NATIONAL PARK SERVICE
U.S. DEPARTMENT OF THE INTERIOR

Canal Lockkeeper's House
Historic Structure Report

National Mall and Memorial Parks
Washington, District of Columbia

Prepared by:
QUINN EVANS ARCHITECTS
August 2011

Contract No. 1443C2000081400
Task Order No. T2011091597
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Image Credit: National Archives, 1916

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EXECUTIVE SUMMARY

Developmental History

Although originally constructed sometime before the middle of the 19th century, the documentation confirms that the building was heavily restored and relocated by the Office of Public Buildings and Grounds (OPBG) in 1915. What remains today has historic and architectural significance, but the original integrity has been compromised.

The simple two story building is approximately 730 square feet. The stone bearing wall supports a wood-framed second floor and roof structure.

The building has been vacant and largely mothballed in the recent past.

Recommended Treatments

Alternate #1 as presented indicates that the building should be rehabilitated in place. This would include restoration of exterior features and rehabilitation and conversion of the interior to a Park support structure. There would be a staff unisex restroom on the first floor, along with a utility sink, small mechanical closet, and space for storage. The upper floor would be open and could be used for storage. The net cost of construction of this alternate is about $620,000.

Alternate #2, the planned treatment, proposes that the building be relocated, perhaps at the location shown on the National Mall Plan. For the building, the exterior would be restored while the interior rehabilitated. The net cost of construction for this alternate is about $1,660,000.

Alternate #3 proposes that the building be relocated and positioned on an inclined site as it had been originally. In addition, the building would be raised to the original 2 ½ story height. These two actions would greatly improve the historic and architectural integrity of this property. For the building, the exterior would be restored while the interior rehabilitated. With the addition of the new cellar level, this alternative would provide over 1,000 square feet of usable space. The net cost of construction for this alternate is about $1,825,000.

Alternate #4 indicates that the building would not be improved or rehabilitated, but rather mothballed until funding permits one of the other approaches. This cost of this alternate would not exceed $25,000.

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ADMINISTRATIVE DATA

Location Data

Name: Lock House B

Park: National Mall and Memorial Parks (NAMA)

LCS No.: 33290004 (preferred structure name: Canal Lockhouse - Res. 332)

Address: Corner of Constitution Avenue and 17th Street, NW, Washington, DC

Management Category: Must be preserved and maintained

General Management Plan: The National Mall Plan, 2010

Development Concept Plan: N/A

Current Uses: Unused, mothballed

Annual Visitation: Not applicable.

Administrative Background

The building was transferred to the Office of Public Buildings and Grounds (OPBG) in 1902. It was used initially as a public comfort station, and later used by the US Park Police. It has not been actively used since the 1980s.

Future Property Management

The property is part of West Potomac Park National Historic District. An extended wall closure for the Potomac Park levee will be constructed to the south of the lockhouse in 2011-2012, greatly changing the present site condition for the house (grading, walkways, landscaping and the addition of the levee closure wall and plaza to the landscape). Additionally, the rehabilitation of Constitution Avenue (2011) will somewhat change the site conditions to the north and northeast of the house and construct a widened plaza south of the house. The final finished grade will be lower than present and will require the addition of another step to the south door. The property will remain under the jurisdiction of the National Park Service. This Historic Structure Report will help inform future decisions for the treatment of the lock keeper's house.

Project Identification

Name: Canal Lockkeeper's House Historic Structure Report
PMIS Number: 43443

Project Team – NPS	Project Manager: Patrick MacDonald, NPS – DSC
	Project Specialist: Andrea Lind, NPS – DSC
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1.1 HISTORY AND CONTEXT

Introduction

The Canal Lockkeeper's House at the corner of 17th Street, NW and Constitution Avenue in Washington, DC is important to the history of the city and its commerce in the nineteenth century. As this house is referred to by many names, Lock House B will be used for the duration of this document.[1] In the nineteenth century, two canals ran through the City of Washington: the Washington City Canal and the Chesapeake and Ohio Canal (C&O Canal). In 1832, an extension to the C&O Canal connecting it to the Washington City Canal was completed. In 1837, Lock House B was constructed for the tender of the lock at the extension.[2]

Pre-history

Washington City Canal

George Washington requested Pierre L'Enfant to draw a plan of the City of Washington. L'Enfant included a canal to extend from the eastern branch of the mouth of Tiber Creek near 17th Street and Constitution Avenue in his plan (see figure 1.1.1). Although L'Enfant took his plans with him when he left his position in 1792, the canal still made it into the plan of the city. L'Enfant's successor, Andrew Ellicott, created a plan similar to L'Enfant's which included the Washington City Canal (see figure 1.1.2).

In 1795, the Maryland Legislature granted the Federal Commissioners the right to conduct two lotteries to raise money for the canal. However the funds were not raised by the lotteries. Very little occurred between 1796 and 1802 due to the lack of funds. In 1802, Maryland Congressman Richard Sprigg, Jr. was drafted to bring a petition for the canal to the House of Representatives on behalf of his constituents. The petition was granted.

[1] One of the more current resources about the C&O Canal lockhouses is the 1996 monograph "The Chesapeake & Ohio Canal Lock-Houses & Lock-Keepers" by Thomas Hahn. Hahn calls the Canal Lockkeeper's House "Lock-House B" which differentiates it from "Lock-House A" that may have been located at the Tide Lock. The other lockhouses are given a numerical number corresponding to the lock number. Hahn utilized the work of Harlan Unrau whose research on lockhouses and in particular the one that is the focus of this HSR which formulates much of the knowledge about its original construction. Unrau's documentation refers to the "lockhouse at Tidelock B on the Washington City Canal" and states that it is at the corner of 17th Street and Constitution Avenue.
[2] Unrau, pg. 16.

The Washington City Canal was intended to transport merchandise into the city from the Potomac River via Tiber Creek. Thomas Tingey, Daniel Carroll, Thomas Law, and Daniel Carroll Brent were named as incorporators of the first Washington City Canal Company in 1802. After the second attempt to construct the canal, only a mile and a half was cut from Sixth Street NW to Tiber Creek (at the present intersection of 17th Street NW and Constitution Avenue). The Washington City Canal Company was chartered to dig the canal in 1802, but the canal was still not completed in 1808. In 1809, a second Washington City Canal Company was chartered to complete the work by 1816. Construction began in 1810. The Washington City Canal was completed in 1815 and connected the Potomac and Anacostia rivers along Tiber Creek to accommodate travel from Georgetown to the ports of Anacostia.

17th Street Wharf

The 17th Street Wharf was a large land bridge in Tiber Creek constructed in 1807, located at the corner of present day 17th Street and Constitution Avenue NW. The wharf's location, drawn on Ellicot's plan (see figure 1.1.2), was at the corner of what is now 17th Street and Constitution Avenue, the current location of Lock House B. It was the second public wharf of the city and was one of the first public works of the Washington City Council in 1806 when $2000 was appropriated for its construction. James Hoban, Timothy Caldwell, and John P. Van Ness were the commissioners of the wharf.

In 1807, specifications were published and construction began, finishing in the same year. The 17th Street Wharf can be seen in a view of the city from Arlington in 1838 (see figure 1.1.3). The wharf is also on DeKrafft's map of 1846 (see figure 1.1.4). With greater detail, the wharf appears on an 1857 map of the City of Washington (see figure 1.1.5), one of the earliest, detailed, widely published map of the city.[3] The wharf has been referred to as Public Wharf, Van Ness' Wharf, and Galt's Wharf. It is most often mistaken for Commissioner's Wharf. Commissioner's Wharf was located between 21st and 22nd Streets NW.

Expansions to the 17th Street Wharf began in 1808 and continued over the next several decades. In 1838 money was appropriated to complete the walls. By the middle of the nineteenth century, the wharf was 150 feet wide and extended 750 feet into Tiber Creek. By 1881, the wharf had expanded to 1,180 feet in length. The wharf played a large role in the development of the city and its commerce. The wharf was likely constructed by enslaved and free African-Americans and was used by the military during the Civil War (1861-1865). The USS Pawnee was anchored at the wharf from May to August 1861 and used for government officials if the need for an escape arose during the start of the Civil War. [A drawing from the same time does not appear to show the wharf (see figure 1.1.6).]

[3] Phase IA Archeological Investigation for the Potomac Park Levee pg. 25

Because the canal system was used for commerce in the nineteenth century, the accounts of wharfages provide insight into the types of materials utilized in the city at the time. Records indicate that building materials, produce, and household items were the main imports entering the city in 1808. In the 1840s and 1850s, coal and wood were the materials passing through the canal lock. With the infilling of the tidal flats and the construction of 17th Street in 1902, the 17th Street Wharf was engulfed with the construction of Potomac Park (see figure 1.1.7 that shows the landfill operations in progress).

Chesapeake and Ohio Canal and Extension

Construction on another canal, the Chesapeake and Ohio, began in Georgetown in 1828. Upon its completion to Seneca in 1831, the canal opened to traffic.[4] The canal stretched from the City of Washington to Cumberland, MD. The intention was to connect the Potomac River to the Ohio River. In 1832, the canal was widened to 150 feet and extended to meet the Washington City Canal at 17th Street in the vicinity of Lock House B.

Original Construction

Lock House B Construction

A lock was constructed at the juncture of these two canals at the east end of the extension. Based on the maps, this lock was at the north end of the 17th Street wharf. The lock necessitated a lockkeeper to collect tolls, keep trade records, and to open and close the lock gates to allow the boats to pass through the lock. Typically, lockkeepers were provided with a residence, the lockhouse.

Multiple lockhouses were built between 1828 and 1833 for the lockkeepers along the locks of the C&O Canal. By 1834, the C&O Canal Company was in a poor financial position. In order to cut costs, it decided to build temporary buildings in place of lockhouses. Then in the summer of 1835, they continued construction of the lockhouses. In 1836, an improved version of the 1828 specifications for lockhouses was introduced to be used for all new lockhouses. Multiple lockhouses were built according to the new specifications.

In the summer of 1836, steps were initiated to construct a lockhouse at Tidelock B on the Washington City Canal [Lock House B at 17th St. and Constitution Ave.]. On August 31, Thomas Carbery was directed to acquire ground for this lockhouse and present a proposal for its construction. On December 7, Superintendant J.Y. Young was "ordered to have suitable stone quarried and transported to the site for lockhouses at Tidelock B and Lock No. 1."[5]

[4] CLI pg. 20. The C&O Canal wasn't fully complete to Cumberland, MD until 1850.
[5] Unrau, The Lockhouses Historical Data, 1978, pg. 16.

On June 7, 1837, the proceedings of the C&O Canal Company board meeting announced that Thomas Carbery "had obtained some ground from the Corporation of Washington for a lockhouse at Tidelock B. Accordingly, Carbery was authorized to erect a house 'of the usual dimension.'" By October 25, 1837, the lockhouse at Tidelock B was finished. On the same date, John Hilton was appointed as lock-keeper at an annual salary of $50.[6]

According to the 1836 lockhouse specifications, Lock House B is a house of ashlar stone built for the lockkeeper and his family (see Appendix 3.4). Originally it was two and a half stories (a cellar, a principal story, and an attic). Lock House B appears to be built to the same specifications as Lock Houses No. 16 and No. 24. The National Park Service categorizes the lockhouses of the C&O Canal by Type I, specified in 1828 and Type II, specified in 1836. Lock Houses 16 and 24 are Type II.[7] Lock House B is most similar to those of Type II in plan with the end chimneys. As such, it is most likely that the house was adopted in the 1836 specifications or it was a prototype. The topography around Lock House B was probably very similar to that of Lock House No. 16 where the north elevation was at the berm side of the canal and the grade sloped down to the river at the south elevation (see figure 1.1.22 and 1.1.23).

In the 1860's the canal became an open sewer. Then in 1873, the canal was infilled with material dredged from the Potomac. In the same year, B Street North (now Constitution Avenue) was built on top of the main length of the Washington city Canal. Potomac Park was created in 1902 by material dredged from the Potomac River and deposited along the tidal flats. Once the canal disappeared, Lock House B lost its use as a lockhouse for the lockkeeper. It is presumed that the house became abandoned between 1873 and 1902 and squatters began to live in it (see figures 1.1.8, 1.1.9, 1.1.10). By this time, the shingled roof had most likely fallen into disrepair and was haphazardly patched with sheets of wood or metal as seen in the photos taken prior to renovations.

Renovations

Change in ownership and use

On August 1, 1902, squatters were evicted from Lock House B.[8] By deed dated August 14, 1902, the trustees of the canal company, under authority granted them by the Supreme Court of the District of Columbia, conveyed to the Army Corps of Engineers, for the use of the United States, all its right, title, and interest in and to the building. It was the intention to use this house as a watchman's lodge and tool

[6] Unrau, The Lockhouses Historical Data, 1978, pg. 16.
[7] Hahn pg. 11.
[8] 1903 Annual Report of the Chief of Engineers, pg. 2554.

house, and accordingly, in May 1903, work was commenced putting it in good repair.[9]

Canal Infill and Lock House B Renovations - 1903

The house was in very poor condition when the Army Corps of Engineers gained ownership of it. The 1903 Annual Report of the Chief of Engineers states, "The old roof was removed and replaced with a new shingle roof, four new dormer windows were put in, the old floor removed, new floor joists laid on the second floor [attic], a new floor put in, and new window sashes fitted. On the first floor [principal story] new floor joists were put in and a new floor laid, 4 new windows put in, the room wainscoted, and a partition 18 feet long and 8 feet high erected" (see figures 1.1.12-1.1.15).[10] It is possible that the partition created a separation of function between the watchman's lodge and the toolhouse uses.

Lock House B Relocation - 1915

Sometime between 1903 and 1916, approximately two to three feet of fill was added to raise the grade between the roadway and the propagating gardens as proposed in the 1903 Annual Report (see figure 1.1.11 which shows plans for the construction of the 17th Street extension and B Street). The 1916 Annual Report includes a photo of the result which necessitated what looks like a set of steps down to the door into the lockhouse (see figure 1.1.16).

Due to the widening of B Street (Constitution Avenue NW), the lockhouse was moved approximately 49 feet west and six feet north. The diagram from the 1916 Annual Report of the Chief of Engineers illustrates the relocation (see figure 1.1.17). The new foundation (dating to 1915) is located approximately 3'-7" below grade.

Based on the 1836 specifications and the visual survey, the house was originally two-and-a-half stories when constructed, but changed to one-and-a-half upon relocation. In order to move the house, it would have been separated from the cellar and its foundation, then raised and lifted probably by means of beams placed under the cellar window lintels. Then it would be placed on a new foundation with additional stone infill. A new concrete floor slab was then placed.

The NPS Resource Management preservation team for National Mall and Memorial Parks and Quinn Evans measured where the house originally stood (see figure 1.1.18). Then the team dug test pits along the south elevation under each of the windows in search of the foundation and signs of previous openings. A window lintel was found below grade under the existing southeast window (see figure 1.1.19). Another window lintel was found below grade under the existing southwest window (1.1.20). A concrete foundation with yellow, white, and orange colored aggregate was found. Based on the NPS Type II drawing for lockhouses and Lockhouse 16, additional test pits were dug

[9] Ibid., pg. 2554.
[10] Ibid., pg. 2554.

on the east and west elevations. A window lintel is apparent (above ground) on the east (see figure 1.1.21). No window lintel was found on the west (see figure 1.1.22). The findings shows that Lock House B was probably very similar to that of Lock House No. 16 (see figure 1.1.23 and 1.1.24 and Appendix 3.4).

Site Renovations - 1915 (As reported in the 1916 Annual Report)

In conjunction with the relocation, many modifications were made to the site of West Potomac Park. Forty-one shrubs and small trees were transplanted and 505 new trees and shrubs were planted. Additions to the site included the construction of 64 linear feet of curb, 581 square yards of bridle paths, 143 square yards of concrete walk, and a 65 linear foot brick gutter (see figure 1.1.25). Ninety-two linear feet of six inch terra cotta sewer pipe was laid and a catch basin was constructed.

Sod was laid on 605 square yards on the grounds, of which 1,215 square yards of ground was re-graded.[12] In a site plan dated 1916, two rectangular blocks are shown to the west of the lockhouse which are most likely mounting blocks (see figure 1.1.26). One mounting block is currently located near the site (see figure 1.1.27). It has since been temporarily relocated within the grounds west of the lockhouse in preparation of construction of the Potomac Park levee closure wall. Figure 1.1.28 shows the plantings and sidewalks.

Building Renovations - 1916 (As reported in the1917Annual Report)

In 1916, the house was converted to a comfort station and bike storage room. Renovations and restorations to the house continued in 1916 to better suit the new functions. According to the 1917 Annual Report, it was "remodeled throughout" (see figure 1.1.29). Partitions were added on the first floor to provide a public comfort station and a bicycle room. Lockers were added to the second floor for use by the park watchmen. During the renovations, special care was taken to restore the lock house to "its original design as nearly as possible."[13] A new roof was placed on the house and two stone chimneys were built.[14] The brick chimneys are still visible between the interior wall finish and the masonry walls (see chapter 1.3 for photo).[15] It is presumed then that the new stone chimneys were just added at the roof line and sit on the existing brick structure. Also, the 1836 lock house specification states that the chimney can be either brick or stone and it specifically states that "above the floor of the principal story the chimney shall be of brick."[16]

As the Annual Report stated that the lock house was being restored "as nearly as possible" to its original design, it is quite possible that this was also when the dormers were restored back to their shorter proportions

[12] 1916 Annual Report of the Chief of Engineers, pg. 3594.
[13] 1917 Annual Report of the Chief of Engineers, pg. 3714.
[14] Ibid., pg. 3714.
[15] There is a hole in the beadboard up on the second floor where one can look through and see the brick.
[16] Unrau, 1978, pg. 43.

and Federal detailing. The 1903 dormers were taller with different divided lite configurations, additional wood trim and 6 over 6 window sashes. The 1916 dormers have 6 over 3 sashes. The 1916 dormers, which were based on presumably the original dormers, became the pattern for the restoration of other lockhouses on the canal during the National Park Service restoration of the C&O Canal in 1939.[17] Though documentation has yet to be found, it may be at this time that the door on the south elevation was inserted to create the public comfort station - i.e. a door that led to the men's toilets and a door that led to the women's toilets (see figure 1.1.30 that shows a walkway leading to the center of the south elevation).

Site Renovations - 1916 (As reported in the1917Annual Report)

A concrete walk with a tarred surface was constructed over the existing bridle path along the south side of B Street. The new walk was eight feet wide and 4,000 feet long from 17th Street to the Potomac River.[18] The new walk created the need for a new bridle path, ten feet wide and 5,700 feet long.

Although these renovations were listed in the 1917 Annual Report of the Chief of Engineers, it is stated in the 1920 Annual Report that the improvements to West Potomac Park, including the lock house renovations, were ongoing as funds were appropriated (see figure 1.1.28).[19]

Site Additions - 1919 (As reported in the 1920 Annual Report)

A pipe rail fence was constructed along B Street between 17th and 18th Streets (see figure 1.1.31).[20]

In the twentieth century, it was used as a headquarters for the park police and a holding cell for prisoners. (See figure 1.1.31 which shows a Park policeman walking out of the lockhouse).

The site around the lockhouse has changed dramatically since the time of original construction. During World War II, temporary government buildings were constructed just to the west of Lock House B. These buildings remained standing until the 1970's (see figure 1.1.32). In 1985 drawings of existing conditions, the current pipe railing is shown on the north elevation (see figure 1.1.33).

[17] Thomas Vint, Outline Report of Architectural Work on the Restoration of the Chesapeake and Ohio Canal for Recreational Use, as quoted by Unrau, 1978, pg. 29.
[18] 1917 Annual Report of the Chief of Engineers, pg.714.
[19] 1920 Annual Report of the Chief of Engineers, pg. 2026.
[20] Ibid., pg. 2028.

Present Context

Located on the National Mall, Lock House B is surrounded by National Monuments and Memorials. Memorials of note include:

Constitution Gardens is located southwest of the lockhouse. It was designed and constructed in 1974-1976 by Skidmore, Owings, and Merrill for the nation's bicentennial.

The Washington Monument is located on the National Mall, southeast of Lock House B. Construction of the Monument began in 1848. When funds ran out in 1855, construction ceased. In 1879, construction again began. The monument was completed on December 6, 1884.

The Lincoln Memorial is located on the National Mall (West Potomac Park) southwest of Lock House B. It was designed by architect Henry Bacon. The groundbreaking took place on February 12, 1914 and the memorial was dedicated on May 30, 1922.

The National World War II Memorial is located slightly southwest of Lock House B on the National Mall. The memorial is dedicated to members of the American Armed Forces who served in World War II. The National World War II Memorial was opened April 29, 2004.

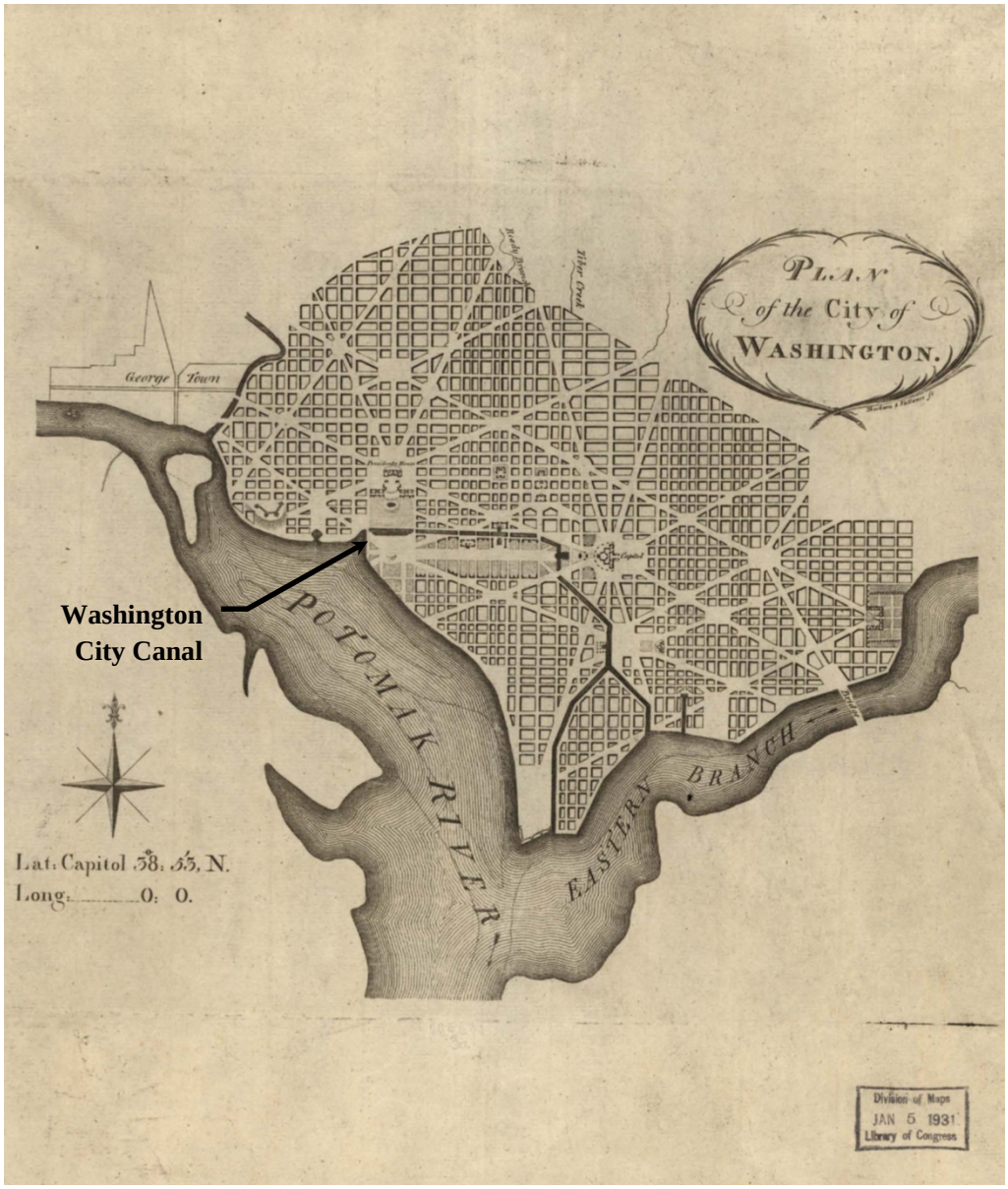

Figure 1.1.1. Pierre L'Enfant's Plan of the City of Washington from Thackara and Vallance, 1792. The arrow points to the start of the Washington City Canal.

Figure 1.1.2. Detail of Ellicott's "Plan of the City of Washington," 1822. The arrows indicate the location of the Washington City Canal and the 17th Street Wharf.

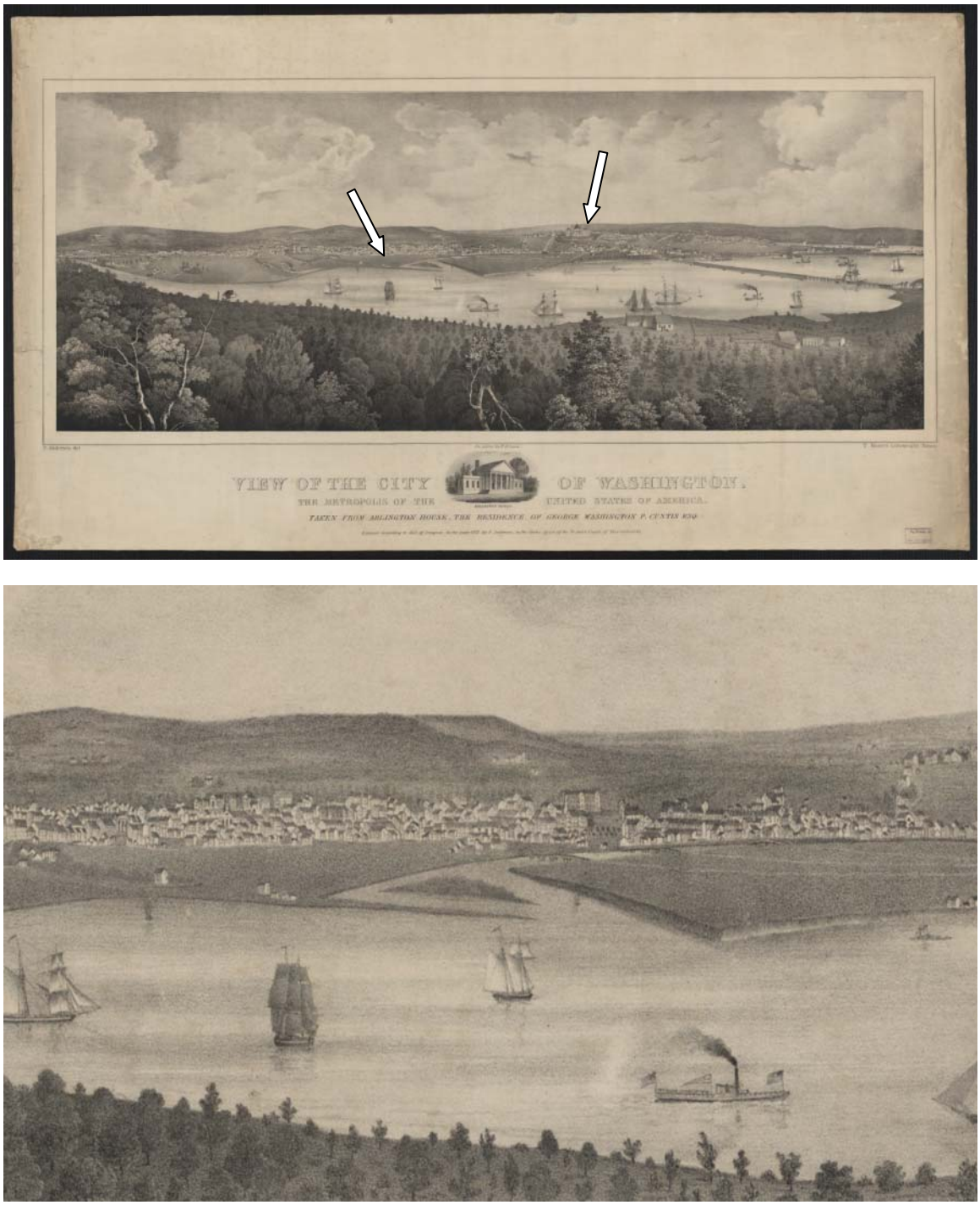

Figure 1.1.3. View of the City of Washington from Arlington House and detail (1838). The left arrow points to the location of Lock House B and the 17th Street wharf. The right arrow points to the Capitol.

Figure 1.1.4. Detail of DeKrafft's "Map of the City of Washington," 1846. The Washington City Canal, C&O Canal Extension, and the 17th Street Wharf are indicated.

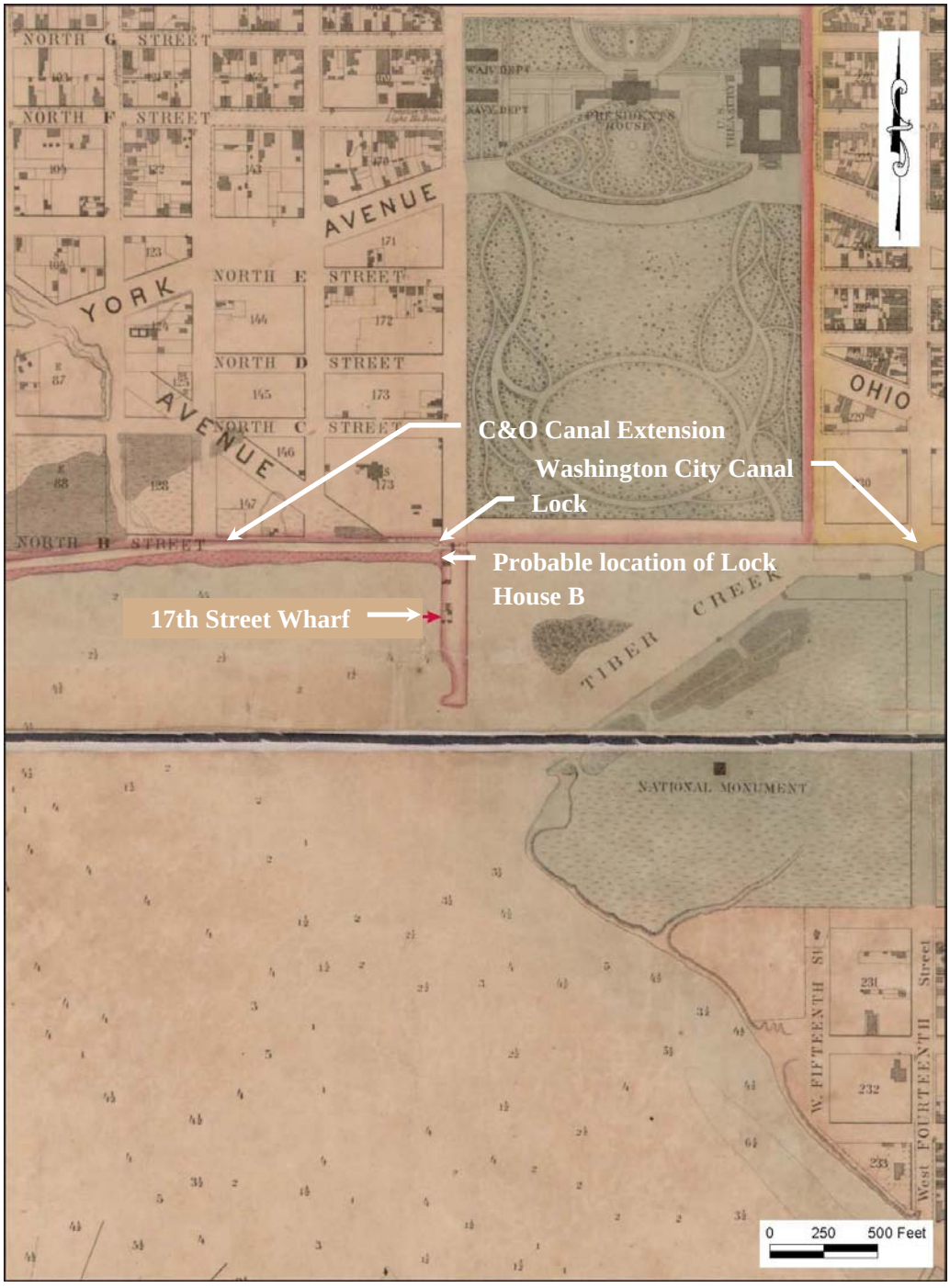

Figure 1.1.5. Detail of Boschke's "Map of Washington City, District of Columbia," 1857. The 17th Street Wharf, lock at the juncture of the Washington City Canal and the C&O Canal, and Lock House B are indicated.

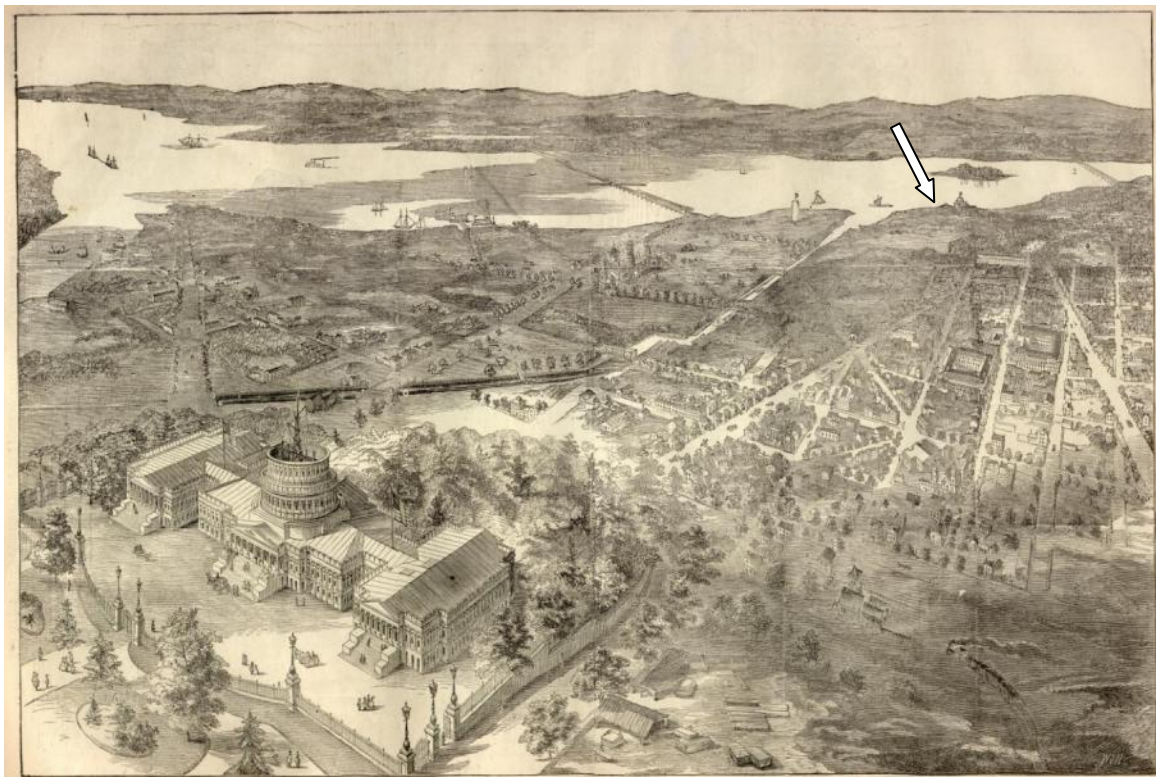

Figure 1.1.6. Drawing of the Capitol under construction (Harper's Weekly, July 27, 1861). The view is to the southwest. Note the Washington City Canal cutting across and extending out to the Potomac River. The arrow points to where the 17th Street Wharf should be along with Lock House B. To the left of the arrow is the partially constructed Washington Monument.

Figure 1.1.7. Looking northwest from the Washington Monument ca. 1894. (Kelly, 1984). The white arrow points to Lock House B. Note that there is no door on the south facade. Landfill operations are in progress around the lockhouse. The facades of the lockhouse are much lighter than the roof in contrast. The lockhouse may have been whitewashed on all four facades.

Figure 1.1.8. Lock House B, north and west elevations (Mitchell, 1999). The photograph was taken before the squatters were evicted in 1902. Note the piles of earth which are evidence of the landfill operations. Note the bright white facade, evidence of a possible whitewash treatment. It is unknown if the lockhouse was whitewashed originally. Whitewash is not in the 1836 specifications. Whitewash instructions appear in 1900 C&O Canal lockhouse documents. The east chimney (on left) appears to have lost some bricks at the top. At the closest corner of the roof, small pieces of roofing are visible. These could be the cypress shingles that are specified in the 1836 specifications (see detail below). The rest of the shingled roof is most likely obscured by the scrap metal or scrap wood sheets. Note also the two leader heads, remnants of a gutter and downspout system that has since disappeared.

Figure 1.1.9. View to the southeast from 1700 block of B Street NW (Postcard, ca. 1900). Photograph was taken before the squatters were evicted in 1902. Landfill operations are in progress around the lockhouse. Several unknown outbuildings are seen on the site. The Washington Monument (completed in 1884) is in the background.

Figure 1.1.10. Lock House B and its surroundings, looking southwest, before the squatters were evicted in 1902 (ca. 1902, Annual Report, 1903). A white exterior finish (a whitewash) on the north elevation of the house is evident. At the closest corner of the roof, small pieces of roofing are visible. These are most likely the cypress shingles that are specified in the 1836 specifications. The rest of the shingled roof is most likely obscured by the scrap metal or scrap wood sheets. The beginnings of the main entrance into Potomac Park are shown (West Potomac Park is on the right, Washington Monument Grounds is on the left).

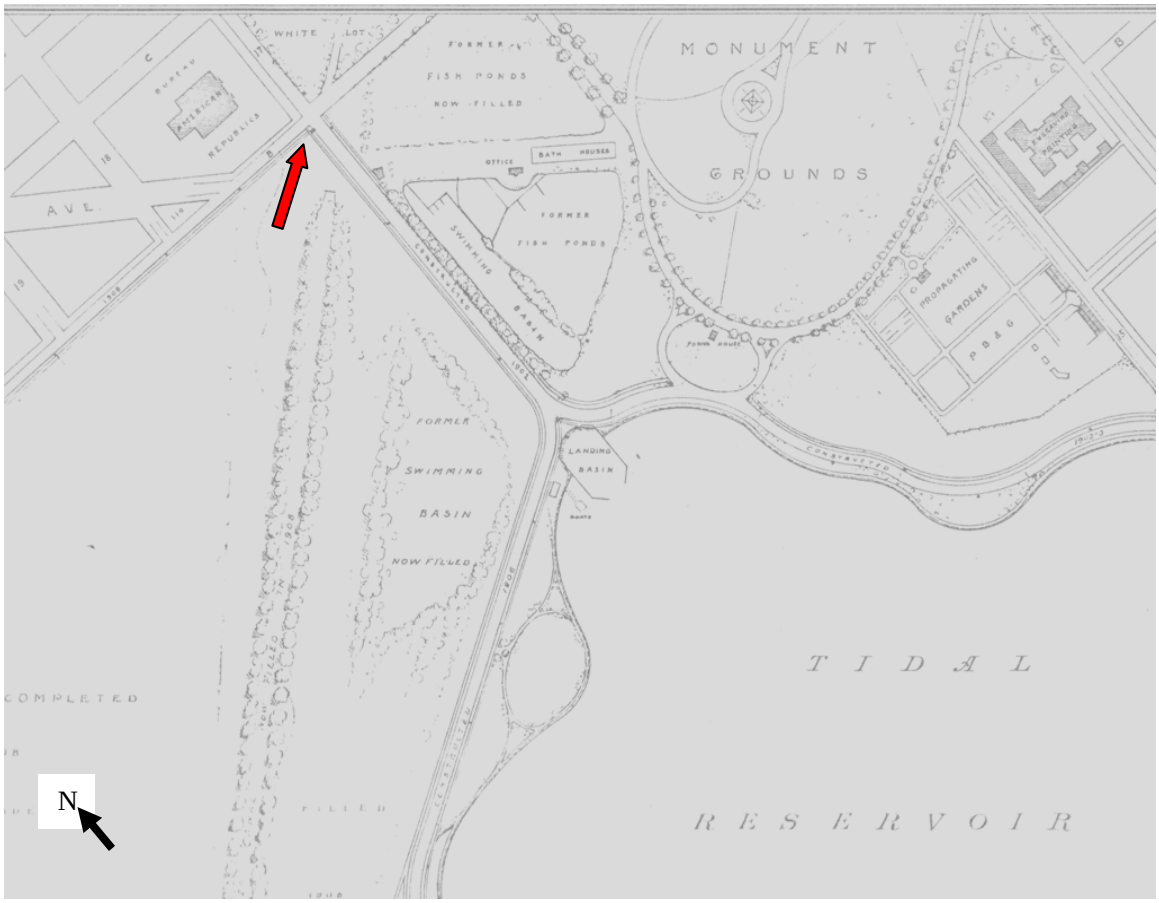

Figure 1.1.11. Detail from map dated 1909 showing 17th Street extension constructed in 1902 and B Street construction in 1908. Note the buildings between the lockhouse (noted with the red arrow) and the Washington Monument.

