

**Architectural Dissection and
Intervention:**
Old Wiehle Brewery

by

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ABSTRACT

“Every new work of architecture intervenes in a specific historical situation. It is essential to the quality of the intervention that the new building should embrace qualities which can enter into a meaningful dialogue with the existing situation. For if the intervention is to find its place, it must make us see what already exists in a new light. We throw a stone into the water. Sand swirls up and settles again. The stir was necessary. The stone has found its place. But the pond is no longer the same.”

Peter Zumthor

Thinking Architecture

This thesis is an investigation of architectural intervention; specifically a question: “How does one mediate the old through the intervention of the new?”

By using methods of dissection, one is able to deconstruct the layers of a historic situation and identify key elements of the old in an effort to provoke a dialog with elements of the new. The historic artifact, in this case an abandoned distillery warehouse, held the essential material conditions of a stereotomic mass and a tectonic frame. Through the introduction of a new program, a brewery, a third architectural condition, the parasitic, was deployed to reveal a new synthesized whole.

DEDICATION

In memory of my mother, Katherine Dean.

You constantly inspire me to reach a little bit higher - this is for you, Mom.

ACKNOWLEDGEMENTS

"Life's tough, get a helmet"

Boy Meets World

Thank you --

To my Dad for greeting my crazy with light-hearted sarcasm and reminding me that there are some things best solved with a glass (or two) of wine. You are and will always be my hero.

To Richard Newlon for your constant support of my architectural ambition and introducing me to this building.

To my classmates for your support and technology lessons - and of course, 4 PM "luck of the draws."

To my committee - Hilary, Bill, & Scott - for your guidance and helping me turn an idea for a project into a thesis. In particular, thank you to Hilary for constantly challenging me and most importantly, accepting my sarcasm. Your dedication to students is unwavering.

Wahoowa.

TABLE OF CONTENTS

ABSTRACT	ii
ACKNOWLEDGEMENTS	iv
INTRODUCTION	1
BREWERY	5
PRODUCTION	9
VISITOR	15
ELEMENTAL CONDITIONS	23
STEREOTOMIC	25
<i>SHELL</i>	
<i>FOUNDATION</i>	
TECTONIC	27
<i>FRAME</i>	
PARASITIC	35
<i>VERTICAL MOVEMENT</i>	
APPENDIX	39
EXTANT ARTIFACT	41
SOURCES	47



INTERVENTION OF NEW WITH EXTANT

INTRODUCTION

“See how a building inevitably establishes new identities over time – once acknowledged, this basic principle makes it fundamental for the architect to leave conspicuous and characteristic evidence of his own era within the historic fabric, trusting time to fuse it into a comfortable whole.”

Carlos Scarpa

Weiterbauen

I have chosen to approach this thesis with the idea that the existing is unfinished and never will be finished. While I will identify the extant as a historic artifact, its history will continue to evolve – regardless of whether it is ultimately intervened with or not. One can say that interventions are merely a new layer added to the continuous history of the building. German architect, Karl-Josef Schattner (1924-2012) called this condition *Weiterbauen* – “to continue to build.”

Italian architect, Carlo Scarpa (1906-1978) referred to architecture as layers of history. In reference to the Castelvecchio in Verona, he discussed the idea of using the new to provoke older elements into conversation, allowing the intervention to inevitably establish a new identity for the whole over time. Similarly, Swiss Architect, Peter Zumthor discusses the idea that all architecture intervenes in specific historical situations; that the qualities of the intervention can enter into a dialogue with the existing. He uses an analogy of throwing a stone in water, the water will eventually settle and the stone will have found its place, but changed the water.

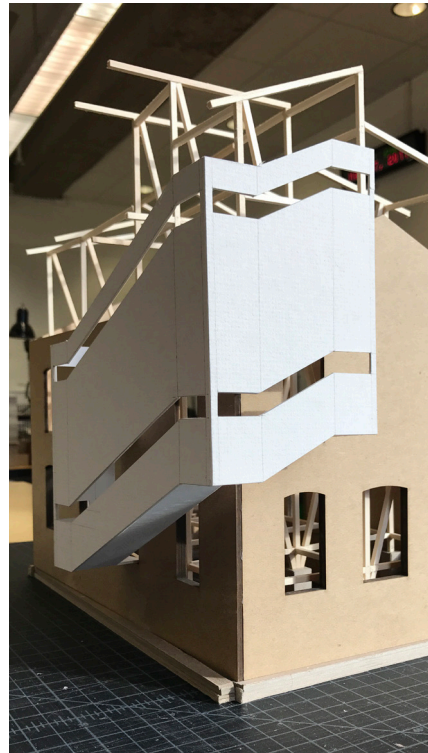
Elemental Conditions

My overarching goal for this thesis was to perceive the identity and characteristics of the extant building's elements and provoke a dialogue when paired with elements of the new and thus, create a new whole. In many instances, the existing elements were essential to the integrity of the new whole – such as roof trusses – but would adapt or respond to the newly defined conditions, uses, or relationships.

In reference to their renovation of Lincoln Center and Alice Tully Hall, Diller Scifidio + Renfo discuss the idea of morphing as “a way to extend significant elements of building without mimicking or negating” their significance. By adapting the element to a new condition, one may respect the original significance of the element but allow it to serve a new purpose.

As I began to analyze the various and different extant elements through their relationships to the new programmatic demands, three recurring conditions emerged that comprised the new whole: the stereotomic, the tectonic, and the parasitic.

(Left) Approach to brewery from W&OD Trail; extant artifact wrapped with parasitic stair.



INHABITING THE ARTIFACT

OLD WIEHLE BREWERY

The site is located along Old Wiehle Avenue in Reston, Virginia, roughly 25 miles west of Washington D.C. Built in the 1890's, the warehouse building is surrounded by both commercial and residential structures ranging from single story historic homes to three story apartments and office buildings. Similar to the warehouse, most of the surrounding buildings are brick. Directly to the south is the W&OD Trail, a converted railway bed which is a popular trail for both bikers and runners.



(Left) New program nestles into the existing footprint of the warehouse through the insertion of a large steel trussed frame.

(Above Right) Aerial view of current existing condition. (Bottom Right) Current west facing elevation of artifact engulfed in overgrown landscape. (Left) Proposed site plan allows circulation throughout the site.



Entrance

The original main entrance into the warehouse was in the center of the south facing elevation, raised roughly 6'-0" above ground level. Upon deeper investigation of the site, there is evidence of a second, larger off-center opening along the north elevation that is at ground level.

Due to the nature of the new program, a brewery, there is necessity for a larger opening with level access -- not only for patrons but also to be able to move equipment and resources in and out of the structure. Thus, instead of maintaining the extant main entrance, the entrance for the new brewery has been moved to the north façade. This not only provides easier access into and out of the structure, but also frees up the south elevation for vertical movement and a commanding interaction with new steel bent frame both internally and externally.

The new entrance itself is set back into the new steel frame; while a traditional signifier of entrance, it immediately provokes and engages interplay between the extant shell and steel frame as one moves into the new building volume.

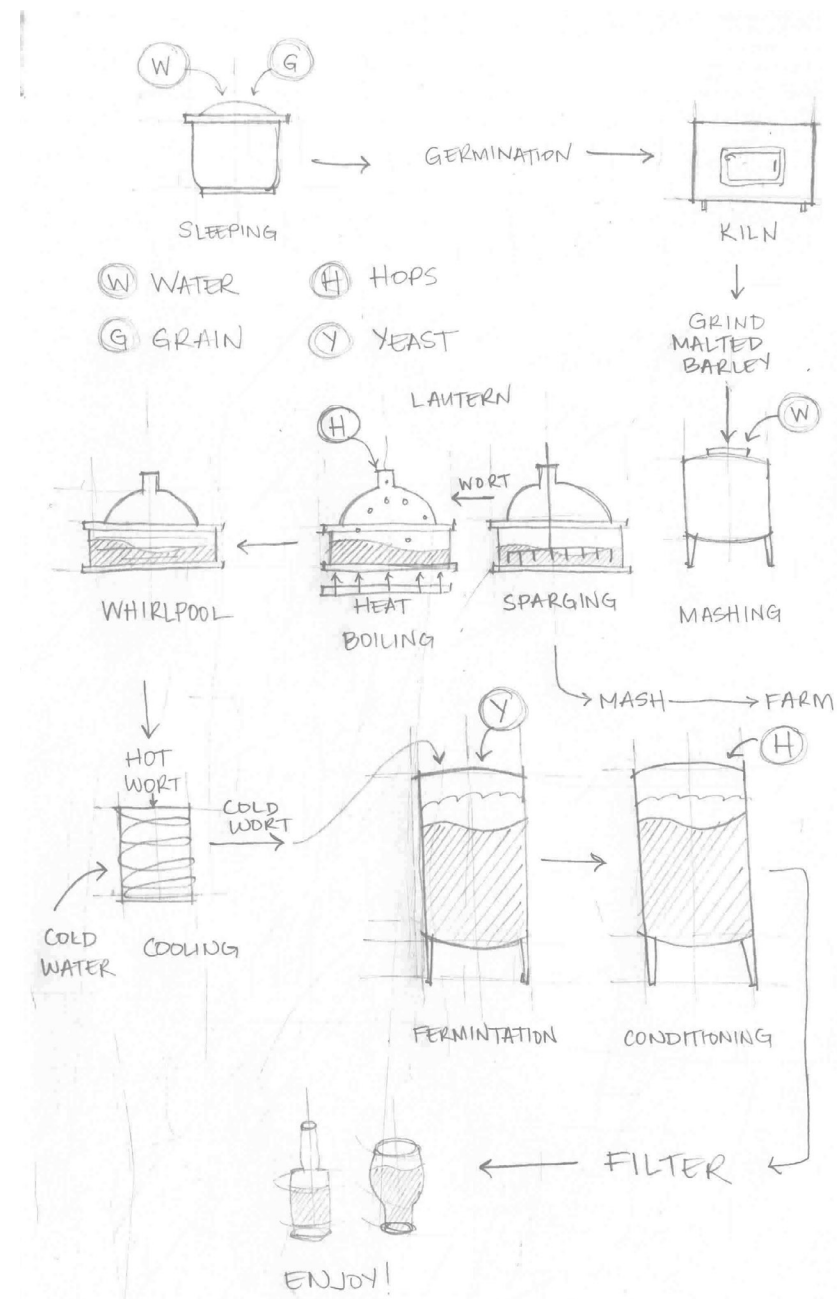
(Top Right) Extant artifact main entrance originally faced south toward W&OD trail; (Bottom Right) New main entrance on north elevation, set back into frame, inviting visitors to experience the brick shell. (Left) Existing secondary entrance infilled with brick found upon site investigation.

(Right) New main entrance approach.



