United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section _____ Page ___

SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: 08001158 **Date Listed: 7/24/2009**

Nuclear Reactor Building — **Property Name**
King — **County**
WA — **State**

N/A
Multiple Name

This property is determined eligible for listing in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.

Signature of the Keeper **Date of Action** 7/24/09

Amended Items in Nomination:

Significance:
The *Period of Significance* is revised to read: 1961-- 1970.
[The nomination discusses the general decline of the University's nuclear programs throughout the 1970s in light of increasing skepticism about nuclear power and its safety. While the building remained operational until 1988, the *exceptional* significance of the facility really appears tied to its innovative design (1961) and the early, progressive years of the school's innovative nuclear programs.

These clarifications were confirmed with the Washington SHPO office.

DISTRIBUTION:
- **National Register property file**
- **Nominating Authority (without nomination attachment)**

NPS Form 10-900
(Oct. 1990)

OMB No. 1024-0018

RECEIVED 2280

JUN 12 2009

NAT. REGISTER OF HISTORIC PLACES
NATIONAL PARK SERVICE

United States Department of the Interior
National Park Service

08000158

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

Historic name **Nuclear Reactor Building**

Other names/site number More Hall Annex

2. Location

street & number 3785 Jefferson Road NE ___ not for publication

city or town Seattle ___ vicinity

State Washington code WA county King code 033 zip code 98195

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this _nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property X meets __ does not meet the National Register criteria. I recommend that this property be considered significant ___nationally ___ statewide X locally. (__ See continuation sheet for additional comments.)

[signature] 6-10-09
Signature of certifying official/Title Date

WASHINGTON STATE HISTORIC PRESERVATION OFFICE
State or Federal agency and bureau

In my opinion, the property __ meets ___ does not meet the National Register criteria. (__ See continuation sheet for additional comments.)

Signature of certifying official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby, certify that this property is:

✓ entered in the National Register.
__ See continuation sheet
___ determined eligible for the National Register.
___ See continuation sheet
___ determined not eligible for the National Register.
___ removed from the National Register.
___ other (explain:) ___________

Signature of the Keeper: [signature] Date of Action: 7/24/09

5. Classification

Ownership of Property
(Check as many boxes as apply)
___ private
_x_ public-local
___ public-State
___ public-Federal

Category of Property
(Check only one box
_X_ building(s)
___ district
___ site
___ structure
___ object

Number of Resources within Property
(Do not incl. previously listed resources in the count.)

Contributing	Non-Contributing	
1		buildings
		sites
		structures
		objects
1		Total

Name of related multiple property listing:
(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register

None

6. Functions or Use

Historic Functions
(Enter categories from instructions)

EDUCATION : Research Facility

Current Functions
(Enter categories from instructions)

Vacant/Not In Use

7. Description

Architectural Classification
(Enter categories from instructions)

Modern Movement

Materials
(Enter categories from instructions)

foundation Concrete
walls Concrete, Glass
roof Concrete, Build-up
other

Narrative Description
(Describe the historic and current condition of the property.) SEE CONTINUATION SHEET

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

X **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.

___ **B** Property is associated with the lives of persons significant in our past.

X **C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

___ **D** Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

Property is:

___ **A** owed by a religious institution or used for religious purposes.

___ **B** removed from its original location.

___ **C** a birthplace or grave.

___ **D** a cemetery.

___ **E** a reconstructed building, object, or structure.

___ **F** a commemorative property.

X **G** less than 50 years old or achieving significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

ARCHITECTURE

EDUCATION

Period of Significance

1961-1988

Significant Dates

1961, 1967

Significant Person
(Complete if Criterion B is marked above)

Cultural Affiliation

Architect/Builder

The Architect Artist Group (Architect)

Jentoft and Forbes (Builder)

Narrative Statement of Significance
(Explain the significance of the property.) SEE CONTINUATION SHEET

9. Major Bibliographical References

Bibliography
(Cite the books, articles, and other sources used in preparing this form.) SEE CONTINUATION SHEET

Previous documentation on file (NPS):

___ preliminary determination of individual listing (36 CFR 67) has been requested
___ previously listed in the National Register
___ previously determined eligible by the National Register
___ designated a National Historic Landmark #___
___ recorded by Historic American Buildings Survey Record#___
recorded by Historic American Engineering Record#___

Primary location of additional data:

___ State Historic Preservation Office
___ Other State agency
___ Federal agency
___ Local government
X University
___ Other

Name of repository:

10. Geographical Data

Acreage of Property Less than one acre

UTM References
(Place additional UTM References on a continuation sheet.)

	Zone	Easting	Northing		Zone	Easting	Northing
1	10	5 52 099	52 77 957	3			
2				4			

Verbal Boundary Description
(Describe the boundaries of the property.) See continuation sheet.

Boundary Justification
(Explain why the boundaries were selected.) See continuation sheet.

11. Form Prepared By

name/title Abby Terese Martin (edited by DAHP Staff - Oct 2008)

organization date May 14, 2008

street & number 515 12th Avenue East telephone (217) 721-3713

city or town Seattle state WA zip code 98102

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items
(Check with the SHPO or FPO for any additional items.)

Property Owner (Complete this item at the request of the SHPO or FPO.)

name University of Washington, Capitol Projects

street & number University Facilities BLDG, Box 352205 telephone (206) 543-5200

city or town Seattle state WA zip code 98195

Narrative Description:

The Nuclear Reactor Building in Seattle, Washington, sits within the University of Washington campus on a triangular shaped space is currently bounded by the Mechanical Engineering Building on the north, More Hall to the south, the Allen Computer Science Building and Stevens Way to the west, and Jefferson Road, a campus access road, to the east. The building is oriented on a tilted east west access and is presently vacant, one can see immediately that the building was not built for a general purpose. The building is distinct from the rest of the Engineering complex in visual character and setting; its physical appearance and materiality are unique. It is singled out by it's a surrounding plaza to the west, and the observer must approach the building by ascending four low risers. With no knowledge of the buildings purpose, one approaching the building can see that it is intended to stand apart, not to conform with its surroundings.

In the tradition of modern architecture, the Nuclear Reactor Building is expressive of the materials of which it is constructed. The defined structural elements of the building provide a frame which has been filled in with broad expanses of plate glass. The structure is precisely and vividly articulated, and every member is essential. The concrete of the main haunch beam is square and solid, while the cast-in-place beams which support the roof are tense in shape; their compacted form opens up the sides of the building for observation. Although the building's shape is animated, the window mullions and the form-work pattern of the cast concrete beams create a regular expression of the grid the building is laid out upon. The use of the glass storefront window system as a thin separation of inside and outside contrasts with the massiveness of the concrete structure. The form of the building is evocative of the forward-looking spirit of the period, with an energy in the shape that implies the power that the building was meant to contain.

Exterior

The Nuclear Reactor Building occupies the southeast corner of the space formed by the Engineering buildings, surrounded by an observation deck with a view to the southeast. Stevens Way, a campus ring-road, runs through the engineering complex. The Nuclear Reactor Building and its adjoining plaza are separated from Stevens Way by a small grassy quad. There is a pedestrian pathway called Snohomish Lane crossing through the north side of the Nuclear Reactor Building lot. The lane passes through the engineering complex toward the gym and stadium. The path descends a set of stairs next to the building, in accordance with the slope of the site. At the base of the stair, on the east façade, is where the main entrance to the Nuclear Reactor Building for students and professors is located. The rear of the building on the east side at the lower level is fitted with a loading dock, accessed by a service road which runs behind the building to the Physical Plant.

The Nuclear Reactor Building is approximately 70 feet by 76 feet on the inside, on the lower floor. The area of the lower floor of the Nuclear Reactor Building is 5,100 sq.ft. The occupiable space of the upper level overlooking the central reactor room is 645 sq.ft., but the entire upper level space including the outdoor observation deck is 7,558 sq.ft. The area of the building and the adjacent paved plaza is 15,997 sq.ft. The building is laid out on a 4 foot grid, expressed in the rhythm of the mullions between the plate glass on both the observation level and in the south facing rooms of the lower level. The reveals every 2 feet in the cast-in-place transverse beams further enforce this rhythm.

The structural components of the Nuclear Reactor Building are expressed as individual pieces, each serving a defined purpose. The roof rests upon and is shaped by two parallel irregularly shaped beams, which in turn rest upon a square-arched haunch beam. Gerard Torrence, the structural engineer for The Architect Artisan Group (TAAG), developed the shape and dimension of the structural members. To achieve the goal of maximum visibility, the structural load was placed on two large cast-in-place concrete beams, which frame the east and west sides of the building. These beams act like “L’s” that have one leg resting on the ground, and the other end resting upon the large transverse concrete haunch beam. The parallel beams must support the roof and the 3-ton beam crane necessary for moving the reactor shield. The roof was designed to be as light as possible, and is composed of precast concrete channels which span the central reactor room, a design which was quite innovative at the time. The structural design of the building was engineered to withstand the seismic activity of the Puget Sound area. The sensitive fuel for the reactor had to be kept in a stable condition, and the main haunch beam serves both as support and stabilizer against any seismic movement.[1]

The materials used in the Nuclear Reactor Building are expressive of their particular qualities. There is no excess use of material, and the details of the building are clear and consistent. Concrete as a material is expressed differently in various conditions of use throughout the building. The concrete of the powerful cast-in-place haunch beam is smooth and square, while the form and rawness of the large parallel beams that support the roof convey the kinetic energy with which concrete can be formed. In the pre-cast roof the relative lightness of the members is evident in their section and the way they simply rest on the beams. Throughout the structure of

1 Interview with Wendell Lovett

the building the connections between the members are simplified so that there can be no mistaking how the load is being carried. The dynamic shaping of the concrete members reflects the energy source contained within the building.

Interior

Inside, the reactor was housed in the central, double height space on the west side of the building, the upper half of which is almost entirely enclosed in glass. Three sides are open to the public via an outside observation deck, while the forth side (to the east) is dedicated to direct study and observation by engineering students and faculty. This observation level includes a control room, a small lecture space and a lobby. The control room and lecture room directly overlook the reactor space below, and are separated from it by a plate glass curtain wall. While the free-standing mechanical console and control panels for the reactor have long since been removed, the spaces retain their original layout, terrazzo floors, canister-type light fixtures, doors and protective railings overlooking the reactor room. Entry to the observation level is via a small entry lobby accessed from the east side of the building. At the northeast corner is a small simple concrete stairwell which leads to the basement or lower level of the building. An original pull-down metal stair at the ceiling of the lobby allows access to the roof.

The lower level floor is much larger in area, extending beneath the outside observation deck on the north and south sides of the building. Here you will find several support spaces including a counting room, an experiment area, a chemistry laboratory, a crystal spectrometry room, restrooms, electronic shop, "dirty shop", an office and classroom spaces. These rooms are all enclosed by utilitarian concrete walls, and are primarily below grade. As the hillside slopes down to the east, several spaces open to natural light via a standard curtain wall system, consisting of plate glass windows and metal insulated wall panels (okra/brown color). The glass and metal panels are articulated with aluminum mullions every 4 feet, in the same manner as the glass walls of the observation area above. These spaces retain their original metal doors, recessed can lights and wall finishes. The floors are currently concrete, and may have been covered in vinyl / asbestos tile. All mechanical fixtures and cabinetry have been removed. Inside the reactor room, the massive high density concrete shield for the reactor remains, but it has been cleaned of its accessory parts when the building was decommissioned. Via historic images, this space remained a fairly open and sparse area, containing only the necessary components and mechanical equipment for the reactor core.

Site

The plaza area immediately adjacent to the Nuclear Reactor Building is of concrete, paved in a trapezoidal pattern echoing the footprint of the building. The pattern is highlighted by sand finished concrete, outlined by exposed aggregate trim. The plaza itself was designed as an extension of the buildings observation deck, and was intended to be a further exhibition space. This paved area steps up four shallow risers to the observation deck overlooking the reactor below. The observation deck continues the trapezoidal paving pattern. Prefabricated board-formed concrete panels were used to form the railing around the edges of the observation deck. The panels are attached to the deck edge, but are not attached to each other. Reportedly there was anxiety about the panels not being strong enough, since a continuous railing does not connect them, but they have proven stable over time. The prefabricated panels and their irregular shape are typical of late modern architecture, and the use of prefabricated technology was a particular trademark of architect Wendell Lovett's.

To the north and west of the plaza area is a manicured lawn area highlighted by extensive planting areas, with some low retaining walls. Here specific plant materials, such as Rhododendrons, Mt. Fugi Flowing Cherry Trees, and Gaulteria shallon were called out in the landscaping plan. Approach to the building was via Stevens Way over a blacktop sidewalk which leads to a small descending set of concrete stairs to the north or a ramp to the south.

Condition / Integrity

The Nuclear Reactor Building maintains a high level of architectural integrity. From the exterior, no changes have been made to the building including the retention of the windows, doors, finishes, as well as the plaza space and other site characteristics. Inside, while all of the mechanical and control equipment have been removed, the original layout out of the building remains, and the flow and use of spaces is easily discernable. The reactor room itself, designed to be observable to the public from the outside observation deck, remains an open two-story space with remnants of the original reactor core attesting to its use as home to a small scale nuclear reactor. And despite the loss of the reactor core itself, the original design intent of the building continues to convey its historic association and function.

Statement of Significance:

The Nuclear Reactor Building, located on the University of Washington campus in Seattle, Washington is eligible for the National Register of Historic Places under criterion "A" for its direct connection to the broad patterns of the development of nuclear energy. More specifically, the structure, housing a small nuclear reactor, served as a teaching tool for a variety of students who learned through hands-on experience, about the daily complexities of running a nuclear reactor facility.

Additionally the Nuclear Reactor Building is historically significant under criterion "C" as a unique example of architecture of the post WWII period and represents the work of several noted Pacific Northwest architects; Wendell Lovett, Gene Zema, and Daniel Streissguth. The building demonstrates modern architecture's close relationship with science, art and technology, blending these ideas into a unified visual statement.

The period of significance for the building begins in 1961, the date the building was completed, and ends in 1988, the date when the reactor shut down. The building was one of the first, if not the first, in the nation, which was specifically designed with the intention of making the nuclear process visually accessible, and open to the public or casual observer. The designers of the University of Washington Nuclear Reactor Building rejected the conventional approach of enclosing the reactor within concrete and instead revealed it through walls of glass. The building was constructed when nuclear technology held great promise as a clean, cheap and efficient energy source. The building design and materiality reflect that optimism. As such the building also meets National Register criteria consideration "G" at the local level of significance as a property that has achieved significance within the past 50 years by expressing the post-WWII optimism for nuclear technology.

