Historic Structures Report
Olympia Brewery

Prepared by Chrisanne Beckner
In Association with Artifacts Consulting, Inc.
On Behalf of Old Brewhouse, LLC
April 2011

Contents

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Acknowledgements

This report was funded by Old Brewhouse, LLC, owners of the original Olympia Brewery. Many thanks go to partners George Heidgerken and Patrick Rhodes, along with members of their development team, including Jon Potter of Northwest Planning and Development Services, Ryan Rhodes of Ryan Rhodes Designs, and Jim Brown of UrbanAdd Architects. The invaluable as-built drawings included in this report were designed and produced by UrbanAdd Architects and Ryan Rhodes Designs. Special thanks also go to Michael Sullivan, Spencer Howard and Mary Thompson of Artifacts Consulting, Inc. for their technical advice and for contributing the significance matrix, a tool that provides an indispensable guide for treatment. Further thanks go to the many local historians who've worked hard to preserve the history of the Olympia Brewery, chief among them, Carla Wulfsberg, Heather Lockman, Shanna Stevenson, Don Trosper, Drew Crooks, and former Olympia Brewery brew master Paul Knight. Thanks are also due the Olympia-Tumwater Foundation. This report could not have been completed without the historic plans, elevation drawings and historic photos provided by their archives. Finally, thanks go to the City of Tumwater and the Tumwater Historic Preservation Commission, along with planner Steven Morrison, for their support of the Olympia Brewery.

Introduction

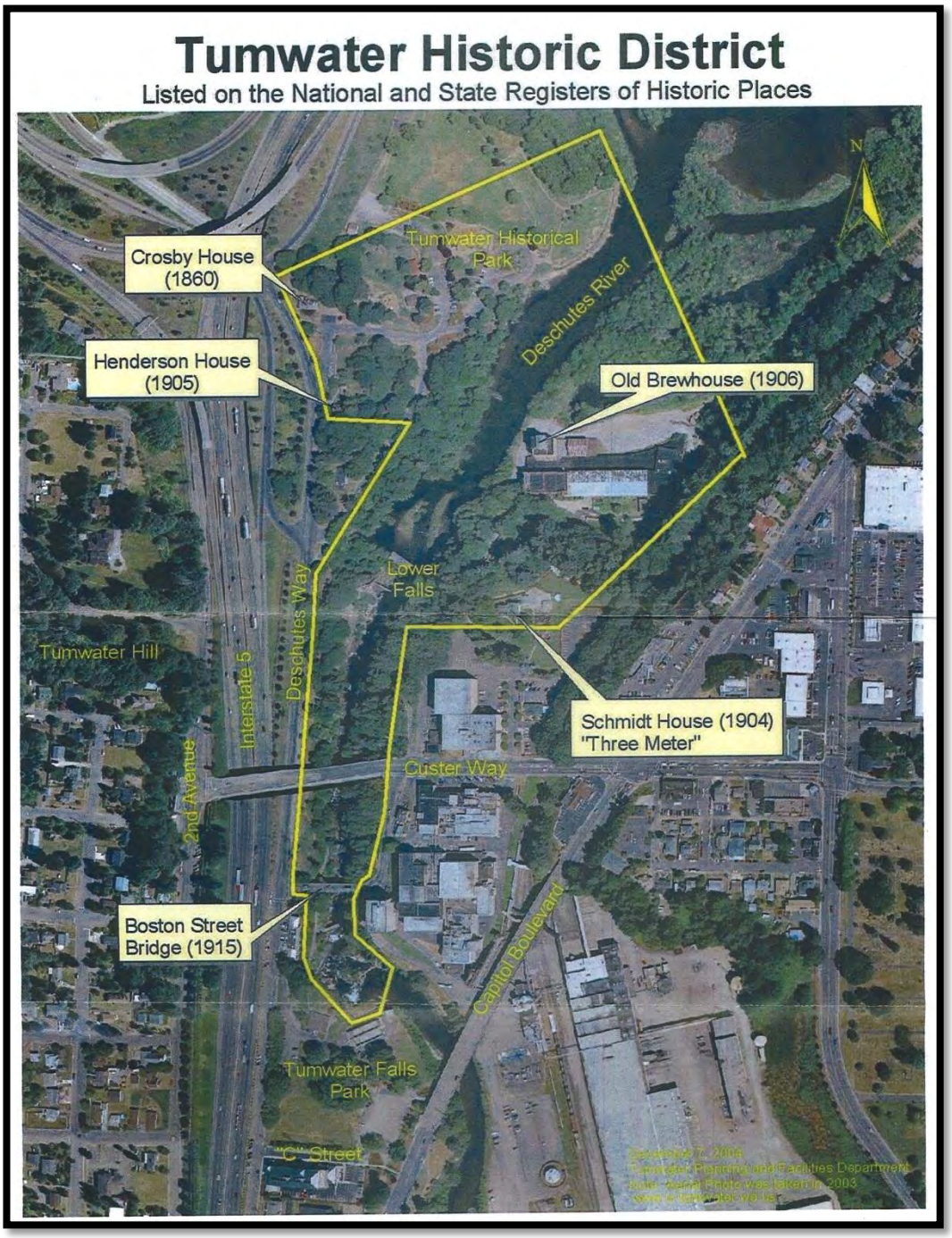
The Schmidt family brewed beer at the foot of the Lower Falls on the Deschutes River from 1896, when the Capital Brewery was founded, through 1915, when Prohibition came early to Washington and closed down the recently renamed Olympia Brewery. After 1915, not another bottle of beer was brewed on this historic site. When Prohibition was repealed in 1933, the Schmidt family built a new state-of-the-art facility to the south, continuing a long tradition as one of the region's most important employers.

Though the new brewery grew into a local favorite, the earliest brewery buildings remain on the banks of the Deschutes. Today, they are one of the most visible, authentic ties Tumwater has to its early industrial history. Repurchased by the Schmidt family in the 1960s, the buildings were used primarily as storage for the new Olympia Brewery until the brewery changed hands in the 1980s and eventually closed down completely in 2003. Over the years, local residents watched from a distance as the buildings deteriorated. In the late 20th Century, the Brewhouse's secondary roofs collapsed. Vandals broke windows and began leaving graffiti on interior surfaces. As rainwater seeped through large holes in the floors, evidence of a once elaborate piping system, iron elements corroded.

Though local governments and interested citizens looked for ways to reimagine a future for the abandoned brewery, the site was rarely open to the public and maintenance was regularly deferred. However, a series of reports were produced that provided guidance for future redevelopment and groups like the Friends of the Old Brewhouse kept the community updated.

In 2010, partners George Heidgerken and Patrick Rhodes formed Old Brewhouse, LLC and purchased the original brewery site with plans to repair the buildings, improve vehicular access and prepare the site for reuse. The partners put together a development team and began sharing their ideas with the community. As part of the planning process, Old Brewhouse, LLC ordered the following report as a first step in documenting the buildings' history, their current condition, and the appropriate treatments for historic materials. The site is already listed on local and state heritage registers, as well as the National Register of Historic Places as an integral part of the Tumwater Historic District.

Map of the Tumwater Historic District, Including the Original Olympia Brewery



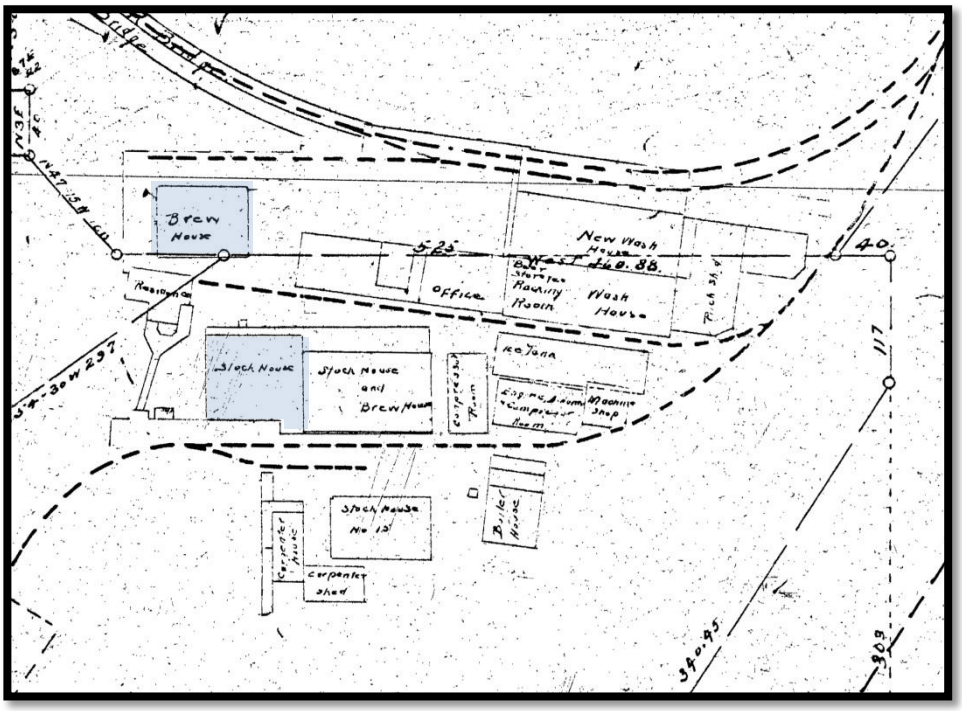
Executive Summary

The current study documents the current condition, the history and the former uses of the five major buildings left on the site of the original Olympia Brewery. The following provides an overview of the site, the buildings that remain, the methodology and findings of this study.

Overview of the Site

The brewery was built on what's become a remote location on the east bank of the Deschutes River. The site sits low on the landscape and has been ringed by development since its early life as a working brewery. Though the brewery sits alone, backed by high inclines to the south and east and by the river and marshes on the west and north, it is visible from major traffic routes on the east, west and south of its historic location. A park sits opposite the brewery on the west bank of the river.

The land was first purchased by Leopold Schmidt in 1895, and there were already buildings related to a former tannery on site. Schmidt added a brewhouse and supporting buildings along a canted east-west axis, and continued to expand as his business grew. The oldest remaining building dates from 1905, and the youngest to 1945. The diagram below shows what the site looked like in 1906, the year that the grand new Brewhouse was constructed. Currently, only the Brewhouse and the original Cellar building (1905) remain. They are highlighted in blue. All other buildings in the diagram were demolished over the years to make way for new construction. The site now contains five buildings, three of which date from the original brewery era (1895 – 1915).



Overview of Buildings

Leopold Schmidt's Capital Brewery, shown below, was founded in 1896, and the site

produced Schmidt's distinctive brew until Prohibition came early to Washington, shutting down breweries across the state in 1915. None of the earliest buildings still stand, but three of the five buildings on site date from the brewery era, when business was booming, due partially to the beer's popularity with men heading out to the Yukon Gold Rush. After Prohibition passed, the Olympia Brewery continued brewing fruit juices and making preserves on site until 1921. However, it was not until Prohibition was repealed in 1933 that the Olympia Brewing Company revived and began producing beer at a newly constructed brewery.

Even now, the grand Old Brewhouse is the most iconic building associated with the Olympia Brewery. Shown left,

it was built in the Italianate style, featuring a copper roof, console brackets along the cornices, banks of arched windows and Tenino sandstone details on the bottom floors. It stands six-stories tall and equals approximately 12,000 square feet. The historic photo below shows one of the early brewing tanks.

The Cellar directly south of the Brewhouse, shown below, dates to 1905, and its western addition dates to 1907. The whole building equals 34,903 square feet. This building was once filled with huge fermentation tanks that stored Olympia Beer as it aged. Ornamental brick work including arched windows and pilasters is echoed in the Brewhouse.

The last brewery building that still stands was built on the eastern edge of the site. The keg house, shown below, was constructed of

reinforced concrete and was one of the most innovative of its time. The keg house and cooperage were used to build, clean and "pitch" the interiors of beer kegs. This was considered a dangerous business because of the high heat and constant threat of fire. Though the building looks much different than its contemporaries, it appears in renderings and photos from the brewery's early years and in newspaper articles that praise its sturdiness.

The two remaining buildings on site were constructed after the brewery closed and was sold. The long, low two-story warehouse in the very center of the brewery site, visible below, is believed to date from 1945, when the site was used as a manufacturing plant for the Jensvold Manufacturing Company, which produced

airplane parts for Boeing. Blueprints from that year were developed by Joseph and Robert Wohleb. Later records also associate this building with Western Metalcraft, which built kitchen cabinets. This building equals 45,3075 square feet.

The final building on site is a two-story storage building that dates from 1927, when the Olympia Brewery site was used briefly by the Tumwater Paper Company. At 6,553 square feet, this concrete building features little ornamentation but retains the corbelling at the cornice. It is shown below.

Though the site has been altered by a variety of uses over the years, and neglect has led to deteriorated brick, broken windows and graffiti, these building retain many of their decorative features, and the Brewhouse is particularly valuable as an historic record of its time and its use. As one of the most visible and beloved remnants of Tumwater's early industrial history, the original Olympia Brewery provides excellent opportunities for redevelopment.

Methodology

An historic structures report is often recommended for complex historic properties that are under consideration for new uses. Documentation and assessment of historic buildings guarantees a snapshot of the site's current condition, significance, and potential for reuse.

In the case of the Olympia Brewery, this report was ordered by Old Brewhouse LLC to assist in understanding the site's history and its current condition and to provide guidance in the future treatment of its historic buildings. The report includes a narrative history of the site, full photo documentation of the character-defining features that remain, and a decision-making matrix that provides specific recommendations regarding these features.

The site of the Olympia Brewery currently includes five significant historic buildings, each of which is broken down in a catalog of character-defining features by exterior and interior elements. This report bases its recommendations on the Secretary of the Interior's Standards for Rehabilitation, which are included in the appendix, along with technical briefs prepared by the National Park Service that detail specific recommendations.

Historic structures reports differ in scope. Due to the time constraints on this project, this report addresses the buildings as they stand today. Further research into the family archives, construction documents, archaeology, the records of the Vilter Maufacturing Company and other key contractors was outside the scope of this report. Likewise, this report does not include a full condition assessment. Tests for paint and mortar composition are recommended but have not yet been completed and this report was prepared before structural engineering reports could be composed. Condition assessment is based on observation only. Full condition assessment and materials analysis is highly recommended. Further research may deepen both our understanding of the construction of these buildings and the costs associated with their redevelopment.

Though all buildings associated with the long history of the Olympia Brewery are of historic importance, this report limits its scope to the five remaining buildings on the site of the original Olympia Brewery, as requested by Old Brewhouse, LLC.

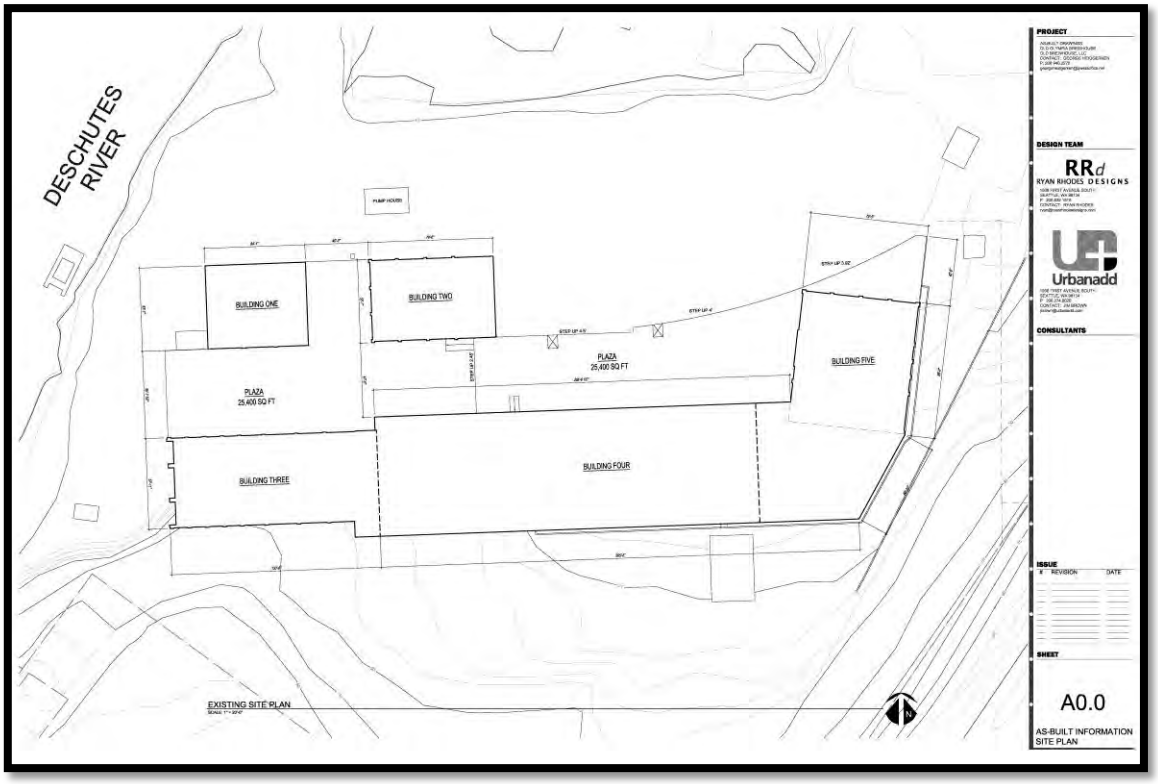
Research proceeded throughout February and March of 2011 and included a combination of site visit, survey, and archival research. Primary reference materials included local histories and brewery reports, historic construction documents and historic photos. Historic photos, original plans, and early documents of the Schmidt family were gathered by Old Brewhouse LLC from the Olympia-Tumwater

Foundation, a local nonprofit that manages the historic Schmidt House in Tumwater and owns the Schmidt family and Olympia Brewery archives. Team members UrbanAdd Architects and Ryan Rhodes Designs created a number of visual aids that are used within this report, including as built drawings, historic site plans, and conceptual plans for reuse. These materials were incorporated, along with reports previously commissioned by the City of Tumwater. This report also references surveys and historic documentation prepared for the National Register of Historic Places by local historian Shanna Stevenson. The buildings, along with the history of Olympia Beer, were well documented by local historians throughout the last half of the 20th century and this report draws freely from this excellent research by local historians including Shanna Stevenson, Roger Easton, Drew Crooks, Carla Wulfsberg, former brew master Paul Knight, and the staff of the Olympia Tumwater Foundation.

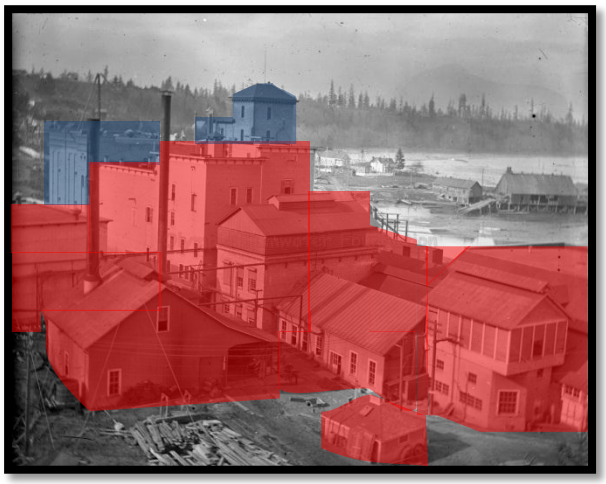
This report was prepared with the technical assistance of Artifacts Consulting Inc. and relied on the specialties of Michael Sullivan, Mary Thompson and Spencer Howard. Artifacts also contributed the significance matrix, a useful guide for the treatment of character defining features.

Findings

The original Olympia Brewery site was a constantly evolving collection of buildings related to the brewing, bottling, marketing and distribution of Olympia Beer from 1896 to 1915. After the brewery was sold, new uses led to a series of redesigns and new construction until approximately 1965, when the site was reacquired by the Schmidt family. The current site plan is shown below:



Above, Building 1 is the current Brewhouse (1906), Building 2 is the North Storage Building (1927), Building 3 is the Cellar (1905-07), Building 4 is the Warehouse (1945), and Building 5 is the Keg House (1907). The site plan above looks much different from the historic photo, right, which shows the site circa 1906. The remaining buildings (the Brewhouse and Cellars) are highlighted in blue. Missing buildings or buildings that have been replaced are highlighted in red.



Condition and Integrity

Of the five primary buildings onsite, the most significant is also the most deteriorated. The iconic Brewhouse, completed in 2006, has lost its two secondary roofs, has lost some historic brick and mortar, as well as its cornices, which divided the building's upper floors into a series of tiers. Its windows, in some cases, are missing or deteriorated. However, this building has also received very few alterations to its form. Window and door openings match historic documentation. Machinery in the upper reaches of the tower is still in place. Stairs, columns and fire proofing details called out in original plans have never been removed or replaced. The Brewhouse suffers from deterioration and neglect but retains excellent integrity of form, materials and craftsmanship.

This is not as true for other buildings on site. The original Cellar, which was built in 2005 south of the Brewhouse, was enlarged in 2007 by what is often referred to as the western addition. Both sections retain excellent exterior integrity on primary facades. Original materials, along with ornamental brickwork tie these buildings to others of the brewery ear. However, the 1907 addition, which shares a wall with the 1905 Cellar, is heavily altered on the interior. A 1945 redesign divided spaces and completely redesigned the western elevation.

The Keg House, the third of the early brewery buildings, has also lost much of its original machinery, yet retains many of its defining features. This two story reinforced concrete structure has retained its form, its original fenestration on the primary façade, and its primary skylight and ventilator, which were designed to help deal with the great heat generated during the pitching process. Some openings have been enlarged, and it appears that the floor has been repoured. It's possible that the building was meant to be clad in brick to match the other brewery buildings, but that seems unlikely. This building was constructed of reinforced concrete rather than brick as a safety precaution against fire, and ornament was applied to the exterior to tie it to the other brewery era buildings.

In 1927, after the brewery had been out of the beer making business for 12 years, a paper company built what is being called the North Storage building. Because it's not associated with the original brewery, it is perhaps not as significant, though its age, its architectural style and its association with the evolution of the brewery site are still noteworthy. With pilasters and corbelling near the roofline, this gabled building shares some ornamental details with its neighbors. Because it's not as well documented as the historic brewery buildings, its history of alteration is less clear. However, the original concrete building is finished with corrugated metal sheet on the

east elevation and once had a corrugated metal addition, which has recently been removed. On the interior, it retains its visible metal truss system and a conveyor belt rising from the first to the second floor.

The final significant building remaining on site is the two-story warehouse building which stretches from the east end of the Cellars to the very end of the site, where it wraps around the southern end of the Keg House. Like the North Storage building, the warehouse retains its original truss system, its original interior columns and many of its original windows. Significant alterations include enlarged openings on the north façade as well as alterations and repairs to the interior brickwork. This building, which includes large clerestory windows and the remnants of machinery that was mounted on pads and hung from ceilings, is significant for its associations. Designed by the well-known firm of Wohleb and Wohleb, the warehouse was used by the Jensvold Manufacturing Company to build airplane parts for Boeing during World War II.

Though the North Storage building and the Warehouse were not part of the original brewery, they became part of the Olympia Brewery when the Schmidt family bought back the site in 1965. Therefore, these buildings were incorporated into the new brewery's day-to-day efforts. The warehouse, for instance, was used for the storage of raw grains and as such, was pristinely maintained during the brewery's later years.

There are three other structures worth mentioning, though they are generally outside the scope of this report.

Along with the five historic structures, there is also a small boiler on site. It is likely an infill structure but its date of construction has not yet been determined. It does not appear in historic documentation for the National Register of Historic Places, for instance. Nor does it appear in aerial photos from the 1930s and earlier. It is likely a later structure though it does include historic machinery and is probably closely associated with more recent uses of the site.

Two other structures have been removed. One of them was an infill structure that bridged the gap between the Brewhouse and the North Storage building. It was removed in 2010. The other was an infill building that stretched across the northern façade of the Cellars and Warehouse. This infill structure was also removed in 2010.

Summary:

Alterations have occurred in each of the five significant buildings that remain, but they each continue to contribute to the historic industrial quality of the original brewery complex. To retain the historic materials and impressive character defining features of these buildings, appropriate new uses must be found that allow for the retention of character. This means identifying uses that preserve the open interior volumes in the warehouse's second floor, the remnants of machinery found in the Brewhouse, and the character-defining features shared by all buildings: the industrial windows, the ornamental brick and concrete work, the visible columns, beams and trusses. Preserving the iconic exterior ornament on the Brewhouse is only one goal of the redevelopment. To protect the character of the whole site, the redevelopment plan should incorporate the artifacts that most clearly identify these buildings as early 20-th Century industrial buildings.

History

The following narrative provides some historic context for the development of the Olympia Brewery, its association with the Schmidt family, and the effect trends such as Prohibition had on its history.

Tumwater: End of the Northern Trail

The site chosen by Leopold Schmidt for his new brewery had a long history even before the brewer and his family arrived. Carved by glaciers, the path of the Deschutes River included three waterfalls that spilled into the southern estuary of Budd Inlet, mixing with the salt water of the South Sound. The area first attracted the attention of local Native tribes, then the Hudson's Bay Company, and finally, the first American settlers to settle north of the Oregon border, the Simmons-Bush party, who founded the town of New Market near the banks of the Deschutes.

Before settlers arrived in 1845, Native Americans from what are now known as the Squaxin Island, Nisqually, and Chehalis tribes fished for salmon and gathered shellfish from the estuary and hunted the nearby prairies. They called the area *Tum Chuck* for "throbbing or noisy water".[i] The area was once covered in groves of alder, red cedar and maple and provided nuts, berries and camas to Native people, who also hunted for elk, deer, and small game, including rabbit, beaver and squirrel.

Archaeological evidence suggests that Native Americans lived near the falls for two to three thousand years before European Americans arrived.[ii] The Hudson's Bay Company, an English company that hunted the Pacific Northwest for pelts, considered founding a mill on the falls, but abandoned their plans, according to historian Drew Crooks. "A company post was temporarily transferred to the Tumwater Falls area in 1833… Because of disappointment in the soil for farming and opposition by American Indian traders, the post was soon brought back to its original site."[iii]

The Simmons-Bush party arrived in Washington after following the Oregon Trail and finding that one of their party, George Bush, could not settle there as a free man because he was of mixed race. The party got permission to move north over the Columbia and settled in the area around current-day Tumwater. Mr. Simmons named the area New Market in 1845, and the young town began drawing other settlers north of the Oregon Trail on what became the Cowlitz Trail. The young town placed its early hopes in waterpower and officially changed its name to Tumwater in 1863. The falls allowed for various mills and other industrial businesses to grow along its banks, including Mr. Simmons' flour mill, founded in 1846, the Simmons family sawmill, founded in 1847, the Lincoln Flour Mill, 1861, the Horton Water Pipe Factor, 1868, and a power plant for Olympia Light and Power Company. Numerous other manufacturers crowded the banks.[iv] Few were still flourishing when Schmidt arrived in Olympia on a fact-finding mission fifty years later.

"It's the Water"

The origins of Leopold Friederich Schmidt's famous brewery are well known. In 1866, Schmidt, a young German seaman, came ashore in New York and made his way first to Missouri before following rumors of gold to Montana in 1870. While there, Schmidt learned the beer business while working for a local brewery and then joined with the brew master to form the new Centennial Brewery in 1876 in honor of the nation's first hundred years.

Two years later, Schmidt returned to Germany to study the art of brewing for himself at the Worms Brewing Academy. He came back to Montana in May of 1879 and brought his new wife, Johanna. The two settled in Butte while Leopold pursued both brewing and state politics.

In 1894, as part of a capital commission visiting West Coast state capitol buildings, Schmidt made his fateful journey to Olympia, where he learned of local artesian springs. A history of seafaring, carpentry and brewing had formed the basis of Schmidt's career. He was therefore well prepared to taste the waters at Tumwater, have them tested, and quickly leave Montana to build a new brewery close to the coast in Tumwater, Washington. He chose the spot of a former tannery and ice plant with nearby waterfalls available for generating power and artesian wells on site.

Schmidt purchased the five-acre site of the Biles and Sons Tannery from Clark Biles' widow for $4,500 and quickly constructed the Capital Brewery near the foot of Tumwater Falls.[v] By October 1896, the brand new Capital Brewery was producing its own pale lager to rave reviews. The company produced 4,255 barrels of beer in its first year, but it was clear that the volume was going to be too much for the brewhouse, stock cellars and engine rooms that comprised the earliest brewery buildings. By 1902, the newly anointed Olympia Brewing Company had expanded to include breweries in Bellingham, Washington and Salem, Oregon.[vi] A continuous flurry of planning and construction was underway. In 1901, a new engine room was added, increasing capacity three-fold. Machine shops, a blacksmith and pipe shops were also running on site, and in 1903, new stockhouses were added. While none of these buildings remain, they were a testament to the quick and steady growth of the Olympia Brewery through the early years of the 20th Century. By 1904, the brewery had grown from producing 4,255 barrels a year to more than 49,800 barrels a year.[vii]

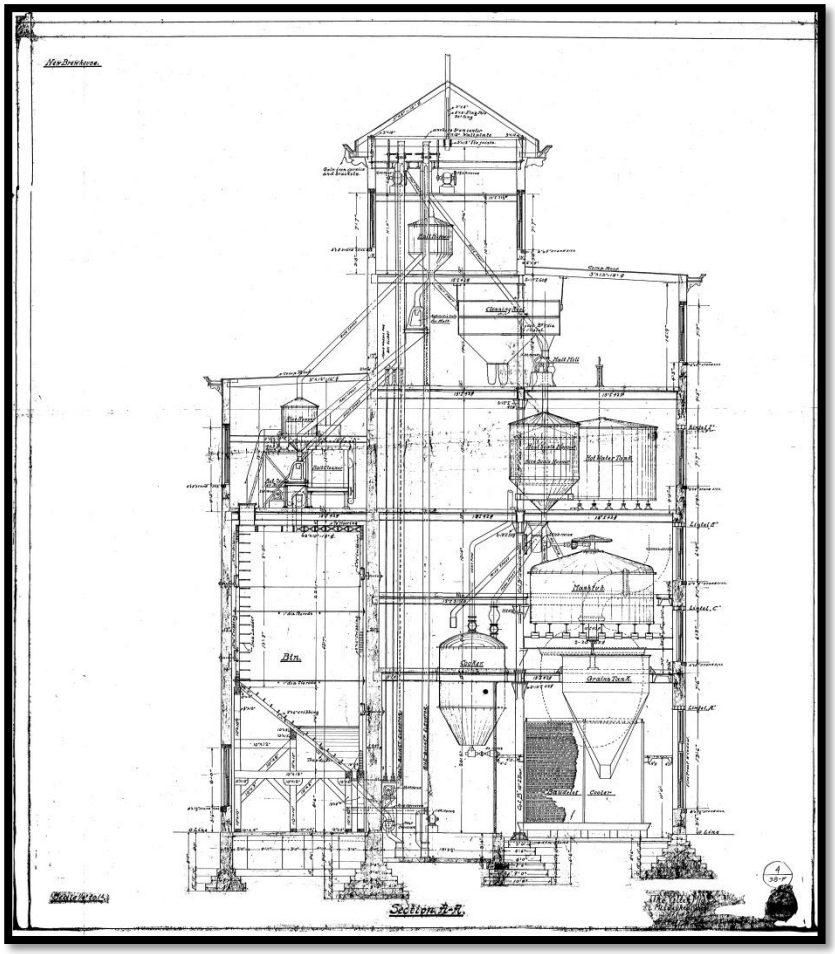
It was also in 1902 that “It’s the Water” became the official motto of Olympia Beer.[viii]

In 1905, the brewery added new cellars, and in 1906, completed the iconic new Brewhouse, a fine six-story structure that became one of the most recognizable buildings in the area. In 1907, the Cellar building was enlarged, and at the far east of the site, the Schmidt family built the Keg House, an innovative structure of reinforced concrete. These three buildings, the Brewhouse, the expanded Cellars and the Keg House remain on site today, the last remaining buildings associated with the original Olympia Brewery. By 1907, there were also railroad tracks crisscrossing the site, running in front of an behind the Brewhouse, hauling raw materials in and dispatching beer over a railroad bridge that crossed the Deschutes to allow the Northern Pacific Railroad access to the site.

Of the original brewery buildings still standing, the most well-known is the Brewhouse, a tiered Italianate building of Chehalis brick ornamented with Tenino sandstone and capped with a tower topped in a copper hipped roof and large console brackets.

Though the Brewhouse was a grand symbol of the brewery’s first successful decade, the systems inside the Brewhouse drew the most attention during construction. The brewery relied on a gravity system to transform raw materials into a “green beer” ready to be aged in the cellars to the south.[ix]

The Brewing Process



Brewing began with grain that was fermented to make malt. The malt was transferred to the Brewhouse and lifted to the top by a bucket elevator which sorted malt and other grains, including rice and grits, into separate bins. From the top floor of the Brewhouse, the malt began working its way down through the systems of the building. At the top, it was ground, sorted and cleaned. It was then stored in a hopper that measured and dumped the malt into the mash tub. Rice went through a parallel system, being measured and dropped into a rice cooker that toasted it in preparation for the mash tub. In the mash tub, the toasted rice and malt were heated with warm water. At various intervals, the mash would "rest" at a particular temperature to bring out desired qualities in the beer. Resting at one temperature broke down proteins that can cloud beer; resting at a higher temperature helped the sugars to flow more freely. After a couple hours in the mash tub, the "wort" was drained through a sieve at the bottom of the mash tub and then transferred to a brewing kettle, where it was boiled with hops and other additives. The hot wort was drained through a hopjack to remove the hops themselves, the "finished wort" was filtered once more, and then cooled through an innovation called a baudelot cooler that worked similarly to a radiator. Coils of pipes were filled with cold water and the beer ran over them, slowly cooling to near freezing temperatures. Once chilled, the "green beer" was ready to be transferred to the fermenting tanks housed in the cellars. There, yeast was added to convert the sugars to alcohol and the beer fermented for 8 to 12 days. The yeast was then extracted and the beer aged in tanks for two to three months. At the end of that process, fresh beer was mixed in and the fermentation process created carbonic acid gas, which the beer absorbed, giving it its carbonated character. The beer was then ready for packaging.[x]

Prohibition

Though the Olympia Brewery was a success from its earliest years, the grand new buildings would only be in service for a short time. Schmidt had long touted his product as a wholesome beverage to be enjoyed in moderation, but that did not spare his brewery. In spite of his early attempts to sway the public to vote against the Prohibition, it came early to Washington. In 1914, the state of Washington voted to go dry ahead of national legislation, and brewers were given until January 1, 1916 to end all brewing of alcohol. Leopold Schmidt did not live to see it. He died six weeks before the vote. His wife, Johanna, followed three years later, leaving the five Schmidt sons to carry on through a difficult period in the brewery's history.

After Prohibition, the Olympia Brewery was transformed into a plant for making jams, jellies and juices, while the family continued to nurture the hotel business that Leopold Schmidt had pursued later in life. In 1921, the family stopped all production at the brewery and it was closed completely.

By 1927, the site was briefly used by the Tumwater Paper Company, which built one of the two infill structures still standing. The two story concrete building with pilasters and corbelling near the roofline sits just east of the Brewhouse. The paper mill's plans were cut short by the Great Depression, and the buildings were then purchased in the 1940s by the Jensvold Manufacturing Company, which made airplane parts for Boeing as part of the war effort.[xi] Plans from this period were developed by the locally famous architectural firm, Wohleb and Wohleb, who not only designed the two-story infill structure we associate with Jensvold, but also drew up plans for altering and expanding the cellar buildings to the west. After the war, Western Metal Craft Company took over and produced kitchen cabinets for a brief period. The buildings then sat empty until the Schmidt family repurchased them in 1965.

The Schmidts had never lost interest in the brewery business, and once Prohibition was repealed in 1933, the family decided to build a brand new, state of the art facility south of the original brewery buildings. The original buildings were never actively used for brewing again, but were used for storage and the site was sold to Pabst Brewing Company in 1983. All operations ceased once again in 2003. Since then, little to no maintenance has occurred on site.

In 2010, after years of potential redevelopment plans coming and going, Old Brewhouse, LLC was formed to purchase the site and prepare for its redevelopment.

The New Market Historic District

Though the buildings that remain need extensive rehabilitation and repair, the site has been the subject of many local preservation efforts. In 1974, the brewery buildings were added to the National Register of Historic Places as part of the New Market Historic District. The site is also recognized as a historic district by the City of Tumwater and by the state of Washington, which includes the brewery on the Washington Heritage Register.

Though the site has been recognized for its historic significance, the lands around it have been greatly altered. In the 1950s, Interstate 5 was built through the historic heart of Tumwater, taking with it many of the historic buildings that defined the early development of the city. The site of the original brewery buildings remains remote, as it sits low along the banks of the river while traffic arteries loom to the north and the east. The Tumwater Falls Park, directly across the river from the brewery, provides excellent views of the site and protects remaining green space. As the National Register nomination said in 1977, "The construction of Interstate 5 through the area in 1957 destroyed many early Tumwater homes and businesses and radically altered the topography and integrity of the historic landscape. This highway creates a visual and physical barrier to the west and north of the District. While it restricts human access to the river and falls, the freeway has probably also discouraged potentially incompatible development within the area. The only other major and recent developments in the vicinity of the District are the large, modern buildings of the Olympia Brewing Company on the east side of the river, and a restaurant overlooking the upper falls on the west bank."

Surprisingly, the topographical details are very similar today. The site of the original brewery is difficult to access. Only a winding one-lane road leads from Custer Way to the site below, where it is sheltered from direct traffic. The road has been barred to visitors for many years and the public has not had easy access to the site in a very long time. Concern for the buildings has led to much public support for redevelopment. Groups like Friends of the Old Brewhouse have produced their own plans, and organizations, including the Olympia-Tumwater Foundation have been generous with their historic records.

The site has also been studied extensively by historians, by planners and by engineering companies imagining a new future for the site. The four most recent reports commissioned by the city of Tumwater may be accessed from the following webpage: http://www.ci.tumwater.wa.us/historicaloldbrewhouse.htm.

[i] Dell McBride, "A Native American Presence in the Tumwater Falls Area," *The River Remembers: A History of Tumwater*, ed. Gayle Palmer (Virginia Beach: The Donning Company, 1995), 13.
[ii] McBride, "A Native American Presence", 16.
[iii] Drew Crooks. "Lost Opportunities: The Hudson's Bay Company and Tumwater Falls, 1829-1845," *The River Remembers: A History of Tumwater,* ed. Gayle Palmer (Virginia Beach: The Donning Company, 1995), 29.
[iv] Shanna Stevenson, National Register of Historic Places Nomination Form for the Tumwater Historic District, 1977.
[v] Heather Lockman and Carla Wulfsberg, Images of America: Tumwater (Chicago: Arcadia Publishing, 2010),
[vi] Jack S. Blocker, David M. Fahey, Ian R. Tyrrell, *Alcohol and Temperance in Modern History: A Global Encyclopedia* (Santa Barbara: ABC-CLIO Inc, 2003), 468.
[vii] Shanna Stevenson, *Olympia, Tumwater, and Lacey: A Pictorial History* (Virginia Beach: The Donning Company, 1996), 158.
[viii] Stevenson, *Olympia, Tumwater and Lacey*, 167.
[ix] Paul Knight, Interview with the author, March 2011.
[x] Paul Knight, Interview with the author, March 2011.
[xi] Shanna Stevenson, National Register of Historic Places Nomination Form for the Tumwater Historic District, 1977.

Significance

The National Register Nomination for the New Market or Tumwater Historic District documents the historic significance of the entire site but places special emphasis on the brewery. It claims that "The Tumwater Historic District is notable for its many-faceted significance in history and prehistoric archaeology, in patterns of early settlement and industrial use, and in architectural as well as natural beauty." The nomination refers to Leopold Schmidt as "Tumwater's most noted industrialist," and goes on to say that though many of the early industrial sites in Tumwater are no longer recognizable, "the early industrial period is well-represented in the old Olympia Brewhouse with its ornamental brickwork and its picturesque setting and design. Situated at the mouth of the Deschutes River, the Brewhouse is the focal point of old Tumwater and of the Historic District."

Prepared in 1977, the nomination was written at a time when the new Olympia Brewery was still an active employer in the region and the buildings were still in use as storage spaces. In the intervening years, as the buildings have aged and become threatened by neglect, the case for significance has grown. If the Brewhouse is most significant for its association with Tumwater's early industrial history, then the entire brewery site should be considered the focal point of the historic district. The Cellar building predates the Bewhouse, shares its ornamental brickwork, and was central to the brewing of beer. Likewise, the 1907 Keg House was a wonder of innovation when it was designed of reinforced concrete to protect it from the ever-present threat of fire. These buildings contribute to the site's significance as one of the most intact examples of an early 20th-century gravity brewing operation in Washington. It is one of only four breweries listed in the Washington Heritage Register. Even newer buildings, including the 1945 warehouse designed by Olympia's most prominent local architectural firm, is an excellent example of an industrial building associated with significant trends in history. It was put to use during World War II to build airplane parts for Boeing. These buildings can also be considered significant for their association with important people, including the Schmidt family who were noted industrialists in Washington and used the buildings as part of their brewing operation into the 1980s. The site is also associated with Joseph and Robert Wohleb, noted architects in Olympia who became particularly well known for their brewery designs. They redesigned the Cellars building and designed the 1945 Warehouse.

These buildings have been altered since construction, but they can clearly be said to retain integrity of location, design, setting, materials, workmanship, feeling and association. Together, these buildings make up one of Washington's most striking industrial sites and should continue to be recognized and protected for their important place in local and state history.

Secretary of the Interior’s Standards for Rehabilitation

The following guidelines, developed by the Department of the Interior, are the basis for all analysis of materials and treatment recommendations.

The Secretary of the Interior's Standards for Rehabilitation

The Standards (Department of Interior regulations, 36 CFR 67) pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and the interior, related landscape features and the building's site and environment as well as attached, adjacent, or related new construction. The Standards are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.

6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

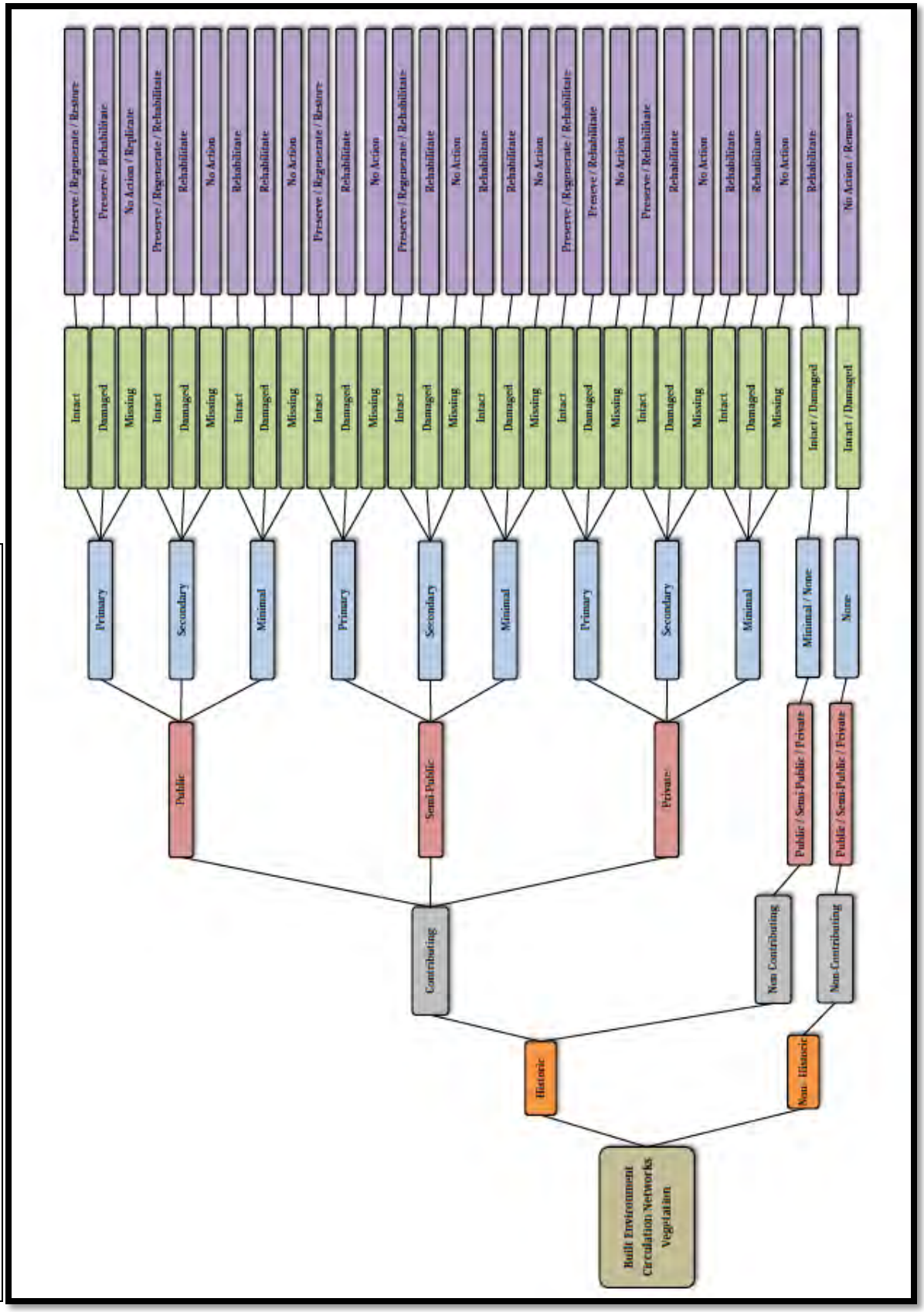
Catalogs of Character Defining Features

The following catalogs break down the character defining features found in each of the five historic buildings remaining on site, beginning with the iconic Brewhouse. Each building is analyzed based first on its exterior features, divided by elevation, and then by its interior features, divided by floor. Analysis and treatment recommendations follow the Secretary of the Interior's Standards for Rehabilitation, included above.

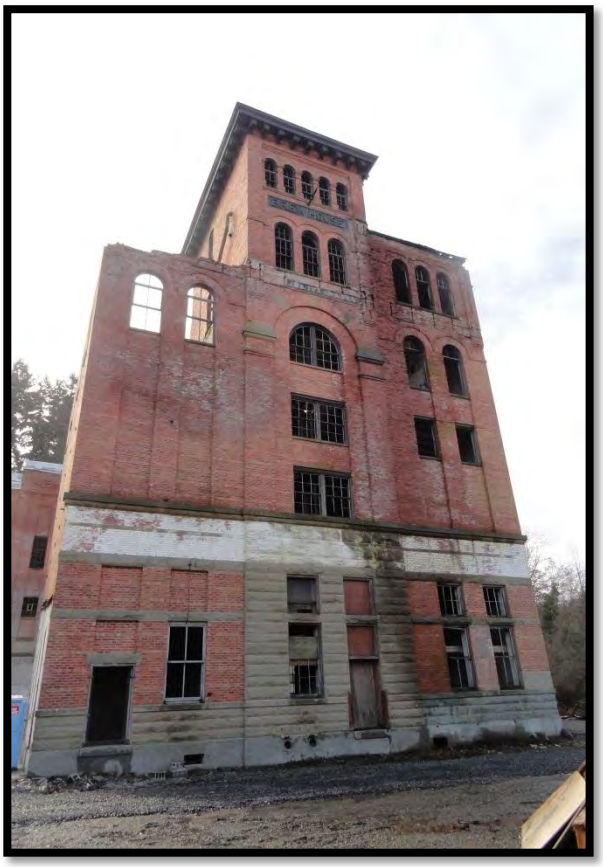
For reference, this report relies on a decision-making matrix for character defining features developed by Artifacts Consulting in Tacoma, Washington. It is included here for reference.

Also included are a series of significance maps color-coded for quick reference using historic elevation drawings when they were available as part of the Olympia-Tumwater archives collection. Floor plans for the interiors were produced by Urbanadd Architects and Ryan Rhodes Design of Seattle. These maps do not include the same level of detail found in the catalogs and are best used for quick reference.

