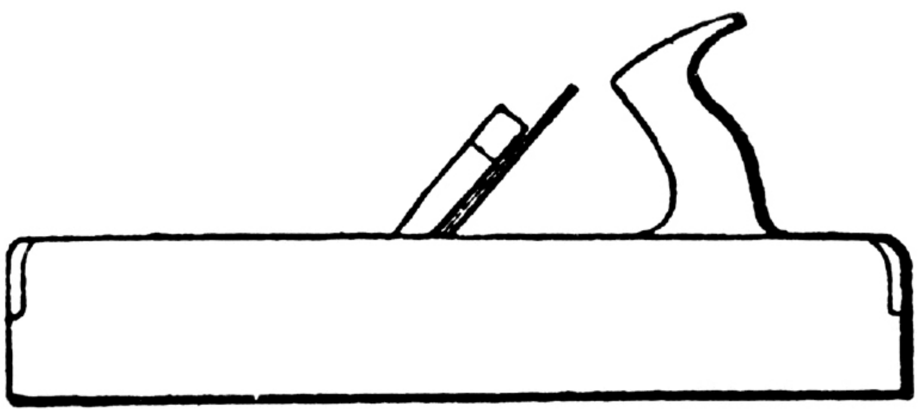
ARCHITECTURE: A TRADITION

The Reintegration of Historical Techniques for
Architectural Adaptation and Preservation



By: Kris Thielen

ARCHITECTURE: A TRADITION

The Reintegration of Historical Techniques for Architectural Reuse and Adaptation

A Design Thesis Submitted to the

Department of Architecture and Landscape Architecture

of North Dakota State University

By

Kris M. Thielen

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Degree of

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Primary Thesis Advisor

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Thesis Committee Chair

May 2013

Fargo, North Dakota

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Kris Thielen 5/08/2013

(Students Signature) (Date)

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Thesis Abstract

Title

Architecture: A Tradition
The reintegration of historical building methods for architectural adaptation and preservation

Key Words

Historical Building Methods, Architectural History and Culture, Building Reuse

Summary

As our built environment continues to grow, new building technologies are continually updated and employed, while historical building methods become outdated and undervalued. Recently there is a resurgence in preserving our architectural history, and building reuse is becoming more common. This requires a larger workforce of craftsmen and women to exercise older historical methods and techniques.

With the design of a technical college in traditional and current architectural building techniques in Minneapolis, Minnesota; we can continue to pass on valuable knowledge once held by mastercraftsmen in order to preserve our architectural past and culture.

Problem Statement

With increased interest in building reuse and preservation, how can historical building methods be employed with current building technologies to preserve architectural knowledge and culture?

Project Typology

Typology

School of Historical and Current Construction Technologies

Action

Teaching and Employing

Claim

Teaching and employing both current and historical construction methods will preserve and maintain our architectural culture and history while enhancing our built environment.

Object

Built environment, architectural culture and history

Actors

Traditional and current construction methods

Theoretical Premise/Justification

Actor Relation

Traditional construction methods are needed as the resurgence in building reuse and preservation continues to grow. Documenting and cataloguing the tools and techniques passed on from generational craftsmen and women is extremely valuable in recording this specialised knowledge in order for it to be ready available to the workforce so it can be employed and implemented.

Action Relation

Reteaching these traditional construction methods allows a new workforce to be employed in building reuse and preservation. Highly skilled craftsmen will have the knowledge to exercise the skills necessary in the field. Combining these old skills with new construction technologies and methods increases the availability of skilled labor.

Object Relation

More opportunities for building reuse and preservation will occur with a larger, knowledgeable workforce. More opportunities for building reuse and preservation will occur with a larger, knowledgeable workforce. Our built environment will be enhance by preserving our culture and architectural heritage.

Conclusion

As our built environment ages, a greater need for master craftsmen and women will be needed to help preserve our history and culture through building reuse and preservation. A growing number of individuals working in the field will allow building reuse and preservation to have a positive impact on the urban landscape, while proving to be cost effective.

Justification

In the last few decades, many structures have been built with a relatively small lifespan (up to 50 years). This overbuilding has created urban sprawl, impacting communities and cities across the nation. Building reuse and preservation allows older structures to have a new life, adapting to current needs in conjunction with "revitalizing communities, preserving local history,

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Narrative

All around us the urban landscape of the city slowly decays, but we can't see it. It is so small, so tiny. It is at a microscopic level that building materials deteriorate. But when this decay continues for a period of time uninterrupted, it is finally large enough for the human eye to see. Sometimes the building owner reacts soon enough where the problem can be fixed, and the facility is saved. Unfortunately this does not always occur, and there is simply too much damage for the building to be "worth" saving. The structure continues to break apart, until it eventually becomes a relic of its former life—abandoned.

It almost seems contrarian to architects to put all this effort and work into planning and overseeing the construction of a building, only to have it slowly deteriorate. We all are aware that buildings have a life expectancy, and that using superior materials and appropriate building methods have a great impact on the building's life cycle from the get-go. Many older structures have both these inherent qualities, and they express them well.

The type of stone chiseled and lain into the walls, forming the lower foundation or perhaps the facade, to the use of wood or ironwork for decoration of the interior; these buildings show an appreciation for the user that I argue many structures of today do not. Alain de Botton states,

"We can conclude from this [beauty] that we are drawn to call something beautiful whenever we detect that it contains in concentrated form those qualities in which we personally, or our societies more generally, are deficient."
-(The Architecture of Happiness)

Working in the field of construction has taught me the valuable lesson that the way homes or commercial properties are constructed using at many times subpar materials; it is of no wonder they do not outlive who occupies them. A 50-80 year life cycle for many structures is not very long, and not to mention the time and effort spent every few decades updating confirms that many buildings from the recent half century lack appeal.

There is beauty in a big old building, and some of them we want to save using adaptive reuse—which is the topic of my thesis. Here I will develop a school that teaches traditional building methods in stone, wood, and metal; appropriate materials and methods to be exercised out into the world on historic buildings. Let this be noted, I am not recreating exact copies of the former (such as the Doric column) for reasons of preservation, but carrying out the tradition of these techniques and materials by rearticulating them for use today.

With a larger workforce, we will have more opportunities and know-how to save a piece of our past, our heritage. Let us not forget that some of our ancestors were craftsmen, and the way each performed a task in construction is inherently tied to a culture brought over to the U.S. We are bound to history, and buildings are artifacts that remind us of our past. These buildings not only mark a special place in time, but they very well may be the last remnants of who we were. Some may argue that I am being a little romantic when I see an old building, that I directly tie it to history without looking at the bigger picture.

This is true; there is no denying that when I look at an older structure I do look towards the past, but you must realize that I am also being critical. As Nietzche quotes:

"Life requires the service of history, however, must be understood just as clearly as the proposition we intend to prove later—that an excess of history is detrimental to life. History belongs to the living man in three respects... monumental, antiquarian, and critical."
-(On the Advantage and Disadvantage of History for Life)

When I look to the past, I do not look at it as the antiquarian. I am not enamored by recreating older styles of architecture like our former craftsmen. I look at what I see important and valuable (the historic techniques crafting stone, wood, and metal), but I see fault in the total process of historic construction. Using older methods as the de facto method of adaptive reuse and preservation cannot and should not be carried out into the workforce today. Not only is this uneconomical, but unethical that it cheapens the course of knowledge we gained in the last century, and to avoid using current technologies for many parts of construction is just plain stupid.

I also not hold regard for the past as monumental. Yes I do use traditional materials, but there are many ways these can be made and shaped, and the school explores these possibilities using an array of techniques and tools, regardless of a particular style achieved or created by a certain culture or group. When it comes to the past, I am critical. This is why I chose to take the older traditions and "rearticulate" them, making them current for today. It is looking at the past and recreating it, putting different "spin" on it, making adaptive-reuse architecture new and yet old, exciting, economical, usable, and beautiful.

User/Client Description

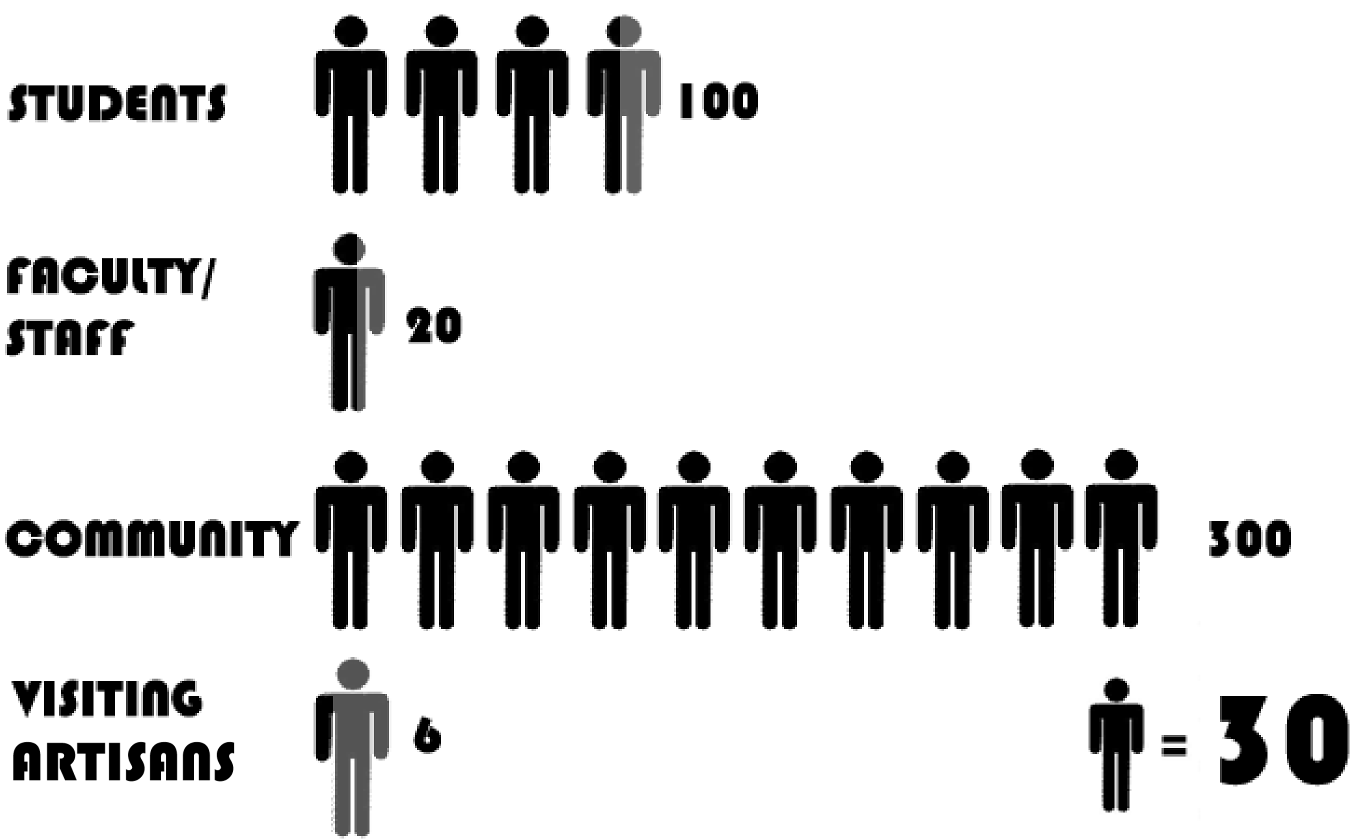
This facility serves as a joint effort in educating student craftsmen and the community. Along with the general staff and students who attend this school during the day, the facility also holds night classes for St. Paul and surrounding communities. In addition to this, visiting artisans who teach and/or exhibit their work must also have reasonable living accommodations.

Owner

City of St. Paul (under the direction of the Office of Vocational and Adult Education-United States Department of Education)

Users

Students and faculty, community of St. Paul and surrounding area, visiting artisans



Major Project Elements

Studio/Shop

These areas act as the classroom where students can learn their craft in stone, wood, and metal. Spaces include: work stations, lockers, storage.

Offices

These spaces support the facility in education and management. Spaces include: faculty, manager and support.

Learning

These are smaller breakout spaces for day and night time classes. Spaces include: classrooms, computer room.

Exhibit

Exhibition spaces allow students, the community, and visiting craftsmen to share their work with the city of St. Paul. Spaces include: gallery, bathrooms.

Visiting Accommodations

As on temporary visit, artisans who teach at the facility will have the opportunity to stay in temporary housing located on campus. Spaces include: kitchen, bedroom, dining, bathroom, guest room.

User Breakdown

Students

Students who attend this school learn historical building techniques in stone, wood, and metal. Classes are year round, attended during the day.

Faculty

The faculty's role is to educate the apprentice artisans, manage and run the facilities, as well coordinating with the city of St. Paul for use of the exhibition spaces.

Community

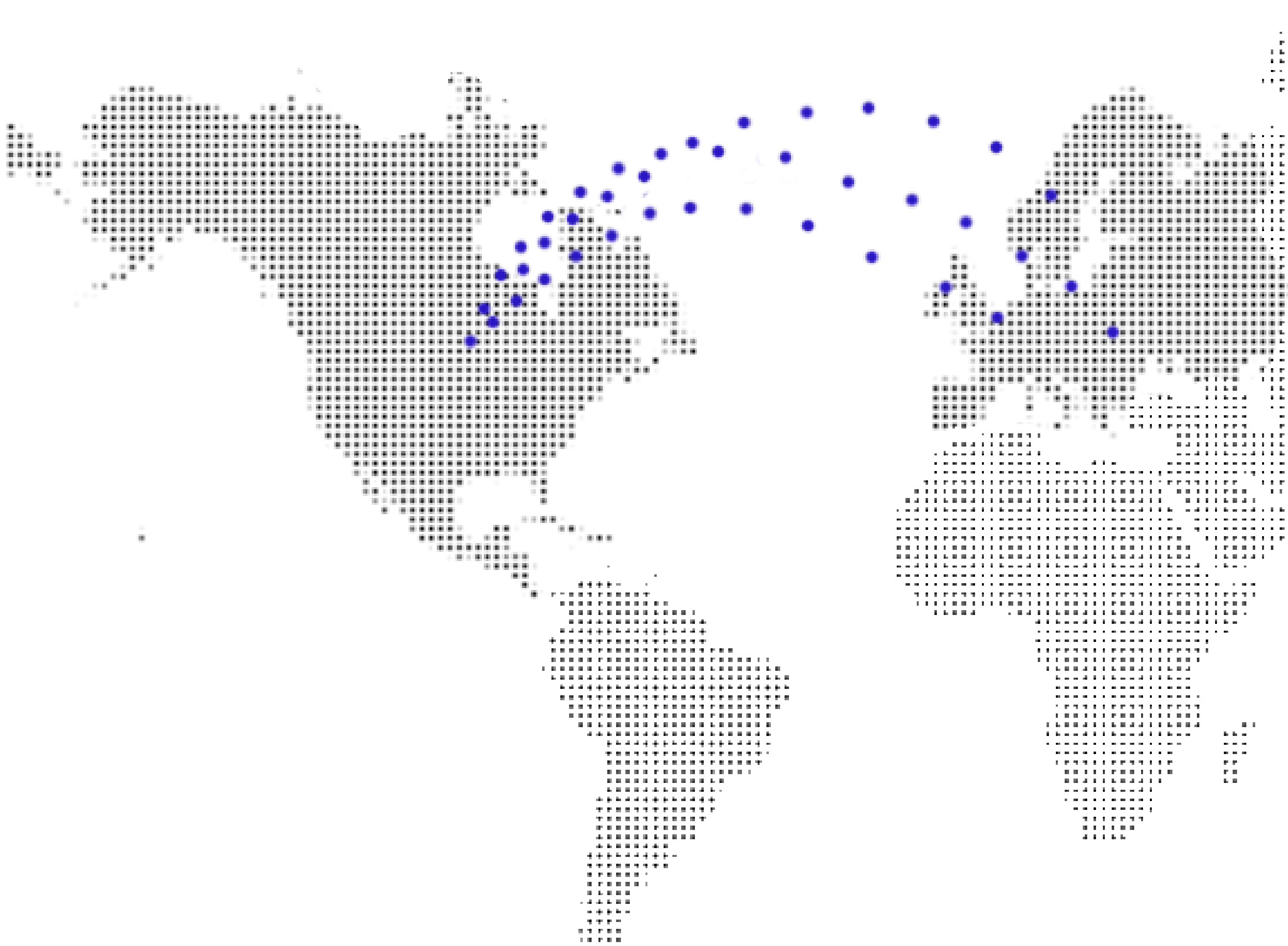
The community has the opportunity to attend night classes inside the facility, related to three respective materials of wood, stone, and metal. Here they will have the opportunity to learn a variety of skills under their own discretion.

Visiting Accommodations

Coordinating with the school's daytime faculty, visiting artisans will train students as well as community, as well as use the school's accommodations.

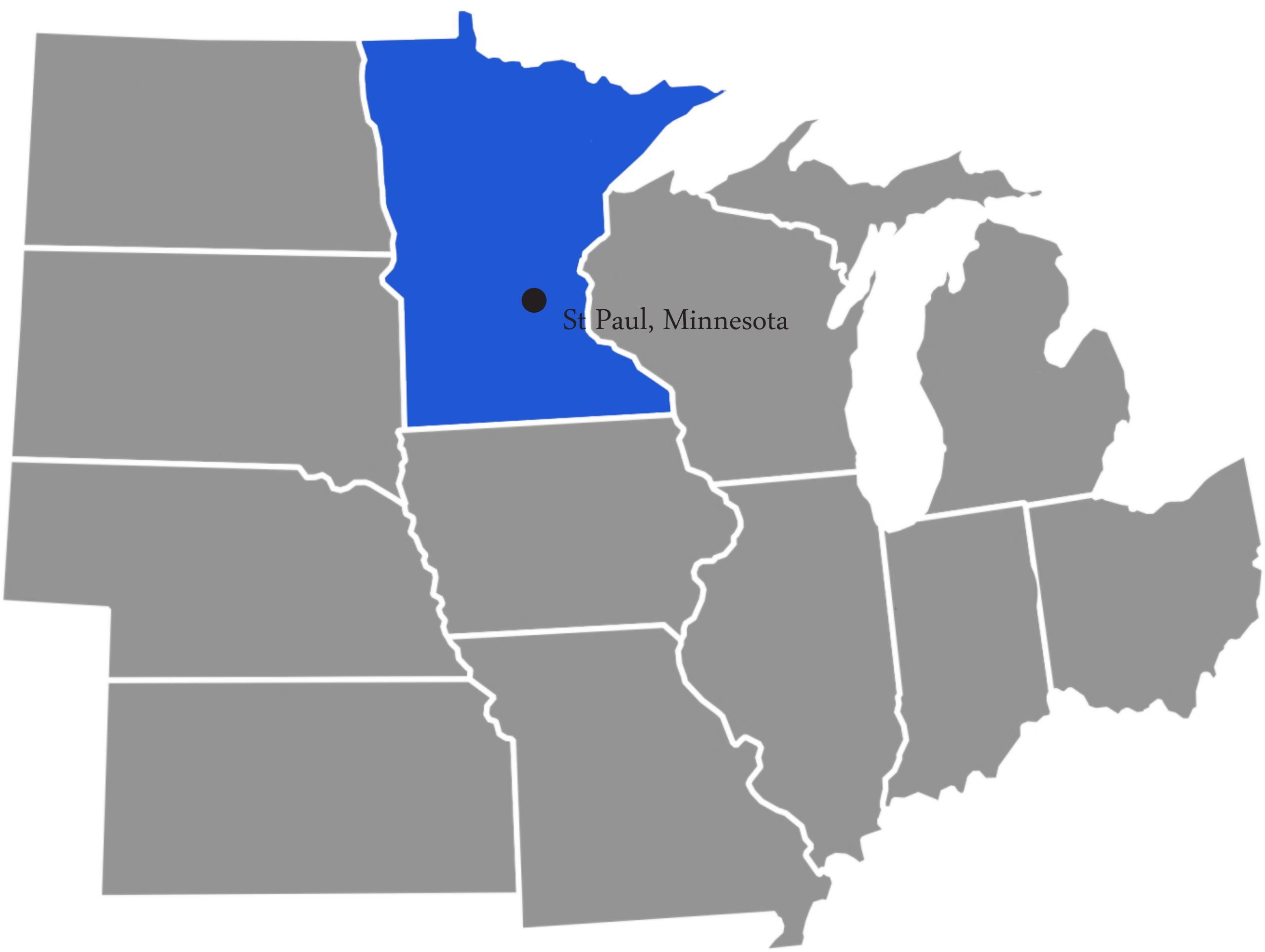
Site: Macro

Historical building tools and techniques derive from European origins. These traditions migrated towards the United States from immigration.



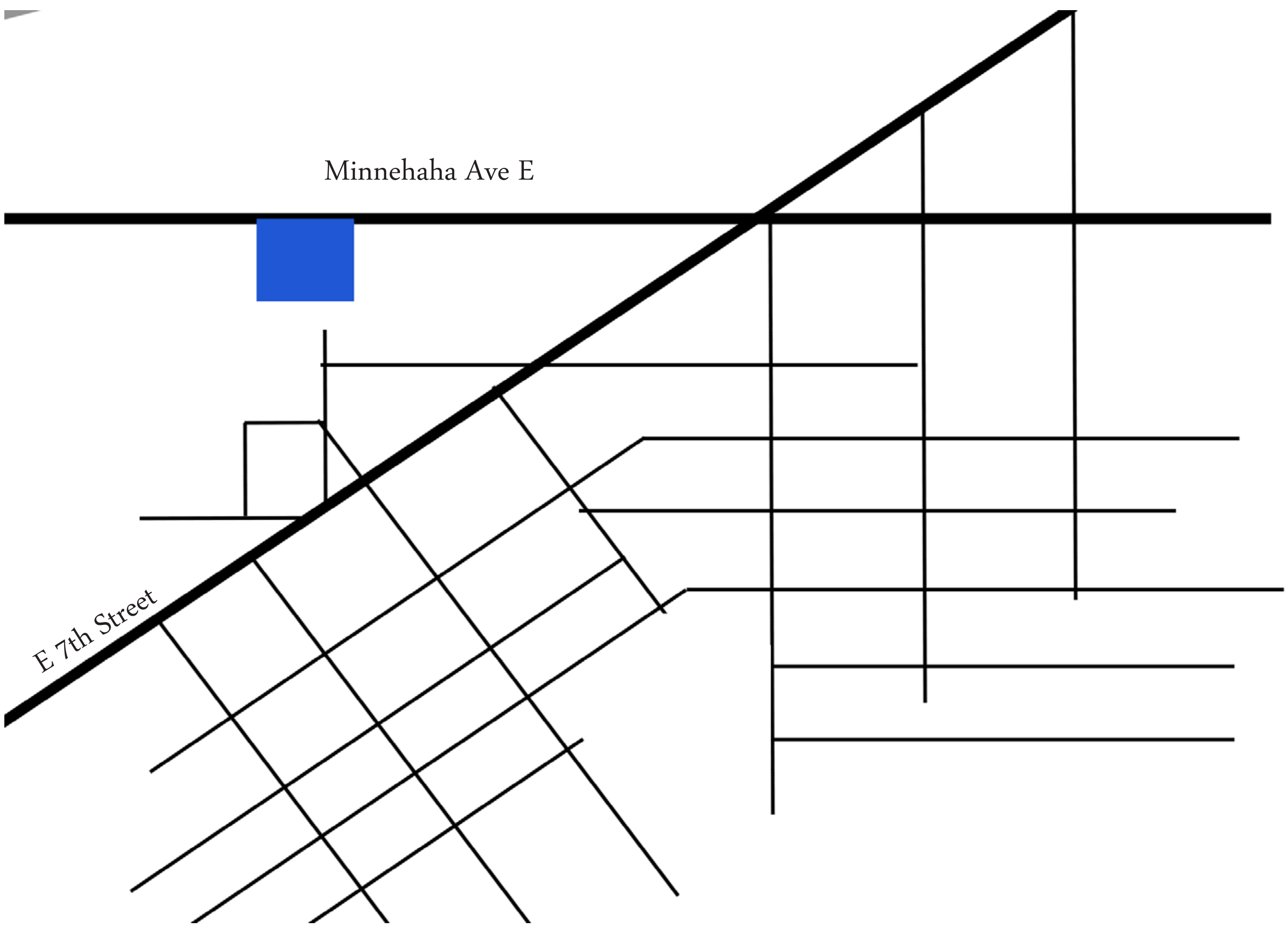
Site Macro

Minnesota is located in the Midwest region of the United States. Although it has a relatively shorter history than other areas in the U.S. (such as the east coast), early settlements occurred along the Mississippi River including St. Paul. Here, many buildings are available for adaptive reuse including Hamm's Brewery.

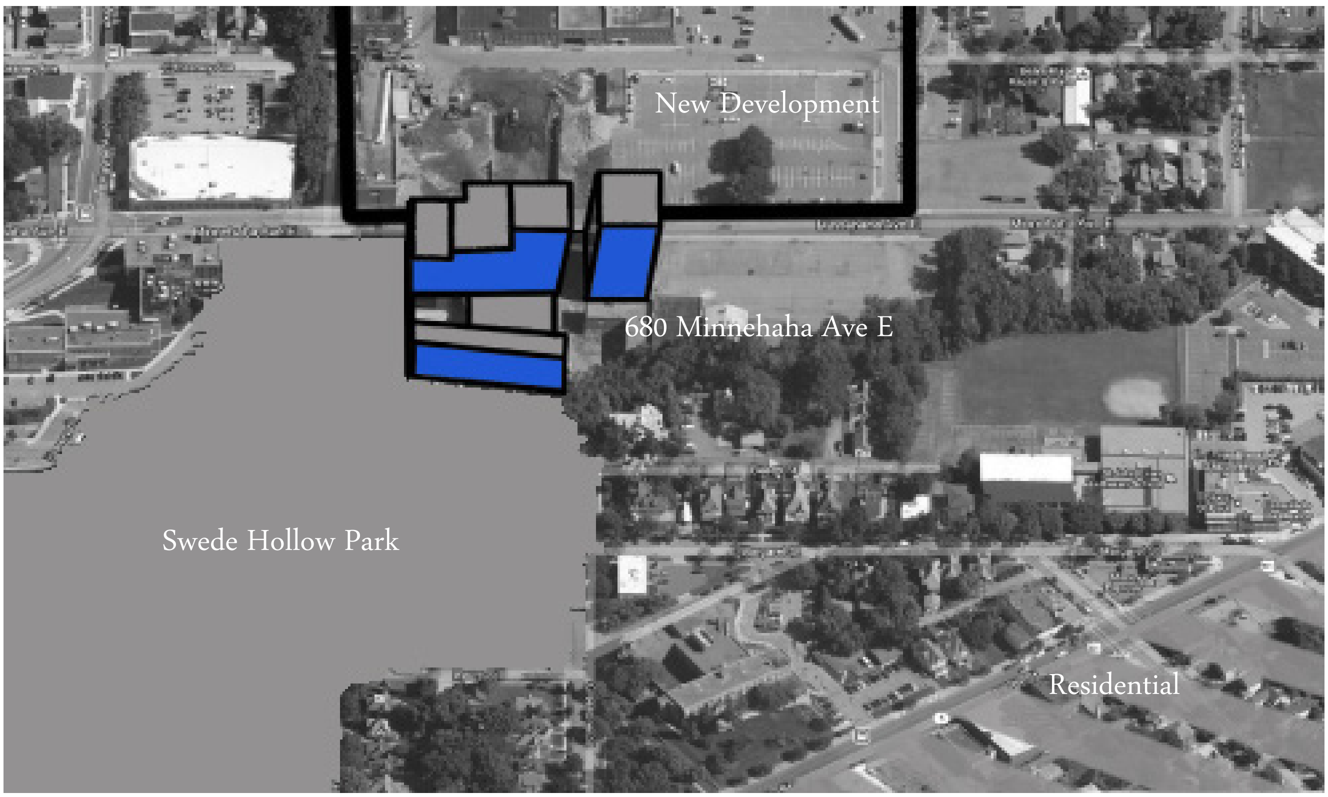


Site: Micro

Bordered by residential housing, a park, and new development, the location of the site offers unique challenges. Using the abandoned brewery structures for adaptive reuse can create a stronger connection to the area due to its history and familiarity with the neighborhood.



Site Micro


New Development
680 Minnehaha Ave E
Swede Hollow Park
Residential

Project Emphasis

Unifying Idea

This project will focus on both historical and current building techniques acquired from specialized craftsmen. By reteaching and applying this combined knowledge for historical preservation and adaptive reuse will allow architects the opportunity to create a "living record" in our built environment that highlights our architectural past and traditions.

Focus

First, this thesis will catalogue historical tools and techniques pertaining to stone, wood, and metal: the traditional materials used for construction. Recording this information will make it ready available for architects to use as a reference guide for each material finish of stone, wood and metal with respects to the technique used. It will also serve as a manual in the construction trade for teaching craftsmen said techniques, supplementing the workforce with specialized knowledge that can be used in the field.

