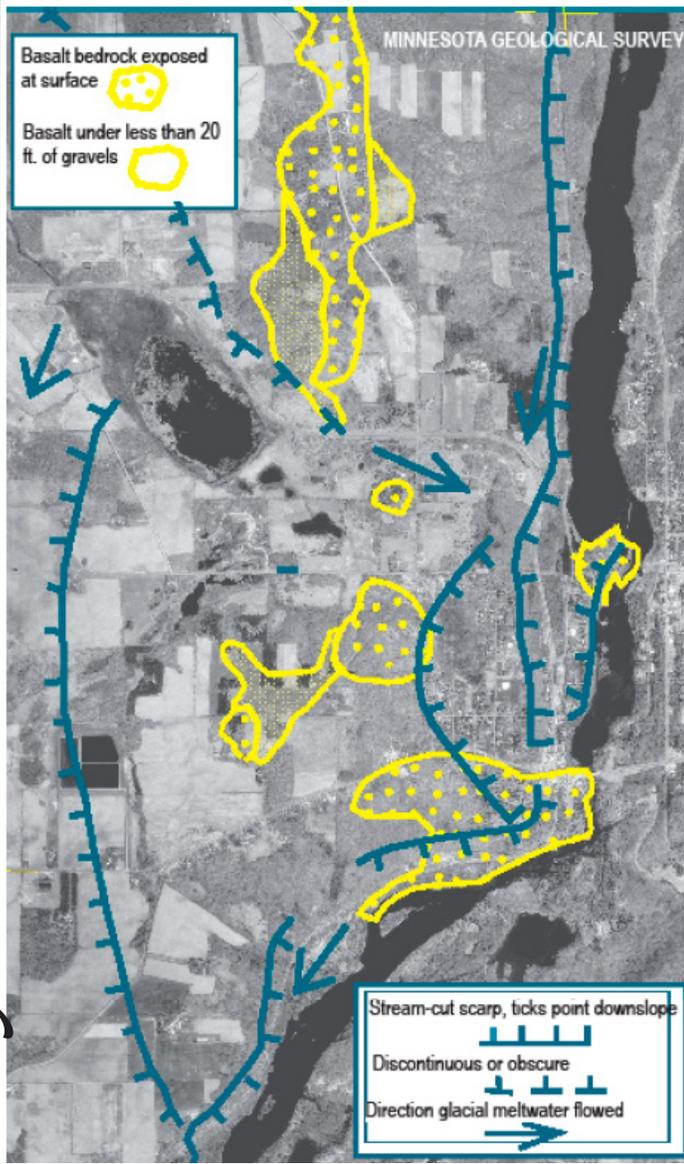
Slope: 12 to 40 percent

Depth to restrictive feature: 0 inches to lithic bedrock

Taylors Falls	Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Insolation, kWh/m ² /day	1.58	2.49	3.48	4.47	5.39	5.72	5.81	4.88	3.75	2.52	1.64	1.33
Clearness, 0-1	0.48	0.52	0.5	0.49	0.49	0.5	0.52	0.5	0.48	0	0.44	0.46
Temperature, degrees C	-11.58	-8.72	-2.73	5.91	13.47	18.79	21.14	20.01	15.11	7.49	-1.81	-9.16
Wind Speed, m/s	6.18	5.88	6.33	6.5	6.06	5.62	5.03	5.02	5.42	5.84	5.96	5.92
Precipitation, mm	20	19	44	59	86	105	97	96	75	57	39	25
Wet days, d	9.5	7.5	9.6	10.8	11.4	11.1	9.4	9.8	10.1	8.2	8.5	9.8

SITE ANALYSIS

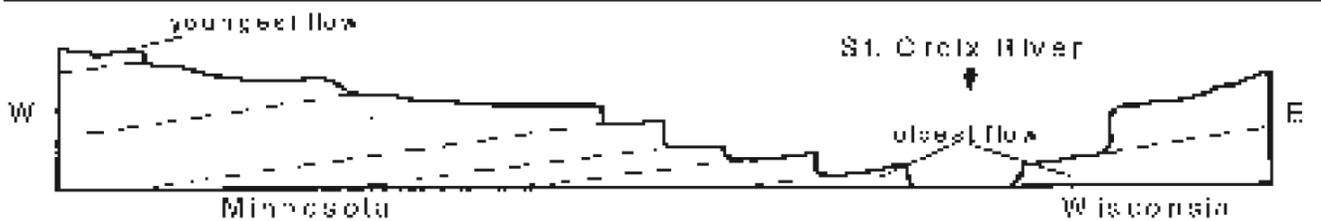
SOIL ANALYSIS



Information provided by: <http://www.soils.agri.umn.edu>

In this photo (basalt rock) of basalt near Taylors Fall, MN a reddish soil can be found in a crack of the rock. Basalt weathers slowly and is high in iron, which imparts a red color to the soil. In some areas, limestone or granite can also be a parent material for residual soils.

Site Analysis



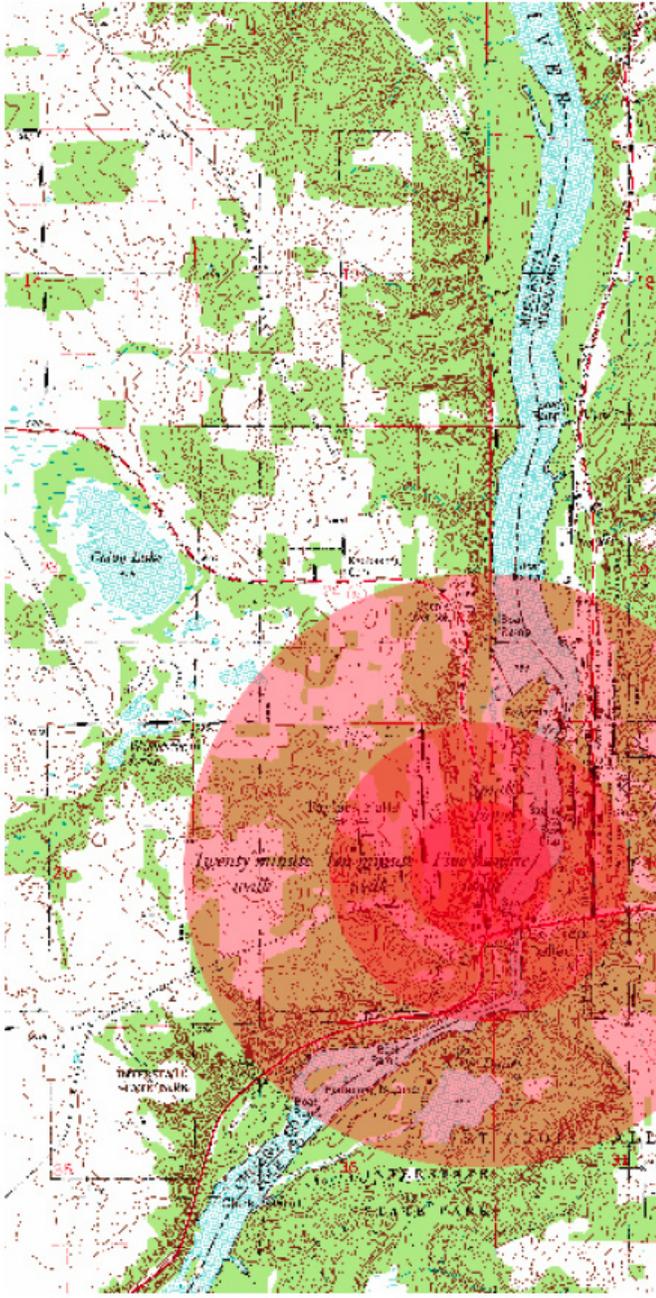
Generalized profile of lava flows in the St. Croix Valley at Interstate State Park. Source: "Surficial Geology of Interstate State Park, Minnesota"

A Plan of Conservation and Development

SITE ANALYSIS

WALKING DISTANCE

Walkability, defined in twenty minute (one mile), ten minute (one-half mile), and five minute (one-quarter mile) radii from the Center of Downtown.



A Plan of Conservation and Development

Twenty minute Walk

a one-mile walk radius, when placed at the center of downtown, the 20 minute walk radius reaches and encompasses nearly all of the “small town” zone and reaches to the “countryside,” creating a community that is compact and easily connected

Ten minute walk

a half-mile radius; when placed at the center of downtown, the 10 minute walk radius reaches into most of the neighborhood on the “upper bench” and suggests an ability to easily reach downtown on foot.