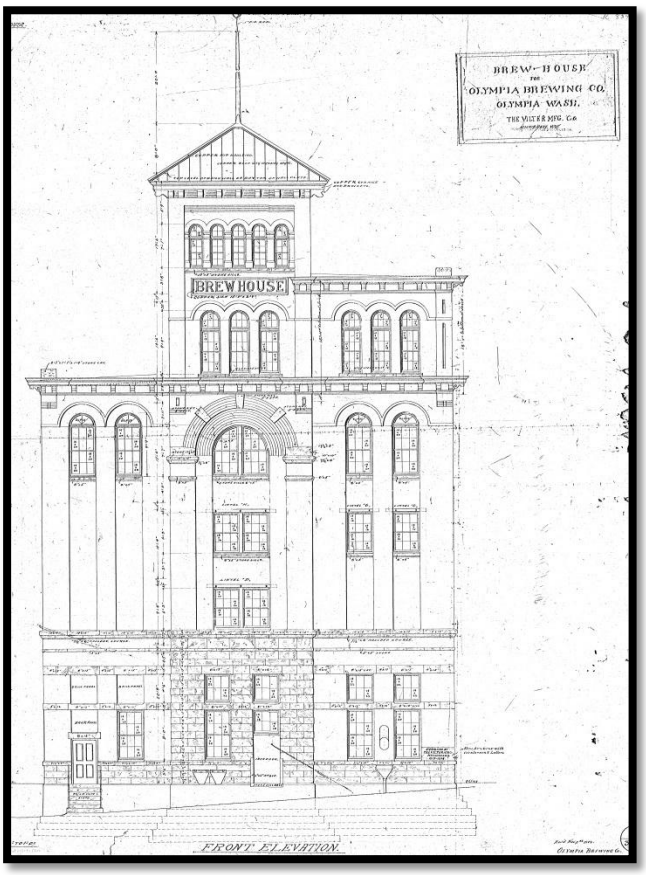
Decision Making Matrix for Character Defining Features



The Brewhouse: Exterior Features



The Brewhouse retains a surprising amount of integrity, in spite of the poor condition of certain elements. Even unusual features, including bricked-in panels on the first floor match historic photos as well as original plans. The original placement of ornamental stone, the fenestration, and the overall form are intact. Ornamental features, including pilasters with sandstone capitals, banks of arched windows, and the copper "Brewhouse" sign are intact, as is the copper roof on the central tower. However, the building has lost secondary roofs, significant portions of the original brick and cornices and brackets that emphasized the upper tiers.

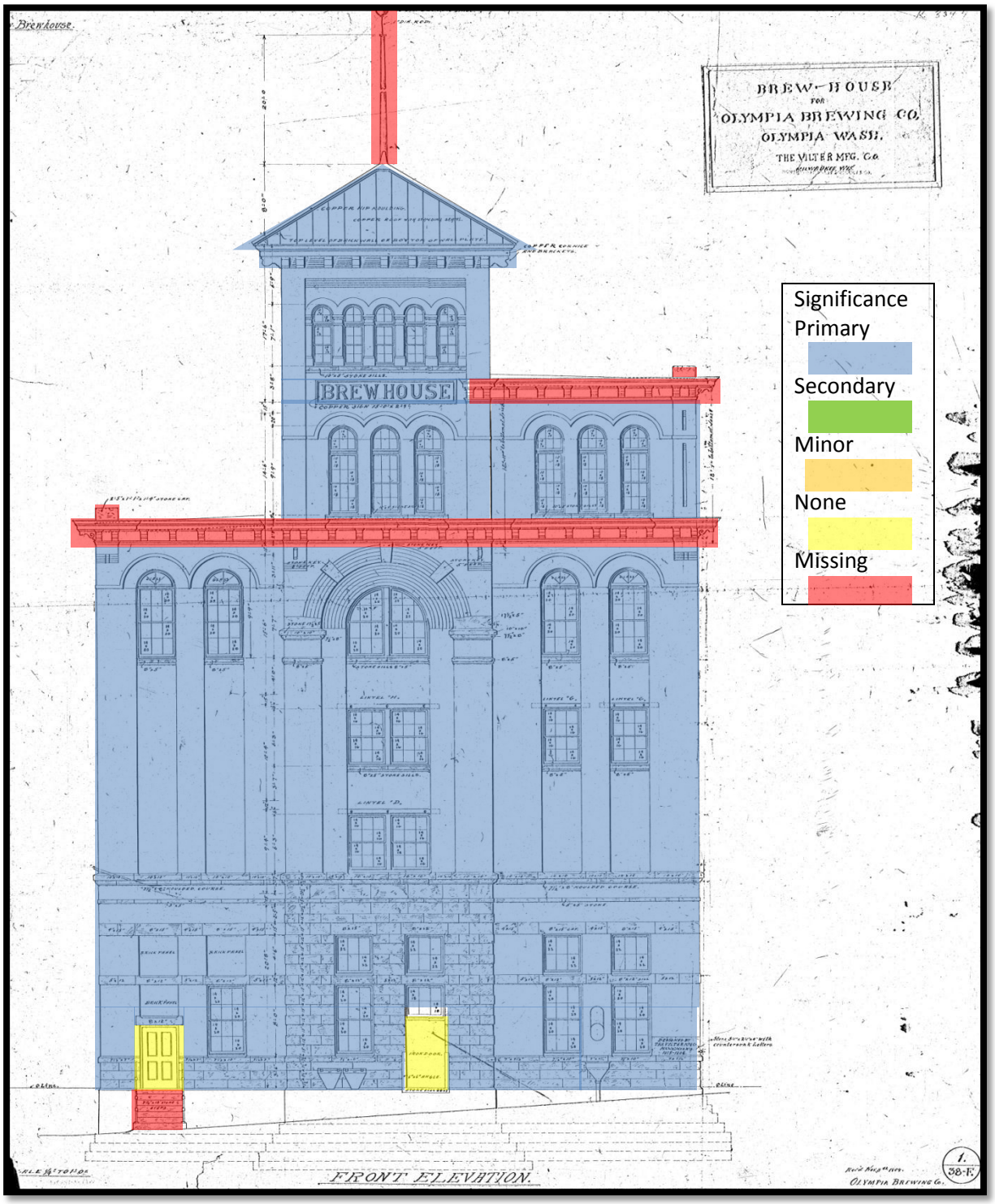


The Brewhouse is a six-story building of Chehalis brick built in the Italianate style.

Its primary façade faces north and is visible from traffic arteries including Interstate-5 and Capitol Way. The western façade faces the Deschutes River, the southern façade faces the promenade and the 1905-1907 Cellar building, and the eastern façade was once linked to the North Storage building through an infill structure that has since been removed.

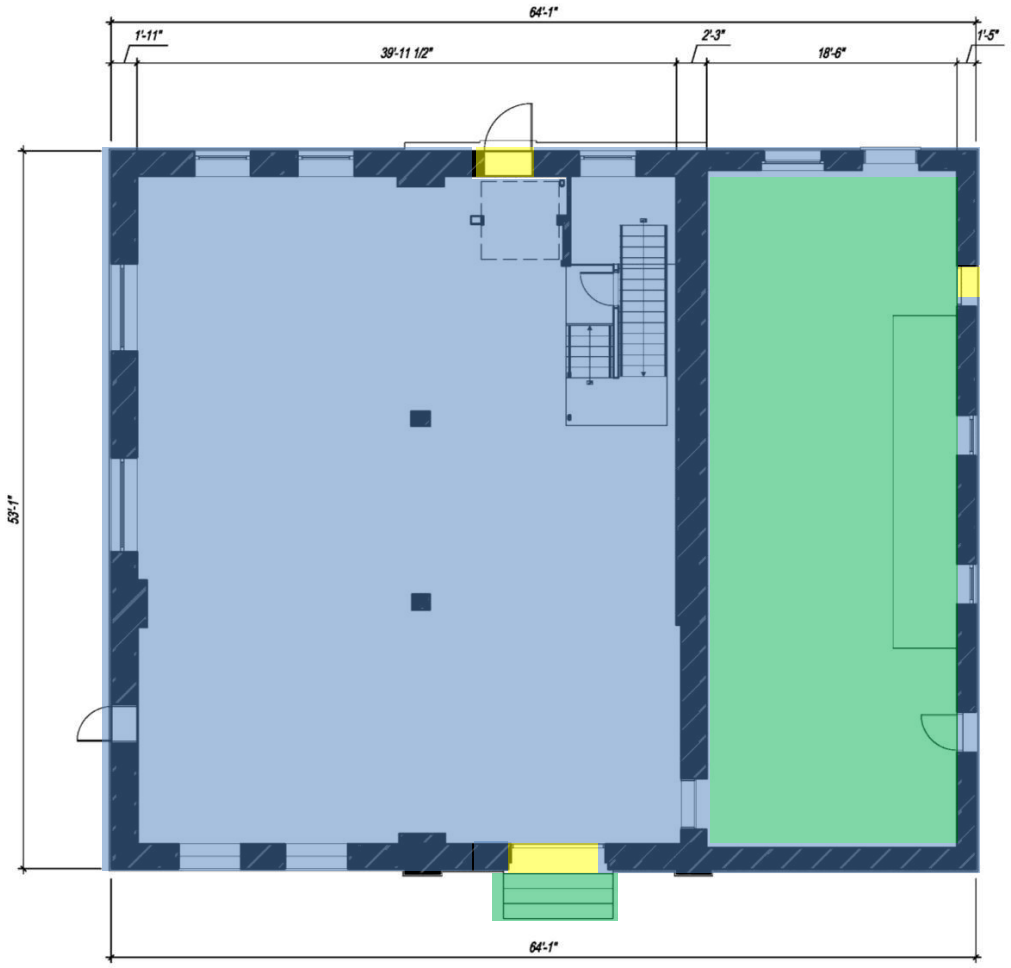
Character-defining features for each elevation are discussed below.

Significance Map: Brewhouse - North Elevation



Significance Map: Brewhouse - West Elevation

Significance Map: Brewhouse – First Floor, as built



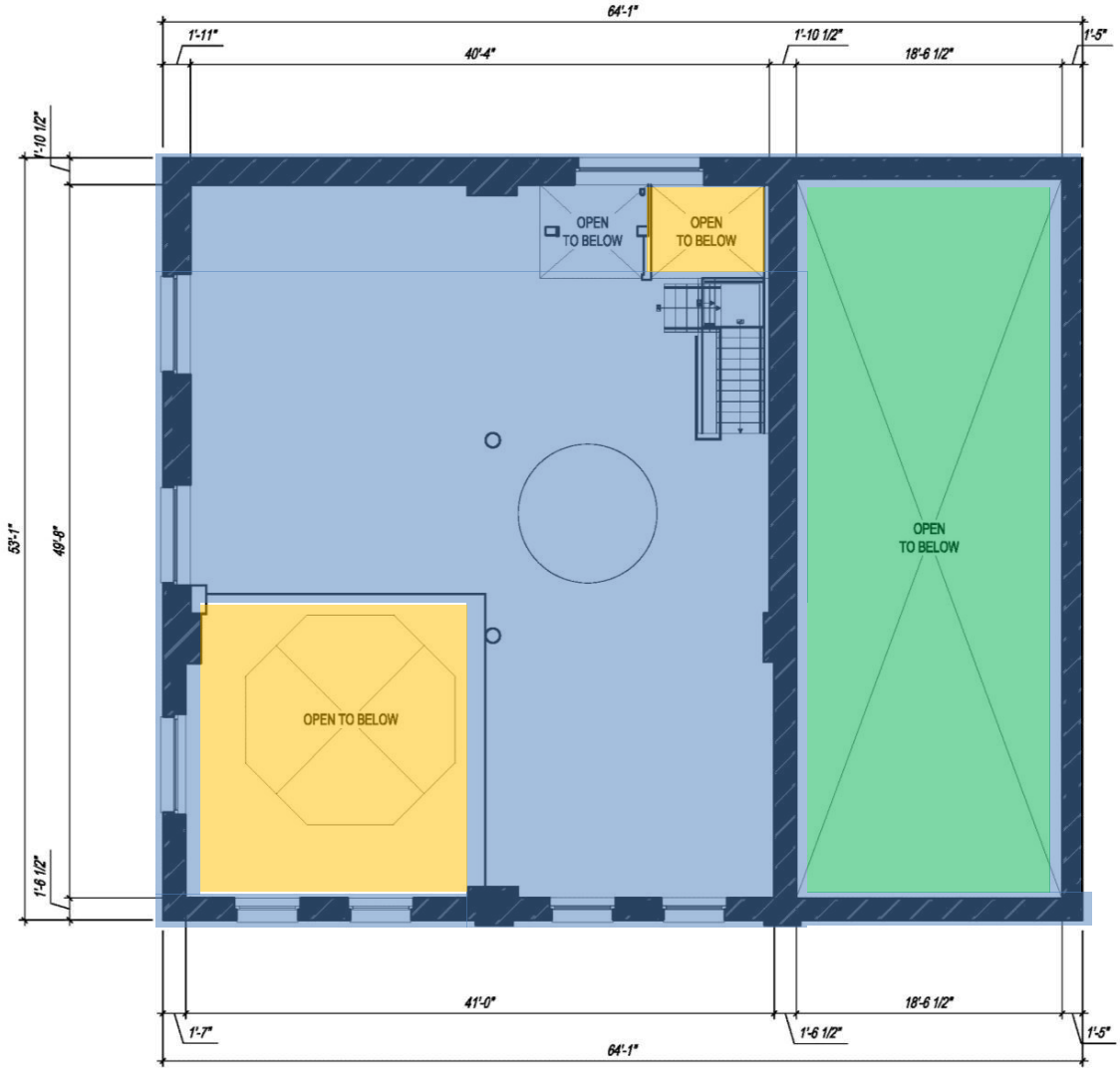
FIRST FLOOR PLAN - 2,756 SQ FT usable

SCALE: 1/8" = 1'-0"

Significance:

- Primary
- Secondary
- Minimal
- None
- Missing

Significance Map: Brewhouse – Second Floor, as built

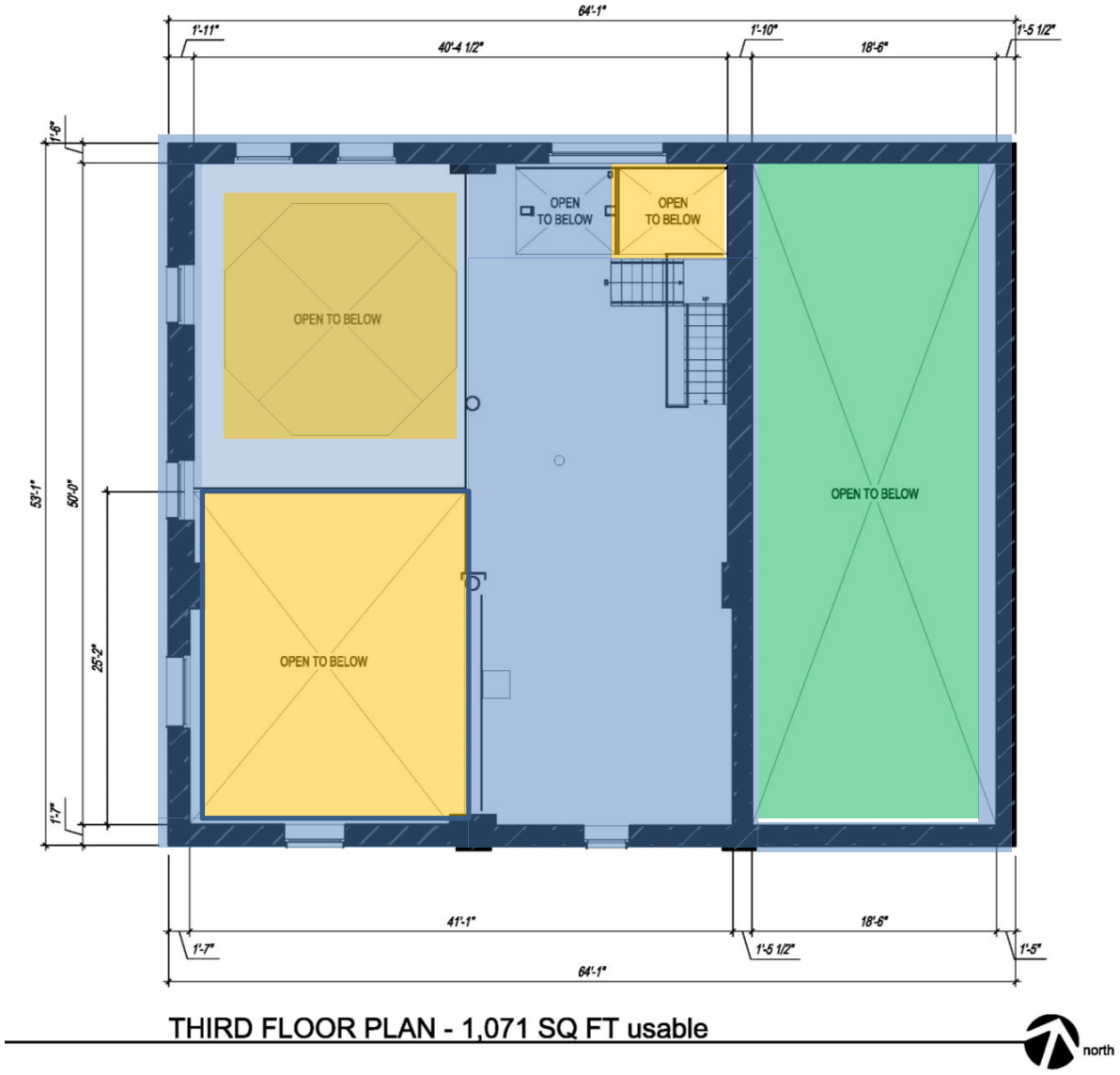


SECOND FLOOR PLAN - 1,588 SQ FT usable

Significance:

- Primary
- Secondary
- Minimal
- None
- Missing

Significance Map: Brewhouse – Third Floor, as built

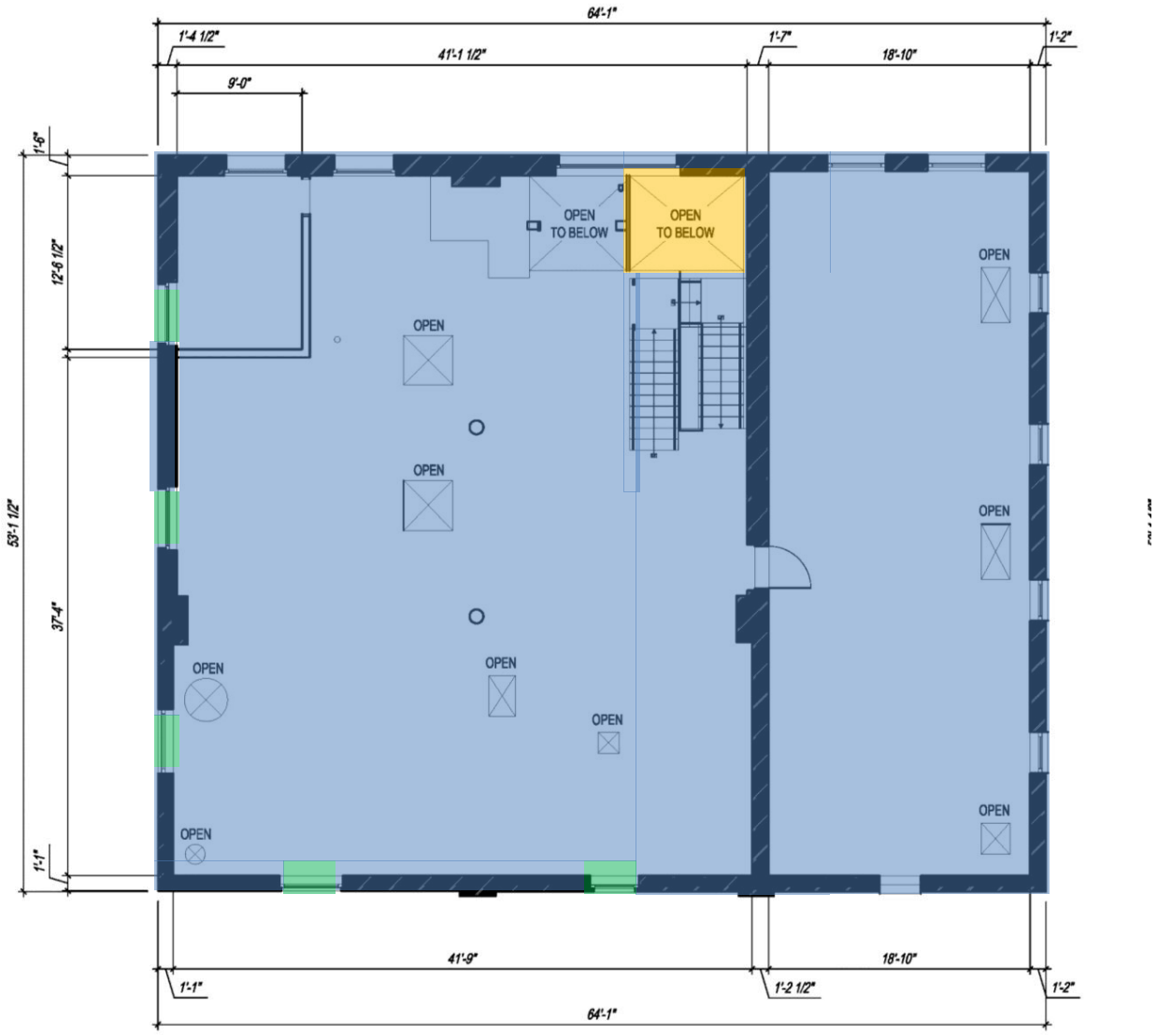


THIRD FLOOR PLAN - 1,071 SQ FT usable

Significance:

Primary	
Secondary	
Minimal	
None	
Missing	

Significance Map: Brewhouse – Fourth Floor, as built



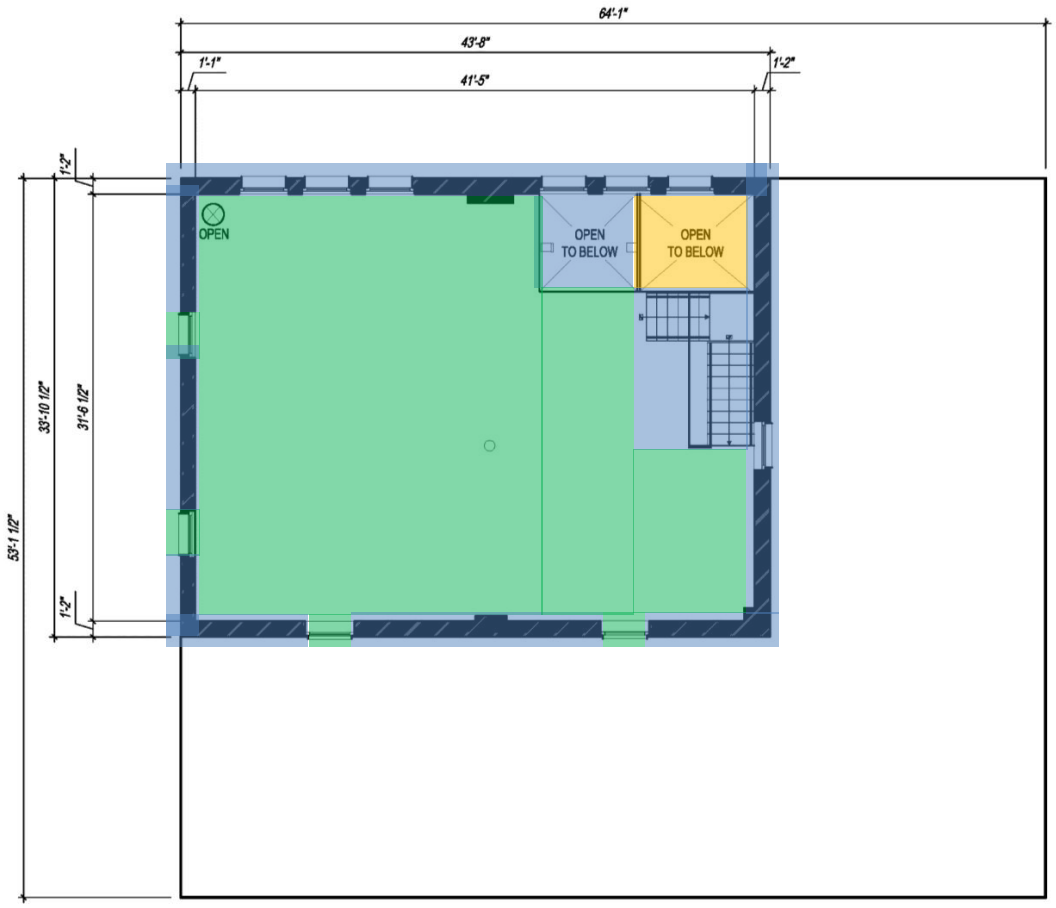
FOURTH FLOOR PLAN - 2,828 SQ FT usable

SCALE: 1/8" = 1'-0"

Significance:

Primary	
Secondary	
Minimal	
None	
Missing	

Significance Map: Brewhouse – Fifth Floor, as built

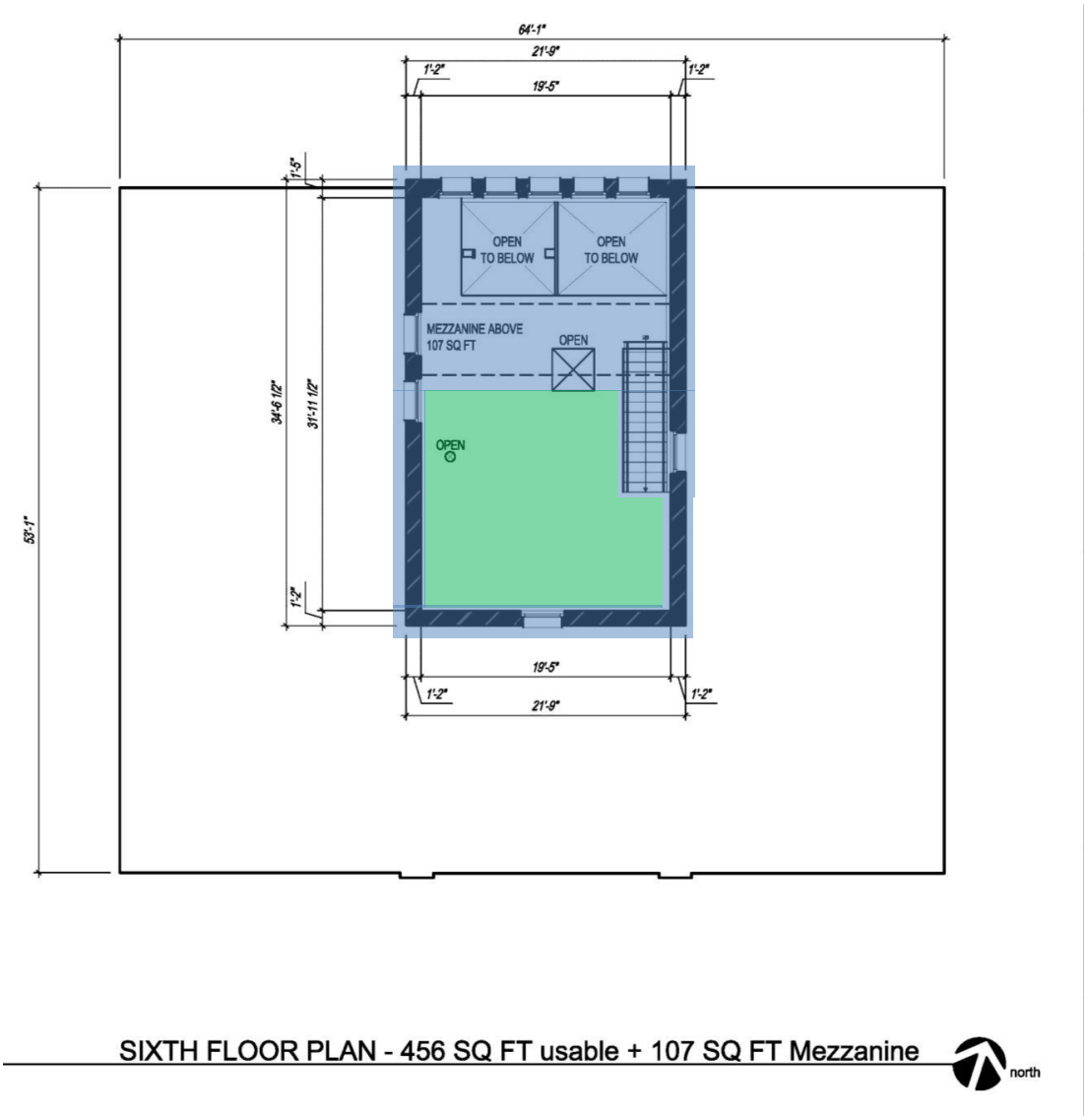


FIFTH FLOOR PLAN - 1,120 SQ FT usable

Significance:

Primary	
Secondary	
Minimal	
None	
Missing	

Significance Map: Brewhouse – Sixthh Floor, as built



Significance:

Primary	
Secondary	
Minimal	
None	
Missing	

North Elevation	
Masonry: Common Red Brick 	Materials: Chehalis Brick American Bond: 6 stretcher courses per header Approximate size: 8 ¼" x 2 ½" x 4" Condition: Fair to Good Significance: Primary Roof collapse has left the brick at critical wall and roof junctures exposed, leading to the loss of historic material. However, most historic brick is intact, though in need of repointing in places. Brick size varies. Recommendations: • Use original brick for repairs, when possible • Replacement brick should be of a similar size, color and texture • Repoint with hand tools to maintain joint profile • All brick ornament, including corbelling at the cornice, pilasters, projections and recessions should be retained

Mortar

Mortar: Unknown composition
Condition: Poor to Good
Joints: Half inch, flush
Significance: Primary

Mortar's deterioration has left historic brick unprotected and more susceptible to water infiltration on the upper floors. Intact joints are flush, approximately half inch, but are somewhat inconsistent. New mortar should match the requirements identified by the National Park Service in Preservation Brief 2 , included in appendix:

- The new mortar must match the historic mortar in color, texture and tooling
- Texture of sand must match that of historic mortar
- The new mortar must have greater vapor permeability and be softer than historic brick
- The new mortar must be as vapor permeable and as soft or softer than the historic mortar

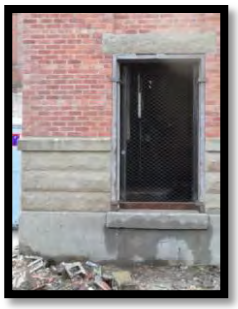
Further Recommendations:

- Historic mortar should be tested to determine quantities of lime, sand and Portland cement for adequate matching
- Repoint with mortar similar in composition, color, texture, joint size, method of application and joint profile
- Choose a mason who's familiar with historic brick buildings and is willing to hand tool the joints before repointing

Masonry: Sandstone 	Material: Coursed Rock-Faced Tenino Sandstone Condition: Good Joint: Beaded Significance: Primary Tenino sandstone was used as an ornamental accent on the primary façade of the Brewhouse. It is found on pilasters, around doors and windows and in horizontal bands between floors. Original plans identify stone sills, keystones, and capitals. Recommendations: • Retain all historic sandstone details • If repair is needed, test mortar and match its composition, color, texture, joint size, method of application and joint profile • Paint does not appear in historic photos from the period of significance. It can be removed by the gentlest means possible (See appendix). • Replacement sandstone may be available from quarries recently reopened in Tenino
Tower Roof 	Material: Copper Condition: Good Significance: Primary Copper roofing was used on the hipped-roof central tower, providing the Brewhouse with an ornamental cap that was further emphasized by a cornice and gutter system featuring large, console brackets. The copper roof appears to be intact and investigations of the supporting wood structure show no obvious signs of leakage or deterioration. Original plans drawn by Viltner call out “copper roof with raised seams” and “copper cornice and brackets”. However, separate elevation drawings refer to the cornice and console brackets as “galvanized iron.” Recommendations: • Retain in place

Secondary Roof 	Material: Composition Condition: Poor to Nonexistent Significance: Minimal Though historians claim that all roofs on the Brewhouse were copper, the lower tiers were apparently composition roofs forming shallow hips. They have ultimately performed poorly, with the first collapse occurring in the early 1990s. Recommendations: • Repair or replace. Maintain historic roof slope to help with drainage.
Console Brackets and Cornice   	Materials: Galvanized Iron Condition: Fair on tower; missing on other tiers Significance: Primary The brackets remaining under the tower's copper roof have been minimally protected by a cornice and gutter system, but the cornices on lower level roofs have been lost, along with the console brackets that emphasized the building's tiers. The tower is shown above left, brackets and cornices are in place in the historic photo, left, and the contemporary photo, below, shows where the brackets were once affixed to the brick. Recommendations: • All new construction should be recognizably new and not create a false sense of history. However, the roof emphasis and delineated tiers were a central design element and should be addressed in restoration plans. • The remaining brackets, cornices and copper roof are highly visible character-defining features and should be repaired and retained in place. The highest priority is to protect significant historic fabric.

First Floor Doors



Materials: Metal Mesh/Wood
Condition: Good/Missing
Significance: Minimal

This metal door, shown below left, is not original to the building, though its sandstone sill and lintel are. Original plans identify a paneled door. Original drawings also call for a metal door in the central bay, below right, but the door is missing and is boarded up by a wood panel. This opening enters into the historic platform lift.

Recommendation:

- Doors may be replaced though the historic opening should be maintained, along with stone sills and lintels
- New construction should be visible new, but constructed of historically appropriate materials

First Floor Windows

Materials: Wooden frames, missing lights
Condition: Fair
Significance: Primary

First floor windows retain remnants of early wooden frames, however the windows differ from those called out on the original plans. The plans call for six-over-six double-hung sash wood windows topped by stone lintels and smaller six-light windows above. Wood frames for two of the three six-light windows remain in place, but the lower windows include frames for two-over-two double-hung sash windows, as seen left. The only six-over-six double hung window sits in the central bay. All frames are deteriorated and historic photographic evidence regarding the original number of divided lights is inconclusive.

Recommendation:

- Retain and repair frames; reglaze
- Replacement windows, where needed, should match the original fenestration, original materials, design and function. Replacement windows should be operable when the originals were double hung; windows originally built with divided lights should be replaced by windows with divided lights.
- Retain sills and lintels

Second Floor Windows  	Materials: Wooden frames, missing lights Condition: Fair Significance: Primary On the second floor, the only windows are a pair of double hung wood windows in the central bay. They are six-over-six sash windows with stone sills and metal lintels. The frames remain, though their condition has deteriorated. Recommendations • Retain and repair frames; reglaze • Replacement windows, if needed, should retain the original fenestration and should, when possible, match the original materials, design and function. Replacement windows should be operable when the originals were operable; windows originally built with divided lights should be replaced by windows with divided lights. • Retain sills and lintels
Third Floor Windows  	Materials: Wooden frames, missing lights Condition: Fair Significance: Primary The central bay on third floor includes a pair of double-hung windows identical to those on the second floor. In the western bay (right), a pair of openings no longer retain their windows. Recommendations • Retain and repair frames; reglaze • Replacement windows, if needed, should retain the original fenestration and should, when possible, match the original materials, design and function. Replacement windows should be operable when the originals were double hung; windows originally built with divided lights should be replaced by windows with divided lights. • Retain sills and lintels

Fourth Floor Windows   	Materials: Wooden frames and Casings Condition: Fair Significance: Primary The fourth floor includes three pairs of arched windows. The westernmost windows retain only their casings but were operable; frayed ropes from the original weight and pulley system remain. The arches are filled by divided fixed lights. Recommendations • Retain and repair frames; reglaze • Replacement windows, when needed, should retain the original fenestration and should, when possible, match the original materials, design and function. Replacement windows should be operable when the originals were double hung; windows originally built with divided lights should be replaced by windows with divided lights. • Retain sills • Retain fixed lights
Fifth Floor Windows  	Materials: Wooden frames, missing lights Condition: Fair Significance: Primary Toward the top of the tower, ornamentation increases. In the central and eastern bays are two banks of three arched windows. The windows consist of fixed, six-light window above operable six-over-six, double-hung sash windows. These windows were well protected from weather and many retain their original muntins. Recommendations: • Retain and repair frames; reglaze • Replacement windows, where needed, should retain the original fenestration and should, when possible, match the original materials, design and function. Replacement windows should be operable when the originals were; windows originally built with divided lights should be replaced by windows with divided lights. • Retain sills • Retain fixed lights

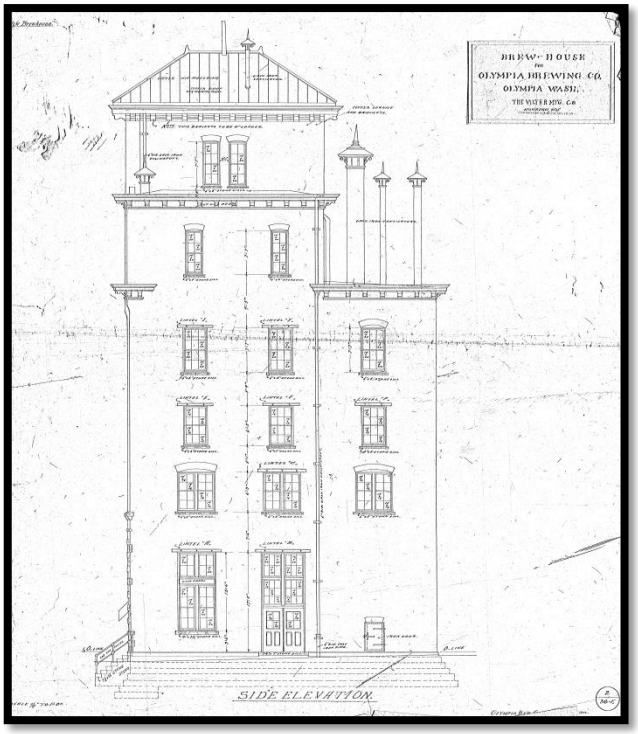
Sixth Floor Windows  	Materials: Wooden frames, missing lights Condition: Good Significance: Primary On the top floor of the tower, there's one bank of six arched windows. The arches are filled with six-light fixed windows above operable double-hung, six-over-six sash windows. Recommendations: • Retain and repair frames; reglaze • It's unlikely that replacement windows will be needed. However, any replacement windows, should retain the original fenestration and should, when possible, match the original materials, design and function. Replacement windows should be operable when the originals were double hung; windows originally built with divided lights should be replaced by windows with divided lights. • Retain sills • Retain fixed lights
Ornamental Features: "Brew House" Sign  	Material: Copper Condition: Good Significance: Primary The inset nameplate is a highly significant feature of the primary façade. Though the brick near it is damaged and shows the structural ties that once held the cornice to the building's face, the sign appears to have been undamaged. Recommendation: • Retain in place
Ornamental Features: Corner Stone  	Material: Sandstone Condition: Good Significance: Primary The cornerstone identifies the designer, the location of the company office and the years in which the building was built. It's both a design feature and an historic document. Recommendation: • Retain in place

Ornamental Features: Brick Detail 	Materials: Chehalis Brick Condition: Fair to Good Significance: Primary Brick ornamentation, including corbelling, pilasters, arcades and mullions in the shape of columns are all central to the significance of the primary façade. Recommendation: • Retain all brick ornament

West Elevation

The Brewhouse, heavily ornamented on the north façade, received less decorative treatment on the west façade. This elevation features three bays of various window types.

Here, damage to the roofs and cornices is extensive.



The western elevation faces the river and is perhaps the least visible of the building's four sides. Note that the steps and the door in the central bay were apparently not built as designed.

Masonry: Common Red Brick

Materials: Chehalis Brick
American Bond: 6 stretcher courses per header
Approximate size: 8 ¼" x 2 ½" x 4"
Condition: Fair to Good
Significance: Primary

Roof collapse has left the brick at critical wall and roof junctures exposed, leading to the loss of historic material. However, most historic brick is intact, though in need of repointing in places. Brick size varies.

The condition of the brick is most deteriorated at the tops of fourth and fifth floors where the removal of cornices and the lack of roofs have left brick susceptible to moisture. Popping, spalling and general deterioration have eroded historically significant material. Other damage has occurred around a punch through on the second floor. Otherwise, the brick is generally intact.

Recommendations:

- Original brick should be used for repair whenever possible
- Replacement brick should be of a similar size, color and texture
- Repoint with hand tools to maintain joint profile
- All brick ornament, including segmental arches, shall be retained.

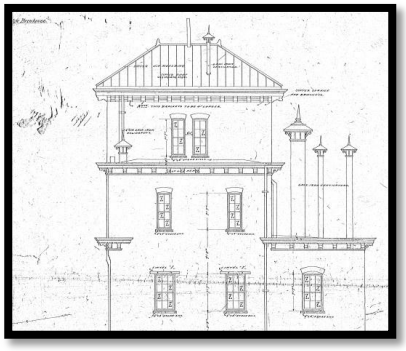
Mortar

Mortar: Unknown composition
Condition: Poor to Good
Joints: Half inch, flush
Significance: Primary

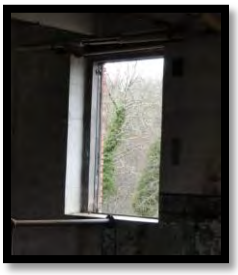
Mortar's deterioration has left historic brick unprotected and more susceptible to water infiltration on the upper floors. New mortar should match the requirements identified by the National Park Service in Preservation Brief 2 , included in appendix:

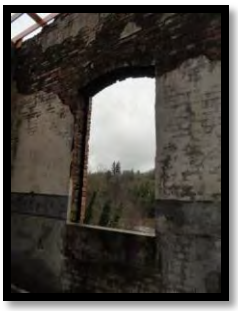
- The new mortar must match the historic mortar in color, texture and tooling
- Texture of sand must match that of historic mortar
- The new mortar must have greater vapor permeability and be softer than historic brick
- The new mortar must be as vapor permeable and as

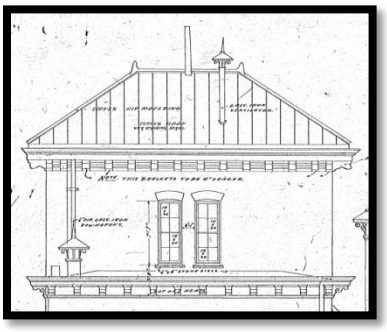
	soft or softer than the historic mortar Further Recommendations: • Historic mortar should be tested to determine quantities of lime, sand and Portland cement for adequate matching • Repoint with mortar similar in composition, color, texture, joint size, method of application and joint profile • Choose a mason who's familiar with historic brick buildings and is willing to hand tool the joints before repointing
Roofing 	Material: Composition Condition: Poor Significance: Minimal The composition roof on the fifth floor on the western elevation has deteriorated greatly, though the roof system below is intact. It's also possible to see the deterioration along the southern elevation. Though historians claim that all roofs on the Brewhouse were copper, the lower tiers were apparently composition roofs forming shallow hips. Recommendations: • Repair or replace. Maintain historic roof slope to help with drainage.
Tower Roof 	Material: Copper Condition: Good Significance: Primary Copper was used to roof the central tower, providing the Brewhouse with an ornamental cap that was further emphasized by a cornice and gutter system featuring large, console brackets. The copper roof appears to be in good condition on all elevations. Original plans call out "copper roof with raised seams" and "copper cornice and brackets". However, separate elevation drawings refer to the cornice and console brackets as "galvanized iron." Recommendations: • Maintain and protect roof and brackets in place

Cornices and console brackets 	Materials: Galvanized Iron Condition: Fair on tower; missing elsewhere Significance: Primary The brackets remaining under the tower's copper roof have been minimally protected by a cornice and gutter system, but the cornices on lower level roofs have been lost, along with the console brackets that emphasized the building's tiers. The brackets and cornices are visible in historic plans, left. Removal of these cornices has increased brick deterioration. Recommendations: • All new construction should be recognizably new and not create a false sense of history. However, the roof emphasis and delineated tiers were a central design element and should be addressed in restoration plans. • The remaining brackets, cornices and copper roof are highly visible character-defining features and should be repaired and retained in place. The highest priority is to protect significant historic fabric.
First Floor Window, Northern Bay 	Materials: Galvanized iron Condition: Fair Significance: Primary This metal "fireproof" window includes fixed four-light windows above a pair of two-over-two double hung sash windows. It lights a room used specifically for a baudelot cooler. The window is the only one identified as fireproof in original first floor plans, though "fire shutters" also existed on the eastern elevation. Recommendations: • Retain frames and glazing; reglaze where necessary • Retain stone sills and iron lintels

First Floor Window, Central Bay 	Materials: Wood Condition: Fair Significance: Primary Fixed four-light windows are separated by a wooden panel from two-over-two double-hung sash windows. Stone sill; iron lintel. Plans identify this opening as a door. Recommendations: • Retain and repair frame; reglaze • If an entrance is needed on the western elevation, this would be the appropriate location
First Floor Door, Southern Bay 	Materials: Iron Condition: Good Significance: Primary This door was used for hops disposal. The hop jack was located just inside. Recommendation: • Retain in place as an artifact of the building's former life as a working brewery
Second Floor Window, North and South Bays 	Material: Wood Condition: Fair Significance: Primary The second floor includes windows of two types. In the exterior bays, windows include brick segmental arches, sandstone sills, wood mullions and wood panels in the arch. They were originally two-over-two, double-hung sash windows. Evidence of weights and pulleys remains.

	Recommendations: • Retain and repair window casings and replace windows with operable double-hung sash windows • Retain arches, lintels, mullions, panels and sills
Second Floor Window, Central Bay 	Materials: Wood Frame Condition: Fair Significance: Primary The central opening contained a pair of two-over-two, double-hung sash windows separated by a wood mullion. The mullion remains, as does evidence of a weight and pulley system. Recommendation: • Repair casing and replace windows with double-hung sash windows • Retain lintel, mullion and sill
Third Floor Windows  	Materials: Wood frames Condition: Poor Significance: Primary Three windows of one type appear on the third floor. These were six-over-six, double-hung sash windows with sandstone sills and iron lintels. Recommendation: • Repair wood casings and replace windows with operable double-hung sash windows • Maintain sills and lintels

Fourth Floor Windows  	Materials: Wood frames Condition: Fair to Poor Significance: Secondary The fourth floor included windows of one type, though the window in the southern bay included a segmental arch. The windows were six-over-six, double-hung sash windows. Deterioration of the wall and roofs of this room have led to the loss of the window and its casing. All openings have sandstone sills. Recommendation: • Repair window surrounds and replace windows with operable double-hung, sash • Maintain sills and lintels • Though the southern window surround is missing, the opening should be maintained and an operable replacement installed
Fifth Floor Windows 	Materials: Wood frames Condition: Poor Significance: Secondary The fifth floor included two windows of one type. These arched windows were original four-over-four, double-hung sash windows. They also have sandstone sills and wood paneled lintels. Recommendations: • Repair surrounds and replace windows with operable double-hung sash windows • Retain sills and lintels

Sixth Floor Windows 	Materials: Wood frames Condition: Poor Significance: Primary This pair of windows on the west elevation of the tower were four-over-four, double-hung sash windows with sandstone sills and wood paneling in the arch. They are rated slightly higher than windows on the fourth and fifth floor because of the visibility and significance of the tower itself. Recommendations: • Repair surrounds and replace windows with operable, double-hung, sash windows • Retain sills and lintels

South Elevation

The east elevation is considered the rear elevation. It faces the Cellars, which were built in 1905 and expanded in 1907. While railroad tracks used to run between the two buildings, there is now a concrete pad separating them.

Though the records for the Brewhouse are extensive, there were no early elevation drawings found for the rear and east elevations.

This elevation includes white paint on the bottom floor and remaining metal supports that once connected the building to an infill structure that was recently demolished. Alterations on this elevation were not referenced in the historic documentation though it's possible that the construction of an infill structure might have led to changes in fenestration.

The eastern bay includes fewer windows than the central and western bays because this section of the building was devoted to the storage of grain. This elevation also includes minimal ornamentation, including very shallow pilasters.

Masonry

Materials: Chehalis Brick
American Bond: 6 stretcher courses per header
Approximate size: 8 ¼" x 2 ½" x 4"
Condition: Fair to Good
Significance: Primary

Roof collapse has left the brick at critical wall and roof junctures exposed, leading to the loss of historic material. However, most historic brick is intact and in need of repointing. Brick size varies.

The condition of the brick is most deteriorated at the top of the fourth floor where roof collapse has left brick completely open to the weather. Popping, spalling and general deterioration have significantly eroded historic material. All repairs will meet the following historic preservation guidelines:

Recommendations:

- Original brick should be used for repair whenever possible
- Replacement brick should be of a similar size, color and texture
- Repoint with hand tools to maintain joint profile
- Brick ornament, including shallow pilasters, shall be retained.

