Johnston-Willis Hospital

1401 Johnston-Willis Drive
Richmond, Va. 23235-4789
(804) 320-2900

November 17, 1983

U. S. Nuclear Regulatory Commission
Materials Licensing Division
Suite 2900
101 Marietta Street, N.W.
Atlanta, Georgia 30303

Dear Sir:

Johnston-Willis Hospital is in the process of completing a new radiation therapy facility. In offering a full range of radiation therapy procedures Johnston-Willis Hospital would now like to ammend its current Nuclear Regulatory Commission license #45-02888-01 to add 10CFR35.100 Schedule A, Group VI byproduct materials. In addition, we would like authorization for 10 millicuries of strontium-90 to be used in a Nuclear Enterprise model 2503/3 Check Source. A complete list of our additional needs is presented in attachment "A".

The additional Group VI materials and the strontium-90 check source will be stored in the new therapy facility which is connected to our present hospital. A diagram of the new facility is shown in attachment "B". Byproduct materials will be stored in room 1-143 adjacent to the simulator, mold and physics rooms. In particular, materials that are maintained for long periods of time, such as the cesium-137 sources, will be kept in a Victoreen/Nuclear Associates (V/NA) radioisotope storage safe model #67-744. This safe will be used in conjunction with an L-block lead shield, V/NA #67-752 (See attachment "C".). This type safe provides over 10 centimeters of lead thickness for the long term storage of sources. The radiation shield provides 5 centimeters of lead protection to the head and torso. Ten centimeters of lead will reduce the exposure rate from 1000 millicuries of cesium-137 to less than 0.1 milliroentgens per hour at 30 centimeters distance from the source or sources. Other standard lead containers (pigs) may be used for other specific sources based on their utility and the ability to maintain 10CFR20 personnel and area exposure limits. All personnel working with these byproduct materials will use personnel monitors as per our present license. In addition, personnel handling therapy sources

will use R. S. Landauer & Company TLD ring dosimeters. Shipments of therapy sources will be surveyed upon arrival and appropriate containers will be used to insure compliance with 10CFR20. Sources will also be transported within our hospital facility in appropriate shielded containers to maintain 10CFR20 standards and security. Such containers include a V/NA 67-724 Heyman carrier with a variety of special cores and a long handle cart, V/NA #67-706 (See attachment "C".).

A log book will be maintained to continuously show the the disposition of all cesium-137 sources. All cesium-137 sources will be signed in and out in terms of the number (count) of sources and the source strength (milligram equivalents). An inventory control sheet will be maintained with each shipment of other sources to indicate the disposition of such sources. At each usage, a source count will be justified against source usage (e. g. sources remaining in patient). All sources will be inventoried on a quarterly basis.

While undergoing radiation therapy within our hospital, patients who contain byproduct materials in amounts that would normally require hospitalization for radiation safety reasons will be generally restricted to specially selected rooms. Such "specially selected" rooms will be chosen on the basis of providing the appropriate clinical care and maintaining 10CFR20 radiation exposure standards. At the present time, we anticipate using isolation rooms 301 and/or 355 as shown in attachment "D". Both 301 and 355 are corner rooms and the adjacent rooms can be left empty should radiation levels indicate this to be appropriate. Radiation safety procedures and nursing instructions will conform to Appendix L, "Radiation Safety Procedures for Therapeutic Use of Sealed Sources" and "Nursing Instructions for Patients Treated with Brachytherapy Sources" as per NRC Regulatory Guide 10.8.

Surveys will be performed during the course of treatment and at the conclusion of treatment. The patient and room will be surveyed with a radiation survey instrument immediately following the conclusion of treatment and before the patient is discharged. The survey will include a source count and will determine that all temporary implant sources have been removed from the patient and from all areas that the patient occupied.

Radiation therapy within our institution will be under the medical direction of Richard Belgrad, M.D. Doctor Belgrad is certified by the Americal Board of Radiology having received his certification in Radiology on June 12, 1964 and in Therapeutic Radiology on December 13, 1975. Doctor Belgrad has continuously practiced radiology and radiaiton therapy most recently at the Medical College of Virginia under NRC licenses #45-00048-17 and #45-00048-19. We wish to have Doctor Belgrad included on our NRC byproduct materials license with authorization for Group IV and Group VI materials.

