

Harris Hydraulics Laboratory Historic Resources Addendum University of Washington

**James Cary, Architect pc
14 December 2012**

1. INTRODUCTION

Background

The University of Washington is planning a project to replace the roofing on the Harris Hydraulics Laboratory (HHL). The laboratory consists of two structures – the original building built in 1920 and an addition built in 1961. The proposed project will replace the roofing on the original 1920 building, the 1961 addition, and the 1961 connector between the two. In addition, the proposed project scope includes improvement of safety measures on the roof by installing safe access and fall arrest anchors.

The Harris Hydraulics Laboratory is located on the south portion of the University of Washington campus on San Juan Road, which is adjacent to the building on its northwest and southwest sides. Adjacent buildings are the Oceanography Teaching Building (OTB) to the northwest and the South Campus Center (SOCC) to the southeast. Showboat Beach is located across San Juan Road to the southwest.

The University's Historic Preservation Policies and Practices require a Historical Resources Addendum (HRA) to be prepared for any project that makes exterior alterations to a building more than 50 years old (2003 Seattle Campus Master Plan). This report provides documentation of the historical and architectural features of both the original Harris Hydraulics Lab (1920) and the addition to the building (1961). These structures are 92 and 51 years old, respectively.

This HRA was developed by James Cary, Architect pc of Seattle, Washington. The research was undertaken in October 2012 and a second draft report was prepared for 30 October 2012.

Research Methods

James Cary, Architect PC undertook research to provide historic context and other information about the Harris Hydraulics Laboratory and the south campus area. Research sources used in the preparation of this report included construction drawings available in the University of Washington Facilities Records, as well as maps, campus plans and historical photographs collection available digitally from the UW Libraries Special Collections and the Museum of History and Industry. Research also included a review of newspaper archives available online through UW Libraries. Information about the historical use of the Harris Lab was provided by Michael Glidden, Facilities Manager for the College of Engineering. Additional information came from a site visit and roof walk with Somchai Suwiwattanakul, project architect for the proposed roofing replacement. Information about the proposed project came from Mr. Suwiwattanakul and the UW Capitol Projects Office website (www.cpo.washington.edu).

Executive Summary

The Harris Hydraulics Laboratory consists of two main structures – the original building built in 1920 and an addition built in 1961. The original 1920 structure is considered worthy of preservation by the 2003 Campus Master Plan, and this report confirms that analysis. The proposed roofing project is necessary to

preserve the structures, and the two buildings can be re-roofed without significantly altering their architectural style. Specific evaluations and recommendations are included in section 5 of this report.

2. HISTORIC PRESERVATION FRAMEWORK

Historic Preservation Policies

In the 2003 Seattle Campus Master Plan, the Regents of the University of Washington provide for project review to insure historic context. This includes the requirement of an Historic Resources Addendum for any exterior alterations to a building older than 50 years. According to the Master Plan, “the information and analysis provided in the HRA provides a framework and context to insure that important elements of the campus, its historical character and value, environmental considerations and landscape context are preserved, enhanced, and valued. The HRA further insures that improvements, changes and modifications to the physical environment may be clearly analyzed and documented.” (2003 Seattle Campus Master Plan, p. 26)

In addition, the Master Plan specifically identifies campus elements that are historically significant because of their association with early campus plans and development, including the 1898 Oval Plan, the 1909 Alaska Yukon Pacific Exposition Plan, and the 1915 Regents Plan. The Harris Hydraulics Laboratory is not included on this list (2003 Seattle Campus Master Plan, Fig. III-2, p. 25). However, the Master Plan does identify the original 1920 portion of the Hydraulics Lab later in the document as a structure that is worthy of maintenance and preservation (2003 Seattle Campus Master Plan, Fig. IV-73, p. 111).

3. HISTORICAL CONTEXT

Development of the University of Washington’s Campus

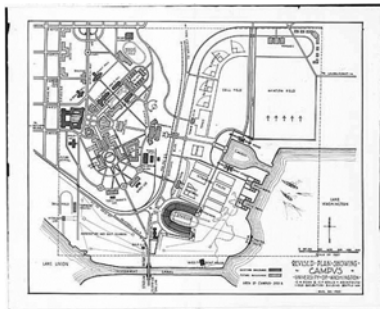


The 1915 Revised General Plan, commonly known as the Regents Plan
University of Washington Libraries, Special Collections, UW13944

The early development of the University of Washington’s Seattle campus was shaped by three campus plans. First was the Oval Plan, designed by Engineering Professor A. H. Fuller in 1898, which addressed only the northern part of campus. Second was the Olmsted Brothers plan for the Alaska Yukon Pacific Exposition of 1909. The AYP plan developed the lower (southern) portion of the campus and established key campus features that are evident today, including the Rainier Vista and Geyser Basin (now Drumheller Fountain). The third plan typically cited in the University’s early development is the Revised General Plan of 1915,

commonly referred to as the Regents Plan. Developed by Carl Gould of the Seattle firm Bebb & Gould, the Regents Plan built on the 1909 Olmsted design for the AYP and laid the groundwork for the future development of the University's Seattle campus. Bebb & Gould were also the designers of the original 1920 Hydraulics Lab building.

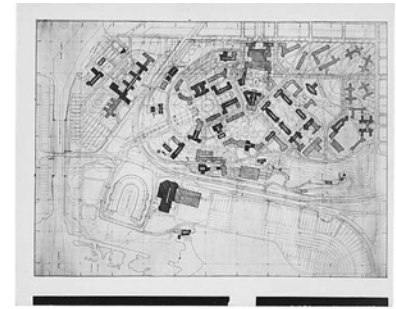
After World War I, the University embarked on a building campaign to replace temporary wooden structures that had been constructed during the war. Philosophy Hall (now called Savery Hall) and Education Hall (now Miller) were constructed in this time period on the Liberal Arts Quad while the Forest Products Lab and Mines Lab (now Anderson and Roberts Halls, respectively) were built further south, below the Science Quad. The Hydraulics Lab was also constructed during this post-war construction boom, but was located alone south of Pacific Street, likely to allow for the maximum drop and therefore maximum water pressure from its water supply at Geyser Basin. A Bebb & Gould Campus Plan dated 1920 shows the Hydraulics Laboratory more clearly in this location. In this drawing, it is shown as the only permanent building south of NE Pacific Street until the construction of the Oceanography Building in 1932. The remaining land in the south portion of campus was occupied by the 9-hole university golf course.



Property of MSCUA, University of Washington Libraries. Photo Coll 700



Property of MSCUA, University of Washington Libraries. Photo Coll 700



Property of MSCUA, University of Washington Libraries. Photo Coll 232

Campus Plans from 1920, 1931 and 1949

University of Washington Libraries, Special Collections, UW13947, UW13953 & Todd 24872

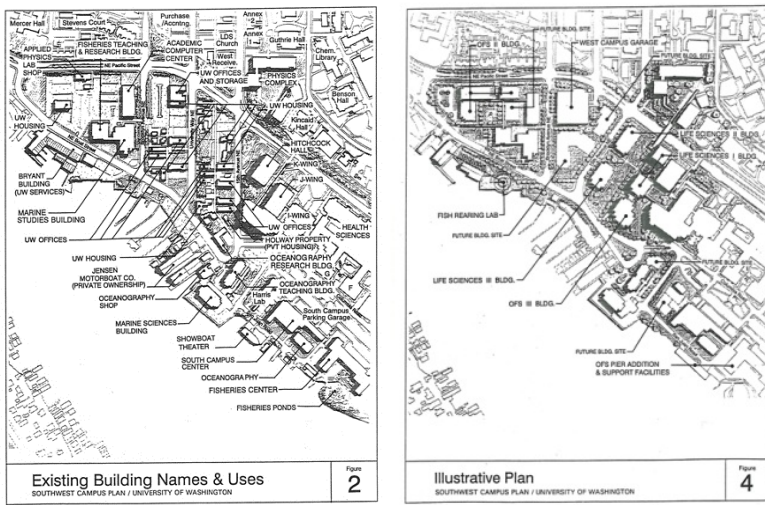
The southern portion of campus remained sparsely built until after World War II, when the health science department arrived on campus in 1946. A small complex of buildings labeled "Medical School" is shown in a campus plan dated 1931, but the department's needs quickly outgrew the originally allotted space. The first buildings of the Magnuson Health Sciences Center opened in 1948 along Pacific Street and construction for the Health Sciences and Medical School has continued ever since. The UW Medical Center opened its first buildings to the east of the Health Sciences Center in 1950 and has been expanding in that direction ever since, most recently opening the new Montlake Tower in the fall of 2012. The Health Sciences Center has likewise expanded to the west, opening the Fialkow Biomedical Sciences Research Pavilion (K Wing) in 1995.

In addition to the Health Sciences and Medical Center buildings along Pacific Street, the south campus saw a series of new buildings join the Hydraulics Lab and Oceanography Building in the decades from 1950 through the mid-1970s. The Hydraulics Lab, which received a major addition in 1961, also gained new neighbors to the west in 1966 and 1969 with the Marine Sciences and Oceanography Teaching Buildings and to the east in 1975 with the construction of the South Campus Center. The remaining south campus waterfront also filled in during this time period with the Fisheries Research Institute (1951) and the Center on Human Development and Disability Complex (1969).



Aerial view of campus from the south, 1948
From Johnston, p. 49

In 1994, the University and the city of Seattle both approved the Southwest Campus Plan, a document designed to better connect the southwestern portion of campus and address academic facility needs, particularly in the Life Sciences, Oceanography and Fisheries departments. It also provided for improvements to the connection between existing buildings and the Portage Bay waterfront.



1994 Southwest Campus plan maps showing existing and proposed conditions
University of Washington Southwest Campus Plan, p. 5 & p. 21

Many aspects of the Southwest Campus Plan have now been completed. The southernmost portion of 15th Avenue NE was realigned to create the Portage Bay Vista, which connects the Physics Plaza north of Pacific Street visually with the waterfront and the city beyond. New academic buildings, including the Ocean Sciences Building (1999), the Fisheries Building (1999) and the William H. Foege Bioengineering Building (2006) have been built according to the principles of the plan. Additionally, efforts have been made to connect the waterfront along San Juan Road with the buildings there, including the Harris Hydraulics Lab. These included the removal of the floating Showboat Theatre and cleanup of the adjacent beach. The South

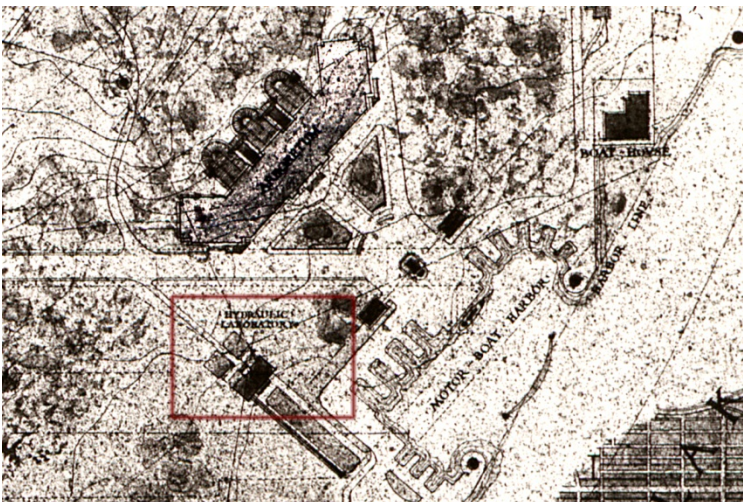
Campus Construction Office, a temporary building located immediately to the southwest of the Harris Lab, was recently demolished as well, further opening the view of Portage Bay from the Harris Lab site.



Current Aerial Photograph from the south
Google Earth, October 2012

Building History and Use

In the lower right corner of the 1915 Regents Plan is a cluster of buildings on the shore of Lake Union. One of the small buildings in this cluster is clearly labeled “Hydraulics Laboratory”. This appears to be the earliest drawing showing the Hydraulics Laboratory in its current location. It is also interesting to note that the Hydraulics Laboratory is the only building of this southern cluster that was actually constructed.



1915 Regents Plan Detail Showing Hydraulics Laboratory
Detail from University of Washington Libraries, Special Collections, UW13944

The original building drawings for the Harris Hydraulics Laboratory are dated June 1920 and titled “Hydraulics Laboratory, Univ of Washington at Seattle”. The laboratory was one of the first University buildings to be built south of NE Pacific Street, and is the only south campus building designed by Carl Gould. It was built as a hydraulics laboratory, which most likely determined its location on the lowest part of the campus. Both water and hydraulic pressure for experiments were originally supplied through a pipe from Geyser Basin (now known as Frosh Pond) 100 feet higher than the lab and over 1500 feet away in the center of the campus.

The addition to the Harris Hydraulics Lab was constructed to the southwest of the original building in 1961. Drawings are dated October 1959, and the building was designed by the firm of Liddle & Jones, which also designed the nearby Marine Sciences and Oceanography Teaching Buildings. The scope of this addition included the construction of a 4-story vertical tank, which provides hydraulic pressure that was previously provided by the pipe from Geyser Basin. There was also a significant 2-phase renovation to the building in the early 1980s. The upper floor of the original building was remodeled into offices in 1979-80, and the upper floor of the addition was renovated in 1983. The 1983 construction project also included a new exterior stair on the southwest façade of the addition and a new mechanical penthouse on the roof.

The lower two levels of the Harris Hydraulics Laboratory are currently administered by the department of Civil and Environmental Engineering and used for fluid mechanics research by that department as well as the Applied Physics Laboratory, Mechanical Engineering and Oceanography.

The Bioengineering Department was housed on the third floor of the Harris Lab from 1973 until 2006, when the department moved to their new home in the William H. Foege Bioengineering Building. From 2006 to 2010, the 3rd floor of the building was either left vacant or used as surge space for other departments in need of temporary space. The department of Global Health has occupied this space since March of 2011, and the third floor was renovated in anticipation of their occupancy in the fall of 2010.



