This Document Consists of 36 Pages
This is Copy 6 of 16A

50-3-26

S[redacted]C[redacted]E T

DATE 3/15/50 INITIALS R.A.S.

Contract Number AT-33-1-GEN-53

Released through the
MOUND LSDR PROJECT
(funded through DOE's OPENNESS INITIATIVE)
Record Copy held at Mound Facility

MOUND DECLASSIFICATION REVIEW
DETERMINATION (CIRCLE NUMBER(S))
1 CLASSIFICATION RETAINED
2 CLASSIFICATION CHANGED TO
3 CONTAINS NO DOE CLASSIFIED INFO
4 COORDINATE WITH:
5 CLASSIFICATION CANCELLED
6 CLASSIFIED INFO BRACKETED
7 OTHER (SPECIFY):
1ST REVIEW-DATE: 9/11/97
AUTHORITY: DADC DADD
NAME: T.M. FLANAGAN
2ND REVIEW-DATE: 9/30/97
AUTHORITY: DD
NAME: R. Rotary

MOUND LABORATORY
Operated By
MONSANTO CHEMICAL COMPANY
MIAMISBURG, OHIO

REVISED
PILOT PLANT BUILDING JUSTIFICATION

(Supersedes Report 50-2-37)

RESTRI[redacted]ATA
This document [redacted]ins restr[redacted] data as defined in the Atom[redacted]ergy Act [redacted]54 Its transmittal or the d[redacted]sure of its c[redacted]nts in any manner to an u[redacted]horized perso[redacted] prohibited.

CA[redacted]N
This document [redacted]ains i[redacted]mation a[redacted] fecting the [redacted]ional D[redacted]nse of [redacted] United States[redacted] Its tr[redacted]mission [redacted]he disclosure [redacted]its cont[redacted]s in an[redacted]nner to an un[redacted]horized [redacted]rson is [redacted]ibited and may [redacted]ult in [redacted]vere crim[redacted]l penalties [redacted]er ap[redacted]cable Fe[redacted]l Laws.
R[redacted]ICTED DAT[redacted]
T[redacted] document [redacted]ntains re[redacted]cted data as [redacted]ined in [redacted] Atomic E[redacted]y Act of 1946.

GROU[redacted]
Excluded [redacted] automatic downg[redacted]g and d[redacted]sification

Date: March 14, 1950

Prepared By: R. A. Staniforth
S. H. Styles

Approved By: M. M. Haring
M. M. Haring
Laboratory Director

S[redacted]E C R[redacted]T

DISTRIBUTION

Copy 1. - Dr. Carroll A. Hochwalt

Copy 2. - Mr. Prescott Sandidge

Copy 3. - Dr. M. M. Haring

Copy 4. - Dr. J. J. Burbage

Copy 5. - Dr. R. A. Staniforth

Copy 6. - Area Manager, Atomic Energy Commission
Dayton, Ohio

Copy 7. - Area Manager

Copy 8. - Area Manager

Copy 9. - Dr. J. H. Payne, Jr.

Copy 10. - Dr. F. C. Mead, Jr.

Copy 11. - Mr. F. L. Halback

Copy 12. - Mr. J. R. Wiesler

Copy 13. - Central Files

Copy 14. - Central Files

Copy 15. - Central Files

Copy 16. - Central Files

Issued: MAR 15 1950

I. INTRODUCTION

In 1946 and 1947 when planning and design were underway for the proposed Mound Laboratory, there was only one problem assigned to the laboratory; research on a single radioactive isotope - polonium. As a consequence, the design centered around health physics and research requirements of this isotope, each area and laboratory being equipped for a phase of such a research program. In addition, emphasis was placed on the fundamental aspects of the research program, since it was felt that more knowledge of chemical and physical properties was necessary before any large scale development work could be started. Limitations of the temporary wartime facilities in Dayton had tended to make scientists handle small quantities of activity and to design and plan experiments of a nature that would not require bulk handling of radioactive materials. All of these factors had an influence on the design of the present Mound Laboratory.

II. PRESENT RESEARCH FACILITIES

A careful analysis of the presently available research and development space has been included in Appendix A. The major projects of the Laboratory have been analysed from the standpoint of man-power needs and space needs over the period until the end of June, 1951. This analysis is included as Appendix B.

If Figure 4, Appendix B is closely examined it will be seen that the operation of a cave producing actinium for experimental purposes could begin in December, 1950. <u>However, no space is available within the present facilities for this work.</u>

Operation of a radium pilot plant could begin about November, 1950 and installation of equipment could start as early as July, 1950. However, no space is available within the present facilities for this work.

Bench scale space for Hanford crib wastes is needed now. This kind of space is now available in the process development area of the Research Building (Room 127). It will be so used immediately and continue in use through June 1950. After midsummer of 1950 the Reactor Waste Disposal Project will devote its effort successively to Tributylphosphate wastes, Redox wastes, and Materials-testing-reactor wastes. The activity level of these waste streams is considerably higher than the crib waste level. Radiation shielding of operations will be vitally necessary. Room 127 will be ideal for bench scale work on these hotter wastes, for the bulky shields necessary for small scale operations will probably fit into this area. But Room 127 is nowhere near large enough for the shielding required for pilot plant work on these hotter wastes. High activity waste disposal pilot plant operations are projected to begin in January 1951. It should be repeated that no space is available within the present facilities for such work.

The pilot plant space available in the "HH" Building will house the first unit of the incinerator plant in a month or so. Two other units to convert it to full plant will be installed as rapidly as possible.

III. ALTERNATE COURSES TO PROVIDE ESSENTIAL SUITABLE SPACE

An unequivocal fact must be faced. If process development work on projects assigned to the Mound Laboratory is to be done, it is absolutely essential to provide adequate pilot plant space.

A careful examination of possible solutions to this problem seems to indicate only the following possibilities:

A. Modify Existing Mound Laboratory Facilities

A survey was made of all buildings at the Mound Laboratory to ascertain the availability, adequacy, and suitability of presently used space for possible conversion to pilot plant use. The results were negative. Certain general considerations, such as:

1. Complete elimination of the "T" Building because of the danger of operations interruption:

2. Elimination of the "I" Building because of contamination level requirements; etc., ruled out everything but the Research Building from consideration.

In turn, the Research Building was ruled out by considerations illustrated on Figures 5, 6, and 7 of Appendix B which show the proposed use of all existing facilities in graphic fashion. However, it should be noted that, even if the floor space required for pilot planting were available in the Research Building, the remodelling costs would run at least three times as much as an equivalent new structure. In addition, laboratory operations during such remodelling, if it were possible, would cease. Finally, all Research Building areas have insufficient head room.

B. Modify Existing Scioto Laboratory Facilities

Even more serious difficulties would be encountered in transferring pilot plant operations to the Scioto Laboratory.

1. The research staff would be split between Marion and Dayton while pilot plant operations were in progress.

2. Cost of starting pilot plant work at Scioto Laboratory would be prohibitive, even if no space modifications were necessary. But some space

modifications would be necessary, since Scioto Laboratory was designed purely as a production plant for polonium and urchins. In addition, no Cafeteria, Administration Building, or Isolated Laboratory presently exists at that site. These, or their equivalent, would have to be built.

3. The personnel to be added to those already at Scioto Laboratory would include not only people directly engaged in such pilot plant work, but also all service personnel; e.g., machinists, counter girls, electronics experts, surveyors and decontamination workers, clerical and administrative workers, etc. A very rough estimate of the total personnel at Scioto Laboratory under such conditions is 200, and much job duplication would be the result of this operation of two plants.

4. The annual operating cost of a pilot plant at the Scioto Laboratory, with personnel totalling about 200, is estimated at $1,000,000. We conclude that, while sufficient space exists at this site, it is impractical to make such use of the space until full plant operations are contemplated.

At this time the "PR" Building would house most of the full plant facilities with proper modification of structure. Certainly, all service and control facilities would be useable. Item production space would probably be ample. The cells would probably be useable for the actinium concentration phase and part of the radium phase. The bulk part of the radium phase would have to be handled in one of the warehouses or in a new structure.

C. Build a New Pilot Plant Building

The only alternative remaining is new construction which, of course, must be planned so that the maximum facility is provided at a minimum cost.

1. Proposed Construction

The area will be general in design, providing basic services, good head room, facilities for handling large scale equipment, and drainage which can be sent to special processing equipment if necessary. The area would then be modified as required for a special problem, the changes being temporary and relatively less expensive. This area would supplement, but in no way replace, the existing facilities.

The following brief description of the proposed building supplements the location sketch shown as Figure 9, Appendix C. The building will be 135 feet long and 60 feet wide. The 30-foot roof height will allow head room for tall equipment and allow installation of a second floor for additional floor area or gravity flow experiments. Exterior walls will harmonize with existing facilities. Large access doors will allow handling of bulky equipment, and crane runs will be provided. Center columns will divide the building. Temporary walls can be erected to give area segregation. Partitions to be of re-usable metal for fast and economical changes.

Basic services to the area will include hot and cold water, steam, compressed air, single and three-phase electrical circuits and trench-type drainage. Sumps will be provided and provision will be made to route waste water to existing waste disposal facilities, to storm sewers, or to special waste processing equipment installed for the specific project. Ten air changes an hour will be considered standard, with provision for installing C.W.S. filters if required. The air will be tempered but not conditioned. Toilet facilities are also included.

The intent is to provide a versatile shell which can be adapted to changing pilot plant needs as projects change. Such modification costs will be considered as expenses of the specific pilot plant projects and will be included in requests for approval of such projects.

2. Advantages

The primary advantage of the location chosen would be relatively low construction cost. However, the additional consideration of convenience is a factor. By connecting to the "R" Building, service and supporting research facilities are made available to the pilot plant groups, including change house facilities. This is particularly advantageous in the case of counting rooms and stock room facilities.

3. Work Schedule

Every effort is to be made to have the first pilot plant installed in a finished building by January, 1951. The difficulties in achieving this date are myriad and an analysis of the work schedule to attempt to do this follows.

However, this much can be said with all the emphasis possible. In order that the date of January, 1951 be met, or any date even close to this, work must begin at once. This will require an expeditious approval to proceed.

