Supplementary Listing Record

NRIS Reference Number: 16000223 Date Listed: 6/26/2017

Property Name: Bell Laboratories--Holmdel

County: Monmouth State: NJ

This Property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation

Signature of the Keeper

6/24/17

Date of Action

===

Amended Items in Nomination:

Section 5: Classification

Number of Resources within Property

The water tower is counted as a contributing structure and not as an object.

DISTRIBUTION:

National Register property file

Nominating Authority (without nomination attachment)

NPS Form 10-900 OMB No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. **Place additional certification comments, entries, and narrative items on continuation sheets if needed (NPS Form 10-900a).**

1. Name of Property

historic name Bell Laboratories-Holmdel

other names/site number Bell Labs

2. Location

street & number 101 Crawfords Corner Road [ ] not for publication

city or town Holmdel Township [ ] vicinity

state NJ code 034 county Monmouth code 025 zip code 07733

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this X nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property X meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

__ national X statewide __ local

[signature] Ass't Commissioner 3/8/16
Signature of certifying official/Title Date

NJ DEP
State or Federal agency/bureau or Tribal Government

In my opinion, the property __ meets __ does not meet the National Register criteria.

Signature of commenting official Date

Title State or Federal agency/bureau or Tribal Government

4. National Park Service Certification

I hereby certify that this property is:

✓ entered in the National Register

__ determined eligible for the National Register

__ determined not eligible for the National Register

__ removed from the National Register

__ other (explain:)

[signature] 6/26/17
Signature of the Keeper Date of Action

5. Classification

Ownership of Property
(Check as many boxes as apply.)

- [x] private
- [ ] public - Local
- [ ] public - State
- [ ] public - Federal

Category of Property
(Check only **one** box.)

- [x] building(s)
- [ ] district
- [ ] site
- [ ] structure
- [ ] object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
1		buildings
1		sites
		structures
1	1	objects
3	1	**Total**

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing)

N/A

Number of contributing resources previously listed in the National Register

N/A

6. Function or Use

Historic Functions
(Enter categories from instructions.)

COMMERCE/office building

Current Functions
(Enter categories from instructions.)

OFFICE
VACANT

7. Description

Architectural Classification
(Enter categories from instructions.)

MODERN MOVEMENT

Materials
(Enter categories from instructions.)

foundation: CONCRETE
walls: METAL/Aluminum
GLASS
roof:
other:

Narrative Description

(Describe the historic and current physical appearance of the property. Explain contributing and noncontributing resources if necessary. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, setting, size, and significant features.)

Summary Paragraph

Designed by Eero Saarinen and Associates, Bell Laboratories-Holmdel was constructed in three phases (1959-1962, 1964-1966, and 1982-1985). The building is located on a 134-acre suburban site, designed by the landscape architecture firm of Sasaki, Walker and Associates, and is located at 101 Crawfords Corner Road in Holmdel, New Jersey. The site, which assumes the shape of a keyhole, is considered contributing and includes one contributing building, one contributing object (water tower) and one non-contributing object (sculpture). The building is a rectilinear concrete- and steel-frame building encompassing two million square feet on its six floors, all housed under a single roof and within a reflective paneled-glass, aluminum-framed curtain-wall exterior (see photographs 2-4; 7). The rectangular building measures 1,000 feet on its north and south elevations and 360 feet on its east and west elevations; it is five stories above grade on its primary (north) elevation and six stories above grade on its rear (south) elevation. The building consists of four five-story pavilions that are separated by a large cruciform five-story atrium (beginning at the 2nd floor) and linked by skybridges (see photographs 9-11; 14, 16, 19, 23, 25), perimeter corridors (see photographs 13, 15, 21, 24) and concrete elevator/stair towers (see photographs 12 and 17). The building's primary entrance (see photographs 2 and 7) is on the north elevation, facing the large water tower at the entrance to the site (see photograph 1). Secondary entrances to the 2nd floor atrium are located on the east and west elevations (see photograph 3). Additional secondary entrances to the 1st floor are located on the rear (south) elevation (see photograph 4).

The interior of the building retains the primary configuration, volume, massing, circulation pattern, and material palette designed by Eero Saarinen and overseen by his partners after his death. The building's northern two pavilions (see photographs 8, 9, 14-16, 18, and 20) were constructed first (1959-1962), with the southern two pavilions (see photographs 13, 19, 21, 22, 24, and 25) constructed soon after (1964-1966), per Saarinen's original design. Between 1982 and 1985, Saarinen's partners Kevin Roche and John Dinkeloo oversaw the design and construction of additions to the building's east and west ends. These additions maintain the configuration, volume, massing, circulation pattern, and material palette of the original structure. The building's four pavilions, two stair/elevator towers, and atrium (see photographs 10-12) remain largely intact with some alterations, including the removal of some modern features that were added in recent decades. In each of the four pavilions, the circulation pattern is consistent with Saarinen's original design, with skybridges around the inner perimeter (atrium corridors) and corridors around the outer perimeter of each floor. The interior floor plans of each pavilion were designed to be flexible and variable, with a combination of offices (see photograph 22), open areas, laboratories, and subordinate cross-corridors. Finishes in the atrium include a modern porcelain tile floor that closely matches the appearance of the original slate floors; gypsum-board and metal-panel walls; and band of egg-crate light fixtures on the underside of the concrete ceilings (see photographs 21 and 24). Finishes in each of the four building pavilions include carpet and vinyl-tile floors; gypsum-board and metal-panel walls with interior windows; and suspended acoustic-tile ceilings. The 1st floor, below the atrium level, spans the full footprint of the building and includes an auditorium (see photograph 26), cafeteria (see photograph 28), lounge (see photograph 27), kitchen, and other service areas. This level is primarily utilitarian, and finishes include: concrete, granite, vinyl tile, and carpet floors; gypsum board and concrete block walls; and suspended-tile ceilings.

The two objects on the site include a water tower and a sculpture. The water tower, which is a contributing structure, is situated to the north of the site, near Crawford's Corner Road. Also located on the site is a metal sculpture, which is a non-contributing object, installed in 1998 (outside of the period of significance). This sculpture honors radio astronomer and Bell Labs employee Karl Jansky, and marks the site of his antenna, which he designed and built and used to identify radio waves from outer space in 1931 (on the site of the current Bell Labs-Holmdel). The sculpture is a stylized, miniaturized replica of his radio telescope.

Narrative Description

Setting: Bell Laboratories-Holmdel is located in Holmdel Township in Monmouth County, New Jersey. This suburban township is located a half-mile southwest of the Garden State Parkway, 15 miles west of the Jersey Shore, and 35 miles south of Manhattan, a proximity that fostered its development by Bell Labs. The site is accessed by local roads and is surrounded by farmland and suburban residential development.

Site/ Landscape: When constructed, the site was comprised of 460 acres, of which 134 acres were formally designed, in the form of a "keyhole." The nominated boundary includes the 134-acre portion of the site; the remaining 366 acres are located outside of the nominated boundary and are now under separate ownership. The 134 acres encompasses the historic Sasaki-designed landscape. The area outside of the keyhole was historically not formally landscaped and contained open field and wooded areas with no formal landscape features. Despite the reduction in acreage, the site maintains a high degree of integrity as it encompasses the portions of the landscape designed by the notable landscape architecture firm of Sasaki, Walker and Associates in collaboration with Eero Saarinen and Associates.

The site is symmetrically arranged along a primary northeast-southwest axis, with two primary entrances on Crawfords Corner Road. The building is placed on the primary axis near the southwest corner of the site, where the site slopes down from the front (north) elevation to the rear (south) elevation. Some landscape features are oriented along a secondary northwest-southeast axis, perpendicular to the primary site axis. Two secondary driveway entrances are oriented on the secondary axis and approach the building from the western edge (from Roberts Road) and the eastern edge (Middletown Road) of the site.

The site is arranged in a keyhole design, delineated by the paved entrance and exit driveways that are reflected across the primary axis. The interior of the keyhole, as defined by the driveways, comprises symmetrically arranged landscape features, including grassy lawns, ponds, parking areas, and plantings (see photographs 1-6). The outer edge of the keyhole is delineated by mature trees that are planted in an allée along the entrance and exit driveways. The primary axis of the site is oriented southeast-northwest; the secondary axis is perpendicularly oriented northwest-southeast. The Bell Laboratories-Holmdel building is located at the center of the concentric oval ring roads. Its rectangular footprint is oriented with its long axis along the secondary axis of the site, while its exterior entrances (on the front and rear elevations) are centered along the primary axis of the site.

System of Circulation: Roads, Sidewalks, and Parking Lots: Automobile traffic circulation is provided by a double-ellipse circulation road which forms the outline of the "keyhole." All roads through the site are one-way driveways. With the exception of the service driveways in the southwestern corner of the site, the driveways are entirely symmetrically arranged. From the two primary entrances, which are located approximately 200 yards apart on Crawfords Corner Road, the driveways taper toward each other, framing a triangular portion of land that measures approximately 200 yards on each side (even at their closest point, the driveways remain approximately 50 yards apart). The driveways gradually diverge again and extend uninterrupted for approximately 500 yards. Their paths once again frame a triangular parcel of land along the site's primary axis.

The two primary access roads extend to the central portion of the site, forming concentric oval ring roads, which complete the overall keyhole design of the Bell Laboratories-Holmdel landscape. These ovals are elongated along the site's secondary axis. The larger oval measures approximately 950 yards on its longer axis and 670 yards on its shorter axis. The secondary concentric oval measures approximately 850 yards on its longer axis and 540 yards on its shorter axis. These concentric ovals are linked by several short curving one-way driveways, forming tertiary ovals between the concentric oval driveways. These tertiary ovals vary in size but are symmetrically laid out.

The western and eastern thirds of the site, which are parabolic in shape within the ovals, are chiefly paved parking areas. In the western and eastern thirds of the landscape within the oval ring roads, a pull-around driveway on center with the site's secondary axis leads up to the entrance on each of these two elevations. On each side of the building, the pull-around driveway encircles two grassy islands and is framed by additional islands that extend from the building and feature concrete sidewalks, light standards, and trees. The remainder of the western and eastern thirds consists of asphalt parking lots. On both the west and east sides of the oval landscape, the parking lots are uninterrupted with the exception of two through-roads that direct traffic from the parking lot to the concentric oval driveways. All of the parking spaces are striped on axis at regular angles from the site's secondary axis, reinforcing the symmetry and geometry of the overall site design within the keyhole landscape.

Planting: All areas between the two ovals contain landscaped areas. The landscape surrounding the building within the oval driveways is symmetrically reflected across the primary axis of the site. It is divided into approximate thirds, as delineated by trees and shrubs and the aforementioned driveways. On the outer perimeter of the driveways, mature trees separate the designed features of the Sasaki-designed site from the surrounding open fields and wooded expanses that are no longer part of the subject property. Strips of grass with rows of trees separate the parking lots from the concentric oval driveways. Regularly-spaced trees line the roads and mark entrance points to the building.

As cited in the 2015 HALS report prepared for the adjacent property owner, more than 80% of the trees on site are various varieties of low-growing juniper trees (*juniperus horizontalis*, *juniperus horizontalis plumosa*, and *juniperus c. sargenti*), which create ground cover around the lab and parking lots. The entrance drives are lined with an allée of sugar maple (*acer saccharum*) trees with modern ground level up-lighting. The main entrance to the complex at Crawford Corners Road contains a screen of sugar maples, eastern red oak (*quercus borealis maxima*), and red maple (*acer rubrum*). Walkways from the east and west parking lots are lined with eastern red oak (*quercus borealis maxima*). At the north pool, there are copses of dawn redwoods (*metasequoia glyptostrobiodes*). At the south pool or "lagoon" on the central island are willow trees, and copses of dawn redwood trees (*metasequoia glyptostrobiodes*). The southwest edge of the lagoon contains a copse of London plane trees (*plantanus x acerifolia*). The south edge of the lagoon houses a copse of pin oak trees (*quercus palustris*), and the western edge houses a copse of willow oak trees (*quercus phellos*). In addition, a hedge of burning bush (*enonymus alatus*) borders the lawn surrounding the lagoon, and a forsythia along the northwest edge.[1]

Sculpture: Located within one of the tertiary ovals in the northeastern portion of the two larger concentric ovals, is a metal sculpture installed in 1998 and therefore non-contributing. This sculpture honors radio astronomer Karl Jansky and marks the site of his antenna. It is a stylized, miniaturized replica of his radio telescope and is

[1] HALS Survey, 14-15, 31.

aligned as Jansky's instrument was in August 1931, when it measured radiation from the center of the galaxy in the constellation of Sagittarius.[2]

Water Features: The central third of the landscape, which is roughly rectangular in shape, is bisected by the building and comprises parking and a pond in front of the building and a lagoon-like pond and gardens at the rear of the building.

The area in front of the building (northeast of the building) includes a large pond that measures approximately 140 yards (primary site axis) by 190 yards (secondary site axis) and is curved toward the building on its southwestern side. The area behind the building (southwest of the building) comprises a lagoon-like pond with an amoebic perimeter that contrasts with the geometry that characterizes the rest of the site plan. Nevertheless, this lagoon maintains the symmetry of the overall landscape design and is reflected over the site's primary axis. It features a small island at the center of the bond, accessed by a concrete bridge with a metal railing. A footpath and regularly-spaced trees run along the perimeter of the lagoon, parallel to its banks.

The water features were designed to be functional for the building, providing cooling for air conditioning and a source for fire suppression.

Water Tower: A large water tower is located at the center of a triangular piece of land near the main entrance, and is visible from Crawfords Corner Road and is a contributing object. The tower is characterized by a sculptural quality, supported on three columns and painted white. This water tower was designed by Eero Saarinen to evoke a transistor, announcing the scientific use of the site to both visitors and passersby.

Structure of Building: The building is primarily constructed with a concrete-frame structure. The west and east ends of the building, which were built in 1982-85 as extensions to the building, feature steel-frame structural systems.

Exterior: The Bell Laboratories-Holmdel building exhibits the massing, material palette, and minimalist design characteristic of a Mid-Century Modern commercial building. The rectangular building resembles a large glazed box whose longest elevations face north and south, with the shorter elevations facing east and west. The glazed box is centered on a plinth-like elongated octagonal concrete base, which is partially exposed on the front (north) elevation and fully exposed on the rear (south) elevation due to the downward slope of the site. An elongated skylight, corresponding to the atrium on the interior, projects above the roof along the central east-west axis and is visible from the east and west elevations. The volume, symmetry, and material palette are consistent on all four elevations, with vertical glazed panels set within aluminum frames with projecting fins. The fins vary slightly in thickness to establish a subtle grid on each elevation, with each floor delineated horizontally and regular bays—in particular, the portion of the glazing centered over the entrance on each elevation—emphasized vertically. While this glazing pattern is consistent on all four elevations, the entrances placed at the center of each elevation vary in scale and configuration.

The ballast roof includes two concrete penthouses and the atrium's skylights, which are divided into three large rectangular sections (separated by the penthouses) along the building's central east-west axis and two smaller rectangular sections along the building's central north-south axis. Mechanical equipment is distributed on the roof, at times near the perimeter and along the skylight perimeter, making it visible within the atrium.

North Elevation

[2] "Detective work leads to monument honoring the father of radio astronomy," Alcatel-Lucent (June 3, 1998), accessed March 27, 2014, http://www.bell-labs.com/news/1998/june/4/2.html.

The primary elevation faces north. As with the other three elevations, it consists of a glazed façade that is recessed from a projecting concrete base. Mechanical equipment is visible on the roof from this elevation.

The glass portion of the north elevation consists of glazed panels set within aluminum frames with projecting fins. The concrete base is partially exposed above grade on this elevation. This base is nearly unbroken at the perimeter of the building, with the exception of the slate entrance stairs and portico at the center of the elevation and the vehicular openings at either end of the elevation. These openings encompass ramps below the building, which were originally adjacent to the first two phases of the building but were submerged when the east and west additions were constructed over the driveways in the 1980s. At the perimeter of the concrete plinth, a series of vents in the concrete are open to below, where the exterior of the 1st floor is exposed below grade.

The primary entrance is centered on the north elevation. It is accessed by a broad, shallow set of slate steps located at the center of the concrete plinth, which lead to a slate portico in front of the entrance doors. A modern handicap-accessible ramp is located off-center at the west end of the steps and features modern aluminum railings. A large rectilinear concrete canopy, supported by exposed concrete columns, spans the full length of the steps and is detached from the glazed façade of this elevation. A secondary, smaller painted-steel canopy projects from the façade and extends to the edge of the concrete canopy. This secondary canopy consists of painted paneled-metal that is in poor condition and corroded in large areas. Inappropriate modern conduit for ADA-pad access and intercoms is exposed on this metal canopy. Primary entrance doors are symmetrically arranged in an A-B-A-A-B-A arrangement of double-leaf anodized aluminum-frame glazed doors (A) and anodized aluminum-frame glazed revolving doors (B), all of which include an anodized-aluminum frame transom above.

West Elevation
The west elevation echoes the configuration of the north elevation, with the glazed façade that is recessed from the projecting concrete base. Unlike the north elevation, the clerestory atrium skylight—comprising glazed panels set within a rectilinear steel frame—projects above the roofline at the center of the west elevation.

The entrance at the center of the west elevation is symmetrically arranged. A concrete canopy projects from the elevation over the two main entrances on this elevation. These two entrances, which are separated by a courtyard at the center of the elevation and entrance, consist of a vestibule with exterior and interior paired double-leaf anodized-aluminum frame glazed doors.

The canopy frames a small courtyard at the center of this elevation, which is exposed to the sky above due to the configuration of the projecting concrete canopy. This courtyard is planted within the concrete plinth, which forms a retaining wall on the courtyard's three projecting sides. It is enclosed on those same three sides by metal-framed glazed panels, which extend from the courtyard's concrete base to the concrete canopy at the courtyard's perimeter.

A set of slate steps extends the full width of the concrete canopy. The steps extend up to the concrete base of the courtyard at the center of the entrance portico, with longer flights of stairs extending up to the vestibules at each end of the portico.

South Elevation
The rear elevation faces south. As with the other three elevations, it consists of a glazed façade that is recessed from a projecting concrete base. Unlike the other elevations, the south elevation is fully exposed at the 1st floor, and a large section (comprising the 1st floor cafeteria dining room on the interior) projects from the center of the

concrete base beyond the remaining perimeter of the concrete plinth. Mechanical equipment is visible on the roof from this elevation.

The glass portion of the south elevation, which extends from the 2nd through 6th floors, consists of glazed panels set within aluminum frames with projecting fins.

The concrete base is interrupted by the projecting portion of the 1st floor and by a vehicular opening at each of the east and west ends. The projecting section features a ballast roof (with pavers around the perimeter) and glazed walls on its west, south, and east walls. The floor-to-ceiling windows are set within aluminum frames with exposed concrete columns at regular intervals along the perimeter. The northwest and northeast corners of this projecting rooms feature vestibules that lead to exterior entrances. A set of double-leaf anodized-aluminum frame glazed doors lead from the 1st floor interior to each of the vestibules, and three single-leaf anodized-aluminum frame glazed doors then lead from each vestibule to the exterior, where a flight of concrete steps extends along the concrete plinth on either side of the projecting section, leading to the 2nd floor, where exterior entrances offer access to the building atrium.

Elsewhere on this elevation, the concrete base of the building is fully exposed at the 1st floor with unfenestrated walls and a very low parapet. The perimeter of the plinth features a series of concrete vents open to below, consistent with the building's other elevations. The vehicular openings at each end of the south elevation encompass ramps below the building, which were originally adjacent to the first two phases of the building but were submerged when the east and west additions were constructed over the driveways in 1982-5.

East Elevation

The east elevation is consistent with the design of the west elevation, with the glazed façade that is recessed from the projecting concrete base. The clerestory atrium skylight—comprising glazed panels set within a rectilinear steel frame—projects above the roofline at the center of this elevation.

The entrance at the center of the east elevation is symmetrically arranged. A concrete canopy projects from the elevation over the two main entrances on this elevation. These two entrances, which are separated by a courtyard at the center of the elevation and entrance, consist of a vestibule with exterior and interior paired double-leaf metal-frame glazed doors.

The canopy frames a small courtyard at the center of this elevation, which is exposed to the sky above due to the configuration of the projecting concrete canopy. This courtyard is planted within the concrete plinth, which forms a retaining wall on the courtyard's three projecting sides. It is enclosed on those same three sides by metal-framed glazed panels, which extend from the courtyard's concrete base to the concrete canopy at the courtyard's perimeter.

A set of slate steps extends the full width of the concrete canopy. The steps extend up to the concrete base of the courtyard at the center of the entrance portico, with longer flights of stairs extending up to the vestibules at each end of the portico.

Interior: The Bell Laboratories building is six stories in height, with a partially below-grade 1st floor that spans the full footprint of the building and a cross-shaped atrium that begins at the 2nd floor and separates the four office/lab pavilions of the 2nd through 6th floors. The atrium is capped by a steel-frame glazed roof.

2nd Floor

The 2nd floor serves as the main level for the building and is arranged symmetrically. A large cross-shaped atrium separates the four rectangular office/lab pavilions of the building, which are located in the corners of the floor plan. A primary corridor extends around the full perimeter of the building between the office/lab pavilions and the glazed curtain wall of the building exterior.

The primary entrance is located at the center of the north elevation, offering access to the main entrance lobby, which is located along the central north-south axis of the cruciform atrium. The entrance lobby features a reception area/sunken conversation pit with seating along the perimeter and a reception desk at the center. The reception area progresses to the center of the building, where the north-south axis of the atrium intersects with the east-west axis of the atrium. The cruciform atrium extends the full depth of the building from the front (north) elevation to the rear (south) elevation, and the full length of the building from the east to the west ends of the structure. The north-south axis is shorter than the east-west axis. All features along these two axes are symmetrically arranged, although some finishes have been asymmetrically altered in areas. The southern end of north-south atrium axis features a granite double-return stair to the 1st floor below.

The east-west axis of the atrium is also symmetrically arranged and features the two stair/elevator towers, which are clad in bush-hammered concrete with uninterrupted walls facing east and west. A fountain with a curvilinear concrete base is located at each end of this axis. The east and west elevations feature paired curved glazed elevators that were inserted in the third phase of construction (1982-85).

The atrium features a porcelain tile floor that was recently installed to closely match the original slate floor that was in poor condition. Two rectangular segments flanking the intersection of the cruciform are tiled in a pattern evoking the image of *Upward*, a painting by Josef Albers, who was a contemporary of Saarinen. The design is executed in black, white, and grey porcelain tiles.

The primary perimeter corridor fully encircles the building footprint at the 2nd floor. It extends the full 1,000-foot length and 360-foot width of the building, separating the four pavilions from the curtain-glass wall at the exterior. Finishes in the primary corridor include carpet and vinyl-tile floors and egg-crate light fixtures within aluminum frames set into the concrete ceiling. Windows in various sizes and configurations have been inserted in the office walls facing the corridors in many areas.

The four office/lab pavilions of the 2nd floor are similar in plan, but configurations and conditions vary. This flexibility in plan was integral to the design of the building, since it allowed for the greatest flexibility for changing space needs for the building's occupants. Secondary corridors, which contain the bathrooms, extend north-south in each pavilion of the building, linking the atrium to the primary corridor at the perimeter of the building. Narrower tertiary hallways also extend north-south within the office pavilions and are constructed of metal partitioning that was assembled and disassembled, creating new configurations throughout the history of the building. Existing metal panels walls in the 1960s sections of the atrium are hollow-metal, whereas the 1985 metal paneling was installed on gypsum wall board.

Within the pavilions, the offices are open in floor plan with some areas containing partitioned offices. The floor plans of the office floors vary, as was the intended design, and renovations occurred continuously throughout the building's history. Typical renovations included the installation of new carpet, ceilings, and partitions and the insertion of windows in corridors and within the offices.

Finishes in the four office/lab pavilions of the 2nd floor include: tile, carpet, and floors; gypsum-board and metal-panel walls; and suspended-tile ceilings. Offices typically contain single-leaf hollow-core steel doors set within metal and gypsum-board partitions, with some offices retaining metal bookshelf built-in units. Partitions were installed throughout the history of the building to meet the needs of the occupants. Windows were added in various sizes and configurations in the office demising walls. The renovated offices in the northeast pavilion feature new demising walls and finishes that include: laminate, tile, and carpet floors; gypsum board walls; and gypsum board ceilings. Bathrooms throughout the 2nd floor feature modern finishes that include tile floors and walls and suspended tile ceilings.

Finishes in the secondary corridors and tertiary hallways include: carpet or vinyl-tile floors and egg-crate light fixtures within aluminum frames set into the concrete ceilings. Windows in a variety of sizes and configurations have been inserted in the office walls facing the secondary and tertiary corridors.

3rd through 6th Floors

From the outer edge of the building in, the 3rd through 6th floors consist of: the primary perimeter corridor around the full footprint of each floor; four office/lab pavilions; balcony corridors (aka atrium corridors) around the inner perimeter of each floor; two elevator/stair towers; and the skybridges that connect the pavilions and stair/elevator towers across the atrium, which is open to the 2nd floor below. The overall configuration of each floor is symmetrical. Circulation on each floor consists of: the primary corridor around the full perimeter of each floor; balcony corridors encircling the inner perimeter of each floor; secondary cross-corridors through each pavilion, which open into the bathrooms; and narrower tertiary cross-corridors through each pavilion, which open into offices.

As on the 2nd floor, the primary perimeter corridor fully encircles the building footprint at the 2nd floor. It extends the full 1,000-foot length and 360-foot width of the building, separating the four pavilions from the curtain-glass wall at the exterior. The corridor features a metal railing attached to the glazed curtain wall. Finishes in the primary corridor include carpet and vinyl-tile floors and egg-crate light fixtures within aluminum frames set into the concrete ceilings. Windows in various sizes and configurations have been inserted in the office walls facing the corridors in many areas.

The four office/lab pavilions of the 3rd through 6th floors are similar in plan, but configurations vary, as was the original design intent. Some offices are open in plan; others are partitioned. Partitions were installed over the course of the building's history, reflecting the changing needs of the occupants. Metal partition walls in the sections dating to 1960 are taller with tall transoms, whereas the 1985 metal partitions are shorter and have shorter transoms. Windows of various sizes and configurations were inserted in the interior office walls and along the outer office walls facing the primary perimeter corridor. The individual offices typically contain single-leaf hollow-core steel doors set within metal and drywall partitions, with some offices retaining metal bookshelf built-in units.

In the southeast corner of the southeast pavilion's 6th floor, an executive suite of offices is located in the portion of the building. The suite was added after the building's period of significance (ending in 1985) and therefore is not central to the interpretation of the building. Finishes include wood plywood and laminate paneling, acoustic wall panels, suspended acoustic tile ceilings, and carpet. The configuration of the offices is not original, as evidenced by the concrete perimeter corridor ceiling with the anodized aluminum frames of the egg crate light fixtures, which remains above the suspended ceiling.

Finishes in the four office/lab pavilions of the 3rd through 6th floors include: vinyl tile and carpet floors; gypsum-board and metal-panel walls; and suspended tile ceilings. Typical doors in the office/lab pavilions are hollow metal doors with varying aluminum hardware. The executive office suite in the southeast corner of the 6th floor contains restrained finishes typical of office finishes of the period. Finishes include carpet floors, drywall walls, and suspended ceilings. A conference room within the suite contains carpet floors, gypsum-board and veneer-paneled walls, and acoustic-tile ceilings with suspended fluorescent light fixtures. Bathroom finishes on each floor are modern and include tile floors and walls and suspended tile ceilings.

At each floor, the secondary corridors and tertiary hallways feature finishes that include carpet or vinyl tile floors and egg-crate light fixtures. The balcony corridors and skybridges feature carpet or vinyl-tile floors, metal railings with glass panels below, and egg-crate ceilings within aluminum frames set within concrete ceilings.

1st Floor

The 1st floor spans the full footprint of the building and is partially below grade. It is not accessible from the front (north) elevation, but the rear (south) elevation features two exterior pedestrian entrances. In addition, two vehicular openings on the north and south elevations lead to driveways that cross through the building at the 1st floor. These driveways originally flanked the building during its two 1960s phases of construction; when the additions were constructed in the 1980s, however, the driveways were incorporated into the 1st floor as the building was extended to the east and west.

The 1st floor is located beneath the atrium, and is therefore the only floor not organized with the atrium/office pavilion floor plan. Instead, its primary functions are organized along the shorter north-south axis (including the prominent double-return stair to the 2nd floor atrium above), while the secondary functions and service areas are located along the longer east-west axis, opening off of two parallel corridors that extend the full length of the building. Beyond the central north-south core of the floor, the 1st floor's features and finishes are utilitarian in character, reflecting the floor's use.

From the front of the building to the rear, the north-south axis includes various offices and lab areas, an auditorium, the stair to the 2nd floor, a lounge with banquette seating, and the former staff cafeteria dining room, which projects from the rear (south) elevation of the building. The east-west axis features a large kitchen (with cafeteria-style food service counters), labs and offices, storage rooms, and parking areas.

Finishes throughout the 1st floor vary and have been altered in renovation campaigns in some areas. The lobby at the bottom of the stairs features granite floors and walls and suspended-tile ceilings. This lobby immediately transitions to more utilitarian corridors, which feature concrete floors and walls and suspended-tile ceilings.

The auditorium features concrete floors, carpeted steps, and a wood stage. The auditorium is functional (for education and lecture purposes) rather than decorative, and there is no proscenium on the stage. The seats feature metal frames and upholstered cushions. The ceiling consists of exposed concrete beams and acoustic panel baffles, with exposed mechanicals.

The lounge features carpet and ceramic tile floors, gypsum board walls, and suspended tile ceilings with soffits at the perimeter. The walls include colored decorative acrylic wall panels. The lounge was renovated in the 2000s and all features and finishes date to that renovation.

Finishes in the cafeteria dining room include: tile floors and exposed concrete columns. The room projects from the rear elevation of the building. As a result, the demising wall between the dining room and the rest of the 1st floor is gypsum board, while the remaining three walls feature floor-to-ceiling glass panels set within steel frames. The ceiling is exposed concrete with modern suspended acoustic-tile baffles that survive in poor condition.

Kitchen finishes are modern and include ceramic tile floors and walls and metal panel ceilings. Finishes in the 1st floor labs and offices include: carpet, tile, or concrete floors; gypsum board or concrete block walls; and suspended tile ceilings. The remaining portions of the 1st floor, including service corridors, mechanical rooms and the parking areas, are utilitarian, with finishes that include: concrete or tile floors; painted gypsum board or concrete block walls; and concrete or suspended tile ceilings. The kitchen was also renovated in the 2000s and all features and finishes date to that renovation.

Vertical Access

Vertical access in the building consists of 12 passenger elevators, five freight elevators, and 14 stairwells. In addition, there is one communicating stair between the 1st and 2nd floors.

Eight of the elevators are arranged in groups of four in each of the two main stair/elevator towers. These elevators feature modern equipment and cabs. Finishes in the elevator lobbies at each floor largely reflect upgrades in recent decades and include carpet or vinyl tile floors; ceramic tile or paneled tile walls; and suspended tile ceilings. The remaining four passenger elevators are paired at the east and west ends of the building, in the areas that were added during the 1980s construction on the building. These elevators are curved and feature glazed cabs and modern equipment. The freight elevators feature modern equipment and cabs.

Ten of the stairs date to the two 1960s phases of construction; the remaining four stairs are located near the west and east ends of the building, in the additions that were constructed in the 1980s. The 1960s stairs consist of terrazzo treads, metal risers and railings, concrete block walls, and plaster ceilings with egg-crate light fixtures. The 1980s stairs feature poured terrazzo treads and risers, steel carriage, and painted metal pipe railings. The communicating stair between the 1st and 2nd floor in the atrium features granite treads and risers and a metal railing with glass panels below.

Alterations and Integrity: The site originally contained 460 acres, but has since been reduced to 134 acres. The 134 acres encompasses the historic Sasaki-designed landscape, or the "keyhole." The 366 acres outside of the boundary are now under separate ownership. The area outside of the keyhole was never formally landscaped and contained open field and wooded areas. Despite the reduction in scale, the site maintains a high degree of integrity.

Limited changes have occurred to the Sasaki-designed landscape over time. Two landscaped ponds, formerly located to the east and west of the building were infilled between 1982-85 (during the period of significance) in order to accommodate for the extension of the east and west ends of the building. The additions to the building's east and west ends, which were constructed in the 1980s extended the building from 700 feet in length to 1000 feet. The additions maintained the characteristics and treatment of Saarinen's original design and were overseen by Saarinen's partners, Kevin Roche and John Dinkeloo. In tandem with the 1980s building expansion, a new pond was created to the south of the building, which replaced a lawn. The area around the new pond was planted with trees and plants to create a Japanese style garden. A combination nature and exercise trail was also built to the northwest of the ellipse in the mid-1980s. The building's alterations were primarily implemented during Bell Laboratories' (later, Alcatel-Lucent's) four decades of use at the site, with some additional alterations in the years since the company sold the property.

Bell Laboratories-Holmdel has integrity as a Modern Movement commercial building. On the exterior, the building retains the massing and minimalism characteristic of the Modern Movement style and Saarinen's work. On the interior, the building retains its distinctive volume, circulation patterns, and hierarchy of spaces.

The atrium retains its original massing, volume and spatial organization. Interior alterations are concentrated in the four office/lab pavilions at each floor and reflect changes in floor plan within each of the pavilions, in keeping with the intentional flexibility of the design. In addition, some alterations have changed the perimeter walls of the office/lab pavilions at each floor. These alterations include: removal of some demising walls; relocation of doors; insertion of windows (along the perimeter and inner corridors); and the insertion of modern offices in varying locations. The bathrooms, 1^{st} floor service areas, and stair/elevator towers have received typical finish and fixture upgrades to meet the evolving needs of the building's occupants.

Proposed Rehabilitation: A rehabilitation of Bell Laboratories-Holmdel is underway, utilizing historic tax credits. The landscape will remain largely unchanged with limited alterations proposed to meet code and safety requirements. The exterior of the building will be retained, with minimal changes beyond the replacement of poorly-operating entrance doors. The interior will be rehabilitated for commercial use with retention of the atrium and pavilion arrangement. Within the pavilions new layouts and finishes will be installed to accommodate office and commercial reuse.

Bell Laboratories-Holmdel
Name of Property

Monmouth County, NJ
County and State

8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- [ ] A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] B Property is associated with the lives of persons significant in our past.
- [x] C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [ ] D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations

(Mark "x" in all the boxes that apply.)

Property is:

- [ ] A Owned by a religious institution or used for religious purposes.
- [ ] B removed from its original location.
- [ ] C a birthplace or grave.
- [ ] D a cemetery.
- [ ] E a reconstructed building, object, or structure.
- [ ] F a commemorative property.
- [x] G less than 50 years old or achieving significance within the past 50 years.

Areas of Significance

(Enter categories from instructions.)

ARCHITECTURE
LANDSCAPE ARCHITECTURE

Period of Significance

1959-1985

Significant Dates

1962
1966
1985

Significant Person

(Complete only if Criterion B is marked above.)

