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Ocmulgee National Monument

The Earth Lodge

# Historic Structure Report



August 2005

Historic Architecture, Cultural Resources Division

Southeast Regional Office

National Park Service



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2004  
Historic Structure Report  
The Earth Lodge  
Ocmulgee National Monument  
Macon, Georgia  
LCS#: 001186

Cover image: Earth Lodge, c. 1940. (OCMU Coll.)



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# Foreword

We are pleased to make available this historic structure report, part of our ongoing effort to provide comprehensive documentation for the historic structures and landscapes of National Park Service units in the Southeast Region. A number of individuals and institutions contributed to the successful completion of this work. We would particularly like to thank the staff at Ocmulgee National Monument for their assistance throughout the process. We are also appreciative of Dr. Donna Roper at the University of Oklahoma for her generosity in providing a pre- publication copy of her study of the earth lodges of the Plains Indians. We hope that this study of the Ocmulgee Earth Lodge will prove valuable to park management in ongoing efforts to preserve the building and to everyone in understanding and interpreting this unique resource.

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# Management Summary

Radiocarbon dated to around 1015 CE, the Earth Lodge at Ocmulgee National Monument is the largest and the earliest of nine such structures that were discovered in Bibb County, Georgia, in the 1930s. Mississippian earth lodges have also been documented at nineteen sites in Georgia, North Carolina, and Tennessee, but none are older or as well preserved as the Earth Lodge at Ocmulgee.

The building has had a number of names since its discovery in 1934. In the 1930s, it was variously referred to as the Mound D lodge, Council Chamber, Ceremonial Council Chamber, Ceremonial Earth Lodge, Macon Earth Lodge, Earth Lodge and Earthlodge. Since about 1940, Earth Lodge and Earthlodge have been in common use. “Earth Lodge” is used in this report, but “Council Chamber” appears to be a more accurate characterization of the structure than the present term and is also the designation used on the original construction documents in the 1930s.

## Historical Data

A product of the Early Mississippian culture, the Earth Lodge was built early in the last millennium but burned in the twelfth century. When the first Europeans visited the area late in the seventeenth century, the great mounds along the Ocmulgee River were landmarks, but the Earth Lodge itself was not discovered until 1934.

In December 1933, the largest archaeological excavation east of the Mississippi got underway at Ocmulgee. Sponsored by the Smithsonian and funded by a variety of Federal programs, the project was under the direction of Harvard anthropologist Dr. Arthur Kelly assisted by archaeologist James A. Ford. Charles Fairbanks and other notable figures in

American archaeology began their careers at Ocmulgee, and the project employed hundreds of unemployed men and women before World War II forced an end to the work in 1942. The remains of the Earth Lodge were fully excavated in 1934 and attracted widespread attention. Clearly one of the most spectacular finds at Ocmulgee Old Fields, it remained under a temporary shelter until the present building was constructed in 1937 under the direction of NPS architect James T. Swanson and archaeologist James A. Ford. It has been the primary attraction at Ocmulgee National Monument since that time.

## Architectural Data

The Earth Lodge is today one of the most spectacular native American structures in the eastern United States. It consists of three distinct elements: the clay features that survived from the pre- Columbian<sup>1</sup> earth lodge, the Depression- era reconstruction of the lost portions of the building, and a contemporaneous, earth- covered, reinforced- concrete structure encasing the two.

### Pre-Columbian Features

The pre- Columbian lodge was built entirely above the natural grade of the site, with the natural red clay of the area heaped up to form a circular, earth-embanked wall that has an interior diameter of about 42', with the embankment extending 13'- 21' beyond the interior wall face. Except on the eastern side of the building where a chinaberry tree prevented plowing during the historic period, the surviving wall was only 6"- 10" high. Much of the clay

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1. Throughout this report, “pre-Columbian” is used to denote the period prior to historic European contact in the late fifteenth century.

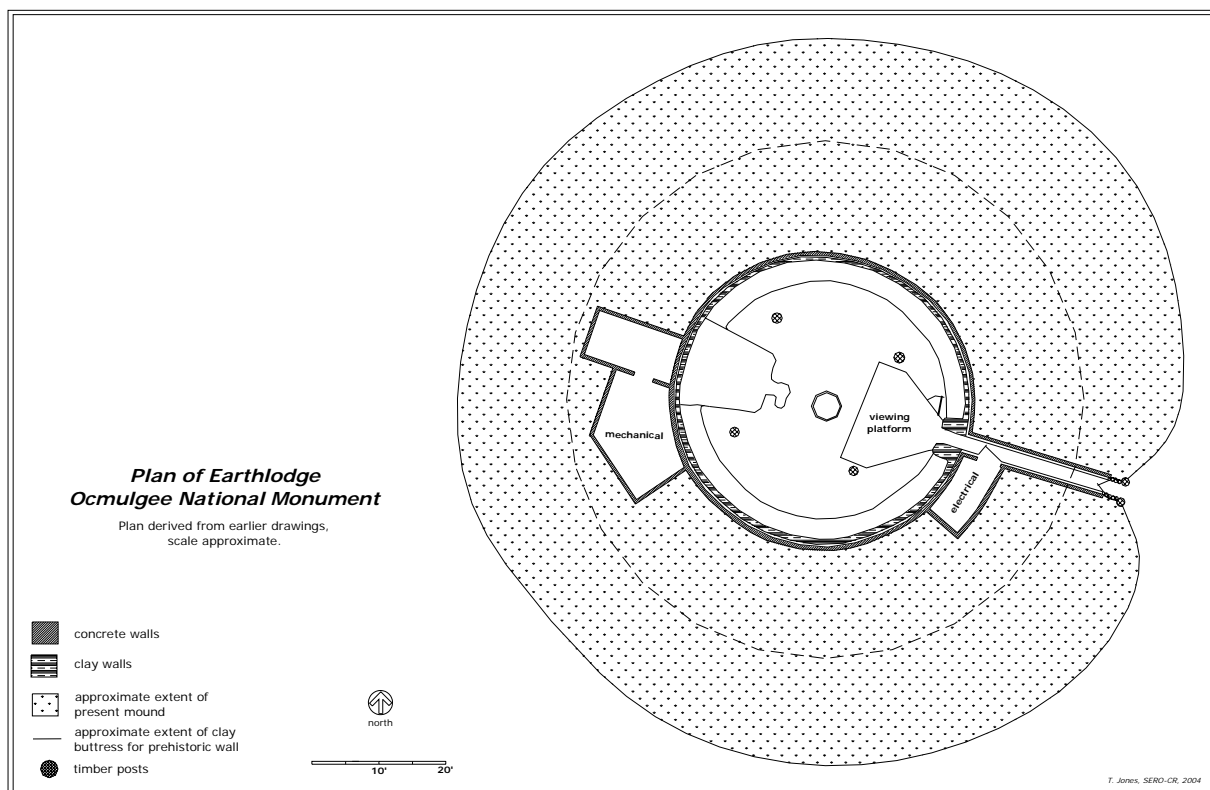
buttressing was destroyed during construction of the concrete shell in 1937 and of the mechanical pits in 1975. Except for the entrance passage, where few of the pre- Columbian features survived, the entire floor of the pre- Columbian lodge is intact, along with the central fire bowl and the magnificent eagle (or buzzard) effigy platform that projects from the northwest wall of the lodge. Also completely intact are 47 molded clay seats that encircle the space. The timber- framed roof burned away in pre- Columbian times but enough charred timber, reeds, and clay, were excavated to allow a credible reconstruction of the roof. Some of the wood was used for radiocarbon dating in 1961, and an unknown quantity is in the collection of the Southeast Archaeological Center in Tallahassee, Florida.

## Reconstructed Features

Much of the present structure dates to the reconstruction in 1937 and, because of its age and the high quality of its craftsmanship and materials, should be considered historic. The largest portion of the structure is the earth- covered, reinforced- concrete shell that was built to enclose the reconstructed lodge. The shell was constructed in a conventional manner using wooden forms with concrete poured from wheel barrows and hand- tamped.

Reconstruction of the wooden roof structure and entrance passage was based on what appears to be sound archaeological evidence. Trees were cut on site and worked in a traditional way, and local cane was cut for the matting for the ceilings and for the sides of the entrance passage. However, there is no sure evidence for the appearance of the lodge's entrance, and because of the presence of the concrete shell, the exterior of the mound is probably 2' or 3' higher and perhaps 30' wider than the pre- Columbian structure would have been.

Damage from termites and rot has required replacement of an unknown but certainly significant amount of the historic organic components of the structure, but these have not significantly altered its historic appearance, except around the building's entrance. Water for a lawn sprinkler system on top of the mound was installed in 1962, and electrical service to the building was entirely replaced in 1975. The most significant alterations to the Earth Lodge occurred in 1975 when, after long debate, an air-conditioning system was installed in the building, and the steel walkway that had allowed visitor access inside the structure was replaced by the present wood and glass enclosure. The latter change significantly and negatively affected the visitors'





experience of the building. Even with the addition of a humidification system in 1992, the interior climate control system may not have completely stabilized the condition of the interior, and mold and mildew remain. Some deterioration of the pre-Columbian clay features is evidently ongoing, albeit at a very slow pace.

## Interpretation

Kelly and Fairbanks acknowledged that some compromises were necessary in reconstructing the building and adapting it for exhibition in the 1930s, including reconstructing the walls somewhat higher than they thought likely in the pre-Columbian building. Overall, no one has challenged the authenticity of the lodge's reconstructed interior, and it remains an impressive structure.

However, significant questions have been raised regarding the authenticity of the exterior. Since the 1970s, an argument has been made for drawing a distinction between structures in which earth entirely covered the structure, as in the earth lodges of the Great Plains and in the reconstructed Earth Lodge at Ocmulgee, and those in which earth only covered the walls and perhaps a portion of the roof, a treatment which has been documented at a number of locations in the southeastern United States. Dr. Lewis Larson, former State Archaeologist for Georgia, has marshaled considerable ethnohistorical and archaeological evidence (see full text of his paper in Appendix C) strongly suggesting that Kelly and Fairbanks misinterpreted their findings in concluding that the structure had been earth covered in the manner of the Plains Indians' earth lodges. In fact, Larson writes, "earth-covered buildings were not characteristic of the prehistory of the [Southeast]" at all, which raises significant interpretive issues for the park.<sup>2</sup>

## Summary of Recommendations

Overall, the Earth Lodge is in good condition, although there are ongoing concerns about the stability of the building's pre-Columbian clay features

and there are problems of repair with the reconstructed portions of the structure that diminish its effectiveness as an interpretive device. In addition, current understanding of pre-Columbian architecture in what is now the southeastern United States calls into question the authenticity of the exterior of the structure.

The Earth Lodge has been the subject of a number of professional and scientific studies and investigations by Kidd and Associates, Law Engineering, the National Bureau of Standards and others that have examined virtually all aspects of the building, and no new studies of that sort have been deemed necessary for the present study.

Recommendations for treatment and use are made below that will (1) improve conditions necessary to preserve the building's pre-Columbian features; (2) repair and preserve the building's reconstructed features; (3) improve the visitor experience of the interior; and (4) suggest ways to reinterpret the exterior of the reconstructed building.

Aside from mounds and rock shelters, authentic pre-Columbian structures are virtually non-existent in the southeastern United States, and the Earth Lodge, for all of its inconsistencies, gives visitors the opportunity to experience one of the most remarkable pre-Columbian buildings in the region. With improvements in the way the building is exhibited and enhanced security through more careful control of access, it would continue to provide visitors with a glimpse of pre-Columbian America.

## Pre-Columbian Features

- Install crack monitors at select locations
- Do not attempt restoration
- Closely monitor platform shoulders and fire pit rim for continued spalling
- Avoid contact with spalling clay
- Explore possibility of consolidation if conditions worsen
- Test for excessive moisture and monitor pre-Columbian walls to determine if rising damp is present

2. Lewis Larson, "The Case for Earth Lodges in the Southeast," p. 105, in *Ocmulgee Archaeology, 1936-1986*, edited by David Hally (Athens and London: University of Georgia Press, 1994).

- Discontinue use of sprinkler if rising damp is still present
- Conserve stained portions of the wall
- Develop conservation plan for pre- Columbian clay features
- Provide training for park staff in inspecting and cleaning the artifact
- Devise safe means of access to smoke hole that avoids contact with the floor and fire pit rim
- Insure that humidistatic controls are functioning properly
- Maintain humidity levels of at least 60%

### Reconstructed Features

- Repair entrance door frame
- Repair erosion around front entrance
- Consider removal of sprinkler
- Establish safe procedure for making repairs to reconstructed clay features
- Repair top of reconstructed wall and perimeter of smoke hole
- Clean all woodwork to eliminate molds and mildew
- Repair walls and ceiling in passageway
- Restore door to its original appearance
- Inspect building for termite or other insect infestation annually
- Inspect building for evidence of rodent entry monthly
- Install smoke and fire detection system
- Consider eliminating uncontrolled access
- Work with local fire department to establish fire- fighting procedures at the Earth Lodge

### Visitor Experience

- Recreate original “daylight” presentation of the building
- Install task lighting that will fully illuminate the interior
- Replace existing walls and ceiling of viewing platform with minimally- framed glass or acrylic panels
- Replace carpet on floor of platform and in passageway

### Interpretation

- Design waysides or other means of accurately interpreting the exterior appearance of the Earth Lodge
- Re- establish historic flattened top to mound and grade above and around entrance

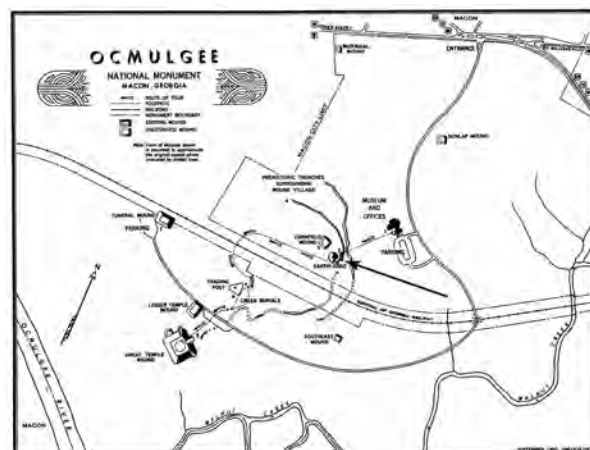
## Administrative Data

### Locational Data

Building Name: The Earth Lodge

Location: Ocmulgee National Monument

LCS#: 00n186



## Related Studies

- Brockington and Associates, Inc. "Archaeological and Historical Delineation of Ocmulgee/Macon Plateau." Atlanta, GA: Georgia Department of Transportation, July 1995.
- Bryan, Benjamin L. "Guide Manual: Ocmulgee National Monument." National Park Service, 1940.
- Denver Service Center. "General Management Plan/ Environmental Assessment, Ocmulgee National Monument." Denver, CO: September 1982.
- Ewers, John C. "Exhibit Plan for Ocmulgee National Monument." Macon, GA: Ocmulgee National Monument, June 27, 1940.
- Fairbanks, Charles H. "The Macon Earth Lodge," *American Antiquity*, Vol. 12, No. 2, October 1946.
- Historic Architecture Division, Southeast Region. "Historic Structure Assessment Report, Earth Lodge, Ocmulgee National Monument." Atlanta, GA: National Park Service, 1993.
- Jennings, J. D. "Ocmulgee Archaeology, Summary through May 1938." Ocmulgee National Monument, 1938.
- Kelly, A. R. "Exploring Prehistoric Georgia," *Scientific American*. March, 1935, pp. 117- 120.
- \_\_\_\_\_. *A Preliminary Report on Archaeological Explorations at Macon, Georgia. Bulletin 119* Bureau of American Ethnology. Washington, GPO, 1938.
- Kidd and Associates. "Earth Lodge Study, Ocmulgee National Monument." Atlanta, GA, April 2, 1974.
- Marsh, Alan. "Ocmulgee National Monument Administrative History." Macon, GA: Ocmulgee National Monument, 1986.
- Nelson, Swindell, Williams. "An Analysis of Ocmulgee Bottoms Materials at the Southeast Archaeological Center." Tallahassee, FL: University of Florida, July 1974.
- Pope, G. D. *Ocmulgee National Monument, Georgia*. Washington, D. C.: National Park Service Historical Handbook Series No. 24, 1956, reprinted 1961.
- Swanson, Jr., James T. "A Report Including Discovery, Excavation, Restoration of a Prehistoric Indian Ceremonial Earth Lodge, Ocmulgee National Monument."
- Walker, John W. "Ocmulgee Archaeology: A Chronology." Tallahassee, FL: Southeast Archaeological Center, NPS, 1989.
- Watson, JoAnna M. "Summary of Past and Proposed Ground Disturbing Activity at Ocmulgee National Monument." NPS and Mercer University, August 2000.

## Cultural Resource Data

*National Register of Historic Places:* Contributing structure at Ocmulgee National Monument.

*Period of Significance:* pre- Columbian period of significance, c. 1015 CE, and a secondary historic period of significance, 1934- 1942.

*Proposed Treatment:* Repair and preservation.



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# Historical Background and Context

Located on the east bank of the Ocmulgee River opposite Macon in middle Georgia, the so- called Macon Plateau has been a site of human habitation since the first nomadic people arrived perhaps 12,000 years ago. For thousands of years, the hunters and gatherers of the Archaic period (8,000 BCE - 1,000 BCE) frequented the area before the first rudimentary settlements began to evolve with the early farmers of the Woodland period (1,000 BCE- 900 CE).

In the tenth century CE, a culture of “master farmers” emerged, ushering in the great Mississippian period of mound builders at Ocmulgee. Over the next two centuries, the Indians built several mounds and at least nine so- called earth

lodges, including the subject of the present study, at three sites in present- day Bibb County, before apparently abandoning the sites in the twelfth century. Ancestors of the Creek Indians of the historic period re- occupied the site in the fourteenth century, but it was never again the large town that it had been when the mounds and earth lodges were first constructed.

Besides the nine earth lodges excavated in Bibb County in the 1930s, similar structures have been documented at nineteen other sites in Georgia, North Carolina, and Tennessee, with the Ocmulgee structures being the oldest.<sup>3</sup> The lodge that was

3. <<http://www.nps.gov/ocmu/Macon-Plateau.htm>>, accessed March 11, 2004.

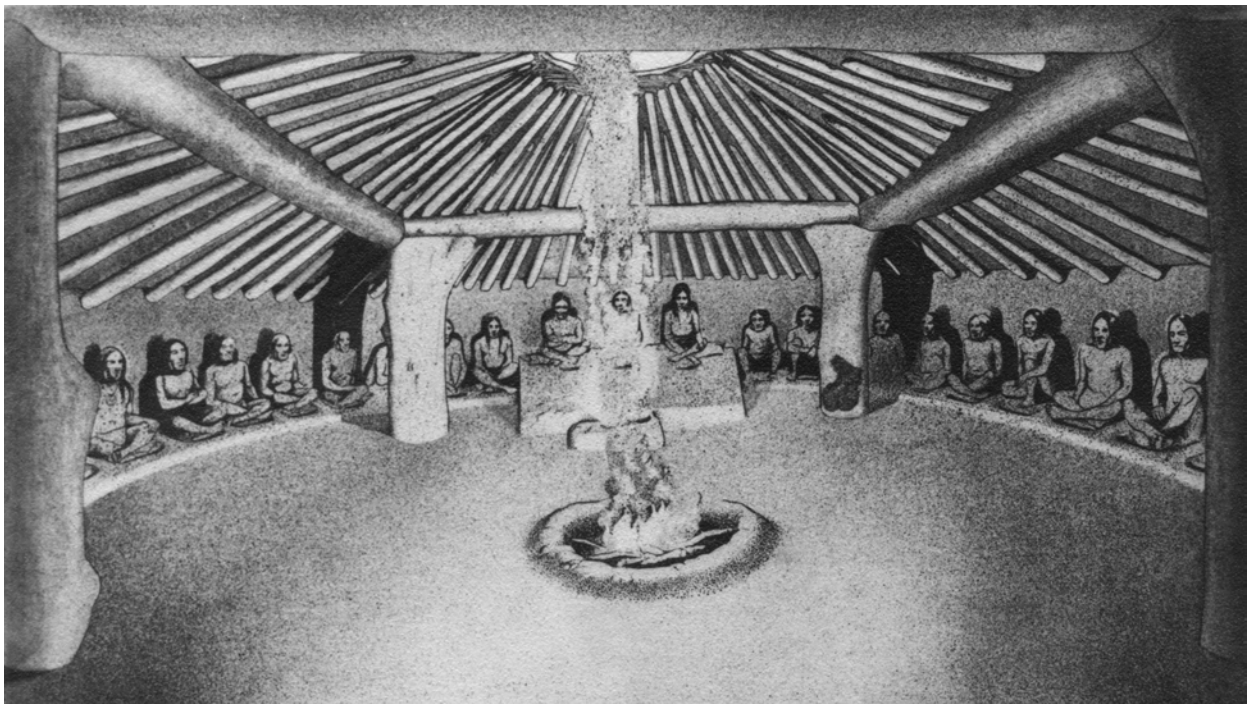


FIGURE 1. Artist's conception of ceremony in Earth Lodge. (from Ewer's exhibit plan for Ocmulgee, 1940)

## Historical Background & Context

reconstructed at Ocmulgee National Monument in 1937 has been radiocarbon dated to around 1015 CE and was the largest and most elaborate of the Ocmulgee structures. Its discovery in 1934 was arguably the highlight of the massive archaeological study conducted at the site between 1933 and 1942, the largest such study ever conducted east of the Mississippi River.

Although some masonry structures in the desert Southwest that are contemporaneous with the Earth Lodge have survived with many of their essential features intact, water, rot, and termites have insured that very little remains of the earth and timber buildings constructed by the pre-Columbian Mississippian culture in what is now the southeastern United States. As a result, the pre-Columbian portions of the Ocmulgee structure are a unique and highly significant resource.

## Ocmulgee Old Fields

Around 1690, English traders from Charleston established a trading post on the Lower Trading Path at Ocmulgee, and some Creek Indians to re-establish themselves permanently at Ocmulgee around the same time. Although the Creeks abandoned Ocmulgee and retreated to the Chattahoochee River after the Yamasee War of 1715, they maintained their claim to the “Ocmulgee Old Fields” for another hundred years.



FIGURE 2. Artist's conception of Carolina traders arriving at Ocmulgee, c. 1700. (from Ewers' "Exhibit Plan for Ocmulgee National Monument Museum," 1940)

The Creeks could not account for the origin of the great mounds on the Macon Plateau but believed, as the famed naturalist William Bartram recorded in the 1770s, that Ocmulgee was “the first town or settlement, where they sat down (as they term it) or established themselves, after their emigration from the west, beyond the Mississippi, their original native country.”<sup>4</sup> Bartram also left one of the earliest descriptions of Ocmulgee when he saw the place, already long abandoned, in 1773:

About seventy or eighty miles above the confluence of the Oakmulge and Ocone, the trading path from Augusta to the Creek nation, crosses these fine rivers, which are there forty miles apart. On the east banks of the Oakmulge, this trading road runs nearly two miles through ancient Indian fields, which are called the Oakmulge fields: they are the rich low lands of the river. On the heights of these low grounds are yet visible monuments, or traces, of an ancient town, such as artificial mounds or terraces, squares and banks, encircling considerable areas. Their old fields and planting land extend up and down the river, fifteen or twenty miles from this site.<sup>5</sup>

In 1802, Benjamin Hawkins recommended establishment of a fort at Ocmulgee, and in 1805, the Creeks were persuaded to cede their claims east of the Ocmulgee River. Even then, however, they retained title to fifteen acres around the mounds until Creek claims were finally extinguished in 1826. Two years later, the land was auctioned for white settlement and destruction of the Ocmulgee Old Fields began. By 1840, most of the site was part of the Dunlap Plantation and was being cleared and brought under cultivation. In 1843, the Central of Georgia Railroad was cut through the southwestern side of the plateau, destroying a large part of Mound B and littering the landscape with artifacts and “a number of skeletons and human bones.”<sup>6</sup>

George White thought the mounds worthy of mention in his *Statistics of the State of Georgia*, which was published in Savannah in 1849. But that

4. William Bartram, *Travels Through North and South Carolina, Georgia, East and West Florida* (Savannah, GA: The Beehive Press, 1973 facsimile of the London edition published in 1792), p. 53.
5. Bartram, p. 52-53.
6. David J. Hally, *Ocmulgee Archaeology, 1936-1986* (Athens and London: University of Georgia Press, 1994), p. 16.

did not prevent construction of a railroad round-house near Mound C or destruction of part of the so-called McDougal Mound to provide earth fill for Main Street in East Macon. By 1856, when the Dunlap House, now the Superintendent's residence, was built, much of the plateau was under cultivation and routine plowing was degrading more and more of the archaeological resources. In 1871, the Central of Georgia abandoned their old railroad line across the plateau and replaced it with another further north, repeating at Mound C the archaeological disaster that had occurred at Mound B in 1843.<sup>7</sup>

Georgia historian Charles Colcock Jones, Jr., (1831-1893) was the first to take a professional archaeological interest in Ocmulgee when he described it in his acclaimed *Antiquities of the Southern Indians, Especially Those of Georgia*, published in 1873. His study of two of the burials exposed at Mound C in 1871 correctly concluded that the mound contained both historic and pre-Columbian burials.

Beginning in 1881, the Smithsonian Institution's Bureau of American Ethnology (BAE) conducted archaeological investigations at ten sites in Georgia, but none were in middle Georgia. Their work coincided with a renewed interest in Indian culture in the late nineteenth century, but along with that interest came the looters and collectors, whose destruction of pre-Columbian sites, especially in the Southwest, helped spark passage of the Antiquities Act in 1906, establishing a Federal role in preservation of such sites. In the early twentieth century, residential and commercial growth in East Macon along with continued expansion of the nearby Bibb Manufacturing Company brought development closer and closer to the well-known mound complex. By the 1920s, Mound C was being plundered by pot hunters and motorcyclists were using Mound A for races, leading one Macon civic leader to lament "the path worn in the mound [that] is letting erosion set in and destroy the treasures of centuries."<sup>8</sup>

In 1922, General Walter Alexander Harris, a prominent Macon attorney who later authored several

papers on Creek Indian history, began a personal campaign to acquire and preserve the mounds, but not until April 1929 did he succeed in luring Matthew W. Stirling, the new Chief of the Smithsonian's BAE, to Macon to inspect the site. The onset of the Great Depression temporarily stalled Harris' campaign to preserve Ocmulgee, but in the spring of 1932, he renewed his campaign with the help of the local historical society and Georgia Congressman Carl Vinson. By June 1933, the Macon paper was reporting that the Smithsonian was seriously considering archaeological investigation at Ocmulgee.

Harris was also encouraged by Walter B. Jones, director of the Alabama Museum of Natural History, who was spearheading efforts to acquire the spectacular Moundville site on the Black

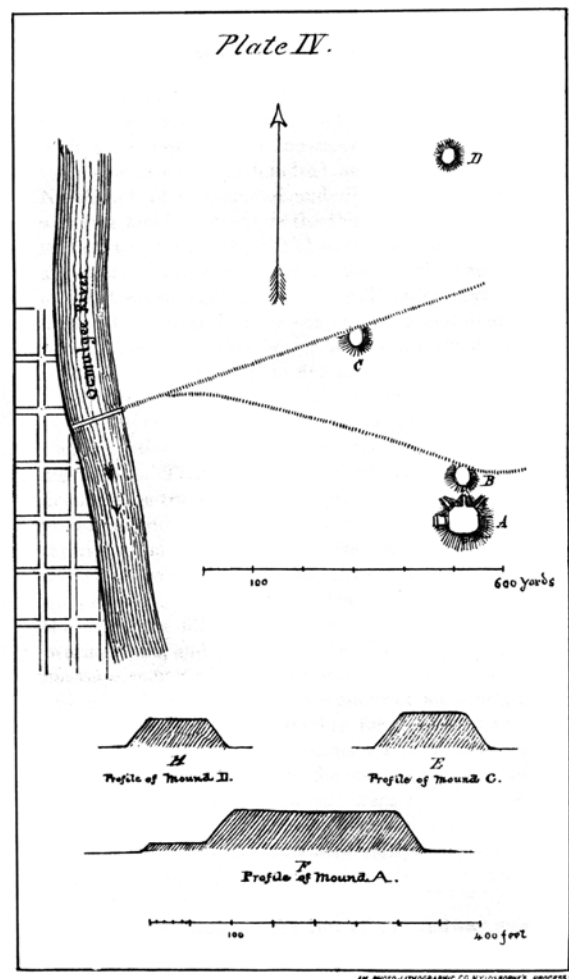


FIGURE 3. Plan of Ocmulgee as drawn by C. C. Jones, 1873, showing railroad rights-of-way through the site. The Earth Lodge is not depicted. (Plate IV, Jones, *Antiquities of the Southern Indians*)

7. Charles Colcock Jones, Jr., *Antiquities of the Southern Indians* (1873, reprint Spartanburg, SC: The Reprint Co., 1972), p. 159.
8. "Country's Most Perfect Mounds Found Near City," *Macon Telegraph*, November 17, 1933,

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Warrior River below Tuscaloosa. In October 1933, Harris called a meeting in Macon at which the Society for Georgia Archaeology was formed, with Macon surgeon and amateur historian Charles Cotton Harrold as president, businessman Linton M. Solomon as secretary, and General Harris himself as executive committee chairman. Through their efforts, the Macon Junior Chamber of Com-

merce began a concerted effort to purchase and restore the Indian mounds as a city park, and by the middle of November 1933, had obtained options to purchase Mound A and other nearby mounds.

By December 1933, the Junior Chamber of Commerce had raised enough money to exercise Harris' options to purchase Mound A, also called the Great

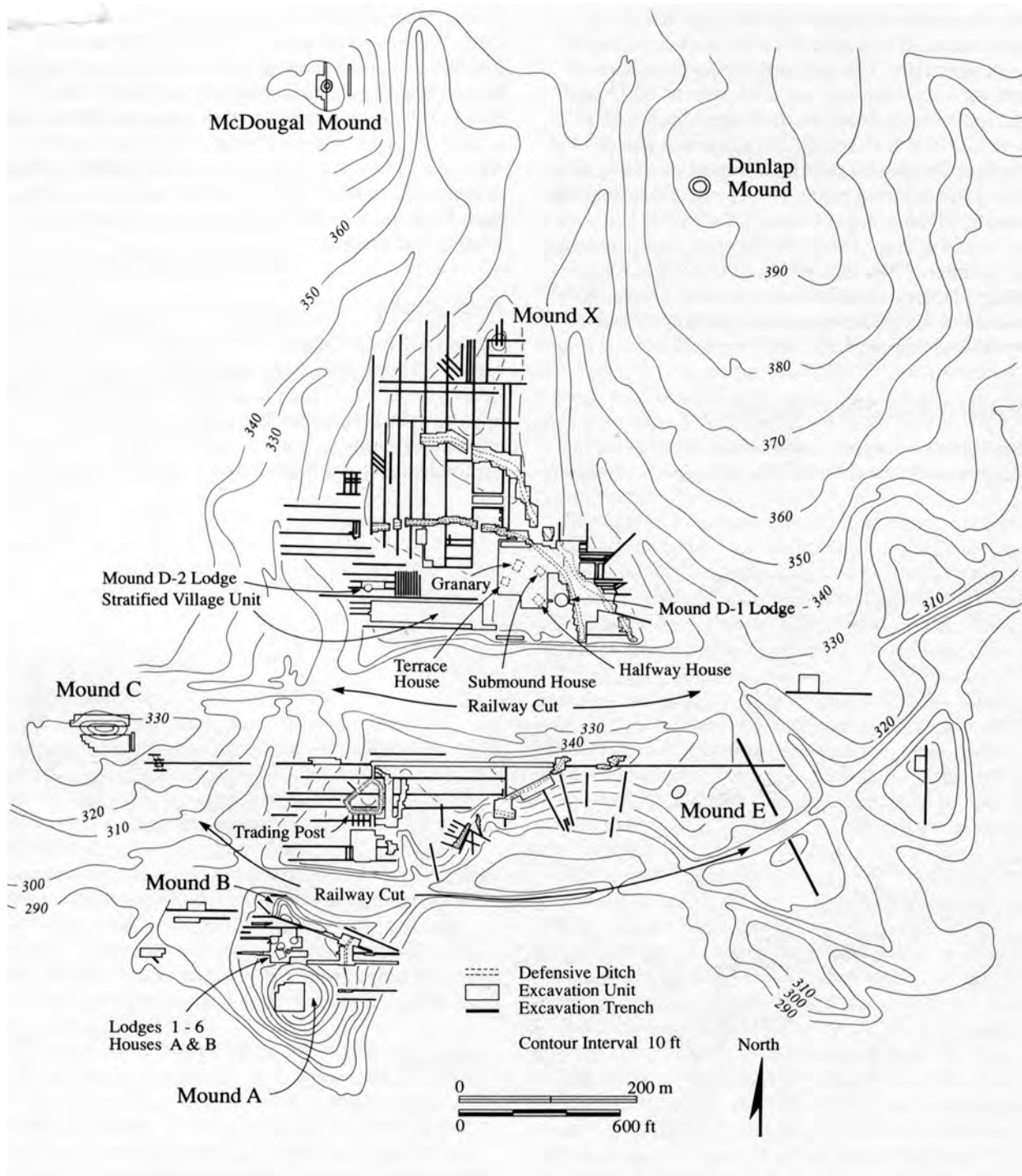


FIGURE 4. Excavation units at Ocmulgee, 1934-1942, with Earth Lodge designated "Mound D-1 Lodge." (from Hally, *Ocmulgee Archaeology*)



Temple Mound, and the Lamar site two miles down river, and the Society for Georgia Archaeology had gained access to sixteen other sites in the Macon area. On December 7, the Federal government's newly- created Civil Works Administration (CWA) announced a grant to fund employment of 150 unskilled laborers, 50 skilled tradesmen and equipment operators, and five supervisors to begin preparing the site for archaeological excavation. Simultaneously, the Smithsonian Institution announced that it would carry out archaeological excavations at Ocmulgee, one of five such archaeological projects that it conducted under the auspices of the CWA.<sup>9</sup>

Arthur Randolph Kelly, an anthropologist at Harvard, was appointed to direct the project, with James Alfred Ford as his assistant. Ford would be particularly useful because he had just completed a stint at Marksville, Louisiana, supervising over a hundred unskilled laborers in archaeological investigation at that site, the first such project funded by

the CWA. Both men arrived in Macon on December 13, 1933, and on December 20, work got underway clearing trees and brush from Mound A and building a better road into the site. Utilizing a variety of funds from the Federal Emergency Relief Administration (FERA), the Works Progress Administration (WPA), and other Federal programs, archaeological investigation would continue almost uninterrupted for over eight years.<sup>10</sup>

## Ocmulgee National Monument

In January 1934, the National Park Service agreed to consider inclusion of Ocmulgee in the national park system, and in February Rep. Carl Vinson and Sen. Walter F. George introduced legislation in both chambers of Congress to establish a 2,000 acre park around the mounds. In June 1934, the legislation

9. Kelly, "Exploring Prehistoric Georgia," p. 185.

10. Hally, *Ocmulgee Archaeology*, p. 17-19.



FIGURE 5. Excavation of pre-Columbian cornfield near Earth Lodge, 1935. (OCMU Coll.)

## Historical Background & Context

passed and FDR authorized establishment of Ocmulgee National Monument, but no money was appropriated to actually establish the park. Virtually all of the labor for the initial development of Ocmulgee, including reconstruction of the Earth Lodge, was provided under the auspices of the CWA or WPA. At one time as many as six hundred men and a few women were working at Ocmulgee, with as many as three hundred working as laborers for the archaeological investigation. Some skilled labor was employed but the majority of the dozens of workmen who labored on the Earth Lodge reconstruction were unskilled, most of them from the local community and grateful for any kind of employment in the depths of the Great Depression

The Roosevelt administration initiated the Federal government's first major funding for cultural development, beginning with the emergency relief programs in 1933- 1934. The Smithsonian was the impetus for archaeological investigation at Ocmulgee, but it was the New Deal's Civil Works Administration (CWA) that funded employment of 150 laborers to begin excavation of the site in December 1933. In the spring of 1935, Roosevelt initiated one of his most ambitious programs, the Works Progress Administration (WPA), later the Works Projects Administration, which provided

massive employment relief until fiscal conservatives and World War II brought it to an end in 1942.

In January 1936, the WPA's district office submitted a project proposal to Georgia's State Works Progress Administration, which administered Federal funding at the local level. Sponsored by the City of Macon, the project included funding to reconstruct the Earth Lodge as well as installation of electrical, telephone, and water systems at the site. However, byzantine Federal regulations required that the project proposal be reformulated after it was submitted, and the project was not finally approved until October 7, 1936, with notice that the project funds would be available in November.<sup>11</sup>

Meanwhile, the largest archaeological investigation in the country was producing splendid results. The first complete pot was unearthed at McDougal Mound in January 1934, and discoveries piled up after that, including the preserved remains of a pre-Columbian corn field. In February 1934,<sup>12</sup> trenching began near a low, rather nondescript hillock a few yards east of the corn field, and the project's most

11. WPA Project State Serial #5449. James T. Swanson, "Discovery, Excavation, Restoration of a Prehistoric Indian Ceremonial Earth Lodge, Ocmulgee National Monument" (NPS, 1939), p. 27.



FIGURE 6. View of vicinity of Earth Lodge, 1935, showing temporary shelter erected to protect the excavation. (NPS-SERO-CR, 2004)

spectacular discovery was made as the remains of the Earth Lodge were slowly exposed in March 1934.

In spite of the obvious significance of the site, the President's authorization of the monument did not allow use of Federal funds for land acquisition, and over the next two years, local fund-raising efforts fell far short of the original goal. By December 1936, the Society for Georgia Archaeology, the Macon Junior Chamber of Commerce, and the Macon Historical Society had gained title to only 678.48 acres of land, which included the Lamar site. Nevertheless, that was enough for President Roosevelt to proclaim establishment of Ocmulgee National Monument on December 23, 1936. Two days before, reconstruction of the Earth Lodge had gotten underway. When complete, the reconstructed Earth

Lodge would prove to be the site's most-popular attraction for the 41,000 visitors who visited Ocmulgee between July 1, 1938, and June 30, 1939.<sup>13</sup>

Funding for a visitors center was slow to materialize; but in 1938, construction finally began on a controversial Art Moderne structure designed by James T. Swanson. "Patterned after buildings of the New York World's Fair," the *Macon Telegraph* reported erroneously, it was nevertheless a dramatic departure from the rustic structures that the public was accustomed to seeing in the nation's parks. Construction was slow, and when funding was suspended in 1941, the building was only about 65% complete, but still had room for ERA and NPS offices and "a large quantity of archaeological material."<sup>14</sup> After the war, the park was severely understaffed and material shortages delayed resumption of construction until 1950. The building was finally dedicated on 1 November 1951.

12. Hally, *Ocmulgee Archaeology*, p. Ben A. Nelson, et. al., "Analysis of Mound D and Macon Earth Lodge (1bi3) Materials at the Southeast Archaeological Center" (unpublished mss, Florida State University, May 1974), p. 40.

13. Annual Report FYE 1939

14. Marsh, *Administrative History*, p. 33.



FIGURE 7. Ocmulgee visitors' center as it appeared between the time construction was suspended in 1941 and its completion in 1951. (OCMU Coll.)

## Historical Background & Context

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# Chronology of Development and Use

This section of the historic structure report is based on a synthesis of historical documentation and physical evidence and provides an outline of the physical construction of the Earth Lodge and its later modifications. This chronology begins with a discussion of earth lodges as a type of building and how the Macon lodge fits into that typology and continues with a description of the building's origins that is intentionally brief, since much of what is known about the original structure is best presented in a description of the rediscovery and reconstruction of the building in the 1930s. In addition, comprehensive interpretation of the original pre-Columbian lodge is outside the scope of the present report, which is meant to focus on the modern structure and how well it is protecting the ancient

artifact. This section continues with an outline of repairs and modifications to the building over the four decades after it was opened to the public in November 1937, and concludes with a description of more- recent repairs and alterations that have brought the building to its present state.

## Earth Lodges

Circular buildings with conical or domed roofs are an ancient building form, commonly found in many parts of the world as utilitarian, residential and ceremonial structures. A number of observers, including Dr. Arthur Kelly and Charles Fairbanks, the foremost authorities in early interpretation of



**FIGURE 8.** Diorama in Ocmulgee museum, illustrating possible use of the Earth Lodge. (T. Jones, SERO-CRD, 2004).)



**FIGURE 9.** Wichita Indian “grass house,” c. 1890.  
(Image accessed April 22, 2004, at <http://www.texasindians.com/wichita.htm>)

the Earth Lodge at Ocmulgee, noted that the circular kivas built by the Anasazi in the American west were similar to the contemporaneous “earthlodges” built by the Mississippian people in the east. That does not, however, imply a cultural affinity, since wigwams, igloos, kraals, earth lodges, Wichita “grass houses,” and other such circular forms of building were developed independently as common-sense solutions to building problems in many ancient cultures.<sup>15</sup>

When the Earth Lodge was initially discovered in 1934, Dr. Kelly, who directed its excavation, identified it as a “ceremonial council chamber” and the plans for reconstruction two years called it simply “Council Chamber.” In his 1938 report on the building’s excavation and reconstruction, however, Kelly identified the structure as a “ceremonial earth lodge,” which was apparently the first time that the term “earth lodge” was used to identify “an archaeologically defined structure” in the Southeast.<sup>16</sup> With a comprehensive understanding of the region’s archaeology only just then beginning to develop, it is not surprising that Kelly and other archaeologists and ethnographers turned to contemporary work in the western United States in an attempt to make sense of their finds at Ocmulgee. Interpretation of the archaeological evidence for the Earth Lodge has

evolved since that time, and Dr. Lewis Larson’s analysis in the 1980s presents a significant and convincing reinterpretation of the resource.

As early as 1881, Lewis Henry Morgan described “earth lodges” in the Sacramento Valley and “dirt lodges” in the northern Great Plains, both of which, like the Southwestern kiva, bore certain similarities to the Ocmulgee lodges. As a result of common usage in the nineteenth century, the term “earth lodge” came to be applied to any large, circular building with a sod-covered roof on pole rafters supported by a timber post-and-beam frame.

Between 1906 and 1918, Gilbert Wilson documented numerous lodges of the Plains Indians, and his published work long remained one of the most detailed analyses of these structures. In the 1920s, Ralph Linton also drew comparisons between the earth lodges built by the Mandan of the northern Plains and the indigenous buildings of the Muskogean people of the Southeast as they were described by James Adair, William Bartram, and Benjamin Hawkins in the eighteenth and early nineteenth centuries.<sup>17</sup> Linton concluded that

some type of earth-covered dwelling has been used over a practically continuous area extending from eastern Siberia to the Carolinas . . . [T]hroughout this vast territory the earth lodge is nearly always associated with an old, if not the oldest, cultural stratum. . . . The wide distribution and evident age of the earth lodge in North America strongly suggest that the use of this type of dwelling was a feature of some very ancient generalized American culture, possibly even of that of the Asiatic migrants who were ancestral to the North American Indians.<sup>18</sup>

The Creeks appear to have built rectangular residences, but like the Chickasaw, the Cherokee, and other southeastern tribes, they also built great circular (sometimes described as octagonal) communal or ceremonial structures. For the Creeks these buildings, used mainly in bad weather, were called *tcoko’fa* or *tcoko’fa-thlako*, and closely resembled the Chickasaws’ “hot houses” and the Cherokees’ “rotundas.” An early nineteenth century

15. Charles H. Fairbanks, “The Macon Earth Lodge,” *American Antiquity* (October, 1946), p. 106; A. R. Kelly, “Exploring Prehistoric Georgia,” *Scientific American* (April 1935), p. 187.

16. Lewis Larson, “The Case for Earth Lodges in the Southeast,” p. 105, in *Ocmulgee Archaeology, 1936-1986*, edited by David Hally (Athens and London: University of Georgia Press, 1994).

