L31163

PURDUE UNIVERSITY

EXECUTIVE VICE PRESIDENT
AND TREASURER

February 23, 1999

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Re: Docket 70-152
License SNM-142

Gentlemen:

Enclosed is the updated Decommissioning Funding Plan and Financial Assurance for our NRC License SNM-142. The total costs for decommissioning with a 25% contingency is estimated to be $137,563. This will return the affected facilities to conditions for unrestricted use. As specified in the enclosed document, this amount will be adjusted at each license renewal to ensure that inflation, changes in site conditions, and other relevant factors are taken into account.

As Executive Vice President and Treasurer of Purdue University, I certify that the funds will be available when needed to conduct the activities necessary to permit facilities to be returned for unrestricted use. If you have any questions regarding this information, please contact our Radiation Safety Officer, James F. Schweitzer at 765.494.2350.

Sincerely,

Kenneth P. Burns
Executive Vice President
And Treasurer

NF04

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Decommissioning Funding Plan for SNM-142 License
Purdue University

1. Historical Radionuclide Possession, Use, and Surveys.

A. The use of special nuclear material under this license has been primarily in the form of sealed sources and uranium contained in sealed fuel rods. The enriched uranium rods have not been opened, however, some of the natural uranium rods have been opened and the uranium oxide pellets removed. The sealed sources (PuBe) and calibration sources are all intact and have been leak tested as appropriate.

B. Routine surveys of the areas where special nuclear material (SNM) is used have been performed on a regular basis. No contamination that would indicate leaking fuel rods has been found. Also no sealed sources have shown any indication of leakage. No manipulation of material in unsealed form has been done in this area for in excess of two years. Wipe tests over this period have found no removable contamination and direct radiation measurements have found no fixed contamination.

C. The only activity with unsealed radioactive material has been the removal of UO_2 pellets from fuel rods. The uranium fuel rods have all been opened in a glove box specially designed for that purpose with exhaust air filtered by a HEPA filter. During operation, air samples have been taken to ensure the integrity of the HEPA filter. All samples analyzed have been negative for uranium in the air exhausted to the ductwork and environment.

D. The Cf-252 neutron source used in the subcritical assembly is stored below floor level and raised during experiments. The concrete surrounding the source has most likely a small amount of activation products produced from exposure to neutrons during its storage period.

All uranium with the exception of small amounts is owned by the Department of Energy (DOE). The research activities associated with the natural uranium and 1.3% and 4.8% enriched uranium fuel have ceased. Accordingly, the DOE has been contacted to take possession of this material and we expect DOE to accept this fuel and sources when a facility becomes available. We also would expect that DOE would bear the expense for shipment and costs associated with the return of this material. Activities using the sealed sources and calibration sources will continue under the license.

We have used reference facility estimates found in NUREG/CR-1754 for the preparation of our decommissioning estimate. Appropriate modifications will be made due to the unique nature of the facility and the low potential for facility contamination.

2. Description of Facilities

The principal area for use and storage of special nuclear material is the Physics Building Room B-28 (Attachments 2.1, 2.2). The subcritical assembly (FBBF) is located within a concrete and concrete block room (B28C) within the larger room. A cross sectional view is found in Attachment 2.3. The glove box is located in Room B28.

Additional locations that have been exclusively for storage of fuel rods are Duncan Annex Rooms B-84 and B-77A (Attachment 2.4). These locations would not be decommissioned since they are used for activities involving other byproduct material and source materials licenses.

3. Scope of Decommissioning Activities

The activities of decommissioning will be focused on a few specific items listed below:

A. Dismantling Room B28C to Allow for Removal of FBBF and Cf-252 Source

Prefabricated concrete beams make up the roof portion of Room B28C. To remove the converters containing fuel rods and other items these beams will be removed. An existing overhead crane will remove the beams and converter assembly

B. Opening Sealed Converters

Two converters containing fuel rods may be opened to remove the rods. The welds will be cut and the rods packaged for shipment.

C. Removing the Cf-252 Sources

The four Cf-252 sources will be removed from the storage area (concrete) and placed in an appropriate shipping container for return to DOE.