Cultural Affiliation

N/A

Architect/Builder

SAARINEN, EERO (ARCHITECT)
DINKELOO, JOHN (ARCHITECT)
ROCHE, KEVIN (ARCHITECT)
SASAKI, HIDEO (LANDSCAPE ARCHITECT)

Statement of Significance Summary Paragraph (In *one* paragraph, provide a summary that briefly states what the significance of the property/district is, and, for each claim, identifies the level of significance and applicable criteria that apply. The summary paragraph also needs to identify the period of significance.)

Designed by Eero Saarinen and Associates and constructed between 1959-1966, with additions built between 1982-1985, Bell Laboratories-Holmdel is eligible for listing in the National Register under Criterion C in the area of Architecture as the work of a nationally important architect and an intact example of a Modern Movement suburban corporate campus. It is the only known Saarinen corporate complex in New Jersey. The landscape is one of two known Sasaki-designed landscapes in the state, the other being the Forrestal Village in Princeton New Jersey, which is a 52-acre mixed use retail and office complex, which broke ground in 1986. Although some Bell Laboratories buildings elsewhere in the northeast predate the Holmdel facility, Bell Laboratories-Holmdel marks a deliberate shift toward a modernist design befitting the modern research housed within. The Bell Laboratories-Holmdel site, which was designed by landscape architect Hideo Sasaki of Sasaki, Walker and Associates in partnership with Eero Saarinen and Associates, is also characteristic of the mid-century move toward suburban landscaped campuses for corporate headquarters and research sites, and therefore is significant for its landscape design. From 1959 to 2007, the building functioned as a research and development facility for Bell Laboratories and its successor Alcatel-Lucent. The period of significance begins in 1959, when the first phase of construction began, and extends through 1985 when the last significant additions were completed. The building meets Criterion Consideration G, with exceptional importance in the area of Architecture for its modern design that reflects the qualities of a mid-century office and research facility, which was a new typology at the time of its design and construction. Furthermore, between 1982 and 1985, Eero Saarinen's partners Kevin Roche and John Dinkeloo oversaw the design and construction of additions to the building's east and west ends, which maintain the configuration, volume, massing, circulation pattern, and material palette of the original structure.

Bell Laboratories-Holmdel gained significance as a key research and development facility for Bell Laboratories, which spearheaded significant breakthroughs in twentieth-century science. Over the course of the twentieth century, and in its various organizational incarnations, the company was responsible for innovative work related to radio astronomy, the transistor, lasers, and physics. Scientists in the corporation's various facilities have earned seven Nobel Prizes for research conducted at Bell Labs, including one Nobel Prize in Physics that Steven Chu earned in 1997 for his work on laser cooling at the Holmdel facility.[3]

The building is significant at the state level as one of the major commissions by Eero Saarinen, a prominent, internationally-acclaimed Modernist architect, and as a noteworthy example of suburban corporate research campuses found throughout the state. The landscape, designed by Hideo Sasaki, of Sasaki, Walker and Associates, who designed several suburban corporate campuses across the country, is significant at the state level.

Period of Significance (Briefly justify the period of significance identified above.)

The period of significance (1959-1985) captures the construction of the building, from groundbreaking (1959) to completion (1985, by Kevin Roche and John Dinkeloo).

[3] "Former Bell Labs Scientist Steven Chu Wins Nobel Prize," Alcatel-Lucent (October 1997), accessed March 27, 2014, http://www.bell-labs.com/user/feature/archives/chu/.

Criteria Considerations (Briefly explain how the property meets any Criteria Considerations that apply.)

Criterion G—Properties that have Achieved Significance within the Last Fifty Years

Bell Labs - Holmdel is an important example of the Modern Movement style of architecture and the work of an internationally-renowned architect (Eero Saarinen), and Landscape Architect (Hideo Sasaki). While completed within the last fifty years, Bell Labs-Holmdel meets National Register Criterion Consideration G for its exceptional importance as a mid-century office, and research and development facility. It is the only known Saarinen corporate complex in New Jersey. The landscape is one of two Sasaki landscape designs in the state, the other being the Forrestal Village in Princeton New Jersey, constructed in 1986.

Developmental history (Explain the construction history or the creation of the property, and its evolution through the period of significance.)

In 1929, Bell Laboratories acquired a large tract of the Hedrickson family farm property south of Crawfords Corner Road.[4] Initially, the site served as an outpost of Bell Telephone's main laboratories in New York City, which specialized in the development of wireless receivers and transmitters for transatlantic radio-telephone communications. Bell chose the site based on its remote location, crucial in order to avoid man-made static which interferes with sensitive radio-telephone equipment. In addition, the site was approximately 13 miles north of the Deal Test Site, where the first ship-to-short-wave experiments were completed in 1919. The early scientific experiments conducted on the site occurred in a complex of one-story wood framed buildings; some engineers and scientists resided in the former Roberts and Hendrickson farm houses.[5]

The completion of the Garden State Parkway in 1954, which is located roughly 0.5 miles from the site, spurred development throughout Holmdel. Bell acquired additional tracts of farmland to protect the area from development and possible interference with research near the corner of Crawfords Corner Road and Roberts Road in 1957. By 1957, Bell began planning for a new state-of-the-art research facility on the site, and cleared the area of both the former low-rise wood research buildings and the farmhouses.[6]

In 1957, Bell Laboratories commissioned Eero Saarinen and Associates to design a new building for the site at Holmdel in order to address overcrowding at its other facilities in Murray Hill, New Jersey and elsewhere. Bell Labs, designed in 1941 by Voorhees, Walker, Foley and Smith Architects, was criticized for its conservative Colonial Revival design that conflicted with its modern use and mission.

Saarinen was celebrated by this time for his sleek designs and suburban corporate complexes for clients such as General Motors, IBM, and John Deere.

The Holmdel building was constructed in three phases. Although Saarinen died during the first phase of construction, phases 1 and 2 of the site were built according to his original design; the third phase was overseen by his partners, Kevin Roche and John Dinkeloo. The first phase (1959-1962) included the construction of the northwest and northeast pavilions together with the east and west stair/elevator towers. Together, the pavilions were fully sheathed in paneled glass, which was removed on the south elevation when the second phase of construction (1964-1966) began. This second phase comprised the southwest and southeast pavilions and the

[4] The original site included 460 acres, the majority of which are now under separate ownership.
[5] Historic American Landscapes Survey: Bell Labs Holmdel. HALS No. NJ-7. 7-8.
[6] HALS Survey, 8.

cruciform atrium that separated all four of the pavilions. The third phase (completed in 1985) expanded the building to the east and west, extending the building by two bays at each end and enclosing the new additions with the same paneled-glass curtain-wall system employed in the original two phases of construction.

At one time, the building was Bell's largest facility, with more than 5,000 researchers and other staffers working at the site. The building was routinely altered by the company to address changing spatial needs as the building's population surged, and the workspaces were reorganized to accommodate changing project teams and needs. In recent decades, at the building's peak occupancy, the company relocated some services and employees to the atrium, where new offices were inserted within the volume of the space.[7] Bell Laboratories-Holmdel continued to function as a research and development facility for nearly four decades under Bell Laboratories, which eventually became AT&T, Lucent, and finally Alcatel-Lucent, formed twelve years after AT&T was broken up by federal anti-trust legislation. By the 2000s, this much smaller subsidiary of AT&T found it economically infeasible to operate the site. Average maintenance costs for the building were over 10x their average in the 1960s due to the rising costs of gas, oil, and electricity.[8] To alleviate the costs, AT&T leased out space to tenants, who were often competing R&D companies. The presence of competing companies led to security concerns, while also altering the dynamic of the building itself: the cafeteria, once used for collaboration and discussion, was silenced.[9] Security issues and increasing costs combined with the 1990s market pinch and 2000 telecom bust resulted in Alcatel-Lucent downsizing its physical sciences research staff, including those at Bell Laboratories-Holmdel, who were relocated to Murray Hill and Whippany, NJ.

In 2007, the company left the facility and attempted to sell the property. As national coverage from *The New York Times,* the *Wall Street Journal*, and other publications have noted, the building presents significant redevelopment challenges and has faced demolition several times.[10] The building has remained largely vacant for the past nine years.

Narrative Statement of Significance (Demonstrate each of the claims for significance made in the summary paragraph.)
Bell Laboratories-Holmdel is significant under Criterion C in the area of Architecture as the work of internationally-renowned architect Eero Saarinen and an intact example of the Modern Movement style of architecture. The building represents Saarinen's evolving design approach to suburban corporate campuses, and the keyhole-design landscape—designed by Sasaki, Walker and Associates in partnership with Eero Saarinen and Associates—reinforces the minimalist geometry of the Modern Movement design.

Eero Saarinen (1910-1961)
Eero Saarinen was born on August 20, 1910, sharing a birthday with his father, Eliel Saarinen, who was a world-famous architect in his own right. Eero was born in Hvittrask, Finland, where his father practiced architecture. In 1923, the family immigrated to the United States and Eliel garnered international acclaim for his competition entry for the Tribune Tower in Chicago, although the competition was ultimately awarded to the firm of Howells and Hood. Two years later, Eliel was invited to design the campus of Cranbrook Educational Community in Bloomfield Hills, Michigan, an arts-based academy where Eero was later educated.

[7] Michael Calafati, et. al, "The Bell Labs Charrette: A Sustainable Future," 17.
[8] Karen H. Kaplan "Former Bell Labs research building faces wrecking ball." *Physics Today* (August 2006): 25
[9] Personal interview with Dr. Anthony Tyson, 2-12-15
[10] David W. Dunlap, "The Office as Architectural Touchstone," *The New York Times* (March 2, 2008): LII.
Anton Troianovski, "Reinventing Old Site of Bell Labs is Tricky," *Wall Street Journal* (May 16, 2010), ProQuest Online Newspapers.

Eero went on to study at the Académie de la Grande Chaumière in Paris and the Yale School of Architecture, where he earned a fine arts degree in 1934. He was part of a team of designers—including his father—that won the competition for the Smithsonian Institute Gallery of Art in 1939, and both Saarinens designed the Crow Island School (1938-42) in Winnetka, Illinois. Eero also frequently collaborated with friend Charles Eames (another Cranbrook graduate), including the design for Case Study House #9 (1945-9) in Los Angeles and a furniture design competition sponsored by the Museum of Modern Art that they won in 1941.[11]

Eero Saarinen's first major solo commission came in 1948, when he beat out his father and other architects to win the competition for the Jefferson National Expansion Memorial in St. Louis, Missouri. Although the stainless-steel Gateway Arch was not completed until 1964, it was high-profile enough to launch Eero into a partnership in his father's firm, Saarinen, Swansen and Associates, which he took over and renamed Eero Saarinen and Associates after his father's death in 1950. Subsequent acclaimed projects included Kresge Chapel and Auditorium at the Massachusetts Institute of Technology (1950-5), the American Embassy in Oslo (1955-9), and the TWA Terminal in New York City (1956-62).

In the years before Eliel's death, both father and son worked on the General Motors Technical Center (1948-56) in Warren, Michigan, which garnered much attention and earned them several other commissions for corporate headquarters. Projects for IBM (1956-8) and John Deere (1958-1964) followed, both of which involved large rationalist-design buildings (in the architectural tradition of Ludwig Mies van der Rohe) set within a broader landscape in a rural or suburban context. These projects, coupled with their experience in campus projects, including Brandeis University, Drake University and the University of Chicago, earned Eero Saarinen the commission in 1959 for the Bell Laboratories' new project in Holmdel, New Jersey.[12]

Eero Saarinen practiced architecture until his premature death (during surgery for a brain tumor) in 1961. Because his death was sudden, a number of his most famous projects were completed after his death under the supervision of his partners, including Kevin Roche and John Dinkeloo. These later works include the Gateway Arch, Dulles International Airport (1958-63), the CBS Building (1960-5), and Bell Laboratories-Holmdel. Saarinen was posthumously awarded the American Institute of Architects' Gold Medal in 1962.

Bell Laboratories-Holmdel as the Work of a Significant Architect

The Bell Laboratories-Holmdel building was designed in deliberate contrast to the company's earlier facility at Murray Hill, New Jersey. That building, designed in the late 1930s by the architectural firm of Voorhees, Walker, Foley and Smith Architects, was groundbreaking in its own right, but primarily for its interior configuration of the H-shaped plan. The Murray Hill building brought together thousands of pioneering Bell Labs scientists under one roof, but the building itself was comparatively conservative. Its Colonial Revival design employed brick walls and staid gable rooflines, applying the style and features of a manor home to a massive commercial building. Architectural critics often criticized Murray Hill for its hesitantly traditionalist design, which contrasted with the ground-breaking corporate image that Bell Laboratories hoped to assert.[13]

Murray Hill was also limiting in its performance as a research facility. In 1955 the Vice President of Bell Laboratories formed a committee to develop criteria for a new laboratory facility and recommend an architect. The committee, composed of scientists at Bell Labs, identified several areas where Murray Hill was not

[11] "Eero Saarinen, 51, Architect, is Dead," *New York Times* (September 2, 1961): 15.
[12] Ibid.
[13] Knowles and Leslie, "Industrial Versailles," 19—20.

conducive to research and experimentation.[14] Researchers and scientists needed customizable, modular space in which to conduct experiments, which Murray Hill provided to a point, although removing walls and reconfiguring spaces was difficult and time consuming, taking up to several weeks to reconfigure.[15] Additionally, the interior layout of Murray Hill was not ideal for research, as all traffic through the research area had to pass by every laboratory and office, causing noise and distractions. Common facilities such as the library and cafeteria were not centrally located in Murray Hill, which resulted in long walks through the building to get materials or food. Adequate air conditioning was not provided at Murray Hill, and a piece-meal addition of units would have been extremely costly. Changing technology was requiring an increase in air-conditioned labs in order for research to be conducted correctly. The committee also identified a desire for a well-designed site containing a nearby parking lot, while avoiding a view of a "sea of cars" from inside the building.[16] With these criteria in mind, the committee unanimously chose Eero Saarinen to design a new facility.

In making its choice, Bell Laboratories deliberately departed from this earlier architectural language, choosing instead an architect known for inventive work of his own that also met the needs of researchers and scientists. The late 1950s and early 1960s in postwar America marked an era of popular interest in scientific discovery, and private corporations increasingly hired researchers away from academic institutions in pursuit of the company's own commercial breakthroughs. For its facility at Holmdel, Bell Laboratories hoped to woo the best of these employees with a commodity of its own: a hub of commercial, technological, and scientific activity and innovation all under one impressively-conceived roof.[17] By employing an architect of Saarinen's caliber to design a complex in Modernist terms, the company looked to surpass its Murray Hill complex and construct a modern corporate building befitting its modern corporate image while simultaneously nurturing a research-based environment.[18]

The Bell Laboratories-Holmdel project represents several characteristics of Eero Saarinen's later works, including his use of innovative new materials in a rationalist design, set within a larger landscape context. The building is significant for its exterior curtain-wall technology and its interior configuration of four pavilions (known as Building 1, Building 2, etc.) separated by a cruciform atrium and encircled by a perimeter corridor. His design is essentially an extrapolation from the cubicle as a modular unit, with a reverse hierarchy of space progressing from offices to laboratories and finally common spaces, emphasizing the collaborative nature of the work housed within the building. All of these spaces were intentionally designed to be flexible, adaptable, and changeable, given the inevitably evolving nature of research and development. Dr. Anthony Tyson, an astrophysicist who worked at Bell Labs for over thirty years (1970-2), described the building as a "nurturing environment" and stated that "it was critical to our success that [Bell Labs] was built so that the offices and labs could be instantly reconfigured. Within a day, the size could be changed. That kind of flexibility is important if you want to remain ahead of the curve."[19] The Murray Hill laboratory also featured modular, reconfigurable spaces, but reconfiguration required the lab to shut down for several weeks.[20] Collaboration tended to occur in the building's cafeteria, where researchers would meet to discuss current projects and discuss solutions to problems.[21]

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[14] H.J. Wallis, "The Holmdel Laboratories," *Bell Labs Record* (October 1962): 317.
[15] Personal interview with Dr. Anthony Tyson, 2-12-15.
[16] H.J. Wallis, "The Holmdel Laboratories," 318
[17] Miller, "Eero Saarinen on the Frontier of the Future," 125—6.
[18] Knowles and Leslie, "Industrial Versailles," 24.
[19] Personal interview with Dr. Anthony Tyson. 2-12-15.
[20] H.J. Wallis, "The Holmdel Laboratories," 318.
[21] Personal interview with Dr. Anthony Tyson. 2-12-15.

The building itself reflects the iterative, flexible development process fostered within its laboratories. It was constructed in two original phases, with a third phase added 20 years later to address overcrowding issues. All three phases of building construction were overseen by Saarinen or his partners, and all three hewed to the original Saarinen scheme of massing, proportion, circulation patterns, exterior geometry and material palette, and interior volumes.

Even the exterior's fenestrated skin was altered over time as the design was refined and expanded. The glass that sheathes the building, which deflects 70 percent of the sun's heat, was originally concentrated on the building's south (rear) elevation after the first phase of construction. The remainder of the building was wrapped with gray-tinted transparent glass. When the second phase of construction bumped out the back of the building and replaced the original south elevation, the building was re-skinned with reflective glass on all four elevations.[22] Saarinen's partner, John Dinkeloo, was responsible for technical development for the architecture firm, and his innovations for the exterior of the Bell Laboratories-Holmdel building reinforced the inventive, evolving work within the building.

Bell Laboratories and the Emergence of Corporate Campus Design[23]

Bell Laboratories-Holmdel is also significant as one of Saarinen's four influential suburban corporate campuses (along with General Motors Technical Center in Warren, Michigan (commissioned in 1948, NR 2000, NHL, 2014), IBM Thomas J. Watson Research Center in Yorktown Heights, New York (commissioned in 1957), and John Deere World Headquarters in Moline, Wisconsin (commissioned in 1957) that contributed to the design standard for the auto-centric, post-World War II suburban office and research campus. This type of site-planning was a paradigm shift in the development of American business facilities.

Suburban factories constructed during the two decades prior to World War II essentially set the precedent for the layout and design of post-WWII corporate campuses. After 1920, factories were almost exclusively located in suburban and rural areas because they required buildings with sizable footprints. These factories often took the form of modular, low-rise sheds paired with one or two administration buildings, set within a large expanse of lawn and trees.[24] The design of post-WWII suburban corporate campuses reiterates that of pre-War factory predecessors: site plans accommodated sizable, modular buildings which were then surrounded by a large swath of land with a programmed landscape that integrated access roads and walking paths into its design. Setting these campuses apart from pre-War factories were the utilities, which were often moved underground in order to maintain a more pastoral environment.

Four projects significantly contributed to the establishment of the suburban corporate campus as the new paradigm in corporate development: Bell Laboratories-Murray Hill, General Electric Electronics Park, Johns-Manville Research Center, and General Motors Technical Center.

Bell Laboratories in Murray Hill, New Jersey, which opened in 1942, was declared by *Fortune* in 1958 as "the model for research campuses that have sprung up all over the U.S. in the last dozen years."[25] The campus occupied a twenty acre site outside Summit, New Jersey, and contained interconnected lab buildings with

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[22] "The Biggest Mirror Ever," *The Architectural Forum* (April 1967): 37.
[23] The term "Corporate" is used to describe these campuses (rather than "Research") because large corporations, such as Bell, had a large number of scientists as employees. These "corporate scientists" performed the research and experimentation necessary for the corporation to introduce new innovations and trounce competition by attracting consumers. (Mozingo, "Pastoral Capitalism," 45.)
[24] Louise A. Mozingo, *Pastoral Capitalism: A History of Suburban Corporate Landscapes* (Boston: MIT Press, 2011): 32
[25] Ibid.: 46

modular interior spaces, surrounded by a pastoral landscape designed by the renowned Olmsted Brothers. The campus was placed in a serene, secluded location to meet the scientists' needs for quiet research space as well as up-to-date laboratory infrastructure.[26] The campus contained modern, unadorned, interconnected laboratory buildings, situated so that all offices had a view of the surrounding greenery. The entry drive to the campus was lined by a grove of trees, and various plantings around the site provided areas of focus. Utilities ran underground, enhancing the natural setting. In the *Journal for Applied Physics*, a Bell scientist celebrated the surrounding "open country" and emphasized the necessity of a "quiet country location" for optimal research.[27] Scientists at Murray Hill invented, among other things, the transistor and the mathematical bit unit, and "fundamentally revolutionized electronic technology and, arguable, human existence."[28] By 1948, the plethora of discoveries made at Bell Labs sealed the interlinked reputations of its scientists and its site, making a strong case for the suburban corporate campus.

General Electric Electronics Park in Syracuse, NY and the Johns-Manville Research Center in Manville, NJ, constructed in 1948, "advanced the idea of the corporate campus as a management instrument and refined the fundamental characteristics of the corporate campus site plan."[29] Both sites successfully combined production and research facilities on former agricultural land, employing a pastoral landscape conducive to creativity and collaboration. GE Electronics Park contained three factory buildings centered on a large, oval open space with a cafeteria in the middle. A looping drive connected all the buildings, and the landscape of gently sloping expanses and underground utilities. At the corner of the site, a lake, formed by a dammed spring, offered a serene place for walks.[30] The entire site was designed to be modular and easily expanded. This element was tested in 1951, when the television market boomed, and GE easy tripled the size of laboratory space at the site by constructing additions on the rear elevations of two production buildings. "The nimble scheme easily accommodated complicated infrastructure and large building additions without the loss of ambience."[31] Similarly, the Johns-Manville Research Center contained research buildings surrounding a central open space with parking and driveways distributed around the periphery of the 93-acre site. Like Bell Labs-Murray Hill, the laboratories featured modular, movable walls.

Lastly, the iconic 1956 General Motors Technical Center in Warren, Michigan, also designed by Saarinen (who worked alongside his father, Eliel), allowed the corporate campus to become "a symbolic cornerstone of corporate America." After GM, the corporate campus became the favored site for the highest levels of industrial science and research. Foreshadowing his design for Bell Labs-Holmdel, Saarinen employed sleek Modernist, modular buildings set within a carefully designed, restrained landscape immediately surrounding the site, with an unprogrammed, forested area encircling it. Upon its completion, *Architectural Forum* lauded the site as "a historic symbol of today's industrial progress, also of tomorrow's ambition."[32] The campus consists of five complexes of buildings surrounding a 22-acre central pool with a wall of fountains. The surrounding landscape consisted of linear bosques, low evergreen plantings, rectangles of grassy lawns, and a thick perimeter forest. The entire site took on a strong rectangular, form.[33] Upon its completion, the Technical Center received a massive amount of press and praise. *Architectural Forum* dubbed it "GM's Industrial Versailles." Over 5,000 leaders from industry, science, engineering, and the military attended grand opening ceremonies in May of

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[26] Ibid.: 54
[27] Franklin L. Hunt, "New Buildings of Bell Telephone Laboratories," *Journal of Applied Physics* 14 (June 1943): 250
[28] Mozingo, *Pastoral Capitalism*, 61
[29] Mozingo, *Pastoral Capitalism:* 61
[30] Ibid.: 66
[31] Ibid.: 67
[32] Ibid.: 79
[33] Ibid.: 78

1956, and closed-circuit televisions broadcasted the footage of the ceremonies to sixty-two other locations for 25,000 participants across the U.S. and Canada.[34]

Saarinen's success with the General Motors Technical Center made him a sought-after designer for corporate campuses. In 1957 he began designs for three other campuses in his canon: IBM Thomas J. Watson Research Center in Yorktown Heights, New York (completed in 1961); Bell Laboratories-Holmdel (the first phase completed in 1962); and the John Deere World Headquarters in Moline, Wisconsin (completed in 1963).

For Bell Laboratories-Holmdel, Saarinen extracted from his design for GM the same Modernist principles of "modularity, horizontality, rectilinearity, and orthogonality" to unify the building with the surrounding landscape.[35] Like the GM Technical Center, Bell Labs-Holmdel employed a Modern building featuring large spans of glass, surrounded by a programmed landscape employing multiple perimeter roads and paths, bodies of water as focal points, trees arranged in contrasting allées and clusters, and a sculptural water tower designed by Saarinen. The two sites can also be closely compared based on how they were used by researchers. Both the Bell Labs-Holmdel site and the GM Technical Center contain buildings designed to be flexible and modular, allowing researchers to quickly expand a lab to suit their immediate needs. The landscape also contributing to this effort to provide ample space in which researchers could work, by functioning as a contemplative, inspiring place in which to nurture new ideas or ponder solutions for current problems.

Like Bell Laboratories-Holmdel, the IBM Thomas J. Watson Research Center was a departure from the previously established practice of using multiple, interconnected buildings as part of the campus design and instead placing a large, single building of architectural merit within a very large site. The IBM Center is, like Bell Laboratories-Holmdel, sheathed in glass, and stands among a landscape of lawn, trees, and water (the landscape was also designed by Sasaki, Walker and Associates). Grand drives curve and sweep through the broad landscape and culminate in large parking lots. Also like Bell Laboratories-Holmdel, the labs and offices in the IBM building had limited windows, glass exterior walls providing generous views of the surrounding landscape.

Lastly, the John Deere World Headquarters in Moline, Wisconsin, completed after the first Bell Labs-Holmdel building campaign, is a dramatic departure from pre-1960 corporate campus design. "Serving as the exemplar for all subsequent corporate estates, it brought together landscape, site plan, and architecture into an elegant and commanding solution."[36] Sited on acreage with expansive views over the Rock River valley, the 720-acre site contained two interconnected buildings straddling a ravine running through the property. Like the earlier corporate campuses, Saarinen took into account the opportunity for further expansion of the buildings, which received an addition after his death. Saarinen trussed the buildings in industrial Cor-Ten steel, which he would later use in the atrium of Bell Labs-Holmdel, a material that rusted to a protective, deep finish. Inspired by the history of Deere & Company, Saarinen explained, "Farm machinery is not slick, shiny metal but forged iron and steel in big, forceful functional shapes. The proper character for the headquarters' architecture should likewise not be a slick, precise glittering glass and spindly metal building, but a building which is bold and direct, using metal in a strong, basic way."[37] Like at Bell Labs and IBM, Saarinen engaged Hideo Sasaki to design the landscape at the Deere Headquarters. Rather than programming a geometric, formal landscape, Sasaki created a more intimate one, placing clusters of plantings up against the buildings, as if they were dropped into an

[34] Ibid.: 81
[35] "General Motors Technical Center," National Historic Landmark Nomination, 5
[36] Mozingo, *Pastoral Capitalism*, 119
[37] Eero Saarinen, *Eero Saarinen on His Work* (New Haven: Yale University Press, 1968): 77.

existing forest. Sasaki designed the water feature to be split into two sections, the upper of which was manicured, edged in gravel, forming a straight edge against the main building. The lower portion of the pond was larger and served as the air-conditioning system and included grids of spray fountains.[38]

These campuses mimicked the landscape of American universities in order to "attract scientists from academic, and clothe the corporation in high-minded institutional garb" by offering peaceful locations that could enable productive research. Indeed, a scientist at Bell Labs (Murray Hill) asserted that the new "quiet country location" of Bell Labs-Holmdel optimized scientific research.[39] Constructing campus buildings in the sleek Modernist style further accentuated the importance of the surrounding landscape. Like Bell Labs-Holmdel, Saarinen's other corporate campuses contained buildings with large expanses of glass, so that the landscapes can be viewed when indoors. Viewing a surrounding landscape was thought to provide an atmosphere of freedom, which, in turn, encouraged and stimulated scholarship and scientific discovery among researchers on the campuses. Campuses such as Bell Labs (both the Murray Hill campus, and later Holmdel) went on to produce scientific discoveries that furthered the validation of placing them in suburban settings. The number of scientific advances at each of these campuses, and especially at Bell Labs-Holmdel, provided solid evidence of the relationship between functional, aesthetically-pleasing surroundings and the production of quality work. This concept went on to be applied to create the corporate live/work "estate" and the ever-present "office park" seen outside countless American metropolitan areas.

Bell Laboratories-Holmdel as the Work of a Significant Landscape Architect

The Bell Laboratories- Holmdel compass was designed by the notable landscape architect, Hideo Sasaki. Sasaki was an influential landscape architect who pioneered the modernization of landscape design. After attending the Harvard Graduate School of Design, Sasaki chaired the program from 1958-1968, while simultaneously establishing his own practice. In addition to designing three of Saarinen's corporate campuses, IBM 's Thomas J. Watson Research Center (1962), Bell Laboratories-Holmdel (1962) and John Deere World Headquarters (1964), his firm would grow to be enormously successful, designing large projects such as the master plan for Sea Pines Resort in Hilton Head, South Carolina, Pearl Street Mall in Boulder. Colorado (1977), and Euro Disneyland in Paris, France (1992). In 1971, Sasaki was the first person to receive the American Society of Landscape Architects Medal.[40]

Hideo Sasaki (1919-2000), Sasaki, Walker and Associates

Hideo Sasaki was born in Reedley, California on November 25, 1919, and grew up working on his parents' farm. He briefly attended University of California-Berkeley before being interned at the Poston War Relocation Center during World War II, due to his Japanese descent.[41] To escape internment, Sasaki volunteered to work on a farm in Colorado, where the governor welcomed any Japanese-Americans who had been evicted from California during the war.[42] After the war, Sasaki attended the University of Illinois and received a Bachelor of Fine Arts in landscape architecture, with highest honors, in 1946. He was then offered a scholarship to the Harvard Graduate School of Design (GSD) and received a Masters of Landscape Architecture (MLA) in 1948.[43]

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[38] Mozingo, *Pastoral Capitalism*, 126
[39] Franklin L. Hunt, "New Buildings of Bell Telephone Laboratories," *Journal of Applied Physics 14* (June, 1943): 251
[40] Anne Raver, "Hideo Sasaki, 80, Influential Landscape Architect, Dies," *New York Times* (September 25, 2000)
[41] Ibid.
[42] Melanie Simo, *The Offices of Hideo Sasaki: A Corporate History* (Berkeley: Spacemaker Press, 2001): 10
[43] Ibid. 8

Immediately upon graduating, Sasaki began working in the site-planning division at Skidmore, Owings, and Merrill (SOM) in New York City, but left shortly afterward when he was offered a teaching position at the University of Illinois in Champaign-Urbana, working during the summers at the Chicago office of SOM. His first publicized success came when he, together with James V. Edsall and Harry A. Morris entered a competition to design the national headquarters of the U.S. Junior Chamber of Commerce in Oklahoma. Their winning design was featured on the cover of *Progressive Architecture* in 1949.[44] After the project was constructed, Sasaki gained three more commissions in the city of Tulsa, including the master plan for the Tulsa Civic Center Development, with and the award-winning Meadowbrook Country Club, both with Donald H. Honn, architect.

Perhaps the most pivotal point in his career occurred in 1950, when he was invited to teach landscape architecture at the GSD, under Walter Chambers, the chair of the landscape architecture department, and Walter Gropius, the chair of the architecture department. During this time, Sasaki was involved in several collaborations with architects in Boston and New York, which he worked on out of his home in Watertown, Massachusetts at a time when land development and urban renewal were booming. From 1958 to 1968, Sasaki served as chair of the landscape architecture department of the GSD while simultaneously growing his own practice. Sasaki's studios at the GSD were collaborative, and were jointly undertaken by students of architecture, planning, and landscape architecture. By the age of forty, Sasaki had built a clientele base of leading architects, such as I.M. Pei, Pietro Bellushi, Josep Lluis Sert, and Eero Saarinen.

The work of Sasaki's office was diverse and sometimes divisive, much of it concentrated in institutional, corporate, or urban-renewal projects, nationally and internationally. Along with designing some of America's first corporate campuses, Sasaki's offices designed Copley Square in Boston, Constitution Plaza in Hartford, and Washington Square Village in Manhattan--projects which, at their inception, were criticized due to the neighborhoods that were demolished to make way for them.

Sasaki's approach was highly theoretical, and he contributed a large amount of scholarship to the academic study of landscape architecture. Highly critical of western garden design, Sasaki took inspiration from traditional Japanese garden design, which focused on natural elements as focal points of its design. In such gardens, the leading principle might be the contrast between geometrically ordered structures and the biomorphic qualities of natural materials. Sasaki embraced the "ideas of modular expressions, the 'flow' of space, the integration of indoors and outdoors, the use of inherent characteristics of materials" found in Japanese garden design for centuries prior to its acceptance in the U.S.[45] His appreciation and inspiration from Japanese garden design were also evident in his use of contrasting forms. In an essay published in *Landscape Architecture* in 1957, he states, "Where the materials of post, beams, and panels [of the Japanese structure] have given rise to such geometric (rectangular) forms in architecture, the rocks, plants, earth and water have given rise to almost completely biomorphic forms….the two in combination [create] an integrated environment almost incomparable in their appropriateness."[46]

Similar to Olmsted's pastoral tradition, Sasaki designed landscapes that did not call attention to themselves, but rather served as tranquil, distinguished settings for modern architecture. Sasaki also provided functional needs for the buildings, such as air conditioning, through naturalistic elements- such as the reflecting pool at Bell

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[44] Ibid., 12

[45] Peter Walker and Melanie Simo, *Invisible Gardens: The Search for Modernism in the American Landscape*. (Boston: Massachusetts Institute of Technology: 1996) 200.

[46] Hideo Sasaki, unknown title, *Landscape Architecture* (January, 1957): 372.

Labs. These design choices illustrate the importance of aesthetic values to Sasaki, who said, "They may not be necessary for survival, but they are necessary for a full life."[47]

At the entrance to the Bell Labs site, the large, three-legged, water tower was designed by Saarinen to mimic a transistor, one of Bell Labs' most significant scientific developments. As was inevitable in mid-century suburban America, Sasaki incorporated significant swaths of parking and driveways, catering to the site's commuting population and minimizing the cars' distance from the building.[48] Working closely with Saarinen, Sasaki designed the roadways to create a pleasing, peaceful approach to the building. Dr. Anthony Tyson, a researcher at the site for over thirty years (1969-2004), stated, "I looked forward to the drive to get to the building…it was like entering a nurturing atmosphere."[49] Creating a place of solitude that could nurture creative thoughts was precisely Sasaki's intention, which, again, he heavily derived from Japanese garden design.

The remainder of the landscape's central axis was oriented toward pedestrian, rather than vehicular, use. Where the interior of the building would hum with collaboration and activity, the formal landscape inscribed within the keyhole design would allow for peace, quiet, and escape for the building's users. Indeed, walking through the site during lunch breaks "was a tradition" among researchers.[50] The periphery of the site outside the allée of trees was left unprogrammed, but within the keyhole's driveways, the gardens, ponds, lagoon, and lawns of the site complemented the building's commercial and research use with a carefully designed, thoughtful landscape.

The only other known Sasaki landscape in New Jersey is Forrestal Village in Princeton, which broke ground in 1986 and is a 52-acre mixed use retail and office complex. Forrestal Village is significantly smaller than Bell Laboratories-Holmdel and the landscape features are significantly more limited.