17. Larson, p. 107.

18. Ralph Linton, “The Origin of the Plains Earth Lodge,” *American Anthropologist* (1924 Vol. 26), p. 256, accessed at <http://www.publicanthropology.org/Archive/AA1924.htm>, May 26, 2004.

description of a Creek “town house,” as they were also sometime called, shows some similarities to the Earth Lodge:

The town house is a large building built round at the bottom for three or four feet high out of sticks and mud with large posts set round which support other plates on which too rest the rafters. On the last plates rests a large beam which supports another large post in the center against which rest the remainder of the rafters so as to bring the roof to a point in a conical form. On these rafters are tied small lathes which support . . . the roof . . . There is only one door which makes it as dark as midnight.<sup>19</sup>

A central fire pit was always present, presumably with a smoke hole in the roof, and the clay floors of these structures were typically finished with a special clay that could be packed to a hard, dust-free surface.<sup>20</sup> All of these features are present in the Ocmulgee Earth Lodge.

Despite some obvious similarities with those structures, Dr. Kelly thought that “the structural affinity of the Macon Earth Lodge is closer to Earth Lodges [sic] of the western United States than to the type of council and ceremonial houses described by early ethnographers for Indian tribes resident in the southeastern section of the country.”<sup>21</sup> Plains earth lodges were especially intriguing since they were so well- documented, having been built and used within living memory, and because the Civilian Conservation Corps (CCC), which figured prominently in the excavations at Ocmulgee, was also reconstructing some of the Plains lodges at On- A- Slant village at Fort Abraham Lincoln State Park in North Dakota. Inhabited between the 1570s and 1780s, the village had at least 86 lodges, possibly as many as 125, and five of these were reconstructed in the traditional manner and were dedicated in the summer of 1940.<sup>22</sup> In recent years, the lodges have been rebuilt on concrete slabs with other, more-permanent modern materials and construction techniques, similar to those used in reconstruction of the Macon Earth Lodge in 1937.<sup>23</sup>

19. John Reed Swanton, *The Indians of the Southeastern United States* (Washington, D. C.: reissued by Smithsonian Press, 1988), p. 392.

20. Swanton, p. 392.

21. Kelly, p. 187.

22. Superintendent, Fort Lincoln State Park, to Superintendent, Ocmulgee National Monument, September 8, 1939.



FIGURE 10. Conceptual view of the Great Kiva at Chetro Ketl, Chaco Canyon. (Image accessed February 26, 2004, at <http://sipapu.gsu.edu/html/kiva.html>.)

For many years, Kelly’s and Fairbanks’ interpretation of the Macon lodges as a regional variation of the Plains structures went unchallenged, and according to Larson, its very existence served to help identify other structures in the region as being earth lodges. In the 1970s and 1980s, however, doubts emerged as earth *embanked* structures were distinguished from earth *covered* structures. Larson sites Daniel Crouch’s 1974 study of southeastern earth lodges, in which Crouch concluded:

It may be best to think of ‘earth lodge’ as any ceremonial or domestic building of human construction on which earth, loose or sod, has by deliberate human action been placed either on the walls to a significant height or over the walls and at least part of the roof, as a part of its architecture. While the full earth coverage and perhaps semi- subterranean floor may be applicable elsewhere, they are not suitable criteria for South Appalachian ceremonial structures.<sup>24</sup>

Larson also sites James Rudolph’s 1984 study of southeastern earth lodges where he defined them as being above ground buildings with “either an earth- covered roof or an earth embankment buttressing the exterior walls.” As it turned out, only a handful of the structures that he identified showed any indication at all that they might have been earth covered in the manner of the Mandan earth lodges.

23. Memo and photographs from Jeff Hoffer, historian at Fort Abraham Lincoln State Park in North Dakota, provided documentation for the reconstructed lodges at that park.

24. Larson, p. 105.



## Chronology of Development and Use

Two years later, Larson offered a convincing argument that “that earth- covered buildings were not characteristic of the prehistory of the [Southeast]” at all.<sup>25</sup> Larson began by casting a critical eye on the ethnohistorical evidence gleaned from the eighteenth and early- nineteenth century accounts of James Adair, William Bartram, and Benjamin Hawkins. “However we read the eighteenth- century syntax of Adair,” Larson wrote, “it is not easy to conclude” that the buildings described by Adair were earth or sod covered like the lodges on the Great Plains. Furthermore, both Bartram and Hawkins clearly describe the use of cypress and pine bark as roof coverings and nowhere suggest the use of sod or earth as a final roof covering. Significantly, however, Adair and Hawkins described the use of clay as an *underlayment* for bark or thatched roof coverings, with the clay providing some insulation and, more importantly, serving to prevent sparks from the fire pit igniting the roof.<sup>26</sup> Hally documented a similar use of clay as an underlayment in structures that he examined at several locations in the Southeast.<sup>27</sup>

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25. Larson, p. 105.

26. Larson, p. 107.

27. David J. Hally, “As caves below the ground,” in *Between Contacts and Colonies*, edited by Cameron B. Wesson and Mark A. Rees, p. 91.

In addition to ethnohistorical evidence, Larson outlines the archaeological evidence for southeastern earth lodges and finds that out of the hundreds of Mississippian buildings that have been excavated, only four have published descriptions indicating earth- covered roofs, with the Macon Earth Lodge being the earliest and the best known. That fact alone, Larson thought, warranted re- examination of some of the long- held conclusions regarding those structures.<sup>28</sup>

At all but one of the four sites, the argument for earth- covered roofs was based on interpretation of a layer of clay or earth that was deposited on the floor *beneath* fallen roof timbers. At the Earth Lodge, Kelly and Fairbanks surmised that clay or earth covering the structure had filtered through as the cane underlayment burned away but before the roof timbers burned to the point of collapse. Larson points out, however, that there are alternative explanations:

The most plausible of the alternative explanations, one derived from the ethnohistorical data, suggests itself. The presence of the burned daub on the floors of the burned structures may well be attributable to the use of an insulating layer of

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28. Larson, p. 110.



FIGURE 11. View of reconstructed Mandan Earth Lodges at On-A-Slant, Fort Abraham Lincoln State Park in North Dakota. (Photo courtesy of Jeff Hoffer, Fort Abraham Lincoln State Park)



daub over the roof timbers and beneath the roof thatch or other covering. . . . This construction practice, described by both Adair and Hawkins. . . could very likely have been the source of the burned daub found on the excavated floors of the supposed earth lodges in Tennessee, North Carolina, and Georgia.<sup>29</sup>

The third main reason that Larson gave for questioning interpretation of the Macon structure as an earth lodge related to the climatic differences between the Great Plains and the southeastern United States and in some ways is the most compelling of his arguments. “My point here is a simple one,” he wrote:

It does not appear reasonable to postulate pre-historic buildings with earth- or sod- covered roofs in areas where there are large amounts of rainfall. Such structures would simply not be tenable because, given the nature of aboriginal construction techniques, any earth- covered roof would promptly dissolve and pour onto the floor during the first heavy rain.<sup>30</sup>

Given the amount of rainfall typical in the southeast, roofs had to be either impenetrable or quite steep in order to shed water quickly off the structure. “In either case,” Larson wrote, “an earth or clay roof was not a plausible solution.”

None of this is to imply criticism of Kelly’s or Fairbanks’ professional abilities, since their conclusions were perfectly logical given the then- current understanding of aboriginal architecture. While definitive interpretation may never be possible, Larson provides an alternative interpretation of southeastern “earth lodges” that cannot be ignored.

## Original Construction and Loss

The Earth Lodge at Ocmulgee is the largest of the nine Earth Lodges that were discovered in Bibb County, Georgia, in the 1930s. Mississippian Earth Lodges have also been documented at nineteen sites in Georgia, North Carolina, and Tennessee, but none are as elaborate or as well preserved as the

Earth Lodge at Ocmulgee. Radiocarbon dating in 1962 of some material from the lodge established a construction date around 1015 CE.<sup>31</sup> Unfortunately the more- precise dating that might be possible through dendrochronology has not yet been conducted, apparently for lack of base- line data for middle Georgia.<sup>32</sup>

Two features of the Ocmulgee Earth Lodge set it apart from nearly all of the other lodges that have been identified. The most prominent is the low platform, shaped like a stylized eagle or buzzard, on which there was seating for three tribal elders or other important figures. In addition, around the perimeter of the lodge is a series of 47 low clay seats. It was this combination of features that left no doubt that the Earth Lodge was a ceremonial and not a residential structure, given over to civic and religious uses.

In 1962, wood from the pre- Columbian roof of the Earth Lodge was carbon- 14 dated to around 1015 CE, and archaeological excavation showed evidence of earlier structures on the site or nearby. How long the Indians used the Earth Lodge is not known. However, there are several areas in the existing floor that were patched with clay of a different color and composition from the original, and the archeologists also found evidence of anomalous post holes that suggested repairs to the building’s structure during its period of active use. It seems likely that the building was used for perhaps a generation, but rot and termites must have quickly taken their toll.

Just as the demise of the community as a whole remains unexplained, the reason for destruction of the Earth Lodge is not known. Archaeology showed clearly that the building had burned in pre- Columbian times, apparently by firing the perimeter of the building, since the outer ends of the rafters fell first.<sup>33</sup> The fact that the building appeared to have been emptied of artifacts prior to the fire suggested to the archeologists that it was deliberately burned.<sup>34</sup> The lodge might have been destroyed as

29. Larson, p. 112.

30. Larson, p. 114.

31. Rex L. Wilson, “A Radiocarbon Date for the Macon Earth Lodge,” *American Antiquity* (Vol. 30, No. 2, 1964), pp. 202-203.

32. Hally, *Ocmulgee Archaeology*, p. 43.

33. Charles H. Fairbanks, “The Macon Earth Lodge,” *American Antiquity* Vol. 12, #2, October 1946, pp. 94-95, mentions how roof collapsed.

34. Swanson, p. 26.



FIGURE 12. Dr. Kelly standing atop Earth Lodge ruins, December 25, 1933. (Swanson, OCMU Coll.)



FIGURE 13. View east of Earth Lodge excavation as plan of building emerged, late fall 1934. (Swanson, OCMU Coll.)



FIGURE 14. View northeast of Earth Lodge excavation, probably in late winter 1935. Posts are for the temporary shed built to protect the excavation. (Swanson, OCMU Coll.)

part of a ritual of renewal and purification, or it may have been burned simply because it had deteriorated to the point that it was unsafe. Whatever the reason for the fire, it destroyed the roof but effectively preserved the clay floor, seats, fire basin, and eagle effigy platform of the original building.

Hally and Williams report that a number of Mississippian platform mounds “are known to have begun as ground level or semi- subterranean structures with earth banked against their outer walls to a height of a meter or more. After abandonment, the interior of the structure was filled with earth to form a platform mound.” They go on to argue that the Earth Lodge “conforms to this wide- spread pattern and that after its destruction by fire the structure was covered with a mantle of earth and converted into a platform mound, which was then largely obliterated by plowing and erosion.”<sup>35</sup>

## Discovery

While the mounds remained landmarks for the native people and places of wonder to European explorers, the Earth Lodge itself disappeared from view for over 800 years.<sup>36</sup> However, from the first days of archaeological exploration at Ocmulgee in the 1930s, a small knoll some 70’ in diameter and perhaps three feet high was observed about 200’ southeast of the center of Mound D. In February 1934, Dr. Kelly ordered an exploratory trench in the area, which soon exposed what he described as “a rising shoulder of red clay . . . [that] suddenly dropped away to form a vertical wall.” By March 17, horizontal stripping of the earth with shovels and trowels had exposed what was clearly a highly significant structure, and construction of a protective shelter was begun.<sup>37</sup> By April 1934, the “circular council house,” one of the site’s most spectacular finds, lay exposed to view for the first time in over

35. Hally, *Ocmulgee Archaeology*, p. 89.

36. There are three primary sources of information on the archaeology of the Earth Lodge: Dr. A. R. Kelly's *A Preliminary Report on Archaeological Explorations at Macon, GA* (GPO 1938), James T. Swanson's *Discovery, Excavation, Restoration of a Prehistoric Indian Ceremonial Earth Lodge* (NPS, 1939), and Charles Fairbanks' "The Macon Earth Lodge" in *American Antiquity*, October 1946.

37. Hally, *Ocmulgee Archaeology*, p. 19. This reference appears to belie later uncertainty as to how long the remains were exposed before construction of the protective shelter.

eight centuries, and a model was under construction for exhibition in Georgia's booth at the Chicago World's Fair. Excavations at Ocmulgee continued until 1942, and during that time, the remains of eight similar structures were discovered on the Macon Plateau and elsewhere in Bibb County. None, however, were as elaborate, as large, or as well-preserved as the lodge discovered in the late winter of 1934.<sup>38</sup>

The extent of the lodge's remains were apparently fully exposed by the summer of 1934.<sup>39</sup> A clay floor, nearly 42' in diameter, was surrounded by the remains of a low clay wall, which was buttressed around the outside by a clay embankment that gave the structure its semi-subterranean character. Although most of the wall had been reduced to a few inches, a short section on the northeast side, which had been protected from plowing by the presence of a chinaberry tree, rose to nearly 30", and two clay pilasters marked the entrance to the building. Remains of a long, low entrance passage (originally some 26' long) were also exposed, along with evidence of reed matting that covered parts of its sides.

A circular fire basin, around 4- 1/2' in diameter, was set near the center of the space, which was encircled by a series of 47 low clay seats. Each seat was set a few inches above the floor and separated from the next seat by a low curb, and each was fronted by a shallow bowl or depression. While three of the other excavated lodges had similar clay seats, none had the low platform that lay opposite the entrance to the Earth Lodge. Sixteen feet long and nearly as wide, it was shaped to resemble an eagle or a buzzard and showed evidence of seating for three dignitaries.

Partially covering these features were burned timbers, charred cane, and other remains from the structure's fallen roof. The timbers and cane rested on a bed of clay that the archeologists speculated had filtered through to the floor as the cane covering the roof burned away. It was this condition that apparently was their only evidence for



FIGURE 15. Looking in a northeasterly direction toward entrance pilasters, with highest surviving portion of wall behind the workman in this image. (Swanson, OCMU Coll.)



FIGURE 16. View of operation to remove intact remains of passageway wall. (Swanson, OCMU Coll.)



FIGURE 17. View north at Ocmulgee, 1935, showing temporary enclosure of Earth Lodge at right, and one of the Dunlap's partially-demolished tenant houses at left. "Trench-like structures" have been excavated in foreground. (OCMU Coll.)

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38. Unfortunately, no precise chronology of the building's excavation has been located and field notes from the dig were apparently quite limited in scope.
39. The pre-Columbian features of the building will be described in more detail in "Physical Description" following this section of the HSR.

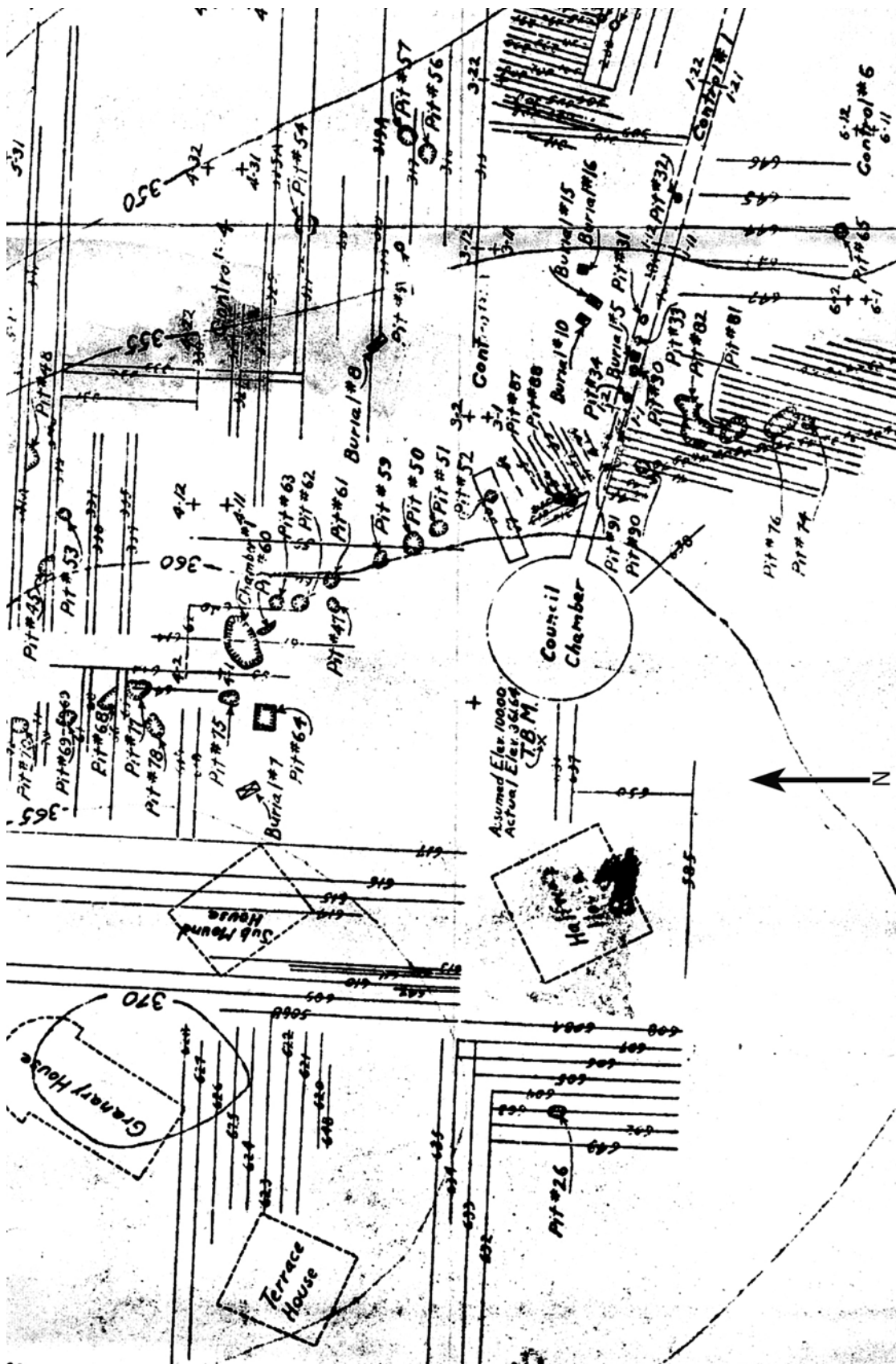


FIGURE 18. Part of "Key Map of Mound D, by Sessions, Oct 18, 1938," annotated with a directional arrow and showing excavations in the vicinity of the Earth Lodge or "Council Chamber." (OCMU Coll.)



assuming the structure to have been entirely earth-covered. However, as discussed above in this report, more- recent work suggests that the assumption may have been mistaken, since it appears more likely that the *underside* and not the *outside* of the roof was plastered with clay, as Hally documented in a number of structures that he excavated in the southeastern United States.<sup>40</sup>

Besides the questions concerning original treatment of the exterior of the structure, the burned timbers themselves proved difficult to interpret. Four large post holes formed an 18- foot square, and the burned remains of “four huge logs” along with the other timbers showed clearly that the post holes and large logs formed a framework that, with the encircling wall, supported the pole rafters for the roof. The absence of debris around the fire pit suggested to the archeologists that the smoke hole in the roof was at least seven feet in diameter, but beyond that, little was certain about the actual configuration of the roof structure. For several months, the charred timbers remained *in situ* while the archeologists, architects, and engineers discussed their meaning.

Only one artifact was discovered directly associated with the Earth Lodge, a large pottery vessel, about 16” in diameter, found crushed beneath the debris on the floor near the northeast post. When Fairbanks wrote his report in 1946, he was not able to examine the piece, but based on limited field notes he thought it was probably typical Bibb Plain ware from the Macon Plateau.

Even before excavation was complete, it was clear that the remains of the Earth Lodge were a find of tremendous significance. Eight other lodges were found in Bibb County, and numerous other examples of such structures were subsequently excavated in Georgia, North Carolina, and Tennessee. Some of the Plains Indians continued construction of similar buildings throughout the nineteenth century as well. But the Ocmulgee Earth Lodge was, according to Fairbanks, both “typologically and stratigraphically” the oldest such structure in the Southeast; and indeed, there are no other such ceremonial lodges anywhere in the country that are older or as well- preserved as the Macon lodge.

40. Cameron Wesson and Mark A. Rees, editors, *Between Contacts and Colonies* (Tuscaloosa, AL: University of Alabama Press, 2002), p. 91.



FIGURE 19. View of typical seats and remains of walls as excavated on south side of building. (Swanson, OCMU Coll.)



FIGURE 20. View of remains of wall and seats, with charred timbers in foreground. (Swanson, OCMU Coll.)



FIGURE 21. View of eagle effigy, 1935. (Swanson, OCMU Coll.)



**FIGURE 22.** View of effigy platform and central fire pit, with burned timbers still in place. (Swanson, OCMU Coll.)



**FIGURE 23.** View of Dr. Kelly, left with pipe and hat, and New Mexico graduate students completing excavation of the Earth Lodge floor in the summer of 1936. (Swanson, OCMU Coll.)



**FIGURE 24.** Macon Mayor Charles Bowden and unidentified companions paying a visit to the Earth Lodge in 1935 or early 1936. (OCMU Coll.)

As the remains of the lodge slowly emerged, it was immediately clear that exposure to the elements would rapidly degrade the clay of the lodge, and even before excavation was complete, construction began on a temporary shelter over the excavation (see Figure 18). The shelter was framed using log posts, headers, and rafters and was covered with sheets of corrugated metal roofing. Just inside the ring formed by the log posts, a low circular wall was constructed out of exceptionally long, hollow- core, vitreous- clay, “conduit” tile. With the excavation at least partially protected from the elements, detailed study of the remains continued for two years.

During the summer of 1936, Dr. Kelly utilized the services of six interns sponsored by the Laboratory of Anthropology in Santa Fe, New Mexico. Among other things, the students completed excavation of the interior of the Earth Lodge by removing the charred timbers that had been left in place until that time. They also retrieved fragments of unburned wood buried in the debris and, in all, catalogued over 1,500 samples. Dr. Kelly was optimistic that dendrochronological investigation of the samples would help establish a date for construction of the lodge, and in 1936 Gordon Willey collected numerous core samples from timber in the Macon area. A few years later, Dr. Florence Hawley at the University of Chicago collected samples as well, but concluded that tree- ring dating was probably not possible for the region. Besides the problem of locating the samples needed for comparison with thousand- year- old wood, samples that were collected were virtually useless due to the paucity of pronounced “checking rings” that are necessary for accurate dating.<sup>41</sup> It was at this time, too, that the timbers were “carefully preserved by soaking the pieces in a gasoline and paraffin solution,” a treatment intended to waterproof the material.<sup>42</sup>

## Reconstruction

Although establishment of a national park at Ocmulgee was authorized in June 1934, federal funding for park development remained doubtful. Prospects for funding brightened considerably later in the year, however, and Swanson reported that

41. Hally, *Ocmulgee Archaeology*, p. 42-43.

42. The same solution was used on circus tents, among other things, with disastrous results in a 1944 circus fire in Hartford, CT, which killed 167 people.

“definite consideration and serious study were [then] given to the problem of preserving and exhibiting intelligently the extant portions of the Earth Lodge.”<sup>43</sup> By the end of 1935, a plan for “restoration” of the “Council Chamber,” as it was then called, was underway.<sup>44</sup>

## Planning

A number of options were considered for the Earth Lodge, paramount among them protection of the pre-Columbian clay remains, but “almost from the beginning,” NPS architect James T. Swanson wrote, there was a desire to exhibit the Earth Lodge in some way. Unlike most of the rest of the excavated features at Ocmulgee, which would be re-buried, the Earth Lodge had to be seen. Some consideration was given to a plainly modern, permanent shelter

like the one built (but later dismantled) to protect the excavations at Mound C. In the end, that approach was rejected because it would, Kelly and Swanson thought, “seriously reduce the effectiveness of the exhibit.”<sup>45</sup>

In December 1935, a drawing of a proposed reconstruction of the lodge was completed by Swanson and his team. This initial plan envisioned retaining the hollow tile wall from the temporary shelter and adding to it a steel frame with steel columns concealed by the four large wooden interior support posts. Reinforced concrete slabs would finish the protective structure. The plan was completed in time for a visit by the NPS’ chief architect, Thomas C. Vint in December 1935 or January 1936. Although Kelly did not intend the plan to be formally submitted, it was anyway, and on March 25, 1936, it was approved by the NPS Director as the preliminary

43. Swanson, p. 13.

44. The project was called a restoration in the 1930s, but by today’s standards, the project would probably be classified as a reconstruction.

45. Swanson, p. 13.

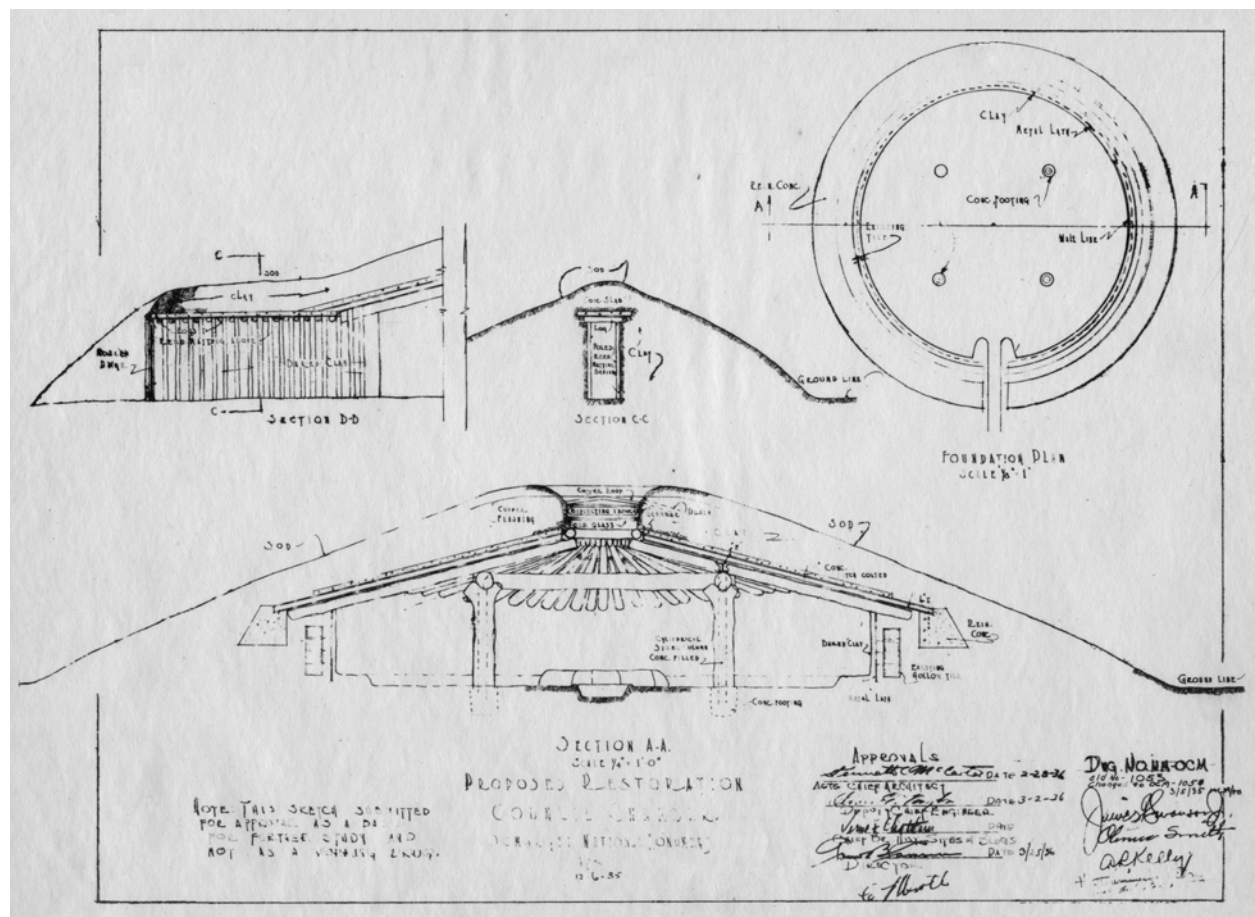


FIGURE 25. Swanson’s plan for “restoration” of the Earth Lodge. The relationship between the concrete shell and the reconstructed lodge was considerably different in the final plans. See Appendix A for final drawings. (OCMU Coll.)

## Chronology of Development and Use

design for reconstruction of the Earth Lodge.<sup>46</sup> Over the spring and summer of 1936, Kelly and Swanson continued to study the structure's details and to refine and expand the preliminary plan. In Washington, Swanson discussed the plans with NPS Associate Architect Sutton and P. B. Dansbro of the Branch of Engineering, who ultimately designed the concrete shell for the lodge. Swanson and Sutton appear to have made most of the design decisions for ventilation, lighting, and other aspects of the reconstruction.

A great deal of effort went into interpretation of the burned remains of the roof and how the roof should be reconstructed, a task that was hampered because the original height of the encircling wall was not known. Extrapolating from available evidence, however, Kelly and Swanson ultimately determined that the wall must have been between four and five feet high near the lodge entrance. Logic dictated a

uniform height for the wall, but the problem of how the rafters of the circular roof intersected what was obviously a square support frame remained problematic. In addition, while the absence of debris in the vicinity of the fire pit indicated that the roof was open to the sky, it was not possible to determine the precise configuration of the smoke hole from the roof debris that remained.<sup>47</sup>

A model of half of the proposed reconstruction was finally constructed out of plaster, clay, and twigs at a scale of  $1/4" = 1'$ , and this proved useful in working out a logical arrangement of roof rafters and beams.<sup>48</sup> In the end Swanson and Kelly recognized that "the actual solution and treatment of these [roof framing] details could only be finally solved during the course of construction and for that reason only the general method of construction was shown on the drawings."<sup>49</sup>

46. Drawing No. NM-OCM-1054 (originally #1053), "Proposed Restoration--Council Chamber, Ocmulgee National Monument."

47. Swanson, p. 12.

48. All of the construction models appear to have been lost except for a plaster model of the floor that remains in the museum collection.

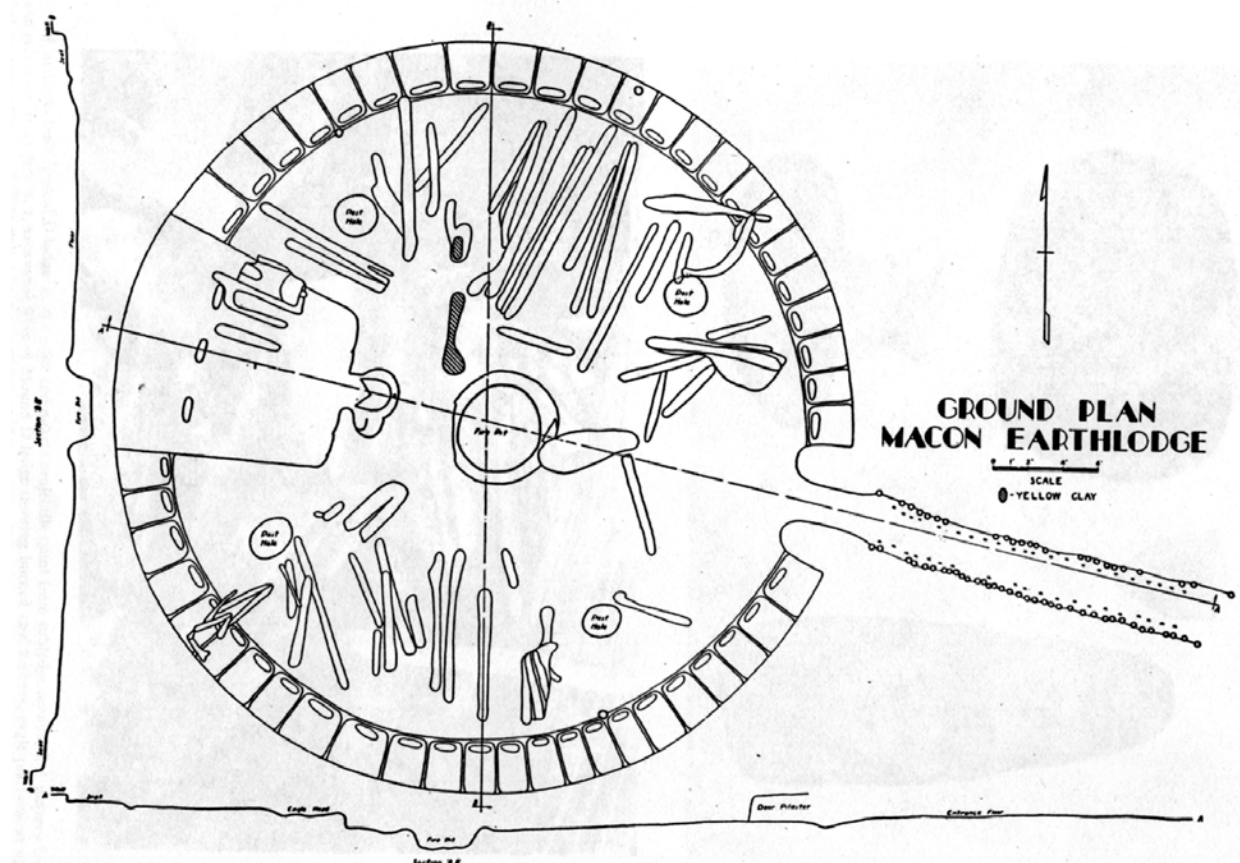


FIGURE 26. Plan of excavated Earth Lodge. (Swanson, OCMU Coll.)



In order that the correct species of wood be used in the reconstruction, specimens of the timber remains were sent to Dr. Volney Jones at the Ethnobotanical Laboratory, University of Michigan, for identification in March 1937. Fairbanks summarized Jones' findings:

The radial rafters were some species of the Southern Pine group. The resemblance to Longleaf Pine, *Pinus palustris*, was close, although there is a possibility that they were Loblolly Pine, *P. taeda*, or Shortleaf Pine, *P. echinata*. The large vertical posts were members of the White Oak series, some White Oak, *Quercus alba*, and others Post Oak, *Q. stellata*. In the absence of leaves and seeds, the cane could not be specifically identified except that it was either *Arundinaria macrosperma* or *A. tecta*. As both species grow in the immediate vicinity at present, either species, or both, could have been used.<sup>50</sup>

Although the width of the entrance passageway was never in dispute, there was some controversy regarding its precise length and its relationship to a double line of trench-like structures that was discovered running directly in front of the lodge entrance. Neither question was ever definitively resolved, but as investigation continued, the archaeologists were ultimately confident that the passageway's length was around 22'.<sup>51</sup>

Once the design of the interior was underway, the NPS Branch of Engineering proceeded with design of the concrete shell within which the lodge would be reconstructed. Preliminary plans had called for retention of the hollow tile wall of the temporary shelter and construction of a steel frame that would support the structure. The engineering studies showed, however, that a reinforced-concrete, "dome-like" roof set on a circular reinforced concrete wall would not require interior columns. The final plan resulted in a reinforced concrete structure which rose some three feet higher than originally anticipated in order to provide working room above the roof of the reconstructed lodge.<sup>52</sup>

In the spring of 1936, Swanson and his team submitted their final plans and specifications for the



FIGURE 27. Gen. Harris breaking ground for the Earth Lodge reconstruction, with James Swanson looking on, November 1936. (Swanson, OCMU Coll.)



FIGURE 28. View of footings, with one side of the wooden forms and the rebar for the first pour of walls in place. (Swanson, OCMU Coll.)

49. Swanson, p. 14-15.

50. Fairbanks, p. 97. Also the botanical report is quoted along with photographs in Swanson, pp. 19-24.

51. Swanson, pp. 9-12, 16.

52. Swanson, p. 17-18.



FIGURE 29. Pouring upper portion of north half of concrete wall, January 22, 1937. (Swanson, OCMU Coll.)



FIGURE 30. View of Earth Lodge, February 2, 1937, with north half of wall complete and rebar in place for south half. (Swanson, OCMU Coll.)



FIGURE 31. View of workmen pouring and tamping concrete wall at the Earth Lodge. (Swanson, OCMU Coll.)

reconstruction to NPS officials in Washington for their approval. On June 8, 1936, the plans, which included three sheets of drawings labeled NM-OCM- 1054- A, were approved by the Director. Copies of these plans and specifications are in Appendix A of this report.

## Construction

On November 19, 1936, reconstruction of the Earth Lodge got underway when General Walter A. Harris, who had begun the campaign to preserve Ocmulgee nearly twenty years earlier, used a pre-Columbian stone celt<sup>53</sup> to break ground for the project. Actual work began on December 21 when the temporary shed over the excavation was removed so work on the footings could begin. To protect the pre- Columbian remains during construction, the clay features on the lodge's interior were completely covered with as much as four feet of sand for the duration of the construction process. Although digging for the footings was constantly monitored by Kelly and Swanson, it is somewhat surprising that only one artifact, a polished, green, stone celt, was unearthed in digging the footings.<sup>54</sup>

**Concrete Shell.** While the footings were being excavated and poured, two sections of the passageway walls which had remained *in situ* were removed for study to determine precisely how the walls should be treated. To accomplish removal of these sections intact, a concrete backing for each section was poured, and workmen excavated behind and beneath the cured slab and wall section, allowing the sections to be lifted with the slab forming a backing for the remains of the wall.<sup>55</sup> Forms for the walls were constructed in movable sections constructed of tongue- and- groove boards installed vertically on a frame of 2" by 4" studs.

Work began on the north half of the wall, and the first pour of concrete raised the wall about three feet above the footings. Disaster was narrowly averted when, before the concrete could set, heavy rains forced emergency shoring to prevent damage to the clay features. The second pour brought the wall to the height of a ledge that would support the log rafters of the roof.<sup>56</sup> A total of four pours were used

53. A celt is a stone implement shaped like a chisel or ax head.

54. Swanson, p. 28.

55. Swanson, p. 30.

56. Swanson, p. 30-31.

to complete the north half of the wall, at which point the wooden form work was removed and re-erected for construction of the south half of the wall. Construction of the south half of the wall went smoothly, and with just three pours it was complete.<sup>57</sup>

“Framing the roof form,” Swanson reported, “proved a highly interesting and somewhat unique although not particularly difficult construction problem.”<sup>58</sup> While the walls were poured in sections, part of the strength of the roof depended on the concrete being delivered in a single pour. By the middle of February 1937, heavy timber supports were in place as were 2” by 6” rafters sheathed with 1”- thick, tongue- and- groove boards. Radial and circumferential reinforcing bars were then tied into the bars in the walls, and the wooden form was braced and cross- braced so that the roof could be poured, Swanson wrote, “without possible danger to the original clay walls and floor of the Earth Lodge.”<sup>59</sup>

The roof was poured using “a very dry mix . . . in a spiral manner,” and Swanson thought the work was “quite satisfactory,” even though he later found the surface of the underside of the roof to be somewhat honeycombed.

Considering the great quantity of steel in the roof, which rendered rodding and tamping rather difficult for even experienced concrete workers, and the fact that the majority of relief laborers used on this particular portion of the concrete work had no previous experience of this kind, the result was entirely satisfactory. There was certainly no evidence of structural weakness in the completed monolithic roof or in any other portion of the structure.<sup>60</sup>

The plans called for insertion of a terra- cotta pipe to form a vent for an exhaust fan, but it was decided during construction to create “a low concrete ventilating stack” that was integral with the roof itself, thus eliminating the need for flashing.

In constructing the concrete shell for the entrance passageway, Kelly and Swanson decided to extend the passage “only as far as actual evidence of the



FIGURE 32. View of construction of false work for pouring concrete roof. (OCMU Coll.)



FIGURE 33. View of completed form for roof, March 1, 1937. (Swanson, OCMU Coll.)



FIGURE 34. View of wooden false work for Earth Lodge roof, February 1937. (Swanson,



FIGURE 35. View of completed concrete shell, March 20, 1937. (Swanson, OCMU Coll.)

57. Swanson, p. 42.

58. Swanson, p. 36.

59. Swanson, p. 39.

60. Swanson, p. 41-42.



FIGURE 36. View of light derrick used to move logs into the lodge. (Swanson, OCMU Coll.)



FIGURE 37. View of east beam being readied to be hoisted into position. (Swanson, OCMU Coll.)

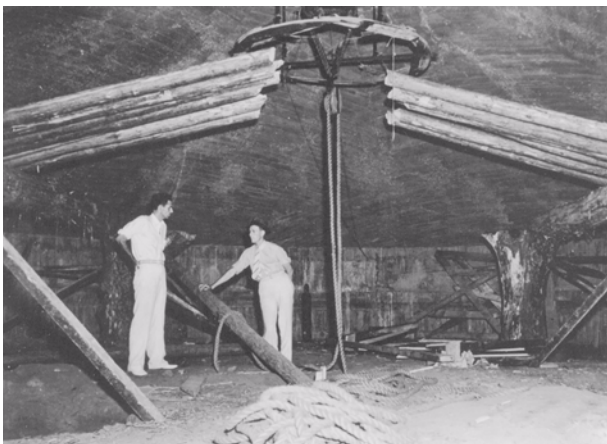


FIGURE 38. View of Earth Lodge interior with two beams and some of the rafters in place. (Swanson, OCMU Coll.)

clay floor could be found.” There was some evidence that the passage may have extended further, but since they did not understand the relationship between the passage and the trench- like structures in front of the lodge, they opted for a conservative approach. “If eventually some connection is proved to have existed between the Earth Lodge and this feature,” Swanson wrote, “continued restoration could be effected with less difficulty than if the passageway were extended across the trench.” In addition, the plans called for a passage height that was “greater than necessary,” apparently to allow easier visitor access, but the decision was made to keep the height to the absolute minimum.<sup>61</sup>

**Grading.** Concrete work was completed by March 20, 1937, and a line of 4” hexagonal terra- cotta drain tiles were placed around the entire perimeter of the building and carried down the slope to the east. A “waterproof membrane,” the character of which was not specified, was then placed over the “central portion” of the roof and the exterior surface of the concrete shell was given “several applications of hot coal tar pitch.” After thorough testing, Swanson assured himself that the structure was “completely waterproof.”<sup>62</sup>

Backfilling was done entirely by hand with wheelbarrow loads of dirt built up in thin layers in a spiral around the structure. As backfilling progressed, a layer of sand up to a foot thick was placed next to the building’s walls, and a layer a few inches thick was carried over the entire roof to help insure that water would be quickly carried away from the concrete down to the drain tiles and away from the building.<sup>63</sup>

Kelly and Swanson realized that reconstruction of the lodge within a concrete shell would affect the exterior profile of the lodge, making exterior dimensions “admittedly considerably greater than those of the original.” However, Swanson hoped “to create an illusion of less than actual height by the effective grading of the earth covering so that the visitor would not be conscious of the increased dimension.”<sup>64</sup> As a result, the slope of the exterior grading was less than the pitch of the interior log rafters, which increased the diameter of the finished

61. Swanson, p. 42.

62. Swanson, pp. 43-44.

63. Swanson, p. 44.

64. Swanson, p. 17.



structure at the ground “considerably.” The top of the exterior was also flattened for a radius of about six feet, which produced an appearance that Swanson and Kelly believed “would actually obtain if the ‘smoke hole’ were open to the sky and the earth graded to the rim of the opening.”<sup>65</sup> Finally, “for the sake of reducing maintenance and providing a neat and attractive finish,” the earthen roof of the structure was sodded, something Swanson and Kelly considered unlikely in the original structure.<sup>66</sup>

**Interior.** With the concrete and exterior of the lodge nearing completion, Swanson turned his attention to the interior. He requested that the PWA appoint James A. Ford as his “Collaborator” to provide technical assistance and research for the interior restoration. He was part of the team when excavations at Ocmulgee began and, under Dr. Kelly, directed excavation of the Earth Lodge itself in 1934. Ford, who was also recommended by Dr. Swanton at the Smithsonian, arrived on site in late May 1937, and work on the interior began almost immediately.<sup>67</sup>

Because there was no electricity on the site until later in the summer, it was necessary to use acetylene lights which, with the summer heat in Macon, turned the interior into an inferno, making the need for air circulation “acute,” according to Swanson. The exhaust fan for the lodge had already been delivered, and as a temporary measure, a one- cylinder gasoline motor taken from a small air compressor was rigged to the fan, which was mounted in a cowl at the vent on top of the lodge. The fan helped, but the lodge remained a stifling place to work.<sup>68</sup>

Another scale model of the lodge was built by Ford to help work out final details of the roof framing, before four large white oaks were cut, apparently from nearby woods, and transported to the site. Short- leaf pine logs were also cut for the large beams, and the oak tree trunks, which would form the uprights for the framing, were prepared by burning “socket- like seats” for the horizontal beams into the tops of the posts and a light derrick was then used to move the heavy timbers into the



FIGURE 39. View of interior of lodge after removal of protective sand layer but prior to reconstruction of clay walls. (Swanson, OCMU Coll.)

