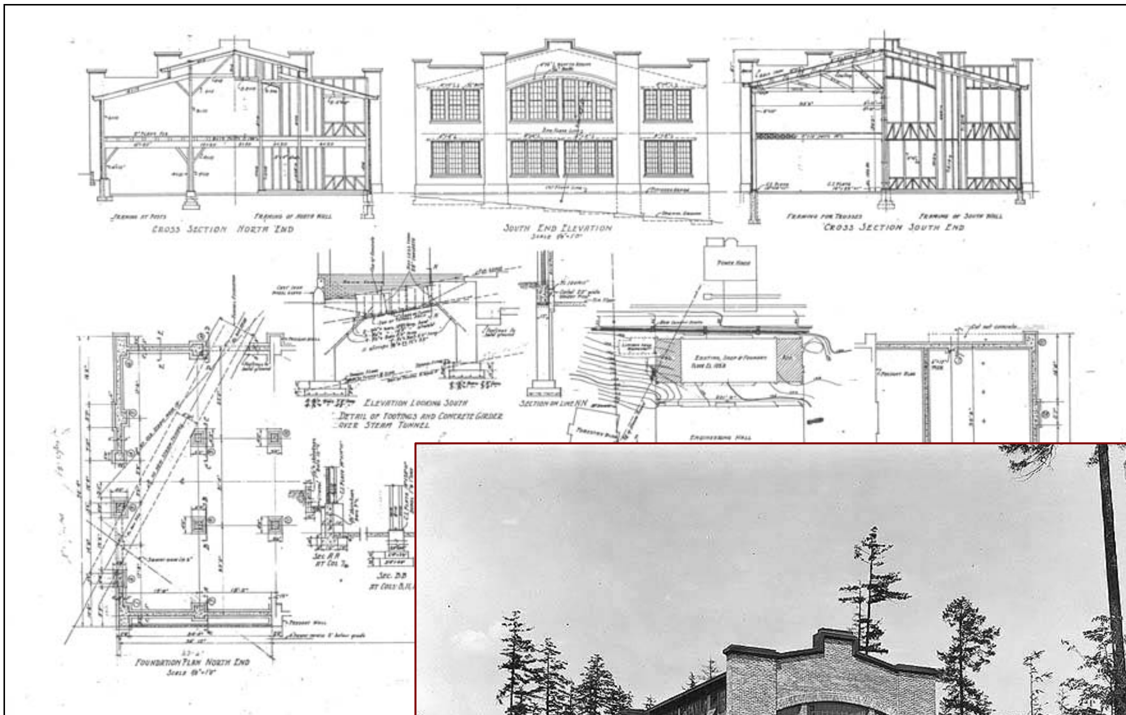
AYPE Foundry / Engineering Annex
University of Washington

Historic Resource Addendum
July 24, 2012



BOLA Architecture + Planning
Seattle

July 24, 2012

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CONTENTS

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1. INTRODUCTION

Background

The University of Washington is considering changes to the Engineering Annex Building, a heavy timber, wood frame and brick masonry building that dates from the era of the Alaska Yukon Pacific Exposition (AYPE). The Annex building is situated near the existing Power Plant, on the eastern side of the campus, east and north of the 1959 Mechanical Engineering Building, southeast of the 1969 Loew Hall. The proposed project involves repairs or replacement of deteriorated, wood frame windows.

Consistent with its historic preservation policies as outlined in its "University of Washington Master Plan—Seattle Campus" of January 2003 (2003 Seattle Campus Master Plan), the University of Washington has sought historic and urban design information about the Mechanical Engineering Annex in a Historic Resources Addendum (HRA). This type of report is provided for projects making exterior alterations to a building over 50 years old, or adjacent to a building or a significant campus feature older than 50 years, and for public spaces as identified in Fig. III-2 of the 2003 Seattle Campus Master Plan.

The report provides historical and architectural information about the Mechanical Engineering Annex, which was constructed in 1908-09 to serve as a foundry and exhibit space for national and local manufactured industrial products and equipment. It also provides a preliminary evaluation of the Annex building's historical and architectural significance, the proposed project, and recommends project approaches and mitigation.

Additional work was undertaken after the University's review of the draft, to expand the report's focus on specific historic materials and components, their existing conditions and recommendations for future treatment. The additional treatment recommendations address the following components:

- Restoration and rehabilitation approaches
- The buildings significance
- Preservation and sustainability
- Access and use of interior spaces
- Window paint prep and paint colors
- Roofing, flashing and roof accessories
- Exterior stucco cladding and wood siding
- Brick masonry, cleaning, repairs, re-pointing, parge coat, products, and contractor qualifications
- Wood frame windows, glazing, and window hardware
- Exterior wood doors and hardware, aluminum storefront entry, and exterior signage
- Site and exterior elements

This report was developed by Principal Susan Boyle, AIA, and Intern Architect Abby Inpanbutr of BOLA Architecture + Planning with assistance from the University. Research of historic documents and field work, which included tours of the building and photography to document its current conditions, and historic research were undertaken and early 2012, and the draft report prepared in March 2012.

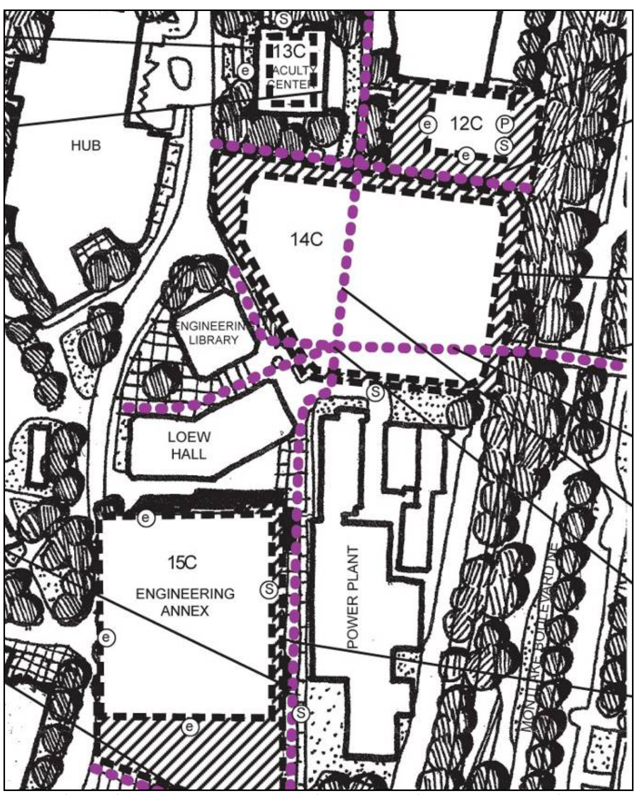
Research Sources

Research was undertaken to provide historical context and factual data about the development of the building and surrounding campus context. Sources included historic drawings, maps, and studies, primarily those from the University Facilities Records and the Special Collections Division of the University Libraries, and information from the Mechanical Engineering Department. Informal discussions with former and current students in of the University's Mechanical Engineering Department were useful in describing the current use of the Annex building. Other research also included reviews of archival newspaper collections from the Seattle Public Library, and digital photography collections of the Seattle Municipal Archives and the Museum of History and Industry.

2. HISTORIC PRESERVATION FRAMEWORK

The University Stewardship and Historic Preservation Policies

As noted in the 2003 Seattle Campus Master Plan, the Regents provide stewardship for historic university properties. As part of its development, the University assures that preservation of an historic resource is considered through provision of a Historic Resources Addendum (HRA). According to the Master Plan, the intent of the HRA is to "provide a context to insure that important elements of the campus, its historical character and value, environmental conditions and landscape context are preserved, enhanced, and valued. [It] further insures that improvements, changes and modifications to the physical environment are analyzed and documented."



The Engineering Annex is located in Illustrative Development Area 15-E. As shown in a diagrammatic map in the 2003 Master Plan, cropped and inserted to the left. The Annex and Mechanical Engineering Building are illustrated as a single, somewhat square-shaped structure, cited as "Engineering Annex.")

Based on historic campus planning documents, the 2003 Se
significant buildings that are associated with the early devel

master plans, which include the 1898 Oval Plan, the 1909 Alaska Yukon Pacific Exposition Plan, and the 1915 Regents Plan. Significant campus elements that were part of the early master plans of 1898, 1909 and 1915, and significant and unique landscapes on the campus are cited in the Master Plan in Figures III-2 and III-5. Neither of these citations included the subject building. Nonetheless, the building has significance as one of the few remaining structures dating from the AYPE.

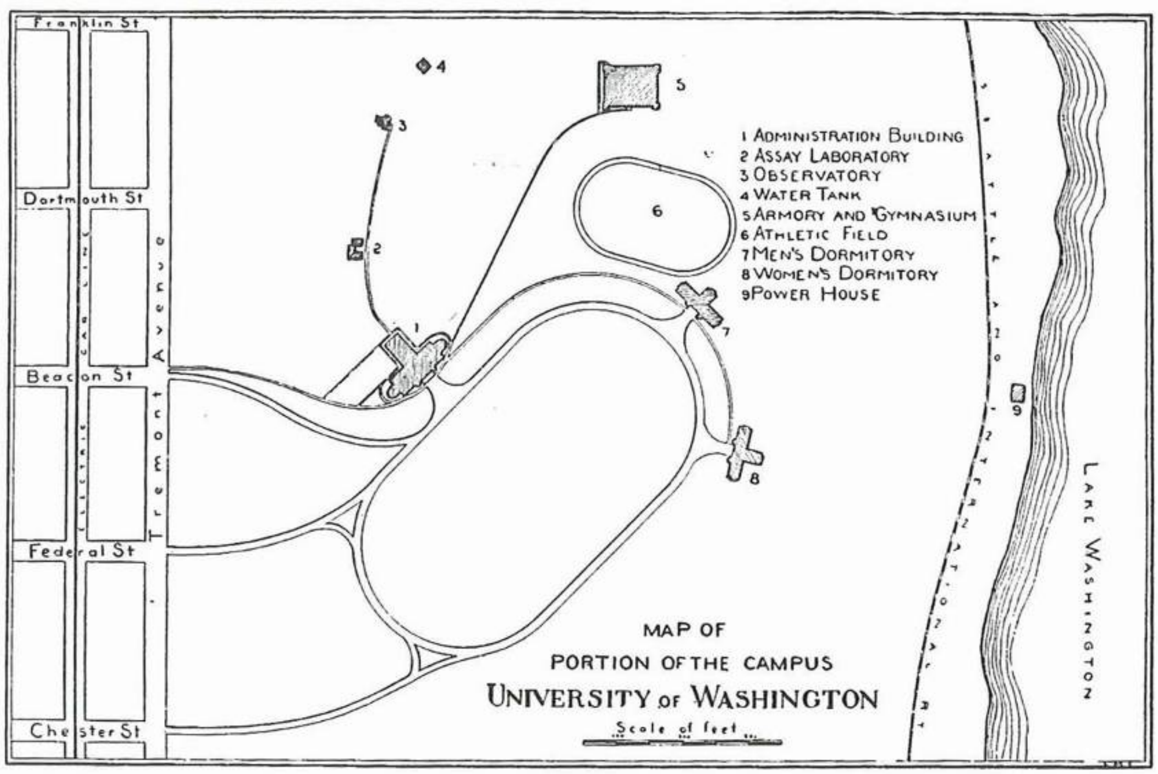
3. HISTORICAL CONTEXT

Development of the University of Washington's Campus

The University of Washington was established by the State Legislature in 1861 as the first public university in the state. Initially it was sited on a ten-acre parcel in what is present downtown Seattle. By the late 1880s, the original facilities were inadequate due to increasing student enrollment and urban development, and the University Land and Building Commissioners hired local architect William E. Boone to develop a comprehensive plan for a new campus at its current Seattle site in 1891.

The campus was moved to this location in 1895. Denny Hall, originally the University's Administration Building, and the nearby Observatory were completed that same year. Within four years, a drill hall, gymnasium, and two dormitories were built (Lewis and Clark Halls).

The University Regents sought to develop a campus plan to guide future building locations. In 1898, engineering professor A.H. Fuller developed a plan known as the Oval Plan, which included only the



Above, the Oval Plan, also known as the Fuller Plan, c. 1898. (University of Washington, taken from a reprint in Johnston, p. 20.)

northern portion of the University site. Remaining buildings constructed in the 1890s include the two dormitories, later named Lewis and Clark Halls. These two buildings, Denny Hall and the Observatory. are situated in the north campus area.

In 1903 the Board of Regents hired the renowned landscape architects, the Olmsted Brothers, to prepare a design for a general campus plan. While the resulting 1904 Olmsted plan was never realized, it was adapted in part as the plan for the Alaska Yukon Pacific Exposition (AYPE). In planning for this fair, local businessmen approached the University Regents in 1906 to suggest that the undeveloped lower (southern) portion of the campus be used. The exposition plan was then developed by the Olmsted Brothers, who also provided the landscape design. As a result, the lower campus was cleared of timber. Thus a good portion of the present campus plan descends from John Charles Olmsted's Beaux-Arts design for the 1909 fair grounds.

The AYPE grounds reverted to the University in 1909, providing the central axis of Rainier Vista, an encircling road system, and an emphasis on the landscape and formal layout of buildings. The AYPE also left the University with so-called permanent buildings, including the Machinery and Foundry Buildings. After the AYPE, most of the University's buildings were built in the Central and South campus areas.

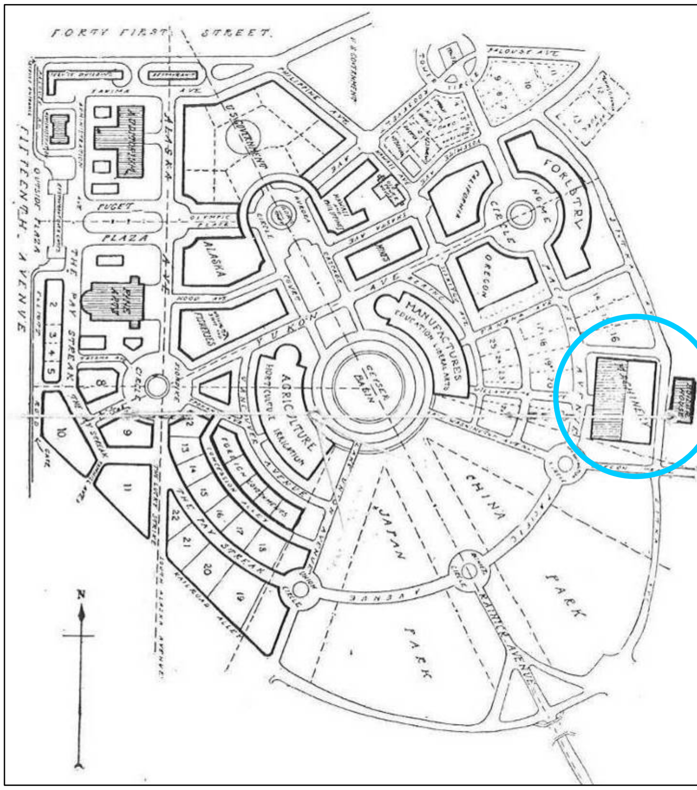
The Regents Plan of 1915 was designed by the campus architect, Carl F. Gould, and the Seattle architecture firm of Bebb and Gould. This plan reaffirmed the Olmsted plan for the AYPE grounds while adapting its symmetry and formality in a design for the upper campus. The plan served as the basis for the subsequent two decades of planning and construction, and set the Collegiate Gothic character for the architectural design of campus buildings.

