

## **More Hall Annex**

**Historic Resources Addendum  
University of Washington, Seattle, WA  
August 2008, updated April 2015**

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## TABLE OF CONTENTS

1.	INTRODUCTION .....	1
1.1	July 2008 Introduction .....	1
1.2	April 2015 Introduction .....	1
2.	PROPERTY DATA .....	2
3.	ARCHITECTURAL DESCRIPTION.....	3
3.1	Location.....	3
3.2	Site Context.....	3
3.3	Site .....	3
3.4	Building Structure & Exterior Features .....	4
3.5	Plan & Interior Features .....	6
3.6	Documented Building Alterations.....	6
4.	SIGNIFICANCE .....	7
4.1	Context.....	7
4.2	More Hall Annex.....	10
4.3	Historical Architectural Context .....	11
4.4	Building Architect.....	12
4.5	Other Associated Individuals .....	15
5.	BIBLIOGRAPHY .....	18
	APPENDIX 1—FIGURES .....	20
	APPENDIX 2—2015 CONDITION PHOTOGRAPHS .....	22

## LIST OF FIGURES – APPENDIX A

Figure 1	Vicinity Map .....	A-1
Figure 2	University of Washington, site development area .....	A-1
Figure 3	Site Plan.....	A-2
Figure 4	North and west façades .....	A-3
Figure 5	West and south façades .....	A-3
Figure 6	Partial east and north façades, lower level.....	A-3
Figure 7	North and partial east façade.....	A-3
Figure 8	East and partial south façades.....	A-3
Figure 9	East and partial south façades, lower level .....	A-3
Figure 10	Viewing west through dirty shop to reactor room beyond.....	A-4
Figure 11	Reactor room, viewing east, from exterior .....	A-4
Figure 12	Reactor room, viewing east .....	A-4
Figure 13	Reactor room, viewing south.....	A-4
Figure 14	View of south and east façades, 1963 .....	A-5
Figure 15	West and east façades, 1963 .....	A-5
Figure 16	University of Washington, Nuclear Reactor Building control room, viewing west .....	A-5
Figure 17	University of Washington, Nuclear Reactor Building, control room .....	A-5
Figure 18	University of Washington, Nuclear Reactor Building, reactor room, viewing west.....	A-5
Figure 19	Schematic of University of Washington, Nuclear Reactor Building, reactor room.....	A-5
Figure 20	Reactor B, Hanford, WA .....	A-6
Figure 21	Nuclear Science Teaching-Research Center, Texas A&M University, interior, Caudill, Rowlett and Scott .....	A-6
Figure 22	Nuclear Science Teaching-Research Center, Texas A&M University, interior, Caudill, Rowlett and Scott .....	A-6
Figure 23	Nuclear Science Teaching-Research Center, Texas A&M University, exterior, Caudill, Rowlett and Scott .....	A-6
Figure 24	Geisel Library, UCSD, San Diego, William L. Pereira, 1971 .....	A-7
Figure 25	Boston City Hall, Kallman, McKinnell and Knowles, 1968 .....	A-7
Figure 26	Kane Hall, University of Washington, Walker, McGough, Foltz, Lyerla, 1971 .....	A-7
Figure 27	Gould Hall, University of Washington, Streissguth and Zema, 1972.....	A-7
Figure 28	Gould Hall, interior court, Streissguth and Zema, 1972 .....	A-7
Figure 29	Parthenon, Athens, Greece, 447 BC .....	A-8
Figure 30	Beinecke Rare Book Library, Yale Campus, New Haven, CT, Skidmore, Owings, and Merrill, 1964 .....	A-8
Figure 31	Nuclear Reactor, Rehovot, Israel, Phillip Johnson, 1961 .....	A-8
Figure 32	Seattle Scottish Rite Temple viewing northwest from parking lot, NBBJ, 1964 .....	A-8
Figure 33	Washington State Library, Olympia, Paul Thiry, 1959 .....	A-8
Figure 34	Mercer Island Presbyterian Church, Paul Thiry, 1960 .....	A-8
Figure 35	Lovett Residence, Hilltop #1, Seattle, Lovett, 1951 .....	A-9
Figure 36	Lovett Residence II, Seattle, Lovett, 1957 .....	A-9
Figure 37	Giovanelli Residence, Mercer Island, Lovett, 1959 .....	A-9
Figure 38	Lovett Residence, Hilltop #2, Seattle, Lovett, 1963 .....	A-9
Figure 39	Lovett Vacation House, Crane Island, Lovett, 1970.....	A-9
Figure 40	Villa Simonyi, Bellevue, Lovett, 1987 .....	A-9
Figure 41	Wells Medina Nursery, Medina, Streissguth and Zema, 1968.....	A-10
Figure 42	Gene Zema Office, 200 E Boston Street, Zema, 1953 .....	A-10
Figure 43	Lupton House Living Room, Zema .....	A-10

Figure 44	Gene Zema Residence, Whidbey Island, Zema, 1961 .....	A-10
Figure 45	Gene Zema Residence, Whidbey Island, Zema, 1961 .....	A-10
Figure 46	Dr. and Mrs. Richard Johnson Residence, 2401 Killarney Way SE, Bellevue, Zema, 1962 .....	A-11
Figure 47	4234 51 <sup>st</sup> Avenue NE, Seattle, Zema.....	A-11
Figure 48	Gene Zema Residence, Seattle, Zema, 1965.....	A-11
Figure 49	9520 SE 15 <sup>th</sup> St, Bellevue, Zema, 1968.....	A-11
Figure 50	2222 16 <sup>th</sup> Ave E, Seattle, Zema, 1969.....	A-11
Figure 51	Zema Office Building and Japanese Antique Gallery, Eastlake and Boston, Seattle, Zema, 1968 .....	A-11
Figure 52	7053 Beach Dr SW, Seattle, Chittock, 2007.....	A-12
Figure 53	Spencer Moseley, May 1971 .....	A-12

### LIST OF FIGURES – APPENDIX B (2015 CONDITION PHOTOGRAPHS)

Figure 1	Northern and western façades .....	B-1
Figure 2	Northern and southern façades .....	B-1
Figure 3	Eastern façade .....	B-2
Figure 4	Detail of western façade overhang .....	B-2
Figure 5	Detail of southern façade overhang .....	B-3
Figure 6	Viewing southeast into decommissioned reactor core.....	B-4

# More Hall Annex Historic Resources Addendum

## 1. INTRODUCTION

### 1.1 July 2008 Introduction

This report provides information regarding the architectural design and historical significance of the More Hall Annex, formerly known as the Nuclear Reactor Wing of the Engineering Building. The building is located on the University of Washington in Seattle, Washington. The Johnson Partnership prepared this report at the request of the University of Washington, based on the criteria for a Historic Resources Addendum (HRA), as described in the approved *2003 University of Washington Master Plan-Seattle Campus*.

Larry E. Johnson, AIA, principal of The Johnson Partnership, 1212 N.E. 65th Street, Seattle, WA, completed research and development of this report during June and July, 2008. Steve Sand, AIA, provided historic research assistance. Research included review of documentation from the University of Washington's Capital Project Office archives. Other research was undertaken at the University of Washington Special Collections Library, the College of Architecture and Urban Planning's Library and Visual Resources Collection's digital image database, the Seattle Public Library, and the Museum of History and Industry.

### 1.2 April 2015 Introduction

This report has been updated to reflect the subject building's listing in the National Register of Historic Places on July 24, 2009. The building was also listed on the Washington State Heritage Register. Please see Appendix 2, Figures 1-6 for updated condition photographs of the building.

## 2. PROPERTY DATA

**Common/Historic Building Name:** More Hall Annex, Nuclear Reactor Building/Nuclear Reactor Wing, Mechanical Engineering Building

**Address:** 3785 Jefferson Road NE

**Location:** University of Washington

**Date of Construction:** 1961

**Original/Present Use:** Nuclear Reactor Research and Education/Vacant

**Original/Present Owner:**

University of Washington  
Capital Projects Office  
University Facilities Building  
Box 352205  
Seattle, WA 98195

**Original Designers:**

**Architects:** The Architect Artist Group (TAAG)—Wendell Lovett, Daniel Streissguth, and Gene Zema

**Collaborative Artist:** Spencer Moseley

**Landscape Architect:** Robert Chittock

**Structural Engineer:** Gerard Torrence

**Mechanical Engineer:** Richard Stern and Robin Towne

**Electrical Engineer:** Thomas Sparling

**General Contractor:** Jentoft & Forbew

**Building Size:** 7595 sq. ft.

### 3. ARCHITECTURAL DESCRIPTION

#### 3.1 Location

The More Hall Annex is located in what is considered the east-central segment of the University of Washington's Seattle Campus. The building lies in a cluster of multi-story academic buildings roughly between the Drumheller Fountain on the west and the Edmunson Pavilion down slope and to the east. *See Figure 1.*

#### 3.2 Site Context

The existing University of Washington Seattle Campus site was acquired in 1884, as a 580-acre property north of the City of Seattle's central business district and adjacent to Lake Washington. Several master plans and the 1909 Alaska, Yukon, and Pacific Exposition (AYP) have organized the campus and its collection of academic, administrative, and utility buildings, stylistically ranging from historically-based styles such as Collegiate Gothic, French Renaissance, and Romanesque, to contemporary buildings with late Art Deco, International, Brutalist, or Post-modern stylistic intent. The More Hall Annex site lies within a cluster of academic engineering or science buildings. The site is adjacent to More Hall (1946, Bebb & Jones with Leonard Bindon, Associates) to the south and the Mechanical Engineering Building (1959, Carlson, Elly & Grevstad) and Engineering Annex (1909) to the north. Both More Hall and the Mechanical Engineering Building are four-stories tall and are constructed with brick cladding with cast stone accents primarily used around windows and entries and can be considered to be built in the Modern/Institutional style. The Engineering Annex is one of the few remaining buildings constructed during the 1909 AYP Exposition. On the western side of More Hall facing Stevens Way is a statue of James J. Hill (1909, Finn H. Frolich), the man behind the Great Northern Railway's expansion into the Northwest. Across Stevens Way, directly to the west of the subject site lies the five-story tall Paul G. Allen Center for Computer Sciences and Engineering (1948, Paul Thiry; 1972 addition, Kallmann McKinnell & Wood; 1999 addition, Mahlum & Nordfors). The University's Power plant (1909, Howard & Galloway; 1999-2000, Bouillon Christofferson and Parsons Brinkerhoff) is located down slope and to the northeast of the subject site. A vista overlooking the Edmunson Pavillion (1928, Bebb & Gould; 1939, Bebb & Jones; 1969, John Morris & Associates; 1980, Decker, Barnes, Bobbs, Fukui; 2000, Loschy, Marquart & Nesholm), Husky Stadium (1920, Bebb & Gould; 1950 addition, George W. Stoddard and Associates; 1988, Skillings Ward Berkshire, engineers, with NBBJ architects), Lake Washington, and the Cascade Mountains opens up across the site as the subject site and land eastward of the site slope downward. Pathways through the site provide access over a former railway right-of-way, now Jefferson Road, to Mason Road, and to the southernmost of three pedestrian overpasses over Montlake Boulevard NE, a major north/south arterial separating the main campus from the lower eastern campus' athletic facilities and Lake Washington. The 2003 University of Washington Plan indicates an underground building may occupy the subject site in the future. *See Figure 2.*