BREWING INFRASTRUCTURE

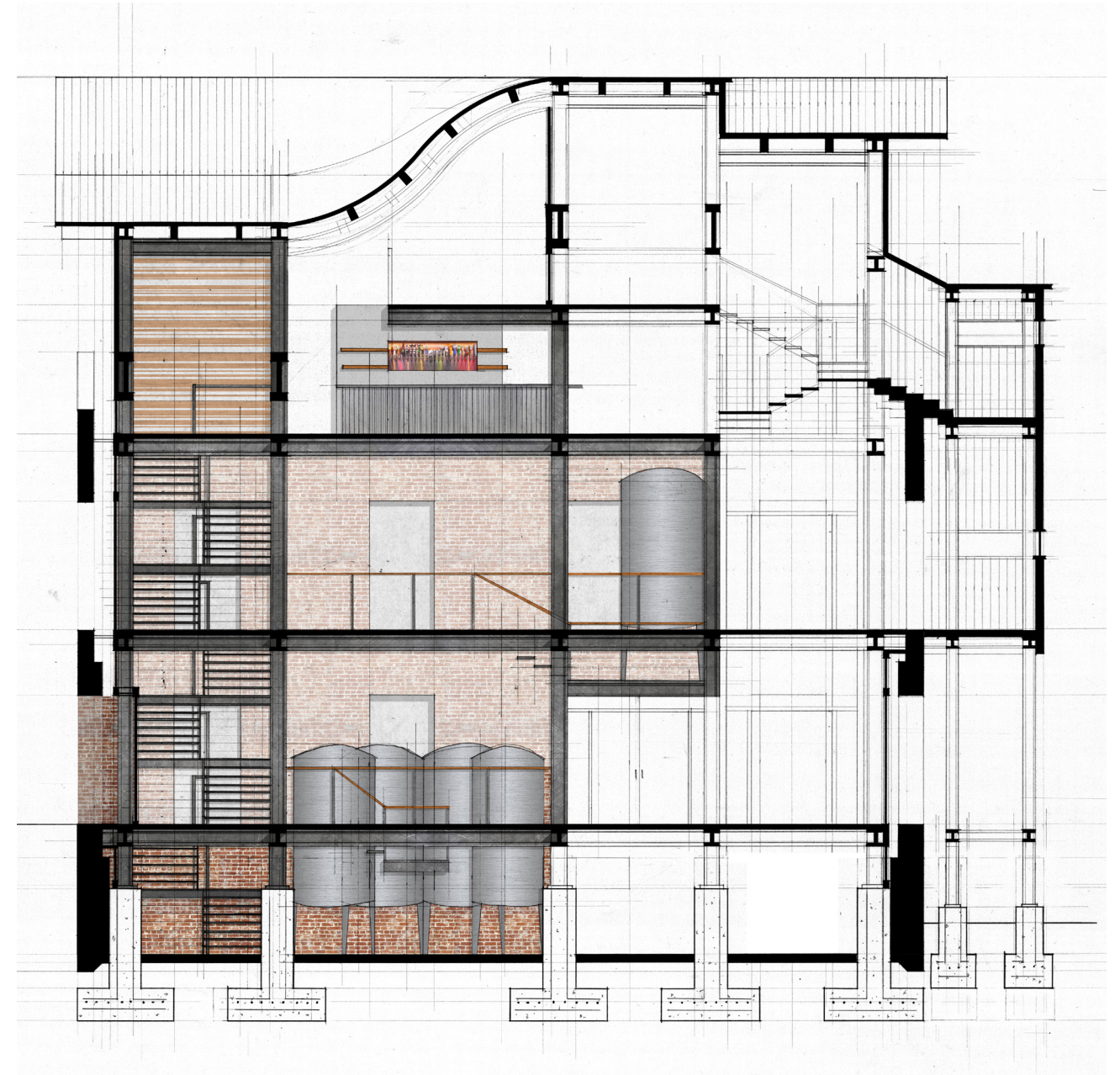
ELEMENTS OF PROCESS

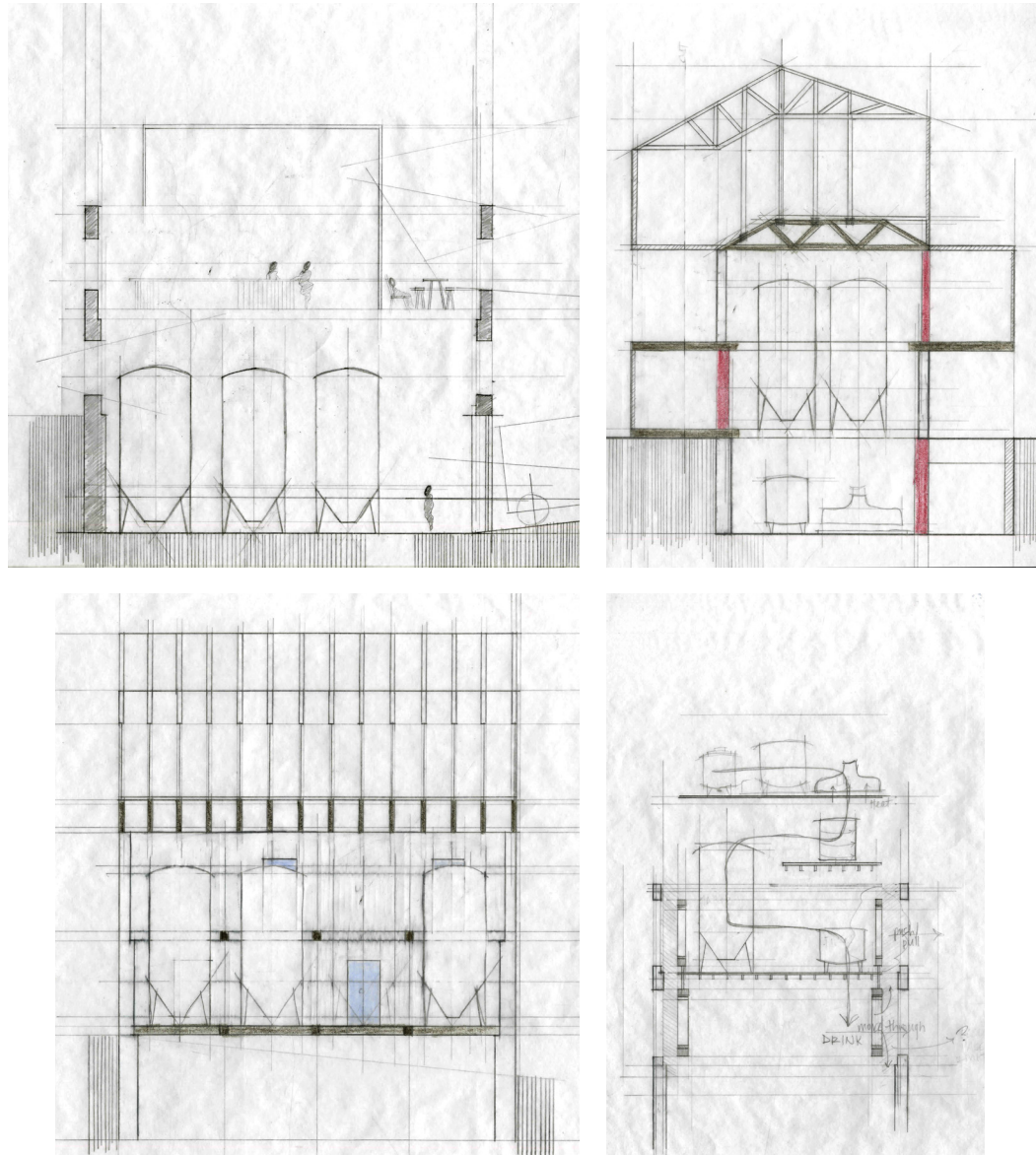


The program was one of the foundational elements to this thesis. While it was a nod toward the previous use of the existing structure, a distillery warehouse, it also developed out of a fascination with the process of brewing. The spatial and sequential process requirements of this program guided many formal decisions in plan and section -- including frame location, floor heights and locations, and ideas of public (visitors) vs. private (brewers).

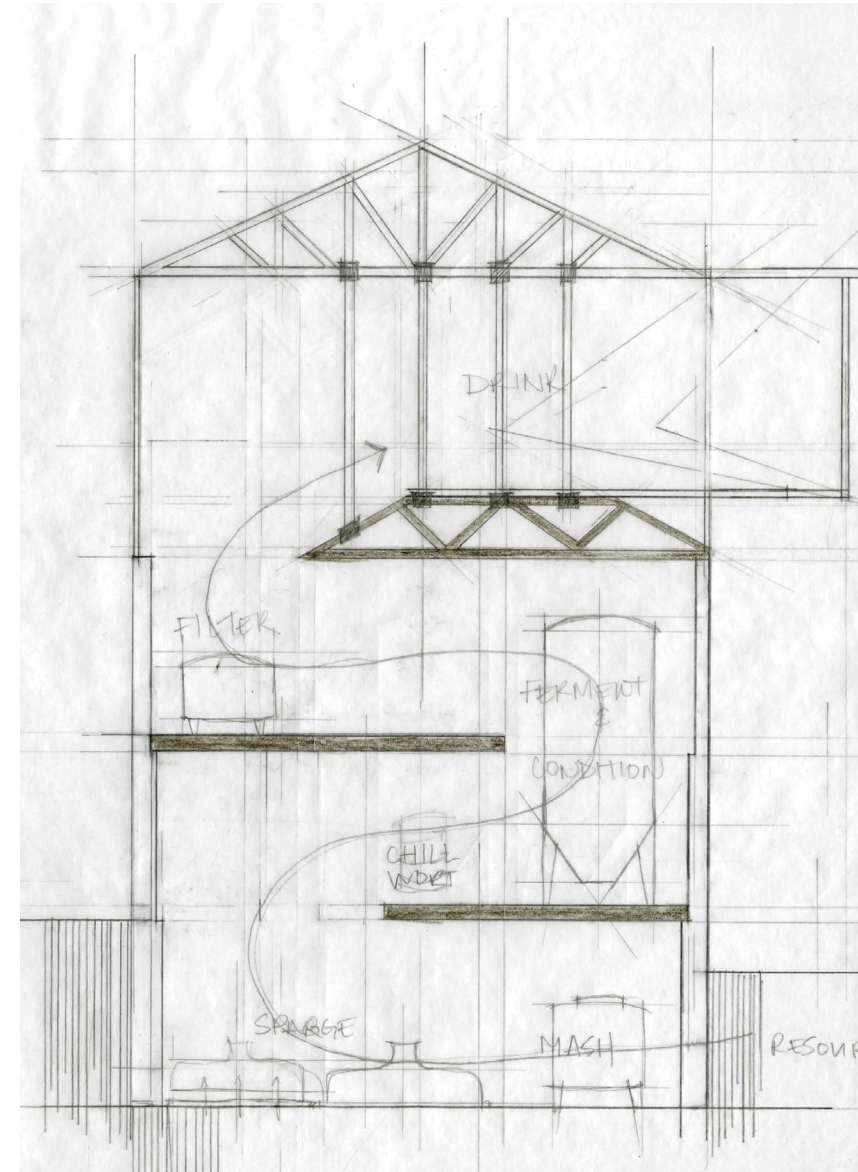
The brewing process is generally linear - a systematic process - but it is universally scalable. With the limited footprint of the existing building, it was established that this process would need to become vertical to fit within the boundary of the extant shell. This presented a handful of design challenges.

(Left) Diagram of the sequential brewing process to consider when ordering spaces and how visitors can alternatively view or experience them. (Right) Section demonstrates the vertically ordered brewing process.





Sectional studies addressing possible organizations of the specific process sequences vs. the required volumetric spatial demands of equipment.



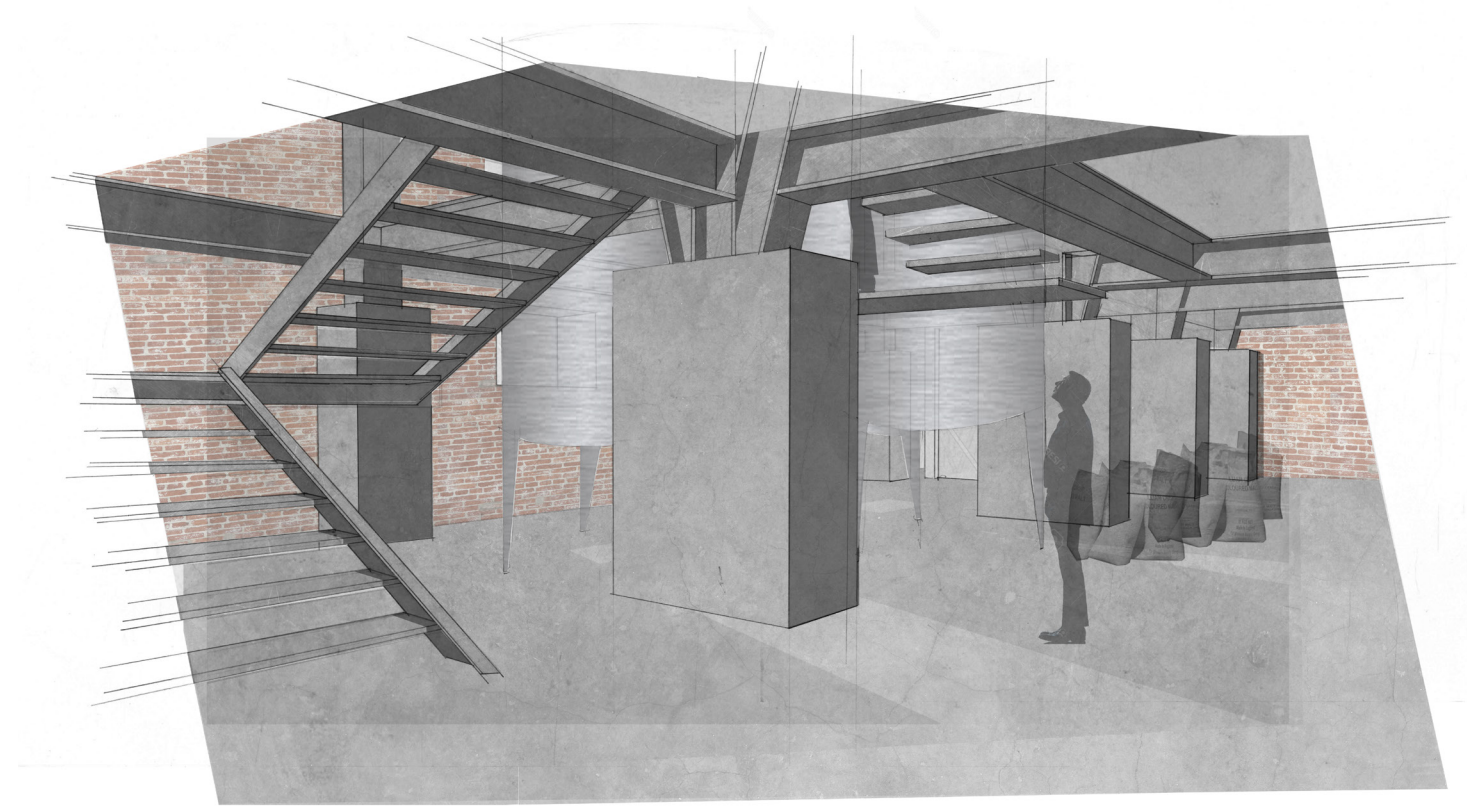
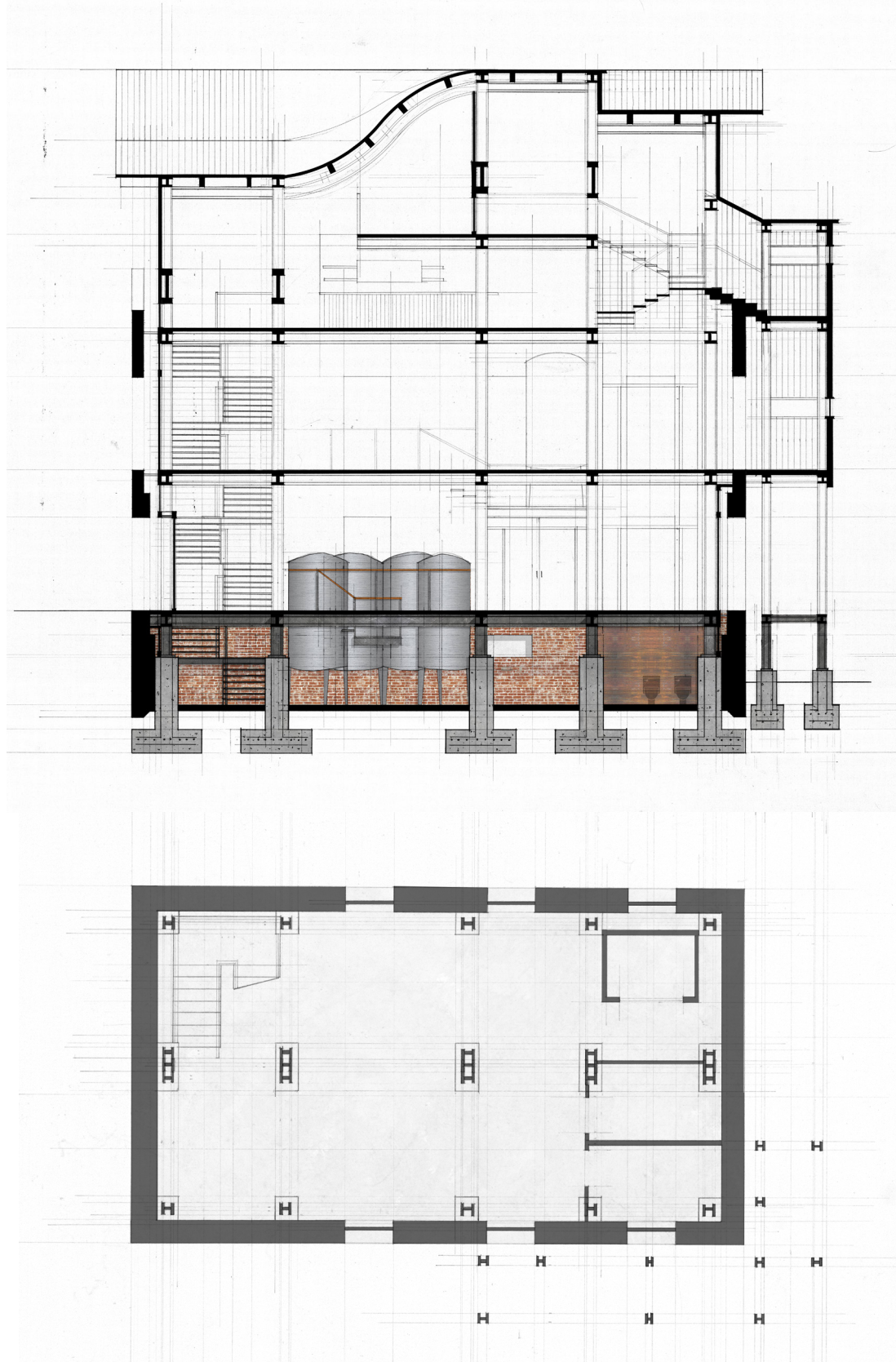
Process vs. Volume