Original Architects - Bebb & Gould

Charles Bebb was born April 10th, 1856 in Mortlake, Surrey, England. He was educated at King's College in London and the University of Lausanne in Switzerland before returning to London to study civil engineering at the School of Mines in London. In 1877, Bebb embarked on a career in construction engineering that took him first to South Africa and then to the United States, where he became chief superintending architect for the Chicago firm of Adler & Sullivan. He relocated permanently to Seattle in 1893, and opened his own architecture office in 1898. He

Charles Bebb & Carl F. Gould
From Ochsner, p. 174-175

partnered with Louis Mendel in 1901, and they proceeded to design many of early Seattle's most prominent buildings working across a wide range of building scales and architectural styles. The firm of Bebb & Mendel dissolved in 1914 and Bebb partnered with Carl Gould later the same year. Bebb was a founding member of the Washington State AIA and was one of the first Washington State architects to be elected as an AIA fellow, in 1910.

Carl F. Gould was born in New York on November 24th, 1873. He earned a Harvard degree in 1898 and spent the following five years studying at the École des Beaux-Arts in Paris. Gould interned in the New York office of McKim, Mead & White from 1903 to 1905, then worked with Edward Bennett on the Burnham Plan for San Francisco. It was on his return to the east coast from this project that Gould visited Seattle for the first time. He moved to Seattle permanently in 1908 and was one of a few local architects with significant training. He formed a partnership with Daniel Huntington in 1909 and together they designed a handful of houses, apartments, and mixed-use projects. At the same time, Gould was also working independently and designed five additional houses and two commercial projects. In addition, he began lecturing on domestic design at the University of Washington in 1912 and was central in founding the University's Department of Architecture in 1914. He was named chair of that department in 1915, a position he retained until 1926.

In 1914, Bebb and Gould formed a partnership that would last until Gould's death in 1939. They agreed that Bebb would function as engineer and partner in charge of management and contracts, while Gould was

in charge of the more artistic aspects of planning and design. Their arrangement also allowed Gould to remain heavily involved in the University of Washington, where the firm received the commission for the campus plan in 1915. The firm of Bebb & Gould would continue as the University's "supervising architects" for many years, producing a series of continuously evolving plans for the campus that included a 1935 official update to the 1915 Regents Plan, which made several changes and additions, but kept the overall spirit of the 1915 plan alive. In addition to their work as campus planners, Bebb & Gould also designed many of the buildings on the University's Seattle campus, with Gould as the primary designer. These projects span a wide range of architectural styles, from the precise Gothic Revival of Suzzallo Library and the Liberal Arts Quad to the Arte Modern design of the Penthouse Theatre, Gould's final project (completed 1940). Their partnership spanned 25 years, during which time they completed approximately three hundred projects, over two hundred of which were completed in the first decade of their partnership. After Gould's death in 1939, Bebb partnered with John Paul Jones, who later continued the firm as Jones & Bindon.



1961 Addition Architects - Liddle & Jones

Alan Liddle was born in Tacoma, WA in 1922. He began his architectural studies at the University of Washington in 1940, but his studies were interrupted by World War II. He returned to the University after serving in the war and completed his Bachelor of Architecture degree in 1948. Liddle spent two years furthering his education in Switzerland at the Federal Institute of Technology in Zurich before returning to Tacoma and establishing his own practice in 1952. He had early success in the residential market, making a name for himself as the

Alan Liddle & Robert Jones
From Docomomo-WEWA

supervising architect for the Frank Lloyd Wright designed Chauncey Griggs House in Tacoma (1954). Later in his career, Liddle became known as an spokesman for historic preservation and helped to found the Tacoma Landmarks Commission. He is credited with playing an important role in preserving Tacoma's historic core during the urban renewal movement of the 1960s. Alan Liddle was elected to the AIA college of Fellows in 1970, with the jury describing his designs as "both timely and timeless." (Appelo 2009).

Robert Jones was born in New York in 1921, but spent much of his childhood in and around Tacoma. He received his Bachelor of Architecture degree from the University of Washington in 1948. In 1957, Liddle and Jones formed a partnership in Tacoma. For the next 11 years, the partnership thrived and they designed a range of projects including the Harris Hydraulics Addition (1961) and its south campus neighbors, the Oceanography Teaching and Marine Sciences Buildings (1966 & 1969).



Marine Sciences (1966) & Oceanography Teaching Building (1969)

Liddle & Jones dissolved their partnership in 1968 and formed independent practices. Both men continued to have success with primarily residential practices, winning awards and recognition both regionally and nationally. Liddle retired from his practice in 1998 and died in Lakewood, WA in 2009. Jones retired in 1992 and died in 2010, also in Lakewood.

Liddle & Jones's other campus projects, the Marine Sciences and Oceanography Teaching Buildings, are located immediately to the northwest of the Harris Lab. These buildings, which opened in 1966 and 1969 respectively, are significantly different stylistically from the hydraulics addition. As the only projects that the firm designed for the University of Washington, the side by side locations of the three buildings offer an opportunity to see the evolution of their designs.

Architectural Context – Collegiate Gothic and the University of Washington

When Carl Gould produced the Regents Plan for the University in 1915, it stipulated that all future campus buildings be designed in the Collegiate Gothic style, a policy to which the campus planners adhered for the better part of four decades. Gould based this stylistic choice at least in part on the cool, gray climatic conditions of the university's Pacific Northwest location, knowing that Collegiate Gothic architecture could place special emphasis on using warm colors and irregular rooflines to break the monotony of an overwhelmingly gray climate. Spatially, the plan united two quadrangles – the Liberal Arts Quad to the northeast and the Science Quad to the south with a grand central plaza, now commonly known as Red Square. Each of the two quads has its own interpretation of Collegiate Gothic architecture and sense of space.



Liberal Arts Quad Buildings - Raitt Hall (1916) & Music Building (1950)

The Liberal Arts Quad is the more inwardly focused of the two, centered on the central green space and its cherry trees. Here, the Regents Plan calls for a rigorous interpretation of the Collegiate Gothic style, and this precision is seen even in the most recent construction, the art and music buildings that completed Gould's vision in 1950.

The Science Quadrangle has been less rigorous in its interpretation of the Collegiate Gothic style. Where the Regents Plan specified a strict adherence to stylistic details on the Liberal Arts Quad, it has been interpreted as being more permissive with the lower campus. The Science Quad is more open than Liberal Arts and focusses outward along the Rainier Vista rather than inward as its upper campus counterpart does. The buildings there have more stylistic variation and are easier to identify by time period, while continuing a compatible architectural language. This variation in stylistic details is even apparent in earlier buildings on the quad. Bagley Hall, which is directly adjacent to the quad, is considered "the University's first concession to Modernism." (Johnston, p. 50)



Science Quad Buildings with modern additions – Mary Gates Hall (1928 & 2000) and Bagley Hall (1937 & 1995)

The subtle departure from Collegiate Gothic in early campus architecture continues at the lowest portion the campus with the Harris Hydraulics Lab (1920) and the Oceanography Building (1932). As seen in the Science Quad, the design of these buildings is compatible with the language of the upper campus and the Liberal Arts Quad, but it is clearly not the same thing. Both the Harris Lab and the Oceanography Building clearly have their roots in the Collegiate Gothic tradition, but neither follows the style with the rigor of the Liberal Arts Quad buildings or even some of the older buildings on the Science Quad. These buildings fit in with the campus architecture from the time they were constructed, but because of their location away from the central campus they are simpler and more utilitarian, with subtler detailing and less ornamentation.



Early South Campus Buildings – Oceanography Building (1932) and Harris Hydraulics Lab (1920)

Architectural Context – Pacific Northwest Modernism

The Modern Movement in architecture is generally acknowledged to have begun with the work of Walter Gropius, Le Corbusier, and Mies van der Rohe. In the late 1920s and early 30s, these European architects developed an architectural style that embraced forms of industrialization and rejected the perceived chaos and eclecticism created by 19th century revivalist styles such as neoclassicism and the gothic revival. Modernism was introduced to Seattle in the 1930s by Paul Thiry, a 1928 graduate of the University of Washington's architecture program. Thiry attended the Ecole des Beaux Arts after his graduation and initially work in more tradition design styles, but a year-long trip around the world in the early 1930s exposed him to European Modernism and he returned to Seattle with a new outlook on design. Early Modern Thiry projects in Seattle included several residences, including his own in 1936, which are regarded as a critical advancement in Pacific Northwest architecture.

After World War II, architecture in the Pacific Northwest evolved into its own style of modernism. This style combined the tenets of Modernism – simple, functional forms and minimal ornament – with responses to the regional environment, including attention to site, local materials, and natural light. The post-war period in the region saw an influx of young architects who embraced these ideas, including Thiry, Paul Hayden Kirk, Roland Therry and Alan Liddle.

The University of Washington embraced these design principles as well, and largely abandoned Gould's commitment to the Collegiate Gothic style in the post-war years. Many campus building projects from the 1950s and 1960s, including the 1961 Liddle & Jones addition the Harris Hydraulics Lab, show the influence of the Pacific Northwest Modern architecture movement. Other Buildings from this era include the Magnuson Health Sciences Center (1950), the Faculty Center (1960), Sieg Hall (1960) and Balmer Hall (1962).

Historical Overview of Harris Hydraulics



Property of MSCUA, University of Washington Libraries. Photo Coll 700

Exterior of Harris Lab, undated photograph
University of Washington Special Collections, UW14776



Property of Museum of History & Industry, Seattle

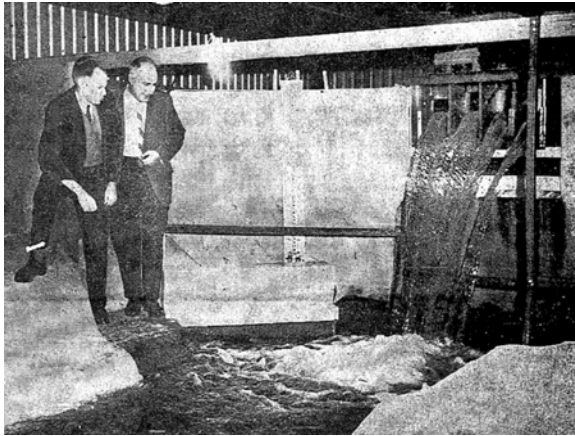
Puyallup River Flood Control Model, 1938
Museum of History & Industry, Image 1986.5.6554.1

The idea of a stand-alone Hydraulics Laboratory at the University of Washington dates back to the university's earliest days. In 1905, Ernest Schroder, a 1900 graduate of the University of Washington and professor of engineering at Cornell proposed such a building for the Ravenna neighborhood north of the university, saying, "The opportunity to build the finest Hydraulics Laboratory in America has been made easy by nature for the State University of Washington." (Seattle Daily Times, 1905). Schroder's proposal, which was supported by the engineering department and A. H. Fuller, designer of the Oval Plan, would have used the outflow from Green Lake as it dropped 120 feet through the Ravenna Park ravine to power the lab's experiments. Unfortunately, Green Lake was lowered by seven feet in 1911 to create parkland, causing the outflow to dry up between the lake and Cowen Park.

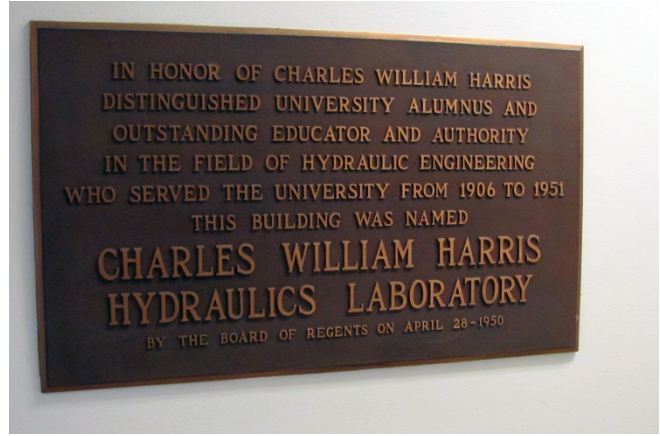
While Schroder's plan was never realized, the university did eventually take advantage of Seattle's natural topography to power a world-class hydraulics laboratory. Instead of the natural water source of Green Lake, experiments in the new Hydraulics Laboratory were powered by pressure supplied from Geyser Basin, installed as the centerpiece of the Alaska Yukon Pacific Exposition in 1909. When the lab was built in 1920, it was the best hydraulics research facility of any university in the United States.

The building was renamed in 1950 to honor of Charles W. Harris, who was a professor of Civil Engineering at the University from 1906 until 1951.

From 1963 to 1964, the Harris Hydraulics Laboratory facilities were used by Tacoma City Light (now Tacoma Power) as part of the planning for the Mossyrock Dam on the Cowlitz River in Lewis County, Washington. A 1:60 scale model of the dam, which is the tallest in Washington State at 606 feet, was constructed inside a shed over one of the flumes behind the lab. The shed is still there today.



Scale Model of Mossyrock Dam
The Seattle Times, January 26, 1967



Dedication Plaque inside Harris Lab Entrance

It appears that the Mossyrock dam project was one of the last projects to use the large-scale outdoor facilities at the Harris Lab. An engineering drawing dated 1973 shows a permanent cutoff of water to the pumphouse and flumes. Improvements in measurement devices have allowed models to be scaled down, and physical experiments have moved into the ground floor lab in the 1961 addition, powered by the pressure from the large water tank in the south corner of the building. Equipment in the lab now includes a 2.5m x4m plume basin, a 4.9m long sediment/wave flume, a rotating table and a 15m wave tank, along with a substantial collection of measurement equipment.



