

# Wellness In Educational Facilities

A Study of How Architecture Can Improve  
Mental Health in Schools

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North Dakota State University  
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# Wellness in Education

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By  
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# TABLES OF CONTENTS

|                                      |         |
|--------------------------------------|---------|
| THESIS PROPOSAL                      | 6-20    |
| TABLES AND FIGURES                   | 5       |
| ABSTRACT                             | 7       |
| NARRATIVE                            | 8       |
| TYPOLOGY                             | 9       |
| PROJECT ELEMENTS                     | 10-11   |
| CLIENT                               | 12-14   |
| SITE                                 | 15      |
| PROJECT EMPHASIS                     | 16      |
| GOALS                                | 17-19   |
| PLAN FOR PROCEEDING                  | 20      |
| <br>                                 |         |
| THESIS RESEARCH                      | 21-77   |
| RESEARCH RESULTS                     | 22-42   |
| CASE STUDIES                         | 43-52   |
| PROJECT JUSTIFICATIONS               | 53      |
| CONTEXT                              | 54-61   |
| SITE INVENTORY                       | 62-73   |
| PERFORMANCE CRITERIA                 | 74-77   |
| <br>                                 |         |
| THESIS DESIGN SOLUTION               | 78-122  |
| PROCESS                              | 78-87   |
| PROJECT SOLUTION                     | 88-105  |
| SITE RESPONSE                        | 106-110 |
| RESPONSE TO TOPOLOGICAL RESEARCH     | 111-113 |
| RESPONSE TO GOALS                    | 114-117 |
| CRITIQUE OF APPLIED RESEARCH METHODS | 118-119 |
| BOARDS                               | 120-122 |
| <br>                                 |         |
| APPENDIX                             | 123-127 |
| REFERENCES                           | 124-125 |
| STUDIO EXPERIENCE                    | 126-127 |

# TABLES AND FIGURES

|    |                                   |         |                           |
|----|-----------------------------------|---------|---------------------------|
| 12 | Anderson Demographics             | 73      | Plant Hardiness Zone Maps |
| 13 | Andersen Updates                  | 76      | Program Connections       |
| 14 | Current Floor Plans               | 77      | Program Mapping           |
| 15 | Site Plan                         | 80-81   | Mass Modeling             |
|    | Roof Plan                         | 82-83   | Floor Plan Evolution      |
| 24 | Disorders by Age                  | 84      | Exterior Process          |
|    | Teen Rise in Depression           | 85      | Interior Process          |
| 25 | Brain                             | 86-87   | Sun Studies               |
| 26 | Sound Waves                       | 88      | South Facade              |
| 27 | Children                          | 89      | Back Walkways             |
| 33 | Light Quality                     | 90      | Floor Plan 1              |
|    | Light Psychology process of Light | 91      | Floor Plan 2              |
| 37 | Optimal Healing Environments      | 92      | Floor Plan 3              |
|    | OHE 2                             | 93      | Floor Plan 4              |
| 38 | CSCP + MYSS                       | 94      | Classroom Perspective     |
| 44 | PV Panels                         |         | Section                   |
| 45 | Lady Bird Exterior                | 95      | Counseling Room           |
|    | Interior                          | 96      | Site Plan                 |
| 46 | Soma Sustainability Diagrams      | 97      | Playground                |
| 47 | Soma Exterior                     |         | Softball Field            |
|    | Interior                          |         | Community Garden          |
| 49 | Sodra Interior                    | 98      | Drop Off Site             |
|    | Exterior                          | 99      | Drop Off Entrances        |
| 55 | Hennipin School Districts         | 100-101 | Halls and Stairwells      |
| 56 | Minneapolis                       | 102     | Back and White Stairwell  |
| 57 | Central Union                     | 103     | Black and White Hall      |
| 57 | Andersen                          | 104-105 | Elevations                |
| 62 | Site                              |         | Sections                  |
| 63 | Site Diagram                      | 108     | Site Map                  |
| 65 | Andersen Roof Plan                | 109     | Site Photographs          |
| 66 | Temperature and Climate           |         | Site Redesign             |
|    | Solstices                         | 110     | Park Photographs          |
| 67 | Weather Chart                     |         | Park Redesign             |
|    | Wind Diagram                      | 112     | MTSS                      |
| 68 | Bedrock                           |         | Healing Environments      |
| 69 | Contours                          | 113     | Open Classroom Planning   |
| 70 | Depth to Water Table              | 120-121 | Presentation Boards       |
| 71 | Water Table Elevation             | 122     | Installation              |
| 72 | Soil                              |         |                           |
|    | Forest Productivity               |         |                           |

# PROPOSAL

# ABSTRACT

Universally children are sent to attend school to gain basic knowledge in most communities. In the United States the standard is about 7 hours a day, 5 days a week, for 13 years. These educational institutions that are in place have a strong impact on the growth and development of young individuals.

Many schools are historical or show strong elements that speak to the time they were built. These elements include architectural style, classroom size, amounts, and types, and systems within the building. As communities grow from the framework in which the school was originally constructed, there lies the opportunity to be more intentional with updates and redesign. To foster intellectual growth, those who attend need to have the ability to grow mentally and emotionally. Creating safe spaces for the youth aids the cultivation of skill sets needed for success and well-being. Moving forward, schools need to be places of relief and positive stimulation. Green building design, incorporating WELL building standards, using space psychology, connecting the school's surroundings to their environment, and ensuring safety are all strong goals to create more positive learning environments. These positive learning environments will encourage focus, exploration, and collaboration of ideas and learning.

# NARRATIVE

When children begin school, they are often immersed into a new setting where they learn new material, social practices, routines, spaces, and people. Individuals typically return to the same schools annually, but there can still be some anxieties experienced such as interacting with peers, being away from home, having difficulty with some subject material, and so much more. These fears often lead to a lack of confidence in one's self or abilities. Anxieties in the self can influence the subject matter they are there to learn.

A strong sense of safety and belonging is part of what makes individuals enthusiastic to learn. Connecting the local environment to the learning environment gives a sense of purpose and context. A strong connection to the community and within the school itself fosters a better grasp of material and willingness to participate.

Development for youth guides what individuals think for their lifetime. With one in five Americans having mental health disorders, the importance of cultivating strong individuals and communities is essential. Creating spaces that aid mental well-being, give a sense of comfort and safety. This allows for teacher to and help students work through disorders or discomforts by assessing their needs and accommodating to them.



# PROJECT TYPOLOGY

The proposed design will be a public middle school.

Public

Education

Urban

The design proposal for the thesis project is to designing a new building for a preexisting public middle school is currently in place. There are medical centers and learning centers in the surrounding area and fits well into its place and surroundings. Working in the public sector leads an influence of the people who live and interact in the area and should be considered with the design. Educational buildings maintain their own built and spacial requirements through function and code. The urban setting and set place holds a means of consideration for entrances, set backs, views, noise levels, and more.

# MAJOR PROJECT ELEMENTS

The Andersen Middle school redesign is set to create a strong community through a connection with those around and within the school and within the school itself. Redesigning allows for additional classroom spaces such as auditorium, shops, and other elective classes to be involved. Adding new learning spaces and different types of classroom is one way of opening up the school.

Another way of opening up the school is through windows, bringing more vegetation to the site and within the building, and clear lines of vision. By changing the landscaping and bringing the greenery indoors, the opportunity in the Minnesotan winter to have the liveliness of plants and color year round while still having a visual connection to the outdoors is a new feature brought to the school.

The program is set up so that similar subjects are located closely together in clusters. The goal of this organization is to foster learning between classes and a connection with other teachers and students. By being located next to one another students and staff can collaborate and connections can be made with someone in the departments even if a student doesn't have a class with a specific teacher. Building a community throughout the school starts with programming and intention.

WELL Certification

Connected to environment and community

Green Design

Safe feeling

Safe physically

Community

Belonging

Sustainable Design

Site Development and Context

Program

Form

Material Base

Program

Circulation

Administration

Reception

Principal

VP

Councilor

Family Resources

Classrooms

Math

Science

English

Art

Social Studies

Computer Science

Band

Choir

Gym

Wood Shop

Metal Shop

F.A.C.S.

Engineering

Dining

Kitchen

Serving

Seating

Dish

Library

Auditorium

Nurse

Mechanical

Break Room

Restrooms

Janitorial

Storage

Loading Dock

Garbage

# CLIENT

## ANDERSEN UNITED MIDDLE SCHOOL

Anderson middle school is a public institutions grades 6, 7, and 8th and is located in downtown Minneapolis, Minnesota. The school offers a dual language program, offers special help for those with learning disabilities and that need extra attention with emotional and behavioral help.

The school has an older set up and a built community in place. The concrete structure has been in place since the 1960s when it was constructed in a brutalist style. LSE Architects described the space to have a lack of windows and daylighting, a cold exterior and has a fragmented interior that negatively impacts the students and community relationships.

With expansion and growth of the city, often buildings such as schools need to increase their capacity to hold students and cater to more specialized needs. Current classroom sizes range from 20-30 students and 5-6 for special education. Anderson middle school is one of the many schools in the metro area and holds value that has the potential to increase.

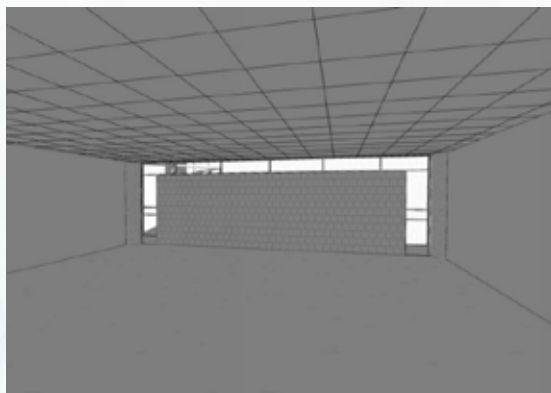
# UPDATES

In 2016 Anderson Middle School completed a renovation that included a new entry with a remodeled grand staircase that welcomes and directs visitors. Other added spaces include an updated media center. Looking forward the school has future goals that they hope to include in two phases.

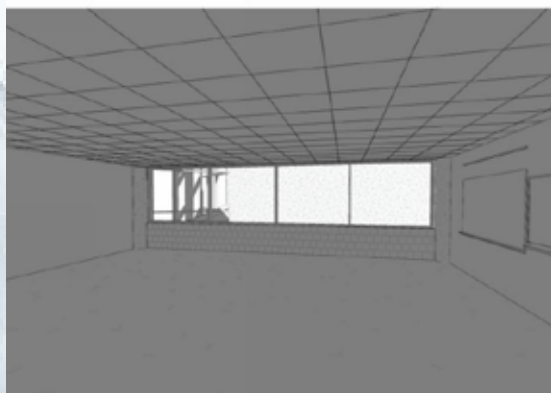
The first phase of renovations include additional and improved daylighting, kitchen and lunchroom updates, restrooms, locker spaces, new furniture, and further accessibility. The second phase moves to new science labs, improve technology and performance spaces, and general maintenance and operational needs.

With further funding the school would ideally open up even more daylighting and breaking into the facade, changing the playgrounds on the perimeter into green spaces. Improve night lighting and spatial organization.

While the proposed remodeling of the school are considerable improvements, my thesis presentation wishes to rebuild the school completely. By building 4 stories rather than remodeling 2, there is the possibility to open up the learning programs and classrooms even further. With the proposed design, there are additional spaces such as an auditorium and intentional light brought into the building that the school does not currently have the funds to install.

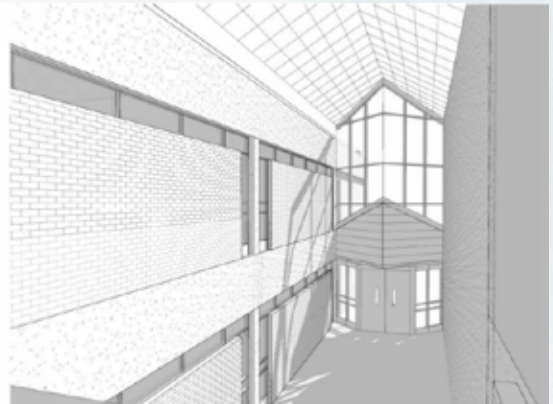


**Current Classroom Spaces (Rendering)**

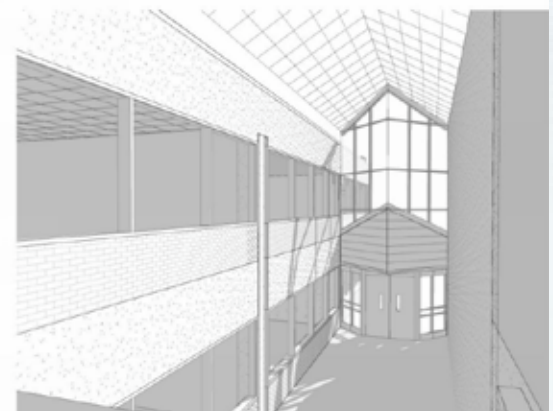


**Proposed Classroom Spaces (Rendering)**

**Current Atrium Spaces (Rendering)**



**Proposed Atrium Spaces (Rendering)**





# Current Building Layout – Main Level

- Legend**
- Administration
  - Building Support
  - Circulation
  - Classroom
  - Commons
  - Community Ed
  - Food Service
  - Office
  - Physical Education
  - Special Ed Classroom
  - Specialty Classroom



5

# Current Building Layout – Upper Level

- Legend**
- Administration
  - Building Support
  - Circulation
  - Classroom
  - Commons
  - Community Ed
  - Food Service
  - Office
  - Physical Education
  - Special Ed Classroom
  - Specialty Classroom



6



# SITE

1098 ANDERSON LANE  
MINNEAPOLIS, MN 55407

Located in Minneapolis Minnesota, the site is impacted by noise, traffic, and high density. The midwest weather creates for hot humid summers and harsh, cold, dry winters with lots of snow. During the school year, winter is the most prominent season that deals with issues regarding snow and wind. These extreme temperatures effect the building materials and form as well as the site, entrances, and transportation. Clearing roads and sidewalks for safe

It is a dense neighborhood with and adjacent park, some business, and surrounding residential homes. To the west of the school is a campus of healthcare facilities and laboratories. The three surrounding sides are filled with single family, residential homes.



# EMPHASIS

## Mental Health

This project seeks to improve leadership and assistance for those who deal with mental illnesses through a means of architectural design and school programming. Understand the stigma of mental health in public and in schools and work to understand how that could be eliminated in order to foster positive environments and mindsets.

## Sustainable Design

Integrating natural resources can cut down on energy and help improve the environment and the people who will inhabit the spaces. Create connections to the outdoors and the site.

## Community

Give a sense of belonging while maintaining individuality to form a connectedness a positive space for people to come together. To get the community excited and foster the education of themselves. Create collaborative spaces that allow for connection with the neighborhood and the

## Safety

Entrances, technology, and form can all impact the safety of a building. Knowing the area and feeling safe within an environment also is a key feature in the topic of safety. Through architecture play is further incorporated, transportation is more carefully considered, and pedestrian leisure is on a new level.



# GOALS OF THE THESIS PROJECT

Understand how mental health aid is incorporated successfully into schools

Mental health aid includes awareness planning and systems in place to improve the learning of those in need with mental disabilities. Educating staff as to how to recognize signs and how to help after that is an important part of this system in addition to the architectural improvements.

Creating awareness of mental health and what that could look like in a school setting. Through research I hope to find examples of programs that are currently successful and how educational institutions are working to achieve this.

Integrate Green Design intentionally and beautifully

Involving sustainability into the project from the beginning is a strong goal for this project. From the form, orientation, and maintenance, the extreme weather conditions will have an effect on the building and the occupants. Saving energy and money to benefit the place and people will be strategies to research and look at the options of what would fit the project best.

Incorporating biophilic design throughout the building is another way to include green design

in the project. Green walls bring plant life into the building in the winter. Green roofs bring plant life at an elevated level and create outdoor learning opportunities.

Connect the school with the community

I would like to find what makes a strong community, what connects people to a place and to one another. The location, cultures, community therapy, and location are factors or this section. Creating parts of the park for the occupants of the hospital to the west and the residential housing of the east to partake in brings the local community into one area.

Using safety strategies that aren't highly noticeable but are effective

Safety through site design, technology, and community play together to create a safe environment. A goal of the project is to foster true safety and security and the knowledge and feeling of being in a safe space.

## Well Building Standard

Achieve WELL Building Certification through the guidelines provided.

Explore the 10 concepts listed and understand and utilize these concepts.

## Sustainability

Incorporate passive elements such as natural lighting and ventilation into the building.

Manage heat gain and heat loss.

Incorporate operable shading devices.

Use school's future built goals as guidelines to incorporate and maintain similar elements throughout the building.

Develop landscaping and add more to site and indoor plants.

## Community

Build upon student and staff connection through building programming and resources available.

Create collaborative spaces within the building that invite both groups of occupants and allow for spaces to work and play.

Build a connection with the surrounding community that educates the public of what is being taught.

Allow for public events such as concerts and shows that display academic and artistic work.

## Growth

Expand the building's volume to create more room in the classroom spaces and a variety of types.

Build spaces that are lacking such as an auditorium expand art and music spaces, counseling and social environments.

## Safety

Improve bus, vehicular, and pedestrian traffic through more spacing, clear signage and visibility.

Create more aesthetic and visual pleasing fencing to influence internal safety and sense of satisfaction.

Further ADA accessibility throughout the building, Make hallways wider and analyze staircases and elevators.

## Mental Health Improvements

Expand current counseling program to more structures levels of support. Incorporate through staff to initiate learning and involvement.

Incorporate physical aspect lead by healing architecture and WELL verification to environmentally influence minds and bodies. Create Spaces that allow for and invite relaxation, creativity, and connection.

Improving academics for the school and school district through a public project to impact the community in a positive way. For a means of school academics, I would like to use software to achieve useful design elements that are clear and well performed and learn more about the software being used. I would like to get better at using technology to analyze the design in a variety of ways such as sun patterns and influences, ventilation and wind patterns, and the impact it will have on its future surroundings.

Through the thesis process I would like to become more informed on sustainable design to be able to incorporate that into the real world. To think of sustainability throughout the entire design rather than an after thought. This should become a strong element of my portfolio and speak about my passion, interest, and skill set within architecture.

Through Thesis I would like to become more aware of what happens in the professional world and the impact design can have on communities as a whole. I would like to see if a connected community could become more closely tied to sustainability if there are strong designs that amplify the idea and how that could impact them and society.

# PLAN FOR PROCEEDING

Moving forward with the research program I plan to look into how other schools are doing well to incorporate mental health in their buildings and communities and what that looks like as well as how they are working to destigmatization mental health and getting help for it. The next point of interest is sustainability, how that is incorporated, and how it impacts the environment and health of the occupants and community. Another point of interest will be building safety and security, what makes a building safe and how it interacts with the community. And finally what connects a school to its community and how can individuals find a connection and belonging.

Design Methodology for my project will work closely with case studies, correlation research, and quantitative research. The case studies will help to highlight how the goals I'm searching for have been achieved and what makes their design successful, whereas the historical research looks both into the positive and negative sides. To understand the full scope of the successful projects as well as what has gone wrong or could be fixed helps to point a scope of possible solutions. Correlation research will help to tie all of my interests and goals together to find a solution for a variety of parts of the project.

When researching I plan to take notes on relevant information from different resources and then sorting based on the goal and having another category on parts of the project that it can influence. Parts of the project include form, program, spaces, structure, occupants, and community. A focus on how each of these elements impact one another and how they are connected leads into a progression of design.

The leading importance of proceeding with my research begins with looking at examples of schools that are successfully changing the way they incorporate mental health, then how that effects the community. Further looking into what makes a community and what the community on my site looks for are also preliminary steps. When looking at safety, this will include on site information what creates a safe, connected community. One of the first ways of looking into these is to further looking into case studies.

# THESIS RESEARCH

# RESULTS FROM RESEARCH

## LEADING DEFINITIONS

Mental Illness : Mental illnesses are health conditions involving changes in emotion, thinking or behavior (or a combination of these). Mental illnesses are associated with distress and/or problems functioning in social, work or family activities (Parekh, 2018).

(ex: Anxiety, Depression, PTSD, ADAD, etc.)

Anxiety Disorders, Depression, ADHD, OCD, Borderline Personality Disorder, PTSD

Well-Being : the state of being happy, healthy, or prosperous (Well-being).

School: An institution for teaching of children

A source of knowledge

The process of teaching or learning (School Definition and Meaning)

Conceptual Level : A cognitive disposition relevant to this issue is conceptual level, which describes a person's adaptability to adapt to their surrounding environments in terms of information processing style and interpersonal maturity (Cortterell, 1984).

## KEYWORDS

School, Mental Health, Sustainable Design,  
Healing architecture, WELL Building Standard, Lighting Design, Classroom,  
Environmental Psychology, Multi-tiered System of Supports, Rational Emotive  
Behavior Therapy



# MENTAL HEALTH

Mental health is “a state of well-being, in which individuals are able to live to their fullest potential, cope with the normal stresses of life, work productively and contribute to their community (WELL).” Awareness and precautions towards mental health have been increasing for years. Approximately 30% of adults will experience a common mental health condition within their lifetime, and 18% will within a 12 month period (WELL). Children also experience mental health conditions, with the amount only increasing. At this point, 16.7% of children ages 6–17 struggle with a disorder every year (NAMI, 2021). These numbers have been increasing from 5.4% in 2003 and 8.4% in 2012 (Wolpert, 2021). Mental health issues impact not only the individuals but their whole surroundings. Impacts include decreased focus and interest in school. These issues surface on all levels and are increasing in needed assistance.

Issuing proper tools and coping strategies for these concerns at an early age has potential benefits to last a lifetime. “Mental Health is a fundamental component of human health across all stages of life and is vital for the physical and social well-being of all individuals, communities and societies (WELL).” Looking after this issue is important from an early point, for 50% of mental illness begins to appear by 14, and 75% by 24 (NAMI, 2021). Those with mental health issues are more likely to experience further negative effects, such as an additional mental health disorder, substance abuse disorders, and have higher unemployment rates (Wolpert, 2021). The most common and impacting disorders are depression and anxiety.

The two cost the global economy \$1 trillion in productivity each year, and impact the individuals and their lives even further outside of the work environment (Wolpert, 2021). Productivity and mental health have a direct tie that can be seen through those levels of productivity and excitement in their work. Those ties can be seen through grades and those students, ages 6–17, who struggle with mental health are three times more likely to repeat a grade. Those in the same age group with depression are two times more than their peers to drop out entirely (NAMI, 2021).



General fear and distress are normal in children when in public, especially when taken out of their typical settings, but it is when it becomes intense and restricting in their daily lives that disorders are the problem, not normal stress and sadness. Healthy eating plans, daily physical activity, sleep, and practicing mindfulness are factors that help children maintain healthy bodies and minds (CDC, 2021). Schools create structured atmospheres that have the ability to take control of most of those pieces. Understanding the problem and taking away the stigma allows for more solutions to arise.

Positive outlook in mental health is significantly higher than it used to be and Americans are becoming more open to the topic. 87% said having a mental health disorder is nothing to be ashamed of and 86% of adults agreed that individuals who experience mental health disorders can get better (APA, 2019). The increased openness to the topic has improved the public's attitude towards mental health. An open attitude for adults is important to carry in to new generations considering adult mental health disorders are avoidable or able to be minimized if risk factors are tended to at a childhood age. While the overall attitude has improved, 86% said "mental illness" has a negative connotation and carries a stigma, and 33% of adults said those with disorders scare them (APA, 2019).

How Americans view mental illness shows an inconsistency of understanding of the whole picture. While 81% of people were somewhat comfortable being friends with someone with a mental health disorder, that number dropped to 51% when it came to intimate relationships. Adding to the survey, 33% said that they did not consider anxiety to be a mental illness and 22% said the same about depression (APA, 2019). This misunderstanding of what constitutes as a mental illness has a possibility to create issues when providing aid and understanding for individuals but the overall positive outlook is productive.



# MENTAL HEALTH CONDITIONS

**Anxiety Disorders**– Persistent, excessive fear or work in situations that are nonthreatening.

Apprehension, dread, tense, restlessness, irritability,

Shortness of breath, sweating, tremors, twitches, headaches, fatigue, insomnia,

Generalized Anxiety Disorder, Social Anxiety Disorder, Panic Disorder, Phobias

Most common concern in the united states with 7% of children ages 3–17, and 19.1 % in adults.