Saarinen and Sasaki: Collaborative Work[51]

The partnership between Saarinen and Sasaki produced three works which represent the innovative integration of landscape and building design: IBM 's Thomas J. Watson Research Center (1962), Bell Laboratories-Holmdel (1962) and John Deere World Headquarters (1964).

Within the context of Modernist architecture, which extolled International style buildings and universal design, the idea that landscape and building were inextricably linked was revolutionary. In the 1960s, modern architects and landscape architects partnered to join the building and the landscape. Collaboration between different types of designers on projects was thought to produce a building harmonious with its landscape. Sasaki's beaux arts background partnered with his practical experience with site planning for modern buildings made him an ideal candidate for collaboration with architecture firms with similar backgrounds. Saarinen also followed this collaborative process, pioneering corporate campus design with Sasaki's landscape design.

During the mid-twentieth century both Sasaski's and Saarinen's individual firms designed some of America's first corporate parks as companies moved their headquarters from city to country.[52] Saarinen's design of the GM Center in Warren, Michigan (1949) and Sasaki's landscape design for Skidmore, Owings and Merrill's

[47] Invisible gardens, conversation with Walker and Simo
[48] H. J. Wallis, "The Holmdel Laboratories," *Bell Laboratories Record* 40, no. 9 (October 1962): 318.
[49] Personal interview with Anthony Tyson. 2-12-15.
[50] Personal interview with Bill Brinkman. 2-08-15.
[51] Adapted from the Bell Labs Holmdel HALS Report.
[52] Raver, Anne. "Hideo Sasaki, 80, Influential Landscape Architect Dies." *New York Times*. September 25, 2000.

Upjohn's headquarters in Kalamazoo, Michigan (1957) were among the most influential of early corporate office parks.

Saarinen and Sasaki were both accustomed to working with an integrated design team in a very collaborative process. Saarinen brought Sasaki in on their first joint project, IBM's Thomas J. Watson Research Center in Yorktown Heights, New York (1962) where Sasaki designed a Japanese-inspired garden which featured footbridges connecting the building to its parking lot.[53] Their revolutionary collaboration on IBM, was said to "set the standard by which all subsequent corporate campuses and suburban corporate office buildings would be measured."[54]

Similarly, Saarinen received commissions for Bell Laboratories-Holmdel (1962), and the Deere and Company Administrative Center, in Moline, Illinois (1964), where he asked Sasaki to collaborate on the landscape designs. Since all of Saarinen and Sasaki's designs housed the research functions for corporations they sought to create a contrast between the "the efficient laboratories" and nature, "providing them a more relaxed, 'tweedy', outdoors sort of environment."[55] Their partnership resulted in buildings which were integrated with the landscape, defining mid-twentieth century corporate suburban architecture.

With his knack for collaboration and extensive experience designing sites for modern buildings, Sasaki (with his partner, Peter Walker, a former student) was an obvious choice for Saarinen. Saarinen engaged Sasaki to complete his design for Bell Labs, what he described as a "giant pavilion on the central axis of a parklike garden, comprising the driveways and a reflecting lagoon."[56] Sasaki's approach is reflective of his appreciation for traditional Japanese gardens. The central bodies of water, one of which takes on an amoebic, natural shape, exist in sharp contrast to the surrounding angles created by the building, and the geometry created by the rows of trees and periphery roads.

Modern Movement in Architecture

Commonly defined as the period between approximately 1920 and 1970, the Modern Movement was an era marked by scientific and technological advances (such as those at Bell Labs), an expanding economy, a rising standard of living, developing urban pressures, and a renewed awareness amongst architects of the social purpose of architecture. As a discipline, architecture remained rooted in the fundamental concerns of the interrelation of light, space, and texture, but architects of the Modern Movement adopted a new pragmatic approach to these design issues. The movement's buildings are characterized by straightforward expression, a newfound awareness of the environment, structural honesty, and functional integrity.

In the United States, the origins of the Modern Movement can be traced to the late nineteenth century and the development of what became known as the "Chicago school of architecture." During the 1880s, a number of high-rise buildings were erected in downtown Chicago. Each had an individual identity, but also a shared framework. The "Chicago school" refers both to a group of architects who were active in these reforms in Chicago in the late nineteenth century, promoted the incorporation of new technologies into commercial buildings, and to the buildings themselves. Among the distinguishing features of the Chicago School buildings

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[53] Clay, Grady. "Formula for Better Building: Crafts + Trades + Professions." *The Courier-Journal* (Louisville, Kentucky). April 22, 1962.; Grant Benjamin. "The Corporate Campus: A Local History." http://www.spur.org/publications/urbanist-article/2016-09-21/corporate-campus-local-history.
[54] Dunlap, David W. "The Office as an Architectural Touchstone." *New York Times*. March 2, 2008.
[55] Dunlap, David W. "The Office as an Architectural Touchstone." *New York Times*. March 2, 2008.
[56] Simo, *The Offices of Hideo Sasaki*, 34.

were: steel-frame skeleton structures with masonry cladding; the development of the "Chicago window" and its dominance; and the limited application of ornamentation. Chicago School-style skyscrapers generally assume a columnar organization, with the first story serving as a base, the middle stories forming the shaft, and the upper stories forming the capital, which was typically embellished and crowned by a projecting cornice. While the steel-frame skeleton allowed for the application of masonry elements in any style, Chicago School buildings most commonly incorporated 2-dimensional exterior ornament free from association to previous styles. This liberation from historical imagery foreshadowed Modernism's dominant theme.

In Europe, parallel developments in the field of architecture evolved during this period, resulting in what became known as European Modernism. In the late 1890s, the impulse for new movements in architecture came initially from Otto Wagner and Adolf Loos in Austria, and later from Peter Behrens and Walter Gropius of Germany.[57] Germany, a leader in the industrial age, became the center for European Modernism. The *Deutsche Werkbund* (German Work Federation) was a German association of architects and designers founded in 1907 in Munich. The *Werkbund* was a state-sponsored effort to integrate architecture and mass-production techniques. Among the most notable of the architects that comprised the *Werkbund* was Peter Behrens. Behrens employed a new approach to factory design, seeking to make the factory a more dignified workplace. In his design for the Berlin Turbine Factory, Behrens employed such new materials as steel and glass to create a new solution for industrial architecture.

Walter Gropius founded the *Bauhaus*, the common term for the *Staatliches Bauhaus*, an art and architecture school in Germany that operated between 1919 and 1933. The *Bauhaus* became one of the most influential currents in Modernist architecture and education, producing many designers who then emigrated to the United States and elsewhere in the 1930s and 1940s, spreading the *Bauhaus'* Modernist ethos. The *Bauhaus* operated under three architect-directors (Walter Gropius, 1919-28; Hannes Meyer, 1928-30; and Ludwig Mies van der Rohe, 1930-33). Seeking to create a new architectural style to reflect the new modern age, the *Bauhaus* led the field of architecture in a new direction, uniting art, craft, and technology, and emphasizing function and mass production while embracing the aesthetic.

The *Bauhaus* fostered the International Style of architecture, which became the dominant trend in architecture in the 1920s and 1930s, in the wake of World War I. Common characteristics of the style included: simplification of form; cubic forms; honest expression of structure; absence of ornament; incorporation of glass, steel, and concrete as the dominant materials; horizontal bands of windows (known as "ribbon windows"); use of mass-production techniques; machine aesthetics; and an acceptance of and design consideration for the automobile. After World War II, the International Style matured into the Modern Movement, and embraced the economic, social, and political aspects of the mid-twentieth century.

The Modern Movement placed even more emphasis on the incorporation of mass-produced and prefabricated elements in architecture. This was evident in American postwar housing, where architects and developers met the high demand with mass-produced standard units. Larger commercial projects during this period also made use of the nation's increasing industrial complex, designing buildings planned around the repetition of standard units. These standard plans increased the speed of material production and construction, while also reinforcing the geometric lines, simplification of form, honest expression of structure, and absence of ornament that was prized by the Modern Movement.

Bell Laboratories-Holmdel as an Example of the Modern Movement

[57] Sigfried Giedion, *Space, Time and Architecture* (Cambridge, MA: Harvard University Press, 1965): 474—5.

The Bell Laboratories-Holmdel building typifies the design values and aesthetics of the Modern Movement. Its plan and elevations are based on the modular replication of one rectilinear unit, reinforcing the geometry and simplified forms of the movement. In plan, the pavilion is repeated in four iterations, while in elevation, the window panes are repeated numerous times within the rectilinear aluminum frames. Moreover, the building is designed with the characteristic design palette of the Modern Movement, using concrete, steel, and glass as the dominant materials. The advanced technology of the reflective glass reinforced the modern research housed within the building, but at night, the reflective qualities receded and the structural forms of the building emerged. The Bell Laboratories-Holmdel building asserted a dynamic Modernist presence befitting the company's modern corporate image, with the stripped-down aesthetics, abstracted rectilinear forms, and structural honesty that was characteristic of the Modern Movement of architecture.

Corporate Architecture in Suburban New Jersey

The suburban corporate office center evolved as a unique building type throughout the mid- to late-twentieth century as major corporations relocated their headquarters out of major cities, including into suburban and rural New Jersey. Of these complexes Bell Laboratories-Holmdel was the most influential and sole Saarinen and Sasaki partnership project in the state. As such, Bell Labs was the first corporate office complex in the state to integrate the design of landscape and building. Earlier complexes, most notably the RCA Laboratories (later known as David Sarnoff Laboratories and SRI International), constructed in 1942, had begun the tradition of relocation to the suburbs. The RCA complex, which focused on radio research and development, is located in Princeton, on a 300 acre site.[58] However, at RCA and the earlier complexes, the building and landscape were not designed as one composition. Bell Laboratories-Holmdel was the first corporate office complex to embrace the concept of building and landscape in an integral design.

Later office campuses in New Jersey followed Saarinen and Sasaki's design philosophy with the integration of building and landscape on expansive complexes. In 1975, AT&T constructed a new facility at Basking Ridge, which the company occupied for 27 years. The expansive 15 acre complex included 1.3 million square feet of seven interconnected buildings, plus 1.3 million square feet of underground parking. AT&T's complex also included a hotel, conference center, and cafeteria. Its seven low-rise buildings, attached by tunnels and walkways, was designed to blend in with the countryside. The headquarters also featured a two-story corporate cafeteria with wood-burning fireplaces, a heliport and an indoor waterfall that cascades a ton of water a minute.

In the 1990s, corporations continued to seek quiet remote locales to create consolidated modern facilities with amenities for their employees. Merck & Company relocated to Whitehouse Station, NJ and constructed a 1.8 million square foot building sited on a 1,050 acre campus for 2,000 employees. Also during this period, the BASF Corporation relocated to Mount Olive with one million square feet of five interconnected modern office buildings.[59] These complexes were intended to create a corporate village feel with amenities for employees including a jogging trail, child care facilities, salons, auto repair, restaurants, and retail space. This mode of corporate development was phased out by the late 1990s, when many firms began to return to the city or reimagine the needs of a modern office building. The massive sites were viewed as inefficient and the numerous amenities they provided became a drain on resources as companies scaled back on spending.

Conclusion

[58] "Huge Laboratory to be Built by RCA." *New York Times*. March 6, 1941.

[59] Antoinette, Martin. "Marketing Corporate Palaces in Tight times: Searching for Buyers for AT&T & BASF Headquarters." *New York Times.* December 14, 2003.

Bell Laboratories-Holmdel was constructed a research and development facility for Bell Labs, which was involved in many twentieth-century scientific breakthroughs related to telephony and communications. The company's building at Holmdel fostered significant research on transistors, microwave transmission, cellular telephones, and laser cooling, including the Nobel Prize-winning work of Bell Labs-Holmdel employee Steven Chu. The building is significant under Criterion C in the area of Architecture as the work of nationally-significant architect Eero Saarinen and his partners Kevin Roche and John Dinkeloo and landscape architect, Hideo Sasaki. The building stands as an intact example of the Modern Movement style of architecture. The building is significant as a commercial resource whose rationalist, Modernist design reflected the innovative work within the building in the design of the building itself.

Additional historic context information (if appropriate)

Scientific Advancements at Bell Labs - Holmdel

Bell Laboratories (alternately known as Bell Labs) was formally created in 1925 as a consolidation of Western Electric Research Laboratories and a portion of the engineering department of American Telephone & Telegraph (AT&T). Frank Jewett worked as the first president of research until 1940, overseeing the company's development of equipment that Western Electric then manufactured and sold. The company received its first patent in 1926 for a clamping and supporting device (developed by C. Bordmann), and in the ensuing sixty years, Bell Labs secured over 20,000 additional patents.[60]

The company was originally headquartered in Manhattan in a former Western Electric manufacturing plant. Within just a few years of its founding, the company's rosters quickly swelled, and the demand for its products grew, with application in telephone and communication systems around the country.[61] Initially, Bell Labs' scientists were committed to specific research projects related to the product development needs of Western Electric and AT&T. Despite this research environment, which did not explicitly allow for self-directed experiments, scientists still made significant, if at times inadvertent, breakthroughs. Among these early discoveries was the work of Clinton Davisson and his assistant Lester Germer, whose work on the wave nature of the electron earned them a Nobel Prize in Physics in 1937.[62] Although their experiment was not readily applicable to the company's telephone products, it did earn substantial publicity for Bell Labs, which served the company well in recruiting new scientists.

From the start, the building's Manhattan location presented issues of overcrowding, vibration, and electrical interference that affected the facility's experiments. When the city decided to extend a railroad line within two blocks of the laboratory, inviting further challenges with dust, noise, and tremors, the company decided to buy land at Murray Hill in Union County, New Jersey, 25 miles west of the city.[63] Eventually, the company established 21 facilities in eight states, the largest of which was the Saarinen building at Holmdel, which at its peak housed more than 5,000 employees.

[60] Jeremy Bernstein, *Three Degrees Above Zero: Bell Labs in the Information Age* (New York: Charles Scribner's Sons, 1984): 8.
[61] Arthur Gregor, *Bell Laboratories: Inside the World's Largest Communications Center* (New York: Charles Scribner's Sons, 1972): 27.
[62] Bernstein, *Three Degrees Above Zero*, 9.
[63] Knowles and Leslie, "Industrial Versailles," 19.

Bell Labs' transition from Manhattan to Murray Hill signified a larger transition for the company than simply a move from a noisy location to a quieter one. In transplanting its main operations from the city to a suburban location, the company established a new model for facility design and reconfigured its corporate structure. Where the company had always emphasized the "development" aspect of its R&D mission, the Murray Hill facility elevated the "research" arm of Bell Labs, assigning ten percent of its scientists to "pure research" and patent projects.[64] Murray Hill's H-shaped plan was designed to foster collaboration and interaction between employees, many of whom were freed to pursue more theoretical research rather than specific product development. In adopting this new ethos, Bell Labs hoped to draw increasing numbers of scientists away from academic institutions to work in its private corporation, and it created a new model of campus setting in which to host their scientific endeavors.

Although the company freed many researchers from the constraints of product development, this was not an altogether altruistic pursuit of knowledge. The company's long-term objective was still based on the application of many innovative breakthroughs to its ongoing work in telephony and communications. Ninety percent of the researchers were still distributed among five development divisions: Electronic Technology, Transmission Systems Development, Network Planning and Services, Switching Systems Development, and Military Systems Development.[65]

The bilateral R&D approach paid significant dividends for Bell Labs, as the company achieved numerous scientific milestones and innovations over the course of the twentieth century. By the time of the Holmdel building's groundbreaking in 1959, the company had positioned itself as a communications and technological giant in mid-century America. Its parent company AT&T achieved near-total market penetration of phone service thanks to the expansion of its network using the R&D work of Bell Labs.[66] Significant developments in the history of Bell Labs include:

- Karl Jansky's discovery of radio astronomy (on the site of the Holmdel plant, 1931)
- Clinton Davisson's Nobel Prize in Physics (1937)
- John Bardeen, Walter H. Brattain, and William Shockley's Nobel Prize in Physics, for inventing the first transistors (1956- Murray Hill)
- Richard Hamming's Turing Award, for his work on numerical methods and coding systems (1968)
- Philip W. Anderson's Nobel Prize in Physics, for research on glass and magnetic materials (1977)
- Arno A. Penzias and Robert W. Wilson's Nobel Prize in Physics, for their discovery of cosmic microwave background radiation (1978)
- Ken Thompson and Dennis Ritchie's Turing Award, for research on operating systems theory and the development of Unix (1983)
- Steven Chu's Nobel Prize in Physics, for research on laser cooling (conducted at Holmdel in the 1980s, awarded in 1997)
- Horst Störmer, Robert Laughlin, and Daniel Tsui's Nobel Prize in Physics for the discovery of the fractional quantum Hall effect (1998)
- Willard S. Boyle, George E. Smith's Nobel Prize in Physics, shared with Charles K. Kao, for their invention of charge-coupled device semiconductor imaging sensors (2009)

Bell Laboratories-Holmdel as a Significant Facility for Bell Labs

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[64] Gregor, *Bell Laboratories*, 34.
[65] Ibid.
[66] Nancy A. Miller, "Eero Saarinen on the Frontier of the Future: Building Corporate Image in the American Suburban Landscape, 1939-1961," (PhD diss., University of Pennsylvania, 1999): 125.

Bell Labs' facility at Holmdel was the most populated facility constructed by the company, and its layout reinforced progressive and prestigious corporate culture that was established in 1925.[67] It was constructed on the site of Karl Jansky's discovery of radio astronomy, one of the earliest achievements to earn the company significant publicity and renown, and it was the site involved in developing products ranging from central station equipment and top-secret military systems to the push-button phone and Touch-Tone dialing.[68] The building's four pavilions were deliberately designed to be flexible, with moveable partition walls and a variety of floor plans, in order to best foster this wide-ranging research and development activity. The building remained a key site for Bell Labs even after the company was restructured within AT&T in the 1980s, hosting Steven Chu's Nobel Prize-winning work on laser cooling that eventually earned him a Nobel Prize in 1997.

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[67] Bernstein, *Three Degrees Above Zero,* 8.
[68] Knowles and Leslie, "Industrial Versailles," 27.

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Miller, Nancy A. "Eero Saarinen on the Frontier of the Future: Building Corporate Image in the American Suburban Landscape, 1939-1961." PhD diss., University of Pennsylvania, 1999.

Mozingo, Louise. *Pastoral Capitalism: A History of Suburban Corporate Landscapes*. Boston: Massachusetts Institute of Technology Press, 2011.

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Troianovski, Anton. "Reinventing Old Site of Bell Labs is Tricky." *Wall Street Journal*. May 16, 2010. ProQuest Online Newspapers.

Tyson, Anthony. Personal interview. 8 February 2015.

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Wallis, H. J. "The Holmdel Laboratories." *Bell Laboratories Record* 40, no. 9 (October 1962): 316-25.

Previous documentation on file (NPS):

__x__ preliminary determination of individual listing (36 CFR 67 has been requested)
____ previously listed in the National Register
____ previously determined eligible by the National Register
____ designated a National Historic Landmark
____ recorded by Historic American Buildings Survey #__________
____ recorded by Historic American Engineering Record # __________
____ recorded by Historic American Landscape Survey # __________

Primary location of additional data:

____ State Historic Preservation Office
____ Other State agency
____ Federal agency
____ Local government
____ University
____ Other
Name of repository: ____________________

Historic Resources Survey Number (if assigned): ____________________

10. Geographical Data

Acreage of Property 134.821
(Do not include previously listed resource acreage.)

Latitude/Longitude Coordinates

(Follow similar guidelines for entering these coordinates as for entering UTM references described on page 55, *How to Complete the National Register Registration Form*. For properties less than 10 acres, enter the lat/long coordinates for a point corresponding to the center of the property. For properties of 10 or more acres, enter three or more points that correspond to the vertices of a polygon drawn on the map. The polygon should approximately encompass the area to be registered. Add additional points below, if necessary.)

Datum:

1. Latitude: 40.372405 N Longitude: -74.161550 W
2. Latitude: 40.369223 N Longitude: 74.170388 W
3. Latitude: 40.366648 N Longitude: 74.173060 W
4. Latitude: 40.362871 N Longitude: 74.170570 W
5. Latitude: 40.361637 N Longitude: 74.164219 W
6. Latitude: 40.362904 N Longitude: 74.162610 W
7. Latitude: 40.371042 N Longitude: -74.158473W
8. Latitude: 40.372329 Longitude: 74.159509 W

Verbal Boundary Description (Describe the boundaries of the property.)

The boundary is the legal parcel of the property, designated Block 11, Lot 38.05, Holmdel Township, Monmouth County, NJ, as shown in the attached site plan. The boundary includes the regularly spaced trees that line Bell Laboratories Rd., commonly referred to as the “allée of trees.”

Boundary Justification (Explain why the chosen boundaries are the most appropriate.)

The boundaries encompass the full extent of the nominated resource, including the subject building and the keyhole-shaped programmed-landscape and driveways. The areas outside of the keyhole, which were historically part of the Bell Laboratories campus, but not formally landscaped, are now under separate ownership and thus are not part of the nominated parcel.

11. Form Prepared By

name/title CINDY HAMILTON / Vice President

organization HERITAGE CONSULTING GROUP date March 30, 2017

street & number 15 W HIGHLAND AVENUE telephone 215-248-1260

city or town PHILADELPHIA state PA zip code 19118

e-mail CHAMILTON@HERITAGE-CONSULTING.COM

Additional Documentation

Submit the following items with the completed form:

- **Continuation Sheets** (in ascending numerical order, by section and page number)
- **Maps:** A **USGS map** (7.5 or 15 minute series) indicating the property's location.
  A **Sketch map** for historic districts and properties having large acreage or numerous resources.
  Key all photographs to this map.
- **Additional items:** (Check with the SHPO or FPO for additional items, especially for "Photographs" below.)

Photographs:

Submit clear and descriptive photographs. Each digital image must include an array of 3000x2000 pixels or greater. For the submission of hard-copy photographs, consult your SHPO or FPO. Key all photographs to the sketch map.

Name of Property: Bell Laboratories-Holmdel
City or Vicinity: Holmdel Township
County: Monmouth
State: New Jersey
Photographer: Cindy Hamilton
Date Photographed: March 2014
Description of Photograph(s) and number:

1. Site, looking southwest
2. North elevation of Bell Laboratories-Holmdel, looking southwest
3. West elevation of Bell Laboratories-Holmdel, looking southeast
4. Site and south elevation Bell Laboratories-Holmdel, looking north
5. Site, looking southwest
6. Site, looking northeast
7. North elevation of Bell Laboratories-Holmdel, looking southwest at entrance
8. Second floor of Bell Laboratories-Holmdel, looking northwest at entrance
9. Second floor of Bell Laboratories-Holmdel, looking southeast at atrium
10. Second floor of Bell Laboratories-Holmdel, looking northwest at stair in atrium
11. Second floor of Bell Laboratories-Holmdel, looking west at atrium
12. Second floor of Bell Laboratories-Holmdel, looking southeast at stair/elevator tower
13. Second floor of Bell Laboratories-Holmdel, looking southwest at corridor
14. Third floor of Bell Laboratories-Holmdel, looking southeast at atrium
15. Third floor of Bell Laboratories-Holmdel, looking northeast at corridor
16. Third floor of Bell Laboratories-Holmdel, looking northeast at corridor
17. Third floor of Bell Laboratories-Holmdel, looking west at elevator lobby

18. Fourth floor of Bell Laboratories-Holmdel, looking southeast at corridor
19. Fourth floor of Bell Laboratories-Holmdel, looking east at office area
20. Fourth floor of Bell Laboratories-Holmdel, looking southwest at corridor
21. Fifth floor of Bell Laboratories-Holmdel, looking northeast at corridor
22. Fifth floor of Bell Laboratories-Holmdel, looking northeast at office
23. Sixth floor of Bell Laboratories-Holmdel, looking southeast
24. Sixth floor of Bell Laboratories-Holmdel, looking southwest at corridor
25. Sixth floor of Bell Laboratories-Holmdel, looking southeast
26. First floor of Bell Laboratories-Holmdel, looking north at auditorium
27. First floor of Bell Laboratories-Holmdel, looking west at lounge
28. First floor of Bell Laboratories-Holmdel, looking southeast at cafeteria

Property Owner:

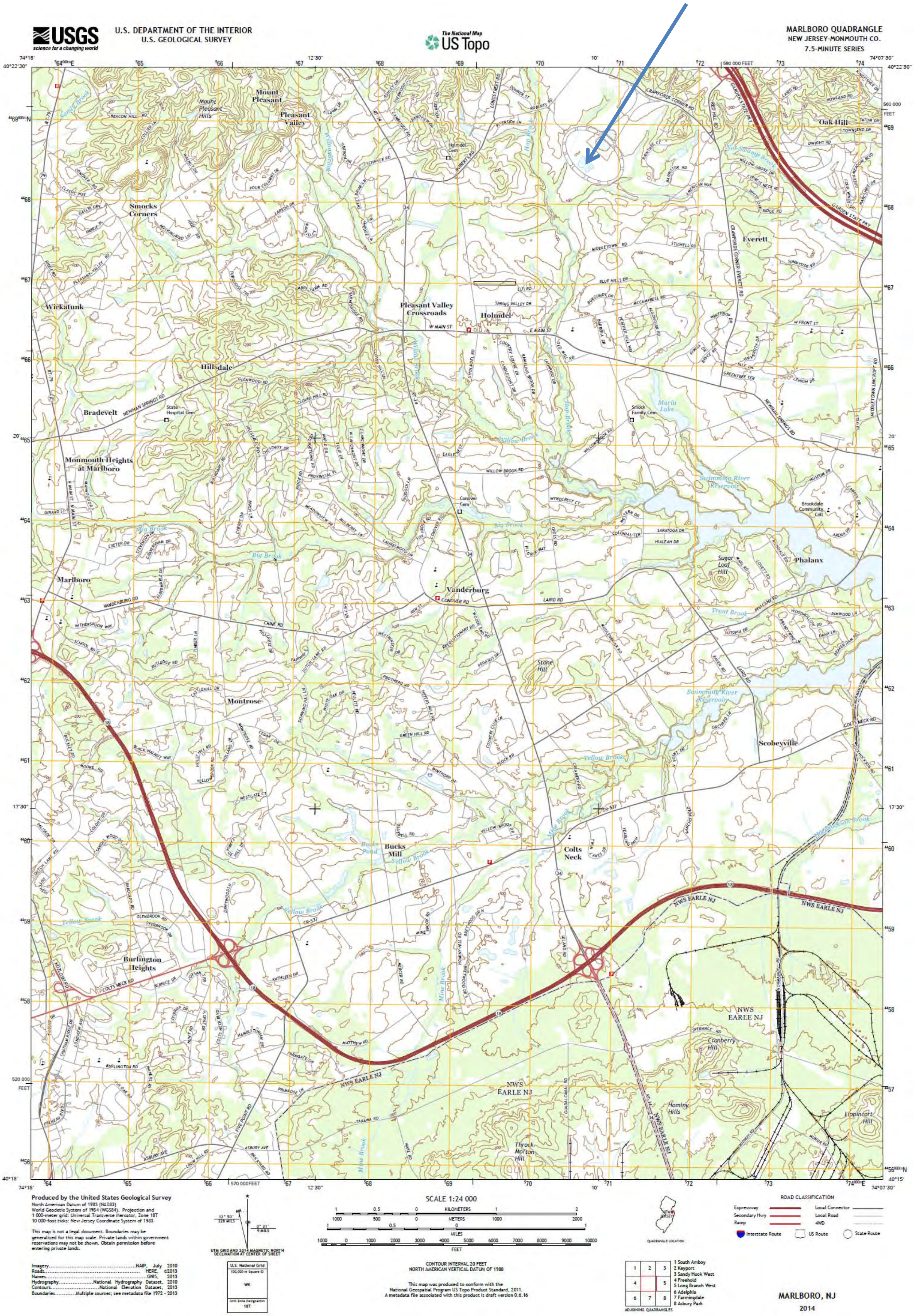
(Complete this item at the request of the SHPO or FPO.)

name Ralph Zucker, Somerset Development

street & number 101 Crawfords Corner Road telephone 732-367-2828

city or town Holmdel state NJ zip code 07733

Bell Labs - Holmdel



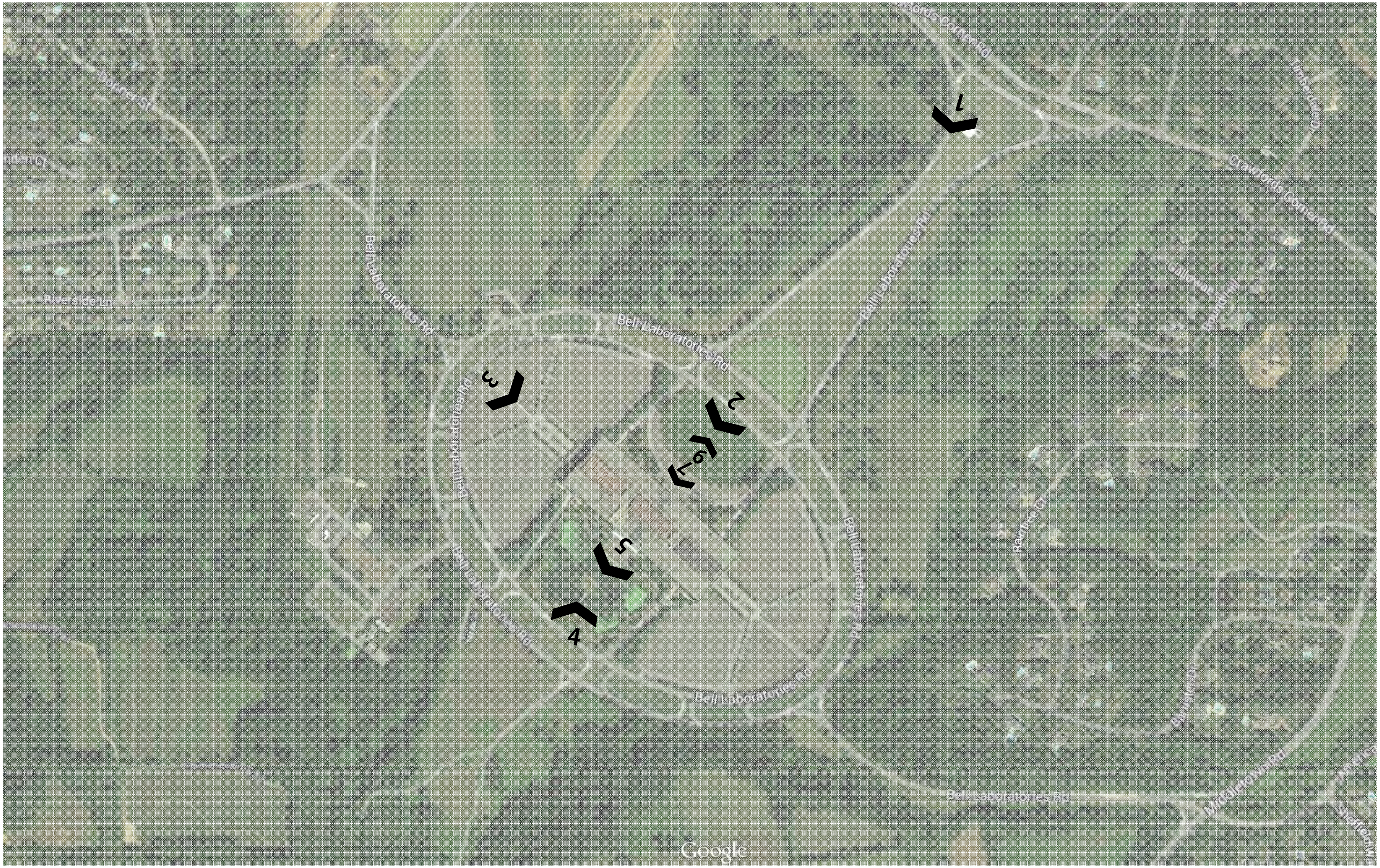
HERITAGE
HERITAGE CONSULTING GROUP

Bell Laboratories--Holmdel: National Register Nomination Photographs
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey
March 2015

N

Site and Exterior

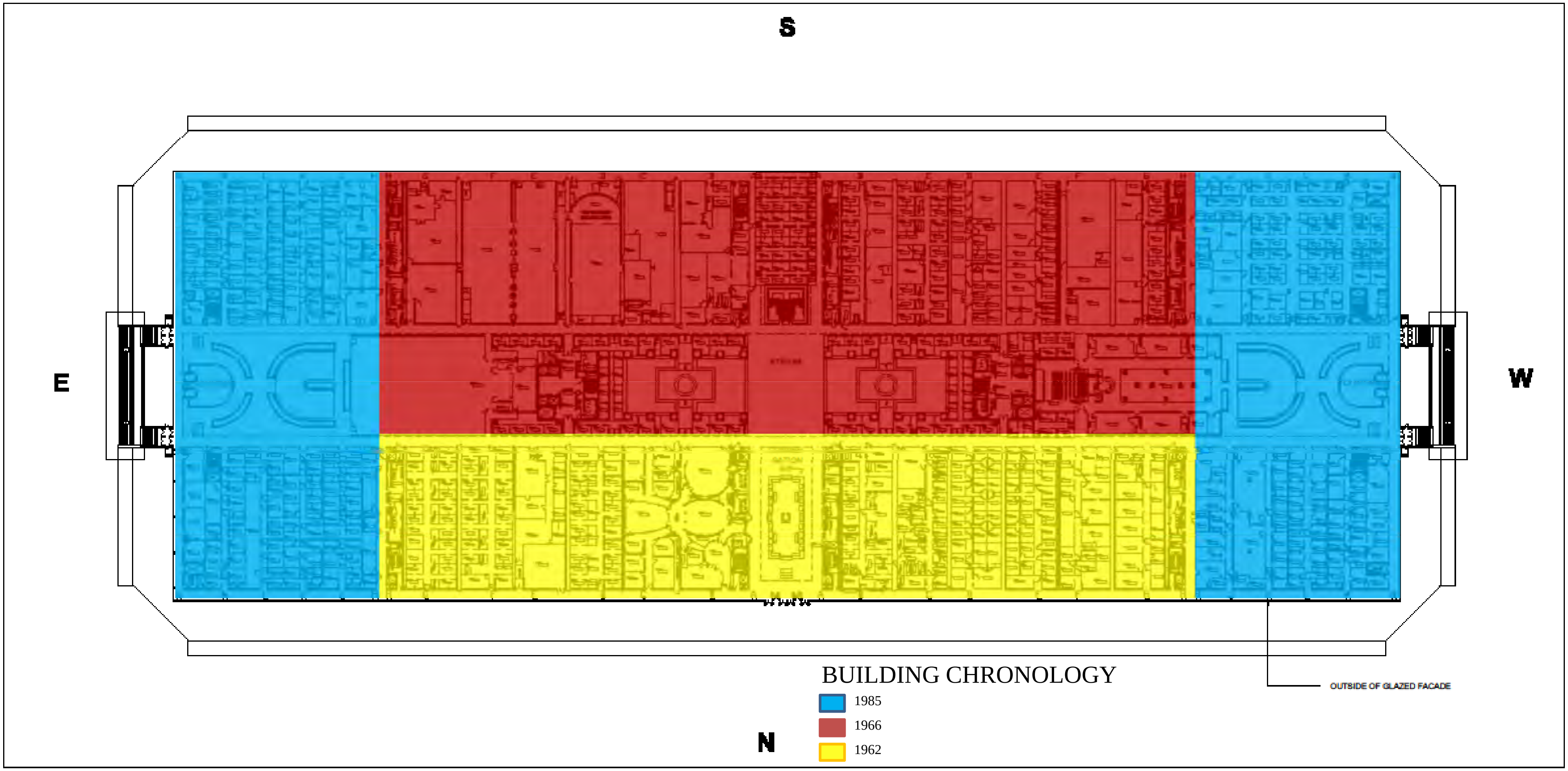
Photos 1 – 7
Yellow arrow indicates starting point