Sincerely,

Robert L. Kinneberg
Assistant Administrator

Enclosures: Attachment A
Attachment B
Attachment C
Attachment D
Amendment Fee ($40 check)

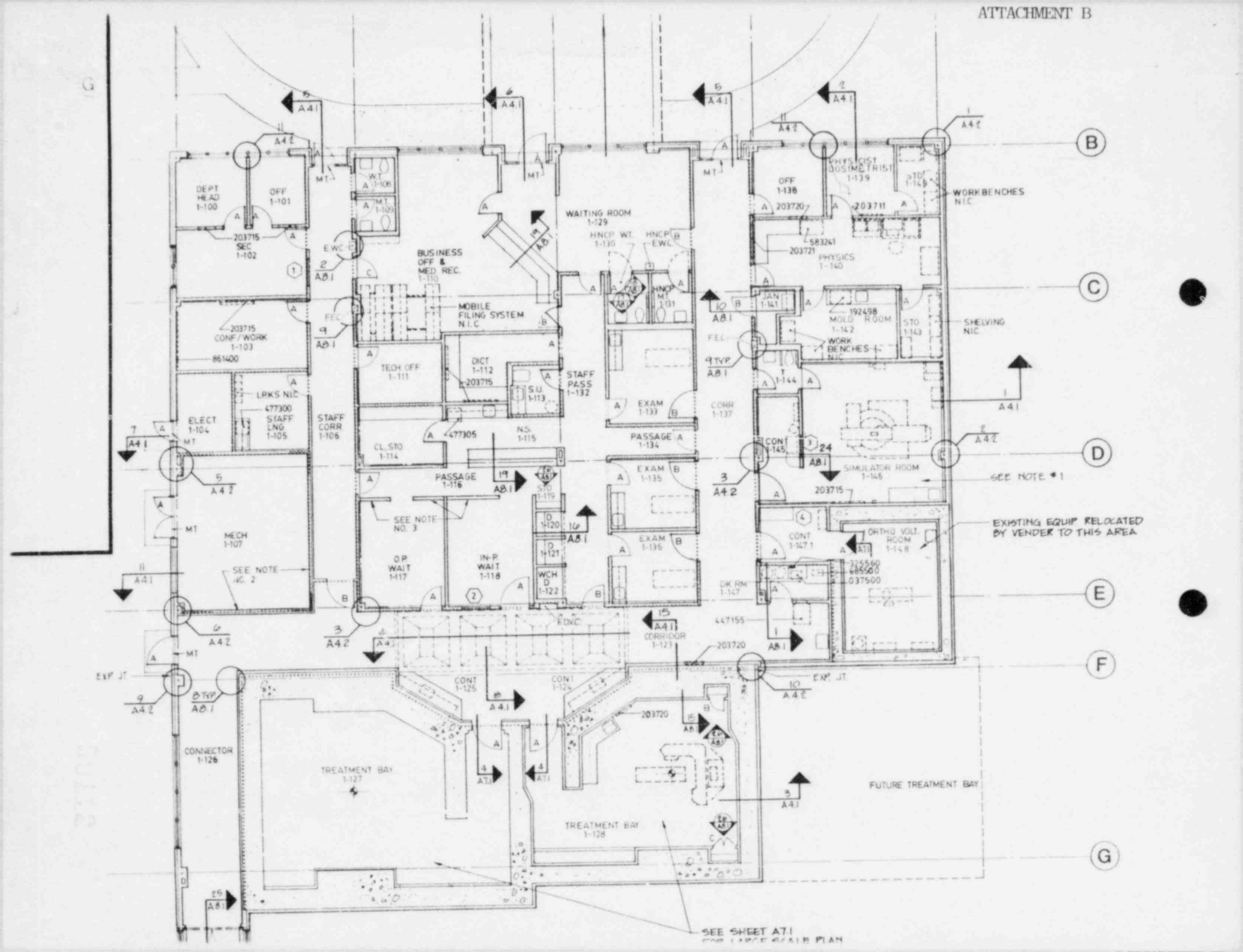
RLK:nw

Attachment A

Additional Byproduct Materials Requested

Byproduct Material	Chemical and/or Physical Form	Additional Possession Limit
Cesium-137	Encased in needles and applicator cells for topical, interstitial, and intracavitary treatment of cancer.	1000 mCi
Iodine-125	As seeds for interstitial treatment of cancer.	100 mCi
Iridium-192	As seeds encased in nylon ribbon for interstitial treatment of cancer.	300 mCi
Strontium-90	Sealed in an applicator for treatment of superficial eye conditions.	150 mCi
Strontium-90	Ion chamber check source Nuclear Enterprise model 2503/3, Radio Chemical Centre source SIC.7	10 mCi