Interior of Harris Lab, lower level addition
Current Condition



Mossyrock Dam Model Shed
Current Condition

4. ARCHITECTURAL DESCRIPTION



Current Map of the South Campus with the Harris Lab outlined in red
www.washington.edu/maps, October 2012

Campus Setting and Site Features

The Harris Hydraulics Lab is located on the southern end of the University campus on San Juan Road. The site is oriented on a northeast-southwest axis, with the primary approach from the northwest. The main entrance to the building faces northeast with secondary entrances on the northwest. The South Campus Center and South Parking Structure are located to the southeast and the Marine Sciences and Oceanography Teaching Buildings to the northwest. The Magnuson Health Sciences Center (H Wing) is directly across Columbia Road to the northwest. The site is open to Showboat Beach and Portage Bay to the southeast.

There is a significant slope from northeast to southwest. The grade is higher on the northeast and northwest elevations of the building. There is a parking lot (S7) that covers much of the southeast portion of the site. The original 1920 building is located on the northeast portion of the site and has two stories above grade on its northeast and northwest sides, and three stories above grade on the southwest and southeast sides. The 1960 addition is located on the northwest side of the site and has three stories above grade on its southwest and southeast sides. The northwest side has two stories above grade, and the northwest side forms the connection with the original structure.

The Harris Lab site also features structures unique to its function as a hydraulics laboratory. Immediately to the southeast of the 1920 building there is a pumphouse connected to a series of flumes that run along the southeast and southwest edges of the site. The pumphouse and flumes are not shown on the original drawings from 1920, but they date from at least the mid-1930s and may be older than that. A vehicular bridge was added across the southeastern flume as part of the 1961 addition. There is also a shed over the southeastern flume that was constructed as part of the Mossyrock Model Dam project in the 1960s. It appears that neither the flumes nor the shed has been used in many years, as they are overgrown with vegetation and the valves show significant rust. An engineering drawing dated 1973 shows a permanent cutoff of water to the pumphouse.



Pumphouse and Valves - Current Conditions



Building Architecture

The original 1920 Hydraulics Laboratory is a concrete framed building in an understated Collegiate Gothic style. The trim and details are in light terra cotta and multi-colored red brick veneer. Along with the nearby Oceanography Building (John Graham, 1932), the Harris Lab is one of only two buildings that extend the Collegiate Gothic style to the south campus. In general, the 1915 Regents Plan stated that while buildings on the Liberal Arts Quad should be stylistically faithful to Gothic Revival, the Science Quad buildings could be designed based on a looser interpretation of the style. The design of the Harris Lab, even further from the central campus, can be seen as a continuation of this trend. While its design is stylistically compatible with the Collegiate Gothic designs of the upper campus, much of the detailing is simplified and the building is much more subdued than the buildings closer to the center of campus.



Detail on parapet of
1920 building



1920 building Main Entrance – Current Condition

The northeast façade was the front of the 1920 building and still serves as the primary entrance to the Harris Lab. The door is framed by a simple gothic arch, and light-colored terra cotta detailing continues to the top of the building. There is a continuous cornice at the third floor ceiling height on all sides of the building, with a repeated terra cotta shield detail on the brick parapet above the cornice. The parapet is capped with light-colored terra-cotta. Light-colored terra cotta detailing also wraps the corners of the building as corbels. The northwest and southeast façades show similar detailing, with simple arches over the entrances and terra cotta detailing around the windows and at the building corners. The southwest façade has been largely obscured by the 1961 addition, but what remains is stylistically consistent with the rest of the building.



1920 Building, Northeast Façade – Current Condition



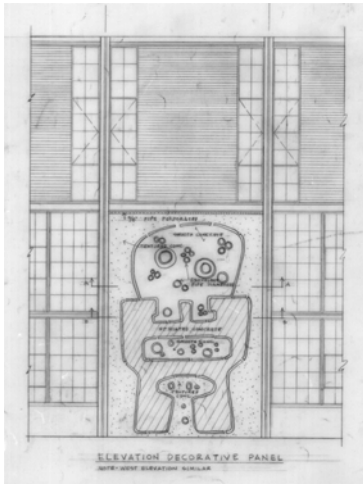
1920 Building, Northwest Façade – Current Condition



1920 Building, Southwest Façade – Current Condition

The 1961 addition is designed in the 1960s modernist style. The materials are exposed precast concrete structure with brick veneer and large steel windows. The exposed concrete structure divides the southeast and northwest facades into seven equal bays, and upper and lower levels are defined by brick cladding on the upper layer and large steel windows on the lower levels. On the southeastern façade, the pattern is interrupted by a large garage door and a blank infill panel. In the original drawings for the addition, the blank panel is shown in a detail labeled “Elevation Decorative Panel” with a figure, similar to Modern

figures designed by Le Corbusier, cast in different types of concrete. The same figure appears on the opposite panel on the northwestern façade, but these decorative panels were never built.



Elevation Detail



1961 Addition, Southeast Façade – Current Condition



1961 Addition, Southwest Façade - Current Condition



1961 Connector, Northwest Façade - Current Condition

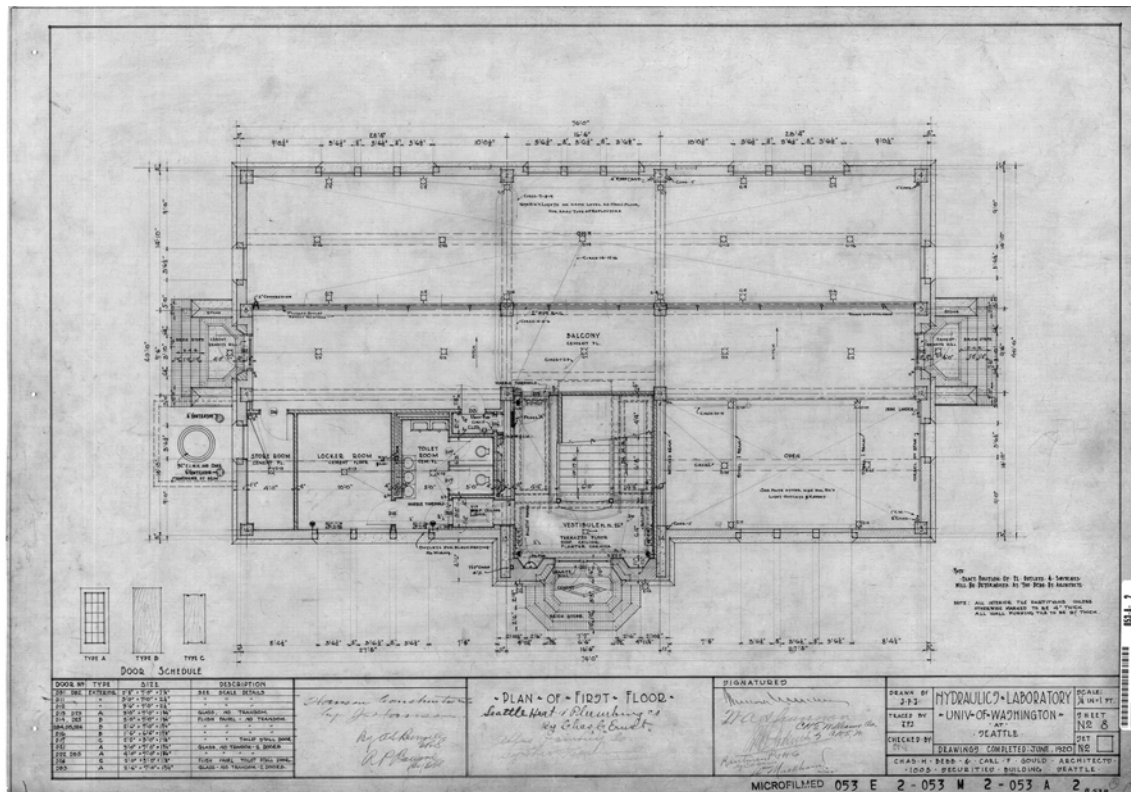
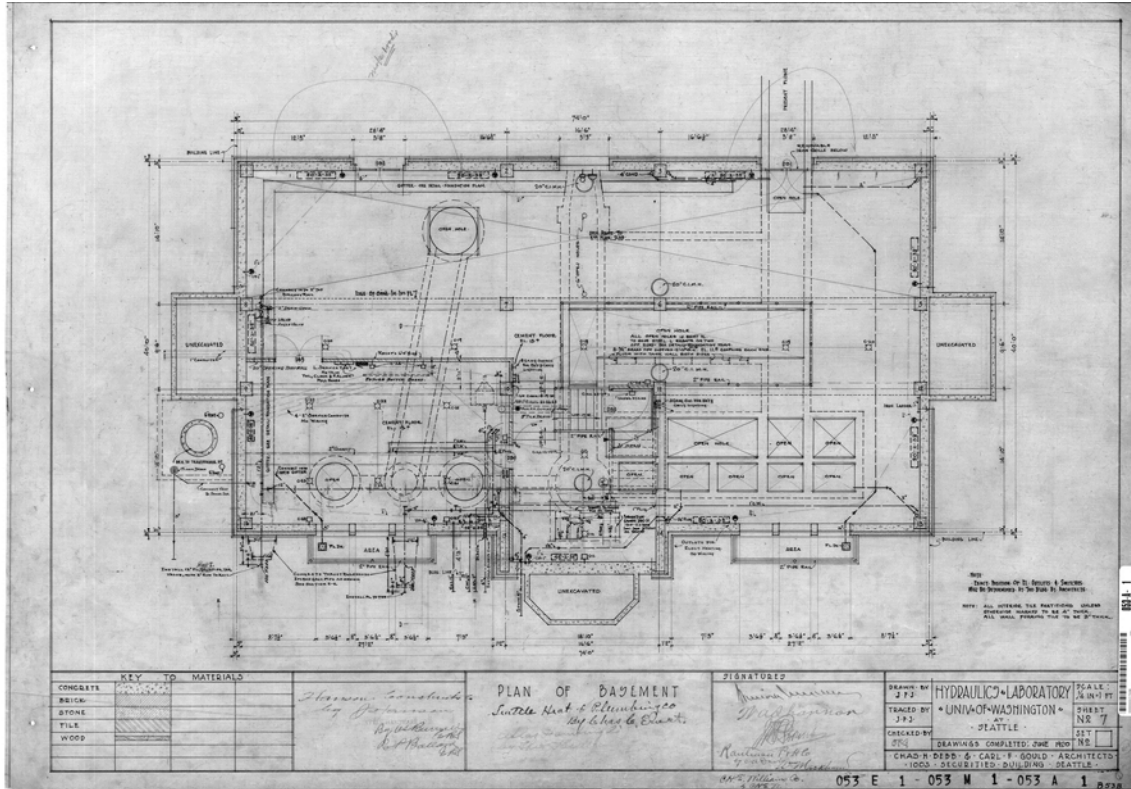


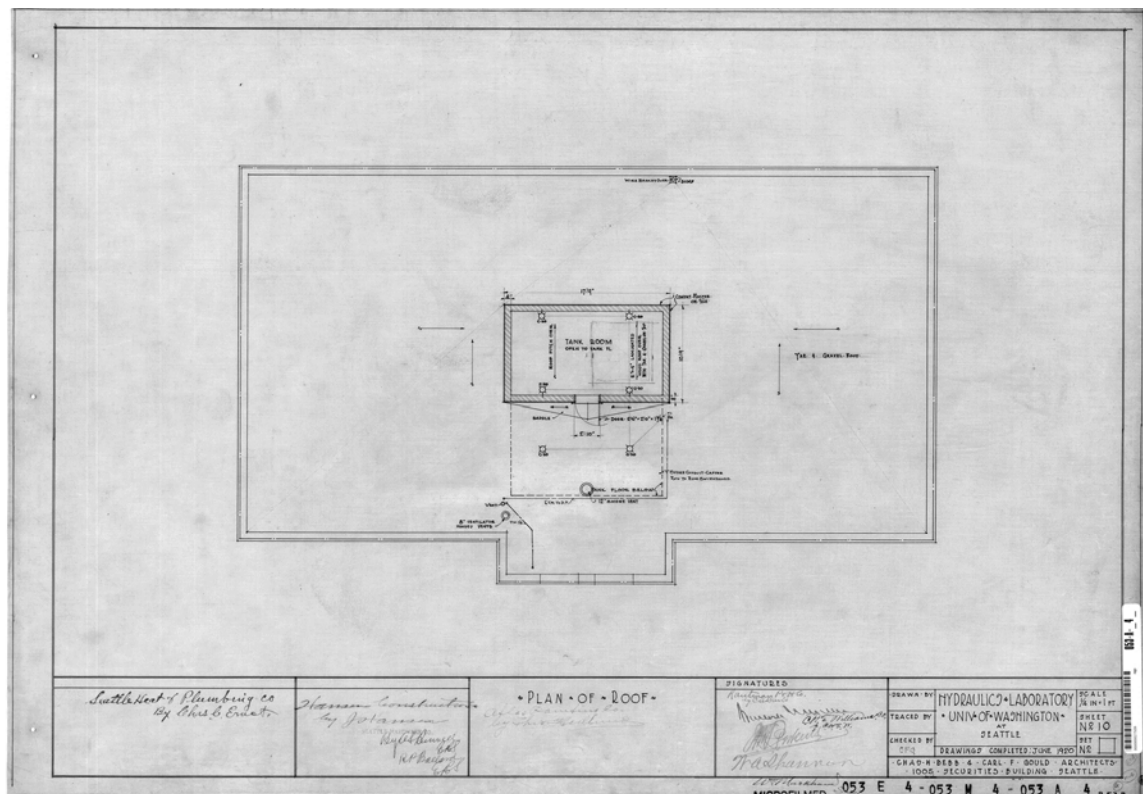
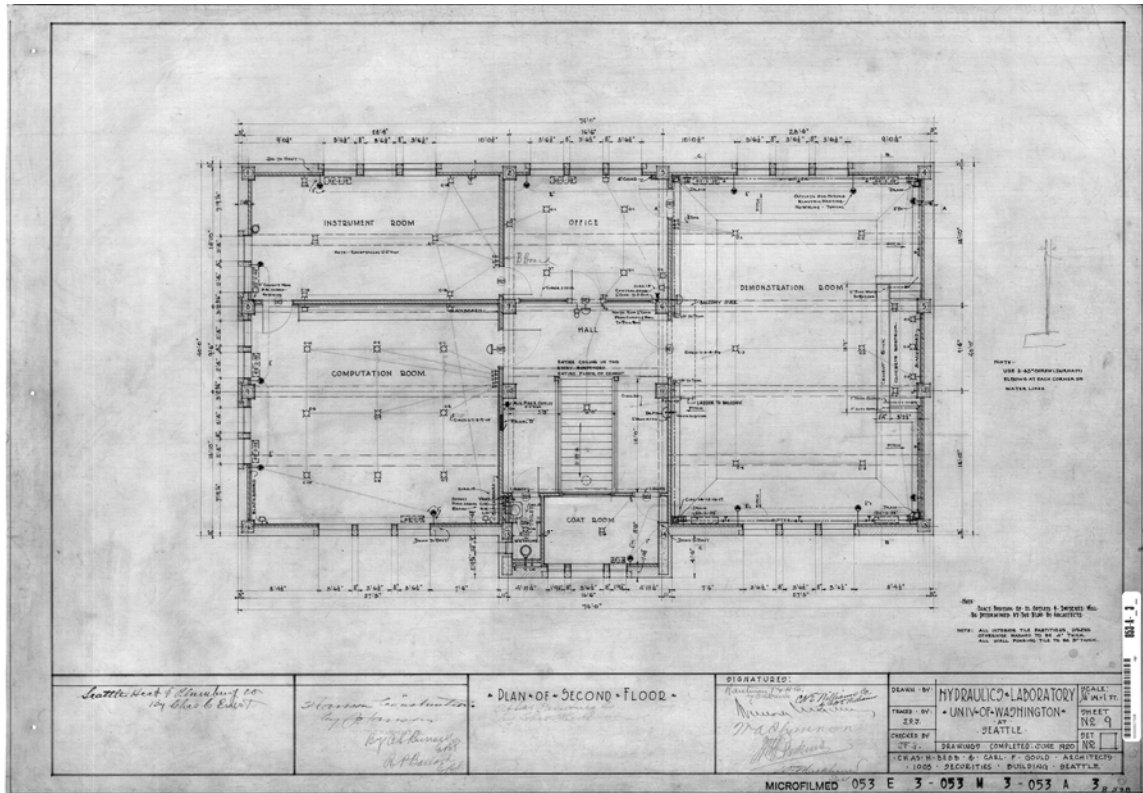
1961 Connector, Interior Stair Current Condition

