

Architecture: A Tradition

The Reintroduction of Historical Building Techniques for Architectural Adaptation And Preservation

By: Kris Thielen



Thesis Presentation Overview

Today I will present to you my thesis project of a construction technologies center. This technical school will teach both historical and new building techniques of stone, wood and metal as a response for the increase need of skilled labor for adaptive reuse projects. As a collaborate effort provided by the school, other services included within the facility will be rentable studios, public exhibition space, a courtyard for gathering, and housing. These typologies are housed in the former site facilities of Hamm's Brewery in St. Paul, MN.

I will begin by first talking about my **original** theoretical premise, my research, and then my altered claim. I will then discuss the condition of the former brewery and the use of an artifact for the inspiration of spaces and details in my project. Finally I will follow up by providing the answer to the main question of why I chose this project.



Problem Statement

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

Original Claim

Teaching and employing **traditional** construction methods will preserve and maintain our architectural culture and history while enhancing our built environment.

Problem With Claim

Although teaching these historic techniques are pertinent to architecture regarding our past and culture, it is a “romantic” view of our history as only teaching these techniques . Although important, we simply cannot and should not recreate the architecture using only these skills; it cannot justify the number of work hours, man/women power, and in some cases is not up to code.



Three “views” of the past

While researching for thesis, it was suggested by colleague Stephen Wischer that I evaluate my relationship with the past for my project. He cites Nietzsche in stating there are three ways we can look to the past

- the antiquarian
- the monumental
- the critical



Antiquarian

- wants the past to remain as is. **Preservation** is key as it wants to continue the traditions of old.
- often “romantic” view of history

Problems that arise include:

- zoning issues (Historic Districts)
- “Flat Earth Brewery example”
- creation of only museums



Monumental

- prides man's accomplishments or achievements performed in history
- technological advances from industrial revolution
- innovative building components (planar truss)

Problems that arise include:

- egocentric thinking ("this is the best way")
- as only solution(s), can limit possible solutions or outcomes to problems or needs
- "service vs. us" (need for structures but want of variety/uniqueness)

- develops "specialized" labor required for these certain techniques
- specialization increases numbers involved in project, decreases workflow ability



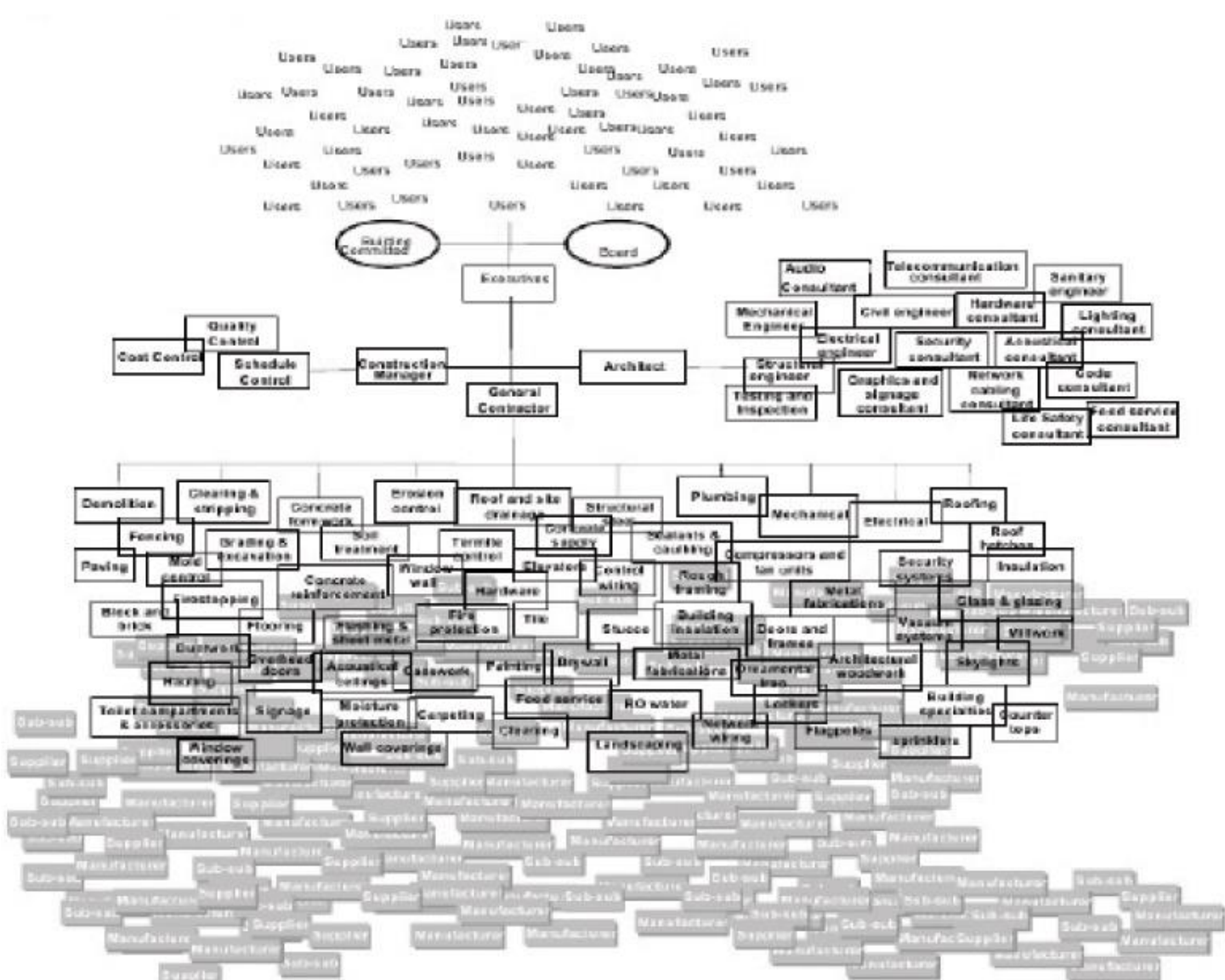


image provided by Kevin L. Burr, 2012

Critical

Objective view of the past in realizing the promise and faults

- allows cultural change based off of history to influence future (continuation vs. repetition)
- newly formed theoretical premise

Original Claim

Teaching and employing **traditional** construction methods will preserve and maintain our architectural culture and history while enhancing our built environment.

Revised Claim

Teaching and employing **both traditional and current** construction methods **to adapt** and maintain our architectural culture and history while enhancing our built environment.