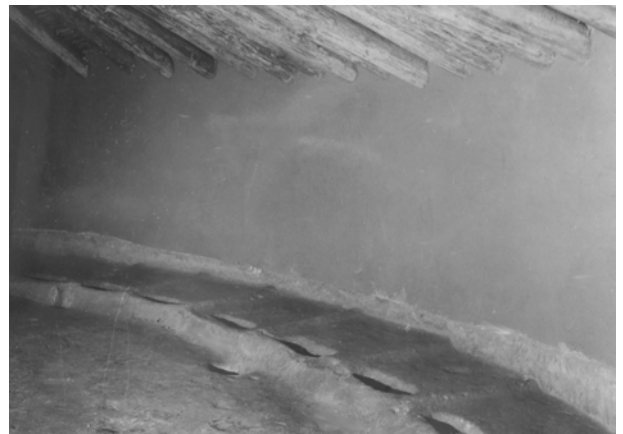


FIGURE 40. View of restored wall, with line of pre-Columbian wall clearly visibly above seats. (Swanson, OCMU Coll.)



FIGURE 41. View of restored entrance pilasters. (Swanson, OCMU Coll.)

65. Swanson, p. 44-45.

66. Swanson, p. 17.

67. Swanson, p. 47.

68. Swanson, p. 53.

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lodge. Logs were peeled and shaped by burning, a method that the Indians would have used in the original construction. However, modern metal drift pins were used to tie the beams and rafters together. With the roof framing in place, large quantities of native cane was cut in a variety of sizes from the swamps along the river and Walnut Creek. Leaves were stripped off and the canes then distributed in a uniform thickness and woven together. Sawn boards were then nailed into place from above to keep the cane matting from slipping out of place. A salvage was created at the opening for the smoke hole by doubling back the cane and weaving the ends back into the larger mass of cane.<sup>69</sup>

**Interior Walls.** With most of the lodge roof complete, the sand covering the original clay features was removed and work began to reconstruct the

missing portions of the wall. To create the interior walls, Swanson and Ford originally intended to install metal lath against the concrete wall and construct a solid mud wall against it. CCC workers puddled red clay with their feet in an open pit outside the lodge and mixed it with straw in as dry a consistency as possible. The mud was then applied to the wall like stucco and a retaining form erected to hold it in place. A fire was built at the entrance and for several weeks large- capacity fans moved the warm air through the structure. When the forms were removed, however, the mud had dried only on its surface and began to slump from the wall. It was clear that the method was “impractical,” and all of the mud had to be removed from the lodge

As an alternative, Swanson and Ford decided to try mud bricks, using the same local mud as before, mixed with straw and excelsior, which was a packing material made from thin, curled, wood shavings.

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69. Swanson, p. 55.



**FIGURE 42.** View west-northwest of completed interior, late summer 1937. (Swanson, OCMU Coll.)

After some experimentation, they found that a brick four inches thick would dry completely after a few days in the sun, and set the CCC workers to the task of making enough bricks for the interior wall.

The dried mud brick were laid up in a common bond using the same mud as mortar. An “air space” was left between the mud wall and the concrete wall, but Swanson’s report does not give a dimension for that separation. The mortar dried “in a reasonably short time, after which a stucco or plaster of the same clay was applied to the entire wall surface.” Hairline cracks developed as this coating dried, and the wall was dampened and rubbed down with “sections of heavy thick nap rug.” This produced a surface that looked too much like sand- finished plaster, Swanson thought, but with further moistening and hand rubbing, the reconstructed portions of the walls were “not dissimilar to that of the original walls.” During construction of the entrance

pilasters a steel hanger was bolted to the concrete wall on either side of the passage. These hangers carried a log lintel that caught the ends of the three rafters terminating above the entrance.<sup>70</sup>

**Passage** Through careful study of the sections of passage walls that they were able to remove intact, Swanson and Ford were able to accurately determine the original character of the passage walls. Split logs or slabs were sunk into the ground in a continuous line on either side of the passage, and these slabs were then covered on both sides with woven, split- cane matting similar to that used on the roof. Matting on the back side of the slabs acted to retain the earth behind, while the matting on the interior gave a finished appearance to the passage. The roof was created by using round logs laid across the passage and supported by the upright slabs and by the flanking clay walls. These were covered with

70. Swanson, p. 57.



FIGURE 43. View south-southeast toward entrance passage after completion of interior restoration, late summer 1937 (OCMU Coll.).

## Chronology of Development and Use

cane matting similar to that used on the roof of the main part of the lodge.

**Entrance** The drawing Swanson made for reconstructing the exterior entrance to the lodge was, he wrote, never intended for construction, but was included “solely as an indication in order to complete the drawings.” Further, Swanson acknowledged “that the entrance as actually constructed is in all probability a considerable departure from the original.” Swanson and Ford assumed that the exterior covering of the lodge was most likely clay and felt it logical to assume that “the slope of the lodge covering was terminated around the entrance in molded clay.” However, because the decision had been made to maintain a turf covering to the roof, logs were introduced around the entrance in order to avoid a slope that was too steep to hold the earth and sod in place.

Swanson made no pretense that their treatment of the entrance to the Earth Lodge was accurate, stating plainly that it was “purely imaginative and based on no prevailing evidence of the original method of construction,” evidence for which was almost entirely absent.<sup>71</sup> Vertical white oak logs set in concrete acted as buttresses on either side of the

opening, preventing the weight of the earthen covering from dislodging the lintel above the opening. Galvanized iron flashing was set between the concrete roof and the outer wooden lintel and arranged so that water would be directed to the tile drainage system at the base of the wall. A header for the opening was created by a white oak log set behind the exterior lintel at the same level as the passageway roof, and a hewn header of white oak allowed the door to clear the ground. Horizontal logs buttressed the earth on either side of the entrance.

The door itself was constructed much as it was depicted in the drawings. Mounted on hidden floor hinges, the door was constructed of a horizontal layer of 1- 1/8” cypress planks and a diagonal layer of planks, all covered with split- cane matting. The door was designed so that, when opened, its outer surface became part of the wall of the passage. A mortised, deadbolt lock was fitted to the door, with the bolt using a copper- lined mortise on the northern jamb post.

**Lighting.** Swanson designed the lighting for the interior of the lodge to be as unobtrusive as possible, mimicking the effect of daylight in “texture and intensity . . . and [providing] the desired amount and kind of light through the smoke hole without

71. Swanson, p. 66.



FIGURE 44. View northeast with backfilling and grading in process, June 1, 1937. (Swanson, OCMU Coll.)



creating a theatrical or stage effect.”<sup>72</sup> To accomplish that, the smoke hole was to be covered with a sheet of translucent plate glass, seven feet square, that had been left in its crate and placed above the roof structure before the final rafters were installed.

A frame for the plate glass was constructed from 1-1/2” by 1-1/2” angle iron with rubber strips cemented to the inner surfaces. Since the smoke hole provided the only access to the lodge’s “attic” between the concrete shell and the reconstructed lodge interior, the glass had to be movable and was set in a horizontal track created by bolting two 15’ sections of 3” by 5” angle iron to the concrete roof of the lodge. Ball-bearing roller skate wheels were then set into slots cut in the flange of the tracks, with small rolling casters spot-welded to the vertical sides of the track. A system of ropes and pulleys was then installed that allowed the glass panel, which was of “considerable weight,” to be moved “easily” and without binding in the track.<sup>73</sup>

Light fixtures consisted of a ring of twelve, 7”-diameter, metal reflectors mounted on standard porcelain receptacles connected to rigid metal conduit. Swanson’s report does not specify the lamp wattage used, but the concrete ceiling above the smoke hole was painted white for reflectivity. After some experimentation, the most appropriate light was created by pointing the reflectors up which reflected the light back “uniformly and without spottiness.” The light was further reflected and confined by hanging a heavy, white, canvas curtain in a circle slightly larger than the smoke hole opening.<sup>74</sup>

In addition, Swanson installed small tubular lights in trough reflectors mounted in the center of each of the north, south, and west log beams. These lights were controlled by a simple pull chain mounted through the roof at the inner end of the passageway. Two small lights were also concealed in two of the roof logs in the passageway and three concealed outlets were installed for utility purposes.<sup>75</sup> A “no fuse circuit breaker” was mounted behind the entrance door along with a switch panel.



FIGURE 45. View of construction of entrance to Earth Lodge. (OCMU Coll.)



FIGURE 46. View of walkway installed in summer 1938. (Swanson, OCMU Coll.)



FIGURE 47. View of smoke hole with glass panel rolled partially away to expose electric lights above. (Swanson, OCMU Coll.)

72. Swanson, p. 16.

73. Swanson, pp. 57-58.

74. Swanson, pp. 57-58.

75. Swanson, p. 59.



FIGURE 48. View of door to Earth Lodge, 1939. (Swanson, OCMU Coll.)



FIGURE 49. View of interior of Earth Lodge through passage, summer 1937. (Swanson, OCMU Coll.)

## Ventilation

From the beginning, Swanson assumed, correctly, that some sort of artificial ventilation would be necessary, given the small entrance and the fact that the smoke hole would not be open to the exterior. The electric fan which had been mounted temporarily above the vent in the center of the roof was re-installed permanently on a platform suspended from the ceiling. The platform was lined with cork, and a canvas coupler connected the fan duct to the concrete discharge through the roof, both measures intended to reduce noise inside the lodge.

## Walkway

Plans called for construction of a boardwalk within the lodge, but for unknown reasons, the lodge was formally opened to the public on November 1, 1937, without the walk in place. Not installed until the summer of 1938, it formed about three- fourths of a circle and eliminated visitor contact with any of the building's pre- Columbian features except for the entrance pilasters. The walk was not constructed as shown on the plans. Swanson thought it imperative that the weight be evenly distributed and not carried on joists. The walkway was installed at grade over a layer of building paper placed directly on the floor and covered with "a layer of dry, pulverized red clay." It was constructed in five sections, each composed of two layers of 3" tongue- and- groove flooring nailed together. The walk was covered with 1/8" ribbed rubber matting and finished with a guardrail fabricated out of 1- 1/4" black iron pipe. It was later discovered that a number of holes had been "chopped into the floor" during installation of the walkway. Holes were approximately 6" square and 3"- 4" deep and were created to take the ends of the long bolts used to attach the railing to the floor of the walkway.<sup>76</sup>

## Compromise

Kelly and Swanson appear to have frankly acknowledged all of the compromises that were necessary if the pre- Columbian remains of the lodge were to be preserved while at the same time providing visitors with a useful experience. "It is not intended that the term 'restoration' convey that the structure presents an exact reproduction of the original lodge in all its details," Swanson wrote, continuing:

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76. Undated memo, probably 1946, from Charles Fairbanks outlining treatment of floor.

Purposely the height of the inner walls has been made greater than that concluded from the evidence. Otherwise the interior has been restored above the existing remains to what is considered a very faithful reconstruction of the original lodge. Obviously the devices by which the structure has been made permanent depart from any phase of restoration and their sole purpose is to provide for permanency.<sup>77</sup>

As for the exterior, the decision to sod the roof of the structure was a marked departure from the clay coating that Kelly, Ford, and Swanson thought was the likely treatment originally. That decision in turn dictated Swanson and Ford's treatment of the entrance, which they frankly admitted was "purely imaginative and based on no prevailing evidence of the original method of construction."<sup>78</sup> Although there would be later alterations to the Earth Lodge, the entrance would be the only significant restored or reconstructed element that would ever be changed.

77. Swanson, Preface.

78. Swanson, p. 66.

The "Ceremonial Earth Lodge" at Ocmulgee was opened to the public on November 1, 1937, although some work was still going on at that time. In particular, the walkway on the inside was not installed until the following summer, and all work was not completed until October 6, 1938.<sup>79</sup>

## Preservation

The park attracted as many as 5,000 visitors a month in the years before World War II and was reported to have had the second highest number of visitors of any of the nation's historic parks in 1939.<sup>80</sup> Then, as now, visitors could wander through the park if they chose, but the lodge itself was only unlocked and opened for guided tours conducted by park rangers on a regular basis. Most visitors took one of these tours, and since there was no walkway in the lodge until the summer of 1938, most

79. Superintendent to Encyclopedia Britannica, November 30, 1938.

80. 1939 Annual Report.



FIGURE 50. View south of Earth Lodge as it was nearing completion in 1937. (OCMU Coll.)

## Chronology of Development and Use

of them apparently walked on the pre- Columbian clay floor.<sup>81</sup>

Tourism declined during World War II, but even after a walkway was installed, vandalism remained an ongoing concern for park staff, and although visitors only entered the building with a tour leader, minor vandalism continued to occur. While most of that damage was limited to initials scratched in the reconstructed portions of the walls, “one of our most disturbing problems,” a staff member reported in 1953, “is the occasional spitting of tobacco juice by older country people on the earthlodge floor.” All that could be done, he believed, was to encourage tour leaders to stress the floor’s antiquity if they noticed visitors chewing tobacco.<sup>82</sup>

The reconstructed Earth Lodge was “reasonably permanent,” Fairbanks wrote in *American Antiquities* in 1946, and for many years there was little criticism of the accuracy of the reconstruction. Nevertheless, preservation of the pre- Columbian clay features as well as the reconstructed lodge was an ongoing concern, and almost as soon as the reconstruction was complete, problems began to

arise, some of which threatened the viability of the Earth Lodge exhibit entirely.

## Ventilation

On April 15, 1938, Herbert Kohler, Coordinating Superintendent at Ocmulgee, reported to the NPS Regional Director that he inspected the Earth Lodge and “found that the timbers and reeds were covered with heavy mildew and fungus growth. The Council Chamber smelled like a vegetable cellar and was found very damp. The clay of the central fire place and the eagle effigy was flaking off.” He also noted that there was “little air circulation in the chamber.”<sup>83</sup> In spite of the exhaust fan installed in 1937, internal humidity remained high, and probably because the timber and cane used in the reconstruction was green when installed, mold growth was rampant.<sup>84</sup>

A full- blown air- conditioning system was considered and designed, but Olinus Smith, NPS engineer who had worked with Swanson on the reconstruction, thought such a system would prove of little value “commensurate with its cost, maintenance,

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81. 1939 Annual Report.

82. Marsh, *Administrative History*, p. 28.

83. Monthly Report, April 1938.

84. Alan Marsh, “Administrative History, Ocmulgee National Monument” (NPS 1986), p. 29.



FIGURE 51. View of Earth Lodge, c. 1945, with original entrance which Swanson acknowledged was “purely imaginary.” (OCMU Coll.)

and difficulty of operation.” Instead, he recommended installation of an additional fan and enlargement of the vent at the top of the roof so that the air in the lodge would be changed completely every fifteen minutes.

By the end of September, there was still no resolution to the problem, and the superintendent wrote the Regional Director that something had to be done. Visitors sometimes fainted, he wrote, and “the stench encountered late in the day after two or three hundred visitors . . . is such as to make the trip through the Council Chamber a grim and harrowing experience.”<sup>85</sup>

Unfortunately NPS engineers were swamped with other work, and by October 1938 there were still no improvements. In frustration, the park finally assembled their own exhaust fan out of surplus materials and installed it in the back access tunnel. The new arrangement made possible a complete change of air 2- 1/2 times every hour, and after six weeks of operation, “soon lowered the humidity to

a point where mold ceased to grow” and visitors stopped fainting.<sup>86</sup> The system remained in operation for nearly four decades, although the “blower system” was completely rehabilitated in January 1956, when “all termite eaten ducts and supports were replaced with galvanized metal ducts and creosote treated timbers.” A cement floor was also laid in the blower pit on the outside of the lodge at that time.<sup>87</sup> Although the blower system improved conditions for visitors inside the lodge, its use almost immediately raised concerns for the building’s pre-Columbian clay features, the preservation of which remained a critical issue.

## Clay Features

**Pre-Columbian Features.** For obvious reasons, preservation of the lodge’s pre-Columbian clay features has always been the highest priority; yet beginning in 1938 and continuing to the present, there has been constant disagreement as to the extent of any deterioration that might be occurring.

85. Superintendent to Regional Director, September 22, 1938.

86. Superintendent to Carl Russell, December 2, 1938; Acting Asst. Regional Director to Superintendent, May 12, 1941.

87. Monthly Report, January 1956.



FIGURE 52. Visitors to Earth Lodge, c. 1940. (OCMU Coll.)



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In the spring of 1938, as planning was underway to improve ventilation, the superintendent was already convinced that the clay features were deteriorating and that some treatment of the floor was necessary. "It seemed certain," the superintendent reported, that the clay features were drying out and flaking as moisture was wicked up through the earth by capillary action and then rapidly evaporated by the building's ventilation system. He had gone so far as to request a trial use of a varnish made from Bakelite, the first commercially-produced, synthetic plastic when it was introduced in 1909.<sup>88</sup>

Swanson was horrified and immediately wrote an impassioned plea to the Regional Director, urging that no such treatment be considered, at least until the improvements to the ventilation system were complete. He categorically denied that any cracking of the clay had occurred since the lodge was excavated. "This can easily be verified," he wrote, "by a comparison with photographs made early in 1934." There had, he pointed out, been absolutely no criticism of the Earth Lodge restoration from "any anthropologist, ethnologist, archeologist, or other scientist who has examined the completed restoration," primarily because "*no element of the original remains has been altered to the slightest degree since the day the excavation was completed* [emphasis in original]."<sup>89</sup>

While the staff at Ocmulgee shared Swanson's desire that nothing be done to the clay features, they were less sure that no deterioration was occurring and continued to explore treatment options. Samples of clay were sent to the Bureau of Standards, which tested sixteen different treatments, including sodium silicate, magnesium fluosilicate, calcium chloride, Bakelite varnish, and vinylite resins. The Dupont Foundation and "various other chemical and scientific organizations" were also contacted, but "none of them had much to offer."<sup>90</sup>

The presumed solution to the problem was finally determined through correspondence with the staff at Arizona's Pueblo Grande Museum and Archaeological Park. They assured the Superintendent that they had excellent results with a new compound

called Alvar, having used it on clay and earth features as well as paper, textiles, wood, and bones. In August 1938, the Superintendent secured a sample of Alvar and applied it to a square foot of the Earth Lodge floor with, he thought, results that were entirely satisfactory.<sup>91</sup>

Introduced in 1938 under the trade name Alvar, polyvinyl acetal was one of several vinyl plastics that were developed in the 1930s. Produced from a condensation of polyvinyl alcohol with an aldehyde, polyvinyl acetal is the general name for a group of three compounds: polyvinyl acetal itself, polyvinyl butyral, and polyvinyl formal. Polyvinyl acetal resins are thermoplastics which can be processed by casting, extruding, moulding and coating, and Alvar was initially used as an interlayer for laminated safety glass. Although Alvar is no longer produced as such, polyvinyl acetal resins continue to be used in adhesives, lacquers, coatings and films.

The new ventilation system dramatically improved internal conditions for visitors and reduced mold growth, but the Superintendent still thought that it was also accelerating deterioration of the clay features. In November 1939, the NPS' senior engineer, E. F. Preece, inspected the test square treated with Alvar, and a report was developed recommending complete treatment of the clay features in the lodge. The Superintendent apparently did not await formal approval of the work and two thirds of the clay features were treated by December 1939. There were delays, however, since the coating could not be applied in cold, damp weather and not until March 1940 was the walkway removed so that treatment could be completed.<sup>92</sup>

In July 1941, the superintendent summarized the treatment for the regional director:<sup>93</sup>

The floor and floor features of the Earth Lodge are composed of a compact gray clay. This material, when first uncovered, was extremely compact and dense. No attempt was made to impregnate these features when first uncovered. After the Earth Lodge was restored it was discovered that moisture condensed in the cool interior of the building. This led to the growth of

88. James T. Swanson to Regional Director, April 26, 1938. The fires kindled to dry reconstructed walls were not mentioned as a cause of the floor's cracking.

89. Ibid.

90. Coordinating Superintendent to Regional Director, May 4, 1938.

91. Julian, Pueblo Grande, to Superintendent, May 21, 1938.

92. OCMU Archaeologist's Monthly Report, December 1939, February and March 1940.

93. Ibid.

various damp molds on the wooden members of the structure. It was decided to control the growth of these molds by ventilating the building by means of a small fan concealed at the back. This ventilation soon lowered the humidity to a point where mold ceased to grow. Almost immediately it was noticed that drying of the floor was in progress. . . . After considerable correspondence, a method of treatment was determined. This treatment consisted of painting the clay floor and other features with a solution of Poly Vynl Resin [sic]. The solution used was 7 percent by volume of Alvar in Acetone; 70 percent Alvar was used. Technical Acetone was used for the solvent. The solution was made up in two- gallon containers which were kept tightly corked to prevent thickening of the solution. At first spraying of the solution was attempted, but this produced an opalescent deposit on the surface and was abandoned. The method used throughout the stabilization was to paint a small area of about three square feet with Acetone. Before the Acetone dried the Alvar solution was applied. Before the Alvar solution dried another application of Acetone was made.

Two workers thus managed to cover the area rapidly without allowing the Alvar solution to dry on the surface. Two- inch paint brushes were used throughout. Special attention was given to areas adjacent to large cracks in the floor.

About 15 pounds of Alvar and 55 gallons of Acetone were used. CCC labor was used throughout. The Alvar solution darkened the floor somewhat over its dry color. This was not considered undesirable as the floor had dried several degrees from its normal dark grayish-tan. We believe that the Alvar solution restored the original color. Tests at experimental strips showed that the Alvar solution penetrated less than 1/16 of an inch. It did not close existing cracks. It did, however, prevent the formation of new cracks. It has eliminated dusting of the surface.

We were not able to determine whether capillary water made a contact with the Alvar solution. This treatment, in effect, is a skin treatment. We are under the impression that had this treatment been undertaken as soon as restoration was complete,



FIGURE 53. View of school group on steel walkway installed in Earth Lodge in 1951. (OCMU Coll.)

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that all cracking of the floor would have been prevented. We are of the opinion that a skin of Alvar, together with proper humidity control will adequately protect compact clay floors in this climate where freezing is not a problem. The use of paint brushes for applying the Alvar was possible because of the compact nature of the Earth Lodge floor.<sup>94</sup>

Fairbanks and others were satisfied that the treatment had stabilized the clay and had even restored its color. As he pointed out,

we can assume that the color of the interior [clay] was that of wet rather than dry clay. Under the walkway areas were moist due to the cushion of sand used under this walkway. The color of this damp clay did not differ perceptibly from that of the treated clay.<sup>95</sup>

Although the Alvar solution closed small cracks, larger cracks continued to allow evaporation from the clay features. Fairbanks recommended that humidity levels be elevated in order to reduce continued drying of the floor, writing that “the optimum of humidity would be just below the point where fungus growth begins.” As a result, operation of the fan was reduced, and humidity was monitored daily.<sup>96</sup>

Apparently, the Alvar treatment and continued monitoring of humidity inside the lodge reduced or eliminated concerns about the stability of the artifact; at least there is no mention of problems or of retreatment until February 1951. At that time, the superintendent reported that,

after a thorough vacuum cleaning, the floor, seats, fire bowl, and eagle platform were treated with a solution of acetone and alvar. As expected, the treated areas are slightly darker than heretofore. A few glossy spots resulted but they can be eliminated by brushing with acetone.<sup>97</sup>

That appears to have been the last application of Alvar to the clay surfaces.

The Alvar treatment in 1951 may not have been applied correctly, since in July 1954, the park felt it necessary to coat the floor with isopropanol “to clear the surface of the cloudy appearance caused by the action of moisture on the alvar used with acetone in a previous treatment.” Obtained at that time by the catalytic reduction of acetone, isopropanol is one of the cheapest alcohols and has replaced ethanol for many uses because of its similar solvent properties. The results were “not completely satisfactory,” the Superintendent reported, but he believed that “a second application will prove the claim that isopropanol is a better solvent and penetrant than acetone.”<sup>98</sup> Subsequent reports by the Superintendent do not mention if another application of isopropanol was made, and indeed, park reports make no further mention of the floor’s condition until the 1960s.

**Reconstructed Features.** Initially, the condition of the reconstructed clay walls does not appear to have been an issue, but in the mid- 1950s, problems began to be noted with that feature as well. Although problems with accumulating salts are not mentioned in earlier reports and mold had not been mentioned since before World War II, in the summer of 1956, the superintendent characterized those problems as “long- lasting,” indicating an ongoing concern. In 1956, the park made the first application of a slurry or colloidal mixture of water and clay with clorox added to kill the mildew. The superintendent reported that the “problem of salt and mold in the EL seems to have been solved. . . . After two weeks or more the desired color is still holding up.”<sup>99</sup>

The coating did not, however, prevent the problem from recurring, and in July 1957, the superintendent reported that one of the archeologists “has been refinishing the Ceremonial Earth Lodge interior with a new clay coating to hide the fungus growth developed during the past year. This appears to be an annual operation.”<sup>100</sup> In October 1961, a new superintendent was on the site and, apparently unfamiliar with the Earth Lodge’s problems, reported that “for some unexplained reason, bricks or mortar between the bricks in the walls of the

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94. Acting Asst. Regional Director to Superintendent, May 12, 1941; Fairbanks reported in 1946 that a 6% solution of Alvar was used, making the precise formulation uncertain.

95. Undated memo, probably 1946, from Charles Fairbanks outlining treatment of floor.

96. Undated memo, probably 1946, from Charles Fairbanks outlining treatment of floor; also Fairbanks to Richard D. Faust, Southeastern Archaeological Center chief, February 3, 1972.

97. Superintendent’s Monthly Report, February 1951.

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98. Superintendent’s Monthly Report, July 1954.

99. Monthly Report, July 1956.

100. Monthly Report, July 1957.



reconstructed earthlodge bled through the clay plaster, giving the appearance of a plain wall painted to resemble brick.” After consulting with the archeologists in the regional office and in Washington, he concluded that the clay “paint” was appropriate and it was applied to the walls again, which apparently solved the problem. The coating was applied again in October 1963, and the superintendent reported that it “must be done periodically because of discoloration caused by penetration of walls by moisture.”<sup>101</sup> It is believed that the treatment continued to be made as necessary until the 1980s, but there is no further mention of the treatment in the superintendent’s reports.

## Walkway

In designing the walkway inside the lodge, Swanson apparently assumed that keeping visitors from walking on the floor was all that was necessary, but there was a constant problem with visitors, “young and old alike, kicking and pawing the floor to determine its hardness.” Because the walking surface of the original walkway was elevated less than two inches, contact with the floor was difficult to control, and a new walk was installed in 1948 that was a few inches higher than the first. The park considered installing hardware cloth around the bottom of the walk but, with its slightly higher elevation, apparently found that unnecessary.<sup>102</sup>

The walkway installed in 1948 may only have been a temporary measure, however, for in late 1949 or early 1950, plans were prepared by the Regional Office for a new steel walkway. Approved for funding with the new fiscal year (which began July 1), the project was delayed by a nation-wide steel strike in the summer of 1950, and not until January 1951 was the new steel walkway delivered. Even then it was rejected as not meeting the specifications, and the new walkway was not completed until May 1951<sup>103</sup>

## Research and Interpretation

The NPS, especially the park superintendent and staff, continued to study the Earth Lodge even after reconstruction was complete. In 1939, a series of wood samples from the Council Chamber and some other sites at Ocmulgee were wrapped and sent to

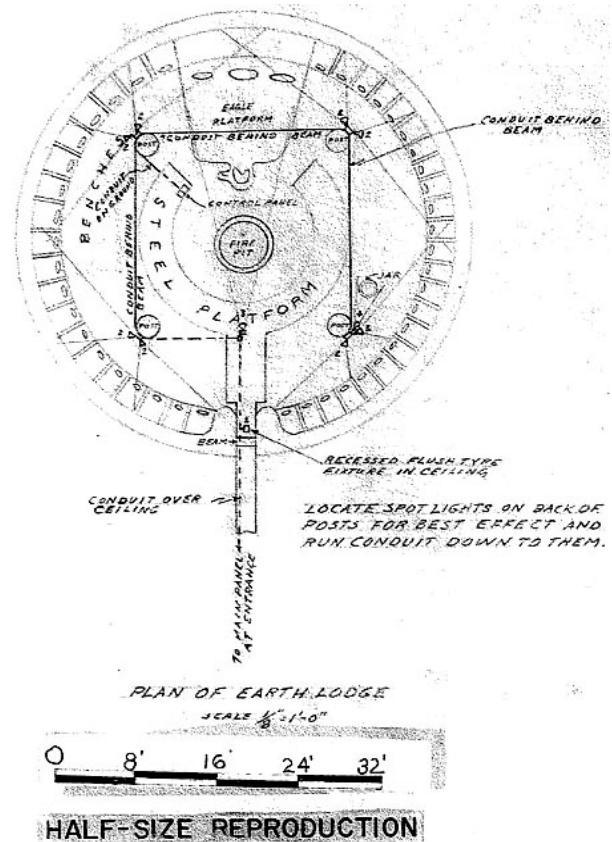


FIGURE 54. Plan for new lighting system, 1952. (OCMU Coll. )

Dr. Frances Hawley, of the Dendro- Chronological Laboratory at the University of Chicago.”<sup>104</sup> There were high hopes that this sort of study could help precisely date the Earth Lodge, but base line data for middle Georgia was never developed and the effort came to naught.

Also in 1939, the staff learned of the reconstructed Mandan Earth Lodges in North Dakota and traded photographs and other documentation in an ongoing discussion of the similarities beyond the circular form and four internal posts that the North Dakota superintendent first noted as common features between Mandan and Mississippian lodges.

For the first ten years of its existence, there were no objects displayed in the reconstructed Earth Lodge. In 1948, however, the Superintendent reported that “for a more realistic appearance, charred wood was recently placed in the fire basin and a restored vessel in the depression in the floor near the north-east column.” The charred wood was soon removed, but the vessel, along with a conch shell

101. Monthly Report, October 1963.

102. 1948 Annual Report.

103. Superintendent’s Monthly Reports, 1950-1951.

104. OCMU Archaeologist’s Monthly Report, January 1939.

dipper that was added later, remains on display in the lodge.

### Fire Protection

Initially, there was apparently little concern that fire might destroy the lodge or, worse yet, trap visitors inside the building with its single cramped exit. Concern for fire safety was greatly increased by a series of disastrous fires during and shortly after World War II, including Boston's Coconut Grove nightclub fire that killed nearly 500 in 1942 and the Ringling Brothers Circus fire that killed 167 in Hartford in 1944. Closer to home, in December 1946, the nation's worst hotel fire, the Winecoff disaster in Atlanta, claimed 146 lives. By then the cane matting and timbers on the interior of the lodge were thoroughly dry, and it was obvious that the Earth Lodge could easily become a fire trap.

At least by 1948, efforts were underway to find a suitable way to flame- proof the interior of the lodge, and the Superintendent reported that a 2- 2/2 gallon fire extinguisher had been "conveniently located in the interior."<sup>105</sup> By 1951, an unidentified flame- proofing agent was located and ordered for the lodge. It was applied in April and May, probably by spray, and was complete on May 15.<sup>106</sup>

### Lighting

Swanson had gone to considerable lengths to design an appropriate lighting system for the lodge, and except for occasional, unexplained outages, the monthly reports do not note problems with the lighting. In the spring of 1951, however, a new spot light and transformer were installed in the lodge, the Superintendent reported, "with the idea of providing better lighting facilities during explanatory talks. It is yet to be determined," he continued, "whether the comparatively weak, condensed beam is any improvement over the wider and brighter lamp formerly used."<sup>107</sup> Apparently it was, and in the spring of 1952, plans were developed for rewiring the lodge.<sup>108</sup> In April 1952, bids for rewiring were solicited, "but previous commitments and emergency work on cooling system and fans occasioned by the oppressive heat of the month [May] prevented much progress."<sup>109</sup>

Once begun, the work went quickly and was completed July 10. The superintendent reported that "the new method of lighting the interior with spot lamps affixed to the backs of the four columns provides much better views of the various features, while the control panel at the interpreter's station is the most satisfactory means we have employed for directing attention, with lights, to the features as they are commented on during interpretive talks."<sup>110</sup>

In the spring of 1956, the underground electrical cable from the Visitors Center to the Earth Lodge "burned out" and part of it had to be replaced. In April of that year, 278' of new cable was installed in Orangeburg conduit, a unique type of conduit made of cellulose fibers impregnated with coal- tar pitch, first manufactured in the 1890s and continuing in use until replaced by the advent of PVC pipe in the 1970s. The same conduit may have been used when the original wiring system was installed in 1937, but it was susceptible to softening and deformation with age, allowing water infiltration and root intrusion which probably led to the line's failure. In addition to replacement of the conduit and cable, "a 100 watt fuse- switch box was placed in the underground transformer vault to facilitate future trouble- shooting at the EL."<sup>111</sup>

The repairs to the electrical system in 1956 apparently did not eliminate problems, and in 1959, the old underground armored cable installed in 1936 was replaced from the Visitors Center to the Earth Lodge. Completed in May 1959, the new line included two additional manholes and would, the superintendent reported, "eliminate any possibility of future electrical shorts between the main underground power terminal and the EL, a distance of approximately 900 feet."<sup>112</sup> In September 1963, a new switch for the Earth Lodge lights was installed so that the lights above the smoke hole came on automatically when the entrance door was opened. "The result has been a saving in electricity and a smoother earthlodge presentation," the superintendent reported.<sup>113</sup>

### Entrance

Although significant portions of the passageway into the lodge were excavated in 1937, the archeologists

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105. 1948 Annual Report.

106. Ibid.

107. Monthly Report, May 1951.

108. Drawing NM-OCM-2100.

109. Monthly Report, July 1952.

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110. Ibid.

111. Monthly Report, April 1956.

112. Monthly Report, May 1959.

113. Monthly Report, September 1963.

found no evidence to suggest the design of the original exterior entrance to the passage beyond a pair of post holes that apparently marked the location of the doorway. As Kelly readily admitted, the entrance to the lodge that was constructed in 1938 was “purely imaginative.” In 1939, the superintendent learned of the Mandan earthlodges that CCC laborers were reconstructing at Fort Lincoln State Park in North Dakota and that were dedicated in the summer of 1940.<sup>114</sup> That may have been the first indication of how imaginative the design for the entrance really was. Unspecified repairs were made to the entrance in May 1941,<sup>115</sup> but it was probably at that time that the entrance was redesigned. When completed, the new entrance was a marked departure from the old, bearing similarities to the Mandan lodges of the Plains Indians. Gone were the bulwarks of horizontally-laid logs on both sides of the entrance, and instead the earth was simply graded steeply down to the ground on either side of the entrance, a treatment that Swanson had thought likely in the first place but had rejected when the decision was made to turf the mound.<sup>116</sup>

With pressure-treated wood not yet being used, rot was an ongoing problem and probably precipitated the repairs that were made to the entrance in 1948. In July of that year, the superintendent’s report states that “replacement of timbers in the entrance of the Earth Lodge has been postponed until desirable logs are obtained through the clearing of the power line right-of-way recently granted the power company.”<sup>117</sup> Exactly when those timbers were replaced is not certain, but it probably occurred later that year.

It was probably also at that time that the cane covering for the entrance door was replaced. Canes split in half were used instead of the whole canes that were used to weave the original cover. The design of the weave was also altered slightly by the use of more-closely-spaced horizontal ribbons than the original. In 1955, in conjunction with repairs to termite-damaged interior woodwork, the entrance was replaced again, probably because it



FIGURE 56. Original entrance to reconstructed Earth Lodge. (OCMU Coll.)



FIGURE 57. Georgia Governor Ellis Arnall exiting Earth Lodge, 1946, showing changes to entrance that probably occurred in 1941. (OCMU Coll.)



FIGURE 55. View of third treatment of entrance that occurred around 1948. (OCMU Coll.)

114. Sigmund Sameth, “Lodges of the Mandan Tribe,” *New York Times*, November 17, 1940.

115. “Repair of Council Chamber Entrance, Job #60,” Acting Asst. Regional Director to Superintendent, May 12, 1941.

116. Swanson, p. 66.

117. Annual Report, 1948.



FIGURE 58. View of fourth treatment of entrance, 1955. (OCMU Coll.)



FIGURE 59. View of fifth and current treatment of entrance, after 1978. (T. Jones, NPS-SERO-CR 2004)



FIGURE 60. View of deteriorated door to Earth Lodge, c. 1965. (OCMU Coll.)

was termite damaged as well. One of the staff archeologists and two helpers used an automobile tow truck to replace the two large pilasters and header as well as seven smaller logs that made up the remainder of the entrance. This time the timbers were pressure-treated to guard against insects and rot.

Repairs to the entrance door were also again necessary. In January 1960, the door jambs were replaced with treated sycamore timbers, apparently because of additional termite damage. Although the door itself remained intact, the woven cane with which it was covered was badly worn and had to be replaced as well.<sup>118</sup>

The entrance was altered again after 1976, apparently because of ongoing problems with earth spilling over the single header that had been used up to that time. Material was not replaced or altered, but a second log was simply added atop the existing header.

### Termites

As might be expected with significant wood-to-ground contact in the building, termites are a constant threat to the reconstructed portions of the structure. As early as May 1951, termites were reported on the interior of the lodge, but according to the superintendent's report for that month, "were destroyed with DDT." Cheap and with relatively low toxicity to mammals, dichloro-diphenyl-trichloroethane was the first of the chlorinated organic insecticides. First formulated in 1873, it was not until 1939 that its effectiveness as an insecticide was discovered by Paul Muller of Geigy Pharmaceutical in Switzerland, who won a Nobel prize in medicine and physiology in 1948 for his discovery. It was one of the most widely used insecticides until mounting evidence of negative environmental consequences from its use led to its being banned in this country in 1973.

Additional termite activity was reported in December 1954, and by then, damage was apparently already so far advanced that extensive repairs were necessary. At the end of June 1955, the superintendent reported, "all timber necessary for rehab of the EL interior was on hand but delayed work until after the July 4th holiday." The next day, July 5, the

118. Monthly Report, January 1960.



building was closed to the public and work got underway under contract with the Sheridan-Punaro Company, one of Macon's best-known building contractors.

For protection, the floor and other clay features were covered with "light building paper" and a layer of sand before work began. "All electrical conduits and the handrails were removed [and] a heavy wooden platform was erected on which scaffolds were built to support the roof timbers while the termite-infested uprights and cross timbers were replaced with pressure treated timbers."<sup>119</sup> Timbers were apparently cut specifically for the work, probably from the site, and were hauled to Atlanta for treatment. Documentation for how much of the interior woodwork was replaced during this project has not been located, but it appears to have included all of the great posts supporting the roof, some of the cross beams, and perhaps 10% of the pole rafters.

Most of the wood work was complete by early August 1955, but one of the staff archeologists at the park "spent considerable time chinking holes in the Earth Lodge made during repair work," using local clay that matched the walls. For unexplained reasons, salts had leached through to the surface, but these were simply "brushed off."<sup>120</sup>

With that done, according to the superintendent, "the Orkin Company sprayed the entire structure for termites" using chlordane, a man-made chemical that was first marketed in 1948 and was widely used to exterminate termites until it was banned in 1988. If the treatment was done correctly, and it likely was, the material was not sprayed on the structure itself but rather injected into the ground. On August 16, the Earth Lodge was re-opened to the public. The superintendent reported that the repairs looked "exceptionally good and, except for the smell of chlordane, the structure appear to be exactly as it was previous to repair work."<sup>121</sup>

## Sod

Kelly and Swanson's decision to maintain sod on the exterior of the lodge was made simply to improve the site's aesthetic qualities, but keeping grass green on the Earth Lodge has been an ongoing



FIGURE 61. View of eagle effigy, 1965. Note sloughing of material on left shoulder. (OCMU Coll.)



FIGURE 62. View of mold on one of interior posts, 1965. (OCMU Coll.)



FIGURE 63. View west in Earth Lodge, showing discoloration of reconstructed wall due to uneven moisture penetration, 1965. (OCMU Coll.)

119. Monthly Report, July 1955.

120. Monthly Report, August 1955.

121. Ibid.

## Chronology of Development and Use

challenge. With only a few inches of earth covering the concrete roof of the lodge, the soil quickly dried and the grass browned during dry weather. In 1962 or early 1963, a water line for a lawn sprinkler system was installed at the Earth Lodge as part of a larger project at the Temple Mound. In October 1963, the superintendent reported that the plastic piping running from the visitors center to the Earth Lodge “went to pieces.” The line was soon replaced, but he continued, “constant watering is essential to keep grass cover alive in warm weather, even if other parts of the park are not especially dry.”<sup>122</sup>

## Climate Control

It may not have been a coincidence that, after installation of the sprinkler system, the problems with mold and dampness returned with a vengeance, and by 1966 had reached crisis proportions. Discoloration of the reconstructed clay walls was so bad in 1963 that park staff was forced to recoat the walls with the mud/water/clorox slurry on three separate occasions, applying two coats each time. In 1964 and 1965, that problem was much less severe and the walls were only recoated once each year; but the mold, the superintendent reported, was “worse than ever before and treatment of previous years is totally ineffective.” Ominously, he warned, “Also, floor and wall.”<sup>123</sup>

According to the superintendent, mold covered all of the timbers, most of the wall (which he mistakenly believed to be original), and much of the floor. The cane matting in the ceiling was “a hairy mess”; not only did it look bad, but a “very musty, offensive odor” developed, causing frequent visitor complaints and the refusal by some to enter the lodge at all. Park rangers who gave tours of the building complained of red eyes, runny noses, and chronic coughs, and one visitor claimed that her child had required “extensive medical treatment” after a tour of the Earth Lodge.

After much worry, the park contacted the Department of Agriculture, and Samuel J. Rowan, a plant pathologist with the department, visited Ocmulgee and collected samples from the interior of the lodge. In addition to the common fungus that causes

brown rot in wood, thirteen other fungi were identified out of the mold collected from the floor and timber of the Earth Lodge. Most of the mold was from the genus *Penicillium*, with *Penicillium frequentans* being the most common, and none were particularly unusual for a cool, damp, “cellar-like” area like the interior of the Earth Lodge. Minute quantities of *Aspergillus fumigatus*, a potential human pathogen, were also identified, but Rowan reported that the amount was so small that there was “little health hazard to be concerned about.”<sup>124</sup>

Rowan later returned to the lodge and exposed six plates for five minutes in order to test air quality and noted “a surprisingly low population of air contaminants. . . a total of ten propagules [reproductive structures] of fungi and two of bacteria.” Although these bacteria and fungi gave the lodge its musty odor, none of them were known to be pathogenic to humans at that time.<sup>125</sup>

Rowan reported that because the best fungicidal treatment would involve incorporation of the fungicide into the clay and would change the color of the clay, “I am not left with many recommended treatments.” He suggested the possibility of using “germicidal ultraviolet lamps” when the building was unoccupied or fumigation of the entire chamber with methyl bromide, a powerful and effective fungicide, but one that is now being phased out of use because it contributes to depletion of the earth’s ozone layer.<sup>126</sup>

The fungus was brought under control, but the problem persisted, and the condition of the floor continued to be of concern. Dr. Fairbanks maintained an interest in the site throughout his life, returning periodically to visit. In early 1972, he wrote the Acting Chief at Southeastern Archaeological Center (which was then still based at Ocmulgee) that the Earth Lodge “seems to be slowly deteriorating over the years and I share the concern of many in wondering what can be done.” He recapitulated the problems with excessive humidity and with “dusting, cracking, and spalling” of the clay that had occurred before and after World War II. He noted their efforts to improve ventilation and reduce the incidence of mold growth as well as the Alvar treat-

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122. Monthly Report, October 1963.