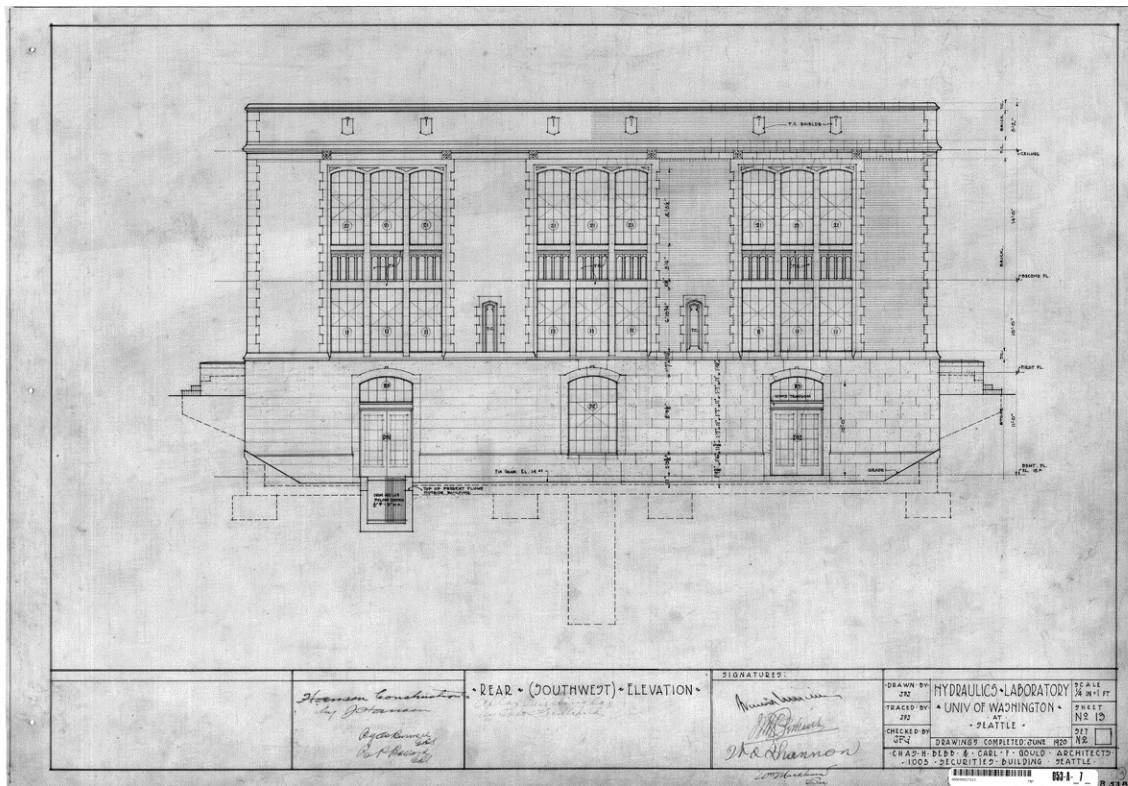
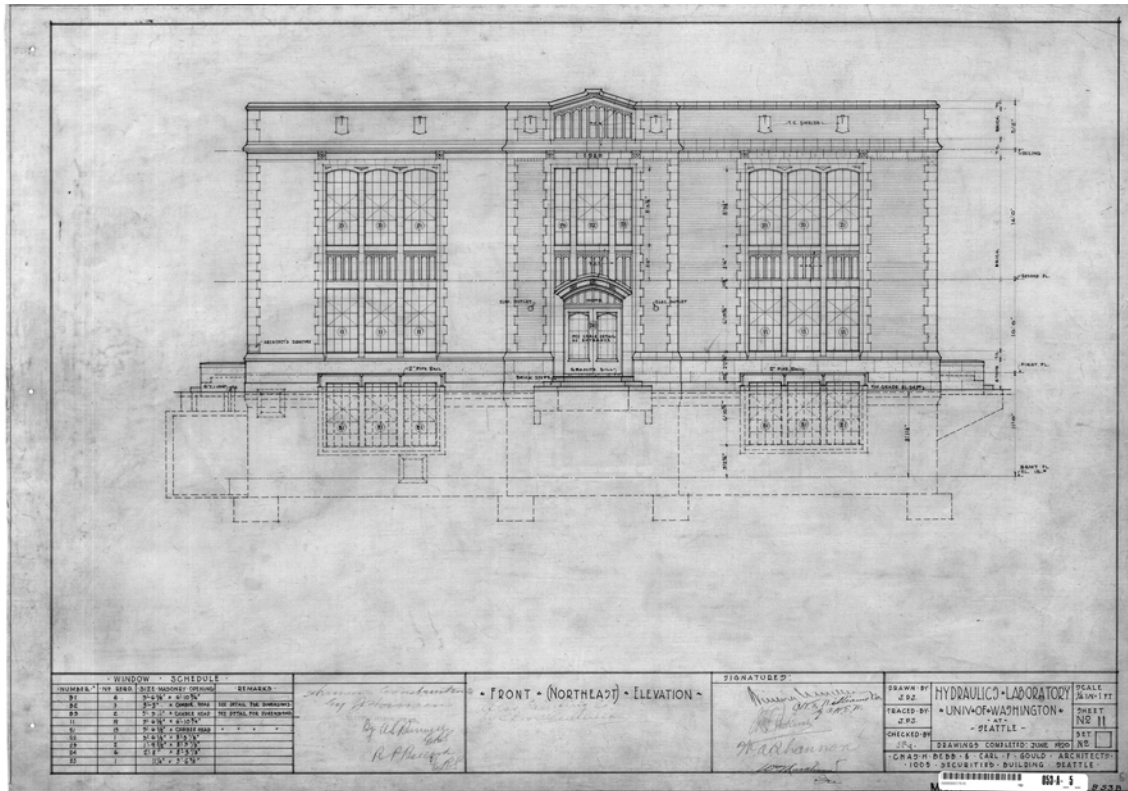
The southwestern elevation of the 1961 addition features a brise-soleil constructed of a vertical pre-cast concrete screen. The brise-soleil shields windows and a balcony on the upper level, and the materials on the lower level are exposed concrete structure with brick infill. An exterior metal stair was added as part of the 1983 renovation and required the removal of one concrete panel from the brise-soleil. The stair obscures much of the elevation.

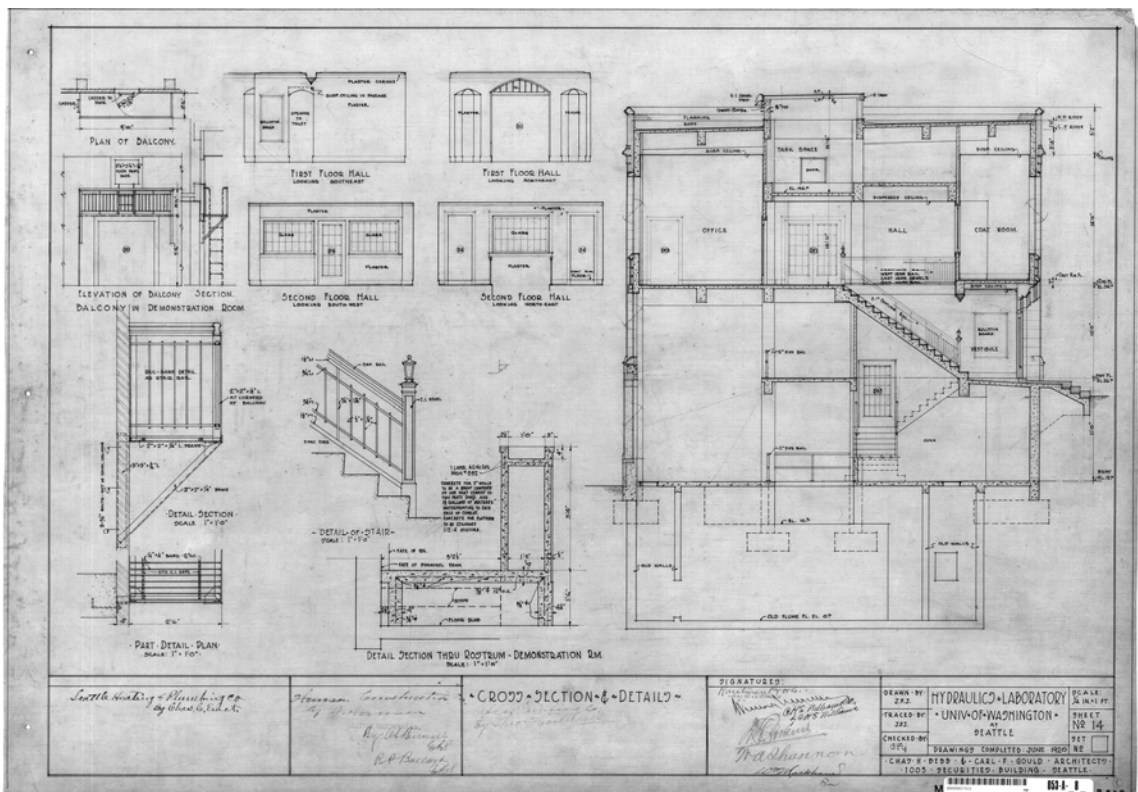
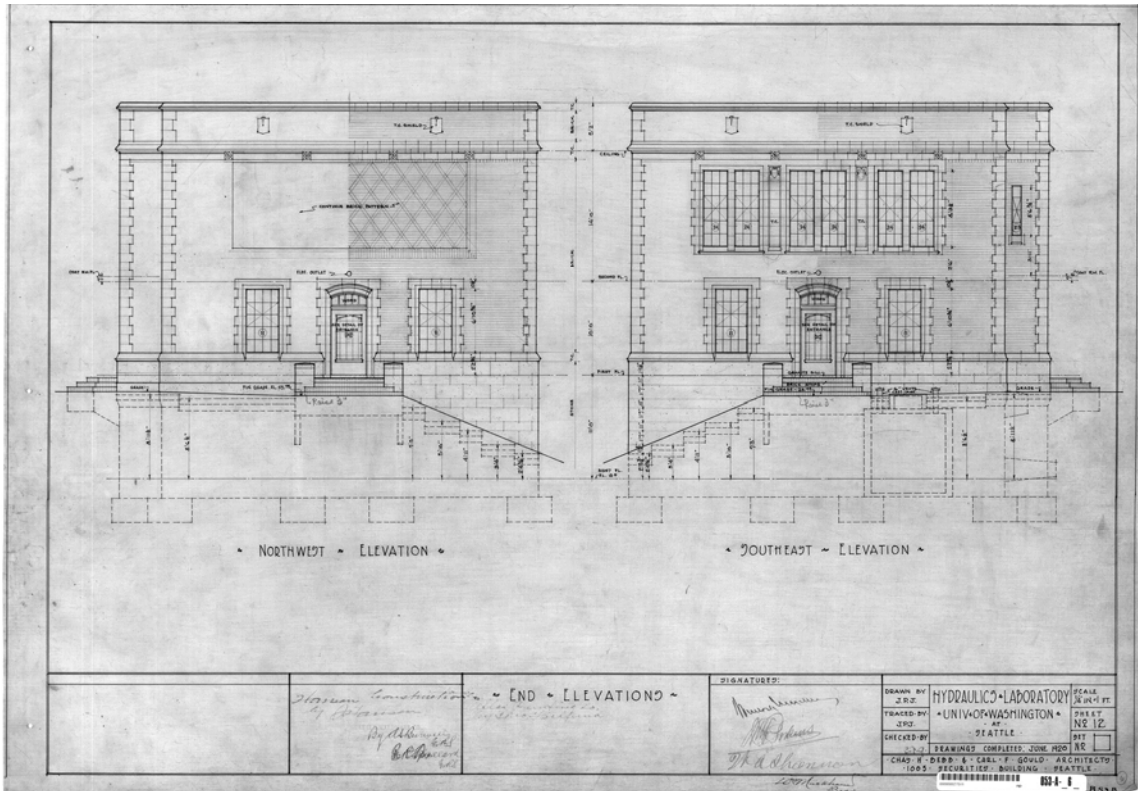
The addition is connected to the 1920 building through a fully-glazed link that contains an interior stair. The pattern of the exterior brise-soleil is repeated as a decorative wall in the stairwell.

