OCT 29 1987

614/114B

U.S. Nuclear Regulatory Commission
Region II, Nuclear Materials Safety Section
101 Marietta Street, Suite 2900
Atlanta, GA 30323
Attn: Mr. Earl Wright or Ms. Carol Connell

Subject: Amendment request to NRC License #41-00119-08.

The new Spinal Cord Injury (SCI) laboratories are ready for occupancy. Previously a number of staff have been located in University of Tennessee space. The SCI laboratories are on the same property as (same address) and are directly attached to and a part of the existing V.A. Medical Center.

Enclosed is a scale drawing (labeled #1) showing the laboratories which are made up of 200, 400 and 600 square feet modules. Initial allocation of space is shown, although this is subject to continued change as approved by the Radiation Safety Committee. Drawings #2, 3 and 4 are enlargements, by areas, of drawing #1.

Enclosed also is a blow-up (scale drawing #5), shown as a representative example, of one section located between lines 15 and 22 in the south-east corner of scale drawing 1.

Laboratory cabinets are standard metal cabinets with epoxy resin tops. Walls are painted and floors are vinyl tile coated with floor wax. The area is built according to V.A. laboratory specifications. An eye wash is located at each sink. Emergency showers are located at intervals along the hallways. Chemical fume hoods are specified for 100 FPM face velocity airflow with sash wide open; actual face velocity measurements in BE-105 and BE-103 show 105 FPM. Note from the table "Exhaust and Fume Hoods" for BE-103, for example that a total of 875 CFM is specified and actual hood opening is 28"x38", thus specifying 100 FPM minimum. They also have a flow activated "on" light. All hoods will meet this minimum 100 FPM.

Rooms BB-127 and BE-108 are designed for higher level radioisotope use. They contain radioisotope hoods having stainless steel work surfaces and HEPA filtered exhausts (0.3 micron), epoxy counter tops and sealed concrete floors (Dexotex). Actual face velocity measurements in BB-127 and BE-108 yielded minimum 105 FPM withsash wide open. Both these hoods are equipped with positive static alarm, filter alarm, and magnehelic gauge to measure filter differential pressure.

Some of the major equipment assignments currently are:

BE-110: most of the LSC counters
BE-117: RIA lab
BB-130: gamma counter
BB-107: beta counter

Additional equipment will be brought from the previously used University of Tennessee space. Location of equipment within the complex is subject to change as needs change and approval is given.

The area is to be used for the same research as already approved by, or will be approved by, the Radiation Safety Committee. Marking and labelling of the laboratories is under way and wipe and meter surveys will be performed as currently done in previously existing V.A. Research space. The previously existing Research area will continue under Research and is not to be abandoned by Research.

As space available to the researchers at U.T. is being closed out, priority handling of this space addition is kindly requested. Would you please call us as soon as approval has been signed, as we very much need to expedite this move.

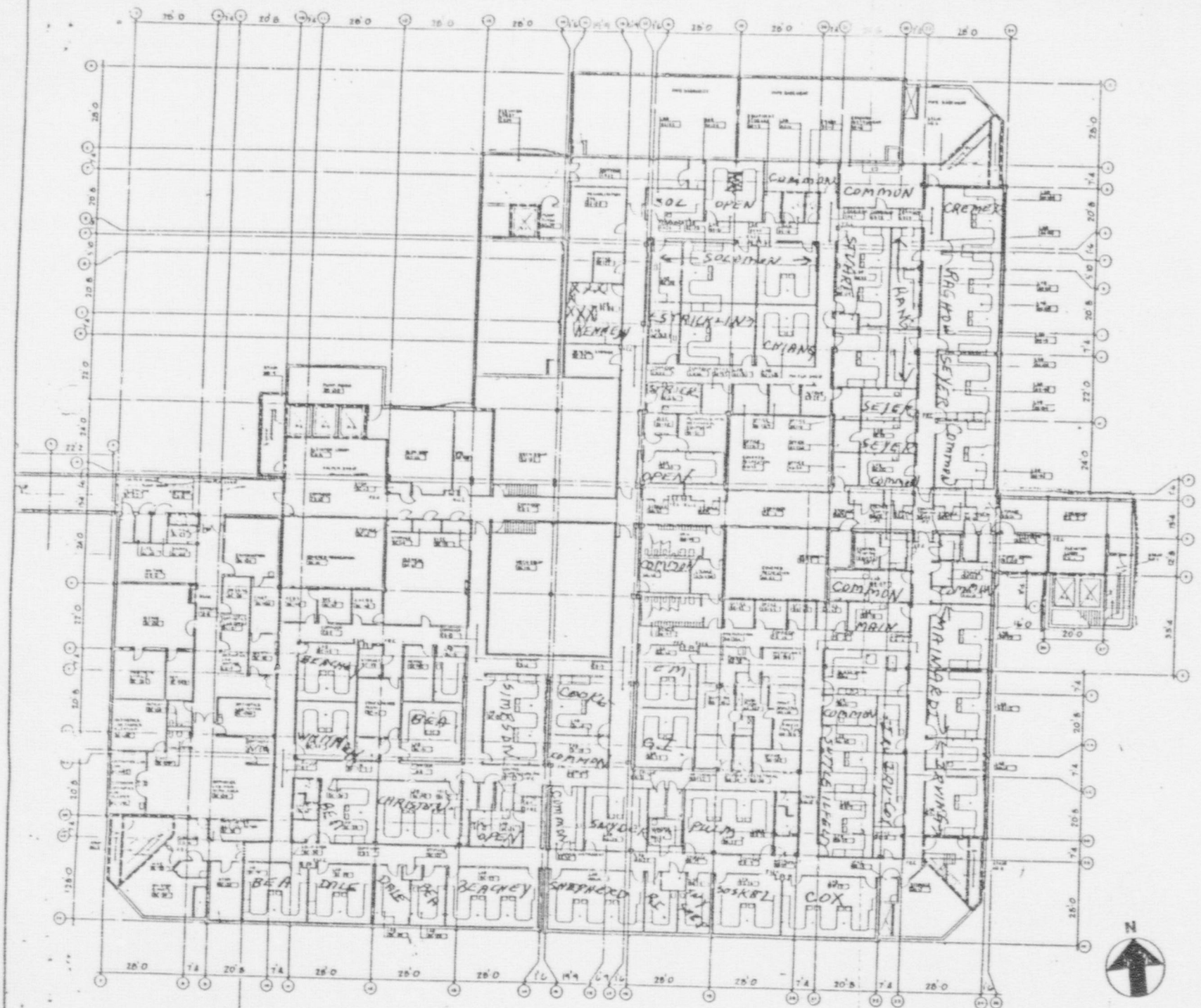
Please note that we are simultaneously sending a copy of this request to VACO as well as directly to NRC. Telephone permission to proceed in parallel was obtained October 28, 1987 from VACO.