In a preliminary estimate of the time required to complete the main structure the assumption is made that approval for the project will be available no later than April 1, 1950. The minimum time required based on this starting date is as follows:

Design for a bid purpose April 1, 1950 to May 8, 1950.

Bidding by contractor May 15, 1950 to June 15, 1950.

Awarding June 16, 1950.

Completion December 31, 1950.

In order to maintain such a schedule it will be necessary to do a considerable amount of expediting, especially in obtaining the necessary structural steel at the earliest possible date. It is reasonable that operations planning and a certain amount of preliminary work could be started approximately six weeks before final completion of building, assuming that by that time the structure will be enclosed and certain necessary services and utilities available for use.

4. Costs - Preliminary Estimates

The proposed building location is given in Figure 9, Appendix C. The cost details are as follows:

PRELIMINARY ESTIMATE - "SW" BUILDING

By Contract

Design	$5,000.00
Labor) Material)	210,000.00
Overhead (Monsanto service and inspection)	5,000.00
Contingency	10,000.00
	$230,000.00

"SW" refers to the proposed Pilot Plant Building.

PRELIMINARY ESTIMATE - "SW" BUILDING

Excavation	
190 cu. yd. @ $12.00	$2,300.00
Footers	
88 cu. yd. @ $46.75 complete	4,100.00
Structural Steel	
Columns, trusses, cross and lateral bracing	8,000.00
Walls	
Brick and block 13"	50,000.00
Reinforcing Steel	
5-1/3 T. at $150.00/T.	800.00
Roofs	
Cement tile w/1" insulation w/20 yr. bond built up covering	10,500.00
Floor	
960 sq. yd. @ $3.50/sq. yd.	3,500.00
Drives	
Including pads for tank area	5,000.00
Drains	
Trench type w/grating; Building, storm, W.D., sanitary	9,000.00
Ventilation	
Heating, w/10 changes/hr. Filter frames Stack connection	30,000.00

Sump Pits

500 gal. sumps (2) w/pumps	$2,500.00

Cranes

Underhung, motorized, three req'd. Trolleys	10,000.00

Services

Combined (air, H.W., C.W., steam) Electrical	6,000.00

Lavatories

Including necessary service area	10,000.00

Miscellaneous

Cornice, paint, exterior doors, partition	10,000.00

Sprinkler System

(To be decided later)

5. Contract Arrangements

For the purpose of saving on both time and expenses it is planned to do the design work involved in this project by the Mound Laboratory Engineering Design forces augmented by other suitable personnel to be temporarily transferred from other departments at Mound Laboratory and design engineers from Monsanto, St. Louis.

As soon as approval to proceed is received, work will immediately be started on the design of the main structure and specifications necessary for the letting of the contract. During the period of actual construction of main structure the design on the interior arrangements and equipment could continue so that no time will be lost in placing the building into full operating conditions.

The construction of the main structure, services, and utilities will be performed by contracting for same with local contractors under an A.E.C. Prime Contract on a lump sum basis. In addition to the bid we would request the contractor to submit his proposed date of completion time, as the completion date would be considered in awarding the contract.

6. Special Conditions

Appendix C not only contains the sketch of the building shell proposed for pilot plant work, but also includes layouts of the equipment for the first pilot plants to be installed in this area. The layout for the Actinium Pilot Plant is fairly complete and will probably be altered little in final form. However, the layout for the Radium Pilot Plant is tentative, based on the best facts available to date. It is felt that

certain operations may be condensed as a result of research developments proceeding simultaneous with building design and construction. It is felt that these condensations will balance contingency space needs. The Reactor Waste Disposal layout is in a similar state.

7. Cost Summary

A rough distribution of the $230,000 building cost would allocate $160,000 to the Radium-Actinium Program and $70,000 to the Liquid Waste Disposal Program. The cost of equipment and installation would increase the programs as follows:

Radium-Actinium	
Building	$160,000
Radium Process	212,600
Actinium Process	98,300
Total	470,900
Liquid Waste Disposal	
Building	70,000
Waste Disposal Process	100,000
Total	170,000
Grand Total	$640,900

Cost breakdowns for the processes follow:

RADIUM PILOT PLANT

Design Cost	$9,200
Labor Cost	27,800
Material Cost	
Extraction Process Equipment	
1. 5 Filters	15,000
2. 3 Centrifuges	12,000
3. 20 Tanks	14,000
4. 10 Pumps	3,500
5. 1 Unloader and Screen	4,200
6. 1 Size Reducer	3,500
7. 1 Shielding and Instrumentation	8,000
8. Process Valves and Piping	1,500
9. Service Valves and Piping	4,000
10. Miscellaneous	8,000
Purification Process	
Equipment and Piping	16,000
Liquid Waste Disposal	
Tanks	20,000
Centrifuge	4,000
Pumps, Valves, and Piping	1,500
Gaseous Waste Disposal	
Equipment and Ducts	8,000
Materials Total	123,200
Overhead	33,100
Contingencies	19,300
Grand Total	$212,600

ACTINIUM PILOT PLANT

Design		$4,300
Labor		12,500
Materials		
	Cave	16,000
	Windows	12,500
	Refrigeration (Traps)	800
	Manipulator	9,000
	Equipment in Cave	8,000
	Control Panel	1,200
	Crane, 1 Ton	2,000
	Laboratory Facilities and Special Construction	8,000
	Materials Total	57,500
Overhead		15,100
Contingencies		8,900
	Grand Total	$98,300

LIQUID WASTE DISPOSAL PILOT PLANT

Design Cost	$5,100
Labor Cost	9,500
Material Cost	
Process Equipment	
1. 4-200 gal. Stainless Steel Tanks	5,500
2. 4-500 gal. Stainless Steel Tanks	9,000
3. 12 Packed Columns, Stainless Steel	3,000
4. 3 Liquid-Solids Separation Equipment	9,000
5. Pumps, Valves, and Lines	9,000
6. Instrumentation	4,500
7. Shielding	2,500
Total	42,500
Evaporation Equipment	
1. Evaporator (including Condenser)	9,000
2. 2 Feed Tanks, 2,000 gal., lined	3,900
3. 2 Effluent Tanks, 2,000 gal., steel	1,900
4. Instrumentation	1,800
5. Pumps, Valves, and Lines	4,000
Total	20,600
Total Material Cost	63,100
Overhead	13,500
Contingencies	8,800
Grand Total	$100,000

APPENDIX A

PRESENT RESEARCH FACILITIES

A. General

Analyzing the area assigned to research as it exists today, the effect of the original design premises is obvious. Most of the laboratory area is equipped with special hood facilities for handling alpha emitting radioactive materials. Most of the remainder is allocated to research tools and services planned for a specific isotope although wider application is often possible. One room is designed for a certain amount of process development work. Even for this purpose it is not entirely adequate because of building limitations of head room. This is restricted to fourteen and a half feet. Also all equipment must be brought in through the regular building entrances, thus limiting the size of the units which can be installed.

The total space involved in research activities encompasses areas in buildings other than the Research Building. On the other hand, much of the total floor area of the Research Building is taken up with necessary building and service functions. The total space assignable may be categorized as follows:

1. General Research Space
2. Supporting Research Space
3. Service Space
4. Building Function Space

The total amount of space involved in research activities is shown on Figures 1 and 2. The total floor area is 32,200 square feet. However,

it is most important to note that this space is not all available for research work. An analysis of the situation follows:

B. Building Function Space

Some areas of the Research Building are taken up with the performance of necessary building functions.

The following space is allocated to necessary building functions in the Research Building. These areas must be retained inviolate regardless of changes of research activities in the area.

Function	Area
1. Corridors - low and high risk	1, 101, 2, 2a, 3, 4, 5, and 191
2. Contaminated material removal	135, 136, 137, 138, and 139
3. High risk change rooms	123, 124, 125, 186, 152, 153, and 154
4. Janitor closets	126 and 184
5. Men and women rest rooms	102, 182, and 183
6. Storeroom	105 and 106
7. Electrical substation	104
8. Electrical distribution rooms	107 and 192
9. Vault	117

This area is diagonally shaded on Figure 1 and amounts to 11,200 square feet (see area summary for percentage).

C. Service Space

Some areas of the Research Building were designed to house certain necessary services, not only to research, but to the whole plant.

The following space is allocated to necessary service functions in the Research Building. These functions are located here for the following reasons:

1. It is required that certain vital services be near at hand.
2. Particular services require low risk laboratory space.

It will be most desirable not to disturb the location of these functions, regardless of any change in research emphasis.

Function	Area
1. Decontamination	131, 132, and 133
2. Health survey headquarters	181
3. General and health electronic maintenance	169
4. Water stills	164
5. Low risk shop	165
6. High risk shop	118
7. Instrument room	112
8. Research reading room	103
9. Gamma-ray calibration	134

This area is vertically shaded on Figure 1 and amounts to 3,300 square feet.

This leaves 12,700 square feet in the Research Building (white areas on Figure 1) and 5,000 square feet in the "T", "HH", "WD", and "E" Buildings (Figure 2) available for research work.

D. Supporting Research Space

Certain areas are concerned with research which is not involved with single major projects, but rather supports all projects.

The following space is allocated to supporting research functions in the Research Building. The location of these functions is permanent in most cases because of special built-in facilities such as shielded rooms for spectroscopy, concrete piers for balances, etc.

Function	Area
1. Emission spectroscopy	179 and 180
2. Absorption spectroscopy	170
3. X-ray diffraction	177 and 178
4. Balance room	176
5. Quartz-fiber gravimetry	173, 174, and 175
6. Microscopy	155 and 156
7. Calorimetry	109 and 110
8. Mass spectrometry	113

On Figure 1 the supporting research space is diagonally shaded. This amounts to 3,000 square feet.

E. General Research Space

This is the space in which the direct research activities on individual major projects of the Laboratory are conducted. Most of this kind of space is in the Research Building. All of the space used for research outside of the Research Building is of this kind. This space in turn is of two general types:

1. Laboratory space

2. Process development space

The total of general research space amounts to 14,700 square feet (for percentage analysis see Figure 3). Of this, 2,000 square feet are for process development. (Fourteen hundred square feet of this are assigned to a pilot plant which will become a full scale incinerator plant in about a year.)