University of Washington Hydraulics Laboratory – Original Drawings (Dated June 1920)

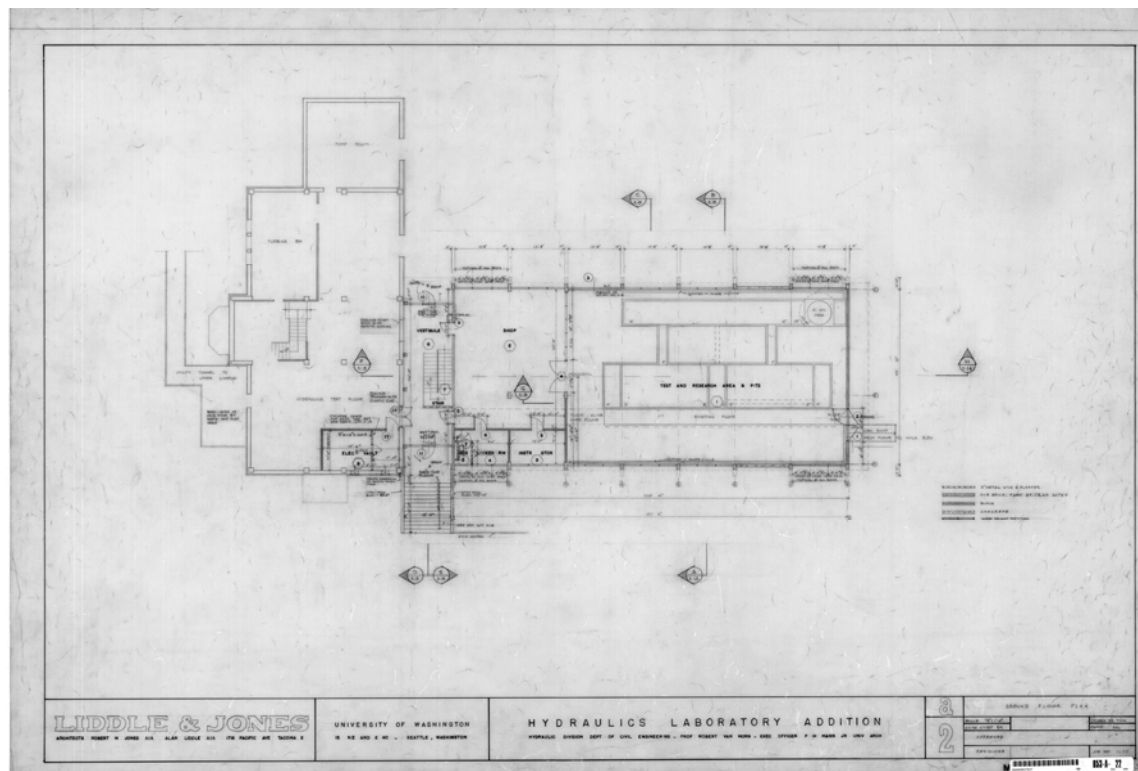
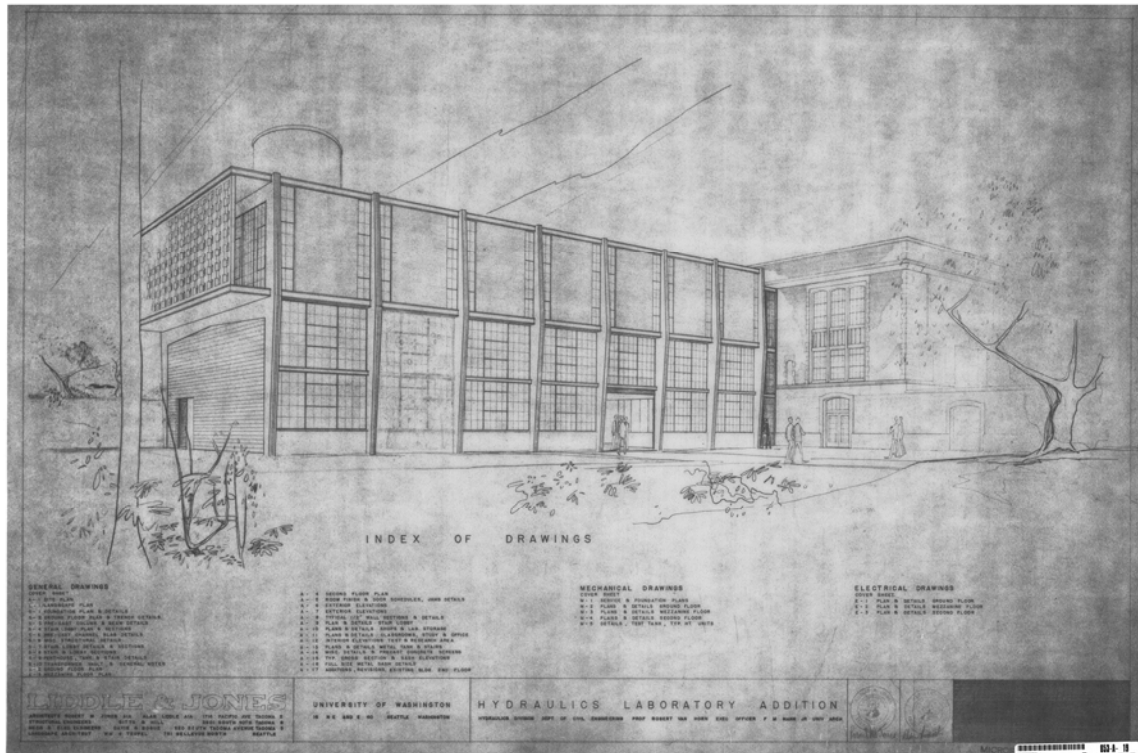


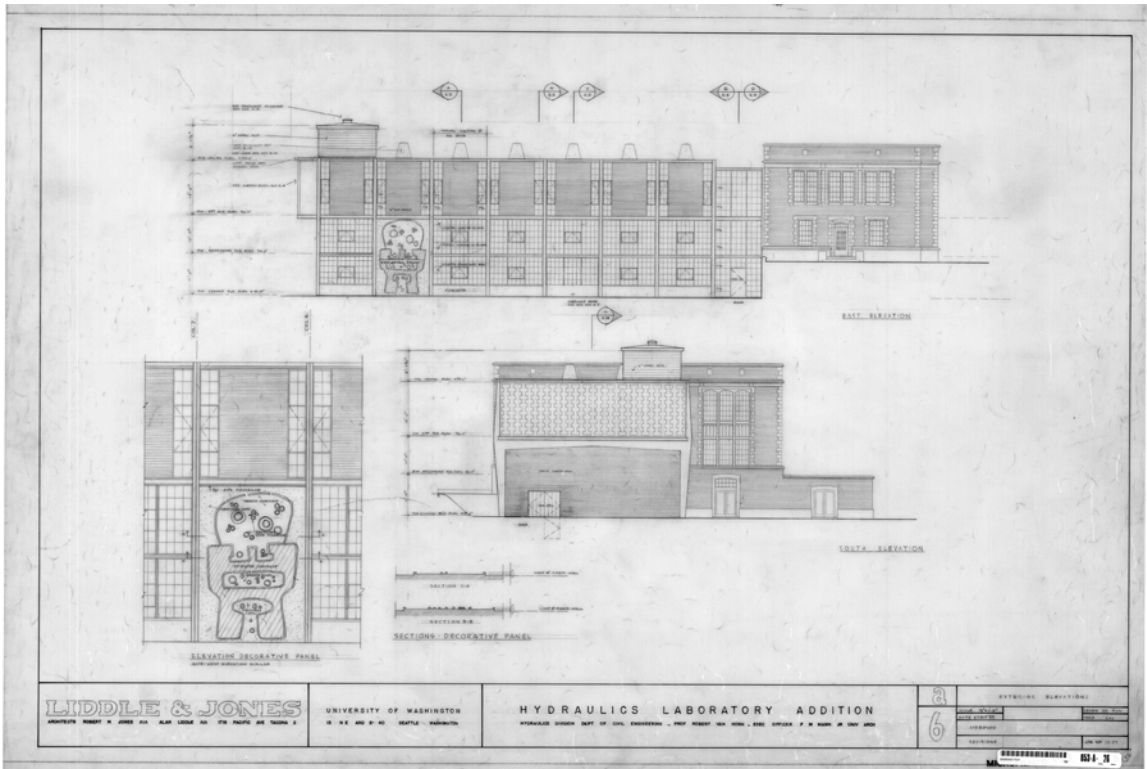
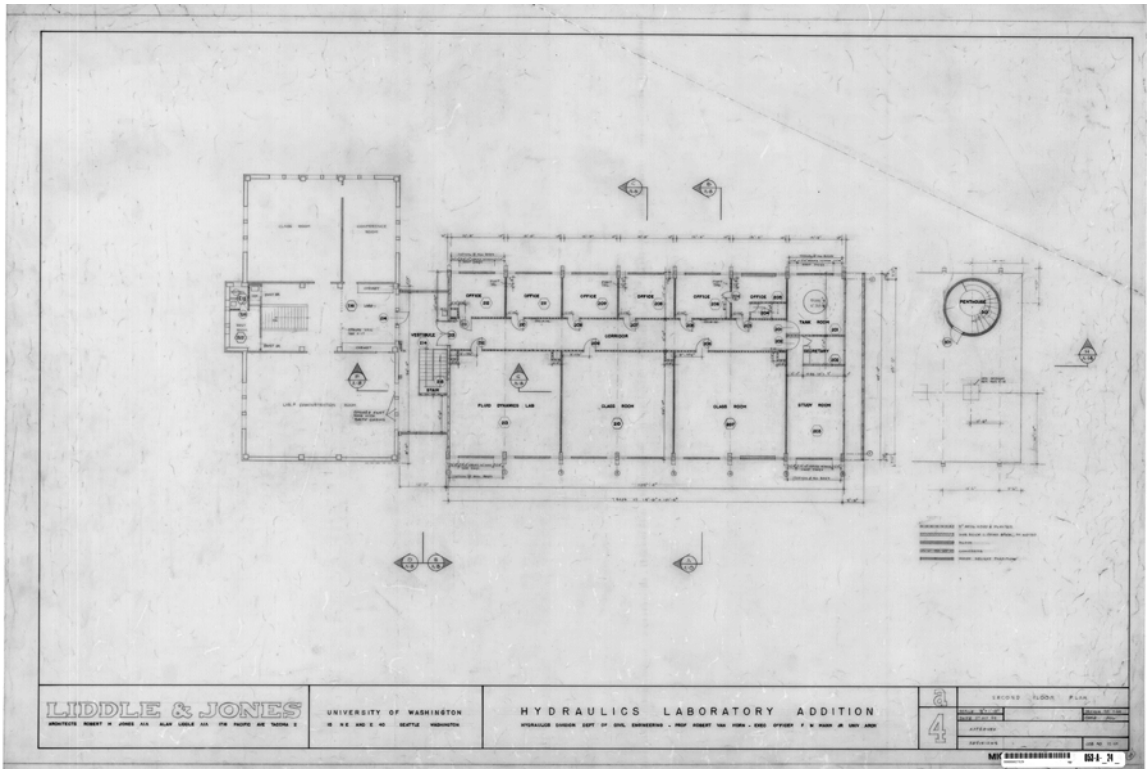