Second, recording these tools and techniques offers insight into the heritage of knowledge shared by craftsmen as it is customarily passed down orally, in the workplace. Lastly, each tool and technique used is adherently tied to a distinct group from a certain point of time, and by reintegrating it into architecture is culturally significant in keeping the past alive.

Conclusion

The handiwork of craftsmen is pertinent to architectural record as well as societal culture and heritage. This is not a means of copying historical architectural qualities, but to reticulate these traditional building methods and using them today with modern technologies for adaptive reuse and historic preservation.

Plan for Proceeding

Research Direction

The direction for my research will be conducted on my theoretical premise/ unifying idea. Research on technical colleges and guilds will provide information for my project typology. A large portion of research will investigate traditional building tools and techniques, providing the historical backbone to the project which it emphasizes. Site analysis of the current brewery structure and its surroundings will investigate its relation to the city including traffic patterns, pedestrian routes, solar, wind, sound, and other data. Site visits to other technical collages will allow comparison of certain program requirements needed for my school.

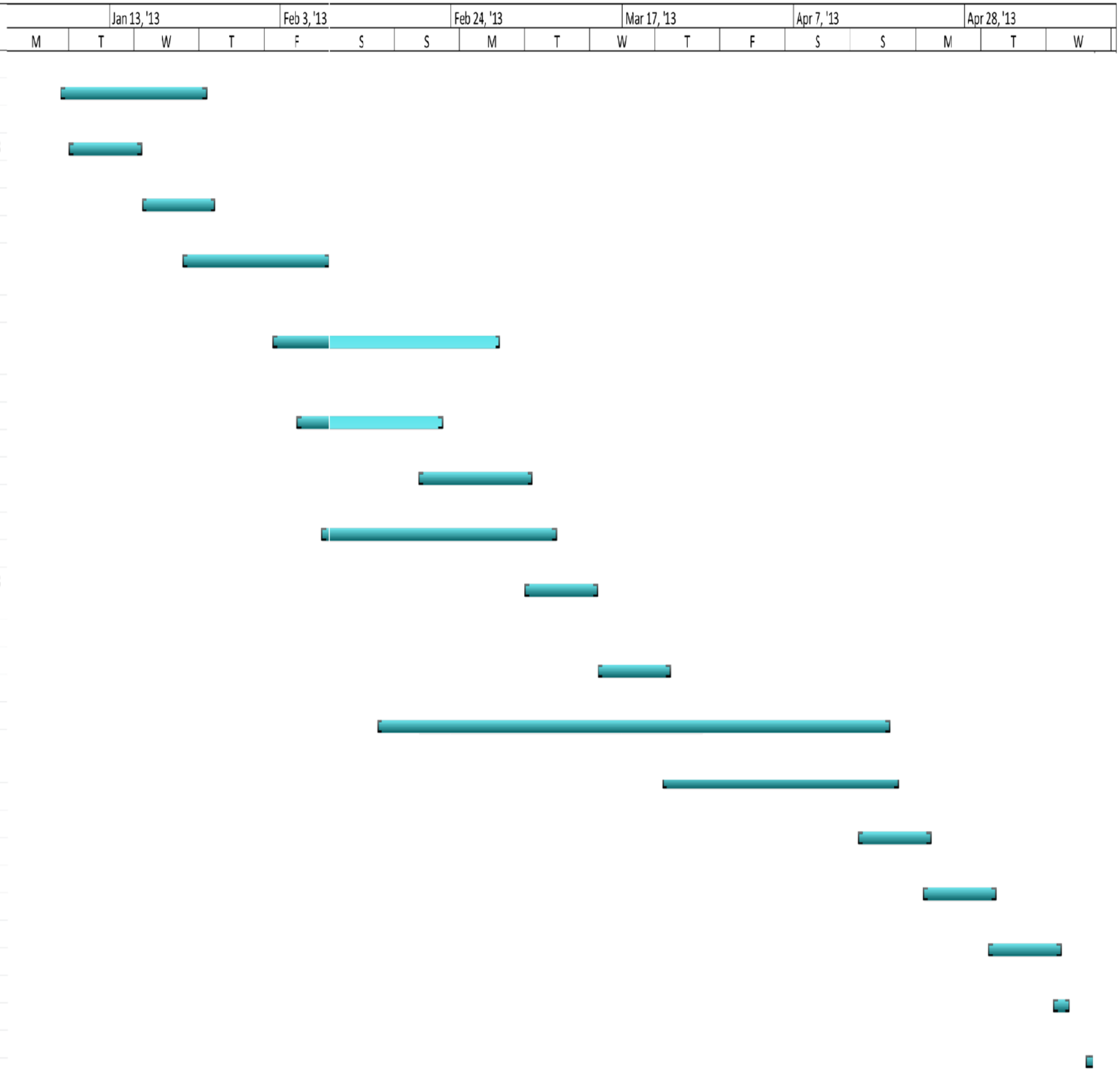
Design Methodology

The design method employed uses both quantitative and qualitative methods for obtaining information guided by the Concurrent Transformative approach (based on the theoretical premise/unifying idea).Quantitative data includes: statistics, scientific data. Qualitative data includes: observation, interviews, research.

Documentation Plan

All digital work including video will be stored digitally and updated periodically at the end of each week in two locations: an external hard disk and written to DVD. All physical work including sketches and drawings will be catalogue and stored in a physical binder and scanned digitally to aforementioned locations. For all interviews, written transcripts will be documented and stored physically and digitally.

Task Name	Duration	Start	Finish
SITE CONTEXT	14 days	Mon 1/7/13	Thu 1/24/13
SPATIAL ORGANIZATION	7 days	Tue 1/8/13	Wed 1/16/13
CONCEPTUAL DESIGN	7 days	Thu 1/17/13	Fri 1/25/13
PLAN/SECTION DEVELOPMENT	14 days	Tue 1/22/13	Fri 2/8/13
STRUCTURAL DEVELOPMENT	21 days	Sat 2/2/13	Fri 3/1/13
SYSTEM INTEGRATION	14 days	Tue 2/5/13	Fri 2/22/13
BUILDING ELEVATION	10 days	Wed 2/20/13	Tue 3/5/13
MATERIAL RESEARCH	21 days	Fri 2/8/13	Fri 3/8/13
MIDTERM PRESENTATION	7 days	Tue 3/5/13	Wed 3/13/13
MIDTERM REVISIT	7 days	Thu 3/14/13	Fri 3/22/13
SITE DEVELOPMENT	25 days	Wed 2/20/13	Tue 3/26/13
DIGITAL MODELING	45 days	Fri 2/15/13	Thu 4/18/13
GRAPHIC BOARDS	21 days	Fri 3/22/13	Fri 4/19/13
PHYSICAL MODEL	7 days	Mon 4/15/13	Tue 4/23/13
FINAL THESIS REVIEW	7 days	Tue 4/23/13	Wed 5/1/13
CD DUE TO THESIS ADVISEF	7 days	Wed 5/1/13	Thu 5/9/13
FINAL THESIS DOCUMENT [	2 days	Thu 5/9/13	Fri 5/10/13
COMMENCEMENT	1 day	Mon 5/13/13	Mon 5/13/13



Studio Experience

Fall 2009

Professor: Stephen Wischer
Projects: "Montessori School"
"Boat House"

Spring 2010

Professor: Phil Stahl
Projects: "Tea House"
"Chair"
"Hemmah House"

Fall 2010

Professor: Paul Gleye
Projects: "Bicycle Sales/Testing Facility"
"Fire Station"
"Snow Symposium"

Spring 2011

Professor: Ron Ramsey
Projects: "Shaker Barn Adaptive Reuse"
"Chicago Midrise"

Fall 2011

Professor: Don Faulkner
Projects: "San Francisco Highrise"
"KKE Design Competition"

Spring 2012

Professor: Don Faulkner
Projects: "Marvin Window Competition"
"Kindred Urban Design"

Fall 2012

Professor: Paul Gleye
Projects: "Fargo Urban Design"
"Craft Project"

Spring 2013

Professor: Ganapathy Mahalingam
Projects: Thesis (Architecture: A Tradition)

Program Document

Research Results

Typological Research

Case Study 1
Case Study 2
Case Study 3
Case Study Summary

Historical Context

Project Goals

Site Analysis

Program Requirements

RESEARCH RESULTS

Looking at our built environment, as structures are erected closer to the present, the result resembles less and less of our architectural past. What I am referring to is the abandonment of traditional construction techniques in favor of current methods and technologies. Since the introduction of the industrial revolution, architecture and construction that was once carried out in unison by master-builders is now fragmented into a set of specializations.

By splitting the two entities, architecture has become less commonplace and substituted with niche construction, with no cultural significance other than to satisfy a need or service. Re-exercising older building techniques is the linkage that will bind architects and constructors in creating thoughtful work, enhancing our built environment while preserving and maintaining our architectural heritage. Let us trace the origins of the master builder to understand this cultural shift experienced in our practice.

History of "Master Builder"

The role of the master-builder is quite old, in fact the word architect is a direct descendent of "master builder" which is of Greek and Roman origin. The Greeks for instance, coined the ancient word pxitktwv (architekton); following suit the word was translated into Latin by the Romans with architectus, meaning "master builder" (Dinsmore, 2008).

Ancient texts also support the theory of design and building in unison as exemplified in "The Ten Books on Architecture" by Virtruvius.

"It follows, therefore, that architects who have aimed at acquiring manual skill without scholarship have never been able to reach a position of authority to correspond to their pains, while those who relied only upon theories and scholarship were obviously hunting the shadow, not the substance. But those who have thorough knowledge of both, like men armed in at all points, have the sooner attained their object and carried authority with them."

(Virtruvius, Book I)

By linking design and building together illustrates the importance of the two working in harmony. Many architectural works continued this tradition for centuries in Europe; and with the emergence of the United States, these practices were then carried over into North America via immigration, enduring this practice with their eastern counterpart.

"In colonial and post-revolutionary America the title of architect, while quite elastic, still carried the connotations of authority and responsibility similar to the times of the Renaissance. The first architects of early American settlements were the building artisans. Bricklayers, masons, glaziers, painters, plasterers, and carpenters were all prominent artisans of the century."

(Burr, Jones, 2006)

Let it be noted that these individuals were craftsmen by trade, and although they did not have the formalities of an institutional education system (not until 1865 with the first architecture school at MIT), they created architecture. It is with the introduction of the Industrial Revolution that line between designer and builder is drawn.

An Age of Change

During this time, many advances in building technologies followed suite, with new materials including their mass production changed the course of construction. Buildings that were once traditional materials of stone, wood, or metals such as bronze became more outdated as the exploration of cast iron and then steel were implemented. Structures became larger as they were essentially a kit of parts, waiting to be assembled. The increased complexity of the project required extensive planning, where the results from methodical engineering was a set of plans to aid in construction, ridding of the informality of building without knowing as experienced before the Industrial Revolution.

Time also was an important factor, as the construction process became more efficient. Whereas in the past, the process of building was almost intuitive from years of trial and error; requiring the master builder on site to give direction. Construction times were vastly shortened as these new materials and technologies were ready available.

The result from these advancements would have both positive and negative implications to architecture and our built environment. As we look at construction technologies, we will understand that it not technology that predicates these results, but who is using them, for the outcome can be vastly different

Construction Technologies

Since the dawn of the Industrial Revolution, new construction technologies in materiality, form, and production caused a explosion in building. These advancements changed the course of architecture forever, as using them influenced the size, shape and form of architecture, and continues to do this into our present era.

The planar truss is one new technology as a result of the Industrial Revolution. Although the truss has been in use since the Roman Ages, development was insufficient due to material limitations, as timbers were the only available material used. As larger spans were required, overbuilding would occur as they were not engineered but rather built from proportions, causing them to be expensive.

With the mass production of iron, the material became more economical and was used in creation of a new building technology. The first implementation of the iron planar truss was for bridges, but soon engineers developed it into a building material able to span distances and carry loads that before their invention, was unobtainable. The planar truss continued to evolve as steel became the metal of choice, and with the development of metal gusset plates, wood planar trusses would also be used. In fact, much of the building we do today continues to use the planar truss (Dieste, 1992).

One other advancement in building technologies was the use of reinforced concrete for construction purposes. William Wilkinson patented his idea of embedding a grid of wire rope in a slab of concrete in 1854. “Ferroconcrete used reinforced concrete extensively by Francois Coignet, building a series of apartment blocks in 1867. It wasn’t until 1873 when the placement of rebar below the neutral axis of the concrete beam was preformed, (Boake). Within the following years, reinforced concrete continued to be used in larger projects, and architecture built with reinforced concrete as a major material became common place.

On one hand, architecture benefited greatly from these inventions, as it made building easier, efficient, and more cost effective. It also contributed to economic development as new industries were created around these new materials. On the other hand, problems would begin to surface within the architecture world, spreading out into the built environment.

One problem with these new technologies was projects became more engineered and not designed. More effort to the structure of the building was placed into the hands of the engineer, not the architect. This event increased the number of engineers form 512 in 1850, to over 45,000 by 1900, all working on structural projects including architecture (Smith, 2006). As a result, the structure of the building became a separate entity from architecture altogether.

“The conceptual shift allowed us to think of the structure of a building as a skeleton partially free of its walls, and which made architectural space independent from construction, a method unknown at that time”

(Dieste, 1992)

This would permeate into architecture even farther, as both reinforced concrete and the steel planar truss aided the fruition of the Modern Movement, as clean lines were preferred over organic that of Art Deco.

As building becomes more complex, the greater need for specialization occurs because of these new technologies require expert knowledge in those fields. Architects are less responsible for the actual building of the project and conversely rely on other parties such as contractors for the construction of the project; who in turn hire their sub-contractors such as steel erectors, plumbers, electricians, etc. to preform each individual step. This specialization is “niche construction” as it impacts the entire workforce, changing the way buildings are constructed.

“Niche” Construction

The theory of Niche Construction is where an organism will alter their own environment from a shift in trait selection, acting as a reactant allowing control over their surroundings that will continue to support those selected traits. This specialization does not always support the species survivability, with factors that can in fact discourage a continual growth including the surplus of population or the environment’s resources exhausted.

Scientists developed two factors in which an organism will control the environment. The first way is increasing the number of traits in order to reduce the dependency on a particular environment, allowing more control over their surroundings albeit any uncertainty mother nature provides (Krakauer, Page, Erwin 2008). It is the quality of having many traits that allows the species more control by not being so selective but rather adaptive. The second strategy is developing a trait that has the greatest monopolistic control over the environment (Krakauer, Page, Erwin 2008).

By creating this “niche”, the organism has the greatest control of the environment as it models the surroundings to best suit their trait. Leaf cutter ants are a prime example as they develop a herbicide that encourages a growth of only certain tree types. By injecting a formic acid into leaves of unwanted trees, they alter the forest environment by wiping out all but a species of tree that encourages their population growth, hence a “devil’s garden” (Schwartz, 2005).

What is interesting to point out is this theory correlates well with architecture and construction methodologies. In the past, architects that were master builders have in fact, had many traits that allowed themselves to produce work. They were masters of not only math or geometry, but also stonemasons, sculptors, painters, and philosophers. It was because of these adaptive behaviors that allowed construction to be executed without the aid of technical plans. Although the quantity of work completed cannot compare to that of later generations, they were masters at construction management as they knew every process of building.

Architecture faces this issue with the continual regression of their involvement with the building process. With the arrival of new building technologies that were brought upon by the Industrial Revolution, architectural projects increased in size and complexity. The last remaining master builders could no longer be and expert in all these new fields, and so architecture was separated into two distinct professions: designer and builder (Thomsen, 2002).

With the appearance of the Industrial Revolution, a chasm was created that divided architecture and construction. As time grew, the gap between the two continued to widen. In our present age, the role of the architect serves two functions as Paul Segal states:

"We are the creators, the designers, the authors, and the coordinators of all the other design professionals work...Our second role is to provide construction administration."

(Segal, 2006).

So with architects less involved with construction, someone had to take over the work load. This is when specialized labor begin to enter the workforce.

Construction Process

Like architects, master builders (in the carpentry sense since the workload was passed onto them) were involved in all phases of building. In fact, the first organization of carpentry labor was formed in 1724 by the Carpenters Company of Philadelphia. These men were involved with all phases of construction (Burr, 2012).

With the onset of the 19th century, these same men who handled all phases of construction could no longer be responsible, as with the use of new technologies such as the steal planar truss and reinforced concrete; required more specialization due to the complexity and skill required for each trade. This is were "niche construction" first took root, the specialized type of construction where each phase is handled by only a certain group of individuals. With this increase in specialized labor, the construction process required a high degree of coordination.

Analyzing the workforce involved in the construction process, you begin to understand the complexity as you look at the diagram below. The number of individuals involved in any phase of the project is astounding, requiring a large amount of coordination. The architect will work with consultants as well as the construction manager; who in turn works with the general contractor. The general contractor works with his sub-contractors, who in turn the subs have material suppliers, and so on. For every spot on the diagram below the general contractor is a "niche" who specializes in one phase.

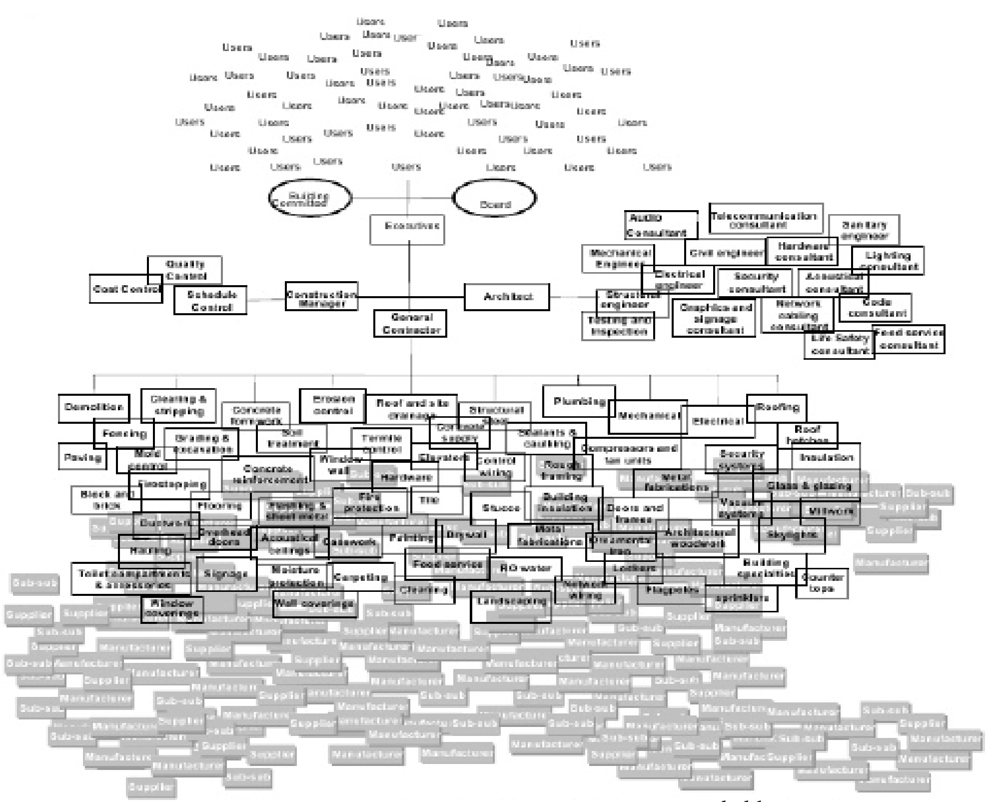


image provided by Kevin L. Burr, 2012

With each niche, several problems can easily arise. One issue is the project can easily be delayed due to each party relying on the one prior before they can begin work. If the sub-contractor cannot get the materials on time, meet code, or has a change order; this effects every party after him. Thus it extremely important that each phase is done on time according to the project schedule, which lists all phases and dates of completion. Another issue is with all these parties involved, the fear of litigation is always on mind from every party including, owner, architect, contractor, and sub-contractor. When there is an issue with the project and a lawsuit is involved, this is extremely expensive not only to fix the problem, but finding out who is responsible for the work, and who can correct it.

With the addition of new materials and technologies, the process can only increase in complexity. With the cost-effectiveness of "green" technologies becoming more prevalent, their inclusion into projects will no less require even more specialists. Trying to simplify the building process is what every owner wants, which is why many have become developers.

Building Simplified

A developer is a property owner that builds with the intention to sell. The quickest way to simplify construction is to shorten the time of production. A smaller interval of time to complete each project allows more work that can be done. The problem with simplifying the construction process is the owner will choose the project type, the budget, materials, and sub-contractors. Although the architect may be involved, many times they are involved with producing construction documents, and do not make executive decisions that the owner does.

Within this business model, the quality of the finish product can suffer if the owner chooses to make sub-standard choices. This is a highly ethical issue, and it can be disheartening to architects when they see this lack of quality. Within this scheme, building has no connection to architecture, as it tends to only provide a service or need. These types of structures are at the lowest end of the spectrum, and do not meet the Virtruvian thought of "utilitas, firmitas, and venustas".

SUMMARY

As we reflect, we begin to see the diminutive role architects have with our built environment, with much changing over the course of years. First, architects were in charge of design and construction as “master builders”, but as advancements in building technologies increased the magnitude and complexity of the project, responsibilities were passed on to the constructor. Thus begun the separation of designer and builder. The closer we get to the present, more parties are involved with a project, and the responsibility for the architect is now design and project coordination. An entire new construction model was created, with specialized or “niche construction” becoming increasingly prevalent and relied on. Problems have arise because of this, most effectively, the loss of control architects have on their built environment, as developers are able to make the design decisions, thus overtaking the role of master builder.

The biggest question that arises is, “Why does all this matter?” To begin, we must realize the change architecture experienced throughout the course of history. Understanding where we came from, and the direction our profession is heading gives the problem context, shedding light on the complexity of the issue. It also makes architects realize that we cannot solve current issues directly because it is no longer in our hands. Urban sprawl, material waste, and inefficient design can no longer be solved directly by architects as we no longer are in control of the entire building process. Architects play a part in a much larger scheme of things, and it is impossible to turn back the clock. This is why these problems as well as ethical issues are relevant within architecture today; we are part to blame. Although we do not have entire control, we still do take part of the building process, and it up to us be educated enough to make the right decisions when it comes to design. We also turned our back to our past, and instead of becoming more involved with construction, the profession has literally just stood by.

The next question that architects have is “What can we do?” The best thing we can do alone is to continually educate ourselves in all areas of architecture, past and present. The more knowledge we have, the more architects are able to withstand change as they can be more adaptive to the surrounding environment and culture. One way architecture has done this is with creating design/build firms of their own, once again regaining some control over the built environment.

Another way architects can gain more control over the built environment is re-educating the workforce. This sets the premise for my thesis project: a artesian school that reteaches historical building techniques. This is important to architecture in several ways. As explained before, niche construction is a product of specialization. Developers can fully take advantage of this by simplifying the construction process using as little tradesmen possible in the production of work. This occurs daily and all over the world with housing developments of short life-cylces. These units tend to use non-sustainable, low-grade materials, and utilize only one type of construction (wood-platform framing).

To curb this type of construction and influence our built environment, a school that teaches both old and new construction techniques will allow this new type of workforce to become more adaptable and usable. Reteaching historic construction techniques is increasing in need because adaptive reuse projects are becoming more prevalent. This type of architecture will become more affordable when more tradesmen are qualified to work, reducing the number of parties involved with this type of construction. This is not only a sustainable way to approach architecture (as it reuses an old structure), but it also helps preserve a culture for both tradesmen and architects. Doing this will help bridge the gap of design and construction, something that architecture has been use to for such a long time.

