

MERCY HOSPITAL

West Central Park at Marquette • Davenport, Iowa 52804 • 319-383-1000

June 14, 1984

United States Nuclear Regulatory Commission
Material Licensing Section, Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

REFERENCE MAIL CONTROL NO. 76738
ATTENTION: Mr. Mike McCann

Dear Mr. McCann:

As requested in our letter of May 7, 1984, we still desire to have Farida B. Rajput, M.D. added to our institutional license (License No. 14-14621-01) as the sole user of Group 6 materials. Pursuant to that end, we are providing the following information and documents:

1. Doctor Rajput will be accountable for the sources and their inventory.
2. The materials will be stored and loaded into the patient in the Davenport Radiation Clinic. The facility in which the clinic is housed communicates directly with Mercy Hospital through a completely enclosed corridor.
3. The Davenport Radiation Clinic is a hospital secured facility. In addition to the presence of Dr. Rajput and her staff during normal business hours, the facility is patrolled by the hospital security department on a 24 hour per day basis.
4. Supporting documents enclosed:
 - (a) Drawings of the location of the Davenport Radiation Clinic, the storage area within the clinic, and the connecting corridor of the facility to Mercy Hospital.
 - (b) Photocopy of the confirmation of Dr. Rajput's certification in Therapeutic Radiology by the American Board of Radiology.
 - (c) Description of the storage facilities including the storage safe.

RECEIVED

JUN 18 1984

REGION III

8408210589 840711
NMS LIC30
14-14621-01 PDR

Affiliated with Misericordia Health Systems, Inc.

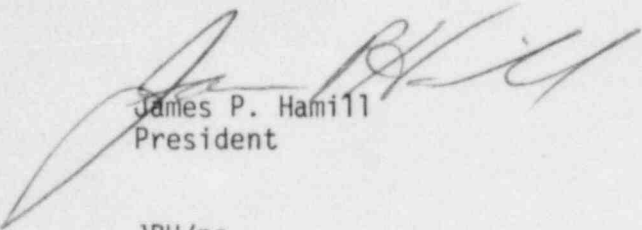
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- (d) Description of the transport cart.
- (e) Other information detailing how the materials will be handled and utilized as well as what records will be maintained.

Please let us know if there is any other information that we can provide you in order to expedite the approval of this amendment request.

Sincerely,



James P. Hamill
President

JPH/pc

Encls.

The American Board of Radiology

DEAR DOCTOR:

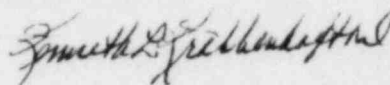
I am pleased to inform you that at its last meeting The American Board of Radiology voted to grant you its certificate in THERAPEUTIC RADIOLOGY.

With personal congratulations, I am

Sincerely yours,

TR 24977

Farida B. Rajput, M.D.
209 S. College Ave.
Aledo, IL 61231



EXISTING HOSPITAL

EXISTING OFFICE BUILDING

DAVEYPORT
RADIATION
CLINIC

EXIST. TELEPHONE
SERVICE
LOCATE
IF REQ.

