

DEPARTMENT OF ENERGY, MOUND FACILITY, RESEARCH
BUILDING (R BUILDING)
One Mound Road
Miamisburg
Montgomery County
Ohio

HABS OH-2470-M
OH-2470-M

HABS
OH-2470-M

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

FIELD RECORDS

HISTORIC AMERICAN BUILDINGS SURVEY
MIDWEST REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
601 Riverfront Drive
Omaha, NE 68102

HISTORIC AMERICAN BUILDINGS SURVEY

DEPARTMENT OF ENERGY, MOUND FACILITY, RESEARCH BUILDING (R BUILDING)

HABS No. OH-2470-M

- Location:** Department of Energy, Mound Facility
One Mound Road
Miamisburg, Montgomery County, Ohio
UTM Coordinates: 16.730670.4390150
- Present Owner:** U.S. Department of Energy
- Present Use:** Demolition of R Building is underway. Mound Site is currently being decontaminated and prepared for future development.
- Significance:** Mound's R "Research" Building is significant for its operational role in the polonium processing mission of Mound Laboratory during the late 1940s and early 1950s. Radioactive polonium had importance to the nation during that time for its use in nuclear weapons manufacture and atomic energy. During the polonium processing era, R Building was designed for chemical and physical research on alpha emitters. These studies were part of a program to provide polonium research and for production improvement. The building contains facilities for basic and fundamental research in nuclear energy and subsequent chemical problems.
- Project Information:** The Westerly Group, Inc. of 225 E Main Street, Madison, Indiana 47250 prepared this document. Under the supervision of Camille B. Fife and Thomas W. Salmon II, ASLA of The Westerly Group, Inc., the historical narrative was compiled by Elizabeth Auxier and Melissa Buchanan, also of The Westerly Group, Inc. Photographs by Camille B. Fife and Thomas W. Salmon II, ASLA of The Westerly Group, Inc. Floyd Hertweck of CH2M Hill Mound, Inc. supplied research materials, conducted interviews and prepared the preliminary materials upon which this document is based.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. **Date of Erection:** R Building construction began on July 6, 1947 with completion on December 28, 1948. The first occupants moved into the building on December 31, 1948. The site operator, Monsanto Chemical Company of St. Louis, officially noted the building as complete on February 8, 1949, soon after final construction.¹ The dates cited throughout this section are drawn from the original plans as well as drawings for subsequent additions or alterations.

2. **Architect:** Under contract with the U. S. Government, the Monsanto Chemical Company constructed and operated the proposed Mound Site. They provided the original architectural and engineering supervision for the entire Mound Laboratory, including R Building. Their contractual responsibilities included all design and engineering aspects of construction, procurement, and supervision of laboratory equipment installation, security against espionage and sabotage, and inspections throughout the construction process. Monsanto subcontracted the preparation of architectural drawings to Giffels and Vallet, Inc., of Detroit, Michigan.

3. **Original and Subsequent Owners:** Since the Mound Site's conception, the U. S. Government has owned the site, including R Building. Originally supervised by the Atomic Energy Commission (AEC) and operated under contract by Monsanto Chemical Company, the Mound Laboratory responsibility shifted to the Office of Energy Reserve and Development Administration (1975-1977), then to the Department of Energy when President Carter created the Department in 1977. In 1988, operative responsibilities were given to EG&G Mound Applied Technologies, a Massachusetts company. In 1997, Babcock & Wilcox of Ohio, Inc. assumed operational responsibilities. As of January 1, 2003, CH2M Hill Mound, Inc. assumed control of the site for the clean-up process.

4. **Builder, Contractor, and Suppliers:** Maxon Construction Company of Dayton, Ohio, was the primary contractor for the original buildings at Mound Laboratory. It provided labor, tools, machinery, and equipment not furnished by the U. S. Government.

5. **Original Plans and Construction:** The description of R Building as it was constructed in 1948 is based upon available engineering drawings, historic photographs, and Monsanto Chemical Company's Construction Completion Report.² R Building was a

¹Monsanto Chemical Company, *Construction Completion Report* v. 1, MLM-273, March 1949.

