CONSERVATION MANAGEMENT
AUBURN BILLIARD HALL AND CARRIAGE HOUSE

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Samantha Staviss

APPROVED:  
Jane Ashburn
Committee Chair

Heather Veneziano
Committee Member

Brent Fortenberry, Ph.D.
Committee Member, Program Director
# TABLE OF CONTENTS

LIST OF FIGURES............................................................................................................iv

Chapter

1. INTRODUCTION........................................................................................................... 1

2. LITERATURE REVIEW................................................................................................. 7
   Southern Plantation Landscapes...................................................................................... 7
   Site Interpretation......................................................................................................... 10
   Documentation ........................................................................................................... 18
   Conservation ............................................................................................................. 22

3. METHODOLOGY.......................................................................................................... 29
   Laser Scanning.......................................................................................................... 29
   Photography .............................................................................................................. 30
   Conditions Reports.................................................................................................... 34
   Technical Illustrations.............................................................................................. 34

4. FINDINGS.................................................................................................................... 38
   Billiard Hall Building Description and Conditions ................................................... 38
   Structural Integrity .................................................................................................. 41
   Site and Safety .......................................................................................................... 42
   Foundation ............................................................................................................... 44
   Exterior Walls .......................................................................................................... 50
   Roof ......................................................................................................................... 56
   Pediments ................................................................................................................ 57
   Porch Columns and Entablature .............................................................................. 59
   Porch Ceilings .......................................................................................................... 64
   Porch Flooring and Stairs ....................................................................................... 67
   Interior Walls .......................................................................................................... 69
   Interior Ceiling ........................................................................................................ 72
   Interior Floor .......................................................................................................... 74
   Doors ........................................................................................................................ 75
   Windows .................................................................................................................. 77

   Carriage House Building Description and Conditions ........................................... 79
   Structural Integrity .................................................................................................. 81
   Safety and Site ......................................................................................................... 81
LIST OF FIGURES


2.2 Photo of the enslaved persons’ dwellings at Evergreen Plantation. Image: Samantha Staviss.

2.3 Photo of the German Coast Uprising memorial at Whitney Plantation, 2022. Image: Melaine Harnay.

2.4 Map of the plantation museums present in Virginia’s James River Region, 2016. Image: Meredith Stone et al.


3.1 Example of a photograph annotated through Goodnotes. Image: Samantha Staviss.

4.1 Photo of the Billiard Hall’s south façade. Image: Robin Smith.

4.2 Photo of the Billiard Hall’s east façade. Image: Robin Smith.

4.3 Photo of the Billiard Hall’s interior looking northwest. Image: Samantha Staviss.

4.4 Photo showing the debris outside of the north façade of the Billiard Hall. Image: Samantha Staviss.

4.5 Photo of the western foundation crack on the north façade and the biogrowth that is typical on the foundation.

4.6 Photo of the 25mm wide crack located under the southern porch on the west façade. Image: Samantha Staviss.
4.7 Photo showing an area of stucco and lath loss located at the bottom of the wall on the south façade. Image: Samantha Staviss.

4.8 Photo of missing bricks and mortar from the foundation on the south façade. Image: Samantha Staviss.

4.9 Photo showing examples of finish loss, cracking, and plaster discoloration located on the north façade. Image: Samantha Staviss.

4.10 Photo of plant growth along the west façade. Image: Samantha Staviss.

4.11 Photo of the sill on the east facade showing a large crack through the middle of the sill, material loss of the sill, and pest intrusion on the middle right stud. Image: Samantha Staviss.

4.12 Photo of the plywood shims inserted between the sill and studs on the west façade. Image: Samantha Staviss.

4.13 Photo showing material loss in the wood trim and rusting flashing located on the southern pediment. Image: Samantha Staviss.

4.14 Photo showing peeling paint and separation at the ridge on the southern pediment. Image: Samantha Staviss

4.15 Example from the south façade of the damage at the bottom of the columns typical across the building. Image: Samantha Staviss.

4.16 Example of the finish loss on the south façade’s columns. Image: Robin Smith.

4.17 Photo of ants swarming on the bottom of the north entablature and evidence of previous structural posts for stabilization of the north pediment and beam. Image: Samantha Staviss.
4.18 Photo of the areas of loss on the back of the western beam. Image: Samantha Staviss.

4.19 Photo of the north porch ceiling demonstrating the defunct light fixture, cracking, and peeling paint that is present on both porches. Example of stucco loss revealing rusting metal lath that is present in several areas of the porch ceilings. Image: Samantha Staviss.

4.20 Photo of the south porch ceiling demonstrating a grid pattern of cracking, missing finish, and pests along the edges of the ceiling. Image: Samantha Staviss.

4.21 Photo of the warped tongue and groove floorboards of the south façade’s porch. Image: Samantha Staviss.

4.22 Photo of the large area of plaster loss between the two northern windows on the west interior wall. Image: Samantha Staviss.

4.23 Photo of evidence of a previous partition wall located in the center of the west interior wall. Peeling paint and cracking in a vertical rectangular pattern is mirrored on the east interior wall. Image: Samantha Staviss.

4.24 Photo of an area of plaster loss which reveals rusting metal lath located on above the east interior wall and is typical of the areas of loss on the ceiling throughout the Billiard Hall. Image: Samantha Staviss.

4.25 Photo of the interior of the Billiard Hall looking south and showing three of the electrical fixtures on the ceiling. Image: Samantha Staviss

4.26 Photo showing the original tongue and groove wooden flooring beneath the existing linoleum tile. Image: Samantha Staviss.
4.27 Photo of the southwestern transom. Image: Samantha Staviss.

4.28 Example of the conditions typical of the Billiard Hall windows such as warped sashed, broken or missing glass panes, and pests between the remaining glass panes and exterior plywood coverings. Image: Samantha Staviss.

4.29 Photo of the Carriage House’s west façade. Image: Samantha Staviss.

4.30 Photo of the Carriage House’s south and east façades. Image: Samantha Staviss.

4.31 Photo of the rusting bracket holding the wall plate to the west façade. Image: Samantha Staviss.

4.32 Photo demonstrating the excess moisture typical throughout the underside of the Carriage House roof. Example located in the northeast corner and depicts material loss. Image: Robin Smith.

4.33 Detail photograph of the bowing above the main entrance on the west façade. Image: Samantha Staviss.

4.34 Photo of the biogrowth and soiling typical of the west façade. Image: Samantha Staviss.

4.35 Photo of the large crack and biogrowth on the walls located at the intersection of the south wall and the rear of the west wall. Image: Samantha Staviss.

4.36 Photo of the large patches of Portland cement on the south wall and the existing finish present on the south, north, and east walls. Image: Samantha Staviss.
4.37 Photo of the severe crack in second column from the east on the south façade. Image: Samantha Staviss.

4.38 Photo of the northeastern column which is leaning outward from the building. Image: Robin Smith.


A.1 Conditions diagram of the Billiard Hall north façade.
A.2 Conditions diagram of the Billiard Hall south façade.
A.3 Conditions diagram of the Billiard Hall east façade.
A.4 Conditions diagram of the Billiard Hall west façade.
A.5 Conditions diagram of the Billiard Hall north interior elevation.
A.6 Conditions diagram of the Billiard Hall south interior elevation.
A.7 Conditions diagram of the Billiard Hall east interior elevation.
A.8 Conditions diagram of the Billiard Hall west interior elevation.
A.9 Conditions diagram of the Billiard Hall floor plan.
A.10 Conditions diagram of the Billiard Hall reflected ceiling plan.
A.11 Conditions diagram of the Carriage House north elevation.
A.12 Conditions diagram of the Carriage House south elevation.
A.13 Conditions diagram of the Carriage House east elevation.
A.14 Conditions diagram of the Carriage House west elevation.
A.15 Conditions diagram of the Carriage House reflected ceiling plan.