TYPOLOGICAL RESEARCH

Case Study 1

Austrialian Technical College/
Birrelli Architects


image provided by birrelli.com

Case Study 2

Borusan Music and Art House/
GAD Architects

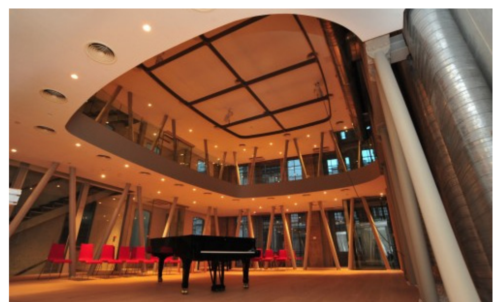


image provided by openbuildings.com

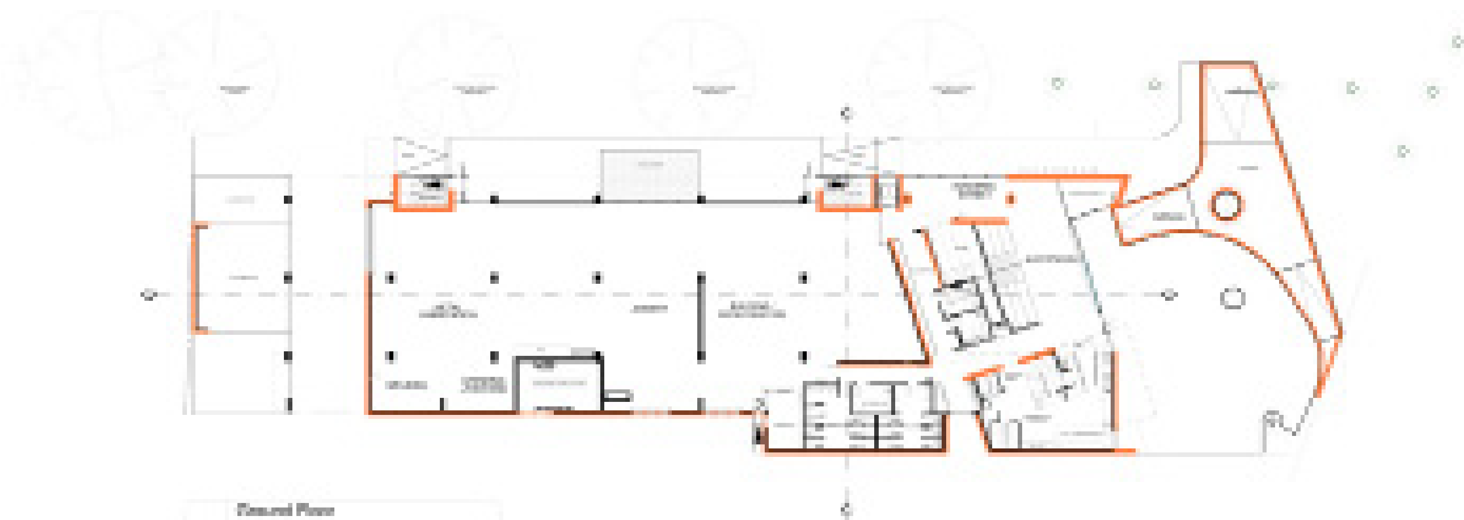
Case Study 3

Young Centre for the Performing Arts/
KPMB Architects


image provided by Tom Arban

Australian Technical College/
Birrelli Architects

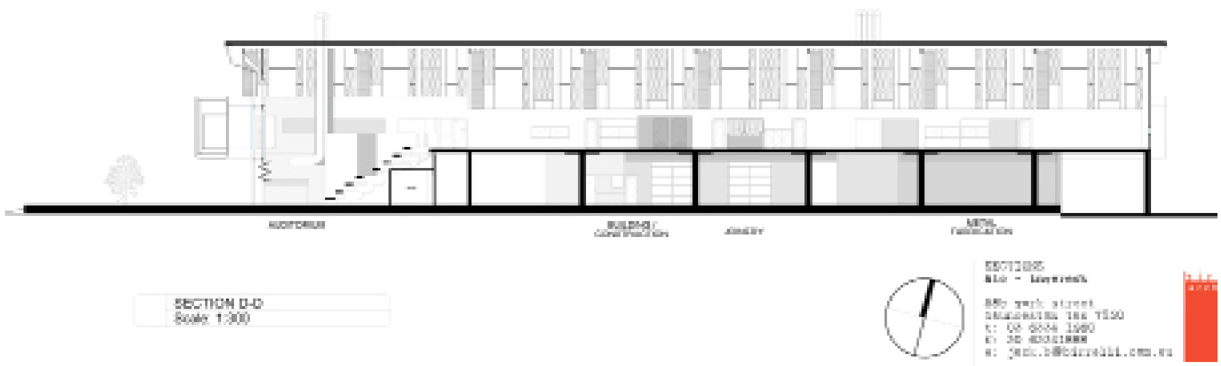
Plans



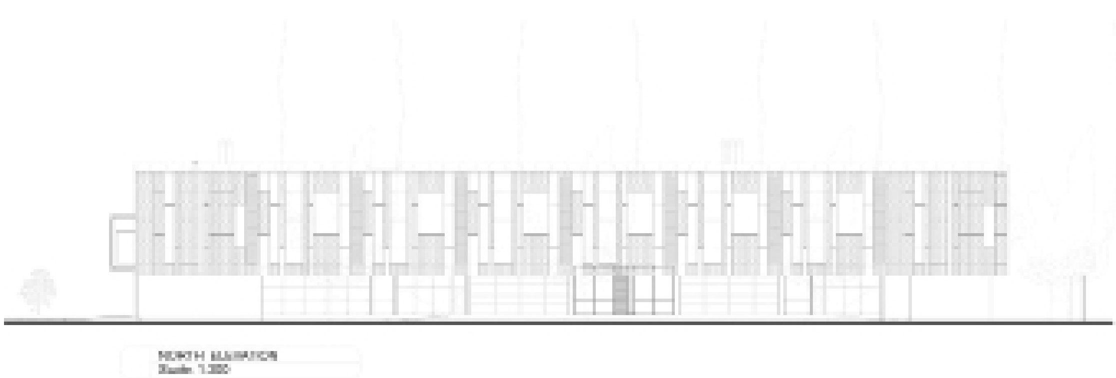
Ground Floor
Scale: 1:400

First Floor
Scale: 1:400

Section

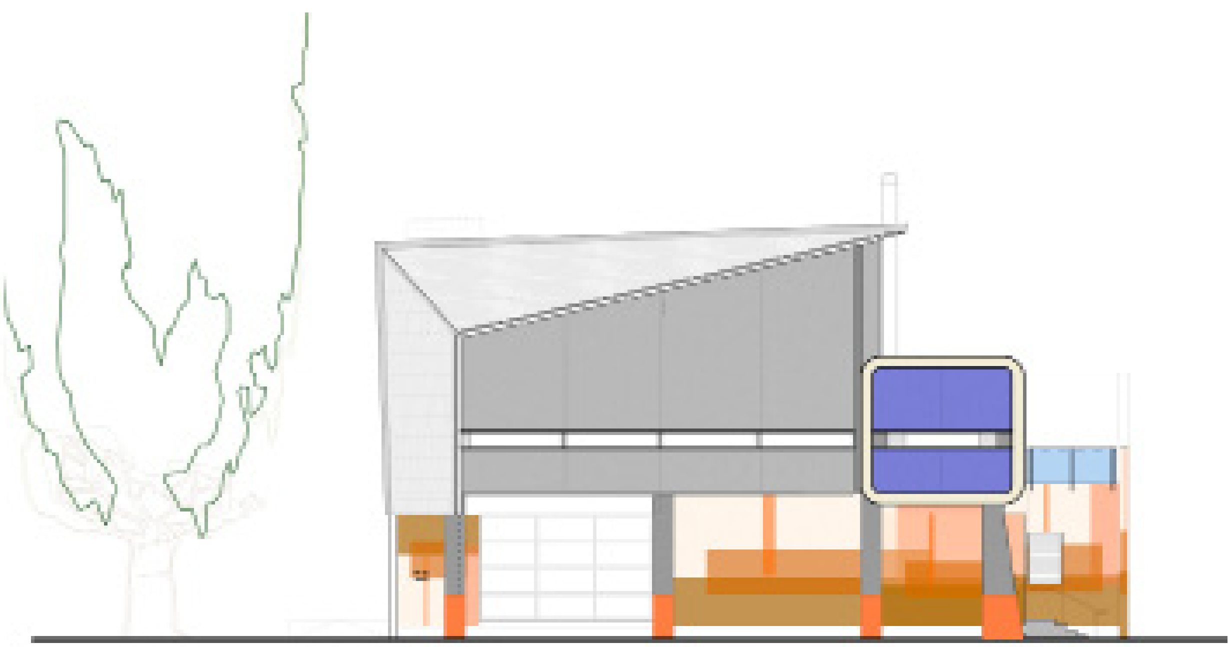


Elevations



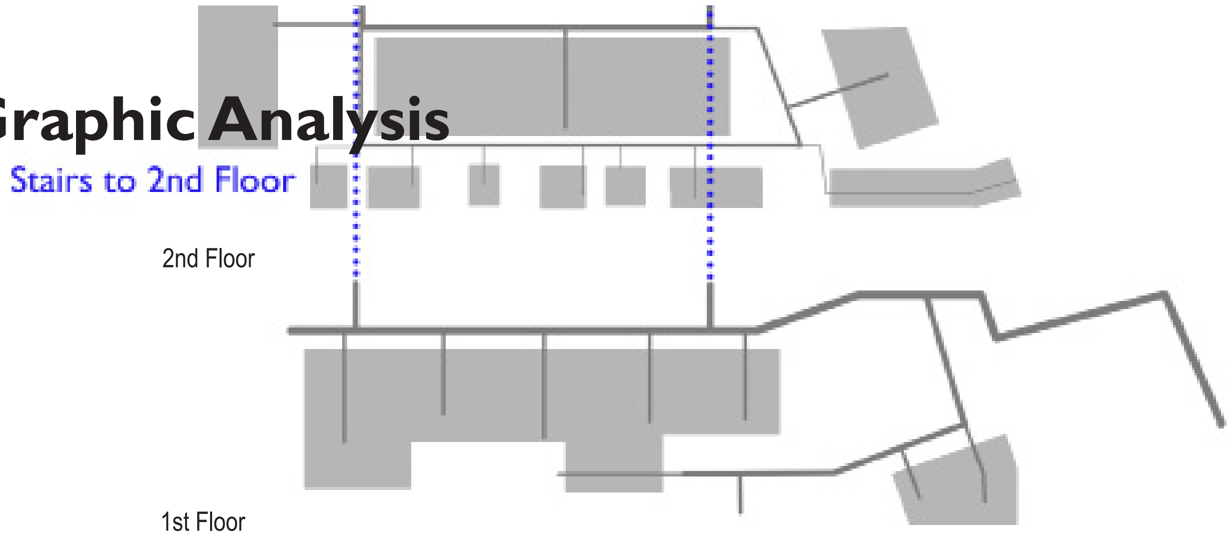
Elevations

EAST ELEVATION
Scale: 1:200

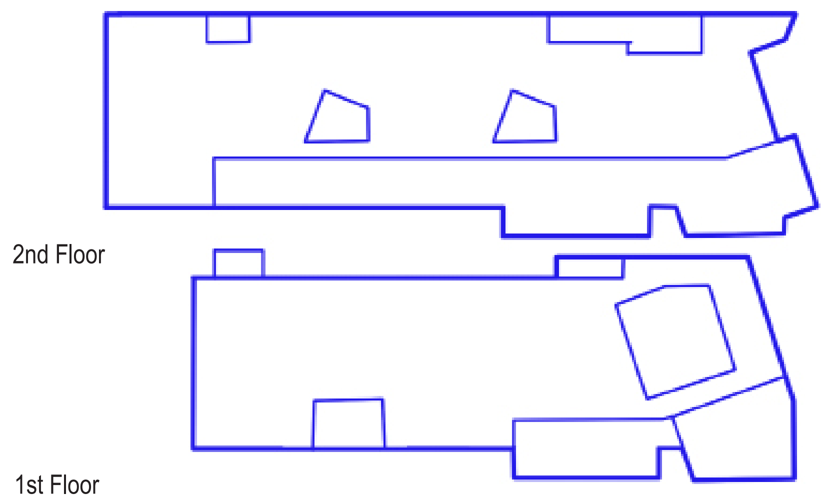


WEST ELEVATION
Scale: 1:200

Graphic Analysis



Circulation to Space



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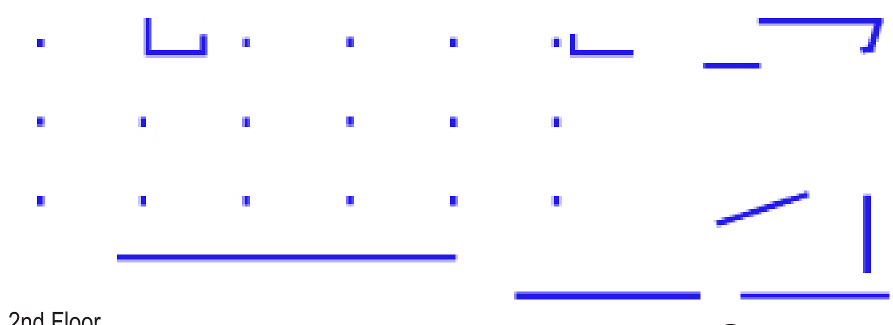
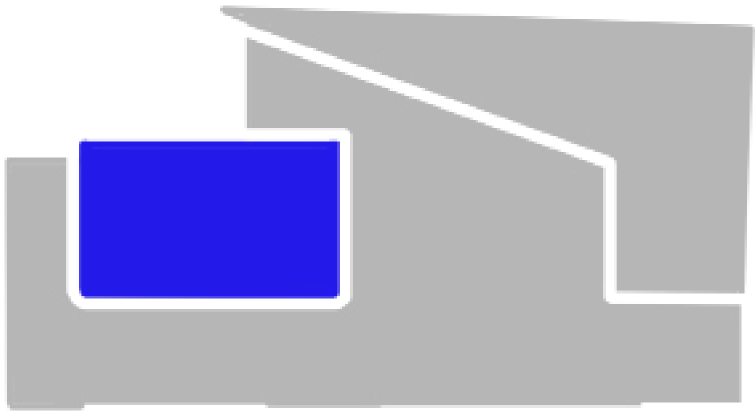
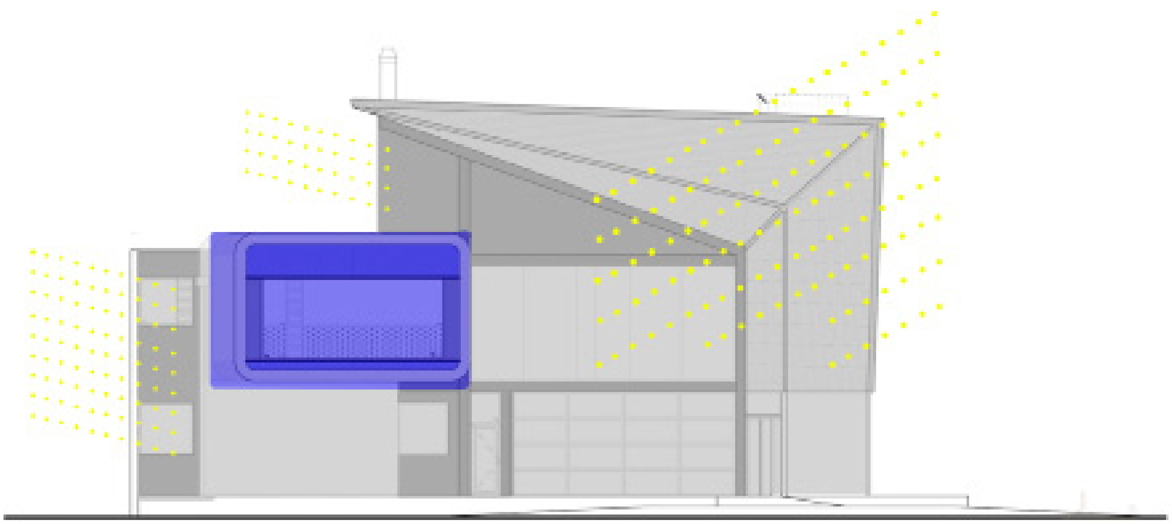


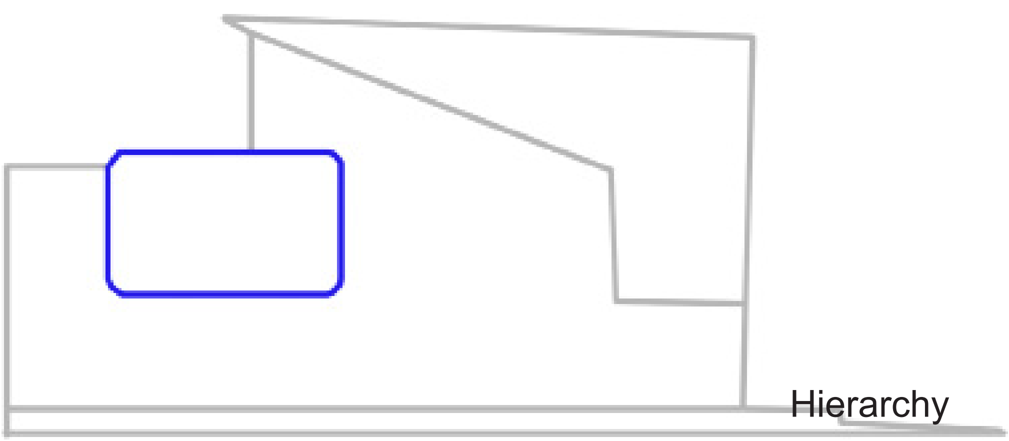
Structure



Massing



Natural Light



Hierarchy

Plan to Section

Australian Technical College/ Birrelli Architects

image provided by birrelli.com

Project Introduction

Located in Northern Tasmania, Australia; the ATCNT serves the community of Iveresk, Launceston. The 2,300 m^2 technical school (approximately 25,000 sq. ft.) provides education for vocational skills in an exciting environment. Although constructed of a portal frame design (a common design element with many of the industrial structures in the surrounding community), it cleverly hides the industrial-service it provides.

Using a unique combination of materials and interesting form, the building is appropriately planned, making it very functional. Taking two years to complete, the technical school opened its doors in 2009 offering many trades for eager students to learn including carpentry, welding, commercial cooking, plumbing, and automotive technology.

Research Findings

This case study shares the same building typology with one other case as an education facility. For my thesis project, an artesian school, it is pertinent to understand the types and number of program elements educational facilities provide. Appropriate planning and size to these spaces will make my facility functional and efficiently used, avoiding any hindrance to the building program by poor layout.

What makes this case study different is this project is not and adaptive reuse building like the subsequent two, and instead is newly constructed. Although my project utilizes building reuse, it is important to understand the expressive nature of industrial building components, as my facility will be renovated with new materials. This will create a wonderful dialogue between the new and the old, which makes adaptive reuse projects interesting.

This project responds to the site and surrounding areas in several ways. Responding to environmental factors such as solar heat gain, the facility is built among a grove of poplar tress that were already on site before construction, providing shading from the hot sun to the building and the surrounding environment. As noted before, the school's structure is a portal frame, easing the technicality of building the structure with complicated machinery and equipment. The architects also mention from the spacial configuration of the interior spaces, there is flexibility to the building's use, allowing the program inside the ability to change to meet any changing needs.

The interior of the structure is inviting with the bright use of colors and open floor plan. One could suggest this building is socially responsible in creating an inspiring learning environment, even though the trades studied inside are not considered "higher education". Part of this reason is allowing a higher budget on this facility ($7.5 million). This allows the architecture to provide more than just a service, but an important addition to a thriving community in Iversek. As the

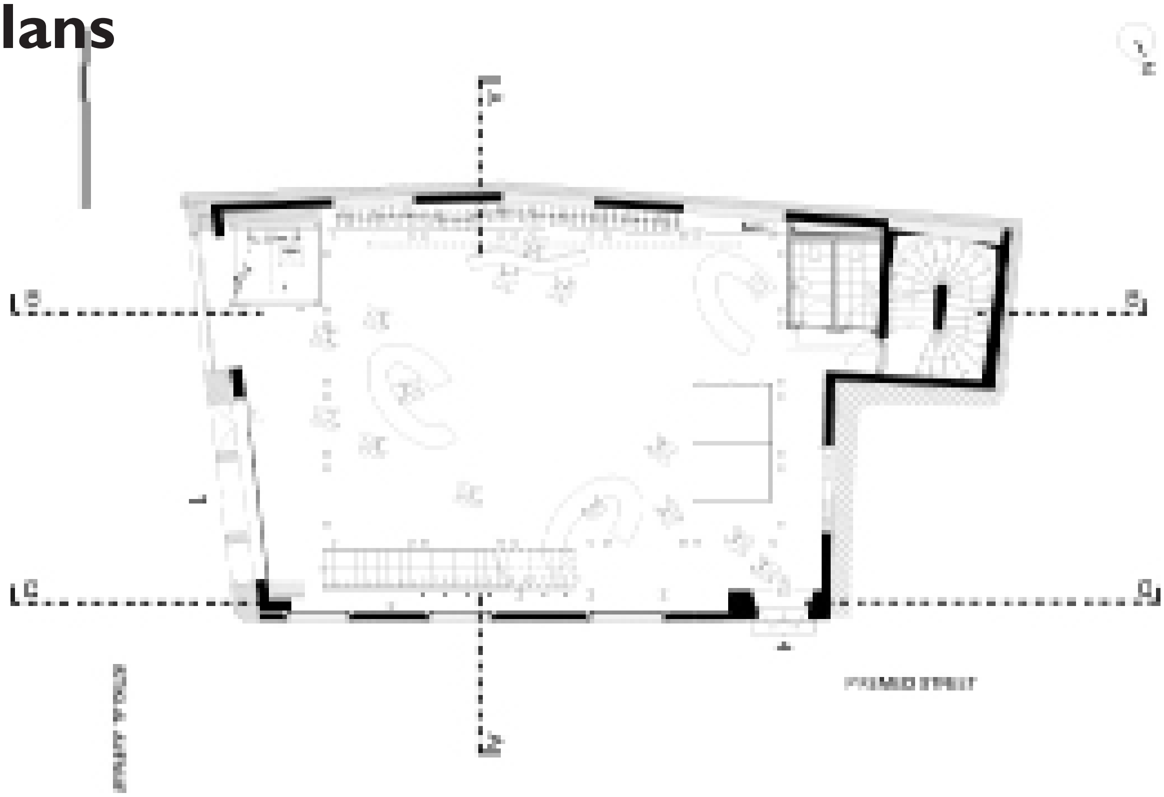

image provided by archdaily.com

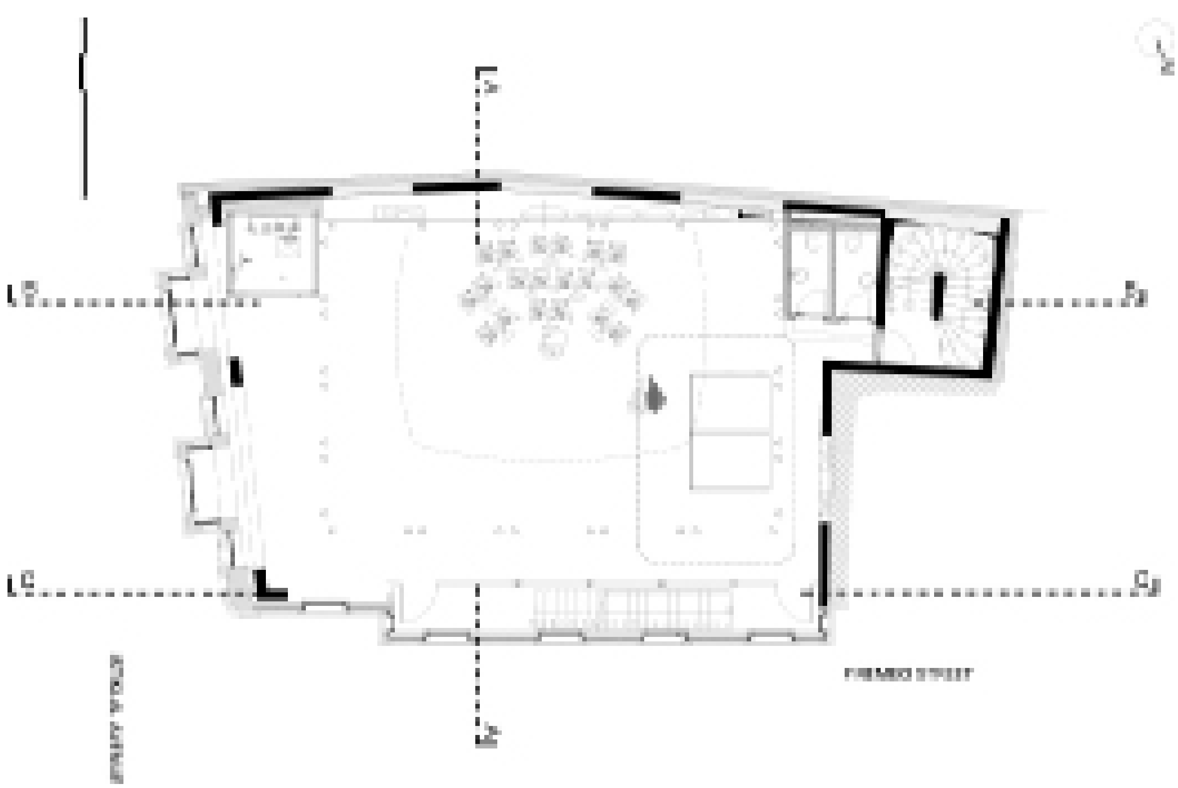
name suggests, the Iveresk Railyards in Launceston was an industrial zone that thrived on the railroad. Although the area has evolved, there is a continual respect for the past as much of the architecture is still intact. The building's form and structural system pays homage to area by rearticulating those former elements into a new design that although familiar, is entirely new.

This is the true strength of the project, as it carries out former ideas in a new way that is expressed in the architecture. It gives the building true context to the site as it's historical presence is felt throughout the entire building. Rather than replicating 100+ year old architecture of the surrounding community, the architects took a new direction that is rooted in older architectural ideals--the main idea behind my thesis project

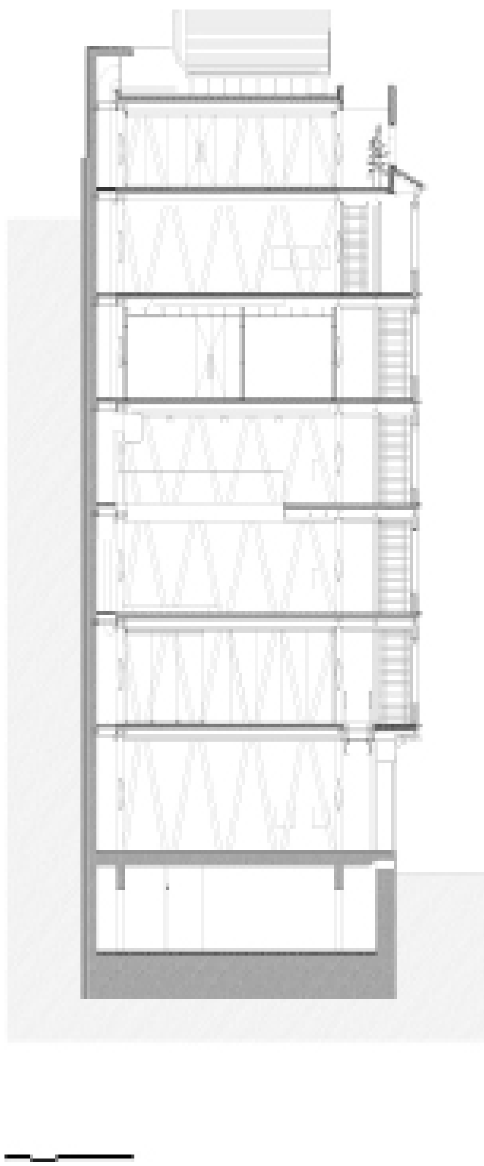
Borusan Music and Art House/
GAD Architects

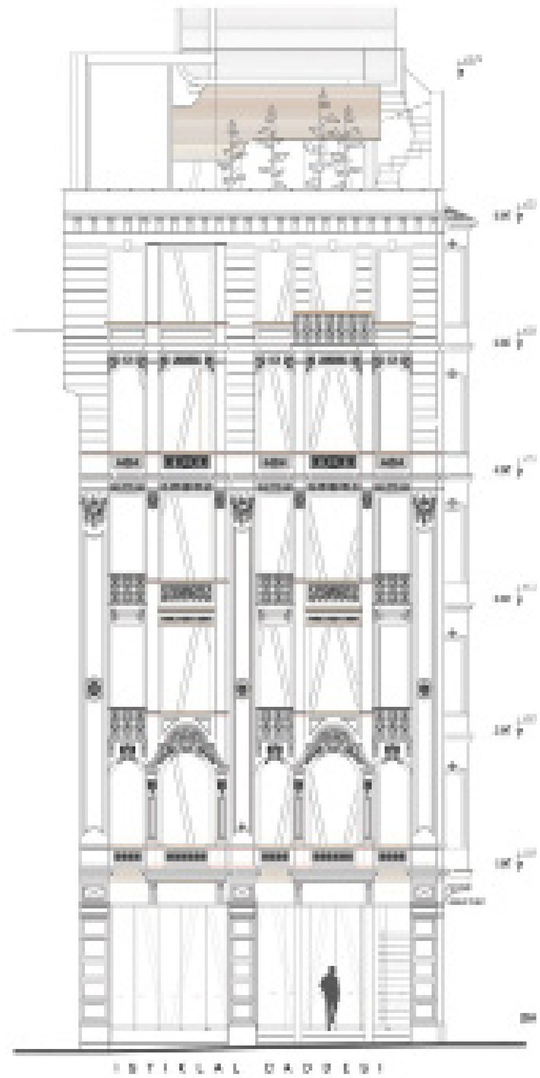
Plans



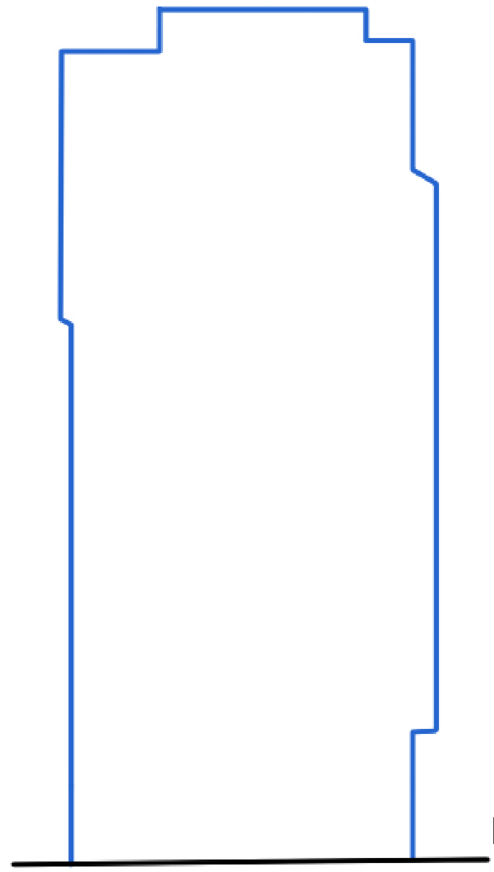


Section

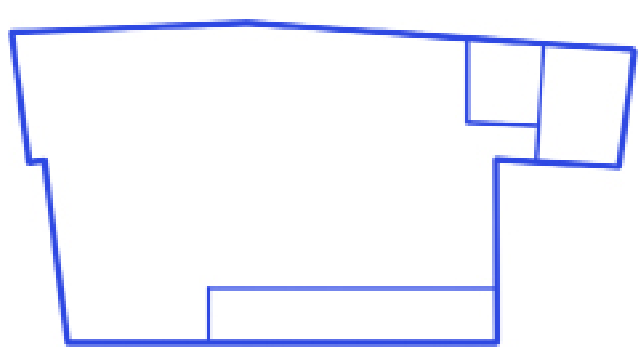




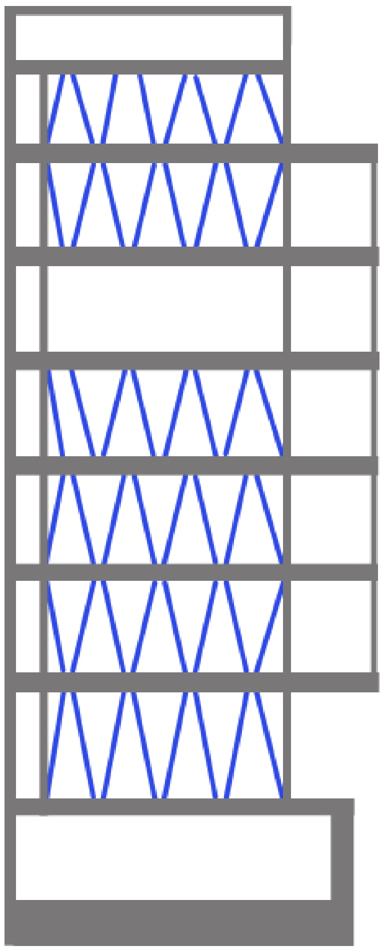
Graphic Analysis



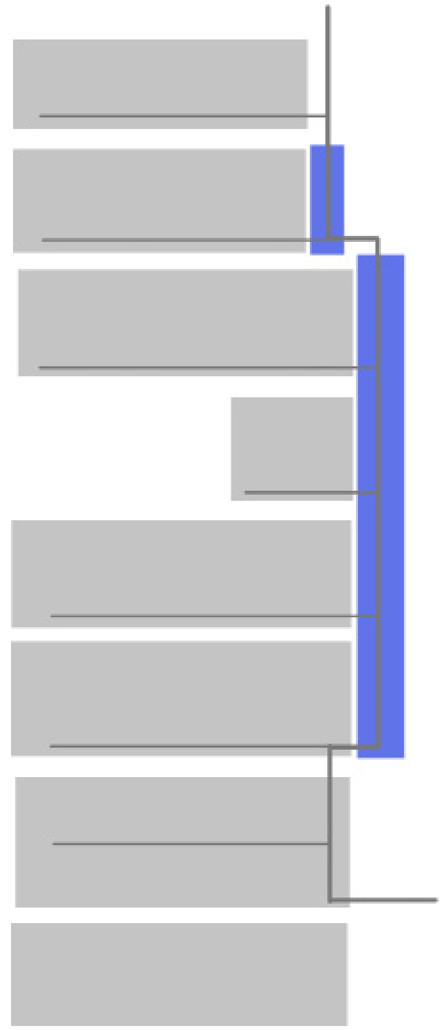
Hierarchy



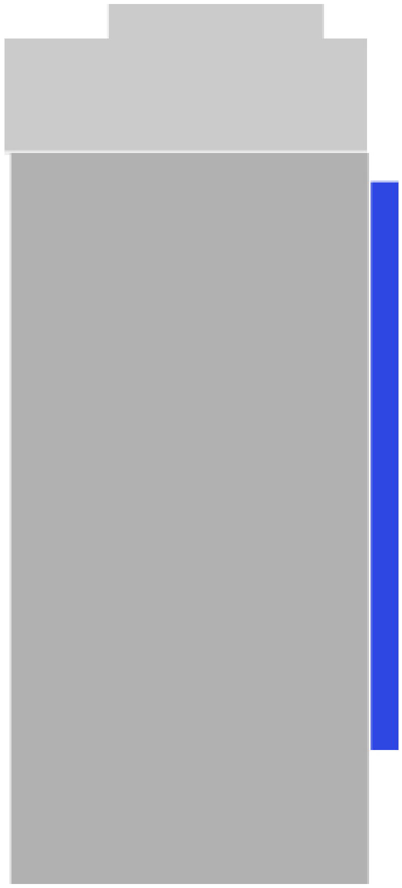
Geometry



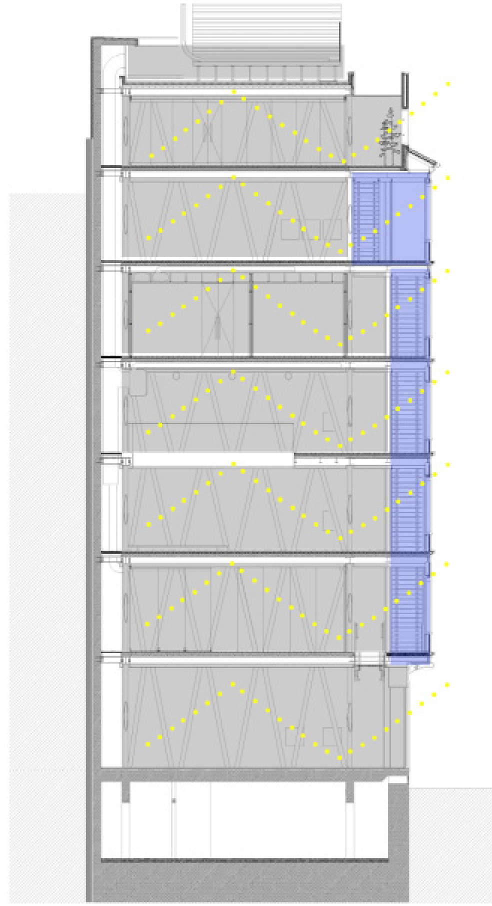
Structure



Circulation to Space



Massing



Natural Light

Plan to Section

Borusan Music and Art House/ GAD Architects

Project Introduction

Located in Turkey, the Borusan Music and Art House serves the community of Beyoglu, Istanbul. The site area for the building is 230 m^2, with six floors combining to make 1,900 m^2 of usable space (approximately 2,500 and 20,500 sq. ft. respectively). Although there are many adaptive reuse projects out there, the one characteristic that sets this case study apart is how the building was restructured.

