
National Park Service
Cultural Landscapes Inventory
1998



Wright Brothers National Memorial Landscape
Wright Brothers National Memorial

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Inventory Unit Summary & Site Plan

Inventory Summary

The Cultural Landscapes Inventory Overview:

CLI General Information:

Purpose and Goals of the CLI

The Cultural Landscapes Inventory (CLI), a comprehensive inventory of all cultural landscapes in the national park system, is one of the most ambitious initiatives of the National Park Service (NPS) Park Cultural Landscapes Program. The CLI is an evaluated inventory of all landscapes having historical significance that are listed on or eligible for listing on the National Register of Historic Places, or are otherwise managed as cultural resources through a public planning process and in which the NPS has or plans to acquire any legal interest. The CLI identifies and documents each landscape's location, size, physical development, condition, landscape characteristics, character-defining features, as well as other valuable information useful to park management. Cultural landscapes become approved CLIs when concurrence with the findings is obtained from the park superintendent and all required data fields are entered into a national database. In addition, for landscapes that are not currently listed on the National Register and/or do not have adequate documentation, concurrence is required from the State Historic Preservation Officer or the Keeper of the National Register.

The CLI, like the List of Classified Structures, assists the NPS in its efforts to fulfill the identification and management requirements associated with Section 110(a) of the National Historic Preservation Act, National Park Service Management Policies (2006), and Director's Order #28: Cultural Resource Management. Since launching the CLI nationwide, the NPS, in response to the Government Performance and Results Act (GPRA), is required to report information that respond to NPS strategic plan accomplishments. Two GPRA goals are associated with the CLI: bringing certified cultural landscapes into good condition (Goal 1a7) and increasing the number of CLI records that have complete, accurate, and reliable information (Goal 1b2B).

Scope of the CLI

The information contained within the CLI is gathered from existing secondary sources found in park libraries and archives and at NPS regional offices and centers, as well as through on-site reconnaissance of the existing landscape. The baseline information collected provides a comprehensive look at the historical development and significance of the landscape, placing it in context of the site's overall significance. Documentation and analysis of the existing landscape identifies character-defining characteristics and features, and allows for an evaluation of the landscape's overall integrity and an assessment of the landscape's overall condition. The CLI also provides an illustrative site plan that indicates major features within the inventory unit. Unlike cultural landscape reports, the CLI does not provide management recommendations or

treatment guidelines for the cultural landscape.

Inventory Unit Description:

Wright Brothers National Memorial is a 421-acre interpretive and commemorative site located in Kill Devil Hills, Dare County, North Carolina, about four miles south of the community of Kitty Hawk and about seven miles north of the coastal village of Nags Head, in a highly developed corridor along the Outer Banks. Administered by the National Park Service as part of Cape Hatteras National Seashore, the park incorporates the site of the first successful human attempt at heavier-than-air, controlled, powered flight. The designed landscape serves both to interpret this seminal event in aviation history and to memorialize the efforts of Orville and Wilbur Wright.

The analysis of the landscape development at Wright Brothers National Memorial suggests that the appropriate period of significance is 1900-1960. As the location of the Wright brothers' early experiments, culminating in the December 17, 1903, successful heavier-than-air powered flight, Wright Brothers National Memorial achieves its primary significance for its association with that historic event (1900-1903). However, radical changes that occurred to the site, beginning with the stabilization of Kill Devil Hill with grass and shrubs, as part of the Park Development era (1928-1942) altered the historic setting. Subsequent changes in the way the visitor is oriented to the site (1947-1960) altered the commemorative landscape. The 1947 Master Plan and later refinements that included a 1952-1954 visitor center overlay reflect the culmination of design and development at Wright Brothers National Memorial, ending in 1960 with the construction of the Wright Brothers National Memorial Visitor Center.

The historic condition of the site was that of open, shifting sandsflats devoid of vegetation punctuated by three large sand dunes and steady winds of 15-16 miles per hour. A major characteristic of the Wright-era landscape was its dynamic nature in response to natural forces and features. The Wrights chose the Outer Banks as the site of their experiments because the landscape met certain criteria: broad, open expanses of soft sand, prevailing winds, and sparse vegetation. The landscape was characterized by continual and dynamic change due to the low profile, narrowness, sand deposition, and adjacent high wave energy. The high winds, storm overwash, and salt spray precluded the establishment of dense vegetation.

Beginning in 1928, the topography and vegetation of the site were dramatically changed by the stabilization of Kill Devil Hill and West Hill, which were planted with grasses and shrubs to stop their southwestwardly migration. Construction of artificial barrier dunes along the Outer Banks between 1936-1940 reduced salt spray, sand movement, and storm overwash, dramatically altering the distribution and composition of the vegetation at Wright Brothers National Memorial.

These changes have resulted in the loss of the original setting of the Wright brothers' first flight of December 17, 1903. No Wright-era structures or vegetation remain on site. The World Heritage Committee denied the park's nomination in 1980 as a World Heritage site for this reason. The setting of Wright Brothers National Memorial has achieved significance as an example of a designed commemorative landscape that has evolved over time. Early efforts to memorialize the site focused on the Wright Brothers Monument, the First Flight Marker, and the spatial relationship between the two. With the decision to build a museum/visitor center and landing strip in the early 1950s, emphasis shifted

Wright Brothers National Memorial Landscape

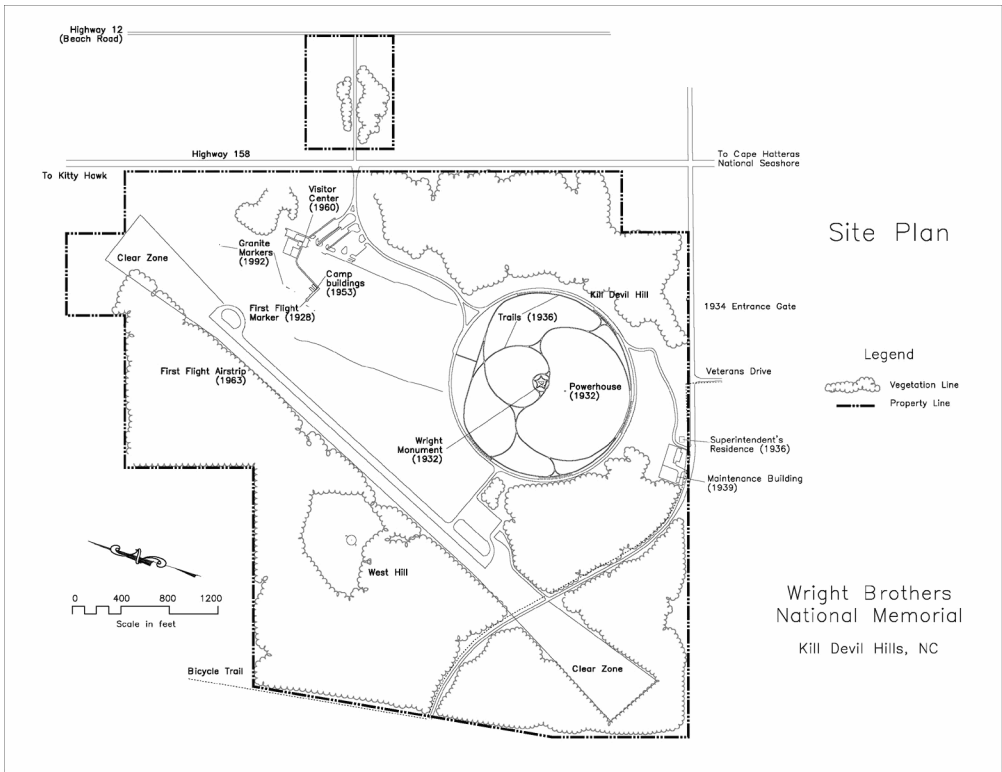
Wright Brothers National Memorial

from the monument and marker to a larger interpretive program that included the reconstruction of the Wright brothers' camp buildings. Markers placed at the landing sites of the first powered flights (the first flight path) have gained importance as a later addition to the commemorative landscape. The landscape retains overall integrity of location, design, workmanship, feeling, and association.

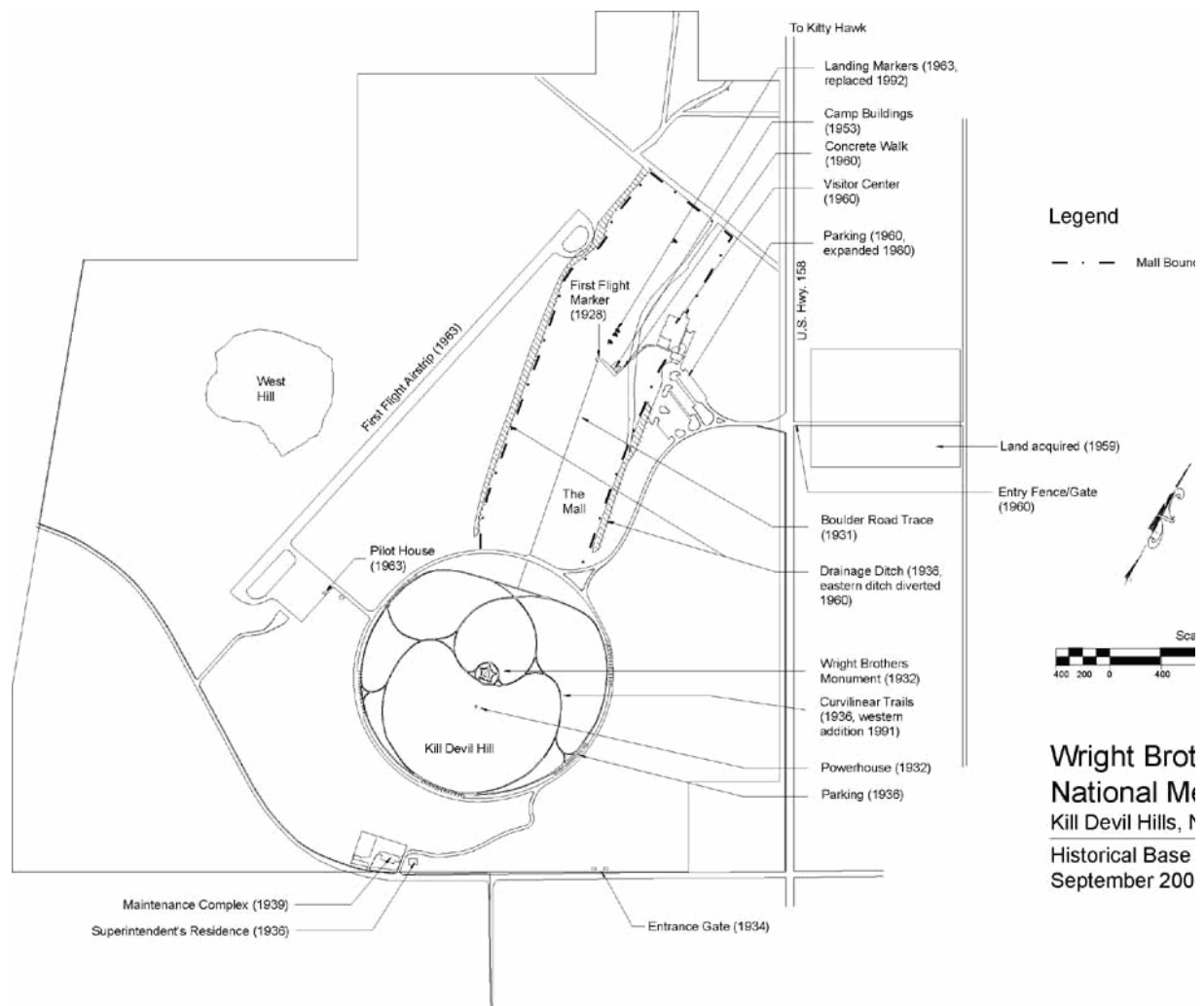
The Wright Brothers landscape includes several historic landscape features: the Wright Monument and associated powerhouse (1932), the First Flight Marker (1928), the circular monument road and curvilinear pedestrian paths (1936), the original entrance gates (1933), the open, grassed mall that delineates the first flight area (1936), and the Wright Brothers National Memorial Visitor Center (1960). Although the setting of the Wright-era landscape has largely been lost, the open character remains intact. The landscape retains integrity of key features of its commemoration including spatial organization, structures, vegetation, and views and vistas.

Wright Brothers National Memorial Landscape

Wright Brothers National Memorial



Wright Brothers National Memorial Landscape
Wright Brothers National Memorial



Property Level and CLI Numbers

Inventory Unit Name:	Wright Brothers National Memorial Landscape
Property Level:	Landscape
CLI Identification Number:	550169
Parent Landscape:	550169

Park Information

Park Name and Alpha Code:	Wright Brothers National Memorial -WRBR
Park Organization Code:	5187
Park Administrative Unit:	Cape Hatteras National Seashore

CLI Hierarchy Description

The Wright Brothers Cultural Landscape encompasses the entire 421-acre site of the Wright Brothers National Memorial, corresponding to its listing in the National Register of Historic Places. There are no component landscapes.

Concurrence Status

Inventory Status: Complete

Completion Status Explanatory Narrative:

Documentation for the CLI Levels I and II was extracted from a CLR for Wright Brothers National Memorial written by Susan Hitchcock and completed in 2001. Several site visits were conducted during the course of the CLR research, including a systematic review of the historic park maps and archival photographs. The author also photographed the key landscape features, surveyed the vegetation, and recorded existing conditions for the site. The Level II date reflects the date that the information was entered into CLAIMS, not the date that field research was completed.

The Wright Monument and associated powerhouse, the curvilinear trail system, the First Flight Marker, the grassed mall, the old entrance gates, the reconstructed camp buildings, and the Wright Brothers National Memorial Visitor Center are evaluated in greater detail as Level III landscape features. The park contact is Steve Harrison.

Concurrence Status:

Park Superintendent Concurrence:	Yes
Park Superintendent Date of Concurrence:	08/18/2010
National Register Concurrence:	Eligible -- SHPO Consensus Determination
Date of Concurrence Determination:	04/08/2004

National Register Concurrence Narrative:

NC-SHPO concurred on the significance of the cultural landscape through information provided in the CLR, which is the source for this CLI.

Concurrence Graphic Information:

Wright Brothers National Memorial Landscape
Wright Brothers National Memorial



United States Department of the Interior

NATIONAL PARK SERVICE
Southeast Regional Office
Atlanta Federal Center
1924 Building
100 Alabama St., S.W.
Atlanta, Georgia 30303



H22(SERO-CRD)

12 July 2004

Memorandum

To: Superintendent, Wright Brothers National Memorial (WRBR)
From: Chief, Cultural Resource Division, Southeast Region *R. B. Hasty*
Subject: Cultural Landscape Inventory
Wright Brothers National Memorial Landscape
Reply Due: 16 August 2004

We are pleased to transmit to WRBR the Cultural Landscape Inventory (CLI) for the Wright Brothers National Memorial Landscape. The CLI is an evaluated list of landscape properties in the National Park System that are eligible for listing on the National Register of Historic Places (NR) or contribute to an existing historic property. In order for the CLI to be certified and counted under goals 1a7 and 1b2B in PMDS, the North Carolina State Historic Preservation Office (NC-SHPO) needs to concur on the eligibility of the property for listing in the National Register of Historic Places, and the Park Superintendent needs to concur on the condition assessment and management category provided within the inventory. Through prior communication with NC-SHPO on the Cultural Landscape Report, there is consensus on the significance of cultural landscape features at the property. For Park Superintendent approval, a signature page has been sent along with this CLI. It needs to be signed by the Superintendent and returned to the Regional Office for the final certification. If the condition assessment and management category are agreed upon, please sign the attached approval form and return to our office to the attention of David Hasty.

Enclosures



Letter to the Superintendent

Wright Brothers National Memorial Landscape
Wright Brothers National Memorial

CULTURAL LANDSCAPE INVENTORY
CONDITION ASSESSMENT CONCURRENCE SHEET

Park Information

Park: Wright Brothers National Memorial
Name: Wright Brothers National Memorial Landscape
Location: North Carolina
County: Dare
CLI#: 550169

Cultural Landscape Condition Information

Landscape Condition:

Good X

Fair

Poor

Management Category:

Must be preserved X

Should be preserved

May be preserved

May be released, altered or destroyed

Park Superintendent Concurrence

Concur Do Not Concur

Laurie A. Bell 8/3/04
Superintendent Date

Superintendent Signature of Concurrence; 2004

Wright Brothers National Memorial Landscape
Wright Brothers National Memorial

AUG. 18. 2010 3:53PM

NATIONAL PARK SERVICE

NOL 035 P. 1

CULTURAL LANDSCAPE INVENTORY
CONDITION ASSESSMENT CONCURRENCE SHEET

8 July 2010

Park Information

Park: Wright Brothers National Memorial
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Management Category:

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May be preserved

May be released, altered or destroyed

Park Superintendent Concurrence

Concur ✓ Do Not Concur

Michael B. Murray 8-18-10
Superintendent Date

Superintendent Signature of Concurrence; 2010

Wright Brothers National Memorial Landscape

Wright Brothers National Memorial

NRT PARK SERVICE FAX: 252-473-2353

North Carolina Department of Cultural Resources
State Historic Preservation Office
David L. S. Brock, Administrator

Division of Historical Resources
David J. Olson, Director

Michael F. Easley, Governor
Lizabeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary
Office of Archives and History

April 8, 2002

Lawrence A. Belli
Outer Banks Group
National Park Service
1401 National Park Drive
Manteo, NC 27954

Re: Wright Brothers National Memorial Cultural Landscape Report,
Dare County, ER 02-8976

Dear Superintendent Belli:

Last fall we received a draft version of the above-cited report, but were asked to withhold comment until a later date. This January staff at the Wright Brothers National Memorial asked us to review the final report. A comparison of the final report with the draft report indicates that the only substantive differences are additional documentary photographs and plans and a brief section at the end on preparing a record of treatment.

Overall, the cultural landscape report does an excellent job of acknowledging, describing and analyzing the multi-layered history of the site and its landscape, especially the history of commemoration over the years. Throughout the report, there is an appropriate emphasis on interpreting the changes to the site, particularly the commemorative design elements.