**Depression** – Mood disorder characterized by persistent depressive mood and loss of interest impairing daily life.

Changes in Sleep, Changes in Appetite, Lack of Concentration, Loss of Energy, Lack of Interest in Activities, Hopelessness, Guilt, Changes in Movement, Physical Aches + Pains, Suicidal Thoughts

Serious and dangerous disorder, 8.4% of American adults experienced at least one episode in 2020.

**Attention Deficit Hyperactivity Disorder (ADHD)**– Inattention hyperactivity + impulsive

Easily Distracted, bored quickly, difficulty finishing tasks, difficulty processing information quickly, not listening.

Fidgeting, non–stop talking, excessive touching things, impatience, acting + speaking impulsively, interrupting others

Most common in younger groups, 8.8% in ages 4– 17 vs 4.4% in adults.

**Eating Disorders** – Thoughts + actions that consume one’s daily life based around food , weight, + body image.

Anorexia Nervosa: Starvation based around fat loss, over exercise, binge + purge behaviors, food rituals

Bulimia Nervosa: Feeling out of control when bingeing, repercussions include purging, restriction, exercise.

Binge Eating Disorder: Looses control when bingeing, doesn’t try to make up for excess consumption.

**Obsessive–Compulsive Disorder** – Repetitive, unwanted, intrusive thoughts (obsessive) and irrational, excessive urges to do certain actions (compulsions).

Examples: Thoughts of harming/have harmed someone, doubts something done correctly, unpleasant images,

fears of saying/shouting something inappropriate things in public, hand washing, counting and recounting, checking`

**Borderline Personality Disorder** – Difficulties regulating emotion having them be intense for extended periods of time, + harder to stabilize after emotional trigger.

Fear of abandonment + actions to avoid it, unstable relationships, distorted self-image, impulsive behaviors,

self-harm, periods of intense depressive mood, irritability or anxiety, chronic feelings of boredom or emptiness

**Posttraumatic Stress Disorder** – Long term responses to threatening events.

Re-experiencing: recurring, involuntary + intrusive memories, flashbacks, bad dreams, + intrusive thoughts

Avoidance: staying away from places or objects that are reminders of a traumatic event

Symptoms: Numb, guilt, worry, depression, memory loss, dissociation, hyper vigilance, difficulty sleeping, and bursts of anger

# IMPACTS OF SPACES

Noise and surrounding sounds heavily impact the experience within a space and individual's ability to focus. Chronic noise exposure to children increases stress hormones, and produces annoyance and interference with daily activities (Evans, 2006). Common sources of noise that children are exposed to are transportation, other people, music, and sports which can impact their learning. These interfering stressors cause distractions that break up the classroom's focus and creates an inconsistency of a calm atmosphere. Within an educational facility, children can be impacted with their surroundings and have long term effects on their cognitive development, memory, reading, and speech (Evan, 2006). Children often find stressors quite difficult to control and work past, making it difficult for proper functions to occur and be able to work past it in the future. Feeling of powerlessness and hopelessness arise and can negatively impact individuals when they are unable to make choices and have control over their surroundings (Jarrett, 2017).

Acoustical quality of a space can have a high impact on the overall satisfaction of a space. Reduction of interrupting noises has shown to disturb sleep patterns and the mental arithmetic skills of children (WELL, 2020). Space allocations and project programs are important to distinguish adjacencies to avoid unnecessary conflict in classroom typologies and relationships. Music and active classrooms should have a good distance from spaces that need quiet to focus and learn such as libraries and general classrooms. Choices of materials also aid in noise. To improve acoustics, designers can use materials such as carpeted floor compared to wood or concrete and absorbant tiles on the ceilings to absorb vibrations (Jarrett, 2017).

Vibrations through walls also become unwanted distractions. Individuals become uncomfortable when they can overhear conversations in unwanted situations and become concerned with their own privacy as well. Absorbative materials, additional massing, glazing options, and sealing gaps all reduce this noise leakage, providing comfort and privacy (WELL, 2020).

Meeting the basic needs of children is essential to allowing for a healthy learning and living environment. Four of the essential attributes to a space include movement, comfort, competence, and a sense of control. The rooms, circulation, and the way children move through them and the effect they have on them internally impacts their development. If movements are restricted, hyperactivity, attention deficits, and poor motivation can arise (Jarrett, 2017). With a rise of sedentary behavior, it has shown links with poor mental health, obesity, type II diabetes, and cardiovascular risks (WELL, 2020). Children are very sensitive and all aspects of their surroundings can cause their mind to develop and learn patterns in a variety of ways.

Children's comfort levels that allow them to be confident in their surroundings and decrease anxiety allows and invites them to further explore and interact with their surroundings (Jarrett, 2017). Familiarity and predictability help with that relation and guidance. Scale becomes dynamic and relates to the body. Heights can be increased to invite exploration but should remain reasonable to not be uncomfortable. The scale of the overall space also helps emotional, social and cognitive development (Jarrett, 2017).

Arrangements, colors, and textures are a few elements that children interact with initially in a space. Children use their senses to shape the world around them. Natural and nude tones are received well, and other color psychology can be utilized to evoke further emotional responses in a room on the different surfaces. Bright colors are often used for younger children to excite them and help in their sensory environment (Jarrett). Colors and textures can both be used strategically for comfort, development, collaboration, and communication.



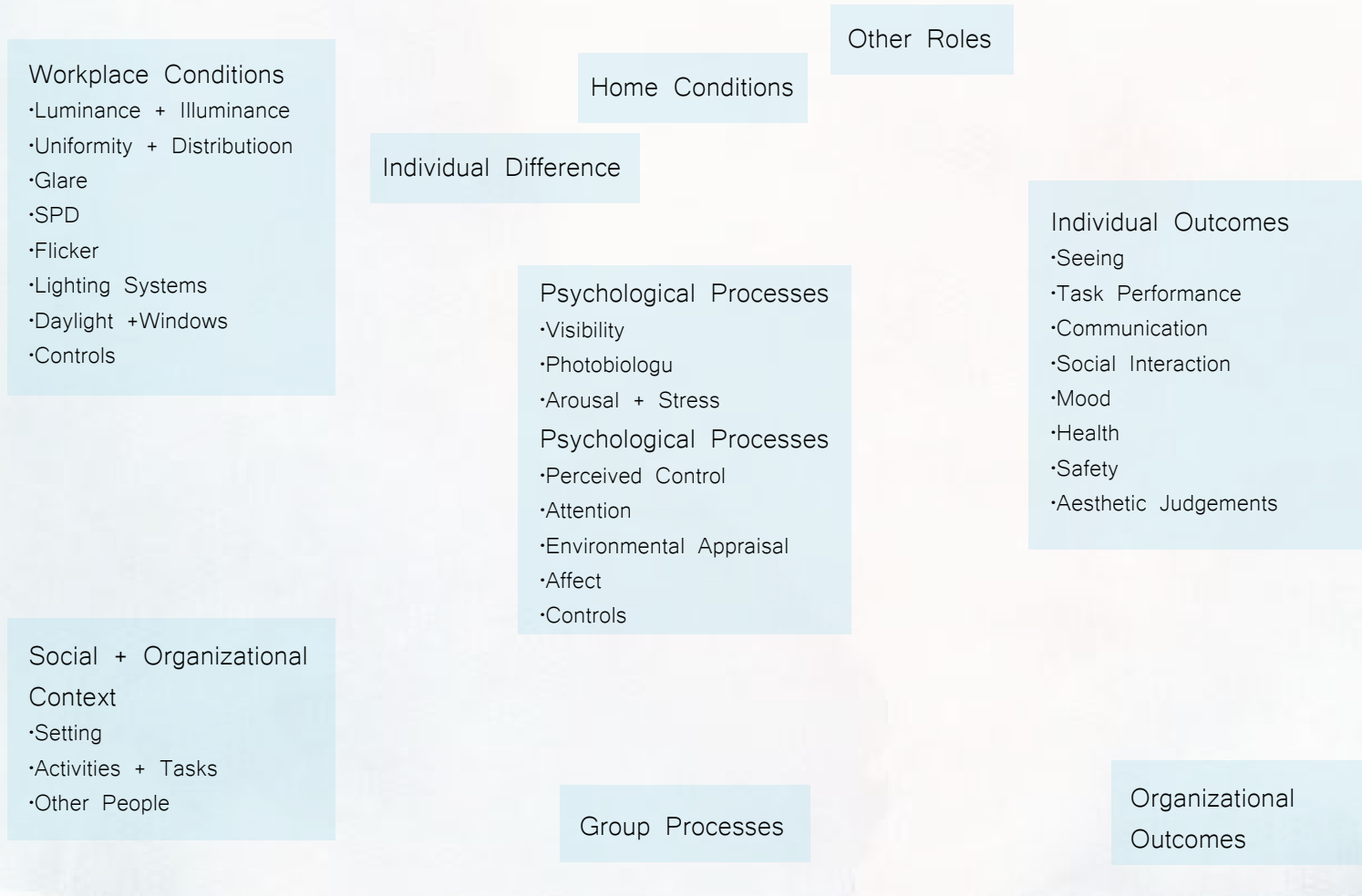


# LIGHTING

Lighting design can increase the mood, beauty, and quality of a space through positive design. To promote well-being through lighting design there must be a balance in luminance + illuminance, uniformity across tasks, luminance distributions within rooms, glare, spectral power distribution, flicker, indirect lighting systems; and windows and daylighting (Veitch, 2003). Quality lighting design takes all of these into consideration and what determines adequacy varies for the specific setting. Better views and brighter light have been shown to produce better performance and well-being (WELL, 2020). Tied with the quality of the light given, occupants prefer to have a sense of control over their lighting conditions.

Perceived control can moderate stress reactions. When faced with other distractions, if occupants have control over their physical surroundings, they tend to maintain lower stress levels and mediate their reactions (Veitch, 2003). Lower stress levels in development and learning environments. Given control over aspect of their surroundings helps convey a sense of control and participation within their education. Helplessness on the other hand has more negativities than the initial problem. It can lead to emotional, cognitive, and behavioral deficits, also leads to powerlessness and unhappiness (Veitch, 2003). Harm may be caused through too much as well including eye strain, fatigue, crankiness, headaches, and impaired visual perception (Jarrett, 2017).

The importance of lighting design is in the impact of both physical and cognitive functional satisfaction. Improved moods and reduction of depression symptoms can be the result of exposure to natural light. It can increase healing rates and reduce recovery time (WELL, 2020). Parts of lighting design that shows its success is visibility, photobiology, and arousal (Veitch, 2003). Lighting design takes into positive effects on the physical and cognitive comfort of children that foster learning and excitement in their environment.



Relationship Between Lighting Conditions, Individual Process and Outcomes



# BIOPHILIC DESIGN

The natural need for connection to nature is something that humans are constantly working towards. Incorporating nature into inhabited settings can reduce stress, enhance creativity, and clarity of thought (Browning). These are parts of design working to improve well being and aid healing through architecture. When working with biophilic design, plants, air movement, and water are all included. These design features work to improve individual's interaction with their environment and can be seen through their cognitive, physiological, and psychological responses (Ryan).

Two differentiating ways of incorporating this form of design is through visual and non-visual connections. Visual connections are quite direct and can reduce stress, improve mood, and self-esteem and it is suggested individuals are exposed to nature for a minimum of five to twenty minutes a day (Brown). Along with healing environments and healing architecture, views to nature are shown to increase and quicken recovery rates in addition to improving concentration (Ryan). Middle school children are highly susceptible to mood alterations and esteem changes making for improvements to these aspects even more important. Non-visual connections are that in which include auditory, haptic, olfactory, and/or gustatory stimuli that have an implication or connection to nature (Brown). These stimuli can be just as important as visual connections so long as they don't become a sensory overload.

The experience generated through thoughtful design requires thoughtful consideration and planning. Prioritizing or bringing in opportunities for exercise near green spaces is prove positive responses and decreased street levels. When exposed to nature at least 10 minuets before mental stressors individuals stimulated heart rate variability and parasympathetic activity (Ryan). School environments often introduce mental stressors to students, and so a continuous exposure to nature could help to stabilize stressing situations.





Mankind's biological need for connection brings to light the importance of biophilic design. Being introduced to real nature is favored to simulated nature, however simulated nature still proves to be more beneficial than none (Browning, 2014). Providing healthy workspaces that aid in decreasing stress levels and improve overall health and well-being is a responsible design strategy and goal (Ryan). "Strong or routine connections with nature can provide opportunities for mental restoration, during which time our higher cognitive functions can sometimes take a break. As a result, our capacity for performing focused tasks is greater than someone with fatigued cognitive resources. For instance, vegetated spaces can improve an individual's self-esteem and mood, while the presence of water can have a relaxing effect (Browning, 2014)."

Taking this cognitive rest is an important part of being able to be in a learning environment for an extended period time. While children are expected to learn inside for 7 hours of the day, 5 days a week, it is important that burnout isn't created. By exposing these children to nature, even just on their walk to and from classes, a mental relief and return to natural comfort is formed. "Biophilic, like air quality, thermal comfort and acoustics, is an essential component of environmental quality that expands the conversation from daylight, materials toxicity, and air, water and soil quality, to include human biological health and well-being (Browning, 2014)." Bringing nature to the building, especially within an urban setting, is a way of providing a basic human necessity.

Environmental stimuli such as light, sound and temperatures all reflect a variety of responses when intaking this stimuli. These sensations, or "soft fascinations," can improve concentration and work well in light breezes and other natural movements. Ensuring comfort and health while not distracting from focus and concentration are ways in which biophilic design can work within a school improvement to promote well-being.





# 14 PATTERNS

Nature in the Space encompasses seven biophilic design patterns:

1. Visual Connection with Nature. A view to elements of nature, living systems and natural processes.
2. Non-Visual Connection with Nature. Auditory, haptic, olfactory, or gustatory stimuli that engender a deliberate and positive reference to nature, living systems or natural processes.
3. Non-Rhythmic Sensory Stimuli. Stochastic and ephemeral connections with nature that may be analyzed statistically but may not be predicted precisely.
4. Thermal & Airflow Variability. Subtle changes in air temperature, relative humidity, airflow across the skin, and surface temperatures that mimic natural environments.
5. Presence of Water. A condition that enhances the experience of a place through seeing, hearing or touching water.
6. Dynamic & Diffuse Light. Leverages varying intensities of light and shadow that change over time to create conditions that occur in nature.
7. Connection with Natural Systems. Awareness of natural processes, especially seasonal and temporal changes

Natural Analogues encompasses three patterns of biophilic design:

8. Biomorphic Forms & Patterns. Symbolic references to contoured, patterned, textured or numerical arrangements that persist in nature.
9. Material Connection with Nature. Materials and elements from nature that, through minimal processing, reflect the local ecology or geology and create a distinct sense of place.
10. Complexity & Order. Rich sensory information that adheres to a spatial hierarchy similar to those encountered in nature. characteristic of a healthy ecosystem.

Nature of the Space encompasses four biophilic design patterns:

11. Prospect. An unimpeded view over a distance, for surveillance and planning.
12. Refuge. A place for withdrawal from environmental conditions or the main flow of activity, in which the individual is protected from behind and overhead.
13. Mystery. The promise of more information, achieved through partially obscured views or other sensory devices that entice the individual to travel deeper into the environment.
14. Risk/Peril. An identifiable threat coupled with a reliable safeguard.

# WELL v2 STANDARD

## Air

The WELL Air Concept seeks to implement holistic design strategies to promote clean air and minimize human exposure to harmful contaminants, in order to maximize benefits to productivity, well-being and health. Using a variety of mechanically ventilated spaces, naturally ventilated spaces, naturally ventilated spaces in areas with elevated particulate matter in design to create the healthiest and most sustainable design movement for airflow.

Minimization, Source Separation, Air Filtration

## Water

The WELL Water concept aims to increase the rate of adequate hydration in building users, reduce health risks due to contaminated water and excessive moisture within buildings and provide adequate sanitation through better infrastructure design and operations coupled with awareness and maintenance of water quality. Universal access to good water, sanitation and hygiene are often grouped in public health approaches, yet are interdependent of each other. Provision of well-designed and equipped bathrooms for all, supporting appropriate hand washing, should reduce risks of acquiring centric and respiratory diseases associated with poor hygiene practices. Availability and contaminant thresholds of drinking water, as well as features targeting the management of water to avoid damage to building materials and environmental conditions.

Quality Indicators, Drinking Water Quality, Basic Water Management, Enhanced Water Quality, Moisture Management, Hygiene

Support

## Nourishment

The WELL Nourishment concept supports healthy and sustainable eating patterns by increasing access to fruits and vegetables, limiting the availability of highly processed foods and designing environments that nudge individuals toward healthier choices. Poor nutrition remains a top contributor to the global burden of disease, accounting for more than one in every five deaths globally. Healthy diets are link human health and environmental health and sustainability. The current global transition towards unhealthy and unsustainable produced food is threatening global food systems as food production remains one the largest contributors to global environmental change.

Fruits + vegetables, nutritional transparency, ingredients, portion sizes, preparation, production

## Light

The WELL Light concept aims to provide a lighting environment that reduces circadian phase disruption, improves sleep quality and positively impacts mood and productivity; promotes exposure to light and aims to create lighting environments that promote visual, mental and biological health. Light exposure stimulates the circadian system, which starts in the brain and regulates physiological rhythms throughout the body's tissues and organs, such as hormone levels and the sleep-wake cycle. Disruption or desynchronization of the circadian rhythm has been linked with obesity, diabetes, depression and metabolic disorders.

Exposure, Visual Lighting Design, Circadian Design, Electric Light Glare Control, Daylight Design Strategies, Daylight Simulation,

Visual Balance, Electric Light Quality, Occupant Lighting Control

## Movement

The WELL Movement concept promotes physical activity in everyday life through environmental design, policies and programs to ensure that movement opportunities are integrated into the fabric of our culture, buildings and communities. aims to promote movement, foster physical activity and active living and discourage sedentary behavior, by creating and enhancing opportunities through the spaces where we spend our lives. It is critical that buildings, communities and sociocultural environments consider movement as a vital part of the human condition – and as a key health promotion tool.

Active Building + Communities, Ergonomic Workstation Design, Circulation Network, Opportunities, Self Monitoring, Promotion

## Thermal Comfort

Aims to promote human productivity and provide a maximum level of thermal comfort among all building users through improved HVAC system design and control and by meeting individual thermal preferences. The WELL standard takes a holistic approach to thermal comfort and provides a combination of research-based interventions to help design buildings that address individual thermal discomfort and support human health, well-being and productivity. Thermal comfort greatly influences experiences in the places where we live and work and is one of the highest contributing factors influencing overall human satisfaction in buildings impacting individual levels of motivation, alertness, focus and mood.

Thermal Performance, Verified Thermal Comfort, Thermal Zoning, Humidity Control, Enhanced Operable Windows

## Sound

Aims to bolster occupant health and well-being through the identification and mitigation of acoustical comfort parameters that shape occupant experiences in the built environment. Exposure to noise sources, such as traffic and transportation have been shown to hinder the health and well-being. Airborne noise sources, impact of noise from adjacent activity, such as footfall, exercise or mechanical equipment vibration can all create uncomfortable environments for nearby occupants. Inappropriate reverberation times and background noise levels in a space can impede speech intelligibility and cause strain for occupants who may possess hearing impairments. Speech intelligibility is also a crucial element in educational facilities, where information is being presented to large audiences and aural comprehension is vital for memory retention and task completion.

Sound Mapping, Maximum Noise Levels, Sound barriers, reverberation Time, Sound Reducing Surfaces, Maximum Background Sound, Impact Noise Management, Enhanced Audio Devices

## Materials

Aims to reduce human exposure, whether direct or through environmental contamination, to chemicals that may impact health during the construction, remodeling, furnishing and operation of buildings. WELL standard requires projects to assess the presence of these compounds and take measures to prevent human exposure along with restricting them in new products, and testing, remediation and redevelopment of sites contaminated with these and many other toxic pollutants is encouraged, in order to support environmentally responsible growth and preventing sprawl. Increasing literacy on materials by promoting ingredient disclosure, whereas the second is to promote the assessment and optimization of product composition in order to minimize impacts to human and environmental health.

Material Restrictions, Interior Hazardous Materials Management, Site Recommendations, Transparency, Optimization

## Mind

WELL promotes mental health through policy, program and design strategies that seek to address the diverse factors that influence cognitive and emotional well-being. Improvements to mental health literacy and efforts to reduce stigma; provision of healthy living and working conditions for all, including organizational improvements to promote positive work environments and provision of stress management programs; and strategies that address gaps in access to and use of care by supporting access to mental health, substance use and addiction services and treatment.

Improving opportunities for restoration through mindfulness programming, restorative spaces and support of optimal sleep

Promotion, nature + Place, Services, Education, Stress Management, Restorative Spaces + Programming

## Community

Aims to support access to essential healthcare, build a culture of health that accommodates diverse population needs and establish an inclusive, engaged occupant community. Promoting community well-being must begin with supporting the fundamental factors that influence individual and collective health.

Health + Well-Being Promotion, Integrative Design, Emergency Preparedness, Occupant Survey, Health Services and Benefits, Family

Support, Civic Engagement, Diversity and Inclusion, Accessibility and Universal Design

## Innovation

Innovation features pave the way for projects to develop unique strategies for creating healthier environments.

WELL Accredited Professional, Certification, Gateways to Well-Being, Green Building Rating System, Carbon Disclosure Reduction

# HEALING ARCHITECTURE

Commonly used in healthcare facilities, healing architecture implies a sense of well-being and mental and emotional growth for the occupants. "Healing Architecture means improved conditions for getting and staying healthy (Nickl)." When placed in a healing environment in a hospital setting, patients recover more quickly, have a shorter stay, report lower levels of stress, and increased satisfaction with services and overall experience (Riaffaadh, 2007). Factors such as large, sun-facing windows have improved recovery time for severe depression and heart attacks (WELL, 2020). Physical environments have a great impact on the cognitive landscape of one's mind.








Another design implementation that is connection with the natural environment. Courtyards allow for sensory experiences to occur and subconsciously promote activity and social interaction (Walker, 2020). Healing gardens have become a design element on campuses as a part of physical therapy. Having gardens on site and being able to interact with them brings in a natural healing element and sustainable design (Bindel, 2010). Natural materials and colors on the interior spaces also evoke a calm environment for work spaces (Riaffaadh, 2007). While a connection to the outdoors is an important part of healing architectural design, one of the top components is lighting design.

Visual needs, physiological responses, and mood are altered by the presence of light on interior spaces. Within schools specifically, the absence of natural daylight impacts children's performance, annual body growth, and sick leave (Riaffaadh, 2007). Lighting design includes orientation, shape, sizing, placement and shading devices connected to windows placed. Comparing electrical lighting to natural brings into consideration coloring, flickering potential (should be avoided), temperature, glare control, and the balance between the two.

Further elements within healing architecture include noise control, air quality, thermal comfort, lighting, communication, color, texture, privacy, and view to nature (Riaffaadh, 2007). WELL building standards line up with many parts of what designers look to when consider healing architecture. Individualistic, and separated spaces can be a break from the larger spaces and large open environments give an open, inviting communal space (Bindel, 2010). Communal spaces are important in the healing process because of how humans are social creatures. Building a community with a shared vision and goals helps one another build off of each other with support and knowledge.