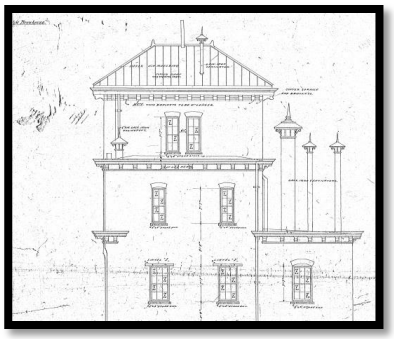
Mortar

Mortar: Unknown composition
Condition: Poor to Good
Joints: Half inch, flush
Significance: Primary

Mortar's deterioration has left historic brick unprotected and more susceptible to water infiltration on the upper floors, especially at corners, seen left. New mortar should match the requirements identified by the National Park Service in Preservation Brief 2:

- The new mortar must match the historic mortar in color, texture and tooling
- Texture of sand must match that of historic mortar
- The new mortar must have greater vapor permeability and be softer than historic brick
- The new mortar must be as vapor permeable and as soft or softer than the historic mortar

	Further Recommendations: • Historic mortar should be tested to determine quantities of lime, sand and Portland cement for adequate matching • Repoint with mortar similar in composition, color, texture, joint size, method of application and joint profile • Choose a mason who's familiar with historic brick buildings and is willing to hand tool the joints before repointing
Roofing 	Material: Composition Condition: Missing Significance: Minimal The composition roof on the fourth floor of the southern elevation has collapsed. On the fifth floor, the composition roof is deteriorated but in place. Recommendations: • The secondary roofs are not visible from the ground. New composition roofs would be appropriate.
Tower Roof 	Material: Copper Condition: Good Significance: High Copper was used on the hipped-roof central tower. The copper roof appears to be intact on all elevations and investigations of the supporting wood structure show no obvious signs of leakage or deterioration. Original plans drawn by Viltner call out "copper roof with raised seams" and "copper cornice and brackets". However, separate elevation drawings refer to the cornice and console brackets as "galvanized iron." Recommendations: • Maintain and protect roof and brackets in place

Cornices and Console Brackets 	Materials: Galvanized Iron Condition: Fair along tower; missing elsewhere Significance: High Though the cornice and brackets on the tower are intact, the southern elevation has lost all other cornices. A cornice once wrapped the building at the fifth floor and at the fourth floor, emphasizing the building's tiers. The roof and any evidence of the original cornices and brackets are missing. Recommendations: • It would be inappropriate to replicate the cornices exactly, as all new construction must be recognizably new. However, the roof emphasis and delineated tiers are a central design element and should be included in restoration plans. • The cornice and brackets that remain along the top of the sixth floor should be repaired and retained. The highest priority is to protect and retain significant historic fabric. The brackets, cornices and copper roof are a highly visible character-defining feature.
First Floor Door 	Materials: Metal Condition: Good Significance: Minimal The metal gate installed over this opening is not original, but the opening appears with a transom window in mid-century historic photos. The original plans call for paired double-hung sash windows in this location. No documentation exists for installing an opening at this location. Recommendations: • Retain opening in place and restore transom or return to original fenestration

First Floor Windows 	Materials: Wood frames Condition: Fair Significance: Primary The first floor includes paired windows. They are six-over-six, double-hung sash windows topped by wooden panels and fixed divided-light windows. The fixed windows are boarded up. Sandstone sills support the bottom windows. Recommendations: • Retain and repair windows and retain original glazing where possible • Uncover and reglaze fixed lights • Replacement windows, if needed, must be of the same materials, size and shape. Historically operable windows should be replaced with operable windows with true divided lights.
Second Floor Windows  	Materials: Window frames Condition: Fair Significance: Primary The second floor includes two pairs of window casings on the two western bays. Though the windows are missing, the casings, paneled arches and sandstone sills remain. Recommendation: • Retain openings and existing surrounds and sills • Replacement windows should be operable double-hung sash windows

Third Floor Windows  	Materials: Wood Frames Condition: Fair Significance: Primary Only two windows exist on the western and central bays of the third floor. Though the windows are missing, one of the wooden casings remains. The other retains only its opening, its stone sill and its segmental arch. Recommendation: • Retain openings and existing casings and sills • Replacement windows should be operable double-hung sash windows
Fourth Floor Windows: Western bays 	Material: Wood Frames Condition: Fair to Missing Significance: Secondary The fourth floor includes one opening per bay. The central bay is missing its window and casing and is framed by deteriorating masonry, as on the third floor. Sill and segmental arch remain. The western window (left) retains its casing and sill but the window is missing. Recommendations: • Repair masonry and retain the opening in the central bay. Replacement window should be operable, double-hung sash • The window frame in the western bay should be repaired and the replacement windows should be an operable, double-hung sash.
Fourth Floor Window: Eastern Bay 	Materials: Metal and safety glass Condition: Good Significance: Primary “Fire shutters” were added to the top floor of the building’s eastern bay, where grain was stored. These windows are pivoting and made of metal rather than wood. Recommendations: • Retain in place • Reglaze with safety glass where needed

Fifth and Sixth Floor Windows 	Materials: Wood Condition: Fair Significance: Primary On the fifth floor, the southern and eastern volumes of the building have terminated and only the tower and the western volume continue. The windows on these floors are similar to others with deteriorated casings, missing windows, damaged brick and remaining sandstone sills and paneled arches. Recommendations: • Retain and repair casings • Replace windows with operable double-hung sash windows
Remaining Features: Corbelled panel 	Materials: Brick Condition: Good Significance: Primary This recessed panel with corbelled edge in the central bay should be retained. No evidence remains of the sign or ornament that was installed here. Recommendation: • Retain in place
Remaining Features: Piping 	Materials: Metal Condition: Good Significance: Secondary These pipe ends and openings were used to transfer materials from the Brewhouse to the Cellar building to the south. Recommendations: • If possible, they should be left in place as an artifact of the building's use as a working brewery.

Remaining Features: Underground Access 	Materials: Concrete and Iron Condition: Good Significance: Unknown This recessed opening leads under the building and is filled with water. The opening in the floor panel is surrounded with iron and likely held a cover. It is yet unknown how the underground space was used by the brewery, but plans for the Cellar building, south, included mention of wells and water tanks underground. Recommendations: • If possible, the recession should remain visible.
Remaining features: Stairs 	Materials: Sandstone Condition: Good Significance: Secondary These sandstone stairs appear to predate the pad poured around them, though they do not appear on original plans. Recommendations: • If possible, they should remain in place
Remaining Features: Vents 	Materials: Metal Condition: Good Significance: Secondary The vent on the southern elevation is a good example of the fire resistant details added to the Brewery's dry grain storage. Recommendations: • If possible, this example or others should remain in place as artifacts of the building's history as a working brewery

Remaining Features: Flashing and Supports 	Materials: Steel Beams and Flashing Condition: Good Significance: Minimal The flashing that once protected the seams between the Brewhouse and an infill structure, which has since been removed, are not character defining and may be removed by the gentlest means possible. Recommendations: • Remove or take no action
Remaining Features: Paint 	Materials: Unknown Composition Condition: Good Significance: Minimal The remnants of white paint on the eastern and southern elevations correspond to the dimensions of infill buildings that have since been removed. The paint was not an historic treatment on the masonry of the Brewhouse and may be removed. Recommendations: • No Action or remove by the gentlest means possible

East Elevation

The East elevation faces a storage building, just out of view. From the angle, the missing secondary roof is most obvious. This elevation is unusual in that it includes two exterior door and no windows on the second through fourth floors. This section of the building was used for grain storage and included large bins for malt, rice and grits, according to early plans.

The white paint and flashing define a portion of the wall that contributed to an infill building that has since been removed. The slope of the paint matches the slope of the former roof.

The southern and eastern elevations are the least documented. Neither historic elevation drawings nor sections approach the building from this angle. However, the volume of the interior appears in floor plans and shows the great volume of the space dedicated to grain storage.

Character defining features, very similar to those found on other elevations are called out below. The unique feature of this elevation is the fireproofing applied to windows on the first and fourth floors.

Masonry

Materials: Chehalis Brick
American Bond: 6 stretcher courses per header
Approximate size: 8 ¼" x 2 ½" x 4"
Condition: Fair to Good
Significance: Primary

Roof collapse has left the brick at critical wall and roof junctures exposed, leading to the loss of historic material. However, most historic brick is intact and in need of repointing. Brick size varies.

The condition of the brick is most deteriorated at the top of the fourth floor where the lost roof has left brick susceptible to moisture. Popping, spalling and general deterioration have eroded historically significant material. All repairs should meet the following historic preservation guidelines:

Recommendations:

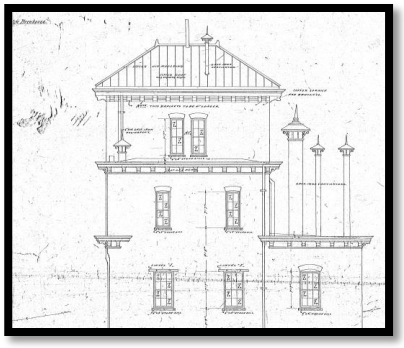
- Original brick should be used for repair whenever possible
- Replacement brick should be of a similar size, color and texture
- Repoint with hand tools to maintain joint profile
- All brick ornament, including segmental arches, shall be retained.

Mortar

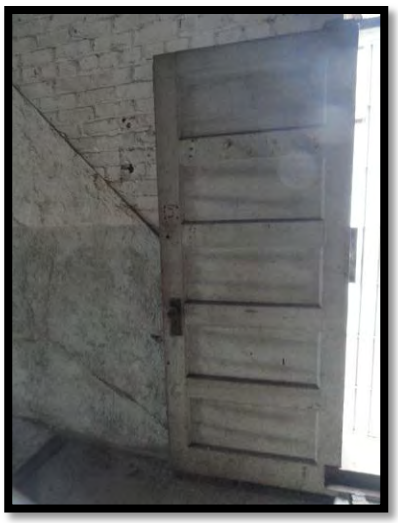
Mortar: Unknown composition
Condition: Poor to Good
Joints: Half inch, flush
Significance: Primary

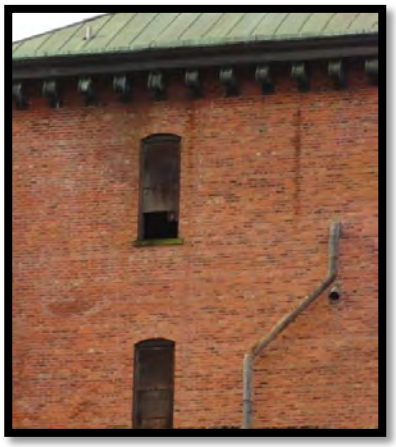
Mortar's deterioration has left historic brick unprotected and more susceptible to water infiltration. New mortar should match the requirements identified by the National Park Service in Preservation Brief 2:

- The new mortar must match the historic mortar in color, texture and tooling
- The sand's texture should match that of the historic mortar
- The new mortar must have greater vapor permeability and be softer than the brick.
- The new mortar must be as vapor permeable and as soft or softer than the historic mortar

	Further Recommendations: • Historic mortar should be tested to determine quantities of lime, sand and Portland cement • Repoint with mortar similar in composition, color, texture, joint size, method of application and joint profile • Choose a mason who's familiar with historic brick buildings and is willing to hand tool the joints before repointing
Tower Roof 	Material: Copper Condition: Good Significance: Primary Copper was used to sheath the central tower, providing the Brewhouse with an ornamental cap that was further emphasized by a cornice and gutter system featuring large, console brackets. The copper roof appears to be intact on all elevations and investigations of the supporting wood structure show no obvious signs of leakage or deterioration. Original plans drawn by Viltner call out "copper roof with raised seams" and "copper cornice and brackets". However, separate elevation drawings refer to the cornice and console brackets as "galvanized iron." Recommendations: • Maintain and protect the roof and cornices in place
Cornices and console brackets 	Materials: Galvanized Iron Condition: Missing Significance: Primary Though the cornice and brackets on the tower are intact, the eastern elevation has lost all other cornices. A cornice once wrapped the building at the top of the fourth floor. The roof and any evidence of the original cornices and brackets are missing. Recommendations: • It would be inappropriate to replicate the cornices exactly, as all new construction must be recognizably new. However, the roof emphasis and delineated tiers are a central design element and should be included in restoration plans. • The cornice and brackets that remain along the top of

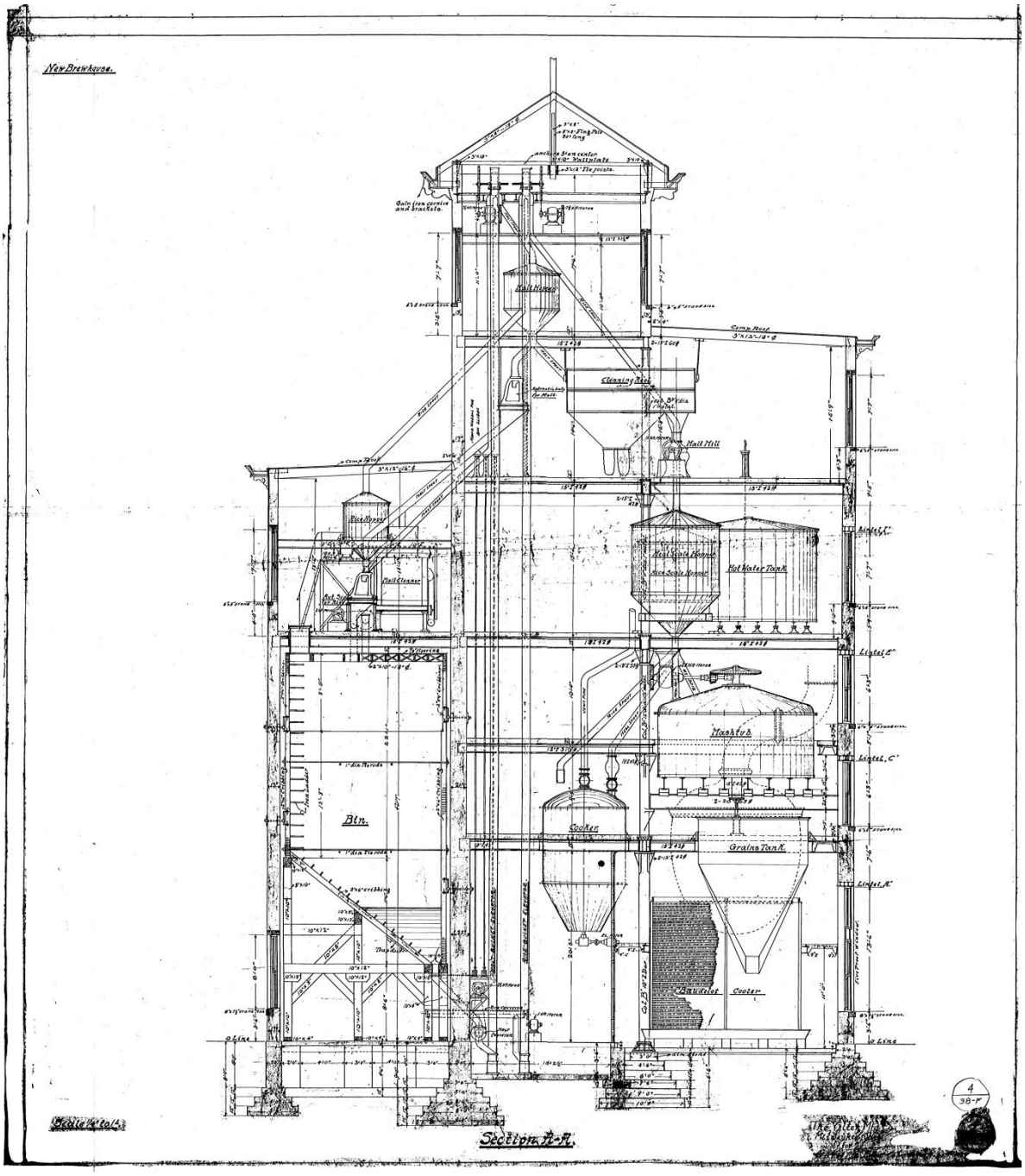
	the tower should be repaired and retained. The highest priority is to protect and retain significant historic fabric.
Secondary Roofing 	Material: Composition Condition: Missing Significance: Minimal The composition roof on the fourth floor of the grain storage room, visible from the eastern elevation, has collapsed. Recommendations: • May be replaced with new composition roofs
First Floor Doors 	Material: Metal Condition: Good Significance: Minimal The two metal doors are not original to the building, and the openings may have been windows originally. An infill structure was connected to the eastern elevation and has since been removed. Openings may have been expanded to allow access between the two buildings. Original window frames remain above doors. Recommendations: • Retain openings or return to original fenestration • Retain and repair window frames as needed • Reglaze with safety glass when necessary

First Floor Wooden Door 	Material: Wood Condition: Good Significance: Primary Though the metal doors and gates that now bar entrance to the Brewhouse are not original, one door remains in the grain storage room on the east elevation. This wood paneled door with historic hardware is from an unknown period of the brewery's development. Recommendations: • Retain in place
First Floor Windows 	Materials: Metal and Safety Glass Condition: Good Significance: Primary The grain storage room was fire-proofed to a greater degree than other parts of the Brewhouse. This is reflected in the metal windows that line the first floor of the eastern elevation. These two-over-two double-hung windows are called out as "fire shutters" on the original plans. They include stone sills and paneled, arched lintels. Recommendations: • Retain and repair, if necessary • Reglaze with safety glass where needed

Fourth Floor Windows 	Materials: Metal and Safety Glass Condition: Good Significance: Primary Four windows on the fifth floor were made in metal for fire protection. These two-over-two windows include a pivotal upper sash and stone sills, along with paneled arched lintels. Recommendations: • Retain in place • Reglaze with safety glass where needed
Fifth and Sixth Floor Windows 	Materials: Wood Condition: Fair Significance: Primary On the tower, which rises above the terminated grain storage room, the windows are similar to other tower openings, with missing windows, wood casings, stone sills and paneled, arched lintels. Each floor has a single boarded-up window. Recommendations: • Retain and repair surrounds • Replace windows with operable double-hung sash windows
Remaining Features: Drain Pipe 	Materials: Metal Condition: Good Significance: Primary These systems were central to the successful functioning of the brewery, and should be retained as artifacts of the building's history as a working brewery. This pipe appears in early historic photos of the Brewhouse. Recommendation: • Retain in place

Remaining Features: Flashing 	Material: Sheet Metal Condition: Good Significance: Minimal The flashing that once protected the seams between the brewhouse and an infill structure, which has since been removed, are not character defining and can be removed. Recommendations • Take no action or remove by the gentlest means possible
Remaining Features: Paint 	Materials: Composition Unknown Condition: Good Significance: Minimal The remnants of white paint on the eastern elevation corresponds to the dimensions of an infill building that has since been removed. The paint was not an historic treatment on the masonry of the Brewhouse and can be removed. Recommendations: • Take no action or remove by the gentlest means possible

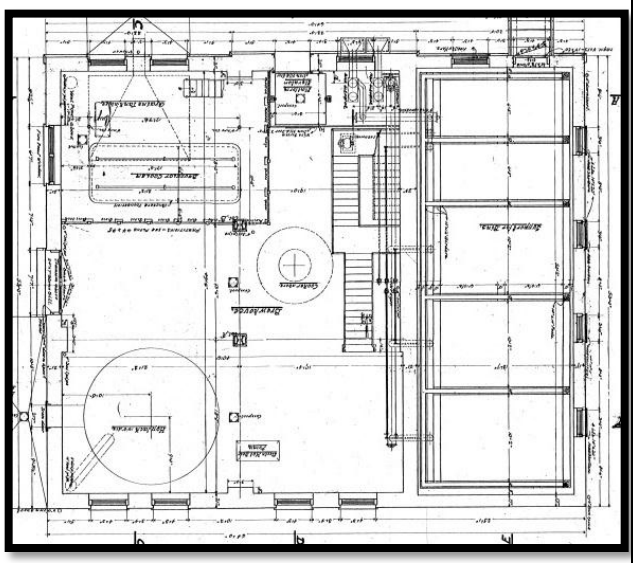
Brewhouse Interiors



The Brewhouse interior was devoted to a gravity based brewing system that relied on a series of tanks and kettles to brew raw materials into “green beer” that was then transferred to storage tanks in the cellars to the south. While little of the machinery once used to brew beer remains, the building includes a number of clues to how it functioned, and most of those may be retained in place as artifacts of the building’s historic use.

First Floor: Introduction

The first floor of the Brewhouse was actually the final destination for beer that was brewed through the gravity process. Grains were lifted to the top of the building by a bucket elevator. They were cleaned, crushed and added to holding tanks by type. Those tanks carefully measured how much of each grain was released into a mash tub (second floor) that heated the raw material with water from another tank (fourth floor), resting the concoction at various temperatures to bring out specific qualities in the beer. The wart was then drained from the bottom of the mash tub and transferred to a kettle (between second and third floors), where it was boiled with hops. From there, the beer was drained again into the hopjack (first floor), where the hops were removed and the beer was filtered once more before being passed into the baudelot cooler (first floor). The cooler took the hot beer down to about 40 degrees by running it over pipes filled with cold water. When the beer was sufficiently cooled, it was transferred to the Cellars building to the south, where yeast was added and the fermentation process occurred.



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The original drawing shows the first floor layout, with the grain storage room on the right, the hopjack in the southwest corner, and the baudelot cooler in a room in the northwest corner.

As working industrial spaces, these rooms were not heavily ornamented. The applied finishes are still in place but have deteriorated over time. Much of the machinery has been removed. However, the building's distinctive floor plan, along with the absences that remain after the removal of tanks and kettles, show clearly how the brewery functioned when all elements were still in place. The character-defining features are called out below by floor.

Structure: Interior Volume

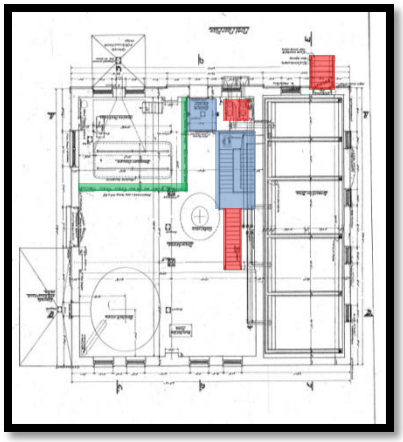
Significance: Primary

The first floor of the Brewhouse is now an open space broken only by structural beams, a stair and lift, and a dividing wall between the Brewhouse and the grain storage room. The hopjack and baudelot cooler are missing, as are the walls that once defined the cooler room. Damage to the columns, and steel supports along the walls appear to mark a catwalk or platform that once divided this volume.

Recommendation:

- Missing material does not need to be replaced, but remaining supports should be left in place, if possible
- Volumes should remain as open as possible, though a room on the footprint of the original cooler room would also be appropriate.

Structure: Traffic and Conveyance



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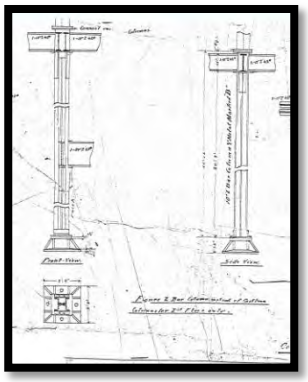
Bucket elevator, lift, and stairs were all located at the northeastern edge of the building's main volume. Stair cleats embedded in the floor and wall show that formers stairs have been removed. Access to the grain storage room was in the southeast corner of the building's main volume.

While a redevelopment plan may incorporate greater access to all portions of the building, original traffic patterns should be maintained, with openings and access to the upper floors located in the northeast corner of the building's primary volume. Access to the grain storage room should remain in the southeastern corner, where it exists today.

The current stair and lift are marked in blue.
Missing elements, including a former stair, an exterior stair, and the missing bucket elevator are marked in red. Two missing walls that once provided a separate room for the brewery's baudelot cooler are marked in green.

Structure: Columns and Beams



Material: Cast iron
Condition: Should be tested
Significance: Primary

The first floor of the Brewhouse includes columns of cast iron that have been covered with plaster and painted. In places, the plaster, which increased the columns' fire protection, has been damaged, exposing the iron to water and corrosion. Cracks have formed in some structural beams.

Recommendations:

- Columns throughout the building should be investigated by structural engineers
- Columns should be retained in place if possible
- Treatment should include plaster repair and paint

Stair Rail and Tread

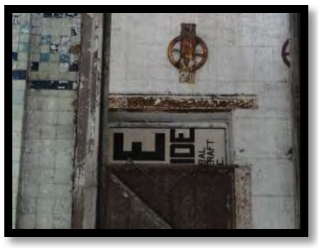
Material: Cast Iron and Steel
Condition: Fair to Good
Significance: Primary

Two-inch gas pipes make up the railing for this stair. The treads and newel posts are cast iron and the supporting structure is made of steel. Though treads have been replaced in some cases, the overall integrity of the stair is excellent.

Recommendations:

- Retain in place, along with replacement treads

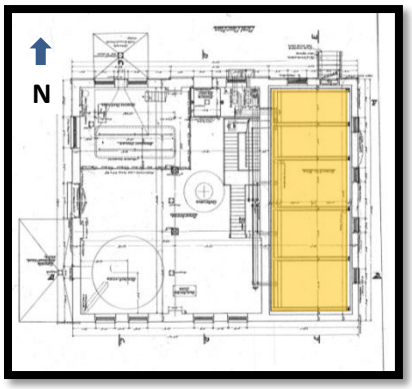
Doorway to Grain Storage 	Materials: Wood Fame Condition: Missing Door Significance: Primary This doorway was the main access point between the grain storage room and the main body of the Brewhouse. Nothing remains of the door but some historic hardware affixed to the door frame. Recommendations: • The opening should be retained in place
Structural Supports: Former Platform  	Materials: Metal Condition: Fair Significance: Primary The steel supports embedded in the walls correspond to damage in the support columns, emphasizing that a platform or catwalk was original in place. Recommendation: • Though the platform and/or walkways are missing, their supports should remain if possible. They provide evidence of the former use of the building and contribute to its industrial character.

Platform Elevator 	Materials: Multiple Condition: Fair Significance: Primary The lift was accessible through iron doors on the exterior of the building and from the interior. Both doors are missing, as is the wire mesh cage called out in plans. The platform, however, is still in place. Recommendation: • Retain structural materials in place • Rehabilitate as a working lift, if appropriate
Former Elements  	Material: Steel and Cast Iron Condition: Missing Significance: Primary The remnants of missing stairs and machinery remain in place throughout the building and are valuable artifacts of the building's former use. Recommendation: • Retain evidence of steel supports, iron stair treads and other steel and iron remnants as artifacts of the building's history as a working brewery

Grain Transference System  	Materials: Various Condition: Good Significance: Primary The lined chute just visible behind the stair in the picture below left transferred grain from the grain storage room to the bucket elevators. Under the wood panel below the newel posts, a storage bin for grain remains. Recommendation: • Retain wood bin cover and chute in place as artifacts of the building's history as a working brewery
Drains 	Material: Metal Condition: Good Significance: Primary The brewery employed a series of drains, defined as "cesspools" on plans, to handle waste during the brewing process. The recessed openings remain along with surrounding slopes in the floors. Recommendations: • Retain in place as artifacts of the building's history as a working brewery
Finishes: Wall 	Material: Glass Tile Condition: Poor Significance: Primary Ornament is rare on the interior of the Brewhouse. Glass tile on the walls of the cooler room protected the walls from mold and mildew but also introduced a decorative pattern in light and dark blue and white. Recommendation: • Retain undamaged tile • Carefully remove and replace tiles that cannot be retained

Finishes: Floor 	Material: Tile Condition: Good Significance: Primary The hexagonal tile on the bottom floors includes pale tiles highlighted by red diamonds. The pattern also included stripes of red and blue marking boundaries. Recommendations: • Retain undamaged tile • Carefully remove and replace any broken tiles
Finishes: Wall Plaster 	Material: Plaster Condition: Fair Significance: Primary Interior spaces were generally plastered and painted, with exceptions for the cooler room and grain storage room. Recommendation: • Repair plaster where necessary; retain original historic fabric
Finishes: Wall Paint 	Material: Paint Condition: Poor Significance: Secondary The walls were generally painted white, but bands of green and blue circle the bottoms of walls and lead up the staircase. Remnants of paint colors vary. It is not known when the walls were painted. Recommendation: • Test paint for lead • Using historic photos, consider providing a similar treatment to the walls

Grain Storage Room



The grain storage room is an open brick storage room built along the eastern wall of the Brewhouse. It is three stories tall and was used to store great quantities of raw materials for brewing. Bins for rice, malt and grits are indicated on historic plans.

Currently, the room is one open volume with two exterior doors on the building's east elevation, and an interior door opening into the Brewhouse.

While upper portions of the walls were left unpainted, the bottom floor of the room was painted white with accents similar to those within the larger Brewhouse. It's possible that this room was at one time divided into multiple floors.

Bolts mark the location of previous tie bars that are now missing.

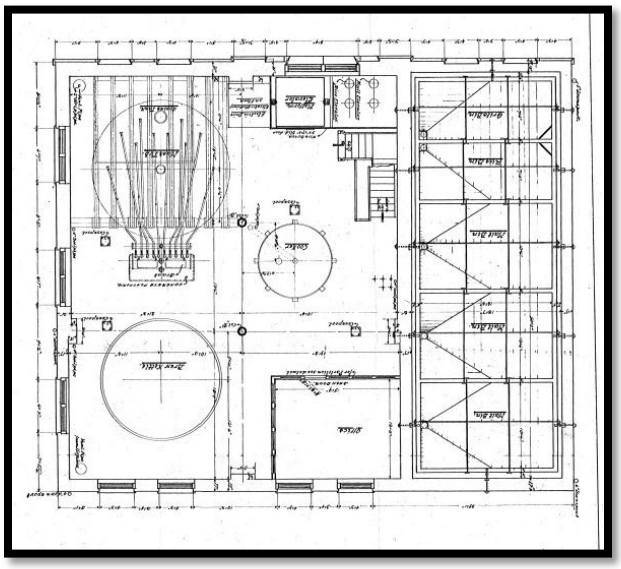
Second Floor: Introduction

The Brewhouse's second floor, right, consisted of only two bays, with no access to the grain storage room.

The second floor provided access to the top of the rice cooker and to the kettle, where wart from the mash tub was boiled with water and hops. This floor retains the opening in the floor associated with the kettle. It also retains the lid of the rice cooker which is now visible both from the first and second floors. A former platform on the second floor once raised the mash tub through an opening in the ceiling so that half the tub was accessible from the third floor. Both the platform and the mash tub are missing but the hole in the second floor remains.

Finishes are similar to the first floor. The ceramic floor tile exists only on the first and second floors. Only the first floor includes glass tiles on the walls. On the second floor and above, all walls were painted.

All the floors of the brewery included machinery central to the brewing of beer, but the second floor was a connection point for many of these systems, which led to a greater division of spaces.



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The primary character defining features on this floor are the remaining stair, the visible supports, and the rice cooker lid. These and other features are detailed below.

Structure: Interior Volume

The large rice cooker lid, the only remnant of the brewery's extensive system of tanks and hoppers, is visible in both pictures left. These pictures also highlight two notable holes, a large hole in the ceiling (visible in the center of picture left and in the picture below) and a large hole in the floor, visible in the lower left corner of the picture left. These openings, along with the lid, are some of the most readable artifacts of the Brewhouse's history as a gravity brewing system.

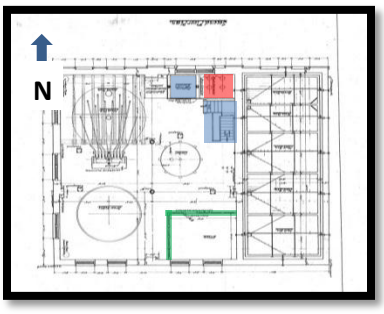
As you can see from the rice cooker lid, it was designed to be chest high, while the volume of the cooker protruded through the floor. This was the case for the missing mash tub and kettle as well.

Once the wart (a combination of malt and toasted rice) was drained from the mash tub, it was transferred to the kettle, where it was boiled with hops. The kettle was suspended between the first and second floors.

Recommendations:

- Though this space is challenging, the remaining lid and evidence of a gravity system are some of the building's more readable features. If it's necessary to fill holes, the visible beams that supported these openings should remain visible. New construction, distinguishable from historic material, will help provide evidence of the unique design of the building.

Structure: Traffic and Conveyance

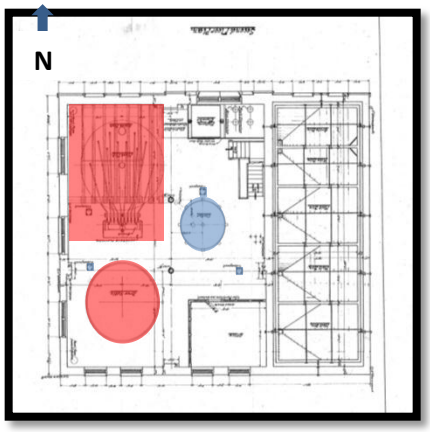


A stair, marked in blue, and the lift, also in blue, remain in place, as per the original plans. The bucket elevator, marked in red, has been removed. Former walls of an office that have since been removed are marked in green.

Recommendations:

- Retain all stairs and elevator in place

Structure: Machinery



Very little remains of the gravity brewing system that once filled the Brewhouse with tanks and kettles, but the openings in floors and ceilings remain.

The floor plan to left shows remaining machinery features in blue, which include the lid of the rice tub and three cesspool drains. Missing features are shown in red. These include the kettle and the mash tub, along with the mash tub platform.

Rice Cooker Lid

Materials: Sheet Steel and Iron
Condition: Good
Significance: Primary

The rice cooker lid retains evidence of its controls, visible at the top of the dome, left. Above the dome protrudes a pipe that runs through the ceiling and emerges on the third floor.

In the lower photo, one can see the underside of the lid as it appears to someone standing on the first floor.

The rice cooker was used specifically to toast rice, which had to be cooked separately from malt before being added to the mash. No documentation has been found that details when or why machinery was removed from the Brewhouse.

Recommendations:

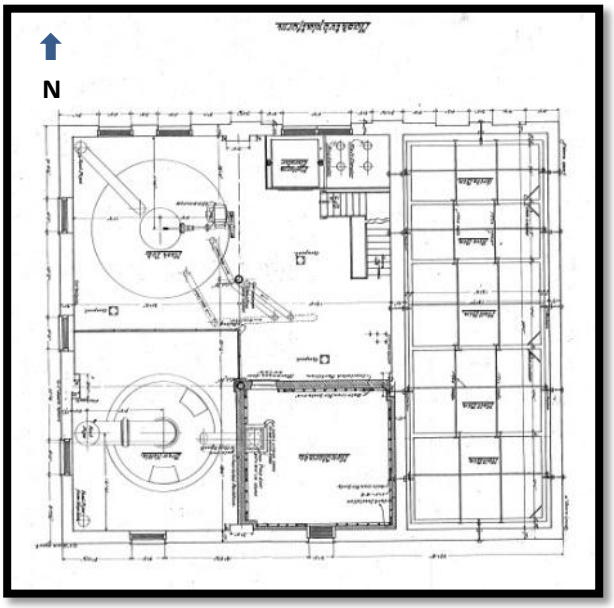
- Retain in place

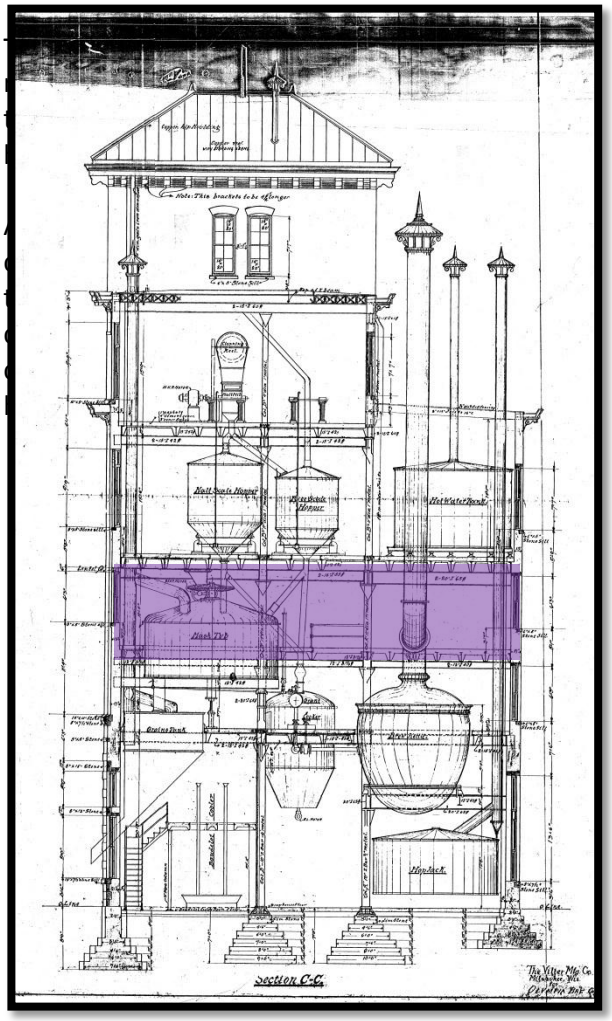
Structure: Columns and Beams 	Material: Cast Iron Condition: Should be tested Significance: Secondary Structural supports have been left visible on the second and third floors. Columns, beams, floor plates and all structural materials were painted white, but the paint has eroded over time. Recommendations: • Have all columns and beams assessed by engineering team • Retain in place
Stair Rails and Treads  	Material: Cast Iron and Steel Condition: Good Significance: Primary Two-inch gas pipes make up the railing for this stair. The treads are cast iron and the supporting structure is made of steel. Recommendations: • Retain in place • Metal replacement treads may remain in place • Broken treads should be repaired or replaced
Absences: Kettle 	The hole that once surrounded the kettle is now covered with wood planks. Recommendations: • If it's necessary to fill holes in floors and ceilings, the visible beams that supported these openings should remain visible. New construction should be distinguished from historic material.

Absences: Mash tub 	The hole that once surrounded the mash tub is still distinguished by its support structure. Recommendations: • If it's necessary to fill holes in floors and ceilings, the visible structure that supported these openings should remain visible. New construction should be distinguished from historic material.
Finishes: Floor 	Material: Tile Condition: Good Significance: Primary Ornament was especially rare on upper floors of the Brewhouse, but this hexagonal ceramic tile features a pale background highlighted by red diamonds. The pattern also included stripes of red and blue around the perimeters of rooms. Recommendation: • Retain undamaged tile • Carefully remove and replace tiles that cannot be retained
Finishes : Wall 	Material: Plaster and Paint Condition: Fair Significance: Secondary Interior spaces were generally plastered and painted. Recommendation: • Repair plaster where necessary • Test paint for lead • Consider restoring the original design

Finishes: Ceiling 	Material: Steel Condition: Fair to Poor Significance: Secondary All structural materials were left visible in the design of the Brewhouse, but they were coated and painted white. Recommendations: • Historically painted materials should be repaired and repainted

Third Floor





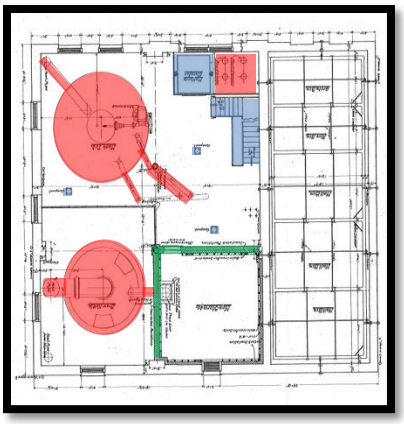
The third floor has no access to the grain storage room. It contains an opening that once fit around the mash tub, a metal tank that heated raw materials in an early stage of brewing.

A mezzanine in the southwest corner surrounded the pipe that emerged from the kettle, where the beer was boiled.

On the south end of the building, a former hops storage room is still lined with black glue that once held cork insulation to the walls.

Structure: Interior Volumes 	The two primary holes in the floor are pictures to the left. The mezzanine, indicated by the downward facing arrow, surrounded the kettle. The opening indicated by the right facing arrow supported the mash tub. The mezzanine provided views to the floor and the kettle below, while the hole for the mash tub was filled by the tank's mass. Recommendations; • The mezzanine should be retained if possible, as it was intended to provide a view of the works below, but the mash tub surround may be filled, as long as the new material is distinguishable as new construction.
Structure: Traffic and Conveyance 	As on other floors, the stair and platform elevator are in place, while all evidence of the bucket elevator has been removed. As on the second floor, there is no access from this floor to the grain storage room on the other side of the eastern wall.

Remaining and Missing Elements



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Traditional methods of conveyance that are still in place are highlighted in blue. These include the platform elevator and stair. Missing elements, including the bucket elevator, are marked in red. Other missing elements highlighted in red include the mash tub and the brewing kettle. The green lines indicate walls that once defined a storage room for hops that are now missing.

Structure: Columns and Beams

Materials: Iron and Steel
Condition: Should be tested
Significance: Secondary

The third floor includes visible structural columns and beams as well as railings that now block off the mezzanine and the location of the mash tub. The columns are currently unpainted.

Recommendations:

- Columns throughout the building should be investigated by structural engineers
- Columns should be retained in place
- Those surfaces that were historically unpainted should remain unpainted

Stair 	Material: Iron and Steel Condition: Good Significance: Primary The stair that rises consistently from the first through sixth floors includes nearly all of its original materials: two inch gas pipe railings, steal supports and iron treads. Recommendations: • Repair and retain in place
Mezzanine 	Material: Steel Surround; gas pipe railing Condition: Good Significance: Secondary The primary pipe for the kettle rose through the center of this open mezzanine. Recommendation: • The mezzanine with its molded surround was meant to provide views to the works below. Retain in place, if possible. • If filling this absence is necessary, consider marking the original absence to distinguish new materials from historic materials. Retain railing for use elsewhere
Absences: Mash tub 	Material: Steel surround Significance: Minimal The steel frame supporting this opening helped hold the mash tub in place. With the mash tub missing, the hole itself is not of primary importance. Recommendation: • If filling this absence is necessary, consider marking the original absence to distinguish new materials from historic materials • Retain sections of the railing and preserve removed sections for use elsewhere

Finishes: Floor 	Materials: Concrete Condition: Good Significance: Secondary The upper floors are laid with scored concrete. The edges of the mezzanine and cesspool drains are molded. Currently, the floor is unpainted, which adds to the industrial feel of the space. Recommendations: • Consider leaving the concrete uncovered
Finishes: Wall 	Materials: Plaster and Paint Condition: Fair Significance: Secondary The white wall includes remnants of the green and blue paint that marked the historic traffic patterns and ran along the perimeters of rooms. Recommendations: • Test paint for lead • Retain in place, if possible • Repaint surfaces that were historically painted
Finishes: Ceiling 	Materials: Steel Condition: Fair to Good Significance: Secondary The steel beams supporting the ceiling, and the weight above it, were left visible, though they were painted white. Recommendations: • Supports should be investigated by a structural engineer • If possible, beams should be left visible and historic treatment, which includes white paint, should be restored

Additional Elements: Trap Door 	Materials: Iron Condition: Poor Significance: Primary This trap door was used to deliver hops from the insulated room in which it was placed to the kettle below, which would have been visible through the mezzanine at the top of the photo, left. Recommendations: • Repair and retain in place as an artifact of the building's former use
Additional Elements: Pipe 	Material: Metal Condition: Good Significance: Secondary This was a vent pipe for the rice cooker below, though only a portion of it remains. Recommendation: • Retain in place, if possible
Additional Elements: Wall Insulation 	Materials: Cork and glue Condition: Poor Significance: Secondary Cork was used to insulate the hop storage room in the southeastern corner of the main volume. Though the finish has been removed, some remnants of cork remain, as does the residue from the glue that held the insulation in place. Recommendation: • Though the cork insulation was the historic treatment, it does not need to be reinstalled and the glue does not have the same significance and can be removed or covered in place.

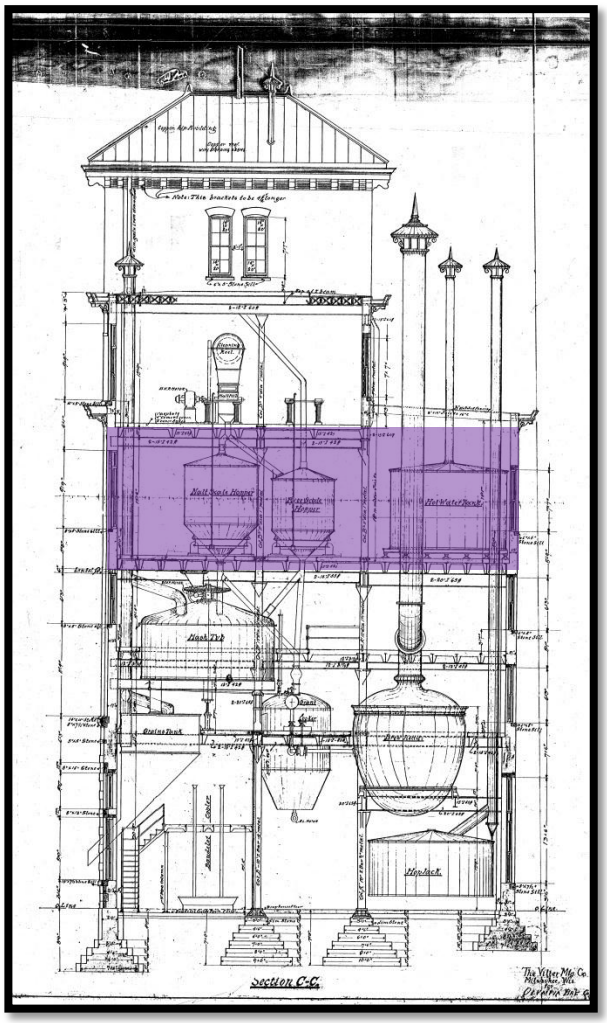
Additional Elements: Cesspools 	Material: Metal Condition: Good Significance: Secondary The brewery employed a series of drains, defined as "cesspools" on plans, to handle waste. The recessed openings remain. Recommendations: • Retain in place as artifacts of the building's history as a working brewery • There are two to three cesspools per floor and it may be practical to retain good examples rather than all examples
Additional Elements: Remaining Machinery 	Materials: Metal Condition: Fair Significance: Secondary Pipes ran from one floor to the next throughout the Brewhouse, delivering power, water and raw materials. The remnants are artifacts of the building's history as a working brewery. Recommendations: • If possible, retain in place as artifacts
Hardware 	Material: Metal Condition: Fair Significance: Primary Historic hardware is missing in some cases, but some of the historic sash lifts and locks remain in place. Recommendations: • Retain in place when window is repairable

Fourth Floor

The fourth floor was also a working floor full of tanks and tubs. This floor held the hoppers that measured and distributed raw materials into the mash tub. It also held a hot water tank.

Unlike lower floors, these storage tanks and hoppers did not leave behind large uncovered holes in the floor. Instead, the hoppers were raised off the floor and used chutes and piping to deliver materials.

The fourth floor does include access to the top floor of the grain storage room, which was fireproofed with metal windows.



Structure: Interior Volumes

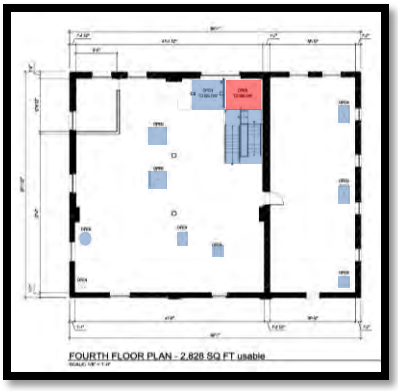
Significance: Secondary

The fourth floor is the last floor to access the entire Brewhouse footprint. From here up, the tower narrows.

This floor includes a stair and platform elevator, but retains no evidence of the original bucket elevator. This floor provides access to a floor above the grain storage room. That volume has lost its roof and some of its windows, as seen below left, but still retains evidence of the “fire shutters” called out on original plans.

Though lower floors have been opened up by the removal of walls, the fourth floor retains a small separate room with frosted clerestory windows.

Remaining and Missing Elements



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A fourth floor as-built plan developed by Urbanadd Architects and Ryan Rhodes Design shows a contemporary view of the fourth floor. In the plan at left, missing elements are marked in red, including the bucket elevator. The two hoppers, which were located in the center of the main volume, are also missing, but the openings for a series of chutes, along with cesspools and pipe openings, remain.