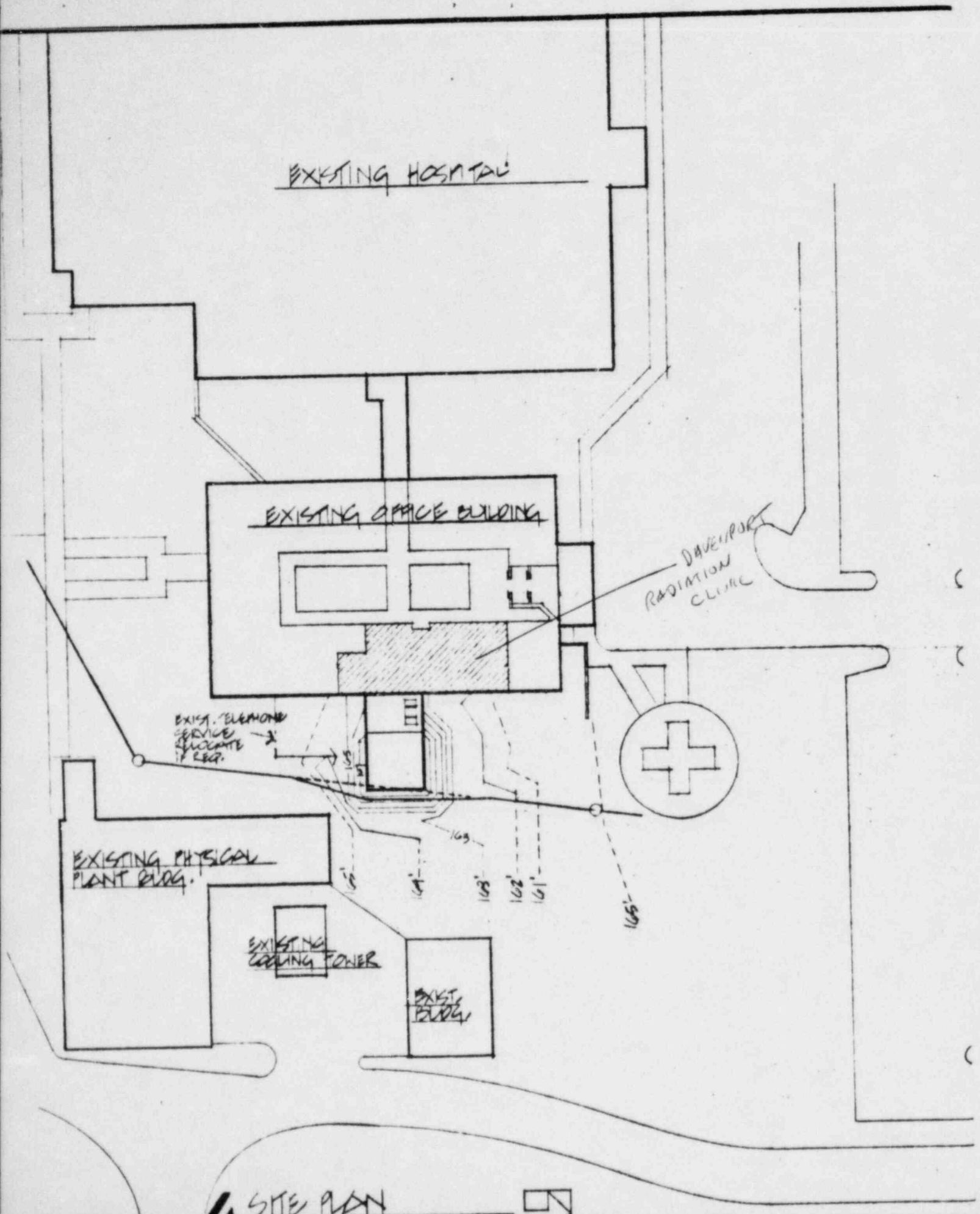


EXISTING PHYSICAL
PLANT BLDG.