ATTACHMENT B

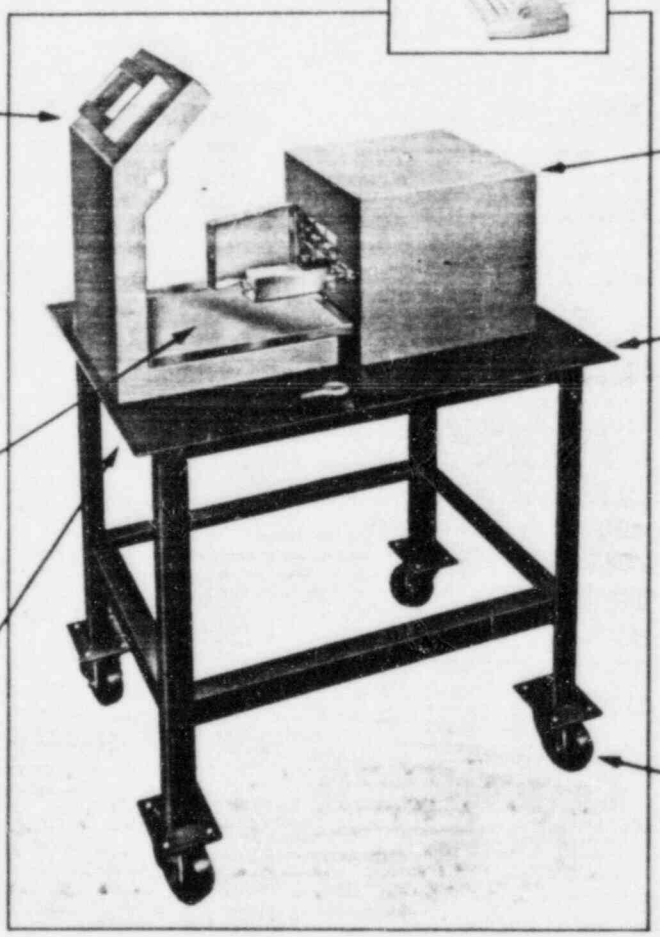


Radioisotope Shielded Work Station

- **Provides optimum work conditions when using radioisotopes.**
- **Designed for maximum protection and versatility.**

This sturdy work station is the ideal vehicle for the safe storage of radioisotopes. It provides optimum protection to personnel from radiation exposure when storing isotopes and has sufficient work and storage area to allow flexibility when using its contents. Optional heavy-duty 5" casters lend mobility to the work station and permit transportation of radioisotopes to the point of use under hazard-free conditions.

Magnifying-Viewing Lamp. Aluminum construction with a weighted base and circular, shadow-free fluorescent illumination. Has 2X magnification. Swing arm permits maximum maneuverability. 110V, AC.



L-Block Lead Shield. Solid lead shield, 5 cm thick (2"), protects head and torso from radiation. Tilted lead-glass window, 5 cm thick x 10 cm high x 20 cm wide (2" x 4" x 8") has a density of 6.2 gm/cm³ and allows a safe, unobstructed view of the work area. Overall size 56 cm high x 35 cm wide x 42 cm long (22" x 14" x 16½"). Weighs 180 Kg (410 lbs.). An optional stainless steel work tray is available (see below).

Shielded Storage Safe. Choice of sizes (6-drawer unit is shown). Additional details are on next page.

Steel Table. Table provides a solid support surface for components of work station. Smooth bevel-edged worktop offers adequate area for tool and instrument placement. Table support frame is solid steel with welded corner joints for maximum strength. Has 10 cm x 10 cm (4" x 4") floor supports. Overall size 71 cm x 91 cm x 86 cm high (28" x 36" x 33¾"). Weighs 54 Kg (120 lbs.).