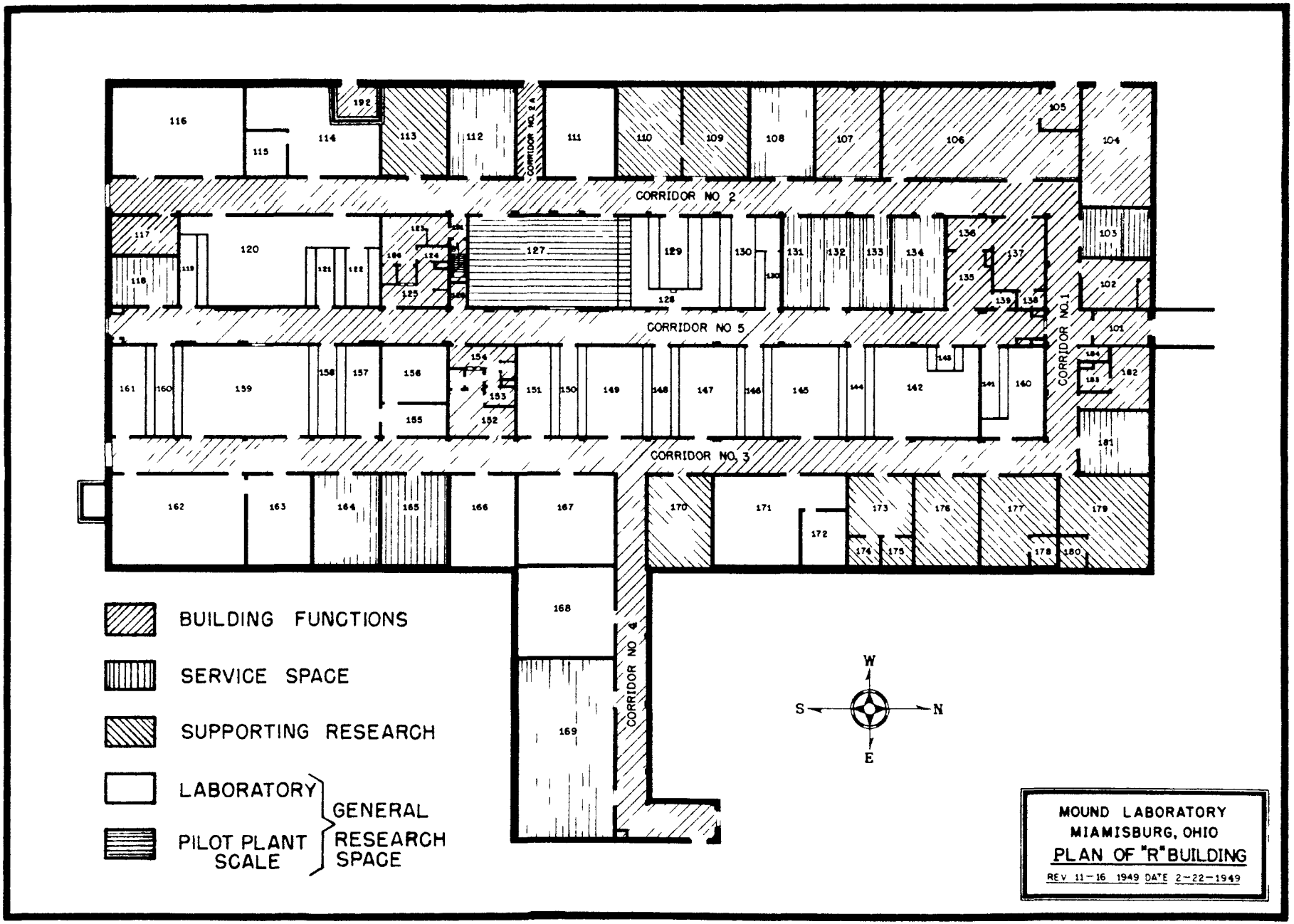


FIGURE 1

50-3-26

FIGURE 2

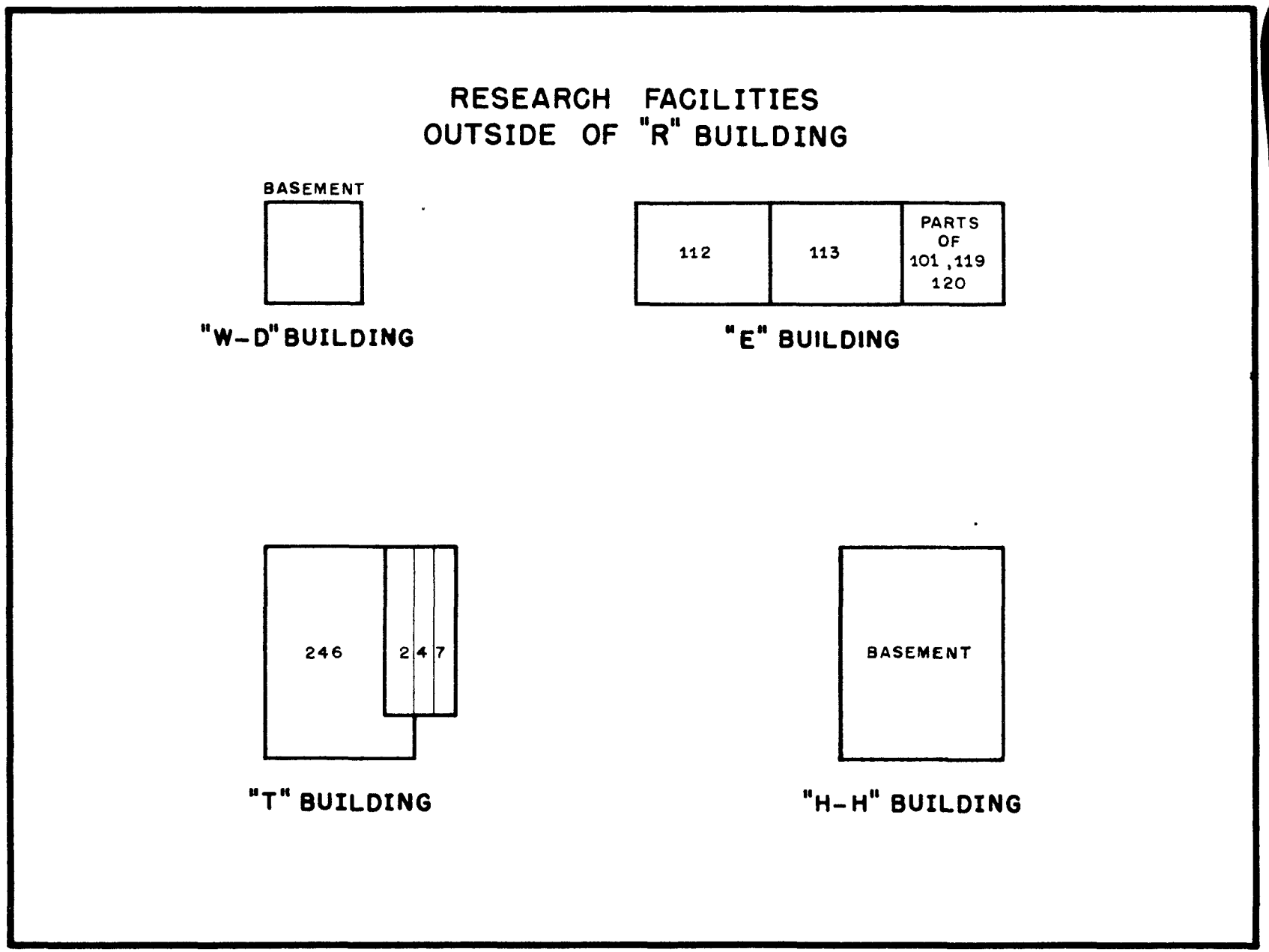

RESEARCH FACILITIES
OUTSIDE OF "R" BUILDING
BASEMENT
"W-D" BUILDING
112
113
PARTS OF 101, 119 120
"E" BUILDING
246
247
"T" BUILDING
BASEMENT
"H-H" BUILDING

FIGURE 3

SPACE SUMMARY

RESEARCH BUILDING			
Function	Area (ft.^{2})	Percentage of "R" Building	Percentage of all Research Areas
Building Functions	11,200	41	35
Service Functions	3,300	12	10
Supporting Research	3,000	11	9
General Research			
Laboratory Space	9,100	33	
Process Development	600	3	
OTHER BUILDINGS			
General Research			
Laboratory Space	3,600		
Pilot Plant Space	1,400 *		
Total General Research			
Laboratory Space	12,700		40
Process Development and Pilot Plant Space	2,000		6
Grand Total	32,200		

* This pilot plant space is the "HH" Building area to house the incinerator unit which eventually is to become the full scale incinerator plant and will be unavailable as pilot plant space.