The volume of the associated brewing equipment required is fairly large and demands different spatial conditions. There are certain pieces of equipment that need to be close to one another. Vertically, most of the equipment spans larger than a typical "floor height," including the extant condition, and requires clearances both around and above the equipment.

Ideally in a vertical alignment, you would want to use gravity to assist with movement of the different processes. However, when looking at the initial resources in the brewing process, grain, barley, water etc. would need to be at the highest point. One could build into the earth, however this did not logistically make sense for the existing conditions. The alternative was a ground-up approach – starting the mash in the basement and moving vertically - ending with the finished product at a skyhigh taproom. By utilizing pumps to move the resources vertically, the final product can be enjoyed at the best location, the top floor with optimal views and a small roof deck.

Path Infrastructure

When considering how visitors vs. production would occupy space – it was clear that it was not practical for the production process to utilize the same stair as visitors to move between equipment. This led to a dual stair approach; whereas the main "parasitic," sculptural stair engages not only the process of brewing but also the extant artifact itself – a second stair provides direct support between equipment from start to finish.



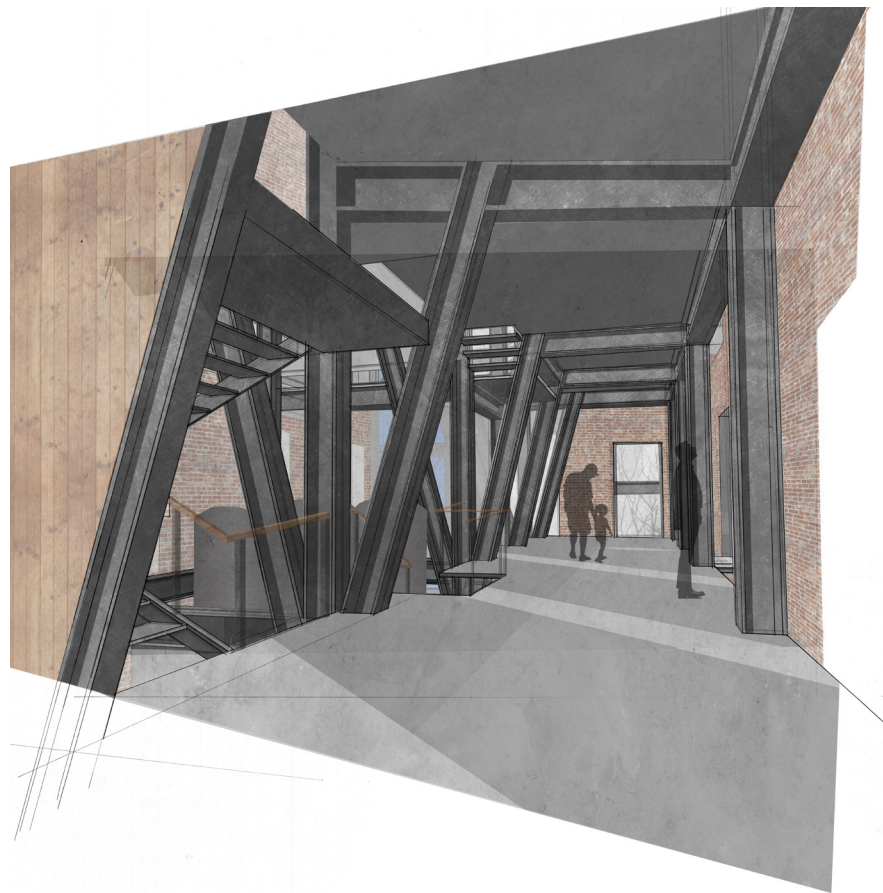
(Above) Structural "knuckle" where steel frame and concrete pier foundation meet at the basement level. (Left) The foundation of the brewing process is located in the basement where the 4-Vessel Barrel System originates. It is also the location for storing the key resources in the brewing process: water, malt, hops, and yeast.

VISITOR INFRASTRUCTURE ELEMENTS OF EXPLORATION

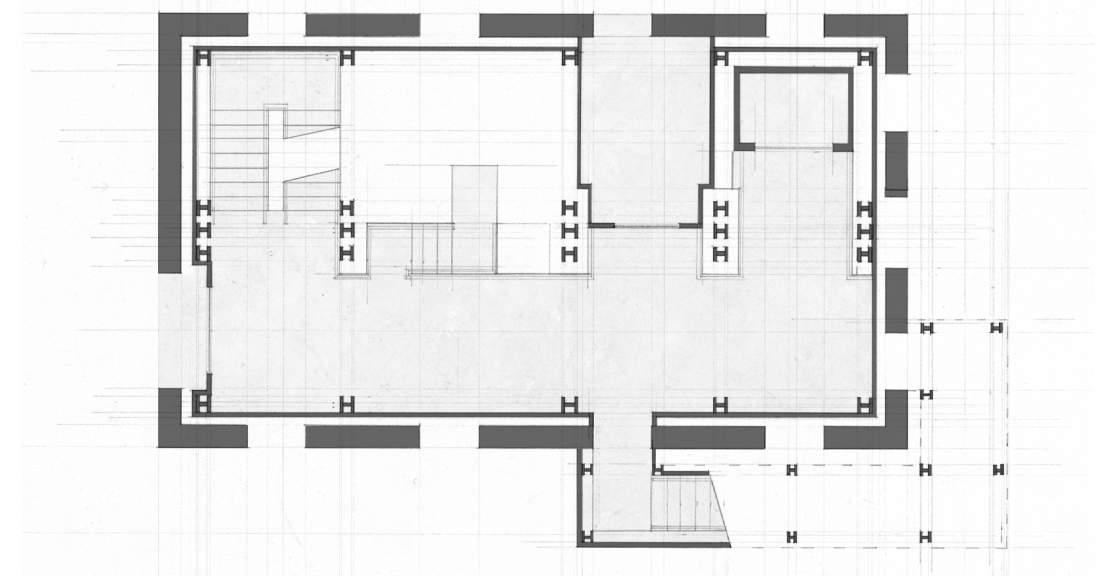
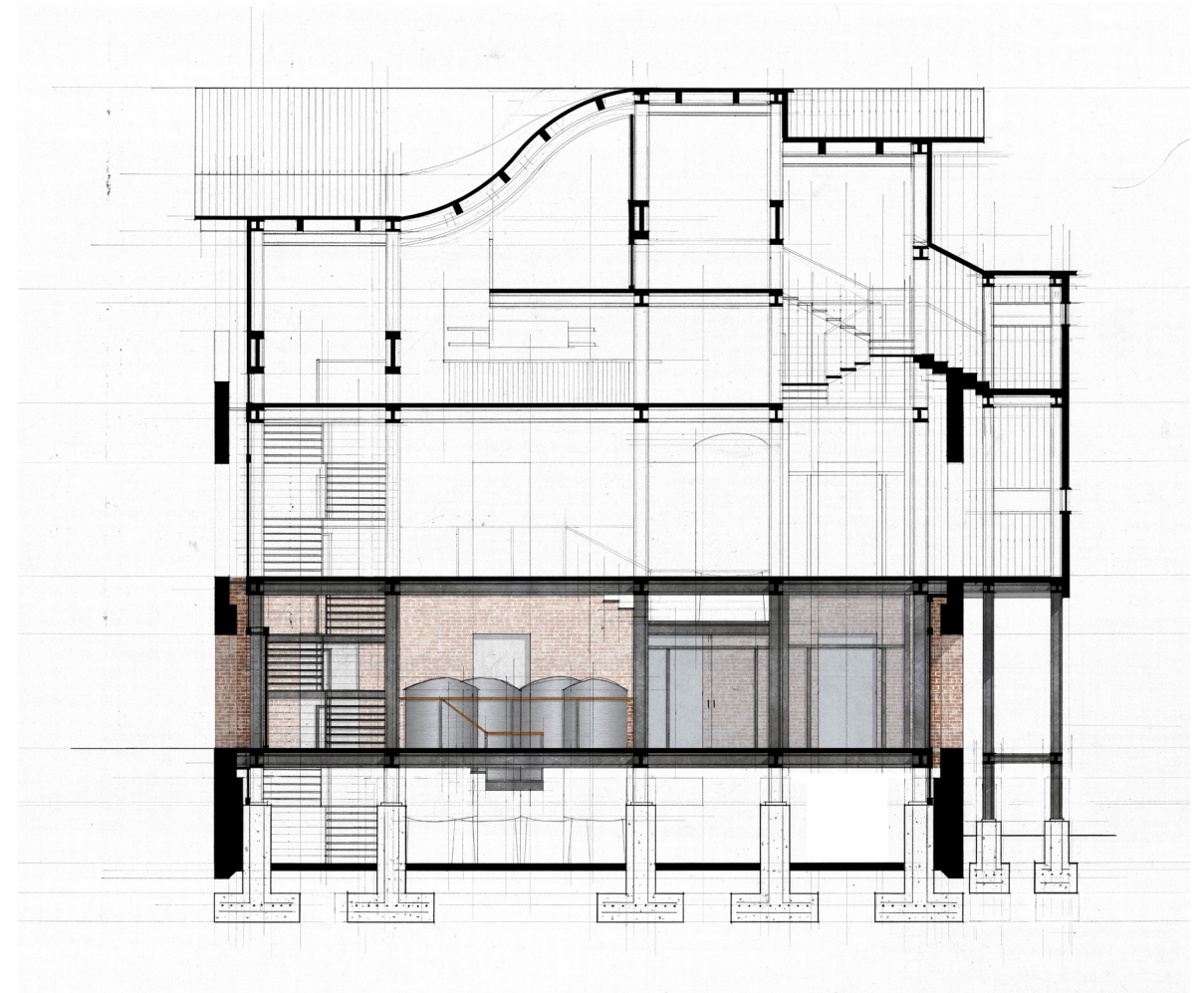
The new frame is pulled away from the existing shell, creating a completely independent, new volume. Once within, you are immediately confronted with the structural bents of the new steel frame. With the idea of occupying a truss, the steel "trusses" or bents are anchored with concrete piers in the basement and penetrate the volume vertically to support the oscillating roof of the taproom above.

There are multiple options for moving vertically through the structure. For the visitor, the path to the taproom is designed to weave in and out of the extant shell and new structural frame but also intertwines with the production spaces in an effort to educate and integrate the brewing process with the product. The intended path of the visitor is the "parasitic" stair that wraps the southwest corner, utilizing the existing window openings for circulation.