123. Superintendent to Regional Director, September 26, 1966.

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124. Samuel J. Rowan to Superintendent, November 15, 1967.

125. Ibid.

126. Ibid.

ment that was applied to the clay features. However, he wrote that he had “noticed lately that the fan isn’t used and wonder[ed] if that may not be part of the problem.”<sup>127</sup> Concern continued to grow, apparently, and in his annual report for 1972, the superintendent stated that “the floor in our reconstructed Earth Lodge is deteriorating badly and should be studied and preserved at the earliest possible date.”<sup>128</sup>

### Kidd and Associates Study

In June 1973, the NPS contracted with Kidd and Associates of Atlanta to conduct a soils analysis and a detailed engineering analysis of the building “to determine the effect on the Earth Lodge of temperature, humidity, vibrations, ventilation, and visitation.” In April 1974, they issued their report, which addressed several key points.

**Soils Analysis.** Dense, silt- laden, clay soils naturally shrink as they dry, resulting in a characteristic pattern of random cracking. Kidd and Associates found that “shrinkage as a result of drying or desiccation has caused the cracking of the surface soil in the floor.” Comparing the existing condition with historic photographs convinced them that most of that cracking occurred fairly soon after excavation, especially during the brief interval that the clay was exposed before the temporary shelter was constructed to protect it from the elements. Some additional dessication and additional cracking may also have occurred when fires were used in an attempt to hasten drying of the reconstructed walls, and that “most of the cracking had occurred by the time the reconstruction was completed.”<sup>129</sup>

They also tested to determine if additional shrinkage and cracking were possible, but after laboratory analysis, they found that all soils were so dry that even with additional moisture loss, additional shrinkage and cracking would not occur. In fact, the soil a few inches below the floor surface was “unusually low,” lower than would be expected at similar depths outside the Earth Lodge. They attributed the low moisture content to the drying effect of the ventilation system.<sup>130</sup>

127. Charles Fairbanks to Richard Faust, Acting Chief of SEAC, February 3, 1972.

128. Annual reports discontinued in 1964, resumed in 1972.

129. Kidd and Associates, “Earth Lodge Study, Ocmulgee National Monument” (NPS, 1974), pp.36-37.

130. Kidd, p. 37.



FIGURE 64. View of trench for electrical line from Visitors Center, November 6, 1974. (OCMU Coll.)



FIGURE 65. View of new French drain around perimeter of concrete shell. (OCMU Coll.)



FIGURE 66. View southeast of Earth Lodge, showing initial excavation for electrical room, October 1974. (OCMU Coll.)

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**Vibration.** Concern had been expressed by some that vibrations from the railroad that runs within 150' of the Earth Lodge could be causing cracking and deterioration of the clay features. Law Engineering conducted tests and found that the 30 or 40 visitors on the viewing platform caused more vibration than passing trains, but that "the vibratory effect" from either of these causes was "insignificant."<sup>131</sup>

**Climatological Control.** The Kidd report stated that climatological control was non-existent with the Earth Lodge's original ventilation system. It also stated that the old system, in fact, exacerbated the problem by introducing exterior air into the cool interior of the lodge, produced humidity levels near saturation, remaining steady at 92% to 98%, even when exterior levels were much lower.

Obviously, excessive humidity contributed directly to the growth of bacteria and fungi within the lodge. While the study found that fluctuating humidity levels and vibration were "unlikely causes" of spalling of the clay features, it suggested that mold infection within existing cracks might be contributing to deterioration.<sup>132</sup>

**Visitation and Programming.** The study also analyzed the impact of visitation on the original features, but found that to be negligible. However, it would clearly be difficult to control humidity (and the resultant biological growth) as long as "walk-in visitation" was continued. Furthermore, relatively free access to the lodge's interior exposed the original features to possible vandalism.<sup>133</sup>

For those reasons, the report explored four alternatives for separating visitors from the pre-Columbian

131. Kidd, p. 38.

132. Kidd, p. 37.

133. Kidd, p. 35.

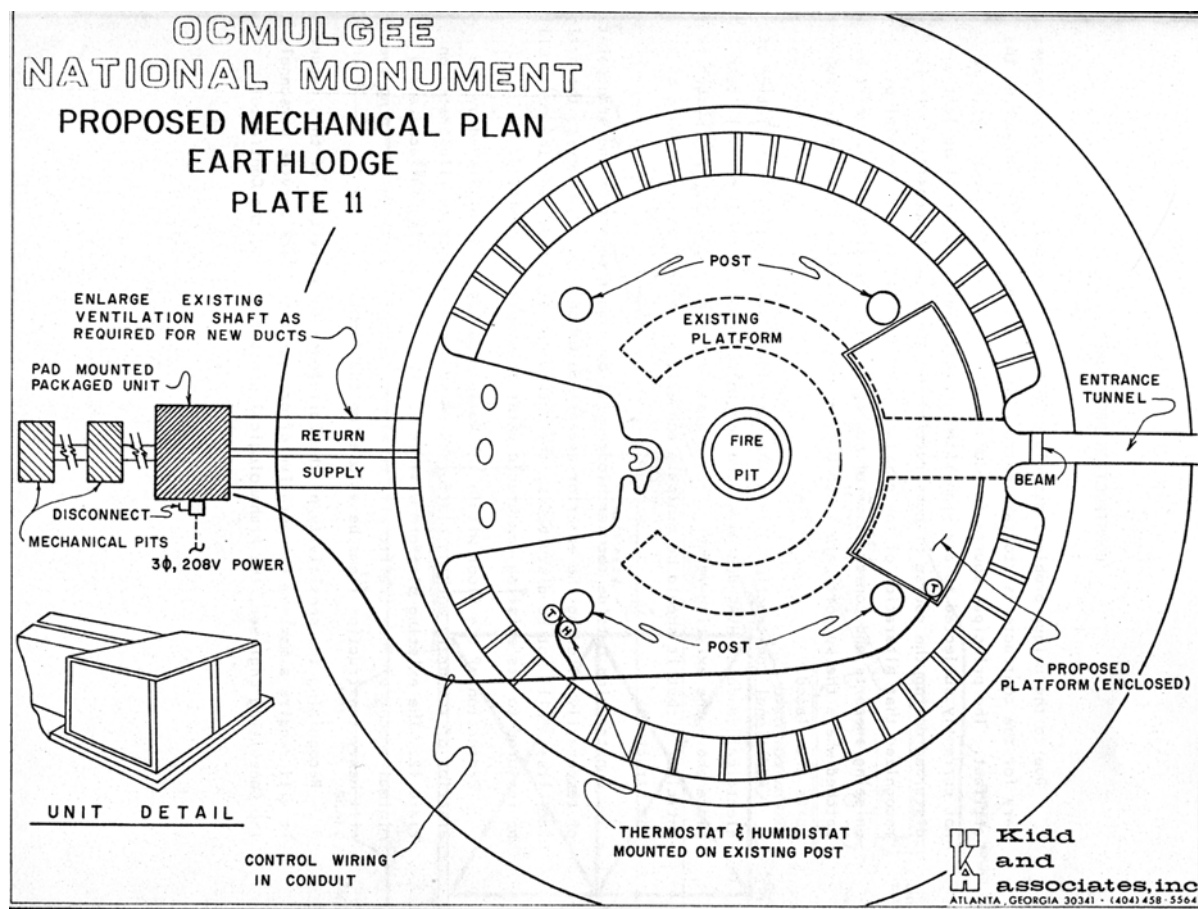


FIGURE 67. Kidd and Associate proposed alterations to the Earth Lodge. Actual construction deviated substantially from this plan. (OCMU Coll.)



clay features. Alternative “A” would simply enclose the existing, semi-circular viewing platform, while Alternative “B” would remove most of the existing platform and place a smaller enclosure at the entrance. The other two alternatives were much more radical, with “C” recommending removal of part of the concrete side wall and constructing a new viewing platform outside the lodge. Alternative “D” proposed removing the WPA construct entirely and constructing a new building to house the pre-Columbian remains of the lodge.

All of these alternatives envisioned a “visitor-activated audio presentation . . . [that] would allow for continuous daily viewing by the public.” This self-service approach to exhibition and interpretation, the report stated, would not only reduce necessary staff but would also “eliminate the general variations in tour procedures now prevalent and due to the many different individual guides used.”<sup>134</sup>

**Floor Restoration.** The report also suggested the possibility of restoration of the floor through “a closely regulated program of environmental control to increase and maintain the soil’s water content above the plastic limit.” It might then be possible to close some or all of the cracks in the floor, although the report noted that cracks might have been a feature of the floor when it was still in use by the Indians. This proposal was never implemented.

**Recommendations and Implementation.** The Kidd study concluded with a recommendation to subdivide the interior of the Earth Lodge to physically separate visitors from the exhibit itself, using Alternative “B.” Installation of a system to regulate temperature and relative humidity was also recommended along with improvements to interior lighting.

A preliminary report was submitted in October 1973 and over the next months, Kidd and Associates developed construction drawings, specifications, and cost estimates for implementing all of the report’s recommendations, except restoration of the floor. Plans and specifications were completed in May 1974, and on May 28 an invitation to bid was issued. A. J. Punaro, who as part of Sheridan-Punaro Construction Company repaired the interior of the lodge in 1955, was the low bidder, and work commenced on August 26, 1974.<sup>135</sup> (See



FIGURE 68. View south of Earth Lodge, November 25, 1974. (OCMU Coll.)



FIGURE 70. View of break in concrete shell for installation of a duct, exposing WPA-era mud brick. (OCMU Coll.)



FIGURE 69. View of entrance to Earth Lodge, December 1974. (OCMU Coll.)

134. Kidd, pp. 35-36 & 49.

135. Project #5620-5304, Contract #CX 5000-4-9010.



FIGURE 71. View of Earth Lodge, summer 1975. (OCMU Coll.)

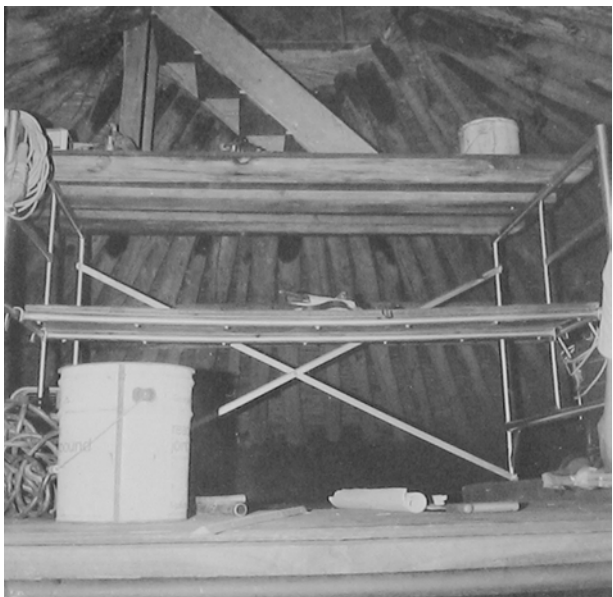


FIGURE 73. View of scaffolding erected in April 1975 for work on interior of concrete shell. (OCMU Coll.)



FIGURE 72. View of completed electrical room. (OCMU Coll.)

Appendix B to this report for copies of the plans for the work.<sup>136</sup>) Almost immediately there was a delay because it was found that the proposed location of the mechanical pits on the north side of the lodge would intrude upon significant archaeological resources. A number of alternative locations were considered, but after a meeting with archeologists from Southeastern Archaeological Center (SEAC) in early September, it was decided that the mechanical pits should be located within the footprint of the Earth Lodge mound. A portion of the mound had already been removed for installation of an electrical equipment room on the north side of the lodge entrance, and this allowed closer inspection and determination of the feasibility of a location within the mound footprint.<sup>137</sup>

The preliminary excavation went to the top of the footings for the concrete shell, and there was some surprise when parts of the pre- Columbian Earth Lodge were exposed. The exposed feature was reported as beginning “about four feet from the shell (that portion which had been closer was destroyed by excavations for the concrete footings) and was six inches in maximum height, beginning at about the level of the upper surface of the footings. The feature, composed of bright red sandy clay soil, extended back about 15 from the wall.” As a result of this discovery, excavation was to go no lower than a foot above the top of the footings.<sup>138</sup>

The preliminary excavation also revealed that “approximately the lower two feet” of the concrete wall enclosing the lodge had not been waterproofed when the building was constructed. The reasons for this omission (an apparent contradiction of Swanson’s report on the reconstruction of the lodge) could not be explained, but it was decided that the entire concrete structure should be unearthed and waterproofed as part of the project.<sup>139</sup> In December 1974, the original contract was amended to include installation of a new French drain and complete waterproofing of the contract shell.

Progress was slowed considerably by “inaccurate information regarding conditions,” but by early 1975,

136. Drawings #41002.

137. Research Archeologist to Chief at SEAC, September 13, 1974, reporting on site meeting held on September 10; also Annual Report, 1975.

138. Ibid.

139. Ibid.

the project was in full swing. In spite of the disruption to the site, visitation continued, although work on the interior, principally wiring, required temporary closures for a few days in April and June and again in August 1975. Installation of mechanical equipment did not begin until June 1975. Conditioned Air, Inc., of Macon contracted for installation of a heater by Indeeco of St. Louis, Missouri, and air-conditioning equipment by Carrier. The contract for equipment was complete by October 1, but the entire project was not finally completed until January 1976.<sup>140</sup>

The project also included rewiring of the building, and a trench for new electrical service was opened from the Visitors' Center to the Earth Lodge. The lighting system that had been in place since the 1950s was replaced entirely, with 6'-long strips of receptacles mounted behind the three beams inside the enclosure. In addition, during this period, the original plate-glass panel above the smoke hole was replaced with the present blue acrylic dome. The dome utilized the original rolling frame and track, but all of the lighting was removed from above the smoke hole, and the effect of day light was replaced by that of night.

In the darkness, dramatic lighting effects, which Swanson had rejected as inappropriate, included a red light over the fire pit and were designed as part of a self-service interpretation that could be had at the press of a button inside the new enclosed viewing platform. Most of the lodge's pre-Columbian features were now protected from visitor contact, and the interior climate could be more readily controlled. Interpretation was now standardized as well, although the visitors' experience of being *inside* the Earth Lodge was greatly reduced.

## Mold and Cracks Redux

Even before the climate control project was finalized, problems began to emerge, most notably cracking of the timbers inside the lodge. In October 1976, the superintendent reported that "the contractor has made a great many trips here to try to achieve the optimum setting to prevent cracking of timbers and accumulation of mildew on the floors



FIGURE 74. View of inside of concrete shell above lodge ceiling, 1974. (OCMU Coll.)

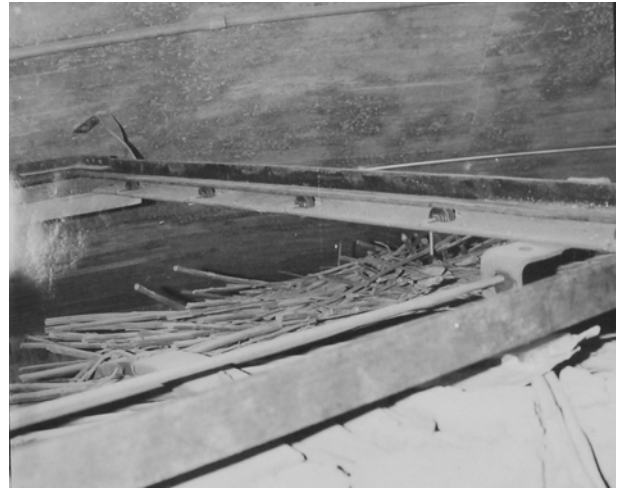


FIGURE 75. View of inside of concrete shell above lodge ceiling, 1974, showing part of original track installed for retracting skylight in 1937. (OCMU Coll.)



FIGURE 76. View of log which began splitting as interior of lodge dried out after installation of climate control system. . (OCMU Coll)

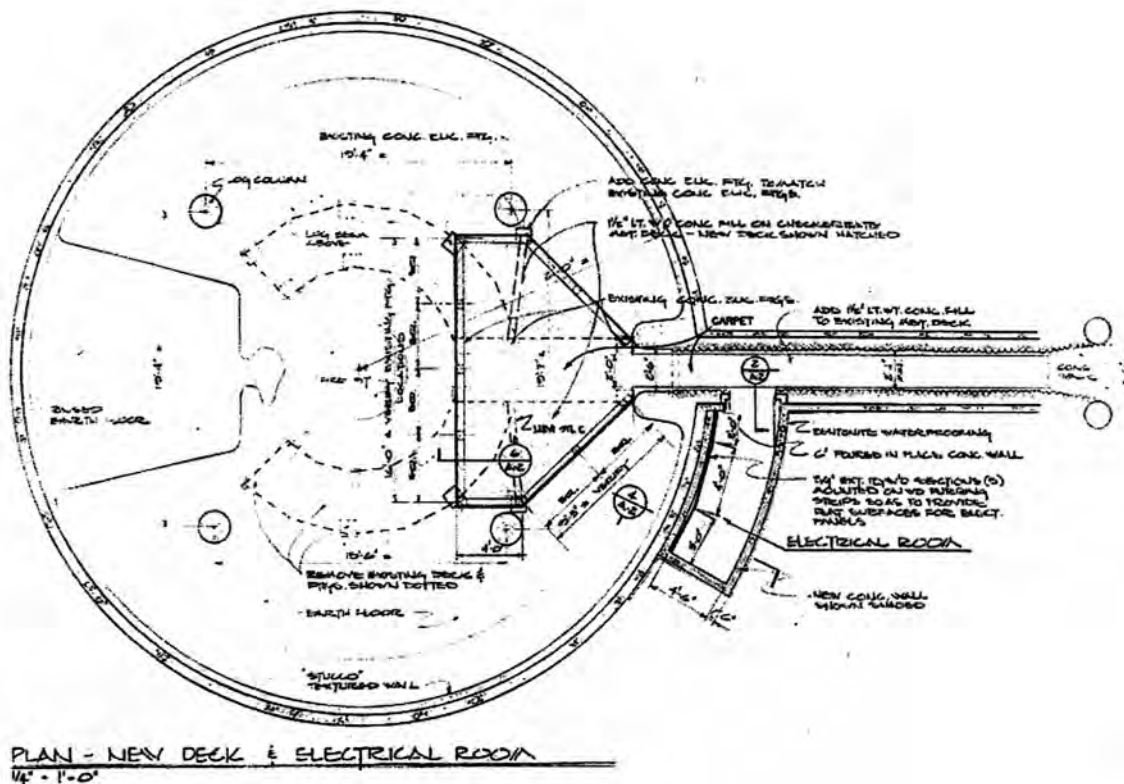
140. Annual Report, 1975.

and walls without complete success.” Cracking of the timbers was accelerating, according to the superintendent, mildew had reappeared, and the contractor was recommending that all timbers be treated to remove mildew and then sealed to prevent moisture absorption. With that done, the contractor believed, it would be possible to lower the humidity inside the lodge to “at least 56%.”<sup>141</sup>

## Law Engineering Study

141. Superintendent to Associate Regional Director,  
October 19, 1976.

142. Although this report and others use the term “slaking,” the word “spalling” more accurately represents the condition, since slaking generally connotes the addition of water.



**FIGURE 77.** Plan of new electrical room and enclosed viewing platform. (1974, Kidd & Associates, OCMU Coll.)

operation of the dehumidification system draws water vapor from below the Earth Lodge floor into the chamber. This apparently causes or accelerates the slaking of the floor.”<sup>143</sup>

Law considered three courses of action. One option would be continued analysis of conditions in the Earth Lodge to verify that movement of water vapor from the floor into the air was, in fact, causing the clay to spall. However, Law pointed out that such an investigation “would probably be difficult, costly, and may not be definitive.” Another option, Law reported, would be to completely seal the floor again, using some form of vinyl or plastic sealant that would prevent migration of water vapor from the floor into the atmosphere. With that done, the dehumidification that kept mold and mildew at bay could be continued. Given the condition of the clay, however, the engineers stated that “we doubt a permanent vapor seal can be achieved.”

The third option, and the one considered most appropriate by the engineers, would be to discontinue dehumidification permanently and allow equilibrium between temperature and relatively high levels of humidity to be re-established inside the lodge. This, they believed, would halt migration of moisture out of the floor and reduce the spalling of the clay features. It would also, the report acknowledged, require periodic spraying to eliminate the fungus and mold that would almost certainly return if dehumidification were to cease. Vigorous debate over the best course of action ensued among NPS architects, engineers, the director of SEAC, and the NPS regional office.

## National Bureau of Standards Report

In the summer of 1977, James R. Clifton of the National Bureau of Standards inspected the lodge and issued a report to the NPS. “Apparently,” he wrote,

some slight deterioration of the earth floor took place following its excavation until the air-conditioning system was installed.... Afterwards, a more perceptible deterioration of the earth floor has [sic] thought to have occurred.<sup>144</sup>

Although the Earth Lodge was in “good condition overall,” his report identified four problems:

- (1) numerous cracks and fissures in the earth floor, including the eagle shaped mound; (2) crumbling and sloughing of the surface of the soil, especially on the shoulders of the eagle; (3) some white efflorescence on the walls; (4) slight amount of mold growth on the main timber beam.

Clifton thought that at least some of these problems were caused by misguided “attempts to inhibit other degradation processes.” Attempts to reduce mold growth by lowering relative humidity, for instance, had caused drying and cracking of the floor. He also thought that the use of hardeners to stabilize the clay on the floor ran the risk of eventually allowing moisture and/or salts to accumulate below the treated earth.

He concluded his report with five recommendations. First, the existing condition of the structure, especially that of the earthen floor, should be documented by photogrammetric and stereoscopic techniques and the size of major cracks measured. This would form a baseline of information that would allow objective determination of changes in conditions. Second, because the moisture content in the clay was directly related to its overall condition, determination of moisture content “should be given high priority.” This should be done periodically, especially when temperature and relative humidity are altered but also whenever any work was conducted in the lodge. Cores should also be taken in order to develop a moisture profile as a function of soil depth and to determine the amounts and types of soluble salts that might be present.

Third, Clifton recommended that “the ambient relative humidity and temperature conditions which [would] stabilize the earth floor and ensure its preservation should be experimentally determined.” Since optimum conditions for the clay were also optimum conditions for the growth of fungi on the wood, he recommended that any such growth “be impeded by treatment with appropriate fungicides . . . rather than by reducing the relative

143. Law Engineering, “Report of Data Review and Evaluation, Earth Lodge Floor Deterioration,” January 13, 1977.

144. James R. Clifton, “Material Problems in the Preservation of the Earth Lodge at Ocmulgee National Monument,” draft dated 12/7/77, OCMU contract files.

## Chronology of Development and Use

humidity within the exhibit site.” Finally, Clifton recommended investigating the “feasibility of providing an effective drainage system on the exterior east side of the earthlodge.”

### Implementation

None of the recommendations were implemented completely or consistently. Efforts to eliminate fungi growth by fumigation with methyl bromide were stalled by the Environmental Protection Agency’s permit procedures in the late 1970s, but it is believed that the lodge was fumigated at least once around 1980. Monitoring of the internal environment of the lodge has never been consistent, although a base line of data was developed in the early 1990s. Spikes in conditions inside the Earth Lodge have been controlled, with relative humidity maintained between 60- 70% and temperature between 60- 70 degrees. In spite of recommendations to the contrary, the highly- visible mold that continues to appear from time to time inside the lodge has dictated a lower humidity than might be found most conducive to preservation of the pre- Columbian clay features.

### The Recent Past

Over the last twenty- five years, there have been few alterations of any kind to the Earth Lodge. The top of the structure was re- sodded in 1979, but even with the use of the sprinkler, grass is still difficult to maintain on top of the building’s concrete roof. In 1987, a timer was installed on the Earth Lodge’s climate control system as an energy- saving measure, and in 1990, the staff installed a hydrothermograph and began compiling those records.

In 1991, the park established a standard procedure governing access to the lodge’s interior behind the enclosure, effectively eliminating entry except for maintenance. That same year, a video, “The Earth-Lodge Story,” was produced to improve the building’s accessibility to the handicapped.

The reconstructed clay pilasters required frequent repairs as visitors scratched initials into the clay, with repairs being made twice in 1991 alone. There have been no repairs or recoating of the walls inside the lodge since the 1970s, and repair of the pilasters have not been made since the early 1990s over concerns that fumes from the clorox and mud mixture being used might be harmful to employees, especially after the enclosure was in place.

In 1992, staff in the Southeast Regional Office began photographic documentation of the condition of the building’s clay features and conducted a comprehensive assessment of the entire building’s condition. In the fall of 1993, as a result of that study, the mechanical air- conditioning system was replaced along with the addition of humidity control to the system. In order to reduce fogging of the glass on the viewing platform when a large number of visitors was present, ducts were extended to the viewing platform.

Uncertainty over the fragility of the clay features and the absence of curatorial staff capable of making decisions regarding preservation of the Earth Lodge have led to benign neglect. Except for changing light bulbs, no one enters the lodge outside the enclosed viewing platform, and since the early 1990s, there has been no attempt to even clear the floor of debris, much of which falls from the wood and cane in the roof.

Earth Lodge Chronology	
12,000 BCE	Earliest human inhabitation of the Macon Plateau
900-1100 CE	Early Mississippian period of mound building on Macon Plateau
<b>c. 1015</b>	<b>Construction of Earth Lodge, based on carbon-14 dating in 1939</b>
c. 1150	Ocmulgee site abandoned
c. 1350	Lamar culture emerges at Macon Plateau
c. 1690	Creek Indians return to Macon Plateau, trading post established along ancient Indian trading path that ran a few hundred feet east of Mound A
1715	Yamasee War results in Indians again abandoning Macon Plateau
1739	First written account of Ocmulgee mounds, by one of Gen. Oglethorpe's rangers
1775	James Adair's account of Ocmulgee published
1777	William Bartram visits "Old Oakmulgee Fields"
1805	Creek Nation cede most of territory east of the Ocmulgee to the U. S. government; fifteen acres at Ocmulgee Old Fields not ceded
1826	Creek Nation cede fifteen acres at Ocmulgee Old Fields
1828	Ocmulgee site auctioned off for white settlement
by 1840	Cultivation of Ocmulgee mound area begins
1843	Central of Georgia Railroad destroys much of Mound B constructing its line from Savannah to Macon
1873	Central of Georgia Railroad destroys much of Mound C constructing new alignment for railroad; Charles Colcock Jones' publishes <i>Antiquities of the Southern Indians</i> , including a description of Ocmulgee
c. 1900?	Part of Dunlap Mound destroyed for construction of Main Street in East Macon
Feb. 3, 1922	Gen. Walter A. Harris writes Bureau of American Ethnology expressing interest in preserving Ocmulgee Old Fields
April 1929	Gen. Harris contacts Bureau of American Ethnology offering funds from City of Macon for Smithsonian-led excavations at Ocmulgee
May 1929	Bureau Chief M. W. Stirling visits Ocmulgee
October 1933	Society for Georgia Archaeology organized
November 1933	Harris, Dr. Charles Howard, and Linton Solomon persuade Macon Junior Chamber of Commerce to spearhead a movement to purchase Ocmulgee, supported by Society for Georgia Archaeology and Macon Historical Society
December 1933	Fund raising complete, Smithsonian appoints Arthur R. Kelly as project director at Ocmulgee and James A. Ford as his assistant
December 20, 1933	CWA funding allows commencement of archaeological excavations at Ocmulgee
January 6, 1934	NPS agrees to investigate inclusion of mounds in national park system
February 5, 1934	Rep. Carl Vinson introduces H. R. 7653 in Congress to establish 2,000-acre Ocmulgee National Park [sic]
<b>February 7, 1934</b>	<b>First mention of "small knoll," which would later be found to contain the Earth Lodge</b>
February 8, 1934	Sen. Walter F. George introduces S. R. 2679, identical to House resolution
<b>February 14, 1934</b>	<b>Exploratory trenching unearths first evidence of Earth Lodge</b>
April 1934	Archaeological responsibilities shifted to Federal Emergency Relief Administration; Macon civic leaders gather to discuss new park



## Chronology of Development and Use

<b>Earth Lodge Chronology</b>	
May 15, 1934	House passes measure establishing Ocmulgee National Monument
June 4, 1934	Macon civic leaders vote to launch a city-wide campaign to raise \$25,000 for land acquisition
June 6, 1934	Senate passes measure establishing Ocmulgee National Monument, but prohibits federal funding of land acquisition
June 14, 1934	President Franklin Roosevelt authorizes establishment of Ocmulgee National Monument
<b>Summer 1934</b>	<b>Many NPS officials visit Ocmulgee; Earth Lodge excavation mostly complete and temporary shelter in place</b>
May 1935	Macon Historical Society gains title to 500 acres at Ocmulgee, but funds are exhausted
May 15, 1935	Macon Junior Chamber of Commerce launches another fund-raising campaign for Ocmulgee
June 4, 1935	Local fund-raising goal of \$8,000 met
March 9, 1936	Condemnation proceedings initiated to acquire abandoned RR right-of-way cut near Mound A in 1843 and tract owned by Bibb Mfg. Co.
<b>March 1936</b>	<b>Preliminary plans for EL reconstruction approved (#1053)</b>
<b>June 1936</b>	<b>Final plans for EL reconstruction approved (#1054-1)</b>
July 25, 1936	Final condemnation judgement against RR and Bibb Co.
Aug 5, 1935	FDR approves WPA allotment of \$155,636 to continue work at OCMU
<b>December 21, 1936</b>	<b>Reconstruction of Earth Lodge begins, WPA project #5449</b>
December 23, 1936	FDR proclaims Ocmulgee National Monument encompassing 678.48 acres
1937	NPS produces six-year development plan for OCMU
May 1937	CCC begins employment of about 200 men at OCMU
<b>August 8, 1937</b>	<b>Drawings and specifications for "Humidity Control System"</b>
<b>November 1, 1937</b>	<b>Earth Lodge opened to the public</b>
1938	Excavations cease at OCMU
1939	NPS produces Master Plan for park
<b>December 1939</b>	<b>Treatment of "Council Chamber" floor underway</b>
<b>April 1940</b>	<b>Fairbanks sends final report on "Council Chamber" restoration to superintendent</b>
<b>May 1941</b>	<b>Job No. 60 to repair "Council Chamber" Entrance, probably including removal of horizontal logs</b>
June 13, 1941	Five acres added to Lamar site by donation
November 1941	Emergency Relief Authority work at OCMU is halted
February 10, 1942	Ocmulgee Auxiliary Corporation replaces Indian Mounds Commission as local cooperative association
July 1942	CCC work halted at OCMU
October 3, 1944	Dr. Kelly appointed Custodian (Superintendent) at OCMU
September 1, 1947	Dr. Kelly resigns.
October 28, 1947	Millard D. Guy appointed superintendent
<b>1948</b>	<b>New platform constructed and installed in Earth Lodge; entrance logs replaced?</b>
<b>June 2, 1950</b>	<b>Plan completed for new steel walkway in Earth Lodge; contract let to complete VC</b>

<b>Earth Lodge Chronology</b>	
<b>May 9, 1951</b>	<b>Steel walkway installation complete</b>
November 2, 1951	Visitor Center dedicated
<b>April 1952</b>	<b>Bids for rewiring received---Final approval of plans (#2100) dated May 1952</b>
<b>1957</b>	<b>Concrete walk installed to Earth Lodge</b>
<b>1962</b>	<b>Lawn sprinkler system installed.</b>
<b>1963</b>	<b>Major outbreak of mold on interior</b>
<b>Sept 1966</b>	<b>Superintendent makes formal report to Regional Director of problems with Earth Lodge</b>
<b>October 15, 1966</b>	<b>Ocmulgee National Monument listed on National Register of Historic Places</b>
<b>October 17, 1966</b>	<b>Southeastern Archaeological Center (SEAC) established at Ocmulgee</b>
<b>June 12, 1972</b>	<b>SEAC moves to Tallahassee, Florida</b>
<b>June 20, 1973</b>	<b>Contract # CX2000-3-0087 with Kidd and Associates</b>
<b>May 28, 1974</b>	<b>Climate control project advertised for bids</b>
<b>June 28, 1974</b>	<b>Contract awarded to A. J. Punaro for installation of climate control at Earth Lodge at cost of \$93,678</b>
<b>August 26, 1974</b>	<b>Climate control project begins</b>
<b>December 1974</b>	<b>Contract awarded for new waterproofing and for French drain</b>
<b>October 1, 1975</b>	<b>Subcontractor Conditioned Air, Inc., of Macon completes installation of equipment</b>
<b>February 19, 1976</b>	<b>Earth Lodge nominated to National Register (listed in 1978) as part of historic district</b>
<b>June 14, 1976</b>	<b>Climate Control project completed</b>
<b>October 1976</b>	<b>Reports of cracking timbers and mold inside Earth Lodge</b>
<b>January 1977</b>	<b>Law Engineering report reiterates many points made earlier</b>
<b>1978</b>	<b>Bureau of Standards issues report on condition of Earth Lodge</b>
<b>Spring 1977</b>	<b>70 degree/70% relative humidity established as target for interior climate</b>
<b>c. 1980</b>	<b>Interior of Earth Lodge fumigated?</b>
<b>1981</b>	<b>Intrusion alarms installed at Visitors Center and at Earth Lodge</b>
<b>1990</b>	<b>Draft resource management plan recommends development of an HSR and a Preservation Guide for the Earth Lodge</b>
<b>Fall 1992</b>	<b>Condition Assessment Report on Earth Lodge by Southeast Regional Office</b>
<b>1992</b>	<b>Alan Bohnert, SERO-CR, initiates photographic documentation of condition of pre-Columbian clay features</b>
<b>August 19, 1993</b>	<b>Notice to proceed with replacement of HVAC equipment and addition of humidification system at Earth Lodge; contractor Max Horne Heating and Air, Macon, GA; contract #1443CX5000 93033; cost \$17,140</b>
<b>Sept. 10, 1993</b>	<b>Ocmulgee Indian Celebration, 3-day event</b>
<b>February 4, 1994</b>	<b>HVAC contract completed</b>
<b>2000</b>	<b>Cane matting on front door to Earth Lodge replaced</b>



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# Physical Description

This section of the HSR contains a systematic accounting of all features, materials, and spaces as they presently exist. Age, significance, and general condition and integrity of existing features are noted. The narrative is based upon a physical inspection of the structure in the spring of 2004. Building investigation was non-destructive but included a visual survey of the entire structure. There has been no additional laboratory analysis of materials, but data from earlier materials analysis has been incorporated as appropriate. A plan of the existing building can be found at the end of this physical description.

Originally constructed around 1015 CE, the Earth Lodge burned in pre-Columbian times and was lost

until discovered by archeologists in 1934. In 1936-1937, a replica was reconstructed over the remains of the original clay walls, seats, and floor. Generally considered authentic, the reconstructed lodge was known to differ from the pre-Columbian lodge in three important ways. First, the reconstructed lodge is “considerably larger” than the pre-Columbian lodge on account of the concrete shell that was built to protect the reconstructed lodge. Second, the pre-Columbian lodge was almost certainly not covered with turf, which was a modern concession to aesthetics and simplified maintenance. Indeed evidence suggests that the structure was not completely covered with earth at all, at least not in the manner of the Plains Indian earth lodges. Finally, there was no archaeological evidence for the



FIGURE 78. View north-northwest of Earth Lodge entrance. (NPS-SERO-CR, 2003)

## Physical Description

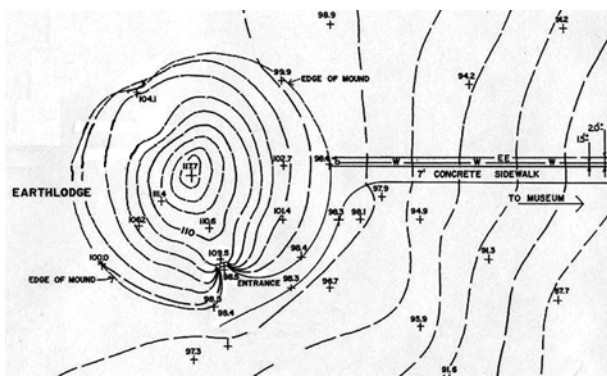


FIGURE 79. Topographical plan of Earth Lodge and vicinity, drawn 1974. Since the mound was reconstructed in 1975, the mound may differ slightly from this drawing. (OCMU Coll.)



FIGURE 80. View west of Earth Lodge from near Visitors' Center. (NPS-SERO-CR, 2004)



FIGURE 81. View southeast of Earth Lodge. (NPS-SERO-CR, 2004)

character of the entrance to the pre- Columbian lodge, with Swanson freely admitting that his design for the entrance was “purely imaginative.” Subsequent alterations to the entrance (there have been four such alterations) were perhaps less imaginative but were still conjectural.

The concrete shell constructed in 1937 remains mostly intact, but the mound encompassing the shell was largely removed and regraded in 1975, when mechanical and electrical rooms were constructed near the entrance and at the rear of the lodge. Virtually none of the mound or other exterior materials can be considered historic, although they do replicate historic features.

The reconstruction of the interior of the lodge remains mostly intact as well. Some wooden members were replaced in 1955 due to termite damage, but all of the CCC- built mud- brick walls remain intact. The interior wooden features and materials and the reconstructed clay walls of the Earth Lodge should be considered historic.

## Site

Ocmulgee National Monument encompasses just over 702 acres, which includes 45 acres at the detached Lamar site. The Earth Lodge is located near the center of the larger unit, about 150 yards southwest of the Visitors' Center and around 600 yards northeast of Mound A. Except for the hard surfaced walkway from the Visitors' Center, which continues around the south side of the lodge to the mound areas, the site is grassed. The immediate site rises approximately four feet from east to west.

Electrical and water service to the lodge is underground. Both run along the northwest side of the walk from the Visitors' Center, with the electrical line crossing to the southeast side of the walk just east of the lodge and entering the structure on the southwest side of the entrance. See Figure 64.

The site underwent extensive archaeological investigation in the 1930s and there have been smaller archaeological projects since that time. Significant archaeological resources surround the structure, including a series of trenches or dugouts that run along the east side and immediately in front of the entrance and the so- called “Half- Way House” a

few dozen feet west of the lodge. The areas south and southwest and immediately north of the lodge appear never to have been excavated.

## Mound

Originally constructed in 1937 and reconstructed in 1975, the earthen mound covering the reconstructed lodge is approximately 100' in diameter and rises about 19' above the grade level on its eastern side. The mound was trenched to install a water line for the lawn sprinkler at the top of the mound in 1962. In 1975, all of the earth surrounding the mound (but apparently not on top of the mound) was removed for installation of a new French drain and for waterproofing the exterior of the concrete walls. The mound that was re-established at the end of that project appears to approximate the historic (1937) mound in plan, but the flattened top meant to simulate the presence of a smoke hole has been diminished.

In addition to the visible pre-Columbian clay features on the interior, part of the clay buttress that formed the wall of the pre-Columbian lodge is buried beneath the present mound. This feature was most recently documented on the south side of the structure where it was unearthed during construction of the mechanical pits in 1975. The buttress was noted as beginning about four feet outside the concrete shell and extending another eleven feet away from the wall. In 1946, Fairbanks recorded the feature as extending 13' to 21' from the edge of the clay floor. It is unclear how much of the feature remains today, since construction in 1937 and again in 1975 clearly intruded on the feature.

In 1937 when the earthen mound covering the lodge was first constructed, Kelly and Swanson acknowledged that in order to accommodate the protective concrete shell over the reconstructed lodge, the earth covering that they presumed on the exterior would have to be "considerably larger" than they thought probable for the pre-Columbian structure. In fact, the underside of the concrete shell was constructed some 3' above the top of the smoke hole, and to minimize that discrepancy, the slope of the mound is less than that of the interior rafters, which extends the outside edge of the mound as much as 15' beyond the remains of the pre-Columbian clay buttressing for the walls. The archaeological evi-



FIGURE 82. View east showing grates and access doors for mechanical pits added in 1975. (NPS-SERO-CR, 2004)

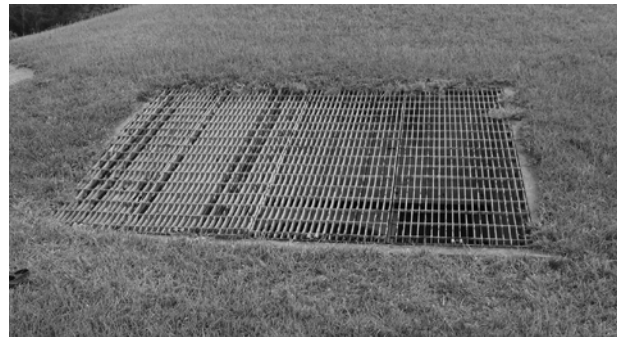


FIGURE 83. View of one of grates. (NPS-SERO-CR, 2004)

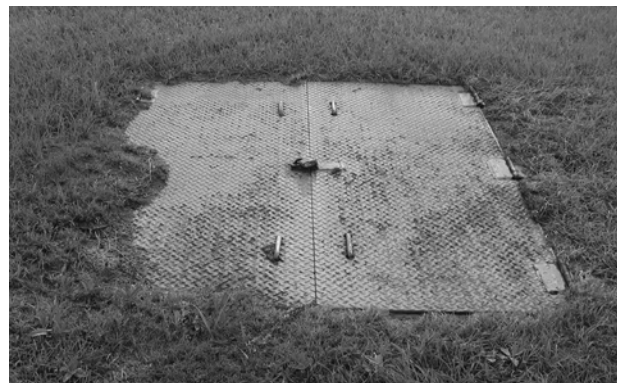


FIGURE 84. View of access doors. (NPS-SERO-CR, 2004)



FIGURE 85. View of small vent at back of mound. (NPS-SERO-CR, 2004)



FIGURE 86. View of entrance to lodge. (NPS-SERO-CR, 2004)



FIGURE 87. View of entrance. (NPS-SERO-CR, 2004)

dence suggested that the smoke hole was no less than 7' in diameter, and to mimic the presumed appearance of the pre- Columbian mound, Swanson had the top of the mound graded flat for a diameter of about 6'.<sup>145</sup>

### Mound Alterations

The mound's historic appearance was altered by installation of a lawn sprinkler on top of the mound in 1962, which eliminated much of the mound's flat top. Installation of the climate control system in 1975 introduced significant new features to the mound's exterior in the form of two large metal grates (4' by 7- 1/2" and 5' - 6" by 7' - 6") and solid metal access doors (4' - 6" by 6' - 6") on the west side of the mound. Less intrusive is a small concrete- framed vent associated with the north mechanical pit. The original green paint on the metal grates and doors is badly deteriorated and significant areas of the metal are rusting.

### Entrance

The entrance to the lodge is formed by large, pressure- treated, sycamore logs installed in January 1960. Two of these, which are about 12" in diameter and nearly 7' tall, form pilasters for the entrance while another log, almost as large, was installed as a lintel. In order to better stabilize the earth above, the lintel was enlarged by the addition of a second horizontal log in 1975. Smaller logs form the sides and top of a sort of vestibule that Swanson used to reduce the difference in height between the exterior and interior of the entrance. Logs also form the jambs for the door itself, which is located about 2' behind the front face of the large log pilasters. The vertical log that forms the door's right- hand jamb has deteriorated so that it is no longer in contact with the ground and has been re- attached to the door sill by the use of an iron, L- shaped bracket.