## Optimal Healing Environments

| Developing Healing + Intension  | Experiencing Personal Wholeness   | Cultivstion Healing Relationships   | Practicing Healthy Lifestyle  | Applying Collaborative Medicine  | Creating Healing Organization   | Building Healing Space  |
|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |
| Expectaion  | Mind  | Compassion  | Diet  | Conventional   | Leadership<br>Mission   | Nature<br>Color   |
| Hope  | Body  | Empathy   | Excercise   | Complementary  | Culture<br>Teamwork   | Light<br>Artwork  |
| Understanding   | Spirit  | Social Support  | Relation  | Traditional  | Technology<br>Evaluation  | Architecture<br>Aroma   |
| Belief  | Energy  | Communication   | Balance   | Integrative  | Service   | Music   |
| Internal  |   |   |   | External   |   |   |

Samueli Institute

### Wellness

·Achieving balance + wholeness  
in body, mind, + spirit

### Efficiency

·Providing quick, accessible care

### Sustainability

·Environmentally friendly architecture

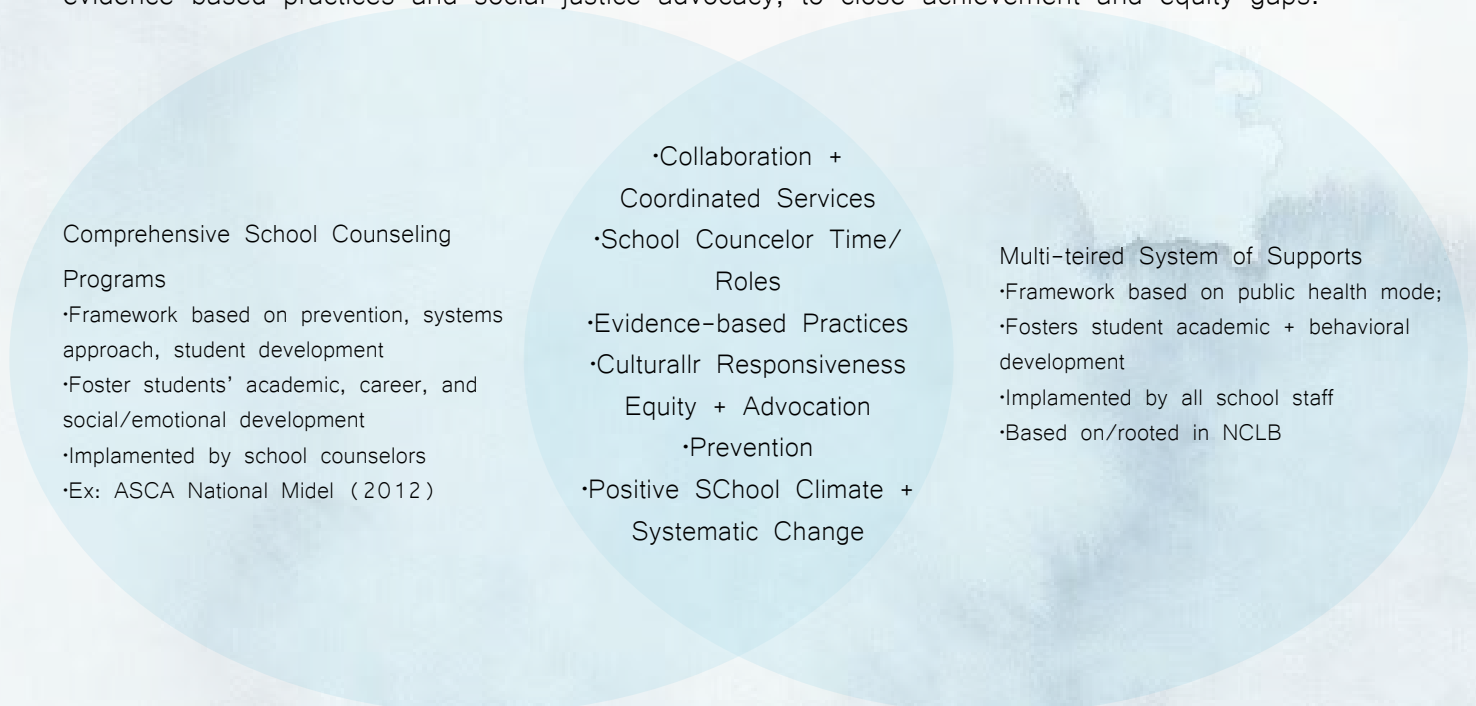


# MULTI-TIERED SYSTEM OF SUPPORTS

While working towards improved mental health for children in schools, the structure of community and support systems can become just as important as the structure of the building. Including comprehensive counseling programs in schools aid the school design and promotes success for students in terms of academic, career, and social advancements. One system to work for these goals and for the students is incorporating a multi-tiered system of supports (MTSS). These supports are brought on three levels and include response to intervention and positive behavioral interventions and supports.

The first tier of support is that of primary prevention. Primary prevention includes educated staff that can recognize disorders and individuals who require any additional aid. Students and staff can both look out for one another and report any concerns to a teacher or council worker. This section catches about 80% of the school and works to improve learning and emotional wellness equally for all the children. The second tier includes 5-15% of the school population and further assistance is brought in and catered to the group. Care and attention for this sector are increased yet much of the increased specialization can be covered for that group. Lastly the third tier gets one-on-one help and specialization on subject matter and wellness specifically for them to succeed educationally and behaviorally.

Determining a child's needs starts with a screening, giving academic benchmarks assessments and behavioral needs to determine which tier they fall under. Most of the work done in screening and setting up these plans comes from leaders chosen by the school, most often lead by councilors. Councilors are often the leaders, facilitators, interveners, and supporters and switch between the roles as necessary. Multi-tiered systems of supports share overlapping properties with comprehensive school programs and work well when integrated together. "In implementing both frameworks, school counselors are able to focus on student achievement and behavior, as well as collaboration, data collection, evidence-based practices and social justice advocacy, to close achievement and equity gaps."



Prevention of mental illness and mood disorders is the best initial line of defense and helps healing for individuals and includes classroom guidance, bullying prevention, universal behavioral expectations, discipline procedures, and positive reinforcement. Closing the achievement gap among students is best for the community and comes into play with low-income and minority students, and can start to be solved through performing leadership, advocacy, systemic change, and collaboration and teams. Maintaining a single classroom is ideal, so maintaining connection with the second and third tiers is an important integration.

The next levels of need are more specified and can include behavioral contracts, social skill instruction and wraparound services. Small reading group can be an example of additional help for that second tier and, one-on-one instruction for the third tier. Giving these students more opportunities to advance lowers the rate of referrals for special education and creates a more even playing field. "Classroom guidance programming and subsequent small group follow-up, have increased student achievement and motivation." Using data driven results from data informed needs creates a measurable system and points to way the programs can improve and how they have improved development and learning for children.

Ziomek-Daigle, 2016

## RATIONAL EMOTIVE BEHAVIOR THERAPY (REBT)

Another form of developmental aid and tool that can be implemented into school systems is Rational Emotive Behavior Therapy (REBT). This form of therapy works to help individuals create and form a more adaptive perception of reality. Forming individuals to be more flexible and efficient in their environments sets them up to be prepared for the unexpected which can often trigger young minds. The perception and interpretation can psychologically impact a person more than the actual event. The way the brain puts labels a past event suggests there is some control over thoughts and reactions, giving the opportunity to take control of memories and future reactions.

Control over thoughts and feelings to a degree offers students control over their interpreted reality. "The purposes of REBE as it follows: helping students become more aware of their inner dialogue by teaching them how to think more rationally; teaching students to evaluate their own thoughts so they get less disturbing emotions; teaching students how to use rational emotive principles so they can more easily reach their objectives."

# SCHOOL PROGRAMMING

Standard classroom settings are considered to be quite structured and predictable. Open plan classrooms offer new variances to the learning environment. Opportunites found through open classroom structures have been found to affect the amount of conversation and the size of groups students choose for themselves. The way teachers act upon disciplinary decisions, their cooperativeness with other faculty, and pupil's focus and productivity are also seen to be influenced. Social interatioins are the seem to be the main improvement with this structure.

Within interaction of their spaces, students generally showed less anxiety, confusion, and discomfort when dealing with movement throughout the spaces and were more coordinated with the orientaion of the building. Moving through the space became less stressful as well as locating classrooms, teachers, and classmated. "Environments not only select and coerce behavior, but induce psychological stress by affecting people's spacial orientation and social interactions." Another part of easing stress anxiety is allowing for occupants to have contol over their environments.

Availability and openness are key components of predictability and control behaviors. Anxiety often stems from individuals to maintain control over their surroundngs, especially when it includes social interations and their overall functionality is impacted negatively. Reducing information and sensory overload overall improves a learning environment but students have different rates of being able to deal with stimuli.

A person's adaptability to incoming information can greatly influence their success. CL refers to conseptual level which relates to logistics and how and individual is able to interpret information including time and amount of distractions, "A cognitive disposition relevant to this issue is conceptual level, which describes a person's adaptability to environments in terms of information processing style and interpersonal maturity."

Those students who displayed lower levels of CL, typically had higher interpersonal anxiety and reacted defensively to potential treats within new and unfamiliar social settings. This group of students were also less tollerant os ambiguity and were more likely to draw conclusions with incomplete information. On the other side of the spectrum, students with higher levels of CL were levels were more sound and versitile in handling tension and discrepancies. Flexability and adaptivity were also more developed in these students. The conseptual level isn't an exact scale and there are individualitic differences that can be altered by very specific changes in their environment.



Student reaction to spaces is very important for facilities, in addition to teachers'. Within open plan classrooms, instructors were more likely to put students in charge of their own learning through structural activities. These same teachers were also more likely to tell answer children's questions directly rather than helping them find their own answers through interactive learning. Lecture followed by group work was found to be more common. This method of teach seems to be appropriate with the notion that individuals are more interactive with one another in open learning environments. Student collaboration aided by the environments and teachers can aid in social interaction as well as educational material.

While Connection with the space and collaboration that open plan classroom environments can foster, higher levels of anxiety surrounding schoolwork were noted. Part of this stress came from the reported normlessness that came with the environment compared to conventional school programs. The aim of designing school classroom programs is to limit anxiety and overall foster growth and learning opportunities. A potential mix of styles and awareness as well as being informed of the potential raise in anxiety can help to intentionally work with that in mind.

Strategies to reduce anxiety, information overload or under-load is varied based on the individual and how capable they are of interpreting relevant cues and making a coherent pattern of them. Learning is a very unique experience that needs a safe and well designed environment to help, rather than hinder the individual. Classroom plans have the potential to impact the designed spaces and structure of the learning environment.

# RESEARCH SUMMARY

Architecture has a great impact on the way people interact with the world around them and can effect mood, perceptions, learning abilities, and mental and physical wellness. The WELL building standard was built up around different studies of how spaces impact people. Highlighted elements that tend to have the greatest impact are lighting design, sound, materials and movement. These tie into the natural psychology and are important for children. Children are highly susceptible to changes and slight differences and with development stages need high consideration for the spaces they occupy.

The spaces created for learning are just as the programs within. Examples of counseling programs to include throughout educational facilities include Comprehensive School Counseling Programs, Multi-tiered System of Supports, and Rational Emotive Behavior Therapy. These can be integrated together or separately to best serve the students. Being able to provide support for students create a safe space for occupants, better chances at succeeding mentally, educationally, and socially becomes essential for the growth of children. Those who may not have the opportunity to find resources elsewhere are at a greater disadvantage if they are not provided with it in their educational lives.

Understanding what mental health and mental illnesses are are essential in order to be able to give aid and treatment. A few of the most common are depression, anxiety, obsessive compulsive disorder, and eating disorders. Mental illnesses are caused by genetics, family history, life experiences, chemical imbalances, and environmental factors. While educational facilities do not have control over genetic factors or the lives of children outside of the school setting, their experience can be improved with a safe and healthy space while they are improving their education.

Through education wellness can be promoted and taught at an early age where children are still developing. Healthy environments and healthy minds is important for a place where students and staff spend at least 35 hours of their weeks for multiple years. Developing schools, minds, and communities can all be shaped by the touch of architecture. Architecture with thoughtful, meaningful design and intentions.

# CASE STUDIES

# LADY BIRD JOHNSON MIDDLE SCHOOL

|                |   |
|----------------|---|
| Architect      | Corgan  |
| Size           | 150,000 sf  |
| Location       | 3601 W Pioneer Drive<br>Irving, TX, United States |
| Project Type   | Community, Education                              |
| Year Completed | 2011  |
| Certifications | Net-Zero<br>LEED Gold                             |
| Cost           | \$29,000,000                                      |

Lady Bird Middle School, located in Irving, Texas, was the first net-zero middle school in Texas, and is the largest net-zero public school in the United States. Goals set for the building includes minimizing energy loss and reducing heat gain. reducing energy use, producing energy on site, and including eco friendly elements. The building now produces more energy that it consumes in a year through the use of geothermal heating, solar panel technology, wind turbines, rainwater harvesting, and smart solar management.

Tools to manage these goal include increasing wall and roof R values to 30 through insulation and effectively designing around solar analysis to reduce heat gain and minimize energy loss. By using double-glazed windows, and shading first floors on the west through the second floor overhang reduced heat gain. To minimize energy, natural light is brought in and in the library's floor to ceiling windows, frosted glass is incorporated to keep it to an optimal comfort level.

In order to reduce energy use, Corgan's use of geothermal heating and cooling proved to be more efficient than standard HVAC systems. Daylight harvesting, natural lighting, and high-efficiency florescent and LED lights work together to create the most efficient and cost saving lighting environments.







Lady Bird's roof is comprised of two-thirds the roof being solar panels. Paired with twelve wind turbines, serve the buildings' energy use and are a tool for learning for students.

To include friendly design elements, features such as a pulper, local brick, the flooring chosen, and water conservation are included. The pulper reduces the trash from dining by compressing and pulverizing waste generated from the cafeteria. By using recycled concrete columns, there is less waste through the building's construction. Another material choice, brick, contained low life cycle and maintenance costs, and the eco-friendly flooring also contains easy to care for materials while reducing traffic volume. The final eco-friendly tool used was the water conservation tank that comes from the roof to be used as irrigation for the landscaping and a well is used to irrigate the football field.

By studying Lady Bird Middle School, I was able to see a well accomplished net-zero building within the educational realm of architecture. Looking forward I can use passive systems to influence my own design and understand what works and how many tools need to be included and work together to create efficient systems. The strategies included save the building money and the environment harm over time.





# SONOMA ACADEMY'S JANET DURGIN GUILD & COMMONS

|                |   |
|----------------|---|
| Architect      | WRNS Studio                               |
| Size           | 19,000 sq ft                              |
| Location       | 2500 Farmers Ln<br>Santa Rosa, California |
| Project Type   | Education – K-12 School                   |
| Year Completed | 2017                                      |
| Certifications | Net-Zero<br>LEED Gold                     |
| Cost           | \$17 million                              |

In California, the Sonoma Academy is the first project to be awarded the Zero Carbon and Petal Certification by the international Living Future Institute. The college allows for opportunities for students to have hands-on experiences and integration into all parts of their education. Leading principles for the academy include creativity, inclusive community, exploration, and innovations. As part of the design process, sliding screens, automated shades, visible radiant system controls, and deep overhangs were incorporated as a response to the climate.

As a material base, the design team chose regionally-sourced low carbon block, ceramic tiles, reclaimed beams, and exterior and interior sliding are paired with regionally-made lamps and furniture to celebrate community. There is a living roof, which also contains photovoltaics, and connects planters that filter gray water and storm water for reuse.

The building is worked into the landscape and connects the two floors on different ends to incorporate and utilize the land. The Y shape optimizes views and efficiency. Interior spaces include wood assembly, metal shop, digital media, and robotics. Connections between spaces and the outdoor spaces lead into one another and connect to the rural campus.



The design incorporates deep porches to protect from solar heat gain but the vast amounts of windows with the glazing used incorporate natural lighting and ventilation, while managing solar heat gain and obtaining optimal views. Ground source heat pumps also help the building regulate comfortable temperatures.

The intentionality of design creates a successful connection of spaces. These spaces are with one another, the environment and the surrounding site. Integrated systems create sustainability and an open floor plan creates connectivity of the occupants with one another, their education, and the building and environment.

# SÖDRA ÄLVSBERG HOSPITAL PSYCHIATRIC CLINIC

|                |   |
|----------------|---|
| Architect      | White Arkitekter                                  |
| Size           | 248,646 sq ft                                     |
| Location       | Borås, Sweden                                     |
| Project Type   | Hospital  |
| Year Completed | 2021  |
| Certifications | 2013 WAN Award Best<br>Future Healthcare Building |
| Cost           | \$68 million                                      |

Sodra Alvsborg Hospital creates a healing environment that protects patient integrity and a calming workplace for staff. By adopting a humanist design approach that encourages interaction with place and nature, the clinic provides a safe haven for patient recovery, relatives and staff alike. The design team did research on space psychology to best fulfill the emotional wellness of a psychiatric clinic.

They worked to create a clinic with the dignity of a public building, yet without the feeling of a closed institutional facility. The site has much outdoor space that interacts with the building itself and the users including patients and staff are able to use and explore. A main goal was to promote patient independence, freedom and self-responsibility. In addition, a calm and safe environment for staff, relatives and visitors could be established.

Healing through design included sensory gardens, natural light and ventilation, neutral color palettes, sun filters, and winding paths to name a few. The material base of wood for interior wall cladding, frames and selected floors help add cohesiveness and neutrality.





The Program consists of inpatient wards, an emergency ward for an 80-bed Adult Psychiatry Unit, a 10-bed Children and Adolescent Psychiatry Unit, and a rehabilitation unit and administrative offices. Designers looked into how there is a connection between the physical care environment and patient well-being and recovery. There is a privacy allowed while opening up and promoting interaction with others and this option allows for patients to be comfortable in their surroundings and be sure of their safety.



The Sodra Alvsborg Clinic gives a practical showcase of how mental health is being treated through facility management and through the environment and spaces. By studying this project I am able to see from a medical standpoint how space psychology can be implemented into projects.



# BIODIVERSITY SCHOOL AND GYMNASIUM

|                |                              |
|----------------|------------------------------|
| Architect      | Chartier Dalix Architects    |
| Size           | 72,828.62 sq ft              |
| Location       | Boulogne-Billancourt, France |
| Project Type   | Primary School               |
| Year Completed | 2014                         |
| Cost           | \$21.37 million              |



Biodiversity school and gymnasium experiments with the blending of a school, with a bio-diverse experience. Architects Chartier Dalix emphasize wellness with activity and life within and on the building. Nature being brought back to urban settings is a strong lead for designs from the architects and can be seen in the school through wall design and green roofs. The innovative feature of the building is the structure, specifically the mineral wall and the hanging garden roof. The design of the plant life is a response to what would grow in that environment if the urban lifestyle had not taken over.







The mineral wall is made of concrete blocks with one side being smooth and the other rough and ribbed. The function of this is to allow for the plant life to grow and direct water to the sides of the blocks in order to avoid premature aging and erosion. The living wall adds more dimension to the building and addition of the biodiversity brought to the environment. The next element used is the green roof system. The system is comprised of three levels of vegetation including a prairie, a shrub-land fringe, and a woodland. These are connected in a continuum and the elevated corridors are created through the natural environment that has been made to be imitate real landscapes. The intended function of the garden is to cultivate rich resources and help itself flourish, promoting the success of the biodiversity. The building structure is alive and benefits the life inside.

The program includes eighteen classroom and a gym. A leading component of the school includes health and activity. The gymnasium is large and holds the availability for many activities and the elevated exterior floors also hold room for sports and activities. There are 18 classrooms, which include 7 pre-school and 11 primary school rooms, and a gymnasium which is open to the public. This school is a community project for the people as a whole.



# CASE STUDY SUMMARY

The case studies previously mentioned have looping connections. Lady Bird Johnson Middle School and Sonoma Academy's Janet Durgin Guild & Commons both focus on school design with an emphasis on sustainability and net-zero design. Accompanied with being Net-Zero certified, both schools achieved LEED Gold status. They were each created within the last 11 years which show the push from clients and users towards more sustainable and healthier buildings.

Differentiating characteristics include intended age clientel, location, size, year completed, and cost. Sonoma Academy's Janet Durgin Guild & Commons is the smallest and least expensive, located the furthest west in California, and moving west would be Lady Bird. The middle school is in Texas and is the next largest in size and cost. The newest, most expensive, and largest building in size within these case studies is Södra Älvsborg Hospital Psychiatric Clinic. The most distinct characteristic of the clinic relating to my thesis research is the focus on mental well being and using architecture to heal patients.

Healing patients through different living environments and design strategies works well in the new hospital facility and has the opportunity to be beneficial to students in the learning environment. Including elements to make adjustments work for those under psychiatric care within a high school could work to improve the mental well-being of children operating under normal circumstances. Looking at schools, shows how working toward net-zero design can improve the program and layout of the building in order to achieve these goals.

Connecting sustainable design that is healthy for the environment and design strategies that improve health for the individual are leading ideas to guide the design for this thesis proposal. Each of these buildings adapted to their site and surroundings for the optimal performance, and research about this site led the design and made them each to what they became. Each project made well designed landscaping into consideration even with the varied opportunities due to site and building size and were successful in their own ways.

Designing for the future is a common theme within the mentioned buildings and within the design field. LEED and WELL standards are becoming more popular goals and betting on these standards is pushing the future to a new way of thinking. Creating buildings that improve the environments and individuals is exciting for the community and something they can take pride in. A community that supports their school system carries over a lot of inspiration and pride, prompting more security and participation to unify the area.

To look at the case studies that helped inspire the research for the thesis project, a leading element among the very specific designs, included improvements to the environment in which the occupants spend long portions of their time within.

# PROJECT JUSTIFICATION

School is a surrounding element while growing up and adds a foundation for education, social context, and health. Mental wellbeing aids in a holistic healthy lifestyle. Many children and families don't have access to counseling or healthcare in general. By creating a learning environment in which children want to be in, they have the opportunity to focus on their education which is why they are sent there to begin with. When left untreated and not understanding mental health problems, they tend to grow and become more difficult in the lives of the individuals around them. To create a facility that helps treat and understand to serve the individuals and the community.

Another important aspect of my thesis project is how the community would respond to the building. Further making a connection with the students, staff and neighborhood could create stronger sense of place and purpose. Post occupancy evaluations would be important to see if mental health is improved, as well as occupancy satisfaction and ownership. Correlating factors could be measured to see if grades have improved, health benchmarks, or community involvement are impacted.

As a public facility the social response is an important factor in determining the success of the project. The location is set in Minneapolis where there are growing neighborhoods and new developments going in place leading to the increased need for space of those who are already there, as well as allowing for the neighborhood to grow even further than its current requirements. Being a public project, the school would also be funded by the public without profit.

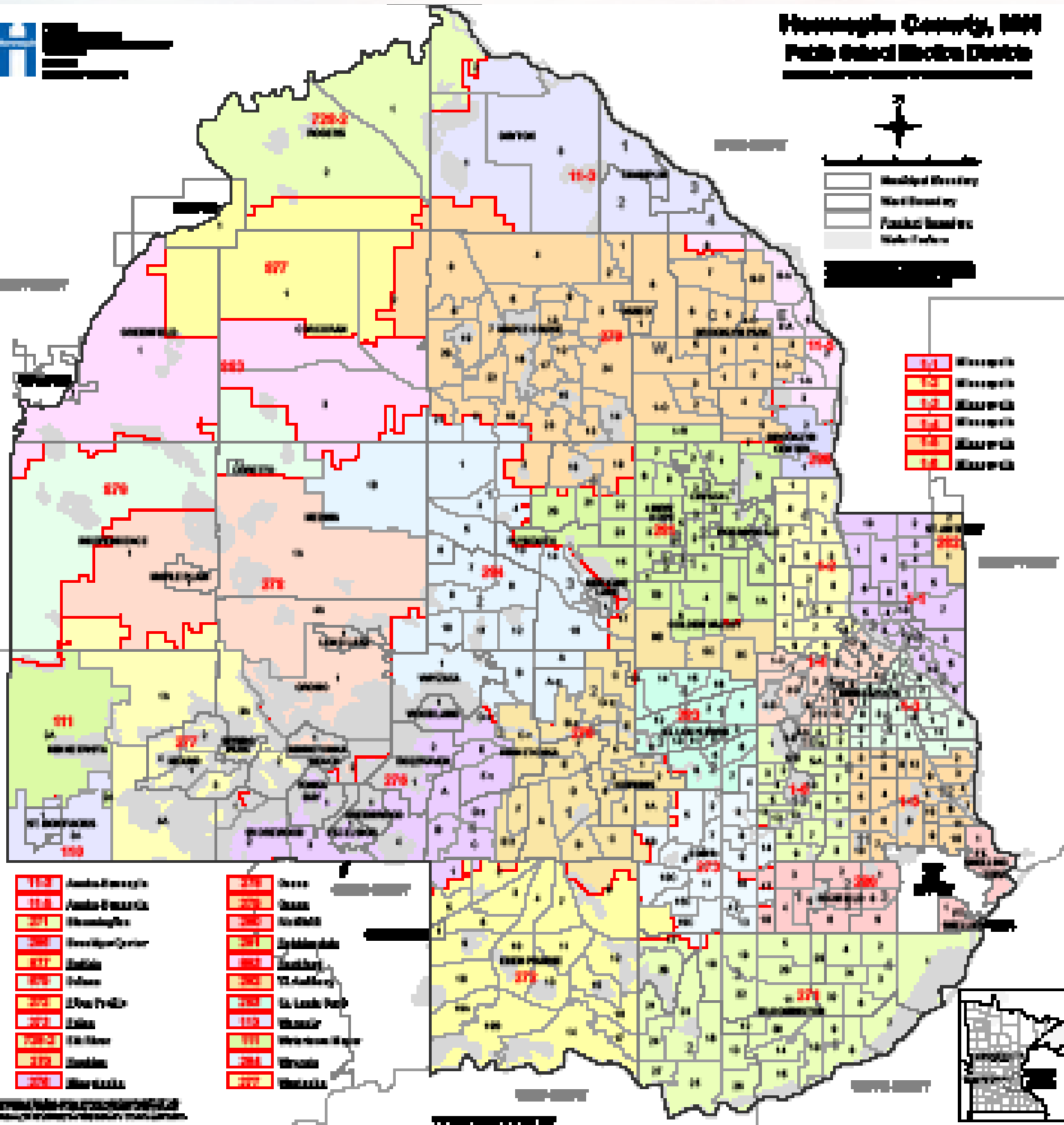
From an economic standpoint, to incorporate passive and sustainable design strategies, the building could over time cost less to operate and maintain and be lighter on the environment. As designers move forward with more knowledge and technology, incorporating smart design starts to become the standard for design. Working with the environment and bringing nature into the city and a children's environment is important to me when thinking of child growth, development, and wellbeing.