Stainless Steel Tray For L-Block Lead Shield. 38 cm x 33 cm x 2 cm high (15" x 13" x ¾").

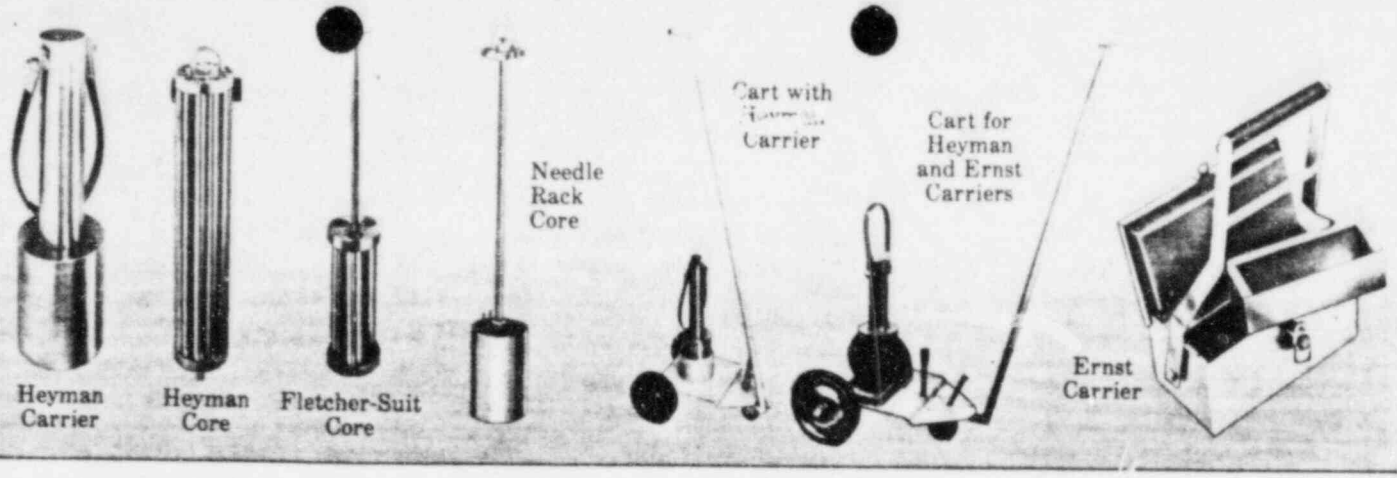
Storage Drawer Fits under work-top. 50 cm x 61 cm x 18 cm (19½" x 24" x 7").

Swivel Casters Heavy-duty, 13 cm (5") casters assure easy mobility for work station.

As a guide to determine maximum isotope content for a desired surface radiation level, the following Tenth-Value Layers (in lead) are provided:*
Radium 5.5cm, Cesium-137 2.2cm, Cobalt-60 4.1cm, Iridium-192 2.0 cm, and Gold-198 1.1 cm.

*National Council on Radiation Protection and Measurements, Report No. 40, "Protection Against Radiation from Brachytherapy Sources."

67-752	L-Block Lead Shield (22" x 14" x 16½")	$1875.00
67-751	L-Block Lead Shield (16½" x 14" x 14")	1125.00
67-761	Stainless Steel Tray (for 67-752 only)	50.00
67-749	Steel Table with Drawer	500.00
67-750	Steel Table on Casters with Drawer	750.00
67-753	Magnifying-Viewing Lamp	150.00
	Shielded Storage Safes	See next page



Carriers, Cores and Carts

For rapid transport of radioactive sources to bedside or operating room

- **Ideal for temporary storage of approx. 100 mg Ra-eq ^{137}Cs or 100 mg Ra.**

These units are designed for safety and convenience in transporting radioactive material between a permanent storage safe and the patient's bedside. Carriers and lift-out cores are made of corrosion-free stainless steel, and the carriers are shielded with 1" (2.54 cm) of lead. The units fit a rugged, enamelled-steel cart equipped with two wheels, a caster and a long handle. One cart holds a Heyman Carrier; the other one holds both Ernst and Heyman Carriers.