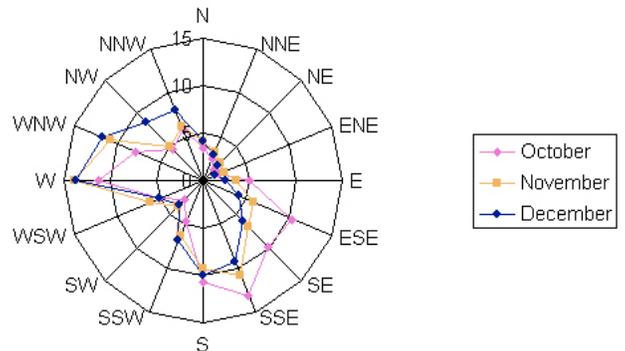
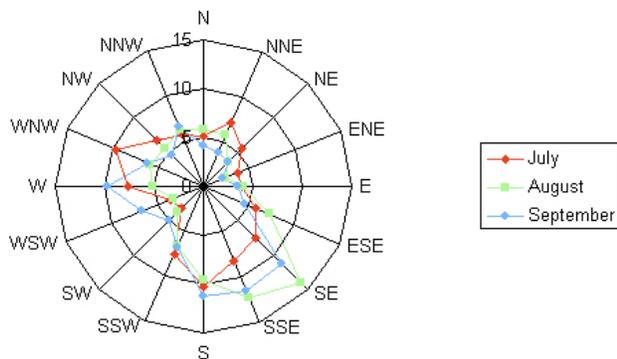
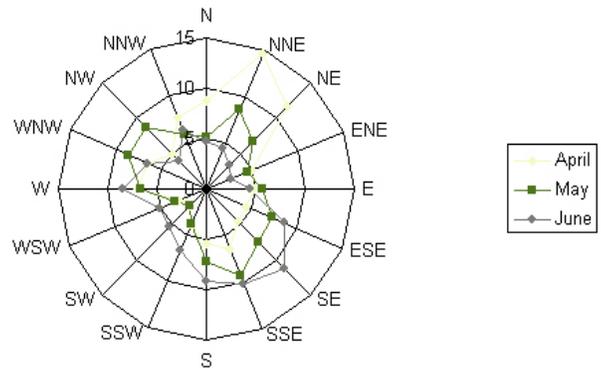
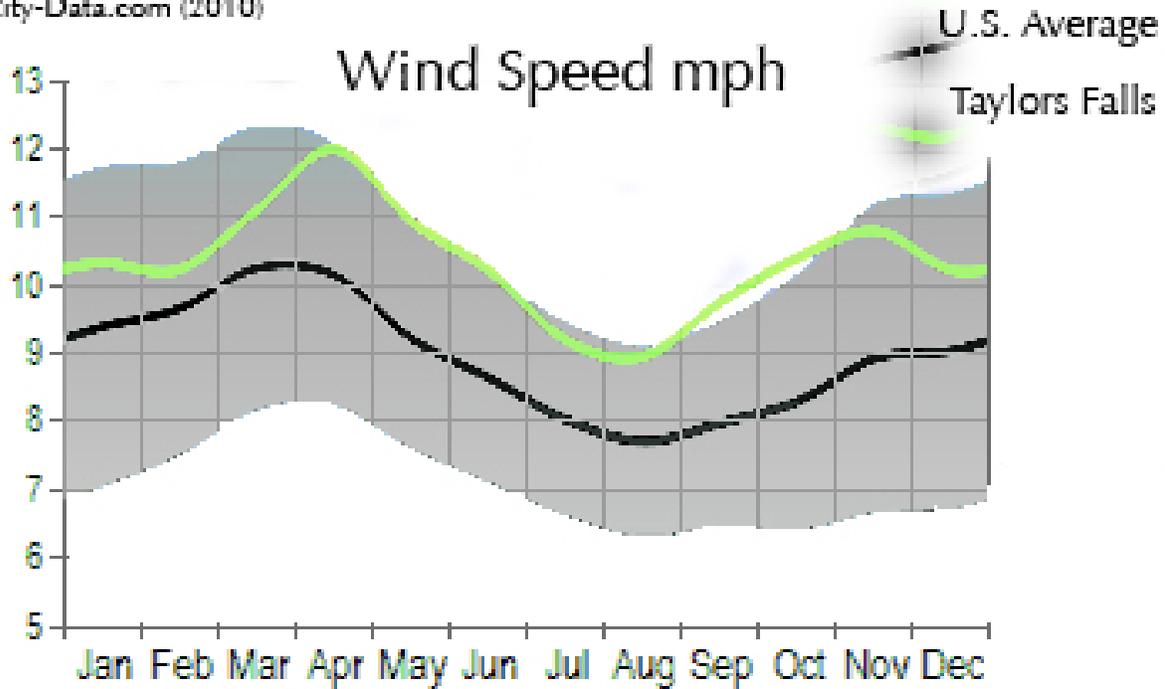
Five minute walk

a quarter-mile walk radius; when placed at the center of downtown, the 5 minute walk radius encompasses nearly all of downtown and suggests a district that maintains the scale and character of both historic and present day downtown Taylors Falls.

SITE ANALYSIS

WIND ANALYSIS

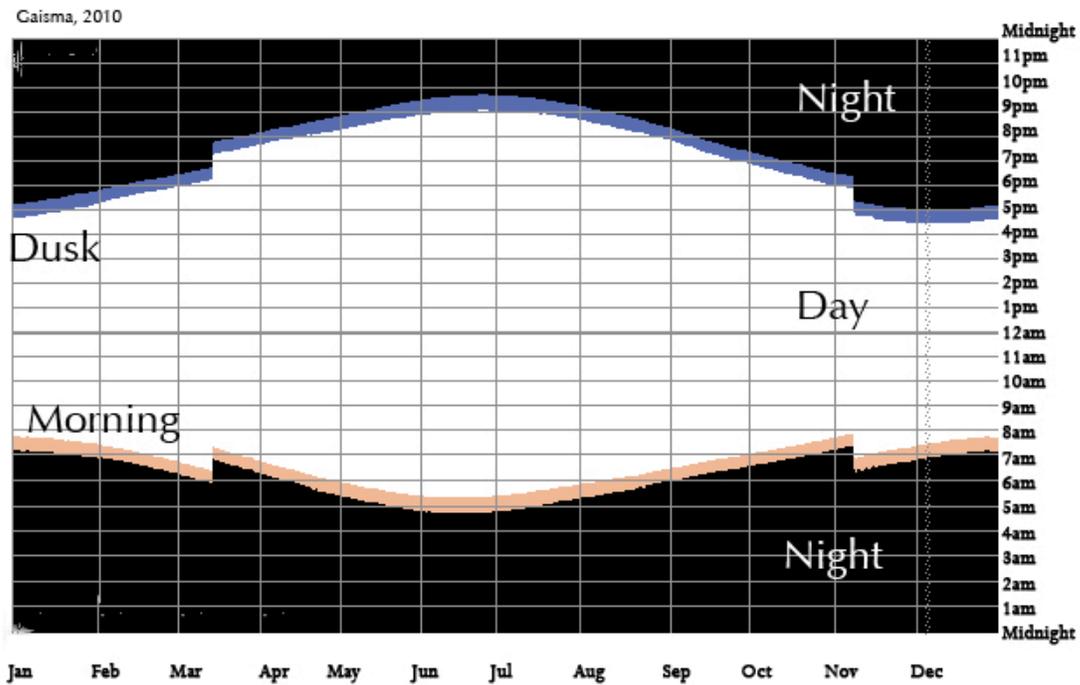
City-Data.com (2010)