Structural: Columns and Beams 	Materials: Metal Condition: Should be tested Significance: Primary The fourth floor includes visible structural columns and a visible structural system of steel beams. Recommendations: • Columns throughout the building should be investigated by structural engineers • Columns should be retained in place
Stair 	Material: Cast Iron and Steel Condition: Good Significance: Primary The stair that rises throughout the building is of great significance and is in fair to good condition throughout. Two-inch gas pipes make up the railing for this stair. The treads and newel posts are cast iron and the supporting structure is made of steel. The fourth floor retains good examples of the stair's elegant newel posts. Recommendations: • Retain in place
Absences: Hoppers 	Materials: Metal Condition: Good Significance: Secondary A pair of chutes was once used to deliver raw materials from hoppers on the fourth floor into the mash tub on the third floor. The hoppers themselves are missing, but their location is marked by the remaining openings. Recommendations: • Retain in place, if possible

Finishes: Floor 	Materials: Concrete Condition: Good Significance: Primary The upper floors are laid with scored concrete. The edges of cesspool drains are molded. Recommendations: • Consider retaining the concrete surface as is as it contributes to the industrial character of the space
Finishes: Wall 	Material: Plaster and Paint Condition: Poor Significance: Secondary Though the walls on this floor were originally plastered and painted, the wall finishes have been damaged by lack of protection from the weather. There was also a hot water tank on this floor and the black glue that would have held cork insulation to the wall behind it remains visible, as in photo left. The floor above the grain storage room was also plastered and painted though the finish has been almost entirely stripped away in places by weather. Recommendations: • Test paint for lead • Replaster and paint surfaces that were historically plastered and painted, as these surfaces were
Finishes: Ceiling 	Material: Paint Condition: Poor Significance: Secondary The supports, though visible, have been painted white in the past. Recommendations: • Test paint for lead • Repaint surfaces that were originally painted

Additional Elements: Pump Room  	Materials: Various Condition: Fair Significance: Primary The room with clerestory windows is unique to this floor. Its windows, while in need of repair, contain fixed wood frames with true divided lights. This room held the pump station on stanchions, which remain in place, and are pictured left. Recommendation: • Retain windows and reglaze where necessary with frosted glass • Retain walls in place • Retain or relocate stanchions
Additional Elements: Elevator Motor 	Materials: Metals Condition: Unknown Significance: Primary The machinery bolted to a pad on the fourth floor drove the elevator system. A vent and other machinery have been piled on top of it. Recommendations: • If the lift is to remain operable, retain machinery in place • Vent may be removed and used elsewhere • If lift will not be operable, machinery should be left in place or relocated
Additional Elements: Trapdoor 	Material: Iron Condition: Poor Significance: Primary Three trapdoors embedded in the floor above the grain storage room were probably used for distributing materials, including bales of hops or other raw grain for brewing. Recommendations: • Retain in place or relocate for use elsewhere

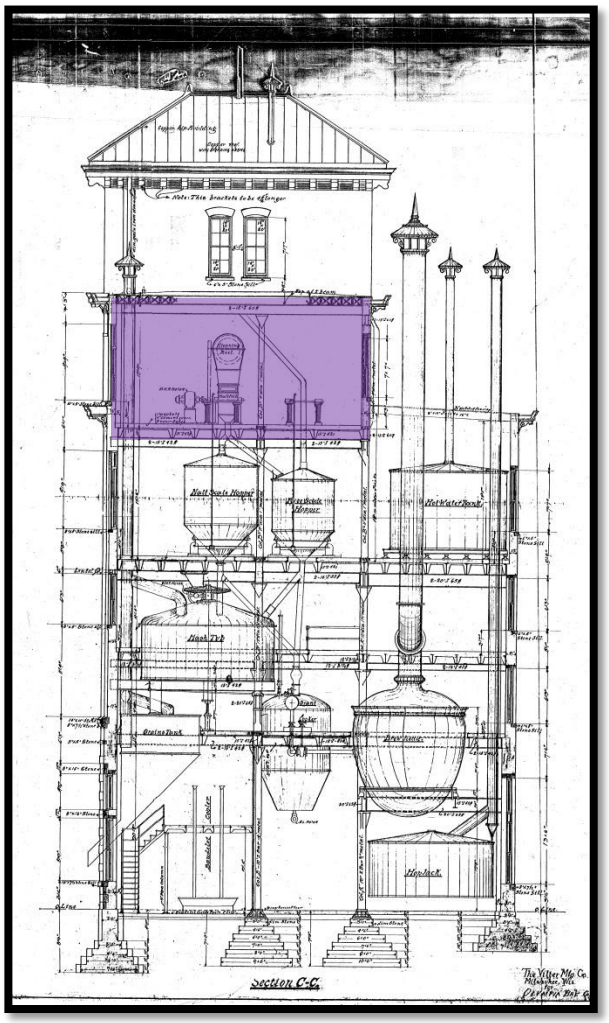
Additional Elements: Systems 	Materials: Metals Condition: Varied Significance: Secondary Electrical connectors, pipes and other mechanical remnants still hang from ceilings and are bolted to walls. Recommendations: • Retain in place as artifacts of the building's former use
Additional Elements: Metal Door 	Material: Metal Condition: Fair Significance: Primary This metal door was part of the fire-proofing enhancements made to the grain storage room. It closed the eastern block of the building off from the main body of the brewery. Like the windows, this door is made of fire resistant material. It has a metal paneled lintel in the arch. Recommendations: • Repair and retain in place
Additional Elements: Systems 	Materials: Various Condition: Various Significance: Secondary Pipes, pads, vents and blocks are found bolted to the fourth floor. Recommendations: • If possible, these artifacts should remain as evidence of the building's former use

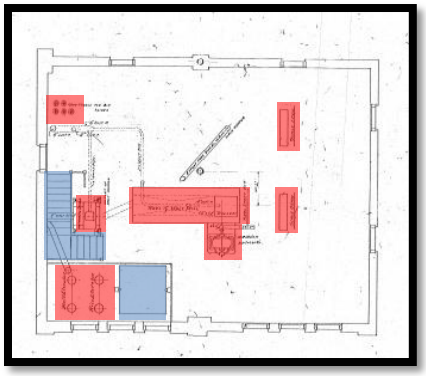
Fifth Floor

The fifth floor of the Brewhouse was given over to mechanical systems, including mills that sorted and crushed grains for use in the brewing process.

On the fifth floor, the volume to the east of the building's main volume has terminated and the tower remains.

Though the interior includes little ornamentation, the fifth floor is dominated by the arcade of arched windows on the northern elevation.



Structure: Interior Volumes  	Significance: Secondary Unlike lower floors, the fifth floor includes no openings in the floor or ceiling, leaving the room complete and whole, dominated by windows on one façade, by a central space once devoted to machinery, and by the terminating floor of the western volume. From the fifth floor, only the tower achieves yet another floor. Recommendations: • Retain openness of original floor plan
Traffic Patterns and Missing and Remaining Features 	The fifth floor relied on the stair, bucket elevator and lift in the northeast corner of the main volume. Those features that remain, including the stair and lift, are marked in blue. Missing elements, including the bucket elevators, the mill and scales are marked in red.
Structure: Columns and Beams 	Material: Steel Condition: Should be tested Significance: Secondary The fifth floor of the Brewhouse includes unpainted columns. Recommendations: • Columns throughout the building should be investigated by structural engineers • Columns should be retained in place

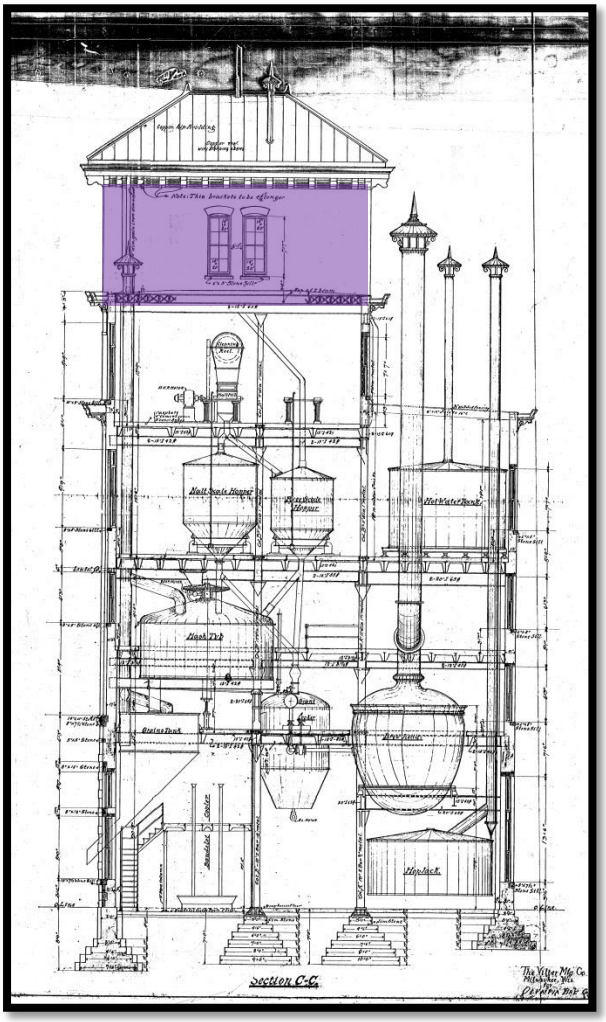
Stair 	Material: Cast Iron and Steel Condition: Good Significance: Primary The Brewhouse stair continues on the fifth floor, retaining the two-inch gas pipes, treads and newel posts that characterize this feature on other floors. Recommendations: • Retain in place
Finishes: Floor 	Materials: Concrete Condition: Good Significance: Secondary The upper floors are laid with scored concrete. Recommendations: • Consider retaining the concrete as is
Finishes: Wall 	Materials: Plaster and paint Condition: Fair Significance: Secondary The walls of the fifth floor are better protected than those that have lost roof coverage. The remnants of blue and green paint are more visible here and could provide a model for restoration. Recommendations: • Test paint for lead • Retain in place • Surfaces that were historically plastered and painted should be repaired and repainted.

Finishes: Ceiling 	Material: Paint Condition: Fair Significance: Secondary The supports, though left visible, were painted white. Recommendations: • Test paint for lead • Restore finish
Secondary Ceiling 	Material: Wood Condition: Good Significance: Primary This is the only remaining portion of a secondary roof in the Brewhouse, and it provides a model for how the roofs were constructed. Rafters and cross-bracing can be replicated under other secondary roofs. Recommendation: • Retain in place • Potentially use as a model for rehabilitating lost roofs
Additional Elements: Pads 	Materials: Various Condition: Various Significance: Secondary The fifth floor retains remnants of systems that should were bolted to the floor. These pads held machinery used in the brewing process. Recommendations: • If possible, pads that held machinery should remain in place as artifacts of the building's former use

Sixth Floor

The sixth floor of the Brewhouse is known as the tower. Highly visible and easily recognizable, it has become an icon for local architects who have used its likeness throughout the South Sound.

On its interior, the sixth floor includes a small, square room with a secondary platform that provides access to elevator machinery and the tower's flagpole.



Structure: Volumes

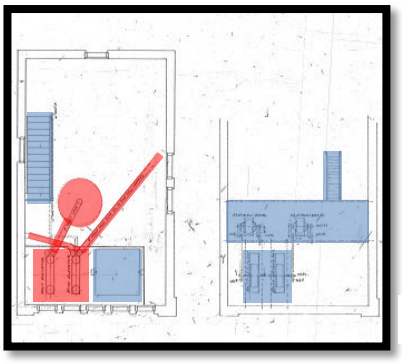
Significance: Secondary

The sixth floor includes one main volume, with stairs and lift in the northeast corner, a bank of arcaded windows, and a narrow stair to a platform that looks over machinery housed just under the copper roof, as shown below.

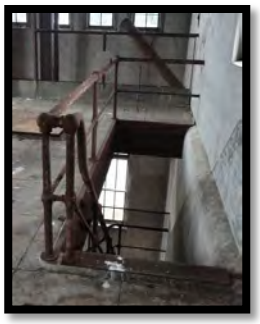
Recommendations:

- This floor is small enough that its open volume should be maintained

Structure: Traffic and Conveyance



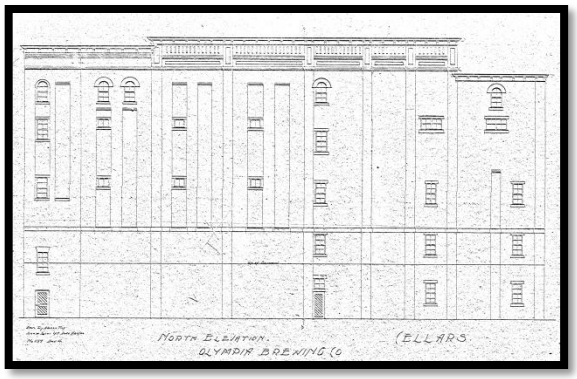
The plan at left shows both the main volume and the platform, approached by a second stair. The elements that are still in place, including the platform, the machinery, the stair and lift, are highlighted in blue. Missing elements, including the bucket elevator and pipes that routed materials to various hoppers and mills, are marked in red.

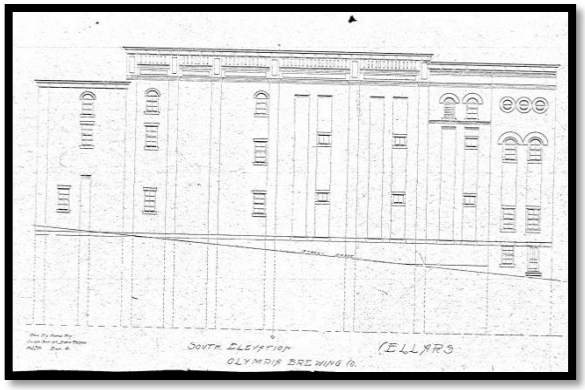
Stair  	Materials: Iron and Steel Condition: Fair to Good Significance: Primary Though the tower is perhaps the least accessible and least public of the Brewhouse floors, it is significant for its access to unique elements, including remaining machinery and the tower flagpole, now missing. It is also possible to the see the roof structure beneath the copper tower from this floor. The primary stair, which is consistent on all floors, is in good condition here. The second stair, much narrower, has a broken railing and is far steeper and narrower than contemporary stairs. Recommendations: • Repair and retain in place as artifacts of the former brewery
Additional Elements: Platform Elevator 	Materials: Metal Mesh Condition: Good Significance: Primary The platform elevator cage on the sixth floor is in place and in good condition. There is some corrosion and rust, but the cage is intact. Recommendations: • If possible, retain lift in place and restore historic fabric • If the elevator is to be removed, retain opening for any added conveyance, and relocate material for use in another location within the building

Finishes: Floor 	Material: Concrete and metal patch Condition: Fair Significance: Secondary This floor is finished in gridded concrete, similarly to other top floors. However, a portion of the floor next to the platform elevator is covered in a thin sheet of metal, possibly as a patch for former damage or an unsafe opening. Recommendations: • Repair concrete and retain in place • Investigate the patch and repair any hidden damage
Finishes: Wall 	Materials: Plaster and Paint Condition: Fair Significance: Secondary The colors and patterns are most visible on the sixth floor, but there are also portions of exposed brick. There are also significant cracks that should be investigated before the wall is refinished. Recommendations: • Test paint for lead • Patch and repaint or leave in place, but do not expose remaining brick
Finishes: Ceiling 	Materials: Wood Rafters Condition: Good Significance: Primary The copper tower sits on wooden rafters. Wood is unpainted. Recommendations: • Retain in place • Retain flagpole

Additional Elements: Platform 	Materials: Metal Condition: Good Significance: Primary As a unique feature of the Brewhouse, this platform allows a view down through all six floors via the platform elevator and the location of the missing bucket elevator. Recommendations: • Retain in place
Additional Elements: Trapdoor 	Materials: Molded Concrete Surround Condition: Fair Significance: Secondary These openings in floors and ceilings were a means of conveyance. In this case, it's believed that the opening allowed for the raising of machinery that was placed in the upper reaches of the tower. Recommendation: • If possible, retain in place
Additional Elements: Piping 	Materials: Metal Condition: Good Significance: Secondary As on other floors, pipes and pipe holes remain in place, artifacts of the brewery's gravity system, which used these pipes as conveyances for grain and other raw materials. Recommendations: • Retain in place as artifacts of the building's historic use

The Cellars: Features

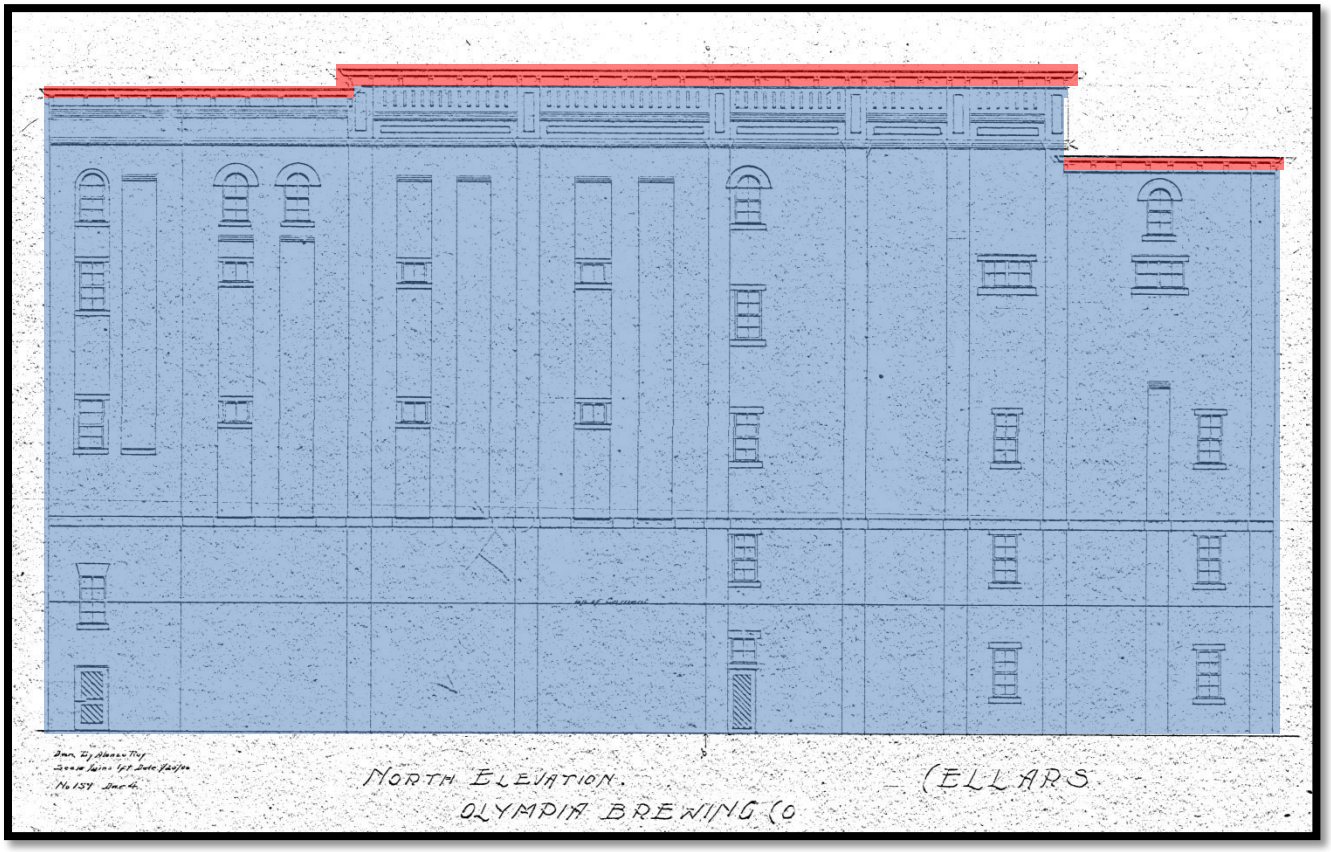




The Cellars building really has two primary facades. The south elevation, shown above, is the first glimpse one gets of the brewery when approaching from the access road. But as you can see from the two elevation drawings, right, the north elevation was designed to be equally ornamented. Both elevations include arched windows, pilasters, corbelling at the roofline and cornices that tie this building to other brewery era buildings. Though its façade is elegantly ornamented, it was clearly designed to be less grand than the tiered Brewhouse.

The Cellars building has gone through three distinct phases of construction. The original Cellar was built in 1905. The western addition, which nearly doubled the size of the building, was built in 1907, and the west elevation and the interior were redesigned by the Wohlebs in 1945.

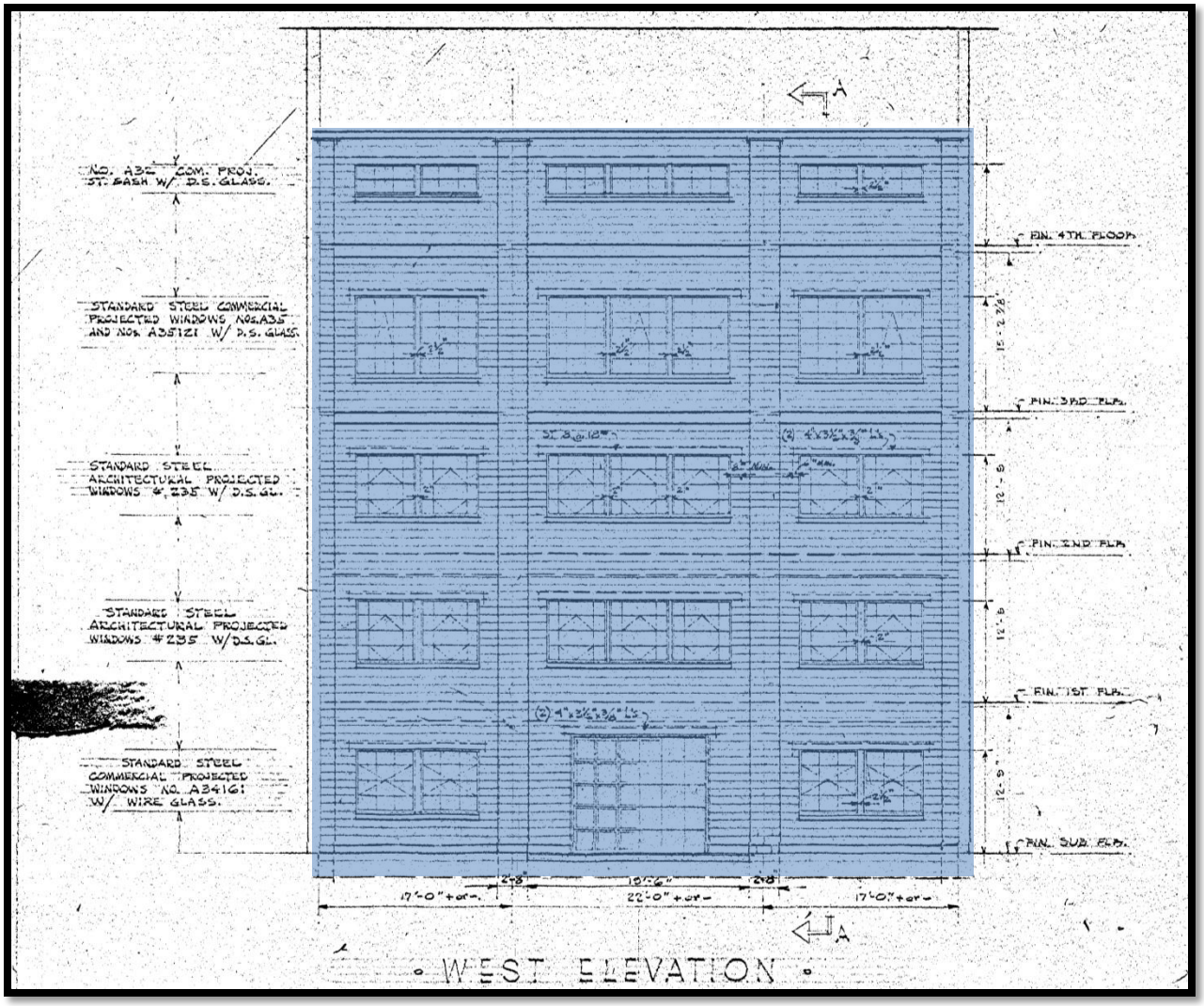
Cellars Building: North Elevation



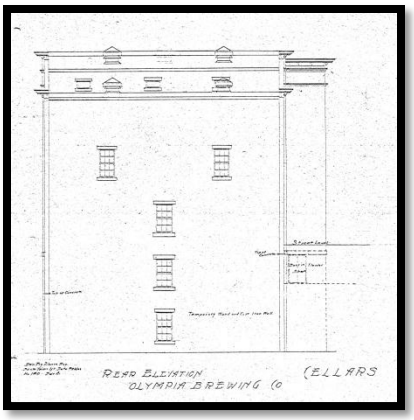
The fenestration on the north façade of the Cellars differs slightly from this historic drawing. Windows are larger and more numerous than appear here. It's not known whether the original plan was altered or if windows were filled and opened in later alterations. The most likely period of alteration would have occurred when drawings for the western façade were drawn up in 1945. Any changes that occurred during that period are now over 50 years old and have earned a degree of historic significance over time. The only exceptions are the cornices. The cornices have been removed very recently due to deterioration.

Significance
Primary
Secondary
Minor
None
Missing

Cellars Building: West Elevation

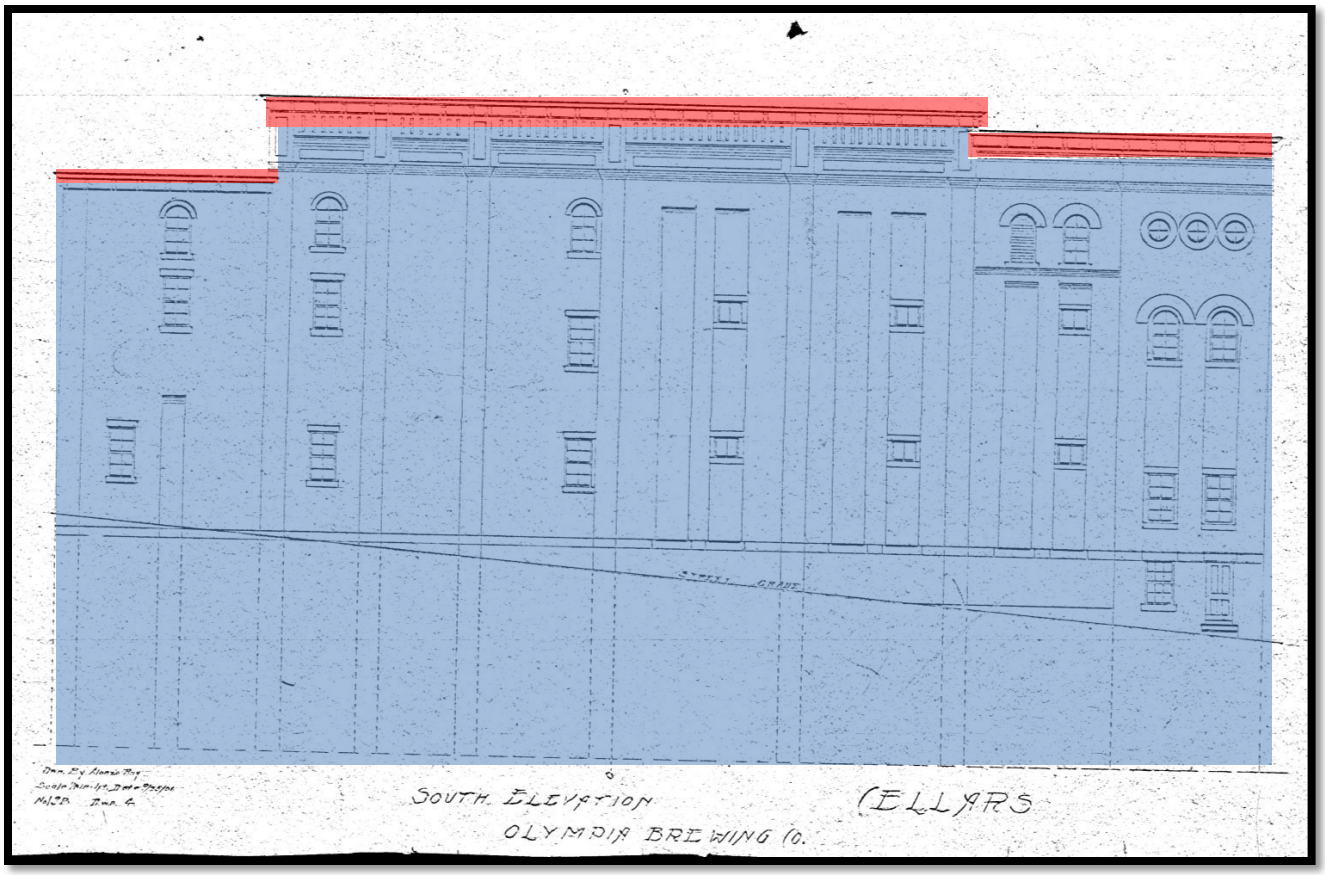


The West Elevation was altered based on the 1945 plans prepared by Wohleb and Wohleb. As the alterations are more than 50 years old and ar associated with a key local architectural firm, they are treated here as significant in their own right. However, the building is much altered from its 1907 plan, as shown right.



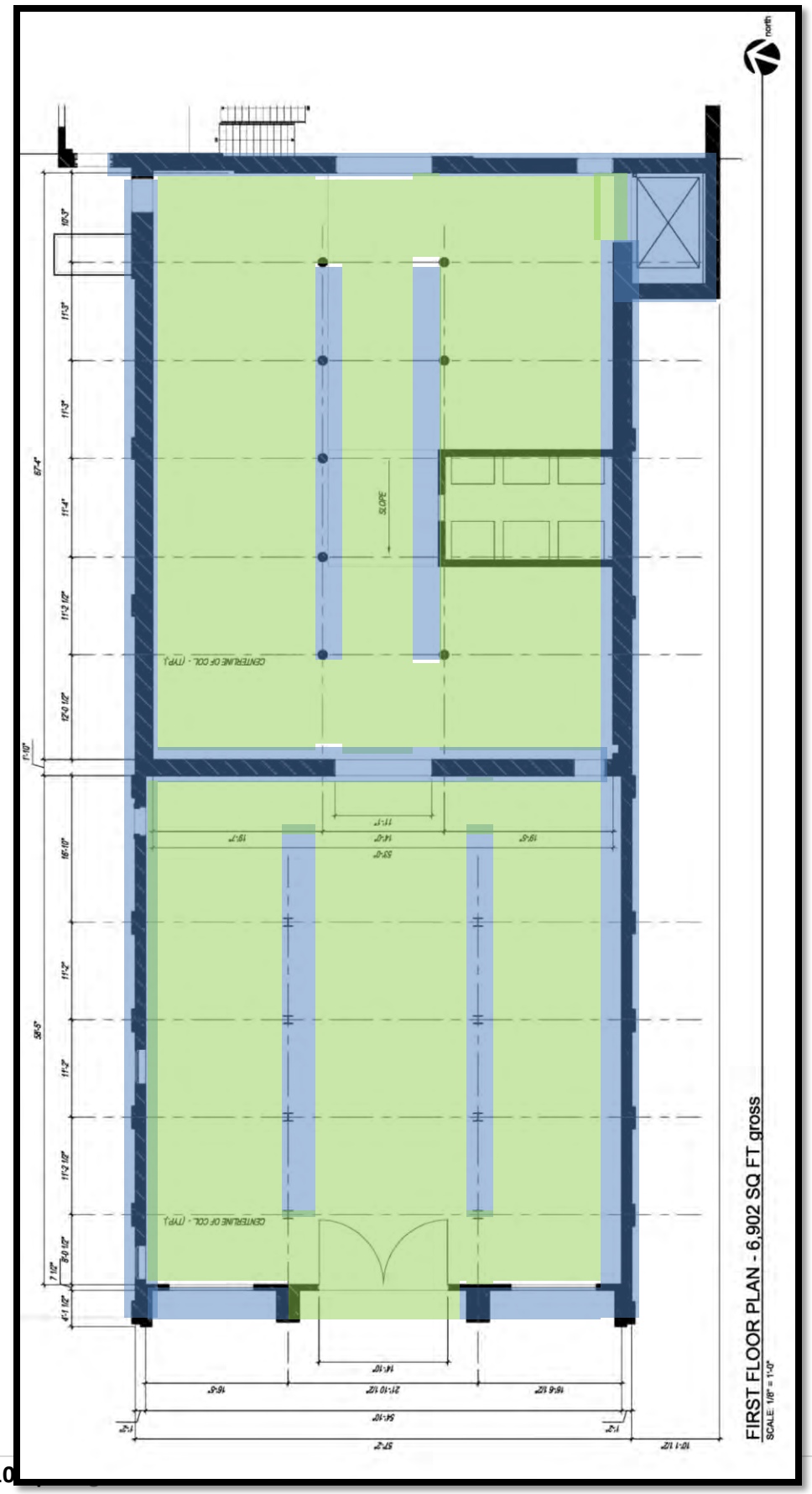
Significance
Primary
Secondary
Minor
None
Missing

Cellars Building: South Elevation

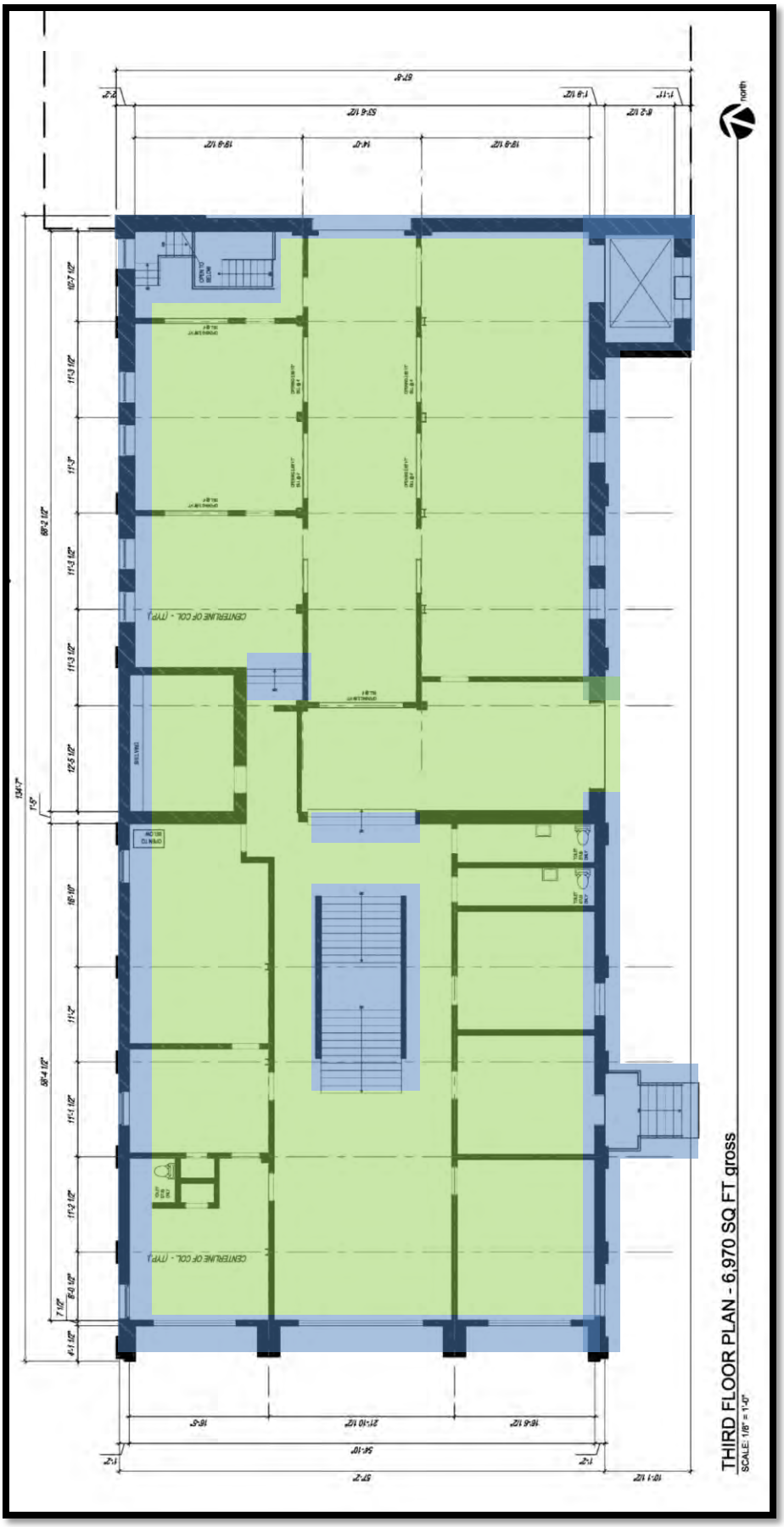


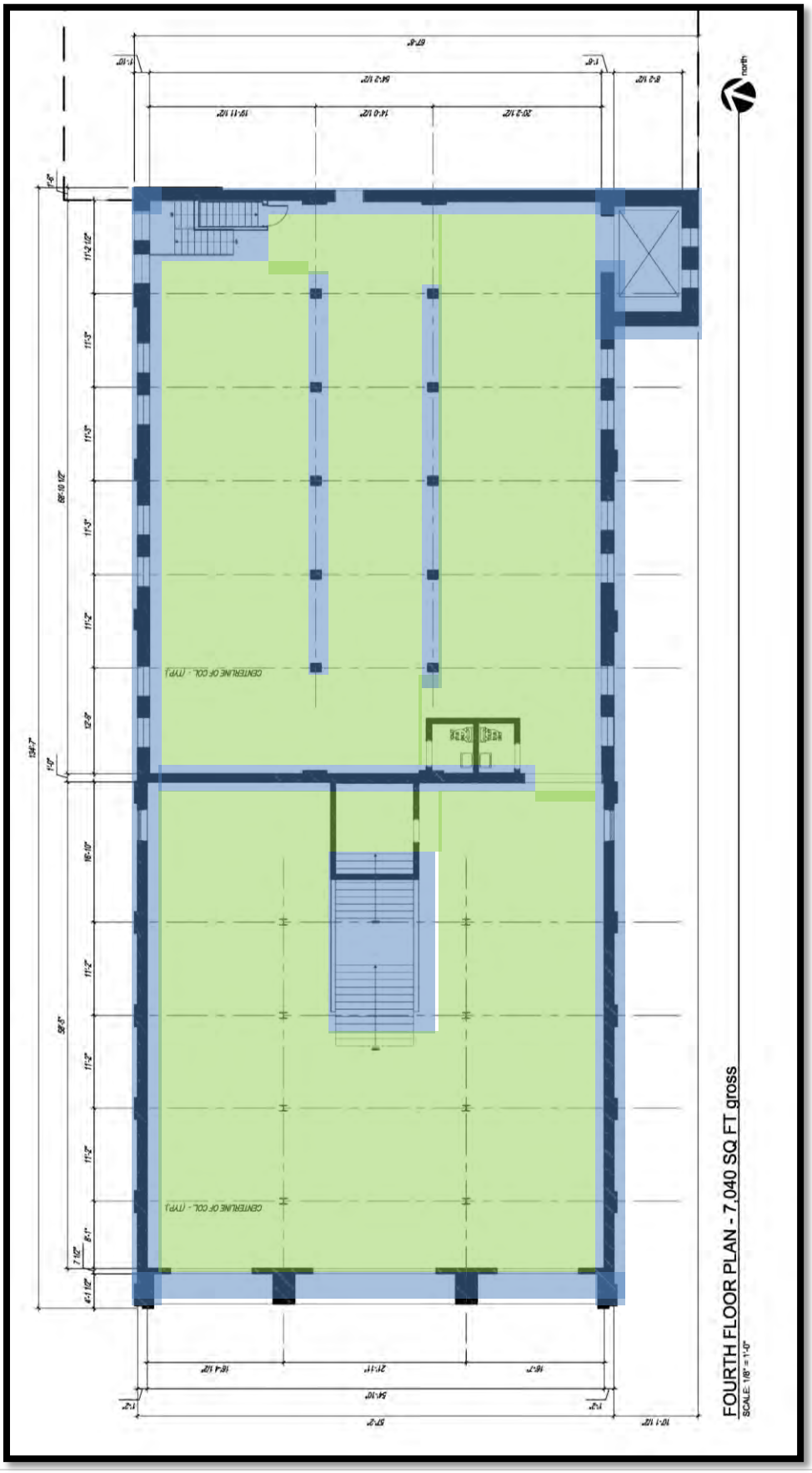
The south elevation is also slightly different from this original drawing. As on the north façade, windows are more numerous in the 1905 cellar than called for on drawings. There are fewer windows on the 1907 addition. Also, the elevator shaft, which here appears to end at the fifth floor, continues above the roofline, as seen in the photo left. It's also clear from the photo that doors have been added to the south façade. It's unknown whether the building was constructed with these changes or whether they date from later alterations. The west elevation and the building's interior was altered in 1945.

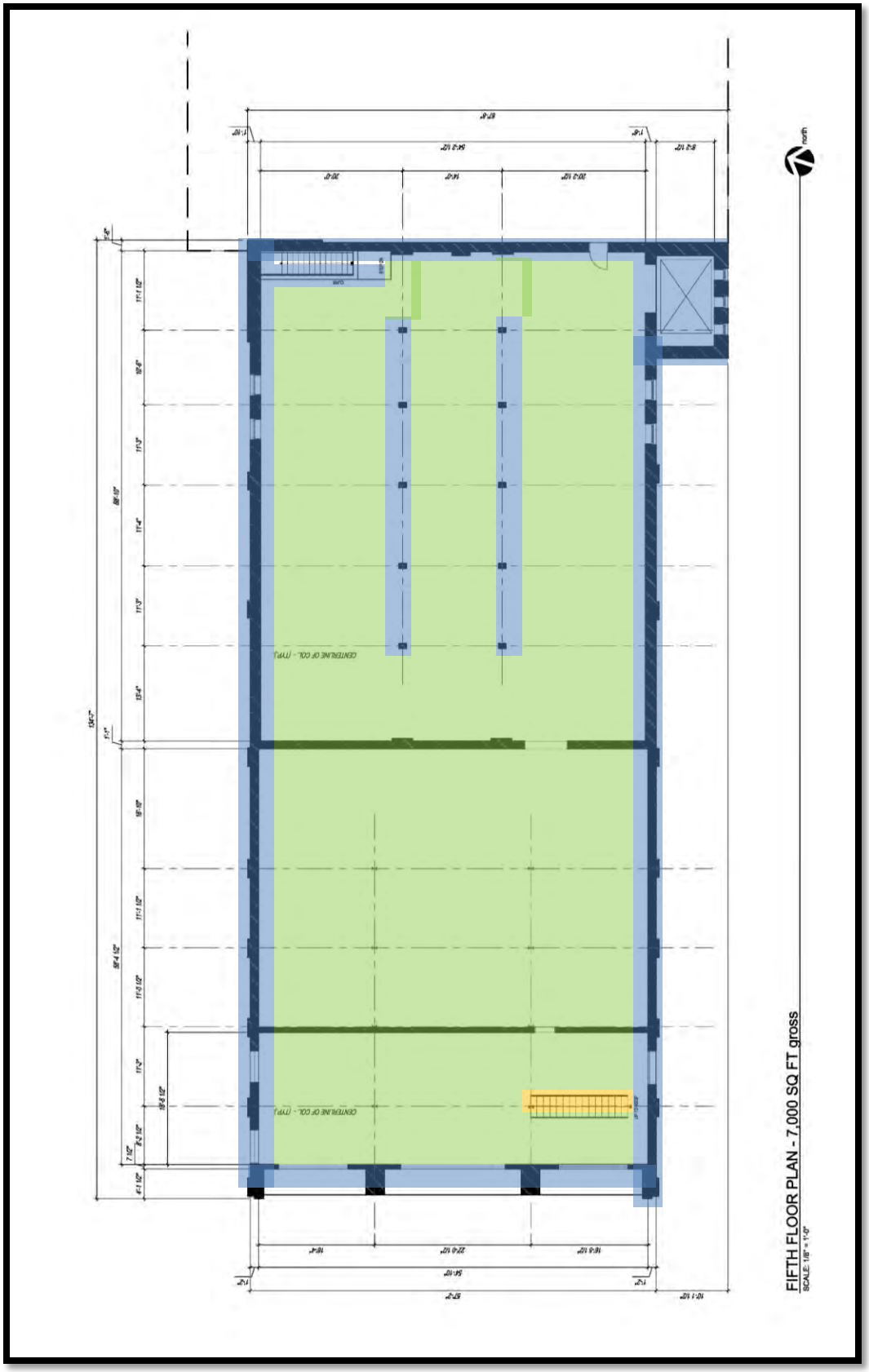
Significance
Primary
Secondary
Minor
None
Missing


north
SLOPE
CENTERLINE OF COL. (TYP.)
CENTERLINE OF COL. (TYP.)
FIRST FLOOR PLAN - 6,902 SQ FT gross
SCALE: 1/8" = 1'-0"


north
SECOND FLOOR PLAN - 6,957 SQ FT gross
SCALE: 1/8" = 1'-0"

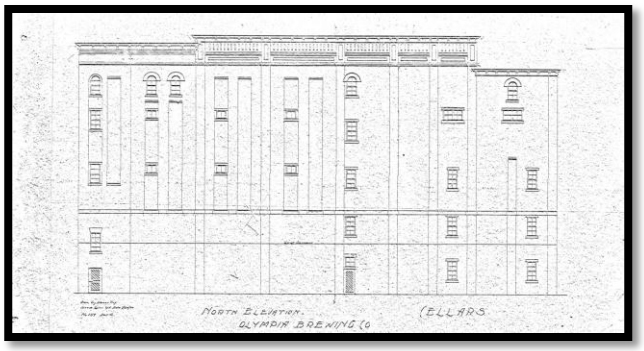

north
THIRD FLOOR PLAN - 6,970 SQ FT gross
SCALE: 1/8" = 1'-0"


north
FOURTH FLOOR PLAN - 7,040 SQ FT gross
SCALE: 1/8" = 1'-0"


north
FIFTH FLOOR PLAN - 7,000 SQ FT gross
SCALE: 1/8" = 1'-0"

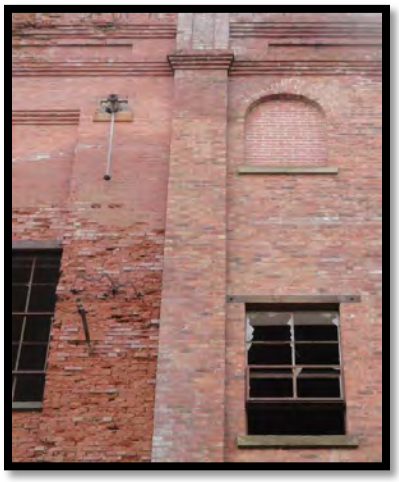
North Elevation

The picture left shows the 1905 Cellar and the 1907 addition, right of the arrow. The primary differences are visible in the fenestration. Window types differ on the two portions of the building as do materials. From the interior, the division is clear as well, especially as one passes through the thick wall that was once the western exterior of the original 1905 Cellar.



The historic elevation drawing differs slightly from the building's current design, especially on the western addition. Also, the building no longer includes the belt course that divides the lower, flat façade from the more ornamented façade above. This belt course may have been altered by an infill structure that has since been removed.

Masonry: Common Red Brick



Materials: Chehalis Brick
American Bond: 6 stretcher courses per header
Approximate size: 8 ¼" x 2 ½" x 4"
Condition: Variable
Significance: Primary

The brick used on the Cellars building is in excellent shape in some places and has deteriorated in others. It matches the brick on the Brewhouse in color and size. Brick size varies.

Recommendations:

- Original brick should be used for repair when possible
- Replacement brick should be of similar size, color and texture
- Repoint with hand tools to maintain joint profile
- All brick ornament, including pilaster, corbelling at the cornice, projections and recessions should be retained
- If material is to be removed to create openings, concentrate on bricked in panels

Mortar

Materials: Unknown composition
Condition: Variable
Joint: Flush, half inch
Significance: Primary

The mortar is most deteriorated where historic cornices have been removed. New mortar should match the requirements identified by the National Park Service in Preservation Brief 2:

- New mortar must match the historic mortar in color, texture and tooling
- Sand must match the sand profile in historic mortar
- New mortar must have greater vapor permeability and be softer than brick
- New mortar must be as vapor permeable and as soft or softer than the historic mortar

Further Recommendations:

- Historic mortar should be tested to determine quantities of lime, sand and Portland cement
- Repoint with mortar similar in composition, color, texture, joint size, method of application and joint profile
- Choose a mason familiar with historic brick buildings who is willing to hand tool joints before repointing

Cinder Block 	Materials: Cement, aggregate, cinders Condition: Good Significance: Primary Cinder block is called out on plans and is used on the north and west facades. It appears to be in good condition. Recommendations: • Leave in place • Clean by the gentlest means possible • If repair is needed, test mortar and match its composition, color, texture, joint size, method of application and joint profile
Masonry: Sandstone 	Materials: Tenino Sandstone Condition: Good Significance: Primary Tenino sandstone sills are a design features that ties together buildings of the Brewhouse era. Recommendations: • Retain all historic sandstone details • If repair is needed, test mortar and match its composition, color, texture, joint size, method of application and joint profile • Replacement sandstone may be available from quarries recently reopened in Tenino
Roof 	Materials: Composition Roof with Flashing Conditions: Fair to Poor Significance: Secondary The Cellar roof includes a number of historic features, including wood stairs, seen left, and access to the elevator tower. Flashing is called out on plans as galvanized iron. Though the roof looks sound, water infiltration is a problem on upper floors and roof repair is a priority. Recommendations: • Repair and retain or replace in kind • Retain all additional features, including stairs and flashing, if possible

Cornice and Brackets

Materials: Galvanized iron
Condition: Missing
Significance: Primary

The cornices were recently removed based on their deteriorated condition. However, they were one of the design features that tied together buildings of the Brewhouse era.

Recommendations:

- If possible, the removed cornices should be repaired and reused
- All new construction must be recognizably new. However, the roof emphasis was central to the original design and cornices should be incorporated into restoration plans

First Floor Doors

Materials: Metal/Missing
Condition: Good/Missing
Significance: Secondary

There are two doors on the first floor. It's not known when the metal sliding door, left, was installed. A paneled door is called out on plans, but this fire resistant door may have been an early alteration.