The following corrections and additions are recommended:

- Page 31: At the top of the page, the granite company is incorrectly cited. The company is the North Carolina Granite Corporation, formed in 1904 in Mount Airy. John D. Sargent, a stonecutter from Vermont, became superintendent in 1910 and in 1918 became the company's president. Under Sargent, the company became a national leader in its field, providing the stone for numerous important national projects such as the Ft. Knox Bullion Depository and the Arlington Bridge in Washington, D.C.
- Pages 33-35: It would be helpful if architects J. M. Thrower and Thomas C. Vint were more fully identified. Where were they based? What were their credentials?
- Page 38: Efforts to obtain the 1903 Wright brothers plane are mentioned. A bit more information would be helpful. Where was the plane ca. 1950? Were those overseeing development of the Wright Brothers National Memorial in competition with groups in Dayton?

	Location	Mailing Address	Telephone/Fax
Administration	507 N. Blount St. Raleigh, NC	4617 Mail Service Center, Raleigh 27699-4617	(919) 733-4763 • 733-8653
Restoration	515 N. Blount St. Raleigh, NC	4613 Mail Service Center, Raleigh 27699-4613	(919) 733-6547 • 715-4801
Survey & Planning	515 N. Blount St. Raleigh, NC	4618 Mail Service Center, Raleigh 27699-4618	(919) 733-4763 • 715-4801

Letter from the Superintendent

Wright Brothers National Memorial Landscape
Wright Brothers National Memorial

NRT PARK SERVICE

PAK:202470-030

PP: 11 04 01 11 04

Page 3
Lawrence Belli
April 8, 2002

- Pages 70-74: The analysis section includes a description of changes to the visitor center (page 70), but the evaluation that follows does not mention those changes in terms of the seven aspects of integrity. For consistency and thoroughness, these changes should be addressed with regard to design and materials.
- Pages 79-80: The bulleted items on treatment of the visitor center should specify that any vegetation planted should not block the distant view of the visitor center, which is an important landmark in the community and commemorative landscape.
- Find Notes: It would be easier to read the several sets of end notes if the identification numbers were properly formatted (smaller and in superscript).
- Bibliography, unpublished reports. We enclose a copy of our "Evaluation of the Visitor Center (Mitchell/Giurgola, 1959-1960), Wright Brothers National Memorial, Kill Devil Hill, Kitty Hawk, North Carolina," North Carolina State Historic Preservation Office, January 14, 1997, and request that it be cited among the "Unpublished Reports" in the bibliography.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee (Medhill) Farley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

David Brook by J. Hotteluck

David Brook

DB:kgc

enclosures

cc: Doug Stover, NPS, Manteo

2nd page of Letter from Superintendent

Geographic Information & Location Map

Inventory Unit Boundary Description:

The 421-acre park is located in Kill Devil Hills, Dare County, North Carolina, about four miles south of the older community of Kitty Hawk and about seven miles north of the historic coastal village of Nags Head, in a highly developed corridor along the Outer Banks. Expanded from its earlier 314-acre size on June 23, 1959, Highway 158 forms the eastern boundary of the park, and Colington Road forms the

south boundary. To the west and southwest, a wooded area of pine/hardwood forest buffers the park. More built-up areas surround the park on the southeast, east, and north, although areas of woody vegetation on the southeast and east screen the site from increasing development.

State and County:

State: NC

County: Dare County

Size (Acres): 421.00

Boundary UTMS:

UTM Zone:	18
UTM Easting:	440,075
UTM Northing:	3,986,850
UTM Zone:	18
UTM Easting:	439,175
UTM Northing:	3,984,950
UTM Zone:	18
UTM Easting:	440,725
UTM Northing:	3,985,425
UTM Zone:	18
UTM Easting:	438,650
UTM Northing:	3,986,350

Location Map:



Location map for Wright Brothers National Memorial

Regional Context:

Type of Context: Cultural

Description:

Native peoples inhabited the North Carolina barrier islands hundreds of years before they were discovered by European explorers in the 16th century. In 1584, Sir Walter Raleigh sent two vessels across the Atlantic to search for suitable sites for New World settlements. Within a year, a settlement was established on the northern end of Roanoke Island. By 1590, however, there was no trace of the colonists, and the mystery remains unsolved to this day.

The area was not permanently settled until the mid-17th century when English colonists settled near present-day Colington. From the beginning, proximity to the ocean and the mainland has been important to those living on the Outer Banks. The natural processes that formed these islands have caused major redistributions of the populations for the past 400 years.

Type of Context: Physiographic

Description:

Wright Brothers National Memorial is located on an Atlantic barrier island on the Outer Banks of North Carolina. The shore zone or interface between the land and sea portions of the coastal plain consists of a series of barrier islands two to twenty miles offshore. Most are low islands one to three miles wide and ten to twenty miles long. The highest topographic features are sand dunes, usually 10 to 20 feet above sea level, but sometimes reaching heights of more than 100 feet. The barrier islands of the Outer Banks are an assemblage of sedimentary layers, each made up of particles of different sizes that indicate their source and the processes responsible for their movement.

Type of Context: Political

Description:

The park is located within the 3rd Congressional District of North Carolina.

Management Unit: Cape Hatteras National Seashore

Tract Numbers: 01-101 through 01-123

Management Information

General Management Information

Management Category: Must Be Preserved And Maintained

Management Category Explanatory Narrative:

The park incorporates the site of the first successful human attempt at heavier-than-air powered flight—an accomplishment attained by Orville and Wilbur Wright on 17 December 1903. The Wright brothers came to the Outer Banks of North Carolina in 1900 to conduct glider experiments. The area met their needs of a wide, open space devoid of vegetation with steady winds of fifteen-sixteen miles per hour. They chose the area south of Kitty Hawk because of the presence of three large sand dunes, known locally as Kill Devil Hills. The Wrights spent the next three years, intermittently at Kill Devil Hills, conducting experiments and test flights before achieving success with four powered flights, the longest of which was 852 feet in 59 seconds. Historians now view the Wright brothers' efforts as a seminal event in aeronautic development, paving the way for future advances in aviation. The park was established in 1927 to commemorate this event. Beginning in 1928, the site was planted with grasses in order to stabilize the sand dunes and to create a memorial landscape that included the Wright Brothers Monument on top of Kill Devil Hill, the First Flight Marker, and a grassed mall.

In January 2001, the Wright Brothers National Memorial Visitor Center was designated a National Historic Landmark, in recognition of its being a nationally significant example of a Mission 66 visitor center and as one of the most important examples nationally of the Philadelphia School of modern architecture. It had previously been included as a contributing feature of the existing National Register historic district as an outstanding example of modernist architecture in North Carolina.

Maintenance Location Code: 5187

Agreements, Legal Interest, and Access

Management Agreement:

Type of Agreement: Concession Contract/Permit

Expiration Date: 12/31/2001

Management Agreement Explanatory Narrative:

The First Flight Airstrip services the site's concession and general aviation.

NPS Legal Interest:

Type of Interest: Fee Simple

Public Access:

Type of Access: Unrestricted

Adjacent Lands Information

Wright Brothers National Memorial Landscape

Wright Brothers National Memorial

Do Adjacent Lands Contribute?

No

National Register Information

Existing National Register Status

National Register Landscape Documentation:

Undocumented

National Register Explanatory Narrative:

Wright Brothers National Memorial was first listed in the National Register on 15 October 1966, upon passage of the National Historic Preservation Act. Documentation for the district was accepted by the Keeper of the National Register on 25 August 1978. An amendment to the nomination, accepted 13 September 1996, provides documentation about the Wright Brothers National Memorial Visitor Center.

Existing NRIS Information:

Name in National Register:	Wright Brothers National Memorial
NRIS Number:	66000071
Primary Certification:	Listed In The National Register
Primary Certification Date:	10/15/1966
Other Certifications and Date:	Additional Documentation - 8/25/1978

National Register Eligibility

National Register Concurrence:	Eligible -- SHPO Consensus Determination
Contributing/Individual:	Contributing
National Register Classification:	District
Significance Level:	National
Significance Criteria:	A - Associated with events significant to broad patterns of our history
Significance Criteria:	B - Associated with lives of persons significant in our past
Significance Criteria:	C - Embodies distinctive construction, work of master, or high artistic values
Criteria Considerations:	E -- A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived F -- A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical

significance

G -- A property achieving significance within the past 50 years if it is of exceptional importance

Period of Significance:

Time Period:	AD 1900 - 1924
Historic Context Theme:	Expanding Science and Technology
Subtheme:	Technology (Engineering and Invention)
Facet:	Transportation
Other Facet:	None
Time Period:	AD 1925 - 1960
Historic Context Theme:	Expressing Cultural Values
Subtheme:	Architecture
Facet:	Moderne Art Deco (1920-1945)
Other Facet:	None
Time Period:	AD 1925 - 1960
Historic Context Theme:	Expressing Cultural Values
Subtheme:	Landscape Architecture
Facet:	The 1930's: Era Of Public Works
Other Facet:	None

Area of Significance:

Area of Significance Category:	Architecture
Area of Significance Subcategory:	None
Area of Significance Category:	Conservation
Area of Significance Subcategory:	None
Area of Significance Category:	Invention
Area of Significance Subcategory:	None
Area of Significance Category:	Landscape Architecture
Area of Significance Subcategory:	None

Statement of Significance:

Wright Brothers National Memorial encompasses the site of the first heavier-than-air powered flight, achieved by Orville Wright on 17 December 1903, and subsequent test flights of the same day piloted by both Orville and Wilbur Wright. The Wright brothers' earlier experiments with gliders also occurred here.

Wright Brothers National Memorial is significant under National Register Criterion A and B as the location of the Wrights' successful flight experiments. The resources are also significant under Criterion A for their association with the efforts to recognize, commemorate, and preserve the site. They are significant under National Register Criterion C for the commemorative architecture and landscape architecture of the site. The period of significance is 1900-1960.

The Wrights chose the Outer Banks for their experiments because the landscape met certain criteria: broad, open expanses of soft sand, prevailing winds, and sparse vegetation. A major characteristic of the Wright-era landscape was its dynamic nature in response to natural forces and features. The high winds, storm overwash, and salt spray precluded the establishment of dense vegetation.

The Kill Devil Hills area was the focus of their experiments because of the presence of three large sand dunes. The Wrights spent the next three years intermittently on site conducting experiments and test flights before achieving success with four powered flights on 17 December 1903, the longest of which was 852 feet in fifty-nine seconds. Historians now view the Wright brothers' efforts as a seminal

event in aeronautic development that paved the way for future advances in aviation.

Congress created Wright Brothers National Memorial in 1927 to commemorate the Wright brothers' historic first flight. Beginning in 1928, the site was stabilized to support a memorial landscape, including the Wright Monument, a nationally significant example of commemorative architecture, the First Flight Marker, the curvilinear trails and circular monument road, the monument's associated powerhouse, and the grassed mall that set off the area from the surrounding landscape that was growing up in woody vegetation. These resources represent the realization of the intended commemorative purpose of the park through a formal designed landscape under War Department and NPS management.

With the decision to include a larger interpretive program in the 1947 Master Plan, emphasis shifted from the monument and marker to plans for a museum/visitor center, reconstruction of the Wright brothers' camp buildings, and markers placed at the landing sites of the first powered flights. The developments associated with this shift to a comprehensive interpretation approach altered much of the Park Development-era landscape. However, the landscape as proposed in 1947 with refinements in 1952-54 remains essentially intact and is in the range of being 50 years old.

The Wright Brothers National Memorial Visitor Center was the centerpiece of the shift from commemoration to comprehensive interpretation in the landscape. Throughout the Mission 66 period, the Park Service's overriding goal for its visitor centers was to improve interpretation and stimulate public interest in the park (Allaback 2000, 26). Recently designated a NHL, this early Mission 66 visitor center controlled the approach and entry from the parking lot into the building, with clear views out to the mall blocked by the cypress fence. Visitors were directed to the visitor center first, where they learned the Wright brothers' story, and then were released out to the camp buildings, the first flight line, and the monument beyond.

Chronology & Physical History

Cultural Landscape Type and Use

Cultural Landscape Type: Designed

Current and Historic Use/Function:

Primary Historic Function: Airplane

Other Use/Function

Automobile

Interpretive Trail

Leisure-Passive (Park)

Monument (Marker, Plaque)

Other Type of Use or Function

Both Current And Historic

Both Current And Historic

Both Current And Historic

Both Current And Historic

Current and Historic Names:

Name	Type of Name
Kill Devil Hill Monument	Historic
Wright Brothers National Memorial	Current

Chronology:

Year	Event	Annotation
AD 1900 - 1911	Engineered	Between 1900-1903, the Wright brothers conducted experiments at Kill Devil Hills, culminating in the first heavier-than-air powered flight of December 17, 1903. The brothers continued their work at the site in 1908 and 1911. Wright, Orville and Wilbur
AD 1928	Memorialized	On December 17, 1928, members of the International Civil Aeronautics Conference dedicated a granite marker placed at the approximate location of the 1903 liftoff and the cornerstone of the monument to be placed on Kill Devil Hill.
AD 1928 - 1931	Stabilized	Beginning in 1928, Kill Devil Hill was stabilized by the planting of grasses and shrubs.
AD 1931 - 1932	Built	In 1931, construction began on the Rogers and Poore Art Deco-inspired granite monument. The monument and its associated powerhouse were completed in 1932. Poor, Alfred Easton Rogers, Robert Perry
AD 1931 - 1933	Built	The War Department constructed an entrance road that arced around the east side of Kill Devil Hill and turned due north, on axis with the First Flight Marker. The War Department constructed an entrance feature that was completed in 1933.
AD 1933	Land Transfer	In August 1933, Kill Devil Hills Monument National Memorial was transferred from the War Department to the National Park Service.

Wright Brothers National Memorial Landscape

Wright Brothers National Memorial

AD 1934 - 1936	Altered	Between 1934-1936, NPS removed the War Department entrance road and built a new circular road. NPS also removed the existing path ascending Kill Devil Hill and built a symmetrical, curvilinear path system.
AD 1935 - 1936	Built	A caretaker's residence and comfort station were built between 1935-1936.
AD 1936	Planted	In 1936, the Greenbriar Farms of Norfolk, Virginia completed an ornamental planting project at the site.
AD 1953	Reconstructed	In 1953, the Wright brothers' camp buildings were reconstructed.
AD 1954	Altered	In 1954, the park repointed the exterior walls and enclosed the terrace of the superintendent's quarters on the north side.
AD 1957 - 1959	Altered	Beginning in 1957, the circulation system was significantly altered. A new entrance road and a bypass road to Colington were completed in 1958. The old entrance road and Boulder Road were removed between 1958-1959.
AD 1959	Purchased/Sold	In 1959, Congress authorized the formal acquisition of the additional 111 acres to the north and east.
AD 1959 - 1960	Built	In February 1959, the contract for the construction of the Wright Brothers National Memorial Visitor Center was awarded to Hunt Construction Company of Norfolk, Virginia.
Romaldo Giurgola/Ehrman Mitchell		
AD 1963	Built	An airstrip was constructed east of West Hill in 1963.
AD 1964 - 1965	Reconstructed	In November 1963, the park took down the reconstructed camp buildings (quarters and hangar) and reconstructed them in 1964-65.
AD 1974	Altered	In 1974, the terrace of the superintendent's residence was enclosed with screening and wood lattice, and the original steel sash windows were replaced with double-hung metal windows.

Wright Brothers National Memorial Landscape
Wright Brothers National Memorial

AD 1976	Altered	In 1976, the original steel frame windows of the visitor center were replaced with aluminum frames and the steel casement-type windows in the assembly room were replaced with fixed-sash aluminum windows.
AD 1979	Demolished	The abandoned entrance station was removed in 1979 after the park received Section 106 clearance.
AD 1980	Expanded	In 1980, Denver Service Center oversaw a contract to approximately double the visitor center parking lot.
AD 1984	Land Transfer	In 1984, the United States conveyed to the state of North Carolina a right-of-way along a portion of Ocean Bay Boulevard and a portion of Colington Road.
AD 1987	Preserved	The Williamsport Training Center completed preservation work on the Wright Brothers Monument in 1987.
AD 1992	Altered	In 1992, the park replaced the small concrete pedestals previously used to mark the 1903 landing sites with granite markers.
AD 1993	Reconstructed	In 1993, the park's preservation team rebuilt the quarters and hangar building.
AD 1997	Rehabilitated	In 1997, the Wright Brothers Monument was rehabilitated.
AD 1998	Removed	In 1998, the park removed the cypress fence and associated vegetation that provided a screen from the parking lot to the first flight area.
AD 2000	Stabilized	In 2000, the powerhouse was stabilized.

Physical History:

1900-1911

The Wright Brothers National Memorial is recognized as the site of the first successful human attempt at heavier-than-air, controlled, powered flight carried out by Orville and Wilbur Wright on December 17, 1903. The first flight marked the end of many years of experimentation by the brothers from Dayton, Ohio. The three years immediately preceding were spent intermittently on site conducting experiments and test flights. The brothers' fascination with heavier-than-air flight has been traced back to 1892 when they began reading and analyzing previous writings and experiments on flight. Employed in their own bicycle manufacturing and repair business, the Wrights were able to devote the majority of September to January to their experiments. In 1899, the brothers conducted their first glider experiments using a double-foiled kite, and the following year they continued testing construction materials and techniques. Their goal was to create a glider capable of carrying the weight of a man.

It was during this first period of experimentation in Dayton that the brothers began to search for a more practical site to test their glider. They consulted the U.S. Weather Bureau and other individuals conducting flight experiments to identify locations that would meet certain criteria of topography, vegetation, and wind (a wide, open space; steady winds of fifteen-sixteen miles per hour; isolation; elevation change; and soft sand for landing). They chose the North Carolina Outer Banks because the landscape was characterized by broad, open expanses of shifting sand and steady northeasterly prevailing winds. The area was void of vegetation because of the high winds, salt spray, and periodic storm overwash. Following correspondence with residents of Kitty Hawk, North Carolina, Orville and Wilbur Wright were persuaded that this was the best location for their flight experiments, due to the presence of several large sand dunes, known in the area as Kill Devil Hills. Insert footnote: Over the years, there have been many theories as to the origin of this place name. Regardless, the name appears on maps as early as 1809. A lifesaving station established here in 1870 bore the name, and when the town incorporated in 1954, it adopted the name as well.

The First Season

The brothers' first season of experiments at Kitty Hawk began when they arrived in September 1900. The last leg of the trip was by boat, as there were no bridges connecting the Outer Banks with the North Carolina mainland. At the time Kitty Hawk was an isolated fishing village of several hundred inhabitants. A letter from Wilbur in 1900 described the area:

In October my brother and myself spent a vacation of several weeks at Kitty hawk, North Carolina, experimenting with a soaring machine. We located on the bar which separates Albemarle sound from the ocean. South of Kitty hawk the bar is absolutely bare of vegetation and flat as a floor, from sound to ocean, for a distance of nearly five miles, except a sand hill [Kill Devil Hill] one hundred and five feet high which rises almost in its center. The main slope of the hill is to the northeast, which is facing the prevailing winds. The slope is one to six. To the north, northeast, and east, and southeast there is nothing but flat plain and ocean for a thousand miles nearly. It is the ideal place for gliding experiments except for its inaccessibility (Westcott 1983, 30).