Henry Suzzallo was the University of Washington's fifteenth president, whose tenure lasted eleven years from 1915 to 1926. Suzzallo worked closely with Gould in developing plans for the campus and its buildings. He envisioned the institution as "the university of a thousand years," with the library as its heart. Bebb and Gould's Regents Plan, adopted during Suzzallo's first year as president, placed the library and administrative buildings on intersecting axes, with the Liberal Arts Quadrangle to the northeast and science facilities to the southeast along Rainier Vista and the southern portion of Stevens Way. Major athletic facilities were to be located along the eastern edge of the campus near Lake Washington. Utilitarian structures, such as the Power Plant, were positioned east of Stevens Way, between the primary campus and the athletic facilities.

The Regents plan was consistent with other Beaux-Arts and City Beautiful designs for American civic centers, towns and campuses during the period between the 1880s and 1930s, exemplified by those for Chicago, St. Louis, Columbia University, and the University of California campus at Berkeley. Borrowing from grand European city and villa plans of the 16th and 17th centuries, Beaux-Arts principles included axial alignments, balance and symmetry, and a hierarchical order reinforced by the use of landscape.

Unlike many other campuses, which have compromised their original Beaux-Arts and City Beautiful campus concepts, the plan of the University of Washington has remained essentially intact. Principles of the plan have been used in recent master plans, guiding contemporary construction on the campus and extensions to the south and west. Some of the university's engineering facilities have remained in the original area cited in the Regents Plan, while others have been grouped in the south part of the campus.

Collegiate Gothic was endorsed by architect Carl Gould as the suitable architectural style for the campus buildings due to its symbolic content, and a visual association with older English universities. This style offered adaptability to the sometimes irregular plans that individual buildings and their academic

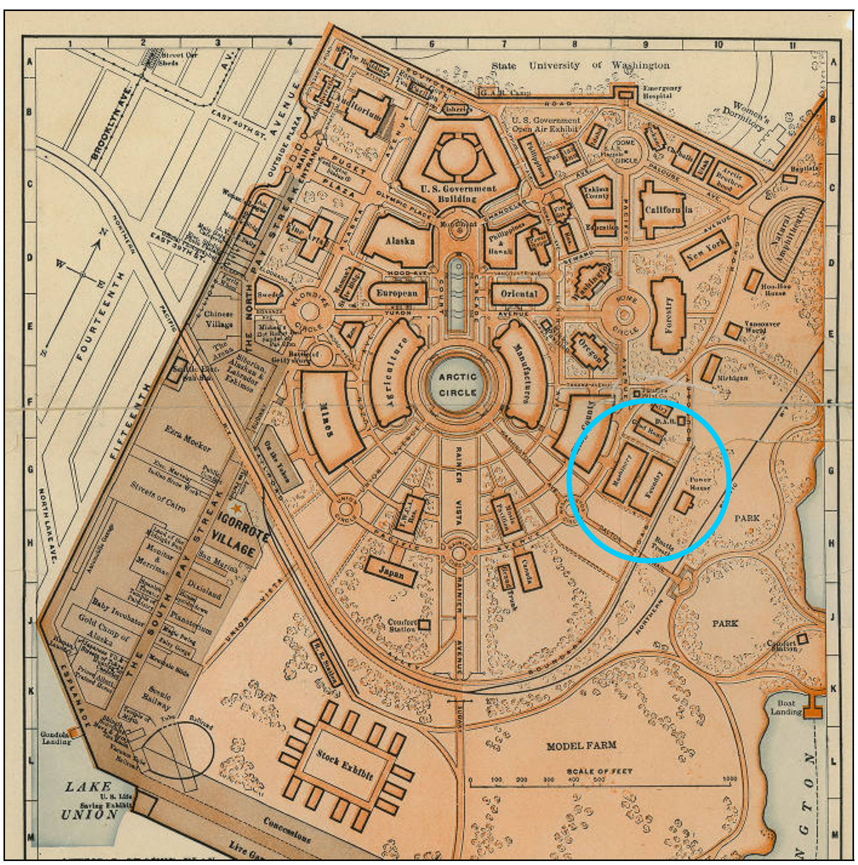


Left: Early plan of the proposed AYPE grounds 1907. (From "Alaska-Yukon-Pacific Exposition" booklet, MOHAI, 2006.3.1.)

Below Left: Ground Plan of the AYPE by the J. N. Matthews Co., 1909.

North is oriented up in both plans. The complex of buildings made up by Machinery Hall, the Foundry (Annex Building), and original the Power Plant are circled in blue.

(These two images and the other historic images and photographs in this report are from the University of Washington Libraries, Special Collections Division, unless otherwise noted.)



functions required. Colored brick in warm shades of brown, pinkish-gray cast stone, and cream-colored terra cotta were adopted as primary exterior materials. Decorative brick patterns and decorative sculpture were used to embellish many of the campus' Gothic Revival buildings.

Campus buildings constructed from 1915 through the 1920s from Bebb and Gould's Gothic Revival designs included Raitt, Savery and Miller Halls, the Main Library (later renamed Suzzallo Library), Hutchinson Hall and the Henry Gallery. Other buildings constructed in the late 1920s and early 1930s included Physics, Guggenheim and Science Halls, and the Oceanography Building, all designed by architect John Graham Sr.; and Anderson Hall and the Athletic Pavilion (Hec Ed), both by Bebb and Gould.

In 1934, the Regents requested a reexamination and update of Bebb and Gould's 1915 plan. The resulting 1935 Campus Plan essentially reaffirmed the earlier one, while recommending some changes, such as locating a student union building east of the library, siting of a health sciences complex south of Northeast Pacific Street, and situating a student housing along the northeasterly campus ridge.

Following World War II, major changes on the campus included an influx of students attending on the GI Bill. Construction immediately after the war responded to the establishment of the University Medical School in 1946, and infrastructure improvements on and around the campus. The University's basic plan was again updated, resulting in the 1948 Campus Plan. In addition to supporting the 1935 campus design, the new plan recommended increased density and acquisition of new projects in the Northlake / Portage Bay area south of the main campus.

Buildings on the campus constructed in the decades after World War II were designed in Modern styles that emphasized new materials and expressive structural qualities. Prominent among these is the Student Union or HUB (1949, currently undergoing a large expansion), and Faculty Center (1958–1960), which is located on the west side of Stevens Way. The present, Modern style Mechanical Engineering Building was built in 1959 on the same site as the Machinery Building. A portion of its south façade was constructed to abut the original north facade of the former AYPE Foundry / Annex Building.

In the 1950s, a University Architectural Commission was established and a University Architect appointed. Collegiate Gothic was replaced by Modern style architecture as the preferred style for new campus buildings. Designs for university buildings have become more diverse since the 1970s, due in part to creative rehabilitation, additions and adaptive use of older buildings, and new facilities have introduced contemporary architectural forms, materials and styles. The present campus strongly reflects its early layout. The University is characterized further by its buildings, characterized by stylistic variations that provide the campus with visual interest and a sense of its development over time.

The Architects

<u>The Original Designer, G. Washington Place</u>

The original AYPE Foundry was designed by Washington N.G. Place. No information has been discovered about Place's early life and education except for his birth date, indicated as 1851 from a brief local newspaper article about a shooting range competition when he was 60 years old.

Local newspaper articles note Place's employment by the City of Seattle as early as June 1900, when he was cited as being an assistant on probation upon taking a civil service exam. He was cited as building inspector in early August that year, and again in January 1903-04 and July 1907. In this capacity he monitored and reported on building permits, and comments on code revisions. Articles about Place not his being involved in claims relating to a faulty retaining wall designed by another architect, for the City of Seattle Municipal hall in 1908. By that date he was the former city inspector. He was involved also in controversy associated with construction of the Armory Building (present the Center House at the Seattle Center). He was cited as the building's supervising architect and was called into question after a handrail gave way in the completed building during an indoor marathon race in early May 1909, with a resulting accident that left 63 people injured and three fatalities. Conflicting claims were made by Seattle's Mayor John Miller and Prosecuting Attorney George Vanderveer as to the responsibility for a design or construction error. In his defense Place cited the dissolution of his partnership with the design architect, George Lohman, in February 1909, and his lack of involvement in the project.

Other records about Place's career are minimal, but they indicate that he worked in partnership with architect George Lohman in 1909 and with J. L. McCullough in 1911. From 1908 to early July, 1910, he was a partner with architect John L. McCauley, and it was during this period that the subject building was designed. During this period Place also designed a two-story apartment building at Walker Street and Rainier Avenue for owner Henry Gobel. The partnership of Place and McCauley Architects was dissolved in July 1910, and Place established an office in what appears to have been his residence at 2802 East Valley Street, Seattle. McCauley, who retained an office in the Leary Building, went on to design the 1916 King County Courthouse Building, and had a lengthy practice up until 1931.

<u>F. W. Elwell, Designer of the 1920 Addition</u>

F. W. Elwell was the Superintendent of Buildings and Grounds at the University for several years, and also served as a member of the University's Building Committee. During his tenure significant projects were undertaken, including the construction of Suzzallo Library (1923-27) and the Hec Edmundson Pavilion (1928), both designed by the prominent architectural firm and campus architect, Bebb & Gould. Elwell oversaw these and many smaller projects on the campus, including the 1920 addition to the present Engineering Annex (identified as the Shops Building). Construction drawings for this project were done under his name, with the draftsman cited as O.H. Other projects managed by Elwell include a Biology Station constructed at Friday Harbor, and the former Meany Auditorium when it was declared unsafe in 1924.

<u>Richard Bouillon, Architect, Designer of the 1961 Project</u>

The building was remodeled in 1961 by Seattle architect Richard Bouillon. The son of local mechanical engineer Lincoln Bouillon, he was born on September 27, 1927 and graduated from the University of Washington with an architecture degree in 1952 at the height of Northwest Modernist design. He was licensed in the state of Washington in August 1954.

Due to an early death two decades later, Bouillon's career was relatively brief. He worked in partnership with architect Joseph Williams before forming his own firm in 1959, Richard Bouillon & Associates. Early e of Williams, with whom he assisted in the Plaza of the States at the Seattle World's Fair in 1962.) Bouillon was an active member the Washington Athletic Association and joined the AIA in 1964. Records about his career are scant, and the 1970 *AIA Directory of Architects* cited only a business address.

Bouillon worked in a Modernist style, and received an AIA Honor Award in 1969 for the design of a fountain and alternations to the University Chevrolet car dealership at Roosevelt Way NE and NE 45th Street, in the University District, in 1969. In addition to the 1961 project for the University's Engineering Annex building, he is credited also with the following projects:

- Crestview Apartments in Seattle's Rainier Valley, ca. 1963 (winner of an award from *Practical Builder* magazine)
- Office complex for the Rudy Simone Construction Company, also in the Rainier Valley, 1964

- Lake Forest Park Shopping Center, 1964
- Crossroads Restaurant in the Bellevue Play Barn (assisting architect John Woodman), 1964
- B. F. Goodrich Company store, 1964
- Klopfenstein's downtown Seattle retail store, ca. 1967
- Washington Mutual Savings bank, Renton, 1968
- Fountain at University Chevrolet Auto Dealership, Seattle, ca. 1968
- Greenwood Inn / Red Lion Inn, West Olympia, 1970
- Totem lake Shopping Mall, Kirkland, 1973

Bouillon is reported to have partnered briefly with architect Harry Rich in the early 1970s, but their business disbanded. Records for the Seattle firm Lance Mueller & Associates (LMA) indicate that Mueller joined Bouillon as a project manager in 1970s and that this company became the successor firm after Bouillon's death in 1973.

Richard Bouillon's work was primarily commercial in nature, and he may have been chosen for the University's 1961 Engineering Annex project due to his father's relationship with the Mechanical Engineering Department. Lincoln Bouillon was a graduate of the Mechanical Engineering Department, and local practicing engineer. Lincoln Bouillon was the President the American Society of Heating, Refrigerating and Air-Conditioning Engineers (AHSRAE), having served as the local chapter president in 1935. In 1966 the Puget Sound Chapter established a scholarship in his name for student in the department. (Lincoln Bouillon was a partner with several local engineering and architecture firms, including Sylliaasen, Bebb, Jones, and Bouillon Architects, which operated during World War II; Jones, Bouillon, Thiry and Sylliaasen Architects in 1943-44, and as Lincoln Bouillon and Associates, beginning in 1949.

The Building's History and Use

The Foundry Building was designed by W.N.G. Place for the 1909 AYPE. The Machinery Building, originally sited directly west of the Foundry Building and built at the same time, was also built for the AYPE. The Machinery Pavilion was designed by Howard & Galloway Architects. Howard & Galloway also designed the Auditorium, Fine Arts Building and Lake Union Wharf for the AYPE, and are credited also for work on the site plan for the Exposition (PCAD). Of the buildings designed for the AYPE by Howard & Galloway, only the Fine Arts Building remains, serving currently as Architecture Hall.

The Foundry Building, later renamed the Engineering Annex, was built in 1908-09 for a reported $12,000 as an AYPE exhibit space for industrial products and equipment. Historic photos, from the University Libraries Special Collections Division, show the AYPE exhibits of foundry tools, motors, and a display of boilers, cleaning mills, and equipment by the WW Sly Company of Cleveland, Ohio. Other exhibits showcased foundry equipment for production of pig iron and coal by the E. P. Jamison & Company, molding sand from the Cedar Mountain Coal and Coke Company, coke from the Wilkeson Coal & Coke Company, and fire brick and clay from Denny-Renton Clay & Coal Company. Historic photos show the grade-level spaces, and use of the upper floors remained un documented.

After the Exposition ended the subject building was retained for use by the University and served as a foundry structure and as a stable for horses used to transport coal wagons to the nearby Power Plant. (The present Power Plant and Plant Operations Building are located to the east of the Annex, across Jefferson Road in an area devoted to physical services and plant operations.) The University's electrical and paint shops were housed in the Foundry as well.

In 1920 the subject building, cited as the "Shops Building," was extended by additions of new bays on both the north and south ends, along with construction of new north and south facades. The new facades were similar to the original ones. At some time after this date the Mechanical Engineering Department took over use of the building for classrooms, offices, shops and study spaces. This may have occurred as late as 1957-1959, when the nearby, old Engineering Hall was demolished and replaced by the present Mechanical Engineering Building (MEB). In 1961 the Mechanical Engineering Shops and Foundry building was remodeled and a full and partial level of offices spaces were created in the northern 70' on the second floor and a partial third floor, which was inserted into the original roof monitor.

Apparent changes to the north facade at this date included replacement of the 1920 era stair with new stairs that led to new vestibule and primary west-facing entry at the second floor level, and HVAC revisions. A new mechanical room, No. 300, was placed directly above a new lobby reception space, room No. 200, where it was accessible only by ladder. The new facade elements were clad in wood. Subsequent remodeling occurred according to drawings dating from 1976, 1984 and 1996. In 2012 additional partitions were constructed at the first floor.