The second opening on the first floor, pictured below left, is missing entirely, along with its casing, but the opening remains.

Recommendations:

- Retain doors in place or replace with historically appropriate materials
- Where replacements doors are needed, original historic plans can provide models

First Floor Windows

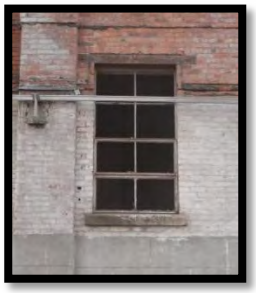
Materials: Wood Casings
Condition: Missing
Significance: Primary

Of the two windows on the first floor, only one includes any remnant of its casing. As shown below, the windows were operable, triple- sash windows in the 1907 Cellar addition. Though similar sills on the Brewhouse are made of sandstone, these are concrete.

Recommendations:

- Replacement windows should match the existing fenestration, materials, design and function. Replacement windows should be operable when the originals were operable and should include true divided lights
- Original windows should match the original pivoting sashes
- Retain sills and lintels, when in place

Second Floor Windows



Materials: Steel Pivot Windows in Wooden Casings
Condition: Fair to Good
Significance: Primary

There are five windows of two types on the second floor. Three in the 1907 addition are called out as eight-light “triple sash box frames” in original plans. They are visible in the top two photos. The two lower sashes pivot. Sashes and muntins remain in place.

The final opening, shown below left, is part of the original 1905 Cellar building. It does not retain its casing or its window. Brick repair is visible.

These early industrial windows are rather rare and should be retained if at all possible. Replacement is a last resort.

Recommendations:

- Retain and repair frames when possible; reglaze
- Replacement windows, when needed due to sever corrosion, should match the original fenestration, original materials, design and function.
- Retain sills and lintels

Third Floor Windows   	Materials: Steel Pivot Windows in Wooden Casings Condition: Fair to Good Significance: Primary There are seven windows on the third floor, divided into two types. As above, three are called out as eight-light “triple sash box frames” in original plans for the 1907 addition. Lower window sashes pivot. Sashes and muntins remain in place. The four windows on the original 1905 building are fixed nine-light windows with central screens encased in metal. These early industrial windows are rather rare and should be retained if at all possible. Replacement is a last resort. Recommendations: • Retain and repair frames when possible; reglaze • Replacement windows, when needed due to sever corrosion, should match the original fenestration, original materials, design and function. • Retain sills and lintels
Fourth Floor Windows   	Materials: Steel Condition: Fair to Good Significance: Primary Nine windows of two types are represented on the fourth floor. Four pairs of 15-light, triple-sash windows appear on the 1905 Cellar. One window in the 1907 addition matches the triple-sash, eight-light windows found on lower floors. These early industrial windows are now rather rare and should be retained if at all possible. Replacement is a last resort. Recommendations: • Retain and repair frames when possible; reglaze • Replacement windows, when needed due to sever corrosion, should match the original fenestration, original materials, design and function. • Retain sills and lintels

Fifth Floor Windows  	Materials: Wood Casings Condition: Missing Windows Significance: Primary Four windows of two types are represented on the fifth floor. In the 1905 Cellar, a pair of arched windows retains only their casings. They were also triple-sash windows. In the 1907 addition, a pair of small rectangular windows retains only the casings, as shown below left. Recommendations: • Retain and repair window casings and replace windows with operable sash windows • Retain arches and sills
Additional Elements: Ornamental Brick Work 	Materials: Chehalis brick Condition: Fair to Good Significance: Primary Brick ornamentation, including corbelling, pilasters, segmental arches and recessed panels are central to this primary façade. Recommendations: • Retail and repair all brick ornament
Additional Elements: Bricked-in Windows 	Materials: Red Brick Condition: Good Significance: Primary A number of recessed openings have been filled with brick. Some windows retain sills and lintels and the newer brick panels include almost no header courses. Recommendations: • It's unknown when windows were bricked in. Either retain or reopen with new, operable windows

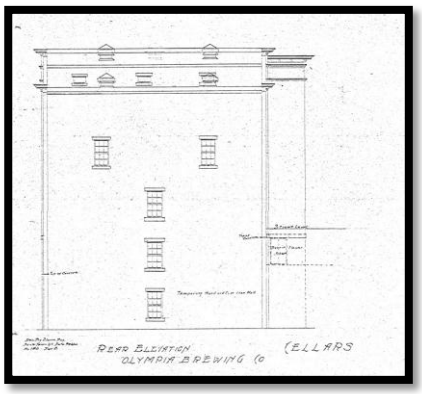
Additional Elements: Paint 	Materials: Paint Condition: Good Significance: Secondary Remnants of white paint on the brick correspond to the portions of the façade that were once covered by an infill structure that's since been removed. Recommendations: • Retain or remove by the gentlest means possible
Additional Elements: Flashing and Supports 	Materials: Metal Condition: Good Significance: Minimal The flashing that once protected the seams between the Brewhouse and the infill structure are not character defining. Recommendations: • Remove or retain in place
Additional Elements: Pipe Fittings 	Materials: Various Condition: Good Significance: Primary The pipe fittings, ties and other connectors that continue to project from the building are artifacts of the buildings' original uses and help communicate the industrial character of the buildings. Recommendations: • Retain in place

Additional Elements: Sliding Door 	Materials: Iron and Wood Condition: good Significance: Secondary The sliding door appears to be historic but its date of installation is unknown. It does not resemble original plans, and the opening has received some alteration that suggests a different door was once installed. Recommendations: • Retain in place or replace • Retain and repair opening
Additional Elements: Roof Finials 	Materials: Metal Condition: Good Significance: Primary The finial pictured left is one of the last remaining on the top of the Cellar building. Recommendations: • Retain in place
Additional Elements: Window Hardware 	Materials: Metal Condition: Various Significance: Primary Window hardware is integral to the historic character of the window system. Recommendations: • Retain historic hardware where possible

Additional Elements: Roof Stairs   	Materials: Wood Condition: Good Significance: Secondary The roof of the Cellar building is accessible and includes four sets of wooden stairs that provide access to each section of the roof. Recommendations: • Retain in place where useful
Additional Elements: Roof Flashing 	Materials: Iron Condition: Unknown Significance: Primary Called out in plans: “entire wall to be flashed down to roof with gal. iron.” Recommendations: • Retain in place if in good condition

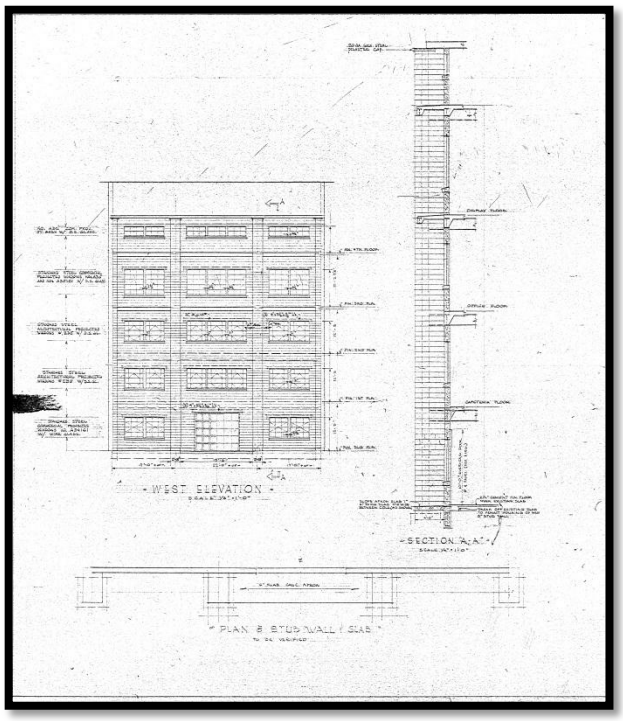
Additional Elements: Tower 	Materials: Various Condition: Good Significance: Primary Access to the elevator tower is gained through a roof stair Recommendations: • Retain in place

West Elevation



The west elevation, called the “rear” elevation in the historic drawing shown below, is the building’s least visible and most altered facade. As seen in the photo left, cinder block columns dividing three banks of large windows have replaced a brick wall with relatively small windows and a well-defined cornice.

The cellars building was built in three sections and is perhaps the most altered of the significant brewery buildings on site. The original cellar, which forms the eastern half of this building, was built in 1905. The western addition followed almost immediately, in 1907. Changes to this elevation are also documented in plans. In 1945, the father and son team of Joseph and Robert Wohleb, submitted plans to Jensvold Manufacturing Company for a new design, as seen below.

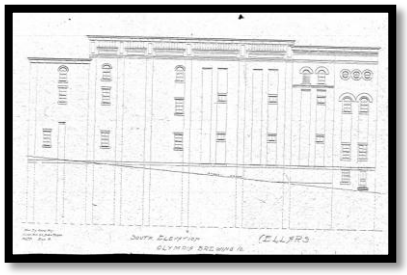


Concrete Block 	Materials: Cement Condition: Good Approximate size: 32 x 15” Significance: Secondary This façade is not original to the building but has gained historic significance of its own. Recommendations: • Retain in place
Mortar 	Materials: Unknown composition Condition: Good Joint: Flush Significance: Secondary New mortar, if needed, should match the requirements identified by the National Park Service in Preservation Brief 2: • New mortar must match the historic mortar in color, texture and tooling • Sand must match the sand profile in historic mortar • New mortar must have greater vapor permeability and be softer than brick • New mortar must be as vapor permeable and as soft or softer than the historic mortar Further Recommendations: • Historic mortar should be tested to determine quantities of lime, sand and Portland cement • Repoint with mortar similar in composition, color, texture, joint size, method of application and joint profile • Choose a mason who’s familiar with historic brick buildings and is willing to hand tool the joints before repointing

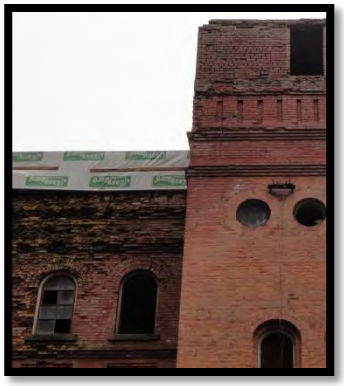
Ornamental Concrete Work 	Materials: Cement Condition: Good Significance: Secondary Massive, board-formed aprons appear between the third and fourth floors, and between the fourth and fifth floors. They are a primary feature of the design. Recommendations: • Retain in place
Doors 	Materials: Wood Condition: Good Significance: Secondary Paired wood doors with historic hardware take up the central bay of the western elevation. Their age is unknown. Recommendation: • Retain in place
First Floor Window 	Materials: Steel Condition: Fair to Good Significance: Primary Though these windows were part of the redesign of the western façade, they are similar to industrial windows on the north elevation. These paired windows of ten lights a piece are called out as “standard steel commercial projected windows No. A3416: w/ wire glass.” Recommendations: • Retain and repair frames when possible; reglaze, maintaining historic industrial fireproofing • Replacement windows, when needed due to sever corrosion, should match the original fenestration, original materials, design and function • Retain sills

Second Floor Window 	Materials: Steel Condition: Fair to Good Significance: Primary Though these windows were part of the redesign of the western façade, they are similar to industrial windows on the north elevation. These windows are called out as “standard steel architectural projected windows #235 w/D.S.GL.” Outer bays include paired windows; central bay includes three windows. Recommendations: • Retain and repair frames when possible; reglaze • Replacement windows, when needed due to sever corrosion, should match the original fenestration, original materials, design and function. • Retain sills
Third Floor Window 	Materials: Steel Condition: Fair to Good Significance: Primary Though these windows were part of the redesign of the western façade, they are similar to industrial windows on the north elevation. These windows are called out as “standard steel architectural projected windows #235 w/D.S.GL.” Outer bays include paired windows; central bay includes three windows. Recommendations: • Retain and repair frames when possible; reglaze • Replacement windows, when needed due to sever corrosion, should match the original fenestration, original materials, design and function. • Retain sills

Fourth Floor Window 	Materials: Steel Condition: Fair to Good Significance: Primary Though these windows were part of the redesign of the western façade, they are similar to industrial windows on the north elevation. These windows are called out as “standard steel architectural projected windows Nos. A35 and Nos. A35121 w/D.S. GL.” Outer bays include paired windows; central bay includes three windows. Recommendations: • Retain and repair frames when possible; reglaze • Replacement windows, when needed due to sever corrosion, should match the original fenestration, original materials, design and function. • Retain sills
Fifth Floor Window 	Materials: Steel Condition: Fair to Good Significance: Primary Though these windows were part of the redesign of the western façade, they are similar to industrial windows on the north elevation. These windows are called out as “No. A32 com. Proj. st. sash w/D.S. glass.” Outer bays include paired windows; central bay includes three windows. Recommendations: • Retain and repair frames when possible; reglaze • Replacement windows, when needed due to sever corrosion, should match the original fenestration, original materials, design and function. • Retain sills
Additional Elements: Window Hardware 	Materials: Metal Condition: Various Significance: Primary Window hardware is integral to the historic character of the window system. Recommendations: • Retain historic hardware where possible

South Elevation	
 	As on the northern facade, the fenestration on the south differs from the original elevation drawing, shown below. Windows are larger and more numerous on the oldest section of the building, the 1905 original, and are smaller and less common on the 1907 addition. The elevator tower also extends past the top of the building to provide an upper section that's accessible from the roof.

Masonry: Red Brick



Materials: Chehalis Brick
American Bond: 6 stretcher courses per header
Approximate size: 8 ¼" x 2 ½" x 4"
Condition: Variable
Significance: Primary

The brick used on the Cellars building is in excellent shape in some places and has deteriorated in others. The worst condition is near the roofline where cornices have been removed. Brick matches the Brewhouse in color and size, which varies slightly.

Recommendations:

- Original brick should be used for repair when possible
- Replacement brick should be of similar size, color and texture
- Repoint with hand tools to maintain joint profile
- All brick ornament, including pilasters, arches, corbelling at the cornice, projections and recessions should be retained
- If material is to be removed to create openings, concentrate on bricked in panels

Mortar

Materials: Unknown composition
Condition: Variable
Joint: Flush, half inch
Significance: Primary

New mortar should match the requirements identified by the National Park Service in Preservation Brief 2:

- New mortar must match the historic mortar in color, texture and tooling
- Sand must match the sand profile in historic mortar
- New mortar must have greater vapor permeability and be softer than brick
- New mortar must be as vapor permeable and as soft or softer than the historic mortar

Further Recommendations:

- Historic mortar should be tested to determine quantities of lime, sand and Portland cement
- Repoint with mortar similar in composition, color, texture, joint size, method of application and joint profile

	• Choose a mason who's familiar with historic brick buildings and is willing to hand tool the joints before repointing
Masonry: Sandstone 	Materials: Tenino Sandstone Condition: Good Significance: Primary Tenino sandstone sills are a design features that ties together buildings of the Brewhouse era. Recommendations: • Retain all historic sandstone details • If repair is needed, test mortar and match its composition, color, texture, joint size, method of application and joint profile • Replacement sandstone may be available from quarries recently reopened in Tenino
Elvator Tower 	Materials: Red Brick Condition: Good Significance: Primary The tower was extended to allow access from the roof. Recommendations: • Retain in place
Cornices and Brackets 	Materials: Galvanized iron Condition: Missing Significance: Primary The cornices were recently removed based on their deteriorated condition. However, they were one of the design features that tied together buildings of the Brewhouse era. Recommendations: • If possible, the removed cornices should be repaired and reused • All new construction must be recognizably new. However, the roof emphasis was central to the original design and cornices should be incorporated into restoration plans

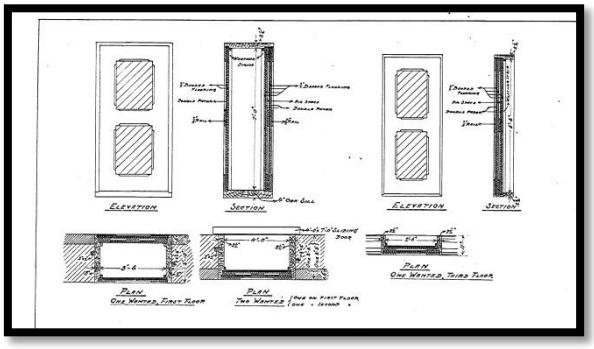
Doors

Materials: Unknown
Condition: Missing
Significance: Secondary

All three doors have been removed. Historic photos do not show the design of the original doors but do show awnings and stairs on the southern façade's westerly door, as shown left. A set of plans include door details, shown below.

Recommendations:

- Replace with wood or other historically appropriate material



Second Floor Windows

Materials: None
Condition: Missing
Significance: Primary

The grade changes drastically. No windows exist on the first floor and only one exists on the second floor next to the door on the elevator tower. Its casing is missing, as is the window. In the historic elevation drawing, this is a six-over-six sash window.

Recommendations:

- Replace in kind using nearby industrial windows as models
- Retain sill and lintel

Third Floor Windows

Materials: Rolled Steel
Condition: Fair to Good
Significance: Primary

Three window types are represented on the third floor. Two windows on the elevator tower are double hung, four-over-four sash windows with stone sills and lintels. There are also two pairs of fixed, nine-light windows with stone sills and metal lintels. On the western half of the building, there are also two windows similar to the triple-pane eight-light box frames found on the north elevation. Lower window sashes pivot. All sashes and muntins are in place, though corrosion has not been assessed. These early industrial windows are now rather rare and should be retained if at all possible. Replacement is a last resort.

Recommendations:

- Retain and repair frames when possible; reglaze
- Replacement windows, when needed due to sever corrosion, should match the original fenestration, original materials, design and function.
- Retain sills and lintels

Fourth Floor Windows

Materials: Steel
Condition: Fair to Good
Significance: Primary

Three types of windows are represented on the fourth floor. As on the north façade, three pairs of 15-light, triple-sash windows appear on the original warehouse. One window in the 1907 addition resembles the triple-sash, eight-light pivotal window found on lower floors. These early industrial windows are now rather rare and should be retained if at all possible. Replacement is a last resort. On the elevator tower, there's also a pair of arched windows. The windows themselves are missing but the casings remain, showing these were triple-sash windows as well.

Recommendations:

- Retain and repair frames when possible; reglaze
- Replacement windows, when needed due to sever corrosion, should match the original fenestration, original materials, design and function.
- Retain sills and lintels
- Replacement windows for the arched openings should retain form, original materials and be operable

Fifth Floor Windows  	Materials: Unknown Condition: Missing Significance: Primary Three window types are represented on the fifth floor. A pair of arched triple-sash windows exist in the 1905 Cellar. One retains only its casing. There's also a trio of round windows in the elevator tower. In the 1907 addition, a single small rectangular window retains its shutters. Recommendations: • Retain and repair window casings and replace windows with operable sash windows. • Retain arches, sills and shutters • Retain the round windows featured in the tower
Sixth Floor Window 	Materials: Unknown Condition: Missing Significance: Primary The opening at the top of the elevator shaft does not appear in historic plans or elevation drawings. No casing or window remains. Recommendations: • Retain opening • Replace in kind using nearby industrial windows as models

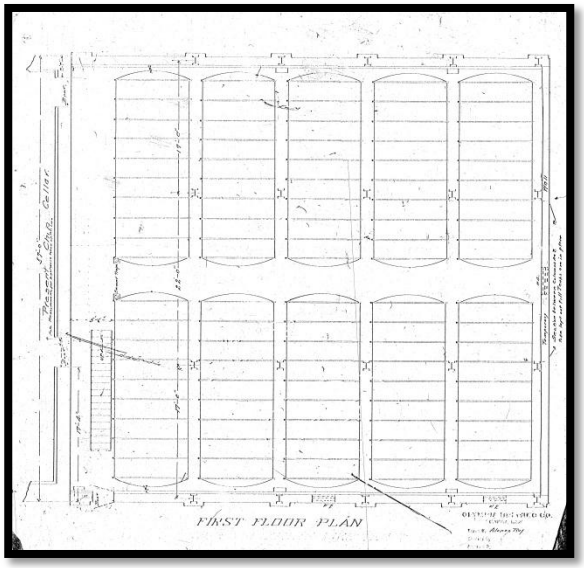
Additional Elements: Ornamental Brickwork 	Materials: Chehalis brick Condition: Fair to Good Significance: Primary Brick ornamentation, including corbelling, pilasters, segmental arches and recessed panels are central to this primary façade. Recommendations: • Retail and repair all brick ornament
Bricked-in Openings 	Materials: Red Brick Condition: Good Significance: Primary A number of recessed openings have been filled with brick. Some windows retain sills and lintels and the newer brick panels include almost no header courses. Recommendations: • It's unknown when windows were bricked in. Either retain or reopen with new, operable windows of historically appropriate materials
Additional Elements: Elevator 	Materials: Various Condition: Good Significance: Primary Though the elevator tower does not appear in the earliest elevation drawings, it does appear in plans and includes elements, including corbelling and arched windows,that tie it to the rest of the Brewhouse-era buildings. Recommendations: • Retain and reuse elevator shaft • Retain elongated form and roof access

Additional Elements: Vents 	Materials: Unknown Condition: Good Significance: Secondary Vents visible in the exterior facades are artifacts of the building's early use. Recommendations: • Retain in place or retain best examples
Additional Elements: Treatment 	Materials: Concrete Condition: Good Significance: Secondary It appears that the elevator tower received a secondary treatment over the brick. The timing and reason for the coating is unknown. Recommendations: • Retain in place or remove by the gentlest means possible
Additional Elements: Apron/Opening  	Materials: Concrete Condition: Good Significance: Secondary An apron of concrete separates two paired openings on the second and third floors. It's not known how these doors were used. Recommendations: • Retain apron in place if openings are maintained

Additional Elements: Window Hardware 	Materials: Metal Condition: Various Significance: Primary Window hardware is integral to the historic character of the window system. Recommendations: • Retain historic hardware where possible

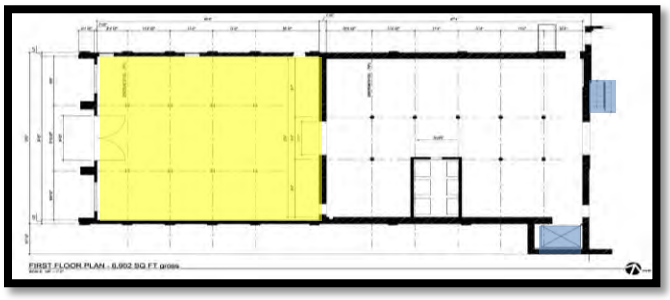
South Elevation	
	Materials: Chehalis Brick American Bond: 6 stretcher courses per header Approximate size: 8 ¼" x 2 ½" x 4" Condition: Variable Significance: Primary Not much of the south elevation remains visible from the ground since the installation of the warehouse. The eastern elevation includes the windowless eastern elevation of the elevator tower, remnants of flashing form a removed structure, and a metal door that should be retained in place.

First Floor Introduction



The cellars, built in two phases, were primarily storage spaces for the brewery. As pictured left, the open volumes were filled with very large tanks for fermenting beer.

Detailed plans for a remodel were drawn up by the Wohlebs in 1945. However, they don't cover the first floor of the cellar.



In the as-built drawing left, note that rooms remain open, broken up only by columns, an elevator in the southeast corner, and a single room or storage space on the south wall. East-west openings provide a corridor through the building, which connects to the warehouse from the east wall.

The 1907 western addition is highlighted in yellow. Stair and elevator are highlighted in blue.

This report finds that while the exterior of the Cellars is of primary importance, the interior has been greatly changed. Rather than recommend a restoration, this report makes recommendations based on the current condition of the interior elements. Character-defining features are called out below.

Structure: Interior Volumes

For both the 1905 and 1907 spaces, the volumes remain open enough to have housed storage tanks between the columns, as used during the brewery era. The upper photograph shows the western (1907) addition to the original cellar building. It is in the process of being painted at the time of this photo.

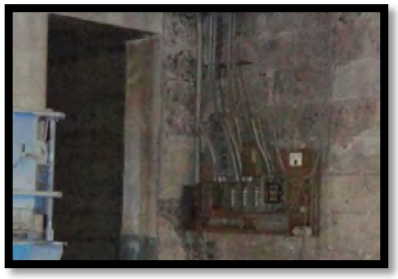
The second photo also shows the 1907 addition, but from the interior of the original 1905 building, looking west at the 1905 building's original exterior wall and the 1907 addition beyond.

The third photo shows the interior of the original 1905 cellar building. Note that the columns are round in this section, and that in this south facing photo, the opening to a 1945 warehouse building to the east of the cellar is visible. The two broad openings allow for a corridor from the eastern edge of the warehouse building all the way to the western section of the Cellar building.

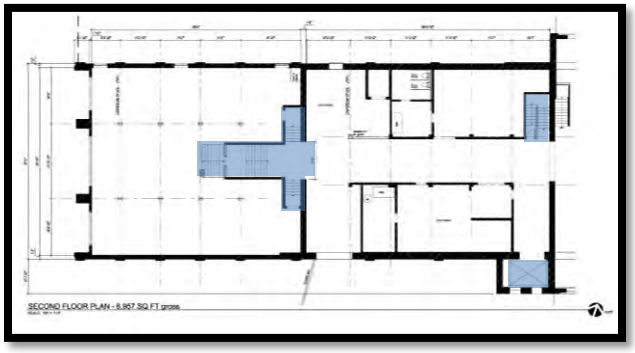
Structure: Columns and Beams  	Meterials: Steel Condition: Should be tested Significance: Primary The columns in the 1907 addition are pictured left before repainting began. Unlike in the Brewhouse, it appears that these were not enclosed. The lower photo shows the round columns in the original 1905 Cellar building. Recommendations: • All structural columns should be investigated by structural engineers • Columns should be retained in place • Historically unpainted columns should be left unpainted; historically painted columns should remain painted • Early paint should be tested for lead
Traffic: Elevator  	Materials: Various Condition: Unknown Significance: Primary The elevator that inhabits the tower found on the south of the original Cellars retains many of its original features. The car the gates and the machinery are in place though the cables have been cut and the elevator is no longer operable. Recommendations: • Retain structural materials in place • Restore and reuse as a working elevator, if possible

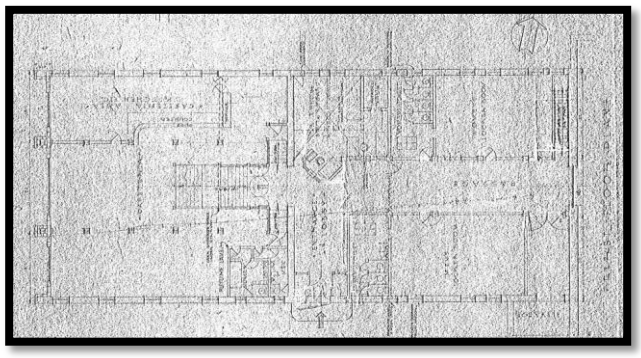
Traffic: Doorway Between Cellars 1 and 2  	Materials: Masonry Condition: Good Significance: Primary The openings between the Cellar buildings provide evidence of the historic traffic patterns and show the thickness of original exterior walls. Recommendations: • Retain openings and leave materials in place as they are
Traffic: Doorway Between Cellars and Warehouse 	Materials: Masonry Condition: Good Significance: Primary This opening, between the 1905 Cellar and the 1945 Warehouse, provides evidence of historic traffic patterns between the buildings. The openings also provide visible evidence of the thickness and materials in the original exterior walls. Recommendations: • Retain openings and leave materials in place as they are

Traffic: Ramp 	Materials: Concrete Condition: Good Significance: Secondary The ramp moderates the difference in elevation between the building's two halves and allows for smooth movement of people and machines from one half to the other. Recommendations: • Retain in place
Finishes: Floors 	Materials: Concrete Condition: Good Significance: Secondary The unfinished concrete floor contributes to the industrial feel of these spaces, but they may have been finished at various times. Most surfaces have been stripped from the interior. Recommendations: • Retain floor and consider retaining bare concrete surface
Finishes: Walls 	Materials: Plaster Condition: Fair to Poor Significance: Secondary In most cases, the interior walls were plastered and painted. Remnants of the plaster and paint have survived harsh cleanings. Some brick walls were apparently left bare on upper floors. Some of these were once exterior walls that have been absorbed by new construction. Recommendations: • Paint should be tested for lead • Historically plastered surfaces should be repaired, retaining as much of the original materials as possible. Historically bare surfaces should remain bare.

Finishes: Ceiling 	Materials: Steel Beams Condition: Should be tested Significance: Secondary Ceiling beams have been left visible inside the Cellar building, exposing the overall structure and the concrete above. Recommendations: • Retain open and visible structure • Historically painted materials should be repainted; historically unpainted materials remain unpainted • Historic paint should be tested for lead
Additional Elements: Electrical Panels 	Materials: Various Condition: Good Significance: Primary Evidence of original systems remain in the 1907 addition. Recommendations: • Retain in place as an artifact of the building's history
Additional Elements: Storage Space  	Material: Concrete Condition: Good Significance: Secondary This mysterious room includes thick concrete walls, an opening and sloped bottom, visible from the exterior, as seen in the photo left. Its historic use is unknown and nothing is left of its original door. Recommendations: • Retain in place, if possible • Consider a use that would retain the shape and outline of this room • Pursue further research to identify historic use

Second Floor Introduction





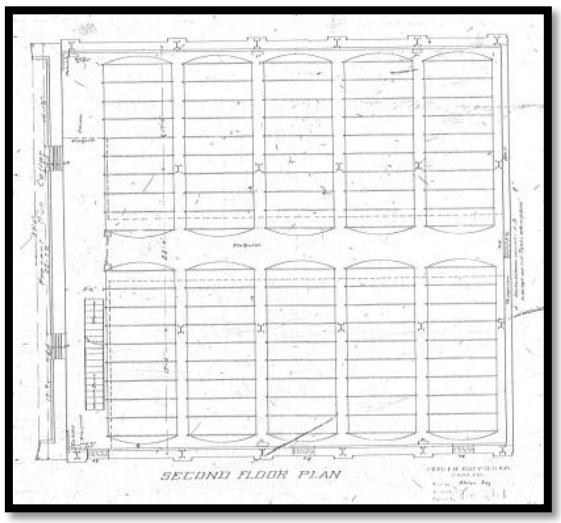
The blueprint above, while difficult to read, shows the 1945 remodel for the second floor (The plans refer to this as the first floor and do not include a plan for the basement floor). You can see that the stair, as well as the bathrooms and other divided spaces are alterations that broke up the early open floor plan that made room for the fermenting tanks.

In the 1945 plans, this floor is referred to as the "café floor" and includes locker rooms for men and women. It's not clear that all these alterations were carried out.

As visible in the as-built drawing, left, the Cellars' second floor is more divided than the first, and includes a large stair in the western addition.

The historic elevator and stairs are highlighted in blue.

The historic floor plan, below, shows that the second floor was originally designed to store fermenting tanks for the brewery.



Structure: Interior Volumes

Significance: Primary

While the 1907 addition, with broad windows on its western wall, added in 1945, includes fairly open spaces, again divided primarily by columns, as shown left, the 1905 original cellar has been divided into a series of rooms and corridors with cinder block walls, as shown below.

These divisions are of varying size. Some include the remnants of bathroom fixtures and others were originally small closets.

Recommendations:

- Retain the openness of western rooms
- Either retain dividing walls in the 1905 Cellar or reestablish original open floor plan

Structure: Columns and Beams

Materials: Steel
Condition: Good
Significance: Primary

The second floor was one of the most public floors of the Cellar building after the remodel, including public lobbies, etc.

In most cases, the structural elements remained visible, as seen in the 1945 Wohleb plans. Without historic photos of the interior, it's difficult to determine if the columns and beams were originally painted but it's likely. The finishes on surfaces, including floors, have been removed.

Recommendations:

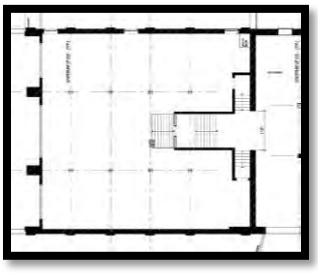
- Historic paint should be tested for lead
- Historically painted surfaces should remain painted; historically unpainted surfaces should remain unpainted

Traffic: Stairs

Materials: Concrete
Condition: Fair to Good
Significance: Primary

Two sets of stairs are accessible from the second floor. The side stairs on the original 1905 Cellar, begin on the second floor. There are no stairs from the first to the second floor within the Cellars.

A grander second stair, made of concrete, begins at the juncture between the 1905 and 1907 Cellars and rises west to the third floor. However two narrow side stairs lead from the foot of this stair down half a flight into the second story of the 1907 Cellar, navigating a change in elevation between the two buildings, as shown below in the as-built drawing for the 1907 Cellar.



Recommendations:

- Retain in place

Traffic: Elevator

Materials: Various
Condition: Unknown
Significance: Primary

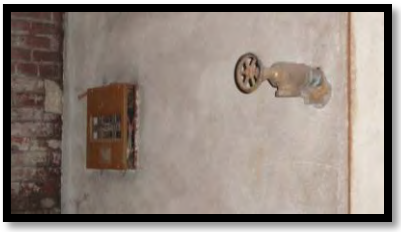
The elevator rises through all five floors of the southern tower that terminates above the roofline.

Recommendations:

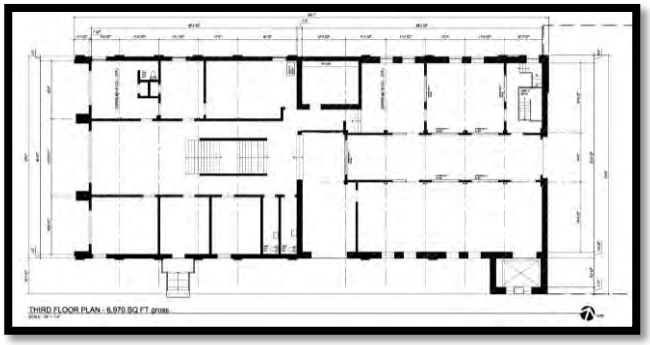
- Retain structural materials in place
- Reuse as a working elevator, if possible

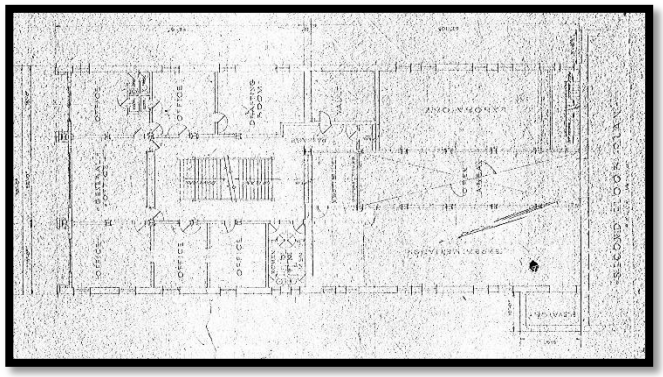
Traffic: Doorway Between Cellars 1 and 2  	Material: Brick Condition: Good Significance: Primary The connections between the original 1905 cellar building and the 1907 addition are still visible after the 1945 remodel and should be maintained. The openings also provide visible evidence of the thickness and materials in the original exterior walls. Recommendations: • Retain openings and leave materials in place as they are
Finishes: Floor 	Materials: Concrete Condition: Good Significance: Secondary The unfinished concrete floor contributes to the industrial feel of these spaces but was likely previously finished. Most finishes have been stripped from floors and walls. Recommendations: • Consider retaining the original concrete surface as is

Finishes: Wall 	Materials: Plaster Condition: Fair to Poor Significance: Secondary In most cases, the interior walls were plastered and painted. Remnants of the plaster and paint have survived harsh cleanings. Some brick walls were left bare, but these tend to be exterior walls or upper floor walls that have been absorbed by new construction. Recommendations: • Paint should be tested for lead • Historically plastered surfaces should be repaired, retaining as much of the original materials as possible. Historically bare surfaces should remain bare.
Finishes: Ceiling 	Materials: Steel Beams and Concrete Condition: Good Significance: Secondary Ceiling beams have been left visible inside the Cellar building, exposing the overall structure and the concrete above. Recommendations: • Retain open and visible structure • Historically painted materials should be repainted; historically unpainted materials should remain unpainted • Paint should be tested for lead
Additional Elements: Furnishings 	Materials: Various Condition: Unknown Significance: Secondary Some rooms include artifacts of the building's previous uses. The metal sink, the boiler, vents and the pipes are such artifacts. Recommendations: • Retain in place, if possible or reuse on site

Additional Elements: Opening 	Significance: Secondary This opening cuts through various floors and may have surrounded systems or vents or have been used for the movement of materials between floors as in the Brewhouse. Its history is unknown Recommendations: • Retain in place or if it's necessary to cover the opening, materials should be recognizably new and preserve the outline of the former opening
Additional Elements: Systems  	Materials: Various Condition: Good Significance: Primary Evidence of original systems remain in the 1907 addition. • Retain in place as an artifact of the building's history
Additional Elements: Stored Furnishings 	Materials: Wood Condition: Fair to Good Significance: Secondary A number of former doors and windows have been stored in the Cellar building. It may be possible to identify their original locations and replace them. Recommendations: • Retain and reuse • Attempt to fit original doors to their original locations

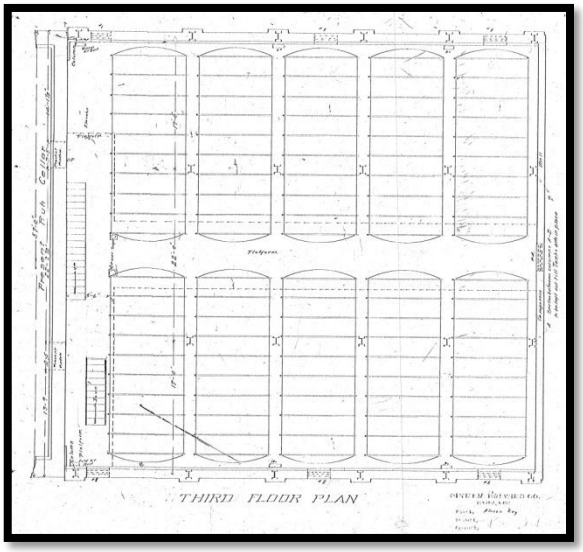
Third Floor Introduction





The third floor of the Cellar resembles the 1945 plans, with added bathrooms and a grand, wide central stair.

Like the first and second floor, the historic plans show that this floor was originally used for beer storage tanks, as shown in the historic plan below.



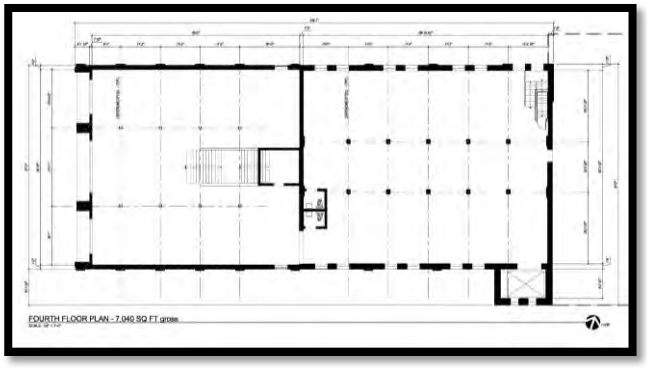
Structure: Interior Volumes  	Significance: Secondary The interior volumes of the 1905 cellar, as shown below left, have been divided with cinder block walls. The interior volumes of the 1907 addition remain more open and the structural columns are left visible. Recommendations: • Retain openness in the 1907 addition • Either retain divisions or consider returning the 1905 Cellars to its more open historic floor plan
Structure: Columns and Beams 	Materials: Steel Condition: Should be tested Significance: Secondary In the enclosed spaces, the columns appear inside concrete block walls. They remain visible in the 1907 addition. Recommendations: • All structural systems should be investigated by engineers • Beams and columns should be left visible and unenclosed where possible as they were original to the Cellar plan

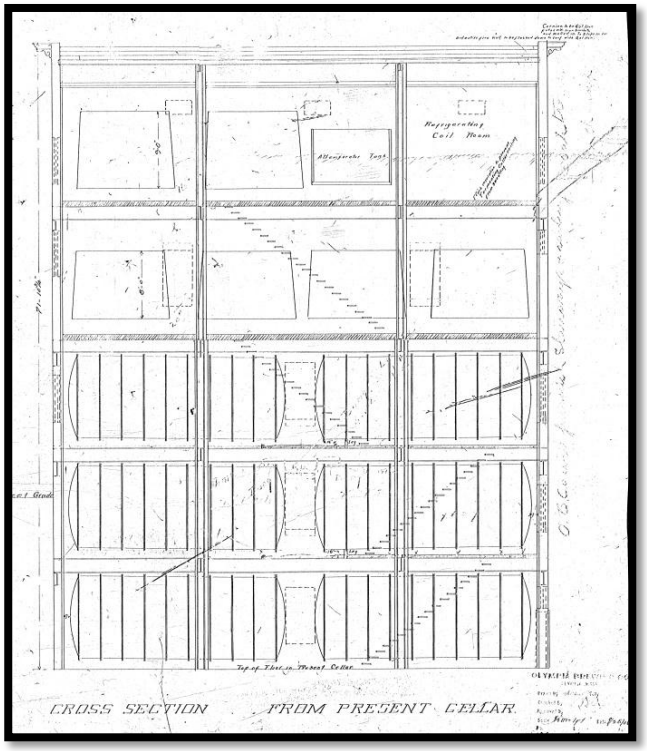
Traffic: Stairs  	Materials: Concrete Condition: Good Significance: Primary The grand central stairs on the third floor are an addition from the 1945 plan. Recommendations: • Retain in place
Traffic: Secondary Stair 	Materials: Concrete and Iron Condition: Good Significance: Primary The concrete secondary stair includes a pipe railing. Recommendations: • Retain in place, if possible • If stair must be altered, reuse materials
Traffic: Elevator 	Materials: Various Condition: Unknown Significance: Primary The elevator rises throughout the building's five floors and retains its historic materials. Recommendations: • Retain structural materials in place • Reuse as a working elevator, if possible

Traffic: Doorway Between Cellar 1 and 2 	Material: Brick Condition: Good Significance: Primary The connections between the original 1905 cellar building and the 1907 addition are still visible after the 1945 remodel and should be maintained. The change in elevation is negotiated by added stairs. Recommendations: • Retain openings and leave materials in place as they are
Finishes: Floor 	Materials: Concrete Condition: Good Significance: Secondary The unfinished concrete floor contributes to the industrial feel of these spaces but was likely finished at some point. Most finishes have been stripped from Cellar floors and walls Recommendations: • Consider retaining the bare concrete as it contributes to the industrial feel of these buildings
Finishes: Wall 	Materials: Plaster and Brick Condition: Fair to Poor Significance: Secondary In most cases, the interior walls were plastered and painted. Remnants of the plaster and paint have survived harsh cleanings. Some brick walls were left bare, as in the photo left. Recommendations: • Paint should be tested for lead • Historically plastered surfaces should be repaired, retaining as much of the original materials as possible. Historically bare surfaces should remain bare.

Finishes: Ceiling 	Materials: Steel Beams and Concrete Condition: Good Significance: Secondary Ceiling beams have been left visible inside the Cellar building, exposing the overall structure and the concrete above. Recommendations: • Retain open and visible structure • Historically painted materials should be repainted; historically unpainted materials should remain unpainted • Historic paint should be tested for lead
Additional Elements: Bathroom Fixtures 	Materials: Various Condition: Poor to Good Significance: Secondary Bathroom fixtures likely date to the 1945 remodel. Few of them are in good condition, but those that remain should be reused. Recommendations: • Retain and reuse materials, where possible
Additional Elements: Missing Bath Fixtures 	Materials: Various Condition: Missing Significance: N.A. Some bathroom fixtures, including sinks and toilets, have already been removed. If these rooms are reused as bathrooms, the historic layout should be maintained and materials replaced in kind. Recommendations: • Missing elements need not be replaced in kind

Fourth Floor Introduction





The fourth floor as-built drawings show that these floors were not altered to the same extent as the lower floors. Stairs are consistently found in the center of the addition and in the northeast corner of the original Cellar. The projecting elevator tower is visible in the southeast corner.

As seen in the section shown left, the fourth floor was originally filled with fermentation tanks.

Structure: Interior Volumes  	Significance: Primary The fourth floor is defined by open volumes punctuated by columns, similar to the original design of the Cellar building. It does not appear in historic plans, except when a systems diagram was prepared. It does include some interesting elements, including a stair with curved concrete rail. Recommendations: • Consider maintaining the open look and feel of these rooms by maintaining open volumes with visible columns and beams
Structure: Columns and Beams  	Meterials: Steel Condition: Should be tested Significance: Primary The columns in the 1907 addition are pictured left. The lower photo shows the built up columns in the original 1905 Cellar building. Recommendations: • All structural columns should be investigated by structural engineers • Columns should be retained in place • Historically unpainted columns should be left unpainted; historically painted columns should remain painted • Paint should be tested for lead

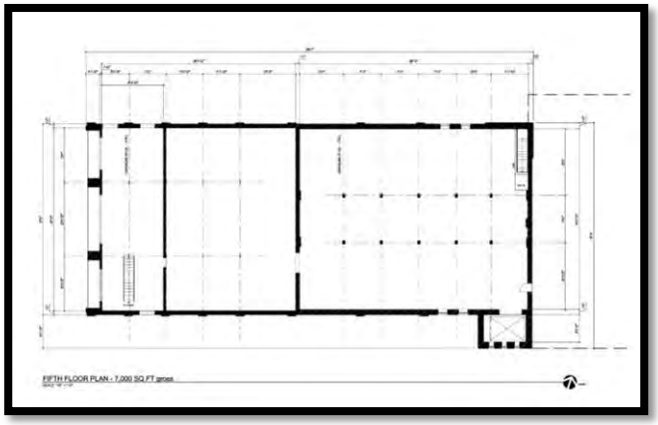
Traffic: Stair  	Materials: Concrete Condition: Good Significance: Primary The grand central stair on the fourth floor is an addition from the 1945 plan, as seen left. The secondary stair, found in the northeast corner of the original cellar, is constructed with rounded wood treads, and metal railing, similar though not the same as the pipe railing in the Brewhouse. Recommendations: • Retain stars in place • If stair must be altered, reuse historic materials
Traffic: Elevator 	Materials: Various Condition: Unknown Significance: Primary The elevator rises through the entire building. Recommendations: • Retain structural materials in place • Reuse as a working elevator, if possible
Traffic: Doorway Between Cellar 1 and 2 	Materials: Masonry Condition: Good Significance: Primary Openings between the cellar buildings reveal historic traffic patterns and show the original exterior elements of the 1905 Cellar. Recommendations: • Retain openings and leave materials in place as they are

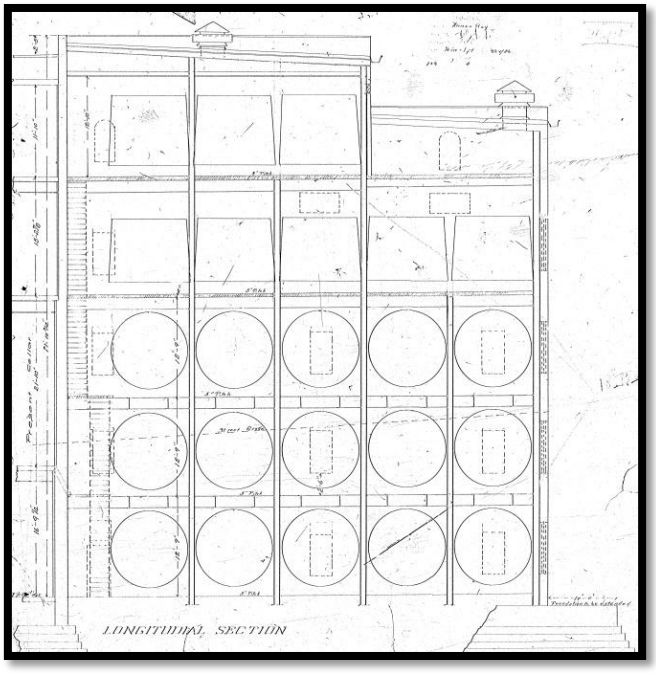
Finishes: Floor 	Materials: Concrete Condition: Good Significance: Secondary The unfinished concrete floor contributes to the industrial feel of these spaces but the floors may have been finished at one time. Most finishes have been stripped from walls and floors. Recommendations: • Consider retaining the bare concrete as an artifact of these buildings' original industrial use
Finishes: Wall 	Materials: Plaster and Brick Condition: Fair to Poor Significance: Secondary In most cases, the interior walls were plastered and painted. Remnants of the plaster and paint have survived harsh cleanings. Recommendations: • Historic paint should be tested for lead • Historically plastered surfaces should be repaired, retaining as much of the original materials as possible. Historically bare surfaces should remain bare.
Finishes: Ceiling 	Materials: Steel Beams and Concrete Condition: Good Significance: Secondary Ceiling beams have been left visible inside the Cellar building, exposing the overall structure and the concrete above. Recommendations: • Retain open and visible structure • Historically painted materials should be repainted; historically unpainted materials should remain unpainted • Historic paint should be tested for lead

Additional Elements: Bathroom Fixtures 	Materials: Various Condition: Poor to Good Significance: Secondary Bathroom fixtures likely date from the 1945 remodel. Not all of them remain in place, as seen left. Recommendations: • Retain and reuse materials when possible
Additional Elements: Door to Warehouse 	Materials: Wood Condition: Fair Significance: Secondary This door connects the fourth floor of the Cellar to the warehouse building but no longer includes a stair that reaches down to the second floor of the warehouse. Instead it puts the user eyelevel with the trusses of the Warehouse's roof. Recommendations: • Retain visual access to the warehouse space even if the door must be sealed or replaced
Additional Elements: Enclosed Stairwell 	Materials: Wood Condition: Fair Significance: Secondary A small section of the stairwell as enclosed in wood. The enclosure and the door remain. Recommendations: • Retain in place if possible

Additional Elements: Systems 	Materials: Metal Condition: Good Significance: Secondary Remaining HVAC systems appear in various places throughout the building. Recommendations: • Retain in place, if possible • Reuse materials if possible
Additional Elements: Bricked-in Panels 	Materials: Red Brick Condition: Good Significance: Primary When the 1905 Cellar building was expanded with the 1907 addition, the openings in the original exterior wall were bricked in, sometimes leaving sills and lintels in place. Recommendations: • Retain in place as evidence of the original fenestration of the 1907 Cellar building • If windows are to be opened, fill with historically appropriate materials and retain sills and lintels where they remain

Fifth Floor Introduction





The fifth floor is divided not into two sections, as in the rest of the building, but three, including a western bay that houses a stair to the roof.