Site

The location of the site is northeast of St. Paul, Minnesota; approximately one block west of the intersections of east 7th Street and Minnehaha Ave E. The building program occupies only a portion of the former brewery; most noticeably, the NW corner. Nearby elements include commercial to the west, residential to the south, and a park adjacent to the lot (west). Business located on site include “Urban Organics Farm” and “Flat Earth Brewery”.





.....SITE

SITE INFO

THE LOCATION OF THE SITE IS NORTHEAST OF ST. PAUL, MINNESOTA; APPROXIMATELY ONE BLOCK WEST OF THE INTERSECTIONS OF EAST 7TH STREET AND MINNEHABA AVE E. THE BUILDING PROGRAM OCCUPIES ONLY A PORTION OF THE FORMER BREWERY; MOST NOTICEABLY, THE NW CORNER. NEARBY ELEMENTS INCLUDE COMMERCIAL TO THE WEST, RESIDENTIAL TO THE SOUTH, AND A PARK ADJACENT TO THE LOT (WEST). BUSINESS LOCATED ON SITE INCLUDE URBAN ORGANICS FARM AND FLAT EARTH BREWERY.

680 MINNEHABA AVE. EAST, ST. PAUL

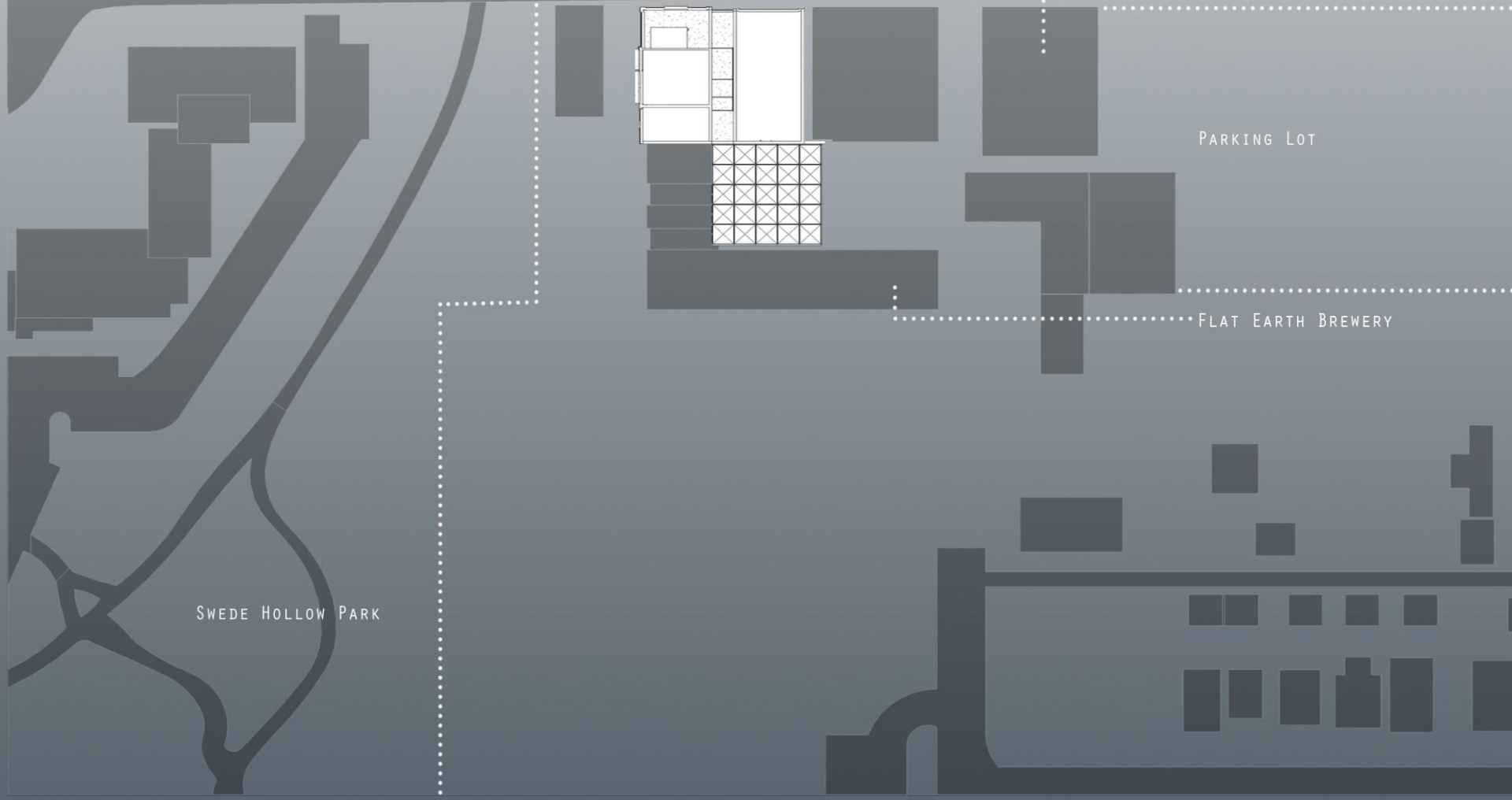
MINNEHABA AVE

.....URBAN ORGANICS

PARKING LOT

.....FLAT EARTH BREWERY

SWEDE HOLLOW PARK





Main Typology

School for Construction Technologies

-Teaches both Historic and Modern Techniques of wood stone and metal

Sub-Typologies

-Rentable Studios

-Temporary Artesian Housing

-Public Courtyard

-Housing Units (Flats)