Figure 1.1.12. Lock House B, north and west elevations, (ca. 1900). The Washington Monument in background. The building on the right may be one of the structures near the swimming basin seen in the previous image. It has since been demolished. The photograph shows the renovations that occurred in 1903. The chimneys have been repaired; the roof replaced; the dormers replaced. Note the ghosting of the earlier porch at the front door. Remnants of possible whitewash are still in extant.

Figure 1.1.13. Lock House B, north and west elevations, sometime after the infilling of the canal in 1902 (exact date unknown). The Washington Monument and another structure that has since been demolished can be seen in the background. The north (front) and west elevations are shown.

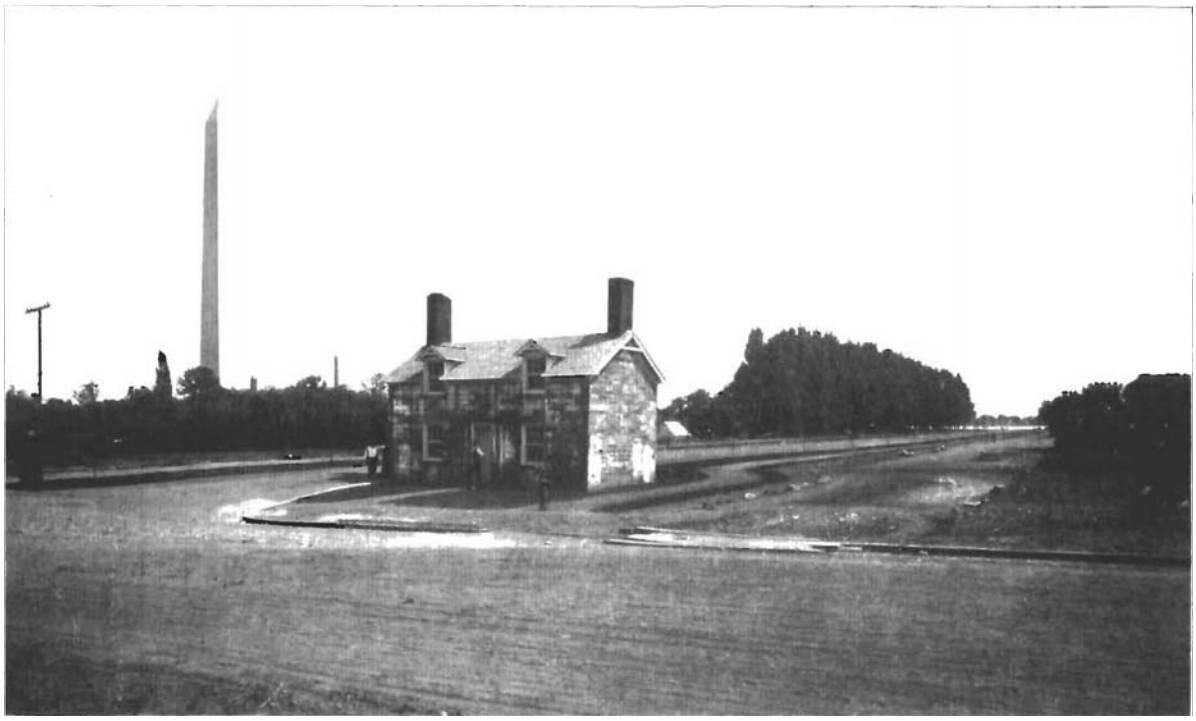

Figure 1.1.14. Lock House B and the entrance to Potomac Park at Seventeenth and B Streets NW taken between 1902-1903 after improvements were made to the house and site (Annual Report, 1903). Note how the curb of 17th Street meets the corner of the lockhouse. The north (front) and west elevations are shown. Note the large white areas on the west elevation that indicate a finish on the masonry.

Figure 1.1.15. Looking northwest from the Washington Monument ca. 1911. (Penszer, 1998). Note that there is no door on the south facade of the lockhouse.

Figure 1.1.16. Lock House B, north and east elevations, (Annual Report, 1916). Note the vegetation on the north (front) and east elevations of Lock House B. The photograph was taken after B Street (now Constitution Avenue) was raised 2 feet 3 inches in 1903. Note the security bars in the northeast window.

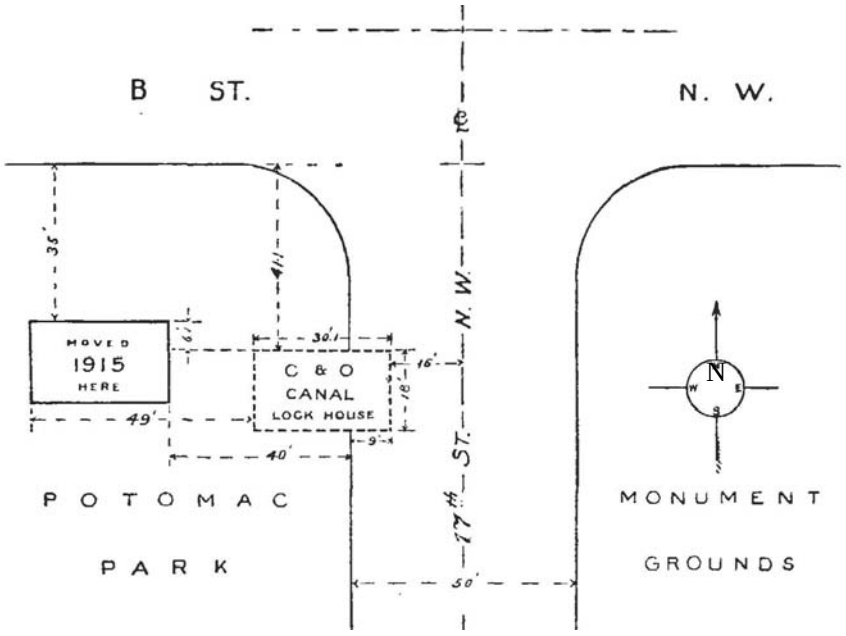

Figure 1.1.17. Diagram from the 1916 Annual Report of the Chief of Engineers documenting the relocation of Lock House B. The house was raised and moved 49 feet west and 6 feet north in order to accommodate the widening of 17th Street NW.

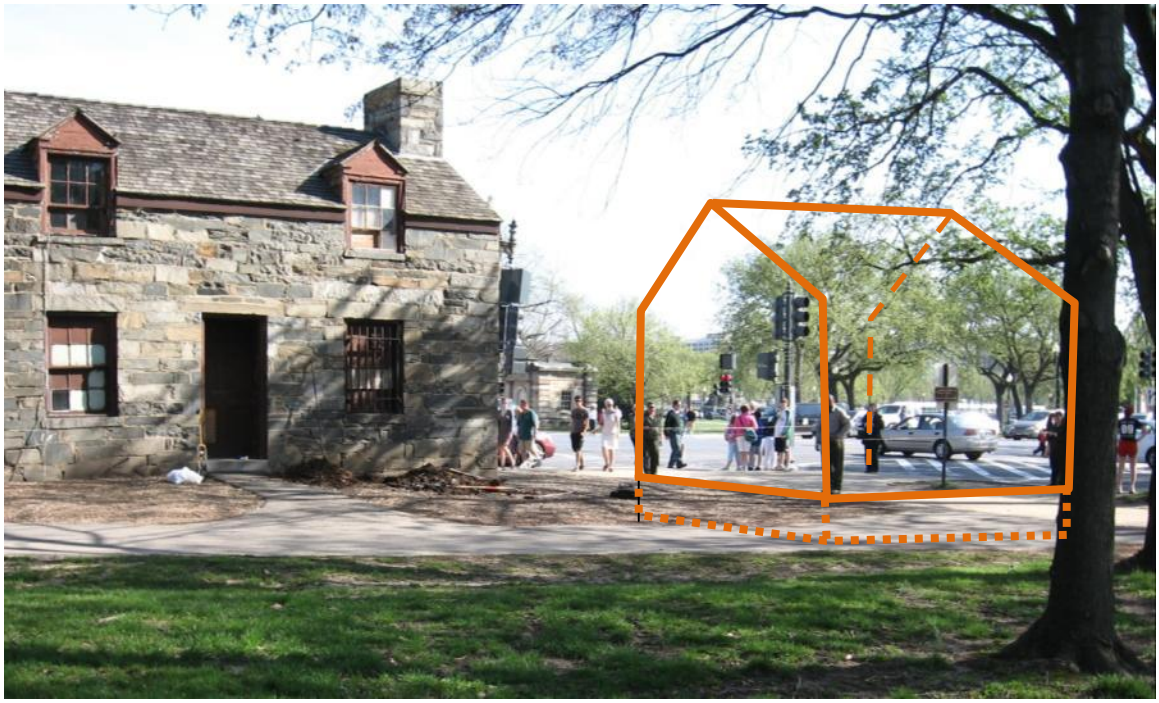

Figure 1.1.18. Locating the original location (QEA, April 02, 2010). Orange lines represent the lockhouse at its original location (49 feet to the east and 6 feet south) and lower elevation. The east side of the lockhouse's original location is at the current curb line of 17th Street. Dashed lines indicate the first floor at its original elevation, approximately 2 feet 3inches lower than the current first floor elevation. The location was laid out by the NPS Resource Management preservation team for the National Mall and Memorial Parks and QEA.

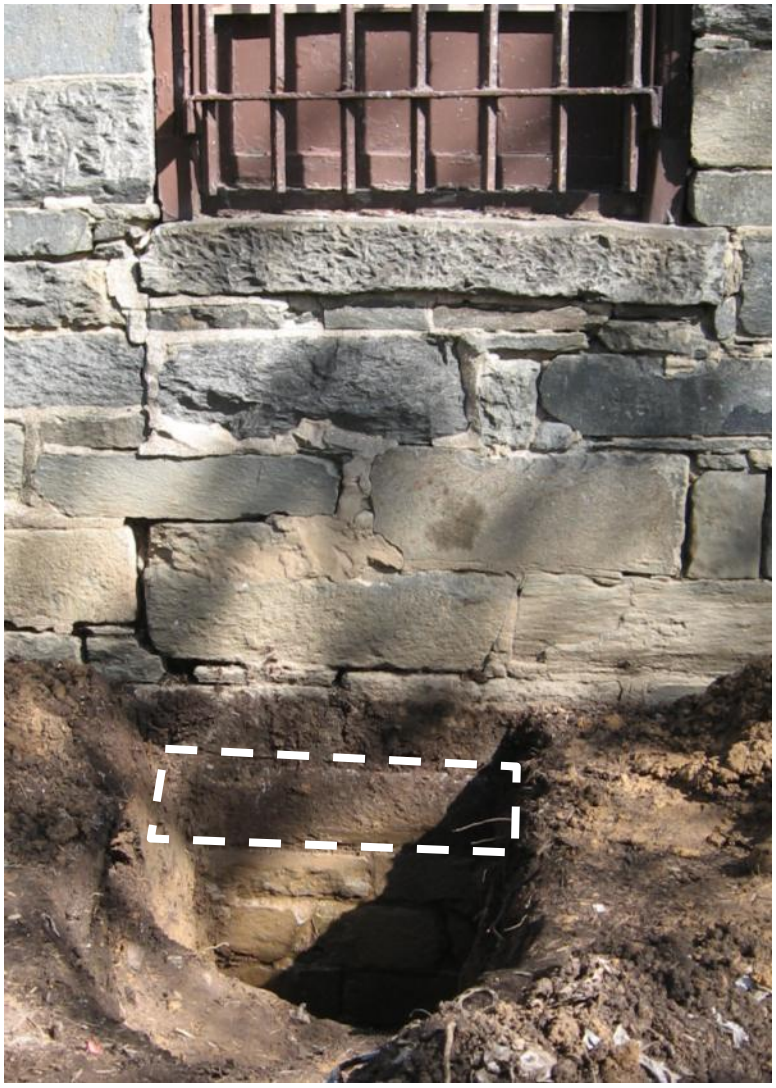

Figure 1.1.19. Test pit under the southeast window (QEA, April 02, 2010). Rectangle identifies a long, thin stone which is believe to be a window lintel from the cellar level dating to original construction.

Figure 1.1.20. Test pit under the southwest window (QEA, July 20, 2010). Rectangle identifies a long, thin stone which is believe to be a window lintel from the cellar level dating to original construction.

Figure 1.1.21. Test pit along the east elevation near the southeast corner (QEA, July 20, 2010). The rectangle identifies a long, thin stone which is believe to be a window lintel from the cellar level dating to original construction.

Figure 1.1.22. Test pit along the west elevation near the northwest corner (QEA, July 20, 2010). A long, thin stone similar to the others was not found at this location.

Figure 1.1.23. Lock House at Lock 24 (Kuriacose Joseph, December 10, 2005). The contract for construction was placed on December 11, 1828 and it is assumed that construction was completed in the next year. The house is on the berm side of the canal (opposite the towpath). This is a similar orientation to what we presume Lock House B had to the C&O Canal Extension. Like Lock House B, this house has the end chimneys. At the time of the HABS drawings, the house still had its central stair and fireplace mantels. Lock House 24 followed the 1828 specifications which prescribed a transom over the door.

Figure 1.1.24. Lock House at Lock 24 (Kuriacose Joseph, April 25, 2005). The contract for construction was placed on December 11, 1828 and it is assumed that construction was completed in the next year. The canal is at the higher grade shown in the photo. Lock House B was most likely surrounded by similar topography with the ground receding down to the Potomac river.

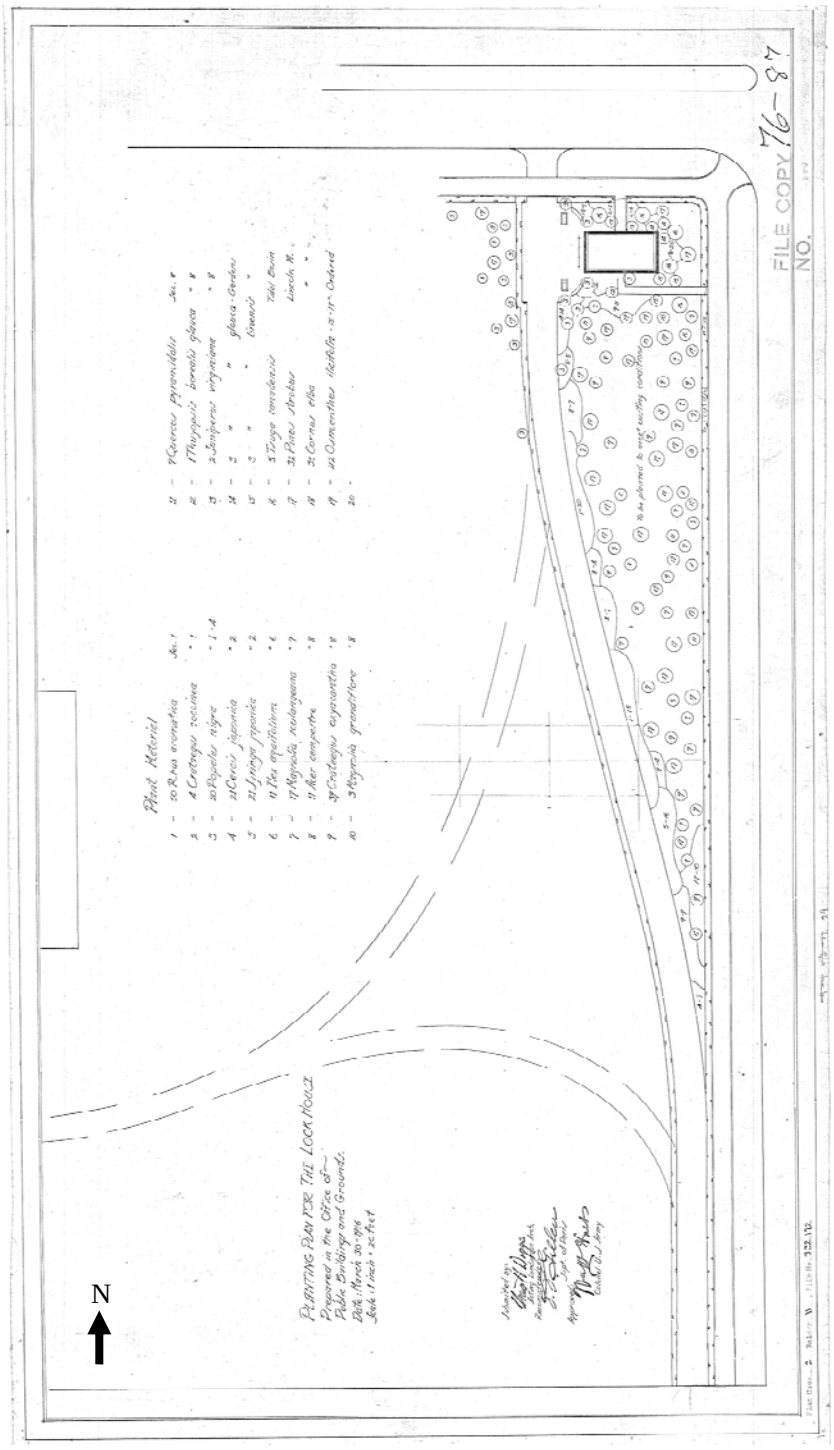

Figure 1.1.25. Planting Plan (1916). The lockhouse is to the right of the plan. See the enlarged detail on the next page.

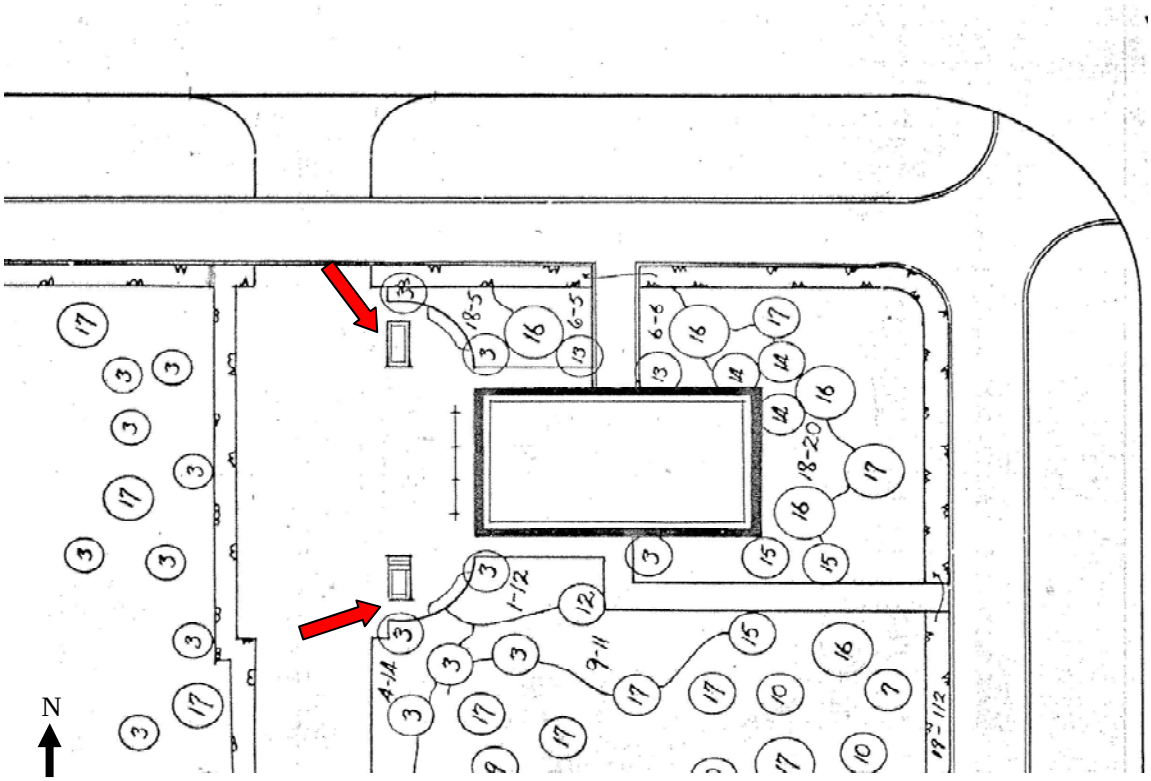

Figure 1.1.26. Detail of planting plan (1916). Note the path leading to the center of the south elevation presumably to the newly cut south door. Also note the two rectangles along the west side. These are most likely mounting blocks of which one remains today. The mounting blocks allowed riders to dismount in order to use the comfort station.

Figure 1.1.27. Mounting block dating from 1910's before it was temporarily removed by NPS in 2009 pending completion of the Potomac Park Levee project (QEA, July 2009).

Figure 1.1.28. View of Lock House B looking southwest after it was relocated north and west of the original location (Annual Report, 1916). The new trees, curb, and concrete walk are also visible.

Figure 1.1.30. Lock House B, south and east elevations (1917). This is one of the few photos of the south elevation. Note the security bars on the southeast window.

Figure 1.1.29. Lock House B, west and south elevations (1935). Note the mounting block in the foreground and the stoop and railing in the background.

Figure 1.1.31. Lock House B, north elevation (1943). Constitution Avenue has been widened by this date as seen by the close proximity of the curb to the house. Note the pipe railing (not the current one), the security bars in the northeast window, the cupping of the wood shingles, the graffiti at the bottom left of the door, and the mounting block on the right side of the photo. There are three other photos of the north elevation and similar subject matter that date to 1943.

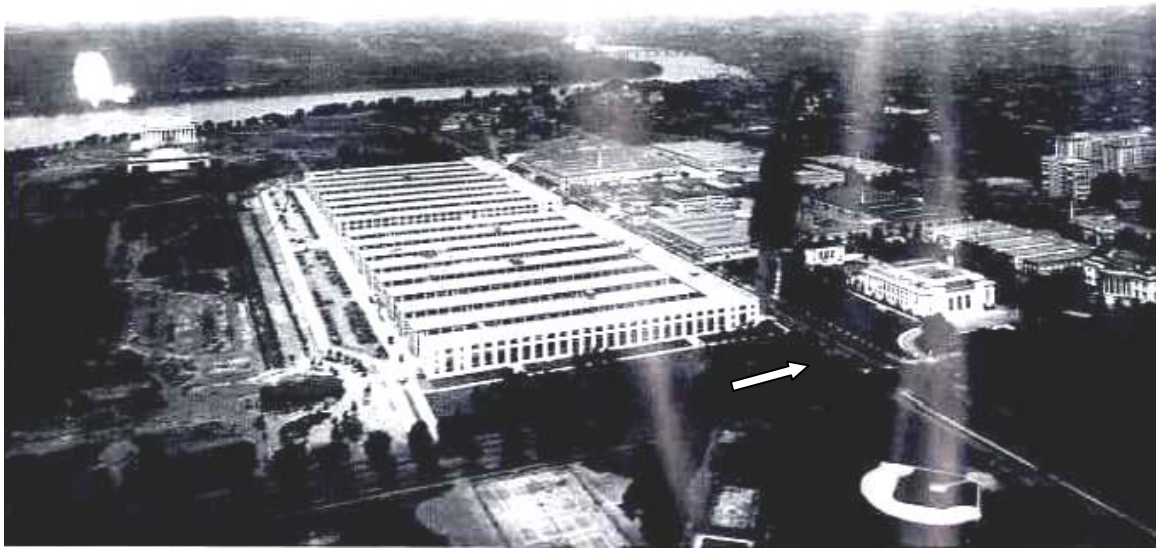

Figure 1.1.32. View looking northwest from the Washington Monument (ca. 1922). Temporary government buildings were built during World War I and remained standing until 1970 and 1971. The white arrow points to the lock house.

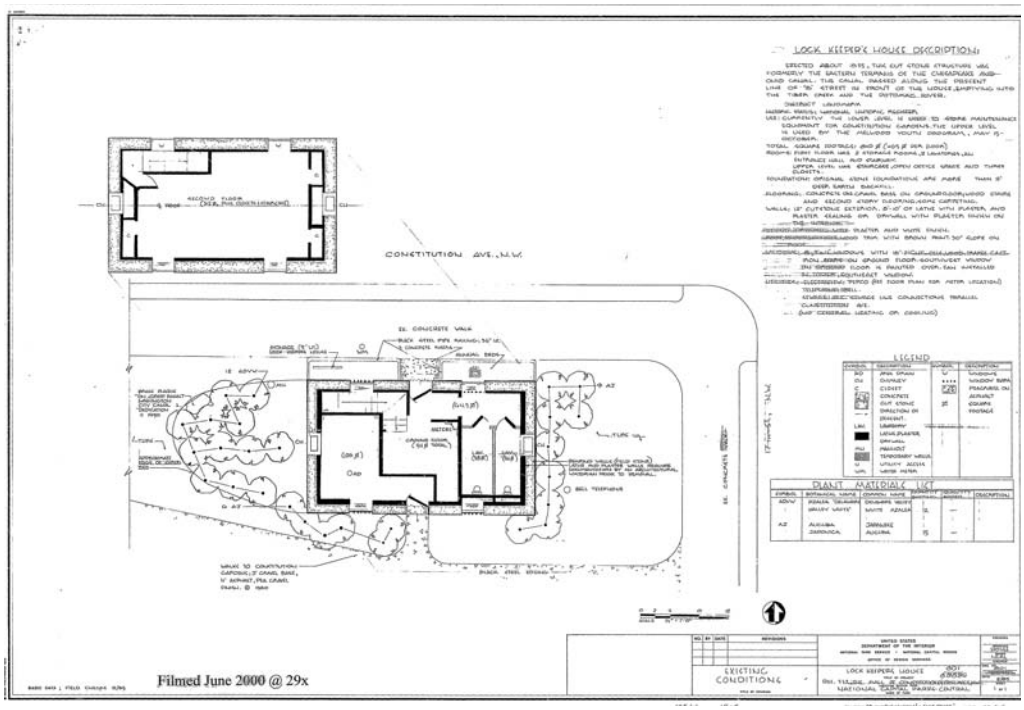

Figure 1.1.33. Existing Conditions drawing (1985).

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1.2 CHRONOLOGY OF DEVELOPMENT AND USE

Timeline	*Supplemental and contextual information is shown in italics.*
Pre-history	**1808** - 17th Street Wharf constructed.
	1815 - Washington City Canal constructed.
	July 4, 1828 - Ground broken for the construction of the C&O Canal.
	1831 - C&O Canal opened for barge traffic from Georgetown to Seneca followed by Harpers Ferry in 1833 and near Hancock in 1839.
	1832-1833 - C&O Canal Extension construction occurred to connect the C&O Canal to the Washington City Canal at the 17th Street Wharf and Tiber Creek.
	October 1834 - October 1837 - The Board assigned the Georgetown lock-keeper the additional duty of operating Tide Lock B.[1]
	August 31, 1836 - C&O Canal Board directed ground to be acquired for the lockhouse at Tidelock B on the Washington City Canal.[2]
	December 7, 1836 - An order for suitable stone to be quarried and transported to the site for the lockhouse at Tidelock B was given.[3]
	June 7, 1837 - Ground for lockhouse at Tidelock B was obtained from the Corporation of Washington.[4]
Original Construction	**October 25, 1837** - By this date, the lockhouse at Tidelock B was finished. John Hilton was appointed as lockkeeper with a yearly wage of $50.[5]
	1848 *- Washington Monument construction began.*
	1850 - C&O Canal construction completed.
	1855 *- Washington Monument construction halted.*

[1] Hahn, 1996, pg. 47.
[2] Unrau, The Lockhouses Historical Data, 1978, pg. 15.
[3] Ibid., pg. 15.
[4] Ibid., pg. 16.
[5] Ibid., pg. 16.

1860's - The canal became an open sewer.[6]

1873 - Canal infilled with material dredged from Potomac. B Street North (now Constitution Avenue) was built on top of the main length of the covered and filled-in Washington City Canal.[7]

1874-1912 - Potomac Park was constructed. Dredged material from the Potomac River and soil deposited from building excavations was used for fill. A U.S. Civil Engineer under the Army Chief of Engineers, U.S. Army Corps of Engineers oversaw the work.

August 15, 1876 - Lock House B leased to Samuel Opdylse for $50 annually.[8]

1879 *- Washington Monument construction began again.*

1884 *- Washington Monument completed.*

1889 *- Ownership of the C&O Canal was transferred to the B&O Railroad.*

1902 - The tidal flats along the Potomac River following the McMillan Commission Plan converted the land surrounding Lock House B into public parkland creating the West Potomac Park and the Washington Monument Grounds, divided by 17th Street.

August 1, 1902 - Squatters evicted from Lock House B.[9]

Change in ownership and use

August 14, 1902 - Ownership of Lock House B was conveyed to the Chief of Engineers from the canal company. It was the intention to use this house as a watchman's lodge and tool house, and accordingly, in May 1903, work was commenced putting it in good repair.[10]

May 1903 - "The old roof was removed and replaced with a new shingle roof, four new dormer windows were put in, the old floor removed, new floor joist laid on the second floor, a new floor put in, and new window sashes fitted. On the first floor new floor joists were put in and a new floor laid, 4 new windows put in, the room wainscoted, and a partition 18 feet long and 8 feet high erected."[11]

[6] Constitution Gardens CLI pg. 28
[7] The Constitution Gardens Cultural Landscapes Inventory (2008) states that in 1870 "portions of the Washington City Canal were covered over and others filled in. The height of the Lockkeeper's House was reduced to one-and-a-half stories." In other words, the ground floor was covered up by fill.
[8] Unrau, The Lockhouses Historical Data, 1978, pg. 26.
[9] 1903 Annual Report of the Chief of Engineers, pg. 2554.
[10] Ibid., pg. 2554. The Office of Public Buildings and Grounds (OPBG), which later became the National Mall and Memorial Parks, was under the Army Corps of Engineers.
[11] 1903 Annual Report of the Chief of Engineers, pg. 2554

After May 1903 - Lock House B used as a tool house and watchman's lodge for the United States Army Corps of Engineers.[12] It included a locker room and bicycle storage room.

Before 1909 - Two to three feet of fill added. Steps added to lead down to the door on north elevation. Grade was right below window sills.

1910's - Mounting block added to site for mounting and dismounting horses.

Before 1915 - The 1916 Annual Report includes a photo from before the 1915 relocation. This photo shows the steps down to the first floor and security bars are visible in the northeast window.

Change in location

Fall 1915 - Lock House B was "raised and moved a distance of about forty-nine feet to the west and six feet to the north to a new site" because of the widening of Seventeenth Street.[13] It appears that at this time, the house became one and a half stories instead of the original two and a half.

***1915** - Two drinking fountains installed.[14] It is unknown where the drinking fountains were located.*

1916 - The lock house was "fitted up as a comfort station, bicycle room, and locker room for the park watchmen"[15] and "remodeled throughout."[16] Partitions were added on the first floor to provide a public comfort station and a bicycle room. Lockers were added to the second floor for use by the park watchmen. The lock house was restored "as nearly as possible" to its original design. A new roof was placed on the house and two stone chimneys were built (presumably from the roof line up, on top of the existing brick).[17] It is also possible that this was when the dormers were restored back to their shorter proportions and Federal detailing. In addition, this date may also be when the door was inserted in the south elevation to provide separate entrances to a men's toilet room and a women's toilet room.

1916 - A new concrete walk 8 feet wide and 4,000 feet long, with tarred surface, was constructed along the south side of B Street north from 17th Street to the Potomac River and a new bridle path 5,700 feet long and 10 feet wide paralleling this walk was built.[18]

[12] 1903 Annual Report of the Chief of Engineers
[13] 1916 Annual Report of the Chief of Engineers, pg. 3594
[14] 1916 Annual Report of the Chief of Engineers, pg. 3595
[15] 1917 Annual Report of the Chief of Engineers, pg. 1891
[16] 1917 Annual Report of the Chief of Engineers, pg. 3714.
[17] 1917 Annual Report of the Chief of Engineers, pg. 3714.
[18] 1917 Annual Report of the Chief of Engineers, pg. 1891

1918 *- Two large "temporary" concrete buildings were built just west of the 17th Street in West Potomac Park along B Street (next to the lock house). They were occupied by the War Department and the Navy Department.*

1919 - The interior and roof were painted.[19]

Early 20th Century - Lock House B was used as a headquarters for Park Police and a temporary holding cell for prisoners arrested in Potomac Park.

1922 *- Lincoln Memorial construction completed.*

1924 *- Operations of the C&O Canal ceased. The railroad had captured almost all of its carrying trade.*[20]

1925 *- The Office of Public Buildings and Grounds (OPBG) was replaced by the Office of Public Buildings and Public Parks (OPBPP) of the National Capital.*

June 5, 1928 - The bronze plaque was unveiled on the lock house by Frederick D. Own, a retired architect and engineer who had devoted much of his life to development of the parks in Washington.[21]

July 4, 1928 - 100th anniversary of the opening of the C&O Canal.

1930 - Flood Control Act of June 22, 1930 - OPBPP must maintain height of flood control levee at West Potomac Park.

1930's - Construction of an earth-and-concrete flood control levee.

1931 *- A congressional act authorized changing the name of B Street North to Constitution Avenue (Public Resolution 123-71 St. Congress, H.J. Res. 464).*

June 10, 1933 *- President Franklin D. Roosevelt signed Executive Order #6166, which transferred all public reservations and buildings, including National Capital Parks, to a new Office of National Parks, Buildings, and Reservations, in the Department of the Interior.*

March 2, 1934 *- The Office of National Parks, Buildings, and Reservations was renamed the National Park Service.*

June 4, 1934 *- The Office of Public Buildings and Public Parks became National Capital Parks (now the National Capital Region).*

[19] 1920 Annual Report of the Chief of Engineers, pg. 4120
[20] Unrau, The Lockhouses Historical Data, 1978, pg. 27.
[21] West Potomac Park Historic Resource Study, 1970, pg. 128.

1938 *- C&O Canal was acquired from the B&O Railroad by the United States.*

1940 *- Federal office buildings began to appear along Constitution Avenue.*

1940 - The first floor of the lockhouse was converted to a public comfort station. The attic was used for maintenance storage.[22]

After 1950 - Bridal paths removed from West Potomac Park.[23]

1965 *- National Capital Parks was officially established in 1965 to protect some of the oldest parkland in the National Park System*[24].

1970's - Flood control levee rebuilt.

1970 & 1971 *- The two large "temporary" concrete buildings for the War Department and Navy Department were demolished.*

1973 - Listed as a contributing structure to the National Register for Historic Places nomination for East and West Potomac Parks.

1974-1976 - Site changes. Trees planted.

1974-1976 - Constitution Gardens built for the nation's bicentennial. Designed by Skidmore, Owings, & Merrill. Dedicated on May 27, 1976. The flood control levee was rebuilt as part of this project.

1985 - The lower level is used to store maintenance equipment for Constitution Gardens. The upper level is used by the Melwood Youth Program, May 15-October.[25] [The first floor has 2 storage rooms, 4 lavatories, an entrance hall, and stairway. Stairs to the upper level lead to an open office space and three closets.]

2004 - Shingle roof replaced and sheathing repaired.[26]

2004 *- World War II Memorial dedicated.*

[22] National Register Nomination, 1973.
[23] West Potomac Park Historic Resource Study, 1970, pg. 167.
[24] The National Mall & Memorial Parks website, www.nps.gov/nacc, states that NAMA was officially established in 1965 though it was the National Capital Parks that was established which was subsequently renamed.
[25] Existing Conditions Drawing, 1985.
[26] Sheathing replacement drawing, 2004.

2005 - *National Capital Parks-Central renamed National Mall and Memorial Parks (NAMA). NAMA administers, interprets, maintains, and preserves the Washington Monument, Thomas Jefferson Memorial, Lincoln Memorial, Franklin Delano Roosevelt Memorial, Ulysses S. Grant Memorial, District of Columbia War Memorial, World War II Memorial, Korean War Veterans Memorial, Vietnam Veterans Memorial, George Mason Memorial, Pennsylvania Avenue from the Capitol to the White House, the National Mall, East and West Potomac Parks, Constitution Gardens, 60 statues, and numerous other historic sites, memorials, and parklands.*

2005 *- Hurricane Katrina*

2009 - Asbestos containing materials assessment and lead-based paint screening occurred within Lock House B performed by Aerosol Monitoring & Analysis, Inc., Environmental Consultants.

2009 - Vegetation removed from immediately around the lockhouse in preparation for the historic structure report investigation and levee wall construction.

2010 - Cleaning of Lock House B - Lead-based paint abatement occurred.

Future Development

Potomac Park Levee Project - Current flood control measures found inadequate since Hurricane Katrina. Improvements to the levee will include a levee closure at 17th Street which will require the addition of a wall structure south of the lock house.

Lock House B Relocation - Once the levee closure is constructed, the site will be re-evaluated to see if relocating the house is a necessary and/or desirable action as part of its rehabilitation (as discussed in the preferred alternative of the National Mall Plan.)

1.3 PHYSICAL DESCRIPTION & SIGNIFICANCE

Significance of the Property

The significance of Lock House B lies in its association with the Chesapeake and Ohio Canal, completed in 1831, and the Extension of the C&O Canal in 1832 that connected the C&O Canal and the Washington City Canal (1815). Included in Pierre L'Enfant's original plan for the city, the Washington City Canal connected the Potomac River and Northwest Washington with the Anacostia River. Built in 1837, Lock House B is significant in its relative location at the corner of Seventeenth Street and Constitution Avenue, slightly northwest of its original location but still the same orientation as it was to the canal. The lockhouse is the only remnant of the C&O Canal Extension and the oldest structure on the National Mall. The lockhouse was added to the DC Inventory of Historic Sites on November 8, 1964 and to the National Register of Historic Places, NRIS# 73000218, on November 30, 1973.

Besides being listed individually, Lock House B is listed as a Contributing Building under "Miscellaneous Resources" for the revised National Register nomination for East and West Potomac Parks.