The as-built drawing likely includes alterations made in 1945, but the spaces remain open, as they apparently would have been in the original Cellar, as shown in the historic drawing below.

Historic plans do not appear for the fifth floor.

Structure: Interior Volumes

Significance: Secondary

The fifth floor includes a western bay with stairs, as seen below, and open volumes punctuated by columns.

The photo below shows a new roof and stair constructed over what was a room open to the weather. Water infiltration is a problem on this floor, as seen in lower photos where water has pooled. In the western bay, roof leaks are still visible.

Recommendations:

- Retain open volumes and visual access to windows

Structure: Columns and Beams

Meterials: Steel
Condition: Should be tested
Significance: Primary

The built-up columns in the original 1905 Cellar are pictured left. The lower photo shows the bare columns from the 1907 addition.

Recommendations:

- All structural columns should be investigated by structural engineers
- Columns should be retained in place
- Historically unpainted columns should be left unpainted; historically painted columns should remain painted
- Paint should be tested for lead

Traffic: Stair  	Materials: Concrete Condition: Good Significance: Primary The primary stair is a concrete stair in the northeast corner of the original Cellar. It is original to the building. The secondary stair rises from the western-most bay to the roof. It is not original to the building, nor is the new roof system on this bay, which enclosed a room open to the weather. Recommendations: • Retain original stair in place • If finishing the new roof and stair, make sure they remain distinguishable as new construction.
Traffic: Elevator 	Materials: Various Condition: Unknown Significance: Primary The elevator rises through the sixth floor, where the tower is adorned with three small round windows. Recommendations: • Retain structural materials in place • Reuse as a working elevator, if possible

Traffic: Doorway Between Cellar 1 and 2  	Materials: Masonry Condition: Good Significance: Primary The openings between the 1905 and 1907 Cellars provide evidence of historic traffic patterns. In this case, brick repair is visible. Recommendations: • Retain openings and leave materials in place as they are • Repair plaster on historically plastered surfaces
Finishes: Floor 	Materials: Concrete Condition: Good Significance: Secondary The unfinished concrete floor contributes to the industrial feel of these spaces but was likely covered at some point. Recommendations: • Consider retaining the bare concrete surface as evidence of the industrial history of these buildings

Finishes: Wall

Materials: Plaster and Brick
Condition: Fair to Poor
Significance: Secondary

In most cases, the interior walls were plastered and painted. Remnants of the plaster and paint have survived harsh cleanings. Some brick walls were left bare, and some were likely constructed at a later date, as the opening in the wall to the western bay suggests.

Recommendations:

- Paint should be tested for lead
- Historically plastered surfaces should be repaired, retaining as much of the original materials as possible. Historically bare surfaces should remain bare.

Finishes: Ceiling

Materials: Wood
Condition: Good
Significance: Primary

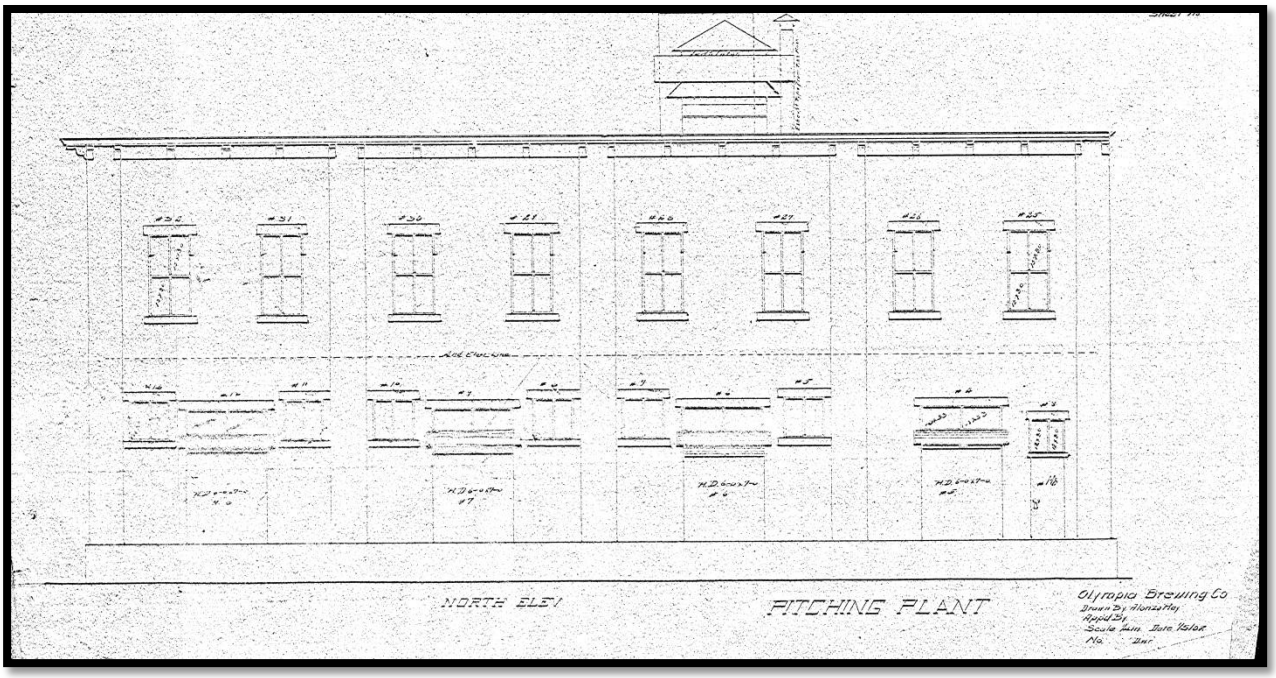
Ceiling beams have been left visible inside the Cellar building, exposing the overall structure and the concrete above in most cases. However, one of the rooms on the fifth floor includes a wood laminate ceiling. Its historic purpose is unknown.

Recommendations:

- Retain open and visible structure where visible
- Historically painted materials should be repainted; historically unpainted materials should remain unpainted
- Paint should be tested for lead
- Wood veneer should be repaired and retained if possible

Additional Elements: Brick Panels 	Materials: Red Brick Condition: Good Significance: Primary When the 1905 Cellar building was expanded, the openings in the original exterior wall were bricked in, sometimes leaving sills and lintels in place. Recommendations: • Retain in place as evidence of the original fenestration of the 1905 Cellar building or consider reopening and allowing visual access through the building
Additional Elements: Materials 	Materials: Various Condition: Various Significance: Secondary As on other floors, materials have been stored away from their original locations. If it's possible to restore them for use in their original locations, that would be ideal. Recommendations: • Retain and reuse

The Keg House and Cooperage

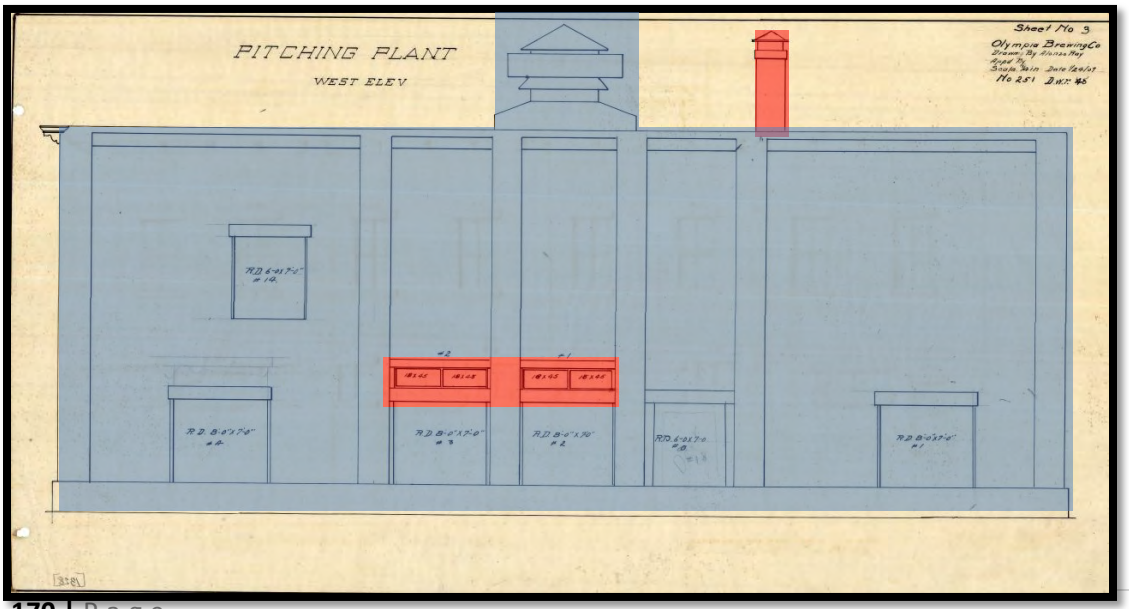


The Keg House and Cooperage is one of three buildings associated with the brewery era. It was built in 1907, the same year as the addition to the original Cellar building, but it is much different than either the Cellars of the Brewhouse. It is not built of brick, or even faced in brick. It's located at the far eastern edge of the complex and is only two stories tall. However, it includes cornices and brackets similar to those found on the Brewhouse and Cellars buildings. It appears in historic articles of the era, praised for its fire-proofing.

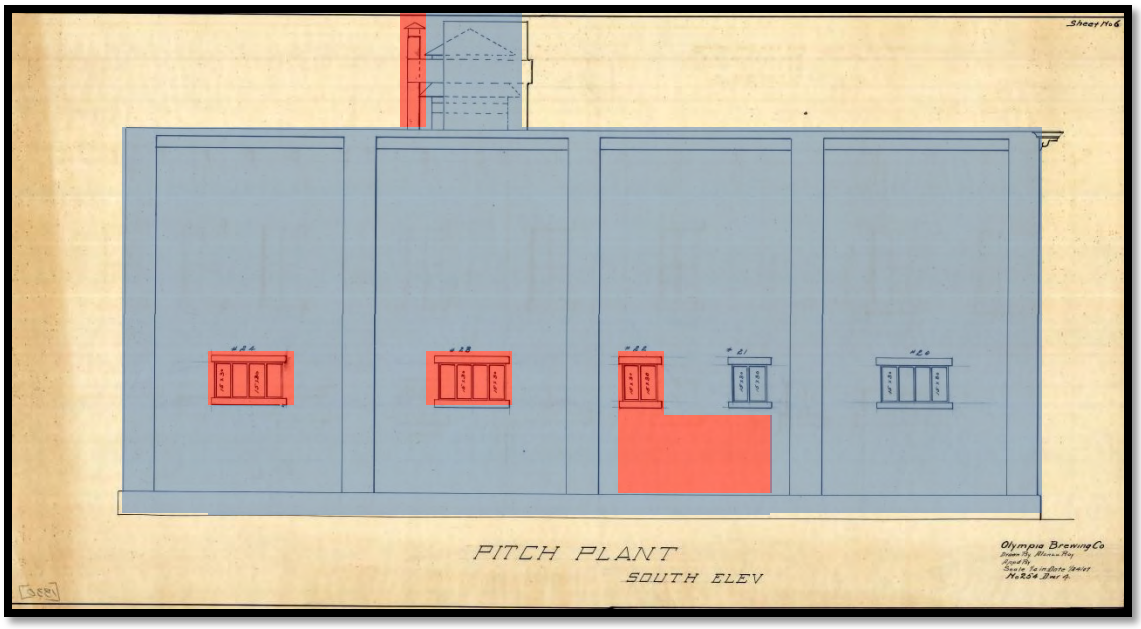
Significance Maps: North Elevation

Significance
Primary
Secondary
Minor
None
Missing

Significance Maps: West Elevation



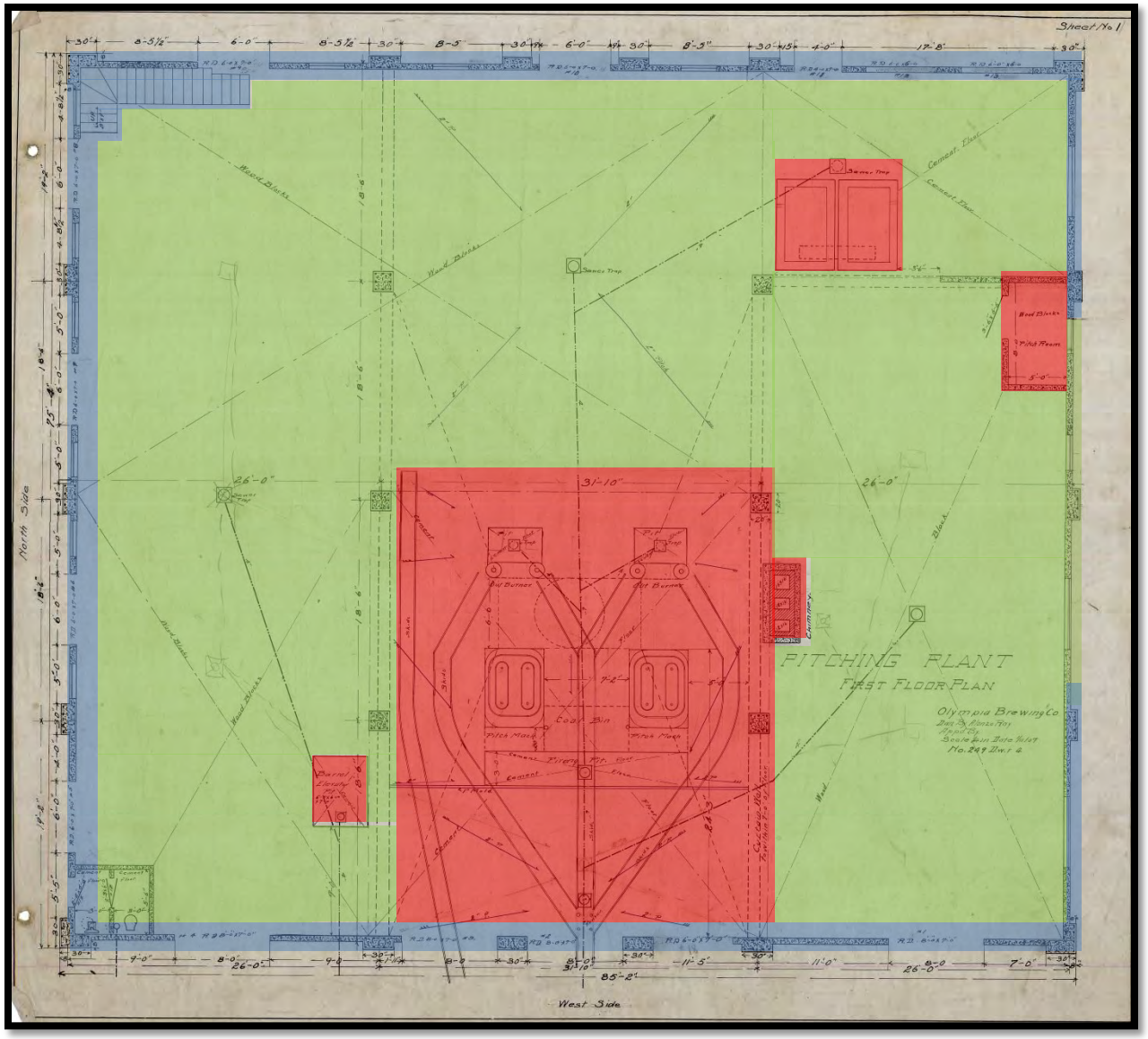
Significance Maps: South Elevation



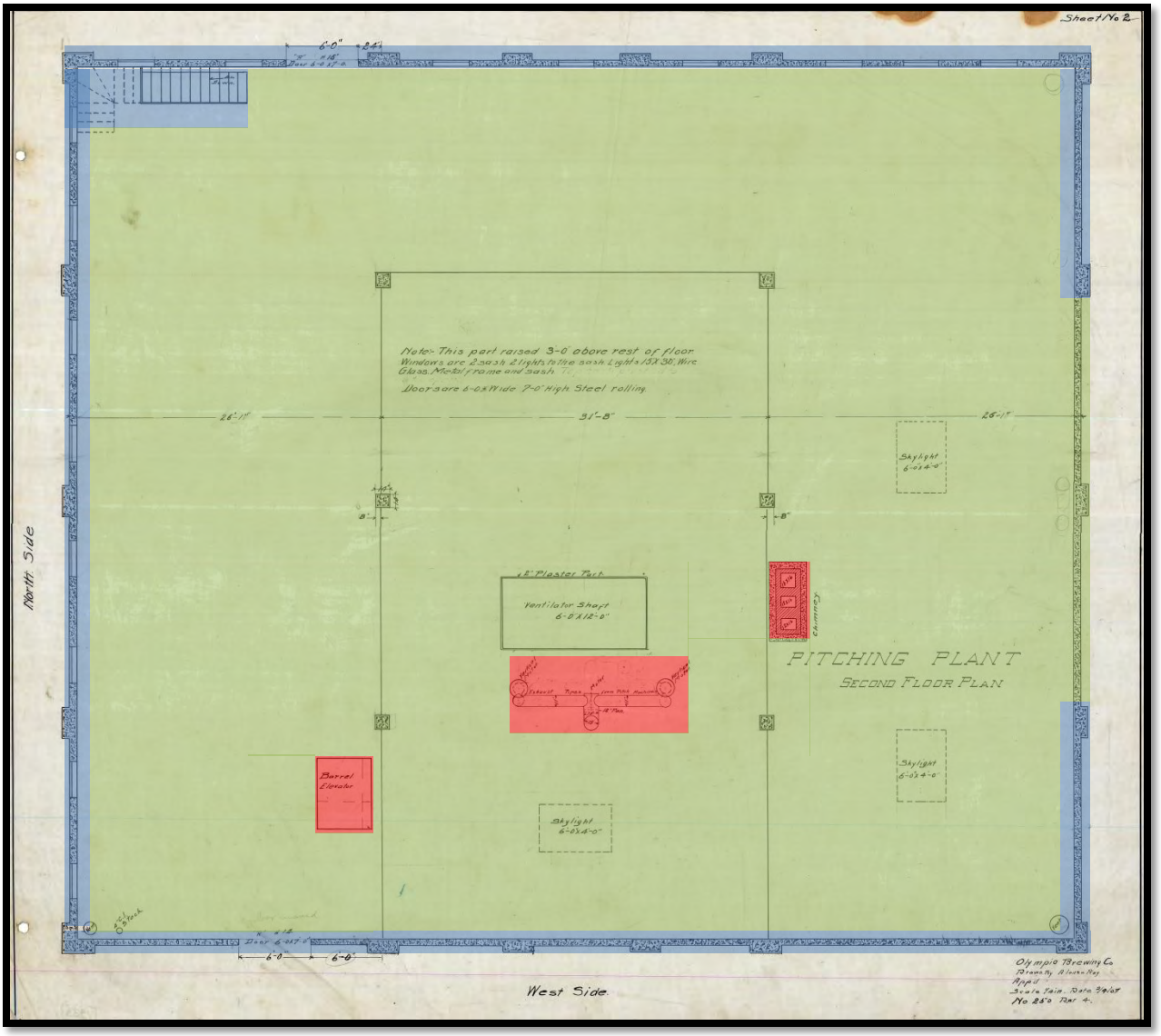
Significance
Primary
Secondary
Minor
None
Missing

Significance Maps: East Elevation

Significance Maps: First Floor



Significance Maps: Second Floor



Significance

Primary

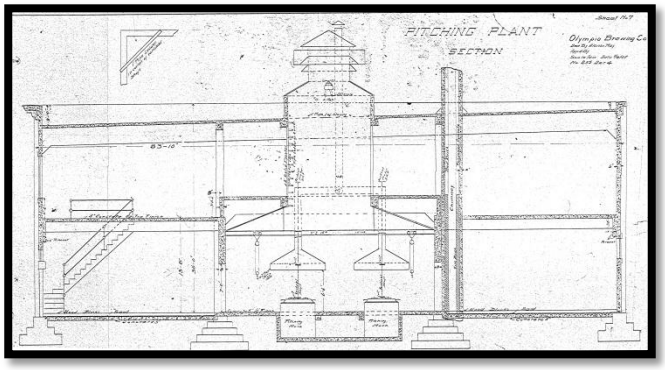
Secondary

Minor

None

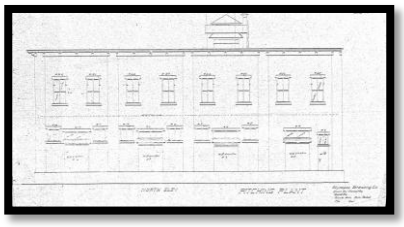
Missing

Keg House: Features



The Keg House is unusual in that it's contemporary with the other brewery buildings but looks very different. It's not made of brick but of reinforced concrete.

The details of its construction were outlined in an article from an unknown source found in the Olympia-Tumwater archives: "The cooper and pitch plant will be one of the most modern and complete of its kind…It will be entirely of steel and reinforced concrete, save that the cooperage floor will be given a wooden block pavement to prevent wear and injury to the kegs… Some delay was experience awaiting more of the long steel rods especially designed for this work… The heavily roughened square rods are placed vertically within the temporary wooden retaining walls and then wired together from six to twelve inches apart. These are entirely encased in cement, giving a wall practically indestructible from earthquake, fire or flood."

North Elevation	
 	The current North Elevation closely matches the original elevation drawing prepared in 1907, suggesting the exterior has received some alterations, but only to the lower opening in the third of four bays, as shown below. Other elements, including fenestration, brackets and materials remain in place. From the photo below left, it's clear that a pad has been poured at an angle around the exterior of the building, defining the boundaries of the site and guiding vehicular access around the Keg House.
Structure 	Materials: Reinforced Concrete Condition: Fair Significance: Primary In the photo left, rebar is visible within the disintegrating pilasters that decorate the exterior and divide the façade into four bays. Recommendations: • Concrete should be tested to identify causes of deterioration • Repair and retain in place • This material was historically left uncovered and should remain uncovered

Cornices and Brackets 	Materials: Galvanized Iron Condition: Good Significance: Primary The cornice and brackets on the Keg House have fared better than those on the Cellars or Brewhouse buildings. Recommendations: • Retain in place • These are likely the best remaining examples of original brackets and may be useful as models for reconstruction
Roof 	Materials: Composition Condition: Good Significance: Secondary Unlike roofs of other buildings on the western edge of the complex, the top of the Keg House roof is not easily visible from the ground or from upper floors of other buidings. It appears to be a flat composite roof. Recommendation: • Retain in place or reroof • Retain and restore historic ventilator • Consider restoring historic skylights, the outlines of which are visible from the interior

Doors

1

2

3

4

Materials: Unknown
Condition: Missing
Significance: Primary

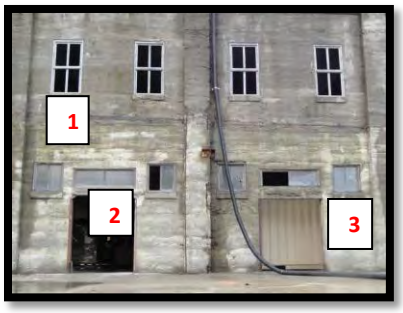
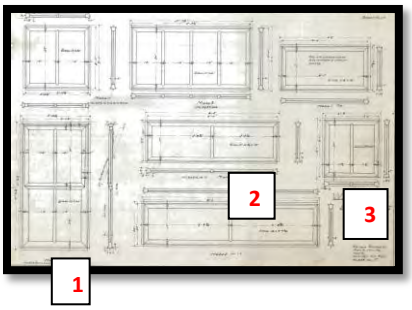
The first floor of the building includes a series of five openings, one per bay, and two in the western bay, shown left. Three of these doors retain their metal casings, though the doors themselves are missing, as seen in the photo 2 below left.

Only one of the openings appears to have been expanded. It includes no casing and rough edges, as seen in photo 3.

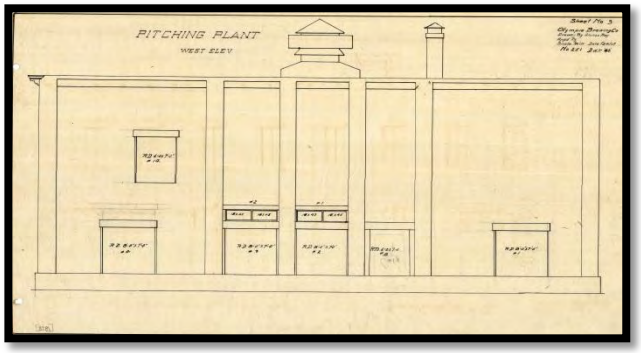
The western bay includes two openings, a door that matches those in photo 2 and a secondary door that was originally topped with a transom window. This was an exterior door to a bathroom likely used by multiple buildings in the complex. This door is missing both its casing and its transom window.

Recommendations:

- If possible, retain and reuse the three consistent openings that match original plans and retain their casings
- In the case of the enlarged opening, consider returning it to its original shape and size to restore the symmetry of the north facade
- In the case of the bathroom door in photo 4, either replace the door and transom or fill the opening, leaving evidence of new versus historic construction.

Windows   	Materials: Galvanized Iron Condition: Good Significance: Primary Three window types are represented on the north façade. The numbers below each window type correspond to details found in original plans, below. Window 1: Galvanized two-over-two, double-hung sash windows with pivoting top sash Window 2: 6’ wide fixed two-light window Window 3: Fixed two-light window Recommendations: • Windows are in good condition and should be retained • Lower windows were glazed with fire glass, which should be retained • Upper windows, which have lost their lights, may be reglazed with clear glass
Additional Elements: Ornamentation 	Materials: Reinforced Concrete Condition: Fair to Good Significance: Primary The corbelling and the pilasters are some of the few ornamental features that tie the Keg House to other Brewery era buildings. Recommendations: • Repair and retain in place

West Elevation

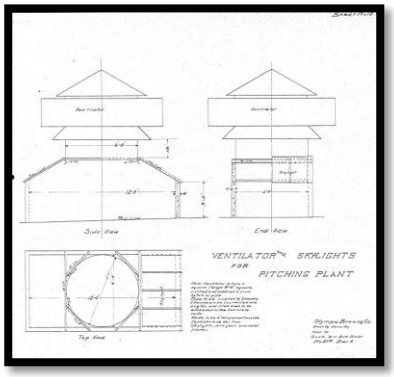
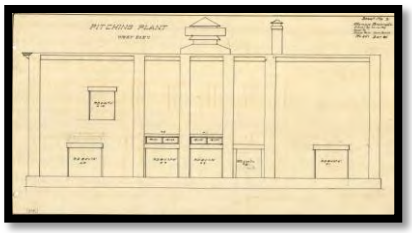


The West elevation resembles the historic elevation drawing, left. The pilasters that define the bays are in place, the openings are in place, and the metal door on the second floor is in place.

The primary alterations took place on the south elevation. Behind the façade of the two-story warehouse, added in 1945, the intact form of the Keg House remains. Its southern end was absorbed rather than removed.

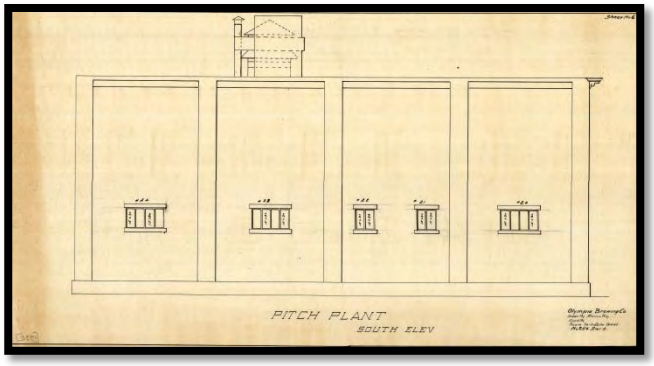
From this elevation, it's also clear that the pad that now provides a promenade that attaches all remaining buildings, completely encompasses the footprint of the Keg House.

Structure  	Materials: Reinforced Concrete Condition: Fair to Good Significance: Primary In the photo left, rebar is occasionally visible through deteriorating concrete. However, this elevation, sheltered from the weather, appears in good condition. As stated above, the southern portion of the Keg House has been absorbed by an infill warehouse added in 1945. The photo, left, shows that the building retains its original shape. Recommendations: • Repair and retain in place • This material was historically left uncovered and should remain uncovered
Cornices and Brackets 	Materials: Galvanized Iron Condition: Missing Significance: N.A. Cornice and brackets appear never to have been installed on the western elevation. In the photos left and above, the corbelling and the minimal eave are visible. Recommendations: • Do not add cornice or brackets, which would give a false sense of history
Roof 	Materials: Composition Condition: Good Significance: Secondary On this elevation, the ventilator is most visible. Based on historic plans, the ventilator has been partially dismantled. Recommendation: • Retain roof material in place • Retain and restore historic skylights and ventilator

Skylights and Ventilator  	Materials: Galvanized Iron, Wire Glass, Metal Frames Condition: Unknown Significance: Primary Skylights and ventilators were included in original plans for the Keg House. From the interior, the openings are visible but have been boarded up, except in the case of the large ventilator most visible on this elevation. Recommendations: • Restore and retain in place
Doors   	Materials: Unknown Condition: Missing in some cases Significance: Primary There are five doors visible on the western elevation. Three are eight feet wide, and two are six feet, as shown in the elevation drawing below left. The single second-story opening retains its rolling door. The others retain only their metal casings. This is also true for the southerly door, which has been absorbed into the Warehouse. Recommendations: • If possible, retain and reuse the openings that match original plans and retain their casings • Retain rolling door on second floor • Remake doors of historically appropriate material • Retain lintels

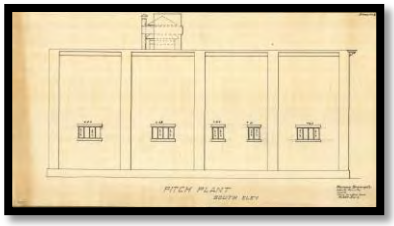
Windows  	Materials: Galvanized Iron Condition: Missing Significance: Primary Only two windows were installed on the west elevation above two of the doors. One has been bricked in and the other is missing and retains only its opening. Recommendations: • Retain the bricked in panel or return to original fenestration • Replace missing windows with historically appropriate materials, using plans as possible models
Additional Elements: Ornamentation 	Materials: Reinforced Concrete Condition: Fair to Good Significance: Primary The western elevation includes very little ornamentation. Pilasters and corbelling at the roofline are the most visible. These detail tie the design to other brewery era buildings. Recommendations: • Repair and retain all exterior ornament in place

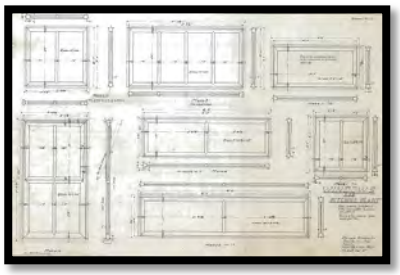
South Elevation



The south elevation is no longer visible from the exterior of the building. It's been absorbed and reused by an infill Warehouse that was added in 1945. The photo, left, shows the former exterior wall as it exists now inside the Warehouse.

The historic elevation drawing below shows the original fenestration. There was originally no door on this elevation, but openings have been added to connect the Warehouse to the interior of the Keg House, seen left.

Structure 	Materials: Reinforced Concrete Condition: Fair to Good Significance: Primary In the photo left, the original pilasters and concrete walls of the southern elevation are still visible. Recommendations: • Repair and retain in place • This material was historically left uncovered and should remain uncovered
Cornices and Brackets 	Materials: Galvanized Iron Condition: Never Installed Significance: N.A. It appears that the cornice and brackets found on the north and east elevations were never installed on the south elevation. Recommendations: • Do not recreate or install brackets as this would give a false sense of history

Doors  	Materials: Unknown Condition: Missing Significance: Secondary Doors were not planned for the south elevation, but one opening has been added to the first floor, left, and one has been added to the second floor, below left. Recommendations: • Retain these two enlarged openings. They have been here for at least 50 years and provide the only access to the Warehouse from the interior of the Keg House.
Windows   	Materials: Galvanized Iron Condition: Fair Significance: Secondary Two window types were represented on the south elevation. None appear on the second floor, as shown left, and only two appear on the first floor. Two other windows on the lower floor have been filled. Recommendations: • Where window frames remain, they should be reglazed • Where casings alone remain, windows should be replicated. Fixed windows should be replaced with fixed windows in historically appropriate materials • Filled windows may be restored or left as is

East Elevation

The East elevation retains the original details provided in the historic elevation drawing.

In the photo below, note that the building is canted.

It's also clear that the building is at a lower grade than the surrounding road. Retaining walls and a sluice that help shed water from the lower floor.

Structure 	Materials: Reinforced Concrete Condition: Fair to Good Significance: Primary As seen left, the defined pilasters and corbelling at the roofline are the primary ornamental details. The east elevation, though it's hidden from much of the complex, was highly visible as the site was approached from an access road that wrapped the eastern wall of the Keg House. Recommendations: • Repair and retain in place • This material was historically left uncovered and should remain uncovered
Cornices and Brackets 	Materials: Galvanized Iron Condition: Good Significance: Primary The cornice and brackets on the Keg House have fared better than those on the Cellars or Brewhouse buildings. Recommendations: • Retain in place • These are likely the best remaining examples of original brackets and may be useful as models for reconstruction

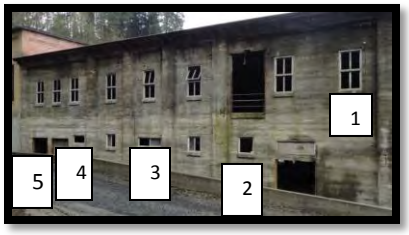
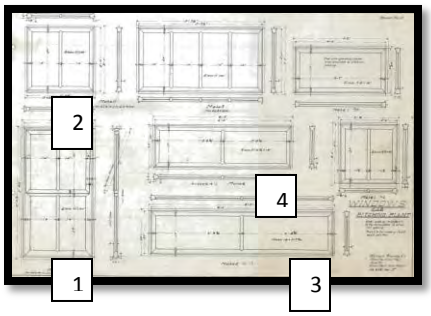
Doors

Materials: Unknown
Condition: Missing
Significance: Primary

The first floor includes three doors, as shown both in the plan and photo left, and the second floor includes a door as well. The upper floor opening is six feet across and includes wooden doors. Two of the lower doors are the same size. The final first floor door is slightly narrower than the rest.

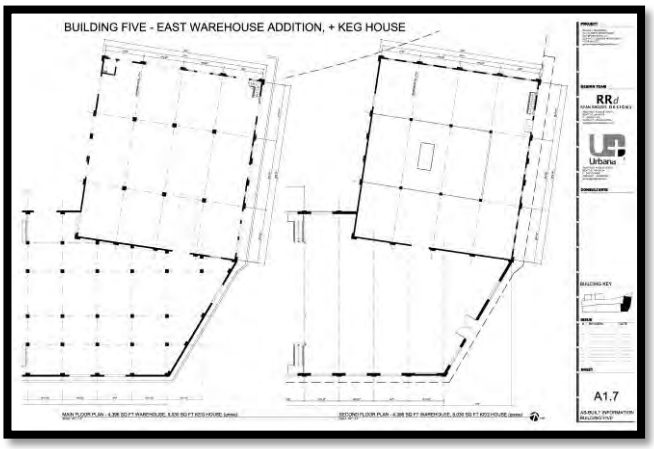
Recommendations:

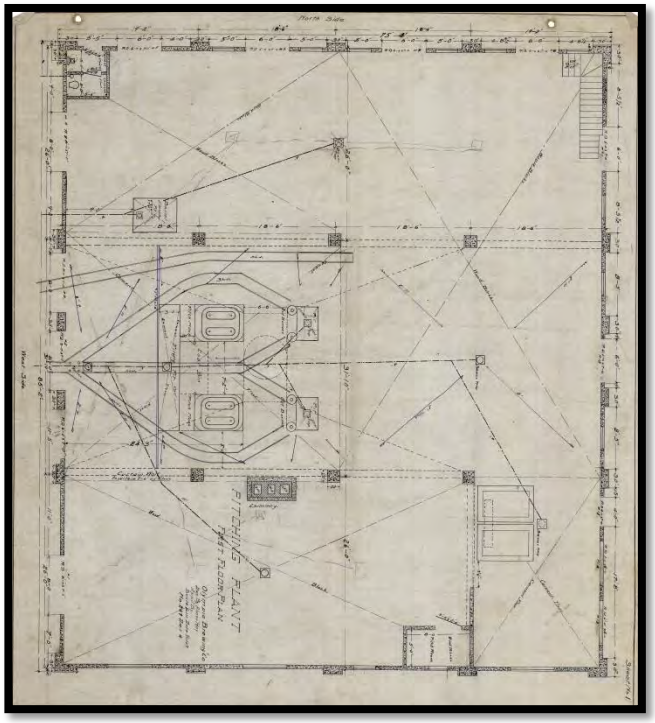
- If possible, retain and reuse the openings that match original plans and retain their casings
- If openings are to be filled with new materials, ensure that all new construction is recognizably new and that casings, bars and lintels remain where appropriate

Windows   	Materials: Galvanized Iron Condition: Good Significance: Primary One window type is represented on the top floor. All eight windows are two over two, double-hung sash windows with a pivoting upper sash (1). The bottom floor includes five window types, four of which are keyed to the original plans. One of the transom windows has been boarded up. The fifth window type is a large opening fit with metal rolling doors. It does not appear on original plans. Recommendations: • Window frames are in good condition and should be retained • Windows, most of which have lost their lights, may be reglazed with clear glass
Additional Elements: Ornamentation 	Materials: Reinforced Concrete Condition: Fair to Good Significance: Primary The corbelling and the pilasters are some of the few ornamental features that tie the Keg House to other Brewery era buildings. Recommendations: • Repair and retain in place

Additional Elements: Sluice 	Materials: Wood Condition: Good Significance: Primary The sluice that allows for runoff does not appear in plans but was likely added to deal with wet conditions. Currently, it helps shed water away from the building's foundation. Recommendations: • Retain in place as an artifact of water control technology onsite

First Floor Introduction





The as-built floor plans for the Keg House, shown left, illustrate the cant of the building and its relationship to the warehouse that encompasses its south end.

The first floor was left open, punctuated by columns and with amenities on the northern edge, including a bathroom, accessible from the building's exterior, and a stair, shown in the northeast corner of the building.

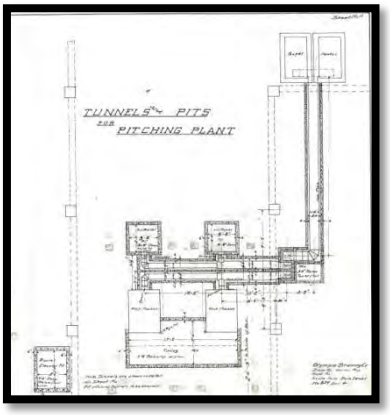
Originally, as shown below, the first floor was devoted to a pitching machine that would heat brewer's pitch, pour it into the interior of a new barrel and turn the barrel to distribute the pitch evenly through the interior.

As in other buildings, the machinery is gone and only plans remain. This building, more than others, has been stripped of its defining interior features. No chimney, floor drains or barrel elevator remain.

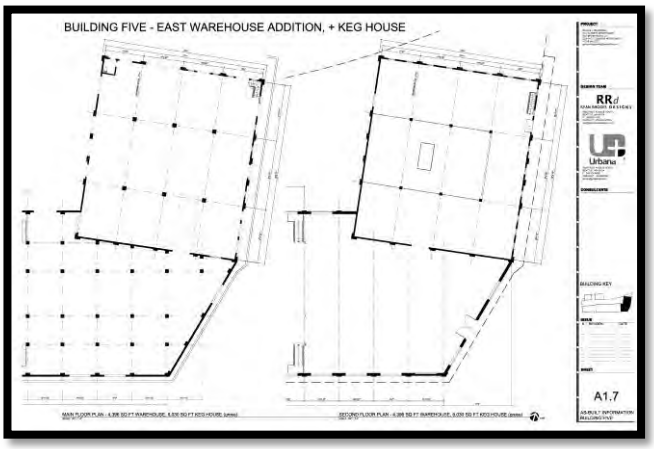
Structure: Interior Volumes  	Significance: Secondary Half walls divide the building and isolate the middle portion, which is where the pitching machine originally was. In the photo below, the opening in the ceiling allowed the heat and smoke from the very hot pitching machine, which worked with boiling pitch, to escape through the second floor and up through the ventilator still visible on the roof. Recommendations: • Retain columns and sense of openness, if possible
Structure: Columns and Beams 	Materials: Concrete Condition: Good Significance: Primary In this space, the built up columns and concrete beams both support the structure and provide extra fire protection. Recommendations: • Retain in place • Historically painted materials should remain painted. Historically unpainted materials should remain unpainted

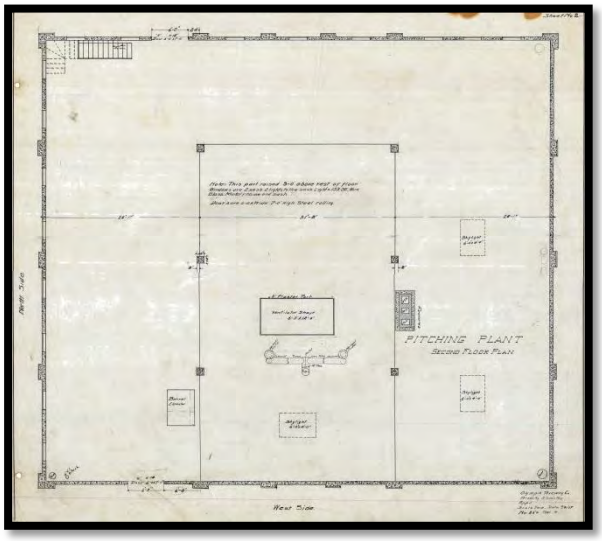
Traffic: Stair 	Materials: Concrete Condition: Good Significance: Primary This quarter-turn enclosed stair is the main conveyance from the first to the second floor. Its stairwell is encased in concrete and narrows near the second floor. A bucket elevator appears on plans but does not exist in the building now. Recommendation: • Retain stair in place and retain historic materials, if possible
Traffic: Opening Between Keg House and Warehouse 	Materials: Reinforced concrete; metal casing Condition: Good Significance: Secondary Though this is not an original opening, it now provides access to and from the building. Recommendation: • Retain in place
Traffic: Ramp 	Materials: Concrete Condition: Good Significance: Secondary The ramp, likely added to negotiate changes in grade between the two buildings allowed for the smooth movement of materials and machinery. Recommendations: • Retain in place

Finishes: Floors 	Materials: Concrete Condition: Good Significance: Secondary Drains, chimneys, and a barrel elevator are indicated on historic plans, along with a pitching machine. None of these materials remain, nor does the floor surface show any sign of them. The concrete floor is likely not original but its age is unknown. Recommendations: • Retain in place • Historically uncovered materials should remain uncovered
Finishes: Walls  	Materials: Concrete Condition: Good Significance: Secondary The southern wall includes evidence of filled windows, as seen left, but the wall surfaces are otherwise in good condition. Recommendations: • Nothing remains of any paint or other coating on the walls. Historically unpainted materials should remain unpainted • Columns retain paint on lower halves. Historically painted materials should remain painted
Finishes: Ceiling 	Materials: Concrete Condition: Good Significance: Primary The ceiling of the Keg House is significant as one of the remaining artifacts of the pitching process. It's made of the same rough concrete used on the building's exterior, unlike interior half walls and built up columns. Recommendations: • Retain in place

Additional Elements: Ceiling Opening 	Materials: N.A. Condition: N.A. Significance: Primary The opening between the first and second floors includes a large hole that leads to the ventilator on the building's roof. There are also metal connectors that remain in place and likely supported the pitching machinery that's since been removed. Recommendations: • Though openings are not easy to retain in floors and ceilings, consider securing the opening but leaving it visible to be interpreted in place
Additional Elements: Bathroom Fixtures 	Materials: Unknown Condition: Missing Significance: Secondary The bathroom fixtures that were installed have apparently been removed, with the exception of the plumbing and a towel dispenser, seen in the photo left. Recommendations: • Retain artifacts in place or convert to a new bathroom • Remove and relocate historic materials, if necessary
Additional Elements: Missing Underground Elements 	The Keg House plans include references to tunnels and pits, and the sketch, left, details some of these elements. They no longer exist within the building but underground resources may exist in place. Recommendations: • Be aware, during construction, of the possibility of running into underground resources

Second Floor Introduction





The as-built floor plans for the Keg House, shown left, illustrate the cant of the building and its relationship to the warehouse that encompasses its south end.

The second floor of the Keg House includes a raised platform that takes up nearly a third of the interior space. It was installed to provide greater head room for machinery on the first floor. It is shown in original plans, below left.