The original Foundry Building, since renamed the Engineering Annex, presently is occupied by the Mechanical Engineering and Industrial Engineering Departments, which utilize northern portions of the building's lower floor as a semi-independent laboratory space, known as the Integrated Learning Factory (ILF, sometimes referred to as the Industrial Systems Engineering ILF). This program space was created with a matching grant from the National Science Foundation. It one of three similar facilities established by the Manufacturing Engineering Education Partnership, along with others at the University of Puerto Rico and Pennsylvania State University.

Historic Overview of the Mechanical Engineering Department

The Engineering Department at the University of Washington began with the establishment of the School of Mines in 1894. At this time the University had just acquired the current campus tract between Lake Union and Lake Washington. The first engineering students at the new campus attended classes in the Administration Building, later renamed Denny Hall. In 1897 the Engineering Department offered specialized courses in mechanical and electrical engineering. A department of Civil Engineering had been established in 1895, and an Electrical Engineering Department was established soon after. Mechanical Engineering remained a part of the Electrical Engineering Department at this time. In 1900 the Engineering Department at the University of Washington had an enrollment of 40 students. The College of Engineering was separated from the School of Mines in 1901.

In 1905 Mechanical Engineering was established as its own department, founded by Professor Everett O. Eastwood, who served as its chair from 1905 to 1947. Born in 1876, Eastwood received a Masters degree from the University of Virginia in 1899 and Bachelors of Science from MIT in 1902, and joined the University of Washington faculty as a new department head in 1905. He established the first of the University's graduate programs, the Master's degree in Mechanical Engineering, in 1921. In 1929 he helped establish the Aeronautical Engineering Department, which he also chaired from 1930 to 1947.

The University had constructed a new building (eventually renamed Parrington hall), which was dedicated to science in 1902, although engineering students continued to attend classes in the Administration Building (Denny Hall). In 1905 the old Power House, located in the general vicinity of Suzzallo Library, was converted for use by both the mechanical and electrical engineering programs when a commercial laboratory was established within it. An early University publication, the *Pacific Wave*, announced in 1907 that new buildings to be erected for the AYPE would eventually be used for

Engineering and Chemistry departments. Specifically, it cited the proposed AYPE Machinery Pavilion, which was to be the new Engineering Hall.

It took some time for the University to reconfigure the 28 buildings retained from the AYPE to academic buildings. The *Pacific Wave* reported, "The Machinery Hall to become Engineering Hall will require much work and may not be ready before the middle of 1910. The shop building was badly damaged by fire on September 18 but will be repaired." When the new Engineering Hall was occupied by the department, the north half of the first floor became the mechanical engineering laboratory. In 1910 the Mechanical Engineering Department, along with those in Chemical, Civil, and Electrical Engineering, began offering a Masters degree in addition to a four-year Bachelors degree.

Careers in engineering grew after World War I, and this was reflected in the growing popularity of the University's engineering programs. By 1919 an estimated 4,600 students were enrolled in the University, with nearly 400 of them registered in engineering. In the mid-1920s a new department, General Engineering, was created to serve all first-year engineering students. Of particular interest to students around this time were courses in hydroelectric development. As the northwest's aeronautical industry grew, a wind-tunnel structure was built near Guggenheim Hall, and a Department of Aeronautical Engineering was established in 1929 under the direction of Professor and later Dean Eastwood.

Despite losses in funding and reduction in staff and student enrollment during the Depression, engineering remained a popular field during the 1930s. In 1931, 893 students were enrolled in the Engineering College. By 1938 enrollment in the college's seven departments rose to 1,277, and by 1939 to 1,338. Accelerated courses were offered during World War II to aid in supplying of technicians for the war effort. Student enrollment dropped to low numbers during the war, only to rise considerably after 1945 with passage of the G.I. Bill, which funded tuition for returning servicemen. In 1948 a new Electrical Engineering Building was constructed, and the Mechanical Engineering Department's laboratory was expanded into the first floor space of Mechanical Hall.

In 1956 the old Engineering Hall was vacated, to be demolished the following year. The Mechanical Engineering Department received its own facility in 1959 when construction of the current Mechanical Engineering Building was completed. In 1968-69 Loew Hall was built just northwest of the Annex Building. A part of its uppermost floor was assigned to the Dean of the College of Engineering.

The Department of Mechanical Engineering currently offers as Bachelors of Science in Mechanical Engineering (BSME) degree, which leads up to senior level, team design or capstone projects, and four graduate and non-degree programs. These include a Masters of Science (MSME) (MSME) and a Masters of Science in Mechanical Engineering (MSE), a PhD in Philosophy and a Graduate Non-Matriculated Masters. Enrollment within the College of Engineering numbered 215 students who graduated from the Mechanical Engineering Department in 2009-10 along with 48 graduate students earning MSME/MSE degrees and 11 awarded PhD degrees. The Department's faculty is made up currently by 32 tenured and tenure-track and research faculty, 14 joint or adjunct faculty and 30 affiliate faculty from industry and other research and educational institutions. In 2009-10 there were 28 visiting faculty and scholars.

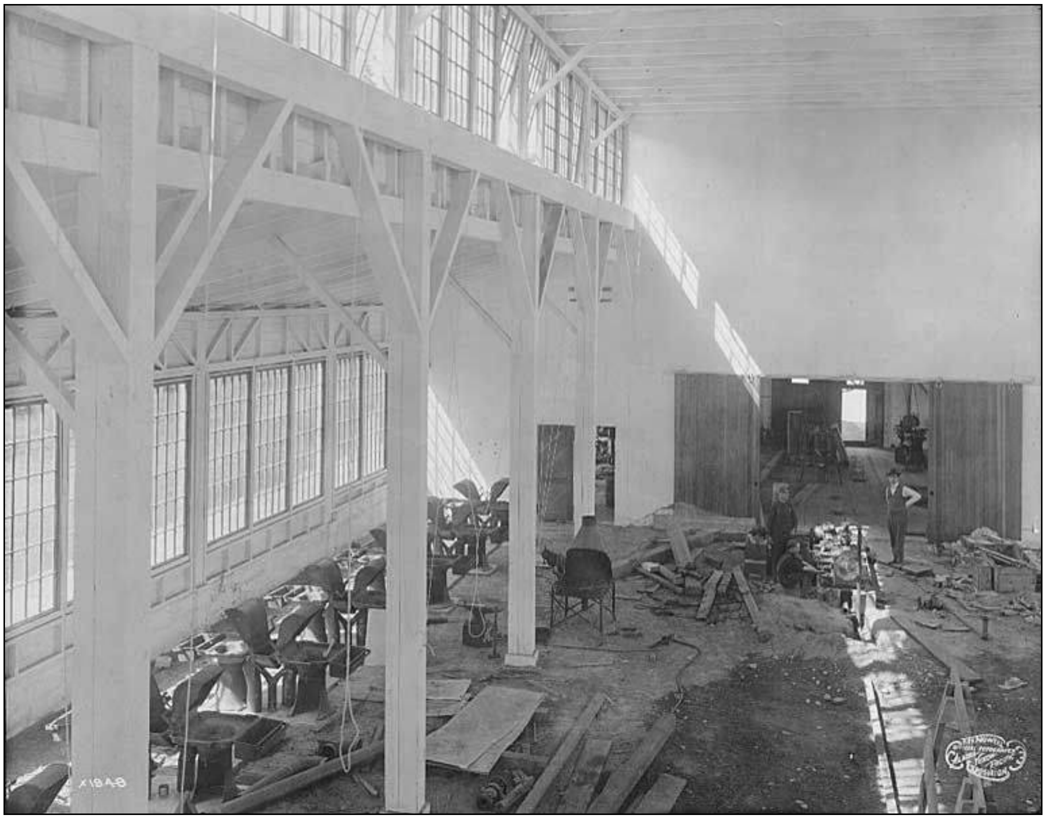
The current curriculum focuses on a range of subjects including energy, biomechanics, micro/nano technology, cell mechanics, micro fluids, material science technology, and mechatronics and robotics. In 2010 the Department's research garnered nearly $10.5 million in grants from the National Institutes of Health, National Science Foundation, Department of Energy, Washington State, Air Force and Army Research Offices, and individuals and corporations, such as the Boeing Company.

Above, a historic postcard from the 1909 AYPE Exposition, which shows the originally Foundry and adjacent Machinery Buildings in relation to surrounding buildings.

Left: Powerhouse 1 was located east of the Foundry Building as shown in this historic photograph, dating from1908. A portion of the original Foundry Building's east facade, presumably under construction, is visible in the background.

Above, exterior view of the Foundry Building in 1909. This view is looking north and shows the original south facade. The north and south facades were replaced in 1920 when the building was expanded, with a similar appearing end walls. The original north facade was encapsulated later by a two-story extension of the building. The extension abutted and was internally linked at the second floor with the new Mechanical Engineering Building in 1959.

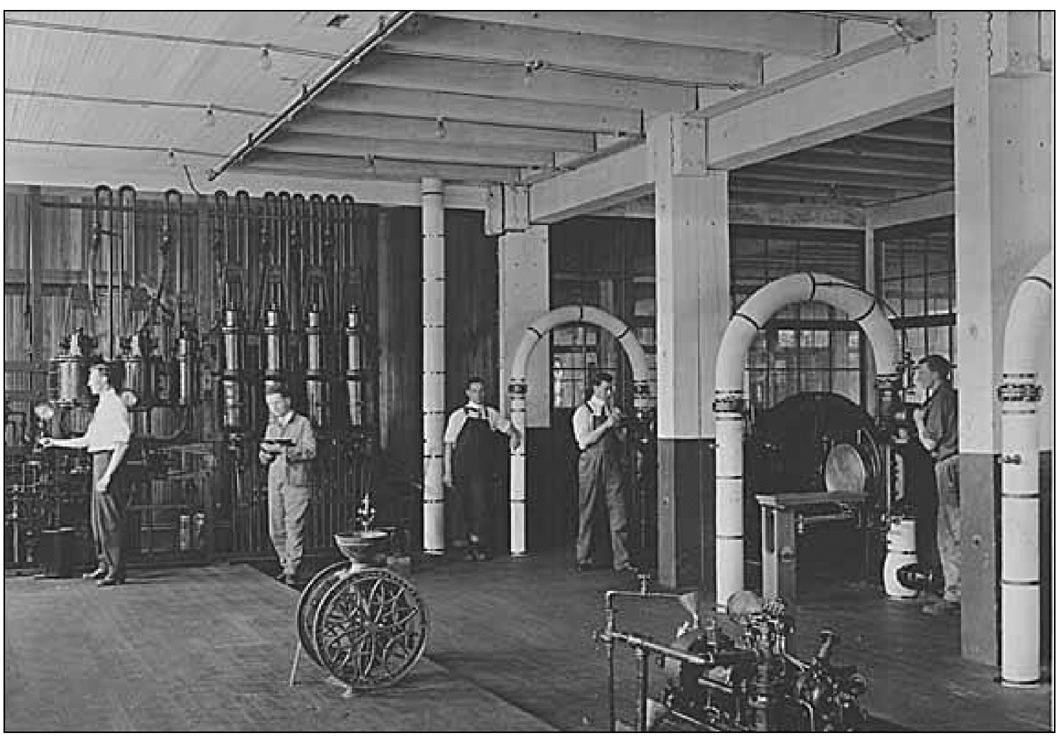
Above, AYPE exhibits and interpretive signs within the building's main first floor space in 1909.



Above, interior view of the Foundry Building in 1909. Note the open framing, typical of many AYPE buildings. Natural illumination and ventilation was provided by sidewall and operable clerestory windows.

Above, detail view of exhibits in the AYPE Foundry Building, 1909.

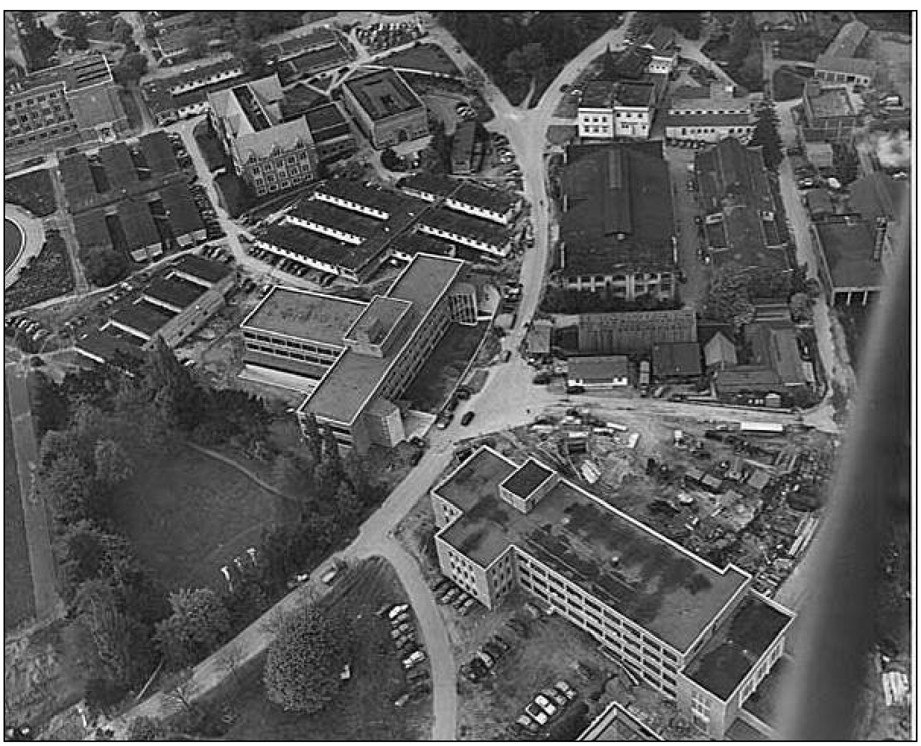
Foundry Tool Exhibit, 1909. The original building had no finished floors or interior finish surfaces.



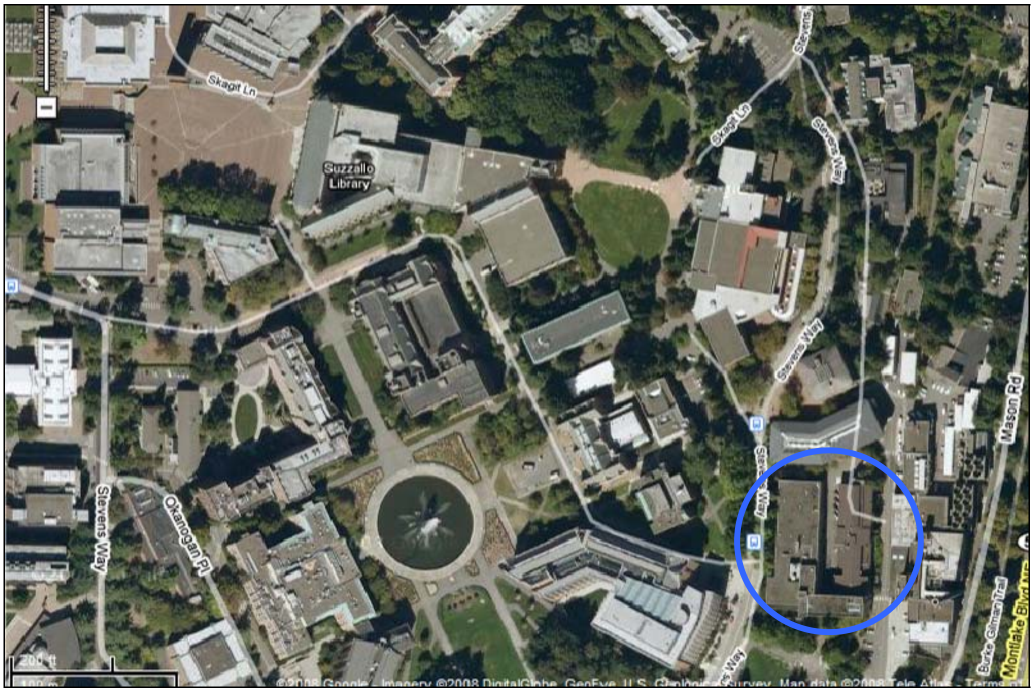
Above, mechanical engineering students in 1925. By this date a floor was installed. (Note: This historic photo maybe a view of the Annex or the original Mechanical Engineering Building.)