The Nuclear Reactor Building was completed to serve as the showpiece for the newly-formed Nuclear Engineering program at the University of Washington (UW). The building is a classic and concise example of modern architecture on the UW campus, a sharp contrast to the traditional brick buildings that surround it. The building was designed by The Architect Artist Group (TAAG), which included architects: Wendell Lovett, Gene Zema and Daniel Streissguth. The group was a collaboration of professionals whose goal was to achieve comprehensive design through the integration of their respective disciplines: art, architecture and engineering. TAAG was the vision of Lovett, a University of Washington professor at the time. In the late 1950s Lovett organized this group of professionals in order to obtain work on larger design projects, mainly to go after projects at the up-and-coming Seattle World's Fair. Lovett asked architects Daniel Streissguth, a fellow professor, and Gene Zema, a former student, to join him. The other members of The Architect Artist Group were structural engineer and professor of structures in the UW architecture department, Gerard Torrence, and a painter, Spencer Moseley, who was a professor of art at the University. All the members of TAAG taught courses at the University of Washington at the time, with the exception of Gene Zema, who had a private architecture practice. The Nuclear Reactor Building was the only building constructed by The Architect Artist Group, thus serving as an example of this unique collaborative partnership. In 1961, the group submitted a competition design for the proposed Toronto City Hall, but failed to win the commission.

The decision to hire The Architect Artist Group to design the Nuclear Reactor Building was not typical of University of Washington convention at the time. The regular policy of the University was to offer design projects on campus only to outside architectural firms in the state, and, as full time professors, the members of TAAG were excluded, even if they had independent outside architectural practices. Lovett had connections in the Capital Projects Office at the University, specifically Fred Mann, the University Architect. Fred Mann was aware of The Architect Artist Group's organization and broke convention to offer them the project to design the Nuclear Reactor Building. The only stipulation was that the professors had to temporarily become part-time employees.[1]

At the time of the building's design and construction, Seattle was preparing for the 1962 "Century 21" World's Fair, which was being centered around new technologies and futuristic ways of living. The function and purpose of the Nuclear Reactor Building coincided with the ideals about a better tomorrow that drove the 1962 Seattle World's Fair. Two important figures in the design of the Fair, Paul Thiry and Minoru Yamasaki, also served on the University's Design Review Commission at the time the Nuclear Reactor Building was in the design phase. Showcasing its involvement in cutting edge technology was certainly in the forefront of the minds of the University as Seattle was preparing to present itself to the world.

It was also during this time when many architects from Washington and Oregon were beginning to receive national acclaim for designing some of the finest modern buildings in the county. From 1949 to 1961, projects in Washington received 2 honor awards and 7 merit awards from the AIA. Examples of work in the State appeared in regional, national and even international publications. Yet modernism in Washington State followed the trends of other States in terms of specific design idoms.

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[1] Interview with Daniel Streissguth

The Nuclear Reactor Building is considered an early work of Brutalism. The term was coined in 1953 to describe the architectural work of a group of British architects. Brutalism in its early phase (originally called New Brutalism) was actually a design philosophy, not a style. The idea was to create an aesthetic based on the exposure of a building's components: its frame, its sheathing, and its mechanical systems (all important features of the nominated building). Quickly however the term began to be applied to buildings that utilized monumental concrete forms and bulky massing. The style represents a revolt by architects against the corporate glass curtain wall and was often seen as a quick and easy way to construct long-lasting buildings.

While the style appeared early in the Pacific Northwest, the best examples date to the late 1960s and early 1970s. The style was rarely used for residential architecture and is mainly found on institutional building such as libraries, classrooms and museums. Small-scale commercial building such as banks also utilized the style.

Brutalism brought out the best and worst in what Modern architecture had to represent. In warmer desert climates, many Brutalist buildings have often come to be regarded as works of art. However, under the damp, grey skies of the Pacific Northwest, Brutalist buildings are often described as being unfriendly, cold and dark. The roughness of the exterior concrete soaks up moisture and turns black with age.

The term Brutalism is derived from the French word for rough concrete or "*beton brut*". Brutalist structures have a heavy mass and scale. And their highly sculptural blocky shapes are often stacked together in various ways, creating an unbalanced look. Common design features include the "Russian Wedge" in which a wall plane projects outward on a slopped angle. Broad surfaces are often interrupted by deep-shadow penetrations of the buildings mass; vertical slots may contrast with broad oblong openings or tall openings with horizontal slots, while "egg-crate" effects are also much employed. The exterior treatment, as the name suggests, is usually exposed concrete, which is left rough to show the wooden formwork. However some examples of brick and stucco can be found. Fixed windows are set deep into the walls and are often small in relation to the size of the structure. Other common features include the use of "Waffle" slabs for floor and roof systems. As the name implies this cast-in-place building system utilized continuous pour of concrete with a coffered underside to reduce the weight of the slab. Such slabs were often left exposed.

Brutalist buildings on the University of Washington campus include McMahon Hall (1965); the Marine Sciences Building & Oceanography Teaching Buildings (1967-69); Schmitz Hall (1970); Kane Hall (1971); Gould Hall (1972) and Condon Hall (1973). The earliest expression of the style is the Union Avenue Parking Garage in Olympia completed in 1958. The best example in the state is most likely the multi-story Psychology Building on the Central Washington University Campus completed in 1972. The Nuclear Reactor Building, represents a solid example of the style in terms of embodying the distinctive characteristics of the period of construction, which in this case possess high artistic values.

The University of Washington's College of Engineering began offering nuclear engineering classes in 1953, and in 1958 granted its first Master's degree in Nuclear Engineering. Dr. Harold Wessman, Dean of the Engineering College at the time, served as a strong advocate for the formation of the Nuclear Engineering program and pushed for the construction of a reactor on campus. Initially the program was run through the graduate school at the College of Engineering until 1965, when it became its own department.

That same year General Electric's Graduate School of Nuclear Engineering at Richland, Washington was transferred to the University of Washington, further boasting the program.[2] Richland was the site of the Hanford project, which was established in Eastern Washington in 1942 to produce plutonium for the Manhattan Project. The Hanford site was no longer secret after World War II, and continued to produce plutonium for nuclear applications, eventually becoming a site for producing nuclear power.[3] After the transfer of the graduate program in Nuclear Engineering, the University of Washington and Hanford maintained a strong connection, exchanging educators and students throughout the next 20 years.[4]

Such programs in Nuclear Engineering were becoming common place at the university level by the late 1950s (see attached table). North Carolina State became host to the first a university–based nuclear reactor in the world in 1953, followed by Penn State in 1955. By 1968, over 75 nuclear reactors were in operation at universities across the United States. Today there are approximately 27 nuclear reactors in academic settings, down from 40 in 1987. The early 1960s were somewhat of a boom-time in terms of construction of university based teaching reactors. Between 1960 and 1965, nine reactors came on-line across the college campus. In the Pacific Northwest, Washington State and the University of Washington reactors became operational in 1961, preceded by Idaho State (1967), Oregon State (1967) and Reed College (1968).

[2] A Century of Educating Engineers, p 44

[3] Pope, The Atomic West, p 236

[4] Interview with Dean McFeron

At the University of Washington, Dr. Albert Babb became the first chair of the eight-faculty department, which was made up of engineering professors of different departments. During the 1960s, there was a joint research project with the Critical Mass Laboratory in Hanford supervised by Bob Albrecht. Between its inception in 1965 and 1992, the department granted approximately 300 graduate nuclear engineering degrees.

After WWII, the Atomic Energy Commission was created to continue atomic energy research and the development of practical applications for nuclear energy. Several academic institutions across the United States would play a key role in this effort. However, a research reactor was essential for a competitive nuclear engineering program. Their proximity to the Hanford reservation, and faculty/personnel exchange, enhanced the two state universities in Washington State to garner federal financial support for the construction of a reactor on their campus' as well as for the development of research and educational programs. Washington State University received a $110,000 grant from the Atomic Energy Commission for the construction of a nuclear reactor building, while the University of Washington was able to obtain a grant of $150,000.[5]

Washington State Universities Reactor was designed by campus architect Philip Keene and was housed in an International style concrete box far removed from campus life. In contrast, the University of Washington embraced the idea of having a reactor centrally located and exposed to public view. The design for the Nuclear Reactor Building at the University of Washington was formulated in 1959.

The site chosen for the new Nuclear Reactor Building was a prominent site in the center of the Engineering complex on the old campus, in the middle of a courtyard surrounded by larger buildings. The idea of the building, as a symbol of the University's engineering program, justified its placement on such an important site. The building was executed in the spirit of showcasing nuclear power, "*sort of a crown jewel,*" as described by architect Daniel Streissguth. As recorded in the University of Washington Training Reactor Final Hazards Summary Report to the Atomic Energy Commission, it is stated: *"the reactor building is intended to be a campus 'showpiece', since large numbers of visitors are expected, particularly during the Engineering Open House"* [p 13]. Dr. Albert Baab, the professor leading the establishment of the Nuclear Engineering Department, worked closely with TAAG and was deeply involved in the design of the building. Baab's feelings about nuclear power and its hopeful nature are remembered by architect Daniel

[5] A Century of Educating Engineers, p57

Streissguth: "*He wanted to make it a symbol of the School of Engineering, he wanted to show the world what nuclear power looked like*."[6]

As soon as The Architect Artist's Group received the commission, they began to research existing teaching reactors on other university campuses. Many major universities were installing research reactors at the time, including the University of Wisconsin, the University of Maryland, MIT, and the University of Florida (see attached list). As TAAG surveyed these examples, they found only reactors "*hidden in concrete boxes*," as Daniel Streissguth and Gene Zema later remembered. TAAG and Dr. Baab concluded that encasing a reactor of the proposed size in concrete was an unnecessary protective measure. In the reaction process, radiation is contained within the reactor itself, and if any radioactivity should escape, concrete walls cannot contain it. The practice of housing research and training reactors in concrete was psychologically based, as the concrete was perceived as a protective shield. The University of Washington Training Reactor Final Hazards Summary Report to the Atomic Energy Commission states:

"There is no credible way in which the fission products of this reactor can be made to escape, and the amount of contained fission products will be relatively small since it is limited to a maximum power of 10 kilowatts".

Additional research and questioning by TAAG and Dr. Baab determined that if the reactor were located below ground level, any potential released radiation would be absorbed by the ground. The shape and slope of the site in the engineering complex was conducive to this design. The reactor could be protected by the earth and viewed from above, with access to service and loading at the rear of the building at ground level. The main level of the building became an observation deck overlooking the testing process. By placing the reactor below the ground, the walls of the building above the reactor level could be almost entirely glass. A reactor which was housed behind glass walls was completely unprecedented.[7] The design of the building was approved by the University Architectural Commission and the Board of Regents.

The design of the form of the Nuclear Reactor Building has been largely attributed to architect Wendell Lovett. In the words of fellow TAAG member Daniel Streissguth "*the building is all Wendell*." Although all the members of The Architect Artist Group participated and contributed to the design, Wendell Lovett had the strongest ideas about how the building would be expressed.

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6 Interview with Gene Zema and Daniel Streissguth

7 Ibid.

From his boyhood, Lovett had been fascinated with technology and this is evident in the Nuclear Reactor Building. Lovett's design for the building is the physical manifestation of an opportunity to promote nuclear technology unashamedly.[8]

Wendell Harper Lovett was born in Seattle on April 2, 1922. He received his formal architectural education at the University of Washington where he received his bachelor's degree in architecture in 1947. While at the University, Lovett excelled in his studies and was awarded the AIA Student Silver Medal for excellence in design. He continued his education at Massachusetts Institute of Technology where he received his graduate degree in 1948. While there he was awarded the William R. Ware Prize.

On the job training during summer and winter breaks garnered Lovett a variety of experiences. He served as at draftsman for George Groves (summer 1941); a Carpenters helper, American Building Co. (summer 1942); served as a draftsman for Stuart & Durham (fall 1945); NBBJ (1946-47); and worked for Ralph Rapson while in Boston (spring 1948).

After graduate school Lovett accepted a job with the architectural firm of Bassetti & Morse. During this time he joined a group of architects to build a planned community (called Hilltop) east of Lake Washington. There he built his first house (1951). The project received widespread publication, from the American Arts & Architecture magazine to the French l'Architecure d'Aujourd'hui magazine and was presented a State AIA Honor Award in 1953. This was the first of many awards to come.

During this early phase of Lovett's career, he was heavily influenced by the Miesian idiom and the idea of using production components to create minimalist dwellings. Notable projects in this vein include the Wallace H. Lovett House (1954); the Gervais Reed House (1955); and the Gordon Giovanelii House (1959). Each project received numerous design awards and were featured in a variety of domestic and international publications.

With such allocates pouring in, at the young age of 32, in 1954 Lovett was offered a half-time teaching position at University of Washington. He continued working half time for Bassetti until he left Seattle on a Fulbright Scholarship as a guest critic at the Technical Institute in Stuttgart (1959-60 academic year). Before he left, the design for the Nuclear Reactor building was finished and the working drawings were almost complete.

[8] Interview with Daniel Streissguth

While in Europe, Lovett was heavily influenced by the work of Rolf Gutbrod, Fritz Leonhardt, and Ralph Erskine. He notes that he *"discovered the idea of enclosure and containment"* during this time. He would later call this idea his *"stop" and "go"* spaces and his designs began to move away from stark geometrical and industrial layouts, to anthropomorphic expressions of form.

Immediately upon his return to Seattle, Lovett, in collaboration with Seattle architect Ted Bower, was engaged in the design of a pedestrian walkway shelter system for Seattle World's Fair (1961). Other notable projects include the Geber House (1962); the Meiller House (1966); and the Studebaker House (1969).

In 1965, Lovett was appointed as a full professor at the University and continued an independent private practice on the side. Between 1972 and 1981, he designed sixteen custom houses including the Fey House (1973); the Scofield House (1976) on Mercer Island; the Larsen House (1978); the Fujita House; and the Weston House (1981).

Over a span of 40+ years many of his designs were featured in a variety of local, regional, national and international publications including Sunset; House & Garden; Architectural Record and Domus. From 1953 to 1980 over 60 articles appeared. Lovett has also won numerous honors and awards from design competitions for Progressive Architecture; to local, regional and state AIA Honor Awards, to the Seattle Times "Home of Year".

Lovett's desire to link art and architecture also led him to product design. In 1954 he created the "Flexi-Fibre" later "Bikini" Chair, which was displayed at the *International Exhibition of Modern Decorative and Industrial Arts* in Milan. In 1966 he created the "Firehood" and "Toetoaster" hearths for Condon-King Company. After going into mass production, today the hearths can be found in thousands of dwellings across the county.

In 1987 Lovett retired from teaching and began work on the Villa Simonyi, a sprawling multi-phase project in Medina. Other work during the later part of his career include the Cutler-Girdler House (1996); the Vagners-Christianson House (1999); and the Meilleur–Buren House (2001).

Lovett was elected to the AIA College of Fellows in 1978 and in 1993 was awarded the Seattle AIA Medal for distinguished lifetime achievement in architecture, design and design education. Today Lovett is retired and resides in Madrona.