Structure: Interior Volumes  	Significance: Secondary The second floor is made up of one large volume with a raised platform along the northern wall that protrudes into the room. It is surrounded by columns. Recommendations: • Retain the columns that define and divide the space and retain the open volumes around the raised platform, if possible
Structure: Columns and Beams 	Materials: Concrete Condition: Good Significance: Primary The columns and beams are built up, covered in concrete and remain visible, as in other brewery era buildings. The columns cluster around the platform in the center of the room. Recommendations: • Retain in place • Retain and maintain finish on historically finished materials
Traffic: Stair 	Materials: Concrete Condition: Good Significance: Primary The stairwell becomes very narrow at the second floor where is encased in concrete. A metal railing remains. Recommendations: • Retain in place, if possible • If the space needs to be opened up, retain as much of the original design as possible

Traffic: Opening Between Keg House and Warehouse 	Materials: Concrete Condition: Good Significance: Secondary This opening dates from the addition of the warehouse, added in 1945. Recommendations: • Retain in place • Though the opening is not original to the building, it allows for access between the two
Traffic: Doors 	Materials: Wood Condition: Good Significance: Primary Two swinging wood doors remain on the second floor. They are similar to wood doors in the Warehouse, built in 1945, and may date from that era. Recommendations: • Retain in place
Finishes: Floors 	Materials: Concrete Condition: Good Significance: Secondary The concrete floor provides industrial character to the second floor. Recommendations: • Retain in place and retain historic finish

Finishes: Wall 	Materials: Concrete Condition: Good Significance: Secondary The rough, unfinished walls appear to have been left unpainted and unplastered. Recommendations: • Historically unfinished materials should remain unfinished
Finishes: Ceiling 	Materials: Concrete Condition: Fair to Good Significance: Secondary The ceiling beams have been left visible. Recommendations: • Repair and retain in place • Historically unfinished materials should remain unfinished
Additional Elements: Platform 	Materials: Concrete Condition: Good Significance: Secondary The platform is evidence of the building's historic use but does not, in itself, retain primary significance Recommendations: • Leave in place, if possible

Additional Elements: Ventilator 	Materials: Various Condition: Good Significance: Primary The photo left was taken from beneath the ventilator looking up through the opening in the roof. This historic element of the Keg House defines its former use as a pitching plant. Recommendations: • Should be retained
Additional Elements: Skylights 	Materials: Unknown Condition: Missing Significance: Secondary The openings associated with four skylights have been boarded up. The lights themselves are missing. Recommendations: • Return to former condition

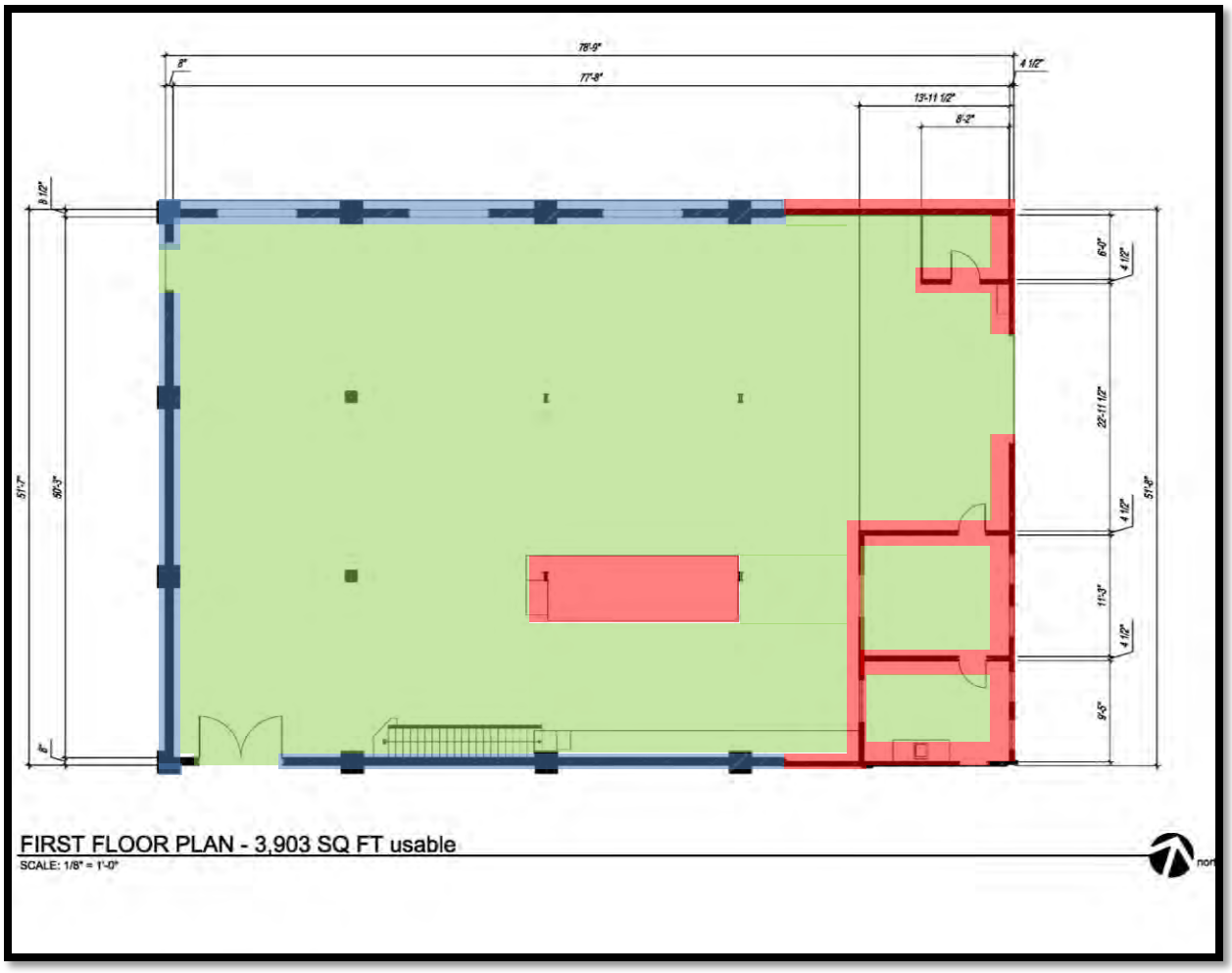
North Storage Building

The archives do not include the same level of documentation for the North Storage Building as for other buildings. This building dates from 1927, when the site was briefly owned by a paper mill that did not survive the Great Depression in this location. However, no elevation drawings or floor plans were found.

Because the original use of the building is unknown, materials are assumed to be original unless evidence suggests otherwise. Significance maps are made using only the as-built drawings prepared by Ryan Rhodes Designs and Urbanadd Architects.

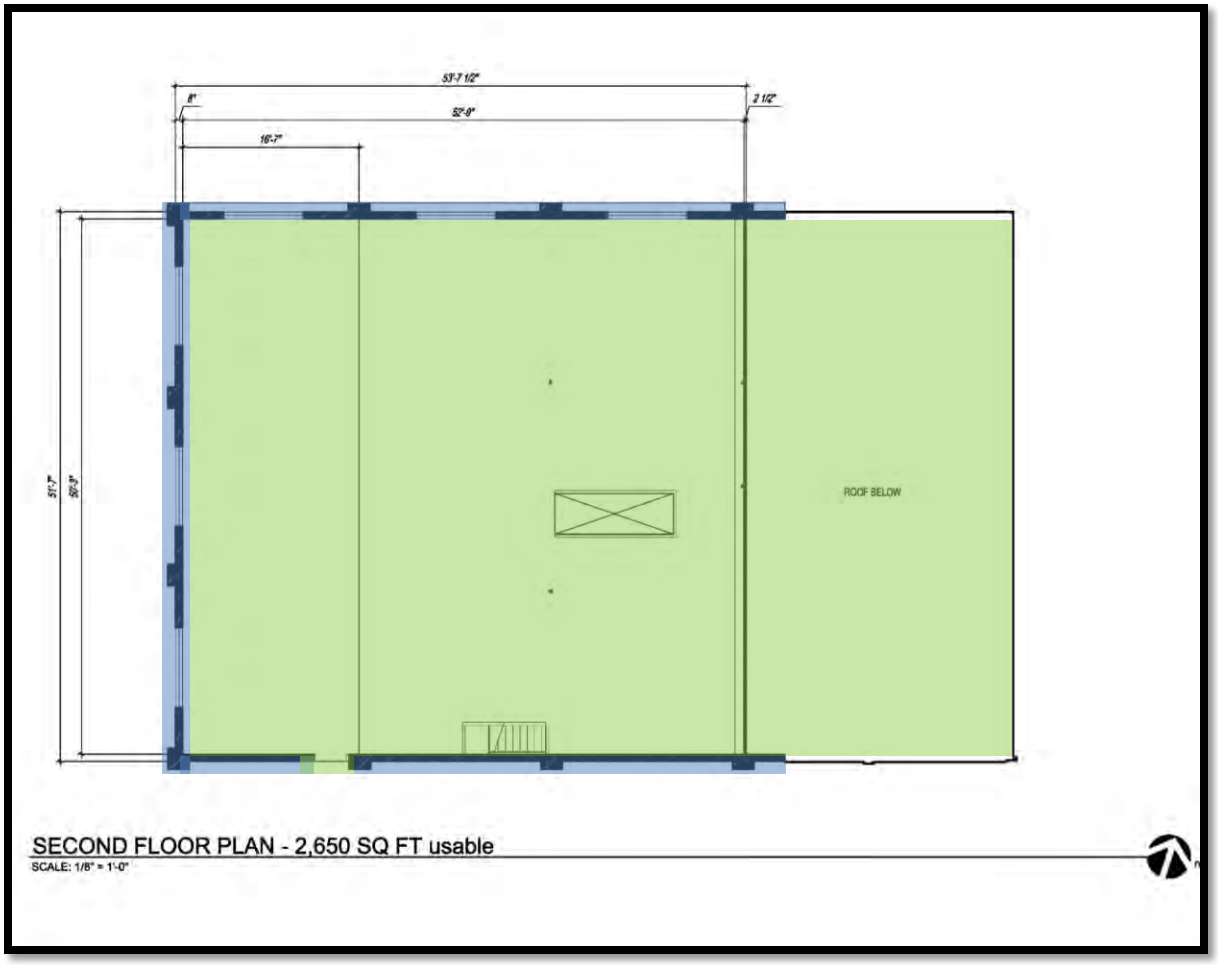
In spite of the lack of historic documentation, this building is considered significant as an example of a 1920s industrial building, and for its association with the history of the brewery site.

Significance Maps: First Floor



Significance
Primary
Secondary
Minor
None
Missing

Significance Maps: Second Floor



Significance
Primary
Secondary
Minor
None
Missing

North Elevation	
	The north elevation of the side-gabled North Storage Building includes some of the design elements found on other brewery buildings, including the pilasters and corbelling near the roof. This is likely the primary façade, though the building is visible from all sides and does not include extensive ornamentation on any façade. There's no visible evidence on the corrugated roof of a former cornice or brackets. It's unknown whether the roof is original. The building has three identical bays and achieves a notable symmetry, which is generally absent from the facades of brewery era buildings.

Construction 	Materials: Board-formed concrete Condition: Good Significance: Primary The exterior of the storage building includes visible seams from the board molds used to shape the concrete, which appears to be in generally good condition. Recommendations: • Retain the unfinished surface • Retain all exterior ornament, including the chamfered pilasters and corbeling
Roof 	Materials: Corrugated Galvanized Steel Condition: Unknown Significance: Secondary The gabled metal roof on the storage building is the only significantly pitched roof in the complex. The white stripes seem to be remnants of the original white paint. The roof appears all white in one hand-tinted postcard. Recommendations: • Repair and retain or replace in kind • As the surface was originally painted white, it can be repainted white. It can also be left as is if it remains in good condition

Doors  	Materials: Missing Condition: Missing Significance: Primary The openings themselves are significant to the building's original design, but all evidence of original doors is missing on this elevation. However, a single door on the southern façade may provide a model for new doors. Those double doors are made of wood. Recommendations: • Retain openings if possible • Build doors or panels of historically appropriate materials
Windows 	Materials: Metal Condition: Good; missing glass Significance: Primary The northern elevation includes three pairs of identical windows. These industrial windows are boarded up in the two outer bays but the frames remain in place. Each window includes one fixed upper sash of six lights, a central awning sash of six lights, and a lower fixed sash of three lights. Each pair of windows is separated by narrow mullions. Recommendations: • Reglaze and retain in place unless corrosion makes window replacement necessary • If replacement windows are necessary, they should match the existing fenestration, materials, design and function. Replacement windows should be operable where the originals were operable and should include true divided lights.

Additional Elements: Ornament  	Materials: Concrete Condition: Good Significance: Primary The primary evidence that the Tumwater Paper Mill was echoing the original design of the brewery buildings is found in the concrete exterior, the chamfered pilasters and the corbelling at the roofline. Recommendations: • Retain all exterior ornament, including the three bays and the chamfering on the columns, seen left

West Elevation

The west elevation faces the east wall of the Brewhouse over a concrete pad that used to hold an infill structure that has since been removed. The outline of that structure's roofline is visible in the remains of white paint and flashing still adhering to this elevation.

No documentation exists to show what alterations may have occurred, but it's possible the small door on the first floor was added to provide access to the infill structure.

Construction 	Materials: Board-formed concrete Condition: Good Significance: Primary The exterior of the storage building includes visible seams from the board molds used to shape the concrete, which appears to be in generally good condition. Recommendations: • Retain the unfinished surface • Retain all exterior ornament, including the chamfered pilasters and corbeling
Roof  	Materials: Corrugated Galvanized Steel Condition: Good Significance: Secondary The gable ends of the storage building include one unusual ornamental addition. The purlins project under a narrow eave. Recommendations: • Repair and retain or replace in kind • As the surface was originally painted white, it can be repainted white. It can also be left striped if it remains in good condition • Retain visible, projecting purlins

Door

Materials: Missing
Condition: Missing
Significance: Secondary

This door is smaller than others in the building and may be original to the building or possibly added to connect the storage building to the recently removed infill building. It is the only missing door that retains portions of its casing. In fact, it retains remnants of multiple door casings, all of which were made of wood.

Recommendations:

- Leave opening in place, if possible
- Replace door with historically appropriate materials

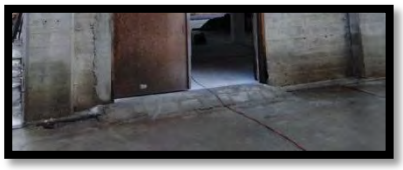
Windows 	Materials: Metal Condition: Level of corrosion unknown Significance: Primary The western façade includes three identical pairs of windows. These industrial windows match those on the northern façade in design but are smaller. Each window includes one upper awning sash of six lights and a lower fixed sash of three lights. Each pair is divided by narrow metal mullions. Recommendations: • Reglaze and retain in place unless corrosion makes window replacement necessary • If replacement windows are necessary, they should match the existing fenestration, materials, design and function. Replacement windows should be operable where the originals were operable and should include true divided lights.
Additional Elements: Ornament 	Materials: Concrete Condition: Good Significance: Primary The primary evidence that the Tumwater Paper Mill was echoing the original design of the brewery buildings is found in the concrete exterior, the chamfered pilasters and the corbelling at the roofline. Recommendations: • Retain all exterior ornament, including the three bays and the chamfering on the columns, seen left

Additional Elements: Finish 	Materials: Paint, sealant, flashing Condition: N.A. Significance: Minimal The white paint on the first story and the remnants of glue and flashing identify the portion of the western wall that was once integrated into the infill structure between the Brewhouse and the Storage Building. Recommendations: • Paint and sealant may be retained in place or removed by the gentlest means possible

South Elevation	
	The south elevation faces the Cellars and Warehouse buildings. It too includes evidence of an infill structure that has since been removed. This elevation includes no windows, but does include pilasters and corbelling.

Construction 	Materials: Board-formed concrete Condition: Good Significance: Primary The exterior of the storage building includes visible seams from the board molds used to shape the concrete. Recommendations: • Retain the unfinished surface • Retain all exterior ornament, including the chamfered pilasters and corbeling
Roof 	Materials: Corrugated Galvanized Steel Condition: Unknown Significance: Secondary The corrugated metal roof appears to be sound, as there's no leakage visible within the building. It's not known when it was installed. The roof appears white in a hand-tinted postcard. Recommendations: • Repair and retain or replace in kind • As the surface was originally painted white, it can be repainted white. It can also be left striped if it remains in good condition

Doors 	Materials: Wood Door and Casing Condition: Good/Missing Significance: Secondary The first floor double doors are the only remaining doors on the building. All other openings have been stripped of their doors, and most have been stripped of their casings. The surrounding concrete shows evidence of repairs, suggesting that the wood casing was a later alteration. The upper door was likely added when the missing infill structure was built. Historic photos show the door opening onto the infill structure's roof. There are no windows on this elevation. Recommendations: • Retain doors and casing on first floor or replace with historically appropriate materials • Fill second story opening with visibly new construction or build and secure replacement door of historically appropriate materials
Additional Elements: Ornament 	Materials: Concrete Condition: Good Significance: Primary The primary evidence that the Tumwater Paper Mill was echoing the original design of the brewery buildings is found in the concrete exterior, the chamfered pilasters and the corbelling at the roofline. Recommendations: • Retain all exterior ornament, including the three bays and the chamfering on the columns, seen left

Additional Elements: Ramps  	Materials: Concrete Condition: Good Significance: Minimal Two ramps impact the exterior of the southern façade. The first, left, negotiates a small rise into the storage building. The second, below left, negotiates a drop in elevation from one part of the concrete promenade to another. This ramp obscures a small part of the storage building's southeast corner. Recommendations: • Retain both ramps in place unless alterations to the promenade are necessary
Additional Elements: Finish and Supports 	Materials: Paint, Sealant, Metal Condition: N.A. Significance: Minimal The white paint on the first story and the remnants of sealant and flashing show where this wall was once integrated into the infill structure between the Storage Building and the Warehouse to the south. There are also protruding beams. Recommendations: • May be retained in place or removed by the gentlest means possible

Additional Elements: Gutter 	Materials: Metal Condition: Poor Significance: Minimal A gutter system once helped protect the building from weather. The gutter system is greatly deteriorated. Recommendations: • Remove and replace

East Elevation

The east elevation is the most altered elevation on the North Storage Building. It is also the most mysterious. Instead of being made of concrete, the top floor is enclosed with sheet metal and the bottom floor is no longer enclosed at all, though the supports from a former single story addition remain. Rebar projects from the ends of the southern and northern concrete walls, suggesting that the building was never finished with a fourth concrete wall. The reasons for leaving the building unfinished are unknown, but a corrugated steel wall on the east elevation also appears in historic mid-century photos, along with the missing addition.

No original plans or drawings exists to show how the building has been altered.

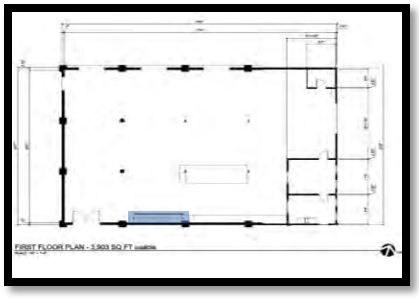
Construction  	Materials: Corrugated Steel Condition: Good Significance: Secondary The top floor is enclosed with recently painted corrugated sheet steel. The structural system of the former addition remains in place but the corrugated metal panels have been removed. An overhead door remains but it does not appear in historic mid-century photos and is not original to the building. The date of the first story addition is unknown. Recommendations: • If enclosing the building is the goal, identify the new construction as non-historic • If removing the addition is necessary, consider enclosing the space with historically appropriate materials • If finishing the building in concrete is the goal, ensure that the east wall does not give a false sense of history
Roof 	Materials: Corrugated Galvanized Steel Condition: Good Significance: Secondary The metal roof on the storage building is echoed in the roof of the former addition, which is also corrugated metal. Purlins appear under a narrow eave on the gable end. Recommendations: • If removing the addition, remove roof and consider reusing materials elsewhere • Regardless of the roof treatment, retain visible purlins in place

Additional Elements: Fan 	Material: Various Condition: Unknown Significance: Secondary A fan and vents are visible under the gable but do not appear in mid-century historic photos. Recommendations: • Retain in place as an artifact of the building's industrial use or use elsewhere on site

First Floor Introduction

The interior of the North Storage Building now includes an open volume interrupted only by structural columns and a stair on the southern wall. The former first story addition on the eastern wall retains only its roof and one overhead door, which is not original to the building. It is seen in the picture left.

The building is a mysterious mix of structural materials, with two different support systems in place. The change in materials is likely evidence of alterations and additions. It's not known when these alterations took place.

Structure: Interior Volumes 	Significance: Secondary This floor plan, drawn up by Urbanadd Architects and Ryan Rhodes Designs, shows an addition on the eastern portion of the building that has since been removed. The structure of the addition remains in place, but interior and exterior walls have been removed. The stair, highlighted in blue, provide the only conveyance to the second floor. There is no elevator or lift in this building. Recommendations: • Retain sense of openness, if possible
Structure: Columns and Beams 	Materials: Steel and Concrete Condition: Good Significance: Secondary There are two support systems for the upper floor visible on the first floor. In the western section of the building, composite columns and beams support a concrete floor. In the eastern section, steel beams and wood joists and cross-bracing support a wood floor. Recommendations: • Retain in place

Traffic: Stair  	Materials: Wood Condition: Good Significance: Secondary The open-riser stair on the south wall is the only access between the building's two floors. Treads, rails, carriage and platform are all wood, recently painted. Recommendations: • Retain in place
Finishes: Floors 	Materials: Painted Concrete Condition: Good Significance: Minimal The storage building's floor is a recently painted concrete surface. Photos from before the recent repainting show a darker surface. Recommendations: • Retain in place or repaint
Finishes: Walls 	Materials: Painted Concrete Condition: Good Significance: Minimal The wall surfaces were recently painted but match the color matches the most recent surface coat. Recommendation: • Maintain in place or repaint

Finishes: Ceiling

Materials: Wood and Concrete/Steel
Condition: Good
Significance: Secondary

There are two distinct systems for the second floor. On the western bay, the system is similar to other brewery era buildings. Built-up columns and beams support a concrete floor. In the central bays, floor joists and cross-bracing are visible. The third portion of the ceiling is the eastern addition ceiling, which is made of corrugated metal, as seen below left.

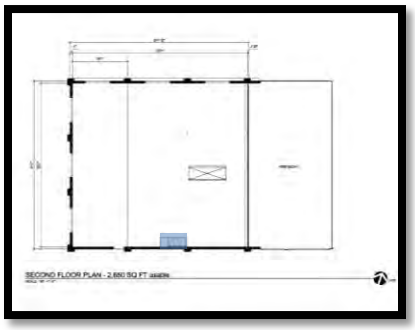
Recommendations:

- Retain in place
- Do not cover or encase structure

Second Floor

The second floor of the North Storage Building is one open volume with visible trusses and large windows.

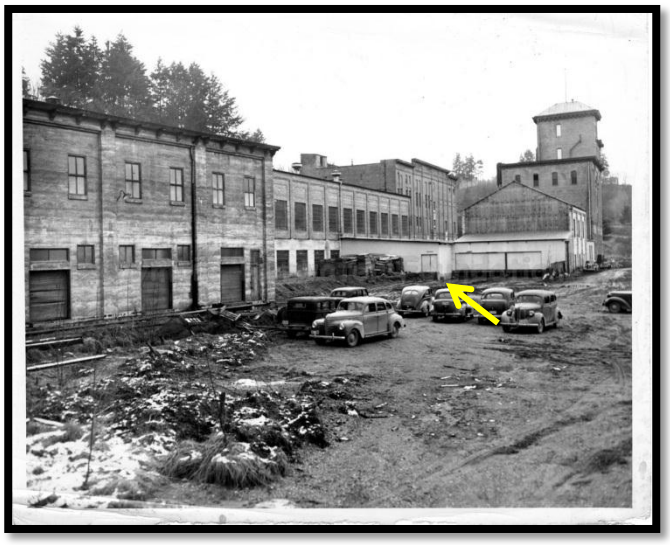
The space is characterized by its openness, its visible trusses and an opening in the floor that once supported a conveyor belt. A metal portion of that conveyor system remains in the building and should be preserved as an artifact.

Structure: Interior Volumes 	Significance: Secondary This floor plan, drawn up by Urbanadd Architects and Ryan Rhodes Designs, shows the second floor's open volume and stair to the first floor, highlighted in blue. Recommendations: • If possible, retain the sense of openness and the visibility of trussing and other systems
Structure: Columns and Beams 	Materials: Metal Condition: Good Significance: Primary The roofing system, Fink or pitched Fink trusses, have been left visible, along with two supporting members. Recommendations: • All structural columns should be investigated by structural engineers • Columns should be retained in place • Historically unpainted columns should be left unpainted; historically painted columns should remain painted
Traffic: Stair  	Materials: Wood Condition: Good Significance: Secondary The open-riser stair on the south wall provides the only access between the building's two floors. Treads, rails, carriage and platform are all wood, recently painted. On the second floor, a door and railing are in place around the stair. Recommendations: • Retain in place, if possible • If the stair must be altered, retain door for use in another location

Finishes: Floors 	Materials: Painted Concrete and Wood Condition: Good Significance: Secondary The second floor includes two different floor types, a concrete floor on the western section and a plywood floor on the eastern section. Recommendations: • Retain in place if possible
Finishes: Walls 	Materials: Painted Concrete and Corrugated Metal Condition: Good Significance: Secondary The wall surfaces were recently painted to match the former color. Recommendation: • Maintain in place or repaint
Finishes: Ceiling 	Materials: Wood Condition: Good Significance: Primary The corrugated sheet steel and the Fink truss have recently been repainted white, though this is also the color associated with the building interior in contemporary photos. Recommendations: • Retain in place • Do not cover or encase structure

Additional Elements: Window Hardware 	Materials: Metal Condition: Fair to Good Significance: Secondary Window hardware is a character defining element of industrial windows and should be retained when possible. Recommendations: • Retain in place, if possible, or replace in kind if corrosion makes replacement necessary
Additional Elements: Conveyor Belt 	Materials: Metal Condition: Unknown Significance: Secondary A hole in the floor was once filled with a metal conveyor that is still housed in the building. The opening, surrounded by a wood railing, remains. Recommendations: • Without the conveyor belt, the opening in the floor does not retain its significance and may be filled • The conveyor should be preserved and reused or displayed elsewhere • New construction should be recognizably new
Additional Elements: Fan 	Materials: Various Condition: Unknown Significance: Secondary A fan is installed prominently on the eastern wall of the building, an artifact of its earlier industrial use. Recommendations: • Retain if possible • If it must be removed, reuse on site

Warehouse: Features



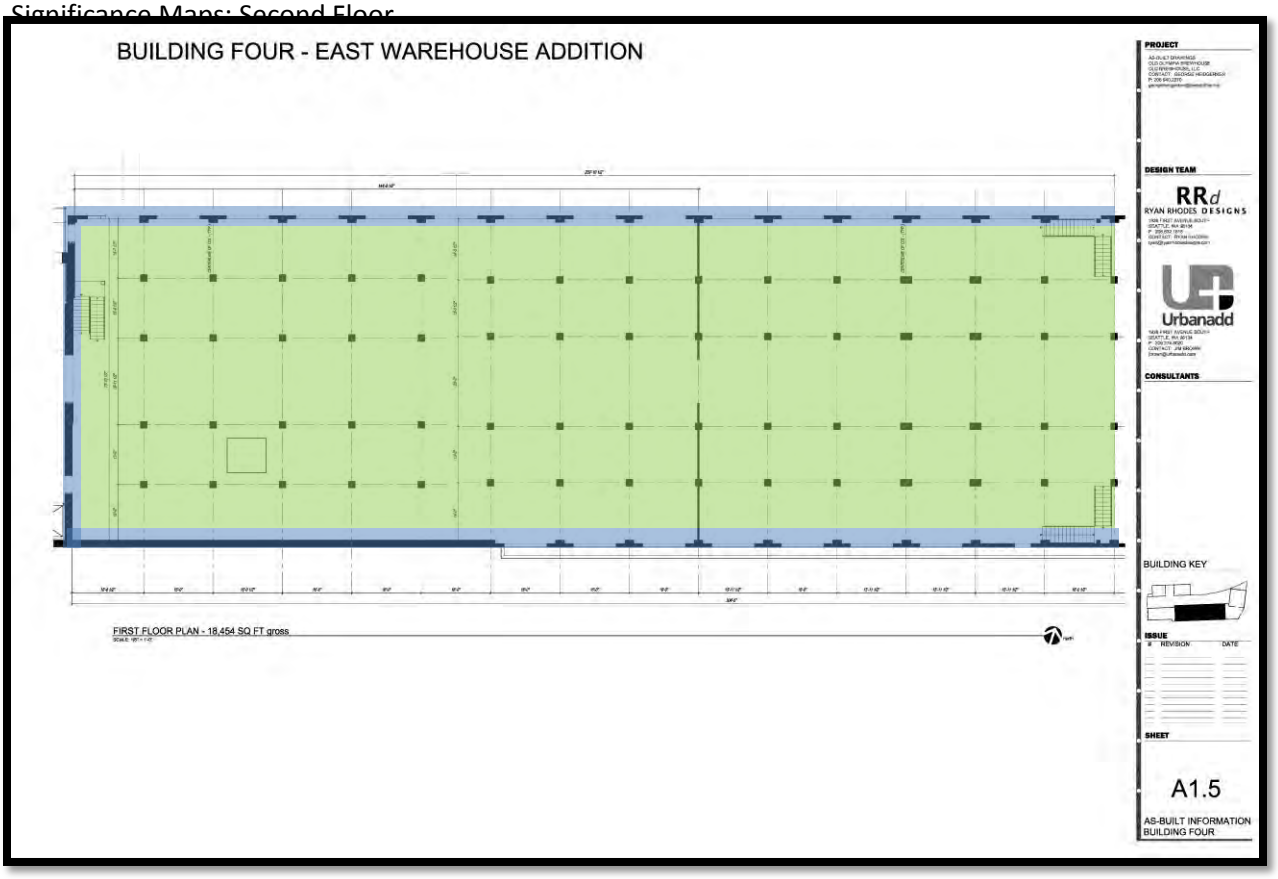
This building was designed by the father-son team of Joseph and Robert Wohleb, who were well-known local architects and particularly known for their brewery buildings. The newer brewery, built off site in 1933, is from Wohleb designs.

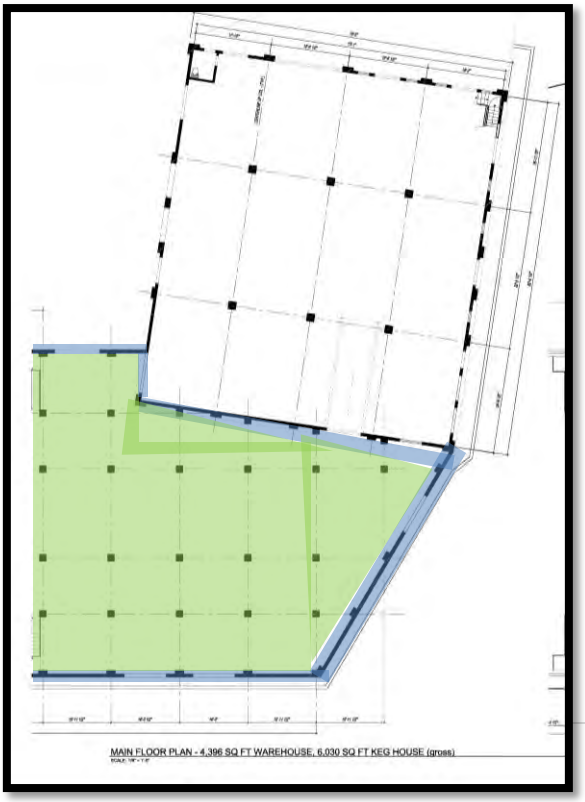
No elevation drawings were found for the Wohleb Warehouse. There are, however, excellent plans that describe the construction of the building and of added elements like a well and water tank below ground.

There are also historic photos, like the one left, that document significant alterations, including the addition of infill structures on the north of the warehouse that have since been removed but might have necessitated some of the alterations to bottom floor windows and doors.

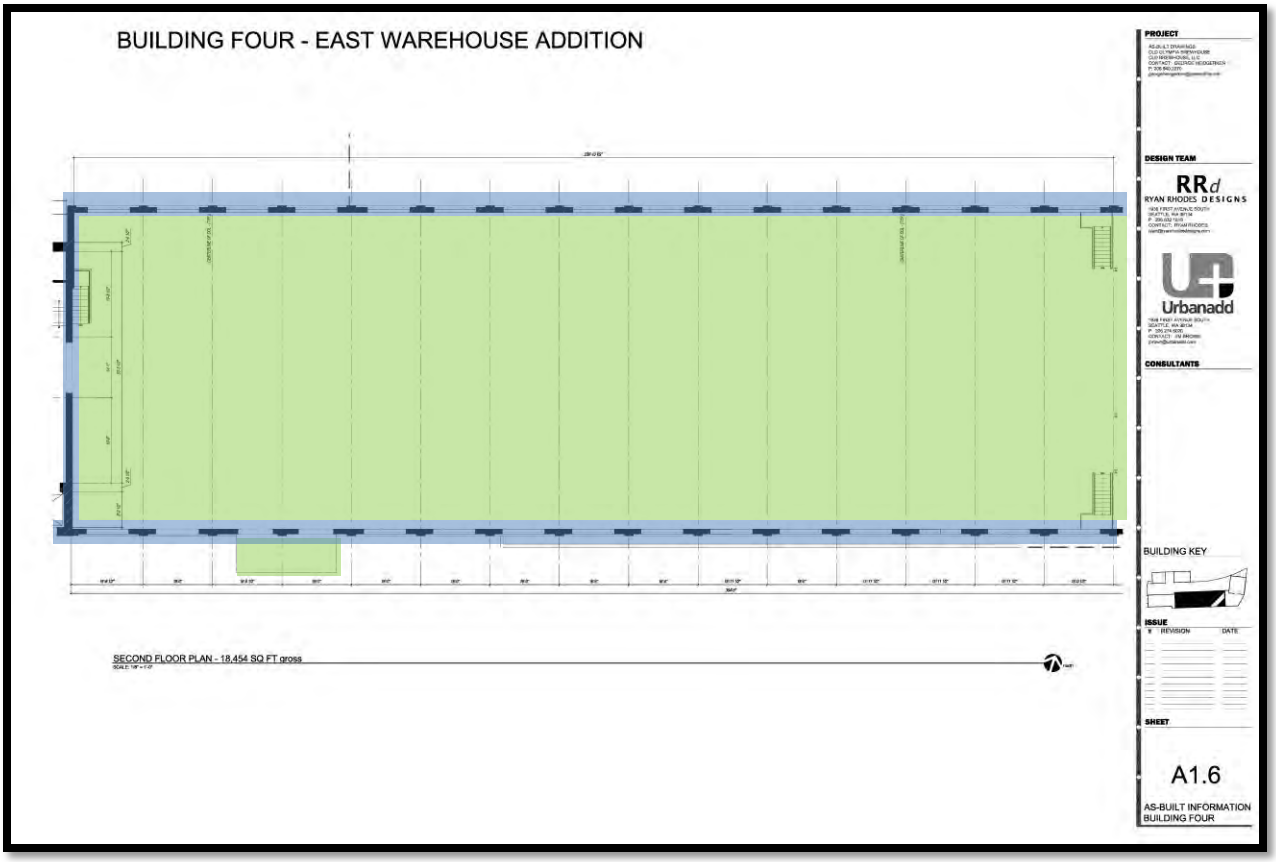
Significance maps are created using as-built drawings prepared by Urbanadd Architects and Ryan Rhodes Designs.

Significance Maps: Second Floor





Significance
Primary
Secondary
Minor
None
Missing



Significance

Primary

Secondary

Minor

None

Missing

North Elevation

The north elevation of the warehouse faces the site's promenade and includes an upper floor that echoes design features found in the brewery era buildings, including the shallow pilasters and corbelling. The lower floor is plainer and less ornamented than the brewery era buildings, and even the North Storage building.

Masonry

Materials: Red Brick
American Bond: 6 stretcher courses per header
Approximate size: 8 ¼" x 2 ½" x 4"
Condition: Fair to Good
Significance: Primary

The brick on the warehouse is in better condition than on brewery era buildings. The north elevation is sheltered from weather. The course is somewhat inconsistent due to the amount of area devoted to windows, pilasters and panels.

Recommendation:

- Use original brick for repairs if needed
- Replacement brick, if needed, should be of a similar size, color and texture
- Repoint with hand tools to maintain joint profile
- All brick ornament, including corbelling at the cornice, pilasters, projections and recessions should be retained

Mortar

Materials: Composition Unknown
Condition: Good
Significance: Primary

The mortar seems most deteriorated on projecting pilasters.

Recommendations:
New mortar should match the requirements identified by the National Park Service in Preservation Brief 2 , found in the appendix:

- The new mortar must match the historic mortar in color, texture and tooling
- Texture of sand must match that of historic mortar
- The new mortar must have greater vapor permeability and be softer than historic brick
- The new mortar must be as vapor permeable and as soft or softer than the historic mortar

Further Recommendations:

- Historic mortar should be tested to determine quantities of lime, sand and Portland cement for adequate matching
- Repoint with mortar similar in composition, color, texture, joint size, method of application and joint profile

	• Choose a mason familiar with historic brick buildings who is willing to hand tool the joints before repointing
Concrete 	Materials: Concrete Condition: Good Significance: Primary Board formed concrete makes up the lower floor, inside and out. On the north façade, the concrete overlaps the brick between floors. Recommendations: • Retain in place • Clean by the gentlest means possible
Roof 	Materials: Various Condition: Unknown Significance: Primary The roof on the warehouse is constructed of two materials. The shallow gable includes a composition roof on the northern slope and corrugated galvanized sheet steel on the southern slope. The northern slope appears to be in a more deteriorated condition. The gutter system has been displaced. Recommendations: • Retain in place • Restore composition roof on southern slope, if preferred • Repair or replace gutter system to protect historical materials

Doors

Materials: Missing
Condition: Missing
Significance: Openings are primary

Five of the large window openings on the bottom floor have been converted into doorways. No casings or windows remain. On historic plans and in historic photos, all openings are treated identically as windows.

Recommendations:

- Repair and retain openings that can be reused
- Convert unused doors to windows based on original fenestration. Replace windows in kind

Windows

Materials: Steel, where intact
Condition: Good, where intact
Significance: Primary

The windows on the bottom floor, left, include neither the casings nor the windows themselves. Only the openings remain.

The second floor retains its 16 windows, but very little window glass. Fifteen windows are identical. Paired, fixed ten-light windows separated by narrow mullions top pairs of awning windows. Four two-light awning windows appear in the bottom of each window opening. The lower windows are also lined with wire mesh. The sixteenth window, near the eastern edge, is smaller, includes fixed eight-light windows over four two-light awning windows, one of which is covered. The window is pictured below left.

Recommendations:

- Replacement windows on the bottom floor should be recognizably new but historically appropriate, made of similar materials and echoing the industrial look and feel of the second story windows.
- The identical openings on the second story are perhaps the most character defining features of the north facade. The industrial windows should be retained and reglazed

Additional Elements: Ornamental Brick Work 	Materials: Red Brick Condition: Good Significance: Primary If the windows are the most defining feature, the surrounding brickwork emphasizes the symmetry of the original design, dividing the façade into bays and emphasizing those bays with shallow pilasters, inset panels, and corbelling near the roofline. • Retain all ornamental brickwork
Flashing and Sealant 	Materials: Unknown Condition: N.A. Significance: Minimal Remnants of sealant and flashing still adhering to the exterior wall and are evidence of a former infill structure that has since been removed. The infill structure was only a single story and terminated below the second story windows. Recommendations: • The materials may be left in place or removed by the gentlest means possible

West Elevation

The warehouse was built against the eastern wall of the original Cellar building, shown left. A photo of the bottom floor, below left, shows a small projecting wall at the point where the buildings are joined.

Though this wall has little ornament, it does include one pilaster and the only door that retains its casing. This metal casing could potentially provide a model for materials to be used in filling other openings.

South Elevation

The south elevation of the Warehouse building faces the site's only access road and behind that, a steep incline. One of the major artesian wells sits just to the southeast of the building.

This Warehouse connects the Cellars to the west with the Keg House to the east. The eastern portion of the Warehouse wraps around a portion of the Keg House, providing a corridor from one side of the site to the other.

As on the northern façade, the top floor is defined by large, symmetrical windows and ornamental brick work. The bottom floor on the southern elevation is only partly visible as the elevation rises. Retaining walls and a slough whisk water away from the wall surfaces. Though the first floor on the northern elevation has lost all its windows, they've been retained on this elevation and can provide models for replacements.

The historic photo below left shows that alterations have occurred on this elevation. Openings have been expanded and windows have been transformed into doors and bays.

Masonry

Materials: Red Brick
American Bond: 6 stretcher courses per header
Approximate size: 8 ¼" x 2 ½" x 4"
Condition: Fair to Good
Significance: Primary

The brick on the warehouse is in better condition than on brewery era buildings. The course is inconsistent due to the amount of space devoted to windows, pilasters and panels that interrupt the American bond.

Recommendation:

- Use original brick for repairs if needed
- Replacement brick, if needed, should be of a similar size, color and texture
- Repoint with hand tools to maintain joint profile
- All brick ornament, including corbelling at the cornice, pilasters, projections and recessions should be retained

Mortar

Materials: Composition Unknown
Condition: Good
Significance: Primary

The mortar seems to be in good condition on the south façade.

Recommendations:
New mortar, if needed, should match the requirements identified by the National Park Service in Preservation Brief 2 , included in appendix:

- The new mortar must match the historic mortar in color, texture and tooling
- Texture of sand must match that of historic mortar
- The new mortar must have greater vapor permeability and be softer than historic brick
- The new mortar must be as vapor permeable and as soft or softer than the historic mortar

Further Recommendations:

- Historic mortar should be tested to determine quantities of lime, sand and Portland cement for adequate matching
- Repoint with mortar similar in composition, color, texture, joint size, method of application and joint profile
- Choose a mason who's familiar with historic brick

	buildings and is willing to hand tool the joints before repointing
Concrete 	Materials: Concrete Condition: Good Significance: Primary Board formed concrete was used inside and out on the first floor and is visible here on the south facade. It also was used to fill openings, as seen in the photo left. Recommendations: • Retain in place • Clean by the gentlest means possible • Remove and restore original fenestration where possible
Roof 	Materials: Various Condition: Unknown Significance: Primary The roof on the warehouse is made up of two materials. The shallow gable includes a composition roof on the northern slope and corrugated galvanized sheet steel on the southern slope. The southern slope has likely been reroofed as historic photos do not show corrugated metal on the roof. Recommendations: • Retain in place or reroof

Doors

Materials: Metal
Condition: Good
Significance: Secondary

Three doors have been cut into the southern facade. Two of them are now secured with metal rolling doors and the third with an overhead door. These doors and openings are not original to the building but clearly were related to its industrial use. Machinery, possibly for winching, has been installed outside the metal doors and topped with metal grates protected by a temporary roof.

Recommendations:

- Retain in place or replace with historically appropriate materials
- Doors may be removed to reestablish the original fenestration

Windows

Materials: Steel, where intact
Condition: Good, where intact
Significance: Primary

The openings on the bottom floor include windows similar to those on the north façade but smaller. These windows consist of paired, six-light, fixed windows atop two sets of paired apron windows. Some window openings have been blocked in.

The second floor retains most of its windows. Some were partially filled with concrete block. Others were expanded, as seen left, and are now boarded up. The standard windows include paired fixed, ten-light windows separated by narrow mullions atop pairs of two-light awning windows.

Recommendations:

- These identical industrial windows are perhaps the most character defining features of the south facade. All windows should be retained and reglazed.
- Openings that have been altered may be left as is or returned to their original shapes and sizes

Additional Elements: Ornamental Brick Work 	Materials: Red Brick Condition: Good Significance: Primary If the windows are the most defining feature, the surrounding brickwork emphasizes the symmetry of the original design, dividing the façade into even bays and emphasizing those bays with shallow pilasters, inset panels, and corbelling near the roofline. Recommendations: • Retain all ornamental brickwork
Additional Elements: Exterior Machinery  	Materials: Various Condition: Unknown Significance: Secondary The machinery found outside the south façade was used for an unknown purpose. Historic plans refer to a large 500-pound press near this location, as well as a water tank and well underneath the building near this location. The machinery may be related to these or other uses. It's worth noting that a similar opening with similar machinery appears on the north side of the building under the promenade. It is indicated in the photo below left. Recommendation: • Retain in place or, after determining the age and function through further research, remove and restore original openings on the south elevation

East Elevation

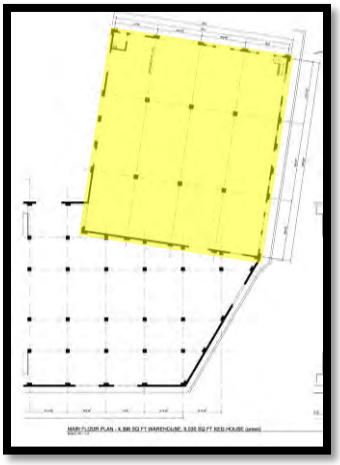
The East elevation of the Warehouse is unusual in that it does not retain the symmetry of other elevations. The east section of the building wraps around the Keg House, which is set as a slightly different angle. Perhaps to make the clipped gable less visible, this section of the Warehouse has a lowered roofline. Note that the bays are asymmetrical, as is the gabled roof.

Masonry 	Materials: Red Brick American Bond: 6 stretcher courses per header Approximate size: 8 ¼" x 2 ½" x 4" Condition: Fair to Good Significance: Primary The brick on the exterior of the warehouse is in better condition than on brewery era buildings. Recommendation: • Use original brick for repairs if needed • Replacement brick, if needed, should be of a similar size, color and texture • Repoint with hand tools to maintain joint profile • All brick ornament, including corbelling at the cornice, pilasters, projections and recessions should be retained
Mortar 	Materials: Composition Unknown Condition: Good Significance: Primary The mortar is in fairly good condition, but weather has stressed some joints. Recommendations: New mortar should match the requirements identified by the National Park Service in Preservation Brief 2 , included in appendix: • The new mortar must match the historic mortar in color, texture and tooling • Texture of sand must match that of historic mortar • The new mortar must have greater vapor permeability and be softer than historic brick • The new mortar must be as vapor permeable and as soft or softer than the historic mortar Further Recommendations: • Historic mortar should be tested to determine quantities of lime, sand and Portland cement for adequate matching • Repoint with mortar similar in composition, color, texture, joint size, application and joint profile

	• Choose a mason who's familiar with historic brick buildings and is willing to hand tool the joints before repointing
Concrete 	Materials: Concrete Condition: Good Significance: Primary As on other elevations, the bottom floor is made of board-formed concrete. Recommendations: • Retain in place • Clean by the gentlest means possible
Doors 	Materials: Wood Condition: Good Significance: Secondary These two wooden doors are the only wooden doors in the warehouse and some of the few remaining doors of any material. Their age is unknown. Recommendations: • Retain in place
Windows  	Materials: Wood and Steel Condition: Good Significance: Primary There are two types of windows on the east elevation. The paired eight-light wood windows, seen left, are unusual and unique to the building. While other windows are metal and distinctly industrial, these transom windows, separated by a narrow wood mullion are graceful enough to connote a public entrance. This second floor entry, however, is above ground and not easily accessible, as seen in the photo below. The metal windows on either side of the door are eight light fixed windows over operable awning windows, as on other elevations of the Warehouse. Two of the window sets are on the second floor, and one set is on the lower floor. Other window openings have been filled with concrete block.

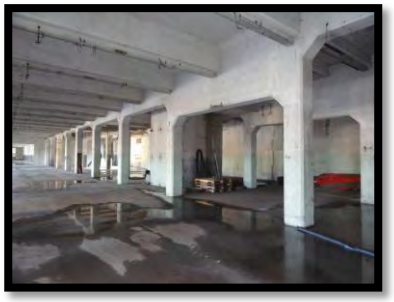
	Recommendations: • Retain and reglaze all windows
Additional Elements: Ornamental Brick Work 	Materials: Red Brick Condition: Good Significance: Primary The brickwork is one of the most distinguishing features of the warehouse, though its pattern on this elevation is not consistent with the symmetry found on other elevations. Recommendations: • Retain all ornamental brick work, including pilasters and corbelling

First Floor Introduction



The first floor, appearing in two parts in the as-built drawings left, includes three stairs, and a plywood wall in the center. Original concrete columns remain in place. As visible in the second drawing, the warehouse angles out to meet the southeast corner of the Keg House, which is highlighted in yellow.

Stairs are highlighted in blue in the as-built drawing at left.

Interior Volumes 	Significance: Primary The interior volumes of the first floor are fairly open, broken primarily by four lines of east-west columns that stretch the entire length of the building, as if dividing it into long corridors. Metal remnants still hang from beams that once held up banks of lights and hanging machinery. A wall with a wide doorway divides the building almost in half. It likely dates from 1965 or later. Recommendations: Retain the openness and sense of space
Structure: Columns and Beams 	Materials: Concrete and Steel Condition: Good Significance: Primary The columns that define and divide the space appear in historic photos and plans. These encased double columns also provide a series of arches. The lower arches pictured left are near the connection with the Keg House. Large, visible columns and beams add to the industrial feel of the space. Recommendations: • Retain these large, open spaces and the visible columns and beams

Traffic: Stairs

Materials: Concrete
Condition: Varied
Significance: Secondary

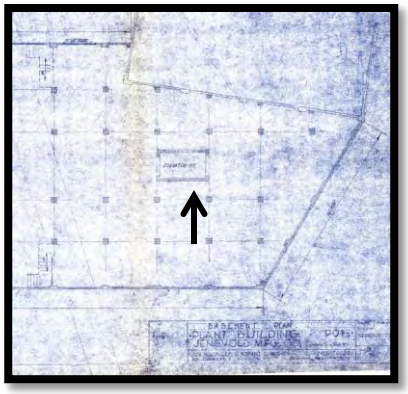
There are three stairs between the first and second floors. The two concrete, quarter-turn stairs near the eastern edge of the building are very plain. One of the two has no handrail.

The third stair, a half-turn stair near the entrance to the Cellar building, is in poorer condition. Its rail is in place but broken and its steps are disintegrating and need repair.

Recommendations:

- Retain stairs in place, if possible
- Repair historic materials

Traffic: Elevator



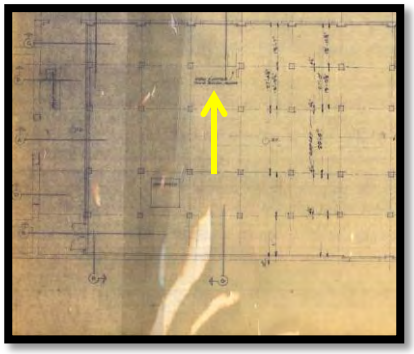
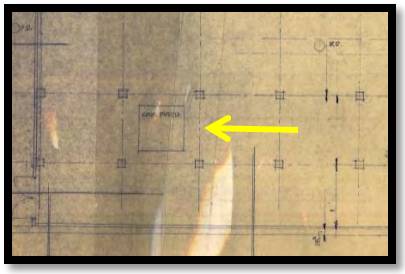
Materials: Concrete
Condition: N.A.
Significance: Minimal

Though there is no elevator in the building now, the original historic plans call for an elevator pit in the eastern section of the building, as seen left. This space is currently marked by a visible outline in the concrete.