Artifact

Aids in conceptualizing architecture with a design language

- begin thinking about space
- materiality, organization, details
- fun

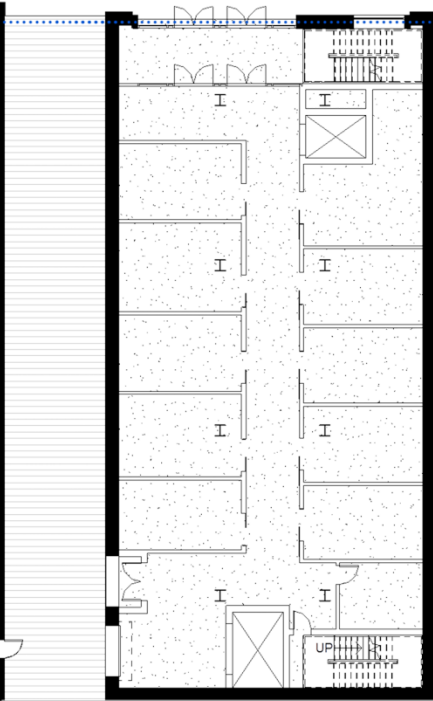
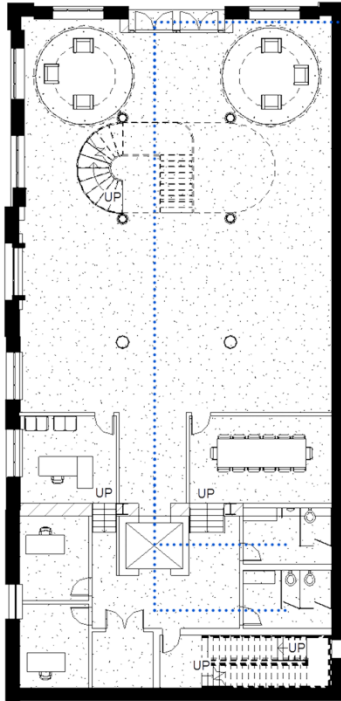
The passing and exchange of information or ideas. Constant reminder of **time**, and that these ideals begin to deteriorate with each passing. Based off of alchemic transmutations (transformations)

- show a correlation between alchemic ideals and master craftsmen (building techniques)
- once both were prized in society
- now mostly read about in books, few still teach these techniques/processes





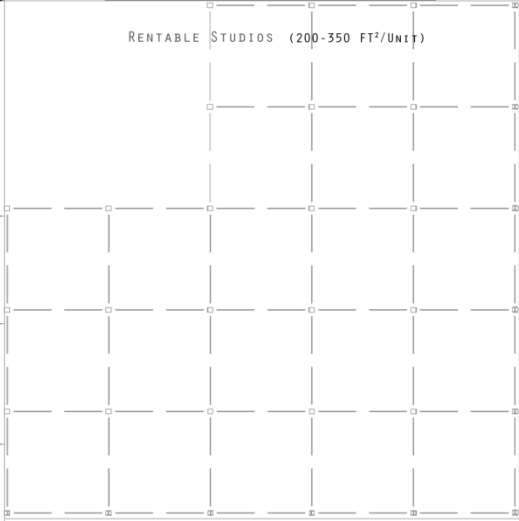
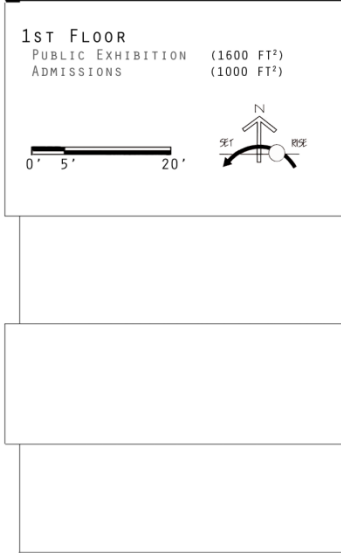
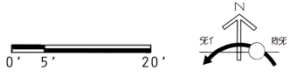




ADA COMPLIANT
 -GROUND LEVEL ELEVATOR
 -PUBLIC BATHROOMS WHEELCHAIR ACCESSIBLE

1ST FLOOR
 PUBLIC EXHIBITION (1600 FT²)
 ADMISSIONS (1000 FT²)

RENTABLE STUDIOS (200-350 FT²/UNIT)





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.COM/LEARN/GUIDE/ELEMENTS_OF_MASONRY.HTM](http://www.stone.com/learn/guide/elements_of_masonry.htm)

WOOD AND ZINC "RING" SOFFIT



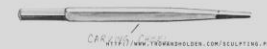
A DROP SOFFIT CREATED FROM STEEL FRAMING IS ENCASED IN A WOOD VENEER. INSIDE THE INTERIOR, HAMMERED ZINC PANELS ARE ATTACHED, WITH A PATTERN DERIVED FROM THE SIDE PANELS OF THE ORIGINAL STAIRCASE INSIDE THE BREWERY. A "REPOUSSE" HAMMER IS USED WITH PUNCHES TO CREATE THE PATTERN.



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.