² Monsanto Chemical Company, *Construction Completion Report* v. 1, MLM-273, March 1949.

two-story rectangular building with measurements of 234'-10" x 108'-4". The gross floor area was 37,815' square, including the penthouse, under-floor trenches, and a connecting corridor to E "Electrolysis" Building. The gross volume is 695,125' cubed. The construction completion report details the poundage of iron and steel used in the construction, which totaled more than eighty tons.

The plan for R Building paid mind to its role in supporting the furtherance of the science of polonium processing. The first floor plan drawing indicates a multi-chambered building with three major north-south corridors, as well as some lesser corridors running east to west, and north to south.³ The most prevalent feature on this drawing is the processing areas with their cells and corridors that lie on either side of the center corridor. R building was connected by a covered and enclosed passageway to B "Biology" Building.

6. Alterations and Additions: R Building, like most other buildings at Mound Laboratory, underwent a multitude of adaptations through its 50-year lifespan. These modifications to the original structure reflect the changing functions and missions of the Mound Laboratory facility.

In 1959, R Building received its first major renovation, known as the R & E Building Addition. It was constructed to the south of the R Building breezeway and connected to E Building. This addition, measuring 58'-2" by 44'-7", utilized the exterior walls of the breezeway and portions of E and R Buildings for three of its sides.

The floor slab poured for this addition was 6" thick, and the floor (8' concrete block and poured concrete) were placed along the new southern wall approximately 2'-6" deep.⁴ Furthermore, the structural elevation shows a glass, windowed addition, with a double single light set of doors. The facing on the addition appears to have been a painted metal panel, constructed over a framework. The floor plan indicates this was an open area, with no indicated room divisions.⁵

The southeastern corner of this addition was built into a part of E Building entitled "E Building Mechanical Room Addition." This area is shown by a rectangle on the floor plan drawings for the 1959 addition, of which one-half of the "E Building Mechanical Room Addition" lies within the then new R & E Addition.^{6, 7} The "E Building

3 Engineering Drawing Number 351300-02003, *R Building First Floor Plan*, As Built, October 1948, with revisions to 1953.

4 Engineering Drawing Number 4-3141, *R & E Building Addition, Foundation, Footer and Plot Plan*, Drawing Approved June 22, 1959.

5 Engineering Drawing Number 4-3142, *R & E Building Addition, Floor Plan and Details*, Drawing Approved June 1959.

6 Engineering Drawing Number 4-4017, *Modifications to "R" Building Addition #1, General Floor Plan & Details*,

Mechanical Room Addition” is today a part of R Building, and includes Rooms 27 and 28.

Another significant change was the R Building Storage Addition in 1961.⁸ It was constructed on the southwestern corner of R Building, as a concrete block, brick-faced walled addition that joined the outer walls of the Fan House and the T West Stack. The Storage Addition also utilized the exterior walls of R Building and a portion of the exterior of SW Building as its interior walls. The addition was divided into two rooms by a concrete block wall. Two sets of double doors allowed access to these rooms from the west, while an interior door allowed passage from room to room. The only access to the interior was through SW Building. A single door allowed access from the east, near the R Building penthouse stairs; however, the stair had to be relocated, in part, to allow for construction of the addition. There were no access doors into R Building from this addition.

The juncture at the Fan House required that every third brick be tied to the existing brickwork. The floor of the addition was 5" thick concrete on a 5" gravel bed. The footers were approximately 3'-0" deep.

In 1964, plans for the addition of the areas currently numbered as Rooms 51, 52, 53, and 54 were added to R Building, just off the breezeway. Known as the Area Engineers Addition, this new section measured 15'-1" by 25'-0". This office area contained one large room, with two doors accessing the Covered Corridor (breezeway), and another door near the northeastern corner.⁹ The Area Engineers Addition included a 6" slab floor set on a 6" gravel bed, with footers set at approximately 3'-6" deep (measured from the slab top).^{10,11}

During the following year, yet another modification was made in the form of the R & E Building Addition. This was a laboratory addition that housed twelve numbered rooms, including an “L” shaped corridor that would eventually serve as the entrance to a 1991 E Building Addition, along with two offices, a utility penthouse, and the laboratory areas.