APPENDIX B

PROPOSED USE OF GENERAL RESEARCH SPACE

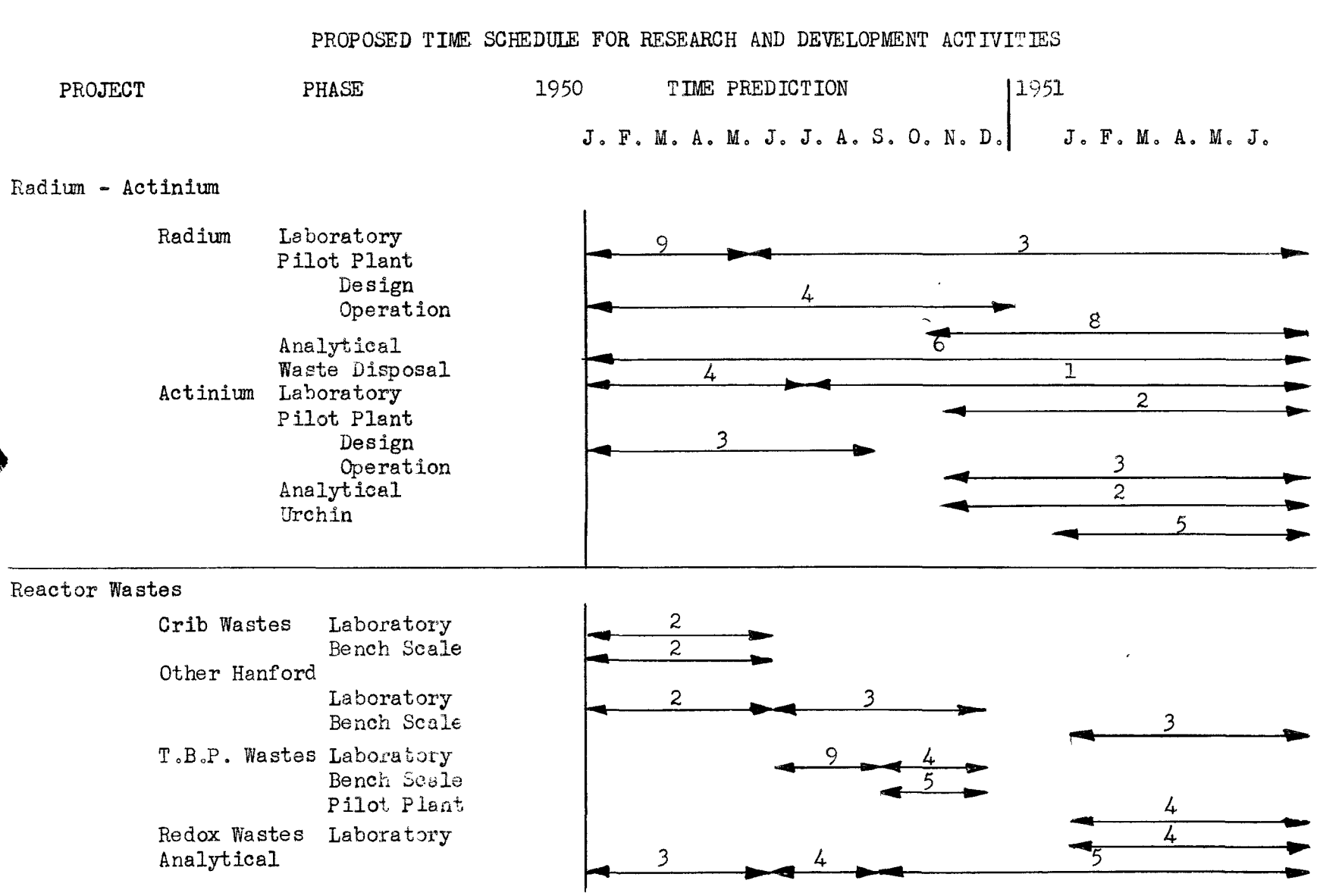
The major projects of the Laboratory have been analyzed from the standpoint of man-power needs and space needs over the period until the end of June, 1951.

Figure 4 gives a proposed time schedule for all research and development activities presently authorized. Three dates,-February, 1950, July, 1950, and January, 1951,-were selected as representative times to analyze the space use. This analysis is given in Figures 5, 6, 7, and 8.

It should be noted that there will be no worthwhile section of the Research Building available for remodelling into a pilot plant area, if this question is raised. (See Section III, Alternate Courses.) In fact, all the space is needed for laboratory and bench scale phases of the major projects.

FIGURE 4

PROPOSED TIME SCHEDULE FOR RESEARCH AND DEVELOPMENT ACTIVITIES



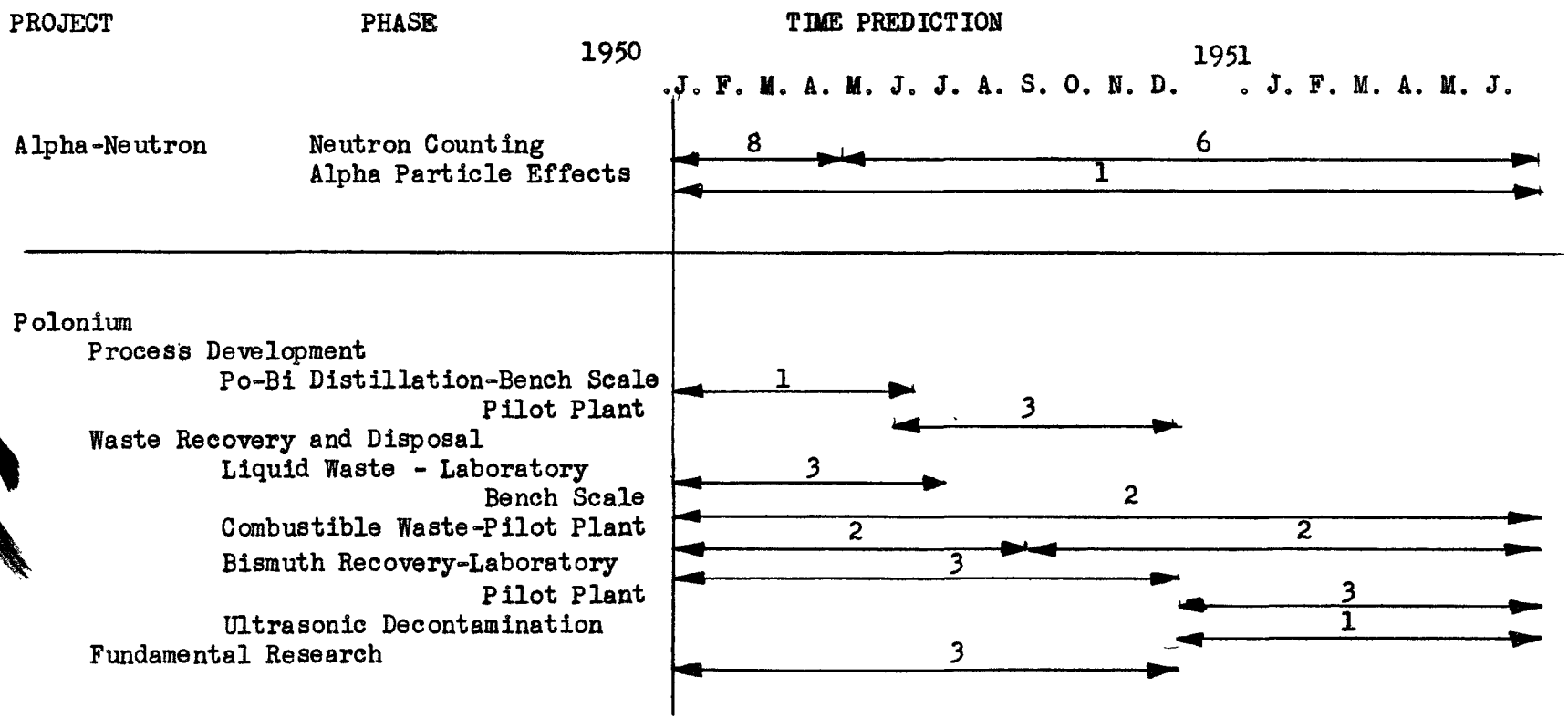
Note: 1. The numbers associated with arrows refer to the project staff size.

2. Pilot plant refers to scale necessary to determine feasibility.

50-3-26

FIGURE 4 (contd.)

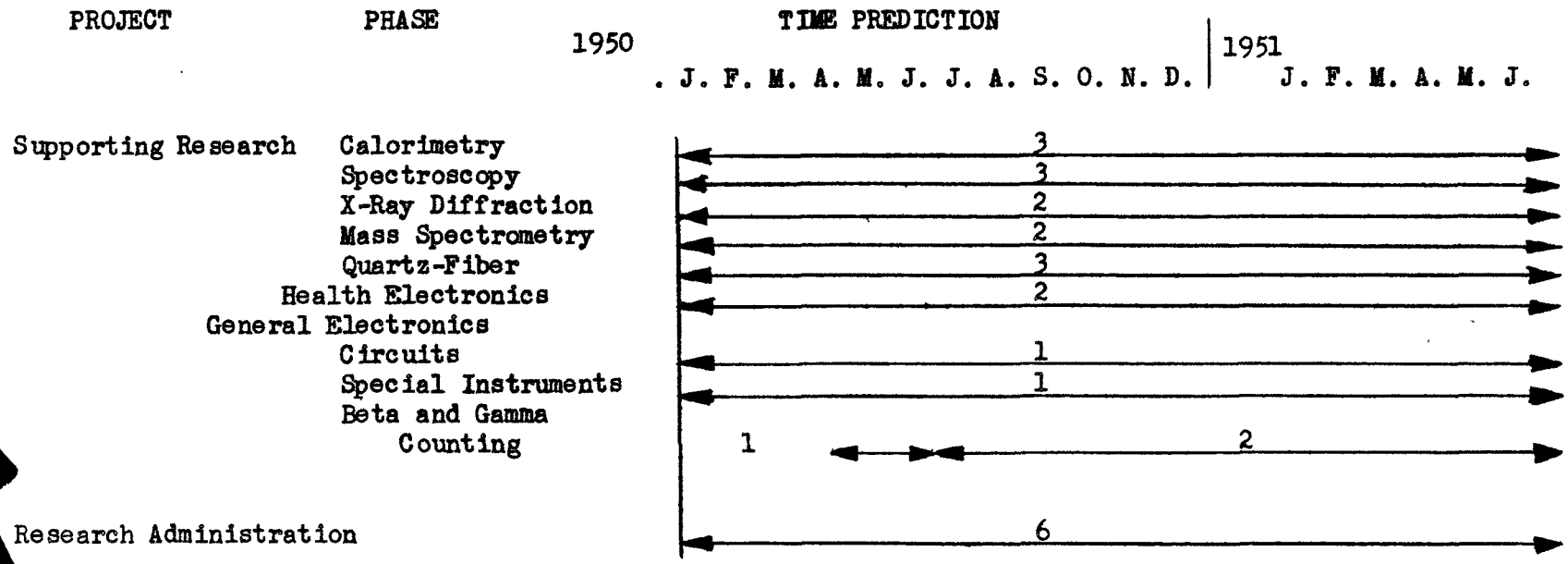
PROPOSED TIME SCHEDULE FOR RESEARCH AND DEVELOPMENT ACTIVITIES



50-3-26

FIGURE 4 (contd.)