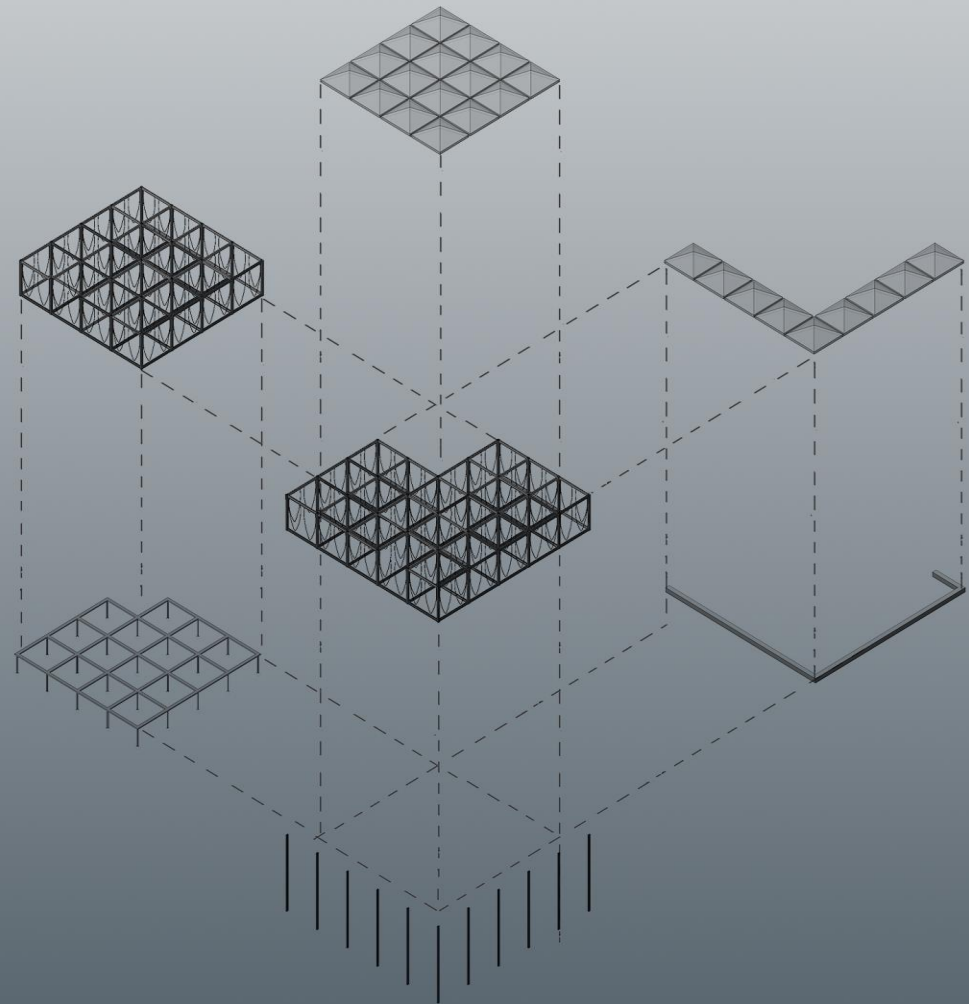


FROM THE EARLY EGYPTIANS, TO PRESENT DAY, POST AND LINTEL CONSTRUCTION CONTINUES TO DEVELOPE. THE ANCIENT BUILDERS USED MASSIVE COLUMNS, CARVED IN ONE PIECE OF STONE OR BUILT FROM LAYERING SECTIONS, THEN STACKED TO FORM A WHOLE. THE MASSIVE WEIGHT OF THE BEAM WOULD REST ON TOP OF THE COLUMN.

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.





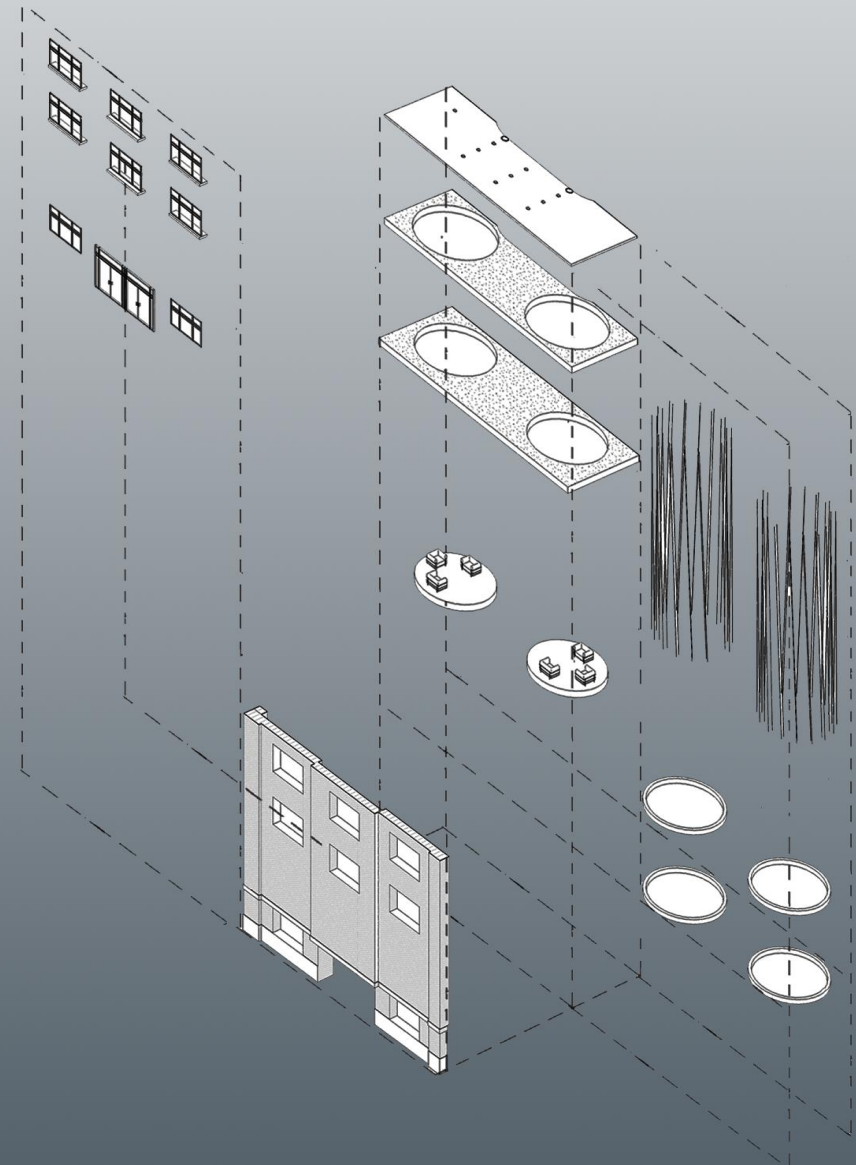
COURTYARD: THIS SHARED SPACE IS THE LYNCH-PIN FOR THE SITE AND SURROUNDING AREAS, AS A COLLABORATE EFFORT BETWEEN THE SCHOOL AND ADJACENT BUSINESSES. ITS A GATHERING PLACE TO BE USED FOR RECEPTIONS, PARTIES, AND FOR THE LOCAL BREWERY AS A BEER GARDEN. A COVERED ENTRANCE TUNNEL ALLOWS DIRECT ACCESS TO THE SITE ROLLED CURTAIN SYSTEM HIDES IN DROP-BOXES LOCATED IN THE SOFFIT BETWEEN COLUMNS, WHEN ACTIVATED ENCLOSE THE SPACE, WHILE INFRARED HEATERS LOCATED IN THE STRUCTURAL FRAMING PROVIDE HEAT.