MONMOUTH / HOLMDEL TOWNSHIP

Bell Laboratories-Holmdel

Drawn: NJHPO/KEC 3/28/17



DRAWING TITLE
SECOND FLOOR PLAN - EXISTING

DATE 07-10-2014

SCALE 1"=80'

0' 10' 20' 50' 100'

DRAWING NO. A102

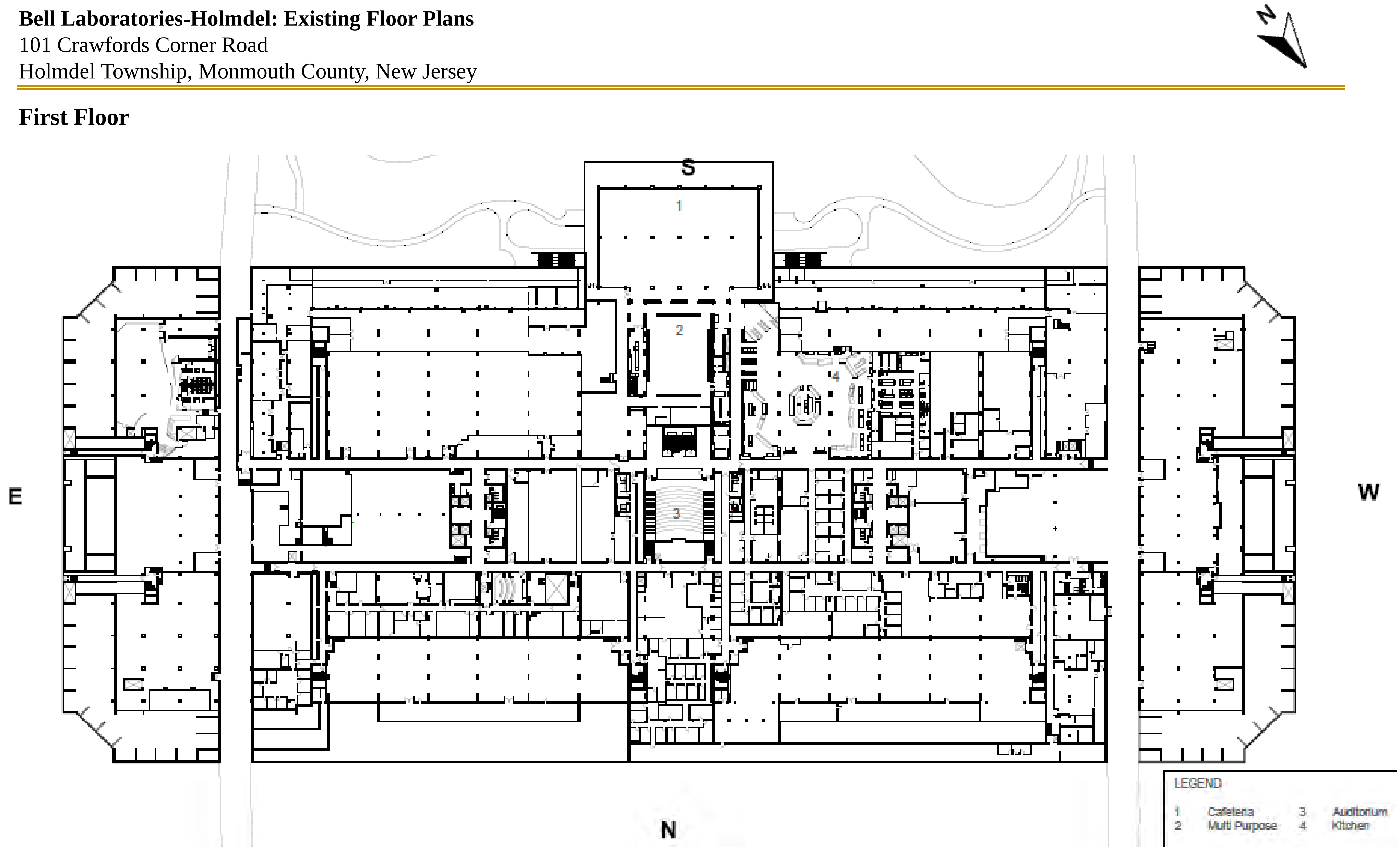
ALEXANDER GORLIN ARCHITECT LLC
137 VARICK STREET, NEW YORK, NY 10013
T: 212.229.1199 F: 212.206.3590

B E L L P L A C E
101 CRAWFORDS CORNER ROAD, HOLMDEL, NEW JERSEY

SOMERSET HOLMDEL DEVELOPMENT I, LP LLC
911 E COUNTY LINE RD, LAKEWOOD, NJ 08701

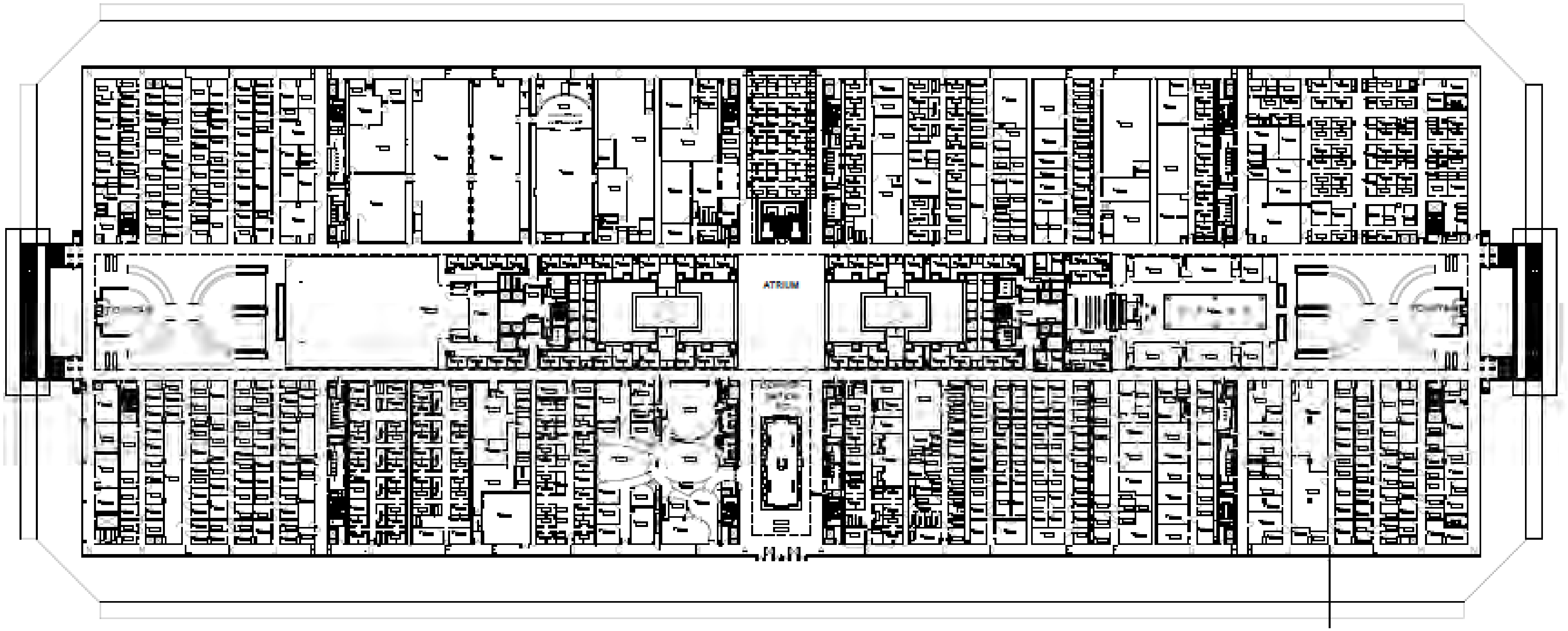
Bell Laboratories-Holmdel: Existing Floor Plans
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey

First Floor



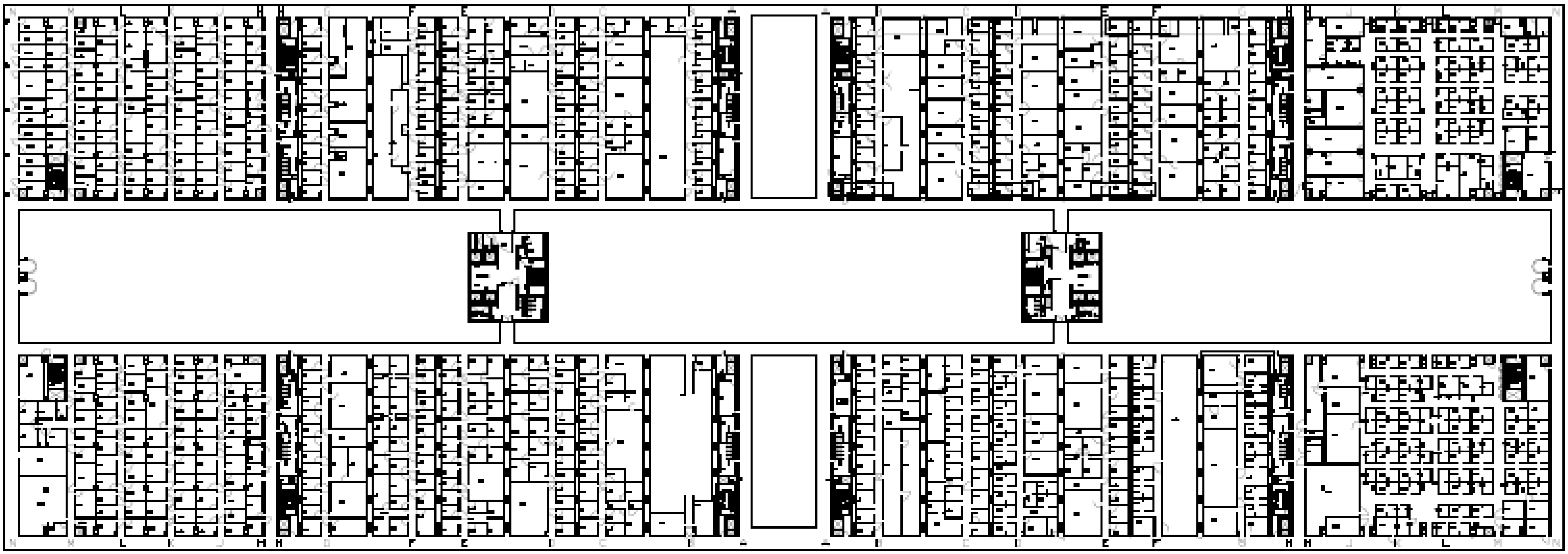
Bell Laboratories-Holmdel: Existing Floor Plans
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey

Second Floor



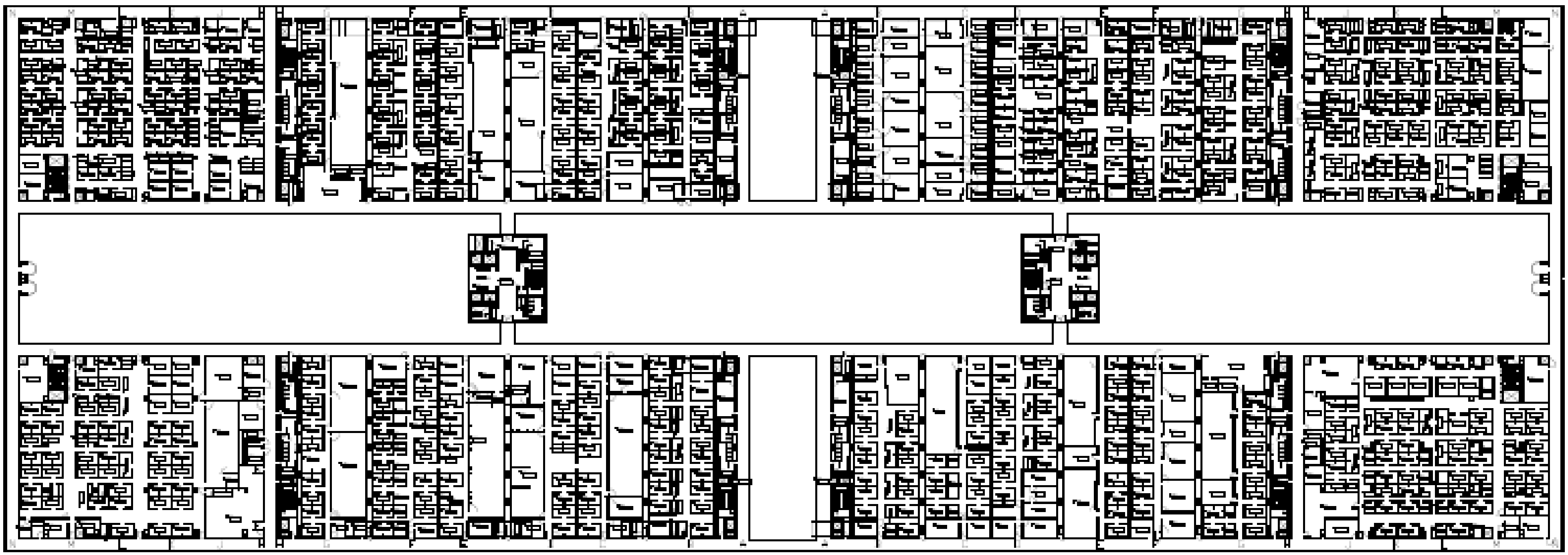
Bell Laboratories-Holmdel: Existing Floor Plans
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey

Third Floor



Bell Laboratories-Holmdel: Existing Floor Plans
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey

Fourth Floor



Bell Laboratories-Holmdel: Existing Floor Plans
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey

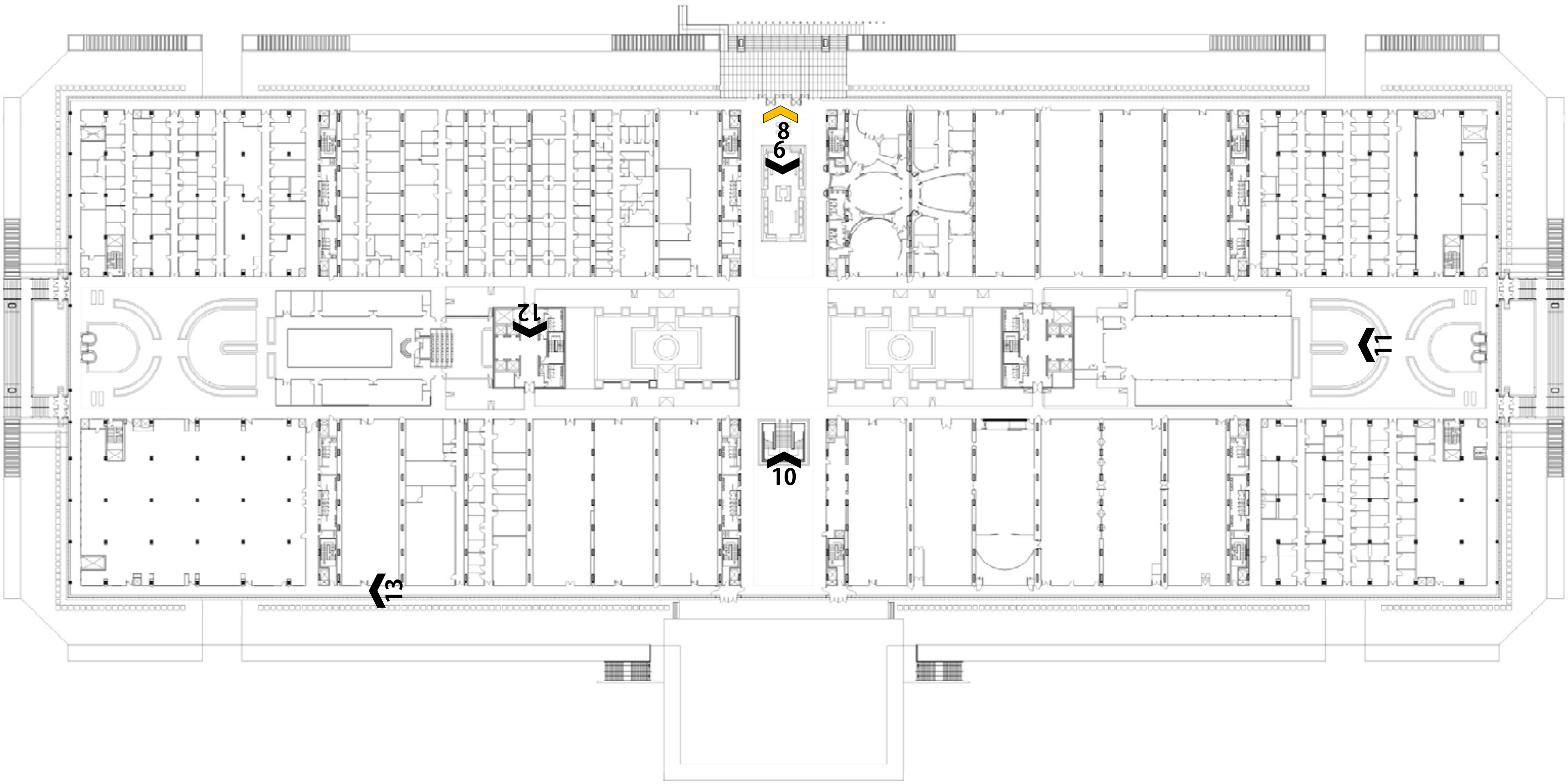
Fifth Floor

Bell Laboratories-Holmdel: Existing Floor Plans
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey

Sixth Floor

Bell Laboratories: National Register Nomination Photographs
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey
March 2015

Second Floor
Photos 8– 13
Yellow arrow indicates starting point



HERITAGE
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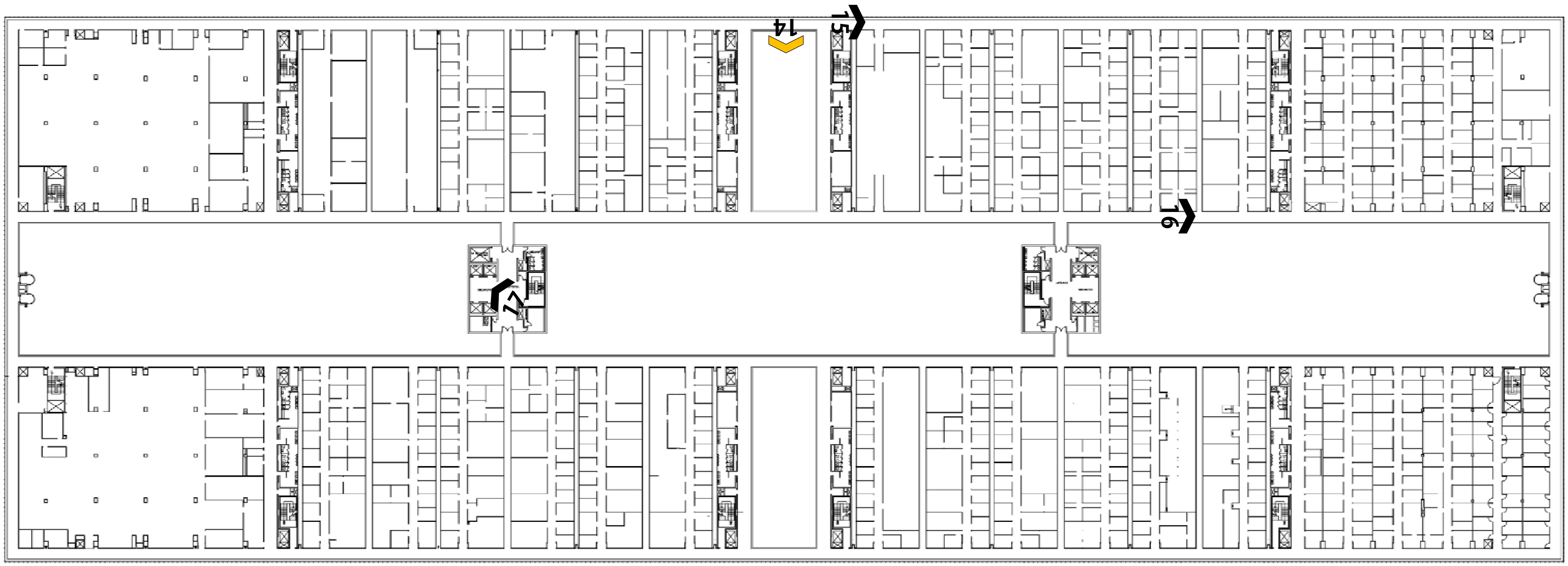
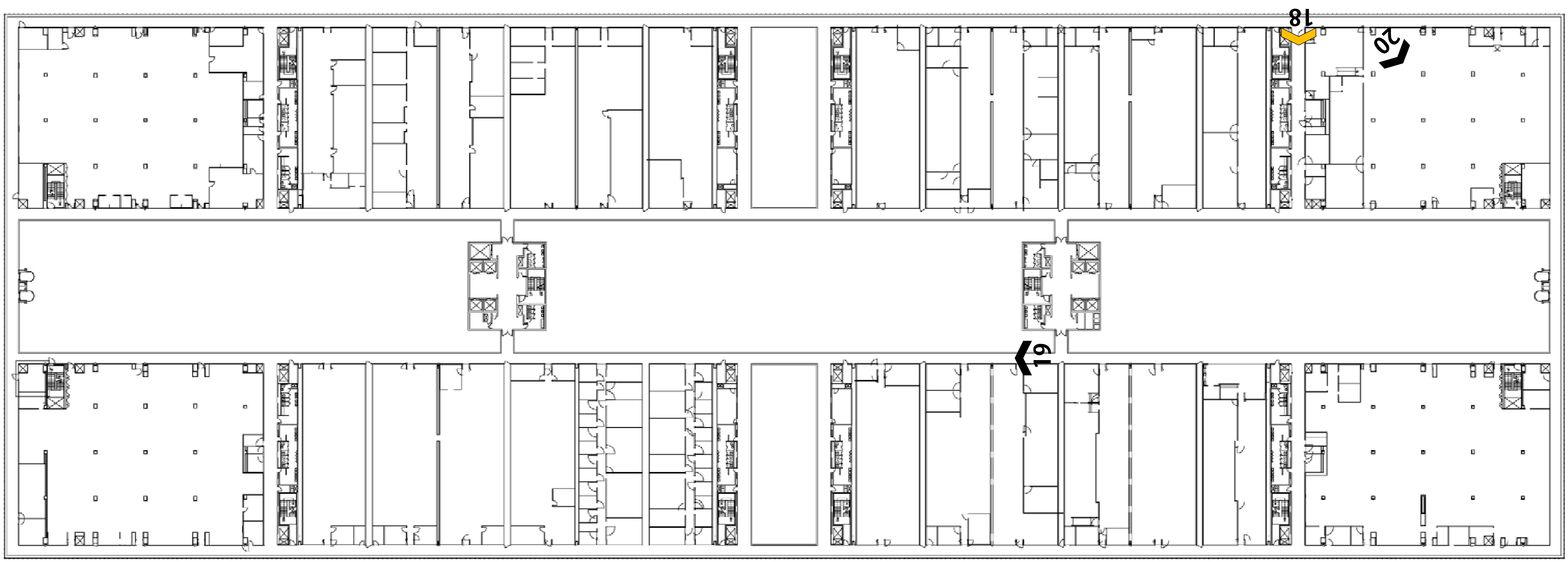
Bell Laboratories: National Register Nomination Photographs
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey
March 2015

Third Floor
Photos 14– 17
Yellow arrow indicates starting point

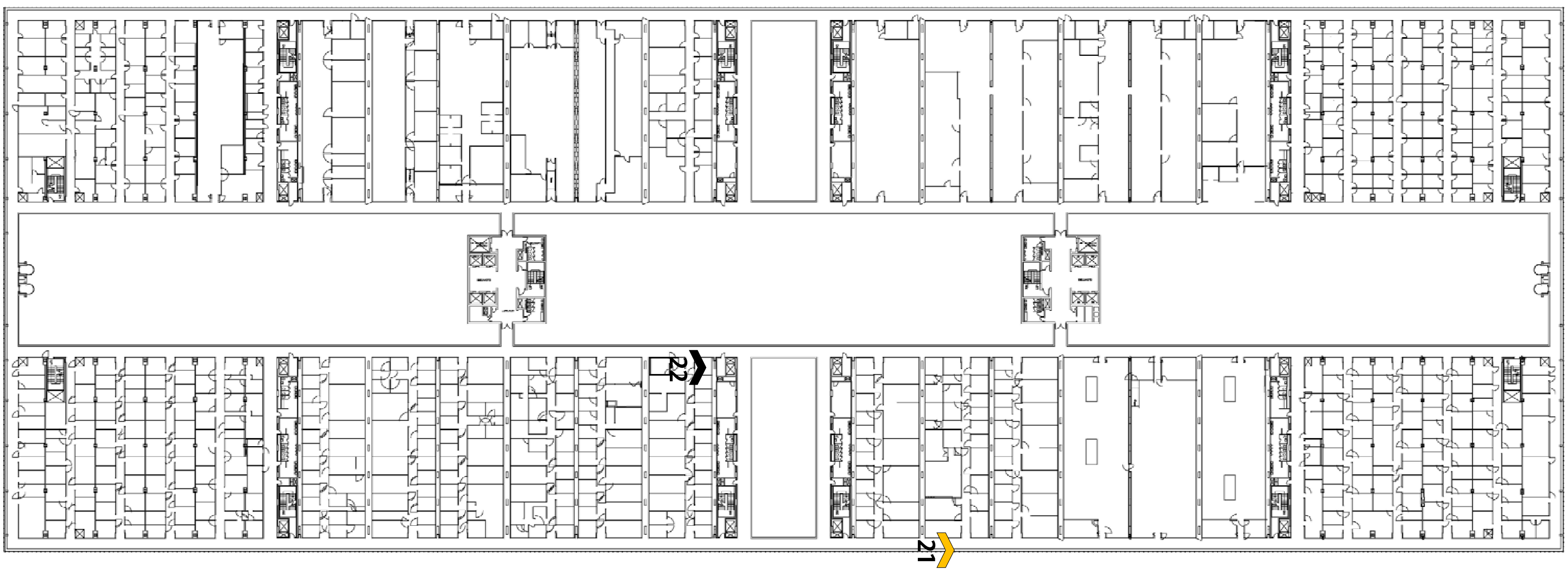


Bell Laboratories: National Register Nomination Photographs
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey
March 2015

Fourth Floor
Photos 18– 20
Yellow arrow indicates starting point



Fifth Floor
Photos 21– 22
Yellow arrow indicates starting point



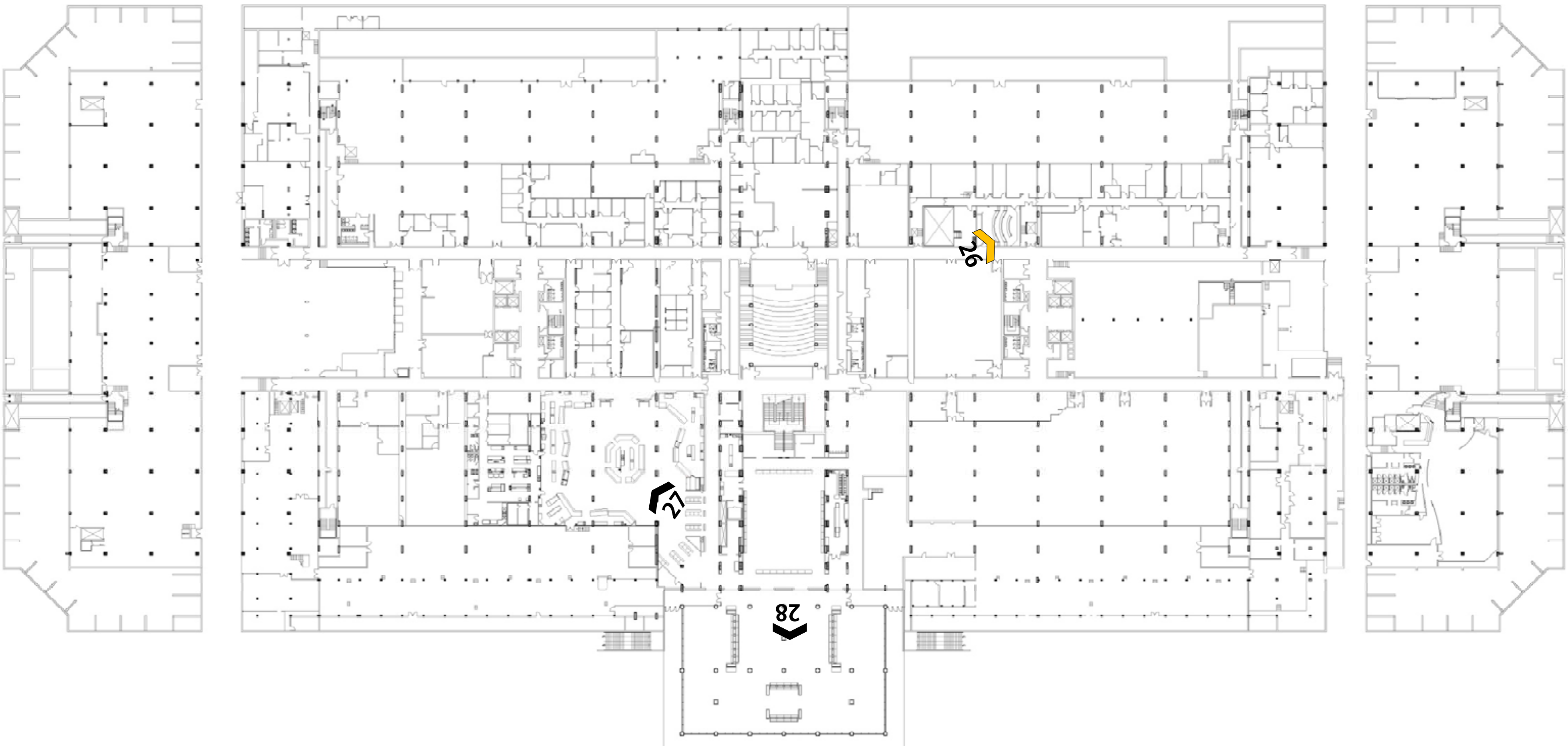
Sixth Floor

Photos 23– 25

Yellow arrow indicates starting point

Bell Laboratories: National Register Nomination Photographs
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey
March 2015

First Floor
Photos 26– 28
Yellow arrow indicates starting point



1. Site, looking southwest

2. North elevation of Bell Laboratories-Holmdel, looking southwest

3. West elevation of Bell Laboratories-Holmdel, looking southeast

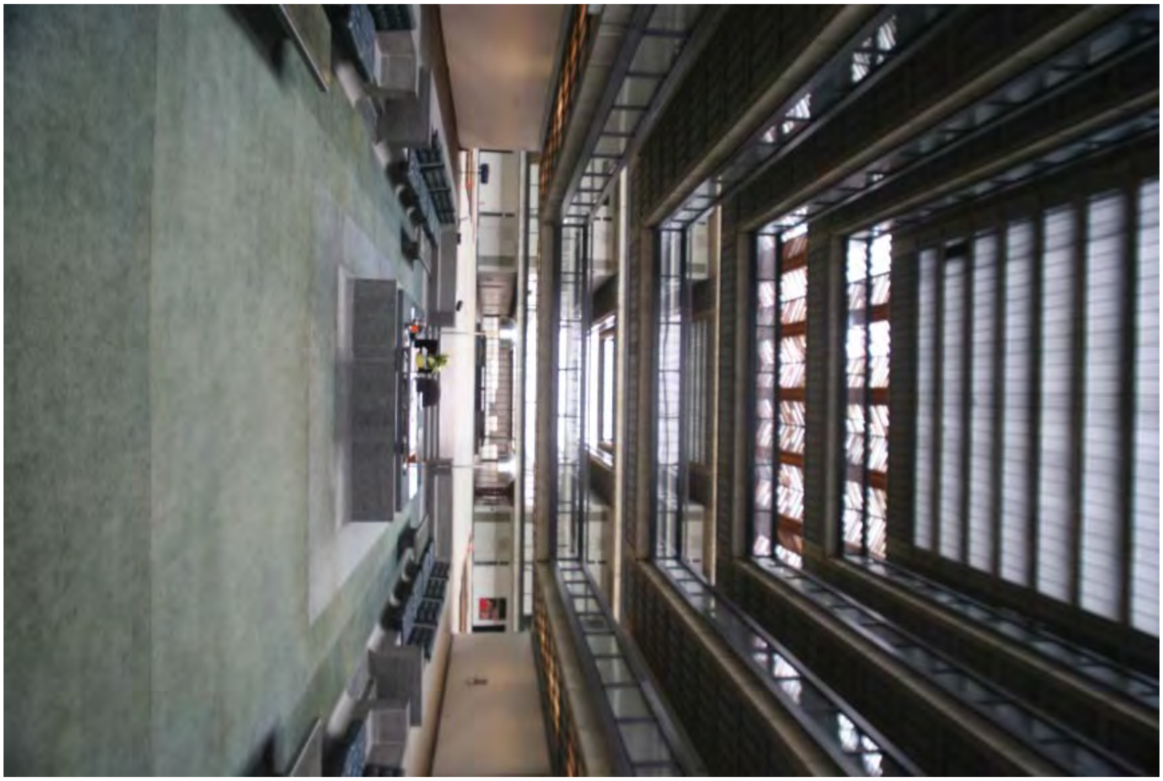
4. Site and south elevation Bell Laboratories-Holmdel, looking north