Thank you very much for your help.

Sincerely,

Sam H. Lott, Ph.D.
Radiation Safety Officer

Enclosures: Scale drawing #1-6, Hood data (H-3:radioisotope; H-13; chemical fume)


COMMON
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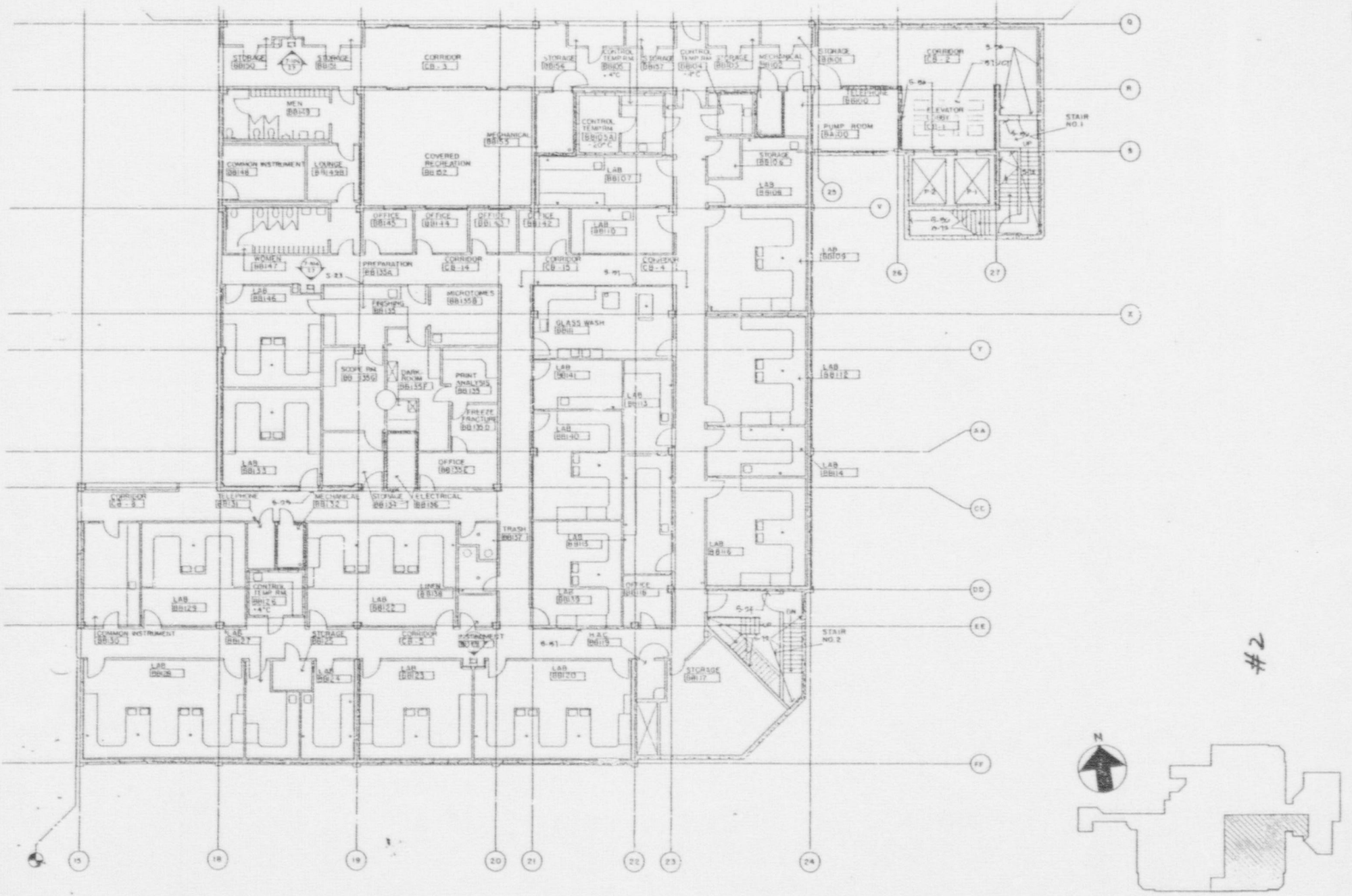
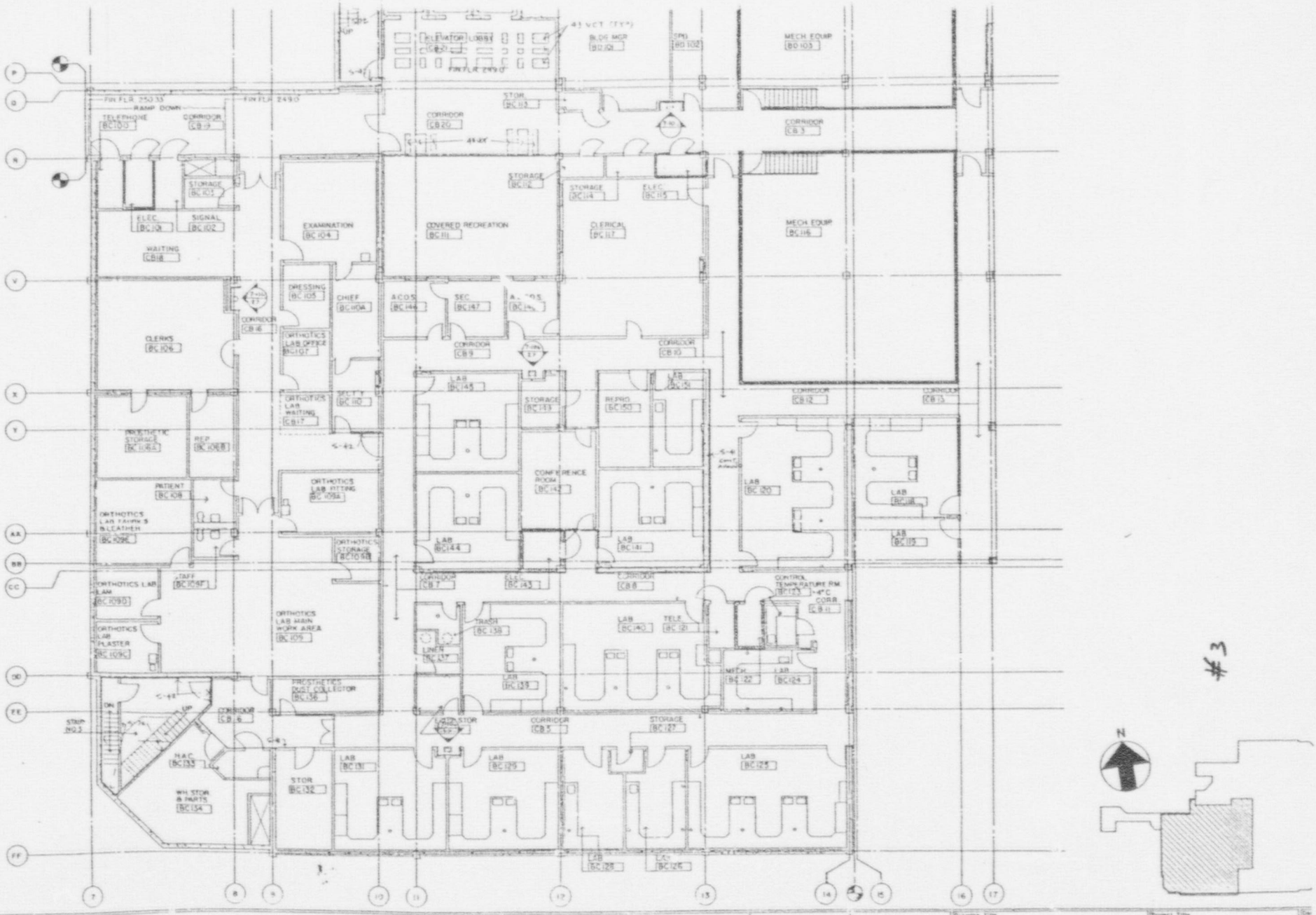
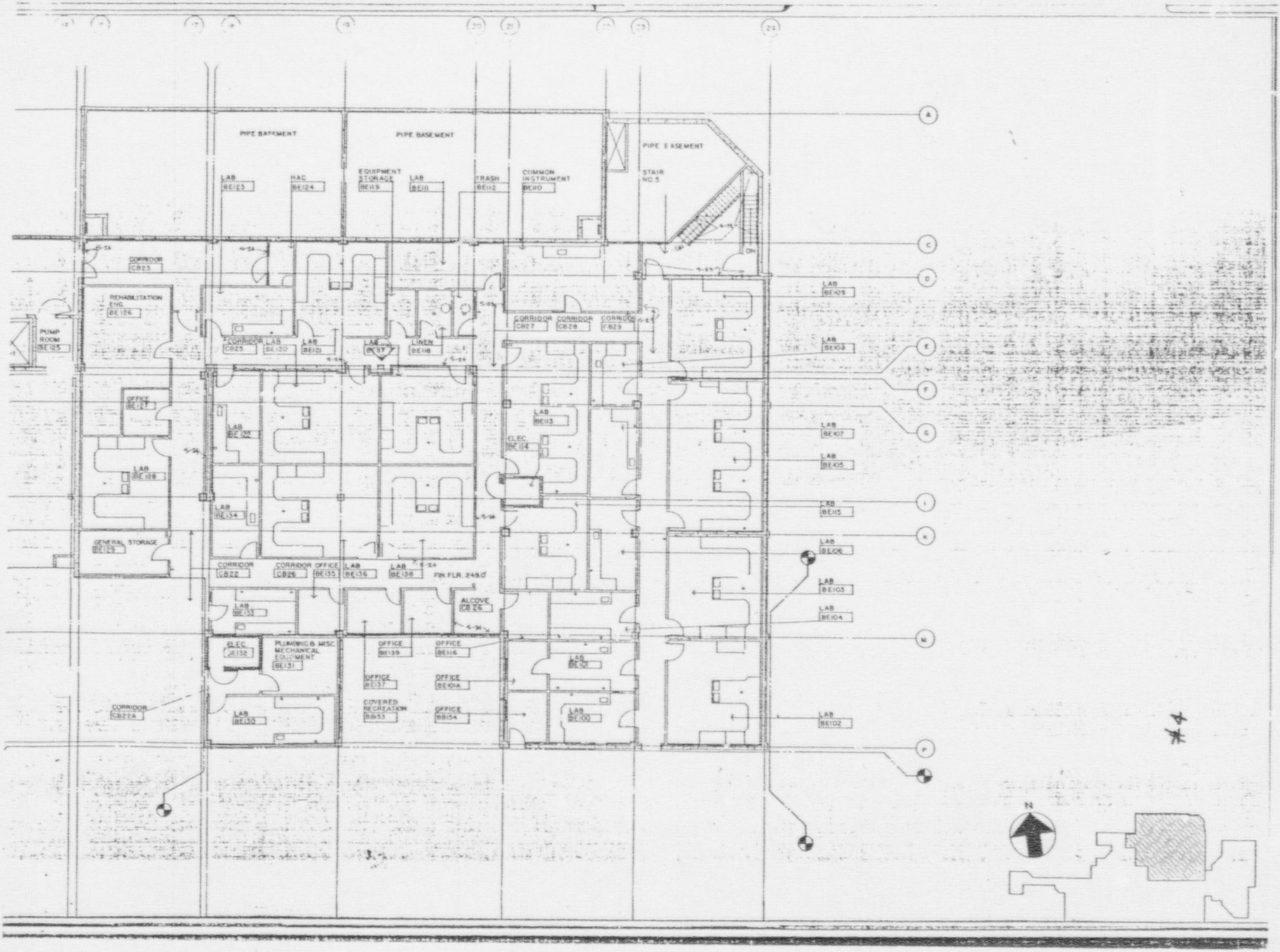
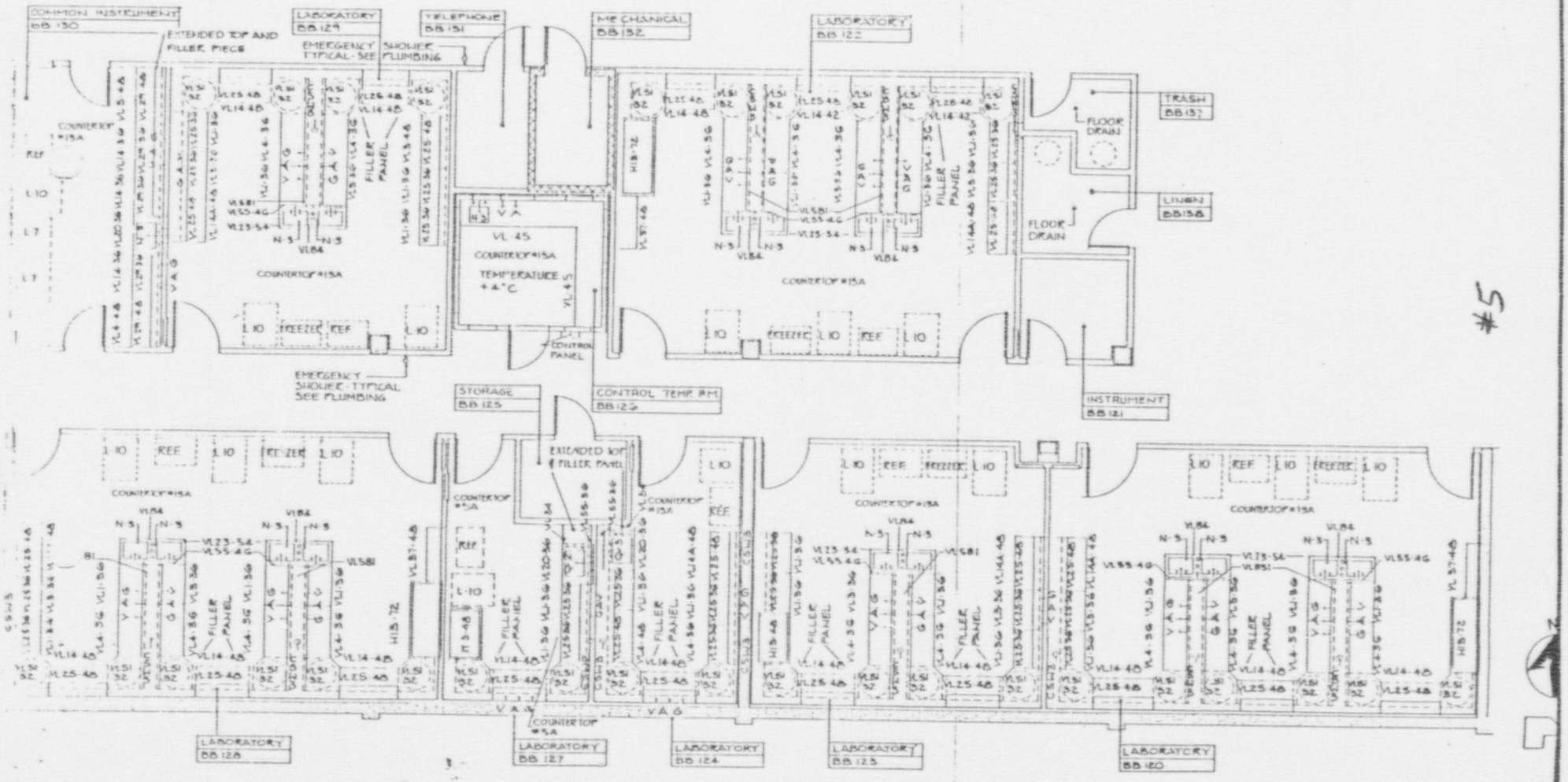
OPEN
SOLOMON
STRICKLAND
HANK
SEYER
COMMON
MAIN
BEACHEY
SHEPHERD
COX
N