D. Removal of Concrete Storage Cell for Disposal

The area below floor level where the Cf-252 neutron source is stored is composed of six prefabricated concrete blocks. The central block is expected to be activated from exposure to the neutron source. This block and the others will be removed and disposed as appropriate.

E. Decontamination and Disposal of Glovebox

The interior of the glovebox is contaminated with natural uranium. The glovebox and associated ductwork will be decontaminated and/or disposed of in a manner that minimizes radiation exposure and cost

F. Shipment of Fuel and Sources to DOE

The preparation of fuel for return to DOE will require the material control and accounting procedures be followed. Surveys and documentation to ensure compliance with DOT regulations will be necessary.

G. Final Survey and Release of Facility for Unrestricted Use

The above activities are expected to remove all radioactive material from the facility. Final direct radiation measurements and surveys for removable contamination will be performed.

4. Costs of Decommissioning

The following individuals may be necessary to provide services in order to decommission Purdue University facilities. The salaries and estimated worker costs (including 50% overhead) are listed below:

Position	Basic Salary ($/yr)	Worker Cost ($/yr)
Radiation Safety Officer	70,000	105,000
Health Physicist	40,000	60,000
Technician	30,000	45,000
Foreman	40,000	60,000
Laborer	25,000	37,500
Craftsman	35,000	52,500

A. Planning and Preparation

Preparation of Documentation for Regulatory Agencies

Radiation Safety Officer	.08 yr x $105,000 =	$8400	
Health Physicist	.04 yr x $60,000 =	$2400	
Subtotal			$10800

Development of Work Plans and Equipment Procurement

Radiation Safety Officer	.04 yr x $105,000 =	$4200	
Foreman	.08 yr x $60,000 =	$4800	
Subtotal			$9000

Development and Presentation of Training

Health Physicist	.04 yr x $60,000 =	$2400	
Subtotal			$2400

Characterization of Radiological Condition of the Facility

Radiation Safety Officer	.02 yr x $105,000 =	$2100	
Health Physicist	.08 yr x $60,000 =	$4800	
Technician	.16 yr x $45,000 =	$7200	
Subtotal			$14,100
Total			$36,300

B. Decontamination and/or Dismantling Facility Components

Component	Fate
Glove Box	Decon/Disposal
Ductwork	Disposal
HEPA Filter	Disposal
Misc. Tools	Decon/Disposal
Concrete Neutron Shield	Disposal

Health Physicist	.04 x $60,000 =	$1500	
Foreman	.04 x $60,000 =	$1500	
Craftsman	.16 x $52,500 =	$8400	
Laborer	.32 x $37,500 =	$12000	
Equipment and Supplies		$13000	
Total			$36400

C. Packaging, Shipment, and Disposal of Low-Level Waste

Radiation Safety Officer	.04 x $105,000 =	$4200	
Health Physicist	.08 x $60,000 =	$4800	
Technician	.08 x $37,500 =	$3000	
Laborer	.08 x $37,500 =	$3000	
Subtotal			$15000
Low-Level Waste			
Glove box	12 x $300/ft^3 =	$3600	
Ductwork	20 x $300/ft^3 =	$6000	
Concrete shield	15 x $300/ft^3 =	$4500	
Miscellaneous	15 x $300/ft^3 =	$4500	
Subtotal			$18600
Total			$33600

D. Final Radiation Survey

Radiation Safety Officer	.01 x $105,000 =	$1050	
Health Physicist	.02 x $60,000 =	$1200	
Technician	.04 x $37,500 =	$1500	
Total			$3750