PROPOSED TIME SCHEDULE FOR RESEARCH AND DEVELOPMENT ACTIVITIES

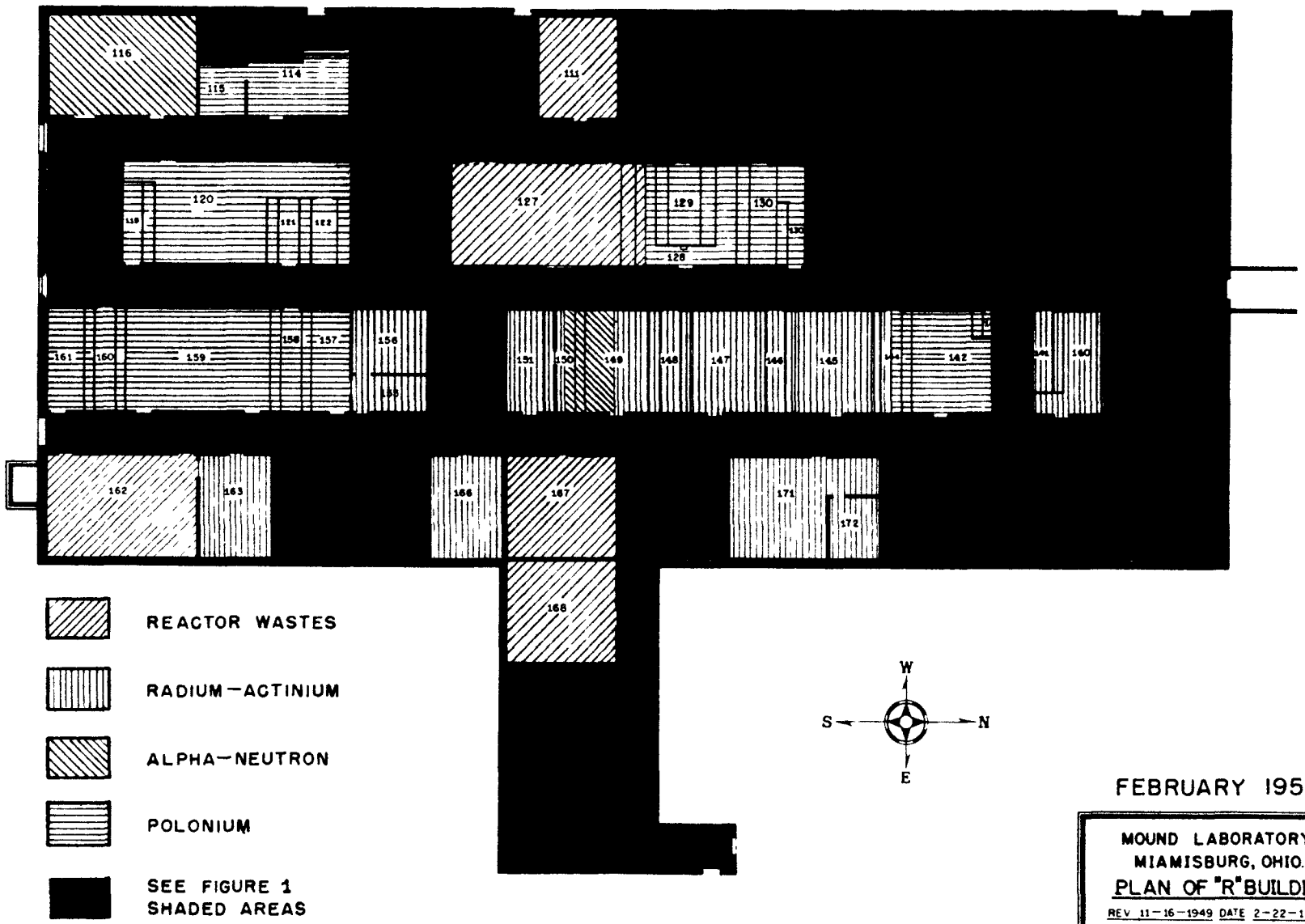


Summary

Project	Feb 1950	July 1950	Jan 1951
Radium - Actinium	26	17	30
Reactor Wastes	9	16	17
Alpha - Neutron	9	7	7
Polonium	14	14	8
Supporting Research	17	19	19
Research Administration	6	6	6
Total	81	79	87

50-3-26

FIGURE 5



FEBRUARY 1950

MOUND LABORATORY
MIAMISBURG, OHIO.
PLAN OF "R" BUILDING
REV 11-16-1949 DATE 2-22-1949

50-3-26

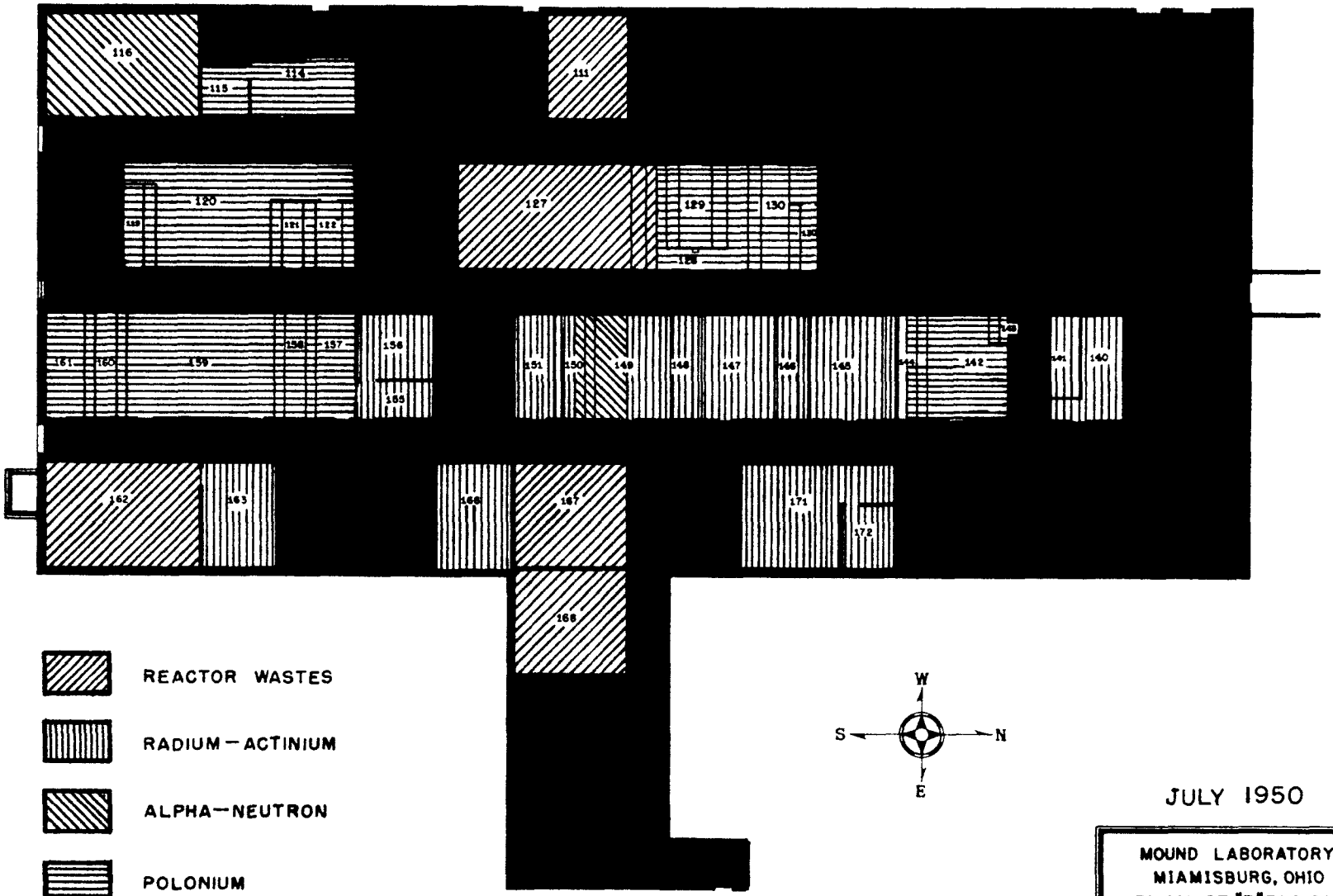
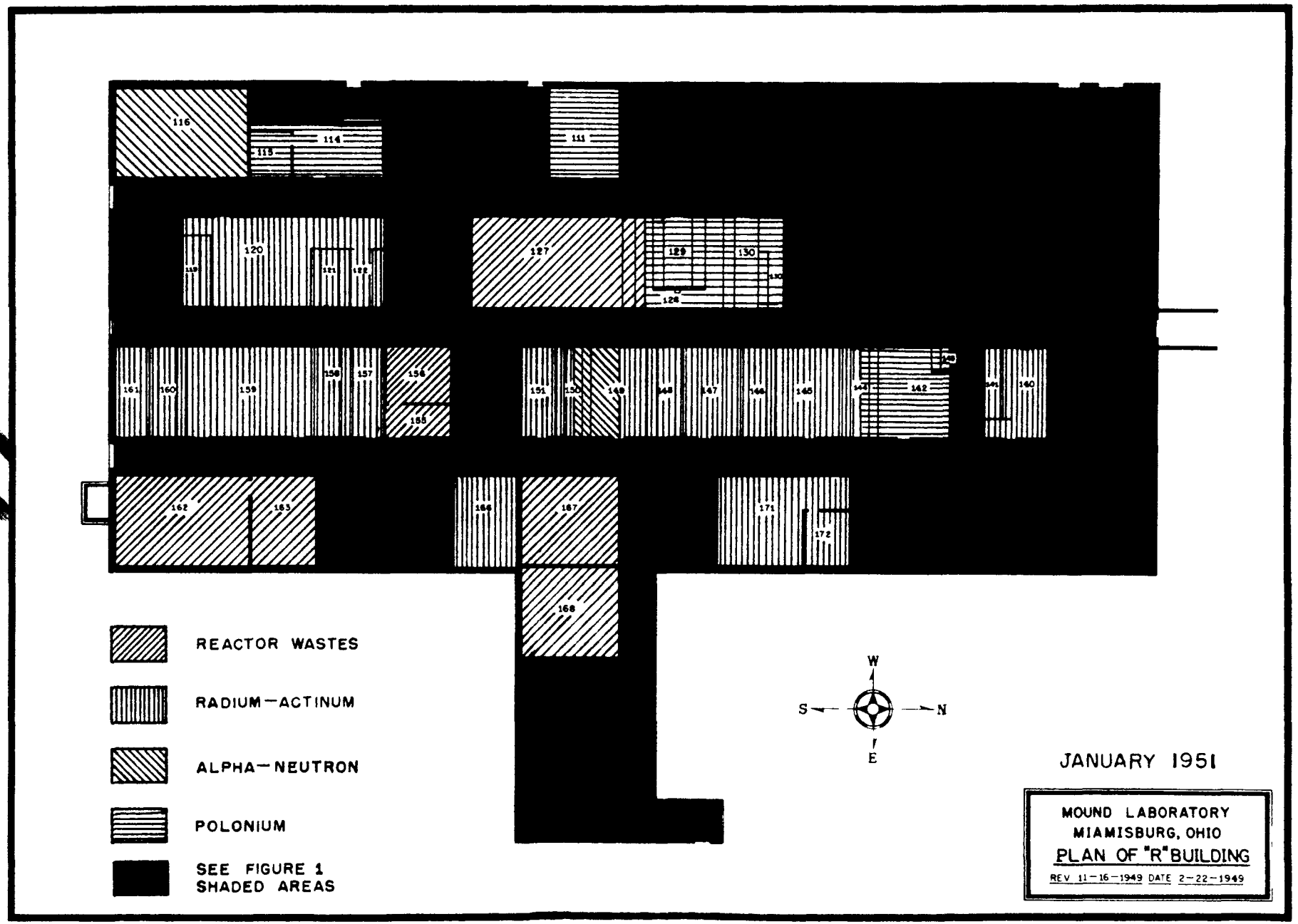