STORAGE BB102
STORAGE BB101
CORRIDOR CB-3
STORAGE BB154
CONTROL TEMP RM BB106 +4°C
STORAGE BB157
CONTROL TEMP RM BB104 -4°C
STORAGE BB103
MECHANICAL BB102
STORAGE BA101
CORRIDOR CB-2
MEN BB149
MECHANICAL BB155
CONTROL TEMP RM BB103A -20°C
TELEPHONE BB100
PUMP ROOM BA100
ELEVATOR 10KV
STAIR NO.1
COMMON INSTRUMENT BB148
LOUNGE BB149B
COVERED RECREATION BB102
LAB BB107
STORAGE BB106
LAB BB108
OFFICE BB145
OFFICE BB144
OFFICE BB143
OFFICE BB142
LAB BB110
LAB BB109
WOMEN BB147
PREPARATION BB135A
CORRIDOR CB-14
CORRIDOR CB-15
CORRIDOR CB-4
LAB BB146
FINISHING BB135
MICROTOMES BB135B
GLASS WASH BB111
SCOPE RM BB135G
DARK ROOM BB135F
PRINT ANALYSIS BB135
FREEZE FRACTURE BB135D
LAB BB104
LAB BB113
LAB BB112
LAB BB140
LAB BB133
OFFICE BB135C
LAB BB114
CORRIDOR CB-8
TELEPHONE BB131
MECHANICAL BB132
STORAGE BB133
ELECTRICAL BB136
TRASH BB137
LAB BB115
LAB BB116
CONTROL TEMP RM BB126 +4°C
LAB BB129
LAB BB122
LINEN BB138
LAB BB119
OFFICE BB118
COMMON INSTRUMENT BB130
LAB BB127
STORAGE BB125
CORRIDOR CB-5
INSTRUMENT BB128
H.V.A.C. BB119
STAIR NO.2
LAB BB126
LAB BB124
LAB BB123
LAB BB120
STORAGE BB117
N

#2


FIN FLR 250.0
FIN FLR 250.33
RAMP DOWN
TELEPHONE BC100
CORRIDOR CB19
STORAGE BC103
ELEC BC101
SIGNAL BC102
WAITING CB18
EXAMINATION BC104
COVERED RECREATION BC111
CLERICAL BC117
MECH EQUIP BC116
DRESSING BC105
CHIEF BC110A
ACOS BC144
SEC BC147
CORRIDOR CB16
CORRIDOR CB9
CORRIDOR CB10
CLERKS BC106
ORTHOTICS LAB OFFICE BC107
ORTHOTICS LAB WAITING CB17
ASST BC110
LAB BC145
STORAGE BC133
REPRO BC150
LAB BC116
CORRIDOR CB12
CORRIDOR CB13
PROSTHETIC STORAGE BC104A
REP BC108
PATIENT BC108
ORTHOTICS LAB FITTING BC109A
CONFERENCE ROOM BC142
LAB BC120
LAB BC118
LAB BC115
ORTHOTICS LAB PLASTER BC109C
ORTHOTICS LAB MAIN WORK AREA BC109
ORTHOTICS STORAGE BC109B
LAB BC144
LAB BC141
CORRIDOR CB7
LAB BC143
CORRIDOR CB8
CONTROL TEMPERATURE RM BC123 -4°C
CORR CB11
TRASH BC138
LAB BC140
TELE BC121
LINEN BC137
LAB BC139
MECH BC122
LAB BC124
PROSTHETICS DUST COLLECTOR BC136
CORRIDOR CB6
CORRIDOR CB5
STORAGE BC127
H&C BC133
WH STOR & PARTS BC134
STOR BC132
LAB BC131
LAB BC129
LAB BC125
LAB BC128
LAB BC126
N
#3
A JOINT VENTURE OF:
2080 PEABODY AVENUE . MEMPHIS . TENNESSEE 38104
PARTIAL BASEMENT
120 BED S.C.I. UNIT