Above, the AYPE Machinery Pavilion with the Foundry Building in the background right. This undated photograph predates the 1920 expansion of the subject building.

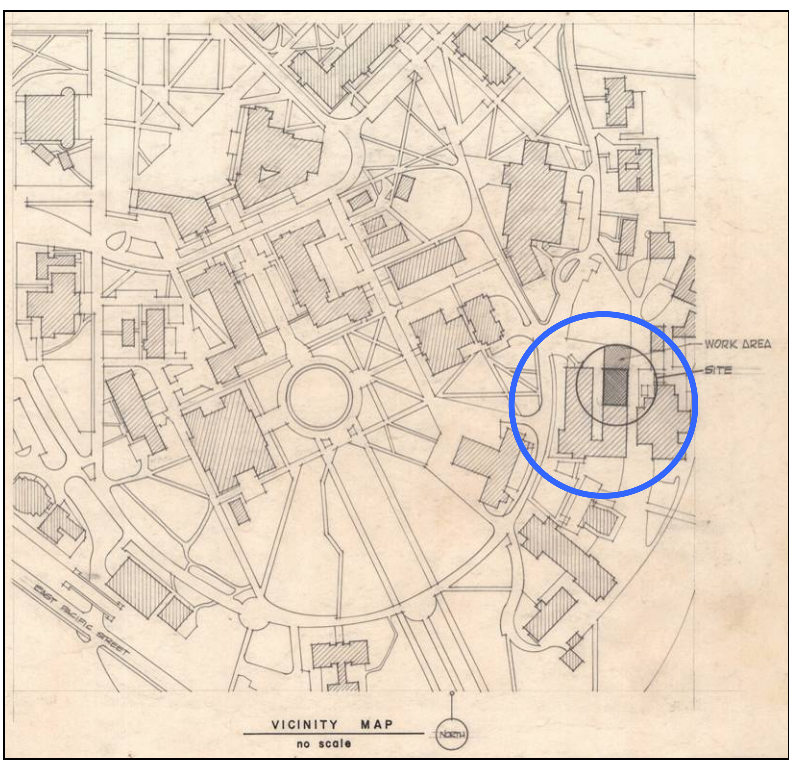
Below, a 1948 aerial view of the east campus showing the Mechanical Hall and the Annex. Under construction, to the south was the Nuclear Reactor Building (More Hall Annex)



4. ARCHITECTURAL DESCRIPTION



Above, a contemporary aerial view of the Mechanical Engineering Building an Annex (within the blue circle) in relation to surroundings. (Google Maps, October 2008.) Below, the site plan from the 1961 MEB drawing set, showing the new construction juxtaposed with the preexisting Foundry (shaded darker.) This and other drawings that follow are from the UW Facilities Services.



Campus Setting

The 1909 AYPE Foundry was located east of the Machinery Pavilion, a larger bearing brick and wood frame structure, which was converted to use as the University's Engineering Hall after the end of the Exposition. According to the 1909-10 academic catalogue of the University, a new electrical laboratory occupied the south half of the first floor, with equipment moved into it from Denny Hall. The north half of the first floor housed the mechanical engineering laboratory, an instrument making and repair department and instrument store room, a shop, telephone laboratory, and an electrolysis room. Offices and classrooms occupied the second floor. The central area of this floor was well lit by overhead skylights, and served as the civil engineering drafting rooms. A photometry room and battery room were located in the basement. Old Engineering Hall demolished in 1957, to allow for construction of the current Mechanical Engineering Building on its site.

The 1959 Mechanical Engineering Building (MEB) is an L-shaped structure that occupies the site of the old Engineering Hall. Its northwest wing extends to the Annex, encapsulating or eliminating its 1920 south facade. The MEB is a large, approximate 98,000 square foot, three-story building with brick veneer classing and horizontal ribbons of windows. In 1960 a mainframe computer was housed in the building, one of the University's earliest technological advancements. The MEB presently contains classrooms and faculty offices along with two large labs for thermodynamic study and mechanical engineering. Designed in a Modern style by the architecture firm of Carlson, Eley and Grevstad, of Seattle, it was constructed for approximately $1,5623,000.

Other buildings near the Engineering Annex include Loew Hall, a three-story concrete and brick clad office and classroom building, situated northwest of the Annex. It was designed by a well-known Seattle architect, Fred Bassetti in a Modern Brutalist style and built in 1965 for approximately $3,198,000. Loew Hall, named for Edgar Allen Loew, Dean of the Electrical Engineering Department from 1935-48, it contains 140 rooms housing academic programs and offices for the University's science and engineering programs, including the Dean's Office for the College of Engineering, assigned spaces for the campus-wide Center for Career Services, and general assignment classrooms.

The Site

The Engineering Annex Building is situated near the eastern edge of the primary campus, where it is setback from Stevens Way and largely situated behind and concealed by the three-plus story Mechanical Engineering Building. This larger building is L-shaped and abuts south end of the Annex. The combined building mass has resulted in an asphalt and concrete-paved courtyard on the west side of the Annex, which provides diagonal vehicle parking along the east face of the Annex in Parking Area C15.

The Annex is located in an area of the campus that contains a number of Engineering facilities: Loew Hall and the Engineering Library to the north, and the Kisten Aeronautical Lab, Guggenheim and Sieg Halls and the Aerospace Research Building are nearby on the west side of Stevens Way.

Jefferson Road runs along the east side of the Annex. The University's Power Plant, which provide steam, chilled water, electricity and emergency power throughout the campus, is situated on the east side of the road. The Power Plant, built originally at this location in 1932, was expanded in 1965 and again in the late 1990s. It contains two, natural gas fueled generators. The Power Plant is characterized by its concrete and steel structure, glass, and brick and metal-clad facades, and a highly identifiable smoke stack.

A wide, asphalt-paved route to the north of the Annex leads from Stevens Way to Jefferson Road, separating it from the 1965 Loew Hall to the north. This open space is used by pedestrians and for shortterm vehicle parking and deliveries. Vehicle access is from Stevens Way, while the west side contains an exterior stair.

Landscaping around the Annex building is limited to small plant beds on either side of the north façade, which contain deciduous trees of varied size and species and ground covers. A continuous, approximate 15'-wide plant bed along the west façade is interrupted only by a basement access. This bed is densely filled with ivy ground cover along with a few evergreen and deciduous trees. The sloping plant bed is supported by a concrete retaining wall near its north end

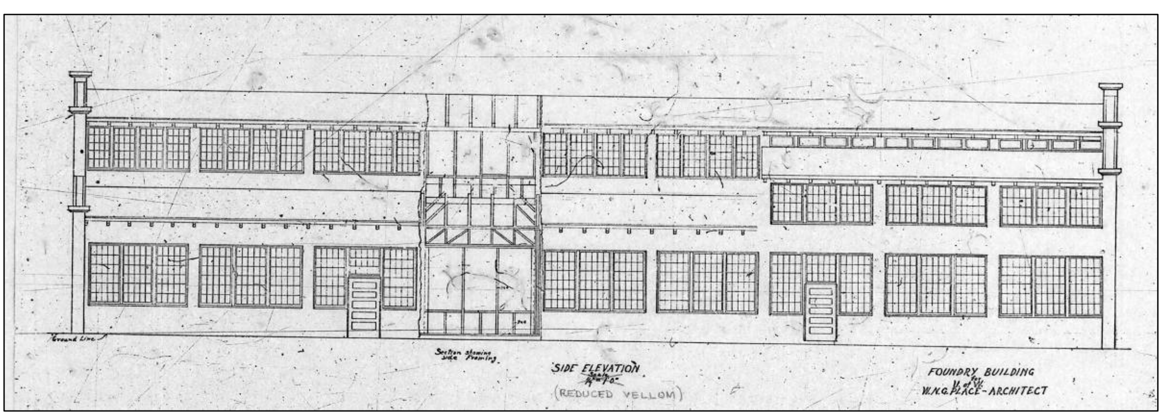
The site grade changes with a slope downward from the west to the east by an estimated 8' and with a slight grade change from the north to south end along the building's west side. On-grade access into the building's first floor is provided at north end. A ramp and steel framed/concrete stair, on the west side of the north end, leads up approximately 7' to a landing and the main, west-facing entry to the second floor.

<u>The Original Design</u>

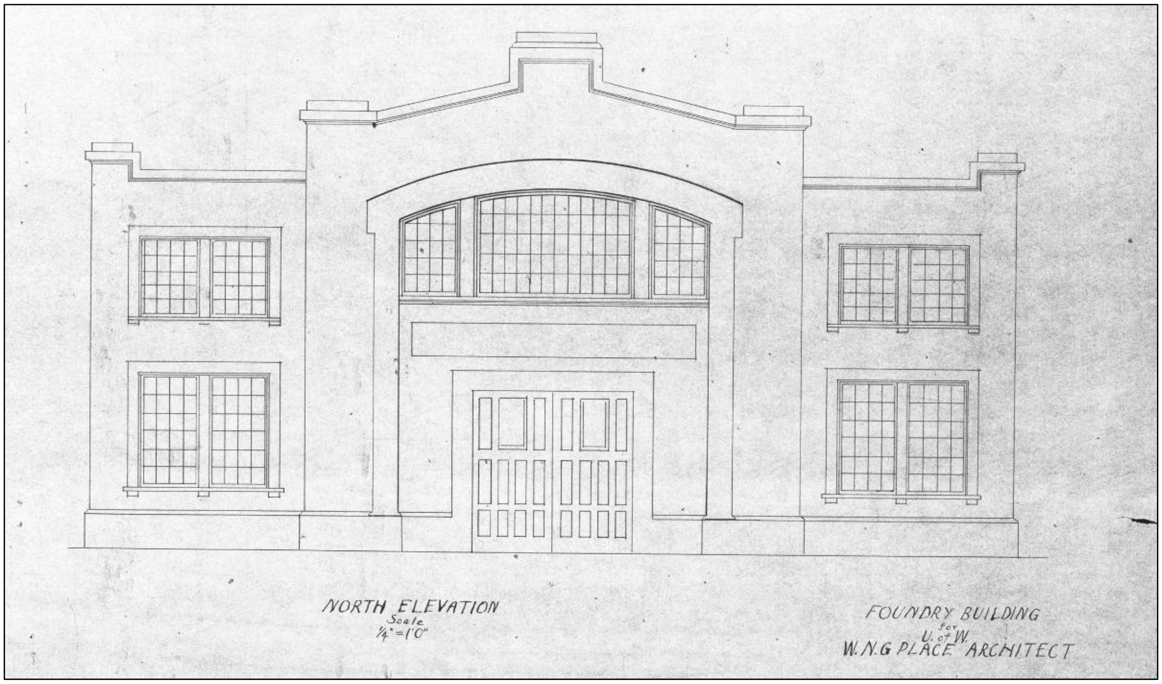
The original Foundry Building was designed as a 135' by 64' rectangular mass with a footprint made up by nine repeated, 16'-wide structural bays, according to dimensions noted on the 1909 Foundation Plan. These structural bays were expressed on the side elevations by the brick sections separating window openings. The length of the building was oriented north/south with clerestory windows facing east and west. Tall first floor windows were consistent in size along all side walks, each approximately 11' tall by 4'-4". The tree northernmost bays were framed with columns at 21'-4" centers to support a second floor level and roof monitor. Side roofs over these second floor areas sloped to terminate on the east and west sides with an overhang above the second level windows, which were an estimated 5'-5" in height. Very small clerestory openings appear to have been provided in the short monitor wall below the main roof.

The southern six bays made up the single, tall, 96' by 64' volume. The 64' width was subdivided into a 31'-wide, tall central space with lower height, 16'-6" -wide side aisles. Tall clerestories and tall first floor level windows were provided along the east and west sides to bring ample illumination into the space. Interior spaces and side elevations of first floor level were consistent, although the building width was supported by three column lines set 21'-4" apart. Furthermore, the windows differed in this portion with slightly lower heights that were set in taller side walls. Small rows of clerestories were placed above.

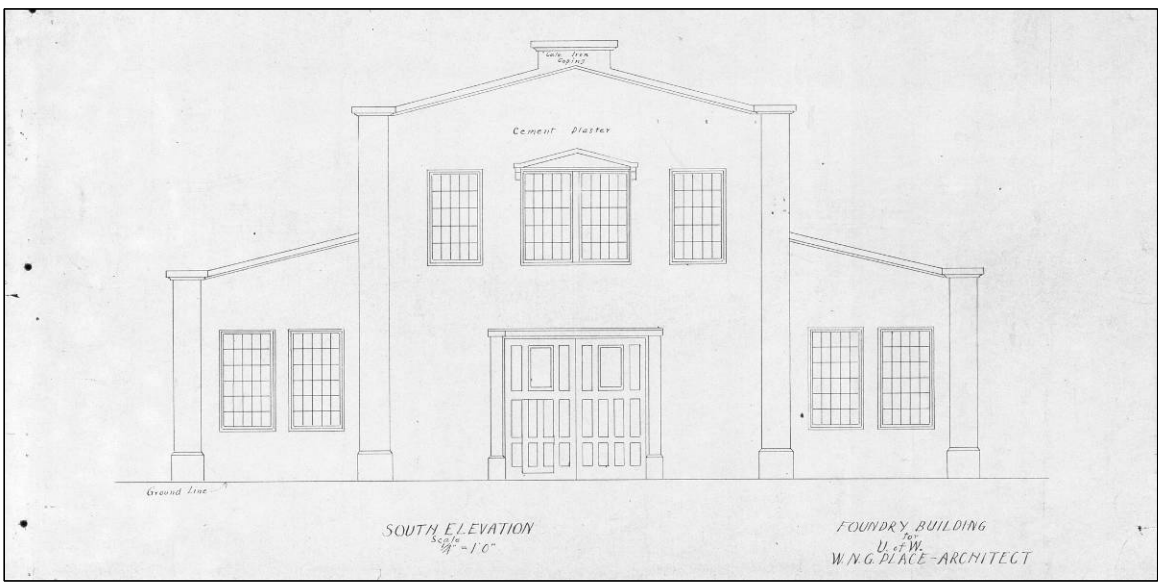
The original building was a free-standing brick and wood-framed structure. Typical of an early 20th century industrial shed, it had a gable roof over a tall clear-span space with tall windows and clerestory



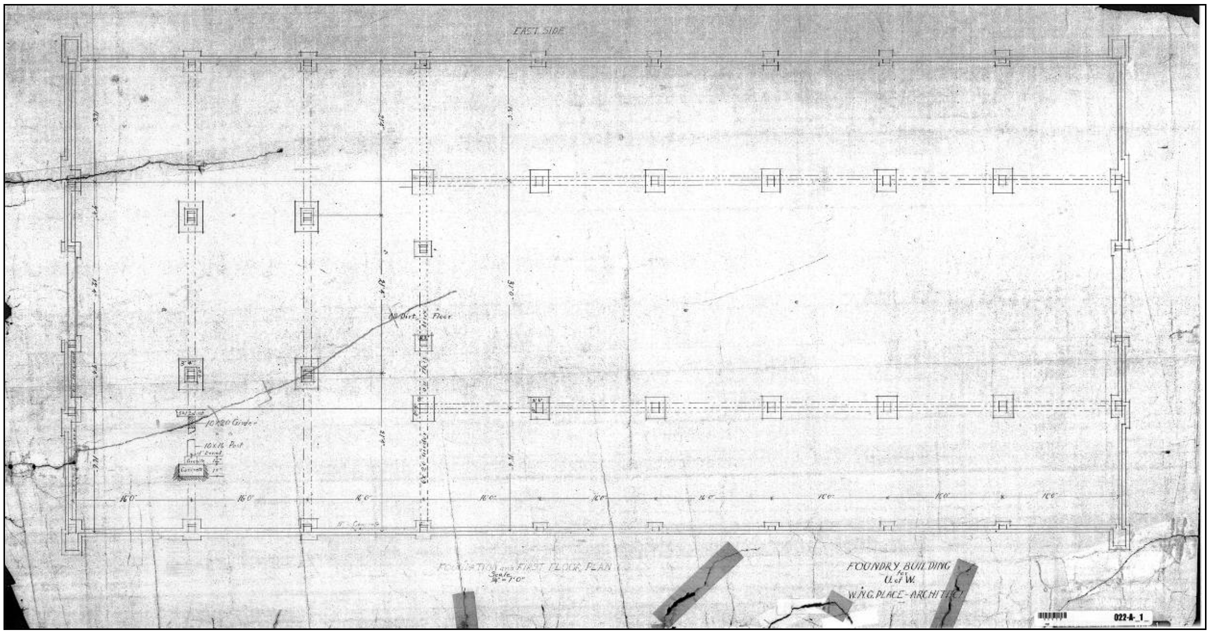
Above, the East Elevation of the 1909 Foundry Building.