Essentially, the building is an old facade attached to an new interior structural system, opening up the floor plate while preserving the historical exterior. This is an engineering feat alone as the building's use was able to succeed from the modification of the structure. Completed in 2009, this multi-use facility offers a wide array of events, art exhibitions, cultural center, an orchestra hall, and a rooftop cafe.

Research Findings

One characteristic this case study shares with another is both are adaptive reuse projects. Looking at how each architect approached building reuse allows me to make informed decisions for my thesis, as my project utilizes an old structure.

One area that I had questions with both case studies is how did each architect treat the existing building. For both projects, it seems that although the building's essence and historic architecture was important, both studies were flexible as each project allowed major alterations to the existing building. Though the architecture of these historical buildings is important, they must be able to change to meet the needs of today; that is what makes adaptive reuse projects successful. Rather than treating them as a time capsule, these buildings are a living record. As they continue to age and change, it is recorded and expressed in the architecture, showing both the past and the present.

Regarding the treatment of the existing building, the major difference to this project is the re-engineering to the structure. Essentially, this building is a box inside of a box. The skin of the building is persevered, but the original structural system in the interior is revamped with a steel dia-grid frame attached to the exterior walls. By removing the interior load bearing walls, this system allowed the space inside to change from a series of restricted spaces to an open floor plan. This allowed flexibility to the planning of the interior spaces, as they were not restricted to material and size from the existing structural walls. This important decision to change how the building was structured made the project successful as the historic building was allowed to adapt to the program elements and needs of today.

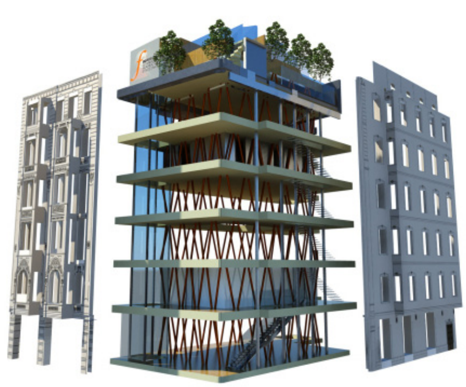


image provided by openbuildings.com

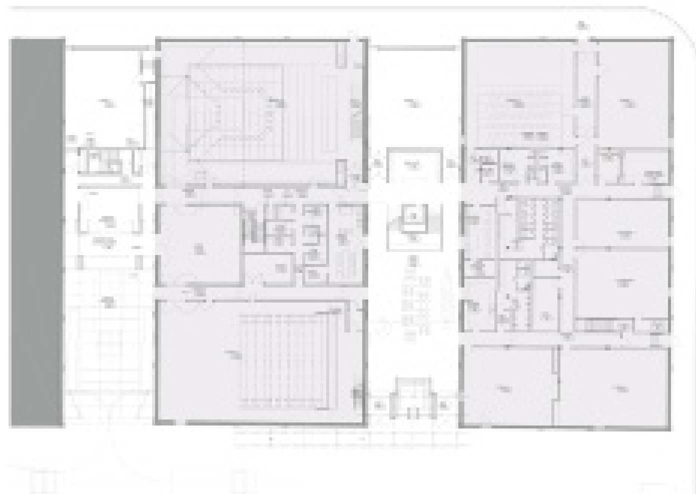
This project responds to the site and surround areas in several ways. One example is the preservation to the historic facade that faces the street. The building's architecture is one of several late Ottoman structures that were built between the 19th and early 20th centuries. The facade is referred to as "French Apartment", and it gives the neighborhood in Beyoglu a sense of place as the entire neighborhood along the Istiklal Caddesi is built in this style (Avicoglu, 2009).

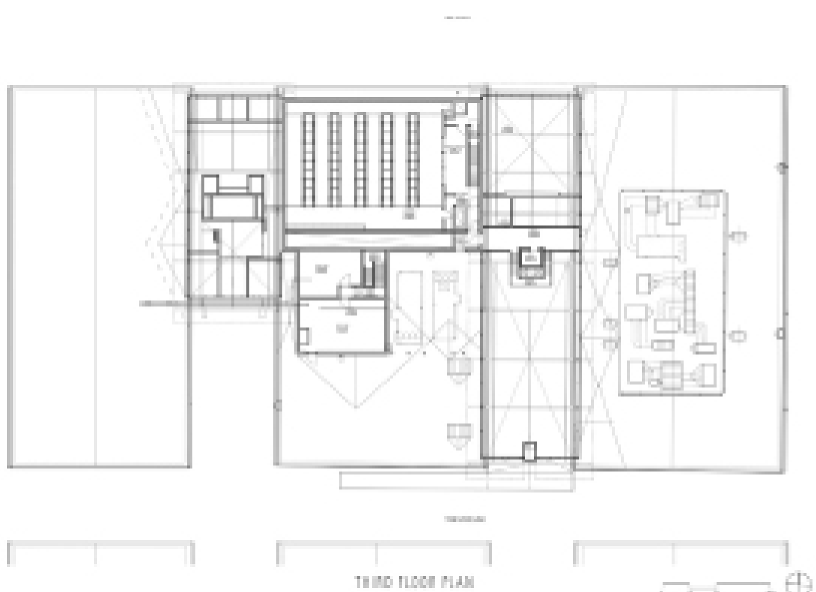
The program for the building is a cultural triumph as it promotes the arts and social interaction to the community. The multi-use facility allows it to be active at all times of the day, providing several services that do not negate the building to normal business hours. Inside, visitors can look at exhibitions, listen to music played by the famous Borusan Istanbul Philharmonic Orchestra, or enjoy a meal at the rooftop cafe.

The successful re-engineering to the structure allowed the project to express both the past and present, adjusting its needs for today while still historically responsible to the community.

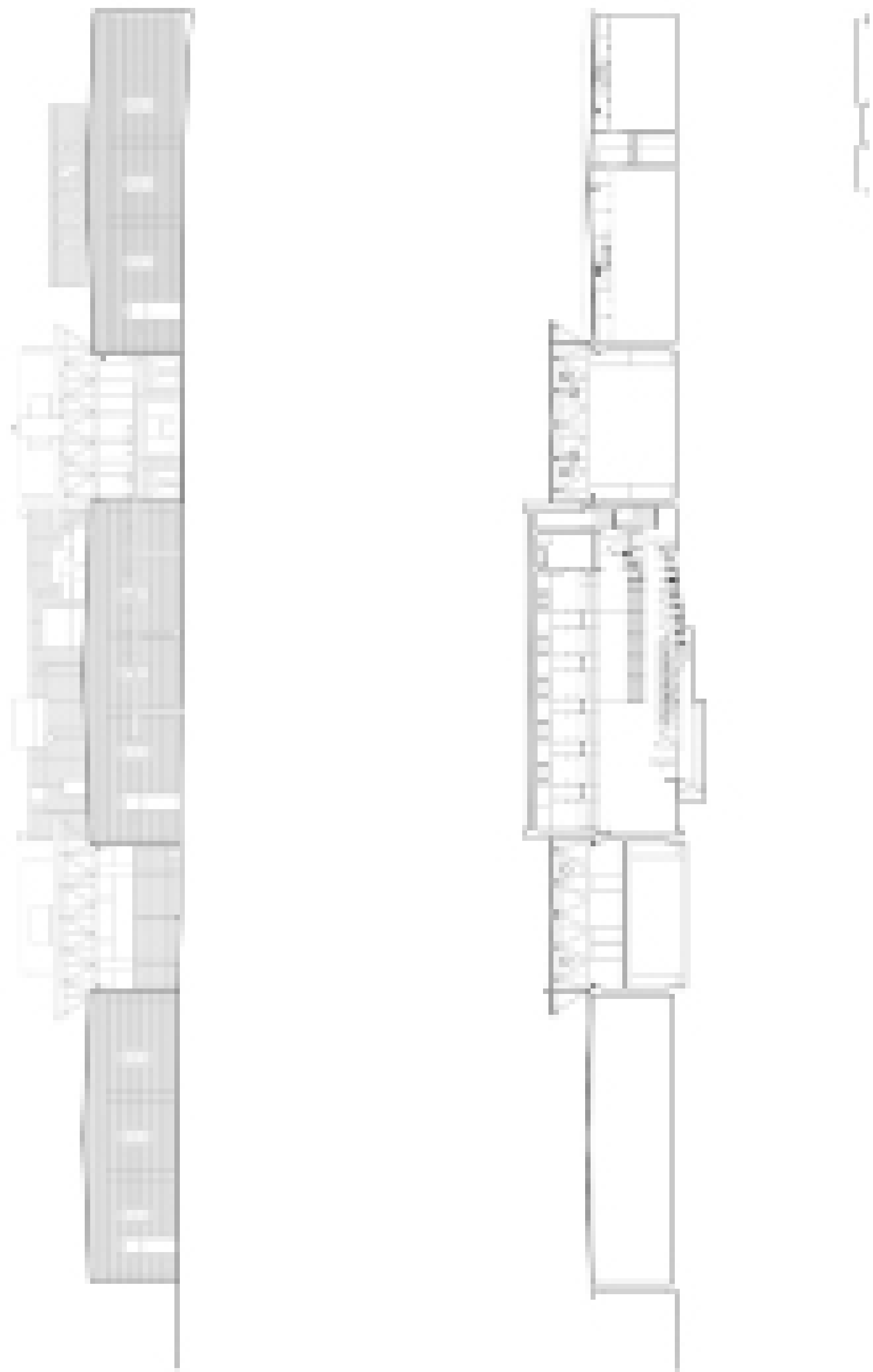
Young Centre for the Performing Arts/ KPMB Architects

Plans

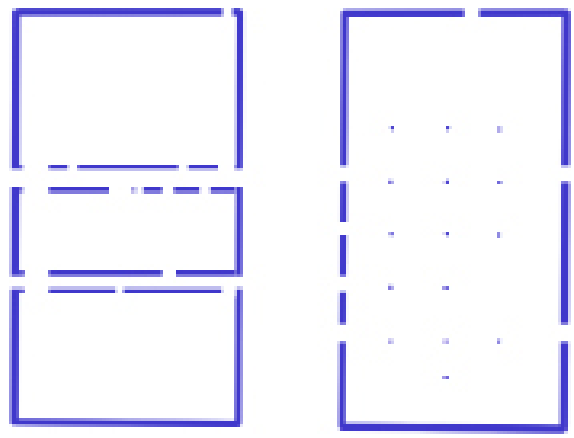




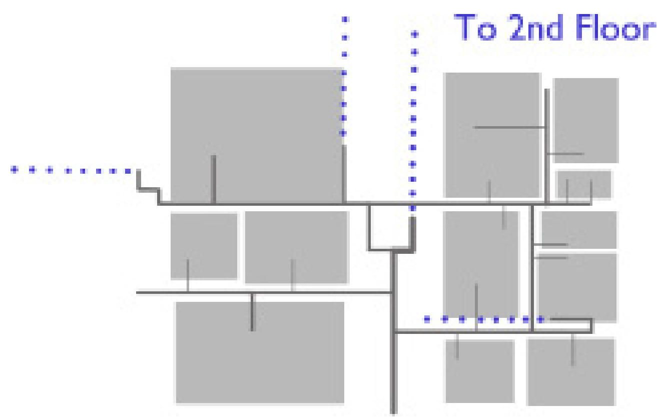
Section/Elevation



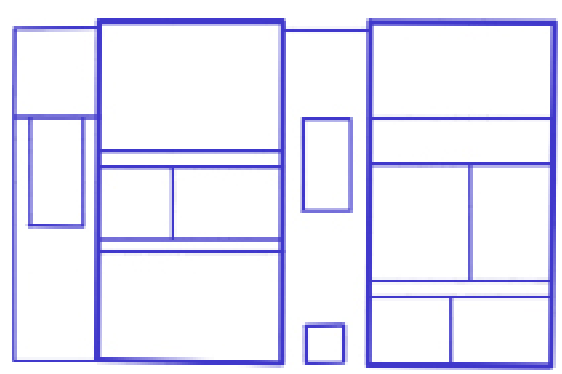
Graphic Analysis



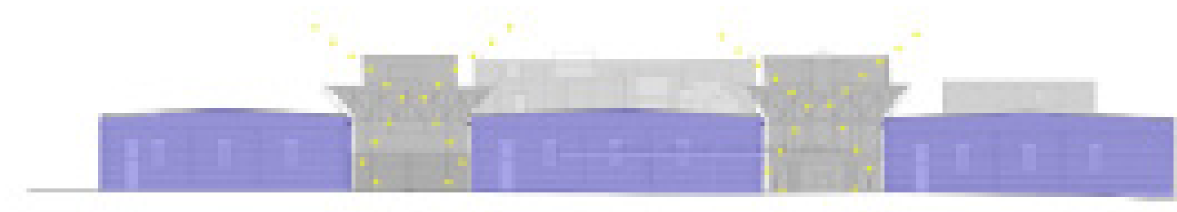
Structure



Circulation to Space



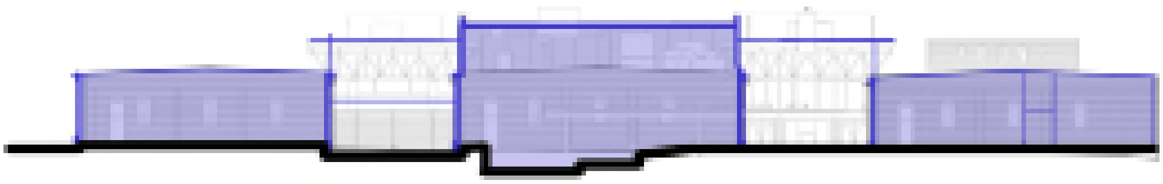
Geometry



Natural Light

Massing

Hierarchy



Plan to Section/Elevation

Young Centre for the Performing Arts/ KPMB Architects

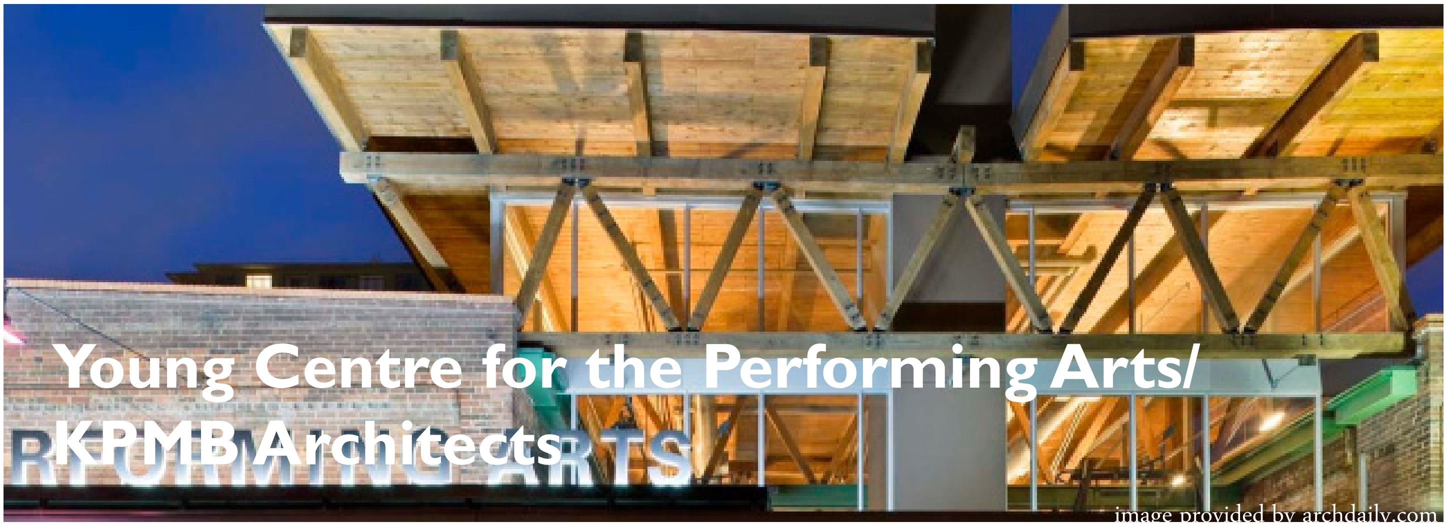


image provided by archdaily.com

Project Introduction

In an old Distillery District, Tank Houses 9 and 10 serves the city of Toronto not as a brewery, but a college and theater. With 44,000 sq. ft. of space, this Canadian facility is both educator and stage. Using a budget of $10 million, this adaptive reuse project transformed an abandoned structure into a bustle of activity, and proper planning allowed the two different programs to coexist under one roof.

A dialogue between the old is allowed to express throughout the entire facility, allowing functional use at all hours of the day. Here, visitors, and are treated to four theatres, a cafe and bar, a bookstore, and conference rooms for business meetings. Students are able to learn theatre with many studio spaces, classrooms, and stages to practice their performance.

Research Findings

My final case study shares the same characteristic with the Borusian Music and Art House as a multi-use facility. The ability to provide more than one function allows the building to have long term value as it doesn't rely on one building program. Instead, there is a duality of two functions, school and entertainment; making it important to a larger portion of the population. Understanding how different typologies can work together is an important aspect that I will employ into my own thesis project.

What makes this case study different is the materiality use for the structure. While the other two relied heavily on steel, this one chooses to express the structural system using timber frame construction. Douglas fir is the wood of choice as it is used in both post and beam and truss construction as it transfers the weight onto the existing historical load bearing walls.

Responding to the site, the college and performance center adds to the already diverse social structure of the Distillery District. The area offers shopping, art, food, and entertainment; and with the introduction of a multi-use building that includes education, it expands the diverse paradigm of the neighborhood, offering even more accessibility with a new typology.

image provided by Tom Arban

The Young Centre for the Performing Arts is culturally significant to the district by highlighting the historic architecture of the area. Many of the structures are built in the "Victorian Industrial" style, dating back to the early/mid 19th century. As many as 47 structures were built by Gooderham & Worts Distillery, and plans to restore the buildings to their former glory begun roughly 10 years ago. But rather than treating the area as a museum, each structure was updated using modern technology, while respecting elements of the past. The result was entirely new use of old space, hinting at both the past and present.

Combining new and old, the Young Center continues this approach of adaptive reuse with the alterations to Tank Houses 9 and 10, but keeping historical context. Window locations remained, original brick was left exposed, as well as the cobblestone flat work remained intact. The result is a palette of brick, timber, and metal; acting together in creating a "raw warm industrial" aesthetic that both pleases the facility and the district (KPMB, 2006).

The strength of this project is the diversity of programs offered, showing that multi-use buildings can be both new and old, functional and beautiful. The project also displays the importance of community involvement, as the redevelopment of the district was a collaborate effort from developers, architects, and the community.

CASE STUDY SERIES/TYPOLOGICAL

All three case studies explored many areas of architectural study deemed important to my thesis project including: building typologies, adaptive reuse, and spatial planning/organization. Researching these projects allows me to evaluate my design as these three themes are important to my theoretical premise/unifying idea: the reintroduction of historical building techniques in an adaptive reuse project.

Beginning with the Australian Technical College, how the building was constructed and the layout of those interior spaces created architecture that inspired learning. It is the responsibility of the architect to treat each project as a masterpiece, regardless of the service it provides. This is an important aspect to my project, as my program typology is an artesian school.

A major part of the profession is to be a good problem solver, and Berrilli Architects used thoughtful planning and good material selection to create thoughtful, and effective design. Although it was new construction, the facility referenced the surrounding community by the shape of the building and the materiality of structural components. This displays architecture's attention to the surrounding area by giving the school context within the neighborhood. This allows new projects to become an extension to the neighborhood by drawing on older connections.

From this idea, additions to the existing structure for my thesis project will reflect on the site's history. As the original facility and surrounding buildings were part of a brewery, I will reintroduce those core ideas/cultural values into the project.

The Borusan Music and Art House continued this recognition of the surrounding environment; so much in fact the building's structure was re-engineered, but the exterior facade remained intact. Thus the building wanted to be part of the neighborhood by preserving its exterior, but developed a new interior that reflected today. The juxtaposition between new and old is ever-present as the structural members can be seen when looking through the exterior windows. This indicates building reuse should be flexible, and there is a hierarchy that architects develop for adaptive reuse projects in what they should change, and what should remain the same.

As I look towards my thesis project, I will analyze the existing structure(s) and begin to develop a hierarchy of my own. Through this I can develop a design language that my project can express with the architecture by using the historical building techniques to create a dialogue between the new and the old.

Concluding this research, the Young Centre for the Preforming Arts continues both examples by its successful organization and design language between old and new. Lastly, it owes part of its success to the work done beforehand in the surrounding community. As mentioned before, the Distillery District undergone urban redevelopment ten years prior to the introduction of the project. It confirms that it takes a group effort with the involvement of many members from various professions and the community, allowing adaptive reuse to work.

In my thesis project, there is promise for the site as there is community effort displayed with grant money to update the facilities; along with new businesses entering the area. With my building typologies of a school, exhibition space, and cultural programs teaching historic techniques to the public, diversity will be added to the area and surrounding community.

Comparing the three shows good architectural design allows flexibility, regardless if it new or building reuse. It needs to be usable, beautiful, and have more to offer than one service. These issues can be hard, especially for adaptive reuse projects. It will take time for these ideas to be reintegrated into an area, especially if the area that was once prominent, is now lost. But all we can do is try, and with good examples explored, it can be done.

HISTORY

What unfolds is the history Hamm's Brewery, of Saint Paul, Minnesota. For over 100 years, the brewery was a staple for the community along Minnehaha Ave, but its eventual closing in 1997 had profound impact to those who worked and lived in the surrounding areas. All that remains to the Hamm family name are a series of vacant structures-the site of my thesis project.

Investigating the social implications to the neighborhood when it finally closed doors, Hamm's legacy still is important to the community even though it no longer brews beer. Individuals continue to collect memorabilia, and there are web sites dedicated to the history of the Hamm family.

As the site enters the 21st century, new interest with the abandoned would rise again, but in a different direction. Can Hamm's Brewery regain its importance and influence to the neighborhood once again?

Site (Hamm's Brewery)

The origins of Hamm's Brewery does not begin with Theodore and Louise Hamm, but in fact a man named Andrew F. Keller. "Excelsior Brewery" made over 500 barrels a day in St. Paul, and plans for expansion to Mr. Keller's brewery were set.

The only problem was the matter of funds, and this is when Andrew Keller approached Theodore with a proposition. As collateral, the rights to the brewery would be given to Theodore in exchange for a loan. Being the smart businessman, Mr. Hamm agreed. Later Andrew Keller would regret his decision, as he defaulted on the loan, and Excelsior Brewery then became "Hamm's" in 1864.

Zoning laws did not exist back then, and the site of the brewery was quite different. Along with a beer garden, a cattle yard and mill were built.

Within subsequent years, the site including a boarding house, with residents who worked for Hamm's Brewery fed three meals; and on Christmas a basket with food and silver dollars were passed out, giving Theodore the nickname "Bruderle Hamm" which means "little brother." (Thompson, 2000)

Success to the brewery allowed Theodore Hamm to add technological advances to the brewery. Automated bottling and artificial refrigeration allowed the Hamm's Brewery to become a "modern brewery", with the once famous tours of the plant begun in 1903. As the brewery grew, so did the production of beer; from 500 barrels a year in 1865, to 600,000 barrels in 1915 (Thompson, 2000).

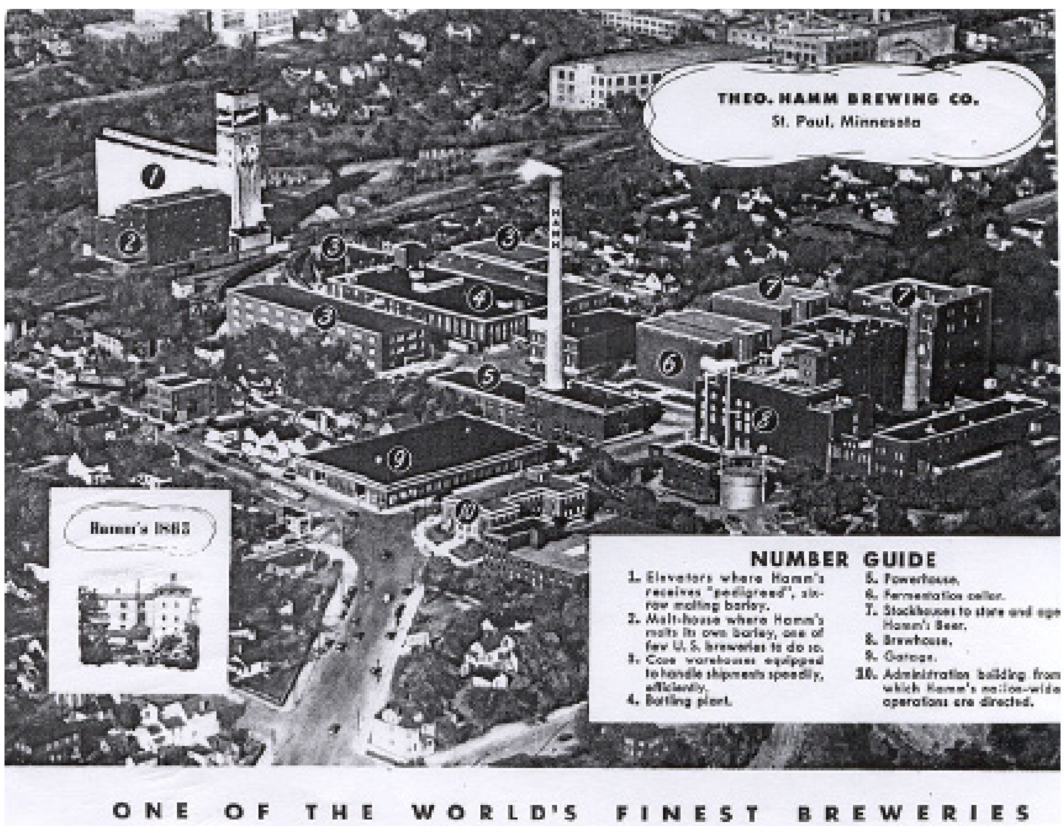
Though the following decades proved difficult, Hamm's Brewery remained in business. In 1903, founder Theodore Hamm passed away, and his son William took over, as he previously dropped out of school and worked at the plant since the age of 13.