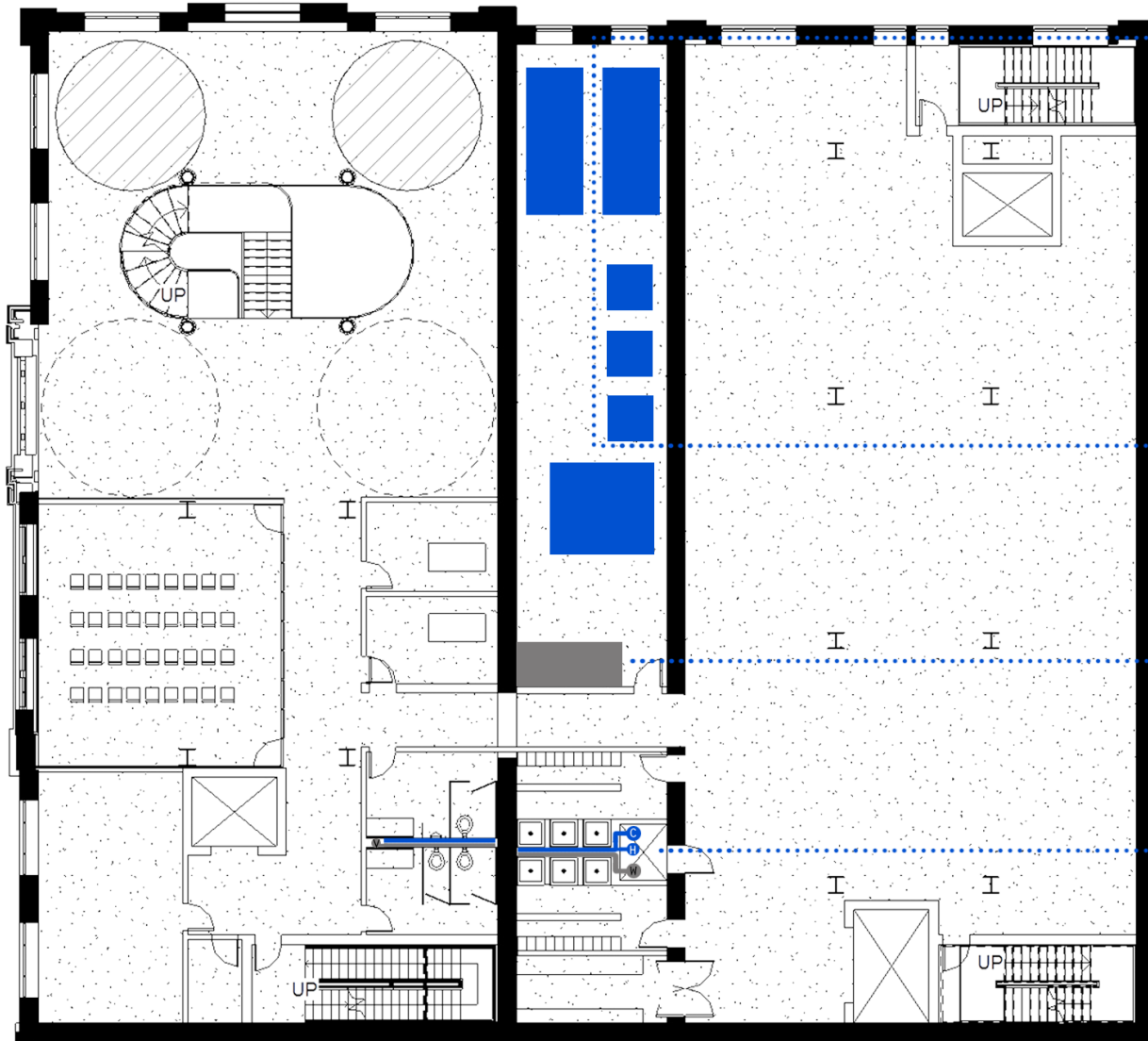
THE MAIN ENTRANCE TO THE FACILITY REQUIRED ENLARGING THE ORIGINAL ENTRANCE. A STRUCTURAL STEEL HEADER IS POSITIONED TO RECEIVE THE LOAD FROM THE OUTER BRICK WALL, SPANNING THE OPENING WHILE ALLOWING IT TO BE ENLARGED.

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 ALLOWS 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.





MECHANICAL ROOM
 -CENTRALLY LOCATED FOR SPLIT ACCESS
 -OCCUPY UNUSABLE SPACE DUE TO EXHISTING STRUCTURAL ELEMENTS
 -VAULTED SPACE ALLOWS VERTICAL PLACEMENT OF PIPES AND DUCTS
 -DIRECT ACCESS TO FRESH AIR

HYDRONIC HEATING/COOLING SYSTEM
 BOILER
 CHILLER
 AIR HANDLER
 AIR DUCTS
 PUMPS/COMPRESSORS

ELECTRICAL SERVICE
 -LOCATION OF DISTRIBUTION BOX
 -OCCUPIES SAME SPACE FOR CENTRAL LOCATION AND VERTICAL PLACEMENT OF CONDUIT/WIRES

PLUMBING
 -"STACKED" DESIGN FOR EFFICIENCY
 - ACCESS TO MAIN SUPPLY/WASTE

2ND FLOOR

CLASSROOMS (1050 FT²)
 INSTRUCTOR OFFICES (175 FT²/UNIT)
 MECHANICAL ROOM (1100 FT²)

WORKSHOP (4200 FT²)
 LOCKER ROOM (340 FT²)
 EXHIBITION (900 FT²)
 TOOL STORAGE (120 FT²)

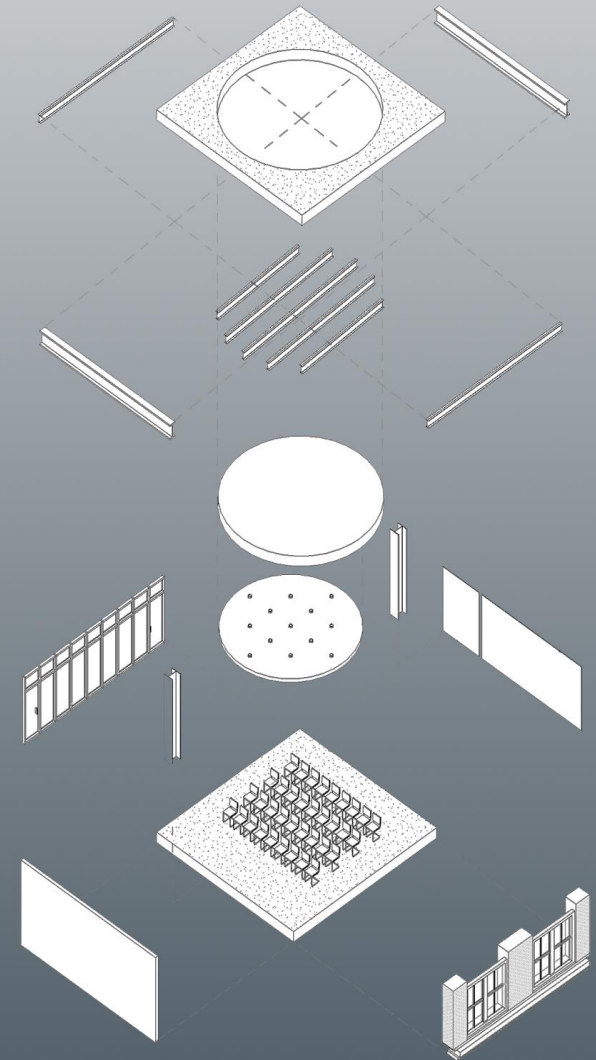
CONSTRUCTION TECHNIQUE (BREW TANK HOLES)