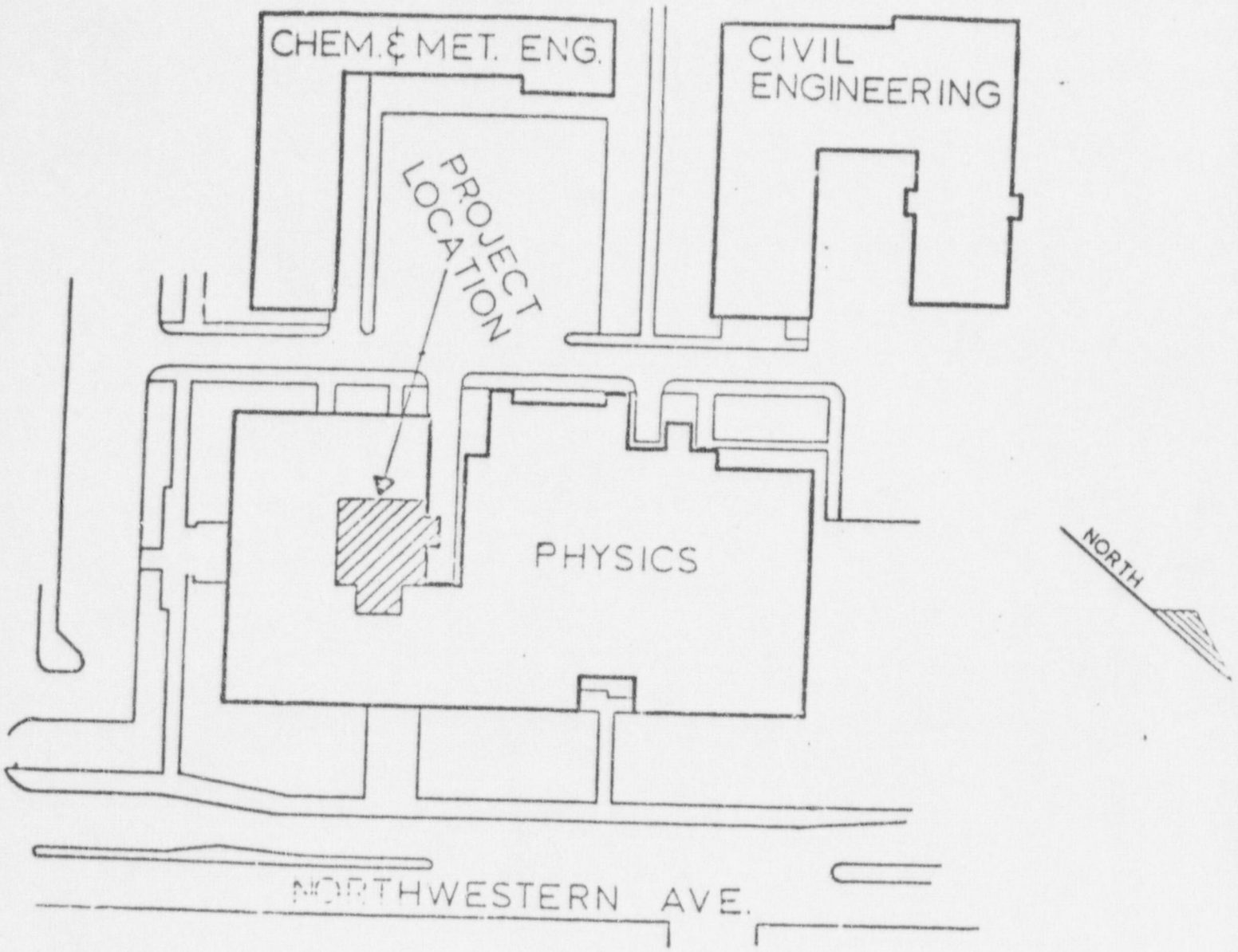
5. Summary

The decommissioning funding estimate above was prepared using NUREG/CR-1754. The estimates were modified to fit the specific features of our facility. Operating history has shown no contamination incidents and routine surveys demonstrate that no contamination is present. No sinks or drains are present in the facility that would allow for the accumulation of radioactive material. One glove box (HEPA filtered) is present but no additional hoods are present at the facility.