A key member of the TAAG team was artist Spencer Moseley. His job (with the help of Charles Smith) was to help further in revealing the nuclear process to the observer. The Argonaut reactor within the building had a shield that was composed of large blocks of metal filled with concrete. The shield was composed of many blocks because of their combined weight. A shield of a single piece would have required substantially more structure and a much stronger beam crane to lift it. The limit of the beam crane in the Nuclear Reactor Building was 5,000 lbs, and some of the shield blocks weighed nearly as much. It was necessary to move the blocks periodically to change the fuel rods.[9] Moseley's idea was to color code the blocks in bright primary colors (red blue, yellow and indicative of different radioactive qualities), so that when the blocks were moved they would create a continuously changing visual pattern. The colors of the blocks differentiated them according to their position in the shield. In a building that was composed of concrete and glass with minimal finishing, the colored blocks of the reactor shield drew the observer's eyes directly to the reactor.[10]

Moseley (1926 -1998) was born in Bellingham and taught art at the University of Washington from 1951 to 1971 after receiving a BA and MFA from the University. He served as the director of the School of Art from 1967 to 1977. Moseley was an acclaimed artist whose paintings are included in the collections of many regional museums, including the Seattle Art Museum and the Henry Art Gallery. As a young man he studied in Paris with the legendary modernist Fernand Leger, and for the rest of his life his paintings were inspired by an interest in formal, structural abstraction, often with a cubist spin. Yet despite his lifelong passion for European modernism, Moseley was a champion of the regional art scene and new, experimental art disciplines that in the halcyon days of the '60s and '70s were emerging from craft departments at the University of Washington.

With Lovett in Europe, Gene Zema, Daniel Streissguth, Gerald Torence and landscape architect Robert Chittock completed the construction documentation over the next few months. Zema signed the architectural drawing set on November 9, 1959. Zema supervised the actual construction of the Nuclear Reactor Building, and today recalls that it was a smooth process, *"the building went up without a hitch."* A craftsman himself, Zema's care and attention to detail are recognizable in the details and articulation of materials of the building.[11]

Zema was born on September 2, 1926, and grew up on a farm in the Sacramento Valley in California. He began studies at the University of Washington in 1944. Although he initially studied Engineering, he changed his course of program to Architecture after returning to school from service in the Navy during World War II. In 1950, he completed his Bachelor of

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[9] Interview with Brian Panckow and Stan Addison

[10] Interview with Daniel Streissguth

[11] Interview with Daniel Streissguth and Gene Zema

Architecture degree at the University of Washington, with Lovett serving as one of his main professors.

After receiving his architectural license in 1951 he worked for a variety of architectural firms before opening his own practice in 1953. Located in Seattle's Eastlake neighborhood (200 East Boston), the office was a strong testament to the skills of the young designer and helped him receive many notable architectural commissions over the next thirty years. Zema shared this office with A.O. Bumgardner, and they often formed a partnership to work on larger projects. They each maintained their private residential practices during this time and the partnership lasted only a few years. As partners, the two were invited in 1955 to produce a prototypical residential design for the Grand Rapids (MI) Homestyle Center exhibit featuring nationally known architects. Their design represented a *"budget house for…the Pacific Northwest utilizing natural materials"*. In the early 1950s, Zema had designed a number of standard builder's plans for the development of Bridle Trails Park in Bellevue, WA, which were very similar to the Homestyle Center model he designed later with Bumgardner.

Zema holds the distinction of receiving the first Seattle AIA Home of the Year award in 1955 for his own dwelling completed in 1954 (16040 35th NE, Sheridan Heights). Other award-winning homes were the Holm residence in Richmond Beach (built 1956, AIA honor award 1962), and the Lupton residence (1961) on Mercer Island, which was awarded both a Home of the Year award in 1961 and an Honor Award in 1962. Other notable residential buildings in and around Seattle included the Stephen House (1970) and his own home in Laurelhurst (1965).

Zema's residential and non-residential work was heavily influenced by the work of Paul Hayden Kirk. He especially drew direct inspiration from Kirk's "how-to" book about clinic design (Doctors' Offices and Clinics, 1955) for the eight medical and/or dental clinics he designed. These included the Jefferson Park Medical Clinic (1957) on Beacon Hill, the Rice Dental Clinic (1961) in north Seattle, and the Overlake Park Clinic (1963-65) in Bellevue.

Other non-residential projects also include the Wells-Medina Nursery (1968) and Gould Hall at the University of Washington (with Dan Streissguth, 1972). In 1968 Zema opened a Japanese antiquities gallery in his office, which remained in operation through the 1990s (under different ownership). Zema retired from practice in 1976 and built a third home for his family on Whidbey Island in 1983, where he currently resides.

Daniel Streissguth graduated from the University of Washington in 1947 and received a graduate degree from MIT in 1949. He was licensed by the State of Washington (#648) on July 10, 1951. Upon graduation, he taught at Washington University in St. Louis, Missouri (1953-55). In 1955 he began teaching at the University of Washington, and continued to teach beginning level design courses to undergraduate and graduate students until his retirement in 1993. During his tenure he served two-four-year terms as chair of the Architecture Department, and is primarily know for his excellence in teaching design.

Streissguth maintained a small private practice over his career where he worked on residential projects in addition to his teaching duties. Projects include the Cotton House Remodel in Port Townsend (1956), the Helander House also in Port Townsend (1956), and his own home in Seattle (1958). He joined fellow architect Gene Zema to design the current home of the University of Washington College of Architecture & Planning (Gould Hall) in 1972. He also worked with Zema on the Wells Medina Nursery building and grounds (1968).

The contractors for the Nuclear Reactor Building were Jentoft & Forbes Contractors. Nothing is known of their other construction projects. Landscape architect Robert W. Chittock was a University of Oregon graduate and received his formal landscape architectural license (#86) on June 9, 1971. Chittock began his practice in 1957 and his practice continues today. Projects include Japanese Branch First Presbyterian Church of Seattle (1963), WSU Agricultural Science Building (1969), a roof top deck for Bay Vista Towers (1982); the Seattle Garden Club Fragrance Garden (2007); landscape for the Grace Boyd House (2008) and the Bowman Garden (1982) in Bellevue. Over the years he has been a regular contributor to Sunset Magazine and his work has been featured in several publications including: Practical Guide to Home Landscaping (1972); Sunset Ideas for Landscaping (1972); Landscape for Western Living (1968); and How to Build Fences and Gates (1971).

When Lovett returned to Seattle in 1961 he was pleased with the result of TAAG's work at the Nuclear Reactor Building. With his absence, however the partnership dissolved and each member moved back into private practice.[12]

The Reactor Building was dedicated in 1961, the centennial year of the University of Washington, just before the 1962 Seattle World's Fair. Lovett recalls, when the building was completed, there were some reservations about its appearance. The University president at the time, Charles Odegaard, asked the team after the building was completed, if it was finished and if they were going to paint it. Painting the building was not TAAG's intention, and countered the raw expression of the material in the building. In the end, the concrete haunch beam and the pre-cast roof channels were painted white to reconcile the president.

12 Interview with Wendell Lovett

However overall, the Nuclear Reactor Building was recognized for its innovative design in a variety of regional, national and international publications such as: Architecture West, Arts and Architecture, Architectural Record, Progressive Architecture, Pacific Architect Builder and L'Architecture d'Ajourd'hui. These articles identified the building as the *"natural focus for the engineering building group"* (*Architecture West*) and describe the nature and materiality of the building as appropriate for the *"dynamic energy source"* contained within (*Arts and Architecture*).

Within the College of Engineering itself, the construction of the Nuclear Reactor Building was greatly celebrated. Dean McFeron, professor in the Mechanical Engineering department at the University of Washington who came to the Seattle in the 1950s to help establish the Nuclear Engineering Program, fondly remembers when the Nuclear Reactor Building began to be used. Since the building was constructed at the same time as the grounds and attractions for the Seattle World Expo, the Engineering Department held a public "Open House" to show off its new building. Professor McFeron recalls that someone had the idea to make a "mini monorail" with a model train and run it through the reactor's portholes. The little train was encased in lead for protection, but made the reactor go a little haywire because reactors do not react well to sudden change. The "mini monorail" was a public success, and many people were watching from the observation deck, "ten people deep".[13]

The reactor reached critical and sustained fission in April 1961 and began operation at 10 kw. The Nuclear Reactor Building was used for testing and teaching consistently throughout the 1960s, and in 1967 the reactor's power production was raised from 10 kw to 100 kw. The only significant accident in the history of the Nuclear Reactor Building occurred in 1972. That year a plutonium foil failed and 42 mg of plutonium dust was spread around the reactor room. The spill was cleaned up, and the floor was painted over and composition tiles laid to protect from contamination. The cleanup was successful, and the building continued to be used as usual. (When the building was decommissioned later, the tiles were removed). The Nuclear Reactor Building underwent safety testing by the Nuclear Regulatory Commission yearly as long as the reactor was in place.[14]

The applications of the nuclear reactor at the University of Washington went beyond the research and experimentation within the Nuclear Engineering department. The reactor's location on campus was convenient for producing short-life isotopes for the University's Hospital, which

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[13] Interview with Dean McFeron
[14] Interview with Brian Panckow

were used for some medical treatments. The reactor was also used for testing for Cystic Fibrosis in infants, which could be diagnosed by the radioactivity levels of the child's fingernails.[15]

In the 1970s there was a general decline in the prosperity of the Nuclear Engineering Department. Both enrollment and funding numbers receded. This decline was due to a combination of skepticism about nuclear power, the energy crisis, environmental concerns, the Vietnam War and the economic recession. Throughout the 1970's, nuclear power in the United States faced growing resistance and gained mostly negative attention due to its expense and safety concerns. In the Pacific Northwest, the issues were largely economic. The Washington Public Power Supply System [WPPSS] had proposed a plan to build five reactors in Washington State, but the project fizzled under political and economic scrutiny. Over a period of two decades, only one power plant was completed. The economic consequences of this venture induced resistance from the public. There were protests against the WPPSS and a few protests against nuclear power itself.[16] In March 1979 the Three Mile Island accident occurred near Harrisburg, Pennsylvania, which solidified a fear and aversion to nuclear power across the nation.

The general dissent against nuclear power brought with it a lack of employment. Many graduates of the Universities Nuclear Engineering program in the 1970s were forced overseas to find work. Brian Panckow, who operated the reactor in its later years of operation and was involved in the decommissioning of the building, recalled that in the late 1970s when he began working in the building, the program was well into decline and research was limited. The Nuclear Reactor Building, less than two decades old, became burdened with the negative attitudes that have kept it trapped in the past. In 1982 there were severe budget restrictions at the University of Washington, and many programs were cut or insufficiently funded. Limited research continued in the Reactor Building on fusion, passively safe nuclear concepts, and nuclear waste management. There was some funding for research from the Department of Energy. In the late 1980s the reactor was used less for teaching and research and more for infrequent testing for a few commercial companies, mostly for medical applications. In 1988 the reactor ceased to be used. From October 1988 to February 1990 the fuel rods were removed to the Hanford site in eastern Washington. In the course of the reactor's operation 304,443 kw hours of thermal energy was produced.[17]

[15] Interview with Dean McFeron

[16] Pope, The Atomic West, p 236

[17] University of Washington Nuclear Reactor Laboratory Decommissioning Information

In 1992 the Nuclear Engineering program at the University of Washington officially disbanded, due to lack of student enrollment and interest. In 1994 the University's reactor license was converted from operation to possession only. In 1995 the Nuclear Regulatory Commission approved the decommissioning plan proposed by the University, but in 1999 the decommissioning process was put on hold due to lack of funding. The decommissioning plan was reactivated in October 2003. In December 2006 the University requested a termination of its Facility Operating License for the research reactor. On May 21, 2007, the Nuclear Regulatory Commission issued its inspection report (50-139 / 2006-204) declaring the building decommissioned and certified clean for reoccupation. Currently the University plans to demolish the building in the summer 2008.[18]

Although the Nuclear Reactor Building has been dormant for the past two decades, it remains in good condition. The structural elements of the building are sound. There are a few visual defects from water stains, and some leaks from cracks in the observation deck. Inside the building, most of the finishes have been stripped in the process of decommissioning. The floor tiles have been removed and paint from the walls of the reactor room was removed as well. All the original scientific equipment has been removed. Although the reactor itself has been removed, the concrete casing for the reactor still stands in the center of the reactor room. An observer today, seeing the remnants of the concrete casing, can still grasp the building's original intention.

In the tradition of modern Brutalist architecture, the Nuclear Reactor Building is an expressive of the materials of which it is constructed. The defined structural elements of the building provide space for large expanses of glass curtain wall. The concrete of the main haunch beam is square and solid, while the cast-in-place beams which support the roof are tense in shape as they open up the space for observation. Although the building's shape is animated, the window mullions and the form-work pattern of the cast concrete beams create a regular expression of the grid the building is laid out upon. The use of the glass storefront window system with regular aluminum mullions as a thin separation of inside and outside contrasts the massiveness of the concrete structure. The structure is precisely and vividly articulated, and every member is essential. The form of the building is evocative of the forward-looking spirit of the time, with an energy in the shape that implies the power that the building was meant to contain.

[18] Ibid

The Nuclear Reactor Building represents a matchless aspect of the work of three significant Modern architects of the Pacific Northwest, who were part of a short-lived but progressive collaboration: The Architect Artist Group. For The Architect Artist Group, the Nuclear Reactor Building is a result of their combined talents, with significant contributions from structural engineer Gerard Torrence and artist Spencer Moseley. For all parties the Nuclear Reactor Building was a unique project in their careers. Architect Wendell Lovett, the lead designer of the project and organizer of TAAG, was internationally known for his work, and has been elected a Fellow of the American Institute of Architects. Over the course of his career he designed primarily residences, some furnishings, but the Nuclear Reactor Building is his only institutional project. Such work offers an insight into what might have been if the group were to have maintained a long term partnership. Such collaborations between architect and artist were part of the main tenants of modernism. Architects Gene Zema and Daniel Streissguth, who also designed many buildings in the northwest, went on to design some commercial and institutional building including designing together Gould Hall on the University of Washington campus in 1972.

All three of the architects of the Nuclear Reactor Building are still living, but have not practiced for several years. When interviewed regarding the building and The Architect Artist Group, they recalled the experience as unique in their careers. They felt that the Nuclear Reactor Building itself had potential for re-use on the University campus, and was a true expression of the excitement of new technology and research of the time period.

The Nuclear Reactor Building is exemplary of modern architecture's close relationship with science and technology. The building's form and character is driven by technology and its advancement, looking only to the future. In an era of un-precedented change, the Nuclear Reactor Building expresses a need to advance and eliminate boundaries. One can see this clearly while observing the building, set apart and standing out from the conventional academic buildings around it. The building unashamedly promotes technology and communicates it publicly.

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Interview with Brian Panckow, Radiation Safety Officer at the University of Washington, by Abby Martin, November 2007

Interview with Daniel Streissguth, Architect, by Abby Martin. January 12, 2008.

Interview with Daniel Streissguth, Architect, and Gene Zema, Architect, by Abby Martin. January 15 2008.

Interview with Wendell Lovett, Architect, by Abby Martin. January 17 2008.

Interview with Brian Panckow and Stan Addison, Radiation Safety Officers at the University of Washington, by Abby Martin, January 24 2008.

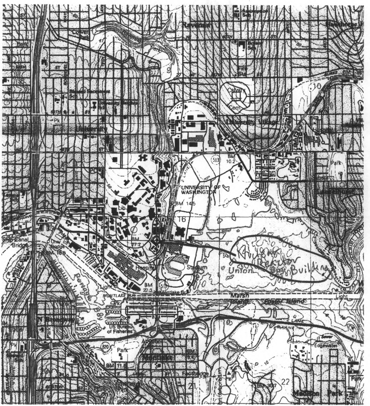
Interview with Dean McFeron, Professor Emeritus of Mechanical Engineering, University of Washington, by Abby Martin. January 31 2008.