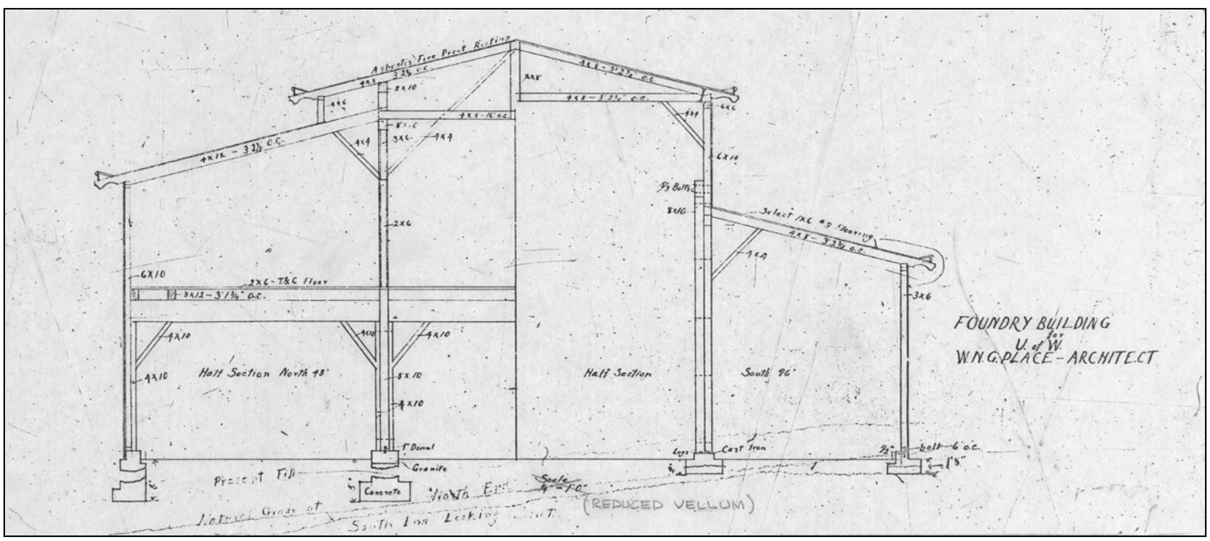
Above, the original north elevation of the 1909 Foundry Building.



Above, the original 1909 south elevation.



Above, the foundation plan of the 1909 Foundry Building. Below, the structural transverse section of the building.



openings in its southern two-thirds, while the northern third contained two floor levels with tall windows. The north and south gable end wall were obscured by more formal, rectilinear facades. The building section provided the tallest space in the center of the clear-span portion, and lower side aisles under shed roofs along the east and west. This spatial division was represented clearly on the primary end elevations, composed with a tall central portion and projecting parapets.

Primary building facades were on the north and south. The original elevation drawings show their formality and symmetry. Two wide brick pilasters, set proud of the building face, define the tall central section, with a raised parapet above the gable roof end. The lower portions of the primary facades featured flat parapets that disguised the sloped side roofs beyond and terminated at their outer corners with raised parapet projections. Parapet caps were emphasized by their cast iron material. (In photos the solid dark colored caps contrasted with the brick masonry walls.) The central upper wall section of the primary north and south facades contained a large, tripartite opening with a partial arched opening, within which was fitted multi-pane wood sash windows separated by brick clad posts. The drawing by Architect W. N. G. Place shows three upper windows, with the central opening capped by a gable-shaped trim.

Centered at grade on both the north and south elevations was a large double door. The doors, sized for vehicle or horse-drawn deliveries, appears in a historic photograph to have been treated with diagonal boards or half timbering, although the north elevation drawing by W. G. Place suggests they were made up by wood stiles and rails. To either side of each doorway there were pilasters and a pair of large, multi-lite wood windows. Several courses of projecting brick running above the door may have served as a sign band. Original drawings indicate the windows, with exception of the large gable-end ones, were detailed with projecting 5-5/8" brick mold.

The side elevation in the original drawing set portrays the long east and west elevations. The upper perimeter walls were shown to be clad with 6" wood siding outside of sheathing above the low roofs. (These walls were clad with stucco at some early date.) Groups of three, wood framed windows with multi-lite wood sash were typical. Clerestory windows, placed in the taller space in southern two-thirds of the building, were made up by groups of four, smaller pivoting windows, each divided into a multi-pane pattern of 4:5 lites, while those in the northern third were smaller, single units. Shed roofs above the windows were framed by projecting rafters that supported overhangs. In a 1909 photograph the roof edges appear to have been fitted with gutters and downspouts.

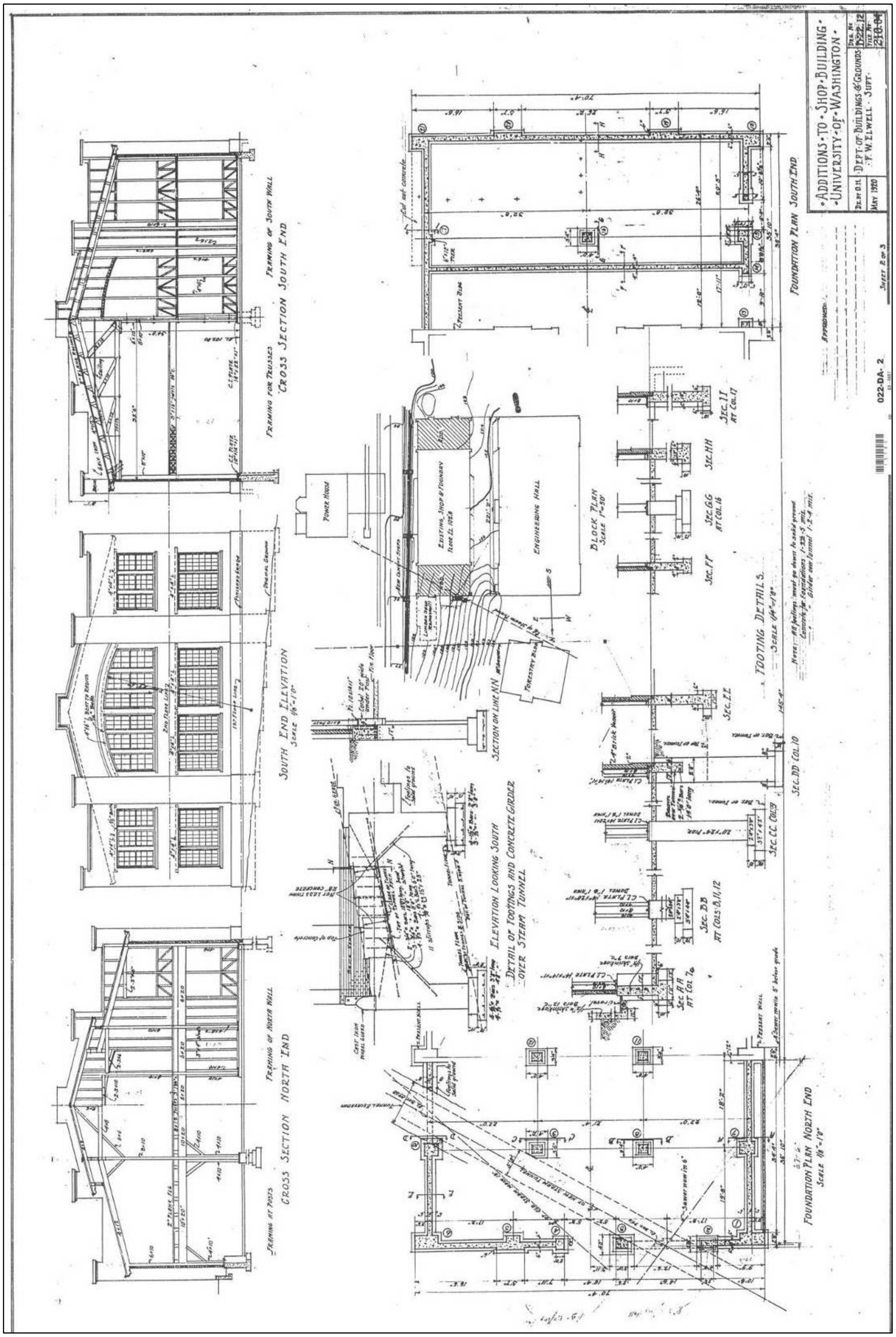
A rough foundation and floor plan exists, and photographs show the use of the southern portion as an open volume exhibit space, with heavy timber posts with what appears to have been whitewashed, perimeter walls and wood framing, with a flat ceiling over the center section and exposed sloping roofs over the aisles. A crane way is visible, along with the unfinished dirt floor. By the mid-1920s this space appears to have been finished with wood floors, and electric lights with surface-mounted electrical conduit.

1920 Addition and Remodel

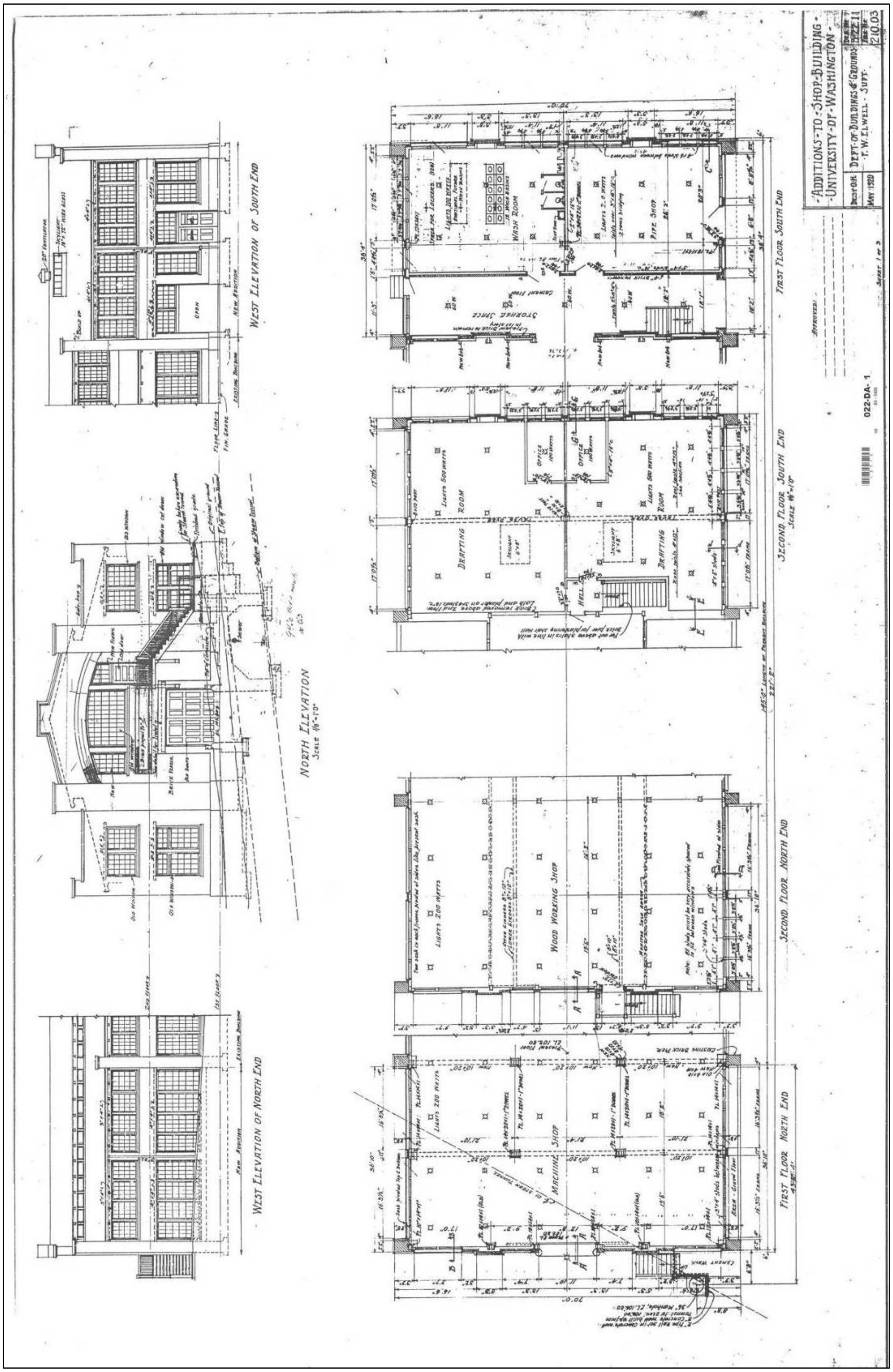
Design drawings dating from July 14, 1920 show the major remodel and additions to the building's north and south ends. The addition, designed by the University's Superintendent of Buildings and Grounds, F. W. Elwell, extended the structure by two bays on its north end, and two bays its south end. The addition was constructed in the same manner as the original building, with wood framing and brick veneer. Most of the new windows in the addition were designed to match those of the original building. The exterior visible portions of the original masonry end walls of original north and south facades remained in place, although at the interior they were modified to provide access to the addition spaces.