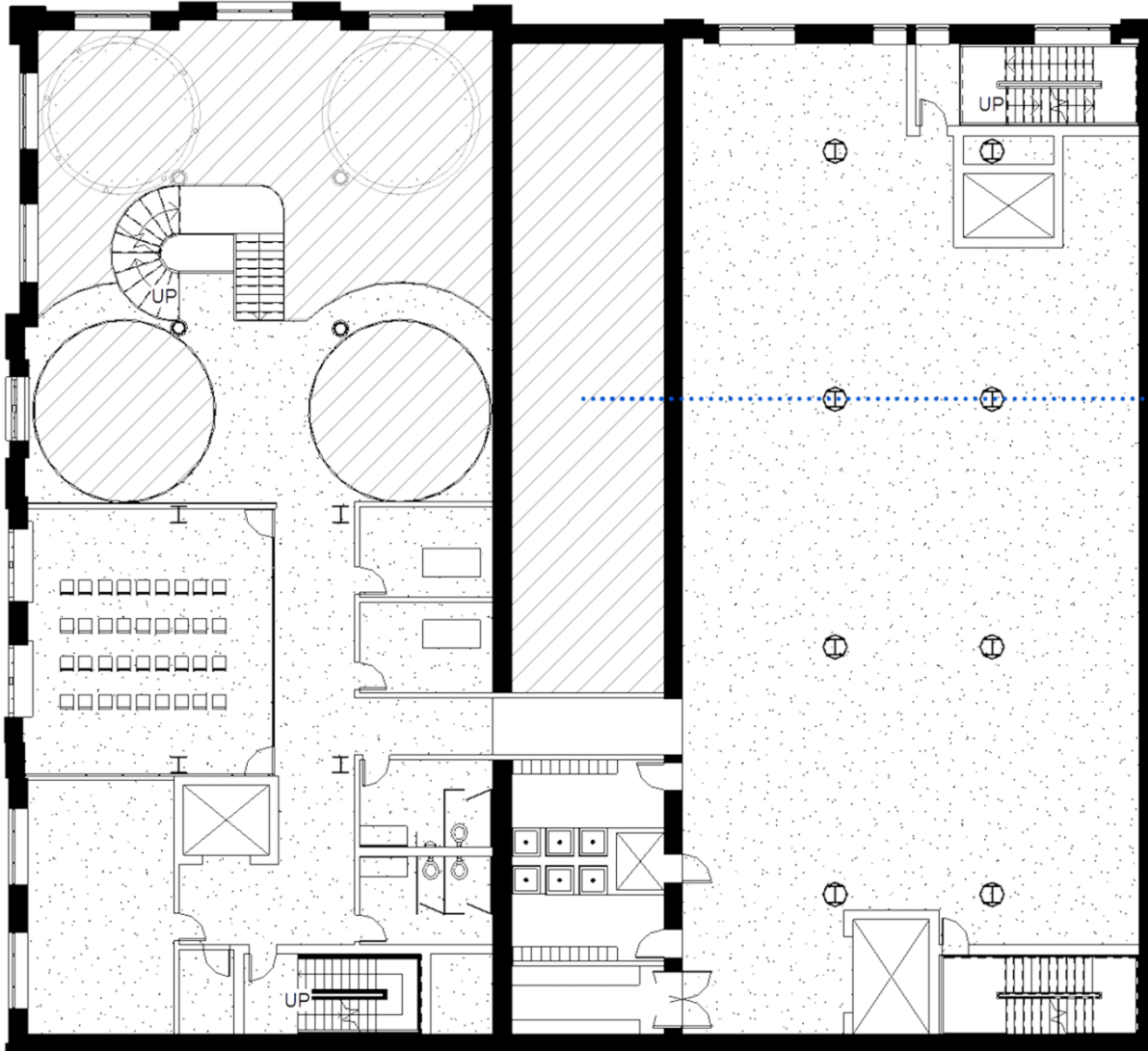
AS MENTIONED BEFOREHAND, THE FACILITY ONCE SERVED AS A BREWERY; HENCE, THE OPENINGS ALLOWED MATERIALS SUCH AS WATER, YEAST, AND HOPS TO BE LOWERED INTO THE TANKS. THE LARGE SIZE OF THESE TANKS REQUIRED TWO STORIES OF BUILDING SPACE FOR THIS ONE FUNCTION.

TO ALLOW THE TYPOLOGY OF THE TRADES 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 COVERS, BUT ALSO AN OPPORTUNITY TO FINISH THE OUTER RIM AND FACE USING BOTH HISTORIC AND 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.





3RD FLOOR

CLASSROOMS (1050 FT²)
 INSTRUCTOR OFFICES (175 FT²/UNIT)

WORKSHOP (4200 FT²)
 LOCKER ROOM (340 FT²)
 TOOL STORAGE (120 FT²)

STAIRCASE RISER METAL PANEL



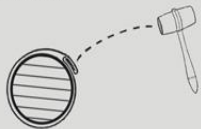
THE DESIGN FOR THE STAIRCASE RISER PANELS ARE INFLUENCED BY THE ORIGINAL METAL STAIRCASE. USING A HYDRALIC PRESS TO CUT THE PANEL HOLES. THE FINISH IS SLIGHTLY HAMMERED WITH "PENE HAMMER" TO ADD A PATINA TO THE FINISH.



METAL COLUMN WRAP



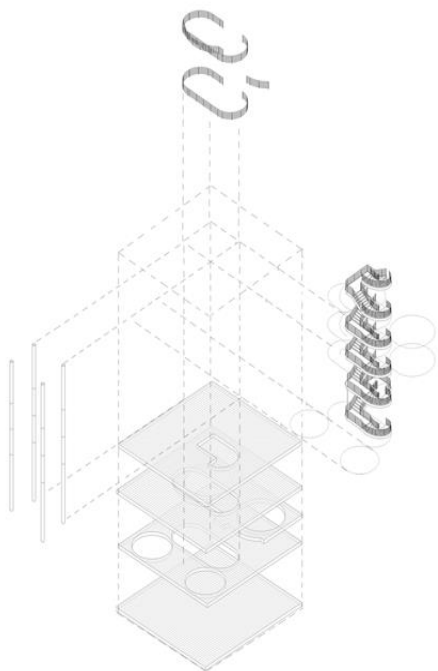
THE ORIGINAL COLUMNS FOR THE CENTRAL STAIRWAY ARE WRAPPED WITH ZINC METAL TO COVER THEIR DEGRADED STATE. AFTER PRODUCING THE COIL STOCK, THE METAL IS ATTACHED WITH THE SEAM HAMMERED WITH "TINNER'S MALLET". THIS NEW DETAIL IS THE PROGRESSION OF THE COLUMN WITH A MODERN DAY EXPRESSION.