Drawing Approved November 16, 1961.

7 The “E Building Mechanical Room Addition” IS NOT indicated on any of the E Building drawings, and is not described in the E Building process and structural history.

8 Engineering Drawing Number 4-3988, *Storage Addition to South-West Corner of R Building Plan, Sections & Elevations*, Approved November 11, 1961.

9 Engineering Drawing Number 4-5475, *Area Engineers Office-“R” Bldg Floor Plan, Door Details & Roof Schedule*, Approved November 6, 1964.

10 Engineering Drawing Number 4-5477, *Area Engineers Office-“R” Bldg Foundation Details*, Approved November 6, 1964.

11 Engineering Drawing Number 4-5476, *Area Engineers Office-“R” Bldg Elevations & Roof Sections*, Approved November 6, 1964.

The addition also resulted in the remodeling of two rooms constructed in 1959 that converted them into restrooms and a janitor's closet.¹²

The room functions as designated by the R & E Building Addition:

1. Room 21, Micro Assay Laboratory
2. Room 22, Beryllium and Toxic metal Analysis Laboratory
3. Room 23, Wet Chemistry Development Laboratory
4. Room 24 and 25 Wet Chemistry Instrumental Analysis
5. Room 26, Office
6. Room 27, Janitor Room
7. Room 28, Men's toilet
8. Room 29, Women's toilet
9. Room 30, Corrosion Laboratory
10. Room 31, Corridor
11. Room 32, Office
12. Room 33, Physical Properties Laboratory
13. Room 34, Penthouse

During the same year, 1965, drawings were approved for the construction of an R Building addition that would be located in the "courtyard" to the north of the R/E Breezeway and R Building Rooms 168 to 169. This addition, the Technical Information Center, would eventually house Mound's library, including text volumes, Mound Laboratory Manuals (MLMs), microfiche and film, and other library materials.

The addition only included one exterior wall, constructed on its northern side. This was a wall with twin doors, located on the eastern side, with face brick that included "typical recessed brick courses."¹³ The floor plan indicates that a cleanout pit original to the 1948 construction was modified to receive a new frame and cover. The outside wall was, like some of the building additions, constructed of concrete block with brick facing. The floor plan for the Technical Information Center was 5" thick, set on a 6" minimum gravel bed. Footers extend 3'-6" deep from the floor top.¹⁴

12 Engineering Drawing Number 351301-02001, *R & E Building Addition First Floor Plan, Room & Door Schedules*, 1965.

13 Engineering Drawing Number 351303-A-02002, *Technical Information Center Floor Plan, Reflected Ceiling Plan, Elevations, & Details*, Approved May 1965.

14 Engineering Drawing Number 351303-A-02002, *Technical Information Center Structural Floor Plan, Foundation Plan & Wall Sections*, Approved May 1965.

As Mound faced closure, and operational aspects of the facility were being phased out, the library was closed in 1996. This area (Room R-40 and associated rooms) was later used to house Mounds Radiation Protection Program records (including worker exposure records), and as a point from which personnel and visitors could be issued safety equipment, such as a radiation dosimeter.

In 1966, an addition was made to the north portion of R Building (R-Annex Addition). The rooms in this addition were constructed as offices. The overall dimensions were 54'-0" by 49'-7.5", housing fifteen rooms and a corridor.¹⁵ The Annex included two doorways: one that accessed the outdoors on the eastern side and one that exited to the breezeway, on the western side. This addition included block walls, with brick facing.¹⁶ In 1966, plans called for a 6" slab, over a gravel fill. Footers were approximately 2'-6" deep.¹⁷

In 1974, the original filter bank configuration in the R Building penthouse underwent a remodeling, with the removal of walls, door, ceilings, filters/filter frames, etc. Once removed, the filter bank rooms were replaced with new walls, curbs, frames, grating, ceilings, and doors. Not only that, the room configuration was altered.^{18, 19} Other changes included the blocking/bricking in and sealing up of holes in the eastern wall of the penthouse that had fed into the duct.²⁰ New holes were then cut into the wall.²¹

