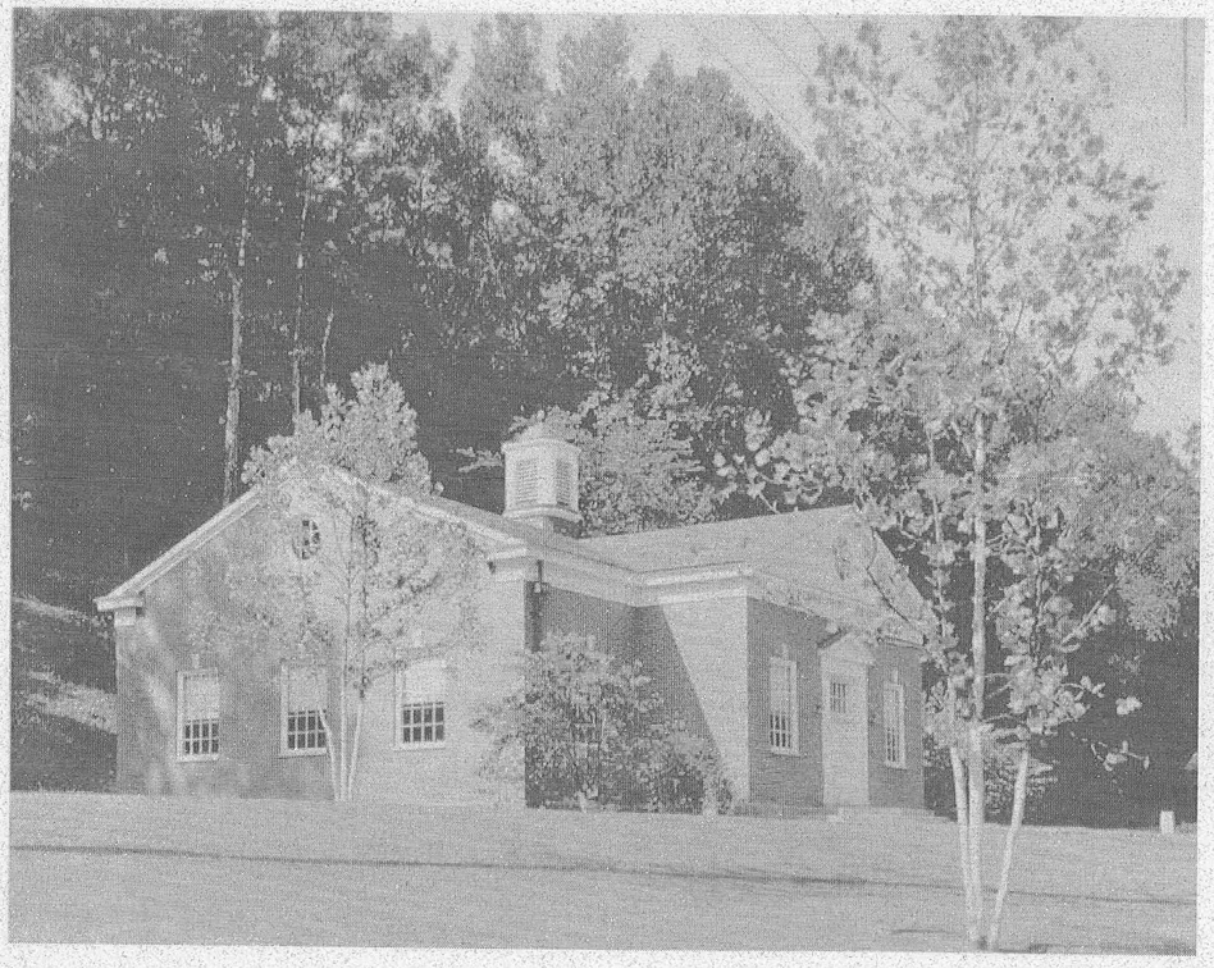
HISTORIC STRUCTURE REPORT
Wright Hall
Carillon Historical Park
Dayton, Ohio



March 30, 2006
Final Submission

QUINN EVANS/ARCHITECTS
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HISTORIC STRUCTURE REPORT

Wright Hall

Carillon Historical Park

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Recommended: _____ Date: _____
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Regional Director, Midwest Region

Carillon Historical Park
Dayton Aviation Heritage National Historical Park
Dayton, Ohio

National Park Service

United States Department of the Interior

March 2006

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Wright Hall
Carillon Historical Park

Dayton, Ohio

Dayton Aviation Heritage National Historical Park
National Park Service

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NPS Task Order # T6068000014

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Executive Summary

Introduction

This document was originally developed in 2000, at the beginning of the final construction phase for Wright Hall. Since that time, some of the recommendations have been implemented and new conditions have arisen. Portions of this report have been updated to reflect changes at the site since 2000.

General Property Description

Wright Hall, built to house the restored Wright Flyer III, is one of four units of the Dayton Aviation Heritage National Historical Park, in Dayton, Ohio. The building is a Colonial Revival pavilion built in 1948-50 at Carillon Historical Park by Colonel Edward A. Deeds, CEO of The National Cash Register Company, with input from Orville Wright. The 1905 Wright Flyer III was restored between 1947-1950, under the initial overall direction of Orville Wright, with day-to-day supervision by Harvey Geyer, a former Wright brothers' employee. The Wright Flyer III was designated a National Historic Landmark in 1990.

Wright Hall is significant for its association with Orville Wright and the 1905 Wright Flyer III, and for its design, which was consciously planned to showcase its exhibit. The building is unique as a National Register-eligible structure that contains a National Historic Landmark. Additionally, Carillon Historical Park was the first location in Ohio to commemorate the development of transportion in Ohio and the United States.

Project Team

Following the objectives of Carillon Historical Park, the National Park Service Midwest Regional Office engaged the professional services of QUINN EVANS | ARCHITECTS, an architectural firm specializing in historic preservation, to conduct a comprehensive survey of Wright Hall. Historic background documentation was provided by NPS-MWRO, Dayton Aviation Heritage National Park, Lorenz and Williams, Inc. and Carillon Historical Park. Team members providing specialized expertise to QE|A include: Gary Steffy Lighting Design , for lighting systems analysis and recommendations, Seebohm, Ltd., for interior finishes analysis and recommendations, and Geiger & Hamme, LLC, for acoustical system analysis and recommendations.

Investigation Methodology

QE|A led an on-site workshop in 2000 during which the team members gathered material related to their area of focus and expertise. A survey of the building was conducted in order to document the building's architectural characteristics, construction techniques, material changes, fenestration, hardware, and trim work, as well as structural framing changes, providing insight into the evolution of the building. Site features were examined for use, design, historical intent and damage due to weathering.

The interim result of this workshop was the compilation of the requested reports from the various team members for a set of unified solutions.

This report is based on documentary evidence, limited physical probings and nondestructive testing, and on-site physical investigation of the structure.

Report Organization

During the on-site workshop in 2000, the project team utilized the previously-researched information prepared by NPS-MWRO, Dayton Aviation Heritage National Park, Lorenz and Williams, Inc. and Carillon Historical Park. With this foundation the team conducted on-site investigations and surveys, and met to generate recommended strategies for the rehabilitation of Wright Hall. The results of this investigative research, documentation and workshop are contained in this Historic Structure Report, arranged in the following manner:

Executive Summary

Includes a general description of the property and documents gathered by the project team members, the scope of the project, the investigative methodology, and the report's organization, as well as a brief summary of the report's recommendations.

Part 1: Developmental History

A. Historical Background and Context: Includes the history of the Wright Flyer III, its restoration, and the establishment of Carillon Historical Park. Documents

the design and construction of Wright Hall, provides a comparable structures analysis, and presents a statement of significance for Wright Hall.

B: Building Chronology: Presents written and graphic analyses of Wright Hall's chronology based on known historical, archeological, and physical investigative information, with an emphasis on building configuration, the locations of door and window openings, and building materials. The information is organized in the form of building episodes that describe the changes to the structure over time.

C: Existing Conditions: Presents a detailed description of the building. Includes information gathered during field survey and research pertaining to existing site, landscape and architectural conditions.

Part 2: Treatment and Use

A: Treatment Recommendations: Presents the recommended approach and alternatives for the treatment of Wright Hall, as defined by the categories of restoration and rehabilitation. The treatments frame the overall direction of the project based upon the standards established by the United States Secretary of the Interior. Also includes the rehabilitation treatments as they apply to HVAC, acoustics, and lighting modifications.

B: Research Recommendations: Provides recommendations for further historical, archeological, and physical research and investigation that are outside of the scope of this report.

References

Provides a bibliography of materials used in preparing this report.

Appendices

Presents supportive materials including the National Register of Historic Places inventory form for Wright Hall, historic drawings, historic and existing conditions photographs, guiding principles from Carillon Historical Park, psychometric data, and the asbestos and chromachronology reports.

Summary of Recommendations

The following recommendations are summarized from Part 2-A: Treatment Recommendations. The goal of the treatment recommendations is to provide a comprehensive approach to restoring the essential character of Wright Hall. The following recommendations comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties. The recommended approach to treatment for Wright Hall is rehabilitation.

Site

An effort should be made to develop an integrated design that unites the historic features of the site and provides universal access and space for signage. Landscape design should respect remaining historic site conditions, including the canal prism and the steps leading up the canal prism to Wright Hall.

Site design should provide a clear, linear link between the stairs, the path at the top of the prism, and the entrance and exit of the building. The circulation system should complement the Wright Cycle Company building/Wright Hall by using unobtrusive paving and seating materials. The path and gathering spaces should be intimately scaled, rather than formal and massive. It should respond to the linear quality of the building using geometric, rather than organic or curvilinear design.

Building Exterior and Envelope Protection

The building exterior is generally in good condition and requires only minor repairs and maintenance work. Issues that should be addressed include ice damming at the roof above the apse, maintenance of the exterior drainage systems, and sealing of foundation cracks to prevent moisture penetration. Interior magnetic storms with ultraviolet filter material and an integrated perimeter seal should be installed at all window openings when feasible.

Interior

Attic

For airflow in the hall, the existing wood-framed cupola in the attic should be utilized for additional

ventilation purposes. In addition, a low air supply system should be introduced in the attic space to promote air flow and circulation. Similar to the ceilings, all of the penetrations must be sealed and weathertight.

Ceiling

The recommendation is to address the replacement of the central acoustic plaster panels with acoustic material. All of the penetrations must be sealed.

Walls

The walls are in good condition and only require maintenance of the existing conditions. The ASHRAE Psychometric chart (see Appendix C) indicates low relative humidity in the winter, when there typically is the highest concern for moisture. The current wall construction is impervious and there is a low migration potential due to the characteristics of the painted finish on the plaster, the glazed brick, and terrazzo floors. Regular surveillance is required to sustain the quality of this condition.

Minor Interior Detail Modifications

The recommendation is to maintain the east and west wing openings as doors and to modify the trim. In doing so, the trim should be simplified so that it is flat with a radius profile. The faux transom also should be trimmed out and the new opening replicated.

Interior Finishes

The interior finishes should be returned to the original color scheme. The significance of the original color scheme should be investigated to determine if the hierarchy of color is intentional.

Displays and Exhibits

The Wright Flyer III, busts and apsidal wall text should all be integrated cohesively. Install display cases so that they are movable.

Acoustics

The acoustic recommendations are made primarily with regard to improved voice acuity in the existing line space comprising hard surfaces. This would require the addition of acoustical treatment to the walls. Because of the visual impact of an acoustical wall treatment, it is recognized that this recommendation will not be implemented. The existing ceiling panels in the plenum space should be used.

Ultraviolet Transmittance, Through-Window Lighting, and Light Fixtures

The goal is to maintain the transparent view of the interior but to block harmful light transmission. The recommended course of action for the windows is to remove the existing film and install glazing on the interior storm with ultraviolet blocking Plexiglas or Lexan type material. An exterior storm with ultraviolet glass should be installed at the transom window. Filters should be placed on all of the lights.

Lighting for the Wright Flyer III, General Interior and Daylighting

The pathway lighting should be recreated via historic recessed ceiling downlighting. The Wright Flyer III warrants very selective accent lighting with particular attention paid to the ceiling shadows, as well as the amount of obtrusiveness. Also of concern is the level of glare in the pit and any necessary modifications to the historic character and fabric. These same issues are also relevant in terms of the existing railing. Provide very selective accent lighting for the busts and apsidal wall with recessed ceiling lighting.

Humidity and HVAC Management

Although one relative humidity setting is not problematic, multiple settings with shoulder season transitions are recommended. The targeted relative humidity level is 45% +/- 5%, based on industry standards for museum humidity levels. Also, connectors as air locks or the same environment in all spaces should be established, as well as HEPA filtering.

Post Construction Evaluation

A post-construction evaluation occurred on June 1-2, 2005, to review the condition of the building and the implementation of the treatment recommendations. Additional recommendations are noted in Part 2-A, Treatment Recommendations.

Part 1: Developmental History

Part 1-A: Historical Background and Context

Introduction

Commissioned by Colonel Edward Deeds as the focal point of Carillon Historical Park in Dayton, Ohio, Wright Hall was built from 1948-50 in Colonial Revival style. It was designed, with input from Orville Wright, to house and showcase the restored 1905 Wright Flyer III.

The Wright Flyer III

The Wright Flyer III was the last and perhaps the most significant of Orville and Wilbur Wright's experimental aircraft. The 1903 Wright Flyer I, now on display at the Smithsonian Institution in Washington, D.C., was the first to achieve true flight, but only lasted for four brief flights before being damaged. The 1904 Wright Flyer II improved upon the first flyer's design, completing over 100 flights, but was still plagued with accidents and loss of control. Both aircraft had proved that flight was possible, but not that it was practical.

It was with the Wright Flyer III that the Wright brothers created the world's first practical airplane. By the end of 1905, the airplane had completed 50 flights, including one of more than 39 minutes, and represented a significantly safer and more controllable aircraft.

For the next two and a half years, the Wright Flyer III sat in storage while the Wright brothers secured a patent and a contract for production of the machine. After settling on an agreement with the United States Signal Corps and a French syndicate, the brothers pulled the Wright Flyer III out of storage in 1908 to reconfigure it for demonstration flights later that year.

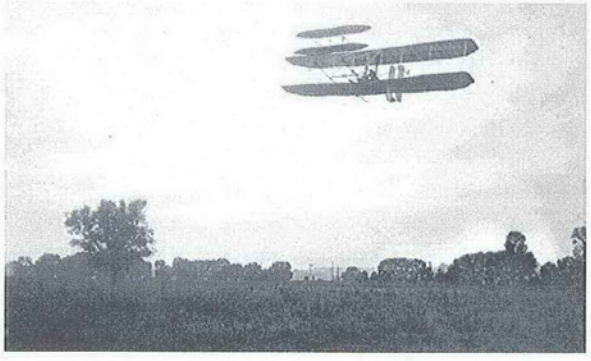

Figure 1: The Wright Flyer III over Huffman Prairie, 1905 (Wright State University, Special Collections and Archives)

The airplane completed another 22 flights, on the last day becoming the first airplane to carry both a pilot and a passenger.

The Wright Flyer III was dismantled after the 1908 test flights at Kitty Hawk, and never flew again. The airframe was stored at a hangar at Kitty Hawk, where it later suffered damage. The engine and other mechanical parts were shipped back to Dayton.

Early Restoration Efforts

In 1911, Zenas Crane, a wealthy Massachusetts paper manufacturer who established the Berkshire Museum in Pittsfield, MA, wrote to Orville and Wilbur Wright, requesting an airplane or glider that could be exhibited in the museum. The Wright brothers responded that there were no preserved gliders, but authorized the salvage of the 1905 Wright Flyer III frame from storage at the Kill Devil Hills Life Saving Station in Kitty Hawk.[1] Crane also managed to acquire Orville's 1911 glider. With little knowledge of Wright airplanes and no idea how to begin the reconstruction process, Crane began with the 1911 glider, having his workmen assemble the parts into a configuration similar to that of the 1902 glider. The errors were so egregious that when Orville saw the result, he refused to allow the museum to exhibit the machine.[2]

Realizing he needed guidance, Crane requested Orville's assistance in reconstructing the 1905 Wright Flyer III. Believing Crane's workmen incapable of properly restoring the aircraft, Orville refused. For the next thirty years, a group of interested individuals, including Crane, continued to ask for Orville's help as an advisor in rebuilding the 1905 Wright Flyer III, but Orville continually denied their requests.[3]

Establishment of Carillon Historical Park

Colonel Edward Deeds, Chairman of the Board of the National Cash Register Company and a longtime friend of Orville Wright, was responsible for the first preservation efforts in Dayton related to the Wright brothers. In the late 1940s, Deeds was in the process of building a park that would commemorate the role the Miami Valley played in the evolution of transportation, and he believed the achievements of Wilbur and Orville Wright would make a good focal

Figure 2: Carillon Park, 1954. Wright Hall is at the upper left. (Carillon Park Archives)

point for the museum. In 1947, Deeds contacted Orville Wright to present his idea and inquire about the possibility of exhibiting some remaining parts of the Wright brothers' earlier planes. At first, Orville suggested that Deeds construct a replica of the 1903 Wright Flyer I for display at Carillon Historical Park. At the time, the original airplane was on display at the Science Museum in London, but accurate drawings had been made that would have assisted in replicating it for Deeds.[4]

After further consideration, however, Orville had a better idea: reconstructing the 1905 Wright Flyer III. Although the original pieces were scattered in various places, including Dayton and the Berkshire Museum, Orville believed there were enough original parts to make a restoration effort worthwhile. The Wright Flyer III also had a stronger connection to Dayton than the 1903 Flyer as its experimental flights had taken place at Huffman Prairie [Flying Field], and it was potentially more significant as the first practical airplane.[5] Orville also trusted Deeds to ensure that the Wright Flyer III was correctly reassembled.

The first step was to obtain the frame from Crane's Berkshire Museum. Carl Beust, head of the National Cash Register Company Patent Department, met with the director of the museum and found that he was willing to send the frame to Dayton. Beust also met with representatives from a museum in Edenton, North Carolina, which had other parts of the 1905 airplane. They, too, were amenable to sending the parts to Dayton to be used in the restoration of the airplane. Beust succeeded in gathering all of the parts in Dayton by the end of 1947.[6]

Upon evaluation, the existing parts of the Wright Flyer III represented between sixty and eighty-five percent of the original plane. Deeds hired Harvey Geyer, who worked for the Wright brothers from 1910 to 1912, to oversee the reconstruction effort, and provided a National Cash Register Company building as a workshop space. Orville took an active effort in

the rebuilding of the plane until his first heart attack in 1947. He provided all the necessary technical information and measurements needed to complete the rebuilding process.[7]

Considering the supervision of Orville Wright in the initial stages of the restoration and the management of Geyer throughout, the restoration was likely as accurate as possible, although no detailed record of the restoration process exists.

Wright Hall

While the reconstruction of the airplane was underway, the building designed to house the Wright Flyer III, Wright Hall, was constructed as an element in Dayton's Carillon Historical Park (figure 2).

The park site was originally swamp land, and the original park buildings line the firmer ground along the southern prism of the Miami Erie Canal. Wright Hall, one of eight original structures, was designed specifically to house the Wright Flyer. Deeds and Wright sought to construct a building that required a minimal amount of maintenance and was relatively straightforward to construct, but that would also provide a fitting setting for its occupant. Thus a combination of ideological influences and practical considerations went into the design of Wright Hall.

Comparable Structures Analysis

Wright Hall was designed in the Colonial Revival style. Colonial Revival was a popular and prolific style throughout America from the late nineteenth century to the 1950s. Sparked by a famous exhibit at the Philadelphia Centennial Exposition in 1876, Americans became nostalgic for their colonial roots. The trend was reinforced by the 1893 Columbian Exposition in Chicago, which featured reproductions of key colonial American buildings such as Independence Hall and Mount Vernon. By the early 1900s, reaction against the perceived excesses of the various Victorian styles further boosted the popularity of Colonial Revival. The simplicity and adaptability of the style made it suitable for everything from complex public buildings to Sears kit homes. Upsurges in patriotism during and after the First and Second World Wars kept the style popular into the 1950s.

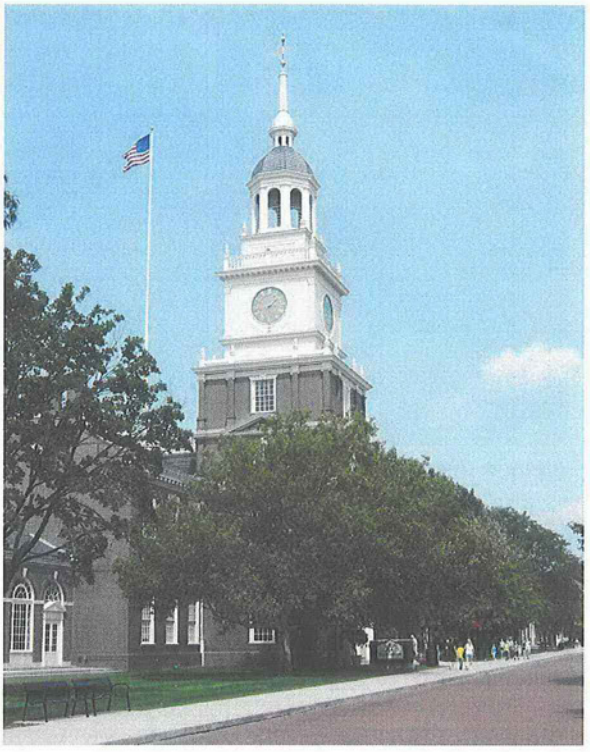

Figure 3: The Henry Ford Musem/Greenfield Village (QE\A 2004)

The same interest in American colonial roots that spurred Colonial Revival architecture inspired another trend in the early twentieth century: the colonial village as open-air museum. One of the earliest of these was Henry Ford's Greenfield Village in Dearborn, Michigan (figure 3). Ford gathered a number of historic artifacts and structures, including the Wright brothers' own Cycle Shop, and created an environment designed to educate visitors about American culture, values and history. Ford was particularly interested in American agricultural, industrial, and technological history. To house his collection of artifacts, Ford hired an architect well versed in period styles to create a complex of buildings, which included replicas of Independence Hall, Congress Hall, and the Old Philadelphia City Hall.

At the same time that Ford was creating his museum in Dearborn, another wealthy American businessman was undertaking a project to showcase American history. In 1926, John D. Rockefeller, Jr., son of the oil tycoon, was persuaded by Bruton Parish rector W.

Figure 4: The 1770 Williamsburg Courthouse

A. R. Goodwin to fund the restoration of Colonial Williamsburg, a project that was to have a far-reaching effect on architecture, historic preservation and interpretation throughout the country. Over the next 9 years, Williamsburg was restored to its colonial period through the removal of post-colonial structures, the restoration of remaining structures, and the recreation of structures thought to be key to the period of interpretation. In an attempt to make the colonial experience as authentic as possible, Rockefeller and Goodwin also restored the landscape and hired costumed reenactors to populate it.

While the "restoration" of Colonial Williamsburg had many flaws by modern preservation standards, at the time it had an enormous influence on architectural trends and the popularity of historical "theme parks." Colonial Williamsburg, Greenfield Village, and other parks like them likely had a strong influence on the development of Carillon Historical Park and Wright Hall. Although the Wright brothers never visited Williamsburg, both Orville Wright and Colonel Deeds would have been familiar with its restoration, and Orville Wright visited Greenfield Village in the 1930s during the dedication of the Wright buildings there.

Specific precedents for Wright Hall exist both at Colonial Williamsburg and in the Wrights' own home at Hawthorn Hill. Photocopies in the files at Carillon Historical Park suggest that the 1770 Williamsburg Courthouse (figure 4) was one model for Wright Hall.[8] The Courthouse is a simple T-shaped brick structure with a hipped roof and an unsupported projecting gable on the main facade. It has a projecting water

Figure 5: Hawthorn Hill, 1990 (Ohio Historical Society)

table, round-arched windows and front door, and an octagonal wood cupola. Wright Hall is similar to the Williamsburg Courthouse in scale and form, but the details are simplified or altered to suit the requirements of the building's purpose.

Like the rest of the country, Colonial Revival was a popular style in Ohio during the late nineteenth and early twentieth centuries, and the Wrights had already employed the style, in a more elaborate form, at their house, Hawthorn Hill, in the Dayton suburb of Oakwood (figure 5). Hawthorn Hill was designed by the Dayton architectural firm of Schenk and William, which would later evolve into Lorenz and Williams Incorporated, who designed Wright Hall. The firm was experienced in the popular styles of the day and frequently designed structures for Colonel Deeds and The National Cash Register Company.[9]

Finished in 1914, Hawthorn Hill was more self-consciously high-style Classical Revival than Wright Hall. Nine bays wide with north and south porticoes in the central three bays and a hipped roof, Hawthorn

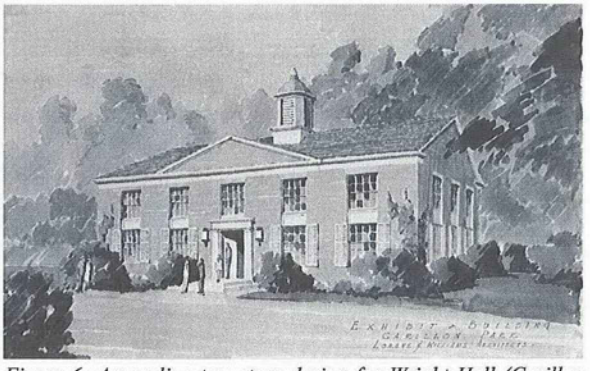

Figure 6: An earlier, two-story design for Wright Hall (Carillon Park Archives)

Hill is detailed with dormers, wide friezes, dentil molding, Ionic columns, and an elaborate front entrance. Both buildings, however, employed similar footprints and were situated on rising ground to take full advantage of the classical ascendant perspective of the building. They clearly belong to different eras, as by the 1940s and 50s Colonial Revival styles were more simplified in their execution. It is clear, though, that Colonial Revival was a style familiar to Wright, Deeds, and their architect.