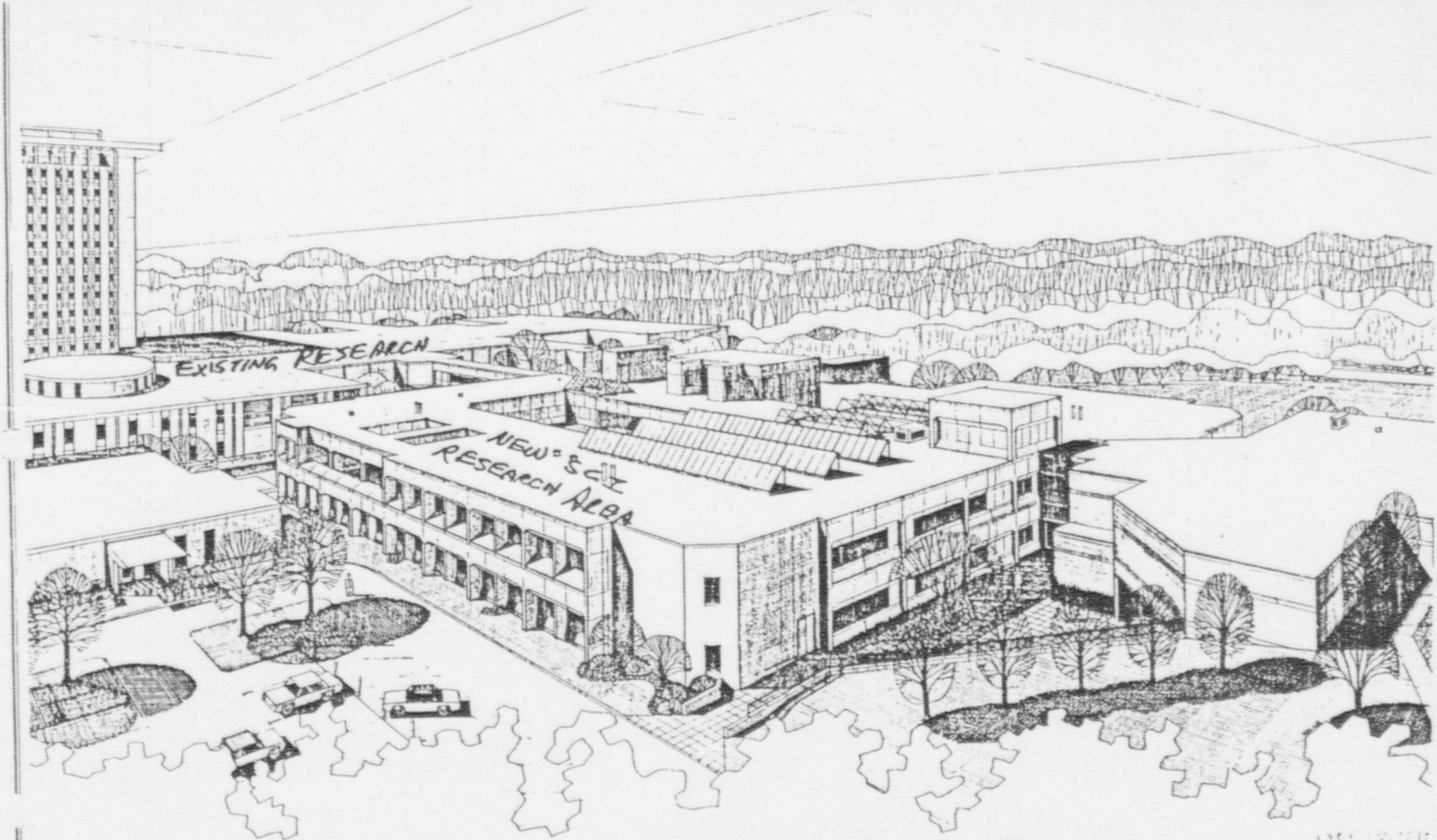

PIPE BASEMENT
PIPE BASEMENT
PIPE EASEMENT
STAIR NO.5
LAB BE123
HAC BE124
EQUIPMENT STORAGE BE119
LAB BE111
TRASH BE112
COMMON INSTRUMENT BE110
CORRIDOR CB23
REHABILITATION ENG. BE126
PUMP ROOM BE125
CORRIDOR CB25
LAB BE120
LAB BE121
LAB BE117
LINEN BE118
CORRIDOR CB27
CORRIDOR CB28
CORRIDOR CB29
LAB BE109
LAB BE108
OFFICE BE127
LAB BE122
LAB BE113
ELEC BE114
LAB BE107
LAB BE105
LAB BE128
LAB BE134
LAB BE115
GENERAL STORAGE BE129
LAB BE106
CORRIDOR CB22
CORRIDOR OFFICE CB24
LAB BE135
LAB BE136
LAB BE138
FIN.FLR. 249.0'
LAB BE103
ALCOVE CB26
LAB BE133
LAB BE104
ELEC BE132
PLUMBING & MISC MECHANICAL EQUIPMENT BE131
OFFICE BE139
OFFICE BE116
LAB BE102
OFFICE BE137
OFFICE BE140A
COVERED RECREATION BB153
OFFICE BB154
CORRIDOR CB22A
LAB BE130
LAB BE100
LAB BE102
N



#5

H-3: RADIOISOTOPE HOOD

H-13: CHEMICAL FUME HOOD



SPINAL CORD INJURY UNIT
VETERANS ADMINISTRATION MEDICAL CENTER
MEMPHIS, TENNESSEE

A JOINT VENTURE OF

ARCHITECTS INC.