This addition extended the length of the building to approximately 221' (the present length), apparently in an effort to match the length of the old Engineering Hall, then situated just to the west. The new bays at the north end matched the sectional shape of the original building, while the new those at the south end were similar in section to the north end, with its new second story space. The south end second floor would be linked by a double-loaded corridor to the present Mechanical Engineering Building in 1959. This area is accessed also by a narrow stairs that lead to the grade on the west side of the Annex.

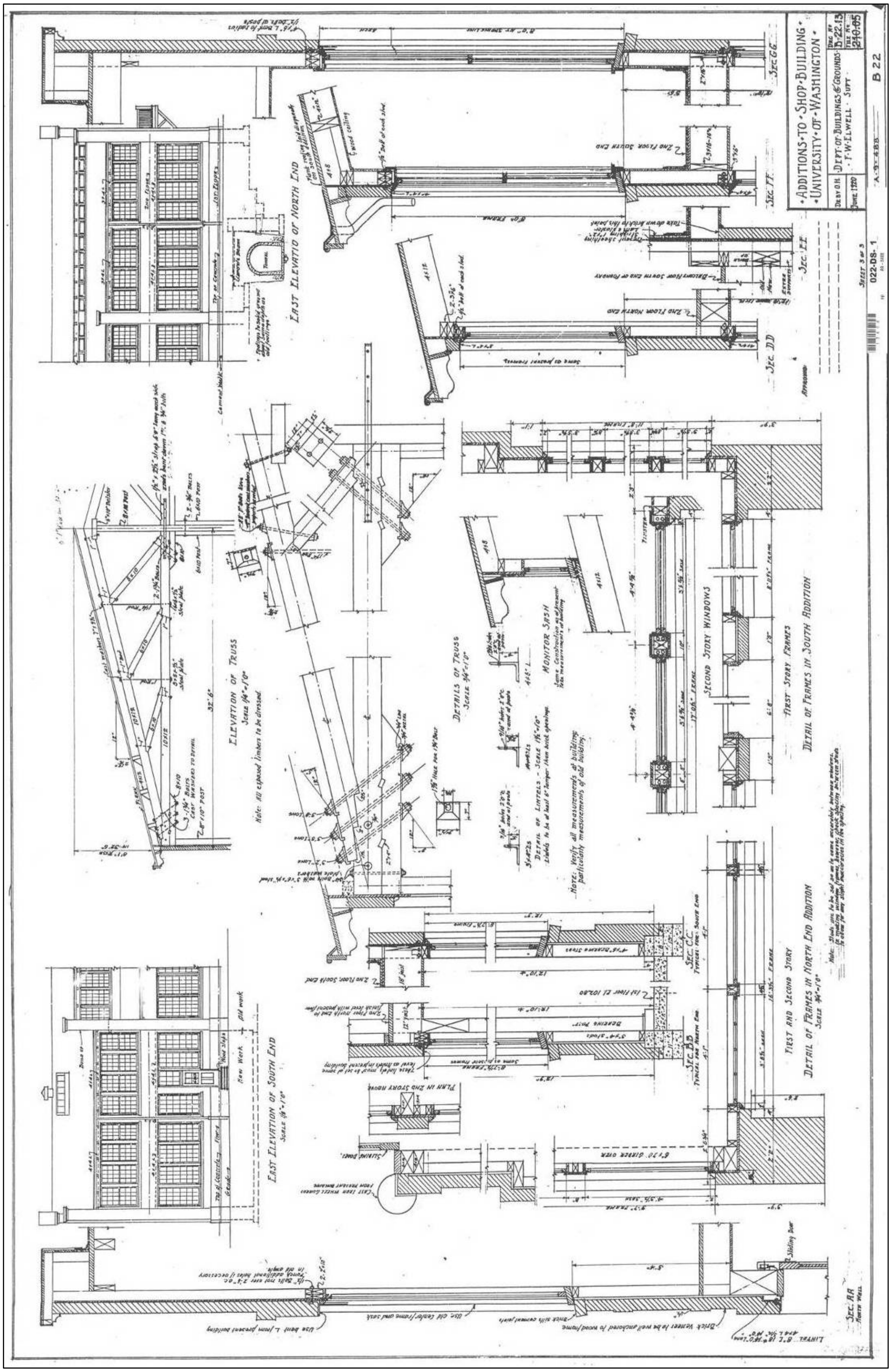
The 1920 north and south facades were designed to be very similar to the original ones, and while the windows were divided differently, the openings were shaped and proportioned similarly. The new facades featured a slightly different configuration with central, arched head windows at the second floor level,



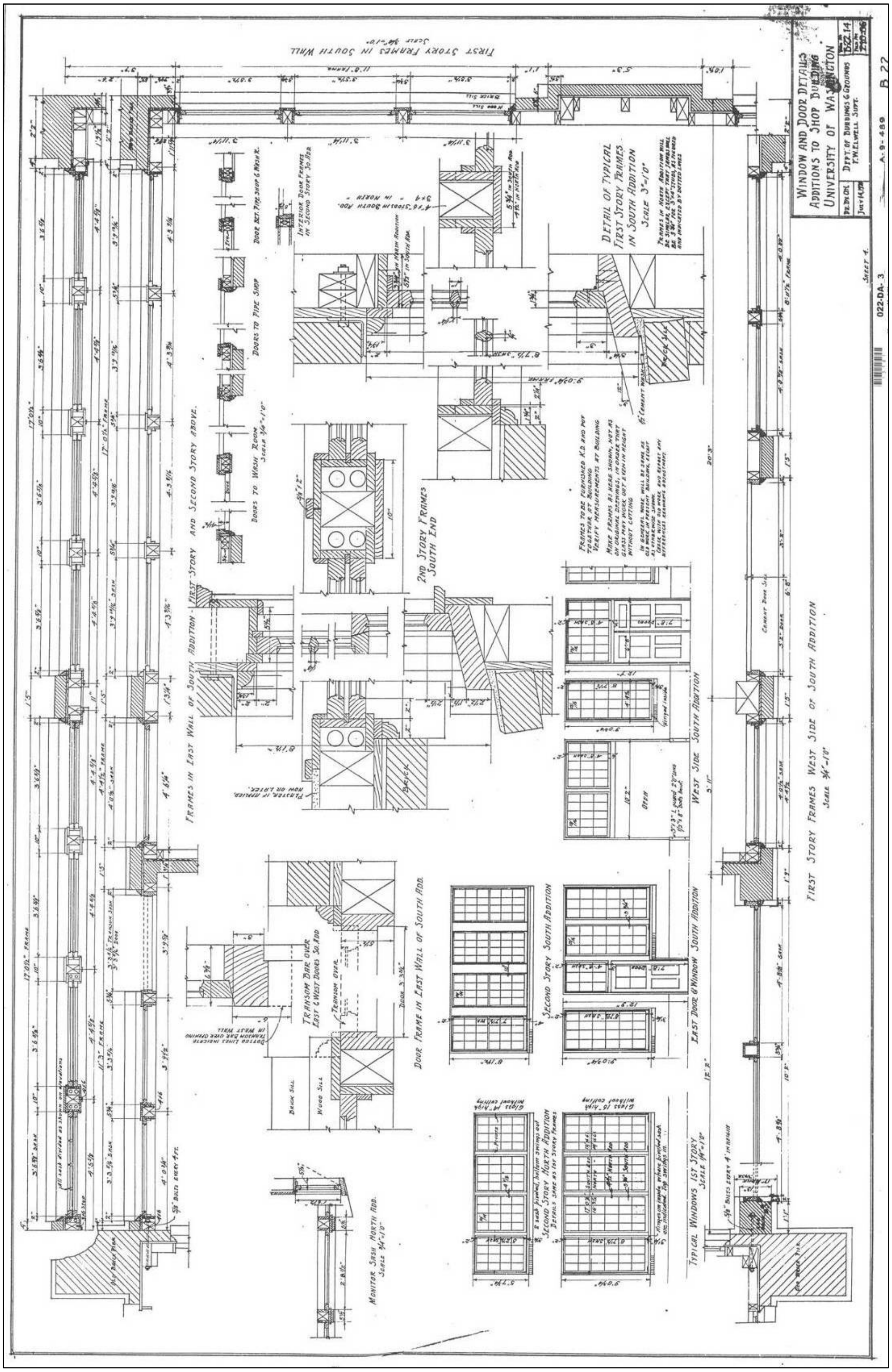
Above, drawing for the 1920 Addition, showing the south elevation, sections and details.



Above, drawing for the 1920 Addition, showing the north and west elevations and plan.



Above, drawing for the 1920 Addition, showing framing details.



Above, drawing for the 1920 Addition, showing window and door details.

and designed to place greater emphasis on the projecting pilasters. The south facade was changed also to have grouped window at the first floor, rather than an entry door. A new, projecting exterior landing stairway was located on the north facade, which led to a new primary entry at the second floor level. The more utilitarian entry below it, at the first floor, was retained. Additional secondary entries to the building were added at the south ends of the east and west elevations.

Floor plans for the 1920 project note uses within specific spaces. A Machine Shop was in the first floor north end with a Wood Working Shop above it, and a Storage Space, Pipe Shop and Wash Room at the first floor south end with two Drafting Rooms and two Offices above these rooms on the second floor.

Changes in 1959 and the 1961 Remodel

With exception of the drawings, few historic records or photographs have been discovered for the building after 1920. It is clear, however, that the early building's primary facades have been changed considerably. The 1920-era south facade was removed or encapsulated in 1959 by construction of the adjacent Mechanical Engineering Building. The north facade remains visible, but has been dramatically altered.

Drawings from 1961 called for a revision of the north facade and a new entry vestibule to the offices at the second floor. This addition also extended the wall planes on the central and eastern side with new wood-framed and brick veneer clad perimeter wall areas set flush with the east and west walls. This design eliminated the clerestory monitor windows in several bays. The east and west facades of the building appear consistent with the original design, with exception of these extensions and steel fire stair, which was added along the west facade in 1961. Because of its relatively light scale and simplicity, however, this stair seems to work in harmony with the original building's straightforward character.

The 1961 project also involved the insertion of a mechanical space awkwardly above the ceiling of an office off the second floor entry lobby and an additional split-level of offices above the second floor, in a 20' wide by 84' long space in the northernmost five bays. While the ridge remained in place, the side roofs were modified, by raising them to accommodate this insertion. New operable windows were inserted where there were once only clerestories. New stairs were also inserted. The expansion covered the earlier brick veneer wall and resulted in removal and replacement of the existing floor, and construction of the asymmetrical, angled, chimney-like forms on the north facade. New painted wood horizontal siding with a narrow exposure and corner boards was added. The Modern style of the remodeled facade c emphasized a contrast between the old and new, in a distinctive, inharmonious way.

Existing Windows

The existing windows appear to be original. This observation is verified in part by window notations and notes in the 1961 remodel drawing (Sheet A.2) and accompanying drawings of the first and second floor windows. The general notes call for "reconditioning of all sash and re-glazing as necessary and replacement of defective hardware as called for." The notes for the second floor plan call for hold-open devices "to match existing," while those for first floor windows call for new hardware and reconditioning:

- Where marked F on the plan, remove hardware, nail shut and permanently caulk.
- Where marked O on plan, remove sash and existing hardware, recondition sash as necessary. Mill stiles to receive sash hardware. Replace glass where necessary. New hardware: Whitco sash hardware, awning and transom type, series 1AB __ (unreadable). Whitco sash fastener No. 47R as manufactured by Vincent Whitney Co. or Equal
- Where marked = on plan, no work.

The Current Interior

The original AYPE Foundry Building has been changed episodically over the last century. Portions of the building interior have been changed, with the resulting creation of two separate spatial and function components. At the grade level most of the original AYPE Foundry space remains in the southern portion of the building, which it continues to serves as an educational and shops facility. New first and second level spaces were added with the 1920 additions to the north and south ends of the building. At the north end these spaces included a machine shop on the first floor and a wood working shop on the second floor. At the south end these spaces included a new stair to the second level; a storage area, wash room and pipe shop on the first floor; and two drafting rooms and two offices on the second floor. The new drafting rooms each contained a skylight, which are no longer in place.

The northern 84' clerestory addition on the upper floors dates from a dramatic remodel and expansion project of 1961. This project exploited the interiors for greater functionality with an office layout on three separate levels. Approximately 39 small perimeter and interior offices, along with a conference room, reception, and restrooms, were inserted into a split-level second floor, Access to these new spaces was provided by multiple double-loaded corridors, with typical widths of only 4'-5", that lead from the pre-existing entry stair near the northeast corner to a new interior stair near the center of the plan, and a new exit landing at the south end that led to a steel fire stair fitted against the west perimeter wall. At the uppermost floor an additional 10 offices and a single restroom were set within the 20'-wide clerestoried space below the roof ridge. The second floor offices are narrow spaces, with widths of only 7'-9" and 9' widths, while those at the uppermost level are even narrower, with widths of only 7' or 8'-2.5".

Non-original doors include a pair of aluminum-framed, glazed entry doors at the main, second floor entry, and solid and stained and painted hollow-core hardwood interior doors. Interior office floors features currently include acoustic ceiling tiles, resilient flooring and extruded base, and surface-mounted fluorescent fixtures.

The Mechanical Engineering Department's Instruction Learning Factory (ILF) spaces are located on the first floor of the Annex Building. These areas of the interior retain the heavy timber framing and exposed wood framing, along with visible car decking and surface-mounted pipes, ducts, and lights at the ceiling, which characterize an earlier era, along with resilient flooring, office system furniture and partitions, and contemporary light fixtures and technology raceways.

In the northern portion the Learning Factory spaces include a student hall, with a study area and display wall; a Products Dissection Lab, with tools, computers and work benches for student team projects; a Design Lab with workstations; a Design Studio conference space; Injection Molding and Plastic Molding Areas area for mold-making and production of resin and plastic prototypes; a large classroom known as a Prototype Lab; and a Library containing product research materials.

Presently there are four instructional shops in the southern portion of the first floor. These are available to all University students, faculty and staff for education-related work. The facilities include a Machine Shop, Welding Shop, Casting Foundry and Wood Shop. Equipment within the shops spaces includes a variety of engine lathes, bills, drill presses, band saws, sanders, grinders, and tools, along with a sand blaster, treatment oven and radiant heat furnace. The welding area, located on the west side, contains arc and gas welding machines and a plasma cutter, while the casting foundry on the east side houses an inducto-therm furnace, core maker, sifter and other foundry equipment.

In the Wood Shop at the far south end there is a table saw, jointer, planer, band saw, disc and cylinder sanders, radial arm and plywood saws, and a wood lathe. (Information about the ILF is from the University of Washington College of Engineering, Mechanical Engineering Department web site.)

5. WINDOW PROJECT RECOMMENDATIONS AND MITIGATION

Comments on the Proposed Project

The Annex Building results from several phases of construction dating back to the AYPE, over a century ago. While the north facade appears as a hybrid, the east and west facades clearly recall their original design. The multi-paned wood framed windows and surrounding brick masonry are important elements that provide a pattern of crafted textures, and contrasting scales and materials.

In addition, much of the building interior appears to have a high degree of architectural and historical integrity. The large volume, heavy timber and wood-framed spaces in the southern portion of the building recall its original service as an exhibition hall.