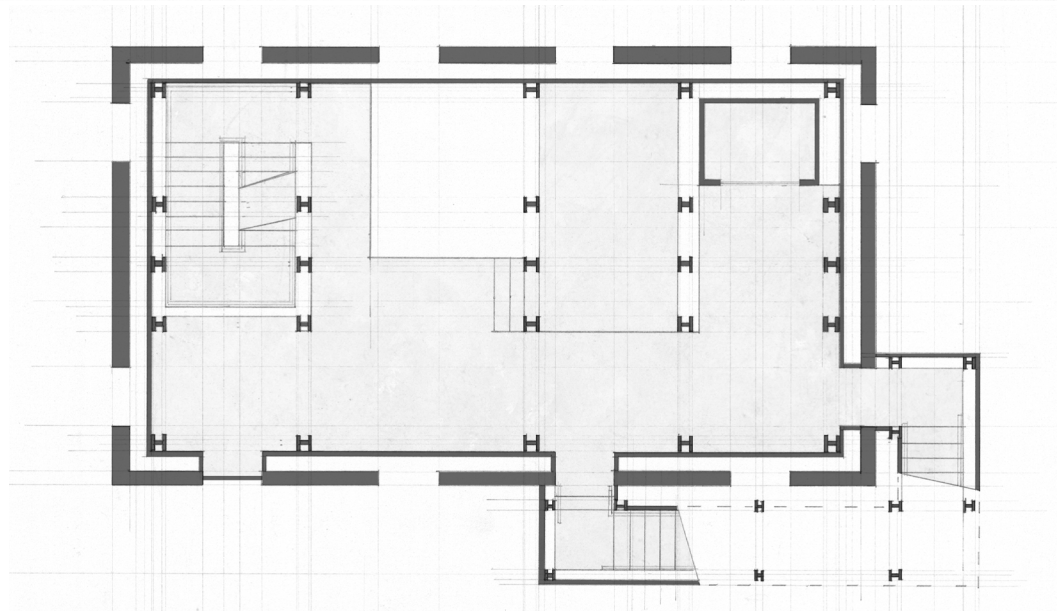
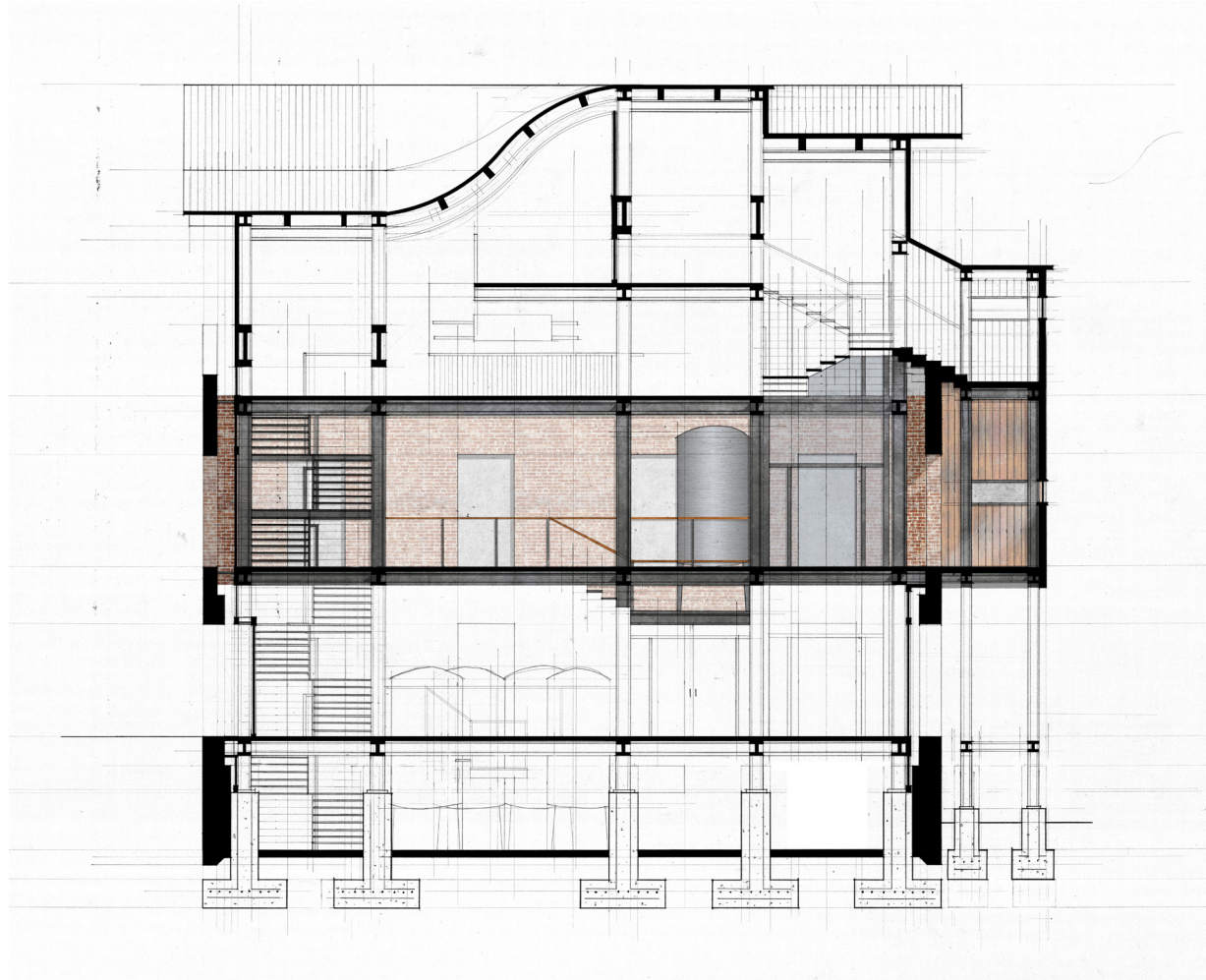
To get to the stair, one must move past the 4-vessel brewing equipment. Due to the previously discussed volumetric requirements of the production apparatus, the equipment penetrates through floor plates throughout. It is at many of these moments that the two paths, the brewer and the visitor, overlap.



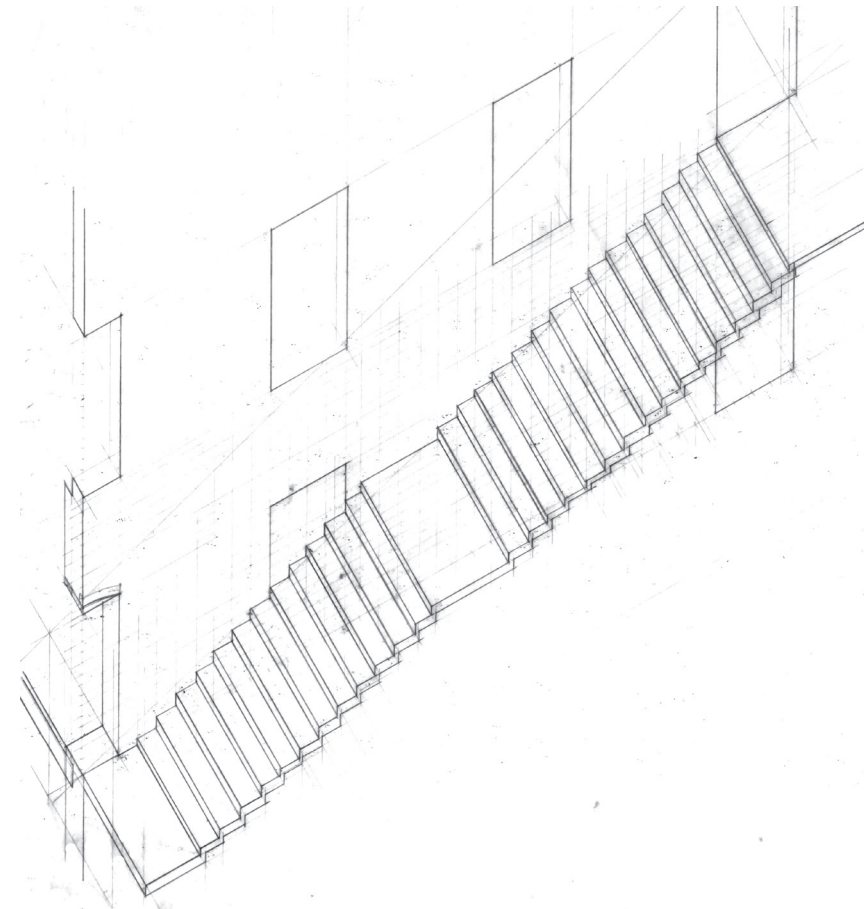
Passing through the entry, visitors are immediately confronted with the dynamic between the shell and the frame as well as the notion of interior and exterior spaces within the boundary of the extant shell.



First floor plan introduces the dialogue between the visitor experience and the brewing process.



The second floor continues the dialogue established on the first floor between the visitor and the brewing process by circulating individuals vertically through the process.



Vertical Movement

The parasitic stair is the primary vertical path; it connects the extant shell with the new structural frame. It weaves in and out of the mass, utilizing the existing window openings within the shell as thresholds. Similar to the main entrance, it challenges the visitor to partake in the dialogue between the old and new as one crosses the thresholds -- while also being structurally independent from the shell and frame. Views are controlled using an eye-level windows that follow the slope of the stair. The volume wraps the corner of building, arriving at the next floor and then slips back into the new interior structural frame.

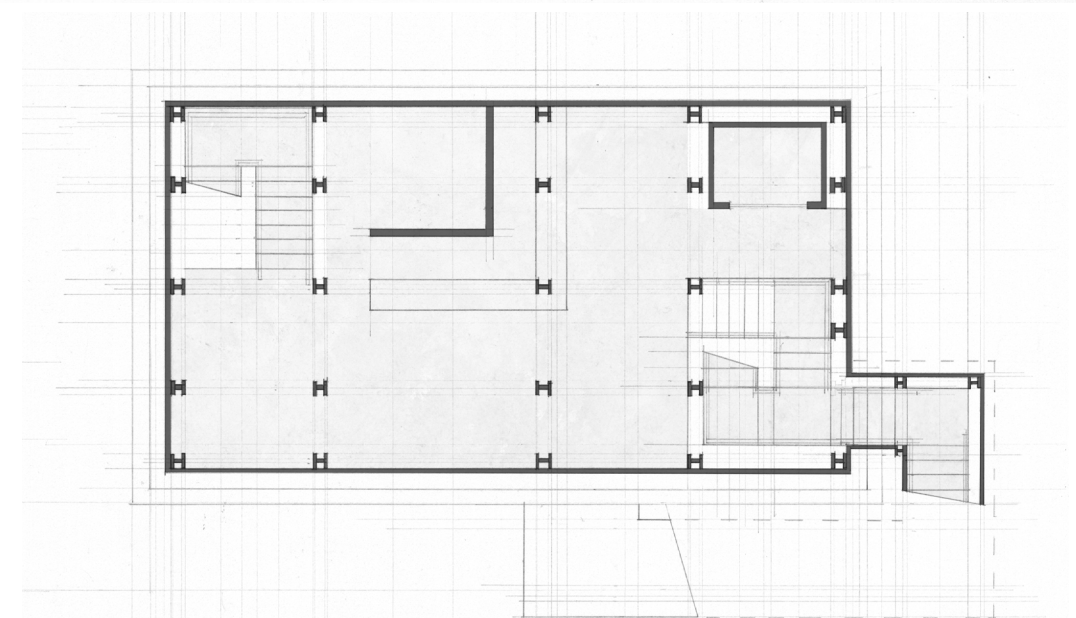
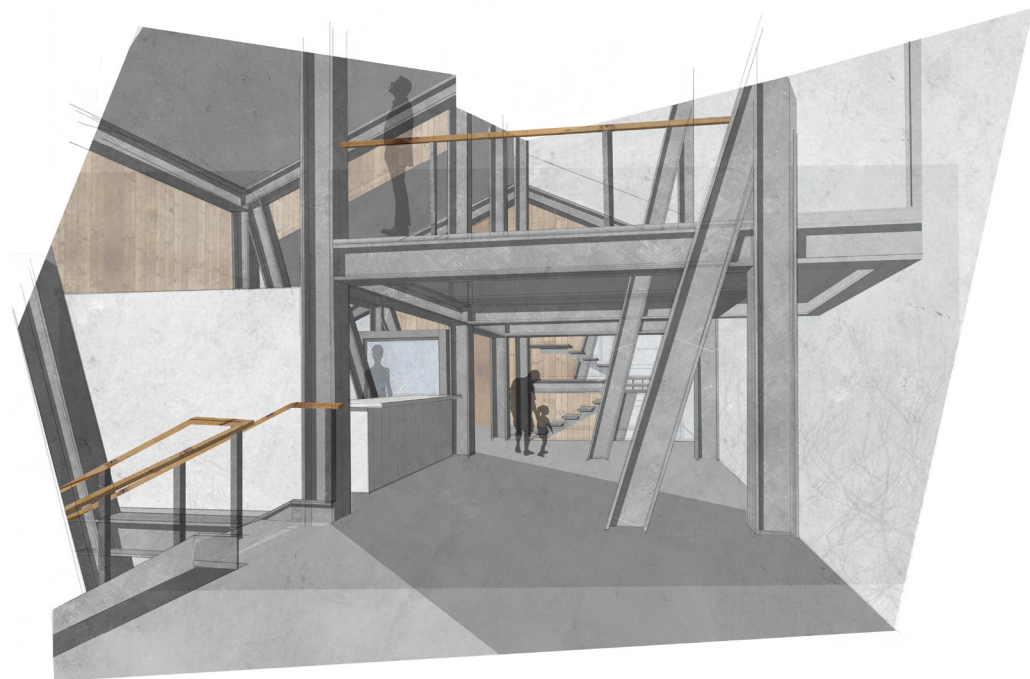


Initial sketch study (above) explores feasibility of using the window openings as new thresholds for stair as seen in model image (below).

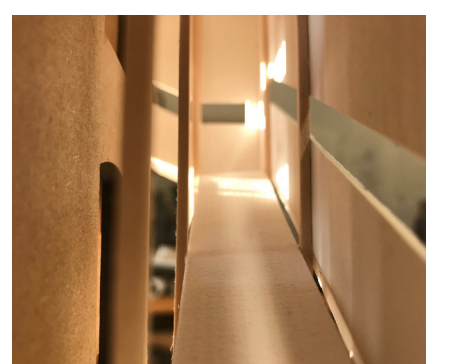


Both the visitor's exploration as well as the brewing process culminates in the elevated tasting room. The pinnacle is an elevated glass box nestled within two trusses that protrudes beyond the boundary of the shell. It breaks the rhythm of the oscillating roof line and maximizes a visitor's views. While physically elevated above the extant shell, this is the only instance other than the parasitic stair where this occurs. At night, this glowing glass box, that protrudes toward the street, could be seen as a beacon to the tasting room.

(Left) Final model of pinnacle tasting room protrudes beyond the boundary of the brick shell. (Below) Elevated tasting room reveals the intersection of the steel trussed frame with the oscillating roof line.



The third floor introduces the destination: the taproom. Situated at the top of the process chain - it is the final point of arrival for both the visitor and the product. The volume itself emerges out the top of the shell, exposing the new program and structure to the public.