The door itself is constructed with 3- 1/2" by 3/4", double- beaded, tongue- and- groove boards attached horizontally to diagonally- laid 1" by 8" boards. This construct is attached to a vertical log that forms what is, in effect, the hinge style of the door with a pivot hinge concealed in its base. The door is covered by woven, split cane installed in 2002 and held in place by half- round wooden strips nailed to the face of the door. A mortise lock by Yale,

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145. Swanson, pp. 17, 44.



probably part of the original construction secures the door when the building is closed.

## Concrete Shell

The exterior of the Earth Lodge consists of a circular, reinforced-concrete structure, completely covered by an irregularly-shaped, earthen mound. Originally constructed in 1937, the concrete structure encloses the clay remains of the pre-Columbian Earth lodge and a replica of the original lodge that was also constructed in 1937.

The concrete shell has an interior diameter of approximately 44' which is about 2' wider than the interior diameter of the reconstructed lodge. The shell rises about 16'-6" above the clay floor of the lodge. Construction of the shell has been documented in the previous section of this report, and there have been only minor alterations since that time. Concrete was specified to be one part Portland cement to two parts fine-aggregate sand and four parts clean crushed rock or gravel, reinforced with 1/2" and 3/8" steel rods.

## Footings

The wall is set on a concrete footing approximately 12" thick and extending about 2'-6" beyond the outside edge of the concrete walls. The footing was poured with its top about 6" below the interior floor level. In 1975, the original terra-cotta French drain and sand back fill was reportedly replaced with 6" ABS perforated pipe in gravel draining toward the east side of the mound.

## Circular Wall

The circular wall is around 12" thick and rises to a height of about 8'-9" above the pre-Columbian clay floor. Walls were poured and tamped by hand in movable wooden forms constructed using 1-3/8" by 8" and 1-3/8" by 10" tongue-and-groove boards and 1/2" reinforcing bars. The north half of the wall was constructed in four pours, while the south half of the wall was constructed in three pours. A concrete "shoulder" or ledge about 5'-9" above the floor of the lodge is integral with the walls to support the ends of the rafters of the reconstructed lodge. Walls were discovered not to be adequately waterproofed during construction in 1975, and additional waterproofing tar was applied to the outside of the walls (but not to the roof) at that time.

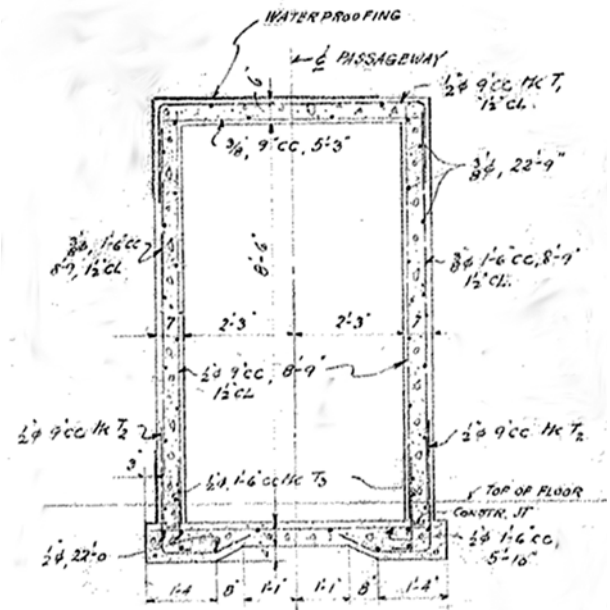


FIGURE 88. Detail from original construction drawings showing presumed section through concrete shell for entrance passageway. (OCMU Coll.)

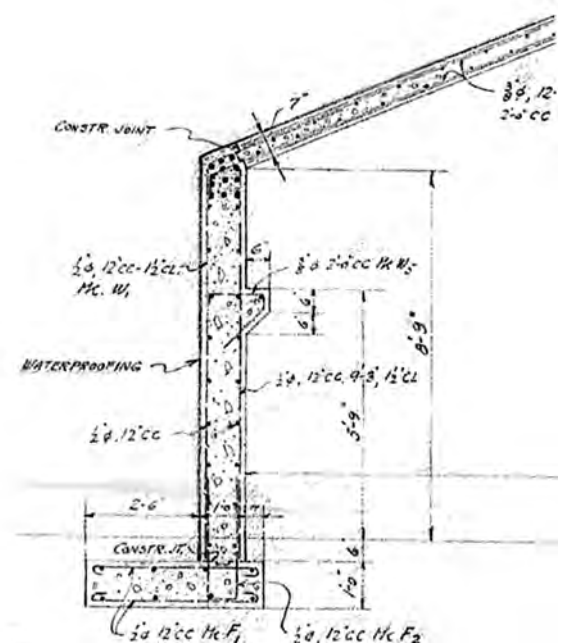


FIGURE 89. Detail from original construction drawings showing presumed main section through main concrete shell. See Appendix A for entire sheet. (OCMU Coll.)

## Physical Description



**FIGURE 90.** View of exposed corner of concrete shell for passageway, showing rusting corrugated metal that apparently covers the roof. (NPS-SERO-CR, 2004)



**FIGURE 91.** View of concrete shell at west end of electrical room showing presumed typical relationship between the concrete wall and the mud-brick wall behind. (Kidd and Associates, 1975))



**FIGURE 92.** View of underside of roof of concrete shell, with imprint of wooden forms clearly visible. (NPS-SERO-CR)

## Roof

The conical slab for the main roof was specified to taper slightly from 7" thick at the outside edge to 6" thick at the upper edge. A flat, circular slab about 5' in diameter completes the top of the roof. Heavy timber supported the false work for the roof, which was poured in a spiral fashion in a single pour on 1"-thick, tongue- and- groove sheathing with 1/2" reinforcing bar. A terra- cotta flue or vent was set in the top of the roof for the original ventilation system, but it has since been removed. Significant portions of the roof are honeycombed, showing evidence that the concrete was poorly tamped into place during construction, a fact that was noted by Swanson at the time. This does not appear to have affected the integrity of the concrete structure, and there is no evidence of cracking or other deterioration of the structure. There is some slight staining of the concrete surface that may be evidence of some slight water penetration in the past, but there is no evidence of the calcification expected if the leaks were significant and of long duration. Swanson's report also noted that the area above the skylight was painted white to increase reflectivity, and although stained, that area is still evident.

## Passageway

The entrance passageway was reconstructed within concrete walls and a ceiling slab that are about 7" thick. Walls are about 8' - 6" high. A concrete floor slab was poured for the passageway. The passage was not constructed as shown on the original plans. Swanson thought the height specified was too high and had it reduced as construction was underway, which accounts for the odd step in the passage roof visible in construction photographs (see Figure 35 in previous section). Corrugated metal typical of roofing and apparently covered with tar is visible where erosion as exposed the corner of the passage roof. Swanson's report describes a "membrane" covering the roof, but there is no mention of the use of corrugated roofing in this manner.

## Interior

The interior of the Earth Lodge consists of three primary components: the pre- Columbian clay features (c. 1015 CE), the reconstructed clay walls and wooden features (1937), and modern additions including the wood and glass enclosure installed in 1975. Clearly the significance of the pre- Columbian

clay features far outweighs that of the reconstructed features, although it must be acknowledged that the high quality of the reconstruction has some significance in its own right.

### Pre-Columbian Features

The clay remains of the pre- Columbian Earth Lodge are by far the most significant features of the present structure. These include the eagle effigy platform on the northwest side of the space, the encircling series of 47 seats, the central fire basin, and 6"- 12" of the encircling wall, which is readily distinguished from the reconstructed wall by a change in color that accompanies a change in materials. Swanson's 1939 description of the excavated remains of the Earth Lodge is comprehensive and remains a good description of the artifact.

[A] massive buttress surrounded the clay floor so as to give the building the appearance of being semi subterranean, although it was actually

entirely above ground. The floor was covered to the plowed zone with mixed clay, charcoal, and fragments of burned clay. The slightly uneven floor of hard- packed slate- gray clay appeared to have been patched in several places with a blue- gray clay of different origin. There was no evidence that the floor had been burned except where charred roof timbers lay in contact with it. The floor was lowest just northeast of the center and sloped gently upward towards the periphery.

Very slightly south of the true center is a circular fire basin 4.5 feet in diameter and 1.0 foot deep with flat floor and slightly sloping sides. This basin was surrounded by a rounded, raised curb 6- 12 inches wide and 5 inches high. The curb was battered for a distance of about 3.5 feet on the western side, where two notches 6 inches wide cut through the curb to the floor level. On the eastern side another notch 6 inches wide also cut through the curb to the floor. There was a layer of compact, gray ash 0.3 foot thick on the bottom of the fire basin.



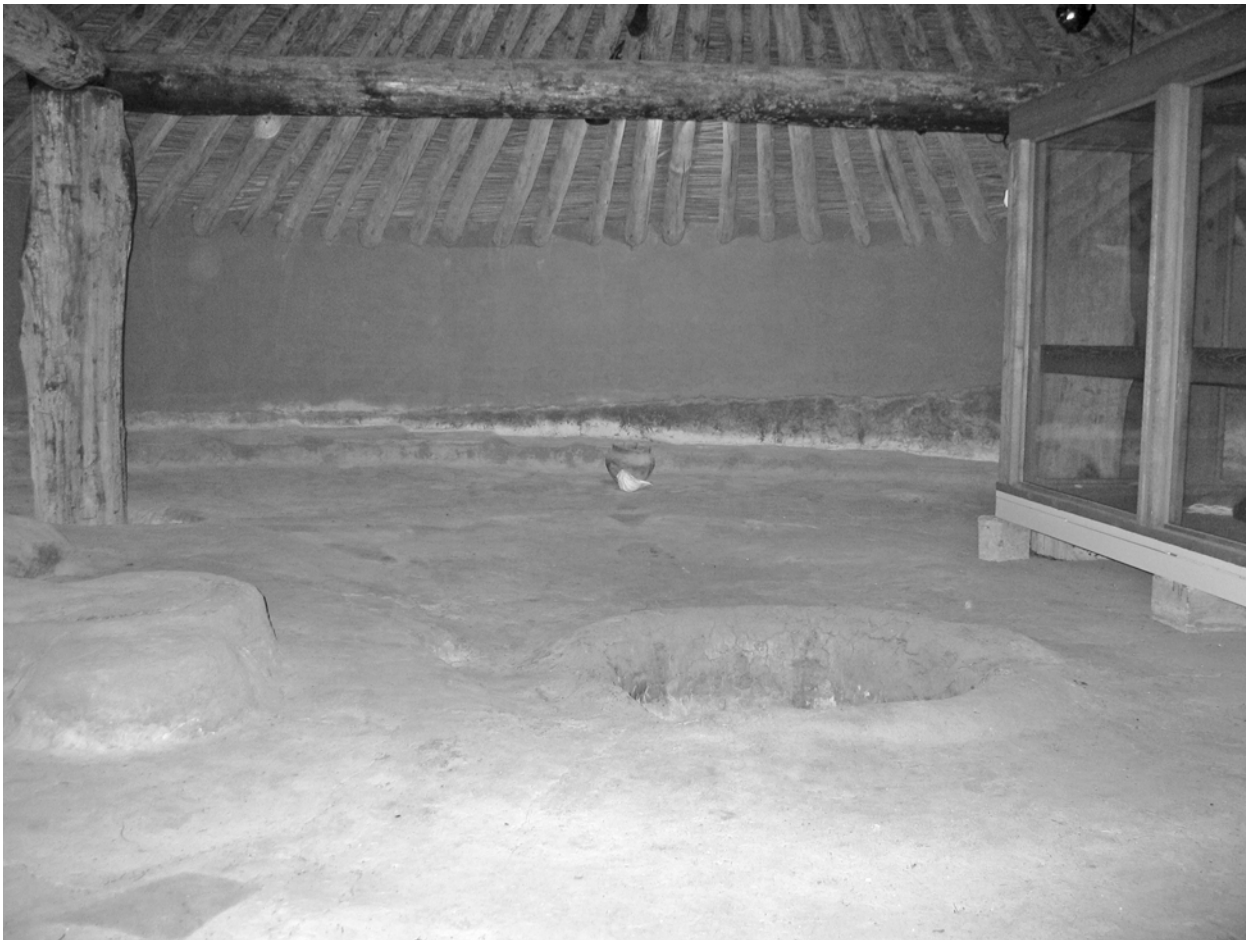
FIGURE 93. View west in Earth Lodge, showing effigy platform and, at lower left, the fire basin at lower left. (NPS-SERO-CR, 2004)

## Physical Description

*Eagle Platform and Seats:* Inside the structure, directly opposite the entrance, was a large, packed clay platform shaped to represent an eagle. It was 16 feet long, 14 feet wide, and 9-12 inches high. The head was towards the fire basin. The shoulders were slightly grooved as if to represent feathers, and the beak was shown by a shallow groove. The eye was a typical "forked eye" sunk 0.1 foot into the head. Just above the eye, a small hole 0.1 foot in diameter and 0.5 foot deep extended vertically into the head. At a distance of 4.5 feet from the wall was a row of three shallow rounded depressions 0.6 foot wide and 0.3 foot deep. The center one was 1.5 feet long, the other two were 1.3 feet long. On either side of the platform and extending around the wall to the entrance was a series of seats, twenty-three on the northerly and twenty-four on the southerly side of the lodge. These seats were modeled on a clay bench raised 0.3-0.5 foot above the floor. Each seat was separated from the next by a low rounded curb 0.6 foot wide

and 0.3 foot high. Each seat had, at the front, an oval depression similar to the three on the eagle platform. The bench was slightly higher near the platform and lowest near the door. At two places on the front edge of the bench and at one place near the wall were found small post holes 0.6 foot in diameter. Four very large post holes, 2.0-2.9 feet in diameter and 3.0 feet deep, in which the charred ends of large logs were found, mark the location of the main posts supporting the roof. It is tentatively considered that the three small post holes found near the wall represent repair posts put in after the building had been completed. They do not form part of the regular pattern of the larger posts and seem to be definitely intrusive into the floor.

*Timbers:* Upon the floor were numerous pieces of charred timbers resting on from 0.2 foot to nearly one foot of partly burned clay and fragments of charred cane. Charred timbers, on the average 0.4 foot in diameter, lay on radiating lines around the central basin but did not reach within five feet of



**FIGURE 94.** View northeast in Earth Lodge, with fire basin right of center and viewing platform at upper right. Reddish material around fire basin is clay that has fallen from the reconstructed roof. Dark trapezoidal shape at lower left marks location of one of the supports for the metal walkway installed in 1952 and removed in 1975. (NPS-SERO-CR, 2004)

it. Thus, the charred remains of roof timbers resembled the spokes of a wheel with the fire basin as the hub. These timbers lay close to the floor near the wall and were elevated on fragments of burned clay near the center. Under the smaller poles were larger logs one foot or more in diameter. One of these touched the fire basin. It was evident that all these charred timbers represented debris from a burned roof and that the roof had been covered with earth. In burning, the cane had fallen first and allowed much of the covering clay to fall through to the floor before the main timbers burned sufficiently to give way. Thus, when these larger beams fell, they rested on previously fallen roof materials that had originally covered them. The fallen earth was a sandy red clay which contained lumps of bright yellow clay. On the floor between the platform and the fire basin was a thin layer of this yellow clay about 0.7 foot wide and fairly continuous for a distance of 7.5 feet. There was little charcoal at this point and the clay showed no evidence of burning.

**Botanical Identifications:** Specimens of the charcoal were identified by Dr. Volney H. Jones of the Ethnobotanical Laboratory, University of Michigan. The radial rafters were some species of the Southern Pine group. The resemblance to Longleaf Pine, *Pinus palustris*, was close, although there is a possibility that they were Loblolly Pine, *P. taeda*, or Shortleaf Pine, *P. echinata*. The large vertical posts were members of the White Oak series, some White Oak, *Quercus alba*, and others Post Oak, *Q. stellata*. In the absence of leaves and seeds, the cane could not be specifically identified except that it was either *Arundinaria macrosperma* or *A. tecta*. As both species grow in the immediate vicinity at present, either species, or both, could, have been used.

**Plan of the Structure:** Measurement of the building disclosed that the circumference varied less than 0.5 foot from a true circle. A number of additional instances of considerable accuracy were noted in the dimensions. The center of the middle depression on the eagle platform, the small hole in the eagle's head, the geometrical center of the building and the center of the entrance passage were all on a straight line. This line was 12 degrees, 45 minutes south of east. An extension of the line for a distance of 66.3 feet passed directly between two post holes equally spaced on each side. The only connection between these two post holes and the structure which could be found was their position in relation to the central axis. The centers of the four large central posts marked the corners of a

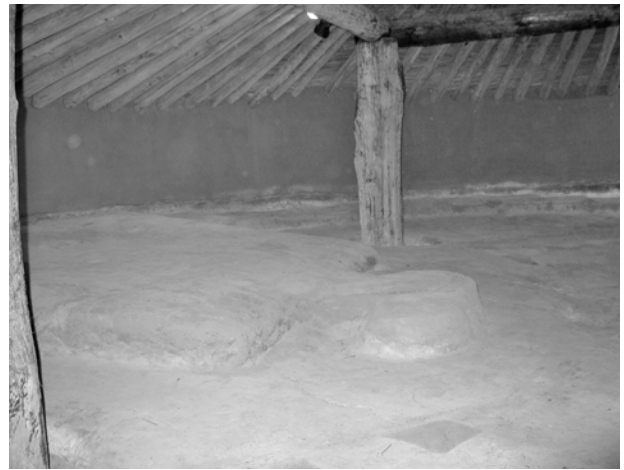


FIGURE 95. View of Eagle Platform. (NPS-SERO-CR, 2004)



FIGURE 96. View of seats on northeast side of lodge, with highest surviving portion of encircling wall. Whitish band at base of wall is mold. (NPS-SERO-CR, 2004)



FIGURE 97. View of floor and seats at door from east side of viewing platform. (NPS-SERO-CR, 2004)

## Physical Description



FIGURE 98. View of effigy platform. (NPS-SERO-CR, 2004)

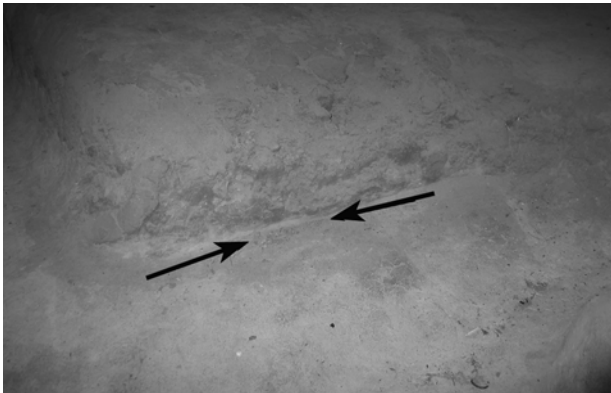


FIGURE 99. View of left (south) shoulder of effigy platform. Arrows mark clay that has detached from the shoulder. Miscellaneous debris is visible in the foreground in this image. (NPS-SERO-CR, 2004)

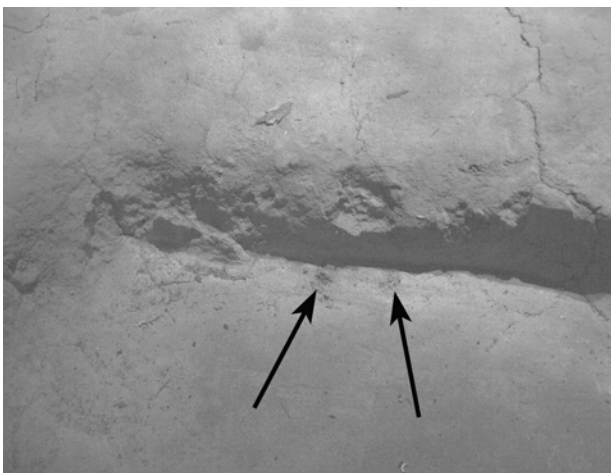


FIGURE 100. View of right (north) shoulder of effigy platform. Arrows mark clay that has detached from the shoulder. (NPS-SERO-CR, 2004)

square measuring 18 feet on each side, but not truly parallel to the axis of the building. The sides of the eagle platform would, if extended, meet at a point on the central axis just inside the entrance pilasters. These measurements indicate considerable care in planning and erecting the building but do not seem to involve any but the very simplest mathematics. . . .

Only one artifact was discovered directly associated with the Earth Lodge. That was part of a large pottery vessel lying on the floor near the northeast post. It is not available for description but, from the excavation notes, it seems to have been typical Bibb Plain of the Macon Plateau pottery complex.

**Composition.** Swanson reported that “pure red clay” was used in constructing and in reconstructing the lodge, but laboratory analysis by Law Engineering in 1974 revealed substantially larger grain sizes than clay, leading them to classify the basic material as a “hard tan clayey [sic] fine sandy silt.” The reconstructed wall was “similar in construction,” and the floor’s “highly compacted silty sand” also had a greyish “kaolin- type sandy silt wearing surface.”<sup>146</sup>

**Existing Condition.** When the posts were replaced in 1955, the pre- Columbian post holes were back-filled, but not to floor level and the material used was different from the surrounding pre- Columbian floor in composition, compaction, and color. More apparent are the trapezoidal holes that were created in the floor when the steel walkway was installed in 1951. Replacement of the steel walkway with a differently configured walkway in 1975 exposed those holes to view. They were filled with a dark greyish cement that often attracts the attention of visitors.

In addition, excess moisture around the east and northeast side of the structure has severely damaged the pre- Columbian wall in that area. A heavy coating of a white, chalky material is evident all along the wall in that area. Whether this is active mold or salts accumulation due to ongoing moisture penetration or simply residue from earlier problems is not known.

The floor, eagle platform, seats, and fire basin are all littered with small particles of clay, bark, insect exoskeletons, and other debris, most of which have

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146. Kidd, p. 13 and Appendix A.



fallen from the reconstructed roof. Small piles of reddish silt dot the floor, mostly around the smoke hole and around the perimeter of the floor. All of it appears to have fallen from the clay coating the perimeter of the smoke hole and from the upper edges of the wall, both of which have become somewhat embrittled.

The shoulders of the effigy platform continue to crumble, as they have since first excavated in the 1930s. Amounts are small, perhaps 3 cubic centimeters, and since the interior of the building outside the viewing platform has not been cleaned since the early 1990s, this may give some indication of how rapidly deterioration is occurring. Nevertheless, poor lighting and the amount of extraneous material on the floor, including clay from the roof and walls, precludes an overall assessment of the pre-Columbian features' condition.

### Reconstructed Features

The wooden features of the Earth Lodge were reconstructed inside the concrete shell in 1937. A significant but unknown quantity of that woodwork was later damaged by termites and replaced in 1955.

The passage way walls and ceiling and the "roof" on the interior of the lodge were constructed from timbers (principally white oak and pine) and native cane culled from the site in 1937, and subsequent repairs were also made using native materials. Differences in how the timbers were worked are apparent, however. The builders of the Earth Lodge did not, of course, have saws and often used fire to burn large timbers to an appropriate length. Swanson had the exposed timber for the earth lodge treated in much the same way. For the repairs in 1955, the same procedure was used, although the large posts at the entrance to the lodge appear to have been sawn and the sawn ends then charred, produced a typically blunt end on the timbers.

**Entrance Passage.** Swanson described the excavated entrance passage:

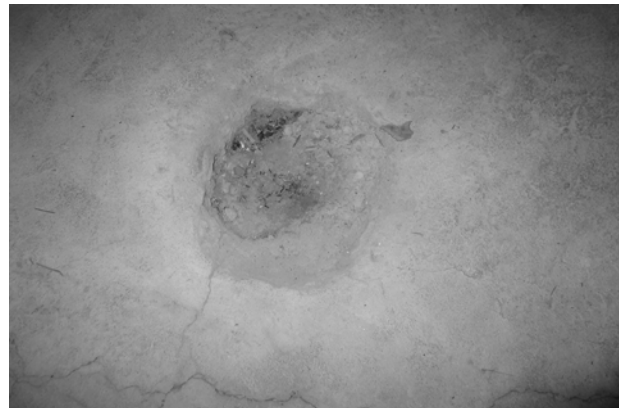
East of the fire basin, two rounded pilasters extended inward 9 inches from the wall. They flanked an entrance passage 2.2 feet wide and 26.2 feet long. The floor of the entrance was hard-packed clay similar to that in the structure proper. The passageway had been banked with a buttress of earth like that which surrounded the rest of the building. Details of construction were



**FIGURE 101.** View of juncture of pre-Columbian features and reconstructed wall along northeast side. White band at base of wall appears to be mold or salts as a result of water penetration. (NPS-SERO-CR, 2004)



**FIGURE 102.** View of pre-Columbian post hole filled with modern material. (NPS-SERO-CR, 2004)



**FIGURE 103.** View of pre-Columbian posthole and charred wood on east side of lodge, one of the features interpreted as being indicative of pre-Columbian repairs to the structure. (NPS-SERO-CR, 2004)

## Physical Description



**FIGURE 104.** View of ceiling just inside entrance. Absence of cross logs is atypical. (NPS-SERO-CR, 2004)



**FIGURE 105.** View of passageway, looking toward entrance. Note where visitors' hands (or heads) have worn the ceiling logs. (NPS-SERO-CR, 2004)



**FIGURE 106.** View of entrance door jamb on north side of opening. (NPS-SERO-CR, 2004)

accurately determined through examination of a fragment of wall 1.0- 1.3 feet high which still remained. Along each side were charred remains of split posts 0.2- 0.3 foot in diameter. Behind these, and evidently originally tied to them, were charred fragments of split- cane matting of an under- four- over- four weave. About 0.3 foot back of the split posts was a row of round post holes 0.3- 0.4 foot in diameter. The earth piled against the sides touched these posts, and in many cases post molds extended upward in this buttress from the post holes in the floor. Between the whole posts and the cane matting were charred lengths of cane lying without any evidence of weave. Three slightly larger posts were set at each side of the external end of the passage.

The entrance passage is on an axis that was originally thought to be about 10 degrees south of due east. Actual orientation appears to be closer to 15 degrees south of due east. The passageway is around 26' long but barely 2' - 4" wide. Ceiling height varies from around 5' - 2" at the outside entrance to 4' - 6" at the entrance into the lodge itself.

In the original pre- Columbian structure, round posts sunk into the dirt floor and whole cane served to hold in place the earth that covered the exterior of the structure. These were then covered with split- cane matting held in place by split posts lashed to the round posts behind. In reconstructing the passage, the round posts were unnecessary, but the appearance of the matting held in place by split posts was recreated. The entrance door was designed so that, when open, it recessed into and appeared to be part of the wall. An electrical room was created off the interior end of the passage in 1974, and a portion of the wall was altered at that time to serve as a door.

The ceiling was created by a series of logs that were installed to appear as if they ran into the walls beyond, since the original logs would have extended into the earthen sides of the structure. Above these logs, whole canes were laid perpendicular to the logs, as they would have been in the original structure to serve as an underlayment for the earth covering the passage. Near the door into the passage, logs are not present on the ceiling, but it is not clear if they have been removed or if they were simply not installed in the first place. Most of the material making up the walls and ceiling is in good condition, although visitor contact with the ceiling logs is

clearly evident the length of the passage. In addition, most of the white oak strips used to lash the split logs in place are now missing, but their loss has not affected the integrity of the walls.

According to Swanson, the floor of the passage was reconstructed using “tamped clay of a type similar to the original.” Most of that material appears to remain in place but is now covered by a steel walkway, decked with plywood and running the length of the passage. It was installed along with the enclosure of the main portion of the lodge in 1975.

**Interior “Roof” Structure.** The interior of the lodge is surrounded by a circular clay wall, which is capped by a timber-framed roof reconstructed inside the concrete shell in 1937. Four large white oak trunks were up-ended in the pre-Columbian post holes that formed a square about 18’ on each side. Rising to about 8’, the splaying at the top of each trunk was notched to form a seat for the four, slightly smaller pine cross timbers that form a plate to support the pole rafters, which are tied to the beams by metal drift pins. The other end of the rafters appears to be supported by the clay wall but were actually set on a concrete ledge or shoulder that is integral to the reinforced concrete wall enclosing the reconstructed Earth Lodge.

The structure suffered heavy termite damage and major repairs were necessary in 1955, including replacement of all four timber posts, some if not all of the beams, and perhaps 10% of the pole rafters. The new posts were set in the original post holes, and an unidentified material used to fill the holes to about an inch below floor level.

Above the rafters, whole canes, which were gathered from the swamps along Walnut Creek and the Ocmulgee, are laid across the pole rafters. The cane was roughly interwoven to keep them from slipping and further secured by battens spiked to the rafters from above. From below, the cane presents a relatively uniform appearance that is not evident when viewed from above. To finish the smoke hole, the rim of the opening was plastered with the same clay used for the walls.

The wood and cane appear to be in fair condition, but inspection was only visual and did not include probes that might reveal hidden damage. All of the cane is heavily soiled and some mildew may be



FIGURE 107. View of junction of post, beams and rafters. (NPS-SERO-CR, 2004)



FIGURE 108. View of intersection of rafters and clay wall. (NPS-SERO-CR, 2004)



FIGURE 109. View of cane matting above main roof. Note sawn batten spiked to rafter to hold cane in place. (NPS-SERO-CR, 2004)

## Physical Description

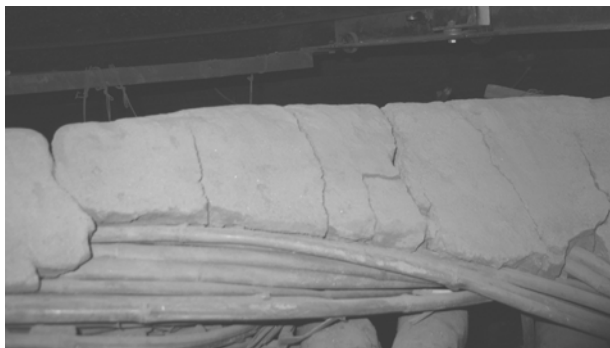


FIGURE 110. View of clay and cane matting around opening to smoke hole. (NPS-SERO-CR, 2004)



FIGURE 111. View of pilaster on north side of entrance. (NPS-SERO-CR, 2004)



FIGURE 112. View of north beam with typical mold growth. (NPS-SERO-CR, 2004)

present. Most of the mold appears to be confined to the four posts and the cross beams and may be the result of the wood having been installed green. Further testing would be necessary to determine if the mold is alive or dead.

**Reconstructed Clay Features.** The pre- Columbian structure had clay walls that were thrown up and packed by hand into a monolithic whole. Reconstruction of the Earth Lodge in 1937 utilized sun-cured clay or mud brick, made on site by the CCC workers and laid up with a clay mortar. The entire surface was then plastered with a thin coat of the same clay.

By the mid- 1950s, the walls had apparently begun to discolor or stain, and the decision was made to recoat them. Using a colloidal mixture of clay taken from the nearby railroad embankment, water, and clorox (which apparently improved the coatings cohesiveness), the walls were recoated on numerous occasions beginning in 1956. The circular walls have not been refinished since the 1970s. The present finish is bright orange in color, but residue from an earlier coating that is much redder in color is readily apparent at the top of the walls and adjacent rafters.

The great clay pilasters at the entrance from the passageway were reconstructed along with the circular walls using similar methods and materials. Visitor contact, both inadvertent and intentional, required that the pilasters be frequently recoated, but since health concerns over the fumes generated by the process surfaced in the early 1990s, there has been no recoating, and large chunks of the clay coating have fallen to the floor both inside and outside the viewing platform.

## Viewing Platform

Installed in 1975, the viewing platform is a five- sided structure set on low concrete piers. Approached by a long metal ramp that extends to the Earth Lodge's entrance, the platform has built- up wooden posts or columns holding large, fixed panels of plate glass. A hollow- core door provides access to the interior on the north side of the platform. The ceiling, which is also wooden, is covered with carpet as is the plywood- decked metal platform itself. While it rests on the pre- Columbian floor, the platform enclosure is not tied directly into the pilasters. Plywood "wings"

between the wood- framed glass panels and the clay pilasters complete the enclosure, but do not provide security against unauthorized entry. In 2003, an intruder kicked through the “wing” on the south side of the platform, entered the exhibit, and removed the conch shell on display. He was apprehended and the shell returned, but it demonstrated the ease with which the exhibit could be entered.

## Utilities

### Electrical

The building’s original lighting system was altered in 1952 and replaced entirely in 1975.<sup>147</sup> The ring of lights that Swanson designed to light the smoke hole has disappeared, but conduit, junction boxes, and receptacles remain in place on the ceiling above the smoke hole, although the entire original system is thought to have been deactivated in 1975. Porcelain sockets that Swanson had set into rafters remain in place out of view behind the header beams but are no longer active.

The existing lighting was designed in coordination with the recorded monologue that interprets the lodge for visitors, with automatic activation of individual lights intended to direct the visitor’s attention as the recording plays out. Conventional “power strips” with multiple receptacles are mounted on the upper back sides of the north, west, and south header beams, with a pair of floodlights plugged into the receptacles on each header. Two additional floodlights are mounted on a board laid across the top of the smoke hole. Fitted with red gels or bulbs, these lights are directed on to the fire basin at the appropriate point in the monologue. Overall light levels are quite low, with parts of the lodge’s interior so dimly lit that details cannot be seen. Underground cable run along the west side of the walkway from the visitors’ center supplies power to the lodge, with a 250 amp breaker panel located in the electrical room off the south side of the passage. Most of the equipment dates to 1975, with only minor alterations in 1993.

### Water

The water line for the lawn sprinkler is a 1” line run along the north side of the walkway from the visi-



FIGURE 113. View north in viewing platform. (NPS-SERO-CR, 2004)

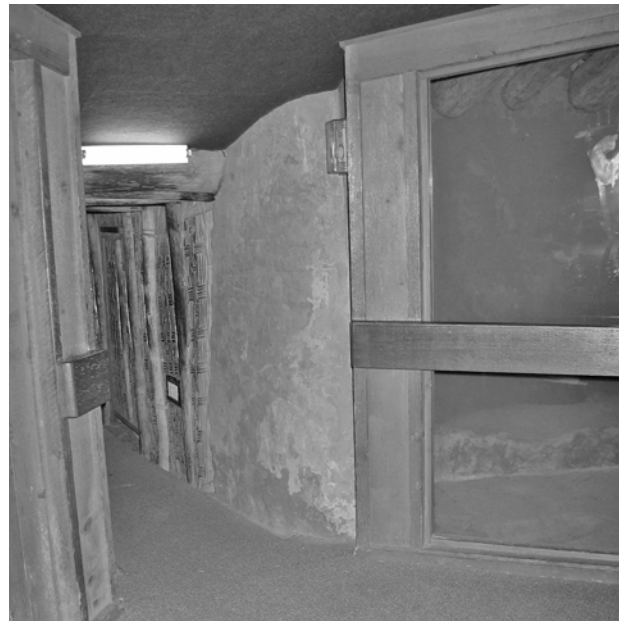


FIGURE 114. View of entrance into viewing platform. (NPS-SERO-CR, 2004)



FIGURE 115. View of modern power strip and flood light. Arrow marks recessed porcelain socket for original (1937) lighting system. (NPS-SERO-CR, 2004)

147. See Swanson, p. 59 and 66, for description of original lighting.



## Physical Description



FIGURE 116. View of pot and shell, the only objects displayed in the Earth Lodge. (NPS--CR, 2004)



FIGURE 117. View at top of inside of concrete shell, showing remnants of 1937 electrical system and of white paint applied to improve the day-light effect of the original lighting. (NPS-SERO-CR, 2004)



FIGURE 118. View south in electrical room. (NPS-SERO-CR, 2004)

tors' center. The part of the line closest to the visitors' center is galvanized steel pipe and the remainder is reportedly PVC pipe. In 1993, a 1/2" line was run from the front of the lodge to supply humidification equipment that was added to the climate control system at that time. An in-ground cut-off valve is located by the walkway just north of the lodge.

## HVAC

Air-conditioning equipment installed in 1975 was replaced with a complete climate control system, including humidification, in 1993. It includes a 106,504 BTU air-cooled condensing unit and indoor air handler by Carrier along with Johnson's System 350 humidity control system. All equipment is located in the mechanical pits on the southwest side of the earthen mound that covers the structure. A metal access door in that area provides access into the pits, which are reportedly infested with black-widow spiders (*Latrodectus mactans*). Sheet-metal supply and return ducts from the mechanical pits into the building's interior penetrate the concrete shell immediately behind the eagle platform and encircle the perimeter of the space between the ceiling and the concrete shell. Ducts were extended to include the viewing platform in 1993.

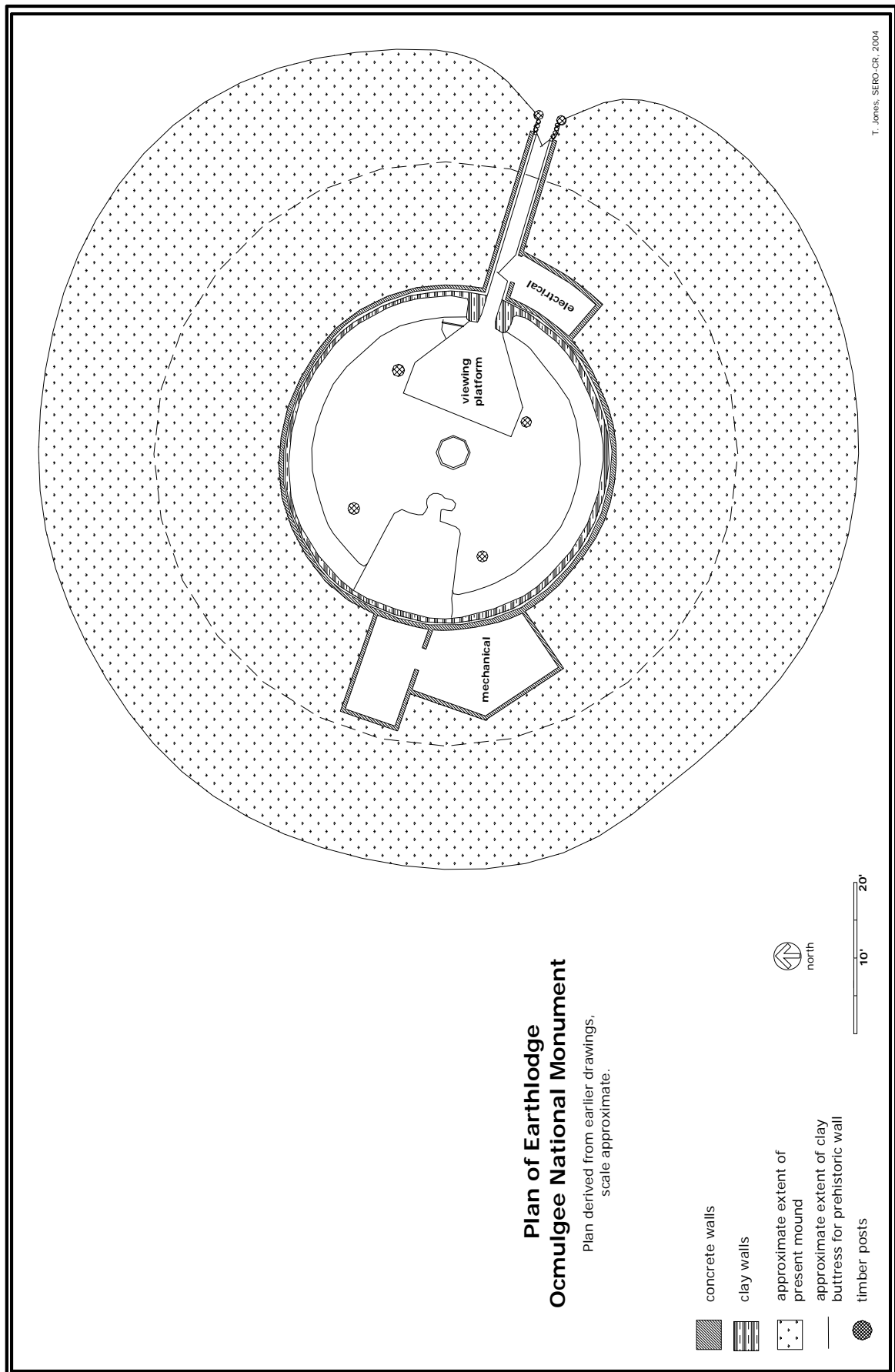
## Security

A security system was installed in 1981. It includes a contact alarm at the entrance door, a motion detector with audio alarm on the north side of the viewing platform, and a video camera connected to a monitoring station in the basement of the visitor center.

## Artifacts

A clay pot, reconstructed from fragments excavated at Ocmulgee but not necessarily at the Earth Lodge, is displayed near the northeast post. A single pot was, in fact, excavated in the Earth Lodge; but it apparently disappeared at an early date. Next to the reconstructed pot is displayed a conch shell dipper, with the two items used to interpret ceremonies that may have occurred in the Earth Lodge during pre-Columbian times. No other artifacts are on display in the Earth Lodge.





## Physical Description

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# Treatment and Use

Originally constructed around 1015 CE but destroyed in the twelfth century, the Earth Lodge was reconstructed inside a reinforced concrete shell in 1936- 1937 to exhibit and interpret extraordinarily intact remains of the pre- Columbian building. It has been one of the most popular attractions at Ocmulgee National Monument since that time.

A product of the great Mississippian age of mound builders, the pre- Columbian portion of the structure is clearly of paramount importance, being one of the largest and most elaborate of dozens of circular council chambers documented in the southeastern United States since discovery of the Earth Lodge in 1934. However, the Depression- era reconstruction of the Earth Lodge has gained some significance in its own right. It was designed by NPS architect James T. Swanson in consultation with archaeologists Arthur Kelly and James Ford. Both their decision- making process and the building's actual construction, which was mostly by CCC labor, are well documented. Except for the concrete shell, construction and later repair materials were almost entirely taken from the surrounding site.

The following sections outline issues surrounding use of the building as well as legal requirements and other mandates that circumscribe treatment of the building. These are followed by an evaluation of treatment alternatives before describing the proposed treatment through a series of more- detailed recommendations.

## Requirements for Treatment and Use

A number of laws, regulations, and functional requirements circumscribe treatment and use of the Earth Lodge. In addition to protecting the cultural

resource, these requirements also address issues of human safety, fire protection, energy conservation, abatement of hazardous materials, and handicapped accessibility.

### National Historic Preservation Act

The National Historic Preservation Act of 1966 as amended (NHPA) mandates protection of significant cultural resources. In implementing the act, a number of laws and authorities have been established that are binding on the NPS.

**Section 106.** Section 106 of NHPA requires Federal agencies “to take into account the effect” of any undertaking involving National Register properties. To satisfy the requirements of Section 106, regulations have been promulgated (36 CFR Part 800, “Protection of Historic Properties”) that require, among other things, consultation with local government, SHPO, and Indian tribal representatives. Prior to any undertaking at the Earth Lodge, the NPS is required to “afford the Advisory Council on Historic Preservation established under Title II of this act [NHPA] a reasonable opportunity to comment with regard to such undertaking.”

### Executive Order 13007

Issued in 1996, Presidential Executive Order 13007, “Indian Sacred Sites,” was issued “in furtherance of Federal treaties, and in order to protect and preserve Indian religious practices.” If structures like the Earth Lodge are determined sacred by the tribes, the NPS in its managing of the site must:

to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, (1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites.

## Executive Order 13175

Issued in 2000, Executive Order 13175, “Consultation and Coordination With Indian Tribal Governments,” was issued “in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications.” Changes in policy regarding use of the Earth Lodge, particularly any policy that would reduce access, would invoke the provisions of this Executive Order.

## American Indian Religious Freedom Act of 1978

The American Indian Religious Freedom Act of 1978 established a Federal policy

to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions . . . including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

While the ceremonial purpose for the Earth Lodge is clearly evident in the existing building, NPS has restricted access to the interior of the lodge due to its great antiquity, its fragile condition, and uncertainty over the exact nature of its original use.

## Native American Graves Protection and Repatriation Act of 1990

The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), as the title states, is primarily concerned with human remains and associated funerary objects, but also encompasses “objects of cultural patrimony.” Prior consultation with culturally affiliated tribes is mandatory prior to any planned excavations at the site.