The brothers originally stayed in the home of the local Postmaster, William J. Tate, and his family in the village of Kitty Hawk. Soon thereafter they established a camp immediately outside the village, approximately four miles north of the current National Memorial. Orville and Wilbur began to experiment with their first glider in October 1900, focusing on flying the glider as a kite using guide ropes controlled from the ground. On October 19, they moved their experiments about four miles south to the Kill Devil Hills area to begin their first manned glides from the slopes of three large sand dunes (referred to by the Wrights as Big Hill [Kill Devil Hill], West Hill, and Little Hill). Wilbur later described the Kill Devil Hills practice ground as a “group of detached hills or mounds formed by sand heaped up by the winds ... constantly changing in height and slope, according to the direction and force of the winds” (Westcott 1983, 76).

Before the end of their first season, the brothers had completed about a dozen manned glides from the Kill Devil Hills. They returned to Dayton in late October and resumed their work in the bicycle shop and began the design and construction of a second glider that they completed early the following year.

1901, The Second Season

Orville and Wilbur transported their second glider to the Outer Banks for testing in July 1901. At this time they established a more permanent camp, constructing a combined wood frame workshop and storage facility about four miles south of their old camp and just northeast of the main Kill Devil Hill (Stick 1958, 204). The season's experiments consisted primarily of manned glides that were launched from the slopes of the main Kill Devil Hill. With the benefit of an increased wing span and surface area, the brothers broke the previous season's records of manned glider distance and time aloft. The brothers completed their experiments in August and returned to Dayton for further work. After a series of wing configuration tests, they had enough data to create a new design, which they incorporated into the 1902 glider and subsequent powered aircraft.

1902, The Third Season

The Wright brothers began a third season at the Kill Devil Hills site in August 1902. They returned to the camp established the previous year to find it in disrepair as a result of winter storms and shifting sand. With the help of local labor, the brothers made basic repairs to their camp and added ten feet to the storage and workshop building to be used as living quarters (Combs 1979, 158). The brothers remained in camp until October while they tested their new glider, surpassing the previous year's records of distance and time aloft, completing over 700 glides from the slopes of the three large sand dunes that dominated the topography of the site. By the end of the 1902 season, the Wrights had made great progress on the way to successful flight. They returned to Dayton to develop an engine for their aircraft.

1903, The Fourth Season

The Wrights spent the winter of 1902 and spring of 1903 in Dayton developing an engine for their glider with the goal of attaining powered flight. They returned to the Outer Banks for their fourth season at the Kill Devil Hills site in late September. Upon their arrival they began repairs

on the storage facility/workshop, which had been blown off its foundation by storms. They found the 1902 glider intact, despite damage to the storage facility, and practiced with it until the 1903 aircraft was ready. They also constructed a second building, or hangar, for their powered aircraft. The new building, constructed just west of the old camp building, was a wood frame structure that was braced on two sides against the wind and measured approximately 44-by-16 feet (Stick 1958, 208). The powered glider, which they called the Flyer, arrived one month after Orville and Wilbur, and another month passed before the powered aircraft was assembled. To aid in the launching of the Flyer, the brothers constructed a sixty-foot “monorail” that consisted of four, 15-foot two-by-fours covered with a metal strip. The Wrights immediately experienced engine difficulties, which in turn resulted in damage to one of the propeller shafts, which they sent to Dayton for repairs. In the interim, the brothers improved the construction of the monorail, which had to be relaid for each flight along the northeast side of Big Hill. The repaired shafts arrived at the camp on November 20, but extremely cold weather delayed test flights throughout the month. After finding a crack in one of the propeller shafts, they decided only solid steel shafts could withstand the vibrations of the engine. Orville traveled back to Dayton to get the necessary parts (Howard 1988, 122).

On December 12, 1903, the brothers installed new propeller shafts on the Flyer. The following Monday, they decided to test the machine despite low wind velocities, but were only able to stay aloft for three and one-half seconds before the Flyer clipped the sand with its left wing. After repairs were completed, the next attempt was made on December 17, 1903. They erected the monorail on the flat ground just west of their camp buildings. Orville Wright piloted the first flight, which covered a distance of 120 feet and lasted only twelve seconds. Following repairs to a damaged rudder, the brothers repeated the experiment. At 11:20 Wilbur made a second flight, totaling 175 feet. A half-hour later Orville made the third flight, covering a little more than 200 feet and lasting about fifteen seconds. At noon Wilbur piloted the fourth and longest flight of the day, covering 852 feet in fifty-nine seconds. A gust of wind toppled the Flyer after the fourth flight, cracking the engine and making any further attempts impossible and ending the season’s experiments.

The Aftermath

After successfully completing the first powered flights of 1903, Orville and Wilbur returned to Dayton to work on a sturdier flyer that would hold a more powerful engine. The brothers used a field located about eight miles from Dayton as a practice area for the two new planes that they designed and constructed in 1904 and 1905. Although they acknowledged that the practice area was not as favorable as the Kill Devil Hills site, they continued to set new records of time and distance aloft.

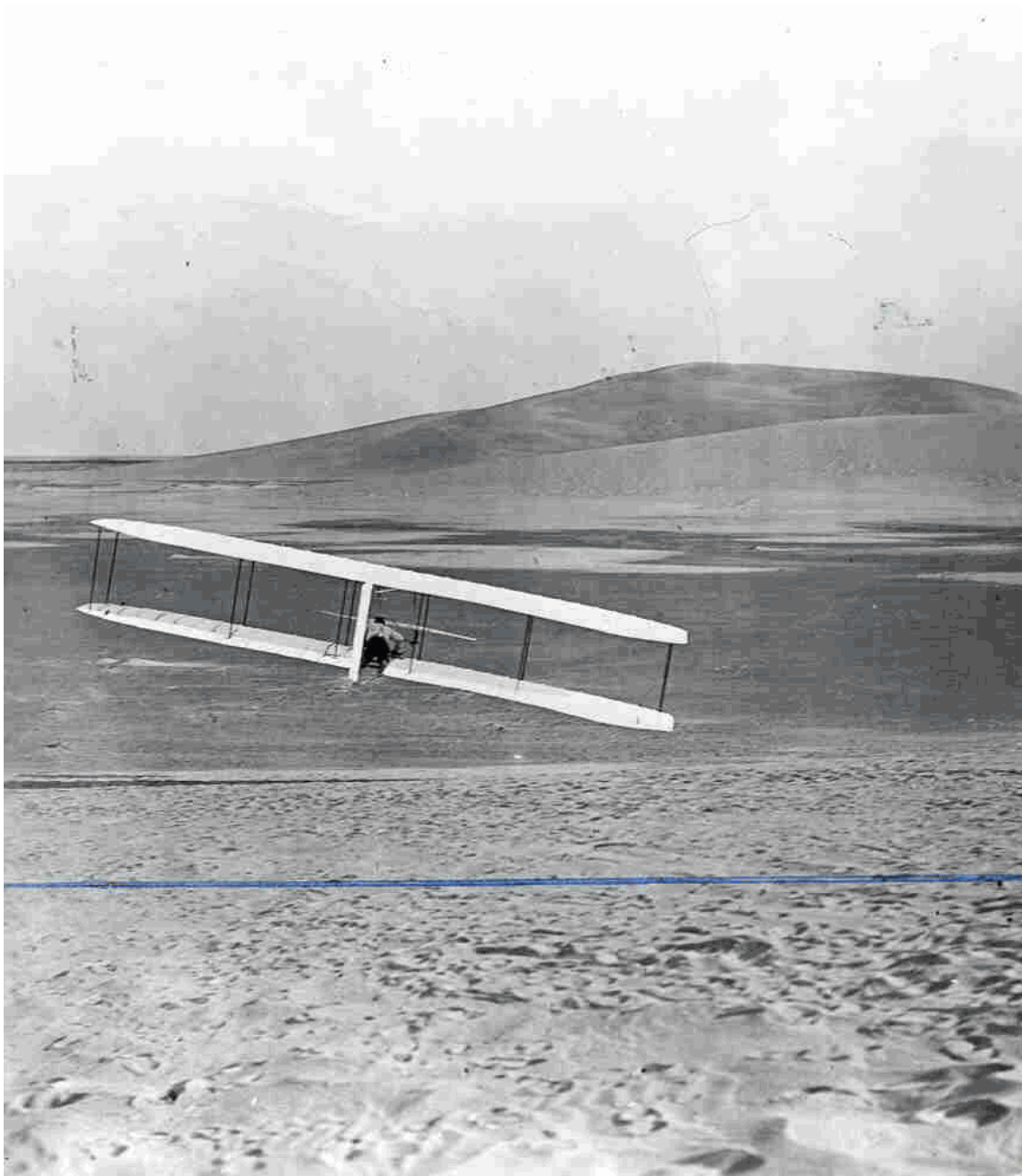
Between 1905 and 1908, the brothers devoted their time to making improvements to the flyer and in negotiating with potential clients. In 1908, the brothers secured two contracts with the U.S. Army Signal Corps and a French client. Because the contracts were dependent on successful demonstrations of the flyer, the brothers decided to return to Kill Devil Hills where they could count on better winds, more open space, and privacy to regain their skills and further test the aircraft.

The Fifth Season

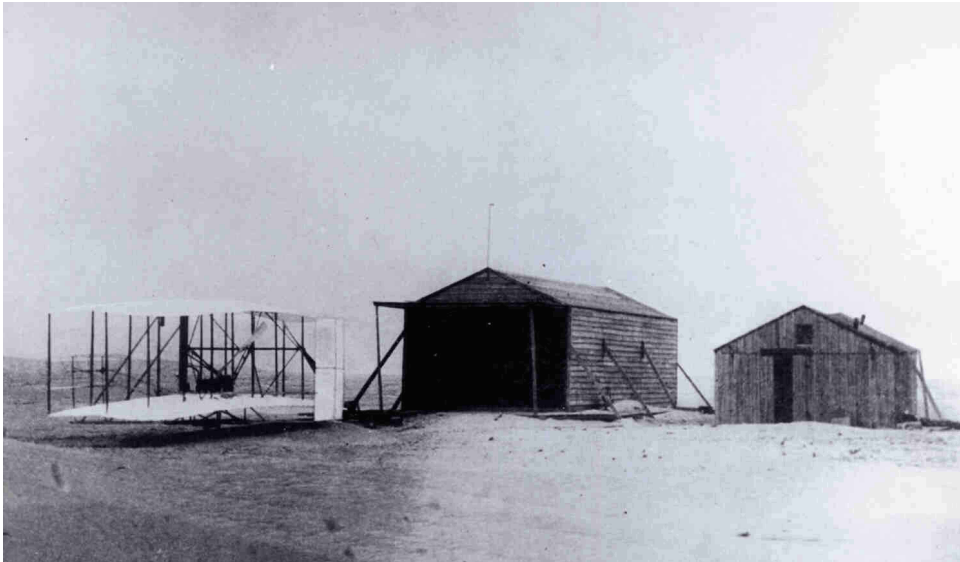
The fifth season began in April 1908 when Wilbur arrived to prepare the camp; Orville arrived a month later. In their absence storms had again destroyed the camp buildings used in previous seasons. They constructed a new building to serve as both living quarters and hangar for the 1908 experiments. By the end of May, the brothers were confident they could meet the required demonstrations the contracts called for. Wilbur left the Outer Banks on May 17 to go directly to Europe where he began assembling the glider for the demonstration in LeMans, France. Orville left camp a few days later for Dayton to begin building a new flyer for the U.S. Signal Corps tests at Fort Myer, Virginia (HRS 1997, 38). In 1911, Orville returned for a short period for further glider experiments. Wilbur died in 1912 of typhoid fever.



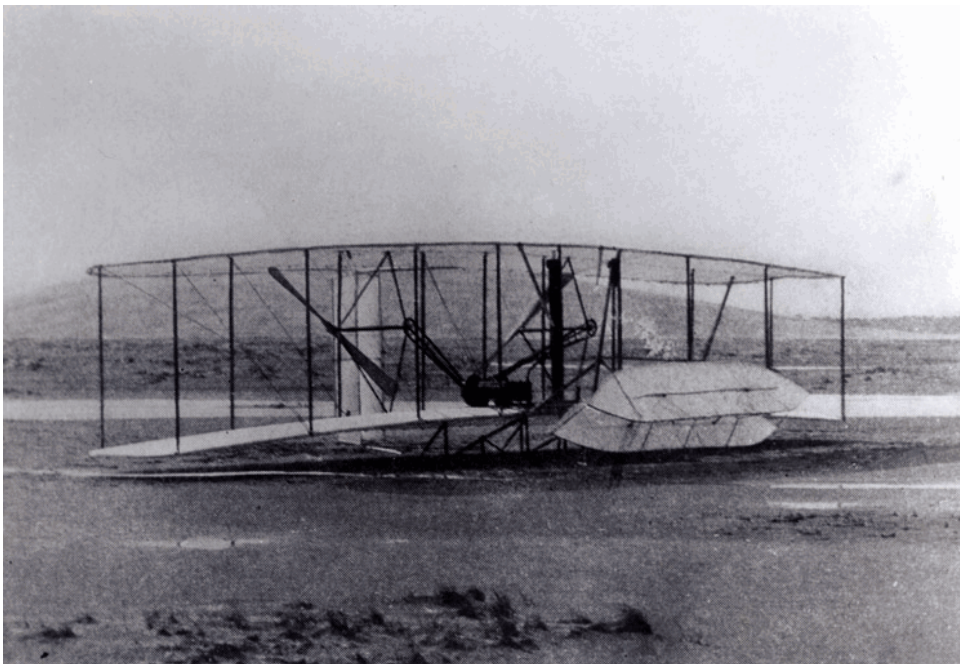
View of camp, 1900



Glider flights from West Hill, 1902



Camp buildings and Flyer, 1903



4th landing site, December 17, 1903

1913-1927 (Early Recognition of the Wright Brothers)

The LeMans and Fort Myer tests received wide acknowledgement as resounding successes. By 1909, the Wrights led the world in the piloting and production of airplanes, but their standing was not universally accepted at the time. For many years they faced a number of contenders

for priority in aeronautics, especially the American aviator Glenn Curtiss, whose independent development of ailerons, or flaps, eventually superseded the Wrights' wing-warping mechanism.

The onset of WWI highlighted the Wrights' contributions to the development of flight. By the war's end, the British Royal Flying Corps, originally made up of 150 aircraft and 1,800 men and officers, expanded to 300,000 men and 22,000 aircraft. The U.S. air division, which started with Wright-supplied Signal Corps aircraft in 1917, grew to a force of 13,000 planes, with orders pending for 52,000 more (HRS 1997, 40).

The mid-to-late 1920s introduced a period of renewed interest in the capabilities of aircraft and the general potential for air flight, culminating in Charles A. Lindbergh's nonstop flight from New York to Paris in May 1927. The increased flight activity of the late 1920s encouraged a public recognition of the Wrights' place in the history of aviation. At the local level, North Carolinians, led by W.O. Saunders, sought to memorialize the site of the Wrights' experiments and to underscore the importance of the Outer Banks to their success. Saunders, the editor of the nearby *Elizabeth City Independent*, organized the Kill Devil Hill Memorial Association to ensure a proper commemoration of the Wrights' first flight effort (Hewes 1967, 15). A longstanding champion of Outer Banks causes, Saunders progressively pushed for economic development, with a memorial to the Wright brothers seen as only a part of that development. Other important players included Frank Stick, a real estate developer from New Jersey interested in promoting the Outer Banks, and North Carolina administrators and politicians such as Frank Page of the North Carolina Highway Commission and R. Bruce Etheridge, Director of the North Carolina Department of Conservation and Development (HRS 1997, 42).

National figures joined local efforts to promote the idea of a Wright brothers memorial. U.S. Representative Lindsay Warren of North Carolina first introduced a bill for a Wright memorial to Congress on December 17, 1926, the twenty-third anniversary of the first flight of 1903 (Congressional Record Dec. 17, 1926). Senator Hiram Bingham of Connecticut, a former WWI aviator, as well as the renowned discoverer of Machu Pichu, the "Lost City of the Incas" in Peru, introduced a similar bill in the U.S. Senate the same day. Warren enlisted the support of Orville Wright and the National Aeronautics Association. Frank Stick and other New Jersey investors donated the land at Kill Devil Hills where the Wrights conducted their experiments. The act passed both houses of Congress and was signed by President Coolidge on March 2, 1927, establishing the Kill Devil Hill Monument National Memorial.

1928-1933 (War Department Administration)

The specifics of the Wright Brothers Memorial Act called for a monument to be erected in commemoration of the first successful human attempt at power-driven airplane flight. A commission made up of the Secretaries of War, Navy, and Commerce would select an appropriate location within the memorial for a monument. The Commission of Fine Arts—a commission established by Congress and composed of various experts who were to decide on matters concerning aesthetics and the fine arts—and the Joint Committee on the Library would be responsible for approval of the design and other plans for the memorial (Hewes 1967, 11).

The Kill Devil Hills Memorial Association lobbied for construction of a bridge to the Outer Banks (completed in 1930) and a new road (Highway 158) connecting Kitty Hawk and Nags Head. The memorial offered an incentive for tourists to visit the area, and therefore provided a justification for new roads and bridges. The state of North Carolina took over the land for the proposed road in October 1927 (Hewes 1967, 18).

The Office of the Quartermaster General prepared a report in October 1928 suggesting that the top of the largest hill (Kill Devil Hill) would be a suitable location for the monument. Previously, it had been thought that such an attempt would be impractical because of the shifting sands on the dune, but a committee appointed to investigate the site discovered that the hill consisted of moist and heavily compacted sand, which could be planted and secured (Hewes 1967, 24). By this time nothing remained of the camp buildings constructed by the Wrights, and the prevailing winds had caused the southwestward migration of Kill Devil Hill by what has been estimated as 300-600 feet. In 1928, the Coast Guard and local citizens began the first stabilization efforts of Kill Devil Hill, planting shrubs and sand grass around its base and over its conical sides (New York Times, December 18, 1928).

No War Department Master Plan has been located for the development that occurred at Wright Brothers National Memorial. Consequently, the work carried out by the War Department will be laid out chronologically.