#### 3.3 Site

The More Hall Annex was constructed between 1960 and 1961, to house a small research nuclear reactor associated with the University of Washington's Department of Mechanical Engineering, and was sited adjacent to the other engineering buildings. The More Hall Annex site is primarily shaped by Stevens Way on the west, a steep slope to the east, and the adjacent More Hall and the Mechanical Engineering Building and Engineering Annex on the south and north respectively. The northern wall of More Hall and the southern walls of the Mechanical Engineering Building and Engineering Annex angle outward from Stevens Way approximately 39° creating a circle segment, or roughly trapezoidal site, measuring 165 feet wide along Stevens Way, extending eastward approximately 300 feet, and measuring approximately 340 feet wide at its eastern end. The site slopes approximately 16 feet from Stevens downward to the former railroad right-of-way, now Jefferson Road, with 12 feet of the slope on the site's eastern side. The More Hall Annex is located on the southeastern corner of the site, partially buried in the slope. This orientation creates an expanding

eastward vista toward the University's athletic complex, Lake Washington, and the Cascade Mountains, from Stevens Way and the upper portion of the site, primarily across a portion of the lower plaza on the northern side of More Hall Annex. *See Figure 3.*

Pedestrian access to the site is primarily from Stevens Way via a concrete walkway slightly to the north of the center of the site and flanked by lawn on the south and planting beds on the north. Secondary concrete walkways access the northern end of More Hall and the southern end of the Mechanical Engineering Building on the southern and northern sides of the site respectively. These walkways intersect a north/south concrete walkway linking More Hall and the Mechanical Engineering Building. At the intersection of this north/south walkway, the primary site access walkway descends to a lower plaza via an approximately 42-foot wide stairway of seven treads (eight risers). A secondary concrete stair also allows access to a lower plaza from near the northern entrance to More Hall. The plaza is adjacent to the western side of the subject building and extends both southward and northward from the southern and northern sides of the building, measuring approximately 160-foot wide in this north/south direction and approximately 60-foot deep in the east/west direction. The plaza has three different concrete surface finishes in an interlocking rhomboid-shaped slab design. A stairway located at the northeastern corner descends downward ten treads (ten risers) to a landing before continuing down an additional ten treads (eleven risers), to a concrete walkway accessing the northern end of the main floor of the building and also continuing onward to Jefferson Road.

The second floor of the building is a penthouse above the larger main floor, creating the appearance of a pavilion placed on a plinth. Access to the subject building's small lobby is on the eastern side of this penthouse and is reached by ascending a stairway of four risers extending the entire width of the building to perimeter paved roof walkways. These walkways have solid pre-cast concrete guardrails extending around the southern, eastern, and northern sides of the main floor roof. The site contains mature deciduous and coniferous plantings on the northern, southern, and western portions of the area.

### 3.4 Building Structure & Exterior Features

The More Hall Annex is a two-story building constructed of reinforced concrete. A larger partially earth-sheltered main floor supports a smaller second-floor penthouse, essentially the only portion of the building visible from Stevens Way.

The lower, main level is rectangular, measuring 69 feet 8 inches wide in the north/south direction by 76 feet in the east/west direction. The western portion of this floor is buried into the sloping site, with only the northern and southern façades exposed on their eastern ends. These walls are of conventional waterproofed reinforced concrete. Vertical board forming, spaced at a four-inch intervals, textures the exposed concrete walls on the building's lower northern and southern façades. The ceiling/roof of the lower portion is constructed of reinforced concrete with a floor to ceiling height of 11 feet. The roof slab cantilevers outward from exterior walls on the southern, eastern, and northern sides, creating a pedestrian roof deck or plinth for the penthouse. The north and south slab cantilevers extend progressively further outward reaching their greatest extent slightly to the east of the mid-section of the building, thus creating a trapezoidal plan of the roof plinth. The roof deck/plinth measures approximately 92 feet 2 inches at its widest point north/south, by 108 feet in the east/west direction. The roof deck is covered with a roofing membrane with exposed aggregate topping slabs sloped to drain to roof drains. The perimeter of the cantilevered roof slab supports solid pre-cast exposed aggregate guardrails spaced at four feet on center. Six equally spaced reinforced-concrete beams extend eastward from the eastern face of the lower/main floor supporting the longer cantilever of the eastern roof deck cantilever. These 3-foot deep beams span approximately 28 feet from the main north/south interior wall to rectangular columns set slightly inside of the building's eastern façade before cantilevering 12 feet outward. On the northern and southern façades the exterior wall areas inward from the exposed eastern concrete columns and lying beneath the outermost beams are filled with a mill-finish aluminum glazing system. The aluminum vertical mullions are spaced at 4 feet on center and intervening spaces are filled with glazing, opaque "panels," or louvered grills. The westernmost section on the northern wall contains a glazed door. The eastern



façade also has the aluminum glazing system with vertical mullions spaced at 4 feet on center. The intervening spaces, with the exception of a glazed French door located south of the building's mid-point, are divided by horizontal mullions with lower opaque "panels," and a glazed transom running between the cantilevered concrete beams.

The building's penthouse is designed as a sculptural element mounted on the roof-deck/plinth. The penthouse allowed views down to the reactor room on its western side and featured a lobby and interior, viewing gallery on its eastern side. Two 10-inch thick reinforced concrete east/west girders are raised approximately 9 feet 6 inches above the plinth and define the northern and southern walls and support a reinforced concrete channel roof. Integral columns at the eastern penthouse wall and the ends of an interlocking transverse north/south haunch beam positioned east on the building's mid-point support these massive east/west girders. The eastern supports are 10-inch wide by 8-feet high, rhomboid-shaped columns that taper up from a base of 4 feet by 10 inches to a width of 8 feet at the top. The large girders cantilever 10 feet from the building's western face and 24 feet in the eastward direction from where they rest on the transverse haunch beam. The girders also increase in depth from 6 feet 7 inches on their western ends and 5 feet from their eastern ends to a maximum height of approximately 11 feet at the eastern edge of the haunch beam. The large northern and southern girders also support transverse spandrel beams defining the penthouse's western and eastern façades. The exposed concrete structural girders and beams are textured by vertical board forming, spaced at a 4-inch interval. The large haunch beam is 2 feet wide and protrudes outward approximately 6 feet from the penthouse's northern and southern walls. The 20-inch deep concrete roof channels are spaced at 4 feet on center and cantilever outward from the large east/west perimeter beams, extending outward approximately 5 feet from the eastern and western edges of the roof, and getting progressively larger until they reach approximately 9 feet 6 inches above the haunch beam. The exposed concrete haunch beam and the roof channels are painted white. The roof is covered with membrane roofing and the roof has a 1-in-12 slope that drains to the east and west to stainless steel downspouts running downward near the faces of the eastern and western exterior walls. The remaining wall areas of the penthouse are filled with a mill-finish aluminum glazing system sitting on top of a 1-foot high concrete perimeter curb.

From the west the building appears to be resting on a nearly rectangular, six-sided, exposed-aggregate concrete plinth, raising the building four steps above the western plaza. The western façade, beneath the transverse spandrel beam, consists of nine plate-glass panels framed by vertical aluminum mullions spaced approximately 4 feet on center. A single, 1.5-inch aluminum guardrail mounted 41 inches above the exterior deck is attached to each window mullion. A transverse concrete spandrel beam measuring 3 feet 6 inches high by 12 inches thick is mounted above the windows, spanning the distance between the external girders. Stainless steel downspouts are aligned with the window mullions 8 feet from each edge of the façade.

The northern façade of the penthouse features the large concrete east/west girder and its supports. The girder maintains a consistent bottom chord height of 9 feet, 6 inches. The remainder of the façade consists of ten 4-foot by 8-foot metal-framed windows on the western end of the façade. The westernmost window has an irregular shape, an approximately 6-foot wide base that tapers back on one side to a 4-foot wide top. The protruding haunch beam, measuring 2 feet wide by 6 feet 6 inches high, interrupts the eastern end of the window wall. On the eastern side of the protruding haunch beam, the eastern portion of the wall continues as a row of four, 5-foot by 6-inch plate glass windows below four, 2-foot by 6-inch glass transom panels. Poured-in-place concrete fills the intervening open ends of the roof channel sections at the perimeter wall.

The eastern penthouse façade contains nine four-foot wide aluminum framed panels similar to the western façade. At this location the panels have been divided into two sections, a two-foot high transom, and a six-foot panel below. The four southernmost lower panels are opaque. The lower middle panel and the three northernmost lower panels contain glazing and flank a glass French door with a lower kick plate at the same height as the other panel's sills. Two stainless steel downspouts are placed in a similar location as the west elevation.

The southern façade is nearly a mirror image of the northern façade, except that the eastern portion of the wall has a row of four 5-foot by 6-inch opaque panels below four 2-foot by 6-inch glass

transom panels. *See Figures 4–9.*

### 3.5 Plan & Interior Features

The building originally featured the research nuclear reactor on its western side with upper exterior gallery windows affording views down to the reactor floor. The eastern side of the building was devoted to service areas on the lower main floor and to administrative and interior public viewing on the penthouse level.

The lower level was designed around the location of the nuclear reactor. At the northwest corner of the building there is a 16-foot by 16-foot counting room that has a 2-foot wide interior wall. Moving east is a 20-foot by 16-foot area that was used as an experiment area. A 12-foot by 16-foot cluster of rooms is roughly centered along the north wall and contains a janitor closet, restrooms with gypsum board walls, and a large poured-in-place concrete column in the southwestern corner of this space. A corridor in a north-south direction approximately two-thirds the distance of the building from the western edge provides access to the exterior and circulation throughout the lower level. The corridor width varies from 5-feet 6 inches at the entry to 4 feet near the middle of the building; the eastern third of the building contains five spaces east of the corridor. From north to south there is a 16-foot by 28-foot graduate room, a 12-foot by 12-foot calculating room, a 12-foot by 12-foot office, a 24-foot by 12-foot dirty shop, and a 16-foot by 24-foot electronic shop. A transformer room is located within the electronic shop and is accessed from the north and east sides of the room. The western central portion of the building contains the nuclear reactor room, which is open to the roof structure of the penthouse and centered on a 21-foot concrete octagon that formerly housed the nuclear reactor. The concrete octagon has a rough cut through the middle where the reactor and any possibly contaminated concrete were removed. The remaining mass still rises approximately 12 feet high. The crystal spectrometry room in the southwestern corner of the building measures approximately 34 feet by 17 feet. Three flights of stairs wrap around a hollow concrete core and provide access to the upper floor off the compressed section of corridor, near the northeastern corner of the building.

The western two-thirds of the penthouse is open to the reactor floor below. A large traveling crane allowing rearrangement of reactor blocks was mounted to rails on the northern and southern concrete girders. The main public entry to the building is located near the midpoint of the eastern exterior wall, entering into a small 6-foot by 12-foot lobby. The lobby provides access to: an 11-foot by 19-foot control room overlooking the reactor floor; a southern lecture/briefing room also overlooking the reactor area and measuring approximately 17 feet by 16 feet; a stairway located in the northeastern corner leading down to the lower floor; and an attic space via a fold-down stair. *See Figures 10–13.*

### 3.6 Documented Building Alterations

The original building design was completed during 1959, and construction took place primarily in 1960. The building was dedicated in 1961.

A catwalk allowing access from the control room to the reactor was installed and removed at unknown dates.

In 1973, a decontamination corridor was added in the reactor room and a wall added to separate the experiment room. A wall was also added to the north side of the crystal spectrometry room and an emergency exit to the exterior. These features were removed, presumably during decommissioning. Architects Keith R. Kolb and Jack C. Stansfield, with Wood and Associates, Consulting Engineers, designed the alterations.

In 1978, the graduate room and calculating room had interior walls placed to create a more private office. University staff prepared the plans for the project.

In 1990, asbestos abatement was completed in the steam tunnel under the direction of Law Associates.

In 1993, minor interior remodeling included reconfiguration of interior partitions including accessibility improvements in restrooms, other minor alteration to partitions, and renewal of finishes.

University staff prepared the plans for the project.