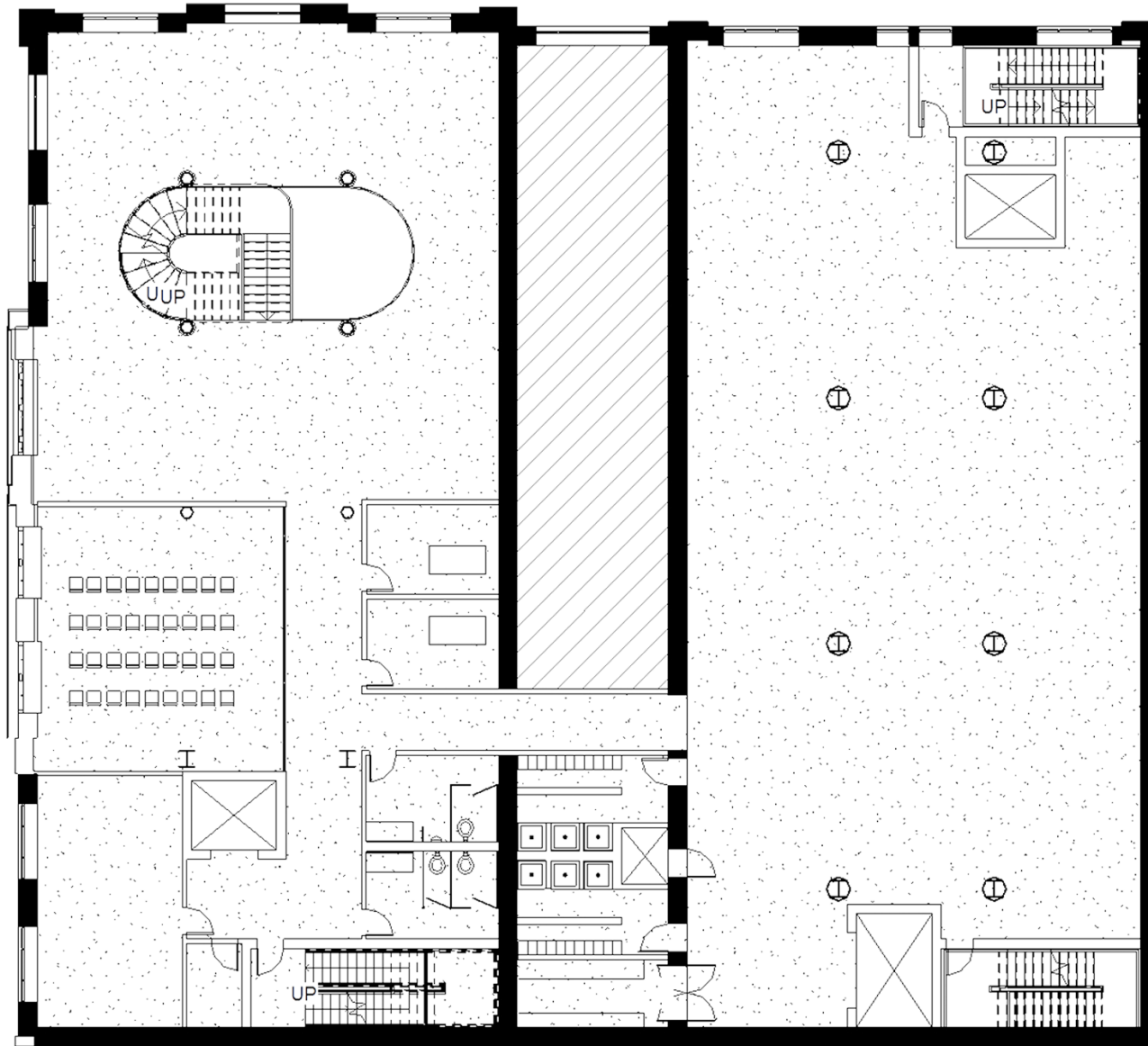


WOOD CARVED HANDRAIL



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.