First Commemoration

An important first step in the realization of the Wright Brothers National Memorial occurred on December 17, 1928, when 200 delegates from the International Civil Aeronautics Conference and more than 3,000 visitors dedicated a granite marker placed at the approximate location of the 1903 liftoff and laid the cornerstone of the monument to be placed on Kill Devil Hill. W.O. Saunders, Senator Hiram Bingham, and Secretary of War Dwight Davis addressed the crowd, including Orville Wright and Amelia Earhart. The National Aeronautics Association (NAA) provided the marker, carved to resemble a boulder.

Identifying the exact location of the takeoff was problematic because the topography of the site had shifted in the years following the Wrights' experiments. On November 4, 1928, under the direction of the NAA, Captain William Tate organized a meeting of three of the four surviving witnesses to the first flight to determine the point of takeoff. Using Orville Wright's accounts of the flight, Will Dough, Adam Etheridge, and Johnny Moore identified the approximate location of the takeoff. Tate described their methods at the marker's dedication ceremony:

Dough, Etheridge, Moore, and I assembled here and I explained to them the importance of arriving at a definite conclusion with respect to the spot where the Wright brothers' airplane, in making its first successful flight, first began to move along the ground. We located the four corners of the building in which the machine was housed. . . . We took into consideration what Mr. Orville Wright said about it in his article How We Made Our First Flight. We had a compass with us and we were sure of our compass course. After considering all these things and talking it over these three men proceeded by themselves to come out here on this point and select the spot on which this magnificent boulder stands and said that this was the spot where

the Wright airplane started its first successful flight. . . . After agreeing upon this exact spot we signed a paper to that effect. . . . (U.S. House, 70th Congress, 2d Session, House Document 520, 1929:23)

A copper pipe was driven into the ground to mark the spot, and a concrete foundation was poured over it. The granite marker, measuring approximately 6-by-4 feet, was set on the foundation, and a small mound of sand was spread over the foundation and covered with grass so that the boulder would give the appearance of having been set in the sand (East 1961, 36).

Selection of Monument Design

The cornerstone laid at the top of Kill Devil Hill on 17 December 1928 initiated the spatial relationship between the granite marker and the monument. The construction of the monument was set out in the 1927 Congressional Act, but its actual design was undecided. The Memorial Commission favored a utilitarian design, and the Commission of Fine Arts (a commission established by Congress and composed of various experts who were to decide on matters concerning aesthetics and the fine arts) favored a purely commemorative structure. Much of this controversy took place before the 1928 anniversary celebration. By June 1928, the Office of the Quartermaster General, responsible for supervision of construction, realized the futility of a quick decision and announced a design competition. By 31 January 1929, thirty-six entries had been received by a jury established by the Memorial Commission through the Quartermaster General. The selection of the winning design was made in accordance with principles established by the American Institute of Architects. The jury chose the submission by the New York architectural firm of Rodgers and Poor, and the Commission of Fine Arts concurred. The objections of several parties delayed official notification until 14 February 1930.

The winning Art Deco-inspired design was a masonry shaft and base of approximately sixty feet set on a star-shaped foundation. The foundation formed a terrace around the monument base and shaft at a height of five to ten feet above grade. The triangular shaft was embellished with relief carvings symbolizing stylized sculpted wings on the east and west sides. The design implied ancient Egyptian motifs, an important source for Art Deco designs. The main entry to the monument was from the terrace at the center of the base on the south side (HRS 1997, 47). Alfred Poor later remarked that the design and orientation of the monument was influenced by thoughts of placing an airstrip south of the monument. There were no provisions for pedestrian or auto circulation.

Stabilization of Kill Devil Hill

Before construction of the monument began, Kill Devil Hill required further stabilization. In 1929, the War Department appointed William H. Kindervater of the Quartermaster Corps as caretaker and inspector of construction. Kindervater found that the most serviceable grasses and shrubs were bermuda grass (*Cynodon dactylon*), secured from around dwellings locally and transplanted on the hill; bitter panic grass (*Panicum amarulum*) gathered at nearby Virginia Beach; and a range of local shrubs including yaupon (*Ilex vomitoria*), myrtle (*Myrica cerifera*), pine (*Pinus* sp.), live oak (*Quercus virginiana*), and sumac (*Rhus* sp.). Other grasses planted were crotalaria (*Crotalaria* sp.) and rye (*Lolium multiflorum*). The planting method is described below:

Shallow furrows plowed about thirty inches apart. Fertilizer applied, wire grass roots placed in furrow, and different grass seeds sowed with the wire grass roots. All planting then covered with a thin layer of sand and the entire area covered with two to three inches of wood's mold. Wood mold helped to fertilize sand and prevented the movement of sand while the seeds were germinating (Landscaping Report, December 27, 1930). Over the years Bermuda grass was referred to as wire grass (*Aristida stricta*) in the park reports.

Stabilization was completed in 1931. This planting method effectively halted the southwestward migration of Kill Devil Hill, which weathered several storms in 1929 and 1930 without damage. West Hill was not stabilized at this time (Little Hill, the third sand dune, was never acquired).

It was also necessary to protect the site from "the molestation of tourists and souvenir collectors, and the ravages of wild hogs." A wire fence enclosed the area around Kill Devil Hill to prevent animal grazing on the newly planted grass (Hewes 1967, 30).

Circulation System

The War Department constructed an access road into the park from Highway 158 (the new road from Kitty Hawk to Nags Head). Title to the strip of land connecting the park and the highway was obtained from Dare County on 3 February 1931 (Hewes 1967, 38). Bidding on the construction of an internal road network was opened in February 1931. The 1931 Plan of Proposed Roads called for a sand-asphalt entrance road that curved around the east side of Kill Devil Hill, turning due north on axis with the First Flight Marker and the Wright Brothers Monument. Roundabouts were located at either end of an axial roadway (Boulder Road) connecting the First Flight Marker and the base of Kill Devil Hill. The plan specified that the centerline of the roadway (16' wide with a 4' shoulder on each side) was to be symmetrical about the granite marker, which was encircled by a concrete block walk. With roadwork completed by May 1931, the location of the entrance road provided a sight line to the First Flight Marker.

Another component of the circulation system was a concrete block footpath, on axis with Boulder Road, starting at the base of Kill Devil Hill and ascending the hill to the monument. Photographs dated December 1933 show that a concrete block plaza was also constructed on the monument's south side.

Monument Construction

The Wills and Mafera Corporation of New York won the bid for general contractor. Construction specifications called for a granite tower, 61 feet high, with a light beacon and a base measuring 36-by- 43 feet. Details specified stainless steel for metal fittings, except for roofing, flashing, and thresholds, which were to be copper and bronze. The Sargent Granite Company of Mount Airy, North Carolina, received the contract to supply the granite.

The stone was transported to the park by railroad via Norfolk and Elizabeth City and then by barge and truck. The bridge at Kitty Hawk opened that spring, allowing smaller pieces to be delivered directly by truck. Moving larger pieces required on-site rails to be constructed (HRS

1997, 52). Work on the star-shaped granite base began in December 1931. Granite blocks were lifted into place by a crane mounted on the hillside. Construction crews completed the monument and its associated powerhouse (designed by the War Department) in November 1932.

Entrance Feature

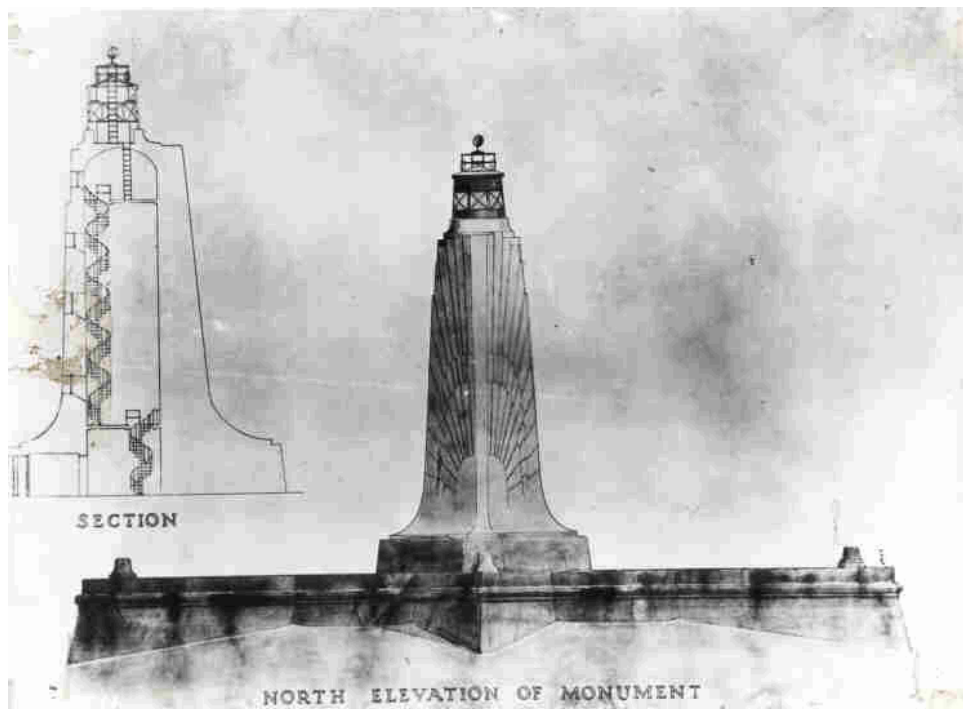
The War Department constructed an entrance feature that was sited to provide a visual link to the First Flight Marker, as well as provide a view to the Wright Brothers Monument. Roughly following the form of truncated obelisks, the entrance posts used ancient Egyptian motifs like the monument. Extending about nine feet above grade with approximately thirty-inch-square, slightly projecting bases, the four obelisks tapered to less than twenty-four inches at the top, terminated with a recessed, pyramidal cap. The two outer-most posts were fitted with bronze fence panels, and similarly designed moveable bronze gates, mounted on the two inner-most posts, guarded the entrance. The park built a small, concrete contact station just to the west of the entrance, which served as a caretaker's office. It appears that the Quartermaster General Corps was responsible for the design and oversight of construction, completed before the transfer to NPS in 1933.



Kill Devil Hill, 1928



First Flight Marker, 1934



Monument elevation, 1929



Stabilization of Kill Devil Hill, 1930



Boulder Road construction, 1931

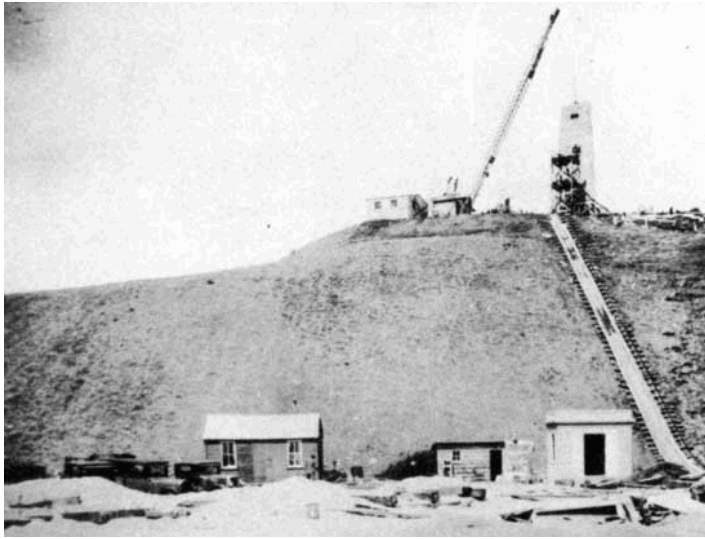




Monument plaza, 1933



Footpath ascending Kill Devil Hill, 1934



Monument and power house construction, 1932



Entrance station, undated

1933-Present (National Park Service Administration)

In August 1933, two Executive Orders transferred administrative authority of forty-eight areas under the War Department to the National Park Service (NPS). Kill Devil Hills Monument National Memorial was one of the forty-eight. Horace Dough, local boatbuilder and fishing guide, was appointed caretaker just a few days before the transfer.

One of the issues immediately faced by NPS was whether to construct an airstrip, which had been one of the original goals of the Kill Devil Hill Memorial Association. Soon after the transfer, the Association renewed lobbying for an airstrip. NPS was hesitant because of the expense required to buy needed additional lands, the cost of construction, and a concern that operation of an airport was not in keeping with the mission of the NPS (Hewes 1967, 50-51).

Park Development Era (1933-1942)

1938 Master Plan

As a result of President Franklin D. Roosevelt's New Deal programs, the park received \$90,500 through the Public Works Administration for "improvements." The final budget listed road and trail improvements (\$38,000), a superintendent's residence and office (\$13,500), a comfort station and shelter for visitors (\$10,000), additional fencing (\$5,000), electrical service (\$4,000), plants for the road, trails, and monument (\$10,000), and plants for 290 acres of the park (\$10,000). The 1934 Preliminary General Plan, which was further articulated in the 1938 Master Plan, outlined these developments in a very formal, Beaux Arts-style layout.

In July 1934, the park erected a fence constructed of concrete posts and eight strands of barbed wire around the entire 314-acre site. Previously, only a portion of the site was fenced to exclude free range grazing. Also in 1934, the park stabilized West Hill with Bermuda grass, which was described as "growing fine and . . . [had] completely covered the hill except three small areas" (Super. Report July 1934).

Circulation System Alterations

Between 1935-1936, NPS removed the War Department road that arced around the east side of Kill Devil Hill and built a new monument road that encircled the base of the monument. The specified road mix was sand-asphalt. An exit spur led to the village of Colington. The public utilized part of the monument road to reach Colington until a bypass road was built by the state of North Carolina in the 1950s.

In 1934, the preexisting footpath ascending the north slope of Kill Devil Hill was removed and portions used to lay out the walks at the superintendent's residence (Super. Report March 1936). Also at this time, the concrete plaza leading up to the monument on the south side was replaced with asphalt. Between 1934-1936, four symmetrical, curvilinear paths (sand-bituminous foundation and sandrock asphalt surface) were constructed ascending Kill Devil Hill. The shoulders were graded, planted with Bermuda grass, and covered with rushes. (June 1935-January 1936 Super. Reports; 361/1008 dated 11/34).

Structures

New additions to the site during the early NPS period included a superintendent's residence, with an associated access road, and a comfort station for visitors. The residence and comfort station were sited to "provide minimum disruption of the natural and historic environment while still providing the best possible protection for the monument" (Hewes 1967, 59). As a result, the new buildings were located on the south side of Kill Devil Hill, out of view of the First Flight Marker but on axis with the center line of the monument. Architect J.M. Thrower prepared the

designs for both, sending his first versions of the plans to Superintendent Horace Dough late in 1934. Construction of the comfort station and the residence began in October 1935 and ended in 1936 (HRS 1997, 58). Concrete pathways linked the comfort station to the circulation system on Kill Devil Hill.

Further implementation of the 1938 Master Plan occurred in 1939. NPS added a maintenance shop and storage building adjacent to the superintendent's residence. Another storage building and workshop were added in 1941 (Horace Dough to the Director NPS 2/8/28; Superintendent's Monthly Report 8/41).

Articulation of the Mall and Ornamental Plantings

A 1935 letter from T.C. Vint states that another \$7500 was needed to make "such further improvement as a tree and bush-lined mall between the First Flight Marker and the Monument" (Hewes 1967, 60). A 1936 proposal for projects for the years 1938-1943 (the Six-Year Plan) called for paths along the mall and plantings. The 1938 Master Development Plan articulated this concept, showing a long rectangular open space that linked the two focal points of the site—the monument and the granite marker.

In 1936, the Greenbrier Farms of Norfolk, Virginia, "completed the ornamental plantings projects . . . lining the circular drive with trees, planting flat, sandy areas with grass, and installing numerous shrubs" (Hewes 1967, 59). The January 1936 Superintendent's Report states that 330 live oak trees were planted around the circular drive. The Circular Drive Planting Plan specified that the trees be aligned with the center line of the monument. The Monument Planting Plan also called for a 3-ft.-high yaupon hedge to be planted at the base of the monument. The Caretaker's Residence Planting Plan and the Comfort Station Planting Plan called for a palette of predominately native plants, arranged in a naturalistic planting style. In January 1938, Greenbrier Farms had to replace the 330 oak trees planted in 1936 (Jan 1938 Super. Report).

1950s aerial photographs show the mall defined by thin bands of vegetation along its longest sides, apparently planted as part of the 1936 ornamental planting project. The mall is set apart from surrounding areas of the park by differences in vegetation management. Outside the mall the vegetation was released to natural succession, resulting in scattered shrub growth (triggered by fertilizing, seeding, changes in drainage patterns, and the construction of an artificial foredune along the length of the Outer Banks). The aerial photographs suggest the park arrested successional vegetation within the mall by regular mowing of grass and removal of trees and shrubs (see vegetation management below). Drainage ditches dug by the NPS in the 1930s prevented standing ponds of rainwater from destroying the grass.

An Airport

Support for an airport continued a scheme that was included in the 1938 Master Plan. The area south of the monument seemed most probable, due to the high costs of land to the north and the lack of space to the west. The park determined that a minimum of 523 acres would be needed in order for the airstrip to be useful as more than just an exhibit. Alfred Poor, the architect for the monument, offered to design the airstrip, stating that the original plans for the memorial

included an airfield south of Kill Devil Hill, which influenced the design and orientation of the monument. In July 1939, the park produced schematic layouts both north and south of the monument. The scheme south of the monument was selected, but Roy Knabenshue, charged with working out acquisition costs and other problems, concluded that building costs at the south end would be too high due to the necessary removal of a large sand dune (Hewes 1967, 64).

World War II (1942-1945)

World War II brought development at the Wright Brothers National Memorial to a complete halt. A lack of funding forced NPS to reduce staff. Money was unavailable for basic needs, such as fertilizer.

Appropriation cuts brought by WWII (from a 1940 level of \$21 million to \$5 million in 1943) dealt a final blow to any further additions to the mall, such as formalized plantings around the granite marker. Plans for an airport were also shelved. NPS continued to plan for the future, completing a new master plan in 1942. With the end of WWII in 1945, basic maintenance funds were returned to the park, but the 1942 Master Plan was never implemented. An unplanned maintenance cost occurred in 1944, when the copper-sheathed roof of the superintendent's quarters was replaced with an asphalt roof following a damaging storm (Hewes 1967, 74).