Site Analysis

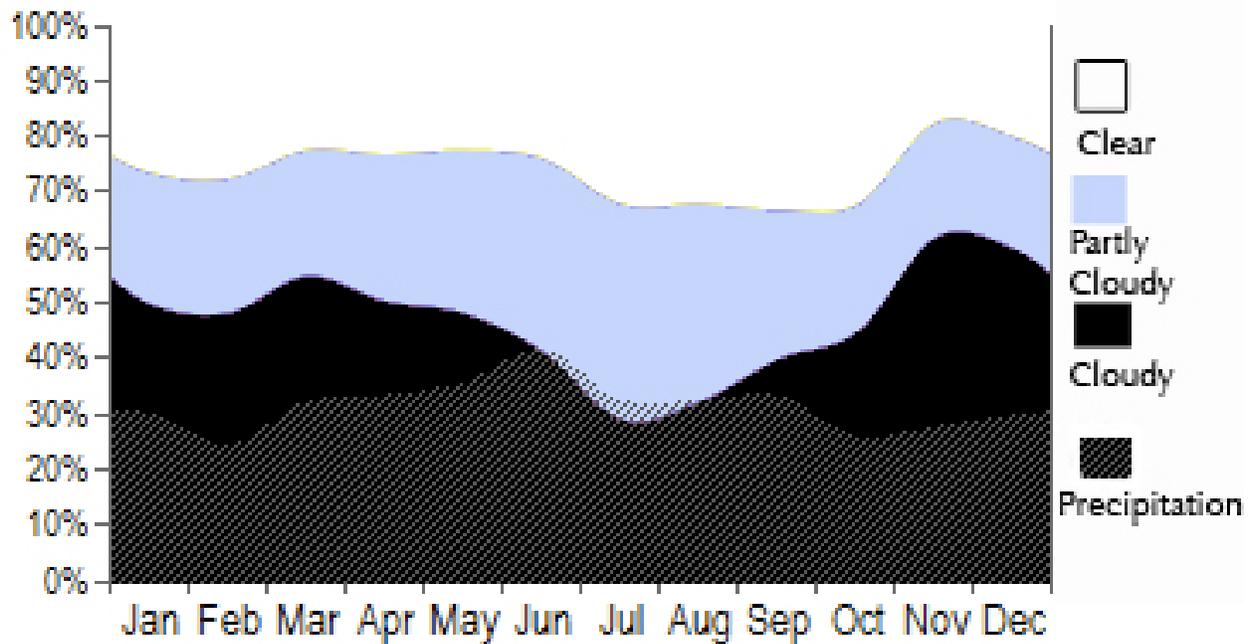
SITE ANALYSIS

SUNLIGHT ANALYSIS



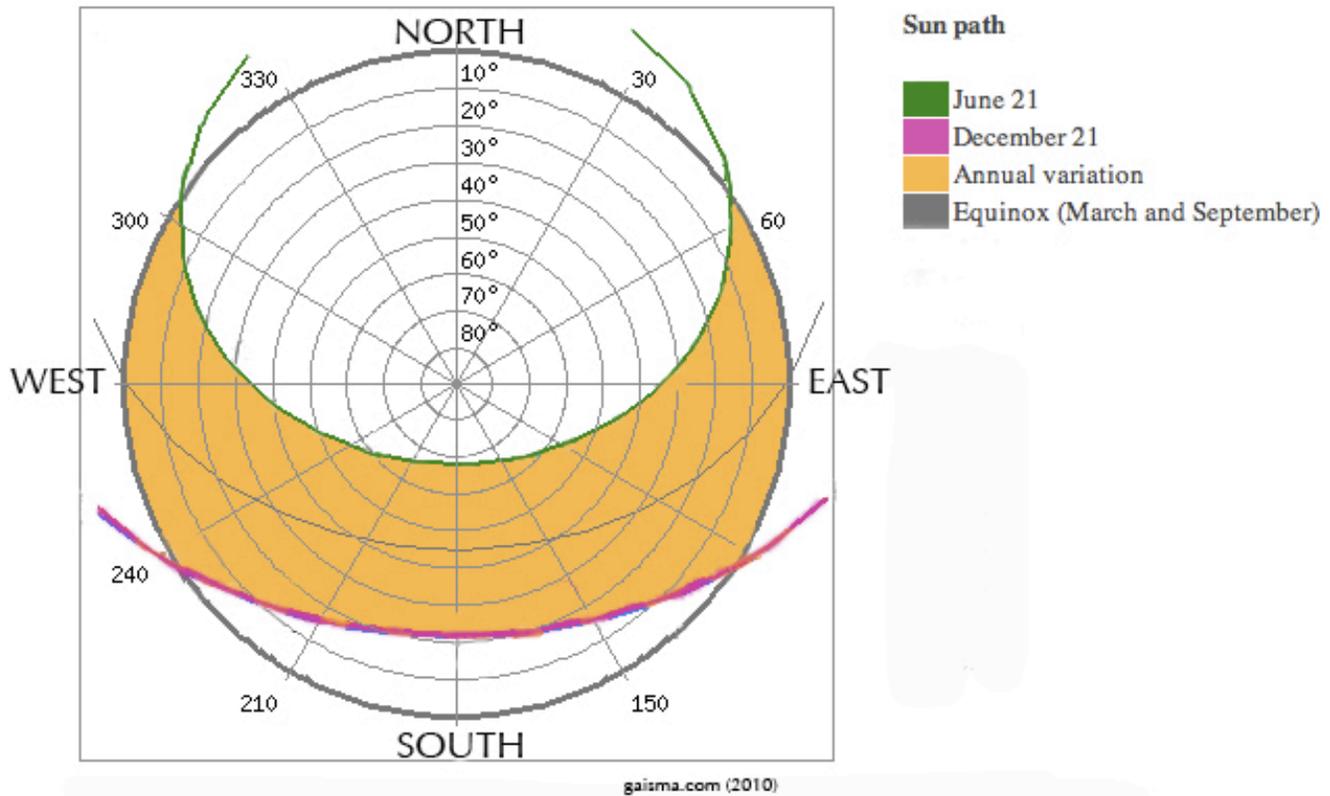
Cloudy Days

(City-Data.com, 2010)



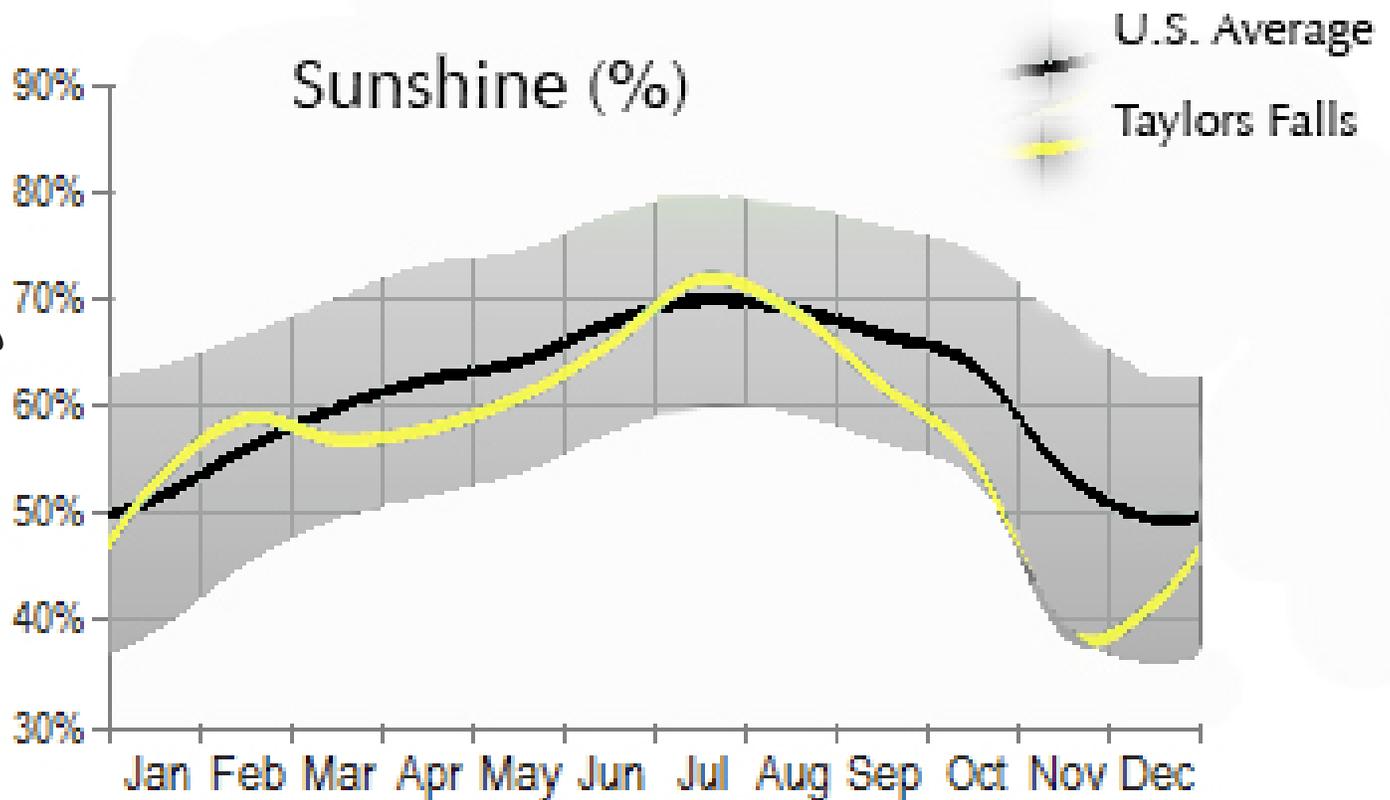
SITE ANALYSIS

SUNLIGHT ANALYSIS



(City-Data.com (2010))