# THESIS CONTEXT



# Mississippi County, MN Public School Election Districts





# HISTORY OF MINNEAPOLIS

# AND MINNEAPOLIS SCHOOLS

1680 - 1st Visited  
St. Anthony Falls

1819 - Fort Snelling  
Military Outpost

1851 - University of Minnesota

1856 - Village of Minneapolis

1860 - St. Anthony  
Chartered as a City

1867 - Minneapolis  
Chartered as a City

1869 - Augsburg College

1870 - Minneapolis is Country's Top  
Producer of Flour



The Birthplace of Minneapolis  
St. Anthony Heritage Board, 2011

1834 - 1st educational institution  
Rev. J.D. Stevens

1849 - 1st Private School  
St. Anthony

Encyclopedia Britannica, 2021

1857 - 1st High School  
Central Union High



Central Union High  
Encyclopedia Britannica, 2021

A Brief History, 2013

1872 - Minneapolis and St. Anthony  
Merged

1889 - Minneapolis College  
of Art and Design

1914 - Dunwoody College  
of Technology

1930 - North Central University

1950 - Peak Population 521,718  
Metropolitns Area Increased



Andersen 2021  
Carpenter

1874 - 6 School Buildings  
2,907 pupils  
4 Buildings in St. Anthony

1878 - One Board of education

1922 - Total Enrollment in Elementary,  
Jounior High, and High School  
+ 70 Thousand pupils



1975 - Anderson United Opened

2021 - Anderson Middle school  
6-8 Grades  
Changed From PK-8

Mental health and the education and studies relating to schools began to develop in the 1890s within the Progressive Era and continued in the same methods until the 1930s. Part of the change in school structure happened because of urbanization and industrial change. An increase of days of attendance brought some information into the school curriculum rather than being taught at home. Health, industrial education, recreation, and 'mental hygiene' were some of the topics previously within homes brought into general education. Part of this original intention to improve schools was to fix the schools and the students.

To begin solving the issue at hand was the programs within the educational facilities. By collaborating with educators and social workers, a step towards progressive mental health information and care began. Part of the other elements brought in were school counseling, social work, special education, and interaction within the various disciplines. The second area of focus after fixing the schools was fixing the students.

The implication of helping these children is to improve their lives. Mental health services were seen as a toll for the larger picture. Academic and behavioral problems were the true problem these reformers were trying to solve. As a means to incorporate special education opportunities, those children who seemed to have mental health needs were able to partake in nongraded and special classes. To aid these behavioral and mental issues seen in students, the first psychological clinic was established.

Built intentionally for children, the clinic expanded into schools, agencies, and churches. When initially brought into schools, counselors were considered to be vocational guidance who were merely teachers with a touch of additional training. The 1950s is when the role of a school counselor really took place and the federal government began to provide financial aid. The public concern brought more approval and furthered the act to improve mental health through educational institutes.

After the 1950s the public eye really took hold of improving mental health and began to make it part of the community. Social activism and idealism of the 1960s brought the push through a means of the community. The movements began with prevention and began to become more progressive with time and information. These progressions came in the form of assessments and treatment for the students struggling. Approaches taken to providing mental health services to schools were school-based health centers, (SBHCs), expanded school mental health programs (ESMH), full service schools, and comprehensive school and systemwide approaches.

The first approach to providing mental health services is school-based health centers. The core foundation of this method stemmed through nursing and public health clinics. Primary health at the time included mental health counseling and was expanded into schools by the 1980s. Originally was seen in the form of strictly nurses and most often within urban schools but began expanding.

Expanded school mental health programs took on a more universal range of services applying to regular and special education. The holistic involvement comes from an older sense of community involvement. Extended from diagnostics assessment, individual, group, family psychotherapy, crisis intervention, and case management. Aim was to help poorer community needs and decrease mortality rates.

Full-Service Schools bring together multiple community resources to help young students. Primary health care and social services are the main interventions to help where is necessary. Linking the community to the school would provide additional aid for children and adults. Aid provided for all included language tutoring, community policing, childcare, traditional health, mental health, and social services.

The last system was comprehensive school and systemwide approaches. Mental and social problems were seen to be the root of school failures, and so interventions were brought in to try to resolve this issue. Restructuring and reforming schools sought to address mental health needs for all students. School safety, reform, and mental health were the components to make the approach comprehensive.

All of these approaches to improve mental health were able to happen through community push and government funding. Parts of these approaches linger still and were necessary to build upon and grow from.

# WELL STANDARD CONTEXT

WELL building standard was developed in 2014 to help promote healthier buildings and people as a whole. Before it was released, 6 years of development and research were done in order to get a grasp of how these goals could be accomplished and an idea of what truly constitutes as healthier design for mind and body. Studies on environmental and space psychology have been done in correlation and independently of the WELL building standard.

Moving forward with environmental wellness, mental wellness is being brought into architectural design. Architects have more knowledge and technology than ever before and have the opportunity to make ground breaking designs that are unique and futuristic. Designing for the mental is in consideration to the human, to the body, and the mind.

A social move to improving the mind and body come through in many ways in modern society, driving a constant need for improvement. With Minneapolis developing quickly there is opportunity to reconstruct the infrastructure for the community.



# CONTEXT SUMMARY

Anderson Middle school sits in an urban setting that is constantly changing and evolving. The site has a context to the larger city with its own community for context. School design and programs within have changed with the time. The site boundaries have remained the same overtime yet the community and programs can grown within.

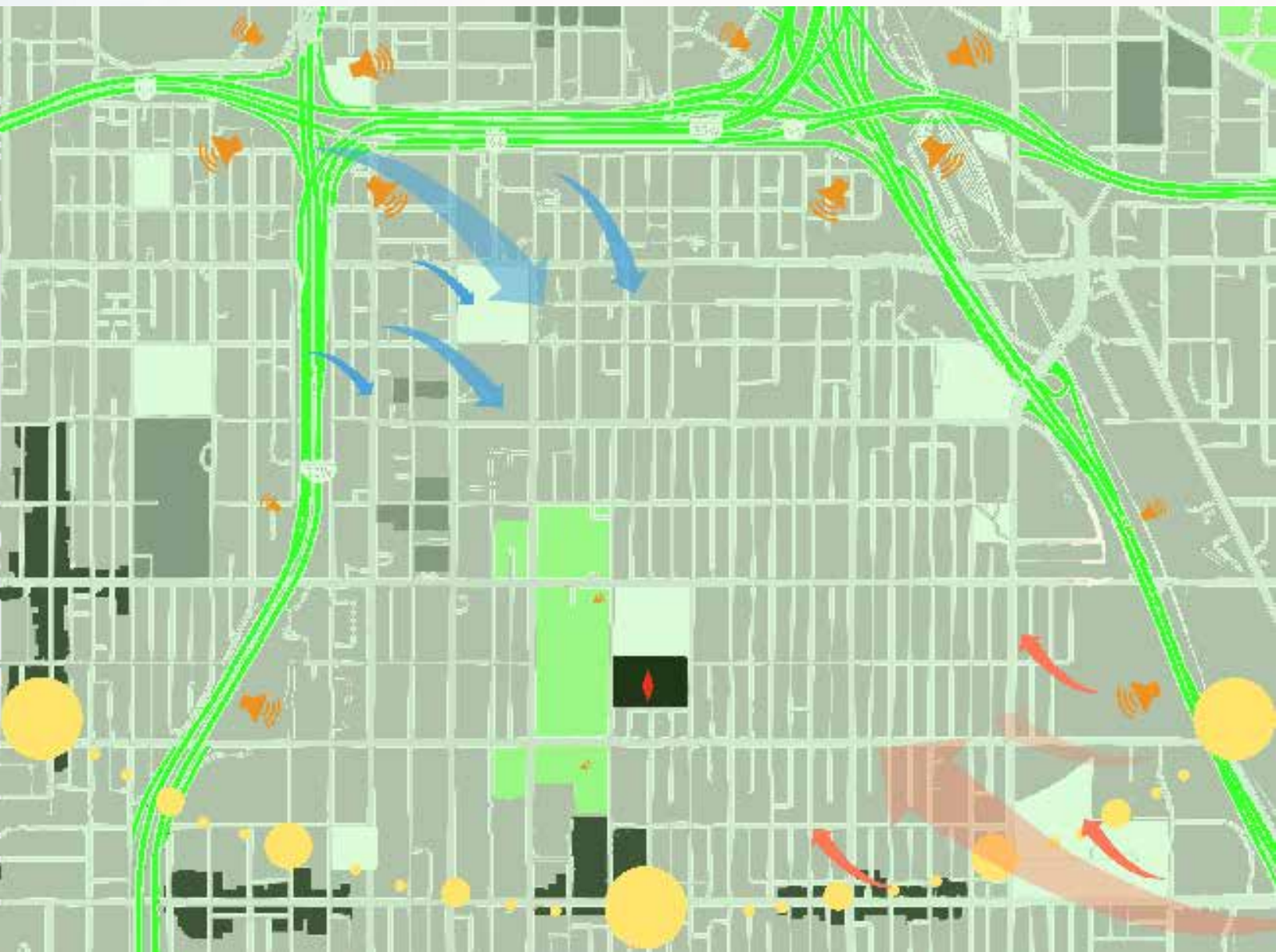
Safe spaces where children are comfortable and confident foster learning and healthy relationships with themselves, others, the environment, and their own education. A multitude of school interaction methods and mental health developments sets the future of schools and well-being ahead.

Sites within urban context have the availability to let nature in and use sustainable development. Historical context can be brought along with growth and built upon. The future of Minneapolis is moving along with movements such as WELL standard, sustainable design, and mental health school systems.

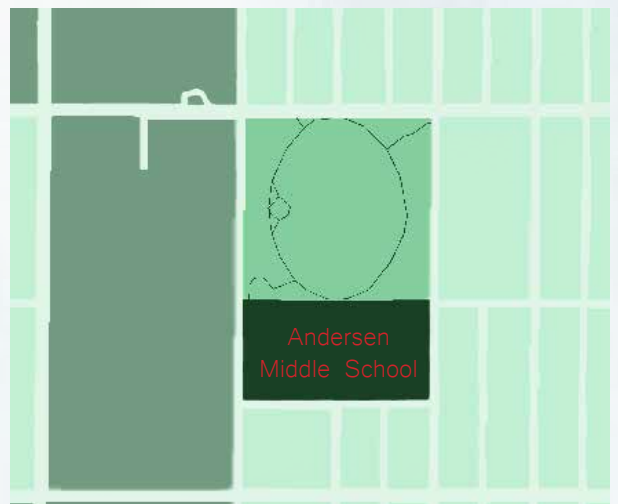
# SITE ANALYSIS







- Site
- Parks
- Hospitals
- Commercial
- Residential
- Streets
- Highways
- Sun
- Noise
- Winter Winds
- Summer Winds



# QUALITATIVE ASPECTS

Surrounding buildings consist of single family homes, hospital facilities, lab research facility, and parking. Healthcare facilities included are Children's Minnesota Hospital, Children's Heart Clinic PA, Allina Health Piper Building Pharmacy, Abbott Northwestern Hospital, and Allina Health Laboratory. The healthcare complex lines the west side of the site, being a barrier between it and the nearby highway.

Surrounding Traffic routes include 35W on the west, 94 to the north, and Hiawatha Ave to the east. Streets are in a narrow grid in the nearby neighborhood. There is limited parking on site and nearby street parking is compact and used mostly by the residential users that line the streets. While the site is set into a mostly residential area, it is close to major highways and not far from the downtown area.

Since most of the buildings lining the site are residential, three of the four sides are a maximum of two stories, while the hospital to the west is eight. The building is typically occupied from 8 am to 3 pm, so the sun directly interacts with the building and site throughout its occupied hours and through the seasons. Its located in an urban setting with new development in the area.

Much of the residential homes are older and slightly run down while the hospital campus is newer and leaves room for further development. The park directly to the north is not technically owned by the school but is used for school functions. On site are some trees and a small garden for the school.

The park offers some green space directly adjacent from the space. Neighborhood streets are lined with trees. Residential homes offer some yard space to the visual landscape, yet is limited due to the density of the area. Adding more plantings to the site would add to the visual aesthetic, learning environment, and health of community.



Current building is made of concrete and red brick on the north side with a red metal roof. Colorful mosaics line the exterior walls in organic swirling design that shines in the daylight. The roof is composed of a triangle and square grid oriented 45 degrees from the north axis.

The current building is set back from the street about 35 feet on the south side and 40 feet on the east and west. The south side contains a bus drop off location that comes off of Anderson Lane which is a one way street that goes west. Parking is located on the northeast with limited spots.



Temperature

Climate

Climate Data

Summer Solstice

Winter Solstice



# QUANTITATIVE ASPECTS

2727 10th Ave S

Minneapolis, MN 55407

PID 3502924310101

Parcel Area 4.12 acres

179,301 sq ft

Owner School District No 1

Property Type Commercial-Preferred

Year Built 1986

School District 001

Watershed District 6

Soil Type D64B

Urban land-Hubbard complex, Mississippi River Valley,  
0 to 8 percent slopes

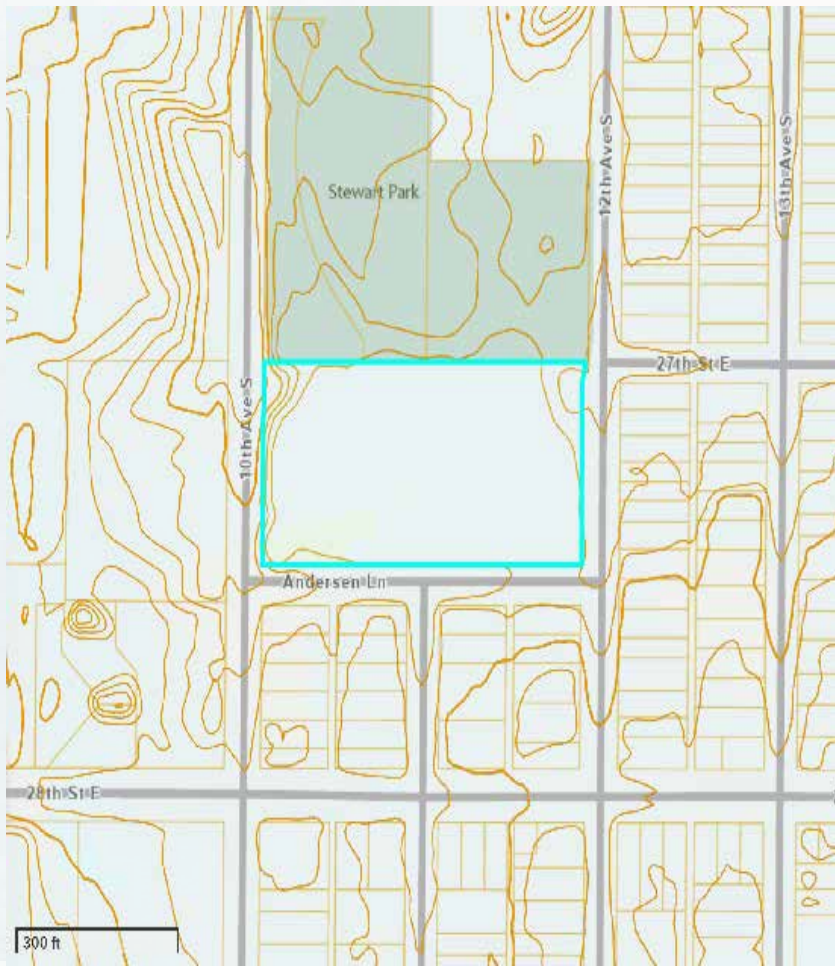
## Bedrock Geology



St. Peter Sandstone  
Platteville + Glenwood Formations



## 2' Contours



Site is mostly utilized by the build structure with a few cut outs for small playgrounds that are fenced in. The building pad is nearly completely flat, with a small slope down toward the road on the west side. The larger context is set into a busy part of Minneapolis with a high density of buildings not allowing for much variance in contours.W

The closest body of water is the Mississippi River located to the northeast of the site. In Minnesota, the surfaces of lakes, streams, and wetlands commonly represent the water-table elevation because these water bodies commonly receive groundwater contributions. The water table is relatively high in this area with a medium depth to that water table.

Bedrock geology of the area is made up of St. Peter Sandstone and Platterville and Glenwood formations. and the soil is made of D64B, soil type 1 is urban land, soil type 2 is Hubbord, and soil type 3 is Mosford.





# SOIL TAXONOMY

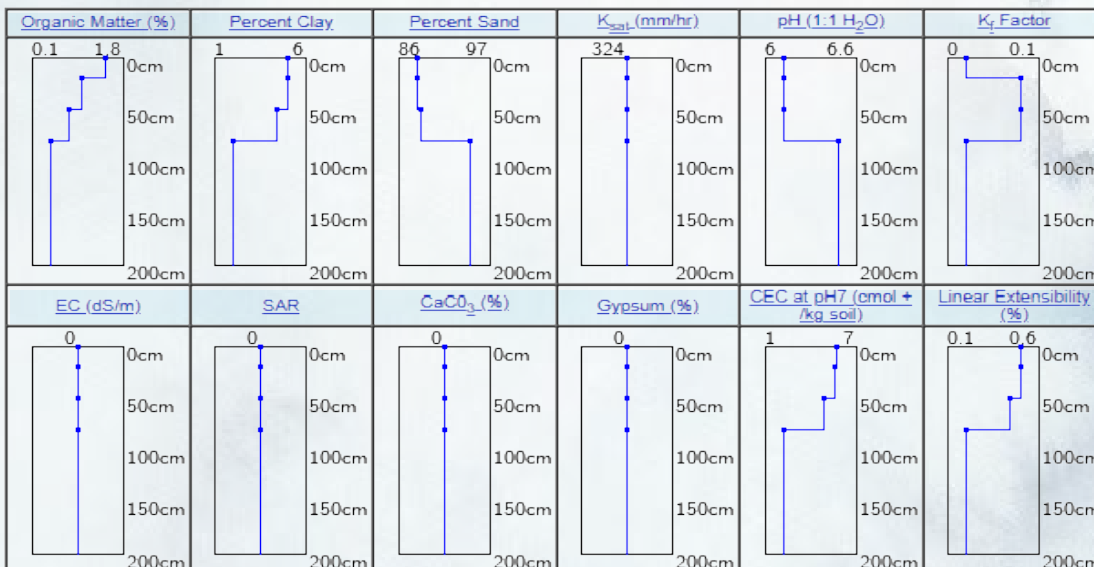
|             |                                       |
|-------------|---------------------------------------|
| Order       | Mollisols                             |
| Suborder    | Udolls                                |
| Greatgroup  | Hapudolls                             |
| Subgroup    | Entic Hapludolls                      |
| Family      | Sandy, mixed, frigid Entic Hapludolls |
| Soil Series | Hubbard                               |

# HYDRAULIC AND EROSION RATINGS

|                                   |                     |
|-----------------------------------|---------------------|
| Wind Erodibility Group            | 2                   |
| Wind Erodibility Index            | 134                 |
| T Erosion Factor                  | 5                   |
| Drainage                          | Excessively Drained |
| Hydric Rating / Hydrologic Group  | No [Group A]        |
| Parent Material:                  | Sandy Alluvium      |
| Total Plant Available Water (cm): | 14.05               |

# FOREST PRODUCTIVITY

Symbol      Common Name      Site Index      Site Index Curve Number      Productivity (cu.ft / ac. / yr.)





Minneapolis is located in a Zone 4b for growing hardiness. Within this zone, the average annual extreme minimum temperature is  $-20^{\circ}$  to  $-25^{\circ}$  F, and maximum  $75^{\circ}$  to  $85^{\circ}$  F. When considering plants to incorporate into the landscape, rain, light, humidity, wind, and soil type also need to be considered (Bachman's).

# PERFORMANCE CRITERIA

## Energy Consumption

Aspects of energy consumption for the project that can be measured are electricity, heating, cooling, ventilation. Measuring each one in their respective units of measurement and comparing to a baseline and then a high-performance level to see where the building lands. Working towards high performance, low energy usage will help to determine the success of the building design.

## Environmental Performance

How the building operates within its environment and how it affects its site is important when considering the success of a project. LEED standard is an excellent guideline to follow when looking at the environmental impact and design strategies to implement while in the design process. After project completion, looking to get certified is a tool of measurement that can judge by the standards that have been set in place and reviewed by many. And while the standard can continuously evolve, so too can designers to improve their standard for a sustainable set point.

## Behavioral Performance

Possibly the most important analysis of my project would be the response from the occupant. Stress levels, happiness, engagement, grades, and overall community mood of the school look to judge the performance. Surveys can be taken for the perceived happiness and success while in grades can show their own trend of teacher and student response to the atmosphere. There is a lot of variances that can rise when judging perceived success while grades are a set standard grading level. There can be a variety of levels when determining the success of the project's behavioral performance from the viewpoint of students, faculty, and community, but when combining the responses there will be a response that can cover the project.

## Psychological Impact

Psychological impacts often need psychological responses and analysis to determine the success and interpretations of a space. Following WELL building standard is a goal and guideline for my project. Designing for the occupants is the main driving point and creating a positive experience that can create healthier atmosphere and carry over to other parts of their lives. If the building can be certified under the WELL v2 standard, the project can be considered a success. The work done to have this as a standard shows the improvement it can have to impact on the health and wellness of the occupants.

## Code Compliance

Standard codes set in place for location and topology of the project are mandatory with a public school and any building design. Complying with the code is important criteria for the project and has been set in place by state and local laws.

## Cost

When using LEED building standard as a guiding design principal, it is implied that over time the building the initial cost will be less and more efficient when designing for environmental impacts. Comparing lifelong costs and initial costs of different systems will determine the most benefits and best solution.

A leading standard for the project criteria is how closely it follows the WELL building standard. Following the guideline when designing the project and then after seeking certification would be logical to determining the success of the project and the goals sought out. WELL certification ties in the people and the psychological impact of the architecture on the community that it is being designed for. Part of the thesis project is to make improvements for individuals and future ways of design thinking. While achieving these certifications aren't the only criteria to determine its success, they are good benchmarks for theoretical proposals and designs.