The focus of park maintenance during this time was vegetation management. In 1943, park staff had to remove bushes and small trees from the forty-acre mall area extending from Kill Devil Hill. The June 1944 Superintendent's Report stated that "it has been determined by the Service Landscape Architect and everyone else concerned that the growth of trees and shrubs on Kill Devil Hill and around the base of the hill within the circular drive should be kept at the lowest possible elevation." The reasons given were to preserve the open character of the site, and to prevent overgrown trees and shrubs from competing with the Wright Brothers Monument (June 1944 Super. Report; May 1945; June 1945). In November 1949, the yaupon shrubs planted around the base of the monument were "dug up with as much turf as possible and were reset in trenches" (November 1949 Monthly Report). Remnants of the hedge can be seen in photographs taken in the 1960s.

1947 Master Plan and Mission 66 (1947-1966)

Superintendent Horace Dough wrote the Director in 1946 asking for exhibits and other improvements "in order that the visiting public might be better informed" (Hewes 1967, 76). In 1947, the park drew up another master plan that emphasized interpretation and advocated thinning out brush and other vegetation in order to return to a more accurate historic scene (Turner 1993, 97). The 1947 General Development Plan prompted the acquisition of an 800-by-2,000-foot strip of land between the monument and Highway 158 to the east, so that a new East-West entrance road could be built. The state of North Carolina promised to build a bypass road to Colington, so that internal park roads would no longer be utilized by the public. The North-South entrance road would be obliterated. Alterations to the orientation of the site initiated the groundwork required before a larger interpretive program could be implemented. Funds could not be found for the required land purchase at this time, postponing related developments until the 1950s.

Refinements to the 1947 Master Plan in the 1950s included a museum/visitor center that ultimately changed the park's orientation and focus. A proposal for an "ultra-modern aviation museum" had been made in 1942 during an effort to obtain the original 1903 Wright Brothers plane, but funding was not forthcoming (Hewes 1967, 73). Such an ambitious construction project began to seem possible in 1951, when the Kill Devil Hills Memorial Association reorganized as national "Society" hoping to raise awareness about the 50th anniversary of the first flight to be celebrated in 1953. The Kill Devil Hills Memorial Society hoped to raise funds for land acquisition, a museum, reconstruction of the camp buildings, and eventually an airstrip. In February 1952, the park prepared preliminary plans for a museum facility to be located near the eastern park boundary. The Wright Brothers Memorial Museum included a "court of honor," "Wright Brothers exhibit area," "library and reception center," and funnel-shaped "first flight memorial hall" with outdoor terraces facing the view of the First Flight Marker to the north and the Wright Brothers Monument to the west (Allaback 2000, 68-69).

These plans marked a shift from commemoration to comprehensive interpretation in the landscape. The monument was no longer the focal point of the site, as the new entrance road directed visitors to the museum and then out to the camp buildings, markers, and monument. All subsequent revisions to the 1947 Master Plan were based on this concept. The plans proposed that the park boundaries be extended to accommodate the museum and also to include the site of the 4th landing on 17 December 1903. The proposed east entrance was laid out in a curvilinear manner in its approach to the circular monument drive. This particular scheme sited the museum/visitor center southeast of its present location.

As early as the spring of 1952, it became obvious that enough money could not be raised to cover all the projects proposed, and plans for the \$1.2 million museum were postponed. Instead of a museum, the Society decided to prioritize the reconstruction of the two camp buildings and the monorail from which the 1903 flyer had taken off; to erect cast aluminum information markers at the four landing points of the December 17 flights; and to construct walkways connecting these interpretive elements (Hewes 1967, 83). In November 1953, the archaeologist from the Regional Office arrived to locate the site of the Wright brothers' camp buildings. The camp buildings and monorail were completed by the 50th anniversary celebration in December (Super. Report November and December 1953). The installation of these features initiated a change in the way visitors experienced the site, culminating in the construction of the Wright Brothers National Memorial Visitor Center.

Wright Brothers National Memorial Visitor Center

In November 1953, the Avalon and Old Dominion Foundations of New York gave \$82,000 for land acquisition at Wright Brothers. With the money finally in hand for the needed land purchase, building the museum and new entrance road became the next priority. The 1954 General Development Plan, which included an airstrip east of West Hill, further articulated the implementation of a larger interpretive program for Wright Brothers. The plan proposed changes to the commemorative landscape not seen in earlier plans. Boulder Road would be taken out and the new east entrance located farther north. The plan sited a museum and associated parking area north of the Wright Brothers Monument, slightly east of the location ultimately chosen for the visitor center. This 1954 revision to the 1947 Master Plan outlined all

the subsequent changes that occurred to the site.

In 1957, the NPS offered to sponsor a scaled-down version of the facility. In an October meeting, Director Conrad Wirth outlined Mission 66, a ten-year program to transform the American national park system to meet the conditions and demands of the postwar era. The program included a new building type that centralized basic visitor services. The “visitor center” became the most significant architectural expression of national park development in this period and subsequently became the centerpiece of park planning all over the country. The use of the word “center” indicated the planners desire to centralize park interpretive and museum displays with new types of interpretive presentations, park administrative offices, restrooms, and various other services (Allaback 2000, 24). For its Mission 66 visitor center at Wright Brothers, the Park Service sought a smaller, less expensive, more compact structure with distinct components; restrooms (preferably entered from the outside), a lobby, exhibit space, offices, and a room for airplane displays and ranger programs (Allaback 2000, 70). Wirth approved the 1957 General Development Plan, a variation on the 1954 plan that sited the visitor center on the eastern edge of the mall. NPS chose the architectural firm of Mitchell, Cunningham, Giurgola, Associates of Philadelphia to design the building.

A collaborative effort took shape between the NPS and Mitchell/Giurgola for the design of the visitor center and surrounding site. The location of the entrance road to the monument, the parking lot design, visitor center footprint, and paths to the quarters and hangar were approved by John Cabot, Regional Director Elbert Cox, Thomas Vint, and Conrad Wirth between April and June 1958 (Allaback 2000, 74). The 1958 Visitor Center Development Plan placed the building and parking area along the eastern edge of the mall. It appears that NPS determined this location. The Mission 66 Prospectus for the park stated that the visitor center was to be “near the camp buildings” and a pedestrian path would connect the new building and the first flight line (“Mission 66 Prospectus for Wright Brothers,” 5). According to architect Mitchell, the siting of the building was entirely a NPS decision. It was “exactly what they dictated. The location was specified as being close to the first flight line” (Allaback 2000, 75). Park Service historians and planners felt that some encroachment on the historical and natural environment could be justified in light of the more effective public education that resulted. (Allaback 2000, 27).

Throughout the design process, Mitchell and Giurgola were considering the location of the building in relation to the Wright Brothers Monument and the first flight line. Preliminary site sketches include arrows indicating vistas from the building to these points of interest. He also stated that “the low profile of the building is in keeping with the expanse of land and the gentle undulation of the dunes, and the distribution of the spaces is in relation with the view of the existing monument and of the Wright Brothers’ shelters and take-off area. . . . the design reflected the particular period of American architecture of the early 60s in which the rigidity of modernism evolved into more articulated solutions integrating internal and external spaces” (Ronaldo Giurgola to Carol Shull, March 4, 1997).

While the architects worked with possible design schemes, the park turned its attention to construction of the entrance road and parking facilities. In June 1958, they awarded a contract

for the construction of the east entrance road and parking lot to Dickerson, Inc., of Monroe, North Carolina. In August, a group from the Eastern Office of Design and Construction (EODC) visited “to discuss plans for the Visitor Center and Parking Area” (Allaback 2000, 76). The half-mile road and parking area was completed by December, and the following February the contract for the construction of the visitor center was awarded to Hunt Construction Company of Norfolk, Virginia. In June 1959, Congress authorized the formal acquisition of the additional property to the north and east needed for the visitor center and parking lot, including the fourth landing site of 17 December 1903. A second sixteen-acre tract was added between Lowell and Woodmere Avenues to provide a buffer from encroaching development. A total of 111 acres were added to the park for a total of 421 acres.

Beginning in 1957, the circulation system, and ultimately the way visitors experienced the park, was significantly altered. The state of North Carolina was proceeding with the relocation of the main highway paralleling the eastern boundary of the park. The new highway would be located directly on the proposed eastern boundary and the new entrance into the park would be adjacent to this highway. Another change was the construction of a bypass road to Colington, completed in July 1958. Public traffic no longer had access to internal park roads, although the right-of-way for the bypass road was located in the southwestern corner of the park. The old entrance road and the internal Colington Road extension were obliterated in May 1959. Apparently Boulder Road was taken out sometime prior to 1959 (Hewes 1967, 91; May 1959 Superintendent’s Report). Insert footnote here: The 1959 Obliteration and Access to Residence Map (361/ 3007) shows Boulder Road gone and the other two roads still to be obliterated.

Mitchell/Giurgola’s final plan for the visitor center was a single-story concrete and glass building, slightly elevated on a 128-foot square concrete platform. Two parallel, rectangular blocks with flat roofs occupied the east half of the platform. The easternmost block consisted of restrooms and offices, and the other served as entry lobby and display area. The display area joined directly to a large domed “assembly room,” square in plan that occupied the northwest quarter of the platform. The southwest quarter of the platform was an open “ceremonial terrace,” and the southeast corner was open as well, functioning as a smaller “entry terrace.” By alternating interior spaces with open exterior terraces, the architects avoided the potential monotony of such geometry. The roof structure design formed “a strong focal point on the exterior of the structure, which stands above the low-lying landscape, in concert with the higher rising dunes and pylon” (Allaback 2000, 80).

The attention lavished on aesthetics and symbolic purpose did not detract from the visitor center’s practical function. The visitor center served as a control point for what planners called “visitor flow,” as well as a more efficient means of serving far larger numbers of visitors and cars in a more concentrated area (Allaback 2000, 24). Visitors arrived on the new entry road “located so as to give access, in proper sequence, to the historic sites and buildings.” (Mission 66 Prospectus 1957, 8) The parking lot oriented visitors at a 45-degree angle to the entry terrace at the southeast corner of the building. Both the entry road and the siting of the parking lot directed the visitor away from the Wright Brothers Monument, which had previously been the focus of the site. The Park Service sited the building to become the new center for visitor arrival and orientation, with both monuments and the first flight line easily viewed from the

visitor center itself. During an August 1958 meeting of the “Wright Memorial Committee,” members agreed that “special consideration be given to directing people to the first flight line area rather than to the memorial feature.” (Ronald Lee to David Stick, August 14, 1958).

Cypress fences were part of the original plan, flanking the building on the south and east sides. The fence extended approximately ninety-five feet from the south side of the building along the west side of the parking lot. By blocking the view from the parking lot to the first flight line, the fence and associated vegetation funneled the visitor to an open entry court and controlled the visitor’s initial view of the camp buildings, First Flight Marker, and Wright Brothers Monument. The intent was to guide the visitor into the building, through the museum exhibits, and into the assembly room housing the replica airplane, where a wall of glass allowed the visitor to look out onto the first flight line. This scheme also blocked views back to the parking lot from the ceremonial terrace. The fence on the south side was damaged by Hurricane Donna in September 1960 but was immediately rebuilt. The fence extending approximately forty-six feet from the east side of the building screened staff parking from view of arriving visitors. An entry feature with a fence and gate were designed as part of the site plan.

The approach from the parking lot was a crucial part of the design concept of controlling pedestrian flow up to the building, so that clear views out onto the mall were blocked. Walkways oriented visitors to the raised entry terrace. Steps extended the full length of a terrace, and visitors crossed an open area to reach the double glass doors leading into the lobby. In addition to the entry terrace, the raised platform included a concrete walkway connecting the two terraces along the south side of the building and wrapping the east and north sides of the ceremonial terrace. A wooden bench was an original feature along the south side of the platform between the entry and ceremonial terraces; four cast-concrete planters were designed for the east and north sides of the ceremonial terrace. A formed-concrete water fountain was designed for the east side of the entry terrace near the rest rooms. A walkway also extended past the rest rooms north of the entry terrace. A flagpole was located at the south end of the walkway that brought visitors to the entry terrace from the parking lot.

The main entry brought visitors into the lobby area, where they had an immediate view directly across to the ceremonial terrace, with the first flight line in the distance. Visitors then proceeded into the interpretive display area, and finally to the large domed assembly room, which also featured views out to the first flight line and the Wright Brothers Monument beyond through large window walls on three sides of the room. The steel window frames and mullions were painted bright red-orange, drawing attention to the glass areas of the walls (Allaback 2000, 81). Double doors at either end of the south facade led out to the ceremonial terrace, designed to be the focal point for the park’s more formal events. A walkway on the south side of the ceremonial terrace led visitors out to the camp buildings and the first flight line beyond. According to the Completion Report for the Visitor Center, portions of the encircling exposed-aggregate concrete block walk around the First Flight Marker were taken up and used to complete the walk from the marker to the camp buildings (Completion Report Visitor Center and Utilities dated 2/16/61).

The original planting plans for the visitor center specified bearberry (*Arctostaphylos uva-ursi*), a native groundcover that could not be supplied by the contractor. The completion report states that “considerable experimentation and effort” was used with native groundcovers in trying to replace the bearberry. The subcontractor was able to secure a prostrate, spreading form of yaupon, which was proposed to be used with a non-native creeping liriopse (*Liriope spicata*). The “as built” planting plan indicates that creeping liriopse was the only groundcover used. The open areas were stabilized with Bermuda grass and rye grass.

The visitor center (9900 square feet) was dedicated in December 1960. At this time the Wright Brothers Monument was closed to visitors, as the visitor center and camp buildings became the center of comprehensive interpretation. Staffing was not adequate to man the monument, and there was also a concern about visitor safety (Memo from Acting Regional Director to Superintendent December 1960).

Definite plans for a three-thousand-foot airstrip, to be located east of West Hill, were announced at the December 1962 anniversary ceremonies. The airfield was sited so that landing planes would have the correct wind conditions the majority of the time. The dedication of the airstrip occurred at the 60th anniversary celebration in 1963.

Vegetation Management

Vegetation management during this time (other than routine mowing) entailed planting various grass seeds on the road shoulders and removal of brush and trees. In June 1950, an area of ½ acre was planted in oats as an experiment and was to be expanded to include all the areas along the roadways that were not adequately grassed (this experiment was not mentioned again in the Monthly Reports). In October 1950, rye grass was sown on the bare portions of the road shoulders to prevent erosion by strong winter winds (Super. Report October 1950). Superintendent Dough reported in May 1951 that the top soil and Bermuda grass roots have started “growing a good cover” on the road shoulders around the hill. He noted that in February 1951, the park removed brush and trees from the 50 acres between Kill Devil Hill and the First Flight Marker, flanking both sides of Boulder Road (Super. Report Feb. 1951). A similar notation was made for July 1960.

Miscellaneous Projects

In 1948, the park graded and reshaped the shoulders on the inside of the circular monument road to correct drainage problems. In 1954, the park repointed the exterior walls and enclosed the terrace of the superintendent’s quarters on the north side. In 1957, the circular monument road and curvilinear walks were resurfaced with sand-asphalt and the shoulders regraded and covered with topsoil and Bermuda grass. In 1959, maintenance crews repainted the comfort station and garage and replaced the wooden walkways alongside the hangar.

In November 1963, the park took down the camp buildings and rebuilt them in 1964-65. In June 1963, the park erected triangular pedestal markers at the landing points of the December 17, 1903 flights (Super. Report June 1963). The pedestals were painted orange-red to match the color of the original steel window frames and mullions, creating a striking link between the building and the landscape.

Another important change to the commemorative landscape occurred in 1966. With Boulder Road taken out and interpretation shifted to the visitor center, the park rotated the First Flight Marker so that it faced the camp buildings, and the small mound supporting the marker was leveled in an effort to return the topography to a more accurate Wright-era appearance. A new concrete walkway (brush-finish surface) connected the marker and the camp buildings with the visitor center.

1965 Master Plan

The 1965 Master Plan called for “recreating the historic scene” by removal of all trees and shrubs from Kill Devil Hill and West Hill and from the area between Kill Devil Hill and the first flight line. It called for selective cutting to maintain a view of West Hill from the first flight line and visitor center, but screening of the airstrip turn-around as viewed from the visitor center. The plan recommended removing the comfort station, powerhouse, and old entrance station. The comfort station was removed sometime before 1969. In 1977, the park submitted Section 106 compliance documentation for removal of the old entrance station and powerhouse. The park received clearance to remove the old entrance station with the suggestion from the North Carolina State Historic Preservation Office that the entrance posts be retained. Park maintenance carried out the demolition of the entrance station in December 1979. The park also received clearance to remove the powerhouse but chose to keep it.

In October 1966, Wright Brothers National Memorial was entered in the National Register of Historic Places, subsequent to passage of the National Historic Preservation Act, and documented as a historic district in August 1978. A Historic Resources Study, completed in 1997, added the Wright Brothers Monument, the First Flight Marker, the monument powerhouse, the curving trails and circular road, the spatial relationship between the monument and the marker, Kill Devil Hill, West Hill, and the Wright Brothers National Memorial Visitor Center as contributing resources.

Vegetation Management

A 1980 Grounds Management Plan restated that a low profile vegetative cover evocative of the openness of the 1900-1903 period should be maintained. It called for the removal of 170 acres of trees and shrubs in and near Kill Devil Hill, West Hill, and the first flight line. These areas would be maintained as grass; all trees and shrubs were to be removed from West Hill. In 1987, the Superintendent reported that “a major landscaping project on the main hill at Wright Brothers was accomplished with the participation of personnel from all divisions.” No further description of the work was included (Annual Report 1987).

Miscellaneous Projects

In 1974, the terrace of the superintendent’s quarters was enclosed with screening and wood lattice, and the original steel sash windows were replaced with double-hung metal windows. In 1976, the park also replaced the original steel frame windows and doors of the visitor center with an aluminum window-and-door system (HRS 1997, 67-68).

In 1980, Denver Service Center oversaw a contract to approximately double the visitor center

parking area. Handicapped access ramps alongside the restrooms were added at this time. (Super. Annual Reports; 361/41007-B dated 1978).

In 1980, the First Flight Airstrip and parking area, as well as the walks from the airstrip to the Wright Brothers Monument, were repaved. Also during the 1980s, the park partially enclosed the employee parking lot on the northeast side of the building with a wood fence similar in appearance to the fencing along the visitor parking lot. In 1984, metal stair railings on both the entry and ceremonial terraces were installed, and a new entrance sign was designed and constructed, and the hangar was rebuilt for a third time to more exact specifications after being destroyed by a storm. (Super. Annual Reports).