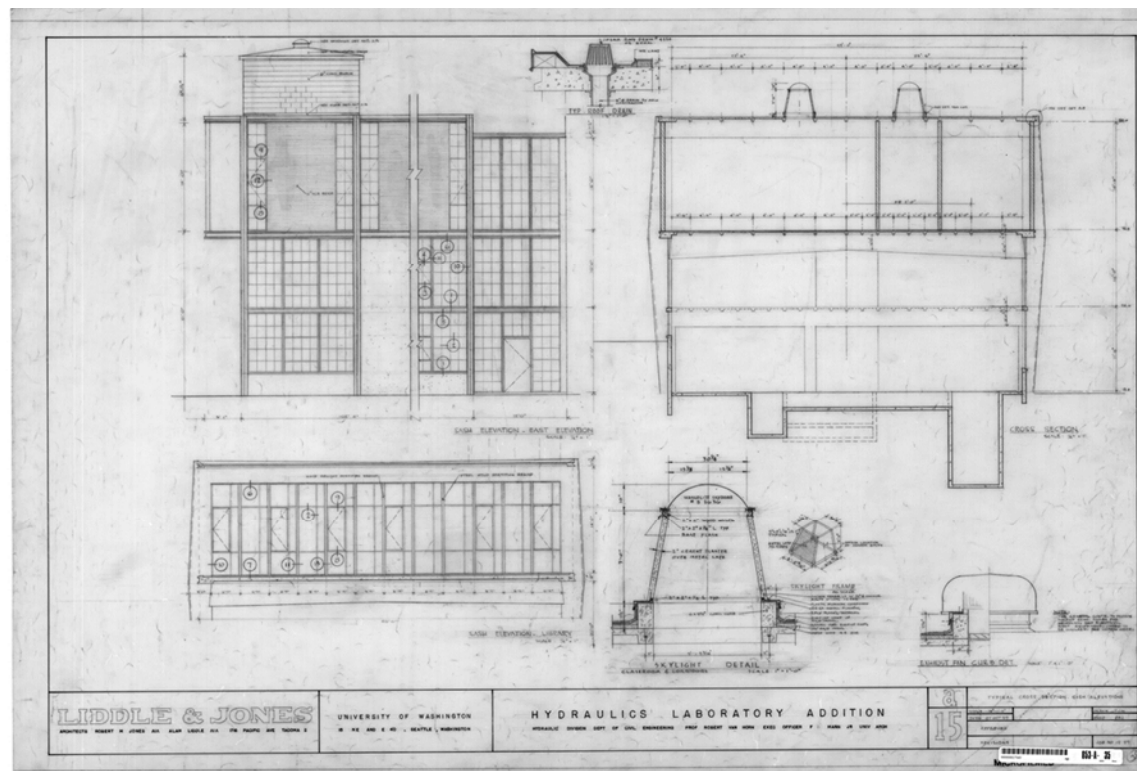
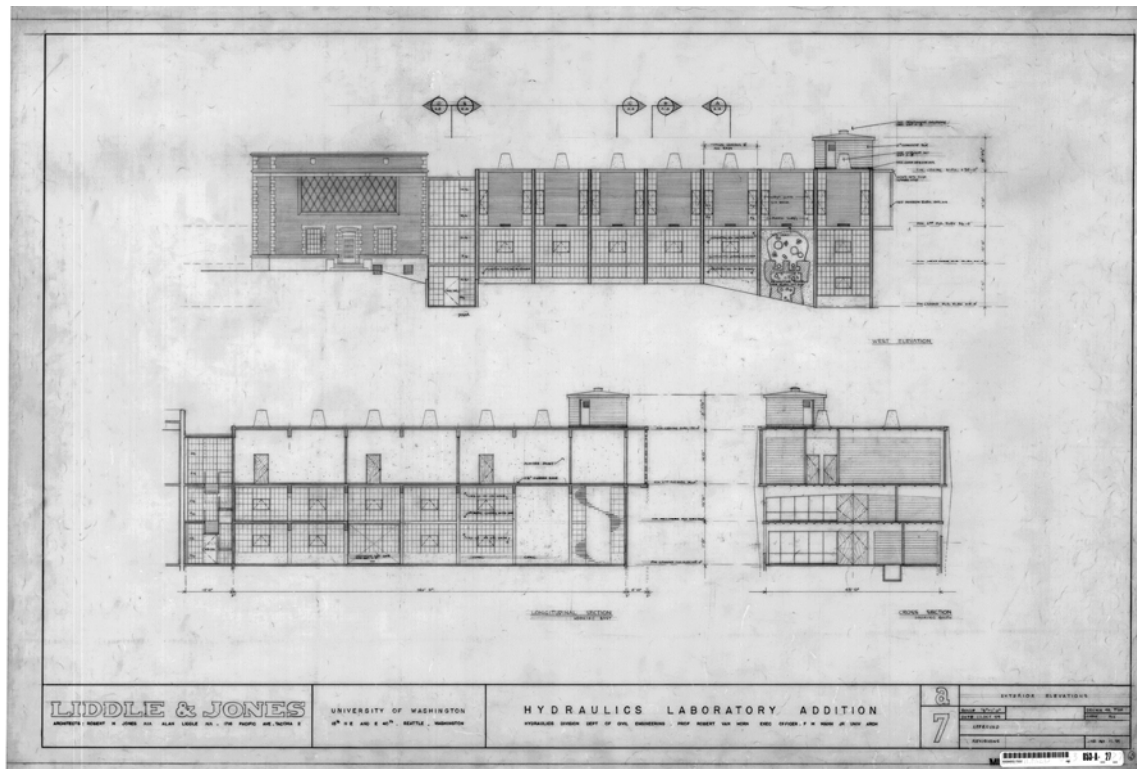




Hydraulics Laboratory Addition – Original Drawings (Dated 27 October 1959)







Roof and Roofing Materials

The current roof condition includes three separate roofs – the roof of the original 1920 building, the roof of the 1961 addition, and the roof of the 1961 connector between them. The roof of the connector is shown in the original drawings at 2'-0" below the main roof of the addition and approximately 4'-6" below the top of the 1920 parapet.

The roofing materials are labeled as "Tar & Gravel Roof" in the original 1920 drawings and the roof structure is shown as sloping 1'-0" from front to back of the original building. Section details in original drawings for the addition describe roofing materials on both the main roof and connector roof as 5-course built-up roofing over 1½" rigid insulation, topped with gravel ballast.

The original 1920 roof is surrounded by a parapet that is 2'-4" high at the low point of the roof and 1'-4" at the high point. The parapet construction consists of concrete structure with brick veneer on the outside face, topped with an ornamental terra cotta cap. Copper flashing is visible on both sides of the parapet.

The 1961 roof has no parapet and is surrounded by a 6" gravel stop. Two layers of copper flashing are visible on the roof edge all the way around the building. Several mechanical units and ventilation fans are located on low curbs on this roof.



1920 Parapet – Current Condition



1961 Roof Edge at intersection of main roof and connector – Current Condition

Both the 1920 and 1961 roofs have significant additional features. There is a tank room penthouse in the center of the original building that measures approximately 17'-9" wide by 10'-9" long by 3'-6" high at its highest point. The roof of the penthouse slopes from northeast to southwest. On the 1961 addition, there are ten skylight frames that measure 4'-0" square at the base by 3'-0" high. They taper to 30" square at the top and are topped by a 1'-0" high clear plastic dome. According to original drawings, the skylight frames are constructed from 2" of cement plaster on metal lathe.



1920 Penthouse – Current Condition



1961 Penthouse – Current Condition



1961 Skylights – Current Condition



1961 Roof – Current Condition
the 1920 Parapet is visible in the foreground

The 1961 building also has two penthouses on the roof. In the south corner there is a cylindrical penthouse that provides roof access and houses the vertical water tank. This penthouse is approximately 14'-6" in diameter and 7'-4" tall and built from 6" concrete block. In addition, there is a 13'-0" wide by 19'-0" long by 7'-6" high mechanical penthouse on the southwest side of the roof. This penthouse was added as part of the 1983 third floor renovation and required the removal of two existing skylights.

5. EVALUATIONS & RECOMMENDATIONS

Building's Significance

The original 1920 Hydraulics Laboratory, designed by Bebb & Gould, is significant due its history as part of the campus plan, architectural style and location on campus. It is the only example of Carl Gould's design on the south campus, and it is shown in the original 1915 Regents Plan for the University. The structure is also in good and useable condition. The 2003 Campus Master Plan recommends that the 1920 structure should be preserved and maintained, and that "new development should be sensitive to [the] Harris Hydraulics Lab" (2003 Seattle Campus Master Plan, Fig. IV-73, p. 111). This report confirms that recommendation.

Alan Liddle is recognized locally as part of a group of significant Tacoma architects who operated in the Puget Sound region in the 1950s and 1960s. He was primarily known for his residential architecture, but he also designed several larger projects in collaboration with Robert Jones, including the 1961 addition to the Harris Hydraulics Laboratory. The Hydraulics Lab addition was one of just a few University projects

completed by the firm, and it represents a strong example of Liddle & Jones' interpretation of the Modernist style.

Comments and Recommendations

The proposed roofing replacement project for the Harris Hydraulics Lab can be performed without significant alteration to the exterior appearance of the building. The project will affect three roofs – the original 1920 building, the 1961 addition, and the 1961 connector between the two. Significant features of the 1920 roof include the parapet and cap and the tank room penthouse. Significant features of the 1961 roof include a cylindrical water tank penthouse on the south corner of the building and ten skylights, as well as the roof edge. All three roofs are likely to require a significant increase in roofing thickness in order to accommodate new insulation. Care should be taken to limit the effect that this increase has on the exterior appearance of the building. Diagrams showing recommended treatments for roof edge and parapet conditions are included at the end of this section.



1920 Parapet – Current Condition



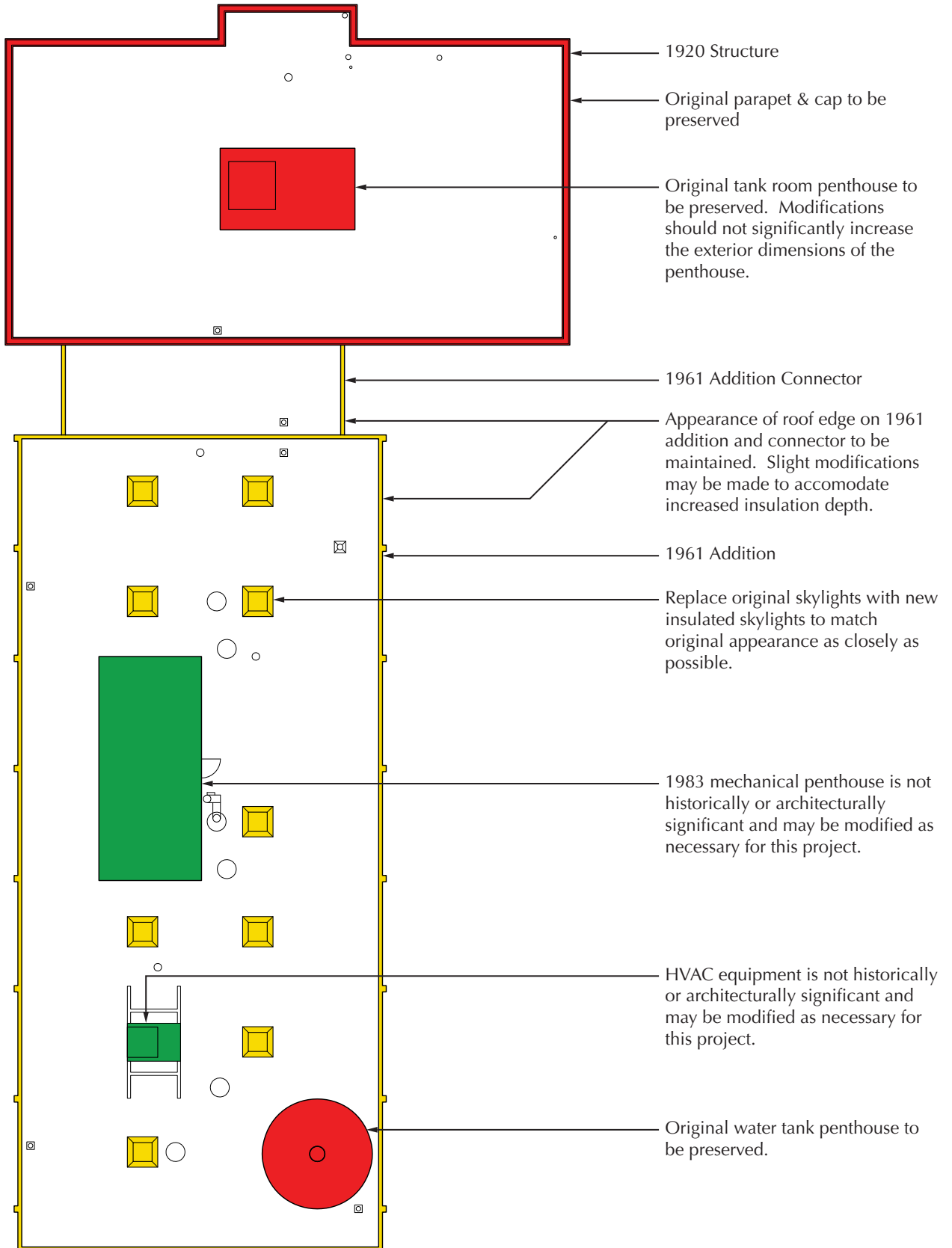
1961 Roof Edge at intersection of main roof and connector
Current Condition