Design and Construction

Wright Hall was one of the eight original buildings of the park and designed with Orville Wright's input, specifically for the exhibition of the plane. Aside from considerations of style, The National Cash Register Company sought to construct a building that required a minimal amount of maintenance and was relatively straightforward to construct. Since multiple buildings at that time were constructed using glazed brick, a similar method was selected for Wright Hall. This glazing provided several advantages to the construction. The hard, smooth, dense surface was impervious to moisture and resistant to high temperatures, thermal shock and scratches. Second, when properly applied, the glaze increased the strength of the clay body. Third, glazing resulted in a durable, attractive, colored surface that was particularly desirable in situations where ease of maintenance was important. In short, glazed brick offered the long-term structural stability and stature that The National Cash Register Company sought, in addition to a minimal level of required maintenance.

The glazing used in Wright Hall is green in color, suggesting the presence of zinc powder. At the time of construction, there were between thirty and fifty companies producing similar bricks in the Midwest; only two of the companies remain. These production companies would supply their bricks to an installation company, who completed the work. The

Figure 7: Wright Hall under construction, 1948-50 (Carillon Park Archives)

Figure 8: Wright Hall under construction, 1948-50 (Carillon Park Archives)

Figure 9: Wright Hall interior under construction, 1948-50 (Carillon Park Archives)

Figure 10: A 1949 postcard depicting the completed Wright Hall (Carillon Park Archives)

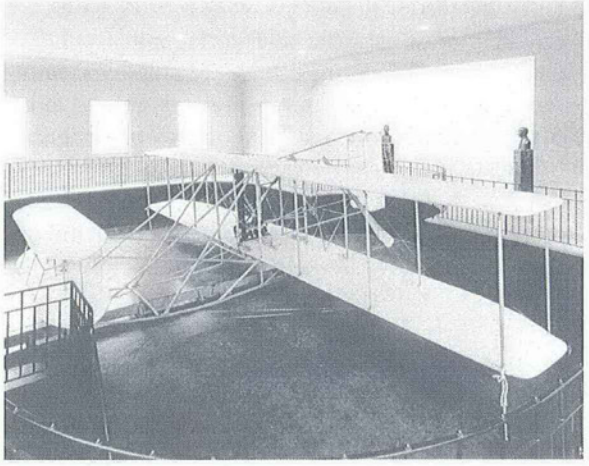

Figure 11: An October 1949 photograph depicting the Wright Flyer III in Wright Hall (Carillon Park Archives)

green color itself is similar to greens that were on the standard color palette of the era, but were eventually removed due to lack of demand. Since that time, it has made limited periodic appearances on the palette, as trends dictated.

The interior of the building was designed to provide the best viewing position for its centerpiece, the Wright Flyer III. The design positions the plane in a three-foot depression on the ground level, allowing visitors to view the plane from above (Figure 11). Initial color analysis suggests that the palette used in the display room, while not specifically decorative, was designed to create a special atmosphere. Deeper greens at the base of the wall shaded up to lighter hues at the ceiling, creating a "flying space" for the Wright Flyer.

Both Wright Hall and the Wright Flyer III were dedicated following the building's completion in June of 1950. Since that time, modifications have occurred to the design, including the addition of two wings (see Part 1-B, Building Chronology).

Significance

Wright Hall is significant for its association with Orville Wright and the Wright Flyer III, and for its design, which was consciously planned to showcase its exhibit.

Wright Hall was designed, with considerable participation by Orville Wright, specifically to house the Wright Flyer III. The Wright Flyer III is designated a National Historic Landmark, as

> the world's first airplane capable of sustained controlled flight and suitable for practical applications. It was with this airplane that the Wright Brothers perfected the technique of flying and developed a utilitarian flying machine that ushered in the aviation age. With the development of the Flyer III, the Wright Brothers had for all practical purposes completed their conquest of the air.[10]

Wright Hall and the Wright Flyer III represented the first effort in Dayton, the Wright brothers' hometown, to preserve an object directly associated with the Wright brothers and their invention of powered flight.

The design of Wright Hall was directly influenced by the Wright Flyer III, as it was purpose-built as a dedicated pavilion to house the airplane. Elements that were specifically designed to optimize viewing of the plane included the sunken floor and elevated perimeter of the plenum chamber, as well as the original color scheme, which provided a special visual "flying space" as a background for the flyer.

Wright Hall retains its integrity of location, design, setting, materials, workmanship, feeling, and association. Recent additions are complementary to the original character of the structure and have left unaffected the basic style and design principles of Wright Hall. The Hall continues in its original use as the setting for the exhibition of the Wright Flyer III.

Endnotes

[1] Zenas Crane to W. and Orville Wright, 11 November 1911, Box 18, Wright Papers, LC and Wright brothers to Z. Crane, 18 November 1911, Box 18, Wright Papers, LC.

[2] O. Wright to F. Campbell, 11 February 1928, Box 27, Wright Papers, LC; Samuel G. Colt to O. Wright, 20 May 1915, Box 18, Wright Papers, LC and O. Wright to Z. Marshall Crane, Box 18, Wright Papers, LC.

[3] O. Wright to Z. Crane, 29 January 1913, Box 18, Wright Papers, LC; Z. Crane to O. Wright, 5 February 1913, Box 18, Wright Papers, LC; S.G. Colt to O. Wright, 21 February 1914, Box 18, Wright Papers, LC; O. Wright to S.G. Colt, 27 August 1914, Box 18, Wright Papers, LC.

[4] Press Release for 25 February 1948, History Non-NCR Carillon Historical Park, NCR.

[5] Ibid.

[6] Carl Beust to O. Wright, 25 August 1947, Box 63, Wright Papers, LC.

[7] McFarland, Papers, 2:1192; Press Release for 25 February 1948, History Non-NCR Carillon Historical Park, NCR and "Historical Building Moved to New Site," NCR Factory News, September 1949, 2.

[8] Electronic correspondence with Ann Deines, NPS, Dayton Aviation NHP, March 23, 2000.

[9] Electronic correspondence with Alan Moody of Lorenz and William, Incorporated, March 28, 2000.

[10] National Historic Landmarks Program, "Wright Flyer III." http://tps.cr.nps.gov/nhl/detail.cfm?ResourceId=2099&ResourceType=Structure.

Part 1-B:

John W. Berry, Sr., Wright Brothers Aviation Center Chronology

Episode I (1948-1953)

- Earlier schematic renderings (see Part 1-A, figure 6) showed a two-story, five bay structure with shutters at the first floor windows. These renderings appear in newspaper articles announcing the construction of Wright Hall. It is not clear why this original design was scaled back.

- The final design was a simple one-story structure with an interior "well" that allowed visitors to view the Wright Flyer III from an elevated position. The detailing was restrained and designed to showcase the Wright Flyer III exhibit.

-Wright Hall was constructed between 1948 and 1950. It was intended to be the primary component of Carillon Historical Park. The official dedication of the building was in 1950.

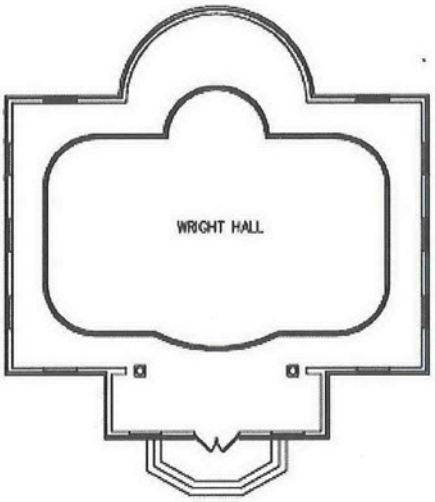

Figure 12: Original Wright Hall floor plan

Figure 13: Wright Hall shortly after completion

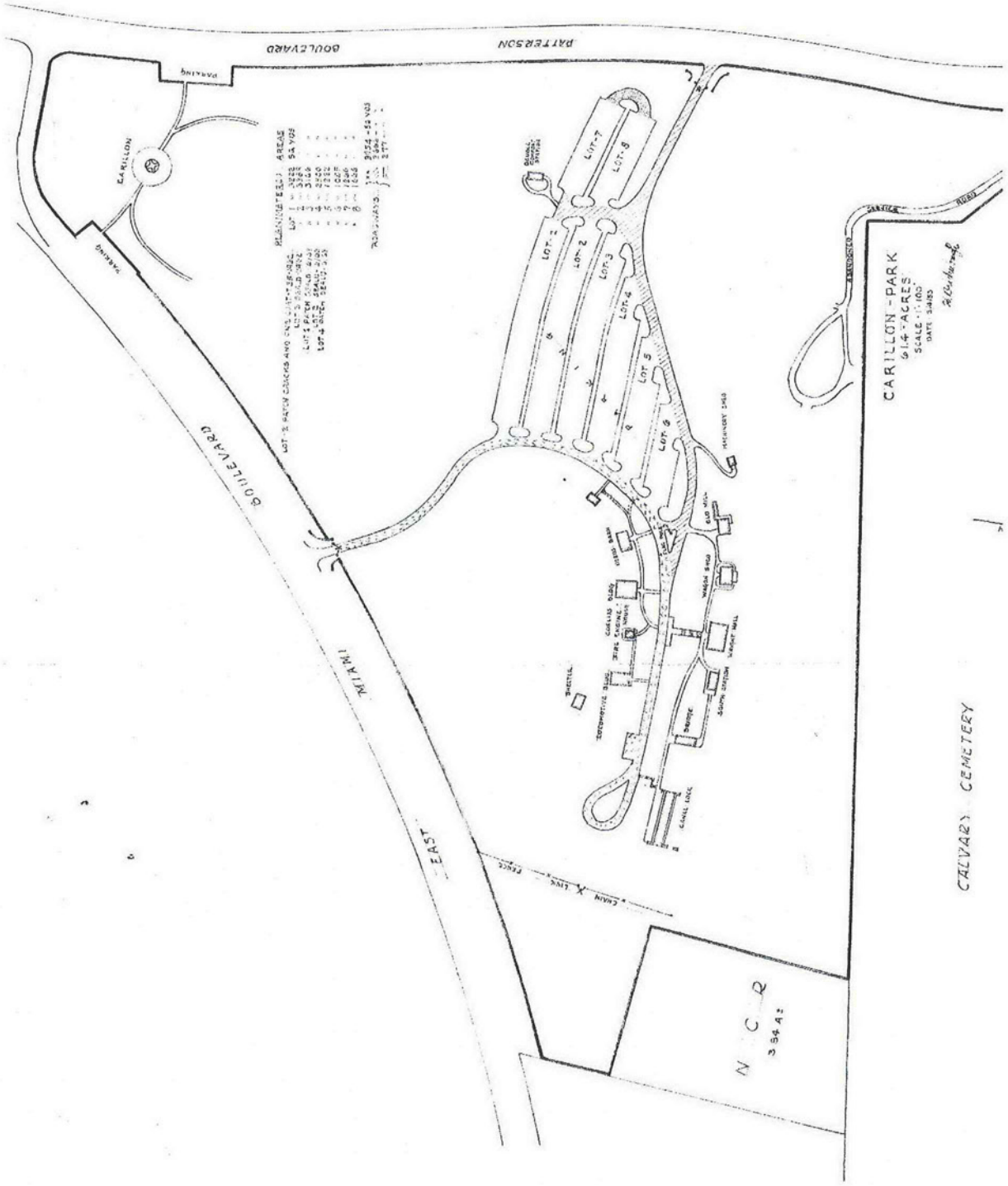

Figure 14: 1953 Carillon Historical Park site plan, Wright Hall at center right.

Episode II (1953 -1998)

- A replica of the Wright Cycle Shop (original now located at Greenfield Village (The Henry Ford) in Dearborn, Michigan) was built adjacent to Wright Hall in 1972.

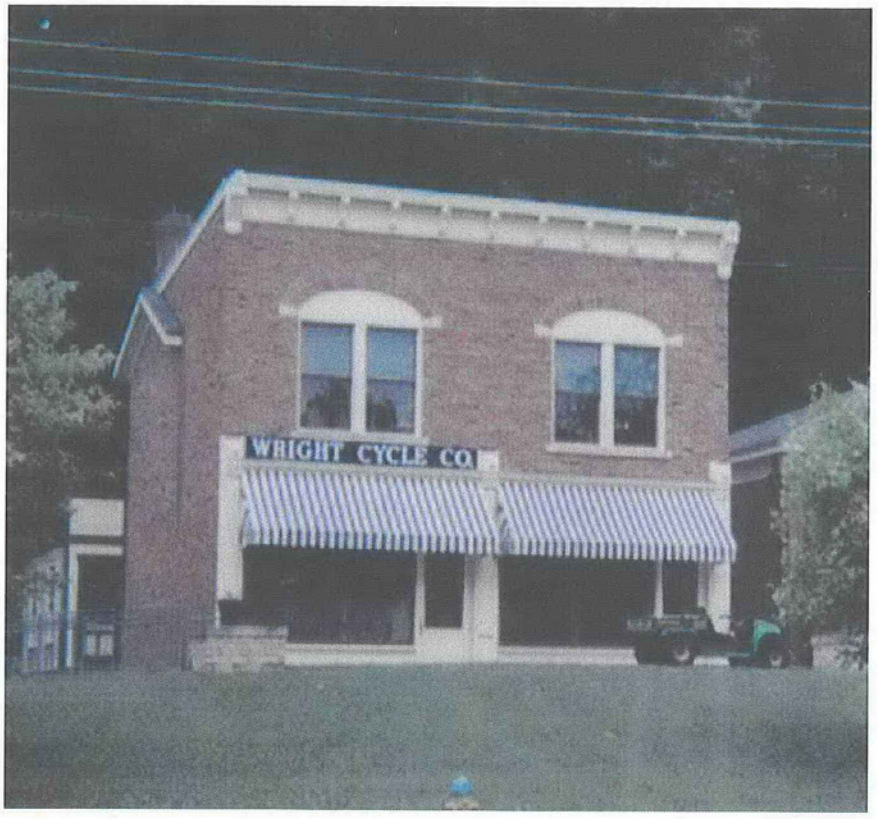

Figure 15: Replica cycle shop (2005)

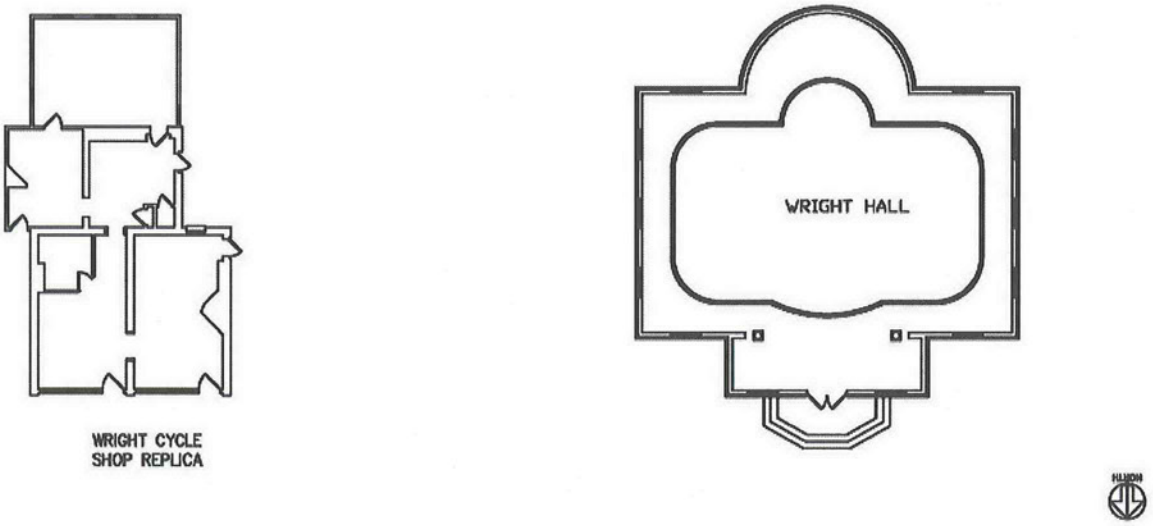

Figure 16: Wright Hall and replica Cycle Shop

Episode III (1998 - present)

- In 1998, the Wilbur Wright wing was built as a link between Wright Hall and Wright Cycle Shop replica.

- In 2000, the Orville Wright wing was built to the west of Wright Hall.

- To allow for the connection between Wright Hall and the new wings, the third windows on the east and west facades of the original Wright Hall were modified as doors.

- The north entry of Wright Hall is no longer the primary entrance to the building; access is now though the Wright Cycle Shop.

- As part of the construction of the flanking wings, the building systems in Wright Hall were replaced with new lighting, HVAC upgrades, and humidity control to provide improved conditions for the structure and exhibits.

- Some additional building modifications were agreed to, based on consideration of the Wright Flyer III, the longevity of the building, and accommodation for visitors as outlined in this document.

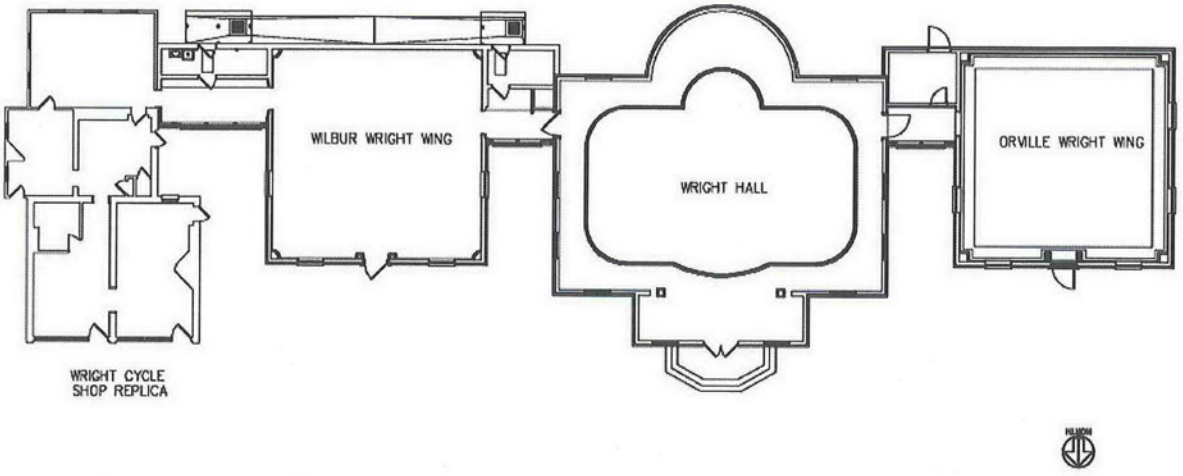

Figure 17: Floor plans, Wright Hall, Wright Cycle Shop replica, Wilbur Wright wing, and Orville Wright wing

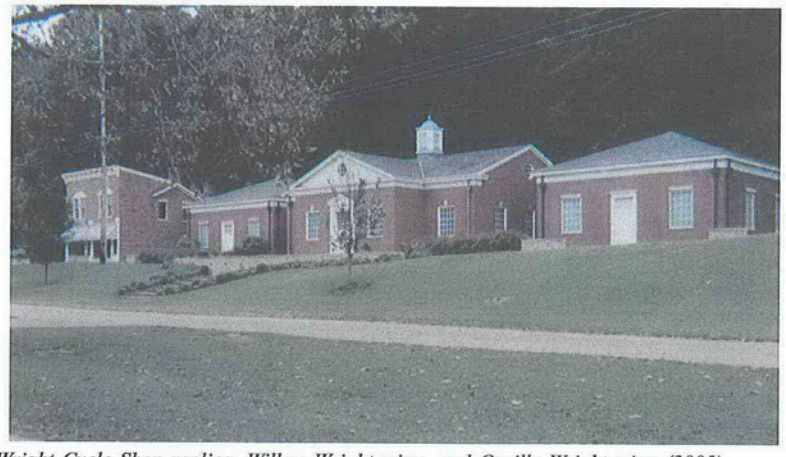

Figure 18: Wright Hall, Wright Cycle Shop replica, Wilbur Wright wing, and Orville Wright wing (2005)

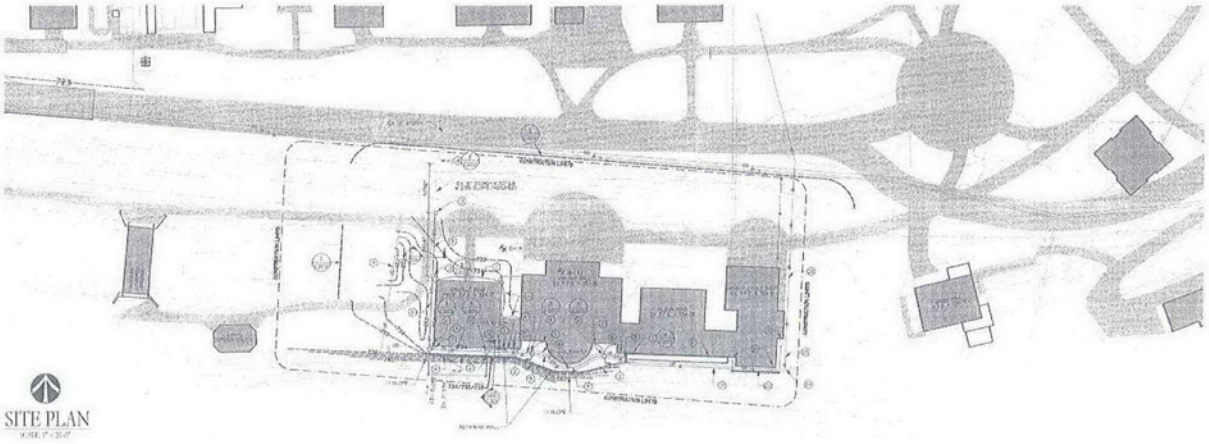

Figure 19: Site Plan, Wright Brothers Aviation Center (1999)

WRIGHT HALL COMPLEX

Figure 20: Schematic rendering of Wright Hall and Wright Cycle Shop replica with proposed Orville and Wilbur Wright wings

Part 1-C:

Existing Conditions

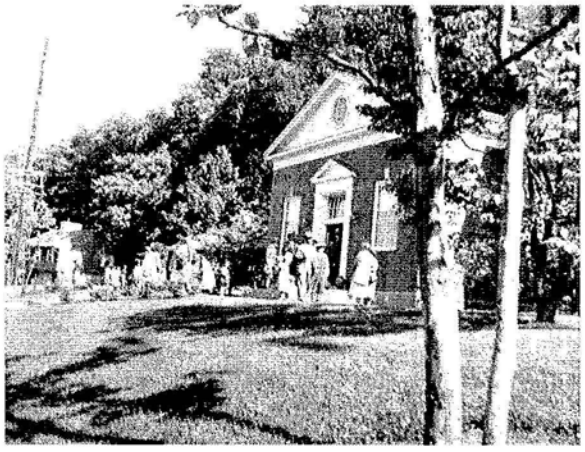

Figure 21: Wright Hall, Dayton, Ohio (Carillon Park Archives)

General Overview

Set on the canal prism at Carillon Historical Park, Wright Hall is a free-standing one-story masonry structure with a lower concrete pit surrounded by a continuous crawl space. The wood-framed attic space is capped by a wood-framed, copper-clad cupola.

The rectangular building has a primary entrance portico on the central axis of its north elevation. The entry axis continues through the structure into the moraine at the rear of the building with a curved apse.

Since construction, Wright Hall has been enlarged with flanking set-back wing additions. The additions are wood and brick structures with a modern masonry cavity wall system. The flanking additions complement the restrained Colonial Revival style of Wright Hall.

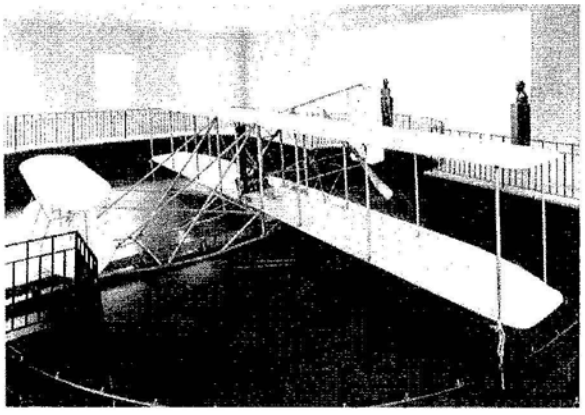

Figure 22: Wright Flyer III inside Wright Hall, October 1949 (Carillon Park Archives)

The interior character is muted and designed to focus attention on the Wright Flyer III. The flyer is in a centrally-located position in the lower floor space (igure 22). It is surrounded by the only public space in the hall. Ancillary spaces are utilitarian and service oriented.

The interior spaces of the newly-finished wings house interpretive exhibits on the Wright brothers, their development of the airplane in context with turn-of-the-century Dayton, and Colonel Deeds' development of Carillon Historical Park.

The components evaluated below pertain to Wright Hall proper and only refer to the flanking additions as they directly impact Wright Hall.

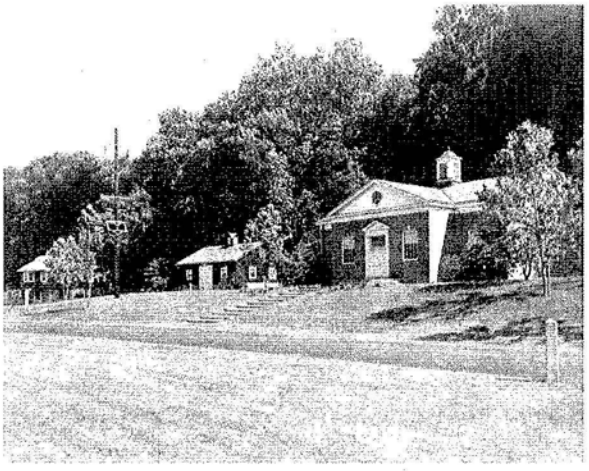

Figure 23: Wright Hall site, Dayton, Ohio (Carillon Park Archives)

Site

Set into a glacial moraine at the perimeter of Carillon Historical Park, Wright Hall is situated on top of the south side of the canal prism. The original main entry stairs run from the building to the base of the canal prism.