Verbal Boundary Description

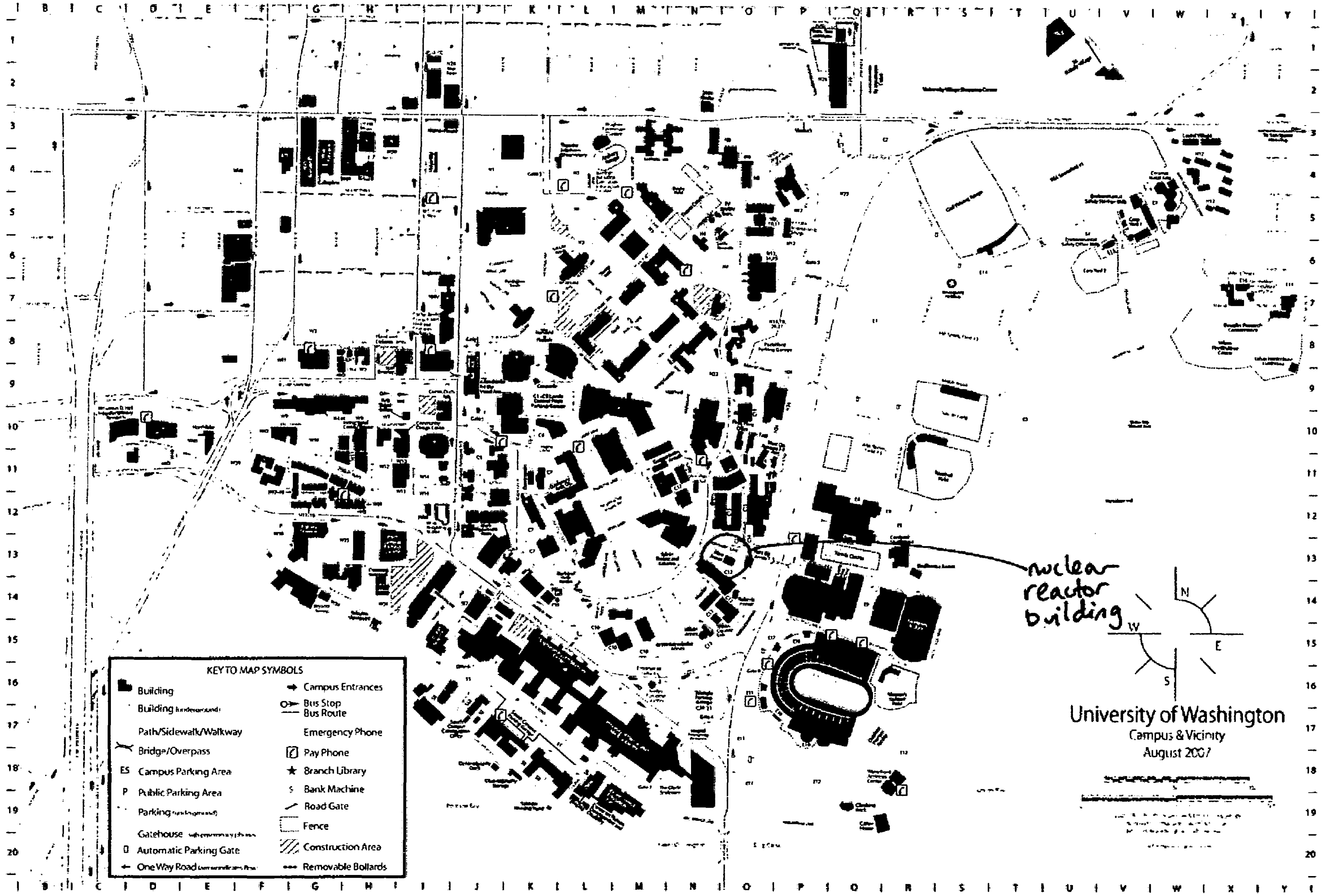
The Nuclear Reactor Building and its adjacent plaza are sited within the central open space of the Engineering Complex at the University of Washington campus in Seattle. The triangular shaped space is currently bounded by the Mechanical Engineering Building on the north, More Hall to the south, the Allen Computer Science Building and Stevens Way to the west, and Jefferson Road, a campus access road, to the east. Bisecting the site on a east/west access is a pedestrian lane, called, Snohomish Lane.

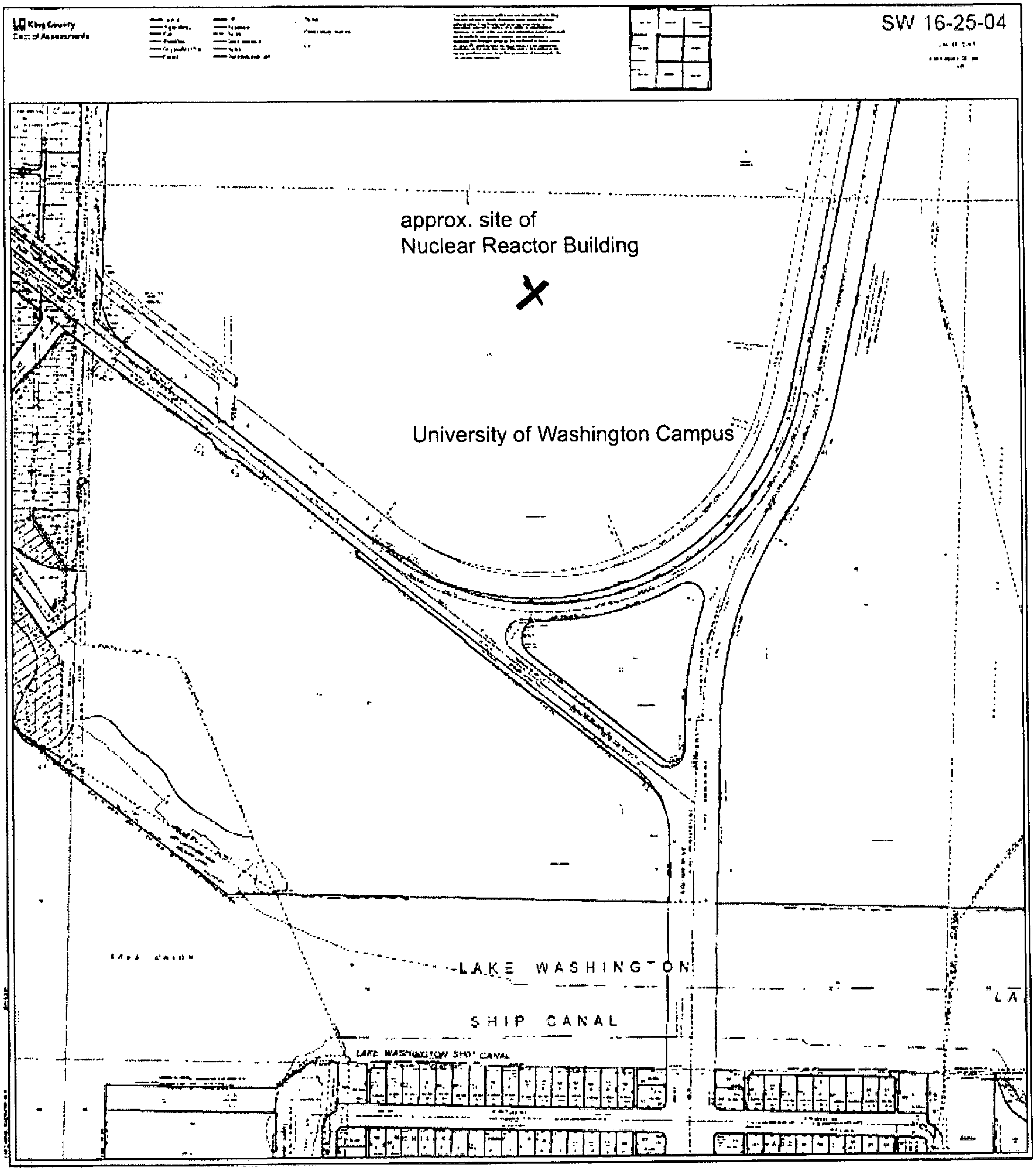
Boundary Justification

The boundaries of the nominated property include the structure itself and the adjacent plaza facing Stevens way as well as the east side walkway, stairs and path areas, all part of the original landscape design.

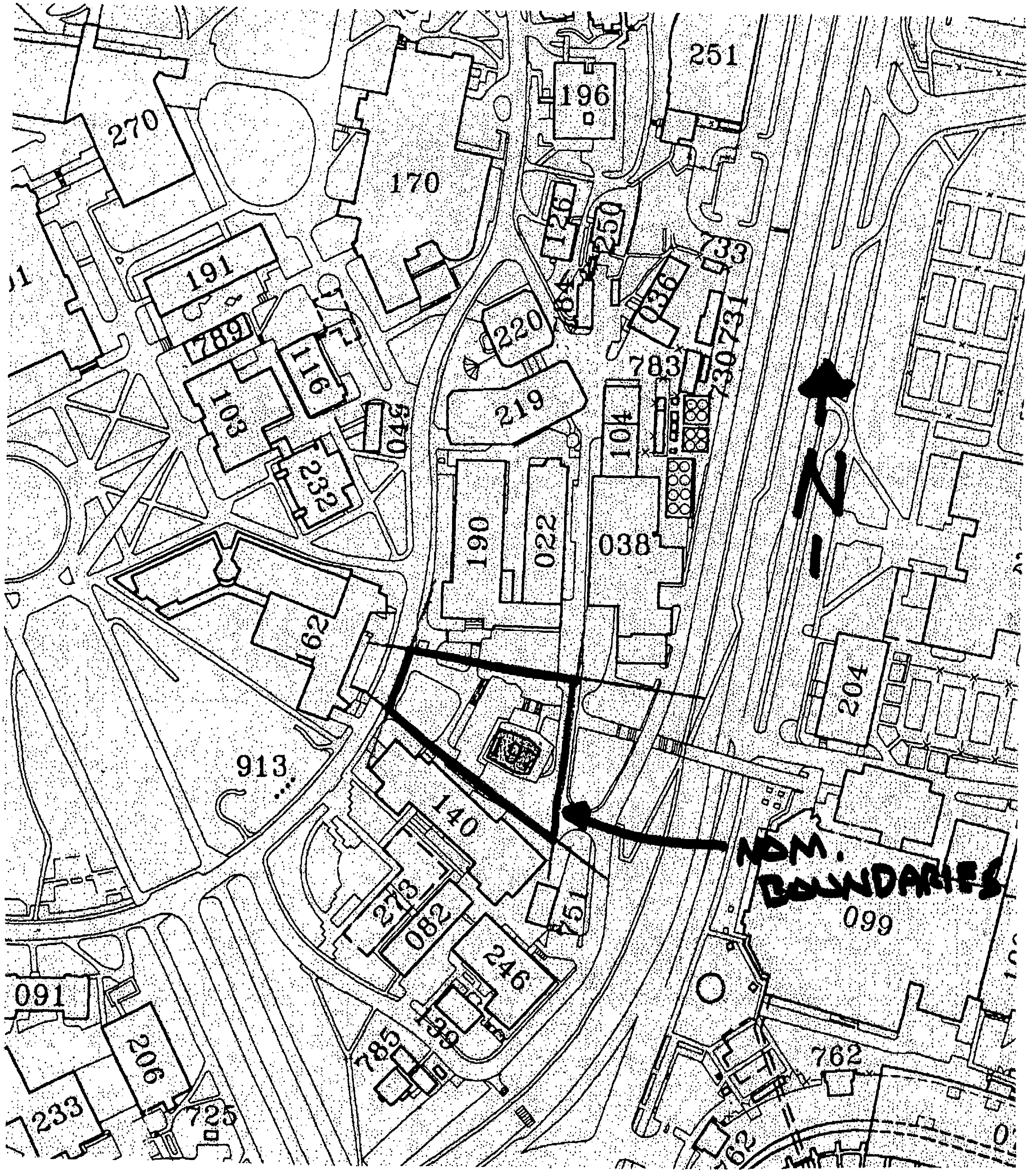


Ravenna
Calvary
Cem
University Village
UNIVERSITY OF WASHINGTON
BM 14.5
Lib
Stadium
Hospital
Union Bay
Marsh
Foster Island
Light
Ship Canal Bridge
Univ Bridge
US Bureau of Fisheries
Park
Edgewater
Footbridge
Madison Park


nuclear reactor building
N
E
S
W
University of Washington
Campus & Vicinity
August 2007
KEY TO MAP SYMBOLS
Building
Building
Path/Sidewalk/Walkway
Bridge/Overpass
ES Campus Parking Area
P Public Parking Area
Parking
Gatehouse
Automatic Parking Gate
One Way Road
Campus Entrances
Bus Stop
Bus Route
Emergency Phone
Pay Phone
Branch Library
Bank Machine
Road Gate
Fence
Construction Area
Removable Bollards