B.1 Billiard Hall north façade.
B.2 Billiard Hall south façade.
B.3 Billiard Hall east façade.
B.4 Billiard Hall west façade.
B.5 Billiard Hall north interior elevation.
B.6 Billiard Hall south interior elevation.
B.7 Billiard Hall east interior elevation.
B.8 Billiard Hall west interior elevation.
B.9 Billiard Hall floor plan.
B.10 Billiard Hall reflected ceiling plan.
B.11 Carriage House north elevation.
B.12 Carriage House south elevation.
B.13 Carriage House east elevation.
B.14 Carriage House west elevation.
B.15 Carriage House floor plan.
B.16 Carriage House reflected ceiling plan.
B.17 Carriage House north section.
B.18 Carriage House east section.
C.1 Billiard Hall technical illustration.
C.2 Carriage House technical illustration.
1. INTRODUCTION

Within the field of historic preservation, the care, management, and conservation of historic sites lacks standardization. A conservation management plan is vital to buildings. Conserving buildings becomes a means of building interpretation because stakeholders decide what to do with the building and which aspects are considered culturally valuable to the heritage site.¹

This practicum explores the application and importance of conservation treatment and conservation management by documenting and assessing two of Auburn's outbuildings in Natchez, Mississippi. Natchez has a rich historic fabric and a collection of suburban villas. Auburn is one of the earliest suburban villas in Natchez and maintains several of its outbuildings in addition to the main house. Auburn's Kitchen/Quarters, Dairy, Carriage House, and Billiard Hall are still standing today. Auburn was built in 1812 and designed by architect Levi Weeks.² The house was originally built for Lyman Harding and sold to Stephen Duncan in 1820. Under Duncan's ownership, the outbuildings, including the Billiard Hall and

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Carriage House, were constructed around the 1830s.³ Auburn is considered to be the first building to introduce formal architectural principles to Natchez and it became the model for plantation houses and mansions across the South.⁴

Figure 1.1 Map of Natchez’s suburbs by Charles W. Babbit, 1891. Image by Historic Natchez Foundation.

The Duncan family deeded the property as a part of 210 acres to the City of Natchez in 1911. The city then converted the grounds into Duncan Park. The buildings sat empty until the 1930s when the Natchez Cooperative Club decided to work with the city to restore the main house. The Town and Country Garden Club, more recently known as the Auburn Garden Club, maintained the buildings from 1972 until October 2022 when it was returned to the city. The Historic Natchez Foundation is now managing the buildings.

By analyzing Auburn’s Carriage House and Billiard Hall through documentation, condition reports, and technical illustrations, one can begin to craft a plan for the conservation management of these buildings and options for new, more inclusive interpretive narrations. Examining these two outbuildings will demonstrate how a conservation management plan can be applied within the context of Auburn.

Outbuildings are auxiliary structure that accommodate chores and tasks that are fundamental to keeping a villa or plantation operational. Examples of outbuildings include kitchens, quarters, dairies, carriage houses, or privies. The documentation of these structures is important to interpreting the past as they represent histories that have been traditionally overlooked. Outbuildings were

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often the homes and workplaces of enslaved people and are integral to better understanding their lives.\(^8\)

This practicum contributes a deeper understanding of these underrepresented histories through the completion of a conservation management plan. The work done to document and assess the Carriage House and Billiard Hall at Auburn provides a framework for the maintenance and repair of both buildings. By preserving the historic fabric of these structures, the historic narrative can continue to be studied and interpreted by future generations.

The literature review highlights the historical and social context of Auburn and previous scholarship. It is divided into two sections: thematic contexts and technical processes. The thematic content explores the existing research about southern plantation landscapes and suburban villas and how they are geographically situated and historically situated. The literature review will also examine how southern plantation landscapes and suburban villas are interpreted with an emphasis on the shift in the way plantations are interpreted more holistically and inclusively that has been occurring over the past few years.\(^9\)

The technical section comments on the various documentation and conservation methods currently in wide practice in the field. Building documentation was completed through laser scanning, measured drawings, and photogrammetry, and it explores the history of these practices as well as their

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benefits and any possible limitations. This section further explains how these processes fundamentally work and are completed. The documentation section examines how digital data are used to create 2D drawings.

The final section highlights concepts and practices in conservation management. Conservation focuses on the documentation, mitigation, treatments, and maintenance planning that occurs with the conservation of the physical built environment. The literature review explores how loss, deterioration, and compensation affect historic fabric. It also examines the role of maintenance in buildings and discusses how modern American building practices have created a culture of low-maintenance expectations. Recommendations of best practices are included to assist practitioners in navigating modern interventions and their implications. Lastly, this section examines how implementing “sense of place” can improve the quality of conservation.\textsuperscript{10} This will connect conservation to site interpretation and detail how both can benefit from incorporating setting and context into the work.

The methodology is also broken into two sections: documentation and analysis. The documentation section serves as a record of the current state of both the Carriage House and Billiard Hall. Documentation of the materials present and their conditions contribute directly to the analysis. Laser scanning provided measurements for documentation while a system of photographs provided qualitative documentation. The analysis is supplemented by measured drawings.

with conditions diagraming, and photographic documentation. Technical illustrations complete the documentation. They provide a mode of graphic representation that allow for artistic expression of texture and materiality.

The findings section includes the conditions assessments prepared for the Billiard Hall and the Carriage House. The conditions assessments were prepared by describing the conditions in each element and then providing recommendations. The elements include doors, windows, exterior walls, interior walls, roofs, ceilings, and any other building category. The recommendations are listed under each section to facilitate an easy understanding of which conditions are being addressed. The conditions assessments include photographs of mentioned issues or exemplary issues to better illustrate the conditions of the buildings. Diagrams of the conditions are included to further locate each and to visualize patterns described in the reports.
2. LITERATURE REVIEW

Both thematic and technical focuses are involved throughout this research. In order to best understand the surrounding context and previous work done in this field, this literature review will focus on four main topics: southern plantation landscapes, site interpretation, documentation methods, and conservation methods.

Southern Plantation Landscapes

To understand this project’s context it is important to understand how these landscapes were initially formed and organized. The fertile land of the Mississippi Valley, access to transportation along the Mississippi River, and the international and economic demand for cotton and sugar would lead to the monoculture of cotton north of Baton Rouge and sugar south of Baton Rouge.

The landscapes and geography of Natchez were created by their location in the Mississippi Valley. The land around the river was extremely fertile, and frequent flooding renewed these lands through the deposition of nutrient rich sediment. While much of the floodplain was not feasible for agriculture due to its low elevation, poor drainage, and dense forests, the natural levee and its backslope provided higher ground and better drainage. In areas where drainage was optimal, both cotton and sugar cultivation thrived. Plantations downriver from...
Baton Rouge were able to take advantage of the warmer climate and were predominantly focused on sugar production.\textsuperscript{11}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{normans_chart.png}
\caption{Norman’s Chart of the Lower Mississippi River. Image: Library of Congress.}
\end{figure}

\begin{flushright}
\textsuperscript{11} Tomich et al., \textit{Reconstructing the Landscapes of Slavery}, 23-25.
\end{flushright}
In addition to the soil and geographic qualities needed to cultivate crops, the Mississippi River provided an invaluable transportation network. The river allowed for the exportation of the sugar and cotton produced at the plantations along the Mississippi to the Atlantic marketplace. The processed crops could be transported from the interior of the continent to New Orleans, where it could then be exported into world markets. In addition to exportation, the river allowed for the movement of both free and enslaved people and supplies. The Mississippi River and its channels would be one of the main routes to bring enslaved people into the interior plantations both domestically and internationally. After the importation ban on enslaved Africans in 1808, the river would be used to transport enslaved peoples from the Upper South and the North into the Lower South, where these plantations primarily existed.12

Natchez was one of the most productive cotton centers of the South in the first part of the nineteenth century.13 Its location on the Mississippi River provided close proximity to New Orleans and thus the Atlantic world market. The city is located on top of a bluff which protected it from flood waters and provided a defendable location. The surrounding land to the east of the Mississippi River outside of the city became the residences of the elite planter class in the South and is referred to as the Natchez Suburbs.14 Many of the planters who owned residences in the Natchez suburbs owned several plantations and had property in Mississippi and/or Louisiana. Most importantly, Natchez was the primary

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12 Tomich et al., *Reconstructing the Landscapes of Slavery*, 20-25.
14 Tomich et al., *Reconstructing the Landscapes of Slavery*, 25.
destination of the United States international and domestic slave trade.\textsuperscript{15} The Mississippi River provided the main route of transportation of enslaved persons and the Forks of the Road market was only second in size to the New Orleans market.\textsuperscript{16} Natchez’s location and geographic situation helped to establish the city as one of the most important locations in the Southern plantation landscape. Its rich history, participation in slavery, and the unique situation of the planters’ suburban villas has provided a built environment for situated interpretations and narratives.