Recommendations:

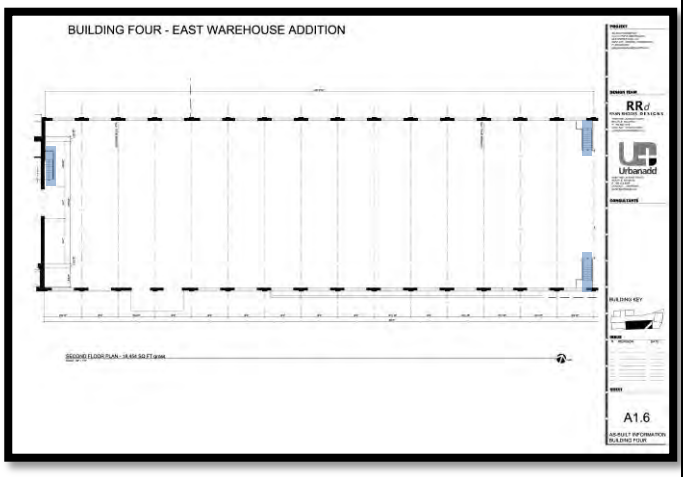
- The pad may be a remnant of the original lift and may be left visible or covered

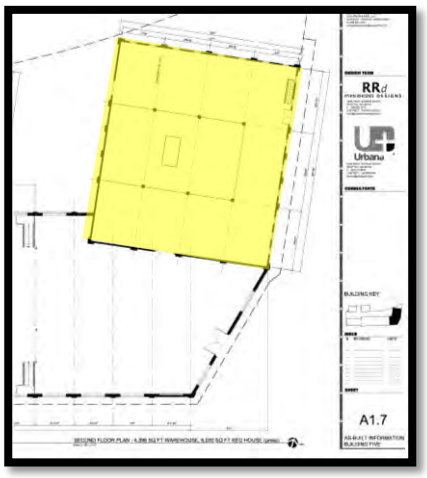
Surfaces: Floor 	Material: Painted Concrete Condition: Good Significance: Secondary The first floor is encased in concrete, floor, walls and ceiling. It's not clear in historic photos whether or not the floor was painted. Recommendations: • Retain as is or repaint • The concrete flooring contributes to the industrial feel of the building and should be retained where possible
Surfaces: Wall 	Material: Painted Concrete Condition: Good Significance: Secondary The walls have likely been repainted, but they appear to match the paint found in historic photos. The lower halves of columns are clearly darker than the tops in these photos. The pattern also echoes the Brewhouse interior, which is appropriate. Recommendations: • Retain in place or repaint • If columns are obscured by interior walls, leave them as visible as possible, along with beams
Surfaces: Ceiling 	Materials: Painted Concrete Condition: Good Significance: Secondary It appears in historic photos that the ceiling was originally painted white. Recommendations: • Retain in place as is or repaint • Leave beams visible

Additional Elements: Well 	Materials: Unknown Condition: Unknown Significance: Secondary A number of the buildings on the brewery campus include underground access. This is a rare case in which the use of underground space is referenced on a plan. The note indicated on the plan reads “well & water tank below floor.” Recommendations: • Wells and access to local water are key to the site’s historic significance. It would be ideal to reference and interpret these underground resources
Additional Elements: “Concrete Foundation”  	Materials: Concrete Condition: Good Significance: Secondary Rising from floor to ceiling is a large reinforced concrete block that appears on early plans but is not explained. On the floor above was installed a 500-pound press, and this column of concrete may have been installed to support the floor underneath it. Recommendations: • Consider investigating and removing column, or leaving in place
Additional Elements: Tank 	Materials: Metal Condition: Unknown Significance: Secondary Such artifacts were found throughout the buildings on site. This one has been removed but provides an opportunity to retain historic material within the building that speaks of its early historic use. Recommendations: • Return to its original place or reuse elsewhere on site as an artifact of the building’s early industrial use

Additional Elements: Built-In Platforms 	Materials: Concrete Condition: Good Significance: Secondary These built-in industrial elements probably supported machinery integral to Jensvold's manufacturing efforts. If they can remain in place, they reference the original industrial use of the space. Recommendations: • Retain in place, if possible
Additional Elements: Electronics 	Materials: Metal Condition: Unknown Significance: Secondary The remaining electrical systems within the building reveal its age and its original industrial use. Though most of the installed lighting has been removed, these remaining supports should remain. Recommendations: • Retain in place

Second Floor Introduction





The second floor of the warehouse includes an uninterrupted volume with no supporting columns. The interior is defined by the red brick walls and large windows, as well as the visible trusses that are suspended from the ceiling. Stairs are highlighted in blue.

The as built drawing is visible left, in two parts. The lower image is the drawing for the eastern section of the building where it wraps the southern section of the Keg House, highlighted in yellow.

Structure: Interior Volumes 	Significance: Primary The interior volumes of the second floor are very open, stretching the whole length of the building and showing off the windows to the north and south. This floor was also an industrial floor, as seen in historic photos, but the machinery and even a temporary wall have been removed to leave the space entirely open. Recommendations: • It's particularly important to retain the open feel of the second floor. Ideally, the space would not be divided. If it must be, clerestories or partial walls should be used to maintain the openness
Traffic: Stairs 	Materials: Concrete and Metal Rail Condition: Fair Significance: Secondary The stairs that rise from the first floor are surrounded by railings on the second floor. Recommendations: • Retain stairs and railings in place, if possible • Repair and retain original materials, where possible
Surfaces: Floor 	Material: Concrete Condition: Good Significance: Secondary The second floor is made of concrete. Recommendations: • Retain as is or paint • The uncovered concrete flooring contributes to the industrial feel of the building and should be retained where possible

Surfaces: Wall 	Material: Brick/Block Condition: Good Significance: Primary While the first floor is encased in concrete, the second floor is built of red brick. However, while the exterior surface is uniform, the interior shows repairs and brick replacements that differ in size and shape. There are also window openings that have been filled with concrete block. Recommendations: • Retain replacement bricks in place, if possible • Uncover and return to the original fenestration. Windows should be replaced in kind
Surfaces: Ceiling 	Materials: Wood Condition: Good Significance: Secondary The ceiling of the warehouse is particularly important as it not only retains the visible truss system, but the original lighting in some places, along with a system of beams that likely supported machinery or electrical systems. Recommendations: • Retain in place as is • Leave beams and trusses visible
Additional Elements: Electronics 	Materials: Metal Condition: Fair Significance: Secondary The remaining electrical systems within the building reveal its age and its original industrial use. Though most of the installed lighting has been removed, these remaining elements should be retained. Recommendations: • Retain in place

Additional Elements: Openings

Materials: Various
Condition: Good
Significance: Secondary

The opening near the connection with the Cellar building includes two rolling doors topped by blocked in windows. A third opening is topped with an overhead door. Two of the doors share access to a metal platform. The platform is covered and is accessible from just above ground near the access road to the site.

Historic photos, as the one shown below left, include some projection near this location but do not include altered windows and doors.

Recommendations:

- Retain in place as an artifact of the building's industrial past, or remove doors and return to the original fenestration

Additional Elements: Kinnear Doors

Materials: Steel
Condition: Good
Significance: Secondary

One of the many rolling doors on the site includes a stencil identifying the maker as “Kinnear” and the city of origin as “San Francisco.” The same vertical member includes a stencil reading “Olympia Brewing Company.”

The stencil suggests that these doors were added after the Olympia Brewery reacquired the property in 1965. However, the Kinnear Manufacturing Company was founded in San Francisco just as the Schmidt family opened the Capitol Brewery in 1895 and was famous for producing fire doors that saved building during the 1906 earthquake. Kinnear purchased a wood mill in Centralia in 1966, making the company very accessible from Olympia, WA. Paint has obscured any similar markings on other doors.

Summary of Recommendations for the Original Olympia Brewery

Though each building is different, there are a few recommendations that are generally applicable. They are listed below for quick reference.

- The best way to protect historic industrial sites like this one is to choose compatible uses for the buildings that do not rely on extensive alteration. In the case of this unique site, choose uses that fit within the open volumes of existing historic buildings. This will provide the best protection for the site's significant historic resources and ensure their protection over the long term.
- Windows are some of the most important and most fragile of character defining features. Whenever possible, historic material should be preserved and repaired. Even deteriorated window frames are often repairable. This is particularly true for industrial windows, which were not just architecturally significant, but necessary to provide light and ventilation to industrial spaces. On the brewery site, there are also excellent examples of windows employed to protect against fire damage.
- Large, open spaces are key to many of the historic buildings on site. These open volumes with visible columns should be maintained. If spaces must be divided, tools like interior clerestories and half walls can help maintain the sense of openness that characterizes industrial interiors.
- Interior and exterior surfaces should retain their historic finishes. Bare brick should remain bare and painted and plastered surfaces should be repaired and repainted. Whenever possible, the original plaster should be retained.
- Further testing is needed on the brewery site. Paint should be tested for lead, mortar should be tested for composition so that repairs are appropriately done, and materials like deteriorated concrete should be investigated to identify the cause of damage before repair work is begun.
- Generally, missing materials do not have to be recreated. However, the brewery is unique in that its buildings are tied together by a number of ornamental elements. The cornices and brackets are some of the most significant and should be restored.
- All new construction should walk the fine line of blending in with historic materials without giving the false sense that new construction is historic. This can be achieved in a number of ways and guidance from National Park Service bulletins referenced in the appendix can be extremely helpful.

Bibliography

Ching, Francis D.K. *A Visual Dictionary of Architecture*. New York: John Wiley and Sons, 1995.

Friends of the Old Brewhouse: http://mylite.addr.com/auto/oldbrewhouse/index.html [Accessed March 2011].

Gayle, Margot, David W. Look and John G. Waite. *Metals in America's Historic Buildings*. Washington D.C.: U.S. Department of the Interior, 1992.

Hewitt Isley. *New Market Historic District Master Plan*. Tumwater: Department of Policy and Planning.

History of the Olympia Brewing Company: http://brewerygems.com/olympia.htm [Accessed March 2011].

Koenig, David. *The Tumwater Historic District: A Plan for Preservation, Development and Restoration*. Olympia: State Capitol Museum, 1977.

Lentz, Florence. *The Tumwater Historic District: A Plan for Preservation, Development, and Restoration*. Tumwater: Office of Archaeology and Historic Preservation, 1977.

Lockman, Heather and Carla Wulfsberg*, Images of America: Tumwater* (Charleston: Arcadia Publishing, 2010).

Palmer, Gayle L. *The River Remembers: A History of Tumwater*. Virginia Beach: The Donning Company, 1995.

Olympia-Tumwater Foundation archives, historic photos, 1906 - 1921.

Shed, Solon. *The Clays of the State of Washington: Their Geology, Mineralogy, and Technology*. Pullman: State College of Washington, 1910.

South Bay Historic Committee. *South Bay: Its History and Its People: 1840-1940*. (Olympia: South Bay Historical Association, 1986).

Stevenson, Shana: *Olympia, Tumwater, and Lacey: A pictorial history. (*Virginia Beach: Donning Company: 1996).

Stevenson, Shanna, Historic Property Inventory Report, DAHP

Stevenson, Shanna, National Register Nomination, New Market Historic District, 1977.

Trosper, Don. *Tumwater's 150: 1845-1945*. (Tumwater: KVSN, 1995).

Tumwater Historic District Infrastructure Analysis Summary of Findings, prepared by Parametrix for the City of Tumwater:

http://www.ci.tumwater.wa.us/City%20Plans/Historic%20District%20Infrastructure%20Analysis%20Summary%20of%20Findings.pdf [Accessed March 2011].

Tumwater Historic Preservation Commission, *Celebrating 100 Years: The Old Brewhouse*.

Van Daleen, Chris and the Alliance for Sustainable Jobs and the Environment, "It's the Future: A Community Vision for the Tumwater Brewery: Report from the June 25, 2003 Community Forum."

Urbanadd Architects. As-Built Drawings. Seattle: 2011.

Weaver, Martin E. *Conserving Buildings: A Manual of Techniques and Materials*. New York: John Wiley & Sons, Inc., 1997.

Appendix

National Park Service documents are an excellent source of technical briefs related to the preservation and repair of historic materials. Visit www.nps.gov/history. Two are included below.

A. Retaining Industrial Character in Historic Buildings

B. The Repair and Thermal Upgrading of Historic Steel Windows

National Park Service
U.S. Department of the Interior
Technical Preservation Services

ITS
NUMBER 55

Interpreting
The Secretary of the Interior's Standards for Rehabilitation

Subject: **Retaining Industrial Character in Historic Buildings**

Applicable Standards:
1. Compatible Use
2. Retention of Historic Character
5. Preservation of Distinctive Features, Finishes, and Craftsmanship

Issue: Derelict industrial structures that are no longer needed or suited for their intended purpose are often rehabilitated for new uses. Industrial buildings typically consist of large open spaces. The interiors are usually unfinished with exposed brick walls, exposed beams, structural columns and ceiling trusses. In some cases, it can be challenging to preserve these features that are so crucial in defining the historic character of these buildings, particularly when the new use may be very different from the original. The first thing that must be considered when planning to rehabilitate an industrial building is that the proposed new use must be compatible with its historic character to meet Standard 1 of the Secretary of the Interior's Standards for Rehabilitation. If an appropriate new use is chosen and the rehabilitation is undertaken in accordance with the Standards, the new use will result in retention of historic character and preservation of distinctive features, finishes and craftsmanship.

Above: *The historic bus barn before rehabilitation.*
Below: *The historic bus barn after conversion to a grocery store. A butt glazed storefront was installed in the former garage bays to retain the sense of openness.*

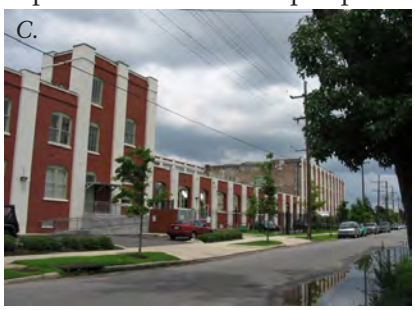
Application 1 (*Compatible treatment*): This historic car barn was built c. 1893, originally to house streetcars and remained in use until it was closed in the 1990s when a new facility was constructed. After years of disuse, it was proposed to be converted into a grocery store. The sheer size and volume of the interior proved to be a good match for the new use. The car barn was large enough that the grocery store itself could fit into the front half of the building, leaving the rear portion available for parking. The openness and immense height of the interior with its exposed metal structural system contributes to the market's appeal and is also ideal for the parking area which, after all, was the building's original use. New corrugated metal replaced the rusted historic metal sheathing on the exterior. The large historic vehicular openings on the back allow access to the parking and also provide ventilation. The vehicular doors on the front were infilled with a butt glass storefront system to retain the open appearance the building had historically. This project meets the Standards.

Left and Right: *The exposed trusses on the interior, both in the parking area and in the grocery store, emphasize the structure's industrial character.*

Application 2 (*Compatible treatment*): This small brick garment factory was constructed c. 1930 with later expansions. After being vacant for many years the building was rehabilitated as low-to-moderate income residential units. The character-defining industrial metal windows were retained where possible, while those that were deteriorated beyond repair were replaced to match the existing. Bricked-up windows were reopened and matching windows were installed. The simple metal canopy over the entrance in the front was retained and the deteriorated corrugated metal siding on one elevation was replaced to match. The industrial nature of the building is also clearly evidenced on the interior in the exposed wood ceiling and metal trusses. Even the large fans that cooled the sewing area of the factory were incorporated as decorative elements in a fence at the rear of the building. This project has preserved the industrial character of the structure and meets the Standards.

Clockwise from top: A. The early-twentieth century garment factory before rehabilitation. B. After rehabilitation, historic windows shine again after repair and paint removal. New windows have been installed in bricked-up openings and new matching windows have replaced historic windows too deteriorated to repair. C. Old fans have been reused decoratively as part of a fence around the parking lot. D & E. Accented by new industrial lighting fixtures, the historic character of the interior is clearly expressed in the exposed wood and steel beams and trusses, as well as in the original concrete floor.

Application 3 (*Compatible treatment*): A group of early-twentieth century factory buildings, the oldest of which dates to c. 1908, was rehabilitated into a multi-use residential, retail and commercial complex. As part of the rehabilitation, the existing windows--both wood and metal--were retained and repaired or, where necessary, replaced to match. Compatible, partially-glazed infill was installed in many of the loading dock openings on the first floor. An existing corrugated metal industrial bridge connecting two buildings was retained and the ruined walls of a fire-damaged structure were also retained as part of the complex. On the interior, mushroom-capped columns and the unfinished cast concrete ceiling were left exposed throughout. Historic metal fire doors were also kept and secured in an open position. This project, too, meets the Standards.



Clockwise from left: *A. After rehabilitation, this section of the factory complex includes a restaurant and shops on the first floor with apartments on the upper floors. Partially-glazed infill in the loading door openings is compatible with the character of the building. B & C. The historic industrial bridge was retained, as were the ruins of walls that remained after a fire. D & E. The industrial nature of the interior is evident in the mushroom-capped cast concrete columns and the fire doors that remain in several of the buildings.*

Anne Grimmer, Technical Preservation Services, National Park Service

13 Preservation Briefs
Technical Preservation Services
National Park Service
U.S. Department of the Interior

The Repair and Thermal Upgrading of Historic Steel Windows

Sharon C. Park, AIA

A NOTE TO OUR USERS: The web versions of the **Preservation Briefs** differ somewhat from the printed versions. Many illustrations are new, captions are simplified, illustrations are typically in color rather than black and white, and some complex charts have been omitted.

The Secretary of the Interior's "Standards for Rehabilitation" require that where historic windows are individually significant features, or where they contribute to the character of significant facades, their distinguishing visual qualities must not be destroyed. Further, the rehabilitation guidelines recommend against changing the historic appearance of windows through the use of inappropriate designs, materials, finishes, or colors which radically change the sash, depth of reveal, and muntin configuration; the reflectivity and color of the glazing; or the appearance of the frame.

Windows are among the most vulnerable features of historic buildings undergoing rehabilitation. This is especially the case with rolled steel windows, which are often mistakenly not deemed worthy of preservation in the conversion of old buildings to new uses. The ease with which they can be replaced and the mistaken assumption that they

cannot be made energy efficient except at great expense are factors that typically lead to the decision to remove them.

Maintaining historic steel windows for continued use is always recommended. Photo: NPS files.

In many cases, however, repair and retrofit of the historic windows are more economical than wholesale replacement, and all too often, replacement units are unlike the originals in design and appearance. If the windows are important in establishing the historic character of the building, insensitively designed replacement windows may diminish--or destroy--the building's historic character.

This Brief identifies various types of historic steel windows that dominated the metal window market from 1890-1950. It then gives criteria for evaluating deterioration and for determining appropriate treatment, ranging from routine maintenance and weatherization to extensive repairs, so that replacement may be avoided where possible.(1) This information applies to do-it-yourself jobs and to large rehabilitations where the volume of work warrants the removal of all window units for complete overhaul by professional contractors.

This Brief is not intended to promote the repair of ferrous metal windows in every case, but rather to insure that preservation is always the first consideration in a rehabilitation project. Some windows are not important elements in defining a building's historic character; others are highly significant, but so deteriorated that repair is infeasible. In such cases, the Brief offers guidance in evaluating appropriate replacement windows.

Historical Development

Although metal windows were available as early as 1860 from catalogues published by architectural supply firms, they did not become popular until after 1890. Two factors combined to account for the shift from wooden to metal windows about that time. Technology borrowed from the rolling industry permitted the mass production of rolled steel windows. This technology made metal windows cost competitive with conventional wooden windows. In addition, a series of devastating urban fires in Boston, Baltimore, Philadelphia, and San Francisco led to the enactment of strict fire codes for industrial and multi-story commercial and office buildings.

As in the process of making rails for railroads, rolled steel windows were made by

passing hot bars of steel through progressively smaller, shaped rollers until the appropriate angled configuration was achieved. The rolled steel sections, generally 1/8" thick and 1" - 1-1/2" wide, were used for all the components of the windows: sash, frame, and subframe. With the addition of wire glass, a fire-resistant window resulted. These rolled steel windows are almost exclusively found in masonry or concrete buildings.

A by-product of the fire-resistant window was the strong metal frame that permitted the installation of larger windows and windows in series. The ability to have expansive amounts of glass and increased ventilation dramatically changed the designs of late 19th and early 20th century industrial and commercial buildings.

The newly available, reasonably priced steel windows soon became popular for more than just their fire-resistant qualities. They were standardized, extremely durable, and easily transported. These qualities led to the use of steel windows in every type of construction, from simple industrial and institutional buildings to luxury commercial and apartment buildings. Casement, double-hung, pivot, projecting, austral, and continuous windows differed in operating and ventilating capacities. In addition, the thin profiles of metal windows contributed to the streamlined appearance of the Art Deco, Art Moderne, and International Styles, among others.

Historic metal windows provide abundant natural light in this rehabilitated industrial space. Photo: NPS files.

The extensive use of rolled steel metal windows continued until after World War II when cheaper, noncorroding aluminum windows became increasingly popular. While aluminum windows dominate the market today, steel windows are still fabricated. Should replacement of original windows become necessary, replacement windows may be available from the manufacturers of some of the earliest steel windows. Before an informed decision can be made whether to repair or replace metal windows, however, the significance of the windows must be determined and their physical condition assessed.

Evaluation

Historic and Architectural Considerations

An assessment of the significance of the windows should begin with a consideration of

their function in relation to the building's historic use and its historic character. Windows that help define the building's historic character should be preserved even if the building is being converted to a new use. For example, projecting steel windows used to introduce light and an effect of spaciousness to a warehouse or industrial plant can be retained in the conversion of such a building to offices or residences.

Other elements in assessing the relative importance of the historic windows include the design of the windows and their relationship to the scale, proportion, detailing and architectural style of the building. While it may be easy to determine the aesthetic value of highly ornamented windows, or to recognize the importance of streamlined windows as an element of a style, less elaborate windows can also provide strong visual interest by their small panes or projecting planes when open, particularly in simple, unadorned industrial buildings.

One test of the importance of windows to a building is to ask if the overall appearance of the building would be changed noticeably if the windows were to be removed or radically altered. If so, the windows are important in defining the building's historic character, and should be repaired if their physical condition permits.

Physical Evaluation

Steel window repair should begin with a careful evaluation of the physical condition of each unit. Either drawings or photographs, liberally annotated, may be used to record the location of each window, the type of operability, the condition of all three parts--sash, frame and subframe--and the repairs essential to its continued use.

A severely deteriorated frame, such as this, can be replaced in kind. Photo:

Specifically, the evaluation should include: presence and degree of corrosion; condition of paint; deterioration of the metal sections, including bowing, misalignment of the sash, or bent sections; condition of the glass and glazing compound; presence and condition of all hardware, screws, bolts, and hinges; and condition of the masonry or concrete surrounds, including need for caulking or resetting of improperly sloped sills.

Corrosion, principally rusting in the case of steel windows, is the controlling factor in window repair; therefore, the evaluator should first test for its presence. Corrosion can be light, medium, or heavy, depending on how much the rust has penetrated the metal sections. If the rusting is merely a surface accumulation or flaking, then the corrosion is light. If the rusting has penetrated the metal (indicated by a bubbling texture), but has not caused any structural damage, then the

Henry Chambers, AIA.

corrosion is medium. If the rust has penetrated deep into the metal, the corrosion is heavy. Heavy corrosion generally results in some form of structural damage, through delamination, to the metal section, which must then be patched or spliced.

A sharp probe or tool, such as an ice pick, can be used to determine the extent of corrosion in the metal. If the probe can penetrate the surface of the metal and brittle strands can be dug out, then a high degree of corrosive deterioration is present.

In addition to corrosion, the condition of the paint, the presence of bowing or misalignment of metal sections, the amount of glass needing replacement, and the condition of the masonry or concrete surrounds must be assessed in the evaluation process. These are key factors in determining whether or not the windows can be repaired in place. The more complete the inventory of existing conditions, the easier it will be to determine whether repair is feasible or whether replacement is warranted.

Rehabilitation Work Plan

Following inspection and analysis, a plan for the rehabilitation can be formulated. The actions necessary to return windows to an efficient and effective working condition will fall into one or more of the following categories: routine maintenance, repair, and weatherization. The routine maintenance and weatherization measures described here are generally within the range of do-it-yourselfers. Other repairs, both moderate and major, require a professional contractor. Major repairs normally require the removal of the window units to a workshop, but even in the case of moderate repairs, the number of windows involved might warrant the removal of all the deteriorated units to a workshop in order to realize a more economical repair price. Replacement of windows should be considered only as a last resort.

Since moisture is the primary cause of corrosion in steel windows, it is essential that excess moisture be eliminated and that the building be made as weathertight as possible before any other work is undertaken. Moisture can accumulate from cracks in the masonry, from spalling mortar, from leaking gutters, from air conditioning condensation runoff, and from poorly ventilated interior spaces.

Finally, before beginning any work, it is important to be aware of health and safety risks involved. Steel windows have historically been coated with lead paint. The removal of such paint by abrasive methods will produce toxic dust. Therefore, safety goggles, a toxic dust respirator, and protective clothing should be worn. Similar protective measures should be taken when acid compounds are used. Local codes may govern the methods of removing lead paints and proper disposal of toxic residue.

Typical Rolled Steel Windows Available from 1890 to the Present

DOUBLE-HUNG industrial windows duplicated the look of traditional wooden windows. Metal double-hung windows were early examples of a building product adapted to meet stringent new fire code requirements for manufacturing and high-rise buildings in urban areas. Soon supplanted in industrial buildings by less expensive pivot windows, double-hung metal windows regained popularity in the 1940s for use in speculative suburban housing.

PIVOT windows were an early type of industrial window that combined inexpensive first cost and low maintenance. Pivot windows became standard for warehouses and power plants where the lack of screens was not a problem. The window shown here is a horizontal pivot. Windows that turned about a vertical axis were also manufactured (often of iron). Such vertical pivots are rare today.

PROJECTING windows, sometimes called awning or hopper windows, were perfected in the 1920s for industrial and institutional buildings. They were often used in "combination" windows, in which upper panels opened out and lower panels opened in. Since each movable panel projected to one side of the frame only, unlike pivot windows, for example, screens could be introduced.

AUSTRAL windows were also a product of the 1920s. They combined the appearance of the double-hung window with the increased ventilation and ease of operation of the projected window. (When fully opened, they provided 70% ventilation as compared to 50% ventilation for double-hung windows.) Austral windows were often used in schools, libraries and other public buildings.

CASEMENT windows adapted the English tradition of using wrought iron casements with leaded cames for residential use. Rolled steel casements (either single, as shown, or paired) were popular in the 1920s for cottage style residences and Gothic style campus architecture. More streamlined casements were popular in the 1930s for institutional and small industrial buildings.

CONTINUOUS windows were almost exclusively used for industrial buildings requiring high overhead lighting. Long runs of clerestory windows operated by mechanical tension rod gears were typical. Long banks of continuous windows were possible because the frames for such windows were often structural elements of the building.

Routine Maintenance

A preliminary step in the routine maintenance of steel windows is to remove surface dirt and grease in order to ascertain the degree of deterioration, if any. Such minor cleaning can be accomplished using a brush or vacuum followed by wiping with a cloth dampened with mineral spirits or denatured alcohol.

If it is determined that the windows are in basically sound condition, the following steps can be taken: 1) removal of light rust, flaking and excessive paint; 2) priming of exposed metal with a rust-inhibiting primer; 3) replacement of cracked or broken glass and glazing compound; 4) replacement of missing screws or fasteners; 5) cleaning and lubrication of hinges; 6) repainting of all steel sections with two coats of finish paint compatible with the primer; and 7) caulking the masonry surrounds with a high quality elastomeric caulk.

Recommended methods for removing light rust include manual and mechanical abrasion or the application of chemicals. Burning off rust with an oxyacetylene or propane torch, or an inert gas welding gun, should never be attempted because the heat can distort the metal. In addition, such intense heat (often as high as 3800 deg. F) vaporizes the lead in old paint, resulting in highly toxic fumes. Furthermore, such heat will likely result in broken glass. Rust can best be removed using a wire brush, an aluminum oxide sandpaper, or a variety of power tools adapted for abrasive cleaning such as an electric drill with a wire brush or a rotary whip attachment. Adjacent sills and window jambs may need protective shielding.

Rust can also be removed from ferrous metals by using a number of commercially prepared anticorrosive acid compounds. Effective on light and medium corrosion, these compounds can be purchased either as liquids or gels. Several bases are available, including phosphoric acid, ammonium citrate, oxalic acid and hydrochloric acid. Hydrochloric acid is generally not recommended; it can leave chloride deposits, which cause future corrosion. Phosphoric acid-based compounds do not leave such deposits, and are therefore safer for steel windows. However, any chemical residue should be wiped off with damp cloths, then dried immediately. Industrial blow-dryers work well for thorough drying. The use of running water to remove chemical residue is never recommended because the water may spread the chemicals to adjacent surfaces, and drying of these surfaces may be more difficult. Acid cleaning compounds will stain masonry; therefore plastic sheets should be taped to the edge of the metal sections to protect the masonry surrounds. The same measure should be followed to protect the glazing from etching because of acid contact.

Measures that remove rust will ordinarily remove flaking

paint as well. Remaining loose or flaking paint can be removed with a chemical paint remover or with a pneumatic needle scaler or gun, which comes with a series of chisel blades and has proven effective in removing flaking paint from metal windows. Well-bonded paint may serve to protect the metal further from corrosion, and need not be removed unless paint buildup prevents the window from closing tightly. The edges should be feathered by sanding to give a good surface for repainting.

Next, any ***bare*** metal should be wiped with a cleaning solvent such as denatured alcohol, and dried immediately in preparation for the application of an anticorrosive primer. Since corrosion can recur very soon after metal has been exposed to the air, the metal should be primed immediately after cleaning. Spot priming may be required periodically as other repairs are undertaken. Anticorrosive primers generally consist of oil-alkyd based paints rich in zinc or zinc chromate.(2) Red lead is no longer available because of its toxicity. All metal primers, however, are toxic to some degree and should be handled carefully. Two coats of primer are recommended. Manufacturer's recommendations should be followed concerning application of primers.

Repair

Repair in Place

The maintenance procedures described above will be insufficient when corrosion is extensive, or when metal window sections are misaligned. Medium to heavy corrosion that has not done any structural damage to the metal sections can be removed either by using the chemical cleaning process described under "Routine Maintenance" or by sandblasting. Since sandblasting can damage the masonry surrounds and crack or cloud the glass, metal or plywood shields should be used to protect these materials. The sandblasting pressure should be low, 80-100 pounds per square inch, and the grit size should be in the range of #10-#45. Glass peening beads (glass pellets) have also been successfully used in cleaning steel sections. While sandblasting equipment comes with various nozzle sizes, pencil-point blasters are most useful because they give the operator more effective control over the direction of the spray. The small aperture of the pencil-point blaster is also useful in removing dried putty from the metal sections that hold the glass. As with any cleaning technique, once the bare metal is exposed to air, it should be primed as soon as possible. This includes the inside rabbeted section of sash where glazing putty has been removed. To reduce the dust, some local codes allow only wet blasting. In this case, the metal must be dried immediately, generally with a blowdrier (a step that the owner should consider when calculating the time and expense involved). Either form of sandblasting metal covered with lead paints produces toxic dust. Proper precautionary measures should be taken against toxic dust and silica

particles.

The historic steel sash (see photo above) was removed and replaced with modern aluminum sash, resulting in a negative visual impact on the building's historic character. Photo: NPS files.

Bent or bowed metal sections may be the result of damage to the window through an impact or corrosive expansion. If the distortion is not too great, it is possible to re-align the metal sections without removing the window to a metal fabricator's shop. The glazing is generally removed and pressure is applied to the bent or bowed section. In the case of a muntin, a protective 2 x 4 wooden bracing can be placed behind the bent portion and a wire cable with a winch can apply progressively more pressure over several days until the section is realigned. The 2 x 4 bracing is necessary to distribute the pressure evenly over the damaged section. Sometimes a section, such as the bottom of the frame, will bow out as a result of pressure exerted by corrosion and it is often necessary to cut the metal section to relieve this pressure prior to pressing the section back into shape and making a welded repair.

Once the metal sections have been cleaned of all corrosion and straightened, small holes and uneven areas resulting from rusting should be filled with a patching material and sanded smooth to eliminate pockets where water can accumulate. A patching material of steel fibers and an epoxy binder may be the easiest to apply. This steel-based epoxy is available for industrial steel repair; it can also be found in auto body patching compounds or in plumber's epoxy. As with any product, it is important to follow the manufacturer's instructions for proper use and best results. The traditional patching technique--melting steel welding rods to fill holes in the metal sections--may be difficult to apply in some situations; moreover, the window glass must be removed during the repair process, or it will crack from the expansion of the heated metal sections. After these repairs, glass replacement, hinge lubrication, painting, and other cosmetic repairs can be undertaken as necessary.

To complete the checklist for routine maintenance, cracked glass, deteriorated glazing compound, missing screws, and broken fasteners will have to be replaced; hinges cleaned and lubricated; the metal windows painted, and the masonry surrounds caulked. If the glazing must be replaced, all clips, glazing beads, and other fasteners that hold the glass to the sash should be retained, if possible, although replacements for these parts are still being fabricated. When bedding glass, use only glazing compound formulated for metal windows. To clean the hinges (generally brass or bronze), a cleaning solvent and fine bronze wool should be used. The hinges should then be lubricated with a non-greasy lubricant specially formulated for metals and with an

anticorrosive agent. These lubricants are available in a spray form and should be used periodically on frequently opened windows.

Final painting of the windows with a paint compatible with the anticorrosive primer should proceed on a dry day. (Paint and primer from the same manufacturer should be used.) Two coats of finish paint are recommended if the sections have been cleaned to bare metal. The paint should overlap the glass slightly to insure weathertightness at that connection. Once the paint dries thoroughly, a flexible exterior caulk can be applied to eliminate air and moisture infiltration where the window and the surrounding masonry meet.

Caulking is generally undertaken after the windows have received at least one coat of finish paint. The perimeter of the masonry surround should be caulked with a flexible elastomeric compound that will adhere well to both metal and masonry. The caulking used should be a type intended for exterior application, have a high tolerance for material movement, be resistant to ultraviolet light, and have a minimum durability of 10 years. Three effective compounds (taking price and other factors into consideration) are polyurethane, vinyl acrylic, and butyl rubber. In selecting a caulking material for a window retrofit, it is important to remember that the caulking compound may be covering other materials in a substrate. In this case, some compounds, such as silicone, may not adhere well. Almost all modern caulking compounds can be painted after curing completely. Many come in a range of colors, which eliminates the need to paint. If colored caulking is used, the windows should have been given two coats of finish paint prior to caulking.

Repair in Workshop

Damage to windows may be so severe that the window sash and sometimes the frame must be removed for cleaning and extensive rust removal, straightening of bent sections, welding or splicing in of new sections, and reglazing. These major and expensive repairs are reserved for highly significant windows that cannot be replaced; the procedures involved should be carried out only by skilled workmen.

As part of the orderly removal of windows, each window should be numbered and the parts labeled. The operable metal sash should be dismantled by removing the hinges; the fixed sash and, if necessary, the frame can then be unbolted or unscrewed. (The subframe is usually left in place. Built into the masonry surrounds, it can only be cut out with a torch.) Hardware and hinges should be labeled and stored together.

The two major choices for removing flaking paint and corrosion from severely deteriorated windows are dipping in a chemical bath or sandblasting. Both treatments require removal of the glass. If the windows are to be dipped, a phosphoric acid solution

is preferred, as mentioned earlier. While the dip tank method is good for fairly evenly distributed rust, deep set rust may remain after dipping. For that reason, sandblasting is more effective for heavy and uneven corrosion. Both methods leave the metal sections clean of residual paint. As already noted, after cleaning has exposed the metal to the air, it should be primed immediately after drying with an anticorrosive primer to prevent rust from recurring.

Sections that are seriously bent or bowed must be straightened with heat and applied pressure in a workshop. Structurally weakened sections must be cut out, generally with an oxyacetylene torch, and replaced with sections welded in place and the welds ground smooth. Finding replacement metal sections, however, may be difficult. While most rolling mills are producing modern sections suitable for total replacement, it may be difficult to find an exact profile match for a splicing repair. The best source of rolled metal sections is from salvaged windows, preferably from the same building. If no salvaged windows are available, two options remain. Either an ornamental metal fabricator can weld flat plates into a built-up section, or a steel plant can mill bar steel into the desired profile.

While the sash and frame are removed for repair, the subframe and masonry surrounds should be inspected. This is also the time to reset sills or to remove corrosion from the subframe, taking care to protect the masonry surrounds from damage.

Missing or broken hardware and hinges should be replaced on all windows that will be operable. Salvaged windows, again, are the best source of replacement parts. If matching parts cannot be found, it may be possible to adapt ready-made items. Such a substitution may require filling existing holes with steel epoxy or with plug welds and tapping in new screw holes. However, if the hardware is a highly significant element of the historic window, it may be worth having reproductions made.

Weatherization

Historic metal windows are generally not energy efficient; this has often led to their wholesale replacement. Metal windows can, however, be made more energy efficient in several ways, varying in complexity and cost. Caulking around the masonry openings and adding weatherstripping, for example, can be do-it-yourself projects and are important first steps in reducing air infiltration around the windows. They usually have a rapid payback period. Other treatments include applying fixed layers of glazing over the historic windows, adding operable storm windows, or installing thermal glass in place of the existing glass. In combination with caulking and weatherstripping, these treatments can produce energy ratings rivaling those achieved by new units.(3)

Weatherstripping

The first step in any weatherization program, caulking, has been discussed above under "Routine Maintenance." The second step is the installation of weatherstripping where the operable portion of the sash, often called the ventilator, and the fixed frame come together to reduce perimeter air infiltration. Four types of weatherstripping appropriate for metal windows are spring-metal, vinyl strips, compressible foam tapes, and sealant beads. The spring-metal, with an integral friction fit mounting clip, is recommended for steel windows in good condition. The clip eliminates the need for an applied glue; the thinness of the material insures a tight closure. The weatherstripping is clipped to the inside channel of the rolled metal section of the fixed frame. To insure against galvanic corrosion between the weatherstripping (often bronze or brass), and the steel window, the window must be painted prior to the installation of the weatherstripping. This weatherstripping is usually applied to the entire perimeter of the window opening, but in some cases, such as casement windows, it may be best to avoid weatherstripping the hinge side. The natural wedging action of the weatherstripping on the three sides of the window often creates an adequate seal.

Vinyl weatherstripping can also be applied to metal windows. Folded into a "V" configuration, the material forms a barrier against the wind. Vinyl weatherstripping is usually glued to the frame, although some brands have an adhesive backing. As the vinyl material and the applied glue are relatively thick, this form of weatherstripping may not be appropriate for all situations.

Compressible foam tape weatherstripping is often best for large windows where there is a slight bending or distortion of the sash. In some very tall windows having closure hardware at the sash midpoint, the thin sections of the metal window will bow away from the frame near the top. If the gap is not more than 1/4", foam weatherstripping can normally fill the space. If the gap exceeds this, the window may need to be realigned to close more tightly. The foam weatherstripping comes either with an adhesive or plain back; the latter variety requires application with glue. Compressible foam requires more frequent replacement than either spring-metal or vinyl weatherstripping.

A fourth type of successful weatherstripping involves the use of a caulking or sealant bead and a polyethylene bond breaker tape. After the window frame has been thoroughly cleaned with solvent, permitted to dry, and primed, a neat bead of low modulus (firm setting) caulk, such as silicone, is applied. A bond breaker tape is then applied to the operable sash covering the metal section where contact will occur. The window is then closed until the sealant has set (27 days, depending on temperature and humidity). When the window is opened, the bead will have taken the shape of the air

infiltration gap and the bond breaker tape can be removed. This weatherstripping method appears to be successful for all types of metal windows with varying degrees of air infiltration.

Since the several types of weatherstripping are appropriate for different circumstances, it may be necessary to use more than one type on any given building. Successful weatherstripping depends upon using the thinnest material adequate to fill the space through which air enters. Weatherstripping that is too thick can spring the hinges, thereby resulting in more gaps.

Appropriate Types of Weatherstripping for Metal Windows

SPRING-METAL comes in bronze, brass or stainless steel with an integral friction fit clip. The weatherstripping is applied after the repaired windows are painted to avoid galvanic corrosion. This type of thin weatherstripping is intended for windows in good condition.

VINYL STRIPS are scored and fold into a "V" configuration. Applied adhesive is necessary which will increase the thickness of the weatherstripping, making it inappropriate for some situations. The weatherstripping is generally applied to the window after painting.

Closed cell **FOAM TAPE** comes either with or without an adhesive backing. It is effective for windows with a gap of approximately 1/4" and is easy to install. However, this type of weatherstripping will need frequent replacement on windows in regular use. The metal section should be cleaned of all dirt and grease prior to its application.

SEALANT BEAD. This very effective type of weatherstripping involves the application of a clean bead of firm setting caulk on the primed frame with a polyethelene bond breaker tape on the operable sash. The window is then closed until the bead has set and takes the form of the gap. The sash is then opened and the tape is removed leaving the set caulk as the weatherstripping.

Thermal Glazing

Historic steel sash can be fitted with dual glazing to improve thermal efficiency. Photo: NPS files.

The third weatherization treatment is to install an additional layer of glazing to improve the thermal efficiency of the existing window. The decision to pursue this treatment should proceed from careful analysis. Each of the most common techniques for adding a layer of glazing will effect approximately the same energy savings (approximately double the original insulating value of the windows); therefore, cost and aesthetic considerations usually determine the choice of method. Methods of adding a layer of glazing to improve thermal efficiency include adding a new layer of transparent material to the window; adding a separate storm window; and replacing the single layer of glass in the window with thermal glass.

The least expensive of these options is to install a clear material (usually rigid sheets of acrylic or glass) over the original window. The choice between acrylic and glass is generally based on cost, ability of the window to support the material, and long-term maintenance outlook. If the material is placed over the entire window and secured to the frame, the sash will be inoperable. If the continued use of the window is important (for ventilation or for fire exits), separate panels should be affixed to the sash without obstructing operability. Glass or acrylic panels set in frames can be attached using magnetized gaskets, interlocking material strips, screws or adhesives. Acrylic panels can be screwed directly to the metal windows, but the holes in the acrylic panels should allow for the expansion and contraction of this material. A compressible gasket between the prime sash and the storm panel can be very effective in establishing a thermal cavity between glazing layers. To avoid condensation, 1/8" cuts in a top corner and diagonally opposite bottom corner of the gasket will provide a vapor bleed, through which moisture can evaporate. (Such cuts, however, reduce thermal performance slightly.) If condensation does occur, however, the panels should be easily removable in order to wipe away moisture before it causes corrosion.

The second method of adding a layer of glazing is to have independent storm windows fabricated. (Pivot and austral windows, however, which project on either side of the window frame when open, cannot easily be fitted with storm windows and remain operational.) The storm window should be compatible with the original sash configuration. For example, in paired casement windows, either specially fabricated storm casement windows or sliding units in which the vertical meeting rail of the slider reflects the configuration of the original window should be installed. The decision to place storm windows on the inside or outside of the window depends on whether the

historic window opens in or out, and on the visual impact the addition of storm windows will have on the building. Exterior storm windows, however, can serve another purpose besides saving energy: they add a layer of protection against air pollutants and vandals, although they will partially obscure the prime window. For highly ornamental windows this protection can determine the choice of exterior rather then interior storm windows.

The third method of installing an added layer of glazing is to replace the original single glazing with thermal glass. Except in rare instances in which the original glass is of special interest (as with stained or figured glass), the glass can be replaced if the hinges can tolerate the weight of the additional glass. The rolled metal sections for steel windows are generally from 1" 1-1/2" thick. Sash of this thickness can normally tolerate thermal glass, which ranges from 3/8" 5/8". (Metal glazing beads, readily available, are used to reinforce the muntins, which hold the glass.) This treatment leaves the window fully operational while preserving the historic appearance. It is, however, the most expensive of the treatments discussed here.

Window Replacement

Repair of historic windows is always preferred within a rehabilitation project. Replacement should be considered only as a last resort. However, when the extent of deterioration or the unavailability of replacement sections renders repair impossible, replacement of the entire window may be justified.

In the case of significant windows, replacement in kind is essential in order to maintain the historic character of the building. However, for less significant windows, replacement with compatible new windows may be acceptable. In selecting compatible replacement windows, the material, configuration, color, operability, number and size of panes, profile and proportion of metal sections, and reflective quality of the original glass should be duplicated as closely as possible.

This is a successful replacement in kind of the deteriorated frame shown above. Photo: Henry Chambers, AIA.

A number of metal window manufacturing companies produce rolled steel windows. While stock modern window designs do not share the multi-pane configuration of historic windows, most of these manufacturers can reproduce the historic configuration if requested, and the cost is not excessive for large orders. Some manufacturers still carry the standard pre-World War II multi-light windows using the traditional 12" x 18" or 14" x 20" glass sizes in industrial,

commercial, security, and residential configurations. In addition, many of the modern steel windows have integral weatherstripping, thermal break construction, durable vinyl coatings, insulating glass, and other desirable features.

Windows manufactured from other materials generally cannot match the thin profiles of the rolled steel sections. Aluminum, for example, is three times weaker than steel and must be extruded into a boxlike configuration that does not reflect the thin historic profiles of most steel windows. Wooden and vinyl replacement windows generally are not fabricated in the industrial style, nor can they reproduce the thin profiles of the rolled steel sections, and consequently are generally not acceptable replacements.

For product information on replacement windows, the owner, architect, or contractor should consult manufacturers' catalogues, building trade journals, or the Steel Window Institute, 1230 Keith Building, Cleveland, Ohio 44115.

Summary

The National Park Service recommends the retention of significant historic metal windows whenever possible. Such windows, which can be a character-defining feature of a historic building, are too often replaced with inappropriate units that impair rather than complement the overall historic appearance. The repair and thermal upgrading of historic steel windows is more practicable than most people realize. Repaired and properly maintained metal windows have greatly extended service lives. They can be made energy efficient while maintaining their contribution to the historic character of the building.

NOTES

(1) The technical information given in this brief is intended for most ferrous (or magnetic) metals, particularly rolled steel. While stainless steel is a ferrous metal, the cleaning and repair techniques outlined here must not be used on it as the finish will be damaged. For information on cleaning stainless steel and nonferrous metals, such as bronze, Monel, or aluminum, refer to *Metals in America's Historic Buildings* (see bibliography).

(2) Refer to Table IV. Types of Paint Used for Painting Metal in Metals in America's Historic Buildings, p. 139. (See bibliography).

(3) One measure of energy efficiency is the U-value (the number of BTUs per hour

transferred through a square foot of material). The lower the U-value, the better the performance. According to *ASHRAE HANDBOOK 1977 Fundamentals*, the U-value of historic rolled steel sash with single glazing is 1.3. Adding storm windows to the existing units or reglazing with 5/8" insulating glass produces a U-value of .69. These methods of weatherizing historic steel windows compare favorably with rolled steel replacement alternatives: with factory installed 1" insulating glass (.67 U-value); with added thermal break construction and factory finish coatings (.62 U-value).

Bibliography

ASHRAE Handbook 1977 Fundamentals. New York: American Society of Heating, Refrigerating and Air-conditioning Engineers, 1978.

Crittal, W. F. *A Metal Window Dictionary*. London: Curwen Press, 1926. Reprinted by B.T. Batsford. Ltd., 1953.

Gayle, Margot; David W. Look, AIA; John G. Waite. *Metals in America's Historic Buildings: Uses and Preservation Treatments.* Technical Preservation Services, U.S. Department of the Interior. Washington,D.C.: U.S. Government Printing Office, 1980.

Gillet, William. "Steel Windows." *Windows and Glass in the Exterior of Buildings.* National Academy of Sciences Publication 478. Washington, D.C.: 1957,7578.

Sarton, R. H. "Selecting and Specifying an Appropriate Type of Steel Window." *Metalcraft*. Vol. 6, No. 1 (January, 1931): 4348, 6465.

Sweet's Architectural Catalogue. 13th Edition, New York, Sweets Catalogue Service, Inc., 1918.

Acknowledgments

The author gratefully acknowledges the invaluable assistance of co-worker Michael Auer in preparing this brief for publication. This publication is an extension of research initiated by Frederec E. Kleyle. Special thanks are given to Hope's Architectural Products, Inc., Jamestown, NY, for their generous contribution of historic metal window catalogues which were an invaluable source of information. The following individuals are also to be thanked for reviewing the manuscript and making suggestions: Hugh Miller, Chief, Park Historic Architecture Division, National Park Service; Barclay L. Rogers, Museum Services, National Park Service; Susan M. Young, Steel Window Institute, and Danny Schlichenmaier, State Building Division, Lincoln, Nebraska. Finally, thanks go to Technical Preservation Services Branch staff and to cultural resources staff of the National Park Service Regional Offices, whose valuable comments were incorporated into the final text and who contributed to the publication of this brief.

Washington, D. C. September, 1984

Home page logo: Metal casement window from "Hope's Metal Windows and Casements, 1818-1926." Photo: Courtesy, Hope's Windows, Inc.

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