During the Prohibition Era, the production and sale of alcohol including beer was illegal. The plant somehow managed to stay afloat by producing new products including, soft drinks, and industrial alcohol syrups. During WWII as the men from the plant went overseas to fight, their wives kept the place running while they were gone.

The remaining structures on the site today were the result of a $16,000,000 expansion to the plant to over 20 acres. The peak of the company would be felt in the years between 1950's-64.

Production peaked at 3.4 million barrels a year in 1957. Hamm's brewery expanded their franchise in San Francisco, Los Angeles, and Houston. Money was poured into advertisement, and the famous slogan "Refreshing as the Land of Sky Blue Waters" along with commercials featuring Hamm's bear.

After 100 years in the brewery business, the family sold the brewery to Heublein, Inc. in 1965. This would mark the beginning of the end for the brewery, as it would continually decline. The brewery then exchanged hands four more times: Hamm's distributors in 1973; resold to Olympia Brewing Company the same year. Finally, Pabst Brewing Company in 1983 which traded with Stroh's in Tampa. Hamm's beer was no longer produced by the brewery in St. Paul after 1983. Stroh continued to brew beer at the plant until 1997. On November 24, 1997, the final whistle blew from inside the brewery, and 350 workers walked quietly away.



Theo Hamm Brewing Co.

As soon as the doors to the plant closed, public outreach began to decide what to do with the brewery.

A group of over 100 individuals met to discuss the future of the plant, and suggested to raze the site for an industrial park. Instead of demolishing the old brewery, Howard Gelb (a real estate investor) bought the rights to the plant in 1998.

Between 1998, and the present day in 2012, much has changed to the site of Hamm's Brewery. Several buildings including the elevator, the fermentation cellar, and stock houses on the north side of Minnehaha Ave. were demolished.

The bottling house was renovated and currently is leasing office and apartment space, while the remaining stock house south of Minnehaha is home to a urban organic farm and fishery.

Although several of the buildings continue to decay, urban explorers continue to trek the grounds.

Lastly, a $403,000 grant was given to the city of St. Paul to update utilities to some of the original buildings.

The impact of Hamm's Brewery closing its doors hurt the community as it was a staple employer. The once vibrant neighborhood, is now virtually silent. When a business at one point operates with over 1,500 employees at peak begins to falter, the area suffers.

Generational workers who lived, worked, and played in that area for years had to adjust, as they neighborhood continued to decline.

Third generation plant worker Pat Bowlin garnered as much old Hamm's memorabilia as the plant was clearing out its doors. This just one example of the Brewery's influence on culture, as Old glasses, bottles, news adds, and other paraphernalia created by the old brewery are bought, traded and sold on ebay and conventions. There area even Youtube™ videos that show old commercials once aired on television sets across Minnesota.

Similiar Themes

For my thesis project, the structures of the former Hamm's brewery will become my new artesian school. In reflection of the history of the site, several factors play into the success of an adaptive reuse project.

Unfortunately like many other properties across the nation, areas that once were prominent are now in decline. Blue collar communities inside larger cities including Pittsburgh, Baltimore, and Detroit all have similar problems to urban decline in an area, especially if a major economic provider no longer is there.

For the brewery in St. Paul, businesses surrounding the plant suffered as soon as the plant closed doors. Borgstom Pharmacy, located on Payne Avenue, stated "The vitality of the East Side has been based on this type of business" (Meryhew, 1998).

Another issue that arises is how exactly do you treat the former area. There are many good adaptive reuse projects out there already, but it is not ensure that those projects would ensure success if implemented locally.

One major issue with this project is the inability of the owners to make a decision. Because the property is split between three owners, and although work has been done by two the problem is they are working interdependently. Three different visions for the direction of the area is a large reason why the area is at a standstill.

Social Trends

There is continual support for adaptive reuse projects from both architects and the public. From the architecture realm, these projects preserve the history as well as improve the built environment. They give a place context as the buildings are given and once again become and integral part of the neighborhood and surrounding areas.

The public enjoys these types of projects because they are enjoyable places to be. Proper planning and execution can revitalize an area that once was prominent. This can be very personal to the public, and for this reason is why Hamm' Brewery meant so much to the community and St. Paul.

This issue is important to my thesis project, as it will reinvest into the community by providing services for many, just as the brewery did prior. It also can build a new traditions with the community as my facility will be an educator, entertainment, and a service provider.

Social Context

The site for my thesis is important to the community as the Hamm family gave back to society. Resurrecting the site is important to the social context of the community as the brewery was an integral part in their lives as an employer, but more importantly a friend.

Even at its earliest beginnings, Theodore Hamm's generosity was experienced by his workers. As mentioned before, he would give out food and silver dollars for Christmas. Continuing this generosity, the family reached out to those less fortunate.

The Hamm Memorial Psychiatric Clinic is a non-profit mental health facility, offering care to individuals who social outcasts. The clinic still runs today, and owes its existence to the Hamm family.

"Established in 1954 by the family of Theodore Hamm, was founded on the belief that comprehensive mental health care is a basic human right for every community member."

(Hamm Clinic)

Contributions like this explain why the site is revered by the residents. Rehabilitating the area gives hope to the residents as it can help their community grow again.

PROJECT GOALS

Academic

In the academic realm, this project seeks to find relevant knowledge for my thesis gathered from research- in particular adaptive reuse. For this reason, the information presented must be of high standard from quality sources. Knowledge is only as good as it is useful, and finding useful information relevant to architecture is important for the development of new ideas, adding to the wealth of architectural knowledge that already exists.

Sometimes this information can also be lost or forgotten (such as historical building techniques,). With the reintroduction of this knowledge, the academic world benefits as this information is preserved, allowing others to use when needed. It is from my research and new ideas that when complete, my thesis project will become a tool for others to use in learning.

In the course of knowledge, students at NDSU and across the nation may have the same questions I faced when encountering adaptive reuse and historical built techniques. When others use this project as reference will be a sign that I have made the time to do thoughtful, appropriate work.

Professional

Regarding the professional realm, one goal for this project is to influence design professionals to undertake adaptive reuse projects. Providing some answers to difficult problems architects face will remove some reluctancy felt by firms who avoid this type of work. This can be the resultant from a lack of research to adaptive research problems or project typologies, and the risk taken without substantive information in the firm's viewpoint, is not worth it.

This project wants to encourage those not to be afraid, and a good starting point for adaptive reuse is learning from noble examples done by other professionals in our field. Highlighting thoughtful work can ground our fears by studying what our colleagues have done to understand when faced with a problem. As a student researching these difficult issues, the information I present into my thesis project gives validity to our education and furthermore to the profession. As noted before, using this project for reference is important to the academic world, but also crosses over into the professional as they too can use this document as a tool for learning.

Personal

This project will continue my interest in the complex area of adaptive reuse. There are many topics I have yet to comprehend when it comes to building reuse; such as understanding the budgeting for these types of projects, and determining what systems can be used to coincide with the former.

This thesis project will allow me the opportunity to continue my research and act as a stepping-stone into a hopefully long career in this subject.

In continuing this research, I will also have the opportunity to learn new skills shared by craftsmen of stone, wood, and metal as it is a personal interest of mine and an essential theme in my project. I have and will continue to work with my hands as a craftsman, and over the years of doing carpentry, I have garnered respect for the individuals that preform these tasks.

As much of the construction workplace can be mundane, my thesis will bring new life into tradesmen skills by reintroducing old techniques, allowing architecture to continue to be unique by rearticulating the past. The intention of my thesis is to use all my research, and with these old techniques, create architecture that has greater value than just an old building because of my comprehension on the subject.

SITE ANALYSIS

-Qualitative Site Analysis

-Place

-Site Observation

-Quantitative Information

Image provided by Google Earth

QUALITATIVE SITE ANALYSIS

681 Minnehaha Ave
St. Paul, MN

Mid-day, 2PM. As we meander through various lines of traffic, we knew we were getting close to the site, as the area looked familiar from Google Maps. Turning left onto Minnehaha, we finally made it to our destination, the site of the once renowned "Hamm's Brewery". Our arrival did not stir anyone, for the lot was vacant. The fall sun shone brightly upon us, and as we look around, we feel quite alone. Walking a few steps, we continue our journey into the unknown, while red-bricked buildings stand silently watching us, on a Sunday afternoon.

Upon further inspection, I notice work is being done on the structure. There is a fence blocking a ramp to the entrance, and a banner attached to it reads "For Lease". I am not quite sure what they are exactly leasing, and with nothing else to see, I entered the car, and drove south.

I cannot imagine how lifeless the site seems, it is completely desolate. I continue to walk around to get a sense of the place, while my companions are less formidable and remain in their seats. My eyes glance around, hoping to find someone. Shrugging my shoulders, I approach a building.

Exiting the lot, we make a short right, and then left into an alley owned by the property. Here I looked up and first realize the massiveness of the brick towers as they align with the alley, forming a corridor. Fifty feet ahead, we can no longer proceed, for once again a gate stops our path.

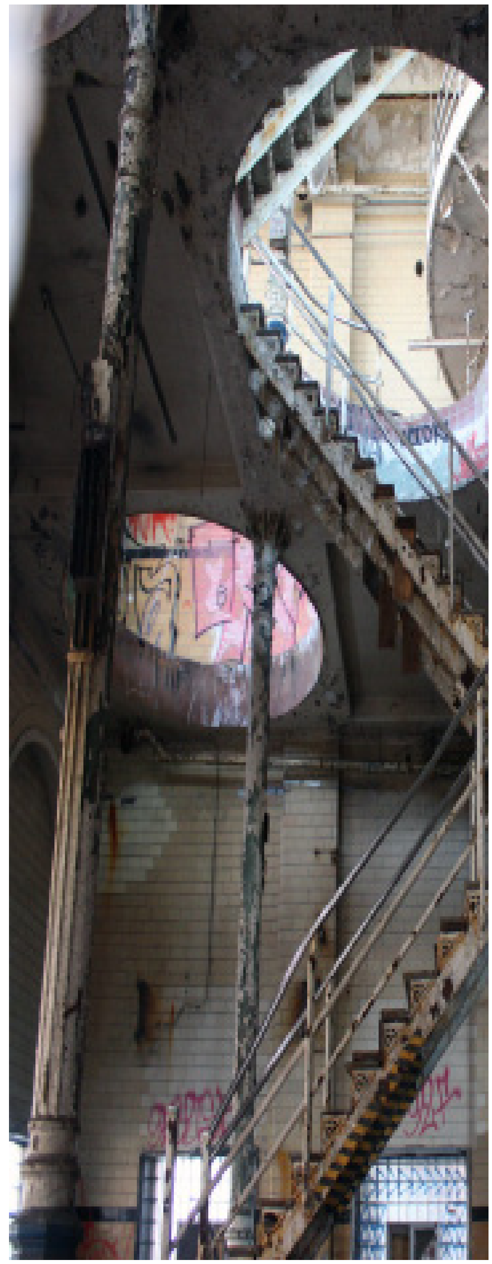
Although our path is blocked, I get out to get a better look. This is the entrance to an old trucking dock. The road continues south, then makes a sharp 180 to the right, and proceeds down a steep grade to the building on our right. Tracing the road with my eye, I catch a glimpse of two people walking at Willow Park, just a hundred feet below. Civilization at last.

I notice how comfortable they seem as they look at one another in conversation, while making a stroll on a quiet afternoon. I finally feel comfortable for the first time since entering the area, and now I want explore. I begin to walk out the alley and turn right on the sidewalk, passing a sign well mounted onto the brick reading “Power House 8”.

Looking up, I am in awe wondering how many brick it took to build the massive walls. This building is well over 80 ft. high, and seems to be in good shape. Continuing my journey to the east, I stop at the former main entrance to the facility. At one time, thousands of visitors would tour these very same walls to quench their thirst with a free sample.

Walking 80 more steps, I reach the corner of the building, and once again I am met with an empty lot. “With all this pavement,” I wonder, “Why did I park in the alley.” Over 100 cars could park here alone. I retrace my steps, straining my neck up to see the tops of the building as I pass by, and return to my companions in the alleyway. There, they did not seem to notice my arrival, as they were busy in discussion. I could not take it anymore, I had to enter a building.

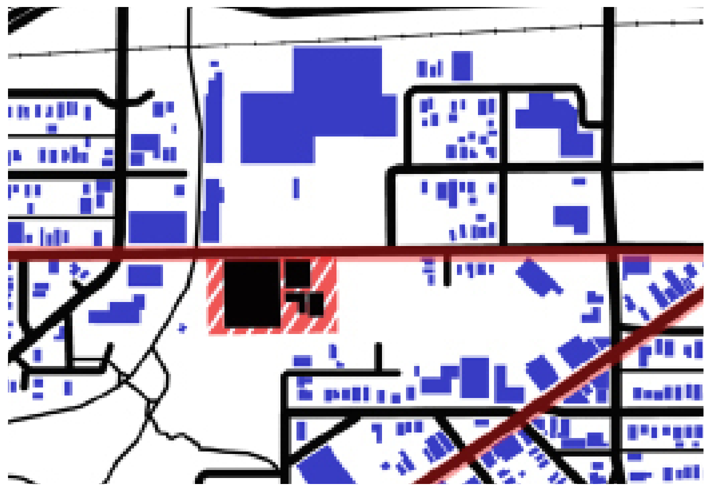
Although the windows are boarded, I knew from stories on the internet that this site is host to many urban explorers. I lightly pry back the weathered sheet of plywood, muttering to myself whoever put this board up did a poor job of keeping me out. The inside is dirty and in a slight state of neglect. A set of two columns flank each side of a metal staircase filling the empty space. Up the stairs onto the second level, circular voids are cut out of the floor to below. Light filters down from above, and I take time to enjoy the verticality of the space. "Hello" I call out, and quickly react with contraction, hoping no one would answer. I snapped a few photos, sighed in relief, and returned to my vehicle to grab a bite to eat. Funny how strange a place seems when no one is around.



SITE OBSERVATION

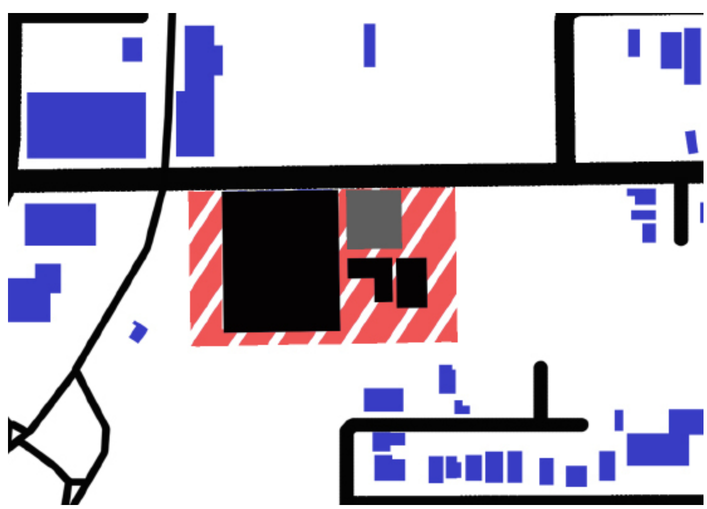
Existing Grid

The area around my site at consists of two grids. The site and existing buildings follow the Cartesian grid. The grid is then broken with E. 7th Street running at approximately 30 degrees to the south. The reason for this anomaly is St. Paul is built according to the direction of the Mississippi River. For this reason, the grid changes direction to follow the river instead of Cartesian directions.



Density

The density of the area was in decline for many years since the closing of Hamm's Brewery in 1997. Some of the structures to the north across Minnehaha Ave. were demolished, but there is a resurgence of interest for the remaining structures. The structure on the NE corner of my site known as "Stock House" is now home to an urban fishery; while the remaining structures they are still monitored.



Light Quality

There are varying degrees of light quality depending on what side of the site you are on. On the north edge following Minnehaha Avenue, the existing buildings cast heavy shadows on the road. While driving or walking, there is an alternating pattern of light and dark. Extending this play of light is an alley between the central and eastern building. There, light filters between the two structures, reflecting off the brick surface. A walkway that connects the two structures break this display by creating a shadow that transfers from one side to the other, acting as a sundial.

The west side of the site is quite open, and is light by midday. Here the interplay of light and shadow is less obvious, and is created by various architectural details formed by the brick and stone.

Wind

Depending on the season, the winds come from the NW in the winter, and the SW in the summer. The northern winds are most noticeable on the NE corner of the site due to the openness of the area. The existing structures also tend to channel the wind into the central alley. The southerly winds are not as noticeable due to a ridge line forming on the southern edge of the site, sloping down to the park below. This tree covered area creates nice cover as it will dissipate any strong breezes from that direction.

PLACE

Human Interaction

When walking around the site, there are many signs of human interaction. Although there are abandoned structures in the site, the area is relatively clean of debris. If you were to look up at the "Stock House" facing Minnehaha Ave., a sign advertising the "Urban Organics Fishery" is attached to exterior wall. Renovations to that building are well underway, and the site is being secured with a fence to block trespassers from entering.

This has not deterred any public interference. As I researched the history of the facility, the area continues to be an "urban explorer hot spot", with many individuals making the trek to enter the grounds. Although this is against the law, I applaud those very individuals who took the risk and capture photographs of the buildings and posted them online. In the course of recent years, a few structures have been torn down, only leaving a graded patch of gravel behind.

Distress

The reaming structures of the former Hamm's Brewery are all showing varying signs of wear. Many areas on the brick walls of the exterior show a white coloration from efflorescence. Although this may be only a cosmetic issue, the mortar joints of those areas may need repair work. Almost all of the windows are broken, and with no signs of glass on the outside, it can be assumed that they are in fact the result from vandals throwing rocks, breaking the glass from outside-in. This has caused the first floor including doorways to be boarded shut to keep intruders out. Other signs of wear beyond the facility is the flat work on the site, with various potholes littering the east end. Fences that are put up to barricade intruders from entering the south end of the site have been partially pulled back. Vegetation is also growing in the cracks along the foundation walls and fence lines. As a result from the distress, the property owners of the facility (which is owned by three parties) are upset because the value of the facility continues to be depreciated in value.

QUANTITATIVE INFORMATION

Soils

There are two soil types found in the region. The tree covered ridge which includes the southern portion of the site is "Doreton-Rock outcrop complex", with a 25-65% slope. The soil composition is Loamy sediment over limestone bedrock, with a depth of approximately 70 inches until bedrock is encountered. It has a low water capacity.

The rest of the site's soil and surrounding area is "Urban land-Chetek complex", with a 3-15% slope. The soil's composition starting with the topsoil and increasing in depth is sandy loam, gravelly sandy loam, and gravelly coarse sand. The soil drainage class is "somewhat excessively drained" and the depth to water table is more than 80 inches.

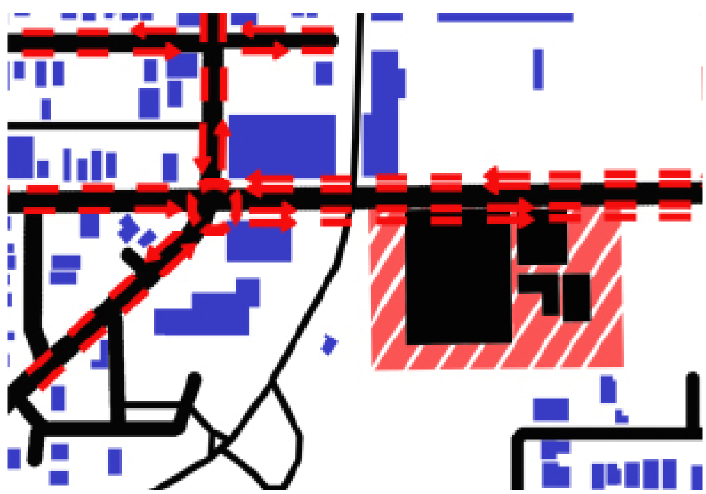
Image provided by the USDA

Utilities

The site's utilities still exist but are in need of updating. Recently, the city of St. Paul received a $403,000 grant from DEED (Minnesota Department of Employment and Economic Development) to make much needed updates to the structures south of Minnehaha Ave., which is the location of my site. This is a welcome notice as it will attract more leasing opportunities to the area.

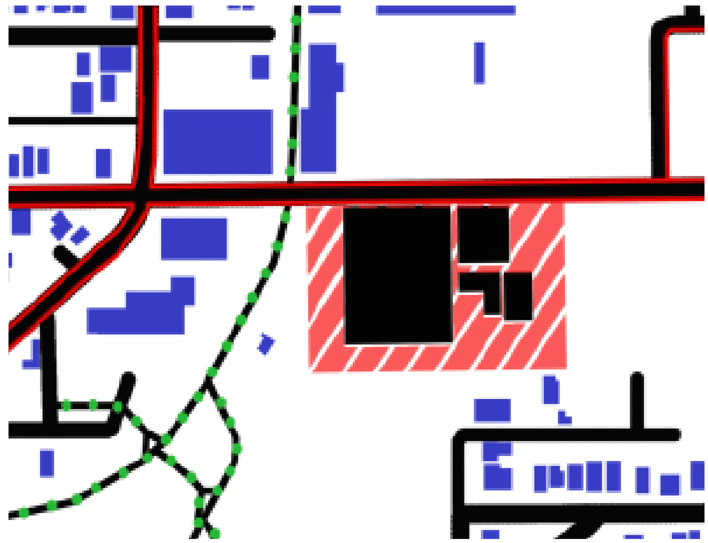
Vehicular Traffic

Vehicle traffic to the site and surrounding areas varies. Minnehaha Ave. is a major transit line, with a double lane up until the intersection with Payne Ave. This can be cumbersome at times as one lane changes into a turn lane, and bottlenecks can occur. It is also noted that the traffic in the area is prototypical that of rush hour; busy on the weekdays, but on weekends such as Sunday afternoon, traffic is nonexistant.



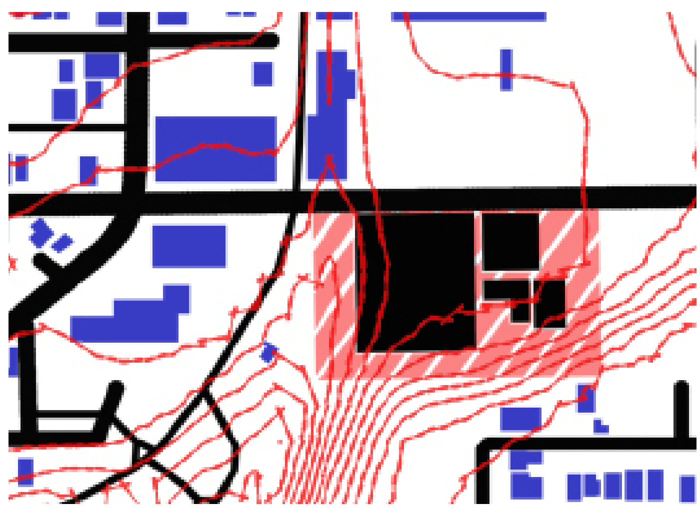
Pedestrian Activity

There are two distinct types of pedestrians using the site and surrounding areas. The first type use the sidewalks along the major roads in the area. Activity along this route is low as it is not used for recreation. The other route are the walking paths located west of the site. These paths are used much more as they are located in a park (Swede Hollow), and are protected from traffic (path travels under Minnehaha Ave).



Topographic Survey

There is a large elevation change along the ridge line, traveling into Swede Hollow Park. The grade of this elevation change ranges up to a 65% slope. The brewery on the site utilizes this elevation change by cutting a trucking lane along side of the hill, resulting in a much lower level for the west building (roughly 25 feet below road grade). The rest of the site has approximately a 5% slope.



Site Character

At first glance, there is much to be desired from the site. The inactivity of the area inhibits any interest one would have when visiting. This has been exercised thoroughly as the structures, though abandoned for only 15 years, have degraded; and some drastically enough to be removed. As I continued to investigate the site, there were signs of promise. The area is clean, which shows that the buildings are being monitored. As mentioned before, a business is moving into one of the structures, and some of the structures around the site (also part of the brewery but different owners) are leasing. I also knew from blogs that many know of this former brewery, and still take the time to visit (though illegally). These signs of interest make the site a "diamond in the rough", and though it needs some work, there are people out there who are willing to make this place important again.

Site Reconnaissance

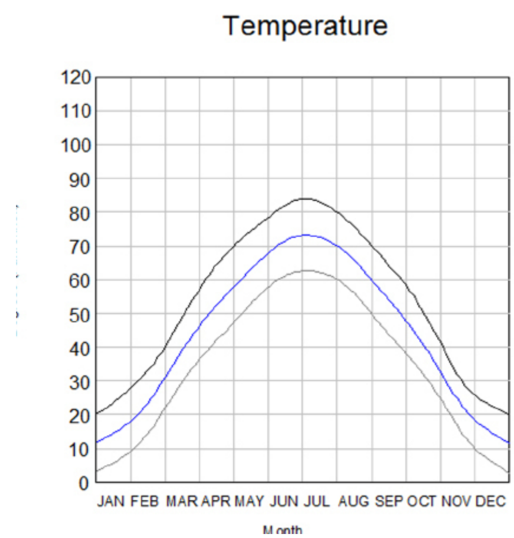





Climate Data

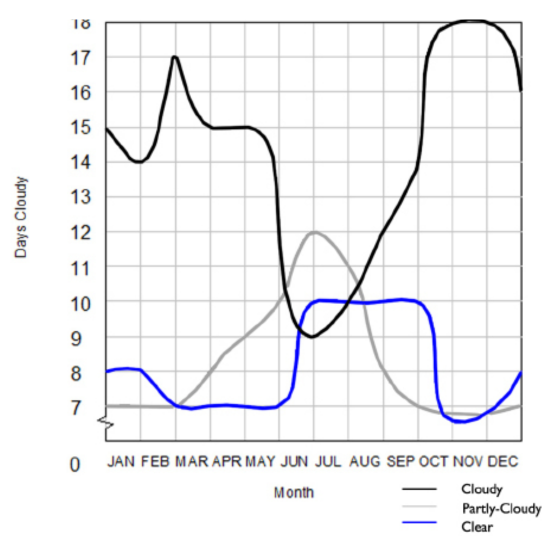
Temperature

Average monthly temperatures range from 3 degrees (F) to 85 degrees (F). It is noted however that this range can increase as record lows have been well below zero and highs in the high 90's.



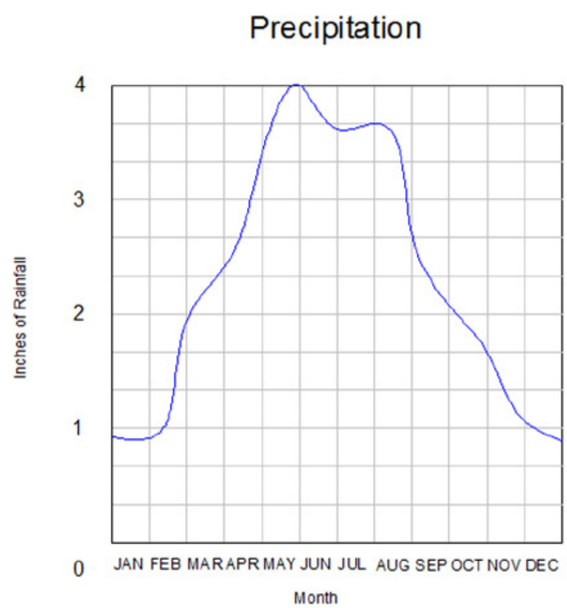
Cloudiness

The major days of the year is cloudy because of the greatest ranges of temperatures.



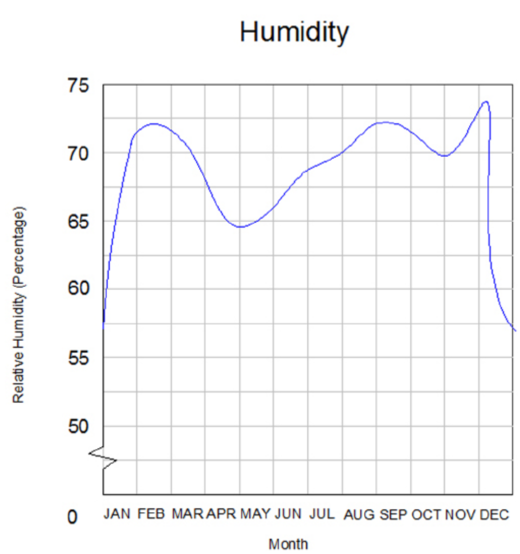
Precipitation

Average monthly temperatures range from 3 degrees (F) to 85 degrees (F). It is noted however that this range can increase as record lows have been well below zero and highs in the high 90's.