\textbf{Site Interpretation}

All historic sites are interpreted and one needs to carefully consider the narrative presented at the site. The way these landscapes are interpreted has been changing over the last few decades, and there is a need to examine what information is included and how it is interpreted. After Emancipation and throughout the Jim Crow South, the interpretation of plantation sites has generally adhered to a limited scope of thematic narrative. Historically, the information presented about plantations was Eurocentric, and histories of enslaved people were often either ignored or presented in a way that did not accurately portray the realities of plantation life.\textsuperscript{17} By choosing which aspects of a site to highlight and conserve, those who manage heritage sites inherently decides how these sites should be interpreted.

\textsuperscript{15} Tomich et al., \textit{Reconstructing the Landscapes of Slavery}, 25.
\textsuperscript{16} Tomich et al., \textit{Reconstructing the Landscapes of Slavery}, 27.
\textsuperscript{17} Melaine Harnay, “Slavery and Plantation Tourism in Louisiana: Deconstructing the Romanticized Narrative of the Plantation Tours.” \textit{Mondes Du Tourisme}, no. 21 (2022): 2.
Historically, plantations and plantation museums would often center their interpretations and narratives of the sites around the lives of planters. These narratives would be supported architecturally by focusing on the main house, commonly referred to as the “big house,” and spaces typically inhabited by the planter and their family. Interpretations largely credit the planters for the full extent of their success without mentioning the enslaved people tasked with performing the labor or managing domestic life. Narratives were designed to romanticize the antebellum South and thus created a mythical representation of plantation life.

In recent years there has been a continuing trend toward embracing a more holistic or inclusive approach to plantation interpretation. These interpretations seek to include the contributions of enslaved persons on the plantations and highlight their narratives as individuals.

The aforementioned themes are explored in a contemporary setting through Harnay’s comparative examination of several plantation tours along River Road in Louisiana. The Eurocentric tour is the first narrative that is explored throughout the research. These narratives and tours, still employed by some plantation sites, focus on the planters and their families and thus perpetuate a romanticized version of the antebellum South. The tours perpetuate this narrative by focusing on objects that demonstrate the wealth or lavish lifestyle of the planters and how these items and spaces were owned by the planters rather than on how they were most

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frequently handled by enslaved people.\textsuperscript{21} These tours do not explore the complexity of the people, lives, interactions, and experiences lived at the plantation. Harnay cites the websites, leaflets, and tours from Greenwood Plantation near St. Francisville, LA and Houmas House in Darrow, LA.\textsuperscript{22} The Greenwood Plantation website still uses the tagline “a truly magical and majestic place,” and the Houmas house still uses the “Crown Jewel of Louisiana’s River Road.”\textsuperscript{23} These taglines demonstrate how the sites are romanticized and Harnay recounts how her experiences of the tours focused on the planters and their romanization.

The paper goes on to further explore the different emerging narratives present at various sites like Evergreen Plantation and Whitney Plantation or rethought narratives such as Oak Alley Plantation. Harnay explains how Oak Alley’s tours have been restructured to focus on the interactions between the enslavers and the enslaved. They do this by focusing on one enslaved woman’s experience of working in the main house and highlighting that perspective.\textsuperscript{24} Additionally, these shifting narratives are often presented in and focus on the lives of the enslaved through the enslaved people’s dwellings on the plantation. When Harnay toured Evergreen Plantation, the enslaved people’s dwellings were the last location on the tour and explored the lives lived there. Oak Alley, on the other hand, reconstructed the quarters of the enslaved that would have been on the plantation.

\textsuperscript{21} Harnay, “Slavery and Plantation Tourism in Louisiana,” 3.
\textsuperscript{22} Harnay, “Slavery and Plantation Tourism in Louisiana,” -4.
\textsuperscript{24} Harnay, “Slavery and Plantation Tourism in Louisiana,” 8.
However, the article states that the quarters are not currently part of the tour and are optional for visitors.\textsuperscript{25} It brings into question how well the practice of slavery is integrated into the narrative being told.

![Figure 2.2 Photo of the enslaved persons' dwellings at Evergreen Plantation. Image: Samantha Staviss.](image)

Whitney Plantation focuses exclusively on the lives and stories of the enslaved people living on the plantation and further makes a statement by solely centering these narratives and excluding the once typical Eurocentric ones. Harnay mentions the visit to the outdoor kitchen and how the tour guide was able to focus on the instrumental contribution of the enslaved Africans to Southern cuisine.\textsuperscript{26} There are a variety of monuments throughout Whitney Plantation such as the Wall of Honor and the Field of Angels which commemorate those enslaved

\textsuperscript{25} Harnay, “Slavery and Plantation Tourism in Louisiana,” 9.

\textsuperscript{26} Harnay, “Slavery and Plantation Tourism in Louisiana,” 8.
at Whitney and the children who were enslaved there respectively.\textsuperscript{27} Brian Graves states that the narrative at Whitney is more provocative and graphic in depicting the horrors of slavery and cites the German Coast Uprising memorial.\textsuperscript{28} Whitney Plantation seeks to primarily focus on the lives and contributions of enslaved persons in order to reject the traditional narrative presented at plantation sites.

![German Coast Uprising memorial at Whitney Plantation](image)

Figure 2.3 Photo of the German Coast Uprising memorial at Whitney Plantation, 2022. Image: Melaine Harnay.

Brian Graves's article critically examines McLeod Plantation's reinterpretation of their site, further discuss the ways in which the interpretation has been successful, as well as how it is still lacking.\textsuperscript{29} McLeod is located on James Island, South Carolina, and it is run by Charleston County Parks. The plantation used the Wappoo Creek to transport its cotton from site to Charleston. The site is connected to the Gullah Geechee who were enslaved there.\textsuperscript{30} McLeod aims to

\textsuperscript{28} Graves, “Return and Get It,” 88.
\textsuperscript{29} Graves, “Return and Get It,” 75-96.
critically examine the previous narratives and surviving historical accounts presented at the site and continually incorporate newly discovered information into their interpretation to provide an accurate and more holistic approach. McLeod embraces the gaps within the records and gives heavier emphasis to the possibilities of enslaved life.\textsuperscript{31} Additionally, the study looks at how two prevailing goals of reparation and reconciliation have affected site reinterpretation. Reconciliation is the reaching of friendly relations between victims and transgressors through an acceptance of past events.\textsuperscript{32} Reconciliation based narratives focuses on interpretation that is intended to lead to racial reconciliation.\textsuperscript{33} Reparation is the rectification of wrongdoing and often implies that African Americans have a right to financial compensation.\textsuperscript{34} Reparation narratives frequently supports descriptions of slavery as a holocaust.\textsuperscript{35} The study argues that neither of these extremes are necessarily effective at fully interpreting slavery because they have a tendency to limit enslaved people to victimhood rather than recognizing their strength and ability to redefine themselves and reshape their futures as individuals and communities. Instead, the study proposes that there needs to be a middle ground between the goals, which allows for a complex and nuanced interpretation of slavery in plantation landscapes.\textsuperscript{36} The case study of McLeod Plantation demonstrates how the conservation of plantation sites can

\textsuperscript{31} Graves, “‘Return and Get It,’” 84.
\textsuperscript{33} Graves, “‘Return and Get It,’” 88.
\textsuperscript{34} McGary, “Reconciliation and Reparations.” 547.
\textsuperscript{35} Graves, “‘Return and Get It,’” 88.
\textsuperscript{36} Graves, “‘Return and Get It,’” 89.
present a nuanced and holistic narrative and how this might be applied at other heritage sites.