Site Analysis

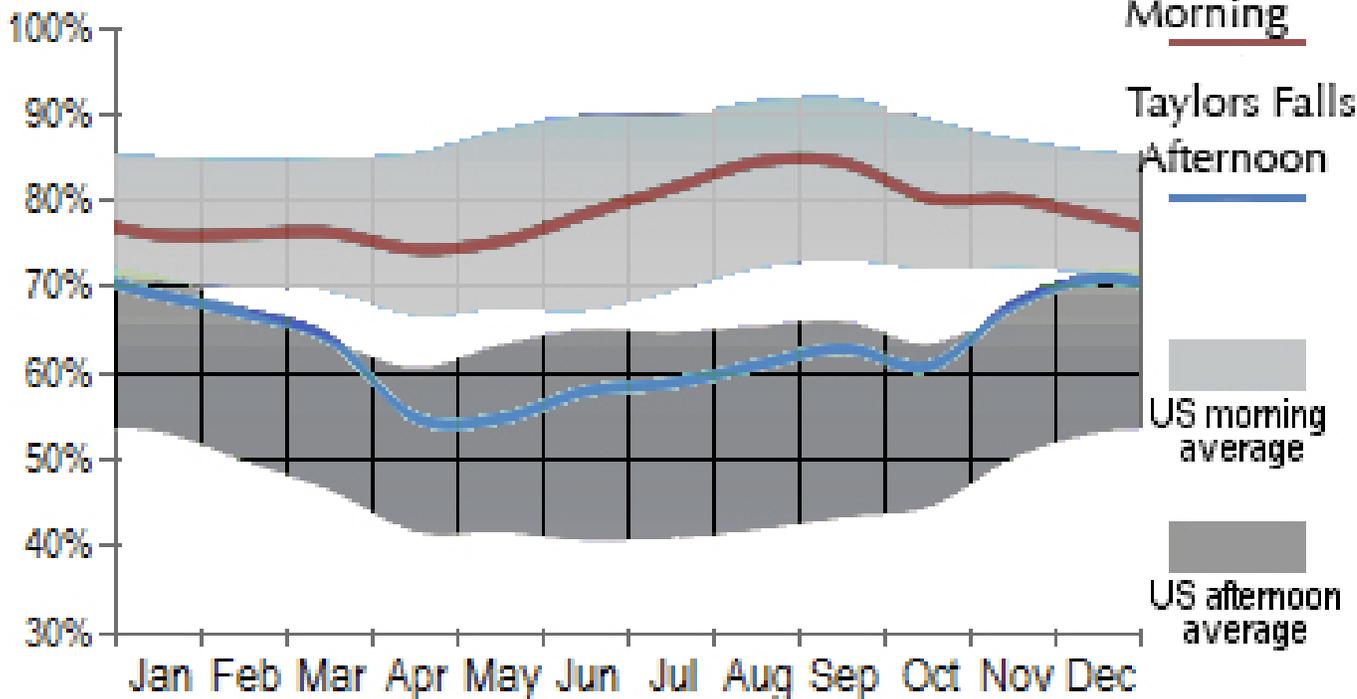


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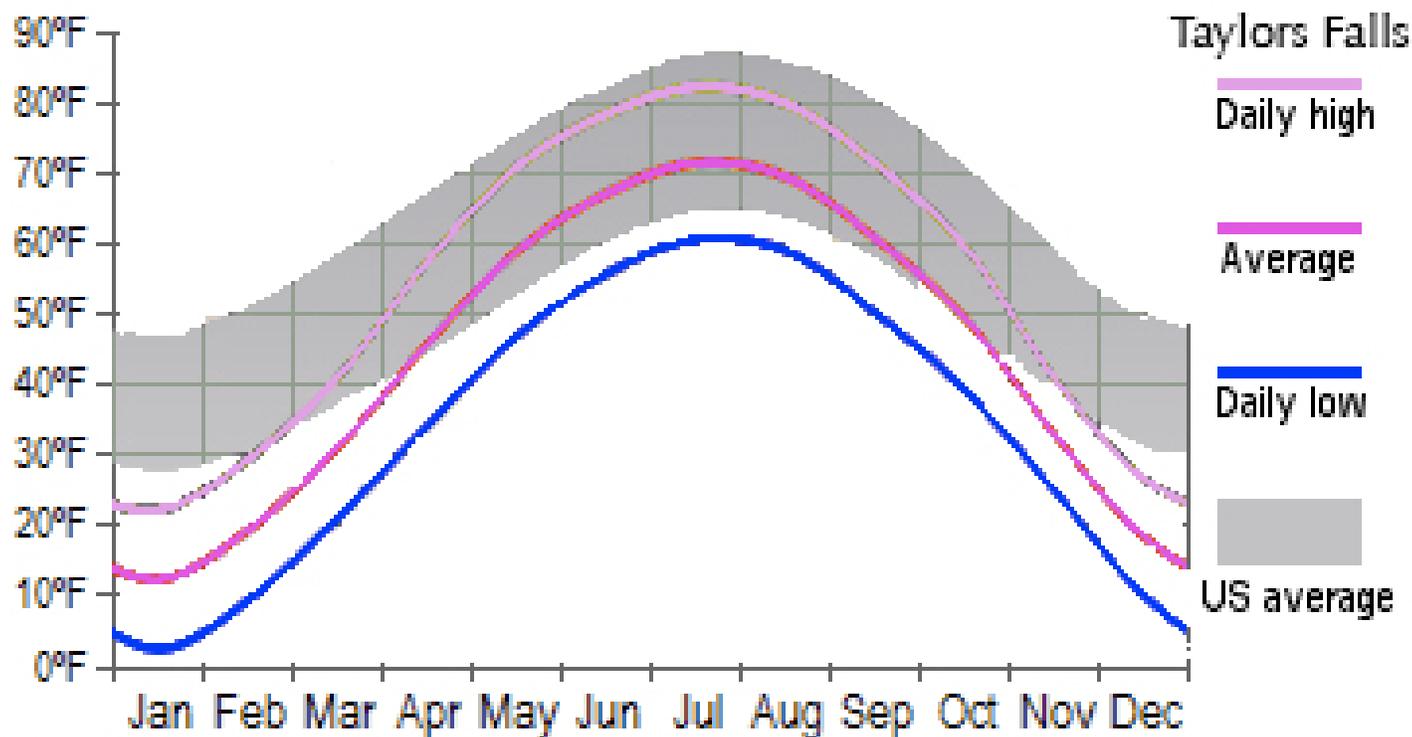
CLIMATE ANALYSIS

City-Data.com (2010)