The extant features of the cultural landscape surrounding Wright Hall include the spatial relationship to a paved pathway along the top of the south side of the canal prism, the steps into the building from the path, and the steps (with lower landing) up the side to the top of the prism (figure 23). The views to the Wright Cycle Company building and Wright Hall from the Kettering Family Education Center are significant, as are the views that are offered from various vantage points throughout the site. Currently, these positively influence the comprehension of the overall site.

Exterior

Roof

The main building roof is gabled with a cross-gabled roof over the projecting entry pediment. This roof was originally designed as a slate roof with built-in copper gutters and copper flashing crowned with a wood-framed, copper-clad cupola. The flat roof over the apse was originally designed as a metal roof with a masonry parapet wall which has a built-in gutter on the exterior perimeter. The connecting wings have gabled roofs.

Presently, the south halves of the gabled roofs have been reroofed with asphalt shingles. The north halves and entry roofs have retained the copper flashing and slate roofing. The flat roof over the apse has been reroofed with a membrane roofing system. The cupola retains its historic materials.

The copper built-in gutter system exists at all of the eaves and at the exterior perimeter of the southern parapet wall. The built-in gutter is connected to copper leaders held in place with copper leader straps. On the north façade there are copper leader heads engraved with the year that the building was opened.

All of these systems remain intact. At the time of survey, the gutters on the south, west and east elevations were not complete, with missing leaders and leader straps. Modifications were made for drainage into an underground system on the south side of the building in an effort to eliminate the water penetration into the building (figure 24).

The reroofing of the southern side of the building, including the flat roof, could be due to water penetration, as internal staining appears at the joint between the flat and pitched roofs in early photographs. There is also evidence of water penetration on the plaster walls and coves on this side of the building (figure 25). In addition to construction details, the siting of the building could be contributing to the disintegration of the roofing. This is due to the fact that the moraine into which the building is set blocks the southern exposure and the drying effects of the sun. Some of the slate on the north sides of the gabled roof appears to be broken or missing. This condition primarily occurs on the areas near the perimeter of the roof and adjacent to

Figure 24: Moraine siting, south side of Wright Hall

the built-in gutter. There is a new ridge cap along the roof edge where the slate and shingled roofs meet.

The wood trim and fascia appear to be in stable condition around the entire perimeter of the building. Evidence of earlier repair is visible at the south elevation parapet wall.

North Elevation

This elevation is the original main entry facing out into Carillon Park. The exterior construction of the wall is an exposed rubbed concrete foundation with a brick finish face. The portico portion of the north elevation has two symmetrically-centered steel windows around both the wood double door and

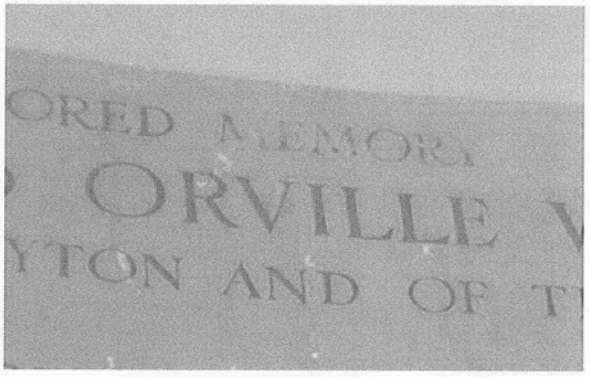

Figure 25: Evidence of water penetration in plaster of cove.

wood-framed transom. The entire door unit is capped by a wood trim pediment flashed at the top with copper, regleted into the face brick. Each window has a flat arch with a limestone key (figure 26). The fifth window on the elevation is a round steel window centered in the wood pediment over the main entry.

There is no evidence of weeping or water penetration in the brickwork. Some pointing repair is indicated but in general the brick and mortar appear to be in good condition. The limestone keys are in good condition, with no evidence of spalling or efflorescence.

The light fixtures, originally on either side of the entry door, were not present at the time of this field survey.

The stone and concrete steps were dismantled and the stone was stored, unprotected, on the site adjacent to the building (figure 27).

The wood trim and casing for the double doors and pediment show some localized water damage, primarily on the east side. The gap at the meeting point of the double doors is evident only on the exterior at the bottom third of the doors. The original hardware remains on the doors and transom.

The vase shown on the steps in the early photographs was not present at the time of survey as the steps were dismantled. It was located during the survey of the plenum chamber in the northwest corner of the chamber with a chipped portion of the lip stored inside the vase.

South Elevation

With a centered, curved brick wall and flanking flat walls, this elevation retains the same materials and characteristics of the north elevation. The exterior construction is similar with the exception of the parapet wall which serves as the terminus for the flat roof over the apsidal end.

Each window on the flat walls has a brick flat arch and limestone key, and matches the north elevation windows in type and style. The keys on this elevation show more weathering and wear than those at the north elevation.

There is considerable evidence of brick pointing repair. This additional work may be explained by the

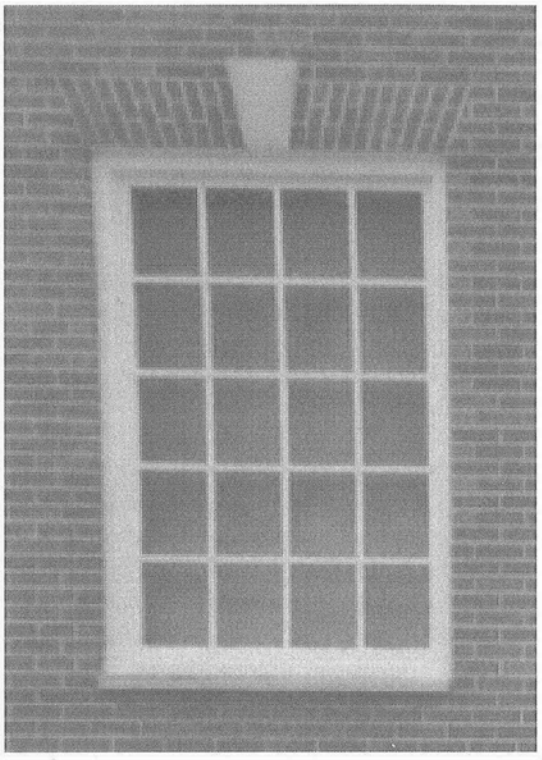

Figure 26: Window arch, typical

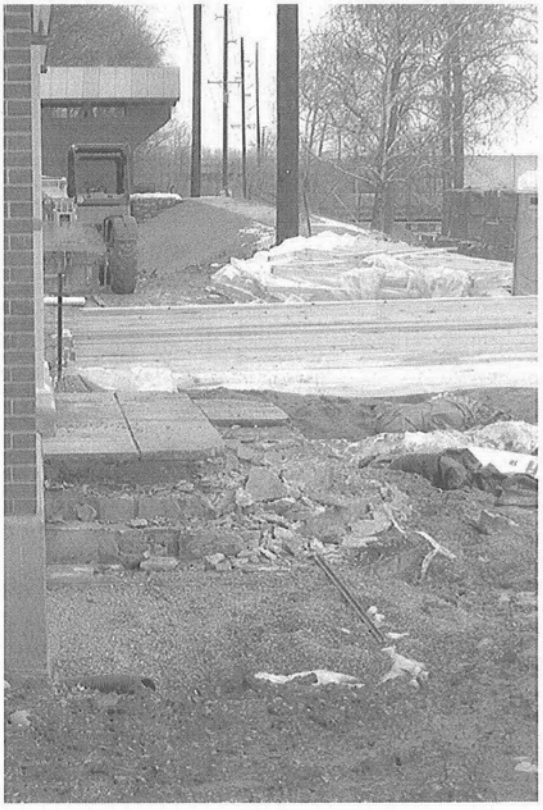

Figure 27: Dismantled front steps.

enclosed, shaded condition of the elevation since it is sheltered by the moraine. The brick at the rounded portion of the elevation appears to overhang the foundation instead of the foundation stepping out from the brick face, as is typical around the perimeter of the building. The brick overhangs up to half an inch on the eastern half of the curved wall.

The foundation shows evidence of spalling of a recent parging repair adjacent to the ground. Foundation cracking and the repair of earlier foundation cracking is evident along the entire south elevation (figure 28).

The recent drainage and diverting system installed appears to be functioning to solve the issue of run-off from the moraine. The resolution, however, of the ground water issue is not as clear. The clay-like, muddy texture of the fill immediately adjacent to the building is evident, while the fill from the drip edge to

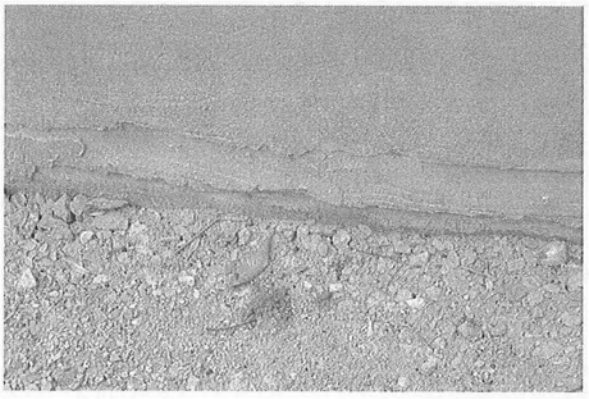

Figure 28: Foundation condition at grade.

the retaining wall appears to maintain a coarse gravel appearance. This may be indicative of water retention adjacent to the building, or the perking of ground water up the exterior of the building.

East and West Elevations

Though both elevations retain the same materials as the north and south elevations, the east and west elevations have been modified. The southernmost of the three window openings was changed into a door for a connecting corridor to the newly constructed flanking wing additions.

The remaining two windows on each side require some attention, as there is evidence of peeling paint and rusting metal.

Both elevations have a round steel window in the pediment end. These windows differ from the north elevation window only in the surrounding material. The north elevation window is finished in wood and the east and west elevation windows are finished in brick. All three round windows appear to be in good condition and require wire brushing, priming and painting due to peeling paint and rusting metal.

Both elevations show indications of foundation cracking. The cracking at the east elevation appears to align with interior cracking through the plenum chamber and terrazzo floor (figures 29and 30).

Interior

North Elevation

General description: The north interior elevation includes the formal portico entry to the entire hall. The lower 6'-1 ¾" of the wall is clad in a green glazed brick. The brick has a bull nose edge detail at the window openings. The remaining 7'- 7 ¼" is flat plaster leading to a decorative cove treatment. The tile detail continues at this height in the entry portico, but the ceiling height drops to 13'- 4" adjacent to the bulkhead that separates the two spaces. The exposed tile requires some minor pointing under the windows. The display cases in the

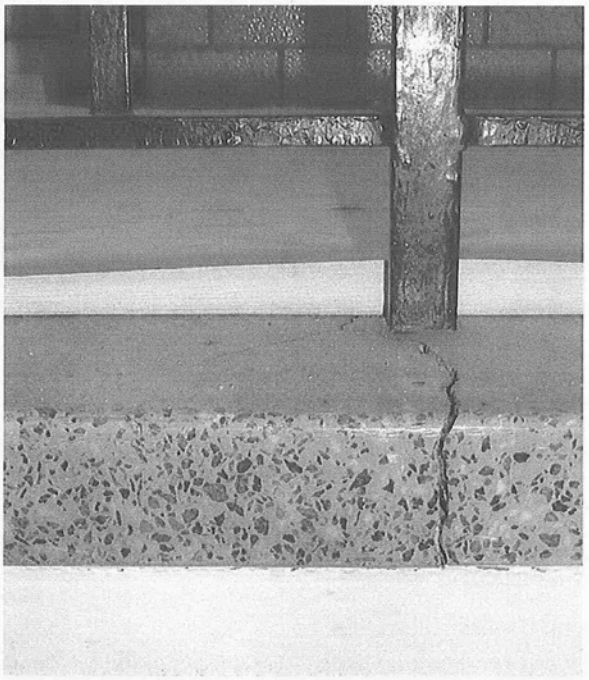

Figure 29: Crack in terrazo floor.

Figure 30: Evidence of cracking at floor on exterior

corners of the portico are immovable and the tile was not surveyed behind them. There are two wood columns at the east and west ends of the bulkhead that further define the entry space. These columns are in good condition and have a painted finish.

Windows: The steel windows on either side of the entry are in good condition. In all the windows there is a noticeable amount of heat loss occurring. This is likely due to the fact that the windows are single glazed and the steel exterior connects directly to the interior. Both windows have peeling paint on the exterior and interior faces at the sill. There is no apparent rusting or degradation of the metal components

Doors: The main entry doors are solid wood rail and stile doors with three raised panels set into each (figure 31). The wood casing and trim appear to be in good condition with minor water damage at the lower left corner of the frame. The wood panels are in good condition. The handset, escutcheon plate and hinges appear to be original to the door. The thumb turnlock appears to have been modified, as there is some wood blocking used to adjust the mounting depth of the lock. The most apparent issue requiring attention is the 1/4" to 1/8" gap between the leaves.

The wood framing around the door continues around the transom. The transom, unlike other windows in the building, is a wood-framed window that is flush to the interior face of the door casing. Historic photos show that the transom was originally an operable tilt-in window. The transom panel appears to be in good condition although it requires re-glazing. There is the same noticeable heat loss at this unit as is evident in the single-glazed window. The transom is now covered with a fixed storm window.

Plaster: The flat plaster appears to be in good condition, with no cracking. All surfaces have a painted finish. The finishes on the plaster are further outlined in the decorative finish analysis section. The plaster wall has some penetrations from the wood mounting rail.

Glazed Brick: The glazed brick is generally in good condition, with some penetrations at the locations where the lower wood trim mounting rail is in place (figure 32). There is some mortar missing at the joints below the sills of each window corner.

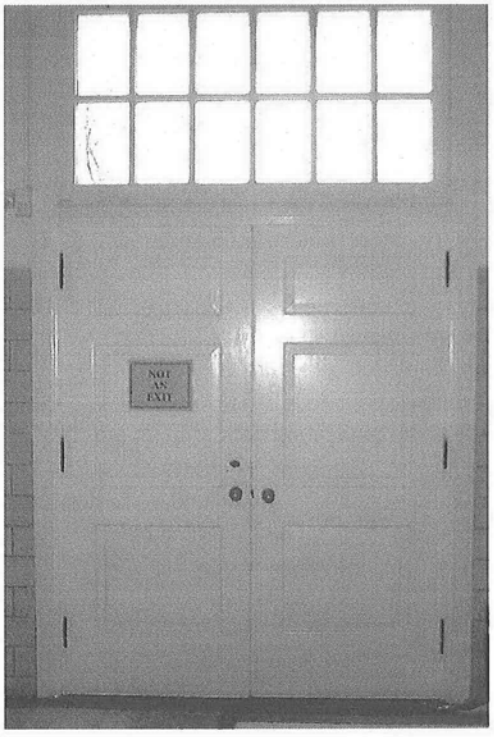

Figure 31: Interior of entry door.

South Elevation

General description: The south interior elevation includes the apsidal end in the hall containing the freestanding busts of Orville and Wilbur Wright. The brick and plaster are of the same height and edge detail as the north elevation. The tile detail continues at this height in the curved niche, but the ceiling height drops to 13'- 4" adjacent to the bulkhead separating the two spaces.

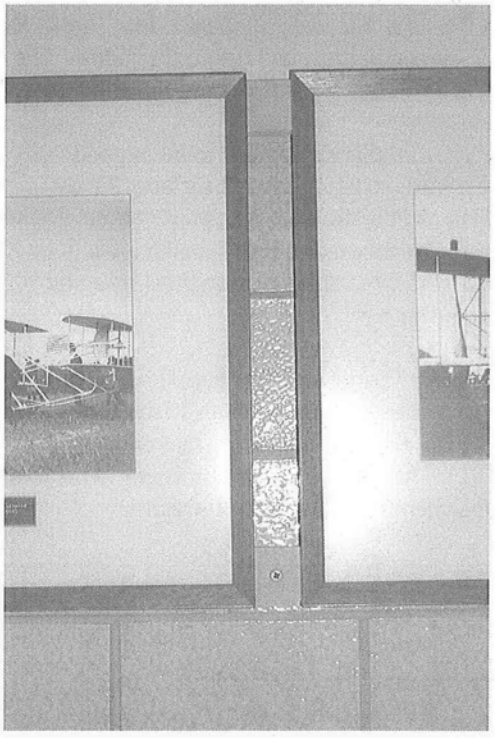

Figure 32: Glazed brick at mounting rail.

Windows: The steel windows on either side of the curved space are in good condition. The condition of the windows is consistent with those on the north elevation with regard to the heat loss and deterioration of painted surfaces.

Plaster: The flat plaster appears to be in good condition with no cracking except in the curved surface. Along the curved surface and the bulkhead there is evidence of plaster deterioration from water infiltration. All surfaces have a painted finish. There is a decorative finish on the curved wall with gold-leafed lettering stenciled on the wall. There are losses in the leaf where the plaster damage has occurred. The finishes on the plaster are further outlined in the decorative finish analysis section. The cove plaster appears to have some minor cracking on either side of the curved wall.

Glazed Brick: The glazed brick is generally in good condition.

East Elevation

General description: The east interior elevation includes the new entry to the connecting corridor of the wing. The brick and plaster are the same height and edge detail as the north elevation. The exposed tile requires some minor pointing under the windows. The display cases in the corners of the wall are immovable and the tile was not surveyed behind them.

Windows: The two steel windows north of the new entrance are in good condition. The condition of the windows is consistent with the north elevation, with heat loss and deterioration of painted surfaces.

Doors: The new passage opening is a hollow metal frame with a wood trim profile different than the trim profiles utilized in the building. There is the appearance of a transom panel above the door that indicates the original height of the window. This opening is not trimmed out and is painted to match the wall color.

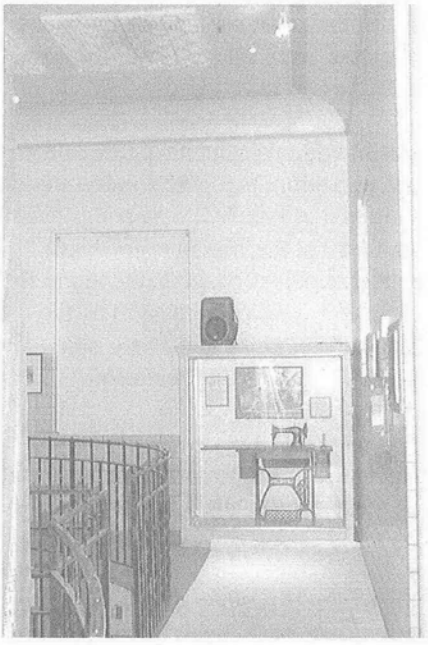

Figure 33: East interior elevation.

Plaster: The flat plaster appears to be in good condition without cracking. All surfaces have a painted finish. The finishes on the plaster are further outlined in the decorative finish analysis section. The plaster wall has some penetrations from the wood mounting rail.

Glazed Brick: The condition of the glazed brick is generally good with some penetrations at the locations where the lower wood trim mounting rail is located. There is some mortar missing at the joints below the sills of each window.

West Elevation

General description: The west interior elevation includes the new entry to the corridor connecting to the new wing (figure 34). The brick and plaster are the same height and edge detail as the north elevation. The exposed tile requires some minor pointing under the windows. The display cases in the corners of the wall are immovable and the tile was not surveyed behind them.

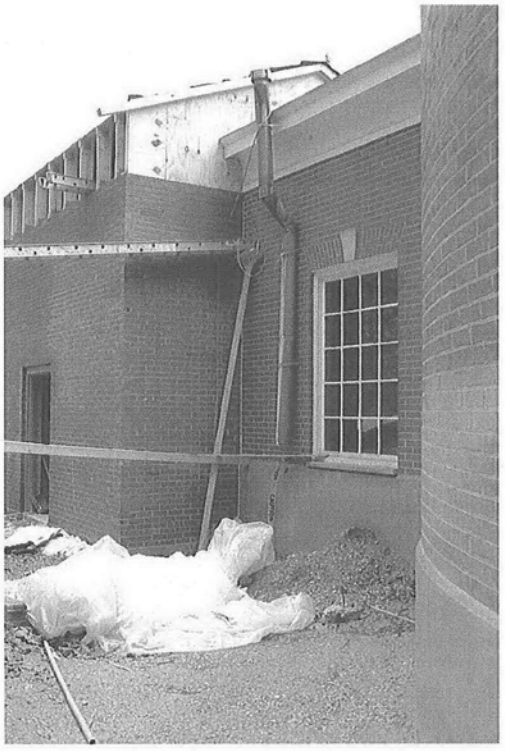

Figure 34: Connector building

Windows: The two steel windows north of the new entrance are in good condition (figure 35). The condition of the windows is consistent with the north elevation, in terms of heat loss and deterioration of painted surfaces.

Doors: The new passage opening was sealed shut at the time the building was surveyed and no information was available on the modifications to the opening.

Plaster: The flat plaster appears to be in good condition without cracking. All surfaces have a painted finish. The finishes on the plaster are further outlined in the decorative finish analysis section. The plaster wall has some penetrations from the wood mounting rail.

Glazed Brick: The condition of the glazed brick is generally good with some penetrations at the locations where the lower wood trim mounting rail is located. There is some mortar missing at the joints below the sills of each window (figure 36).

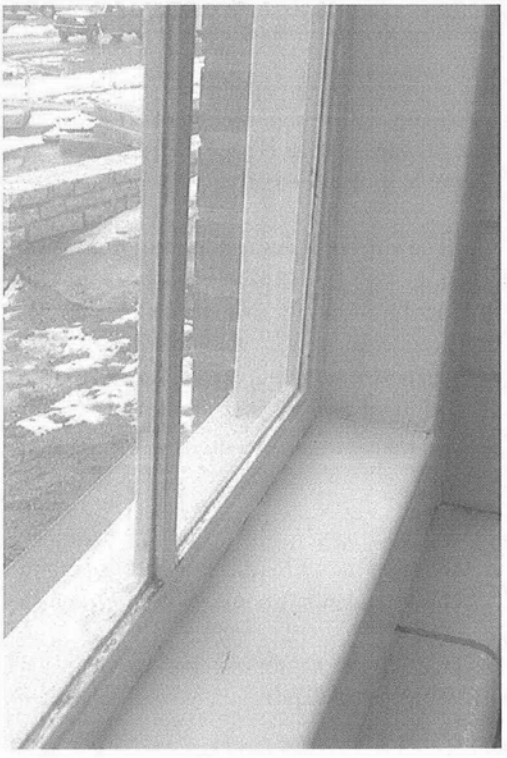

Figure 35: Steel window.

Ceilings

Plaster flat and cove: The central ceiling space is composed of an acoustical plaster. Acoustical panels

have been glued to the ceiling. The plaster was tested and found not to contain any asbestos. In examining the feasibility of removal, it was discovered that the plaster is friable. There is evidence of this fragility at the new fixture penetrations and track mounting locations where the finish layer has deteriorated and the brown coat is visible.

Figure 36: Glazed brick at window sill.

The cove and wall plaster appears to be a traditional 3-coat system with scratch, brown and finish coatings. All surfaces have been painted numerous times as noted in the decorative paint analysis.

Lighting: The current lighting is not original to the main space as seen from historic photographs (figure 22). The openings from the original ceiling fixtures remain and are evident from dust collection in the acoustical panels mounted over the openings. The current lighting of the hall central space, apsidal end and portico is covered in detail in the lighting analysis later in this section (figure 37).

Acoustics: The current acoustical modifications include the mounting of foam panels at the ceiling surfaces and the installation of a portable sound system with a lavaliere microphone. The acoustical analysis later in this section covers the existing conditions in further depth.

Fire Protection: Currently there is a dry line system with head and line locations in the plenum space,

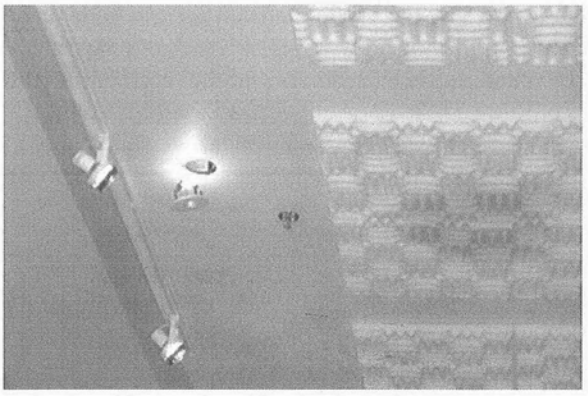

Figure 37: Ceiling and track lighting

above the main hall, above the vestibule, and in the curved section ceiling.

Ceiling Access panels: There are two ceiling access panels in the space. One is located in the entry vestibule and the other is on the east side of the main entry space. Neither panel is a rated construction type as they are wood panels placed over framed openings. Both are original to the building.

Floor: The original floor is a green terrazzo. There are several stress crack locations running from the exterior walls to the edge of the pit. The cracks located on the eastern side of the hall coincide with cracking in the pit and on the exterior foundation.

Pit

Walls: The reinforced concrete walls forming the pit are curved at the north and south ends. There are six openings of equal size into the plenum space. Each of the openings has a metal grille fit into it that was originally used for air circulation. There is evidence of cracking in the walls. The cracks at the east side align with exterior cracking in the foundation. In some of the cracks, efflorescence is evident. The concrete walls in the interior of the plenum space have received a bituminous coating in some locations.

Railing: Visitors are protected from the three-foot drop to the lower floor where the Wright Flyer III is located by a transparent but strong railing. It is likely that the simple details and use of strong materials was intentional to allow optimal viewing of the Wright Flyer III without visual competition (figure 38). The railing is grounded in the terrazzo floor. There is some minor cracking at these locations.

Figure 38: Interior corner showing railing

Floor: It appears from an historic photograph that the concrete floor was a brushed natural finish with a protective coating prior to the series of colors applied to the floor and walls. The other finishes are listed in chronological order in the decorative painting analysis. The flooring in the plenum space shows some evidence of efflorescence. During the site visit, there were heavy rains, and there was no evidence of standing water or recent water penetration into the building. However, there was a small area of standing water due to a dehumidifier drain tube that was not aligned with a drain.