## Americans With Disabilities Act of 1990

The Americans With Disabilities Act of 1990 (ADA) establishes comprehensive civil rights protection for disabled Americans, both in employment and in their right to free, unaided access to public buildings. However, ADA also recognizes that full compliance with ADA regulations might require significant alterations to the historic character of an historic property and, in that case, also allows for alternatives to full compliance.

## International Building Code

Treatment of historic buildings, including the Earth Lodge, should be guided by the International Building Code, including that code’s statement regarding historic buildings:

**3406.1 Historic Buildings.** The provisions of this code related to the construction, repair, alteration, addition, restoration and movement of structures, and change of occupancy shall not be mandatory for historic buildings where such buildings are judged by the building official to not constitute *a distinct life safety hazard* [emphasis added].

Threats to public health and safety should always be eliminated, but because this is an historic building, alternatives to full code compliance are recommended where compliance would needlessly compromise the integrity of the historic building.

## DOI and NPS Policies and Regulations

The Secretary of the Interior’s Standards for the Treatment of Historic Properties have established a framework in which to plan and execute treatment of historic structures. Guidelines for interpreting the Standards have been issued, and the NPS has also published 42 Preservation Briefs to provide detailed direction for appropriate treatment of a variety of materials, features, and conditions found in historic buildings.

Regardless of treatment approach, a key principle embodied in the *Standards* is that changes be reversible, i.e., that alterations, additions, or other modifications be designed and constructed in such a way that they can be removed or reversed in the future without the loss of existing historic materials, features, or character.

Finally, the NPS General Management Policies (2001) guides overall management of the Earth Lodge, especially Chapter 5 “Cultural Resource Management.” Based upon the authority of some 19 Acts of Congress and many more Executive orders and regulations, these policies require

planning to ensure that management processes for making decisions and setting priorities integrate information about cultural resources, and provide for consultation and collaboration with outside entities; and Stewardship to ensure that cultural resources are preserved and

protected, receive appropriate treatments (including maintenance), and are made available for public understanding and enjoyment.

Section 5.3.5, “Treatment of Cultural Resources,” provides specific directives, including a directive that “the preservation of cultural resources in their existing states will always receive first consideration.” The section also states that

treatments entailing greater intervention will not proceed without the consideration of interpretive alternatives. The appearance and condition of resources before treatment, and changes made during treatment, will be documented. Such documentation will be shared with any appropriate state or tribal historic preservation office or certified local government, and added to the park museum cataloging system. Pending treatment decisions reached through the planning process, all resources will be protected and preserved in their existing states.

Any alterations to the Earth Lodge must be carefully considered.

## Alternatives for Treatment and Use

Historic Structure Reports generally consider and evaluate alternative uses and treatments for historic structures. Emphasis is on preserving extant historic material and resolving conflicts that might result from a structure's proposed treatment and use. However, the nature of the Earth Lodge - historic reconstruction on top of pre-Columbian remains - severely limits the alternatives.

### Reburial

Continued preservation of the pre-Columbian remains of the building are, of course, of paramount importance, and no treatment or use can be contemplated which would diminish, degrade, or harm those features in any way. A legitimate and sometimes preferred treatment of large-scale archaeological resources like the pre-Columbian portions of the Earth Lodge is reburial of the excavated artifact. The magnificent pre-Columbian corn field that was excavated just west of the Earth Lodge in 1934 was soon reburied. The unexpected layers of color in Mound C were exhibited under temporary

Part II: Treatment and Use  
shelter until the 1950s when fiscal restraints prohibited a permanent shelter, and that excavation, too, was reburied.

From the beginning, however, the archaeologists and most others concerned with the site have believed the Earth Lodge to be of such significance that exhibit was absolutely necessary, and so it has remained. Certainly it would be possible to remove the present twentieth-century reconstruction and submerge the pre-Columbian clay remains under tons of sand. Such an operation might offer greater protection to the floor, seats, and effigy platform; but it is difficult to imagine a set of circumstances that would justify such a drastic remedy.

### Deconstruction

Removal of the reconstructed portions of the Earth Lodge has been given some consideration in the past. A new structure could be designed and built specifically to provide ideal conditions for preserving and exhibiting the pre-Columbian clay remains of the original building, with no attempt at reconstructing the remainder. Certainly replacing the existing building could greatly simplify preservation of the pre-Columbian clay features by eliminating the inherent conflict between maintaining conditions appropriate to preserving wood and conditions appropriate to preserving the clay features in the same space. A new structure could provide ideal conditions for preservation of the pre-Columbian artifact, but it would also necessarily be a modern intrusion on the landscape and any such proposal would almost surely spark stiff opposition. In the 1930s, Ford and Swanson considered a similar approach, but rejected it because they felt it would “seriously reduce the effectiveness of the exhibit.”

### New Reconstruction

It could be argued that the present reconstruction of the Earth Lodge should be removed because it incorporates so many compromises and mistaken assumptions that its usefulness as an interpretive device is severely limited. While there is general agreement that the Earth Lodge presents a more- or- less authentic interpretation of the original appearance of the interior of the pre-Columbian building, the authenticity of the exterior appearance of the structure, which is finished to resemble a Plains Indian earth lodge, is less certain and, some would argue, even misleading in terms of its repre-

sensation of pre- Columbian architecture in the southeastern United States.

Making use of modern technology and materials, a new reconstruction could be designed and built that would eliminate most, if not all, of the problems with the present structure. Use of inorganic materials, for instance, instead of the native pine, oak, and cane might make it possible to maintain higher levels of humidity that could improve conditions for the clay features.

Modern technology and materials might also allow a more authentic reconstruction, incorporating new information and perspectives on the Earth Lodge that have emerged over the last seventy years. An alternative to the concrete shell, for instance, could make possible replication of the smaller dimensions of the pre- Columbian structure, which was about 3' lower and perhaps 30' less in diameter than the dimensions of the present mound. Modern technology and materials might also eliminate the need for the turf covering which is one of the more obvious compromises evident in the present reconstruction.

A new reconstruction of the Earth Lodge would probably be hotly debated, however, since there is no consensus of opinion on what the original exterior appearance might have been. Some aspects of the original building (the height of its walls and the exact configuration of its roof, for instance) simply cannot be known, and interpretation of the archaeological data that does exist is open to discussion. It is not at all clear, then, that a new reconstruction would dramatically improve interpretation of the pre- Columbian building beyond what could be done through alterations to tour content or through the addition of wayside exhibits.

## Visitor Experience

If the present structure is maintained, as is recommended below, adaptation to remove the modern viewing platform should always be considered as an option. Partitioning of the interior in 1975 severely and negatively affected the visitor's experience of the Earth Lodge, but the extent of any improvement in environmental conditions that are conducive to

preservation of the pre- Columbian clay features remains debatable. Removal of the existing platform and installation of a new open platform (using the same footprint as the pre- 1976 platform) would require redesign of the climate- control system to include the entrance passage.

While removal of the enclosed viewing platform would improve visitors' access, it would also expose the building to damage if there were still uncontrolled visitor access. The present viewing platform offers some protection from vandalism, but even that is not complete, as a recent daytime break- in and theft demonstrated. While an open viewing platform would vastly improve the visitor's experience of the Earth Lodge, such a presentation of the building would require a return to the ranger- led tours that were the rule prior to the partitioning of the interior in 1975.

## Ultimate Treatment and Use

There is no compelling reason to consider discontinuing exhibition of the Earth Lodge as it was reconstructed in 1937, but there are compelling reasons to alter the way the building is accessed and interpreted. Protection and preservation of the pre- Columbian portions of the Earth Lodge must remain the highest priority in any scheme for treatment and use of the structure. Treatment should not diminish, degrade, or otherwise threaten the pre- Columbian portions of the structure, and should seek to preserve the historic reconstruction so long as that does not impede efforts to preserve the pre- Columbian portions of the building and so long as it remains useful for interpretation of the pre- Columbian features.

Recommendations for treatment and use are made below that will (1) improve conditions necessary to preserve the building's pre- Columbian features; (2) repair and preserve the building's historic features; (3) improve the visitor experience of the interior; and (4) suggest ways to reinterpret the exterior of the reconstructed building.



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# Recommendations for Treatment and Use

Overall, the Earth Lodge is in good condition, although there are ongoing concerns about the stability of the building's pre- Columbian clay features. There are also problems of repair with the reconstructed portions of the structure that diminish its effectiveness as an interpretive device. In addition, current understanding of pre- Columbian architecture in what is now the southeastern United States calls into question the authenticity of the exterior of the structure.

As outlined in the previous section of this Historic Structure Report, the Earth Lodge has been the subject of a number of professional and scientific studies and investigations by Kidd and Associates, Law Engineering, the National Bureau of Standards and others that have examined virtually all aspects of the building, and no new studies of that sort have been deemed necessary for the present study.

Recommendations for treatment and use are made below that will (1) improve conditions necessary to preserve the building's pre- Columbian features; (2) repair and preserve the building's reconstructed features; (3) improve the visitor experience of the interior; and (4) suggest ways to reinterpret the exterior of the reconstructed building.

Aside from mounds and rock shelters, authentic pre- Columbian structures are virtually non- existent in the southeastern United States, and the Earth Lodge, for all of its inconsistencies, gives visitors the opportunity to experience one of the most remarkable pre- Columbian buildings in the region. With improvements in the way the building is exhibited and enhanced security through more careful control of access, it would continue to provide visitors with a glimpse of pre- Columbian America.

## Pre-Columbian Features

The building's pre- Columbian clay features are, of course, of paramount importance, with everything else existing only as a means of protecting those features and interpreting them for visitors. Although the building was constructed for those purposes, the stability of the pre- Columbian features became the subject of intense debate almost as soon as the building was opened in 1938.

Between 1941 and 1951, the pre- Columbian clay was coated with Alvar, a synthetic resin, on at least two occasions in an attempt to prevent drying of the floor. Until the 1960s, ventilation and routine monitoring of the building's internal environment were part of the park's standard operating procedure, but high indoor humidity precipitated occasional outbreaks of mold and mildew.

Environmental studies in the 1970s led to installation of an air- conditioning and dehumidification system, and the interior was partitioned with a viewing platform separating visitors from the pre- Columbian features. There were additional studies in the late 1970s and in the early 1990s, and in 1993, equipment was replaced and a humidification system was added amid renewed fears that the pre- Columbian clay was undergoing excessive drying.

Concerns about the stability of the pre- Columbian features have continued to the present day, and rightly so. However, anecdotal evidence has sometimes overwhelmed good data and sound analysis from past studies, while failure to follow through with professional recommendations has sometimes put the artifact at risk.

## Natural Processes

Cracking, spalling, and rising damp are all more-or-less natural processes that have taken their toll on the pre-Columbian clay features.

**Cracking.** There is no evidence that the floor is continuing to crack or that existing cracks are increasing in size. Testing in 1974 showed that the moisture content in the upper strata of the pre-Columbian clay features had been reduced such that any further drying would not cause additional cracking of the surface. Evaluation of the existing condition of the pre-Columbian clay features against historic photographs shows that most, if not all, of the cracking now visible occurred either before or shortly after excavation of the Earth Lodge in 1934, and that condition has not changed appreciably, if at all, since that time. Thermal or seasonal expansion and contraction of the cracks may be possible but does not seem likely. Crack monitors could be installed at selected locations and monitored continuously for at least a year to determine how much, if any, of the movement that might be occurring is seasonal or thermal in nature and, therefore, largely unpreventable.

It would be possible to repair the cracks since the source of the original kaolin-rich clay could probably be located nearby. However, the cracks are a natural occurrence when clay dries; and since cracks may have been present in pre-Columbian times, repair of cracks or other attempt to restore the pre-Columbian clay surface should not be considered.

- Install crack monitors at select locations
- Do not attempt restoration

**Spalling.** While cracks may be stable, there is clear evidence for continued spalling (i. e., crumbling)<sup>148</sup> of the clay on the shoulders of the effigy platform and around the fire basin, both of which historic photographs show were already badly deteriorated when first excavated in 1934. Investigation in April 2004 was hampered by the presence of a great deal of small trash and insect parts as well as clay fallen from around the smoke hole and from the top of the

reconstructed walls, but because this debris is reported by park staff as having accumulated over at least a decade, it gives some sense of the relatively slow rate at which spalling might be occurring. During that interval, perhaps 10- 15 cubic centimeters of material have spalled away on the shoulders of the platform (see Figures 99 and 100, above). Since the material in those areas is quite friable, and has been since the artifact was uncovered, additional spalling can be expected, although there is no indication that it is spreading beyond the existing deteriorated areas of the platform shoulders and fire pit rim. Extreme care should be taken that these areas are not abraded or brushed, since that would dislodge additional, already-loose material. A means of consolidating and securing the friable material could be explored, but any treatment runs the risk of exacerbating the problem, disfiguring or otherwise damaging the pre-Columbian clay.

- Closely monitor platform shoulders and fire pit rim for continued spalling
- Avoid contact with spalling clay
- Explore possibility of consolidation if conditions worsen

**Rising Damp.** Rising damp, a condition where ground moisture is wicked up through masonry or earthen materials, has severely damaged and discolored the remains of the pre-Columbian wall, especially on the northeast side of the building. The localized nature of the damage suggests the presence of excessive groundwater beyond the general dampness of the earth. In 1975, the French drain around the perimeter of the concrete shell was entirely replaced and the exterior of the shell was waterproofed for the second time, which presumably eliminated ground water problems.

However, it is not clear if the observed damage to the walls is ongoing or simply staining and residue from old leaks. There should be careful monitoring of the moisture levels in the walls to determine if rising damp remains a problem. If it does, the most likely source might be the lawn sprinkler, which the 1974 study recommended be discontinued. More aggressive measures may have to be researched if rising damp continues to be an issue, but careful monitoring may reveal there is no ongoing problem,

148. Clay falling from the reconstructed walls and from around the smoke hole can be distinguished from material that may have spalled off the pre-Columbian features by its reddish-orange color of the former and by its disintegration into small piles of uniform fine particles.

and if there is, discontinuance of the sprinkler might be the solution.

Once it is certain rising damp has been controlled, a professional conservator can assess the sections of the wall that have been severely stained and recommend solutions. Complete removal of the stains may not be possible without some restoration of the clay surface.

- Test for excessive moisture and monitor pre-Columbian walls to determine if rising damp is present
- Discontinue use of sprinkler if rising damp is still present
- Conserve stained portions of the wall

## Vibration

Testing has shown that the effect on the pre-Columbian clay features of vibration from the nearby railroad is nil, and that, indeed, more vibration could be detected from visitors simply moving around the viewing area. While this conclusion was reached through testing in 1974 prior to the installation of the present viewing platform, it is highly unlikely that conditions have changed appreciably since that time.

## Curatorial Care

Although part of the building, the pre-Columbian clay features must always be treated as a delicate museum artifact and not simply as an architectural feature of an historic building. Under the direction of a qualified museum conservator of pre-Columbian artifacts, procedures for cleaning and monitoring the pre-Columbian clay features should be developed and implemented immediately. Maintenance staff should be included in that process and, if properly trained and supervised, could assist in ongoing care of the building's pre-Columbian features.

Careful monitoring of the condition of the Earth Lodge's pre-Columbian clay features was historically a routine procedure but, over the last twenty-five years, has frequently been neglected. Since SEAC's relocation to Tallahassee in the early 1970s, there has often been no staff on site with the expertise to make curatorial decisions, and the resource has suffered accordingly. Considering the size of the

## Part II: Treatment and Use

park's museum collection, personnel primarily responsible for curation of the Earth Lodge and of the rest of the park's large collection should be part of the park's permanent staff.

Since staff shortages are routine in the NPS, however, the responsibility for curatorial care of the Earth Lodge has fallen to the rangers and existing maintenance staff. They must have procedures to follow, and the proper equipment to inspect and clean the building. Existing methods of accessing the area above the ceiling are thoroughly inadequate and subject the rim of the fire basin to possible damage. At a minimum, the efforts of existing staff must be supported by an annual inspection of the interior of the Earth Lodge by an architectural conservator qualified in the preservation of pre-Columbian earthen structures and materials, who could direct an annual cleaning and inspection of the pre-Columbian features.

- Develop conservation plan for pre-Columbian clay features
- Provide training for park staff in inspecting and cleaning the artifact
- Devise safe means of access to smoke hole that avoids contact with the floor and fire pit rim

## Climate Control

The existing climate control system was mostly installed in 1992, but there has been no regular monitoring of conditions inside the Earth Lodge since 1994. Correct settings through the system's internal thermostatic and humidistatic controls cannot be verified.

Providing an appropriate climate for preserving dissimilar materials in the same space is always difficult, as the past history of the Earth Lodge demonstrates. The natural characteristics of clay are such that drying tends to cause shrinkage and consequent cracking of the clay, although Law Engineering tests showed that moisture levels in the pre-Columbian clay features were so low that further drying of the clay would not cause cracking. However, there was concern that maintaining low humidities would increase transpiration of ground moisture through the pre-Columbian clay and could contribute to the spalling of the clay on the shoulders of the platform and the rim of the fire

basin. The applications of Alvar in the 1940s and 1950s were meant in part to reduce any transpiration that might occur, but the coating could not seal large cracks and its effectiveness as a seal degrades after twenty years.

Elevated humidity levels could also reduce transpiration of ground moisture but, if maintained above 60%, would tend to encourage the growth of molds and mildew on the reconstructed wood and cane portions of the building. Because of the high visibility of the mold growth on the timber posts and beams, and because any degradation of the pre-Columbian clay is subtle and slow to become obvious, the tendency has been to reduce humidity levels to control the mold, in spite of repeated professional recommendations to the contrary.

Temperature can be allowed to fluctuate, but humidity levels should not be allowed to fall below 60%. Minor mold and mildew outbreaks can be cleaned as they occur. A hydrothermograph should continuously monitor the internal climate, especially when changes to access are made, as recommended below.

Most important, as noted above, the condition of the clay features must be carefully monitored and inspected annually by an architectural conservator qualified in the preservation of pre-Columbian earthen structures and materials. Any evidence of new areas of spalling in the pre-Columbian clay would be an indication that humidity levels should be raised. It is possible that future conditions might dictate maintaining humidity levels at such high levels that mold outbreaks would be uncontrollable. At that point, alternatives to maintaining the historic wood and cane structure along with the pre-Columbian clay features may have to be examined.

- Insure that humidistatic controls are functioning properly
- Maintain humidity levels of at least 60%

## Reconstructed Features

All of the wooden parts of the building as well as the concrete shell should be considered historic features of the building. All are in reasonably good

condition and require only minimal repair to insure their continued preservation.

### Exterior

The right-hand or lock-side jamb of the entrance door is badly deteriorated. The deteriorated member should be repaired or replaced, using timber harvested from the park woodland and treated to resist decay and insect damage.

- Repair entrance door frame

### Concrete Shell

The concrete shell within which the Earth Lodge was reconstructed is completely covered by earth and exists only to protect the pre-Columbian and the reconstructed features of the building. Although only parts of the building's concrete shell can be examined, no cracks or other evidence that it is defective or deteriorating have been observed. However, erosion has exposed part of the concrete shell at the entrance to the Lodge, and repair of the eroded areas will be necessary.

The side walls were completely waterproofed in 1975, and the only reports of leaks occur when the sprinkler is allowed to run too long and water leaks into the electrical room, which is outside the concrete shell. As noted above, excessive moisture has apparently been present all around the building, especially on the northeast side where the grade of the surrounding ground is a few inches higher and water naturally percolates toward the concrete wall. All around the building, water, if it collects or is allowed to stand, can seep through the construction joint between the concrete wall and its footing, and even without penetrating the concrete shell itself, excess moisture can manifest itself as rising damp in the pre-Columbian clay wall on the interior.

On the northeast side of the building, rising damp has precipitated serious discoloration and some spalling of the remains of the pre-Columbian clay wall in that area. This problem was recognized in 1975 when a new French drain was installed, although some questions have remained about the drain's effectiveness. It is not clear if the current discoloration and deposits are the results of active leaks or simply residue from past incidents of leakage, but the dangers of rising damp should always be recognized.

As noted above, it may be necessary to remove the sprinkler since there is evidence that it may have contributed to rising damp in the building's pre-Columbian clay walls. Any browning of the turf during certain seasons of the year would only reinforce the idea that a grass covering would not have been characteristic of the pre-Columbian building.

- Repair erosion around front entrance
- Consider removal of sprinkler

## Interior

Unlike the exterior, the interior of the Earth Lodge, minus the modern viewing platform, is generally thought to be an accurate representation of the structure's pre-Columbian appearance, although to accommodate visitors in something other than a semi-crouched position, the walls were built at least a foot higher than the archaeological evidence suggested was the case in the pre-Columbian structure. Most of the reconstructed features (i.e., the upper part of the clay walls, the timber-framed roof, and wood- and-cane passageway walls and ceilings) are in reasonably good condition, given that much of the material is now over seventy-five years old, but there are problems of repair and maintenance that detract from its effectiveness as part of exhibit of the building's pre-Columbian clay features.

**Clay Features.** The clay walls that were reconstructed on top of the small portion of the pre-Columbian walls excavated in 1934 were reconstructed with clay brick manufactured on site by CCC workers using local materials. Laid up with a clay mortar, the walls were then finished with a layer of clay stucco or plaster and was thought, at the time, to approximate the appearance of the pre-Columbian walls. Clay was also used to coat the reed roof covering around the smoke hole.

Beginning in the 1950s and continuing to around 1990, the reconstructed portions of the walls, not the pre-Columbian portions, were routinely recoated with a slurry of clorox, water, and clay from the nearby railroad embankment in order to eliminate discoloration from mold and mildew and to repair vandalized surfaces, mainly on the pilasters on each side of the entrance. The process was discontinued when maintenance personnel began to complain of the effects of chlorine fumes after enclosure of the visitor viewing platform. As a

## Part II: Treatment and Use

result, the pilasters are in very poor condition. With good exhaust fans and proper respirators, a safe procedure for this maintenance activity could be established and the repairs resumed.

The clay around the smoke hole and at the top of the walls has also become embrittled and cracked, with small bits of clay routinely drop on to the floor below. These areas can be repaired in the same manner as the pilasters. All of these repairs should be made *after* cleaning of the wooden features that is recommended below.

- Establish safe procedure for making repairs to reconstructed clay features
- Repair top of reconstructed wall and perimeter of smoke hole

**Wooden Features.** The timbers and cane that form the roof and the sides and ceiling of the passageway are mostly intact, but many of the cane straps that attach (or appear to attach) the cane matting to the posts to form the passageway walls are missing. The passageway ceiling also appears to have been disturbed around the entrance, exposing some of the sawn lumber used for hidden framing in 1937. Walls and ceiling in the passageway should be repaired to restore their original appearance. In addition, modern repair of the entrance door did not replicate the original design, which was intended to be the same as the walls. The door, too, should be restored to its original appearance.

Mold and mildew, both of which are living organisms have been a constant problem on the interior of the Earth Lodge, which is encased in concrete and earth-covered, giving it a naturally damp, cool environment not unlike a cellar or basement. In addition, it seems likely that timbers and other organic materials used in the reconstruction in 1937 and the repairs in 1955 may not have been completely dry, which exacerbated the problem.

All of the timber posts, plates and rafters are severely soiled from accumulated dust, mold, and/or mildew. White mold is clearly evident on the four posts and the plates, but the mold may be dead, leaving the extent of mold activity uncertain. Darker material coats the timber rafters and cane roofing, but it is unclear how much of this material is mildew and how much is simply dust.

A variety of molds were identified in the building in 1966, none of them deemed toxic to humans, and there have been no reports of toxic reactions to exposure since the climate control system was installed in 1975. Some of the popular concern about mold has been overblown, similar to the hysteria over asbestos when its toxicity was first widely reported. Department of Interior (DOI) policy on mold contamination does not require microbial sampling unless there have been specific health problems associated with exposure.

DOI policy recommends removal of molds and mildew by wiping contaminated materials with a simple bleach/detergent solution or by disposing of contaminated material. Vacuuming using high-efficiency particulate air (HEPA) filters can also remove significant amounts of mold growth. Except for the most complex or controversial situations, microbial sampling and on-site "experts" need not be part of the equation.

All of the timber posts, plates, and rafters can be easily cleaned by wiping with a bleach/detergent solution. Cleaning the large quantity of cane above the rafters in that manner would be more difficult, but is probably not necessary, since it is not infected with the white mold found on the timbers. The cane could be thoroughly vacuumed from above and from below, with further cleaning only where molds or mildew are visible. A somewhat soiled appearance on any of the wood or cane surfaces should be tolerated, since such an appearance would have been typical of the pre-Columbian building after a season or two of general use.

Small, inconspicuous areas of the timber and cane should be treated in the recommended manner to determine the correct cleaning solution and to determine the efficacy of the treatment. While total replacement of the cane might be suggested, replacement should be avoided. Installation of the cane, which was deliberately placed and woven around the smoke hole, is one of the primary examples of the high level of craftsmanship exhibited in the 1937 reconstruction. Its replacement would seriously diminish the resource.

- Clean all woodwork to eliminate molds and mildew
- Repair walls and ceiling in passageway

- Restore door to its original appearance

**Pest Control.** Insects and rodents appear to be present inside the Earth Lodge, with the area around the entrance the most likely point of entry. From there, mice or other rodents can travel between the clay walls and the concrete shell and access all parts of the building. During the current inspection, rodent droppings were evident on the clay floor outside the viewing platform and a mouse or other rodent has burrowed a small hole through the pre-Columbian clay wall remains on the north-east side of the building.

There has been no inspection of the building for termites in at least ten years, but the danger of termite damage is always present. The Earth Lodge was reconstructed inside a concrete shell, but the four main supporting timbers appear to have been the route of a major termite infestation that necessitated extensive repairs in 1955. The timbers were set in resin or other impervious material at that time, so that wood-to-ground contact is limited to the area around the entrance.

The building should be routinely inspected for termites, rodents, and other pests by a licensed professional and appropriate measures taken to eliminate pests from the building. The nature of the entrance into the building is such that rodent access can probably not be completely eliminated, but a trapping program could keep it under control.

- Inspect building for termite or other insect infestation annually
- Inspect building for evidence of rodent entry monthly

**Fire Protection.** As noted earlier in this report, fire protection was an early concern with the Earth Lodge, and an unidentified fire-proofing material was applied to the wood and cane surfaces shortly after World War II. Its effectiveness sixty years later is uncertain. Fire prevention must be a high priority and is one of several reasons why uncontrolled access to the building should be discontinued (see below). Although there is always the chance of an electrical fire, the most likely source of fire in the Earth Lodge is arson and should a fire be set in the passageway the result could be disastrous if the building were occupied. Not only could lives be lost, but a fire in the passageway could move rapidly



into the lodge itself, if the air handler happened to be in operation at the time.

In addition to eliminating uncontrolled access and maintenance of a fire extinguisher inside the lodge, a smoke and fire- detection system should be installed with sensors located above the ceilings. Use of water to combat fire inside the lodge should be limited to the passageway, since flooding of the main interior could do irreversible damage to the clay features, more damage perhaps than the burned roof collapsing onto the floor again as it did when the building burned in the twelfth century. The park should work closely with local fire officials to make certain that they are familiar with the Earth Lodge and the importance of protecting the pre-Columbian clay features.

- Install smoke and fire detection system
- Consider eliminating uncontrolled access
- Work with local fire department to establish fire- fighting procedures at the Earth Lodge

## Visitor Experience

Conservation and repairs recommended above are necessary if the pre- Columbian and historic building is to be preserved. Other repairs and alterations are recommended that would significantly enhance the visitor's experience of the building.

### Lighting

Since visitors see the Earth Lodge during daylight hours, the original lighting in the Earth Lodge was designed to replicate the appearance of daylight streaming through the smoke hole. Swanson consciously avoided what he called "theatrical effects." That system was augmented by additional lighting in 1952, but the overall presentation of the exhibit was not changed.

In 1975, it was decided to replace the "daylight" effect of that original lighting system with "night" lighting. At that time, it was thought that much if not most of the building's use would have occurred at night, although that makes little sense in light of the centrality of Sun symbolism in the religious practices of Southeastern tribes. The light streaming through the smoke hole was eliminated and the

## Part II: Treatment and Use

new, semi- theatrical lighting, which included a red light on the fire basin, was coordinated with an button- activated audio interpretation of the interior. Overall, light levels were greatly reduced, and unless the automatic audio/visual presentation is activated (and works properly), visitors are unable to clearly see significant portions of the interior.

The original "daylight" presentation of the building should be restored by replacing the dark acrylic dome with translucent glass and reinstating the lighting above the smoke hole. Regardless of other interpretive devices or how the exhibit is accessed (see below), increased light levels would improve visitors' ability to perceive the Earth Lodge's most-significant features. In addition, utility lighting should be installed that would fully illuminate the interior of the Earth Lodge to facilitate inspections and housekeeping. Such lighting could be easily concealed behind the headers and in other inconspicuous locations.

- Recreate original "daylight" presentation of the building
- Install task lighting that will fully illuminate the interior

### Access

The stooped posture required for entrance into the building should set the tone for the visit, but the experience is diminished by the site of worn industrial carpeting underfoot, and overhead as well once the visitor enters the viewing platform. Stained- and- varnished fir boards, all unnecessarily wide, form frames for the glass and are also used for a wide railing. The visitors' experience of the building was severely diminished by the separation of the visitor from the interior space. The interior of the Earth Lodge is difficult for the visitor to fully comprehend, and sealed behind glass walls, the experience of the dimly- lit interior is that of viewing one of the museum's dioramas.

The viewing platform was installed to better control the interior climate, to reduce staffing, and to protect the resource. As recent experience has shown, however, the present arrangement does not eliminate the chance of vandalism, in spite of television monitoring. Indeed, the condition of the entrance pilasters demonstrates that significant damage still occurs outside the view of the camera.

The viewing platform should be redesigned and replaced with a glass- or acrylic- enclosed platform that minimizes framing and that replaces the current carpeted ceiling with a glass or acrylic ceiling. In place of the old audio- visual presentation, simple interpretive panels on the railings could offer better interpretation, and with improved lighting, the visitors' experience of the Earth Lodge would be greatly enhanced.

- Replace existing walls and ceiling of viewing platform with minimally- framed glass or acrylic panels
- Replace carpet on floor of platform and in passageway

## Interpretation

In 1937, an earthen mound was constructed as part of the reconstruction of the Earth Lodge. There have been significant disturbance of the top of the mound for installation of the lawn sprinkler system in 1962, and most of the original mound was removed for waterproofing in 1975. Although the overall size of the present mound approximates that of the 1937 mound, the concrete shell that encloses the building and other compromises necessary to make the building accessible to the public required that the reconstructed mound be substantially larger than the evidence suggested was the case in the pre- Columbian building.

In addition, as noted earlier, Larson and others have called into question the authenticity of presenting the Earth Lodge as a completely earth- covered structure, and even Swanson in 1937 admitted that such a treatment was unlikely and was done simply for reasons of aesthetics and ease of maintenance. Quite possibly, the pre- Columbian building featured a bark- or thatch- covered roof above sloping clay walls that were a foot or more lower than at present, with no turf or grass covering. While there

may be insufficient evidence to replicate the building's exterior appearance with any degree of certainty, on- site interpretation should address the issue directly through a wayside panel that would disabuse visitors of the notion that Mandan- style earth lodges were ever a part of the pre- Columbian landscape at Ocmulgee and would provide an alternative interpretation of the structure that was unearthed in 1934.

There has been significant erosion of the mound, especially at the top but also above and around the entrance into the building, where part of the top of the passageway's concrete shell has been exposed. Two logs now serve as a lintel above the entrance, the second placed there around the time the mound was regraded in 1975. The second lintel could be removed, additional earth brought in, and the top of the passageway and the slopes around the entrance regraded to cover the concrete shell and to replicate the appearance of those areas prior to the alterations in 1975.

In addition, the concrete shell terminates with a flat, circular top about 6' in diameter, which allowed a flat top to the mound that simulated the smoke hole that vented the top of the pre- Columbian structure. This feature of the mound has lost most of its definition, primarily through erosion. Along with regrading the top of the entrance passageway, the flat top of the mound should also be re- established.

The metal grates and access door to the mechanical pits on the west side of the mound are rusting. These should be repainted in a green that blends with the surrounding grass.

- Design waysides or other means of accurately interpreting the exterior appearance of the Earth Lodge
- Re- establish historic flattened top to mound and grade above and around entrance

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# Sources of Information

## Published Sources

- Bartram, William. *Travels Through North and South Carolina, Georgia, East and West Florida*. Savannah, GA: The Beehive Press, 1973 facsimile of the London edition published in 1792.
- Fairbanks, Charles H. "The Macon Earth Lodge," *American Antiquity*, Vol. 12, No. 2, October 1946.
- Hally, David J. *Ocmulgee Archaeology, 1936- 1986*. Athens and London: University of Georgia Press, 1994.
- Jones, Charles Colcock. *Antiquities of the Southern Indians*. Spartanburg, SC: The Reprint Co., 1972, originally published 1873.
- Kelly, A. R. "Exploring Prehistoric Georgia," *Scientific American*. March, 1935, pp. 117- 120.
- . *A Preliminary Report on Archaeological Explorations at Macon, Georgia*. *Bulletin 119* Bureau of American Ethnology. Washington, GPO, 1938.
- Kelly, A. R., and Louis Friedlander. "Oculgee's Trading Post Riddle," *The Regional Review*. Vol II, no. 1 January 1939. US Department of the Interior, NPS, Region One, Richmond Virginia.
- Pope, G. D. *Ocmulgee National Monument, Georgia*. Washington, D. C.: National Park Service Historical Handbook Series No. 24, 1956, reprinted 1961.
- Sameth, Sigmund. "Lodges of the Mandan Tribe," *New York Times*. November 17, 1940.
- Swanton, John Reed. *The Indians of the Southeastern United States*. Washington, D. C.: reissued by Smithsonian Press, 1988.
- Wesson, Cameron, and Mark A. Rees. *Between Contacts and Colonies: Archaeological Perspectives on the Protohistoric Southeast*. Tuscaloosa, AL: University of Alabama Press, 2002.
- Wilson, Rex L. "A Radiocarbon Date for the Macon Earth Lodge." *American Antiquity*, Vol. 30, #2, 1964.

## Unpublished NPS Studies

- Brockington and Associates, Inc. "Archaeological and Historical Delineation of Ocmulgee/Macon Plateau." Atlanta, GA: Georgia Department of Transportation, July 1995.
- Bryan, Benjamin L. "Guide Manual: Ocmulgee National Monument." National Park Service, 1940.
- Clifton, James R. "Material Problems in the Preservation of the Earth Lodge at Ocmulgee National Monument." Washington, D. C., draft dated 12/7/77, OCMU files.
- Ewers, John C. "Exhibit Plan for Ocmulgee National Monument." Macon, GA: Ocmulgee National Monument, June 27, 1940.
- Historic Architecture Division, Southeast Region. "Historic Structure Assessment Report, Earth Lodge, Ocmulgee National Monument." Atlanta, GA: National Park Service, 1993.
- Jennings, J. D. "Ocmulgee Archaeology, Summary through May 1938." Ocmulgee National Monument, 1938.
- Kidd and Associates. "Earth Lodge Study, Ocmulgee National Monument." Atlanta, GA, April 2, 1974.
- Marsh, Alan. "Ocmulgee National Monument Administrative History." Macon, GA: Ocmulgee National Monument, 1986.
- Nelson, Swindell, Williams. "An Analysis of Ocmulgee Bottoms Materials at the Southeast Archaeological Center." Tallahassee, FL: University of Florida, July 1974.
- Swanson, Jr., James T. "A Report Including Discovery, Excavation, Restoration of a Prehistoric Indian Ceremonial Earth Lodge, Ocmulgee National Monument."
- Walker, John W. "Ocmulgee Archaeology: A Chronology." Tallahassee, FL: Southeast Archaeological Center, NPS, 1989.

Watson, JoAnna M. "Summary of Past and Proposed Ground Disturbing Activity at Ocmulgee National Monument." NPS and Mercer University, August 2000.

## **OCMU Planning and Administrative Documents**

Archaeologist's Reports, 1938- 1943.

Denver Service Center. "General Management Plan/ Environmental Assessment, Ocmulgee National Monument." Denver, CO: September 1982.

"Guide Manual," July 1940.

"Statement for Interpretation," revised 1993.

Superintendent's Annual Reports, June 1938 - August 1954.

Superintendent's Monthly Narrative Reports, January 1939; June 1950 - December 1953; March 1954 - July 1967; 1987, 1991, 1993.

## **NPS Technical Information Center Drawings**

#1053, Proposed Restoration Council Chamber, 1 sheet, March 25, 1936.

#1054, Restoration Council Chamber, 3 sheets, June 1, 1936.

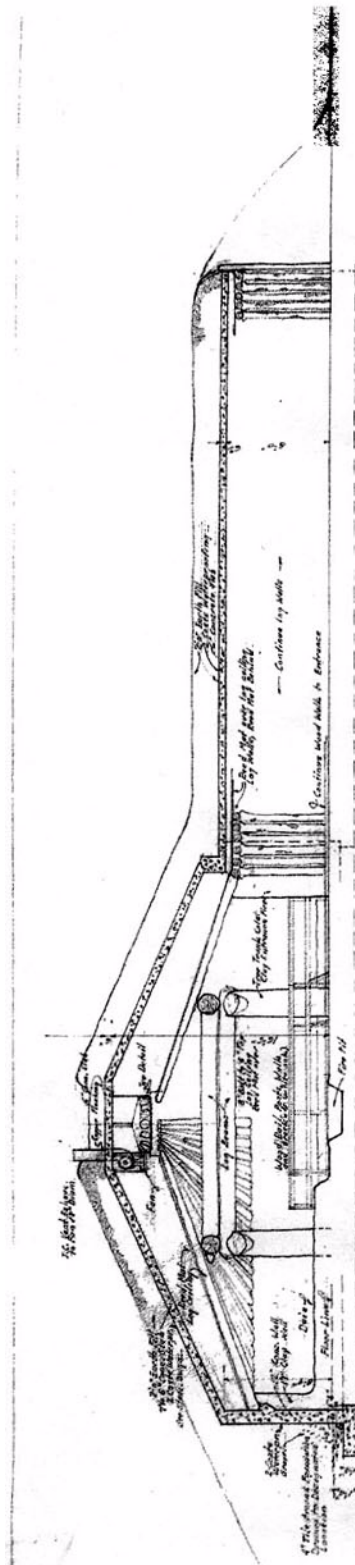
#2100, Earth Lodge Additional Lighting, 1 sheet, May 1, 1952.

#41001, Climate Control/Earth Lodge, 8 bid sheets + 2 added sheets (14 preliminary sheets), February 1, 1978.

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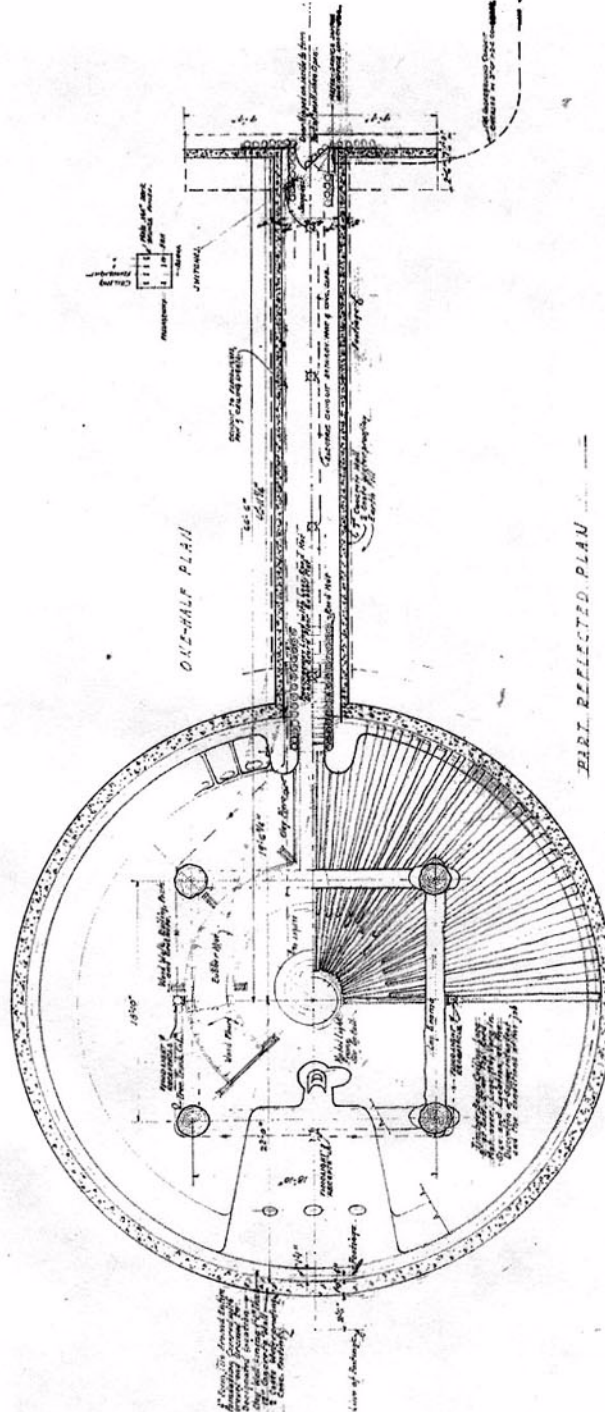
# Appendix A: Plans, Specifications, and Materials List, 1936





LONGITUDINAL SECTION

ELECTRICAL WORK

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PART REFLECTED PLAN

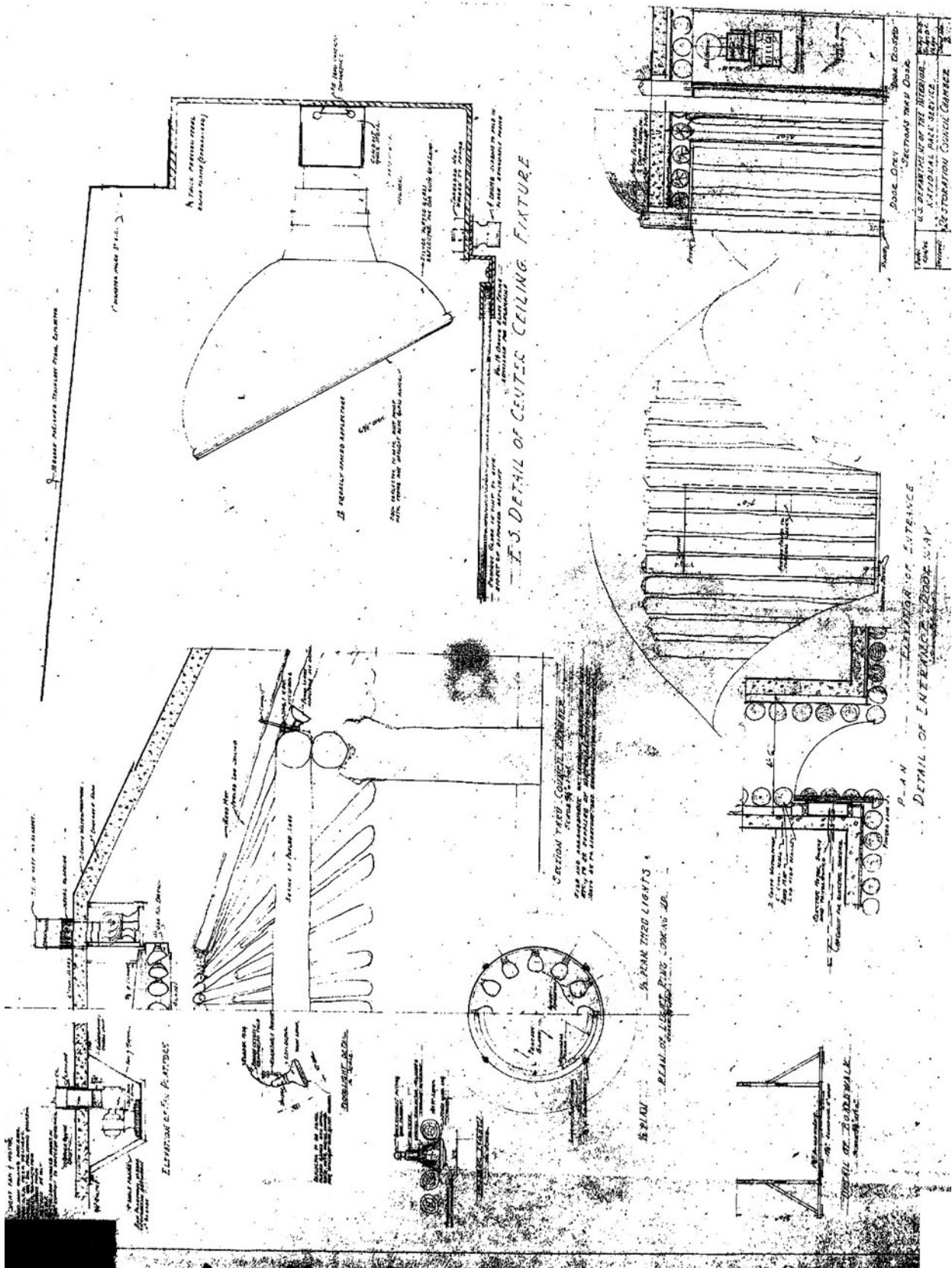
HALF-SIZE REPRODUCTION

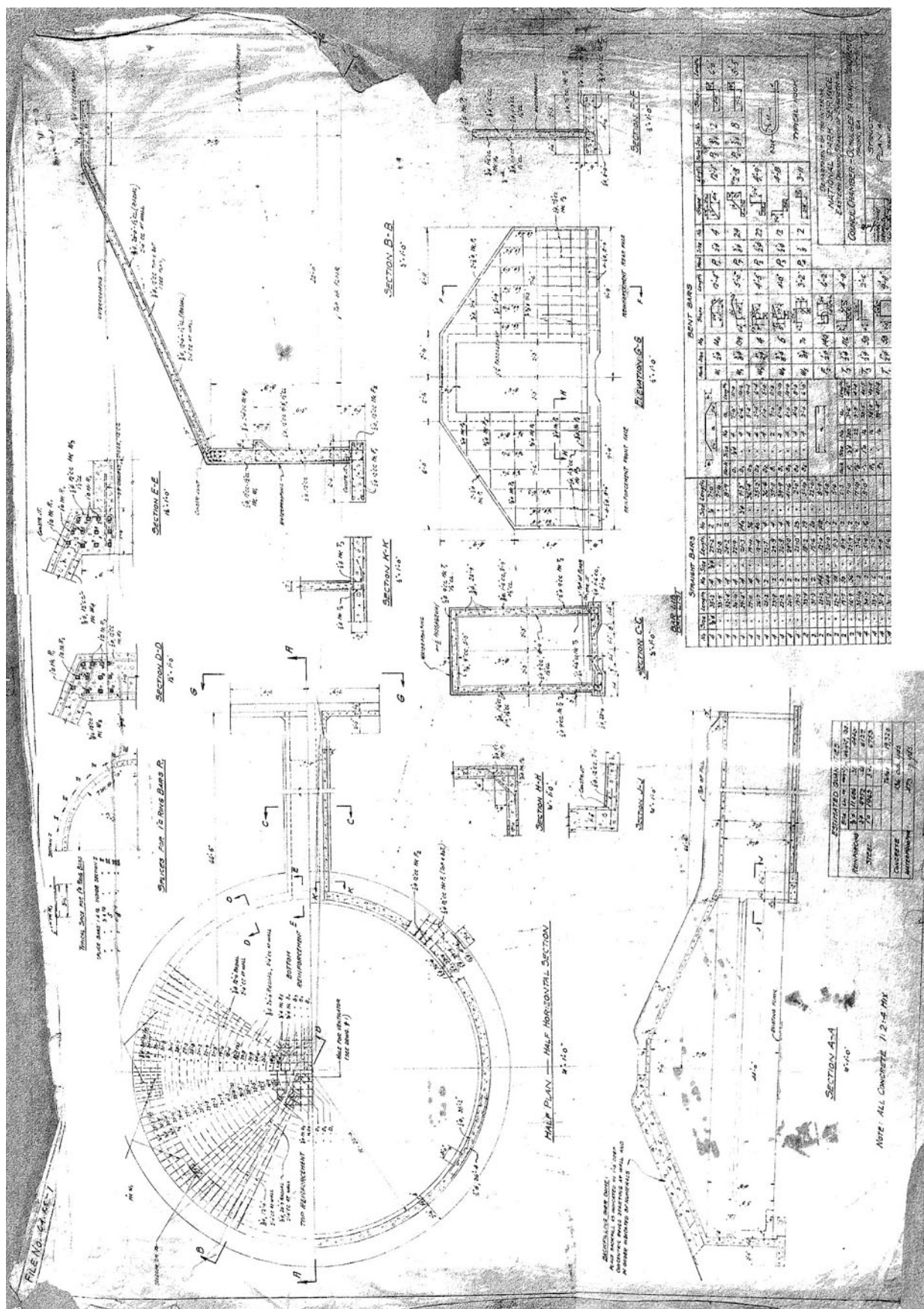
Ordered for Free Protection L. D. Griffin by Publication 3-16

RESTORATION COUNCIL CHAMBER  
OC MULGEE NATIONAL PARK  
see Duffin's for structural drawings and details

[illegible]







July 1, 1936.