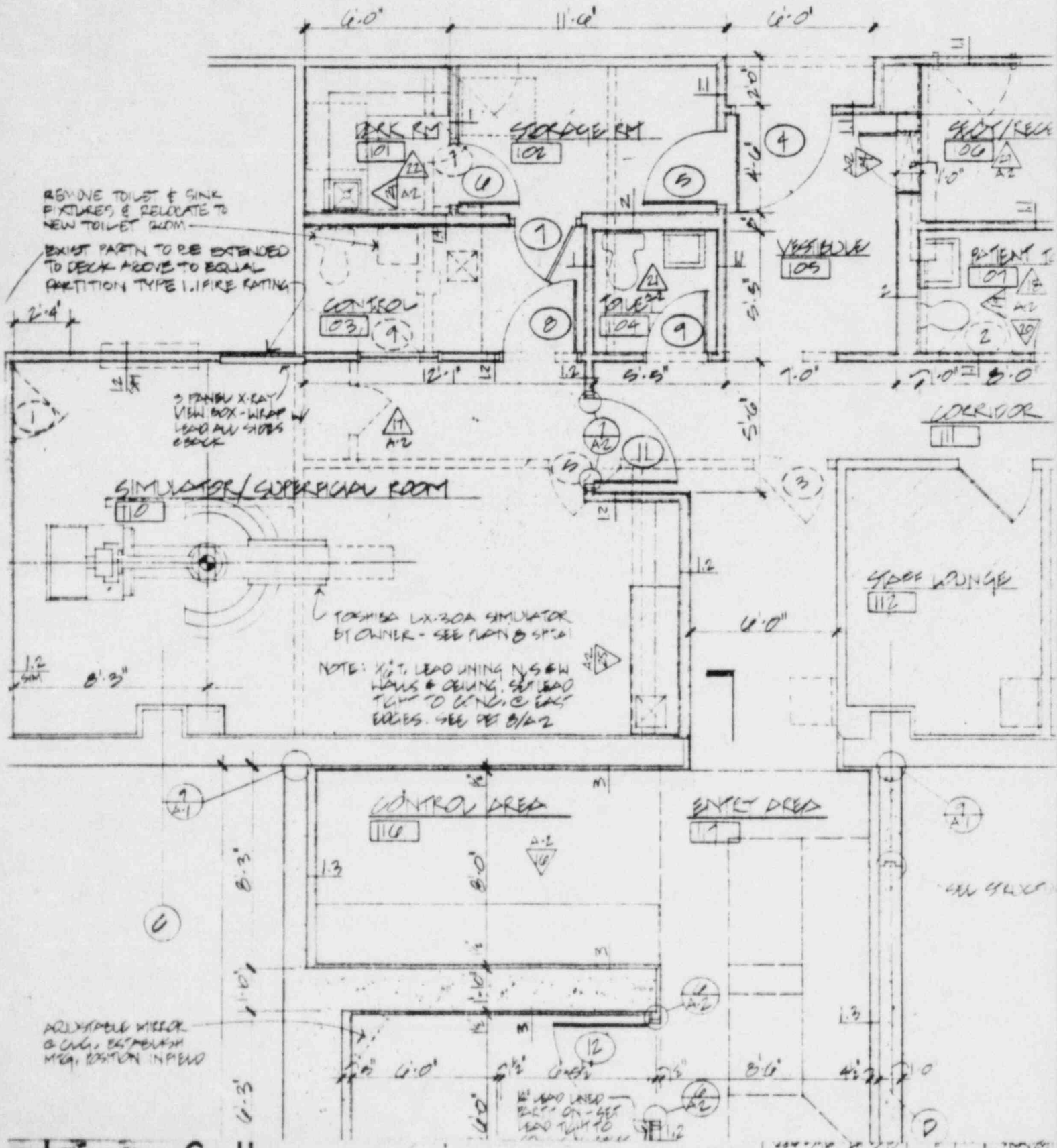
EXISTING
COOLING TOWER

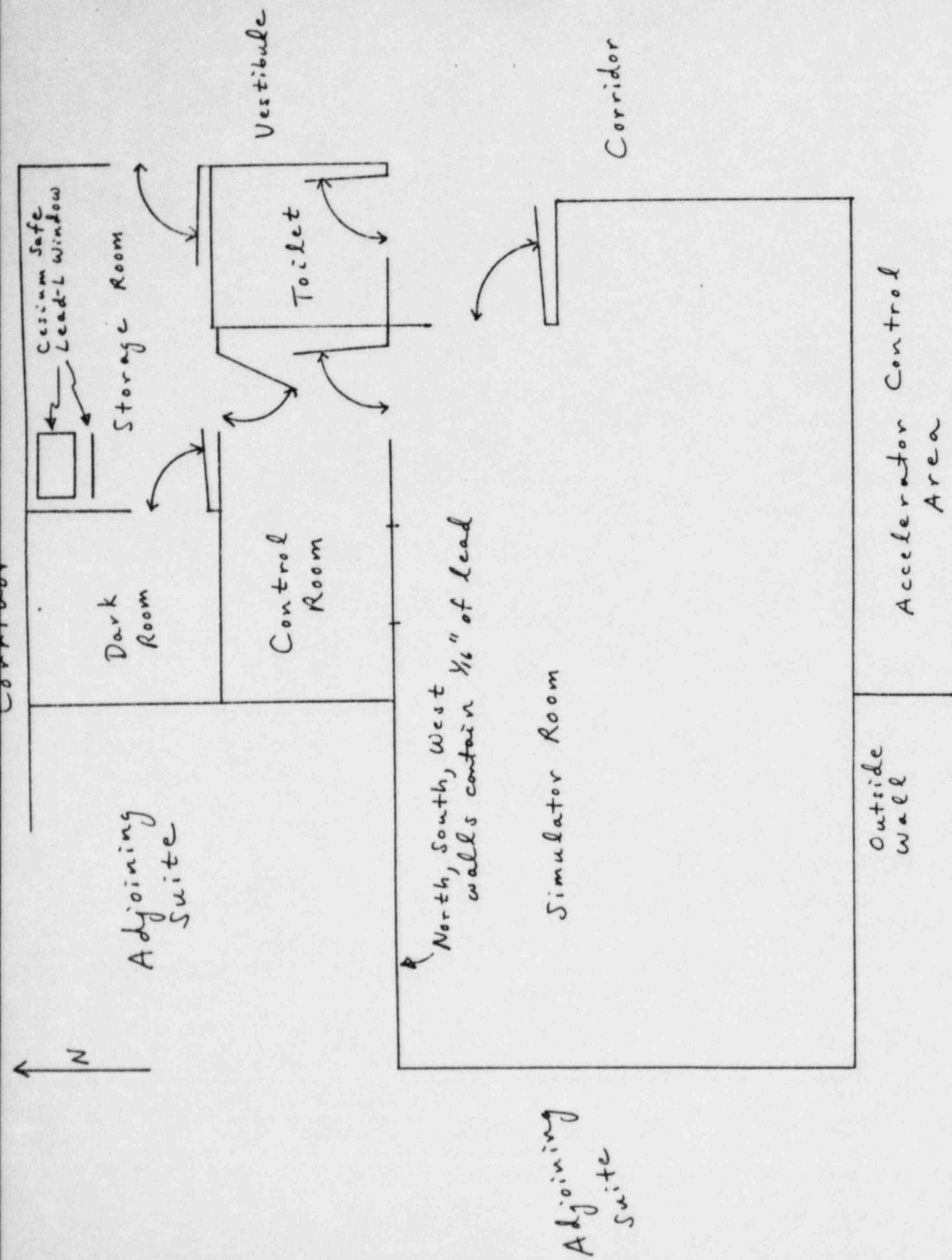
EXIST.
BLDG.

SITE PLAN



ELEVATOR
LOBBY





EXIST'G. BUILDING
GRID (VERIFY)

EXISTING BUILDING

EXISTING
BUILDING

NEW
CONSTRUCTION

REMOVE EXIST'G. WALL AS
REQ'D FOR NEW CPNG &
VERIFY W/ STRUCT.

DOOR 112B ROW UP B
LARGE FIRE DOOR THIS
LOCATION. SECURE TO
EXISTING MASON. CONST. 4
MFG STD DOOR H/WB.
(DOOR CONTAINER ABOVE CUG)

BRONZE ALUM.
DOOR (LINE
UP DIRECTLY
ACROSS FROM
EXISTING DOOR)

26' FROM
LINE DOOR

48'-0"

30'-0"

28'-0"

12
A5 SIM.

W-5

8'-0"
CLEAR

10

1
A5

11. Facilities and Equipment

Four-drawer storage safe 3M Corporation Cat. No. 6624

Lead-glass L-block 3M Corporation Cat. No. 6621

Long-handled tongs

Steel-lined cart on wheels

Description: Steel box with 1 inch thick side walls and lid. The lid has an additional 1/4 inch thick sheet of lead. This steel box is mounted inside a 1 inch thick oak box mounted on wheels. The handle for pulling the cart is 1 meter long.