The proposed project in 2012 calls for upgrade the uppermost level windows in the building and the surrounding cladding on the perimeter walls. The windows, located in northern bays on the east and west facades, are made up by painted wood frames and sash. A brief visual survey confirms that many are in poor condition due to weathering. Deterioration is evident in the spalled paint and worn surface areas, and loss of material integrity due to dry rot. Records indicate that these windows date from ca. 1961, over 50 years ago.

Other windows dating from the original era and the 1920s remain throughout the building. Some of those in the tall shop spaces at the building's south end retain pivot operations, while other have been closed and/or fitted with new operating hardware in 1961.

Mitigation - Preliminary Recommendations

The wood framed, wood sash windows in the Engineering Annex Building are important character-providing original features, and their retention reinforces the historical significance of the building and provides a comparative scale to it along with the heavy brick masonry facades.

The preliminary HRA report was finalized and discussed with University representatives on March 13, 2012. Recommendations focused on the windows as the University plans to repair and/or replace those in the third floor clerestory areas in the northern portion of the building. Deteriorated windows in these areas, which serve the perimeter offices, should be replaced in-kind. The replacement windows should be operable, to allow users to open and close them for comfort, assuming that this action will not negatively impact the building's mechanical ventilation. Further guidance on restoration and repair methods is available in a preservation brief developed by the U.S. Department of the Interior's National Park Service, "Preservation Brief No. 9: The Repair of Historic Wooden Windows."

Other windows, which appear to be in fair condition, should be retained and reconditioned through select repairs. Replacement in-kind of damaged frame and sash elements, with new painted wood materials, should be undertaken only if necessary. Analysis of the existing HVAC system and ventilation needs may reveal that fewer of the windows in the shop spaces need be operable and, in this case, these can be affixed shut. If infiltration and resulting energy heat loss is a problem, the fixed windows can be fitted with exterior or interior storm windows, with hinged sections as needed for access to hardware.

It may be possible for replacement windows and repairs to be undertaken by the University crews or a local window shop, which is a preferred approach from a sustainability perspective, than ordering manufactured wood windows located far outside the region. Skilled and experienced workers should undertake the work using existing windows as models for building new, similar wood windows with insulated glass units.

6. ADDITIONAL TREATMENT RECOMMENDATIONS

Acknowledge the Building's Significance

The Engineering Annex is a rare surviving building dating from the creation of the University of Washington campus during the Alaska Yukon Pacific Exposition more than a century ago, and its presence is historically and architecturally significant. The center of north façade of the building has been altered and the south façade encapsulated by newer construction, but much of the original form and materials dating from 1909 to the early 1920s have survived. Furthermore, the large shop in the southern portion of the building is spatially intact. With few exceptions, other AYPE buildings on the campus have been demolished and replaced, or have been transformed through physical changes, relocations and expansions or additions. The Annex building, in contrast, still embodies materials and construction techniques that recall its place in history, and it has provided flexible spaces for a variety of program uses.

The following additional recommendations are provided to serve as guidance for the proposed window upgrade project in 2012, for future restoration and rehabilitation projects, and for ongoing preservation and maintenance.

Preservation and Sustainability

While retention of the Engineering Annex is one way of maintaining embodied energy, sensitive upgrades should be made in the future to increase the building's performance and energy conservation. Operable windows help meet current ventilation requirements and respond to different occupant needs. Future provision of automated controls for lighting and other building systems, the installation of a more efficient, zoned heating system and air-flow mixing fans, and use of low-VOC finishes will help make the building more sustainable. Occupants can aid in this through occupancy monitoring and operation protocols. The published NPS *Guidelines for Rehabilitating a Historic Building* cite specific materials, such as masonry, wood cladding, roofing materials, and windows, etc. The guidelines address the inherently sustainable qualities of an historic building, and the application of weatherization and energy-saving approaches: http://www.nps.gov/history/hps/tps/standguide/rehab/rehab_approach.htm.

Refer also to the revised NPS Preservation Brief No. 3, "Improving Energy Efficiency in Historic Buildings." http://www.nps.gov/tps/how-to-preserve/briefs/03Preserve-Brief-Energy.pdf

The building can be celebrated as part of the University's ongoing stewardship. Design and installation of a lobby display will help educate occupants about the role it has played in the past century, and the value of preserving and sustaining the Annex. An exhibit will help build advocacy for its preservation.

Window Paint Prep and Paint Colors

The scope of this report does not address hazardous material issues. Regardless, tests for lead, asbestos and other hazardous materials should be undertaken by qualified consultants, and appropriate abatement and/or monitoring procedures put in place prior to removal of any paint from existing window sash/frames or hardware. All existing paint chips, which may contain lead, should be retained in a labeled, sealed plastic bag. Existing window putty should not be removed before it is tested.

Black and white ca. 1909 historic photographs of the Engineering Annex building's exterior indicate that the value of the window paint color was similar to that of the brick masonry. University personnel examined exterior paint samples from the windows, and noted that the painted green color tone was similar to that in the historic photos. Samples of three or four alternate paint colors, within the green range that has been identified, should be applied on several exterior facades of the building, and photographed by University personnel for their review and verification before a final color is selected.

From interior photos of the Engineering Annex during the AYPE era, it is clear that the interior of the building was painted a white or off-white color. The new paint color should be close to the original white or off-white color. (Lab testing has not be undertaken, the original color cannot be verified although University personnel have removed a loose piece of the paint from an interior window muntin or sill to determine the underlying, historic, paint color.) Any specific new color for trim, doors, windows, etc. should be selected to harmonize existing off-white interior paint color.

Restoration and Rehabilitation Approaches

A combination of restoration and rehabilitation treatments is recommended for this building. These two treatments have been defined in by the Secretary of the US Department of the Interior and National Park Service (NPS), and adopted by many federal, state, regional and local governments as well as by private institutions and individual owners. *Restoration* is defined as an accurate reconstruction of missing historic elements where character-defining features can be determined by study of remaining original, on-site features or from records, such as drawings or photographs sufficient to create accurate new elements that match the original ones. Typically a restoration has as its focus a specific, significant time period in a building's history, and calls for removal of materials from other periods.

Rehabilitation is a more pragmatic approach, defined as the process of returning a building to a state of utility, through repair or alteration, which makes possible an efficient use while preserving those portions and features of the building and its site and environment which are significant to its historic, architectural, and cultural values. Rehabilitation standards propose priorities for maintaining before restoring and replacing historic materials, or making alterations or new additions. Several steps should occur before any new work is undertaken. Identify, retain, and preserve character-providing features.

The North Facade

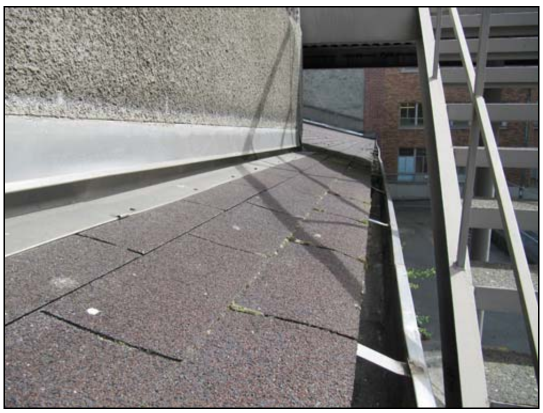
Removal of non-original wood-clad forms, which have been added to the central north façade, and restoration of the underlying original facade is a critical task. Given the existing plan, this approach will likely require removal and relocation of the mechanical space and equipment that are currently placed above the ceiling in the office off the main entry lobby. Provision of a mechanical room in a more accessible location will also make equipment maintenance and monitoring easier.

Access and Use of Interior Spaces

Explore solutions for universal access and creative use of the building's interior. It presently does not contain an elevator, and stairs between the grade and upper floors are discontinuous. These spatial qualities discourage use of the building for 21^{st} century team projects, social connection, and inter-disciplinary exchange. The offices at the second floor south end are connected by a corridor to the adjacent building, which contains an elevator, but the offices in the north end are accessible only by stairs. In addition, the uppermost floor at north end of the building is a non-original insertion that contains very small perimeter offices off a narrow double-loaded corridor with problematic ventilation. Consider removing this floor or changing it to open, shared workspace.

The current mix of high tech activities within the solid, low tech 20^{th} century structure is one means of acknowledging the building's history and its future.

Roofing



Recommendations

Recommended treatments for the existing roofing include the following:

- Retain the roof shape and configuration.
- Analyze roof framing and determine if slate roof shingles can be supported. Consider natural slates use upon re-roofing. In lieu of natural slate, retain existing composition asphalt roof singles, and re-roof with architectural grade composition shingles (of slightly greater appearing thickness), selecting a consistent size and range of colors in the mid-gray range.
- Eliminate placement of new large pieces of equipment on roofs. Study the visual impact of new replacement or smaller equipment, vent and chimney stacks, guy wires, etc., through creation and analysis of scaled elevation drawings.
- Upon re-roofing, replace existing flashing with copper flashing at sidewall or roof wall/junctures that are visible, along with half-round copper eave gutters, and cylindrical downspouts. If copper is cost prohibitive, consider new metal flashing and gutters with a dark-bronze manufactured finish.
- Affix downspouts to masonry walls using heavy copper straps, affixed with mechanical connectors into the mortar joints. Do not install fasteners into the face of the brick masonry.
- Verify conditions and regrade as necessary around the building's perimeter to provide positive flow to drains. Eliminate low spots and extend downspouts to downspout boots at perimeter drains leaders.

Reference: National Park Service (NPS), Historic Technical Preservation Brief No. 4, "Roofing for Historic Buildings," http://www.nps.gov/hps/tps/briefs/brief04.htm

Exterior Stucco Cladding and Wood Siding

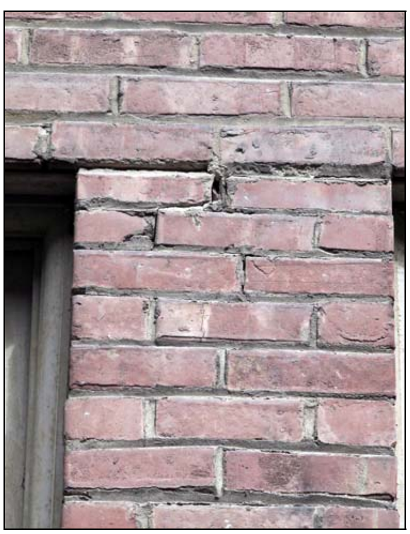
Recommendations

Recommended treatments for cladding on the non-masonry perimeter walls:

- Remove non-original wood siding and stucco coating with heavy swirl pattern finish. Investigate and remove damaged substrate materials, and provide new heavy sand finish stucco coating on sound wood or new metal lath.
- Repair stucco by removing damaged material and patching with new stucco that duplicates the old in strength and composition, color, and texture.
- Stucco color and finish texture should be uniform on all building facades.
- Replace missing or unsound parge coat that protects the sky-facing brick rowlock courses that make up window sills.
- Wood siding with a 4" bevel cladding, apparently from the 1961 remodel and addition, currently exists on the north elevation. When this addition is removed, any new cladding should match the stucco or narrow wood siding.
- Establish a cyclical maintenance program for the building to monitor it through annual inspections using a maintenance checklist, and photo record of changes.

References: National Park Service Historic Preservation Briefs No. 22, "The Preservation and Repair of Historic Stucco," (http://www.nps.gov/history/hps/tps/briefs/brief22.htm); No. 39, "Holding the Line: Controlling Unwanted Moisture in Historic Buildings,"(http://www.nps.gov/history/hps/tps/briefs/brief39.htm); and No. 47, "Maintaining the Exterior of Small and Medium Size Historic Buildings,"(http://www.nps.gov/history/hps/tps/briefs/brief47.htm).

Brick Masonry



Recommendations

Recommended treatments for masonry focus largely on its protection and maintenance.

- Clean masonry only after pre-testing cleaning methods and products to select the lowest pressure and most gentle method. Recommended products are those manufactured by Prosoco, Inc. If consolidates or water repellants are to be considered the products should be pre-tested over a full weathering year. Do not apply water proofing or paint.

- Remove unused metal elements from the masonry; where retained, provide gaskets to minimize staining. Do not affix connectors, cables, or signage directly onto the brick units. Limit attachments to mortar joints.

- Patch holes and missing masonry using in-kind salvaged materials, matching the existing bricks in size, color and texture. If damage has been caused by human activities, restrict these. If caused by water, investigate and correct source of deterioration before undertaking repairs.

- Undertake repointing where mortar is missing or spalling, or where masonry is cracked. (Install crack-monitors to verify any future movement.) For re-pointing, use soft, more permeable mortar than the brick masonry, typically Type N. Rake to solid, sound surface and provide new joints in consistent size, profile and mortar mix. Do not use mechanical tools, such as grinders

- Replace missing or unsound parge coat to protect sky-facing brick rowlock courses that make up window sills.

- Select qualified masonry restoration contractors, with workers with demonstrated experience working on historic buildings.

References: NPS Historic Preservation Brief No. 1, "Cleaning and Water-Repellent Treatments for Historic Masonry Buildings," http://www.nps.gov/history/hps/tps/briefs/brief01.htm; No. 2, Repointing Mortar Joints, http://www.nps.gov/hps/tps/briefs/brief02.htm; and No. 6, "Dangers of Abrasive Cleaning to Historic Buildings," http://www.nps.gov/hps/tps/briefs/brief06.htm

Wood Frame Windows

Reference: National Park Service Historic Preservation Brief No. 9, "The Repair of Historic Wood Windows," http://www.nps.gov/hps/tps/briefs/brief09.htm; and NPS standards for successful rehabilitations of windows: http://www.nps.gov/tps/standards/applying-rehabilitation/successful-rehab/windows-documentation.htm

Recommendations

Recommended treatments as for the restoration and repair of windows and the replacement in-kind of damaged windows.

- Replace glazing where cracked, missing or damaged, using salvaged glass or new glass made to replicate historic plate glass. Replace glazing compound to match existing profile.

- Repair deteriorated framing and sash sections damaged by dry rot. Provide guidance with documentation of existing windows, such as photographs and scaled elevation and detail drawings based on field verification of horizontal and vertical sections. Where repair is not feasible, provide new, in-kind windows that match the original ones in material, form, size and detail, including true divided lights. Consistent frame and sash dimensions should be used at each floor. The components of the third floor clerestory windows, for example, should match one another, even if they are slightly different from those in lower level window openings.

- Where possible install weather-stripping or insulated double-glazed units to upgrade energy conservation performance. Where the profiles of existing mullions and muntins are too narrow to accommodate double-glazed units, develop a modified widow design, or provide interior or exterior storm windows. Operable storm units may be a necessary to accommodate window operation and natural ventilation.

- Retain historic hardware, or provide matching new pieces, such as sash locks, where missing. Where the hardware differs from window to window, on the third level for example, new, consistent hardware is acceptable. Salvage and reuse is another recommended treatment. In such a case, existing paint should be stripped off the hardware, following abatement if necessary, refinishing, and reinstallation. New hardware should be metal, not plastic, and consistent in finish. Oil rubbed bronze is the recommended finish. Local hardware companies, such as Builders Hardware and Rejuvenation, carry historic window hardware.

- Replace casement extension rods to limit full extension of low windows, such as those on the 2nd floor west restroom.

Exterior Wood Doors

Recommendations

- Refinish wood door surfaces, and prep and paint interiors and exteriors. Test moisture in the substrate with moisture meters. Verify paint content does not contain lead; take correct procedures for worker safety and encapsulation if it does. Provide adequate thickness and numbers of primer and finish coats. Select colors for doors and windows similar to or matching original paint colors.