ELEMENTAL CONDITIONS

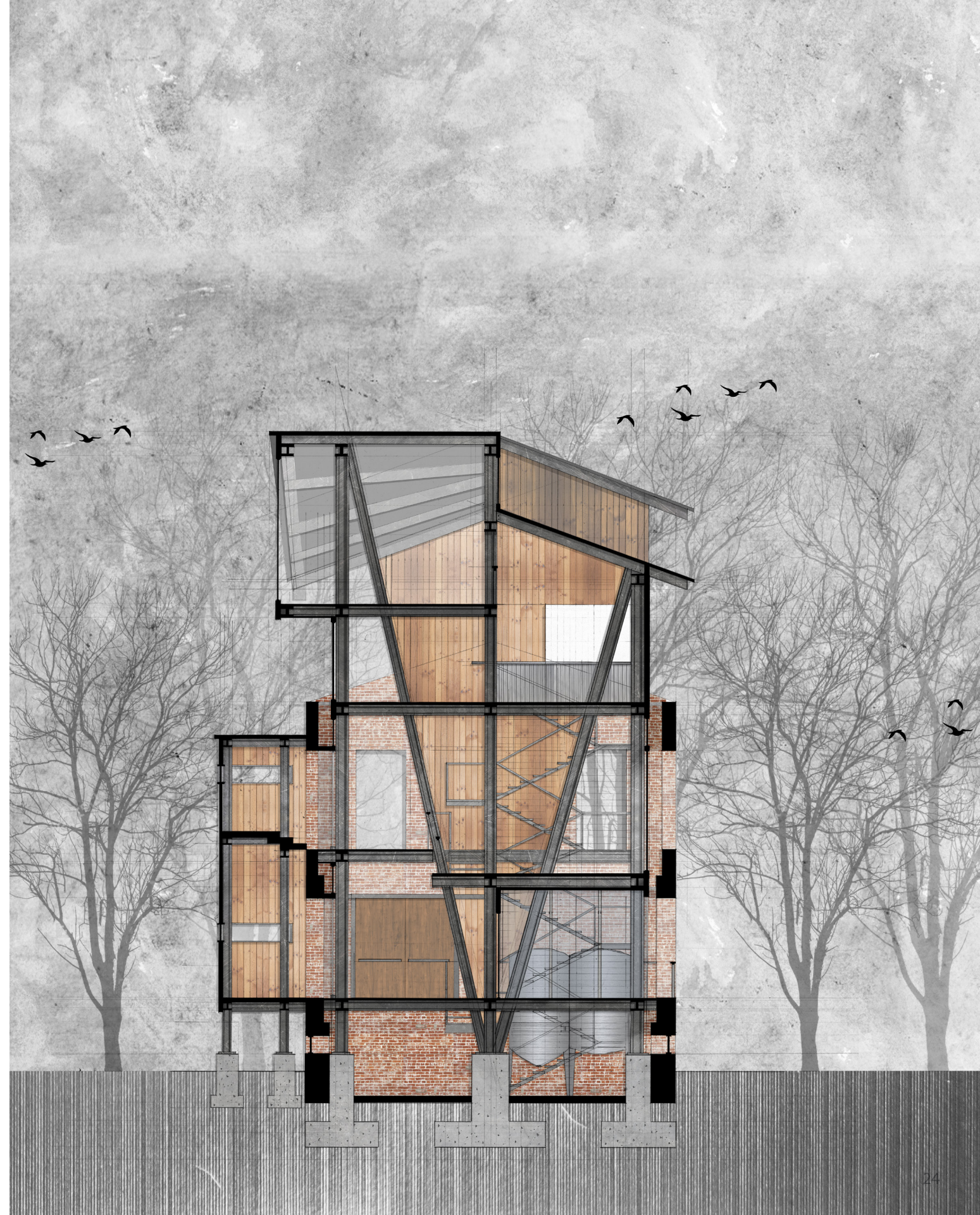


Through initial studies of both the existing building fabric as well as necessary additional elements required by the new program, it became evident that each element had inherent qualities and characteristics associated with its purpose. Of these characteristics emerged two conditions: the stereotomic and the tectonic. For this thesis, the stereotomic refers to the elements of old,

the extant brick shell, while the tectonic refers to the new – the framed enclosure.

It was from the juxtaposition of these two conditions that a third condition emerged: the parasitic. The parasitic is the connection between the old and the new – the vertical circulation that interweaves between the new frame to the extant shell.

(Above) Model studies that established the initial elemental conditions: the stereotomic shell, the tectonic frame, and the parasitic stair. (Right) Section illustrating the structural steel bent frame defining the new volume within the extant shell.



STEREOTOMIC BOUNDARY & FOUNDATION

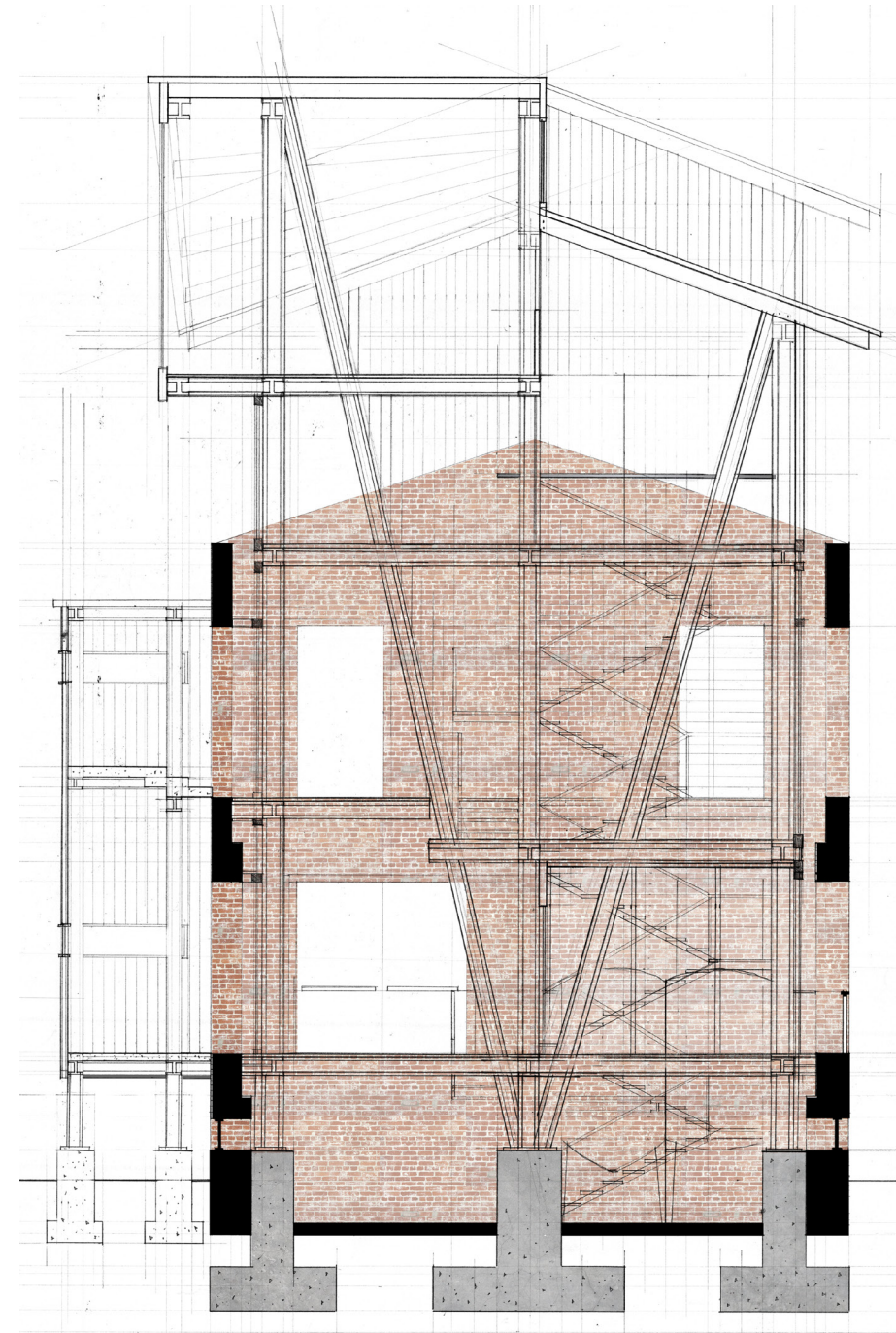
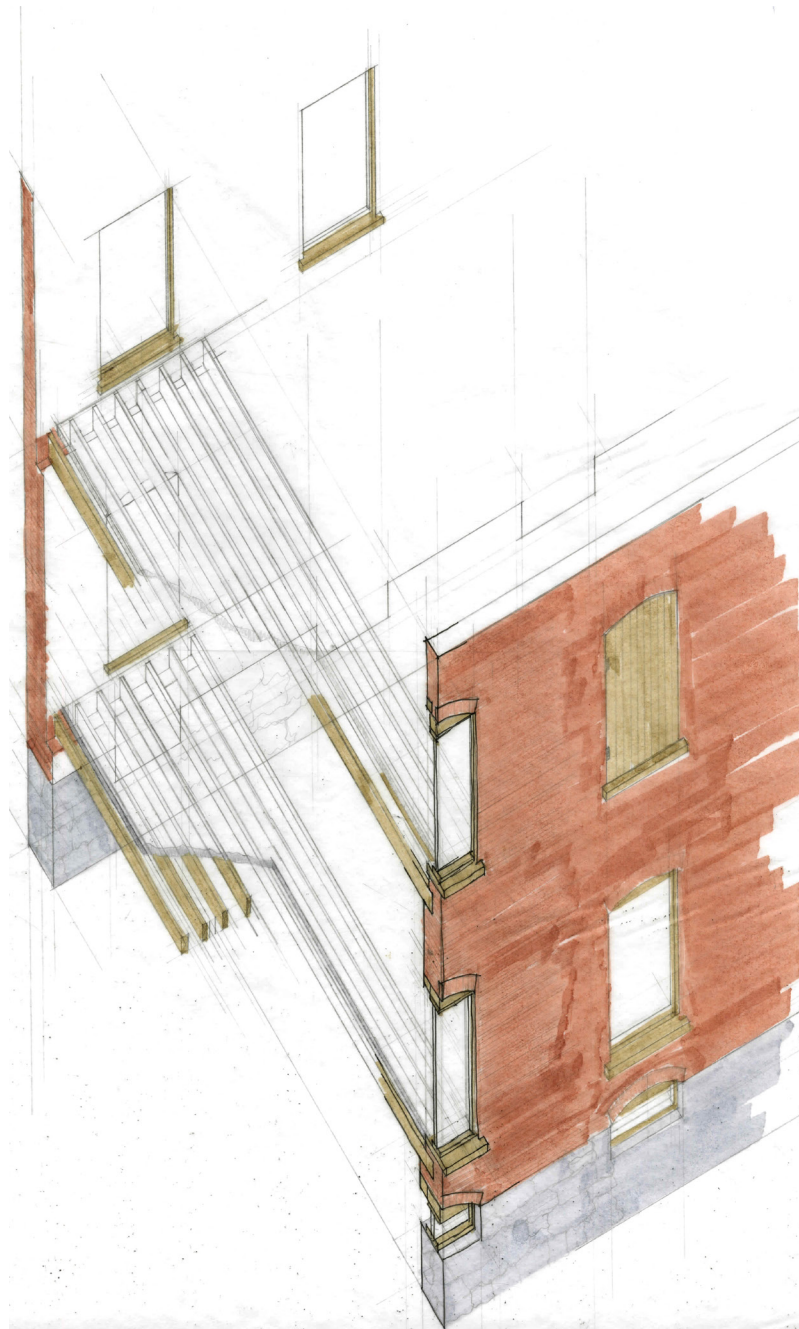
“Two fundamental procedures: the tectonics of the frame, in which lightweight, linear components are assembled so as to encompass a spatial matrix, and the stereotomics of the earthwork, wherein mass and volume are conjointly formed from the repetitious piling up of heavyweight elements.”

Kenneth Frampton
Studies in Tectonic Culture

Initially, the stereotomic referred mainly to the extant brick shell: a solid mass that gave boundary and founded the rhythm to developing new elements. As the project evolved, the stereotomic has also evolved into the condition relating to the connection to the ground – in particular the raised, cast concrete piers that supports the new structural steel frame and stair.

The extant shell is 2'0" wide at its base and tapers as it climbs vertically supporting the floor joists of the existing warehouse. The east and west elevations contain eight symmetrical windows – 4'-0" x 8'-0" as well as a few smaller openings at ground level where the slope of the ground allows. The north and south elevations include the previously mentioned entrances into the existing structure as well as similar windows. Currently, all except a few second story windows are bricked in. A few have the original shutters and wood frames; some are without.

(Right) Initial axonometric section of potential original construction method of original structure. Initial construction studies were used to define the existing elements of the artifact.