The Cs-137 sources are to be stored in the lead safe shown in the attached diagram of the facility. The sources will be loaded into the applicators behind the lead-glass L-block using long-handled tongs. These applicators will be placed in the steel-lined cart for transport to the simulator room where they will be loaded into the patient. The patient will then be transferred to a private room in the adjoining hospital. At the time the sources are removed, they will again be placed in the steel-lined cart for return to the lead safe in the radiation therapy department.

12. Farida B. Rajput, M.D. will be the only person working with radioactive materials. Her training and experience in the use of radioactive materials is outlined in Supplements A and B.

The personnel in the Radiation Therapy Department and other ancillary personnel in the hospital where brachytherapy patients are to be housed will be informed about radiation hazards and appropriate precautions. This information will be provided in the form of lectures. These lectures will be delivered prior to the initial use of the radioactive materials and will be repeated on an annual basis. The content of the lectures will be consistent with the outlines provided in the Draft Regulatory Guide and Value/Impact Statement issued by the NRC on January 1, 1984.

13. This license application is specifically intended to cover the use of Cs-137 sources for brachytherapy. As a result, there will only be one order placed for radioactive materials. Farida B. Rajput, M.D. will be responsible for placing this order and ensuring that the total activity does not exceed the possession limits.

When the shipment of radioactive materials is received, the procedure outlined below will be followed.

1. The package and sealed sources will be monitored for surface contamination and external radiation levels as outlined in item 14 of this application.
2. The sources will be inspected to verify that their activity agrees with the quantity ordered.
3. The sources will be stored in a locked lead safe in the Radiation Therapy Department.
4. A radiation survey will be conducted in the areas surrounding the storage safe to ensure that the radiation levels do not exceed the limits specified in 10 CFR Part 20.

17. This license application is specifically intended to cover the use of sealed radioactive sources. Therefore, area surveys will only be deemed necessary when it has been determined that the sealed sources may be leaking. This determination will be based on the routine wipe tests of the sources.

18. This license application is specifically intended to cover the use of sealed radioactive sources. As a result, no radioactive waste will be produced.

20. Therapeutic Use of Sealed Sources

- a. The Cs-137 sealed sources will be placed in the lead-lined safe (3M Corporation, Cat. No. 6624) at the location shown in the facility diagram of item 11 of this application. The nearest unrestricted area is the public corridor to the North of the storage room. The approximate distance to this unrestricted area is 3 feet.

The long-term exposure rate is determined by the shielding provided by the lead-lined safe. The walls of the lead safe are at least 4 inches thick in all directions. Therefore, the calculated exposure rate in the corridor would be

$$\begin{aligned}XR &= [(350 \text{ mCi})(3.28 \text{ R-cm}^2/\text{mCi-hr})/(91.4 \text{ cm})^2] \times \exp(-ux) \\&= 137 \text{ mR/hr} \times 8.0 \times 10^{-6} \\&= 1.1 \times 10^{-3} \text{ mR/hr}\end{aligned}$$

and the dose equivalent would be much less than 100 mrem in any 7 consecutive days.

The short-term exposure rate is determined by the presence of Cs-137 sources outside of the lead safe during the loading of the applicators. During this time, there would be a maximum of 175 mCi of Cs-137 outside of the safe for a period of time not exceeding 5 minutes. The distance to the unrestricted area in this case is approximately 5 feet. Based on these assumptions, the exposure rate would be

$$XR = [(175 \text{ mCi})(3.28 \text{ R-cm}^2/\text{mCi-hr})/(152 \text{ cm})^2] \exp(-ux)$$

The shielding in the wall consists of two 5/8 inch thick layers of sheetrock. Thus

$$XR = 24.7 \text{ mR/hr} \times 0.630$$

and

$$XR = 15.6 \text{ mR/hr}$$

The dose equivalent received during a one hour period when the sources are out of the safe for 5 minutes would be

$$\begin{aligned}DE &= (15.6 \text{ mrem/hr})(5 \text{ min}/60 \text{ min}) \\&= 1.3 \text{ mrem/hr}\end{aligned}$$

- b. The sealed sources will be loaded into the applicators using long-handled tongs while working behind a lead-glass L-block (3M Corporation, Cat. No. 6621). When loading the applicators into the patient the work will also be performed using long-handled tongs.
- c. Ring badges will be worn by all personnel handling sealed sources.