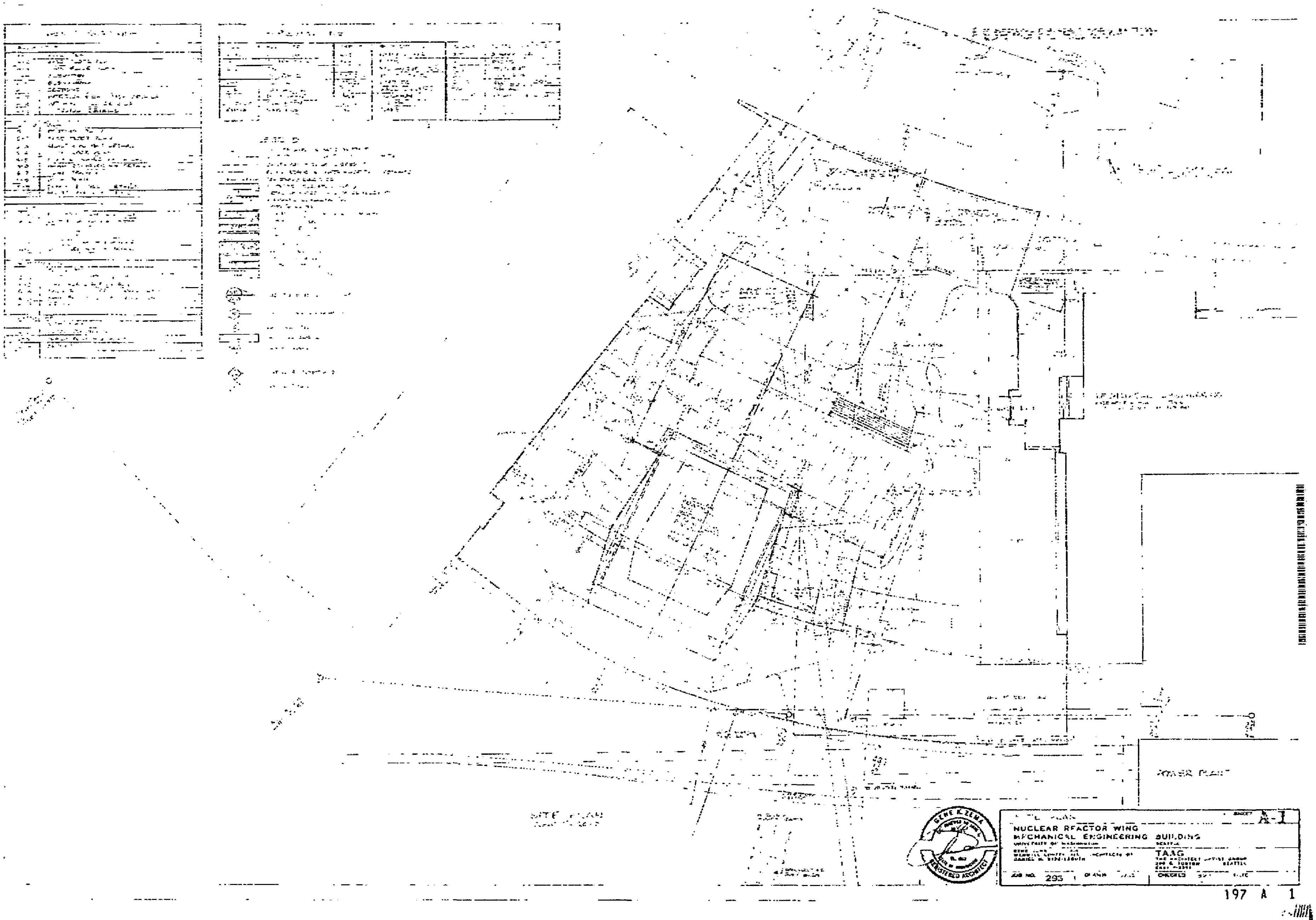


King County Assessor's Map of site, not to scale



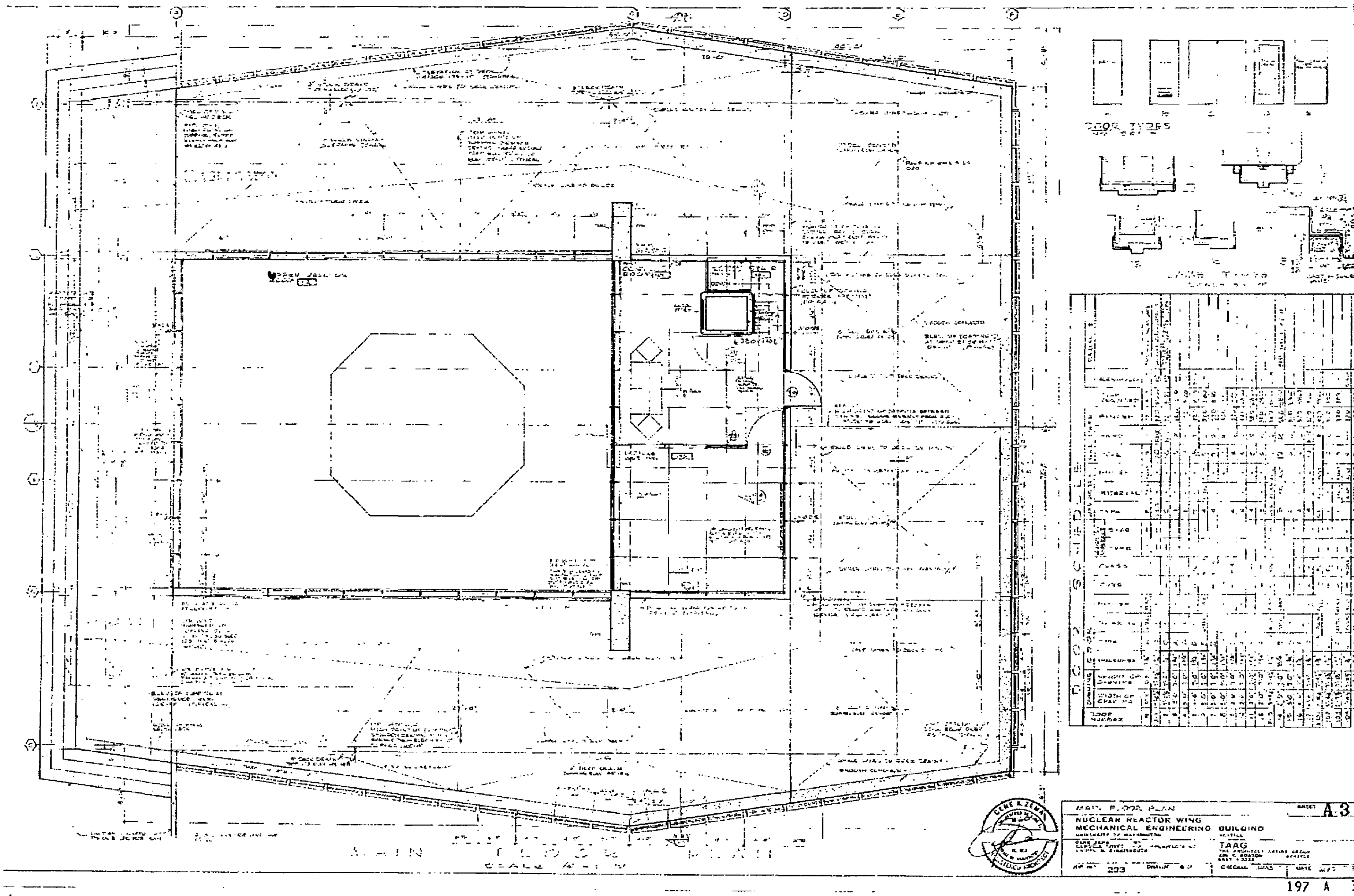
NUCLEAR
REACTOR
BUILDING

SEATTLE, WA

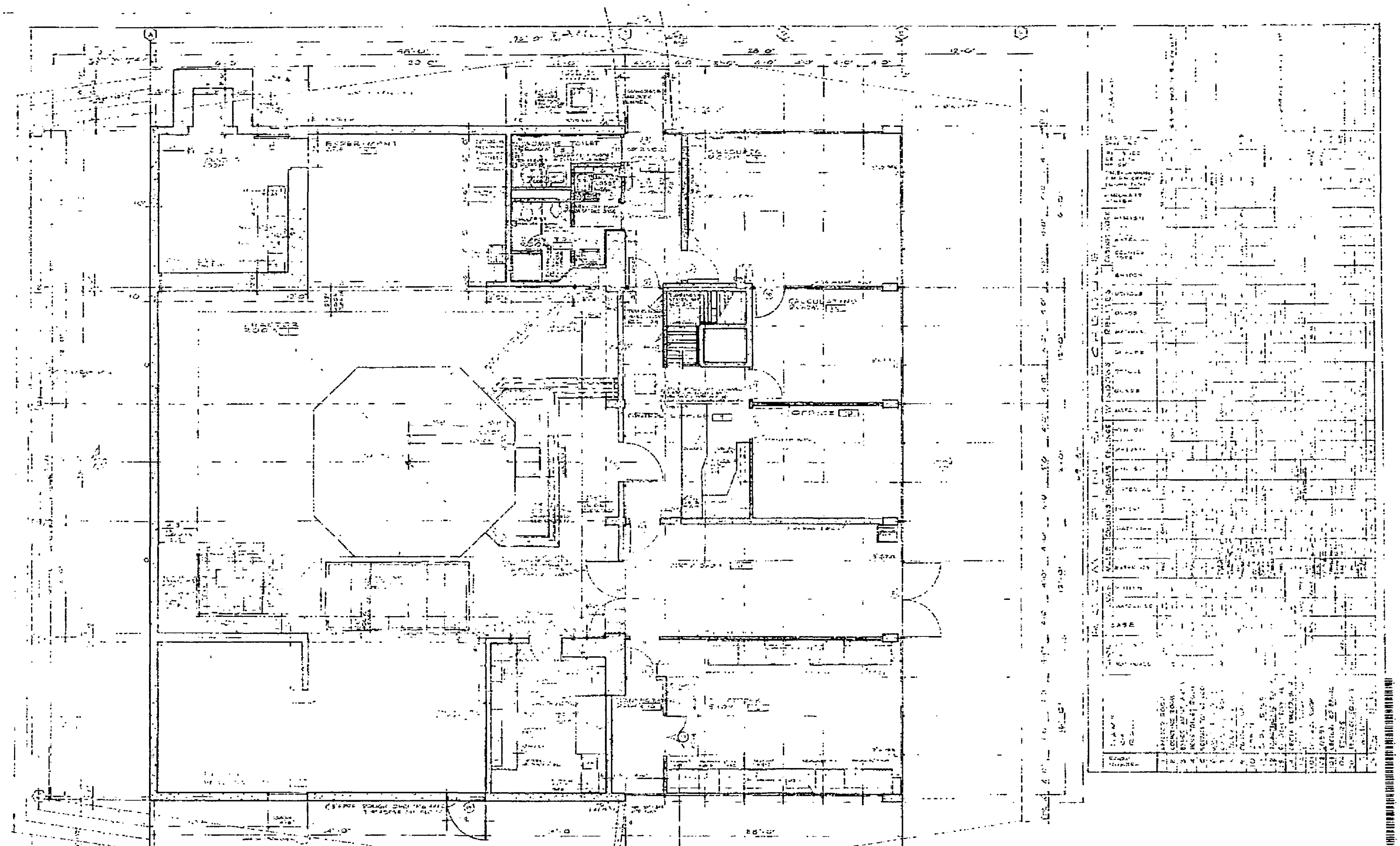


POWER PLANT
SITE PLAN
NUCLEAR REACTOR WING
MECHANICAL ENGINEERING BUILDING
TAAG
A-1
293
GENE K. ZEMA
REGISTERED ARCHITECT
197 A 1

Not to scale


DOOR TYPES
DOOR SCHEDULE
MAIN FLOOR PLAN
SHEET A-3
NUCLEAR REACTOR WING
MECHANICAL ENGINEERING BUILDING
TAAG
203
197 A 3

Not to scale



BASE FLOOR PLAN | SHEET A-2

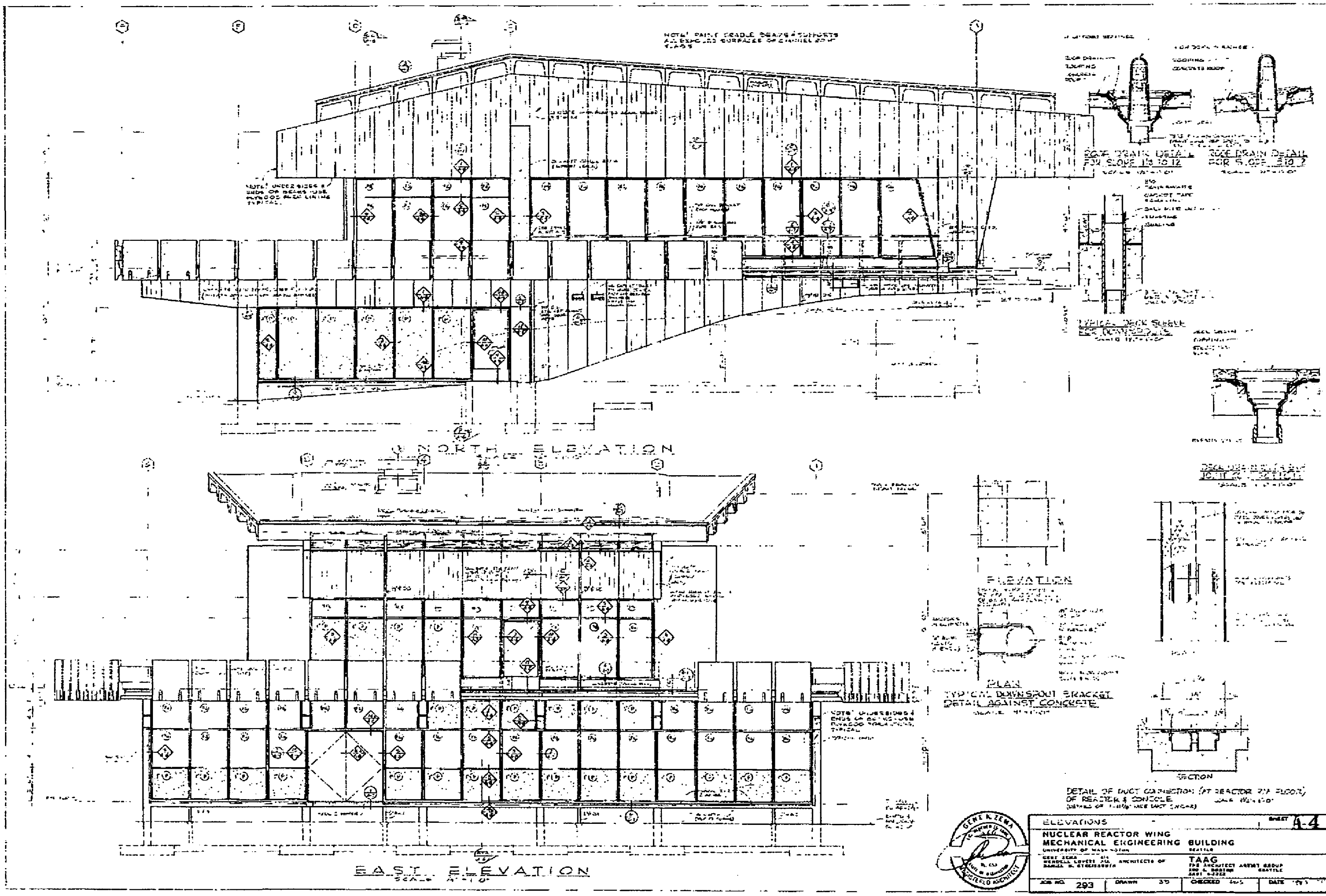
NUCLEAR REACTOR WING
MECHANICAL ENGINEERING BUILDING
UNIVERSITY OF WASHINGTON — SEATTLE