B. Historical Context:

The Mound Laboratory Site was the first permanent atomic energy related facility constructed after World War II. The U. S. Government's Atomic Energy Commission (AEC) planned and constructed the site with the mission to support atomic weapons research, namely through the development of the radioactive element polonium. Polonium had significance to the nation for its role as the initiator in early nuclear weapons, but work completed at Mound also investigated

15 Engineering Drawing Number 351304-A-02001, *Research Building, North Addition Architectural Plan*, July 20, 1966.

16 Engineering Drawing Number 351304-A-02002, *Research Building, North Addition Architectural Details*, July 20, 1966.

17 Engineering Drawing Number 351304-A-02004, *Research Building, North Addition Structural Plan*, July 20, 1966.

18 Engineering Drawing Number 351308-02008, *Additional Upgrading of "R" Building Architectural/Structural Filter Bank Removal Plan Section*, August 24, 1974.

19 Engineering Drawing Number 351308-02008, *Additional Upgrading of "R" Building Architectural/Structural Filter Bank Floor Plan*, August 24, 1974.

20 Engineering Drawing Number 351308-02011, *Additional Upgrading of "R" Building Architectural/Structural Filter Bank Sections and Details*, August 21, 1974.

21 Engineering Drawing Number 351308-02015, *Additional Upgrading of "R" Building Architectural/Structural Filter Bank Sections and Details*, August 21, 1974.

peacetime uses of atomic energy. R “Research” Building served as a vital part of the Mound Laboratory complex by supporting the furtherance of the science of polonium processing, as per the site’s mission. During that polonium mission, R building provided facilities for fundamental polonium research and for production improvement.

The Mound Site had its roots in the turmoil of the Second World War. Franklin Roosevelt approved the formation of the Manhattan Engineering District under the First War Powers Act in 1941, thereby involving the government directly in the exploration of nuclear-related activities.²² Dr. Charles Allen Thomas, director of Monsanto’s Central Research Department in Dayton, Ohio, accepted responsibility from the Manhattan Project to engage in work related to the chemistry and metallurgy radioactive polonium-210.

The Dayton Project traces its origins to early 1943, when Dr. Charles Allen Thomas had gone “east” with James Conant and Richard Tolman for a test of a new underwater explosive. During that time, “his companions took pains to investigate his background without arousing suspicion.” Shortly after that meeting, Dr. Thomas received a telephone call from Brigadier General Leslie Groves, wanting to meet in Washington. Upon arriving he met with Groves and Conant, and was sworn to secrecy and told of the plan for an atomic bomb. Discussions followed all that day.

The amount of chemistry involved in the atomic bomb project had been underestimated, and Dr. Thomas was urged to become co-director of Los Alamos, with Dr. Oppenheimer, with responsibility for the chemistry of the entire project. To aid in the decision, two days of conferences followed at Los Alamos with Conant, Groves and Oppenheimer. To take the position would have meant that Dr. Thomas take leave of absence from Monsanto, a compromise that seemed better. The compromise put Dr. Thomas in charge of “final chemistry and metallurgy of polonium. Thomas immediately took on this work, and proceeded to coordinate work between University of California, University of Chicago, Los Alamos, and the University of Iowa. Appointments were made, and periodic meetings established, including a weekly consultation with Groves.

By the summer of 1943, it had become obvious that someone had to produce large quantities of polonium. Monsanto, at Dayton, undertook this task. With this work, Dr. Carroll Hochwalt, Dr. James Lum and Dr. Nicholas were cleared, went to Los Alamos and were briefed. Thomas became Project Director, Hochwalt Assistant Project Director, and Lum, Laboratory Director.

This research, called the “Dayton Project,” was to directly supplement the larger goal of developing an atomic bomb. Polonium provided the initiating source that generated neutrons (sub-atomic particles) to ensure initiation of the necessary chain reactions.