Properties listed in the National Register may be of five types: buildings, structures, objects, sites or districts. They must possess both historic significance and integrity. To be considered historically significant, they must meet at least one of four National Register criteria:

- Criterion A: Association with events that have made a significant contribution to the broad patterns of our history;
- Criterion B: Association with persons significant in our past;
- Criterion C: Embodiment of distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant distinguishable entity whose components may lack individual distinction; or
- Criterion D: Archeological potential to provide important information about prehistory or history.

For the East and West Potomac Park nomination, it is listed under Criterion A, events and history, and Criteria C, characteristics of a type, period, or method of construction. It also falls under Criteria Consideration B because it was "removed from its original location that is significant primarily for its architectural value" and because of its association with the Washington City and C&O Canals.[1] The individual nomination of the

[1] Constitution Gardens Cultural Landscape Inventory, 2008, pg. 15.

lockhouse to the National Register includes criteria architecture and commerce and transportation.

Contextual Significance

The Washington City Canal ran along B Street that became Constitution Avenue. The C&O Canal ran parallel to the Potomac River from Cumberland, MD to Washington, DC. The C&O Canal Extension was built to connect the two canals. The stone lockhouse was built on the 17th Street Wharf (1807) for the keeper of the lock at the extension. The current location is significant only in its relative location, not actual location, to the long since filled in canal. The house was relocated 49 feet west and 6 feet north from its original location in 1915 to accommodate the widening of B Street (present day Constitution Avenue).[2]

Architectural Significance

Records from the C&O Canal in the "Proceedings of the Board of the President and Directors" of the C&O Canal Company found at the National Archives and Records Administration describe this particular lockhouse and allude to its being of a particular typology.[3] Lock House B is built of the "usual dimensions" and presumably built to the 1836 specifications.

Lock House B is similar to lockhouses 16 and 24, which are categorized as Type II by the NPS (see figure 1.3.1). Lock House 16 was built to the 1836 specifications, but Lock House 24 differs from the 1836 specifications in the window treatment of the attic story and the arrangement of the doors on the lower level.[4]

The Federal Style lockhouse, the focus of this HSR, is constructed of ashlar stone. The footprint of the house remains unchanged, yet the massing was altered considerably during the 1915 relocation with the reduction in height. The masonry openings along the north facade and the south (not including the south door) remain unchanged from original construction while the windows and doors have been replaced. Many of the changes occurred in the early 20th century including the brick chimneys which are now encased in stone.

Period of Significance

According to the National Register nomination form, the period of significance for Lock House B is c. 1833, the year construction of the C&O Canal Extension and the lockhouse were completed. It is now known that the lockhouse was completed by October 1837 according to the Proceedings of the C&O Canal Company. The date of original construction of the lockhouse for the period of significance will be used for this document.[5]

As the only remnant of the C&O Canal Extension and the oldest structure on the National Mall, Lock House B is also significant to the history of the National Mall and the development of the City of Washington. The house

[2] Annual Report, 1916.
[3] Unrau, 1978 and Hahn, 1996, pg. 71.
[4] Hahn, 1996, pg. 16.
[5] It is recommended that the National Register nomination form be updated.

allows visitors to visualize the National Mall before its creation and the addition of the monuments, memorials, and museums in addition to helping visitors visualize the canals which flowed through the city in the nineteenth century and the commerce that moved along them.

Regulations

Lock House B and East and West Potomac Parks have been listed in the National Register of Historic Places and in the District of Columbia Inventory of Historic Sites because they have been deemed worthy of recognition and protection for their contribution to the cultural heritage of the nation's capital.

There are numerous statutes, executive orders, presidential memoranda, and other regulations that apply to Federal agencies (such as the National Park Service) regarding historic preservation. The two major Federal laws that protect historic resources within the Federal government are: The National Historic Preservation Act of 1966 (NHPA), as amended, and The National Environmental Policy Act of 1969 (NEPA).

The passage of the NHPA established stewardship of cultural resources as a national policy and required Federal agencies to take into account the impact of Federal undertakings on America's historic buildings, structures, and sites. Section 110 of the NHPA mandates Federal agencies to "undertake such planning and actions as may be necessary to minimize harm" to historic resources, eligible National Register properties and Landmarks. A requirement of the act is consultation with the Advisory Council on Historic Preservation (ACHP). "The Advisory Council on Historic Preservation (ACHP) is an independent Federal agency that promotes the preservation, enhancement, and productive use of our Nation's historic resources, and advises the President and Congress on national historic preservation policy … ACHP is the only entity with the legal responsibility to encourage Federal agencies to factor historic preservation into Federal project requirements" (Advisory Council on Historic Preservation, 2007). Section 106 of the NHPA requires Federal agencies to "take into account the effects of their undertakings on historic properties" and "afford the Council a reasonable opportunity to comment on such undertakings."[6]

In brief, Federal undertakings are Federally funded or licensed actions, including grants, licenses, and permits, and that action has the potential to affect properties listed in or eligible for listing in the National Register of Historic Places. Each Federal agency must:

- Identify and assess the effects of its actions on historic resources;
- Consult with appropriate state and local officials, Indian tribes, applicants for Federal assistance, and members of the public, and consider their views and concerns about historic preservation issues when making final project decisions; and,
- Resolve the effects by mutual agreement, usually among the State Historic Preservation Officer (SHPO) or the Tribal Historic

[6] Code of Federal Regulations: 36 CFR 800.1(a)

Preservation Officer, the Federal agency, and any other involved parties. The Advisory Council on Historic Preservation (ACHP) may participate in controversial or precedent-setting situations. These steps are commonly known as the "Section 106 Review Process." A more expansive explanation of the Section 106 Review Process can be found in the ACHP regulations for implementing NHPA, Title 36 of the Code of Federal Regulations Part 800 Protection of Historic Properties (36 CFR 800).

Types of possible undertakings applicable to potential work at the lockhouse include:

- Maintenance of buildings, structures, and landscapes that might be historic, and maintenance of the land in general if such maintenance could alter the character of the historic landscape.
- Changes in the use of older buildings, structures, and land areas, which might have historic or cultural values.
- Accessibility programs, which can impact historic buildings, structures, and landscapes.
- Energy conservation programs, which can result in the demolition or substantial alteration of historic buildings and structures.
- Hazardous materials removal, which can alter the character of historic buildings, structures, and landscapes, or disrupt archeological sites and other resources.
- Environmental programs, which can result in land-use changes and other changes that can affect historic and archeological resources.
- Ground-disturbing activities which may indicate the need for archeological investigations and considerations.

The purposes of the National Environmental Policy Act of 1969 are:

"To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality" (42 USC § 4321, Sec. 2). "Under NEPA, agencies have broad responsibilities to be concerned about the impacts of their activities on the environment, including historic properties. To an extent, NEPA addresses some of the same concerns as NHPA, for instance regarding identification of irreversible effects" (Advisory Council on Historic Preservation).

The NEPA review process evaluates proposed actions and determines the level of documentation that is required for the action. The levels of documentation include:

- Categorical Exclusions (CATEX) are actions that are categorically excluded from further NEPA review. They do not individually or cumulatively have a significant effect on the human environment.
- A Record of Environmental Compliance (REC) is a record that briefly describes the proposed action and its anticipated timeframe,

identifies the proponent, and explains why further documentation is not required.
• An Environmental Assessment (EA) is a detailed statement outlining the anticipated effects of the proposed action. An EA is prepared to document potential effects of a proposed action and is subject to review and comment. An EA results in a finding of no significant impact (FNSI or FONSI) or a notice of intent to prepare an Environmental Impact Statement (EIS).
• An EIS is a detailed public statement documenting the environmental consequences of actions that may cause significant environmental impacts.

The regulations for implementing NEPA are found Title 40, part 1507 of the Code of Federal Regulations. The independent Federal agency associated with NEPA is the Council on Environmental Quality.

There are numerous statutes, executive orders, Presidential memoranda, and other regulations that apply to Federal agencies and historic preservation. However, compliance with one or more of these other statutes does not substitute for compliance with ACHP's regulations, 36 CFR Part 800, unless ACHP explicitly agrees that it does through execution of a Programmatic Agreement or approval of alternate procedures. Also, the regulations allow Federal agencies to comply with Section 106 through the use of the NEPA process and documentation, so long as the steps and standards of Section 800.8(c) of ACHP's regulations are met.

With respect to listing in the D.C. Inventory of Historic Sites, the process for reviewing changes to historic buildings and the preservation objectives of the city are specified in the District of Columbia Historic Landmark and Historic District Act of 1978 (D.C. Law 2-144) and D.C. Municipal Code 12. The law establishes the procedure for officially designating buildings, structures, districts, and sites as historic properties and provides for their protection. The law also directs that all new construction and most exterior changes to individually designated historic landmarks (or to contributing buildings located within historic districts) obtain approval from the Historic Preservation Review Board prior to undertaking rehabilitation, restoration, additions or new construction. For the Federally-owned lockhouse this is not required. The District of Columbia Historic Preservation Office, which typically reviews permit applications for modifications to non-Federally owned historic properties to determine whether the proposed work is compatible with the character of the historic property, would be involved in the Section 106 process to help resolve any potential effects of the undertaking on the historic resource.

Significant Site and Building Features

Definition

Significant features are the "character-defining features" of a building that embody its essence and convey its identity or special quality. More specifically, the term refers to the "essential physical features that must be present for a property to represent its significance."[7]

The *Secretary of the Interior's Standards* state that the "historic building's appearance may be defined by the form and detailing of its exterior materials, such as masonry, wood, and metal; exterior features, such as roofs, porches, and windows; interior materials, such as plaster and paint; and interior features, such as moldings and stairways, room configuration and spatial relationships, as well as structural and mechanical systems; and the building's site and setting."[8] Therefore character-defining features are those tangible qualities that capture the essence of the historic building.

These features should be retained and restored when possible. The identification of a feature is based on the best assessment at this time and may be subject to new information from a more detailed analysis at a future time. It is important also to consider these individual features within a greater context relative to the building's overall massing and spatial configuration.

Site Features

There are few significant site features that date to the period of significance.

Setting
(1837, altered 1915)

The lockhouse is located at the corner of Seventeenth Street and Constitution Avenue NW, the location of the Seventeenth Street Wharf of the nineteenth century (figure 1.3.1). In 1915, it was relocated forty-nine feet west and six feet north of its original location for the construction of Constitution Avenue. The current site of the Lock House is not a significant feature. However, its relative location at the corner of Seventeenth Street and Constitution Avenue is. The house still has the same orientation to the canal that it once did.

Exterior Features

There are a few significant exterior features that date to this era.

Overall Massing
(1837, altered 1915)

The house is a rectangular stone building 18'x30' with symmetrical end gables on the east and west (figures 1.3.2 and 1.3.3). It is constructed of ashlar stone primarily of a a metamorphic stone in the gneiss family similar to granite and some sandstone. The stone is regularly coursed on the north elevation (the front of the house facing the canal), and randomly coursed on the east, south and west elevations.

As previously discussed, the house originally had one and a half stories on the north (the canal side) and two and a half stories on the south (away from the canal). The house is now one and a half stories due to the 1915

[7] National Register Bulletin No. 15, p. 45.
[8] Secretary of the Interior's Standards, p. 119

relocation. Lock Houses 16 and 24, both similar to Lock House B, are two and a half stories (see Appendix 3.4). Physical proof of this alteration was found in the test pits described in the first chapter.

The current overall height of the building is 21'-10" from grade to roof ridge. The current lower story is 7'-10 1/2" from floor to ceiling and the upper story is 7'-11". There is a chimney at each of the east and west ends. There are two windows at the lower story and two dormers at the upper story on both the north and south elevations.

Walls (1837, repointing varies)	The walls are 22" thick stone with a mixture of 90% gneiss and 10% sandstone. The light brown sandstone could be from the Aquia Creek quarry.[10] The stones have key marks on all elevations, most likely from tooling during construction, but possibly due to stucco or plaster renderings added later (figure 1.3.4-1.3.6). From survey of the exterior stone walls, there have been approximately six mortar campaigns (see figures 1.3.7-1.3.11).
Lower Story Windows (openings, sills, lintels 1837)	The openings are still in their original locations, making the openings significant features (see figures 1.3.12 and 1.3.13). The original specifications state that the casings should be of 1 1/4 inch yellow pine plank and the sills and lintels of locust. The masonry sills and lintels are sandstone on the north and granite on the south. The sandstone lintels are presumed to date from 1837, therefore they are significant features. The frames and sashes are not significant features.
Doors (north opening 1837)	The north door opening is seen in one of the earliest photographs dating to before 1902 (see figure 1.3.14). In another early photograph dating to 1894, the south door is not seen. It is speculated that the south door opening was created in 1916 to create separate entrances for a men's toilet room and a women's toilet room. Both doors are six paneled and date to the same renovation. Hence, the north opening is significant, but the doors themselves and the south opening are not**.**
Upper Story Dormers (openings 1837)	The dormer openings are significant in that they depict where the original dormers were located, however the dormers themselves were replaced at least twice.[12]
Chimneys (brick remnants 1837)	The remainder of the original brick chimneys is still found within the wall cavity between the exterior wall and the interior finish wall is significant. On the east side, the bricks appear to have a whitewash (figure 1.3.15).

[10] The amount of deterioration and color is similar to the nearby Gatehouse (directly across Constitution Avenue but were originally near the Capitol) which date to 1829. Designed by Charles Bulfinch, the Gatehouse (and associated Gateposts) are known to be built of poor quality Aquia Creek sandstone. A darker, more red sandstone from Seneca Creek was used at Lock House 24, located in Seneca, MD, close to the quarry. Lock House 24 is similar to Lock House B in form but used different materials that were easily available for construction.
[12] Annual Report of the Chief of Engineers, 1903.

Figure 1.3. 1 View of the lockhouse looking southeast towards the Washington Monument (QEA, 2011). The street in the foreground is Constitution Avenue.

Figure 1.3. 2 North and west elevations of the lockhouse (QEA, 2011). Note the symmetrical facade with chimneys at either end.

Figure 1.3. 3 South and east elevations of the lockhouse (QEA, 2011).

Figure 1.3. 4a, 4b, 4c Three different types of markings on stone. These markings could be quarry marks (tooling) or possibly for a stucco or plaster rendering.

Figure 1.3. 5 East facade (QEA 2011). Note the two stones in the foreground which have remnants of a hard white coating on the surface of the stone. The remnants when disturbed became a fine white powder.

Figure 1.3. 6 South facade at the eave (QEA 2011). Note the remnants of a white coating on the surface of the stone. This instance and the one in the photograph above are evidence of a white coating that can be seen in the historic photographs.

Figure 1.3. 7 Photograph of mortar located on the south elevation. This mortar is a crudely struck with large aggregate. It consists of yellow, brown, and white aggregate and tan sand. The aggregate is similar to that used in 1915 foundation and the mounting block.

Figure 1.3. 8 Photograph of mortar found at both sides of south door. This is a raised profile mortar of medium aggregate brown, beige, white, and tan on top of darker beige. This may be the desired final appearance. This mortar probably dates to when the south door masonry opening was cut, probably during the 1916 renovation.

Figure 1.3. 9 Photograph of a very fine white mortar found on a couple of locations of the south elevation, obviously a replacement mortar.

Figure 1.3. 10 Photograph of a mortar located on both east and west elevations that has a thin layer of brown mortar on top of a tan fine aggregate mortar.

Figure 1.3. 11 Photograph looking north of the west chimney showing a dark brown mortar with raised profile joints.

Figure 1.3. 12 Southwest window (QEA, 2011).

Figure 1.3. 13 Northeast window (QEA, 2011).

Figure 1.3. 14 North door (#101) (QEA, 2011).

Figure 1.3. 15 View through hole in second floor northeast closet. Brick chimney is visible as is a flue that is now sealed off by the beadboard partition walls. (QEA, 2011).

Interior Features

Very little of the interior is from the original construction, therefore there are not many significant features from the period of significance.

The plaster and wood lath on the interior surfaces of the exterior walls may be from original construction if they were not damaged heavily during the relocation. The lath appears to be applied directly to the masonry. However, the finish appears to sit directly on top of the coved concrete base of the slab which may mean that it is not from the period significance unless it was cut and patched along the base of the wall when relocated.

Absent or Obscured Features from the Period of Significance

Exterior Trim — The original wood trim on the exterior is now missing. When the roof was replaced in 1903, extra wood trim was added. Wood trim along the roofline and dormers was reconstructed in the 1916 restoration and matches that found in photos dating to before 1902.

Gutters and downspouts — The earlier system for collecting and directing rainwater is now missing.

Mantels — The mantels at the fireplaces on the east and west ends of the house are presumably lost. One can look into the cavity between the brick chimney and the beadboard through a hole in the beadboard of the attic closet and look down to the first floor. One can also look up in the ceiling along the west wall of the west toilet room and not see any trace of a mantel hidden behind newer walls.

Cellar — It is presumed that Lock House B was originally two and a half stories as opposed to the current one and a half. The cellar story would have been below grade on the north side and a walk-out cellar on the south side. When the lockhouse was relocated in 1915, it is assumed that it was lifted off of the basement at the basement window lintels and thereby converted to the current one and a half stories. The 1916 Annual Report of the Chief of Engineers states that it was "raised and moved."[13] It does not say if the cellar and original foundations still exist underground at the house's original location. The existing first floor is a concrete slab. There is an inaccessible space under the stairs. It looks like the concrete slab was not poured completely under the stairs. The current foundations seen from the test pits appear to date from the time of the relocation.

Mechanical - Heating — The lockhouse was heated by the chimneys originally. At an unknown point in time, it is possible that a stove was installed. A pipe (flue) still exists entering the chimney behind the interior wall finish. Currently, the house is not heated.

Non-significant Features — The following features do not date from the period of significance.

Foundation (1915) — The current foundations date to the time of the 1915 relocation. The concrete has orange, yellow, and white aggregate, similar to that of the mounting block.

Doors (south opening 1916, door frames and doors 1916) — It is speculated that the south door opening was created in 1916 to create separate entrances for a men's toilet room and a women's toilet room (see figure 1.3.16). As both doors and frames are alike, it is assumed then that

[13] Annual Report of the Chief of Engineers, 1916, pg. 3594

	both six panel wood doors on the north and south elevations date to 1916 or after.[14]
Lower Story Windows (frames and sashes 1903)	The windows have 12 lights on the lower story and nine on the upper story, each with 10 x 12 glass with wood casings. The windows themselves are not significant features because they replaced the original ones.
Door Sills (1916)	As both granite sills are the same type of granite and similar wear, it can be assumed that both were put in 1916.
Exterior trim (assumed 2004)	The exterior fascia and barge boards appear to replicate the ones in the photographs dating to before 1902. The current ones are painted metal whereas originally they were wood. The design and use of this exterior trim is significant but the actual elements are not significant.
Roof (2004)	The ridge of the gabled roof runs east-west. The roof construction is wood shingle. The roof was replaced in 1903, in 1916, and again in 2004. The concept of the wood shingle roof is significant rather than the feature of the roof itself. A cypress shingle roof is described in the 1836 lockhouse specifications. Photos dating to before the 1903 acquisition by the Chief of Engineers and subsequent renovation show what looks to be a standing seam metal roof.
Upper Story Dormers (frames, sashes, and possibly wood framing 1916)	Four new dormers "were put in" as stated in the 1903 Annual Report. These dormers were taller with different divided lite configurations than the ones shown in photos dating to before 1902. The 1903 dormers had additional wood trim and 6 over 6 window sashes. The current dormers appear to be a little shorter in proportion with 6 over 3 window sashes. All are double hung except for the southeast window which is a casement but still has the look of 6 over 3. These dormers date to the 1916 renovations when the lockhouse was restored "as nearly as possible" (matching the photos dating to before 1902).[15]
Chimneys (stone 1916)	The stone chimneys were added in 1916. It appears that the stone was added on top of the original brick chimneys above the roofline. The stone chimneys are non-significant features of the lockhouse, but the stone is a good match to the existing stone.
Floors (1916)	There are no significant features pertaining to the floors. The floor of the lower story is concrete throughout dating to the 1916 move. There is a coved curb base on the first floor that is also not a significant feature. The coved curb base provides the base for each interior partition. The second floor is covered with asbestos containing tile. The wood floor of the southwest closet is left exposed.
Spatial Organization (1916)	The current spatial organization is not a significant feature. Primarily, the lockhouse lost an entire story - the cellar - during the 1915 relocation.

[14] The Annual Reports do not describe the creation of the south door nor the replacement of the north door.
[15] Annual Report of the Chief of Engineers, 1917, pg. 3714.

Additionally, each floor would have been divided into two spaces as described in the 1836 specifications and shown in the "Type II" category (figure 1.3.17). If the assumption is that Lock House B was built similarly to Lock House 16 and 24, then it also lost the central stair which divided each floor.

The current spatial organization is such that the lower story (what used to be the "principal story") of the house was divided into six rooms in 1916. It is unknown where the 1903 partition is or was located. An entry vestibule is located directly inside the north door. A hall adjacent to the entry vestibule at the east leads to two toilet rooms. The window in the entry vestibule is one of the two with metal bars on the exterior. It also has bars on the interior. It is believed that the east half of the lockhouse was used for the holding cell for the park police because these are the only two windows with security bars, and it appears these toilet rooms were separated from the public area. The main room is adjacent to the entry vestibule at the north. From the northwest corner of the main room, the stair leads up along the north facade to the upper level (figures 1.3.18 and 1.3.19). There are no doors currently at the interior thresholds of the entry vestibule, but the door trim remains at the openings.

Another entry vestibule is directly inside the south door which leads to another toilet room on the west. These spaces are completely separated from the spaces accessed by the north door. Inside the west toilet room, there is a sink, two sanitary waste lines, and parts of toilet partitions, evidence that two toilet stalls once existed. There is an extant door between these two rooms.

The upper story remains one main room with three closets, two on the east and one on the west (figures 1.3.20-1.3.22). Access to the stair is in the northwest corner.

Partition Walls (1916 and later)

The partition walls of the main room on the first floor have a beadboard wainscot covering half the wall. The upper half of these walls is painted plaster on wood lathe. Peg board is nailed to the plaster on the east, south, and west walls. The partitions were added in 1903 and 1916. Consequently they are not significant features**.**

The partition wall separating the east toilet rooms from the vestibule (which is along the north exterior wall with the window) appears to be of a different finish. The doors are metal in hollow metal frames. These are from a later renovation.

Stair (assumed to be 1916)

The wood stair is located in the northwest corner of the lockhouse. It runs along the north facade and blocks the northwest window. If the lockhouse is assumed to have been built similarly to lockhouse 16 and 24, then the stair would have run in the center of the house in the north-south direction.

At its current location it blocks much of the light from that window which would not have been desirable in a pre-electricity lockhouse.[16]

It is possible that in 1903, when the new floor joists and new floor were added, that this is when the stair was relocated. Or it is possible that in order to put so much program into this small building in the 1916 renovation, that was when it was decided to remove the central stair and add a new one in a far corner. The comfort station and bicycle storage area may not have needed the additional light from a window, especially with the introduction of electricity to the building. The wood stair is also lined with the same beadboard as that used in the rest of the lockhouse.

Window and Door Trim (assumed to be 1916)

The trim is painted wood of an unknown species. As the partition walls were added in 1903 and 1916, the trim associated with them is not a significant feature. As the window trim has a similar profile to the door trim, it is assumed that these too were added in 1916.

Ceiling (possibly 1903, 1916)

A plaster ceiling is found in the lower level. The ceiling on the upper level is constructed of wood paneling. When the new floor joists were installed in 1903, that is probably when a new ceiling was constructed. Most likely the ceilings were added in 1916.

Interior Doors (assumed to be 1916 and later)

There are two interior doors on the lower floor at the east toilet rooms A & B (#103 and 104) that are painted metal flush doors and date to a later renovation. There is a painted wood six paneled door (#105) between the south entry vestibule and the west toilet room that probably dates to the 1916 renovation. The doors to the stair and closets on the upper floor are also painted wood paneled doors and probably date to the same time. The door to the stair (#201) is a raised five paneled door. The closet doors (#202, 203, and 204) are simple recessed four paneled doors. The inside face of the southwest closet door (#202) is faux grained.

Door Hardware (1916 and later)

The current door hardware was most likely installed in the 1916 renovations and then when the partition was put in for the east toilet rooms at a later date.

Hardware (1900's)

The security bars on the northeast and southeast windows are not significant. They do not show up in the lockhouse specifications. Security bars appear at the northeast window in an early 1900's photo when the streets were raised. They are also visible at the same window in a 1943 photo with a policeman walking out of the house. It is reasonable to assume that the security bars were added when the lockhouse became a watchman's lodge and tool house. There is a watchmen's lockbox attached to the security bars of the northeast window. Additionally, the hinges and section of a toilet partition are still attached to the walls of the west toilet room along with a board with pegs for hanging clothing items.

[16] Further inspection of the underside of the stair to examine the sawmarks may help determine whether the stair was built after original construction (unless the original central stair was reinstalled in the current location).

Light Fixtures (unknown)	The vestibule light fixture is a double bulb fluorescent fixture. There are two light fixtures in each of the toilet rooms, one 3' fixture and one 2'. The room on the upper story has two light fixtures, each with two fluorescent bulbs. The light fixtures are not a significant feature.
Electrical (unknown)	It is unknown when electricity was installed. It is on and a single circuit and one switch on the south wall of the north entry vestibule control the lights for the east toilet rooms, main room, and also upstairs. The wires and conduit are within the wall partition and are assumed to have been installed at the same time. A separate light switch on the south wall along the exterior wall of the south entry vestibule is for the west toilet rooms.
Plumbing Fixtures *(1916 and possibly later)*	Three sinks are located on the lower level, one in each of the toilet rooms and one in the vestibule. A ventilation duct for the east toilet rooms A & B is on the south wall of the west toilet room. There are also two sanitary waste pipes in the west toilet room. It seems probable that the east toilet rooms A & B were used as holding cells by the Park Police. Plumbing is currently shut off.
Plaque *(1928)*	Bronze plaque located to the left of the north door (1.3.23). It was placed in 1928 by Frederick D. Own, a retired architect and engineer, who had devoted much of his life to development of the parks in Washington.
Mounting block *(1910s)*	A concrete mounting block dating from the 1910s is on site (figure 1.3.24). It has since been moved from its original location.
Commemorative plaque and rock *(1950)*	A plaque placed in 1950 to commemorate the Washington City Canal is located on a large rock that has since been moved from its original location (figure 1.3.25).

Figure 1.3. 16 Photograph of south door. Evidence seems to indicate this opening was created possibly during the 1916 renovations. It is not visible in an aerial photograph dating to ca. 1894. The stone lintel above is thinner than the other lintels around the house. Note the lighter colored mortar with a taller profile at the stones around the door. Note also the thin stone at the bottom left that was cut to make the opening. Note the lintel which is not as tall as the other lintels nor is it sandstone.

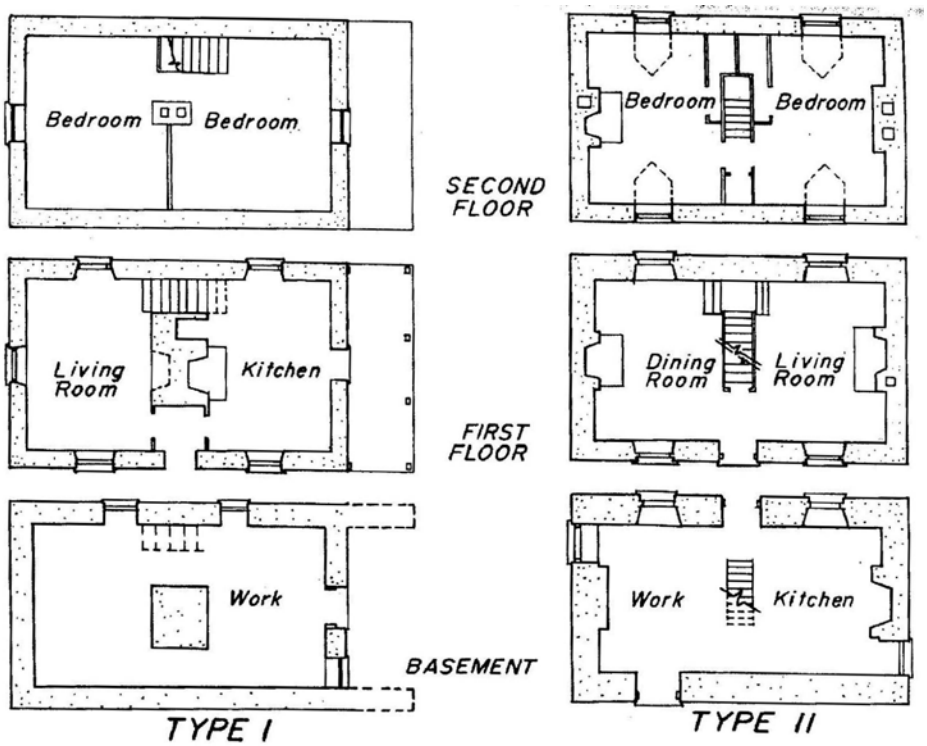

Figure 1.3. 17 Diagram of Lock House Types I & II plans as categorized by the National Park Service. Lock House B is of a similar plan as Type II, with changes in the stair and window and door openings.

Figure 1.3. 18 Stair at first floor (QEA, 2010).

Figure 1.3. 19 Stair at upper landing (QEA, 2010).

Figure 1.3. 20 Northwest corner of the Main Room on the upper level (QEA, 2010).

Figure 1.3. 21 Southwest corner of the Main Room on the upper level (QEA, 2010).

Figure 1.3. 22 Southeast corner of the Main Room on the upper level (QEA, 2010).

Figure 1.3. 23 Bronze plaque to the left of the north door (QEA, 2009).

Figure 1.3. 24 Mounting block at its temporary location (QEA, 2009).

Figure 1.3. 25 Commemorative rock at its temporary location (QEA, 2009).

1.4 CONDITION ASSESSMENT

Overview of Current Conditions

This chapter discusses the current conditions of significant building and site features dating from original construction c.1837. Preservation treatments and guidelines for these significant features will be discussed in Part 2.

The following condition assessment criteria will be used for the architectural elements: excellent, good, fair, and poor.

- *Excellent* is defined as elements that perform their original function and require no renewal or repair.
- *Good* is defined as elements that perform their original function and require only limited repair or renewal.
- *Fair* is defined as elements with only minor or limited areas of failure. Elements would require some repair or corrective action.
- *Poor* is defined as elements that only marginally function as originally intended. Deterioration or loss is more significant and significant repair work, partial replacement, or full replacement is required.

Conditions were assessed on several days:

- December 29, 2009
- March 18, 2010

Many of the features of Lock House B are in poor condition, however most of these are not significant features from the period of significance, 1837. Doors and windows have missing wood trim, panels, and glazing, however it is the openings rather than the elements themselves that are significant to the building. With only a few cracks on the elevations (primarily at the mortar joints), the exterior stone is in fair condition. The condition of the interior features is poor throughout most of the house. Paint and plaster are badly deteriorated. There are also holes in the walls and ceilings.

Condition Assessment by Feature

Site Features

Setting (1837, altered 1915)

The condition of the current setting is poor. Aside from the lockhouse not being in its original location due to the 1915 relocation, the site is now very close to Constitution Avenue. Since 1915, Constitution Avenue has been widened which has pushed the sidewalk and street curb much closer to the lockhouse. Buses have a difficult time turning onto 17th Street and ride over the curb. Passing traffic may also subject the lockhouse to continuous

strong vibrations. Additionally, there is no accessible entrance into the lockhouse.

The original setting has been lost since the canal was infilled in 1873 and the tidal flats were converted to land in 1902. The original grade was high at the canal and then sloped down to the Tiber Creek. This sloping grade can still be seen today at other lockhouses such as Lock House 16.

The location of Lock House B at Seventeenth Street and Constitution Avenue is an area of Washington, DC where flood control is necessary. The existing 17th Street closure was given a poor inspection evaluation by the U.S. Army Corps of Engineers because of new policies since Hurricane Katrina. A new closure for the levee at 17th Street began construction in 2011.

Exterior Features

Overall massing (1837, altered 1915)	The overall massing is in poor condition. Though the perimeter shape and gabled roof date to original construction, Lock House B has lost a full story. as previously discussed during its 1915 relocation.
Walls (1837, repointing varies)	The stone walls, present since original construction in 1837, are in good/fair condition. There are some cracks and spalling sandstone on the exterior elevations. The sandstone is failing fairly severely (figures 1.4.1 and 1.4.2). The stones have key marks on all elevations, most likely from quarry marks and tooling during construction, but possibly due to stucco or plaster renderings added later. Graffiti marks are visible on the north, east, and west elevations in the form of paint and carvings. Many joints are in poor condition and mortar is crumbling (see Figures 1.4.3-6). The mortar will need extensive re-pointing. The large diagonal mortar separation on the north facade may have been caused from the relocation or traffic vibrations. Birds are nesting in large open mortar joints between the stone and the dormer windows.
Foundation (1915)	The foundation is a new concrete foundation dating from when the building was relocated. The test pit excavations exposed the concrete foundation which was seen to have large aggregate. It is assumed to be in good condition.
Windows (openings 1837, frames and sashes 1916)	The northeast (#2) and southeast (#3) windows of the lower story are both fitted with security bars, present as early as 1909. The bars and associated hardware are in poor condition due to rust and chipping paint. The window frames and sashes (dating to 1916) are in poor condition. They all have paint that is failing. Lites are painted to obscure any visibility into the lockhouse. Additionally, the three windows from the cellar are all missing from the 1915 relocation. The northeast (#2) window is missing one pane of glazing which has been replaced with plywood. The wood of the upper sash is splitting. The left hand trim piece is missing. The paint of the trim and sash wood is chipping

	and bare wood is exposed. The sandstone sill and lintel are in fair condition. The mortar between them and the adjacent stones is cracked from loss of mortar.
	The southeast (#3)window is absent, replaced mostly with metal. The previous hole for toilet room ventilation is also covered with metal attached with screws. Plywood is attached to the metal at the upper portion of the bottom sash with screws. The granite sill and lintel are in good condition. There are cracks between them and the adjacent stones due to loss of mortar. It is unknown if the window still exists between the interior finish wall and the plywood.
	The southwest (#4) window is in fair to poor condition. The sash is warped. There is a missing portion of wood trim in the bottom left hand corner, and the present wood trim is rotten with chipping paint. Eleven of the twelve panes are opaque, and painted, (six white and five brown panes). The remaining pane has transparent glazing. The granite sill and lintel are in good condition. There are cracks in the mortar between them and the adjacent stones due to loss of pointing.
	The northwest (#1) window is boarded up with brown painted plywood. The window sashes and trim are not visible from the exterior. The sashes are visible from beside the stair on the interior. The glazing is absent. The sandstone sill and lintel are in fair condition. The left edge of the sandstone at the lintel is chipped. There is an old patch of mortar at the right hand corner of the sill.
North Door (opening 1837, frame and door 1916)	The six panel door and trim on the north (#101) is in poor condition (see figure 1.4.7). The trim is rotten in several places with alligatoring and chipping paint. The door itself has a rotting area at the hinge edge. The paint is also alligatoring and chipping. The kick plate is in fair condition with rusted screws.
South Door (opening, frame, and door 1916)	The door and trim on the south (#102) is in poor condition (see figure 1.4.8). The trim is rotten and visibly separating from the stone at the edges. The trim paint is alligatoring and chipping. The door paint is also alligatoring and chipping. The door is missing one of its lower panels and is patched with plywood.
Door Sills (1916)	Both granite sills at the north and south doors are in good condition.
Exterior trim (assumed 2004)	The exterior fascia is in good condition. Most of the barge boards on the gable ends are also in good condition except for one on the east facade which is missing.
Roof (2004)	The wood shingle roof, presumably of cedar, has been replaced at least twice. This current wood shingle roof dating to 2004 is in good condition. There are no missing shingles, but cupping of the shingles is visible.

Dormers (openings 1837, frames and sashes 1916)	The condition of all four windows is poor (see figures 1.4.9-1.4.13). The wood of the frame, trim, and sash is rotten with alligatoring and chipping paint on all windows. In addition, the southeast casement dormer (#7), which replaced a double-hung window sometime after 1972, is missing three panes of glass. It is missing a portion of the wood at the sill. One is replaced with a sheet of plexi-glass. The other two are replaced with a plywood. All of the dormers have exposed bare wood.
Chimneys (brick 1837, stone 1916)	The two stone chimneys, installed in 1916, are in good condition. There are cracks in the mortar on all sides of both chimneys that will require re-pointing. The mortar of the east chimney is in better condition than the west. The lead coated copper flashing was probably installed in the 2004 when the roof was replaced. It is in good condition. The chimney brick below the roofline is in fair to poor condition. The east chimney brick seems to be intact but the west chimney is missing one side due to a pipe being fit into the chimney. This can be seen by looking up a hole in the ceiling along the west wall in the west toilet room (see figure 1.4.14).
Door Hardware (1916)	The door hardware is similar on the north and south, with the exception of an extra padlock on the south. The doorknobs and locks are in poor condition and do not function. There is a need for a padlock. The padlocks are in good condition.
Pipe Railings (various)	Pipe railings first show up in the 1935 photograph of the south elevation on the east side of the door. This railing is no longer there but the hole is still in the stone wall approximately two stones above the granite sill. A section of pipe was found when the test pit was dug. Another pipe railing is seen in the 1943 photograph on the east side of the north facade. The hole for this railing is seen at the second stone up from the granite sill at the door. This pipe rail was replaced by the current one which attaches to the lockhouse at the fourth stone above the granite sill. An additional railing was added to the west side of the north facade. The current pipe railing on the north facade is in fair condition.

Figure 1.4. 1 Sandstone quoin at northeast corner (QEA, 2009). Note the "A" graffiti.

Figure 1.4. 2 Sandstone quoin at northeast corner (QEA, 2011). Note how the spalling stone is even more deteriorated in just two years.

Figure 1.4. 3 South elevation of Lock House B of regularly coursed uneven ashlar stone (QEA, 2009). Red indicates large joint cracks from loss of mortar. Note the plywood panel in the door, the painted lites, and the plywood in the southeast dormer.

Figure 1.4. 4 East elevation of Lock House B with randomly coursed ashlar stone (QEA, 2009). Red indicates joint cracks. Note the missing barge board at the gable.

Figure 1.4. 5 East elevation of Lock House B with randomly coursed uneven ashlar stone (QEA, 2009). Red indicates large joint cracks due to loss of mortar.

Figure 1.4. 6 North elevation of Lock House B (QEA, 2009). Red indicates large joint cracks between the regularly coursed ashlar stone.

Figure 1.4. 7 North door (#101) (QEA, 2009). Note the large gap at the top right of the frame and the graffiti at the bottom left. The graffiti has been there since at least 1943. It is visible in photos that date to that year. There is a hole to the left of the door from the previous pipe railing. Also note the addition of a kickplate and padlock.

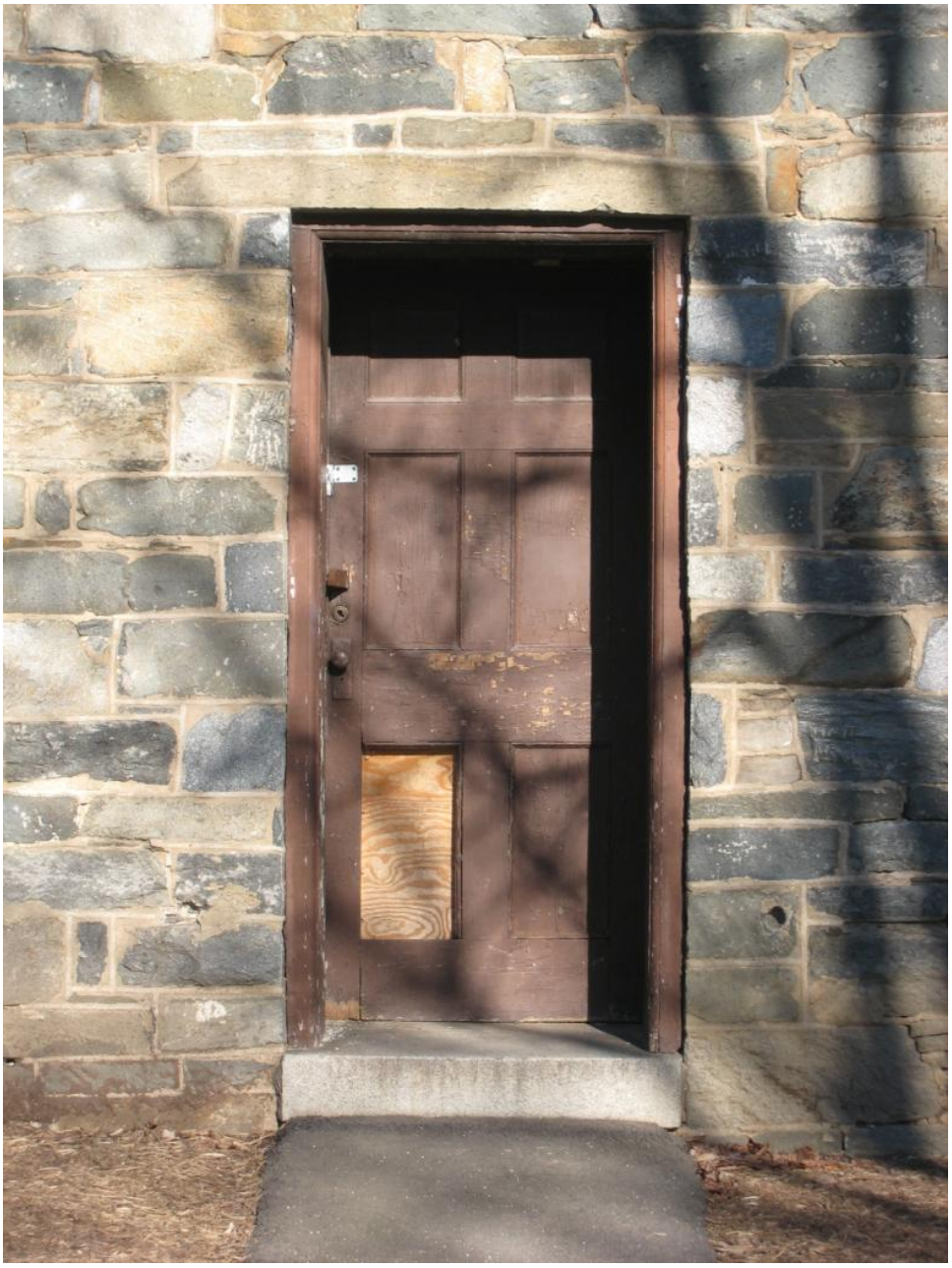

Figure 1.4. 8 South door (#102) (QEA, 2009). Note the hole in the stone on the right from an earlier pipe railing.

Figure 1.4. 9 Northeast dormer window (#6) (QEA, 2009).

Figure 1.4. 10 Northwest dormer window (#7) (QEA, 2011).

Figure 1.4. 11 Southwest dormer window (#8) (QEA, 2011).

Figure 1.4. 12 Southeast dormer window (#7) (QEA, 2011). Note the plywood where the glazing and muntin should be in the lower left of the sash. Additionally, this is the only dormer window that is a casement rather than a double hung window. Around the dormer is considerable loss of mortar. Birds and wasps have been nesting in these gaps.

Figure 1.4. 13 Sill of northeast dormer window (#6) (QEA, 2010).

Figure 1.4. 14 View through a hole in the ceiling along the west wall (QEA, 2010). Note the plumbing vent pipe (arrow) that extends up through what used to be a chimney. Note the bricks of the chimney.

Interior Features

Spatial Organization (1916)	The current spatial organization is in poor condition. It is not useful to the Park's needs nor does it meet current building codes. It no longer reflects the organization from the period of significance. Additionally, the house is missing an entire floor from the 1915 relocation as well as the central stair.
Partition Walls (1916 and later)	The partition walls are in poor condition (see figures 1.4.15-1.4.17). Paint and plaster are failing. Lathe is exposed.
Floors (1916)	The floors are in fair condition (see figure 1.4.18). Some of the concrete slab floor is painted and is chipping. The floor in the attic is covered in vinyl asbestos tile that should either be abated or enclosed. The wood floor that is exposed in the closet needs to be refinished.
Interior Doors (assumed to be 1916 and later)	The interior doors are in poor/fair condition. The painted metal doors at the east toilet rooms A & B (#103 and 104) are in fair condition. The painted wood paneled door (#105) between the south entry vestibule and the west toilet room is soiled and chipped. The doors to the stair and closets on the upper floor (#201-204) are in poor condition. They have chipped and scraped paint, bare wood exposed, mismatched and missing hardware (see figure 1.4.19). The faux graining along the inside face of the southwest closet door (#202) has been protected and is chipped along the length of the hinge side (1.4.20).
Stair (assumed to be 1916)	The stair is in fair condition. It is fairly stable. There is a pipe that sticks out into the stair at the second tread that is a tripping hazard. There is no handrail.
Trim (assumed to be 1916)	The trim at the doors and windows is in poor condition. The paint is chipping and bare wood is exposed.
Hardware (1900's)	The security bars on the interior of the northeast window (#2) are in fair condition due to the many layers of paint. One small section of toilet partition with its hinges for the west toilet room is still attached to the walls though the rest of partitions have long since disappeared. It has multiple layers of paint.
Ceiling (possibly 1903, 1916)	The ceiling is in poor condition. There is a hole through the plaster and lathe in the west toilet room where a large yellow jacket nest was removed by park staff in 2009. There are also holes in the wood paneling on the second floor.
Light Fixtures (unknown)	The light fixtures are in fair condition. They are working light fixtures, but with burned out bulbs. Conduit is exposed.
Electrical (unknown)	The electrical is in fair condition. It is working with the switch on the first floor, which powers all the lights in the house. Conduit is exposed. (See figures 1.4.21 and 1.4.22.)

Plumbing Fixtures (1916 and possibly later)	The plumbing fixtures are in poor condition. Three toilets are missing. The utility sink is covered in paint. The other two porcelain sinks have one faucet presumably for only cold water. The plumbing is currently shut off. The condition of the water lines and sanitary waste lines is unknown.
Mechanical - Heating	There currently is no heating in the lockhouse. At one time the house was heated by the fireplaces which have since been enclosed, mantels removed, and chimneys partially dismantled.

Figure 1.4. 15 Vestibule outside of East Toilet Rooms (QEA, 2010).

Figure 1.4. 16 West wall of West Toilet Room (QEA, 2010).

Figure 1.4. 17 West wall of West Toilet Room (QEA, 2010). Note the portion of toilet partition.

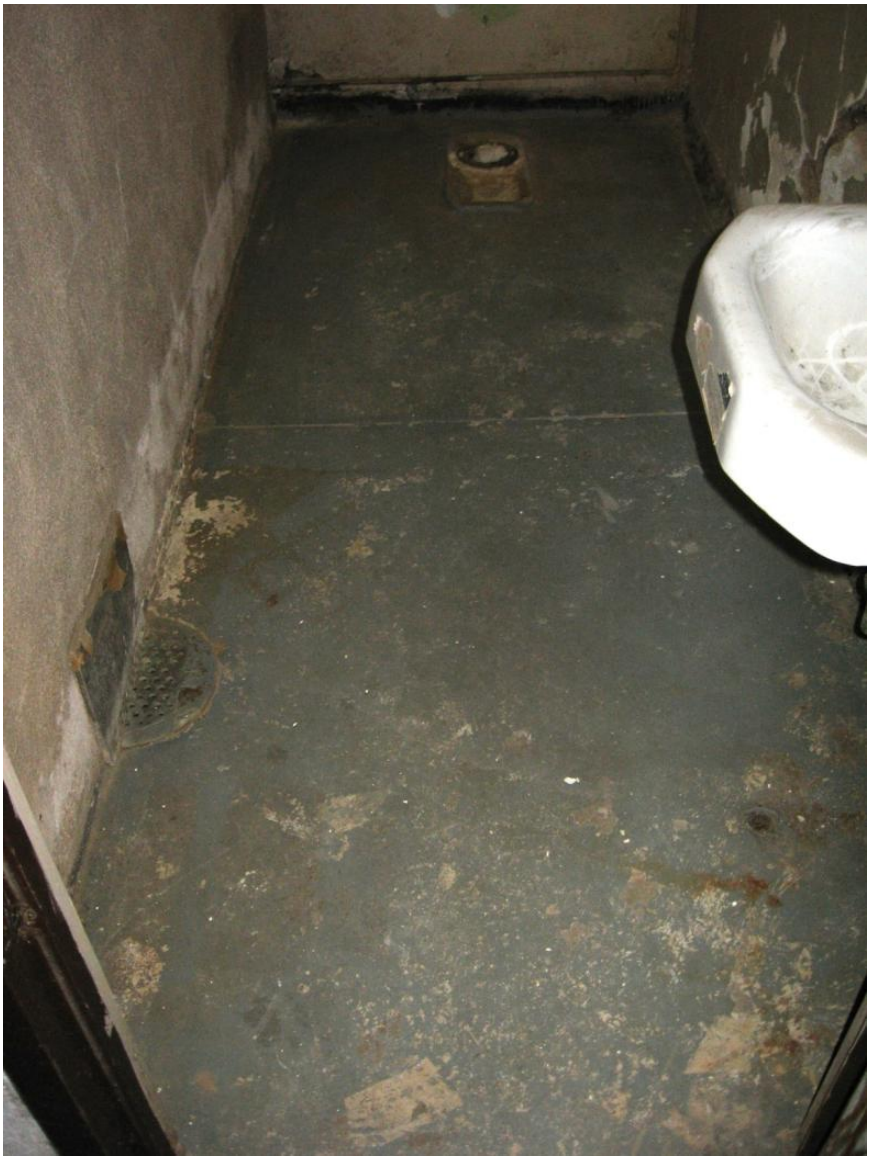

Figure 1.4. 18 Floor of East Toilet Room B (QEA, 2010).

Figure 1.4. 19 Northeast closet door (#204) (QEA, 2010).

Figure 1.4. 20 Southwest closet (#202) (QEA, 2010).

Figure 1.4. 21 Electric Meter and push button switch on the south wall of the Main Room (QEA, 2010).

Figure 1.4. 22 Switch on south wall of the North Entry Vestibule (QEA, 2010). There is a separate switch in the South Entry Vestibule which powers the fixtures in the West Toilet Room).

2.1 TREATMENT AND USE

Preferred Use

The preferred use of Lock House B is one that will return the structure to a condition of usefulness to the Park and with a continuing contribution to the Park's interpretive message. This will include the interpretation of the City of Washington's canal system in the nineteenth century and the role of the lockkeeper. The interpretation period could be enlarged to include the early 20th century when the public recreation space of West Potomac Park came into being, and more recently, with the completion of Constitution Gardens.

The structure will be used as a Park support structure. It may be used as a public building or visitor's contact center.

First Floor

The preferred use for the lower story will be as utility space for Park staff, or public access for interpretive purposes. The space will include a unisex toilet and utility sink for staff use. No public restrooms are anticipated.

Though the proposed use of this building is limited, and the building is very small size, permanent heating or cooling should be installed for the Park staff. Water, sewer, and electric power would be re-connected for the lower level. The windows and doors would be rehabilitated so that fresh air ventilation would be available.

An automatic fire suppression system would be installed throughout the building.

Second Floor

The Park will plan to use the upper story for office space and storage. The narrow stairway would remain, but it is not feasible, nor is there enough floor area, to provide any form of mechanical lift. Therefore, the second floor would not be accessible to a disabled staff person. This could limit the usefulness of the space. The second floor includes about 450 square feet, perhaps space for two to three work stations.

Additional lighting would be brought to the second floor. Electrical wiring would be reworked so that the second floor is not controlled by a single toggle switch on the first floor. The dormer windows would be rehabilitated to operable condition. If used as an office space, permanent heating or cooling would be provided.

Treatment Philosophy and Guidelines

In the previous chapters, this report identified the historically and architecturally significant features of Lock House B and their conditions. This section outlines the overarching guidelines and recommendations for the proper treatment of these features. Treatment recommendations for each element are provided in chapter 2.2.

The National Park Service (NPS) has developed standards and guidelines for approaches to various treatments of historic properties. These are published in *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*. These standards are widely utilized and understood by historic preservation professionals, architects, engineers, contractors and craftsmen around the country.

Three principal treatment options apply to existing buildings: preservation, rehabilitation, and restoration. A fourth treatment, reconstruction, could also apply here. Choosing the appropriate treatment is the most fundamental decision involving the future of a historic building. The NPS indicates the following issues be addressed in making this choice:

- Relative importance in history
- Physical condition
- Proposed use
- Mandated code requirements.[1]

Each of these issues are addressed in a comprehensive fashion in this HSR and the recommended treatment choice is described below. The three principal treatments which could be applied to Lock House B are defined by the NPS as follows:

Preservation *is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather the extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-related work to make the properties functional is appropriate within a preservation project.[2] The treatment emphasizes repair and conservation of significant building features and strives to retain existing materials and features while employing as little new materials as possible.[3]*

Preservation as a Treatment. *When the property's distinctive materials, features, and spaces are essentially intact and thus convey the historic significance without extensive repair or replacement; when depiction at a particular point of time is not appropriate; and when a continuing or new use does not require additions or extensive alterations, Preservation may be considered as a treatment. Prior to undertaking work, a documentation plan for Preservation should be developed.[4]*

[1] The Secretary of the Interior's Standards, p. 1.
[2] Ibid., p. 17.
[3] Ibid., pp. 19-20.
[4] Ibid., p. 21.

Rehabilitation *is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.*[5]

Rehabilitation as a Treatment. *When repair and replacement of deteriorated features are necessary; when alterations or additions to the property are planned for a new or continued use; and when its depiction at a particular time is not appropriate. Prior to undertaking work, a documentation plan for Rehabilitation should be developed.*[6]

Restoration *is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.*[7]

Restoration as a treatment. *When the property's design, architectural, or historical significance during a particular period of time outweighs the potential loss of extant materials, features, spaces, and finishes that characterize other historical periods; when there is substantial physical and documentary evidence for the work; and when contemporary alterations and additions are not planned, Restoration may be considered as a treatment. Prior to undertaking work, a particular period of time, i.e., the restoration period, should be selected and justified, and a documentation plan for Restoration developed.*[8]

Preferred Treatment

In selecting the most appropriate overall treatment for this property based on the NPS guidelines, there are a number of principal facts:

- The original 1837 structure has been somewhat compromised. The basic form is similar, but many of the individual details have been lost or altered. The building has been relocated and the height reduced from 2 ½ to the current 1 ½ stories. The building and site have lost historic integrity. It is still in close proximity to its original location.
- Despite the loss of the ca. 1837 integrity, there remain many character-defining features which should be preserved and repaired. This remains an historically significant property and continued preservation would be appropriate.
- There is reasonably complete photographic evidence regarding early and later exterior appearances that can be used to base future

[5] Ibid., p. 61.
[6] Ibid., p. 66.
[7] Ibid., p. 117.
[8] Ibid., p. 121.

preservation decisions.

- Since the early 1900s, the NPS has essentially followed a "restoration" approach for the exterior.
- For most of the 20th century, the interior has been altered and renovated to fit the needs of the time. There has been little "preservation" philosophy guiding the interior alterations.

Exterior Restoration / Interior Rehabilitation

There are several issues unique to this property that strongly suggest a restoration approach for exterior elements and a rehabilitation approach for the interior as follows:

- Exterior work over the last decades has been toward a "restoration" approach. For example, the dormers were specifically altered in 1916 to return them to the appearance of the mid-19th century.
- Although the building is only 1 ½ stories, there are ample character-defining features remaining, and missing features that could be reconstructed, all to continue the exterior restoration approach.
- Should the building be relocated, that would provide the opportunity to "restore" the site relationships and building height to its original configuration. This would include the addition of the cellar.[9]
- The interior has already been altered on several occasions so adopting a liberal "rehabilitation " approach for future interior work would be appropriate.

[9] The building of the cellar would be considered an addition rather than a "Reconstruction" treatment as there is not sufficient historical documentation of this particular lockhouse to ensure an accurate reproduction with minimum conjecture. The addition would help visitors to understand and interpret the property's historic value.
If archeological investigation is done at the original location of the lock house and sufficient evidence is found of the remains of the original cellar, then a "reconstruction" approach can be considered.

2.2 REQUIREMENTS FOR TREATMENT

Program Requirements

For this modest building, the program requirements are also modest. As a Park support structure, the space use program for the preferred use would be as follows:

First Floor:

Utility or public space	260 SF
Unisex restroom	30 SF
Mech. Room & service sink	30 SF
Stairway	45 SF
TOTAL	365 SF

Second Floor:

Utility or office space	315 SF
Stairway	40 SF
TOTAL	365 SF

Life Safety Requirements

The following requirements and classification for this building are based on the International Building Code (IBC), 2006 edition. These are general requirements that would likely apply for many future years:

Use Type: The closest IBC classification is Group U – Utility and Miscellaneous. This use permits occupancy and storage of low hazard materials.

Construction Type: Type IV – Heavy Timber. This assumes non-combustible bearing walls. These masonry walls would have a 2-hour fire resistance rating.

Building Height and Area: For this use and construction type, the code would permit a 4 story, 18,000 SF structure, so the Lockkeeper's House is well within the allowable height and area.

Chapter 34, Section 3407 – Historic Buildings: This section relaxes strict compliance with the life safety provisions of the code. When the actual design for the rehabilitation is taken further, individual life safety and code issues can be examined.

Fire Suppression: Current NPS policy would mandate the installation of an automatic fire suppression system for this building.

Means of Egress: An accessible means of egress is not required in alterations to existing buildings.

Accessibility Requirements

As a Federal facility, Lock House B must comply with the Architectural Barriers Act Accessibility Standards (ABAAS).[1] These standards are consistent with those of the Americans with Disabilities Act (ADA). Accessibility requirements in the IBC should also be met.

- ABAAS F202.1 requires at least one accessible route within the site from accessible public streets and sidewalks.
- ABAAS F202.2 requires that at least one entrance in the accessible building shall comply with F206.4 and be on an accessible route.
- ABAAS F202.3.1 Exception requires one toilet facility to comply with F213.2 and F213.3.
- ABAAS F202.3 requires altered existing elements and spaces to comply with the applicable requirements of Chapter 2. However, Exception 2 states that when compliance with applicable requirements is technically infeasible, the alteration shall comply with the requirements to the maximum extent feasible.
- ABAAS F202.4 requires that alterations of primary function areas have an accessible path to restrooms, telephones, and drinking fountains unless "such alterations are disproportionate to the overall alterations in terms of cost and scope as determined under criteria established by the Administrator of the General Services Administration, the Secretary of Defense, the Secretary of Housing and Urban Development, or the United States Postal Service."
- ABAAS F202.5 requires that Alterations to a qualified historic building or facility shall comply with F202.3 and F202.4. The Exception states that "Where the State Historic Preservation Officer or Advisory Council on Historic Preservation determines that compliance with the requirements for accessible routes, entrances, or toilet facilities would threaten or destroy the historic significance of the building or facility, the exceptions for alterations to qualified historic buildings or facilities for that element shall be permitted to apply."
- Advisory F202.5 "Alterations to Qualified Historic Buildings and Facilities Exception" states "Section 106 of the National Historic Preservation Act requires that a Federal agency with jurisdiction over a proposed Federal or federally assisted undertaking consider the effect of the action on buildings and facilities listed in or eligible for listing in the National Register of Historic Places prior to approving the expenditure of any Federal funds. The Advisory Council on Historic Preservation has established procedures for Federal agencies to meet this statutory responsibility. See 36 CFR Part 800. The procedures require Federal agencies to consult with the State Historic Preservation Officer, and provide for

[1] ABAAS F201.1 and F202.1 require alterations to existing buildings to comply with these requirements.

involvement by the Advisory Council on Historic Preservation in certain cases. There are exceptions for alterations to qualified historic buildings and facilities for accessible routes (F206.2.1 Exception 1 and F206.2.3 Exception 6); entrances (F206.4 Exception 2); and toilet facilities (F213.2 Exception 2). These exceptions apply only when the State Historic Preservation Officer or the Advisory Council on Historic Preservation agrees that compliance with requirements for the specific element would threaten or destroy the historic significance of the building or facility."

Various exceptions under ABAAS F203 may apply to Lock House B.

- "F203.2 Existing Elements. Elements in compliance with an earlier standard issued pursuant to the Architectural Barriers Act or Section 504 of the Rehabilitation Act of 1973, as amended shall not be required to comply with these requirements unless altered.

  Advisory F203.2 Existing Elements. The exception at F203.2 does not obviate or limit in any way a federal agency's obligation to provide reasonable accommodations pursuant to the Rehabilitation Act of 1973. Federal employees with disabilities are entitled to reasonable accommodations in the workplace. Such accommodations may include modifications to workstations or to other areas of the workplace, including the common areas such as toilet rooms, meeting rooms, or break rooms. Reasonable accommodations are always provided on a case-by-case basis and are specific to the unique needs of a person. As such, an accommodation may be consistent with, or depart from, the specific technical requirements of this, or any other, document.

  In addition, the exception at F203.2 provides that compliance with an earlier standard issued under Section 504 of the Rehabilitation Act satisfies the requirements of the Architectural Barriers Act; the exception does not obviate or limit a Federal agency's authority to enforce requirements issued pursuant to Section 504 of the Rehabilitation Act, including requirements for making reasonable modifications to policies, practices, and procedures, or making structural changes to facilities in order to make a program or activity *accessible* to and usable by persons with disabilities. "

- F206.2.3 Exception 6 states that where exceptions for alterations to qualified historic buildings or facilities are permitted by F202.5, an accessible route shall not be required to stories located above or below the accessible story. Also, under the Accessibility chapter in IBC, an accessible route is not required to the second floor as the aggregate are is less than 3,000 square feet and does not have a public use space with more than 5 occupants. Hence, access to the second floor would be waived as it would require extreme

alteration of the interior and is not applicable per IBC. To install a lift, both floors would lose considerable usable space. An exterior lift and access to the second floor would be unacceptable. For the first floor, measures should be taken to provide access for the disabled into the building. Further, the unisex restroom should meet accessibility design guidelines.

- ABAAS F213.2 requires toilet rooms to comply with 603. F213.2 Exception 2 states that "where exceptions for *alterations* to qualified historic buildings or facilities are permitted by F202.5 and toilet rooms are provided, no fewer than one toilet room for each sex complying with 603 or one unisex toilet room complying with F213.2.1 shall be provided. "

Preservation Requirements

As this property is listed on the National Register of Historic Places, all treatments will need to be in compliance with the Secretary of the Interior's Standards and Guidelines for Treatments of Historic Properties. The following provides a narrative regarding treatments to the major site and building elements. Once this project moves into a formal "design" phase, it would be expected that these general guidelines would be made much more precise for each significant site and building element.

Site Features

There are few, if any, significant site features remaining for Lock House B at this time. The vegetation was removed in 2009 and was not from the period of significance. The mounting block is the only feature of the site that would need to be retained. Since it has already been removed from the site, it would just need to be put in place when the house is relocated.

Removal of the over-grown foundation shrubbery in 2009 was a very positive step to improve the historic site character for this property. Maintaining the status quo for the site would be acceptable.

In the next chapter, 2.3 Alternative for Treatments, there is a proposal to relocate the structure to a site that would be modified to closely reflect the previous conditions next to the Washington City Canal. There is enough documentation to support this "restoration" or "relocation" action.

Exterior Features

The significant exterior features should be repaired and restored where possible. Any exterior features that cannot be preserved due to excessive deterioration should be replaced in kind. Two of the first floor window assemblies have been altered substantially over time with the addition of steel security bars. These intrusions would be removed and new window assemblies to match the originals would be installed in their place.

Overall massing

The existing 1 ½ story structure could remain as it has been in this scale since 1915 when the building was moved. If possible, the historic and architectural interpretation would be greatly increased if the building could be raised to its former 2 ½ story configuration.

Roof and Chimneys

The wood shingle roofing was replaced in kind in about 2004. No roofing work should be needed for several decades.

As documented in the previous chapter, the original brick chimneys were replaced in the early 20th century with stone chimneys which are present today. These could be maintained, but there is sufficient documentation to guide the restoration of the original brick chimneys. This action could be justified along with other exterior restoration treatments.

Stone Walls and Mortar Joints Sills

The condition of most of the wall is good. Some of the stones will need repair and consolidation. Routine selective repointing of the mortar joints should continue on a cyclical basis, perhaps every 10 to 15 years. The existing ca. 1915 foundations should be evaluated.

Wooden Dormers, Window and Door Assemblies

The documentation presented in the previous chapters is clear that virtually all of the exterior wooden elements were replaced in the early 20th century when the Office of Public Buildings and Grounds (OPBG) converted the building to a comfort station. Thus, all these elements are now over 80 years old. The paint finishes are in poor condition and there is bare wood visible. All wooden elements should be repaired where possible. Those in deteriorated conditions will be replaced in-kind. The missing window assemblies will be replaced in-kind.

Interior Features

Documentation has been presented in the previous chapters to establish that the interior spaces have been substantially altered over time. There may be no remaining fabric or finishes from the original construction period. Should original elements be discovered through future selective probes or demolition, then the issue of preservation would be addressed at that time. Otherwise, all interior partitions and finishes will be removed and the new spaces fitted for the proposed new use. It will be beneficial to add thermal insulation in the attic spaces and on the inside of the stone walls.

Architectural Improvements

Beyond the repair and preservation of the historic building and site elements noted above, the following elements would become part of a normal architectural scope of work:

- Provide an accessible pathway and entrance into the building on the South side. There is a current elevation change of about 8 inches to address.[2]
- Provide a unisex restroom, with adjacent utility sink and mechanical closet on the first floor.
- Examine the existing wooden stairway and upgrade where possible to assure safe utilization.[3]
- Consider sustainable design strategies and apply selectively to this

[2] The proposed Potomac Park Levee project will increase the grade at the south side. On one of the Levee project drawings, an additional step would be needed on the south side but this entry should be made accessible.
[3] If further documentation or evidence is found regarding a central stair, then reconstruction of the central stair may be considered.

project to improve the performance and reduce future utility costs (i.e. ground source heat pump).

- Add thermal insulation to the roof/attic assembly and to the perimeter stone walls to meet energy conservation standards.
- Assure all window assemblies are in good condition to reduce air infiltration in the Summer and Winter and then to also provide fresh air ventilation during the mild months.
- For rehabilitated use, provide water and vapor barriers to structural envelope.
- If new additions are included, architectural treatment will be differentiated from, yet compatible with, the historic characteristics of the property in order to protect the integrity of the property and its environment (Secretary of the Interior's Standard for Rehabilitation #9).
- If new additions are included they will be designed and constructed as reversible effects, leaving the integrity of the historic property intact if removed in the future (Secretary of the Interior's Standard for Rehabilitation #10).

Structural Improvements

The structural condition of the building appears to be satisfactory. The only signs of distress are the minor cracking in selected areas of the exterior stonework.

In a future design phase, the wooden structure of the second floor should be examined to measure the size and spacing of joists and the condition. The floor should be capable of supporting the anticipated loading for a utility / storage facility of 40 PSF. Should this be used as office space, the loading requirement would increase to 50 PSF. If repairs or reinforcement is needed to meet these loading capacities, the structural engineer should provide the necessary details.

Fire Protection Improvements

An automatic fire protection systems meeting NFPA 72 would be installed within this building. It is likely that new underground water service would be needed to support such a system. The system would include smoke detection and fire alarm devices. Photoelectric smoke detectors are preferred by NAMA. The extent and type of system would be the subject of a future design phase.

Electrical Improvements

Any existing electrical system should be competely removed and replaced with new service, secondary distribution and power and lighting devices.

The extent and type of electrical system would be the subject of a future design phase. The need for a security system or devices should be confirmed in the future.

Mechanical and Plumbing Improvements

Any existing plumbing and mechanical piping or equipment should be removed entirely. New underground water, sanitary and storm sewer systems are most likely required to support this facility.

Heating and air conditioning can be provided by a ground source heat pump. This system will provide heated or cooled water to small fan coil units located in each room. This is an energy efficient system.

If it is desired, an accessible drinking fountain that has dual height spouts, can be installed.[4]

[4] A minimum of two drinking fountains are required by ABAAS F211.2 but the Exception states that a single drinking fountain that complies with F602.1-602.7 is allowed to be substituted for two separate drinking fountains.

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2.3 ALTERNATIVES FOR TREATMENT

Introduction

There are three distinct alternatives that have been discussed for the future utilization of this building. These are discussed below. In addition, a fourth option is presented to mothball the building for future utilization and when funding is available.

Alternate #1 - Rehabilitate in Place

A straightforward project would include selective exterior repair and restoration work, coupled with interior rehabilitation. This project would provide a first floor space for Park activities, a unisex staff toilet, and utility sink. The upper level would be used for storage or office space. The project would have modest requirements for mechanical, electrical, and plumbing systems. Heating and cooling could be achieved with a ground source heat pump that would provide heated or cooled water to small fan coil units located in each room. An accessible route from the site to the first floor would be provided.

In this alternative, the building would remain in situ (see figure 2.3.1). Although this equates to a small scale project, remaining in place is also the greatest disadvantage of Alternate #1. The current location has major drawbacks to the character and integrity of the building's site and may subject the structure to continuous strong vibrations from the passing traffic[1]. Constitution Avenue is much too close to the structure as the road has widened over the years. On occasion buses drive over the corner when making the turn onto 17th Street. The largest drawback is that the structure has lost the topography and context of a nearby canal.

Concept Image

Figure 2.3. 1 Concept Image for Alternate #1 Rehabilitate in Place.

[1] A vibration study should be performed in a future project.

The estimated cost of construction for this alternative would be about $650,000. See Appendix 3.7 for the detailed estimate work sheet. This assumes the project would be completed in 2013.

The Rehabiliation of Constitution Avenue project will remedy some of the issues associated with the proximity of Constitution Avenue (see figure 2.3.2). The project will entail new sidewalks that will direct pedestrians to the south of the lockhouse. A wide plaza along the south elevation will provide a gathering place for visitors. The sidewalk on the north side of the lockhouse will be removed and finished with turf. The plaza will be at a lower grade elevation than it is currently and an additional step at the south entry is proposed. An improvement to this project would be to provide an accessible ramp at the south entry.

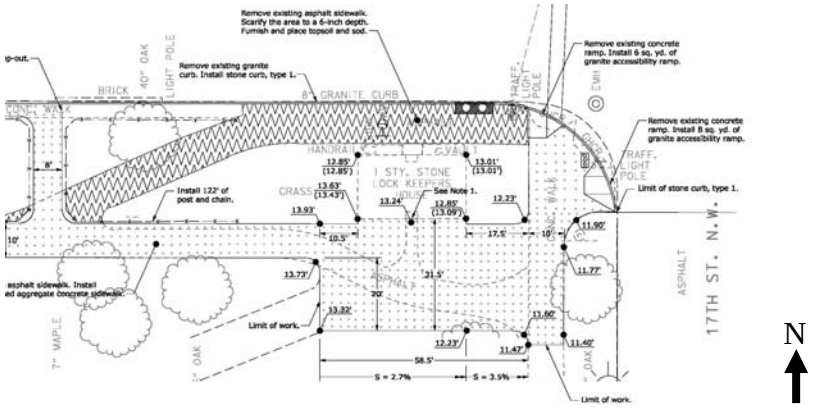

Figure 2.3. 2 Detail from Rehabilitation of Constitution Avenue project drawings (Sheet No. D23, October, 2010).

Alternate #2 - Relocate, Restore, and Rehabilitate (National Mall Plan, Fall 2010)

A more intensive and complex project would relocate this building to a site that is more accommodating to the visitor, while also allowing new structural foundations. The structure would remain 1 ½ stories. In 2007, NPS commissioned a study to examine the feasibility of the moving the house 50-60 feet south and 10-15 feet west of its current location (see figure 2.3.3). The concept drawings for the Potomac Park Flood Protection project show the house moved due south approximately 55 feet (see figure 2.3.4).[2] The location shown on the plan is roughly the location adopted by the National Mall Plan (Fall 2010). In both locations and for any other location considered for this alternate, a relatively flat site is required with few alterations in topography.

As in Alternate #1, the project would include selective exterior repair and restoration work, coupled with interior rehabilitation. The first floor would provide space for Park activities, a unisex staff toilet, and utility sink. The upper level would be used for storage or office space. The project would include extending and upgrading the mechanical, electrical, and plumbing systems. This alternative may or may not include constructing a partial or

[2] The final Potomac Park Flood Protection project drawings do not show the lockhouse relocating.

full basement that would be fully below grade and accessed from inside the building. It could provide space for utilities as well as allow the installation of wood floor joists and wood floor for the first floor.

The estimate of construction costs for this alternative would be about $2,480,000. See Appendix 3.7 for the detailed estimate work sheet. This assumes the project would be complete in 2013.

Concept Plans

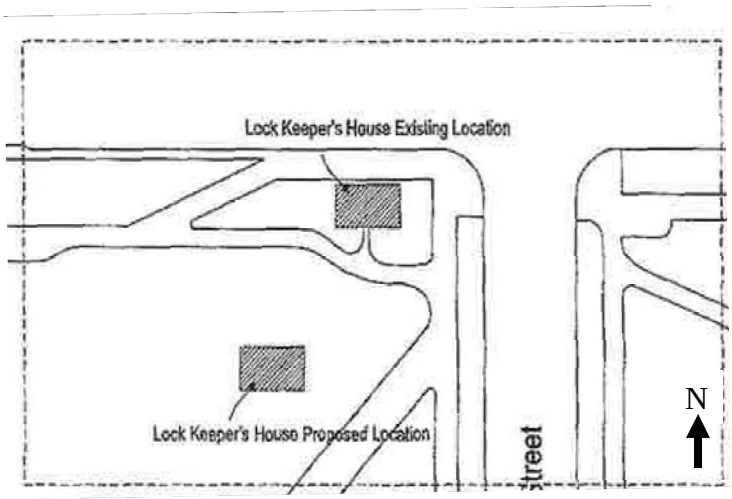

Figure 2.3. 3 Detail from drawing in Feasibility Study to Move the Lockkeeper's House (2007).

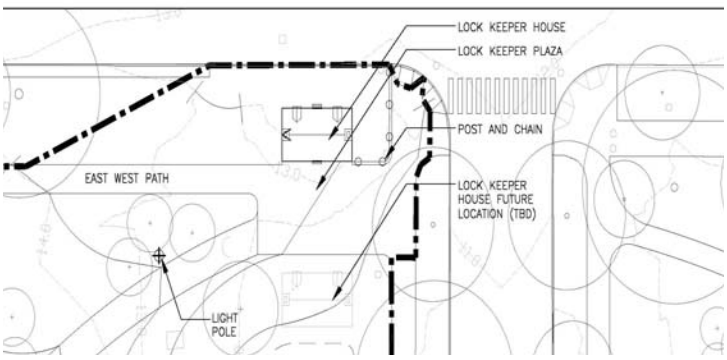

Figure 2.3. 4 Detail from Potomac Park Flood Protection concept drawing (September, 2007).

Alternate #3 - Relocate, Add Cellar, Restore, and Rehabilitate

A more intensive and complex project would relocate this building to a site with a more proper topography, while also allowing new structural foundations and returning the building to the full 2½ story height.[3] Additional exterior restoration could be accomplished with the result that the building and site could become very close to the early 19th century appearance.

An existing sloping topography along Constitution Avenue (where the canal once was) would be an ideal location. The house could be moved south approximately 6 feet, at its original north-south orientation, and away from busy Constitution Avenue. Approximately 200-400 feet to the west towards the Tourmobile stop, the land slopes down to the Constitution Gardens lake (see figure 2.3.5). Depending on its location, paths extending from existing paths could slope down to lower level of the house while the upper level would be at its current elevation.

Raising the building by adding the lower level not only provides the opportunity to provide a sound structural base, but then also provides a cellar space with an additional 365 SF (see figure 2.3.6). The building of the cellar would be considered an addition rather than a "reconstruction" as there is not sufficient historical documentation of this particular lockhouse to ensure an accurate reproduction with minimal conjecture. The addition would help visitors to understand and interpret the property's historic value. If archeological investigations are done at the original location of the lock house and sufficient evidence is found of the remains of the original cellar or additional evidence (i.e. photographs, artwork) is discovered, then a "reconstruction" can be considered.

Depending on accessible access to the house, the new cellar could be the location for the unisex staff toilet, utility sink, and mechanical and fire protection equipment while the first floor would remain open for Park activities (either staff use or public interpretation). If the north facade retains the two steps at the entry, then perhaps the cellar would be suitable use for public use such as a visitor contact center and/or with a public comfort station. Ideally, the house would be accessible at both levels, but not necessarily the attic (as previously discussed).

The existing south doorway would be filled in and a new doorway and windows would be provided at the cellar level. As in Alternate #1, the project would include selective exterior repair and restoration work, coupled with interior rehabilitation. The project would include extending and upgrading the mechanical, electrical, and plumbing systems.

The estimate of construction costs for this alternative would be about $2,780,000. See Appendix 3.7 for the detailed estimate work sheet. This assumes the project would be complete in 2013.

[3] Recreating a sloped landscape and 2½ story appearance at the current location would be difficult to achieve due to the close proximity of 17th Street and the planned finish grade following the completion of the Potomac Park Levee Project.

Concept Images

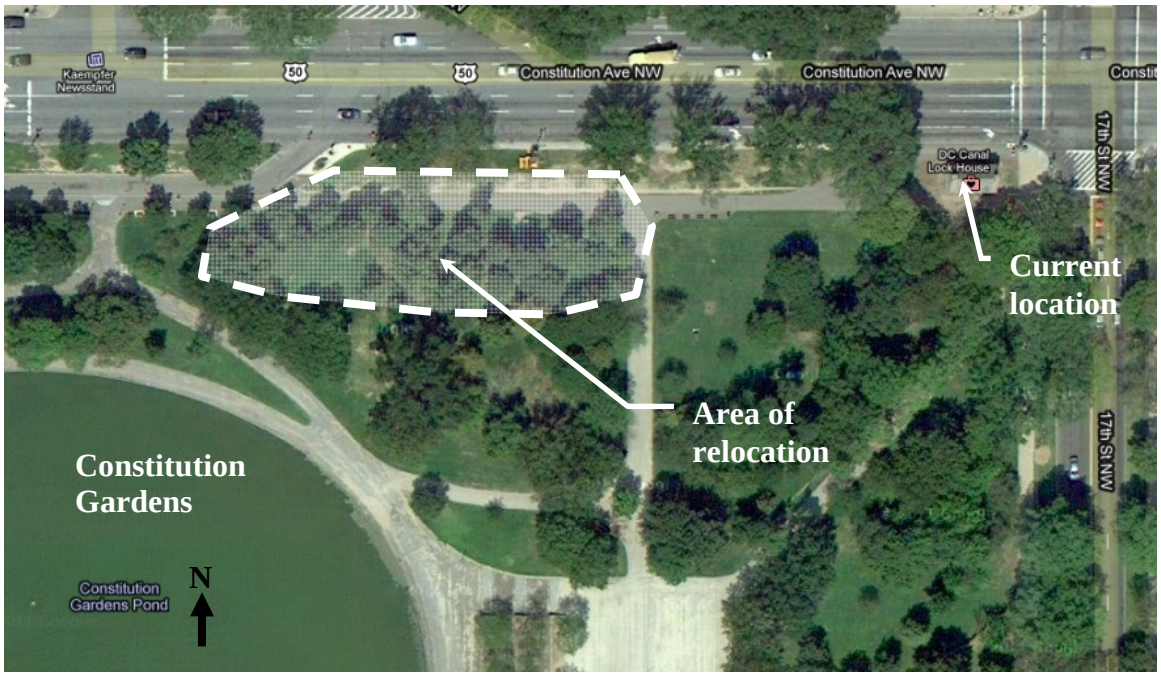

Figure 2.3. 5 Diagram showing possible area of relocation to the west of the current lockhouse location. At this highlighted area there is an existing topography that might be conducive to relocation.

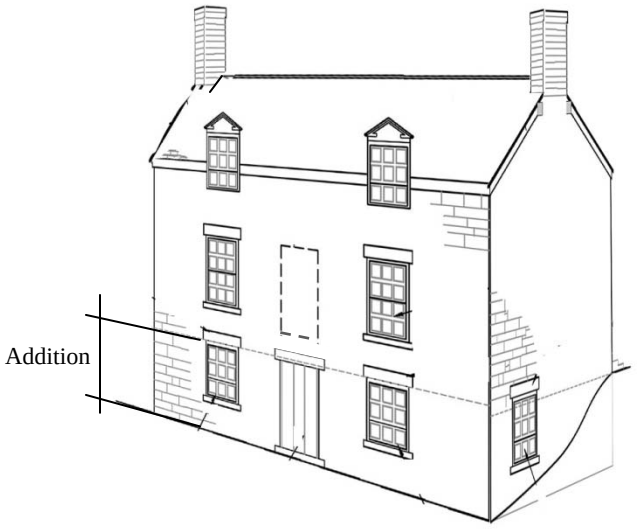

Figure 2.3. 6 Concept image of the south and east facades of the lockhouse with the cellar addition. As there is not enough evidence to reconstruct, the cellar addition would be distinct from the historic fabric.

Alternate #4 - Mothball Structure

The building has been unused for many years and the interior has recently been cleaned of debris. If a significant project were not possible in the near future, then the building should be secured and mothballed in the interim (see figure 2.3.7).[4] There would be two primary project work elements:

- Plywood protective covers would be placed over each existing window and door opening. Ventilation grilles should be introduced into the plywood covers to induce air flow to the interior. The panels at the doors would be hinged to allow continued building access.

- Utilities should be turned off to the building, except for electric power. New temporary lighting and convenience power fixtures should be installed to facilitate future interior survey and inspections. Also, some form of fire or smoke detection, along with an intrusion alarm system, should be installed.

An estimate of costs for this alternative would be less than $30,000.

Concept Image – Existing

Figure 2.3. 7 Image of north facade with plywood protective covers.

[4] A variation on this option would be to stabilize and enclose the house to protect it from detrimental effects such as weathering and vandalism. Monitoring would still be required.

Planned Treatment - Alternate #2 - Relocate, Restore, and Rehabilitate (National Mall Plan, Fall 2010)

Alternate #2 – Relocate, Restore, and Rehabilitate is the planned treatment that is shown in the National Mall Plan, the Potomac Park Levee Project concept drawings, and in the Feasibility to Move Study. The following are the most important reasons for this choice:

- The current location both detracts from the character of the historic resource, but also may subject the building to vibration damage from the adjacent heavy vehicular traffic. With Constitution Avenue widening and encroaching upon the house, the current 1915 setting has been compromised.

- With a greater setback from Constitution Avenue, a new site would provide a more visitor-friendly historic site and bring it back to its 1915 intended context.

Treatment – Alternate #3 - Relocate, Add Cellar, Restore, and Rehabilitate

For additional reference, the following are the most important reasons for the choice of Alternate #3 – Relocate, Add Cellar, Restore, and Rehabilitate:

- The current location both detracts from the character of the historic resource, but also may subject the building to vibration damage from the adjacent heavy vehicular traffic. With Constitution Avenue widening and encroaching upon the house, the current 1915 setting has been compromised.

- Moving the building to a new site, and increasing the height to the 2½ stories, greatly increases the historic and architectural interpretation of the site and building. It will once again have topographical context (minus the canal) and the correct proportion of height to width.

- The usable floor area is so small at present that a viable new use is difficult. Adding a story increases the floor areas to over 1,000 SF which could make a difference regarding future utilization.

- A new site with potential for public access to the cellar and main floor, along with site interpretive features, could greatly enhance the building as an historic resource.

Further Recommendations

Archeological

It is recommended that archeological investigations be done at the original lockhouse location to determine if the original cellar is underground. When the lockhouse was relocated in 1915, fill material had already been added and presumably covered up the cellar. For ease of relocating, the first floor was lifted off the cellar at its window lintels and it is possible then that the cellar was left in place, underground.

Archeological investigations may also reveal various objects associated with the lockkeepers and their families.

Architectural / Engineering Work

More of the east and west walls could be opened up to expose the chimneys and fireplaces openings. It is possible that remnants or ghosting of the mantles may be observed. It is recommended that the impact of traffic vibrations on the structure be studied.

Material Analysis / Testing

The thick white remnants on the exterior stone should be analyzed for their composition. The analysis would determine if it is whitewash and/or paint and its composition.[5]

A mortar analysis and comparison of the many different types of mortar used on the lockhouse may help determine if there remains some original mortar (and what was added to possibly replicate original mortar.

The plaster on the interior face of the exterior walls should be analyzed to determine if it is original and if it is made with two coats per the 1836 specifications or three coats per the 1828 specifications. Dendrochronology on wood elements would help determine the dates.

Comparative Analysis

Further comparisons of exterior and interior details with other lockhouses built around the same time period as Lock House B may guide its future rehabilitation. For instance, if ghosting of a side profile of a fireplace mantle is found, then it can be compared to the mantles in other lockhouses.

Additional research into the lives of the lockkeepers and how they lived may provide information on the treatment of the historic landscape, i.e. if they grew their own food on the land around the lockhouse.

Missing Resources

The earliest photograph dates to ca. 1894 after the canal had been infilled and fill material added to create Potomac Park. Photographs or artwork from before 1894 of this area may provide evidence of what the lockhouse, canal, and wharf looked like originally. This additional visual evidence, along with the archeological evidence, may (or may not) support Alternate #3 and future rehabilitation of Lock House B.

[5] Formulas for whitewash were distributed by the C&O Canal Company in 1900-1920 but this was after Lock House B was under different ownership.

2.4 ASSESSMENT OF AFFECT

Introduction

This chapter provides a narrative regarding the effect (i.e. impact) to the historic and architectural character of the property with the execution of the planned treatment (Alternate #2) as well as Alternate #3 treatment. The details of these treatments are provided in Chapter 2.3 Alternatives for Treatment. This chapter hopes to answer the Advisory Council on Historic Preservation's criteria of adverse effect per the Section 106 process.

- Adverse effects occur when an undertaking may directly or indirectly alter characteristics of a historic property that qualify it for inclusion in the Register [i.e. location, design, setting, workmanship, materials, feeling, and association].
- Adverse effects include physical destruction or damage; alteration not consistent with the Secretary of the Interior's Standards; relocation of a property; change of use or physical features of a property's setting; visual, atmospheric, or audible intrusions; neglect resulting in deterioration; or transfer, lease, or sale of a property out of Federal ownership or control without adequate protections
- If a property is restored, rehabilitated, repaired, maintained, stabilized, remediated or otherwise changed in accordance with the Secretary's Standards, then it will not be considered an adverse effect with the agreement of the SHPO.[1]

This narrative provides a professional opinion regarding compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966.

National Register Nomination Form

The structure is individually listed on the National Register. A copy of the nomination form is provided in Appendix 3.4. It was prepared in 1973 and is rather modest in content. It documents the 1915 relocation and the reduced building height, describes exterior features but actually does not describe any interior elements. Many of these older nomination forms have been updated to reflect newfound information and current preservation policies and standards.

Planned Treatment Summary - Alternate #2 - Relocate, Restore, and Rehabilitate

The planned treatment as shown in the National Mall Plan is to relocate Lock House B to a location approximately 50-60 feet south of its current location and possibly 10-15 feet west.

[1] Excerpted from the ACHP Section 106 Regulations Flowchart Material, http://www.achp.gov/flowexplain.

Treatment Summary - Alternate #3 - Relocate, Add Cellar, Restore, and Rehabilitate

An alternative treatment is to relocate the structure and raise the building to the full 2 ½ stories as originally built. This would provide a site setting reflecting the topography of the original building location which was directly adjacent to the Washington City Canal. In this proposed restoration setting, the south side of the building would be exposed for the full 2 ½ stories with a building entry at the lowest level on the south. The building would be built into an embankment so that the north would only have 1 ½ stories exposed. There would be a second entry to the main level from the north.

Ideally, a location along the area where the canal once existed would be chosen for the relocated structure. One such location would be between 200 and 400 feet to the west of the Lockkeeper's House. The land around the house would slope down from the Constitution Avenue elevation down to the paths around the Constitution Gardens lake. Accessible paths from the main level down to the cellar level can gently slope from one to the other along the Constitution Gardens topography.

See Appendix 3.3 for elevation drawings for the proposed restoration.

Previous Relocation and Building Alterations

Documentation has been provided in the previous sections of this report to establish that the historic and architectural integrity of this property has been compromised as follows:

- When the Washington City Canal was filled and replaced with the current-day Constitution Avenue, this structure was altered and moved 49 feet to the west and 6 feet north. It was reduced in height to the present 1 ½ stories.
- Once relocated, the OPBG carried out an exterior "restoration" campaign in 1916 based on photo evidence from the late-19th century. Most of these exterior alterations remain today.
- The interior of the building has been heavily altered on several previous occasions so that, at this time, it is not known whether any original materials or framing structure remain from the original construction period.
- The "planned" and other alternative treatments would largely follow the same preservation approach used by the NPS over the last 75 years but with significant improvement in the interpretation of this historic structure and the early history of Washington, DC.

Opinion on Effect

This opinion blends an evaluation of and takes into account three factors:

- An understanding of the National Register nomination form, especially in regards to the documentation of significance,
- A broad understanding of the changes and alterations that have occurred to the property over time, and
- An evaluation of the treatments. The proposed treatment is the "action" to be documented pursuant to the Section 106 of the NHPA.

Civil Effect

For a relocation in either Alternate #2 or #3, all municipal utilities will need to extend to the new location as well as upgraded per current code requirements. As these utilities were not part of original construction, any civil work would be an intrusion. Any digging for new civil work will require archeological investigations.

Site and Setting Effect

The proposed site for the relocated building is not actually known at this time. For the planned treatment (Alternate #2), the National Mall Plan, the Feasibility Study to Move the Lockkeeper's House, and the Potomac Park Flood Protection concept drawings, all show a proposed site of about 50-60 feet to the south. At this location, the future grades must be worked out with the Potomac Park Levee Project.

For treatment Alternate #3, the design intent is to modify the site contours so that the relocated building would have a setting that closely matched the original conditions. The structure should be built into an embankment so that the south face is exposes 2 ½ stories, while the north is 1 ½ stories, as it is currently. The hope is that the topography between the east end of Constitution Gardens and Constitution Avenue can provide the necessary level change for this treatment. as well as provide an accessible route. For any excavation at a new site, archeological investigations will be required.

The effect of this relocation is to return the structure to a setting close to its original topographical condition (minus the canal). The National Register nomination form recognizes the move from the lockhouse's original location. Relocating the building (in either alternate) may constitute an adverse effect and may affect the structure's eligibility for listing on the National Register as this would yet again alter the setting.

For either alternate, site disturbance to provide utilities, building access, and to recapture the historic aspect of the original sloped site will result in expanded site excavation and redevelopment work.

Architecture Effect - Exterior

With execution of the treatments toward further restoration of the exterior elements to the early 19th century appearance, the historic and architectural integrity will be strengthened. Further, utilizing sound preservation technology will assure that the building will have continued service life and a viable use.

Architecture Effect - Interior

A rehabilitation approach will be followed for the interior of the building. What little integrity that remains on the interior will be preserved and enhanced with the proposed work. If the unisex toilet room is adopted, then this room would be a visual intrusion and would affect the feeling of a mid-19th century lockhouse. If a cellar is built, then the toilet room can be located there with minimal effect on the historic character. With a toilet room in the cellar, the main room on the first floor would be public space for interpretive purposes or contemporary functions.

Structural Effect

For the relocation, the exterior walls, interior framing, and interior plaster will need to be carefully braced so that they are not damaged during the relocation. The digging of new foundations will need archeological investigations.

Dating to 1903, the second floor floors and/or first floor ceiling may need to removed and reinstalled in order to examine the condition of the floor joists and/or any necessary repairs. If the first floor interior partitions are removed in a future rehabilitation, the second floor may need to be reinforced to meet building codes.

Mechanical Effect

As heating, cooling, and plumbing were not part of original construction (other than fireplaces and possible stove), any mechanical equipment or plumbing fixtures (i.e. staff unisex toilet room, utility sink, and dual height drinking fountain) would be visible intrusions and would affect the feeling of a mid-19th century lockhouse. In order to provide these items, some material may be cut to provide chases. As this is a fairly small building, there is not much room to hide any equipment. If a cellar is built, then the central unit can be located there with minimal effect on the historic character. Otherwise, it will need to be located in a large closet. Small fan coil units in each space would be visible.

Electrical Effect

As electricity was not part of original construction, any electrical equipment would be a visible intrusion and affect the feeling of a mid-19th century lockhouse. As this is a fairly small building, there is not much room to hide any equipment. Any conduit would be concealed in new walls.

Safety Effect

As fire protection was not part of original construction, any sprinklers and associated piping would be a visible intrusion and affect the feeling of a mid-19th century lockhouse. As this is a fairly small building, there is not much room to hide any equipment. Sprinkler piping can be concealed in the ceiling.

Accessibility Effect

In the alternatives, accessibility to the exterior doors is easily achievable and will be a slight visible intrusion to the exterior of the lockhouse with ramped paths leading to the door(s). The door opening meets the minimum required accessible clearance. When a new floor is placed, thresholds at the doors will need to meet ABAAS. As the original doors have been replaced, the thresholds would not have an impact on the character. If automatic door openers and closers are installed, then they would affect the character.

With the removal of the non-significant interior partitions, an accessible route within the interior can be achieved. If further evidence provides a central stair once existed and it is restored, an accessible route may be compromised. As the second floor (attic) was not originally made accessible (and nor is it required per exceptions in ABAAS F206.2.3), any attempts to provide a lift to this floor would be a visible intrusion and will affect the feeling of a mid-19th century lockhouse. While providing an

ABAAS compliant unisex restroom will be beneficial to the staff who occupy the lockhouse, it will take up a third of the main floor of the lockhouse and will be a visible intrusion. If the alternative to relocate and build the cellar level is selected, then the unisex restroom could be installed at that level without a visual impact to the main floor. A dual height drinking fountain will also be a visible intrusion.

Sustainability Effect

The use of a ground source heat pump, an energy efficient system, would be an intrusion and affect the feeling of a mid-19th century lockhouse. In order to place the ground heat exchanger, the site would need to be disturbed. As the topography has completely changed (from canal and creek to fill), disturbing the site would not be an adverse affect unless it disturbed archeological remains (i.e. the original cellar). As stated above, small fan coil units to distribute the air would be a visible intrusion. High velocity air distribution systems may have less of a visible intrusion as they are small in diameter and easily threaded through existing building fabric. With the high speed of the air passing through the small diameter, they would be a potential audible intrusion.

The use of existing materials, such as the exterior masonry walls, will help in retaining the heated and cooled air inside the lockhouse and will retain the historic character. If the thermal performance is upgraded by insulating the historic walls, then the existing interior dimensions will decrease and the plaster walls would be encapsulated. If further research is done on the plaster to determine if it is original, then new interior finishes could replicate what was there originally. The current non-original windows could be replaced with double insulated glazed windows to increase the envelope's thermal performance. The new windows would replicated the historic window type and muntin grid pattern based upon photos that were taken before the squatters were evicted in 1902. New products such as paint that have no or low VOC's that will be used on the rehabilitated interior, though new, will give the appearance of plaster and will not affect the feeling and association.

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Appendix 3.1: Bibliography

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APPENDIX 3.1 – BIBLIOGRAPHY

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National Register of Historic Places, Lockkeeper's House, C&O Canal Extension, Washington, DC, National Register #73000218.

Appendix 3.2:
Record Photographs

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Figure 1. Lock House B north elevation (QEA, 2011)

Figure 2. Lock House B south elevation (QEA, 2011)

Figure 3. Lock House B east elevation (QEA, 2011)

Figure 4. Lock House B west elevation (QEA, 2011)

Figure 5. First Floor, Entry Vestibule North, north elevation (QEA, 2010)

Figure 6. First Floor, Entry Vestibule North, north elevation (QEA, 2010)

Figure 7. First Floor, Entry Vestibule North, west elevation (QEA, 2010)

Figure 8. First Floor, Entry Vestibule North, south elevation (QEA, 2010)

Figure 9. First Floor, Hall, north elevation (QEA, 2010)

Figure 10. First Floor, Hall, east elevation (QEA, 2010)

Figure 11. First Floor, Hall, south elevation (QEA, 2010)

Figure 12. First Floor, Toilet Room East A, south elevation (QEA, 2010)

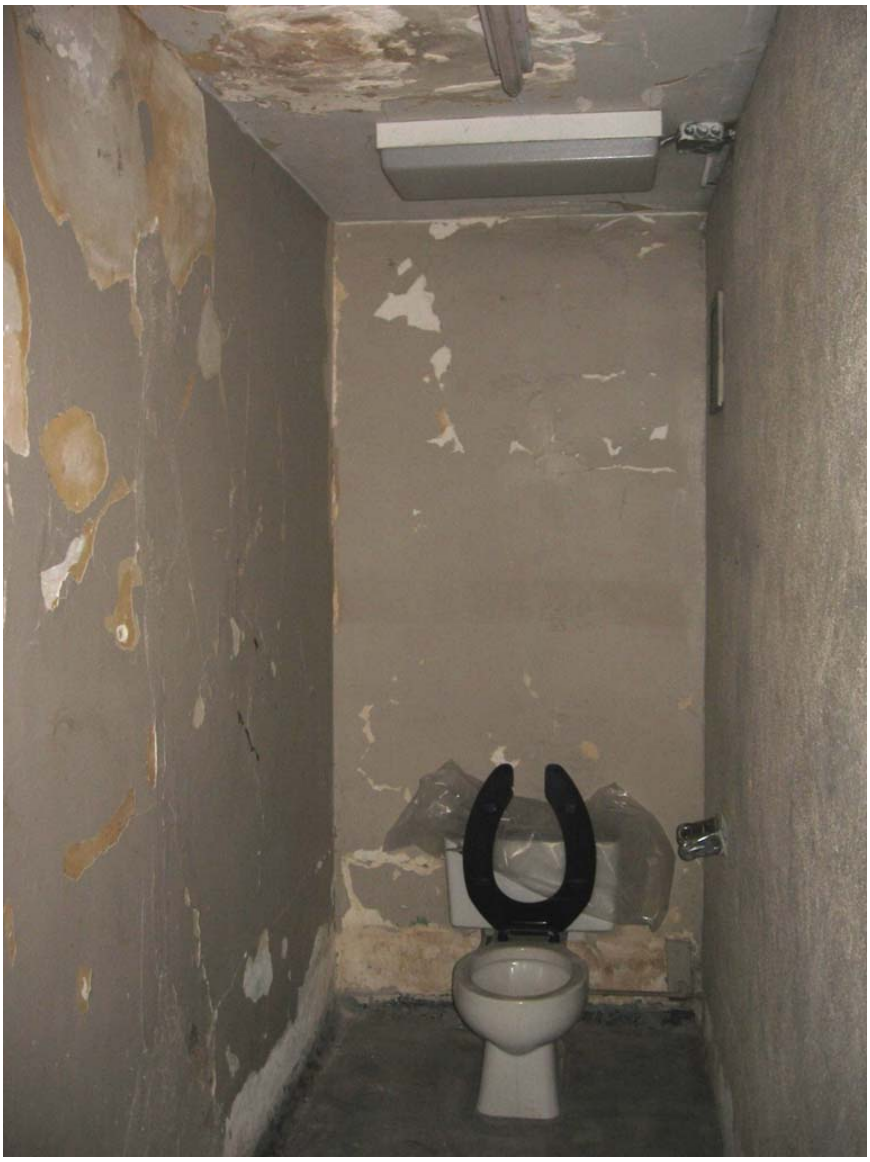

Figure 13. First Floor, Toilet Room East B, south elevation (QEA, 2010)

Figure 14. First Floor, Main Room, north elevation (QEA, 2010)

Figure 15. First Floor, Main Room and Stair, north elevation (QEA, 2010)

Figure 16. First Floor, Main Room, east elevation (QEA, 2010)

Figure 17. First Floor, Main Room, east elevation (QEA, 2010)

Figure 18. First Floor, Main Room, south elevation, alcove (QEA, 2010)

Figure 19. First Floor, Main Room, south and east elevations (QEA, 2010)

Figure 20. First Floor, Main Room, south and west elevations (QEA, 2010)

Figure 21. First Floor, Toilet Room West, north elevation (QEA, 2010)

Figure 22. First Floor, Toilet Room West, east elevation (QEA, 2010)

Figure 23. First Floor, Toilet Room West, east elevation (QEA, 2010)

Figure 24. First Floor, Toilet Room West, south elevation (QEA, 2010)

Figure 25. First Floor, Toilet Room West, west elevation (QEA, 2010)

Figure 26. First Floor, Toilet Room West, west elevation (QEA, 2010)

Figure 27. First Floor, Entry Vestibule South, east elevation (QEA, 2010)

Figure 28. First Floor, Entry Vestibule South, north elevation (QEA, 2010)

Figure 29. First Floor, Stair, north elevation (QEA, 2010)

Figure 30. First Floor, Stair, west elevation (QEA, 2010)

Figure 31. Second floor looking northwest at stair entry (QEA, 2010)

Figure 32. Second Floor, Main Room, west elevation (QEA, 2010)

Figure 33. Second Floor, Main Room, east elevation (QEA, 2010)

Figure 34. Second Floor, Main Room, south elevation (QEA, 2010)

Figure 35. Second Floor, Main Room, south elevation, between windows (QEA, 2010)

Figure 36. Second Floor, Main Room, south elevation (QEA, 2010)

Appendix 3.3: Measured Drawings

Cover
A1 Floor Plans
A2 Elevations & Sections
A3 Alternate 1 Rehabilitate in Place
A4 Alternate 2 Relocate & Restore
A5 Alternate 3 Relocate, Add Cellar

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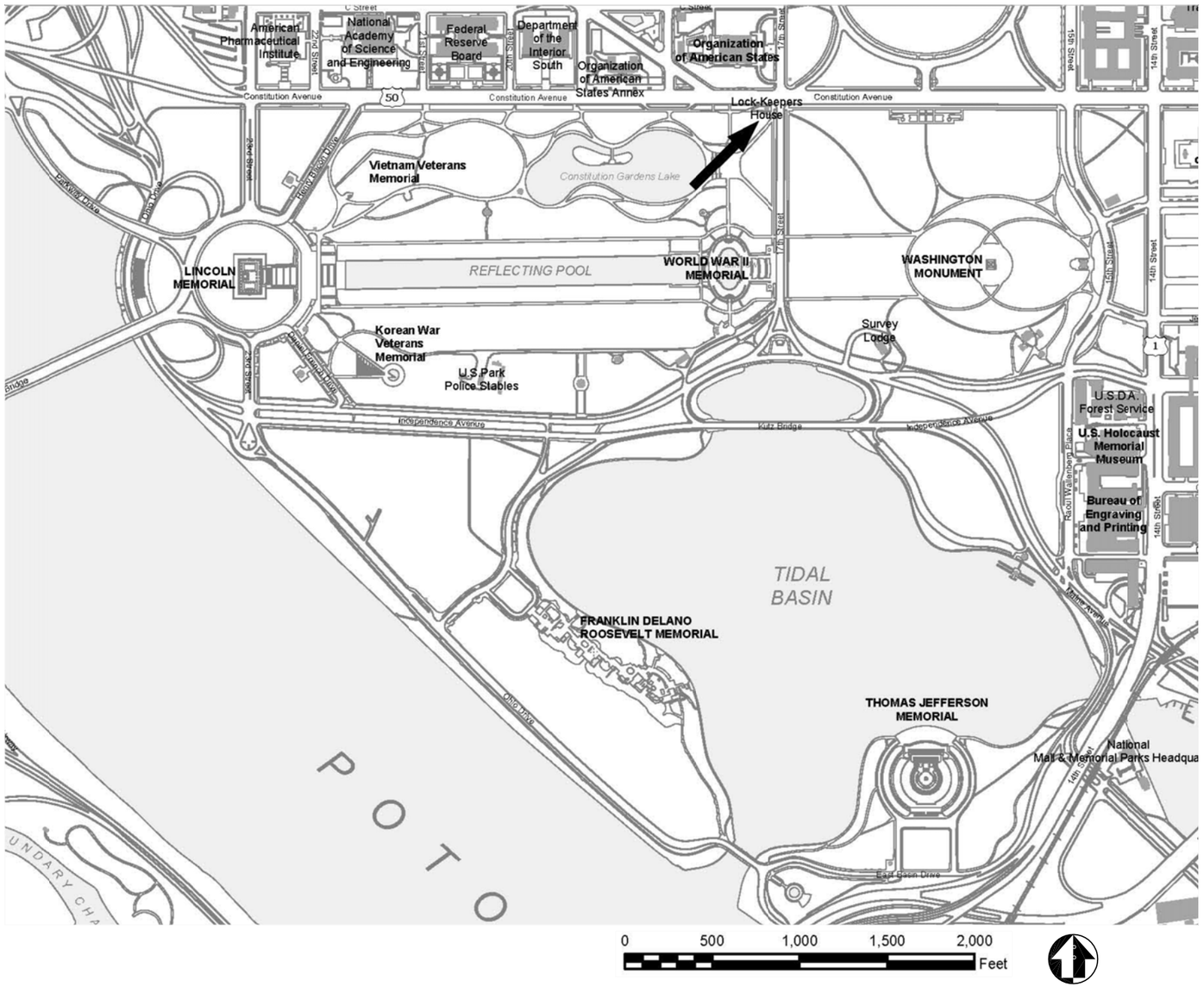


WASHINGTON, DC

INDEX

SHEET	SUB SHEET	TITLE OF SHEET
1 OF 6	COVER	TITLE SHEET, DRAWING INDEX
2 OF 6	A1	MEASURED DRAWINGS FLOOR PLANS
3 OF 6	A2	MEASURED DRAWINGS ELEVATIONS & SECTIONS
4 OF 6	A3	ALTERNATE #1 REHABILITATE IN PLACE
5 OF 6	A4	ALTERNATE #2 RELOCATE & RESTORE
6 OF 6	A5	ALTERNATE #3 RELOCATE, ADD CELLAR

LOCKKEEPER'S HOUSE

CONSTITUTION AVENUE & 17TH STREET, NW
WASHINGTON, D.C.

NATIONAL MALL AND MEMORIAL PARKS

C2000081400
NAMA 43443

HIST. STRUCTURE REPORT

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
DENVER SERVICE CENTER

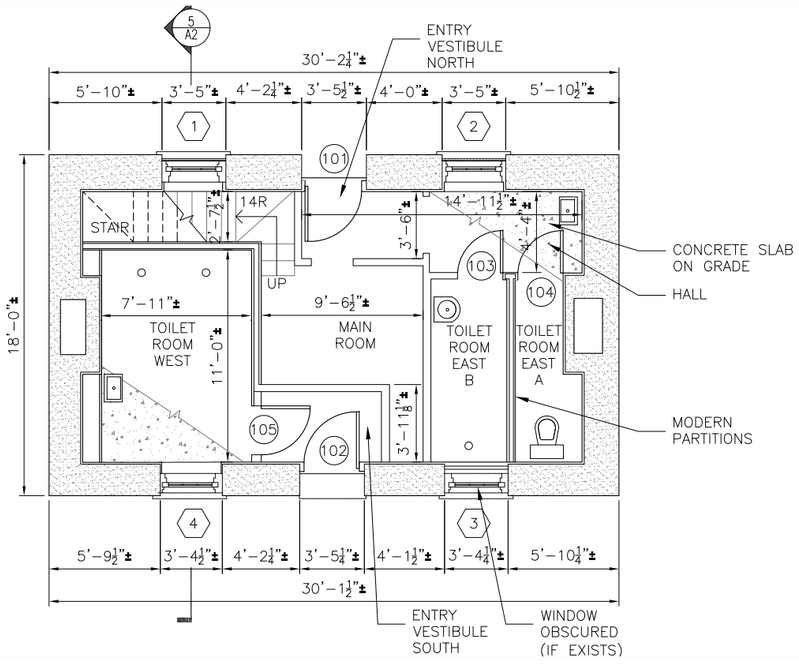
TITLE OF DRAWING
COVER
LOCATION WITHIN PARK
CONSTITUTION AVE & 17TH ST, NW
NAME OF PARK

REGION
STATE
WASHINGTON, D.C.

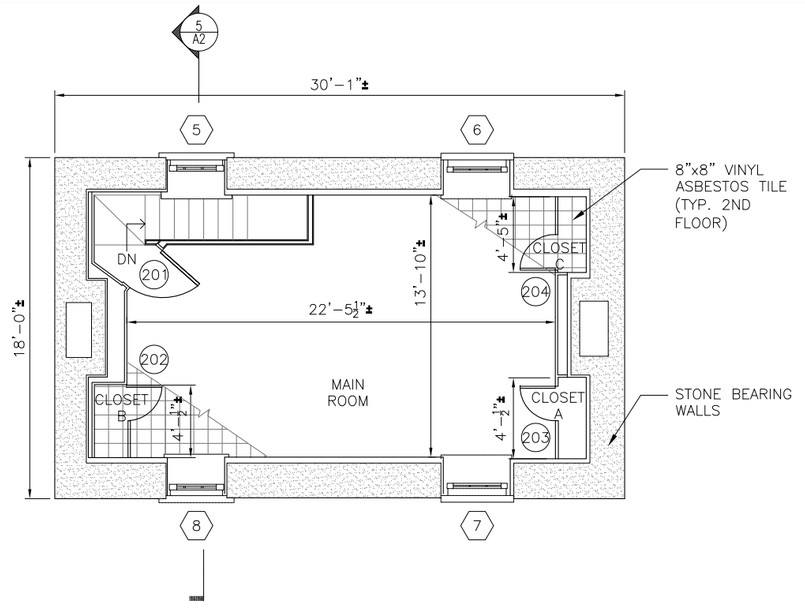
DRAWING NO.
802
109194

PKG. NO. 43443

SHEET 1 OF 6



1 / A1 FIRST FLOOR PLAN



2 / A1 SECOND FLOOR PLAN

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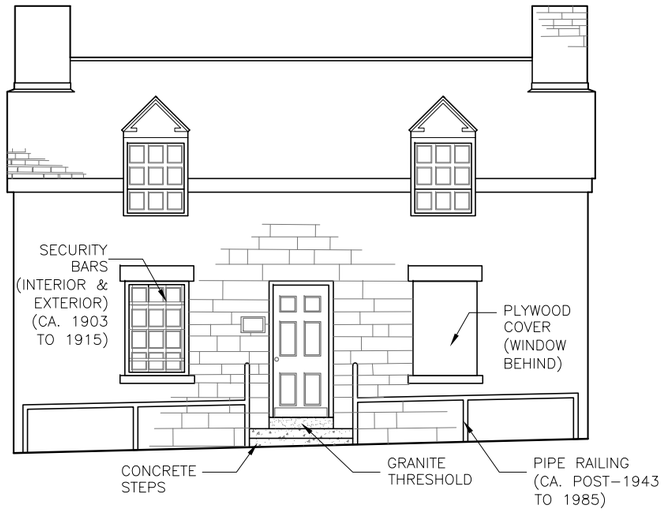

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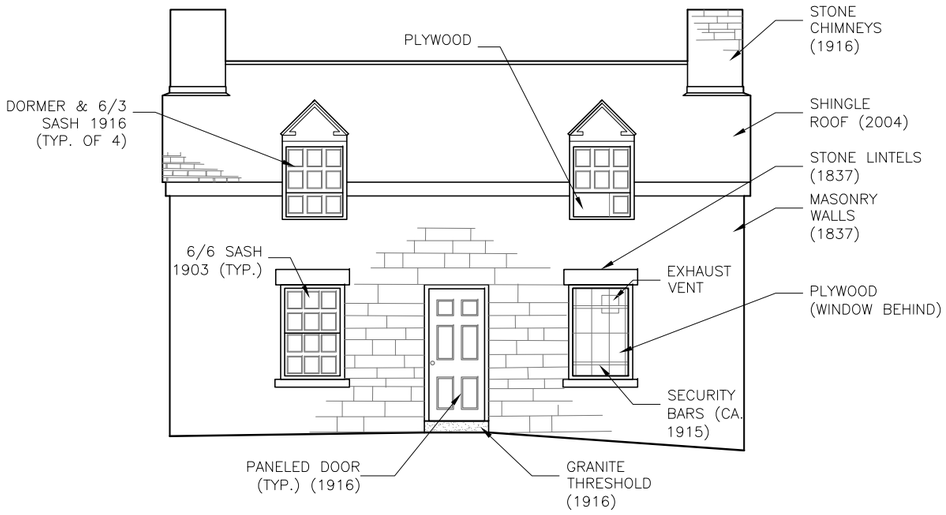

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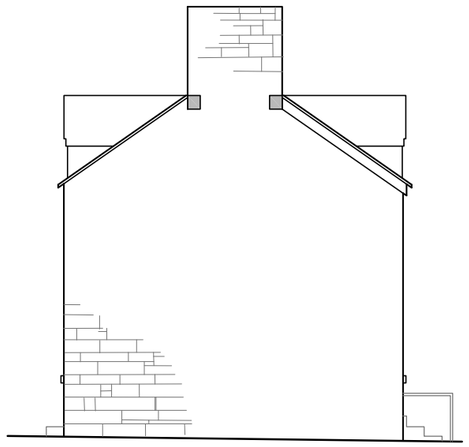

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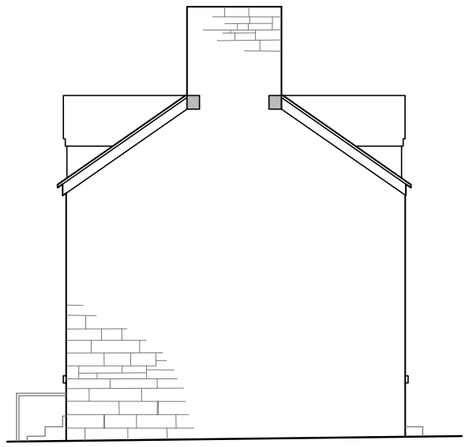


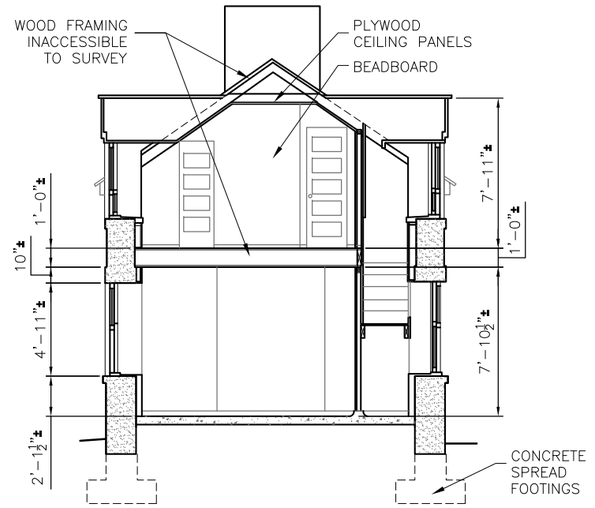
4 A2 WEST

LEGEND

SHINGLES

STONE ELEVATION

STONE SECTION



5 A2 SECTION

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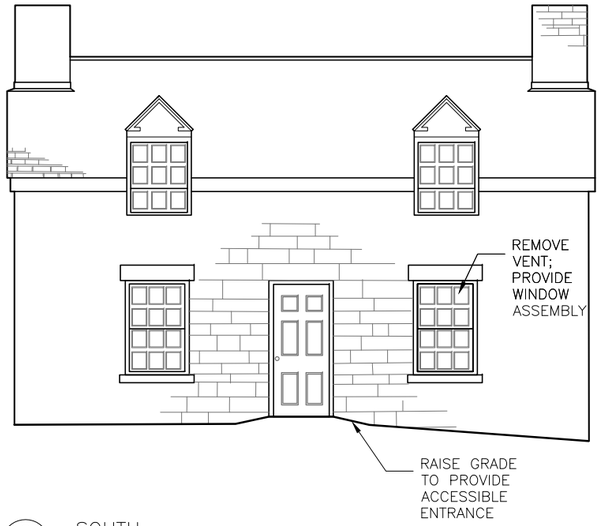
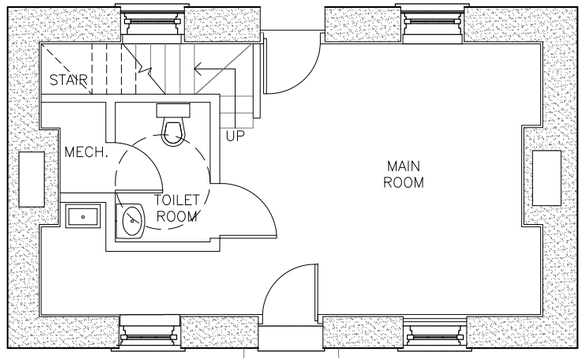
1 A3 NORTH



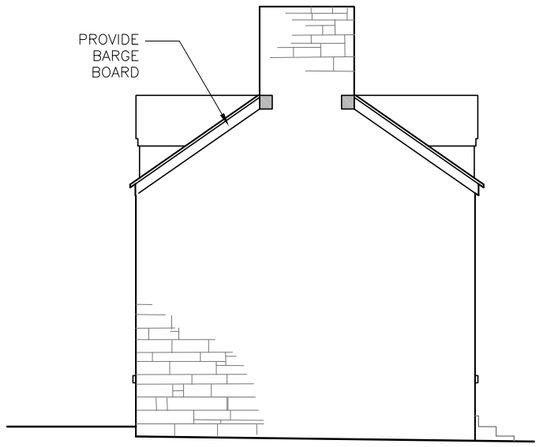
2 A3 SOUTH



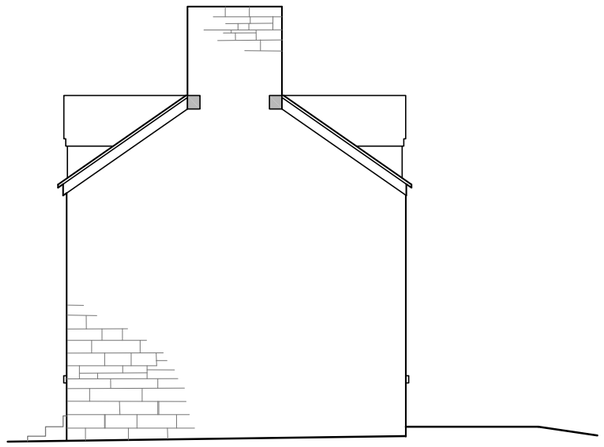
NOTE:
PROVIDE ACCESSIBLE UNISEX TOILET ROOM, MECHANICAL CLOSET, AND UTILITY SINK.

ACCESSIBLE ENTRANCE

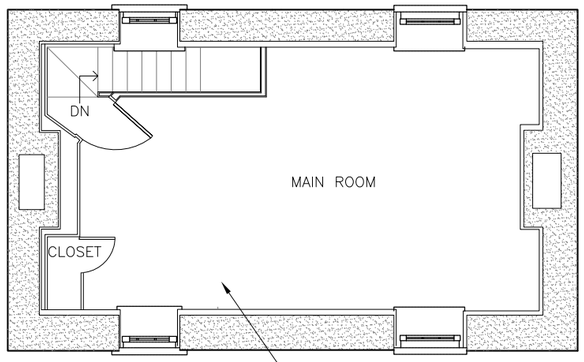
3 A3 FIRST FLOOR PLAN



4 A3 EAST



5 A3 WEST



6 A3 SECOND FLOOR PLAN

LEGEND

SHINGLES

STONE ELEVATION

STONE PLAN

GENERAL NOTES:

1. REPOINT MASONRY JOINTS
2. REPAIR & PRESERVE ALL WOOD TRIM & WOODWORK
3. REPAINT ALL WOOD
4. REHABILITATE WINDOW AND DOOR ASSEMBLIES
5. REHABILITATE INTERIOR

SCALE (A) 4 0 4 8
SCALE OF FEET

DESIGNED: GADD ALF/JCS TECH. REVIEW: BMS DATE: 07/26/2011	SUB SHEET NO. A3	TITLE OF SHEET LOCK HOUSE B ALTERNATE #1 REHABILITATE IN PLACE NATIONAL MALL AND MEMORIAL PARKS	DRAWING NO. 802 109194 PMIS/PKG NO. 043443 SHEET 4 OF 6

5/3/10 12:02 AFRY R17 F:\PROJECTS\2009\209000168 NPS - LOCKKEEPER'S HOUSE HSR\04_DRAWINGS\AUTOCAD\SHEETS\EXTERIOR ELEVATIONS.DWG
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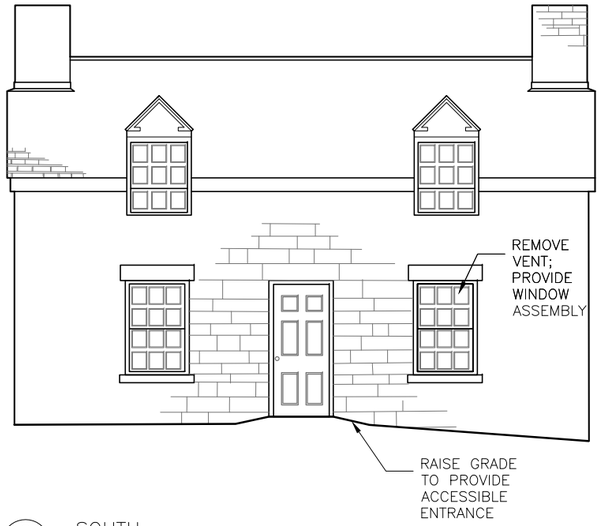
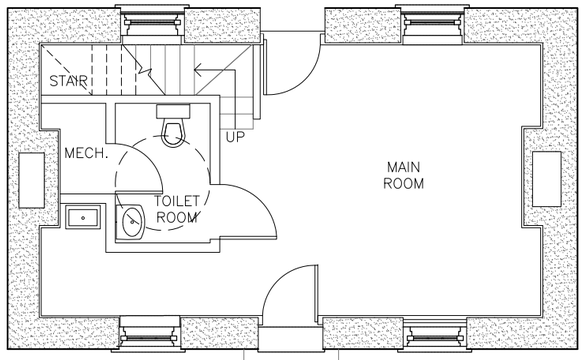
1 / A4 NORTH



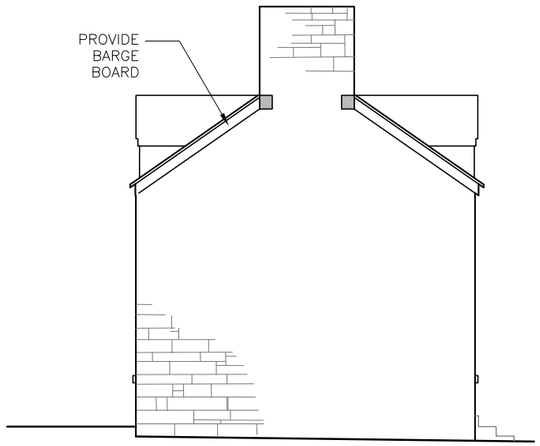
2 / A4 SOUTH



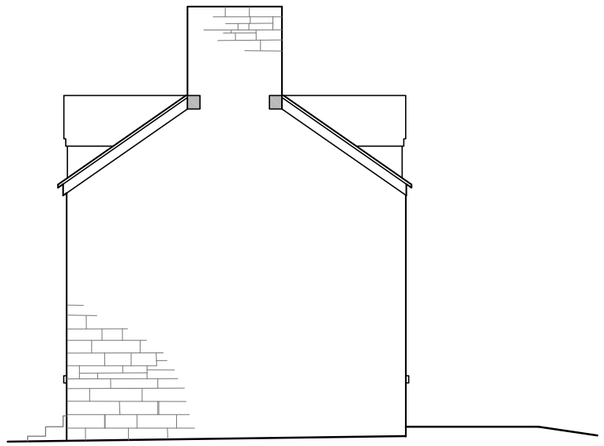
NOTE:
PROVIDE ACCESSIBLE UNISEX TOILET ROOM, MECHANICAL CLOSET, AND UTILITY SINK.

ACCESSIBLE ENTRANCE

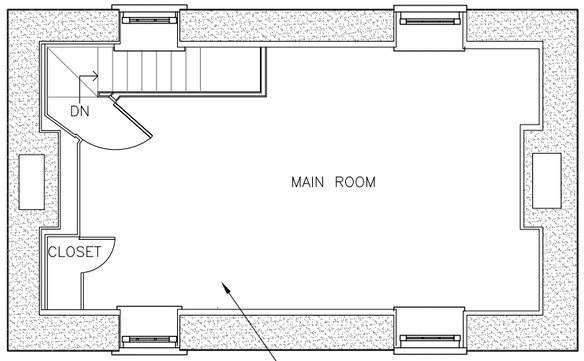
3 / A4 FIRST FLOOR PLAN



4 / A4 EAST



5 / A4 WEST



REMOVE VINYL ASBESTOS TILE, REFURBISH WOOD FLOORS

6 / A4 SECOND FLOOR PLAN

LEGEND

SHINGLES

STONE ELEVATION

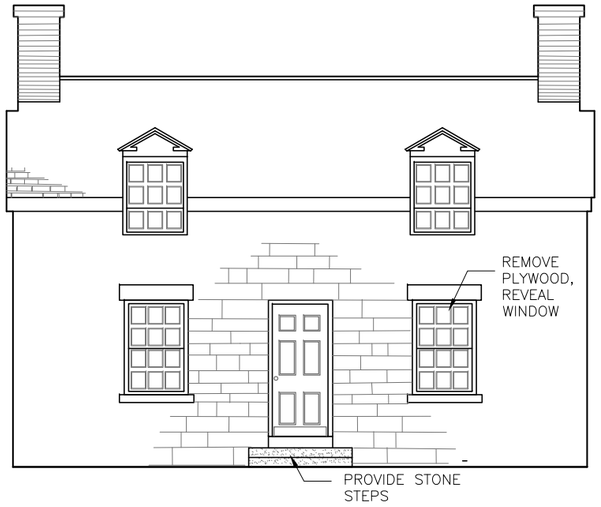
STONE PLAN

GENERAL NOTES:

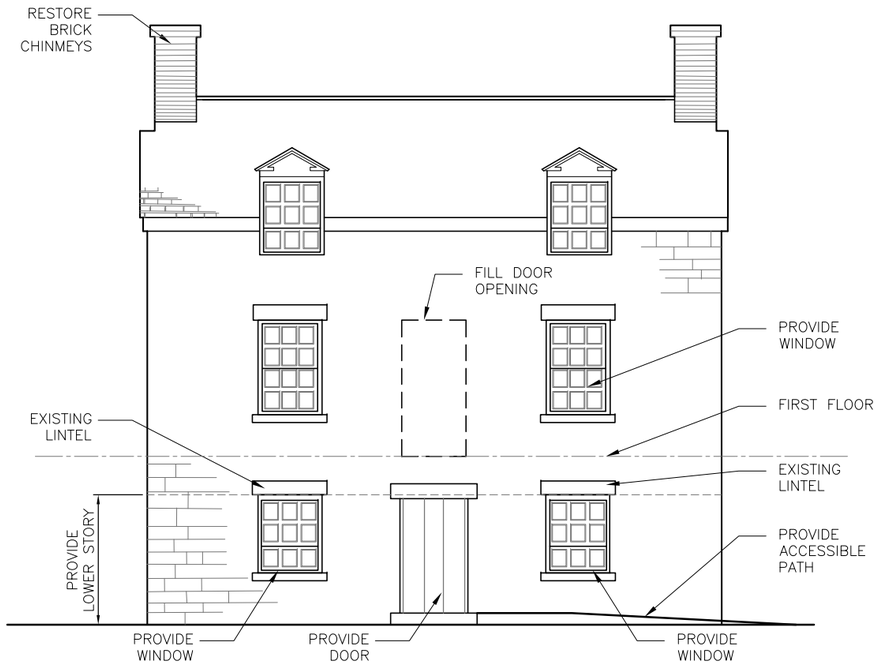
1. RELOCATE TO NEW SITE
2. PROVIDE NEW FOUNDATION
3. PROVIDE NEW FLOOR SLAB
4. REPOINT MASONRY JOINTS
5. REPAIR & PRESERVE ALL WOOD TRIM & WOODWORK
6. REPAINT ALL WOOD
7. REHABILITATE WINDOW AND DOOR ASSEMBLIES
8. REHABILITATE INTERIOR

SCALE (A) 4 0 4 8
SCALE OF FEET

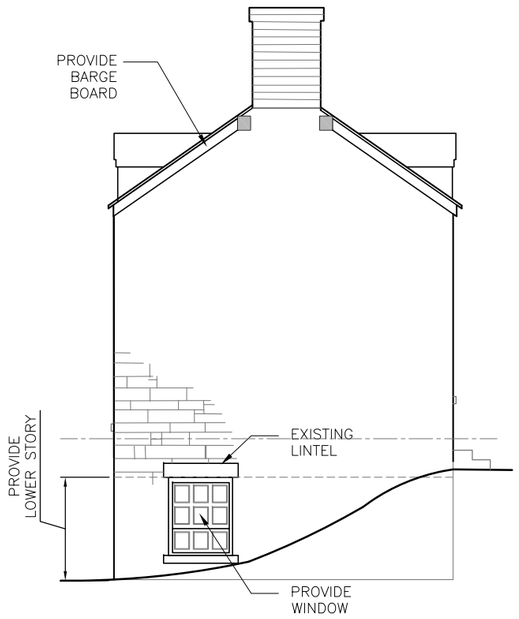
DESIGNED: GADD ALF/JCS TECH. REVIEW: BMS DATE: 07/26/2011	SUB SHEET NO. A4	TITLE OF SHEET LOCK HOUSE B ALTERNATE #2 RELOCATE & RESTORE NATIONAL MALL AND MEMORIAL PARKS	DRAWING NO. 802 109194 PMIS/PKG NO. 043443 SHEET 5 OF 6



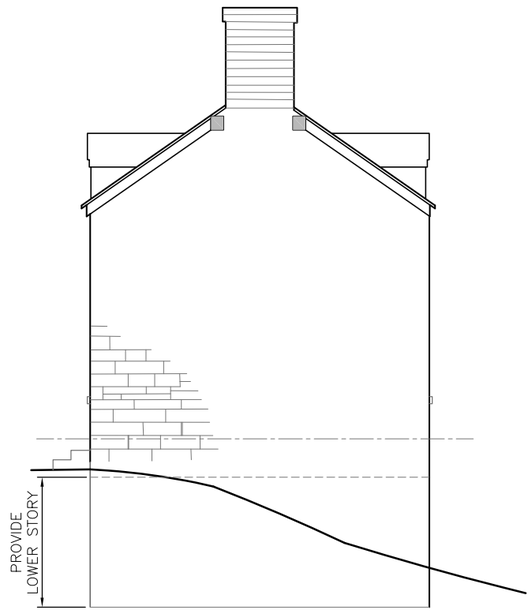
1 A5 NORTH



2 A5 SOUTH



3 A5 EAST



4 A5 WEST

LEGEND

- BRICK
- SHINGLES
- STONE

GENERAL NOTES:

1. RELOCATE TO NEW SITE
2. RAISE BUILDING, ADD CELLAR LEVEL
3. REPOINT MASONRY JOINTS
4. REPAIR & PRESERVE ALL WOOD TRIM & WOODWORK
5. REPAINT ALL WOOD
6. REHABILITATE WINDOW AND DOOR ASSEMBLIES
7. REHABILITATE INTERIOR

SCALE (A) 4 0 4 8
SCALE OF FEET

DESIGNED: GADD ALF/JCS TECH. REVIEW: BMS DATE: 07/26/2011	SUB SHEET NO. A5	TITLE OF SHEET LOCK HOUSE B ALTERNATE #3 RELOCATE, ADD CELLAR NATIONAL MALL AND MEMORIAL PARKS	DRAWING NO. 802 109194 PMIS/PKG NO. 043443 SHEET 6 OF 6

Appendix 3.4: Historical Documents

Appendix F Specification (For a Lock-keepers house (30 by 18 feet) to be erected on the line of the Chesapeake and Ohio Canal)

Feb. 10, 1836

(excerpted from Historic Structure Report The Lockhouses Historical Data Chesapeake and Ohio Canal National Historical Park MD-DC-WV by Harlan D. Unrau, May 1978)

Historic American Building Survey DC-36
Lockkeeper's House
1993-1994

National Register of Historic Places Nomination Form PH0001783
Lockkeeper's House, C&O Canal Extension
Nov. 30, 1973

Historic American Building Survey MD-56-K
Lock House Number 16
Date unknown

Historic American Building Survey MD-56-T
C&O Canal House at Lock 24
March 1964

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APPENDIX F

Feb. 10, 1836

SPECIFICATION

For a Lock-keepers house (30 by 18 feet) to be erected on the line of the Chesapeake and Ohio Canal.

MASONRY – The building to be of brick or stone, at the option of the contractor.
CELLAR – There will be a cellar under the whole house, six feet in the clear, with a floor of earth. The cellar walls will be of stone, 22 inches thick, and shall project 2 inches outside of and around the building. The foundation course of these cellar walls shall project 6 inches outside of the 22 inches. The level of the foundation walls shall be at least one foot below the cellar floor. The cellar door shall have some steps, and a locust frame, with substantial strap hinges, and fastened in the usual way with a padlock. There will be two windows in the cellar, one on each side of the house, consisting each of a single six light sash of 8 by 10 glass, shutting in a locust frame, the sash having hinges to open upwards. From the cellar there shall be a good and sufficient drain, protected by an iron grate.
CHIMNEY – The chimney shall be in the middle of the building; its foundation shall be on level with the cellar walls, and may be either brick or stone; no wood shall be used to support the chimney, unless at such distance below the hearths, as shall, in the opinion of the Engineer, be safe from fire. Above the floor of the principal story the chimney shall be of brick.
PRINCIPAL STORY – The principal story will be eight feet in the clear between the floor and ceiling, and its walls will be 14 ¼ inches if of brick and 20 inches if of stone. The walls of the attic story, lengthwise of the building, will be the same thickness as the principal story. The end walls of the attic will only be 9 inches if of brick and 12 inches if of stone. From the top of the chamber floor to the square will be 3 ½ feet. The peak of the roof will be six feet above the side walls. In the clear, between the floor and ceiling of the attic, will be six feet three inches.
ROOMS – There will be two rooms in each story. The washboards and surface will be plain. To each of the two lower rooms, there shall be an outer door; there shall also be a door leading from one to the other of these rooms. There shall be a door for the stairs leading from one story to the other; and also between the two upper rooms.
DOORS – The doors (five in number, exclusive of the cellar door) shall all be plain paneled, each having a Pennsylvania or German lock, with iron handles. The outside doors will have locust sills and locust lintels; they will have jamb casings of two inch heart pine let into the sills, and framed at top; they shall also have substantial strap hinges, put on with screws.
WINDOWS – In the lower story there will be five windows of twelve lights, 10 by 12. In the upper story there will be four windows of nine lights each, 10 by 12, glass. The casings will be of 1 ¼ inch yellow pine plank. The sills and lintels will be of locust.
PLASTERING – The whole interior of the building above the cellar shall be plastered, except the partition separating the two rooms in the attic story, which will be of 1 ½ inch plank. The plaster shall be finished in the most durable manner, with two coats.
STAIRS AND CLOSETS – The stairs will be plain, and of such rise, and tread, and width, as the Engineer may direct. The closets, two in number, one in each of the lower two rooms, will be finished in a plain manner, with battened doors.
FIREPLACES – There will be two fireplaces, one in each of the lower rooms; each having a mantelpiece, with two pilasters; an iron crane shall be put in the kitchen fireplace.

JOISTS – The joists of the first floor shall be three by twelve inches; of the second, three by ten inches; sixteen inches apart, from center to center, of good yellow pine.
FLOORS – The floors are to be 1 ¼ inch heart pine, planed, and tongued and grooved.
ROOF – The roof will have sixteen pairs of rafters, five inches deep at the top, and eight inches deep at the lower end, and three inches thick, framed together at top, and secured by a collar seam at the point that shall give the required height of six feet three inches in the clear in the upper story. The method of securing the foot of the rafters shall be in the most substantial manner, by means of wad plates properly connected with the top of the brick work, of not less than four inches in thickness and nine inches in width. The projection over the wall, and the finish at the foot of the rafters, shall be such as to present a workmanship appearance. The sheathings will be of three-fourth inch board, laid close; the shingles of the best quality of cypress, eighteen inches long, showing 5 ½ inches to weather, and not less than four inches wide and five-eighths thick.
PAINTING – All of the woodwork outside shall have three coats, and the inside two coats of the best English white lead oil paint, well put on.
MATERIALS, ETC. -- The quality of the brick and of the stone work of the whole building shall be such as the Engineer shall approve of; and the bond, also, of the brick and stone work shall be such as he shall direct.

The whole of the masonry, from the foundation up, shall be laid in good and approved lime mortar, except 1 ½ feet in height at the top of the stone masonry, which shall be laid in mortar made of the best water cement.
PLAN – A plan shall be furnished by the Engineer to the contractor, showing the exact position of doors, windows, closets, etc.

PROPOSAL

I propose to build a house according to the foregoing specification, near to Locks Nos. 45 & 46 on the line of the Chesapeake and Ohio Canal, in a good and substantial manner, and to furnish all materials proper therefore, for the gross sum of: $950.00

For any additional masonry required in consequence of founding the walls lower than described in the specifications, or for other reasons, per perch of twenty-five cubic feet: $2.00

For the excavation for the house and the cellar drain, per cubic yard: $0.25

The masonry of the cellar drain will be paid for at the estimate of the Engineer, but the above prices include the leveling off of the cellar floor, and the leveling around the building to the original surface of the ground.

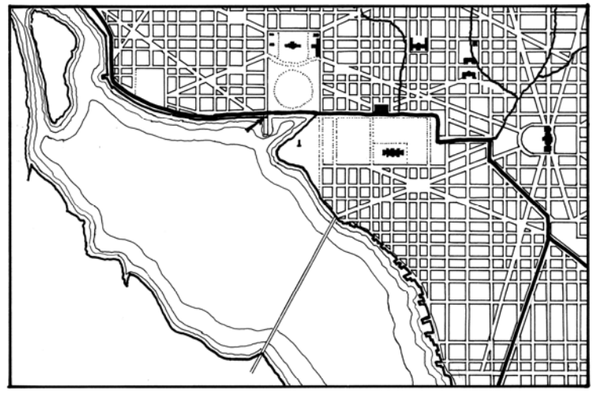
Whatever tolls may be paid to the Canal Company for the transportation of materials will, upon completion of the house, be added to the final account of the contractor, and refunded to him.

Signed this _____ day _____, 183

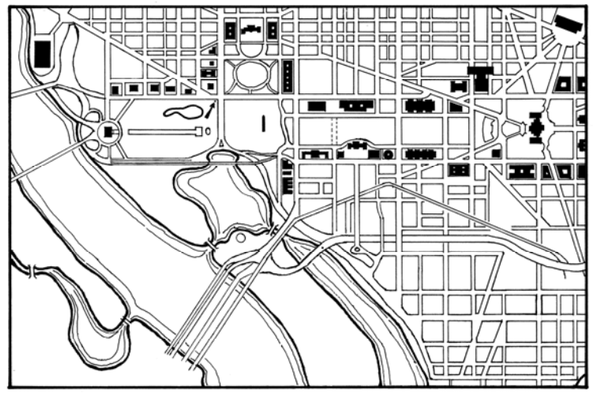
LOCKKEEPER'S HOUSE

of the Chesapeake and Ohio Canal

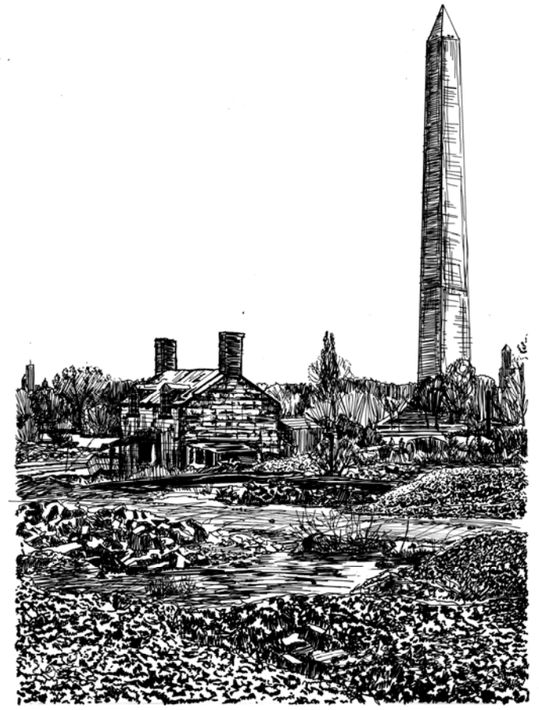
THE LOCKKEEPER'S HOUSE AT 17TH STREET AND CONSTITUTION AVENUE SERVED THE LOCK THAT CONNECTED THE WASHINGTON BRANCH OF THE CHESAPEAKE AND OHIO CANAL TO THE WASHINGTON CITY CANAL THAT CROSSED THE CAPITAL CITY PARALLEL TO THE NATIONAL MALL. THE CITY CANAL SUFFERED PROBLEMS FROM ITS INCEPTION, AND ULTIMATELY BECAME AN OPEN SEWER. THE C & O CANAL ENTAILED ENORMOUS NATIONAL INVESTMENT BUT FELL VICTIM TO LABOR RIOTS, FLOODS, PESTILENCE, RIGHT-OF-WAY DISPUTES, AND FINALLY COMPETITION OF RAILROADS. THE RESULT FOR THE LOCKKEEPER'S HOUSE WAS THE FILLING-IN OF THE WASHINGTON BRANCH OF THE C & O CANAL AND THE WASHINGTON CITY CANAL, LEAVING IT REMOVED FROM ITS PURPOSE. THE HOUSE WAS FURTHER ISOLATED FROM THE RIVER WITH THE MAJOR LANDFILL AND RECLAMATION PROJECT OF THE TURN OF THE CENTURY THAT CREATED POTOMAC PARK, THE SITE OF THE LINCOLN MEMORIAL AND REFLECTING POOL. IT SERVED FOR A TIME AS A SQUATTERS' TENEMENT, AND LATER FOR THE PARK POLICE WITH A HOLDING CELL. AFTER WORLD WAR II THE HOUSE BECAME A COMFORT STATION, BUT NOW STANDS ABANDONED EXCEPT FOR SOME USE AS STORAGE FOR GROUNDSKEEPERS. FEW VISITORS TO THE PARK CAN VISUALIZE THE HISTORIC SCENE OF CANAL BARGES PASSING BY THE FOOT OF THE ELLIPSE AND DOCKING AT THE WHARF THAT ONCE EXTENDED TO THE SOUTH OF THE HOUSE, NOR THE IMAGE OF THE POTOMAC RIVER EXTENDING NEARLY TO THE BASE OF THE WASHINGTON MONUMENT. THE LOCKKEEPER'S HOUSE STANDS AS TESTIMONY TO THIS DRAMATIC AND EVENTFUL PAST.



CITY OF WASHINGTON 1855



CITY OF WASHINGTON 1994



AFTER DESTRUCTION OF THE CANAL 1880'S

17TH STREET & CONSTITUTION AVENUE
WASHINGTON, D. C. Ca. 1832

THE CHARLES E. PETERSON PRIZE IS AN ANNUAL STUDENT COMPETITION TO PRODUCE HABS MEASURED DRAWINGS SPONSORED BY THE HISTORIC AMERICAN BUILDINGS SURVEY OF THE NATIONAL PARK SERVICE AND THE ATHENAEUM OF PHILADELPHIA. THIS SET OF DRAWINGS WAS ENTERED IN 1994.

DRAWN BY: STEVE WYNN

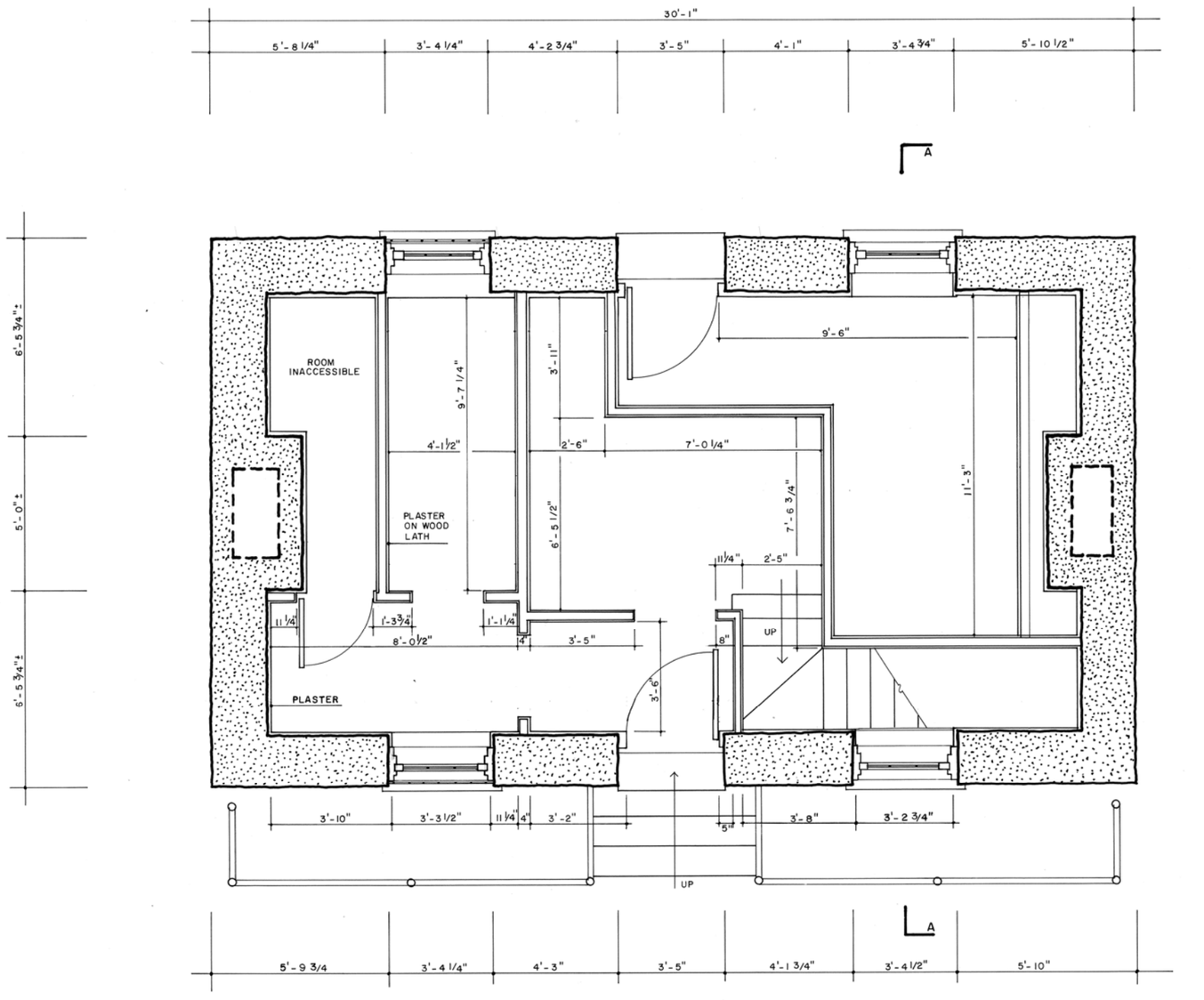
LOCKKEEPER'S HOUSE PROJECT 1993 - 1994
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

NAME AND LOCATION OF STRUCTURE:
LOCKKEEPER'S HOUSE
17TH ST. & CONSTITUTION AVE., WASHINGTON, D.C.

SURVEY NO. DC-36

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 1 OF 5 SHEETS

DRAWING NUMBER INDEX NUMBER



FIRST FLOOR PLAN

DRAWN BY: STEVE WYNN

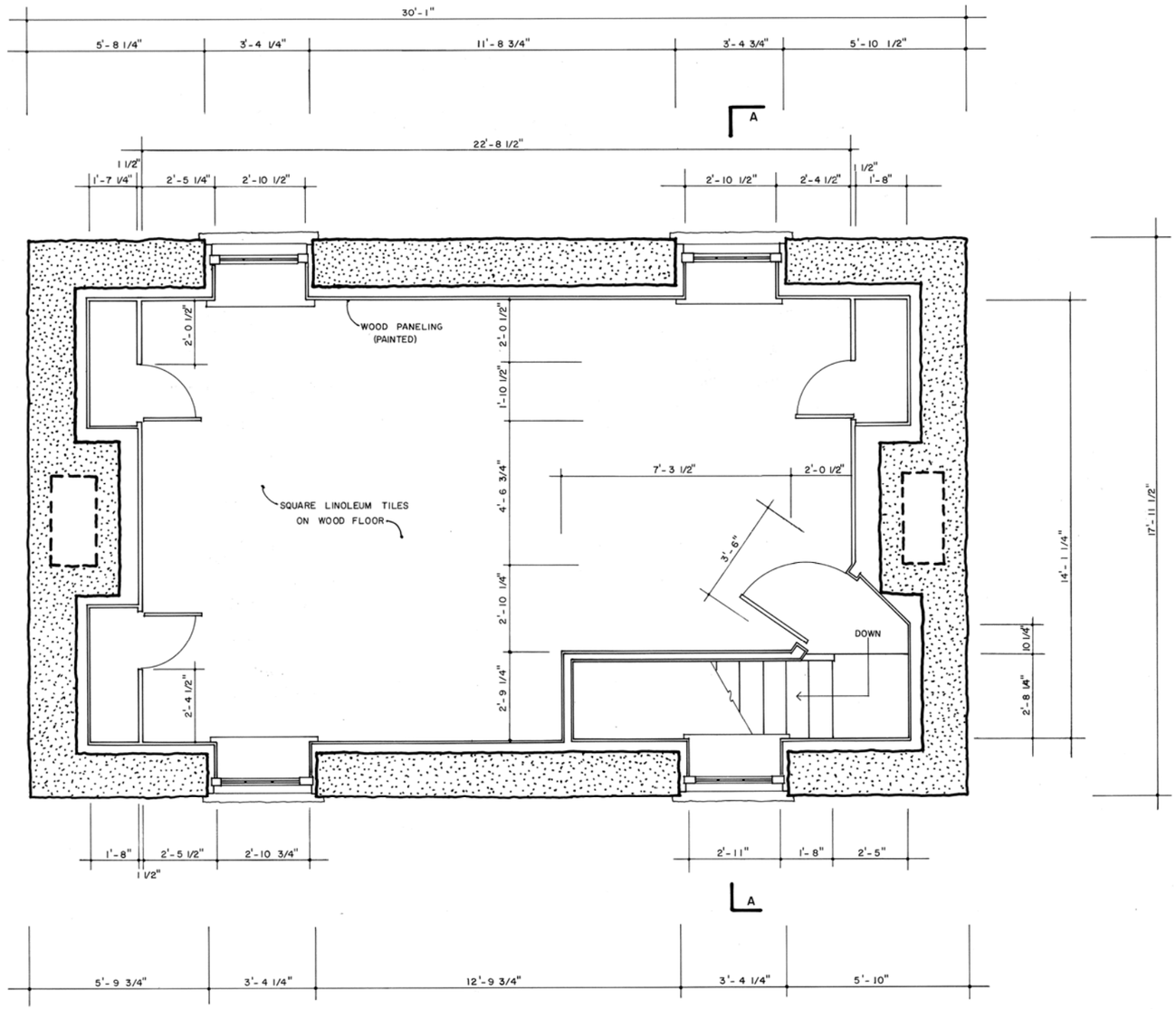
LOCKKEEPER'S HOUSE PROJECT 1993–1994
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

NAME AND LOCATION OF STRUCTURE
LOCKKEEPER'S HOUSE
17TH ST. & CONSTITUTION AVE., WASHINGTON, D.C.

SURVEY NO. DC-36

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 2 OF 5 SHEETS

DRAWN FOR CONGRESS INDEX NUMBER



SECOND FLOOR PLAN

12" 6" 0 1 2 5
FEET 1/2"= 1'-0"

1994 CHARLES E. PETERSON PRIZE, ENTRY

DRAWN BY: STEVE WYNN

LOCKKEEPER'S HOUSE PROJECT 1993 - 1994
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

NAME AND LOCATION OF STRUCTURE
LOCKKEEPER'S HOUSE
17 TH ST. & CONSTITUTION AVE., WASHINGTON, D.C.

SURVEY NO. DC-36

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 3 OF 5 SHEETS

LIBRARY OF CONGRESS INDEX NUMBER

NORTH ELEVATION

12" 6" 0 1 2 5
FEET 1/2"= 1'-0"

1994 CHARLES E. PETERSON PRIZE, ENTRY

DRAWN BY STEVE WYNN

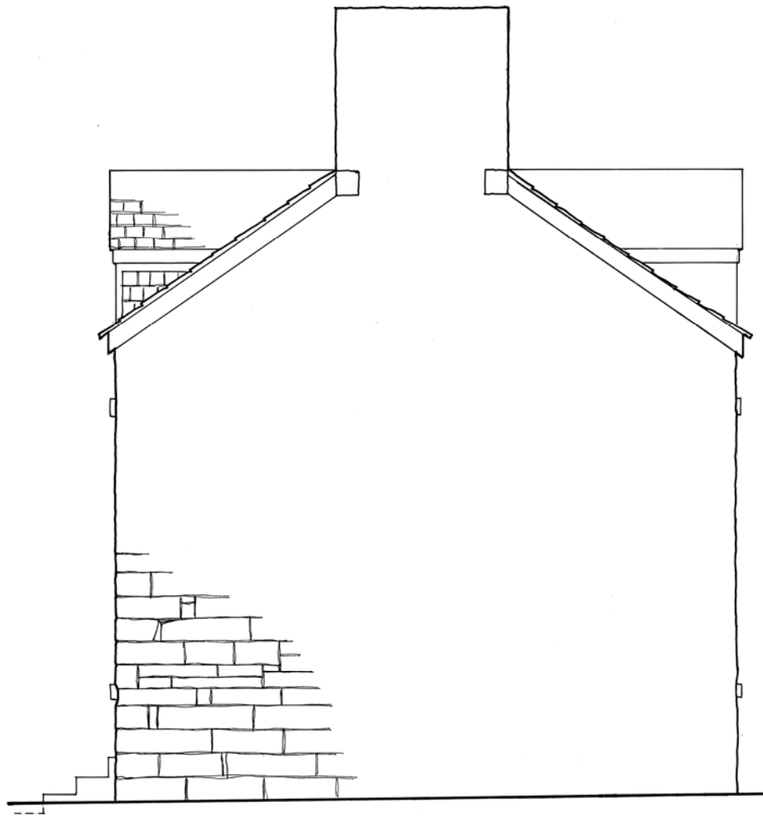
LOCKKEEPER'S HOUSE PROJECT 1993- 1994
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

NAME AND LOCATION OF STRUCTURE
LOCKKEEPER'S HOUSE
17TH ST. & CONSTITUTION AVE., WASHINGTON, D.C.

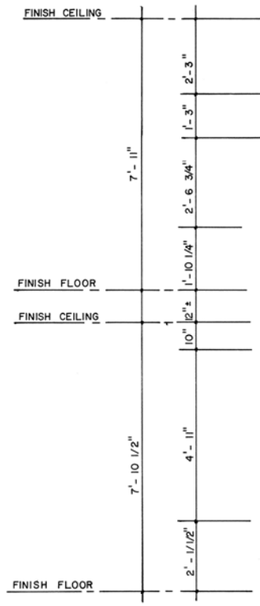
SURVEY NO. DC-36

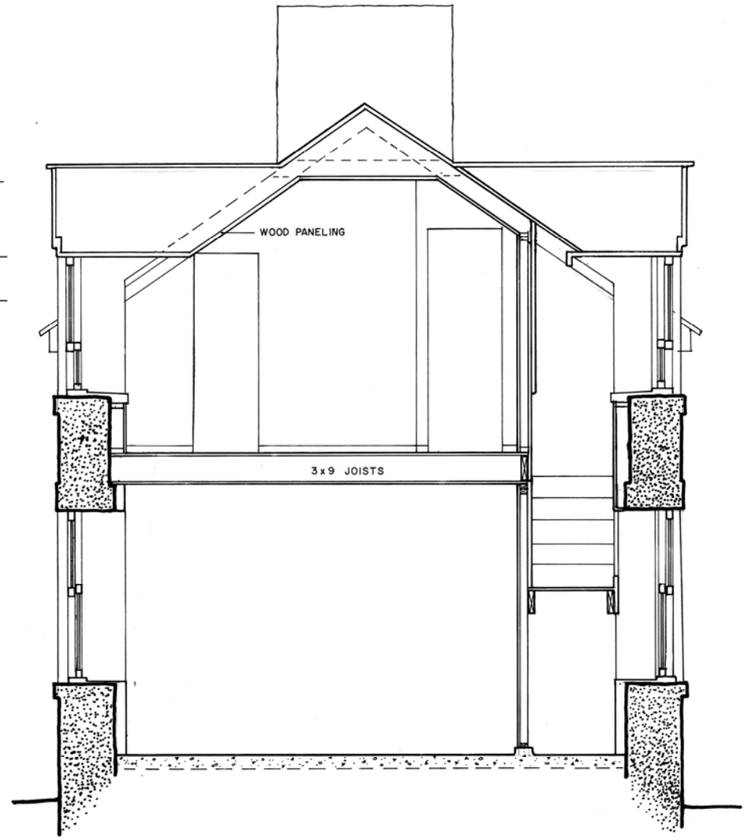
HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 4 OF 5 SHEETS

LIBRARY OF CONGRESS INDEX NUMBER



WEST ELEVATION





SECTION A

12" 6" 0 1 2 5
FEET 1/2"= 1'-0"

1994 CHARLES E. PETERSON PRIZE, ENTRY

DRAWN BY: STEVE WYNN

LOCKKEEPER'S HOUSE PROJECT 1993 - 1994
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

NAME AND LOCATION OF STRUCTURE
LOCKKEEPER'S HOUSE
17TH ST. & CONSTITUTION AVE., WASHINGTON, D.C.

SURVEY NO. DC-36

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 5 OF 5 SHEETS

DRAWING NUMBER INDEX NUMBER

PH0001783

Form 10-306
(Oct. 1972)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY – NOMINATION FORM

FOR FEDERAL PROPERTIES

(Type all entries - complete applicable sections)

STATE:	
COUNTY:	
FOR NPS USE ONLY	
ENTRY DATE	NOV 30 1973

SEE INSTRUCTIONS

1. NAME

COMMON: Lockkeeper's House, C & O Canal Extension

AND/OR HISTORIC:

RECEIVED SEP 7 1973 NATIONAL REGISTER

2. LOCATION

STREET AND NUMBER: ~~Southwest~~ SW corner of 17th Street and Constitution Avenue, N.W.

CITY OR TOWN:	CONGRESSIONAL DISTRICT: Congressman Walter E. Fauntroy, D.C.	
Washington		
STATE: District of Columbia	CODE: 11	COUNTY: District of Columbia / CODE: 001

3. CLASSIFICATION

CATEGORY (Check One)	OWNERSHIP		STATUS	ACCESSIBLE TO THE PUBLIC
☐ District ☒ Building	☒ Public	Public Acquisition:	☐ Occupied	Yes:
☐ Site ☐ Structure	☐ Private	☐ In Process	☒ Unoccupied	☐ Restricted
☐ Object	☐ Both	☐ Being Considered	☐ Preservation work in progress	☒ Unrestricted
				☐ No

PRESENT USE *(Check One or More as Appropriate)*

☐ Agricultural	☐ Government	☐ Park	☐ Transportation	☐ Comments
☐ Commercial	☐ Industrial	☐ Private Residence	☒ Other *(Specify)* comfort station	
☐ Educational	☐ Military	☐ Religious		
☐ Entertainment	☐ Museum	☐ Scientific		

4. AGENCY

Department of the Interior, National Park Service

REGIONAL HEADQUARTERS: *(If applicable)*	STREET AND NUMBER:	
National Capital Parks	1100 Ohio Drive, S.W.	
CITY OR TOWN: Washington	STATE: District of Columbia	CODE: 11

5. LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC: National Capital Parks

STREET AND NUMBER: 1100 Ohio Drive, S.W.

CITY OR TOWN:	STATE:	CODE
Washington	District of Columbia	11

6. REPRESENTATION IN EXISTING SURVEYS

TITLE OF SURVEY: HABS National Park Service survey in compliance with Executive Order 11593

DATE OF SURVEY: 1972 ☒ Federal ☐ State ☐ County ☐ Local

DEPOSITORY FOR SURVEY RECORDS: National Capital Parks

STREET AND NUMBER: 1100 Ohio Drive, S.W.

CITY OR TOWN:	STATE:	CODE
Washington	District of Columbia	11

STATE: / COUNTY: / FOR NPS USE ONLY — ENTRY NUMBER: NOV 30 1973 — DATE

7. DESCRIPTION

CONDITION	(Check One)					
	☐ Excellent	☒ Good	☐ Fair	☐ Deteriorated	☐ Ruins	☐ Unexposed
	(Check One)		(Check One)			
	☒ Altered	☐ Unaltered	☒ Moved	☐ Original Site		

DESCRIBE THE PRESENT AND ORIGINAL *(if known)* PHYSICAL APPEARANCE

The Lockkeeper's House of the C & O Canal Extension is a rectangular one and a half story building, 30' wide and 18' deep. The Lockkeeper's House was originally two and a half stories high but, when the canal, which has become virtually an open sewer, was filled in for sanitary reasons, the area around the structure was filled to such an extent as to reduce its height to the present one and a half stories. The Lockkeeper's House was originally approximately 40' west and 10' north of the present location but was moved in the early 1930's when 17th Street was widened.

The Lockkeeper's House is constructed of field stone with a shingled roof and stone chimney at either side of the structure. The building is symmetrically designed in the Federal Style with a central doorway flanked by two windows directly below two dormers in the shingled roof. This facade is repeated at the rear of the building. Each window had sandstone sills. The front and rear doors measure 7' 1-1/2" in height and 3' 4-1/2" in width, with a granite step. Since its move to the present site on Constitution Avenue, the former Lockkeeper's House has been altered inside to accomodate its present function as a public comfort station and park maintenance area.

SEE INSTRUCTIONS

8. SIGNIFICANCE

PERIOD *(Check One or More as Appropriate)*

☐ Pre-Columbian	☐ 16th Century	☐ 18th Century	☐ 20th Century
☐ 15th Century	☐ 17th Century	☒ 19th Century	

SPECIFIC DATE(S) *(If Applicable and Known)* c. 1833

AREAS OF SIGNIFICANCE *(Check One or More as Appropriate)*

Aboriginal	☐ Education	☐ Political	☐ Urban Planning
☐ Prehistoric	☐ Engineering	☐ Religion/Phi-	☐ Other *(Specify)*
☐ Historic	☐ Industry	losophy	_____
☐ Agriculture	☐ Invention	☐ Science	_____
☒ Architecture	☐ Landscape	☐ Sculpture	_____
☐ Art	Architecture	☐ Social/Human-	_____
☒ Commerce	☐ Literature	itarian	_____
☐ Communications	☐ Military	☐ Theater	_____
☐ Conservation	☐ Music	☒ Transportation	_____

STATEMENT OF SIGNIFICANCE

The Lockkeeper's House, on the Southwest corner of 17th Street and Constitution Avenue, N.W., is the only remnant of the C & O Canal extension. The structure was built(1832-1833) as the house for the Lockkeeper of the Canal, who collected the tolls and kept the records of commerce on the canal.

The C & O Canal extension was built between 1832 and 1833 to connect the Washington City Canal with the C & O Canal. The Washington City Canal was first proposed by Pierre L'Enfant in his plan for the Capital and was opened in 1815. It served as a major commercial thoroughfare connecting the Potomac River and Northwest Washington with the Anacostia River and the southern section of the city.

In addition to the Washington City Canal the founders of Washington also envisioned a major canal connecting the city with the fertile Ohio Valley. Construction of such a canal, the Chesapeake and Ohio, began in 1828. Washingtonians, however, were fearful that Georgetown, not the City of Washington, would benefit from the expected canal commerce, as the C & O's proposed eastern terminus was Georgetown. The City of Washington had subscribed to one million dollars in stock in this undertaking and C & O officialswere informed in November 1831 that they would not be paid until a branch was constructed connecting the C & O with the Washington City Canal. The C & O Canal was in great need of this one million dollar payment and construction of a Washington extension quickly began. In 1833 the canal extension connecting the C & O and Washington City Canal was completed.

"The Chesapeake and Ohio Branch, which connected the Washington City Canal to the Chesapeake and Ohio Canal, started in the Rock Creek Basin of the C and O Canal and followed along Twenty-seventh Street to Constitution Avenue. Here it turned east and continued to Seventeenth Street, where it joined the Washington City Canal" (Heine, p. 23). At the junction of these two canals, the C & O constructed the Lockeeper's House.

The canal ventures proved to be a poor investment. Railroads, not canals, became the dominant form of transportation.in the nineteenth century. Construction of the C & O canal ended in Cumberland, Maryland, in 1850, and not in Pittsburgh, Pennsylvania, as had originally been planned.

SEE INSTRUCTIONS

9. MAJOR BIBLIOGRAPHICAL REFERENCES

Washington, City and Capitol, G.P.O., Washington, 1937.

Caemmerer, H.P., Washington, the National Capital, G.P.O., Washington, 1932.

Heine, Cornelius W., "The Washington City Canal," in Records of the Columbia Historical Society, National Republic Printing Co., Washington, 1959.

10. GEOGRAPHICAL DATA

LATITUDE AND LONGITUDE COORDINATES DEFINING A RECTANGLE LOCATING THE PROPERTY

CORNER	LATITUDE Degrees	Minutes	Seconds	LONGITUDE Degrees	Minutes	Seconds
NW	°	'	"	°	'	"
NE	°	'	"	°	'	"
SE	°	'	"	°	'	"
SW	°	'	"	°	'	"

OR

LATITUDE AND LONGITUDE COORDINATES DEFINING THE CENTER POINT OF A PROPERTY OF LESS THAN TEN ACRES

LATITUDE Degrees	Minutes	Seconds	LONGITUDE Degrees	Minutes	Seconds
38°	53'	30"	77°	02'	24"

APPROXIMATE ACREAGE OF NOMINATED PROPERTY: Less than one acre

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

STATE:	CODE	COUNTY:	CODE
STATE:	CODE	COUNTY:	CODE
STATE:	CODE	COUNTY:	CODE
STATE:	CODE	COUNTY:	CODE

RECEIVED SEP 7 1973 NATIONAL REGISTER

11. FORM PREPARED BY

NAME AND TITLE:	DATE:
Helen Dillon, Historian	Nov. 27, 1972

BUSINESS ADDRESS: National Capital Parks

STREET AND NUMBER:	PHONE:
1100 Ohio Drive, S.W.	426-6957

CITY OR TOWN:	STATE	CODE
Washington	District of Columbia	11

12. CERTIFICATION OF NOMINATION

State Liaison Officer recommendation:

☒ Yes
☐ No
☐ None

State Liaison Officer Signature

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

Federal Representative Signature — *Date* 6/21/73

Dir, Nat'l Cap Parks
Title

NATIONAL REGISTER VERIFICATION

I hereby certify that this property is included in the National Register.

Robert M. Utley
Associate Director, Professional Services

Date 11/30/73

ATTEST:

Charles A. Cunningham
acting *Keeper of The National Register*

Date 11-29-73

SEE INSTRUCTIONS

Form 10-300a
(July 1969)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY - NOMINATION FORM

(Continuation Sheet)

STATE	
COUNTY	
FOR NPS USE ONLY	
ENTRY NUMBER	DATE
NOV 30 1973	

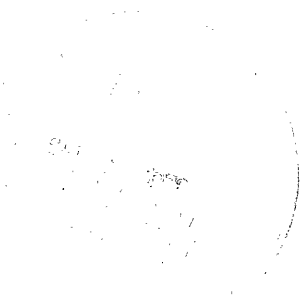
(Number all entries)

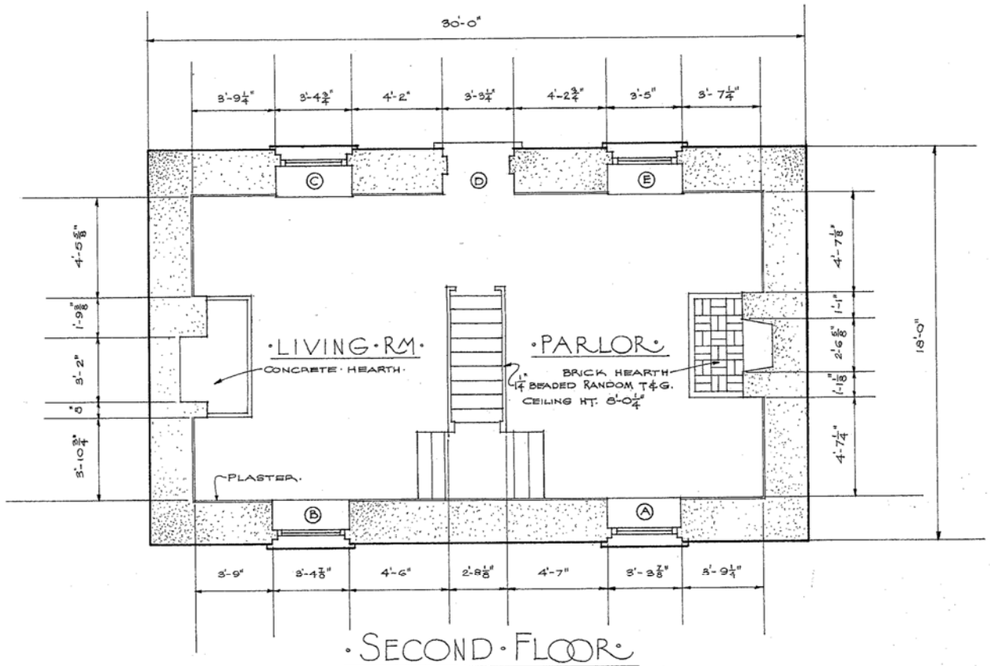
8. Significance - Lockkeeper's House

Furthermore, the local, Washington City Canal, was beset by problems of poor maintenance. Work on a major improvement plan to remedy the canal's poor condition began in 1849, but was never completed. After 1855 the Washington City Canal "ceased to be of any notable use for commerce. In addition, the Washington branch of the Chesapeake and Ohio Canal was allowed to fall into decay" (Heine, pp. 20-21). After the Civil War there were numerous proposals to revitalize the Washington City Canal, but in the 1870's the long process of filling the canal began.

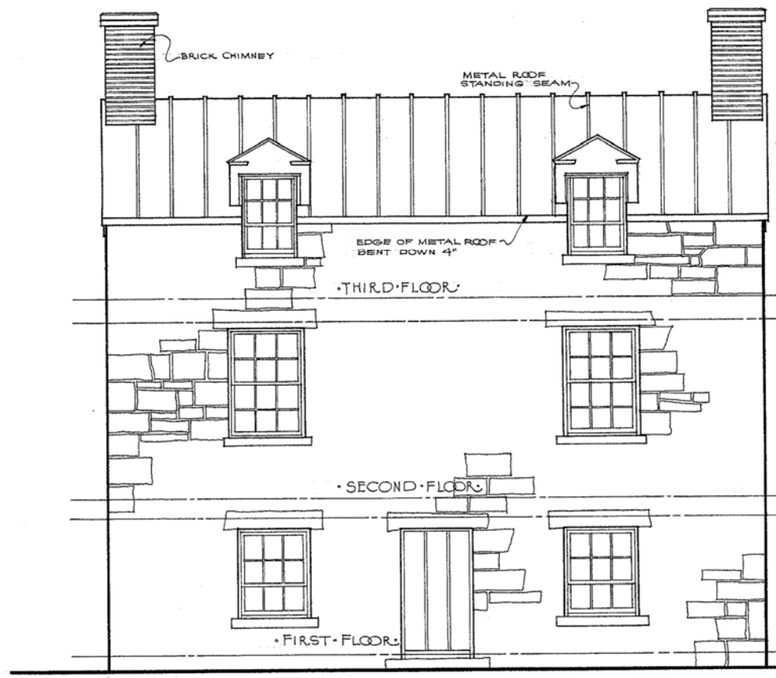
During the development of the Potomac Park in the early 1900's, the lockkeeper's house was given to the United States and functioned for a while as the Park Police headquarters. By 1940 Federal Office buildings began to appear along Constitution Avenue near the Lockkeeper's House. That year, the first floor of the structure was convertedto its present use as a public comfort station, while the attic was used for park maintenance storage.

The present use of the Lockkeeper's House is highly unfitting considering that the construction of this landmark predated the construction of the streets, offices and even landscaped grounds around it.



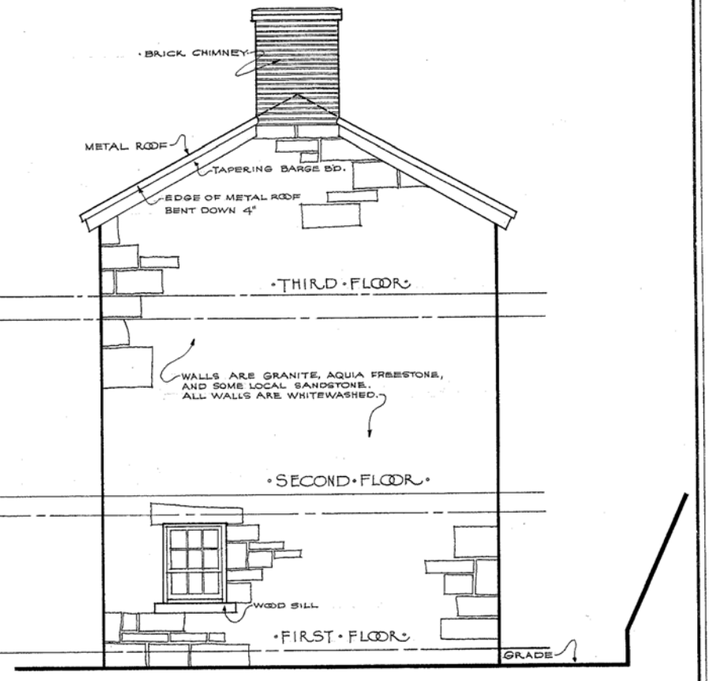


Survey No. changed to MD-56-K sheet 1 of 2



FRONT ELEVATION

SCALE: 1/4" = 1'-0"



RIGHT SIDE

SCALE: 1/4" = 1'-0"

McCLURE DEL.

1/4"=1'-0" 12 IN 0 5 10 FT.

METRIC 1 0 1 2 3 M

CHESAPEAKE AND OHIO CANAL STRUCTURES

U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF NATIONAL PARKS, BUILDINGS, AND RESERVATIONS
BRANCH OF PLANS AND DESIGN

NAME OF STRUCTURE
LOCK HOUSE NUMBER 16
CHESAPEAKE & OHIO CANAL

H.A.B.S.

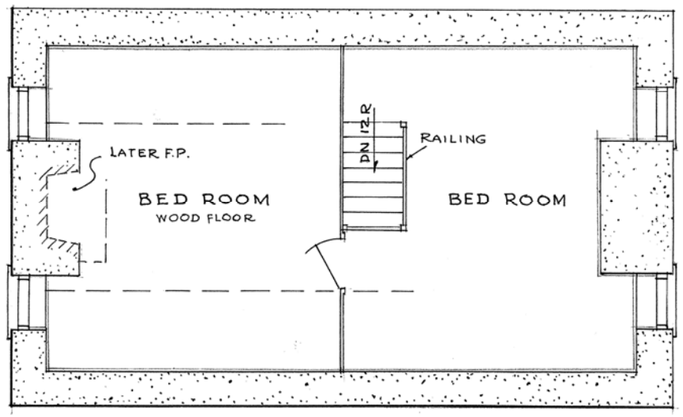
SURVEY NO. MD. 56

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 23 OF 44 SHEETS

INDEX NO. MD. 16 - —— 14 -

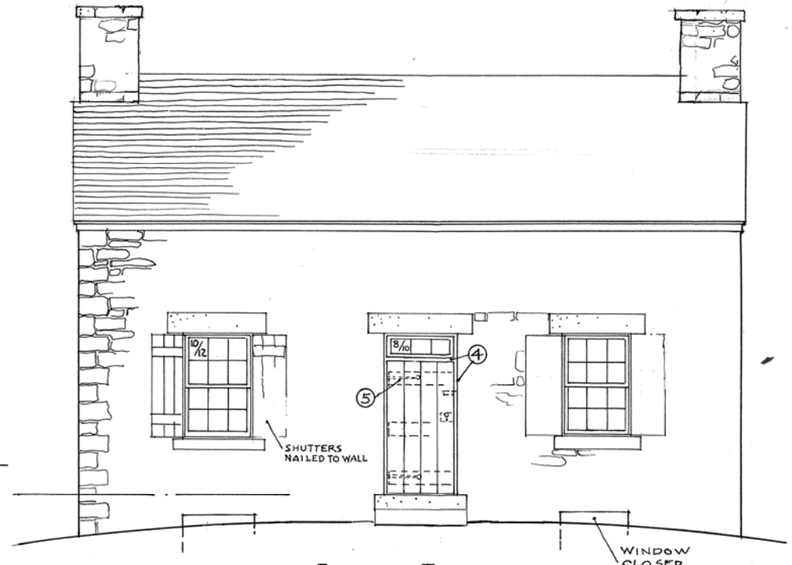
Survey No. changed to MD-56-K sheet 2 of 2

TRIM LINE



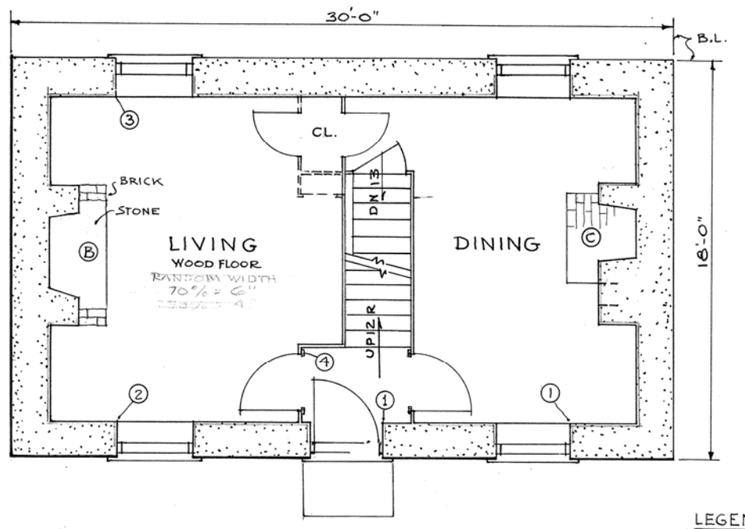
SECOND FLOOR PLAN

N

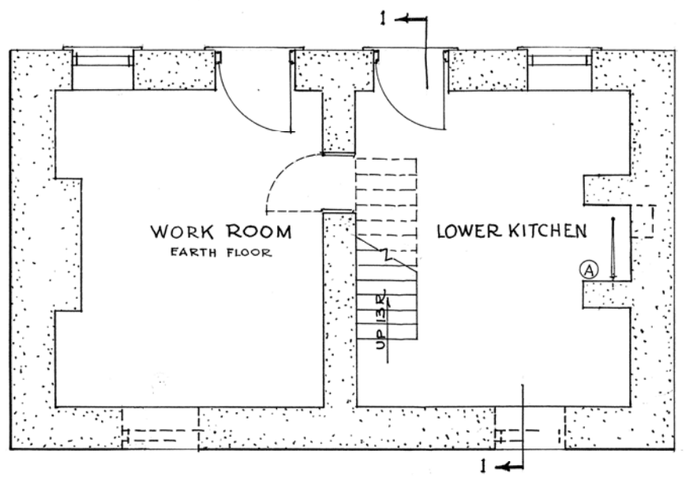


SOUTH ELEVATION

SCALE: 1/4"=1'-0"



FIRST FLOOR PLAN



BASEMENT FLOOR PLAN

LEGEND
RUBBLE
WOOD

GRAPHIC SCALES
10 FT 5 0 12 IN 1/4"=1'-0"
3M 2 1 0 METRIC

See HABS No. DC-147 for a complete list of C & O Canal Sites.

MEASURED & DRAWN. MAR. 1964
J.G. ROBERTS

UNDER DIRECTION OF UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE, BRANCH OF PLANS AND DESIGN

NAME OF STRUCTURE
C & O CANAL - HOUSE AT LOCK 24
TIDEWATER VICINITY RIVERSIDE MONTGOMERY COUNTY, MARYLAND

SURVEY NO. MD 56-T

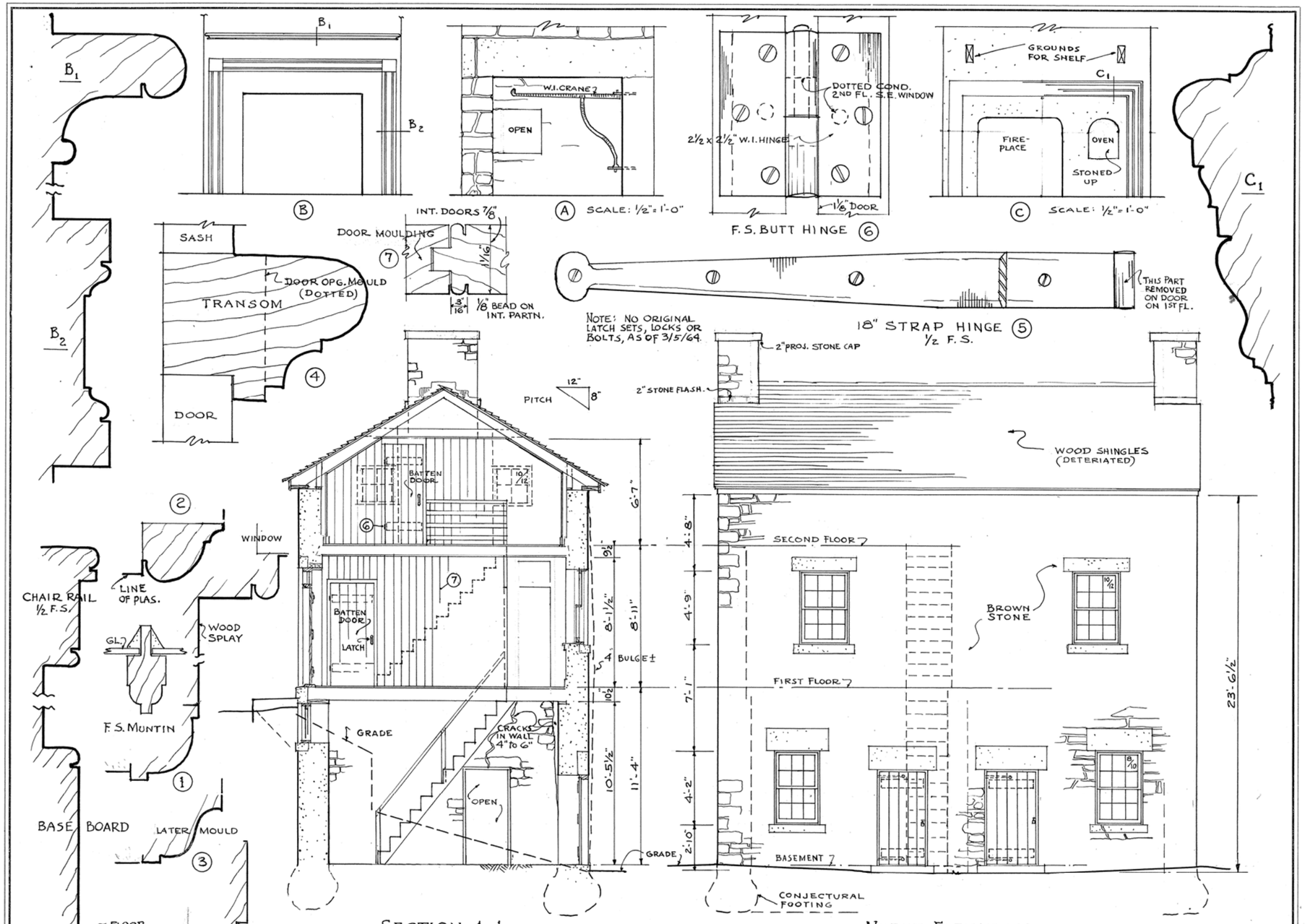
HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 1 OF 2 SHEETS

LIBRARY OF CONGRESS INDEX NUMBER

U.S. GOVERNMENT PRINTING OFFICE 10—0509

TRIM LINE

TRIM LINE



DUE TO INSUFFICIENT INFORMATION AT THE TIME OF EDITING, THIS MATERIAL MAY NOT CONFORM TO HABS OR HAER STANDARDS.

MEASURED & DRAWN, MAR. 1964
J. G. ROBERTS

See HABS No. DC-147 for a complete list of C & O Canal Sites.

UNDER DIRECTION OF UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE, BRANCH OF PLANS AND DESIGN

NAME OF STRUCTURE
C&O CANAL - HOUSE AT LOCK 24
TIDEWATER VICINITY RIVERSIDE MONTGOMERY COUNTY, MARYLAND

SURVEY NO. MD 56-T

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 2 OF 2 SHEETS

LIBRARY OF CONGRESS INDEX NUMBER

U.S. GOVERNMENT PRINTING OFFICE 10—5589

TRIM LINE

Appendix 3.5: Historic Materials

Historic Materials Analysis
May, 2011

Lockkeeper's House Lead Paint Analysis
January, 1995

Asbestos containing materials (ACM) assessment and lead-base paint (LBP) screening conducted within the Lock Keeper's House, located at 17th and Constitution Avenue in Washington, DC
September 23, 2009
(see electronic file)

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APPENDIX 3.5 – HISTORIC MATERIALS ANALYSIS

EXTERIOR SITE ELEMENTS

HISTORIC MATERIAL	PHOTO IMAGE	ANALYSIS & TREATMENT
Carriage Mounting Block		Cast-in-place concrete, exposed aggregate appearance. Appears to be in quite sound condition. Routine cleaning is needed. Consideration of long term strategies to protect object from direct public access. Note that it has been temporarily moved and placed on a pallet by the NPS.
Ground Cover and Landscape Plantings		A more appropriate landscape treatment would be without masonry walkways or pathways. Additional research into the lives of the lockkeepers and how they lived may provide information on the treatment of the historic landscape, i.e. if they grew their own food on the land around the lockhouse.

EXTERIOR BUILDING ELEMENTS

HISTORIC MATERIAL	PHOTO IMAGE	ANALYSIS & TREATMENT
Wood Shingles		This roof assembly was installed in 2004 to match the assumed original roofing material type and appearance. This roof should have at least 30 years remaining service life. The 1836 specifications call for cypress shingles 18" long.
Stone Walls	 	The majority of the stone is a locally quarried metamorphic stone in the gneiss family. This material would have similar properties to granite. It is a superior building stone which generally exhibits little deterioration from weathering. Colors range from dark blue, black and also include medium beige and brown tones. There are a handful of beige-colored wall stones that may be Aquia Creek sandstone. They have suffered severe surface erosion. The non-sandstone stonework could be cleaned, but otherwise, is in very sound condition.
Mortar Joints		There are many (perhaps more than 5) types of mortar present. This image illustrates three of the more common ones: the brighter white is relatively recent, the raised rope joint is fairly prevalent, and in the upper left, the mortar has exposed aggregate piece the size of small peas. Virtually all of the mortar appears to be from the 20th century in that it is hard and firm, probably with a good quantity of Portland cement.

Mortar Joints - Original		The 20th century raised rope joint mortar is at the right of this image. It is placed over a lighter mortar. This beige-colored mortar has some larger aggregate (the size of small peas) and also solid white lumps which are most likely lime. To the author, this mortar appears to be more typical of the early 19th century. This second mortar has maintained strength although it is obviously impacted by long term exposure to weather.
Wood Windows and Trim		The condition of the paint coating on many elements is poor. Most exterior wooden elements were installed in the restoration of 1916 which also most likely included the sashes. This has exposed these elements to the weather. It is possible that wood rot is present, but now invisible. The technology to repair and recondition wood and paint coatings is well understood. Several of the glass panes and a muntin are missing and should be replaced. The remaining panes should receive new glazing putty. Once complete, these treatments can provide continued satisfactory service life. Prior to rehabilitation, every piece of exterior wooden trim should be probed to confirm condition and uncover hidden damage.

HISTORIC MATERIAL	PHOTO IMAGE	ANALYSIS & TREATMENT
Wood Doors		These elements also installed in the NPS restoration of 1916. See above for treatment recommendations.

INTERIOR BUILDING ELEMENTS

HISTORIC MATERIAL	PHOTO IMAGE	ANALYSIS & TREATMENT
Brick chimneys (seen within wall cavity - between masonry walls and beadboard)		It is difficult to examine the brick chimneys. The west one was half demolished for the installation of the plumbing vent. This photo is of the east chimney. It's white surface could have been an interior finish. The flue into the chimney may have been for a stove but it the end of the flue is now cut off by the beadboard partition wall.

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Chantilly, VA 22021-0841
Telephone: (703) 802-6900

INDUSTRIAL HYGIENE DEPARTMENT

M

RECEIVED : 01/14/95
RELEASED : 01/19/95
REPORTED : 01/19/95
WORK ORDER: 104170

17225 NATIONAL PARK SERVICE, N.C.R.
ATTN: ARNOLD REUTER
G.W. MEM PKWY, TURKEY RUN PARK
MCLEAN , VA
22101

PROJECT NAME/JOB ID: CALL #95-217
: LOCK KEEPERS HOUSE

AML NUMBER		VALUE	UNITS
8449634	900		Bulk
3330	LEAD IN PAINT		
	Site/Location:	WINDOW TRIM	
	Concentration:	38.7	% Lead
	Analyst:	Earl Callender	

NOTATIONS

Analysis for lead in paint is performed via modified EPA 846-3050 with subsequent analysis by flame atomic absorption spectroscopy (FLAA) or Inductively Coupled Plasma (ICP).

As per "Lead-Based Paint; Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing; September, 1990, regulatory guidelines are 0.5% lead by weight or 1 mg/cm2 lead content by area.

Excess backing material such as wallboard or wood submitted as sample may cause a result to appear lower than is actually correct for results reported in weight percent.

*** FINAL REPORT ***

BRYAN MASON
DIRECTOR, IND. HYGIENE

FOR INDUSTRIAL HYGIENE RELATED QUESTIONS,
INCLUDING REQUESTS FOR SUPPLIES, CALL
1-800-348-1590

Age and sex dependent reference ranges are printed when available if age and sex are designated. Otherwise, adult values are given.

IRA D. GODWIN, M.D.
DIRECTOR OF LABORATORIES

Aerosol Monitoring & Analysis, Inc.
Environmental Consultants

September 23, 2009

Ms. Jennifer Talken-Spaulding
Cultural Resources Program Manager
National Mall and Memorial Parks
900 Ohio Drive, SW
Washington DC 20024

RE: Asbestos containing materials (ACM) assessment and lead-based paint (LBP) screening conducted within the Lock Keeper's House, located at 17th and Constitution Avenue in Washington DC.

AMA Job #: 09406
GSA Contract #: GS-10F-0386K

Dear Mrs. Spaulding:

On September 17th and 18th, 2009, Mr. Robert Schoennagel, an Environmental Protection Agency (EPA) accredited asbestos and lead inspector representing Aerosol Monitoring & Analysis, Inc. (AMA), was on-site at the Lock Keeper's House, located at 17th and Constitution Avenue in Washington DC, to conduct an asbestos assessment and lead-based paint screening of the accessible interior and exterior areas of the building. The Lock Keeper's House consists of a two-story concrete and stone masonry construction building, with no below grade basement. The purpose of the assessment was to determine the presence and quantity of suspect asbestos containing building materials, and to test surfaces that may be finished with LBP, in response to a request by the National Mall & Memorial Parks. No roofing materials were assessed as part of this investigation.

ASBESTOS

AMA's scope of work included the visual inspection, quantification, sampling, and laboratory analysis of accessible suspect ACM. While on site, Mr. Schoennagel assessed the interior and exterior areas of the building. The interior finishes consist of plaster, gypsum board, wood, concrete, and vinyl floor tile. AMA did not employ destructive sampling techniques during the investigation therefore, suspect ACMs may exist within inaccessible areas of the Lock Keeper's House, such as behind walls, in hidden pipe chases, and inside metal fire doors. Any such material that is discovered during the process of any renovation/ demolition activities that is not identified within this report should be treated as an ACM, unless bulk sampling and laboratory analysis determines otherwise.

The materials from which bulk samples were collected included: 9"x9" brown floor tile, black flooring felt paper, black floor tile mastic, gypsum board, plaster skim coat, plaster scratch coat, window glazing, and door caulking. The EPA defines an ACM as any material containing greater than one percent (>1%) asbestos by polarized light microscopy (PLM**). Of the twenty-one (21) samples collected, two (2) of the samples were identified as having an asbestos content of >1% asbestos. The 9"x9" brown floor tile was determined to contain >1% asbestos by laboratory analysis. AMA observed approximately 305 square feet of 9"x9" brown floor tile on the 2nd floor of the building. Also, AMA identified two (2) metal fire doors on the 1st floor, North side of the building, which were assumed to have asbestos cores.** Please refer to Table I, Asbestos Bulk Sampling Results, at the end of this report, which provides the sample number, material sampled, sample location, and analytical result for the bulk samples collected.

Samples of the suspect ACMs were collected with a core borer, metal spatula, or utility knife, which was driven through the suspect material to the substrate so as to obtain a sample containing all discrete layers. The samples were then placed in "whirl-pak" bags and assigned unique identifiers that were recorded on the bag and the bulk survey sampling sheets.

Samples were submitted to AMA Analytical Services, Inc. in Lanham, Maryland. Samples of bulk material were analyzed using PLM following the EPA Method 600/R-93/116. PLM is an optical microscopic technique used to distinguish the different types of asbestos fibers by their shape and unique optical properties. The technique is based on observing the refraction of light from the various crystalline asbestos structures and identifying the corresponding color changes through the microscope. Analytical results of greater than 1% asbestos classify a material as asbestos containing according to the EPA and the District of Columbia.

AMA Analytical Services, Inc. is a participant in the U.S. Department of Commerce, National Institute of Standards and Technology through the National Voluntary Laboratory Accreditation Program (NVLAP) for Bulk Asbestos Analysis, NVLAP No. 101143-0 and accreditation by the American Industrial Hygiene Association (#8863).

LEAD

Fifty-seven (57) surfaces finished with suspect lead-based paint (LBP) were tested during the lead screening with the use of a Radiation Monitoring Devices (RMD) model LPA-1 x-ray fluorescence spectrum analyzer (XRF). Forty-seven (47) of the tests/surfaces/building components were determined to contain greater than (>0.7) milligram of lead per square centimeter (mg/cm^2) of surface area tested, the amount defined as a lead-containing substance according to the District of Columbia. Lead-containing paint was also identified on various building surfaces located throughout the building. Lead containing paint is any surface finish that contains a measurable amount of lead. There are no requirements to remove the lead based paint or lead-containing paint, however during any renovation or demolition activities the regulations established in the Occupational Safety and Health Administration's (OSHA's) "Lead in Construction Standard" (29 CFR 1926.62) must be followed.

The plaster walls and ceilings, gypsum board ceiling on the 2nd floor, wood walls and ceilings, wood baseboards, wood door systems, wood window systems, and concrete floors were determined by

XRF analysis to be finished with LBP. AMA observed chipping and peeling paint on multiple building surfaces, and lead dust and debris was observed on the floors and other building components throughout the Lock Keeper's House. Please refer to table II for a complete list of LBP components, and the attached site photographs which provide images of building conditions at the Lock Keeper's House.

CONCLUSIONS/ RECOMMENDATIONS

ASBESTOS

If any renovation/demolition activities are to occur within the Lock Keeper's House, the identified asbestos containing materials should be removed prior to disturbance, in compliance with all federal, state, and local asbestos regulations and guidelines. Any suspect asbestos containing building materials discovered during the process of any renovation/ demolition activities, that are not identified within this report should be assumed to be asbestos containing until bulk sampling and laboratory analysis determines otherwise.

The confirmed ACMs identified within the Lock Keeper's House are considered to be miscellaneous materials. Within the EPA's National Emissions Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M) the EPA classifies the floor tile as a Category I non-friable material, and the metal fire doors as Category II non-friable material.

The OSHA 29 CFR 1926.1101 regulation defines work involving the disturbance of asbestos-containing miscellaneous materials as Class II work. If the miscellaneous materials located at the Lock Keeper's House, which were determined to be ACM, will be disturbed, it must be done while meeting the requirements set forth in 29 CFR 1926.1101 for Class II work and must be adhered to during the removal of the ACM.

LEAD

For projects, which will disturb LBP, the paint must be handled in accordance with the requirements established by the EPA and OSHA. There is no requirement to remove LBP prior to demolition/renovation activities, only that painted components be tested to determine the disposal requirements and that contractors be made aware of the existence of LBP, or any paint containing lead in detectable amounts (lead containing paint, LCP), so their workers can be adequately protected. Whenever renovation/ demolition is performed and/or during any cleaning activities conducted upon surfaces contaminated with lead dust and paint chip debris, an attempt should be made to control dust.

Regulations established in OSHA's "Lead in Construction Standard" (29 CFR 1926.62) must be adhered to during demolition/renovation of the surfaces finished with paint containing lead in detectable amounts, and/or during the proposed cleaning activities of the lead contaminated debris located throughout the Lock Keeper's House. This standard established the permissible exposure level (PEL) for lead at 50 micrograms per cubic meter ($\mu g/m^3$) as an eight hour time weighted average (TWA); the action level has been established at 30 $\mu g/m^3$ as an eight hour TWA. This regulation also requires employers to use engineering controls and special work practices to reduce

worker lead exposure to, at, or below the PEL. It also triggers several requirements regarding exposure monitoring, personal protective equipment (PPE), biological monitoring, and employee training when a worker is exposed to airborne lead levels at or above the action level.

Prohibited methods of lead paint removal include: sanding (except with equipment fitted with HEPA filters), burning with an open flame torch, or any methods, which produce uncontrolled dust or fumes (dry sweeping and shoveling). AMA recommends that workers involved in activities which may disturb lead contaminated debris have the proper training and utilize engineering controls, including but not limited to wet methods and HEPA vacuuming, during the proposed cleaning activities at the Lock Keeper's House. Within the EPA's Identification and Listing of Hazardous Waste (40 CFR Part 261), all lead-containing waste is to be handled and disposed of as hazardous waste unless TCLP (toxic characteristic leaching procedure) testing is performed and indicates otherwise. The waste shall be considered as hazardous when the concentration of lead exceeds 5 parts per million (ppm) by the TCLP. Metal components should be recycled, and glazed finishes are to be disposed of as general construction debris.

Enclosed, please find copies of the laboratory certificates of analysis, the chain of custodies, the bulk sample survey sheets, and XRF field data sheets. If you should have any questions regarding this report, please contact our office.

Sincerely,

Robert Schoennagel
Industrial Hygienist

TABLE I: ASBESTOS BULK SAMPLE RESULTS

TABLE I
ASBESTOS BULK SAMPLING RESULTS TABLE
NATIONAL MALL AND MEMORIAL PARKS
LOCK KEEPER'S HOUSE
17TH & CONSTITUTION AVENUE, NW
WASHINGTON DC
SEPTEMBER 2009

Sample Number	Material Sampled	Sample Location	Sample Result (% and type asbestos)
09406091701	**9"x9" Brown Floor Tile**	**2nd Floor, Area #1**	**3% Chrysotile**
09406091702	**9"x9" Brown Floor Tile**	**2nd Floor, Area #1**	**3% Chrysotile**
09406091703	Black Flooring Felt Paper	2nd Floor, Area #1	No Asbestos Detected
09406091704	Black Flooring Felt Paper	2nd Floor, Area #1	No Asbestos Detected
09406091705	Black Floor Tile Mastic	2nd Floor, Area #1	No Asbestos Detected
09406091706	Black Floor Tile Mastic	2nd Floor, Area #1	No Asbestos Detected
09406091707	Gypsum Board	2nd Floor, Area #1	No Asbestos Detected
09406091708	Gypsum Board	2nd Floor, Area #1	No Asbestos Detected
09406091709	Window Glazing	1st Floor, Entrance Foyer, Area #3	No Asbestos Detected
09406091710	Window Glazing	Exterior, South Wall	No Asbestos Detected
09406091711	Door Caulking	Exterior, North Wall	No Asbestos Detected
09406091712	Plaster Skim Coat	1st Floor, Entrance Foyer, Area #3	No Asbestos Detected
09406091713	Plaster Skim Coat	1st Floor, Bathroom, Area #4	No Asbestos Detected
09406091714	Plaster Skim Coat	1st Floor, Bathroom, Area #5	No Asbestos Detected
09406091715	Plaster Scratch Coat	1st Floor, Entrance Foyer, Area #3	No Asbestos Detected
09406091716	Plaster Scratch Coat	1st Floor, Bathroom, Area #4	No Asbestos Detected
09406091717	Plaster Scratch Coat	1st Floor, Bathroom, Area #5	No Asbestos Detected
09406091718	Plaster Skim Coat	1st Floor, Front Room, Area #6	No Asbestos Detected
09406091719	Plaster Scratch Coat	1st Floor, Front Room, Area #6	No Asbestos Detected
09406091720	Plaster Skim Coat	1st Floor, Entrance Foyer, Area #3	No Asbestos Detected
09406091721	Plaster Scratch Coat	1st Floor, Entrance Foyer, Area #3	No Asbestos Detected

TABLE II:POSITIVE XRF READING TABLE

TABLE II
POSITIVE XRF READING TABLE
NATIONAL MALL AND MEMORIAL PARKS
LOCK KEEPER'S HOUSE
17TH & CONSTITUTION AVENUE, NW
WASHINGTON DC
SEPTEMBER 2009

Sample #	Location	Color	Component	Substrate	Condition	Result (mg/cm^2)
September 17, 2009						
004	2nd Floor	White	Wall	Drywall	Intact	>9.9
005	2nd Floor	Green	Wall	Wood	Intact	4.6
006	2nd Floor	White	Baseboard	Wood	Intact	>9.9
007	2nd Floor	White	Window Sash	Wood	Not Intact	>9.9
008	2nd Floor	White	Window Casing	Wood	Not Intact	2.2
009	2nd Floor	Tan	Window Sill	Wood	Not Intact	1.7
010	2nd Floor	Green	Wall	Wood	Not Intact	1.4
011	2nd Floor	Green	Door	Wood	Not Intact	>9.9
012	2nd Floor	White	Ceiling	Drywall	Not Intact	1.7
013	2nd Floor	Green	Door	Wood	Intact	>9.9
014	2nd Floor	White	Door Casing	Wood	Intact	>9.9
015	2nd Floor	White	Window Sash	Wood	Not Intact	>9.9
016	2nd Floor	White	Window Casing	Wood	Not Intact	2.6
017	Stairwell	Green	Wall	Wood	Intact	4.1
018	Stairwell	Gray	Window Sash	Wood	Not Intact	>9.9
019	Stairwell	Gray	Window Casing	Wood	Intact	2.2
020	Stairwell	Gray	Window Sill	Wood	Not Intact	2.4
021	Stairwell	White	Ceiling	Wood	Not Intact	>9.9
024	1st Floor, Entrance Foyer	Brown	Window Casing	Wood	Intact	>9.9
025	1st Floor, Entrance Foyer	Brown	Window Sash	Wood	Not Intact	>9.9
026	1st Floor, Entrance Foyer	Brown	Window Sill	Wood	Not Intact	>9.9
027	1st Floor, Entrance Foyer	Brown	Window Cage	Metal	Intact	>9.9
028	1st Floor, Entrance Foyer	Brown	Door Casing	Wood	Intact	>9.9
029	1st Floor, Entrance Foyer	Brown	Door	Wood	Intact	>9.9
042	1st Floor, Bathroom #2	White	Ceiling	Plaster	Not Intact	3.2
043	1st Floor, Bathroom #2	Off White	Window Casing	Wood	Intact	>9.9
044	1st Floor, Bathroom #2	White	Sink	Porcelain	Intact	>9.9
046	1st Floor, Bathroom #2	Tan	Wall	Plaster	Not Intact	2.8
049	1st Floor, Main Room	Brown	Door Casing	Wood	Intact	>9.9
052	Exterior, North Wall	Brown	Window Casing	Wood	Not Intact	>9.9
053	Exterior, North Wall	Brown	Window Sash	Wood	Not Intact	>9.9
054	Exterior, North Wall	Brown	Window Cage	Metal	Not Intact	>9.9
055	Exterior, North Wall	Brown	Door	Wood	Not Intact	>9.9
056	Exterior, North Wall	Brown	Door Casing	Wood	Not Intact	>9.9
057	Exterior, North Wall	Black	Handrail	Metal	Not Intact	2.0
058	Exterior, South Wall	Brown	Door	Wood	Not Intact	>9.9
059	Exterior, South Wall	Brown	Door Casing	Wood	Not Intact	>9.9
060	Exterior, South Wall	Brown	Door Casing	Wood	Not Intact	>9.9
September 18, 2009						
004	1st Floor, South Side Room	Green	Door	Wood	Intact	>9.9

TABLE II
POSITIVE XRF READING TABLE
NATIONAL MALL AND MEMORIAL PARKS
LOCK KEEPER'S HOUSE
17TH & CONSTITUTION AVENUE, NW
WASHINGTON DC
SEPTEMBER 2009

Sample #	Location	Color	Component	Substrate	Condition	Result (mg/cm^2)
005	1st Floor, South Side Room	Green	Door Casing	Wood	Not Intact	>9.9
006	1st Floor, South Side Room	Green	Wall	Plaster	Not Intact	>9.9
007	1st Floor, South Side Room	White	Sink	Porcelain	Intact	>9.9
008	1st Floor, South Side Room	Yellow	Ceiling	Plaster	Not Intact	>9.9
009	1st Floor, South Side Entrance Foyer	Yellow	Wall	Plaster	Not Intact	>9.9
010	1st Floor, South Side Entrance Foyer	Green	Wall Panel	Wood	Intact	0.8
011	1st Floor, South Side Entrance Foyer	Green	Window Casing	Wood	Intact	>9.9
012	1st Floor, South Side Entrance Foyer	Black	Baseboard	Concrete	Not Intact	3.4

APPENDIX A: ASBESTOS-CONTAINING MATERIAL DOCUMENTATION

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP® 101143-0

Client:	Aerosol Monitoring & Analysis, Inc	**Job Name:**	Lock keeper's House	**Chain Of Custody:**	193641
Address:	PO Box 646, 1331 Ashton Road	**Job Location:**	Washington DC	**Date Analyzed:**	9/18/2009
	Hanover, Maryland 21076	**Job Number:**	09406	**Person Submitting:**	Rob Schoennagel
		P.O. Number:	Not Provided		
Attention:	Gary Urban				

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Homogeneity	Analyst ID	Comments
0966552	09406091701	3	3	--	--	--	--	--	--	--	--	97	Brown	Homogeneous	LBP	
0966553	09406091702	3	3	--	--	--	--	--	--	--	--	97	Brown	Homogeneous	LBP	
0966554	09406091703	NAD	--	--	--	--	--	--	20	--	--	80	Black	Homogeneous	LBP	
0966555	09406091704	NAD	--	--	--	--	--	--	20	--	--	80	Black	Homogeneous	LBP	
0966556	09406091705	NAD	--	--	--	--	--	--	TR	--	--	100	Black	Homogeneous	LBP	
0966557	09406091706	NAD	--	--	--	--	--	--	15	TR	--	85	Black	Homogeneous	LBP	
0966558	09406091707	NAD	--	--	--	--	--	--	TR	--	--	100	White	Homogeneous	LBP	
0966559	09406091708	NAD	--	--	--	--	--	--	TR	--	--	100	Off-White	Homogeneous	LBP	
0966560	09406091709	NAD	--	--	--	--	--	--	--	--	--	100	Off-White	Homogeneous	LBP	
0966561	09406091710	NAD	--	--	--	--	--	--	--	--	--	100	Off-White	Homogeneous	LBP	
0966562	09406091711	NAD	--	--	--	--	--	--	--	--	--	100	White	Homogeneous	LBP	
0966563	09406091712	NAD	--	--	--	--	--	--	--	--	--	100	White	Homogeneous	LBP	
0966564	09406091713	NAD	--	--	--	--	--	--	--	--	--	100	White	Homogeneous	LBP	
0966565	09406091714	NAD	--	--	--	--	--	--	--	--	--	100	White	Homogeneous	LBP	
0966566	09406091715	NAD	--	--	--	--	--	--	--	--	--	100	White	Homogeneous	LBP	

AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

NVLAP 101143-0

CERTIFICATE OF ANALYSIS

Client:	Aerosol Monitoring & Analysis, Inc	**Job Name:**	Lock keeper's House	**Chain Of Custody:**	193641
Address:	PO Box 646, 1331 Ashton Road	**Job Location:**	Washington DC	**Date Analyzed:**	9/18/2009
	Hanover, Maryland 21076	**Job Number:**	09406	**Person Submitting:**	Rob Schoennagel
		P.O. Number:	Not Provided		
Attention:	Gary Urban				

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Homogeneity	Analyst ID	Comments
0966567	09406091716	NAD	--	--	--	--	--	--	--	--	--	100	Brown	Homogeneous	LBP	
0966568	09406091717	NAD	--	--	--	--	--	--	--	--	--	100	Brown	Homogeneous	LBP	
0966569	09406091718	NAD	--	--	--	--	--	--	--	--	--	100	White	Homogeneous	LBP	
0966570	09406091719	NAD	--	--	--	--	--	--	--	--	--	100	Brown	Homogeneous	LBP	
0966571	09406091720	NAD	--	--	--	--	--	--	--	--	--	100	White	Homogeneous	LBP	
0966572	09406091721	NAD	--	--	--	--	--	--	--	--	--	100	Brown	Homogeneous	LBP	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD – "No Asbestos Detected" TR – "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23

Lom Butruk

Lom Butruk

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 193641

Mailing/Billing Information:

1. Client Name: AMA
2. Address 1: 7331 Ashton Road
3. Address 2: Hanover, MD 21076
4. Address 3:
5. Phone #: 410 684 3327 Fax #:

Submittal Information:

1. Job Name: Lock Keeper's House
2. Job Location: Washington DC
3. Job #: 094106 P.O. #:
4. Contact Person: Gary Urban @ phone # 410-684-3327
5. Submitted by: Bob Shoemaker Signature: Bob Shoemaker

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
❑ Immediate Date Due:	❑ Immediate ❑ 3 Day	■ Include COC/Field Data Sheets with Report
❑ 24 Hours Time Due:	■ Next Day ❑ 5 Day +	■ Email: gary.u @ amaconsulting.com
Comments:	❑ 2 Day Date Due: 9/18/09	■ Fax: 410-684-3384
	❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	❑ Verbals:

Asbestos Analysis

PCM Air – Please Indicate Filter Type:
- ❑ NIOSH 7400 (QTY)
- ❑ Fiberglass (QTY)

TEM Air – Please Indicate Filter Type:
- ❑ AHERA (QTY)
- ❑ NIOSH 7402 (QTY)
- ❑ Other (specify) (QTY)

PLM Bulk
- ■ EPA 600 – Visual Estimate 21 (QTY)
- ❑ EPA Point Count (QTY)
- ❑ NY State Friable 198.1 (QTY)
- ❑ Grav. Reduction ELAP 198.6 (QTY)
- ❑ Other (specify) (QTY)

MISC
- ❑ Vermiculite
- ❑ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

TEM Bulk
- ❑ ELAP 198.4/Chatfield (QTY)
- ❑ NY State PLM/TEM (QTY)
- ❑ Residual Ash (QTY)

TEM Dust
- ❑ Qual. (pres/abs) Vacuum/Dust (QTY)
- ❑ Quan. (s/area) Vacuum D5755-95 (QTY)
- ❑ Quan. (s/area)Dust D6480-99 (QTY)

TEM Water
- ❑ Qual. (pres/abs) (QTY)
- ❑ ELAP 198.2/EPA 100.2 (QTY)
- ❑ EPA 100.1 (QTY)

❑ All samples received in good condition unless otherwise noted. (TEM Water samples °C)

Metals Analysis
- ❑ Pb Paint Chip (QTY)
- ❑ Pb Dust Wipe (wipe type) (QTY)
- ❑ Pb Air (QTY)
- ❑ Pb Soil/Solid (QTY)
- ❑ Pb TCLP (QTY)
- ❑ Drinking Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
- ❑ Waste Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
- ❑ Pb Furnace (Media) (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples:
Collection Media
- ❑ Spore-Trap (QTY) ❑ Surface Vacuum Dust (QTY)
- ❑ Surface Swab (QTY) ❑ Culturable ID Genus (Media) (QTY)
- ❑ Surface Tape (QTY) ❑ Culturable ID Species (Media) (QTY)
- ❑ Other (Specify) (QTY)

SAMPLE INFORMATION					ANALYSIS					MATRIX							CLIENT CONTACT
CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	(LABORATORY STAFF ONLY)
																	Date/Time: Contact: By:
094066091701	Lock Keepers House	91709					X				X						
thru	"	"					"				"						
094066091721	"	"					"				"						
																	Date/Time: Contact: By:
ANOTHER 100 OF THESE																	Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 9 / 17 / 09 @ 1045 Via: drop off By (Print): Chris Nicodemus Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

Aerosol Monitoring & Analysis, Inc.

Bulk Sampling Survey Sheet

Date Collected 9/17/09 **Address:** Constitution Ave. at 17th Ave., NW **Company:** Aerosol Monitoring & Analysis, Inc.

Job Number: 09406 Washington DC **Telephone Number:** (410) 684 - 3327

Job Site Lock Keepers House **Contact Person:** Gary Urban **Samples Taken By:** Rob Schoennagel

Chain of Custody #: ~~193641~~ 193641

Sample Number	Type of Material Sampled	Sample Location	Friable	Condition of the Material	Accessibility	Photo	Comments
09406 0917 01	9"x9" Brown Floor Tile	2nd Floor - Area #1 - Along E Wall - 3' N of S Wall	☐ Yes ☒ No ☐ Potentially	☒ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☒ High	☐ Yes ☐ No #	
09406 0917 02	↓	2nd Floor - Area #1 - Along W Wall - 4' N of S Wall	☐ Yes ☒ No ☐ Potentially	☒ Good ☐ Fair ☐ Poor	☐ Low ☐ Medium ☒ High	☐ Yes ☐ No #	
09406 0917 03	Black Flooring Felt Paper	Same As Sample #09406091701	☐ Yes ☒ No ☐ Potentially	☒ Good ☐ Fair ☐ Poor	☒ Low ☐ Medium ☐ High	☐ Yes ☐ No #	- Under Floor Tile
09406 0917 04	↓	Same As Sample #09406091702	☐ Yes ☒ No ☐ Potentially	☒ Good ☐ Fair ☐ Poor	☒ Low ☐ Medium ☐ High	☐ Yes ☐ No #	↓
09406 0917 05	Black Floor Tile Mastic	Same As Sample #09406091702	☐ Yes ☒ No ☐ Potentially	☒ Good ☐ Fair ☐ Poor	☒ Low ☐ Medium ☐ High	☐ Yes ☐ No #	

(Revised 8/01)

Aerosol Monitoring & Analysis, Inc.

Bulk Sampling Survey Sheet

Date Collected 9/17/09 **Address:** Constitution Ave. at 17th Ave., NW **Company:** Aerosol Monitoring & Analysis, Inc.

Job Number: 09406 Washington DC **Telephone Number:** (410) 684 - 3327

Job Site Lock Keepers House **Contact Person:** Gary Urban **Samples Taken By:** Rob Schoennagel

Chain of Custody #: 193641

Sample Number	Type of Material Sampled	Sample Location	Friable	Condition of the Material	Accessibility	Photo	Comments
09406 0917 06	Black Floor T/e Mastic	Same As Sample #094060917 01	☐ Yes ☒ No ☐ Potentially	☒ Good ☐ Fair ☐ Poor	☒ Low ☐ Medium ☐ High	☐ Yes ☐ No #	
09406 0917 07	Gypsum Board	2nd Floor - Area #1 - Along Ceiling = 4' N of S Wall = 7' E of W Wall	☒ Yes ☐ No ☐ Potentially	☐ Good ☒ Fair ☐ Poor	☐ Low ☐ Medium ☒ High	☐ Yes ☐ No #	
09406 0917 08	↓	2nd Floor - Area #1 - Along N Wall = 3' high from floor = 9' E of W Wall	☒ Yes ☐ No ☐ Potentially	☐ Good ☒ Fair ☐ Poor	☐ Low ☐ Medium ☒ High	☐ Yes ☐ No #	
09406 0917 09	Window Glazing	Area #3, Ent. Foyer - Along N. Wall = 5' high from floor = 5' W of E Wall	☐ Yes ☒ No ☐ Potentially	☐ Good ☐ Fair ☒ Poor	☐ Low ☐ Medium ☒ High	☐ Yes ☐ No #	
09406 0917 10	↓	Exterior, S. Wall = 5' high from floor = 2' E of W Wall - Along S. Wall	☐ Yes ☒ No ☐ Potentially	☐ Good ☐ Fair ☒ Poor	☐ Low ☐ Medium ☒ High	☐ Yes ☐ No #	

(Revised 8/01)

Aerosol Monitoring & Analysis, Inc.

Bulk Sampling Survey Sheet

Date Collected 9/17/09 **Address:** Constitution Ave. at 17th Ave., NW **Company:** Aerosol Monitoring & Analysis, Inc.

Job Number: 09406 Washington DC **Telephone Number:** (410) 684 - 3327

Job Site Lock Keepers House **Contact Person:** Gary Urban **Samples Taken By:** Rob Schoennagel

Chain of Custody #: 193641

Sample Number	Type of Material Sampled	Sample Location	Friable	Condition of the Material	Accessibility	Photo	Comments
09406 0917 11	Exterior Door Caulking	Exterior, Along N. Wall - Along N Wall - 6' high from step - Front Entrance Door	☐ Yes ☒ No ☐ Potentially	☐ Good ☐ Fair ☒ Poor	☐ Low ☐ Medium ☒ High	☐ Yes ☐ No #	
09406 0917 12	Plaster Skim Coat	- Area #3, Ent. Foyer - Along E Wall - 2' S of N Wall - 5' high from floor	☒ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☒ Poor	☐ Low ☐ Medium ☒ High	☐ Yes ☐ No #	
09406 0917 13		- Area #4, Bathroom - Ceiling - 2' S of N Wall - 1' W of E Wall	☒ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☒ Poor	☐ Low ☐ Medium ☒ High	☐ Yes ☐ No #	
09406 0917 14		- Area #5, Bathroom - Along W Wall - 5' S of N Wall - 2' high from floor	☒ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☒ Poor	☐ Low ☐ Medium ☒ High	☐ Yes ☐ No #	
09406 0917 15	Plaster Scratch Coat	Same As Sample #0940609171 2	☒ Yes ☐ No ☐ Potentially	☐ Good ☐ Fair ☒ Poor	☐ Low ☐ Medium ☒ High	☐ Yes ☐ No #	

(Revised 8/01)

JOB NAME: Lock Keeper's House

ADDRESS: 17th & Constitution Ave.

RMD LPA-1
FIELD FORM

TEST	ROOM	LOCATION	COLOR	COMPONENT	SUBSTRATE	CONDITION	COMMENTS	TEST NO./RESULT(mg/cm2)	
021	Stairwell - Area #2	Ceiling	W	Ceiling	Wood	NI	+	021	>9.9
022	↓	Stair	Brown	S. Tread	↓	↓		022	0.2
023	1st Floor/N. Side/ Ent. Foyer	W1	OW	Wall	Plaster	NI		023	0.1
024	Area #3	↓	Brown	W. Casing	Wood	I	+	024	>9.9
025	↓	↓	↓	W. Sash	↓	NI	+	025	>9.9
026	↓	↓	↓	W. Sill	Wood	↓	+	026	>9.9
027	↓	W1	Brown	W. Cage	Metal	I	+	027	>9.9
028	↓	↓	↓	D. Casing	Wood	I	+	028	>9.9
029	↓	W1	Brown	Door	Wood	I	+	029	>9.9
030	↓	W3	↓	↓	Metal	I		030	-0.1
031	↓	↓	↓	D. Casing	↓	↓		031	-0.1
032	↓	↓	W	Wall	Plaster	I		032	0.3
033	↓	W2	Tan	W2	↓	NI		033	0.0
034	↓	Floor	Gray	Floor	Concrete	↓		034	0.0
035	1st Floor/N. Side/ Area #4	W2	W	Wall	Plaster	NI		035	0.0
036	↓	Ceiling	↓	Ceiling	↓	↓		036	-0.1
037	↓	W1	Tan	Door	Metal	NI		037	-0.1
038	↓	↓	↓	D. Casing	↓	I		038	-0.1
039	↓	Floor	Gray	Floor	Concrete	NI		039	-0.1
040	↓	W3	W	Toilet	Porcelain	I		040	-0.3

JOB NAME: Lock Keepers House

ADDRESS: 17th & Constitution Ave.

RMD LPA-1
FIELD FORM

TEST	ROOM	LOCATION	COLOR	COMPONENT	SUBSTRATE	CONDITION	COMMENTS	TEST NO./RESULT(mg/cm2)	
041	1st Floor-N. Side / Area #5 Bathroom	W1	Tan	Wall	Plaster	I		041	0.4
042		Ceiling	W	Ceiling		NI	+	042	**3.2**
043		W3	OW	W. Casing	Wood	I	+	043	**>9.9**
044		W4	W	Sink	Porcelain		+	044	**>9.9**
045		W4	W	Pipe	Metal	I		045	0.4
046			Tan	Wall	Plaster	NI	+	046	**2.8**
047	1st Floor-N. Side/Area #5/Bathroom	W2	W	Wall				047	0.0
048			Green		Wood			048	-0.1
049		W1	Brown	D. Casing		I	+	049	**>9.9**
050		Floor	Gray	Floor	Concrete	NI		050	0.0
051		Ceiling	W	Ceiling	Plaster			051	0.2
052	Exterior - North Wall	W1	Brown	W. Casing	Wood	NI	+	052	**>9.9**
053				W. Sash			+	053	**>9.9**
054				W. Cage	Metal		+	054	**>9.9**
055		W1	Brown	Door	Wood		+	055	**>9.9**
056				D. Casing			+	056	**>9.9**
057		W1	Black	Handrail	Metal	NI	+	057	**2.0**
058	- South Wall	W3	Brown	Door	Wood	NI	+	058	**>9.9**
059				D. Casing			+	059	**>9.9**
060							+	060	**>9.9**

JOB# 09406

DATE: 9/17/09 - 0855

JOB NAME: Lab Keepers House

ADDRESS: 17th & Constitution Ave.

RMD LPA-1
FIELD FORM

TEST	ROOM	LOCATION	COLOR	COMPONENT	SUBSTRATE	CONDITION	COMMENTS	TEST NO./RESULT(mg/cm2)
061	CALIBRATION							061 ***0.9***
062	↓							062 ***0.9***
063								063 ***1.0***
064								
065								
066								
067								
068								
069								
070								
071								
072								
073								
074								
075								
076								
077								
078								
079								
080								

JOB# 09406

DATE: 9/17/09 - 0855

JOB NAME: Lock Keepers House

ADDRESS: 17th & Constitution Ave.

RMD LPA-1
FIELD FORM

TEST	ROOM	LOCATION	COLOR	COMPONENT	SUBSTRATE	CONDITION	COMMENTS	TEST NO./RESULT(mg/cm2)
001	CALIBRATION							001 1.0
002								002 1.0
003								003 0.9
004	Area#7, South Side Room	W2	Green	Door	Wood	I	+	004 >9.9
005				D.Casing		NI	+	005 >9.9
006		W4	Green	Wall	Plaster		+	006 >9.9
007			White	Sink	Porcelain	I	+	007 >9.9
008		Ceiling	Yellow	Ceiling	Plaster	NI	+	008 >9.9
009	Area#8, South Side Ent. Foyer	W1		Wall			+	009 >9.9
010			Green	W. Panel	Wood	I	+	010 0.8
011		W1		W. Casing			+	011 >9.9
012			Black	Baseboard	Concrete	NI	+	012 3.4
013		Floor		Floor				013 0.1
014	Calibration							014 1.0
015								015 1.1
016								016 1.1
017								
018								
019								
020								

JOB# 09406

DATE: 9/18/09 - [redacted]1237

APPENDIX C: SITE PHOTOS

SITE PHOTOS
NATIONAL MALL AND MEMORIAL PARKS
LOCK KEEPER'S HOUSE
17TH & CONSTITUTION AVENUE, NW
WASHINGTON DC
SEPTEMBER 2009

Chipping and peeling paint on plaster walls and ceiling inside the 1st floor, south side room.

Paint chip debris on the concrete floor inside the 1st floor, south side room.

Chipping and peeling paint on plaster walls and ceiling inside the 1st floor, south side entrance foyer.

Paint chip debris on the concrete floor, and chipping and peeling paint inside the 1st floor, south side entrance foyer.

SITE PHOTOS
NATIONAL MALL AND MEMORIAL PARKS
LOCK KEEPER'S HOUSE
17TH & CONSTITUTION AVENUE, NW
WASHINGTON DC
SEPTEMBER 2009

Paint chip debris on the 9"x9" brown floor tile inside the 2nd floor room.

Chipping and peeling paint on wood walls and door inside the 2nd floor room.

Chipping and peeling paint on the wood window system inside the 2nd floor room

Chipping and peeling paint on the gypsum board ceiling inside the 2nd floor room.

SITE PHOTOS
NATIONAL MALL AND MEMORIAL PARKS
LOCK KEEPER'S HOUSE
17TH & CONSTITUTION AVENUE, NW
WASHINGTON DC
SEPTEMBER 2009

Chipping and peeling paint on the plaster ceiling and walls inside the 1st floor, north side bathroom #1.

Chipping and peeling paint on the plaster ceiling inside the 1st floor, north side room.

Chipping and peeling paint on the plaster ceiling inside the 1st floor, north side bathroom #2

Paint chip debris on the concrete floor inside the 1st floor, north side bathroom #1.

Appendix 3.6: Supplementary Reports

See electronic files for the following:

Historic Resource Study West Potomac Park: A History.
Gordon Chapel, 1973

Historic Structure Report The Lockhouses Historical Data Chesapeake and Ohio Canal National Historical Park MD-DC-WV
Harlan D. Unrau, May 1978

The Chesapeake & Ohio Canal Lock-Houses & Lock-Keepers
Thomas Swiftwater Hahn, 1996

Feasibility Study to Move The Lockkeeper's House
March, 2007

Constitution Gardens (Cultural Landscapes Inventory)
2008

NMAACH Archeological Investigations
Phase I June, 2007
Phase II, February 2008

Potomac Park Levee Project
Phase IA Archeological Investigation, January 2009
Environmental Assessment, January 2009

National Mall Plan
September, 2010

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Appendix 3.7: Cost Estimate

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APPENDIX 3.7 – COST ESTIMATE

Cost Estimate

Using cost estimating guidelines established by the NPS, an estimate has been prepared by the design team. The detailed Class "C" estimates are included in this appendix.

Estimate Assumptions

The estimates are based on the review of this narrative report with a drawing set, dated July 2011.

Assumptions:

1. At this time, a design contingency of 30% is included in the estimate. This percentage reflects the fact that the design at this time indicate "concepts," not final designs.

2. This estimate does not reflect costs to the government that would occur during the construction period, such as fees for construction management, project management, nor contingencies for construction change orders.

3. The mark-up factors indicated (i.e., remoteness, historic preservation factor, etc) have been developed by the NPS for similar projects and have been adopted for this project.

Estimate Summary – Alternate #1 – Rehabilitate in Place

The Class C estimate for this alternate indicates an estimated net cost of construction at about $650,000. This work would be comprehensive in nature for the exterior and interior of the 730 SF building.

Estimate Summary - Alternate #2 – Relocate, Restore, and Rehabilitate

The Class C estimate for this alternate indicates an estimated net cost of construction at about $2,480,000. This work would be comprehensive in nature for the relocation and exterior and interior work of the 730 SF building.

Estimate Summary – Alternate #3 – Relocate, Restore, Add Cellar, and Rehabilitate

The Class C estimate for this alternate indicates an estimate net cost of construction at about $ 2,780,000. The cost to relocate and raise the structure by 1 story accounts for about 1/3 of the estimate total.

Estimate Summary – Alternate #4 – Mothball

Mothballing the building at this point is a very minor work effort and expense, probably no more than $30,000.

Project: Lock House B - Alternate #1 - Rehabilitate in Place
Park: National Mall and Memorial Parks
PMIS: NAMA 043443
Building Area = 730 SF, Site area about 0.5 acres
Class C estimate is based on 2011 costs

Estimate By: BMS
Date: 07/26/2011
Reviewed By:
Date:

Item No.	Description	Quantity	Unit	Cost/Unit	Total
1	Site work - landscaping	1	LS	$4,000.00	$4,000
2	Replace underground utilities, assume 200 LF for water,	1	LS	$75,000.00	$75,000
	electric and sewer				
3	Provide accessible entry ramp on south side	1	LS	$10,000.00	$10,000
4	Repoint and repair stonework	600	SF	$20.00	$12,000
5	Roofing Repairs	1	LS	$2,500.00	$2,500
6	Replace 2 window assemblies	2	EA	$4,000.00	$8,000
7	Repair & repaint exterior wood trim and assemblies,	1	LS	$22,000.00	$22,000
	assume LCP abatement				
8	Rehabilitate window & door assemblies, including dormers	8	EA	$2,000.00	$16,000
9	Provide unisex restroom, utility sink, & mech. closet	1	LS	$14,000.00	$14,000
10	Provide furred GWB + R 19 Insulation, perimeter walls	190	LF	$24.00	$4,560
11	Provide partition walls, GWB two sides.	24	LF	$30.00	$720
12	Provide ground source heat pump and geothermal wells	1	LS	$45,000.00	$45,000
13	Provide MEP systems, distribution and terminal units	730	SF	$25.00	$18,250
14	Provide interior paint & finishes	1100	SF	$5.00	$5,500
					$0
	Subtotal Direct Construction Costs				**$237,530**
	Published Location Factor - zero				$0
	Remoteness Factor - zero				$0
	Federal Wage Rate Factor (4 Percent)				$3,800
	Design Contingency (30 Percent)				$71,259
	Total Direct Construction Costs				**$312,589**
	Standard General Conditions (20 Percent)				$62,518
	Government General Conditions (10 Percent)				$31,259
	Historic Preservation Factor (10 percent)				$31,259
	Subtotal NET Construction Cost				**$437,625**
	Overhead (15 Percent)				$65,644
	Profit (10 Percent)				$43,763
	Estimated NET Construction Cost				**$547,032**
	Contracting Method Adjustment - Competitive - 10%				$54,703
	Inflation Escalation (to 6/2013) = 8%				$51,056
	Total Estimated NET Cost of Construction				**$652,791**
	Summary - Overall per square foot costs	$853.32		**SAY**	**$650,000**

Project: Lock House B - Alternate #2 - Relocate, Restore & Rehabilitate
Park: National Mall and Memorial Parks
PMIS: NAMA 043443
Building Area = 730 SF (1 1/2 Stories), Site area about 2 acres
Class C estimate is based on 2011 costs

Estimate By: BMS
Date: 07/26/2011
Reviewed By:
Date:

Item No.	Description	Quantity	Unit	Cost/Unit	Total
1	Site work - landscaping, walkways	1	LS	$30,000	$30,000
2	Provide underground utilties, assume 200 LF for water,	1	LS	$75,000	$75,000
	electric and sewer				
3	Prepare new site, provide concrete footings	1	LS	$100,000	$100,000
4	Lift & move structure	1	LS	$450,000	$450,000
5	Demo and fill old site	1	LS	$5,000	$5,000
6	Build new stone foundation walls, basement slab on grade	1	LS	$90,000	$90,000
7	Repoint and repair stonework	600	SF	$20.00	$12,000
8	Roofing Repairs	1	LS	$2,500	$2,500
9	Replace 2 window assemblies	2	EA	$4,000	$8,000
10	Repair & repaint exterior wood trim and assemblies,	1	LS	$22,000	$22,000
	assume LCP abatement				
11	Rehabilitate window & door assemblies, including dormers	8	EA	$2,000	$16,000
12	Provide 2 window & 1 door assembly, south cellar	3	EA	$1,000	$3,000
13	Provide unisex restroom, utility sink, & mech. closet	1	LS	$14,000	$14,000
14	Provide furred GWB + R 19 Insulation, perimeter walls	190	LF	$24	$4,560
15	Provide partition walls, GWB two sides.	24	LF	$30	$720
16	Provide ground source heat pump and geothermal wells	1	LS	$45,000	$45,000
17	Provide MEP systems, distribution and terminal units	730	SF	$25	$18,250
18	Provide interior paint & finishes	1100	SF	$5	$5,500
	Subtotal Direct Construction Costs				**$901,530**
	Published Location Factor - zero				$0
	Remoteness Factor - zero				$0
	Federal Wage Rate Factor (4 Percent)				$14,424
	Design Contingency (30 Percent)				$270,459
	Total Direct Construction Costs				**$1,186,413**
	Standard General Conditions (20 Percent)				$237,283
	Government General Conditions (10 Percent)				$118,641
	Historic Preservation Factor (10 percent)				$118,641
	Subtotal NET Construction Cost				**$1,660,979**
	Overhead (15 Percent)				$249,147
	Profit (10 Percent)				$166,098
	Estimated NET Construction Cost				**$2,076,224**
	Contracting Method Adjustment - Competitive - 10%				$207,622
	Inflation Escalation (to 6/2013) = 8%				$193,781
	Total Estimated NET Cost of Construction				**$2,477,627**
				SAY	$2,480,000

Project: Lock House B - Alternate # 3 - Relocate, Restore, Add Cellar & Rehabilitate

Park: National Mall and Memorial Parks

PMIS: NAMA 043443

Building Area = 1095 SF (2 1/2 Stories), Site area about 4 acres

Class C estimate is based on 2011 costs

Estimate By: BMS

Date: 07/26/2011

Reviewed By:

Date:

Item No.	Description	Quantity	Unit	Cost/Unit	Total
1	Site work - landscaping, walkways (2 @ 100')	1	LS	$65,000	$65,000
2	Replace underground utilties, assume 200 LF for water,	1	LS	$75,000	$75,000
	electric and sewer				
3	Prepare new site, provide concrete footings	1	LS	$120,000	$120,000
4	Lift & move structure	1	LS	$450,000	$450,000
5	Demo and fill old site	1	LS	$5,000	$5,000
6	Build new cellar stone foundation walls	1	LS	$130,000	$130,000
7	Repoint and repair stonework	600	SF	$20.00	$12,000
8	Roofing Repairs	1	LS	$2,500	$2,500
9	Replace 2 window assemblies	2	EA	$4,000	$8,000
10	Repair & repaint exterior wood trim and assemblies,	1	LS	$22,000	$22,000
	assume LCP abatement				
11	Rehabilitate window & door assemblies, including dormers	8	EA	$2,000	$16,000
12	Provide 2 window & 1 door assembly, south cellar	3	EA	$1,000	$3,000
13	Provide unisex restroom, utility sink, & mech. closet	1	LS	$14,000	$14,000
14	Provide furred GWB + R 19 Insulation, perimeter walls	300	LF	$24	$7,200
15	Provide partition walls, GWB two sides.	24	LF	$30	$720
16	Provide ground source heat pump, geo-thermal wells	1	LS	$45,000	$45,000
17	Provide MEP systems, distribution and terminal units	1095	SF	$25	$27,375
18	Provide interior paint & finishes	1700	SF	$5	$8,500
	Subtotal Direct Construction Costs				**$1,011,295**
	Published Location Factor - zero				$0
	Remoteness Factor - zero				$0
	Federal Wage Rate Factor (4 Percent)				$16,181
	Design Contingency (30 Percent)				$303,389
	Total Direct Construction Costs				**$1,330,864**
	Standard General Conditions (20 Percent)				$266,173
	Government General Conditions (10 Percent)				$133,086
	Historic Preservation Factor (10 percent)				$133,086
	Subtotal NET Construction Cost				**$1,863,210**
	Overhead (15 Percent)				$279,481
	Profit (10 Percent)				$186,321
	Estimated NET Construction Cost				**$2,329,012**
	Contracting Method Adjustment - Competitive - 10%				$232,901
	Inflation Escalation (to 6/2013) = 8%				$217,374
	Total Estimated NET Cost of Construction				**$2,779,288**
				SAY	**$2,780,000**

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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