Three types of lift-out cores are available for the Heyman Carrier: Fletcher-Suit, Heyman, and a Needle Rack. The Fletcher-Suit Core holds one loaded uterine source carrier and two loaded colpostat source carriers. The Heyman Core holds up to 12 MICRAD™ or Heyman sources. The lead-filled Needle Rack Core holds up to 12 threaded needles.

The Ernst Carrier is 15" high with a 6" x 2" x 2" opening. The Heyman Carrier is available with an optional padlock for extra safety.

Specifications

All-welded stainless steel carrier, shielded with 1" (2.54 cm) lead. Lift-out stainless steel core. Maximum radiation level (at 1 meter from center of shield): 5 mR/hr when 100 mg ra-eq cesium-137 is stored; 20 mR/hr for 100 mg radium. Enamelled-steel cart has two 8" wheels, one 3" caster, and 40" handle.

67-724	Heyman Carrier	$ 210.00
67-723	Heyman Carrier with Padlock	260.00
67-715	Fletcher-Suit Core	125.00
67-725	Heyman Core	200.00
67-728	Needle Rack Core	200.00
67-705	Cart for Heyman Carrier	280.00
67-706	Cart for Heyman and Ernst Carriers	280.00
67-717	Heyman Carrier, Fletcher-Suit Core, Cart	615.00
67-727	Heyman Carrier with Heyman Core, Cart	690.00
67-757	Ernst and Heyman Carriers, Cores, Cart	1040.00
67-755	Ernst Carrier	350.00

Radioisotope Storage Safes

Provide maximum radiation protection

- **Custom-design storage drawers available.**

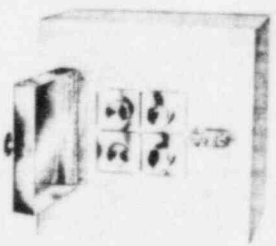
These safes assure maximum shielding against exposure to radiation from tube sources. Made of steel with 10 cm (4") of lead, each safe has a door keylock and is fire-proof. The storage area in each drawer is 15 cm long x 4.4 cm wide x 4.7 cm deep (6" x 1¾" x 1⅞").

Storage Safes with 7.6 cm (3") of lead are also available. Model numbers and prices on request.

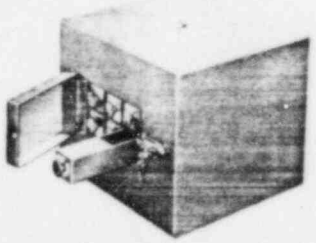
Custom-Designed Drawers

67-701	Converting 1 safe drawer to front opening for storing 10 MICRAD Sources	$250.00
67-703	Lead Insert for safe drawer. Has 36 holes for upright storage of tube sources	50.00

For special requirements relating to drawers, source holders or other modifications, a separate price quotation will be forwarded on request.