# SPACE PROGRAMING

Administration

Atrium

Science

Math

Social Studies

Literature

Spectial Education

Art

Physical Education

Music

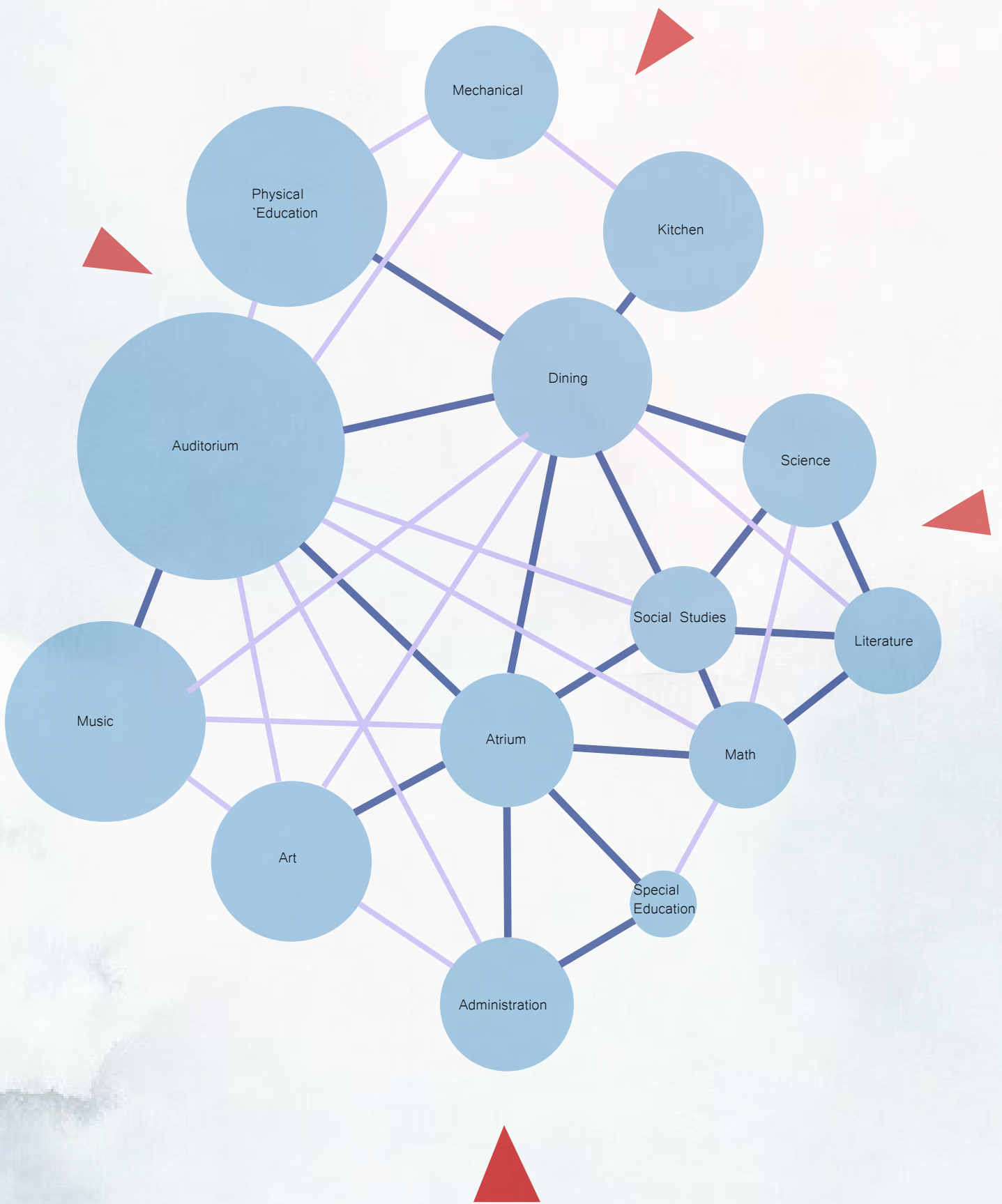
Auditorium

Kitchen

Dining

Mechanical





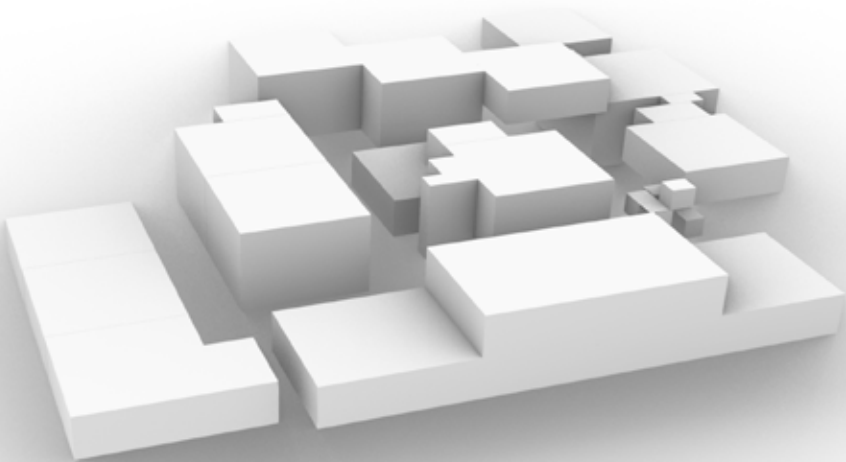
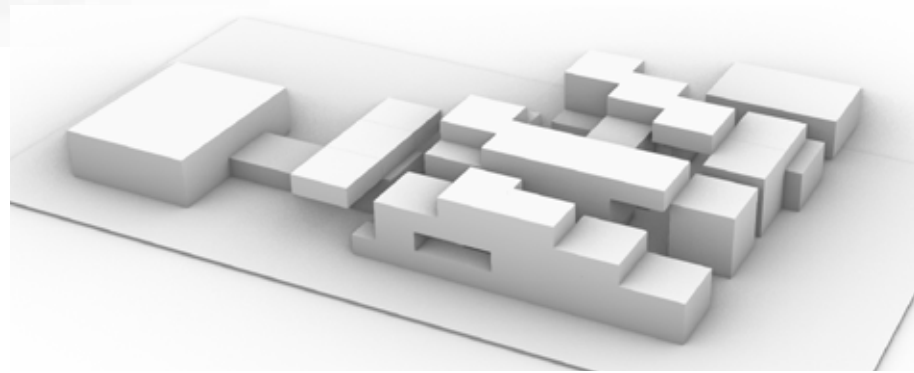
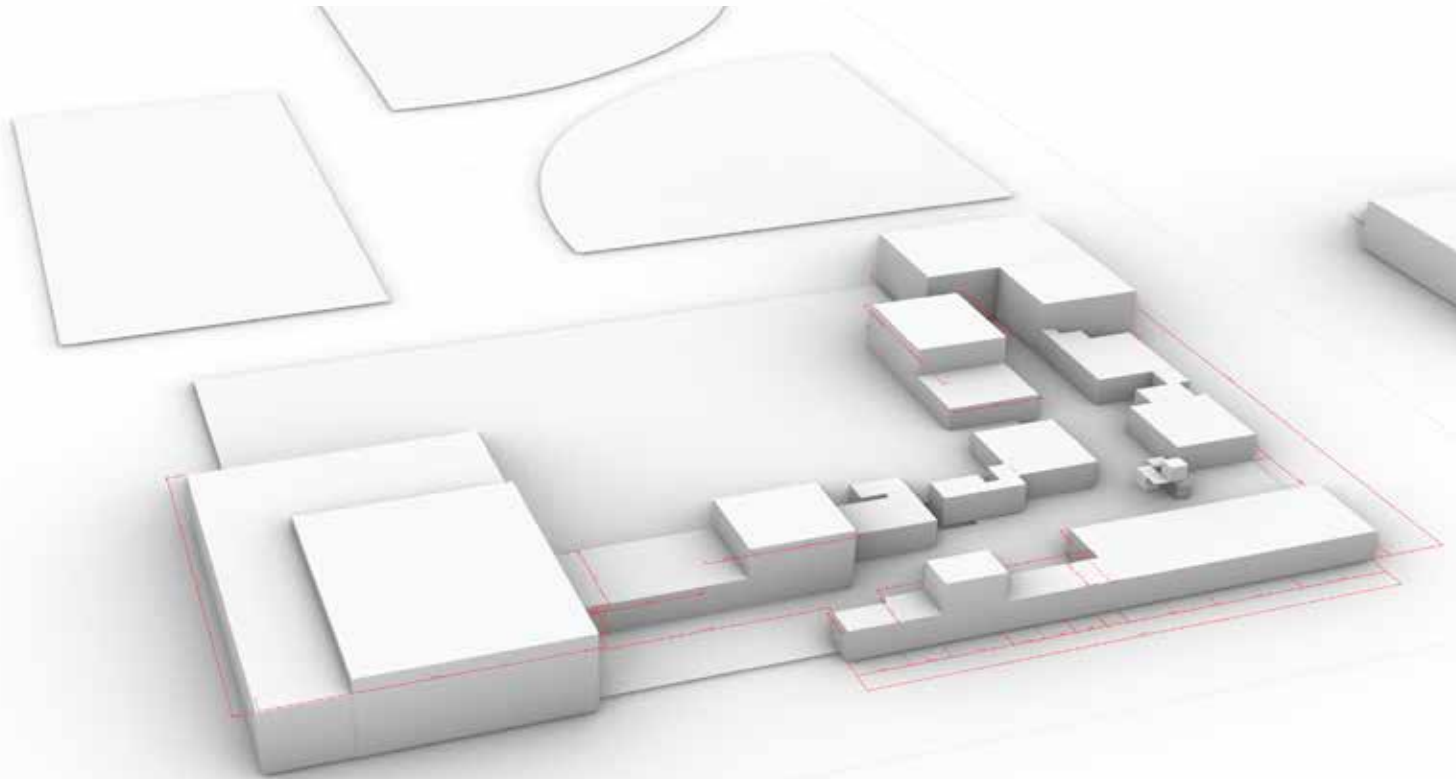
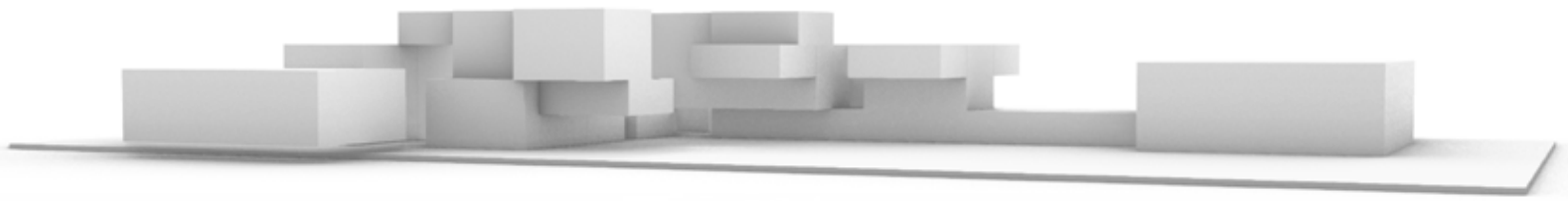
# PROCESS



After analyzing the current building I decided to completely remodel the school. With the brutalist structure, it is difficult to allow light in and the floor plans that are present are very condensed and confusing. When looking for inspiration I started by looking at the angular form and attempting to rearrange the new spaced incorporated.

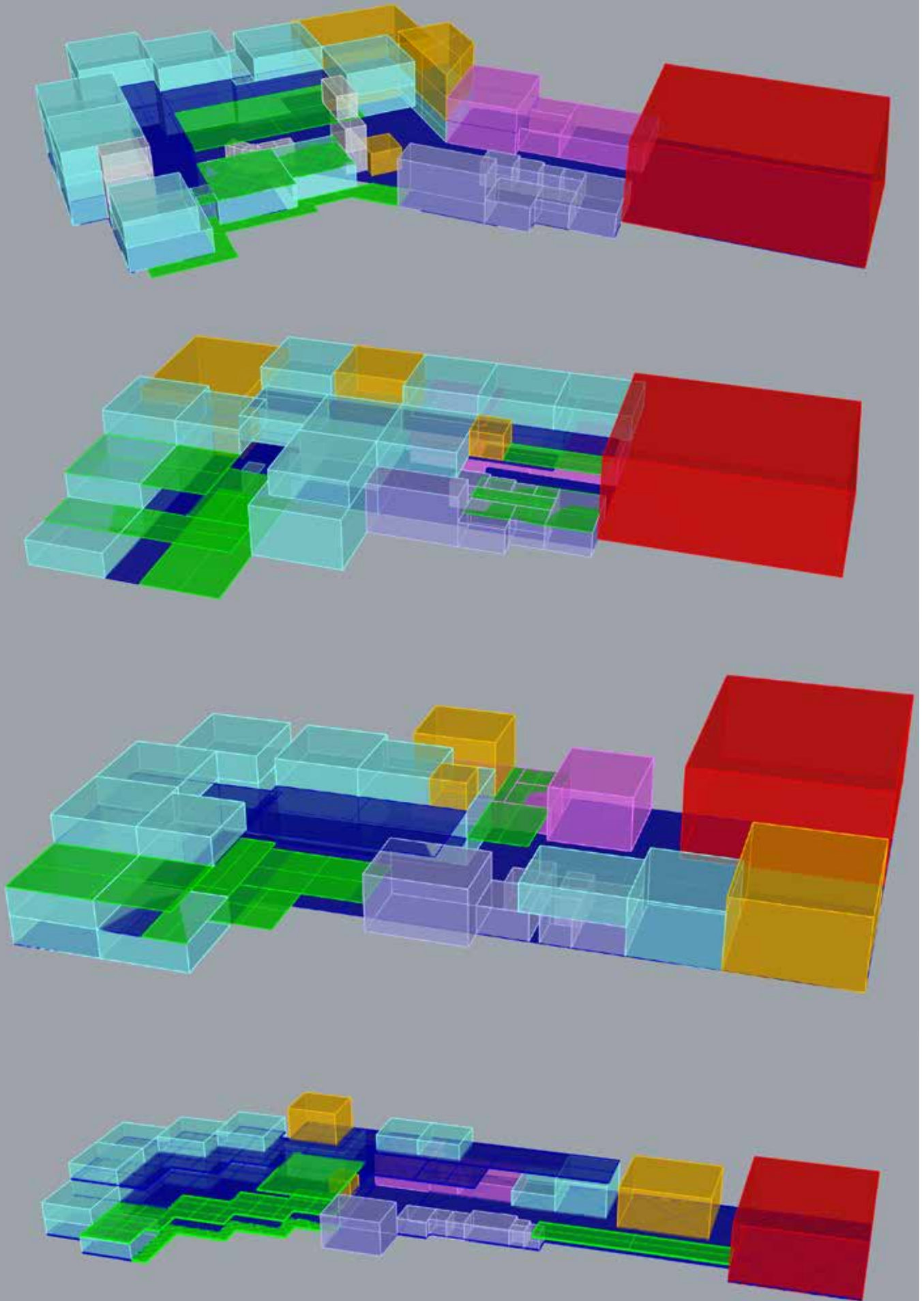
By working with stacking and rearranging I was able to get some unique forms to proceed with. A key component of the programing was separating noise levels in different areas of the building. I wanted to ensure noise comfort levels and so I worked in mass modeling with color coding of room type to initialize spacing for the proposed building.

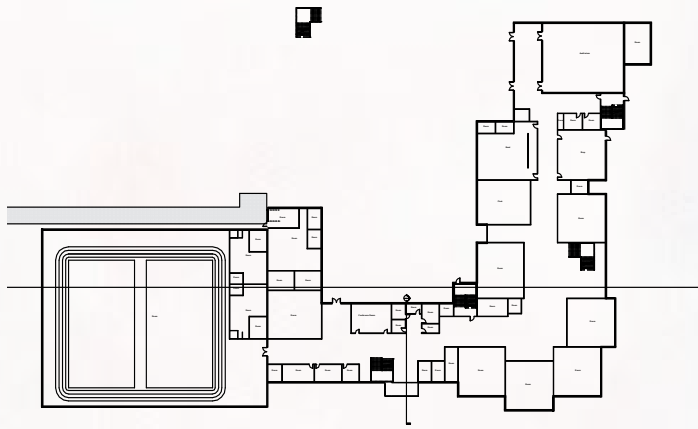
Rhino was a helpful tool in quickly moving around masses in space and relative sizing to create realistic dimensions to proceed with when moving into revit. Revit was an excellent tool when working out exact sizing and finishing the project.



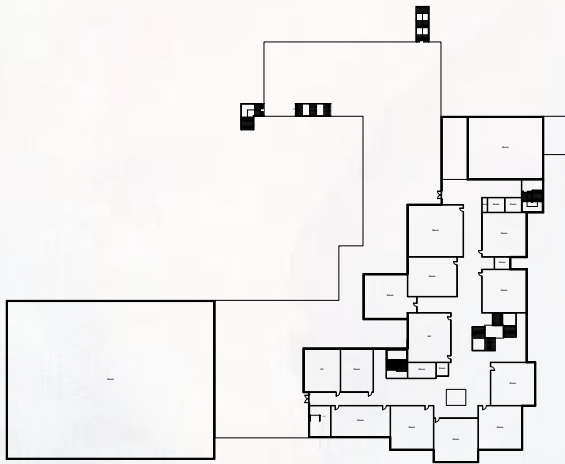
MASS MODELING DESIGN  
CONFIGURATIONS  
VARIOUS DESIGNS PLACED  
ON SITE



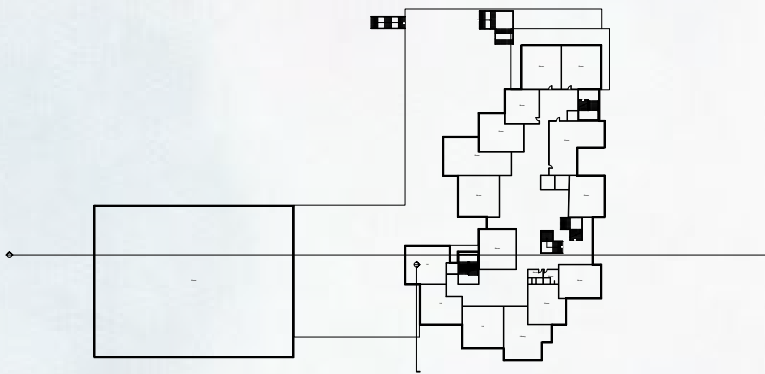




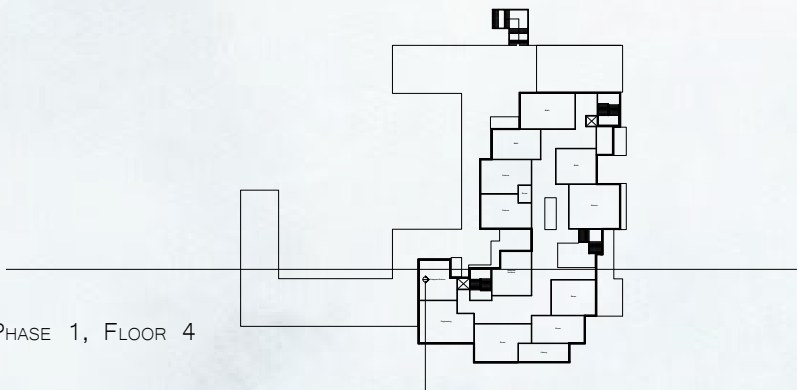
PHASE 1, FLOOR 1



PHASE 1, FLOOR 2



PHASE 1, FLOOR 3



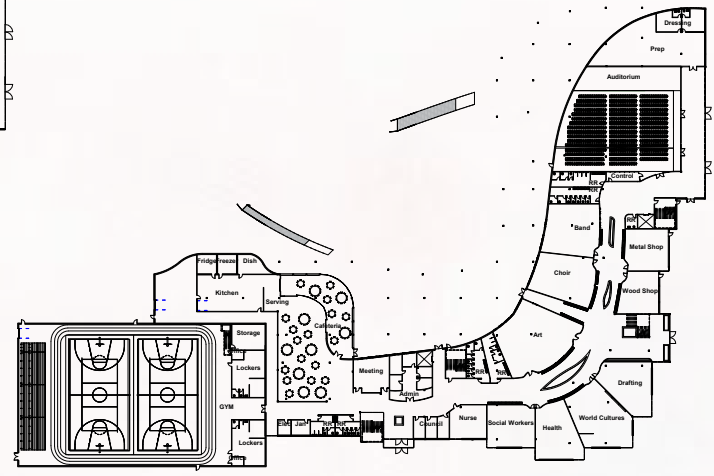
PHASE 1, FLOOR 4

FLOOR PLANS ORIGINATED IN A BOXY ORIENTATION WITH OFFSETS THAT WERE SLIGHTLY RANDOMIZED. AS THE FORM PROGRESSED, A SLIGHT CURVE WAS INTRODUCED ON THE BACK END OF THE BUILDING. AS THE PROGRAM WAS FURTHER DEVELOPED, THE BACK SIDE OF THE BUILDING SMOOTHED OUT EVEN FURTHER AND THE HALLWAYS SMOOTHED OUT INTO A SIMILAR CURVE. ALTERING THE INTERIOR MADE THE FLOW BECOME MORE SENSIBLE AND CREATED A MORE ELEGANT AND CALMING PATH THROUGHOUT THE BUILDING. CLASS SIZES WERE VARIED MORE IN THE FINAL PRODUCT TO MEET THE VARIOUS NEEDS OF THE DIFFERENT CLASSROOM TYPOLOGIES. AS THE FLOOR PLANS CHANGED, SO TOO DID THE OUTDOOR PLATFORMS. THE FINAL FORM HAS WALKING PATHS THAT EXTEND ALONG THE BUILDING LIKE A BACK PORCH ON EACH OCCUPIED FLOOR.

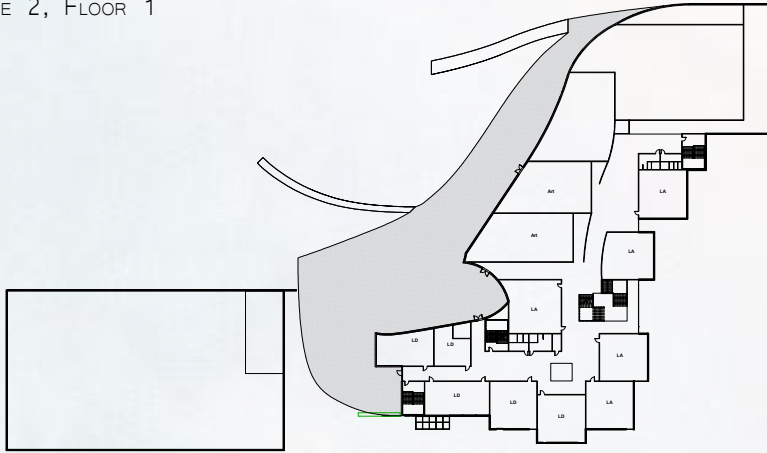
PHASE ONE OF FLOOR PLANS SHOW THE BOXY AND RIDGID START TO THE BEGINING DESIGN. OVERALL FORM, ROOMS, AND LAYOUT ARE GEOMETRICAL.