Research by Meredith Stone et al. in “Searching for the Enslaved in the ‘Cradle of Democracy’” focuses on what is included in the informational content provided by plantation websites or by informational placards present throughout the site. The researchers examined plantation websites from plantation museums within 25 miles of the James River in Virginia. The James River is another river system in which the fertility of the land lead to a system of plantations and monoculture, in this case, tobacco. In addition to its own plantation system, Virginia was one of the lead exporters of enslaved persons to the Deep South where cotton and sugar were grown.

![Map of the plantation museums present in Virginia’s James River Region, 2016. Image: Meredith Stone et al.]

Figure 2.4 Map of the plantation museums present in Virginia’s James River Region, 2016. Image: Meredith Stone et al.

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38 Stone et al., “Searching for the Enslaved,” 204.
Websites can shape tourists’ expectations of a heritage site and many of the websites claimed an educational mission.\(^\text{39}\) As a result, these websites have a powerful voice in shaping the narratives of the region. It was found in the research that the representation of enslaved persons was diminished and pushed to the margins of the historical narrative in the contents of plantation websites. Largely the websites erased slavery from their narratives and focused on the white-centric aspects of their narratives.\(^\text{40}\) The researchers suggest that a more holistic interpretation can be achieved most effectively by tethering the missing information to local events or regionally-specific details so that they are properly placed within their historical context.\(^\text{41}\) Memory is deeply intertwined with the surrounding context and setting it is placed in. These heritage sites are often portrayed as glimpses into the past. Their social memories are linked to the present and visitors have the chance to make meaningful connections between the past and present through heritage sites.\(^\text{42}\) It is important to remember how these narratives are biased with regard to the history they interpret and how these narratives can be changed to include the narratives of enslaved persons.

Examining how plantation sites are interpreted to include previously omitted narratives of enslaved persons leads to better interpretive practices when looking at other sites that also depended on enslaved labor. Auburn can be interpreted so that its story highlights and acknowledges the roles enslaved persons held in the villa. All of Auburn’s remaining outbuildings, including the Carriage House and

\(^{39}\) Stone et al., “Searching for the Enslaved,” 204-205.
\(^{42}\) Stone et al., “Searching for the Enslaved,” 207.
Billiard Hall, are built historic fabric that support the creation of meaningful connections between these narratives and present-day visitors. Conservation management of these outbuildings aids in ensuring they remain as places to facilitate the narratives of enslaved persons.

**Documentation**

Over the past century, the methods and processes for documenting buildings have changed from a standard of hand-measured and drafted drawings to digital deliverables. While continued use is generally considered the best form of preservation, documentation is a valuable asset that provides more widespread access to heritage sites.\(^4^3\) Documentation was one of the first steps in this practicum and several means of documentation were utilized to record structures and conditions.

A systematic approach to architectural documentation was standardized with the creation of the Historic American Buildings Survey (HABS) in 1933. HABS utilized building surveys, measured drawings, and photography to document built heritage.\(^4^4\) Building surveys were used to identify structures that were of historical and architectural interest. These surveys were not all encompassing and limited in scope to what the surveyor deemed historically significant. As a result, outbuildings were often omitted from the first phase of documentation. During the initial process, not all of the structures were fully drawn, but each building received an index card


that listed references and general information about the structure. For measured drawings, HABS laid out the procedures to document the buildings systematically to maintain accuracy, uniformity, and efficiency. Architects would use a tape measure and record the dimensions of the building and its elements. These measurements would be translated into 2D architectural drawings, such as plans and elevations or 3D drawings, such as axonometric and isometric drawings. Hand-measuring has been a reliable way to document buildings and structures and is still used today to create drawings of buildings.

Figure 2.5 Example of hand drawings, 2004. Image: John Burns.

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Graphic representation production transitioned from hand drafting final deliverables to digital drawings. The introduction of computer-aided design (CAD) provided a new means for translating hand measurements into the final drawings. The advantage of CAD allowed for the scale of drawings to no longer be limited to workable sheets of paper and allowed for access to a higher level of detail. In CAD, drawings are produced at a 1:1 scale, meaning that measurements are recorded and drawn digitally as their real-life scale. While initially too expensive to be commonplace, CAD became increasingly more accessible and is now the primary method of graphic representation today.\textsuperscript{47}

Photogrammetry is the process of extracting measurements from a series of photographs. It involves capturing a series of photographs with overlapping points to create an orthographic photo of the building. Analog photogrammetry has existed since the 1870s and was more commonly used starting in the late 1930s. It utilized a metric camera that was calibrated so that the focal length and lens distortion would be exactly known and a photogrammetric plotter to produce the final deliverables that could be used to gather information about the structure.\textsuperscript{48} This was valuable because architectural elements that could not be reached by hand measuring could more accurately be measured by using photogrammetry. Digital photogrammetry was introduced in the mid-to-late 1990s and further changed the methodology of architectural documentation. With digital photogrammetry, computer software processes the images which can be exported

\textsuperscript{48} Akboy-Ilk, “The Nature of Drawing,” 32.
in a variety of formats such as digital models and orthographic photos. Digital models are made of point clouds that map points with 3D coordinates to denote where architectural elements are located. These can be used to produce an orthographic photo which can be traced to produce 2D drawings.\textsuperscript{49}

Laser scanning further augmented the use of point clouds in digital documentation. A laser scanner emits a laser beam from a stationary position. The scanner calculates the position of a point by measuring the amount of time between emitting the laser and when it returns. These points are organized with coordinates to produce a 3D point cloud in CAD.\textsuperscript{50} The point cloud can be used in various ways to create either 3D models or 2D drawings. 3D laser scanning is much more efficient and accurate than hand measuring. While measuring a building by hand might take a team of people, various equipment, and an extensive amount of time, depending on the size of the structure, one person can complete laser scanning in a fraction of the time.\textsuperscript{51} This is more advantageous when days in the field might be limited or when parts of a building are not easily accessible for hand measuring.

Documentation is one of the first steps in creating a conservation management plan.\textsuperscript{52} Hand measuring, photogrammetry, and laser scanning have different benefits and can complement each other throughout the documentation

\textsuperscript{50} Lockett, “HAER Documentation,” 40.
\textsuperscript{51} Lockett, “HAER Documentation,” 40.
process. Determining which method or combination of methods depends on time constraints and the heritage site.

**Conservation**

Architectural conservation in the United States is the variety of theories and practices of maintaining historic architectural materials. This section focuses on a few of the theories present in the field such as how to approach additions with authenticity in mind, the role of maintenance in conservation, and how conservation can be strengthened through connecting conserved sites to their context to create a sense of place.

Conservation directly engages with both the fabric and function of heritage sites as well as the deterioration and loss of historic fabric. Deterioration and loss are often considered detrimental to the integrity of these sites and it becomes a key component when addressing interpretation, cultural value, and function.\(^{53}\) Frank Matero’s article “Loss, Compensation, and Authenticity in Architectural Conservation” examines how these concepts can be navigated in conservation.

Matero addresses contemporary conservation practice through an understanding of European conservation theory in the 19\(^{th}\) and 20\(^{th}\) centuries. There were two guiding theoretists in restoration rhetoric: Eugène Emmanuel Viollet-le-Duc and John Ruskin. Viollet-le-Duc’s theories revolved around stylistic unity and belief that restoration meant to re-establish a building in its finished state even

if it had never existed as a finished building at any point in time.\textsuperscript{54} Ruskin believed that imperfection was an essential quality of architecture and that weathering and additions were a sign of its age. He further believed that age was what led to beauty and that historical and aesthetic values were more important than original appearance.\textsuperscript{55} Through their views of restoration, Viollet-le-Duc and Ruskin provided a base for conservation principles that would further be developed in the 20\textsuperscript{th} century by international and national charters. The \textit{Carta del Restauro Italiana} in 1931 determined that coherence of form was more important than coherence of style and addressed the need for additions and compensations to a building. It stipulates that one should not remove or add elements to a building which are inaccurate to the original fabric. It also addresses additions which are necessary to maintain structural stability or functional reuse of the space by indicating that these additions should be simple and integrate with the whole as well as be easily discernable from the original fabric.\textsuperscript{56} This idea regarding loss and compensation is reinforced through the \textit{International Charter for the Conservation and Restoration of Monuments and Sites} (ICOMOS) \textit{Venice Charter} of 1964 which is regarded as one of the most significant sets of conservation principles.\textsuperscript{57}

Matero address authenticity in conservation through an understanding of the previous theories. Authenticity is traditionally understood as buildings that are unique to their time and place. As culturally valuable assets, these sites stand in for the people who made and used them and are a means for interpretation.