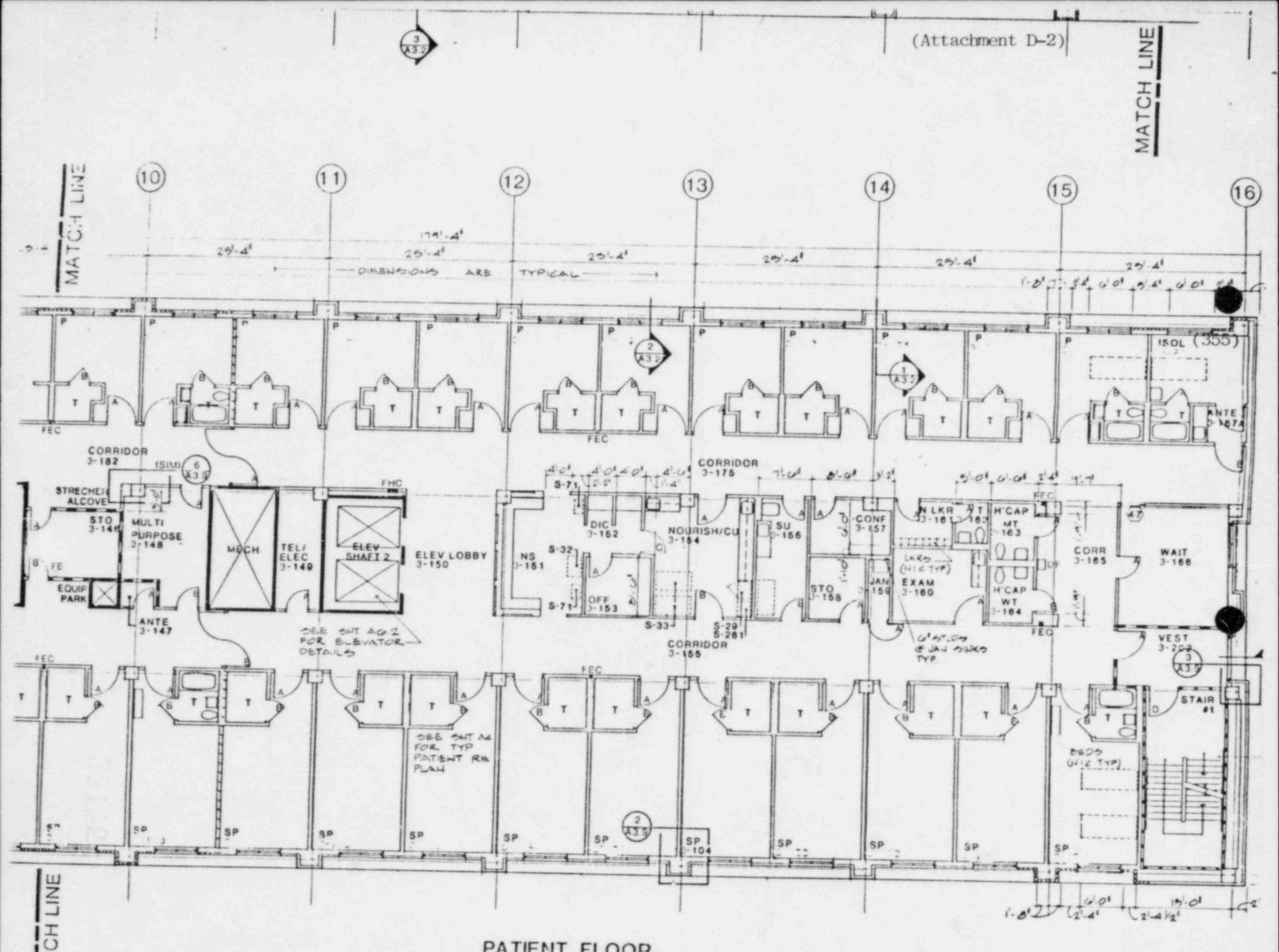
67-745 Four-Drawer Safe



67-746 Six-Drawer Safe

Model No.	No. of Drawers	Size of Safe Length	Width	Height	Net Weight	Price
67-744	2	36.8 cm (14½")	31.8 cm (12½")	26.7 cm (10½")	291 Kg (640 lbs.)	$1825.00
67-745	4	36.8 cm (14½")	32.4 cm (12¾")	32.4 cm (12¾")	357 Kg (785 lbs.)	$1850.00
67-746	6	36.8 cm (14½")	38.1 cm (15")	32.4 cm (12¾")	523 Kg (1150 lbs.)	$2750.00

(Attachment D-1)


MATCH LINE
MATCH LINE
10
11
12
13
14
15
16
179'-4"
25'-4"
DIMENSIONS ARE TYPICAL
CORRIDOR 3-182
STRECHER ALCOVE
STO 3-146
MULTI PURPOSE 3-148
EQUIP PARK
ANTE 3-147
MECH
TEL/ ELEC 3-149
ELEV SHAFT 2
ELEV LOBBY 3-150
FHC
FE
FEC
SEE SHT AG.2 FOR ELEVATOR DETAILS
CORRIDOR 3-175
S-71
DIC 3-152
NOURISH/CU 3-154
SU 3-156
NS 3-151
S-32
OFF 3-153
S-33
S-29
S-28
CORRIDOR 3-155
CONF 3-157
STO 3-158
JAN 159
EXAM 3-160
LKRS (H/C TYP)
H'CAP WT 3-164
H'CAP MT 3-163
CORR 3-165
WAIT 3-166
VEST 3-208
STAIR #1
ISOL (355)
ANTE 3-174
SEE SHT M FOR TYP PATIENT RM PLAN
SP 3-104
SP
PATIENT FLOOR

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