Humidity



Average Temperatures

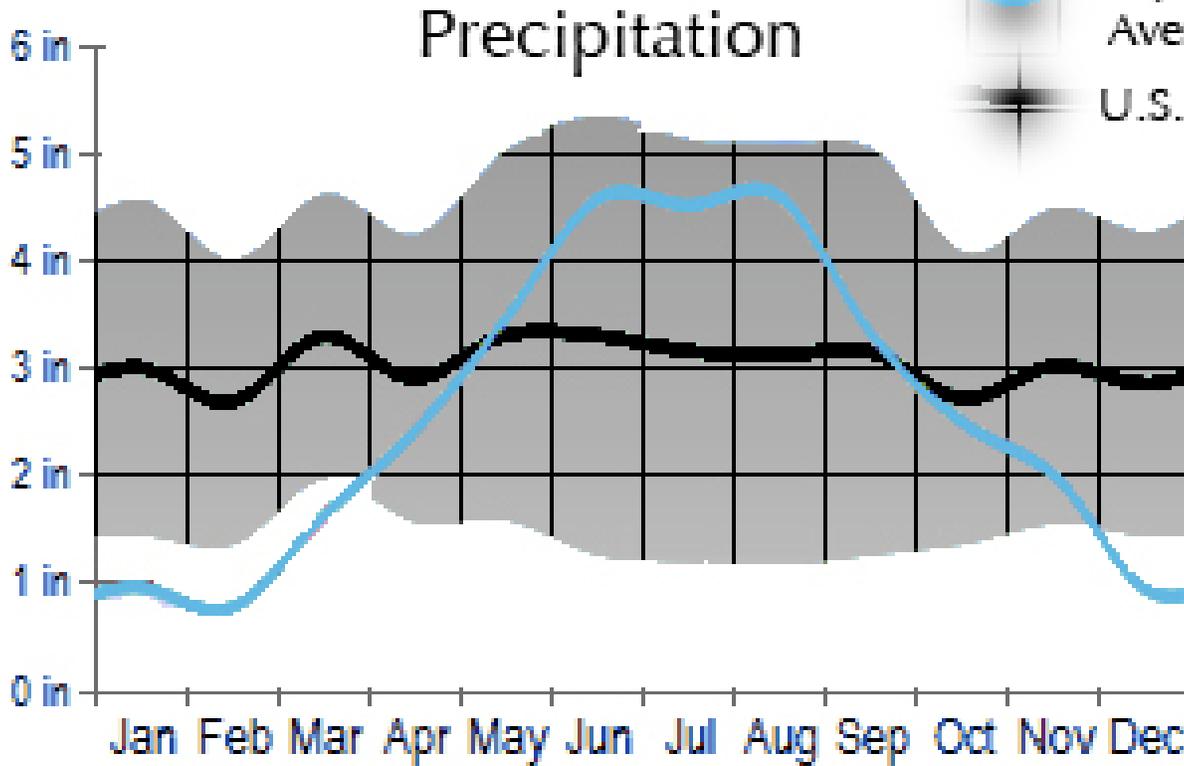


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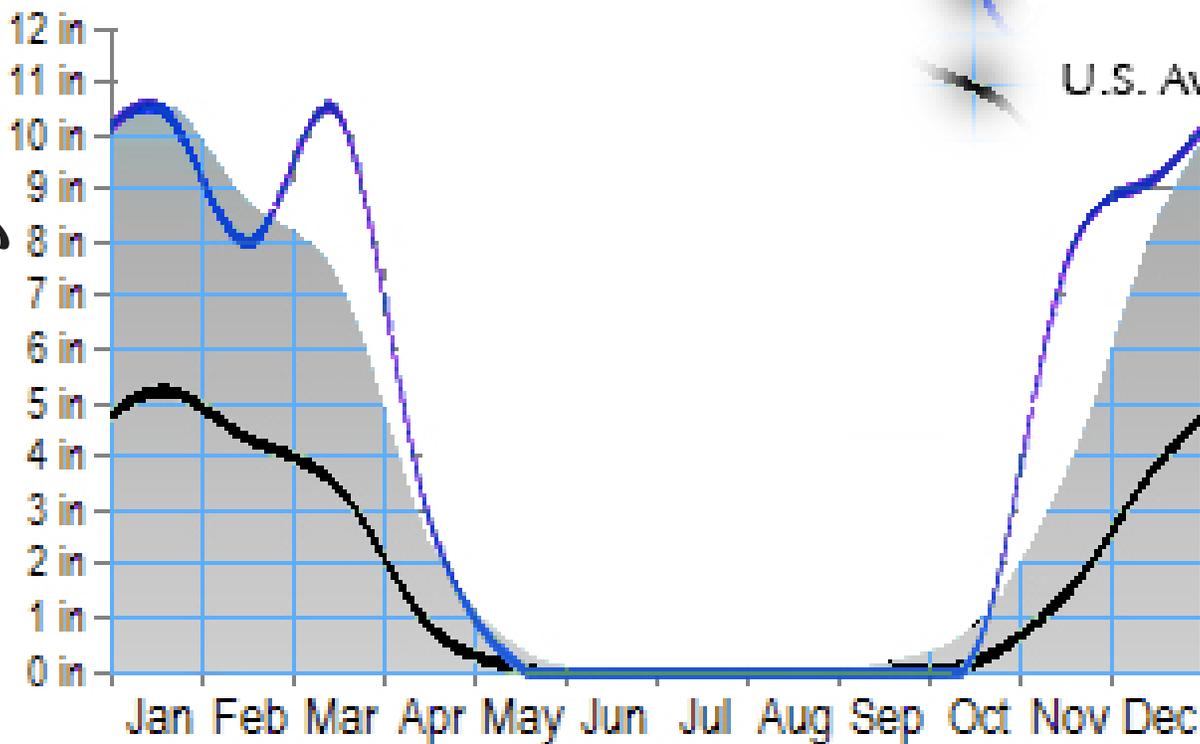
CLIMATE ANALYSIS

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City-Data.com (2010)

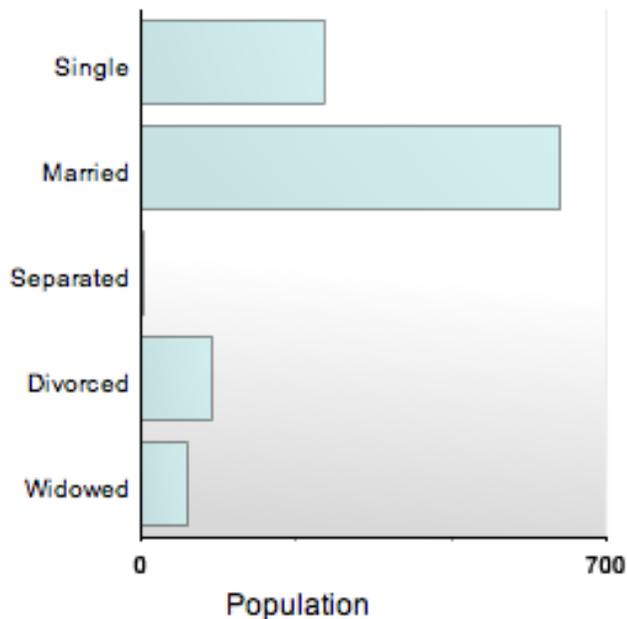
Snowfall



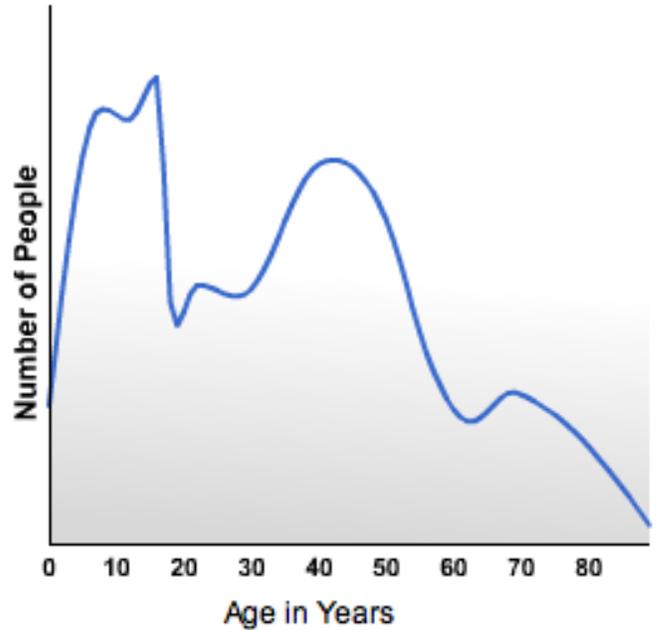
Site Analysis

SITE ANALYSIS

Marital Status



Average Age



The Economics

Average House Value: \$105,300
Average Annual Household income: \$49,375
Businesses: 48
Employees: 421
Annual Payroll: \$4,882,000

The Politics

Congressional District: 08
Congressional District Land Area: 27582.0
Sr Senator: Norm Coleman (R)
Jr Senator: Amy Klobuchar (D)
US House Representative: James L. Overstar (D)

Other Stuff

County FIPS Code: 025
State FIPS Code: 27

SITE ANALYSIS



Views of the Surrounding Area Near the River



View from the original site to the river



View from the original site to the hill/cliff

Site Analysis

SITE ANALYSIS

Looking to the north across a main highway, you will see high hills, cliffs, and plentiful vegetation, which is mostly healthy.



1. North



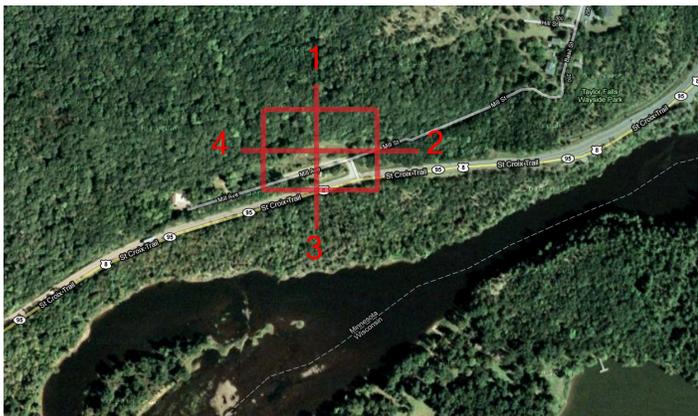
2. East



3. South



4. West



Looking to the south (in the direction of the river) you will notice a beautiful view. Across the river are neighborhoods and a lake.