RADIATION PROTECTION GUIDELINES FOR
PATIENTS TREATED WITH THERAPEUTIC
QUANTITIES OF RADIOACTIVE MATERIALS
DAVENPORT RADIATION CLINIC

Radioactive
material

Radioactive
material

A. PATIENT DATA-

Date of admission: _____ Dept: _____

Patients Name: _____

Hospital#: _____ Room# _____ Bed# _____

Radioisotope Administered: Au-198 _____ Iodine-131 _____ Other _____

Form: Liquid: _____ Seeds#: _____ Activity/Seed: _____ Sealed Sources: _____

Millicuries Administered: _____ Administering Physician: _____

B. SURVEY DATA & PRECAUTIONS TO BE OBSERVED-TO BE COMPLETED BY RADIATION PROTECTION OFFICER

Exposure rates in mrem/hr

Precautions to be observed

1. mrem/hr Date: _____

mrem/hr at 3ft from patient

mrem/hr at bedside

mrem/hr at room entrance
(door closed)

mrem/hr at visitor's chair

2. Posting Accomplished _____ Posting not required _____

3. Visitors under 18 should not be permitted

4. Pregnant visitors should not be permitted

5. Film badges should be worn by nursing care
personal

6. Gloves must be worn while attending patient

7. The patient should use disposable utensils
(save for survey by RPO prior to disposal)

8. Urine: save for Nuclear Medicine Dept. _____
Dispose via sewer: _____

9. Dressings: save for radiation survey prior to
disposal

10. Linens: save for radiation survey prior to
laundry

Date: _____

1. Recommended visiting
times in minutes

2. Distance in ft. visitor
should remain from pt.

3. Recommended attendant
stay time per shift in
min.

11. Patients survey must be performed
prior to dismissal: To be
performed by Radiation Therapist

12. Room not to be released to admitting
office until surveyed by Radiation
Therapist.

Other Instructions: _____

IN CASE OF EMERGENCY OR QUESTIONS INVOLVING RADIATION PLEASE CONTACT RPO at 383-2563

Signature: _____ RPO

FINAL SURVEY RESULTS: To be completed as indicated in item 11 or 12 in section B above

Disposable Utensils: BKGD _____ mrem/hr _____ Disposition _____

Dressing: BKGD _____ mrem/hr _____ Disposition _____

Linens: BKGD _____ mrem/hr _____ Disposition _____

Patient: mrem/hr at 1" from pertinent body area _____

Room & Restroom: All survey results within acceptable levels: Yes _____ No _____

All sealed sources accounted for: Yes _____ No _____ Not acceptable _____

Date of survey _____ Survey Completed By _____

Radiation Protection Officer

DAVENPORT RADIATION CLINIC

[illegible]

CONVERSATION RECORD

TIME

3:57pm

DATE

12 June 1984

TYPE

☐ VISIT

☐ CONFERENCE

☒ TELEPHONE

☐ INCOMING

☒ OUTGOING

ROUTING

NAME/SYMBOL

INT

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU

Ed
Andrew E. Berkow, M.D.

ORGANIZATION (Office, dept., bureau, etc.)

Mercy Hosp
Davenport, Iowa

TELEPHONE NO.

(319) 383
1000

SUBJECT

Control No. 76738

SUMMARY

- 1) Has Dr. Rajput completed her certification — ^{taken oral} will submit copy certifi-
a) What license is being referenced regarding transfer & storage
of sources?
b) Will send documentation Medical Advisory Board
2) need storage location within hospital
a) diagram, adjoining areas
b) describe security of source & who responsible monitoring
c) description of ^{storage} safe
d) " of transport cart

The doctor's office is within hospital's property.
The office is attached to and owned by the hospital corporation.

ACTION REQUIRED

will respond within 30 days

NAME OF PERSON DOCUMENTING CONVERSATION

Mike Mc Carr

SIGNATURE

Mike Mc Carr

DATE

12 June 1984

ACTION TAKEN

SIGNATURE

TITLE

DATE