\textsuperscript{54} Matero, “Loss, Compensation and Authenticity,” 80.
\textsuperscript{55} Matero, “Loss, Compensation and Authenticity,” 78-79.
\textsuperscript{56} Matero, “Loss, Compensation and Authenticity,” 81.
\textsuperscript{57} Matero, “Loss, Compensation and Authenticity,” 82-83.
Ruskin’s theories view authenticity through the historic fabric and age, while Viollet-le-Duc’s theories define authenticity through style, structure, and material.\textsuperscript{58} Newer theories in conservation have synthesized both versions of authenticity by recognizing historic fabric as the primary priority and potential unity as a secondary priority. As a result, authenticity has developed a new definition which encourages the acknowledgement that heritage sites have a continuing history; that they are used, damaged, repaired, restored, and destroyed; and that their current conditions are a record of both the moment of creation as well as the subsequent years.\textsuperscript{59}

The concepts and theories addressing loss, compensation, and authenticity are then connected to three basic constructs of cultural works: form, fabric, and function. Matero states that these three constructs are inherently tied together, but that one can privilege one construct over another or strive for a balance of all three.\textsuperscript{60} The implementation of form, fabric, and function depends on a variety of factors, and different interventions will necessitate different sets of values and solutions. The model of the three constructs offers a means for assessing both immediate and long-term effects of any intervention that includes compensation. Interventions can then be developed and critiqued through an understanding of cultural heritage and the context of the site.\textsuperscript{61}

In addition to examining conservation through theoretical frameworks, it is critical to discuss the technical implications of interventions and how they can

\textsuperscript{58} Matero, “Loss, Compensation and Authenticity,” 83-85.
\textsuperscript{59} Matero, “Loss, Compensation and Authenticity,” 85.
\textsuperscript{60} Matero, “Loss, Compensation and Authenticity,” 85.
\textsuperscript{61} Matero, “Loss, Compensation and Authenticity,” 87.
affect buildings. An article by research scientist A. Elena Charola discusses the importance of maintenance and monitoring historic buildings. While preservation of the historic built environment is now viewed through a lens of heritage conservation and values of culture, buildings were originally maintained to continue their functionality. The article argues that the newer heritage viewpoint suggests that cultural value determines if a building should be preserved without concern for its functionality.\textsuperscript{62} In addition to this changed viewpoint from strict functionality to cultural value, advances in the technology and science of building materials and methods have changed how people view the maintenance of buildings. There is a common misconception that newer building materials and methods are inherently better than traditional ones, and as a result, they require less maintenance.\textsuperscript{63} This has shifted the general view of maintenance from a frequently recurring task and requirement to an intermittent intervention that will fix all problems.\textsuperscript{64} These changes in thinking have affected how buildings are conserved and what is expected from maintenance.

The article by Charola defines maintenance as “the continuous protective care of a place and its setting” and uses two categories: extraordinary and ordinary. The two means of maintenance differ in the length of time between each intervention, the cost, and the level of intervention needed. Ordinary maintenance is the frequent and continuous maintenance of a building. This might include tasks

\textsuperscript{63} Charola et al., “The Relevance of Maintenance,” 1.
\textsuperscript{64} Charola et al., “The Relevance of Maintenance,” 6.
such as regular cleaning or repairs that maintain the functionality of the building and prevent excessive soiling of the building. Extraordinary maintenance is often referred to as a conservation or restoration intervention. Extraordinary maintenance usually occurs every 25 to 30 years and is much more costly than ordinary maintenance. These interventions tend to include things like large repairs, structural repairs, or intense cleaning of the structure.65

The biggest challenge with extraordinary maintenance is that it is often regular maintenance put off for so long that the problem has gotten significantly worse. This is often referred to as deferred maintenance. Delaying the repair of minor problems often leads to a more costly repair and possibly irreparable damages from the issue progressively worsening. This also can create a need for more invasive approaches to conservation because more than the original surface problem might now be affected.

To determine when ordinary maintenance is needed, buildings need to be monitored regularly. Monitoring can determine the frequency at which ordinary maintenance should be carried out and how ordinary maintenance can support the objective of any previous extraordinary maintenance.66 Monitoring helps to determine problems before they become significantly worse and prevent more invasive maintenance.

Conservation also has a role in addressing how sites are interpreted. An article by Mohammad Sadegh Falahat describes the role of “sense of place” in

architectural conservation.67 “Sense of Place” is defined as harmony or familiarity with an environment that helps to create connections and meaning between people and the space.68 Buildings are connected to the original contexts in which they were built as well as the context as it changes over time. The context around a building is significant and as it changes it can become weaker.69 Furthermore, the functional aspects, physical characteristics, and the quality of its relationship to the context can either enhance or inhibit the sense of place. The article proposes that heritage sites are able to present different identity frameworks that can change over time and are affected by a sense of place. Conservation provides people with the conditions needed to understand and connect to that framework through a sense of place.70 Over time, use of the space and activities in the space allow people to connect to the building and they begin to feel responsible for the preservation and conservation of the building.71

Integrating sense of place, considering when interventions are implemented, and how interventions relate to cultural values through a balance of form, fabric, and function can affect the quality of conservation. Sense of place is integral in the conservation of heritage sites. By connecting a narrative to a site, greater holistic interpretation can be achieved and it allows people to connect with and find meaning in preserved sites. Additionally, frameworks for implementing

70 Falahat et al., “The Role of the ‘Sense of Place,’” 23.
interventions allow for the examination of conservation through cultural and contextual lenses which typically leads to improvements in conservation quality.

Through understanding the historical context of the Mississippi River Valley and Natchez, the roles that analog and digital documentation play in preservation, and the various concepts in conservation, this practicum will comprehensively apply these concepts to the Carriage House and Billiard Hall to create effective conservation reports. Conservation of these two buildings will positively impact Auburn’s narrative by addressing historic fabric that facilitates meaningful connection between visitors and the narratives of the enslaved people who once contributed to Auburn.
3. METHODOLOGY

This study was conducted in two stages: documentation and analysis. First, documentation took form through both laser scanning and photography. The second half of the practicum was an analysis of the documentation to create conditions reports and technical illustrations of the two project buildings: the Auburn Billiard Hall and Carriage House.

Laser Scanning

A Leica RTC 360 terrestrial laser scanner was used to record the buildings. The laser scanner is able to document the buildings by obtaining a point cloud of the buildings' measurements as well as through a series of photographs. The scanner uses GPS tracking to determine where it is placed for each scan in order to recognize overlapping points. This creates a cloud of points that is detailed enough to provide visual information of the building as well as measurements accurate to 2-4 mm.\textsuperscript{72} The laser scanner is used to document the dimensions of the buildings through this method and to document conditions such as settling, large cracks, or missing or broken architectural elements. The conditions are documented by the scanner through captured photos as well as the point cloud.

\textsuperscript{72} “Leica RTC360 Product Specification.” Leica Geosystems, n.d.
data. Each point is assigned a color from the photographs which can show the difference between materials. The photographs and point cloud generated by the laser scanner are used to create orthographic photos from which 2D drawings can be generated. In order to create 2D drawings, the orthographic photos are imported into AutoCAD. These 2D drawings are later used to create diagrams that locate various conditions in the buildings as documented in the photographs taken. The 2D drawings produced from the laser scan data are included in the report to further detail the conditions of the building and provide a visual means for understanding the conditions.

**Photography**

In addition to laser scanning, photos are also taken on site with a Canon EOS RP camera to document the conditions. The method for photography follows the methodology outlined in the photography section of *Recording Historic Structures* by William Lebovich and edited by John Burns.\(^7^3\) Photography is used to supplement the other forms of documentation such as laser scanning and measured drawings. Photographs more easily convey a building’s textures, conditions, and spatial qualities. Photographs are used to better document aspects of the building that are not generally drawn on site such as small cracks, peeling paint, and other widespread but minute conditions.\(^7^4\) Photographs provide a means for referencing the site without going onto the site directly when completing

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\(^{73}\) Burns, ed., *Recording Historic Structures*.