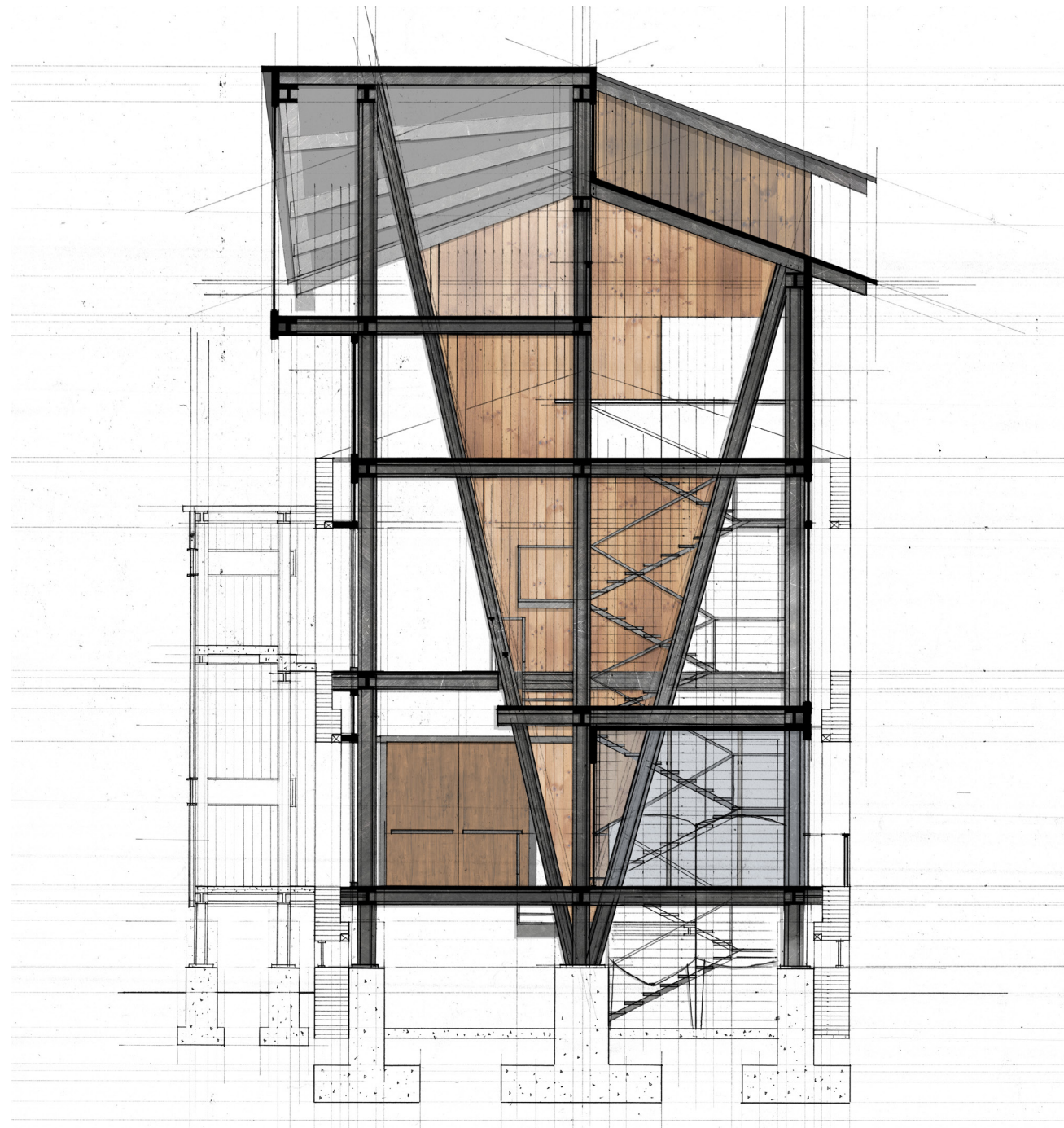


This thesis utilizes the extant shell as it was originally built: all windows and doors that are bricked in will be cleared. Other than returning the shell to its original state, I have chosen to not change or interfere with the existing shell.

The foundational piers for the new frame and stair are made of cast in place concrete. The piers penetrate into the basement volume to meet the steel truss bents.

(Right) Section highlighting the stereotomic elements, the extant shell and new concrete piers supporting the frame, and their relationship the newly established whole. Shell establishes a formal boundary, but also allows for weaving between. (Above) Current condition of the window openings that will become thresholds.

TECTONIC FRAME & ENCLOSURE



Section highlighting the new tectonic elements: frame, production stair, and enclosure within the boundary of the extant shell.

"Framework tends towards the aerial and dematerialization of mass, whereas the mass form is telluric, embedding itself deeper in the earth. One tends toward the light and the other toward dark."

Kenneth Frampton
Studies in Tectonic Culture

Frame

The tectonic refers to the linear framing elements; primarily the new structure. In opposition to the brick shell boundary and penetrating concrete piers, steel truss bents and beams form a new volumetric frame.

The new structural system morphed from the idea that the original wood roof trusses have been lifted vertically to accommodate the new volumetric programmatic requirements below. Five steel bents penetrate to the ground, acting as trusses braced with intermediary beams, to establish the rhythm of the new structure. These trussed steel bents vary in height and angle based upon the required support for the oscillating roof elevation above.

Enclosure

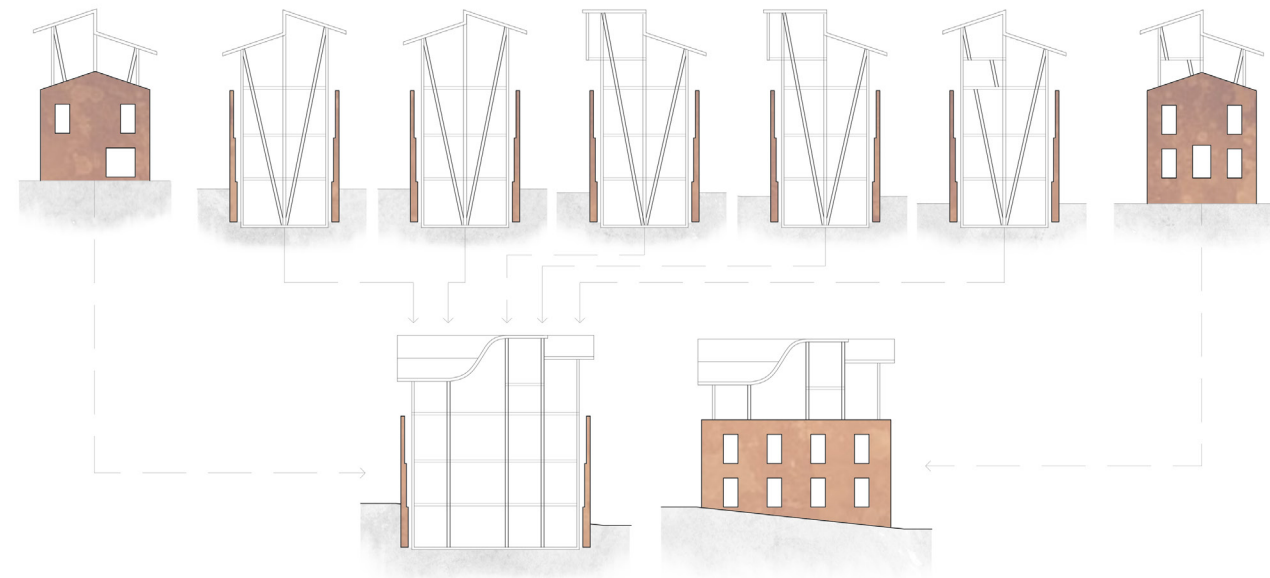
In addition to the new framing system, a combination of light-weight steel framing and a glass curtain wall form the formal enclosure that wraps around the new framed volume. At times the enclosure gives way to "interior" exterior spaces. It is predominately glass on the main floor and second floor to allow visitors to experience the interior scars of the extant brick wall as they move through production spaces as well as views of the frame and production spaces from the exterior. As one moves vertically to the taproom, screens and cladding wrap the framed walls, minimizing glass for giving way to specific views and moments.



Model of the structural frame anchored on concrete piers.

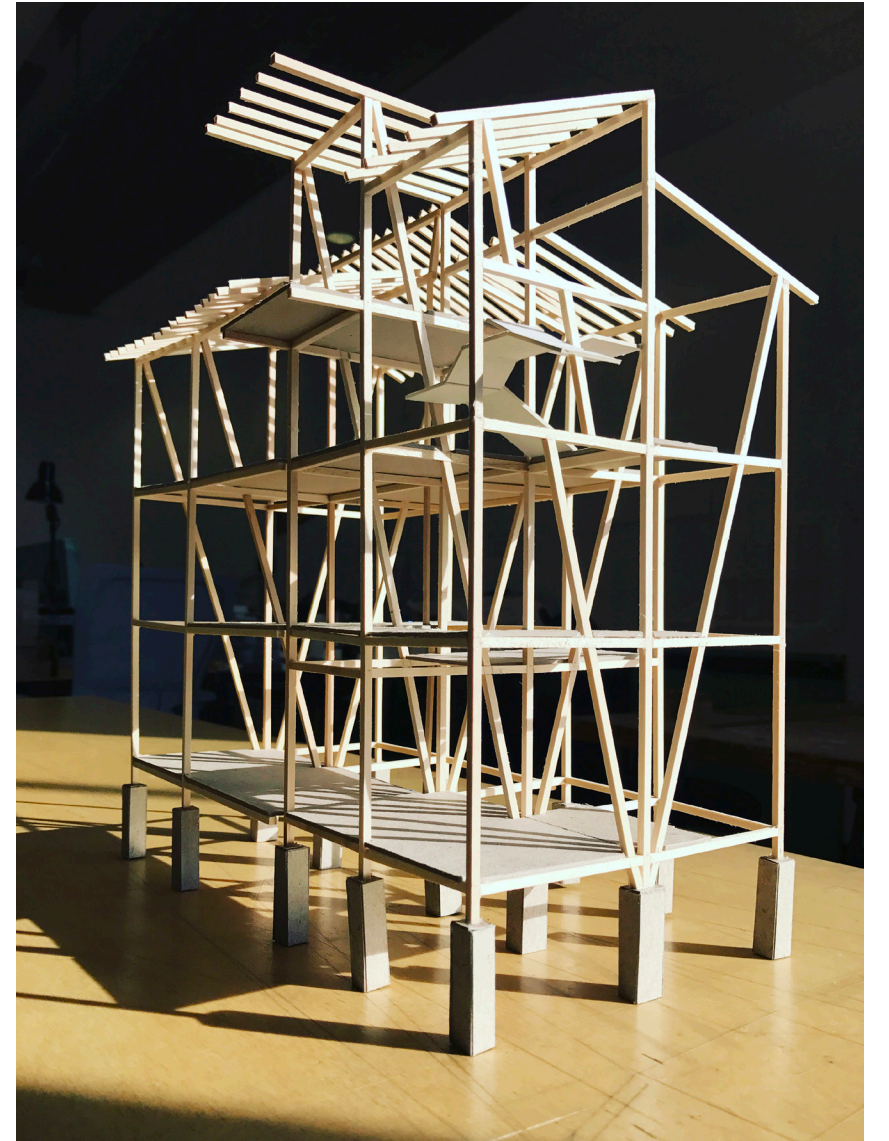


Initial frame diagram (above) developed from lifting "existing" wooden trusses to accommodate new volumes. The various profiles explored different methods of establishing new volumes. The resultant, culminating frame profile (right) and overall elevation of volume.

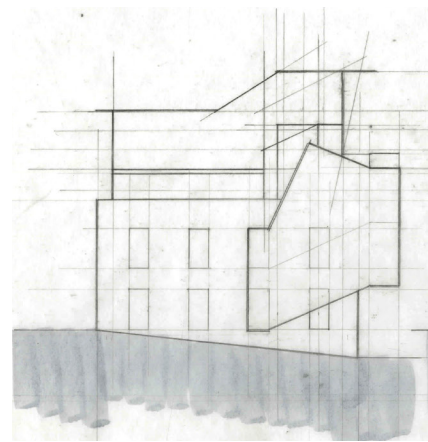
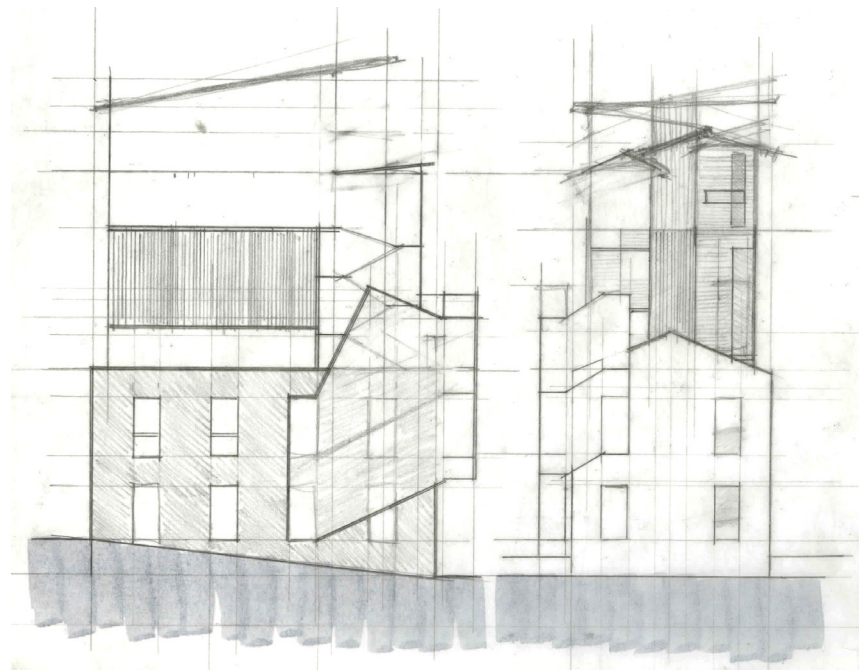




Frame study models developed from the previous frame variations demonstrated in the diagrams.