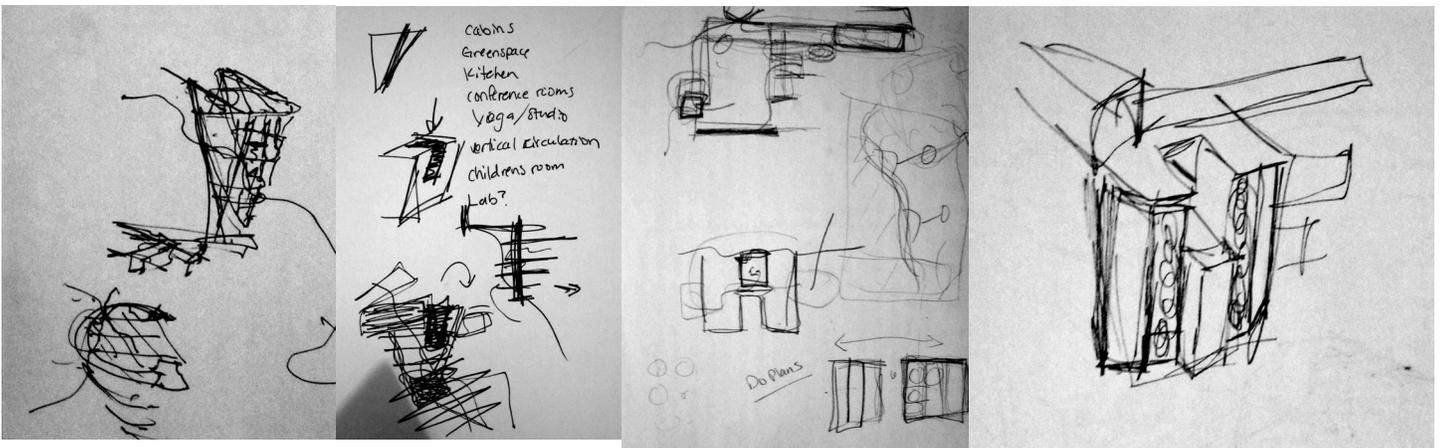
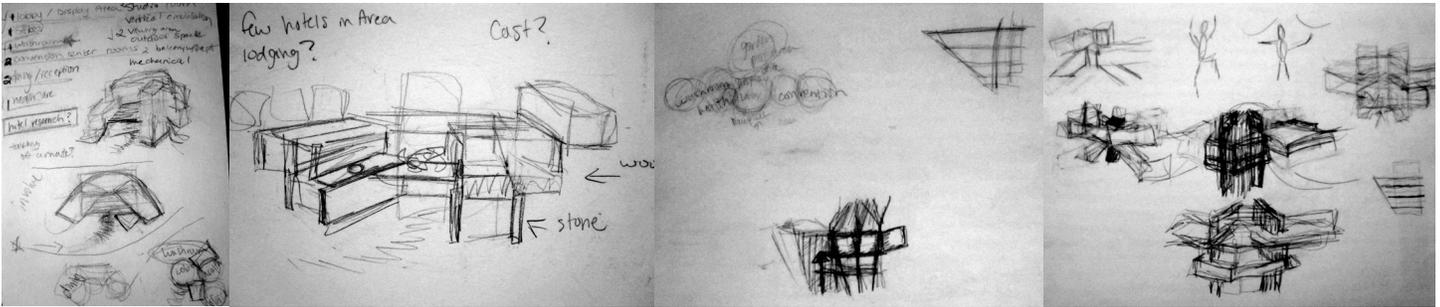
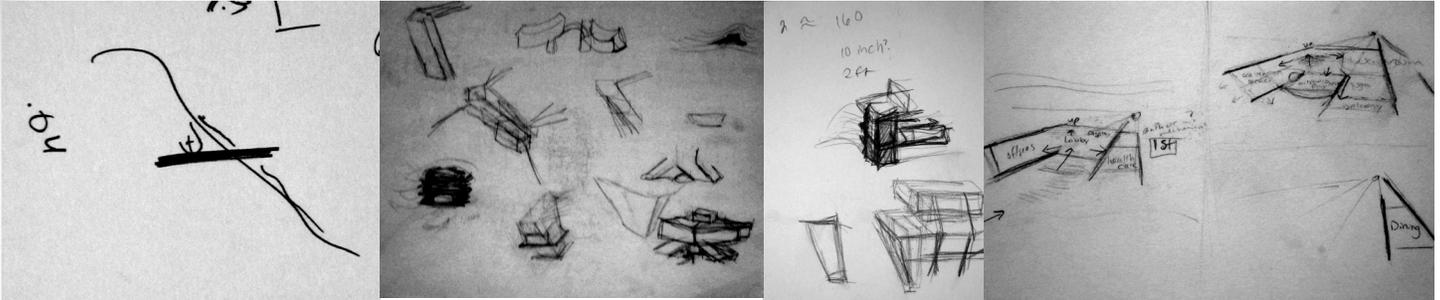
Programmatic Requirement

Entry	600 sq. ft.
Lobbies and Public Space	800 sq. ft.
Outdoor Gathering Space	450 sq. ft.
Main Gathering Storage	600 sq. ft.
Mixed Use Studio	225 sq. ft.
Rock Climbing/Viewing Deck	900 sq. ft.
Mechanical	300 sq. ft.
Office	360 sq. ft.
Conferece Meeting/Classroom 2 total	360 sq. ft.
Bathrooms 5 total	75 sq. ft.
Circulation	3000 sq. ft.
Exploratory	625 sq.ft.
Cabins 12 total	120 sq. ft.

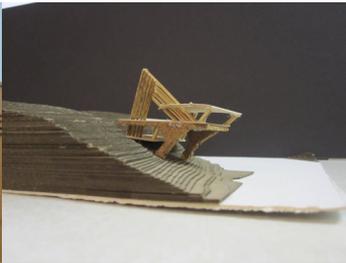
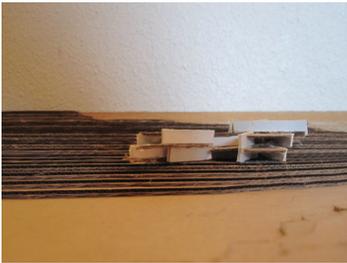
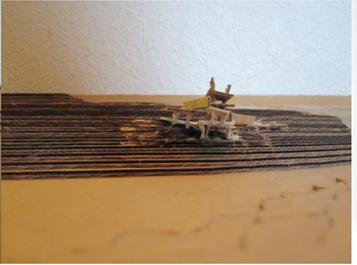
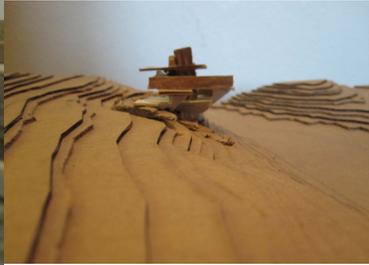
8

Dining	420 sq. ft.
men & women's locker rooms 2 total	450 sq. ft.
Health Office	200 sq. ft.
Total	12000 sq. ft.