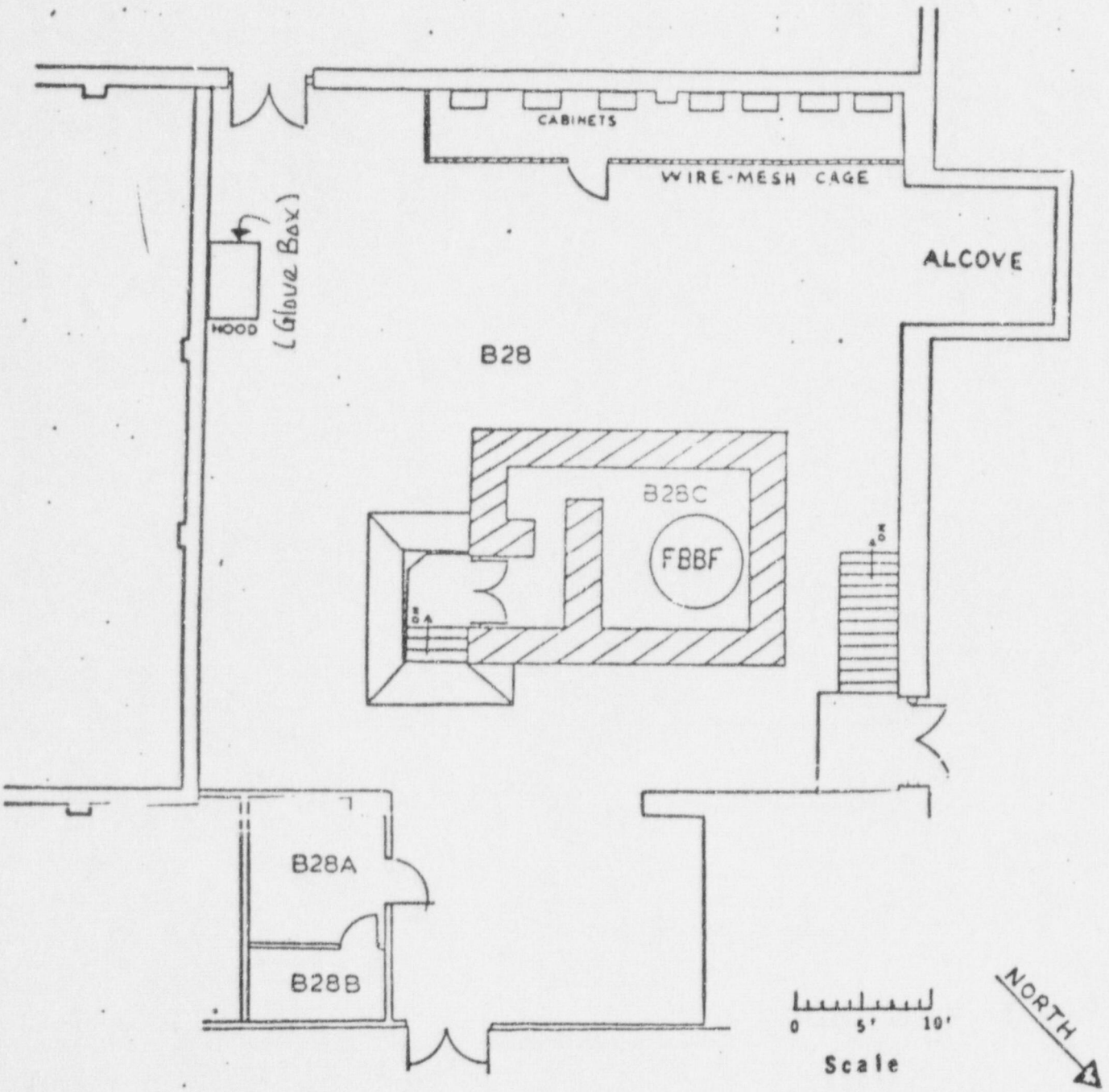
We believe that the estimate is sufficient to return the facility to conditions for unrestricted use. However, as recommended by NUREG/CR-1754 a 25% contingency will be added to account for unforeseen expenses during the process. The cost estimate will be reviewed at each license renewal to ensure that inflation, changes in site conditions, decommissioning procedures, and the cost of waste disposal are taken into account. When necessary, the estimate will be changed and our Statement of Intent adjusted to ensure the proper financial mechanism is on file with the Nuclear Regulatory Commission.