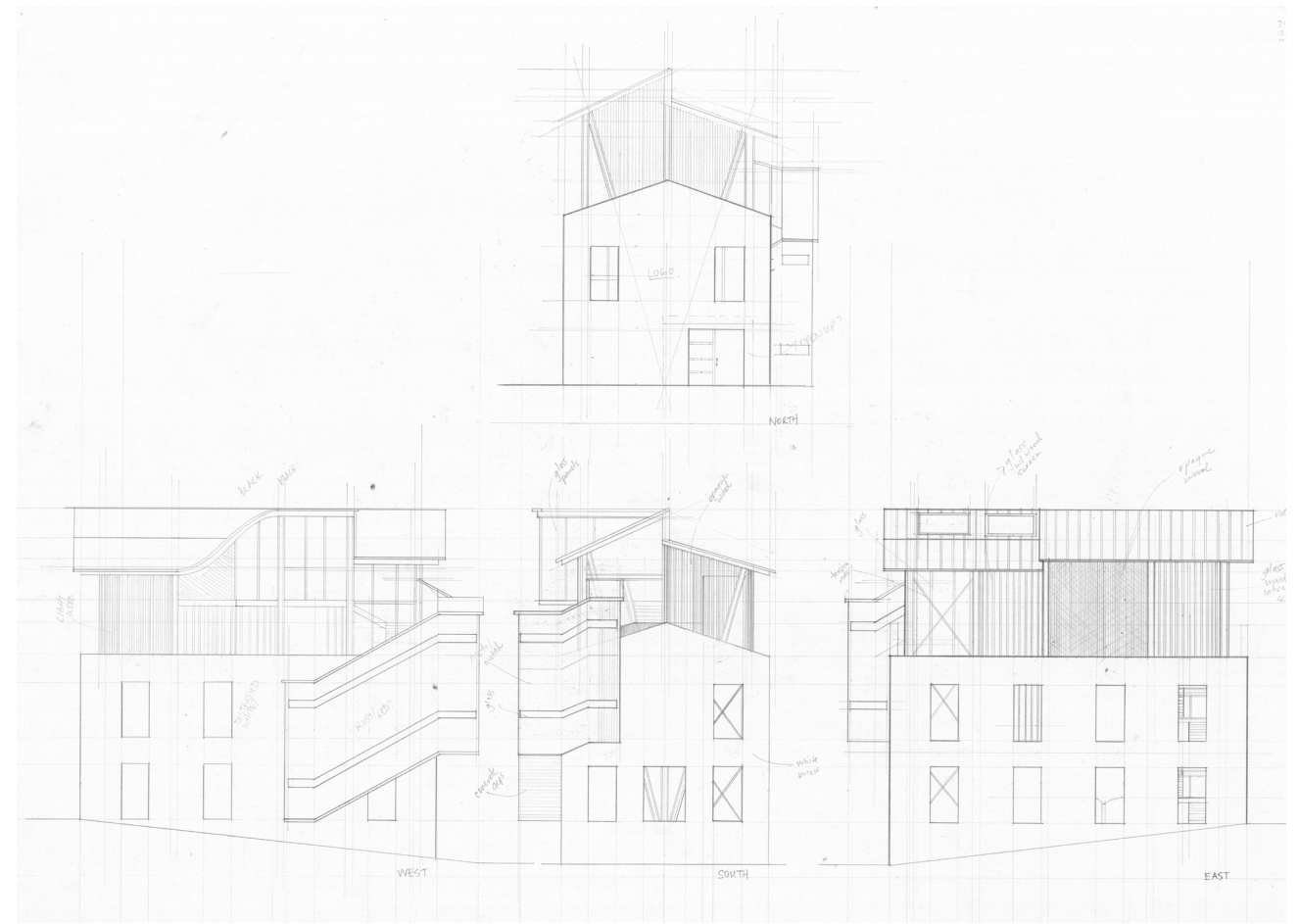
Model of the resulting frame profiles arranged to create the new volume, anchored on concrete piers.



Sketch studies developing the overall massing of the new integrated whole. Studies focused on understanding scale and verticality in relation to the established footprint.

Initial massing studies developed from the volumes associated with the programmatic requirements of the brewing process and equipment. The main purpose was to begin to address initial questions of scale in relation to the existing structure as well as ideas of transparency of enclosure. The studies also began to identify and explore the initial forms and structure of the roof.

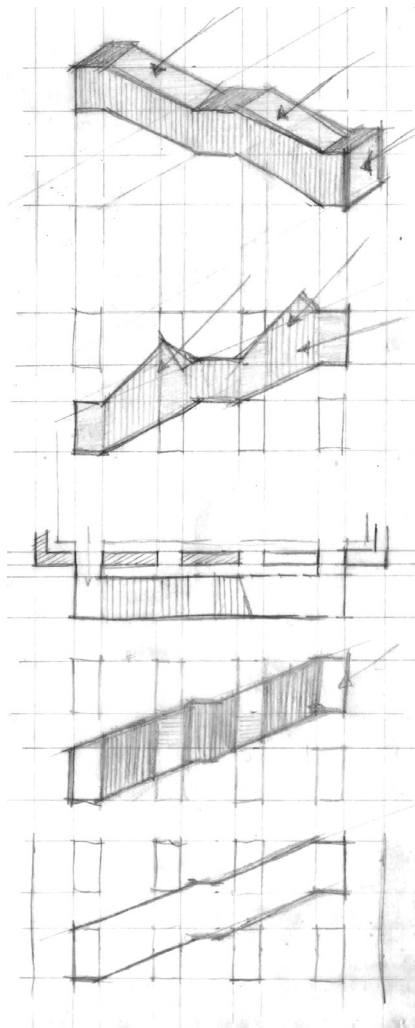
As seen specifically in the above sketch studies, the scale of the intervention was studied in elevation that varied from a 1:1 relationship of existing volumes to new volumes (left) and more of a 2:1. Going forward, the 2:1 approach was utilized to ensure that the extant shell would not be lost by the intervention and was further studied in sketch models. While these studies don't establish structure necessarily, they defined the volumes that eventually led to the three conditions associated with the intervention.



Once the three conditions - the stereotomic, the tectonic, and the parasitic - were established, the elevations were revisited. Each condition had material characteristics that were inherently associated with the condition. The above elevation study utilized these different ideas and helped to define the overall qualities of the enclosure.

Elevation studies focused on establishing the enclosure, both in location and materiality.

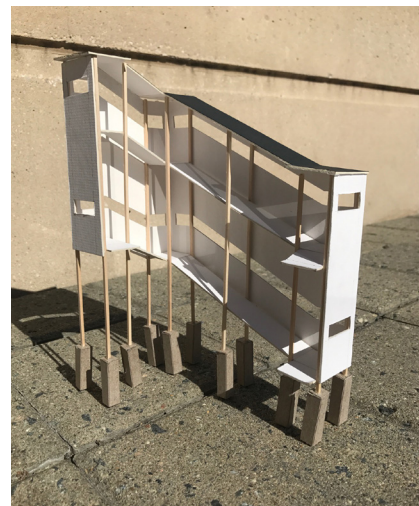
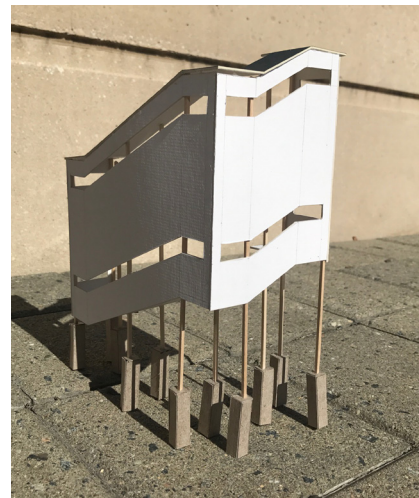
PARASITIC VERTICAL VOLUME



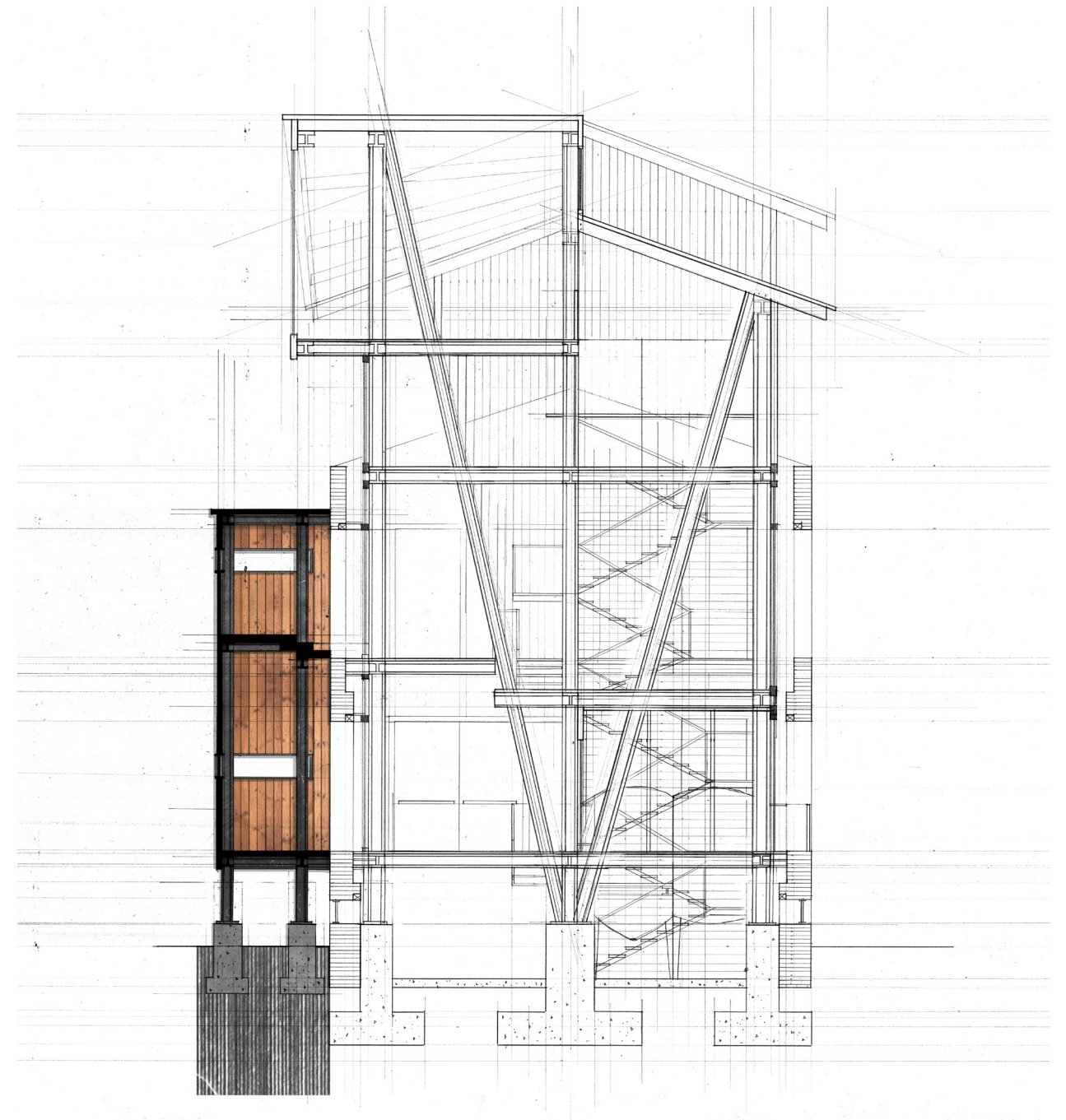
Connecting the stereotomic artifact and the tectonic new volume is the parasitic volume housing vertical circulation. While there are three means of vertical movement, this main stair weaves between the shell and frame, projecting beyond the shell boundary.

The stair begins inside the steel framed volume on the first floor and passes through the window opening of the shell into the independently supported volume. It then wraps the south-west corner of the extant shell and carries visitors to the second story. This continues from the second to third floor and climbs over the shell for the final time to arrive on the main floor of the tap room. An extension of this stair continues inside the frame up to the final elevated space and roof deck.

The stair, in many ways, mimics the overall structural method of the new volume, using steel beams and columns anchored to concrete pier foundations. Sitting within the steel frame are monolithic cast concrete steps. In an effort to focus the view toward the extant shell itself, the interior enclosure, facing the brick, is glass. The exterior enclosure is clad with one continuous window running parallel along the stair at eye-level. A wood railing runs along the exterior wall guiding one back to the new framed volume.



The final massing and structure of the stair that wraps the south west corner of the existing.



Section highlighting the parasitic stair attaching to the exterior of the extant volume.



Stair Variations: Steretomic stair study (left) utilizing a single concrete wall for structure. Tectonic stair study (right) utilizing a steel structural system similar to interior frame.

Stair Studies

In initial models and sketches of the stair, it always appeared to be floating - somehow attached or cantilevering off either the extant shell or new frame. As the characteristics of the different elements revealed themselves, it became clear that the stair was a separate entity and needed to be independently supported. There were various characteristics - such as materiality of the stair and the head-level windows that followed the stair -

that were important in the initial massing studies, but establishing the structural system greatly influenced the stair's presence in the elevation as well as in the users experience.