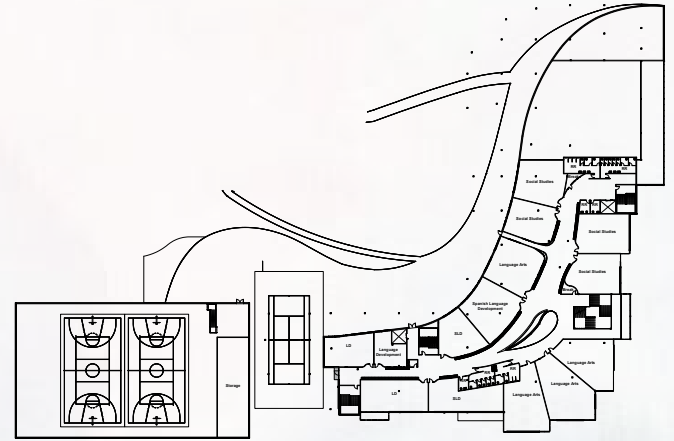
PHASE 2, FLOOR 1



FLOOR 1



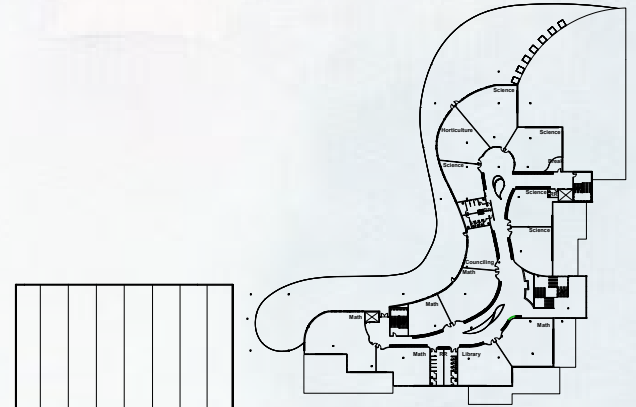
PHASE 2, FLOOR 2



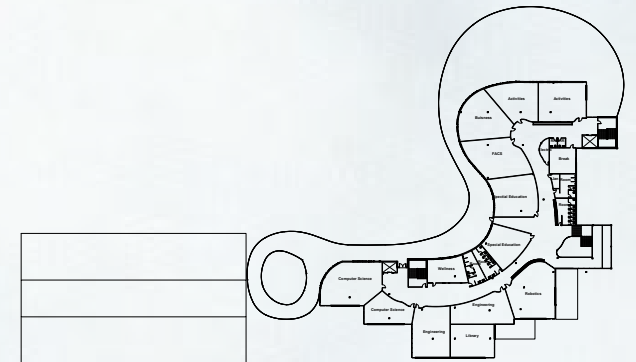
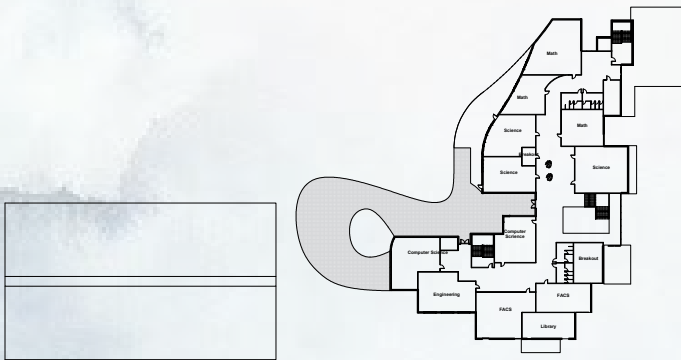
FLOOR 2



PHASE 2, FLOOR 3



FLOOR 3

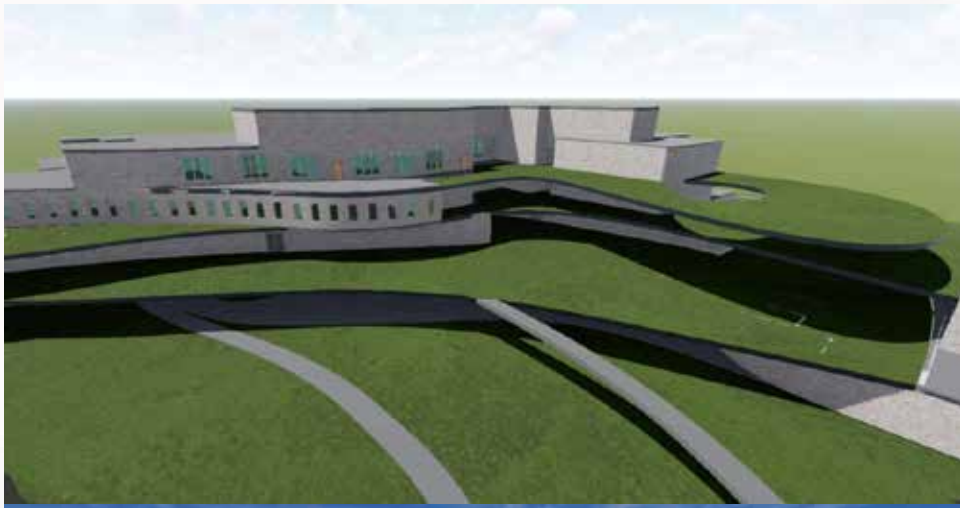


FLOOR 4

PHASE TWO OF FLOOR PLANS SHOWS THE SHIFT OF THE CURVATURE OF THE BACK OF THE FORM AND THE HALL BEGINNING TO BECOME MORE ELONGATED.

THE FINAL FLOOR PLANS SHOW THE CURVED BACK OF THE BUILDING AND A REFLECTION WITHIN THE BUILDING THROUGH CURVED HALLS.





MIDTERM PERSPECTIVE OF THE NORTH SIDE OF THE BUILDING BEGINS TO SHOW THE OUTDOOR PLATFORMS ON EACH LEVEL AND CONSIDERATIONS FOR WINDOWS USED.



MIDTERM PERSPECTIVE OF THE SOUTH SIDE OF THE BUILDING SHOWS THE CONSIDERATION OF A FRONT ENTRANCE. A VARIETY OF WINDOW TYPES ARE SHOWN AS THEY WERE CONSIDERED FOR THE FINAL PRODUCT.

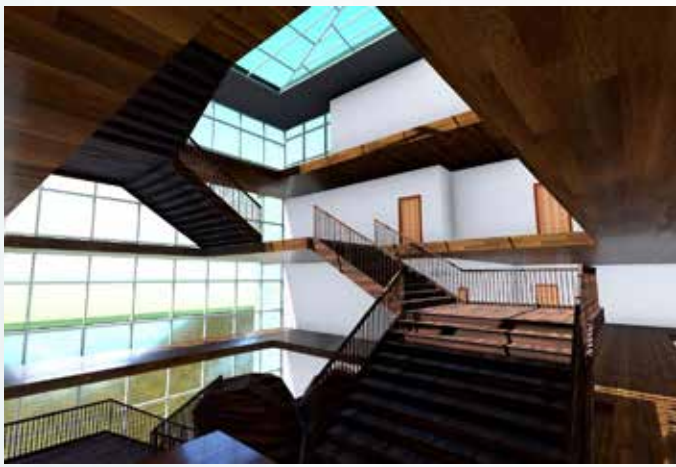


THE SOUTHWEST PERSPECTIVE SHOWS THE BUILDING'S FORM AFTER CIRCLE WINDOWS WERE PLACED BUT BEFORE MATERIALS WERE ASSIGNED AND BEFORE PLANTS AND FURNITURE WERE INCORPORATED. THIS IMAGE SHOWS THE BARE BONES OF THE FORM.

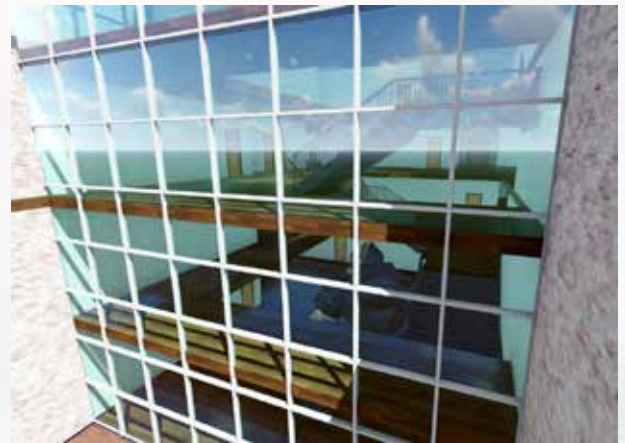
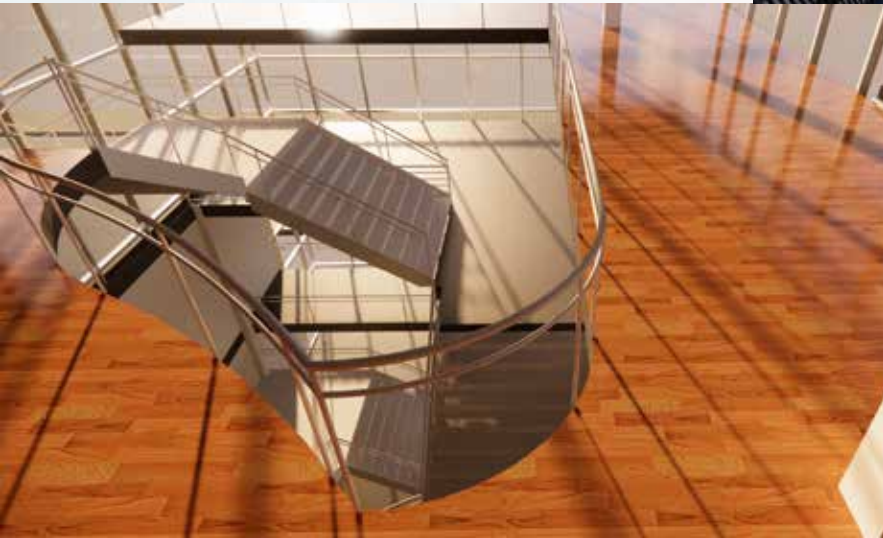
SECOND PERSPECTIVE OF EXTERIOR AT MIDTERM TO FURTHER EXPLORE THE OPENING POSSIBILITIES FOR THE BACK SIDE OF THE BUILDING.





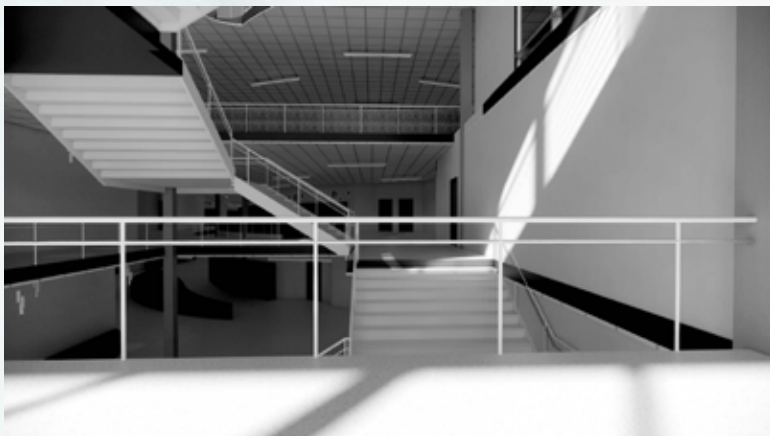
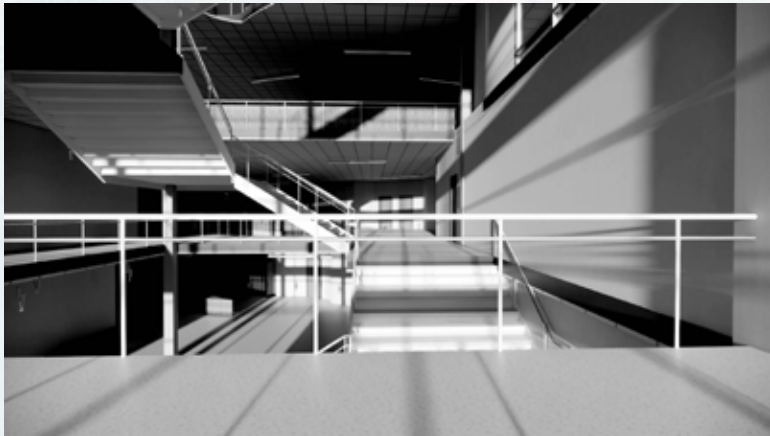
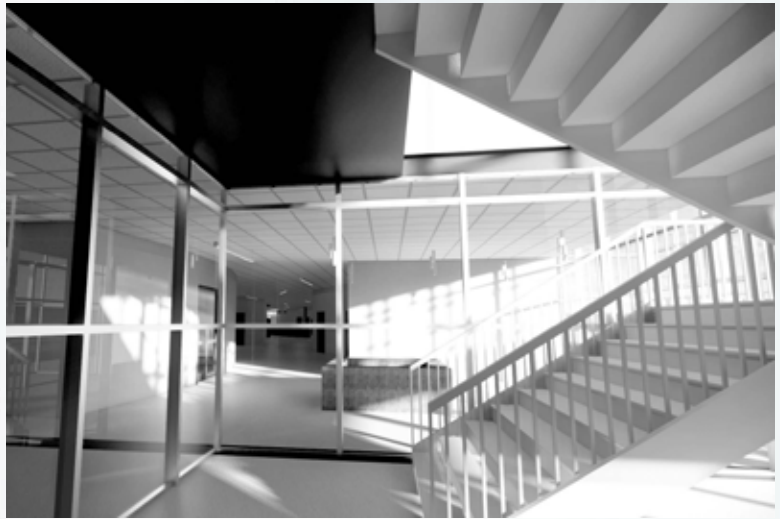
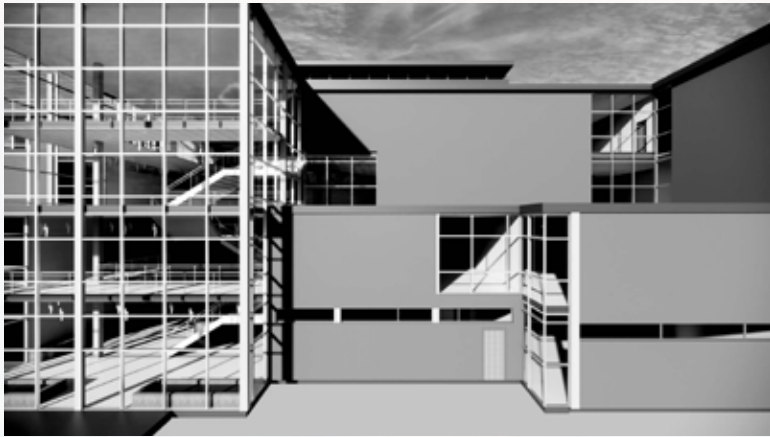


RENDERS OF STAIRCASE AT THE MIDTERM REVIEW



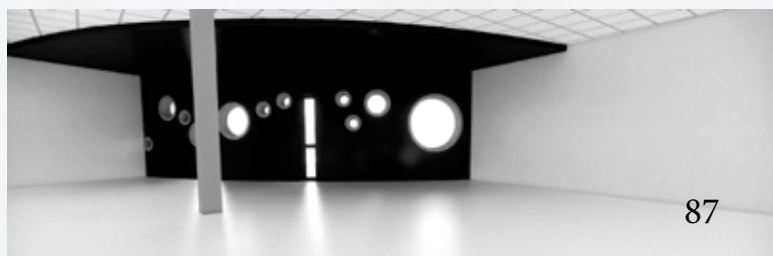
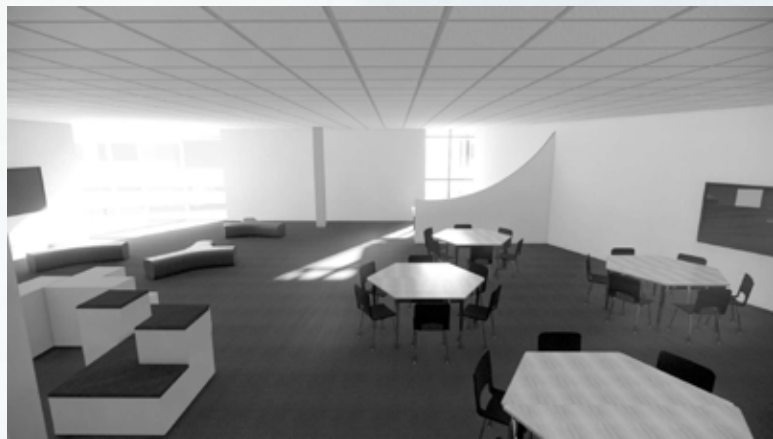
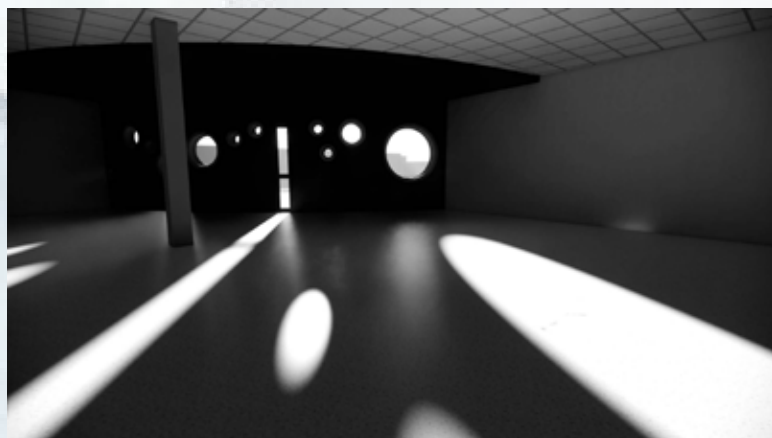
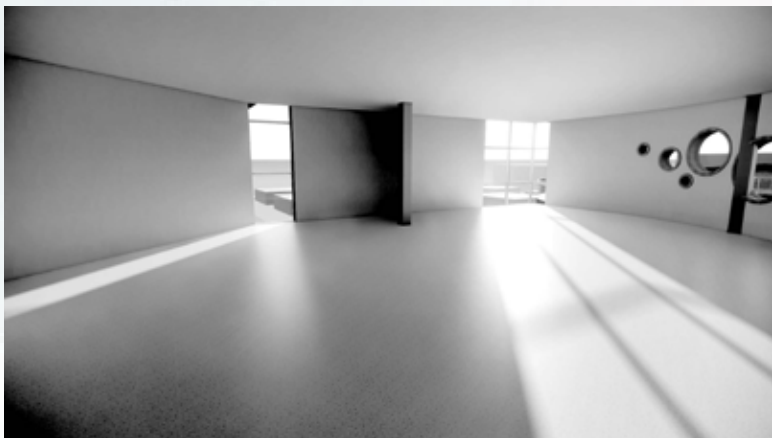
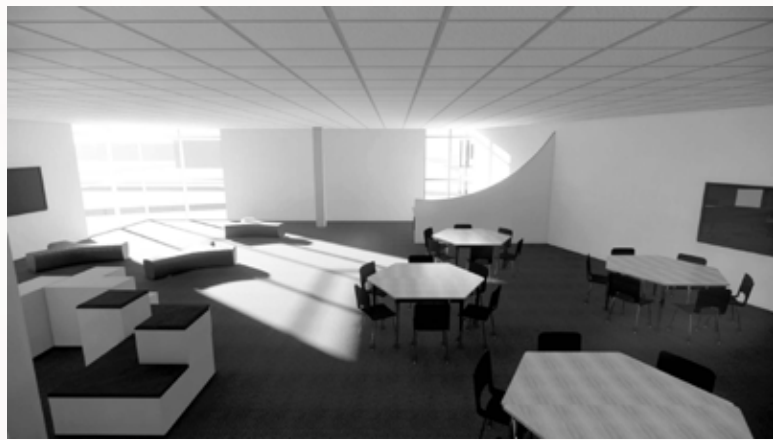
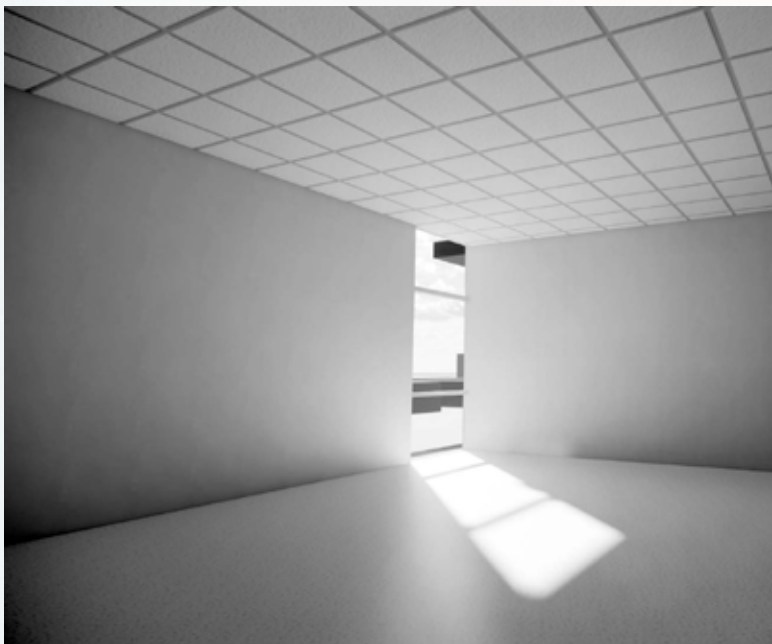
THE EASTERN STAIRCASE IS A KEY DESIGN FEATURE WITHIN MY BUILDING. WITHIN THIS SPACE MASSES OF NATURAL LIGHT ARE BROUGHT IN, A VIEW OF THE STRUCTURE AND MATERIALS ARE HIGHLIGHTED, AND LOTS OF GREENERY ALL COME TOGETHER WITHIN THIS SPACE. WITH THE AMOUNT OF TRAFFIC THAT WOULD FLOW THROUGH HERE IN BETWEEN CLASSES AND BEFORE AND AFTER SCHOOL, IT WAS A FOCAL POINT WITHIN THE DESIGN PROCESS AND HELPED TO INSPIRE THE OTHER COMPONENTS OF THE BUILDING SUCH AS OTHER STAIRCASES AND HALLWAYS.

SUN STUDIES WERE USED THROUGHOUT THE PROCESS WHEN PLACING WINDOWS AND REARRANGING THE FORM. BRINGING THE MODEL INTO ENSCAPE THROUGHOUT THE PROCESS AND USING THE SUN TOOL TO SEE HOW THE BUILDING WOULD INTERACT WITH THE NATURAL LIGHT. WITH MY BACKGROUND IN PHOTOGRAPHY I ENJOY DOING SUN STUDIES TO SEE HOW SPACES COME ALIVE WITH DIFFERENT LIGHTING. KNOWING FROM A PHOTOGRAPHER'S VIEWPOINT OF WATCHING ARCHITECTURE AND LIFE INTERACT WITH LIGHT WAS CRUCIAL FOR ME WHEN DESIGNING A SPACE THAT OTHERS WOULD THRIVE IN.



BLACK AND WHITE PERSPECTIVES OF SUN STUDIES SHOW THE VARIOUS LIGHT CONDITIONS WITHIN THE BUILDING THROUGHOUT THE DAY.





## AIR



FREE FLOWING AIR IS DISTRIBUTED THROUGHOUT THE BUILDING AND MAINTAINS A FRESH AND HEALTHY AIR EXCHANGE. ALLOWING OCCUPANTS TO RECIEVE FRESH, OUTDOOR AIR IS ENCOURAGED. INDOOR PLANTS AND THOSE ON SITE ALSO HELP TO MAINTAIN A LEVEL OF FRESHNESS.

# RESPONSE TO GOALS

## WATER



FRESH WATER IS READILY AVAILABLE TO STUDENTS AND STAFF WITHIN THE BUILDING. IN SITE WATER FEATURES ARE ADDED FOR VISUAL PLEASURE AND AS A SOURCE OF AUDITORY COMFORT. THIS RELAXATION CREATES A CALM CONNECTION TO NATURE.



## LIGHT

LARGE WINDOWS ARE PLACES THROUGHOUT THE BUILDING TO INCORPORATE AS MUCH NATURAL SUNLIGHT AS POSSIBLE. WINDOWS LINE THE HALLS TO CARRY THE SUNLIGHT THROUGHOUT THE SCHOOL AND OPENING THE FLOOR PLATES AND CREATING AN OPEN ATMOSPHERE.

## NOURISHMENT



EDUCATION FOR THE BODY CONTINUES AS A VITAL TOOL IN KEEPING INDIVIDUALS THROUGHOUT THEIR LIFESPAN HEALTHY. ON SITE ARE GARDENS FOR THE COMMUNITY AND SCHOOL TO GROW PRODUCE AND LEARN MORE ABOUT HORTICULTURE. ANDERSEN MIDDLE SCHOOL IS SET TO HAVE A FACs AND HEALTH CLASSROOM ADDED TO THE PROGRAM.



## MOVEMENT

WITHIN THE SCHOOL BUILDING, SUBJECTS AND ACTIVITIES ARE CLUSTERES WITHIN CLOSE PROXIMITY TO ONE ANOTHER TO ALLOW FOR INTERATION AND CONNECTION WITHIN THE DISCIPLINES. CLOSE CONNECTIONS TO INNER DISCIPLINES SHORTENS DISTANCES BETWEEN CLASSES. IN CONTRAST, THE SITE HAS PATHWAYS THAT WIND THROUGHOUT TO ENCOURAGE MOVEMENT AND ACTIVITY.