5. Site, looking southwest

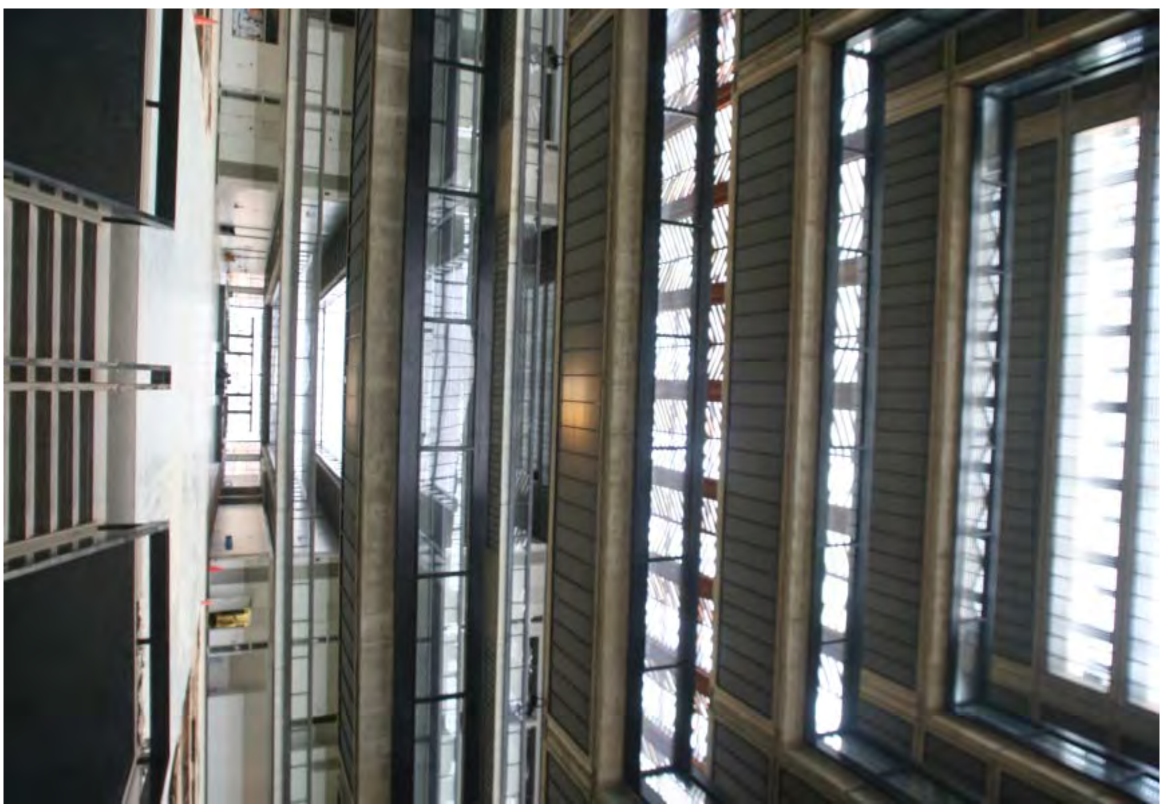
6. Site, looking northeast

7. North elevation of Bell Laboratories-Holmdel, looking southwest at entrance

8. Second floor of Bell Laboratories-Holmdel, looking northwest at entrance



9. Second floor of Bell Laboratories-Holmdel, looking southeast at atrium



10. Second floor of Bell Laboratories-Holmdel, looking northwest at stair in atrium

11. Second floor of Bell Laboratories-Holmdel, looking west at atrium

12. Second floor of Bell Laboratories-Holmdel, looking southeast at stair/elevator tower

13. Second floor of Bell Laboratories-Holmdel, looking southwest at corridor

14. Third floor of Bell Laboratories-Holmdel, looking southeast at atrium

15. Third floor of Bell Laboratories-Holmdel, looking northeast at corridor

16. Third floor of Bell Laboratories-Holmdel, looking northeast at corridor

17. Third floor of Bell Laboratories-Holmdel, looking west at elevator lobby

18. Fourth floor of Bell Laboratories-Holmdel, looking southeast at corridor

19. Fourth floor of Bell Laboratories-Holmdel, looking east at office area

20. Fourth floor of Bell Laboratories-Holmdel, looking southwest at corridor

21. Fifth floor of Bell Laboratories-Holmdel, looking northeast at corridor

22. Fifth floor of Bell Laboratories-Holmdel, looking northeast at office

23. Sixth floor of Bell Laboratories-Holmdel, looking southeast

24. Sixth floor of Bell Laboratories-Holmdel, looking southwest at corridor

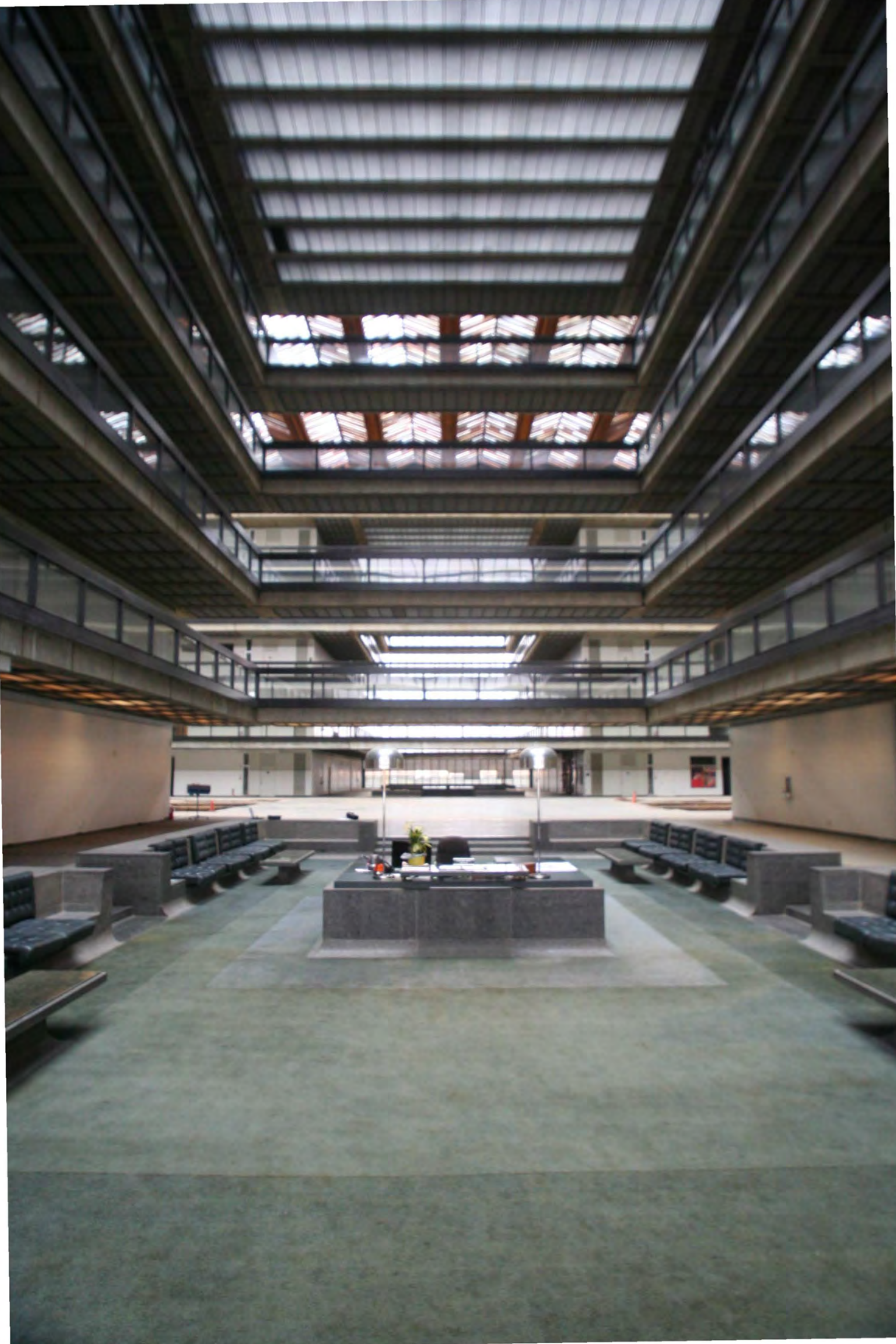
25. Sixth floor of Bell Laboratories-Holmdel, looking southeast

26. First floor of Bell Laboratories-Holmdel, looking north at auditorium

27. First floor of Bell Laboratories-Holmdel, looking west at lounge

28. First floor of Bell Laboratories-Holmdel, looking southeast at cafeteria


ISUZU




Floor
3
3
3
RECYCLE


EXIT

National Register of Historic Places

Archivist note to the record

Correspondence

The Correspondence consists of communications from (and possibly to) the nominating authority, notes from the staff of the National Register of Historic Places, and/or other material the National Register of Historic Places received associated with the property.

Correspondence may also include information from other sources, drafts of the nomination, letters of support or objection, memorandums, and ephemera which document the efforts to recognize the property.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

Requested Action:	Nomination
Property Name:	Bell Laboratories--Holmdel
Multiple Name:	
State & County:	NEW JERSEY, Monmouth

Date Received:	Date of Pending List:	Date of 16th Day:	Date of 45th Day:	Date of Weekly List:
5/12/2017		4/30/2016	6/26/2017	

Reference number:	16000223
Nominator:	State
Reason For Review:	

__X__ Accept ____ Return ____ Reject __**6/26/2017**__ Date

Abstract/Summary Comments:

Recommendation/ Criteria

Reviewer Lisa Deline Discipline Historian

Telephone (202)354-2239 Date 6/26/17

DOCUMENTATION: see attached comments : No see attached SLR : No

If a nomination is returned to the nomination authority, the nomination is no longer under consideration by the National Park Service.

HPO Proj. #13-1611
~~Chrono #: C2016-089~~

RECEIVED 2280

MAR 18 2016

NAT. REGISTER OF HISTORIC PLACES
NATIONAL PARK SERVICE

State of New Jersey

MAIL CODE 501-04B
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL & HISTORIC RESOURCES
HISTORIC PRESERVATION OFFICE
P.O. Box 420
Trenton, NJ 08625-0420
TEL. (609) 984-0176 FAX (609) 984-0578

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

March 9, 2016

Paul Loether, Chief
National Register of Historic Places
National Park Service
Department of the Interior
Washington, D.C. 20240

Dear Mr. Loether:

The enclosed disk contains the true and correct copy of the nomination for Bell Laboratories - Holmdel, in Holmdel Township, Monmouth County, New Jersey, for National Register consideration.

This nomination has received unanimous approval from the New Jersey State Review Board for Historic Sites. All procedures were followed in accordance with regulations published in the Federal Register.

Should you want any further information concerning this application, please feel free to contact Daniel D. Saunders, Administrator, New Jersey Historic Preservation Office, Mail code 501-04B, P.O. Box 420, Trenton, New Jersey 08625-0420, or call him at (609) 633-2397.

Sincerely,

Rich Boornazian
Deputy State Historic
Preservation Officer

NPS Form 10-900 223 OMB No. 1024-0018

United States Department of the Interior
National Park Service

RECEIVED 2280
MAR 18 2016
NAT. REGISTER OF HISTORIC PLACES
NATIONAL PARK SERVICE

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. **Place additional certification comments, entries, and narrative items on continuation sheets if needed (NPS Form 10-900a).**

1. Name of Property

historic name Bell Laboratories-Holmdel

other names/site number Bell Labs

2. Location

street & number 101 Crawfords Corner Road ☐ not for publication

city or town Holmdel Township ☐ vicinity

state NJ code 034 county Monmouth code 025 zip code 07733

3. State/Federal Agency Certification

Returned

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this _X_ nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property _X_ meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

___ national _X_ statewide ___ local

[signature] Ass't Commissioner 3/8/16

Signature of certifying official/Title Date

NJ DEP

State or Federal agency/bureau or Tribal Government

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

Signature of commenting official Date

Title State or Federal agency/bureau or Tribal Government

4. National Park Service Certification

I hereby certify that this property is:

___ entered in the National Register

___ determined eligible for the National Register

___ determined not eligible for the National Register

___ removed from the National Register

___ other (explain:) ____________

Signature of the Keeper Date of Action

Returned

5. Classification

Ownership of Property
(Check as many boxes as apply.)

- [X] private
- [ ] public - Local
- [ ] public - State
- [ ] public - Federal

Category of Property
(Check only **one** box.)

- [ ] building(s)
- [X] district
- [ ] site
- [ ] structure
- [ ] object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
1	0	buildings
		sites
1		structures
1		objects
3	0	**Total**

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing)

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions.)

COMMERCE/office building

Current Functions
(Enter categories from instructions.)

OFFICE
VACANT

7. Description

Architectural Classification
(Enter categories from instructions.)

MODERN MOVEMENT

Materials
(Enter categories from instructions.)

foundation: CONCRETE
walls: METAL/Aluminum
GLASS
roof:
other:

Narrative Description

(Describe the historic and current physical appearance of the property. Explain contributing and noncontributing resources if necessary. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, setting, size, and significant features.)

Summary Paragraph

Designed by Eero Saarinen and Associates, Bell Laboratories-Holmdel was constructed in three phases (1959-1962, 1964-1966, and 1982-1985). It is located on a suburban, 134-acre site, designed by the landscape architecture firm of Sasaki, Walker and Associates, situated at 101 Crawfords Corner Road in Holmdel Township, Monmouth County, New Jersey (the nominated property consists of Block 11, Lot 38.05 of the Holmdel Township tax map). The rectilinear concrete- and steel-frame building encompasses two million square feet on six floors, all housed under a single roof and within a reflective paneled-glass, aluminum-framed curtain-wall exterior (see photographs 2-4, 7). The rectangular building measures 1,000 feet on its north and south elevations and 360 feet on its east and west elevations; it is five stories above grade on its primary (north) elevation and six stories above grade on its rear (south) elevation. The building consists of four five-story pavilions that are separated by a large cruciform five-story atrium (beginning at the 2nd floor) and linked by skybridges (see photographs 9-11; 14, 16, 19, 23, 25), perimeter corridors (see photographs 13, 15, 21, 24) and concrete elevator/stair towers (see photographs 12 and 17). The building's primary entrance (see photographs 2 and 7) is on the north elevation, facing the large water tower at the entrance to the site (see photograph 1). Secondary entrances to the 2nd floor atrium are located on the east and west elevations (see photograph 3). Additional secondary entrances to the 1st floor are located on the rear (south) elevation (see photograph 4). Located on the site is a metal sculpture, which is a contributing object. This sculpture honors radio astronomer Karl Jansky and marks the site of his antenna. It is a stylized, miniaturized replica of his radio telescope. The nominated property also includes a contributing structure, a water tower designed to imitate the shape of an early transistor, together with its associated piping.

Narrative Description

The interior of the building retains the primary configuration, volume, massing, circulation pattern, and material palette designed by Eero Saarinen and overseen by his partners Kevin Roche and John Dinkeloo after his death. The building's northern two pavilions (see photographs 8, 9, 14-16, 18, and 20) were constructed first (1959-1962), with the southern two pavilions (see photographs 13, 19, 21, 22, 24, and 25) constructed soon after (1964-1966), per Saarinen's original design. Between 1982 and 1985, Saarinen's partners oversaw the design and construction of additions to the building's east and west ends (see the floor plan that identifies these phases of construction). The additions maintain the configuration, volume, massing, circulation pattern, and material palette of the original building. The building's four pavilions, two stair/elevator towers, and atrium (see photographs 10-12) remain largely intact with some alterations, but some modern features added in recent decades have also been removed. In each of the four pavilions, the circulation pattern is consistent with Saarinen's original design, with skybridges around the inner perimeter and corridors around the outer perimeter of each floor. The interior floor plans of each pavilion were designed to be flexible and variable, with a combination of offices (see photograph 22), open areas, laboratories, and subordinate cross-corridors. Finishes in the atrium include a modern porcelain tile floor that closely matches the appearance of the original slate floors; gypsum-board and metal-panel walls; and band of egg-crate light fixtures on the underside of the concrete ceilings (see photographs 21 and 24). Finishes in each of the four building pavilions include carpet and vinyl-tile floors; gypsum-board and metal-panel walls with interior windows; and suspended acoustic-tile ceilings. The 1st floor, below the atrium level, spans the full footprint of the building and includes an auditorium (see photograph 26), cafeteria (see photograph 28), lounge (see photograph 27), kitchen, and other service areas. This level is primarily utilitarian, and finishes include: concrete, granite, vinyl tile, and carpet floors; gypsum board and concrete block walls; and suspended-tile ceilings.

Setting: Bell Laboratories-Holmdel is located in Holmdel Township in Monmouth County, New Jersey. This suburban township is located a half-mile southwest of the Garden State Parkway, 15 miles west of the Jersey Shore, and 35 miles south of Manhattan, a proximity that fostered its development by Bell Labs. The site is accessed by local roads and is surrounded by farmland and suburban residential development.

Site: The nominated boundary includes the portion of the site that was designed by the landscape architecture firm of Sasaki, Walker and Associates in collaboration with Eero Saarinen and Associates. Originally the site included an additional 366 acres, which is currently under separate ownership. The area was not formally landscaped and contained an open field and wooded perimeter. The nominated site is symmetrically arranged along a primary northeast-southwest axis, with two primary entrances on Crawfords Corner Road. The building is placed on the primary axis near the southwest corner of the site, where the site slopes down from the front (north) elevation to the rear (south) elevation. Some landscape features are oriented along a secondary northwest-southeast axis, perpendicular to the primary site axis. Two secondary driveway entrances are oriented on the secondary axis and approach the building from the western edge (from Roberts Road) and the eastern edge (Middletown Road) of the site.

The site is arranged in a keyhole design, delineated by the paved entrance and exit driveways that are reflected across the primary axis. The interior of the keyhole, as defined by the driveways, comprises symmetrically arranged landscape features, including grassy lawns, ponds, parking areas, and plantings (see photographs 1-6). The outer edge of the keyhole is delineated by mature trees that are planted in allées in areas—particularly along the entrance and exit driveways). The primary axis of the site is oriented southeast-northwest; the secondary axis is perpendicularly oriented northwest-southeast. The Bell Laboratories-Holmdel building is located at the center of the concentric oval ring roads. Its rectangular footprint is oriented with its long axis along the secondary axis of the site, while its exterior entrances (on the front and rear elevations) are centered along the primary axis of the site.

<u>System of Circulation: Roads, Sidewalks, and Parking Lots:</u> All roads through the site are one-way driveways. With the exception of the service driveways in the southwestern corner of the site, the driveways are entirely symmetrically arranged. From the two primary entrances, which are located approximately 200 yards apart on Crawfords Corner Road, the driveways taper toward each other, framing a triangular portion of land that measures approximately 200 yards on each side (even at their closest point, the driveways remain approximately 50 yards apart). The driveways gradually diverge again and extend uninterrupted for approximately 500 yards. Their paths once again frame a triangular parcel of land along the site's primary axis.

The extended approach to the formal portion of the site leads to concentric oval ring roads, which complete the overall keyhole design of the Bell Laboratories-Holmdel landscape. These ovals are elongated along the site's secondary axis. The larger oval measures approximately 950 yards on its longer axis and 670 yards on its shorter axis. The secondary concentric oval measures approximately 850 yards on its longer axis and 540 yards on its shorter axis. These concentric ovals are linked by several short curving one-way driveways, forming tertiary ovals between the concentric oval driveways. These tertiary ovals vary in size but are symmetrically laid out.

The western and eastern thirds, which are parabolic in shape within the ovals, are almost entirely paved as parking areas. In the western and eastern thirds of the landscape within the oval ring roads, a pull-around driveway on center with the site's secondary axis leads up to the entrance on each of these two elevations. On each side of the building, the pull-around driveway encircles two grassy islands and is framed by additional islands that extend from the building and feature concrete sidewalks, light standards, and trees. The remainder of the western and eastern thirds consists of asphalt parking lots. On both the west and east sides of the oval landscape, the parking lots are uninterrupted with the exception of two through-roads that direct traffic from the parking lot to the concentric oval driveways. All of the parking spaces are painted on axes at regular angles from the site's secondary axis, reinforcing the symmetry and geometry of the overall site design within the keyhole landscape.

<u>Planting:</u> All areas between the two ovals are covered. The landscape surrounding the building within the oval driveways is symmetrically reflected across the primary axis of the site. It is divided into approximate thirds, as delineated by allées of trees and the aforementioned driveways. On the outer perimeter of the driveways, an allée of mature trees separates the designed features of the site from the surrounding open fields and wooded expanses that were formerly part of the nominated property. Strips of grass with rows of trees separate the parking lots from the concentric oval driveways. Regularly-spaced trees line the roads and mark entrance points to the building.

<u>Sculpture:</u> Located within one of the tertiary ovals in the northeastern portion of the two larger concentric ovals, is a metal sculpture. This sculpture honors radio astronomer Karl Jansky and marks the site of his antenna. It is a stylized, miniaturized replica of his radio telescope and is aligned as Jansky's instrument was in August 1931, when it measured radiation from the center of the galaxy in the constellation of Sagittarius.[1]

<u>Water Features:</u> The central third of the landscape, which is roughly rectangular in shape, is bisected by the building and comprises parking and a pond in front of the building and a lagoon-like pond and gardens at the rear of the building.

The area in front of the building (northeast of the building) includes a large pond that measures approximately 140 yards (primary site axis) by 190 yards (secondary site axis) and is curved toward the building on its southwestern side. The area behind the building (southwest of the building) comprises a lagoon-like pond with an amoebic perimeter that contrasts with the geometry that characterizes the rest of the site plan. Nevertheless, this lagoon maintains the symmetry of the overall landscape design and is reflected over the site's primary axis. It features a small island at the center of the bond, accessed by a concrete bridge with a metal railing. A footpath and regularly-spaced trees run along the perimeter of the lagoon, parallel to its banks.

The water features were designed to be functional for the building, providing cooling for air conditioning and a source for fire suppression.

<u>Water Tower:</u> A large water tower, which is supported on three columns and painted white, is located at the center of a triangular piece of land near the main entrance, and is visible from Crawfords Corner Road. This water tower was designed by Eero Saarinen to evoke a transistor, announcing the scientific use of the site to both visitors and passersby.

<u>Structure of Building</u>: The building is primarily constructed with a concrete-frame structure. The west and east ends of the building, which were built in 1982-85 as extensions to the building, feature steel-frame structural systems.

[1] "Detective work leads to monument honoring the father of radio astronomy," Alcatel-Lucent (June 3, 1998), accessed March 27, 2014, http://www.bell-labs.com/news/1998/june/4/2.html.

Exterior: The Bell Laboratories building in Holmdel exhibits the massing, material palette, and minimalist design characteristic of a Mid-Century Modern commercial building. The rectangular building resembles a large glazed box whose longest elevations face north and south, with the shorter elevations facing east and west. The glazed box is centered on a plinth-like elongated octagonal concrete base, which is partially exposed on the front (north) elevation and fully exposed on the rear (south) elevation due to the downward slope of the site. An elongated skylight, corresponding to the atrium on the interior, projects above the roof along the central east-west axis and is visible from the east and west elevations. The volume, symmetry, and material palette are consistent on all four elevations, with vertical glazed panels set within aluminum frames with projecting fins. The fins vary slightly in thickness to establish a subtle grid on each elevation, with each floor delineated horizontally and regular bays—in particular, the portion of the glazing centered over the entrance on each elevation—emphasized vertically. While this glazing pattern is consistent on all four elevations, the entrances placed at the center of each elevation vary in scale and configuration.

The ballast roof includes two concrete penthouses and the atrium's skylights, which are divided into three large rectangular sections (separated by the penthouses) along the building's central east-west axis and two smaller rectangular sections along the building's central north-south axis. Mechanical equipment is distributed on the roof, at times near the perimeter and along the skylight perimeter, making it visible within the atrium.

North Elevation
The primary elevation faces north. As with the other three elevations, it consists of a glazed façade that is recessed from a projecting concrete base. Mechanical equipment is visible on the roof from this elevation.

The glass portion of the north elevation consists of glazed panels set within aluminum frames with projecting fins. The concrete base is partially exposed above grade on this elevation. This base is nearly unbroken at the perimeter of the building, with the exception of the slate entrance stairs and portico at the center of the elevation and the vehicular openings at either end of the elevation. These openings encompass ramps below the building, which were originally adjacent to the first two phases of the building but were submerged when the east and west additions were constructed over the driveways in the 1980s. At the perimeter of the concrete plinth, a series of vents in the concrete are open to below, where the exterior of the 1st floor is exposed below grade.

The primary entrance is centered on the north elevation. It is accessed by a broad, shallow set of slate steps located at the center of the concrete plinth, which lead to a slate portico in front of the entrance doors. A modern handicap-accessible ramp is located off-center at the west end of the steps and features modern aluminum railings. A large rectilinear concrete canopy, supported by exposed concrete columns, spans the full length of the steps and is detached from the glazed façade of this elevation. A secondary, smaller painted-steel canopy projects from the façade and extends to the edge of the concrete canopy. This secondary canopy consists of painted paneled-metal that is in poor condition and corroded in large areas. Inappropriate modern conduit for ADA-pad access and intercoms is exposed on this metal canopy. Primary entrance doors are symmetrically arranged in an A-B-A-A-B-A arrangement of double-leaf anodized aluminum-frame glazed doors (A) and anodized aluminum-frame glazed revolving doors (B), all of which include an anodized-aluminum frame transom above.

West Elevation
The west elevation echoes the configuration of the north elevation, with the glazed façade that is recessed from the projecting concrete base. Unlike the north elevation, the clerestory atrium skylight—comprising glazed panels set within a rectilinear steel frame—projects above the roofline at the center of the west elevation.

The entrance at the center of the west elevation is symmetrically arranged. A concrete canopy projects from the elevation over the two main entrances on this elevation. These two entrances, which are separated by a courtyard at the center of the elevation and entrance, consist of a vestibule with exterior and interior paired double-leaf anodized-aluminum frame glazed doors.

The canopy frames a small courtyard at the center of this elevation, which is exposed to the sky above due to the configuration of the projecting concrete canopy. This courtyard is planted within the concrete plinth, which forms a retaining wall on the courtyard's three projecting sides. It is enclosed on those same three sides by metal-framed glazed panels, which extend from the courtyard's concrete base to the concrete canopy at the courtyard's perimeter.

A set of slate steps extends the full width of the concrete canopy. The steps extend up to the concrete base of the courtyard at the center of the entrance portico, with longer flights of stairs extending up to the vestibules at each end of the portico.

South Elevation
The rear elevation faces south. As with the other three elevations, it consists of a glazed façade that is recessed from a projecting concrete base. Unlike the other elevations, the south elevation is fully exposed at the 1st floor, and a large section (comprising the 1^{st} floor cafeteria dining room on the interior) projects from the center of the concrete base beyond the remaining perimeter of the concrete plinth. Mechanical equipment is visible on the roof from this elevation.

The glass portion of the south elevation, which extends from the 2^{nd} through 6^{th} floors, consists of glazed panels set within aluminum frames with projecting fins.

The concrete base is interrupted by the projecting portion of the 1^{st} floor and by a vehicular opening at each of the east and west ends. The projecting section features a ballast roof (with pavers around the perimeter) and glazed walls on its west, south, and east walls. The floor-to-ceiling windows are set within aluminum frames with exposed concrete columns at regular intervals along the perimeter. The northwest and northeast corners of this projecting rooms feature vestibules that lead to exterior entrances. A set of double-leaf anodized-aluminum frame glazed doors lead from the 1^{st} floor interior to each of the vestibules, and three single-leaf anodized-aluminum frame glazed doors then lead from each vestibule to the exterior, where a flight of concrete steps extends along the concrete plinth on either side of the projecting section, leading to the 2^{nd} floor, where exterior entrances offer access to the building atrium.

Elsewhere on this elevation, the concrete base of the building is fully exposed at the 1^{st} floor with unfenestrated walls and a very low parapet. The perimeter of the plinth features a series of concrete vents open to below, consistent with the building's other elevations. The vehicular openings at each end of the south elevation encompass ramps below the building, which were originally adjacent to the first two phases of the building but were submerged when the east and west additions were constructed over the driveways in 1982-5.

East Elevation
The east elevation is consistent with the design of the west elevation, with the glazed façade that is recessed from the projecting concrete base. The clerestory atrium skylight—comprising glazed panels set within a rectilinear steel frame—projects above the roofline at the center of this elevation.

The entrance at the center of the east elevation is symmetrically arranged. A concrete canopy projects from the elevation over the two main entrances on this elevation. These two entrances, which are separated by a courtyard at the center of the elevation and entrance, consist of a vestibule with exterior and interior paired double-leaf metal-frame glazed doors.

The canopy frames a small courtyard at the center of this elevation, which is exposed to the sky above due to the configuration of the projecting concrete canopy. This courtyard is planted within the concrete plinth, which forms a retaining wall on the courtyard's three projecting sides. It is enclosed on those same three sides by metal-framed glazed panels, which extend from the courtyard's concrete base to the concrete canopy at the courtyard's perimeter.

A set of slate steps extends the full width of the concrete canopy. The steps extend up to the concrete base of the courtyard at the center of the entrance portico, with longer flights of stairs extending up to the vestibules at each end of the portico.

Interior: The Bell Laboratories building is six stories in height, with a partially below-grade 1st floor that spans the full footprint of the building and a cross-shaped atrium that begins at the 2nd floor and separates the four office/lab pavilions of the 2nd through 6th floors. The atrium is capped by a steel-frame glazed roof.

2nd Floor

The 2nd floor serves as the main level for the building and is arranged symmetrically. A large cross-shaped atrium separates the four rectangular office/lab pavilions of the building, which are located in the corners of the floor plan. A primary corridor extends around the full perimeter of the building between the office/lab pavilions and the glazed curtain wall of the building exterior.

The primary entrance is located at the center of the north elevation, offering access to the main entrance lobby, which is located along the central north-south axis of the cruciform atrium. The entrance lobby features a reception area/sunken conversation pit with seating along the perimeter and a reception desk at the center. The reception area progresses to the center of the building, where the north-south axis of the atrium intersects with the east-west axis of the atrium. The cruciform atrium extends the full depth of the building from the front (north) elevation to the rear (south) elevation, and the full length of the building from the east to the west ends of the structure. The north-south axis is shorter than the east-west axis. All features along these two axes are symmetrically arranged, although some finishes have been asymmetrically altered in areas. The southern end of north-south atrium axis features a granite double-return stair to the 1st floor below.

The east-west axis of the atrium is also symmetrically arranged and features the two stair/elevator towers, which are clad in bush-hammered concrete with uninterrupted walls facing east and west. A fountain with a curvilinear concrete base is located at each end of this axis. The east and west elevations feature paired curved glazed elevators that were inserted in the third phase of construction (1982-85).

The atrium features a porcelain tile floor that was recently installed to closely match the original slate floor that was in poor condition. Two rectangular segments flanking the intersection of the cruciform are tiled in a pattern evoking the image of *Upward*, a painting by Josef Albers, who was a contemporary of Saarinen. The design is executed in black, white, and grey porcelain tiles.

The primary perimeter corridor fully encircles the building footprint at the 2nd floor. It extends the full 1,000-foot length and 360-foot width of the building, separating the four pavilions from the curtain-glass wall at the exterior. Finishes in the primary corridor include carpet and vinyl-tile floors and egg-crate light fixtures within aluminum frames set into the concrete ceiling. Windows in various sizes and configurations have been inserted in the office walls facing the corridors in many areas.

The four office/lab pavilions of the 2nd floor are similar in plan, but configurations and conditions vary. This flexibility in plan was integral to the design of the building, since it allowed for the greatest flexibility for changing space needs for the building's occupants. Secondary corridors, which contain the bathrooms, extend north-south in each pavilion of the building, linking the atrium to the primary corridor at the perimeter of the building. Narrower tertiary hallways also extend north-south within the office pavilions and are constructed of metal partitioning that was assembled and disassembled, creating new configurations throughout the history of the building. Existing metal panels walls in the 1960s sections of the atrium are hollow-metal, whereas the 1985 metal paneling was installed on gypsum wall board.

Within the pavilions, the offices are open in floor plan with some areas containing partitioned offices. The floor plans of the office floors vary, as was the intended design, and renovations occurred continuously throughout the building's history. Typical renovations included the installation of new carpet, ceilings, and partitions and the insertion of windows in corridors and within the offices.

Finishes in the four office/lab pavilions of the 2nd floor include: tile, carpet, and floors; gypsum-board and metal-panel walls; and suspended-tile ceilings. Offices typically contain single-leaf hollow-core steel doors set within metal and gypsum-board partitions, with some offices retaining metal bookshelf built-in units. Partitions were installed throughout the history of the building to meet the needs of the occupants. Windows were added in various sizes and configurations in the office demising walls. The renovated offices in the northeast pavilion feature new demising walls and finishes that include: laminate, tile, and carpet floors; gypsum board walls; and gypsum board ceilings. Bathrooms throughout the 2nd floor feature modern finishes that include tile floors and walls and suspended tile ceilings.

Finishes in the secondary corridors and tertiary hallways include: carpet or vinyl-tile floors and egg-crate light fixtures within aluminum frames set into the concrete ceilings. Windows in a variety of sizes and configurations have been inserted in the office walls facing the secondary and tertiary corridors.

3rd through 6th Floors

From the outer edge of the building in, the 3rd through 6th floors consist of the primary perimeter corridor around the full footprint of each floor; four office/lab pavilions; balcony corridors around the inner perimeter of each floor; two elevator/stair towers; and the skybridges that connect the pavilions and stair/elevator towers across the atrium, which is open to the 2nd floor below. The overall configuration of each floor is symmetrical. Circulation on each floor consists of: the primary corridor around the full perimeter of each floor; balcony corridors encircling the inner perimeter of each floor; secondary cross-corridors through each pavilion, which open into the bathrooms; and narrower tertiary cross-corridors through each pavilion, which open into offices.

As on the 2nd floor, the primary perimeter corridor fully encircles the building footprint at the 2nd floor. It extends the full 1,000-foot length and 360-foot width of the building, separating the four pavilions from the curtain-glass wall at the exterior. The corridor features a metal railing attached to the glazed curtain wall. Finishes in the primary corridor include carpet and vinyl-tile floors and egg-crate light fixtures within aluminum frames set into the concrete ceilings. Windows in various sizes and configurations have been inserted in the office walls facing the corridors in many areas.

The four office/lab pavilions of the 3rd through 6th floors are similar in plan, but configurations vary, as was the original design intent. Some offices are open in plan; others are partitioned. Partitions were installed over the course of the building's history, reflecting the changing needs of the occupants. Metal partition walls in the sections dating to 1960 are taller with tall transoms, whereas the 1985 metal partitions are shorter and have shorter transoms. Windows of various sizes and configurations were inserted in the interior office walls and along the outer office walls facing the primary perimeter corridor. The individual offices typically contain single-leaf hollow-core steel doors set within metal and drywall partitions, with some offices retaining metal bookshelf built-in units.

In the southeast corner of the southeast pavilion's 6th floor, an executive suite of offices is located in the portion of the building. The suite was added after the building's period of significance (ending in 1985) and therefore is not central to the interpretation of the building. Finishes include wood plywood and laminate paneling, acoustic wall panels, suspended acoustic tile ceilings, and carpet. The configuration of the offices is not original, as evidenced by the concrete perimeter corridor ceiling with the anodized aluminum frames of the egg crate light fixtures, which remains above the suspended ceiling.