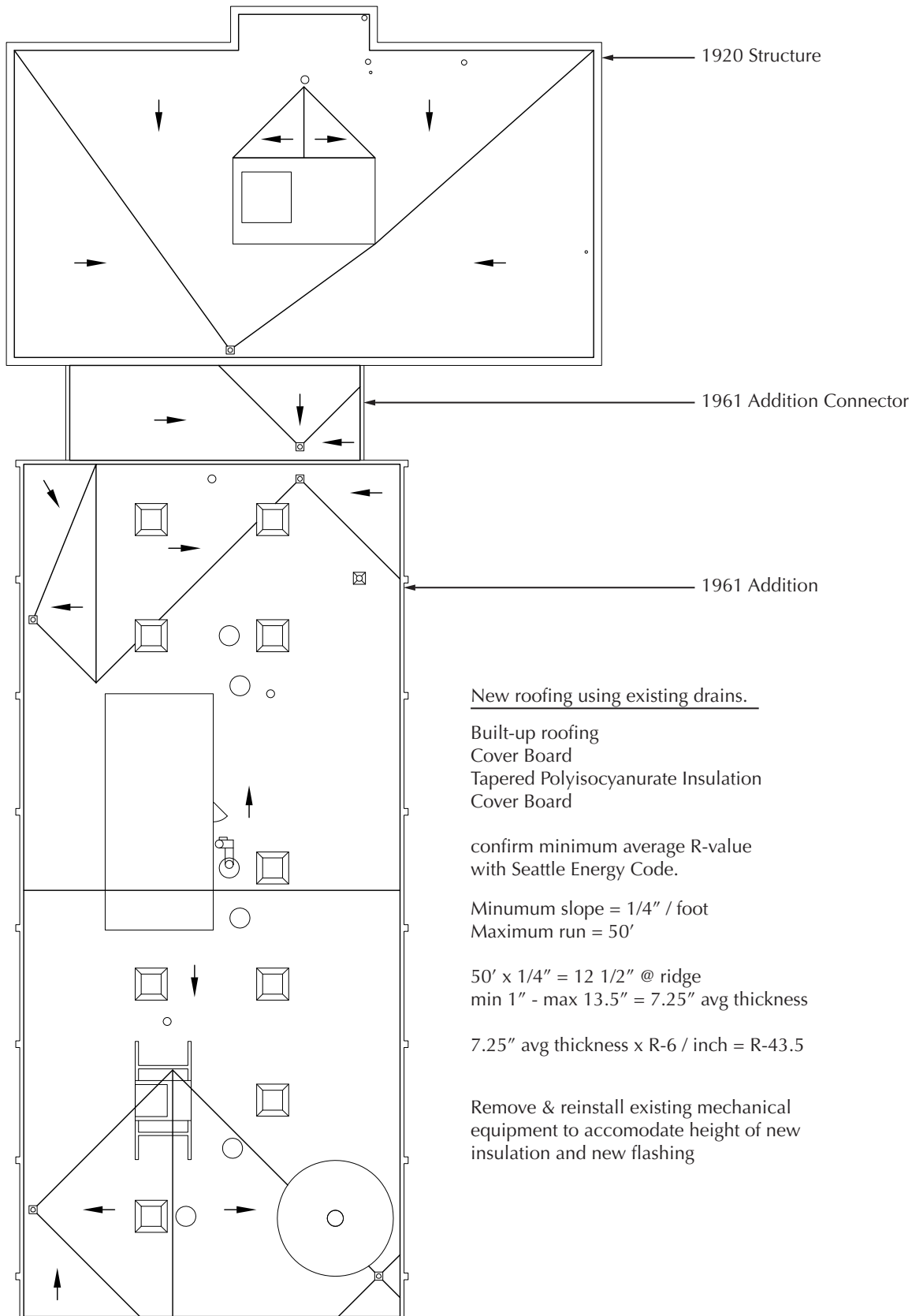


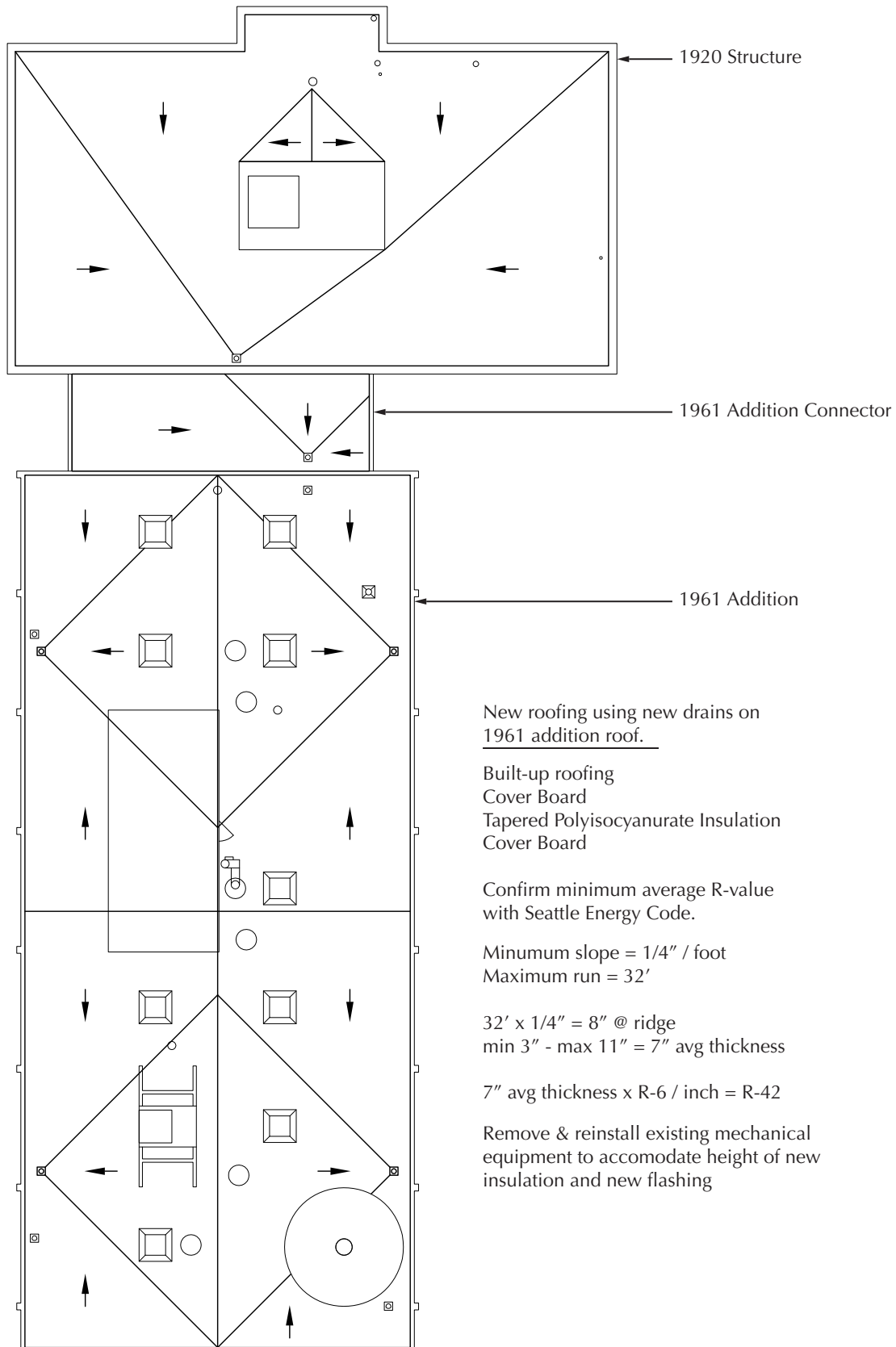
Detail of three roofs at connector
Current Condition

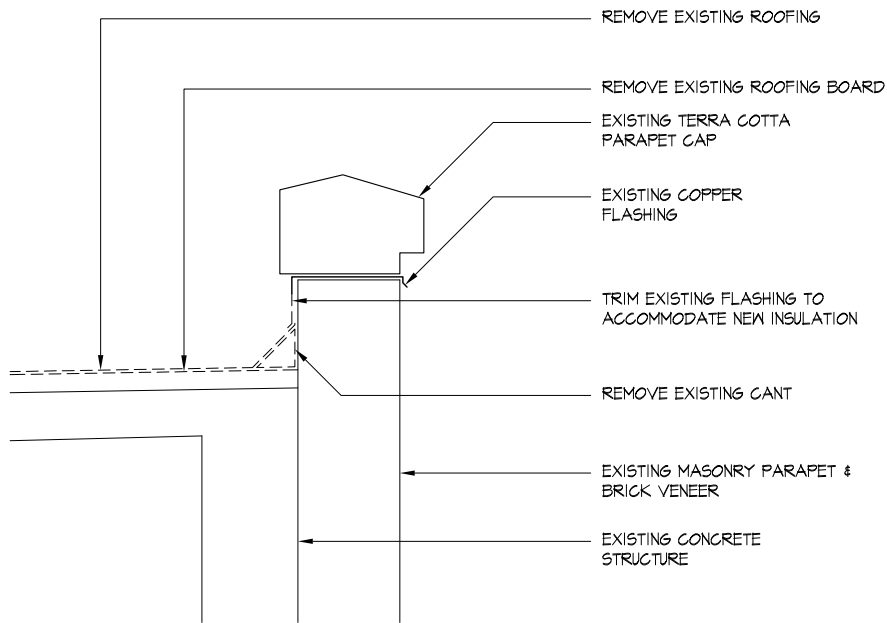
The diagram on the following page shows features of the roofs that may be historically significant and should be considered during the proposed roofing replacement project. On the 1920 building, the exterior appearance of the parapet and terra cotta cap should be preserved. The necessary increase in roof insulation can be accomplished without altering this parapet, and adding fall anchors to the roof would be preferable to raising the parapet to meet safety codes. The tank room penthouse is an important element of the original design, and care should be taken to ensure that any necessary modifications or insulation do not significantly increase the external dimensions of the penthouse. On the 1961 addition and connector, the water tank penthouse and skylights are important elements of the original design that should be preserved if possible. The roof edge detail should also be preserved as much as possible, but it may be altered slightly if necessary to accommodate increased insulation depth. Potential solutions for the roof edge and skylights are shown in the diagrams that follow this section. The metal mechanical penthouse was added as part of the 1983 renovation and is not historically significant.

BLANK PAGE



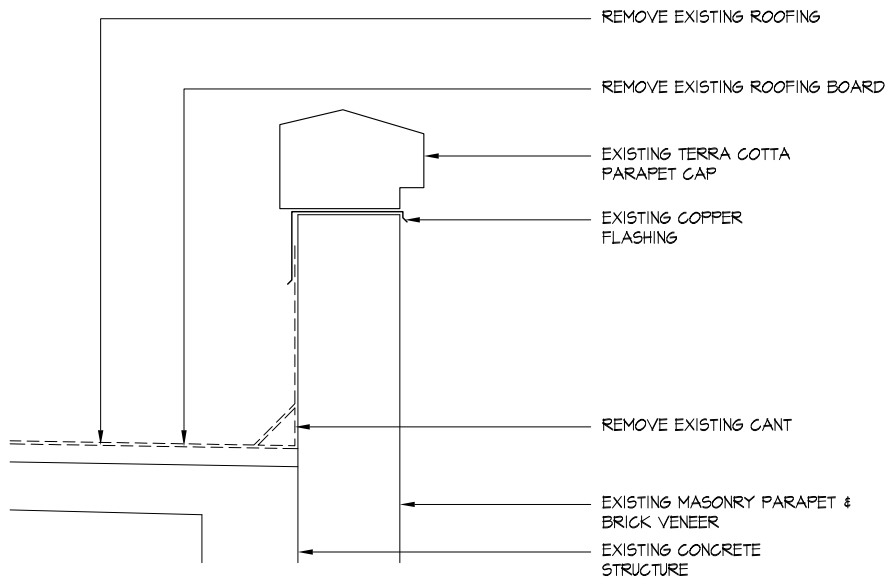






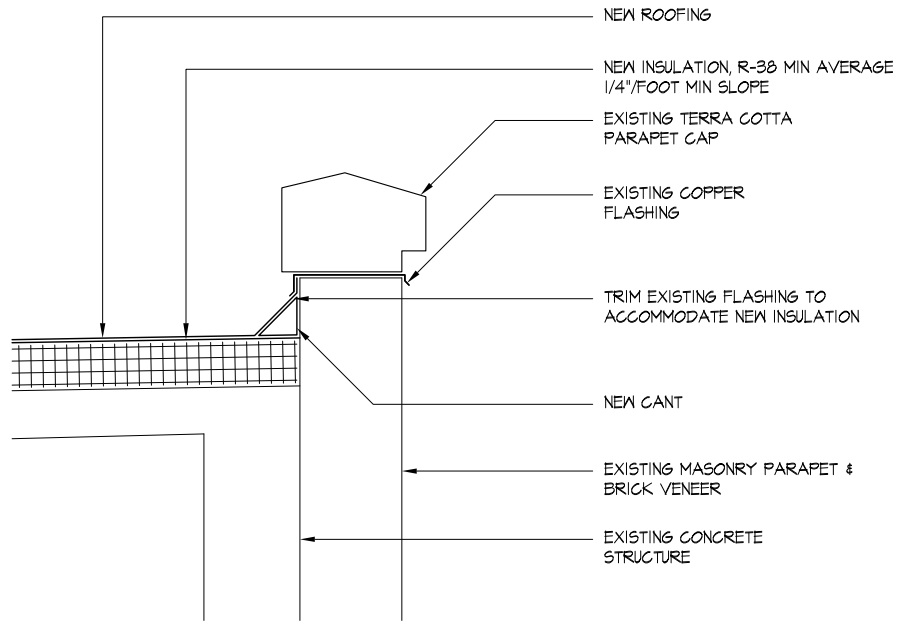
EXISTING 1920 PARAPET @ HIGH END

SCALE: 3/4" = 1'-0"



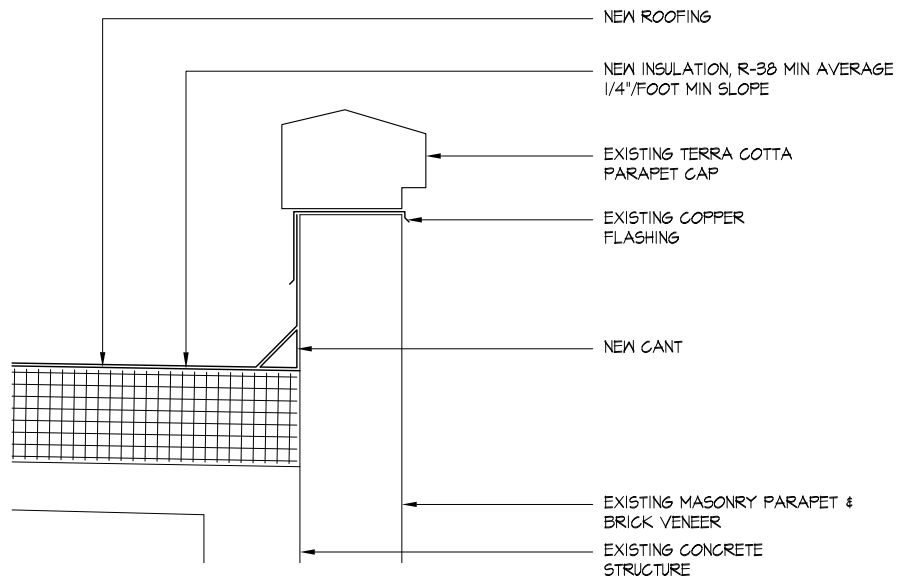
EXISTING 1920 PARAPET, TYPICAL

SCALE: 3/4" = 1'-0"