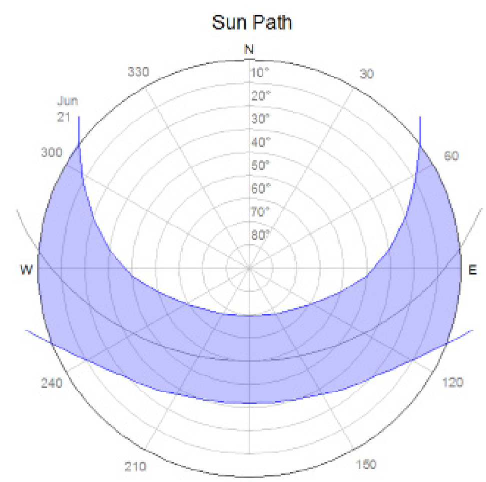


Humidity

The humidity peaks in three separate months of February, September, and December.

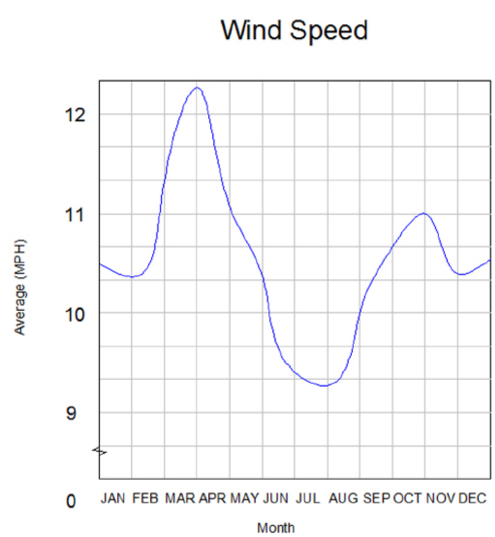


Sun Path



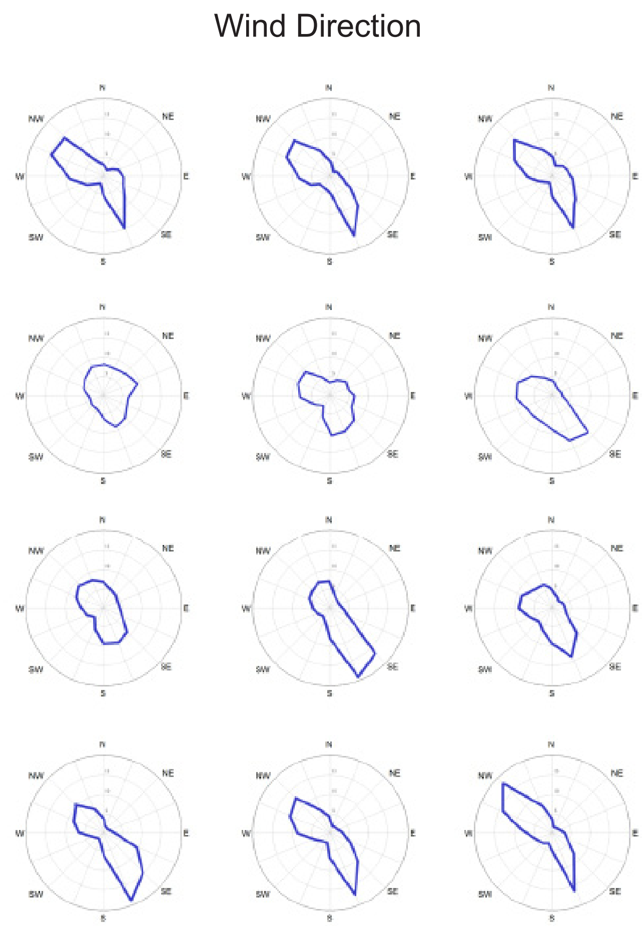
Wind Speed

Average monthly temperatures range from 3 degrees (F) to 85 degrees (F). It is noted however that this range can increase as record lows have been well below zero and highs in the high 90's.



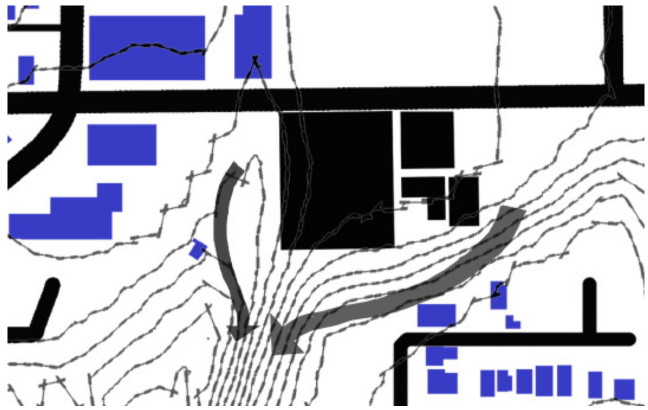
Wind Direction Cont.

Average monthly temperatures range from 3 degrees (F) to 85 degrees (F). It is noted however that this range can increase as record lows have been well below zero and highs in the high 90's.



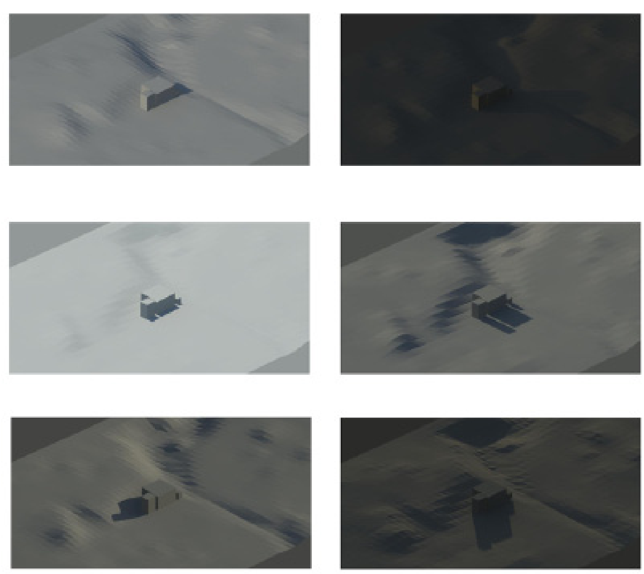
Slope and Climate

The contour of the land funnels into a valley where Willow Park is located. The land to the south of the site drops approximately 60 ft. from the southeast corner to the southwest corner of the site.



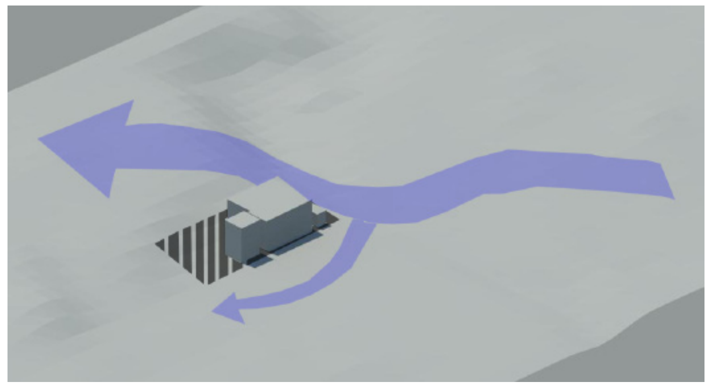
Shading

With the existing structures on the site, various shadows are cast onto the surrounding area.



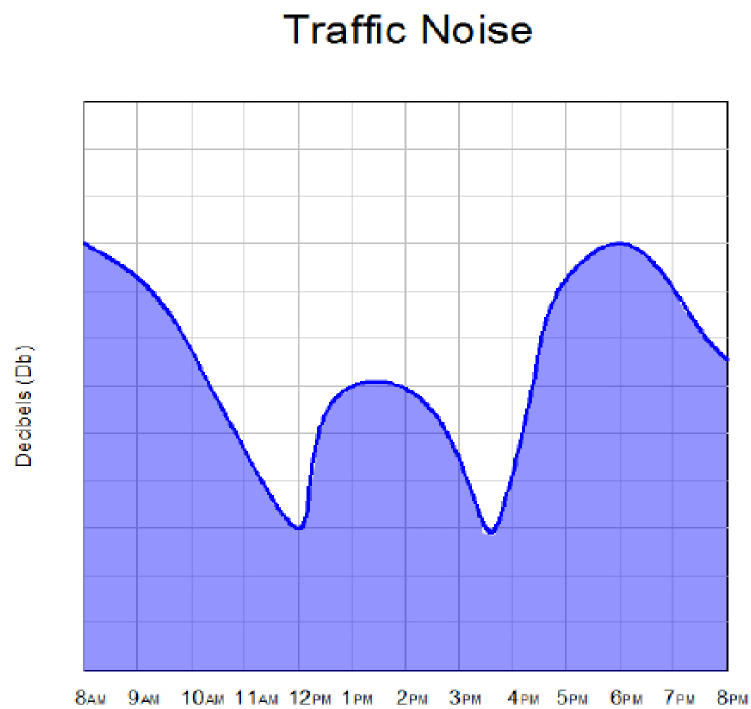
Typography/Air Movement

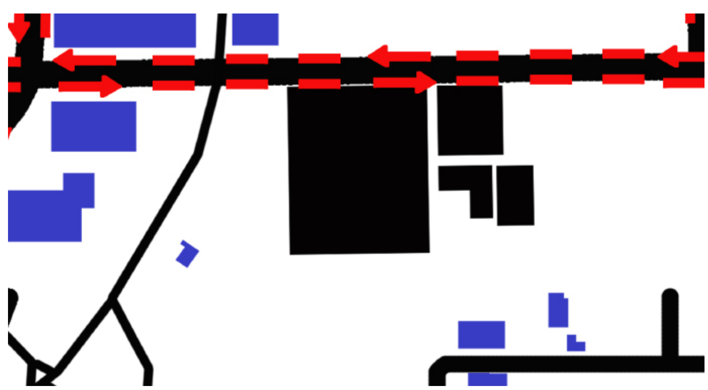
The wind that circulates around the site and existing buildings follows the slope around the land and existing structures. Smaller currents are noticed which circulate the north end of the site by following Minnehaha Ave. due to the corridor created by the road.



Traffic Noise

The majority of noise is created from vehicular traffic on Minnehaha Ave. The shape of the graph illustrates two times of the day when noise measured in decibels peaks, which occur during rush hour.



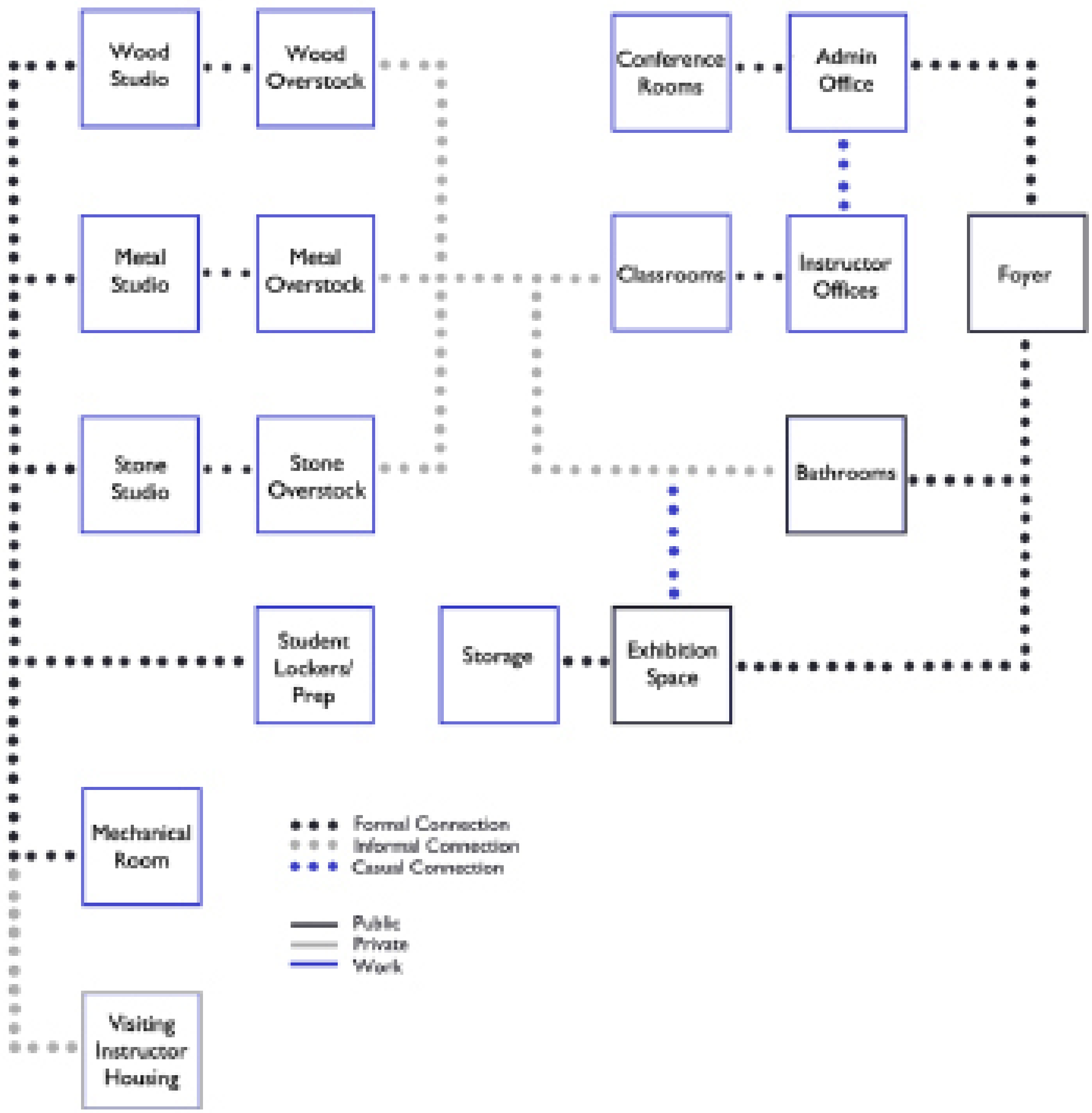


Programmatic Requirements

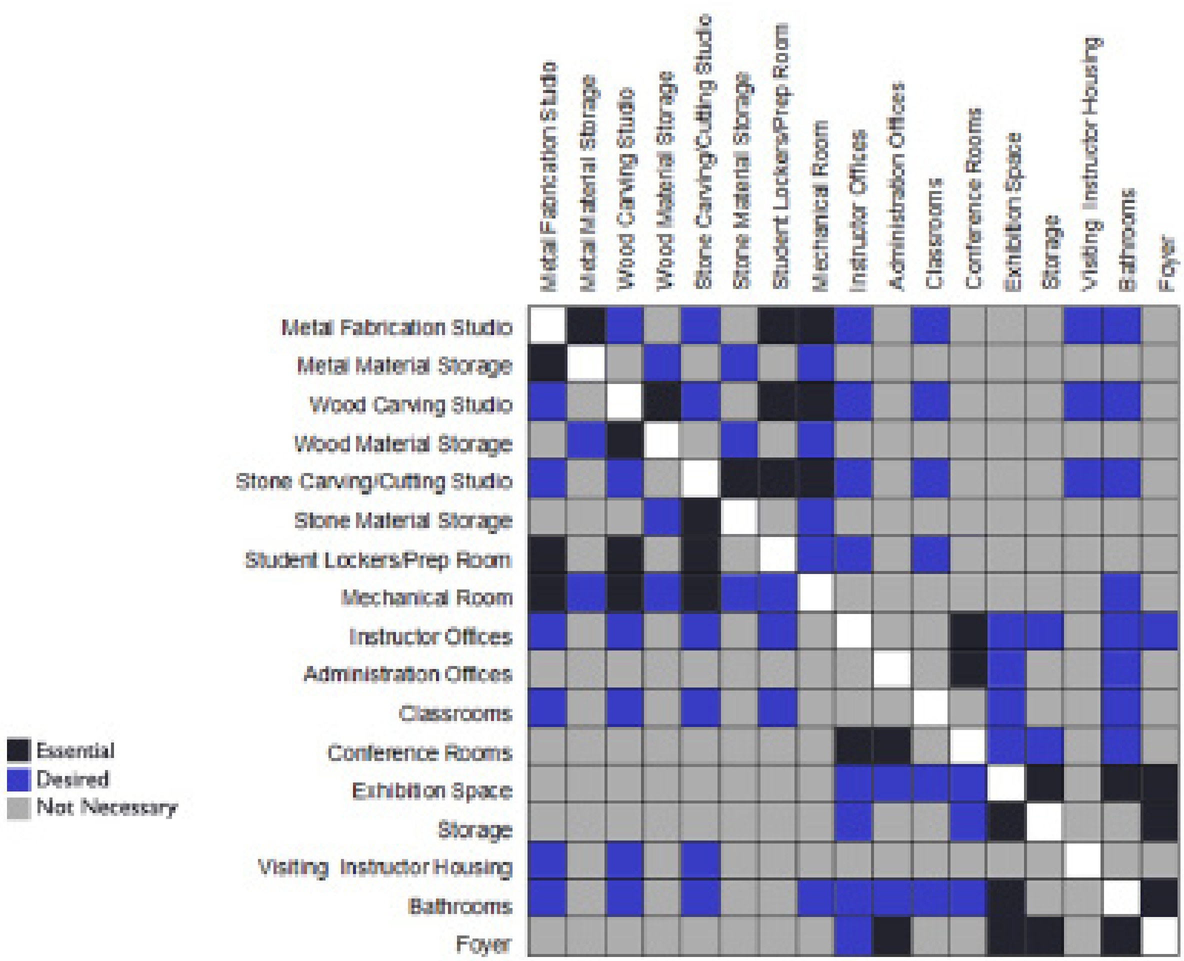
Space Allocation

Studio	
Metal Fabrication Studio	6,000
Metal Material Storage	400
Wood Carving Studio	6,000
Wood Material Storage	400
Stone Carving/Cutting Studio	6,000
Stone Material Storage	600
Student Lockers/Prep Room	800
Mechanical Room	1,500
Work	
Instructor Offices	1,000
Administration Office	400
Storage	400
Visiting Instructor Housing	3,200
Learn	
Classrooms	1,000
Conference Rooms	600
Public	
Foyer	300
Exhibition Space	2,000
Bathrooms	400
Total	**31,000 Square feet**

Interaction Net

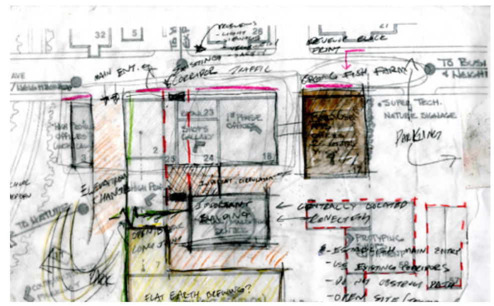


Interaction Matrix



Design Documentation

Process Documentation

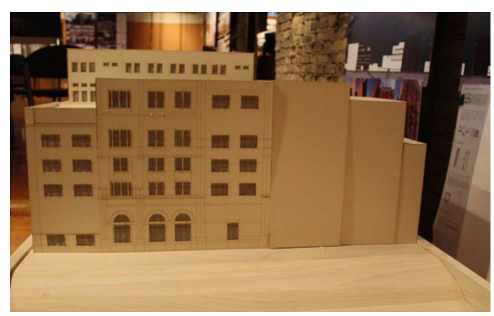


-Site Analysis
-Sketches
-Artifact
-Site Modeling

Project Solution

-Site Map
-Sections
-Isometric Details
-Construction Details
-Plans
-Elevations
-Interior Images