OUTLINE SPECIFICATIONS FOR THE  
RESTORATION OF THE  
COUNCIL CHAMBER.

To accompany Drawing No. NM-OCM-1054-A, 3 sheets.

1. WORK TO BE DONE: - This work consists in the furnishing of all labor and materials and constructing therewith all work necessary for the Restoration of the Council Chamber, located within the Government-owned property of the Ocmulgee National Monument, as shown on the complementary drawings and hereinafter specified.

2. MATERIAL AND WORKMANSHIP: - When not otherwise described, all materials shall be new and the best of their respective grades. They shall be suitable for the use and purpose intended and conform to the applicable Federal Specification available. Where the types and classification of articles specified are not readily obtainable, then other similar articles of equal quality and use shall be substituted with the approval of the officer in charge.

All work shall be accurately cut, fitted, formed, connected and securely fastened plumb and true in accordance with the best modern practice of the trade involved. Minor modifications shall be made as the needs arise or as necessary or expedient to carry out the implied intent for a complete and finished job, suitable in every way to the purposes for which designed.

No work shall be done during cold or freezing weather with materials adversely affected by cold and during such times all installed work shall be adequately protected.

The work and surrounding premises shall be kept neat and orderly and all precautions taken to preserve both men and materials and the existing premises from injury and damage. Any damage or injury made to the property shall be promptly corrected.

Water, for use in the work, shall be clean and potable.

Upon completion the structure and premises shall be thoroughly cleaned and all surplus material, debris, etc., removed from the site.



3. CONCRETE: - Proportions, by volume, shall be 1 part Portland cement, 2 parts clean sand and 4 parts clean crushed rock or gravel. Ingredients shall conform to the following Federal Specifications:

Portland cement - SS-C-191.  
 Sand (fine aggregate) - SS-A-281, Class 1, Grade A.  
 Rock or gravel (coarse aggregate) - SS-A-281, Class 2, Grade A.  
 Reinforcement - QQ-B-71.

4. CARPENTRY AND MILLWORK: - The logs, poles, matting and other unfinished wood products shall be of sound material and of a durable species as selected by the Officer in Charge.

All lumber shall be kiln-dried and dressed red cypress, conforming to Federal Specification MM-L-751, No. 1 common grade, for all uses.

5. WATERPROOFING: - All materials shall conform to Federal Specifications as follows:

QQ-C-501, Type V, 16 oz. copper, hard or soft temper, for metal flashings.

HH-F-201, coal tar saturated felt (15 pound) for membrane water proofing.

R-P-381, Type II, coal tar pitch for waterproofing.

6. HARDWARE: - Rough items, such as nails, bolts, etc., shall conform to Federal Specifications FF-H-101 and FF-B-571a, respectively.

The entrance doorway shall be equipped with one cylinder mortise deadlock, operated by key from outside and turn-knob from inside, Type 114, finish US 10, conforming to Federal Specification FF-H-106; two strap hinges (for door panel), 4 inch length, Type 2203, conforming to Federal Specification FF-H-116; one friction catch (for door panel), Type A1081, conforming to Federal Specification FF-H-116; two brass or bronze door pivots, extra heavy, full mortise type, plates not less than 3 inches in diameter and 3/8 inch thick with pins not less than 3/4 inch diameter.

7. RUBBER MAT: - The board walk shall contain a rubber mat not less than 27 inches wide and conforming to Federal Specification ZZ-M-81. The thickness shall not be less than 1/8 inch and the wearing surface shall have an anti-slip finish made with grooves or corrugations.

Ocmulgee N. M.  
Drawing NM-OCM-1054-B  
3 sheets.

VENTILATION

and

ELECTRICAL WORK

8 SCOPE OF WORK: - This work shall include the furnishing, installing and connecting in every detail of all materials, apparatus and devices for a complete electrical installation, including the main service switch, the fused cutouts for lighting, all wiring, conduit, fittings, switches, outlet boxes, junction and pull boxes, lighting fixtures, etc.

No lamp bulbs are included under this work.

This work shall also include the complete ventilating system for the council chamber, and shall include the fan, motor, foundation, supports, ductwork, wiring, and all miscellaneous equipment to complete the installation.

The location of various conduits, ventilating fan, switches, outlets, etc., are shown on the drawings, but these locations are intended to be general only. The work shall conform to the conditions in the structure, and any necessary changes in the run of the conduits from these shown shall be made upon approval of the Contracting Officer.

Furnish the Contracting Officer with a complete list of materials to be used in the work, together with the names of the manufacturers, brands, catalogue and figure numbers, etc., for approval before starting the work.

Check and verify the space and conditions available for the various pieces of equipment, before ordering the same.

Certificates of Tests shall be furnished as required.

9 WORKMANSHIP: - The work herein specified and shown on the accompanying drawings, shall be furnished and installed in complete working order, and of the best workmanship known to the trade. Certain established standards shall be followed the same as if they were fully specified herein. These are as follows:

- (a) The National Electrical Code of the National Board of Fire Underwriters.
- (b) The rules and regulations of the local Electrical Code.
- (c) The rules and regulations of the local electric company supplying the current.
- (d) The standardization rules of the American Institute of Electrical Engineers.



## Ocmulgee N.M.

(e, The standardization rules of the National Electrical Manufacturers Association.

The foregoing rules and requirements shall be followed as minimum requirements, but they shall not prevent the furnishing and installing higher grade materials and workmanship as may be herein specified.

10 ELECTRIC SERVICE:-- The incoming service for the structure will be installed under a separate contract. This work shall start with empty underground conduit as shown on the plans and connect to a 60 ampere, 3 pole, single throw, safety type "A" switch with meter trim.

11 TYPE OF CURRENT: - The wiring for the building shall be based on the use of alternating current at 115/230 volts, single phase, 3 wire, 60 cycles.

12 CONDUIT: - For the electrical work rigid steel conduit shall connect all outlets as shown on the plans. All ends shall be carefully reamed, and all joints made up with white lead in such a manner that a good electrical connection will be provided across the joints for grounding purposes.

Conduit couplings shall be used wherever it becomes necessary to join the conduits between the outlets. Running threads will not be approved in any case.

The conduit shall be zinc-coated, in accordance with Federal Specification WW-C-581.

The conduit systems shall be free from impediments and shall be swabbed out where necessary so as to be dry before installing wires.

All abrasions of coating shall be painted with approved moisture proof paint.

All conduit throughout the structure shall be run concealed, unless otherwise noted, and shall be made up with approved fittings at all breaks, turns, changes in directions, etc.

The conduit underground shall be encased in 3 inches of 1-2-4 concrete. The end shall be capped for future extension to the main service lines.

The conduits shall be fastened to the structure with approved clamps or straps, on approximately 5-foot centers.

No conduit shall be smaller than 3/4 inch in diameter.

Conduit ends at all outlet boxes, panelboards, pullboxes, etc., shall have approved locknuts and bushings.



The conduit systems in the structure shall be thoroughly grounded, in accordance with regulations of the National Board of Fire Underwriters.

Sample of the conduit shall be submitted for approval.

13 WIRES: - Wires shall connect all outlets in such a manner as to obtain the results indicated, and shall be continuous from outlet to outlet.

All wires shall be Type RL in accordance with Federal Specification J-C-106.

All branch circuits shall be 2 No. 12 gauge wires.

No wires on the lighting system shall be smaller than No 12 gauge.

Conductors larger than No. 10 gauge shall be stranded.

Single conductors shall be used throughout.

After the wires are installed, they shall be tested out and properly connected and soldered ready to receive the fixture connections, switches, etc.

All loop splices to which fixtures do not connect shall be left insulated as specified by local requirements.

Wire loops of not less than 8 inches in length shall be provided at all outlets for future connecting of switches, receptacles, fixtures and other appliances or devices, etc. If any should be installed less than 8 inches long, splicing will not be accepted, but new wires shall be furnished and installed in such places.

Samples of each type and kind of wire shall be submitted for approval.

14 PANELBOARD: - The panelboard for the control of the various circuits shall consist of a no-fuse load center, flush type, with automatic breakers. The load center shall be set in an approved galvanized steel box with surface cover plate. The load center shall be of the circuit capacity noted on the plans.

15 FAN, MOTOR, ETC: - Furnish and install in the space over the Council Chamber, one (1) single inlet, single width, full housed fan. The fan shall have a capacity of 1060 cubic feet of air per minute, free delivery, at a speed not to exceed 1700 R.P.M. The housing shall be of cast iron; the wheel diameter shall be not less than  $7\frac{1}{2}$  inches.



The fan shall be direct connected to an approved 1/3 H.P. induction motor. The motor shall be of an approved manufacture and shall operate on 115 volt, single phase, 60-cycle current.

The fan and motor shall be mounted on an insulated platform, suspended and constructed as shown on the plans.

The inlet to the fan shall have a copper wire guard of 1/4 inch mesh secured to the flange on the fan. The discharge of the fan shall be connected to the ductwork with a heavy, rubber dipped, canvas joint. The copper duct shall be made air tight at the joint with the terra cotta discharge flue.

The fan, motor, platform and supports shall be painted two (2) coats of approved lead and oil paint upon completion.

The fan and motor shall be practically noiseless in operation and shall be free from vibration.

16 OUTLET BOXES: - All outlet boxes on the work shall be of the galvanized stamped steel type, not less than No. 14 gauge, and of approved size to meet the various requirements.

The fittings shall be set tight so as to form good connections, both electrical and mechanical.

The outlet boxes supporting lighting fixtures shall be secured in an approved manner to the structure independent of the wiring conduit.

All outlets are located in their approximate positions only, and shall be shifted as may be required to meet the job conditions.

Samples of the outlet boxes shall be submitted for approval.

17 LOCAL SWITCHES: - Furnish and connect, where indicated, top connected, composition cup base, flush, tumbler switches; of the 20 ampere, 250 volt type, to control the outlets as are indicated to be controlled by wall switches.

The fan switch shall have an approved pilot light and ruby-red bullseye, indicating when the fan is on or off.

18 FLUSH RECEPTACLES: - The receptacles shall be single flush type, totally enclosed, top connected, 20 ampere, 125 volt capacity with double T slots.

Each receptacle shall have on all rubber plug with finger grip.

Ocmulgee

19 LIGHTING FIXTURES: - Furnish and install lighting fixtures for all outlets. The fixtures shall be complete with all necessary parts, fixture studs, glassware, attachment devices, Edison base sockets, canopies, fitters and leads of No. 16 gauge stranded, slow burning, fixture wire,

The fixtures are detailed on the plans and are designated by letters. The locations of the different fixtures are also designated by the corresponding letters at the various outlets.

Pictorial cuts and sketches with complete dimensions, details of construction, etc., of the fixtures shall be submitted for approval.

20 FINISH PLATES: - The switch and receptacle plates shall be of stamped brass .060 inch thick with standard beveled or rounded edges, and shall be finished in dark bronze.

21 CUTTING AND REPAIRING: - The cutting of floors, logs, walls, partitions, etc., required for this work shall be done in a workmanlike manner, and as approved by the Contracting Officer.

All fixtures, switches, finish plates, equipment, etc., shall be protected from injury or damage, and any which becomes damaged before the final acceptance of the work shall be replaced by the Contracting Officer.

22 CLEANING: - Upon completion of this work all lighting fixtures, switch plates, exposed conduits, and switches shall be cleaned; remove from the premises all dirt, debris, etc., caused by the installation of the work and leave the premises broom clean.

TESTS AND GUARANTY: - All tests shall be made as required by the Contracting Officer, to show that the requirements of the specifications and laws and regulations have been fulfilled. All instruments and materials necessary for the complete tests shall be furnished and delivered to the building at a time convenient for the Contracting Officer.

The quality and workmanship of the electrical work shall be guaranteed for a period of one year from the date of final acceptance of the work.



OCMULGEE NATIONAL MONUMENT

## BILL OF MATERIALS FOR THE RESTORATION OF THE COUNCIL CHAMBER

To accompany Drawing No. NM-OCM-1054-A, 3 Sheets.

## REINFORCING STEEL

Federal Specifications No. QQ-B-71.

*Corrected on WPD copies*

3/8"	- 40'	30 pcs.
3/8"	- 30'	126 "
3/8"	- 20'	169 "
3/8"	- 12'	194 "
3/8"	- 10'	200 "
1/2"	- 50'	4 "
1/2"	- 40'	92 "
1/2"	- 30'	20 "
1/2"	- 20'	144 "
1/2"	- 10'	574 "
1/2"	- 50' square	48 "

Coal Tar Pitch for Waterproofing Fed. Spec. R-<sup>P</sup><sub>2</sub>  
381, Type 2 -

5000 lbs.

Cement - Fed. Spec. SS-C-191

680 sacks

Coarse Aggregate, Fed. Spec. SS-A-281, Class 2,  
Grade A -

100 cu.yds.

Sand, Fed. Spec. SS-A-281, Class 1, Grade A

65 " "

## NO. 1. SHORT LEAF YELLOW PINE LUMBER.

2"x4"	3800 ft. B.M.
1"x6" - T.&G.	6000 " " "
2"x6"	1000 " " "

No. 16 Gauge Iron Wire

250 lbs.

16d. Common Nails

200 "

8 d. Common Nails

400 "

Kiln-Dried, Dressed Red Cypress  
Fed. Spec. MM-L-751, No. 1 Common Grade.

1-1/8"x8" - 16'

20 pcs.

## Red Cypress Lumber Cont'd.

1-3/8"x10" 14'	8 pcs.
1-3/8"x8" 12'	58 pcs.
2"x4" 10'	10 "
2"x4" 12'	8 "
1"x6" 12'	8 "

27" Rubber Mat 1/8" thick - Corrugated Fed. Spec. ZZ-M081	68 ft.
48" Rubber Mat " " " "	57 "
8 d. Finish Nails	10 lbs.
No. 8-, 2" Wood Screws, Counter Sink Heads	600
10 d. Common Nails	5 "
Cylinder Mortise deadlock, Type 114, Finish U.S. 10, Fed. Spec. FF-H-106	1
4" Strap Hinges, Type 2203, Fed. Spec. FF-H-116	2
Friction Catch, Type A-1081, Fed. Spec. FF-H-116	1
Bronze Door pivots, extra heavy, Full Mortise Type 3/8"x3" Plates, with 3/4" diameter 10's	2
Membrane Waterproofing - 15 lbs. Fed. Spec. HH-F-201	1800 sq. f t.

## LIGHTING FIXTURES

All fixtures are detailed on the plans and shall be complete with fixture studs, glassware, attachment devices, Edison base sockets, canopies, fitters and leads of No. 16 gauge stranded, slow burning fixture wires.

Light Ring - 12 lights, See Sheet 2, Drawing No. 1054-A	1
Passage Lights, See Sheet 2, Drawing No. 1054-A	4
Flood Lights, See Sheet 2, Drawing No. 1054-A	4
Ventilating Fan and Motor, Single inlet, single width, full housed fan, capacity 1060 cu.ft. of air per minute, free delivery, at a speed not to exceed 700 R.P.M. - castiron housing; wheel diameter 7 1/2" minimum. Fan direct connected to approve 1/3 H.P. inducting motor to operate on 115 Volt, single phase, sixty-cycle current	1
Inlet and discharge assembly for fan including flashing, See Drawing 1054-A, Sheet 2	1
2" Cork, 2xs	2 sq.ft
7/8"x2'-6" Anchor Bolts	4
3/4"x4" Anchor Bolts	4
3/8"x3"x3", 20' Angle Iron	1

Page 3.

1 1/4" Electrical Conduit - Rigid Steel Zinc Coated, Fed. Spec. WW-C-581	30 ft.
3/4" " " " " " " "	400 " -
3/4" Conduit Clamps	80 -
3/4" Locknuts and Bushings for Conduit	34 ea. -
1-1/4" " " " " " "	4 " -
1-1/4" Conduit Cap, Zinc Coated	1 -
No. 12 Gauge wire, Type RL, Fed. Spec. J-C-106	850 ft. -
No. 8 " " " " " " "	40 " -
Panel Board - 6 Circuit, Flush Type, no fuse, load center with automatic Breakers - 20 Amp., 250 Volt, Circuit capacity	1 -
Galvanized Steel Box, with surface cover plate for load center	1 -
Receptacles - Single - Flush Type, Totally enclosed, top connected, 20 Amp. 125 Volt, capacity with double T slots, with all-rubber plugs with finger grip	4 -
14 Gauge, galvanized stamp steel outlet boxes for flush receptacles 3/4" conduit	4 -
Switches, top connected composition cup base, flush Type, tumbler, 20 Amp., 250 Volt capacity	5 -
Switches, top connected composition cup base, flush Type, tumbler 20 Amp., 250 Volt Capacity, with pilot light and Ruby Red Bullseye	1 -
14 Gauge galvanized stamp steel outlet boxes for flush Type tumbler switches 3/4" Conduit	6 -
Receptacle plates, single .060," stamp brass, standard beveled edges, dark brown finish.	4 -
Receptacle plate, multiple, See Drawing No. 1054-A, Sheet 3, finish same as above	1 -
Service Switch - 3 pole safety type - A, 60 Amp., with 3 sets 35 Amp. Cartridge fuses and meter trim	1 -
<i>change on WPA 1st</i> <i>long 1/2</i> PINE LOGS	
Native Loblolly or Short Leaf	
8" to 10" Butt - 20'	180 -
5" Butt with crotch, 8'	250 -
4"-4'	125 -
WHITE OAK LOGS	
2' 0" Butt, with triple crotch at top, 10'	4 -
18" Butt - 22'	4 -
1/2" Native Cane -	60,000 LF -
4" Unglazed Farm Tile	500 ft. -
Coarse Gravel for tile line	20 cu.yds. -



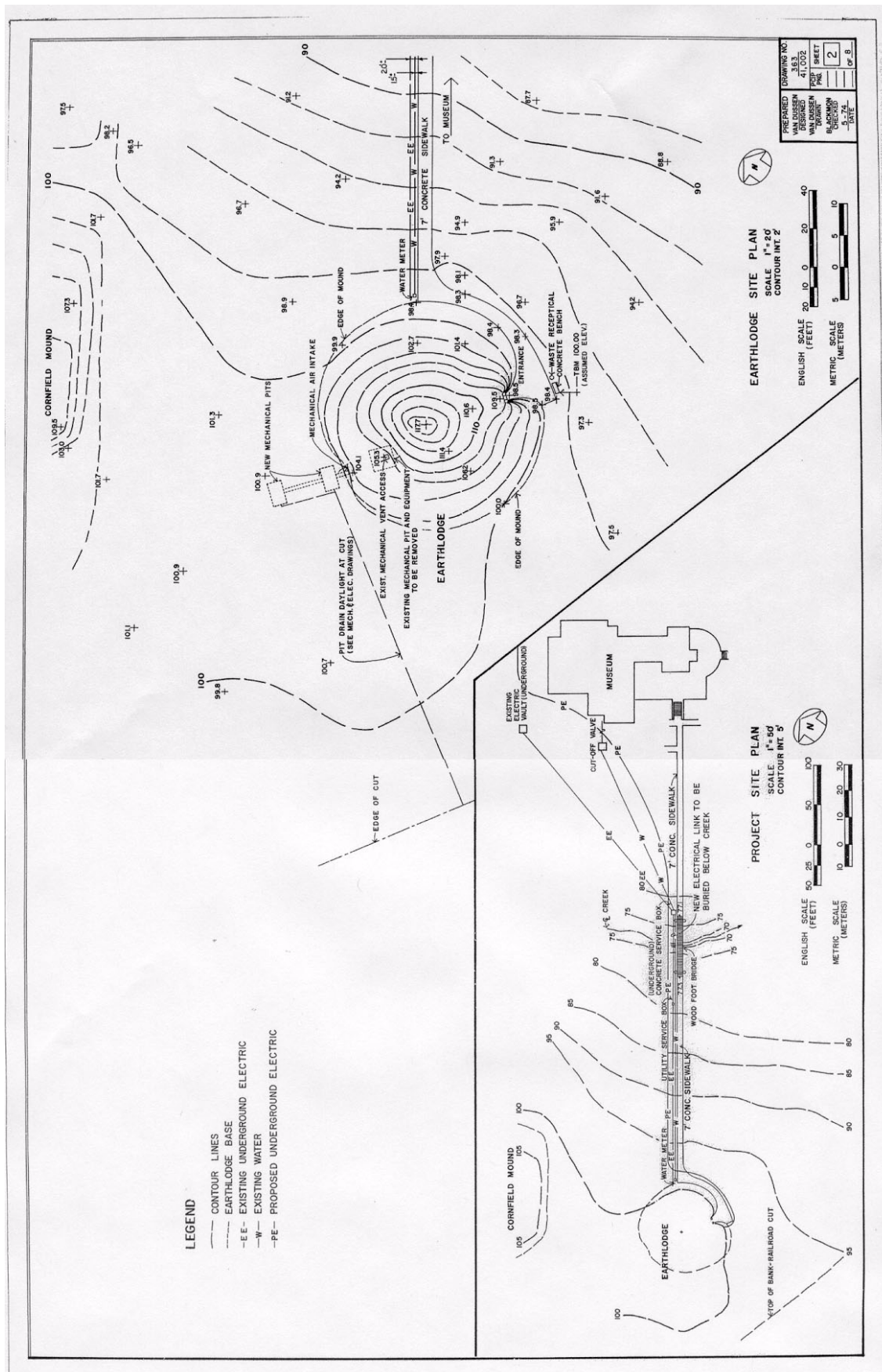


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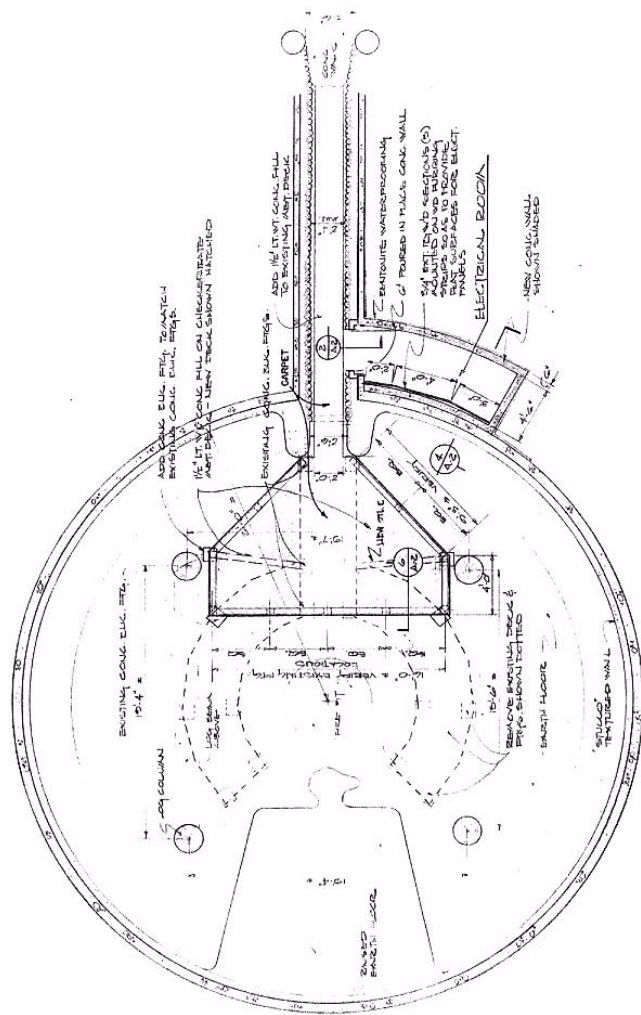
## Appendix B: Kidd and Assoc. Drawings, 1974





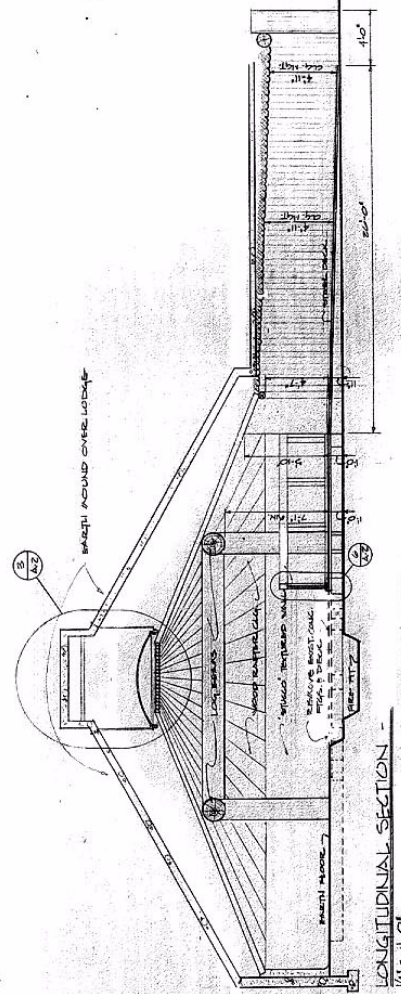






PLAN - NEW DECK & ELECTRICAL ROOM  
11'4" x 11'-0"

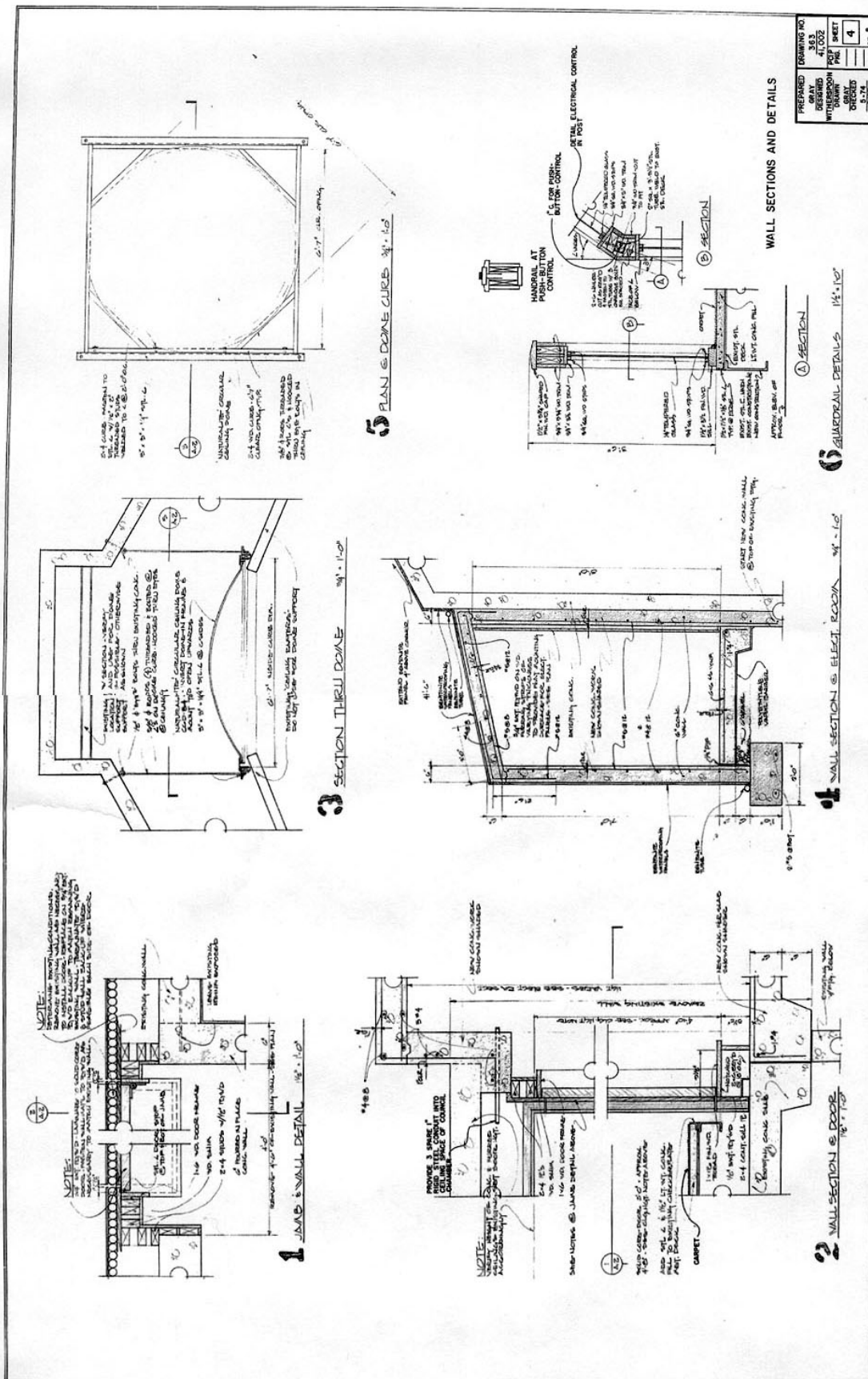
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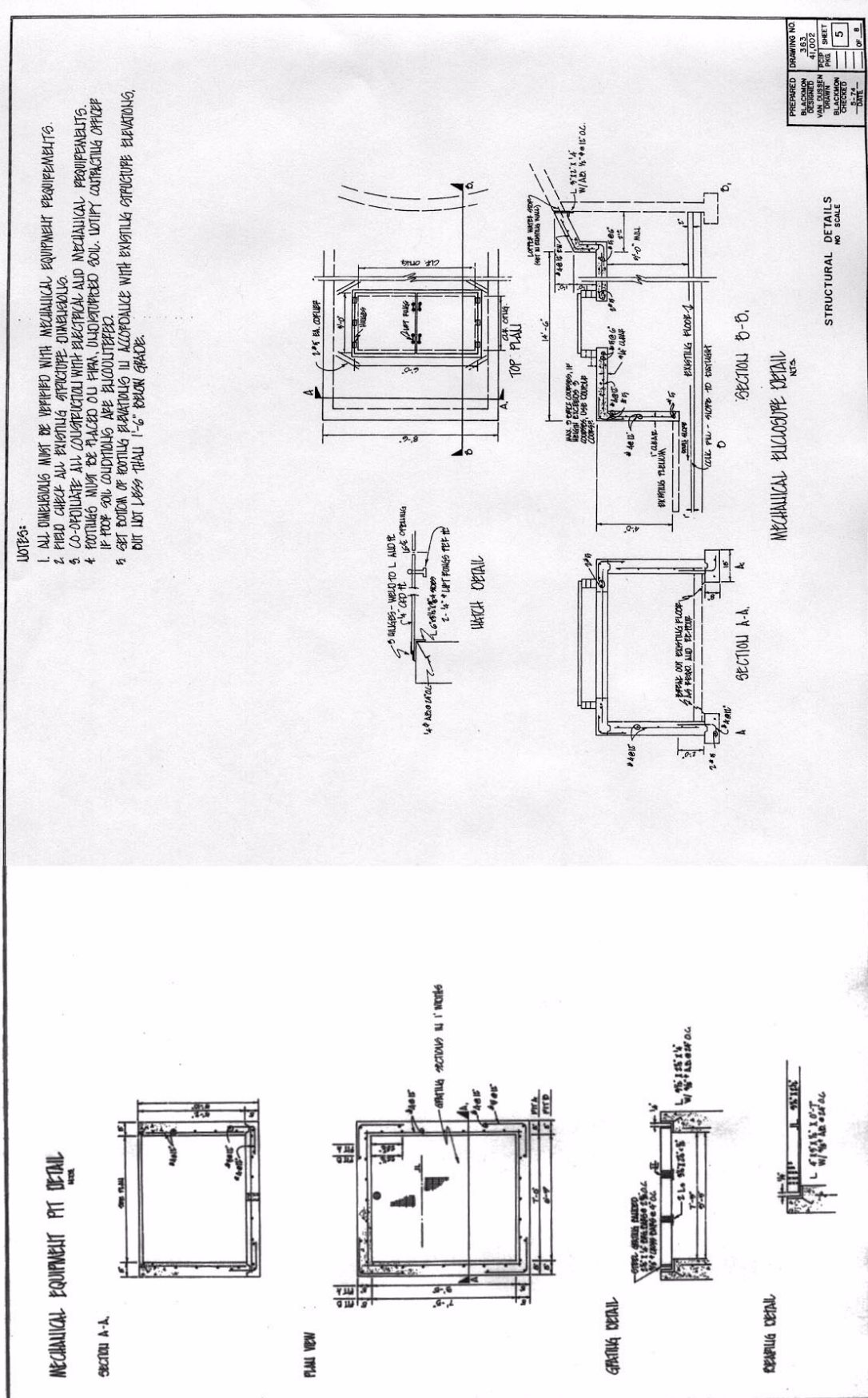
LONGITUDINAL SECTION -  
1/4" = 1'-0"

ARCHITECTURAL PLAN

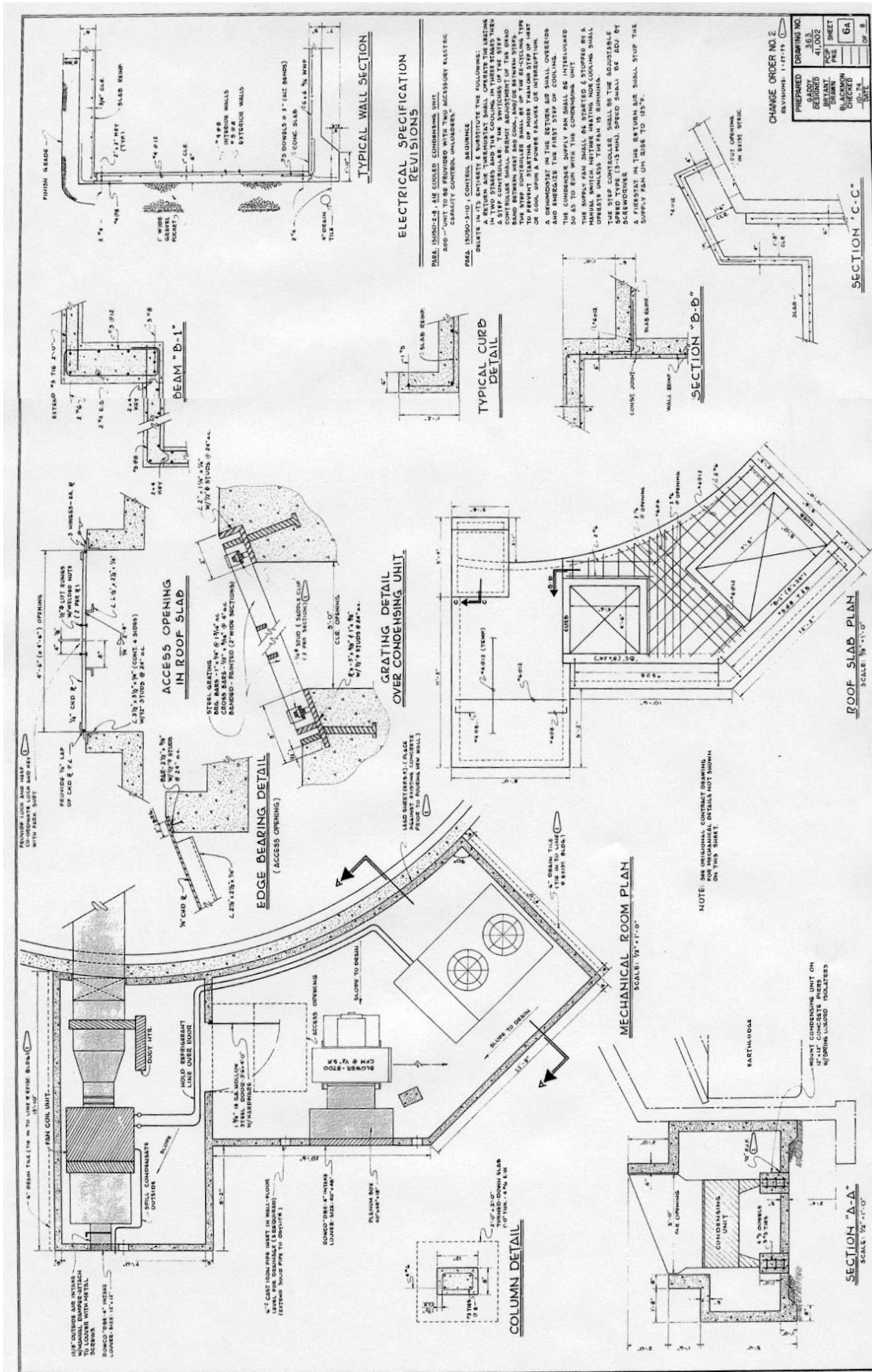
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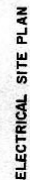


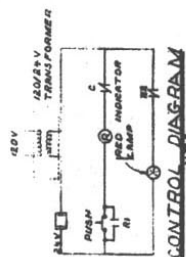




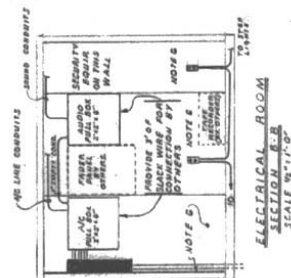








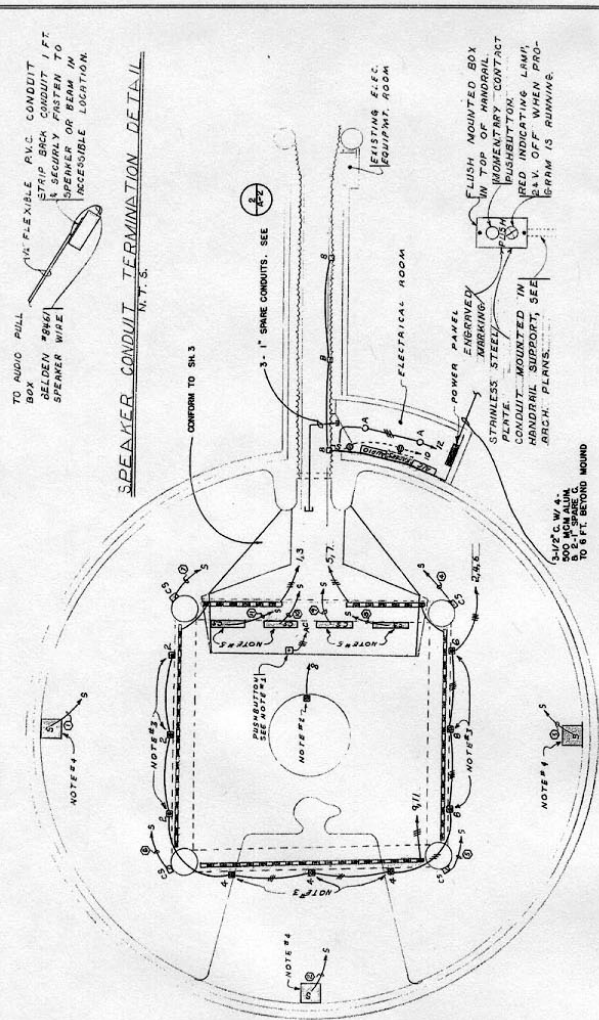
CONTROL RELEASE  
2. CONTROL WALKER 144C CONTACTS PMA  
S.E.C. IN U.S.  
C. TO PRELIMINARY CONTACT PROVIDED &  
WALKER BY OTHERS. CONTACT TO BE  
MADE WHEN PROGRAM IS "RUNNING"  
CLOSED WHEN PROGRAM IS OFF  
CONTROL SEQUENCE  
1. A BUTTON IS DEPRESSSED TO START PRO-  
GRAM  
2. CONTACT R1 IS CLOSED TO MAINTAIN  
PROGRAM AND R2 IS OPEN TO EX-  
TINGUISH EX-WILDT LIGHT  
3. CONTACT C1 IS OPENED BY END OF  
PROGRAM SIGNAL TO RETURN RELAY  
C TO NORMAL STATE



S Y M B O L	D E S C R I P T I O N
1	COLUMN SPEAKER, SEE SPECS.
2	SPEAKER, SEE SPECS.
3	MURLEY OUTLET, PROGRAM LIGHTING.
4	SUBSTATION, INDICATING LAMP, SEE DETAIL.
5	POWER PANEL, 30, 4W, 120/208K
6	TO AUDIO WALL BOX, IN
7	TO AUDIO WALL BOX, IN
8	TO AUDIO WALL BOX, IN
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## NOTES

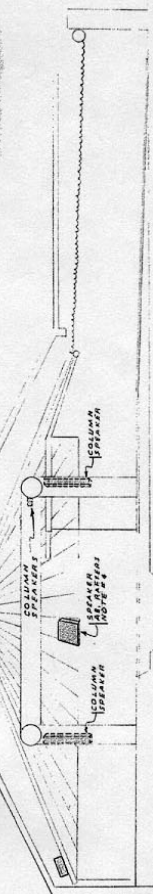
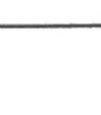
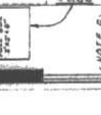
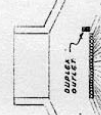
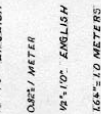
- 1) ROUTE CONDUIT ON HANDRAIL SUPPORT  
DOWN CORN TO NYC PULL BOX  
LOOSELY IN TRANSFORMER ON  
NYC PULL BOX
- 2) MOUNT ABOVE SOME OPENING, SEE  
SECTION 444.
- 3) MOUNT ABOVE RIFTERS, CLEAR  
THATCH FOR EASY ACCESS TO OUTLET  
AT MOUNT ABOVE RIFTERS, CLEAR THATCH  
WHERE SPARKER REMAINS HIDDEN BUT  
WIRE SIGNAL INTERSECTION FOR  
MOUNT SIGNAL
- 4) MOUNT SPARKERS ON BEAM BELOW  
TION 452.
- 5) PROVIDE 1/2" X 1/4" WOOD BASEBOARD  
ALONG OUTLET WALLS IN  
ELECTRICAL RM PROVIDE THICK  
OF POLY VINYL BETWEEN BACKBOARD  
& CONCRETE WALL.