In 1985, a road and walkway rehabilitation project was contracted out through the Federal Highway Administration. It included leveling and overlaying the entrance road, maintenance road, and airstrip access roads; reconditioning and overlaying the circular monument road and parking areas; reconstructing the entrance road intersection and the airstrip parking area and turnaround. The Williamsport Preservation Training Center completed preservation work on the Wright Brothers Monument in 1987. The first phase included replacement of ferrous metal with stainless steel and cleaning/painting of the stairwell. (Super. Annual Report 1987). Also in 1987, the entrance gates to the park were replaced, and a fee collection kiosk was placed near the park's exit (modified in 1989).

In 1991, a new asphalt walkway was constructed on the west side of Kill Devil Hill where visitors had carved out a path between one of the parking pulloffs and the original curvilinear path. The installation of new fencing, handicapped access ramps, and gates at the airstrip also occurred in 1991(Super Annual Reports).

In 1992, the park replaced the small concrete pedestals previously used to mark the 1903 landing sites with granite markers. In 1993, the Cape Hatteras National Seashore preservation team rebuilt the camp buildings (for a fourth time). The installation of a new fiberglass flagpole also occurred in 1993. In 1997, the Wright Brothers Monument was rehabilitated. The replacement of the windows on the north side of the assembly room in the visitor center with solid walls also occurred at this time when a new HVAC system was installed. In 1998, the cypress fence that separated the parking lot from the mall was removed, along with the vegetation in front of it. The installation of the handicapped ramp at the ceremonial terrace also occurred in 1998. The stabilization of the monument powerhouse occurred in 2000.

Land Transfer

In 1984, the United States conveyed to the state of North Carolina a right-of-way along a portion of Ocean Bay Boulevard and a portion of Colington Road, which the state was already maintaining under terms of a special use permit. The basis for the transfer was a reduction in administrative workload. Rights of ingress and egress were retained (Amundson 1987, 24).

1997 General Management Plan

In 1997, a General Management Plan (GMP) was approved for Wright Brothers National Memorial. It proposed the following:

- Removal of the 1960 Wright Brothers National Memorial Visitor Center
- Construction of a new visitor center, entrance road, and parking for 225 vehicles
- 16, 250 ft. of stabilized trails
- Addition of a fee collection plaza
- Removal of camp buildings; footprints of the buildings interpreted instead
- Removal of a portion of the road system linking the existing entrance with the circular drive
- Restriction of access to full circular drive
- Thinning of the vegetation adjacent to the First Flight Airstrip to provide a view of aircraft taking off and landing
- Selective planting of vegetation at the park's entrance to screen Hwy 158
- Removal of Superintendent's residence
- Relocation of maintenance facilities
- Removal and relocation of First Flight Airstrip concession structure
- Culverts to replace sections of the drainage ditch on the east side of the monument
- Stabilize and repoint monument

The NPS prepared an Environmental Assessment (EA) on the GMP for Wright Brothers National Memorial, which resulted in a Finding of No Significant Impact (FONSI) pursuant to the Council of Environmental Quality's regulations for implementing the National Environmental Policy Act. The GMP/EA addressed the issues of visitor use and circulation, interpretation, protection of cultural and natural resources, facility development, the use and disposition of extant structures, and how to prepare for the centennial of powered flight.

The North Carolina Department of Cultural Resources commented that the Wright Brothers Memorial Visitor Center appeared to be eligible for listing in the National Register of Historic Places, as an outstanding example of modernist architecture designed in the mid-20th century in North Carolina. Concurrent with the general management planning process, NPS prepared additional documentation for the park's National Register district that defined contributing and non-contributing resources. Research on the maintenance history and architectural significance of the visitor center resulted in a non-contributing recommendation for the resource. A copy of the documentation was sent to the North Carolina Department of Cultural Resources for comment in July 1996. NPS received no response from the Department of Cultural Resources. On 13 September 1996, the Keeper approved the additional documentation and NPS notified the state of North Carolina. Soon thereafter, the North Carolina Department of Cultural Affairs, the American Institute of Architects, the Society of Architectural Historians, and other professional observers vigorously challenged the decision by the Keeper regarding the visitor center.

In 1997, as a result of the concerns raised by the professional community, NPS amended the National Register documentation to include the visitor center as a contributing feature of the existing 421-acre historic district (Wright Brothers National Memorial listed 1966; documentation for historic district submitted 1978). In January 2001, the visitor center was designated as a National Historic Landmark as a nationally significant example of a Mission 66 visitor center and as one of the most important examples nationally of the Philadelphia School of modernist architecture. National Historic Landmark status adds an additional level of

compliance review to any action affecting the building, since the Secretary of the Interior would have to comment, in addition to the SHPO. An Historic Structures Report (HSR) is being prepared concurrent with the Cultural Landscape Report. Details concerning the visitor center will be addressed in the HSR.

First Flight Centennial Plan

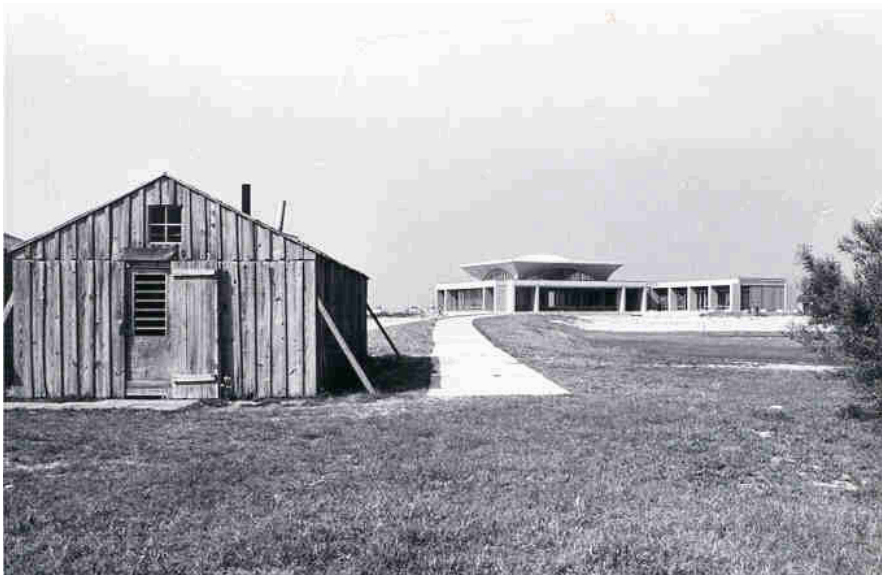
Over the past five years the National Park Service has undertaken various planning projects to prepare the park for the 100th anniversary of flight in 2003. Designation of the Wright Brothers National Memorial Visitor Center as a NHL will necessitate a new GMP. In the meantime, planning for the centennial celebration is underway. The park has written an Action Plan for the First Flight Centennial Anniversary. The celebration is expected to draw a minimum of 30,000 visitors per day over a two-day period and will include multiple local, state, and federal agencies, extensive civilian and military aircraft participation, and possibly a presidential visit.



Construction of curvilinear paths, 1935



Aerial view of visitor center, 1963



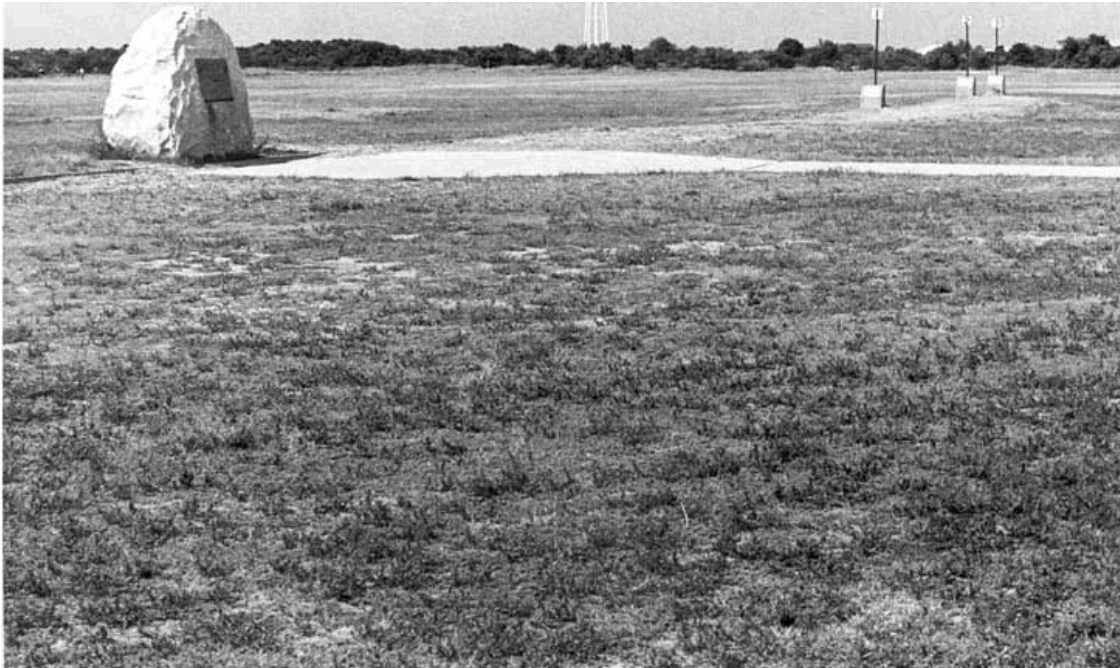
Walkway connecting camp buildings with visitor center, 1960



Approach to visitor center showing cypress fence, 1960



Aerial view of the airstrip, 1969



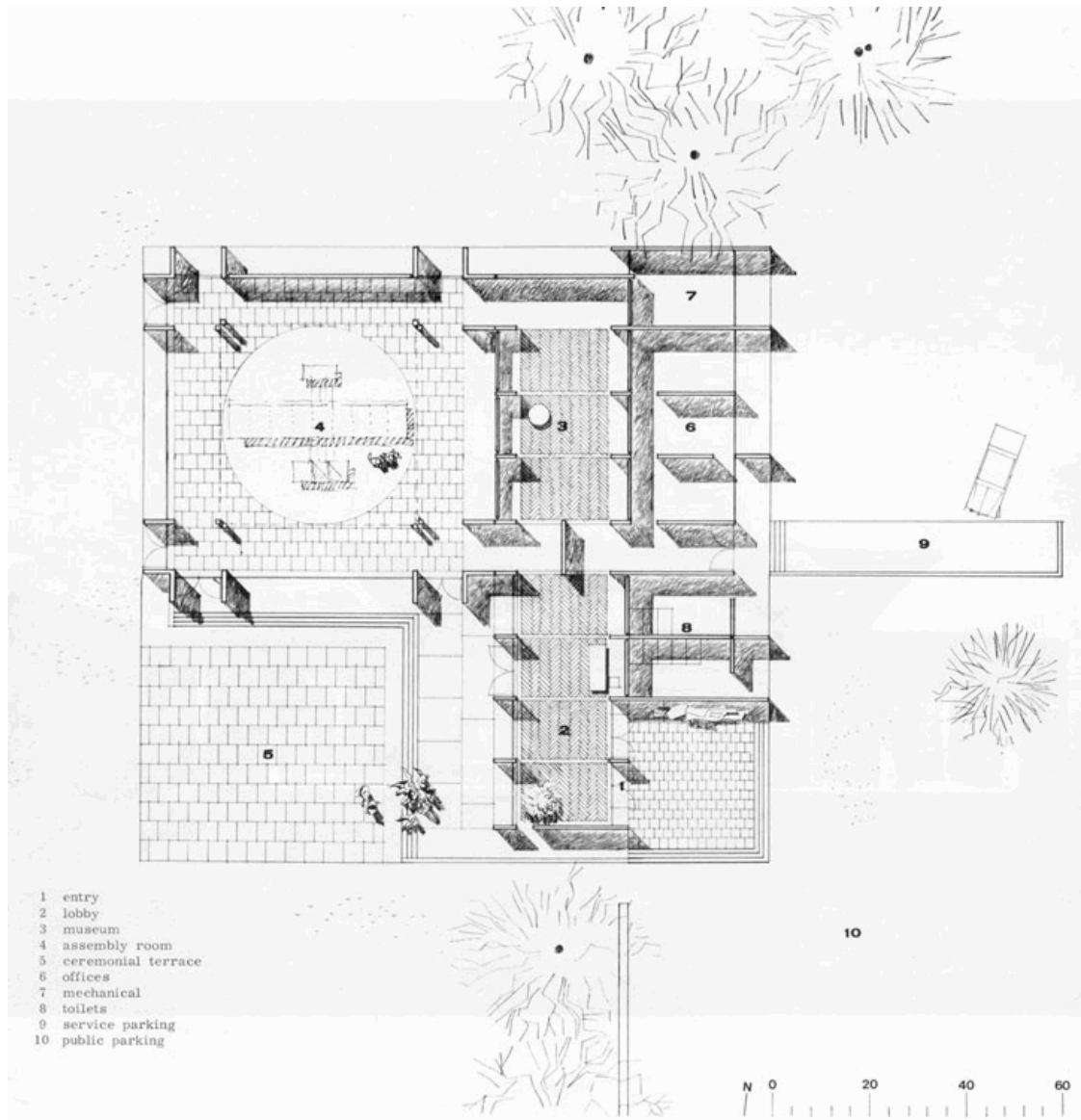
View of reoriented First Flight Marker and pedestal markers, post-1966



Abandoned entrance station, 1977



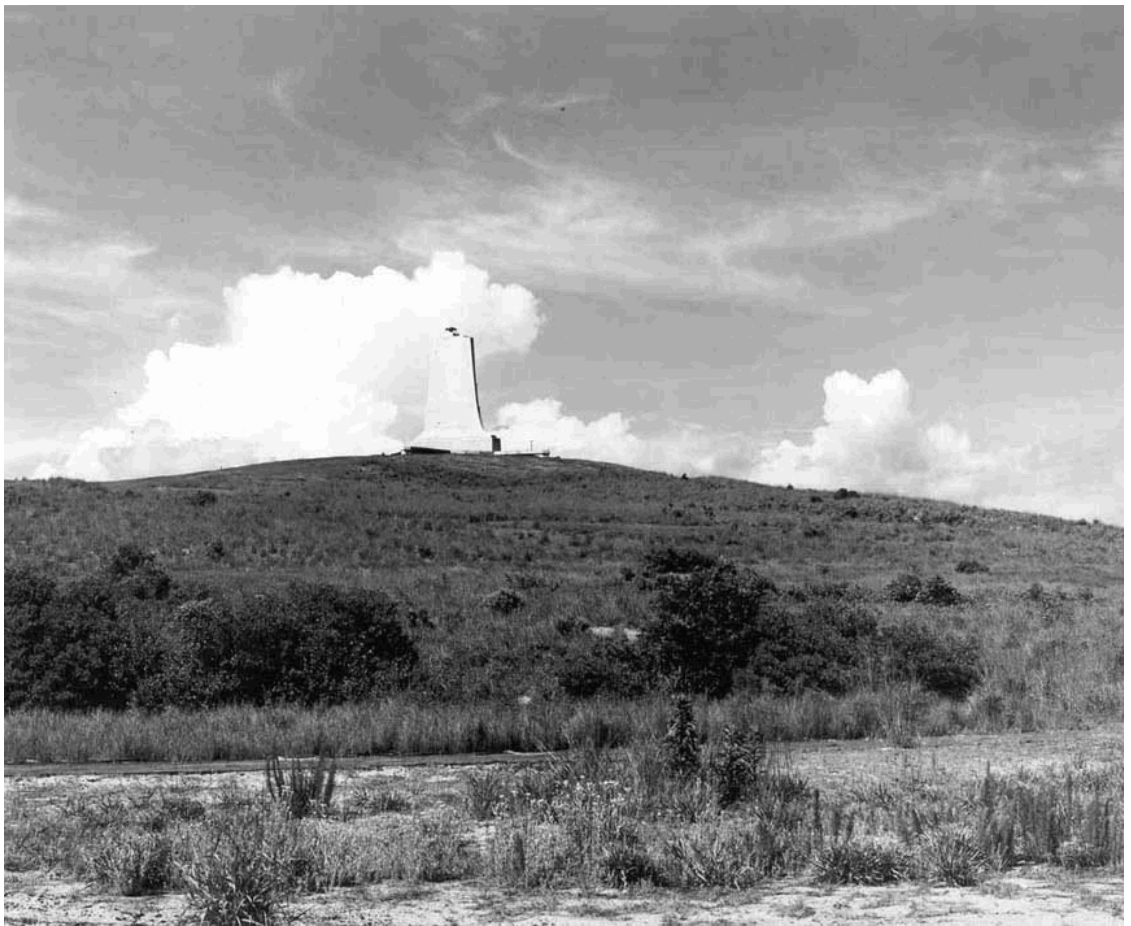
Monument tour road showing tree planting, 1936



Axiometric view of visitor center, 1959



Aerial view of the site, 1950s



Vegetation on Kill Devil Hill, 1941



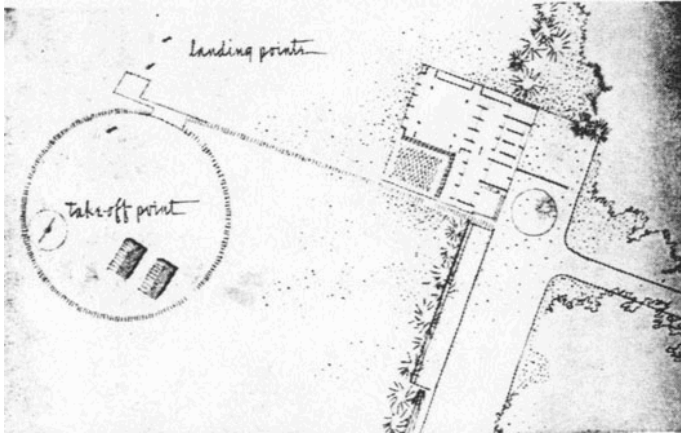
View of Wright Brothers Monument, 1963



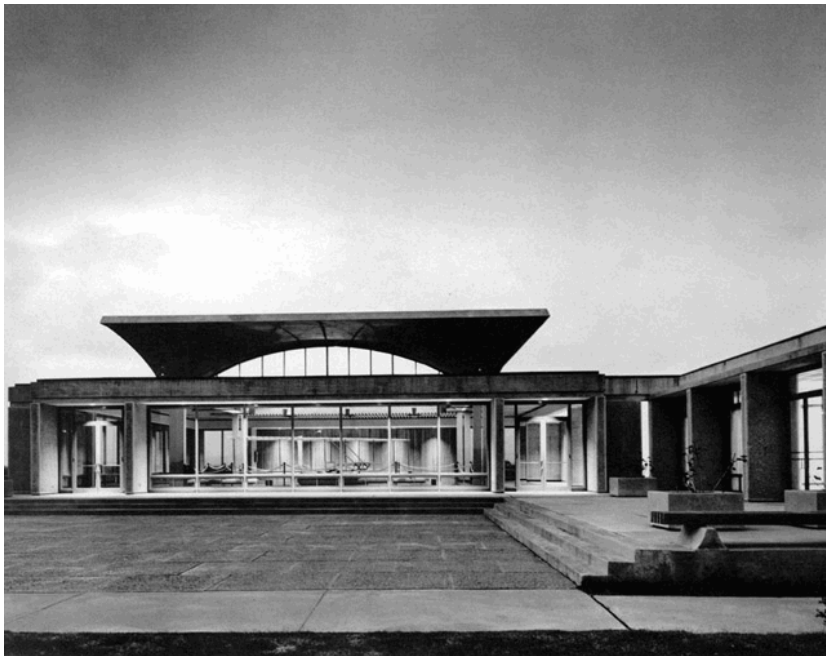
Archaeological testing, 1953



View of the mall with camp buildings in place, 1956



Mitchell/Giurgola site plan sketch



Mitchell/Giurgola visitor center

Analysis & Evaluation of Integrity

Analysis and Evaluation of Integrity Narrative Summary:

The evolution of the historic landscape of Wright Brothers National Memorial is a complex one, beginning with stabilization efforts in 1928 that altered the historic setting. The initial direction of the commemorative landscape (1927-1942), although never fully realized, was to create a direct relationship between the Wright Brothers Monument and the First Flight Marker, reinforced with a grassed mall that set off the area from the surrounding landscape that was growing up in woody vegetation. With the decision to include a larger interpretive program in the 1947 Master Plan, emphasis shifted from the monument and marker to plans for a museum/visitor center, reconstruction of the Wright brothers' camp buildings, and markers placed at the landing sites of the first powered flights. The 1947 Master Plan and later refinements that included a 1952-1954 visitor center overlay reflect the culmination of design and development at Wright Brothers National Memorial, ending in 1960 with the construction of the Wright Brothers National Memorial Visitor Center. Landscape characteristics and features will be evaluated based upon work completed from the 1947 Master Plan.