When the project became operable in 1943, war-induced material limitations and time

²²External Regulation of DOE, <http://tis.eh.doe.gov/extreg/committee/committee/116/rpt3/rpt3-1.html>

constraints forced the Dayton Project to locate in various rented spaces around Dayton, Ohio. After WWII, in late 1945, the need for polonium continued to increase and it became feasible to construct a new polonium-processing plant. Although the Dayton facilities had been adequate for producing the polonium initiator on a laboratory scale and for providing the few initiators needed to win World War II, including the polonium utilized in the devastating atomic bombs dropped on Japan, the Dayton facilities were not sufficient for production under normal operations on a manufacturing scale.²³

Site selection and construction of Mound Laboratory began in the post-war years with construction from 1947-48. The site selection for the new Dayton facility followed an AEC prescribed process for site selection of atomic energy production plants.²⁴ The Miamisburg, Ohio, location was selected because it fulfilled criteria for security, had readily available materials and power, and did not require personnel relocation. It also offered land formations favorable to constructing facilities below ground. Preliminary site preparation work was undertaken in July 1946.²⁵ The site selected for the construction of the new Mound Laboratory was a 182-acre parcel, essentially rectangular, measuring 3,300' x 2,400'. The government purchased the land from private owners in April of 1947. It should be noted that the site is near the location of a historic Native American burial mound and the Miamisburg Mound State Park. This prehistoric Adena Indian Mound dates to sometime between 800 BC and 100 AD and is the largest mound of its type in Ohio.^{26 27}

The plans for Mound Laboratory called for a greater degree of organization, security, and specialization than had been available to the Dayton Project in its various rented spaces. The original polonium-era buildings were categorized to fulfill one of six functions. Buildings were to either serve in Administration, Production, Research, Health, Disposal, or Maintenance. The Technical (T) Building was the only facility in the production group. This building was constructed within the elevated land formation, below ground, as a defensive position. The research buildings included the Research Laboratory (R) Building, the Biology (B) Building, and the Electronics (E) Building. These structures had facilities for fundamental polonium research, facilities for chronic studies on animals, and the capacity for developing special radiation detection instruments, respectively. The Isolated (I) Building served the main function of the

²³U.S. Department of Energy, *History of the Production Complex: The Methods of Site Selection*, DOE/NV/10594 H1 UC-2, September 1987.

²⁴U.S. Department of Energy, *History of the Production Complex: The Methods of Site Selection*, DOE/NV/10594 H1 UC-2, September 1987.

²⁵U.S. Department of Energy, *History of the Production Complex: The Methods of Site Selection*, DOE/NV/10594 H1 UC-2, September 1987.

²⁶Russell, Lorraine, M., *Brief History of the Miamisburg Indian Mound*, no date.

²⁷Ohio Historical Society, <http://www.ohiohistory.org/places/miamisburg/index.html>

health division; it included facilities to provide routine personnel monitoring. The Change House (H Building) also served a health function: it provided laundry decontamination. The disposal group included the Sewage and Waste Disposal (SD and WD) Buildings as well as the Hydrolysis House (HH Building), which was equipped to neutralize process acid solutions. The maintenance group had five buildings including the Cafeteria, Garage, Power House, Pump House, and Maintenance Building.

According to an early report²⁸ R Building was designed for chemical and physical research on alpha emitters, having approximately 32 laboratory rooms, varying in size, but averaging 300 sq. ft. The building was also provided with oxygen and nitrogen lines.

Special facilities identified included bench scale lab, insulated rooms for calorimetry, electrically shielded rooms for special electronic instruments, shop for precision work, special balance room (with heavy concrete piers set in deep sand beds) small room with a still, a vault for storing activity or sources having a heavy vault door with a combination lock and a water well to store neutron emitters.

An accompanying floor plan shows process cells (elephants) and service corridors. Elephants are defined as a "drybox grown into a hood". They were devices developed at Mound for use in both production and research that enabled personnel to easily handle alpha emitters without contamination.

The middle part of the elephant was used for processing; utilities in that part of the box included power and light, gases, water, drains where needed, and Kidde carbon dioxide detectors. The material of construction was 3/4 inch plywood heavily painted with Amercoat. Access to assemble or remove equipment was through the rear; the high risk area was closed with a gasketed door, fastened with refrigerator hardware. Access to the front was through two armholes or ports on the front panel that included a glass panel for viewing. The upper section of the "elephant" housed solutions that were fed by gravity or by "electronic instruments" to the workspace. The lower section of the "elephant" housed pumps and plumbing. Air locks allowed passage of beakers and flasks from one elephant to another, or allowed moving them into low risk areas.