\(^{74}\) Burns, ed., *Recording Historic Structures*, 52.
other documentation such as digital 2D drawings or written documentation such as a conditions report.

The principles of architectural photography in *Recording Historic Structures* were used in this practicum to guide the photography practice. The first principle is “understanding the subject.” It is important to have a clear concept of what one is seeking to accomplish with a photograph and why something is important to document. Not understanding the subject can lead to issues of missing context in a photograph, an unobstructed view, or distortion of the photograph. Additionally, important aspects of the building might be missed if the photographer does not clearly understand the subject.\(^{75}\) The photograph needs to be an accurate and informative record. The image should not distort the building; it should be sharp and suitable for enlarging, and leveled.\(^{76}\) Lighting is essential to architectural photography. Deep shadows can obscure details of a building and too much light can wash out features in the photograph.\(^{77}\) Scaling is used to give the viewer a sense of the size and scale of what is being photographed.\(^{78}\) Technical factors such as leveling the camera and using proper exposure can help the viewer focus on the subject matter rather than the medium with which it is being presented.\(^{79}\) Considering the aesthetics of a photograph, such as strong composition, makes a photograph more compelling and encourage the viewer to study it more and determine what is important in the photograph.\(^{80}\)

\(^{75}\) Burns, ed., *Recording Historic Structures*, 59.
\(^{76}\) Burns, ed., *Recording Historic Structures*, 60.
\(^{77}\) Burns, ed., *Recording Historic Structures*, 60.
\(^{78}\) Burns, ed., *Recording Historic Structures*, 62.
\(^{80}\) Burns, ed., *Recording Historic Structures*, 68.
Photographs were taken of the Billiard Hall and Carriage House at various scales to fully document the conditions of the building. Entire facades and interior walls were photographed to provide context for more detailed oriented photographs as well as to document the building as a whole. Once a condition was located, a detail photograph was taken in order to give context as to where the condition is located on a specific façade or wall. A second close-up condition photograph would be taken to clearly document the qualities of the condition at a larger scale so its nature could be better recorded. This methodology locates each condition by referencing a specific façade or wall and where that wall or façade is in relation to the rest of the building.

In addition to considering the various scales, oblique perspective photos were taken of the exterior and interior of the building to document the overall feeling of the condition and the relationships between each façade and wall. These photographs often focused on the conditions present at a specific corner of the building as well as the relationship between the two surfaces.

The documentation was enhanced further through annotations recorded directly onto photographs demonstrating areas of concern. A photo would be taken and then imported into either Goodnotes or Procreate on an iPad.\(^{81}\) Conditions of a building were highlighted, drawn, or pointed out by a series of annotations on the photograph. The annotations were labeled either by text or by using a color-coded

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\(^{81}\) Goodnotes is a note taking app that is intended to mimic pen and paper notetaking with the added benefit of digital resources such as photo insertion. The app allows for users to write with a stylus, type, highlight, insert photos, and organize notes. Procreate is an app intended for digital art. Photos can be imported and then drawn over using a stylus that coordinates to brushes and other tools.
system described in a key on the photo. For example, a photo of the ceiling of the porch would be taken and imported into Goodnotes or Procreate on the iPad. Cracks in the surface of the ceiling would be traced using the color blue, biogrowth would be circled with green, and holes in the surface would be circled in pink. The annotations allowed for more conditions to be recorded within a larger context as one could look closer at the building and mark the location of a condition that might be visible on site but not easily visible on a smaller-scale photograph. These annotated photographs will be used to further inform and corroborate the locations of conditions.

Figure 3.1 Example of a photograph annotated through Goodnotes. Image: Samantha Staviss.
Conditions Reports

Conditions reports are the means for analyzing and organizing the information obtained in the documentation phase as well as the main deliverable of the Practicum. These reports fully detail the conditions of the building in both written and visual form through descriptions, photographic examples, conditions drawings, and diagrams. In addition to providing information on each condition and its location, recommendations as to the conservation, maintenance, treatment, and repair of the conditions are written in the report for the client to reference.

In the case of Auburn’s Carriage House and Billiard Hall, a full set of drawings including elevations, plans, and ceiling plans were generated from the laser scans. Each drawing was then marked to show where different conditions exist on the buildings. Colors are used to mark areas of biogrowth or soiling and each crack or hole will be drawn onto the drawings. Photographs that clearly show a certain condition were incorporated into the report to provide a visual example of what one should look for and how this specific condition presents itself. The report primarily consists of written descriptions of the buildings, the issues and deterioration present, and how one might conserve, maintain, and repair each building.

Technical Illustrations

The final form of documentation utilized for the report are technical illustrations. The technical illustrations provide a drawing that is accurate in its depiction of the building’s scale, context, and condition while providing a sense of
the feeling of the building. These illustrations are used as coversheets for the reports and for submissions to the Library of Congress. The analog, perspective drawing of these buildings provides a means for depicting the building that cannot be obtained from measured drawings or those completed in CAD.

Technical illustrations may be created freehand, however, in order to assure correct detail and perspective, a reference photograph and lightbox were used. This can significantly expedite the process. The photo was be taken and selected using the principles of architectural photography mentioned above in the photographic documentation section above. Care was taken to select a reference photo that would best demonstrate the priority of the illustration. While priority can vary based on site, composition usually focuses on representing sense of place, texture, materiality, and appearances in various periods. Each reference photo would then be edited in Adobe Lightroom to prepare it for drawing. If necessary, the perspective of the photo would be edited to remove distortion caused by the camera lens or photo angle. The contrast of the photo was adjusted so that elements were easily distinguishable without removing shadows that might be cast. It is important to be able to draw each element while still being able to convey how it interacts with light and its relationship to the rest of the building. Due to the nature of the stippled drawing, the lighting, contrast, and exposure of the photograph is of upmost importance. The photograph would then be formatted to fit on a 36 inch by 24 inch print. The printed photograph would be placed over a light pad and underneath a sheet of vellum. This provided the base for creating accurate and scaled illustrations.
Koh-i-noor Rapidograph pens were used to create the technical illustrations. The pens consist of a hollow-needle nib and a chamber filled with black India ink. While the pens can draw lines, they are best used to create stippled drawings. The primary pen size used for the technical illustrations was a 0.25mm. Along with the 0.25mm pen, a 0.60mm pen might be used to better create darker areas and more contrast while a 0.18mm pen might be used to help create lighter areas and more of a gradient than can be accomplished by using the single pen size. The first step to drawing the technical illustration is to draw the lines of the building. Elements such as the walls, siding, columns, foundation, and fenestration were outlined with spaced points. This creates an outline of the drawing without creating lines too dark. After an initial outline, shading and detail were added. Points close together create a darker and more shaded area while points spaced farther apart create lighter tones. For the brightest areas and glass no points are added. Shading is used to create shadows cast by different architectural elements, convey conditions of a building, and show the texture of materials. Once shading is completed, the context of the building would be added. Context might include ground lines, adjacent buildings, or plants. The context drawn around the building provides information as to qualitative factors of setting as well as to what is directly around it and might be framing or blocking view of the building.

Once the drawing on vellum is completed, it is digitally scanned. The drawing is then edited in Photoshop to remove any mistakes or issues caused by scanning or the medium of the vellum such as crinkles, tears, or lines. The goal of
editing is to edit as little as possible and only remove obstructions to the drawing caused by the medium.

Both the stage of documentation consisting of laser scanning and photography and the stage of analysis with conditions reports and technical illustrations were used to inform the findings and outcomes of this report. Documentation gathers the data necessary to inform the client about the building and the analysis of this information is used to create an effective conservation management plan for the client.
4. FINDINGS

The findings of this paper consist of the two conditions assessments written for the Billiard Hall and Carriage House. The conditions assessments detail the current issues present in the buildings and consider best practices for advising recommendations. The conditions assessment of the Billiard Hall draws from the initial assessment of the building conducted by Jane Ashburn, Brent Fortenberry, and Samantha J. Smith in structure and recommendations. Many of the conditions have not changed and the previous recommendations are still applicable.