Finishes: In the pit where the Wright Flyer III rests, the wall surfaces show a stable paint layering on top of the plaster substrate. Up to fourteen coatings were found on the walls of the pit, with approximately ten color campaigns represented. The floor of the pit held only four color campaigns where tested. Inspection of the photograph taken of the Wright Flyer III in Wright Hall on October 24, 1949 (figure 22) shows a mottled floor similar to what might be seen with a bare concrete floor; although it also appears that the floor is highly reflective, suggesting a clear protective coating or polished finish.

Inspection of the iron balustrade surrounding the pit resulted in the detection of several thin coats of black paint. At the handrail on the north side of the Wright Flyer III a red-brown undercoating was detected by the naked eye. Scraping and inspection through a 10X hand held magnifier indicated the presence of only one primer coating (red-brown) followed by one black finish coat. The coating system at this location is thought to be recent.

Attic

It appears that the attic was built as indicated in the drawings. The primary modification is the introduction of a blown cellulose insulation material (figure 39). The space is not heated and a draft is noticeable . An improvised drainage system made of a garden hose and visqueen can be seen under the cupola. It does not appear that much water drains through this system.

Floor: The structure remains exposed under the insulation material and the wood walkway running east-west in the attic is in stable condition. There is some evidence of earlier water staining under the cupola.

Roof: The wood substructure and the wood and steel framing are all clearly visible and appear to be in generally good condition (figure 40). The only location where previous water infiltration is evident is at the framing between the flat and pitched roofs at the rear of the building. This is consistent with information obtained from photographs and the plaster condition below.

Finishes

The interior finishes of Wright Hall in general appear to be stable and intact. Initial color investigation executed by cratering and microscopic inspection provided a general understanding of the paint chromachronology, and frequency of coating applications. A cursory inspection of the building interior also provided an understanding of the amount of deterioration, albeit limited and localized.

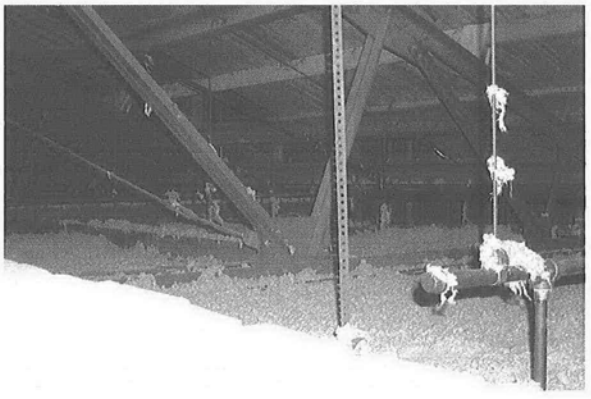

Figure 39: Attic

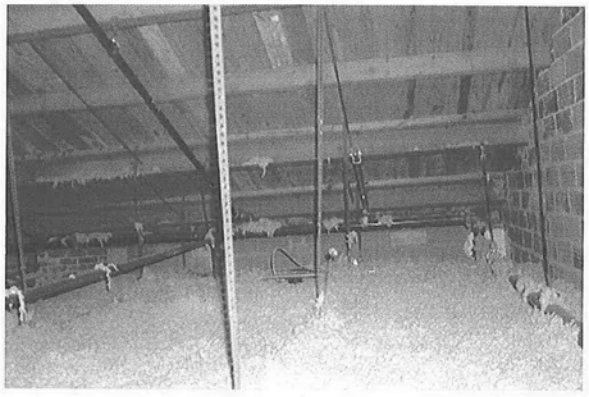

Figure 40: Wooden substructure in attic

At the time of the initial survey (2000), the 1905 Wright Flyer III was enclosed in scaffolding and polyethylene sheeting to protect the plane from construction dust generated by the introduction of an addition to the building. The ceiling shows limited paint flaking or peeling back to the substrate, which otherwise appears well bonded to the substrate.

The ceiling molding, cove, picture molding and walls all appear to have a similar layering of finishes, generally in good condition, although some flaking and delamination appears to have taken place. While the initial cursory inspection has determined only three to four coatings applied to the ceiling, the ceiling molding, cove, picture molding and walls show at least five coatings of a minimum of four color campaigns.

The only ceiling/wall area exhibiting water damage is found in the semicircular alcove at the south end of the interior. In this area, flaking and peeling paint and some efflorescence are found on the ceiling adjacent to the short wall beneath the cove and picture molding in the main hall. Similar conditions exist on the south exterior wall of the alcove, resulting in water damage to the gilded lettering of the wall text.

At the window and door surfaces closest to the elements, such as the window sash and the front doors, typical paint flaking for coatings can be found throughout. The casing of the windows and doors, however, remains intact and in good general condition.

Initial interpretation of the first paint colors found on the interior surfaces of Wright Hall indicates that the ceiling was painted a very light green, almost an off-white with green pigmentation. The ceiling molding, cove, and picture molding were likely also painted a light gray-green, with the walls painted a darker gray-green. Due to the periods of construction and use, it is safe to predict that the paints are lead oil or alkyd oil coatings, and have very likely yellowed. Inspection of the pit walls showed the presence of the greatest number of coatings applied to the interior, with the first paint campaign likely a gray-blue. The pit floor had only three coatings where inspected under the stair, with the first campaign having a bright blue-green hue. It is assumed that the first floor coating is not that, due to the time the building was constructed. Based on inspection of the earliest photographs, the floor appears to have a mottling consistent with unpainted concrete.

The intentional subtle nature of the finishes varies. Currently the building is painted white at the interior and the terrazzo floor and glazed brick are the only hints of the original color scheme. It is apparent from the decorative finish analysis that the monotonal nature of the finishes was well coordinated and intentional. The use of color is an interesting contrast to the commonplace nature of the materials. The materials and details used here were commonly used in public and industrial constriction at that time. The green color was similar to greens that were on the standard color palette of the era, but it is unknown if this particular shade was a custom color.

Paint finishes of elements including wood trim, windows, the portico columns, and the display cases are covered in the decorative finish analysis.

Display cases: The cases, designed at the same time as Wright Hall, were not added until later. The design utilized for the existing cases is true to the original design intent. They are not permanently fixed to the walls and the glazed brick and plaster treatments continue behind the cases. However, they are not easily moved due to the power source requirements and the nature of the objects.

Items mounted on walls: Recently two pieces of wood trim were mounted to the plaster and brick wall for the mounting of historic photographs. Carillon Historical Park has expressed that these images will not remain there permanently. Some repair work is required to both the plaster and the face of the glazed brick.

Lighting

At the time of the initial survey (2000), the weather was sunny. The room containing the Wright Flyer III is light in tone and the plane fabric is of a similar tone. Illuminances on the floor of the mezzanine level ranged from 3 to 53 footcandles under an existing MR16 downlight. Throughout the space the vertical footcandles read between 9 and 19 fc. However, it should be noted that the plane is under cover, which prevents measurements in situ. Under cover on the upper surface of the bottom wing of the plane, the readings varied from 2.2 to 3 footcandles.

Throughout the space, the daylight is controlled with the use of roller shades, however, the transom over the front door is untreated, a matter which results in serious glare and daylight infiltration. There are serious glare issues that occur when the shades are not in the down position.

The existing structure has been modified with the removal of the original lights and the insertion of acoustic pads. The current lighting system, which is a few years in age, consists of Halo (or equal) MR16 downlights and PAR30S trackheads (also Halo or equal). The trackheads are fitted with black egg crate louvers. (Refer to figure 37).

Acoustics

Wright Hall materials are typical for their time: brick, single-glazed windows of wood or steel frames, structural clay tile with brown coat plaster, hard lime surface plaster finished with oil paint, glazed tile, concrete floors often surfaced with terrazzo, and ceilings of metal lath, brown coat plaster and surface plaster. With all of these hard surfaces, sound was "mirrored" around the space without energy loss resulting in a very long reverberation time (the time required for the sound to decay to one millionth of its source intensity). Only the people in the space absorbed sound, and in a space such as Wright Hall, with a volume of 50,000 cubic feet and no seating, the reverberation would be 4 to 5 seconds and speech communication would be impossible beyond about a ten to fifteen foot distance. This was common knowledge at the time and the only area of the building susceptible to a softer surface was the ceiling. Acoustical plaster was applied to the brown coat ceiling and, depending on its softness and thickness, the reverberation time of the space could be controlled. Most acoustical plasters of this period were made of lime plaster mixed with a high percentage of asbestos fibers, the same fibers as were used for thermal insulation (although asbestos was not found in the Wright Hall ceiling). Originally, the ceiling in Wright Hall would have had a reverberation time of about 1.5 to 2 seconds, and one could communicate with an elevated voice level across the 30 feet of the flyer display (figure 41).

The only problem may have been in the winter when the heating system was active and the fan noise from the plenum along the pit may have been loud enough to interfere with speech communication at a distance. Therefore, when Wright Hall opened to the public, the acoustics were good. After the hall had operated for several years, the ceiling was repainted and some of the open surface of the acoustical plaster was sealed with paint. This resulted in a loss of sound absorption and a somewhat longer reverberation time in the hall, but probably only a marginal decrease in speech intelligibility.

At some point during additional repainting, the surface of the acoustical plaster was sealed with paint and only the low frequency sound was

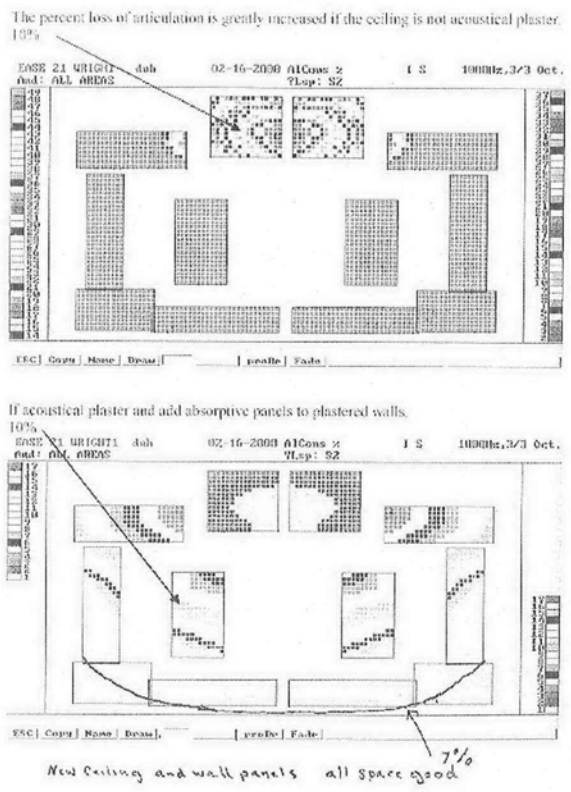

Figure 41: Acoustical reverberation information.

Figure 42: Connector Building

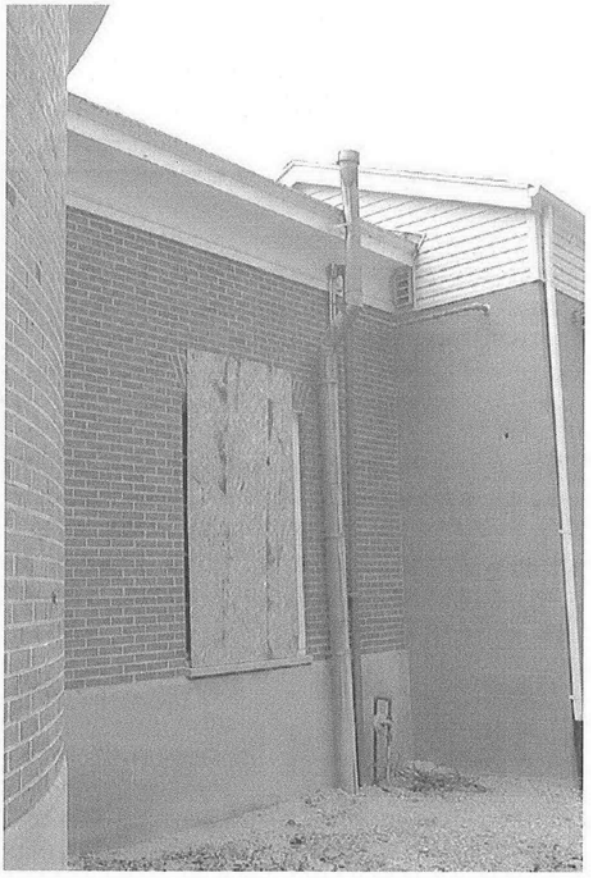

Figure 43: Connector Building

absorbed. The effect would have been very noticeable, the reverberation time at mid frequencies may have been as high as 5 seconds and speech intelligibility could have been reduced by 25 to 30%. At some time within the last ten years, a plastic foam Somex was applied to the ceiling surface to restore the middle and high frequency sound absorption that had been lost over the years by the repainting of the ceiling. The reverberation time in the hall at this time is about the same as it was in the newly opened hall in 1950. However, a new heating system has added a high level of noise at about 51 dBA to the hall and non-amplified speech is non-intelligible at a distance greater than 15 feet.

Connectors

The connectors from the wing additions do and will continue to house the new mechanical units for Wright Hall. In general, there is good separation between the structures to prevent transference of vibration. (figures 42and 43). The only exception to this is the block wall that separates the mechanical area from the corridor. The wall directly abuts the exterior brick of the Hall. The passage to the new addition was not accessible and was not surveyed during this visit. Issues relating to the air handling unit proximity and noise transference are addressed in the acoustic analysis.

Post Construction Evaluation

A post construction evaluation occurred on June 1st and 2nd, 2005, to review the condition of the building and the implementation of the treatment recommendations. The following items were noted as either a continuing condition or a new issue not previously mentioned earlier in this section.

Exterior

- Continuing condition: A gap still exists between the original two main entrance doors which will allow tempered air to filter into the outdoors and untempered air to filter into the main exhibit hall.
- Continuing condition: There are still loose

and missing slate shingles on the north face of the main roof and west face of the cross entrance gable roof.

- Continuing Condition: There still appears to be water leaking into the building from the rubber roof over the apse portion of the building. From discussions with Park personnel, this most likely has been caused by ice damming at the scupper and conductor box. The ice damming during past winters could also have created a tear in the EPDM roof membrane at the parapet wall juncture that is also allowing water to infiltrate.
- Continuing Condition: Grade level yard drains at the south side of the building have debris in them restricting the flow of water. Several of the drain covers were not correctly seated in the drain pan and protruded above the ground plane.
- Continuing condition: A crack in the foundation at the west side of the curved apse has been routed out to accept a sealant infill, but no sealant was installed.
- New condition: The exterior wood trim is peeling and in several locations bare wood is evident.
- Continuing condition: There is mortar erosion on the northwest corner of the building at a height level with the top third of the adjacent window.
- Continuing condition: Weeds are growing in the stone joints of the original exterior steps leading to the top of the prism.

Interior

- New condition: At several locations on the ceiling of the main exhibit hall, there is a black residue adjacent to the mechanical supply grilles discoloring the new ceiling finish.
- Continuing condition: The tinted ultra-violet film has not been removed from the individual window panes in the existing windows.

Part 2:

Recommendations

Part 2-A:

Treatment Recommendations

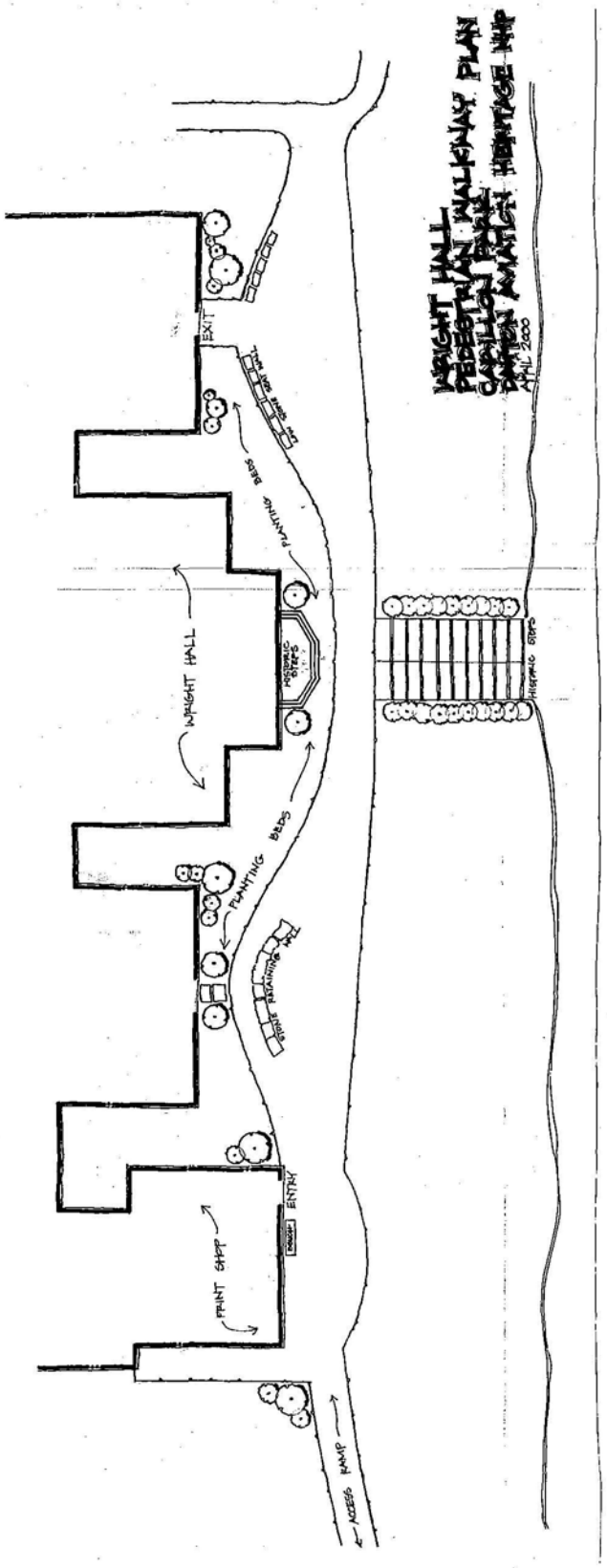

Figure 44: Original proposed landscape design

Approach to Treatment

The goal of the treatment recommendations is to provide a comprehensive approach to restoring the essential character of Wright Hall. The following recommendations comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties. The Standards establish professional standards and goals for the preservation and protection of cultural resources. The four approaches include: Preservation, Restoration, Rehabilitation, and Reconstruction, each approach with its own set of standards. The choice of a treatment depends on many factors, including the property's historic significance, physical condition, and proposed use. These factors have all been examined in order to provide treatment guidelines that consider both broad questions of site chronology and significance and specific questions of individual structure history and significance.

The most appropriate approach to treatment for Wright Hall is rehabilitation. **Rehabilitation** is defined by the Secretary of the Interior's Standards as the "act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values."

Sometimes several treatment alternatives are possible. Where this is the case, the alternatives are presented and the recommended alternative is discussed.

Requirements for Section 106 Consultation:

Under Section 106 of the National Historic Preservation Act of 1966, as amended, actions carried out by or on behalf of a federal agency that could alter aspects of the location, design, setting, materials, workmanship, feeling and association, or use of a Register-listed or eligible property should be carefully considered to analyze possible effects on historic qualities and research potential. Federal funding, licensing, permitting, or approval by a federal agency are included by law, as are projects or programs subject to state or local regulation administered pursuant to a delegation or approval by a federal agency. In the case of Carillon Historical Park, any work conducted at Wright Hall or on the Wright Flyer III with funding from Save America's

Figure 45: Historic landscape at entry (Carillon Park Archives).

Treasures or other federal money constitutes an undertaking under Section 106. Upon sufficient notification, compliance with Section 106 for Carillon Historical Park will be conducted by Dayton Aviation Heritage National Historical Park. The contact for this will be the park's Section 106 compliance coordinator, historian Ann Honious.

Site

An effort should be made to develop an integrated design that unites the historic features of the site and provides universal access and space for signage. Landscape design should respect remaining historic site conditions, including the canal prism and the steps leading up the canal prism to Wright Hall.

Site design should provide a clear, linear link between the stairs, the path at the top of the prism, and the entrance and exit of the building. The circulation system should complement the Wright Cycle Company building/Wright Hall by using unobtrusive paving and seating materials. The path and gathering spaces should be intimately scaled, rather than formal and massive. It should respond to the linear quality of the building using geometric, rather than organic or curvilinear design. Continue to use the top of the prism for a walkway, which can be widened or expanded near the Wright Cycle Company building in order to provide a gathering space of approximately 15 by 15 feet. Connect the large stone staircase in front of Wright Hall to the sidewalk, but refrain from providing a connection between the prism sidewalk and the stairs in front of the door. Consider using a band of low shrubs or groundcover to prevent people from walking between

the prism sidewalk and this set of stairs. A six-foot sidewalk should allow for a gap of about two to three feet in front of the stairs where the shrubs could be placed.

Relocate the memorial bench to align with a doorway to reinforce the symmetry of the building. Further, reinforce the symmetry of the landscape in front of Wright Hall by planting shrubs or small ornamental trees on either side of the formal entry, and along the outside edge of the large staircase, as is indicated in the historic photographs.

If possible, consider integrating a simple system of retaining walls and ramps in front of and immediately west of the Cycle Company building to create a seating/gathering space of a relatively intimate scale. Use stone similar to that of the new retaining wall.

Several complex slope and grade issues pose challenges to access and drainage concerns. Ramping and retaining walls used to solve these issues could also be used for informal seating throughout the site. Current drainage conditions should be monitored and maintained in the short term. Guidelines need to be established for the amount of vegetation to be cleared from the slope behind the buildings, with consideration given to the stabilization of the slope.

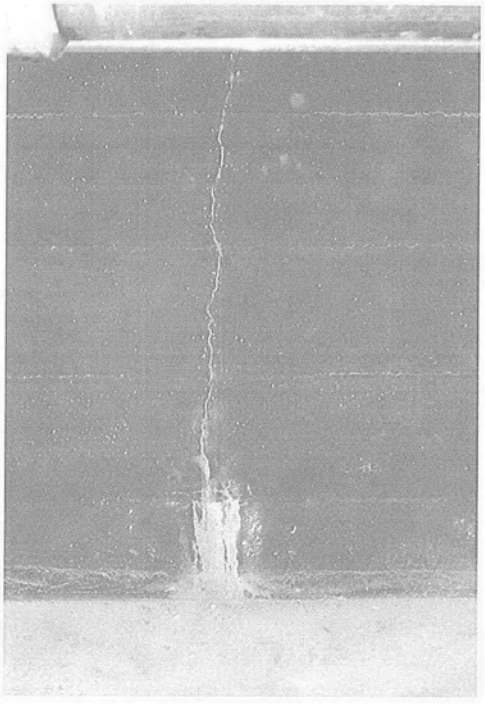

Figure 46: Interior wall foundation crack (QE|A 2000)

The building requires a reoriented visitor approach from the ceremonial entry at Wright Hall into the Wright Cycle Company building, with modified accessibility and egress provided. This new entry should be more informal and asymmetrical than the existing entry, and should be strengthened with appropriate signage, ramping, and stairs. A space should be provided in close proximity to the entry for small groups of visitors to gather. A smaller space of similar function at the exit is also recommended. The character of the formal, symmetrical entry and both sets of stairs should be maintained.

Accommodation for the existing signage that links Wright Hall to the other Dayton Aviation Heritage National Historic Park sites is strongly suggested. Signage materials should be sensitive to historic elements. The use of sandstone, fieldstone, or pressed concrete, similar to that of the entry at the education building, is recommended for the sidewalk and gathering spaces. Neutral colors, such as beige or tan, as opposed to dark gray or black, are preferred. The width of the sidewalk should be between four and six feet, similar to the existing prism path between the new wing and the covered bridge, except at the larger gathering space.

Building Exterior and Envelope Protection

Door and Window Openings

The existing windows and door openings remain in a generally good and functional condition. Minor repairs and maintenance are recommended. All perimeter and astranged gaps in the doors and transom should be sealed in a non-invasive and least visible method.

The two recommendations for modifications to the windows include basic repair and painting to retain the integrity of the metal windows and the installation of interior magnetic storm with ultraviolet filter material and an integrated perimeter seal. Because of this configuration, the transom opening will require an exterior storm of the same construction affixed with non-corrosive fasteners and an outer perimeter seal.

Foundation

The installation of the exterior drainage system requires monitoring. Another aspect that needs to be

monitored is the crack at the east elevation. This crack carries through the structure and should be monitored on both the interior and exterior. In addition, a positive air movement should be created in an effort to reduce the condensation. A clear and free catch basin as well as the sealant at existing cracks should continue to be maintained.

Interior

Attic

For airflow in the hall, the existing wood frame cupola in the attic should be utilized for additional ventilation purposes. In addition, a low air supply system should be introduced in the attic space to promote air flow and circulation. Similar to the ceilings, all of the penetrations must be sealed and weathertight.

Ceiling

Three treatment alternatives are possible:

1. Replace the central acoustic plaster panel with acoustic material. Seal all penetrations.
2. Encapsulate the central acoustic plaster panel. Provide a vapor barrier and install a drop ceiling of acoustic material. Detail with a reveal from the ceiling plaster mould in order to retain the original plaster cove. Seal and protect all penetrations and evaluate the partial abatement requirements.
3. Maintain the existing conditions.

The recommendation is to replace the central acoustic plaster panels with acoustic material. All of the penetrations must be sealed.

Walls

The walls are in good condition and only require maintenance of the existing conditions. The ASHRAE Psychometric chart (see Appendix C) indicates low relative humidity in the winter, when there typically is the highest concern for moisture. The current wall construction is impervious and there is a low migration potential due to the characteristics of the painted finish on the plaster, the glazed brick, and terrazzo floors. Regular surveillance is required to sustain the quality of this condition.

Minor Interior Detail Modifications

Two treatment alternatives are possible:

1. Maintain the door as a door. Simplify trim, flat with radius profile. Trim out the faux transom and replicate the new opening of the door.
2. Change door to an opening. Plaster the bullnose edge and bullnose the tile replacement.