COMMON USE	BB121	IMMUNOFLUORESCENT MICROSCOPE
	BB130	SPECTOPHOTOMETER, ULTRACENTRIFUGES (2),
		SORVALL CENTRIFUGE, GAMMA COUNTER
	BC119	REVCO FREEZERS
	BB108	DRY ICE, LN2, LYOPHILIZERS (2), CELL FREEZER
	BB107	SPECTOPHOTOMETER, ULTRACENTRIFUGES (2),
		ORVALL RC5-Bs (2), SONICATOR, BETA COUNTER
	BB148	REVCO FREEZERS
	BE111	REVCO FREEZERS
	BE110	SCINTILLATION & GAMMA COUNTERS
	BB127	RADIOISOTOPE LAB
	BE100	AMINO ACID ANALYZERS
	BE102	SEQUENCERS AND SYNTHESIZERS
GLASSWASH	BB111	GLASSWASHER, DRYING OVEN, AUTOCLAVE
	BB141	STILL, DeI WATER, GLASS STILL, ICE

EXHAUST AND FUME HOODS

	LOCATION	EQUIPMENT OR SERVICE	HOOD TYPE	SIZE IN.	EXH. AIR CFM	EXH. AIR S.P.	AUX. AIR CFM	AUX. AIR S.P.	FAN SERVING HOOD
7-H1-1	BE 102	LAB. HOOD	H13-4B	45x48	875	0.6	525	0.5	7-EF-1
7-H1-2	BE 103		H13-4B	45x48	875		525		7-EF-2
7-H1-3	BE 105		H13-7B	45x72	1375		825		7-EF-3
7-H1-4	BE 108	ISOTOPE HOOD	H13-4B	45x48	875		0		7-EF-4
7-H1-5	BE 113	LAB HOOD	H13-7B	45x72	1375		825		7-EF-5
7-H1-6	BE 115		H13-4B	45x48	875		525		7-EF-6
7-H1-7	BE 117		H13-4B						7-EF-7
7-H1-8	BE 121		H13-4B						7-EF-8
7-H1-9	BE 120		H13-4B						7-EF-9
7-H1-10	BE 128		H13-4B						7-EF-10
7-H1-11	BE 135		H13-4B						7-EF-11
7-H1-12	BB 109		H13-4B						7-EF-12
7-H1-13	BB 112		H13-4B						7-EF-13
7-H1-14	BB 116		H13-4B						7-EF-14
7-H1-15	BB 120		H13-7B	45x72	1375		825		7-EF-15
7-H1-16	BB 122		H13-7B	45x72	1375		825		7-EF-16
7-H1-17	BB 123		H13-4B	45x48	875		525		7-EF-17
7-H1-18	BB 127	ISOTOPE HOOD	H13-4B	45x48	875		0		7-EF-18
7-H1-19	BB 128	LAB H200	H13-7B	45x72	1375		825		7-EF-19
7-H1-20	BB 136A		H13-4B	45x48	875		525		7-EF-20
7-H1-21	BB 139		H13-7B	45x72	1375		825		7-EF-21
7-H1-22	BB 140		H13-4B	45x48	875		525		7-EF-22
7-H1-23	BB 146		H13-4B						7-EF-23
7-H1-24	BC 118		H13-4B						7-EF-24
7-H1-25	BC 120		H13-7B	45x72	1375		825		7-EF-25
7-H1-26	BC 125		H13-7B	45x72	1375		825		7-EF-26
7-H1-27	BC 129		H13-4B	45x48	875		525		7-EF-27
7-H1-28	BC 131		H13-4B						7-EF-28
7-H1-29	BC 139		H13-4B						7-EF-29
7-H1-30	BC 140		H13-7B	45x72	1375		825		7-EF-30
7-H1-31	BC 141		H13-4B	45x48	875		525		7-EF-31
7-H1-32	BC 145	LAB H200	H13-4B	45x48	875		525		7-EF-32
7-H1-33	IP 101	KITCH. HOOD	W-1300	42x60	1250	1.33	500	0.1	7-RV-A/7-RSF-1
7-H1-34	IP 101C	DISH WASH	—	—	1550	—	—	—	7-RV-10
—	BC 128	BIOL CABIN	H12-4B(VV)	—	300	—	0	—	GENERAL EXH.
—	BB 113	BIOL CABIN	H12-4B(VV)	—	300	—	—	—	
7-H1-36	BC 109	WELDING	"A"						

NOTE: REFER TO DETAIL DWG. 7-H 11 FOR DETAILS OF TYPE "A" HOOD
EQUIPMENT IS SPECIFIED IN SERIES 500 SPECIFICATIONS.

Date

A JOINT VENTURE OF:

YEATES, G
CROMWELL, TRUEMPER, LEVY,
PICKERING, WOOTEN,
THOMP

Hood Data

aire Fume Hoods — Radioisotope Superstructure H3-48

tope Fume Hood Superstructures should be
d when special base cabinets are to be used
hood superstructure is to be installed on
g base cabinets. Please note that type "S"
pe "K" superstructures include an integral or
ed work surface. Type "F" requires that the
rface be specified as a separate item.

d for one 120 Volt A.C. duplex receptacle, one
Volt A.C. receptacle, a two-tube fluorescent
tubes included), and a light switch, other ser-
must be specified and ordered as required.

tope Superstructures are Air Foil design
rmed entrance members and a bottom
al foil. Framing members and exterior
are fabricated of cold rolled steel finished
fume and reagent resistant, baked plastic

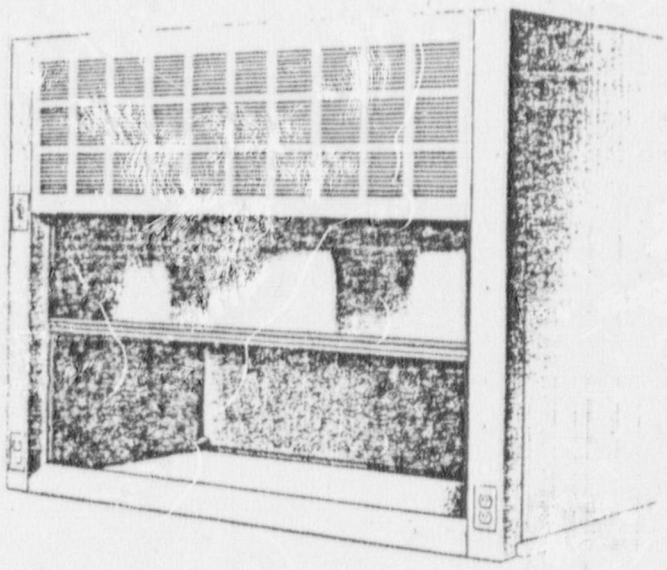
ner material and interior finish from the
s listed below.

F, for low level, short half-life isotopes. White
coated interior. Type 304 dished stainless
work surface. Interior side wall access panels
ded.

S, for moderate level activities. For materials
nger half-lives and higher energy levels. In-
and work surface of type 304 stainless steel.
side wall access panels provided.