**Billiard Hall Building Description and Conditions**

Built circa 1830s, Auburn Billiard Hall is a single-story, open room with a gable roof on a brick foundation. The north and south façades feature Greek Revival integrated porches with pediments. Four wooden columns support each porch. The fenestration of the north and south façades consist of four fenestrations and is symmetrical across the central axis of the building. Two shuttered, six-over-six, double-hung windows are centrally located between two doorways. The doors have six raised panels, and each opening features transoms with 18 lights. Each opening features Greek Revival surrounds. Pilasters in similar style to the porch

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82 Jane Ashburn, Brent Fortenberry, Samantha J. Smith, "Billiard Hall Conditions Assessment." Natchez: Tulane University, 2021.
columns are located at the corners of the north and south façades. The east and west façades each feature four shuttered, six-over-six, double-hung windows. The surrounds of these windows are also in a Greek Revival style but are more simple than those featured on the north and south façades. All of the windows and transoms are covered on the exterior of the building with sheets of plywood. Three of the four doors are also covered with plywood. The eastern door on the north façade is uncovered for building access. The shutters on the windows have been removed from the exterior of the building, but the metal hardware remains. The interior of the building is currently a single open space. However, there is evidence of a partition on the east and west walls that would split the hall into a north and south room.

Figure 4.1 Photo of the Billiard Hall’s south façade. Image: Robin Smith.

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83 Sheets of plywood were installed over the fenestration to protect the building from vandalism and to protect the doors and windows from further damage.
The foundation of the building is a four-over-one common bond brick masonry. The north and south façades of the Billiard Hall consist of timber frame that is stuccoed and lathed construction, while the east and west exterior walls are clapboard. The columns, frieze, and cornices are timber. The centers of the pediments are wooden boards with butted joints. The interiors of the porches and the ceilings are stucco and lath. All moldings and surrounds are made of wood on the exterior of the building. The flooring of the porches consist of tongue and groove wood planks. The exterior wood moldings and other wooden elements are painted. The stucco on the north and south façades is scored to look like stone and painted.
The interior walls are plastered and lathed. The ceiling appears also originally of plaster and lath construction but now consists of plaster and metal lath. There are architraves on the fenestration, chair rails, and baseboards in the Billiard Hall. Vinyl tile that covers the original tongue and groove wood flooring. The interior walls, moldings, doors, and windows have been finished with latex paint.

Figure 4.3 Photo of the Billiard Hall's interior looking northwest. Image: Samantha Staviss.

**Structural Integrity**

The Billiard Hall overall appears to be in good structural condition. Cracking and settling present in the building will be discussed in this report but do not appear to present an immediate danger to the stability of the building. To fully assess the
structural elements of the Billiard Hall, a structural engineer should be contacted to provide a full assessment.\(^{84}\)

**Site and Safety**

Due to the age of the Billiard Hall, lead paint may likely be present in the building. Lead is a toxic material when inhaled or ingested. High levels of lead can result in various health issues and/or death. Lead finishes are not a high priority in the stabilization phase as long as they are not disturbed through sanding and other actions. A simple lead test should be conducted before removing any finishes. Several areas should be tested for lead for each type of finish. If lead is found in any finishes, no finish should be disturbed, and a certified abatement professional should be contacted.\(^{85}\) The lead will either need to be removed or fully encapsulated.

There are many wasps and other pests located within the building. Before moving forward with work, the nests and pests should be removed so that workers can safely interact with the site.\(^{86}\)

Evidence suggests a heavy mold presence. An expert should be contacted to determine the type and threat level. Proper precautions, such as a respirator rated for mold, should be taken when interacting with the interior of the building. The building should be properly ventilated to prevent further mold growth.

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\(^{84}\) Ashburn et al., “Billiard Hall Conditions Assessment,” 3.
\(^{85}\) Ashburn et al., “Billiard Hall Conditions Assessment,” 3.
\(^{86}\) Ashburn et al., “Billiard Hall Conditions Assessment,” 7.
An electrician should be contacted to assess the fixtures and wiring in the building and confirm that they are safely disconnected to prevent human injury or fire damage to the building. New safety lighting should be installed.\textsuperscript{87}

There is no pathway to the entrance of Billiard Hall, and a variety of debris is outside the north façade. The concrete and plant debris creates tripping hazards for visitors. The interior of the building is currently being used for storage. These items prevent full access to the interior. Debris should be cleared, and a clear path should be established. The interior should be cleared in preparation for work and to prevent pests in the building.\textsuperscript{88}

There is currently no signage that prohibits entry to the building or provides safety alerts. Safety signage should be considered a high priority. The building is located in Duncan Park, a public site, and is highly visible. Safety signage should be placed around the building to inform visitors of hazards and to protect property owners from liability in the event of injury.\textsuperscript{89}

\textsuperscript{87} Ashburn et al., “Billiard Hall Conditions Assessment,” 7.
\textsuperscript{88} Ashburn et al., “Billiard Hall Conditions Assessment,” 7.
\textsuperscript{89} Ashburn et al., “Billiard Hall Conditions Assessment,” 7.
The brick in the foundation of the Billiard hall appears to be original red brick. Much of the mortar appears to be original light colored lime mortar, but there is Portland cement patching. The Portland cement patching is differentiated from lime mortar by the color, hardness, and varying technique of application. Portland cement is more grey and harder than lime mortar.\textsuperscript{90} It is often applied with thicker joints. Several of these patches are causing decay in the foundation of the building and leading to cracking through the brick.

The brick foundation has noticeable cracks near the corners on all façades. The cracking on the north façade is 3-5mm wide, and one crack is located near

\textsuperscript{90} Ashburn et al., “Billiard Hall Conditions Assessment,” 3.
the western corner, and one is near the eastern corner. The eastern façade has a crack of less than 2mm at the north corner and a crack of 2-5mm at the southern corner. The cracking on the west façade is 25mm wide and near the south porch. A crack on the south façade near the western corner is less than 2mm wide. These cracks all go through both the mortar and the brick. Locations of these cracks can be seen in the Billiard Hall diagrams in the appendix.

Figure 4.5 Photo of the western foundation crack on the north façade and the biogrowth that is typical on the foundation. Image: Samantha Staviss..
In addition to cracking, material loss is located at the southeastern corner. There is a brick missing one row up from the ground. The brick above is broken at the corner. There is a loss of mortar for approximately 40cm from the corner in the bottom three rows. While these cracking and material loss issues do not appear to present any structural concern, they provide entrances into the foundation for water and pests.

The masonry foundation has a layer of biogrowth and soiling. The biogrowth is most prominent on the north and west façades, while the soiling is prominent on the north, east, and west façades. Plant growth along the entire west façade is growing into and along the brickwork and from inside the brickwork. Biogrowth covers 95% of the brick on the north façade.
Figure 4.7 Photo of missing bricks and mortar from the foundation on the south façade. Image: Samantha Staviss.

Recommendations

Portland cement is considered an inappropriate mortar material in historic masonry restoration. The historic masonry system relies on softer, lime-based mortar to act as the sacrificial material in and remove moisture from brickwork or stonework. It is easier to replace and repoint mortar than replace bricks.\textsuperscript{91} Portland cement is physically stronger than soft historic bricks and leads to the bricks taking the majority of any physical impact, shifting from settling, or moisture intrusion.\textsuperscript{92} Additionally, Portland cement is unable to expand and contract like historic lime


\textsuperscript{92} Ashburn et al., “Billiard Hall Conditions Assessment,” 3.
mortars and bricks. Inflexibility in the masonry often leads to the Portland cement pulling apart from the bricks and causing the faces of the bricks to shear off or the entire brick to break.\footnote{Weaver and Matero, \textit{Conserving Buildings}, 107.} Lastly, Portland cement is extremely difficult to remove once applied. Due to these characteristics, Portland cement should be avoided in repairing historic masonry.