WELL V2 STANDARD WAS USED AS A GUIDELINE AS PER MY ORIGINAL GOALS WERE STATED. THE SYSTEM HAS ALIGNED TEN DESIGN CONCEPTS IN WHICH CREATED SPACES IN WHICH OCCUPANTS HAVE NOTED BEING A POSITIVE RESPONSE WITHIN THEIR LIVING AND WORKING ENVIRONMENTS. BY USING THE WELL V2 STANDARD AS A GOAL I WAS ABLE TO LOOK AT EXAMPLES WHEN DESIGNING AND WORK TOWARD MEETING THAT STANDARD.

## THERMAL COMFORT



MINNESOTA HARBORS EXTREME WEATHER CONDITIONS THROUGHOUT THE YEAR, ADDING TREES THAT ACT AS WIND BREAKS TO THE SITE. THE WAY THE BUILDING WRAPS TO THE NORTH WORKS AS A METHOD TO LET THE AIR PASS THROUGH. MAINTAINING CONSISTENT TEMPERATURES THAT ARE CONDUCIVE TO LEARNING ALSO WORK TO MEET THIS STANDARD.

## SOUND



FOR OPTIMAL SOUND BARRIERS, CLASSES SUCH AS PHYSICAL HEALTH, MUSIC, AND SHOP CLASSES ARE LOCATED FURTHER FROM CLASSROOMS THAT REQUIRE A MORE QUIET AND FOCUSED ATMOSPHERE. THE SOUTHEAST CORNER AND UPPER LEVELS HOUSE THE CLASSES THAT ARE TRADITIONALLY MORE LECTURE AND STUDY FOCUSED. MATERIALS SUCH AS WOOD AND HDPE LOCKERS AID IN CURATING OPTIMAL SOUND LEVELS.



## MATERIALS

WOOD IS USED AS THE PRIMARY STRUCTURAL ELEMENT FOR ITS NATURAL WARMTH AND CALMNESS AS WELL AS THE CEILINGS TO ADD ACOUSTICAL AID. HDPE LOCKERS WERE PLACED INSTEAD OF TRADITIONAL METAL LOCKERS TO DECREASE NOISE LEVELS IN THE HALLS AND IT IS A STRONG AND DURABLE MATERIAL. TERRAZZO FLOORING IS DURABLE FOR HIGH TRAFFIC AREAS, EASILY MAINTAINED, AND HAS UNIQUE AND COLORFUL DESIGN OPTIONS.



## MIND

FOCUSING ON HEALTHY AND INNOVATIVE LEARNING SETTINGS BRINGS WELLNESS TO THE OCCUPANTS OF ANDERSEN MIDDLE SCHOOL. OPEN PLAN CLASSROOMS THAT ADJUST TO MEET THE NEEDS OF THE STUDENT, ACTIVITY TYPE, AND TEACHING STYLES. THIS ENVIRONMENT FOSTERS LEARNING AND HEALTHY MINDSET TOWARDS SCHOOL AND LEARNING.

## MOVEMENT



## COMMUNITY

CONNECTION TO THE HOSPITAL STUDENTS AND STAFF AND THE RESIDENTIAL COMMUNITY IS FOSTERS THROUGH THE SHARED SITE TO THE NORTH. AMENITIES SUCH AS GARDENS, A PARK, PATHWAYS, AND ATHLETIC FIELDS ARE AVAILABLE FOR ALL TO USE.

# COMMUNITY

AN ORIGINAL GOAL OF THE PROJECT WHEN REDESIGNING ANDERSEN MIDDLE SCHOOL WAS TO REBUILD AND PROMOTE COMMUNITY ENGAGEMENT. BY LOOKING AT COMMUNITY NEEDS, WHAT EXCITES THE GROUP, AND THE ENVIRONMENT I WAS ABLE TO INTENTIONALLY DESIGN SPACES IN WHICH GROUPS AND INDIVIDUALS WANTED TO BE IN.

## SITE AMENITIES

PARK

BASEBALL FIELD

SOFTBALL FIELD

GARDENS

PATHS

## INVOLVEMENT WITHIN BUILDING

GYM AND AUDITORIUM OPEN TO EVENTS

## CURVE APPEAL THAT INVITES PEOPLE TO STAY AND LINGER

A BUILDING BLOCK OF CONNECTION IS INVITATION AND THE FEELING OF BELONGING. BY INCORPORATING FEATURES THAT SERVE THE NEIGHBORING SITES THE AREA IS MORE LIKELY TO INTERACT IN A NATURAL WAY. ADDING GARDENS WITH WATER FEATURES, SEATING, AND SHADING ALLOWS FOR PEOPLE TO COME TAKE BREAKS OR ENJOY A WALK.



# SAFETY

USING IMPROVEMENT OF SAFETY LED THE EXTERIOR DESIGN. WHEN VISITING THE SITE IN PERSON, FEELINGS OF A COLD AND UNWELCOMING ENVIRONMENT WERE PRESENT WHICH MADE THE NEED TO REDESIGN PREVALENT. OCCUPANT AND VISITORS NEED MORE EFFECTIVE AND FRIENDLY TOOLS OF SAFETY WHICH WAS MY GOAL TO IMPROVE.

## TRAFFIC

SEPARATING PEDESTRIAN TRAFFIC

SEPARATING PARENT AND BUS DROP OFF

SETTING BACK THE BUILDING FROM THE ROAD

BARRIERS OF TREES AND SHRUBS RATHER THAN GATES AND FENCES

CREATING OUTDOOR SPACE THAT DOESN'T HAVE ACCESS TO THE PUBLIC

BY CREATING NATURAL BARRIERS THE LEVEL OF SAFETY INCREASES AS WELL AS THE AESTHETIC FROM HOW THEY WERE IMPLEMENTED. SAFETY AND A WELCOMING FEEL TIED TOGETHER CREATES A NATURAL SENSE OF SECURITY WHERE PEOPLE ARE ABLE TO ENJOY AND FEEL COMFORTABLE IN THEIR ENVIRONMENTS.







# PROJECT SOLUTION





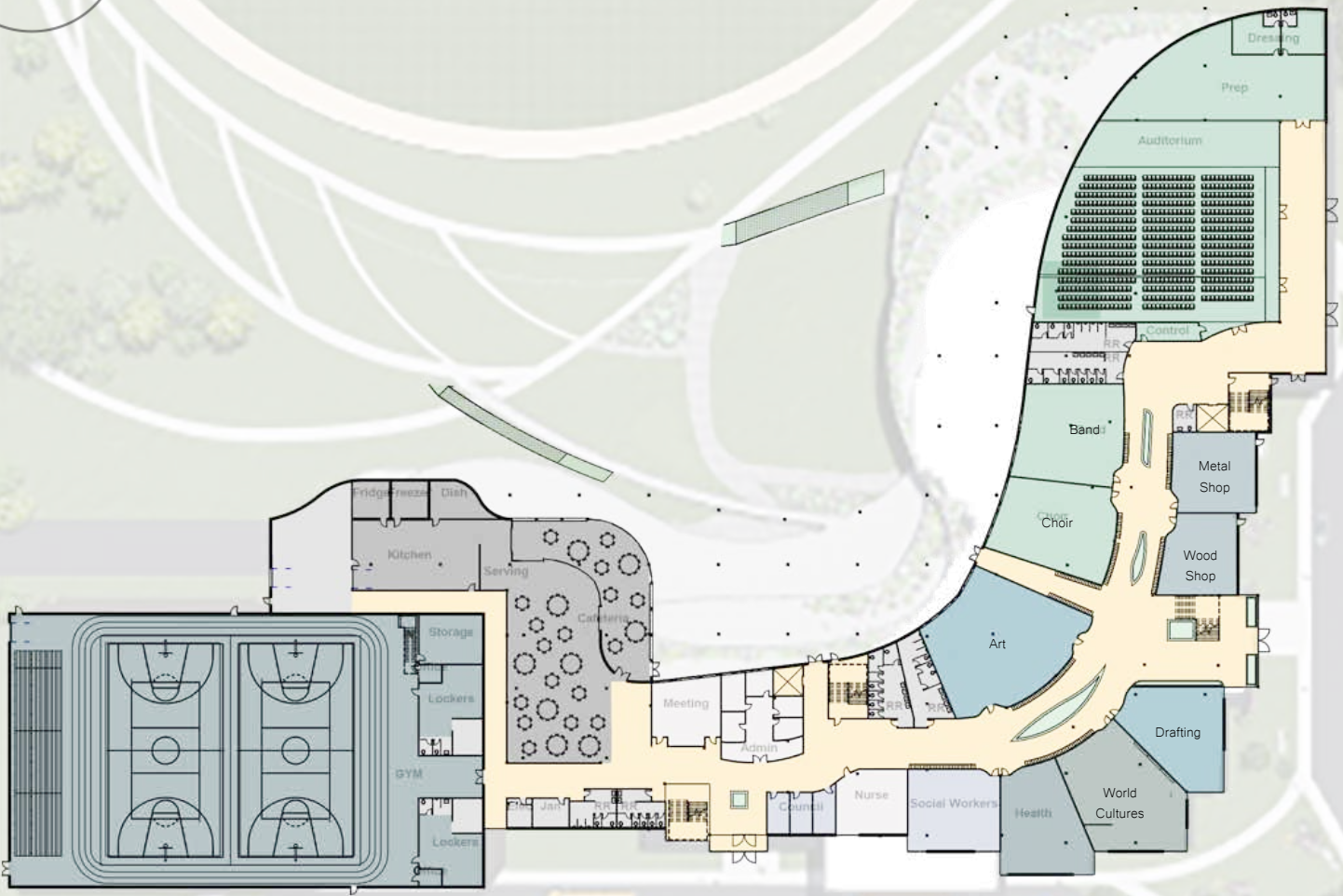


NOURISHMENT - EDUCATION FOR THE BODY CONTINUES AS A VITAL TOOL IN KEEPING INDIVIDUALS THROUGHOUT THEIR LIFESPAN HEALTHY. ON SITE ARE GARDENS FOR THE COMMUNITY AND SCHOOL TO GROW PRODUCE AND LEARN MORE ABOUT HORTICULTURE. ANDERSEN MIDDLE SCHOOL IS SET TO HAVE A FACS AND HEALTH CLASS ADDED TO THE CURRICULUM.

MOVEMENT - WITHIN THE SCHOOL BUILDING, SUBJECTS AND ACTIVITY TYPES ARE CLUSTERED WITHING CLOSE PROXIMITY TO ONE ANOTHER TO ALLOW FOR INNER CONNECTION. CLOSE CONNECTIONS TO INNER DISCIPLES ALSO SHORTENS DISTANCE WHEN MOVING CLASSES THROUGHOUT THE SCHOOL DAY. IN CONTRAST, THE SITE HAS PATHWAYS THAT WIND THROUGHOUT TO ENCOURAGE ACTIVITY AND MOVEMENT.



# FLOOR PLANS



FLOOR 1

SEPARATING CLASSROOM TYPES WAS A STRONG PART OF THE PROGRAMMING AND LAYOUT OF THE BUILDING. I WANTED TO ENSURE NOISE CONTROL FOR THE AREAS OF THE BUILDING THAT REQUIRE MORE CONCENTRATION. THE GYMNASIUM AND CAFETERIA ARE ON THE WEST SIDE OF THE BUILDING, FOLLOWING ADMINISTRATION, SOME GENERAL CLASSROOMS, FOLLOWED TO THE NORTH BY THE SHOPS, AND FURTHEST NORTH ARE THE MUSIC ROOMS.





## FLOOR 2

ANDERSEN MIDDLE SCHOOL HAS A LARGE MINORITY POPULATION AND A STRONG LANGUAGE DEVELOPMENT. THE IMPORTANCE OF DIVERSITY IN THE SCHOOL MAKES THEIR DEVELOPED LANGUAGE PROGRAM A PART OF PRIDE FOR THE SCHOOL. PLACING CLASSES THAT ARE SIMILAR TO ONE ANOTHER HELPS ENCOURAGE INNER COMMUNICATION THROUGHOUT THE PROGRAM AND HELPS PROMOTE INNER CONNECTION AND INTERACTION.



FLOOR 3

STEM CLASSES, SUCH AS MATH AND SCIENCE ARE PLACED ON THE THIRD FLOOR FOR THE GROUPING OF GENERAL EDUCATION CLASSES THAT ARE REQUIRED FOR ALL STUDENTS. HORTICULTURE HAS BEEN ADDED AND IS DIRECTLY CONNECTED TO THE OUTDOOR WALKWAYS WHICH HAVE PLANTS GROWING OUTDOORS AND GREENHOUSES FOR THE CHILDREN TO GET HANDS ON EXPERIENCE.





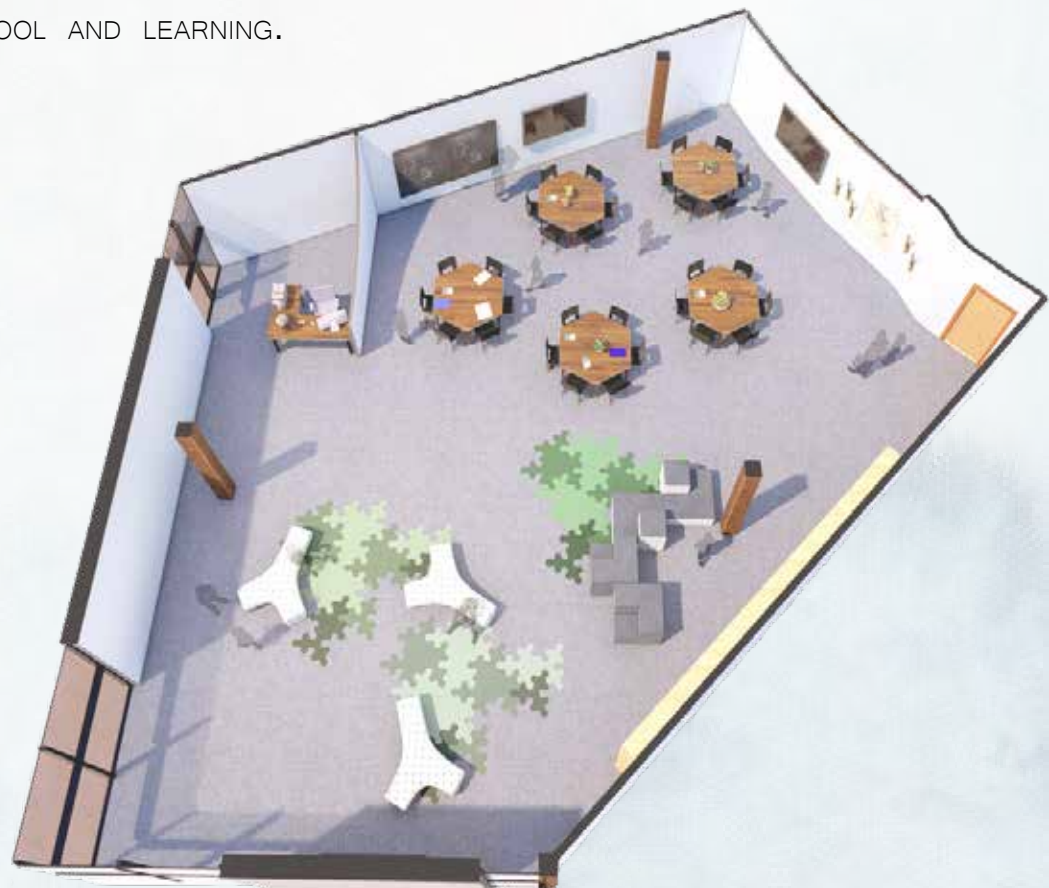
FLOOR 4

ADDING CLASSES TO OPEN UP THE LEARNING OPPORTUNITIES WAS AN EXCITING PART OF BEING ABLE TO BRING MORE OPPORTUNITIES ENGINEERING, ROBOTICS, FACS, BUSINESS, AND SPECIAL EDUCATION CLASSES ARE ADDED ON THE FOURTH FLOOR TO ADD DIVERSITY.



CLASSROOM

MIND - FOCUSING ON HEALTHY AND INNOVATIVE LEARNING SETTINGS BRINGS WELLNESS TO THE OCCUPANTS OF ANDERSEN MIDDLE SCHOOL. OPEN PLAN CLASSROOMS THAT ARE ADJUSTABLE TO FIT THE STUDENT, ACTIVITY TYPE, AND TEACHING STYLE'S NEEDS FOSTER LEARNING AND A HEALTHY MINDSET TOWARDS SCHOOL AND LEARNING.



CLASSROOM SECTION

THROUGHOUT THE SCHOOL ARE COUNSELING AND BREAK ROOMS TO ALLOW FOR MENTAL HEALTH AID THROUGH PROGRAMING. TO ACCOMMODATE RATIONAL EMOTIVE BEHAVIOR THERAPY AND MULTI TIER LEVELS OF SUPPORT THESE SPACES MADE ADDITIONAL LEARNING AND PERSONAL NEEDS AVAILABLE TO THE BUILDING'S OCCUPANTS. WITH THE ABUNDANCE OF SOUNDS AND DISTRACTIONS THAT GO ON AROUND A SCHOOL, HAVING A RELIEF ALLOWS FOR INDIVIDUALS TO HAVE A SLIGHT RESET

COLORS SUCH AS BLUE AND GREEN ARE SHOWN TO IMPROVE FOCUS AND CREATE CALMING ENVIRONMENTS WHICH ARE PERFECT FOR LEARNING SPACES.



COUNSELING BREAK ROOM







# COMMUNITY



COMMUNITY PARK

CONNECTION TO THE HOSPITAL STUDENTS, STAFF, AND THE RESIDENTIAL COMMUNITY IS FOSTERED THROUGH THE SHARED SITE TO THE NORTH. AMENITIES SUCH AS GARDENS, A PARK, PATHWAYS, A BASEBALL, AND SOFTBALL FIELD ARE AVAILABLE FOR ALL TO USE.



COMMUNITY FIELDS



COMMUNITY GARDEN



## SITE PLAN FOR TRAFFIC

PARENT DROP  
OFF ROUT

SEPARATE SPACES FOR GUARDIANS AND BUSES FOR ADDED SAFETY.  
SET BACK FROM THE STREET AND LINED WITH TREES RATHER THAN  
SEPARATING IT WITH GATES.





SOUTH ENTRANCE



EAST ENTRANCE



EAST STAIRWELL

INTERIOR PERSPECTIVE RENDERS SHOW THE OPEN AND LIGHT FEEL OF THE HALLS AND STAIRS. THESE IMAGES SHOW MATERIALS, COLOR CHOICES, LIGHT INTERACTION, BIOPHILIC DESIGN, AND SCHOOL PRIDE. BY SETTING THE FIRST GLANCES OF THE SCHOOL TO THIS STANDARD IT WILL REFLECT THE REST OF THE INTERIOR AND THE PERSPECTIVE OF THOSE VISITING.



THIRD FLOOR HALLWAY





EAST STAIRWELL



SECOND FLOOR HALLWAY

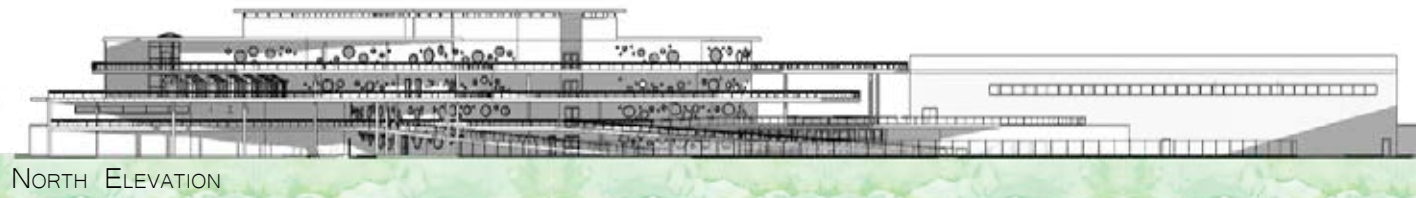


A LEADING COMPONENT OF MY DESIGN INCLUDED BRINGING LIGHT AND PLANT LIKE THROUGHOUT THE BUILDING. BY ADDING LARGE PLANTERS THROUGHOUT THE HALLS THIS GREENERY REACHES ALL AND IS NOURISHED BY THE SUNLIGHT THAT REACHES IN. THE SPACE IS OPENED UP FURTHER FROM THE HOLES THAT CUT THROUGH THE FLOOR PLATES.









NORTH ELEVATION

NORTH AND WEST ELEVATIONS SHOW THE BACK OF THE BUILDING THAT IS MORE PRIVATE AND THAT RELATES TO CHILDREN. THE EXTERIOR PLATFORMS ARE ALSO DISPLAY WITHIN THESE EL



SOUTH ELEVATION

SOUTH AND EAST ELEVATIONS SHOW THE MORE GEOMETRICAL FACADES OF THE BUILDING. THESE LARGE GLASS CUTOUTS BRING IN THE SOUTHERN LIGHT EXPOSURE WHICH VARY FROM THE C



SECTION 1

SECTIONS 1 AND TWO SHOW FURTHER HOW THESE VARIOUS ELEVATIONS AND THE FLOOR PLANNING, THE SIZE OF THE GYM IN COMPARISON TO OTHER PARTS OF THE BUILDING, AND THE MEASUREMENTS, DEPTHS AND THEIR RELATIONSHIP TO THE INTERIOR EXITS. BOTH ELEVATIONS GIVE A FURTHER





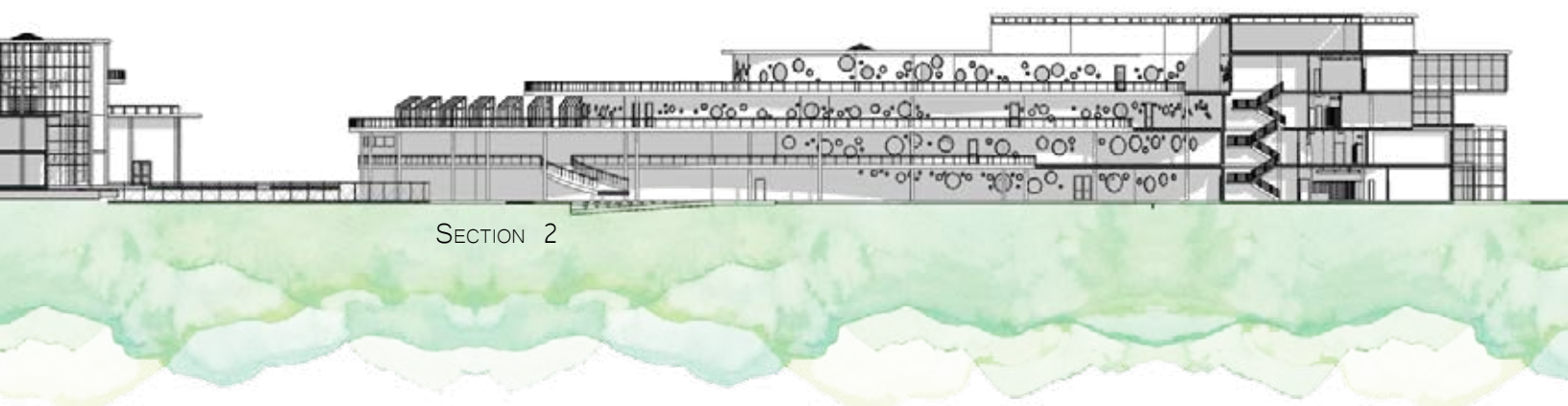
WEST ELEVATION

AND ORGANIC. THE CIRCLE WINDOWS WITH VARIOUS HEIGHTS SHW CLEARLY THE FUN AESPECT  
 ELEVATIONS AND HOW THE BUILDIND IS SET BACK IN AS IT GOES UP.



EAST ELEVATION

SE RELATE TO THE HOSTPITAL CAMPUS TO THE WEST, AND HAVE A MORE BUISNESS FEEL.  
 IRCLE WINDOWS THAT RECIEVE MORE DIFFUSED LIGHT.