Finishes in the four office/lab pavilions of the 3rd through 6th floors include: vinyl tile and carpet floors; gypsum-board and metal-panel walls, and suspended tile ceilings. Typical doors in the office/lab pavilions are hollow metal doors with varying aluminum hardware. The executive office suite in the southeast corner of the 6th floor contains restrained finishes typical of office finishes of the period. Finishes include carpet floors, drywall walls, and suspended ceilings. A conference room within the suite contains carpet floors, gypsum-board and veneer-paneled walls, and acoustic tile ceilings with suspended fluorescent light fixtures. Bathroom finishes on each floor are modern and include tile floors and walls and suspended tile ceilings.

At each floor, the secondary corridors and tertiary hallways feature finishes that include carpet or vinyl tile floors and egg-crate light fixtures. The balcony corridors and skybridges feature carpet or vinyl-tile floors, metal railings with glass panels below, and egg-crate ceilings within aluminum frames set within concrete ceilings.

1st Floor

The 1st floor spans the full footprint of the building and is partially below grade. It is not accessible from the front (north) elevation, but the rear (south) elevation features two exterior pedestrian entrances. In addition, two vehicular openings on the north and south elevations lead to driveways that cross through the building at the 1st floor. These driveways originally flanked the building during its two 1960s phases of construction; when the additions were constructed in the 1980s, however, the driveways were incorporated into the 1st floor as the building was extended to the east and west.

The 1st floor is located beneath the atrium, and is therefore the only floor not organized with the atrium/office pavilion floor plan. Instead, its primary functions are organized along the shorter north-south axis (including the prominent double-return stair to the 2nd floor atrium above), while the secondary functions and service areas are located along the longer east-west axis, opening off of two parallel corridors that extend the full length of the building. Beyond the central north-south core of the floor, the 1st floor's features and finishes are utilitarian in character, reflecting the floor's use.

From the front of the building to the rear, the north-south axis includes various offices and lab areas, an auditorium, the stair to the 2nd floor, a lounge with banquette seating, and the former staff cafeteria dining room, which projects from the rear (south) elevation of the building. The east-west axis features a large kitchen (with cafeteria-style food service counters), labs and offices, storage rooms, and parking areas.

Finishes throughout the 1st floor vary and have been altered in renovation campaigns in some areas. The lobby at the bottom of the stairs features granite floors and walls and suspended-tile ceilings. This lobby immediately transitions to more utilitarian corridors, which feature concrete floors and walls and suspended-tile ceilings.

The auditorium features concrete floors, carpeted steps, and a wood stage. The auditorium is functional (for education and lecture purposes) rather than decorative, and there is no proscenium on the stage. The seats feature metal frames and upholstered cushions. The ceiling consists of exposed concrete beams and acoustic panel baffles, with exposed mechanicals.

The lounge features carpet and ceramic tile floors, gypsum board walls, and suspended tile ceilings with soffits at the perimeter. The walls include colored decorative acrylic wall panels. The lounge was renovated in the 2000s and all features and finishes date to that renovation.

Finishes in the cafeteria dining room include: tile floors and exposed concrete columns. The room projects from the rear elevation of the building. As a result, the demising wall between the dining room and the rest of the 1st floor is gypsum board, while the remaining three walls feature floor-to-ceiling glass panels set within steel frames. The ceiling is exposed concrete with modern suspended acoustic-tile baffles that survive in poor condition.

Kitchen finishes are modern and include ceramic tile floors and walls and metal panel ceilings. Finishes in the 1st floor labs and offices include: carpet, tile, or concrete floors; gypsum board or concrete block walls; and suspended tile ceilings. The remaining portions of the 1st floor, including service corridors, mechanical rooms and the parking areas, are utilitarian, with finishes that include: concrete or tile floors; painted gypsum board or concrete block walls; and concrete or suspended tile ceilings. The kitchen was also renovated in the 2000s and all features and finishes date to that renovation.

Vertical Access
Vertical access in the building consists of 12 passenger elevators, five freight elevators, and 14 stairwells. In addition, there is one communicating stair between the 1st and 2nd floors.

Eight of the elevators are arranged in groups of four in each of the two main stair/elevator towers. These elevators feature modern equipment and cabs. Finishes in the elevator lobbies at each floor largely reflect upgrades in recent decades and include carpet or vinyl tile floors; ceramic tile or paneled tile walls; and suspended tile ceilings. The remaining four passenger elevators are paired at the east and west ends of the building, in the areas that were added during the 1980s construction on the building. These elevators are curved and feature glazed cabs and modern equipment. The freight elevators feature modern equipment and cabs.

Ten of the stairs date to the two 1960s phases of construction; the remaining four stairs are located near the west and east ends of the building, in the additions that were constructed in the 1980s. The 1960s stairs consist of terrazzo treads, metal risers and railings, concrete block walls, and plaster ceilings with egg-crate light fixtures. The 1980s stairs feature poured terrazzo treads and risers, steel carriage, and painted metal pipe railings. The communicating stair between the 1st and 2nd floor in the atrium features granite treads and risers and a metal railing with glass panels below.

Alterations: Bell Laboratories-Holmdel has integrity as a Modern Movement commercial building. On the exterior, the building retains the massing and minimalism characteristic of the Modern Movement style and Saarinen's work. On the interior, the building retains its distinctive volume, circulation patterns, and hierarchy of spaces. The additions to the building's east and west ends, which were constructed in the 1980s, maintained the characteristics and treatment of Saarinen's original design and were overseen by Saarinen's partners, Kevin Roche and John Dinkeloo. The building's alterations were primarily implemented during Bell Laboratories' (later, Alcatel-Lucent's) four decades of use at the site, with some additional alterations in the years since the company sold the property.

The atrium retains its original massing, volume and spatial organization. Interior alterations are concentrated in the four office/lab pavilions at each floor and reflect changes in floor plan within each of the pavilions, in keeping with the intentional flexibility of the design. In addition, some alterations have changed the perimeter walls of the office/lab pavilions at each floor. These alterations include: removal of some demising walls; relocation of doors; insertion of windows (along the perimeter and inner corridors); and the insertion of modern offices in varying locations. The bathrooms, 1st floor service areas, and stair/elevator towers have received typical finish and fixture upgrades to meet the evolving needs of the building's occupants.

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- [ ] A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] B Property is associated with the lives of persons significant in our past.
- [x] C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [ ] D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

Property is:

- [ ] A Owned by a religious institution or used for religious purposes.
- [ ] B removed from its original location.
- [ ] C a birthplace or grave.
- [ ] D a cemetery.
- [ ] E a reconstructed building, object, or structure.
- [ ] F a commemorative property.
- [x] G less than 50 years old or achieving significance within the past 50 years.

Areas of Significance
(Enter categories from instructions.)

ARCHITECTURE
LANDSCAPE ARCHITECTURE

Period of Significance

1959-1985

Significant Dates

1962
1966
1985

Significant Person
(Complete only if Criterion B is marked above.)

Cultural Affiliation

N/A

Architect/Builder

SAARINEN, EERO (Architect)
DINKELOO, JOHN "
ROCHE, KEVIN "
SASAKI, HIDEO (LANDSCAPE ARCHITECT)

Statement of Significance Summary Paragraph (In *one* paragraph, provide a summary that briefly states what the significance of the property/district is, and, for each claim, identifies the level of significance and applicable criteria that apply. The summary paragraph also needs to identify the period of significance.)

Designed by Eero Saarinen and Associates and constructed between 1959-1966, with additions built between 1982-1985, Bell Laboratories-Holmdel strongly meets National Register Criterion C in the area of Architecture as the work of a nationally important architect and an intact example of a Modern Movement suburban corporate campus. Bell Laboratories-Holmdel marks a deliberate shift toward a modernist design befitting the modern research housed within. The site, designed by landscape architect Hideo Sasaki of Sasaki, Walker and Associates in partnership with Eero Saarinen and Associates, is also characteristic of the mid-century move toward suburban landscaped campuses for corporate headquarters and research sites, and is a significant landscape. From 1962 to 2007, the building functioned as a major research and development facility for Bell Laboratories and its successor Alcatel-Lucent. The period of significance begins in 1959, when the first phase of construction began, and extends through 1985. The building meets Criteria Consideration G, with exceptional importance in the area of Architecture for its modern design as a paramount embodiment of a mid-century corporate office and research facility. Furthermore, between 1982 and 1985, Saarinen's partners Kevin Roche and John Dinkeloo oversaw the design and construction of additions to the building's east and west ends, which maintain the configuration, volume, massing, circulation pattern, and material palette of the original building.

The building is of statewide significance as one of the most prestigious buildings in New Jersey in the Modern era, as a major commission by Eero Saarinen, a prominent, internationally-acclaimed Modernist architect, and as an outstanding example of a suburban corporate research campus found within a state that was awash in such places. The landscape, designed by Hideo Sasaki, of Sasaki, Walker and Associates, who designed several suburban corporate campuses in New Jersey, is likewise outstanding among New Jersey's corporate campuses, and of statewide significance in landscape architecture under Criterion C.

Period of Significance (Briefly justify the period of significance identified above.)

The period of significance (1959-1985) is the construction of the building from groundbreaking (1959) to completion (1985, by Kevin Roche and John Dinkeloo). These years encompass the three phases of the building's construction.

Criteria Considerations (Briefly explain how the property meets any Criteria Considerations that apply.)

Criteria Consideration G

Bell Labs-Holmdel is an important example of Modernist architecture and the work of an important architect (Eero Saarinen). Although its third phase of construction was completed well within the last fifty years, it was construction that extended but did not depart from the exceptionally important design of the first and second phases, the latter of which was completed in 1966 (at the time of this writing 49 years ago). Further, even though the third construction phase was completed still within the heyday of the corporate research campus, enough scholarship has been accomplished regarding such properties that adequate historical perspective has been achieved. Bell Labs-Holmdel thus meets National Register Criteria Consideration G. for its exceptional importance as a mid-century office, and research and development facility.

Developmental history (Explain the construction history or the creation of the property, and its evolution through the period of significance.)

Bell Laboratories' principal facility at Murray Hill, New Jersey, designed in 1941 by Voorhees, Walker, Foley and Smith Architects, had been criticized for its conservative Colonial Revival design that conflicted with its modern use and mission. To avoid a repetition of that concern, in 1957 Bell Laboratories commissioned Eero Saarinen and Associates to design a new building for the site at Holmdel in order to address overcrowding at Murray Hill and its other New Jersey facilities. Saarinen was celebrated by this time for his sleek designs and suburban corporate complexes for clients such as General Motors, IBM, and John Deere.

The Holmdel building was constructed in three phases. Although Saarinen died during the first phase of construction, phases 1 and 2 of the site were built according to his original design; the third phase was overseen by his partners, Kevin Roche and John Dinkeloo. The first phase (1959-1962) included the construction of the northwest and northeast pavilions together with the east and west stair/elevator towers. Together, the pavilions were fully sheathed in paneled glass, which was removed on the south elevation when the second phase of construction (1964-1966) began. This second phase comprised the southwest and southeast pavilions and the cruciform atrium that separated all four of the pavilions. The third phase (completed in 1985) expanded the building to the east and west, extending the building by two bays at each end and enclosing the new additions with the same paneled-glass curtain-wall system employed in the original two phases of construction.

At one time, the building was Bell's largest facility, with more than 5,000 researchers and other staffers working at the site. Alterations to interior workspaces were routinely made to address changing spatial needs as the building's population surged and to accommodate changing project teams and their needs. Indeed, the building was designed to foster such changes. In recent decades, at the building's peak occupancy, the company relocated some services and employees to the atrium, where new offices were inserted within the volume of the space.[2] Bell Laboratories-Holmdel continued to function as a research and development facility for nearly four decades under Bell Laboratories, which eventually became AT&T, Lucent, and finally Alcatel-Lucent, formed twelve years after AT&T was broken up by federal anti-trust legislation. By the 2000s, this much smaller subsidiary of AT&T found it economically infeasible to operate the site. Average maintenance costs for the building were over 10 times their average in the 1960s due to rising costs of gas, oil, and electricity.[3] To alleviate the costs, AT&T leased out space to tenants, who were often competing R&D companies. The presence of competing companies led to security concerns, while also altering the dynamic of the building itself: the cafeteria, once used for collaboration and discussion, was silenced.[4] Security issues and increasing costs combined with the 1990s market pinch and 2000 telecom bust resulted in Alcatel-Lucent downsizing its physical sciences research staff, including those at Bell Laboratories-Holmdel, who were relocated to Murray Hill and Whippany, NJ. In 2007, the company left the facility and attempted to sell the property. As national coverage from *The New York Times,* the *Wall Street Journal*, and other publications have noted, the building presents significant redevelopment challenges and has faced demolition several times.[5] The building has remained largely vacant for the past nine years.

Narrative Statement of Significance (Demonstrate each of the claims for significance made in the summary paragraph.)

Bell Laboratories-Holmdel is significant under Criterion C in the area of Architecture as the work of internationally-renowned architect Eero Saarinen and an intact example of the Modern Movement style of

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[2] Michael Calafati, et. al, "The Bell Labs Charrette: A Sustainable Future," 17.
[3] Karen H. Kaplan "Former Bell Labs research building faces wrecking ball." *Physics Today* (August 2006): 25
[4] Personal interview with Dr. Anthony Tyson, 2-12-15
[5] David W. Dunlap, "The Office as Architectural Touchstone," *The New York Times* (March 2, 2008): LII.
Anton Troianovski, "Reinventing Old Site of Bell Labs is Tricky," *Wall Street Journal* (May 16, 2010), ProQuest Online Newspapers.

architecture. The building represents Saarinen's evolving design approach to suburban corporate campuses, and the keyhole-design landscape—designed by Sasaki, Walker and Associates in partnership with Eero Saarinen and Associates—reinforces the minimalist geometry of the Modern Movement design.

Eero Saarinen (1910-1961)

Eero Saarinen was born on August 20, 1910, . Eero was born in Hvittrask, Finland, where his father, Eliel Saarinen, a world-famous architect in his own right, practiced. In 1923, the family immigrated to the United States and Eliel garnered international acclaim for his competition entry for the Tribune Tower in Chicago, even though the competition was ultimately awarded to another firm. Two years later, he was invited to design the campus of the Cranbrook Educational Community in Bloomfield Hills, Michigan, an arts-based academy where Eero was later educated.

Eero went on to study at the *Académie de la Grande Chaumière* in Paris and the Yale School of Architecture, where he earned a fine arts degree in 1934. He was part of a team of designers—including his father—who won the competition for the Smithsonian Institute Gallery of Art in 1939, and both Saarinens designed the Crow Island School (1938-42) in Winnetka, Illinois. Eero also frequently collaborated with friend Charles Eames (another Cranbrook graduate), including the design for Case Study House #9 (1945-9) in Los Angeles and a furniture design competition sponsored by the Museum of Modern Art that they won in 1941.[6]

Eero Saarinen's first major solo commission came in 1948, when he beat out his father and other architects to win the competition for the Jefferson National Expansion Memorial in St. Louis, Missouri. Although the stainless-steel Gateway Arch was not completed until 1964, it was high-profile enough to launch Eero into a partnership in his father's firm, Saarinen, Swanson and Associates, which he took over and renamed Eero Saarinen and Associates after his father's death in 1950. Subsequent acclaimed projects included Kresge Chapel and Auditorium at the Massachusetts Institute of Technology (1950-5), the American Embassy in Oslo (1955-9), and the TWA Terminal in New York City (1956-62).

In the years before Eliel's death, both father and son worked on the General Motors Technical Center (1948-56) in Warren, Michigan, which garnered much attention and earned them several other commissions for corporate headquarters. Projects for IBM (1956-8) and John Deere (1958-1964) followed, both of which involved large rationalist-design buildings (in the architectural tradition of Ludwig Mies van der Rohe) set within a broader landscape in a rural or suburban context. These projects, coupled with their experience in campus projects, including Brandeis University, Drake University and the University of Chicago, earned Eero Saarinen the commission in 1959 for the Bell Laboratories' new project in Holmdel, New Jersey.[7]

Eero Saarinen practiced architecture until his premature death (during surgery for a brain tumor) in 1961. Because his death was sudden, a number of his most famous projects were completed after his death under the supervision of his partners, including Kevin Roche and John Dinkeloo. These later works include the Gateway Arch, Dulles International Airport (1958-63), the CBS Building (1960-5), and Bell Laboratories-Holmdel. Saarinen was posthumously awarded the American Institute of Architects' Gold Medal in 1962.

Bell Laboratories-Holmdel as the Work of a Significant Architect

The Bell Laboratories-Holmdel building was designed in deliberate contrast to the company's earlier facility at Murray Hill, New Jersey. That building, designed in the late 1930s by the architectural firm of Voorhees,

[6] "Eero Saarinen, 51, Architect, is Dead," *New York Times* (September 2, 1961): 15.
[7] Ibid.

Walker, Foley and Smith Architects, was groundbreaking in its own right, but primarily for its interior configuration of the H-shaped plan. The Murray Hill building brought together thousands of pioneering Bell Labs scientists under one roof, but the building itself was comparatively conservative. Its Colonial Revival design employed brick walls and staid gable rooflines, applying the style and features of a manor home to a massive commercial building. Architectural critics often criticized Murray Hill for its hesitantly traditionalist design, which contrasted with the ground-breaking corporate image that Bell Laboratories hoped to assert.[8]

Murray Hill was also limiting in its performance as a research facility. In 1955 the Vice President of Bell Laboratories formed a committee to develop criteria for a new laboratory facility and recommend an architect. The committee, composed of scientists at Bell Labs, identified several areas where Murray Hill was not conducive to research and experimentation.[9] Researchers and scientists needed customizable, modular space in which to conduct experiments, which Murray Hill provided to a point, although removing walls and reconfiguring spaces was difficult and time consuming, taking up to several weeks to reconfigure.[10] Additionally, the interior layout of Murray Hill was not ideal for research, as all traffic through the research area had to pass by every laboratory and office, causing noise and distractions. Common facilities such as the library and cafeteria were not centrally located in Murray Hill, which resulted in long walks through the building to get materials or food. Adequate air conditioning was not provided at Murray Hill, and a piece-meal addition of units would have been extremely costly. Changing technology was requiring an increase in air-conditioned labs in order for research to be conducted correctly. The committee also identified a desire for a well-designed site containing a nearby parking lot, while avoiding a view of a "sea of cars" from inside the building.[11] With these criteria in mind, the committee unanimously chose Eero Saarinen to design a new facility.

In making its choice, Bell Laboratories deliberately departed from this earlier architectural language, choosing instead an architect known for inventive work of his own that also met the needs of researchers and scientists. The late 1950s and early 1960s in postwar America marked an era of popular interest in scientific discovery, and private corporations increasingly hired researchers away from academic institutions in pursuit of the company's own commercial breakthroughs. For its facility at Holmdel, Bell Laboratories hoped to woo the best of these employees with a commodity of its own: a hub of commercial, technological, and scientific activity and innovation all under one impressively-conceived roof.[12] By employing an architect of Saarinen's caliber to design a complex in Modernist terms, the company looked to surpass its Murray Hill complex and construct a modern corporate building befitting its modern corporate image while simultaneously nurturing a research-based environment.[13]

The Bell Laboratories-Holmdel project represents several characteristics of Eero Saarinen's later works, including his use of innovative new materials in a rationalist design, set within a larger landscape context. The building is significant for its exterior curtain-wall technology and its interior configuration of four pavilions (known as Building 1, Building 2, etc.) separated by a cruciform atrium and encircled by a perimeter corridor. His design is essentially an extrapolation from the cubicle as a modular unit, with a reverse hierarchy of space progressing from offices to laboratories and finally common spaces, emphasizing the collaborative nature of the work housed within the building. All of these spaces were intentionally designed to be flexible, adaptable, and

[8] Knowles and Leslie, "Industrial Versailles," 19-20.
[9] H.J. Wallis, "The Holmdel Laboratories," *Bell Labs Record* (October 1962): 317.
[10] Personal interview with Dr. Anthony Tyson, 2-12-2015.
[11] H.J. Wallis, "The Holmdel Laboratories," 318
[12] Miller, "Eero Saarinen on the Frontier of the Future," 125—6.
[13] Knowles and Leslie, "Industrial Versailles," 24.

changeable, given the inevitably evolving nature of research and development. Dr. Anthony Tyson, an astrophysicist who worked at Bell Labs for over thirty years (1970-2), described the building as a "nurturing environment" and stated that "it was critical to our success that [Bell Labs] was built so that the offices and labs could be instantly reconfigured. Within a day, the size could be changed. That kind of flexibility is important if you want to remain ahead of the curve."[14] The Murray Hill laboratory also featured modular, reconfigurable spaces, but reconfiguration required the lab to shut down for several weeks.[15] Collaboration tended to occur in the building's cafeteria, where researchers would meet to discuss current projects and discuss solutions to problems.[16]

The building itself reflects the iterative, flexible development process fostered within its laboratories. It was constructed in two original phases, with a third phase added 20 years later to address overcrowding issues. All three phases of building construction were overseen by Saarinen or his partners, and all three hewed to the original Saarinen scheme of massing, proportion, circulation patterns, exterior geometry and material palette, and interior volumes.

Even the exterior's fenestrated skin was altered over time as the design was refined and expanded. The glass that sheathes the building, which deflects 70 percent of the sun's heat, was originally concentrated on the building's south (rear) elevation after the first phase of construction. The remainder of the building was wrapped with gray-tinted transparent glass. When the second phase of construction bumped out the back of the building and replaced the original south elevation, the building was re-skinned with reflective glass on all four elevations.[17] Saarinen's partner, John Dinkeloo, was responsible for technical development for the architecture firm, and his innovations for the exterior of the Bell Laboratories-Holmdel building reinforced the inventive, evolving work within the building.

Bell Laboratories and the Emergence of Corporate Campus Design[18]
Bell Laboratories-Holmdel is also significant as one of Saarinen's four influential suburban corporate campuses (along with General Motors Technical Center in Warren, Michigan (commissioned in 1948, NR 2000, NHL, 2014), IBM Thomas J. Watson Research Center in Yorktown Heights, New York (commissioned in 1957), and John Deere World Headquarters in Moline, Wisconsin (commissioned in 1957)) that contributed to the design standard for the auto-centric, post-World War II suburban office and research campus. This type of site-planning was a paradigm shift in the development of American business facilities.

Suburban factories constructed during the two decades prior to World War II essentially set the precedent for the layout and design of post-WWII corporate campuses. After 1920, factories were almost exclusively located in suburban and rural areas because they required buildings with sizable footprints. These factories often took the form of modular, low-rise sheds paired with one or two administration buildings, set within a large expanse of lawn and trees.[19] The design of post-WWII suburban corporate campuses reiterates that of pre-war factory predecessors: site plans accommodated sizable, modular buildings which were then surrounded by a large swath of land with a programmed landscape that integrated access roads and walking paths into its design. Setting

[14] Personal interview with Dr. Anthony Tyson. 2-12-15.
[15] H.J. Wallis, "The Holmdel Laboratories," 318.
[16] Personal interview with Dr. Anthony Tyson. 2-12-15.
[17] "The Biggest Mirror Ever," *The Architectural Forum* (April 1967): 37.
[18] The term "Corporate" is used to describe these campuses (rather than "Research") because large corporations, such as Bell, had a large number of scientists as employees. These "corporate scientists" performed the research and experimentation necessary for the corporation to introduce new innovations and trounce competition by attracting consumers. (Mozingo, "Pastoral Capitalism," 45.)
[19] Louise A. Mozingo, *Pastoral Capitalism: A History of Suburban Corporate Landscapes* (Boston: MIT Press, 2011): 32

these campuses apart from pre-War factories were the utilities, which were often moved underground in order to maintain a more pastoral environment.

Four projects significantly contributed to the establishment of the suburban corporate campus as the new paradigm in corporate development: Bell Laboratories-Murray Hill, General Electric Electronics Park, Johns-Manville Research Center, and General Motors Technical Center.

Bell Laboratories in Murray Hill, New Jersey, which opened in 1942, was declared by *Fortune* in 1958 as "the model for research campuses that have sprung up all over the U.S. in the last dozen years."[20] The campus occupied a twenty acre site outside Summit, New Jersey, and contained interconnected lab buildings with modular interior spaces, surrounded by a pastoral landscape designed by the renowned Olmsted Brothers. The campus was placed in a serene, secluded location to meet the scientists' needs for quiet research space as well as up-to-date laboratory infrastructure.[21] The campus contained modern, unadorned, interconnected laboratory buildings, situated so that all offices had a view of the surrounding greenery. The entry drive to the campus was lined by a grove of trees, and various plantings around the site provided areas of focus. Utilities ran underground, enhancing the natural setting. In the *Journal for Applied Physics*, a Bell scientist celebrated the surrounding "open country" and emphasized the necessity of a "quiet country location" for optimal research.[22] Scientists at Murray Hill invented, among other things, the transistor and the mathematical bit unit, and "fundamentally revolutionized electronic technology and, arguable, human existence."[23] By 1948, the plethora of discoveries made at Bell Labs sealed the interlinked reputations of its scientists and its site, making a strong case for the suburban corporate campus.

General Electric Electronics Park in Syracuse, NY and the Johns-Manville Research Center in Manville, NJ, constructed in 1948, "advanced the idea of the corporate campus as a management instrument and refined the fundamental characteristics of the corporate campus site plan."[24] Both sites successfully combined production and research facilities on former agricultural land, employing a pastoral landscape conducive to creativity and collaboration. GE Electronics Park contained three factory buildings centered on a large, oval open space with a cafeteria in the middle. A looping drive connected all the buildings, and the landscape of gently sloping expanses and underground utilities. At the corner of the site, a lake, formed by a dammed spring, offered a serene place for walks.[25] The entire site was designed to be modular and easily expanded. This element was tested in 1951, when the television market boomed, and GE easily tripled the size of laboratory space at the site by constructing additions on the rear elevations of two production buildings. "The nimble scheme easily accommodated complicated infrastructure and large building additions without the loss of ambience."[26] Similarly, the Johns-Manville Research Center contained research buildings surrounding a central open space with parking and driveways distributed around the periphery of the 93-acre site. Like Bell Labs-Murray Hill, the laboratories featured modular, movable walls.

Lastly, the iconic 1956 General Motors Technical Center in Warren, Michigan, also designed by Saarinen (who worked alongside his father, Eliel), allowed the corporate campus to become "a symbolic cornerstone of corporate America." After GM, the corporate campus became the favored site for the highest levels of

[20] Ibid.: 46
[21] Ibid.: 54
[22] Franklin L. Hunt, "New Buildings of Bell Telephone Laboratories," *Journal of Applied Physics* 14 (June 1943): 250
[23] Mozingo, *Pastoral Capitalism*, 61
[24] Mozingo, *Pastoral Capitalism:* 61
[25] Ibid.: 66
[26] Ibid.: 67

industrial science and research. Foreshadowing his design for Bell Labs-Holmdel, Saarinen employed sleek Modernist, modular buildings set within a carefully designed, restrained landscape immediately surrounding the site, with an unprogrammed, forested area encircling it. Upon its completion, *Architectural Forum* lauded the site as "a historic symbol of today's industrial progress, also of tomorrow's ambition."[27] The campus consists of five complexes of buildings surrounding a 22-acre central pool with a wall of fountains. The surrounding landscape consisted of linear bisques, low evergreen plantings, rectangles of grassy lawns, and a thick perimeter forest. The entire site took on a strong rectangular, form.[28] Upon its completion, the Technical Center received a massive amount of press and praise. *Architectural Forum* dubbed it "GM's Industrial Versailles." Over 5,000 leaders from industry, science, engineering, and the military attended grand opening ceremonies in May of 1956, and closed-circuit televisions broadcasted the footage of the ceremonies to sixty-two other locations for 25,000 participants across the U.S. and Canada.[29]

Saarinen's success with the General Motors Technical Center made him a sought-after designer for corporate campuses. In 1957 he began designs for three other campuses in his canon: IBM Thomas J. Watson Research Center in Yorktown Heights, New York (completed in 1961); Bell Laboratories-Holmdel (the first phase completed in 1962); and the John Deere World Headquarters in Moline, Wisconsin (completed in 1963).

For Bell Laboratories-Holmdel, Saarinen extracted from his design for GM the same Modernist principles of "modularity, horizontality, rectilinearity, and orthogonality" to unify the building with the surrounding landscape.[30] Like the GM Technical Center, Bell Labs-Holmdel employed a Modern building featuring large spans of glass, surrounded by a programmed landscape employing multiple perimeter roads and paths, bodies of water as focal points, trees arranged in contrasting allées and clusters, and a sculptural water tower designed by Saarinen. The two sites can also be closely compared based on how they were used by researchers. Both the Bell Labs-Holmdel site and the GM Technical Center contain buildings designed to be flexible and modular, allowing researchers to quickly expand a lab to suit their immediate needs. The landscape also contributing to this effort to provide ample space in which researchers could work by functioning as a contemplative, inspiring place in which to nurture new ideas or ponder solutions for current problems.

Like Bell Laboratories-Holmdel, IBM's Watson Research Center was a departure from the previously established practice of using multiple, interconnected buildings as part of the campus design and instead placing a large, single building of architectural merit within a very large site. The IBM Center is, like Bell Laboratories-Holmdel, sheathed in glass, and stands among a landscape of lawn, trees, and water (the landscape was also designed by Sasaki, Walker and Associates). Grand drives curve and sweep through the broad landscape and culminate in large parking lots. Also like Bell Laboratories-Holmdel, the labs and offices in the IBM building had limited windows, glass exterior walls providing generous views of the surrounding landscape.

Lastly, the John Deere World Headquarters in Moline, Wisconsin, completed after the first Bell Labs-Holmdel building campaign, is a dramatic departure from pre-1960 corporate campus design. "Serving as the exemplar for all subsequent corporate estates, it brought together landscape, site plan, and architecture into an elegant and commanding solution."[31] Sited on acreage with expansive views over the Rock River valley, the 720-acre site contained two interconnected buildings straddling a ravine running through the property. Like the earlier

27 Ibid.: 79
28 Ibid.: 78
29 Ibid.: 81
30 "General Motors Technical Center," National Historic Landmark Nomination, 5
31 Mozingo, *Pastoral Capitalism*, 119

corporate campuses, Saarinen took into account the opportunity for further expansion of the buildings, which received an addition after his death. Saarinen trussed the buildings in industrial Cor-Ten steel, which he would later use in the atrium of Bell Labs-Holmdel, a material that rusted to a protective, deep finish. Inspired by the history of Deere & Company, Saarinen explained, "Farm machinery is not slick, shiny metal but forged iron and steel in big, forceful functional shapes. The proper character for the headquarters' architecture should likewise not be a slick, precise glittering glass and spindly metal building, but a building which is bold and direct, using metal in a strong, basic way."[32] Like at Bell Labs and IBM, Saarinen engaged Hideo Sasaki to design the landscape at the Deere Headquarters. Rather than programming a geometric, formal landscape, Sasaki created a more intimate one, placing clusters of plantings up against the buildings, as if they were dropped into an existing forest. Sasaki designed the water feature to be split into two sections, the upper of which was manicured, edged in gravel, forming a straight edge against the main building. The lower portion of the pond was larger and served as the air-conditioning system and included grids of spray fountains.[33]

These campuses mimicked the landscape of American universities in order to "attract scientists from academic, and clothe the corporation in high-minded institutional garb" by offering peaceful locations that could enable productive research. Indeed, a scientist at Bell Labs (Murray Hill) asserted that the new "quiet country location" of Bell Labs-Holmdel optimized scientific research.[34] Constructing campus buildings in the sleek Modernist style further accentuated the importance of the surrounding landscape. Like Bell Labs-Holmdel, Saarinen's other corporate campuses contained buildings with large expanses of glass, so that the landscapes can be viewed when indoors. Viewing a surrounding landscape was thought to provide an atmosphere of freedom, which, in turn, encouraged and stimulated scholarship and scientific discovery among researchers on the campuses. Campuses such as Bell Labs (both the Murray Hill campus, and later Holmdel) went on to produce scientific discoveries that furthered the validation of placing them in suburban settings. The number of scientific advances at each of these campuses, and especially at Bell Labs-Holmdel, provided solid evidence of the relationship between functional, aesthetically-pleasing surroundings and the production of quality work. This concept went on to be applied to create the corporate live/work "estate" and the ever-present "office park" seen outside countless American metropolitan areas.

Bell Laboratories-Holmdel as the Work of a Significant Landscape Architect
Hideo Sasaki was an influential landscape architect who pioneered the modernization of landscape design. After attending the Harvard Graduate School of Design, Sasaki chaired the program from 1958-1968, while simultaneously establishing his own practice. In addition to designing two of Saarinen's corporate campuses, Bell Laboratories-Holmdel (1962) and John Deere World Headquarters (1964), his firm would grow to be enormously successful, designing large projects such as the master plan for Sea Pines Resort in Hilton Head, South Carolina, Pearl Street Mall in Boulder, Colorado (1977), and Euro Disneyland in Paris, France (1992). In 1971, Sasaki was the first person to receive the American Society of Landscape Architects Medal.[35]

Hideo Sasaki (1919-2000), Sasaki, Walker and Associates

Hideo Sasaki was born in Reedley, California on November 25, 1919, and grew up working on his parents' farm. He briefly attended University of California-Berkeley before being interned at the Poston War Relocation

[32] Eero Saarinen, *Eero Saarinen on His Work* (New Haven: Yale University Press, 1968): 77.
[33] Mozingo, *Pastoral Capitalism*, 126
[34] Franklin L. Hunt, "New Buildings of Bell Telephone Laboratories," *Journal of Applied Physics 14* (June, 1943): 251
[35] Anne Raver, "Hideo Sasaki, 80, Influential Landscape Architect, Dies," *New York Times* (September 25, 2000)

Center during World War II, due to his Japanese descent.[36] To escape internment, Sasaki volunteered to work on a farm in Colorado, where the governor welcomed any Japanese-Americans who had been evicted from California during the war.[37] After the war, Sasaki attended the University of Illinois and received a Bachelor of Fine Arts in landscape architecture, with highest honors, in 1946. He was then offered a scholarship to the Harvard Graduate School of Design (GSD) and received a Masters of Landscape Architecture (MLA) in 1948.[38]

Immediately upon graduating, Sasaki began working in the site-planning division at Skidmore, Owings, and Merrill (SOM) in New York City, but left shortly afterward when he was offered a teaching position at the University of Illinois in Champaign-Urbana, working during the summers at the Chicago office of SOM. His first publicized success came when he, together with James V. Edsall and Harry A. Morris entered a competition to design the national headquarters of the U.S. Junior Chamber of Commerce in Oklahoma. Their winning design was featured on the cover of *Progressive Architecture* in 1949.[39] After the project was constructed, Sasaki gained three more commissions in the city of Tulsa, including the master plan for the Tulsa Civic Center Development, with and the award-winning Meadowbrook Country Club, both with Donald H. Honn, architect.