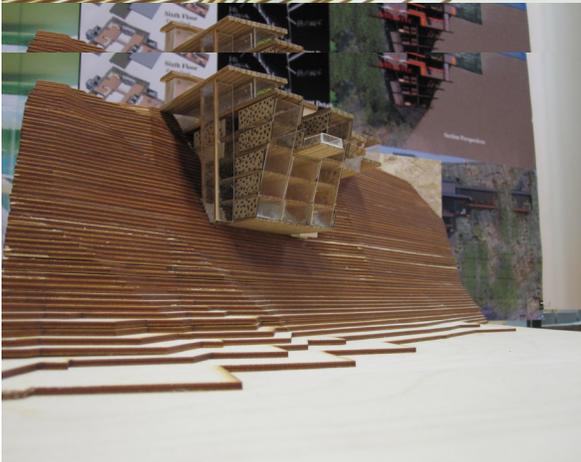
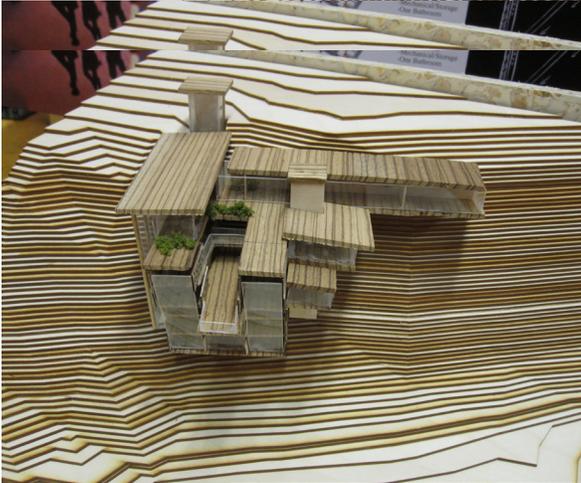
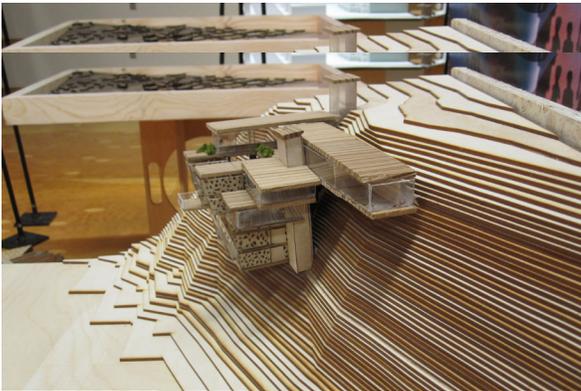
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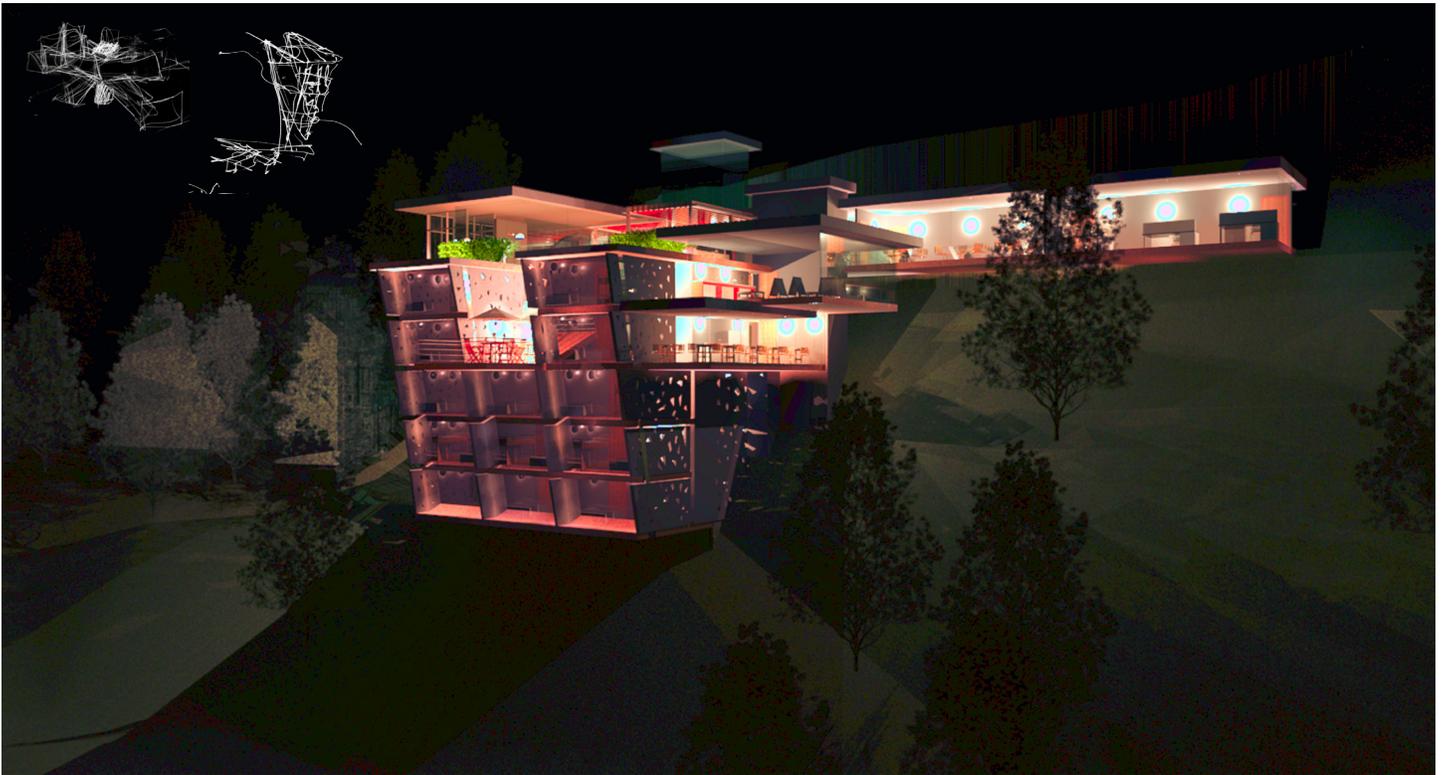
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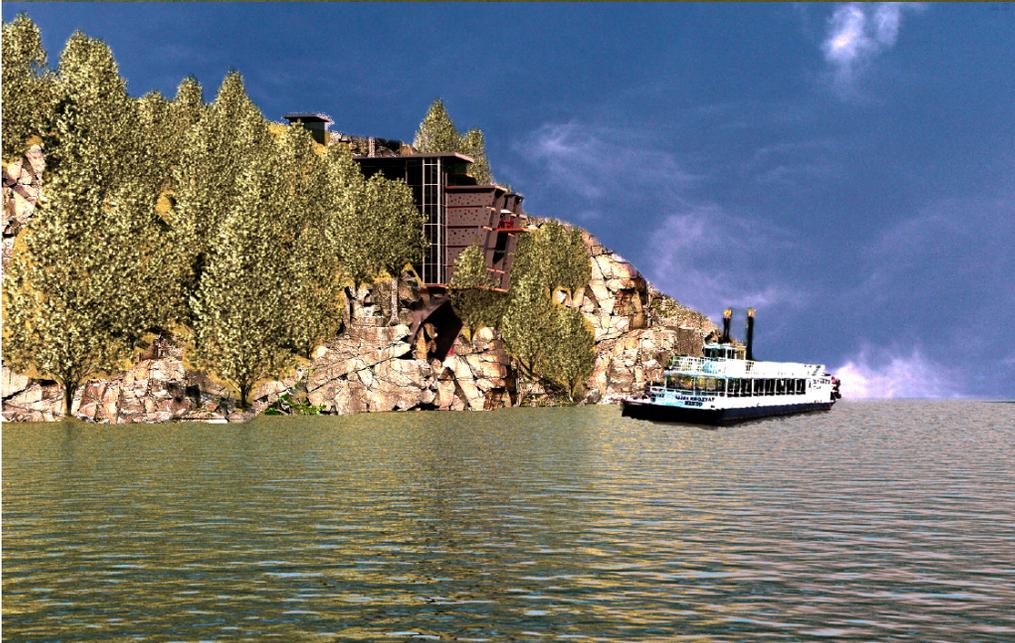
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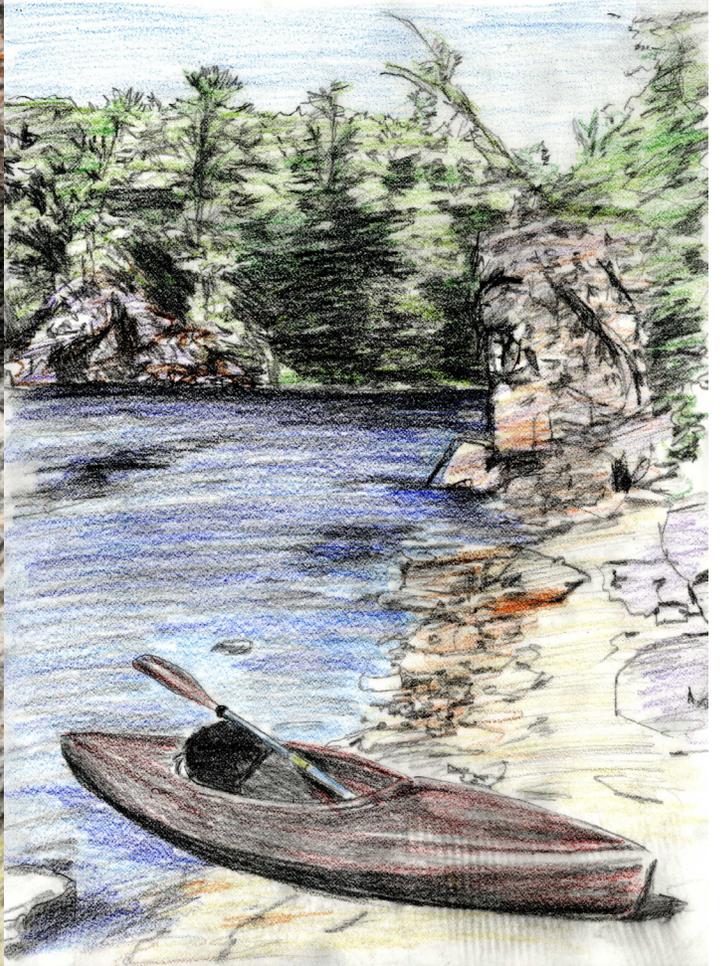
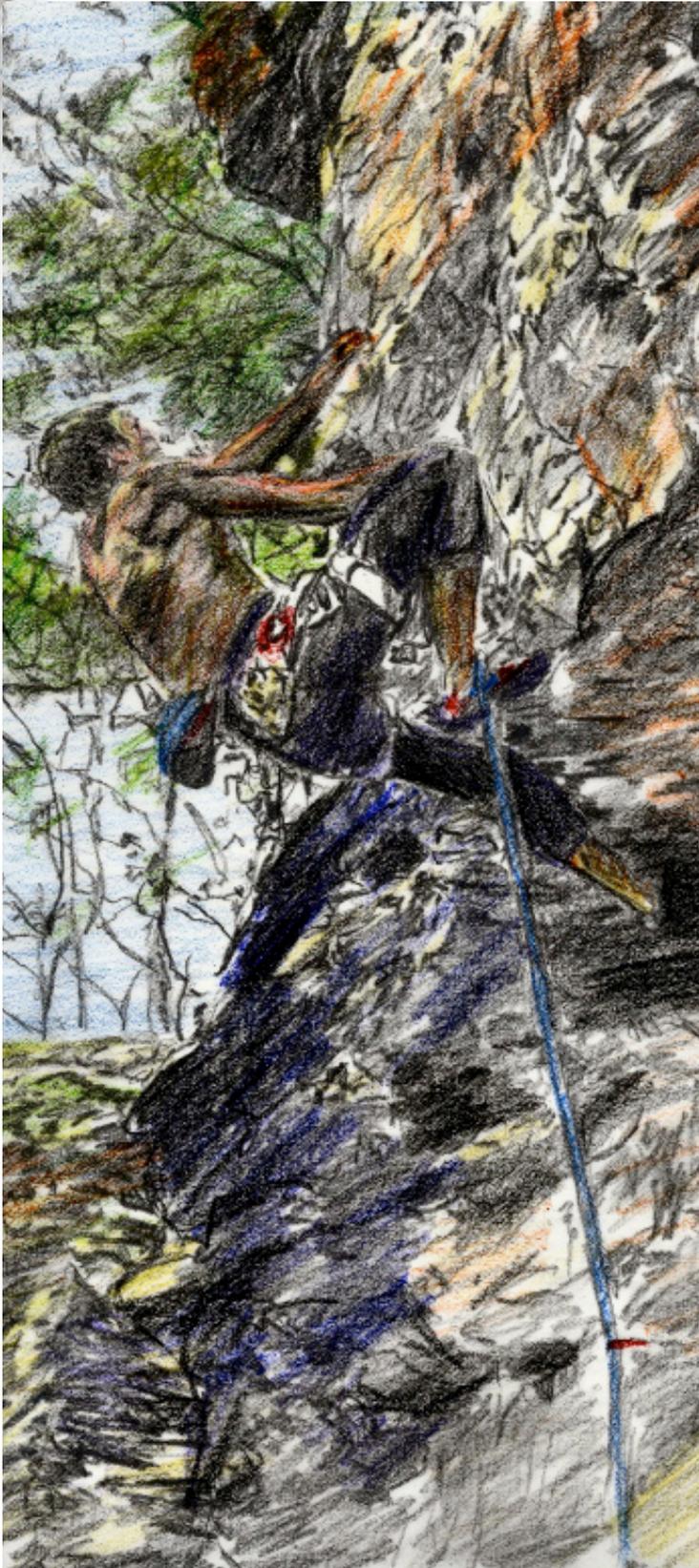
Final Images