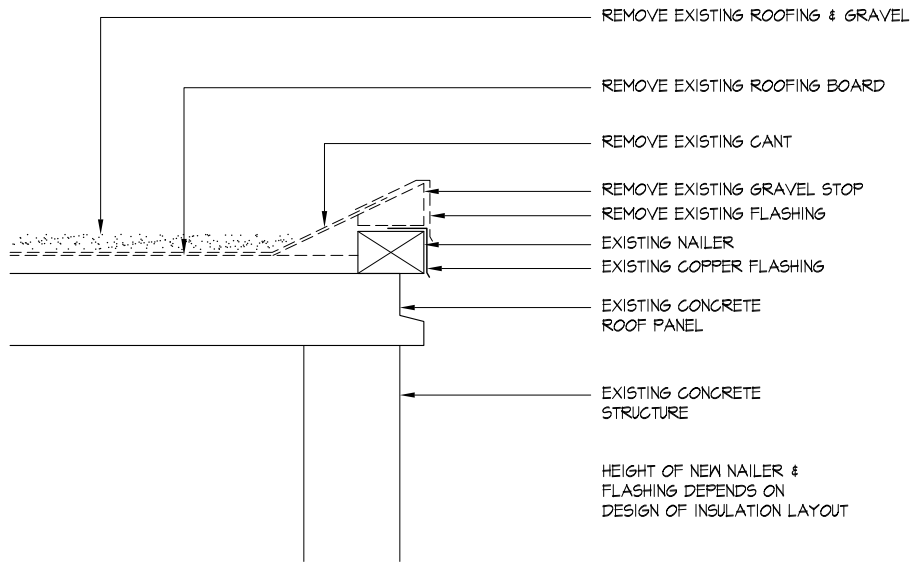
RECOMMENDED 1920 PARAPET @ HIGH END

SCALE: 3/4" = 1'-0"



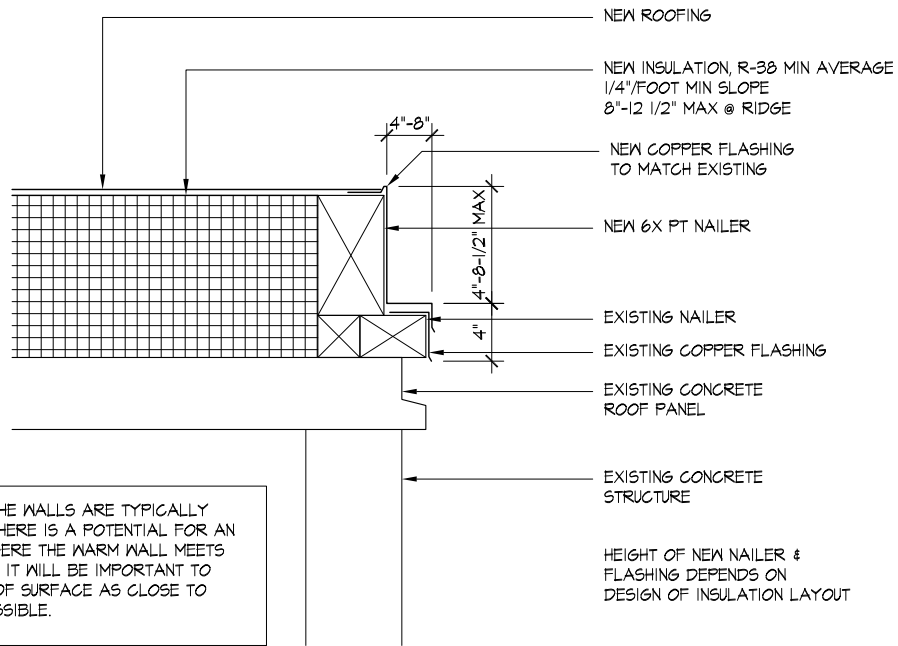
RECOMMENDED 1920 PARAPET, TYPICAL

SCALE: 3/4" = 1'-0"



EXISTING 1961 ROOF EDGE, TYPICAL

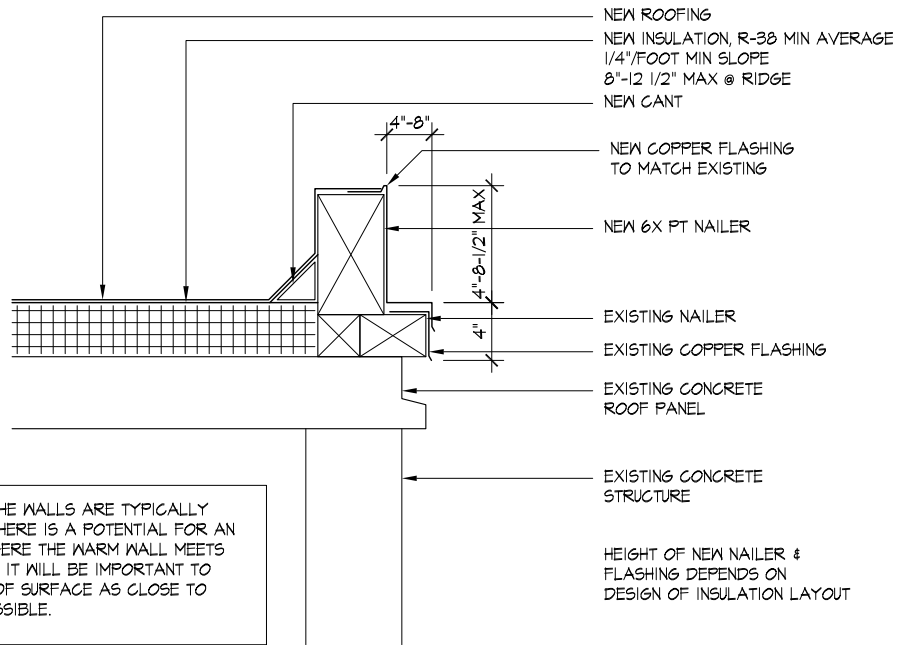
SCALE: 3/4" = 1'-0"



NOTE: BECAUSE THE WALLS ARE TYPICALLY NOT INSULATED, THERE IS A POTENTIAL FOR AN ICE CONDITION WHERE THE WARM WALL MEETS THE COLD ROOF. IT WILL BE IMPORTANT TO INSULATE THE ROOF SURFACE AS CLOSE TO THE EDGE AS POSSIBLE.

RECOMMENDED 1961 ROOF EDGE @ RIDGE

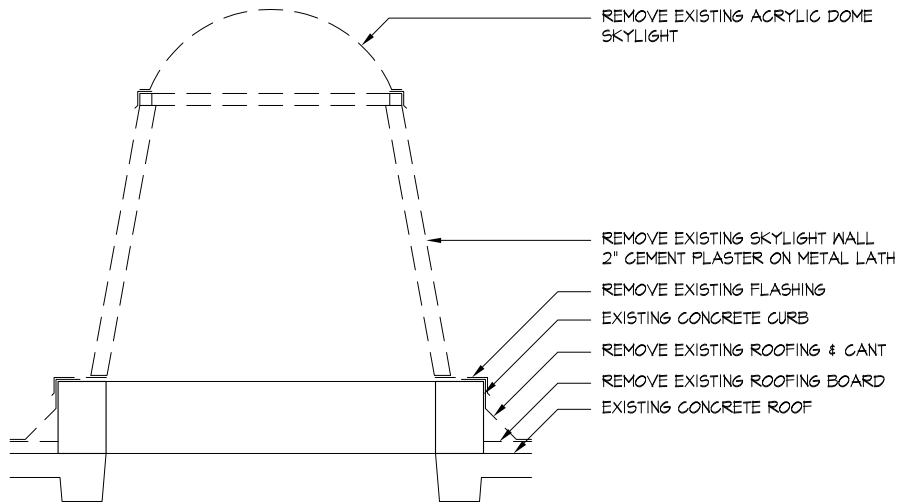
SCALE: 3/4" = 1'-0"



NOTE: BECAUSE THE WALLS ARE TYPICALLY NOT INSULATED, THERE IS A POTENTIAL FOR AN ICE CONDITION WHERE THE WARM WALL MEETS THE COLD ROOF. IT WILL BE IMPORTANT TO INSULATE THE ROOF SURFACE AS CLOSE TO THE EDGE AS POSSIBLE.

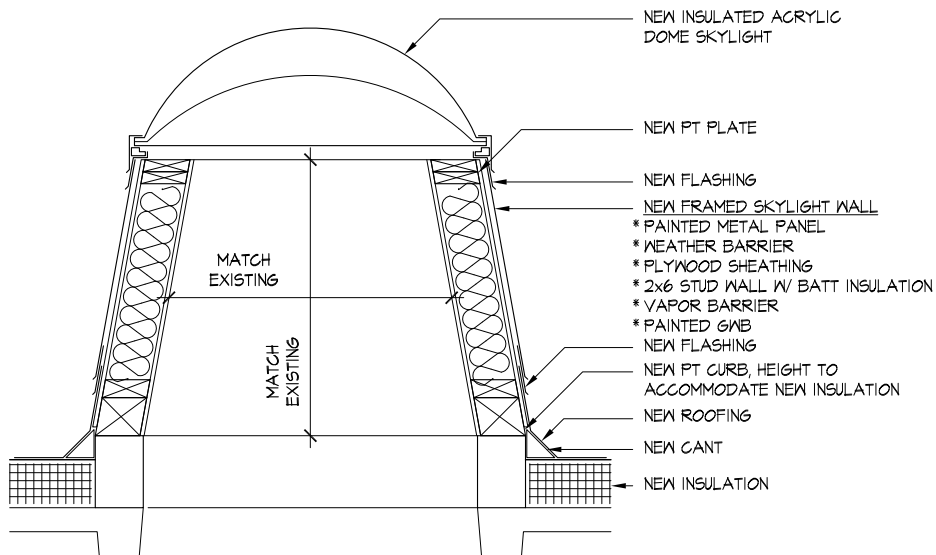
RECOMMENDED 1961 ROOF EDGE, TYPICAL

SCALE: 3/4" = 1'-0"



SECTION THROUGH EXISTING SKYLIGHT

SCALE: 1/2" = 1'-0"



SECTION THROUGH PROPOSED SKYLIGHT

SCALE: 1/2" = 1'-0"

BIBLIOGRAPHY

- Appello, Tim. *He Came, He Saw, He Saved*. City Arts Magazine. October 28, 2009. <http://www.cityartsmagazine.com/issues/tacoma/2009/09-0/he-came-he-saw-he-saved>, accessed 10/26/2012
- Callachan, Peter. *Tacoma architect Alan Liddle was passionate advocate for historic preservation*. The News Tribune. May 19, 2009. <http://www.thenewstribune.com/2009/05/19/746578/tacoma-architect-alan-liddle-was.html>, accessed 10/5/2012
- Docomomo WEWA – Embracing Northwest Modernism. “Jones, John P.” www.docomomo-wea.org/architects_detail.php?id=144
- Docomomo WEWA – Embracing Northwest Modernism. “Jones, Robert M.” www.docomomo-wea.org/architects_detail.php?id=107
- Docomomo WEWA – Embracing Northwest Modernism. “Liddle, Alan” www.docomomo-wea.org/architects_detail.php?id=112
- Elliot, Aleta. Manager and Special Assistant to Chair & Vice Chair, Department of Global Health, University of Washington. Telephone Interview. October 3, 2012.
- Gates, Charles M. *The First Century at the University of Washington, 1861-1961*. Seattle, University of Washington Press, 1961.
- Glidden, Michael. Facilities Specialist, College of Engineering, University of Washington. Phone Interview. October 4, 2012.
- Johnston, Norman J. *The Fountain & the Mountain: The University of Washington Campus, 1895-1995*. Seattle, University of Washington Press, 1995.
- Johnston, Norman J. *The Campus Guide: University of Washington*. New York, Princeton Architectural Press, 2001.
- Morelli, Jill. Director of Facilities, Dean of Medicine, University of Washington. Email. October 3, 2012.
- Mossyrock Model*. The Seattle Times. January 26, 1967. Retrieved from <http://infoweb.newsbank.com.offcampus.lib.washington.edu>
- Ochsner, Jeffrey. Professor of Architecture, University of Washington. Telephone Interview. October 4, 2012.
- Ochsner, Jeffrey Karl, ed. *Shaping Seattle Architecture: A Historical Guide to the Architects*. Seattle, University of Washington Press, 1994.
- To Harness Green Lake*. The Seattle Daily Times. August 8, 1905. Retrieved from <http://infoweb.newsbank.com.offcampus.lib.washington.edu>
- Tacoma Power. *Cowlitz River Project Statistics*. http://www.ci.tacoma.wa.us/power/parksandpower/hydro_power/cowlitz/statistics.htm

University of Washington. *Capital Projects Office Project Tracking System*.

<http://www.cpo.washington.edu/PTS/projOverview.aspx?ProjNum=204003>, accessed 10/8/2012

University of Washington. *Harris Hydraulics Laboratory*.

<http://www.engr.washington.edu/about/bldgs/hhl.html>

University of Washington. *Harris Hydraulics Laboratory*.

<http://depts.washington.edu/uwefm/facilities.shtml>

University of Washington. "University of Washington Master Plan – Seattle Campus." January 2003.

University of Washington. "University of Washington Southwest Campus Plan – A Supplement to the 1991 2001 General Physical Development Plan." April 1993.

University of Washington & Charles W. Harris Hydraulics Laboratory. *The Mossyrock Dam: Hydraulic Model Investigation*. Seattle, University of Washington Dept. of Civil Engineering, 1964.