The recommendation is to maintain the east and west wing openings as doors and to modify the trim. In doing so, the trim should be simplified so that it is flat with a radius profile. The faux transom also should be trimmed out and the new opening replicated (figure 47).

Post-construction inspection revealed that treatment alternative 2 was implemented very successfully (figure 48)

Interior Finishes

The interior finishes should be returned to the original color scheme as itemized below and noted with both the Munsell and Sherwin Williams colors for ease of matching and replication. The

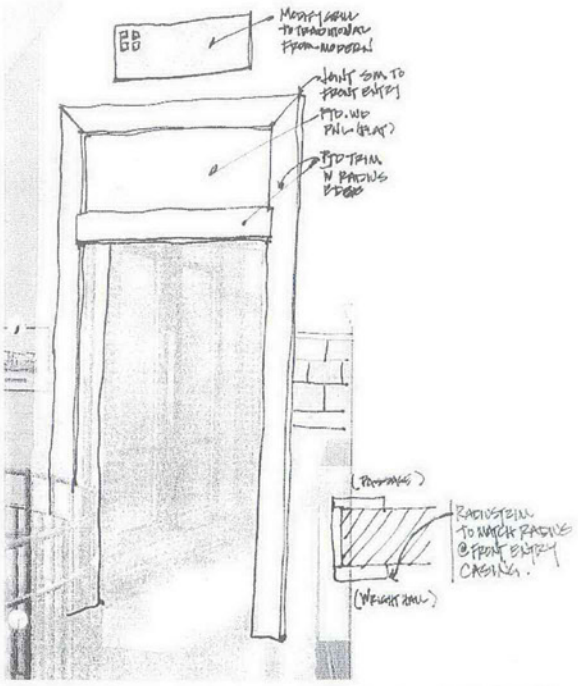

Figure 47: Proposed door trim simplification (QE|A 2000)

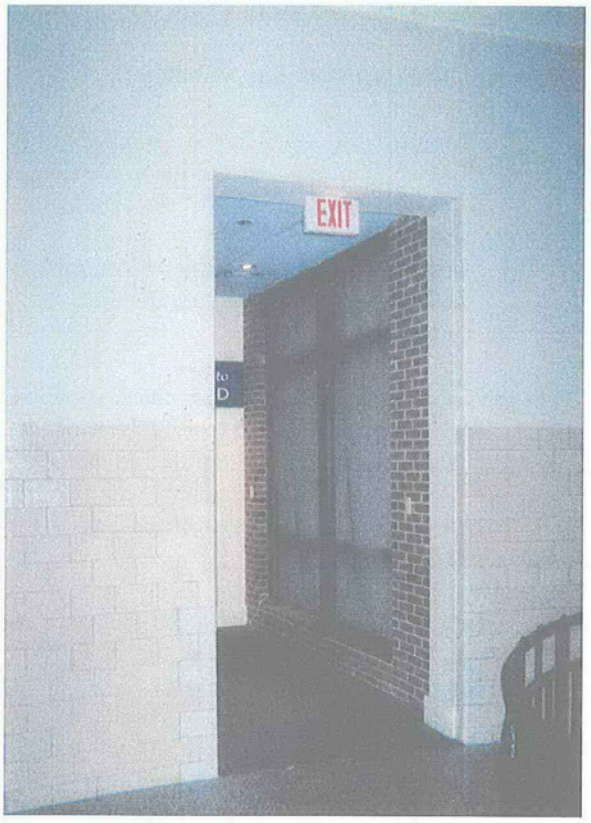

Figure 48: Actual opening installation (QE|A 2005)

significance of the original color scheme should be investigated to determine if the hierarchy of color is intentional.

Historic Color Documentation Itemization:
Ceiling:
Munsell
7.5GY 9/2
Sherwin Williams
SW 1710 Lima Green & SW 1711 Barley Green

Ceiling Molding, Ceiling Cove and Wall Molding:
Munsell
5GY 8/2
Sherwin Williams
SW 1429 Pistachio

Walls:
Munsell
5GY 7/2
Sherwin Williams
SW 1169 Landscape

Window Mullions and Pit Rail:
Munsell
N1.5
Sherwin Williams
Standard gloss black

Window, Door Casing, Doors, Column Base, Shaft & Capital:
Munsell
5GY 8/2
Sherwin Williams
SW 1429 Pistachio

Pit Walls:
Munsell
7.5GY 2/4
Sherwin Williams
MS 42-7(GO or NE)

Pit Floor:
Munsell
10GY 5/6
Sherwin Williams

The wall text in the apse is gold leaf.

Displays and Exhibits

The Wright Flyer III, busts and apsidal wall text should all be integrated cohesively. Install display cases so that they are movable.

Acoustics (Figures 49 and 50)

There are three treatment alternatives:

- Add acoustic treatment to both the walls and ceiling.
- Add treatment to the ceiling only.
- Add treatment to the walls only and retain the existing ceiling treatment.

The acoustic recommendations are made primarily with regard to improved voice acuity in the existing line space comprised of hard surfaces. This would require the addition of treatment to the walls and ceiling. The existing ceiling panels in the plenum space can be used. Wall detailing is also critical in terms of acoustic concerns. The material type, edge detail and configuration need to be sympathetic to the existing window details. These solutions respect the significance of the monolithic appearance of the wall plane. A scheduling of the wall treatments is recommended.

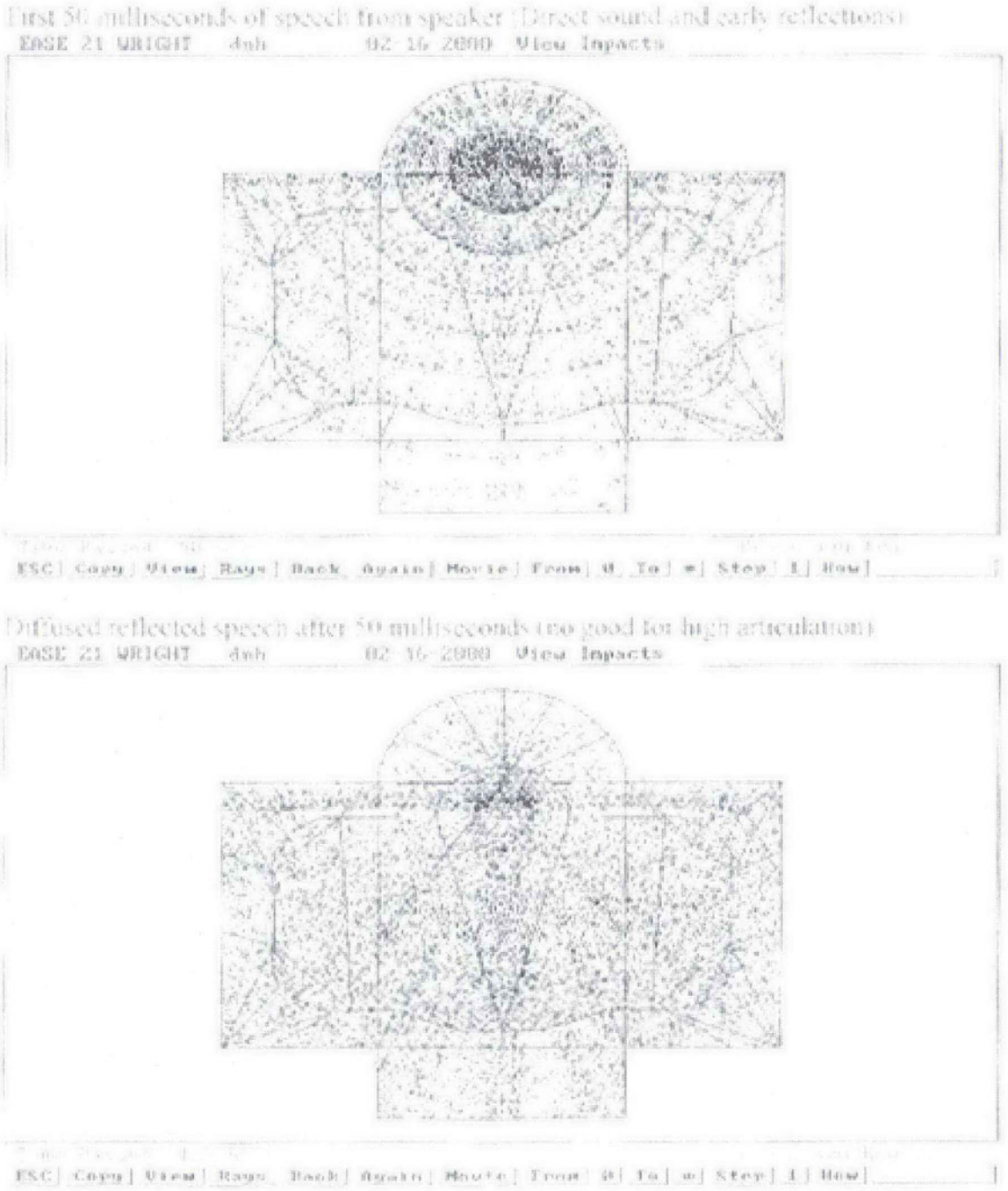

Figure 49: Acoustical Review of direct and reflected speech. (Geiger & Hamme, 2000)

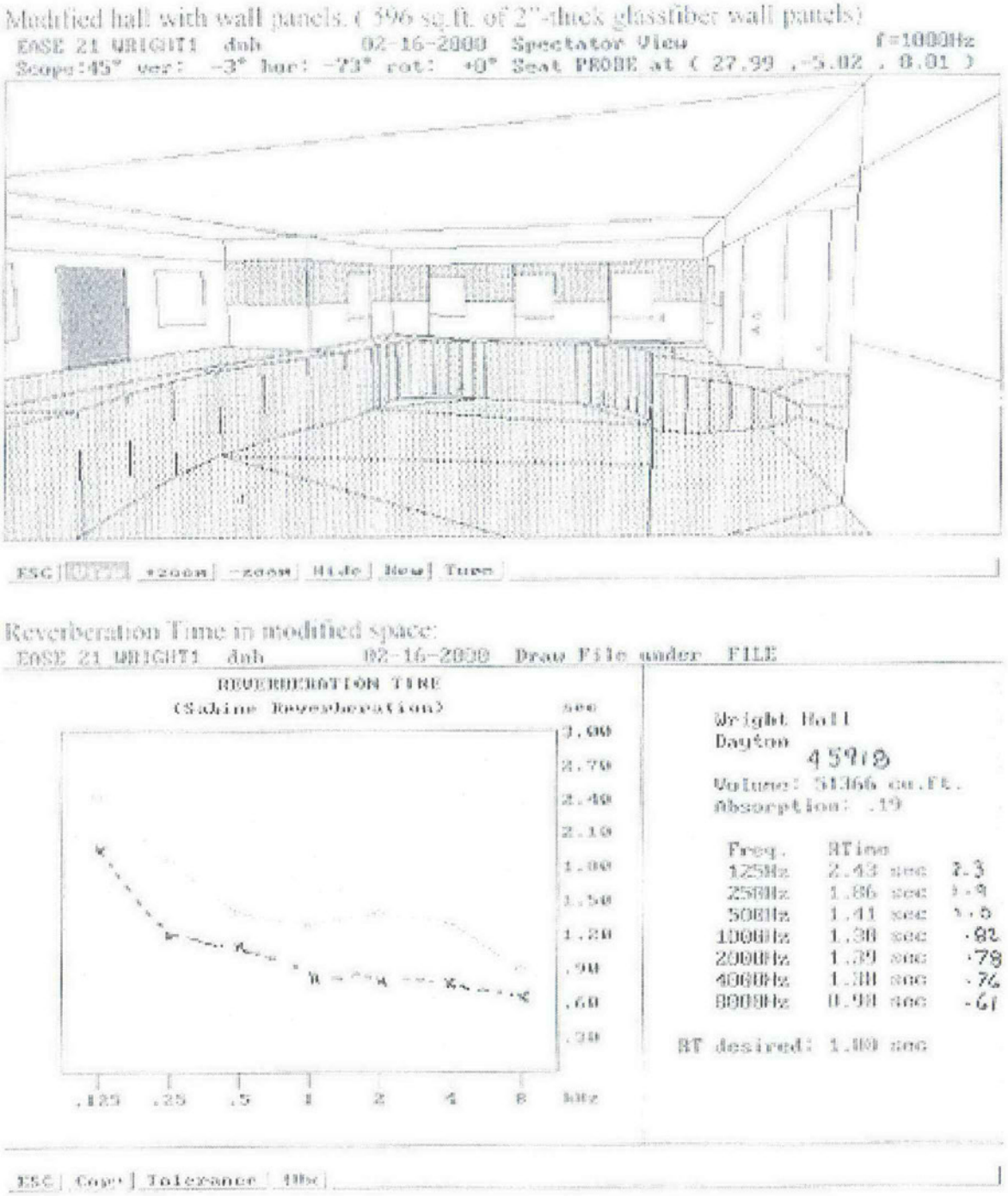

Figure 50: Acoustical Review with modified wall panels (Geiger & Hamme, 2000)

Because of the visual impact of an acoustical wall treatment, it is recognized that this recommendation will not be implemented.

Ultraviolet Transmittance, Through-Window Lighting, and Light Fixtures

To control ultraviolet transmittance, the following alternatives were considered:

- Control the amount of light entering through the windows by installing full black out shades.
- Control the amount of light entering through the windows by installing sunscreen shades.
- Control the light by applying tinted film to the windows.
- Control the amount of light entering through the windows by installing tinted storms.
- Control the amount of light entering through the windows by installing opaque shades to match historic shades.
- Maintain existing window shades.

The goal is to maintain the transparent view of the interior but to block harmful light transmission. The recommended course of action for the windows is to remove the existing film and install glazing on the interior storm with ultraviolet blocking Plexiglas or Lexan type material. An exterior storm with ultraviolet glass should be installed at the transom window. Filters should be placed on all of the lights.

Lighting for the Wright Flyer III, General Interior and Daylighting

The pathway lighting should be recreated via historic recessed ceiling downlighting. The Wright Flyer III warrants very selective accent lighting with particular attention paid to the ceiling shadows, as well as the amount of obtrusiveness. Also of concern is the level of glare in the pit and any necessary modifications to the historic character and fabric. These same issues are also relevant in terms of the existing railing. Provide very selective accent lighting for the busts and apsidal wall with recessed ceiling lighting.

Humidity and HVAC Management

While one relative humidity setting is not problematic, multiple settings with shoulder season transitions are recommended. The targeted relative humidity level is 45% +/- 5%, based on industry standards for museum humidity levels. Also, connectors as air locks or the same environment in all spaces should be established. HEPA filtering should be installed.

Post Construction Evaluation

A post construction evaluation occurred on June 1st and 2nd, 2005, to review the condition of the building and the implementation of the treatment recommendations. The following additional recommendations address the continuing and new conditions found during the evaluation, which were noted in Part I-C Existing Conditions.

- Weatherstripping should be installed at the perimeter of the two main entrance doors, including the stile edges where the two doors meet.
- Loose or broken slate shingles should be reinstalled or replaced on the north roof face and the east/west face of the entrance gable.
- The installation of an electric heat trace at the scupper and down into the downspout above the apse may help prevent ice damming at that location and prevent the water infiltration. In addition, a reputable roofing contractor should inspect the roof membrane and flashings at this location to see if a tear or pinhole has developed from the previous ice build-ups which is allowing the water infiltration.
- Good maintenance of the grade level yard drains will allow the collection of the stormwater from the hillside behind the building and move it away from the foundation.
- Seal the routed-out crack in the foundation at the west wall of the apse with a urethane sealant colored to match the foundation wall.
- All wood trim should be scraped, primed, and repainted to protect the wood.
- Eroded mortar should be repointed with mortar that matches the strength, color and texture of the original/existing mortar.
- Remove the weeds from the original stone steps of the prism.
- The interior ductwork of the mechanical system should be cleaned to reduce the black residue staining the ceiling adjacent to the supply grilles. The mechanical contractor who installed the system should also inspect the furnace and HEPA-filter system to ensure that it is working

according to the manufacturer's standards and to the engineer's specifications.

- As the tinted ultra-violet film on the windows wears out and needs to be replaced, the previous recommendations for the installation of interior storm windows with UV panels should be implemented.

Part 2-B:

Research Recommendations

There are several suggested avenues for expanding the research compiled in this report.

Archeological investigation is required to determine the effect that the presence of the canal and pre-existing features had in the formation of Carillon Historical Park. This information may also explain the location of the separate structures within the park. These efforts may assist in the determination of the landscape episodes, prior to and during the establishment of the park.

Further investigation is recommended for the historical documentation of Wright Hall. The areas of focus should include The National Cash Register Company and its dominant influence on the project. The National Cash Register Company historic materials were recently transferred to the Montgomery County Historical Society archives and contain a wealth of information. They should be explored upon the Society's completion of cataloguing and documenting the records. It was recently discovered that a significant amount of correspondence and photographs pertaining to the construction of Carillon Historical Park are located in the Olmsted Center in Brookline, Massachusetts. This collection should be reviewed for relevant material. Related materials also exist in the Manuscript Division of the Library of Congress.

The final recommendation for expanded research is long-term physical documentation of the interior conditions. A partial survey was completed for this report and a full investigation, including long-term monitoring of the humidity and the impact on the materials, is recommended.

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Appendix A:

National Register of Historic Places Inventory - Nomination Form

Copy of Submission Draft
Scan Tool

NPS Form 10-900
(Rev. Aug. 2002)

OMB Approval No. 1024—0018
(Expires Jan. 2005)

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 *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an 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 entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Wright Hall

other names/site number

2. Location

street & number 1000 Carillon Boulevard ☐ not for publication

city or town Dayton ☐ vicinity

state Ohio code OH county Montgomery code 113 zip code 45409

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this ☐ 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 ☐ meets ☐ does not meet the National Register criteria. I recommend that this property be considered significant ☐ nationally ☐ statewide ☐ locally. (☐ See continuation sheet for additional comments.)

Signature of certifying official/Title Date

State or Federal Agency or Tribal government

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. (☐ See continuation sheet for additional comments.)

Signature of commenting official/Title Date

State or Federal agency and bureau

4. National Park Service Certification

I hereby certify that the property is:

☐ entered in the National Register.
☐ See continuation sheet.

☐ determined eligible for the National Register
☐ See continuation sheet.

☐ determined not eligible for the National Register.

☐ removed from the National Register.

☐ other. (explain:)

Signature of the Keeper Date of Action

Wright Hall
Name of Property

Montgomery County, Ohio
County and State

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	3	buildings
		sites
		structures
		objects
		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

1 (National Historic Landmark)

6. Function or Use

Historic Functions
(Enter categories from instructions)

Recreation and Culture: Museum exhibition hall

Current Functions
(Enter categories from instructions)

Recreation and Culture: Museum exhibition hall

7. Description

Architectural Classification
(Enter categories from instructions)

Late 19th and 20th Century Revivals: Colonial Revival/ Georgian Revival

Materials
(Enter categories from instructions)

foundation Concrete
walls Brick
roof Synthetics, slate, asphalt
other

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets.)

See continuation sheets.

Wright Hall
Name of Property

Montgomery County, Ohio
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.

☐ 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.

☐ G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

Transportation
Invention

Period of Significance

1948-1950

Significant Dates

1948-1950

Significant Person
(Complete if Criterion B is marked above)

Wright, Orville; Deeds, Edward A.

Cultural Affiliation

N/A

Architect/Builder

Lorenz and Williams, Inc., Dayton, Ohio

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography
(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

☐ 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 #

Primary location of additional data:

☐ State Historic Preservation Office
☐ Other State agency
☐ Federal agency
☐ Local government
☐ University
☒ Other

Name of repository:

Carillon Historical Park, Dayton, Ohio

Wright Hall
Name of Property

Montgomery County, Ohio
County and State

10. Geographical Data

Acreage of Property Less than one acre

UTM References
(Place additional UTM references on a continuation sheet.)

	Zone	Easting	Northing		Zone	Easting	Northing
1	16	739800	4404080	3			
2				4			

[ ] See continuation sheet

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Edward Roach, Historian; Lauren Gurnewicz, Intern

organization National Park Service date 15 November 2004

street & number P.O. Box 9280 telephone 937 225 7705

city or town Dayton state Ohio zip code 45409

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

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.

Photographs

Representative **black and white photographs** of the property.

Additional Items
(Check with the SHPO or FPO for any additional items)

Property Owner

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

name Carillon Historical Park

street & number 1000 Carillon Boulevard telephone 937 293 2841

city or town Dayton state Ohio zip code 45409

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.). A federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number.

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to Keeper, National Register of Historic Places, 1849 "C" Street NW, Washington, D.C. 20240.

Description

Wright Hall, part of the John W. Berry, Sr., Wright Brothers Aviation Center, is one of the components of Dayton Aviation Heritage National Historical Park in Dayton, Ohio (the others being the Wright Cycle Company building and Hoover Block in west Dayton, the Huffman Prairie Flying Field, and the Paul Laurence Dunbar State Memorial). Edward A. Deeds (1874-1960), Chairman of the Board of The National Cash Register Company, supervised Wright Hall's construction between 1948 and 1950. With extensive initial counsel from Orville Wright (1871-1948), Deeds hired local architects and construction workers to build Wright Hall for the sole purpose of displaying the restored 1905 Wright Flyer III as part of Carillon Park. Carillon Historical Park seeks the listing of Wright Hall on the National Register of Historic Places under criterion B, for its association with the lives of Wilbur (1867-1912) and Orville Wright and Edward A. Deeds, three prominent residents of Dayton. Additionally, Wright Hall is a commemorative structure, and Carillon Historical Park requests that criteria consideration F concerning commemorative properties be applied given the role of Orville Wright in designing the building and the National Historic Landmark listing of the building's occupant, the 1905 Wright Flyer III.

Deeds coordinated the building of Wright Hall as the central attraction of Dayton's Carillon Park, a Skansen-style outdoor museum interpreting the history of settlement, invention, innovation, and transportation in the Dayton area. Technicians restored the 1905 Wright Flyer III simultaneously with the building's construction. The continued exhibition of the NHL-listed Wright Flyer in this single-purpose building contributes to Wright Hall's historic integrity; the building continues to be used for its original purpose. As a result of Orville Wright's guidance, the design of the building places the airplane in a four-foot (1.2 m) depression on the ground level, allowing visitors to view the airplane from above. Carillon Park dedicated the restored airplane and Wright Hall in June of 1950.

Wright Hall, one of Carillon Park's original eight exhibit structures, is a freestanding one-story masonry structure situated on the south side of the canal prism at Carillon Historical Park. Other buildings within the park line the edges of the Miami and Erie Canal. Built with 1940s materials, Wright Hall is of Georgian Colonial Revival style. According to Carillon Historical Park records, Wright Hall appears to be modeled after the Courthouse in Williamsburg, Virginia, which was built between 1770 and 1771.[1]

The original main entry stairway descends from an entry portico on the central axis of the building's rectangular form to the base of the canal prism. In order to comply with the Americans with Disabilities Act, primary access to Wright Hall now occurs through the replica of the final Wright Cycle Company shop on Wright Hall's east perimeter. The south end of the entry axis protrudes into the moraine at the rear of the building through a curved apsidal penetration.[2] The axial configuration with an apsidal end creates four parts to the Wright Hall roof. While the roof on the curved apsidal

[1] See Photograph 6
[2] See Photograph 2

penetration is flat, the roof on other sections of Wright Hall is pitched. Originally, the roof was made of slate, with built- in copper gutters and copper flashing crowned by a wood-framed, copper-clad cupola. The flat roof over the apsidal end was originally designed as a metal roof with a perimeter masonry parapet wall, which has a built-in gutter on the exterior perimeter.

Presently, the southern sections of the pitched roof are covered with asphalt shingles. The northern sections and the entry roof retain the copper flashing and slate tile. The metal roof over the apsidal end has been replaced with a membrane roofing system. The asphalt shingles do not malign the building's integrity; they closely match the color and texture of the original slate, and since the building borders a steep hillside, the southern side of the roof is rarely visible from the ground. The cupola remains a wood-framed structure with copper cladding. The built-in copper gutter system exists at ends of all of the eaves and at the exterior perimeter of the southern parapet wall. The built-in gutter is connected to copper leaders held in place with copper leader straps. On the north façade there are copper leader heads engraved with the year that the building opened.

The north elevation of Wright Hall contains the building's original primary entrance. The exterior construction of the north wall is an exposed rubbed concrete foundation with a brick finish face. The portico portion of the north elevation has two symmetrically centered steel windows on either side of the wood double door and wood-framed transom. The entire door unit is capped by a wooden trim pediment flashed at the top with copper regelated into the face brick. Each window has a jack arch with a limestone key. The fifth window on the elevation is a round steel window centered in the wood pediment over the main entry. Stone and concrete steps lead to the entrance door. The main entry doors are solid wood rail and stile doors with three raised panels set into each.[3] The doors and transom retain their original hardware.

With a centered and curved brick façade and flanking flat façades, the south elevation retains the same materials and characteristics of the north elevation. The exterior construction is similar to that of the north elevation, with the exception of the parapet wall, which serves as the terminus for the flat roof over the apsidal end. Each window on the flat sections of the south façade has a brick jack arch and limestone key, and matches the northern elevation windows in type and style.

Although the eastern and western elevations retain the same materials as the north and south elevations, they also include modified components. Carillon Historical Park changed the southernmost window opening of the three window openings on the eastern and western elevations into doorways to corridors connected to non-contributing wings built in 1998 and 2000. Both elevations have a round steel window in the pediment end. These windows differ from the northern elevation window in only the surrounding material. The east and west elevation windows are finished in brick.

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[3] See Photograph 5

The lower portion of the inner wall of Wright Hall is clad in a green-glazed brick. It provides a hard, smooth, dense surface that is impervious to moisture and resistant to high temperatures, thermal shock, and scratches. The interior walls are flat plaster with a painted finish. The central ceiling space is comprised of acoustical plaster. Originally, both the wall and ceiling surfaces were painted a pale green to match the green-glazed brick tiles. Between 1950 and 2000, Carillon Historical Park painted the interior walls of Wright Hall several times in other colors. Recent paint analysis revealed the original interior color scheme, which Carillon Historical Park restored.