In 1999, the fuel rods from the reactor were removed to Hanford, WA, effectively initiating the decommissioning of the building. Decommissioning involved stripping of porous interior finishes to remove possible radioactive substances, removal of wood-framed partitions near the reactor, and removal of the reactor itself. All mechanical systems including heating and ventilation equipment as well as electrical systems were also removed. The Nuclear Regulatory Commission issued a decommissioning certification on May 21, 2007.<sup>1</sup> *See Figures 14–19.*

## 4. SIGNIFICANCE

### 4.1 Context

#### *National and Worldwide Nuclear Environment (1942-2008)*

On December 2, 1942, in the midst of World War II, a team of scientists headed by Dr. Enrico Fermi achieved the first known controlled nuclear chain reaction at the University of Chicago. This new technology was further developed by the United States, allowing the United States to employ nuclear weapons in the Pacific Theater, specifically on the Japanese cities of Hiroshima and Nagasaki in 1945. After World War II, the Atomic Energy Commission was created to continue atomic energy research, and the development of practical applications. The first usable electricity from nuclear fission was produced in 1951, at what is now called the Idaho National Engineering Laboratory, and the nation's first nuclear-powered submarine using this technology, *Nautilus*, was under construction a year later. In 1954, the Atomic Energy Act was amended to allow private companies to utilize nuclear material and build power generation plants. Arco, Idaho, a small town of 1,000 people, was powered by a boiling water nuclear reactor in 1955. The Sodium Reactor Experiment at Santa Susana, California, produced the first electricity from a private nuclear reactor on July 12, 1957. On December 2, 1957, the first full-scale nuclear plant at Shippingport, Pennsylvania, went online, eventually providing 60 megawatts of electricity. The first nuclear-powered merchant vessel, the *Savannah*, was launched on July 21, 1959.<sup>2</sup>

During the 1960s and 1970s, the future of nuclear-powered electrical generation plants appeared unlimited.<sup>3</sup> By 1980, the number of nuclear power plants had increased to a point that, when combined, generated more electricity than oil-fired generation plants.<sup>4</sup>

After a partial core meltdown on March 28, 1979, at the Three Mile Island Unit 2, the safety of nuclear plants was questioned and the construction of additional plants became controversial with a subsequent slowdown of new plant construction. Another setback to the growth of nuclear power occurred in 1986, when a major deadly accident occurred in the Soviet Union at Chernobyl, Ukraine. By 1989, however, national electrical demand was more than 50 percent higher than in 1973, with nuclear plants providing approximately nineteen percent of this power demand. In 1989, the Perry Power Plant in Ohio became the 100<sup>th</sup> operational nuclear power plant in the United States. The number of operating nuclear power plants in the nation increased to 112 in 1990. In 2000, a world record reliability benchmark was reached for the nation's nuclear power plants operating safely at more than 90 percent capacity beginning in 1990. There are currently 104 operational nuclear power plants operating in the United States and there are 30 plants currently in

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<sup>1</sup> Capital Projects Office (CPO) record drawings for Nuclear Reactor Building, University of Washington, TAAG and CPO, various dates.

<sup>2</sup> Commission on Engineering and Technical Systems, US Nuclear Engineering Education: Status and Prospects, The National Academy of Sciences, 1990.

<sup>3</sup> <http://www.nei.org/>, accessed June 26, 2008. The Idaho National Engineering Laboratory is now a National Historic Landmark, and open to the public for touring.

<sup>4</sup> <http://www.nei.org/>, accessed June 26, 2008

the planning stages in the US, however only one is under construction.<sup>56</sup>

Nuclear power production is growing throughout the world with 439 plants presently operational, with many located in China, Korea, Japan, and Taiwan.<sup>7 8</sup> The United States has the greatest number of nuclear plants in the world, but ranks 17<sup>th</sup> in the percentage of total electricity used from nuclear power. France leads with nearly 77 percent of its energy derived from nuclear sources, and is second in the world with 59 operational nuclear power plants.<sup>9</sup> Nuclear waste and cleanup are ongoing issues at numerous sites around the world.<sup>10</sup>

### *State of Washington Nuclear Environment*

The Hanford Reservation in southeastern Washington was part of the World War II Manhattan Project that developed the first nuclear explosive device, and the site of the world's first full-scale plutonium production reactor. During the Cold War, the plant produced plutonium for most of the nuclear weapons in the nation's arsenal. Hanford's reactors for weapons production were decommissioned after the conclusion of the Cold War, leaving behind 53 million gallons of radioactive waste contained at the site. The location is still considered to be the most contaminated site in the United States.<sup>11</sup> See *Figure 20*.

The popularity of nuclear energy in the Northwest has been harmed more by bad financial decisions than by technological problems or concerns over safety. The Washington Public Power Supply System (WPPSS) borrowed \$8.3 billion by May 1974, and committed to construct five nuclear plants.<sup>12</sup> The decision to build the plants was based on an escalating need for power as forecasted by the Federal Bonneville Power Administration. In 1982, the costs had ballooned from the \$4.1 billion expected to \$23.2 billion. Problems with the forecast came from energy conservation as a result of the 1973 and 1979 surges in oil prices. As a result the WPPSS defaulted on \$2.25 billion in bonds used for financing two nuclear power plants that never became operational. The Bonneville Power Administration honored the bonds because of the financial structure for the first three plants. Financing costs were passed on to users in rate increases.<sup>13</sup>

The Trojan Nuclear Plant on the Oregon side of the Columbia River cost \$450 million to build when construction began in 1970, ran for seventeen years, and will cost \$409 million to decommission (the plant developed a cracked steam tube which released radioactive gas into the plant in 1992).<sup>14</sup> This and the WPPSS debacle caused both Washington and Oregon to pass laws restricting the construction of future nuclear power plants.<sup>15</sup>

### *National Academic Nuclear Engineering Environment*

Nuclear engineering and radiological sciences are one of the younger engineering professions. The field involves the extraction of useful energy from the nucleus of the atom, the manufacture and handling of isotopes used in hospitals and industry, modification of materials, and development of

<sup>5</sup> [http://www.eia.doe.gov/cneaf/nuclear/page/nuc\\_reactors/reactsum.html](http://www.eia.doe.gov/cneaf/nuclear/page/nuc_reactors/reactsum.html), accessed June 26, 2008. Some older plants have been decommissioned.

<sup>6</sup> <http://www.nei.org/careersandeducation/careersinthenuclearindustry/bepartofagrowingworkforce/>, accessed June 26, 2008.

<sup>7</sup> <http://www.greatachievements.org/?id=3691>, accessed June 26, 2008.

<sup>8</sup> Peter Lyon, NRC Commissioner Speech, March 22, 2008.

<sup>9</sup> <http://www.nei.org/resourcesandstats/>, accessed June 26, 2008.

<sup>10</sup> <http://www.em.doe.gov/pages/emhome.aspx>, accessed June 30, 2008

<sup>11</sup> <http://www.hanford.gov/doe/history/>, accessed June 26, 2008

<sup>12</sup> Daniel Pope, "Antinuclear Activism in the Pacific Northwest—WPPSS and Its Enemies," 1998, pg. 236.

<sup>13</sup> Charles P. Alexander, "Whoops! A \$2 Billion Blunder," *Time*, August 8, 1983, via <http://www.time.com/time/magazine/article/0,9171,955183,00.html>, accessed June 26, 2008.

<sup>14</sup> <http://ludb.clui.org/ex/i/OR3142/>, accessed June 30, 2008.

<sup>15</sup> Harden, Blaine, "In the Northwest, Nuclear Power Takes a Hit," *Washington Post*, May 22, 2006, p. A02.

instruments and scanners to detect radiation. Nuclear engineering contributes approximately 4.1 million jobs and \$300 billion to the nation's economy annually. Research in nuclear fusion today focuses on a limitless supply of energy through the use of seawater, magnetic bottles, high-powered lasers, and charged particle beams.<sup>16</sup>

In 1968, approximately 76 nuclear reactors were in operation at universities in the United States. Today there are approximately 27 nuclear reactors in academic settings, down from 40 in 1987, and 28 in 1990. Undergraduate senior student enrollment decreased from 1,150 in 1978 (before Three Mile Island), to about 650 in 1988. The Northwest currently has four research reactors associated with universities: one at Washington State University, Pullman, Washington; one at Oregon State University in Eugene, Oregon; one at Reed College, in Portland, Oregon; and one at Idaho State University in Pocatello, Idaho.<sup>17</sup><sup>18</sup> See *Figures 21–23*.

As nuclear departments' faculty has aged, and departments shrink because of declining enrollment, there has been little room for younger academics to gain teaching experience in the field. The rising costs of aging faculty and a lack of revenue from both tuition and research income has caused universities nationwide to cut nuclear programs and operational costs. Additionally, younger scientists who are entering the teaching ranks have a lower interest in reactor-based research than older faculty members. This may be due to the decline in research related to reactors since 1973, and redirection of research toward fusion, medical applications, space power, and waste management. However, the demand for graduates is expected to be stable or slightly increase over the next 20 years.<sup>19</sup>

### *Nuclear Engineering at the University of Washington*

The University of Washington College of Engineering began offering nuclear engineering classes in 1953, and in 1958, granted its first Master of Science in Engineering focusing on nuclear engineering. This program was run through the Graduate School or College of Engineering until 1965.<sup>20</sup> The Dean of the Engineering College at the time was Dr. Harold Wessman, an advocate for the formation of the Nuclear Engineering program with a research nuclear reactor building on the campus.<sup>21</sup>

In April 1961, (the centennial of the University of Washington), the nuclear reactor in the current More Hall Annex reached criticality (the point in an intensifying nuclear reaction at which it becomes self-sustaining). Nuclear Engineering was upgraded as a discrete department in 1965, having at that time 65 students. Albert L. Babb was the first chair of the eight-faculty department made up of engineering professors of different departments. During the 1960s, there was a joint research project with the Critical Mass Laboratory in Hanford, WA, supervised by Bob Albrecht.<sup>22</sup> Declining interest in nuclear power research led to a decline in enrollment, and by 1989, the department had only 18 students. The department was dissolved in 1992, and the eight faculty members went back to their home departments of electrical, chemical, mechanical, and aeronautical engineering. Between its inception in 1965 and 1992, the department granted approximately 300 graduate nuclear

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<sup>16</sup> <http://www-ners.engin.umich.edu/about/undergrad.html>, accessed June 26, 2008

<sup>17</sup> *USGAO Nuclear Security Report to the Ranking Member, Subcommittee on National Security and Foreign Affairs, Committee on Oversight and Government Reform, House of Representatives*, January 2008.

<sup>18</sup> *U.S. Nuclear Engineering Education: Status and Prospects*, Committee on Nuclear Engineering Education, National Research Council, 1990, p. 56. The current climate of security concerns has led to a re-examination of the fuels used in research facilities. Completion of this conversion is anticipated by 2011. Oregon State University and Washington State University presently use highly enriched uranium (HEU, weapons grade fuel), but are scheduled to convert to low enriched uranium (LEU) by 2008.

<sup>19</sup> *U.S. Nuclear Engineering Education: Status and Prospects*, Committee on Nuclear Engineering Education, National Research Council, 1990, p. 56.

<sup>20</sup> Norman McCormick, email correspondence, June 26, 2008.

<sup>21</sup> Dean McFeron, interviewed by Abby Martin, January 21, 2008.