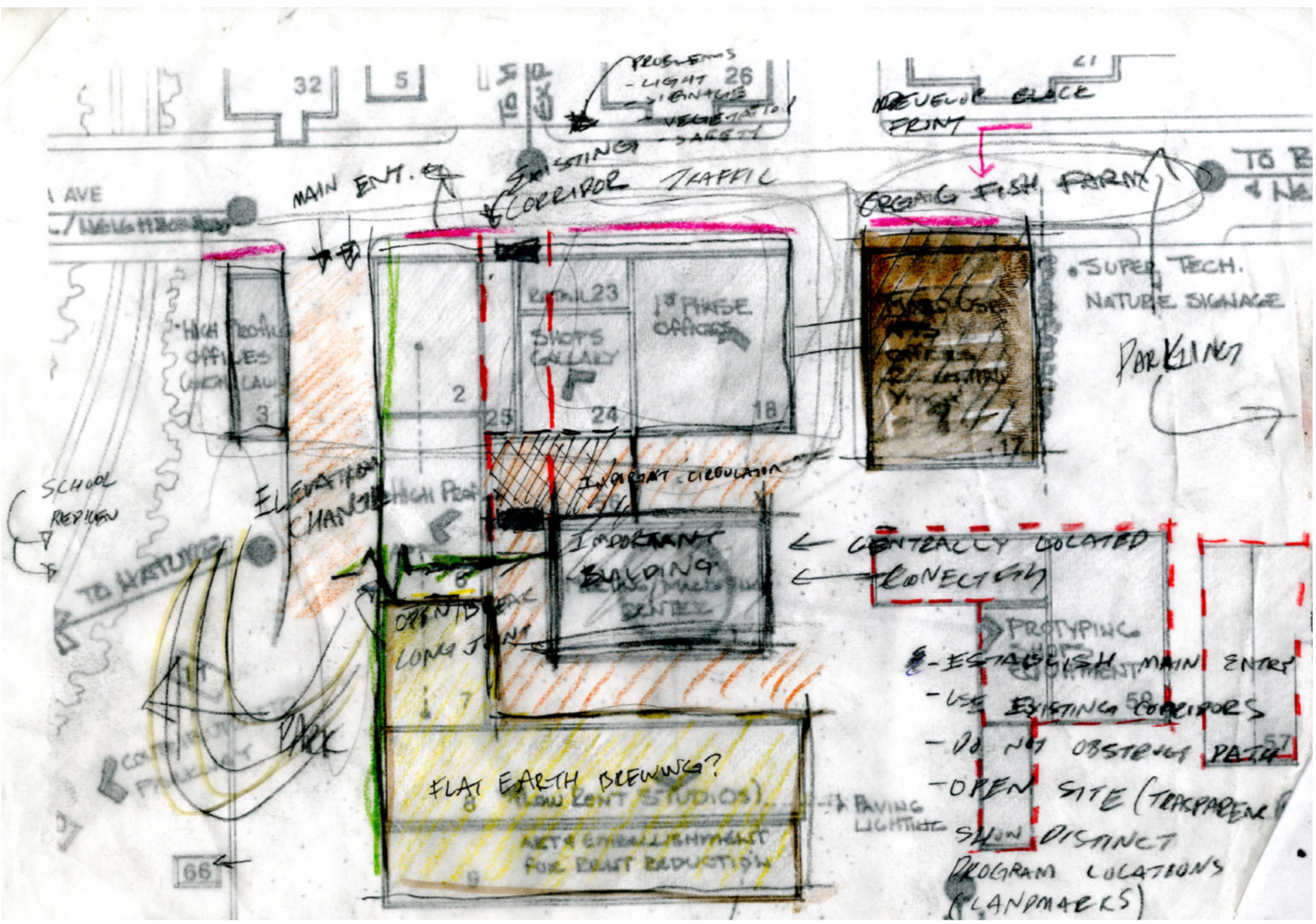
Project Installation



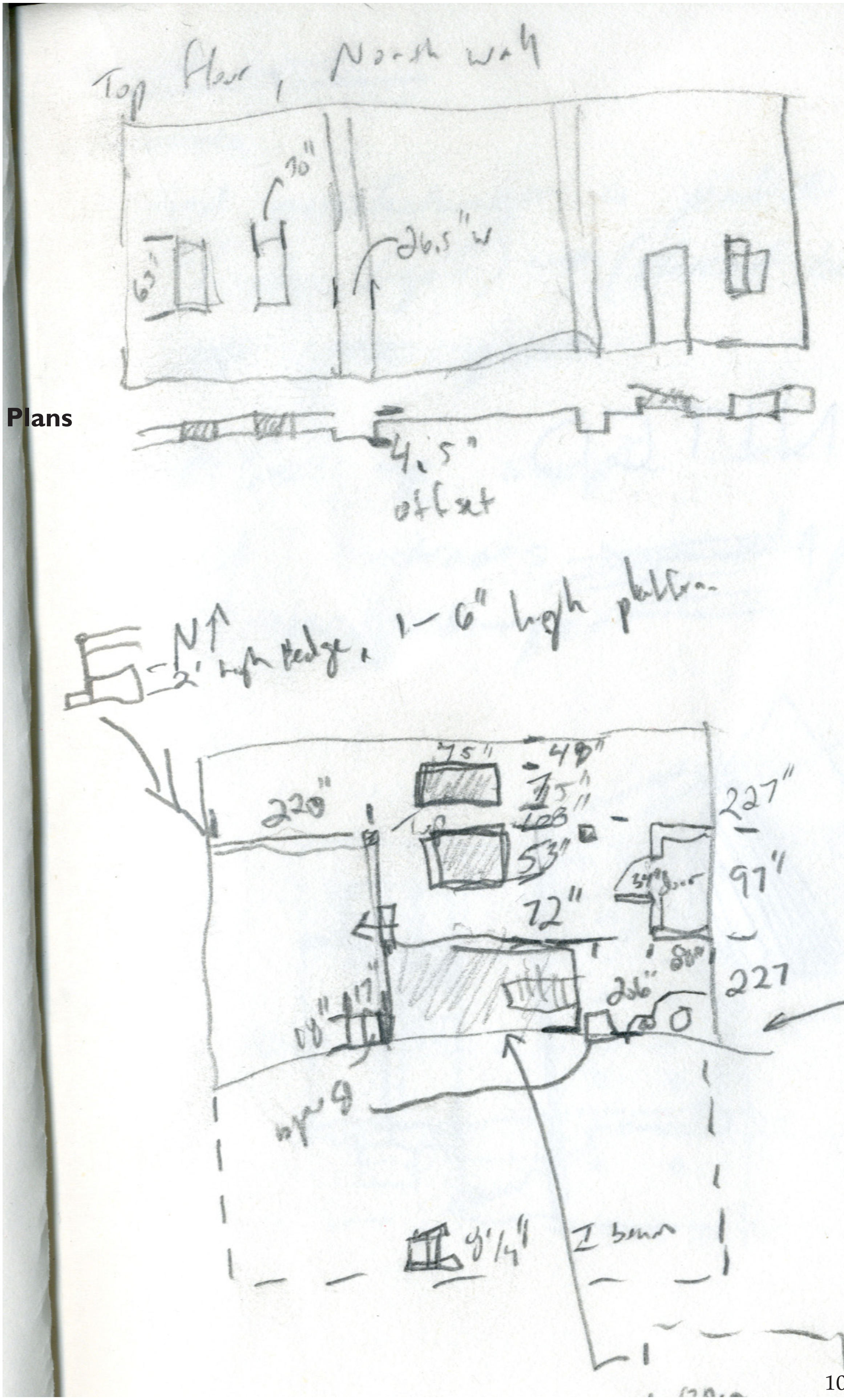
-Project Installation Photos

Process Documentation

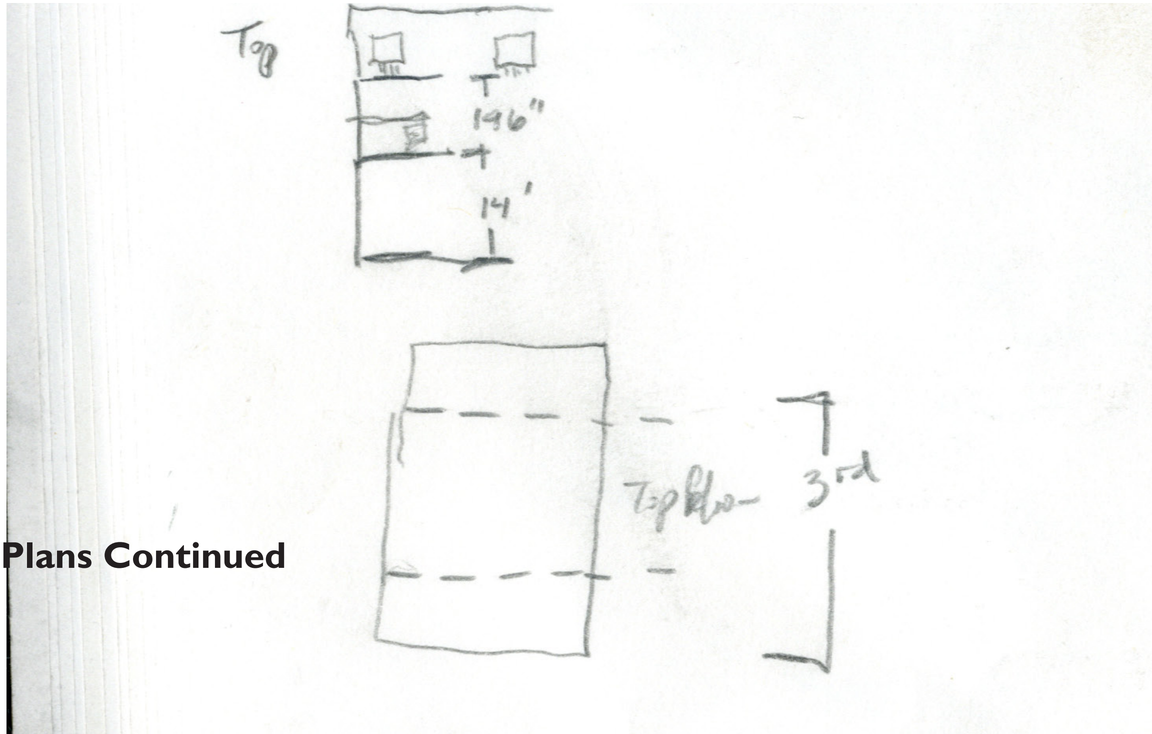
Site Analysis

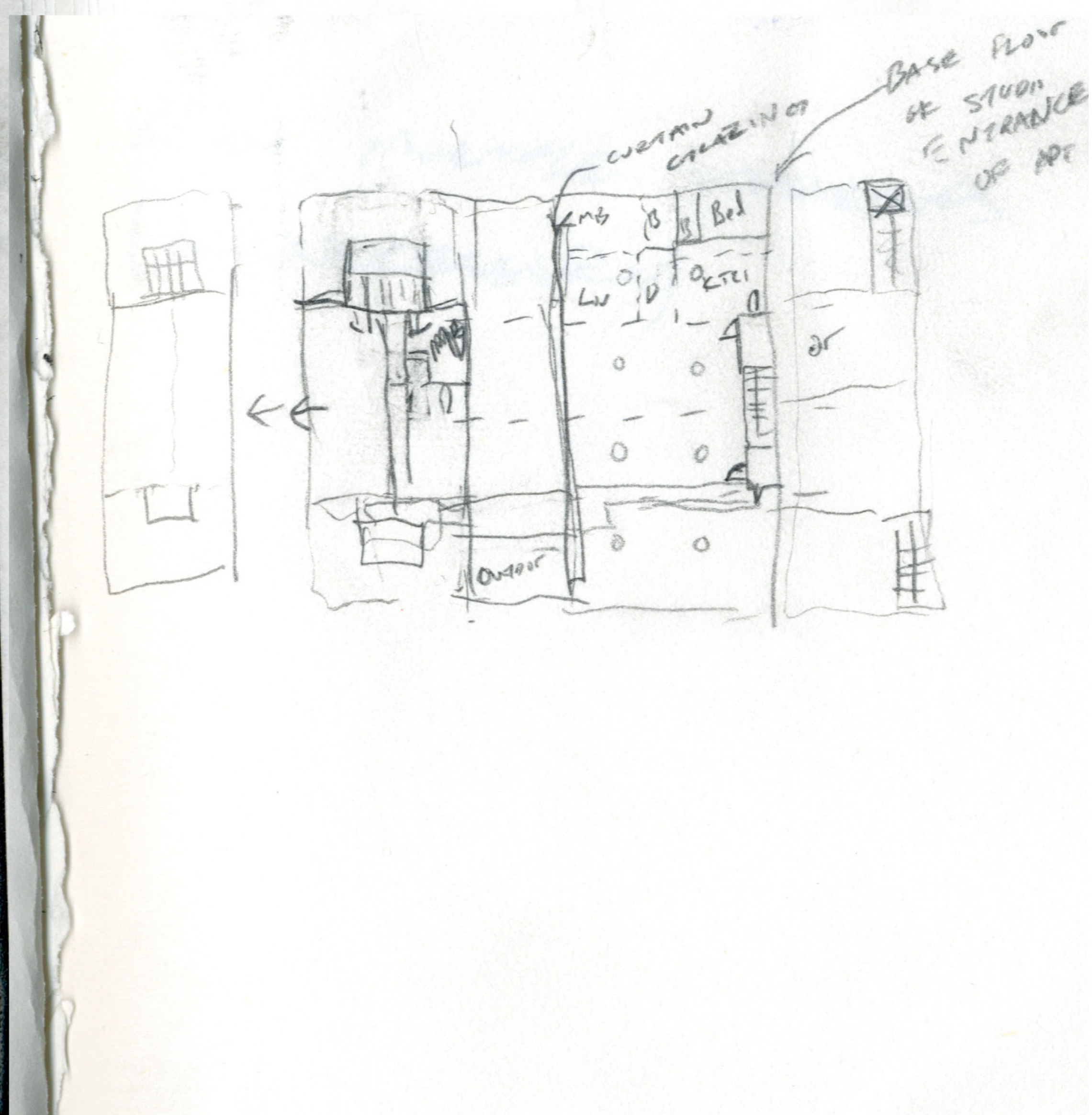


Existing Site Plans

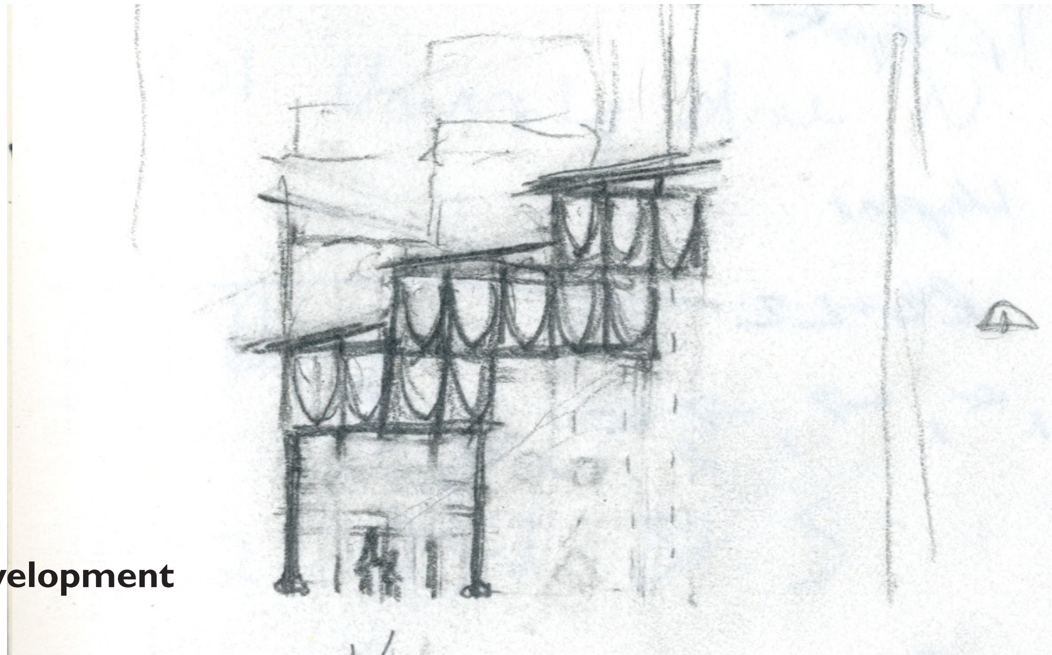


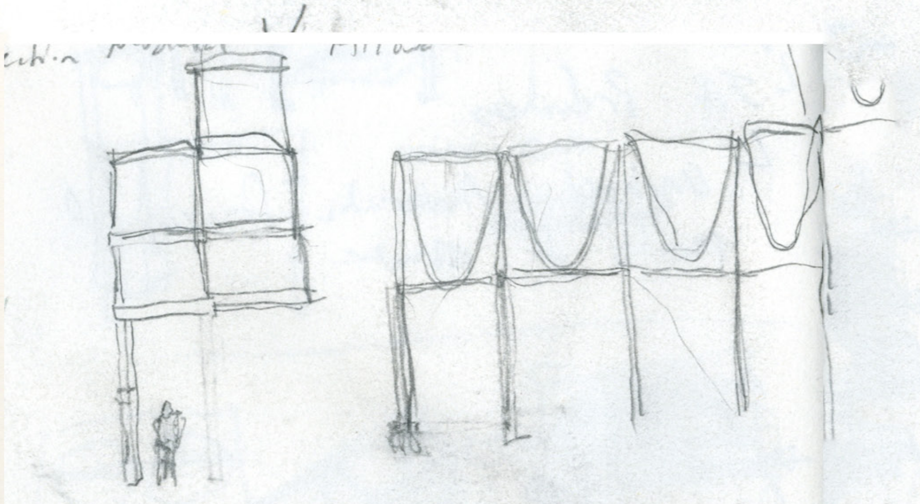
Existing Site Plans Continued

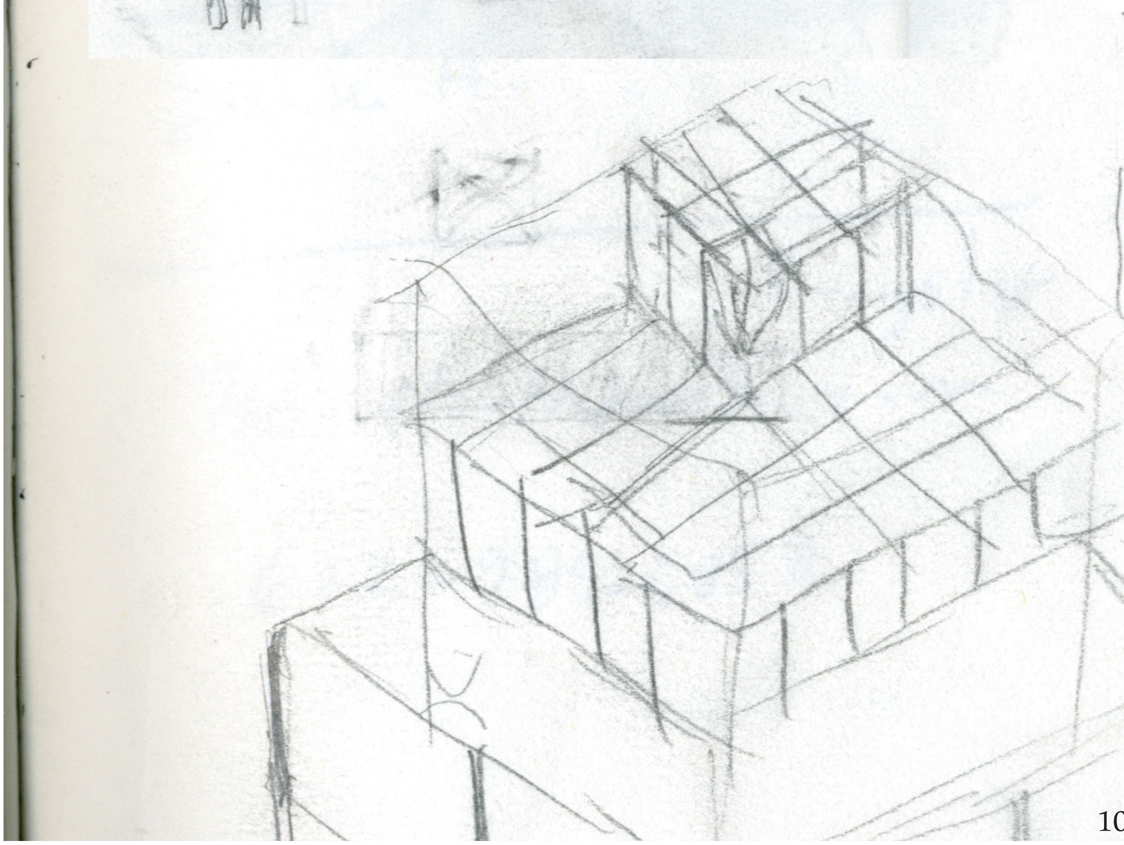




Courtyard Development







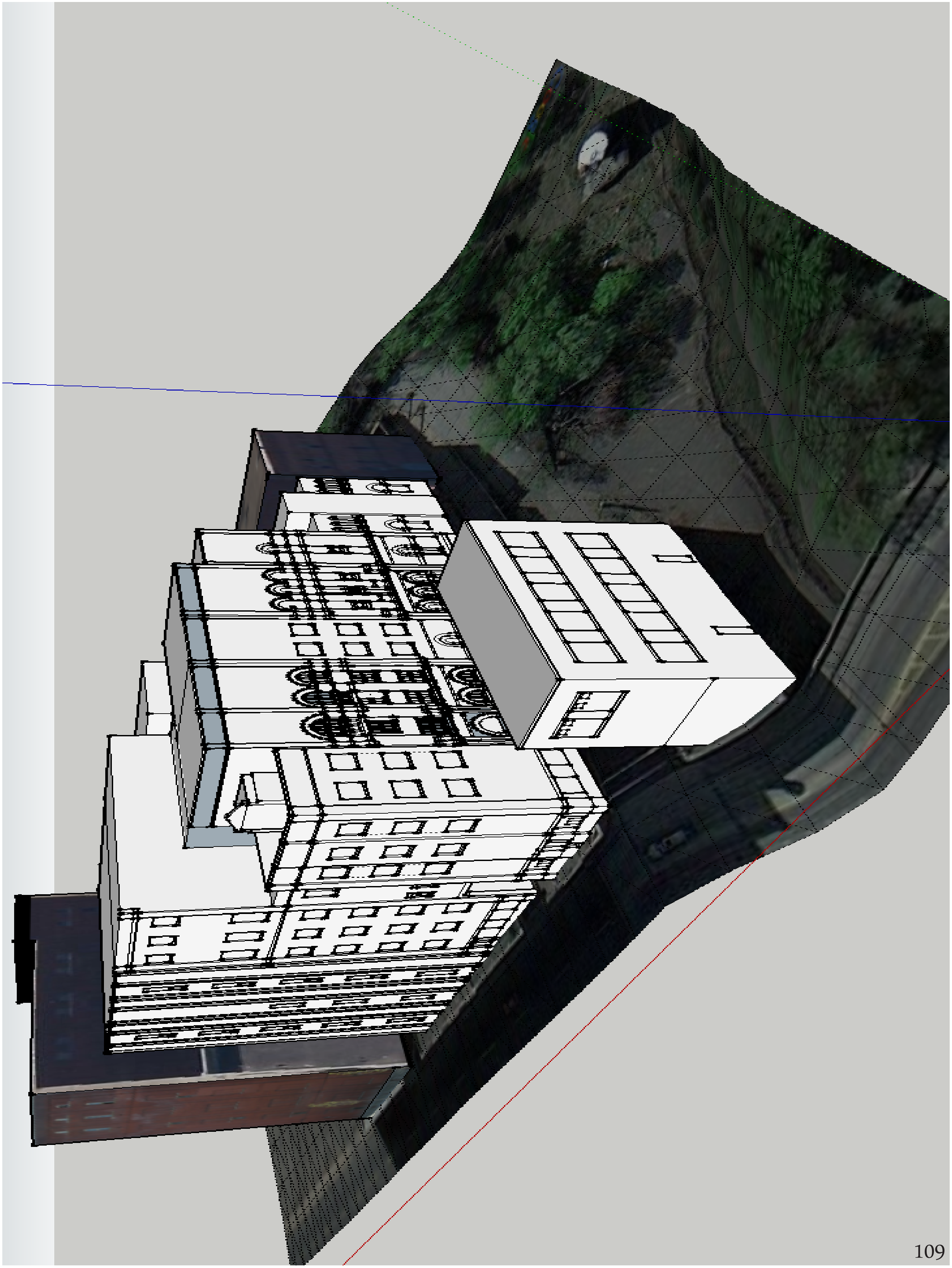
Artifact

The purpose of the artifact is to draw inspiration from an analog in developing a design language for use in the project.

The artifact shows the passing and exchange of information or ideas. A constant reminder of time, these ideas begin to deteriorate with each passing. Based off of alchemic transmutations, a correlation can be drawn between alchemic ideals and master craftsmen. Both were once prized in society but now are mostly read about in books, and even fewer still teach these techniques/processes. The purpose of the artifact is to draw inspiration from an analog in developing a design language for use in the project. Elements from my artifact used exclusively in my project include: verticality, materiality, orientation, and shape.

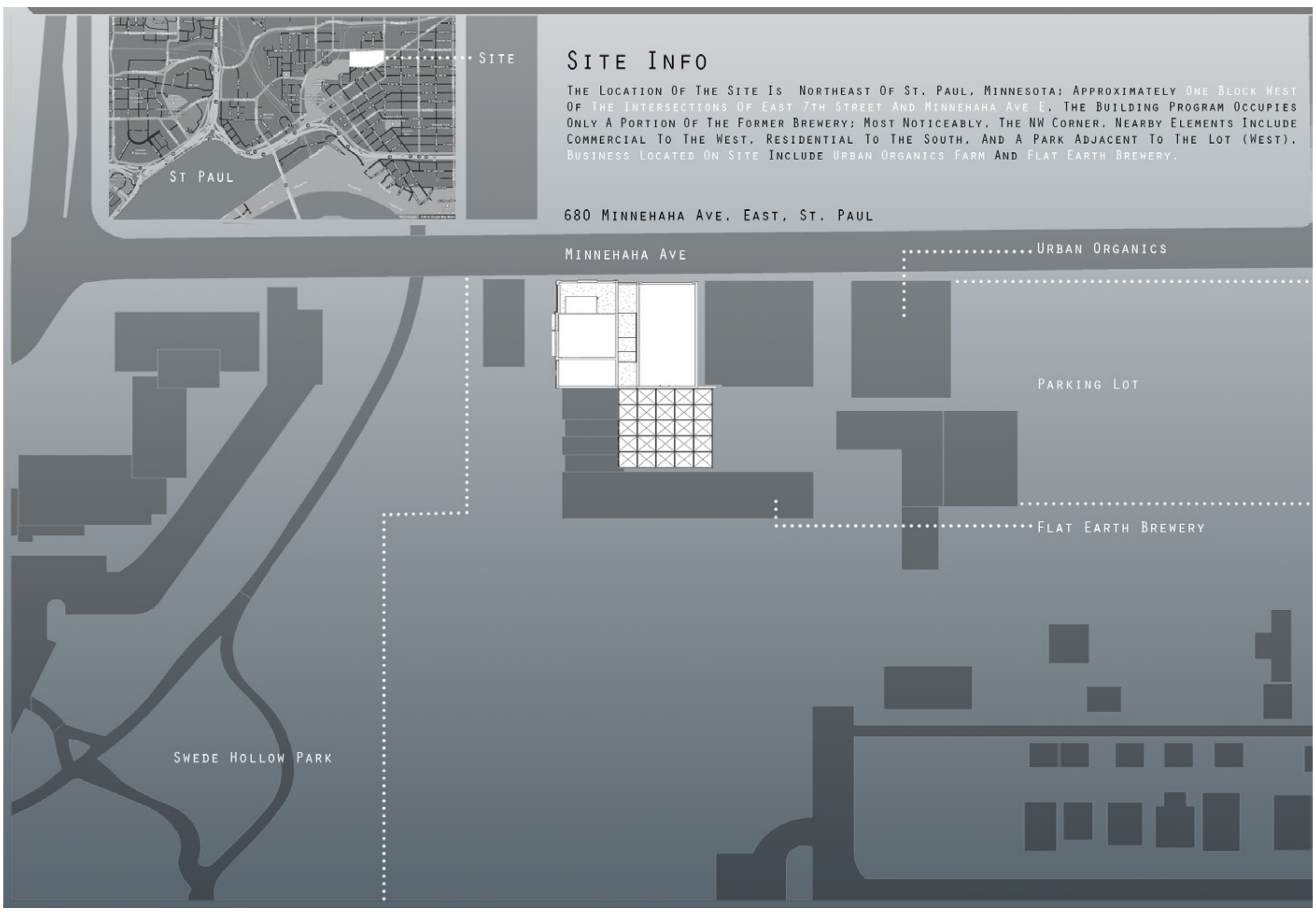
Site Modeling

The existing structures were modeled with dimensions recorded from visits to the site and existing buildings.

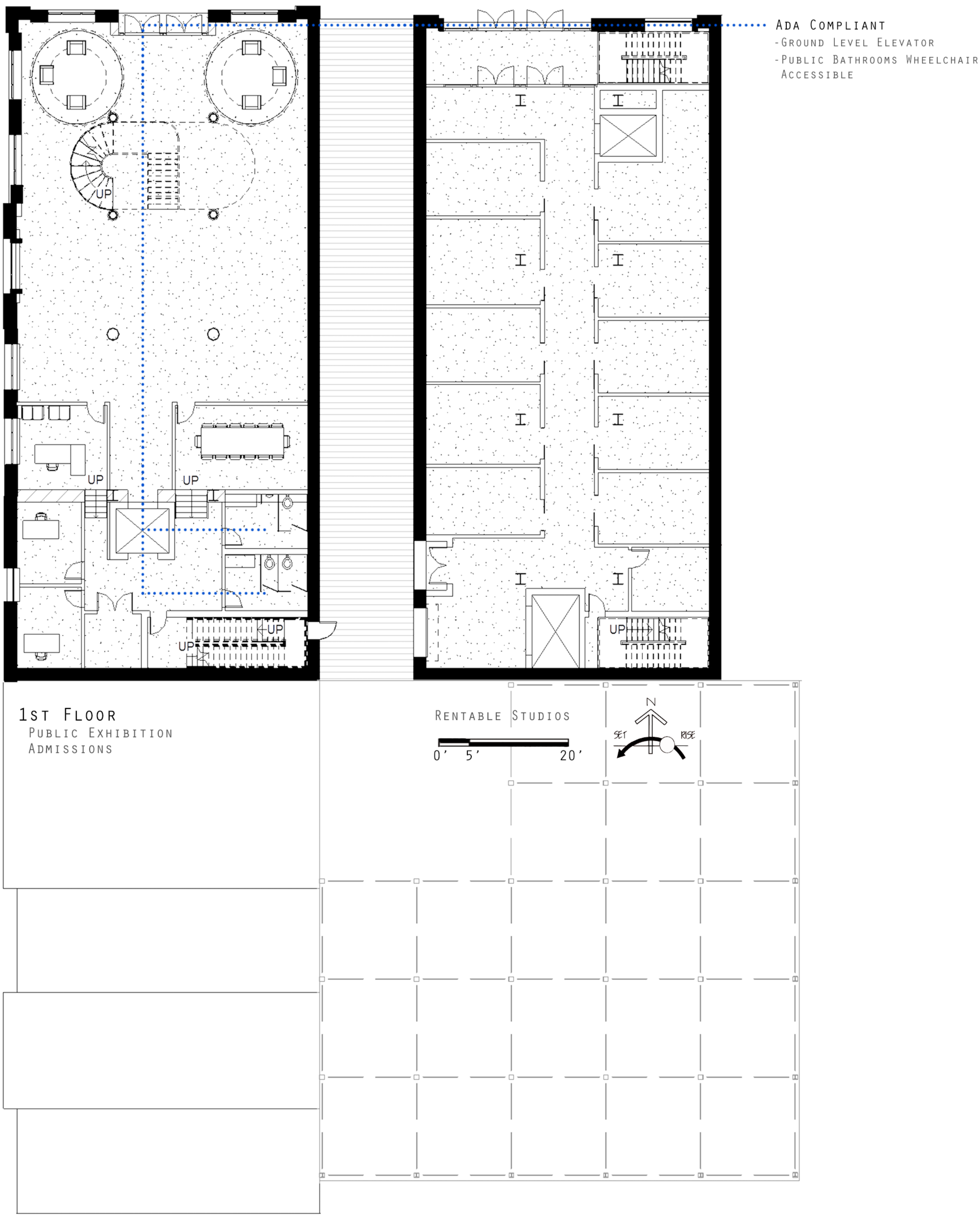


Project Solution

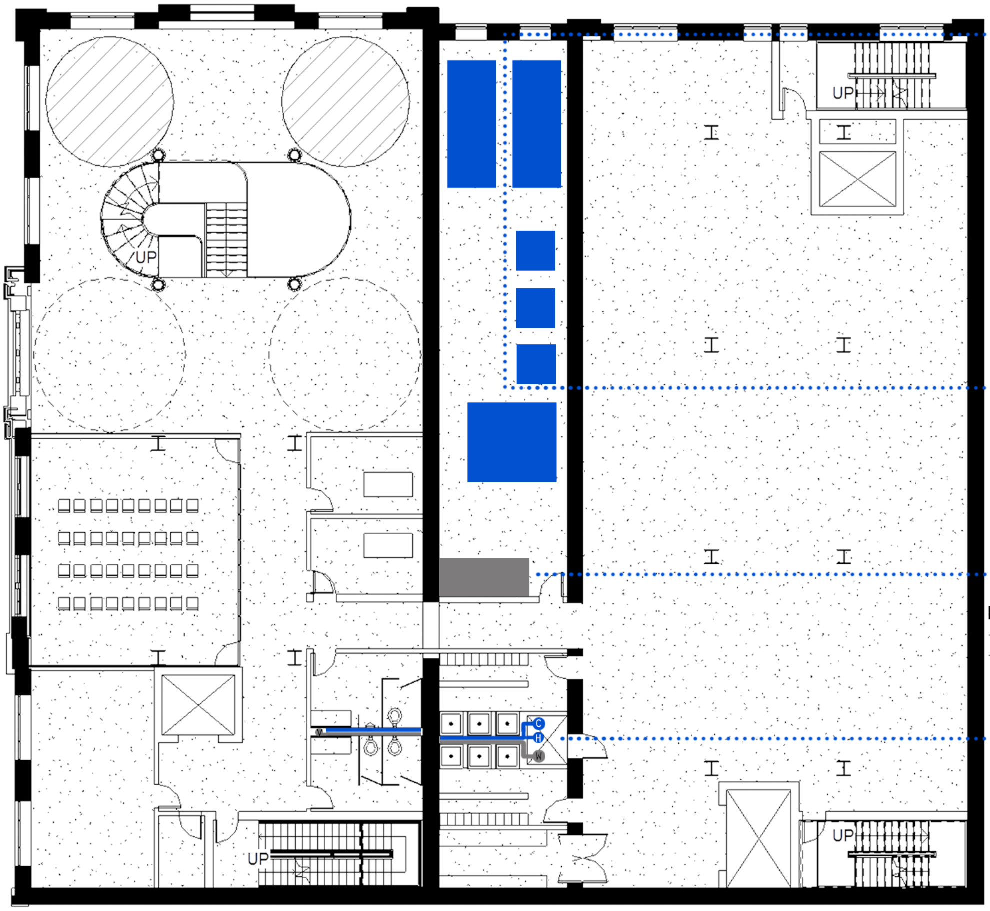
Site Map



Plans

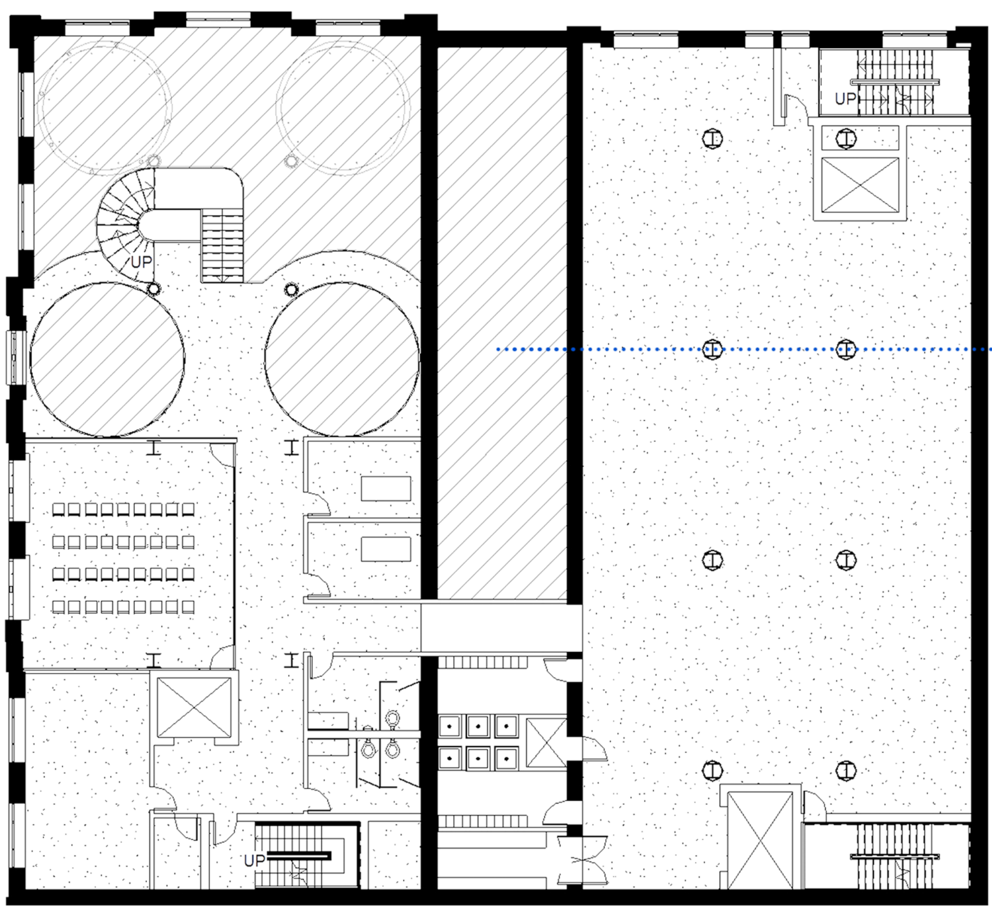


Ada Compliant
-Ground Level Elevator
-Public Bathrooms Wheelchair Accessible
UP
UP
UP
UP
UP
UP
1st Floor
Public Exhibition
Admissions
Rentable Studios
0' 5' 20'
N
SET
RISE