Location-

The historic location of the Wright Brothers Monument and associated powerhouse, First Flight Marker, curvilinear paths and circular road, visitor center, and the spatial relationship between the monument and marker retain overall integrity of location. The rotation of the First Flight Marker in 1966 reduced the resource's integrity of location, but because it was originally placed at a location determined by the best estimates of surviving witnesses, it has never marked more than an approximate location. The boundary of the park was expanded in 1959 to include the location of the 4th landing site of 17 December 1903.

Design-

The Wright Brothers Monument and associated powerhouse, First Flight Marker, curvilinear paths and circular monument road, and the spatial relationship between the monument and marker retain high design integrity. Changes to the visitor center landscape (removal of the fence and associated vegetation and changes to the bench) reduced its design integrity but did not compromise the building's overall form. The original entrance gateway, superintendent's quarters, and maintenance area have all undergone substantial alterations and lack sufficient integrity.

Setting-

A major characteristic of the Wright-era landscape was its dynamic nature in response to natural forces and features. The Wrights chose the Outer Banks for their experiments because the landscape met certain criteria: broad, open expanses of soft sand, prevailing winds, and sparse vegetation. The Kill Devil Hills area was the focus of their experiments because of the presence of three large sand dunes. The natural forces and features that made the site ideal contributed to creating a landscape characterized by continual and dynamic change due to the low profile, narrowness, sand deposition, and adjacent high wave energy. The high winds, storm overwash, and salt spray precluded the establishment of dense vegetation.

Wright Brothers National Memorial Landscape

Wright Brothers National Memorial

Beginning in 1928, the topography and vegetation of the site were dramatically changed by the stabilization of Kill Devil Hill and West Hill, which were planted with grasses and shrubs to stop their southwestwardly migration. Construction of artificial barrier dunes along the Outer Banks between 1936-1940 reduced salt spray, sand movement, and storm overwash, altering the distribution and composition of the vegetation at Wright Brothers National Memorial.

These changes have compromised the original setting of the Wright brothers' first flight of 17 December 1903. The World Heritage Committee denied the park's nomination in 1980 as a World Heritage site for this reason.

The setting of Wright Brothers National Memorial has achieved significance as an example of a designed commemorative landscape that has evolved over time. Early efforts to memorialize the site focused on the Wright Brothers Monument, the First Flight Marker, and the spatial relationship between the two. With the decision to build a museum/visitor center and landing strip in the early 1950s, emphasis shifted from the monument and marker to a larger interpretive program that included the reconstruction of the Wright brothers' camp buildings. Markers placed at the landing sites of the first powered flights (the first flight path) have gained importance as a later addition to the commemorative landscape.

Materials-

The original entrance feature gate posts lost materials integrity when the bronze gates were removed in the 1960s. The removal of the generating equipment from the monument powerhouse resulted in a small loss of materials integrity.

Granite, asphalt, and concrete are historically significant materials repeated throughout the memorial. Failure to match the finishes of the terraces and walkways when installing handicapped access ramps and railings has compromised the material integrity of the visitor center platform. The platform bench also lost integrity due to replacement of all materials from the original installation, with the exception of the concrete support piers.

Waxleaf privet (*Ligustrum lucidum*) and eastern red cedar (*Juniperus virginiana*) survive from the 1935 Custodian's Residence Planting Plan. One group of yaupon and one live oak tree survive from the 1959 Visitor Center Planting Plan. Although the yaupon has outgrown its intended use as a low-growing foundation plant, the live oak tree remains in scale with the building and helps define the entry terrace. Planting plans for the memorial have specified predominately native plant materials.

Workmanship-

Most of the features associated with the Wright Brothers National Memorial retain integrity of workmanship. The most prominent example of loss of integrity of workmanship occurred during the many alterations and additions to the maintenance buildings, with no attempt made to retain the original features of the 1930s-era design.

Feeling/Association-

The Wright Brothers Monument lost some integrity of feeling and association following the move of the park entrance and the construction of the visitor center in the late 1950s, which marked a shift in the way visitors experienced the park. Up until this time, the monument had been the focal point of the commemorative landscape. After the visitor center opened in 1960, however, the monument was closed to visitors—it became something to be viewed at a distance. The monument's powerhouse lost a measure of integrity of feeling and association after the discontinuation of the substation function of the building. The association of the powerhouse and the monument remains strong and offers an opportunity to interpret the monument's original beacon feature. The First Flight Marker retains integrity of feeling and association, as the spatial relationship between the marker and the monument remains intact, as well as the spatial relationship of the marker and the first flight line. Development outside the park boundaries has changed the feel of the location somewhat, although vegetation partially screens the site along all sides.

Landscape Characteristic:

Buildings And Structures

The superintendent's quarters and maintenance area have all undergone substantial alterations. The park replaced the original roof of the superintendent's quarters in 1944 (following storm damage), altered the front terrace in 1954 and 1974, and replaced the original windows in 1974, significantly altering the few original Art Moderne design elements. The maintenance area has had numerous additions and alterations, with no attempt made to retain the original features of the 1930s-era design.

The Wright Brothers Monument and associated powerhouse (recently stabilized) retain overall integrity of design, location, materials, workmanship, and feeling/association, representing the core of the earliest commemorative development at the park. The Wright Brothers Monument lost some integrity of feeling/association following the move of the park entrance and the construction of the visitor center in the late 1950s. Up until this time, the monument had been the focal point of the commemorative landscape. After the visitor center opened in 1960, however, the monument was closed to visitors—it became something to be viewed at a distance. The monument's powerhouse lost a measure of integrity of feeling and association after the discontinuation of the substation function of the building. The association of the powerhouse and the monument remains strong and offers an opportunity to interpret the monument's original beacon feature.

The camp buildings and the monorail are reconstructions whose location was never more than a close approximation. However, their placement in 1953 marked the shift from commemoration to comprehensive interpretation in the landscape.

In January 2001, the 1960 Wright Brothers National Memorial Visitor Center's nomination as a National Historic Landmark was approved. In 1998, it was included as a contributing feature of the park's 421-acre National Register historic district. As one of the original examples of a visitor center, a new building type that concentrated visitor services and supplemented old-fashioned museum exhibits with modern methods of interpretation, it is a nationally significant example of Mission 66 architecture. It is also one of the most important examples

nationally of the Philadelphia School of modern architecture, reflecting a period when modernist architects were moving away from the limitations of the rectangular glass box. For the Wright Brothers site, Mitchell/Giurgola sought a design that would both respond to its sun-and-wind-swept site and symbolically portray the concept of flight in static form.

Alterations to the building in 1976 compromised aspects of design integrity. As part of a contract for the refenestration of the building, the original glass was replaced with tinted double-pane, insulated glass, and the steel window frames and doors were replaced with an anodized-aluminum window-and-door system. This system did not replicate the composition, profile, or color of the original, whose hopper-type, ventilating windows and prominent reddish-orange color were among the building's more distinct features. These changes also disrupted the unity of color between the windows and the pedestal markers (replaced in 1992).

The installation of concrete handicapped access ramps and metal hand-railings has compromised the design and materials integrity of the entry and ceremonial terraces. These installations and other repairs elsewhere on the platform use a standard, brush-finished surface without exposed aggregate, making them quite different from the original in both color and texture. As much as these changes alter the aesthetic of the building, they do not compromise its overall form or affect visitor circulation.

Character-defining Features:

Feature: Wright Brothers Monument

Feature Identification Number: 94798

Type of Feature Contribution: Contributing

IDLCS Number: 07396

LCS Structure Name: Wright Brothers Monument

LCS Structure Number: HS-01

Feature: Wright Brothers National Memorial Visitor Center

Feature Identification Number: 94799

Type of Feature Contribution: Contributing

IDLCS Number: 091645

LCS Structure Name: Wright Brothers National Memorial Visitor Center

LCS Structure Number: HS-08

Feature: Monument Powerhouse

Feature Identification Number: 94794

Type of Feature Contribution: Contributing

IDLCS Number: 90077

Wright Brothers National Memorial Landscape

Wright Brothers National Memorial

LCS Structure Name: Wright Brothers Monument Powerhouse

LCS Structure Number: HS-05

Feature: Airstrip concession building

Feature Identification Number: 94790

Type of Feature Contribution: Non-Contributing

Feature: Fee Collection Kiosk (2)

Feature Identification Number: 94791

Type of Feature Contribution: Non-Contributing

Feature: Hangar

Feature Identification Number: 94792

Type of Feature Contribution: Non-Contributing

IDLCS Number: 092487

LCS Structure Name: Wright Brothers Reconstructed Hangar/SHADOW

LCS Structure Number: HS-03

Feature: Pilot House

Feature Identification Number: 94795

Type of Feature Contribution: Non-Contributing

Feature: Quarters

Feature Identification Number: 94796

Type of Feature Contribution: Non-Contributing

IDLCS Number: 092486

LCS Structure Name: Wright Brothers Reconstructed Quarters SHADOW

LCS Structure Number: HS-02

Feature: Superintendent's Quarters

Feature Identification Number: 94797

Type of Feature Contribution: Non-Contributing

Feature: Maintenance Complex

Feature Identification Number: 94793

Type of Feature Contribution:

Non-Contributing

Landscape Characteristic Graphics:



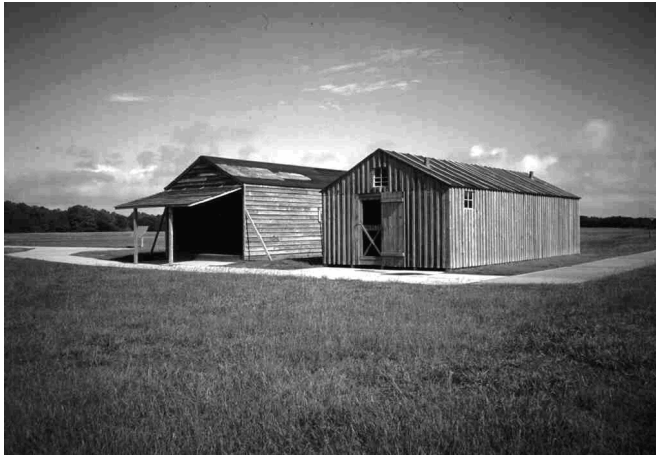
Monument and powerhouse, 1994



Wright Brothers National Memorial Visitor Center, 2000



Handicapped rails and concrete repairs, 2000



Camp buildings, 1999



Superintendent's residence and maintenance area, 1999

Circulation

Between 1934-36, NPS altered the circulation system designed by the War Department. The entrance road that arced around the east side of Kill Devil Hill was removed and a new circular monument road was built. The concrete block pedestrian path that led straight up the hill was removed and four symmetrical, curvilinear paths were constructed as part of the commemorative landscape.

Between 1947-60, as part of the 1947 Master Plan and subsequent plans for the visitor center,

the park removed Boulder Road, closed the original entrance, and built a new entrance road along the eastern boundary. The state of North Carolina constructed a bypass road to Colington. These changes significantly altered the Park Development-era circulation system, which had previously been processional in nature and culminated in the view from the top of the Wright Brothers Monument out to the First Flight Marker. By constructing a new entrance road and abandoning the War Department entrance gateway, the orientation to the site was changed from the monument to the visitor center. Boulder Road was no longer needed for vehicular traffic, as visitors parked at the visitor center and walked out to the first flight area and monument. It is the circulation initiated by the 1947 Master Plan that has retained integrity.

A two-way asphalt entry road brings the visitor into the site from Highway 158 and directs visitors to the visitor center parking area. The entry road connects with the one-way monument tour road that encircles Kill Devil Hill. The circular monument tour road was constructed by NPS in 1935 as part of the commemorative landscape. There are five symmetrically placed parking areas that accommodate over 100 vehicles around the monument road. A series of paved, curvilinear pedestrian paths ascending Kill Devil Hill are laid out in a symmetrical design on either side of a straight line axis from the Wright Brothers Monument to the First Flight Marker. All but two of the trail segments are part of the 1930s commemorative design. The other segments were added over informal paths created by frequent visitor use. A paved service road accesses the park's maintenance complex and superintendent's quarters. The First Flight Airstrip can be reached either by foot or by car. An asphalt walkway connects the airstrip with the circular monument road. Vehicular access to the airstrip parking area is via an asphalt entrance road located just west of Colington Road.

A volunteer path along the trace of the old Boulder Road connects the monument tour road with the First Flight Marker. An unpaved path stabilized with landscape matting in 1999 connects the First Flight Marker and the four landing sites of December 1903. Concrete walkways connect the First Flight Marker, the reconstructed camp buildings, and the visitor center. The walkways installed in 1966 to connect the marker and camp buildings are quite different in color and texture from the exposed-aggregate concrete walk that extends to the camp buildings from the ceremonial terrace of the visitor center.

The curvilinear paths, circular monument road, and the spatial relationship between the monument and marker retain integrity of design, location, workmanship, and feeling/association. The spatial relationship between the monument and marker lost materials integrity when Boulder Road was removed.

Character-defining Features:

Feature: Curvilinear paths

Feature Identification Number: 94800

Type of Feature Contribution: Contributing

IDLCS Number: 091553

LCS Structure Name: Monument Curving Trails and Circular Road

LCS Structure Number: HS-07

Feature: First Flight Path

Feature Identification Number: 94801

Type of Feature Contribution: Contributing

Feature: Monument tour road

Feature Identification Number: 94802

Type of Feature Contribution: Contributing

IDLCS Number: 091553

LCS Structure Name: Monument Curving Trails and Circular Road

LCS Structure Number: HS-07

Landscape Characteristic Graphics:



Unimproved pedestrian circulation, 1999



Flight path, First Flight Marker, and Monument, 1999



Entry road connecting to monument tour road, 1999

Natural Systems And Features

Continuous changes in sea level, wave action, storm surge, and sediment supply lead to rapid changes in barrier island landforms. The Outer Banks have changed from a system dominated by natural processes to a stabilized system. During the 1930s, sand fences erected by the CCC and the WPA, under the direction of NPS, formed an unbroken chain of barrier dunes along the Outer Banks. Thirty years of artificial dune stabilization has greatly altered the ecology and geology of the area. Most striking are a marked difference in beach widths and changes to the normal vegetation sequence. The planting of vegetation on Kill Devil Hill and West Hill stopped their southwestward migration. Drainage patterns were also altered to prevent water buildup on the circular monument road and on Boulder Road.

Small Scale Features

The War Department entrance feature gateposts lost a significant amount of design integrity when the park removed the bronze gates from their posts in the 1960s after abandoning the original entrance in 1958. The gateposts are the only surviving elements of the original entrance feature. The park received clearance and demolished the contact station in 1978.

The rotation of the First Flight Marker in 1966 reduced the resource's integrity of location, but because it was originally placed at a location determined by the best estimates of surviving witnesses, it has never marked more than an approximate location. The small mound supporting the marker was leveled to better convey a sense of the flat terrain at the time of the Wright brothers' experiments. The side of the marker holding the bronze plaque was turned towards the visitor center--it originally faced the monument--in order to be more visible to visitors approaching the first flight area from the visitor center. The First Flight Marker retains integrity of feeling and association, as the spatial relationship between the marker and the monument remains intact, as well as the spatial relationship of the marker and the first flight line.

The wooden bench that was an original feature along the south side of the platform between the entry terrace and the ceremonial terrace has been modified through total redesign and replacement of its wooden components, with only the concrete support piers remaining from the original installation. Early photographs show that the original design was constructed but also show that, by the 1970s, red-painted metal covered the horizontal top of the bench. The metal was eventually replaced with wood of a modified design. Another original feature that still survives intact is the poured-concrete water fountain designed for the east side of the entry terrace near the rest rooms. No longer operative and beginning to deteriorate, the fountain features two concave squarish bowls.

The 1959 entrance fence and gates, designed as part of the collaborative plans for the visitor center, mark the entry into the site from Highway 158. They retain overall integrity of design, although the original gates were replaced in 1987 and 1999.

The granite markers installed in 1992 mark the four landing sites of December 17, 1903.

In 1998, the cypress fence that separated the parking lot from the first flight line was removed,

along with the associated vegetation. Its removal disrupted the intended entry experience and also exposed the parking lot and the more-distant highway to view from the mall.