Total Cost Estimate:

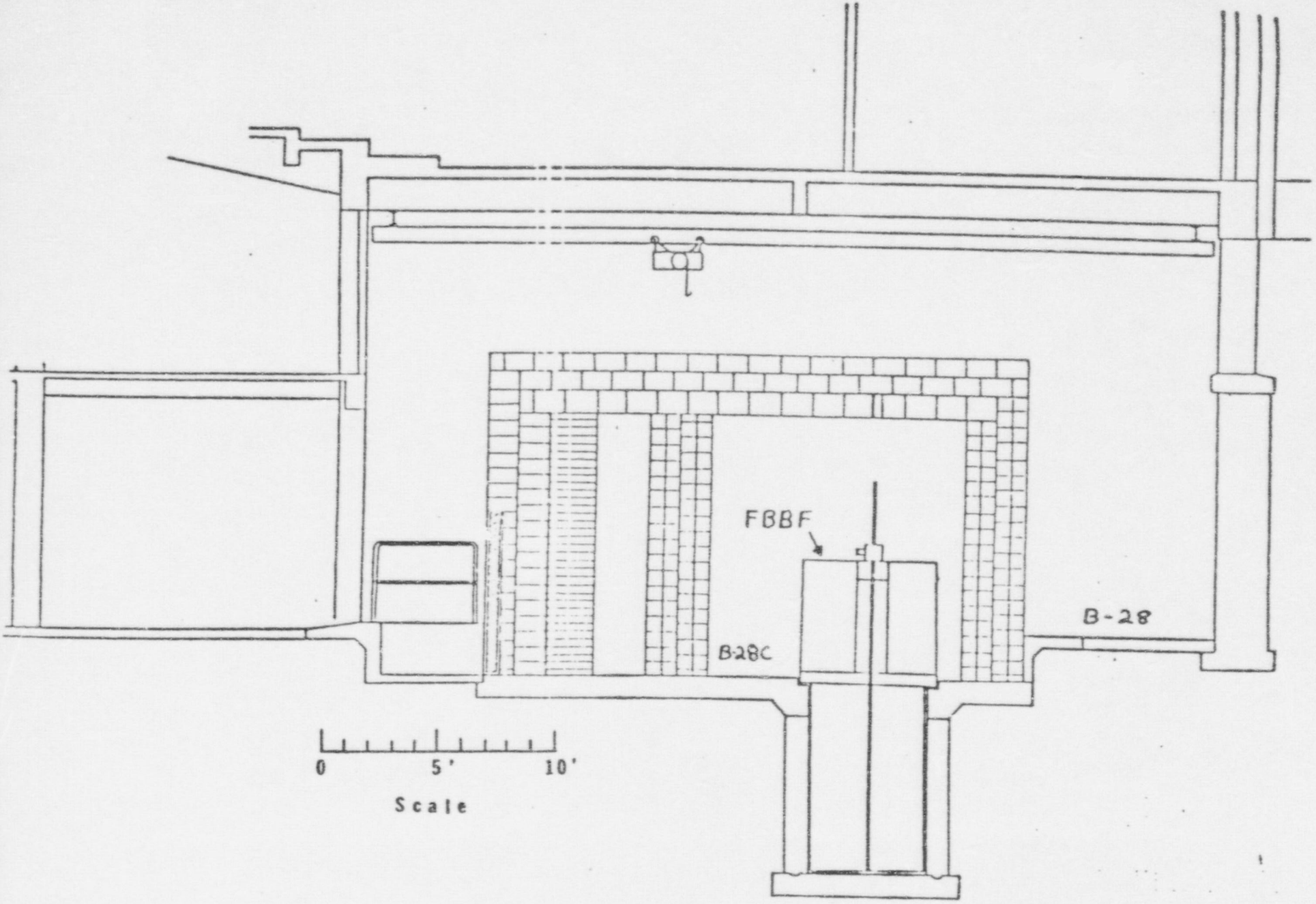
Planning and Preparation	$36,300
Decontamination Dismantling Components	$36,400
Packaging, Shipment, and Waste Disposal	$33,600
Final Radiation Survey	$ 3750
Contingency (25%)	$27,513
Total	**$137,563**



Location of the FBBF Laboratory within the Physics Building



Floor plan of the FBBF Laboratory.



Cross-sectional view of the FBBF Laboratory showing the FBBF inside the concrete blockhouse (Room B-28C).