Mound's R "Research" Building is significant for its operational role in the polonium-processing mission of Mound Laboratory during the late 1940s and early 1950s. Radioactive polonium had importance to the nation during that time for its use in nuclear weapon manufacture and atomic energy. During the polonium-processing era, R Building was designed for chemical and physical research on alpha emitters. These studies were part of a program to ensure the safety and good health of Mound Laboratory personnel. The building contains facilities for basic and fundamental research in nuclear energy and subsequent chemical problems.

²⁸ Haring, M. M. , Laboratory Director, *Mound and Scioto Laboratories, A Brochure on the Atomic Energy Commission Facilities Operated by Monsanto Chemical Company*, MLM-504, October 23 1950.

In October 1988, EG&G Mound Applied Technologies became the site operator, continuing until September 1997. At this time, traditional weapons-related operations were phased out at Mound. The mission was changed to site cleanup and the transition of reusable buildings and processes to the Miamisburg Mound Community Improvement Corporation (MMCIC.) In 1997, Babcock & Wilcox Co. of Ohio was selected to assume the position as operator. It operated the site under an incentive-based contract with an award fee for specific milestones in the clean-up process. This process was known as the Mound Exit Plan and was administered under the Mound 2000 Program, the implementing plan for the CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) or Superfund program clean up. In 2002, the Department of Energy prepared a request for proposals to seek a new contractor for the site clean-up. A contract was awarded to CH2MHill Mound, Inc. to clean up the site. The clean-up program under this new contract was named the "Mound Closure Project," using an accelerated version of the Mound 2000 Program. Because of this clean-up, the number of buildings on the Mound Site is constantly diminishing as buildings are decontaminated and destroyed. Tenants vacated R Building in 2003 in preparation for the 2004 demolition. Mound Site is currently being decontaminated and prepared for future development.

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. **Architectural Character:** R Building was a typical example of utilitarian design common in many manufacturing facilities built during World War II and into the early 1950s. In the vernacular style similar to other Mound Site buildings, R Building was a simple, windowless, rectangular structure that was not ornate in design. During this time, the principal of clean, unadorned lines was prevalent, the influence of the "International Style" and architects such as Meis Van der Rohe, Marcel Breuer and others.
2. **Condition of Fabric:** The structure and its numerous additions were intact and reasonably well maintained at the date of compilation of this report. Demolition is scheduled for 2004.

B. Description of Exterior:

1. **Overall Dimensions:** R Building measured 335' across its south side and approximately 161' across the eastern side. As constructed, the building was 234'-10" x 108'-4".
2. **Stairways:** On the southwestern corner of R Building, a metal stair leads to the roof.
3. **Foundations:** The foundation for the original structure and all additions was poured, reinforced concrete.

4. **Walls:** R Building's original exterior walls and most of the additions' walls were of concrete block with a red clay brick facing. The brick was laid in a bond pattern in which every sixth course of brick was a row of headers (bricks laid at a 90-degree angle to the row of bricks) and recessed by .75".

5. **Structural Systems, Framing:** Based upon engineering information, the original structure had a steel frame with concrete block and brick clad walls. The roof had a steel truss system. Walls that were on the exterior of the original building served as interior walls after remodeling.

6. **Porches:** There are no porches on R Building.

7. **Chimneys:** R Building included a chimney located on the exterior of the southern side of the building, off Room 162, just to the east of the Corridor 2 southern egress door. The chimney also serves as perch for recently decommissioned warning sirens.

8. **Openings:**

a. **Doorways and Doors:** Five doors allow entry to R Building corridors with three on the southern side, one on the western side at R-53 and one on the eastern side at Corridor 75. One door at room 199B allows access from the outside and subsequent access to R Building corridor. There are also four doors allowing outside access to rooms 194 and 195; however these rooms are not accessible from the rest of R Building. The doors were utilitarian metal.

b. **Windows:** R Building was a windowless structure.