<sup>22</sup> McCormick email, June 26, 2008.

engineering degrees.<sup>23</sup>

#### 4.2 More Hall Annex

In the late 1950s, the research reactor in the More Hall Annex was created to supplement the nuclear engineering program at the University of Washington. The University commissioned a team of architects, an engineer, and an artist, most of which were University of Washington faculty, to design the new facility. Collectively known as The Architect Artist Group (TAAG), the group was composed of architects Wendell Lovett and Daniel Streissguth, both on the faculty of the College of Architecture, practicing architect and University graduate Gene Zema; Spencer Moseley, an art professor, Robert Chittock, a landscape architecture instructor at the university, and Gerard Torrence, a structural engineering professor with the College of Architecture.<sup>24</sup>

The site for the proposed research nuclear reactor building on the campus, between More Hall and the Mechanical Engineering Building and Engineering Annex and adjacent to a pedestrian pathway, was chosen both for its close proximity to this cluster of academic engineering buildings, as well as to promote the apparent safety of nuclear energy by being located directly on campus rather than at a remote facility.<sup>25</sup>

Of the design team for the project, Wendell Lovett is generally considered the building's major designer.<sup>26</sup> Streissguth and Zema, however, participated with Lovett in the site design and the terrace plinth. Lovett, an advocate of prefabrication, also designed the pre-cast guardrails lining the terrace plinth.<sup>27</sup> Gerard Torrence, the project engineer, was instrumental in the sizing and shape of the structural members. Torrence also designed the reinforced concrete channel roof.<sup>28</sup>

Spencer Moseley, an artist, worked with Babb and Lovett, on the design of the reactor, which had large moveable blocks, painted in the primary colors, and used as shields. Lovett and Babb conceived of the idea of the building's materials and arranging the spaces so that the interior was highly visible. Moseley, a modernist, non-objective painter, wanted the reactor blocks to be painted various bright colors (blue, yellow, and red) which would be indicative of different radioactive qualities—thus creating a constantly changing pattern while the blocks were positioned for different experiments.<sup>29</sup>

After completion of schematic design, Lovett traveled to Stuttgart, Germany, on a Fulbright grant, spending the academic year as a visiting critic. Zema, Streissguth, Torrence, and Chittock completed the construction documentation over the next few months, with Zema signing the architectural drawing set on November 9, 1959.<sup>30</sup> Streissguth recently credited Zema as a craftsman with great attention to detail and "the most hard-headed and most organized of us architects."<sup>31</sup> Torrence also credits the project architects with demanding and receiving a high level of workmanship in the

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<sup>23</sup> *A Century of Educating Engineers, University of Washington College of Engineering*, Seattle, WA: University of Washington Press 1998.

<sup>24</sup> Streissguth interview, January 12, 2008. Frederick Mann, then University of Washington Architect, approached Arthur Herman, then Dean of the College of Architecture, with a proposal to modify an existing capital improvement policy that prevented University of Washington staff or employees from receiving design commissions from the University, and to allow the selection of TAAG as architect for the proposed new University facility.

<sup>25</sup> McFeron interview, January 31, 2008. As part of the agreement, all faculty members were required to reduce their positions to part time. As a precedent, Carl Gould, the founder of the Department of Architecture and creator of the 1915 General Plan of the University Campus, designed Raitt Hall (1917, 1922), Savery Hall (1917, 1920), and Miller Hall (1922), within the architectural partnership of Bebb & Gould, while employed as head of the Department of Architecture between 1915 and 1926.

<sup>26</sup> Streissguth interview, January 12, 2008. The shape of the large cantilevered girders on the northern and southern sites of the penthouse section recall the shape of the exterior walls on Lovett's Wallace Lovett House II, also designed in 1959.

<sup>27</sup> Streissguth interview, January 12, 2008. It is assumed that Robert Chittock was also involved in siting discussions.

<sup>28</sup> Streissguth interview, January 12, 2008. The original concept was to use pre-cast pre-stressed or post-tensioned concrete sections for the roof. Due to the logistics of site delivery, as well as the uniqueness of every member, Torrence offered the contractor the alternative of poured-in-place construction, which the contractor chose.

<sup>29</sup> Streissguth interview, January 12, 2008.

<sup>30</sup> "Nuclear Reactor Wing, Mechanical Engineering Building," pp. A1-A12. November 9, 1959.

<sup>31</sup> Streissguth interview, January 12, 2008.

concrete construction, noting that the architects surfaced the forms with a textural pattern and form-tie pattern that he felt enhanced the finished product.<sup>32</sup> The design intent of the building was for all concrete to remain unfinished; after the building's completion in 1961, however, the large transverse haunch beam and the roof channel sections were painted white at the request of the University president, Charles Odegaard.<sup>33</sup>

It should be noted that More Hall Annex was one of approximately 76 educational nuclear reactors constructed in the United States, and although contributing to our understanding of the development of nuclear energy for peaceful purposes, the building does not possess a unique association with this aspect of our historic heritage. As far as can be determined, the building also is not known to be associated with an experiment or process that has contributed to the greater body of knowledge of nuclear research or engineering.

#### 4.3 Historic Architectural Context

The More Hall Annex can be considered a Brutalist design, an architectural statement of the possibilities inherent with concrete construction.

##### *Brutalism*

Brutalism is taken from the French "breton brut" or rough concrete. This style developed in the early 1950s, with the philosophic intent to show how buildings worked. The structure, shell, and heating and ventilation systems were to be visible. This design philosophy was later broadened to include any massive building built of concrete, a construction practice opposite of the glass curtain wall promoted by some European architects including Mies van der Rohe and Walter Gropius. The French architect Le Corbusier was considered the champion of this style, and in his *Unité d'Habitation* (1952) in Marseille, France; and the Secretariat Building (1953) in Chandigarh, India, were early archetypes in this style.<sup>34</sup>

The exterior of these buildings was often of rough finished concrete that left the texture of board forms. Other characteristics of the style include: a heavy mass and large scale, ridges or elements that create sharp shadows, inoperable windows set deeply into the building envelope, and floors and roofs constructed of waffle slabs or other expressive structural systems. In addition to concrete, Brutalist buildings may include brick, rough-hewn stone, steel surfaces. All buildings exhibiting an exposed concrete exterior, however, cannot be cataloged as Brutalist, and may be sub-classified as Constructivist, Deconstructivist, Expressionist, International, or Postmodern.<sup>35</sup>

In the United States, one of the best examples of brutalism is the University of California, San Diego's Geisel Library (1971, William L. Pereira). Other significant works include the Boston City Hall (1963-68, Kallman, McKinnell and Knowles), Paul Rudolph's realization of the University of Massachusetts, Dartmouth campus, and the 1958 Yale Art and Architecture Building (Rudolph). *See Figures 24-25.*

Other Brutalist buildings on the University of Washington campus include McMahan Hall (1965, Kirk, Wallace, McKinley & Associates), the Marine Sciences Building and Oceanography Teaching Buildings (1967-69, Little & Jones), Schmitz Hall (1970, Waldron & Pomeroy), Kane Hall (1971, Walker, McGough, Foltz, Lyerla), Gould Hall (1972, Streissguth & Zema), and Condon Hall (1973, Mitchell/Giurguola Associates; Joyce, Copeland, Vaughan & Nordfors). *See Figures 26-28.*

##### Modern Buildings Exhibiting Plinth Bases

The concept of using a low horizontal mass or plane as a foil to an upper distinctive architectural form can be traced back to the Parthenon in Athens (447 B.C.). If the development of the modern

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<sup>32</sup> Gerard Torrence, interviewed by Larry Johnson, June 10, 2008.

<sup>33</sup> Wendell Lovett, interviewed by Abby Martin, January 17, 2008.

<sup>34</sup> Nikolaus Pevsner, *An Outline of European Architecture*, pp. 413-415.

<sup>35</sup> <http://www.ontarioarchitecture.com/Brutalist.htm>, accessed June 26, 2008.

movement freed architects to explore forms created from the combination of free form and geometric volumes, it did not discourage inspiration drawn from classical compositions. The building now known as the More Hall Annex, with its upper sculptural form and lower floor base is compositionally derived from this architectural tradition.

Significant architectural projects using a horizontal plinth to support an architectonic form or forms that were designed in the early to mid-1950s include: Ero Saarinen's Kresge Auditorium (1954-55), Ludwig Mies van der Rohe's Chicago Institute of Technology (1955), Skidmore, Owings and Merrill's U.S. Air Force Academy (1957-60), and Minouru Yamasakis's McGregor Memorial Conference Center (1959). Contemporaneous with the More Annex is the faceted structure of hyperbolic paraboloids of Phillip Johnson's Nuclear Reactor in Rehovot, Israel (1961), and Skidmore, Owings and Merrill's Beinecke Rare Book and Manuscript Library on the Yale Campus completed in 1964.

Locally, Paul Thiry, one of Seattle's most esteemed architects of the period, produced some of the finest regional modernist buildings of the period that incorporated a raised plinth, including Washington State Library (1954-59) in Olympia, and his breathtaking Mercer Island Presbyterian Church, designed in 1960, where the white concrete folded plate roof almost magically hovers above the horizontal plane of its sanctuary. NBBJ also used this concept in the Seattle Scottish Rite Temple in 1961, and later when collaborating with Minoru Yamasaki in the IBM Building in downtown Seattle in 1964. *See Figures 29-34.*

#### 4.4 Building Architect

##### *The Architect Artist Group (TAAG)*

The architect of More Hall Annex was The Architect Artist Group (TAAG), a collaboration of Architect of Record Gene Zema, Wendell Lovett, and Daniel Streissguth. Wendell Lovett initially organized the group, recruiting fellow University of Washington architectural professor, Daniel Streissguth, and former student, Gene Zema, in order to obtain larger, non-residential projects. The collaborative was formed in 1959, to design the Nuclear Reactor Wing, Mechanical Engineering Building on the University of Washington Campus. Spencer Moseley was the collaborating artist in the design, Robert Chittcock provided Landscape design, and Gerard Torrence was the structural engineer for the project. Although TAAG submitted a competition design for the proposed Toronto City Hall in 1961, failing to win the commission, the group ceased to exist that year. Streissguth and Zema collaborated once again on the design of the Wells Medina Nursery in 1968, and Gould Hall on the University of Washington Campus in 1972.

##### *Wendell Lovett*

Wendell Harper Lovett was born on April 2, 1922, in Seattle, Washington. He attended the University of Washington School of Architecture from 1940 through 1943, when he was drafted into the United States Army during the Second World War. Lovett served in Normandy with the 13<sup>th</sup> Armored Division and was discharged in 1946, after the war in Europe ended. He reentered the University of Washington later that year, continuing his architectural studies within an academic program that was slowly shifting toward modernism. Lovett graduated in June 1947, receiving the AIA Silver Medal.<sup>36</sup>

While pursuing graduate studies at the Massachusetts Institute of Technology between 1947 and 1948, Lovett studied under Alvo Alto, who was at the time working on the Baker House Residence Hall.<sup>37</sup> Lovett received his State of Washington architectural license (#475) on July 23, 1948.

<sup>36</sup> Grant Hildebrand and T. William Booth, *A Thriving Modernism, The Houses of Wendell Lovett and Arne Bystrom* (Seattle, WA: University of Washington Press, 2004), pp. 9-12.

<sup>37</sup> Hildebrand and Booth, *A Thriving Modernism*, pp. 12-14. Lovett was licensed to practice architecture in Washington State in July of 1948.