K, for high energy level materials. The
te in radioisotope fume hood designs. One
type 304 stainless steel interior has all cor-

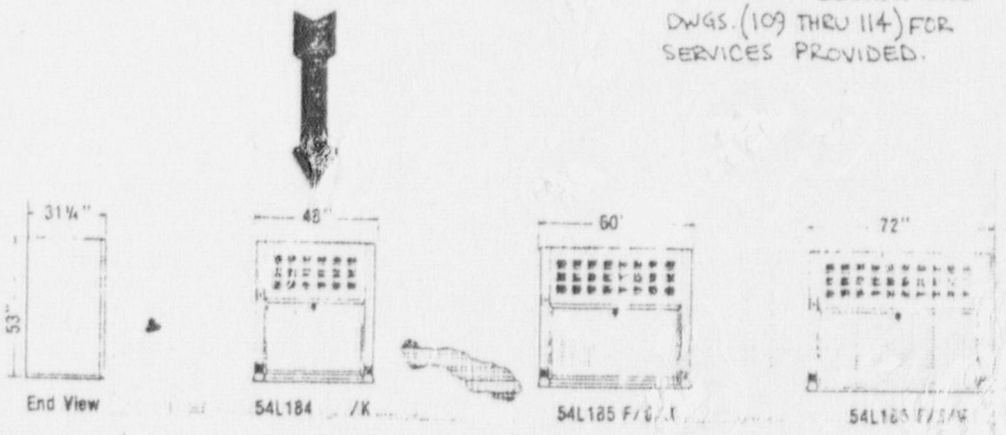
including work surface



ners coved, welded and ground to eliminate any possibility of material build-up. Easily cleaned and decontaminated.

When services are not ordered, plugged holes are provided for future fixture installation. Interior access panels are furnished on Type "F" and Type "S" hoods only.

* SEE HAMILTON INDUSTRIES RL-455781 SECTION 511C DWGS. (109 THRU 114) FOR SERVICES PROVIDED.



Vectaire Fume Hoods — Vectrol Auxiliary Air Superstructure

H13-48
H13-72

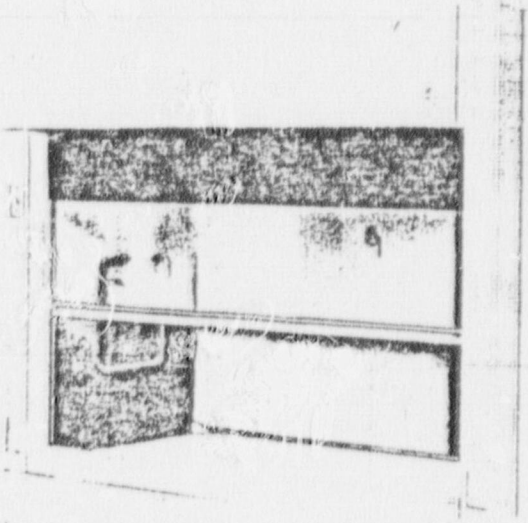
The Vectrol design was developed to yield an increased percentage of capture of auxiliary air when tempered, outside summer air is brought to the chemical hood. The supply air system used with these conditions is usually designed to heat the air during winter months, but to use air taken from outside the building during warmer months. It should be noted, however, that air collected from the roof of the building may reach temperatures of 150 degrees during sunny daytime hours.

When these temperatures cause discomfort or adversely affect the precision of procedures conducted within the hood, it is suggested than an alternate air supply source be used or that supply air be cooled to an acceptable temperature.

Other benefits of this hood design include lower auxiliary air velocities and additional head room for hood personnel.

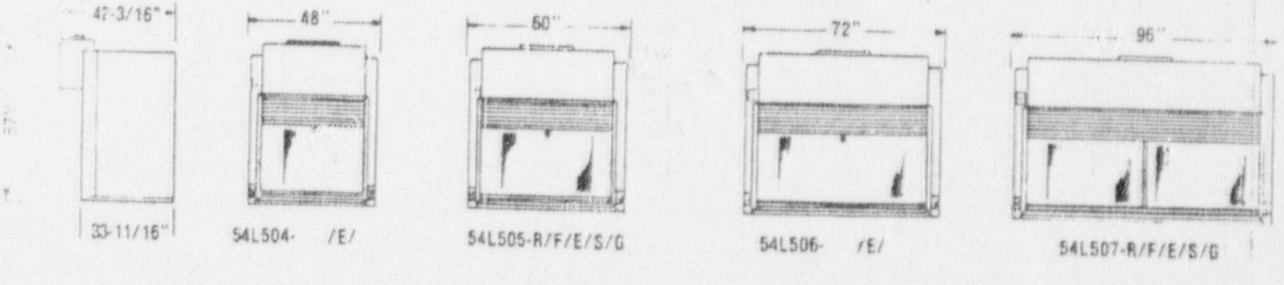
Vectrol Superstructures are designed to fit on a 30 inch deep work surface. All superstructures are furnished with a full view, laminated safety glass sash with a full width recessed pull. Inside sash surface does not contact supply air.

Specify services required. When fixtures are not required, holes are capped, providing for simplified installation should requirements change.



Light switch, two tube fluorescent light and two 120V, 20 Amp. duplex receptacles are always supplied. Eight foot models have two fluorescent lights. Superstructures shown on this page can be combined with work surfaces and special purpose base cabinets for custom assemblies.

* SEE HAMILTON INDUSTRIES RL-455781 SECTION 511C DWGS. (109 THRU 114) FOR SERVICES PROVIDED.



54L504- /E/ 54L505-R/F/E/S/G 54L506- /E/ 54L507-R/F/E/S/G

Hamilton INDUSTRIES

LABORATORY FUME HOODS

GENERAL REQUIREMENTS

1. Laboratory fumehoods shall function as ventilated, enclosed work spaces, designed to capture, confine and exhaust fumes, vapors and particulate matter produced or generated within the enclosure.

2. Laboratory fumehoods shall provide safe operation when properly installed and connected to an exhaust system that provides the proper exhaust air volume to permit the fumehood to operate at the specified face velocity.

3. Fumehoods shall be designed for consistant and safe air flow through hood face. Negative variations of face velocity shall not exceed 20% of the average face velocity at any designated measuring point as defined in this specification.

4. Fumehood prototype evaluation of the manufacturer's standard product, when required, shall take place in the manufacturer's test facility with samples, apparatus, instruments and test materials to be supplied by the manufacturer at no cost to the owner or his representative. Test procedures shall follow the format included in this specification. At his option, the owner may verify data with his instruments, providing instrument suitability and calibration are mutually acceptable.

5. Field evaluation procedures, when required, shall be a separate contract and shall follow the format included in this specification.

6. Instructions covering safe and proper operation of the fumehood shall be provided in two forms.:

   A. A corrosion resistant metal or plastic plate attached to the fumehood exterior with condensed information covering recommended locations for apparatus and accessories, baffle settings and use of sash.

   B. Written instructions in booklet form providing additional details on safe and proper operation and maintenance.

CONSTRUCTION AND DESIGN

1. Fume hood superstructure shall be double wall construction consisting of an outer shell of sheet steel and an inner liner of corrosion resistant material as specified. Double wall shall house and conceal steel framing members, attaching brackets and remote operating service fixture mechanisms. Frame, inner shell and outer shell shall be assembled, fastened and connected into a rigid, self-supporting entity.