9. **Roof:**

a. **Shape, Covering:** Reinforced concrete frame roof. The roof of R Building was flat metal, consisting of a built-up membrane of coal tar and carboline.

C. **Description of Interior:**

1. **Floor Plans:** The original floor plan for R Building had three parallel hallways running north, south (Corridors 2, 5, and 3). Various sized rooms were to the east and west of these hallways, as well as between them. One hallway (Corridor 4), shorter than the others, ran perpendicularly east, west and intercepted the most eastern corridor and ended at that location. Corridor No. 1 ran east, west and was located at the north end of R Building. It was perpendicularly intercepted by Corridors 2, 5, and 3.

2. **Stairways:** The "Ship Ladder" stair was an interior access from the first floor to the

penthouse.^{29, 30} The entry point was located to the west of modern room 213P, on the other side of the corridor 221P wall.³¹

3. Flooring: The floors were 6" reinforced concrete slab floors set on a 6" gravel bed with koroseal flooring for easier decontamination. Some areas had vinyl floor tile. Restroom areas had ceramic tile or asbestos/asphaltic tile. The bulk of the building, except the penthouse rooms, the maintenance shop rooms and some utility rooms, was also asbestos/asphaltic tile.

4. Wall and Ceiling Finish: The walls were face brick and masonry block with plastered interior for ease in cleaning. The building had various interior wall finishes including finished plaster and drywall or painted concrete block. The interior had some walls of the exterior brick in places where there was an addition. Drywall types ranged from pre-finished vinyl covered panels to painted conventional sheet rock drywall. Some walls had acoustic tile, yet others were composed of metal panels. The Decontamination Room had marlite facing while other walls consisted of cement asbestos. Walls in the restrooms were tile and glazed block.

5. Openings:

- a. **Doorways and Doors:** The first floor included at least 137 doors, including double-wide doors in corridors. There was outside access to the larger penthouse with five entry locations – two of which were on the eastern side. Several doors were present inside the penthouse.
- b. **Windows:** R Building was a windowless structure.

6. Hardware: Door and window hardware in the building was simple and utilitarian in design and use, with no notable examples of the period that require documentation.

7. Mechanical Equipment:

- a. **Heating, Air Conditioning, Ventilation:** R Building was completely air conditioned by means of a duct system designed for one-pass air flow with no re-circulation. Each of the air conditioning units provide both temperature and humidity control. All early buildings at Mound Site relied on steam from P Building for their heating and cooling. Later buildings used heat pumps (trailer modulars) and some steel frame buildings..
- b. **Lighting:** Lighting included fluorescent fixture and incandescent lighting,

29 This feature no longer exists.

30 Engineering Drawing Number 351300-02009, *R Building Miscellaneous Schedule and Details*, As Built, October 1948.

31 Engineering Drawing Number 351300-02004, *R Building 2nd Floor & Roof Plan*, As Built, October 1948.

depending upon the function of the area. Some fixtures in the building included their own auxiliary lighting. Lights were sealed in "high risk" corridors R-132 and R-148 as a protective covering around fixtures.³²

- c. **Plumbing:** The plumbing included restrooms, change rooms and showers that were used by laboratory workers after working in restricted areas (later contamination areas). Waste from these rooms was piped to the SD plant, as were the floor drains. Along with these, were glycol lines for cooling, air lines for breathing (bubble suits), inert gas lines (i.e. nitrogen, argon) and tritiated (tritium contaminated) waste water lines. The building had a number of floor drains in various parts of the building, which were eventually tied into sanitary sewer feed lines with wastes from other buildings. Then, these wastes were piped to the SD plant. There were also process waste sewer lines that drained process areas (sinks in vent hoods, sinks in other process areas) and also tied into a line with other buildings and fed into the WD (Waste Disposal) Building for treatment as waste process.

For the most part, water feed lines were copper. Waste lines included both lead pipe (for radiation protection) and Duriron pipe (metal pipe with lead joints). The lower section of the "elephant" (process cell) housed pumps and plumbing.