The 1905 Wright Flyer III is displayed in a recessed pit inside Wright Hall.[4] The reinforced concrete walls forming the shape of the pit are curved at the north and south ends. There are six openings of equal size in the wall of the pit. Each of the openings has a metal grille that covers a plenum which originally circulated air. Visitors are protected from the approximately four-foot (1.2 m) drop to the lower floor where the airplane rests by a simple railing, consisting of turned iron balusters. Use of such simple details and strong materials was likely an intentional choice by the building's designers to allow visitors placid, unobstructed views of the 1905 airplane. The railing, which is painted black, is grounded in the original green terrazzo floor.

Carillon Historical Park added two wings to Wright Hall, one in 1998 and one in 2000. The noncontributing additions are wood and brick structures with modern masonry cavity walls that connect to Wright Hall by short, set-back corridors. The Wilbur Wright wing, built on the east side of Wright Hall in 1998, serves as a link between Wright Hall and a 1972 replica of the final Wright Cycle Company building from 1127 West Third Street in Dayton, the original of which Henry Ford moved to Greenfield Village in Dearborn, Michigan, by early 1937.[5] The Orville Wright wing, built in 2000 on the west side of Wright Hall, contains exhibits that examine the post-1903 Wright story. These additions complement the Georgian Colonial Revival style of Wright Hall but are not proposed for inclusion in the National Register of Historical Places.

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[4] See Photograph 4
[5] See Photograph 3

Statement of Significance

Wright Hall is historically significant under NRHP criterion B for its connections to the lives of several prominent individuals. The exhibition of the restored 1905 Wright Flyer III in a pavilion developed with Orville Wright's considerable participation is a significant commemoration of the contributions that Wilbur and Orville Wright made to humanity through their invention of powered flight. Without university training in engineering, the brothers built, tested, and flew the first heavier-than-air powered airplane in 1903. They subsequently built, tested, and flew the world's first practical and controllable airplane, the 1905 model displayed in Wright Hall. The National Park Service designated this airplane a National Historic Landmark in 1990. The 1905 Flyer was restored between 1947 and 1950 under the initial guidance of Orville Wright and the day-to-day supervision of Harvey Geyer, a Wright Company foreman from 1910 to 1912 and NCR employee.

Wright Hall's construction and the airplane's restoration occurred through the collaboration of Edward A. Deeds and Orville Wright. Deeds was a prominent figure in Dayton society during the early and mid-twentieth century, serving as a president of the Miami Conservancy District, formed after a catastrophic 1913 flood of the Great Miami River to develop flood control dams and levees to prevent future deluges; helping establish the Dayton Art Institute; and participating in activities of the Dayton Astronomical Society. In 1946 Deeds, Chairman of the Board of The National Cash Register Company, was in the process of building a museum commemorating the role of Ohio's Miami Valley in the development of industry and transportation, and decided that the achievements of local residents Wilbur and Orville Wright provided an excellent primary theme for the museum. Deeds' interest in aviation was largely influenced by his friendship with Orville Wright, which began in 1909, when he wrote them with advice concerning engine ignition. This friendship – especially with Orville, as Wilbur died in 1912 – led to a brief business relationship during the late 1910s, when Wright occasionally served as a consulting engineer to Deeds' Dayton Wright Airplane Company. During the First World War, Deeds divested himself of the Dayton Wright Airplane Company and served as colonel in charge of aircraft procurement for the U.S. Army. Both Deeds and Orville Wright were members of the Dayton Engineer's Club, established by Deeds and industrialist Charles F. Kettering (1876-1958) in 1914. During the development of Carillon Park, Deeds contacted Orville Wright, inquiring about the possibility of exhibiting parts from the early Wright airplanes. Instead of suggesting that Carillon Park build and exhibit a replica of the 1903 airplane, Orville instead suggested that Carillon Park display the restored 1905 airplane in a specially-designed facility. Through NCR, Deeds provided workspace for the restoration of the airplane.

Wright Hall is a commemorative structure, built solely to house the 1905 airplane, and also qualifies for inclusion in the National Register under criteria consideration F, which addresses commemorative properties. Wright Hall, built nearly fifty years after the innovative flights of the airplane it exhibits, expresses the perceptions of Deeds, Orville Wright, and others concerning the importance of the role of the 1905 airplane in the development of aviation. While the Wilbur and Orville Wright Memorial Commission dedicated a monument commemorating the Wrights' flights at Huffman Prairie in 1940, the 1905 airplane was the first physical resource connected to the Wrights' work preserved in Dayton.

In late 1936 and early 1937 Henry Ford removed the house in which the Wright family lived from 1871 to 1914 and their final cycle shop from 1127 West Third Street in Dayton to his Greenfield Village museum in Dearborn, Michigan. With public access to Huffman Prairie Flying Field restricted due to its location on Wright-Patterson Air Force Base, and with Hawthorn Hill, the Wright home in Oakwood, serving as private guest quarters for National Cash Register, for nearly forty years Wright Hall was the only location in the Dayton area where people could make personal physical connections to a major Wright-related artifact. Wright Hall's primary role in local commemoration of the work of the Wrights was among the reasons the U.S. Congress incorporated it into Dayton Aviation Heritage National Historical Park in 1992.

Wright Hall also provides evidence of Orville Wright's perspectives towards the commemoration and interpretation of the 1905 Wright Flyer III. Wright worked with architects from the Dayton firm of Lorenz and Williams to ensure that visitors to Wright Hall could examine the 1905 airplane closely to understand how it worked – and start to comprehend the many changes in airplane construction and operations since 1905. Through his insisting that the airplane be placed below the level of the floor from which it is viewed, Wright demonstrated an appreciation for the many developments in aviation technology since the flights of the 1905 airplane, and an appreciation that future visitors might have difficulties relating the wood, wire and cloth used in 1905 to the specialized metals, gears, and computer equipment used in later airplanes. Wright did not want his airplane to be a remote monument to flight; instead, he preferred that it serve as an educational tool to teach its visitors the principles of aviation.

For its connections with Orville Wright and Edward A. Deeds, and its construction to commemorate an artifact later designated a National Historic Landmark, Carillon Historical Park requests that Wright Hall be added to the National Register of Historic Places. Wright Hall, built solely for the 1905 airplane's exhibition, was the first structure in Dayton built to preserve an artifact associated with the Wright brothers and commemorate their invention of powered flight.

Bibliography:

Marcosson, Isaac F. *Colonel Deeds: Industrial Builder*. New York: Dodd, Mead and Company, 1947.

Quinn Evans Architects. *Historic Structure Report: Wright Hall and 1905 Wright Flyer III, Carillon Historical Park, Dayton, Ohio*. 95% Submission. Ann Arbor, Michigan: 2000.

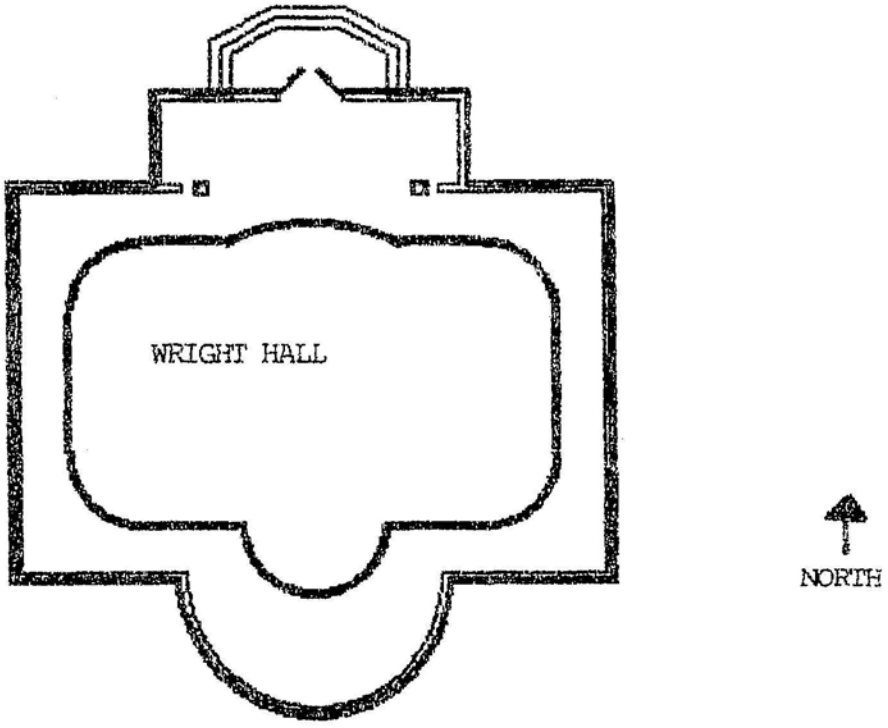
Boundary Description:

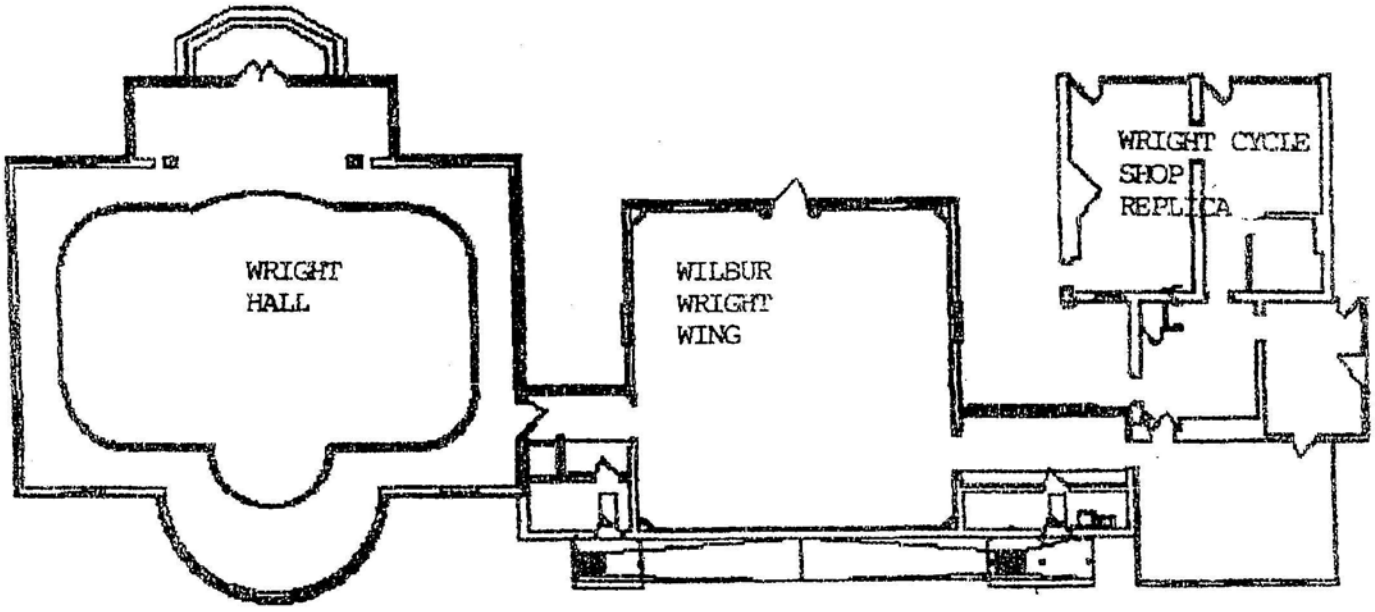
The boundary of Wright Hall as nominated for inclusion in the National Register of Historic Places is solely the original building, exclusive of the subsequent additions to its east and west and its front steps, which are not original.

Boundary Justification:

The additions to the east and west of Wright Hall are not original.

Wright Hall at the time of construction.



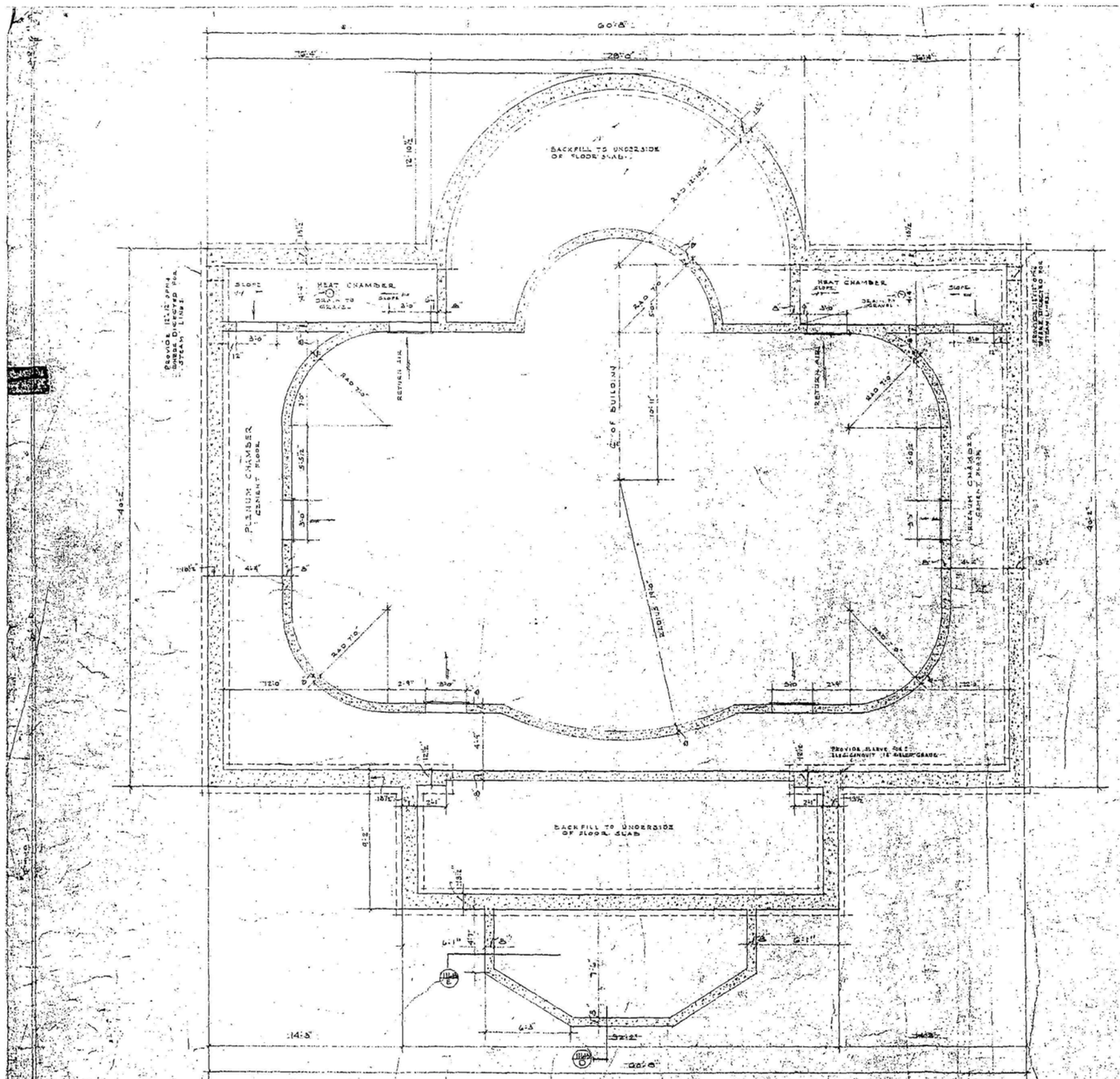


Wright Hall before 2000 addition of Orville Wright wing.

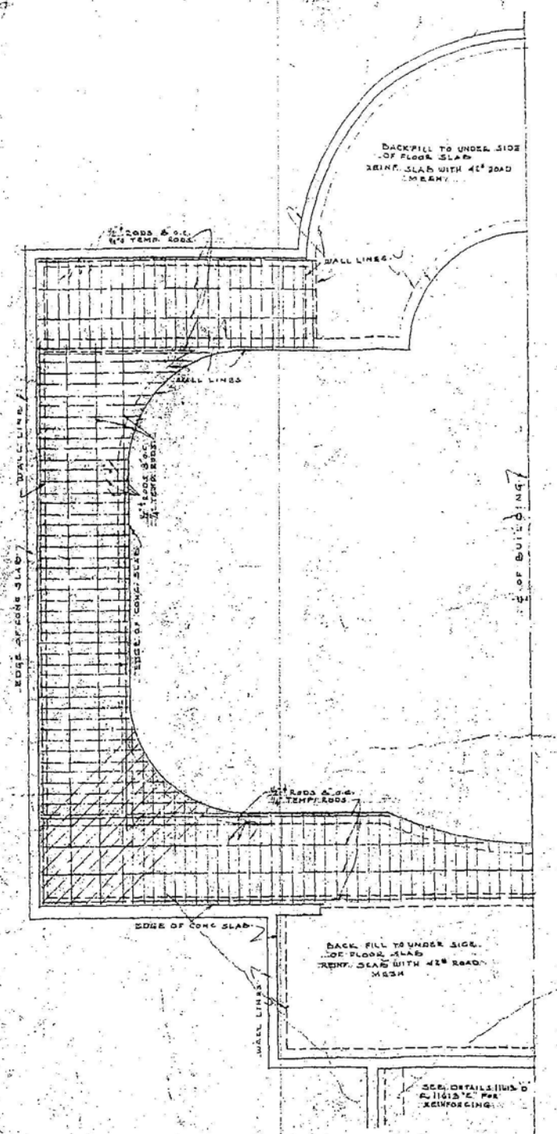
NORTH

Appendix B:

Historic Drawings



FOUNDATION PLAN
SCALE 1/4" = 1'-0"



PART REINFORCING PLAN
SCALE 1/4" = 1'-0"

STEEL REINFORCING SCHEDULE

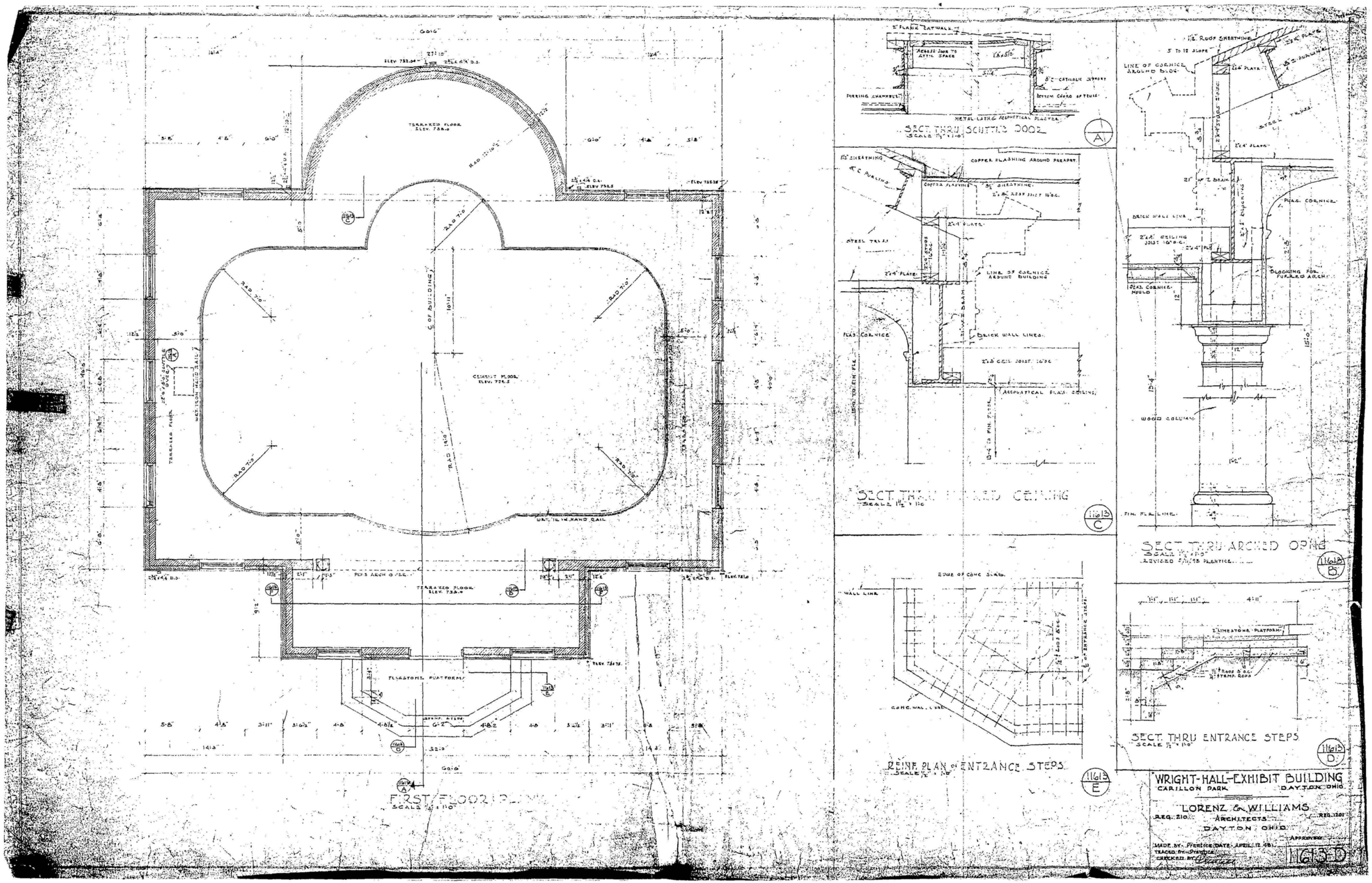
SIZE	NO	LENGTH	STRAIGHT	BENT	REMARKS
12"	4	3'-4"	YES		
12"	2	3'-6"	"		
"	2	3'-8"	"		
"	2	3'-10"	"		
"	2	4'-0"	"		
"	2	4'-2"	"		
"	2	4'-4"	"		
"	2	4'-6"	"		
"	2	4'-8"	"		
"	2	4'-10"	"		
"	82	5'-2"	"		
"	2	5'-3"	"		
"	60	5'-4"	"		
"	4	5'-6"	"		
"	6	6'-0"	"		
"	2	6'-2"	"		
"	4	6'-3"	"		
"	6	6'-8"	"		
"	2	7'-3"	"		
"	2	7'-5"	"		
"	2	7'-10"	"		
"	4	8'-0"	"		
"	8	8'-2"	"		
"	4	8'-8"	"		
"	2	9'-0"	"		
"	8	9'-2"	"		
"	4	9'-10"	"		
"	2	10'-8"	"		
"	4	10'-4"	"		
"	2	11'-0"	"		
"	4	11'-8"	"		