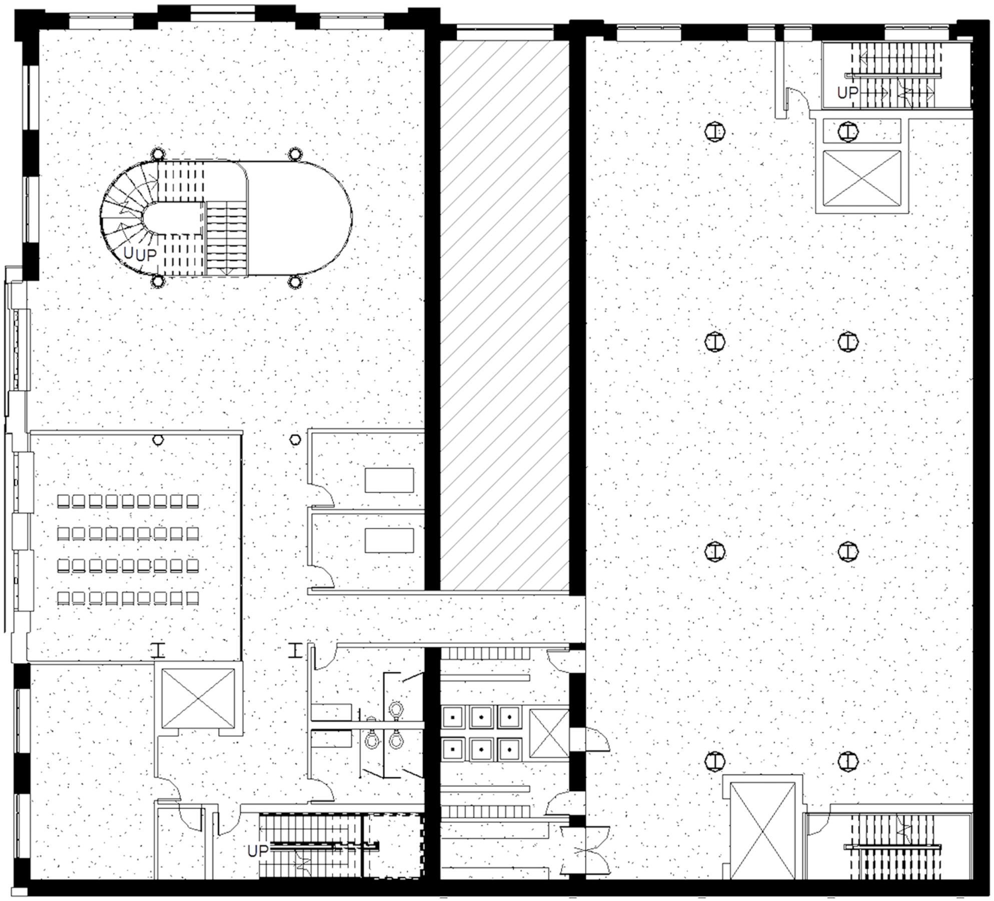
2nd Floor
Classrooms
Instructor Offices

Workshop
Locker Room
Exhibition



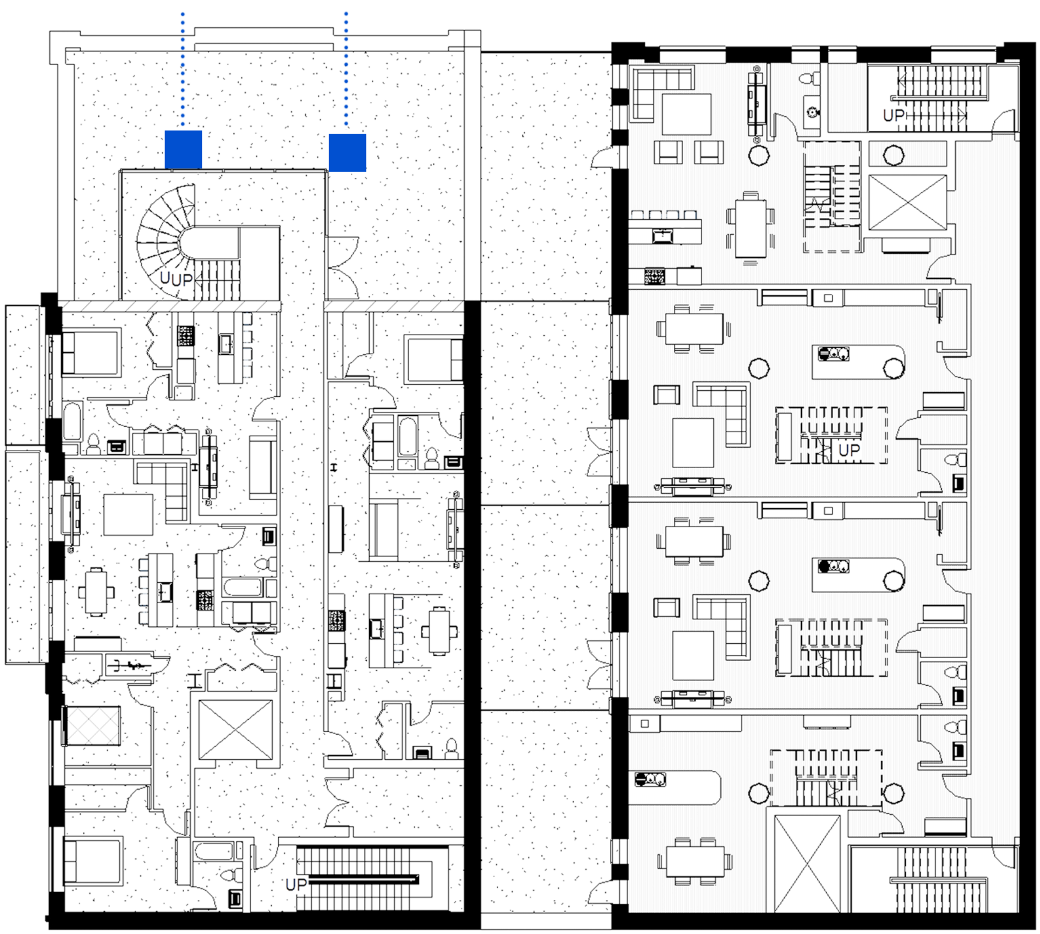
3rd Floor
Classrooms
Instructor Offices

Workshop
Locker Room
Exhibition



4th Floor
Classrooms
Instructor Offices

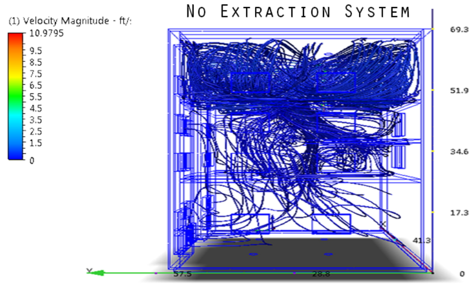
Workshop
Locker Room
Exhibition



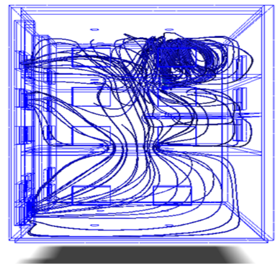
5th Floor
(3) Temp. Artisian Housing Units

(4) Two-Story Condo Units
(1st Floor Of Units)

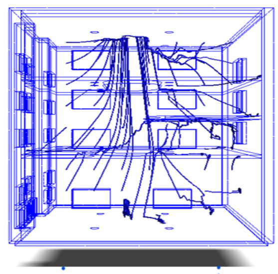
No Extraction System



Extraction At North Wall



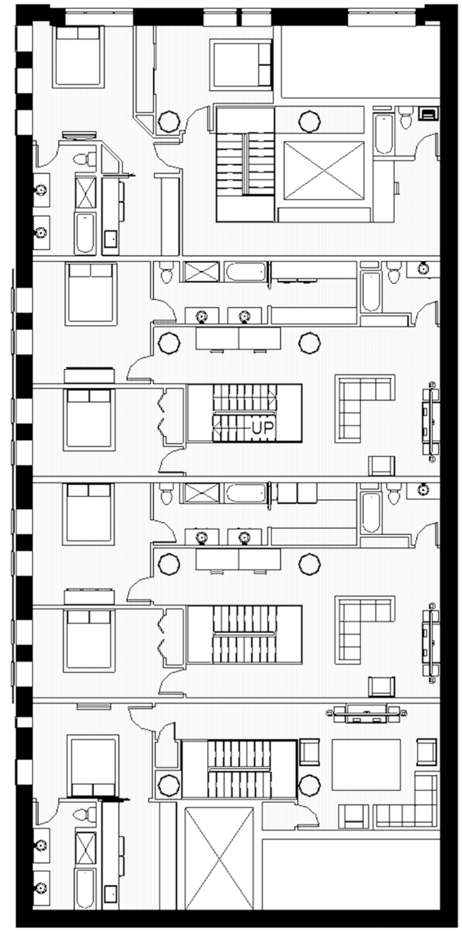
Extraction Through Roof



Fire Safety (Smoke Analysis)

- Using Simulation Software To Track Smoke Travel In The Vertical Atrium Space In The Event Of A Fire, Three Smoke Tests Were Run For Analysis Which Include: No System, System At North Wall, And System Through Roof.

The Data Revealed The Best Placement For Extraction Is Through The Roof, As Initial Placement For Smoke Ventilation In The North Was Ineffective. The Smoke Continued To Circulate In The Upper Floor, Not Being Able To Be Vented Properly; Even At Extraction Rates Of 50 ft^3 Per Second.



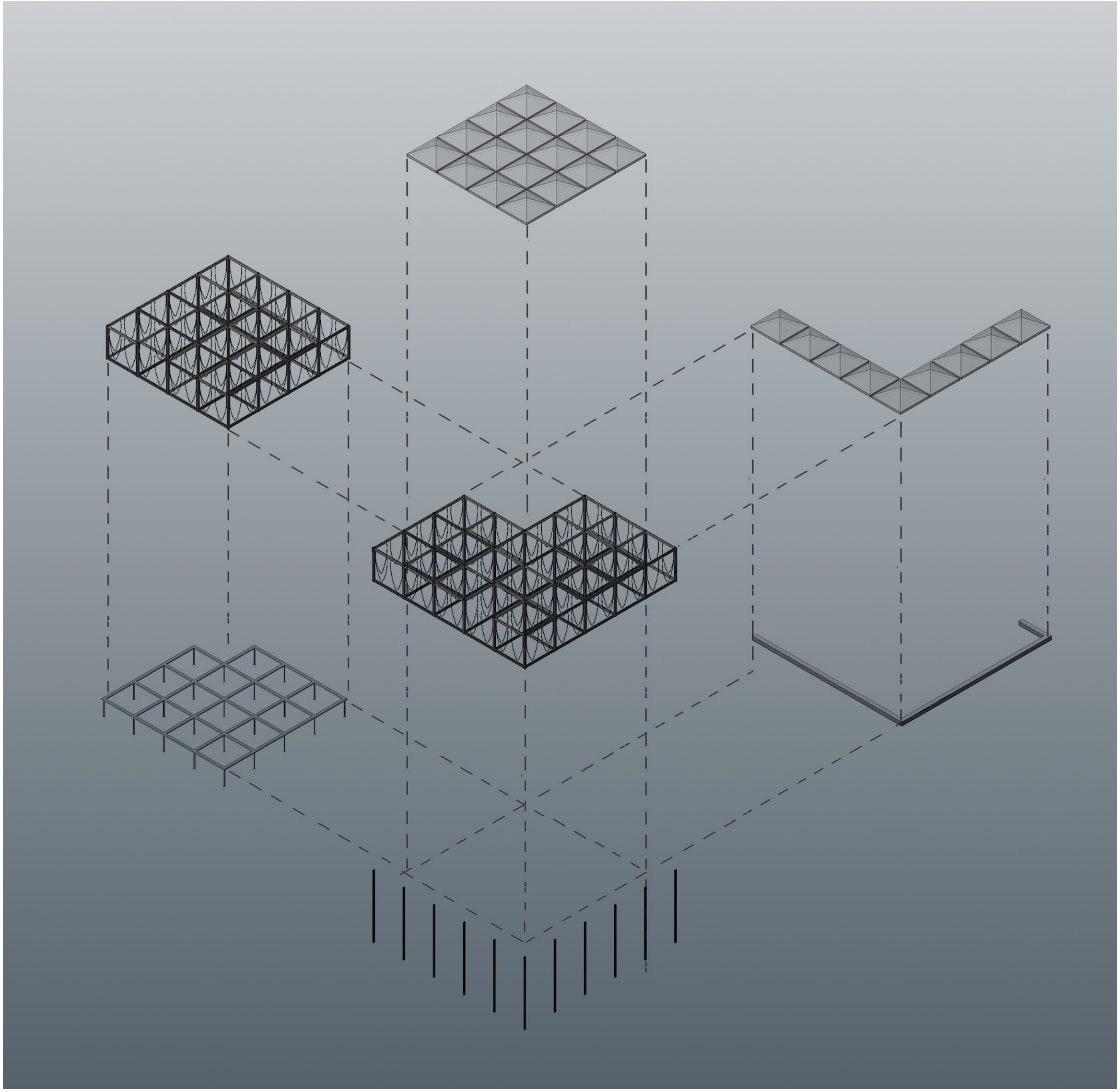
6th Floor
(2nd Floor Of Units)


North Elevation


East Elevation

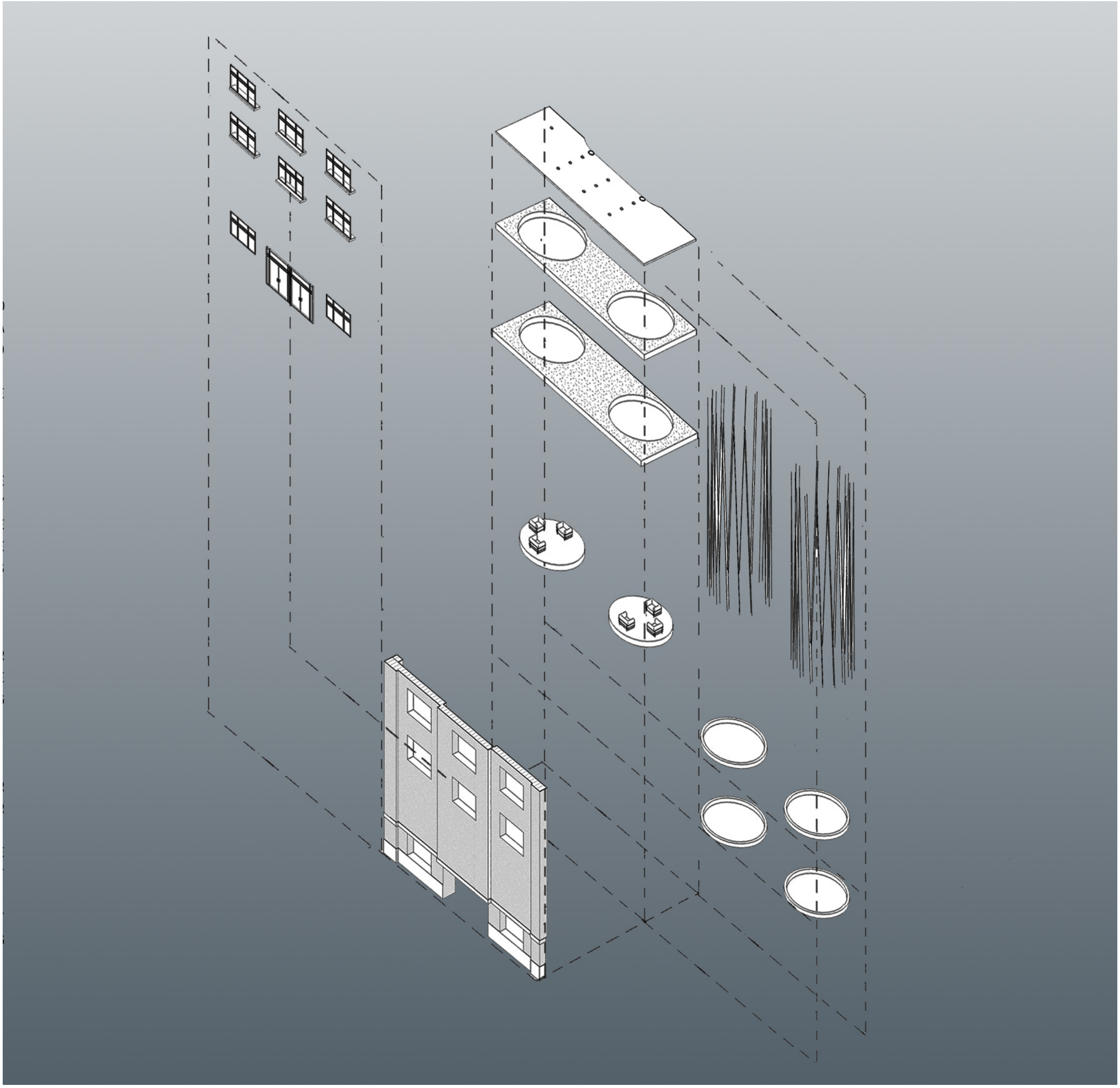

South Elevation


West Elevation



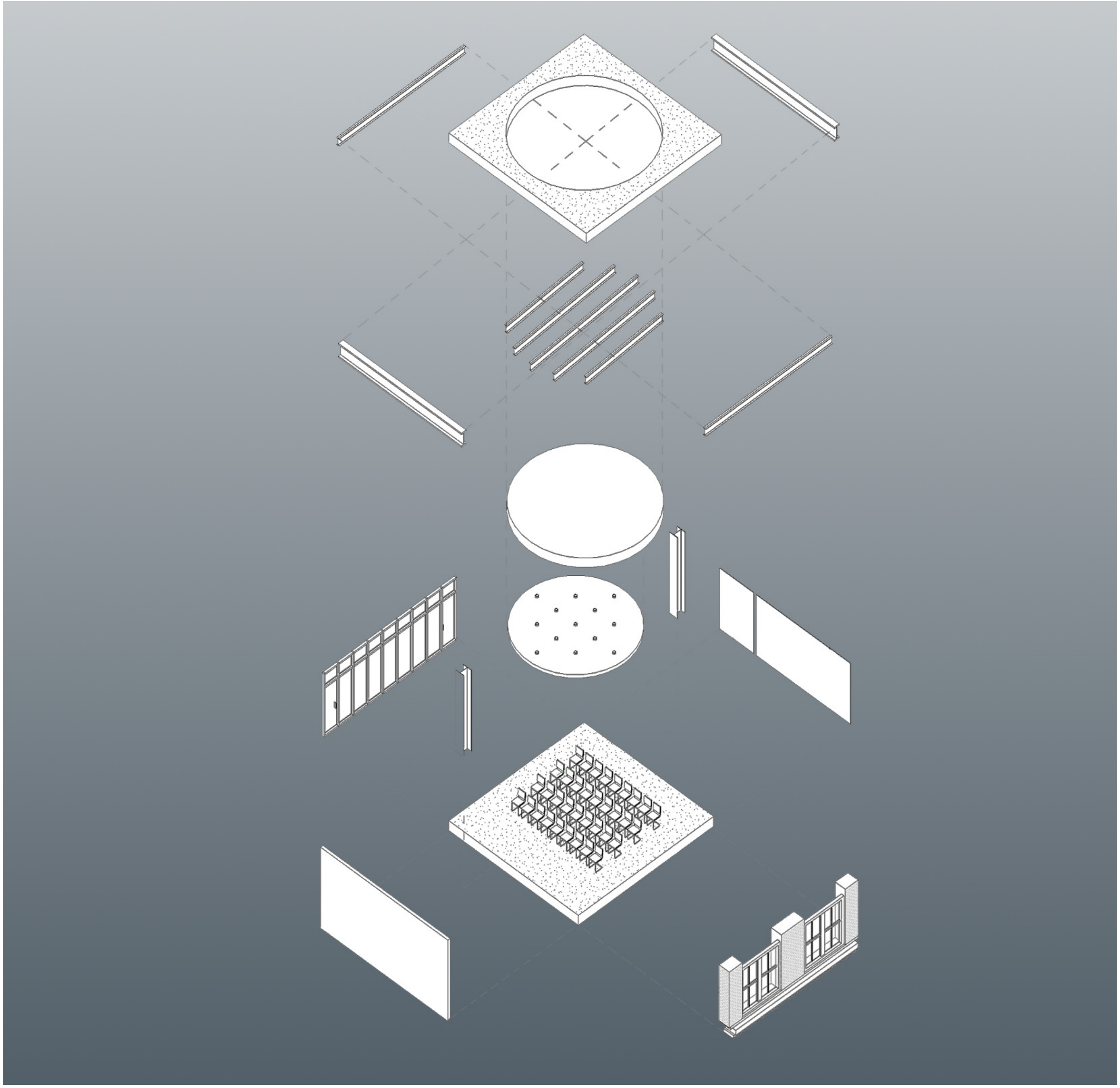
From the early Egyptians, to present day, post and lintel construction continues to develop. The ancient builders used massive columns, carved in one piece of stone or built from layering sections, then stacked to form a whole. The massive weight of the beam would rest on top of the column.

The extreme weight of the material required the building components to be very large, and in time as techniques and building developed, new components were introduced, such as column capitals. With the introduction of cast iron, the column would attach to the main beam or girder from the side using angular plates, securing together the connection with fasteners (bolts or rivets), welds, or the combination of both. Continuing this tradition, the courtyard cover uses steel post and beam construction, but the addition of a modular framing component (a structural cube), the units are fastened together, requiring no inner columns as they are arranged in pyramid form, transferring loads to the outer rim, which is then connected to structural columns.



The main entrance to the facility required enlarging the original entrance. A structural steel header is positioned to receive the load from the outer brick wall, spanning the opening while allowing it to be enlarged. In the past, a temporary frame would be built, and the opening would be enlarged by the use of hand tools (post maul). The process would take longer due to the constraints of manual labor, as well as repairing the jagged edges from the demo.

Recent years allowed the use of power wet-saws, anchored to a hydraulic jack. The saw cuts the opening square and plumb, using much less time and labor. To preserve the integrity of the former brewery, the circular openings in the floor plates in the atrium space will remain, allowing reference to the former life of the building. Architectural elements that detail the space will include rod iron, stone floor inlay, and a ring soffit that will house lighting components, adding intimate lighting to the space,



To allow the typology of the trade school to exist; the facility needs to be altered to allow the building program to function. The same construction techniques taught at this school will be used to close some of the floor openings in the structure.

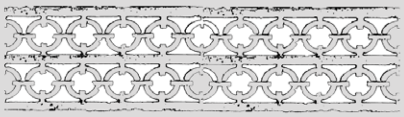
Adding structural members to span the diameter of the hole can be achieved with the efficient design of the steel web joist. Because the only loads that must be supported are the dead and live loads of classroom elements, people, and the floor above, these lighter building materials can be used in place of heavy structural I-beams that the existing structure uses extensively. In addition, a dual-drop soffit will be created, one to trace the outline of the existing hole, covering the structural members while referencing what once existed. An additional soffit will be created, smaller in diameter to house the lighting and ventilation duct work, but also an opportunity to finish the outer rim and face using both historic modern technologies. In fact, the entire building will be a culmination of both old and new working together to educate the importance of these very same skills.


Main View

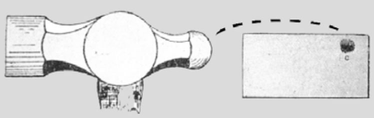
Courtyard


Main Staircase

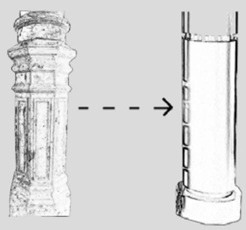
Staircase Riser Metal Panel



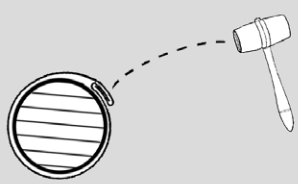
The Design For the Staircase Riser Panels Are Influenced By The Original Metal Staircase. Using A Hydralic Press To Cut The Panel Holes. The Finish is Slightly Hammered With "Pene Hammer" To Add A Patina To The Finish.



Metal Column Wrap

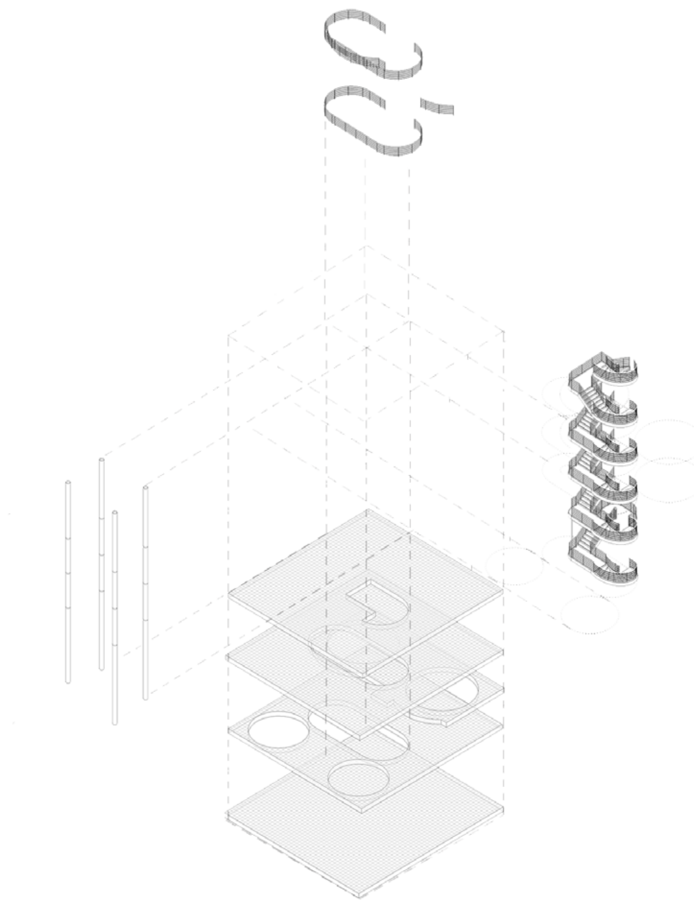


The Original Columns For The Central Stairway Are Wrapped With Zinc Metal to Cover Their Degraded State. After Producing The Coil Stock, The Metal Is Attached With The Seam Hammered With "Tinner's Mallet". This New Detail Is The Progression Of The Column With A Modern Day Expression.



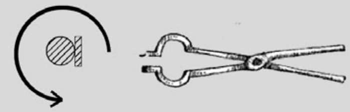
Wood Carved Handrail

Using a molding Machine to Create The Profile For The Handrail. A Dentil Detail Is "Chip" Or "Spot" Carved Into The Bottom Of The Profile Using A Fluted Chisel And Wood Mallet. This Detail Will Act As The Top Rail For Both The Guardrail And Stairway Railing.

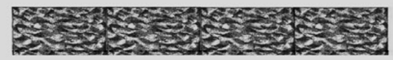


“Compound Twist” Iron Rod Suspensions

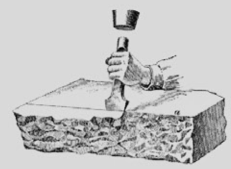
Heating Equal Size Diameters of Flat And Rod Iron, The Two Peices Are Twisted together With Crucible Tongs, Or Wrench, And Cooled With Water To Retain Shape. Further Segments Are Reheated, and the Process Repeats Itself until completed.



“Pitch Faced” Stone Slab Inlay



The Stone Inlay Uses A Hammered Finish From Cut Slabs Of Tile To Give A Rough Surface Known as “Pitched” Or “Rock Faced”. The Face is Then Sawn Off Mechanically, And The Process Is Repeated, Creating A Series Of Tiles For Inlay.

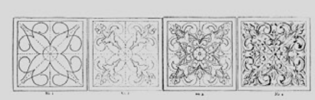


HTTP://WWW.STONE.POPLARHEIGHTSFARM.ORG/ELEMENTS_OF_MASONRY.HTM

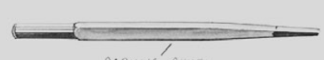
Wood And Zinc “Ring” Soffit

A Drop Soffit Created From Steel Framing is Encased In A Wood Veneer. Inside The Interior, Hammered Zinc Panels Are Attached, With A Pattern Derived From The Side Panels Of The Original Staircase Inside The Brewery. A “Repousse” Hammer is Used With Punches To Create The Pattern.

Carved Building Entrance Stone Trim



Windows are Treated With Stone Veneer Trim With Decorative Rosettes. These Are Produced By Drawing the Pattern On the Peice, Removing Material To Provide Negative Space, And Repeated for More Intricate Details.



HTTP://WWW.TROWANDHOLDEN.COM/SCULPTING.PHP

Project Installation

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For those who I worked with and believed in me...thank you.