Perhaps the most pivotal point in his career occurred in 1950, when he was invited to teach landscape architecture at the GSD, under Walter Chambers, the chair of the landscape architecture department, and Walter Gropius, the chair of the architecture department. During this time, Sasaki was involved in several collaborations with architects in Boston and New York, which he worked on out of his home in Watertown, Massachusetts at a time when land development and urban renewal were booming. From 1958 to 1968, Sasaki served as chair of the landscape architecture department of the GSD while simultaneously growing his own practice. Sasaki's studios at the GSD were collaborative, and were jointly undertaken by students of architecture, planning, and landscape architecture. By the age of forty, Sasaki had built a clientele base of leading architects, such as I.M. Pei, Pietro Bellushi, Josep Lluis Sert, and Eero Saarinen.

The work of Sasaki's office was diverse and sometimes divisive; much of it concentrated in institutional, corporate, or urban-renewal projects, nationally and internationally. Along with designing some of America's first corporate campuses, Sasaki's offices designed Copley Square in Boston, Constitution Plaza in Hartford, and Washington Square Village in Manhattan--projects which, at their inception, were criticized due to the neighborhoods that were demolished to make way for them.

Sasaki's approach was highly theoretical, and he contributed a large amount of scholarship to the academic study of landscape architecture. Highly critical of western garden design, Sasaki took inspiration from traditional Japanese garden design, which focused on natural elements as focal points of its design. In such gardens, the leading principle might be the contrast between geometrically ordered structures and the biomorphic qualities of natural materials. Sasaki embraced the "ideas of modular expressions, the 'flow' of space, the integration of indoors and outdoors, the use of inherent characteristics of materials" found in Japanese garden design for centuries prior to its acceptance in the U.S.[40] His appreciation and inspiration from Japanese garden design were also evident in his use of contrasting forms. In an essay published in *Landscape*

[36] Ibid.
[37] Melanie Simo, *The Offices of Hideo Sasaki: A Corporate History* (Berkeley: Spacemaker Press, 2001): 10
[38] Ibid. 8
[39] Ibid., 12
[40] Peter Walker and Melanie Simo, *Invisible Gardens: The Search for Modernism in the American Landscape*. (Boston: Massachusetts Institute of Technology: 1996) 200.

Architecture in 1957, he states, "Where the materials of post, beams, and panels [of the Japanese structure] have given rise to such geometric (rectangular) forms in architecture, the rocks, plants, earth and water have given rise to almost completely biomorphic forms….the two in combination [create] an integrated environment almost incomparable in their appropriateness."[41]

Similar to Olmsted's pastoral tradition, Sasaki designed landscapes that did not call attention to themselves, but rather served as tranquil, distinguished settings for modern architecture. Sasaki also provided functional needs for the buildings, such as air conditioning, through naturalistic elements- such as the reflecting pool at Bell Labs. These design choices illustrate the importance of aesthetic values to Sasaki, who said, "They may not be necessary for survival, but they are necessary for a full life."[42]

Sasaki was committed to the concept of collaboration, and one example of his strong ability to collaborate was with Saarinen for Bell Laboratories-Holmdel. Saarinen was also working with Sasaki on the landscape design for the John Deere headquarters, and previously, Sasaki worked with Eliel Saarinen, Eero's father, on the Crow Island School in Illinois (1939). With his knack for collaboration and extensive experience designing sites for modern buildings, Sasaki (with his partner, Peter Walker, a former student) was an obvious choice for Saarinen. Saarinen engaged Sasaki to complete his design for what he described as a "giant pavilion on the central axis of a parklike garden, comprising the driveways and a reflecting lagoon."[43] Sasaki's approach is reflective of his appreciation for traditional Japanese gardens. The central bodies of water, one of which takes on an amoebic, natural shape, exist in sharp contrast to the surrounding angles created by the building, the allées of trees, and periphery roads.

At the entrance to the site, the large, three-legged water tower was designed by Saarinen to mimic a transistor, one of Bell Labs' most significant scientific developments. As was inevitable in mid-century suburban America, Sasaki incorporated significant swaths of parking and driveways, catering to the site's commuting population and minimizing the cars' distance from the building.[44] Working closely with Saarinen, Sasaki designed the roadways to create a pleasing, peaceful approach to the building. Dr. Anthony Tyson, a researcher at the site for over thirty years (1969-2004), stated, "I looked forward to the drive to get to the building…it was like entering a nurturing atmosphere."[45] Creating a place of solitude that could nurture creative thoughts was precisely Sasaki's intention, which, again, he heavily derived from Japanese garden design.

The remainder of the landscape's central axis was oriented toward pedestrian, rather than vehicular, use. Where the interior of the building would hum with collaboration and activity, the formal landscape inscribed within the keyhole design would allow for peace, quiet, and escape for the building's users. Indeed, walking through the site during lunch breaks "was a tradition" among researchers.[46] The periphery of the site outside the allées of trees was left unprogrammed, but within the keyhole's driveways, the gardens, ponds, lagoon, and lawns of the site complemented the building's commercial and research use with a carefully designed, thoughtful landscape.

Modern Movement in Architecture

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41 Hideo Sasaki, unknown title, *Landscape Architecture* (January, 1957): 372.
42 Invisible gardens, conversation with Walker and Simo
43 Simo, *The Offices of Hideo Sasaki*, 34.
44 H. J. Wallis, "The Holmdel Laboratories," *Bell Laboratories Record* 40, no. 9 (October 1962): 318.
45 Personal interview with Anthony Tyson. 2-12-15.
46 Personal interview with Bill Brinkman. 2-08-15.

Commonly defined as the period between approximately 1920 and 1970, the Modern Movement was an era marked by scientific and technological advances (such as those at Bell Labs), an expanding economy, a rising standard of living, developing urban pressures, and a renewed awareness amongst architects of the social purpose of architecture. As a discipline, architecture remained rooted in the fundamental concerns of the interrelation of light, space, and texture, but architects of the Modern Movement adopted a new pragmatic approach to these design issues. The movement's buildings are characterized by straightforward expression, a newfound awareness of the environment, structural honesty, and functional integrity.

In the United States, the origins of the Modern Movement can be traced to the late nineteenth century and the development of what became known as the "Chicago school of architecture." During the 1880s, a number of high-rise buildings were erected in downtown Chicago. Each had an individual identity, but also a shared framework. The "Chicago school" refers both to a group of architects who were active in these reforms in Chicago in the late nineteenth century, promoting the incorporation of new technologies into commercial buildings, and to the buildings themselves. Among the distinguishing features of the Chicago School buildings were: steel-frame skeleton structures with masonry cladding; the development and dominance of the "Chicago window;" and the limited application of ornamentation. Chicago School-style skyscrapers generally assume a columnar organization, with the first story serving as a base, the middle stories forming the shaft, and the upper stories forming the capital, which was typically embellished and crowned by a projecting cornice. While the steel-frame skeleton allowed for the application of masonry elements in any style, Chicago School buildings most commonly incorporated two-dimensional exterior ornament free from association to previous styles. This liberation from historical imagery foreshadowed Modernism's dominant theme.

In Europe, parallel developments in the field of architecture evolved during this period, resulting in what became known as European Modernism. In the late 1890s, the impulse for new movements in architecture came initially from Otto Wagner and Adolf Loos in Austria, and later from Peter Behrens and Walter Gropius of Germany.[47] Germany, a leader in the industrial age, became the center for European Modernism. The *Deutsche Werkbund* (German Work Federation) was a German association of architects and designers founded in 1907 in Munich. The *Werkbund* was a state-sponsored effort to integrate architecture and mass-production techniques. Among the most notable of the architects that comprised the *Werkbund* was Peter Behrens. Behrens employed a new approach to factory design, seeking to make the factory a more dignified workplace. In his design for the Berlin Turbine Factory, Behrens employed such new materials as steel and glass to create a new solution for industrial architecture.

Walter Gropius founded the *Bauhaus*, the common term for the *Staatliches Bauhaus*, an art and architecture school in Germany that operated between 1919 and 1933. The *Bauhaus* became one of the most influential currents in Modernist architecture and education, producing many designers who then emigrated to the United States and elsewhere in the 1930s and 1940s, spreading the *Bauhaus'* Modernist ethos. The *Bauhaus* operated under three architect-directors (Walter Gropius, 1919-28; Hannes Meyer, 1928-30; and Ludwig Mies van der Rohe, 1930-33). Seeking to create a new architectural style to reflect the new modern age, the *Bauhaus* led the field of architecture in a new direction, uniting art, craft, and technology, and emphasizing function and mass production while embracing the aesthetic.

The *Bauhaus* fostered the International Style of architecture, which became the dominant trend in architecture in the 1920s and 1930s, in the wake of World War I. Common characteristics of the style included: simplification of form; cubic forms; honest expression of structure; absence of ornament; incorporation of glass,

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[47] Sigfried Giedion, *Space, Time and Architecture* (Cambridge, MA: Harvard University Press, 1965): 474—5.

steel, and concrete as the dominant materials; horizontal bands of windows (known as "ribbon windows"); use of mass-production techniques; machine aesthetics; and an acceptance of and design consideration for the automobile. After World War II, the International Style matured into the Modern Movement, and embraced the economic, social, and political aspects of the mid-twentieth century.

The Modern Movement placed even more emphasis on the incorporation of mass-produced and prefabricated elements in architecture. This was evident in American postwar housing, where architects and developers met the high demand with mass-produced standard units. Larger commercial projects during this period also made use of the nation's increasing industrial complex, designing buildings planned around the repetition of standard units. These standard plans increased the speed of material production and construction, while also reinforcing the geometric lines, simplification of form, honest expression of structure, and absence of ornament that was prized by the Modern Movement.

Bell Laboratories-Holmdel as an Example of the Modern Movement
The Bell Laboratories-Holmdel building typifies the design values and aesthetics of the Modern Movement. Its plan and elevations are based on the modular replication of one rectilinear unit, reinforcing the geometry and simplified forms of the movement. In plan, the pavilion is repeated in four iterations, while in elevation, the window panes are repeated numerous times within the rectilinear aluminum frames. Moreover, the building is designed with the characteristic design palette of the Modern Movement, using concrete, steel, and glass as the dominant materials. The advanced technology of the reflective glass reinforced the modern research housed within the building, but at night, the reflective qualities receded and the structural forms of the building emerged. The Bell Laboratories-Holmdel building asserted a dynamic Modernist presence befitting the company's modern corporate image, with the stripped-down aesthetics, abstracted rectilinear forms, and structural honesty that was characteristic of the Modern Movement of architecture.

The Statewide perspective: Bell Labs and corporate research centers in New Jersey
Scientific research has played an enormous role in New Jersey, especially in the 20th century when some authors have suggested that "the Research State" might suitably replace "the Garden State" as New Jersey's nickname.[48] The origins of this research and development (R&D) abundance were manifested in the invention "factories" of several 19th-century innovators, such as Solomon Andrews in Perth Amboy, who experimented with dirigible aviation in the 1860s, and Oberlin Smith, who discovered the magnetic recording of sound in Bridgeton in 1880. These industrial research precursors found their finest expression in the achievements of Thomas Edison in Menlo Park and West Orange, NJ. These men founded industrial firms from the fruits of their inventions. In the 20th century, especially after World War II, large industrial corporations either brought existing research operations to New Jersey or created new ones there, and built facilities to house them.

In 1964 the *New Jersey Almanac* observed that "research is everywhere in New Jersey—in every county, in every area of major scientific concern, in the entire story of industrial development."[49] It further noted that estimates of New Jersey's share of the nation's research ranged from 9 to 15 percent, "depending on what yardstick of measurement is used."[50] Based on 1961 State government statistics, the *Almanac* reported that 625

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[48] See chiefly John R. Pierce and Arthur G. Tressler, *The Research State: A History of Science in New Jersey* (Princeton, NJ: Van Nostrand, 1964); but also "The Research State is Born," in James P. Johnson, *New Jersey, History of Ingenuity and Industry* (Northridge, CA: Windsor Publications, 1987): 354ff.
[49] Steele Mabon Kennedy et al., eds. *The New Jersey Almanac, 1964-1965, Tercentenary Edition* (Upper Montclair, NJ: The New Jersey Almanac, Inc., 1964), 377-384.
[50] *New Jersey Almanac*, 377.

research facilities were in operation in New Jersey, spread across 175 municipalities (a little less than one-third of the total) and encompassing 700 product classifications.[51] It reported that 577 of these facilities were corporate research laboratories.[52] "Research embraces every field of manufacture—rubber, tile, drugs, dyes, toys, plastics, petroleum, perfumes, detergents, paper, textiles, color, television, castor oil, tape, insecticides. Name it and New Jersey is surely researching it."[53] The state was especially strong in chemical, pharmaceutical, electronics, and telecommunications research. Historian John T. Cunningham reported a decade later that the number of research facilities had reached nearly 700, and that one of every eight workers in research enterprises in the nation worked in New Jersey and that nearly one in five research scientists lived in New Jersey.[54]

The first appearance of corporate research laboratories in New Jersey occurred in conjunction with industrial operations. E.I. du Pont de Nemours (DuPont) opened the state's first industry-connected research laboratory at Repaupo in Gloucester County (near DuPont's dynamite works) in 1902.[55] For the most part, however, research facilities began to appear in cities such as Newark and Camden. In the 1910s and 1920s, the Victor Talking Machine Company (RCA Victor) in Camden built a campus of more than 20 buildings for phonograph and television R&D.[56] The E.R. Squibb Company (Squibb Corporation) established its biological laboratories at New Brunswick in Middlesex County in 1907.[57] As the century advanced, corporations consolidated their research efforts to bring scientific and technical personnel, who had previously been scattered among production facilities, together in a single location. The pharmaceutical manufacturer Merck did that in 1933, when it consolidated its research efforts at Rahway (Union County), to which it had already moved its corporate headquarters in 1926.

Corporate research took a further evolutionary step when companies divorced their R&D facilities from both production facilities and corporate headquarters. John R. Pierce and Arthur G. Tressler asserted that there were many examples of this type of separation.[58] The construction of Bell Labs in Murray Hill (in New Providence Township, Union County) was the first great expression of this idea, in 1941. Bell Labs Murray Hill may also have influenced the shaping of the U.S. Army's Camp Evans facility in Wall Township, Monmouth County that was begun in 1941 by the Signal Corps to be its secret research and development base for weaponizing radar during World War II. The concept of an H-plan in the layout of the buildings at Murray Hill had its counterpart in the H-buildings at Camp Evans.[59] Murray Hill was quickly followed by RCA's research facility at Penns Neck in West Windsor, east of Princeton, in 1942. This was renamed the David Sarnoff Research Center after World War II, and is best remembered for its work in the development of color television.[60] In 1948, the Standard Oil of New Jersey Corporation ("Esso") built for its Standard Oil Development Company subsidiary a research center in Linden (Union County), which was separate from company headquarters. Ten years later,

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51 Ibid.
52 Ibid., 383. The *Almanac* uses the phrase "industrial research laboratories," but the context clearly implies that these were the research facilities of industrial corporations. The other facilities that rounded out the statewide total included both government-run and university laboratories.
53 Ibid., 382.
54 John T. Cunningham, *New Jersey, America's Main Road* (New York: Doubleday & Co., Revised edition, 1976), 307.
55 *New Jersey Almanac*, 379.
56 See, for example, the National Register of Historic Places nomination for RCA Victor Company, Camden Plant, Building 17 (aka the "Nipper" Building), 2002. copy at NJ Historic Preservation Office, Trenton, NJ.
57 Pierce and Tressler, *The Research State*, 64.
58 Pierce and Tressler, 142.
59 Camp Evans, National Historic Landmark nomination, 2014. Copy at NJ Historic Preservation Office, Trenton, NJ.
60 Alexander B. Magoun, *David Sarnoff Research Center: RCA Labs to Sarnoff Corporation* (Charleston, SC: Arcadia Publishing: 2003).

Esso Research and Engineering expanded with new laboratories in Florham Park (Morris County) to specialize in process research. Like Standard Oil, some corporations established more than one research campus. The Celanese Corporation had research facilities in Summit by 1953 and in Clark (both Union County). The Socony-Mobil Corporation had six research operations including three in New Jersey. Mobil brought its oil refining research to Paulsboro (Gloucester County) in 1917. In Hopewell Township near Princeton, the Mobil Corporation's Central Research Laboratories were built in the 1960s. At Metuchen, the Mobil Chemical Company Research and Development Laboratories were built to focus on long-range research projects. The Cities Service Corporation in 1957 built its Research and Development Laboratories along the New Jersey Turnpike in Cranbury Township, Middlesex County.[61]

In other lines of research, the pharmaceutical manufacturer Ciba Corporation established its research operations in Summit by the early 1950s. Warner-Chilcott built its research facility in Morris Plains (Morris County) and Schering built its quality-control research unit in Union (Union County) in 1957.
In 1961 RCA built its "Space Center" to conduct research into space satellite technology (and to build satellites) at a location in East Windsor (Mercer County), several miles to the east of the Sarnoff Research Center. The agricultural chemicals manufacturer American Cyanamid built its research facilities on a large tract of land along Route 1 in West Windsor, near Princeton, in 1962. The National Lead Company, a paint and lead products manufacturer, built its research facility along the New Jersey Turnpike in East Windsor in 1962 and added a second building for its titanium products research a year later. Western Electric opened a telephone research center in Hopewell Township, west of Princeton, in 1963.[62] These and many other comparable facilities were being constructed or used during the years when Bell Laboratories Holmdel was being designed and built.

The concept behind these separate facilities went further than the previous notions of gathering scientists and technical specialists together for productive collaboration. It was also meant to separate them from the pressures presented in every corporation by continuing challenges to incrementally improve current production.[63] Rather they were to become insulated from such near-term needs to refocus and concentrate on fundamental science and long-term technical breakthroughs that would yield benefits in years and decades to come. Western Electric's Engineering Research Center was built in Hopewell Township near Princeton in 1963. A year later, John D. Pierce and Arthur G. Tressler, authors of *The Research State*, wrote that it

> was established apart from all manufacturing facilities to free engineers from the exigencies of specific production commitments. At the Research Center, Western Electric engineers are looking for fundamentally new and better ways to make things--its primary activity is research concerning 'engineering for manufacture.' ....Today we cannot wait until manufacturing techniques are desperately needed to devise them.... It has become evident that research in this area requires special talents, special facilities, and a special working environment.[64]

To do this most effectively, it was believed that a suburban location was ideal, near enough to headquarters and to production facilities that they could be consulted when needed, but also near enough to other research laboratories that shared infrastructure could be developed and advantageously used, and that corporate research collaboration and university partnerships could be fostered wherever they would be mutually advantageous. Research campuses were advertisements of the strength of the corporations to which they belonged, and locations along the New Jersey Turnpike were prized for the advertising opportunities they presented to

[61] Pierce and Tressler, 142.
[62] Ibid., 140.
[63] Pierce & Tressler, 140.
[64] Ibid., 140-141.

millions of motorists and passengers. The Cities Service and Carter-Wallace research facilities featured large identifying signs easily readable by passing motorists and the National Lead Corporation painted its trademark "Dutch Boy" logo on the water tower that it built alongside the Turnpike.

Saarinen's Bell Labs in Holmdel was the apotheosis of the corporate research campus idea in New Jersey, and is singled out for praise in every treatment of the subject that has seen print. Bell Laboratories, Holmdel, combined all of the attributes associated with the corporate research campus. Designed and built in the heyday of such enterprises, one may assert, as Pierce and Tressler did, that Bell Laboratories institutionally comprised the highest expression of the corporate research campus in NJ.[65] It was not only separated from headquarters and from production facilities, it was also removed from the corporation's other research arms, each of which had relatively well-defined missions. Yet it was within easy driving distance of all of them to make visits easier whenever the need arose. It housed nearly the largest number of employees of any corporate campus and it embodied the largest example in a single building of the design layout thought to be most conducive of productive collaboration. On one of the largest tracts of land of any research campus, it was both attractively landscaped with appropriate symbolic reminders, including its unique water tower, and it also was surrounded by woodland that added both natural beauty and a further sense of isolation. It also featured a reflecting pond, a feature that was later seen on other large corporate campuses such as Allied Signal in Wayne Township (Passaic County) and the Squibb Corporation in Lawrence Township (Mercer County). In 2004, Sheldon Hochheiser wrote that at its eventual peak of 6,000 employees, it eclipsed the employee population of Murray Hill, which at 4,200 employees in 1959 had been "the largest industrial research center in the United States" before Holmdel's construction.[66] Its pre-eminence was matched by Sasaki's landscaping and Saarinen's design.

Conclusion

Bell Laboratories-Holmdel was constructed a research and development facility for Bell Labs, which was involved in many twentieth-century scientific breakthroughs related to telephony and communications. The Unix computer operating system was created there. The company's building at Holmdel fostered significant research on transistors, microwave transmission, cellular telephones, and laser cooling, including the Nobel Prize-winning work of Bell Labs-Holmdel employee Steven Chu. The building is significant under Criterion C in the area of Architecture as the work of nationally-significant architect Eero Saarinen and his partners Kevin Roche and John Dinkeloo and landscape architect, Hideo Sasaki. The building stands as an intact example of the Modern Movement style of architecture. The building is significant as a commercial resource whose rationalist, Modernist design reflected the innovative work within the building in the design of the building itself.

Additional historic context information (if appropriate)

Scientific Advancements at Bell Labs - Holmdel

Bell Laboratories (alternately known as Bell Labs) was formally created in 1925 as a consolidation of Western Electric Research Laboratories and a portion of the engineering department of American Telephone & Telegraph (AT&T). Frank Jewett worked as the first president of research until 1940, overseeing the

[65] Pierce and Tressler, 142. Both men, however, had long associations as Bell Labs employees, so their disinterestedness might be at least questioned.
[66] Sheldon Hochheiser, "Bell Labs," in *Encyclopedia of New Jersey* (New Brunswick, NJ: Rutgers University Press, 2004) 68.

company's development of equipment that Western Electric then manufactured and sold. The company received its first patent in 1926 for a clamping and supporting device (developed by C. Bordmann), and in the ensuing sixty years, Bell Labs secured over 20,000 additional patents.[67]

The company was originally headquartered in Manhattan in a former Western Electric manufacturing plant. Within just a few years of its founding, the company's rosters quickly swelled, and the demand for its products grew, with application in telephone and communication systems around the country.[68] Initially, Bell Labs' scientists were committed to specific research projects related to the product development needs of Western Electric and AT&T. Despite this research environment, which did not explicitly allow for self-directed experiments, scientists still made significant, if at times inadvertent, breakthroughs. Among these early discoveries was the work of Clinton Davisson and his assistant Lester Germer, whose work on the wave nature of the electron earned them a Nobel Prize in Physics in 1937.[69] Although their experiment was not readily applicable to the company's telephone products, it did earn substantial publicity for Bell Labs, which served the company well in recruiting new scientists.

From the start, the building's Manhattan location presented issues of overcrowding, vibration, and electrical interference that affected the facility's experiments. When the city decided to extend a railroad line within two blocks of the laboratory, inviting further challenges with dust, noise, and tremors, the company decided to buy land at Murray Hill in Union County, New Jersey, 25 miles west of the city.[70] Eventually, the company established 21 facilities in eight states, the largest of which was the Saarinen building at Holmdel, which at its peak housed more than 5,000 employees.

Bell Labs' transition from Manhattan to Murray Hill signified a larger transition for the company than simply a move from a noisy location to a quieter one. In transplanting its main operations from the city to a suburban location, the company established a new model for facility design and reconfigured its corporate structure. Where the company had always emphasized the "development" aspect of its R&D mission, the Murray Hill facility elevated the "research" arm of Bell Labs, assigning ten percent of its scientists to "pure research" and patent projects.[71] Murray Hill's H-shaped plan was designed to foster collaboration and interaction between employees, many of whom were freed to pursue more theoretical research rather than specific product development. In adopting this new ethos, Bell Labs hoped to draw increasing numbers of scientists away from academic institutions to work in its private corporation, and it created a new model of campus setting in which to host their scientific endeavors.
Although the company freed many researchers from the constraints of product development, this was not an altogether altruistic pursuit of knowledge. The company's long-term objective was still based on the application of many innovative breakthroughs to its ongoing work in telephony and communications. Ninety percent of the researchers were still distributed among five development divisions: Electronic Technology, Transmission Systems Development, Network Planning and Services, Switching Systems Development, and Military Systems Development.[72]

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67 Jeremy Bernstein, *Three Degrees Above Zero: Bell Labs in the Information Age* (New York: Charles Scribner's Sons, 1984): 8.
68 Arthur Gregor, *Bell Laboratories: Inside the World's Largest Communications Center* (New York: Charles Scribner's Sons, 1972): 27.
69 Bernstein, *Three Degrees Above Zero*, 9.
70 Knowles and Leslie, "Industrial Versailles," 19.
71 Gregor, *Bell Laboratories*, 34.
72 Ibid.

The bilateral R&D approach paid significant dividends for Bell Labs, as the company achieved numerous scientific milestones and innovations over the course of the twentieth century. By the time of the Holmdel building's groundbreaking in 1959, the company had positioned itself as a communications and technological giant in mid-century America. Its parent company AT&T achieved near-total market penetration of phone service thanks to the expansion of its network using the R&D work of Bell Labs.[73] Significant developments in the history of Bell Labs include:

- Karl Jansky's discovery of radio astronomy (on the site of the Holmdel plant, 1931)
- Clinton Davisson's Nobel Prize in Physics (1937)
- John Bardeen, Walter H. Brattain, and William Shockley's Nobel Prize in Physics, for inventing the first transistors (1956- Murray Hill)
- Richard Hamming's Turing Award, for his work on numerical methods and coding systems (1968)
- Philip W. Anderson's Nobel Prize in Physics, for research on glass and magnetic materials (1977)
- Arno A. Penzias and Robert W. Wilson's Nobel Prize in Physics, for their discovery of cosmic microwave background radiation (1978)
- Ken Thompson and Dennis Ritchie's Turing Award, for research on operating systems theory and the development of Unix (1983)
- Steven Chu's Nobel Prize in Physics, for research on laser cooling (conducted at Holmdel in the 1980s, awarded in 1997)
- Horst Störmer, Robert Laughlin, and Daniel Tsui's Nobel Prize in Physics for the discovery of the fractional quantum Hall effect (1998)
- Willard S. Boyle, George E. Smith's Nobel Prize in Physics, shared with Charles K. Kao, for their invention of charge-coupled device semiconductor imaging sensors (2009)

Bell Laboratories-Holmdel as a Significant Facility for Bell Labs

Bell Labs' facility at Holmdel was the most populated facility constructed by the company, and its layout reinforced progressive and prestigious corporate culture that was established in 1925.[74] It was constructed on the site of Karl Jansky's discovery of radio astronomy, one of the earliest achievements to earn the company significant publicity and renown, and it was the site involved in developing products ranging from central station equipment and top-secret military systems to the push-button phone and Touch-Tone dialing.[75] The building's four pavilions were deliberately designed to be flexible, with movable partition walls and a variety of floor plans, in order to best foster this wide-ranging research and development activity. The building remained a key site for Bell Labs even after the company was restructured within AT&T in the 1980s, hosting Steven Chu's Nobel Prize-winning work on laser cooling that eventually earned him a Nobel Prize in 1997.

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[73] Nancy A. Miller, "Eero Saarinen on the Frontier of the Future: Building Corporate Image in the American Suburban Landscape, 1939-1961," (PhD diss., University of Pennsylvania, 1999): 125.

[74] Bernstein, *Three Degrees Above Zero,* 8.

[75] Knowles and Leslie, "Industrial Versailles," 27.

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Previous documentation on file (NPS):

__x__ preliminary determination of individual listing (36 CFR 67 has been

Primary location of additional data:

____ State Historic Preservation Office

____ requested)
____previously listed in the National Register
____previously determined eligible by the National Register
____designated a National Historic Landmark
____recorded by Historic American Buildings Survey #____________
____recorded by Historic American Engineering Record # __________
____recorded by Historic American Landscape Survey # ___________

____Other State agency
____Federal agency
____Local government
____University
____Other
Name of repository: ________________________________

Historic Resources Survey Number (if assigned): ______________________________

10. Geographical Data

Acreage of Property Approx. 134 acres
(Do not include previously listed resource acreage.)

Latitude/Longitude Coordinates

(Follow similar guidelines for entering these coordinates as for entering UTM references described on page 55, *How to Complete the National Register Registration Form*. For properties less than 10 acres, enter the lat/long coordinates for a point corresponding to the center of the property. For properties of 10 or more acres, enter three or more points that correspond to the vertices of a polygon drawn on the map. The polygon should approximately encompass the area to be registered. Add additional points below, if necessary.)

Datum:

1. Latitude: 40.372361 N Longitude: -74.161483 W
2. Latitude: 40.369223 N Longitude: -74.170388 W
3. Latitude: 40.366648 N Longitude: -74.[illegible]73060 W
4. Latitude: 40.362871 N Longitude: -74.17[illegible]370 W
5. Latitude: 40.361637 N Longitude: -74.16[illegible] W
6. Latitude: 40.362904 N Longitude: -74.162[illegible] W
7. Latitude: 40.371270 N Longitude: -74.159160 W
8. Latitude: 40.372329 N Longitude: -74.159509 W

Verbal Boundary Description (Describe the boundaries of the property.)
The property consists of Block 11, Lot 38.05 of the Holmdel Township tax map (see the accompanying district map), which can be more precisely described as follows:

BEGINNING at a point on the southwesterly line of Crawfords Corner Everett Road (variable widths) said point being distant the following courses and distances from the intersection of said southwesterly line of Crawfords Corner Everett Road, if produced northwesterly, and the southeasterly line of Roberts Road (variable widths), if produced northeasterly, and running; Along said southwesterly line of Crawfords Corner Everett Road the following 7 courses:

A. South 63°48'11" East, a distance of 710.74 feet to a point; thence
B. South 83°11'01" East, a distance of 140.94 feet to a point of curvature; thence

C. Easterly along a curve to the right. having an arc distance of 284.66 feet, a radius of 1,200.00 feet and a central angle of 13°35'30" and being subtended by a chord which bears South 76°23'16" East, a distance of 283.99 feet to a point of tangency; thence
D. South 69°35'31" East, a distance of 710.84 feet to a point; thence
E. South 68°07'31" East, a distance of 294.48 feet to a point of curvature; thence
F. Southeasterly along a curve to the right, having an arc distance of 354.54 feet, a radius of 970.00 feet and a central angle of 20°56'31" and being subtended by a chord which bears South 57°39'16" East, a distance of 352.57 feet to a point of tangency; thence
G. South 47°11'01" East, a distance of 19.17 feet to the point of Beginning and running; thence

Along said southwesterly line of Crawfords Corner-Everett Road the following 3 courses:

1. South 47°11'01" East, a distance of 226.45 feet to a point of curvature; thence
2. Southeasterly along a curve to the left, having an arc distance of 286.62 feet, a radius of 680.00 feet and a central angle of 24°09'00" and being subtended by a chord which bears South 59°15'31" East, a distance of 284.50 feet to a point of tangency; thence
3. South 71°20'01" East, a distance of 2[illegible]4.44 feet to a point; thence
4. Leaving said southwesterly line, South 48°02'25" West, a distance of 79.50 feet to a point; thence
5. South 76°57'21" West, a distance of 97.09 feet to a point on a curve; thence
6. Southwesterly along a curve to the right, having an arc distance of 230.14 feet, a radius of 350.00 feet and a central angle of *3040'27"* and being subtended by a chord which bears South 50°49'02" West, a distance of 226.01 feet to a point of tangency; thence
7. South 69°39'16" West, a distance of 79.70 feet to a point of curvature; thence
8. Southwesterly along a curve to the left, having an arc distance of 701.74 feet, a radius of 1,050.00 feet and a central angle of 38°17'33" and being subtended by a chord which bears South 50°30'30" West, a distance of 688.76 feet to a point of tangency; thence
9. South 31 °21'43" West, a distance of 1,216.24 feet to a point of curvature; thence
10. Southerly along a curve to the left, having an arc distance of 1[illegible]7.07 feet, a radius of 150.00 feet and a central angle of *6r38'08"* and being subtended by a chord which bears South 02°27'21" East, a distance of 166.97 feet to a point of reverse curvature; thence
11. Southeasterly along a curve to the right, having an arc distance of 1[illegible]6.71 feet, a radius of 2,056.00 feet and a central angle of 4°38'45" and being subtended by a chord which bears South [illegible]°57'03" East, a distance of 166.67 feet to a non-tangent point; thence
12. Southeasterly along a curve to the right, having an arc distance of 435.[illegible] feet, a radius of 1,669.00 feet and a central angle of 14°57'37" and being subtended by a chord which bears South 23°42'42" East, a distance of 434.55 feet to a non-tangent point; thence
13. Southerly along a curve to the right, having an arc distance of 446.72 feet, a radius of 1,080.00 feet and a central angle of 23°41'58" and being subtended by a chord which bears South 04°57'01" East, a distance of 443.54 feet to a non-tangent point; thence
14. Southerly along a curve to the right, having an arc distance of 944.55 feet, a radius of 754.00 feet and a central angle of 71 °46'31" and being subtended by a chord which bears South 40°45'14" West, a distance of 883.99 feet to a non-tangent point; thence
15. Westerly along a curve to the right, having an arc distance of 446.72 feet, a radius of 1,080.00 feet and a central angle of 23°41'58" and being subtended by a chord which bears South 86°27'29" West, a distance of 443.54 feet to a point; thence
16. Westerly along a curve to the right, having an arc distance of 435.79 feet, a radius of 1,669.00 feet and a central angle of 14°57'37" and being subtended by a chord which bears North 74°46'50" West, a distance of 434.55 feet to a non-tangent point; thence

17. Northwesterly along a curve to the right, having an arc distance of 1,264.43 feet, a radius of 2,056.00 feet and a central angle of 35°14'12" and being subtended by a chord which bears North 49°14'46" West, a distance of 1,244.59 feet to a non-tangent point; thence
18. Northerly along a curve to the right, having an arc distance of 435.79 feet, a radius of 1,669.00 feet and a central angle of 14°57'37" and being subtended by a chord which bears North 23°42'42" West, a distance of 434.55 feet to a non-tangent point; thence
19. Northerly along a curve to the right, having an arc distance of 446.72 feet, a radius of 1,080.00 feet and a central angle of 23°41 '58" and being subtended by a chord which bears North 04°57'01" West, a distance of 443.54 feet to a non-tangent point; thence
20. Northeasterly along a curve to the right, having an arc distance of 944.55 feet, a radius of 754.00 feet and a central angle of 71 °46'31" and being subtended by a chord which bears North 40°45'14" East, a distance of 883.99 feet to a non-tangent point; thence
21. Easterly along a curve to the right, having an arc distance of 446.72 feet, a radius of 1,080.00 feet and a central angle of 23°41'58" and being subtended by a chord which bears North 86°27'29" East, a distance of 443.54 feet to a non-tangent point; thence
22. Easterly along a curve to the right, having an arc distance of 435.79 feet, a radius of 1,669.00 feet and a central angle of 14°57'37" and being subtended by a chord which bears South 74°46'50" East, a distance of 434.55 feet to a non-tangent point; thence
23. Southeasterly along a curve to the right, having an arc distance of 177.37 feet, a radius of 2,056.00 feet and a central angle of 4°56'35" and being subtended by a chord which bears South 64°23'34" East, a distance of 177.32 feet to a point of curvature; thence
24. Easterly along a curve to the left, having an arc distance of 176.73 feet, a radius of 150.00 feet and a central angle of 67°30'21" and being subtended by a chord which bears North 84°19'33" East, a distance of 166.68 feet to a point of tangency; thence
25. North 50°34'23" East, a distance of 1,223.91 feet to a point of curvature; thence
26. Northeasterly along a curve to the left, having an arc distance of 679.96 feet, a radius of 930.00 feet and a central angle of 41 °53'27" and being subtended by a chord which bears North 29°37'39" East, a distance of 664.91 feet to a point of tangency; thence
27. North 08°40'55" East, a distance of 47.41 feet to a point of curvature; thence
28. Northerly along a curve to the right, having an arc distance of 206.63 feet, a radius of 350.00 feet and a central angle of 33°49'34" and being subtended by a chord which bears North 25°35'42" East, a distance of 203.64 feet to a point of tangency; thence
29. North 42°30'29" East, a distance of 94.75 feet to a point on the aforementioned southwesterly line of Crawfords Corner-Everett Road being the Point of Beginning.