TAAG — THE ARCHITECT ARTIST GROUP — SEATTLE

JOB NO. 293 | DRAWN | CHECKED | DATE

197 A 2

Not to scale



197 A 4

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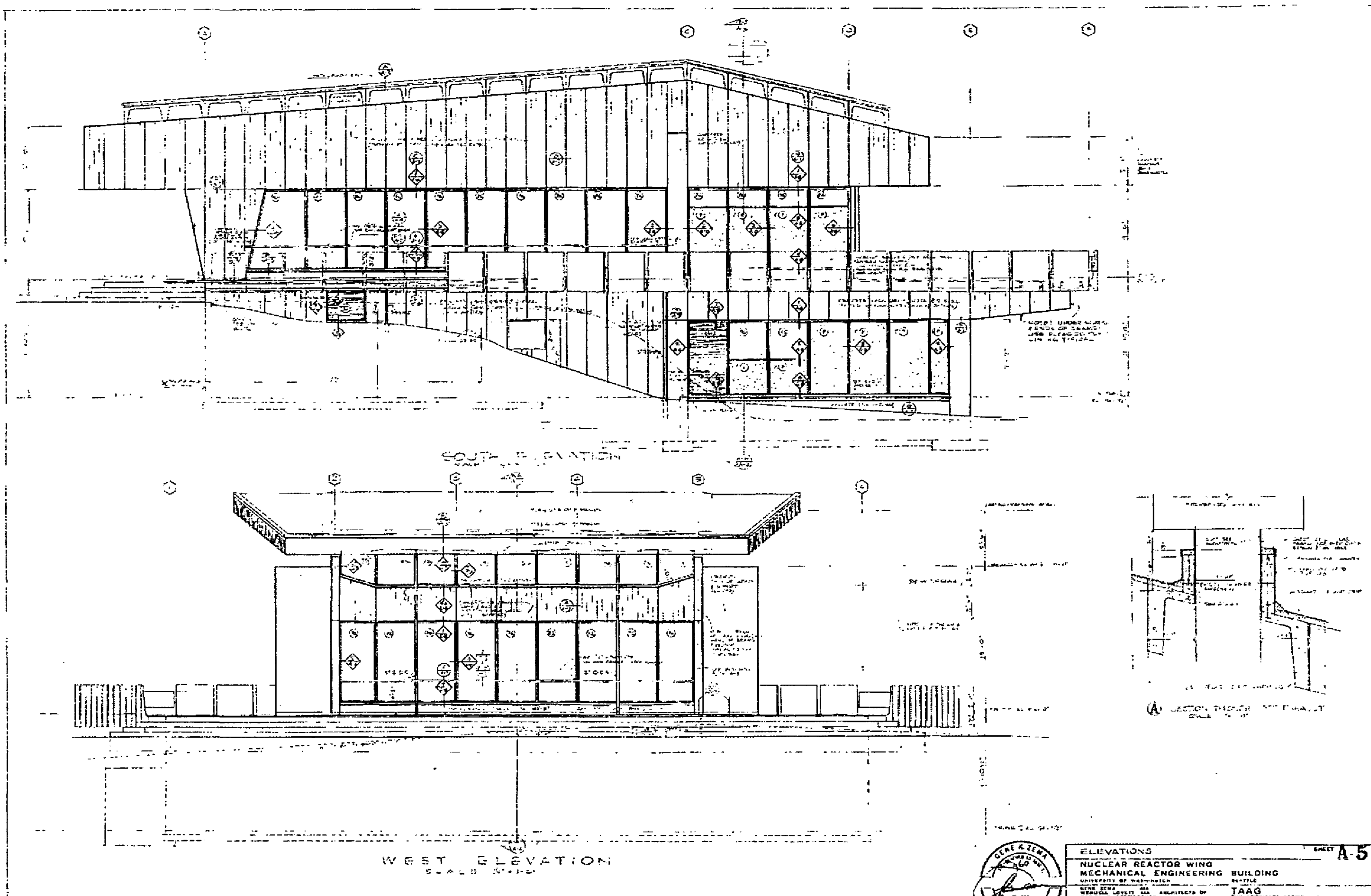


ELEVATIONS

SHEET A-5

NUCLEAR REACTOR WING
MECHANICAL ENGINEERING BUILDING

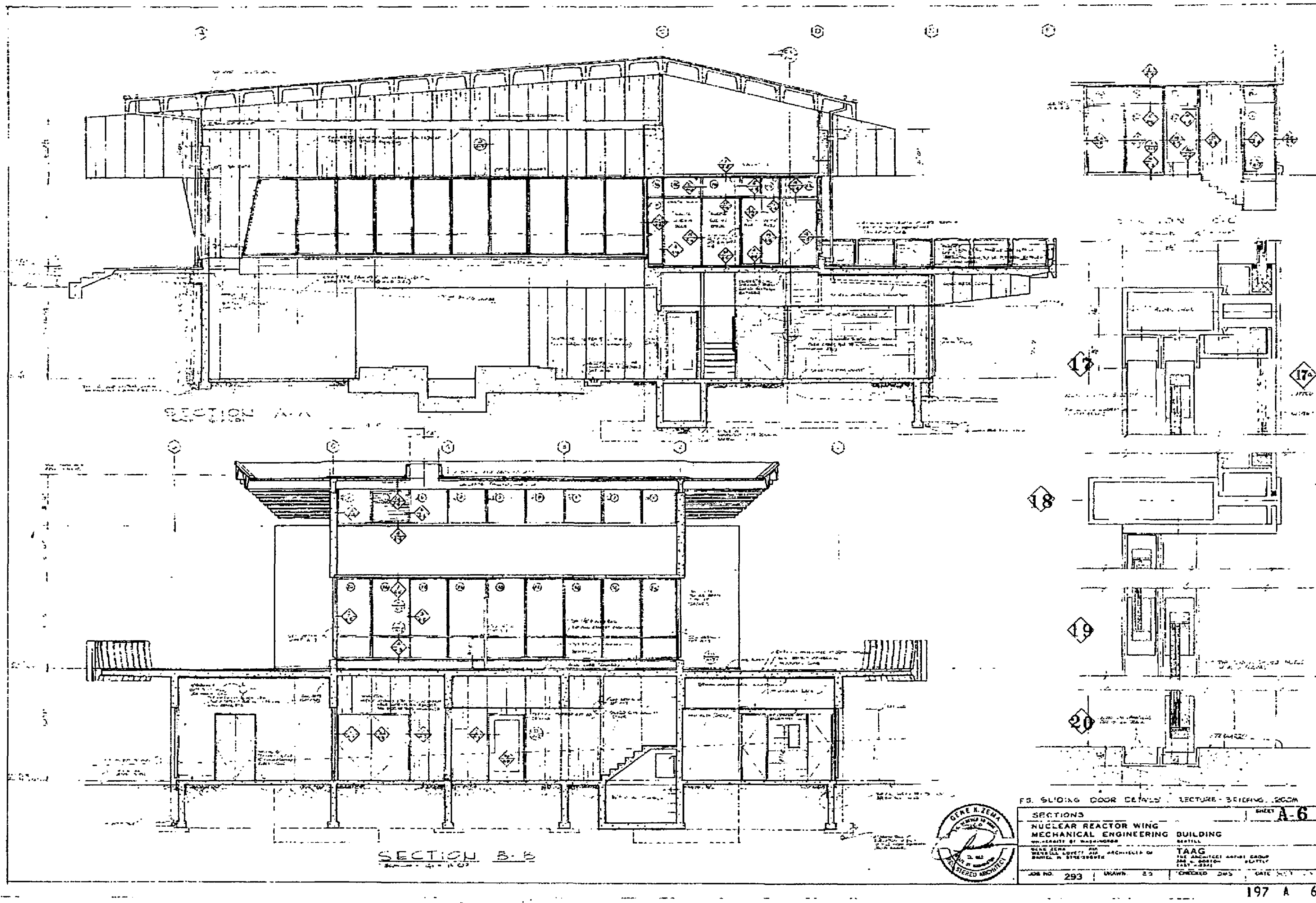
UNIVERSITY OF WASHINGTON — SEATTLE

TAAG

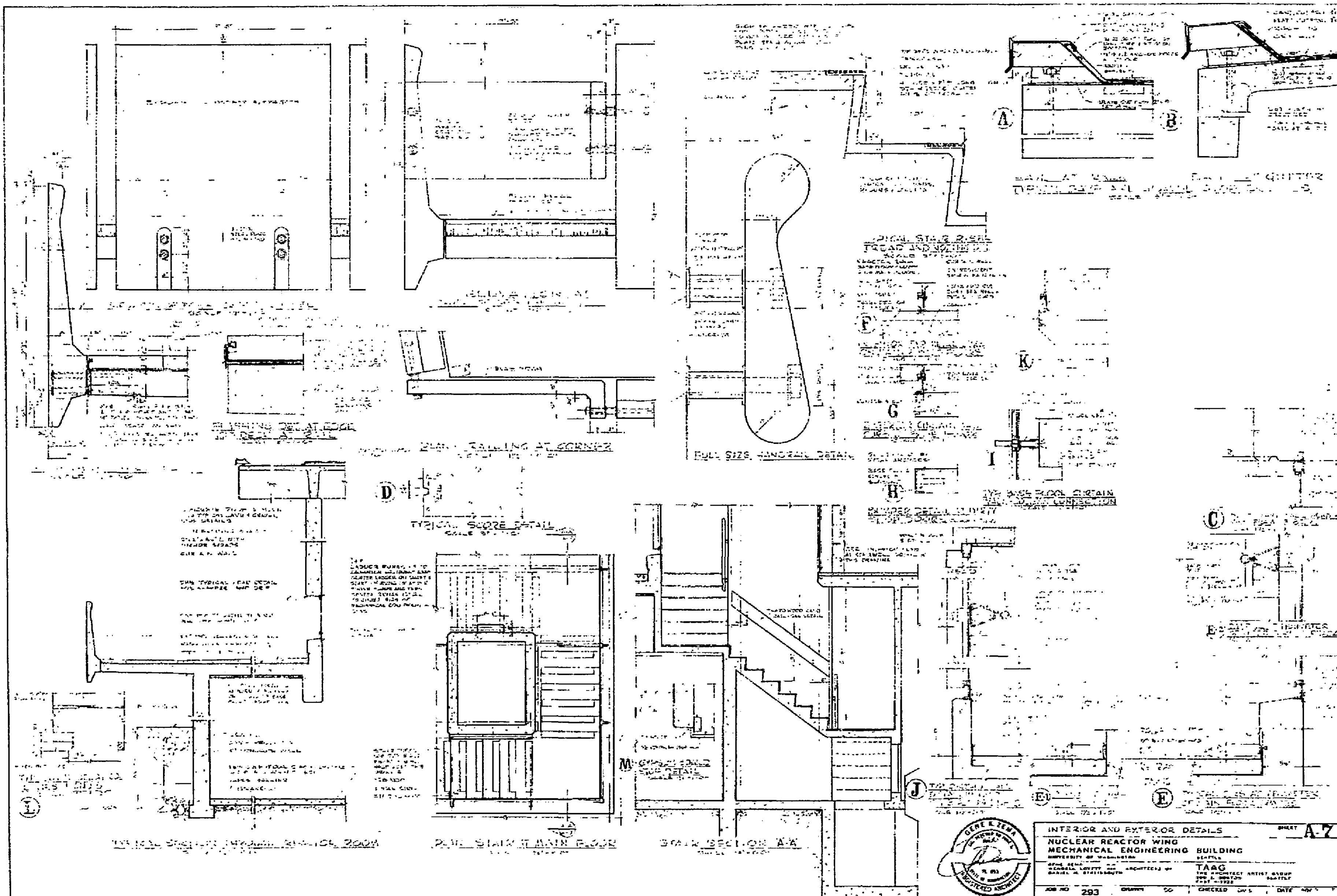
JOB NO 293

197 A 5

Not to scale


SECTION A-A
SECTION B-B
SECTION C-C
17
17a
18
19
20
F.S. SLIDING DOOR DETAILS, LECTURE-BRIEFING ROOM
SECTIONS
SHEET A-6
NUCLEAR REACTOR WING
MECHANICAL ENGINEERING BUILDING
TAAG
JOB NO. 293
197 A 6
GENE K. ZEMA

Not to scale



197 A 7

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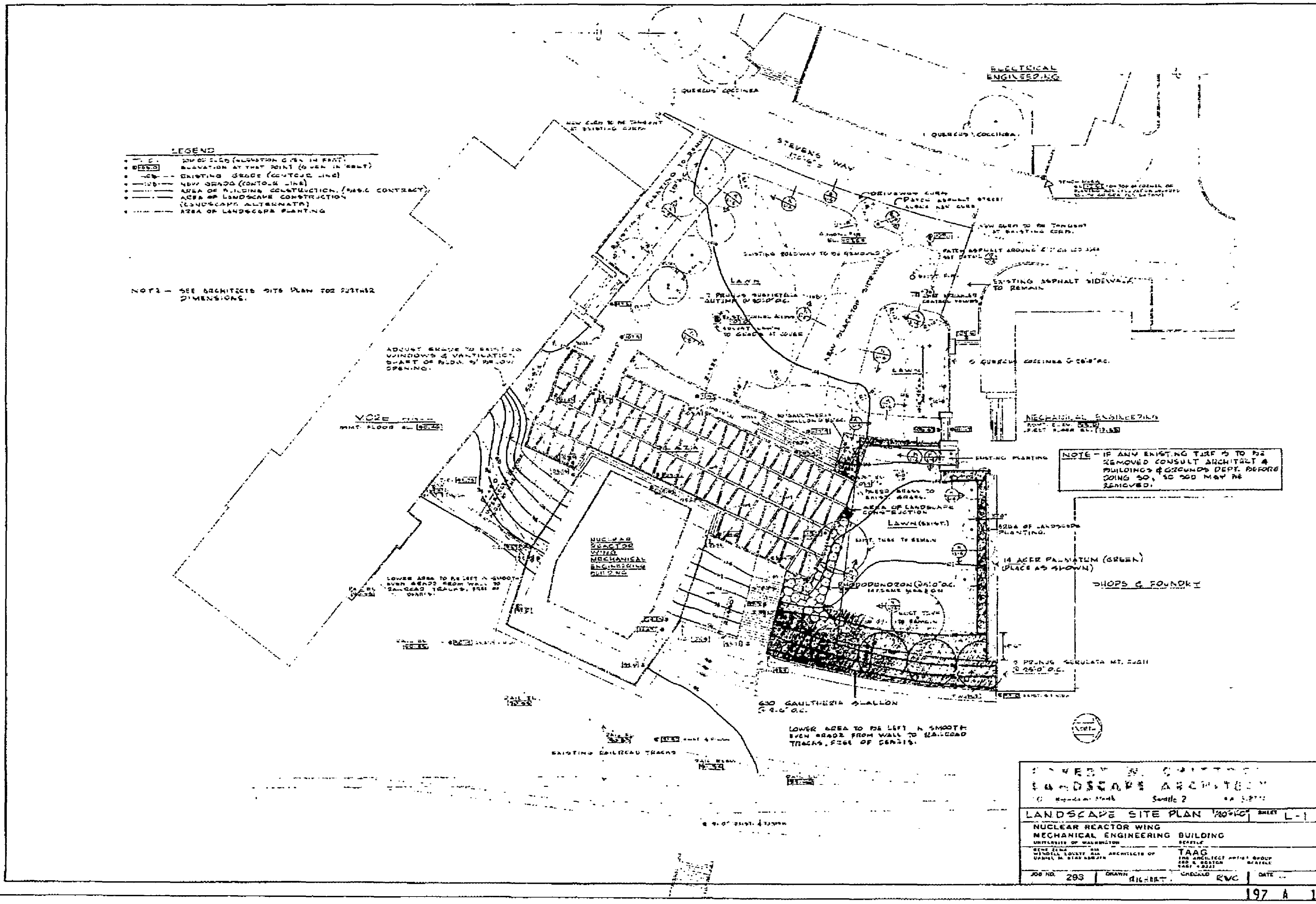
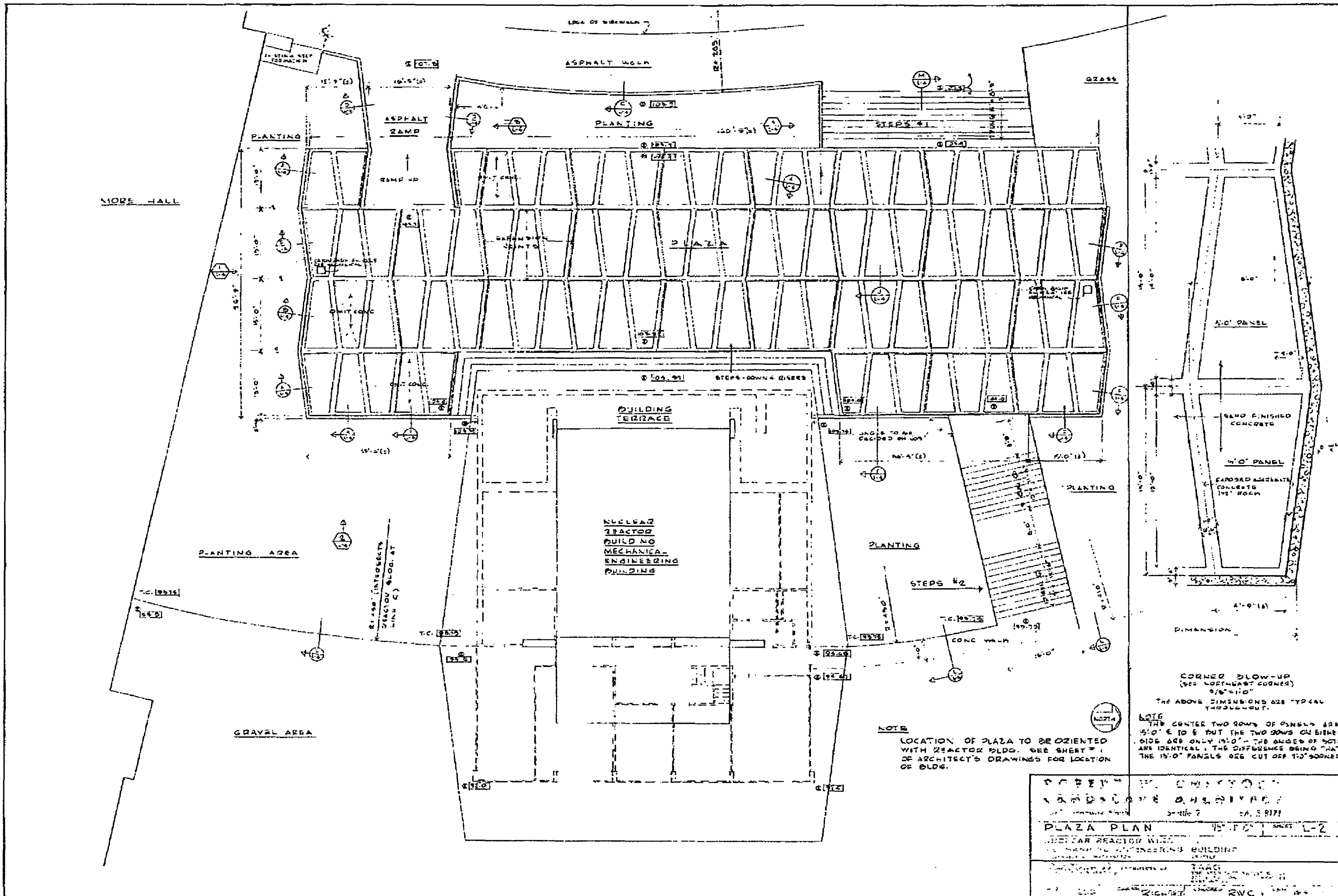
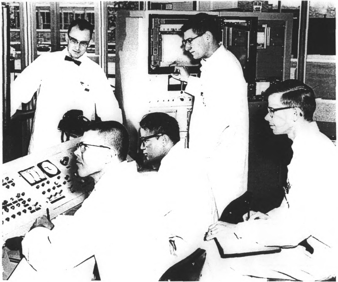