ELECTRICAL PLAN

BAR CHARTS

- $\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$  ENGLISH  
 0.82% / METER  
 $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$  ENGLISH  
 $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$  ENGLISH



SECTION A-A  
SCALE 1/32" = 1'-0"

## ELECTRICAL PLAN

PREPARED	DRAWING NO.
CASTLEFLOW	363
DESIGNED	41,002
MIMS	PQIP
DRAWN	SHEET
CHECKED	8
5-74	OF 8







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# Appendix C: “The Case for Earth Lodges in the Southeast”

Dr. Lewis Larson

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## CHAPTER TEN

### The Case for Earth Lodges in the Southeast

*Lewis Larson*

**E**ARTH LODGES HAVE been an accepted fact of southeastern prehistory for more than 50 years. Writing in 1938, William Webb described what he interpreted as “earth-covered structures” found on sites excavated in the Norris Basin (Webb 1938:48, 72, 193–94). In that same year, Arthur Kelly reported the discovery of a “circular chamber 42 feet in diameter, covered by an earth shell” (Kelly 1938c:11). Found beneath a small mound near Mound D at Macon Plateau, Kelly identified this chamber as a “ceremonial earth lodge.” As far as I am aware, this is the first time that the term “earth lodge” was used in reference to an archaeologically defined structure in the Southeast.

An unpublished thesis by Daniel Crouch (1974) entitled “South Appalachian Earth Lodges” provides the most extensive examination and commentary on southeastern earth lodges to date. He has surveyed the literature of the region pertaining to major sites where earth lodges have been identified, and he has carefully reviewed the evidence for each identification. Initially Crouch recognized three building categories: (1) he uses the terminology “earth lodge” in reference to buildings that are “completely covered” with earth;

(2) his term “earth banked” refers to buildings that have only a “partial” covering of earth; while (3) “earthen construction” is a term that he uses to subsume both of the previous categories (Crouch 1974:2). However, he abandons this terminology in his conclusions. His final sentences, therefore, reflect his ultimate perception of the nature of southeastern earth lodges, namely that earth-covered buildings were not characteristic of the prehistory of the area. “It may be best to think of ‘earth lodge’ as any ceremonial or domestic building of human construction on which earth, loose or sod, has by deliberate human action been placed either on the walls to significant height or over the walls and at least a part of the roof, as a part of its architecture. While the full earth coverage and perhaps semi-subterranean floor may be applicable elsewhere, they are not suitable criteria for South Appalachian ceremonial structures” (Crouch 1974:136).

The most recent discussion of southeastern earth lodges is that of James Rudolph (1984:33). While the thrust of his paper is not a reexamination of the validity of interpretations of southeastern archaeological structures as earth lodges, he does provide a comprehensive survey of structures that he and others have so identified. Rudolph defines “an earthlodge as an above-ground building that had either an earth-covered roof or an earth embankment buttressing the exterior walls” (Rudolph 1984:33). Rudolph argues that the term “earth lodge” is an appropriate one to use in reference to the earth-embanked structures because “the term ‘earthlodge’ has historical precedence in the archaeological literature of the Southeast and has served us perfectly well for many years; there is no reason to change it now” (Rudolph 1984:33).

To be sure, the term “earth lodge” has been used in the southeastern archaeological literature for a long time, at least since 1938; without exception, though, it has been applied only to buildings that were interpreted as having earth-covered roofs. It seems to me that Crouch and Rudolph contribute little to the understanding of aboriginal southeastern architecture, except confusion, by categorizing two very distinct building types—that is, earth-covered and earth-embanked—within the same class. My perceptions notwithstanding, Crouch and Rudolph can and should define “earth lodge” in any way that serves well the analytical needs of their research. On



the other hand, Rudolph should not justify the application of the term to earth-embanked buildings as sanctioned by historical precedent.

At this point, it is necessary for me to define what I mean by "earth lodge" as I will employ it in this paper. My definition of an earth lodge is more restrictive than those definitions employed by Crouch and Rudolph. As I have already indicated, however, I do not want to dispute their definitions. On the contrary, I wish to dispute the interpretation of certain archaeologically known structures in the Southeast as buildings that had earth- or sod-covered roofs. I am convinced that these interpretations are in error and that, as a consequence, they are not earth lodges in terms of both my definition and the definitions that have been historically employed by anthropologists (including southeastern archaeologists).

The earliest use of the term that I have encountered is in *Houses and House-Life of the American Aborigines* by Lewis Henry Morgan, published in 1881. Accompanying a discussion by Morgan of aboriginal earth-covered houses in California is an illustration captioned "Earth Lodges in the Sacramento Valley" (Morgan 1881: Figure 1). Morgan, however, uses the term "dirt lodges" in reference to the Mandan house type (Morgan 1881:126). Historically, the term has been regularly used by American anthropologists in reference to residential structures that were built on the northern and central Plains during the prehistoric and historic periods. The published description of the Hidatsa earth lodge, based on data collected by Gilbert Wilson from native informants between 1906 and 1918, is perhaps the most detailed and complete that we have for earth lodges from the northern Plains area. These circular buildings were large enough (forty or more feet in diameter) to have accommodated an extended kin grouping along with their horses (Wilson 1934:383-94, figure 11). Constructed with a heavy post framing, they had a pole-supported roof and walls covered with sod underlain with a layer of prairie grass and a mat of willow branches (Wilson 1934: figure 16).

For the most part, the ethnographic literature on the North American Indians has, for over a century, applied the term "earth lodge" to the type of structure described by Wilson. For purposes of this chapter, I will therefore limit the definition of the term to large, and often circular, buildings (on the Plains these were usually residences), having a sod-covered roof supported by a wood post and pole framework.

On the other hand, earth-embanked buildings are found on Mississippi period sites over a broad reach of the Southeast. It is almost certainly true that earth embankments, as a feature of both public and residential buildings, were the rule rather than the exception throughout the area during this period. This in turn suggests that an embankment was needed because of

the technical demands of constructing a building with daub-covered walls and a pent roof with eaves. In order to obtain a seal with the wall plate—a wall plate utilizing post construction, wattle work, and a daub covering—the floor was excavated 30 cm to 50 cm below the surrounding ground surface. The embankment—more massive in public buildings because they were large buildings and more modest in smaller domestic structures—functioned as a seal for the base of the outer surface of the walls of the building and the surface of the ground on which it was built. The sloping embankment served not only as a seal but also to divert rain water, which flowed off the eaves and onto the ground, away from the walls. The construction of the embankment thus functioned to keep the interior of the structure from being flooded and to protect the base of the wall from the erosive effect of rain.

In most Mississippi period construction there is no apparent break in the length of the wall line indicating an entry. I believe that this is because the doorway was constructed with a sill that employed a low stub of the wall along with the embankment to span the door opening in order to maintain the integrity of the walls and their seal throughout their entire length. I view these structures as categorically distinct from the earth lodges that were encountered on the Plains and from those that I define as earth lodges.

### Ethnohistorical Evidence

Over sixty years ago, Ralph Linton (1924b:249-53) called attention to the similarity between the earth lodges built on the northern Plains and the dwellings described for the eighteenth-century Muskogean-speaking groups in the Southeast. A review of the available ethnohistorical descriptions, however, suggests that the similarity underscored by Linton was deficient in one important respect. The southeastern buildings lacked a sod-covered roof. The description of Chickasaw houses given by Adair is a case in point. Adair called these southeastern structures "hot-houses" or "winter houses."

The clothing of the Indians being very light, they provide themselves for the winter with hot-houses, whose properties are to retain and reflect the heat, after the manner of the Dutch stoves. To raise these, they fix deep in the ground, a sufficient number of strong forked posts, at a proportional distance, in a circular form, all of an equal height, about five or six feet above the surface of the ground: above these, they tie very securely large pieces of the heart of white oak, which are of a tough flexible nature, interweaving this orbit from top to bottom, with pieces of the same, or the like timber. Then, in the middle of the fabric they fix very deep in the ground, four large pine posts in a quadrangular form, notched atop, on which they lay a number of heavy logs, let into each other, and rounding gradually to the



top. Above this huge pile, to the very top, they lay a number of long dry poles, all properly notched, to keep strong hold of the under posts and wall-plate. Then they weave them thick with their split saplings, and daub them all over about six or seven inches thick with tough clay, well mixed with withered grass: when this cement is half dried, they thatch the house with the longest sort of dry grass, that their land produces. They first lay on one round tier, placing a split sapling atop, well tied to different parts of the under pieces of timber, about fifteen inches below the eave: and, in this manner, they proceed circularly to the very spire, where commonly a pole is fixed, that displays on the top the figure of a large carved eagle. At a small distance below which, four heavy logs are strongly tied together across, in a quadrangular form, in order to secure the roof from the power of envious blasts. The door of this winter palace, is commonly about four feet high, and so narrow as not to admit two to enter it abreast, with a winding passage for the space of six or seven feet, to secure themselves both from the power of the bleak winds, and of an invading enemy. As they usually build on rising ground, the floor is often a yard lower than the earth, which serves them as a breast work against an enemy. (Adair 1775: 418-19)

However we read the eighteenth-century syntax of Adair, it is not easy to conclude that the roof of the Chickasaw house was sod-covered in the manner of the northern Plains earth lodges along the Missouri River. The roof that Adair describes is one that is covered with grass thatch. He does, however, describe the use of daub to cover the roof decking. The daub is seemingly used in this manner to insulate the structure by preventing heat loss through the grass thatch of the roof covering. In this instance, the daub is protected from the weather by the overlay of grass thatching. To a lesser extent, the use of daub over the roof deck may also have functioned as a fire barrier, preventing sparks from the hearth being carried by draughts through the roof timbers directly into the thatch roof covering.

William Bartram, whose observations of the southeastern Indians were roughly contemporary with those of Adair, tells us that the roofs of the houses in the Alachua (Seminole) town of Cusowilla were covered "with the bark of the Cypress tree" (Bartram 1928:122). In a later reference to the more northerly dwellings of "Uche town" near the Fall Line on the Chattahoochee River, Bartram states that "these houses are neatly covered or roofed with Cypress bark or shingles of that tree" (Bartram 1928:244).

It is well to note that these references by Adair and Bartram are to buildings that were almost certainly used primarily, if not solely, as residences. Thus, these southeastern houses are functionally comparable to those of the northern Plains. On the other hand, these eighteenth-century southeastern buildings did not have sod-covered

roofs and so they differ from the Plains houses in this important structural characteristic. Recently, Craig Sheldon has provided me with preliminary data on a historic "hot house" of the type described by Adair. The house was excavated by Auburn University during investigations at the Lower Creek site of Fusihatchee on the Tallapoosa River in Elmore County, Alabama, twelve miles northeast of Montgomery. The structure has been identified as belonging in a post-Mississippi period context. Specifically, it was built and occupied during the Atasi phase that has been assigned a time range of A.D. 1600 to 1715. Using the excavated data and relevant ethnohistorical sources, Sheldon rejects, out of hand, any interpretation that identifies this structure and others like it as sod-covered (Sheldon, personal communication 1986).

One of the more interesting ethnohistoric descriptions of aboriginal southeastern construction is that provided by Benjamin Hawkins. Hawkins lived and worked as an agent among Creeks only a few years after Adair and Bartram traveled in the Southeast, thus his observations are more or less coincident with theirs. The building that Hawkins describes is a public building, a council house.

Chooc-ofau thluc-co, the *rotunda* or *assembly room*, called by the trader, "hot house." This is near the square, and is constructed after the following manner: Eight posts are fixed in the ground, forming an octagon of thirty feet diameter. They are twelve feet high, and large enough to support the roof. On these, five or six logs are placed, of a side, drawn in as they rise. On these, long poles or rafters, to suit the height of the building, are laid, the upper ends forming a point, and the lower ends projecting out six feet from the octagon, and resting on posts five feet high, placed in a circle round the octagon, with plates on them, to which the rafters are tied with splints. The rafters are near together, and fastened with splits. These are covered with clay, and that with pine bark; the wall, six feet from the octagon, is clayed up; they have a small door into a small portico, curved round for five or six feet, then into the house. (Hawkins 1848:71)

The description by Hawkins indicates that the rafters are closely spaced and coated with clay, and they are then covered with a layer of pine bark. In spite of the obvious use of daub in an apparent attempt to insulate and seal the roof of the structure in the same manner as that described by Adair, there is no sense of a "sod covered building" conveyed in the statement by Hawkins. Instead, Hawkins describes a bark-roofed or, perhaps more accurately, a bark-shingled building.

## Archaeological Evidence

Apparently the earliest identification of a southeastern archaeological building as an earth lodge was the Mound



10.1. Excavation of the Mound D-1 Lodge, Ocmulgee National Monument. (Photograph courtesy of the National Park Service, Southeast Archeological Center.)

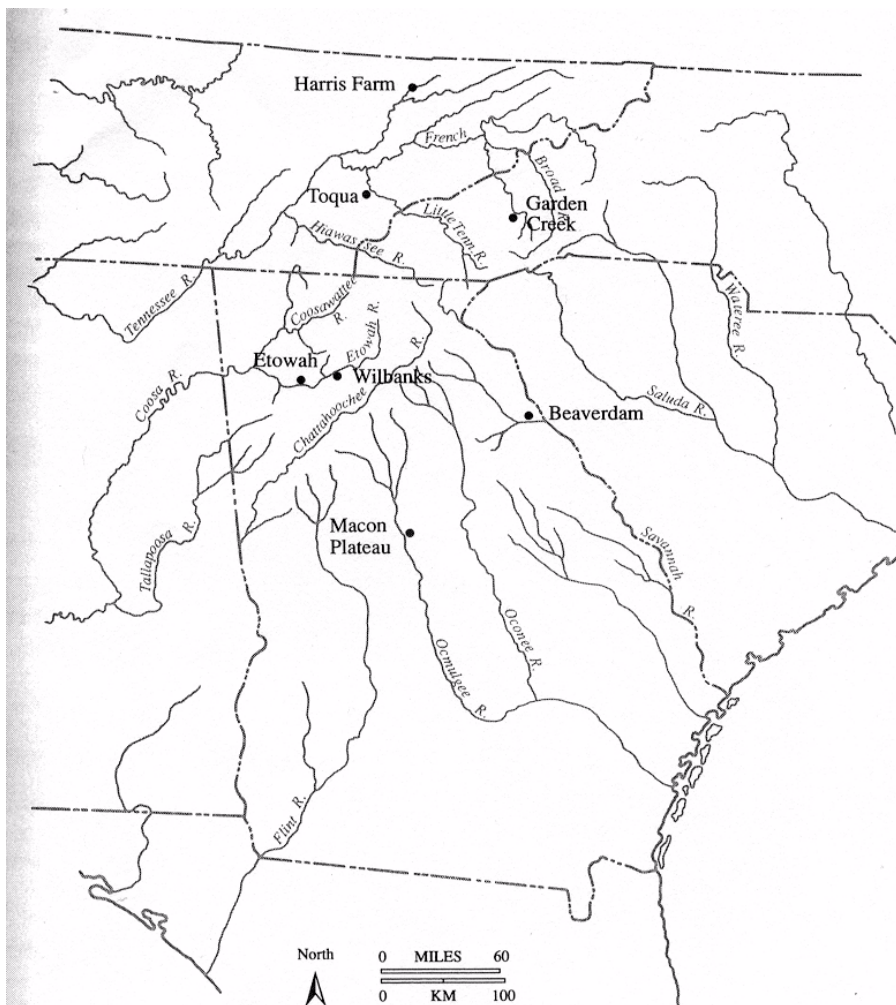
D-1 Lodge (Macon Earth Lodge), initially reported by Kelly (1938:11–12) and subsequently described in detail by Fairbanks (1946b) (Figure 10.1). This building was one of two similar archaeological features encountered and excavated near Mound D at the Macon Plateau site (Figure 10.2). Further, it was this building that was reconstructed as an earth lodge and that today is a major element in the interpretation of the prehistory of Ocmulgee National Monument.

The earth lodges identified at Macon Plateau are stated to have had a nonresidential function. They were, in fact, specifically called “council chambers” in the records of the excavations (for example, Williams and Henderson 1974:20, figures 3 and 8). Both Kelly (1938c:11) and Fairbanks (1946b:94) describe the first of the earth lodges at Mound D as “ceremonial.” Indeed, it would be difficult to characterize the structure in any other way. The clay eagle effigy platform with its forked eye, the clay bank of

seats encircling the wall (Figure 10.3), and the absence of any household refuse on the floor all argue for a use other than as a dwelling. The adjective “ceremonial” certainly appears to be appropriately applied to the Mound D-1 Lodge. No doubt it accommodated a large number of individuals if the forty-seven positions on the wall bench and the three positions on the eagle platform are correctly interpreted as seats. The number, as well as the arrangement, of seats also presents a strong argument that the building was used for ceremonial activity, although the nature of that activity as political or religious ceremony has yet to be determined.

Swanton (1946:386–420) has provided the most detailed and exhaustive survey of the ethnohistorical literature covering the domestic and public architecture of the southeastern Indians. A review of his survey reveals that there are no structures comparable to the Macon Plateau earth lodge as it has been described by Kelly and





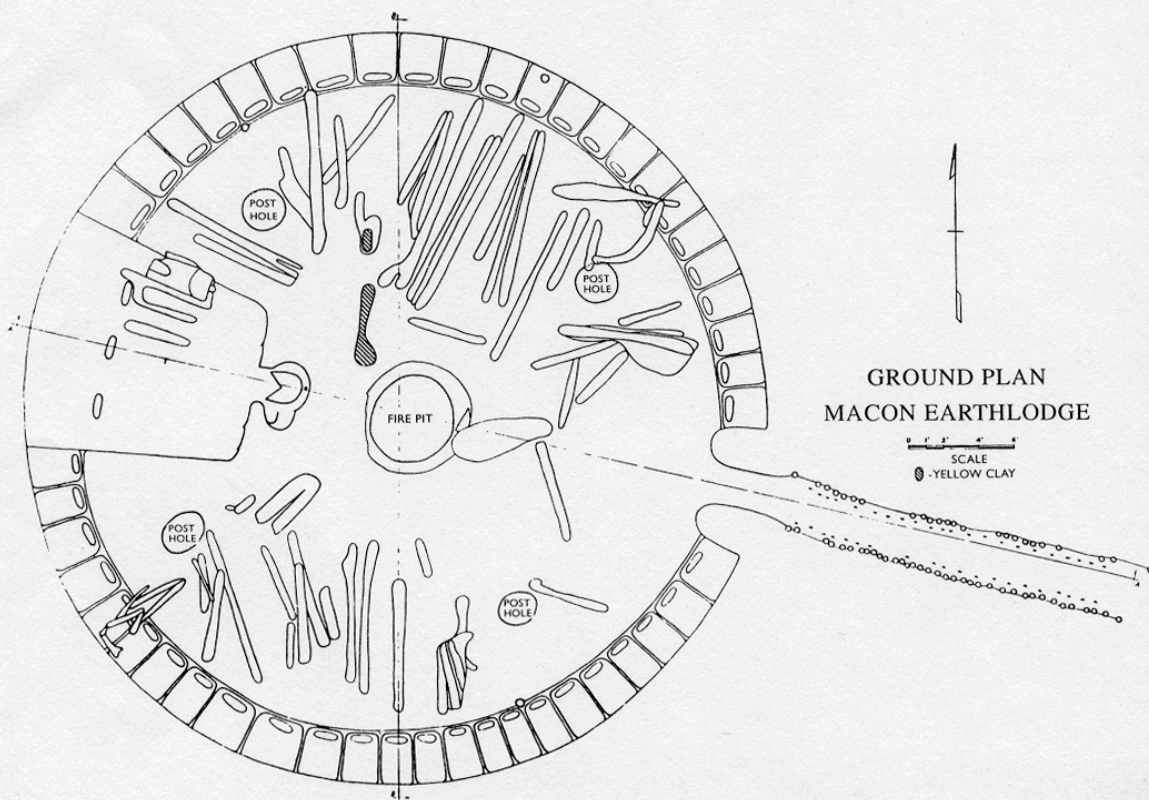
10.2. Location of sites mentioned in text.

Fairbanks. None of the ethnohistorically known buildings had earth- or sod-covered roofs. More important, the roofs of these buildings do not appear to conform to that of the Macon Plateau structure, where we are told that "the roof had been covered by earth" (Fairbanks 1946b: 97). In addition, none of the ethnohistorically known structures had the low, massive, and free-standing clay wall of the Macon Plateau building. On the contrary, the buildings discussed by Swanton had post-supported walls that were usually of a wattle-and-daub construction. These buildings were in marked contrast to the circular wall of the Macon Plateau structure as it is described by Fairbanks: "As the center of the mound was approached, the red clay suddenly dropped away to form a vertical wall. The inner face of the wall was slightly burned. Horizontal stripping exposed a circular structure 42 feet

in diameter surrounded by the remains of a low clay wall or mound. . . . This wall extended 13–21 feet beyond the floor. It remained to a height of 37 inches above the floor at the eastern side but of only 9 inches at the north, where plowing was most severe. This massive buttress surrounded the clay floor so as to give the building the appearance of being semi-subterranean, although it was actually entirely above ground" (Fairbanks 1946b:95).

Interestingly, no postholes outline the wall of the structure, which argues that the wall was not supported by any sort of timbering. In addition, it suggests that the roof beams rested directly on the upper surface of the wall. In this regard it is well to remember that at least some of the tenants of this building were supposedly occupying the seats that encircled the floor immediately against the inner surface of the wall. In order for persons who are between





10.3. Plan view of the Mound D-1 Lodge, Ocmulgee National Monument. (Reproduced from Fairbanks 1946b.)

5 and 6 feet tall to sit up straight in one of these seats, with their backs against the wall and the roof clearing their heads, the wall at the back of the seats would have to have originally extended at least 3.5 feet above the clay surface of the seats themselves. Even this wall height would not have allowed persons to seat themselves without crawling on all fours or backing awkwardly into position.

An examination of the descriptions of buildings from southeastern sites listed by James Rudolph as characterized by earth lodges reveals that in only four instances did those who reported the excavation of the sites interpret any of the archaeological features as the remains of a building that originally had a sod- or earth-covered roof.

These four instances include the Macon Plateau site already noted and the Wilbanks site, both in Georgia, the Harris Farm in Tennessee, and the Garden Creek Mound No. 1 in North Carolina. In the report of the archaeology of each of these sites there is an unequivocal statement that at least one of the structures encountered during excavation was earth-covered (Kelly 1938c:11; Sears 1958:141; Webb 1938:79; Dickens 1976:83). None of the other structures included in the Rudolph survey are

identified as earth lodges by those who originally reported them, with the exception of the structures from the Beaverdam Creek site in Georgia reported by Rudolph and Hally. In the report on that site, we are told by the authors that the term "earth lodge" was used "with some hesitation." This hesitation came in part because, while the Beaverdam Creek Mound structures were earth-embanked buildings, it could not be demonstrated that their roofs were indeed earth-covered (Rudolph and Hally 1985:75).

### Discussion

I feel that there are several reasons for questioning the validity of the archaeological identification of earth lodges in the Southeast. First, of the probably hundreds of excavated Mississippi period aboriginal buildings, domestic and public, in the Southeast, there are relatively few instances where such buildings have been identified. Only the four sites noted above—Macon Plateau, Wilbanks, Harris Farm, and Garden Creek—have published descriptions of excavated buildings that have been



characterized as having earth-covered roofs. It strikes me as unusual that, of the many excavated examples of prehistoric buildings, those with earth-covered roofs have been found at only these four sites. If an earth-covered roof were a viable construction technique in the region, we might well ask why it was not a more widely used technique. Of course, there is the possibility that, for whatever reasons, such roof construction may have been used only a very few times at a very few sites. Nevertheless, the rarity of the technique does provide a rationale and an argument for a reexamination of those instances where it is said to have been used.

A second reason to question the identification of earth-covered roofs is to be found in a rereading of the published excavation descriptions of the presumed earth lodges. These descriptions are not of an order that precludes an interpretation other than that of an earth lodge. Let me quickly assert, however, that the fault may lie not with reality, but with the description given of it by the several investigators, or in fact, with my reading of these descriptions.

Fairbanks reports that at Macon Plateau the excavation of the floor of the building he identifies as an earth lodge revealed that it "was covered to the plow zone with mixed clay, charcoal, and fragments of burned clay" (Fairbanks 1946b:95).

Upon the floor were numerous pieces of charred timbers resting on from 0.2 foot to nearly one foot of partly burned clay and fragments of charred cane. . . . These timbers lay close to the floor near the wall and were elevated on fragments of burned clay near the center. Under the smaller poles were larger logs one foot or more in diameter. One of these touched the fire basin. It was evident that all these charred timbers represented debris from a burned roof and that the roof had been covered with earth. In burning the cane had fallen first and allowed much of the covering clay to fall through to the floor before the main timbers burned sufficiently to give way. Thus, when these larger beams fell, they rested on previously fallen roof materials that had originally covered them. (Fairbanks 1946b:97)

At the base of Garden Creek Mound No. 1, Dickens reports two features that he describes as the "collapsed remains of semi-subterranean earth-covered buildings" (Dickens 1976:83). The evidence for the roof lying on the floors of both features was described as follows: "Numerous horizontal molds of fallen roof beams and cane roof covering were present on the floor and benches" (Dickens 1976:86). Dickens further characterized the archaeological situation on the floor of the buildings in a manner that contrasts it sharply with the archaeology of the Macon Plateau collapsed roof. Dickens states that "the collapsed roof material in both of the [Garden Creek Mound No. 1] earth lodges formed a rather thin (about 0.4 to 0.6 foot) layer over the central portion of the floor,

suggesting that there had been only a sparse covering of dirt on the upper portions of the roofs. This layer was much thicker (about 1 to 3 feet) around the walls and the roof margins" (Dickens 1976:86).

What is referred to as the "primary structure" under Mound 2 at the Harris Farm in the Norris Basin is reported by Webb as having an earth-covered roof. The building had burned. He tells us that "the burned structure had collapsed after burning, but in falling had not reached the primary floor. In sections of the collapsed wall every post was shown by its charred remains, the basal end terminating exactly in a post mold at the boundary. But these posts in falling had been held up off the primary floor by as much as a foot or more of red clay. Although the clay was *under* the fallen and burned wall and rested on an unburned floor, yet it was hardened and discolored as a result of the considerable heat action. The clay immediately *over* portions of this structure showed much less effect of burning" (Webb 1938:78-79).

At the Macon Plateau, Harris Farm, and Garden Creek mound sites, the argument for earth-covered roofs on the structures identified as earth lodges depends upon the archaeological interpretation of the clay or earth deposited on the floor and underlying the remains of roof timbers. This clay or earth is identified as that which originally lay on top of these timbers while they supported the roof. The destruction of the buildings by fire caused the earth covering the roof to fall through the roof beams before these beams, in turn, had burned to a point where they too fell to the floor and came to rest on top of that earth.

I would suggest that there are alternative explanations for the charred roof timbers overlying clay or earth deposited on the floors of the buildings. One alternative explanation suggests itself, in this instance as a consequence of reading the descriptions of the archaeology, not only at the Harris Farm but also at the Garden Creek mound and at Macon Plateau. This alternative argues that the buildings were deliberately burned. The burning was preparatory to either the rebuilding of the structure itself or as a prelude to the construction of a platform mound on the site of the structure. After the building had been set on fire, but before the supporting timbers had fallen, loads of clay began to be thrown onto the site of the burning building. If the destruction of the building by fire and its burial under the fill of a mound construction were part of a single event, and this seems to be the case in these situations, it is entirely reasonable to suppose that the addition of the fill may have begun before the heavy roof beams had burned through and fallen to the floor.

Another alternative explanation argues that the earth or clay underlying the charred roof timbers resulted from daub on the walls falling onto the floor as the structure burned and before the heavy roof beams fell. It is also possible that some or all of the charred timbers or log



molds on the floor are the remains of wall posts rather than roof beams. Webb, in fact, indicates that this is the situation in that portion of his description of the archaeology of the Harris Farm Mound 2 that is quoted above. Apposite to this point, David Hally reports that “in my own experience, domestic [southeastern Mississippi period] structures often have more daub on the floor near the center of the structure than along the walls. It may be that only the upper walls of structures were sufficiently heated during burning to fire the clay. Walls that collapsed inward would then tend to create piles of daub in the center of the floor” (David Hally, personal communication, May 8, 1987).

It is also possible that the daub in the center of the houses, lying beneath the roof beams, was derived from the destruction of interior partitions within the structure. Such post-supported partitions (as opposed to posts supporting benches or other furniture) are known from several Mississippi period sites. At Hiwassee Island, the floors of six buildings indicated such internal divisions (Lewis and Kneberg 1946:67). The Toqua site, also in Tennessee, had a structure with several interior partitions that produced concentrations of daub on the floor (Polhemus 1985:25–26). At the Irvin Village site (No. 5) in the Norris Basin, Webb encountered a structure (No. 2) with an interior partition (Webb 1938:48–49, figure 14). A second such structure (Feature No. 42) was excavated by Webb at the Ausmus Farm Mounds (No. 10), also within the Norris Basin (Webb 1938:97–99, figure 43).

The most plausible of the alternative explanations, one derived from the ethnohistorical data, suggests itself. The presence of the burned daub on the floors of the burned structures may well be attributable to the use of an insulating layer of daub over the roof timbers and beneath the roof thatch or other covering. In addition to collapsed wall daub, this construction practice, described by both Adair and Hawkins and discussed above, could very likely have been a source of a portion of the burned daub found on the excavated floors of the supposed earth lodges in Tennessee, North Carolina, and Georgia.

While as far as I am aware the following archaeological situation has been found only at two archaeological sites, it would seem incidentally to have pertinence to the subject of earth or daub in or on aboriginal roofs. In 1964, at the Etowah site, I excavated the floor of an aboriginal house that had burned. It was located in the village area of the site, some 125 m east of Mound A. In the process of clearing the floor, an interesting architectural detail was brought to light. A fragment of a large jar was found embedded in the fill of the floor. The body of the jar had been broken away more or less evenly at the shoulder around the entire circumference of the vessel, leaving the entire upper portion, with its short neck and relatively small opening, intact. The jar had a pinched rim and a

plain surface and is of a type generally classified as Lamar. It was approximately 41.9 cm in circumference at the shoulder, while the neck was 6.3 cm high with an orifice 18.4 cm in diameter. It lay upside down with the neck down on the floor. When it was turned over it was found that the vessel had clay, or daub, crudely plastered over much of the exterior surface of the jar. The daub, about 2 cm thick, began immediately below the neck and seemed to extend beyond the broken edge at the shoulder line. I believe that the upper portion of this large jar had been placed on top of the roof, probably at or near the ridge pole, where it served as a chimney or more accurately a fireproof smoke hole. The clay plaster was probably carried down from the surface of the jar over the surface of the thatch or mat roofing material, possibly to keep sparks that might fly out of the smoke hole from igniting the flammable roof.

Richard R. Polhemus (personal communication, May 1990) has recently encountered a similar situation at the Loy site. In this instance, while there was no evidence that a portion of a pottery vessel was used, there were indications that the area surrounding the smoke hole was covered with daub. If this were a feature of other Mississippi period houses, or if such other houses simply had clay or daub placed on the roof around the area of the smoke hole to prevent sparks from igniting the roofing material, then the daub would appear in the center of the floor as the roofing material collapsed onto the floor of a house that burned.

The third site where an earth-covered structure has been reported, the Wilbanks Farm, is for me a genuine *pons asinorum*. It presents an unusual, and apparently more complex, archaeological situation than the others discussed to this point. The Wilbanks structure is markedly different from the premound structures at the Garden Creek site, the “small log” buildings of the Harris Farm, or the circular Macon Plateau Council House with its clay seats and eagle platform. The Wilbanks structure lacks any indication of benches along the walls. Compare this with the Tennessee and North Carolina buildings, where there were post-supported benches along the walls. At Macon Plateau an encircling clay banquettes with well-defined seats was an equivalent feature. Two other important differences are seen in the absence of a hearth in the Wilbanks structure or an entry passage.

The explanation, by Sears, of the construction of the Wilbanks feature has not convinced me that there was an earth lodge under the mound. In fact, I am not convinced that there was a building of any kind under the mound. The presumed earth lodge, as it is described by Sears, is not only an architectural anomaly in the Mississippi period of the Southeast, it is structurally implausible. There were, according to the reconstruction by Sears, more than 4,000 square feet of roof supported by poles,





10.4. Artist's reconstruction of the earth lodge at the Wilbanks site. (Reproduced from Sears 1958: Figure 5.)

forty feet long, 4 to 6 inches in diameter, and spaced two feet apart along two opposing walls (Figure 10.4). The roof poles were cantilevered up and out over the floor to form an A-frame-shaped covering. These poles were braced and anchored at their floor ends along each wall line with a large horizontal log and a clay embankment. The pole framing was, in turn, overlain by almost three feet of silt and clay that completed the roof covering. This structure had not burned (Sears 1958:143–44).

My objection to the interpretation of the basal features of the Wilbanks mound by Sears is based in part on the fact that his interpretation results in a roof covered by more than 1,633.5 tons of earth, or a load of 770 pounds per square foot. I am assured by a structural engineer that this weight is well over the load-bearing capacity of a roof of the sort that Sears has reconstructed. Serious engineering questions can also be raised concerning the longitudinal stability of this roof. The latter questions are valid because of the apparent absence of any end-bracing elements for the roof. I must conclude that the data presented by Sears simply does not add up to evidence for any recognizable building. The horizontal logs that served to brace the roof poles and, along with the clay embankment, to define the walls along two sides of the building are not indicated on either the published profiles that show the cross sections of the mound nor on the published floor plan of the feature (Sears 1958: figures 6a, 6b, and 7). Sears reports that the molds of these logs were encountered during the excavation. Interestingly, Wauchope does not report encountering the horizontal log mold, although he too cut a trench across the structure a decade earlier (Wauchope 1966:280–90, 453–55, figure 201). One can only speculate, but it would appear that these large logs could not be traced along the periphery of the presumed floor.

The absence of a fire basin or hearth and any indication of passageway into the structure, regular features not only of Mississippi period houses but also apparently of all public buildings of that period, are additional indications that there is something amiss with the Sears interpretation of the Wilbanks mound.

Finally, I would point out that I also encountered the

pattern formed by what Sears has called “roof poles,” during late July and early August of 1958 while I was excavating Mound C at the Etowah site. At that time, many molds of poles approximately 8 cm to 15 cm in diameter were found on the southwest corner of the mound and extending along the southern side of the mound. The molds indicated that most of the poles had been lying in a horizontal position with their long axis parallel to the sides of the mound. Only a few molds were found that suggested that some of the horizontal poles were placed so that they were lying at right angles to the side of the mound. In some instances we were able to trace particular lengths of molds for as much as four meters. The molds indicated that the poles were originally placed in the fill of the second mound construction phase and that they lay over and inside a ridge of sand that was 53 cm in height. The sand ridge was traced for approximately six meters along the western side of the mound. It turned a corner and ran for about six meters more along the southern side of the mound. It ended at a point where the eroding flood waters of the Etowah River and the initial excavations of Warren Moorehead had destroyed the greater portion of the basal section of the southern half of the mound. Numerous rocks lay over and around the sand ridge.

The complete assemblage of features, pole molds, sand ridge, and rocks were interpreted as a phase in the construction of the mound. The sand ridge served to define the basal area that was to be covered by the addition of a new layer or mantle to the mound. Clay was piled inside of the sand ridge and up the sides of the slope of the previous mantle, a technique that allowed the builders to maintain control over the thickness of the mantle. The molds of the timbers or poles were the remains of the palisade that had encircled the base of the earlier mound mantle. The palisade poles were pulled up, and as the new mantle was added, they were incorporated into it, apparently in an attempt to inhibit erosion and to stabilize the addition. Although in all respects the Mound C situation replicates that described by Sears for the Wilbanks mound, I am unable to interpret the Mound C features as those of an earth lodge or any other structure other than that of the mantle addition.



I feel that the third reason to question the interpretations of earth lodges in the Southeast is derived from an examination of the climate of the area. It appears almost certain that the amount of rainfall in the Southeast is too great to have permitted the use of earth-covered roofs on prehistoric buildings. The mean annual precipitation rate for Bibb County, Georgia, the location of the Macon Plateau site, is between 117 and 122 cm, of which very little, if any, falls as snow. The mean annual precipitation rate of Cherokee County, Georgia, the location of the Wilbanks site, is 135 to 137 cm. Again, little of this moisture falls as snow. Similar, if not slightly higher, precipitation rates pertain in the Norris Basin of Tennessee and in the Appalachian Summit area of North Carolina. Curiously, those areas of the Southeast where earth lodges have supposedly occurred prehistorically are the very areas in the eastern United States with the highest annual precipitation rates. Further, little of this precipitation occurs as snow, a form that would allow for relatively slow runoff or little surface penetration. We can contrast this climatic situation with that in the Upper Missouri Basin of North Dakota, where earth lodges are known to have been built in the nineteenth century. At Linton, in the central area of North Dakota, the mean annual precipitation rate is slightly less than 38 cm. Of this amount approximately 28 cm falls during the warm season. Thus the northern Plains earth lodges were characteristic of an area where the precipitation was only one-third to one-quarter of the amount found in the Southeast.

My point here is a simple one. It does not appear reasonable to postulate prehistoric buildings with earth- or sod-covered roofs in areas where there are large amounts of rainfall. Such structures would simply not be tenable because, given the nature of aboriginal construction techniques, any earth-covered roof would promptly dissolve and pour onto the floor during the first heavy rain.

An additional problem exists in that on steeply sloping roofs, roofs that would shed rainwater rapidly, an earth covering would have an irrepressible tendency to slide down the roof and off the eaves onto the ground unless a special method was developed to hold the covering in place. In this regard it can be noted that the drawings and plans for the Hidatsa earth lodges provided by Gilbert Wilson indicate that the slope angle of the roof of these structures was 20 to 25 degrees from the horizontal, while the sloping walls were slightly more than 50 degrees from the horizontal (Wilson 1934). It should also be pointed out that the preferred material for covering the Hidatsa earth lodge was sod (Wilson 1934:366). The roots of the dominant grasses of the northern Plains areas—for example, little bluestem (*Andropogon scoparius*) and buffalo grass (*Buchloe dactyloides*)—formed a tough, almost

impenetrable, mass that made the use of cut blocks of sod in construction feasible. Sod, in the sense that it occurred on the Plains, has never been available in the forest-covered southeastern region.

Although the precipitation rate on the Plains was low enough to make a roof with a relatively slight slope angle practicable and thus capable of employing a sod covering, the southeastern region had a precipitation rate as much as three to five times higher. The slope angle of the roof would have to have been much greater than that characteristic of Plains earth lodges. It was absolutely necessary that rainwater be made to flow rapidly down and off the roof. The slower the rate of flow, the more likely it would be that the rainwater would seep through any but the most impervious of roof coverings. It should thus come as no surprise that the few ethnohistorical references to aboriginal roofs in the Southeast characterize them as steep and high. Garcilaso de la Vega tells us that the roof of the temple in Talomeco “was very lofty and drafty, for since the Indians had not discovered tile, they found it necessary to raise their roofs a great deal in order to keep the houses from leaking. The roof of the temple revealed that it was constructed of reeds and very thin canes split in half” (Vega 1951:315). In reference to a different structure in the same town, Rangel notes that “the *caney*, or house of the chief, was very large, high and broad” (Rangel 1922:101). Unfortunately, Rangel is not at all clear as to whether he is referring to the roof of the house in his use of the adjective “high” or to the location of the house upon a mound. There are several frequently reproduced late seventeenth-century drawings of aboriginal temples and houses located in the lower Mississippi valley. More important, the artists actually saw the buildings that they drew. The Acolapissa temple, drawn by De Batz, has a domed roof that is very steep, while the house of the chief, by the same artist, has a slope angle on its roof that is approximately 55 degrees from the horizontal (Swanton 1946: plate 62). The roof of the Natchez temple shown in the illustration of the mortuary ritual of the Tattooed-Serpent has the same slope angle (Swanton 1946: plate 63). Given the amount of rainfall characteristic of the southeastern region, we must conclude that in order to function effectively, the aboriginal roofs had to have been made of impermeable materials or alternatively they had to be very steep. In either case an earth or clay roof was not a plausible solution.

To summarize my argument against the interpretation of certain archaeological features as earth lodges, I will restate the three reasons that I believe call into question interpretations of aboriginal southeastern constructions as earth lodges. It must be borne in mind that I define the term “earth lodge,” in conformity with almost 100 years of American ethnographic usage, as an earth- or sod-covered building. I do not include earth-embanked

structures within this definition. First, those buildings presumed to be earth lodges appear as a rare architectural form in the Southeast. Second, there are reasonable and probable alternative interpretations, other than the earth lodge interpretation, for those archaeological features identified as earth lodges. Third and finally, climate, particularly the precipitation rate, in the Southeast appears

to preclude the use of earth-covered roofs as a viable construction technique. I should add, in closing, that I do not deny the possibility of earth lodges in the Southeast. I do think, however, that we must be very cautious in developing interpretations that conclude the existence of such structures.





As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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