FIGURE 6

50-2-16

FIGURE 7


116
114
115
111
120
119
121
122
127
129
130
128
161
160
159
158
157
156
155
151
150
149
148
147
146
145
143
142
141
140
162
163
166
167
171
172
168
REACTOR WASTES
RADIUM—ACTINUM
ALPHA—NEUTRON
POLONIUM
SEE FIGURE 1
SHADED AREAS
W
S
N
E
JANUARY 1951
MOUND LABORATORY
MIAMISBURG, OHIO
PLAN OF "R" BUILDING
REV 11-16-1949 DATE 2-22-1949

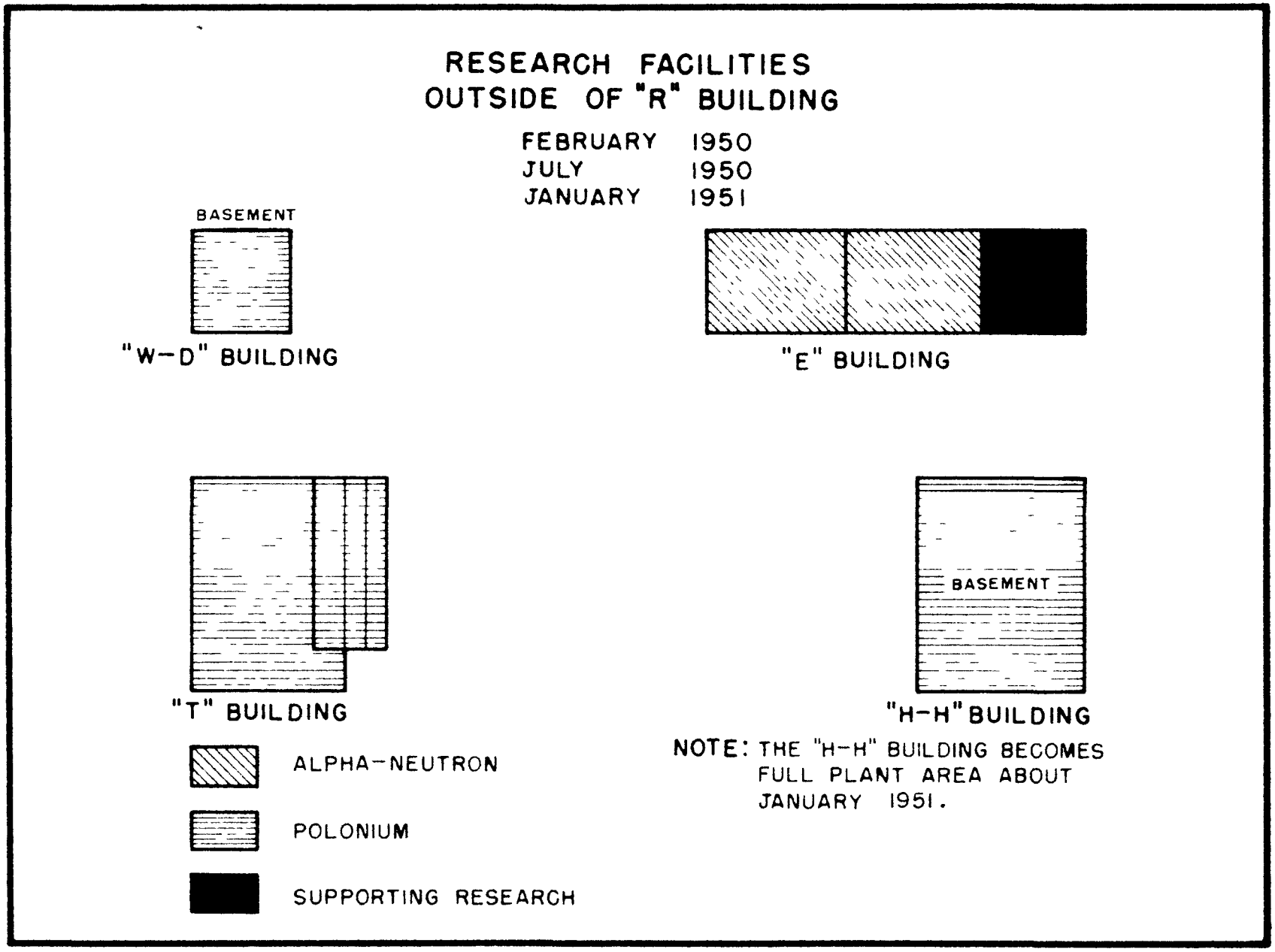
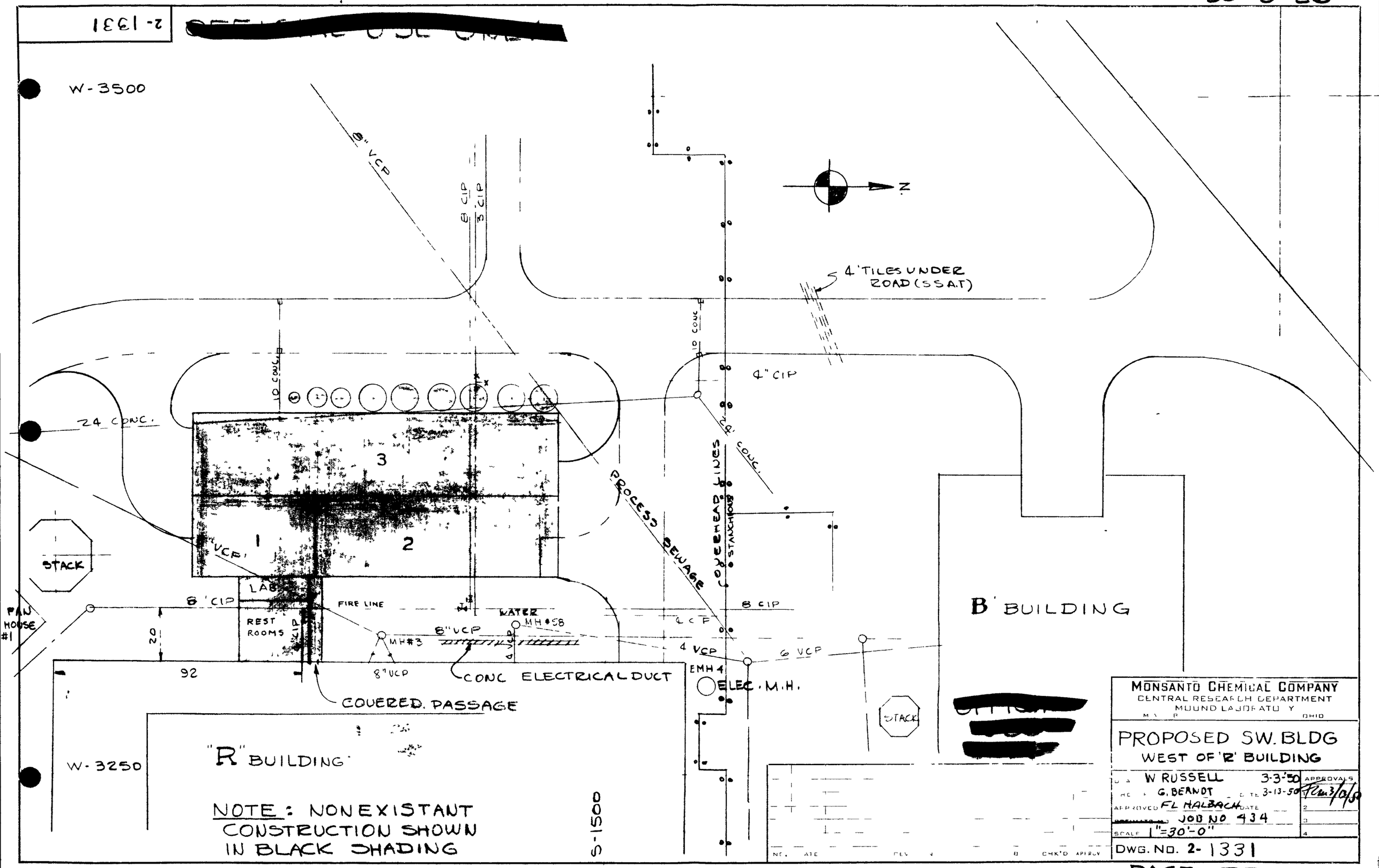