LEGEND
NOTE — SEE ARCHITECTS SITE PLAN FOR FURTHER DIMENSIONS.
ELECTRICAL ENGINEERING
STEVENS WAY
QUERCUS COCCINEA
LAWN
NEW BLACKTOP SIDEWALK
EXISTING ASPHALT SIDEWALK TO REMAIN
MECHANICAL ENGINEERING
NOTE — IF ANY EXISTING TURF IS TO BE REMOVED CONSULT ARCHITECT & BUILDINGS & GROUNDS DEPT. BEFORE DOING SO, SO SOD MAY BE REMOVED.
LAWN (EXIST.)
14 ACER PALMATUM (GREEN) (PLACE AS SHOWN)
SHOPS & FOUNDRY
NUCLEAR REACTOR WING MECHANICAL ENGINEERING BUILDING
650 GAULTHERIA SHALLON
LOWER AREA TO BE LEFT IN SMOOTH EVEN GRADE FROM WALL TO RAILROAD TRACKS, FREE OF DEBRIS.
EXISTING RAILROAD TRACKS
LANDSCAPE SITE PLAN
L-1
NUCLEAR REACTOR WING
MECHANICAL ENGINEERING BUILDING
TAAG
293
RWC
197 A 10

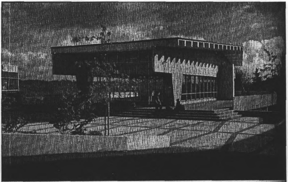
Not to scale

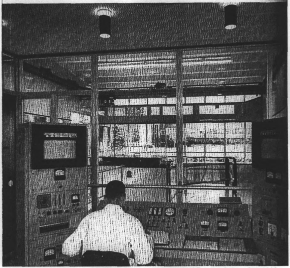

MORE HALL
ASPHALT WALK
ASPHALT RAMP
RAMP UP
PLANTING
STEPS #1
STEPS #2
GRASS
PLAZA
EXPANSION JOINTS
OMIT CONC
STEPS-DOWN 4 RISERS
BUILDING TERRACE
NUCLEAR REACTOR BUILDING MECHANICAL ENGINEERING BUILDING
PLANTING AREA
GRAVEL AREA
CONC WALK
DIMENSION
CORNER BLOW-UP
(SEE NORTHEAST CORNER)
THE ABOVE DIMENSIONS ARE TYPICAL THROUGHOUT.
NOTE
THE CENTER TWO ROWS OF PANELS ARE 15'-0" E TO E BUT THE TWO ROWS ON EITHER SIDE ARE ONLY 14'-0" - THE ANGLES OF BOTH ARE IDENTICAL. THE DIFFERENCE BEING THAT THE 15'-0" PANELS ARE CUT OFF 1'-0" SOONER.
SAND FINISHED CONCRETE
4'-0" PANEL
EXPOSED AGGREGATE CONCRETE
NOTE
LOCATION OF PLAZA TO BE ORIENTED WITH REACTOR BLDG. SEE SHEET #1 OF ARCHITECT'S DRAWINGS FOR LOCATION OF BLDG.
PLAZA PLAN
L-2
NUCLEAR REACTOR WING
MECHANICAL ENGINEERING BUILDING
RWC

Not to scale



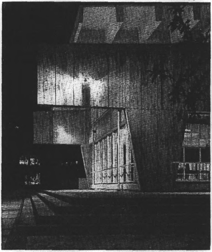
students in the control room

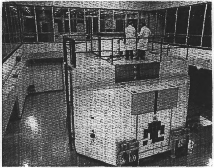




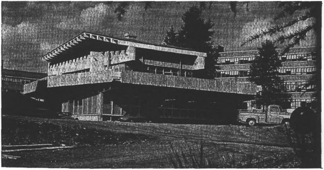
Images of the Nuclear Reactor Building published in *Architectural Record*, September 1963

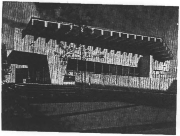
Art Hupy photos

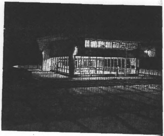




Images of the Nuclear Reactor Building published in *Architectural Record*, September 1963





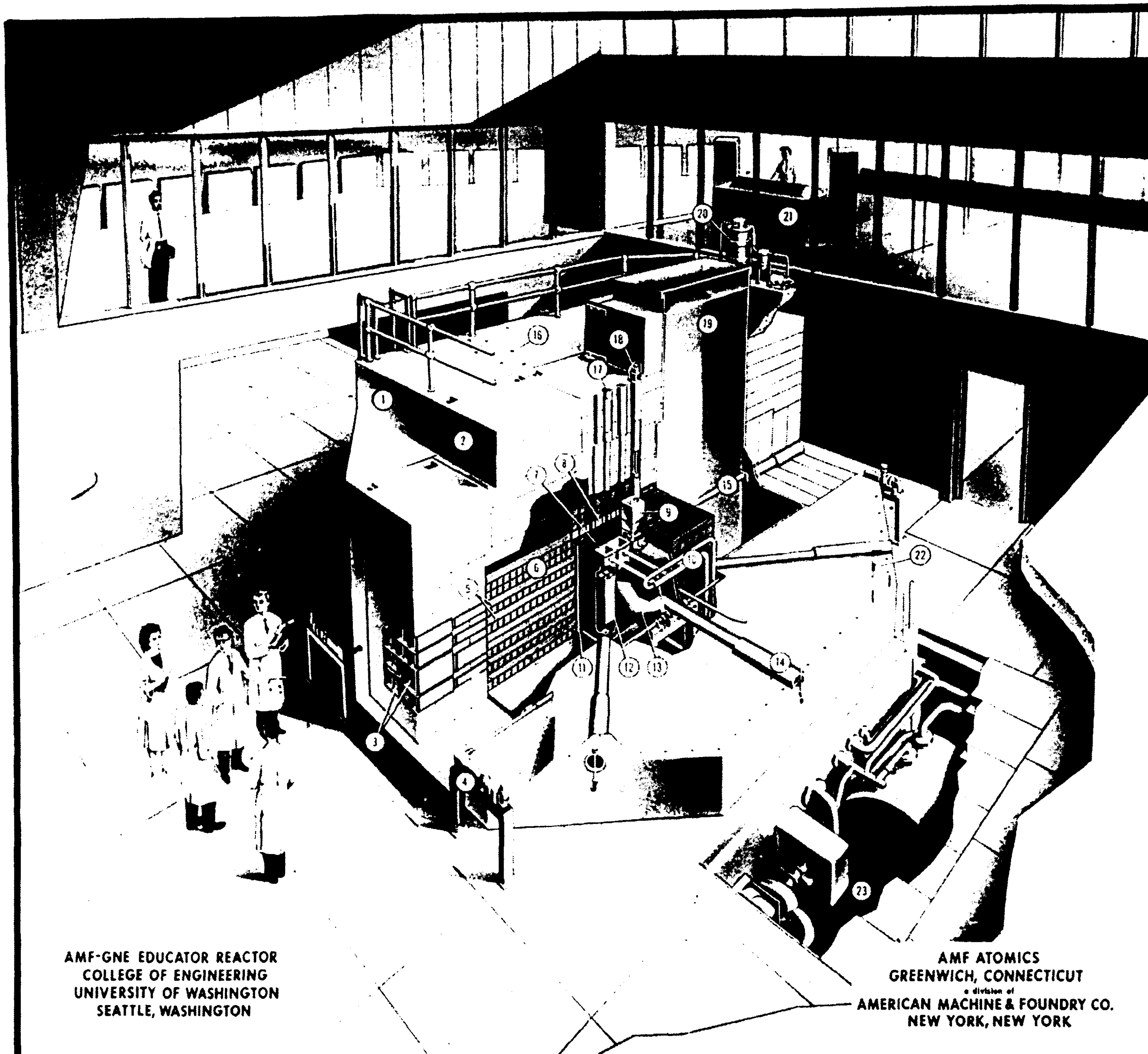


Images of the Nuclear Reactor Building published in *Arts and Architecture*, January 1963

NUCLEAR REACTOR BUILDING UNIVERSITY OF WASHINGTON SEATTLE

zema, lovett, streissguth architects jentoft and forbes contractors

original perspective rendering



1. HIGH DENSITY CONCRETE SHIELD
2. REMOVABLE CONCRETE SHIELD BLOCKS
3. THERMAL COLUMN ACCESS PLUGS
4. RIGHT ANGLE CONTROL DRIVE MECHANISM (4)
5. REMOVABLE GRAPHITE STRINGERS
6. GRAPHITE THERMAL COLUMN
7. FUEL ELEMENT BOXES (6)
8. LEAD BRICK SHIELDING
9. FUEL BOX SHIELDING PLUGS
10. COOLANT PIPING
11. LEAD GAMMA SHIELD
12. ENRICHED URANIUM FUEL ELEMENTS (24)
13. CADMIUM CONTROL BLADE AND *PROTECTIVE SHROUD (4)*
14. BEAM TUBE FACILITIES (6)
15. REMOVABLE BEAM TUBE
16. FOIL IRRADIATION TUBES (12)
17. VERTICAL EXPERIMENTAL TUBES (3)
18. NEUTRON SOURCE DRIVE MECHANISM
19. EXPERIMENTAL SHIELD TANK
20. SHIELD TANK PURIFICATION SYSTEM
21. REACTOR CONTROL CONSOLE
22. PNEUMATIC RABBIT FACILITY
23. PROCESS EQUIPMENT PIT - REACTOR COOLING AND VENTILATING SYSTEMS