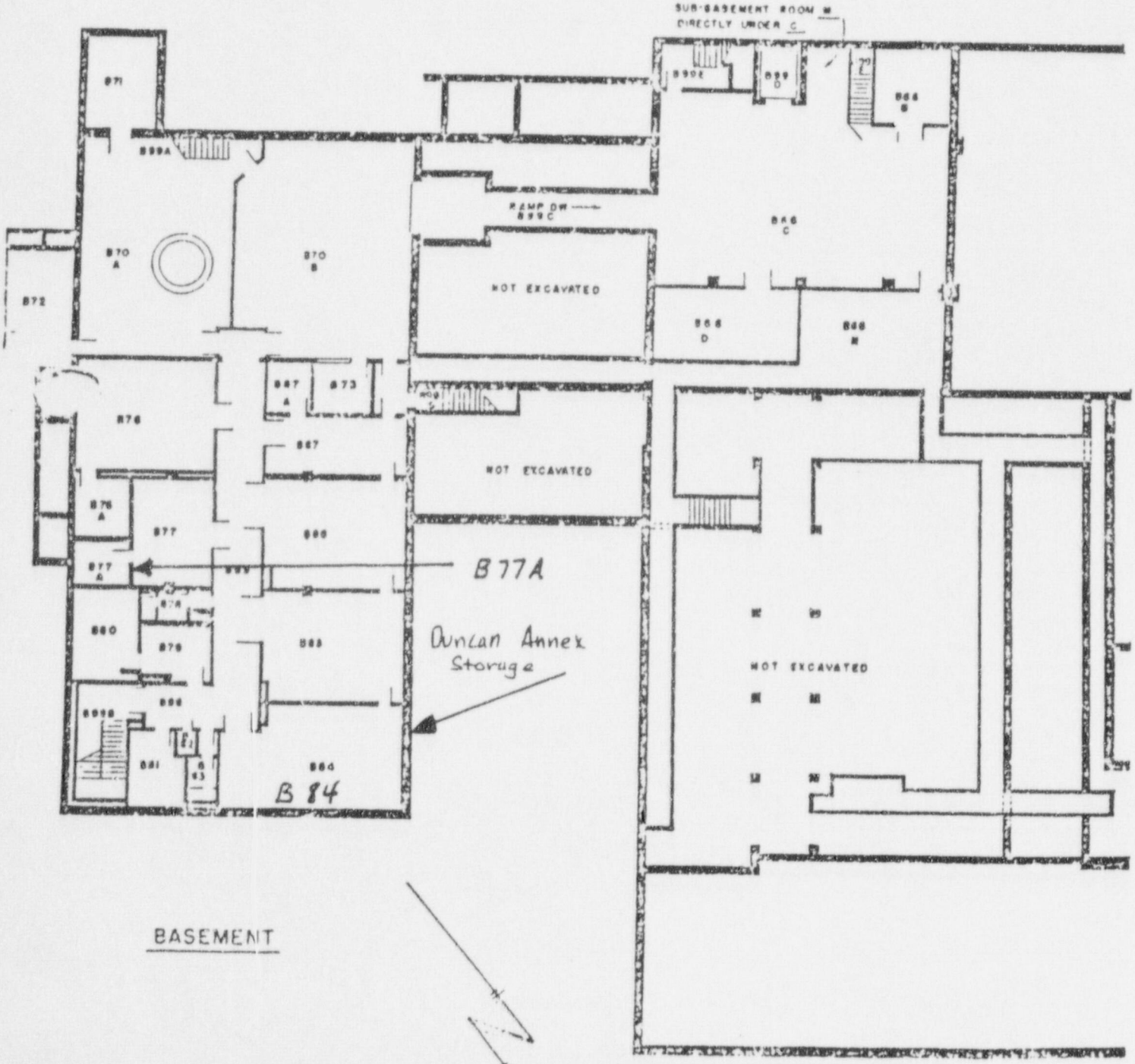
Attachment 2.3

FLOOR PLANS

SCALE $\frac{1}{16}$" = 1'-0"

ELECTRICAL ENGINEERIN
BUILDING

SHEET 1 OF 6
PAGE 20
CODE 55



BASEMENT