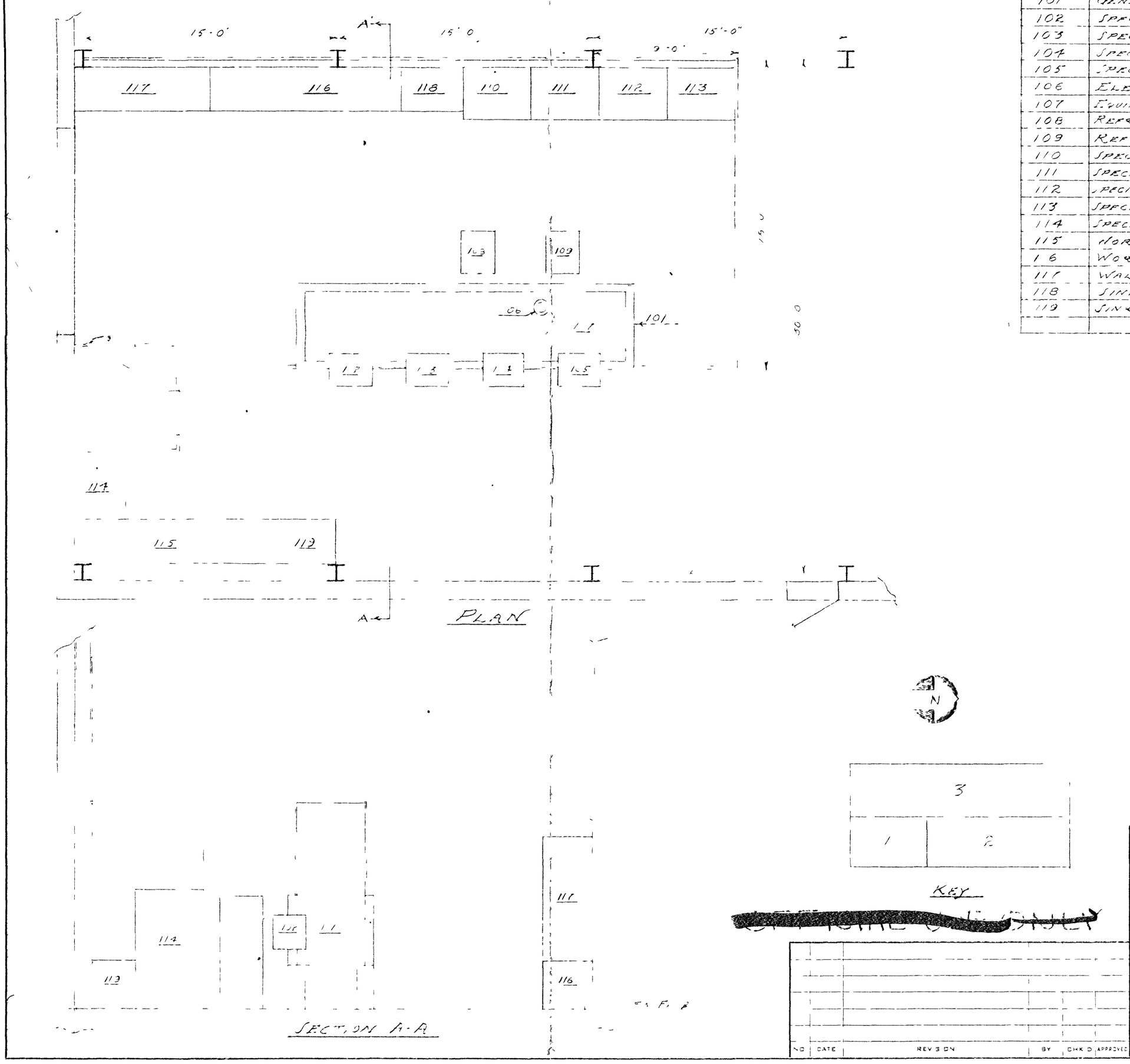
FIGURE 8

50-3-26

2-1331 [redacted]



3-1172 [redacted]



ITEM	DESCRIPTION
101	GENERAL CAVE CONSTRUCTION
102	SPECIAL WINDOW
103	SPECIAL WINDOW
104	SPECIAL WINDOW
105	SPECIAL WINDOW
106	ELECTRIC MANIPULATOR
107	EQUIPMENT INSIDE CAVE
108	REFRIGERATION UNIT
109	REFRIGERATION UNIT
110	SPECIAL FUME HOOD
111	SPECIAL FUME HOOD
112	SPECIAL FUME HOOD
113	SPECIAL FUME HOOD
114	SPECIAL FUME HOOD
115	WORK TABLE
116	WORK TABLE
117	WALL CABINET
118	SINK
119	SINK

[redacted]

NO	DATE	REVISION	BY	CHK'D	APPROVED

MONSANTO CHEMICAL COMPANY
CENTRAL RESEARCH DEPARTMENT
MOUND LABORATORY
MIAMISBURG OHIO

PRELIMINARY EQUIPMENT LAYOUT
S.W. BLDG. SECTION I

DRAWN W.H. CRIDER DATE 3-13-50
CHECKED W. RUSSELL DATE 3-13-50
APPROVED F.L. HALBACH DATE
~~ESTIMATE NO~~ J-B # 434
SCALE 1/4 - 1'-0"

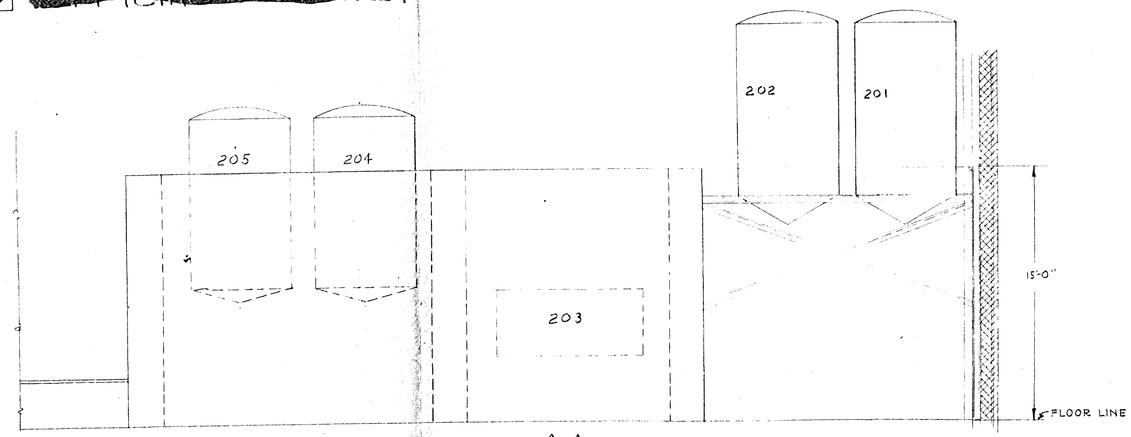
APPROVALS
2
3
4

DWG. NO. 3-1172

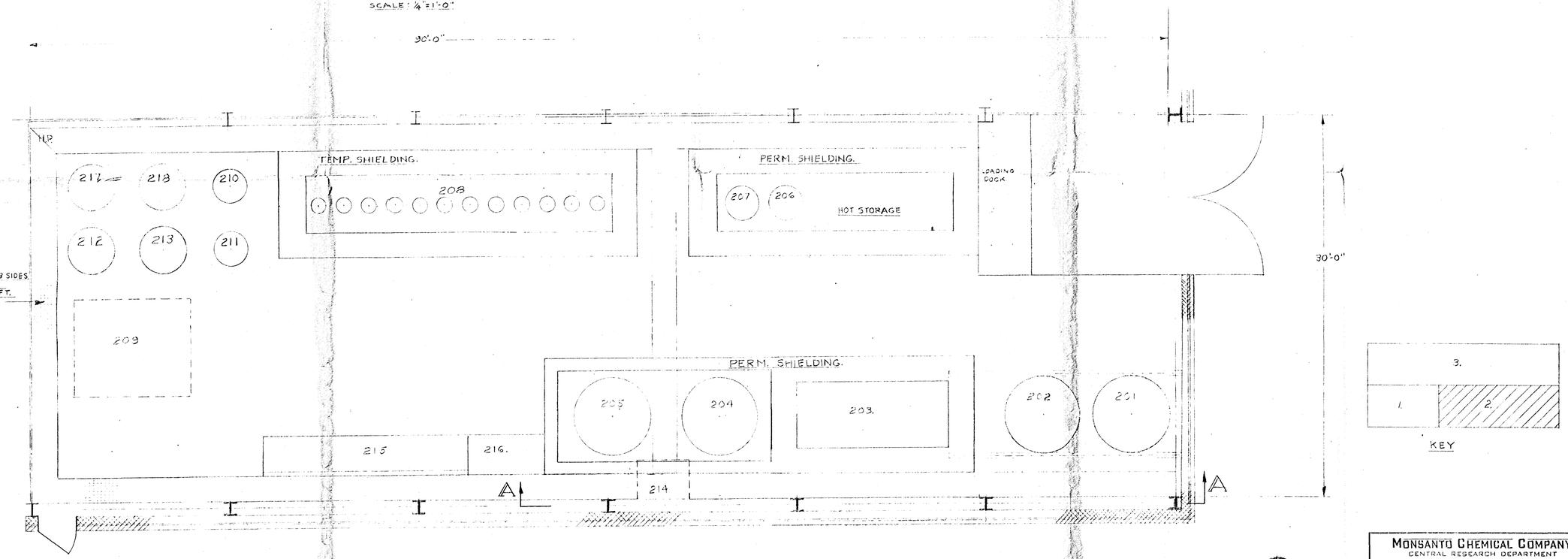
50-3-26

4-1143

~~OFFICIAL USE ONLY~~



VIEW AA
SCALE: 1/4"=1'-0"



ITEM	DESCRIPTION	CAPACITY
201	CONDENSATE TANK - STEEL	2000 GAL.
202	CONDENSATE TANK STEEL	2000 GAL.
203	EVAPORATOR - STAINLESS STEEL	
204	EVAPORATOR FEED TANK - STEEL TANK-LINED	2000 GAL.
205	EVAPORATOR FEED TANK - STEEL TANK-LINED	2000 GAL.
206	FEED TANK 304 STAINLESS STEEL	200 GAL.
207	FEED TANK 304 STAINLESS STEEL	200 GAL
208	12 ADSORPTION UNITS	
209	LIQUID-SOLID PHASE SEPARATION EQUIPMENT	
210	TREATING TANK - 304 STAINLESS STEEL	200 GAL.
211	TREATING TANK - 304 STAINLESS STEEL	200 GAL.
212	TREATING TANK - 304 STAINLESS STEEL	500 GAL.
213	TREATING TANK - 304 STAINLESS STEEL	500 GAL.
214	SUMP FOR SECTION 2 OF BLD'G	500 GAL.
215	WORK BENCH	
216	6' FUME HOOD.	
217	TREATING TANK - 304 STAINLESS STEEL	500 GAL
218	TREATING TANK - 304 STAINLESS STEEL	500 GAL

~~OFFICIAL USE ONLY~~

N

MONSANTO CHEMICAL COMPANY
CENTRAL RESEARCH DEPARTMENT
MOUND LABORATORY
MIAMISBURG OHIO

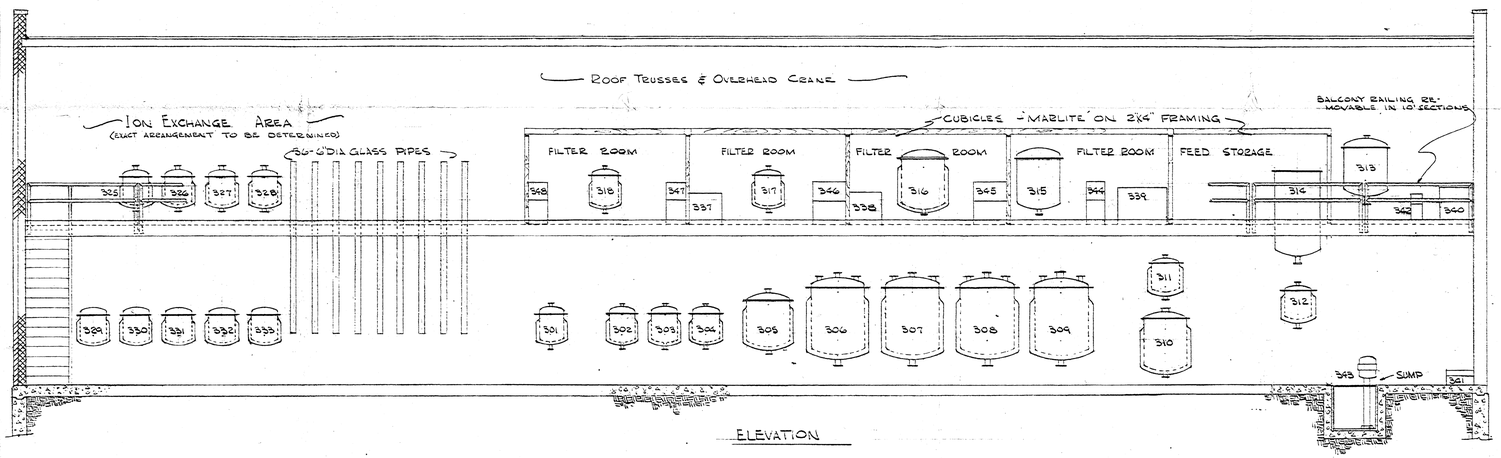
PRELIMINARY EQUIPMENT LAYOUT
SW BLD'G SECTION 2

DRAWN G. BERNDT DATE 3-13-50
CHECKED W. RUSSELL DATE 3-13-50
APPROVED F.L. HALBACH DATE
[redacted] JOB 434
SCALE 1/4"=1'-0"
APPROVALS 1. 2. 3. 4.
DWG. No. 4-1143

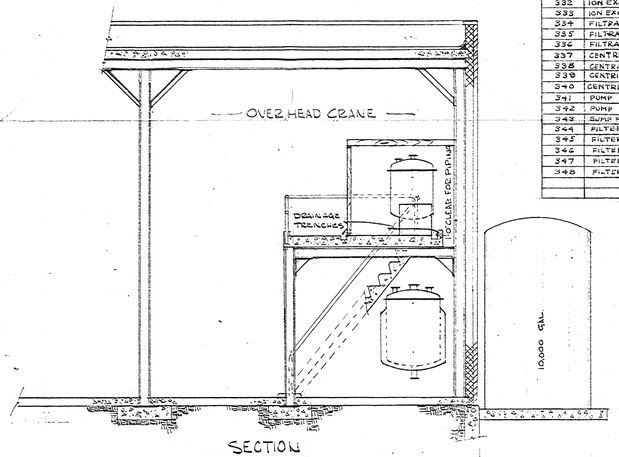
NO.	DATE	REVISION	BY	CHK'D	APPROVED

[redacted]

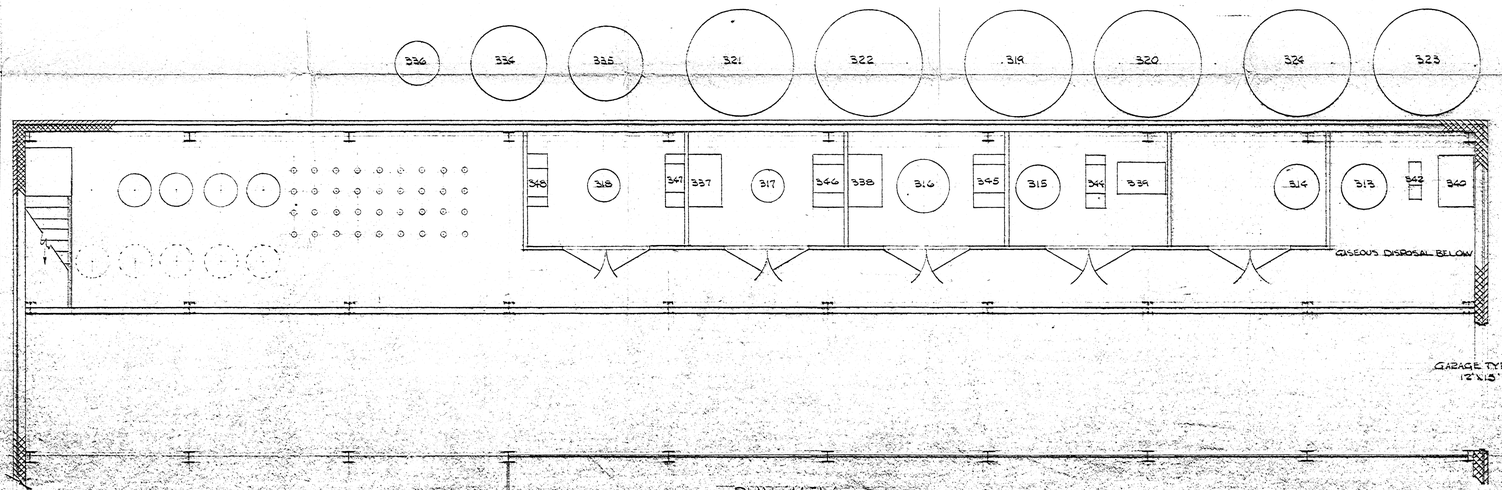
ITEM	DESCRIPTION	CAPACITY
301	TANK-AGITATED - RUBBER OR GLASS LINED	100 GAL.
302	TANK-AGITATED - STAINLESS STEEL	100 GAL.
303	TANK-AGITATED - STAINLESS STEEL	100 GAL.
304	TANK-AGITATED - STAINLESS STEEL	100 GAL.
305	TANK-AGITATED - STAINLESS STEEL (CARPENTER 20)	200 GAL.
306	TANK-AGITATED - STAINLESS STEEL	500 GAL.
307	TANK-AGITATED - STEEL	500 GAL.
308	TANK-AGITATED - STEEL	500 GAL.
309	TANK-AGITATED - STEEL	500 GAL.
310	TANK-AGITATED - STAINLESS STEEL (CARPENTER 20)	200 GAL.
311	TANK-AGITATED - STEEL	100 GAL.
312	TANK-AGITATED - STEEL	100 GAL.
313	WD. TANK-AGITATED STEEL - NO JACKET	200 GAL.
314	UNLOADER TANK - NO JACKET	
315	FILTRATE TANK - AGITATED - STEEL - NO JACKET	200 GAL.
316	RECOVERY TANK - AGITATED - STEEL	200 GAL.
317	TANK - AGITATED - STAINLESS STEEL	100 GAL.
318	TANK - AGITATED - RUBBER OR GLASS LINED	100 GAL.
319	EFFLUENT TANK - AGITATED - STEEL - NO JACKET	10000 GAL.
320	EFFLUENT TANK - AGITATED - STEEL - NO JACKET	10000 GAL.
321	GASEOUS WASTE - STEEL	10000 GAL.
322	GASEOUS WASTE - STEEL	10000 GAL.
323	INFLUENT TANK - AGITATED - STEEL	10000 GAL.
324	INFLUENT TANK - AGITATED - STEEL 10' DIA 20' HI.	10000 GAL.
325	ION EXCHANGE TANK	100 GAL.
326	ION EXCHANGE TANK	100 GAL.
327	ION EXCHANGE TANK	100 GAL.
328	ION EXCHANGE TANK	100 GAL.
329	ION EXCHANGE TANK	100 GAL.
330	ION EXCHANGE TANK	100 GAL.
331	ION EXCHANGE TANK	100 GAL.
332	ION EXCHANGE TANK	100 GAL.
333	ION EXCHANGE TANK	100 GAL.
334	FILTRATE TANK - AGITATED - STEEL	2000 GAL.
335	FILTRATE TANK - AGITATED - STAINLESS STEEL	2000 GAL.
336	FILTRATE TANK - AGITATED - STEEL	200 GAL.
337	CENTRIFUGE	
338	CENTRIFUGE - RECOVERY	
339	CENTRIFUGE	
340	CENTRIFUGE	
341	PUMP	
342	PUMP	
343	SUMP PUMP	
344	FILTER 3 SQ. FT.	
345	FILTER 3 SQ. FT.	
346	FILTER 3 SQ. FT.	
347	FILTER 3 SQ. FT.	
348	FILTER 3 SQ. FT.	



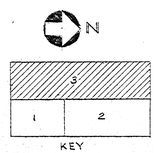
ELEVATION



SECTION



PLAN VIEW



MOUND LABORATORY
OPERATED BY
MONSANTO CHEMICAL COMPANY
MIAMISBURG, OHIO

PRELIMINARY EQUIPMENT LAY-OUT SW BLDG - SECTION 3

W. HICKS 3/13/50
W. BASSEL 3-13-50
E. LAMBERT
Dwg. No. 5-1083

OFFICIAL USE ONLY
PAGE 36