There are multiple patches of Portland cement in the foundation. Portland cement patches can only be repaired by cutting out the brick and replacing the areas with new brick and an appropriate lime mortar.\footnote{Weaver and Matero, \textit{Conserving Buildings}, 107.} Due to the difficulty of removal, the patches should not be removed unless a structural engineer determines they are leading to structural issues. These patches should be monitored for excess moisture and additional cracking. While the foundation displays cracking, this can be expected from settling over time. Most of the cracking in the foundation is smaller than 2mm. Any cracking greater than 2mm should be evaluated.\footnote{Weaver and Matero, \textit{Conserving Buildings}, 5.}

Both cracks described on the north façade and the southern crack on the east façade are 3-5mm wide. At 2-5mm, moisture may penetrate through walls and cause the masonry to loosen.\footnote{Weaver and Matero, \textit{Conserving Buildings}, 5.} These cracks are not yet of structural concern but may lead to other issues presented by excess moisture penetration, such as biogrowth and further deterioration.
The southern crack on the west façade is 25mm wide. This crack is of structural concern.\textsuperscript{97} In addition to structural concerns, the large size of the opening allows for water, pest, and plant intrusion. Excess moisture in the area could lead to more structural problems and allow plants to take root and further push the masonry apart more. It is recommended that this crack and Portland cement patch be repaired.

There is a variety of biogrowth and soiling on the masonry foundation. The biogrowth on the foundation should be treated with a biocide. A biocide should then be applied annually to the foundation of the building.\textsuperscript{98} The product D/2 is recommended to treat the biogrowth on the building.\textsuperscript{99} A thorough coating of D/2 applied with a low-pressure sprayer will immediately work to remove biogrowth and will continue to be effective for an extended time past the initial application.\textsuperscript{100} If the biogrowth on the foundation is persistent, it can be gently scrubbed with a soft nylon or natural hair brush to loosen biological material and soiling.

Plants and vines should be removed from the western façade foundation by cutting the plants at the root and letting them die before removal rather than pulling them directly from the foundation. The strength of plants can remove building material as they are pulled and cause additional damage to the building.\textsuperscript{101}

\textsuperscript{97} Weaver and Matero, \textit{Conserving Buildings}, 5-6.
\textsuperscript{98} Ashburn et al., “Billiard Hall Conditions Assessment,” 3.
\textsuperscript{99} D/2 is the gold standard in the United States and is very effective at removing biological and air pollutant staining. It is very effective on most architectural materials.
\textsuperscript{100} Ashburn et al., “Billiard Hall Conditions Assessment,” 3.
\textsuperscript{101} Ashburn et al., “Billiard Hall Conditions Assessment,” 4.
Each ventilation opening should be assessed and fitted with an air-permeable barrier. Any existing damaged screens should be repaired or replaced. This will prevent pests from entering the building and allow for ventilation.\textsuperscript{102}

\textit{Exterior Walls}

The Billiard Hall’s exterior walls appear to be structurally in good condition. However, there are several areas of loss in the material. The north and south façades are stucco and lath and finished in white latex paint. There are several smaller areas of stucco loss on the north façade. These areas of stucco loss generally occur along the upper edge of the wall where it meets the ceiling, along the bottom trim, and in the center of the façade between the windows. A larger area of approximately 17.8cm between the windows also lacks lath. The south façade also has stucco loss, primarily along the bottom trim and the upper edge of the wall where it meets the ceiling. There is a large area of stucco loss of about 91cm below the western window. There is also lath loss in this area. In addition to material loss, there is considerable cracking in the stucco. Both the north and south facades are experiencing finish loss. In some locations on the north façade, the stucco underneath the cracking paint appears to be a different color.

\textsuperscript{102} Ashburn et al., “Billiard Hall Conditions Assessment,” 3.
Figure 4.8 Photo showing an area of stucco and lath loss located at the bottom of the wall on the south façade. Image: Samantha Staviss.

Figure 4.9 Photo showing examples of finish loss, cracking, and plaster discoloration located on the north façade. Image: Samantha Staviss.
The north façade also has biogrowth. A vine is growing up the wall in the western corner of the façade. There are also holdfasts or aerial roots left on the wall where removed vines once attached to the wall.

The east and west façades are wooden clapboard and painted white. The wooden clapboard is in good condition. There is biogrowth and soiling present on both the west and east façades. Much of the soiling and biogrowth is present under each edge of the clapboard. In most cases, this appears to be soiling more than biogrowth. The west façade of the Billiard Hall has heavy plant growth, which consists of vines growing up the side of the walls and possibly plants coming out from between the foundation and bottom edge of the wall.

Figure 4.10 Photo of plant growth along the west façade. Image: Samantha Staviss.
The sill is visible on the east and west façades of the Billiard Hall. The sill on the east façade is in fair condition. Areas of excess moisture have led to rotting, pest intrusion, and significant cracking. The nails in the east sill are also rusting. The west sill is in fair condition. It retains excess moisture and shows cracking, biogrowth, and soiling. It appears that pieces of plywood were inserted between the sill and the wooden studs of the building possibly as shims to level the structure.

![Photo of the sill on the east facade showing a large crack through the middle of the sill, material loss of the sill, and pest intrusion on the middle right stud. Image: Samantha Staviss.](image)

On both the east and west façades, the bottom trim is missing between the clapboard and the sill. The edge of the bottom clapboard has material loss. The ends of the wooden studs and bracing are visible to the exterior. The studs in the
west façade show signs of water damage and rot. Additionally, the nails in these studs are rusting. There is material loss of the bottom edge of the clapboard on the east façade, and pest intrusion from the sill continues into the visible studs.

![Figure 4.12 Photo of the plywood shims inserted between the sill and studs on the west façade. Image: Samantha Staviss.](image)

**Recommendations**

The removal of any plant growth on the façades of the building is considered a high priority. Plants damage the building by increasing moisture in the building materials and through mechanical damage from attaching to the building or prying.\(^{103}\) Vines that scale the wall should be cut near the ground and allowed to die in place. Once the plant has died, the remaining plant material can be gently

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\(^{103}\) Weaver and Matero, *Conserving Buildings*, 34.
removed using low-pressure water, non-ionic detergents, and a soft nylon or natural hair brush.\textsuperscript{104} Pulling plant material directly off the wall can damage the building as the plant’s root system can take building material with it when removed.\textsuperscript{105}

Pests in the building should also be considered a high priority. A pest control expert with experience in historic buildings should inspect areas of loss on the sill and areas of pest intrusion to determine the pest infestation type and how to remove the pest best. Carpenter ants, termites, and several types of bees and beetles are known to cause to architectural timber.\textsuperscript{106} These areas should continue to be monitored for further infestation.

The walls should be repaired to prevent further pest and moisture intrusion. Appropriate materials such as wood must be used to repair the walls. An appropriate material should be chosen to repair the gap where the interior floor and wall meet and where the bottoms of the timber framing are visible. Care should be taken to maintain ventilation throughout the building. Addressing these areas of loss is a high priority and critical to stabilize the building and prevent further intrusion from pests and moisture. Care should be taken to mitigate pest and water intrusion before repairs are completed by implementing reversible solutions.\textsuperscript{107}

An expert plasterer should be contacted to repair the areas of stucco loss on the building. Stucco should only be repaired after the causes of failure have

\textsuperscript{105} Ashburn et al., “Billiard Hall Conditions Assessment,” 4.
\textsuperscript{106} Weaver and Matero, Conserving Buildings, 28.
\textsuperscript{107} Ashburn et al., “Billiard Hall Conditions Assessment,” 4.
been determined and mitigated. Plants, water intrusion, settling, and pest intrusion should be addressed before the stucco is repaired on the Billiard Hall. The visible lath should be inspected for damage and repaired if necessary. Hairline cracks can be sealed with a thin slurry of the finish coat. Caulking compounds and other commercially available materials are inappropriate for stucco repair. Larger cracks, delaminated and crumbling stucco will need to be removed down to the lath, and repaired by a plasterer.\textsuperscript{108} Stucco on the north and south façades should be properly scored into the historic stone pattern.

The present coatings on the walls do not appear to be original. It is recommended that a trained analyst complete an architectural finish analysis to determine the historic finishes. