BURCH HOUSE

LINCOLN HOME NATIONAL HISTORIC SITE

NATIONAL PARK SERVICE

SPRINGFIELD, IL USA

HISTORIC STRUCTURE REPORT

RATIO ARCHITECTS, INC.

H.F. LENZ CO.

THE JAEGER COMPANY

LAWSON ELSER, INC.

BURCH HOUSE (HS-26)

Lincoln Home National Historic Site
Springfield, Illinois

Historic Structure Report

May 19, 2006

Prepared for
National Park Service
Midwest Regional Office
Omaha, Nebraska

Prepared by
RATIO Architects, Inc.
107 S. Pennsylvania Street
Suite 100
Indianapolis, Indiana 46204
(317) 633-4040

In association with
H.F. Lenz Company
1407 Scalp Avenue
Johnstown, Pennsylvania 15904
(814) 269-9300

The Jaeger Company
367 Prince Avenue
Suite 2
Athens, Georgia 30601
(706) 543-5459

Lawson Elser, Inc.
650 East Carmel Drive
Suite 150
Carmel, Indiana 46032
(317) 574-9409

BURCH HOUSE (HS-26)

Lincoln Home National Historic Site
Springfield, Illinois

Historic Structure Report

May 19, 2006

Recommended Donald L. Stevens Jr. Date: 6-13-06
Associate Regional Director, Cultural Resources, Midwest Region

Concurred James H. Sanders Date: 5/24/2006
Superintendent, Lincoln National Historic Site

Approved Dan N Wenk Date: 6/14/06
Regional Director, Midwest Region

BURCH HOUSE (HS-26)

Lincoln National Historic Site
Springfield, Illinois

HISTORIC STRUCTURE REPORT

May 19, 2006

TABLE OF CONTENTS

3. PART 2: TREATMENT AND USE

4. BIBLIOGRAPHY

5. APPENDICES

List of Illustrations

Executive Summary

EXECUTIVE SUMMARY

At the request of the National Park Service, Midwest Regional Office, RATIO Architects, Inc., in conjunction with H.F. Lenz Company, The Jaeger Company, and Lawson Elser, Inc., has prepared this Historic Structure Report for the non-extant Burch House, within Lincoln Home National Historic Site (Lincoln Home NHS) in Springfield, Illinois. Lincoln Home NHS was established with the goal of preserving and interpreting the Lincoln Home to the time period of his residency, and incorporating the neighborhood he knew and departed from to take the office of President of the United States in 1861, including its relevance to a deeper understanding of Lincoln in American heritage. The visitor is led to an appreciation of Lincoln's life and involvement in this community, where he developed into the statesman known through out the world.

Lincoln Home National Historic Site is within the original blocks of the Elijah Iles Addition to the City of Springfield. Lincoln Home NHS encompasses four residential blocks in downtown Springfield, Illinois, from Capitol Avenue on the north to Edwards Street on the South and from Seventh Street on the west to Ninth Street on the east. Abraham and Mary Lincoln purchased the house on the corner of Eighth and Jackson in 1844 and lived at this location until they departed for Washington, D.C. in 1861, after Mr. Lincoln's election to the Presidency. This is the only residence the Lincoln's ever owned.

The park was established in 1972, when the National Park Service acquired the Lincoln Home and other state-owned property through donation from the State of Illinois. The city of Springfield also donated property including the streets and alleys. The remainder of the four blocks was purchased from private property holders. The goal as stated in the Master Plan of 1970 is to "faithfully restore the neighborhood to establish the proper setting circa 1860." The recommendation was made to restore the extant structures and reconstruct the Burch and Carrigan Houses.

The purpose of the reconstruction is to enable the visitor to better understand the environmental context in which Abraham Lincoln was a part from the beginning of his residency in Springfield to the Presidency. In order to achieve this goal, Historic Structure Reports for the non-extant Burch House located directly across the street from the Lincoln Home and the non-extant Carrigan House located directly next door were created to provide a basis for the eventual reconstruction of both structures to their 1860 appearances. The Historic Structure Report (HSR) will be a readily accessible reference document for the National Park Service, Lincoln Home NHS staff, and professionals working on or using the reconstructed neighborhood. It will also be used as a tool in interpretation of the structure based on historical and physical evidence. The HSR contains a bibliography of archival documentation relevant to the structure and be a resource for further research and investigation.

Investigation was made into the physical growth and appearance of each house and known outbuildings through historical and archeological research. A determination of house location, size and appearance including resolution of landscaping issues such as walks, vegetation, fences and grading has been made. Accessibility issues have been addressed in

regard to the sites and structures. Building environmental systems including communications systems solutions have also been explored. Finally, a value analysis was completed followed by the creation of a Class B cost estimate. The results of the investigative research and documentation are arranged in the following manner:

ADMINISTRATIVE DATA
This section contains the statement of purpose of the project including a general description of the park and the context under which this project was undertaken. Additionally there are descriptions of the team members and insight into the investigation history and methodology.

PART 1: DEVELOPMENTAL HISTORY
This section includes the analysis of existing historic information as it relates to the chronology of the property. A history of owners and occupants associated with the property, historic photographs and maps, archeology and a comparison with buildings and/or features of the same time period are included. An architectural cross-analysis of the gathered information follows.

PART 2: TREATMENT AND USE
This section presents proposed uses and recommendations including information pertaining to the site, structural systems, building environmental systems, and accessibility. Proposed schematic plans for the reconstruction of the Burch House including an ultimate treatment plan follows with a Class B cost estimate.

Administrative Data

PROJECT BACKGROUND & PURPOSE

Robert Lincoln and his wife Mary deeded the Lincoln Home to the State of Illinois in 1887. A live-in custodian was appointed by the state to care for the home. During the 1920's a master plan for Springfield was developed by Myron West, which included acquiring additional land adjoining the Lincoln Home to develop a "Patriotic Center". This was never realized but did begin the implementation of zoning ordinances for the area. In 1939, the Bloom Plan was developed and put forth by the Department of Public Works and Buildings. This plan also called for the development of a park surrounding the Lincoln Home, however it too was never implemented. In addition, the grocery store across the street, the site of the former Burch House, was to be replaced by a custodian's residence. In the early 1960's, Springfield moved to further the preservation of the district with the passage of several ordinances controlling building permits, exterior improvements and design appropriateness in respect to establishing the proper character of the neighborhood. On September 12, 1961 the Lincoln Home District was established by the city of Springfield. However, the city's finances were tight. They in turn looked to the federal government for aid in effort to prevent further deterioration of the Lincoln Home area. With the assistance of Congressman Paul Findley, Lincoln Home National Historic Site was established in 1972, operated by the National Park Service.

The Lincoln Home is a National Historic Landmark designated in 1960 and the Historic District was listed as on the National Register in 1976. Lincoln Home's environment or setting impacts the house by contributing or detracting from the integrity and historical value. The faithful reconstruction of the Burch house would enhance the historical value and contribute to the setting for the 1860 interpretive date of the Lincoln Home. Further, the restoration of the cultural landscape, which includes the Burch house, is called for in the Master plan.

The non-extant Burch House is a critical visual element missing from the park experience. The reconstruction of the house would fill a key gap in the historic complex providing the visitor with a fuller understanding of the environment within which the Lincolns lived. In addition screen out modern intrusive elements outside the historic zone. The neighborhood during Lincoln's time contained a diverse collection of residents and building styles. The reconstruction of the Burch House will contribute to the reestablishment of the diversity of housing and assist in telling the story of the neighborhood and its people.

PROJECT SCOPE

This HSR was created in an effort to compile existing and new research along with investigative findings, analysis and evaluation of the site and former structures. The report will serve as a record document for reconstruction goals and treatments relating to the Burch House. The project scope includes historic research and cultural landscape and architectural investigations. A site survey resulting in a topographical site plan used for investigation and design work was one of the first project activities. A subsurface soil investigation conducted in September 2005 to classify the soil samples will be used in the design of the new foundation and structural system. Drainage alternatives were also explored. Investigation was made into the physical growth and appearance of each house

and known outbuildings through historical and archeological research. With this information schematic design was completed as the first step in the reconstruction of the Burch House.

PROJECT TEAM MEMBERS

Following the objectives of Lincoln Home National Historical Site, the National Park Service, Midwest Region, engaged the professional services of RATIO Architects, Inc., an architectural firm specializing in historic preservation, to prepare the Historic Structure Report (HSR) for the Burch House. Team members providing support to RATIO Architects, Inc. includes:

Hanson Engineering, topographic & boundary survey;
H.F. Lenz Company, mechanical and electrical engineering;
The Jaeger Company, historic landscape architecture;
Kirk Associates, LLC, value analysis;
Lawson Elser, Inc., structural engineering;
Professional Services Industries, Inc., subsurface soil investigation.

The project team has gathered information, in addition to that which had been previously researched and collected and conducted during on-site physical investigations to formulate strategies for the reconstruction of the home. The results of this investigative research and documentation are contained in the Historic Structure Report.

INVESTIGATION HISTORY AND METHODOLOGY

Primary and secondary sources were used during the historical investigation of the Burch House as listed in the bibliography. Archeology, historic maps and photographs were consulted as well in the research efforts. Limited archeological testing was conducted in May of 2005 by the Midwest Archeological Center preceded by a geophysical investigation in April. A review of previous studies was undertaken to understand the existing research available and determine what questions remained to be answered. Previous studies that were particularly important to the development of the HSR include: *The Historical Base Map* by Edwin C. Bearss and the *Historic Resource Study and Historic Structures Report for Blocks 7 & 10 Elijah Iles' Addition* by Albert W. Banton, Jr., Ellen Carol Balm, and Jill York O'Bright.

Although there is a wealth of written information available about the Lincoln Home and the area as a whole, very little information exists pertaining to the Burch family or the house. Research at the repositories in the Springfield area was conducted in an attempt to gather and uncover pertinent information; with the most material located at the Sangamon Valley collection at the Lincoln Public Library, Springfield and the Abraham Lincoln Presidential Library, formerly known as the Illinois State Historical Library. Lincoln Home NHS archives also contains a great deal of useful and pertinent data and photographic documentation pertaining to the Burch site. Research for the Burch House historic tax records was conducted at the Illinois Regional Archive Depository in Springfield. Unfortunately, it appears that these records had been destroyed approximately 60 years ago by the city. The tax records could have provided additional

information concerning building episodes and possibly a definitive construction date. In addition, an on-site investigation of the landscape features, available utilities and the building history was conducted. Programming was discussed with Lincoln Home NHS staff in relation to the functionality of the reconstructed structures.

A Value Analysis (VA) session was held in November of 2005 at Lincoln Home NHS led by Stephen Garrett of Kirk Associates, LLC. Various floor plan options and construction approaches including accessibility were reviewed. An ultimate treatment plan was derived from the presentation and discussion using the "Choosing By Advantages" (CBA) method. A final report dated January 10, 2006 summarized the information presented at the session including a summary of recommendations and comparative costs (Class C and Class B cost estimates).

The HSR follows the format directed by *Cultural Resource Management Guidelines (NPS-28)*, U.S. Department of the Interior with the use of the Chicago Manual of Style handbook. Recommendations are made in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties, Uniform Federal Accessibility Standards (UFAS), International Building Code* and *NFPA 5000 Building Construction and Safety Code*. The report is based on documentary evidence collected to date and limited physical archeology. The research is not concluded with this report as it could be supplemented in the future by newly uncovered documents and additional archeological findings.

PROJECT GOALS

The goal of this project is to prepare critical planning and design documents prior to the ultimate reconstruction of the Burch House. Documentation of the house's history, appearance, and development has been delineated. With the completion of the reconstruction, the Burch house will contribute to the visual and historic context for the Lincoln Home. It is anticipated that the building will eventually be opened to the public for exhibits and contribute to the historic context of the Lincoln Home National Historic Site.

FUTURE RESEARCH

Several questions raised during the preparation of this HSR may be answered during additional archeological testing scheduled for spring 2006. Those questions include the following:

- Confirm the location of the northeast corner of the house,
- Confirm or refute the existence of the chimney seen in the historic photographs as a part of the Burch House,
- Confirm the locations and alignment of the southeast corner and east wall,
- Confirm the location of the foundation of the open porch,
- Confirm the location of the southwest corner of the house,

- Locate the 1880's wood frame addition,
- Identify any remains of the outbuildings.

If reconstruction of the Burch House is undertaken in the future, the park will need to develop a formal data recovery plan in consultation with the State Historic Preservation Office in order to mitigate the impact of reconstruction on significant archeological resources at the site, in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended. Mitigation might include devising methods to preserve some features in place, and/or documenting and removing them through excavation. Any new information about the house and its associated features generated as a result of those investigations may then be used to reconsider and potentially refine the reconstruction plan.

PART 1:

Developmental History

PROJECT LOCATION

The Burch House site is located within Lincoln Home National Historic Site in Springfield, Illinois. The Burch House was built in the Elijah Iles Addition to the town of Springfield in Block 7, Lot 9. The rectangular lot is approximately 40' wide north to south along Eighth Street and 152' long east to west, fronting Jackson Street.

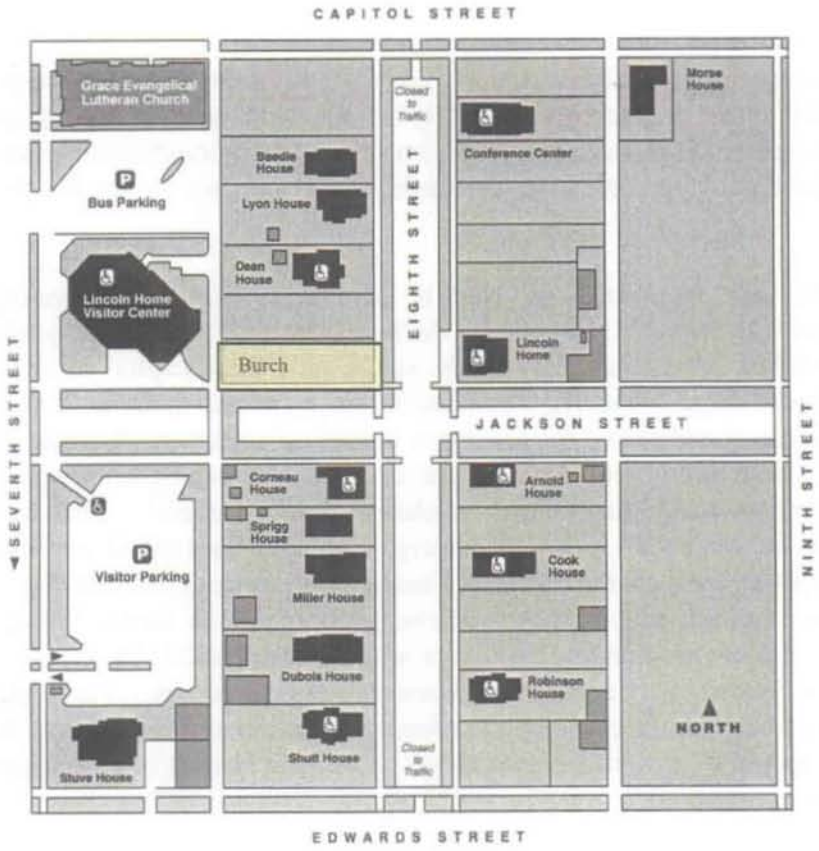


Figure 2-1: Map of Lincoln Home National Historic Site

Figure 2-2: Photograph of the existing site looking east, RATIO Architects, Inc., July 2005.

Figure 2-3: Photograph of the existing site looking northwest, RATIO Architects, Inc., July 2005.

HISTORY

History of Burch House Site

As a part of Lincoln Home National Historic Site, the Burch lot is an important element of the Lincoln neighborhood context. The non-extant Burch House was located at the northwest corner of Jackson and South Eighth streets in Sangamon County, Springfield, Illinois. The house sat directly across Eighth Street from the Lincoln Home during the Lincoln family's residency, however, many changes occurred to the property in the years following the Lincoln's departure from Springfield. Today, the lot is devoid of buildings and is surrounded by a board fence. Tracing the history of the land and its owners provides a historic perspective essential in developing and implementing reconstruction plans. A chain of title table is included which delineates ownership and occupants for the Burch House (**See Table 2-1**).

Springfield was continually growing in population from its beginning. However, the speculation that Springfield would be the new state capital added an extra enticement. The state legislature established Springfield as the new State capital in 1837 and in 1839 the capital moved from Vandalia. Starting in 1836, in anticipation of the announcement, a building boom occurred and the town was in need of workmen. A resident of the town wrote in a letter that buildings could not be put up due to the lack of workmen and that carpenters, masons, tinners and other skilled mechanics were needed.[1] This building boom even withstood the Panic of 1837. An excerpt from the Springfield newspaper, *Illinois State Journal,* written by the editor Simeon Francis gives evidence to this fact. "Notwithstanding the depreciation of the currency, and the pressure of the times, Springfield continues to improve. About one hundred buildings went up last year [1841], and among them some beautiful and costly residences, and extensive business houses...The south part, and all that quarter of the city on the east along the line of the rail road from Cook to Washington Streets, has been spread over with new buildings...." It was during this timeframe that the Burch House was constructed.

History, People and Chronology

Pascal Paoli Enos purchased 160 acres from the U.S. government in November 1823 after moving to the area to become receiver of the Springfield District Land Office. Enos sold a portion of this land to Elijah Iles in 1825. When Iles moved to Springfield from Kentucky in 1821, he set up a general store and made plans to develop a town.[2] Iles was a moving force in creating the town of Springfield and also lobbied for its position as county seat and eventually as the state capital. Along with Enos, Iles donated land to form the new town of Springfield, which was originally named Calhoun. In 1836, Iles Addition to the town of Springfield was platted, which contains Lincoln Home NHS.

Block 7 Lot 9, later known as 429 S. Eighth Street, in the Elijah Iles Addition passed from owner to owner without improvements until 1845, when it was purchased by Thomas P. and

[1] Beach, Richard H. " A letter from Illinois Written in 1836." *Journal of the Illinois State Historical Society*, (October 1910), 96.
[2] Angle, Paul. *"Here I have Lived": A History of Lincoln's Springfield 1821-1865*. (Springfield, Illinois: Abraham Lincoln Association, 1935), 9.

Jemima Lushbaugh. The Lushbaughs owned the property from 1845 to 1859, during this time frame the house was constructed. Thomas was originally from Maryland and married Jemima in 1841. The Lushbaughs had three children: Elizabeth, Harmon and Helen. They were early settlers of Mt. Pulaski, Illinois, where they built the third store in town in 1846.[3] Mount Pulaski, a village and railroad junction in Logan County, is located 24 miles northeast of Springfield. The 1850 census places the Lushbaughs and their three children in Mount Pulaski with Thomas listed as a merchant and his real estate valued at $2300. Lushbaugh also served as a trustee of Logan County Schools in 1852.[4]

Figure 2-4: Thomas P. and his wife Jemima Lushbaugh (Courtesy of the Sangamon Valley Collection, Lincoln Public Library, Springfield)

Lushbaugh and Abraham Lincoln were well acquainted. Presumably when Lincoln was a circuit rider, he traveled to or through Mount Pulaski many times. An account of the stop in the town of Lincoln by Abraham Lincoln and Stephen Douglas during the Lincoln/Douglas debates was written by S. Linn Beidler and recorded in the 1911 History of Logan County. Beidler sat with Mr. Lincoln on the train leaving Lincoln on the way to Springfield. Upon learning Beidler was from Mount Pulaski, Abraham Lincoln asked about his old friends "many of whom he had not met since the removal of the county seat to Lincoln. He made particular mention of Thomas P. Lushbaugh, Col. Whittaker, Jabez Capps and Squire Emmett. He had boarded with the two former.[5]"

The Lushbaughs purchased the property in 1845 for $250 and sold it for $2100 in 1859 indicating that improvements had been made, most likely in the form of a house. The Springfield city map from 1854 clearly depicts the house on Block 7, Lot 9 (**See Figure 2-13**). Elizabeth Capps Lawrence, the Lushbaugh's granddaughter, recalls her grandfather's house in Springfield indicating that the Lushbaughs lived in the house.

[3] *Springfield City Directory and Sangamon County Advertiser for 1855-1856 (Sangamon County, Illinois).* (Springfield: Birchall & Owen, 1855), 137.
[4] Stringer, Lawrence Beaumont. *History of Logan County, Illinois.* (Chicago: Pioneer Publishing Co. 1911), 437.
[5] Ibid, 225.

> *He built a small brick house opposite Abraham Lincoln's home. My grandmother had a cow and sold milk to the Lincolns. Mrs. Lincoln demanded cream she could cut with a knife. Every morning Mr. Lincoln came across the street in his bare feet and slippers to get a shovel of coals with which to start his fire. A lawyer, he was later rising than my grandfather who was a merchant. Robert Lincoln was my mother's playmate and spent a great deal of time at her home when she was eight years old or thereabouts*[6].

Elizabeth Lawrence also mentions that her grandparents moved to Mt. Pulaski following her uncle Jabez Capps, although she does not provide a date. However, it is documented that Thomas P. Lushbaugh opened the third store in Mt. Pulaski in 1846. This information places the date of construction for the Burch House in 1845.

During their ownership, the Lushbaughs rented the property to several families. According to the city directories from 1855 to 1858, the Reverend Noyes W. Miner and family resided at the northwest corner of 8th Street and Jackson. Reverend Miner moved to Springfield in 1855 to become the pastor of the Baptist church at the corner of 7th and Adams Streets and lived in Springfield for fifteen years until the family moved in 1869 to Belvidere, Illinois. The Lincolns and the Miners became very good friends while they were neighbors. Reverend Miner visited the Lincolns in Washington, D.C. at the time of Willie's death in 1862. He was also Mrs. Lincoln's champion in 1882 when he worked in an effort to secure her an increased pension from Congress.

The next tenants of the house were relatives of the previous occupants. Reverend Miner's sister, Hannah came to Springfield from Brooklyn, New York with her two sons after her husband's death in 1854. Hannah's sister, Mrs. Chauncy G. Parrish lived on a farm outside of Springfield. In 1858, Hannah married Dr. John H. Shearer who was in partnership with Dr. Adams. The family rented the Burch House for a year (1858-1859) before moving to Wellsboro, Pennsylvania to accommodate the doctor's health condition. Mrs. Lincoln and Mrs. Shearer became very good friends and continued to exchange letters and visits even after her husband's election to the presidency. Dr. and Mrs. Shearer accompanied the Lincolns on the presidential train from Philadelphia to Harrisburg in 1861 and later that same year Mrs. Shearer and her sons traveled with Mrs. Lincoln from Philadelphia to New York.[7]

The Burchs purchased the property from the Lushbaughs in 1859. William S. Burch was born in Kentucky in 1814 and married Frances A. Thomas in 1838 in Sangamon County. The Burchs had three children, a daughter Mary and two sons, Richard and George Edward. George Edward died of "congestion of the brain" in 1851; he was 7 months and 8 days old.[8] The 1860 census lists only William, Mary, and Richard; presumably Frances had died by this time. In 1862, William married Susan Howatch, unfortunately she died two years later in 1864. William Burch had various professions from lumberman to business owner to clerk.

---

[6] Lawrence, Elizabeth Capps, "Some Memories"(Abraham Lincoln Library, 1966), 11.
[7] Turner, Justin G. and Linda Levitt Turner. *Mary Todd Lincoln, Her Life and Letters.* (New York: Alfred A. Knopf, 1972), 81, 92 93.
[8] *Daily Illinois State Journal*, 6 September, 1851.p.3, col.2

In 1837 and 1838 advertisements for a grocery and iron retail store, owned by Burch and Foley Vaughn, appeared in the *Illinois State Journal*. This partnership ended in October 1838.[9] In 1855, the city directory indicates William's occupation as a lumberman and by 1864 he was a clerk at Hurst and Ruth's Dry Goods Store.

While the Burchs lived in the house at 429 S. Eighth Street for only a year before the Lincolns left for Washington, D.C., they were obviously well acquainted. When the Lincolns left Springfield in 1861, they stored some furnishings at the Burch House. Mrs. Lincoln specifically describes a sofa as being new in a letter to Julia Ann Sprigg dated May 29, 1862.

> *I see by the papers that Mr. Burch is married. We have some pieces of furniture, still remaining at his house, may I ask a favor of you – It is this – If Mr. Black can have room for them, can they be moved, to any place above his store, where he may have room for them. The sofa, at Mr. Burch's was new, a few months before we left.*[10]

Prior to purchasing the house at the corner of Eighth and Jackson Streets, the Burchs resided at the corner of Eighth and Edwards in 1855-1856.[11] This location is within the current four-block area of the National Historic Site. The families may also been acquainted previously through William Burch's civic involvement. In 1838, he was one of 150 Springfield citizens, including Abraham Lincoln, who undersigned the promissory note to the State Bank of Illinois for the new state capital building. Burch also put his hand into the political arena when in March of 1855 he was listed as a candidate for the upcoming election of City Supervisor.[12]

The 1927 obituary of Mary Grimsley (nee Burch) states that she was a child playmate of the Lincoln children, it also claims "Mrs Lincoln visited her just before going to the train. A meal which Mrs. Grimsley had prepared was the last of which Mrs. Lincoln partook while in this city."[13] The Burchs (William, Richard and Mary) lived in the house on Eighth Street for twenty years when Richard sold the house to the Rourkes in 1879. Richard Burch moved to Denver, Colorado and William resided with his daughter Mary's family on Capital Avenue in Springfield.[14]

In 1879, an address was given to the lot: 429 S. 8th Street. John and Mary Rourke owned the property until 1916 when it was purchased by Anton and Katie (Morrison) Elshoff. It was during this time that the lot changed from residential use to commercial and when the Burch House was demolished. The 1896 Sanborn map indicates the existence of the house but by

[9] *Illinois State Journal*: (July 1, 1837), p3, col.4; (October 13, 1838), p3, col. 4.
[10] Turner, Justin G. and Linda Levitt Turner. *Mary Todd Lincoln, Her Life and Letters.* (New York: Alfred A. Knopf, 1972), 128.
[11] *Springfield City Directory and Sangamon County Advertiser for 1855-1856* (Sangamon County, Illinois). (Springfield: Birchall & Owen, 1855), 137.
[12] *Illinois State Journal*, 23 March 1855.
[13] *Illinois State Journal*, 1 May 1927.
[14] Carol R. Craig, "An Exploration of the Social Relationships Between the Abraham Lincoln Family and His Neighbors – Jameson Jenkins, William S. Burch, and Henry Carrigan Families: A survey of Sources in Springfield, Illinois" (master's thesis, University of Illinois at Springfield, 2005), 45.

1917 the Sanborn map and the city directory indicate the grocery store in operation. The address changed between 1917 and 1918 to 431 S. Eighth Street.

Katie and Anton were married May 25, 1892 in Chicago and in 1905 they purchased the Edward Bugg House at 416 S. 8th Street for their residence. In 1917, the Sanborn map indicates a commercial structure at the far southeast corner of the Burch property. The second floor of the store had one apartment in 1917 and by 1955 had three. In addition, the 1917 city directory lists the Elshoffs as operating a grocery store located at 429 S. 8th Street.[15]

Anton Elshoff was a leading grocer in Springfield. Anton joined his father in the family grocery business in 1879 when he graduated from the Springfield Business College. The first Elshoff family-owned grocery store was located at 631 S. 11th Street. According to the 1912 *Historical Encyclopedia of Illinois*, he (and the family) retained a business at the corner of Eleventh and Cook Streets for at least thirty-one years. Anton Elshoff was also active in local politics. In 1893, he was elected a member of the Sangamon County Board of Supervisors and in 1903 was appointed a member of the Springfield Board of Education. He was reappointed in 1906 and served again in 1911.[16] The Elshoffs continued operating a grocery store at 429 S. 8th Street until 1926. In 1927 Anton Elshoff is listed as retired. The Fisher Grocery Company operated a Piggly Wiggly from this location, while the Elshoffs retained ownership of the property. By 1941, a one-story addition and a freestanding garage had been built on the north side of the commercial building. In 1919, the Elshoffs sold the west 80 feet of Lot 9 to Charles E. Hofferkamp. A two-story apartment building containing four apartments was built on that land between 1919 and 1921. The apartments had four rooms and one bath each.[17]

The next change in ownership came in 1948 when Lot 9 minus the west 80 feet was sold to Louis Meyers. Meyers was a real estate salesman. While the ownership changed, the building was still operating as a Piggly Wiggly by the Fisher Grocery Company in 1950. Several food stores operated from this location between 1953 and 1960. In 1960 when the property was purchased by Hugh M. Garvey, the building functioned as the Abraham Lincoln Museum Gift Shop.

The city of Springfield acquired both portions of the lot by condemning the property in 1964.[18] After 1964, the Lincoln Museum Gift Shop moved and is listed at 416 S. Eighth Street. However, in the photographs from 1966 and 1973 (**Figures 2-5 to 2-6a**) items are visible in the window. Deterioration of the Lincoln Home's surrounding neighborhood spurred the city and community into action. In 1966, a local historic district including the four-block area was designated. During this time, Federal participation was sought to ensure the longevity of the Lincoln Home and its immediate neighborhood. The National Park Service wrote a Master Plan in 1970 and Lincoln Home National Historic Site was

[15] *Springfield City Directory*, 1917 R.L. Polk & Co.
[16] Bateman, Newton and Paul Selby, Ed. *Historical Encyclopedia of Illinois and History of Sangamon County*, Vol II. (Chicago: Munsell Pub. Co., 1912), 1205.
[17] Albert W. Banton, Jr., Ellen Carol Balm, and Jill York O'Bright, "Historic Resource Study and Historic Structures Report: Blocks 7 & 10, Elijah Iles' Addition, Springfield, Illinois." (Springfield, Illinois: Lincoln Home National Historic Site, 1987), 240
[18] Ibid, 238.

established in 1972. In August of 1970, approval was given for the demolition of the apartment building and museum gift shop by the city of Springfield. The Master Plan called for the reconstruction of the Burch House necessitating the demolition of the existing commercial structure and apartment building. However, these buildings were not demolished at that time as evidenced by the photographs in Lincoln Home National Historic Site's collection dating to 1973 (**Figures 2-6a & 2-7a**). The commercial and apartment buildings were demolished in 1973. The city directories list the addresses as vacant until 1974 when they are no longer listed.

In 1971, Congress authorized the creation of Lincoln Home National Historic Site, which included the Lincoln Home and the surrounding four-block area. In 1975, the United States government received the west 80 feet of Lot 9 for Lincoln Home National Historic Site from the City of Springfield. The remainder of Lot 9 was donated in 1977 by the City of Springfield in an effort to fulfill the objectives of the 1970 Master Plan.

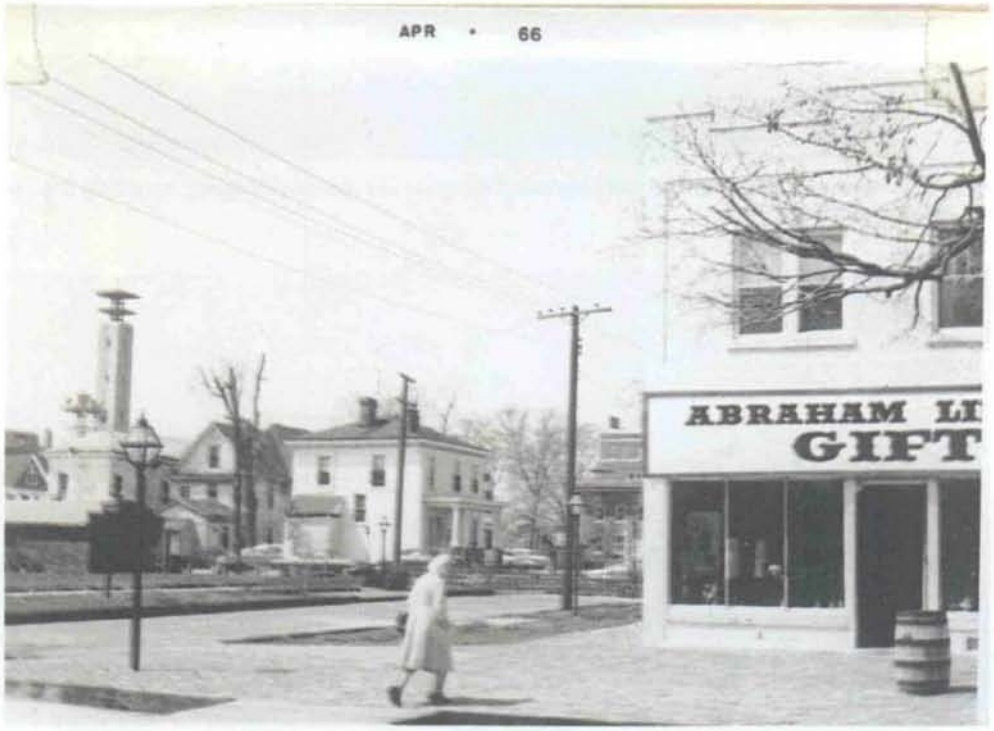


Figure 2-5: View of the corner of 8th and Jackson including the Abraham Lincoln Museum Gift Shop, April 1966. (Courtesy the Lincoln Public Library, Springfield)

Figure 2-6: The Abraham Lincoln Museum Gift Shop (south elevation) and apartment building, April 1966. (Courtesy the Lincoln Public Library, Springfield)

Figure 2-6a: The Abraham Lincoln Museum Gift Shop (south elevation) and apartment building, 1973. Notice the removal of the "Gifts" sign on the south elevation, the new sign on the front façade, the addition of shutters on the second floor windows and the plant growth on the south and east elevations. (Courtesy the Lincoln Home National Historic Site)

Figure 2-7: The Abraham Lincoln Museum Gift Shop (north elevation) and apartment building, April 1966. This view provides a wider view of the lot as well as the neighborhood. (Courtesy the Lincoln Public Library, Springfield)

Figure 2-7a: The Abraham Lincoln Museum Gift Shop looking north on Eighth Street, 1973. (Courtesy the Lincoln Home National Historic Site)

Chain of Title

Table 2-1 provides a chain of title in table format. Shaded entries identify and describe the west end of the lot, following its separation from the original lot division. It is interesting to note that during the deed research it was found that oftentimes the ownership was listed in the names of the children, as in the case of the Burch's ownership. The deed was in Mary and Richard's name rather than their father William. This situation also occurred with the Rourke ownership where the deed lists Joanna Rourke as owner, however she was found to be the young daughter of John and Mary.

CHAIN OF TITLE
BURCH HOUSE – BLOCK 7 LOT 9 - ELIJAH ILES ADDITION

DATES	OWNER	OCCUPANT	NOTES
1837	Elijah & Malinda Iles	None	Elijah Iles Addition
1837	John E. Roll	None	Block 7 Lot 9
1839	R.P. Able	None	Block 7 Lot 9
1842	James P. Langford	None	Block 7 Lot 9
1842	Aaron Beidler	None	Block 7 Lot 9
1845	Thomas P. Lushbaugh	Thomas P. Lushbaugh & Family (1845-1846) Rev. H.W. Miner & Family (1855-1858) Dr. J. F. Shearer & Family (1858-1859)	House built in 1845 Burch House Burch House
1859	Mary F. Burch, et al	William S., Richard S., & Mary F. Burch	Burch House
1879	Joanna Rourke (Margret E. Rourke)	John & Mary, Joanna, Bridget Rourke E.F. Rader (renter) (1915-1916)	429 South Eighth Street
1916	Katie M. Elshoff	Anton Elshoff Grocery Store (1916-1927) Fisher Grocery Company, operating a Piggly Wiggly (1927-1948)	Burch House demolished c.1916 2-story Grocery Store built c.1916 Address changed to 431between 1917-1918
1919 1940 1940	Charles E. Hofferkamp Wilma Barger Charles E. Hofferkamp	Various tenants	West 80 feet of Lot 9 Apartment Building Built c.1921 717 E. Jackson Street
1948	Louis Meyers	Piggly Wiggly (1948-1953); Eisner Food Store (1953-1955); Hertel & Davey Grocery (1955-1958); Citizens Market Grocery (1958-1960)	2-story Store 429 S. 8th Street (Lot 9 minus the west 80 feet)
1960	Hugh M. Garvey	Abraham Lincoln Museum Gift Shop	2-story Store 429 S. 8th Street (Lot 9 minus the west 80 feet)
1960	Hugh J. Garvey Enterprises, Inc.	Abraham Lincoln Museum Gift Shop	2-story Store 429 S. 8th Street (Lot 9 minus the west 80 feet)
1964	City of Springfield	Abraham Lincoln Museum Gift Shop	717 E. Jackson Street (West 80 feet of Lot 9) 429 S. 8th Street (Lot 9 minus the west 80 feet) Demolition of Commercial Store and Apartment Building 1973
1975	United States of America	National Park Service Lincoln Home National Historic Site	West 80 feet of Lot 9
1977	United States of America	National Park Service Lincoln Home National Historic Site	Remainder of Lot 9

Table 2-1: Chain of Title, Burch House

HISTORIC PHOTOGRAPHS AND MAPS

Historic Photograph Analysis

There are only two known historic photographs of the Burch House, both taken c.1880 (**Figures 2-8 and 2-9**). The house on Lot 10 is visible just beyond the Burch house to the right in both of the photographs. As this house was demolished by 1884 as evidenced from the Sanborn map from that year, the latest date the photographs could have been taken is 1883.

Viewed from the NW corner of Eighth and Jackson, the photographs show a three bay front façade with an open porch on the south elevation. A wood frame extension from the rear can be partially seen. Additionally, a few landscape features are visible. The house appears to be in fair condition. The photograph reveals that several shutters are missing and/or in disrepair and the brick on the corner pier of the open porch is damaged. In addition, the stone lintel above the door appears to be sagging. The area immediately in front of the house is grass covered with no additional landscaping material. A tree is located in the front yard just south of the front walk and branches from a second tree in the front yard are visible in both photographs. Shrubs can be seen planted at the southwest corner of the open porch. A short picket fence runs along the north property line.

Information that can be gained from Figure 2-8 includes:

- Construction Type: Brick construction of main section of the house, wood addition
- Building Height: 1-1/2 stories
- Roof: Wood Shingle
- Two rooms deep
- Stone sills and headers on windows
- Small open porch on southwest corner
- Wood clapboard, one-story rear extension
- Chimney placement
- Window and shutter design

The brick is laid in a modified common bond pattern with a header row located on every 7th course. A decorative, two brick corbled band along the foundation can be seen along the east and south elevations. Also along the foundation are vents for a crawl space or basement. There is one located on the front façade between the two windows and two located on the south elevation east of the open porch. The open porch was a feature of the house from its construction, however the post found in the center of the opening on the south elevation may have been placed at a later date for structural support of the wood beam above the porch. Latticework has been installed on the west side of the open porch as a shading mechanism from the harsh late day western sun. A single chimney with a decorative corbelled cap can be seen on the north elevation of the main portion of the house. Another chimney is visible in the photograph, however it likely belongs to the Ira Brown, Jr. House on Lot 10. If the Burch house had another chimney located further west along the north elevation as archeology evidence indicates, it would not be visible because of the angle of the photograph. A parapet rising approximately 21 inches above the roofline along the gabled ends is also visible. Two header rows of brick comprise the coping and a decorative stone corbel is

located on either side of the gutter, running along the front of the house. The window and door design may have changed from the original by the time this photograph was taken in 1880. Both the windows and door seem to be of a later more Victorian influenced design, indicating a recent improvement to the house. A multiple divided light window would have been expected for the original construction period; instead it appears that the windows are one-over-one. Glass manufacturing technology improved during this time period to allow larger glass sheets. The simple stone window and doorsills are shallow and project approximately 2 inches from the façade. If the original door had glazing, it too would have most likely been divided. More likely, the original front door was a solid wood paneled door. The photograph suggests a divided transom above the door. In addition, an apparent door chime is located to the right of the front door. A single dressed stone step leads to the front door threshold.

The second photograph (**Figure 2-9**) was taken from roughly the same location as the first. However, it seems to have been taken earlier in the day than Figure 2-8 considering the pattern of shadows and at a slightly different angle. This photograph of the Burch house provides a more detailed look at the brick pattern and allows a more accurate counting of bricks, used for determining the building dimensions (**MA1-4**). In addition, the wood clapboard sided addition can be seen more clearly in this photograph. Its roof may have been flat, as a slope is not visible. A doorway is visible, located at the southwest corner of this addition leading to the rear yard. Due to the shadow any detail is not discernable. The frame addition to the house may have served as an indoor bathroom. These were commonly added in the corner of an ell.

In both photographs, the field of vision is tight which provides a detailed view of the front and side of the main portion of the house, but does not include a full view of the ell. The photographs do not provide details concerning the connections between the main part of the house and the ell or the one-story additions to each other. Instead this information must be derived from the historic maps and archeology investigations.

In relation to the landscape, this photo offers a partial view of the front and south side yard. One tree is apparent in the landscape just south of the front entry walk to the adjacent boardwalk on Eighth Street. This tree appears to be approximately 8" in diameter and of the *Quercus* genus (Oak). Several informally maintained deciduous shrubs are apparent along the south façade of the rear porch and southwest corner of the house. The ground layer of the front and side yards appears to be lawn. A small section of vertical picket fencing appears in the photo between the northeast corner of the house leading to the northeast corner of the property.

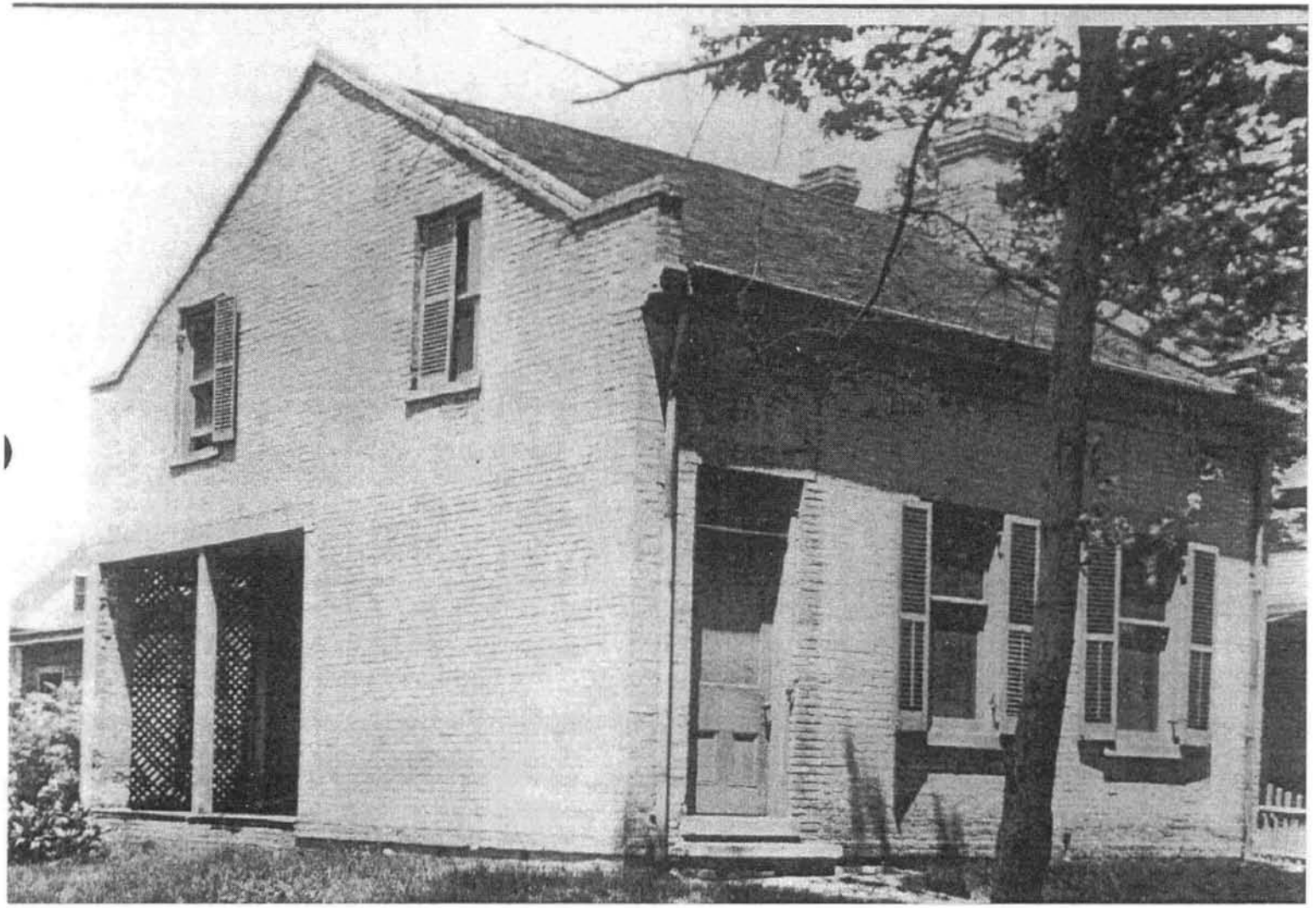


Figure 2-8. The Burch House, c. 1880. View looking northwest. (Courtesy Lincoln Home National Historic Site) It is interesting to note that the Ira Brown, Jr. House, seen to the far right beyond the picket fence, was demolished prior to 1884 the first publication year of the Sanborn maps.

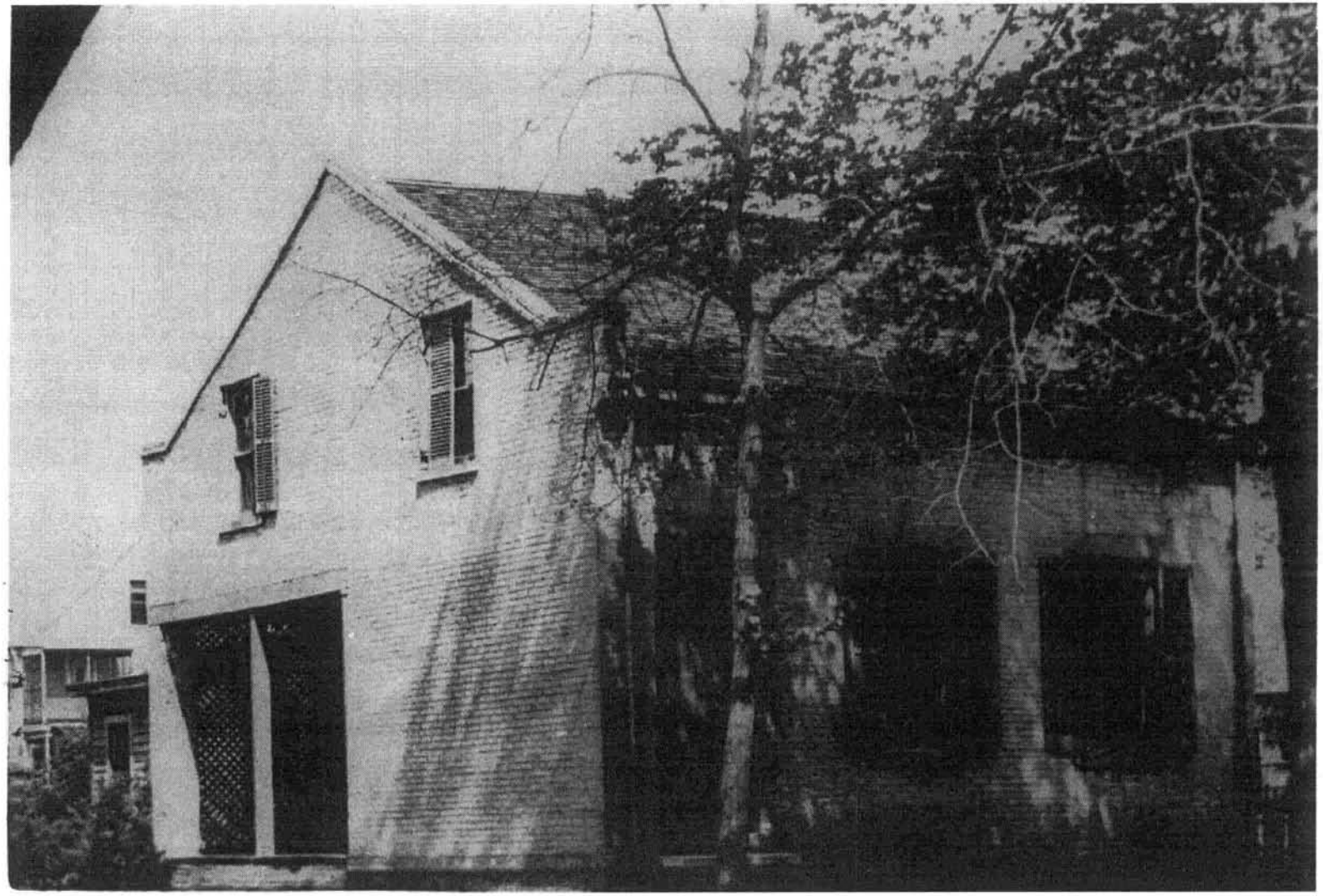


Figure 2-9. The Burch House, c. 1880. View looking northwest. (Courtesy Sangamon Valley Collection, The Lincoln Public Library, Springfield)

Panoramic Drawings

There are three panoramic drawings that were made during the late 19th century depicting the city of Springfield, one from each of the following dates: 1867, 1870, and 1873. The panoramic drawings are not completely accurate as the artists tended to take artistic liberties. Differences can be seen between the three drawings in the size and shape of the house, existence of outbuildings and landscaping features. The 1867 drawing by A. Ruger (**Figure 2-10**) is the least detailed of the three. The Burch House appears fuzzy with the south elevation in shadow, but the house size and shape appears accurate. However, the ell is not depicted and there are no outbuildings indicated on the property. In contrast, the 1870 depiction by Beck and Pauli (**Figure 2-11**) shows a large outbuilding at the rear of the lot, many trees and a wider, full two-story house. Beck and Pauli do not indicate a rear ell in the drawing. The 1873 Koch panorama (**Figure 2-12**) provides a view of the north elevation of the Burch House. This is significant as there are no known photographs depicting the north side of the house. Information that can be gathered from this panorama includes: window count and placement, rooflines, and outbuilding configuration. There are two first floor windows indicated on the north elevation and two, second floor windows. The one-story ell is now shown. A large two-story outbuilding is located along the alley at the rear of the lot.

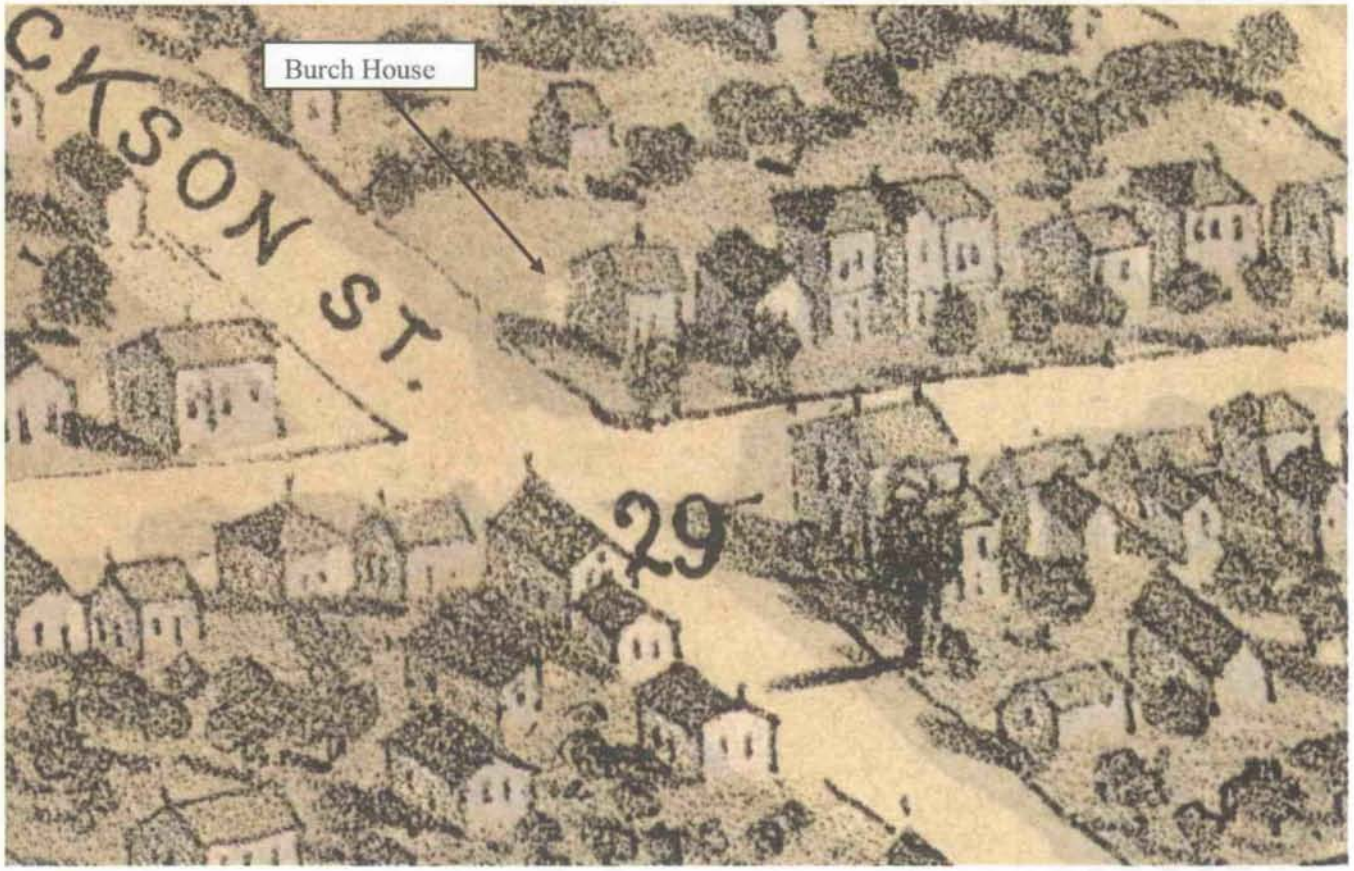


Figure 2-10: Partial view of the 1867 birds-eye-view drawing by A. Ruger. (Courtesy The Abraham Lincoln Presidential Library)

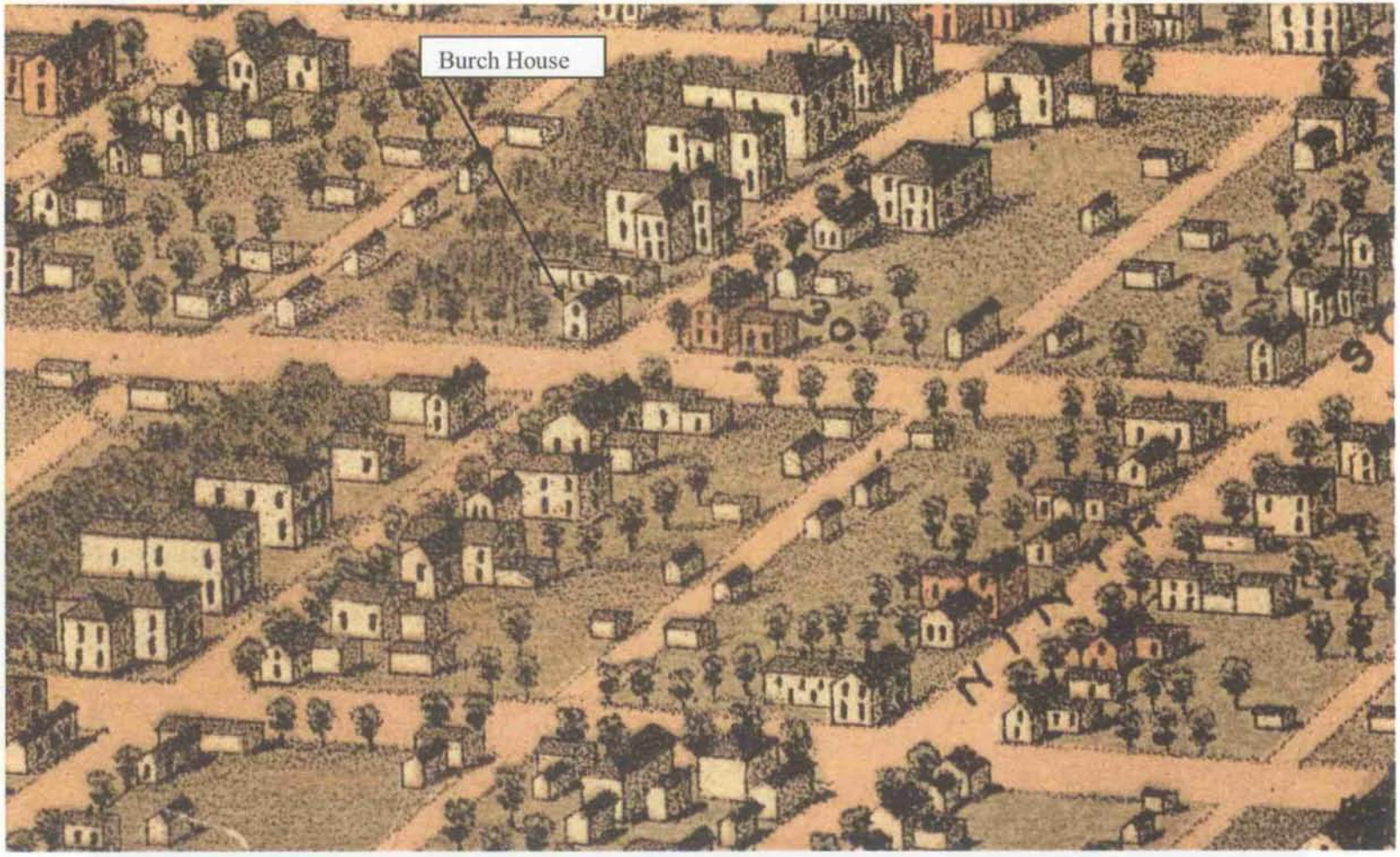


Figure 2-11: Springfield , Illinois 1870, by Beck and Pauli. (Courtesy The Abraham Lincoln Presidential Library)

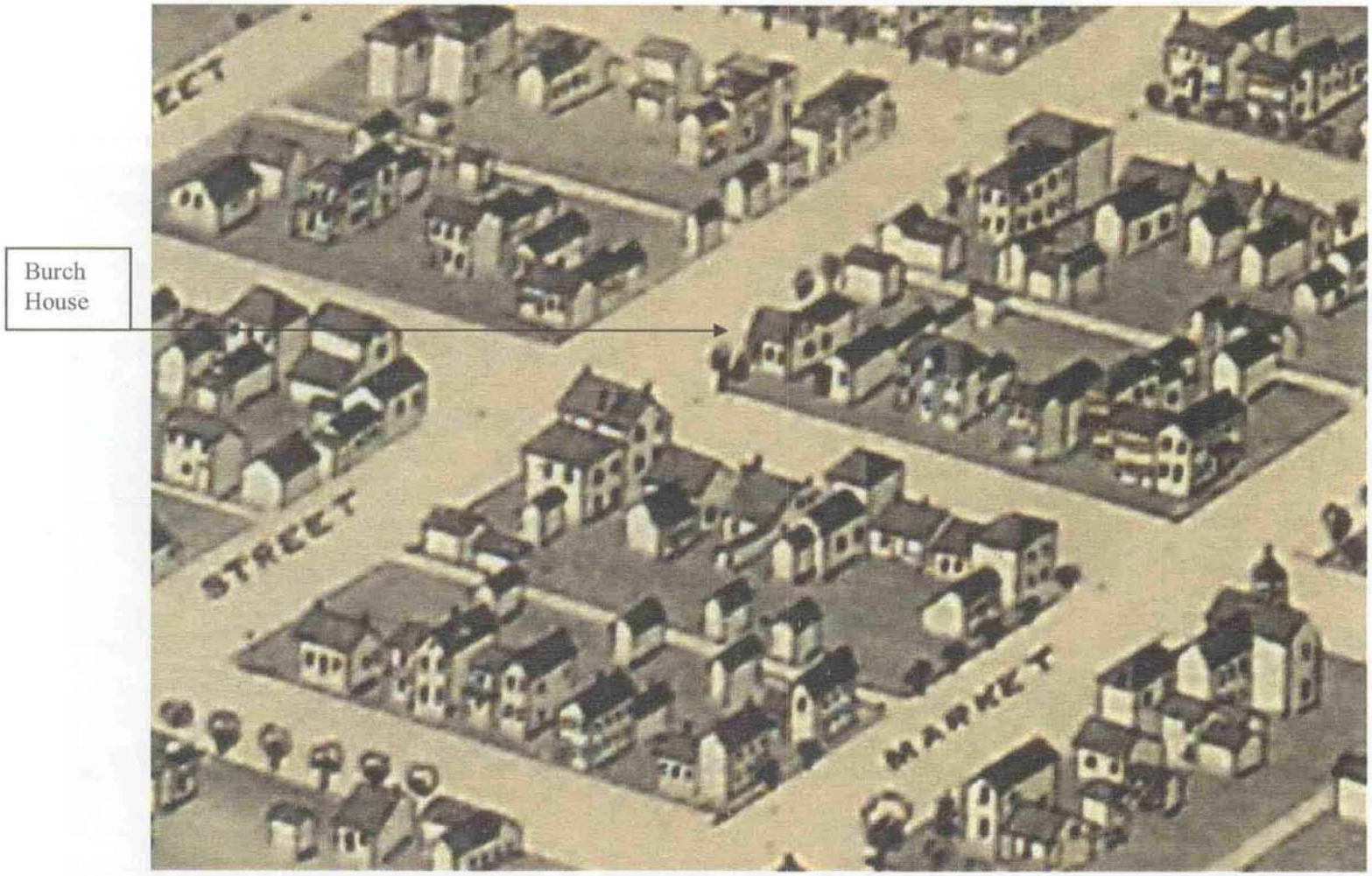


Figure 2-12: A portion of the 1873 birds eye view of Springfield by Augustus Koch. (Courtesy the Sangamon Valley Collection, Lincoln Public Library, Springfield)

Historic Map Analysis

On the 6th of April 1840, the town of Springfield was incorporated as a city. As the city grew, a need arose for mapping and building information. The dates and descriptions documenting the evolution of the site and the structures rely upon research conducted from the City of Springfield, Sangamon County, Illinois maps (1854,1858) and the Sanborn Map Company's Insurance Maps of Sangamon County, Illinois (1884-1950).

The earliest map of Springfield contains building information was created by the Springfield surveyor M. McManus and published by Hart & Mapother of New York in 1854. The 1858 map was surveyed and published by William Sides, the city engineer. These maps provide building size and material information as well as outbuildings, lot division, and in some cases ownership. The legend from the 1854 map indicates wood frame buildings with a single slash hatch and brick or stone constructed buildings are crosshatched.

Sanborn Insurance Maps are large-scale maps, usually at 1-inch equals 50 feet, of towns and cities. They were produced by the Sanborn Map Company between the years of 1867 and 1970 to assist fire insurance companies in assessing the risk of insuring properties based on their fire protection characteristics. To this end, the maps contain footprints of buildings, structural composition, and other data. Structural composition was indicated by color. Most accessible maps are reproductions of the originals and in a black and white microfilm format. Unless an original can be located this information is lost. The original 1896 Sanborn map for Springfield was located in the Sangamon Valley Collection at the Lincoln Public Library in Springfield. Although produced for the aforementioned purpose, the Sanborn maps are a significant resource for architectural historians to determine development and evolution of cities, towns, and specific properties.

City of Springfield, Sangamon County Maps

1854

The 1854 City of Springfield, Sangamon County, Illinois map depicts the Burch House at the intersection of Jackson and Eighth Streets. Blocks 7 and 10 are fairly built up with a house located on most lots. This map does not record any outbuildings for the Burch lot. The form of the building in plan can be recognized as similar to the known photographs from 1880 and later Sanborn maps.

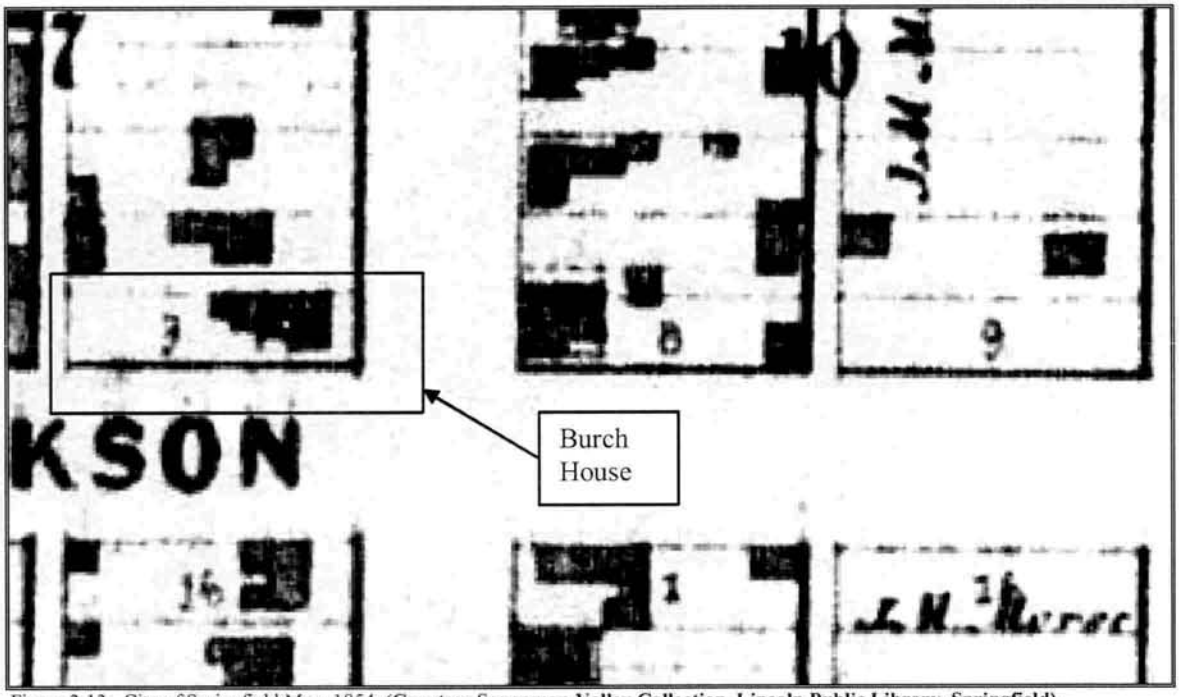


Figure 2-13: City of Springfield Map, 1854. **(Courtesy Sangamon Valley Collection, Lincoln Public Library, Springfield)**

1858

The 1858 City of Springfield, Sangamon County, Illinois map now includes clearer building material information. The cross hatch indicates brick construction and the diagonal lines indicate wood. The Burch House and the Bugg House, located just north of the Carrigan House, are the only brick constructed residences in the four-block area. The Burch lot remains without outbuildings. However, a privy was most likely present as they were not usually included on these types of maps as it was considered impolite during this time. The maps do not indicate a large building boom as only minor changes can be seen to the surrounding area in the four-year span.

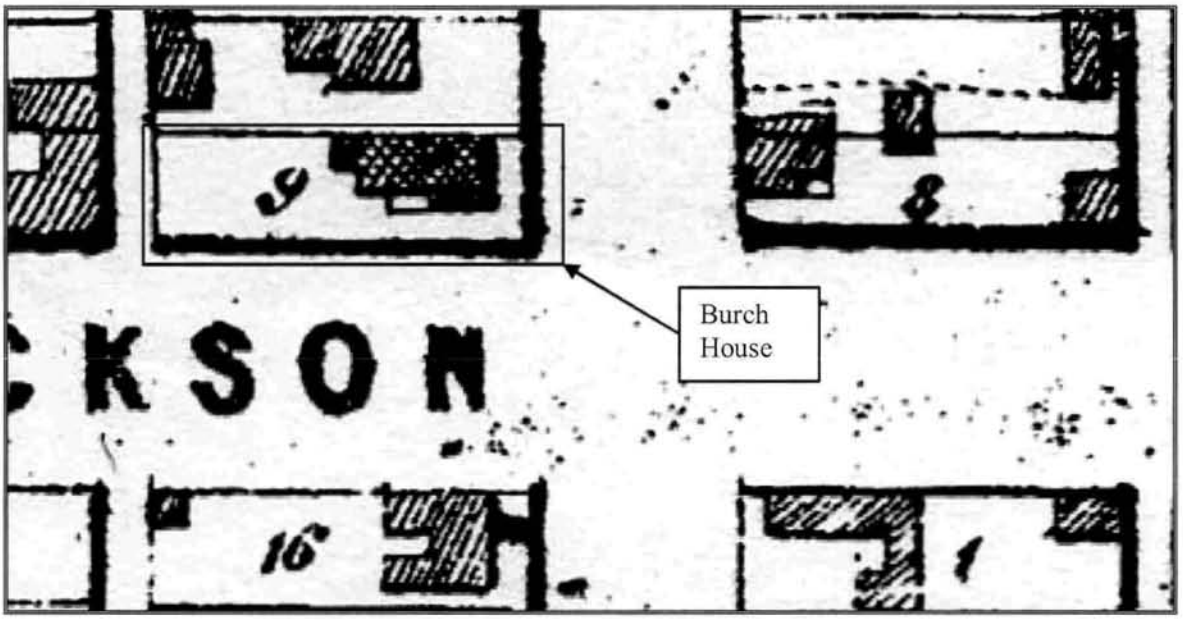


Figure 2-14: City of Springfield Map, 1858. (Courtesy SangamonValley Collection, Lincoln Public Library, Springfield)

Sanborn Maps

Legend

- o Denotes non-combustible roof (slate or metal)
- x Denotes shingle roof (wood)
- # Denotes number of stories
- ┼ Denotes a 6"H firewall (parapet)
- ┼ Denotes a 12"H firewall (parapet)
- Shading indicates frame construction
- Shading indicates masonry construction

Sanborn Map 1884

The 1884 map, the earliest Sanborn map of Springfield, shows the Burch house, 429 S. 8th Street, unchanged in form compared to the 1858 map. New to the site are two outbuildings of frame construction along the alley to the west. One out-building is larger and indicated as being two-stories, the other is smaller and enumerated as one-story. The 1884 Sanborn map indicates a 12-inch "firewall" or parapet above the roofline, a feature not delineated on the previous Springfield maps.

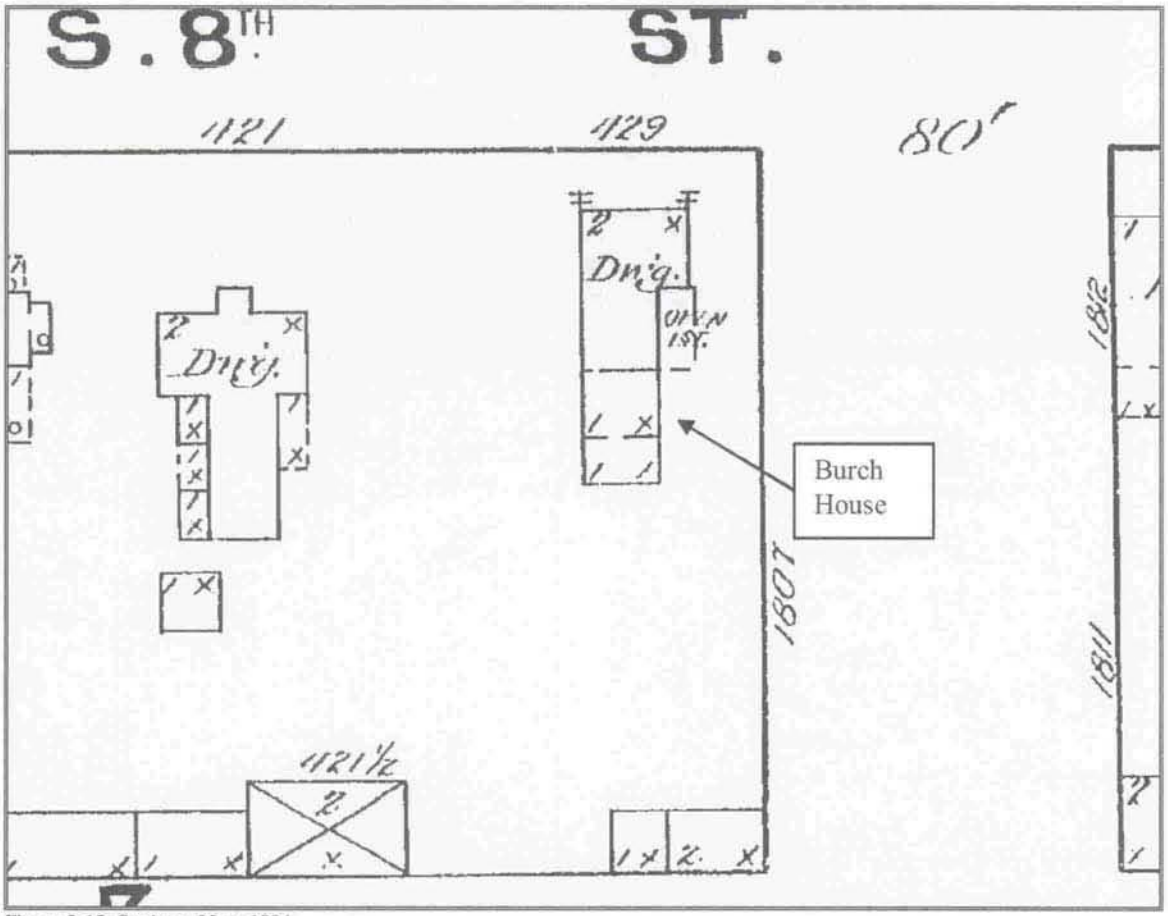


Figure 2-15: Sanborn Map, 1884.

Sanborn Map 1890

The 1890 Sanborn map shows no changes to the Burch lot during the previous six years. This map does indicate the lot lines and numbers. It is interesting to note that the Ira Brown, Jr. House, formerly on lot 10 had been demolished by 1884.

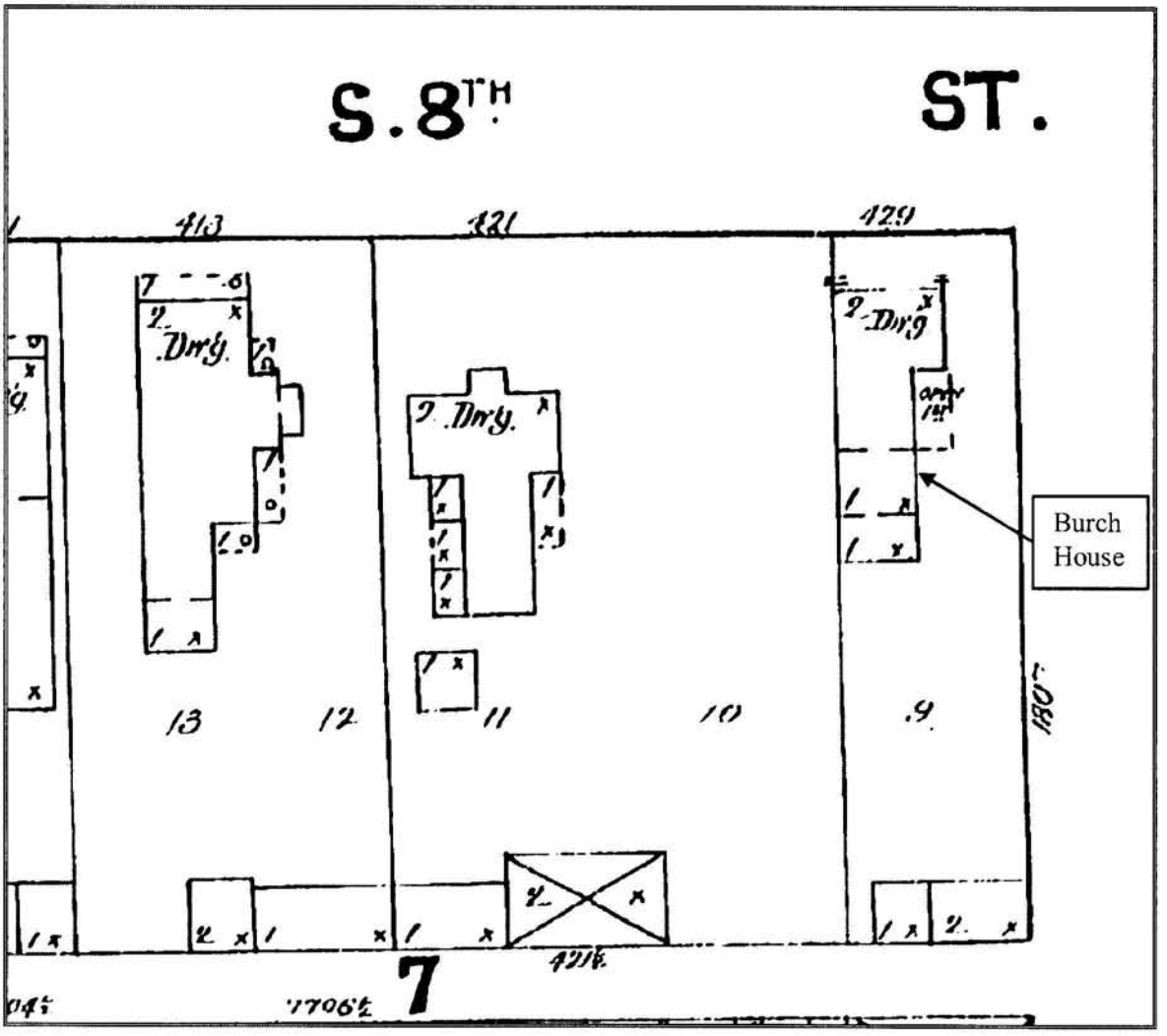


Figure 2-16: Sanborn Map, 1890.

Sanborn Map, 1896

Changes seen from the 1890 to 1896 Sanborn maps for the Burch House include a change in designation of the outbuildings. The large outbuilding on the Burch lot is now indicated as 1-1/2 stories and shown with a symbol for a stable. Previously, it was labeled as two-stories without a stable symbol. The relative sizes have seemed to change as well. The 1896 map shows the one-story outbuilding as being slightly smaller in the east-west direction in comparison to the two-story stable. In 1884 and 1890, the outbuildings are shown as being the same length in that direction. The 1884 and 1890 maps indicate the eastern most section of the ell as a single room; while the 1896 map specifies two sections with separate roofs. Openings are now shown from the main portion of the house to the open porch.

The house itself also appears to have some changes. The house is now indicated as 1-1/2 story construction and the configuration of the ell and one-story additions to the rear have been revised somewhat. The 1896 map indicates two, one-story additions west of the larger one-story rear extension. The northern most structure is labeled as brick and the southern as frame construction. (**See Figure 2-17b**) A doorway on the east side of the open porch into the house was not reflected on previous maps.

It seems that the 1896 map maybe more accurate, and provides additional information and a greater attention to detail than previous maps. This is demonstrated in a comparison of the 1880 photograph of the Burch House and the 1884 and 1896 maps. The photograph shows a 1-1/2 story residence not a full two-stories as indicated on both the 1884 and 1890 maps.

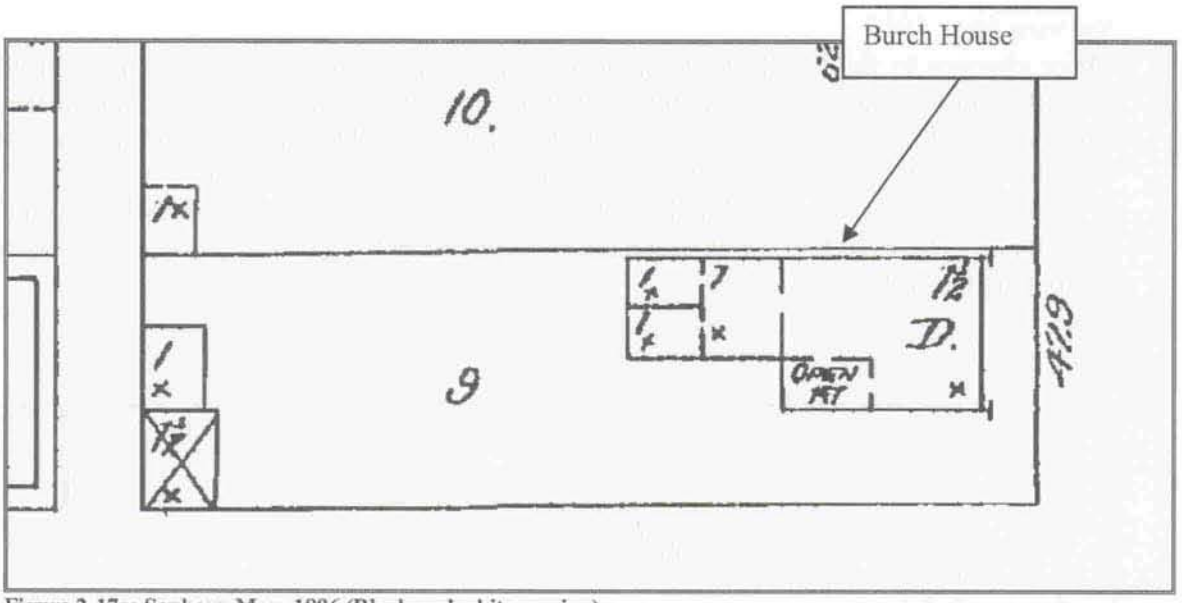


Figure 2-17a: Sanborn Map, 1896 (Black and white version).

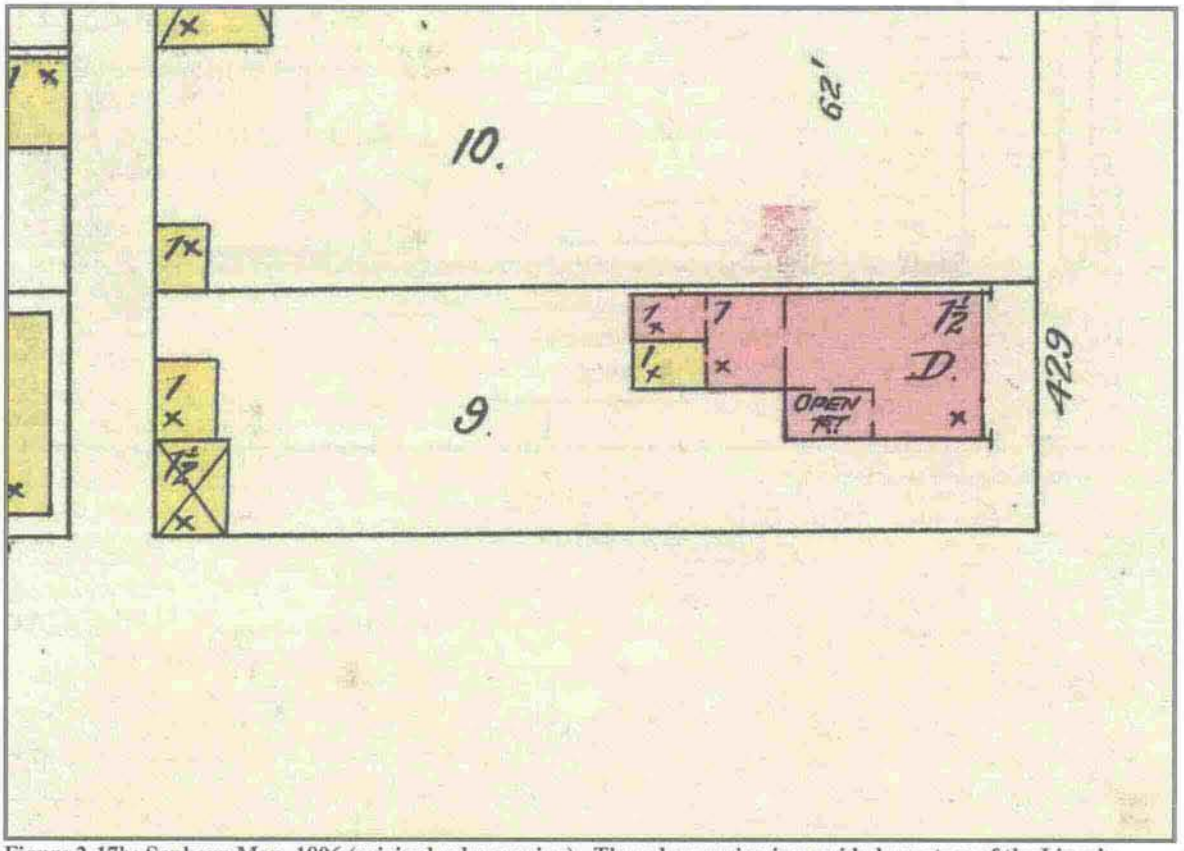


Figure 2-17b: Sanborn Map, 1896 (original color version). The color version is provided courtesy of the Lincoln Public Library, Springfield, IL.

Sanborn Map, 1917

Major changes to the Burch property have occurred since 1896. The Burch outbuildings have been demolished and a new brick building, indicated as a store, is present on the site situated close to the south property line at the corner of Eighth and Jackson. The one-story store has 12-inch thick walls on the north and south and west. The front façade or east wall is indicated as 18 inches. A 12-inch "firewall" or parapet extends past the roofline along the east facade. The front two-thirds of the building served as the store with a space dedicated as a garage in the rear.

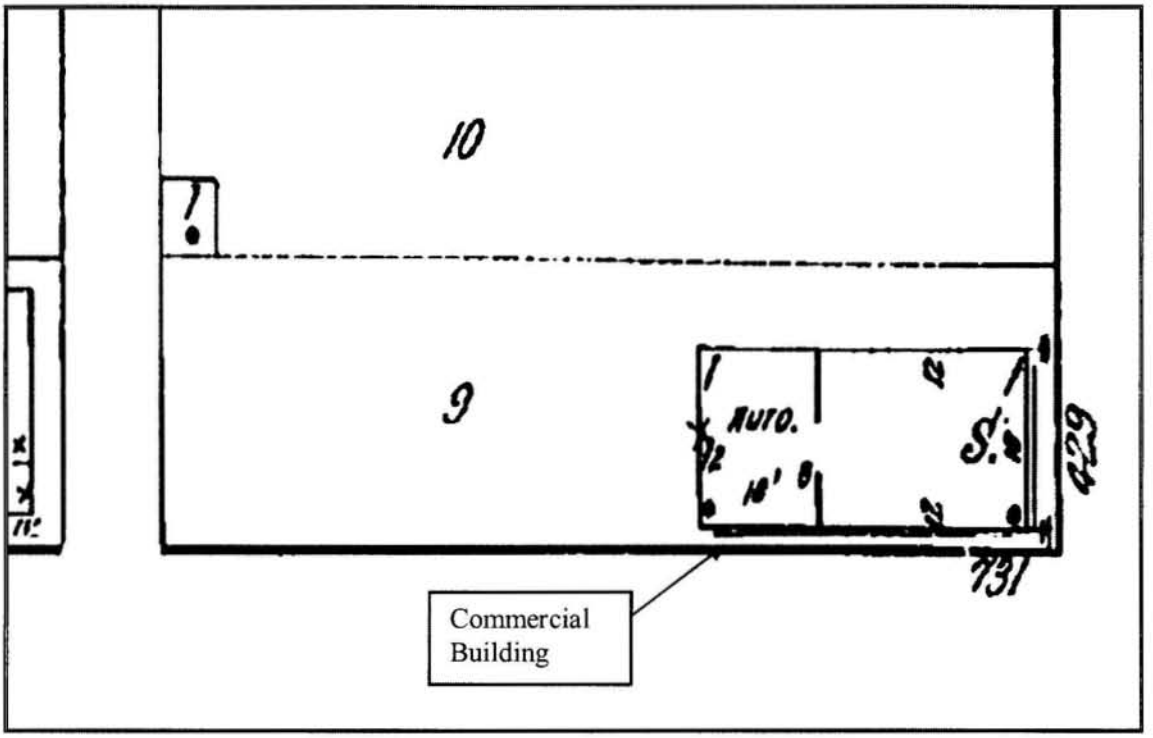


Figure 2-18: Sanborn Map, 1917.

Sanborn Map 1941

Between the 1917 and 1941 Sanborn map many changes occurred to the property. A two-story, multi-family dwelling with four apartments was built along the alley to the rear of the lot. This portion of the property had been sold to a different owner in 1919 (**See Chain of Title, Table 2-1 and Figure 2-6**). The building stretched from the south property line to the north. It had a one-story, covered porch on the southeast corner and a 12" parapet along the south elevation. The commercial building had seen many changes as well. It is now indicated as a two-story structure with a one-story addition to the north, which stretched the building to cover the entire lot from north to south. The one-story addition was separated from the two-story portion by a frame construction wall with three large openings. The proportion of store to garage remains the same in the original store building on the first floor. A new two-story addition to the rear of the garage served as a porch. Also new to the site is a freestanding one-story garage located behind the store, between the apartment building and the commercial structure.

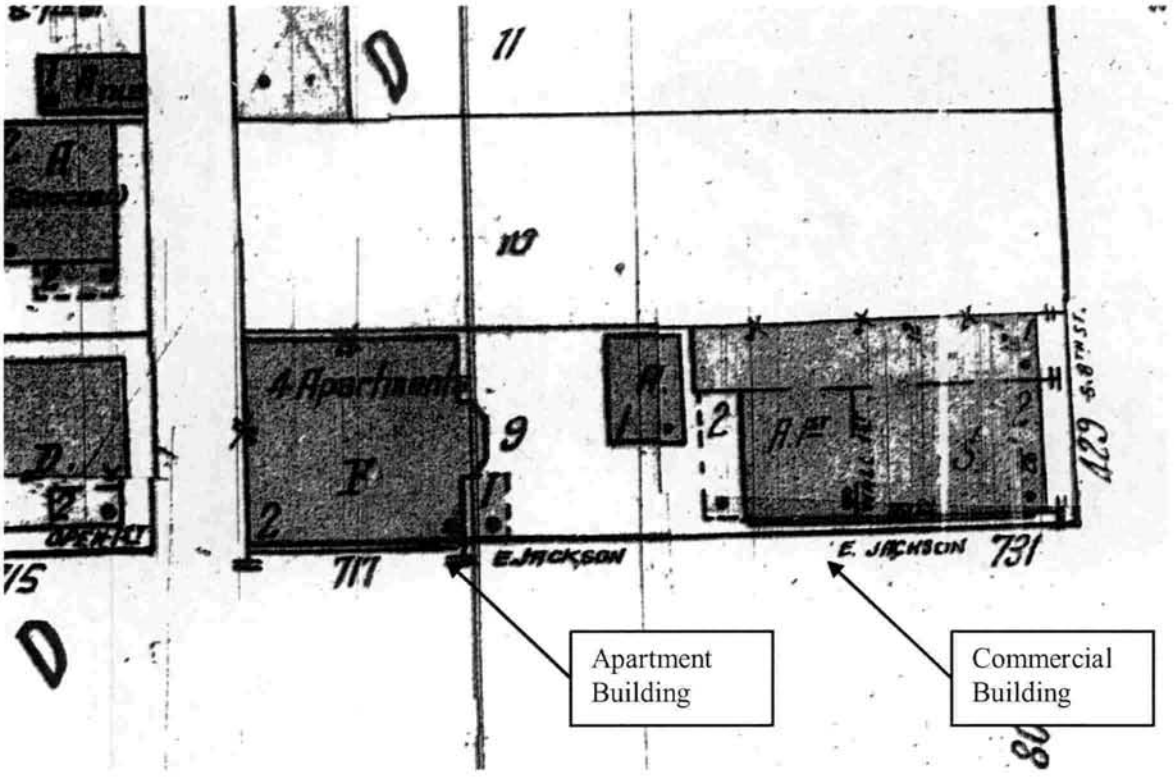


Figure 2-19: Sanborn Map, 1941

Sanborn Map 1952

The apartment and commercial building remain unchanged from the 1941 Sanborn map.

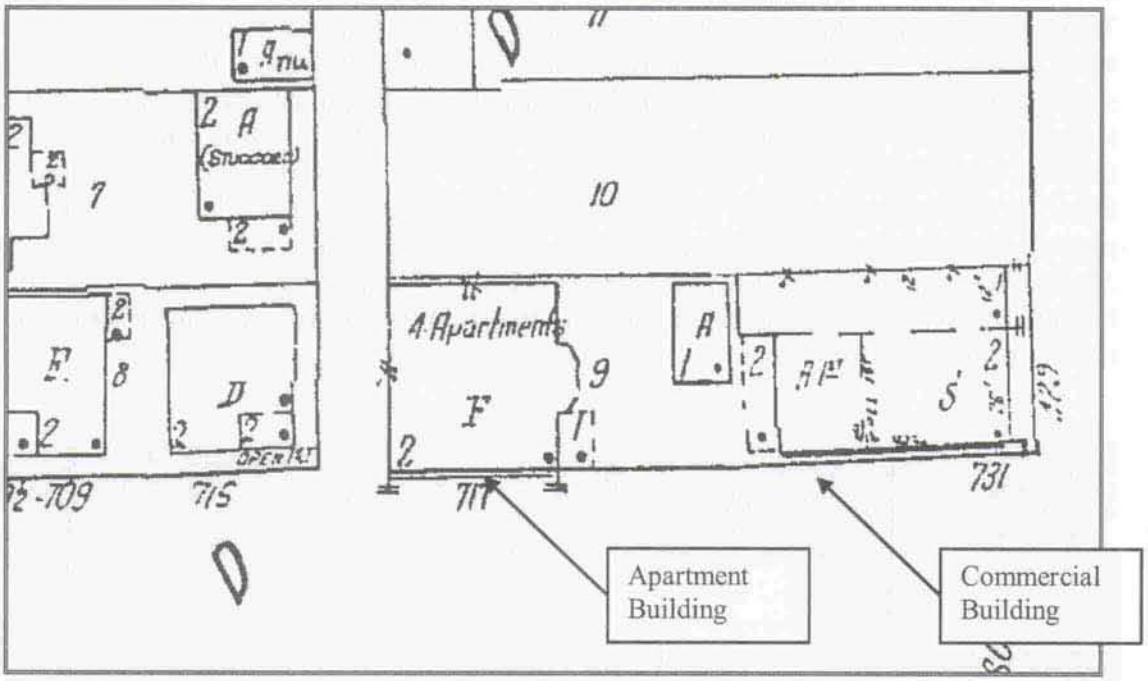


Figure 2-20: Sanborn map, 1952.

Historic Map Summary

The early Springfield maps from 1854 and 1858 provide information concerning the Burch House closest to the interpretation date of 1860. The 1854 map shows an irregular shaped dwelling with the long axis adjacent to the north boundary line of Lot 10. The main portion of the house along with its rear additions had been constructed by this date. There are no outbuildings depicted on the property. The 1858 map provides similar details. The irregular massing of the house seems to indicate additions rather than one building episode.

The Sanborn maps provide a picture of the evolution of the property as it changed from residential to commercial. As indicated on the map from 1941, an addition to the commercial building extended to the north property line over the former Burch House site. The new foundation for this addition or even the original commercial building itself may have obliterated most of the remains of the Burch House foundation.

Archeological Investigations

Geophysical Survey

A geophysical investigation of the Burch lot at the Lincoln Home NHS was conducted by Steven L. De Vore and Jan Dial-Jones of the Midwest Archeological Center of the National Park Service between April 25 and 29, 2005 to gather information in advance of the preliminary evaluative archeological testing of the lot for the proposed reconstruction project. A magnetic gradient survey, conductivity survey, resistivity survey, and ground penetrating radar survey were conducted. The survey results for the Burch lot "indicated the presence of an extensive sheet midden but did not identify any buried building or structural features."[19] Geophysical anomalies were mapped for future archeological investigation. In addition, the results indicated substantial modification to the original historic deposit from the later building episodes and recent landscaping and utility work. (**See Appendix H**)

Archeological Test Excavations

The National Park Service, Midwest Archeological Center conducted an archeological testing during the spring and summer of 2005 with the goal to identify the actual location and footprint of the Burch House based upon intact remnants of the original foundations. Three archeological test units and five backhoe trenches were dug with findings located in trenches two and six (**See Figure 2-21**). The remains of the north foundation wall for the house were located at 10 ¼ inches from the north property line. The front foundation line for the Burch House was not located, however the northwest corner of the Burch house was located at 69'-5 ½" from the present front fence along the sidewalk. According to the archeological map developed by the Midwest Archeological Center, three features were found during the investigation: a well, a chimney base and a cistern. The well was located along the north foundation wall toward the rear of the house and the cistern was located approximately four meters south of the northwest corner of the foundation and most likely fell immediately outside the southwest corner of the house. The chimney base was located approximately one meter to the east of the well remains. A portion of the foundation from the commercial building was located along with an extensive fill area possibly indicating the building had a basement. The commercial building and demolition episode severely impacted the lot as well as a good portion of the foundation remains from the Burch House.

[19] DeVore, Steven: *Geophysical Investigations of the Burch and Carrigan Lots at Lincoln Home National Historic Site, Sangamon County, Springfield, Illinois.* (September 2005), 15.

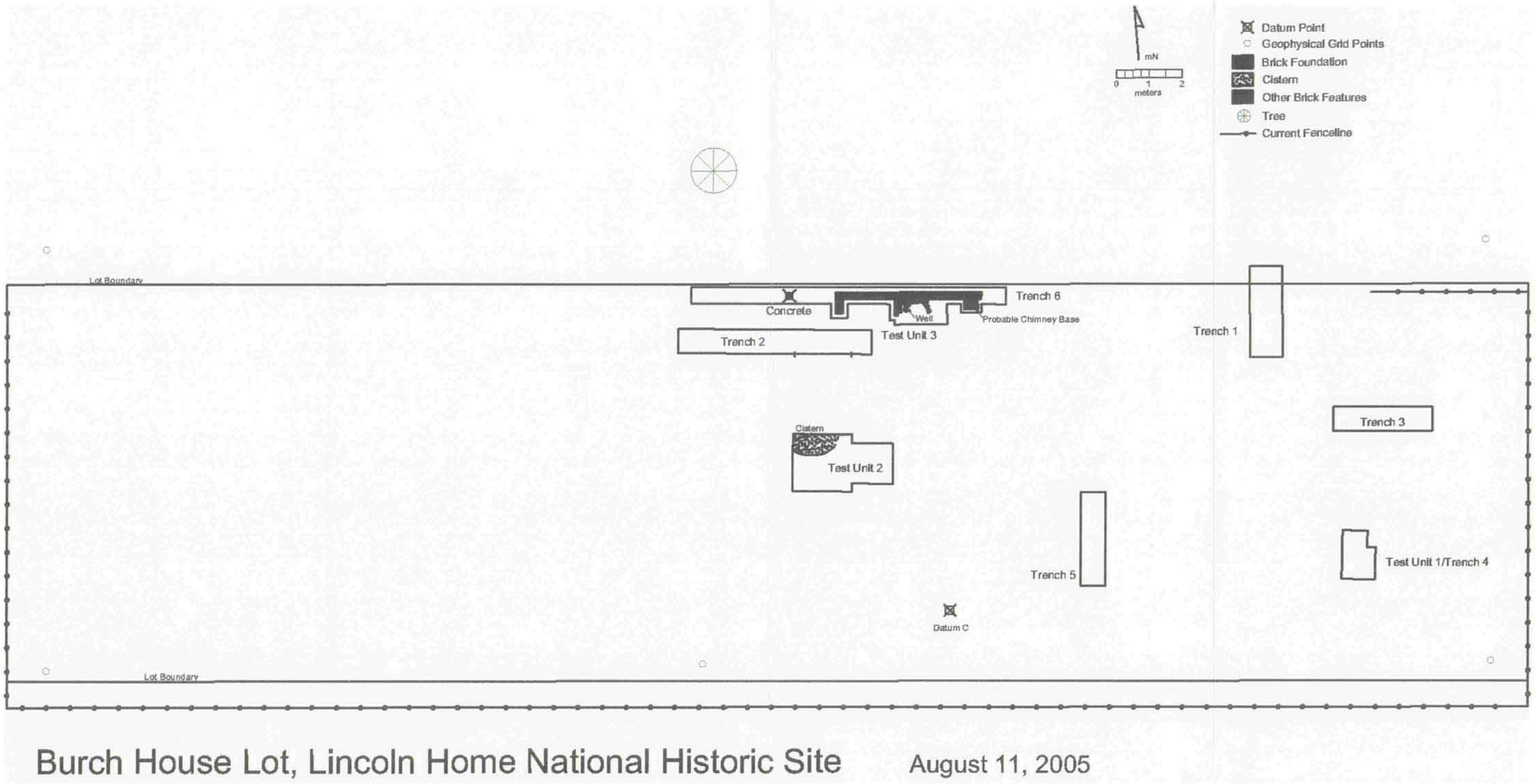


Figure 2-21: Archeology plan map compiled by Jan Dial-Jones, August 11, 2005.

COMPARATIVE ANALYSIS

The Lincoln's neighborhood in Springfield, Illinois contained a diverse assembly of people and architecture. Many of the homes built during the early years of Springfield's development do not reference one particular style but are what architectural historians call vernacular or folk architecture. Vernacular architecture traveled by settlement patterns and built without an attempt to mimic current fashion as opposed to high-style architecture which changed with the current trends and was disseminated by carpenters pattern books and the like. As people migrated from the east to the west they brought with them their material culture, including housing types. The Burch House falls into this category.

Vernacular architecture is generally categorized by floor plan as opposed to architectural details or features. Based on the arrangement of the exterior architecture, the Burch House is an example of the Hall and Parlor typology. The Hall and Parlor is a single-pile dwelling that is two rooms wide and generally has a three or five bay façade with a side gabled roof. An upper half story, when present, was utilized as a bedroom or storage space. A stair located to one end of the house was used to access the second story. These floor plan types are part of the Chesapeake Bay Cultural Hearth, which exerted the most influence upon early architecture in the Midwest (**Figure 2-22**). Cultural hearths are defined as "an original source area with distinctive settlement forms as well as other cultural attributes, from which certain clearly identifiable elements were carried to other parts of the continent."[20] The origins of the Chesapeake Bay cultural hearth lie in the English tradition brought to this country by early settlers. As new territory opened in the west, the settlers brought their building traditions with them. Many of the settlers in the Springfield area originated from the State of Kentucky, which in turn was settled from Maryland and Virginia.

The authors of the book *Common Houses in America's Small Towns, the Atlantic Seaboard to the Mississippi Valley* conducted surveys in several towns across the Midwest including Petersburg, Illinois. Petersburg is approximately 20 miles northwest of Springfield. Their findings indicated the second highest percentage of single pile cottages located in Petersburg; second only to Rockville, Indiana. They defined a single pile cottage as a one or one-and-a-half story dwelling of one of three plans: Hall and Parlor, Saddlebag or the I. These dwellings typically have appendages to create an L or T in plan. The Hall and Parlor plan features two rooms side by side without a separating central hallway, gable roof, end chimney(s), and the half story when present, served as bedrooms. This building type was the most common form of housing stock during the early 1800" in the Midwest. Today surviving examples can still be seen in towns such as Petersburg and Rockville where limited new home construction occurred between 1900-1950.

Considering the demolition of the house and limited floor plan evidence, this typology was determined to be the most probable basis for construction. This determination is centered upon the exterior architectural configuration evidenced from historic photographs and historic maps. The Hall and Parlor was typically a one-and one-half story house containing two main rooms on the first floor and a loft or sleeping space above (**Figure 2-23**). The chimneys were typically placed on the side gabled ends of the house. Constructed in either brick or frame, the façade is more often asymmetrical with a door located slightly off center

[20] Noble, Allen G. *Wood Brick, And Stone.* (Amherst, MA: The University of Massachusetts Press, 1984), 6.

or unevenly spaced windows. A symmetrical façade was also used although less often. Frame examples are more common in Springfield due to the ready abundance of the material and the higher cost of brick (**Figure 2-24**).

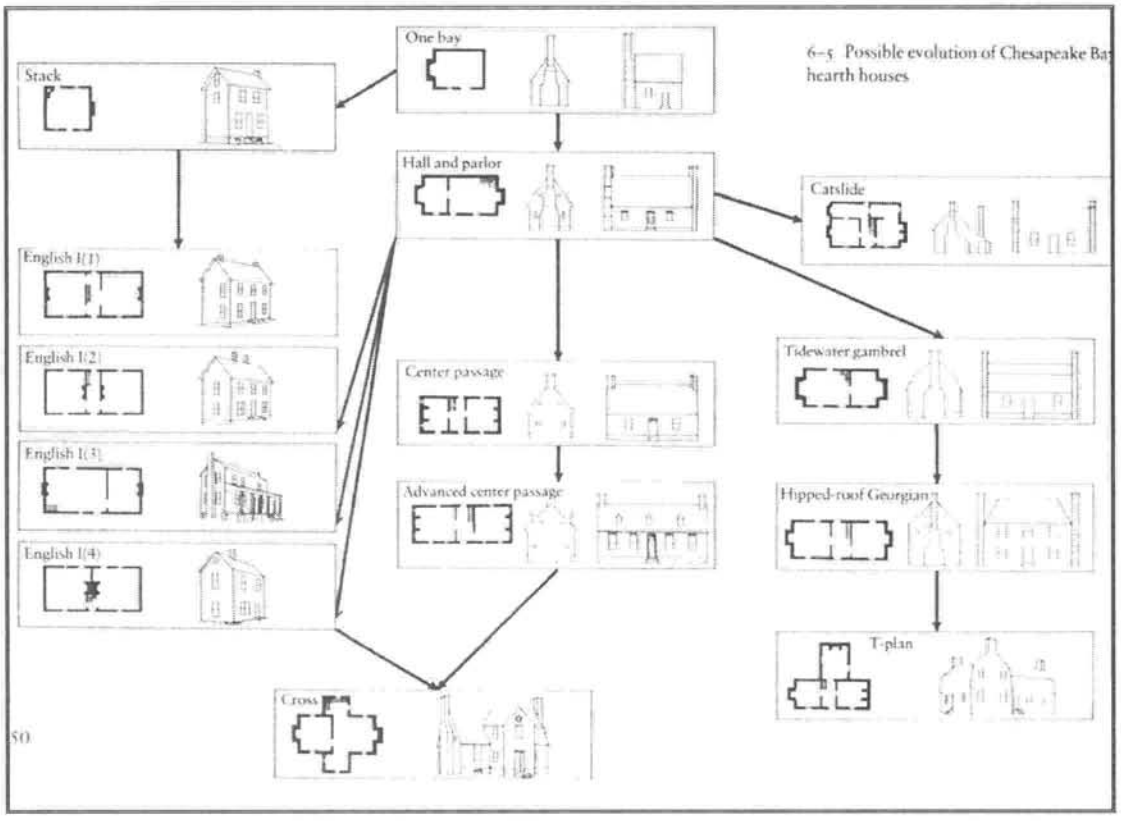


Figure2-22: The evolution of the Chesapeake Bay hearth houses as depicted by Allen Noble in his book *Wood, Brick, and Stone*.[21]

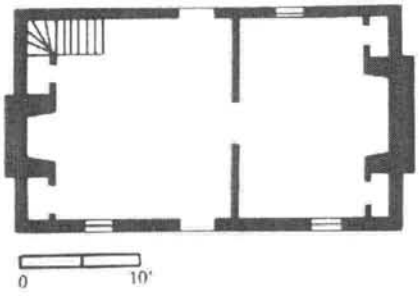


Figure 2-23: A typical hall and parlor floor plan[22]

Figure 2-24: An example of a hall and parlor house.[23]

[21] Ibid, 50.
[22] Ibid, 49.
[23] Ibid, 49.

The hall contained the majority of everyday activities, cooking, dining, work area and living space. The front door entered into the hall and the stair to the loft was located in the corner. The smaller sized parlor, the nicer of the two rooms, operated as a bedroom, and formal living room. As these houses were expanded one-story additions were often built to the rear, sometimes during the original construction.

Although pattern books and builders manuals were available early in the 17th century they focused mainly on high-style architecture. Vernacular architecture, such as delineated in the Burch House, sometimes incorporated hints of the popular high styles but more often had simple features without reference to a particular style. The Burch House has little architectural character defining details with the exception of the stone and brick parapet. Local tradesmen such as carpenters and masons not master architects were typically involved with the construction of vernacular architecture. Explicit information pertaining to the interior of the house is non-existent, however a few details can be implied from the available archeology evidence.

The brick-constructed Burch House had only one chimney in the main portion of the house and it was engaged to the gable and flush to the house. This change in alignment was most likely in deference to the harsher winters in central Illinois in an effort to retain as much radiant heat as possible. The developing technology of the cast-iron stove allowed chimneys to become smaller as the heating function was gradually taken over by the stove. By 1830, multiple stovepipes could be connected to the same flue. This was most likely the case in the Burch House. A second chimney location in the ell addition was revealed during the archeological investigation. This chimney accompanied by the indoor well at the rear of the dwelling indicates the existence of a kitchen wing.

A 6" high brick parapet ran along the gabled ends of the roof delineated by a simple decorative brick coping. The existence of the brick parapet raises questions concerning its purpose. In a more compact urban area the parapet would have served as a firewall between buildings such as row houses. As the house was located in a less compact residential setting, its purpose is more decorative than functional. Stone brackets were used at the corners of the front roofline as well as for the lintels and sills. The use of brick and stone accents were costly building upgrades for the time period. The original Burch House most likely had multiple divided light windows with working horizontal slat, wood shutters. In the c.1880 photograph, the front door had a single, large glazed panel above a divided wood panel, however the original was most likely a solid wood paneled door. A divided light transom window above the door provided ventilation and airflow.

Explicit information pertaining to the interior of the house is non-existent, however a few details can be implied. Available new conveniences of the time included indoor plumbing and stoves for cooking purposes. However, it is interesting to note that the Lincoln's did not have indoor plumbing even in 1860 and a cooking stove was likely not introduced to their home until c.1850. The sewer system and a city water supply were not installed in the neighborhood until after 1865. It is therefore very likely that the interior of the Burch House lacked many of these comforts as well.

Jan Dial-Jones identified the remains of a well through the archeological investigation in 2005 indicating the historic access to a water source on site. The well was housed in the ell addition in what was most likely the kitchen extension. Bedrooms would have been most likely located on the upper floor with the living spaces, the kitchen, parlor, and porch located on the first. Early heating and cooling systems consisted of fireplaces and/or cast iron stoves, transom windows, shutters, and porches. The Burch House employed all of these methods.

In 1992, a project was initiated by the Springfield Historic Preservation Association and conducted by Charles Kirchner & Associates to document the age of the identified buildings extant in Springfield during the Lincoln Era (1837-1861). Approximately 300 buildings were identified from an earlier study conducted in 1980 by the Springfield Historic Preservation Association. Several homes in the Lincoln Home NHS are included on the list: Beedle, Lyon, Dean, Arnold, and Sprigg. Of these, the Arnold and Sprigg homes are of a relative size and date to the Burch. The Sprigg House has the same fenestration pattern as the Burch with a door to the south and two windows to the north on the front elevation however it is a front gabled façade.

Several examples of the Hall and Parlor typology were present in the neighborhood including the original Lincoln cottage, which was originally constructed as a Central Passage with Greek Revival detailing. The 1854/1858 Springfield city maps and 1896 Sanborn map show a similar structure to the Burch House on Lot 5 in Block 10, the Edward Bugg House. These were the only two brick residences in the immediate area. Their plans are similar in size and arrangement and they share the parapet feature along the side gabled roof. It is known that the Bugg House was constructed during the time that George Wise, a bricklayer, owned the property (1840-1856).[24] He did not live in this house but rented the property. With such similarities between the two it is easy to speculate that Wise may have built the Burch and Bugg Houses. More research would be required to validate this theory, as the Bugg House history has not been thoroughly researched. The Bugg House was demolished by 1917 and replaced with a two-story duplex.

The Sprigg House, constructed in 1851, is an example of a Side Hall plan with a front gabled roof. The original floor plan (**Figure 2-25**) as depicted in the HSR from 1995, was one room wide and two rooms deep with an open porch in the corner of the ell. An unidentified addition is located just behind the ell extension. The Burch House plan would have included a staircase on the wall near the front door to access the second floor. In a later plan c.1874 (**Figure 2-26**), an addition was added to the rear, which was divided equally into two rooms and the porch was enclosed. This development is also similar to the Burch House.

The Burch House also shares characteristics with the Side Hall plan also called the Two-Thirds Double-Pile House. The Side Hall house is characterized by a three-bay façade with a floor plan that is one room wide and two rooms deep. The stair hall to the second floor was typically located to one side or the other of the house. This housing type was built of brick or frame however its most common form was found in row houses of eastern cities where its

[24] Banton, Jr.,Albert W., Ellen Carol Balm and Jill York O'Bright. "Blocks 7 and 10 Elijah Iles' Addition Historic Resource Study and Historic Structures Report, Lincoln Home National Historic Site." (Lincoln Home National Historic Site, National Park Service, 1987), 50.

narrow front was suited to the city lot.[25] A study conducted by Jakle, Bastian, and Meyer found this to be a relatively uncommon form except in the Mid-Atlantic States of New York and Pennsylvania. This study included the town of Petersburg, Illinois where this housing type was rare, however it is more frequently found in larger Illinois cities such as Quincy and Galena.[26]

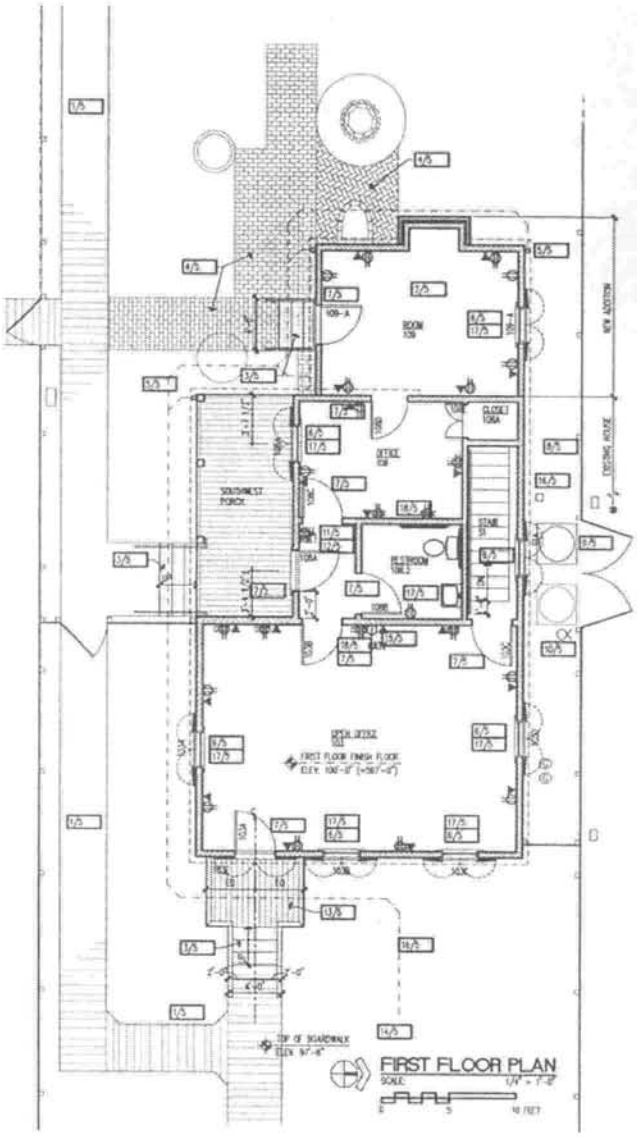


Figure 2-25: The Julia Sprigg House conjectural plan c.1851. (Supplemental Historic Structure Report: Julia Sprigg House (HS-11), Lincoln Home National Historic Site Springfield, Illinois, March 16, 2005)

[25] Jakle, John A, and others. *Common Houses in America's Small Towns: The Atlantic Seaboard to the Mississippi Valley.* (Athens: University of Georgia Press, 1989), .

[26] Stratton, Christopher, Robert Rothman and Floyd Mansberger. "The Architectural Resources of the Enos Park Neighborhood, Springfield, Illinois." (Fever River Research. July, 1997), 85.

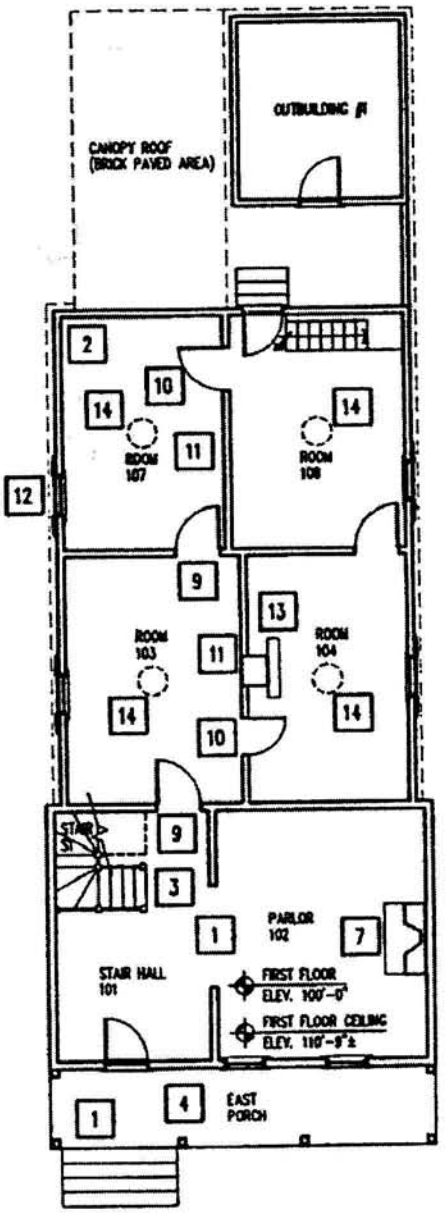


Figure 2-26: The Julia Sprigg House conjectural plan c.1874. (Historic Structure Report: Julia Sprigg House (HS-11), Lincoln Home national Historic Site Springfield, Illinois, May 1995)

Another relevant survey was conducted by Fever River Research in the Enos Park neighborhood in Springfield. Five Hall and Parlor cottages were identified, a number of which are among the oldest documented in the neighborhood. The oldest is located at 812 East Miller Street and was built between 1844 and 1854. The Hall and Parlor houses in Enos Park are all of frame construction, have a rear addition added during construction or at an early date, and largely lack exterior detailing. These are all qualities shared with the Burch house. The survey found nine Side Hall plan houses, the earliest construction date c.1855-1865. However, the majority dated from 1865-1885, which is a later time period than the Burch house. The Enos Park houses all had hipped or front gabled roofs.

Overall, the Enos Park study identified the greatest number of houses as being of frame construction as there were several lumberyards in Springfield at an early date. Masonry construction was found much less often. The Enos Park Study states that brick dwellings indicate the presence of an earlier construction period and were generally associated with an upper class household.

DESIGN REQUIREMENTS

Architectural Analysis

The Burch House was built in1845. Its form had taken shape by 1854 including all additions as depicted in the 1854 and 1858 Springfield maps. However, the c.1880 photographs and the 1896 Sanborn map show a wood clapboard portion of the ell. In contrast, the early Springfield maps indicate the entire dwelling as brick. The outbuildings on the lot were built at a later date, sometime between 1867 and 1872 when they are depicted by two of the Springfield panoramas (Beck and Pauli and Koch). The Burch House and associated outbuildings were demolished between c.1916. The Burch House was most likely demolished when the property was purchased by the Elshoffs in 1916 for a corner grocery store location. The rear portion of the lot was sold in 1919 and by 1921 a brick constructed apartment building was listed in the city directories. The one-story, brick commercial building was constructed at the southeast corner of the lot with a garage to the rear. This "garage" may have been used to accept deliveries for the grocery store. By 1941, the store expanded to two-stories with a one-story addition to the north and a two-story porch on the rear of the original structure. A freestanding, one-story garage is located behind the store. The commercial building and the apartments were removed several years after the demolition approved by the city on August 24, 1970.

The design team used a variety of different information sources in determining the building chronology and configuration of the Burch House and its placement on site as indicated below. Research for the Burch House historic tax records was conducted at the Illinois Regional Archive Depository in Springfield. Unfortunately, it appears that these records had been destroyed approximately 60 years ago by the city.

Survey - The design team employed Springfield, Illinois based Hanson Engineers to complete an extensive site survey. This survey provided benchmark, topographic, and site boundaries for the Burch site, but also provided site boundaries for both sides of Eighth Street between East Market and Capitol Streets.

Archeology - The National Park Service's Midwest Archeological Center in Lincoln, Nebraska conducted preliminary archeological testing of the Burch House site in the spring of 2005.

Historic Maps - Historic City of Springfield Maps (1854 & 1858) and the Sanborn Perris Map Company (later called the Sanborn Map Company) were used to understand the general configuration of the two sites, although as will be discussed later, these maps have varying degrees of accuracy.

Historic Photographs – Historic photographs were gathered from the Lincoln Home NHS archives, the Abraham Presidential Library, and the Sangamon Valley Collection of the Lincoln Public Library, Springfield, Illinois.

Birds-Eye Views – There are three historic Birds-eye-views: A. Ruger, 1867; Beck and Pauli, c.1870; and Koch, 1873.

In order to determine the site boundaries an extensive site survey was undertaken by Hanson Engineers. With this information in hand, the design team used AutoDesk's AutoCAD to overlay the existing historic maps on the survey. The National Park Service's Midwest Archeological Center in Lincoln Nebraska provided the design team with AutoCAD base drawing of archeological surveys that were done in 2005. These drawings were also overlaid on the historic maps and survey providing greater insight into the evolution of the properties (**Sheets OS1-8**). It was found that the information gathered from the early City of Springfield maps, Sanborn maps and the archeology did not agree. Even within the Sanborn maps variations of footprint and location occurred. The conclusion reached was that the 1896 Sanborn map was the most accurate of the historic maps in regard to location. A final conclusion was reached in relation to the footprint from study of the map overlays, photographs and the archeology.

Historic Site Analysis

In a comparison study of the 1884 Sanborn Insurance Map and the current site survey, drawn on June 24, 2005, the overall dimensions of the Burch property have remained relatively close to the original. Historically, the property fronted approximately 40' of Eighth Street on east side of the property. The north side of the house stood approximately 10" from the northern property line. The southeast corner of the house stood approx. 12' off of the eastern property line and approx. 16' off of the property line to the south, which borders Jackson Street. **Sheet OS-3** illustrates the relationship of the 1884 Sanborn Insurance map to the current survey and the relative dimensions of the historic footprint of the house to the current property lines.

Minimal site information is revealed through historic data on the Burch property. Two historic photos, taken in 1880, offer similar views of the southeast corner of the Burch House (**Figures 2-8** and **2-9**). Landscape elements revealed in these photos are a deciduous shade tree about 8" in diameter on the east/front side of the house side and a shrub to the rear of the open porch. According to the 1884 Sanborn Map (**Figure 2-15**), two outbuildings occupied the southwest rear corner of the property and were believed to be a barn and woodshed. However, these structures do not appear in the 1854 and 1858 City Maps of Springfield (**Figures 2-13** and **2-14**). The historic fence along Eighth Street is not documented, however the c. 1880 photo (**Figure 2-8**) shows picket fence along the northern property line. A path leading from the front door to the front walk is also evident in this photo.

According to Proceedings of the Springfield City Council on June 13, 1853, a sidewalk ordinance was in place requiring property owners to install and maintain sidewalks adjacent to their property. The initial minimum requirement was that the material be brick paved or wood plank four feet in width. The ordinance was later revised to reflect a five-foot minimum width. Plank crosswalks were constructed at all intersections from 1856-1859 by the City of Springfield. By 1853 oil streetlamps (also referred to as gas streetlamps) were used in Springfield.[27] However, according to proceedings of the Springfield City Council, no

[27] Bearss, Edwin C. "Historic Base Map, Proposed Lincoln Home National Historical Park, Springfield, Illinois." (Washington, D.C.: National Park Service: Division of History, Office of Archaeology and Historic Preservation, 1969), 108.

streetlamps were located near the intersection of Eighth and Jackson Streets during the Lincoln Era.

Existing Site Conditions & Accessibility Assessment

The existing Burch property fronts Eighth Street along the west side with an eastern boundary of 40.17'. The western boundary runs 40.18' along a vacant alley, which separates the property from the Visitor Center. The northern boundary of the site is 152.69' and is shared with the vacant Brown lot. The southern boundary parallels Jackson Street for 152.68'. The site is relatively flat with an average grade below 3%. A 5% slope occurs on the southern half of the site for approximately 30'. Grades range from 594.5 in the northeast and southeast corners of the property to 596.4 in the northwest corner of the property. The grade level at a rise of 3% is minimal and will be easy to traverse from Eighth Street, Jackson or the alley. This allows several possibilities in locating the approach to the house.

The site is an open lawn with no other vegetation present. Street trees are present to the south and west of the property in the parkway along the Eighth and Jackson Streets. The lot is bordered with a white wood fence on the east and west sides. The west side and back half of the south side is a vertical board fence. The east and front half of the south side is a four-rail type fence.

Civil

The Burch House was located on the corner of Eighth and Jackson Streets, within the Lincoln Home National Historic Site in the City of Springfield, Illinois. The infrastructure serving the site is a combination of public utility services and Park provided systems.

The City provided utilities include sewer, water, and electricity. Natural gas service is available through Central Illinois Light Company. A 24" brick sewer main is located beneath Eighth Street. All sewage lines will have to be combined with existing taps as, reportedly, the City will not permit any additional connections to the main. This will most likely result in routing a line out the front of the building and across Lot 10 over to the Dean House. Storm water will extend under the boardwalks and discharge into the street where the storm water travels along the surface of the street to existing catch basins.

An 8" domestic water main is located beneath Eight Street. Either a new tap and meter will be required, or, it may be possible to extend the water main from the Dean House across Lot 10 to the Burch House to avoid additional meter and tap charges. An additional 4" to 6" tap will be required to serve the fire suppression system.

Natural gas is located in the rear alley and currently terminates behind the Dean House. If required, it will need to be extended along the alley and into the site from the rear. Electric power for the Burch house will require tapping a utility company owned transformer located along the rear alley by the Visitors Center. Three-phase 208-volt power is available.

Lincoln Home NHS maintains the communications (voice/data) system with the equipment located in the Corneau House. Beneath each of the wooden boardwalks, the Park distributes cable TV, site lighting, voice and data. A 25 pair direct burial cable and a 12 strand multimode fiber will be required to be pulled from the Burch House to the Corneau House.

EXISTING CONDITIONS – BURCH HOUSE (HS-26)

LINCOLN HOME NATIONAL HISTORIC SITE

DRAWING SYMBOLS:

CONSTRUCTION/DEMOLITION

- COLUMN GRID
- NEW CONSTRUCTION–REFERENCE TO PARTITION TYPE
- ELEVATION DATUM POINT
- ROOM NAME AND NUMBER
- DEMOLITION PLAN NOTE
- WINDOW NUMBER
- CONSTRUCTION PLAN NOTE
- ALIGN DESIGNATED SURFACES
- REVISION REFERENCE

REFLECTED CEILING PLAN

- ACOUSTICAL CEILING AND GRID
- FLUORESCENT LIGHT FIXTURE
- NIGHT LIGHT/24 HOUR CIRCUIT
- EMERGENCY LIGHT
- CEILING MOUNTED FLUORESCENT FIXTURE
- PENDANT MOUNTED FLUORESCENT FIXTURE
- COMPACT RECESSED FLUORESCENT FIXTURE
- PENDANT/CEILING MOUNTED FIXTURE
- TRACK LIGHTING
- RECESSED DOWN LIGHT
- CEILING MOUNTED WALL WASHER
- WALL MOUNTED FIXTURE
- LIGHT SWITCH
- 3-WAY SWITCH
- DIMMER SWITCH
- SPRINKLER HEAD
- EXISTING SPRINKLER HEAD
- WALL MOUNTED SPRINKLER HEAD
- ACCESS PANEL
- SUPPLY DUCT
- RETURN DUCT
- LINEAR DIFFUSER
- EXHAUST FAN
- SPEAKER
- SMOKE DETECTOR
- SECURITY CAMERA
- MOTION DETECTOR
- THERMOSTAT
- PHONE JACK

ARCHITECTURAL ABBREVIATIONS:

A

A/C	AIR CONDITIONING
A.C.T.	ACOUSTICAL CEILING TILE
ACOUS.	ACOUSTICAL
ADJ.	ADJUSTABLE
ALUM.	ALUMINUM
ALT.	ALTERNATE
ARCH.	ARCHITECT/ARCHITECTURAL
A.F.F.	ABOVE FINISHED FLOOR
A.T.A.	ADVANCED TECHNOLOGY AUDITORIUM
A/V	AUDIO/VISUAL

B

BD.	BOARD
BITUM.	BITUMINOUS
BLDG.	BUILDING
BSMT.	BASEMENT

C

CAB.	CABINET
C.T.	CERAMIC TILE
C.B.	CHALKBOARD
C.G.	CORNER GUARD
CLG.	CEILING
COL.	COLUMN
CONC.	CONCRETE
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
C.O.	CONTRACTING OFFICER
CONTR.	CONTRACTOR
C.J.	CONTROL JOINT
C.M.U.	CONCRETE MASONRY UNIT

D

DEPT.	DEPARTMENT
DET.	DETAIL
D.F.	DRINKING FOUNTAIN
DIA.	DIAMETER
DIM.	DIMENSION
DISP.	DISPENSER
D.M.B.	DRY MARKER BOARD
DN	DOWN
DS	DOWN SPOUT
DWG.	DRAWING

E

EA.	EACH
E.J.	EXPANSION JOINT
EL.	ELEVATION
ELEC.	ELECTRIC/ELECTRICAL
ELEV.	ELEVATOR
ENGR.	ENGINEER
EQ.	EQUAL
EQUIP.	EQUIPMENT
E.W.C.	ELECTRIC WATER COOLER
EXIST.	EXISTING
EXT.	EXTERIOR
E.I.F.S.	EXTERIOR INSUL. FINISH SYSTEM

F

FAB.	FABRICATE/FABRICATOR
F.D.	FLOOR DRAIN
F.E.	FIRE EXTINGUISHER
F.E.C.	FIRE EXTINGUISHER CABINET
F.H.C.	FIRE HOSE CABINET
FIN.	FINISH(ED)
FLR.	FLOOR
FLUOR.	FLUORESCENT
F.O.B.	FACE OF BLOCK
F.O.BR.	FACE OF BRICK
F.O.C.	FACE OF CONCRETE
F.O.F.	FACE OF FINISH
F.O.G.	FACE OF GYPSUM BD.
F.O.S.	FACE OF STUD
FPRF.	FIREPROOF
FT.	FOOT/FEET
F.V.	FIELD VERIFY

G

GA.	GAUGE
GEN.	GENERAL
GL.	GLASS
G.W.B.	GYPSUM WALL BOARD

H

H.	HEIGHT
H.B.	HOSE BIBB
H.C.	HANDICAP
HDWR.	HARDWARE
H.M.	HOLLOW METAL
HORIZ.	HORIZONTAL
HVAC	HEATING, VENTILATION & A.C.

I

I.C.S.	INTERACTIVE CLASSRM. STUDIO
I.D.	INSIDE DIAMETER
INFO.	INFORMATION
INCAN.	INCANDESCENT
INSUL.	INSULATION
INT.	INTERIOR

J

JAN.	JANITOR
JT.	JOINT

L

LAV.	LAVATORY
LB.	POUND
L.H.	LEFT HAND

M

MAX.	MAXIMUM
M.C.O.	MULTIMEDIA COMMUNICATION OUTLET
MIPSIT	MULTIMEDIA INSTRUCTIONAL PORTABLE SYSTEM (TRADE-MARK)
MECH.	MECHANICAL
MTL.	METAL
MFR.	MANUFACTURER(ING)
M.H.	MANHOLE
MIN.	MINIMUM
MISC.	MISCELLANEOUS
M.O.	MASONRY OPENING

N

N.A.F.	NO APPLIED FINISH
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
N.P.S.	NATIONAL PARK SERVICE
N.T.S.	NOT TO SCALE

O

O.A.	OVER ALL
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
O.H.	OPPOSITE HAND
OPG.	OPENING

P

P. LAM	PLASTIC LAMINATE
PLAS.	PLASTER
PWD.	PLYWOOD
PR.	PAIR
PREFAB.	PREFABRICATED
PT. BD.	PARTICLE BOARD
PTD.	PAINTED

Q

Q.T.	QUARRY TILE

R

R	RADIUS
R.C.P.	REFLECTED CEILING PLAN
R.D.	ROOF DRAIN
REF.	REFERENCE
REFL.	REFLECTED
REINF.	REINFORCE
RESIL.	RESILIENT
R.H.	RIGHT HAND
RM	ROOM
R.O.	ROUGH OPENING

S

SCHED.	SCHEDULE
S.D.	SOAP DISPENSER
SECT.	SECTION
SHT.	SHEET
SIM.	SIMILAR
SPEC.	SPECIFICATION
SQ.	SQUARE
S.F.	SQUARE FEET
S.S.	STAINLESS STEEL
STD.	STANDARD
STOR.	STORAGE
STRUCT.	STRUCTURAL
SUSP.	SUSPEND(ED)
SYM.	SYMMETRICAL

T

T.	THICKNESS
T.B.	TACKBOARD
T&B	TOP AND BOTTOM
T.C.	TOP OF CURB
TECH.	TECHNICAL
TEL.	TELEPHONE
TEMP.	TEMPERED
T&G	TONGUE AND GROOVE
T.P.	TOP OF PAVEMENT
TYP.	TYPICAL
T.W.	TOP OF WALL

U

UTIL.	UTILITY
U.N.O.	UNLESS NOTED OTHERWISE
U.V.	UNIT VENTILATOR

V

V.C.T.	VINYL COMPOSITION TILE
VERT.	VERTICAL
VEST.	VESTIBULE
V.I.F.	VERIFY IN FIELD
V.T.C.	VIDEO TELECONFERENCING

W

W	WIDE
W/	WITH
WD.	WOOD
W.H.	WATER HEATER
W/O	WITHOUT
WT.	WEIGHT

MISCELLANEOUS

ø	DIAMETER
∠	ANGLE
℄	CENTER LINE
#	NUMBER
PL	PLATE

DRAWING REFERENCES

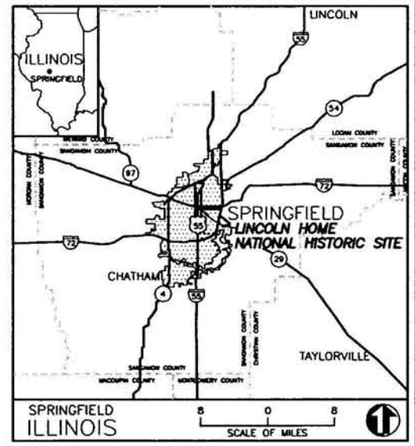
- SECTION CUT REFERENCE: DETAIL NUMBER, SHEET CUT ON
- PLAN REFERENCE: DETAIL NUMBER, SHEET NUMBER
- ELEVATION REFERENCE: DRAWING NUMBER, SHEET CUT ON
- NORTH ARROW

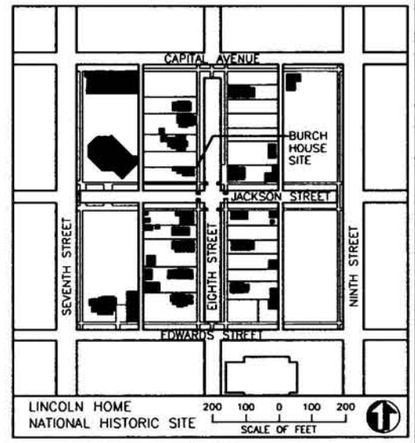
MATERIALS LEGEND:

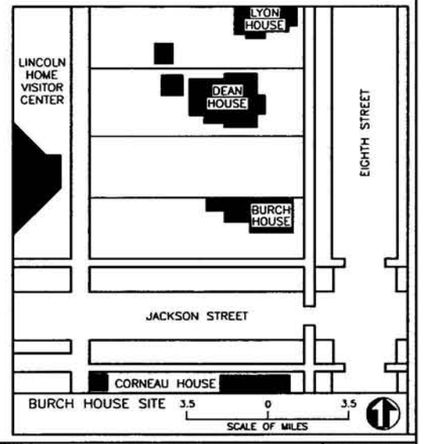
- EARTH
- FACE BRICK
- GRANULAR FILL
- CUT STONE
- CONCRETE
- WOOD, FRAMING
- GYPSUM BOARD OR PLASTER
- WOOD SHIM
- CONCRETE MASONRY UNIT
- GLASS
- FINISHED WOOD
- GYPSUM BOARD OR PLASTER
- WATERPROOF MEMBRANE
- RIGID INSULATION
- BLANKET INSULATION
- PLYWOOD

INDEX OF DRAWINGS

SHEET	SUB SHEET	TITLE OF SHEET
1		COVER SHEET
2	C1	SITE SURVEY
3	L1	SITE ANALYSIS
4	L2	HISTORIC SITE PLAN







Mark	Sheet	REVISION	Date	Initial

QUALITY DESIGN CERTIFICATION

RECOMMENDED: _____ Date

APPROVED: _____ Date

EXISTING CONDITIONS

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

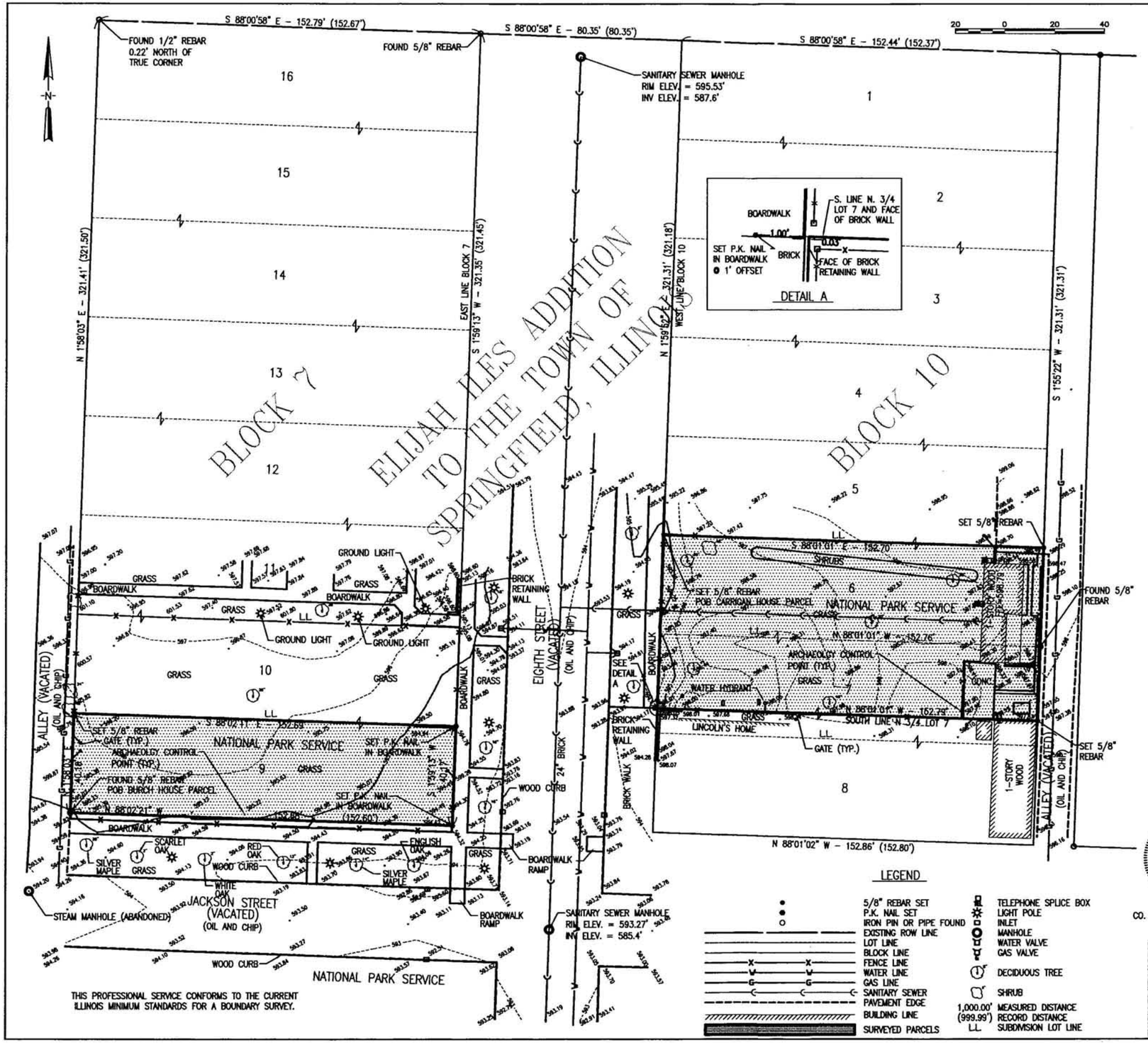
TITLE OF DRAWING
COVER SHEET
LOCATION WITHIN PARK
BURCH HOUSE (HS-26)
NAME OF PARK
LINCOLN HOME
NATIONAL HISTORIC SITE

REGION	COUNTY	STATE
MIDWEST	SANGAMON	ILLINOIS

DRAWING NO. 449 80094

PKG. NO. ____ SHEET ____ OF ____

ORDERED BY: RATIO ARCHITECTS



THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY SURVEY.

LEGEND

•	5/8" REBAR SET
●	P.K. NAIL SET
○	IRON PIN OR PIPE FOUND
	EXISTING ROW LINE
	LOT LINE
	BLOCK LINE
x–x	FENCE LINE
W–W	WATER LINE
G–G	GAS LINE
C–C	SANITARY SEWER
	PAVEMENT EDGE
	BUILDING LINE
	SURVEYED PARCELS
	TELEPHONE SPLICE BOX
	LIGHT POLE
	INLET
	MANHOLE
	WATER VALVE
	GAS VALVE
	DECIDUOUS TREE
	SHRUB
1,000.00'	MEASURED DISTANCE
(999.99')	RECORD DISTANCE
LL	SUBDIVISION LOT LINE

GENERAL NOTES

RECORD DISTANCES PER PLAT OF SURVEY BY JOHN RAYNOLDS, IL PLS # 2054 AND DATED JUNE 1974. ALSO REFERENCE SURVEY INFORMATION COMPILED BY JOHN GARRISON, IL PLS # 1564 AND SHOWN IN A SKETCH DATED JANUARY 28, 1995.

BASIS OF BEARINGS IS GRID NORTH OF THE ILLINOIS STATE PLANE COORDINATE SYSTEM, NAD 83, WEST ZONE AND WAS DETERMINED USING SITE MONUMENTS LIHO 1 AND LIHO 2.

TREE SPECIES WERE IDENTIFIED BY THE JAEGER COMPANY.

PROPERTY PIN #: 14-34-178-024
ADDRESS: 8TH STREET AND JACKSON STREET
SPRINGFIELD, ILLINOIS 62701
OWNER: NATIONAL PARK SERVICE

UTILITY COMPANIES SERVING SITE:

AMERITECH (TELEPHONE)
555 EAST COOK STREET
SPRINGFIELD, IL 62703
217-753-2973

AMEREN/CILCO (GAS)
825 NORTH MACARTHUR AVENUE
SPRINGFIELD, IL 62701
888-672-5252

CITY OF SPRINGFIELD (SEWER)
ROOM 201 MUNICIPAL CENTER WEST
SPRINGFIELD, IL 62701
217-789-2260

CWLP (ELECTRIC)
10TH AND MILLER STREETS
SPRINGFIELD, IL 62702
217-789-2121

CWLP (WATER)
11TH AND MASON STREETS
SPRINGFIELD, IL 62704
217-789-2323

RECORD BOUNDARY DESCRIPTION
(AS PROVIDED BY NATIONAL PARK SERVICE)

Burch House
Lot 9 of Block 7 of the Elijah Iles Addition to the City of Springfield, Illinois
– and –

Carrigan House
Lot 6 and the North 3/4 of Lot 7 in Block 10 of the Elijah Iles Addition to the City of Springfield, Illinois

BENCHMARKS

LIHO 1
BRASS DISK SET IN CONCRETE UNDER BOARDWALK ON WEST SIDE OF EIGHTH STREET ON SOUTH RIGHT-OF-WAY LINE OF CAPITAL AVENUE. DISK IS STAMPED "LIHO 1".
ELEVATION 595.21'

LIHO 2
BRASS DISK SET IN CONCRETE UNDER BOARDWALK ON WEST SIDE OF EIGHTH STREET ON NORTH RIGHT-OF-WAY LINE OF EDWARDS STREET. DISK IS STAMPED "LIHO 2".
ELEVATION = 589.01'

UTILITY NOTE

THE LOCATIONS OF THOSE BURIED AND ABOVEGROUND UTILITIES SHOWN ARE APPROXIMATE, ARE SHOWN FOR CONTRACTOR INFORMATIONAL USE ONLY, AND ARE NOT TO BE REFERENCED FOR CONSTRUCTION PURPOSES. THE IMPLIED PRESENCE OR ABSENCE OF UTILITIES IS NOT TO BE CONSTRUED BY THE OWNER, ENGINEER, CONTRACTOR, OR SUBCONTRACTORS TO BE AN ACCURATE AND COMPLETE REPRESENTATION OF UTILITIES THAT MAY OR MAY NOT EXIST ON THE CONSTRUCTION SITE. BURIED AND ABOVEGROUND UTILITY LOCATION, IDENTIFICATION, AND MARKING ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. REROUTING, DISCONNECTION, PROTECTION, ETC. OF ANY UTILITIES MUST BE COORDINATED BETWEEN THE CONTRACTOR, UTILITY COMPANY, AND OWNER. SITE SAFETY, INCLUDING THE AVOIDANCE OF HAZARDS ASSOCIATED WITH BURIED AND ABOVEGROUND UTILITIES, REMAIN THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

DARREN E. FORGY
035-3637
PROFESSIONAL LAND SURVEYOR STATE OF ILLINOIS

STATE OF ILLINOIS
COUNTY OF SANGAMON

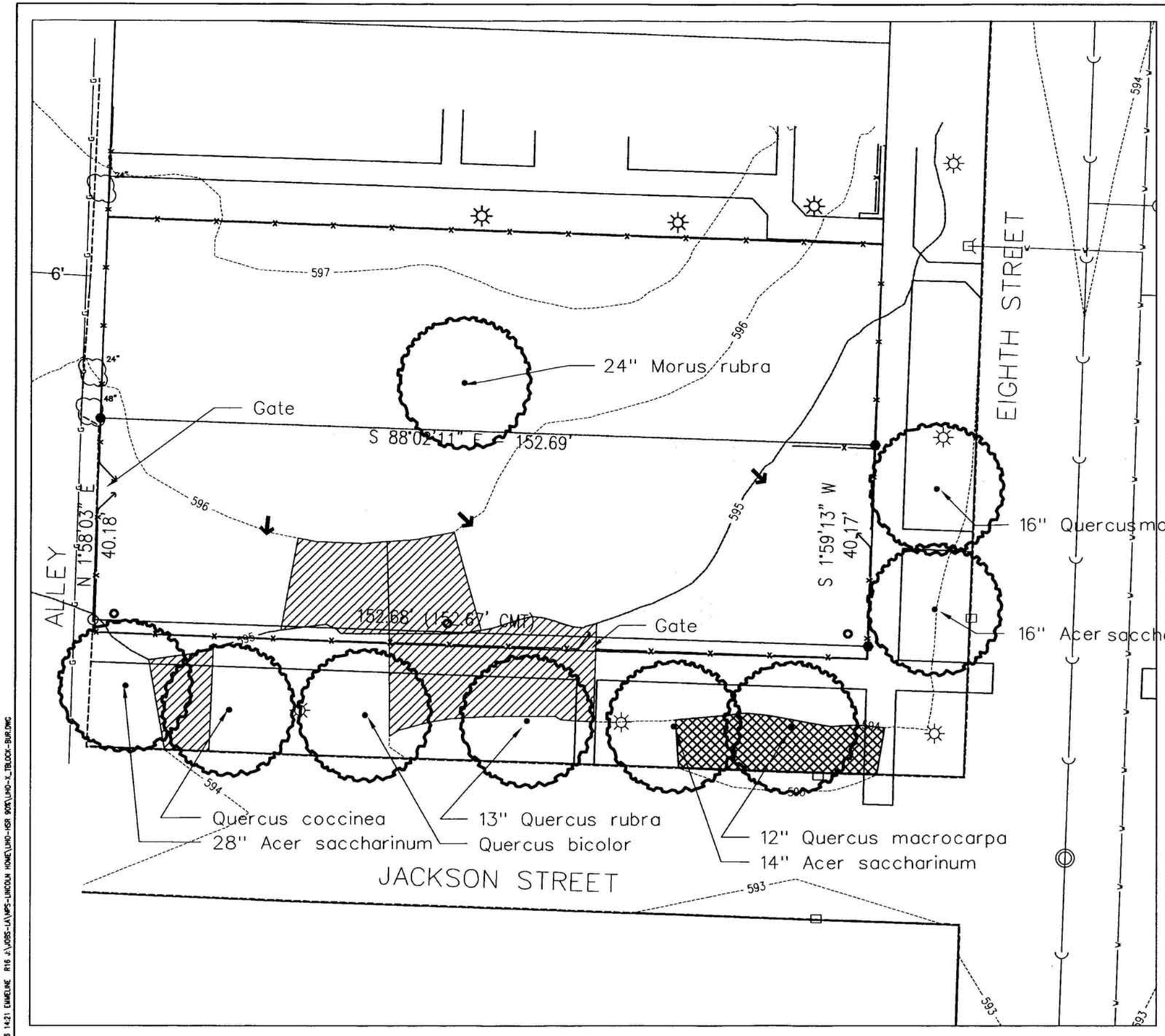
I, Darren E. Forgy, do hereby certify that I am a Professional Land Surveyor, licensed in the State of Illinois; that the survey of this plat was made under my direction; that the survey is true and complete as shown to the best of my knowledge and belief; and that all monuments and marks are of the character and occupy the position shown theron.

Date _____

_____
PROFESSIONAL LAND SURVEYOR NO. 3637
LICENSE EXPIRES NOVEMBER 30, 2006

CO. LICENSE NO. 184-001084

DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
DRAWN	C1	SITE SURVEY	449 / 80094
TECH. REVIEW:			PMIS/PKG NO.
DATE:		LINCOLN HOME NATIONAL HISTORIC SITE	SHEET ___ OF ___



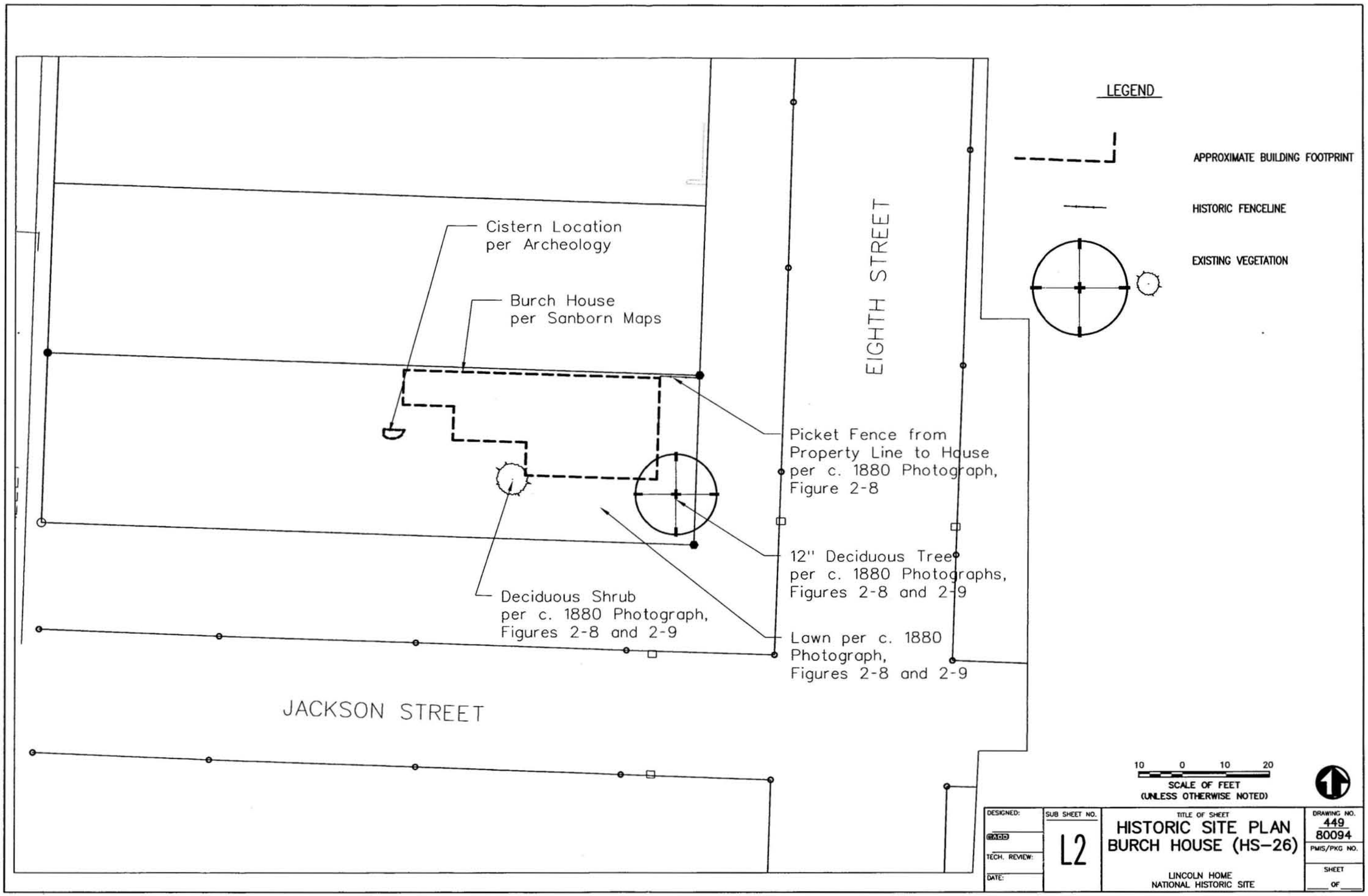
LEGEND

- 5/8" REBAR SET
- P.K. NAIL SET
- IRON PIN OR PIPE FOUND
- EXISTING ROW LINE
- LOT LINE
- BLOCK LINE
- FENCE LINE
- WATER LINE
- GAS LINE
- SANITARY SEWER
- PAVEMENT EDGE
- BUILDING LINE
- SURVEYED PARCELS
- > 8.33% SLOPE
- 5%–8.33% SLOPE
- TELEPHONE SPLICE BOX
- LIGHT POLE
- INLET
- MANHOLE
- WATER VALVE
- GAS VALVE
- DECIDUOUS TREE
- SHRUB
- 1,000.00' MEASURED DISTANCE
- (999.99') RECORD DISTANCE
- L.L. SUBDIVISION LOT LINE
- HYDROLOGY
- * species to be field verified

10 0 10 20
SCALE OF FEET
(UNLESS OTHERWISE NOTED)

DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
DRAWN:	L1	SITE ANALYSIS BURCH HOUSE (HS–26)	449 / 80094
TECH. REVIEW:			PMIS/PKC NO.
DATE:		LINCOLN HOME NATIONAL HISTORIC SITE	SHEET ___ OF ___

J/1/06 14:21 EMMELINE R16 J:\JOBS-LA\LHP5-LINCOLN HOME\LHO-HSR 90%\LHO-X_TBLOCK-BUR.DWG


LEGEND
APPROXIMATE BUILDING FOOTPRINT
HISTORIC FENCELINE
EXISTING VEGETATION
EIGHTH STREET
Cistern Location per Archeology
Burch House per Sanborn Maps
Picket Fence from Property Line to House per c. 1880 Photograph, Figure 2-8
12" Deciduous Tree per c. 1880 Photographs, Figures 2-8 and 2-9
Deciduous Shrub per c. 1880 Photograph, Figures 2-8 and 2-9
Lawn per c. 1880 Photograph, Figures 2-8 and 2-9
JACKSON STREET
10 0 10 20
SCALE OF FEET
(UNLESS OTHERWISE NOTED)
DESIGNED:
CADD
TECH. REVIEW:
DATE:
SUB SHEET NO.
L2
TITLE OF SHEET
HISTORIC SITE PLAN
BURCH HOUSE (HS-26)
LINCOLN HOME
NATIONAL HISTORIC SITE
DRAWING NO.
449
80094
PMIS/PKG NO.
SHEET
OF

Historic Map/Archeology Overlay Study

In order to understand the existing conditions in relationship to the evolution of the site, a historic map/archeology overlay study was conducted. In this study, the team overlaid the archeological drawings produced in August of 2005 by the National Park Service with existing historic maps. As was presented in the archeology description, the recent archeology has placed the northwest corner of a foundation, a chimney pad, a cistern, and a well. The following is the outcome of that study.

City of Springfield Map – 1854 **(See OS-1)**

The northern wall of the Burch House in the 1854 map aligns with the northern edge of the archeological findings. Unfortunately, the northwest corner of the map does not align with the northwest corner of the archeology. From other analysis of this same map, it appears that the 1854 map of Springfield is not particularly accurate with respect to scale. Despite this, the map does give clues to general footprint and materials.

City of Springfield Map – 1858 **(See OS-2)**

Once again, the northern wall in the 1858 map aligns with the archeology, but western extent extends significantly beyond the northwest corner of the corner found during the archeological studies.

Sanborn Map – 1884 **(See OS-3)**

The 1884 Sanborn map is the first map that begins to correspond with the archeology, as the northwest corner is quite close to aligning with the northwest corner of the map. As was discussed with the Sanborn Map Analysis, the 1884 map is not particularly accurate in terms of its notation and is much less precise than the 1896 map, which will be discussed in the next map analysis.

Sanborn Map – 1896 **(See OS-4)**

The 1896 map appears to be fairly accurate in terms of its northwest corner aligning with the northwest corner of the archeology. A few feet to the east, one can see what is labeled on the archeology drawing as "Possible Chimney Pad." This also aligns directly with the dividing wall between westernmost and middle blocks of the house, which could point to this chimney being integrated into this wall structure. Although accurate in terms of the placement of the northwest corner, the dimensions of the south façade and porch do not correspond to the historic photographs. From the photographs, it was determined that the east edge of the porch opening fell approximately in the middle of the south façade. The 1896 Sanborn map clearly shows the porch as significantly smaller than half the length of the south façade.

Sanborn Map – 1917 **(See OS-5)**

By 1917, the Burch House had been torn down and a new store building constructed a bit further to the south. With respect to the Burch House, this doesn't give much insight into the archeology.

Sanborn Map – 1941 **(See OS-6)**

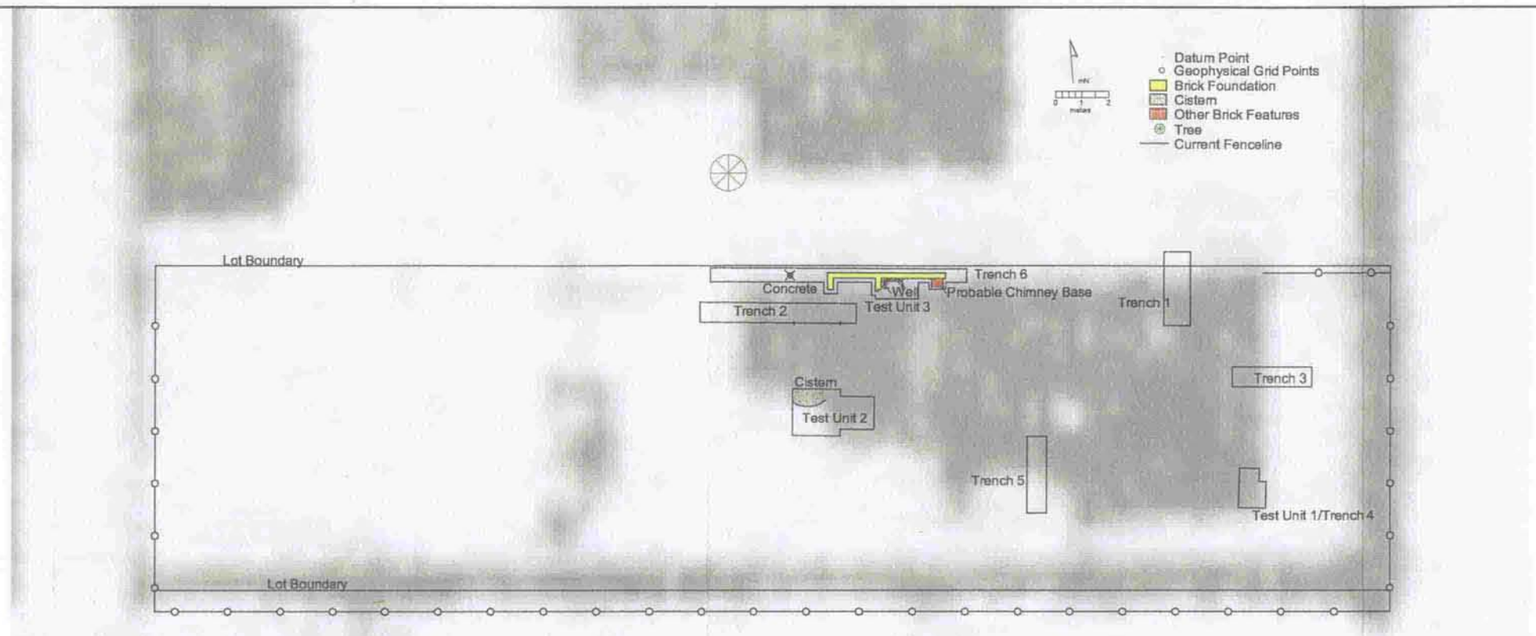
The 1941 Sanborn map is significant to the archeology as it shows an addition constructed to the north of the store building that is first seen in the 1917 Sanborn map. The footprint of

this addition aligns directly with the northwest corner of the Burch house foundation feature. This does bring into question if the foundation found in the archeology was in fact the foundation of the Burch House or from this later building. It also could point to the Burch House foundation being reused for the addition.

Sanborn Map – 1952 **(See OS-7)**
The 1952 map is similar to the 1945 in terms of its configuration.

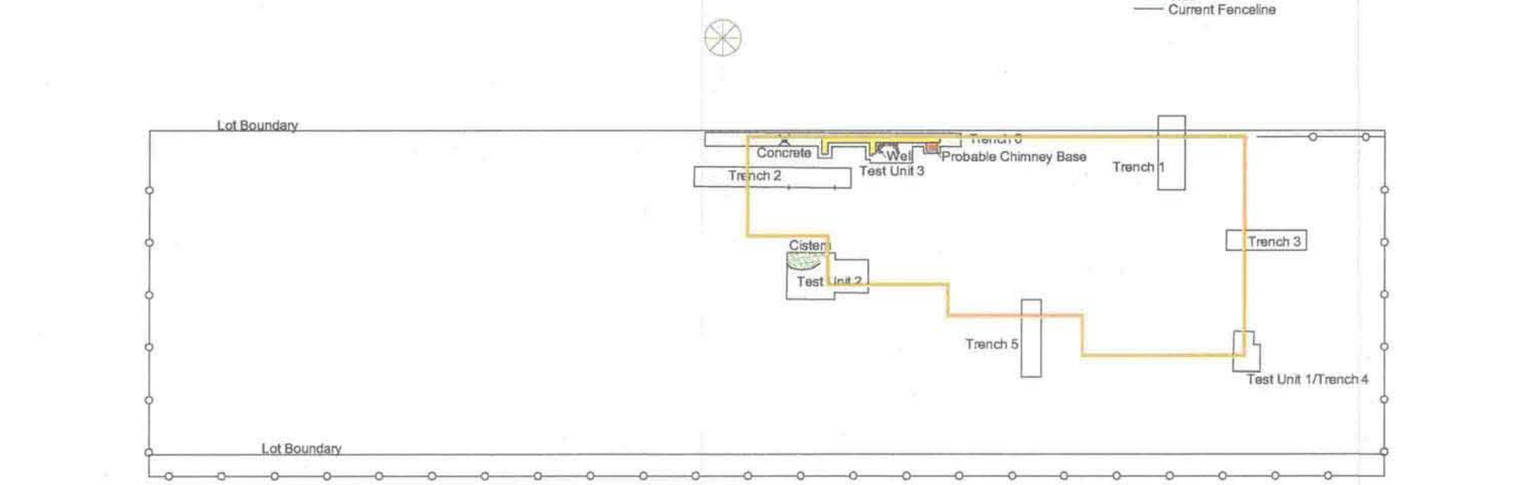
Overlay of 1884 and 1896 Sanborn Maps **(See OS-8)**
The 1884 and 1896 maps are the most accurate of historic maps during the Burch House's time on the site. Both of the northwest corners are close to aligning with the archeology, and both appear to have a fairly accurate footprint. The 1896 map has more precise notation, but the south façade does not correspond to the finding of the historic photographs.

Overlay of 1884, 1896, and 1941 Sanborn Maps **(See OS-8)**
With the addition of the 1941 Sanborn map to the overlay, the notion that the foundation unearthed during the archeological excavations dates to the Burch House is called into question. The brick needs to be examined, and the mortar analyzed to determine if this foundation dates to the Burch house or the later store addition.



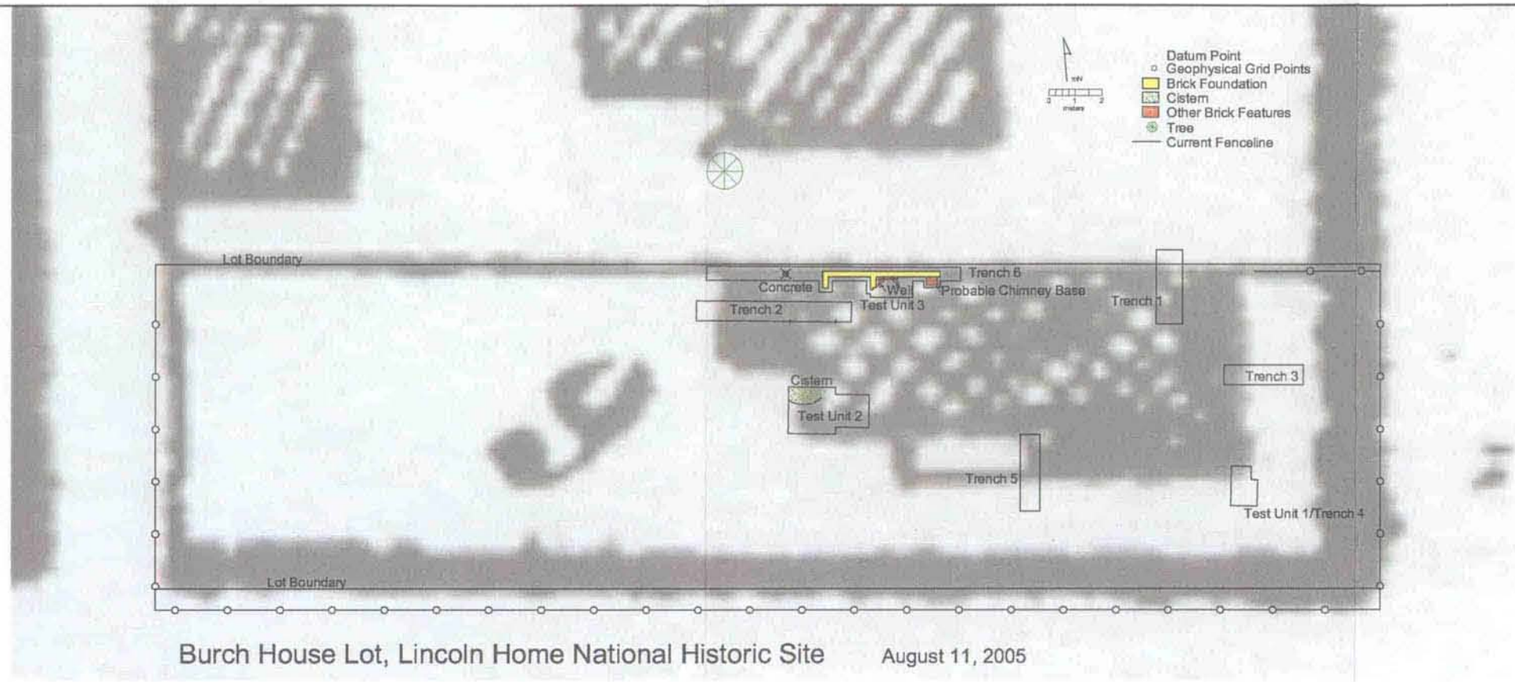
Burch House Lot, Lincoln Home National Historic Site August 11, 2005

1854



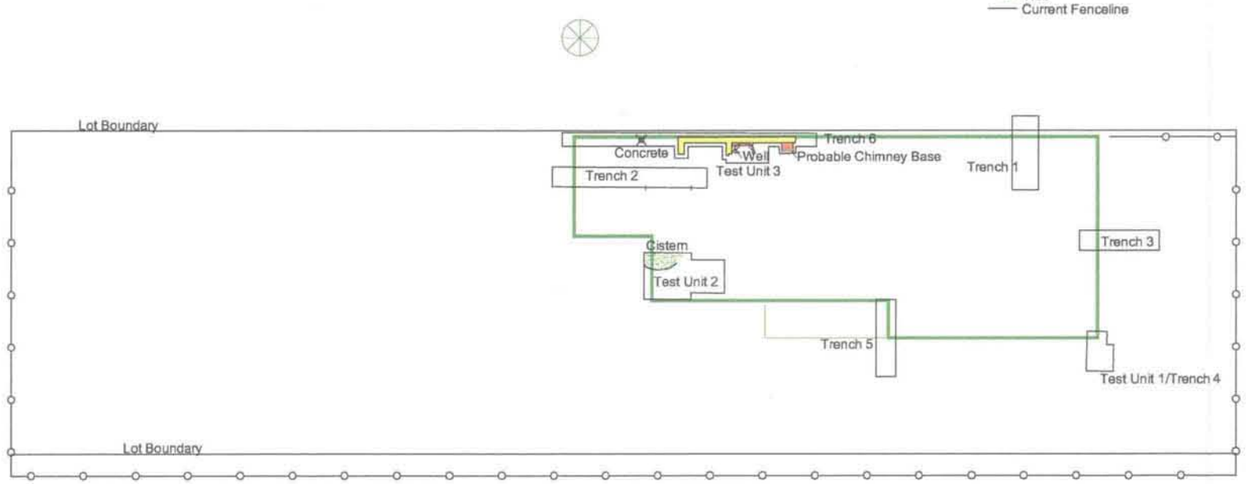
Burch House Lot, Lincoln Home National Historic Site August 11, 2005

DESIGNED: RADD TECH. REVIEW: DATE:	SUB SHEET NO. 0S1	TITLE OF SHEET ARCHEOLOGY/ HISTORIC MAP OVERLAY STUDY LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ___ OF ___



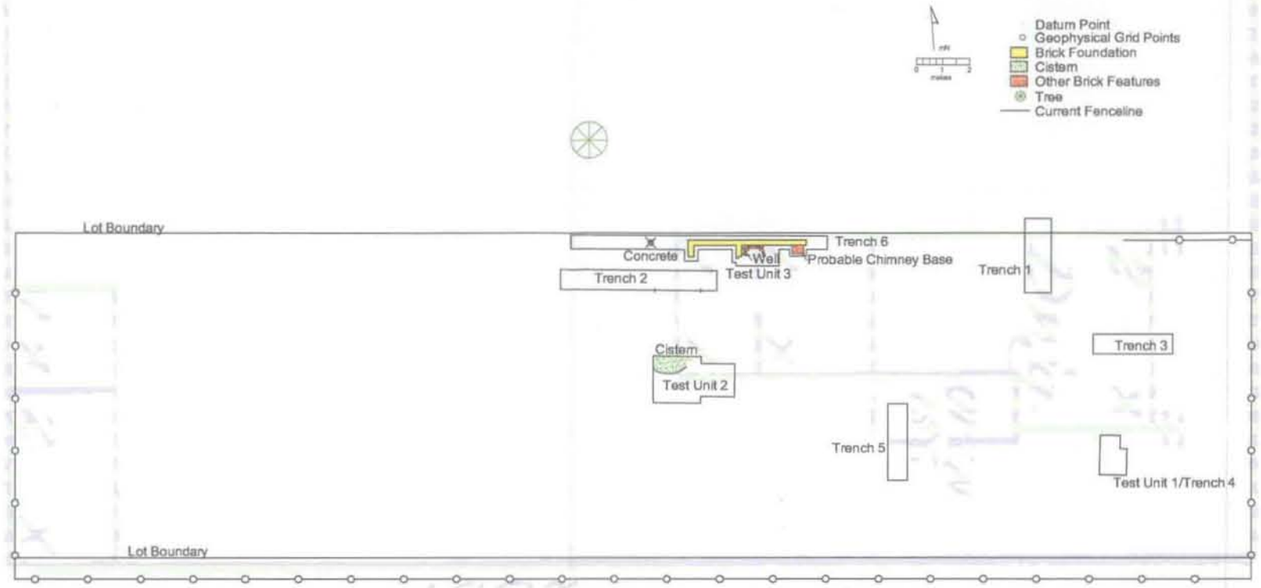
Burch House Lot, Lincoln Home National Historic Site August 11, 2005

1858

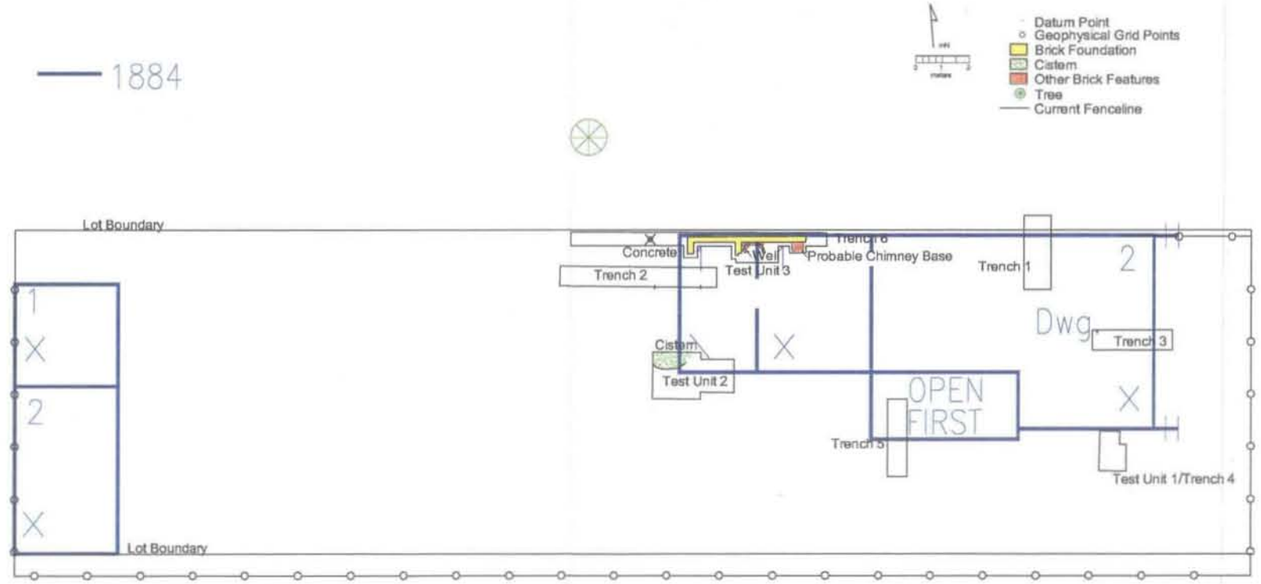


Burch House Lot, Lincoln Home National Historic Site August 11, 2005

DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
DRAFTED	OS2	ARCHEOLOGY/ HISTORIC MAP OVERLAY STUDY	449 / 80094
TECH. REVIEW:		LINCOLN HOME NATIONAL HISTORIC SITE	PMIS/PKG NO.
DATE:			SHEET ____ OF ____

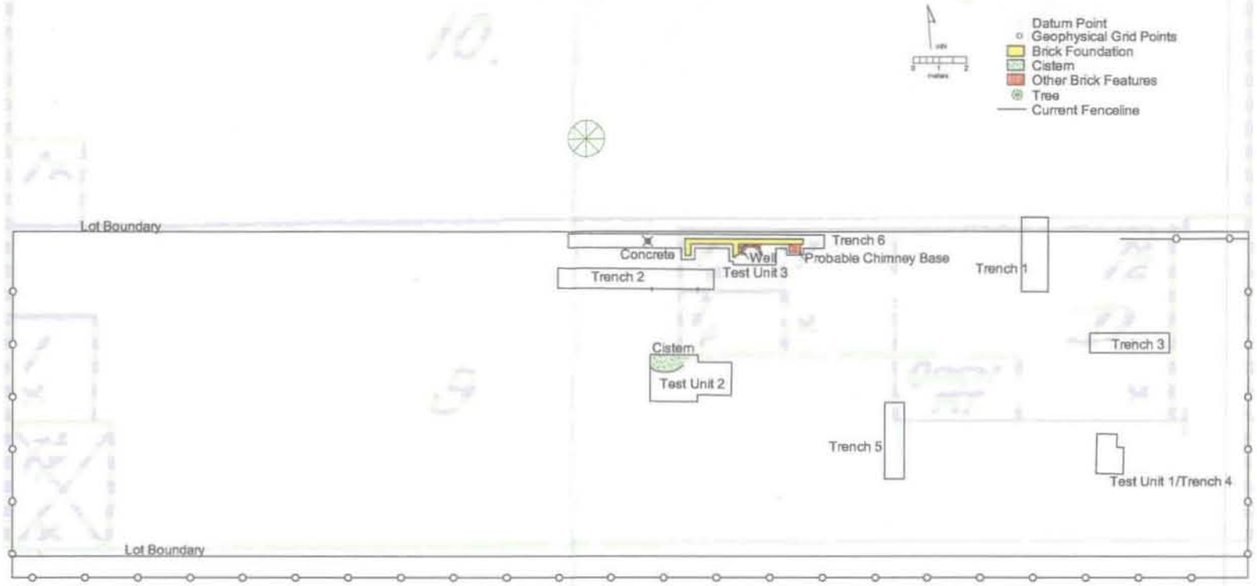


Burch House Lot, Lincoln Home National Historic Site August 11, 2005

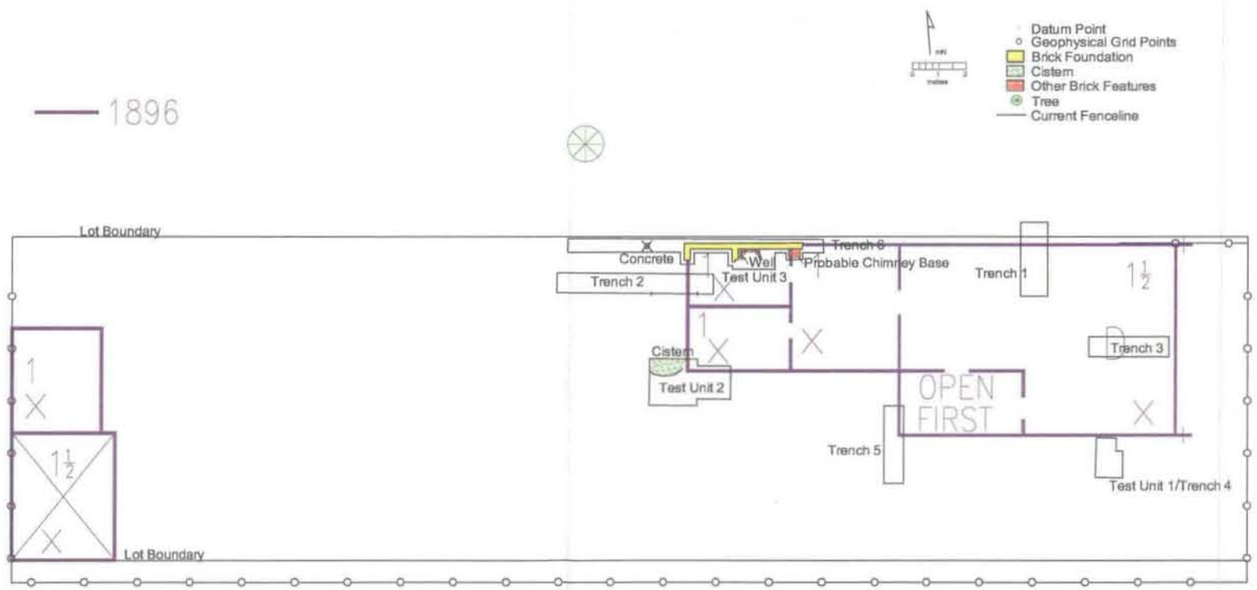


Burch House Lot, Lincoln Home National Historic Site August 11, 2005

DESIGNED: GMD TECH. REVIEW: DATE:	SUB SHEET NO. OS3	TITLE OF SHEET ARCHEOLOGY/ HISTORIC MAP OVERLAY STUDY LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ____ OF ____

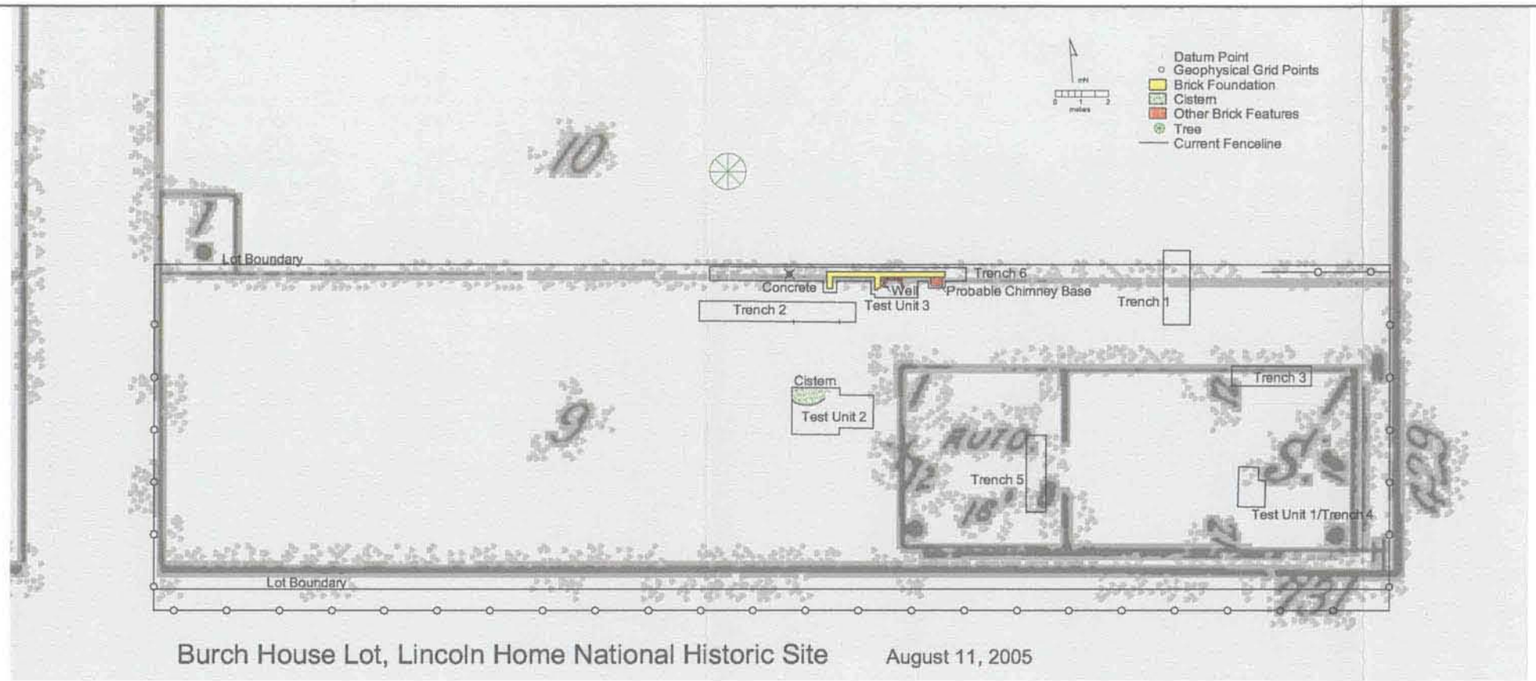


Burch House Lot, Lincoln Home National Historic Site August 11, 2005



Burch House Lot, Lincoln Home National Historic Site August 11, 2005

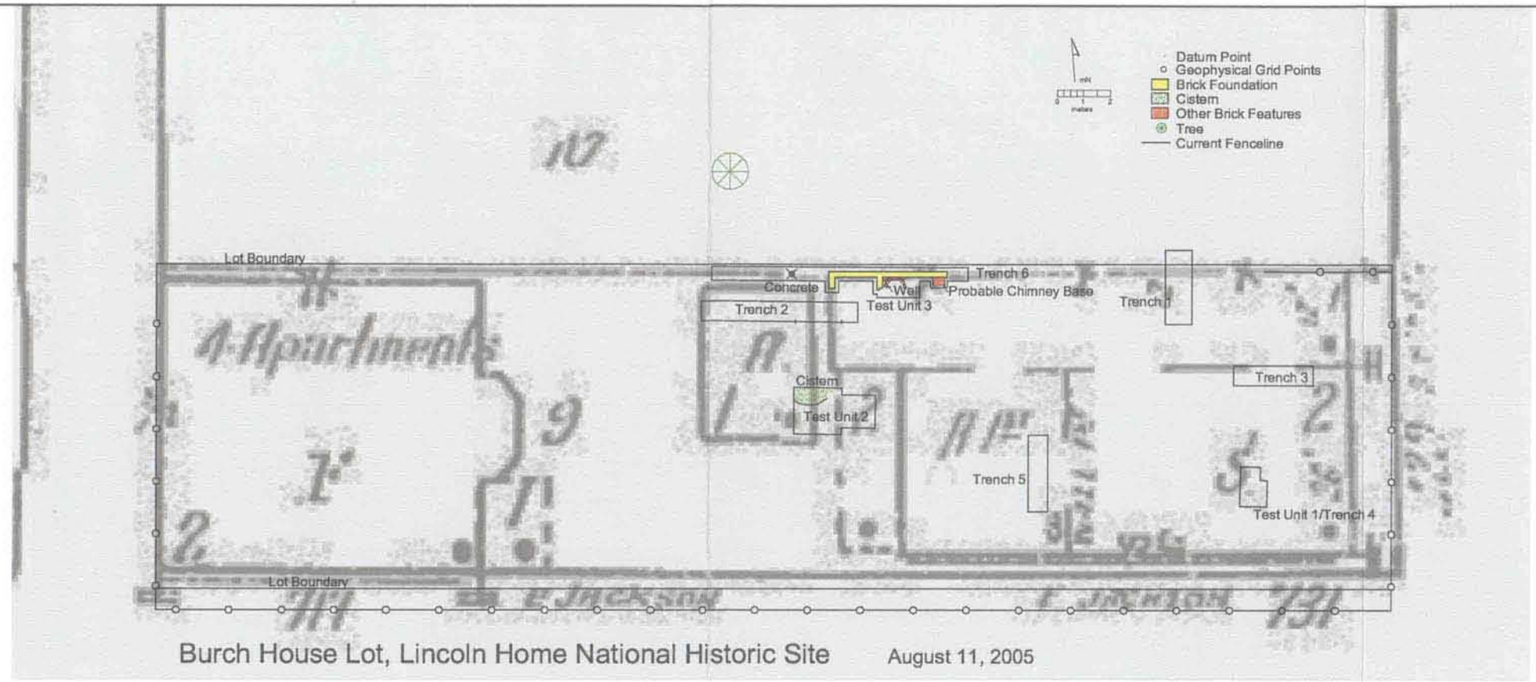
DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
TECH. REVIEW:	OS4	ARCHEOLOGY/ HISTORIC MAP OVERLAY STUDY	449 80094
DATE:		LINCOLN HOME NATIONAL HISTORIC SITE	PMIS/PKG NO.
			SHEET ____ OF ____



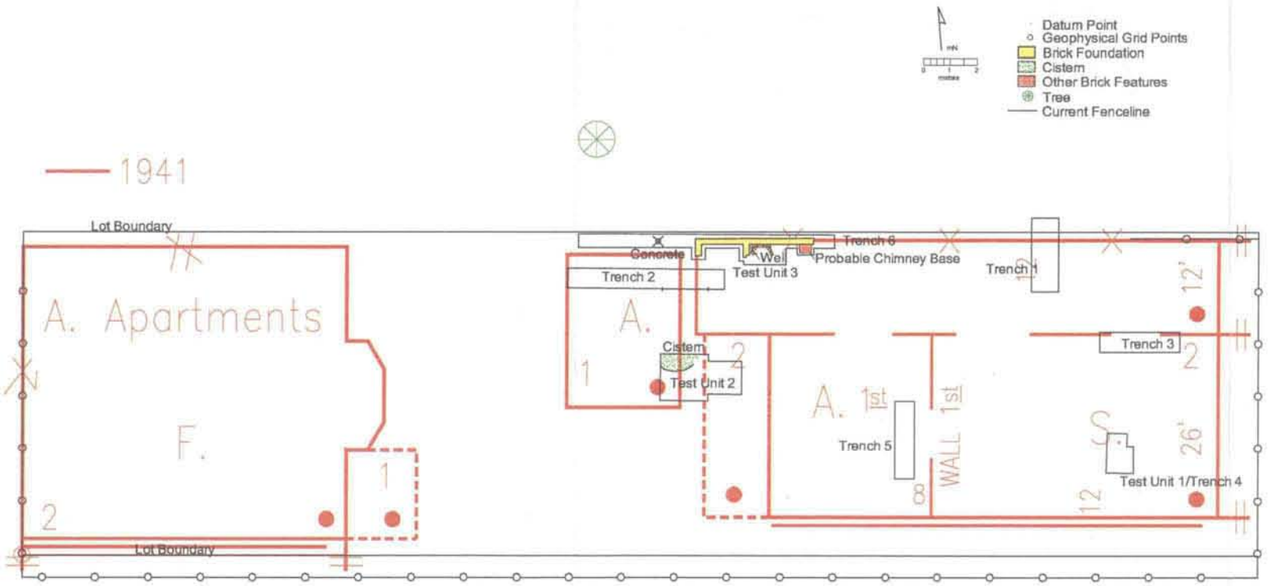
Burch House Lot, Lincoln Home National Historic Site August 11, 2005

Burch House Lot, Lincoln Home National Historic Site August 11, 2005

DESIGNED: GMD TECH. REVIEW: DATE:	SUB SHEET NO. 0S5	TITLE OF SHEET ARCHEOLOGY/ HISTORIC MAP OVERLAY STUDY LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ____ OF ____

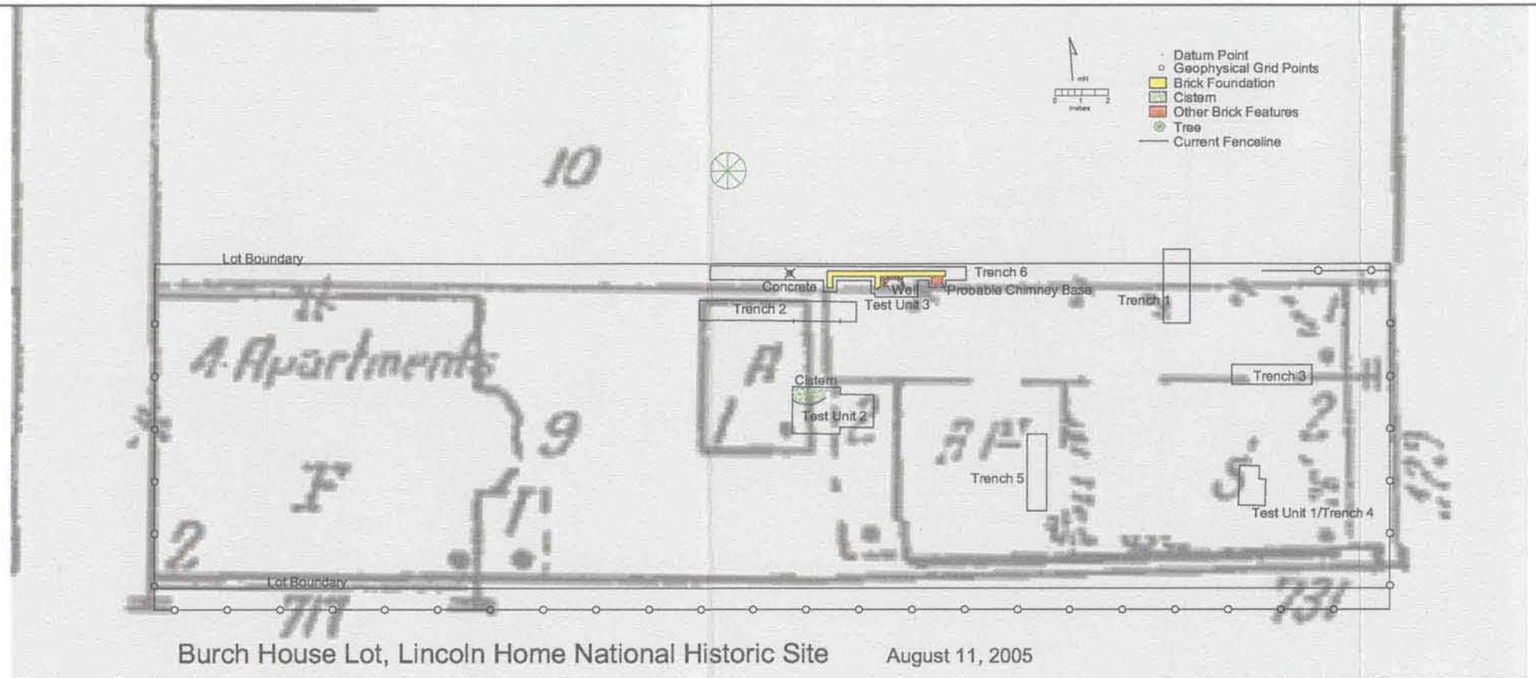


Burch House Lot, Lincoln Home National Historic Site August 11, 2005

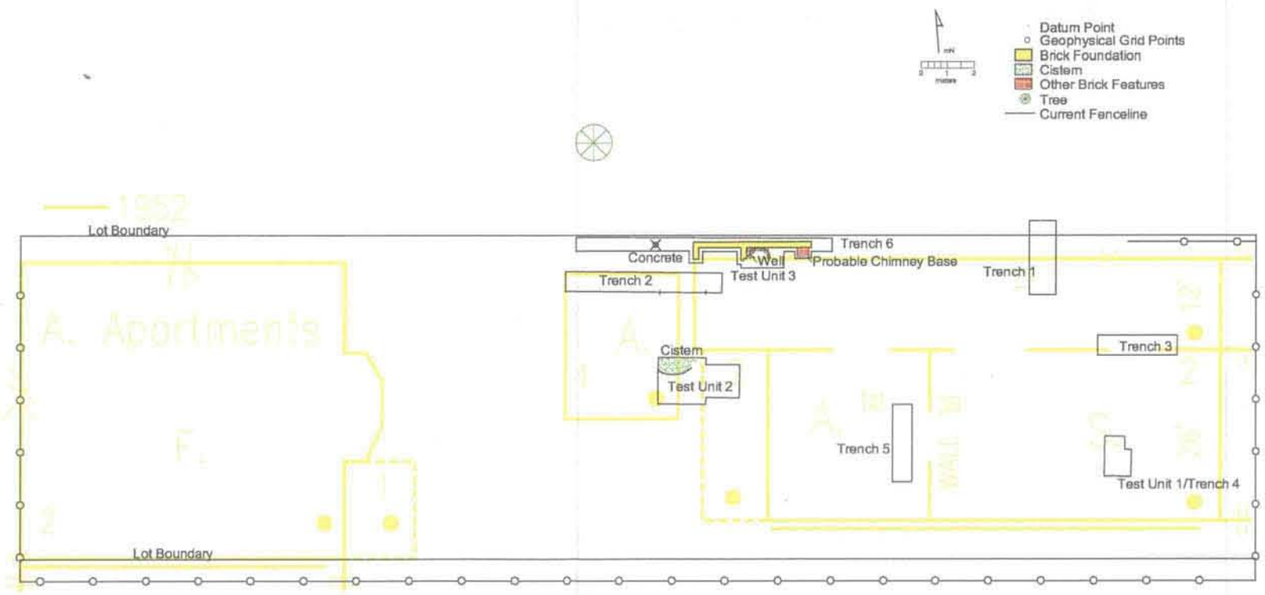


Burch House Lot, Lincoln Home National Historic Site August 11, 2005

DESIGNED: GACD TECH. REVIEW: DATE:	SUB SHEET NO. OS6	TITLE OF SHEET ARCHEOLOGY/ HISTORIC MAP OVERLAY STUDY LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET OF

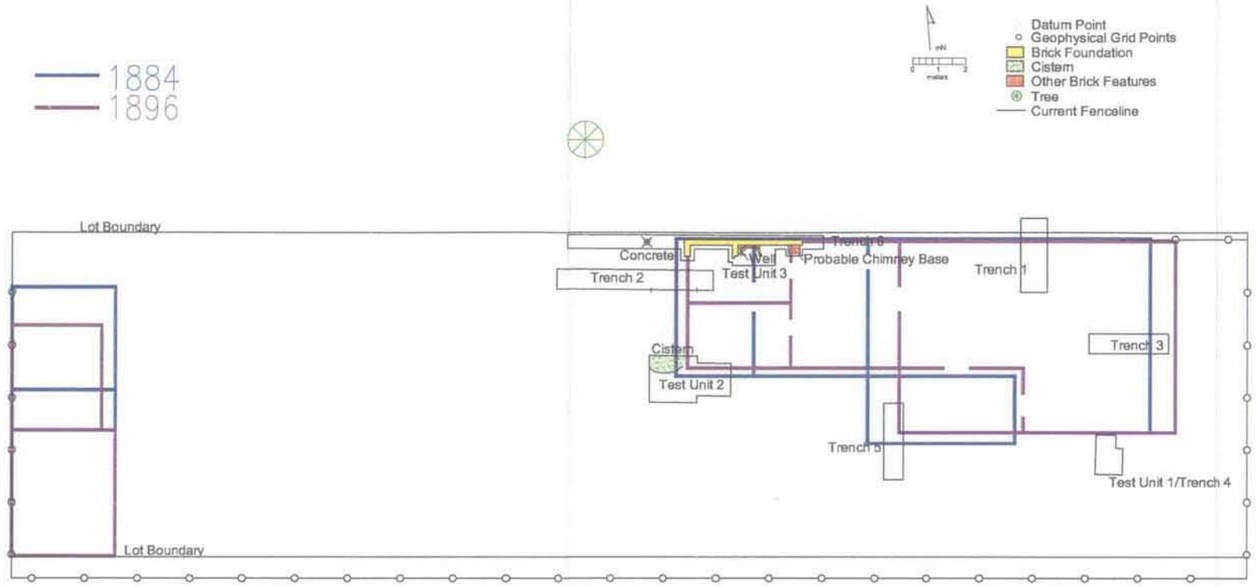


Burch House Lot, Lincoln Home National Historic Site August 11, 2005

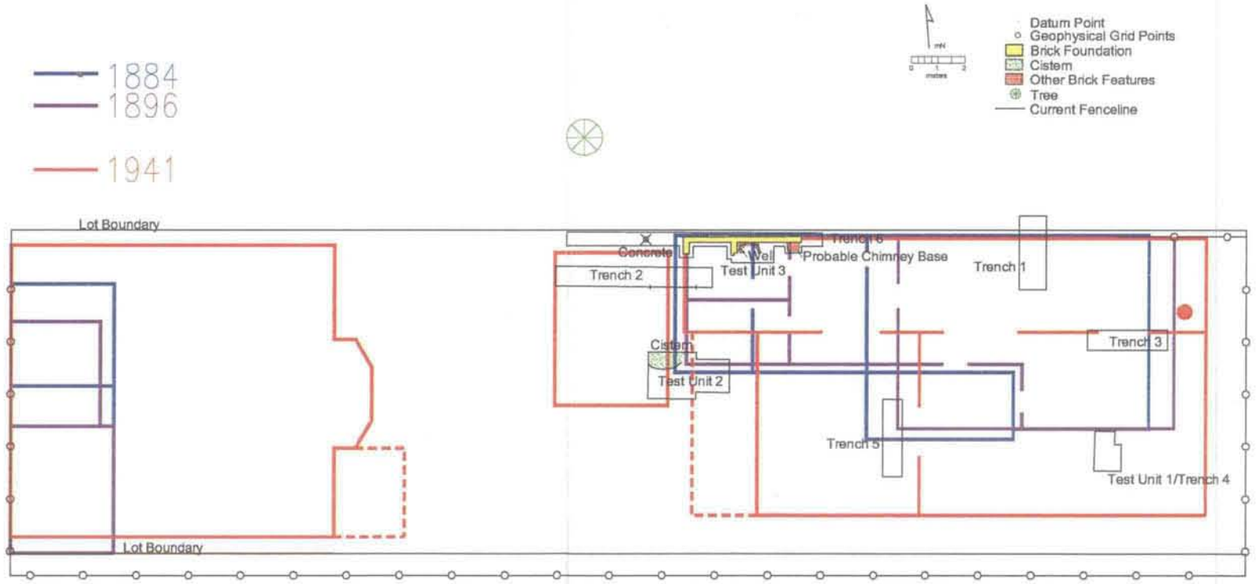


Burch House Lot, Lincoln Home National Historic Site August 11, 2005

DESIGNED: GADD TECH. REVIEW: DATE:	SUB SHEET NO. 0S7	TITLE OF SHEET ARCHEOLOGY/ HISTORIC MAP OVERLAY STUDY LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ____ OF ____



Burch House Lot, Lincoln Home National Historic Site August 11, 2005



Burch House Lot, Lincoln Home National Historic Site August 11, 2005

DESIGNED: GAPD TECH. REVIEW: DATE:	SUB SHEET NO. OS8	TITLE OF SHEET ARCHEOLOGY/ HISTORIC MAP OVERLAY STUDY LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ___ OF ___

MATERIALS / DIMENSIONAL ANALYSIS

Methodology

Given that the Burch House is no longer extant, the material/dimensional analysis was based primarily on photographic analysis and limited dimensions taken from original materials during the archeological excavations.

According to NPS staff, the archeological digs determined the brick to be on average 8-1/2"-1/8" X 8-1/4" X 2". In order to determine the measurements of the house, the two available historic photographs were used to determine the brick coursing. This was done as follows. The photographs were imported into an architectural drafting program, and all of the major exterior elements that are visible in the two photographs were traced over in order to document their configuration and number. With this information in hand, the known brick size was used to extrapolate the dimensions of the portions of the east elevation and the portion of the south elevation visible in the photographs. These dimensions were then compared to the known archeology, historic maps, and aerial drawings in order to estimate the dimensions and configuration of the missing information.

Masonry

According to historic photos, the Burch House is a masonry house consisting of brick walls with stone lintels and stoops. The brick is laid up with a field of running bond with every seventh course being a header course. This is similar to common bond, which consists of running bond with header courses at 6 course intervals. Image MA-1a. was used primarily to determine the vertical dimensions and coursing, as the vertical head joints are for the most part not visible. From the lowest visible brick course at grade level up to the gable peak on the south elevation, there are 109 brick courses. With the addition of two corbelled courses that cap the wall, this brings the total to 111 brick courses. Assuming a 3/8" mortar joint, it was determined that the house measured approximately 22'-0" from the visible grade level up to the peak of the gable's parapet. It is estimated that the east elevation measures approximately 13'-9" from grade level to the top of the roof fascia.

Image MA-2a was used primarily to determine the horizontal dimensions and coursing, as the deep shadows make the vertical joints for the most part apparent. From the southeast corner of the house to the eastern extent of the porch opening, there are twenty-one bricks. Using the aforementioned brick sizes and assuming a 3/8" mortar joint, this portion is estimated to be approximately 15'-1". Since the east edge of the porch opening aligns with the gable peak, it was assumed that this was the midpoint of the façade and thus the western half of the façade was 15'-1" as well. The assumption varies from the 1896 Sanborn map. Although the 1896 Sanborn map (See Historic Map Overlay Study) appears to be the most accurate in most aspects, it depicts the eastern portion of the façade as being the considerably longer than the porch opening on the western portion of the façade.

In addition to the masonry on the facades, there are two chimneys visible in image MA-1e, both of which have three corbelled courses at their upper extent with what appears to be a chimney cap. The western most chimney seen in the historic photo is believed to be an image of a chimney on the house that once stood immediately to the north of the Burch

House. While it is believed from archeological evidence that there was a second chimney on the north wall of the Burch House, the height of that chimney cannot be determined from existing available sources. The masonry portion of the easternmost chimney scales to be around four feet in height.

Windows/Doors/Shutter

There are four windows, all of which have shutters, and a single entry door visible on the historic photographs. The windows appear to be wood and are of the one-over-one double hung variety. The larger windows on the east façade measure are approximately 29 brick courses from the top of the stone sill to the bottom of the stone lintel giving the window openings a height of approximately 5'- 9". The width was determined by counting the head joints and measures about 3'–2". The paired shutters are louvered with two panels and hinges. The bottom panel was operable, as there is visual evidence of the tilt bar. The rail dividing the two panels falls slightly below the meeting rail of the window, as the lower window sash is significantly taller than the upper sash. There are 18 louvers on the upper panel and 15 louvers at the lower panel. The south façade windows are much smaller, measuring approximately 22 brick courses or approximately 4'-4-1/4". The width of these windows was estimated based on the visible head joints. Both windows have only one two-panel shutter. That shutter opens toward the center of the façade. The westernmost shutter is open, revealing tilt bars that were used to rotate the fifteen louvers present on both the upper and lower panels. It appears from examining both of these windows, that the corbelled parapet would have interfered with the opposite side shutters in the open position, so much so, that they could not sit flat against the façade.

Porch

As was discussed in the masonry analysis, it is estimated that the porch opening with its brick pier at the western extent makes up half of the horizontal dimension of the south façade, or 15'-3/4". The flooring material appears to be wood. The column at the mid span of porch opening is approximately one foot in diameter. On the other hand, the horizontal dimension of the porch opening on the west side of the porch could not be determined, although its diagonal lattice is apparent in both photographs.

Roofing

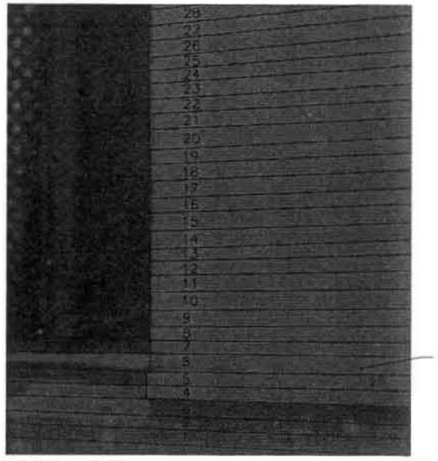
The roofing material appears to be wood shingles (**See MA-4a**). This is further reinforced by 1884 and 1896 Sanborn maps. From the aforementioned vertical brick dimensions at both the gable peak and the eaves, the approximate slope of the roof could be determined. The slope is approximately a 6:12 pitch with 49 courses of shingles with around a four-inch exposure.

The gutters and downspouts are visible as well in both photographs (**See MA-4b and MA-4c**). From a close up of the gutters, it appears that the gutter is built in with the downspouts running from the underside of the soffit directly down the façade. It could not be determined if the gutters terminate into an underground drainage system or empty on grade. The diameter of the downspout is in the three to four inch range.

A close up of the chimneys (**See Image MA-4c**) does not give any clarity to flashing at the eastern most chimney, although it is presumed that there would have been base flashing and counter flashing at the perimeter of the chimneys. The top of both the eastern chimney and western chimney appear to have a cap. The dimension of this could be determined with some accuracy by counting the head joints of the brick courses below leading to a dimension of 1'-5" x 2'-1-1/2".

Wood Trim

The eaves with their built in gutters and trim board below make up the majority of the visible wood trim at the Burch House. In comparing the trim board to the adjacent brick coursing, it scales approximately seven to eight inches. The fascia is a similar dimension. There is also some question as to the material of the "lintel" over the porch opening. From the photograph it appears to be stone, yet because its shallow depth, around 7-1/8", the span would be too great for a stone lintel to be effective in carrying the load. It is possible that this is simply a decorative wood "hood" placed over opening and hiding the presumed wood timber lintel behind it.



PROTRUDING BRICK WATER TABLE

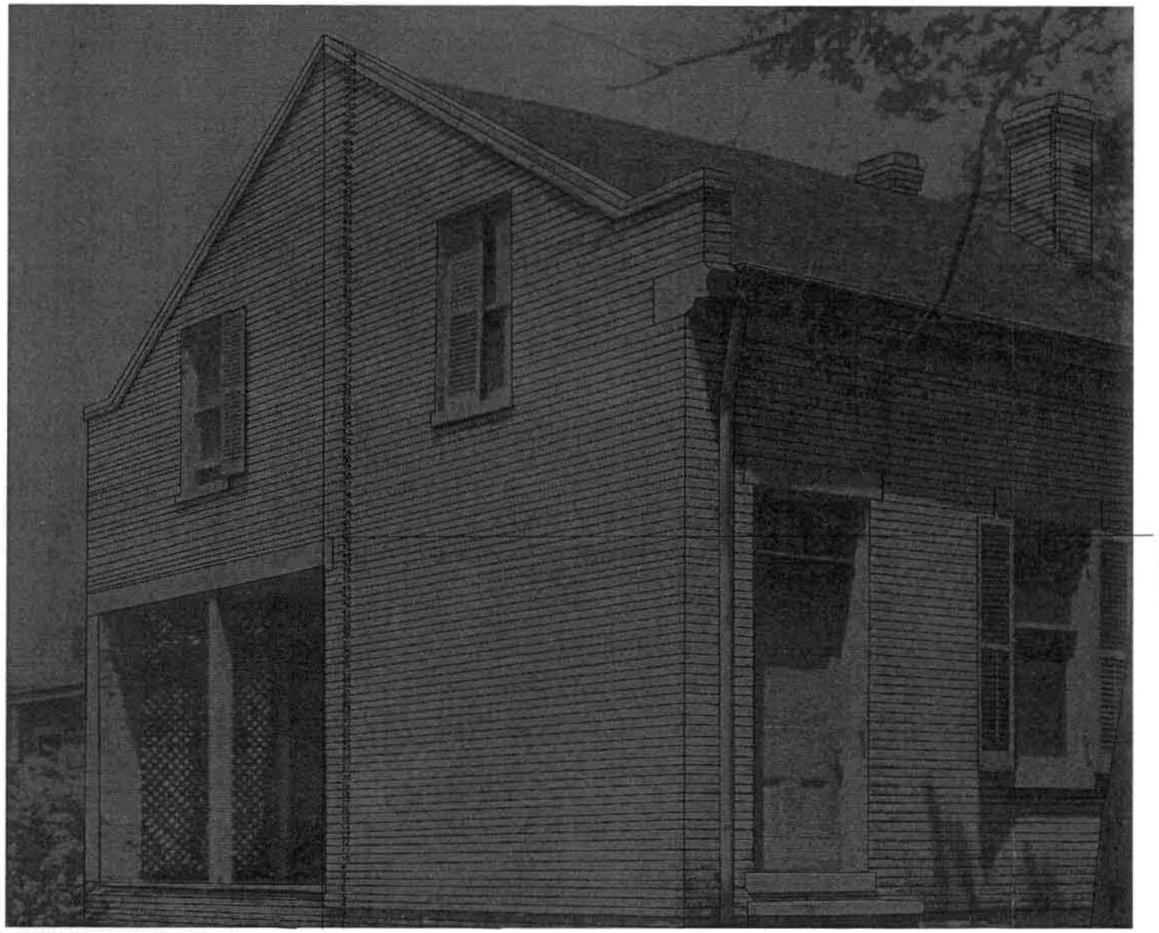
PORCH DETAIL MA–1c

MASONRY DETAIL EXTENDING BEYOND THE FACE OF THE EAST FACADE

MASONRY DETAIL MA–1d

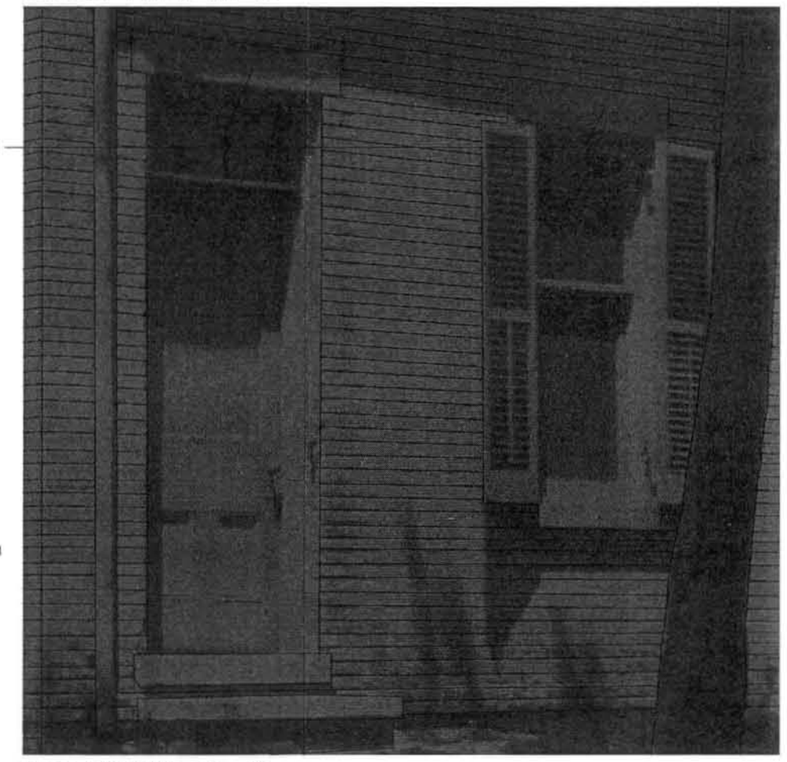
CHIMNEY DETAIL– APPROXIMATELY 20 COURSES HIGH

CHIMNEY DETAIL MA–1e



BRICKS AT GABLE END EXTEND 109 COURSES (111 COURSES COUNTING THE PARAPET) MEASURING APPROXIMATELY 22'

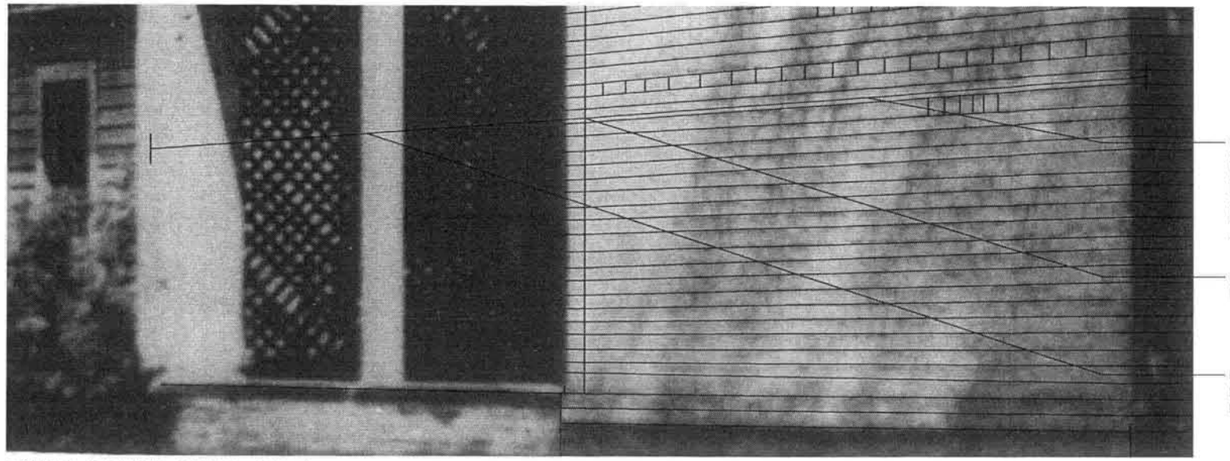
WEST WINDOWS MA–1a



STONE LINTEL AT DOOR AN WINDOW EQUALS 3 BRICK COURSES IN HEIGHT

WEST WINDOWS MA–1b

DESIGNED: HABS TECH. REVIEW: DATE:	SUB SHEET NO. MA1	TITLE OF SHEET MATERIALS/DIMENSIONAL ANALYSIS BURCH HOUSE (HS–26) LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ___ OF ___

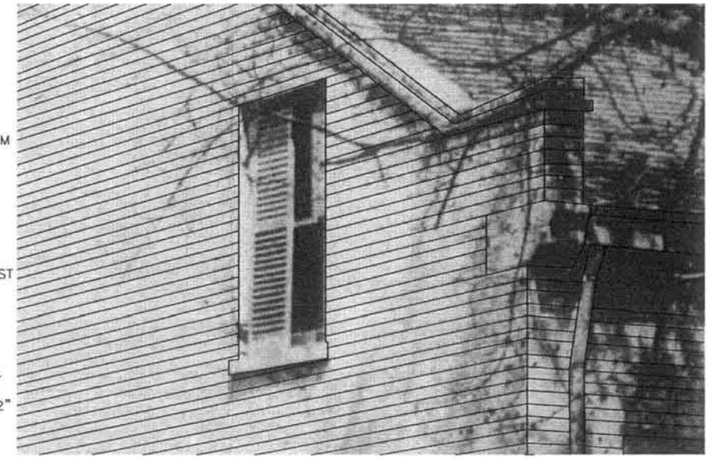


SOUTH FACADE DETAIL MA-2c

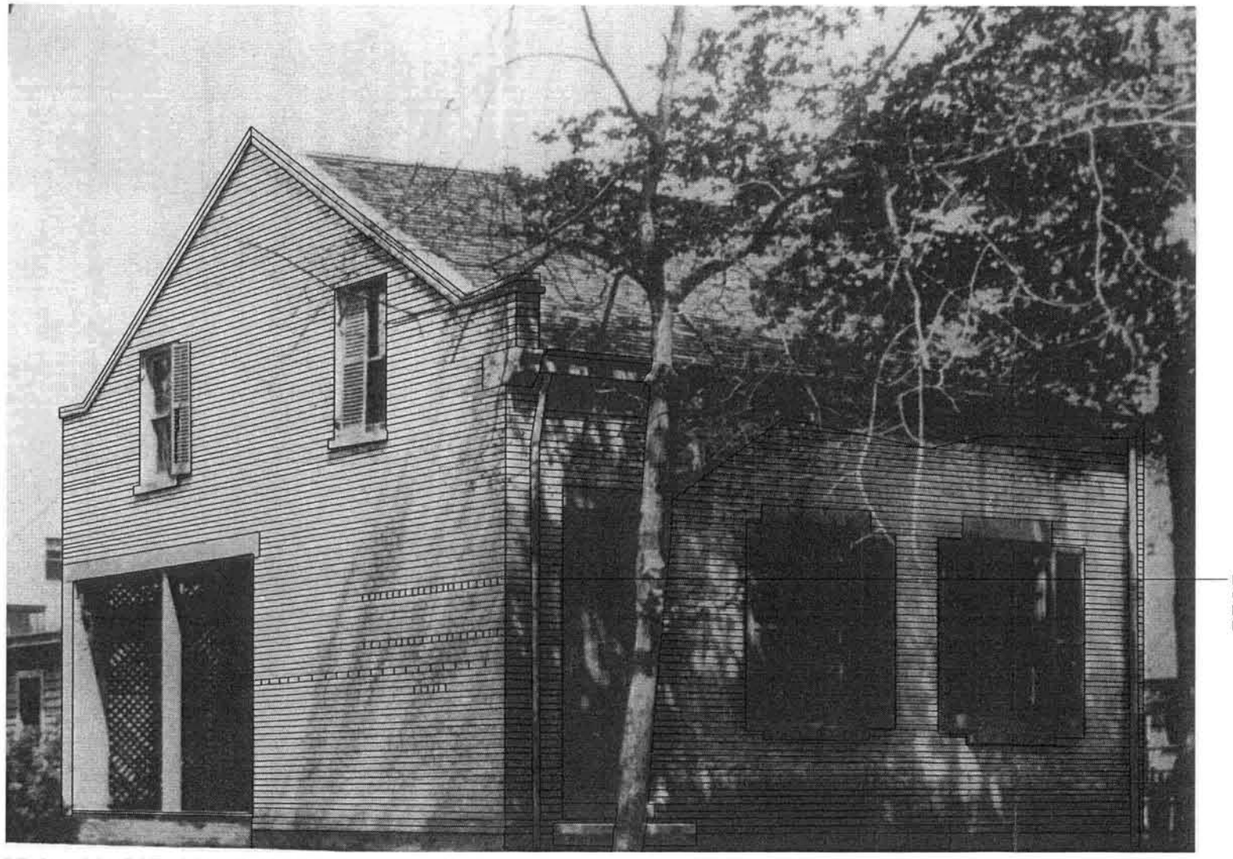
HORIZONTAL DIMENSION FROM SOUTHEAST CORNER TO EASTERN PORCH OPENING DETERMINED BY VERTICAL JOINTS. WITH 21 BRICKS, DISTANCE IS ESTIMATED AT APPROXIMATELY 15'-1"

MIDPOINT OF FACADE AT EAST EDGE OF PORCH OPENING

PORCH DIMENSION IS EQUAL DISTANCE OF 15'-1", TOTAL FACADE DIMENSION IS 30'-2"

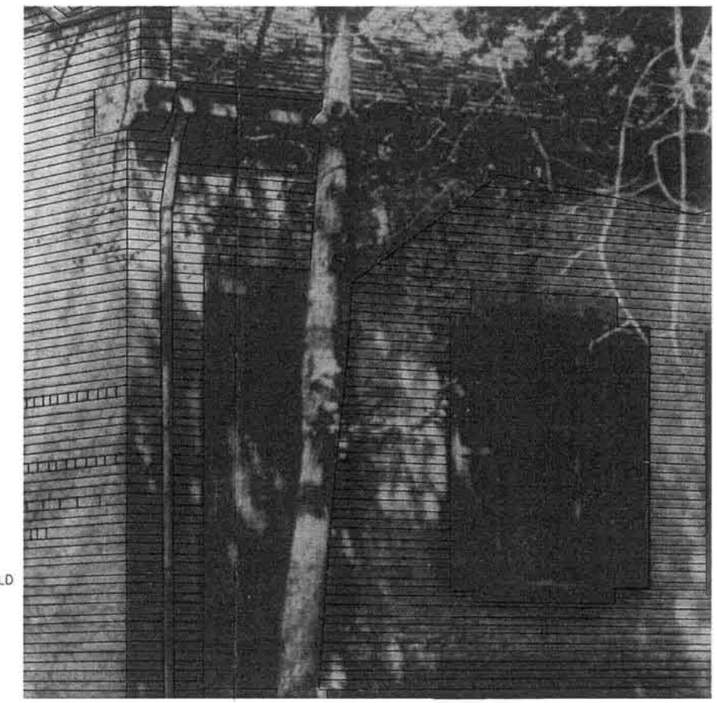


PARAPET DETAIL MA-2d



BRICK COURSE COUNTING MA-2a

BRICK LAID UP WITH A FIELD OF RUNNING BOND WITH EVERY SEVENTH COURSE BEING A HEADER COURSE



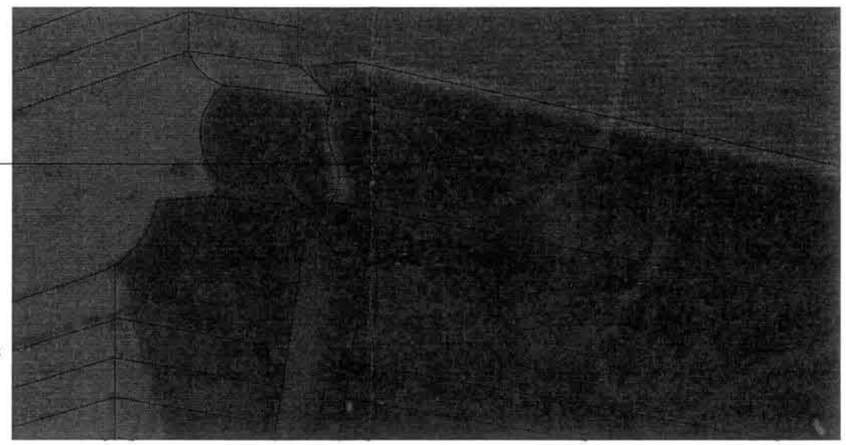
EAST FACADE DETAIL MA-2b

DESIGNED: CADD TECH. REVIEW: DATE:	SUB SHEET NO. MA2	TITLE OF SHEET MATERIALS/DIMENSIONAL ANALYSIS BURCH HOUSE (HS-26) LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ___ OF ___

CHIMNEY CAP

FLASHING AROUND CHIMNEY IS INDETERMINATE

CHIMNEY MA-3c

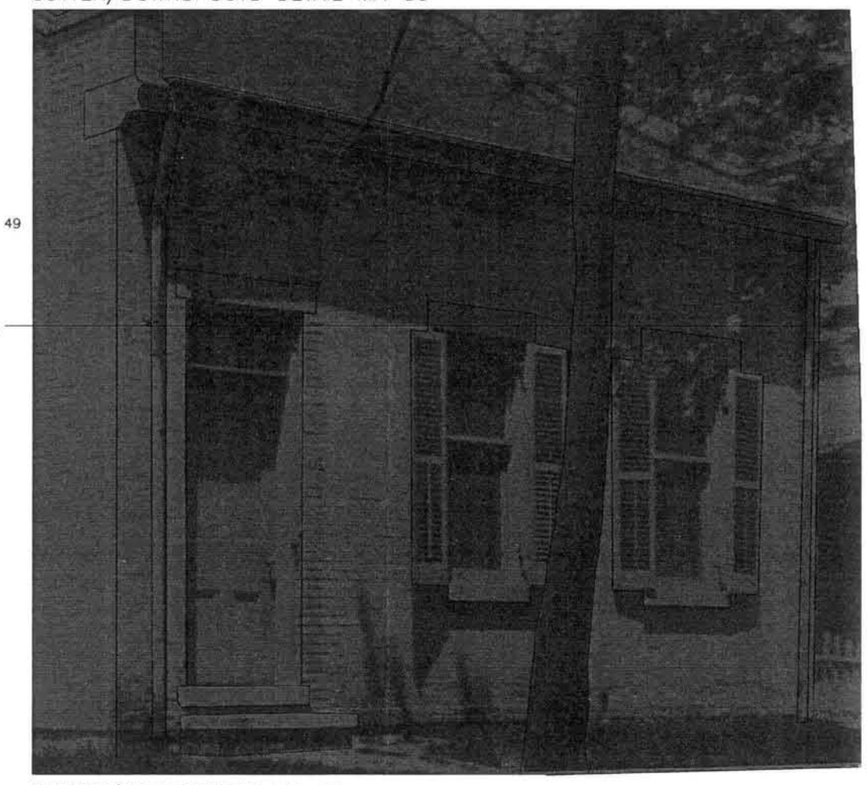


BUILT IN GUTTER WITH DOWNSPOUT DISCHARGING FROM UNDERSIDE OF SOFFIT

GUTTER/DOWNSPOUTS DETAIL MA-3d

WOOD SHINGLE ROOF WITH 49 ROOF COURSES

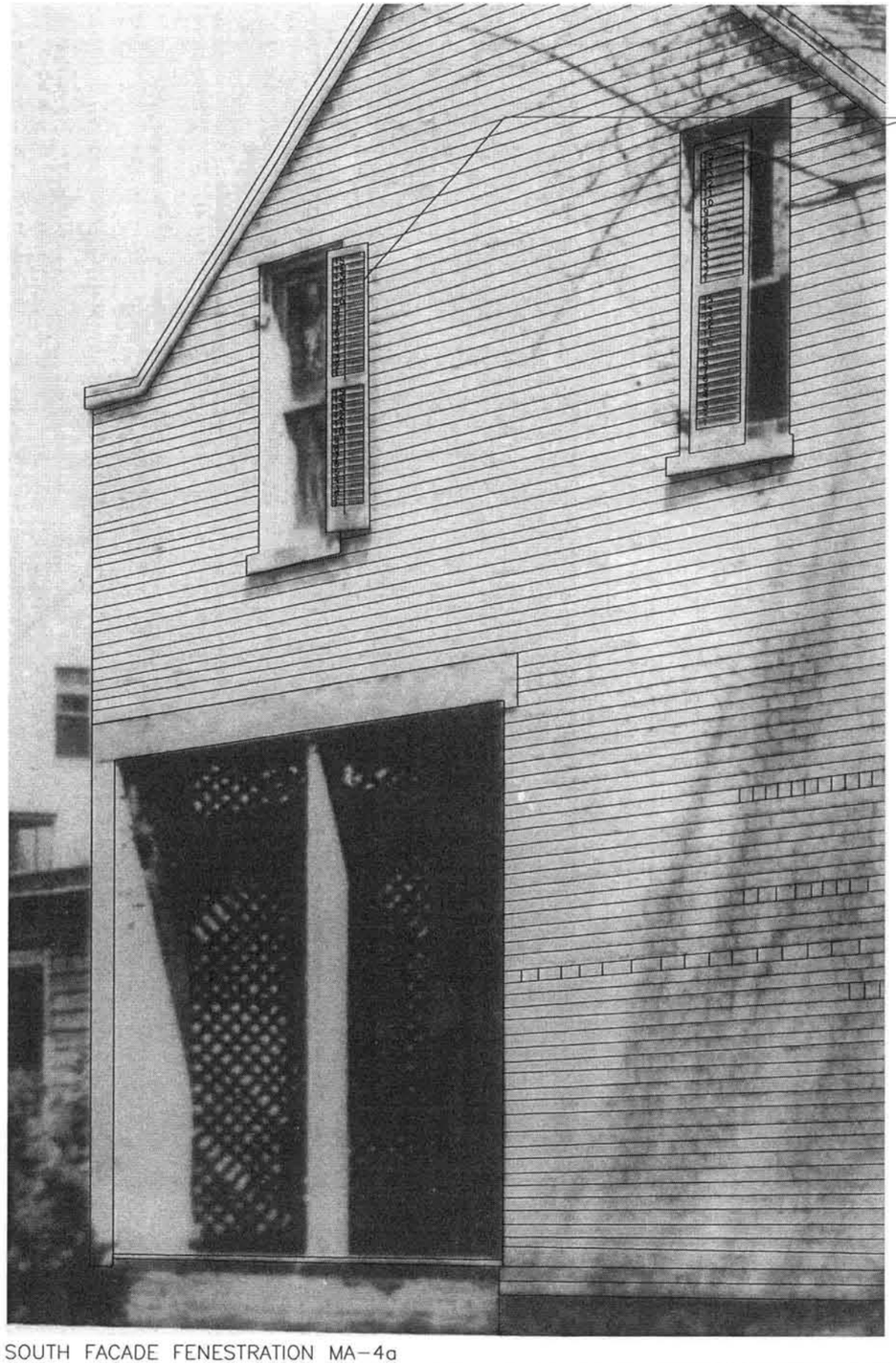
ROOF SHINGLE COURSE COUNTING MA-3a



2 VISIBLE DOWNSPOUTS ON EAST FACADE

GUTTER/DOWNSPOUTS MA-3b

DESIGNED: HABS TECH. REVIEW: DATE:	SUB SHEET NO. MA3	TITLE OF SHEET MATERIALS/DIMENSIONAL ANALYSIS BURCH HOUSE (HS-26) LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ____ OF ____

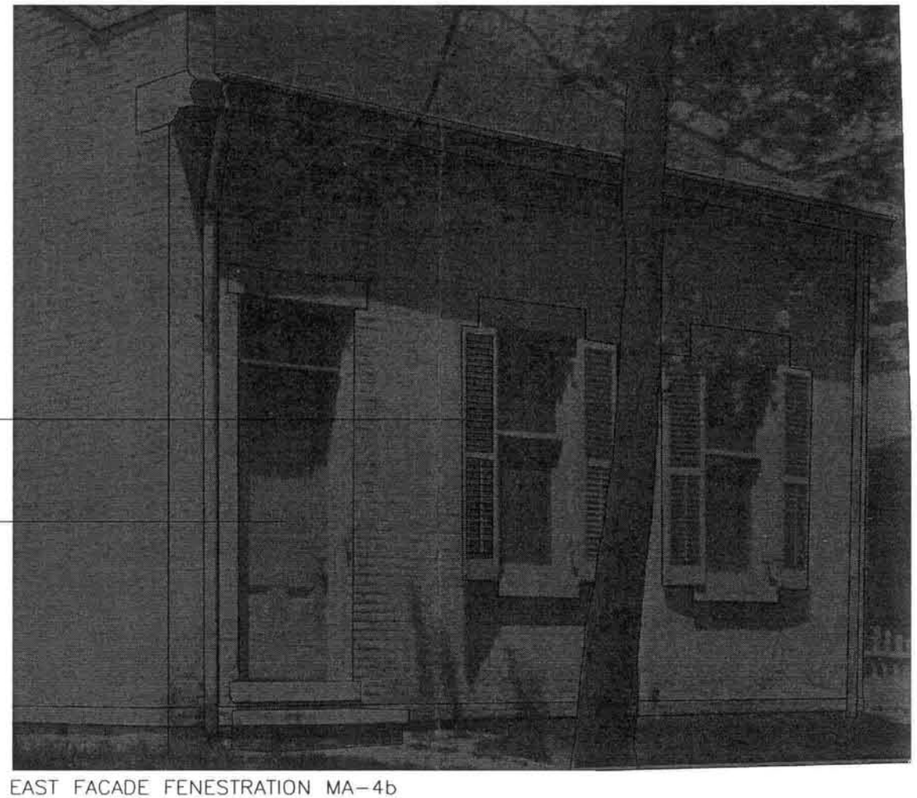


ONE SHUTTER ON SOUTH FACADE WINDOWS WITH 15 LOUVERS ON TOP AND BOTTOM PANELS

3 LIGHT TRANSOM ABOVE DOOR

SOUTH FACADE FENESTRATION MA-4a

TRANSOM DETAIL MA-4c



WOOD SHUTTERS WITH 18 UPPER LOUVERS AND 15 LOWER LOUVERS

THREE PANEL DOOR

EAST FACADE FENESTRATION MA-4b

DESIGNED: HABS TECH. REVIEW: DATE:	SUB SHEET NO. MA4	TITLE OF SHEET MATERIALS/DIMENSIONAL ANALYSIS BURCH HOUSE (HS-26) LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ___ OF ___

PART 2:

TREATMENT AND USE

TREATMENT OBJECTIVES

Reconstruction as defined by the *Secretary of Interior's Standards for the Treatment of Historic Properties* is "the act or process of depicting, by means of new construction, the form, features, and detailing of non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location." The goal of this type of preservation technique is to make the building appear as it did at its most significant time in history. For the Burch House that date is 1860, the year that Abraham Lincoln was nominated and elected to the presidency. Archeological investigation for this treatment is a key element providing vital information essential in making sound decisions. With the available maps, photographs, and historical data an accurate reconstruction is attainable to meet the *Secretary of Interior's Standards for Reconstruction.*

The Burch House is significant for its historical association with Abraham Lincoln and not its architecture per se. Its architecture is significant for its contribution to the neighborhood context and its relationship to the Lincoln Home. With many of the original neighborhood houses missing, the reconstructed Burch House will provide a vital link to presenting an enhanced 1860 experience for the visitor.

GUIDELINES AND STANDARDS FOR TREATMENT

The Secretary of Interior Standards for Reconstruction will be followed for the Burch house reconstruction. Those standards are:

1. Reconstruction will be used to depict vanished or non-surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture, and such reconstruction is essential to the public understanding of the property.
2. Reconstruction of a landscape, building, structure, or object in its historic location will be preceded by a thorough archeological investigation to identify and evaluate those features and artifacts, which are essential to an accurate reconstruction. If such resources must be disturbed, mitigation measures will be undertaken.
3. Reconstruction will include measures to preserve any remaining historic materials, features, and spatial relationships.
4. Reconstruction will be based on the accurate duplication of historic features and elements substantiated by documentary or physical evidence rather than on conjectural designs or the availability of different features from other historic properties. A reconstructed property will re-create the appearance of the non-surviving historic property in materials, design, color, and texture.
5. A reconstruction will be clearly identified as a contemporary re-creation.
6. Designs that were never executed historically will not be constructed.

It is not yet known if the first standard for reconstruction can be met. The determination will be made based in part upon the results of additional archeological testing scheduled for spring 2006. Archeological investigations to locate physical features of the building and site are essential to an accurate recreation. In conjunction with the historical research, the archeological information will be used to replicate the plan of the Burch House. Remaining material from the original structure uncovered during the archeological investigation such as the cistern, well and chimney pad will be documented and if practical incorporated into the reconstruction. These features will assist in the interpretation of the property and the neighborhood to 1860. The landscape and site will be an integral part of the recreation. Information is available through photographs, maps and historical data, which provide enough detail to address these features. It is recommended that the reconstruction should include parameters to avoid disturbing any documented features outside of the foundation that may be identified upon completion of the archeological report.

Accurate information pertaining to the historic interior does not exist and therefore will not be reconstructed. Instead the interior should be used for display and exhibit purposes relating to the interpretive themes as stated in the site's Long Rang Interpretive Plan. The structural and mechanical systems will be of modern design and concealed from the visitor. Several options for the interior layout are offered. Accessibility, energy efficiency and health and safety considerations will be addressed in the reconstruction without adversely impacting the visual congruency. Signage will be included to identify the Burch House as a reconstruction. The house will be reconstructed to its 1860 appearance in congruence with the time period of interpretation for Lincoln Home National Historic Site.

ALTERNATES FOR TREATMENT AND USE

Alternate designs for the Burch House were presented at the Value Analysis (VA) workshop, which was conducted on November 15, 2006 at Lincoln Home National Historic Site. The following options were presented at that workshop:

Accessibility

Two alternates were presented for accessible entries into the house. Alternate #1 proposed ramping up from the west to the western opening of the porch. Alternate #2 proposed ramping up along the south façade and entering at the western extent.

Proposed Basement

The basement floor plan was presented as a full basement that would be used for storage and MEP equipment. The proposed basement was intended to work for all of the proposed first and second floor options. Two access options were presented as well. Option #1 proposed accessing the basement through an exterior stairway that would be designed to appear as a cellar entry. Option #2 placed the stairway on the interior in small westernmost wing of the house.

Option A

Proposed First Floor Plan – Option A

In this option, the house would be broken up into two linear galleries both of which would have "cathedral" ceilings.

Proposed Second Floor – Option A

The second floor plan in this option is minimal because "cathedral" ceilings are in the majority of the space. The only portion of the house that would have a second floor level is directly over the porch and entry vestibule. This space would be accessed by a hatch.

Option B

Proposed First Floor Plan – Option B

Option B is similar to Option A in floor plan with the exception of adding a second floor level in lieu of having a "cathedral" ceiling.

Proposed Second Floor – Option B

The second floor would be accessed by way of a hatch in the entry vestibule.

Option C

Proposed First Floor Plan – Option C

Although there is not historic evidence pointing toward the original floor plan configuration, Option C explores inserting a historically appropriate stair within the entry vestibule in order to access the second floor.

Proposed Second Floor – Option C

The second floor plan is similar to Option B with the exception of the stair providing vertical circulation in lieu of the hatch.

Option D

Proposed First Floor Plan – Option D

Option D inserts a modern staircase with a code compliant rise and run within Gallery 1 in lieu of the historically appropriate stair proposed in Option C.

Proposed Second Floor Plan – Option D

The second floor configuration changes from Option C, as the stair in this option terminates in the middle of the attic space.

Ultimate Treatment Recommendations

After considering these alternates in the VA session, a hybrid design based on Option B was recommended by the design team. The recommended design incorporates a mix of crawl space and full basement in the below grade portion of the house. The westernmost portion of the basement floor plan would be full height and would house most MEP needs. The easternmost portion would be a crawl space. This design was recommended based on cost estimates and evaluating the space needs of the building.

On the first floor, it is recommended that the two galleries shown in Option B be combined into one larger space with a second floor above serving as a storage space and accessed by a hatch in the entry vestibule. Accessible entries to the house would be provided by ramp Option #1, which is recommended because it is less visually intrusive on the historic scene and it connects more directly with the proposed entry on Jackson Street. Vertical circulation Option #2 is also recommended, as it allows for direct access to the basement from the interior.

PROPOSED USES AND RECOMMENDATIONS

With the available information delineated in this report, the Burch House should be accurately interpreted on the exterior but without further information it is impossible to definitively recreate the interior configuration. The interior can be configured for display and exhibit purposes.

It is recommended that the Burch House be constructed using modern techniques for non-visible features but using materials that will allow its historic appearance to be clearly visible. This will fulfill the goal to accurately depict the exterior and allow for energy efficiency and budget conscious construction. The proposed wall type will utilize historically accurate brick, airspace, rigid insulation, and a vapor barrier and retarder on a wood or steel stud structure. The brickwork should be laid in a modified common bond pattern, with every 7th course a header bond, to match the documentation. The window and door designs should match the historic documentation. The windows should have true divided light sashes and interior piggyback storm windows. The roof will employ cedar shingles, Certigrade if possible, and designed with the appropriate ventilation provisions and treated with a fungicide to prevent organic growth. The site will be addressed historically as well. It is recommended that the historic relationship between the building and historic site and landscape features be re-established.

In the approach to design relating to the current building and safety codes, the Burch House should be treated as new construction. It should also be designed to include barrier free access. An accessible path, entry and passageway within the house should be provided to meet the Uniform Federal Accessibility Standards (UFAS). Any displays and exhibits should also be designed with these guidelines in mind. Signage should include verbiage clearly identifying the Burch House as a reconstruction.

Site

See sheet L1 – Ultimate Treatment for further information

Topography

The Burch site is relatively flat with the exception of a 645 square foot area of 5.5% slope midway through the site. Further archeological study is recommended to determine depth of foundation and sub-terrain structures or site features that may have been associated with the Burch House. There should be minimal disturbance to grades during reconstruction of the Burch House.

Accessibility

The National Park Service Management Policies state that "the National Park service will provide persons with disabilities the highest feasible level of physical access to historic properties that is reasonable, consistent with the preservation of each property's significant historic features...However, if it is determined that modification of particular features would impair a property's integrity and character in terms of the Advisory Council's regulations at 36 CFR 800.9, such modifications will not be made." In accordance with this policy, the Burch site and house should be made accessible from the public right of way onto the site and into the house itself.

Because the Burch site is relatively flat, with only a small area falling within the 5%-8.333% grade range, accessibility across the site should not be an issue nor is it an issue from the east or west points of access to this site. A universal access route is planned from an existing gate within the south fence line along Jackson Street. A walkway currently exists from this gate to the street. The grade of this walkway should be studied with more detailed survey data to insure that it meets a less than 5% grade for ADA accessibility. Through the gate, visitors would then follow the path to the rear porch of the Burch House and enter the house via ADA ramp with handrails.

Drainage
There are no apparent drainage issues on site. Roof drainage should flow to downspout and drain into the existing storm system or drain to daylight onto the adjacent Eighth and Jackson Streets and into the existing catch basin.

Circulation & Staging
Circulation recommendations are indicated in **L1-Ultimate Treatment.** Access from the rear of the property is critical in terms of the proximity to the Visitor Center. It is recommended that the front path and entry gate be reconstructed according to historical data as indicated in **L1-Ultimate Treatment** to allow for visitor traffic flow to Eighth Street sidewalk to adjacent Dean House and Lincoln Home Site across Eighth Street. A staging area to accommodate 25-30 visitors should be provided at the rear of the property.

Plant Materials
Two plantings have been identified through research of historic photographs: one deciduous tree and one deciduous shrub. The tree was located in front of the Burch House and appears to be an Oak (*Quercus spp.*) An unidentified deciduous shrub was located at the southwest corner of the house. Approximate locations for these historic plant materials are indicated in **L1-Ultimate Treatment**. It is recommended that appropriate plant material be installed in the historic plant locations. All other existing vegetation shall remain.

Site Elements
There is insufficient data for the front/east fence, however a four-board fence is recommended based on historical data on adjacent properties for the period of interpretation. The front pathway shall be reconstructed to connect to the front/Eighth Street sidewalk. There is insufficient historical data on the associated outbuilding to recommend a reconstruction.

Entry
After discussion of different entry possibilities during the Value Analysis session, it was suggested that patrons could be directed from the Visitor's Center to the Burch House as the first stop on the tour. Because of this movement pattern, it was concluded that the best possible entrance to the site would be from Jackson Street. This allows the most direct access to the visitor entry to the house, which would be located at the westernmost portion of the porch.

Structural Systems

Foundation	Reinforced concrete wall and spread footings.
Basement Walls	Reinforced concrete.
First Floor Framing	Prefabricated wood trusses and ¾" T&G plywood sub-floor. Steel beams and post columns as needed. Live Load Capacity - 100 psf.
Roof Framing	2 x Dimensional lumber framing and ¾" plywood decking. Roof framing supported by internal and external bearing walls. (2x4) Live Load Capacity - Minimum 20 psf.
Exterior Skin	Brick veneer over 2x4 wood stud walls.
Steps and Porches	Stone.
Chimneys	Brick with concrete foundation.

It is recommended that the Burch House be constructed using modern structural materials. The following structural systems are considered appropriate for the demands of the structure for this house.

Foundation

It is proposed that the house have a partial basement and a crawlspace. The basement walls and crawlspace walls may be constructed of reinforced concrete bearing on a concrete footing, at least 2 feet in width and 1 foot in depth. The basement floor should extend into the sub-grade sufficiently to produce a head clearance in the basement of at least 8 feet with the footings being directly below the floor slab. The basement floor slab may be 4 inches thick and placed over a minimum of 4 inches of compacted granular material. The crawl space footings must extend down to frost depth and pea gravel over vapor barrier can be used to fill the crawlspace to within 2 feet of the bottom of the floor framing. Columns and masonry piers are to bear on square reinforced concrete footing pads, sized to meet the loading requirements.

The soils report, as submitted by PSI, dated September 6, 2005, indicates that the allowable net soil pressure for the Burch site is 2,000 pounds per square foot. Exterior footings should extend at least 36 inches below outside final grade to protect against freezing. According to this report, the groundwater table at the time of the field exploration was estimated to be 9 to 11 feet below existing grade. Due to seasonal fluctuations in the water table, it is possible that some water may be encountered during construction of the Burch House basement however; this is not expected to present unusual construction conditions. The site may require some engineered fill to be placed to bring the site to the desired final sub-grade elevation and this will reduce the depth of the excavation of the basement relative to the present existing grade elevation. It is recommended that the basement walls be water-proofed and the crawlspace walls be damp-proofed.

First Floor Framing

It is proposed that the first floor be structured to meet a design live load of 100 pounds per square foot. This can be accomplished with standard dimensional lumber floor joists supported by wood beams along the interior ends and by the foundation wall at the perimeter

of the basement. Where required, wood and steel beams may be supported by steel columns bearing on square reinforced concrete column footings. Over the crawlspace, it is proposed that the floor beams and joists be supported by 16-inch square masonry piers, bearing on square concrete footing pads. It is recommended that the floor deck be ¾" tongue and groove plywood, glued and screwed to the floor framing.

Roof Framing
The roof should be structured to meet a design live load of 20 pounds per square foot. It is recommended that the roof framing consist of standard dimensional lumber rafters supported by wood beams and a ridge beam over the gallery room on the east side of the house and by the exterior stud walls at the perimeter of the house. At the ends of interior beams, double and triple studs should be provided. In certain areas, metal plate, pre-fabricated trusses may be used in lieu of dimensional lumber rafters. Along the outer edge of the southern porch area, the roof framing can be supported by wood beams, which in turn are supported on wood posts. It is recommended that exterior exposed wood members to be pressure treated. It is recommended that all exterior exposed wood members be pressure treated. It is proposed that the roof sheathing be ¾" plywood panels with spacers.

Walls
All walls above grade may be constructed of standard 2x4 dimensional lumber. The sill plate along the exterior perimeter on the top of the basement wall should be pressure treated. Headers over window and door openings can be double 2x8 members nailed together with a ½ inch plywood spacer. It is recommended that the entire exterior of the house be sheathed with ¾ inch nominal plywood or OSB board.

Building Environmental Systems
As described by the Guidelines and Standards for Treatments, the interior mechanical and electrical systems will be of contemporary design and concealed to the visitor from the exterior. The proposed use of the building will be for public display and exhibit purposes and shall meet acceptable standards for human occupancy.

Building environmental systems include; heating, ventilation, cooling/dehumidification, humidification, illumination, power distribution, acoustics, and, communications. Fire detection, alarm and suppression, intrusion detection and alarm, and automatic temperature controls are also major building systems that are included in modern facilities. The selection of these systems is dependant on the on available infrastructure and the costs to construct the required utilities.

The fire alarm/intrusion detection and automatic temperature controls systems must be compatible with campus-wide monitoring systems. A Honeywell/Ademco Vista 128FB combined fire/security system and an Invensys (Barber Colman) Network 8000 DDC system are the campus systems that must be interfaced to.

The HVAC system serving the Burch House should be designed to comply with *ASHRAE Standard 55 – Thermal Environmental Conditions for Human Occupancy*, and not to museum standards. The design winter heating temperature will be 71°F with a range from 68-75°F, while the design cooling temperature will be 76°F with a range from 73-79°F. Relative humidity levels should be designed to a maximum of 45% RH in the summer and a minimum of 30% RH in the winter. The Park does not require any filtration level above 30% efficiency. Any artifacts requiring tighter humidity control will be placed in humidified cases.

The design of the building envelope, HVAC, service water heating, lighting and power distribution systems should be in compliance with *ANSI/ASHRAE /IES Standard 90.1-Energy Standard for Buildings Except Low Rise Residential Buildings*. This standard is the basis for most of today's energy codes, including the International Codes. The standard does allow exceptions for both historic buildings (to allow for single pane glass) and for display lighting energy.

The most common HVAC system in use at Lincoln Home NHS is a residential gas fired furnace with an add-on DX coil. This type of system requires an outdoor air-cooled condensing unit. The outdoor unit is problematic in two ways; the first is that the unit is exposed to the outdoor elements and typically has a life span of ten to fifteen years, while the second is that it houses both a compressor and fan which are noisy and limit the use of the adjacent outdoor space. While the *Secretary of the Interior's Standards for Reconstruction* requires that the reconstruction be clearly identified as a contemporary recreation, the intent is to recreate the historic scene of the 1860's. Placing outdoor equipment adjacent to the building adds both a visual and an audible element that did not exist at that time, compromising the visitor's experience.

The system under consideration for use at the Burch House is a geothermal heat pump system. Geothermal heat pumps use indoor "air-to-water" heat pumps piped to a series of underground loops or wells. The underground piping is known as a "geo-exchanger", where heat is transferred to and from the relatively stable earth. The average ground temperature for Springfield is approximately 55° F. During the summer cooling season, the heat pumps remove the heat from the air and reject it to the water loop, typically raising the water temperature to 90°. The heat is efficiently rejected to the ground. An air-to-air heat pump would require much higher condensing temperatures; lowering its overall efficiency, to reject the same quantity of heat to 93° air. Conversely, when heating, approximately 40° F water is circulated through the 55° F ground, allowing the heat pumps to extract heat from the water loop and supply it to the space.

The geo-exchanger will consist of four, 300 feet deep, 4" diameter boreholes. Each borehole contains two 1-1/4" diameter polyethylene pipes, grouted in place the entire depth. The boreholes are spaced approximately 20 feet apart to minimize each borehole affecting the others. The top of the boreholes and the horizontal distribution piping will be installed at least 36 to 42" below grade.

We considered two options for the locations of the well field for the Burch House. Option 1 consisted of installing the four holes linearly along the side of the home. This option has the advantage of limiting any additional archaeological investigation to the area directly adjacent to the Burch House. The disadvantage is that the work must be carefully coordinated with the construction of the house.

The second option, which is indicated on the mechanical site plan (**Sheet MP1**) is to locate the four boreholes in a rectangle to the west of the building. This option has the advantage of allowing the well field to be constructed independent of the building construction, but may require more archaeology.

Life/Fire Safety Issues

Although the Burch House was historically a residence, it will be reconstructed as a public building with gallery functions and should be treated as such. To this end, life safety codes for this occupant group should be followed. This includes adequate headroom in the basement and at the stairs, sufficient rise and run for interior stairs, minimum door and stair width requirements, compliant signage, and two available fire exits. The building should also be sprinklered throughout.

ULTIMATE TREATMENT – BURCH HOUSE (HS-26)

LINCOLN HOME NATIONAL HISTORIC SITE

DRAWING SYMBOLS:

CONSTRUCTION/DEMOLITION

- COLUMN GRID
- NEW CONSTRUCTION–REFERENCE TO PARTITION TYPE
- ELEVATION DATUM POINT
- ROOM NAME AND NUMBER
- DEMOLITION PLAN NOTE
- WINDOW NUMBER
- CONSTRUCTION PLAN NOTE
- ALIGN DESIGNATED SURFACES
- REVISION REFERENCE

REFLECTED CEILING PLAN

- ACOUSTICAL CEILING AND GRID
- FLUORESCENT LIGHT FIXTURE
- NIGHT LIGHT/24 HOUR CIRCUIT
- EMERGENCY LIGHT
- CEILING MOUNTED FLUORESCENT FIXTURE
- PENDANT MOUNTED FLUORESCENT FIXTURE
- COMPACT RECESSED FLUORESCENT FIXTURE
- PENDANT/CEILING MOUNTED FIXTURE
- TRACK LIGHTING
- RECESSED DOWN LIGHT
- CEILING MOUNTED WALL WASHER
- WALL MOUNTED FIXTURE
- LIGHT SWITCH
- 3-WAY SWITCH
- DIMMER SWITCH
- SPRINKLER HEAD
- EXISTING SPRINKLER HEAD
- WALL MOUNTED SPRINKLER HEAD
- ACCESS PANEL
- SUPPLY DUCT
- RETURN DUCT
- LINEAR DIFFUSER
- EXHAUST FAN
- SPEAKER
- SMOKE DETECTOR
- SECURITY CAMERA
- MOTION DETECTOR
- THERMOSTAT
- PHONE JACK

ARCHITECTURAL ABBREVIATIONS:

A
- A/C AIR CONDITIONING
- A.C.T. ACOUSTICAL CEILING TILE
- ACOUS. ACOUSTICAL
- ADJ. ADJUSTABLE
- ALUM. ALUMINUM
- ALT. ALTERNATE
- ARCH. ARCHITECT/ARCHITECTURAL
- A.F.F. ABOVE FINISHED FLOOR
- A.T.A. ADVANCED TECHNOLOGY AUDITORIUM
- A/V AUDIO/VISUAL

B
- BD. BOARD
- BITUM. BITUMINOUS
- BLDG. BUILDING
- BSMT. BASEMENT

C
- CAB. CABINET
- C.T. CERAMIC TILE
- C.B. CHALKBOARD
- C.G. CORNER GUARD
- CLG. CEILING
- COL. COLUMN
- CONC. CONCRETE
- CONST. CONSTRUCTION
- CONT. CONTINUOUS
- C.O. CONTRACTING OFFICER
- CONTR. CONTRACTOR
- C.J. CONTROL JOINT
- C.M.U. CONCRETE MASONRY UNIT

D
- DEPT. DEPARTMENT
- DET. DETAIL
- D.F. DRINKING FOUNTAIN
- DIA. DIAMETER
- DIM. DIMENSION
- DISP. DISPENSER
- D.M.B. DRY MARKER BOARD
- DN DOWN
- DS DOWN SPOUT
- DWG. DRAWING

E
- EA. EACH
- E.J. EXPANSION JOINT
- EL. ELEVATION
- ELEC. ELECTRIC/ELECTRICAL
- ELEV. ELEVATOR
- ENGR. ENGINEER
- EQ. EQUAL
- EQUIP. EQUIPMENT
- E.W.C. ELECTRIC WATER COOLER
- EXIST. EXISTING
- EXT. EXTERIOR
- E.I.F.S. EXTERIOR INSUL. FINISH SYSTEM

F
- FAB. FABRICATE/FABRICATOR
- F.D. FLOOR DRAIN
- F.E. FIRE EXTINGUISHER
- F.E.C. FIRE EXTINGUISHER CABINET
- F.H.C. FIRE HOSE CABINET
- FIN. FINISH(ED)
- FLR. FLOOR
- FLUOR. FLUORESCENT
- F.O.B. FACE OF BLOCK
- F.O.BR. FACE OF BRICK
- F.O.C. FACE OF CONCRETE
- F.O.F. FACE OF FINISH
- F.O.G. FACE OF GYPSUM BD.
- F.O.S. FACE OF STUD
- FPRF. FIREPROOF
- FT. FOOT/FEET
- F.V. FIELD VERIFY

G
- GA. GAUGE
- GEN. GENERAL
- GL. GLASS
- G.W.B. GYPSUM WALL BOARD

H
- H. HEIGHT
- H.B. HOSE BIBB
- H.C. HANDICAP
- HDWR. HARDWARE
- H.M. HOLLOW METAL
- HORIZ. HORIZONTAL
- HVAC HEATING, VENTILATION & A.C.

I
- I.C.S. INTERACTIVE CLASSRM. STUDIO
- I.D. INSIDE DIAMETER
- INFO. INFORMATION
- INCAN. INCANDESCENT
- INSUL. INSULATION
- INT. INTERIOR

J
- JAN. JANITOR
- JT. JOINT

L
- LAV. LAVATORY
- LB. POUND
- L.H. LEFT HAND

M
- MAX. MAXIMUM
- M.C.O. MULTIMEDIA COMMUNICATION OUTLET
- MIPSIT MULTIMEDIA INSTRUCTIONAL PORTABLE SYSTEM (TRADE-MARK)
- MECH. MECHANICAL
- MTL. METAL
- MFR. MANUFACTURER(ING)
- M.H. MANHOLE
- MIN. MINIMUM
- MISC. MISCELLANEOUS
- M.O. MASONRY OPENING

N
- N.A.F. NO APPLIED FINISH
- N.I.C. NOT IN CONTRACT
- NO. NUMBER
- N.P.S. NATIONAL PARK SERVICE
- N.T.S. NOT TO SCALE

O
- O.A. OVER ALL
- O.C. ON CENTER
- O.D. OUTSIDE DIAMETER
- O.H. OPPOSITE HAND
- OPG. OPENING

P
- P. LAM PLASTIC LAMINATE
- PLAS. PLASTER
- PWD. PLYWOOD
- PR. PAIR
- PREFAB. PREFABRICATED
- PT. BD. PARTICLE BOARD
- PTD. PAINTED

Q
- Q.T. QUARRY TILE

R
- R RADIUS
- R.C.P. REFLECTED CEILING PLAN
- R.D. ROOF DRAIN
- REF. REFERENCE
- REFL. REFLECTED
- REINF. REINFORCE
- RESIL. RESILIENT
- R.H. RIGHT HAND
- RM ROOM
- R.O. ROUGH OPENING

S
- SCHED. SCHEDULE
- S.D. SOAP DISPENSER
- SECT. SECTION
- SHT. SHEET
- SIM. SIMILAR
- SPEC. SPECIFICATION
- SQ. SQUARE
- S.F. SQUARE FEET
- S.S. STAINLESS STEEL
- STD. STANDARD
- STOR. STORAGE
- STRUCT. STRUCTURAL
- SUSP. SUSPEND(ED)
- SYM. SYMMETRICAL

T
- T. THICKNESS
- T.B. TACKBOARD
- T&B TOP AND BOTTOM
- T.C. TOP OF CURB
- TECH. TECHNICAL
- TEL. TELEPHONE
- TEMP. TEMPERED
- T&G TONGUE AND GROOVE
- T.P. TOP OF PAVEMENT
- TYP. TYPICAL
- T.W. TOP OF WALL

U
- UTIL. UTILITY
- U.N.O. UNLESS NOTED OTHERWISE
- U.V. UNIT VENTILATOR

V
- V.C.T. VINYL COMPOSITION TILE
- VERT. VERTICAL
- VEST. VESTIBULE
- V.I.F. VERIFY IN FIELD
- V.T.C. VIDEO TELECONFERENCING

W
- W WIDE
- W/ WITH
- WD. WOOD
- W.H. WATER HEATER
- W/O WITHOUT
- WT. WEIGHT

MISCELLANEOUS
- ø DIAMETER
- ∠ ANGLE
- ℄ CENTER LINE
- # NUMBER
- PL PLATE

DRAWING REFERENCES

- SECTION CUT REFERENCE: DETAIL NUMBER / SHEET CUT ON
- PLAN REFERENCE: DETAIL NUMBER / SHEET NUMBER
- ELEVATION REFERENCE: DRAWING NUMBER / SHEET CUT ON
- NORTH ARROW

MATERIALS LEGEND:

- EARTH
- FACE BRICK
- GRANULAR FILL
- CUT STONE
- CONCRETE
- WOOD, FRAMING
- GYPSUM BOARD OR PLASTER
- WOOD SHIM
- CONCRETE MASONRY UNIT
- GLASS
- FINISHED WOOD
- GYPSUM BOARD OR PLASTER
- WATERPROOF MEMBRANE
- RIGID INSULATION
- BLANKET INSULATION
- PLYWOOD

INDEX OF DRAWINGS

SUB SHEET	TITLE OF SHEET
	COVER SHEET
AL1	ALTERNATE LAYOUTS
AL2	ALTERNATE LAYOUTS
AL3	ALTERNATE LAYOUTS
L1	SITE PLAN
A1	FLOOR PLANS
A2	EXTERIOR ELEVATIONS
A3	SITE SURVEY
A4	SITE PLAN
S1	FOUNDATION PLAN
S2	1ST FLOOR FRAMING PLAN
S3	ROOF FRAMING PLAN
MP1	SITE PLAN
M0	SYMBOLS & ABBREVIATIONS
M1	BASEMENT PLAN
M2	FIRST FLOOR PLAN
M3	HVAC DETAILS
M4	HVAC SCHEMATICS
M5	HVAC SCHEDULES
P0	SYMBOLS & ABBREVIATIONS
P1	BASEMENT PLAN
P2	FIRST FLOOR PLAN
E0	SYMBOLS & ABBREVIATIONS
E1	BASEMENT PLAN
E2	FIRST FLOOR PLAN

BUILDING CODE DATA/ANALYSIS:

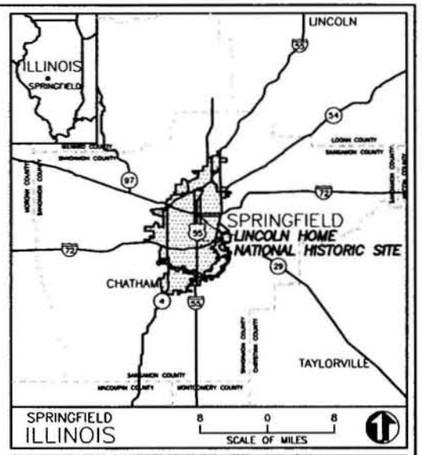
BUILDING:
WOOD FRAME – ASSEMBLY
1 STORY PLUS PARTIAL BASEMENT AND ATTIC
FULLY SPRINKLERED

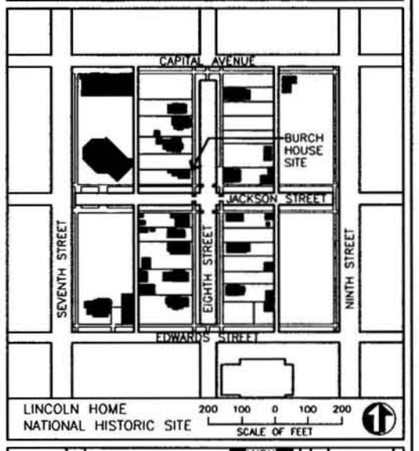
BUILDING AREA:
305 S.F. – PARTIAL BASEMENT
836 S.F. – FIRST FLOOR
1141 S.F. – TOTAL

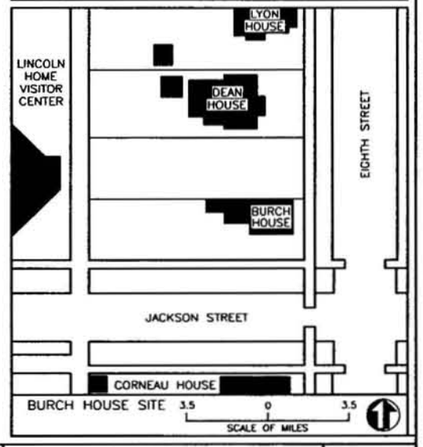
CODE DATA (PER 2000 INTERNATIONAL BUILDING CODE)
USE GROUP
A-3

CONSTRUCTION TYPE
TYPE V-A (PER 602.5)

OCCUPANCY LOAD
169 OCCUPANTS (PER 1003.2.2.2)







A/E FIRM	Mark	Sheet	REVISION	Date	Initial
PRIME/ARCH: RATIO ARCHITECTS, INC. INDIANAPOLIS, IN					
STRUCTURAL: LAWSON ELDER, INC. CARMEL, IN					
CIVIL/MEP: M.F. LENZ CO. JOHNSTOWN, PA					

QUALITY DESIGN CERTIFICATION

RECOMMENDED: _____ Project Manager _____ Date

APPROVED: _____ Superintendent _____ Date

ULTIMATE TREATMENT

UNITED STATES
DEPARTMENT OF THE INTERIOR

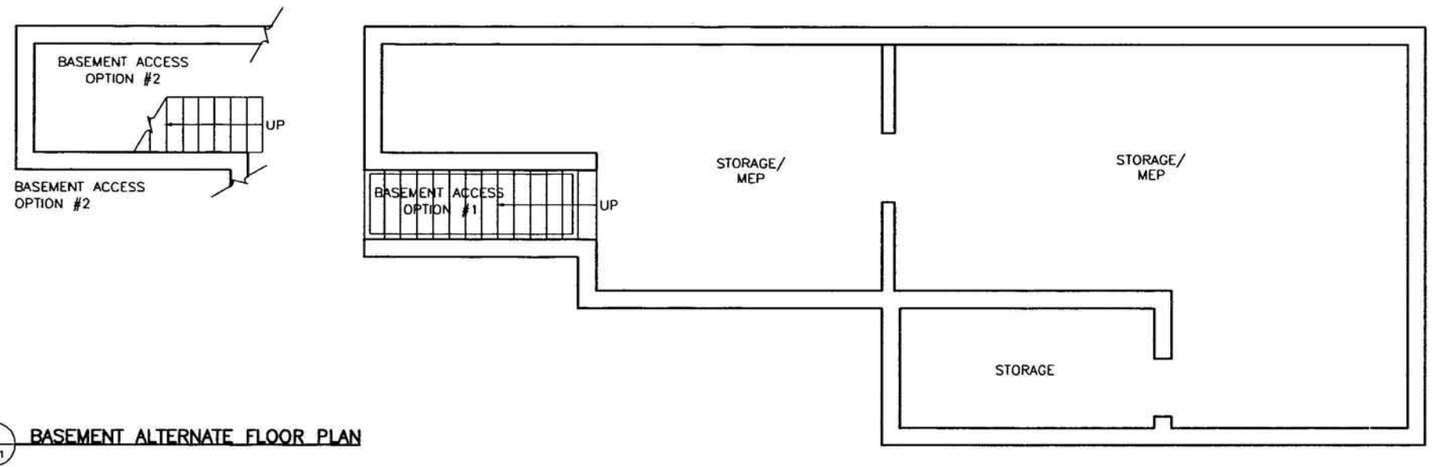
NATIONAL PARK SERVICE

TITLE OF DRAWING
COVER SHEET
LOCATION WITHIN PARK
BURCH HOUSE (HS-26)
NAME OF PARK
LINCOLN HOME
NATIONAL HISTORIC SITE

REGION: MIDWEST | COUNTY: SANGAMON | STATE: ILLINOIS

DRAWING NO. 449 80094

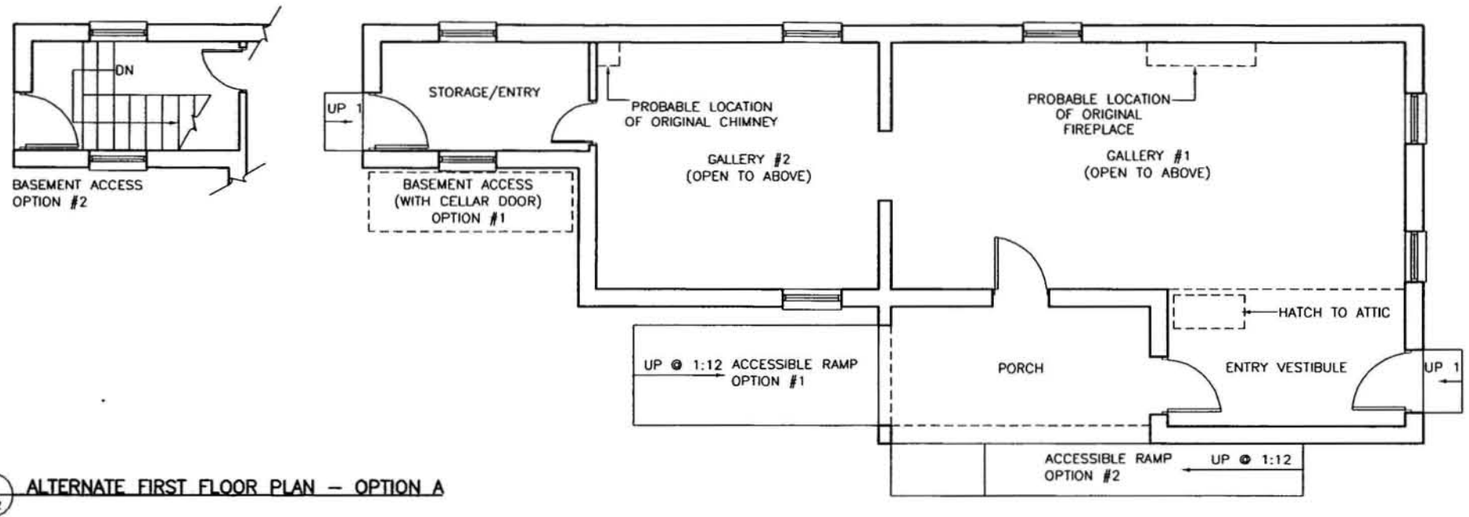
PKG. NO. ____ SHEET ____ OF ____



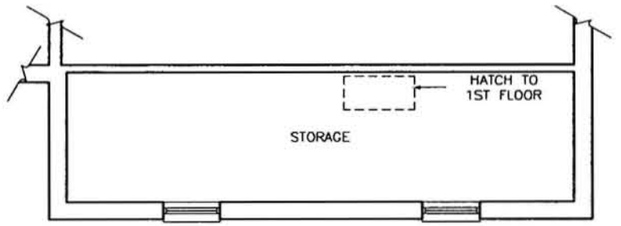
1/AL1 BASEMENT ALTERNATE FLOOR PLAN

4 0 4 8
SCALE OF FEET

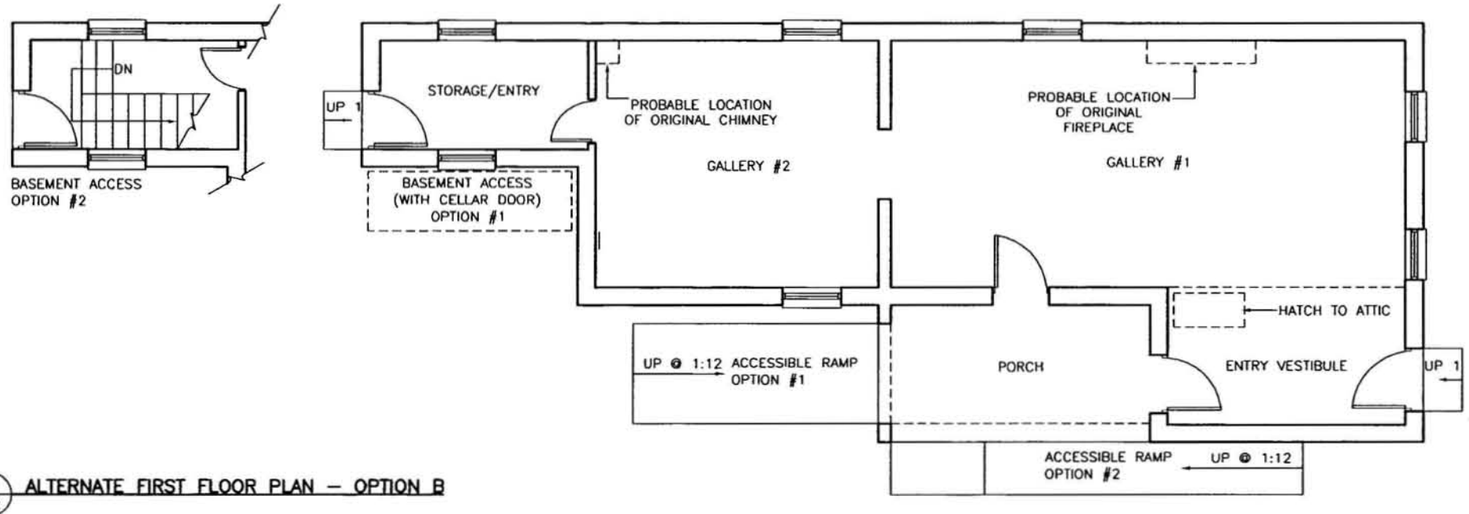
DESIGNED: PADD TECH. REVIEW: DATE:	SUB SHEET NO. AL1	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) ALTERNATE LAYOUTS LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ___ OF ___



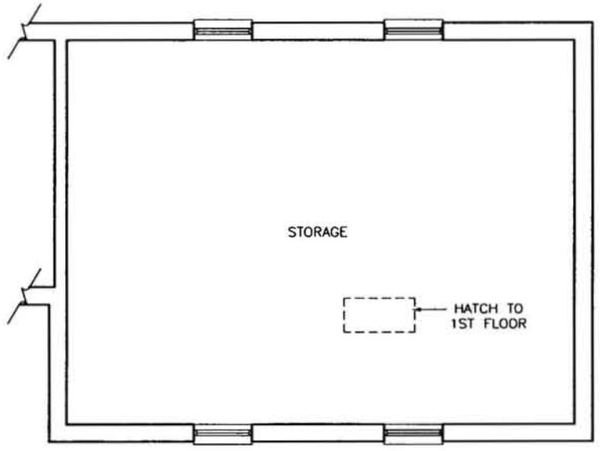
1 AL2 ALTERNATE FIRST FLOOR PLAN – OPTION A



2 AL2 ALTERNATE SECOND FLOOR PLAN – OPTION A



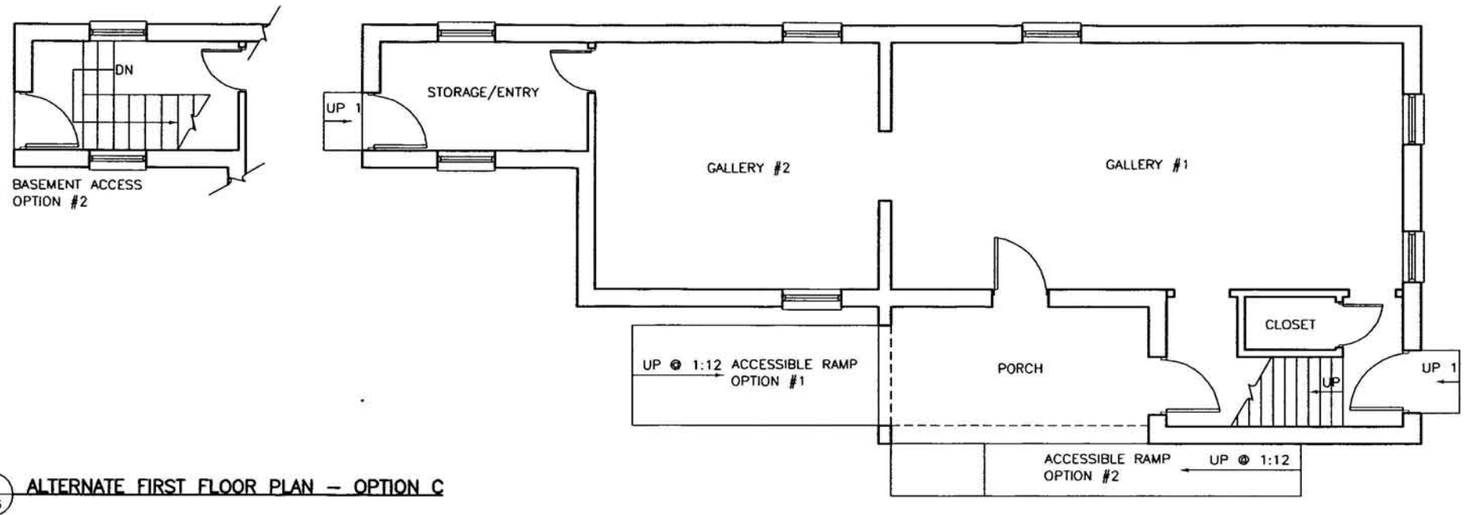
3 AL2 ALTERNATE FIRST FLOOR PLAN – OPTION B



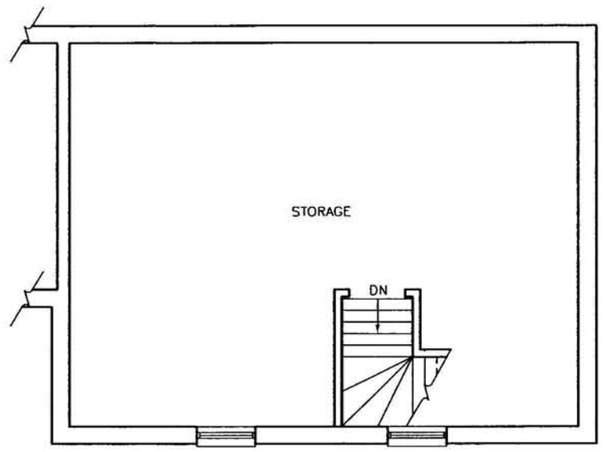
4 AL2 ALTERNATE SECOND FLOOR PLAN – OPTION B

4 0 4 8
SCALE OF FEET

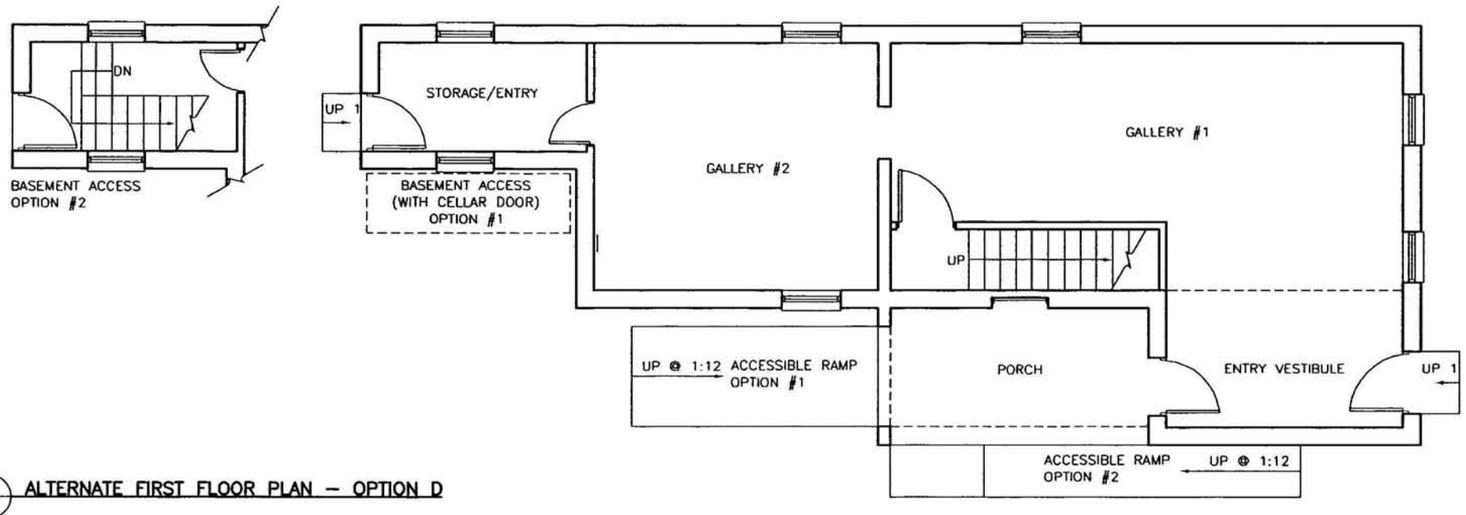
DESIGNED: HABS / TECH. REVIEW: / DATE:	SUB SHEET NO. AL2	TITLE OF SHEET: ULTIMATE TREATMENT BURCH HOUSE (HS–26) ALTERNATE LAYOUTS LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 / PMIS/PKG NO. / SHEET ___ OF ___



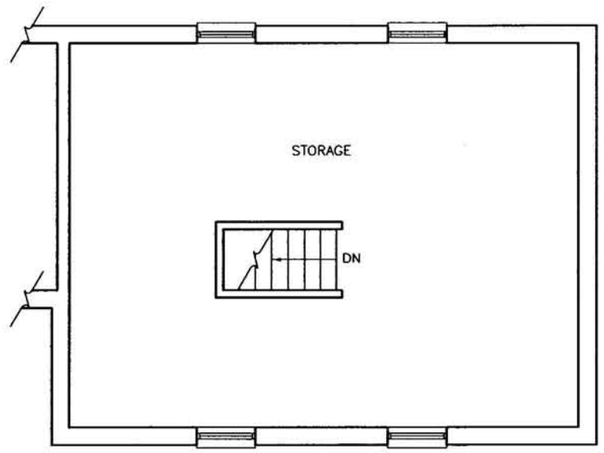
1 AL3 ALTERNATE FIRST FLOOR PLAN – OPTION C



2 AL3 ALTERNATE SECOND FLOOR PLAN – OPTION C



3 AL3 ALTERNATE FIRST FLOOR PLAN – OPTION D



4 AL3 ALTERNATE SECOND FLOOR PLAN – OPTION D

4 0 4 8
SCALE OF FEET

DESIGNED: EADD TECH. REVIEW: DATE:	SUB SHEET NO. AL3	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS–26) ALTERNATE LAYOUTS LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 / 80094 PMIS/PKG NO. SHEET ___ OF ___

GROUND LIGHT

GROUND LIGHT

GROUND LIGHT

Approximate Location of Cistern

Gate to Remain

Approximate Location of Burch House

ADA Accessible Route

S 88°02'11" E - 152.69'

EIGHTH STREET

Picket Fence to be Reconstructed

6'

N 1°58'03" E

40.18'

ALLEY

S 1°58'03" W

40.17'

Four-board Fence to be Reconstructed

152.68' (152.67' CMT)

Gate to Remain

JACKSON STREET

LEGEND

APPROXIMATE BUILDING FOOTPRINT

ACCESS POINT

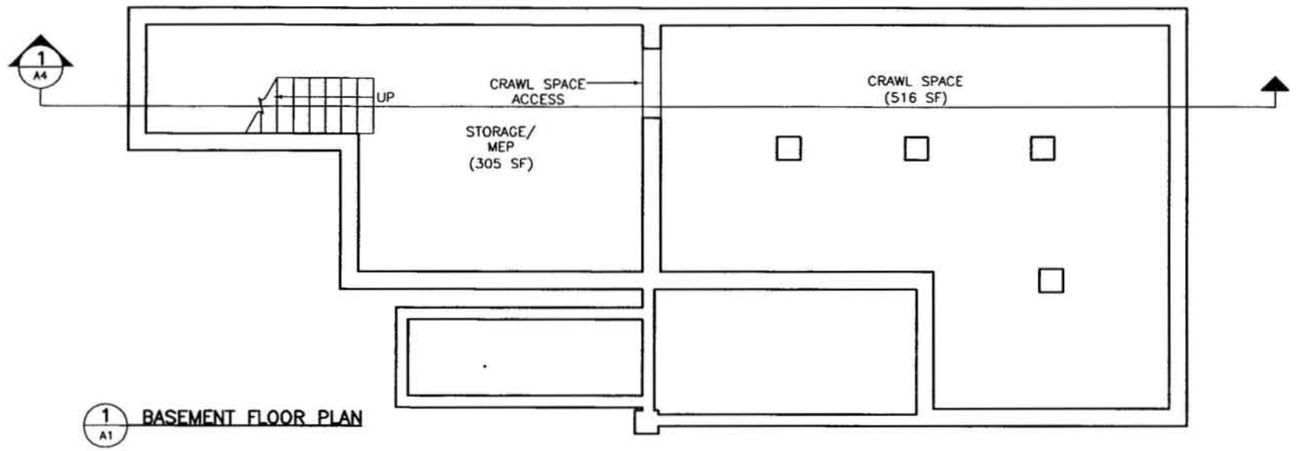
PROPOSED VEGETATION

EXISTING TREE

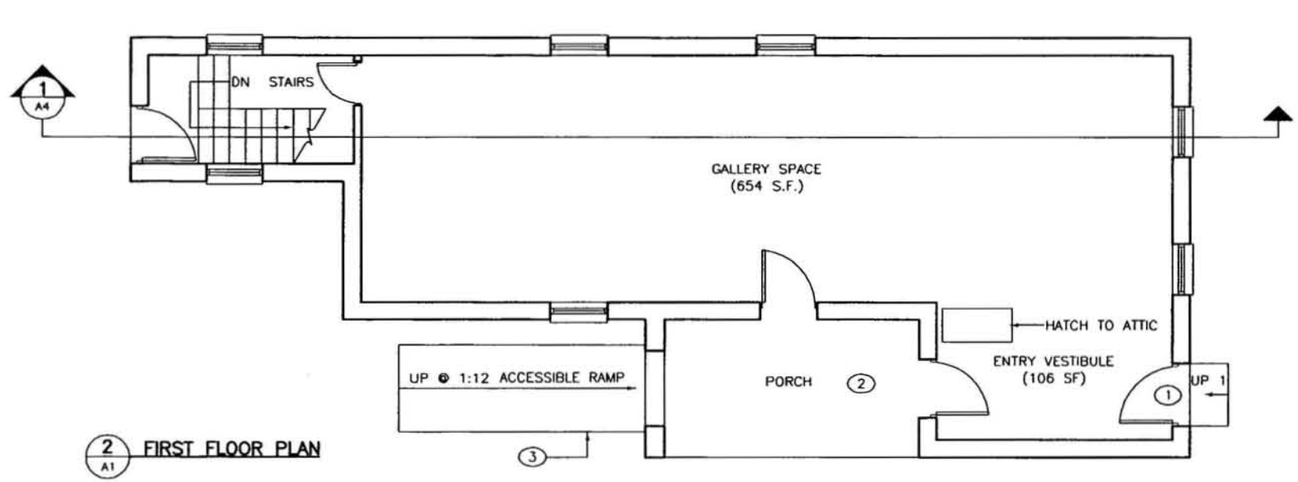
10 0 10 20

SCALE OF FEET
(UNLESS OTHERWISE NOTED)

DESIGNED: CADD TECH. REVIEW: DATE:	SUB SHEET NO. L1	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS–26) LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ___ OF ___



1 A1 BASEMENT FLOOR PLAN

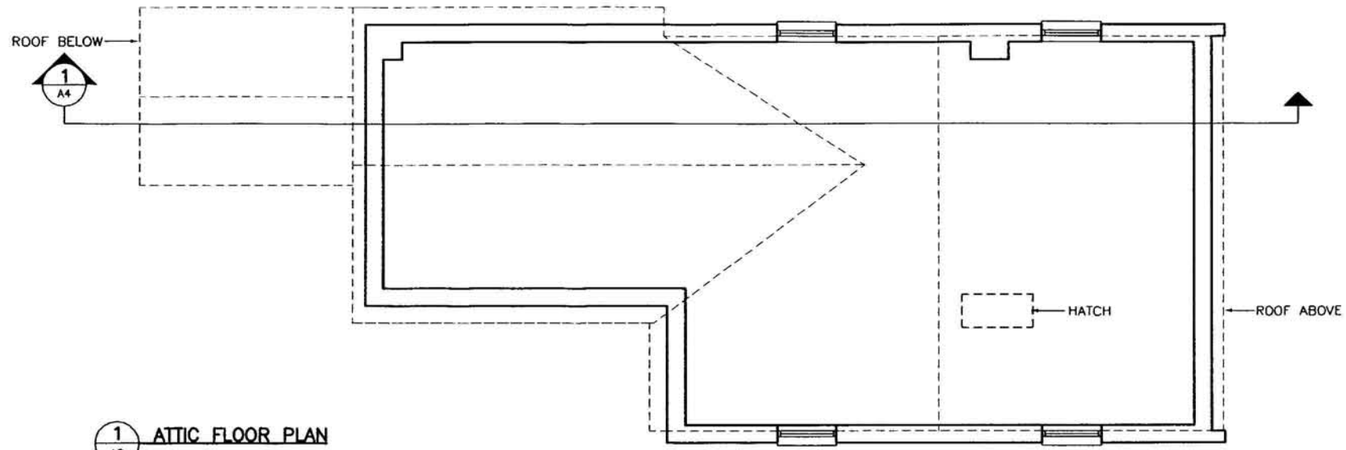


2 A1 FIRST FLOOR PLAN

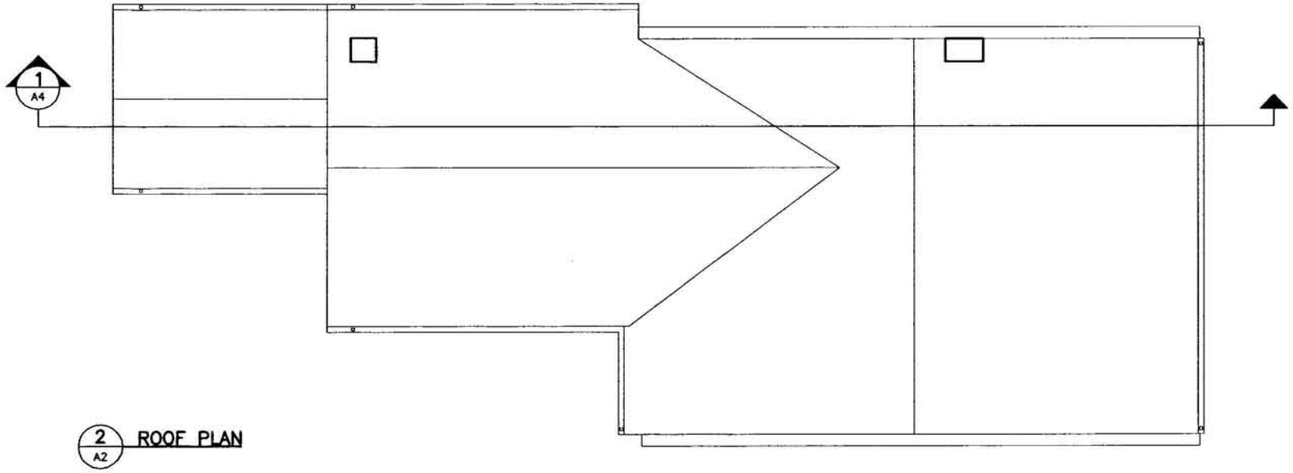
KEY NOTES
1. FRONT (EAST) DOOR TO SERVE AS EXIT ONLY
2. HOUSE TO BE ENTERED FROM BACK PORCH
3. WOOD PLANK ACCESSIBLE RAMP

4 0 4 8
SCALE OF FEET

DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD	A1	ULTIMATE TREATMENT BURCH HOUSE (HS-26) FLOOR PLANS	449
TECH. REVIEW:		LINCOLN HOME NATIONAL HISTORIC SITE	80094 PMIS/PKG NO.
DATE:			SHEET ___ OF ___



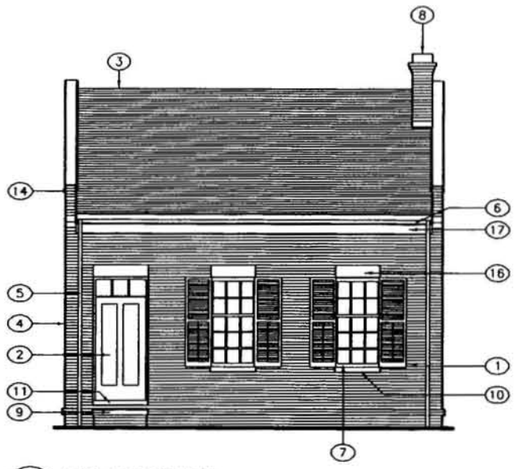
1 A2 ATTIC FLOOR PLAN



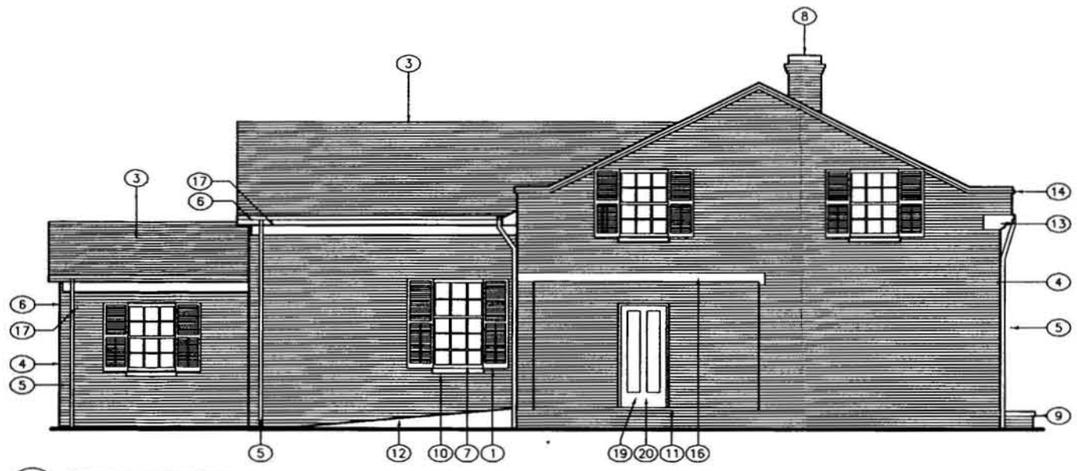
2 A2 ROOF PLAN

4 0 4 8
SCALE OF FEET

DESIGNED: EXOD TECH. REVIEW: DATE:	SUB SHEET NO. A2	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) FLOOR PLANS LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET OF

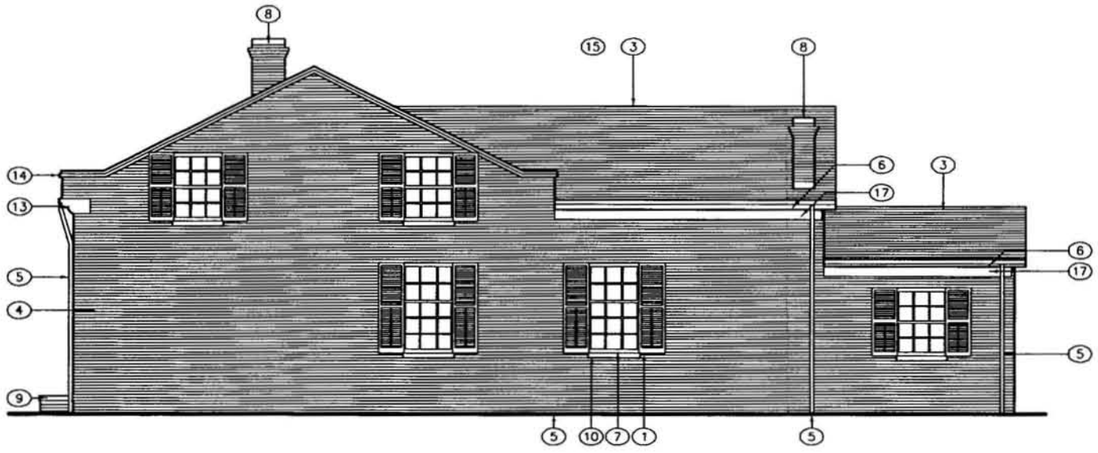


1 A2 EAST ELEVATION



2 A2 SOUTH ELEVATION

3 A2 WEST ELEVATION



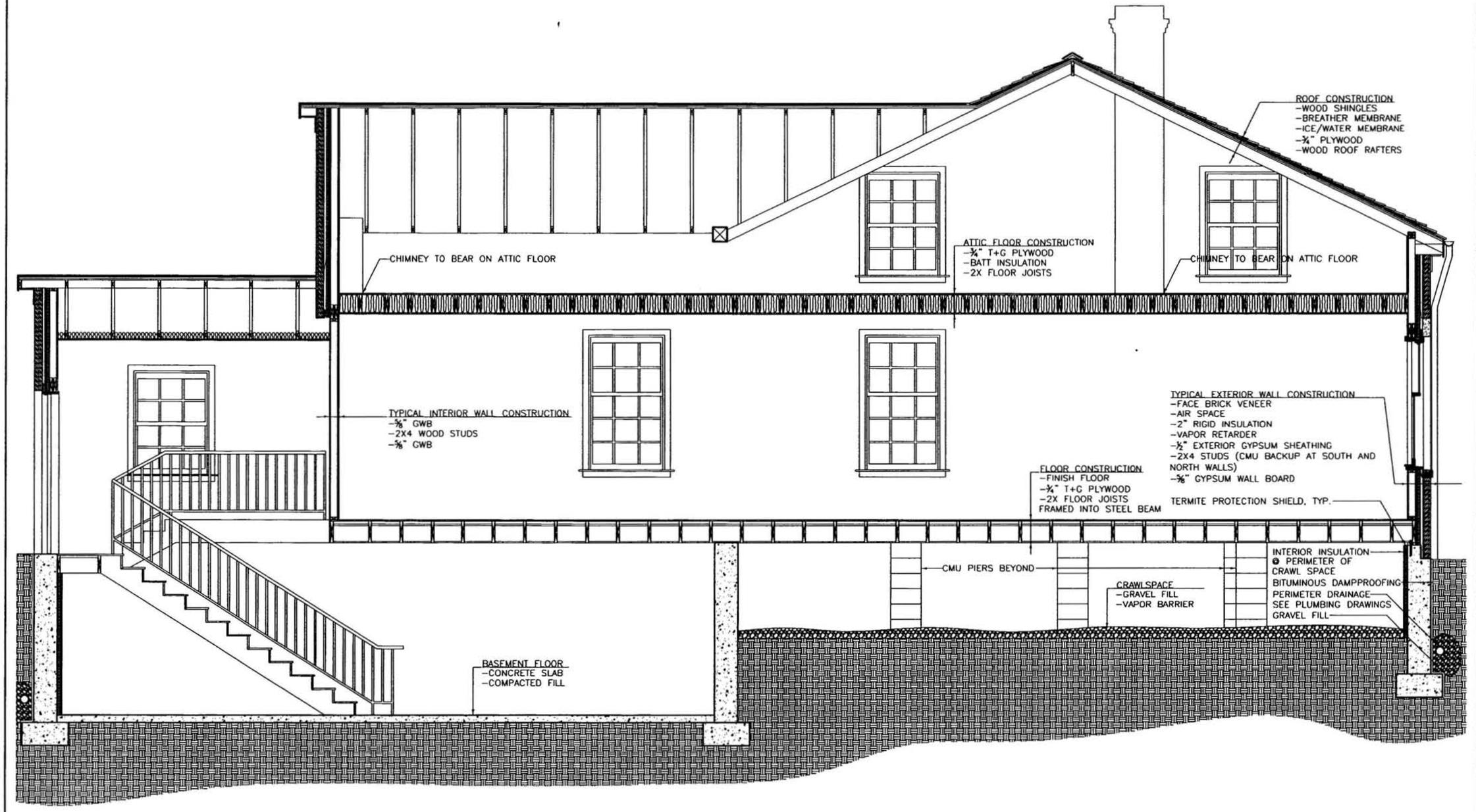
4 A2 NORTH ELEVATION

KEY NOTES

1. WOOD SHUTTERS, TYP.
2. WOOD TWO PANEL DOOR WITH TRANSOM ABOVE
3. WOOD SHINGLE ROOF
4. BRICK VENEER CONSTRUCITON, TYP.
5. COPPER GUTTER SYSTEM
6. WOOD FASCIA BOARD
7. WOOD DOUBLE HUNG WINDOW, TYP.
8. BRICK CHIMNEY WITH COPPER CAP AND STEP FLASHING
9. STONE PORCH STEP
10. STONE WINDOW SILL, TYPICAL
11. STONE DOOR THRESHOLD
12. WOOD PLANK ACCESSIBLE RAMP
13. DECORATIVE MASONRY CORBEL
14. BRICK CORBELLED PARAPET
15. LOCATION OF BRICK CHIMNEY
16. STONE LINTEL
17. WOOD FRIEZE BOARD
18. WOOD LATTICE THAT IS VISIBLE AT THIS LOCATION IN HISTORIC PHOTOS IS NOT REQUIRED AS THIS OPENING IS TO BE USED TO ACCESS THE HOUSE
19. WOOD TWO PANEL DOOR
20. COLUMN THAT IS VISIBLE AT HISTORIC PHOTOS IS BELIEVED TO HAVE BEEN ADDED AFTER CONSTRUCTION IN ORDER TO SUPPLIMENT THE BEAM SUPPORTING THE OPENING

4 0 4 8
SCALE OF FEET

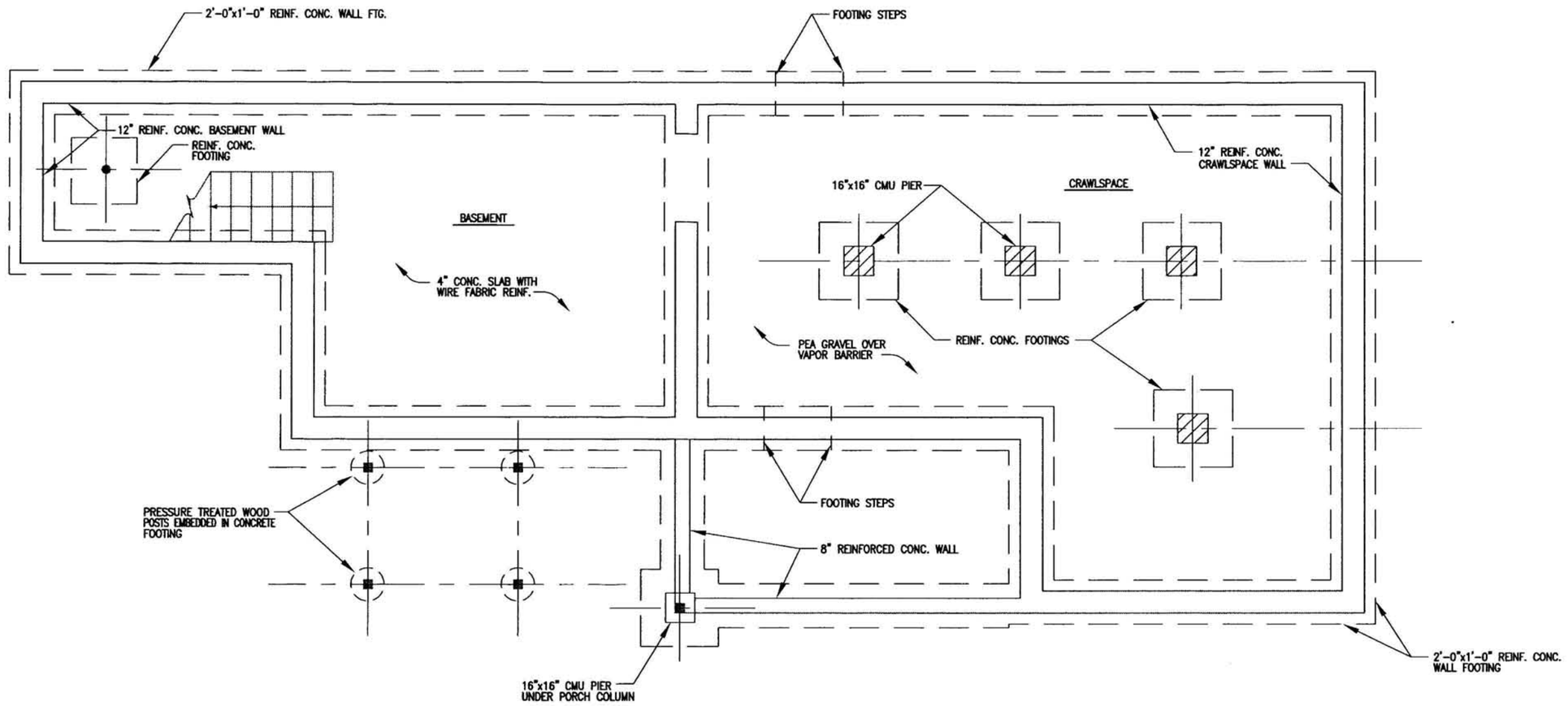
DESIGNED: CAPP TECH. REVIEW: DATE:	SUB SHEET NO. A3	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) EXTERIOR ELEVATIONS LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ___ OF ___



1/A4 BUILDING SECTION

2 0 2 4
SCALE OF FEET

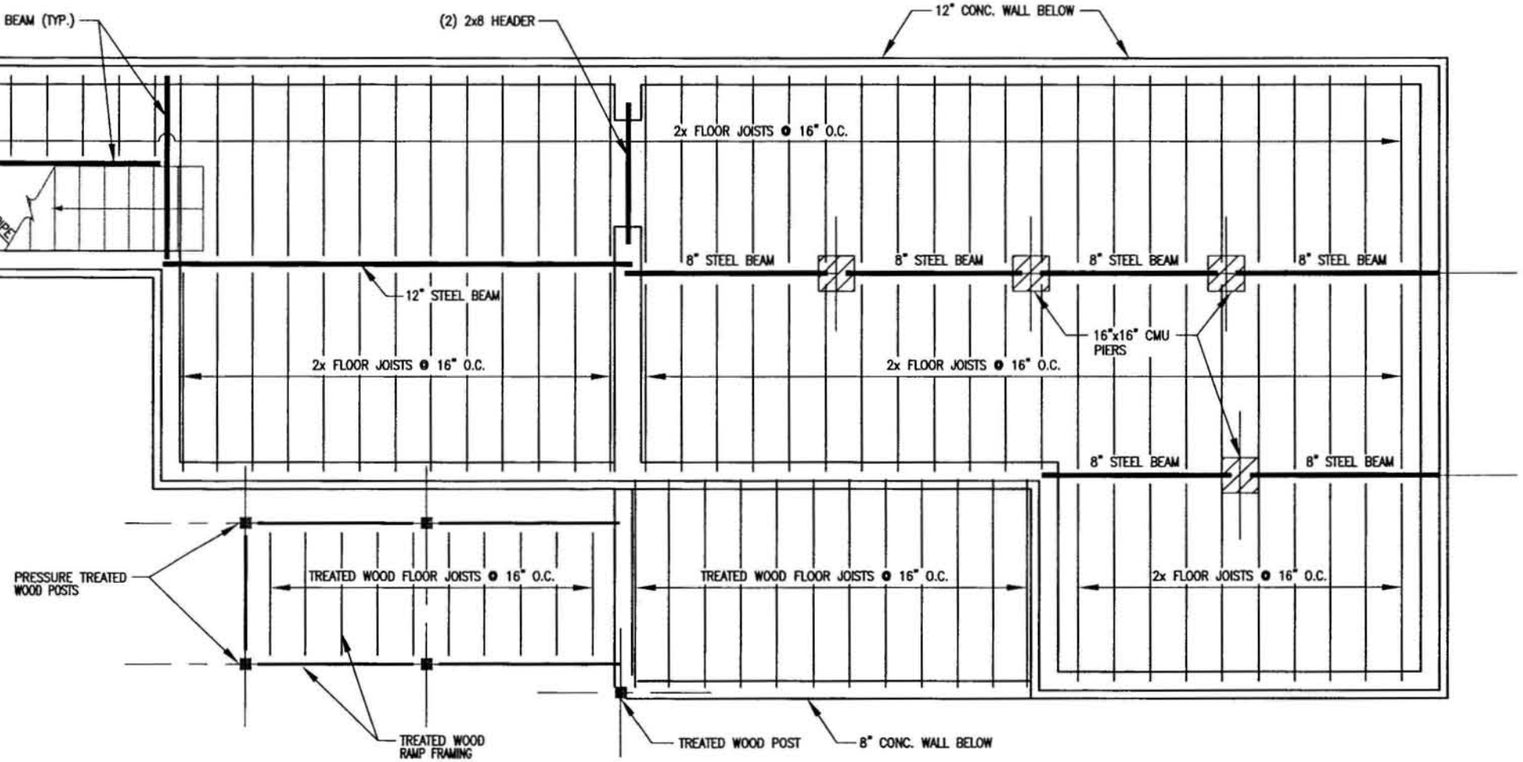
DESIGNED: CADD TECH. REVIEW: DATE:	SUB SHEET NO. A4	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) BUILDING SECTIONS LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ___ OF ___



1 / S1.1 FOUNDATION PLAN
3/8" = 1'-0"

2 0 2 4 6
SCALE OF FEET

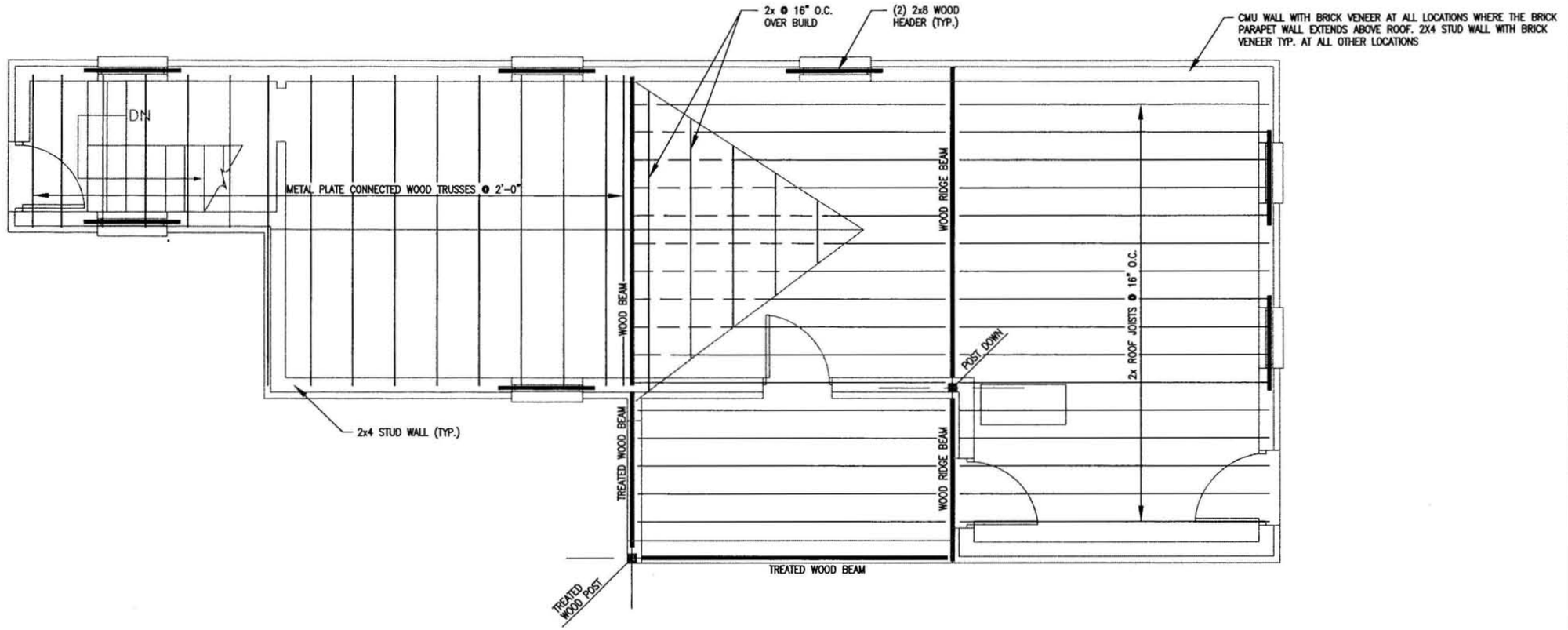
DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
CADD	S1	ULTIMATE TREATMENT BURCH HOUSE (HS-26) FOUNDATION PLAN LINCOLN HOME NATIONAL HISTORIC PARK	449 80094
TECH. REVIEW:			PMIS/PKG NO.
DATE:			SHEET ___ OF ___



1 / S1.2 1ST FLOOR FRAMING PLAN
3/8" = 1'-0"

2 0 2 4 6
SCALE OF FEET

DESIGNED: ADD TECH. REVIEW: DATE:	SUB SHEET NO. S2	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) 1ST FLOOR FRAMING PLAN LINCOLN HOME NATIONAL HISTORIC PARK	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ___ OF ___

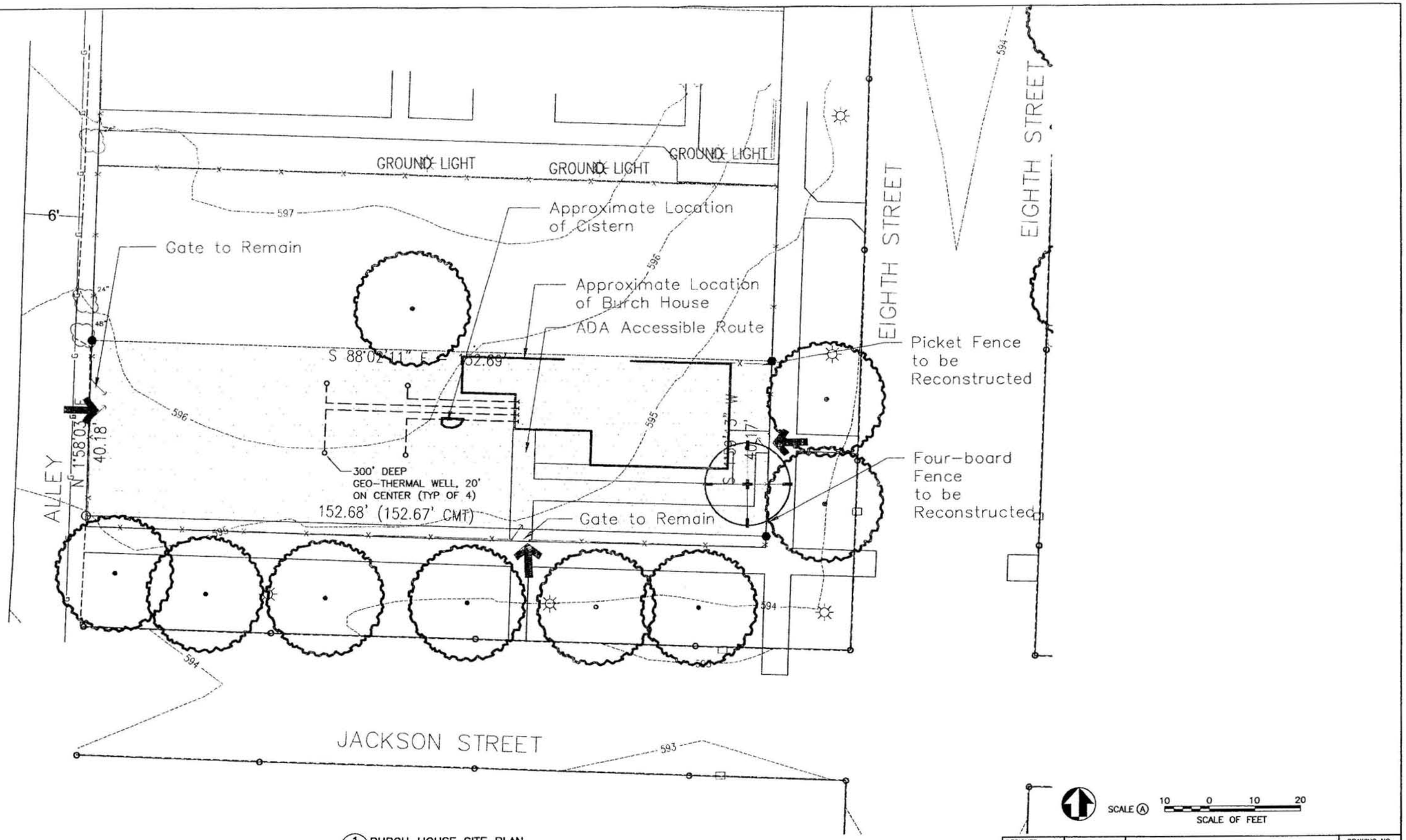


2 0 2 4 6
SCALE OF FEET

1 / S1.3 ROOF FRAMING PLAN
3/8" = 1'-0"

NOTE:
3/4" PLYWOOD SHEATHING

DESIGNED: GADD TECH. REVIEW: DATE:	SUB SHEET NO. S3	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) ROOF FRAMING PLAN LINCOLN HOME NATIONAL HISTORIC PARK	DRAWING NO. 449 80094 PMIS/PKG NO. SHEET ___ OF ___



1 MP1 BURCH HOUSE SITE PLAN
SCALE: A

SCALE A 10 0 10 20
SCALE OF FEET

DESIGNED: PEP DRAWN: CBH TECH. REVIEW: PEP DATE: 03/17/06	SUB SHEET NO. MP1	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) SITE PLAN LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 / 80094 PMIS/PKG NO. 109130 SHEET OF

ABBREVIATIONS

ABV	ABOVE
ADA	AMERICANS WITH DISABILITIES ACT, 1990
BLW	BELOW
BHP	BREAK HORSE POWER
BTUH	BRITISH THERMAL UNIT PER HOUR
CAP	CAPACITY
CFM	CUBIC FEET PER MINUTE
CHAR	CHARACTERISTIC
CO	CLEANOUT
CLG	CEILING
COP	COEFFICIENT OF PERFORMANCE
CW	COLD WATER
CV	CHECK VALVE
DB	DRY BULB
D	DRAIN
DIA	DIAMETER
DN	DOWN
DWG	DRAWING
(E)	EXISTING
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
ELECT	ELECTRICAL
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
F	FAHRENHEIT
FC	FLEX CONNECTION
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FLA	FULL LOAD AMPS
FLR	FLOOR
FPM	FEET PER MINUTE
FRM	FROM
FREQ	FREQUENCY
FT	FEET, FIN TUBE
GAL	GALLON
GHP-#	GEOTHERMAL HEAT PUMP-(DESIGNATION)
GLS	GROUND LOOP SUPPLY
GLR	GROUND LOOP RETURN
GLS&R	GROUND WATER SUPPLY & RETURN
GPM	GALLONS PER MINUTE
HP	HEAT PUMP, HORSEPOWER
HT	HEIGHT
HTG	HEATING
HW	HOT WATER
IN	INCHES
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LRA	LOCKED ROTOR AMPS
LWT	LEAVING WATER TEMPERATURE
MAV	MANUAL AIR VENT
MBH	MILLION BTUH
MCA	MAXIMUM CIRCUIT AMPS
MEP	MECHANICAL, ELECTRICAL, PLUMBING
MIN	MINIMUM
MTD	MOUNTED
MTG	MOUNTING
NC	NORMALLY CLOSED
NO	NORMALLY OPEN, NUMBER
OA	OUTSIDE AIR
P	PUMP
PEX	POLYETHYLENE PLASTIC PIPING
PD	PRESSURE DROP
PG	PRESSURE GAUGE
PRV	PRESSURE REDUCING VALVE
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
RGF	RETURN GRILLE FLOOR
RLA	RUNNING LOAD AMPS
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
S	SUPPLY, SINK
SA	SHOCK ABSORBER, SUPPLY AIR
SAN	SANITARY
SDF	SUPPLY DIFFUSER FLOOR
SGF	SUPPLY GRILLE FLOOR
SGW	SUPPLY GRILLE WALL
SP	STATIC PRESSURE
TGC	TRANSFER GRILLE CEILING
TGW	TRANSFER GRILLE WALL
TH	THERMOMETER
TOT	TOTAL
TYP	TYPICAL
V	VENT
VCD	VOLUME CONTROL DAMPER
WB	WET BULB
WC	WATER CLOSET
W/	WITH

PIPING SYMBOLS

- COLD WATER SUPPLY
- HOT WATER SUPPLY
- GROUND WATER SUPPLY
- GROUND WATER RETURN

HVAC AND PIPING SYMBOLS

- SUPPLY DUCT UP
- SUPPLY DUCT DOWN
- RETURN OR EXHAUST DUCT UP
- RETURN OR EXHAUST DUCT DOWN
- #x# — DUCT (FIRST FIGURE, SIDE SHOWN AND SECOND FIGURE, SIDE NOT SHOWN) ALL DUCTS DIMENSIONS SHALL BE SHOWN IN INCHES.
- #ø — FLEXIBLE DUCT ALL DUCTS DIMENSIONS SHALL BE SHOWN IN INCHES.
- TRANSITIONS
- RECTANGULAR TO ROUND TRANSITION
- STANDARD RECTANGULAR BRANCH FOR SUPPLY OR RETURN
- LINED DUCT
- #ø — ROUND DUCT UP
- #ø — ROUND DUCT DOWN
- DUCT WITH MANUAL VCD
- T — THERMOSTAT
- BALANCING VALVE
- BALL VALVE
- FS — FLOW SWITCH
- PUMP
- VALVE
- STRAINER
- PIPE UNION
- HOSE END CONNECTION
- S — AIR SEPARATOR
- CHECK VALVE
- ECCENTRIC REDUCER
- # — DIFFUSER TAG
- A / M1 — DETAIL NUMBER / SHEET WHERE SHOWN

GENERAL NOTES

1. THE CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS IN THE LOCATION OF DUCTWORK, PIPING, ETC.
2. ALL DUCTWORK AND PIPING SHALL BE INSTALLED AS HIGH AS POSSIBLE UNLESS NOTED OTHERWISE.
3. DO NOT SCALE DRAWINGS – ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE. NOTIFY CONTRACTING OFFICER OF ANY DEVIATIONS FROM THE DRAWINGS.
4. ALL PIPING, CONDUIT, DUCTWORK, ETC., SHALL BE INSTALLED IN A MANNER WHICH WILL NOT DEFACE OR ALTER ANY AREAS. ROUTING OF THE ABOVE EQUIPMENT SHALL BE APPROVED BY THE CONTRACTING OFFICER PRIOR TO INSTALLATION. CONTRACTOR SHALL PROVIDE COORDINATION DRAWINGS TO ILLUSTRATE THIS COORDINATION.
5. ALL WORK PERFORMED ON THIS BUILDING SHALL BE IN COMPLIANCE WITH ALL PERTINENT CODES, RULES, ORDINANCES, AND REGULATIONS OF THE LOCAL STATE AND NATIONAL GOVERNING AUTHORITIES.
6. ALL WORK PERFORMED UNDER AND IN CONNECTION WITH THESE DRAWINGS AND SPECIFICATIONS SHALL BE IN STRICT COMPLIANCE WITH THE LATEST SAFETY AND HEALTH STANDARDS.
7. REPORT ANY DISCREPANCIES FOUND IN THE DRAWINGS AND/OR IN THE SPECIFICATIONS DURING THE BIDDING PROCESS FOR CLARIFICATION BY THE CONTRACTING OFFICER.
8. ALL PIPING AND DUCTWORK TO BE LOCATED AND COORDINATED WITH ARCHITECTURAL PLANS. ALL PIPING AND DUCTWORK TO BE CONCEALED IN FINISHED AREAS.
9. ANY PHYSICAL INSTALLATION MODIFICATIONS, DUE TO FIELD CONDITIONS, SHALL BE RESOLVED BY THE CONTRACTOR IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE CONTRACTING OFFICER.
10. THE CONTRACTOR SHALL PAY FOR ALL FEES AND PERMITS AS NECESSARY TO COMPLETE THE INSTALLATION.
11. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF DUCTWORK WITH ALL NEW PIPING BEING INSTALLED. REFER TO SPRINKLER DRAWINGS.
12. THE DRAWINGS ARE DIAGRAMMATIC AND SHOW ONLY THE GENERAL ARRANGEMENTS OF ALL PIPING AND EQUIPMENT. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO SHOW OR INDICATE ALL OFFSETS, FITTINGS, AND ACCESSORIES WHICH MAY BE REQUIRED TO AVOID EXISTING PIPING OR STRUCTURAL FEATURES.
13. CONTRACTOR TO SUBMIT FOR APPROVAL A DETAILED CONSTRUCTION SCHEDULE FOR COORDINATION OF WORK.

PIPING

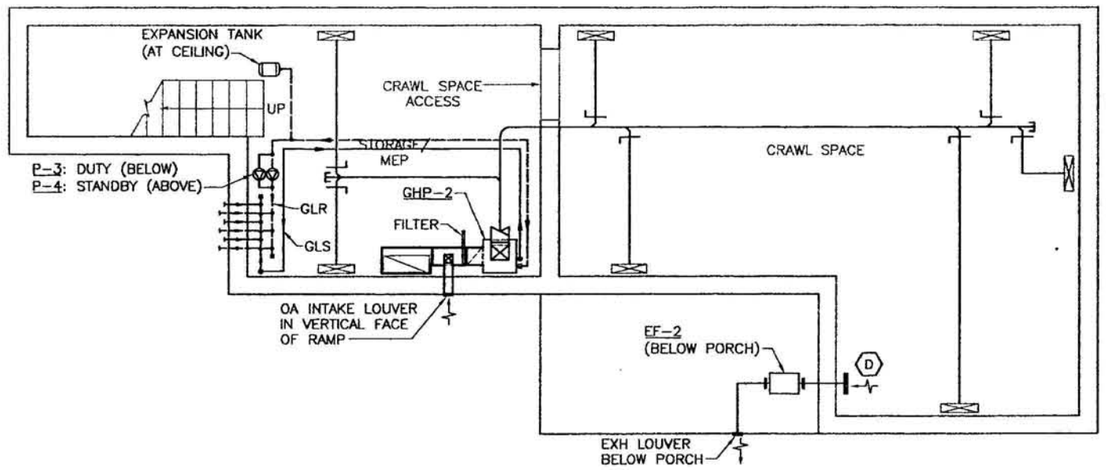
1. ALL DOWNFEED BRANCHES AND EQUIPMENT SHALL HAVE DRAIN COCKS INSTALLED AT LOWEST POINT.
2. ALL HORIZONTAL LINES SHALL BE RUN LEVEL WITHOUT POCKETS. WHERE POCKETS OCCUR, AUTO AIR VENTS SHALL BE INSTALLED AT EACH VERTICAL RISE. PROVIDE ACCESS PANELS AT LOCATIONS APPROVED BY THE CONTRACTING OFFICER.
3. ALL UPFEED RISERS SHALL BE MADE WITH TOP CONNECTIONS AT MAIN. ALL DOWNFEED RISERS SHALL BE MADE WITH BOTTOM CONNECTIONS AT MAIN.
4. CHANGES OF PIPE SIZES ON HORIZONTAL RUNS SHALL BE MADE WITH INVERTED ECCENTRIC REDUCERS WITH TOP OF PIPE LEVEL.
5. ARROWS ON SUPPLY AND RETURN LINES INDICATE DIRECTION OF FLOW.
6. PROVIDE VALVE WITH HOSE END ON ALL LOW POINTS OF PIPING SYSTEM AND AUTO AIR VENTS AT ALL HIGH POINTS OF THE PIPING SYSTEM UNLESS NOTED OTHERWISE. PROVIDE ACCESS PANELS AT LOCATIONS APPROVED BY THE CONTRACTING OFFICER.
7. FOR TYPICAL WATER PIPING CONNECTIONS TO EQUIPMENT, SEE STANDARD DETAILS.
8. WATER PIPE CONNECTIONS TO AIR HEATING AND COOLING COILS SHALL BE MADE SO THERE WILL BE COUNTER FLOW BETWEEN WATER AND AIR.
9. DIELECTRIC UNIONS AND FLANGES SHALL BE USED ON ALL CONNECTIONS BETWEEN DISSIMILAR MATERIALS OR METALS.
10. WHERE WATER LINES ARE RUN IN CRAWL SPACES, RUN LINE HIGH AS POSSIBLE. FINAL LOCATION TO BE APPROVED BY CONTRACTING OFFICER.
11. ALL LINES NOTED "BELOW FLR." OR "ABV. CLG." SHALL BE CONCEALED IN JOIST SPACE, THROUGH JOISTS, OR BETWEEN JOISTS, UNLESS CEILING IS FURRED OR LINES ARE BELOW SLAB ON GRADE.
12. COORDINATE LOCATIONS OF ALL LINES AND EQUIPMENT WITH OTHER CONTRACTORS.

DUCTWORK

1. TOTAL STATIC PRESSURE NOTED IN SCHEDULES INCLUDES DUCT SYSTEM, TERMINAL UNITS, FILTERS, COILS, ETC.
2. ALL DUCTWORK SIZES NOTED ARE FREE AREA SIZES.

NOTE:
ALL SYMBOLS AND ABBREVIATIONS SHOWN ARE NOT NECESSARILY USED.

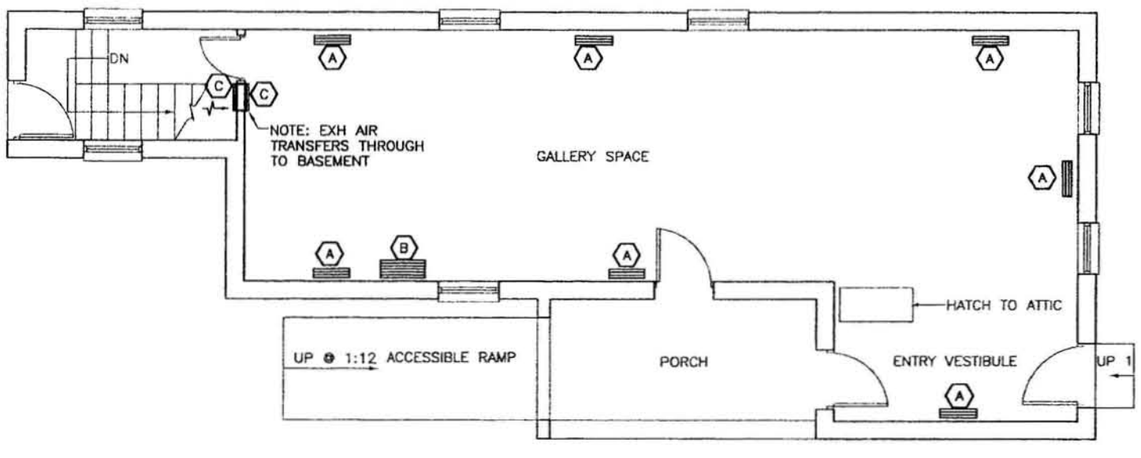
DESIGNED: PEP DRAWN: CBH TECH. REVIEW: PEP DATE: 03/17/06	SUB SHEET NO. M0	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) SYMBOLS & ABBREVIATIONS LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. 109130 SHEET ___ OF ___



1 / M1 BASEMENT PLAN
SCALE: A

SCALE Ⓐ 4 0 4 8
SCALE OF FEET

DESIGNED: PEP DRAWN: CBH TECH. REVIEW: PEP DATE: 03/17/06	SUB SHEET NO. M1	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) BASEMENT PLAN LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094 PMIS/PKG NO. 109130 SHEET ___ OF ___

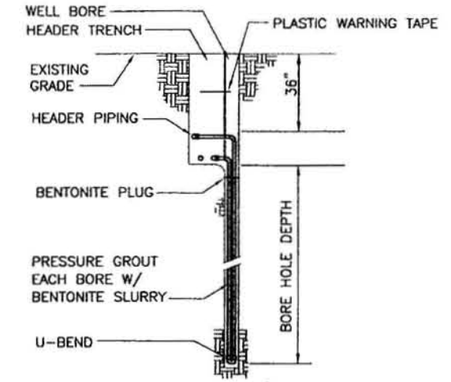


1/M2 FIRST FLOOR PLAN
SCALE: A

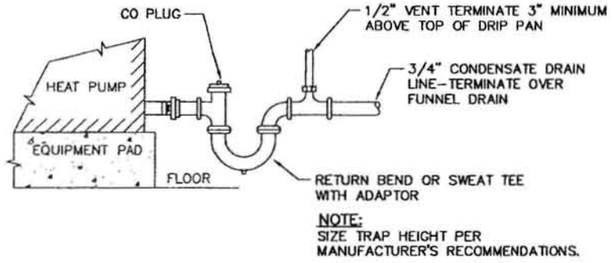
SCALE Ⓐ 4 0 4 8
SCALE OF FEET

DESIGNED: PEP DRAWN: CBH TECH. REVIEW: PEP DATE: 03/17/06	SUB SHEET NO. M2	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) FIRST FLOOR PLAN LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449/80094 PMIS/PKG NO. 109130 SHEET ___ OF ___

5/15/06 08:11 CHARBAUCH R16 C:\AUTOMANAGER WORKSPACE\CHARBAUCH\M-HPL_MERGEHANJD-CA00.5-CA002\MPS\LHPO\10\BURCH\ARCH\M2HVAC.DWG XREFS: ..\BASE\VA-FLRPLNS.DWG

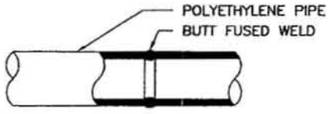


TYPICAL BORE DETAIL
NO SCALE

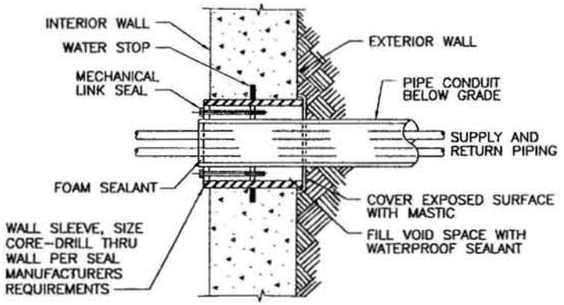


NOTE:
SIZE TRAP HEIGHT PER MANUFACTURER'S RECOMMENDATIONS.

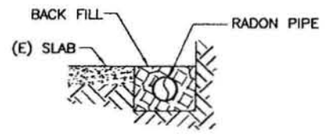
HEAT PUMP DRAIN CONNECTION SCHEMATIC (BASEMENT UNITS)
NOT TO SCALE



GEOTHERMAL PIPE JOINT SCHEMATIC
NO SCALE

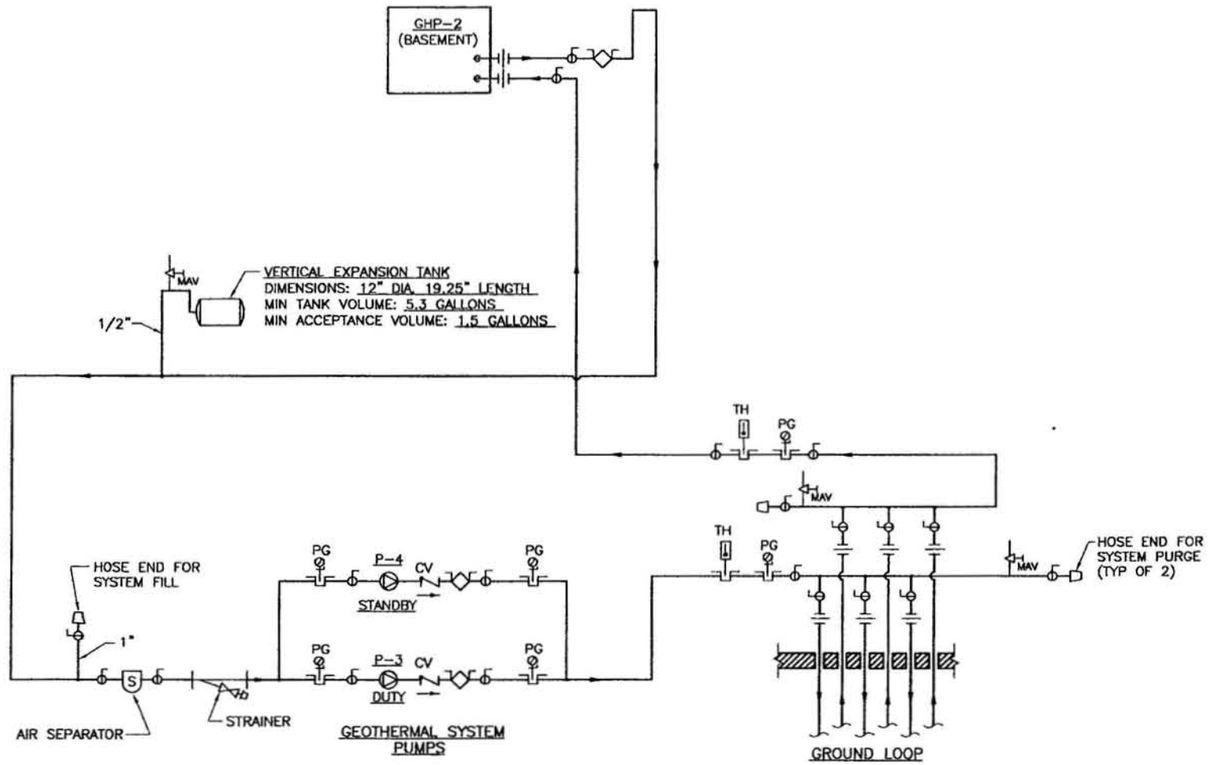


PIPE PENETRATION BELOW GRADE
NOT TO SCALE



RADON MITIGATION TRENCH DETAIL
NO SCALE

DESIGNED: PEP DRAWN: CBH TECH. REVIEW: PEP DATE: 03/17/06	SUB SHEET NO. M3	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) HVAC DETAILS LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 / 80094 PMIS/PKG NO. 109130 SHEET ___ OF ___



GEOTHERMAL PIPING SYSTEM SCHEMATIC

NO SCALE

OPERATIONAL NOTES:

1. PROVIDE CIRCULATING PUMP SWITCH HAND-OFF-AUTOMATIC SWITCH. DUTY PUMP SHALL BE SET IN HAND POSITION WHILE STAND-BY PUMP SHALL BE IN OFF POSITION. UPON PUMP FAILURE, SWITCHES SHALL BE MANUALLY REVERSED.
2. SERVICE PERSONAL TO SELECT DUTY PUMP SERVICE ON A MONTHLY BASIS.

DESIGNED: PEP DRAWN: CBH TECH. REVIEW: PEP DATE: 03/17/06	SUB SHEET NO. M4	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) HVAC SCHEMATICS LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 / 80094 PMIS/PKG NO. 109130 SHEET ___ OF ___

GEOTHERMAL HEAT PUMP SCHEDULE

UNIT NO	FAN			GROUND WATER			COOLING CAPACITY							HEATING CAPACITY				COIL FACE AREA (IN)	ROWS	COMPRESSOR		UNIT DATA			REMARKS
	UNIT CFM	FLA	ESP (IN)	GPM	CLG EWT (°F)	HTG EWT (°F)	TOT MBH	SENS MBH	EER	EAT (°F) DB	EAT (°F) WB	LAT (°F) DB	LAT (°F) WB	MBH	COP	EAT (°F)	LAT (°F)			RLA	LRA	FLA	MCA	ELECTRICAL CHAR	
HP-2	1300	3.9	0.5	9.0	85	50	39.9	31.2	14.3	80	67	58	57	42.0	4.8	60	90	4.5	3	16	88	20	25	208/60/1	NOTE: 1

NOTES:
1. UNITS DESIGNED AROUND FLORIDA HEAT PUMP MODEL: GT042.

PUMP SCHEDULE

PUMP NO	PUMP DUTY	GPM	FEET HEAD	EFF %	BHP	MOTOR HP	RPM	ELECTRICAL CHAR	OPERATING CONDITIONS		IMPELLER SIZE
P-3	DUTY	0	25	–	–	1/6	3150	120/60/1	GPM	9.0	–
P-4	STANDBY	20	17	–	–				FEET	20	
		45	0	–	–				EFF	–	

NOTES:
1. RACK PUMPS ALONG WALL, PROVIDE WALL MOUNTING HARDWARE.
2. PUMPS DESIGNED AROUND GRUNDFOS – UP75-F.

EXHAUST FAN

SYMBOL	CFM	SP	RPM	WATTS	ELEC CHAR	REMARKS
EF-2	260	0.125	1,050	80	120/60/1	–

DIFFUSER, REGISTER, AND GRILLE SCHEDULE

MARK	TYPE	FACE SIZE	CFM	REMARKS
(A)	SRF	24x3.5	185	NOTE: 1,3
(B)	RRF	30x24	1035	NOTE: 1
(C)	TGW	18x12	260	NOTE: 2
(D)	EGW	18x14	260	–

NOTES:
1. COORDINATE GRILLE LOCATION WITH FLOOR JOISTS.
2. COORDINATE GRILLE LOCATION WITH WALL FRAMING.
3. ALUMINUM FIXED BAR, 80 CFM/LINEAR FOOT.

DESIGNED: PEP DRAWN: CBH TECH. REVIEW: PEP DATE: 03/17/06	SUB SHEET NO. M5	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) HVAC SCHEDULES LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 / 80094 PMIS/PKG NO. 109130 SHEET ___ OF ___

FIRE PROTECTION SYMBOLS

- FIRE LINE
- DRY FIRE LINE
- SEMI-RECESSED PENDANT SPRINKLER HEAD
- DRY PENDANT SPRINKLER HEAD
- TEE, OUTLET DOWN
- ELBOW, TURNED DOWN
- FLUSH VALVE WITH 1" PIPE EXTENSION
- FIRE DEPARTMENT CONNECTION

FIRE PROTECTION NOTES

1. PROVIDE AND SIZE ALL SPRINKLER DRAINS PER NFPA-13R.
2. SIZE PIPING WITH HYDRAULIC CALCULATIONS PER NFPA-13R.
3. COORDINATE ALL PIPING AND SPRINKLER HEADS WITH OTHER TRADES.
4. ALL SPRINKLERS SHALL BE INSTALLED IN ACCORDANCE WITH COVERAGE CRITERIA SPECIFIED BY NFPA-13R.

ABBREVIATIONS

CW	COLD WATER
D	DOMESTIC WATER
F	FAHRENHEIT
FP	FIRE PROTECTION
FT	FEET
GPM	GALLONS PER MINUTE
HW	HOT WATER
PD	PRESSURE DROP
SQ	SQUARE
TYP	TYPICAL

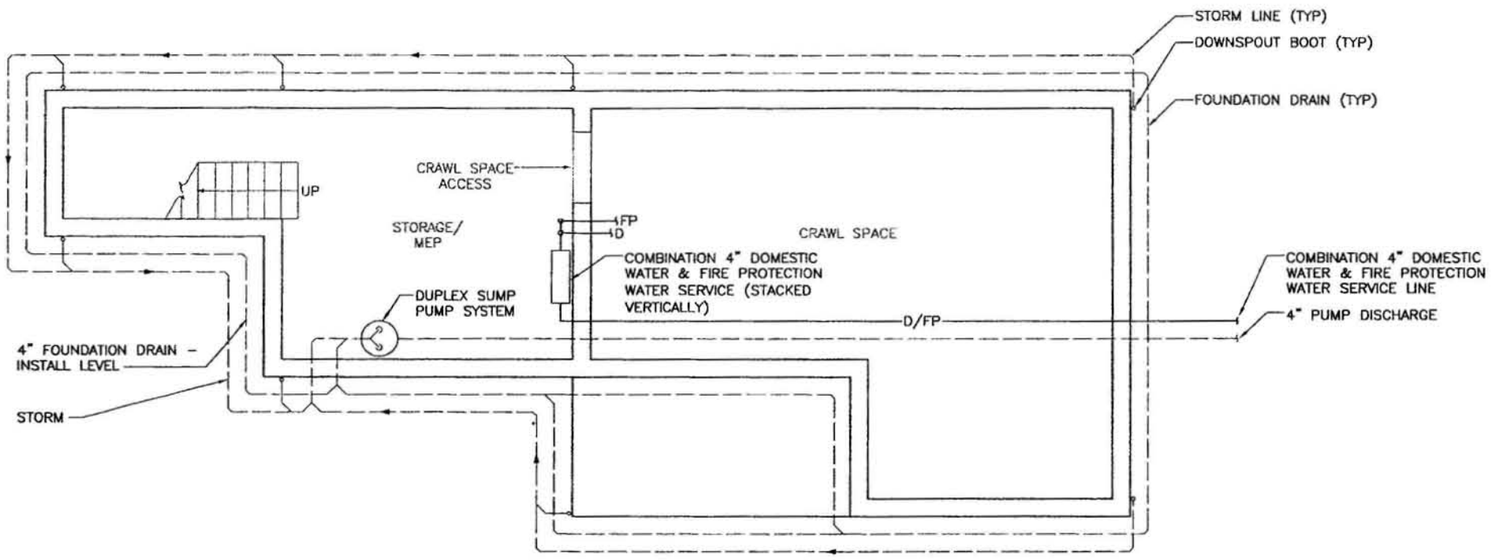
PIPING SYMBOLS

- COLD WATER SUPPLY
- HOT WATER SUPPLY

NOTE:
ALL SYMBOLS AND ABBREVIATIONS SHOWN ARE NOT NECESSARILY USED.

DESIGNED: MKM DRAWN: CBH TECH. REVIEW: PEP DATE: 03/17/06	SUB SHEET NO. P0	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) SYMBOLS & ABBREVIATIONS LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 / 80094 PMIS/PKG NO. 109130 SHEET ___ OF ___

5/15/06 13:55 CHARBAUGH R16 C:\AUTOMANAGER WORKSPACE\CHARBAUGH\M-MFL_MERIDIAN.D-C40D.S-CAD20\MPS\UHO\10\BURCH\PLUM\PGPLUM.DWG



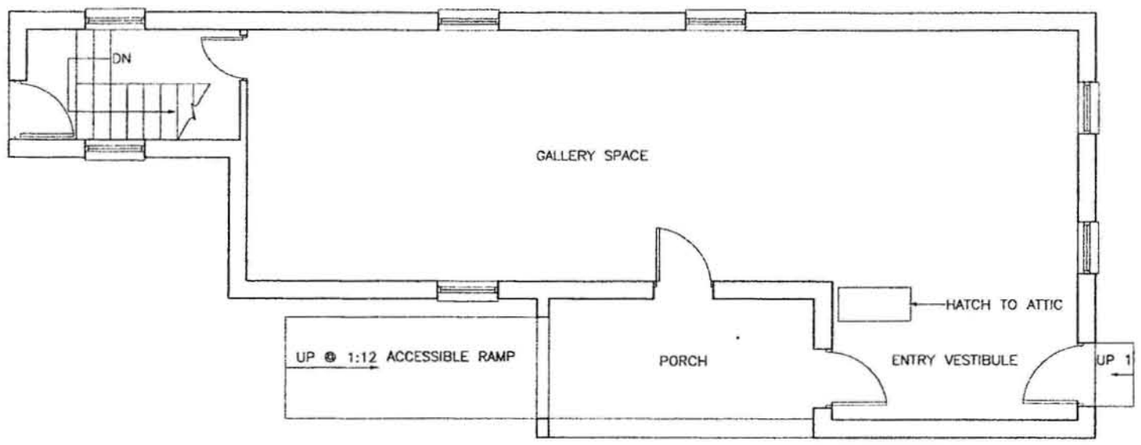
1 / P1 BASEMENT PLAN
SCALE: A

FIRE SPRINKLER DESIGN CRITERIA			
	CATEGORY 1 ① GALLERY AND PUBLIC SPACES	CATEGORY 2 ② ATTIC SPACES	CATEGORY 3 ③ STORAGE AND MECHANICAL
OCCUPANCY CLASSIFICATION:	LIGHT	ORDINARY GROUP 1	ORDINARY GROUP 2
TYPE OF SPRINKLER SYSTEM:	WET	DRY	WET
DESIGN AREA OF WATER APPLICATION:	1500 SQ FT	1950 SQ FT	1500 SQ FT
MINIMUM DENSITY:	.10 GPM/SQ FT	.15 GPM/SQ FT	.20 GPM/SQ FT
SPRINKLER TEMPERATURE RATING:	155°F	200°F	155°F (STORAGE), 212°F (MECHANICAL)
SPRINKLER "K" FACTOR:	K=5.5	K=5.5	K=5.5
SPRINKLER HEAD TYPE:	SEMI-RECESSED PENDENT, QUICK RESPONSE	UPRIGHT, STANDARD RESPONSE	UPRIGHT, STANDARD RESPONSE
HOSE STREAM ALLOWANCE:	100 GPM	250 GPM	250 GPM

NOTE: FIRE SPRINKLER WATER DEMAND INDICATED ABOVE PENDING INSURANCE UNDERWRITER AND AUTHORITY HAVING JURISDICTION APPROVAL.

SCALE Ⓐ 4 0 4 8
SCALE OF FEET

DESIGNED: MKM DRAWN: TPA TECH. REVIEW: PEP DATE: 03/17/06	SUB SHEET NO. P1	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) BASEMENT FLOOR PLAN LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 / 80094 PMIS/PKG NO. 109130 SHEET ___ OF ___



1/P2 FIRST FLOOR PLAN
SCALE: A

FIRE SPRINKLER DESIGN CRITERIA			
	CATEGORY 1 ① GALLERY AND PUBLIC SPACES	CATEGORY 2 ② ATTIC SPACES	CATEGORY 3 ③ STORAGE AND MECHANICAL
OCCUPANCY CLASSIFICATION:	LIGHT	ORDINARY GROUP 1	ORDINARY GROUP 2
TYPE OF SPRINKLER SYSTEM:	WET	DRY	WET
DESIGN AREA OF WATER APPLICATION:	1500 SQ FT	1950 SQ FT	1500 SQ FT
MINIMUM DENSITY:	.10 GPM/SQ FT	.15 GPM/SQ FT	.20 GPM/SQ FT
SPRINKLER TEMPERATURE RATING:	155°F	200°F	155°F (STORAGE), 212°F (MECHANICAL)
SPRINKLER 'K' FACTOR:	K=5.5	K=5.5	K=5.5
SPRINKLER HEAD TYPE:	SEMI-RECESSED PENDENT, QUICK RESPONSE	UPRIGHT, STANDARD RESPONSE	UPRIGHT, STANDARD RESPONSE
HOSE STREAM ALLOWANCE:	100 GPM	250 GPM	250 GPM

NOTE: FIRE SPRINKLER WATER DEMAND INDICATED ABOVE PENDING INSURANCE UNDERWRITER AND AUTHORITY HAVING JURISDICTION APPROVAL.

SCALE Ⓐ 4 0 4 8
SCALE OF FEET

DESIGNED: MKM, TPA	SUB SHEET NO. P2	TITLE OF SHEET: ULTIMATE TREATMENT BURCH HOUSE (HS-26) FIRST FLOOR PLAN, LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094
TECH. REVIEW: PEP			PMIS/PKG NO. 109130
DATE: 03/17/06			SHEET ___ OF ___

SYMBOLS

GFI	DUPLEX GROUND FAULT INTERRUPTER RECEPTACLE
	DUPLEX RECEPTACLE
	TELEPHONE OUTLET
S	SINGLE POLE SWITCH
S_3	THREE WAY SWITCH
S_M	SINGLE PHASE MANUAL MOTOR SWITCH WITH OVERLOADS
	DISCONNECT SWITCH
	COMBINATION DISCONNECT SWITCH/STARTER
	MOTOR STARTER
	MOTOR CONNECTION
J	JUNCTION BOX
J	FLOOR MOUNTED JUNCTION BOX
M	METER
	NEW PANELBOARD
	HOMERUN TO PANELBOARD – 3 #12-3/4"C UNO
	POWER CIRCUIT
	LIGHTING CIRCUIT
	UNDERGROUND OR SUBSLAB CONDUIT OR CIRCUIT
	CAPPED CONDUIT
	SURFACE MOUNTED TRACK LIGHTING

I_{IR}	MOTION DETECTOR INFRARED
I_{DC}	DOOR CONTRACTS
I_{WC}	WINDOW CONTACTS
M_{DL}	MAGNETIC DOOR LOCK
CR	CARD READER
I	INTRUSION ALARM HORN/SIREN/SPEAKER
FD	FLOOD DETECTION
CCTV	CLOSED CIRCUIT TV CAMERA WITH LENZ (FIXED POSITION)
AP	ANNUNCIATOR PANEL
FAP	FIRE ALARM PANEL
MS	MANUAL PULL STATION
F_S	SMOKE DETECTOR
F	FIRE ALARM HORN W/FLASHING STROBE LIGHT
F	FIRE ALARM SYSTEM STROBE
	EXIT SIGN

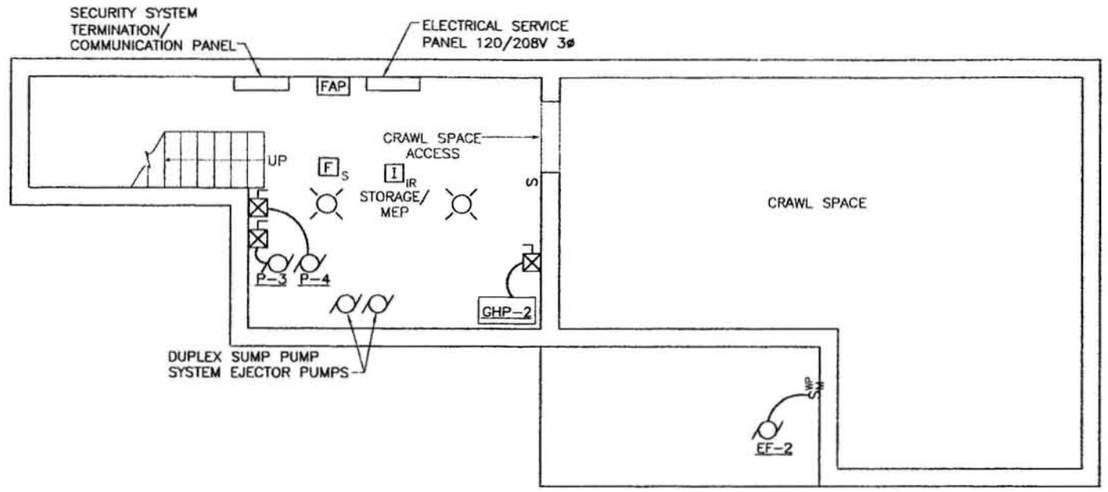
MOUNTING HEIGHTS

1. WALL SWITCH OUTLETS	3'-10" EXCEPT AS HEREINAFTER SPECIFIED
2. BRACKET OUTLETS	7'-0" ABOVE DOORS, OR AS DIRECTED
3. CONVENIENCE OUTLETS	1'-6" UNLESS NOTED OTHERWISE
4. DISTRIBUTION CABINETS	6'-6" TO TOP
5. FIRE ALARM STATIONS	3'-8"
6. FIRE ALARM SOUNDING DEVICES	6'-8" OR 6" BELOW CEILING HEIGHT, WHICHEVER IS LOWER
7. TELEPHONE OUTLETS	1'-6" OR AS DIRECTED
8. TELEVISION OUTLETS	1'-6" OR AS NOTED OR AS DIRECTED
9. MISCELLANEOUS EQUIPMENT OUTLETS	MANUFACTURERS RECOMMENDATIONS
10. EXIT SIGNS	BOTTOM 6" ABOVE DOOR FRAME OR CEILING MOUNT
11. CARD READERS	3'-10" OR AS NOTED
12. LIGHTING FIXTURES IN STAIRWAYS	ABOVE LANDING OR STAIRS OR IN EXISTING BACK BOX 7'-6"

ABBREVIATIONS

A	AMPERE	GC	GENERAL CONTRACTOR	NEC	NATIONAL ELECTRICAL CODE
AFF	ABOVE FINISHED FLOOR	GEN	GENERATOR	NEUT	NEUTRAL
AHU	AIR HANDLING UNIT	GFI	GROUND FAULT INTERRUPTER	NF	NON FUSED
APPROX	APPROXIMATELY	GHP	GEOTHERMAL HEAT PUMP	NIC	NOT IN CONTRACT
AUX	AUXILIARY	GRD	GROUND	ø	PHASE
AWG	AMERICAN WIRE GAGE	HC	HEATING CONTRACTOR	P	PUMP
BFG	BELOW FINISHED GRADE	HP	HORSEPOWER	PC	PLUMBING CONTRACTOR
BATT	BATTERY	HPS	HIGH PRESSURE SODIUM	PLC	PROGRAMMABLE LOGIC CONTROLLER
C	CONDUIT	HUH	HORIZONTAL UNIT HEATER	PNL	PANELBOARD
CA	CARD ACCESS	HOA	HAND OFF AUTO SWITCH	RECP	RECEPTACLE
CB	CIRCUIT BREAKER	HTR	HEATER	REQ'D	REQUIRED
CCTV	CLOSED CIRCUIT TV	HWP	HOT WATER PUMP	REV	REVISION
CKT	CIRCUIT	JB	JUNCTION BOX	RM	ROOM
℄	CENTERLINE	ID	INTRUSION DETECTION	SEC	SECURITY
CLG	CEILING	KCMIL	THOUSAND CIRCULAR MILS	SMR	SURFACE METAL RACEWAY
CORR	CORRIDOR	KV	KILOVOLT	SMY AIR	SYMMETRICAL AMPERE INTERRUPTING RATING
CUH	CABINET UNIT HEATER	KVA	KILOVOLT AMPERES	SPECS	SPECIFICATIONS
CWP	COLD WATER PUMP	KVAR	KILOVAR	STOR	STORAGE
DIA	DIAMETER	KW	KILOWATT	SW	SWITCH
DIST	DISTRIBUTION	KWH	KILOWATT HOURS	SWBD	SWITCHBOARD
DWG	DRAWING	LCP	LIGHTING CONTROL PANEL	TEL	TELEPHONE
EA/	EACH	LTG	LIGHT	TEMP	TEMPORARY
EC	ELECTRICAL CONTRACTOR	LV	LOW VOLTAGE	TP	TWISTED PAIR
EF	EXHAUST FAN	MAX	MAXIMUM	TRP	TUBE ROUTING PANEL
ELEC	ELECTRIC	MCB	MAIN CIRCUIT BREAKER	TV	TELEVISION
ELEV	ELEVATOR	MCM	THOUSAND CIRCULAR MILS	TYP	TYPICAL
EMER	EMERGENCY	MDP	MAIN DISTRIBUTION PANEL	UG	UNDERGROUND
EMT	ELECTRICAL METALLIC TUBING	MECH	MECHANICAL	UNO	UNLESS NOTED OTHERWISE
EX	EXISTING (EXIST)	MIN	MINIMUM	UPS	UNINTERRUPTIBLE POWER SUPPLY
EWC	ELECTRIC WATER COOLER	MISC	MISCELLANEOUS	UV	ULTRA VIOLET
FA	FIRE ALARM	MLO	MAIN LUGS ONLY	V	VOLT
FCU	FAN COIL UNIT	MOD	MOTOR OPERATED DAMPER	VFD	VARIABLE FREQUENCY DRIVE
FDR	FEEDER	MTD	MOUNTED	W	WIRE
FO	FIBER OPTIC	N/A	NOT ACCESSABLE	W/	WITH
FU	FUSE	NE	NORMAL EMERGENCY	WP	WEATHERPROOF
				XFMR	TRANSFORMER

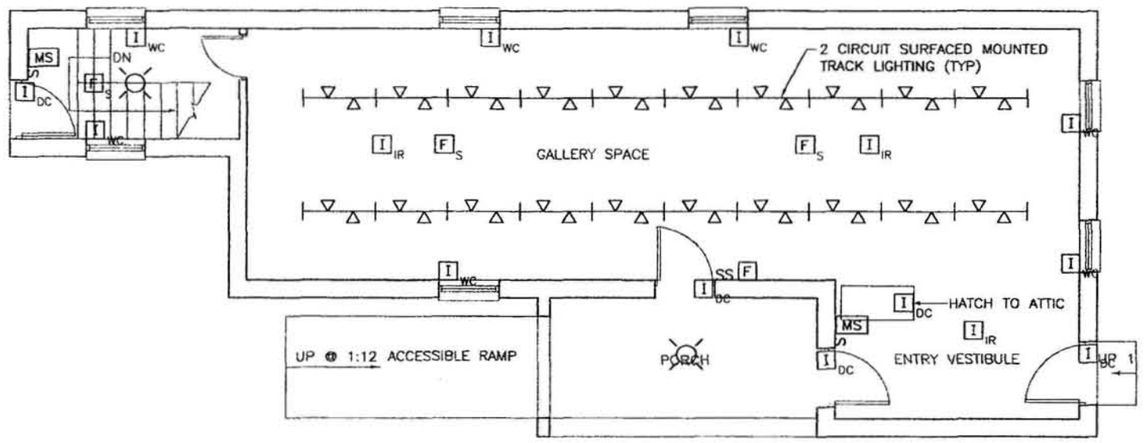
DESIGNED: SEL CADD DJB TECH. REVIEW: PEP DATE: 03/17/06	SUB SHEET NO. E0	TITLE OF SHEET ULTIMATE TREATMENT BURCH HOUSE (HS-26) SYMBOLS & ABBREVIATIONS LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80095 PMIS/PKG NO. 109130 SHEET ___ OF ___



1 / E1 BASEMENT PLAN
SCALE: A

SCALE Ⓐ 4 0 4 8
SCALE OF FEET

DESIGNED: SEL; DRAWN: DJB; TECH. REVIEW: PEP; DATE: 03/17/06	SUB SHEET NO. E1	TITLE OF SHEET: ULTIMATE TREATMENT BURCH HOUSE (HS-26) BASEMENT PLAN; LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094; PMIS/PKG NO. 109130; SHEET ___ OF ___



1 / E2 FIRST FLOOR PLAN
SCALE: A

SCALE Ⓐ 4 0 4 8
SCALE OF FEET

DESIGNED: SEL; CADD: DJB; TECH. REVIEW: PEP; DATE: 03/17/06	SUB SHEET NO. E2	TITLE OF SHEET: ULTIMATE TREATMENT BURCH HOUSE (HS-26) FIRST FLOOR PLAN; LINCOLN HOME NATIONAL HISTORIC SITE	DRAWING NO. 449 80094; PMIS/PKG NO. 109130; SHEET ___ OF ___

BIBLIOGRAPHY

Angle, Paul M. *"Here I Have Lived" A History of Lincoln's Springfield.* Springfield, Illinois: The Abraham Lincoln Association, 1935.

Banton Jr., Albert. "A History of Lincoln Home." Working Manuscript, Lincoln Home National Historic Site Archives, 1984.

Banton Jr., Albert W., Ellen Carol Balm; and Jill York O'Bright. *Historic Resource Study and Historic Structures Report: Blocks 7 & 10, Elijah Iles' Addition, Springfield, Illinois.* Springfield Illinois: Lincoln Home National Historic Site, 1987.

Bateman, Newton and Paul Selby. *Historical Encyclopedia of Illinois and History of Sangamon County.* Chicago: Munsell Publishing Company, 1912. Reprinted with Name index by Sangamon County Genealogical Society, Mt. Vernon, Indiana: Windmill Publishers, 1994.

Beach, Richard H. "A Letter from Illinois Written in 1836." *Journal of the Illinois State Historical Society*, October 1910.

Bearss, Edwin C. *Historic Base Map, Proposed Lincoln Home National Historical Park, Springfield, Illinois.* Washington, D.C.: National Park Service: Division of History, Office of Archaeology and Historic Preservation, 1969.

Charles Kirchner & Associates, Ltd. "A Study to Document Construction Dates of Buildings Identified in the Lincoln/Springfield Survey That Were Thought to be in Existence in the Lincoln Era" Part I. September, 1992.

Charles Kirchner & Associates, Ltd. "A Study to Document Construction Dates of Buildings Identified in the Lincoln/Springfield Survey That Were Thought to be in Existence in the Lincoln Era" Part I. May, 1993.

City of Springfield, Sangamon County, Illinois Map. New York: Hart & Mapother, 1854.

City of Springfield, Sangamon County, Illinois Map. Springfield, IL: William Sides, 1858.

Craig, Carol R. "An Exploration of the Social Relationships Between The Abraham Lincoln Family and His Neighbors – Jameson Jenkins, William S. Burch, and Henry Carrigan Families: A Survey of Sources in Springfield, Illinois." Masters Thesis, University of Illinois at Springfield, 2005.

Dubois, FrederickT. "Address of Senator Frederick T. Dubois on February 12, 1906 at Leland Hotel, Lincoln Banquet." Manuscript Collection. The Abraham Lincoln Presidential Library, Springfield, Illinois.

Fricke, Charles W., ed. *Mount Pulaski, Illinois, 1836-1986: 150 Years of Memories.* Mount Pulaski, Illinois: Charles W. Fricke, 1986.

Glassie, Henry. *Pattern in the Material Folk Culture of the Eastern United States.* Philadelphia: University of Pennsylvania Press, 1968.

Harvey, Robert; and Mary A. Clarke. *Historic Grounds Report and Landscape Plan, Lincoln Home National Historic Site, Springfield, Illinois.* Omaha, Nebraska: National Park Service, Midwest Regional Office, 1982.

Hill, Mary Miner. Manuscript Collection, The Abraham Lincoln Presidential Library, Springfield, Illinois.

Historical Encyclopedia of Illinois and History of Sangamon County, Vol. II. Chicago: Munsell Publishing Company, Publishers, 1912.

History of Logan County. Chicago: Inter-State Publishing Co., 1886.

History of Sangamon County, Illinois. Chicago: Interstate Publishing Co., 1881. Reprinted with Name index by Verna Nation Jones, Evansville, Indiana: Unigraphic, 1977.

Jakle, John A, and others. *Common Houses in America's Small Towns: The Atlantic Seaboard to the Mississippi Valley.* Athens: University of Georgia Press, 1989.

Kirk Associates, LLC, and Ratio Architects, Inc. "Burch House Reconstruction Value Analysis Final Report." Springfield Illinois: Lincoln Home National Historic Site, January 10, 2006.

LANDSCAPES, The Urbana Group, and Myers Schmalenberger Meisner. "Lincoln Home National Historic Site, Cultural Landscape Report: History, Existing Conditions, Analysis." National Park Service, Lincoln Home National Historic Site and the Great Lakes System Support Office, Unapproved draft.

Lawrence, Elizabeth Capps. "Some Memories". Salt Lake City, 1966.

McAlester, Virginia and Lee. *A Field Guide to American Houses.* New York: Alfred A. Knopf, Inc., 1984.

Master Plan Proposed Lincoln Home National Historic Site, Illinois. National Park Service, 1970.

Miner, Rev. N.W SC 1052. Manuscript Collection, The Abraham Lincoln Presidential Library, Springfield, Illinois.

Noble, Allen G. *Wood, Brick, & Stone, The North American Settlement Landscape Volume 1*: Houses. Amherst, Massachusetts: The University of Massachusetts Press, 1984.

Springfield City Directory & Business Mirror. Springfield: Bronson & Nixon Publishers & Printers, 1865.

"Springfield, Illinois." New York: Sanborn Map and Publishing Co., 1884.

"Springfield, Illinois." New York: Sanborn Map and Publishing Co., 1896.

"Springfield, Illinois." New York: Sanborn Map and Publishing Co., 1917.

"Springfield, Illinois." New York: Sanborn Map and Publishing Co., 1952.

Stratton, Christopher, Robert Rothman and Floyd Mansberger, (Fever River Research). "The Architectural Resources of the Enos Park Neighborhood, Springfield, Illinois." Fever River Research. July, 1997.

Stringer, Lawrence B. *History of Logan County.* Chicago: Pioneer Publishing Company, 1911.

Thomas F. Schwartz and Kim M. Bauer, "Unpublished Mary Todd Lincoln," Journal of the Abraham Lincoln Association Summer 1996 http://www.historycooperative.org/journals/jala/17.2/schwartz.html (1 May 2006).

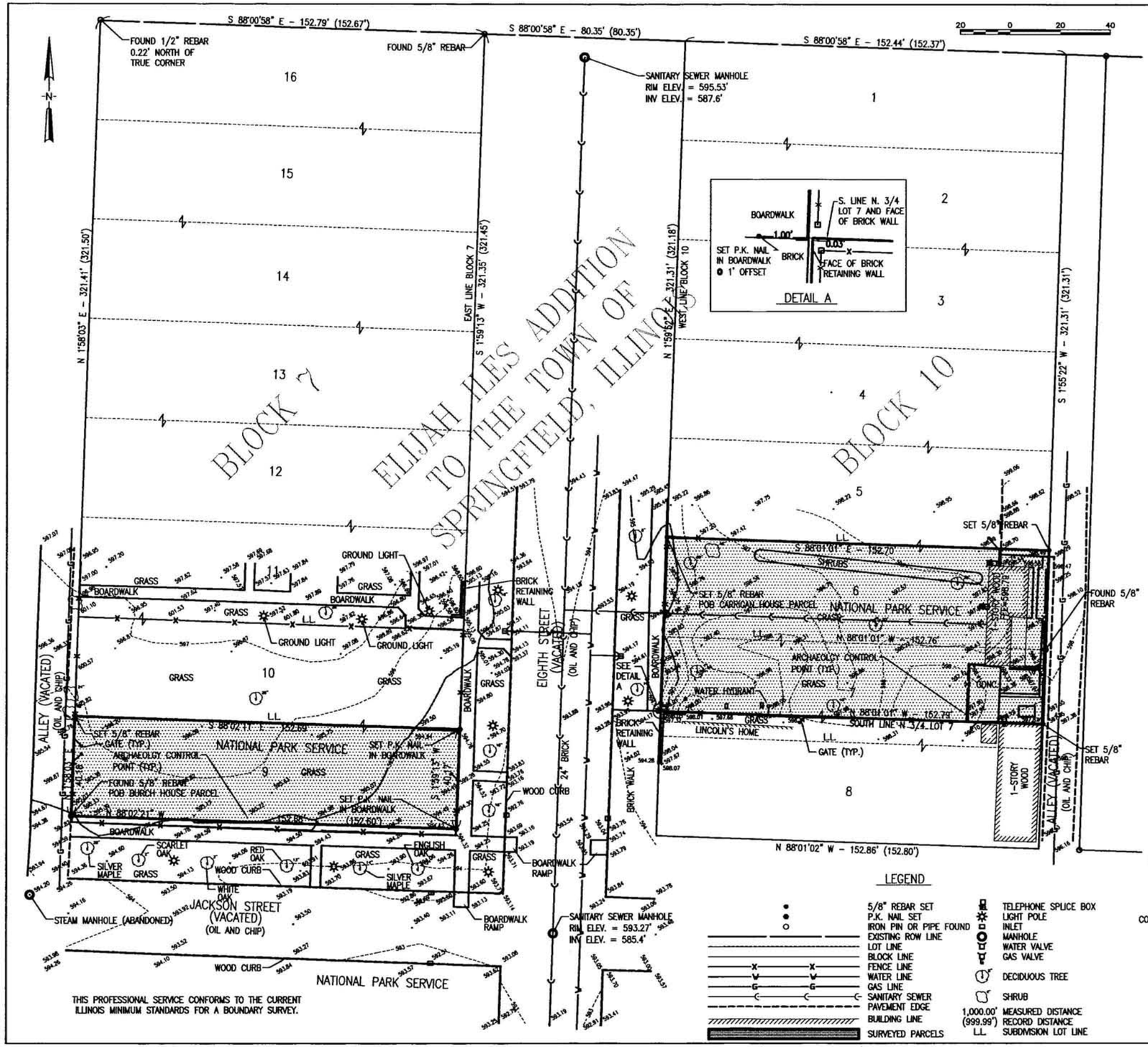
Turner, Justin G. & Linda Levitt. *Mary Todd Lincoln Her Life and Letters.* New York: Alfred A. Knopf, 1972.

"United States Census, 1850. Springfield, Sangamon County, Illinois." Illinois State Archives, Springfield, Illinois:

Weeks, Kay D. and Anne E. Grimmer. *The Secretary of Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitation, Restoring & Reconstructing Historic Buildings.* Washington, D.C.: U.S. Department of the Interior, National Park Service, Cultural Resource Stewardship and Partnerships Heritage Preservation Services, 1995.

APPENDIX A

ORDERED BY: RATIO ARCHITECTS



THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY SURVEY.

LEGEND

- 5/8" REBAR SET
- P.K. NAIL SET
- IRON PIN OR PIPE FOUND
- EXISTING ROW LINE
- LOT LINE
- BLOCK LINE
- FENCE LINE
- WATER LINE
- GAS LINE
- SANITARY SEWER
- PAVEMENT EDGE
- BUILDING LINE
- SURVEYED PARCELS
- TELEPHONE SPLICE BOX
- LIGHT POLE
- INLET
- MANHOLE
- WATER VALVE
- GAS VALVE
- DECIDUOUS TREE
- SHRUB
- 1,000.00' MEASURED DISTANCE
- (999.99') RECORD DISTANCE
- L.L. SUBDIVISION LOT LINE

GENERAL NOTES

RECORD DISTANCES PER PLAT OF SURVEY BY JOHN RAYNOLDS, IL PLS # 2054 AND DATED JUNE 1974. ALSO REFERENCE SURVEY INFORMATION COMPILED BY JOHN GARRISON, IL PLS # 1564 AND SHOWN IN A SKETCH DATED JANUARY 28, 1995.

BASIS OF BEARINGS IS GRID NORTH OF THE ILLINOIS STATE PLANE COORDINATE SYSTEM, NAD 83, WEST ZONE AND WAS DETERMINED USING SITE MONUMENTS LIHO 1 AND LIHO 2.

TREE SPECIES WERE IDENTIFIED BY THE JAEGER COMPANY.

PROPERTY PIN #: 14-34-178-024
ADDRESS: 8TH STREET AND JACKSON STREET
SPRINGFIELD, ILLINOIS 62701
OWNER: NATIONAL PARK SERVICE

UTILITY COMPANIES SERVING SITE:

AMERITECH (TELEPHONE)
555 EAST COOK STREET
SPRINGFIELD, IL 62703
217-753-2973

AMEREN/CILCO (GAS)
825 NORTH MACARTHUR AVENUE
SPRINGFIELD, IL 62701
888-672-5252

CITY OF SPRINGFIELD (SEWER)
ROOM 201 MUNICIPAL CENTER WEST
SPRINGFIELD, IL 62701
217-789-2260

CWLP (ELECTRIC)
10TH AND MILLER STREETS
SPRINGFIELD, IL 62702
217-789-2121

CWLP (WATER)
11TH AND MASON STREETS
SPRINGFIELD, IL 62704
217-789-2323

RECORD BOUNDARY DESCRIPTION
(AS PROVIDED BY NATIONAL PARK SERVICE)

Burch House
Lot 9 of Block 7 of the Elijah Iles Addition to the City of Springfield, Illinois
– and –
Carrigan House
Lot 6 and the North 3/4 of Lot 7 in Block 10 of the Elijah Iles Addition to the City of Springfield, Illinois

BENCHMARKS

LIHO 1
BRASS DISK SET IN CONCRETE UNDER BOARDWALK ON WEST SIDE OF EIGHTH STREET ON SOUTH RIGHT-OF-WAY LINE OF CAPITAL AVENUE. DISK IS STAMPED "LIHO 1".
ELEVATION 595.21'

LIHO 2
BRASS DISK SET IN CONCRETE UNDER BOARDWALK ON WEST SIDE OF EIGHTH STREET ON NORTH RIGHT-OF-WAY LINE OF EDWARDS STREET. DISK IS STAMPED "LIHO 2".
ELEVATION = 589.01'

UTILITY NOTE

THE LOCATIONS OF THOSE BURIED AND ABOVEGROUND UTILITIES SHOWN ARE APPROXIMATE, ARE SHOWN FOR CONTRACTOR INFORMATIONAL USE ONLY, AND ARE NOT TO BE REFERENCED FOR CONSTRUCTION PURPOSES. THE IMPLIED PRESENCE OR ABSENCE OF UTILITIES IS NOT TO BE CONSTRUED BY THE OWNER, ENGINEER, CONTRACTOR, OR SUBCONTRACTORS TO BE AN ACCURATE AND COMPLETE REPRESENTATION OF UTILITIES THAT MAY OR MAY NOT EXIST ON THE CONSTRUCTION SITE. BURIED AND ABOVEGROUND UTILITY LOCATION, IDENTIFICATION, AND MARKING ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. REROUTING, DISCONNECTION, PROTECTION, ETC. OF ANY UTILITIES MUST BE COORDINATED BETWEEN THE CONTRACTOR, UTILITY COMPANY, AND OWNER. SITE SAFETY, INCLUDING THE AVOIDANCE OF HAZARDS ASSOCIATED WITH BURIED AND ABOVEGROUND UTILITIES, REMAIN THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

DARREN E. FORGY
035-3637
PROFESSIONAL LAND SURVEYOR STATE OF ILLINOIS
SPRINGFIELD, IL

STATE OF ILLINOIS
COUNTY OF SANGAMON

I, Darren E. Forgy, do hereby certify that I am a Professional Land Surveyor, licensed in the State of Illinois; that the survey of this plat was made under my direction; that the survey is true and complete as shown to the best of my knowledge and belief; and that all monuments and marks are of the character and occupy the position shown theron.

Date _____

_____
PROFESSIONAL LAND SURVEYOR NO. 3637
LICENSE EXPIRES NOVEMBER 30, 2006

CO. LICENSE NO. 184-001084

DESIGNED:	SUB SHEET NO.	TITLE OF SHEET	DRAWING NO.
DRAWN:	C1	SITE SURVEY	449 / 80094
TECH. REVIEW:			PMIS/PKG NO.
DATE:		LINCOLN HOME NATIONAL HISTORIC SITE	SHEET ___ OF ___

APPENDIX B

Burch and Carrigan Houses
Lincoln Home National Historical Site, Springfield, IL

VALUE ANALYSIS (VA) WORKSHOP AGENDA

November 15-16, 2005

Day 1 – November 15 – Burch House

8:00 a.m. **INTRODUCTION TO WORKSHOP/ INFORMATION PHASE**
- Welcome & Opening Remarks
- Team Member Introductions
- Workshop Objectives, Organization & Agenda

PROJECT DESIGN REVIEW
- Project Goals & Required Functions to be achieved (by NPS)
- Current Design Review (Design Team)
- Project Budget / Current Cost Information / Pareto Diagram
- VA Team Questions

CREATIVITY & EVALUATION PHASE (CBA & Focus Areas)
- Function Logic Diagram, Stakeholders
- Discuss Focus Areas: 1. Internal and External Circulation; 2. Exterior Walls; 3. Well Field location
- Generate / Brainstorm Ideas / Define CBA Alternatives
  (Ideas to Achieve Best Balance of Life Cycle Cost, Performance, Sustainability, and Durability, while meeting Required Functions)
- Define Evaluation Factors (CBA, Ideas)
- Evaluate & Select Proposals / Alternatives for CBA (Possible 2nd Floor)

12:00 p.m. **LUNCH** (working lunch)

CHOOSING BY ADVANTAGES
- Identify Attributes & Advantages, Score Importance of Advantages
- Determine Total Importance of Each Alternative
- CBA / LCC / Importance to Cost Graph Updates
- Consensus of Preferred Alternative

DEVELOPMENT PHASE
- Document CBA Recommendations & VA Proposals
  (Original Design, Proposed Idea, Sketches, Cost Changes, LCC)

PRESENTATION PHASE
- Summary of CBA, Improvements / Cost Savings, VA Proposals
- Comments & Discussion
- Next Steps (VA Implementation), Closing Remarks

5:00 **ADJOURN**

Burch and Carrigan Houses
Lincoln Home National Historical Site, Springfield, IL

VALUE ANALYSIS (VA) WORKSHOP AGENDA

November 15-16, 2005

Day 2 – November 16 – Carrigan House

8:00 a.m. **PROJECT DESIGN REVIEW**

Project Goals & Required Functions to be achieved (by NPS)
Current Design Review (Design Team)
Project Budget / Current Cost Information / Pareto Diagram
VA Team Questions

CREATIVITY & EVALUATION PHASE (CBA & Focus Areas)

Function Logic Diagram, Stakeholders (review from 1st day)
Discuss Focus Areas: 1. Internal and External Circulation; 2. Potential Access to Lincoln Home; 3. Well Field location
Generate / Brainstorm Ideas / Define CBA Alternatives
(Ideas to Achieve Best Balance of Life Cycle Cost, Performance, Sustainability, and Durability, while meeting Required Functions)
Define Evaluation Factors (CBA, Ideas)
Evaluate & Select Proposals / Alternatives for CBA (Access to Site and Building)

12:00 p.m. **LUNCH** (working lunch)

CHOOSING BY ADVANTAGES

Identify Attributes & Advantages, Score Importance of Advantages
Determine Total Importance of Each Alternative
CBA / LCC / Importance to Cost Graph Updates
Consensus of Preferred Alternative

DEVELOPMENT PHASE

Document CBA Recommendations & VA Proposals
(Original, Proposed, Sketches, Cost Changes, LCC Impacts)

PRESENTATION PHASE

Summary of CBA, Improvements / Cost Savings, VA Proposals
Comments & Discussion
Next Steps (VA Implementation), Closing Remarks

5:00 p.m. **ADJOURN / CELEBRATION!**

APPENDIX C

psi Information To Build On
Engineering • Consulting • Testing

GEOTECHNICAL ENGINEERING SERVICES REPORT
BURCH HOUSE (H-26) AND CARRIGAN HOUSE (H-25)
LINCOLN HOME NATIONAL HISTORIC SITE
8TH AND JACKSON STREET
SPRINGFIELD, SANGAMON COUNTY , ILLINOIS
PSI PROJECT NO. 020-55029

PSI Information To Build On
Engineering • Consulting • Testing

September 6, 2005

Ratio Architects, Inc.
107 S. Pennsylvania Street, Suite 10
Indianapolis, Indiana 46204

Attention: Mr. David Kroll
Associate Principial

Re: Geotechnical Engineering Services Report
Burch House (H-26) and Carrigan House (H-25)
Lincoln Home National Historic Site
8th and Jackson Street
Springfield, Sangamon County, Illinois
PSI Project No. 020-55029

Dear Mr. Kroll:

Professional Service Industries, Inc. is pleased to transmit our Geotechnical Engineering Services Report for the referenced project. This report includes the results of field and laboratory testing, and recommendations for foundation design, as well as general site development.

PSI appreciates the opportunity to perform this Geotechnical Study and look forward to continue participation during the design and construction phases of this project. If you have any questions pertaining to this report, or if we may be of further service, please contact our office.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.

Brian R. Haschemeyer
Project Manager

William P. Pongracz, P.E.
District Manager

Copy to: (5) Ratio Architects, Inc.

GEOTECHNICAL ENGINEERING SERVICES REPORT

For the

BURCH HOUSE (H-26) AND CARRIGAN HOUSE (H-25)
LINCOLN HOME NATIONAL HISTORIC SITE
8TH STREET AND JACKSON STREET
SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

Prepared for

RATIO ARCHITECTS, INC.
107 S. PENNSYLVANIA STREET, SUITE 100
INDIANAPOLIS, INDIANA 46204

Prepared by

Professional Service Industries, Inc.
480 North Street
Springfield, Illinois 62704
Telephone (217) 544-6663

PSI PROJECT NO. 020-55029

September 6, 2005

PSI Information To Build On
Engineering • Consulting • Testing

480 North Street • Springfield, IL 62704
Phone 217/544-6663 • Fax 217/544-6148

Brian R. Haschemeyer
Project Manager

William P. Pongracz, P.E.
District Manager

Information To Build On

TABLE OF CONTENTS

1. PROJECT INFORMATION

1.1 PROJECT AUTHORIZATION

Professional Service Industries, Inc. (PSI) has completed a geotechnical exploration for the proposed Burch House and Carrigan House to be located at Lincoln Home National Historic Site. Authorization to perform these geotechnical services was given on June 23, 2005 by a signed agreement, between Ratio Architects, Inc. and PSI.

1.2 PROJECT DESCRIPTION

Based on the information provided by Mr. David A. Kroll of Ratio Architects, Inc., it is understood that the proposed project will consist of the following:

Project Location

- The proposed sites are to be located at the intersection of Eighth Street and Jackson Street in Springfield, Illinois.

Building

- The proposed Carrigan House and Burch House will consist of two-story wood-framed structures.
- No structural loading information is available at this time but it is assumed that maximum continuous wall loads will not exceed 2 kips per foot, and maximum column loads will not exceed 25 kips.

Grading

- Based on current site grades, it is estimated that less than 2 feet of cut and/or fill will be required across the site to achieve final grades for the proposed building.

The geotechnical recommendations presented in this report are based on the available project information, building location, and the subsurface materials described in this report. If any of the noted information is incorrect, please inform PSI in writing so that we may amend the recommendations presented in this report if appropriate and if desired by the client. PSI will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

1.3 PURPOSE/SCOPE OF SERVICES

The purpose of this study was to explore the subsurface conditions at the site to enable an evaluation of acceptable foundation systems for the proposed construction. PSI's scope of services included drilling a total of four (4) soil borings. Two (2) borings were performed within the proposed building pad of the proposed Burch House and two (2) borings were performed within the building pad of the proposed Carrigan House to

depths of approximately 25 feet below the existing ground surface. PSI performed an additional profile boring within the proposed Carrigan House to a depth of approximately 10 feet below the existing ground surface to better determine the depths of the fill material. PSI performed split spoon sampling at 2½ foot intervals. Three inch thin wall tube sampling was also performed at select locations and depths. Additionally, select laboratory testing was performed, and preparation of this geotechnical report.

This report briefly outlines the testing procedures, presents available project information, describes the site and subsurface conditions, and presents recommendations regarding the following:

- A discussion of subsurface conditions encountered including soil properties.
- An evaluation of the data as it relates to the proposed site development.
- An evaluation of the existing soils on the site.
- Recommendations for the site preparation, including placement and compaction of fill and backfill soils.
- Geotechnical recommendations to support foundation design
- Comments and recommendations relating to other observed geotechnical conditions which could impact development.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, groundwater or air, on, or below or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes. Prior to purchase or development of this site, an environmental assessment is advisable.

2. DRILLING, FIELD AND LAB TESTING PROCEDURES

2.1 DRILLING AND SAMPLING PROCEDURES

The soil borings were performed with a drilling rig equipped with a rotary head. Conventional hollow-stem augers were used to advance the holes. Representative samples were obtained employing split-spoon and thin-wall tube sampling procedures in general accordance with ASTM procedures.

2.2 FIELD TESTS AND MEASUREMENTS

Penetration Tests and Split-Barrel Sampling of Soils - During the sampling procedure, Standard Penetration Tests (SPT) were performed at regular intervals to obtain the standard penetration value of the soil. The standard penetration value (**N**) is defined as the number of blows of a 140-pound hammer falling thirty (30) inches, required to advance the split-barrel sampler one (1) foot into the soil. The sampler is lowered to the bottom of the drill hole and the number of blows recorded for each of three (3) successive increments of six (6) inches penetration. The "N" value is obtained by adding the second and third incremental numbers. The results of the standard penetration test indicate the relative density and comparative consistency of the soils, and thereby provide a basis for estimating the relative strength and compressibility of the soil profile components. The split-barrel sampler provides a soil sample for identification purposes and for laboratory tests appropriate for soil obtained from a sampler that may produce large shear strain in the sample.

Thin-Walled (Shelby) Tube Geotechnical Sampling of Soils – This practice is utilized as to obtain a relatively undisturbed specimen suitable for laboratory tests of structural properties or other tests that might be influenced by soil properties. A relatively undisturbed sample is obtained by pressing a thin-walled metal tube (typically 3 inches in diameter) into the in-situ soil, removing the soil-filled tube, and sealing the ends to prevent the soil disturbance or moisture loss. These samples may be utilized in the laboratory to obtain the following information or perform the following tests: Unconfined Compressive Strength (q_u), Laboratory Determination of Water Content, Wet and Dry Density, Void Ratio, Porosity, Percent Saturation, Atterberg Limits, and Grain Size.

Strength Tests - During the field boring operations, samples of the cohesive soil from the split-spoon sampling device were frequently tested by use of a calibrated soil penetrometer, which was used as an aid in determining the strength of the soil. The values of the unconfined compressive strength, as determined on samples of soil from the split-spoon sampling, must be considered recognizing the manner in which they were obtained because the split-spoon sampling techniques provide a representative, but somewhat disturbed, soil sample.

Water Level Measurements - Water level observations were made during and upon completion of the boring operation and are noted on the boring logs presented

herewith. In relatively impervious soils, the accurate determination of the groundwater elevation may not be possible even after several days of observation. Seasonal variations, temperature and recent rainfall conditions may influence the levels of the groundwater table and volumes of water will depend on the permeability of the soils.

Ground Surface Elevations - Elevations of the existing ground surface were determined from Benchmark (Sanitary Sewer Manhole located in the intersection of Eighth Street and Jackson Street, Rim Elevation 593.27') as shown on the plans provided to PSI. Based on this benchmark, PSI determined the ground surface elevation at each boring location using conventional leveling techniques. These elevations are indicated on the attached boring logs that are located in the appendix of this report. Approximate elevations for sites range from 595 to 598 feet above mean sea level.

2.3 LABORATORY TESTING PROGRAM

In addition to the field investigation, a supplemental laboratory-testing program was conducted to determine additional pertinent engineering characteristics of the foundation materials necessary in analyzing the behavior of the proposed structures.

The laboratory-testing program included supplementary visual classification and water content determinations on all samples. The shear strengths of the various cohesive soils were determined from unconfined compressive strength tests on disturbed samples obtained from split-spoon samplers. Atterberg limit tests were performed on select samples to determine the expansion potential of soils. Additionally several 3-inch thin wall tubes were sampled for unconfined compressive strength test, density determination, moisture content determination, and percent saturation.

All phases of the laboratory testing program were conducted in general accordance with applicable ASTM specifications. The results of these tests are to be found on the accompanying boring logs located in the Appendix.

3. SITE AND SUBSURFACE CONDITIONS

3.1 SITE LOCATION AND DESCRIPTION

The site consists of the proposed Carrigan house site which is located immediately north of the Lincoln home and the Burch house which is located on northeast corner of Eighth Street and Jackson Street (across the street to west of the Lincoln home). At the time of the field operation the site surface was covered with grass and our truck mounted drill rig experienced no difficulty moving about the site.

Photographs showing the proposed site, a Site Location Plan, USGS Topographic Map and an Aerial Photograph are provided in the Appendix.

3.2 GENERAL AREA GEOLOGY

The geology of this region has been greatly influenced by several major land-forming factors including bedrock formation and tectonic movements prior to the Pleistocene Period on the geological time scale, and the action of water and wind. A mantle of wind-deposited and water-worked loessial material overlies a deposit of Illinoisan glacial drift on much of the region in which the site is located.

In this region the glacial drift has been deposited in terminal glacial moraines or intermediate ground moraines composed of compact glacial till, which is often times overlain by glacio-fluvial outwash deposits of variable texture, but consist predominately of courser grained soils such as silts, sands and gravel. The underlying glacial till may also be variable textured, but is primarily a heterogenous mixture of sands, gravels, and pebbles bound in a compact clay to silty matrix. Boulders may exist within the glacial till.

The Illinoisan glacial drift and underlying older drift extend to bedrock, which generally consists of interbedded limestone, sandstone, coal and shale. Bedrock generally exists more than 20 to 40 feet below the existing ground surface.

Coal Mine - A cursory review of the Directory of Coal Mine Maps in Illinois issued by Illinois Geological Survey (ISGS) for Sangamon County in May 2000 indicates that the proposed sites are not undermined.

3.3 SUBSURFACE CONDITIONS

The site subsurface conditions were explored with a total of drilling a total of five (5) soil borings. Two (2) borings were performed within the proposed building pad of the Burch House and two (2) borings were performed within the proposed building pad of the Carrigan House to depths of approximately 25 feet below the existing ground surface. PSI also performed an additional profile boring within the proposed Carrigan House area to a depth of approximately 10 feet below the existing ground surface to better determine the depths of the fill material. PSI in consultation with National Park Service

personnel selected the boring locations and PSI located the borings in the field by measuring from known existing structures, using a 100-foot tape. The locations should be considered accurate only to the degree implied by the means and methods used to define them. The borings were advanced utilizing hollow stem auger drilling methods and soil samples were routinely obtained during the drilling process. Drilling and sampling techniques were accomplished generally in accordance with ASTM procedures. Select soil samples were tested in the laboratory to determine material properties for our evaluation. Laboratory testing was accomplished generally in accordance with ASTM procedures.

During PSI's investigation the site was generally covered with a grass with heavy organic material (root and plant fibers) extending to depths of approximately 6 inches below the existing ground surface. Below the upper organic topsoil was a layer of fill material that consists of brown/black silty clay with various amounts brick fragments that extended to depths of up to approximately 3 to 8 feet below the ground surface.

Below the stratum of fill material is layer of stiff brown mottled gray silty clay that extends to depths of approximately 20 feet below the existing ground surface

Underlying the layer of stiff brown silty clay is a stratum of weathered sandstone and shale that extends to the depths explored of approximately 25 feet below the existing ground surface.

The following table briefly summarizes the range of results from the field and laboratory testing programs. Please refer to the attached boring logs and laboratory data sheets for more specific information:

SUBSURFACE SOIL STRATA TYPES & PROPERTIES

PROPERTY DESCRIPTION / SOIL STRATA TYPE	APPROXIMATE ELEVATIONS NOTE1, ft.	RANGE OF PROPERTY VALUES					
		Standard Penetration, N	Water Content, % of Dry Weight	Dry Unit Weight, pcf	Unconfined Compressive Strength, Qu (tsf)	Liquid Limit, %	Plastic Limit, %
Medium Plastic Clay (Fill Material)	590 – 584	6 – 14	8 – 24	82 - 91	0.5 – 1.6	43	22
Low to Medium Plastic Silty Clay	584 – 578	3 – 9	21 – 29	–	1.0 – 3.3	–	–
SANDSTONE / SHALE	578 – 570	>50	10 – 16	–	–	–	–

NOTE 1 – Elevations of the existing ground surface were determined from Benchmark (Sanitary Sewer Manhole located in the intersection of Eighth Street and Jackson Street, Rim Elevation 593.27') as shown on the plans provided to PSI

The subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the appendix should be reviewed for specific information at individual boring locations.

These records include soil descriptions, stratifications, penetration resistances, locations of the samples and laboratory test data. The stratifications shown on the boring logs represent the conditions only at the actual boring locations. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual. Water level information obtained during field operations is also shown on these boring logs. The samples, which were not altered by laboratory testing, will be retained for 60 days from the date of this report and then will be discarded.

3.4 GROUNDWATER CONDITIONS

Free groundwater entered the borings and was measured at depths between approximately 16 to 22 feet below the ground surface ½ to 4 hours after removal of the augers in the borings. Based on these observations, PSI's experience in the area, and on laboratory moisture content measurements, the groundwater table at the time of the field exploration was estimated to be approximately 9 to 11 feet below the existing ground surface. The water level measurements presented in this report are the levels that were measured at the time of PSI's field activities. Although free water was encountered at this time, longer-term observations in cased holes or piezometers would be necessary for a more accurate evaluation of the groundwater conditions at the site.

Fluctuations in the groundwater level should be anticipated throughout the year depending on variations in climatological conditions and other factors not apparent at the time the borings were performed. Additionally, discontinuous zones of perched water may exist within the soils. The possibility of groundwater level fluctuation should be considered when developing the design and construction plans for the project. We recommend that the Contractor determine the actual groundwater levels at the site at the time of the construction activities.

A summary of the observed groundwater conditions is presented on the following table. These observations are based upon measurements during PSI's field operation on July 19, 2005 and were measured using a conventional measuring tape.

GROUNDWATER OBSERVATIONS

(FEET BELOW THE EXISTING GROUND SURFACE)

Boring No.	Ground Surface Elevations (above mean sea level)	Groundwater During Drilling	Groundwater Upon Auger Removal	Groundwater Delayed Readings	Delayed Ground-water Elevations (Above mean sea level)
B-1	595.5	23 ½'	Caved at 22'	16' after 4 hrs	579 ½'
B-2	595.7	None Observed	Caved at 23'	19' after 3 hrs	576 ½'
B-3	598.4	None Observed	Caved at 22'	18' after 2 hrs	580'
B-4	597.5	None Observed	Caved at 21'	22' after ½ hr	575 ½'

4. EVALUATION AND RECOMMENDATIONS

4.1 GEOTECHNICAL DISCUSSION

The primary concerns related to foundation construction on these sites are:

- Presence of fill material within the proposed building areas to depths up to approximately 3 to 8 feet below the existing grades.

As discussed previously in Section 3.3 "Subsurface Conditions", fill materials are present on the site. Based on the visual classification, the fill consists of several types of materials. Soft or improperly compacted fill material present the possibility of settlement under sustained loads, especially under loads such as those imposed by building foundations. It should be noted, however, that settlement could occur over time even under lighter loadings such as under floor slabs. Settlement could possibly be occurring in the fill soils due to the weight of the fill material above. Due to the variable nature of the soils encountered, accurate settlement estimates are very difficult to develop.

To entirely eliminate the possible detrimental effects of settlement of structural elements (foundations, slabs, etc.) placed on these fill materials, the fills should be removed in their entirety and replaced with an engineered backfill, or the loads of these elements should be transferred below the fill. If all or some of the fill is left in place, and foundations/slabs, etc. are placed upon them, the owner/developer would be assuming some degree of risk of detrimental settlement of these structural elements. It should also be considered that the proposed additional engineered fill to be placed on this site will add further load to the underlying existing fill, inducing the potential for additional settlement.

4.2 SITE PREPARATION AND FILL REQUIREMENTS

It is PSI's understanding that an estimated 1 to 2 feet (from existing grades) of engineered fill will be required in the building areas to achieve final subgrade elevation. Before engineered fill is placed, PSI recommends that all significant vegetation and roots, and any soft soils and fill materials in the construction areas, be stripped from the site and either wasted or stockpiled for later use in landscaping. As discussed previously, the heavily organic soils appear to be limited to the upper 5 to 7 inches of the site. However, fill material was encountered in the borings, and this fill extends to depths up to of approximately 3 to 8 feet below the existing grade. Based on the information from these soil borings, an over-excavation of up to approximately 3 to 8 feet is anticipated to remove the fill material.

A qualified representative of the PSI should determine the actual depth of stripping at the time these operations are carried out. The building subgrade areas should then be compacted with a sheeps-foot roller until a stable base is achieved. The areas should

then be proof-rolled with a loaded tandem axle dump truck or similar rubber tired vehicle, weighing at least 18 tons (9 tons/axle). Proof-rolling aids in providing a firm base for compaction of fill, and help to delineate soft or disturbed areas that may exist below subgrade level. Soils that are observed to rut or deflect excessively (typically >1 inch) under the moving load should either be scarified and re-compacted or undercut and replaced with properly compacted, fill. The proof-rolling and undercutting activities should be witnessed by a representative of the geotechnical engineer and should be performed during a period of dry weather.

Silty soils were encountered below the upper organic topsoil on the site. These soils are easily disturbed by construction activity. A stable base for compaction of structural fill is extremely important, as both building foundations and floor slabs may be partly supported by newly placed fill. Where soft subgrade soils are encountered, it is recommended that these materials be removed to underlying higher strength soils. Another alternative for providing a stable subgrade would be lime-treatment of the clayey subgrade soils.

New fill and/or backfill material for the project should be a well-graded granular or non-expansive (Liquid Limit (LL)<50 and Plasticity Index (PI) <25) cohesive material free of organic debris. The first layer of fill material should be placed in a relatively uniform horizontal lift and adequately keyed into the subgrade soils. All fill materials should have a Proctor maximum dry density greater than 100 pcf; be essentially free of organic or other deleterious materials and have a maximum particle size of 2 inches. Soils classified as CL, ML, CL-ML, SM, SC-SM, SW, GW, GP and SP will generally be suitable for use as structural fill. Soils classified as OL, OH, MH, CH and PT should be considered unsuitable. An example of suitable fill material would be a granular fill that is a well-graded sand and gravel mix with a fairly small percentage of fines (typically 5 to 10%). This material would be suitable for use as structural fill or backfill for the project. A crushed limestone (IDOT gradation CA-6 or similar) would also be a suitable granular fill/backfill.

Fill/backfill should be placed in maximum lifts of 8 inches of loose material. The type and size of compaction equipment used would likely determine maximum lift thickness. Suitable cohesive fills should be compacted to a minimum dry density of 97% of the maximum, as determined by ASTM D 698 (Standard Proctor test). The material should be compacted between –2% and +3% of the optimum moisture content value as determined by the standard Proctor test. If a fine-grained silt or clay (cohesive) soil is used for fill, close moisture content control will be essential to achieve the recommended degree of compaction. If water must be added, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying. Each lift of compacted-engineered fill should be tested by a representative of PSI prior to placement of subsequent lifts. The following tables summaries the recommended compactive effort for various types of engineered fills.

RECOMMENDED COMPACTIVE EFFORT (FOR VARIOUS TYPES OF ENGINEERED FILL/BACKFILL)				
MATERIAL TESTED	PROCTOR TYPE	MIN % DRY DENSITY	MOISTURE CONTENT RANGE	RECOMMENDED FREQUENCY OF TESTING
Structural Fill (Cohesive)	Standard	97%	-2 to +3%	1 per 2,500 sf of fill placed
Structural Fill (Granular)	Standard	97%	-2 to +3%	1 per 2,500 sf of fill placed
Base Under Slab (Cohesive)	Standard	97%	-2 to +3%	1 per 2,500 sf of fill placed
Base Under Slab (Granular)	Standard	97%	-2 to +3%	1 per 2,500 sf of fill placed
Landscape Fill (non-load bearing)	Standard	90%	-2 to +3%	1 per 5,000 sf of fill placed
Utility Trench / Wall Backfill	Standard	97%	-2 to +3%	1 per 200 lf of backfill placed

The top of compacted structural fill, if higher than the existing grades outside the building, should extend horizontally at least 5 feet beyond the outside edge of the structural foundations before sloping. PSI recommends that all permanent fill slopes be constructed at 3(H) on 1(V) or flatter and be properly compacted. The surfaces of the slopes should be protected from erosion by seeding, sodding, or other acceptable means.

Based on the boring information, the underlying clayey silt soils appear suitable for use as structural fill. However, based on the in-situ moisture contents of these materials, significant drying of the cohesive on-site soils should be anticipated to facilitate compaction. Drying is typically achieved by spreading the material in a relatively thin lift and aerating the soil by continuous disking. This process works best during periods of warm, dry weather. If earthwork activities are carried out during wetter months, when drying conditions are not optimal, it may be beneficial to incorporate a hydrated lime, or similar additive, into the soil to promote drying if cohesive soils are used. Off-site soils used as fill should be evaluated by adequate laboratory testing prior to their use as fill.

If over excavation of the foundations is required to remove soft or unsuitable soils. The excavation should extend outward horizontally from the edge of the footing for a distance equal to the depth of fill removed below the footing (outward 45° from the bottom edge of footing). A representative of PSI should be present on site to verify proper excavation depths. Backfilling and compaction procedures, as described above, could then be implemented to the bottom of footing elevation. In lieu of soil backfill, a controlled low strength flowable fill material with a minimum 28-day specified compressive strength of 700 psi could also be used as backfill.

4.3 FOUNDATION RECOMMENDATIONS

PSI recommends that the proposed building be supported on a shallow footing foundation system consisting of conventional spread and continuous wall footings. These foundations should extend to a minimum depth of 36 inches below the final grade for frost protection. Footings should bear on the undisturbed stiff brown mottled

gray silty clay extending through the upper fill material or bear on newly compacted fill that extends to the undisturbed stiff brown mottled gray silty clay (which is tested and observed by a PSI representative). Conventional spread and continuous wall foundations bearing on these soils can be designed for a maximum net allowable soil bearing pressure of 2,000 pounds per square foot (psf), based on dead load plus design live load. The net pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation.

It is recommended that soils at footing design elevation be observed and tested by a representative of PSI prior to concrete placement to evaluate the suitability and uniformity of the soils for support of the design foundation loads. If unsuitable bearing soils are encountered in a footing excavation, the footing should be deepened to competent bearing soil, or an over-excavation and backfill procedure could be performed. If an over-excavation and backfill procedure is utilized, it would require widening the deepened excavation in all directions at least 8 inches beyond the edges of the footing for each 12 inches of over-excavation depth. The over-excavation should then be backfilled in maximum 8-inches thick loose lifts with suitable, well-graded granular fill material, and compacted to at least 97 percent of the maximum standard Proctor dry density (ASTM D 698). Another alternative is to undercut to suitable soils, and backfill with lean concrete or flowable fill (with a minimum 28-day specified compressive strength of 700 psi) up to the design elevation of the bottom of footings.

Exterior footings should be located at a depth of at least 36 inches below the outside final exterior grades to provide adequate frost protection. If the building is constructed during winter months or if the footings will likely be subjected to freezing temperatures after construction is completed, then all footings should be protected from freezing.

In order to minimize the effects of any slight differential movement that may occur due to variations in the character of the supporting soils and any variations in seasonal moisture contents, it is recommended that the continuous footings be suitably reinforced to make them as rigid as practical. Minimum dimensions of 30 inches for column footings and 16 inches for continuous footings should be used in foundation design to reduce the possibility of a local bearing capacity failure.

Clayey silt soils to silty clay soils were encountered at this site, and these soils will be susceptible to disturbance from construction activity, particularly if perched water is present near the subgrade level. Care should be taken during excavation and construction of footings to minimize disturbance of the bearing soils. The base of all foundation excavations should be free of water and loose soil prior to placing concrete. Concrete should be placed as soon as possible after excavating to minimize bearing soil disturbance. Should the soils at bearing level become saturated, desiccated or disturbed, the affected soil should be removed prior to placing concrete.

Laboratory consolidation testing was beyond the scope of this exploration. Based on the known subsurface conditions and site geology, laboratory testing and past

experience, PSI anticipates that properly designed and constructed footings for the proposed stuctures supported on the recommended, inspected and approved natural soils, or properly compacted structural fill should experience maximum total and differential settlements between adjacent columns of less than 1 inch and ¾-inch, respectively.

4.4 EARTHQUAKE AND SEISMIC DESIGN CONSIDERATIONS

The 1996 BOCA National Building Code requires a site coefficient for the calculation of minimum earthquake design forces. This coefficient is a function of soil type (i.e., depth of soil and strata types). Based on the (estimated) depth of rock and the consistency of the soil at the boring locations, the soil-profile type is S_1 and a site coefficient (S) of 1.0 is recommended.

The 2003 International Building Code requires a Site Class for the calculation of the earthquake design forces. The effect of soil amplification on earthquake ground motions is taken into account by adjusting the earthquake spectral response accelerations for the soil and rock conditions at the site. The code groups soil or rock conditions into five sites as defined in Table 1615.1.1, with site coefficients of Fa and Fv increasing from Site Class A through F. The site class is based on a weighted average of known or estimated soil properties for the upmost 100 feet of subsurface profile.

Soil borings at the project site extended to depths of 25 feet. Based on regional geological mapping, we anticipate that the subsurface conditions below the explored depth may generally consist of layers of sandstone, shale and bedrock. Based on our review of the available data, and knowledge of regional geology, PSI evaluated the Site Class using the weighted average of known and estimated Standard Penetration Test (SPT) N-values and soil shear strengths estimated from the field and laboratory tests and regional geological information. Based on this evaluation, we recommend that the seismic design for this project be based on Site Class "C". The USGS-NEHRP probabilistic ground motion values near latitude 39.7972° and longitude –89.6451° are as follows:

Period (seconds)	2% Probability of Event in 50 years (%g)	Site Coefficient F_a	Site Coefficient F_v
PGA	11.50	---	---
0.2 (S_s)	26.84	1.20	---
0.3	---	---	---
1.0 (S_1)	10.54	---	1.69

The Site Coefficients, F_a and F_v were interpolated for IBC 2003 Tables 1615.1.2(1) and 1615.1.2(2) as a function of the site classifications and the mapped spectral response acceleration at the short (S_s) and 1 second (S_1) periods.

4.5 FLOOR SLAB RECOMMENDATIONS

As noted previously, the existence of approximately 3 to 8 feet of miscellaneous fill material presents a possibility of detrimental settlements of fills and floor slabs placed upon them. To entirely alleviate this potential, the miscellaneous fill materials should be removed in their entirety and replaced with an engineered backfill. If all or some of the fill is left in place, and slabs or engineered fill are placed upon them, the owner would assume some degree of risk of detrimental settlement of these structural elements. Again, acknowledging that the floor slab loads would generally impose significantly less loading to the fill materials, it may be desirable, from a standpoint of economics, to remove only a portion of the fill under the floor slab areas. *It should be stressed, however, that removing only a portion of the fill might reduce the occurrence of detrimental settlement, but would not alleviate it.*

It is PSI's understanding that the floor slab for the proposed Burch House and Carrigan House will ***not*** support loads greater than "typical" floor slab loads. If sections of the floor slab will support loads greater than "typical" floor slab loads (>125 psf), underlying subgrade soils below these sections may need to be removed and replaced with compacted/engineered fill. PSI recommends that if the proposed building will include heavily loaded floor slab sections, PSI should be provided the opportunity to review the final design plans and specifications to determine if the underlying subsurface soils can adequately support the heavily loaded floor slab sections. The following recommendations assume "typical" floor slab loads.

Proof-rolling, as discussed earlier in this report, should be accomplished to identify soft or unstable soils that should be removed from the floor slab area prior to fill placement and/or floor slab construction.

It is recommended that the floor slab be grade supported on crushed limestone or sand/gravel mix of IDOT gradation CA-6 or similar. Where additional drainage capabilities are desired, a more open-graded material may be used. Crushed limestone of IDOT gradation CA-7 would be suitable for this use. A thickness of six (6) inches in recommended. If the floor slab is to be supported on IDOT CA-7 crushed limestone or other open-graded material, PSI recommends utilizing a geo-textile fabric between the subgrade soils and this base material to prevent the migration of the subgrade soil into the voids of the open graded "clean" crushed limestone.

PSI recommends that the soil surface be graded to drain away from the building without low spots during construction, and before the placement of the granular base material. Polyethylene sheeting should be placed to act as a vapor retarder where the floor will be in contact with moisture sensitive equipment or product such as tile, wood, carpet, etc., as directed by the design engineer. The decision to locate the vapor retarder in direct contact with the slab or beneath the layer of granular fill should be made by the design engineer after considering the moisture sensitivity of subsequent floor finishes, anticipated project conditions and the potential effects of slab curling and cracking. The

floor slabs should have an adequate number of joints to reduce cracking resulting from differential movement and shrinkage.

For subgrade prepared as recommended and properly compacted fill, a modulus of subgrade reaction, k value, of 150 pounds per cubic inch (pci) may be used in the grade slab design based on a 1 ft. x 1 ft. plate load test. However, depending on how the slab load is applied, the value will have to be geometrically modified. The value should be adjusted for larger areas using the following expression for cohesive and cohesionless soil:

Modulus of Subgrade Reaction, $k_s = (\frac{k}{B})$ for cohesive soil and

$$k_s = k(\frac{B+1}{2B})^2 \text{ for cohesionless soil}$$

where: k_s= coefficient of vertical subgrade reaction for loaded area,
k = coefficient of vertical subgrade reaction for 1x1 square foot area, and
B = width of area loaded, in feet

5. CONSTRUCTION CONSIDERATIONS

5.1 QUALITY CONTROL CONSIDERATIONS

It is recommended that PSI be retained to provide observation and testing of construction activities involved in the foundation, earthwork, and related activities of this project. PSI cannot accept any responsibility for any conditions, which deviate from those, described in this report, nor for the performance of the foundation if not engaged to also provide construction observation and testing for this project.

5.2 DRAINAGE AND GROUNDWATER CONSIDERATIONS

Groundwater was encountered in the borings at the time the field exploration was conducted, however is not expected to have an impact on construction operations. Based on these observations, PSI's experience in the area, and on laboratory moisture content measurements, the groundwater table at the time of the field exploration was estimated to be approximately 9 to 11 feet below the existing ground surface. Groundwater infiltration into trench excavations above approximately 9 feet below existing grades is not likely, however fluctuations in the groundwater level should be anticipated throughout the year depending on variations in climatological conditions and other factors not apparent at the time the borings were performed. Additionally, discontinuous zones of perched water may exist within the soils. The possibility of groundwater level fluctuation should be considered when developing the design and construction plans for the project.

Groundwater infiltration could be controlled with normal sump pumping or the use of perimeter trenches to collect and discharge the water away from the work area should be used. Should excessive and uncontrolled amounts of seepage occur, the Geotechnical engineer should be consulted. It is recommended that all excavations be backfilled as soon as possible in order to reduce the period in which groundwater is lowered, which could result in areas of settlement. The method, means and sequence of dewatering should be the responsibility of the general contractor, who should be experienced in this type of construction.

Furthermore, water should not be allowed to collect in the foundation excavations, on floor slab areas, or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the buildings and beneath the floor slabs. Grades should be sloped away from the buildings and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill and floor slab areas of the buildings.

5.3 FEDERAL EXCAVATION REGULATIONS

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document was issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that all excavations, whether they be utility trenches, basement excavation or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person," as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

PSI is providing this information solely as a service to our client. PSI is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

6. GEOTECHNICAL RISK & REPORT LIMITATIONS

Geotechnical Risk

The concept of risk is an important aspect of the geotechnical evaluation. The primary reason for this is that the analytical methods used to develop geotechnical recommendations do not comprise an exact science. The analytical tools which geotechnical engineers use are generally empirical and must be used in conjunction with engineering judgment and experience. Therefore, the solutions and recommendations presented in the geotechnical evaluation should not be considered risk-free and, more importantly, are not a guarantee that the interaction between the soils and the proposed structure will perform as planned. The engineering recommendations presented in the preceding section constitutes PSI's professional estimate of those measures that are necessary for the proposed structure to perform according to the proposed design based on the information generated and reference during this evaluation, and PSI's experience in working with these conditions.

Report Limitations

The recommendations submitted are based on the available subsurface information obtained by PSI and design details furnished by Ratio Architects, Inc. for the proposed Burch House and Carrigan House for the Lincoln Home National Historic Site. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the foundation recommendations are required. If PSI is not retained to perform these functions, PSI will not be responsible for the impact of those conditions on the project.

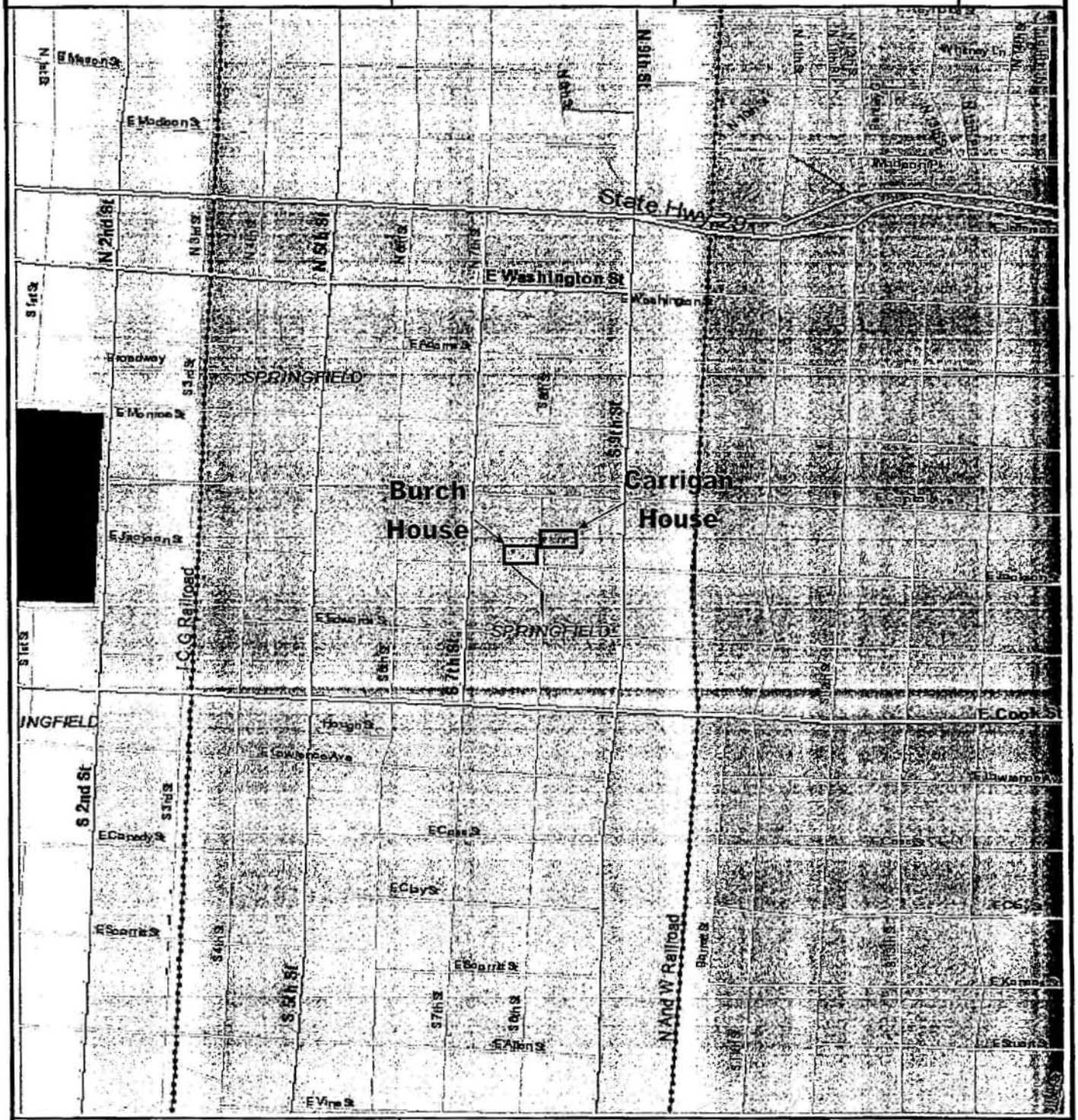
The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are more complete, the geotechnical engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At this time, it may be necessary to submit supplementary recommendations. This report has been prepared for the exclusive use of Ratio Architects, Inc. for the specific application to the proposed Burch House and Carrigan House for the Lincoln Home National Historic Site located 8th Street and Jackson Street in Springfield, Sangamon County, Illinois.

APPENDIX

SITE LOCATION MAP

SOURCE:	YEAR:	SCALE:	
Topozone.com	NA	1" = approx. 1,550'	N



psi Information To Build On
Engineering • Consulting • Testing
480 North Street, Springfield, Illinois 62704
phone 217/544-6663 fax 217/544-6148

SITE LOCATION MAP

PSI PROJECT No.:	020-55029
Project:	Burch and Carrigan Houses
Location:	Lincoln Home National Historic Site 8th Street and Jackson Street Springfield, Sangamon County, Illinois

AERIAL PHOTOGRAPH

SOURCE:	YEAR:	SCALE:	
United States Department of Agriculture (USDA)	1998	1" = approx. 350'	N

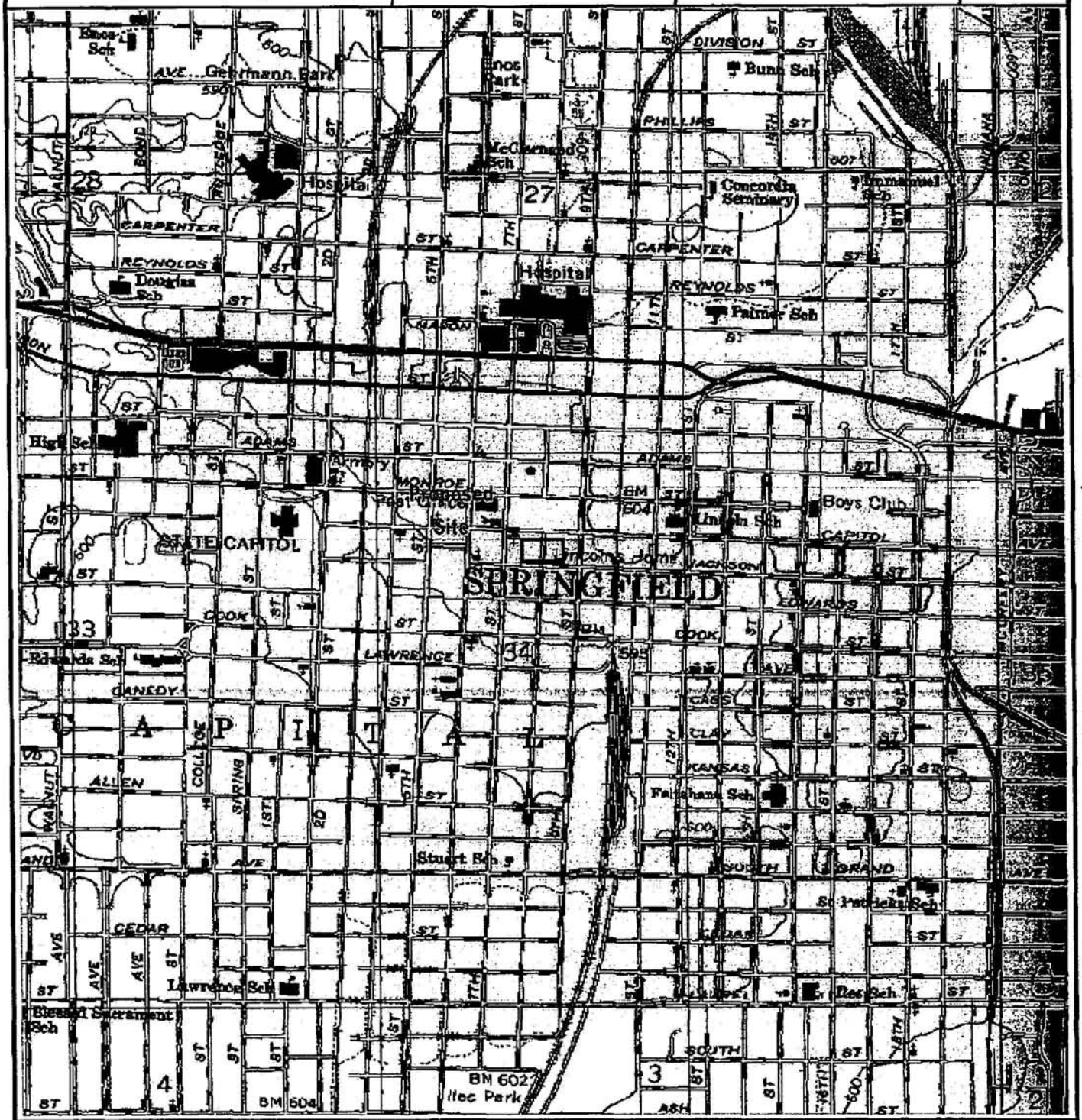
psi Information To Build On
Engineering • Consulting • Testing
480 North Street, Springfield, Illinois 62704
phone 217/544-6663 fax 217/544-6148

AERIAL PHOTOGRAPH

PSI PROJECT No.:	020-55029
Project:	Burch and Carrigan Houses
Location:	Lincoln Home National Historic Site
	8th Street and Jackson Street
	Springfield, Sangamon County, Illinois

TOPOGRAPHICAL MAP

SOURCE:	YEAR:	SCALE:	
United States Gelogical Survey (USGS) 7.5 Quadrangle: **Springfield West, IL**	1998	1" = approx. 1,550'	N



psi *Information To Build On*

Engineering • Consulting • Testing

480 North Street, Springfield, Illinois 62704

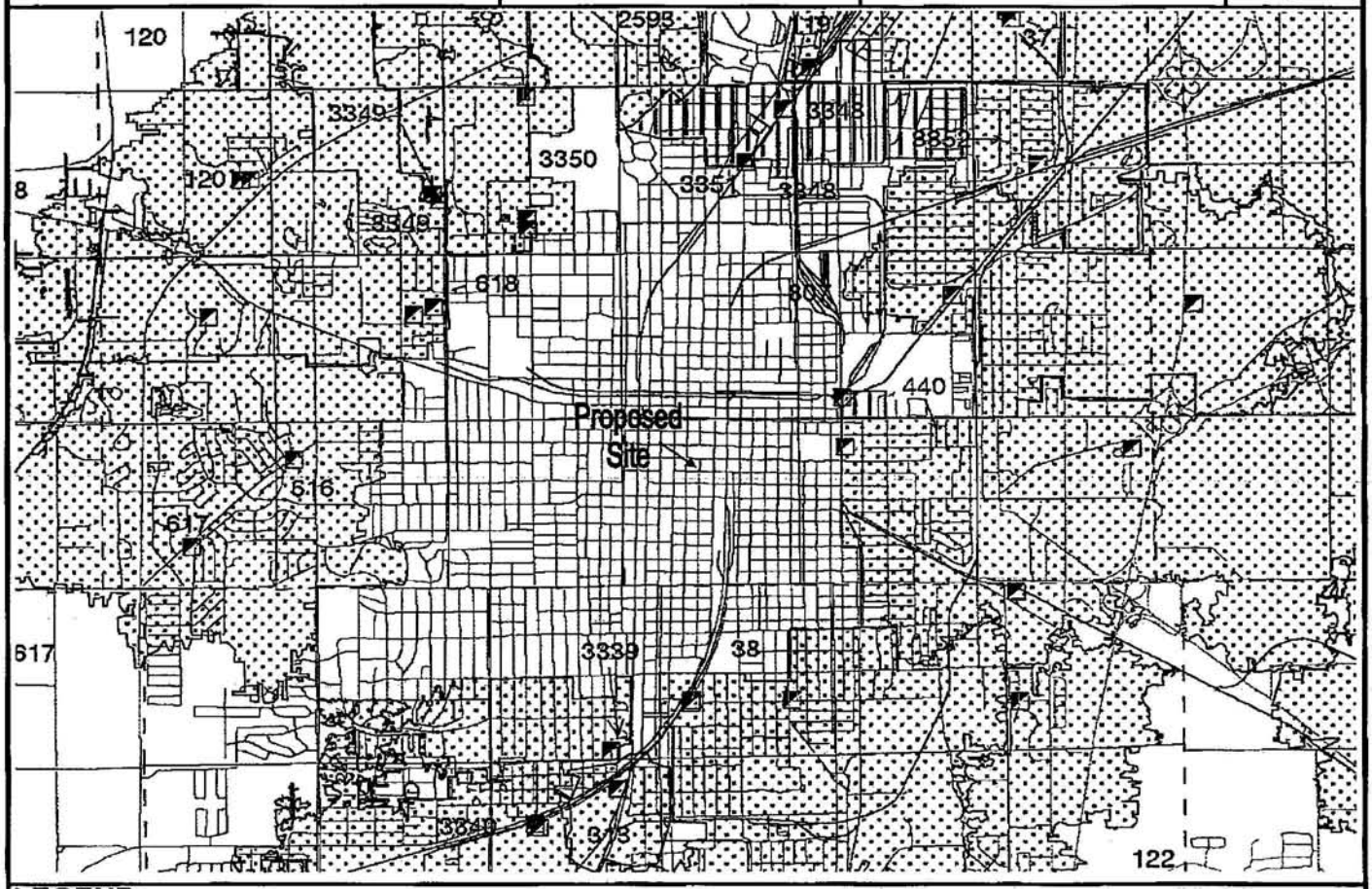
phone 217/544-6663 fax 217/544-6148

TOPOGRAPHICAL MAP

PSI PROJECT No.:	020-55029
Project:	Burch and Carrigan Houses
Location:	Lincoln Home National Historic Site 8th Street and Jackson Street Springfield, Sangamon County, Illinois

COAL MINE MAP

SOURCE:	YEAR:	SCALE:	
Illinois States Gelogical Survey (ISGS) Sangamon County	May 2000	Not to scale	N



LEGEND:

- Active strip mine tipple
- Abandoned strip mine tipple
- Active shaft
- Active drift
- Abandoned drift
- Uncertain type or location
- 3 Mine index number
- Abandoned shaft
- Active slope
- Abandoned slope
- Section lines
- Township and Range lines
- Roads
- Railroads
- Underground mine
- Surface mine
- Indefinite mine boundary

psi Information To Build On
Engineering • Consulting • Testing
480 North Street, Springfield, Illinois 62704
phone 217/544-6663 fax 217/544-6148

COAL MINE MAP

PSI PROJECT No.:	020-55029
Project:	Burch and Carrigan Houses
Location:	Lincoln Home National Historic Site 8th Street and Jackson Street Springfield, Sangamon County, Illinois

SITE PHOTOGRAPHS

Photograph Date: June 2005

PHOTO 1

View of the Burch House site looking east from the western edge of the site.

PHOTO 1

PHOTO 2

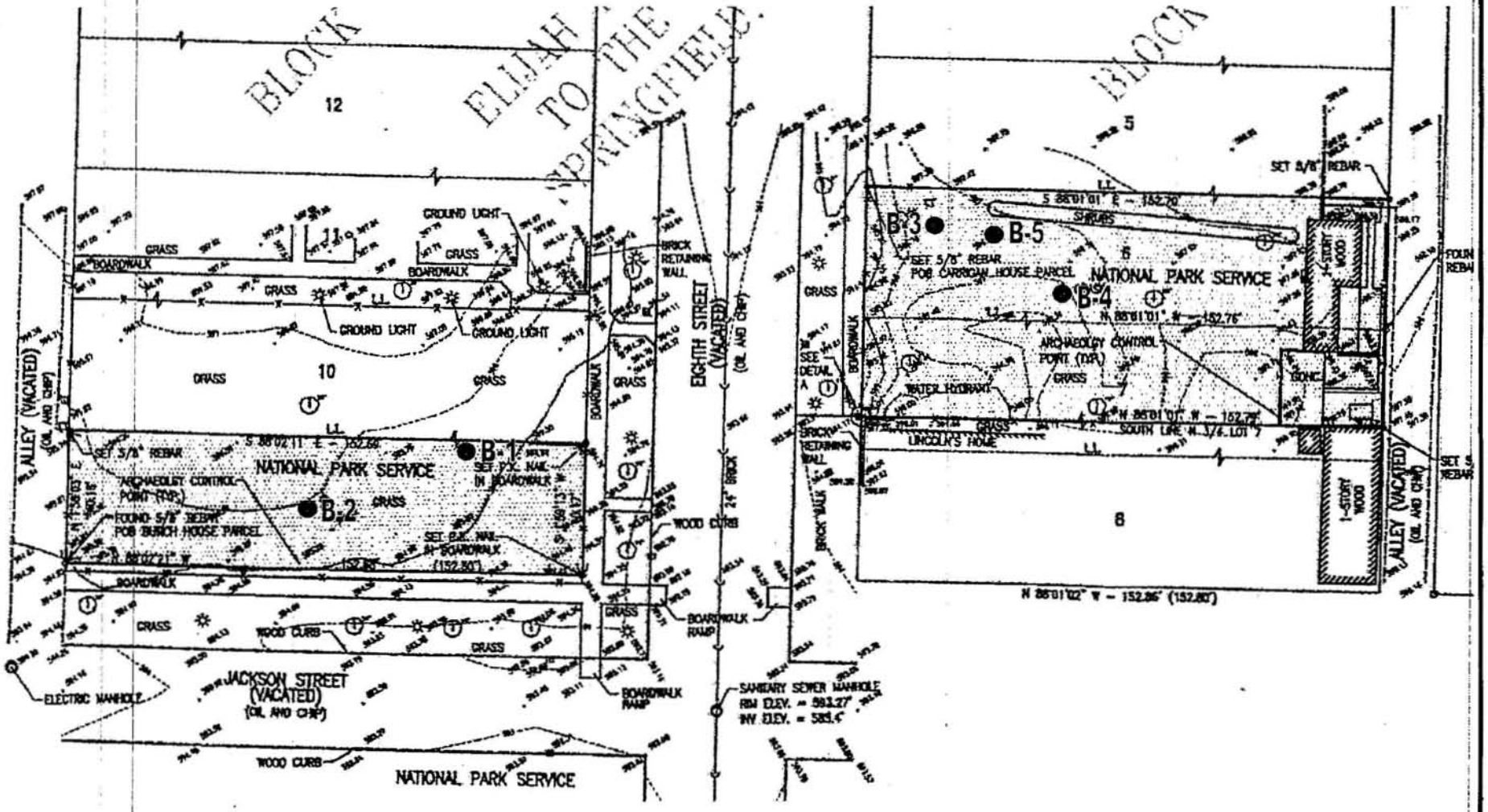
View of the Carrigan House site looking east from Eighth Street (Lincoln Home Shown on Right).

PHOTO 2

psi Information To Build On
Engineering • Consulting • Testing
480 North Street, Springfield, Illinois 62704
Phone 217/544-6663 fax 217/544-6148

SITE PHOTOGRAPHS

PSI PROJECT No.:	020-55029
Project:	Burch and Carrigan Houses
Location:	Lincoln National Historic Site
	8th Street and Jackson Street
	Springfield, Sangamon County, Illinois



● Boring Location

[psi] Information To Build On

Engineering • Consulting • Testing

480 North Street, Springfield, Illinois 62704

phone 217/544-6663 fax 217/544-6148

Project:	Burch and Carrigan Houses Lincoln Home National Historic Site Springfield, Sangamon County, Illinois
Client:	Ratio Architects, Inc. 107 S. Pennsylvania Street, Suite 100 Indianapolis, Indiana 46204

BORING LOCATION PLAN

PSI Project No.: 020-55029

Date: August 2005	
Project Manager: BH	Checked By: WP

N

KEY TO SYMBOLS


Topsoil


Fill (made ground)


USCS Low Plasticity Clay


Sandstone


Shale

HSA = Hollow Stem Auger

CFA = Continuous Flight Auger

SS = Split-spoon Sampler

ST = Shelby Tube Sampler

RC = Rock Core

DD = Dry Density

LL = Liquid Limit

PL = Plastic Limit

Qu = Unconfined Compressive Strength

Qp = Pocket Penetrometer

RQD = Rock Quality Designation

REC'D = Rock Core Recovery Percentage

PID = Photo Ionic Detector (ppm)

MR* = Unable to determine depth of water due to mud rotary drilling methods

The borings were advanced into the ground using hollow stem augers. At regular intervals throughout the boring depths, soil samples were obtained with either a 1.4-inch I.D., 2.0-inch O.D., split-spoon sampler or a 3-inch diameter Shelby tube. The split-spoon sampler was first seated 6-inches to penetrate any loose cuttings and then driven an additional foot where possible with blows of a 140 pound hammer falling 30-inches. The number of hammer blows required to drive the sampler each 6-inch increment is recorded in the field. The penetration resistance "N-value" is redesignated as the number of hammer blows required to drive the sampler the final foot and, when properly evaluated, is an index to cohesion for clays and relative density for sands. The split-spoon sampling procedures used during this exploration are in general accordance with ASTM Designation D 1586.

Relatively undisturbed Shelby tube samples were obtained by forcing a section of 3-inch diameter steel tubing into the soil at the desired sampling levels. This sampling procedure was in general accordance with ASTM Designation D 1587. Each tube, together with the encased soil, was carefully removed from the ground, sealed and transported to the laboratory for testing.

Professional Service Industries, Inc.
480 North Street
Springfield, IL 62704
Telephone: 217-544-6663
Fax: 217-544-6418

LOG OF BORING B-1

PSI Job No.: 020-55029
Project: Burch House and Carrigan House
Location: Lincoln Home National Historic Site
8th Street and Jackson Street
Springfield, Sangamon County, Illinois

Drilling Method: 3 1/4" Hollow Stem Auger
Sampling Method: Split Spoon and Shelby Tube
Hammer Type: Automatic
Boring Location: See location plan
Burch House

WATER LEVELS
While drilling 23.5 ft
Upon compl. caved 22 ft
4 hr Delay 16 ft

Appoximate Surface Elev.: 595.5 ft

Elevation, (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6 inches (N - Blows per 12 inches)	Moisture, %	Additional Remarks
595	0			Surface: Grass (heavy organics to -7")	CL			
				Brown silty CLAY (FILL)	CL			
		1	14	Brown silty CLAY; little gray sand; trace gravel (FILL)		6-5-2 N=7	10	
		2	23		CL	S. Tube	16	DD = 91 pcf
590	5							
		3	8	Dark gray silty CLAY; trace coal and brick fragements (FILL)	CL	2-1-2 N=3	22	Qu = 1.6 tsf
		4	18	Light gray mottled brown silty CLAY		2-1-3 N=4	23	Qu = 1.2 tsf
585	10							
		5	18		CL	1-1-2 N=3	24	Qu = 1.6 tsf
		6	18			1-2-2 N=4	27	Qu = 3.3 tsf
580	15							
		7	18	Brown silty CLAY; trace fine sand	CL	4-5-9 N=14	21	
		8	17	Brown SANDSTONE		9-38-50/3"	13	
575	20				SANDSTONE			
		9	5			50/5"	11	
				Gray SHALE				
		10	5	End of boring at -25'	SHALE	50/5"	16	
	25							

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
× Moisture ◪ PL ✱ LL
1 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0

Completion Depth: 25.0 ft
Date Boring Started: 7/19/05
Date Boring Completed: 7/19/05
Logged By: Harry Waters
Drilling Contractor: PSI, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Shelby Tube
Hand Auger

Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

Professional Service Industries, Inc.
480 North Street
Springfield, IL 62704
Telephone: 217-544-6663
Fax: 217-544-6418

LOG OF BORING B-2

Sheet 1 of 1

PSI Job No.:	020-55029	Drilling Method:	3 1/4" Hollow Stem Auger
Project:	Burch House and Carrigan House	Sampling Method:	Split Spoon
Location:	Lincoln Home National Historic Site 8th Street and Jackson Street Springfield, Sangamon County, Illinois	Hammer Type:	Automatic
		Boring Location:	See location plan Burch House

WATER LEVELS

- While drilling none observed
- Upon compl. caved 23 ft
- 3 hr Delay 19 ft

Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6 inches (N - Blows per 12 inches)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft; Moisture; PL; LL (1 – 25 – 50)	Additional Remarks
						Appoximate Surface Elev.: 595.7 ft				STRENGTH, tsf: Qu; Qp (0 – 2.0 – 4.0)	
595	0					Surface: Grass (heavy organics to -6")	CL				
				1	8	Dark gray silty CLAY; some cinders and brick fragments (FILL)	CL	14-9-5 N=14	8		
						Brown silty CLAY					
				2	18		CL	3-3-3 N=6	24		
590	5										
				3	18	Brown mottled gray silty CLAY		2-2-4 N=6	27		Qu = 1.6 tsf
							CL				
				4	18			2-1-2 N=3	24		Qu = 1.4 tsf
585	10										
				5	18	Gray mottled brown silty CLAY		1-2-3 N=5	27		Qu = 1.7 tsf
				6	18			1-2-2 N=4	28		Qu = 1.6 tsf
580	15						CL				
				7	18			1-3-5 N=8	24		Qu = 2.1 tsf
				8	14	Brown weathered SANDSTONE		19-41-50/2"	12	>>	
575	20						SANDSTONE				
				9	5			50/5"	10	>>	
						Gray SHALE					
				10	6	End of boring at -25'	SHALE	50/5"	10	>>	
	25										

Completion Depth:	25.0 ft	Sample Types:	Remarks:
Date Boring Started:	7/19/05	Auger Cutting; Shelby Tube; Split-Spoon; Hand Auger; Rock Core	
Date Boring Completed:	7/19/05		
Logged By:	Harry Waters		
Drilling Contractor:	PSI, Inc.		

The stratification lines represent approximate boundaries. The transition may be gradual.

Professional Service Industries, Inc.
480 North Street
Springfield, IL 62704
Telephone: 217-544-6663
Fax: 217-544-6418

LOG OF BORING B-3

PSI Job No.:	020-55029	Drilling Method:	3 1/4" Hollow Stem Auger
Project:	Burch House and Carrigan House	Sampling Method:	Split Spoon and Shelby Tube
Location:	Lincoln Home National Historic Site 8th Street and Jackson Street Springfield, Sangamon County, Illinois	Hammer Type:	Automatic
		Boring Location:	See location plan Carrigan House

WATER LEVELS
- While drilling none observed
- Upon compl. caved 22 ft
- 2 hr Delay 18 ft

Approximate Surface Elev.: 598.4 ft

Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6 inches (N - Blows per 12 inches)	Moisture, %	STANDARD PENETRATION TEST DATA (N in blows/ft; Moisture, PL, LL; STRENGTH, tsf: Qu, Qp)	Additional Remarks
	0					Surface: Grass (heavy organics to -5")					
				1	5	Brown silty CLAY; some brick fragments (FILL)	CL	6-4-4 N=8	9		
595				2	20		CL	S. Tube	25		LL = 43 PL = 22 DD = 82 pcf Qu = 0.5 tsf
	5					Brown silty CLAY	CL				
				3	18	Brown mottled gray silty CLAY		2-2-2 N=4	25		Qu = 1.2 tsf
590							CL				
				4	18			2-2-4 N=6	23		Qu = 1.9 tsf
	10										
				5	18	Gray mottled brown silty CLAY		1-1-2 N=3	25		Qu = 1.0 tsf
585											
				6	18			1-1-2 N=3	26		Qu = 1.6 tsf
	15						CL				
				7	18			2-2-3 N=5	27		Qu = 1.2 tsf
580											
				8	18			3-4-5 N=9	21		Qu = 3.5 tsf
	20										
				9	17	Brown weathered SHALE	SHALE	17-28-50/5"	12		>>
575											
				10	10	End of boring at -25'		32-50/4"	13		>>
	25										

Completion Depth:	25.0 ft
Date Boring Started:	7/19/05
Date Boring Completed:	7/19/05
Logged By:	Harry Waters
Drilling Contractor:	PSI, Inc.

Sample Types: Auger Cutting; Split-Spoon; Rock Core; Shelby Tube; Hand Auger

Remarks:

The stratification lines represent approximate boundaries. The transition may be gradual.

Professional Service Industries, Inc.
480 North Street
Springfield, IL 62704
Telephone: 217-544-6663
Fax: 217-544-6418

LOG OF BORING B-4

PSI Job No.:	020-55029	Drilling Method:	3 1/4" Hollow Stem Auger	WATER LEVELS	
Project:	Burch House and Carrigan House	Sampling Method:	Split Spoon	While drilling	none observed
Location:	Lincoln Home National Historic Site	Hammer Type:	Automatic	Upon compl.	caved 21 ft
	8th Street and Jackson Street	Boring Location:	See location plan	1/2 hr Delay	22 ft
	Springfield, Sangamon County, Illinois		Carrigan House		

Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6 inches (N - Blows per 12 inches)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✱ LL (1–25–50); STRENGTH, tsf ▲ Qu ✳ Qp (0–2.0–4.0)	Additional Remarks
	0					Appoximate Surface Elev.: 597.5 ft					
						Surface: Grass (heavy organics to 7")	CL				
595				1	4	Black silty CLAY (FILL)	CL	4-2-2 N=4	16		
	5			2	6	Dark gray sitly CLAY; some brown medium sand (FILL)	CL	3-4-5 N=9	23		Qu = 1.2 tsf
590				3	18	Brown mottled gray silty CLAY		2-4-6 N=10	23		
	10			4	18			4-5-5 N=10	23		Qu = 1.6 tsf
585				5	18		CL	1-2-2 N=4	24		Qu = 1.2 tsf
	15			6	18			1-2-2 N=4	26		Qu = 1.4 tsf
580				7	18			2-3-3 N=6	29		Qu = 1.0 tsf
	20			8	18			4-9-14 N=23	17		Qu = 3.1 tsf
575				9	11 ▽	Brown weathered SHALE	SHALE	16-50/5"	13		>>◎
	25			10	6	End of boring at -25'		50/6"	12		>>◎

Completion Depth:	25.0 ft	Sample Types:	Remarks:
Date Boring Started:	7/19/05	Auger Cutting; Shelby Tube; Split-Spoon; Hand Auger; Rock Core	
Date Boring Completed:	7/19/05		
Logged By:	Harry Waters		
Drilling Contractor:	PSI, Inc.		

The stratification lines represent approximate boundaries. The transition may be gradual.

Professional Service Industries, Inc.
480 North Street
Springfield, IL 62704
Telephone: 217-544-6663
Fax: 217-544-6418

LOG OF BORING B-5

PSI Job No.:	020-55029	Drilling Method:	3 1/4" Hollow Stem Auger	WATER LEVELS	
Project:	Burch House and Carrigan House	Sampling Method:	Auger	▽ While drilling	none observed
Location:	Lincoln Home National Historic Site	Hammer Type:	NA	▼ Upon compl.	none observed
	8th Street and Jackson Street	Boring Location:	See location plan	▽ .	
	Springfield, Sangamon County, Illinois		Carrigan House		

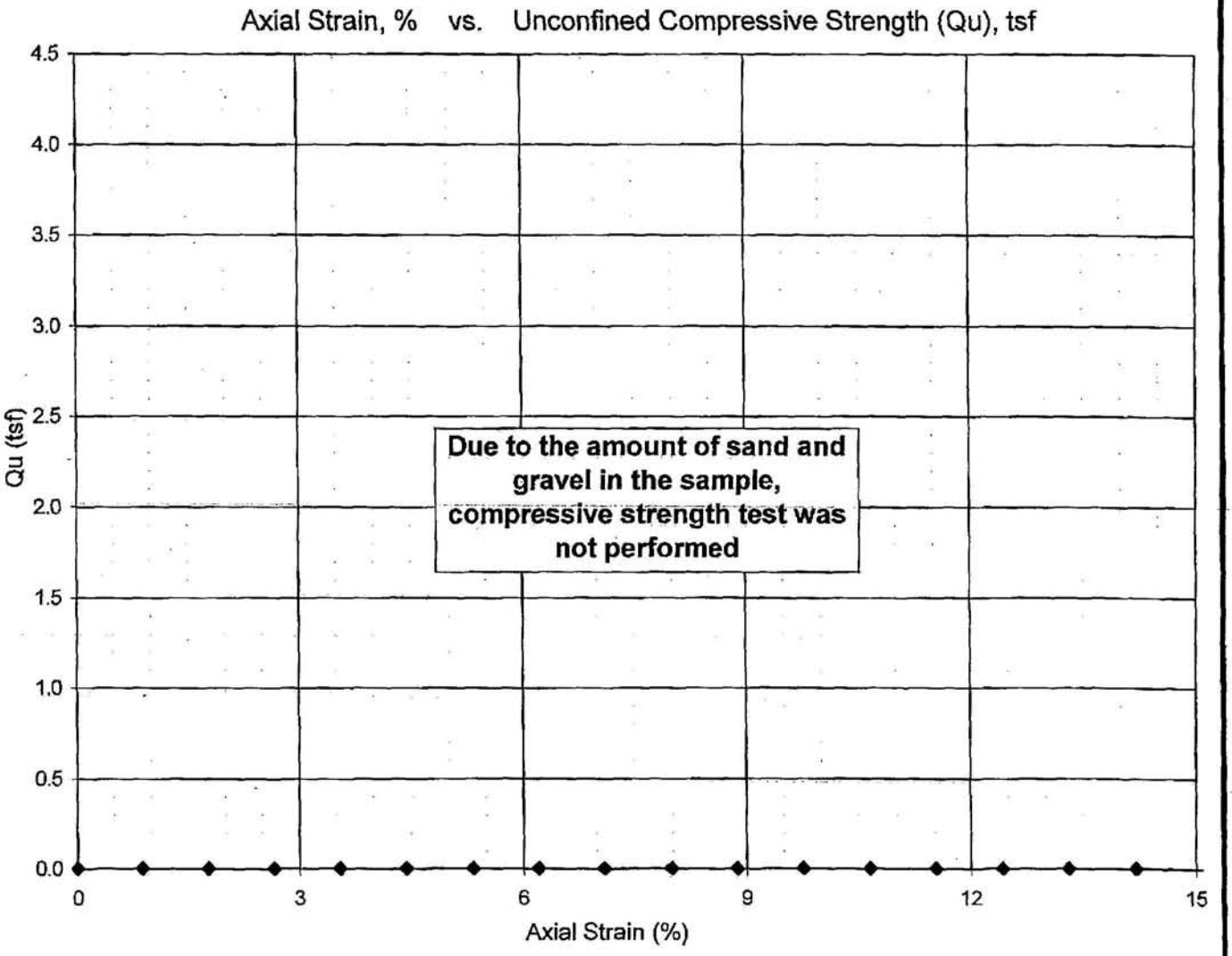
Elevation, (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6 inches (N - Blows per 12 inches)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ● × Moisture ◪ PL ✚ LL (1 – 25 – 50) STRENGTH, tsf ▲ Qu ✳ Qp (0 – 2.0 – 4.0)	Additional Remarks
	0					Surface: Grass (heavy organics to -3")	CL				
						Black silty CLAY (FILL)					
							CL				
						Brick fragements and debris (FILL)	FILL				
	5					Brown/gray silty CLAY					
							CL				
	10					End of boring at -10'					

Completion Depth:	10.0 ft	Sample Types:		Remarks:
Date Boring Started:	7/19/05	Auger Cutting	Shelby Tube	
Date Boring Completed:	7/19/05	Split-Spoon	Hand Auger	
Logged By:	Harry Waters	Rock Core		
Drilling Contractor:	PSI, Inc.			

The stratification lines represent approximate boundaries. The transition may be gradual.

SHELBY TUBE SAMPLE
(3-INCH UNDISTURBED SAMPLE)

BORING No. B-1
SAMPLE No. 2 (-3' to -5')



Physical Properties

Unconfined Comp. Strength (Qu) =	NP	tons/ft^2	Liquid Limit (LL) =	NP	
Water Content (% of dry wt) =	16	%	Plastic Limit (PL) =	NP	
Wet Density =	106	lb/ft^3	Passing No. 200 Sieve =	NP	%
Dry Density =	91	lb/ft^3	Specific Gravity (Gs) =	NP	Unitless
*Degree of Saturation (S%) =	52	%	**Notes:**		
*Void Ratio (e_o) =	0.81	unitless	NP = Test Not Performed		
*Porosity (n) =	0.45	unitless	*If Specific Gravity (Gs) not determined in laboratory then calculations are based on an estimated G_s of 2.65 based on PSI experience with the soils in the area.		

Description: Brown/black silty CLAY trace sand, gravel and brick fragements (FILL)

Remarks: None

Test Method: ASTM D-2166
Sample Method: Shelby Tube
Tested By: PSI - Jud Carter
Load Ring: SN 15225; Calibrated May 2005

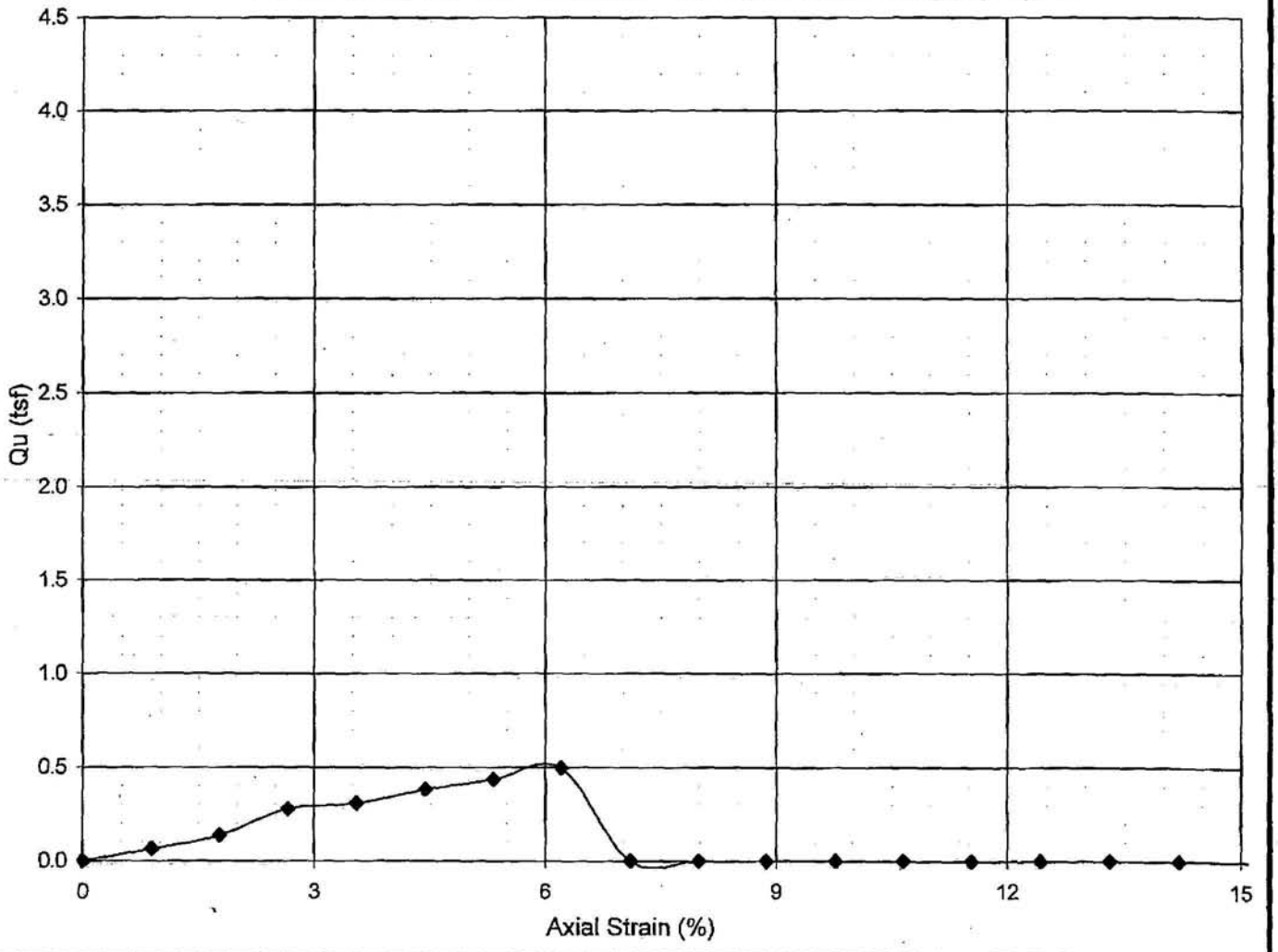
psi Information To Build On
Engineering • Consulting • Testing
480 North Street, Springfield, Illinois 62704
phone 217/544-6663 fax 217/544-6148

SHELBY TUBE SAMPLE

PSI PROJECT No.: 020-55029
Project: Burch and Carrigan Houses
Location: Lincoln Home National Historic Site
8th Street and Jackson Street
Springfield, Sangamon County, Illinois

SHELBY TUBE SAMPLE
(3-INCH UNDISTURBED SAMPLE)

BORING No. B-3
SAMPLE No. 2 (-3' to -5')



Physical Properties

Unconfined Comp. Strength (Qu) =	0.5	tons/ft^2	Liquid Limit (LL) =	43	
Water Content (% of dry wt) =	25	%	Plastic Limit (PL) =	22	
Wet Density =	103	lb/ft^3	Passing No. 200 Sieve =	NP	%
Dry Density =	82	lb/ft^3	Specific Gravity (Gs) =	NP	Unitless
*Degree of Saturation (S%) =	66	%	**Notes:**		
*Void Ratio (e_o) =	1.02	unitless	NP = Test Not Performed		
*Porosity (n) =	0.50	unitless	*If Specific Gravity (Gs) not determined in laboratory then calculations are based on an estimated G_s of 2.65 based on PSI experience with the soils in the area.		

Description: Brown silty CLAY (FILL)

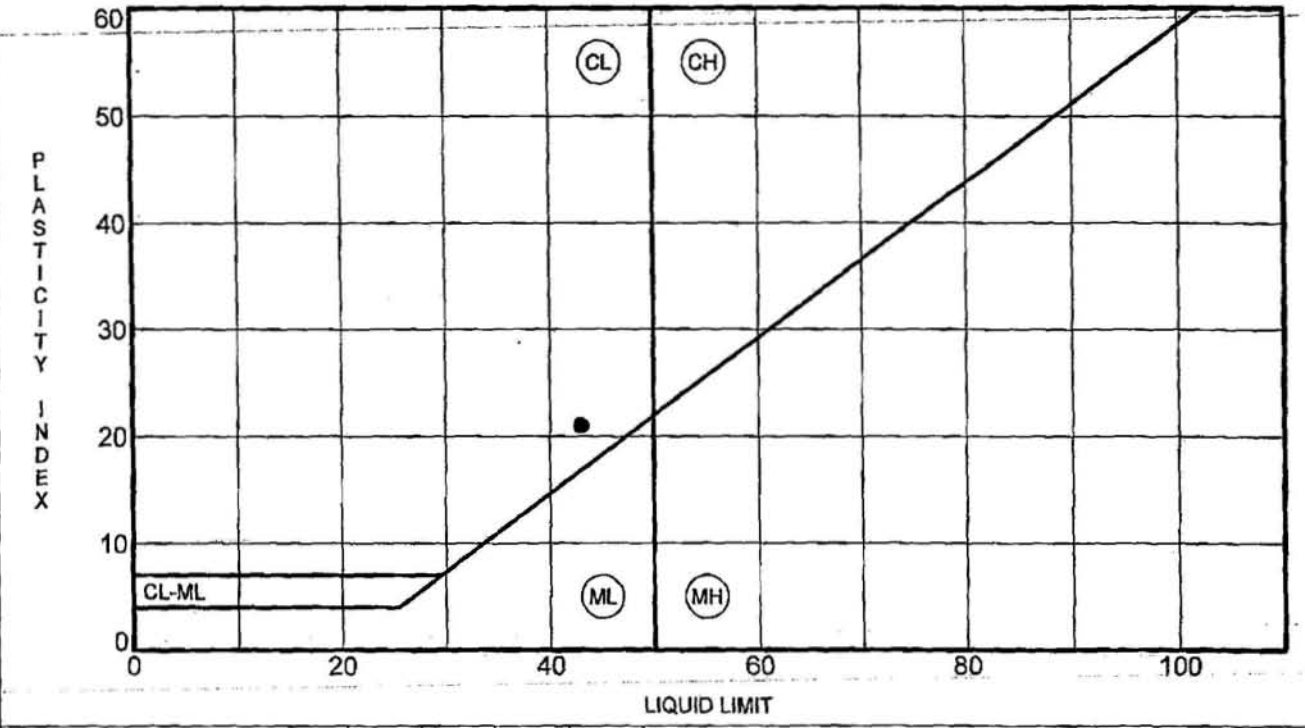
Remarks: None

Test Method: ASTM D-2166
Sample Method: Shelby Tube
Tested By: PSI - Jud Carter
Load Ring: SN 15225; Calibrated May 2005

PSI Information To Build On
Engineering • Consulting • Testing
480 North Street, Springfield, Illinois 62704
phone 217/544-6663 fax 217/544-6148

SHELBY TUBE SAMPLE

PSI PROJECT No.: 020-55029
Project: Burch and Carrigan Houses
Location: Lincoln Home National Historic Site
8th Street and Jackson Street
Springfield, Sangamon County, Illinois



	Boring	Depth (ft)	LL	PL	PI	Fines	Classification
●	B-3	4.0	43	22	21		Brown silty CLAY

Expansion Potential

Expansion Potential	PI	Clay Content (% < 0.002mm)	Expansion Index
Very Low	0 - 10	0-10	0-20
Low	10 - 15	10-15	21-50
Medium	15 - 25	15-25	51-90
High	25 - 35	25-35	91-130
Very High	35+	35+	130+

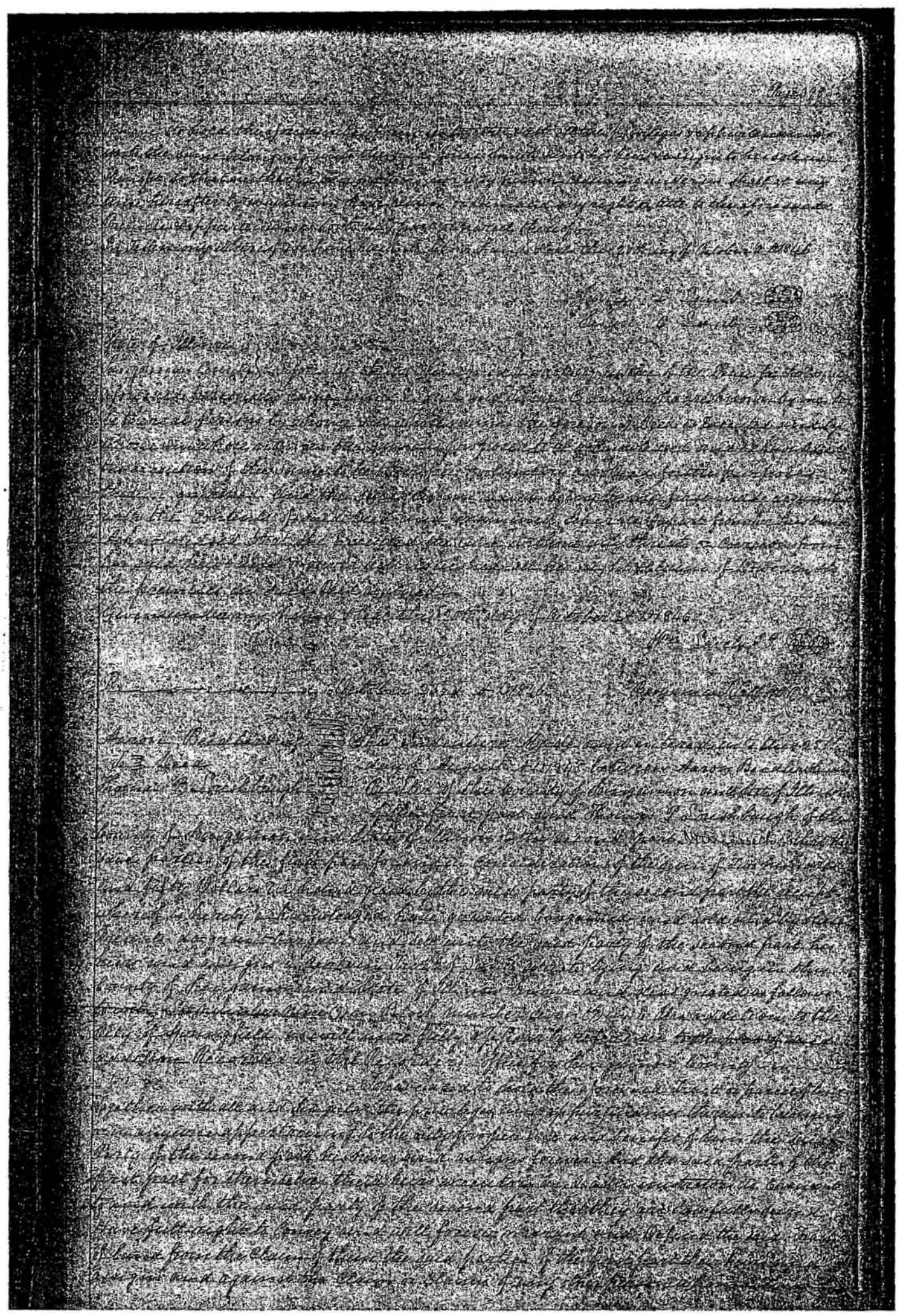
PROFESSIONAL SERVICE INDUSTRIES, INC.
480 North Street
Springfield, Illinois 62704
Ph: 217-544-6663
Fx: 217-544-6148

ATTERBERG LIMITS' RESULTS

PSI Job No.: 020-55029
Project: Burch House and Carrigan House
Location: Lincoln Home National Historic Site
8th Street and Jackson Street
Springfield, Sangamon County, Illinois

APPENDIX D

Burch House
Biddle to
Loughborough



Page 397

In Testimony whereof the Grantors aforesaid have hereunto set their hands and Seals this day and year first above written.

In presence of }

Aaron Beedler

Lavina Beedler

State of Illinois }
Sangamon County } Before me the undersigned one acting Justice of the Peace for the County aforesaid personally came Aaron Beedler who is personally known to me to be the same person whose name is subscribed to the above Conveyance as Grantor and acknowledged that he executed the same Conveyance as his free act and deed for the purposes therein expressed. And the said Lavina Beedler wife of the said Aaron Beedler being by me first examined separately and apart from her said husband and the contents of said Conveyance being by me made known to her she acknowledged that she freely voluntarily and willingly executed the same for the purposes therein expressed and that she does not wish to retract the same. Given under my hand and Seal this 26th day of August eighteen hundred and forty four.

S. T. Thompson Justice of the Peace Sangamon County

Recorded August 26th A.D. 1844 at 2 o'clock P.M.

William Gregg
to
Mortgage
Jessee Jones Mortgage Deed

S. M. Gregg and Jessee Jones of the County of Sangamon and State of Illinois do hereby grant bargain and sell Transfer to the Trustees of Dalcoits Township Section numbered three west of the second Principal Meridian in Township numbered seventeen north of Range numbered five west of the Fourth Principal Meridian and the East half of the South East quarter of the North East fractional quarter of Section numbered twenty in Township numbered seventeen north of Range numbered five west of the Fourth Principal Meridian and reserve as above all the timber on said premises which real Estate I declare to be worth two hundred Dollars over and above all Liens and Incumbrances whatsoever. To have and to hold the same with all the appurtenances thereunto belonging or in anywise appertaining forever. And I hereby covenant to and with the said Trustees and their successors in office that I am lawfully seized of the premises aforesaid and will warrant and defend the same against the claims of all persons whomsoever. And I further covenant that I have a good right to convey the said premises to the said Trustees and their successors in office and that the premises are free from all Incumbrances and that I will and my heirs shall execute such further assurances of the same as may be reasonably required. Provided always and these presents are upon the express condition that if I the said S. M. Gregg my heirs executors or administrators shall pay unto the said Trustees or their successors in office the sum of Two hundred Dollars with interest thereon at the rate of ten per cent per annum on the first day of January A.D. 1847 then these presents and every thing herein contained shall cease and be void and of no effect otherwise to remain in full force and virtue in law. And I the said S. M. Gregg for myself my heirs executors and administrators do hereby covenant promise and agree to and with the said Trustees and their successors in office that I will pay the said sum of money mentioned in the condition of this Mortgage according to the true intent and meaning thereof and that in case default shall be made in the payment of the said sum of money or any part thereof on the day whereon the same is made payable as aforesaid or in case default shall be made in the performance of any covenant or agreement herein contained then and in either of the said cases it shall and may be lawful for the said Trustees and their successors in office to sell the premises hereby granted and conveyed or such part thereof as shall be sufficient to pay the said sum of money and interest and all costs and charges of suit and all other moneys that may be due hereon by virtue of a power of sale hereby given to them and to make and execute to the purchaser or purchasers a good and sufficient deed or deeds in law for the premises so sold and out of the money arising from such sale to retain the said sum of money and interest and all costs and charges of suit and all other moneys that may be due hereon rendering the overplus if any unto the said S. M. Gregg his heirs or assigns. And I the said S. M. Gregg for myself my heirs executors and administrators do hereby covenant promise and agree to and with the said Trustees and their successors in office that in case the said premises or any part thereof shall be sold by virtue of the power of sale hereby given I will not nor will any person claiming under me or my heirs executors or administrators dispute the right of the said Trustees or their successors in office to sell the said premises or any part thereof but will quit and deliver the same to the purchaser or purchasers thereof his her or their heirs or assigns. In witness whereof I have hereunto set my hand and seal this 26th day of August A.D. 1844.

S. M. Gregg

State of Illinois }
Sangamon County } Before me the undersigned Justice of the Peace in and for said County personally came S. M. Gregg to me known to be the same person whose name is subscribed to the foregoing Mortgage Deed as Grantor and acknowledged that he executed the same as his free act and deed for the purposes therein expressed. Given under my hand and Seal this 26th day of August A.D. 1844.

S. T. Thompson J.P.

APPENDIX E

Form No. 10-306 (Rev. 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR FEDERAL PROPERTIES

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC
Lincoln Home National Historic Site
AND/OR COMMON

2 LOCATION

STREET & NUMBER: In an irregular pattern centered at Eighth and Jackson Streets
__NOT FOR PUBLICATION
CITY, TOWN: Springfield
__VICINITY OF
CONGRESSIONAL DISTRICT: 20th
STATE: Illinois
CODE: 17
COUNTY: Sangamon
CODE: 167

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
X DISTRICT	X PUBLIC	__OCCUPIED	__AGRICULTURE	X MUSEUM
__BUILDING(S)	__PRIVATE	X UNOCCUPIED	__COMMERCIAL	X PARK
__STRUCTURE	__BOTH	X WORK IN PROGRESS	X EDUCATIONAL	__PRIVATE RESIDENCE
__SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
X OBJECT	__IN PROCESS	X YES: RESTRICTED	X GOVERNMENT	__SCIENTIFIC
	__BEING CONSIDERED	__YES: UNRESTRICTED	__INDUSTRIAL	__TRANSPORTATION
		__NO	__MILITARY	__OTHER:

4 AGENCY

REGIONAL HEADQUARTERS: *(If applicable)*
United States National Park Service, Midwest Regional Office
STREET & NUMBER
1709 Jackson Street
CITY, TOWN: Omaha
__VICINITY OF
STATE: Nebraska

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC.: United States National Park Service Midwest Regional Office
STREET & NUMBER
1709 Jackson Street
CITY, TOWN: Omaha
STATE: Nebraska

6 REPRESENTATION IN EXISTING SURVEYS

TITLE
National Survey of Historic Sites and Buildings
DATE
1960
X FEDERAL __STATE __COUNTY __LOCAL
DEPOSITORY FOR SURVEY RECORDS: Heritage Conservation and Recreation Service
CITY, TOWN: Washington
STATE: D.C.

(See Continuation Sheet, Page 1)

Form No. 10-300a
Rev. 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

CONTINUATION SHEET ITEM NUMBER 6 PAGE 1

TITLE: LIST OF CLASSIFIED STRUCTURES

DATE: 1976

FEDERAL

DEPOSITORY FOR SURVEY RECORDS: United States National Park Service, Midwest Regional Office, Omaha, Nebraska

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
__EXCELLENT	X DETERIORATED	__UNALTERED	X ORIGINAL SITE
__GOOD	__RUINS	X ALTERED	__MOVED DATE_____
X FAIR	__UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The district nominated to the register includes all land and historic structures located in the Site's historic zone, which is delineated on a map submitted as part of this nomination. The District includes 14 structures with Lincoln association, and 3 structures that do not have Lincoln association. Also included within the boundaries of the district are boardwalks streets, fences, and plantings.

The centerpiece of the district is the Lincoln Home itself. It sits on the northeast corner of Jackson and Eighth Streets. It was build in 1839 for the Reverend Mr. Charles Dresser, from whom Lincoln later bought the home, and who married Abraham and Mary Todd Lincoln. Although he was not able to document it, Edwin Bearss, in the Lincoln Home Historic Structure Report, speculates that Henry Dresser, the Reverend Mr. Dresser's brother and the architect of several structures in Springfield, may have built the original house.

Dresser's one-and-one-half story house has been called Greek Revival in style. Its framing was rough-sawn oak with hand-hewn oak sills. Pine was used for exterior trim and weatherboarding with laths of split hickory. Walnut was used for interior trim and doors. Floors were random-width oak. Wooden pegs and hand-wrought nails were used in the construction. The lumber was probably purchased from the Portland Steam Mill at Portland Landing on the Sangamon River north of Springfield.

Lincoln bought the house in 1844 for $1,200 cash plus another lot valued at $300. In 1856, Lincoln had the house remodeled. Hannan & Ragsdale, in remodeling the structure, took the roof of the front part of the house loose at the header and raised it nine feet. Two-by-six pine studding was inserted and fastened to the existing rough-sawn oak studding of the original walls. When complete, the ceilings of the two half-story bedrooms at the front of the house (where formerly a person of average height could stand erect only in the middle under the peak of the gable) had been raised to a height of 11 feet. The ceilings of the three rooms at the rear of the house were raised about a foot and an entire story (containing four rooms) added above them rounding out the house to a two-story dwelling. For the remodeling northern pine was used. The upstairs woodwork was given an artificial walnut stain to continue the walnut decor found downstairs.

The house was deeded over to the State of Illinois in 1887 by Robert Todd and Mary H. Lincoln. Since then the house has been continuously maintained and, over the years, much work has gone into restoring both the exterior and interior to their appearances during Lincoln's life in the house.

From 1952 through 1955, the State of Illinois completed a major restoration of the house, which brought it to its present appearance and included the addition of the outbuildings at the rear of the house.

(See Continuation Sheet, Page2)

As it stands today, the Lincoln home is a two-story, wood frame structure. Although neither its general proportions, nor its decorative detailing support the stylistic analysis, it has been called Greek Revival in style. There are Greek Revival elements in the design, but a rigorous, stylistic attribution is not really possible. It sits on brick foundation, has clapboard siding painted "Quaker Brown," and wood-shingle roofing.

In the rear of the Lincoln home are an 1846, 6-foot-by-6-foot, three-hole privy donated by Mrs. Charles H. Crawford, in 1953; an adaptive reconstruction of the Lincoln carriage house, which is used for curatorial storage; and, attached to the carriage house, a reconstruction of the Lincoln woodshed, which houses public toilet facilities.

The house sits on an elevated lot surrounded by a brick retaining wall surmounted by a picket fence in the front and a board fence in the rear.

The S-shaped district includes all the properties on both sides of Eighth Street, plus adjoining properties on the corner of Seventh and Edwards Streets and on the corner of Ninth and Capitol Streets.

Inventoried below are the Lincoln period historical structures in the district followed by the historical structures within the district that do not date from the Lincoln period. Numbering relates to buildings shown on the accompanying district map.

Lincoln Period Historic Structures Located within District

HS-1 Lincoln Home (430 South 8th Street; Block 10, Lot 8 and south 10 feet of Lot 7) Two-story, wood frame structure.

HS-2 Corneau House (426 South 8th Street; Block 10, Lots 6 and 7): One-story, wood frame structure. Originally located at the southwest corner of Jackson and 8th Streets (Block 6, Lot 16), where it stood in 1860; it was moved to its present site in 1962.

HS-8 Lyon House (413 South 8th Street; Block 7, Lot 13, north half of Lot 12, and south 10 feet of Lot 14): Two-story, wood frame structure. Restored.

HS-9 Morse House (818 East Capitol Street Block 10, Lots 15 and 16): Two stories, built circa 1845. One of two houses that were built on these lots in 1860. Both were owned by Morse.

HS-10 Robinson House (520 South 8th Street; Block 11 Lots 6 and 7): Two story , wood frame structure. Built between 1863 and 1866.

(See Continuation Sheet, Page 3)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

HS-11 Sprigg House (507 South 8th Street; Block 6, Lot 15): Two-story, wood frame structure.

HS-12 Beedle House (411 South 8th Street; Block 7, Lot 14): Two-story wood frame structure.

HS-13 Dean House (421 South 8th Street; Block 7, Lot 11 and south half of Lot 12): Two-story wood frame structure.

HS-14 Miller House (511 South 8th Street; Block 6, Lot 14): Two-story wood frame structure.

HS-15 Dubois House (519 South 8th Street; Block 6, Lot 12): Two-story, wood frame structure.

HS-17 Shutt House 525 South 8th Street; Block 6, Lot 10 and south 10 feet of Lot 11): Two-story, wood frame house.

HS-19 Cook House (508 South 8th Street; Block 11, Lot 3): Two story, wood frame structure.

HS-20 Arnold House (810 East Jackson Street; Block 11, rear of Lots 1 and 2): 1½-story, wood frame structure, with brick veneer and brick additions. Originally on the front of the lot, it was moved to its present site when 500 South 8th Street was built, around the turn of the century. Reoriented when moved to its present location.

HS-21 Allen Barn (Rear,538 South 8th Street, Block 11, Lot 7): 1½-story wood frame barn.

HS-24 Lincoln Home Privy (Behind Lincoln Home; Block 10, Lot 7): Antique, 1846, wood, 6' x 6' three-hole privy. Moved from another location.

Post-Lincoln Period Historic Structures located within District

HS-5 Stuve House (526 South 7th Street; Block 6, Lots 7 and 8): Three-story, brick, Italianate structure. Built circa 1870.

HS-7 Stuve Carriage House (Block 6, Lots 6,7,8): Brick, painted, one-story structure, gabled, half-hipped roof.

HS-16 Aitken Barn (519 South 8th Street; Block 6, rear of Lot 12): 1½-story, wood frame structure. Dates from about 1900.

(See Continuation Sheet, Page 4)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

NON-HISTORIC STRUCTURES LOCATED WITHIN THE DISTRICT

Building 4 (Block 10; Lots 7 and 8): Curatorial Storage, Public Toilet Facilities.

Building 28 (Block 7; Lot 12): Maintenance Storage.

Building 30 (406 South 8th Street, Block 10: Lot 2): Educational Center

Building 32 (Block 6, Lot 11): Maintenance Storage

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW				
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	__COMMUNITY PLANNING	__LANDSCAPE ARCHITECTURE	__RELIGION	
__1400-1499	__ARCHEOLOGY-HISTORIC	__CONSERVATION	X LAW	__SCIENCE	
__1500-1599	__AGRICULTURE	__ECONOMICS	__LITERATURE	__SCULPTURE	
__1600-1699	__ARCHITECTURE	__EDUCATION	__MILITARY	__SOCIAL/HUMANITARIAN	
__1700-1799	__ART	__ENGINEERING	__MUSIC	__THEATER	
X 1800-1899	__COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	__TRANSPORTATION	
__1900-	__COMMUNICATIONS	__INDUSTRY	X POLITICS/GOVERNMENT	X OTHER (SPECIFY) U.S. President	
		__INVENTION			

SPECIFIC DATES

BUILDER/ARCHITECT

STATEMENT OF SIGNIFICANCE

The Lincoln Home derives its significance through its association with the 16th President. It is the only home he ever owned. Abraham Lincoln came to Springfield as a young lawyer, one of the state legislators who had led the successful fight to move the capital from Vandalia to a more central location. It was in Springfield that he met, courted, and married Mary Todd. In 1844, soon after the birth of their first son, Lincoln purchased the house and lot at the northeast corner of Eighth and Jackson Streets. Here he and his family lived until February 1861, when he left Springfield enroute to his inauguration as President of the United States.

This was Lincoln's home during the fruitful years that saw his emergence from the local onto the national scene. A former legislator and small town lawyer, Lincoln, in 1846, was elected to the United States House of Representatives. After two years in Congress, he returned to his law practice. Because of his "spot resolution," his association with the "Free Soil" wing of the Whig party, and his support of Henry Clay, he was better known than most one-term congressmen. During the next seven years a successful legal practice and popularity as a stump speaker made Lincoln a force in the new Republican party. Here he lived in 1858, when as the Republican candidate for U.S. Senator, he engaged in the debates with Stephen A. Douglas. Although defeated by Douglas, Lincoln was thrust firmly onto the national scene. Two years later, he was nominated and elected to the Presidency.

The other historic buildings within the district derive their principal significance from their association with Lincoln's life and their existence at the time of his residence in Springfield. The district is important in preserving the setting of the President's home.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

Bearss, Edwin C., Historical Base Map, Proposed Lincoln Home National Historical Park, Springfield, Illinois. National Park Service, 1969
———, Historic Structure Report, Lincoln Home National Historic Site, Illinois. National Park Service, 1973.
National Park Service, Master Plan, Proposed Lincoln Home National Historic Site, Illinois. National Park Service, 1970

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY 7.76

UTM REFERENCES

	ZONE	EASTING	NORTHING
A	16	27,356,0	4,408,399
B			
C			
D			

VERBAL BOUNDARY DESCRIPTION

Starting at the corner of Capitol and Ninth Streets in Springfield, Illinois, the district first runs south along the curb line approximately 103 feet to the northeast corner of Lot 14, Block 10; thence west, approximately 167 feet, to the northeast corner of Lot 3, Block 10; thence south, along the west side of the alley and across Jackson Street, approximately 670 feet, to the curb line at the corner of the

(See Continuation Sheet, Page 7)

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

Revised by: Jill York Historian
Midwest Regional Office 9/5/80

NAME / TITLE
Richard I. Ortega, Architectural Historian (Engineer)

ORGANIZATION
U.S. National Park Service, Midwest Regional Office

DATE
5/14/76

STREET & NUMBER
1709 Jackson Street

TELEPHONE
402-221-3426

CITY OR TOWN
Omaha

STATE
Nebraska

12 CERTIFICATION OF NOMINATION

STATE HISTORIC PRESERVATION OFFICER RECOMMENDATION

YES____ NO____ NONE____

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

In compliance with Executive Order 11593, I hereby nominate this property to the National Register, certifying that the State Historic Preservation Officer has been allowed 90 days in which to present the nomination to the State Review Board and to evaluate its significance. The evaluated level of significance is ____National ____State ____Local.

FEDERAL REPRESENTATIVE SIGNATURE

TITLE DATE

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

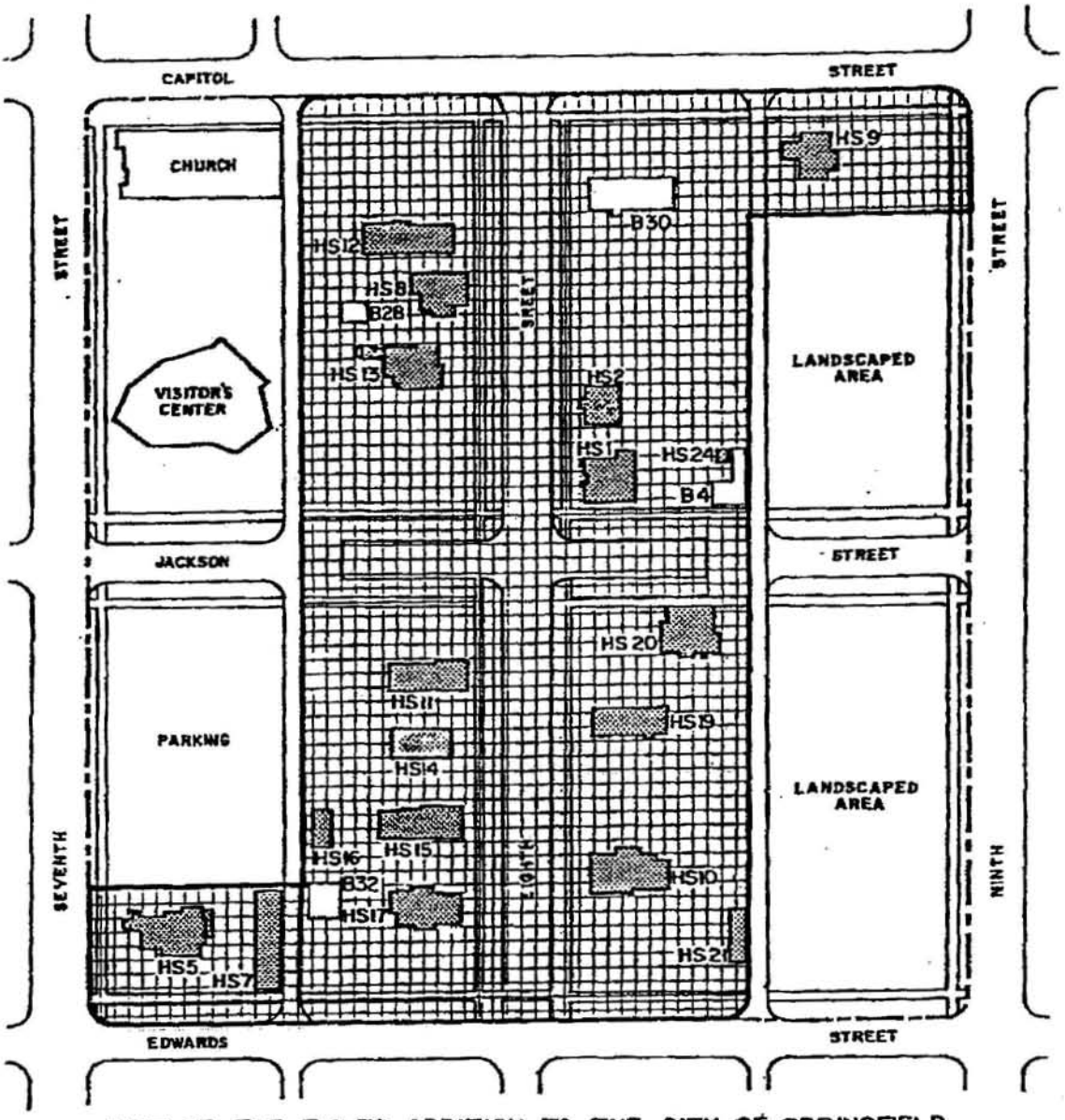
DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST: DATE

KEEPER OF THE NATIONAL REGISTER

alley and Edwards Street; thence west, approximately 567 feet, along the curb line to the corner of Seventh and Edwards Streets; thence north, approximately 135 feet, along the curb line; thence east approximately 167 feet, to the rear property line of Lot 11, Block 6; thence north, along the east side of the alley and across Jackson Street, approximately 635 feet, to the curb line at the corner of the alley and Capitol Street; thence, approximately 567 feet, along the curb line to the point of beginning.



PART OF THE E. ILES ADDITION TO THE CITY OF SPRINGFIELD

NOMINATED AREA

HISTORIC STRUCTURES

NONHISTORIC STRUCTURES

N

EXISTING BUILDINGS

LINCOLN HOME NATIONAL HISTORIC SITE

APPENDIX F

PROJECT COST SUMMARY

Kirk Associates

Project No.:	**80094.00**		
Project Name:	**National Park Service - Burch House**	Date:	**1-Mar-06**
Project Location:	**Springfield, IL**	Building type:	**Historical**
Estimate Type:	**Class B Estimate**	Bid Date:	**Spring 07**

A. Construction:						**$317,400**
				$/GSF		
Total Building Construction	1,516	GSF		$191.23	$289,900	
Design Refinement Contingency			3.50%		$10,100	
Escalation			4.00%		$11,600	
Contractor's Bond			2.00%		$5,800	
Subtotal Burch House	**1,516**	**GSF**			**$317,400**	$150,000
B. Design and Review:						**$0**
A/E Fees & Expenses			1	LS	$0	In Other Budget
Special Consultants			0.00%	LS	$0	In Other Budget
Technology Designer			1	LS	$0	In Other Budget
Testing, Surveys, Soil Borings			1	LS	$0	In Other Budget
State Admin. Costs			0.00%		$0	In Other Budget
C. Management & Inspection:						**$0**
Construction Management			1	LS	$0	Not included
Owner Admin. Costs			1	LS	$0	In Other Budget
Building Permits, Agency Reviews			0.00%		$0	In Other Budget
D. Site Acquisition:						**$0**
Building / Land Purchase			1	LS	$0	Not required
Legal Fees,etc.			0.00%		$0	Not required
Real Estate Fees			0.00%		$0	Not required
E. Reservations:						**$0**
Construction / Phasing Contingency			0.00%		$0	In Other Budget
Asbestos / Hazardous Material Abatement			1	LS	$0	In Other Budget
Furniture & Equipment			1	LS	$0	In Other Budget
Reimbursables			1	LS	$0	In Other Budget
AV Equipment			1	LS	$0	In Other Budget
Move-in/Reloc. Costs			0.00%		$0	In Other Budget

Total Project Estimate:	**$317,400**
Net Construction (escalated) Budget	$150,000
Delta	$167,400

CONSTRUCTION DIVISIONS COST SUMMARY

Kirk Associates

Project Number:	**80094.00**	Date:	**1-Mar-06**
Project Name:	**National Park Service - Burch House**	Building type:	**Historical**
Project Location:	**Springfield, IL**	Bid Date:	**Spring 07**

Bldg.Constr.Type: Historical — GSF: 1,516

Bldg. Cost Index - Current: 1.000 — Orig: 1.000 — City Cost Mod: **1.000**

Quantity Survey Costs (x) City Cost Modifier = System Costs

CSI DIVISION		QUANTITY	UNIT	SYS.COST	COST/GSF
01 General Requirements	20.0%	1,516	GSF	$48,313	$31.87
02 Site Work		0.14	Acre	$25,977	$17.14
03 Concrete		1,516	GSF	$20,230	$13.34
04 Masonry		2,004	WSF	$51,554	$34.01
05 Metals		1,516	GSF	$8,411	$5.55
06 Woods & Plastics		1,516	GSF	$45,516	$30.02
07 Thermal & Moisture Protection		1,516	GSF	$18,881	$12.45
08 Doors & Windows		588	XDA	$13,025	$8.59
09 Finishes		1,516	GSF	$8,557	$5.64
10 Specialties		1,516	GSF	$0	$0.00
11 Equipment		1,516	GSF	$0	$0.00
12 Furnishings		9	EA	$495	$0.33
13 Special Construction		1,516	GSF	$0	$0.00
14 Conveying Systems		1,516	GSF	$0	$0.00
15 Mechanical		1,516	GSF	$34,535	$22.78
16 Electrical		1,516	GSF	$14,383	$9.49
ESTIMATE SUBTOTAL:				**$289,875**	**$191.21**

PROJECT NOTES / ABBREVIATIONS

Kirk Associates

Project Number:	**80094.00**		
Project Name:	**National Park Service - Burch House**	Date:	**1-Mar-06**
Project Location:	**Springfield, IL**	Building type:	**Historical**
Component:	**NOTES**	Bid Date:	**Spring 07**

NOTES :

- Unit cost is based on KIRK Historical Database of similar facilities.
- Contractor's performance bond is based on 100% of total project cost.
- Labor rates are based on prevailing union wages.
- An allowance for undeveloped design details is usually included in construction cost estimates. As the design of each system is further developed, details which historically increase cost become apparent and must be incorporated into the estimate. The design contingency of 3.5% is intended to cover this cost.
- Unit costs included here are reflective of current costs. For the purpose of calculating construction cost at the time of bidding an escalation rate of 4% has been used.
- General Conditions, contractor's overhead and profit have been included at 20% in line item #1. The general Contractor will provide the required supervision/coordination. If this is not the case, additional costs must be added to the Construction Management allowance, and be deducted from the General Conditions. An additional 2% has been added to cover the Contractor's Bond.
- It is prudent for all project budgets to include an allowance for change orders which may occur during construction. An allowance of 0% has been included in calculating the Total Project Cost. This is carried by the owner.
- Kirk Associates has no control over the cost of labor and materials, the general contractor's or any subcontractor's method of determining prices, competitive bidding and market conditions. A 0% bid contingency is included to reflect this uncertainty.
- This opinion of the probable cost of construction is made on the basis of experience, qualifications, and best judgment of our qualified staff familiar with the construction industry. Kirk Associates, however, can not and will not guarantee that actual construction costs will not vary from this estimate.
- Kirk Associates also utilize a city cost index to represent local Ashland market conditions. In this case, a 0% increase in the total construction costs have been included in the "City Cost Modified." Note: the calculation summarizes the system subtotals and then increases them by 0%.
- Kirk Associates professional cost estimators have prepared this estimate in accordance with generally accepted estimating principles and practices. This staff is available to discuss its contents with any interested party.

ABBREVIATIONS :

ACR Acre	KW Kilowatts Connected	SF Square Feet
AP Area Protected	LO Landing Opening	TBD To Be Determined
BCF Basement Cubic Feet	LS Lump Sum	TFA Total Finish Area
BWA Basement Wall Area	MOS Months	TON 12000 Btuh
FLT Stair Flight	MP Metal Pan	UFA Upper Floor Area
FPA Footprint Area	NO Number/None	XDA Exterior Door & Window Area
FXT Fixture Count	PCT Percent	

Construction Systems Quantity Survey

Project Number:	**80094.00**		
Project Name:	**National Park Service - Burch House**	Date:	**1-Mar-06**
Project Location:	**Springfield, IL**	Building type:	**Historical**
Component:	**Class B Estimate**	Bid Date:	**Spring 07**

DIVISION	SECTION		QUANTITY	UNIT	UNIT COST	SYS.COST
	.....These are the "=SUM(X1:Xn)" boundaries					
	$0 .....These are building system cost subtotals which feed into the Building & Sitework Summaries (less the City Cost Modifier of 2%)					
01	**GENERAL REQUIREMENTS**		**1,516**	GSF	31.87	**$48,313**
	GENERAL REQUIREMENTS		**1**	**LS**		**$48,313**
	General conditions, overhead & profit (OH&P)		20.0%			$48,313
02	**SITE WORK**		**0.14**	Acre		**$25,977**
	SITE PREPARATION - EARTHWORK		**0.14**	**Acre**		**$6,038**
	General Excavation		212	CY	12.00	$2,548
	Excavation Removal - Haul away		127	CY	6.00	$764
	Dewatering		*Not Required*			
	Backfill & Compaction		64	CY	18.00	$1,147
	Finish Grading		5,263	SF	0.30	$1,579
	SITE UTILITIES		**0.14**	**Acre**		**$10,400**
	Sanitary		80	LF	20.00	$1,600
	Water		80	LF	25.00	$2,000
	Sewer	not used	0	LF	30.00	$0
	Electrical Service		80	LF	55.00	$4,400
	Fire Protection		80	LF	30.00	$2,400
	SITE IMPROVEMENTS		**0.14**	**Acre**		**$9,539**
	Topsoil, Seed		195	SY	4.15	$809
	Plank Sidewalk / Concrete base		100	LF	25.00	$2,500
	Street Repair (asphalt, coat)		50	SF	35.00	$1,750
Allowance	Landscaping		1	ALW	2,000.00	$2,000
Allowance	Picket Fence (reconstructed)		40	LF	15.00	$600
Allowance	Four Board Fence (reconstructed)		80	LF	11.00	$880
Allowance	Accessible Ramp		40	LF	25.00	$1,000
03	**CONCRETE**		**1,516**	GSF		**$20,230**
	CAST-IN-PLACE CONCRETE					
	Foundations		**1,516**	**SF**		**$20,230**
	Trench Footings		16	CY	345.00	$5,549
	Basement Walls		32	CY	395.00	$12,495
	Vapor Barrier		1,121	SF	0.80	$897
	Drain Tile		1,121	SF	1.15	$1,289

Construction Systems Quantity Survey

Project Number:	80094.00		
Project Name:	National Park Service - Burch House	Date:	1-Mar-06
Project Location:	Springfield, IL	Building type:	Historical
Component:	Class B Estimate	Bid Date:	Spring 07

DIVISION	SECTION		QUANTITY	UNIT	UNIT COST	SYS.COST
04 MASONRY			**2,004**	WSF		**$51,554**
	Masonry Assemblies		**2,004**	**WSF**		**$51,554**
	Brick Veneer		2,004	WSF	21.00	$42,084
	Brick Parapet (corbelled)		76	LF	45.00	$3,420
	Decorative Brick Corbel		15	LF	45.00	$675
	Brick Chimney		1	ALW	1,700.00	$1,700
	Stone Window Sill		9	EA	225.00	$2,025
	Decorative Stone Lintel		1	EA	875.00	$875
	Stone Step (porch)		1	EA	300.00	$300
	Stone Threshold		1	EA	250.00	$250
	Chimney Cap		1	EA	225.00	$225
05 METALS			**1,516**	GSF		**$8,411**
STRUCTURAL STEEL						
	Structural Steel - Floor		**5**	**EA**	**1,682**	**$8,411**
Allowance	Steel Beam		1	EA	1,100.00	$1,100
Allowance	Steel columns		4	EA	450.00	$1,800
	Wall Framing (metal stud)		2,004	WSF	2.75	$5,511
06 WOODS AND PLASTICS			**1,516**	GSF		**$45,516**
CARPENTRY						
	Miscellaneous Carpentry		**7,613**	**LF**	**5.08**	**$38,706**
	Roof Truss		1,121	SF	5.00	$5,605
	Floor Framing	1st Floor	1,121	SF	2.40	$2,690
	Sheathing (dens glass)	Wall	2,172	WSF	2.20	$4,778
	Sheathing	Floor	1,121	SF	6.50	$7,287
	Sheathing	Roof	1,524	SF	10.50	$16,002
	Sheathing	Exhibit Walls	543	SF	3.10	$1,683
	Stair		11	Riser	60.00	$660
	Architectural Woodwork		**1**	**LS**	**6,810**	**$6,810**
Allowance	Wood baseboards		386	LF	2.50	$965
Allowance	Door Moldings		4	EA	55.00	$220
Allowance	Window Moldings		9	EA	75.00	$675
Allowance	Shutters		9	Pair	550.00	$4,950
07 THERMAL AND MOISTURE PROTECTION			**1,516**	GSF		**$18,881**
EXTERIOR / THERMAL PROTECTION			**3,528**	WSF		**$3,594**

Construction Systems Quantity Survey

Project Number:	**80094.00**		
Project Name:	**National Park Service - Burch House**	Date:	**1-Mar-06**
Project Location:	**Springfield, IL**	Building type:	**Historical**
Component:	**Class B Estimate**	Bid Date:	**Spring 07**

DIVISION	SECTION		QUANTITY	UNIT	UNIT COST	SYS.COST
	Insulation	Wall	2,004	WSF	0.50	$1,002
	Insulation	Ceiling	1,524	RSF	1.00	$1,524
	Damproofing		854	SF	1.25	$1,068
ROOFING			**15**	SQ		**$15,287**
	Cedar Shake Roof		15	SQ	575.00	$8,763
	Membranes (Shake, Ice)		15	SG	115.00	$1,753
Allowance	Lead Coated Copper flashing		75	LF	10.00	$750
	Wood Fascia		125	LF	3.50	$438
	Copper Gutters		86	LF	16.00	$1,376
	Copper Downspouts		84	LF	12.00	$1,008
Allowance	Sealants		1	LS	1,200.00	$1,200
08 DOORS AND WINDOWS			**588**	XDA	**22.15**	**$13,025**
DOORS, WINDOWS, HARDWARE			**28**	**EA**	**465**	**$13,025**
	Wood Double Hung Window-lg		5	EA	900.00	$4,500
	Wood Double Hung Window-sm		6	EA	700.00	$4,200
	Window Hardware		11	EA	25.00	$275
	Wood Door, 2 panel		3	EA	900.00	$2,700
	Door Hardware		3	EA	450.00	$1,350
09 FINISHES			**1,516**	GSF		**$8,557**
Interior			**1,753**	**SF**		**$8,557**
	Gypsum Wallboard (wall, ceiling)		1,753	WSF	2.20	$3,857
	Paint		1,753	SF	0.55	$964
Allowance	Carpet, Pad		125	SY	30.00	$3,737
10 SPECIALTIES			**1,516**	GSF		**$0**
11 EQUIPMENT			**1,516**	GSF		**$0**
12 FURNISHINGS			**9**	EA		**$495**
						$495
	Window treatment		9	EA	55.00	$495
13 SPECIAL CONSTRUCTION						**$0**
14 CONVEYING SYSTEMS						**$0**

Construction Systems Quantity Survey

Project Number:	**80094.00**		
Project Name:	**National Park Service - Burch House**	Date:	**1-Mar-06**
Project Location:	**Springfield, IL**	Building type:	**Historical**
Component:	**Class B Estimate**	Bid Date:	**Spring 07**

DIVISION	SECTION		QUANTITY	UNIT	UNIT COST	SYS.COST
15 MECHANICAL			**9**	GSF		**$34,535**
PLUMBING			**1,121**	**SF**	**16**	**$17,513**
Allowance	Geothermal Piping (piping, valves, tanks, pumps, etc.)		1,121	SF	3.50	$3,924
Allowance	Geothermal Wells		3	EA	4,100	$12,300
Allowance	Radon Mitigation System		1,121	SF	0.65	$729
Allowance	Domestic Water		1,121	SF	0.50	$561
	Natural Gas	not used				
	Sanitary	not used				
HVAC			**3**	**TONS**	**3,865**	**$11,595**
Allowance	Ductwork		336	LBS	5.10	$1,715
Allowance	Ductwork insulation		1,516	SF	0.50	$758
Allowance	Ductwork accessories		9	EA	40.00	$360
Allowance	Grilles		12	EA	35.00	$420
Allowance	Electric Humidifier		1	EA	1,600	$1,600
Allowance	Controls, DDC		1,121	SF	2.00	$2,242
Allowance	Heat Pump		1	EA	4,500	$4,500
FIRE PROTECTION			**1,516**	**SF**	**3.58**	**$5,427**
	Dry Pipe Fire Protection Wet System		1,516	SF	3.58	$5,427
16 ELECTRICAL			**1,516**	GSF		**$14,383**
SERVICE & DISTRIBUTION			**2**	**KVA**		**$4,682**
Allowance	Service (interior)		1,121	SF	1.50	$1,682
Allowance	Panelboards		2	EA	1,500	$3,000
LIGHTING & POWER			**1,516**	**SF**		**$7,201**
Allowance	Wiring / Devices		1,516	SF	0.90	$1,364
Allowance	Mechanical Connections		1,516	SF	1.10	$1,668
Allowance	Lighting		1,516	SF	2.10	$3,184
Allowance	Telephone / Data		1,516	SF	0.65	$985
SPECIAL ELECTRICAL SYSTEMS			**1,516**	**SF**	**1.65**	**$2,500**
Allowance	Security System		1	ALW	2,500.00	$2,500
			Sub Total			**$289,875**

APPENDIX G

Geophysical Investigations of the Burch and Carrigan Lots at Lincoln Home National Historic Site, Sangamon County, Springfield, Illinois

Steven L. De Vore
Midwest Archaeological Center
National Park Service
Federal Building, Room 474
100 Centennial Mall North
Lincoln, Nebraska 68508-3873
September 2005

Submitted to Superintendent, Lincoln Home National Historic Site, Springfield, Illinois.

Introduction

The geophysical survey of the William S. Burch and Henry Carrigan house lots at Lincoln Home National Historic Site, Springfield, Illinois, was conducted between April 25 and April 29, 2005, by Midwest archeologists Jan Dial-Jones and Steven De Vore. The Burch House occupied Lot 9 of Block 7 (Banton et al. 1987:235-244). The Burch lot was located to the west of the Lincoln Home across Eighth Street. The Carrigan House occupied Lot 6 and ¾ of Lot 7 of Block 10 (Barton et al. 1987:56-68). The house sat in the adjacent lot to the north of the Lincoln Home facing Eight Street. Located in Section 34, Township 16 North, Range 5 West, of Sangamon County, Illinois (Figure 1), the geophysical investigations were conducted in advance of the Midwest Archeological Center's preliminary evaluative archeological testing (under the direction of Jan Dial-Jones) of the two lots for a proposed reconstruction project. The geophysical investigations of both lots included a magnetic gradient survey with a fluxgate gradiometer, a resistance survey with a resistance meter and twin probe array, a conductivity survey with a ground conductivity meter, and a ground penetrating radar survey with a ground penetrating radar cart system and 400 mHz antenna. General background and additional information of previous archeological and geophysical investigations are detailed in the park's archeological overview and assessment by Alan J. Osborn (2001).

The Lincoln Home National Historic Site commemorates the 17-year period (1844 to 1861) that Abraham Lincoln lived in the house on the corner of Eighth Street and Jackson Street prior to his leaving Springfield for the White House and the Presidency. A four block historic neighborhood forms the core of the neighborhood that Lincoln would have recognized (Figure 2). Over the years, the National Park Service has continued to restore the neighborhood to the 1850s/1860s appearance. The archeological and geophysical investigations of the two house lots represent the continuation of the National Park Service's restoration/ reconstruction efforts to restore the Lincoln neighborhood to its mid-nineteenth century appearance.

Originally built between 1845 and 1854, the Burch House was an irregularly shaped house with the northern elevation along the property line (LANDSCAPES et al. 1997:93). By 1884, the Burch house on Lot 9 was a two story brick house with a one story brick area and combination frame and brick addition to the back of the house. A two story barn with an attached single story shed was located in the southwest corner of the lot (Banton et al. 1987:239). By 1896, the house was only one and a half stories. The barn was also reduced in height to one and a half stories (Banton et al. 1987:240). By 1917, the Burch House had been razed and a two story brick store was built on the southeast corner of the lot. Part of the rear of the building served as a garage (Banton et al. 1987:240). Additional area was added to the north side of the store by 1941. The garage area was also converted to an apartment building. A second apartment building was built on the west portion of the lot (Banton et al. 1987:240). Today, the Burch lot is a grassy lawn (Figure 3)

The Carrigan House was originally a single story frame house which was razed by 1884 (LANDSCAPE et al. 1997:101). A two story frame structure replaced the one story house by 1884 (Banton et al. 1987:62). A small rectangular shed was located behind the house near the eastern lot line. During the next six years, two outbuildings were added to the lot (Banton et al. 1987:62). A small area at the ell of the house was raised to two stories. The two story outbuilding was reduced to a one and half story stable by 1896 (Banton et al. 1987:62-63). By 1917, the porch was enlarged (Banton et al. 1987:63). The small outbuilding was moved, and the stable received an addition to its north side. By 1924, the Carrigan House was removed (Banton et al. 1987:63). The Corneau house was relocated to the vacant Carrigan lot in 1962 from its original location Lot 16 of Block 6 (Banton et al. 1987:58). The Corneau House was later removed and restored its original location in Lot 16 of Block 6. Today, the Carrigan lot is a grassy lawn with a row of bushes forming the northern boundary of the lot (Figure 4).

Survey area: The park is located in the Till Plains section of the Central Lowland province of the Interior Plains division of the North American continent (Fenneman 1931:499-518). The loess mantled plains are dissected by the Sangamon River and the South Fork of the Sangamon River (Steinkamp 1980:1). The area also lies within the Illinoian biotic province (Dice 1943:21-23). The climate is continental with hot summers and cold winters (Steinkamp 1980:1). The project area lies within the Ipava-Tama-Sable soil association of *nearly level to strongly sloping, somewhat poorly drained, well drained, and poorly drained, moderately permeable and moderately slowly permeable soils; on uplands* (Steinkamp 1980:3-4). The geophysical survey is located within the Urban land soil mapping unit (533). This unit consists of nearly level to gently sloping soil material that has been severely impacted fro the construction of streets, buildings, parking lots, and other structures (Steinkamp 1980:38). Originally, the soils formed in calcareous loess, which covered the uplands.

The present geophysical survey is located within the Burch and the Carrigan lots at Lincoln Home National Historic Site (Figure 5). The Burch lot is bounded on the east by Eighth Street and on the south by Jackson Street. The lot is surrounded on the west, south, and east side by wooden fencing (includes vertical boards, horizontal boards and

picket boards). The lawn contains several low spots as well as an elevated area near middle of the eastern half of the lot. An elevated area is also along the northern property line separating the Burch lot for the adjacent Ira Brown, Jr., House lot (Lot 10 of Block 6). The Carrigan lot is bounded on the west by Eighth Street (Figure 6). A row of bushes along the north side separate the Carrigan lot from the adjacent Bugg House lot (Lot 5 of Block 10). A vertical board fence separates the lot from the Lincoln Home on the south side. A horizontal board and picket board fence occur on the west side. At the rear of the lot to the east, there is a storage building and concrete pad. In the lot, there are five randomly spaced trees.

Surface features: The construction of other buildings during the late 19th and early 20th centuries, as well as, more recent National Park Service lawn leveling activities have removed any surface manifestations of the two houses.

Subsurface features: The extent of buried features is presently unknown but there appears to be buried or filled in remnants of the Carrigan House. Other archeological features identifying the location of historic outbuildings may exist, as well as, more recent structural features and building foundations from the 20th century. A number of buildings and other structures are indicated in the historic record. Archeological investigations connected with the removal of the Corneau House from the Carrigan lot identified the remains of *early-to middle-nineteenth century porch and steps* (Mansberger 1997) in front of the Corneau House. After its removal, the archeologists also *uncovered the foundation remains from two separate episodes of house construction. These foundations were mapped and numerous artifacts recovered from within the fill* (Mansberger 1997). Mansberger noted a stone step, a section of brick wall resting upon a shallow stone foundation, two round posts, and a series of brick supports for the step at the front area of the Carrigan House. The structural remains of the Carrigan House and its successor, the Irwin House, included the disturbed brick foundation walls with two different types of brick, a two-room cellar with rear extension, and wide range of demolition debris and late nineteenth century trash. No archeological investigations have been conducted in the Burch lot.

Survey Methodology

The geophysical survey was conducted at the request of Lincoln Home National Historic Site staff. In order to identify any buried archeological resources in the proposed project area, the Midwest Archeological Center (MWAC) staff applied magnetic gradient, resistance, conductivity, and ground penetrating radar survey techniques to investigate and identify the extent and location of possible archeological features associated with the two house lots. Wooden stakes were placed at the 20-meter grid unit corners where possible. Otherwise, the wooden stakes were placed at the end of the geophysical grid baseline. A 13 meter north-south by 44 meter east-west geophysical survey area was established within the boundary of the Burch lot and extending into the Brown lot to the north. Three partial 20 meter by 20 meter grid units were set out in grassy lawn of the Burch lot. The geophysical grid in the Carrigan lot measured 20 meters north-south by

37 meters east-west. One complete 20 m by 20 meter grid unit and one partial 20 meter by 20 meter grid unit were established in the grassy lawn of the Carrigan lot.

Twenty-meter ropes were placed along the east-west base lines connecting the grid unit corners. These ropes formed the north and south boundaries of each grid unit during the data collection phase of the survey. Additional ropes were placed at one-meter intervals across the grid unit in a north-south orientation. These ropes serve as guides during the data acquisition. The ropes were marked with different color tape at half-meter and meter increments designed to help guide the survey effort. Sketch maps were completed for each survey location. The data were acquired across the grid units beginning in the lower left hand corner of each grid unit.

Survey grids: One complete 20 meter by 20 meter grid unit and four partial 20 meter by 20 meter grid units (1,299 m^2 or 0.32 acres) were surveyed.

Magnetic Gradient Survey

Instrument: Geoscan Research FM36 fluxgate gradiometer (Geoscan Research 1987)

Specifications: 0.05 nT (nanotesla) resolution, 0.1 nT absolute accuracy.

Survey type: magnetic gradient

Operators: Steven De Vore

A magnetic gradient survey is a passive geophysical survey (see Bevan 1998:18-29; Clark 2000:64-98; David 1995:17-20; Gaffney and Gater 2003:36-42,61-72; Gaffney et al. 1991:3-5,2002:7-9; Heimmer and De Vore 1995:7-20,2000:55-58; Kvamme 2001:357-358,2003:441; Lowrie 1997:229-306; Milsom 2003:51-70; Mussett and Khan 2000:139-180; Scollar et al. 1990:375-519; and Weymouth 1986:341-370 for more details of magnetic surveys). The Geoscan Research FM36 fluxgate gradiometer (Figure 7) is a vector magnetometer, which measures the strength of the magnetic field in a particular direction. The sensors must be accurately balanced and aligned along the direction of the field component to be measured. Reference points for balancing and aligning the gradiometer and for zeroing the conductivity meter were selected on each side of the creek. The two magnetic sensors in the instrument are spaced 0.5 meters apart. The instrument is carried so the two sensors are vertical to one another with the bottom sensor approximately 30 cm above the ground. Each sensor reads the magnetic field strength at its height above the ground. The gradient or change of the magnetic field strength between the two sensors is recorded in the instrument's memory. This gradient is not in absolute field values but rather voltage changes, which are calibrated in terms of the magnetic field. The fluxgate gradiometer does provide a continuous record of the magnetic field strength.

The magnetic gradient survey was designed to collect 8 samples per meter along 0.5-meter traverses or 16 data values per square meter. The data were collected in a parallel

fashion with the surveyor maintaining the same direction of travel for each traverse across the grid. A total of 6,400 data values were collected for each complete 20 by 20 meter grid unit surveyed during the project. The magnetic data were recorded in the memory of the gradiometer and downloaded to a laptop computer at the completion of the survey. The magnetic data were imported into Geoscan Research's GEOPLOT software (Geoscan Research 2001) for processing. Both shade relief and trace line plots were generated in the field before the instrument's memory was cleared. Upon completion of the survey, the data were processed in GEOPLOT. The grid data file was transformed into a composite file and a zero mean traverse was applied to remove any traverse discontinuities that may have occurred from operator handling or heading errors. Upon completion of the zero mean traverse function, the data were interpolated by expanding the number of data points in the traverse direction and by reducing the number of data points in the sampling direction to provide a smoother appearance in the data set and to enhance the operation of the low pass filter. This changed the original 8 x 1 data point matrix into a 4 x 4 data point matrix. The low pass filter was then applied over the entire data set to remove any high frequency, small scale spatial detail. This transformation may result in the improved visibility of larger, weak archeological features. The data were then exported as an ASCII dat file and placed in the SURFER 8 contouring and 3d surface mapping program (Golden Software 2002). An image map of the magnetic gradient data was generated for both survey grid areas. The magnetic data from the geophysical survey area at the Burch lot ranged from -205.80 nT to 220.83 nT with a mean of 0.027 nT and a standard deviation of 33.548 nT (Figure 8). The magnetic data from the geophysical survey area at the Carrigan lot ranged from -265.51 nT to 229.32 nT with a mean of -0.244 nT and a standard deviation of 49.119 nT (Figure 9).

Conductivity Survey

Instrument: Geonics EM38 electromagnetic conductivity meter (Geonics 1992) with an Omnidata DL-720 polycorder (Geonics 1998)

Specifications: apparent conductivity of the ground in millisiemens per meter (mS/m); measurement precision ±0.1% of full scale deflection; 100 and 1000 mS/m conductivity ranges (4 digit digital meter).

Survey type: conductivity in the quadrature phase operating mode

Operators: Steven De Vore

The conductivity survey is an active geophysical technique, which induces an electromagnetic field into the ground (see Bevan 1983,1998:29-43; Clark 2000:171; Clay 2001:32-33,2002; Davenport 2001:72-88; David 1995:20; Gafeney and Gater 2003:42-44; Gaffney et al. 1991:5,2002:10; Heimmer and De Vore 1995:35-41,2000:60-63; Kvamme 2001:362-363,2003:441-442; Lowrie 1997:222-228; Mussett and Khan 2000:210-219; Scollar et al. 1990:520-590; Weymouth 1986:317-318,326-327 for more details of conductivity surveys). This survey technique measures the apparent soil conductivity. The present survey is conducted with a Geonics EM38 ground

conductivity meter (Geonics 1992). The instrument is lightweight and 1.45 meters in length (Figure 10). The self-contained dipole transmitter (primary field source) and self-contained dipole receiver (sensor) coils are located at opposite ends of the meter. The intercoil spacing is 1 meter.

An electromagnetic field is induced into the ground through the transmitting coil. The induced primary field causes an electric current flow in the earth similar to a resistivity survey. In fact, a conductivity survey is the inverse of a resistivity survey. High conductivity equates to low resistivity and vice versa. The materials in the earth create secondary eddy current loops, which are picked up by the instrument's receiving coil. The interaction of the generated eddy loops or electromagnetic field with the earthen materials is directly proportional to terrain conductivity within the influence area of the instrument. The receiving coil detects the response alteration (secondary electromagnetic field) in the primary electromagnetic field. This secondary field is out of phase with the primary field (quadrature or conductivity phase). The in-phase component of the secondary signal is used to measure the magnetic susceptibility of the subsurface soil matrix.

Changes result from electrical and magnetic properties of the soil matrix. Changes are caused by materials buried in the soil, differences in soil formation processes, or disturbances from natural or cultural modifications to the soil. EM instruments are also sensitive to surface and buried metals. Due to their high conductivity, metals show up as extreme values in the acquired data set. On occasion, these values may be expressed as negative values since the extremely high conductivity signal of the metals cause the secondary coil to become saturated.

In archeology, the instrument has been used to identify areas of compaction and excavation as well as buried metallic objects. It has the potential to identify cultural features that are affected by the water saturation in the soil (Clark 2000; Heimmer and De Vore 1995:35-41). Its application to archeology results from the ability of the instrument to detect lateral changes on a rapid data acquisition, high resolution basis, where observable contrasts exist. Lateral changes in anthropogenic features result from compaction, structural material changes, buried metallic objects, excavation, habitation sites, and other features affecting water saturation (Heimmer and De Vore 1995:37). The conductivity survey can sometimes detect the disturbed soil matrix within the grave shaft. It can also locate large metal objects. Metallic trash on the surface and other small objects buried in the upper portion of the soil can degrade the search of the graves (Bevan 1991:1310).

The meter was connected to the DL720 Polycorder for digital data acquisition (Geonics 1998). The conductivity survey was designed to collect in the continuous or automatic mode with readings collected every 0.25 second resulting in 4 samples per meter. The data were collected in a parallel fashion or unidirectional mode with the surveyor conducting the data acquisition in the same the direction of travel for each traverse across the grid. The data and header files stored in the polycorder were downloaded into the laptop computer at the end of the survey. The survey of the grid unit began in the lower

left hand or southwest corner of the grid. The EM38 was used in the quadrature or conductivity phase, the vertical dipole mode, and one orientation parallel to the direction of travel along the traverses. It provided an exploration depth of approximately 1.5 meters with its effective depth around 0.6 meters in the vertical dipole mode. The instrument was nulled and calibrated at before the start of the survey at the same point used to balance and align the fluxgate gradiometer.

The data were downloaded to a laptop computer at the end of the survey of the geophysical project. The data were processed using the DAT38W software (Geonics 2002). After the transfer of the data and header files to the laptop computer, the files were automatically converted from the raw EM38 format to DAT38 format with the extension name of G38 (Geonics 2002:12-14). The data were then displayed as data profile lines (Geonics 2002:14-15). The individual EM38 data file was then converted to XYZ coordinate file in the Surfer data format. To create the XYZ file, the orientation or direction of the survey line was selected in the DAT38W program along with the data type and format (Geonics 2002:20-23). The resulting XYZ data file was transfer to the SURFER 8 mapping software (Golden Software 2002). The conductivity data were reviewed and an image plot was generated in SURFER 8. To further process the conductivity data, it was transferred to GEOPLOT. The conductivity data were stripped of the X and Y coordinates and then the Z values (measurements) were imported into GEOPLOT for further processing (Geoscan Research 2001). The resulting grid was formatted to form a composite file in GEOPLOT. The interpolation routine was applied to the data set to arrange the data in an equally spaced 4 x 4 square matrix. A high pass filter was then applied over the composite data set. The high pass filter was used to remove low frequency, large scale spatial detail such as a slowing changing geological 'background' trend. The data were then exported as an ASCII *.dat file and placed in the SURFER 8 mapping program. The Northing and Easting coordinates were corrected to actual grid location values. Finally, the data were presented in a gray scale image plot and a contour plot.

The conductivity data were collected along every 0.5-meter traverse at a sampling density of 4 samples per meter or 8 samples per square meter in the two geophysical survey areas. A total of 4,702 data measurements were collected during the survey of the Burch lot and 5,531 data measurements were collected during the survey of the Carrigan lot. The mean for the conductivity data from the Burch lot was 32.670 mS/m with a standard deviation of 7.063 mS/m (Figure 11). The minimum value was -47.61 mS/m and the maximum value was 57.19 mS/m. The mean for the conductivity data from the Carrigan lot was 48.649 mS/m with a standard deviation of 20.560 mS/m (Figure 12). The minimum value was -46.26 mS/m and the maximum value was 141.97 mS/m.

Resistivity Survey

Instrument: Geoscan Research RM15 resistance meter with PA5 multiprobe array (Geoscan Research 1996)

Specifications: 0.05 ohms resolution, 0.1 ohms absolute accuracy.

Survey type: resistance

Operators: Steven De Vore

The resistance survey is an active geophysical technique, which injects a current into the ground (see Bevan 1998:7-18; Carr 1982; Clark 2000:27-63; David 1995: 27-28; Gafeney and Gater 2003:26-36; Gaffney et al. 1991:3-5,2002:7-9; Heimmer and De Vore 1995:29-35,2000:59-60; Kvamme 2001:358-362,2003:441-442; Lowrie 1997:203-219; Milsom 2003:83-116; Mussett and Khan 2000:181-232; Scollar et al. 1990:307-374; and Weymouth 1986:318-341 for more details of resistivity surveys). The voltage is measured and by Ohm's Law, one may compute the resistance at any given point (**R=V/I** where **R** is resistance, **V** is voltage, and **I** is current). Due to the problem of contact resistance between two electrodes in the ground, a typical resistance survey makes use of four electrodes or probes. The current passes through two electrodes and the voltage is measured between the other two probes. The configuration of the electrodes also varies (see Milsom1996:73 and Weymouth 1986:324 for common configurations).

Resistance or resistivity changes result from electrical properties of the soil matrix. Changes are caused by materials buried in the soil, differences in soil formation processes, or disturbances from natural or cultural modifications to the soil. In archeology, the instrument is used to identify areas of compaction and excavation, as well as, buried objects such as brick or stone foundations. It has the potential to identify cultural features that are affected by the water saturation in the soil, which is directly related to soil porosity, permeability, and chemical mature of entrapped moisture (Clark 2000; Heimmer and De Vore 1995:30). Its application to archeology results from the ability of the instrument to detect lateral changes on a rapid data acquisition, high resolution basis, where observable contrasts exist. Lateral changes in anthropogenic features result from compaction, structural material changes, buried objects, excavation, habitation sites, and other features affecting water saturation (Heimmer and De Vore 1995:37). The resistivity survey may sometimes detect the disturbed soil matrix within the grave shaft.

The Geoscan Research RM15 resistance meter uses the PA5 multiple probe array (Geoscan Research 1996). Arranged as a twin probe array, a current and voltage probes are located on a mobile frame, which is moved around the site (Figure 13). Two additional probes are located away from the survey area, which also consist of a current probe and voltage probe. The remote probes are set a distance 30 times the mobile probe separation. The probes on the frame are located at a fixed distance apart. A general rule of thumb for the depth investigation of resistance survey is the depth is equal to the distance of probe separation. This value is not a unique number but an average for the volume of soil 0.5 meters depth and a surface radius of 0.5 meters under the center point of the instrument frame. The probes are connected to the resistance meter, which is also on the frame. Wings may be added to the frame to expand the separation distance of the probes; however, this requires the resurvey of the grid for each change in the probe separation distance. The measurement is taken when the mobile probes make contact

with the ground and complete the electrical circuit. The readings are stored in the resistance meter's memory until downloaded to a lap-top computer.

The resistance survey was designed to collect 2 samples per meter along 0.5-meter traverses or 4 data values per square meter. The data were collected in a zigzag fashion with the surveyor maintaining the alternating the direction of travel for each traverse across the grid. A total of 1,600 data values were collected for each complete 20 by 20 meter grid unit surveyed during the project. The resistance data were recorded in the memory of the resistance meter and downloaded to a laptop computer at the completion of the survey. The resistance data were imported into Geoscan Research's GEOPLOT software (Geoscan Research 2001) for processing. Both shade relief and trace line plots were generated before the instrument's memory was cleared. Upon completion of the survey, the data were processed in GEOPLOT. The grid files were combined to form a composite file and further processed in GEOPLOT. The composite file for the Burch lot resistance data was first despiked to remove any erroneous measurements. Despiking may be accomplished with the processing routine in GEOPLOT or manually by editing each individual grid file. The search and replace routine was first applied to the composite file for the Carrigan resistance data to remove the erroneous 204.7 value for the dummy value which was 2047.5. The 2047.5 dummy value was recognized in the processing software and allowed the subsequent processing routines to be applied to the composite data set without using the dummy values in the calculations. The despike function was then applied to the Carrigan resistance data. A high pass filter was applied to the composite data set to remove low frequency, large scale spatial detail such as a slowing changing geological 'background' trend. The data from the Burch lot resistance data after despiking ranged from 13.05 ohms to 29.25 ohms with a mean of 17.131 ohms and a standard deviation of 2.162 ohms (Figure 14). The data from the Carrigan lot resistance data after despiking ranged from 17.10 ohms to 64.75 ohms with a mean of 24.765 ohms and a standard deviation of 4.916 ohms (Figure 15). The data were then exported as an ASCII *.dat file and placed in the SURFER 8 mapping program. The data were gridded and both an image map and a contour map were generated for the Burch lot resistance data and the Carrigan lot resistance data.

Ground Penetrating Radar Survey

Instrument: Geophysical Survey Systems Inc. (GSSI) TerraSIRch SIR System-3000 ground penetrating radar cart system with a 400 mHz antenna (GSSI 2003).

Specifications: SIR 3000: System hardware contains a 512 mb compact flash memory card as its internal memory. Accepts industry standard compact flash memory card up to 2 gb. Processor is a 32-bit Intel StrongArm PISC 206 mHz processor with enhanced 8.4" TFT display, 800 x 600 resolution, and 64k colors. The processor also produces linescan and O-scope displays. The gpr system uses one channel. It also uses the GSSI Model 623 survey cart with survey wheel for mounting the antenna and control unit. The 400 mHz Model 5103 ground coupled antenna has a depth of view of approximately 4 m assuming a ground dielectric constant of 8 with a range of 50 ns, 512 samples per scan,

16 bit resolution; 5 gain points, 100 mHz vertical high pass filter, 800 mHz vertical low pass filter, 64 scans per second, and 100 kHz transmit rate.

Survey type: ground penetrating radar

Operator: Steven De Vore

The ground-penetrating radar (gpr) survey is an active geophysical technique (see Bevan 1998:43-57; Clark 2000:118-120; Conyers 2004; Conyers and Goodman 1997; David 1995:23-27; Gaffney and Gater 2003:74-76; Gaffney et al. 1991:5-6,2002:9-10; Goodman et al. 1995; Heimmer and De Vore 1995:42-47,2000:63-64; Kvamme 2001:363-365,2003:442-443; Lowrie 1997:221-222; Milsom 1996:131-140; Mussett and Khan 2000:227-231; Scollar et al. 1990:575-584; and Weymouth 1986:370-383 for more details of ground penetrating radar surveys). The gpr unit operated an antenna at a nominal frequency of 400 megahertz (mHz). The antenna was mounted in a cart that recorded the location of the radar unit along the grid line (Figure 16). The gpr profiles were collected along 0.5 meter traverses beginning in the southwest corner of the grid block. The data were collected in a zigzag or bidirectional fashion with the surveyor alternating the direction of travel for each traverse across the grid. A total of 81 radar profiles were collected across the project survey area.

Ground penetrating radar surveys generally represent a trade-off between depth of detection and detail. Lower frequency antennas permit detection of features at greater depths but they cannot resolve objects or strata that are as small as those detectable by higher frequency antennas. Actual maximum depth of detection also depends upon the electrical properties of the soil. If one has an open excavation, one can place a steel rod in the excavation wall at a known depth and use the observed radar reflection to calibrate the radar charts. When it is not possible to place a target at a known depth, one can use values from comparable soils. Reasonable estimates of the velocity of the radar signal in the site's soil can be achieved by this method (Conyers and Lucius 1996). Using one of the hyperbolas on a radargram profile (Goodman 2005:76), the velocity was calculated to be approximately 0.07 cm per nanosecond (ns). For a time slice between 5 and 15 ns with the center at 10 ns (two way travel time), the approximate depth to the center of the gpr slice would be 35 cm. With a time window of 100 ns, the gpr profile extended to a depth of 3.5 meters

The survey cart contained a data-logger (SIR 3000) with a display that allowed the results to be viewed almost immediately after they were recorded. The SIR 3000 was set to collect gpr data with the 400 mHz antenna at an antenna transmit rate of 100 mHz and the distance mode selected for use of the survey wheel on the cart. The scan menu was set with 512 samples, 16 bit format, 100 ns range or window, a dielectric constant of 8 (the default value), a scan rate of 100, and 50 scans per meter. In the gain menu, the gain was set to manual with a default value of 3. The gpr system was moved around the grid prior to the start of the survey to adjust the gain. If a location caused the trace wave to go off the screen, the gain was set to auto and then back to manual. The position was set to the manual mode with the offset value at the factory default and the surface display option

set to zero. The filters were left at the default settings. With the setup completed, the run/stop button at the bottom of the display screen was selected and the collect mode was initiated. The gpr unit was moved across the grid and at the end of the traverse, the next file button was selected and data acquisition was halted. The gpr unit was placed at the start of the next line before saving the profile. Once the profile data was saved, the gpr unit was ready to collect the next profile line. The gpr data were recorded on a 512 mb compact flash card and transferred to a lap-top computer at the end of the survey.

The gpr radargram profile line data are imported into GPR-SLICE (Goodman 2005) for processing. The first step in GPR-SLICE is to create a new survey project under the file menu. This step identifies the file name and folder locations. The next step is to create the information file. The number of profiles are entered, along with the file identifier name, .dzt for GSSI radargrams, the profile naming increment of 1, the first radargram name (generally this is 1), direction of profiling, x and y beginning and ending coordinates, units per marker (set to 1), the time window opening in nanoseconds (100 ns), samples per scan (512 s/scn), the number of scans per meter (these profiles were collected at 50 scans per meter), type of data (16 bit). Selecting the create info file button completes the information file for the project. The information file can be edited if necessary to correct profile lengths. The 16-bit GSSI radargrams are imported into the GPR-SLICE project folder for further processing. The 16-bit data are then converted to remove extraneous header information and to regain the data. During the conversion process, the signal is enhanced by applying gain to the radargrams. Once the conversion process is completed, the next step is to reverse the profile data. Since the radargrams were collected in the zigzag mode, every even line needs to be reversed. The reverse map button shows the radargrams that are going to be reversed. The next step is to insert navigation markers into the resample radargrams. The GSSI SIR 3000 and the artificial markers button are selected to apply markers based on the total number of scans in the radargram. The show markers button allows one to view an example of a radargram with the artificial markers in place. The next step is to create the time slices of the profile data (Conyers and Goodman 1997; Goodman et al. 1995). The program resamples the radargrams to a constant number of scans between the markers and collects the time slice information from the individual radargrams. The number of slices is set to 20 slices. The slice thickness is set to 30 to allow for adequate overlap between the slices. The offset value on the radargram where the first ground reflection occurs is viewed in the search 0 ns subroutine. This value is used to identify the first radargram sample at the ground surface. The end sample is 512. The offset value in entered in the samples to 0 ns box. The cut parameter is set to square amplitude with the cuts per mark set to 4. The slice/resample button is selected for processing the radargrams. The final step in the slice menu is to create the XYZ data file. The grid menu is entered next in the processing steps. The beginning and ending values for the x and y coordinate are entered. The help set button is selected to set the x search radius, y search radius and the blanking radius. The grid cell size is set to 0.1 and the search type is rectangular. The number of grids equal 20 for the number of slices, and the starting grid number is 1. The Kriging algorithm is utilized to estimate the interpolated data. The Varigram button is selected to set the Kriging range, nugget and sill parameters. The start gridding button is selected and the gridded dataset is created. In this menu, a low pass filter may be applied to the

dataset to smooth noisy data in the time slices. At this point, one may view the time sliced radar data in the pixel map menu. Figure 17 and 18 illustrate the time slices from the Burch lot and the Carrigan lot, respectively. In addition, the original processed grid slices and the low pass filtered grid slices can be exported in the Surfer grid format. The surfer grid file is transformed into an image plot in Surfer. Generally, one time slice is selected for further display and analysis. Time slice 3 (Figure 19) was selected from the Burch lot gpr data and time slice 6 (Figure 20) was selected from the Carrigan gpr data. The gain may be readjusted for any time slice. This is done in the transforms submenu. The interpolations value is set to 5 and the interpolate grids routine is selected. The new interpolated grids are all normalized. The next step is to create the 3D dataset in the grid menu. The number of grids is now equal to 95 ((20-1)*5). The 3D database is created under the create 3D file routine. The 3D data may be displayed as a series of z slices in the creation of a 3D cube with a jpeg output for animating the 3D cube.

Interpretations

Andrew David (1995:30) defines interpretation as a "holistic process and its outcome should represent the combined influence of several factors, being arrived at through consultation with others where necessary." Interpretation may be divided into two different types consisting of the geophysical interpretation of the data and the archaeological interpretation of the data. At a simplistic level, geophysical interpretation involves the identification of the factors causing changes in the geophysical data. Archeological interpretation takes the geophysical results and tries to apply cultural attributes or causes. In both cases, interpretation requires both experience with the operation of geophysical equipment, data processing, and archeological methodology; and knowledge of the geophysical techniques and properties, as well as known and expected archeology. Although there is variation between sites, several factors should be considered in the interpretation of the geophysical data. These may be divided between natural factors, such as geology, soil type, geomorphology, climate, surface conditions, topography, soil magnetic susceptibility, seasonality, and cultural factors including known and inferred archeology, landscape history, survey methodology, data treatment, modern interference, etc. (David 1995:30). It should also be pointed out that refinements in the geophysical interpretations are dependent on the feedback from subsequent archeological investigations. The use of multiple instrument surveys provides the archeologist with very different sources of data that may provide complementary information for comparison of the nature and cause (i.e., natural or cultural) of a geophysical anomaly (Clay 2001). Each instrument responds primarily to a single physical property: magnetometry to soil magnetism, electromagnetic induction to soil conductivity, resistivity to soil resistance, and ground penetrating radar to dielectric properties of the soil to (Weymouth 1986:371).

Burch Lot Geophysical Survey Results. The magnetic gradient data from the Burch lot contains numerous dipole and monopole magnetic anomalies (Figure 21). These anomalies are spread across the lot with a major concentration in the eastern half. The western portion of the geophysical survey area contains a lighter density of magnetic anomalies. It should also be noted that the west, south, and east edges of the survey area

contain numerous magnetic anomalies; however, the vast majority of these reflect effects of iron spikes or nails in the board fences that surround the lot in these areas.

A few point conductivity anomalies are present in the conductivity data from the Burch lot (Figure 22). The point conductivity anomalies are associated with metal artifacts. The conductivity anomalies also appear to be concentrated in the eastern half of the geophysical survey grid. Comparing the conductivity anomalies with the magnetic gradient anomalies, one can make several observations. For the overlapping magnetic gradient and conductivity anomalies, it is probable that these anomalies represent ferrous or iron based artifacts. In the cases where there is no corresponding magnetic gradient anomaly, the conductivity point anomaly typically represents a metal object but is not a ferrous based metal (i.e., it does not contain iron nor is it magnetic in nature). In the cases where there is no corresponding conductivity anomaly to the magnetic gradient anomaly, it is generally assumed that the magnetic gradient anomaly represents a non-metal object that contains ferrous compounds (e.g., bricks or fired clay), a thermal related feature (fire hearth, burned structure, etc.), or a disturbed area of soil (e.g., a pit, trench, or other type of soil disturbance).

The resistance data from the Burch lot appears to be the result of moisture concentrations in surface depressions or low spots (Figure 23). A linear depression is located along the north side of the survey area. It appears to represent the location of the property boundary between the Burch lot and the adjacent Brown lot. Two smaller resistance areas are located in the middle and eastern portion of the lot. These occur in low areas noticed during the survey. It is possible that these anomalous areas may relate to buildings that were once present on the lot.

The ground penetrating radar data from the Burch lot indicates the presence of a few high amplitude strength anomalies (Figure 24). The time slice 3 from 6.4 to 10.5 ns (22 cm to 36 cm) was selected as a representative gpr layer. Some of these occur in the same location as the magnetic gradient and conductivity anomalies, which suggest that these ground penetrating radar anomalies represent the location of metal objects. The central portion of the lot seems to consist of a polyhedral area of lower amplitude strength. The exact cause of this anomaly is presently unknown but may be the result of natural factors or more recent park landscaping activities.

By combining the four complementary data sets, it appears that the Burch lot contains a relatively dense sheet midden of cultural materials. However, there is no direct evidence of building foundations or outlines related to the Burch House or subsequent buildings known to have been constructed on the lot. It is still possible that such features exist but lack sufficient change in the measured geophysical properties for the instruments to detect.

Carrigan Lot Geophysical Survey Results. The magnetic gradient data from the Burch lot contains numerous dipole and monopole magnetic anomalies, as well as, linear concentrations of magnetic gradient anomalies (Figure 25). A small portion of the lot along the northern edge of the geophysical survey grid was not surveyed due to the dense

row of bushes separating the Carrigan lot from the Bugg lot. The major concentrations of magnetic gradient anomalies occur in four areas. One area near the north central portion of the lot appears to be associated with the location of the Carrigan House. This includes the portion of the grid that was not surveyed. The three other concentrations appear to be related to buried utility lines including the fire suppressant water line and electrical lines. It should also be noted that the west and south edges of the survey area contain numerous magnetic anomalies; however, the vast majority of these reflect effects of iron spikes or nails in the board fences that surround the lot in these areas and other recent features (i.e., concrete pads, electrical outlets, etc.) associated with the Lincoln Home in the lot to the south of the Carrigan lot. The eastern side of the survey area is also affected by ferrous materials in the concrete pad and storage building. The rear of the lot along the southern and eastern side of the survey area, which would have been the historical yard, appears to contain a light scattering of historic materials.

A few point and linear conductivity anomalies are present in the conductivity data from the Carrigan lot (Figure 26). The point conductivity anomalies are associated with metal artifacts. Comparing the conductivity anomalies with the magnetic gradient anomalies, one can make several observations. For the overlapping magnetic gradient and conductivity anomalies, it is probable that these anomalies represent iron based artifacts. In the cases where there is no corresponding magnetic gradient anomaly, the conductivity point anomaly typically represents a metal object that is not a ferrous based metal (i.e., it is not magnetic in nature). In the cases where there is no corresponding conductivity anomaly to the magnetic gradient anomaly, it is generally assumed that the magnetic gradient anomaly represents a non-metal object (e.g., bricks or other house demolition debris), a thermal related feature (fire hearth, burned structure, etc.), or a disturbed area of soil (e.g., a pit, trench, or other type of soil disturbance). In the north central portion of the survey rid where magnetic gradient anomalies suggested the location of the Carrigan House, a concentration of conductivity highs and lows also suggest the former house location. The conductivity data provides excellent identification of buried utility lines as noted in the data. At least seven buried utility lines or portions of lines are present. These include the water suppressant line, electrical lines, and possibly gas lines. Concrete pads along the southern edge of the lot are visible in the data. There also appear to be some related edge effects from the two fence lines.

The resistance data from the Carrigan lot contains a few conductivity anomalies which appear associated with the former location of the Carrigan House and with the buried utility lines (Figure 27). The house location is identified by a high resistance anomaly. This anomaly may indicate the presence of foundations and demolition debris. Some of the utilities lines are indicated by linear resistance lows.

The ground penetrating radar data from the Carrigan lot indicates the presence of a few high amplitude strength anomalies (Figure 28). A small portion of the lot along the northern edge of the geophysical survey grid was not surveyed due to the dense row of bushes separating the Carrigan lot from the Bugg lot. The time slice 6 from 16.2 to 20.2 ns (56 cm to 70 cm) was selected as a representative gpr layer. Some of these occur in the same location as the magnetic gradient and conductivity anomalies, which suggest

that these ground penetrating radar anomalies represent the location of metal objects. Two areas in the north central part of the grid are located in the area identified as the location of the Carrigan House. These may be related to foundations, walls, cellar, or other structural features. Two areas in the southwest corner and along the east side of the survey grid occur in the same location as buried utility lines identified in the other geophysical surveys. Finally, a small high amplitude gpr anomaly is located in the northwest corner of the grid. It is possible that this is a relatively large piece of metal. But its exact nature is presently unknown.

By combining the four complementary data sets, it appears that the Carrigan lot contains a relatively dense concentration of geophysical anomalies. Several of these occur in the north central portion of the survey area where the Carrigan House was formerly located. Other linear anomalies and concentration of anomalies represent the locations of buried utility lines. Numerous magnetic gradient dipoles in the eastern section of the survey area may also represent the discard of historic materials during the occupation of the Carrigan House, and later, the Corneau House. It is still possible that other structural related features of outbuildings may exist but lack sufficient changes in the measured geophysical properties for the instruments to detect.

Conclusions

During May 2005, Midwest Archeological Center staff conducted geophysical investigations at the Burch and Carrigan lots at Lincoln Home National Historic Site in Springfield, Illinois. The lots were selected for the present project to gather information on the possible location of house structural modifications and outbuilding locations in advance of the Midwest Archeological Center's preliminary evaluative archeological testing of the two lots for a proposed reconstruction project. The geophysical investigations included a magnetic gradient survey with a fluxgate gradiometer, a resistance survey with a resistance meter and twin probe array, a conductivity survey with a ground conductivity meter, and a ground penetrating radar survey with a ground penetrating radar cart system and 400 mHz antenna on both lots. A total of 1,299 square meters or 0.32 acres were surveyed with the geophysical instruments. The surveys resulted in the identification of numerous subsurface anomalies. At the Burch Lot, the results of the geophysical survey indicated the presence of an extensive sheet midden but did not identify any buried building or structural features. Examination of the Carrigan Lot geophysical data suggest the location of buried structural features associated with the Carrigan House and a possible historic sheet midden. In addition, numerous buried utility lines were also identified. Analysis of the geophysical data from both lots also indicated substantial modification to the original historic deposit from later 19th and 20th century building episodes, as well as, more recent park related landscaping and utility excavation activities.

This report has provided a cursory review and analysis of the geophysical data collected during the geophysical investigations of the Burch lot and Carrigan lot project areas. This information will be used by the Midwest Archeological Center and the Lincoln Home National Historic Site staffs to guide further archeological inquiry into the nature

of the site and help direct future National Park Service archeological excavations in both lots at Lincoln Home National Historic Site.

References Cited:

Angle, Paul M.

1935 *"Here I Have Lived:" A History of Lincoln's Springfield 1821-1865.* Abraham Lincoln Association, Springfield, Illinois.

Banton, Jr., Albert W., Ellen Carol Balm, and Jill York O'Bright

1987 *Blocks 7 and 10 Elijah Iles' Addition: Historic Resource Study and Historic Structures Report Lincoln Home National Historic Site.* National Park Service, Lincoln Home National Historic Site, Springfield, Illinois.

Bevan, Bruce W.

1983 Electromagnetics for Mapping Buried Features. *Journal of Field Archaeology* 10(1):47-54.

1998 *Geophysical Exploration for Archaeology: An Introduction to Geophysical Exploration.* Special Report No. 1. Midwest Archeological Center, Lincoln, Nebraska.

Carr, Christopher

1982 *Handbook on Soil Resistivity Surveying: Interpretation of Data from Earthen Archeological Sites.* Research Series, Volume 2. Center for American Archeology Press, Evanston, Illinois.

Clark, Anthony

2000 *Seeing beneath the Soil: Prospecting Methods in Archaeology.* Reprint. Routledge, London. Originally published in 1996 by B. T. Batsford Ltd., London.

Clay , R. Berle

2001 Complementary Geophysical Survey Techniques: Why Two Ways are always Better than One. *Southeastern Archaeology* 20(1):31-43.

2002 Conductivity (EM) Survey: A Survival Manual. Ms. on file, Cultural Resource Analysts, Inc., Lexington, Kentucky.

Conyers, Lawrence B.

2004 *Ground-Penetrating Radar for Archaeology.* AltaMira Press, Walnut Creek, California.

Conyers, Lawrence B., and Dean Goodman

1997 *Ground-Penetrating Radar: An Introduction for Archaeologists.* AltaMira Press, Walnut Creek, California.

Conyers, Lawrence B., and Jeffrey E. Lucius

1996 Velocity Analysis in Archaeological Ground-penetrating Radar Studies. *Archaeological Prospection* 3(1):25-38.

Davenport, G. Clark
2001 *Where is it? Searching for Buried Bodies & Hidden Evidence.* SportWork, Church Hill, Maryland.

David, Andrew
1995 *Geophysical Survey in Archaeological Field Evaluation.* Research & Professional Services Guidelines No. 1. English Heritage, Swindon, England.

Dice, Lee R.
1943 *The Biotic Provinces of North America.* University of Michigan Press, Ann Arbor.

Fenneman, Nevin M.
1938 *Physiography of Eastern United States.* McGraw-Hill Book Company, New York.

Gaffney, Chris, and John Gater
2003 *Revealing the Buried Past: Geophysics for Archaeologists.* Tempus, Stroud, Great Britain.

Gaffney, Chris, John Gater, and Sue Ovenden
1991 *The Use of Geophysical Techniques in Archaeological Evaluations.* Technical Paper Number 9. Institute of Field Archaeologists, University of Birmingham, Birmingham, England.
2002 *The Use of Geophysical Techniques in Archaeological Evaluations.* IFA Paper No. 6. Institute of Field Archaeologists, University of Birmingham, Birmingham, England.

Geonics
1992 *EM38 Ground Conductivity Meter Operating Manual for EM38 Models with Digital-Readout.* Geonics Limited, Mississauga, Ontario, Canada.
1998 DL720/38 Data Logging System Operating Instructions for EM38 Ground Conductivity Meter with Polycorder Series 720, Version 3.40. Geonics Limited, Mississauga, Ontario, Canada.
2002 *DAT38W Version 1.10 Computer Program Manual (Survey Data Reduction Manual).* Geonics Limited, Mississauga, Canada.

Geoscan Research
1987 *Fluxgate Gradiometer FM9 FM18 FM36 Instruction Manual, Version 1.0.* Geoscan Research, Bradford, England.
1996 *Resistance Meter RM15 Instruction Manual, Version 2.4.* Geoscan Research, Bradford, England.
2001 *Geoplot Version 3.00 for Windows Instruction Manual, Version 1.6.* Geoscan Research, Bradford, England.

Golden Software
2002 *Surfer 8 User's Guide: Contouring and 3D Surface Mapping for Scientists and Engineers*. Golden Software, Golden, Colorado.

Goodman, Dean
2005 *GPR-SLICE – Ground Penetrating Radar Imaging Software Quickstart Users Manual, Ver. 5.0*. Geophysical Archaeometry Laboratory, Woodland Hills, California.

Goodman, D., Y. Nishimura, and J. D. Rogers
1995 GPR Time Slices in Archaeological Prospection. *Archaeological Prospection* 2(2):85-89.

GSSI
2003 *TerraSIRch SIR System-3000 User's Manual*. Geophysical Survey Systems, Inc., North Salem, New Hampshire.

Heimmer, Don H., and Steven L. De Vore
1995 *Near-Surface, High Resolution Geophysical Methods for Cultural Resource Management and Archeological Investigations*. Revised Edition. National Park Service, Denver.
2000 Near-Surface, High Resolution Geophysical Methods for Cultural Resource Management and Archeological Investigations. In *Science and Technology in Historic Preservation*, edited by Ray A. Williamson and Paul R, Nickens, pp. 53-73. Advances in Archaeological and Museum Science Volume 4. Kluwer Academic/Plenium Publishers, New York.

Kvamme, Kenneth L.
2001 Current Practices in Archaeogeophysics: Magnetic, Resistivity, Conductivity, and Ground-Penetrating Radar. In *Earth Sciences and Archaeology*, edited by Paul Goldberg, Vance T. Holliday, and C. Reid Ferring, pp. 353-384. Kluwer Academic/Plenium Publishers, New York.
2003 Geophysical Surveys as Landscape Archaeology. *American Antiquity* 68(3):435-457.

LANDSCAPES Landscape Architecture•Planning•Historic Preservation, The Urbana Group, and Myers Schmalenberger Meisner
1997 *Lincoln Home National Historic Site Cultural Landscape Report: History, Existing Conditions, Analysis*. Lincoln Home National Historic Site, Springfield, Illinois.

Lowrie, William
1997 *Fundamentals of Geophysics*. Cambridge University Press, Cambridge, United Kingdom.

Mansberger, Floyd
1997 Letter Report to Chief, Midwest Archeological Center, dated December 16, 1997, describing the Investigations at the Carrigan-Irwin House Site (HS-2: Lot 6 and North Three-Quarters Lot 7m Block 100 on September 29, 1997, and between October 22 and October 23, 1997. Letter Report on file, Midwest Archeological Center, Lincoln, Nebraska.

Milsom, John
2003 *Field Geophysics*. Third Edition. John Wiley & Sons, Chichester, United Kingdom.

Mussett, Alan E., and M. Aftab Khan
2000 *Looking into the Earth: An Introduction to Geological Geophysics*. Cambridge University Press, Cambridge, United Kingdom.

Osborn, Alan J.
2001 *Archeological Overview and Assessment of Lincoln Home National Historic Site, Sangamon County, Illinois*. Midwest Archeological Center Technical Report No. 72. National Park Service, Lincoln, Nebraska.

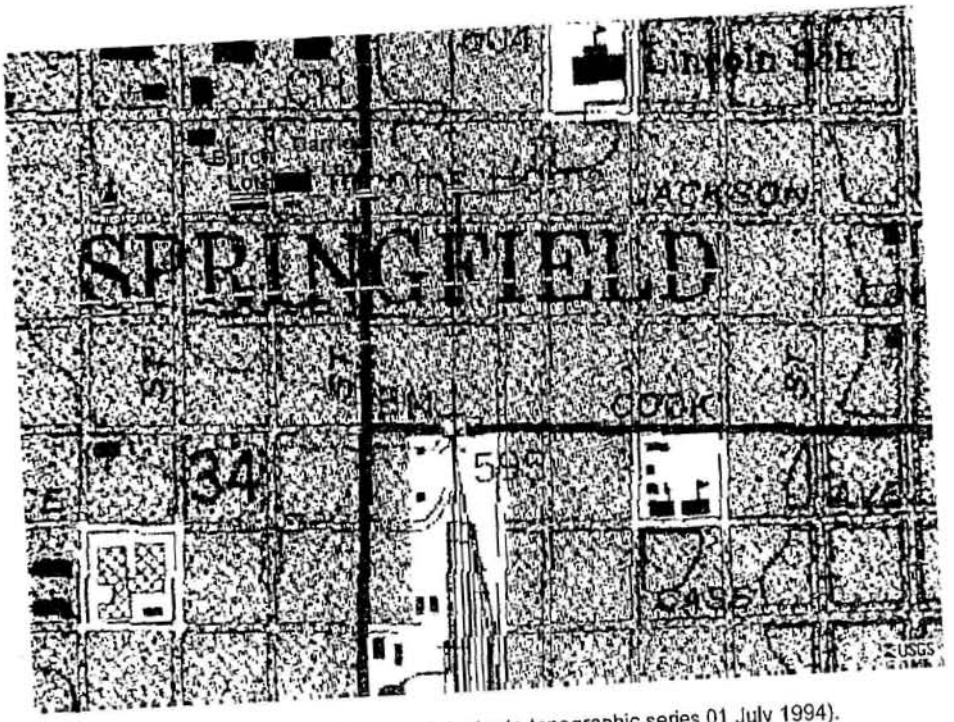
Scollar, I., A. Tabbagh, A. Hesse, and I. Herzog
1990 *Archaeological Prospection and Remote Sensing*. Topics in Remote Sensing 2. Cambridge University Press, Cambridge, Great Britain.

Shelford, Victor E.
1963 *The Ecology of North America*. University of Illinois Press, Urbana.

Steinkamp, James F.
1980 *Soil Survey of Sangamon County, Illinois*. U.s. Government Printing Office, Washington, DC.

Weymouth, John W.
1986 Geophysical Methods for Archaeological Site Surveying. In *Advances in Archaeological Method and Theory, Volume 9*, edited by Michael B. Schiffer, pp. 311-395. Academic Press, Orlando, Florida.

Figures



a) Springfield, Illinois quadrangle (USGS 7.5 minute topographic series 01 July 1994).

b) Springfield, Illinois, United States (USGS aerial photograph, 14 April 1998).

Figure 1. Location of the project area at the Lincoln Home National Historic Site, Springfield, Illinois.

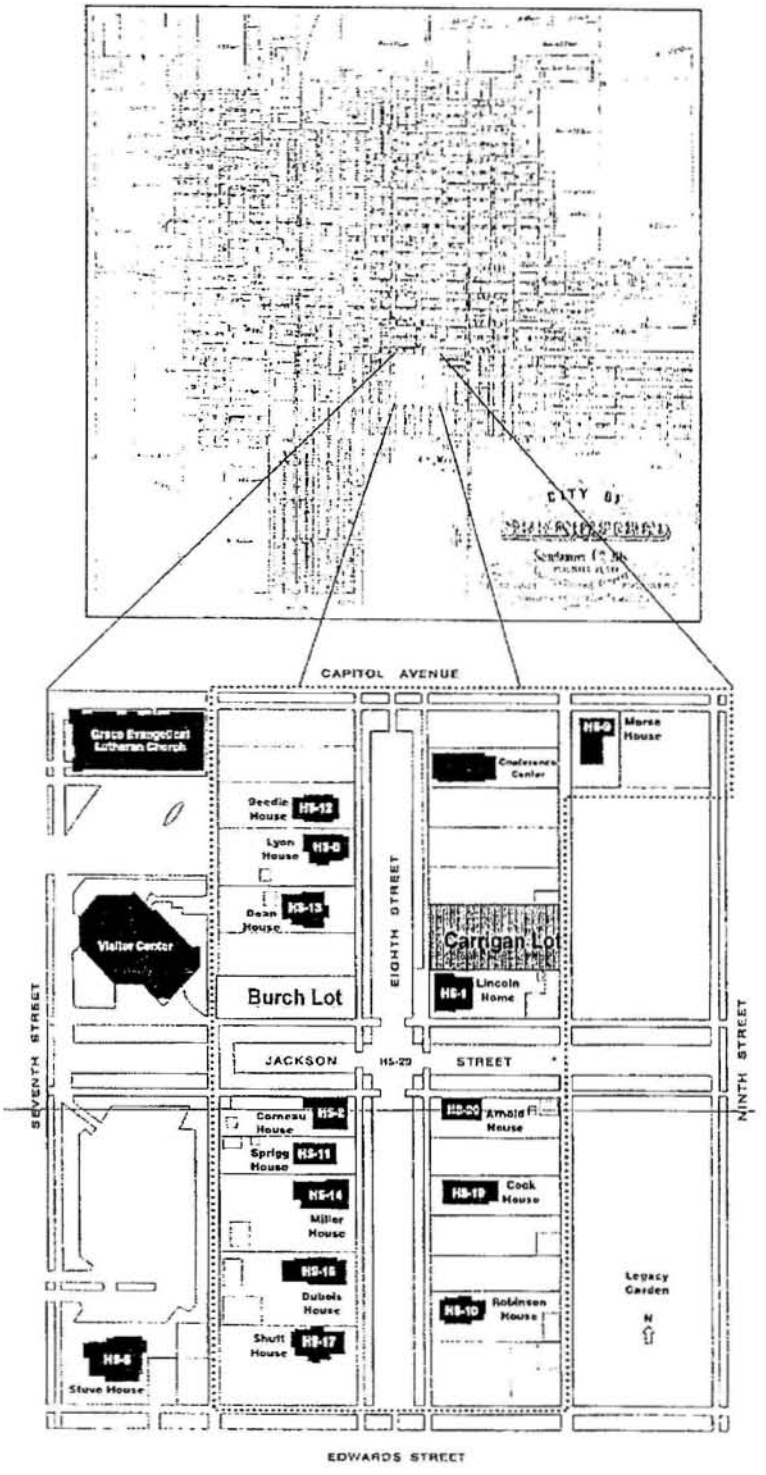


Figure 2. Location of the Burch and Carrigan lots at Lincoln Home National Historic Site (adapted from Angle 1935 and Osborn 2001).

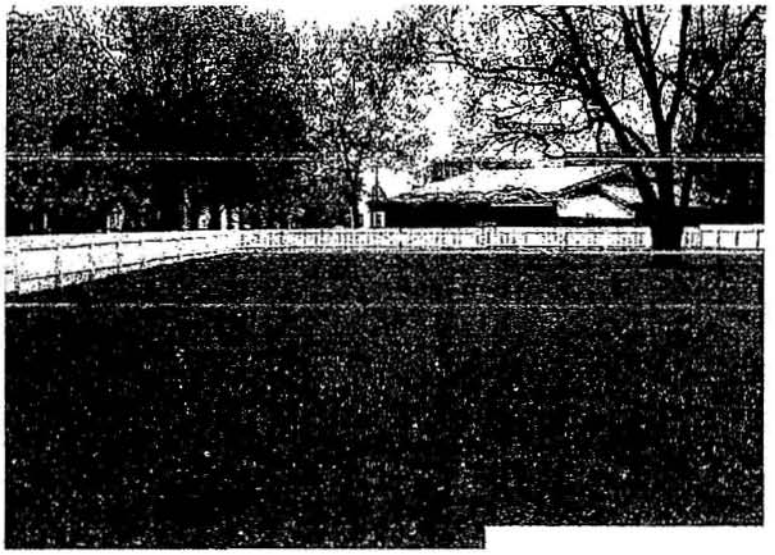


Figure 3. General location of the Burch lot (view to the west).

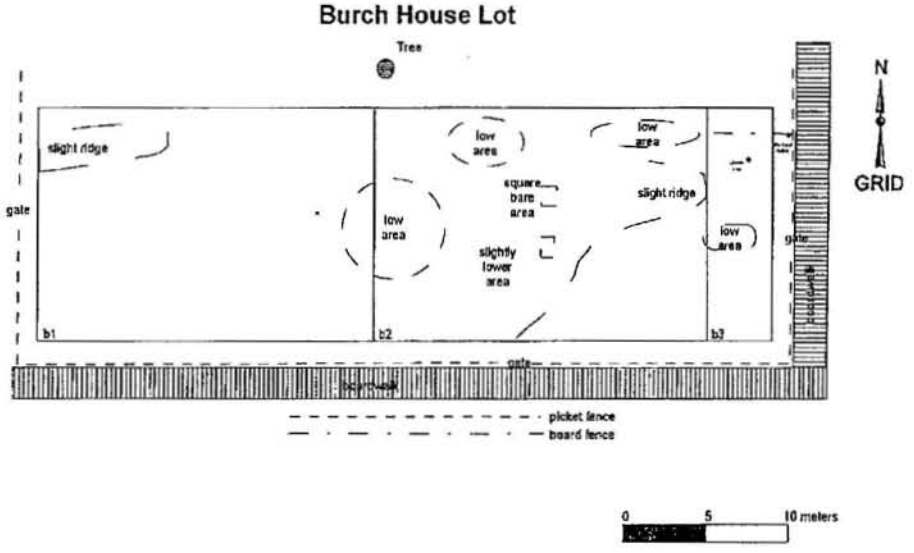


Figure 4. Sketch of natural and cultural surface features in the Burch lot.

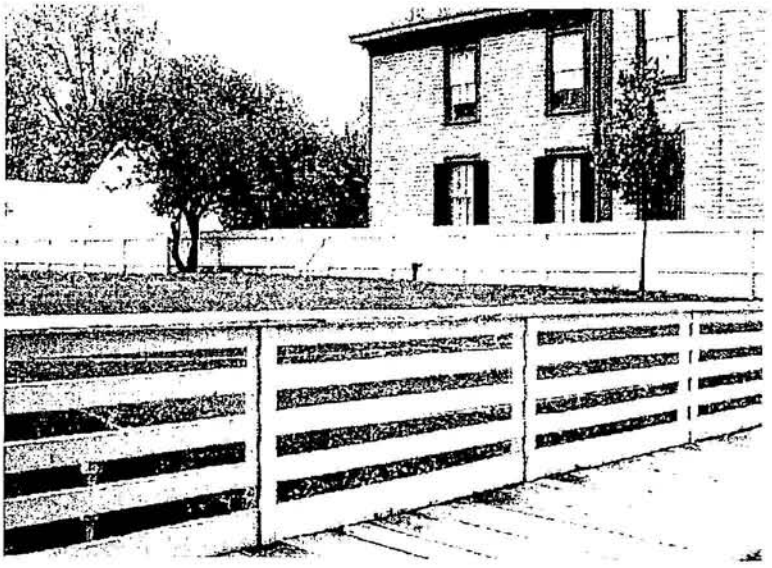


Figure 5. General location of the Carrigan lot (view to the southeast).

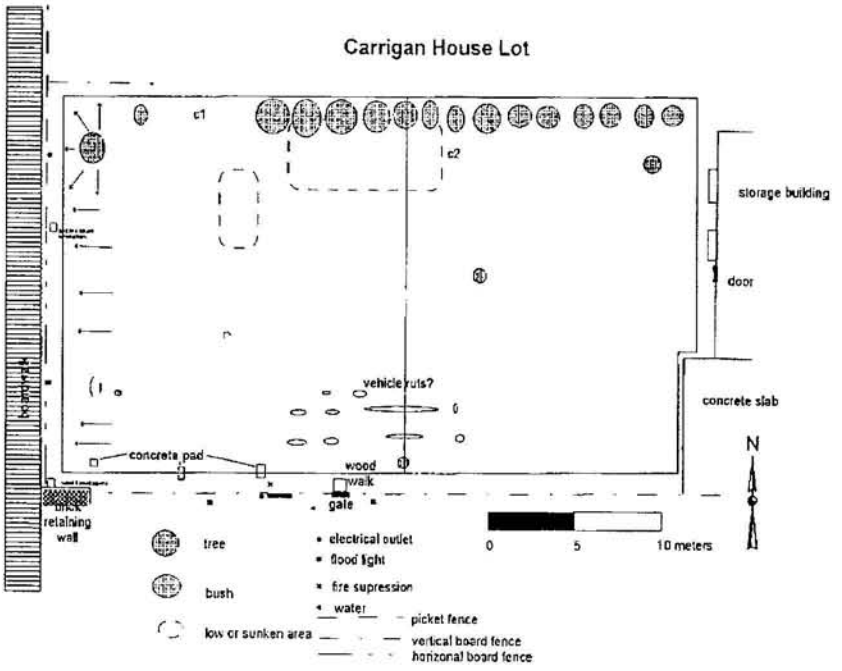


Figure 6. Sketch of natural and cultural surface features in the Carrigan lot.

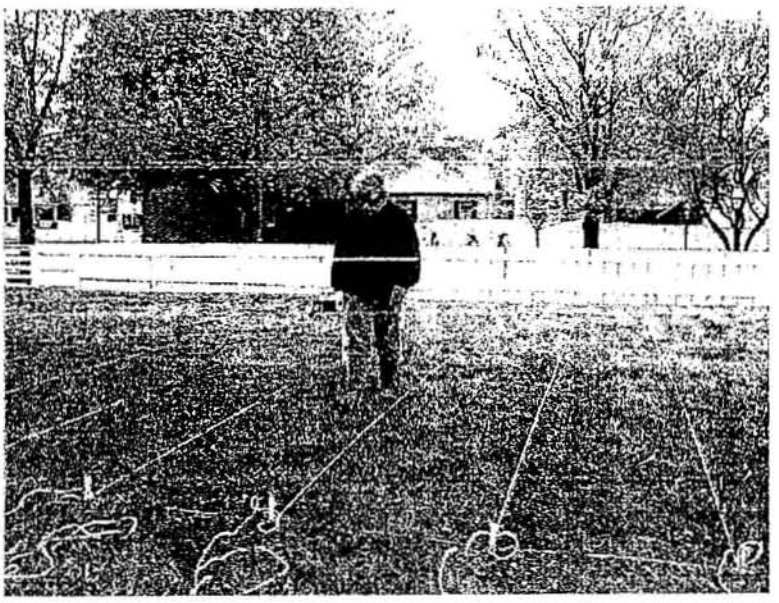


Figure 7. Conducting magnetic gradient survey with fluxgate gradiometer (view to the south).

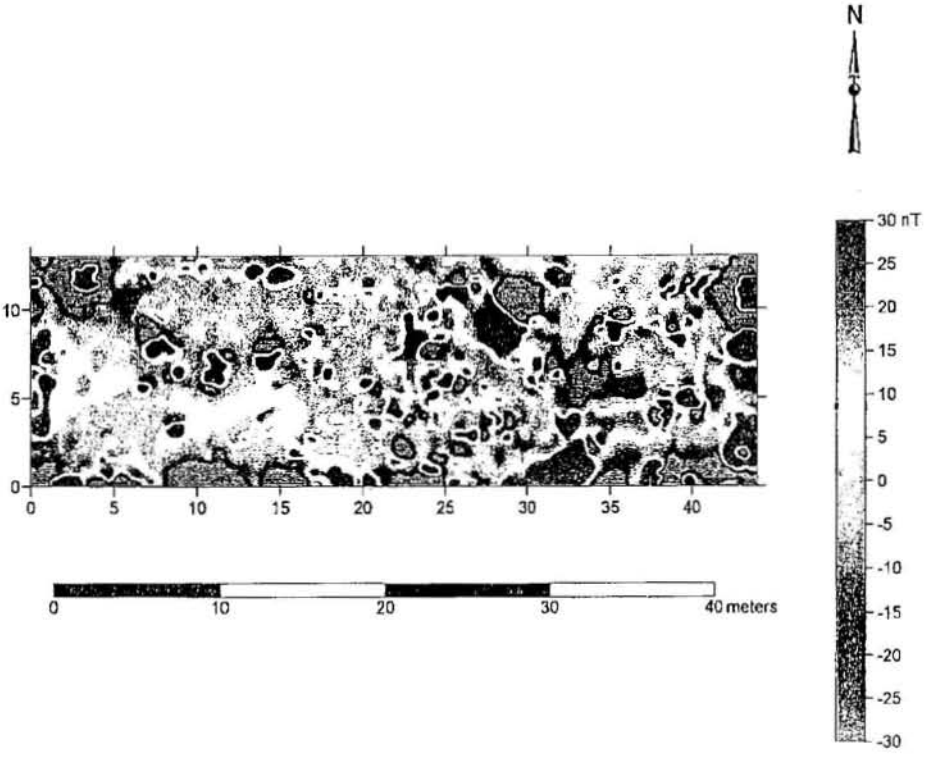


Figure 8. Image plot of magnetic gradient data from the Burch lot.

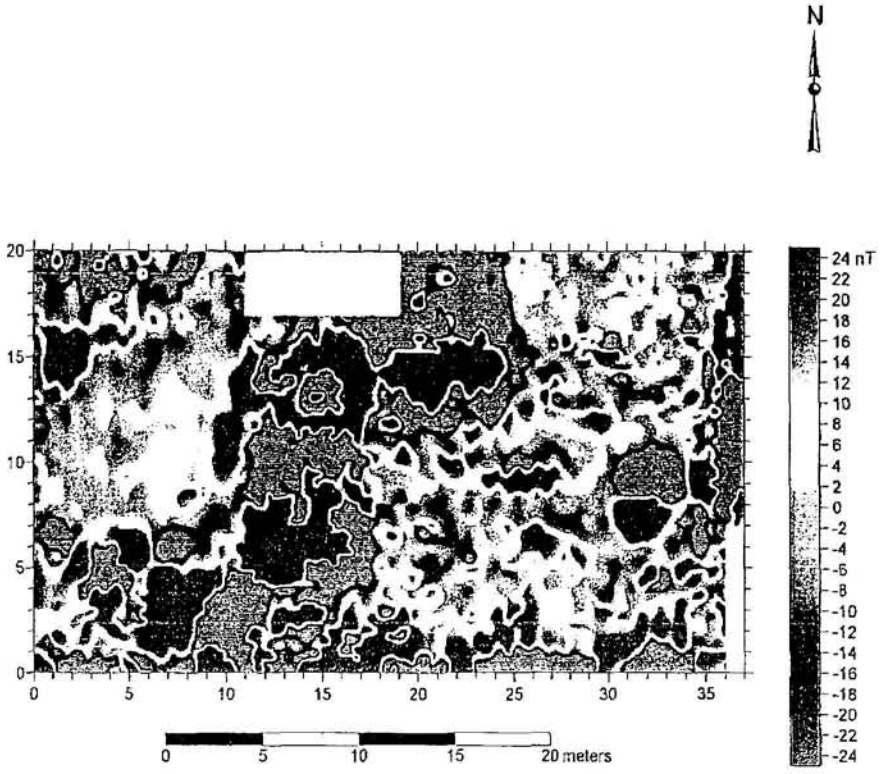


Figure 9. Image plot of magnetic gradient data from the Carrigan lot.

Figure 10. Conducting conductivity survey with ground conductivity meter (view to the southwest).

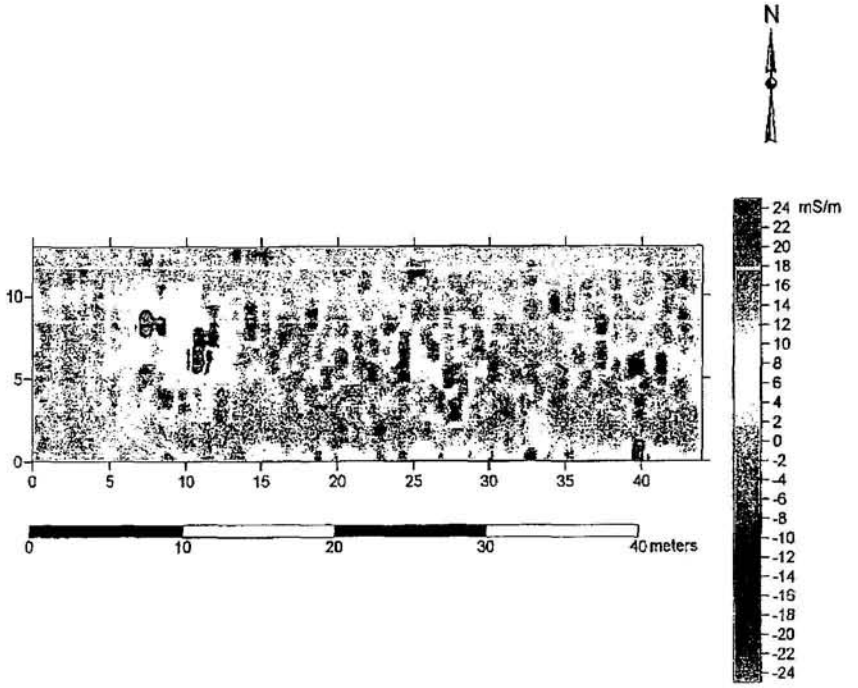


Figure 11. Image plot of conductivity data from the Burch lot.

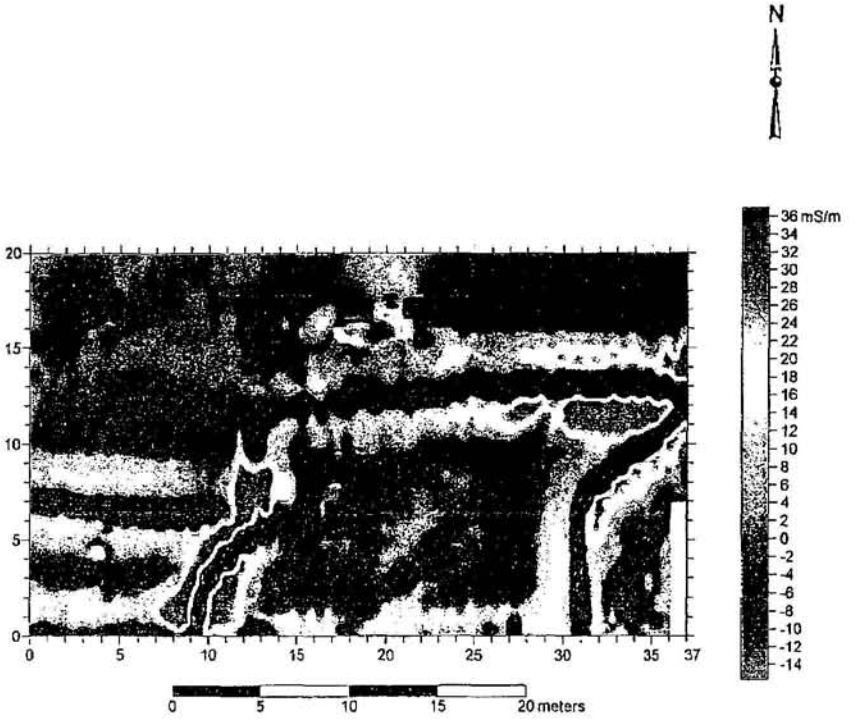


Figure 12. Image plot of conductivity data from the Carrigan lot.

Figure 13. Conducting resistance survey with resistance meter and twin probe array (view to the east southeast).

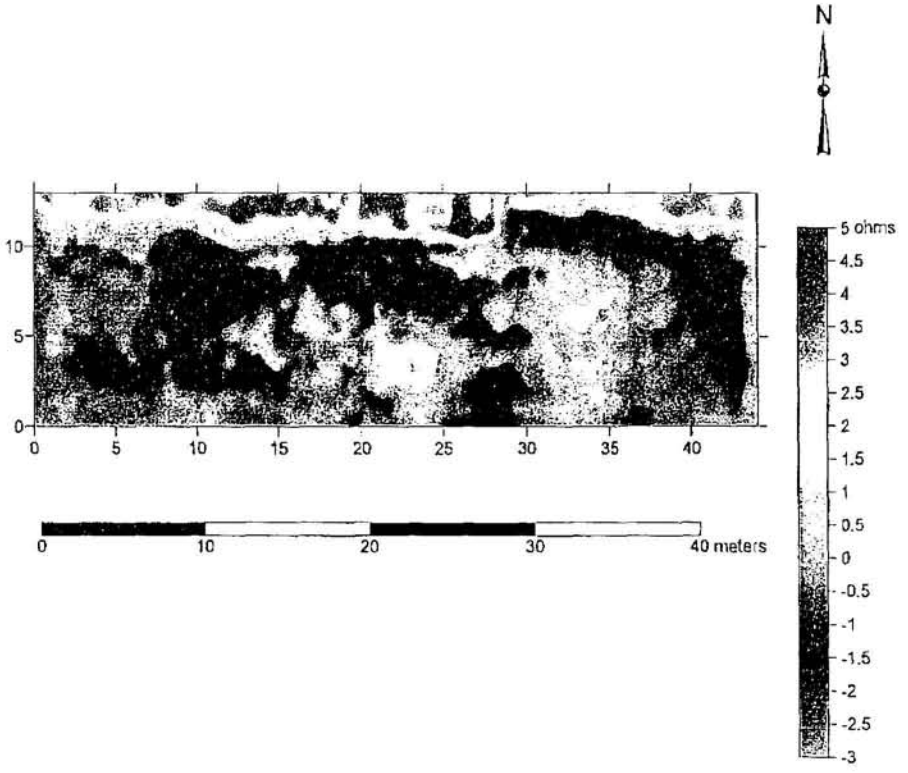


Figure 14. Image plot of resistance data from the Burch lot.

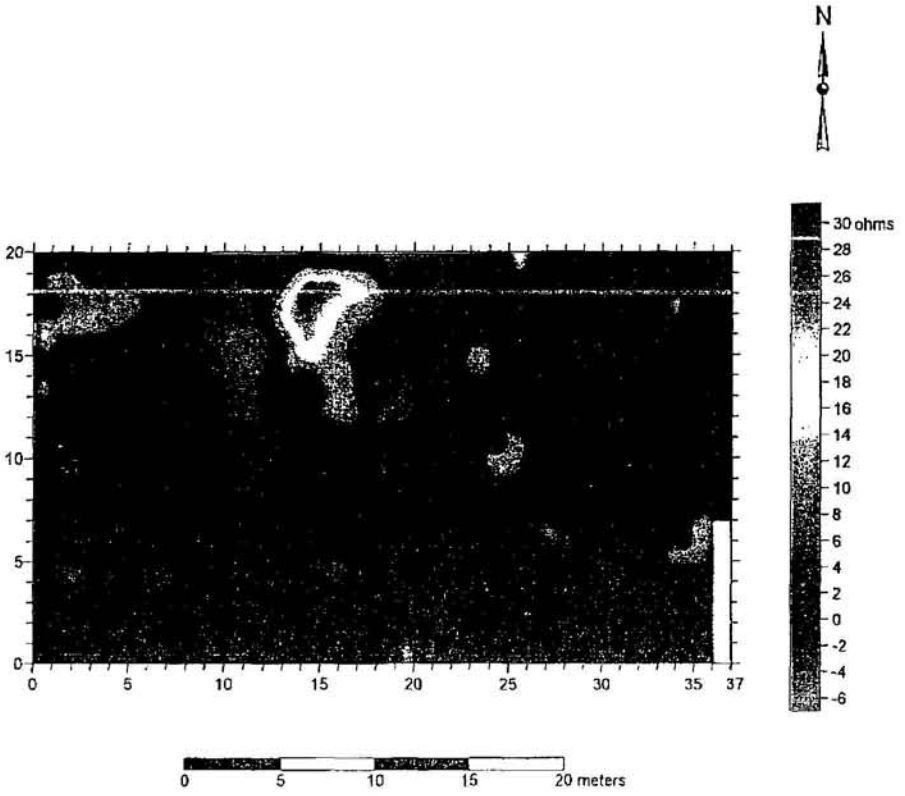


Figure 15. Image plot of resistance data from the Carrigan lot.

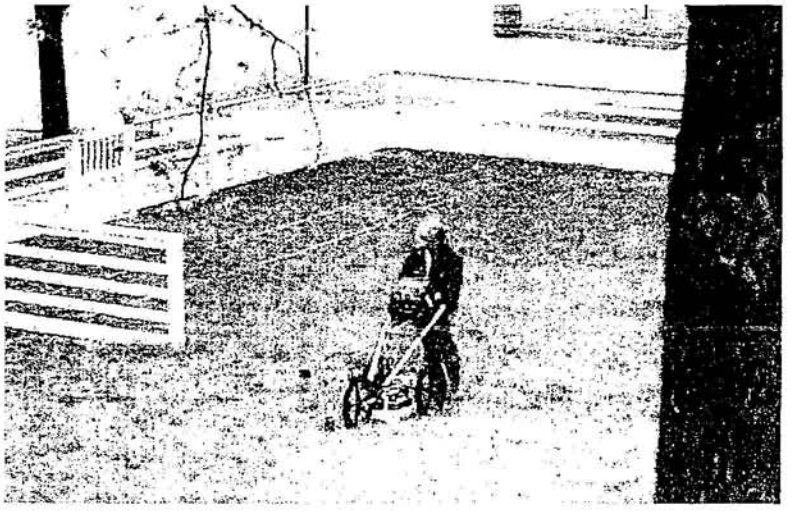


Figure 16. Conducting ground penetrating radar survey with gpr cart system and 400 mHz antenna (view to the southeast).

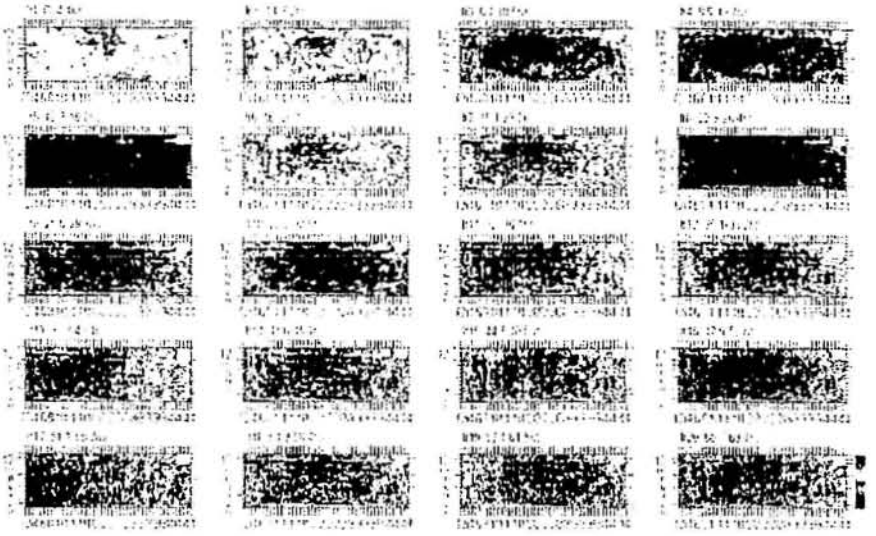


Figure 17. Time slices of ground penetrating radar data from the Burch lot.

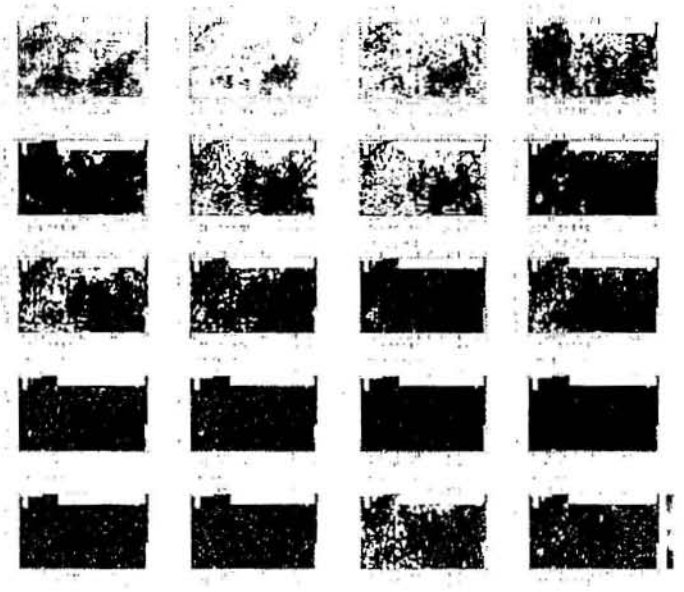


Figure 18. Time slices of ground penetrating radar data from the Carrigan lot.

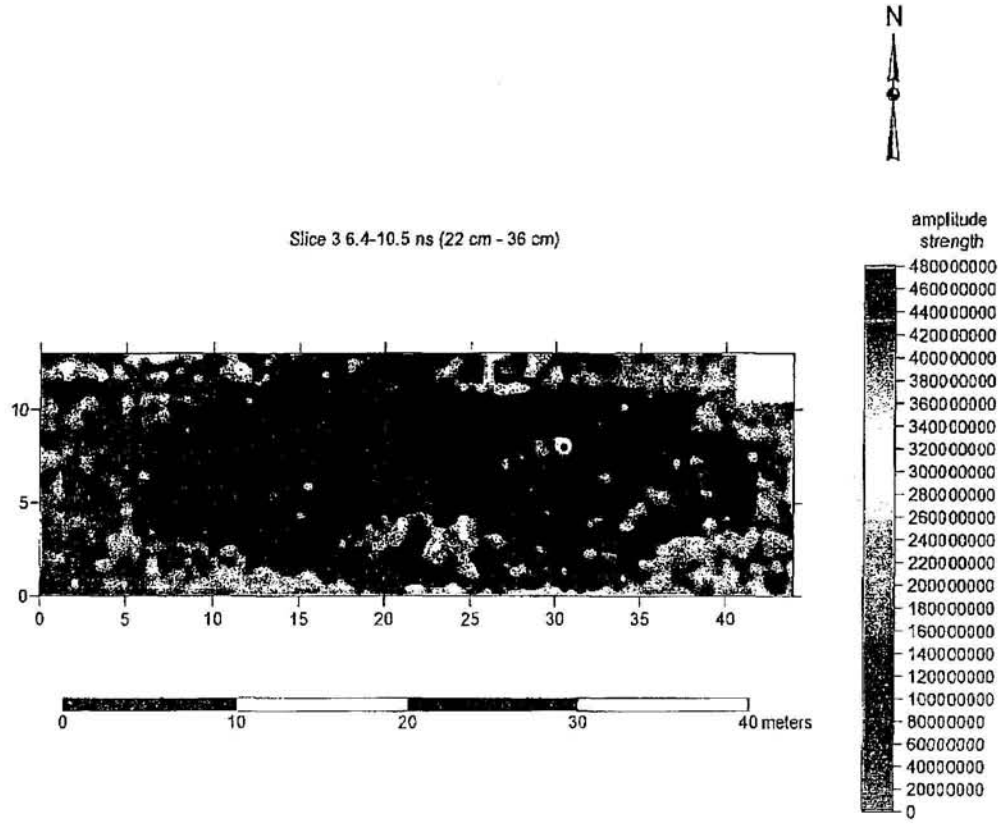


Figure 19. Image plot of time slice 3 data from the Burch lot.

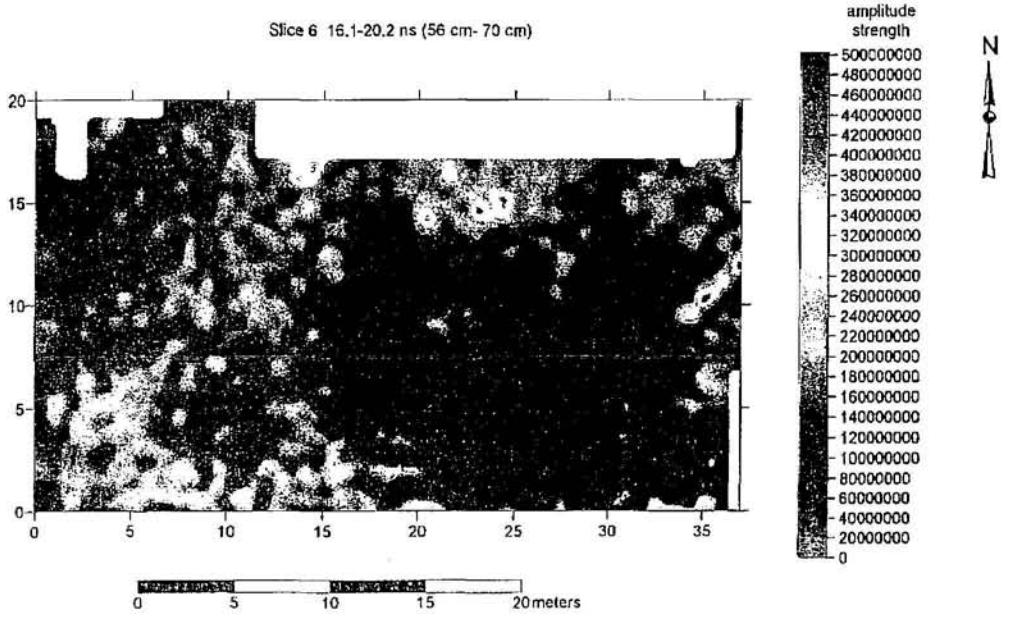


Figure 20. Image plot of time slice 6 data from the Carrigan lot.

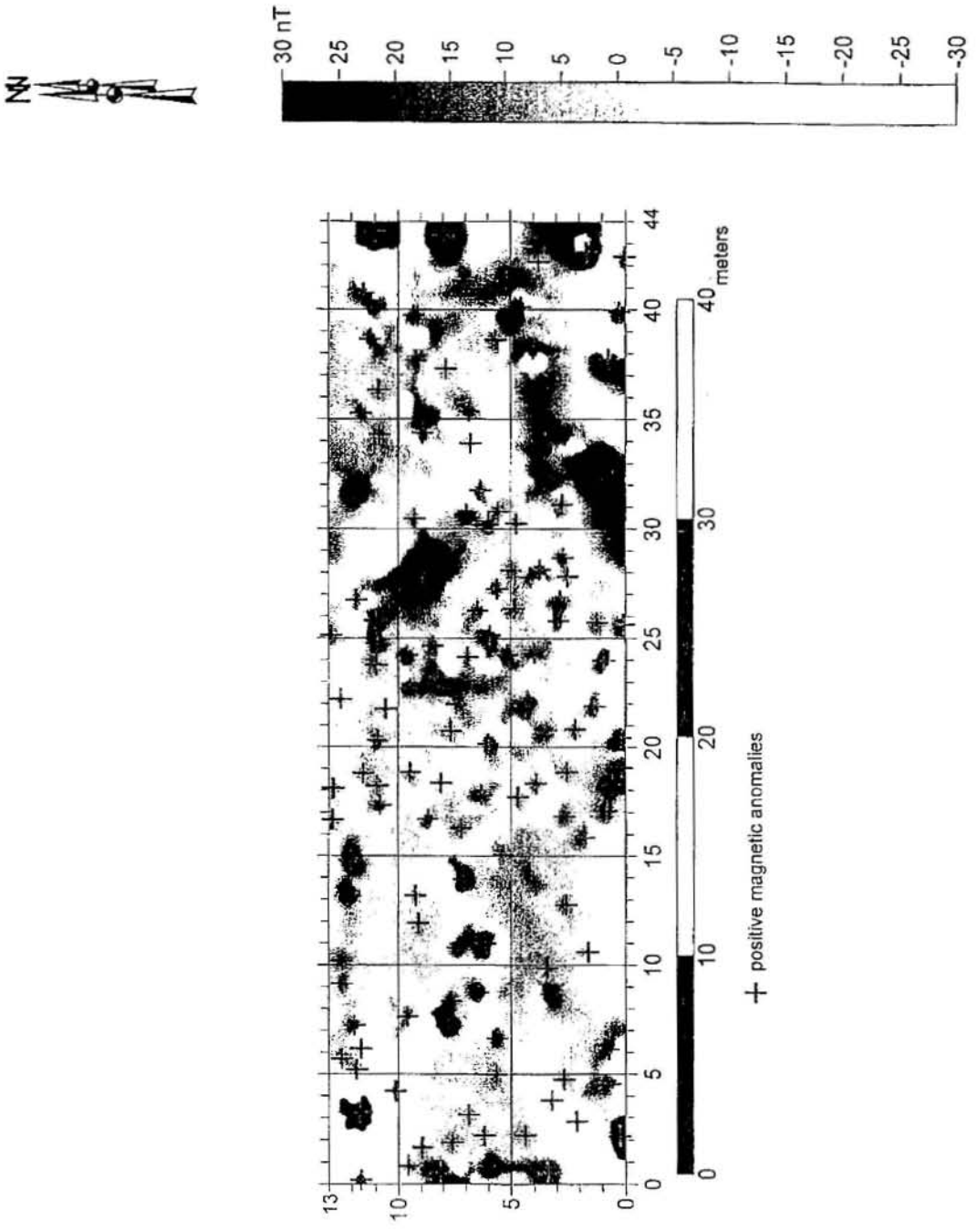


Figure 21. Interpretative map of magnetic gradient data from the Burch lot.

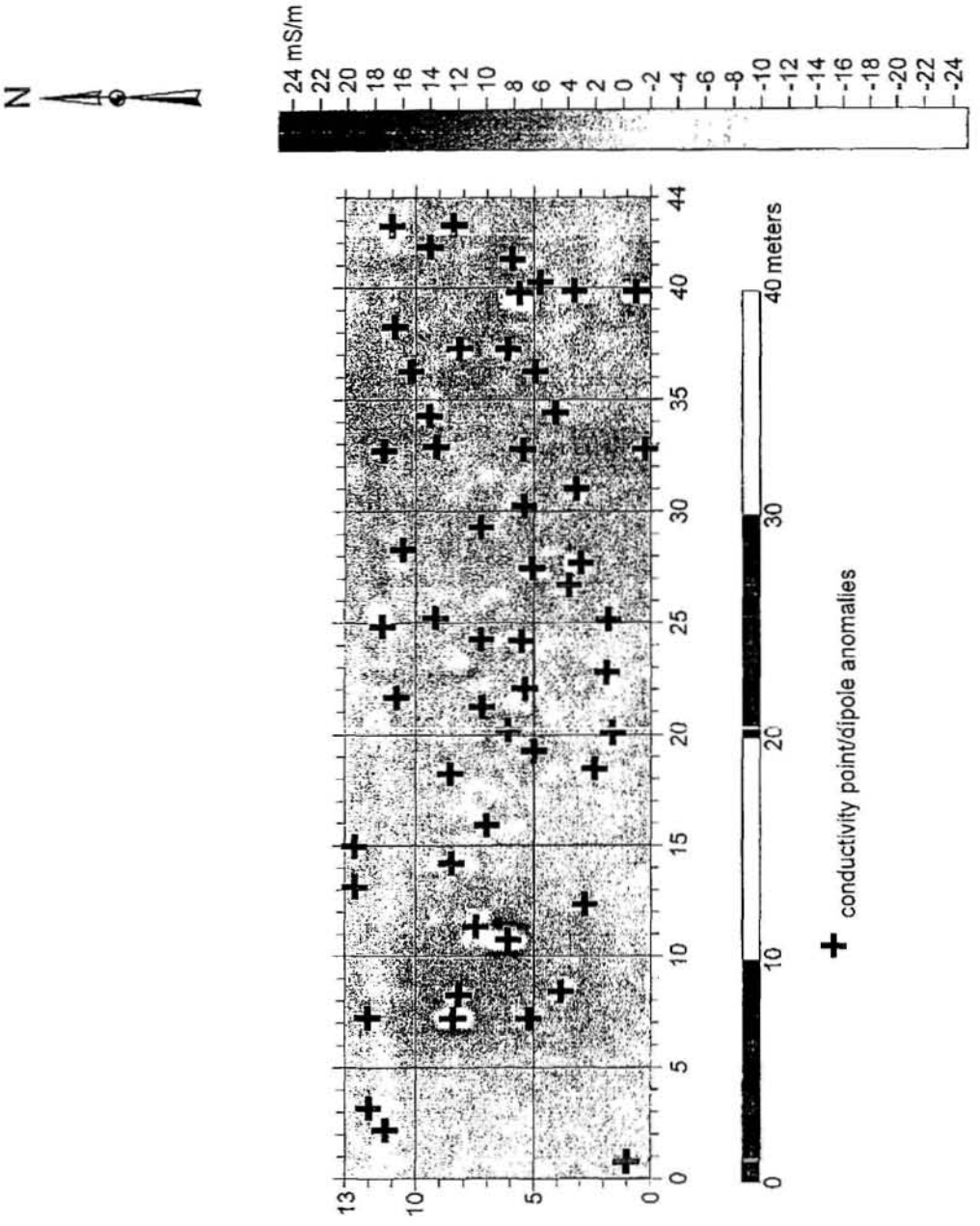


Figure 22. Interpretative map of conductivity data from the Burch lot.

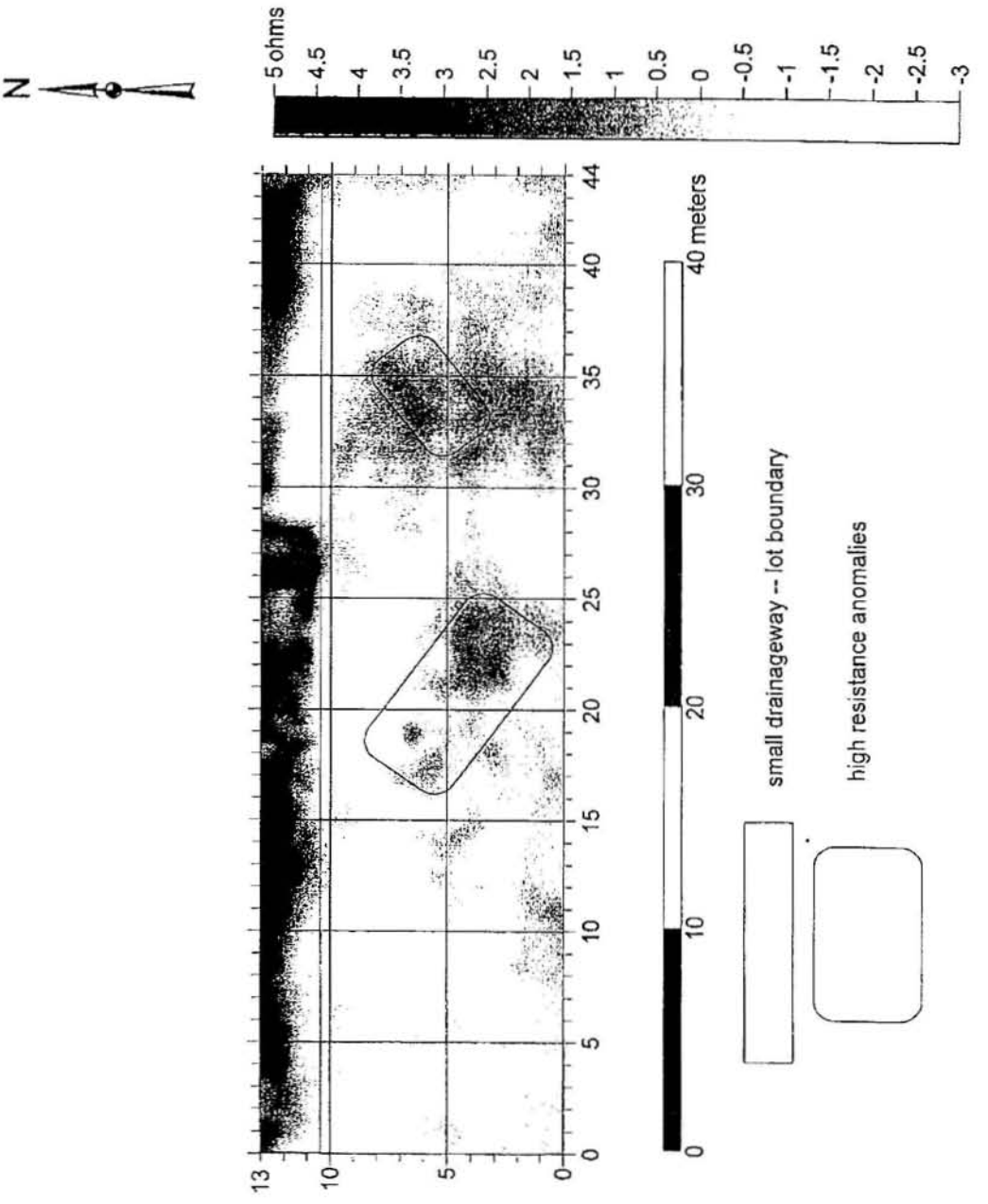


Figure 23. Interpretative map of resistance data from the Burch lot.

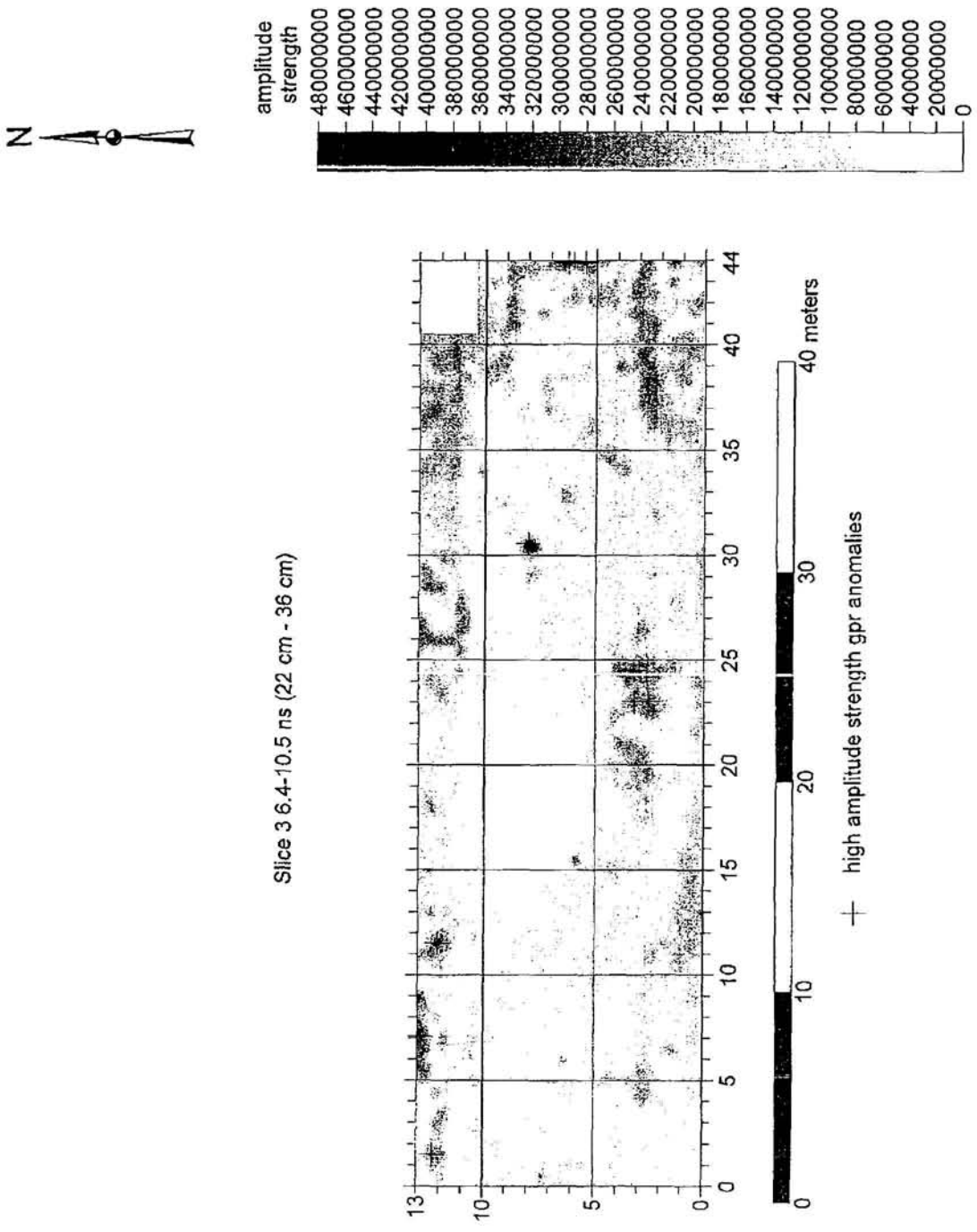


Figure 24. Interpretative map of time slice 3 gpr data from the Burch lot.

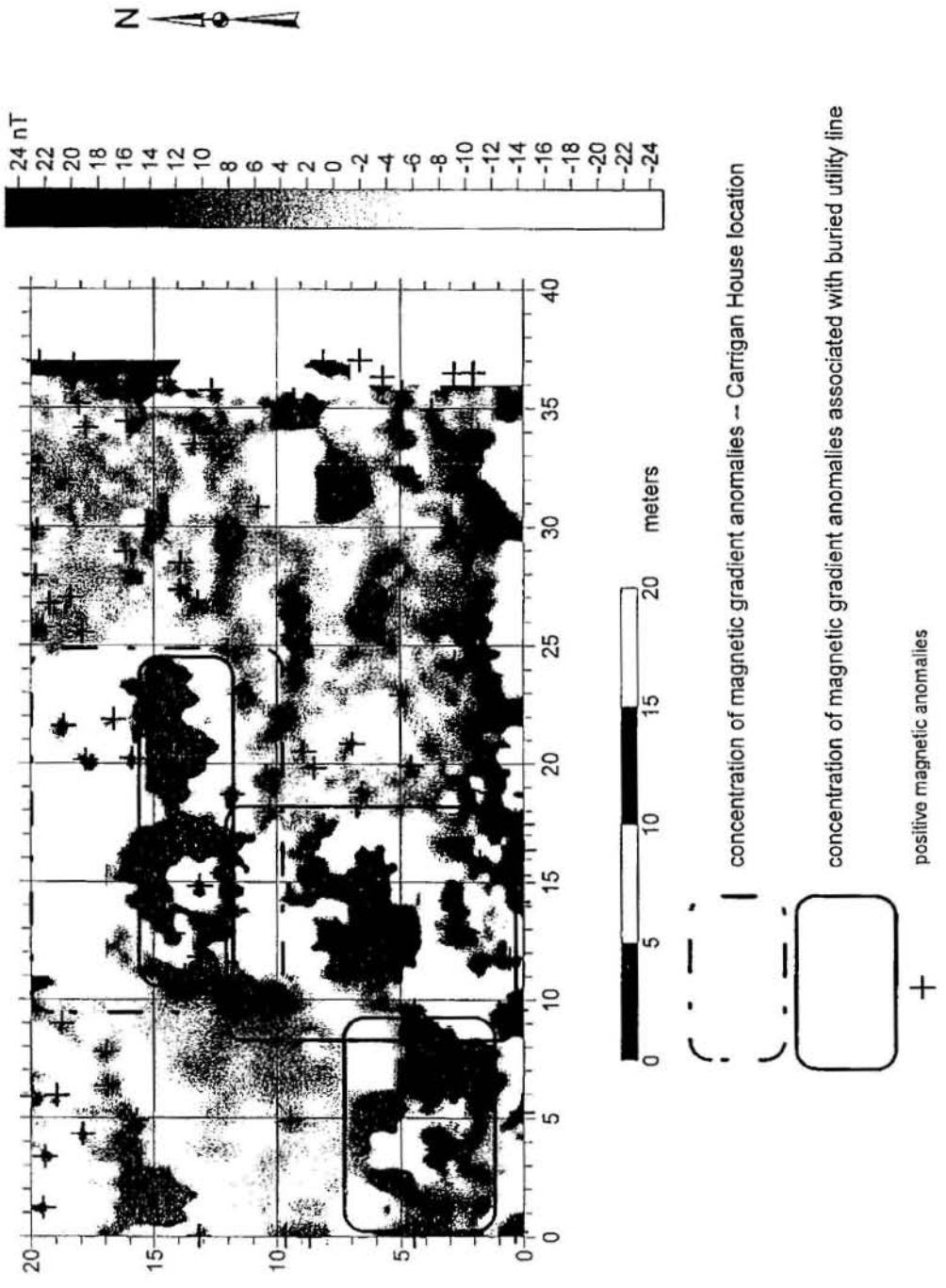


Figure 25. Interpretative map of magnetic gradient data from the Carrigan lot.

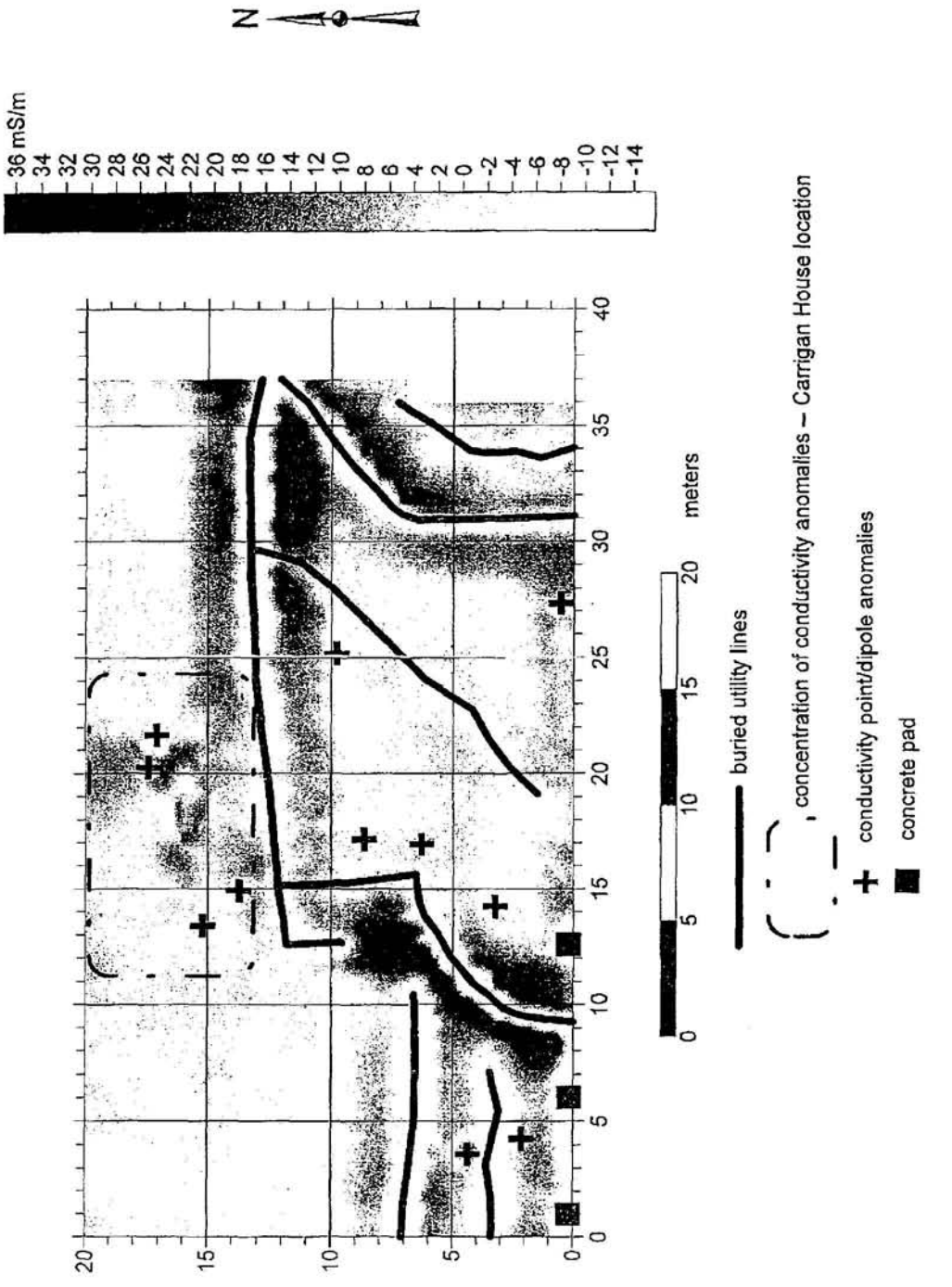


Figure 26. Interpretative map of conductivity data from the Carrigan lot.

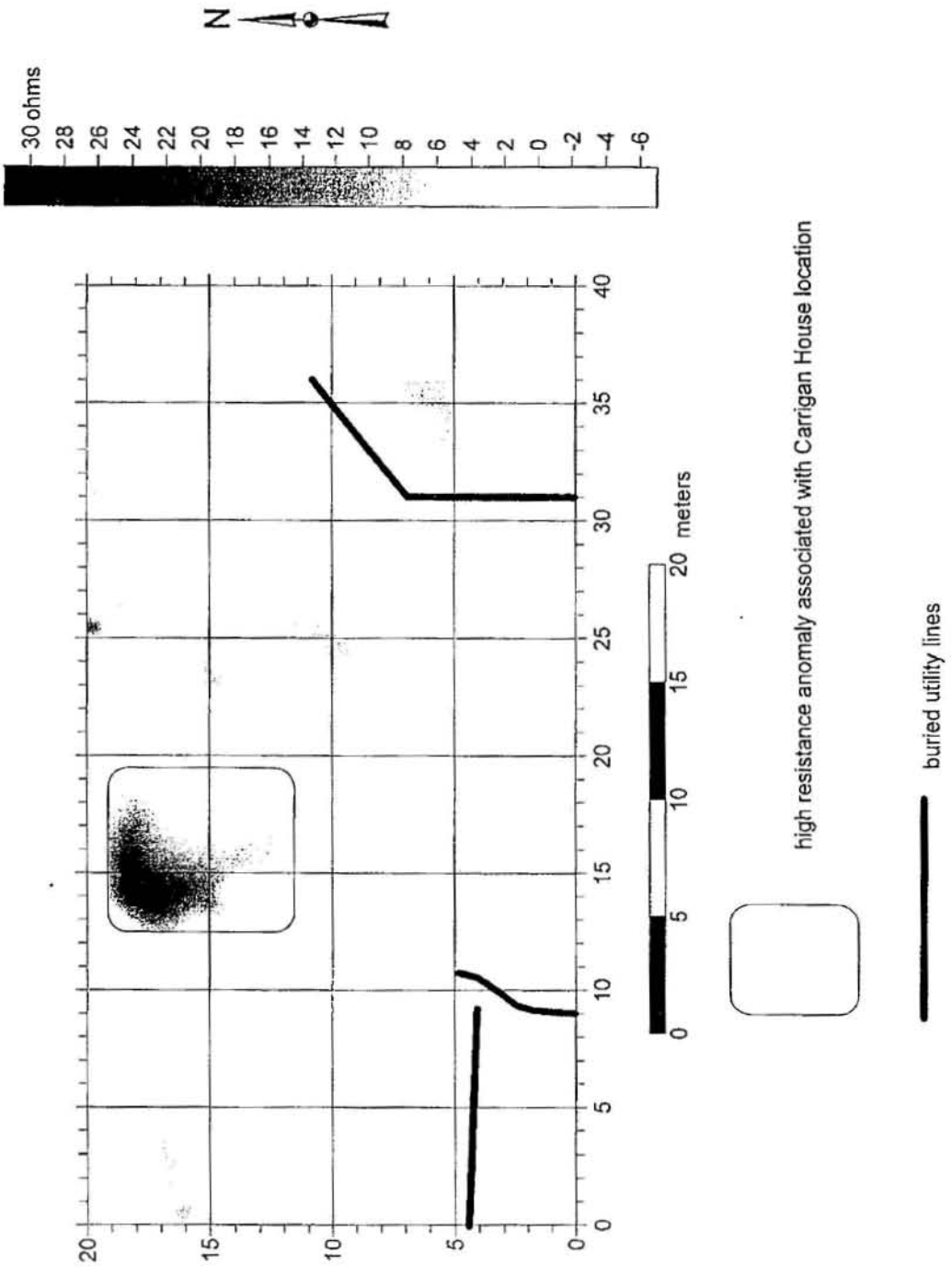


Figure 27. Interpretative map of resistance data from the Carrigan lot.

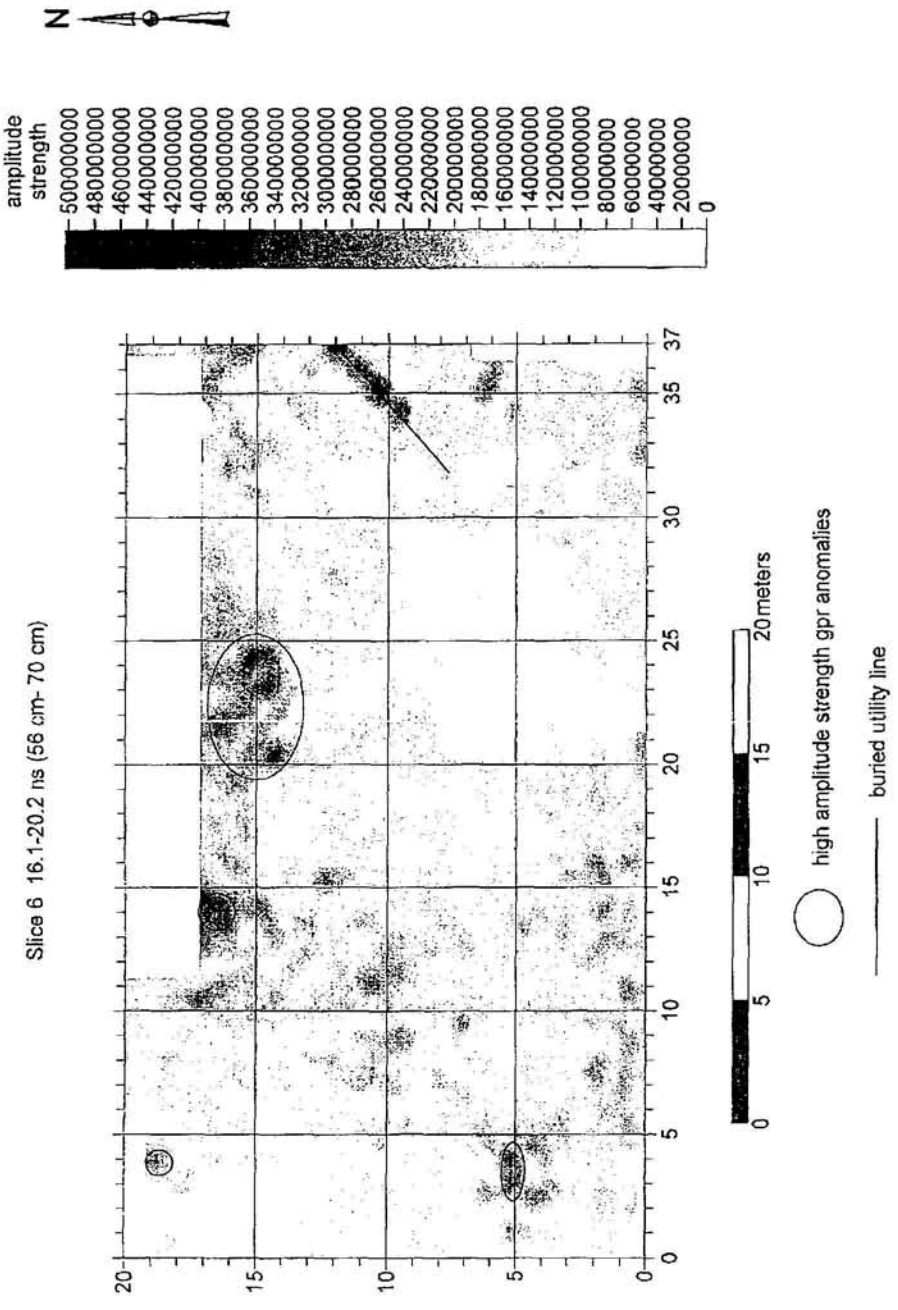


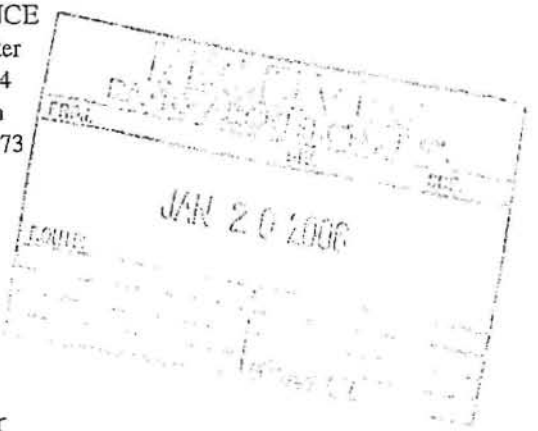
Figure 28. Interpretative map of time slice 6 gpr data from the Carrigan lot.

APPENDIX H

United States Department of the Interior

IN REPLY REFER TO:

NATIONAL PARK SERVICE
Midwest Archeological Center
Federal Building, Room 474
100 Centennial Mall North
Lincoln, Nebraska 68508-3873



A2624(MWAC)

June 9, 2005

Memorandum

To: Manager, Midwest Archeological Center

From: Supervisory Archeologist, Midwest Archeological Center

Subject: Travel to Lincoln Home National Historic Site, Springfield, Illinois, May 16-27, 2005

I traveled to Lincoln Home National Historic Site (LIHO) on May 16th with a Midwest Archeological Center crew of three employees to conduct archeological test excavations at the Carrigan and Burch house lots to collect information needed to prepare an Historic Structure Report (HSR) and plan the proposed reconstruction of those two houses. The Center crew members included Museum Technician Lisa Stanley and Archeological Technicians Jennifer Lahowetz and Tyrel Moss. We were assisted in the fieldwork by MWRO Historical Architect Al O'Bright and LIHO Maintenance Mechanic Supervisor Vee Pollock. O'Bright will serve as the COTR on the contract to be written with an A/E firm for preparation of the HSR. The archeological project was coordinated with LIHO Superintendent Dick Lusardi and Historian Tim Townsend. The related curatorial issues were coordinated with Museum Curator Susan Haake.

The primary focus of our work, as reaffirmed with O'Bright at the outset of fieldwork, was to try to identify the actual location and footprint of each house based upon any intact remnants of the original foundations and associated architectural features such as cellars, cisterns, etc. This task was known in advance to be complicated by the construction of later structures on both properties, and we were consequently unsure how much evidence from the original buildings may have survived. Limited archeological investigations at the west end of the Carrigan lot in 1997, conducted by archeologist Floyd Mansberger of Fever River Research, indicated that several structural features from the Carrigan house were partially intact, including disturbed foundation walls, a two-room cellar with a rear extension, front porch foundations, a stone step, and brick step supports. Mansberger believed that he had identified two corners of the Carrigan house (Mansberger 1997 and related field records on file at LIHO). The Burch lot was more

problematic in that there were no known prior archeological investigations there by which to judge the condition of the original structure.

The primary structures built on the Carrigan and Burch properties over the years are depicted on several historic maps of the area, most usefully on two City of Springfield maps dating to 1854 and 1858, and a series of Sanborn fire insurance maps dating from 1884 through 1941. The Carrigan house is thought to have been built in the 1840s on Lot 6 in Block 10 of the Elijah Iles Addition to the City of Springfield. Lot 6 and the northern three-quarters of adjacent Lot 7 were combined under single ownership and managed as one residential property, which was immediately north of the Lincoln home lot itself. The Carrigan house was present on the property throughout the Lincoln era, but was replaced by the Irwin house in the 1880s. The Irwin house was demolished in the 1920s. The lot then apparently remained vacant until the 1960s, when the nearby Corneau house was moved to this property. The Corneau house was relocated back to its original site in the 1990s.

The Burch house is also believed to have been built in the 1840s, on Lot 9 in Block 7 of the Elijah Iles Addition directly across Eighth Street from the Lincoln home. Sometime between 1896 and 1917, the Burch house was removed and a commercial building was constructed on the front (east end) of the property and later enlarged. A two-story apartment building was also constructed on the rear (west end) of the property sometime prior to 1941.

Prior to the current episode of fieldwork, Center Archeologist Steve DeVore and I traveled to LIHO April 25-29 and conducted geophysical surveys of the two house lots using fluxgate gradiometer, conductivity meter, resistivity meter, and ground penetrating radar equipment. The initial archeological test units were thus placed to investigate the house locations indicated on historic maps of the two properties, to investigate the origin of several geophysical anomalies, and to re-expose certain features identified during the previous archeological work by Mansberger. Hand excavation was combined with excavation by a backhoe operated by Pollock. Given the depth at which many architectural features lie at the two sites (over 1 m below ground surface), use of the backhoe became critical to the successful completion of the project within the allotted timeframe.

Carrigan Lot – Five archeological test units and six backhoe trenches were excavated at the Carrigan lot, within which were exposed a number of intact architectural features interpreted as the remains of the Carrigan house and later Irwin house. The Carrigan house foundations were exposed in several areas and represented most of the footprint of the building, including the northwest and southeast corners of the front portion of the house, a short section of foundation along the front (west) side of the house at an apparent jog in the wall line, two sections of the north foundation toward the back of the house (one of which appeared to have been extended or repaired when incorporated into the Irwin house), the southeast corner of the ell, and a short section along the south wall

of the ell. Two other brick features also identified along the south wall of the ell are interpreted as supports for the porch that originally extended from this wall of the house, per an historic photo (original in possession of the Illinois State Historical Library, Old State Capitol, Springfield, IL). Unfortunately, portions of these features were missing due to subsequent construction of the Irwin house and later trenching of utility lines across the lot, so that the southern edge of the porch could not be identified within the time limits of our excavations. Efforts to identify evidence of the porch that extended off the back side of the front portion of the house were unsuccessful.

It was discovered that the Carrigan house had a second cellar under the back portion of the ell, as indicated by several partially intact cellar entry features including the finished break in the foundation that formed the east entry jamb, sloped brick paving that may have underlain wooden entry steps, the remnants of brick cheek walls on either side of the paving, and two large displaced stone steps. An intact cistern that appeared to be constructed of the same basic type of brick and mortar used in the construction of the Carrigan house was also identified immediately off the southeast corner of the ell. The cistern had clearly been modified for subsequent use in conjunction with the Irwin house. In fact, it appeared that the far back (east) portion of the Carrigan house ell was reused as part of the later Irwin house. A separate section of foundation thought to relate to the Irwin house was aligned in part along and actually mortared to one set of Carrigan house porch supports.

Once exposed, these features were left largely intact. Brick and mortar samples were collected in selected cases. All features and the base of excavation in all test units and trenches were covered with plastic prior to backfilling. While much was learned about the history of house construction on this lot during our investigations, many questions about the Carrigan house and its associated outbuildings and features remain to be answered, presumably during future research at the site. Many Carrigan-related architectural features were identified during the course of this project, and the potential is high that additional intact features and related artifactual deposits exist elsewhere on the property.

Other features previously identified by Mansberger that are thought to relate to the front portion of the Carrigan house were not re-investigated at this time since some documentation on them is already available for use in the HSR.

Burch Lot – Three archeological test units and five backhoe trenches were excavated at the Burch lot. A single 14 ½ ft intact section of the Burch house foundation was identified along the north property line at a depth of approximately 31 cm below ground surface which appeared to include the northwest corner of the house and one interior wall intersection, together with nearly half of an interior brick-lined well. An intact portion of the base of a cistern was also identified at a depth of 68-125 cm below surface at a location that was probably originally immediately outside the southwest corner of the house.

Most of the east end of the lot appears to have been severely impacted by the construction and subsequent demolition of the commercial building mentioned above. A light yellow brown soil was apparently brought to the site to fill much of the void after removal of the commercial building which is quite distinctive from the surrounding natural soil profile. One short intact section of the commercial building foundation was also identified at a depth of approximately 1.27 m below surface. Given the extent of fill, it appears that the commercial building may have had a subterranean or basement level, construction of which would have destroyed much of the Burch house foundation. However, the western edge of the soil fill was identified in two locations, so that the possibility exists that Burch-related features may be present further back on the lot. Since there is no known historic documentation of major Burch-related outbuildings at the far back end of the property, no testing was conducted in that area. The section of Burch-related foundation, the well, and the cistern were left intact and covered with plastic prior to backfilling.

The success of this project was in large part due to the outstanding support provided by the LIHO park personnel, particularly Superintendent Lusardi, Tim Townsend, Vee Pollock, Susan Haake, and other maintenance and ranger staff. It was a pleasure to work in a park setting with such active interest in archeology on the part of the staff and visiting public. As always, the project was enhanced by the invaluable contributions of Al O'Bright.

We returned to Lincoln on May 27th.

Janis L. Dial-Jones

References Cited

Mansberger, Floyd

1997 Letter report dated December 16, 1997 (revised 4/19/98) to Carl Fischer, FWAI Architects, Inc. re: Carrigan/Irwin House archaeological investigations; Contract No. 1443CX603097002, Delivery Order No. 8. On file, Lincoln Home National Historic Site, Springfield, Illinois.

Cleared for distribution:

Donna Vetter, Acting — 6-9-05

Manager, Midwest Archeological Center — Date

cc: Superintendent, Lincoln Home National Historic Site
Tim Townsend, LIHO
Craig Kenkel, MWRO
Al O'Bright, ULSG
Tom Thiessen, MWAC

RATIO

Architecture
Preservation
Interior Design
Landscape Architecture
Urban Planning

RATIO Architects, Inc.
107 South Pennsylvania Street
Indianapolis, Indiana 46204
ph: 317.633.4040
fx: 317.633.4153

10 East Chester Street
Champaign, Illinois 61820
ph: 217.352.7696
fx: 217.352.7831