SECTION 2

ANS EFFECT THE INTERIOR OF THE BUILDING. SECTION ONE SHOWS THE UNDERGROUND PARK-  
 MECHANICAL ROOM ON THE FIFTH FLOOR. SECTION 2 HIGHLIGHTS THE WALKWAYS MORE IN  
 LOOK INTO THE MOVEMENT THROUGHOUT THE BUILDING.

# PERFORMANCE ANALYSIS

## RESPONSE TO SITE

PICKING ANDERSEN MIDDLE SCHOOL SET UP ITS OWN UNIQUE PARAMETERS TO FOLLOW AND RESEARCH. THE SITE WAS A SMALL PLOT OF LAND WITHIN AN URBAN SETTING AND A SHARED SITE WITH THE PUBLIC TO THE NORTH. THE STREETS, AND NEIGHBORING BUILDINGS ALL INTERACT WITH THE SITE AND INFLUENCED THE DESIGN PROCESS.

## RESPONSE TO CONTEXT

SCHOOLS ARE SET TO EDUCATE YOUNG INDIVIDUALS BUT THE LOCATION AND SCHOOL TYPE BOTH PLAY AN IMPORTANT ROLE OF HOW THEY FUNCTION. NEW PROGRAMS WITHIN MENTAL HEALTH AID AND PROTECTION FOR SCHOOLS WOULD COME THROUGH IN PROGRAMING AND INFLUENCE THE WAY INDIVIDUALS INTERACT WITH THE BUILDING AND WITH ONE ANOTHER ON SITE.

## RESPONSE TO TYPOLOGICAL RESEARCH

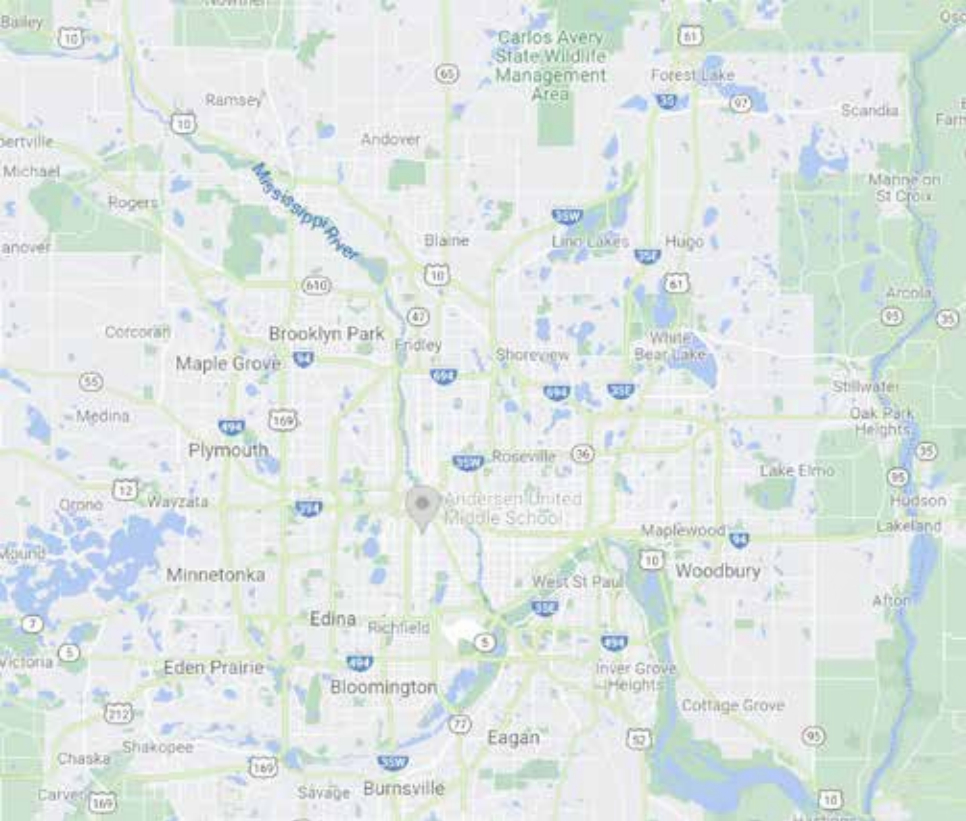
TYPOLOGICAL RESEARCH OF SCHOOLS WAS DONE ON A VARIETY OF IMPORTANT FEATURES THAT WERE INFLUENTIAL TO THE DESIGN. WITH SCHOOLS IN FRANCE BRINGING SAFETY AND NATURE TO THE CHILDREN, THE INFLUENCE TO CREATE A MULTIDIMENSIONAL SPACE WHERE INDIVIDUALS WERE EXCITED TO LEARN WAS HIGHLY INSIGHTFUL. OTHER SCHOOLS ARE BRINGING DESIGN TECHNIQUES FOR STUDENTS TO LEARN AND THAT BENEFIT THEIR SITE AND THE ENVIRONMENT.

## RESPONSE TO GOALS

KEEPING MY GOALS IN MIND WAS A CONSTANT INTERWORKING OF HOW TO MAKE THOSE HAPPEN. MY TOP GOALS WERE IMPROVING MENTAL HEALTH FOR STUDENTS AND STAFF, THE WELL V2 STANDARD, COMMUNITY ENGAGEMENT, AND SAFETY. THE FOUR GOALS WORKED WITH ONE ANOTHER TO PROMOTE A HOLISTIC APPROACH TO WELLNESS.

# RESPONSE TO SITE





## SITE MAP



## SITE STUDY

DOWNTOWN MINNEAPOLIS MAINTAINS A BUSY ENVIRONMENT WITH GROWTH, CULTURE, AND DIVERSITY. WHILE DIVERSITY IN INDIVIDUALS IS CELEBRATED, A DIFFERENCE IN LEARNING OPPORTUNITIES IS NOT. ALL CHILDREN SHOULD BE ALLOWED THE OPPORTUNITY TO HAVE SAFE AND HEALTHY LEARNING ENVIRONMENTS THAT SET THEM UP FOR A MORE POSITIVE FUTURE.

BY DESIGNING IN MINNEAPOLIS I WAS ABLE TO USE MY PERSONAL KNOWLEDGE OF THE AREA WITH RESEARCH TO VISIT AND ANALYZE THE SITE TO IMPROVE THE SCHOOL AND COMMUNITY. HAVING PUBLIC GREEN SPACE THROUGHOUT THE METRO AREA IS IMPORTANT AND MAKING IT SEEM USER FRIENDLY ALSO NEEDS TO COME INTO PLAY WHEN DESIGNING.





CURRENT SOUTH ENTRANCE



UPDATED SOUTHEAST CORNER



CURRENT SOUTHWEST CORNER



UPDATED SOUTHEAST CORNER BIRDSEYE VIEW



CURRENT SOUTHEAST CORNER



UPDATED SOUTH ENTRANCE

THE RESPONSE TO THE HARSH FACADE AND ENTRANCE WAS TO INCORPORATE MORE GREEN SPACE, CHANGE MATERIAL PALETTE, AND SET BACK THE SPACE FROM THE TRAFFIC. THE SOUTHEAST SIDE OF THE NEW BUILDING FOLLOWS THE AESTHETIC OF THE CAMPUS TO THE WEST AND PRESENTS A STRONGER VISUAL CONNECTION THAN THE PREVIOUS BUILDING. REVITALIZING THE SCHOOL HELPS TO SHOW THE DEVELOPING NEIGHBORHOOD IN A BETTER LIGHT.

THROUGH NATURAL BARRIERS THOSE DRIVING BY ARE MORE LIKLY TO SLOW DOWN AND WATCH OUT THROUGH A NATURAL SENSE OF OBSERVATION. CREATING A SITE THAT VISITORS WANT TO TRAVEL TO BEYOND THE SCHOOL DAY CREATES A BUIS ATMOSPHERE THAT CREATES A SOCIAL NETWORK OF INDIVIDUALS KEEPING A LOOK OUT AND OBSERVING THE SITE.





CURRENT BASKETBALL COURT



CURRENT BACK OF BUILDING AND SOFTBALL FIELD



UPDATED SOFTBALL FIELD



UPDATED PARK



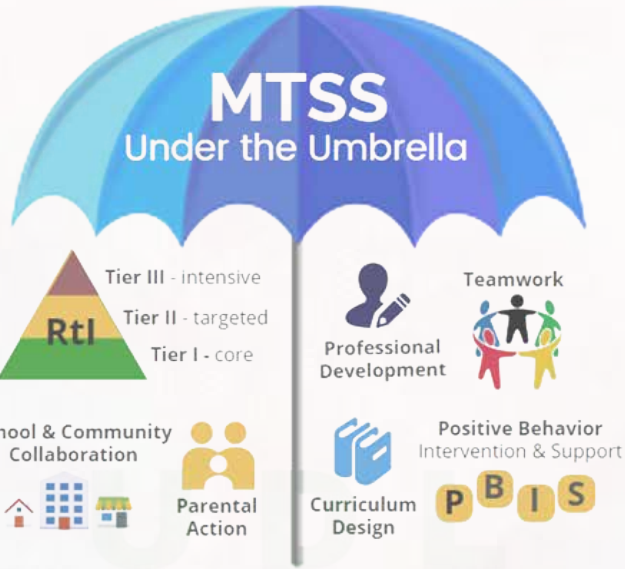
UPDATED NORTHWEST SITE CORNER

MAINTAINING COMMUNITY AMENITIES THAT ARE IMPORTANT TO THE SITE DEVELOPMENT. THE BASEBALL AND SOFTBALL FIELDS WERE KEPT BUT REORGANIZED, THE PLAYGROUND UPDATED, AND GARDENS AND SEATING ADDED. ENCOMPASSING AS MUCH LIFE INTO THE PUBLIC SPACE AS POSSIBLE INVITES HUMAN LIFE TO STAY AND LINGER.

SEATING AND COVERED AREAS THAT INVITE PEOPLE TO STAY LONGER CREATES A GROUP OF REGULAR VISITORS WHO WILL VISIT THE SITE. WITH THESE GARDENS AND TABLES AND SEATING TO THE NORTHWEST THOSE FROM THE HOSPITAL CAMPUS CAN ENJOY THE OUTDOORS ON THEIR BREAKS OR TIME OFF.

THE IMPORTANCE OF UPDATING FACILITIES ON SITE IS IMPORTANT FOR SAFETY AND LIVELINESS HOWEVER IT IS UNFORTUNATE HOW LONG MANY GO WITHOUT BEING REPLACED DUE TO A LACK OF FUNDING. A NEW PLAYGROUND WITH THE SCHOOL COLORS PROMOTES COMMUNITY AND SCHOOL PRIDE ALONG WITH FUN AND EXERCISE.

# RESPONSE TO TYPOLOGICAL RESEARCH



MULTI-TIERED SYSTEM OF SUPPORTS DIAGRAM

WHEN LOOKING TO BRING WELLNESS INTO EDUCATIONAL FACILITIES, IT IS IMPORTANT TO BE ABLE TO RECOGNIZE THOSE WHO NEED ADDITIONAL HELP IN THEIR LEARNING EXPERIENCE. INCORPORATING MULTI TIERED SYSTEMS OF SUPPORT (MTSS) INTO ANDERSEN MIDDLE SCHOOL CAME INTO EFFECT VISUALLY WITHIN THE SCHOOL THROUGH THE PROGRAMING. INCORPORATING COUNSELING AND BREAK ROOMS THROUGHOUT THE SCHOOL MAKES ADDITIONAL LEARNING READILY AVAILABLE AND ALLOWS FOR TRAINED STAFFING TO HAVE A PHYSICAL SPACE NEAR THE REST OF THE BASE LEVEL OF LEARNING TO ENSURE STUDENTS ARE RECEIVING ADEQUATE HELP. THE CLASSROOMS SERVE ALL LEVELS BUT START WITH TIER ONE, WHO NEED MINIMAL ADDITIONAL HELP OUTSIDE OF THE STANDARD CLASSROOM SETTING. THE LARGER COUNSELING ROOMS HELP TO SERVE TIER TWO WHO RECEIVE ADDITIONAL HELP, BUT WITHIN GROUP SETTINGS. FINALLY, TIER THREE, GENERALLY NEEDS ONE-ON-ONE ATTENTION AND SMALL BREAK ROOMS ARE THERE TO SERVE THEM AS WELL AS THE STAFF. WELLNESS AND EDUCATION ARE READILY AVAILABLE TO THOSE WITH VARIOUS NEEDS THROUGHOUT THE WHOLE SCHOOL.



STUDY CUBBIES



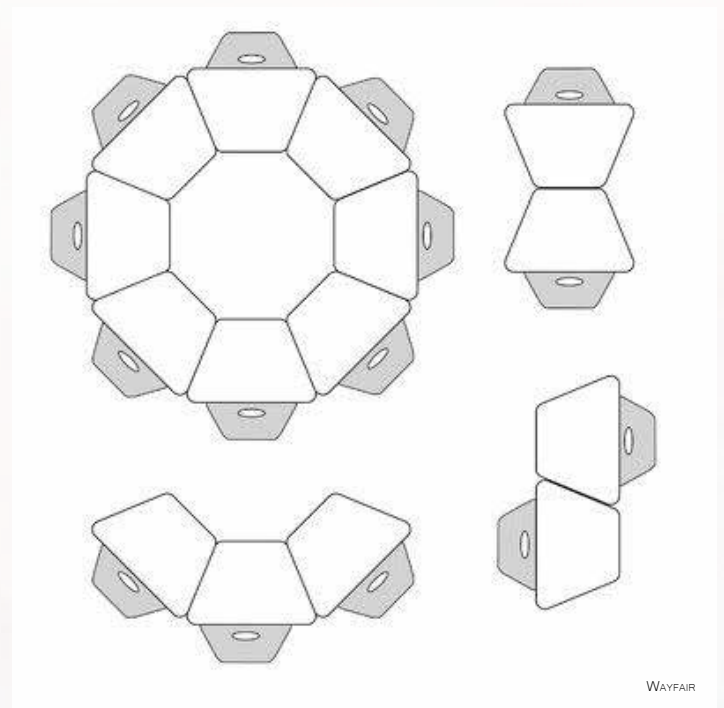
STUDY WINDOW



IVC COMMERCIAL



OPEN PLAN CLASSROOMS WERE SHOWN TO BE A POSITIVE WAY OF BRINGING CREATIVE LEARNING INTO THE CLASSROOM. WHEN TEACHERS TOOK THE FLEXIBILITY AND MADE IT THEIR OWN, THESE SPACES WERE ABLE TO BE UTILIZED TO THE FULLEST. FURNITURE THAT WORKS IN A VARIETY OF ARRANGEMENTS WILL MAKE UNIQUE LEARNING SITUATIONS POSSIBLE. REARRANGEABLE DESKS ALLOW FOR LECTURE STYLE LEARNING AND GROUP WORK. COMFORTABLE SEATING WORKS WELL FOR STUDYING AND CREATIVE IDEAS. ADJUSTING CLASSROOM SIZED TO ABOUT ONE TEACHER TO TWENTY STUDENTS ALLOWS FOR INDIVIDUALS TO RECEIVE INDIVIDUAL ATTENTION AND ENSURE ALL STUDENTS ARE STAYING ON TRACK AND ABSORBING THE NECESSARY INFORMATION.



REARRANGABLE DESK EXAMPLES



UPDATED CLASSROOM SECTION



OPEN CLASSROOM EXAMPLES

# CRITIQUE OF APPLIED RESEARCH

WHEN LOOKING AT MY GOALS AND RESEACH THERE ARE SPECIFIC FACTORS THAT WERE MORE HELPFUL THAN OTHERS. STRONG PERSONAL GOALS SUCH AS BRINGING IN LIGHT AND PLANTLIFE CERTAINLY GUIDED MY DESIGN AND RESEARCH. RESEARCH THAT PLAYED THE BIGGEST ROLE IN MY DESIGN CAME FOWARD THROUGH CLASSROOM SIZE, TYPE, HALLWAY LAYOUT, AND WINDOWS.

MENTAL HEALTH AND WELLNESS WERE A STARTING POINT AFTER HEARING AND LEARNING ABOUT THE TROUBLE CHILDREN FACE AND THE PROBLEMS THAT ARISE WITHIN SCHOOLS. PROGRAMS THAT WERE NEW TO ME INCLUDED MULTI-TIERED SYSTEM OF SUPPORTS AND RATIONAL EMOTIVE BEHAVIOR THERAPY. A WAY OF IMPLAMENTING THESE PROGRAMS THROUGH ARCHITECTURE WAS THROUGH THE ALLOTED SPACES AND HELP AVAILABLE.

OPEN CLASSROOM PLANNING WAS ANOTHER STRATEGY FROM RESEARCH THAT WAS A NEW CONCEPT TO ME. TRADITIONAL LECTURE CLASSROOMS DO NOT FIT ALL THE NEEDS OF THE OCCUPANTS OR THE MATERIAL BEING LEARNED. BY INCLUDING THE TWO THE SCHOOL HAS A BETTER WAY OF INCORPORATING NEW LEARNING AND TEACHING METHODS TO REACH ALL STUDENTS NEEDS.

GOING ALONG WITH CATERING TO THE STUDENTS' NEEDS IS THEIR BIOLOGICAL NEEDS. THROUGH RESEARCH I FOUND OUT MORE UPON THE EFFECTS OF BIOOPHILIC DESIGN. BRINGING LIFE INSIDE IS ABLE TO HELP WITH CONCENTRATION, SELF-ESTEEM, AND ENERGY LEVELS WHICH ALL PLAY AN IMPORTANT ROLE IN STUDENT DEVELOPMENT. NATURAL ENVIORNMENTS BRING ABOUT POSITIVE EFFECTS WHICH LEADS INTO THE WELL V2 STANDARD.

WHILE THIS DESIGN STRATEGY IS A BENIFICIAL TOOL FOR DESIGNERS TO CREATE HEALTHY SPACES FOR THE OCCUPANTS, I THINK THAT I COULD HAVE DOVE DEEPER INTO SOME OF THE STRATEGIES LISTED. MY MAIN FOCUSES WITHIN THE PROJECT WERE LIGHT, MIND, MOVEMENT, AND COMMUNITY, AND WHILE I BELIEVE THAT I ACHIEVED PROFICIENCY WITHIN THESE POINTS, I WISH I WOULD HAVE DOVE DEEPER INTO MORE OF THE COMPONENTS OF THE WELL V2 STANDARD.

ANOTHER GOAL LED THROUGH RESEARCH WAS SAFETY. THROUGH RESEARCH ON SCHOOL DROP OFFS AND FEELING OF SAFETY AND SECURITY, I THINK THE SITE WAS IMPROVED. A STRONG COMPONENT OF SAFETY IS HOW THE OCCUPANTS REFLECT UPON THEIR SPACE AND ENVIORNMENT. BE CREATING MORE NATURAL BARRIERS AND SEPERATING TRAFFIC, THERE CREATED A MORE INHERENT SENSE OD SECURITY AND A HIGHER WATCHFULLNESS FOR THOSE WHO PASS THE SITE.

OVERALL THE RESEARCH I CONDUCTED PRIOR TO AND DURING THE DESIGN PHASE WAS QUITE USEFUL IN UNDERSTANDING WHAT WELLNESS MEANS AND HOW THAT CAN BE BROUGHT INTO EDUCATIONAL FACILITIES. WHILE THE RESEARCH I APPLIED WAS HELPFUL, I WOULD HAVE LIKED TO DO MORE RESEARCH ON SUSTAINABILITY, WHAT NEW TECHNOLOGY IS BEING INCORPORATED INTO SCHOOLS AND HOW SCHOOLS ACROSS THE WORLD ARE TEACHING AND HOW THEY ARE BEING BUILT. WITH MORE INFORMATION COMES MORE OPPORTUNITES WHICH IS THE BRILLIANCE OF EDUCATION.







**COMMUNITY**

CONNECTION TO THE HOSPITAL, STUDENTS, STAFF, AND THE RESIDENTIAL COMMUNITY IS FOSTERED THROUGH THE SHARED SITE TO THE NORTH. AMENITIES SUCH AS GARDENS, A PARK, PATHWAYS, A BASEBALL, AND SOFTBALL FIELD ARE AVAILABLE FOR ALL TO USE.



**AIR**

FREE FLOWING AIR IS DISTRIBUTED THROUGHOUT THE BUILDING AND MAINTAINS A FRESH AND HEALTHY AIR EXCHANGE. ALLOWING OCCUPANTS TO RECEIVE FRESH, OUTDOOR AIR IS ENCOURAGED. INDOOR PLANTS ALSO WORK TO MAINTAIN CLEAN AIR.



**WATER**

FRESH WATER IS AVAILABLE TO STUDENTS AND STAFF IN THE BUILDING. ON SITE WATER FEATURES ARE ADDED FOR VISUAL PLEASURE, AND A SOURCE OF AUDIO COMFORT AND RELAXATION AS WELL AND CREATES A CALM CONNECTION TO NATURE.



**NOURISHMENT**

EDUCATION FOR THE BODY CONTINUES AS A VITAL TOOL IN KEEPING INDIVIDUALS THROUGHOUT THEIR LIFESPAN HEALTHY. ON SITE ARE GARDENS FOR THE COMMUNITY AND SCHOOL TO GROW PRODUCE AND LEARN MORE ABOUT HORTICULTURE. ANDERSEN MIDDLE SCHOOL IS SET TO HAVE A FACS AND HEALTH CLASS ADDED TO THE CURRICULUM.



**MOVEMENT**

WITHIN THE SCHOOL BUILDING, SUBJECTS AND ACTIVITY TYPES ARE CLUSTERED WITH CLOSE PROXIMITY TO ONE ANOTHER TO ALLOW FOR INNER CONNECTION. CLOSE CONNECTIONS TO INNER DISCIPLINES ALSO SHORTENS DISTANCE WHEN MOVING CLASSES THROUGHOUT THE SCHOOL DAY. IN CONTRAST, THE SITE HAS PATHWAYS THAT WIND THROUGHOUT TO ENCOURAGE ACTIVITY AND MOVEMENT.



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ANDERSEN MIDDLE SCHOOL IS LOCATED IN MINNEAPOLIS, MINNESOTA. THE SITE IS IMPACTED BY NOISE, TRAFFIC, AND HIGH DENSITY. THE WINTER WEATHER CREATES FOR HOT SUMMERS AND HARSH, COLD, DRY WINTERS WITH LOTS OF SNOW. DURING THE SCHOOL YEAR, WINTER IS THE MOST PROMINENT SEASON THAT DEALS WITH ISSUES REGARDING SNOW AND WIND. THESE EXTREME TEMPERATURES EFFECT THE BUILDING MATERIALS AND FORM AS WELL AS THE SITE, ENTRANCES, AND TRANSPORTATION. CLEARING ROADS AND SIDEWALKS FOR SAFE. THE DENSE NEIGHBORHOOD IS ADJACENT TO THE PARK, BUSINESS, AND SURROUNDING RESIDENTIAL HOMES. TO THE WEST OF THE SCHOOL IS A CAMPUS OF HEALTH-CARE FACILITIES AND LABORATORIES. THE THREE SURROUNDING SIDES ARE FILLED WITH SINGLE FAMILY, RESIDENTIAL HOMES.



A STRONG SENSE OF SAFETY AND BELONGING IS PART OF WHAT MAKES INDIVIDUALS ENTHUSIASTIC TO LEARN. CONNECTING THE LOCAL ENVIRONMENT TO THE LEARNING ENVIRONMENT GIVES A SENSE OF PURPOSE AND CONTEXT. A STRONG CONNECTION TO THE COMMUNITY AND WITHIN THE SCHOOL ITSELF FOSTERS A BETTER GRASP OF MATERIAL AND WILLINGNESS TO PARTICIPATE.







# Appendix

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# Studio Experience

## 2nd Year

Fall 2018

Cindy Urness  
Meditation Garden  
Boat House

Spring 2019

Milton Yergens  
Dwelling  
Mixed Use

## 3rd Year

Fall 2019

Bakr Ahmed  
Sports Arena  
Resort

Spring 2020

Regin Schwaen  
Dwelling  
ND Capitol Building

## 4th Year

Fall 2020

Amar Hussein  
High Rise

Spring 2021

David Crutchfield  
Marvin Dwelling  
Fargo Mixed Use

## 5th Year

Fall 2021

Bakr Ahmed  
Design by Sketching

Spring 2022

Jennifer Brandel  
Wellness in Education