Returning to Seattle, Lovett worked briefly for Naramore, Bain, Brady, and Johanson (NBBJ), before accepting a position with architects Bassetti and Morse, where he was employed until 1951. He also accepted a half-time position as instructor at the University of Washington School of Architecture, teaching not only alongside his old professor Lionel Pries, but also along with other recent University of Washington architecture graduates such as Victor Steinbrueck and Omer Mithun.<sup>38</sup>

Between 1950 and 1951, Lovett designed and built his own house in the Hilltop Community, a planned development where both Bassetti and Morse also built personal residences. In this house Lovett experimented with design concepts and means of prefabricated construction to the extent that the house could be seen as a prototype for minimalist housing. The project received a Washington State American Institute of Architects (AIA) Honor Award and was widely published in architectural publications both nationally and internationally. During 1951, Lovett began an independent architectural practice.<sup>39</sup> *See Figure 35.*

Lovett was appointed Associate Professor with tenure at the University of Washington in 1954.<sup>40</sup> The same year he completed a design for a house for his parents, which also won a Washington State AIA Honor Award, and was widely published for the design of a patented "firehood" and a wire frame lounge chair known as the "Flexifibre" and later the "Bikini" chair.<sup>41</sup>

In 1957, Lovett designed a second house for his parents, known as the Wallace Lovett house II, which departed radically from earlier attempts to translate Miesian ideals into wood-framed construction and, while retaining some rectangularity, used cantilevered solid sidewalls to create more of a sense of organic enclosure.<sup>42</sup> He also designed the Mary Jane Worth house in Seattle. Both the Wallace Lovett House II and the Worth House were published internationally that year.<sup>43</sup> *See Figure 36.*

In 1958, Lovett collaborated with his former student Gene Zema on alterations to the Alpha Tau Omega fraternity house near the University of Washington campus.<sup>44</sup> In 1959, Lovett designed the Gordon Giovanelli house in Mercer Island.<sup>45</sup> The house received the *Seattle Times/AIA* Seattle "Home of the Year" award. *See Figure 37.*

That same year, Lovett, with fellow University of Washington School of Architecture professor Daniel Streissguth and former student Gene Zema, under the name The Architect Artist Group (TAAG), received the commission to design the Nuclear Reactor Building on the University campus.<sup>46</sup> The design of the building was completed during 1959, and the building was published in national and international architectural journals in 1959, 1962, 1963, 1964, and 1965. In the later part of 1959, Lovett traveled to Germany on a Fulbright grant as part of a faculty exchange program with the Technical Institute of Stuttgart, spending the academic year as a guest critic.<sup>47</sup> *See Figures 14 and 15.*

In 1961, TAAG submitted a competition design for the proposed Toronto City Hall, failing to win the competition. Lovett also collaborated with architect Ted Bower on tensile/fabric pedestrian walkway shelters for the Century 21 Exposition in Seattle. That year Lovett initiated extensive alterations to his Hilltop house; it was published nationally and internationally, and won an AIA Seattle Honor Ward in 1965. *See Figure 38.*

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<sup>38</sup> Hildebrand and Booth, *A Thriving Modernism*, p. 15.

<sup>39</sup> Hildebrand and Booth, *A Thriving Modernism*, pp. 15-16, 134. Lovett would continue to receive international publication in France, Italy, Germany, Japan, and other countries.

<sup>40</sup> Hildebrand and Booth, *A Thriving Modernism*, pp. 16-17, 134-135.

<sup>41</sup> Hildebrand and Booth, *A Thriving Modernism*, pp. 16-17 and 134-135.

<sup>42</sup> Hildebrand and Booth, *A Thriving Modernism*, p. 17. The side cantilevers of this house resemble the sides of the Nuclear Reactor Building on the University of Washington Campus designed in 1959.

<sup>43</sup> Hildebrand and Booth, *A Thriving Modernism*, pp. 135-136.

<sup>44</sup> Hildebrand and Booth, *A Thriving Modernism*, p. 136.

<sup>45</sup> Hildebrand and Booth, *A Thriving Modernism*, p. 136.

<sup>46</sup> Nuclear Reactor Wing, "Mechanical Engineering Building," pp. A1-A12. November 9, 1959.

<sup>47</sup> Hildebrand and Booth, *A Thriving Modernism*, p. 136.

Between 1961 and 1970, many of Lovett's architectural commissions included interior design of office space, including renovations to the offices of the Seattle AIA in 1968. Major residential commissions during this period, many published nationally and internationally, include Sidney Gerber house (1962, Seattle), the Peter Meilleur house (1966, Bellevue), the Nicolas Podvorac house (1967, Seattle), the Jack Melill house (1968, Mercer Island), the Dr. Cecil K. Stedman house (1969, New Denver, British Columbia), and the Lauren Studebaker house (1969, Mercer Island). All of these residential design commissions are more organic forms, originally found in the seminal Wallace Lovett II house. Lovett was appointed Full Professor at the University of Washington in 1965.<sup>48</sup>

In 1970, Lovett designed a vacation retreat on Crane Island in Washington State's San Juan Islands. This house, framed from a pair of inverted king-post trusses, received extensive national and international attention in architectural journals and was published as late as 1997. The retreat also received a *Sunset/AIA* Western Home Competition Merit Award in 1971, an American Plywood Association National Citation in Architecture in 1972, and an *Architectural Record* National Award of Excellence for House Design in 1974.<sup>49</sup> See *Figure 39*.

Between 1970 and 1987, Lovett completed approximately 34 residential commissions besides the Crane Island Retreat, many which received local, national or international attention. The W. Prescott Miller house (1970, Whidbey Island); the David Munday vacation house (1970, Crystal Mountain); the Gerald Frey house (1972, Bellevue); the William Wallace house (1973, Mercer island); the Melvin Fujita house (1975, Seattle); the Max Scofield house (1976, Mercer Island); the William Wahl house (1979, Bellevue); the Larry Monson house (1979, Mercer Island); and the Dick Peterson house (1980, Seattle). Lovett was elected to the College of Fellows of the AIA in 1978.<sup>50</sup>

In 1987, Lovett retired from full-time teaching and was elected Professor Emeritus. The same year, Lovett finished designing what would become a grand lakefront mansion for Microsoft multi-millionaire, Charles Simonyi. Villa Simonyi would be completed over the next 12 years in four phases, receiving national and international recognition.<sup>51</sup> See *Figure 40*.

Subsequent to his retirement Lovett completed approximately 13 more residential commissions between 1987 and 2002, besides Villa Simonyi, including a large lakeside home designed for David Cutler and Debrah Girdler (1997, Issaquah).<sup>52</sup>

Over a career spanning over 50 years, Lovett's has built a national and international recognition based upon his for excellence in residential design. In 1993, Lovett received the AIA Seattle Medal for distinguished lifetime achievement in architecture, in design and design education. *Arcade, the Northwest Journal for Architecture and Design*, published a feature article on Lovett in 1998, and a book featuring both his residential work, and that of contemporary northwest residential architect, Arne Bystrom, was published in 2004.<sup>53</sup>

### *Daniel Streissguth*

Daniel Streissguth is a 1947 graduate of the University of Washington College of Architecture and Planning, and a 1949 graduate of the Massachusetts Institute of Technology, where he completed a Master of Architecture degree. Streissguth was initially licensed (#648) on July 10, 1951. He taught architecture at Washington University in St. Louis, Missouri, from 1953 to 1955. In 1955, he began teaching at the University of Washington, and continued teaching 300-level design (beginning design) to undergraduate and graduate students there until his retirement in 1993. During his tenure he served two four-year terms as chair of the Architecture department, and is primarily known for his excellence in teaching design.

<sup>48</sup> Hildebrand and Booth, *A Thriving Modernism*, pp. 137-138.

<sup>49</sup> Hildebrand and Booth, *A Thriving Modernism*, pp. 26-31, 138-139.

<sup>50</sup> Hildebrand and Booth, *A Thriving Modernism*, pp. 138-142.

<sup>51</sup> Hildebrand and Booth, *A Thriving Modernism*, pp. 138-142.

<sup>52</sup> Hildebrand and Booth, *A Thriving Modernism*, pp. 42-48, 142-143.

<sup>53</sup> Hildebrand and Booth, *A Thriving Modernism*, p. 143.

Streissguth maintained a small private practice over his career where he worked on residential projects in addition to his teaching duties. He designed the Cotton House Remodel in Port Townsend (1956), the Helander House, Port Townsend (1956), and designed his own home in Seattle in 1958. He and Gene Zema worked together to design the current home of the University of Washington College of Architecture and Planning, Gould Hall, in 1972. Streissguth and Zema also worked on the Wells Medina Nursery buildings and grounds (1968). *See Figure 28 and 41.*

### *Gene Zema*

Gene Zema was born and raised in Sacramento Valley, CA. He holds a Bachelor of Architecture degree from the University of Washington, granted in 1950. He received his architecture license (#653) on July 10, 1951, and joined the AIA in 1951, working for a few other firms until beginning his own firm in 1953. His office was located at 200 East Boston, Seattle, where he worked until his retirement in 1976. He originally shared space in this office with A. O. Bumgardner and collaborated on larger projects with his firm. *See Figure 42.*

In 1955, Zema and Bumgardner designed one of many prototypes for residential products for the Grand Rapid Homestyle Center in Michigan, and competed with other nationally known architects. This design was similar to the several builders' concepts he worked on for the Bridle Trails Park of Bellevue.

Zema received a Seattle AIA Home of the Year award in 1955, for a house he designed for himself in Seattle. He also received awards for the Holm Residence (1956, Seattle) in 1962, and the Lupton Residence (Mercer Island) won a *Sunset/AIA* Western Home Competition Honor Award in 1961, and a Seattle AIA Honor Award the following year. *See Figures 43.*

Zema designed a dwelling for himself on Whidbey Island in 1961. In 1962 he completed work on 2401 Killarney Way SE, Bellevue and 4234 51st Avenue NE, Seattle. Zema completed another house for himself in Laurelhurst (1965), followed by 9520 SE 15th Street, Bellevue (1966), and 2222 16th Avenue E, Seattle in 1969. *See Figures 44-50.*

Zema credits design influences of Paul Hayden Kirk's work, particularly his many doctors' offices, clinics, and other medical and dental buildings.<sup>54</sup> The similarities are reflected in eight medical/dental clinics he designed and his residential work as well. Zema designed the Rice Dental Clinic (1961), the Jefferson Park Medical Clinic (1957), and the Overlake Park Clinic (1963-65).

Commercial projects included the Wells-Medina Nursery (1968, Medina, with Streissguth), and his Japanese Antique Gallery on Eastlake Avenue (1968), built to the rear of his original office in the Eastlake Neighborhood. *See Figure 51*

Zema also collaborated with Wendell Lovett and Daniel Streissguth on what is now known as More Hall Annex (1961), and with Streissguth on Gould Hall (1972), both on the University of Washington campus. *See Figures 14, 15, and 28.*

## 4.5 Other Associated Individuals

### *Robert Chittock*

Robert Chittock was the landscape architect for the building now known as More Hall Annex.

Chittock attended the University of Oregon, and received his Landscape architecture license (#86) on June 9, 1971. He was the landscape architect for what is now known as the More Hall Annex. He also designed the landscape for the Japanese Branch of the First Presbyterian Church of Seattle (1963), the rooftop deck for the Bay Vista Towers, Belltown (1982), the Seattle Garden Club Fragrance Garden (2007), the landscape for the Grace Boyd Residence, West Seattle (2008), and the Bowman Garden, Bellevue, WA (1982). *See Figure 52.*

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<sup>54</sup> Streissguth and Zema interview, January 15, 2008.

### *Gerard Torrence*

Gerard Torrence was the structural engineer for the building now known as More Hall Annex.

Gerard Torrence was born in December 1925, in Bellingham, Washington, and lived with his family in Alberta, Canada, where he spent the next eleven years. Torrence enlisted in the United States Marine Corps during World War II. After discharge from the military, he attended and graduated from the University of Washington. Upon graduation, he received a scholarship at the Massachusetts Institute of Technology, where he received a Masters degree majoring in structural engineering in 1950.<sup>55</sup>

He returned to Seattle and worked for the firm of Marshall and Barr, working primarily on reinforced concrete buildings, including grain elevators in Longview and Portland, and steel structures, including a bridge for a logging company, and other bridge-like structures. He also worked briefly for Donald Radcliffe (a structural engineer and professor at the University of Washington, retired emeritus in 1980), before beginning a teaching career at the University of Washington in 1955.<sup>56</sup>

Torrence taught structural engineering at the University from 1955 to 1988, first within the Department of Architecture, and then in the Department of Building Construction (now Building Construction Management), while continuing to practice structural engineering within the confines of a one-person firm. During his career Torrence was the structural engineer on over 120 projects, working in collaboration with many notable northwest architects, often with fellow professors at the University of Washington, including Omar Mithun, Wendell Lovett, and Daniel Streissguth. He is remembered by students as a hard task maker, but most valued his down-to-earth practicality in design solutions. Torrence considers the Nuclear Reactor Building “one of my better accomplishments.” Other significant buildings he worked on include the Music Building at Shoreline Community College, Bellevue City Hall (demolished), Bellevue Library (demolished), Tukwila City Hall, and the Renton Senior Center.<sup>57</sup>

### *Spencer Moseley*

Spencer Moseley was the collaborating artist for the building now known as More Hall Annex.