D. Site:

1. **General Setting and Orientation:** Mound Site is located on top of a flattened topographical feature that once was part a large area of agricultural lands. The site, at the time of decommissioning, was within the corporate limits of the City of Miamisburg, Montgomery County, Ohio. R Building was located in the southwest section of a cluster of buildings at Mound on a hill. The former Miami & Erie Canal flows just west of the Mound Site.
2. **Historic Landscape Design:** The original design of the landscape for Mound Site focused on easy access to the major buildings in the complex and on security issues. A perimeter road ringed the complex around the crest of the Main Hill and connected to the off-site access road near the northeast corner of the site perimeter. Interior paved roads and driveways provide access to the various buildings. For security reasons, the slopes of the Main Hill were relatively free of large vegetation. The density of buildings in a very small area precluded any extensive efforts to landscape the interior of the space at the top of the hill.

³² Bradley J. E. *Health Physics Monthly Information Report*, MLM-778, October 1-31, 1952.

PART III. SOURCES OF INFORMATION

A. Architectural Drawings: Attached R Building sketch plans are the work of The Westerly Group, Inc. Much architectural information from this project is dependent on Floyd Hertweck's investigation at the Mound Drawing Control Department. Various architectural plans and elevations referenced are from the collections at the Mound Facility, 1948-1991 and are on permanent file there.

B. Interviews: In addition to personal knowledge based upon site knowledge as possessed by the persons preparing this package, the following individuals were interviewed:

1. A number of current Mound employees who were formerly quartered in R Building were consulted, or provided information pertaining to R Building throughout the course of this investigation.

C. Bibliography:

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2. Atomic Energy Commission, *Quarterly Progress Report to Joint Committee on Atomic Energy* – Various reports, 1947-1949.
3. Atomic Energy Commission, *Quarterly Progress Report to Joint Committee on Atomic Energy* – July-September 1949, November 1949.
4. Bradley J. E. *Health Physics Monthly Information Report*, MLM-778, October 1-31, 1952.
5. Bradley, J. E., *Quarterly Health Physics Report through September 30, 1954*, MLM 1011, September 30, 1954.
6. Engineering Drawing Number 351300-02003, *R Building First Floor Plan*, As Built, October 1948, with revisions to 1953.
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 15. Engineering Drawing Number 351308-02008, *Additional Upgrading of "R" Building Architectural/Structural Filter Bank Removal Plan Section, August 24, 1974.*
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 20. Engineering Drawing Number 4-3142, *R & E Building Addition, Floor Plan and Details, Drawing Approved June 1959.*
 21. Engineering Drawing Number 4-3988, *Storage Addition to South-West Corner of R Building Plan, Sections & Elevations, Approved November 11, 1961.*
 22. Engineering Drawing Number 4-4017, *Modifications to "R" Building Addition #1, General Floor Plan & Details, Drawing Approved November 16, 1961.*
 23. Engineering Drawing Number 4-5475, *Area Engineers Office-"R" Bldg Floor Plan, Door Details & Roof Schedule, Approved November 6, 1964.*
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D. Likely sources not yet investigated:

Sources of information not yet investigated would be those areas where availability of information and accessing or releasing that information is a potential security risk. These limitations are due to the type of activities at Mound, and the fact that Mound was established to support Atomic Energy Act related activities. As a result, Mound employees were security cleared to the "secret" and "top secret" level, in order to work at Mound. Information sharing was discouraged, except on a "need to know" basis.

PART IV. PROJECT INFORMATION

The Westerly Group, Inc. of Indiana developed this document. Floyd R. Hertweck, Jr., the Historian/Cultural Resources Coordinator for CH2M Hill Mound, Inc., provided the bibliography and research materials. It was prepared as part of a larger project to document the 1948-era Mound site under a Memorandum of Agreement with the Advisory Council on Historic Preservation. Under this agreement, seven of the original seventeen polonium processing era buildings will be documented in the HABS format, and accompany a site information volume also documented in the HABS format. The documentation of the remaining ten structures will be completed with the Ohio Historic Preservation Office as stipulated in the Memorandum of Agreement.

Large format photographs and architectural sketches were completed under contract with The Westerly Group, Inc., 225 E. Main Street, Madison, Indiana 47250 and 556 W. 1175 N. Rd., Farmersburg, Indiana 47850.