Encompassing an area of 134.821 acres, more or less.

Boundary Justification (Explain why the chosen boundaries are the most appropriate.)

The boundaries encompass the full extent of the nominated resource, including the subject building and the keyhole-shaped programmed-landscape and driveways. The peripheral areas outside the keyhole, which were left unprogrammed, are separately parceled into different ownership, and were not significant elements of the landscape design.

11. Form Prepared By

name/title CINDY HAMILTON / Vice President_/ HALEY WILCOX / Junior Associate
organization HERITAGE CONSULTING GROUP date APRIL 13,2015
street & number 15 W HIGHLAND AVENUE telephone 215-248-1260
city or town PHILADELPHIA state PA zip code 19118
e-mail CHAMILTON@HERITAGE-CONSULTING.COM; HWILCOX@HERITAGE-CONSULTING.COM

Additional Documentation

Submit the following items with the completed form:

- **Continuation Sheets** (in ascending numerical order, by section and page number)
- **Maps:** A **USGS map** (7.5 or 15 minute series) indicating the property's location.
  A **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.
- **Additional items:** (Check with the SHPO or FPO for additional items, especially for "Photographs" below.)

Photographs:

Submit clear and descriptive photographs. Each digital image must include an array of 3000x2000 pixels or greater. For the submission of hard-copy photographs, consult your SHPO or FPO. Key all photographs to the sketch map.

Name of Property: Bell Laboratories-Holmdel
City or Vicinity: Holmdel Township
County: Monmouth State: New Jersey
Photographer: Cindy Hamilton
Date Photographed: March 2014
Description of Photograph(s) and number:
1 of 28.

1. Site, looking southwest
2. North elevation of Bell Laboratories-Holmdel, looking southwest
3. West elevation of Bell Laboratories-Holmdel, looking southeast
4. Site and south elevation Bell Laboratories-Holmdel, looking north
5. Site, looking southwest
6. Site, looking northeast
7. North elevation of Bell Laboratories-Holmdel, looking southwest at entrance
8. Second floor of Bell Laboratories-Holmdel, looking northwest at entrance
9. Second floor of Bell Laboratories-Holmdel, looking southeast at atrium
10. Second floor of Bell Laboratories-Holmdel, looking northwest at stair in atrium
11. Second floor of Bell Laboratories-Holmdel, looking west at atrium
12. Second floor of Bell Laboratories-Holmdel, looking southeast at stair/elevator tower
13. Second floor of Bell Laboratories-Holmdel, looking southwest at corridor
14. Third floor of Bell Laboratories-Holmdel, looking southeast at atrium
15. Third floor of Bell Laboratories-Holmdel, looking northeast at corridor
16. Third floor of Bell Laboratories-Holmdel, looking northeast at corridor
17. Third floor of Bell Laboratories-Holmdel, looking west at elevator lobby
18. Fourth floor of Bell Laboratories-Holmdel, looking southeast at corridor
19. Fourth floor of Bell Laboratories-Holmdel, looking east at office area

20. Fourth floor of Bell Laboratories-Holmdel, looking southwest at corridor
21. Fifth floor of Bell Laboratories-Holmdel, looking northeast at corridor
22. Fifth floor of Bell Laboratories-Holmdel, looking northeast at office
23. Sixth floor of Bell Laboratories-Holmdel, looking southeast
24. Sixth floor of Bell Laboratories-Holmdel, looking southwest at corridor
25. Sixth floor of Bell Laboratories-Holmdel, looking southeast
26. First floor of Bell Laboratories-Holmdel, looking north at auditorium
27. First floor of Bell Laboratories-Holmdel, looking west at lounge
28. First floor of Bell Laboratories-Holmdel, looking southeast at cafeteria

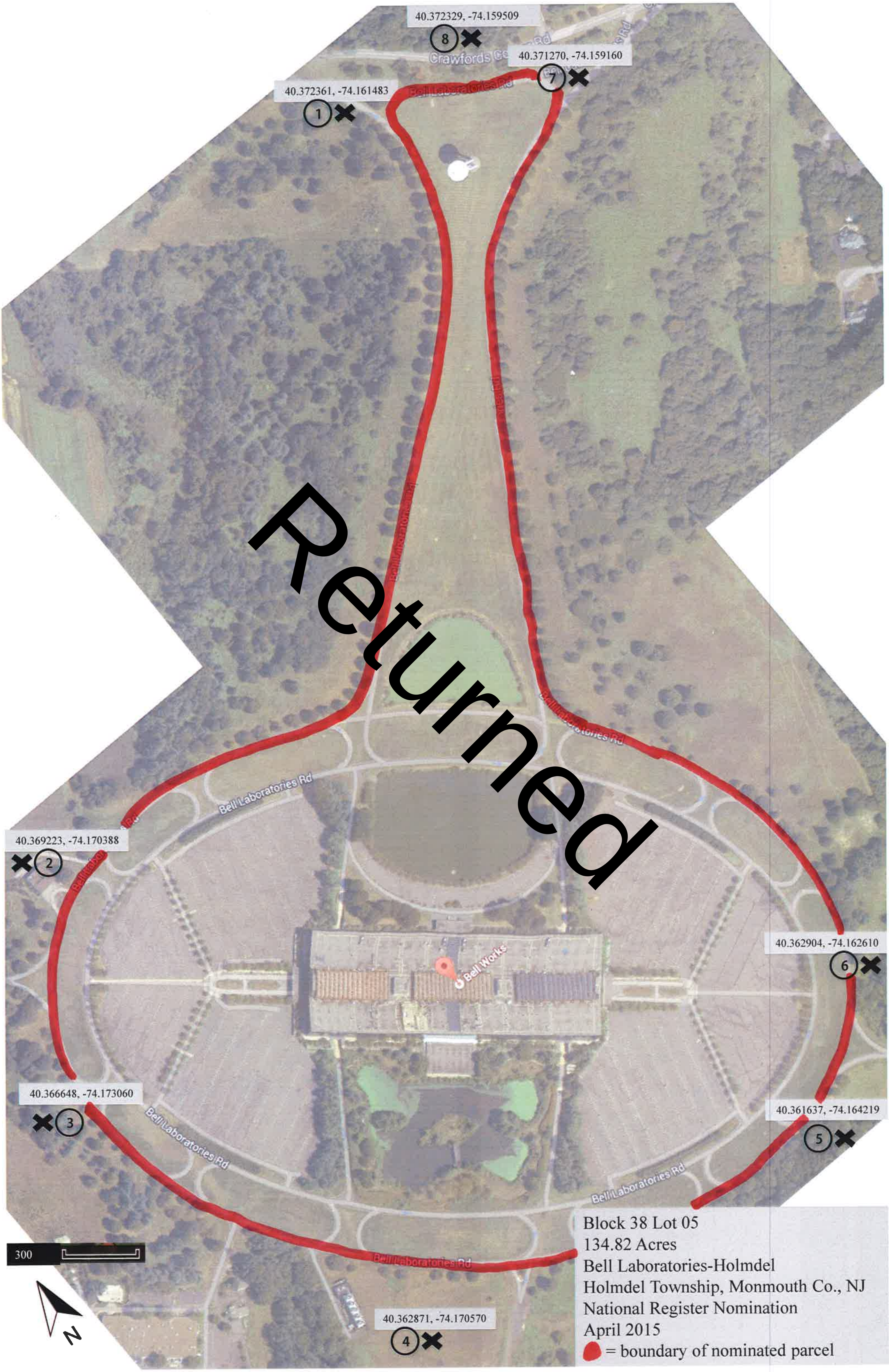
Property Owner:

(Complete this item at the request of the SHPO or FPO.)

name Ralph Zucker

street & number 101 Crawfords Corner Road telephone 732-367-2828

city or town Holmdel state NJ zip code 07733


40.372329, -74.159509
8
Crawfords Co
40.371270, -74.159160
7
40.372361, -74.161483
1
Bell Laboratories Rd
Returned
40.369223, -74.170388
2
Bell Laboratories Rd
Bell Works
40.362904, -74.162610
6
40.366648, -74.173060
3
40.361637, -74.164219
5
300
N
40.362871, -74.170570
4
Block 38 Lot 05
134.82 Acres
Bell Laboratories-Holmdel
Holmdel Township, Monmouth Co., NJ
National Register Nomination
April 2015
= boundary of nominated parcel

Bell Laboratories--Holmdel: National Register Nomination Photographs

101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey
March 2015

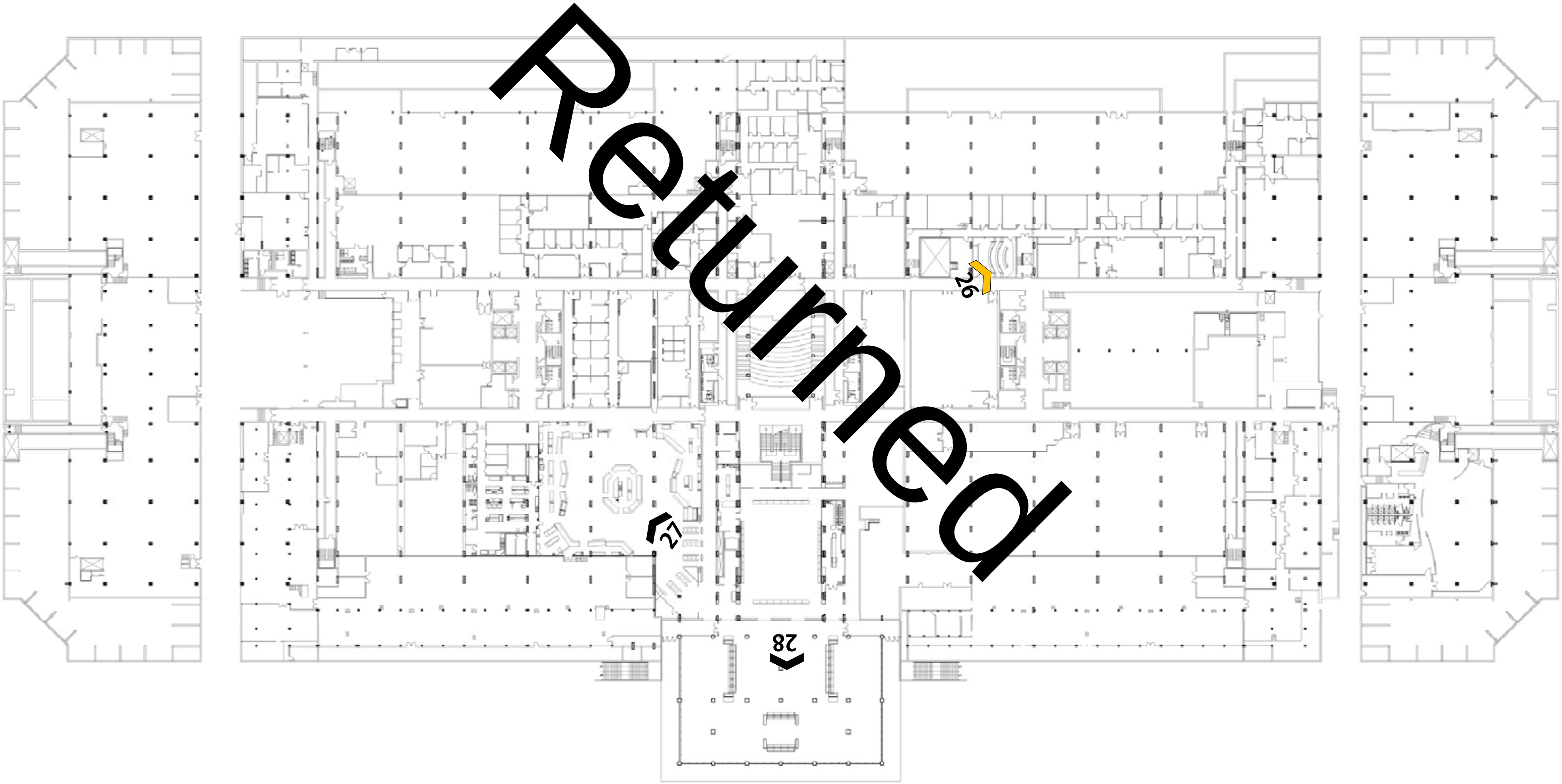
N

Site and Exterior

Photos 1 – 7
Yellow arrow indicates starting point

Bell Laboratories: National Register Nomination Photographs
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey
March 2015

First Floor
Photos 26– 28
Yellow arrow indicates starting point



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HERITAGE CONSULTING GROUP

Bell Laboratories: National Register Nomination Photographs
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey
March 2015

Second Floor
Photos 8– 13
Yellow arrow indicates starting point

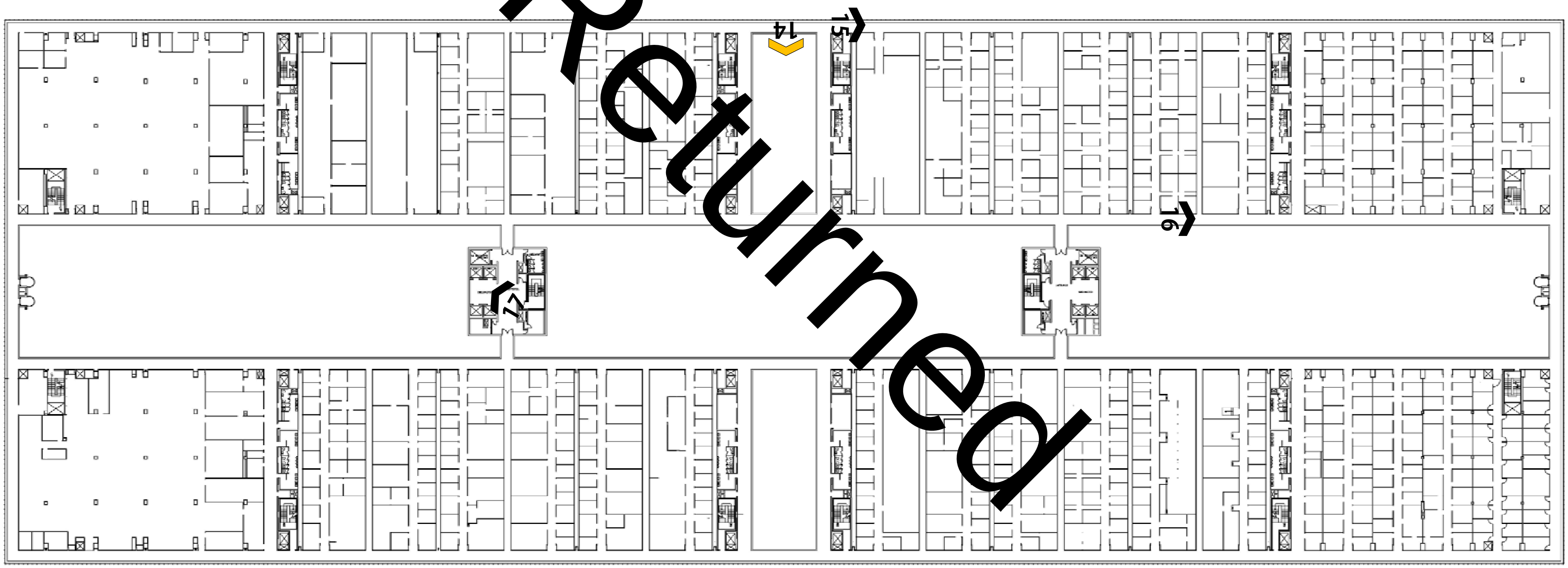
HERITAGE
HERITAGE CONSULTING GROUP

Bell Laboratories: National Register Nomination Photographs
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey
March 2015

Third Floor

Photos 14– 17

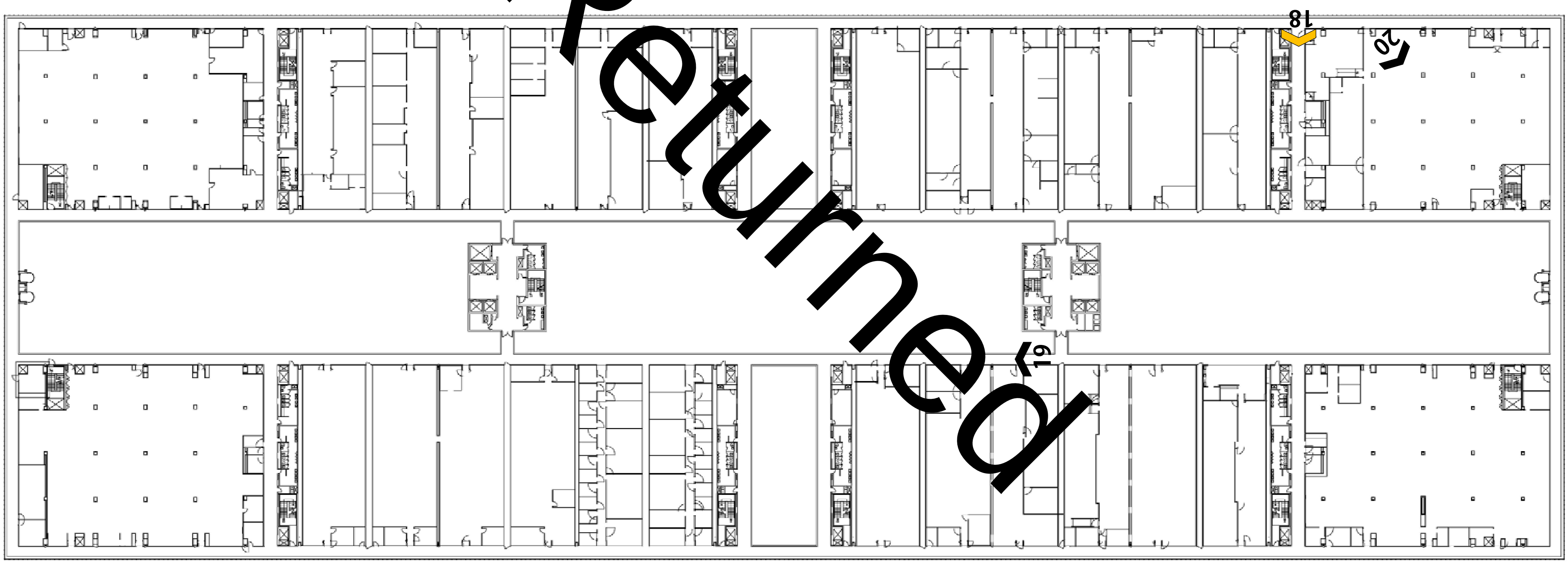
Yellow arrow indicates starting point



HERITAGE
HERITAGE CONSULTING GROUP

Bell Laboratories: National Register Nomination Photographs
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey
March 2015

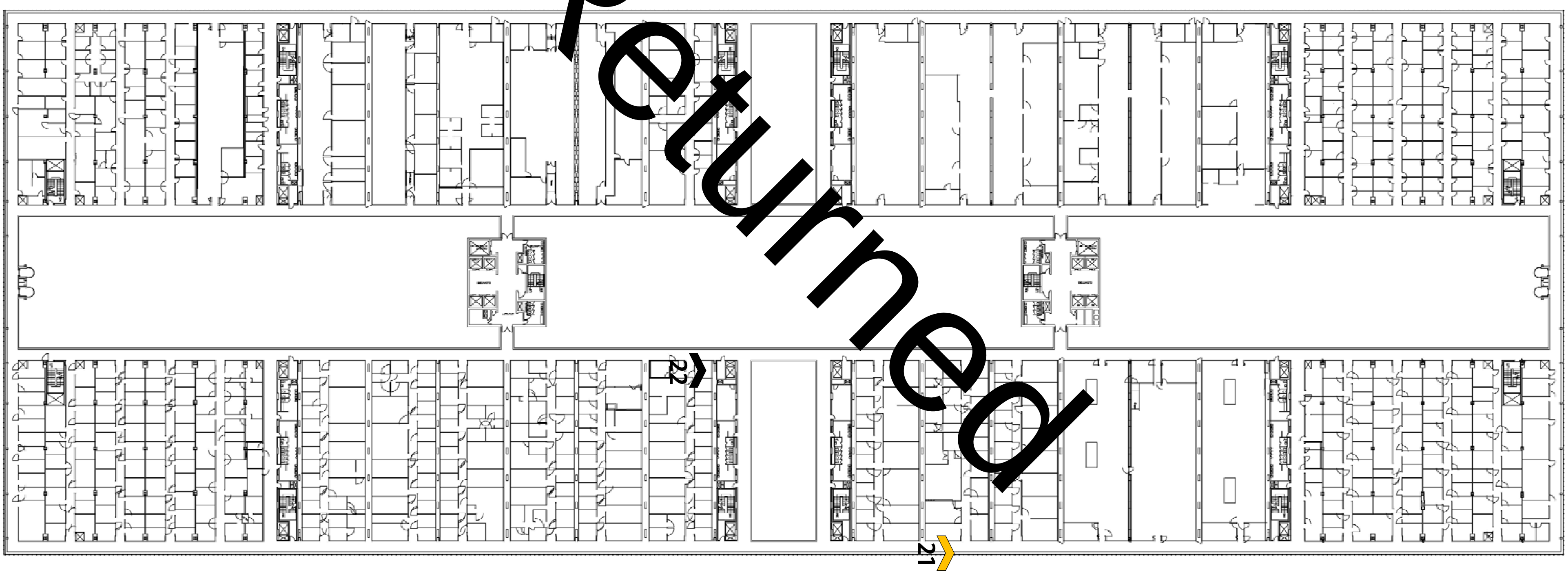
Fourth Floor
Photos 18– 20
Yellow arrow indicates starting point



HERITAGE
HERITAGE CONSULTING GROUP

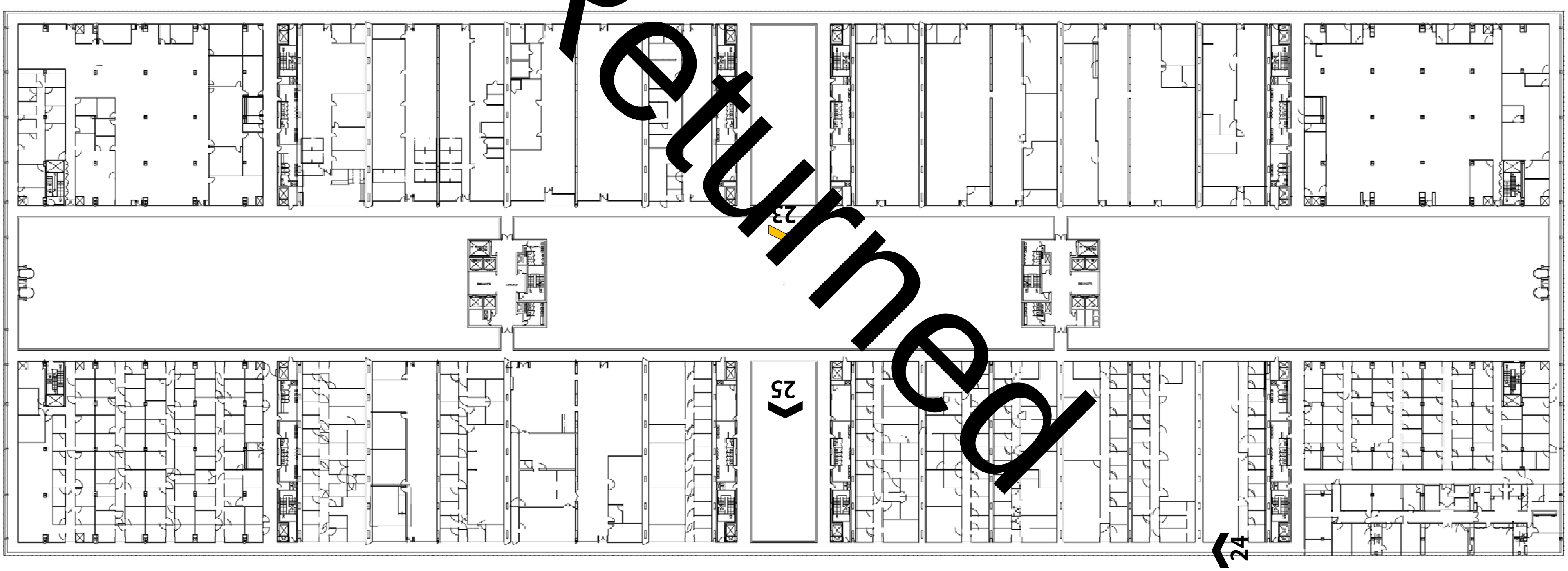
Bell Laboratories: National Register Nomination Photographs
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey
March 2015

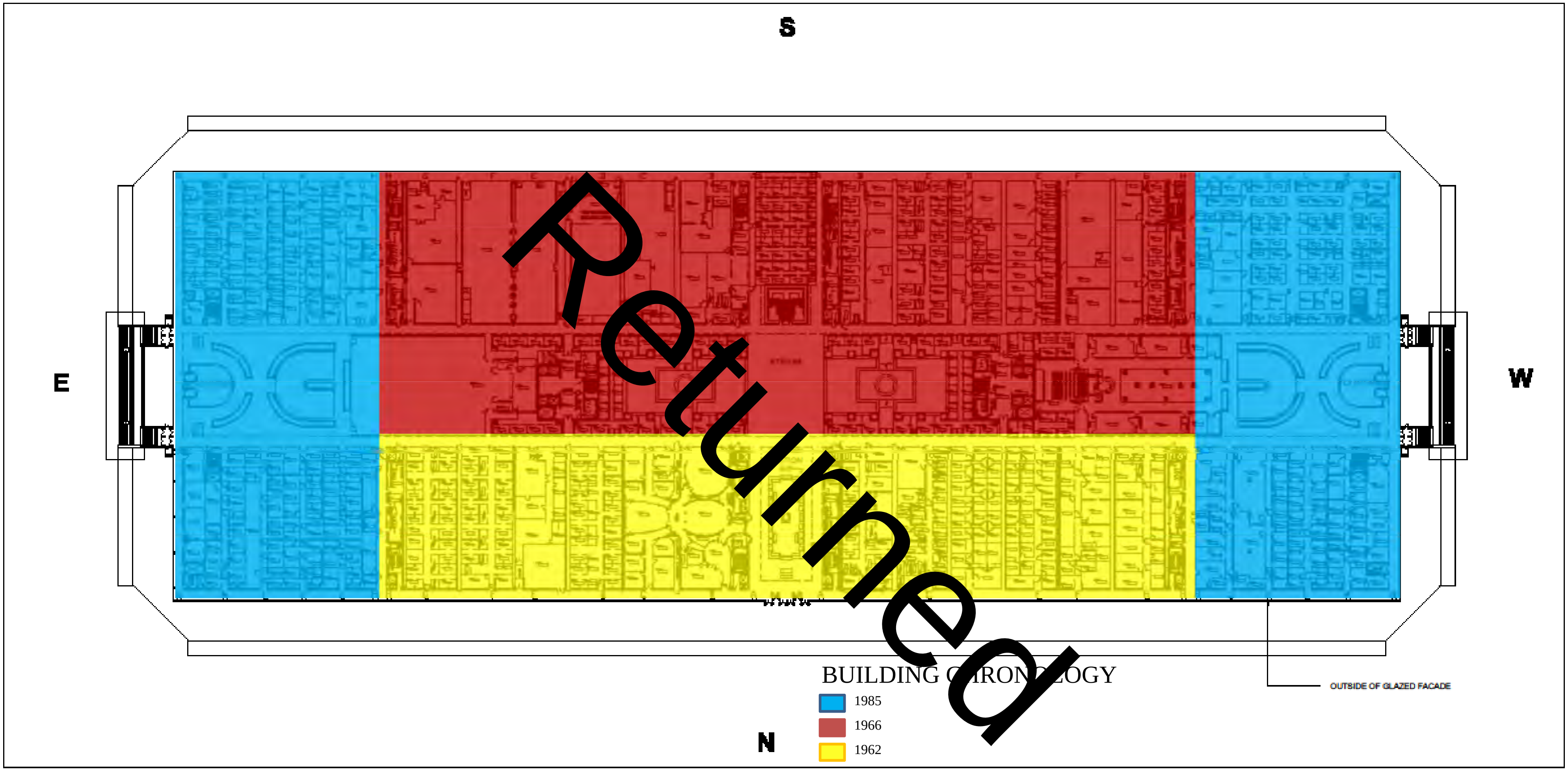
Fifth Floor
Photos 21– 22
Yellow arrow indicates starting point



Bell Laboratories: National Register Nomination Photographs
101 Crawfords Corner Road
Holmdel Township, Monmouth County, New Jersey
March 2015

Sixth Floor
Photos 23– 25
Yellow arrow indicates starting point





DRAWING TITLE
SECOND FLOOR PLAN - EXISTING

DATE
07-10-2014

SCALE
1"=80'
0' 10' 20' 50' 100'

DRAWING NO.
A102

N

ALEXANDER GORLIN ARCHITECT LLC
197 VARICK STREET, NEW YORK, NY 10013
T: 212.229.1199 F: 212.206.3590

B E L L P L A C E
101 CRAWFORDS CORNER ROAD, HOLMDEL, NEW JERSEY

SOMERSET HOLMDEL DEVELOPMENT I, LP LLC
911 E COUNTY LINE RD, LAKEWOOD, NJ 08701

&a20CUNITED STATES DEPARTMENT OF THE INTERIOR
&a30CNATIONAL PARK SERVICE

&a22CNATIONAL REGISTER OF HISTORIC PLACES
&a29CEVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY NAME: Bell Laboratories--Holmdel

MULTIPLE NAME:

STATE & COUNTY: NEW JERSEY, Monmouth

DATE RECEIVED: 3/18/16 &pW DATE OF PENDING LIST: 4/15/16
DATE OF 16TH DAY: 4/30/16 &pW DATE OF 45TH DAY: 5/03/16
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 16000223

REASONS FOR REVIEW:

APPEAL:	N	DATA PROBLEM:	N	LANDSCAPE:	N	LESS THAN 50 YEARS:	N
OTHER:	N	PDIL:	N	PERIOD:	N	PROGRAM UNAPPROVED:	N
REQUEST:	N	SAMPLE:	N	SLR DRAFT:	N	NATIONAL:	N

COMMENT WAIVER: N

__ACCEPT ✓ RETURN __REJECT 5/3/16 DATE

ABSTRACT/SUMMARY COMMENTS:

&a4L

RECOM./CRITERIA Return

REVIEWER [signature] DISCIPLINE Historian

TELEPHONE ________ DATE 5/3/16

DOCUMENTATION see attached comments Y/N see attached SLR Y/N

If a nomination is returned to the nominating authority, the nomination is no longer under consideration by the NPS.

United States Department of the Interior
National Park Service
National Register of Historic Places
Comments
Evaluation/Return Sheet

Property Name: Bell Laboratories-Holmdel

Property Location: Monmouth County, NJ

Reference Number: 16000223

Date of Return: 05/9/16

Nomination Summary

The Bell Laboratories-Holmdel nomination is being returned for substantive and technical issues. The property is being nominated under Criterion C in the areas of significance of architecture and landscape architecture at the state level. The period of significance is 1959-1985.

Issues

While the documentation does provide some overall context on 20th-century corporate campus designs, the statement of significance narrative does not adequately address the significance of this property in landscape architecture at the state level and specifically the work of Hideo Sasaki. The argument needs to be made that the remaining 134 acres of an original 460-acre corporate campus retains sufficient integrity to still be considered significant under landscape architecture.

In Section 8, the summary paragraph states that Hideo Sasaki of Sasaki, Walker and Associates designed several corporate campuses in New Jersey and that it is an outstanding example. However, the text provides no comparative analysis or argument defending why this is the case. Within this statewide context, how does the Bell Labs design compare with other suburban New Jersey corporate campus designs done by Sasaki, Walker and Associates? The nomination would also benefit from further explanation of the collaborative effort of Saarinen and Sasaki.

In Section 7, the narrative description focuses mainly on the Bell Labs building and the changes made throughout the period of significance and the alterations made. Details about the landscape also need to be described beyond the information that is noted on page 23. The description should also include a paragraph describing the current plans for the 134-acre property and for the surrounding former corporate campus acreage.

The 1998 sculpture honoring the work of Karl Jansky is outside of the historic period of significance and is a noncontributing resource. The landscape design should be considered a contributing site. Please adjust the resource counts accordingly.

For clarity, the site map that was submitted with latitude/longitude coordinates marks a red boundary that excludes the allee of maple trees that are along the Bell Laboratories Road. Please clarify in the boundary justification that these trees are indeed included within the National Register district boundaries. Check with the NJ SHPO staff regarding additional requirements for citing botanical names.

The original Saarinen site plans, drawings, Sasaki planting plans, and details for Bell-Holmdel Laboratories, as well as other primary documents are available in the Eero Saarinen Collection at the Sterling Memorial Library, Yale University. It is unclear whether any of these documents were reviewed and there is no indication in the bibliography that they were consulted. They would be immensely useful in further documenting this property as well as illustrating the collaborative efforts of Saarinen and Sasaki.

Please contact me if you have any questions.

Lisa Deline, Historian
National Register of Historic Places
Lisa_Deline@nps.gov

Project # 13-1611
HPO-D2017-240

State of New Jersey

MAIL CODE 501-04B
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL & HISTORIC RESOURCES
HISTORIC PRESERVATION OFFICE
P.O. Box 420
Trenton, NJ 08625-0420
TEL. (609) 984-0176 FAX (609) 984-0578

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

April 28, 2017

Lisa Deline
National Register of Historic Places
National Park Service
1849 C Street NW
Washington, DC 20240

Dear Lisa:

The New Jersey Historic Preservation Office is re-submitting the National Register nomination for the Bell Laboratories - Holmdel, in Monmouth County, New Jersey—National Register reference number 16000223, for National Register consideration. The nomination was returned for technical and substantive issues, as noted in the attached Evaluation/Return Sheet. All changes have been made in compliance with the recommendations.

If you have any questions, please contact me by email at bob.craig@dep.nj.gov or by phone at (609) 984-0541.

Sincerely,

RWC

Robert W. Craig
Registration Program Supervisor

Enclosure