diagram of reactor

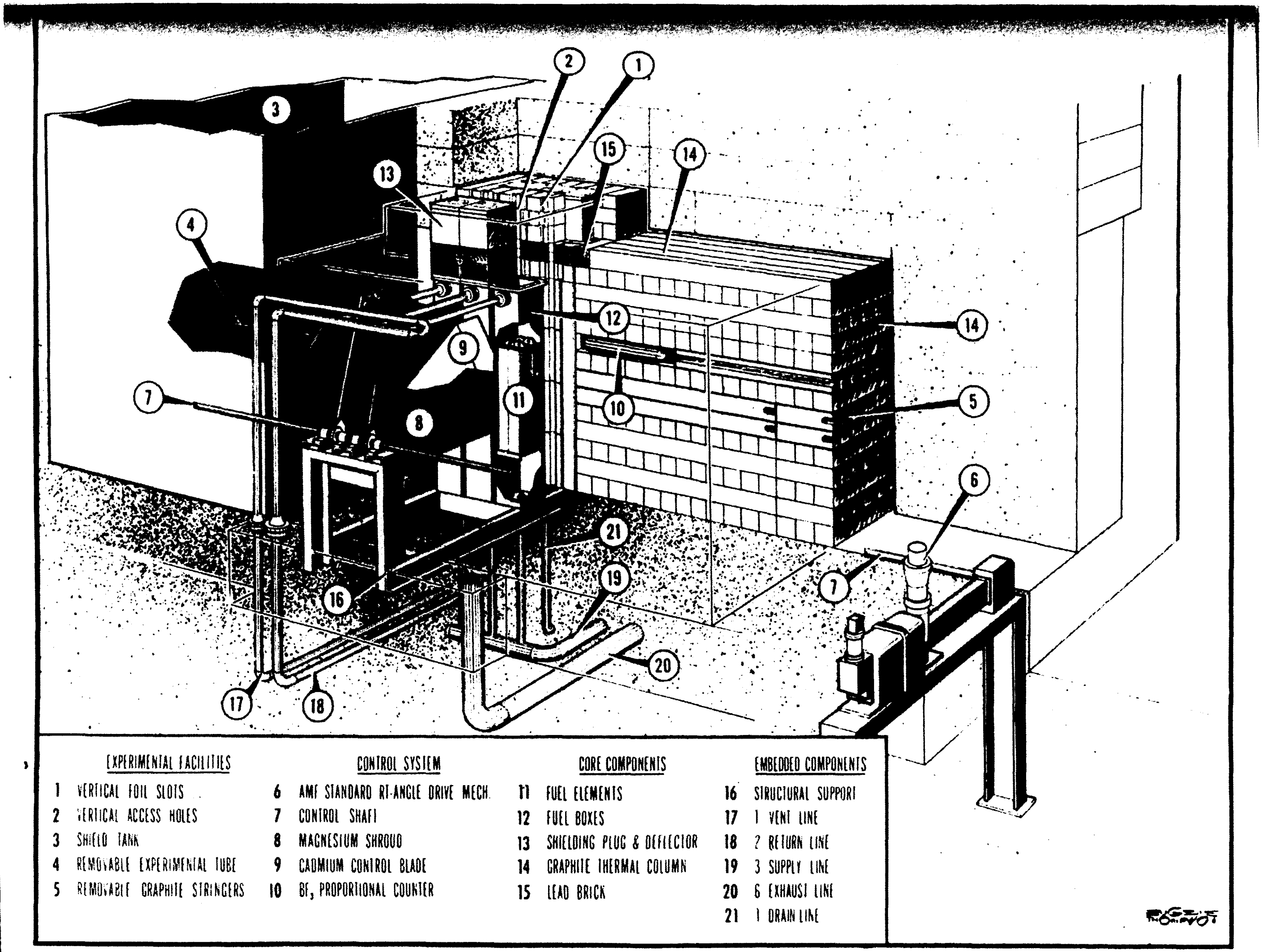


Figure 26. UWTR Core Area

Diagram of University of Washington Argonaut Reactor

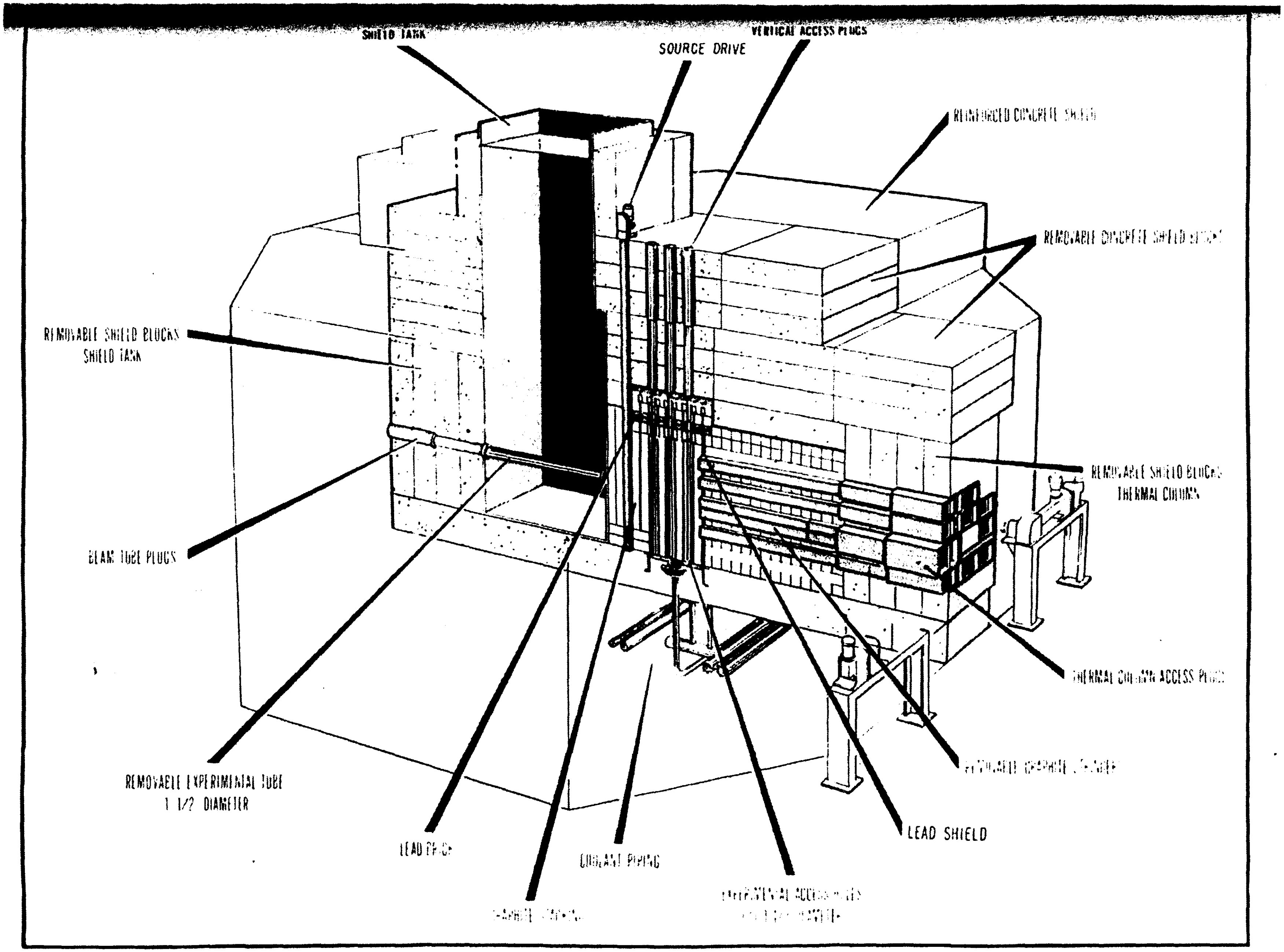


Figure 27. UWTR Longitudinal Section

Diagram of University of Washington Argonaut Reactor

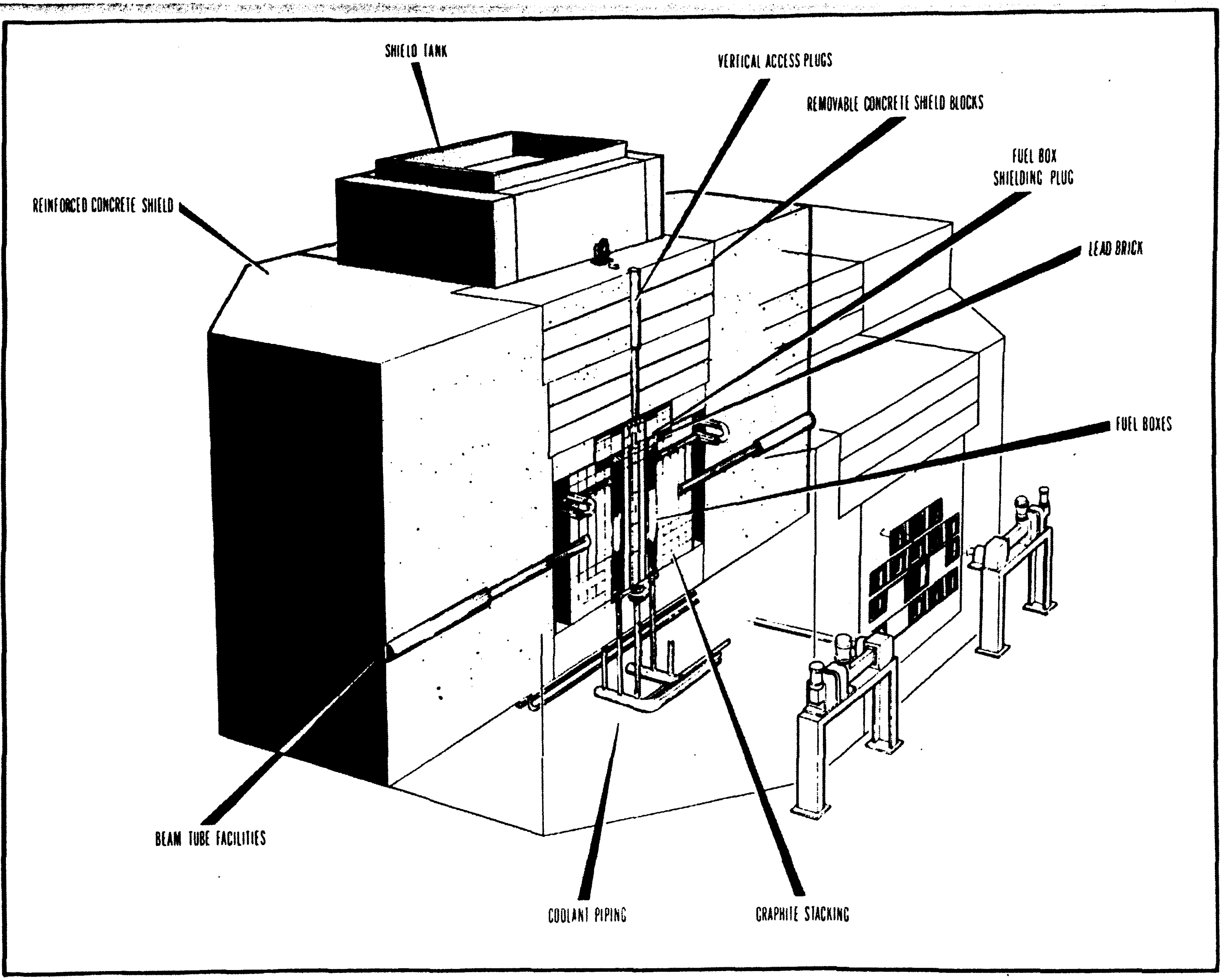


Figure 28. UWTR Transverse Section Through Core Center

Diagram of University of Washington Argonaut Reactor

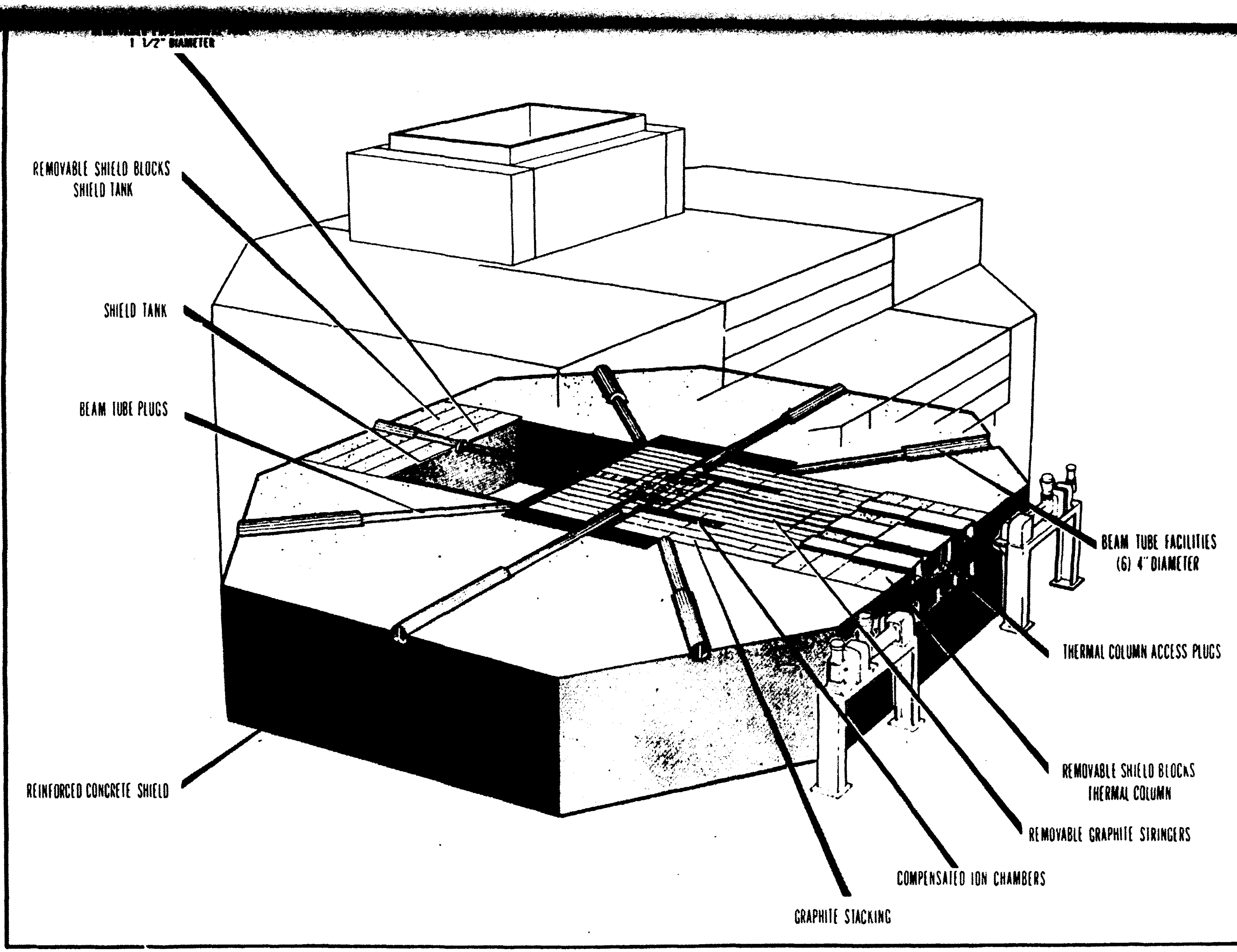


Figure 29. UWTR Horizontal Section at Beam Tube Level

Diagram of University of Washington Argonaut Reactor

Teaching Reactors on University Campus'
by operational date (partial list, unknown status of reactors)

Operator	Location	Operational
North Carolina State	**Raleigh, NC**	**1953**
Penn State University	University Park, PN	1955
University of Michigan	**Ann Arbor, MI**	**1957**
Massachusetts Institute of Technology	Cambridge, MA	1958
University of Arizona	**Tucson, AZ**	**1958**
University of Florida	Gainesville, FL	1959
University of Maryland, College Park	**College Park, MD**	**1959**
Worcester Polytechnic Institute	Worcester, MA	1959
Missouri University of Science &Technology	**Rolla, MO**	**1961**
Ohio State University	Columbus, OH	1961
Texas A&M University	**College Station, TX**	**1961**
University of Wisconsin-Madison	Madison, WI	1961
Washington State University	**Pullman, WA**	**1961**
University of Washington	Seattle, WA	1961
Kansas State University	**Manhattan, KS**	**1962**
Purdue University	West Lafayette, IN	1962
Rensselaer Polytechnic Institute	**Troy, NY**	**1964**
University of Missouri	Columbia, MO	1966
University of New Mexico	**Albuquerque, NM**	**1966**
Idaho State University	Pocatello, ID	1967
Oregon State University	**Corvallis, OR**	**1967**
Reed College	Portland, OR	1968
University of California-Berkeley	**Berkeley, CA**	**1969**
University of California, Irvine	Irvine, CA	1969
North Carolina State University	**Raleigh, NC**	**1973**
University of Massachusetts Lowell	Lowell, MA	1974
University of Utah	**Salt Lake City, UT**	**1975**
University of Texas at Austin	Austin, TX	1992
University of California-Davis	**Sacramento, CA**	**1998**