Structure

Through the above drawings, I studied two different ideas for the stair in plan, section, and overall elevation in relation to the whole. The first (left) utilizes a large 18" thick concrete wall that anchors



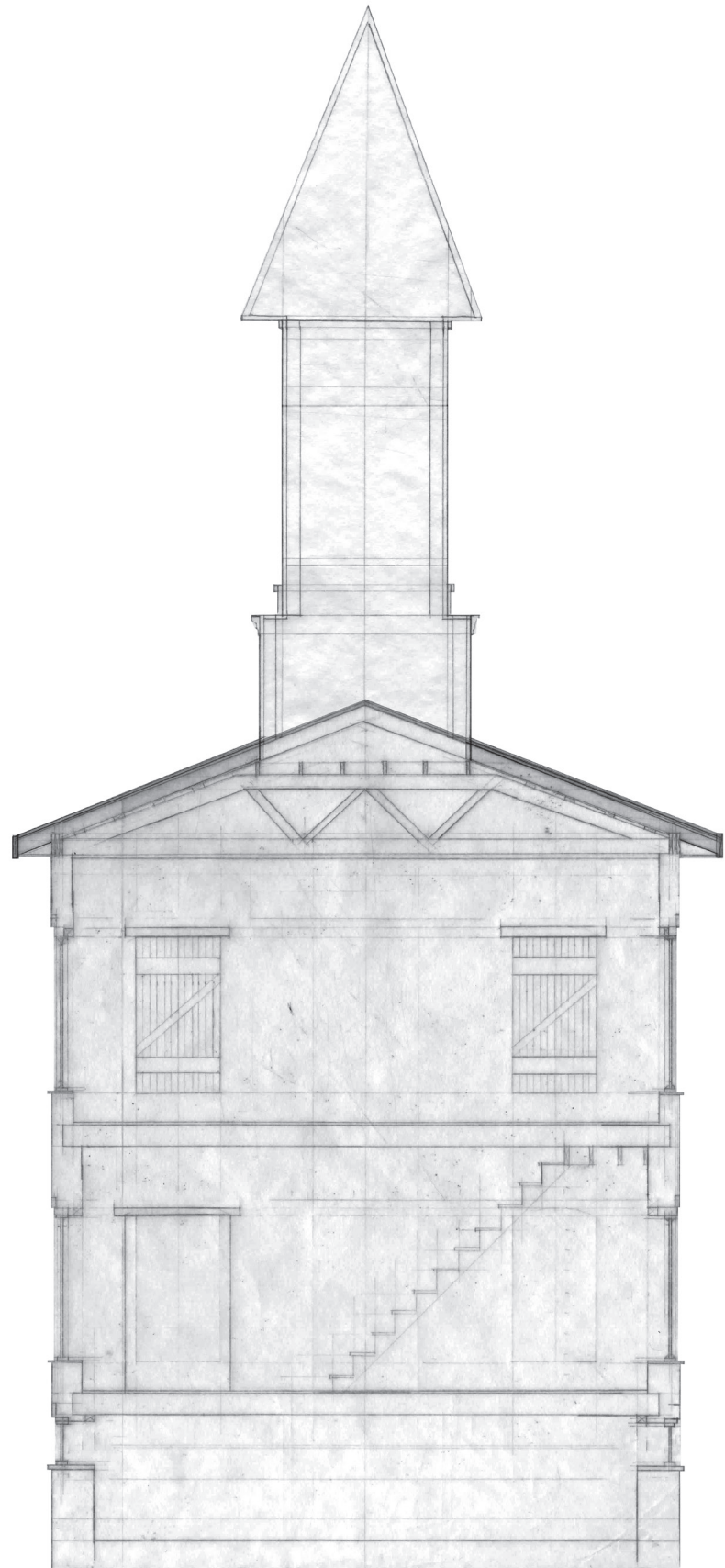
the elevated volume. Developing out of the idea of a stem or retaining wall-like element, this took a more stereotomic approach. Looking at precedent stairs such as W. G. Clark's East Addition to Campbell Hall at the University of Virginia, this approach lended itself to a characteristically heavier enclosure - such as pre-cast concrete panels accompanied by concrete steps.

The second (right) took a more tectonic

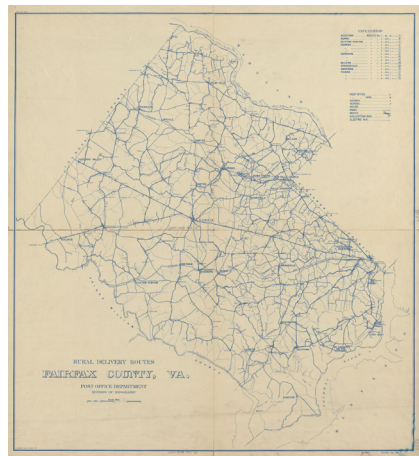
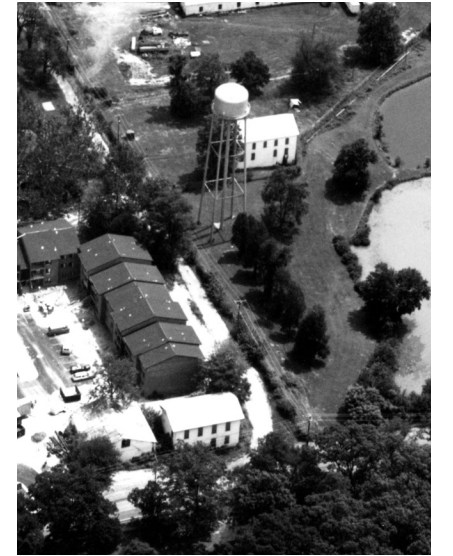
approach, utilizing a steel column and beam system similar to the new framed volume within the shell. For the enclosure, the steel frame condition lended itself to more of a wrapping element. For this study, cladding was used to conceal the metal stairs and formed the general massing of the volume.

Both systems have successes and failures. The stereotomic concrete wall overtook

the brick shell elevation; the cladding created an elevated mass, as it was initially drawn, without overpowering the shell itself. The steel columns and beams created an independent structural system that still seamlessly tied into the new steel bents and frame of the new programmatic volume. With the idea that the vertical circulation would connect the two major elements, it became apparent that a hybrid - including both stereotomic and tectonic elements, would be utilized.



SITE HISTORY



(Left) 1912 Map of Fairfax County establishing the town of Wiehle along the W&OD Trail. (Above Left) 1966 Aerial view of Bowman Farm & Distillery including both warehouse and distillery buildings. (Above Right) Wiehle town hall with steeple in 1890s from *Washington Star Pictorial Magazine* in 1952. (Facing Page Left) Wiehle town hall from W&OD Trail including original post office. (Facing Page Right) 1979 Aerial view of Bowman Farm & Distillery including suburban residential development isolating property.

In 1649, King Charles II deeds the land, the "Northern Neck Proprietary", that is now Northern Virginia to seven of his supporters; one of those families was that of Lord Fairfax. In the 1850's decedents of the Fairfax family sold the land to Benjamin Thornton. For the next thirty years, the rail station was known as Thornton Station. Following the Civil War, Northern Virginia was slow to recover; land was cheap and many were looking to sell.

In 1886, General William Dunn and Dr. Carl Wiehle purchased the 6,450 acres of heavily forested land along the W&OD rail line at roughly \$4.00 an acre. The land was divided equally; Wiehle took the acreage north of the railroad tracks and where he envisioned a planned, utopian community – the town of Wiehle. Wiehle hired a German city planner to lay out 800 residential lots along a grid of streets. Many family owned companies, such as Virginia Lumber and Manufacturing Company as well as the Maryland and Serpentine and Talc Company of

Baltimore set up shop to supply the town's construction, creating an industrial component for the community. Only 12 of the planned 800 residential lots were sold and not even half of those were developed prior to Dr. Wiehle's death in 1901.

Of the structures that were built prior to his untimely death were his family home – the Wiehle Mansion -- a small post office, and a town hall all located along the W&OD rail line, roughly 18 miles west of Washington, D.C. The town hall, now recognized as the Old Wiehle Avenue building and the focus of this thesis, was initially occupied by an Episcopal Methodist Church on the second floor, while the main floor functioned as a town hall. In 1909, the town hall shifted use into the town store on the main floor and a residential space for the owner on the second.

In 1927, Abraham Smith Bowman from Kentucky purchased the 4,000 acres from the Wiehle family and renamed the area

Sunset Hills Farm. The Bowman family converted the Wiehle Mansion into their homestead roughly a mile from the town hall. The farm was initially a dairy and granary. Bowman established the first hunt in Fairfax County and bumped elbows with the likes of Jackie Bouvier (later Kennedy) and General George Patton.

Following the end of Prohibition in 1934, Bowman began the sale of Virginia Gentleman Bourbon from the distillery located on his farm; the town hall building was converted into a storage warehouse for the new Bowman Distillery. In 1947, Bowman expanded the farm by roughly 3,000 acres, previously the Dunn tract, and became the largest farm in Northern Virginia. Up until the conversion of the town hall to meet the needs of the distillery, a steeple was prominently featured for those to see as they travelled through the town. The steeple was ultimately removed to satisfy the community's concerns of having a distillery with the appearance

of a church.

In 1961, Robert E. Simon, a prominent New Yorker, purchased 6,740 acres, all but the Bowman family home and distillery, and proceeded to implement his vision of a planned community without the blight of suburban sprawl. As it was planned, Reston – named for R.E. Simon – is a mixture of commercial and residential spaces that at its core echoes the old town Dr. Wiehle envisioned.

In 1988, the Bowman family moved their operation 60 miles south to Fredericksburg.

WIEHLE STRUCTURE

TOWN HALL

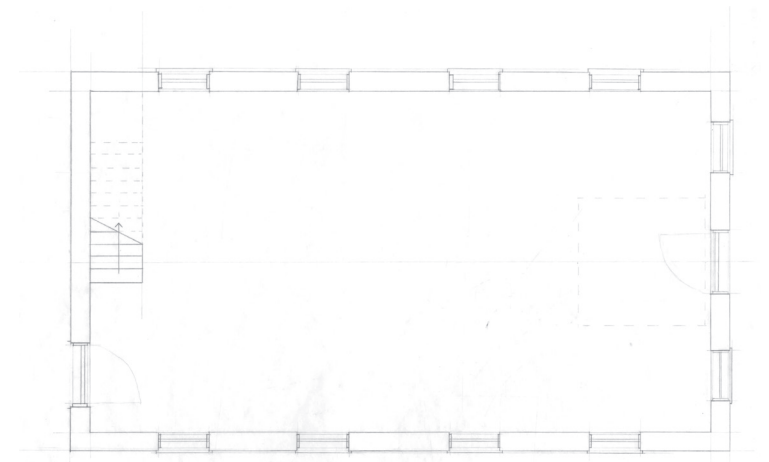
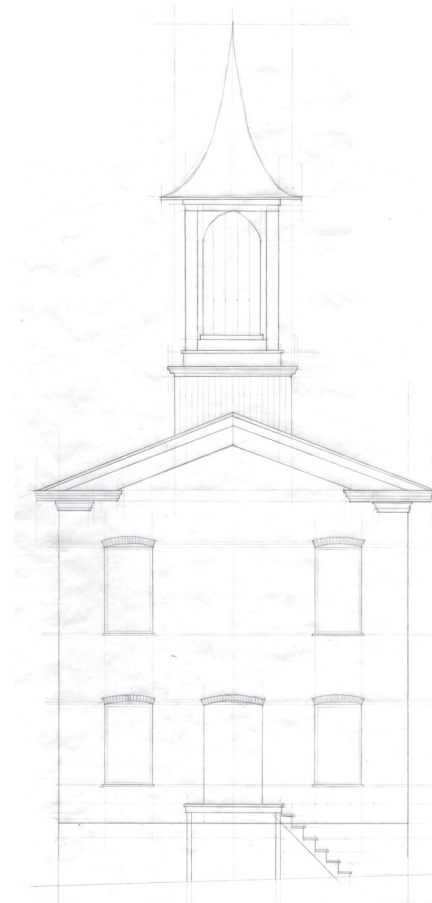
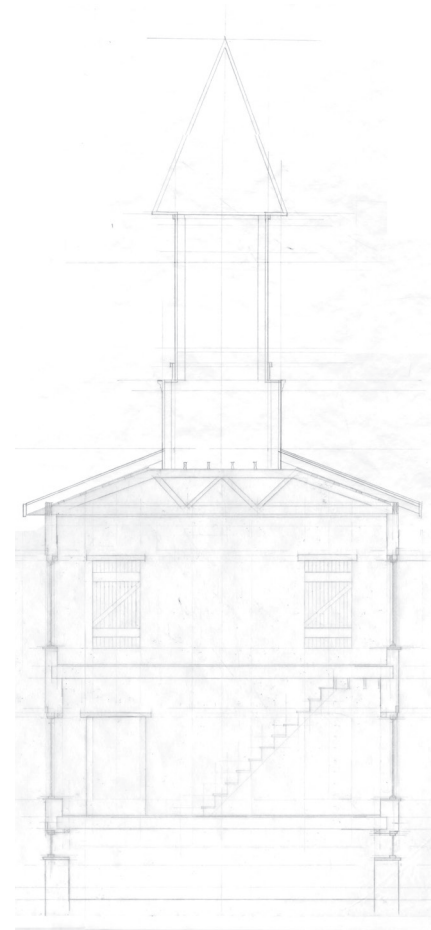


(Above) Evidence of second story floor joists.
 (Below) South facade of remaining structure.

The original structure was a traditional Georgian two story-brick building with a wood truss framed roof and steeple on top of a stone foundation. Over 40 years it housed a town hall, church, and the town general store. Located within feet of the W&OD trail, the steeple was an identifier to visitors traveling west from Washington D.C.

Amidst the shell are large window openings with wood shutters. The front elevation facing the old trail has a main door, raised up roughly 6' above the ground. The rear elevation has a larger opening, most likely a service door at grade.

There is evidence that floors are framed with wood joists and the roof was framed with wood trusses and a lattice ceiling. At some point, the brick walls and ceiling were covered with white plaster. In the rear of the building, near the service entrance was a staircase to the second floor.



Town hall site conditions: (above) first floor plan - assumed that second story was an open room for church services and town meetings, (left) building section including steeple, (middle) south facing elevation, (right) west facing elevation.

BOWMAN STRUCTURE

DISTILLERY WAREHOUSE



Following the purchase of the farm by the Bowman family, the structure was converted into the distillery warehouse. They removed the framed second story of the structure as well as the steeple. Many of the windows were bricked in and shutters were removed, while there is evidence that the exterior trim was left in place. For the smaller window openings below, the only evidence of their existence is the arched brick header and cuts in the stone. The secondary, larger entrance on the north side of the structure was filled-in. The main entrance, on the south side of the structure, was closed in to fit a now standard door size.



A new framing system - to support the whiskey barrels was developed using heavy timbers that slanted toward the middle of the footprint for ease of rolling the barrels. Brick exterior was covered with plaster, most likely as a means of improving thermal conditions.

(Above Left) Entrance converted to accommodate a standard door size. (Above Right) Window openings bricked-in and evidence of previous wood joists removed. (Bottom Left) Remaining barrel frame made of heavy timbers. (Bottom Right) Exterior of bricked-in windows as well as smaller windows with brick arch.



Existing condition drawings: (above left) Section, (above right) current one-story plan, (below left) south elevation, (below right) west elevation.

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All Site History (pg. 39 & 40) pictures are from George Mason University Planned Community Archives: Catherine A. Baum Digital Collection: <http://mars.gmu.edu/handle/1920/505>; or the Reston Historic Trust & Museum Online Collections Database: <http://restonmuseum.pastperfectonline.com/>

Google Earth Aerial Images

All other work (photographs, sketches, models, and drawings) are the work of the author.