Character-defining Features:

Feature: First Flight Marker

Feature Identification Number: 94805

Type of Feature Contribution: Contributing

IDLCS Number: 90066

LCS Structure Name: First Flight Marker

LCS Structure Number: HS-04

Feature: 1933 Entrance Gateway

Feature Identification Number: 94803

Type of Feature Contribution: Non-Contributing

IDLCS Number: 000207

LCS Structure Name: Wright Brothers Monument Entrance Gateway

LCS Structure Number: HS-06

Feature: 1959 entrance fence

Feature Identification Number: 94804

Type of Feature Contribution: Contributing

Feature: Four granite landing markers, installed in 1993, replacing earlier concrete markers erected in 1963

Feature Identification Number: 94806

Type of Feature Contribution: Non-Contributing

Feature: Water fountain

Feature Identification Number: 94807

Type of Feature Contribution: Contributing

Feature: Wooden bench

Feature Identification Number: 94808

Type of Feature Contribution: Contributing

Landscape Characteristic Graphics:



First Flight Marker, 1999



Closeup of wooden bench, 2000



Granite markers, 1999



Original entrance gates, 1992

Spatial Organization

The first effort to create a direct relationship between the Wright Brothers Monument and the First Flight Marker began with the placement of the monument cornerstone on Kill Devil Hill in 1928. This spatial relationship was reinforced by a grassed mall that set off the area from the surrounding landscape that was growing up in woody vegetation. Its roughly symmetrical layout—rectilinear, bisected by a central drive—clearly marked it as a designed landscape. Boulder Road reinforced, but did not determine, the spatial relationship between the two memorial markers. Thus, the spatial organization of the site has retained integrity. The rotation of the First Flight Marker in 1966 reflects the shift to a comprehensive interpretation of the site that evolved from the 1947 Master Plan.

This shift in spatial organization was further articulated in the 1954 General Development Plan, which oriented visitors away from the monument. The subsequent visitor center site plan controlled pedestrian flow up to the building from the parking lot, with a cypress fence shielding the visitor as they approached the visitor center from a clear view of the first flight line and monument. Removing the fence and the associated vegetation changed the visitor experience approaching the building. The spatial organization between the visitor center and the first flight line has been hampered by the lack of a coherent design effort reinforcing the commemorative landscape and the visitor center landscape.

Landscape Characteristic Graphics:



View of the mall showing drainage swales, 1936



View of the mall, 1999

Topography

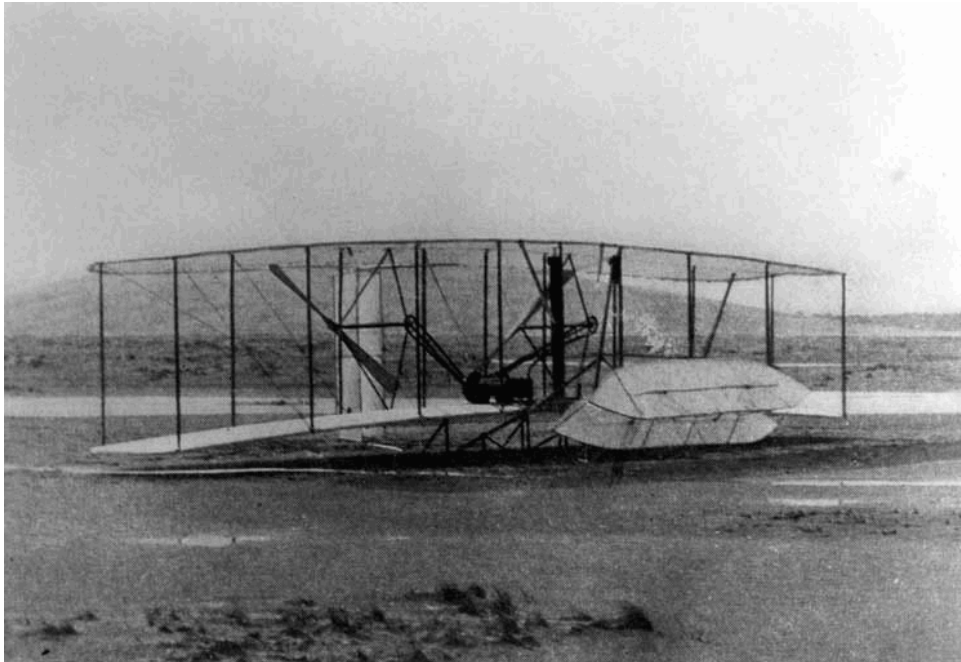
A major characteristic of the Wright-era landscape was its dynamic nature in response to natural forces and features. The Wrights chose the Outer Banks for their experiments because the landscape met certain criteria: broad, open expanses of soft sand, prevailing winds, and sparse vegetation. The Kill Devil Hills area was the focus of their experiments because of the presence of three large sand dunes. The natural forces and features that made the site ideal contributed to creating a landscape characterized by continual and dynamic change due to the low profile, narrowness, sand deposition, and adjacent high wave energy. The high winds, storm overwash, and salt spray precluded the establishment of dense vegetation.

Beginning in 1928, the topography and vegetation of the site were dramatically changed by the stabilization of Kill Devil Hill and West Hill, which were planted with grasses and shrubs to stop their southwestwardly migration. Construction of artificial barrier dunes along the Outer Banks between 1936-1940 reduced salt spray, sand movement, and storm overwash, altering the distribution and composition of the vegetation at Wright Brothers National Memorial.

These changes have compromised the original setting of the Wright brothers' first flight of 17 December 1903. The World Heritage Committee denied the park's nomination in 1980 as a World Heritage site for this reason.

The setting of Wright Brothers National Memorial has achieved significance as an example of a designed commemorative landscape that has evolved over time. Early efforts to memorialize the site focused on the Wright Brothers Monument, the First Flight Marker, and the spatial relationship between the two. With the decision to build a museum/visitor center and landing strip in the early 1950s, emphasis shifted from the monument and marker to a larger interpretive program that included the reconstruction of the Wright brothers' camp buildings. Markers placed at the landing sites of the first powered flights (the first flight path) have gained importance as a later addition to the commemorative landscape.

Landscape Characteristic Graphics:



Topography of the site, December 17, 1903

Vegetation

Between 1936 and 1940, the Civilian Conservation Corps constructed an artificial foredune along the Outerbanks, reducing salt-spray exposure, sand movement, and ocean overspray. The artificial dune system drastically altered the distribution and composition of the island vegetation, allowing salt intolerant species previously excluded from the island to thrive. These changes have directed and accelerated successional trends of vegetation, encouraging large increases in prairie and woody vegetation and a corresponding decrease in bare sand and cordgrass communities.

The stabilization of the site with grasses and shrubs began in 1928. The vegetation planted at Wright Brothers National Memorial has adhered to a predominately native palette. By 1936, Greenbriar Farms had completed an ornamental planting project that included lining the circular drive with live oak trees, planting flat, sandy areas with grass, and installing numerous shrubs

(native). This project apparently included the mall, which is defined in 1950s aerial photographs by thin bands of vegetation on the east and west growing along drainage swales. Beginning in the 1940s, the park began removing shrubs and small trees from the forty-acre area extending from Kill Devil Hill in order to maintain the historic open pattern of the mall, a character-defining feature. Vegetation outside the mall was released to natural succession.

The planting plan for the visitor center specified native plants. All of the plantings except the live oak and yaupon located in an area in front of the entry plaza have been removed over the years. The most significant loss occurred to the plantings placed in front of the cypress fence to help screen the first flight line from view of the parking lot. Although outside of the 100-foot NHL boundary, these plantings were an original part of the collaborative design and extended the barrier between the parking lot and the mall.

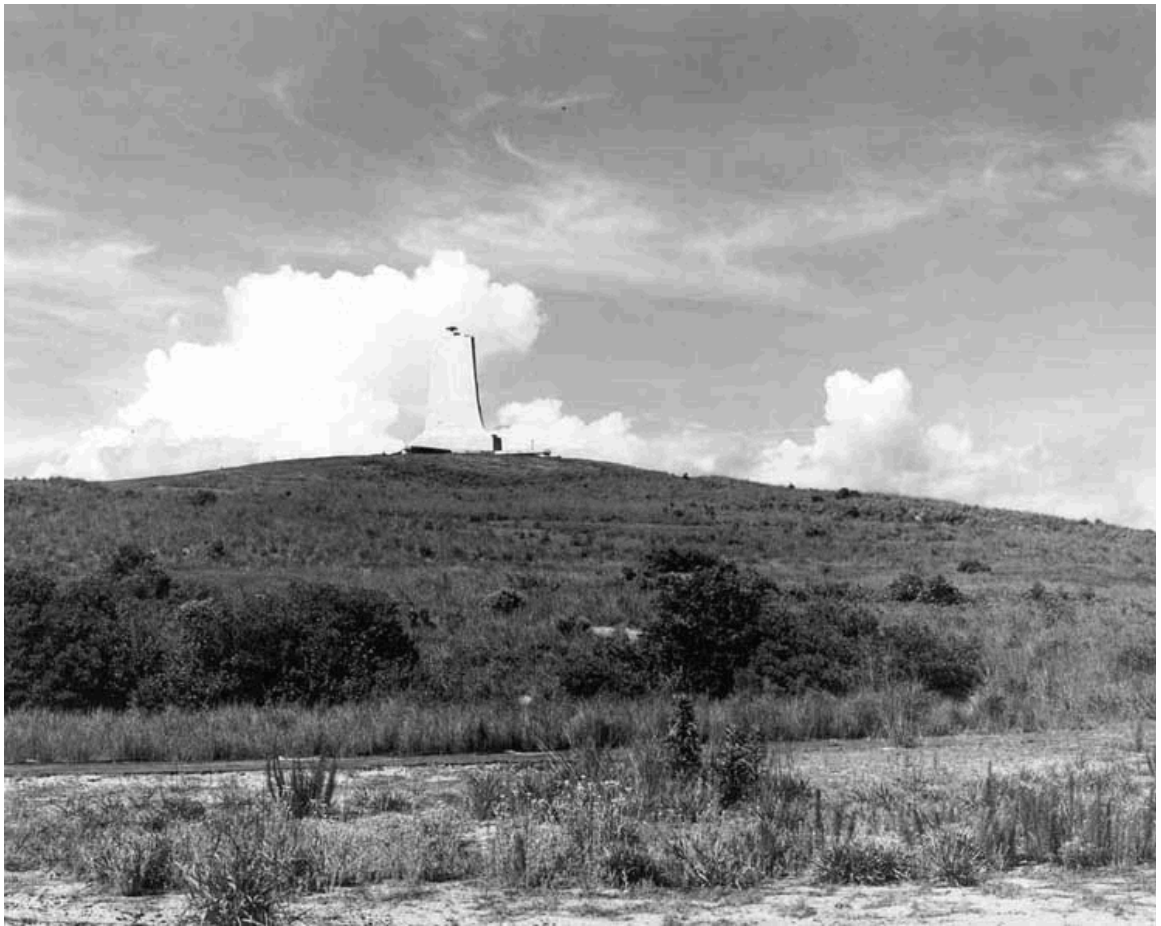
One state-listed plant, wooly beach heather (*Hudsonia tomentosa*) was found at Wright Brothers National Memorial during a field survey of the state and federally-listed threatened, endangered, and other noteworthy plants and animals conducted by terra incognito in 1998 and 1999. A state-listed butterfly, the giant swallowtail (*Papilio cresphontes*), was seen on the property, as well as its food plant, toothache tree (*Zanthoxylum clava-herculis*). Another noteworthy plant found was sandy woods sedge (*Carex arenaria*), which is uncommon in North Carolina.

The open dunes, disturbed grounds, and grasslands are populated with a native cactus that is a nuisance to visitors and probably restricts the numbers of ground-nesting and ground-feeding birds at the park.

Character-defining Features:

Feature:	Live oak tree
Feature Identification Number:	94809
Type of Feature Contribution:	Contributing

Landscape Characteristic Graphics:



Encroaching vegetation on Kill Devil Hill, 1941



View of cypress fence and vegetation, 1962



Live oak and yaupon, 1999

Views And Vistas

An unobstructed view between Kill Devil Hill and the first flight line has remained a

character-defining feature of the site. During the War Department and Park Development eras, sight lines from the Wright Brothers Monument to the First Flight Marker were an important design element. The collaborative plans for the visitor center resulted in its placement on top of the existing vegetation that marked the eastern edge of the mall, but with open vistas to the first flight line. Proposed planting plans were modified so that nothing was planted in the first flight area and no vertical plantings obstructed the view to the Wright Brothers Monument.

Screened views, both from the parking lot out to the mall and from within the mall, were also an important feature of the collaborative design effort of the visitor center. These filtered views were provided by the cypress fence along the south side of the building and the vegetation around it, later removed by the park.

Views to the airstrip from the first flight area are blocked by vegetation that marks the western edge of the mall.

Landscape Characteristic Graphics:



Open view between Kill Devil Hill and the first flight line, 1999



Visitor center showing view to parking lot blocked by cypress fence, 1960



Vegetation screening airstrip concession area and parking from first flight area, 1999

Condition

Condition Assessment and Impacts

Condition Assessment: Good
Assessment Date: 09/30/2000
Condition Assessment: Good
Assessment Date: 08/03/2004

Condition Assessment Explanatory Narrative:

Condition was initially assessed in 2000. This condition was reconfirmed in 2004 when the park superintendent approved the CLI, condition assessment, and management category.

Condition Assessment: Good
Assessment Date: 08/18/2010

Impacts

Type of Impact: Adjacent Lands
External or Internal: External
Impact Description: Increasing development in recent years along the Outer Banks has changed the character of the area around the park. Although vegetated areas delineate the site on the west and southwest, the park is now surrounded by more built-up areas on the southeast, east, and north.

Stabilization Costs

Landscape Stabilization Cost: 388,000.00
Cost Date: 01/01/2004
Level of Estimate: C - Similar Facilities
Cost Estimator: Park/FMSS

Landscape Stabilization Cost Explanatory Description:

Landscape stabilization costs are derived from PMIS statements - 38919, 41109, 4051 & 57140 - that are directly related to the stabilization of the cultural landscape.

Treatment

Treatment

Approved Treatment: Rehabilitation

Approved Treatment Document: Cultural Landscape Report

Approved Treatment Document Explanatory Narrative:

As defined by the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes (1996), rehabilitation is

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.

Because of striking changes to the topography and vegetation of the site, restoration of an accurate Wright-era landscape is not possible. Modifications to the barren, unstabilized terrain were necessary to establish a commemorative landscape. Changes to the spatial orientation of the site initiated by the 1947 Master Plan and visitor center overlay altered the commemorative landscape. Therefore, a program of rehabilitation that addresses contemporary management, planning, and interpretive concerns while preserving significant cultural resources is the most viable overarching landscape treatment approach for the site.

Approved Treatment Costs

Landscape Treatment Cost: 1,472,311.00

Level of Estimate: C - Similar Facilities

Cost Estimator: Regional Office

Landscape Approved Treatment Cost Explanatory Description:

Other approved treatment costs were taken from the cost estimates compiled by Mike Stanley as part of the Centennial Celebration projected costs and a cost estimate for replacing the yaupon compiled by Susan Hitchcock.

Bibliography and Supplemental Information

Bibliography

Citation Title:	Notes on Historic Sites, Wright Brothers National Memorial
Source Name:	CRBIB
Citation Number:	002278
Citation Location:	U.S. Department of the Interior, National Park Service
Citation Title:	Resource Management Plan, Wright Brothers National Memorial
Source Name:	CRBIB
Citation Number:	017312
Citation Location:	U.S. Department of the Interior, National Park Service
Citation Title:	The Wright Brothers Camp, Kill Devil Hill, 1903
Source Name:	CRBIB
Citation Number:	002276
Citation Location:	U.S. Department of the Interior, National Park Service
Citation Title:	World Heritage List Nomination, Wright Brothers National Memorial
Source Name:	CRBIB
Citation Number:	011673
Citation Title:	Wright Brothers National Memorial, Historic Resource Study
Source Name:	CRBIB
Citation Number:	017243
Citation Location:	U.S. Department of the Interior, National Park Service
Citation Title:	"Kitty Hawk Musuem" Progressive Architecture
Source Name:	Library Of Congress/Dewey Decimal
Citation Title:	"Vegetation Changes Associated with Barrier-dune Construction on the Outer Banks of North Carolina"
Source Name:	Library Of Congress/Dewey Decimal
Citation Type:	Both Graphic And Narrative
Citation Location:	CAHA Group Headquarters, SERO

Citation Title:	Kill Devil Hill: Discovering the Secret of the Wright Brothers
Source Name:	Library Of Congress/Dewey Decimal
Citation Type:	Both Graphic And Narrative
Citation Location:	SERO
Citation Title:	Mission 66 Visitor Centers
Source Name:	Library Of Congress/Dewey Decimal
Citation Type:	Both Graphic And Narrative
Citation Location:	SERO
Citation Title:	The Outer Banks of North Carolina
Source Name:	Library Of Congress/Dewey Decimal
Citation Type:	Both Graphic And Narrative
Citation Location:	SERO
Citation Title:	The Outer Banks of North Carolina, 1584-1958
Source Name:	Library Of Congress/Dewey Decimal
Citation Type:	Both Graphic And Narrative
Citation Location:	SERO
Citation Title:	Wilbur and Orville: A Biography of the Wright Brothers
Source Name:	Library Of Congress/Dewey Decimal
Citation Type:	Narrative
Citation Location:	SERO
Citation Title:	Wind and Sand
Source Name:	Library Of Congress/Dewey Decimal
Citation Type:	Both Graphic And Narrative
Citation Location:	SERO
Citation Title:	Wright Brothers National Memorial: An Administrative History, 1968-1987
Source Name:	Library Of Congress/Dewey Decimal
Citation Type:	Narrative
Citation Location:	CAHA Group Headquarters

Citation Title: Monthly Superintendent's Reports

Source Name: Other

Citation Type: Both Graphic And Narrative

Citation Location: CAHA

Citation Title: "Man's Impact on the Barrier Islands of North Carolina"

Source Name: Other

Citation Type: Both Graphic And Narrative

Citation Location: SERO

Citation Title: Visitor Center and Utilities Completion Report

Source Name: Other

Citation Type: Both Graphic And Narrative

Citation Location: CAHA Group Headquarters Museum Building

Citation Title: Threatened and Endangered Species of Wright Brothers National Memorial

Source Name: Other

Citation Type: Narrative

Citation Location: Park Headquarters

Supplemental Information

Title: NC SHPO to Kirk Cordell

Description: Evaluation of the Wright Brothers National Memorial Visitor Center

Title: Romaldo Giurgola to Carol Shull

Description: Letter from Romaldo Giurgola describing his design intent for the visitor center