2. Wall thickness shall be 4-7/8" maximum, providing maximum interior work area. Access to fixture valves concealed between walls shall be provided by removable panels on hood exterior, access panels on the inside liner walls, or through removable front posts.

3. A fluorescent light fixture shall be installed on exterior of roof. Hood roof shall have a safety glass panel sealed, cemented and caulked to isolate the light fixture from fumes and vapors. Fixture shall be largest possible for fume hood size up to 48" on six foot superstructure, two lamp, rapid start, UL listed. Eight foot superstructures shall have two 36" fixtures. Ballast shall be sound rated to limit noise level. Fixture interior shall be finished with a white, high reflecting plastic enamel. Lamps shall be included.

4. Average interior illumination levels of the work area shall be 80 foot candles minimum. Work area shall be defined as that area inside the superstructure from side to side and from face of baffle to the inside face of sash and from the working surface to a height of 28 inches. 100 f.c. required

5. Exhaust outlet shall be radiused, bell shaped and flanged, of lead coated 18 gauge steel finished with #1145 P.M.A. Hoods with stainless steel liners shall have 18 gauge stainless steel exhaust collars welded in place. G.C. To coordinate

6. Fume hood sash shall be full view type providing a clear and unobstructed side to side view of fume hood interior and service fixture connections. Sash shall be laminated safety glass set into a deep form, extruded Polyvinyl Chloride guide. Top and bottom sash rails shall be 2" maximum of 18 gauge steel finished with reagent resistant baked enamel. Glass shall be set into rails with Neoprene or Polyvinyl Chloride glazing channel. Bottom rail shall have an integral, formed, full width, flush pull. Top rail shall be formed to accept lead weights for fine tuning of sash for exact and positive operation. A single weight, pulley, cable, counter balance systems shall be used to prevent sash tilting and permit one finger operation at any point along full width pull and to hold sash at any position without creep. Sash system shall be designed to prevent sash drop in the event of malfunction or failure of a cable. Three, four, five, six and eight foot models shall have a single sash and counter balance system.

7. Baffles shall provide controlled air vectors into and through the fume hood, and be fabricated of the same material as the [redacted]. Exhaust slots shall be provided on the full perimeter of the baffle with top and bottom slots adjustable. A fixed, permanently open horizontal slot located 30" above the work surface shall be provided.

8. Baffle adjustment shall permit setting for (1) high thermal loading, (2) heavier than air gases or fumes generated near work surface, and (3) normal or average operation. Adjustment shall be instantaneous, one handed, with a single point control, accomplished while hood is in use, without disturbing apparatus. For safety, fume hood shall maintain essentially constant exhaust volume at any baffle position. Changes in average face velocity and exhaust volume as a result of baffle adjustment shall not exceed 5% for any baffle position at the specified face velocity. Baffle designs which permit close-off of all slots or which require insertion of the operator's head and shoulders for adjustment are not acceptable.

9. Service fixtures and fittings, mounted inside of fume hood shall consist of hose nozzle outlets and valves controlled from exterior and equipped with color coded index handles. Valves shall be needle point type with self-centering cone tip and seat of hardened stainless steel. Tip and seat shall be removable and replaceable. All service fixtures shall be provided with piping, from valve to outlet, using galvanized iron or copper for water, and black iron for gas and vacuum services. Fixture components exposed to hood interior shall be finished with fume and reagent resistant baked plastic enamel coating. Services shall be as shown or specified.

10. Electrical services shall be three wire grounding type receptacles rated at 120 V.A.C. at 20 amperes. 250 V.A.C. receptacles shall be provided where specified. Flush plates shall be chrome plated, stainless steel or coated with a baked plastic enamel finish.

11. Work surface shall be dished a nominal one-half inch to contain spills. Fume hoods with stainless steel interiors shall have a reinforced, stainless steel work surface, ~~either~~ integral ~~or attached~~.

for H-3 see 511C-2.3.A.6

12. Fume hoods shall be designed to minimize static pressure loss with adequate slot area and bell shaped exhaust collar configuration. Measured average static pressure loss readings taken three diameters above the hood outlet from four points, 90 degrees apart, shall not exceed the following maximums:

Face Velocity	Measured S.P.L. (W.G.)
75 F.P.M.	.30 inches
100 F.P.M.	.50 inches
125 F.P.M.	.75 inches
150 F.P.M.	1.00 inches

13. Fume hoods shall be field convertible, from bypass type to auxiliary air by simple component replacement or addition. Change-over shall be accomplished without construction modifications and without special tools.

H3 Fume Hoods

RADIOISOTOPE FUME HOODS

1. Shall be as described under General Requirements.

2. Shall be constant volume type with a built-in automatic compensating bypass to maintain constant exhaust volume regardless of sash position. Bypass shall be positive in action controlled by the operation of the sash. A low impedance, directionally louvered panel shall be provided in the lintel bypass area. As the sash is lowered, the bypass design shall limit the increase in face velocity to a maximum of four and one-half times the average face velocity as measured with the sash full open.

3. Perimeter of access opening shall have an air foil or streamlined shape with all right angle corners radiused or angled. Bottom horizontal foil shall provide a nominal one inch bypass when the sash is in the closed position. Bottom foil shall be removable without the use of special tools.

H13 FUME HOODS

AUXILIARY AIR FUME HOODS - VECTROL DESIGN

1. Shall be described under General Requirements.

2. Shall be constant volume type with a built-in automatic compensating bypass to maintain constant exhaust volume regardless of sash position. Bypass shall be positive in action controlled by the operation of the sash. As the sash is lowered, the bypass design shall limit the increase in face velocity to a maximum of four and one-half times the average face velocity as measured with the sash full open.

   Bottom horizontal foil shall provide a nominal one-inch bypass when the sash is in the closed position.

3. The hood shall be designed to utilize from 50% to 70% supplemental air with the balance of the air taken from the room. Air supplied to the head shall be introduced directly above and immediately in front of the fume hood face. Capture efficiency of auxiliary air shall be 95% minimum.

4. The auxiliary air supply chamber shall provide for an even distribution of air and shall operate at reasonable static pressure loss levels. Air distribution shall be accomplished by deflection baffles, pressure inducing media and deflection vanes. Chamber shall be fabricated of 18 gauge sheet steel finished with reagent resistant enamel.

5. The air supply system shall be designed to handle warm air 20 degrees F. above room temperature with a capture efficiency of 95% minimum, with all air introduced at a low and controlled velocity.

6. Chamber height above floor shall be 6 foot, 6 inches minimum, to accommodate tall personnel.