- Replace original glazing in original wood panel doors where cracked, missing or damaged, using salvaged glass or new glass that replicates historic plate glass. Provide insulated glass units where possible while maintaining existing true divided light patterns. (Refer to widow recommendations.)

- Retain historic hardware. If door hardware varies considerably, or if there are few remaining original pieces, replace existing door hardware with consistent new hardware, meeting ADA requirements but otherwise selected to match the original handles, escutcheon plates, hinges and locks, etc. Provide metal kick plates on both sides of doors that show wear. Wherever possible install weather-stripping on wood doors.

- Remove and replace the aluminum frame storefront assembly at the main, north entry with more harmonious style doors, with wood skins and panel treatment over fire-rated interior materials as necessary.

- Affix keypads, if necessary, onto metal plates attached to the adjacent mortar. Oil rubbed bronze is a recommended for the finish of all door hardware.

- Entry routes are unclear. Undertake a way-finding analysis, and provide new and consistent directional and exterior door signage.

References: NPS Historic Preservation Briefs No. 10, “Exterior Paint Problems on Historic Woodwork,” http://www.nps.gov/history/hps/tps/briefs/brief10.htm; and No. 32, “Making Historic Buildings Accessible,”http://www.nps.gov/history/hps/tps/briefs/brief32.htm.

Miscellaneous

Reference: PS Preservation Brief No. 17, "Preservation Brief 17: Identifying the Visual Aspects of Historic Buildings…" http://www.nps.gov/history/hps/tps/briefs/brief17.htm

Recommendations

Site and Exterior Elements

- Retain the protective auto bumper guards in the lot along the building's west face.
- Study alternatives to the existing steel and concrete entry stairs. Along with potential accessibility improvements and restoration of the center north facade, consider a more harmonious main entry. Seek a design solution that is holistic and integrated.
- Protect the building from water damage to bricks and infiltration. Close contact with plants can cause moisture to be held against the masonry and result in biological damage. Prune or remove bushes and ground covers in planting beds from within one foot of the building's north and east facades.
- Regrade soil to slope away from the perimeter; and re direct any existing sprinkler heads (and install future heads) to direct water away from the building facades.
- Remove unused flammable material containers from the exterior enclosures.
- Retain the non-original metal stair/walk on the building's west side, which was installed for code-compliant exiting, as its materials and straight-forward design are similar to other exterior elements equipment. The stair is clearly non-original, but also removable should an exit stair no longer be required.

Interior Features

- Upon future remodeling the shop space, replace the concrete floor slabs with thicker slabs over compact fill, or repair the existing slab by pumping in substrate materials. Equipment loads on the lowest floor level can be considerable and a uniform slab upgrade will allow more flexible layouts.
- Provide direct mechanical ventilation for the metal casting area in the east shop.
- Provide consistent exterior way-finding, and door identification signage.

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8. PHOTOGRAPHS

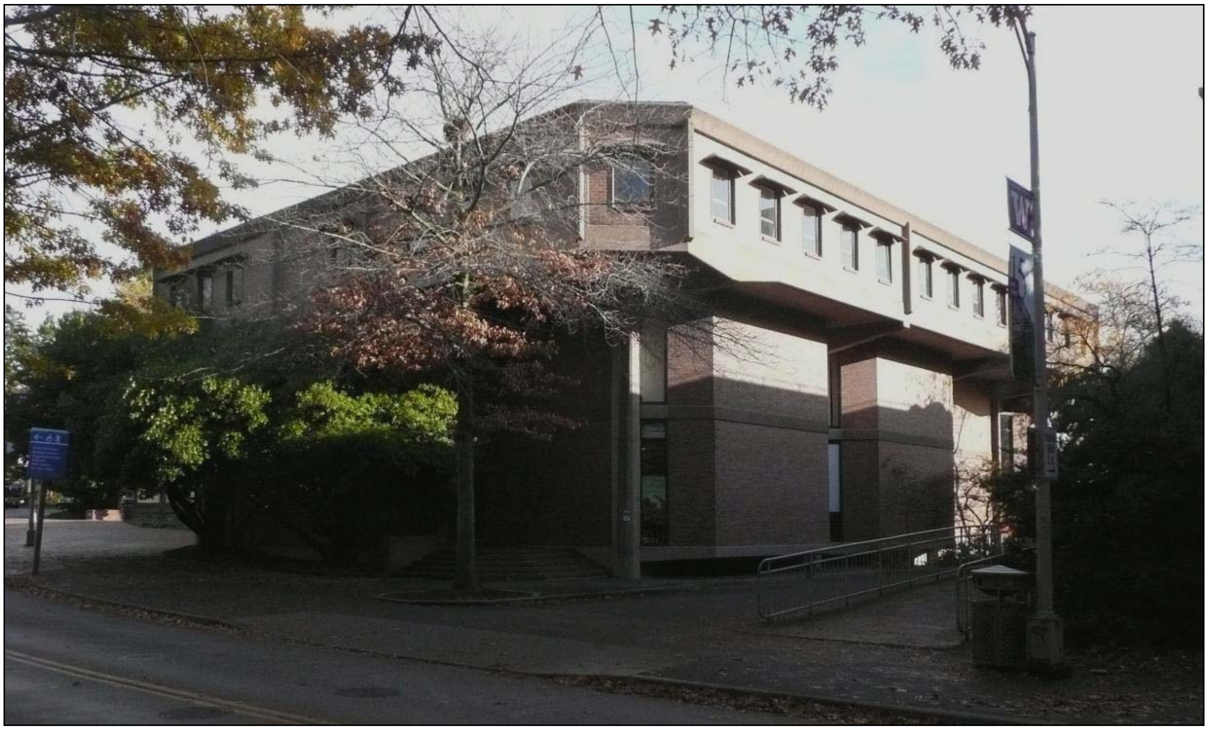
The contemporary photographs the follow are by BOLA, and date from November-December 2011, and May – June 2012.

Above: Context view of looking south on Jefferson Road with the Power Plant to left (east).

Above: Context view looking west from Stevens Way at the northern portion of the subject building. Part of the east wing of the Mechanical Engineering Building is to the right (south), and the southwest corner of Loew Hall is visible in the left foreground (north).

Above: Context view looking north on Jefferson Road. The Mechanical Engineering Building is on the left, the Annex is visible behind.

Left: Exterior view looking northeast on Jefferson Road at the east facade of the Annex. A portion of the Mechanical Engineering Building is visible to the left.



Above: View of Loew Hall, which is located to northwest of the Engineering Annex Building.

Left: View of the Engineering Annex looking southwest at a portion of its east facade, with the Mechanical Engineering Building beyond.

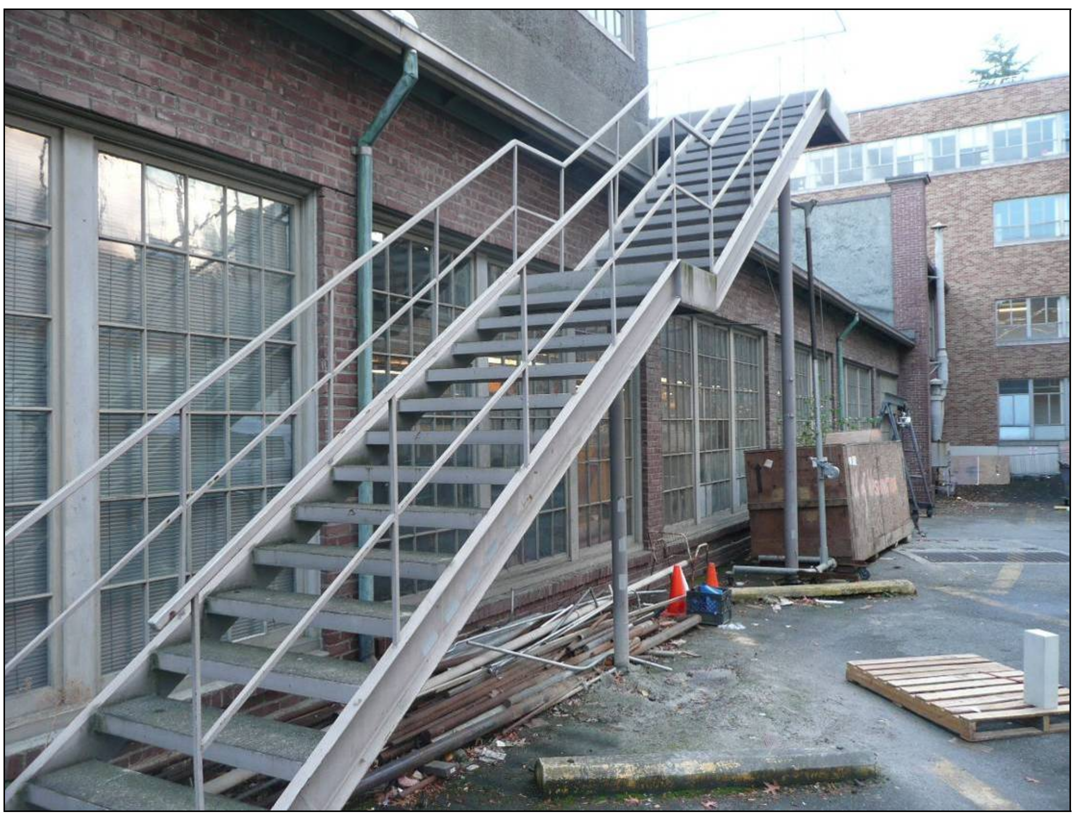
Left: view looking southeast at the north facade of the subject building showing the results of the 1961 remodel and addition. Projecting wood-clad elements on the second and third floors contain components of the mechanical system.

Below: view looking south at the building's west façade and the north end of the Mechanical Engineering Building in the background.

Left: View of the west facade of the woodshop portion of the Annex and the northeast corner of the abutting Mechanical Engineering Building. This two story portion of the Annex dates from 1920. Offices spaces and a corridor that leads south into the adjacent building are contained in the second floor of the Annex. The concrete room at the basement level was provided for storage of paint and chemicals.

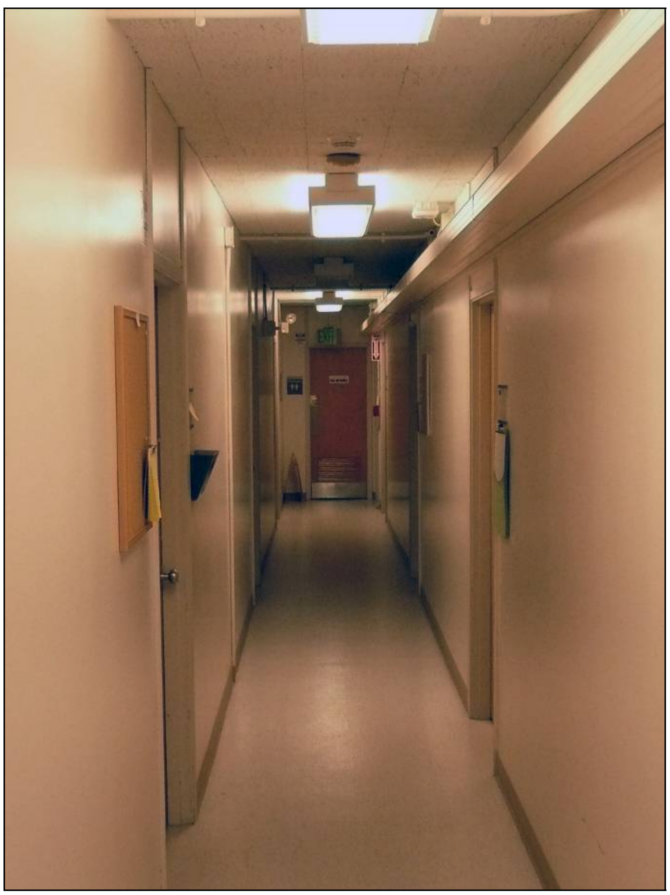
Below: Partial view looking northwest at a portion the west facade showing machine shop in middle, single volume portion of the building that contains shop spaces.

Above: View looking northeast at a portion of the building's west facade. Below: View looking southeast at the steps along the west facade, added in 1961 to provide access and egress from the 3rd floor corridor.



Above: View looking southwest from Jefferson Road at steps near the main entry on the north end of the Annex. Below: View looking northeast at the 3rd floor windows and roof, west side of the building.

Above, detail views of windows conditions.



Above: View of second floor main lobby space at north end of the Annex. Rooms and finishes at the upper floor levels appear contemporary.

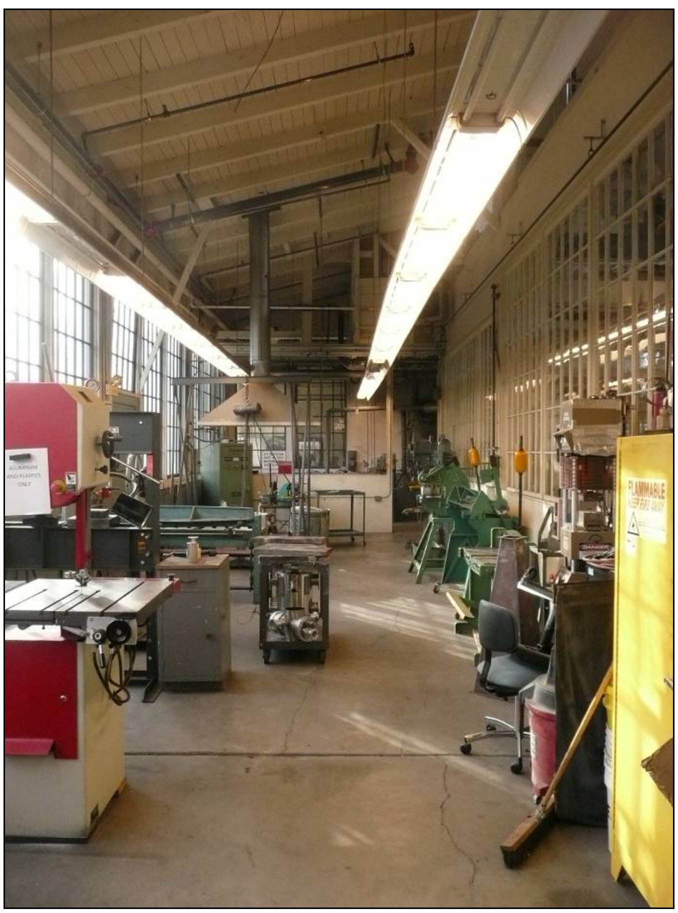
Left: View of typical second floor corridor.

Left: Partial view of a typical third floor office.

Below: View looking south at an open study/lab space in the northern portion of the building’s first floor.

Above: View showing west facing windows and office cubicles in the northwest portion of the first floor.

Left: View of the machine shop area on the first floor, showing its center and west aisle spaces.



Above: View looking northwest at the machine shop office at the first floor.

Left: View looking south in the east aisle space in the machine shop.

Above: View of machine shop center space with east aisle space beyond, and the interior window wall between the two areas.

Left: View looking west in the first floor wood shop (Room 128), which is situated at the south end of the building.

Left: View of exit doors and wood transom windows on the west side of the first floor wood shop (Room 128). The doors and fenestration appear to date from the original 1920 era of construction.