He was born in Bellingham, WA, and attended the University of Washington. Moseley taught at the university from 1951 to 1977, and was the director of the School of Art from 1967 to 1977. He was a Cubist who worked primarily in acrylics. Moseley worked on the More Hall Annex design as an artistic consultant. His historical influence was Ferdinand Leger, a French painter who interacted with Le Corbusier, the famous Swiss Modernist architect.

Moseley was also a musician, composer, and writer. In 1962, along with Hazel Koenig, and Pauline Johnson, he wrote “Crafts Design,” in 1977, he wrote “Wendell Brazeau: A Search for Form” with Millard Rogers, and in 1982, “Walter F. Isaacs: An Artist in America” with Garvais Reed.

Moseley was known as “a modern painter of superb talent, intelligence and wit, and an effective and urbane promoter of all the arts,” said fellow painter Michael Spafford. “As a student, teacher and finally director of the University of Washington’s School of Art, he had a major role in creating an era of great artistic energy in Seattle. He made an effort and a difference and I will remember him with fondness and respect.” Moseley passed away on January 28, 1998. *See Figure 53.*

### *Richard Stern and Robin Towne*

Richard Stern and Robin Towne were the mechanical engineers for the building now known as the More Hall Annex.

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<sup>55</sup> Torrence interview, June 10, 2008.

<sup>56</sup> Torrence interview, June 10, 2008.

<sup>57</sup> Torrence, interview, June 10, 2008.

Both Stern and Towne were fifty-year members of American Society of Heating, Refrigerating & Air Conditioning Engineers (ASHRAE). Stern served as president of the Puget Sound Chapter of American Society of Refrigerating Engineers (ASRE) in 1947, and president of the Puget Sound Chapter of American Society of Heating and Ventilating Engineers (ASHVE) in 1951.<sup>58</sup> Significant structures they worked on include the United Control Corporation Factory, ca. 1960, and the University Unitarian Church #2, Seattle, WA, 1958.

### *Thomas Sparling*

The electrical engineer for the building now known as the More Hall Annex was Thomas E. Sparling.

Sparling was an award winning engineer and the founding partner of Thomas E. Sparling and Associates, Electrical Engineers, predecessor firm to Sparling Electrical Engineering, Seattle, Washington. Sparling received the B.S. in Electrical Engineering from Montana State University in 1939, and worked as an electrical engineer for the Puget Sound Naval Shipyard in Seattle, Washington, during WWII.

He founded Sparling Engineering in 1947, practicing industrial and commercial power, industrial automation and control, and communications before he retired in 1984. Sparling was a registered professional engineer in five states and active in the Institute of Electrical & Electronics Engineers (IEEE) and Industry Applications Society (IAS), holding many offices including chairman of the Codes & Standards Committee (IAS). He worked on the first Hood Canal floating bridge, military facilities and the express lane gates for Interstate 5. He was involved in the National Electric Code and served as chair of the Pacific Northwest Electrical Exposition in 1976 and 1980, as well as President of the Consulting Engineers Council of Washington. Sparling was the recipient of the IEEE Achievement Award for Industrial Power Systems in 1979 and the IAS Outstanding Achievement Award in 1991, and the IEEE Richard Harold Kaufmann Award in 1997. He passed away on December 5, 2004, at the age of 87.<sup>59</sup>

### *Jentoft & Forbew*

The contractor for the building now known as the More Hall Annex was Jentoft & Forbew.

Prepared by:  
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<sup>58</sup> <http://www.pugetsoundashrae.org/history.htm>, ASRE and ASHVE merged in 1959 to form ASHRAE, accessed June 10, 2008.

<sup>59</sup> ACEC Washington Newsletter via Jim Duncan, Chairman and Chief Engineer, Sparling Inc. email correspondence, July 14, 2007.

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## APPENDIX 1

### FIGURES





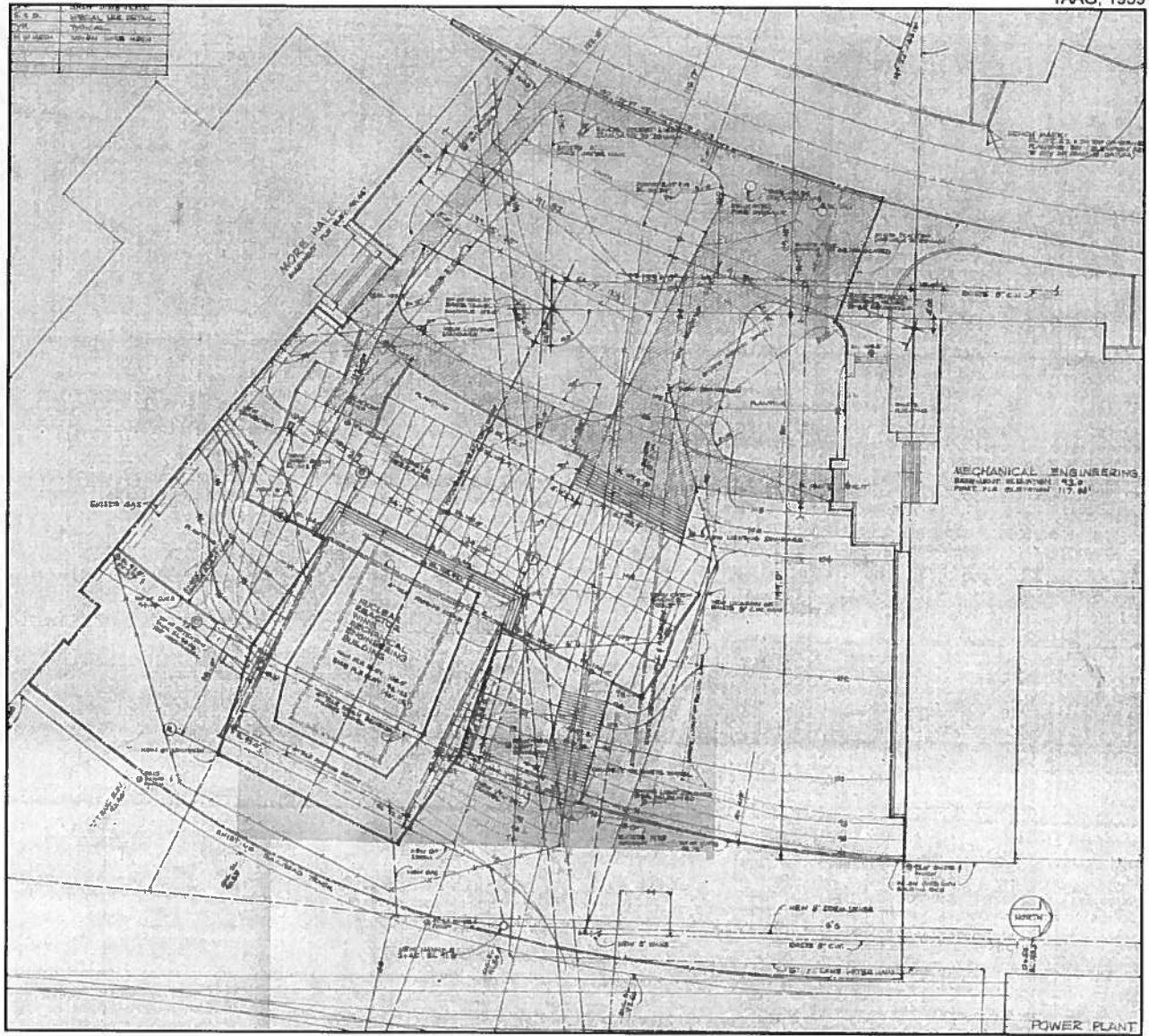


Figure 3 • Site Plan

1' = 190"





Figure 4 • North and west façades

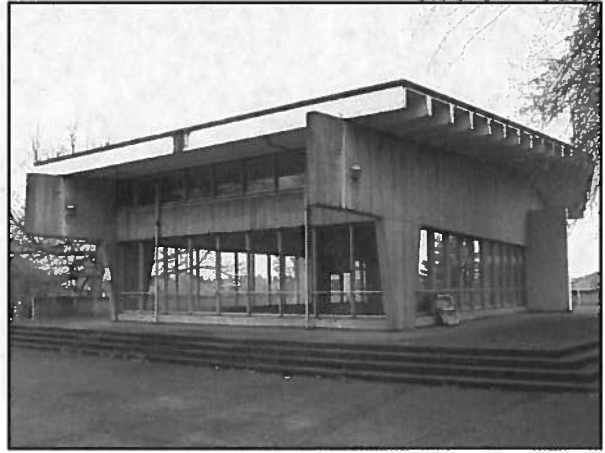


Figure 5 • West and south façades



Figure 6 • Partial east and north façades, lower level



Figure 7 • North and partial east façade



Figure 8 • East and partial south façades



Figure 9 • East and partial south façades, lower level

More Hall Annex  
Historic Resources Addendum

August 2008



Figure 10 • Viewing west through dirty shop to reactor room beyond



Figure 11 • Reactor room, viewing east from exterior



Figure 12 • Reactor room, viewing east



Figure 13 • Reactor room, viewing south



Figure 14 • View of south and east façades, 1963



Figure 15 • West and east façades, 1963

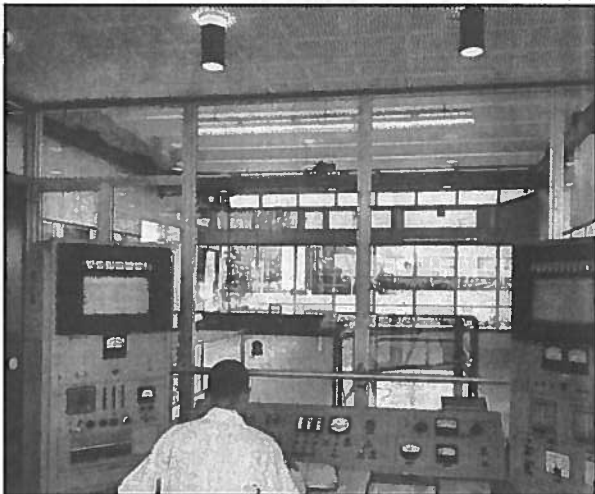


Figure 16 • University of Washington, Nuclear Reactor Building control room, viewing west

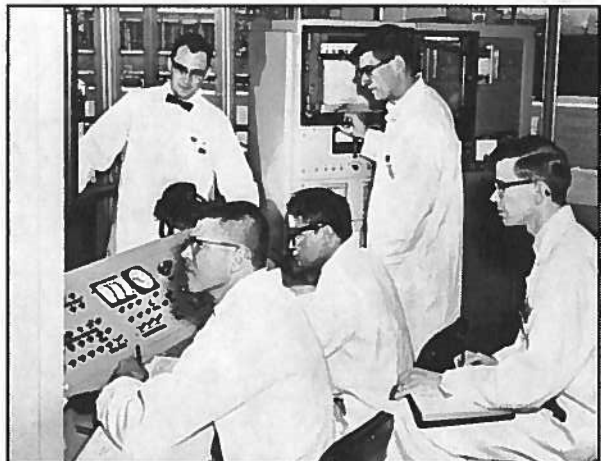


Figure 17 • University of Washington, Nuclear Reactor Building, control room

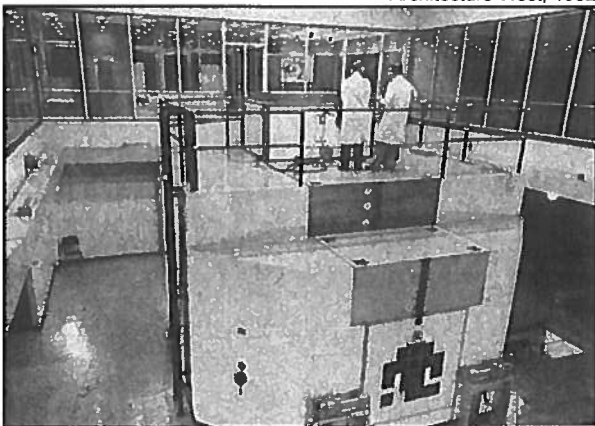


Figure 18 • University of Washington, Nuclear Reactor Building, Reactor Room, viewing west