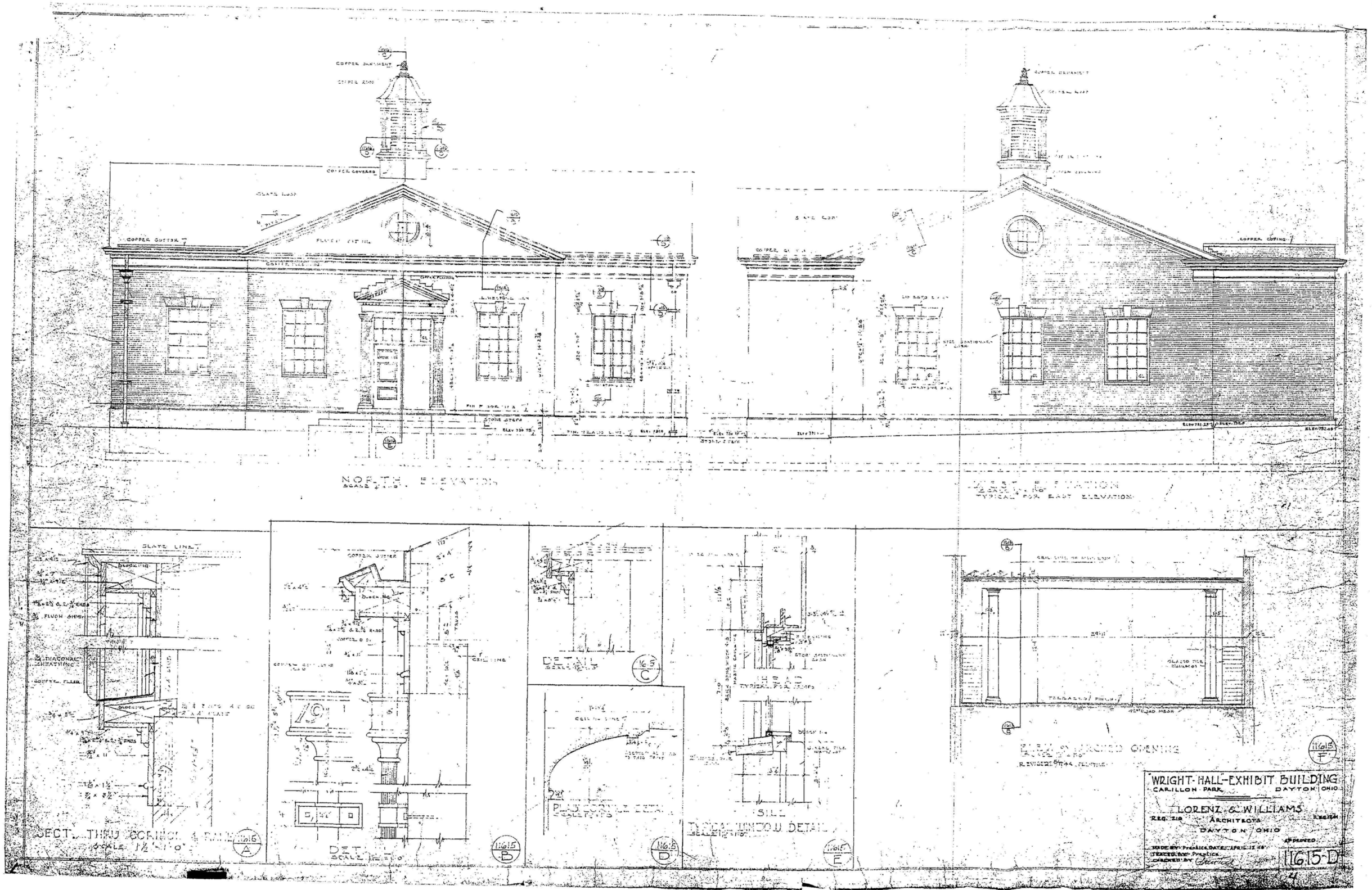
WRIGHT-HALL-EXHIBIT BUILDING
CARILLON PARK DAYTON, OHIO

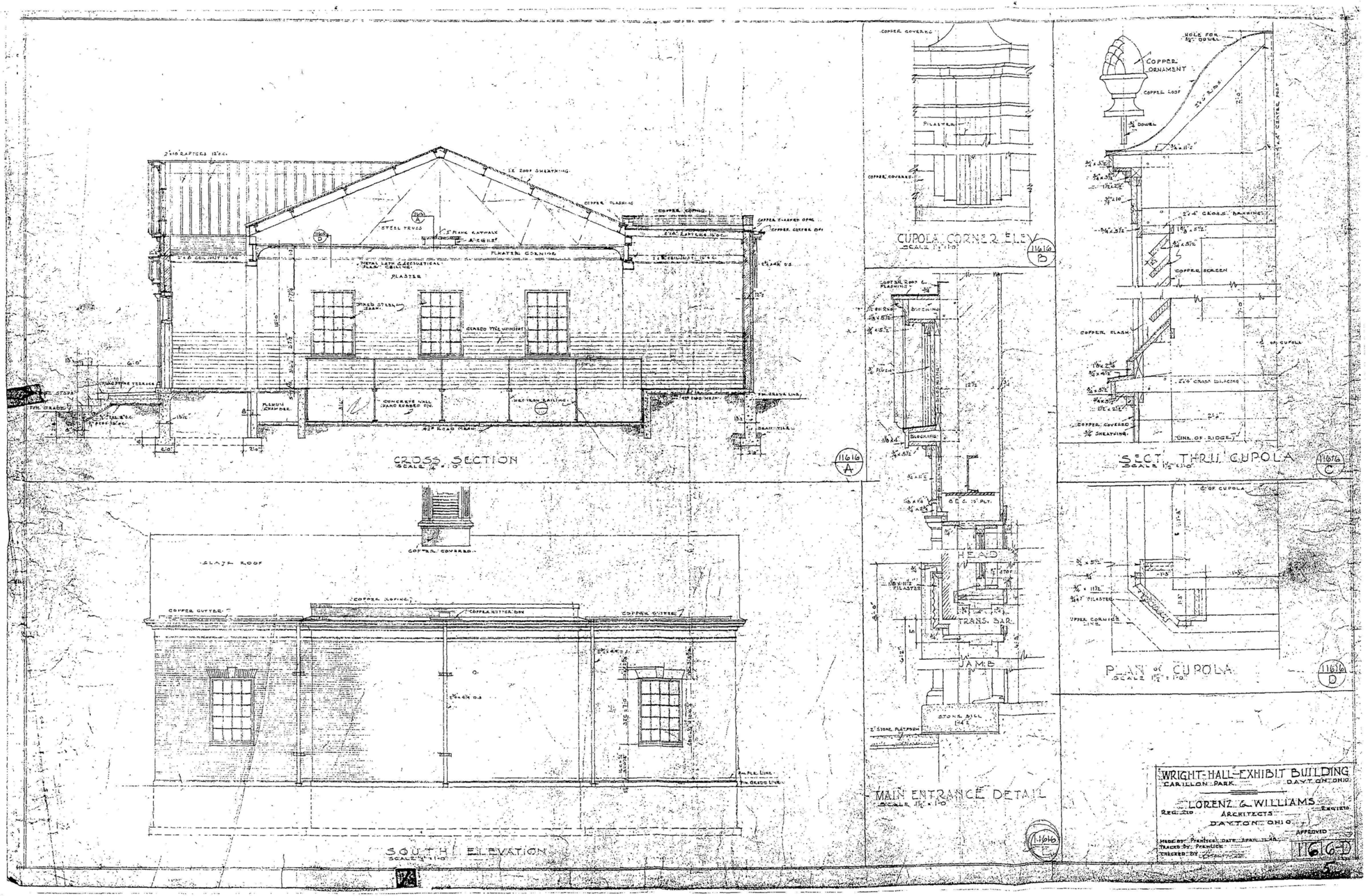
LORENZ & WILLIAMS
ARCHITECTS
DAYTON, OHIO

MADE BY Prentice DATE April 12, 19[illegible]
TRACED BY Prentice
CHECKED BY [illegible]

11612-D


FIRST FLOOR PLAN
SCALE 1/8" = 1'-0"
TERRAZZO FLOOR ELEV. 738.0
CEMENT FLOOR ELEV. 724.5
TERRAZZO FLOOR ELEV. 733.0
FLAGSTONE PLATFORM
SECT. THRU SCUTTLE DOOR
SCALE 1 1/2" = 1'-0"
SECT. THRU ARCHED OPNG
SCALE 1 1/2" = 1'-0"
REVISED 5/11/48 PRENTICE
SECT. THRU ENTRANCE STEPS
SCALE 1/2" = 1'-0"
REINF. PLAN of ENTRANCE STEPS
SCALE 1/2" = 1'-0"
WRIGHT-HALL-EXHIBIT BUILDING
CARILLON PARK
DAYTON OHIO
LORENZ & WILLIAMS
REG. 210
ARCHITECTS
REG. 1201
DAYTON OHIO
APPROVED
MADE BY PRENTICE DATE APRIL 12 48
TRACED BY PRENTICE
CHECKED BY
11613-D


NORTH ELEVATION
WEST ELEVATION
TYPICAL FOR EAST ELEVATION
SECT. THRU CORNICE & RAKE
SCALE 1½"=1'-0"
DETAIL
SCALE 1½"=1'-0"
DETAIL
SCALE 1½"=1'-0"
PLAN CORNICE DETAIL
SCALE 1½"=1'-0"
HEAD
TYPICAL FOR JAMBS
SILL
TYPICAL WINDOW DETAIL
SCALE 1½"=1'-0"
ELEV. OF ARCHED OPENING
REVISED 5/14 & 1/2 FEET
COPPER GUTTER
COPPER COVERED
SLATE ROOF
COPPER COPING
STONE STEPS
FLUSH SHOE
DIAGONAL SHEATHING
COPPER FLASH
BLOCKING
11615 A
11615 B
11615 C
11615 D
11615 E
11615 F
WRIGHT-HALL-EXHIBIT BUILDING
CARILLON PARK
DAYTON OHIO
LORENZ & WILLIAMS
ARCHITECTS
DAYTON OHIO
APPROVED
MADE BY: Prentice DATE: APRIL 12 48
TRACED BY: Prentice
CHECKED BY
11615-D


CROSS SECTION
SCALE 1/4" = 1'-0"
11616 A
CUPOLA CORNER ELEV.
SCALE 1 1/2" = 1'-0"
11616 B
SECT. THRU CUPOLA
SCALE 1 1/2" = 1'-0"
11616 C
PLAN of CUPOLA
SCALE 1 1/2" = 1'-0"
11616 D
SOUTH ELEVATION
SCALE 1/4" = 1'-0"
11616 E
MAIN ENTRANCE DETAIL
SCALE 1 1/2" = 1'-0"
11616 E
COPPER COVERED
PILASTER
COPPER ORNAMENT
COPPER ROOF
COPPER SCREEN
COPPER FLASH
LINE OF RIDGE
HEAD
TRANS. BAR
JAMB
STONE SILL
SLATE ROOF
COPPER GUTTER
COPPER COPING
WRIGHT-HALL-EXHIBIT BUILDING
CARILLON PARK
DAYTON, OHIO
LORENZ & WILLIAMS
ARCHITECTS
DAYTON, OHIO
APPROVED
11616-D

Appendix C:

ASHRAE Psychometric Data for Dayton, Ohio

Ambient Averages for Dayton, Ohio
taken from: NOAA Comparative Climatic
Data in the United States
through 1995

ASHRAE PSYCHROMETRIC CHART NO. 1

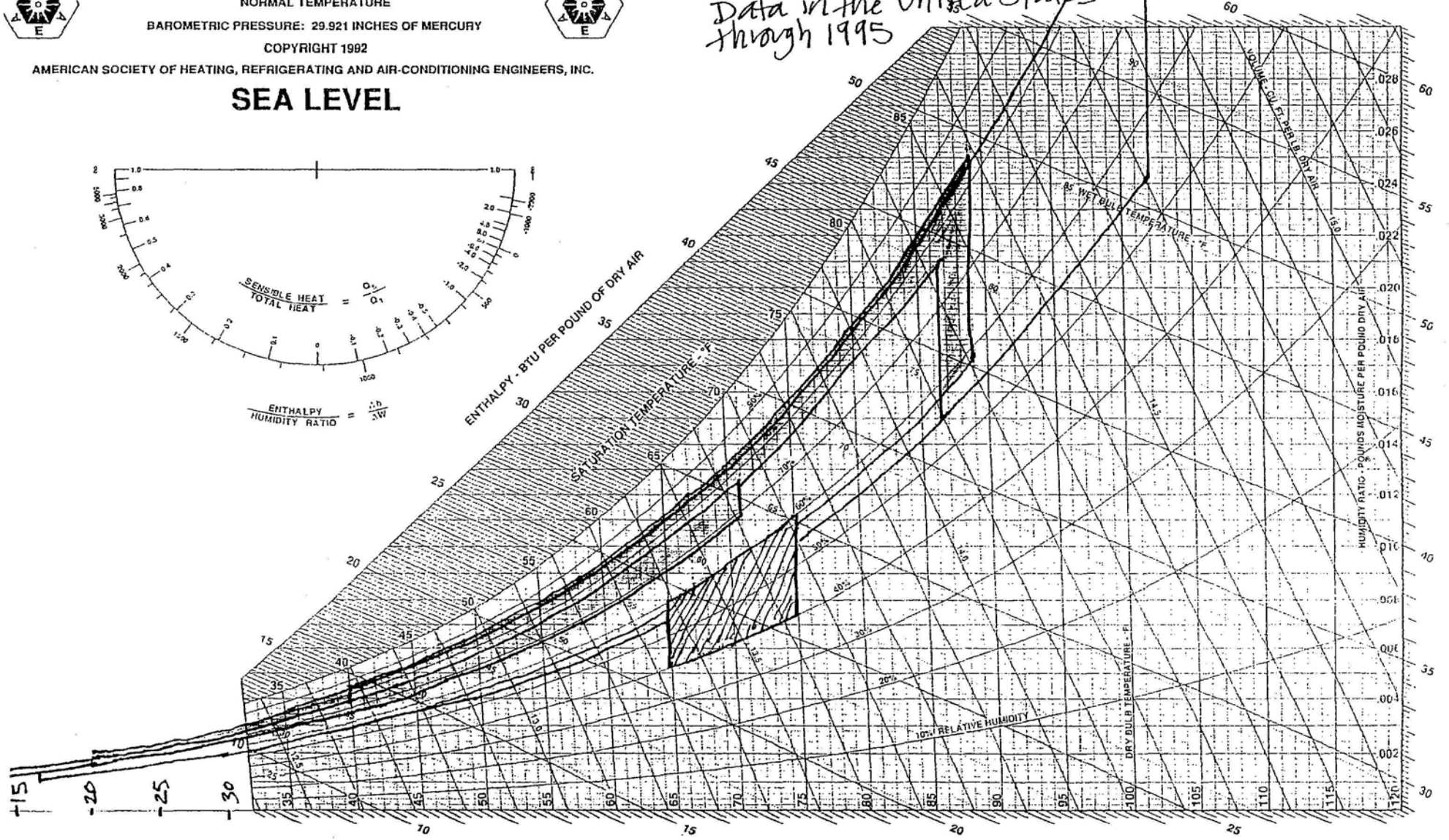
NORMAL TEMPERATURE

BAROMETRIC PRESSURE: 29.921 INCHES OF MERCURY

COPYRIGHT 1992

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.

SEA LEVEL



highs/lows:

winter	-20°/71°F	69/78%
spring	17°/87°F	55/77%
summer	40/102°F	55/82%
Fall	20°/89°F	58/83%

* set point range
40-60% RH
65-75°F

* note that to date there is no environmental data on the existing interior mechanical system in relation to the building envelope

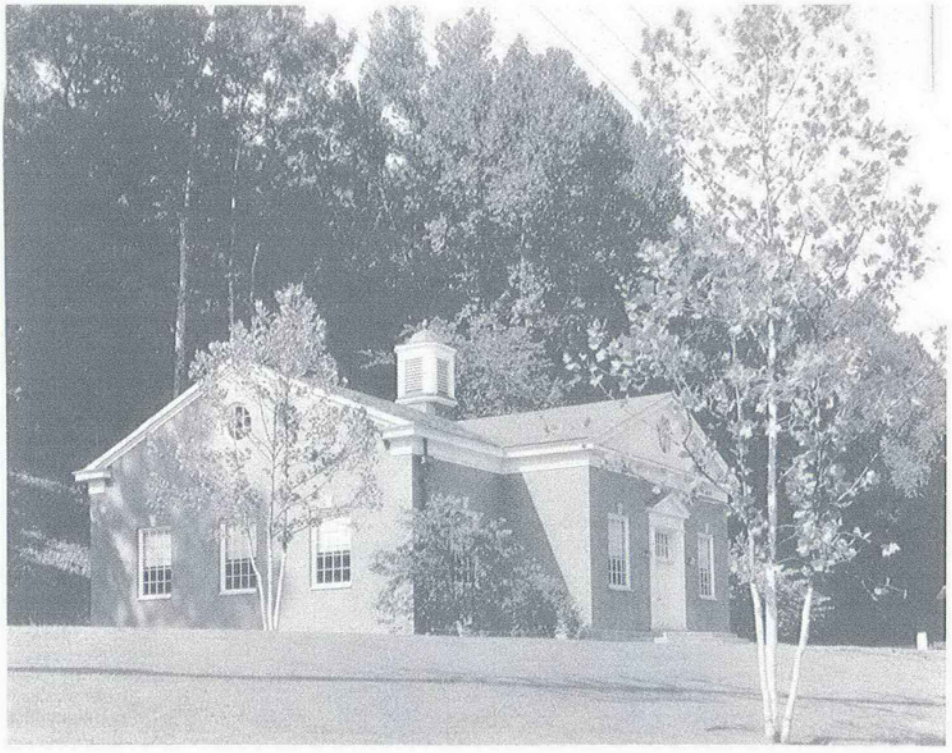
Appendix D:

Historic and Existing Condition Photos

Carillon Historical Park during the construction of Wright Hall, ca. 1948-50 (CHP Archives)

Wright Hall from the northwest, under construction, ca. 1948-50 (CHP Archives)

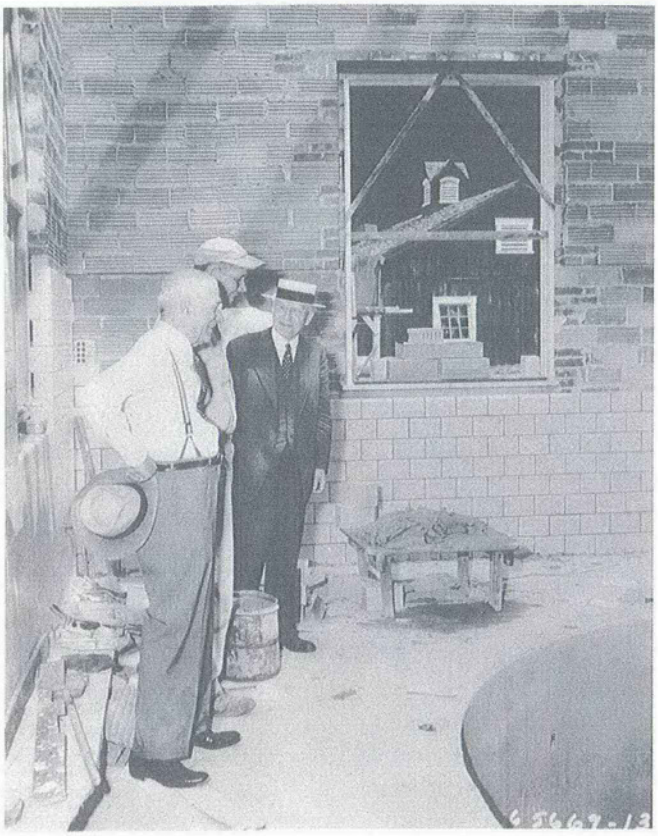
Wright Hall from the northeast, under construction, ca. 1948-50 (CHP Archives)



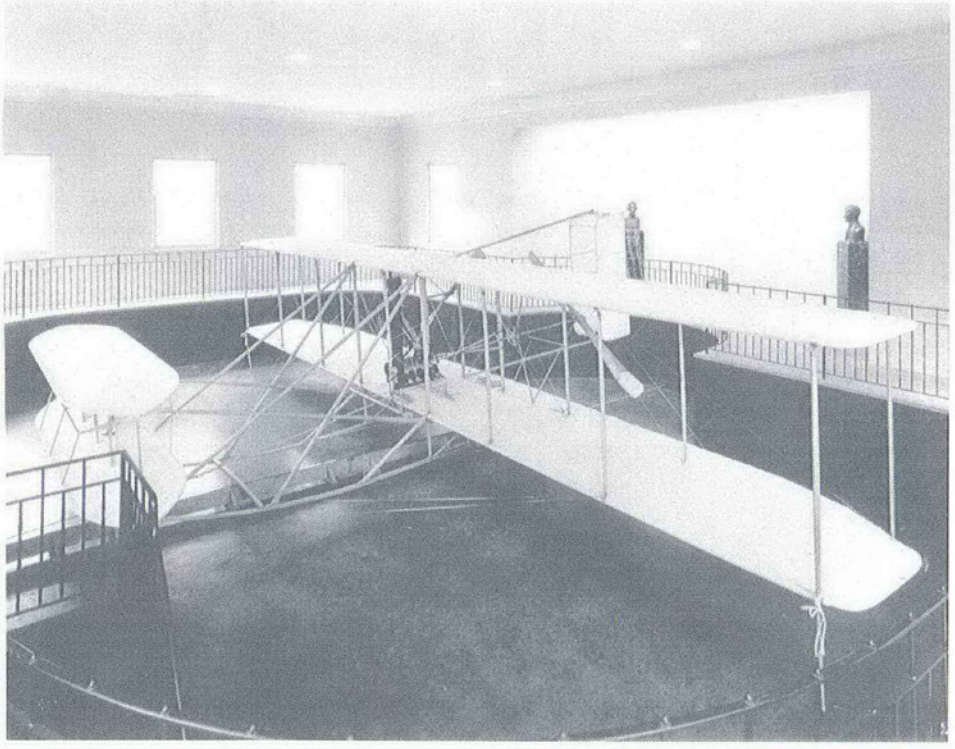
Wright Hall from the northeast, after completion, ca. 1950 (CHP Archives)

Wright Hall from the northwest, after completion, ca.1950 (CHP Archives)

Wright Hall from the northwest, after completion, with visitors ca. 1950 (CHP Archives)



Wright Hall interior under construction, ca. 1948-50 (CHP Archives)

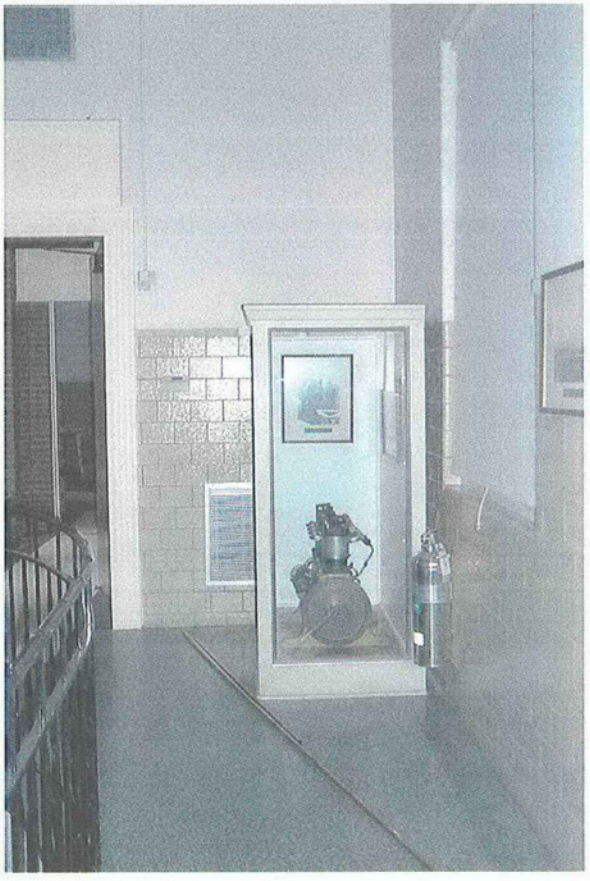


The Wright Flyer III in Wright Hall, October 1949 (CHP Archives)

Wilbur Wright Wing rear exterior, looking west (QE\A 2000)

East elevation at main entrance portico (QE\A 2000)

Wright Hall, interior, opening to new connector building (QE\A 2000)

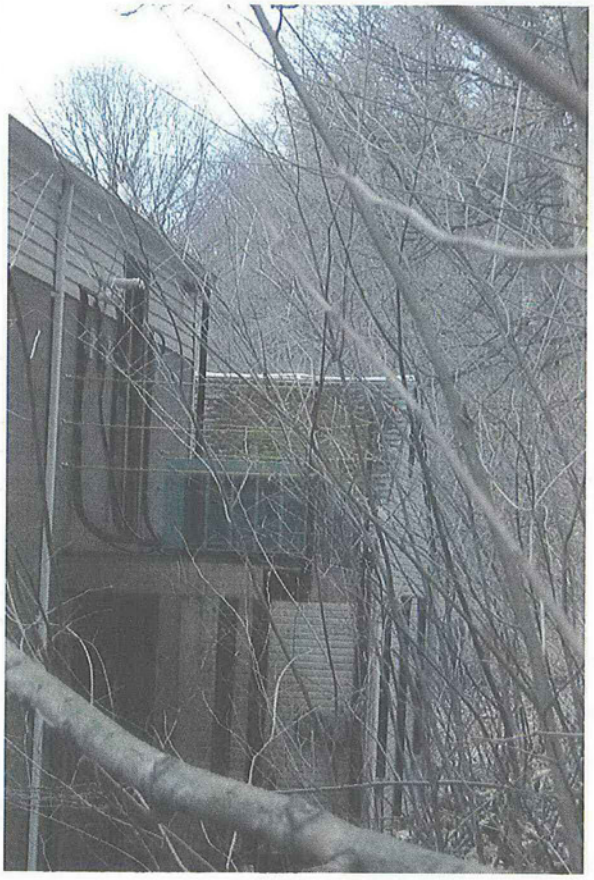


Wright Hall, interior and display case (QE\A 2000)

Wright Hall attic, southwest corner (QE|A 2000)

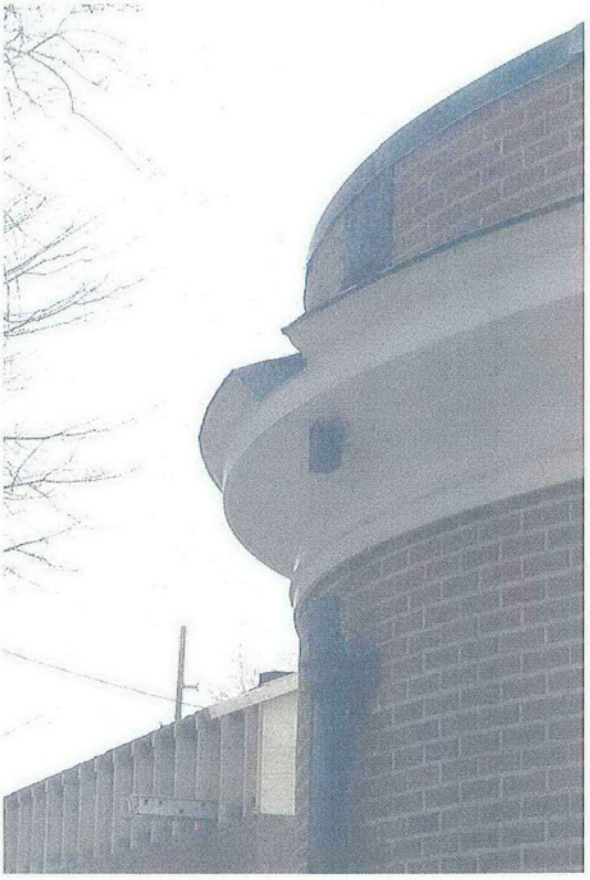
Wright Hall attic, looking west (QE|A 2000)

Wright Hall attic, southeast corner (QE|A 2000)



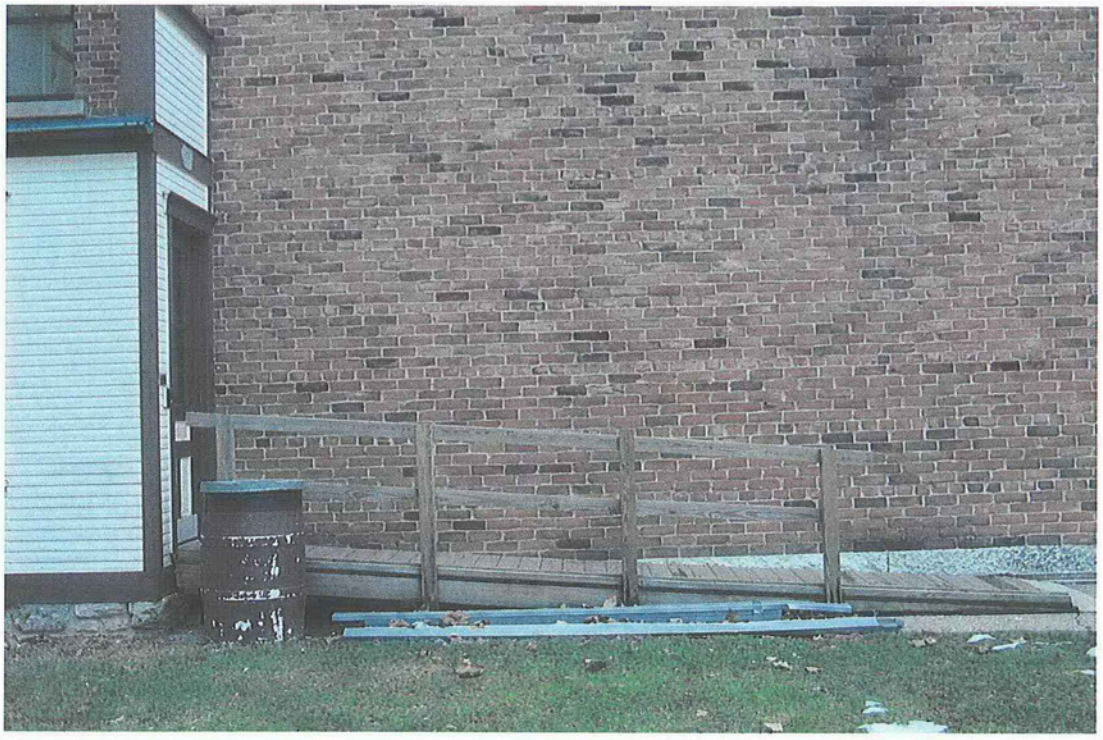
Wilbur Wright Wing rear exterior, looking east (QE|A 2000)