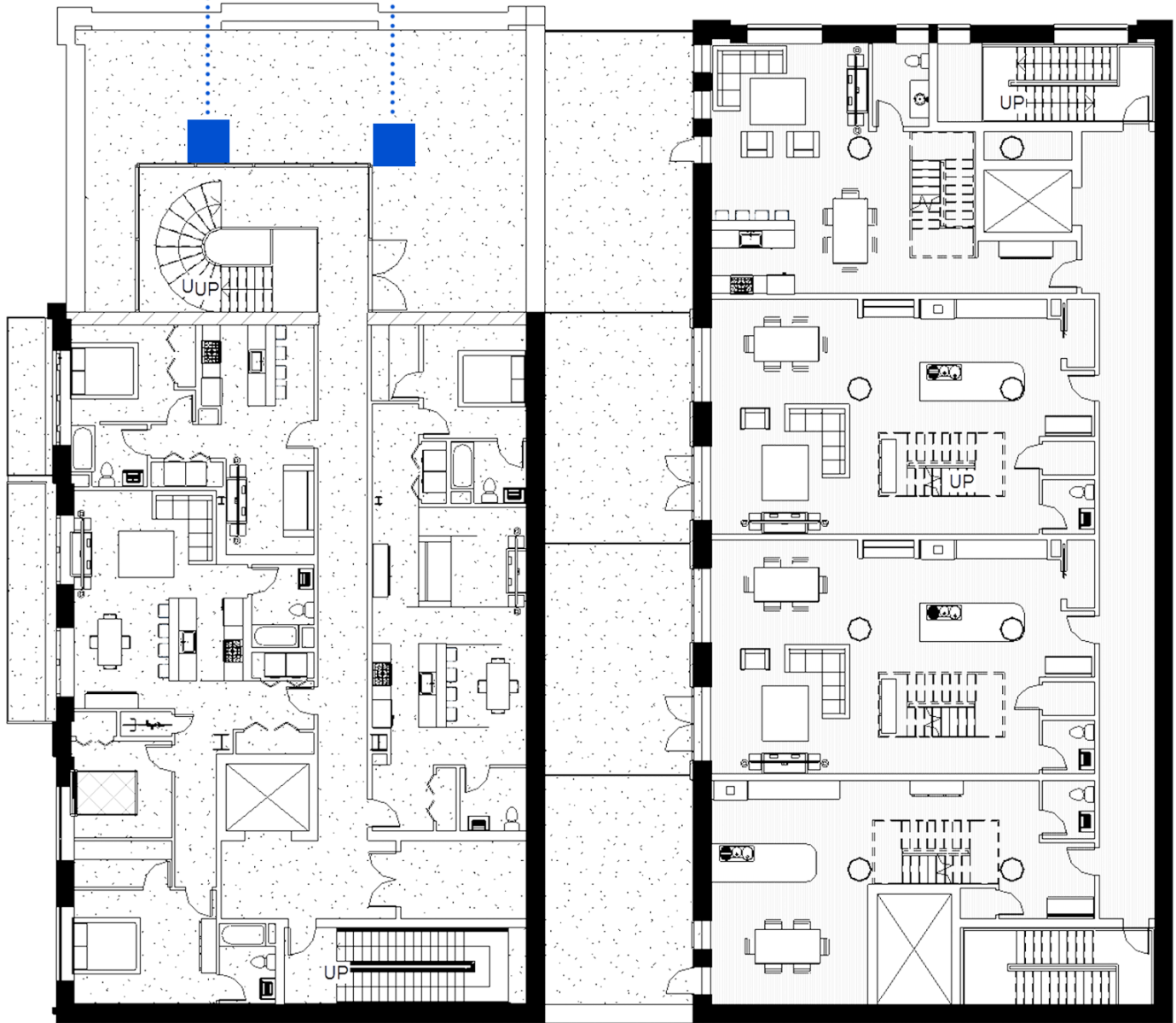




4TH FLOOR

CLASSROOMS (1050 FT²)
 INSTRUCTOR OFFICES (175 FT²/UNIT)

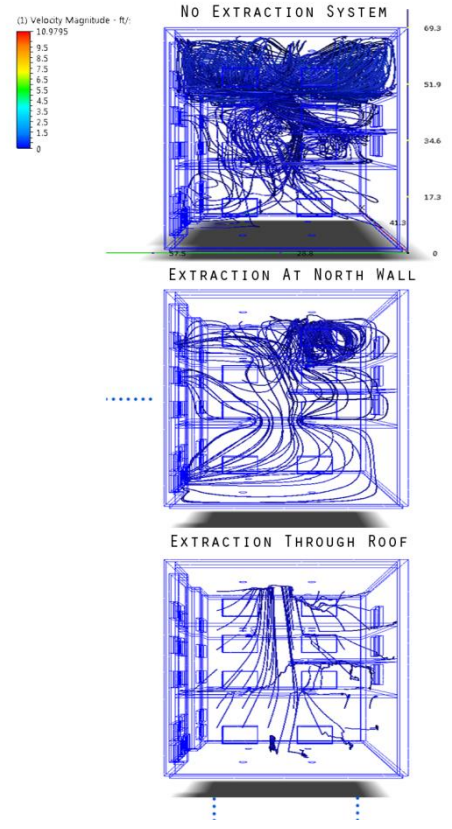
WORKSHOP (4200 FT²)
 LOCKER ROOM (340 FT²)
 TOOL STORAGE (120 FT²)

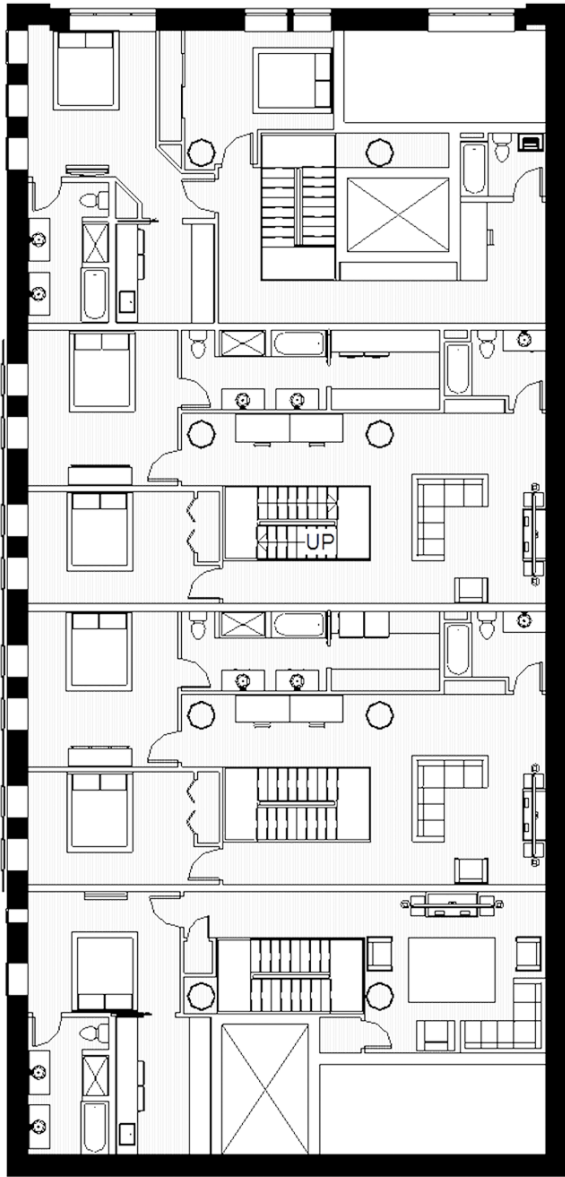


5TH FLOOR

(3) TEMP. ARTISIAN HOUSING UNITS
 -(520-1160 FT²/UNIT)

(4) TWO-STORY CONDO UNITS (1ST FLOOR)
 (1640-2300 FT²/UNIT)





6TH FLOOR
(2ND FLOOR OF UNITS)

Why teach?

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 adaptation/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.

At surface level, this project is only a school. With a closer view one can realize the layers of complexity this project presents. It challenges us as students and architects our perception of the past, and suggests we need to be critical when it comes to preservation. It looks at the workflow on projects that uses the current system of “specialized labor” and suggests the introduction of a new, advanced curriculum is needed in respects to historic adaptation/preservation to be taught in technical colleges. It uses adaptive reuse not as only means of fixing an old building, but restoring a community and bringing new life to the area. Lastly, it teaches us there will always be a need for both old and new techniques as adaptive reuse projects become more prevalent and require the conjunction of new and old means.

Like the jackplane, these individuals are not specialized and perform only one task to perfection. These men and women will however, do the brunt of the work, as they are capable of doing anything.