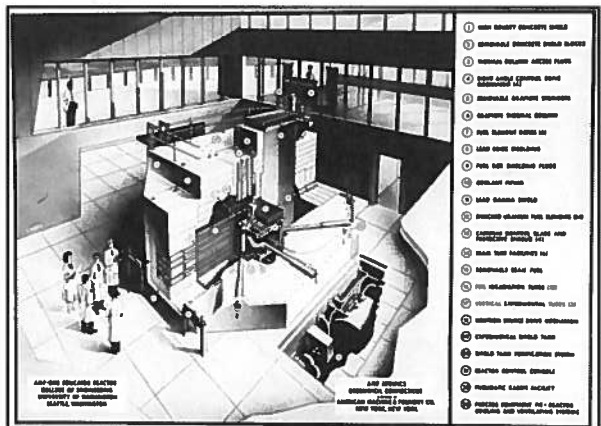


Figure 19 • Schematic of University of Washington, Nuclear Reactor Building, reactor room

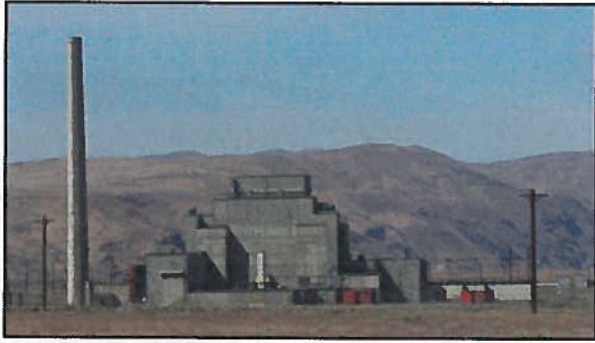


Figure 20 • Reactor B, Hanford, WA

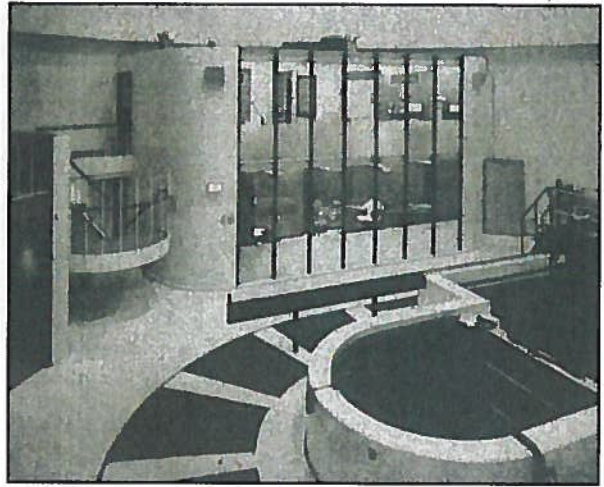


Figure 21 • Nuclear Science Teaching-Research Center, Texas A&M University, interior, Caudill, Rowlett and Scott

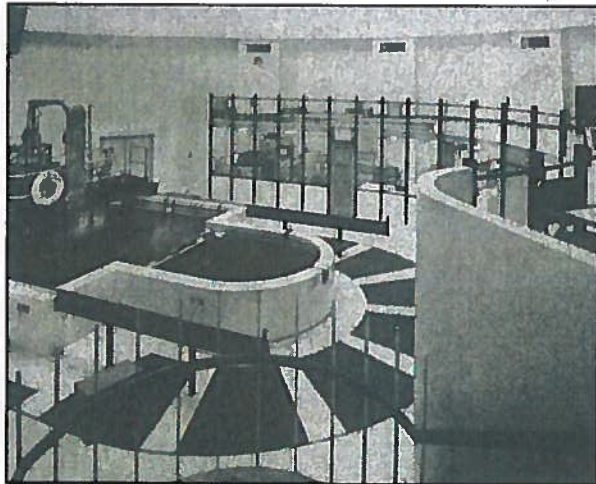


Figure 22 • Nuclear Science Teaching-Research Center, Texas A&M University, interior, Caudill, Rowlett and Scott

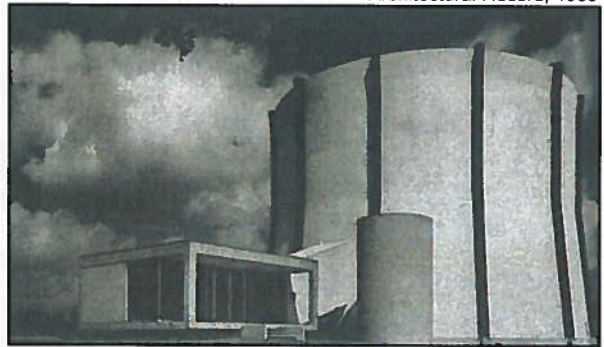


Figure 23 • Nuclear Science Teaching-Research Center, Texas A&M University, exterior, Caudill, Rowlett and Scott



Figure 24 • Geisel Library, UCSD, San Diego, William L. Pereira, 1971



Figure 25 • Boston City Hall, Kallman, McKinnell and Knowles, 1968



Figure 26 • Kane Hall, University of Washington, Walker, McGough, Foltz, Lyerla, 1971



Figure 28 • Gould Hall, University of Washington, interior court, Streissguth and Zema, 1972



Figure 27 • Gould Hall, University of Washington, Streissguth and Zema, 1972

Kidder Smith



Figure 29 • Parthenon, Athens, Greece, 447 BC

Heyer



Figure 30 • Beinecke Rare Book Library, Yale Campus, New Haven, CT, Skidmore, Owings and Merrill, 1964

Heyer



Figure 31 • Nuclear Reactor, Rehovot, Israel, Phillip Johnson, 1961

Seattle Scottish Rite



Figure 32 • Seattle Scottish Rite Temple viewing northwest from parking lot, NBBJ, 1964

Paul Thiry Collection



Figure 33 • Washington State Library, Olympia, Paul Thiry, 1959

Paul Thiry Collection, Hugh Stratford

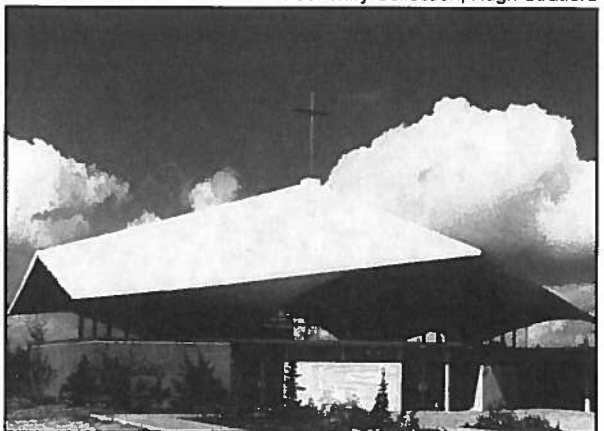


Figure 34 • Mercer Island Presbyterian Church, Paul Thiry, 1960



UW SCD, Hupy 5157-4, Art Hupy 1950



Figure 35 • Lovett Residence Hilltop #1, Seattle, Lovett, 1951

UW SCD Dearborn-Massar, DMA0927 1959



Figure 36 • Lovett Residence II, Seattle, Lovett, 1957

UW SCD, Dearborn-Massar, DMA0903 1959



Figure 37 • Giovanelli Residence, Mercer Island, Lovett, 1959

CAUP Visual Resources Collection, Lovett 1971



Figure 38 • Lovett Residence Hilltop #2, Seattle, Lovett, 1963

CAUP Visual Resources Collection, Lovett 1971



Figure 39 • Lovett Vacation House, Crane Island, Lovett, 1970

CAUP Visual Resources Collection, Hildebrand 1996

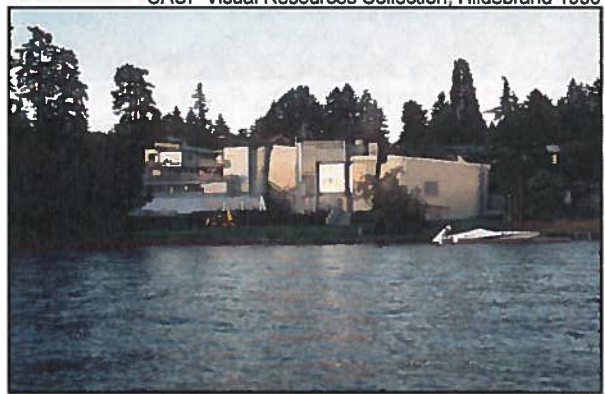


Figure 40 • Villa Simonyi, Bellevue, Lovett, 1987

## More Hall Annex Historic Resources Addendum

More Hall Annex  
Historic Resources Addendum August 2008



Figure 41 • Wells Medina Nursery, Medina, Streissguth and Zema, 1968

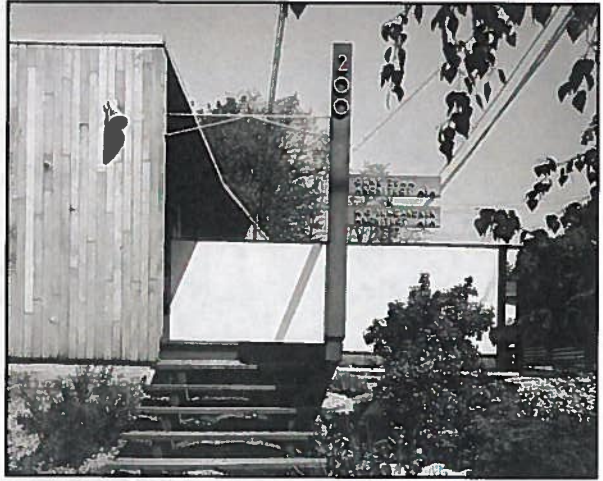


Figure 42 • Gene Zema Office, 200 E Boston Street, Zema, 1953



Figure 43 • Lupton House Living Room, Zema



Figure 44 • Gene Zema Residence, Whidbey Island, Zema, 1961



Figure 45 • Gene Zema Residence, Whidbey Island, Zema, 1961

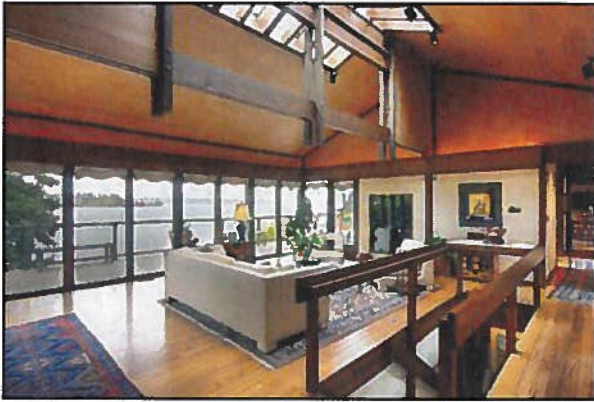


Figure 46 • Dr. and Mrs. Richard Johnson Residence, 2401 Killarney Way SE, Bellevue, Zema, 1962