Wright Hall apse exterior, looking west (QE|A 2000)



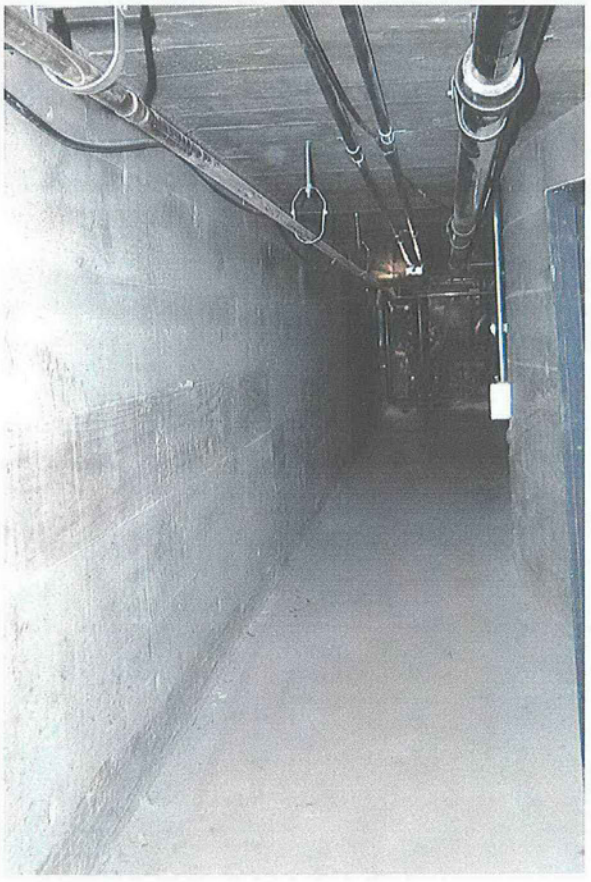
Wright Hall apse exterior, cornice detail, looking west (QE|A 2000)

Wright Hall attic, ridge beam detail (QE\A 2000)



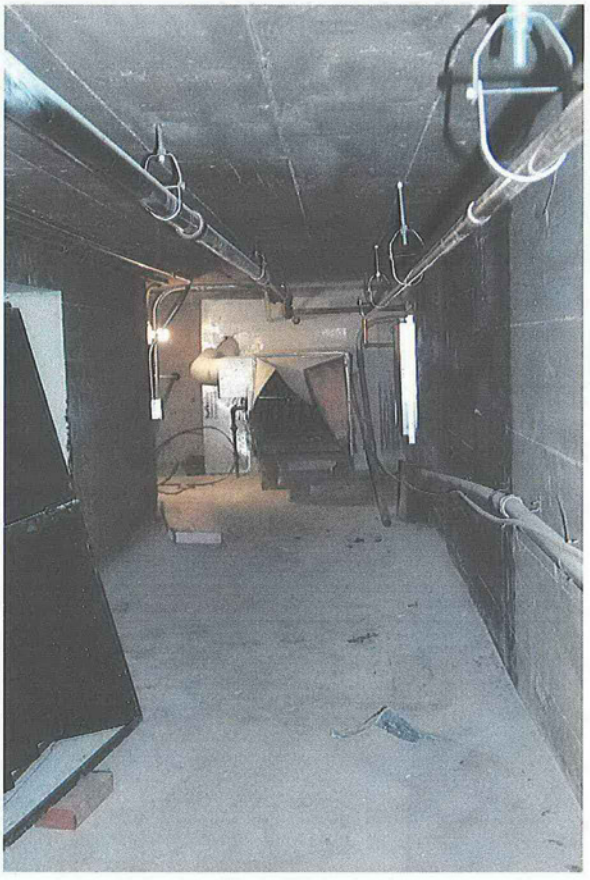
Wilbur Wright Wing exterior, east facade (QE\A 2000)

Wright Hall interior, "pit" fire extinguisher (QE|A 2000)

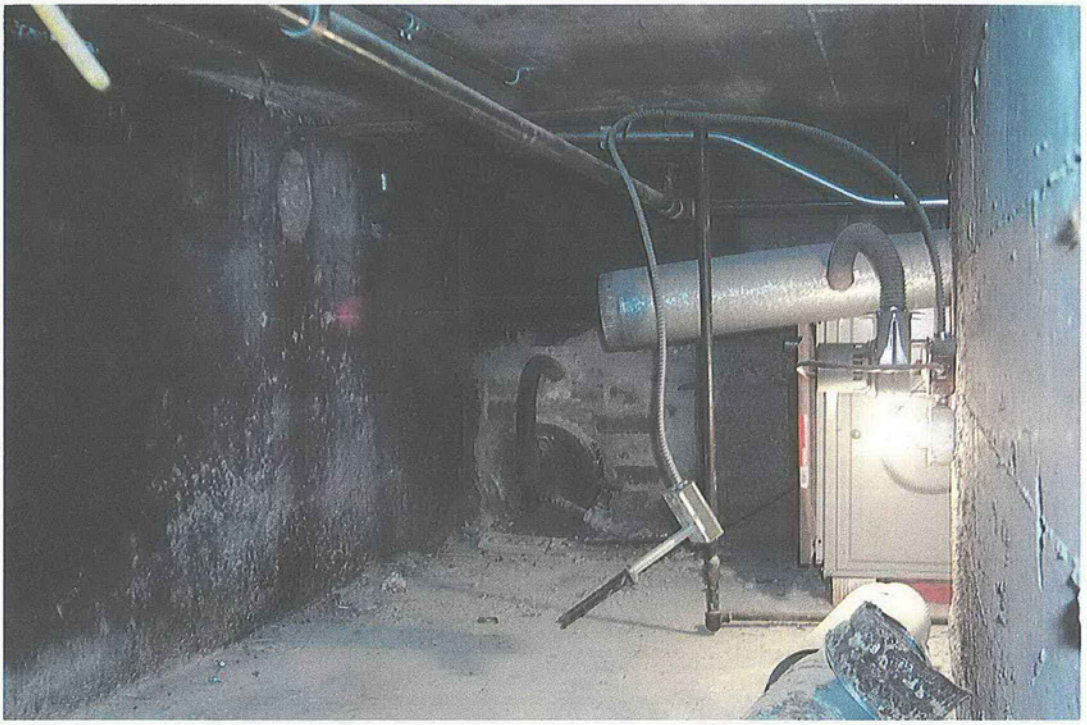


Wright Hall north plenum, looking east (QE|A 2000)

Wright Hall north plenum (QE\A 2000)



Wright Hall west plenum, looking south (QE\A 2000)

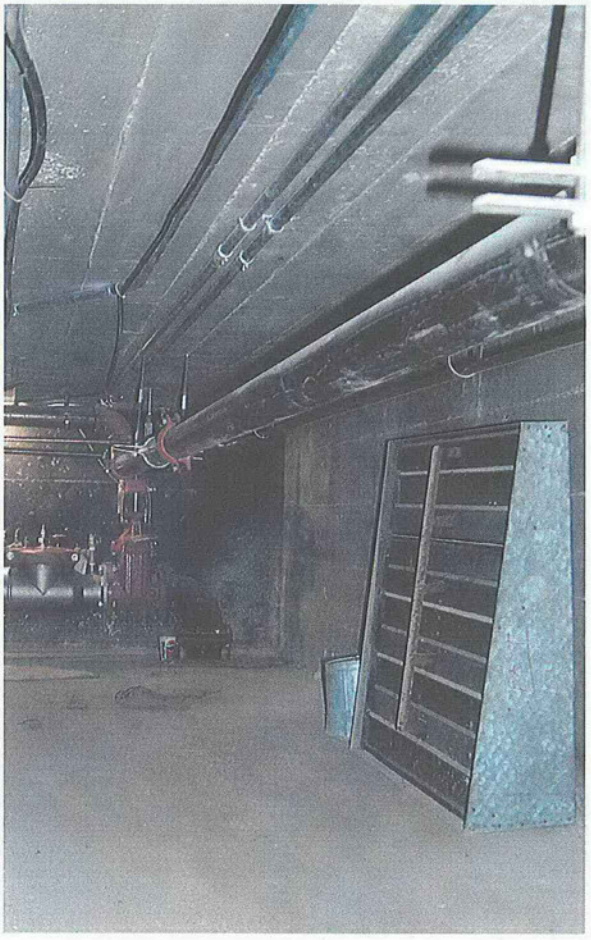


Wright Hall south plenum, looking west (QE|A 2000)

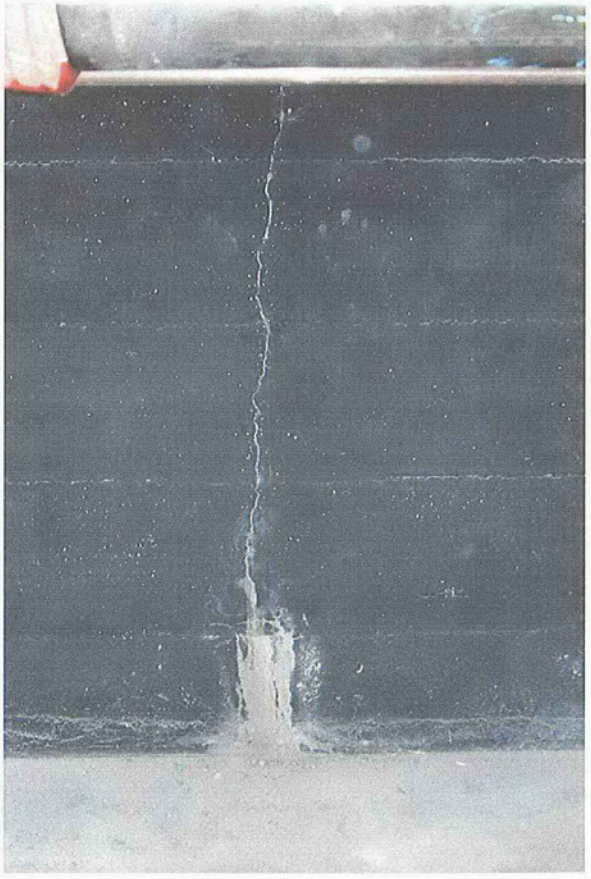
Wright Hall south plenum, drain (QE|A 2000)

Wright Hall south plenum, east end (QE\A 2000)

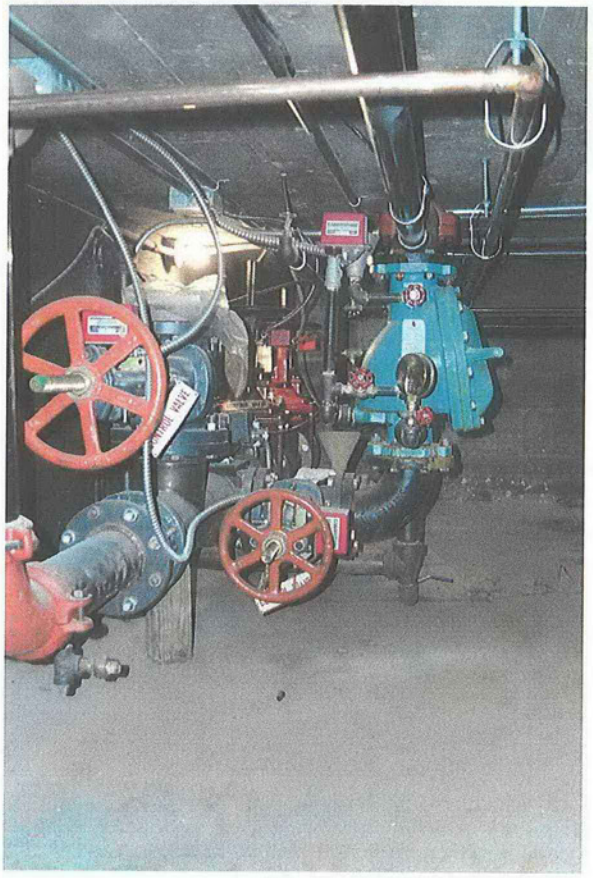
Wright Hall east plenum, looking south (QE\A 2000)



Wright Hall east plenum, looking north (QE|A 2000)



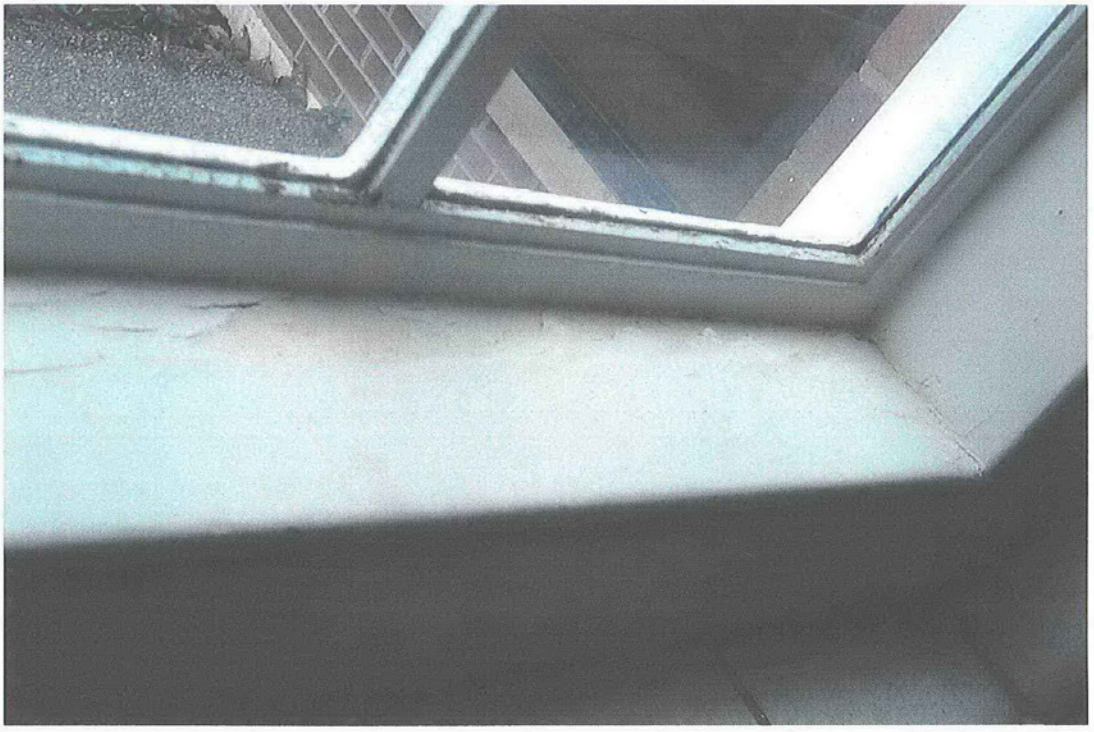
Wright Hall east plenum, thru-wall crack (QE|A 2000)



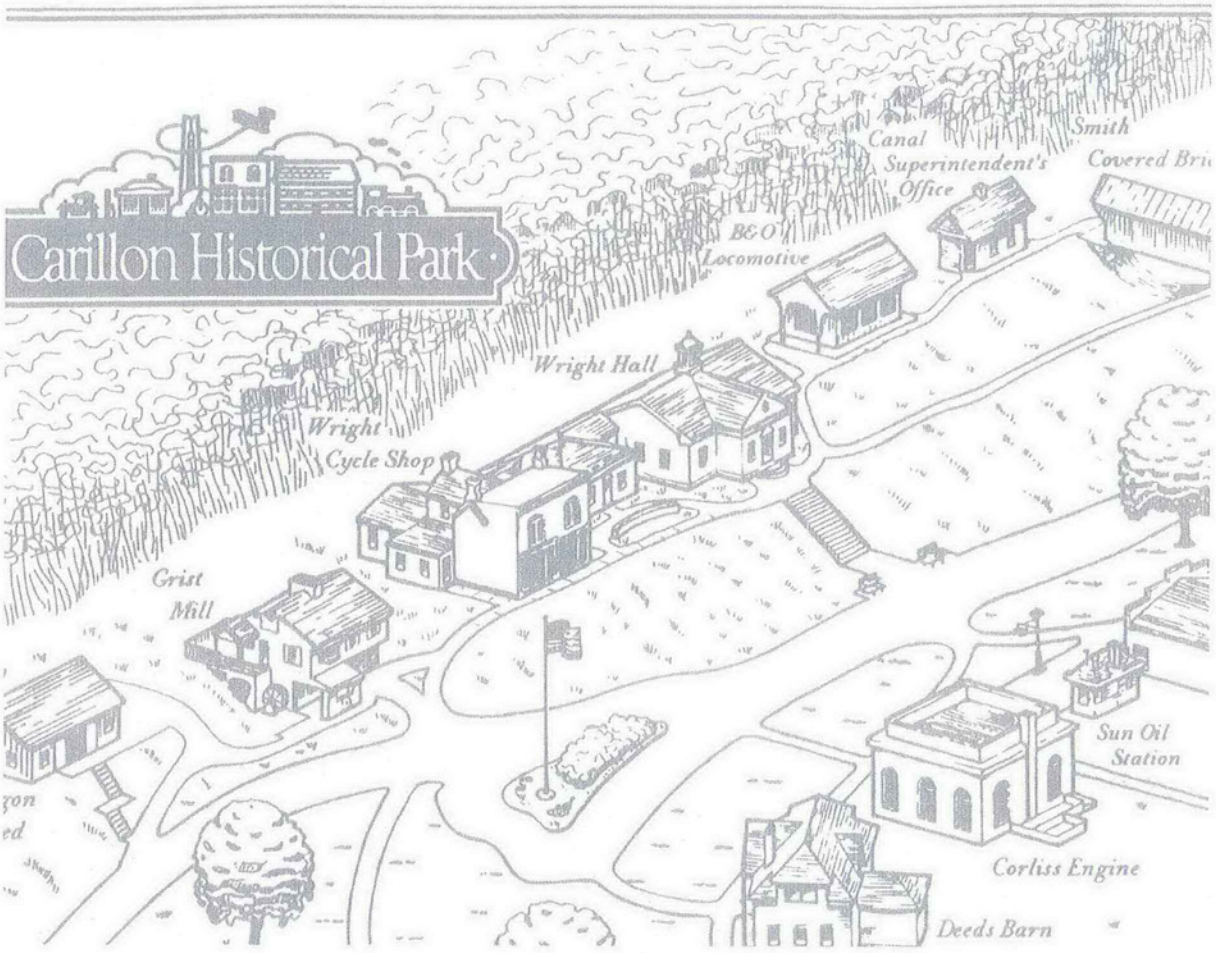
Wright Hall north plenum, east corner (QE\A 2000)

Wright Hall interior, glazed brick (QE\A 2000)

Wright Hall east plenum, south end (QE|A 2000)



Wright Hall interior, typical window condition (QE|A 2000)



Carillon Historical Park, existing site plan (detail)

Appendix E:

Carillon Park HSR Direction

February 16, 2000

TO: The HRS Team

FROM: Mary Mathews

Guiding Principles for Decision Making in the HSR Process

Obviously both Wright Hall and the 1905 Wright Airplane are tremendously important to Carillon Historical Park and the Dayton Aviation Heritage National Historical Park. The plane and the structure together make a stronger statement than either does alone.

Wright Hall was built as a display mechanism for the airplane. The plane and the building are a memorial to the Wright brothers. Orville helped to secure the plane parts, participated in the early years of its restoration and in the site selection and design of the building. He indicated that the plane could be better understood if the visitor viewed it from above. The Flyer III is a National Historic Landmark, the only plane in the United States to hold that distinction. Wright Hall could well become an NHL also if we are cautious now in what we do.

While we want to be prudent about Wright Hall in order to keep its NHL status viable, we also want to be true to the intent of the founder and Orville Wright. As we make decisions, we have two priorities: 1) to insure the conservation of the 1905 Wright Flyer and 2) to enhance the visitor's experience. Our goal is to find a way to do these things while having as little impact as possible on the integrity and aesthetics of Wright Hall. This is a challenging task that we feel our team can meet.

1000 Carillon Blvd., Dayton, Ohio 45409-2023
Phone 937-293-2841 • Fax: 937-293-5798

Appendix F:

Asbestos Report

EMSL Analytical, Inc.

6330 E. 75th St., Suite 152
Indianapolis, IN 46250
Phone: (317) 570-5892 Fax: (317) 570-5894

Attn.: John W. Ey
EHS Technology Group
720 Mound Road COS Suite 420
P.O. Box 45343-3040
Miamisburg, OH 45342

Wednesday, April 12, 2000

Ref Number: IN001671

POLARIZED LIGHT MICROSCOPY (PLM)

Performed by EPA 600/R-93/116 Method*

Project: WRIGHT HALL-CARILLON PARK

Sample	Location	Appearance	Sample Treatment	ASBESTOS %	ASBESTOS Type	NON-ASBESTOS %	NON-ASBESTOS Fibrous	NON-ASBESTOS %	NON-ASBESTOS Non-Fibrous
WH-1		Tan Fibrous Homogeneous	Teased		None Detected	35%	Cellulose	65%	Other
WH-2		Tan Fibrous Homogeneous	Teased		None Detected	35%	Cellulose	65%	Other
WH-3		Tan Fibrous Homogeneous	Teased		None Detected	35%	Cellulose	65%	Other
WH-4		Grey Non-Fibrous Homogeneous	Crushed		None Detected			100%	Other
WH-5		Grey Non-Fibrous Homogeneous	Crushed		None Detected			100%	Other
WH-6		Grey Non-Fibrous Homogeneous	Crushed		None Detected			100%	Other

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

* NY samples analyzed by ELAP 198.1 Method

Richard K. Harding
Analyst

Approved Signatory

Disclaimers: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.
Analysis performed by EMSL Indianapolis (NVLAP Air and Bulk #200188-0.)

EMSL ACCOUNT # EHST50

001671 2149

EHS TECHNOLOGY GROUP

P.O. Box 3040, Miamisburg, Ohio 45343-3040 phone 937-865-3553

CHAIN-OF-CUSTODY RECORD

PROJ. No.: BASL

PROJECT NAME: WRIGHT HALL - CARILLON PARK

Chain-of-Custody #:

SAMPLER (Signature): John W. Ey

Analytical Parameters

SAMPLE FIELD ID #	DATE	TIME	GRAB	COMPOSITE	MATRIX	STATION LOCATION or ID	NUMBER OF JARS	ASBESTOS PLM						REMARKS	LAB ID #
WH-1	4/7	400PM	X			EAST CENTER CEILING	1	X							
WH-2						CENTER CENTER CEILING	1	X						WH-2 SAMPLING TUBE INCLUDED	
WH-3						WEST CENTER CEILING	1	X						TO SHOW CROSS-SECTION	
WH-4						CENTER CENTER ABOVE CEILING	1	X						NO NEED TO RETURN	
WH-5						WEST CENTER "	1	X							
WH-6						EAST CENTER "	1	X							

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
John W Ey	7/10/00	900A	[illegible]				

RELINQUISHED TO SHIPPER BY:	DATE	TIME	DELIVERY SHIPPING METHOD:	___Overnight ___Ground	RECEIVED AT LAB BY:	DATE	TIME
					Pete Morales	4/11/00	10:30AM

COOLER SEAL #_____, SEAL INTACT ?__YES __NO __N/A, TEMPERATURE UPON RECIEPT_____°, ALL BOTTLES INTACT? __YES __NO, ALL BOTTLE SEALS INTACT? __YES __NO __N/A, VOC SAMPLES FREE OF BUBBLES? __YES __NO __N/A

DISTRIBUTION: ORIGINAL WHITE: Return to EHS with report, YELLOW: Laboratory Copy, PINK: Field Copy

Appendix G:

Chromachronology Report

The most difficult color to come up with a match for was the deep green of the pit walls. I had to match (close) to a Martin Senour paint color, otherwise all others are Sherwin Williams or Benjamin Moore. The breakdown is as follows:

Ceiling	7.5GY 9/2	Between SW 1710 Lima Green & SW 1711 Barley Green
Ceiling Molding, Ceiling Cove, Wall Molding	5GY 8/2	SW 1429 Pistachio
Walls	5GY 7/2	SW 1169 Landscape
Window Mullions	N1.5	Standard gloss black
Window, Door Casing, Doors, Column Base, Shaft & Capital	5GY 8/2	SW 1429 Pistachio
Pit Rail	N1.5	Standard gloss black
Pit Walls	7.5GY 2/4	MS 42-7(GO or NE)
Pit Floor	10GY 5/6	BM 2034-30 Grassy Fields

The ceiling, cove and walls should be painted with a flat paint. The ceiling/wall moldings, window casing & jambs, door casing & jambs, & doors should be painted with a semi-gloss paint. The pit walls & floor should be painted with a satin or semi-gloss paint. The window mullions & handrail should be painted with a semi-gloss black paint.

Steve Seebohm
SEEBOHM, LTD.
June 9, 2000