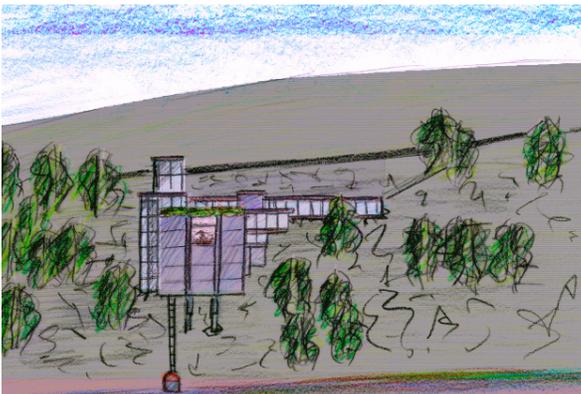
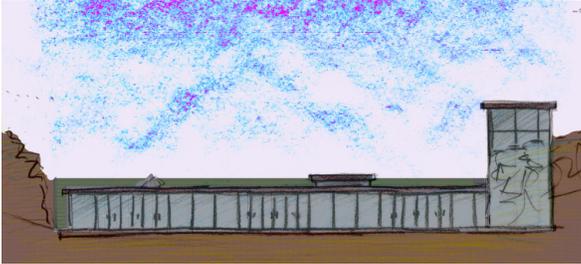
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Final Images



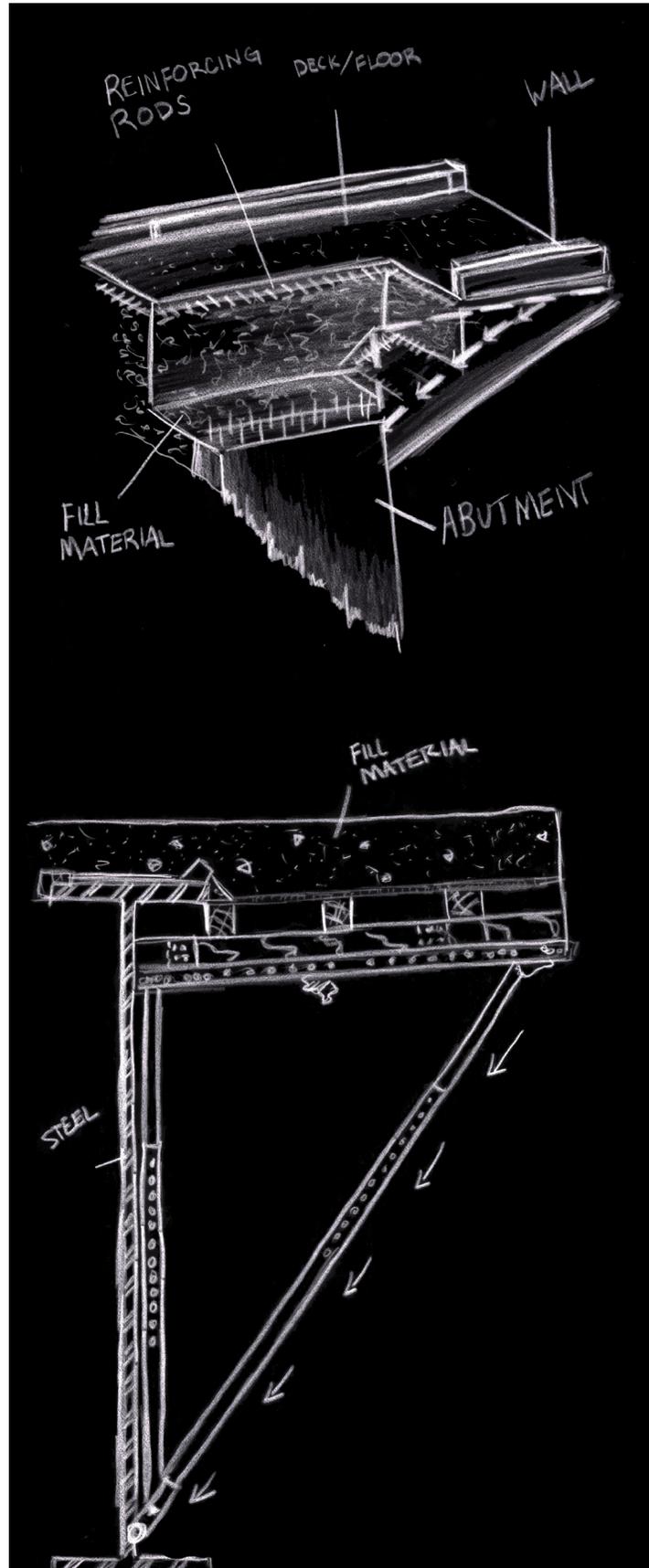
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Preliminary Sketches

Night Perspective

Actuated Architecture:
Driving Healthy Behavior with Design

Exploratory Perspective

Curtain Wall Section

Balcony Perspective

Conference Room Perspective

Rock Wall Interior Perspective

Funicular Track

Front Desk Interior Perspective

Our Society makes behavioral decisions everyday that may or may not lead to better health. Choosing poor behavioral decisions may eventually lead to obesity, stress, diabetes, depression, and America's number one killer, heart disease. Well-designed architectural space can create behavioral responses that diminish unhealthy decisions and influence positive health. This may benefit our societies behavior and help our habits to change unconsciously, because healthy habits conserve sustainable human development.

This project is meant to enhance awareness to our lifestyle through design. The idea is to create a place where families can escape a sedentary lifestyle and experience the outdoors. People are therefore learning that the outdoor stimulation has the same effects as the tv, computer, video games etc, with more positive effects. By creating an environment for families, this lifestyle center is hoping to attack childhood obesity.

Located on a scenic cliff near the St. Croix river in Taylors Falls, MN, it will be affiliated with both Minnesota and Wisconsin, and owned by the state. Targeting 25.5% of the obese population in Minnesota and 26.9% of the obese population in Wisconsin, this Lifestyle center offers a great opportunity for 416,732 obese people, 30% of this being children. This project was designed with cabin spaces, offering a place where families can stay and learn about fitness and experience the outdoors, motivating and activating their lives.

"Architects can get people talking. It can calm children in the classrooms, make positive people more active, and shape corporate culture. It can also encourage people to find new paths and discover new aspects of their city—and of themselves."
- Kim Herforth Nielsen

Roof Plan

Sixth Floor
Front Deck
Health Office
First Conference Room
Faculty Office

Fifth Floor
Two Cabins
Golfing Space
Studio Workshop
Two Ballrooms
Emporium
Rock Wall Viewing

Fourth Floor
Men's Washroom
Women's Washroom
Dining Area
Rock Wall Terrace
Cantilevered Balcony

Third Floor
Three Cabins
One Ballroom

Second Floor
Three Cabins
One Ballroom

First Floor
Furniture Landscaping
Two Cabins
One Ballroom

Cantilevered Floor Reinforcement Detail

Section Perspectives

Architect: T2 Design Team
Client: State of Minnesota
Department of Architecture & Landscape Architecture
Project Location: Taylors Falls, Minnesota
Architectural Firm: 2011 - Active Partnership & Holdings, LLC
Project Name: Lifestyle Center near Taylors Falls, MN

Hiking Trails

Northwest Elevation

Northeast Facing Perspective

Taylors Falls Minnesota Site Map

Canoeing

West Facing Exterior Perspective

The Rock Climber

Funicular Elevator

Section Perspectives

The Rock Climber offers a robust representation incorporated into the design. Not only is this suitable for the typology but it is appropriate for the site.

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“I think there’s much more to know as the world expands.”
Betsy Bermingham, NDSU Associate English Professor

“The purpose of the Wellness Center is to support the academic mission of NDSU by providing an environment where students may learn behaviors conducive to creating healthy lifestyles. Wellness, which is about making healthy lifestyle choices regarding mind, body, and spirit, is the common thread of the Center’s programs and services.” Wallman Wellness Center Mission Statement