Figure 47 • 4234 51st Avenue NE, Seattle, Zema, 1962



Figure 48 • Gene Zema Residence, Seattle, Zema, 1965



Figure 49 • 9520 SE 15th St, Bellevue, Zema, 1966



Figure 50 • 2222 16th Ave E, Seattle, Zema, 1969



Figure 51 • Zema Office Building and Japanese Antique Gallery, Eastlake and Boston, Seattle, Zema, 1968

# More Hall Annex Historic Resources Addendum

August 2008



Figure 52 • 7053 Beach Dr SW, Seattle, Chittock, 2007



Figure 53 • Spencer Moseley, May 1971

**APPENDIX 2**

**FIGURES – 2015 CONDITION PHOTOGRAPHS**

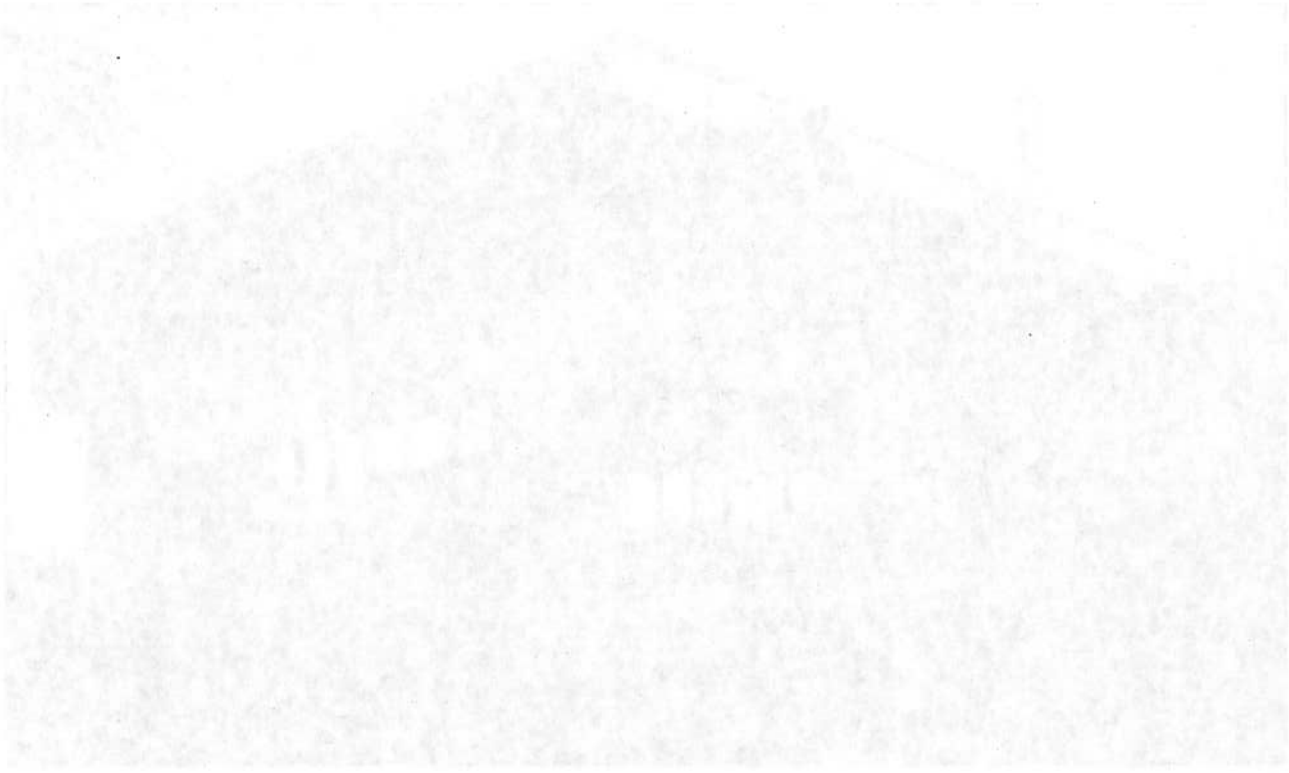
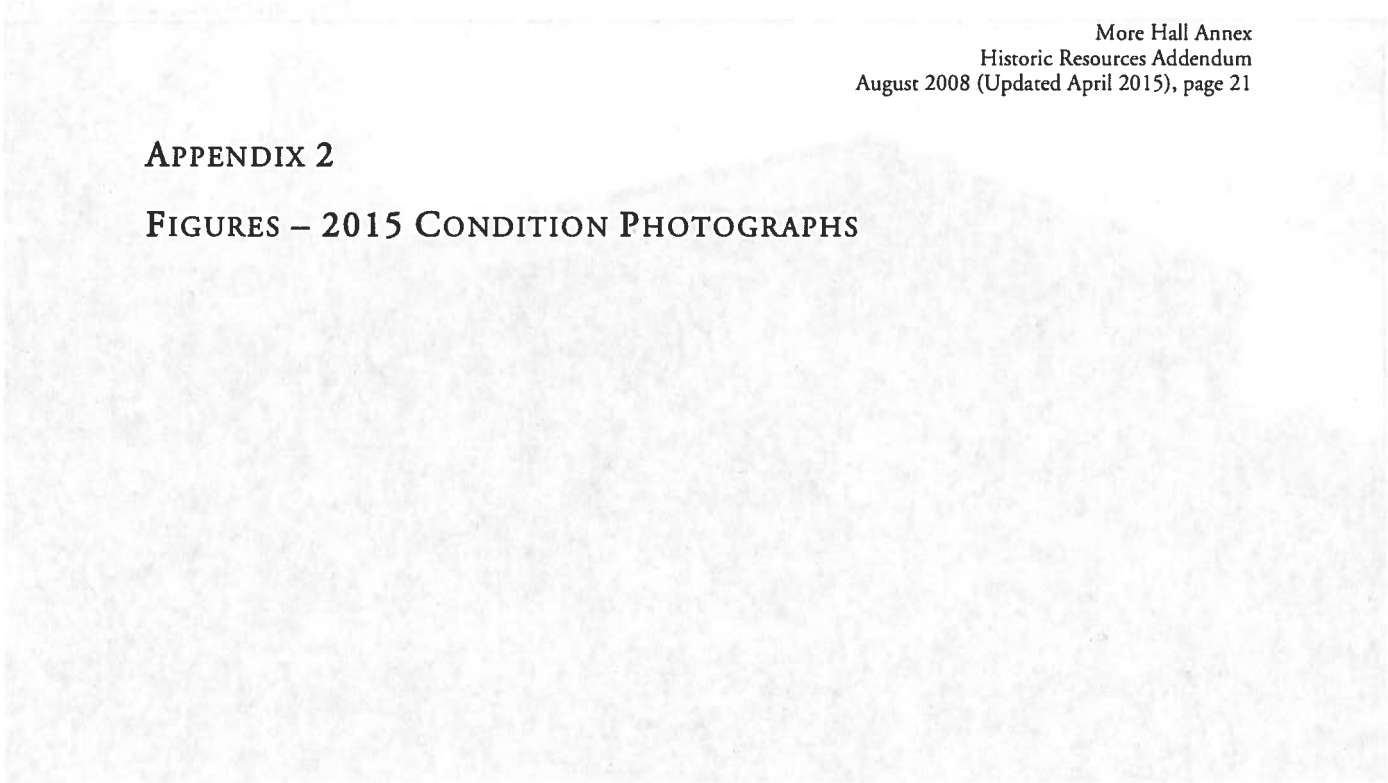




Figure 1 • More Hall Annex, northern and western façades



Figure 2 • More Hall Annex, northern and southern façades

# More Hall Annex Historic Resources Addendum

Update: April 2015



Figure 3 • More Hall Annex, eastern façade



Figure 4 • More Hall Annex, detail of western façade overhang

## More Hall Annex Historic Resources Addendum

More Hall Annex  
Historic Resources Addendum  
Update: April 2015



Figure 5 • More Hall Annex, detail of southern façade overhang



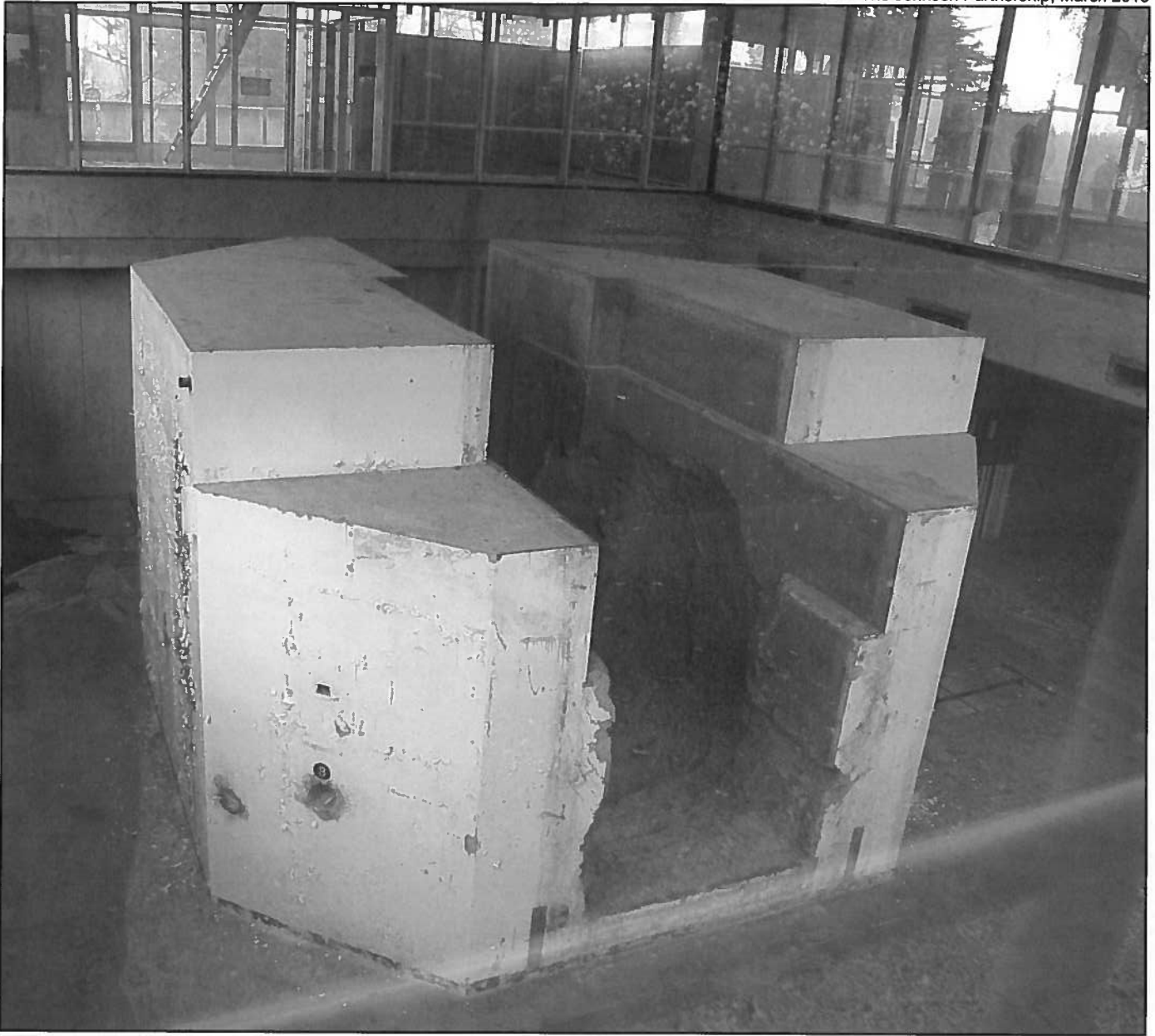


Figure 6 • More Hall Annex, viewing southeast into decommissioned reactor core

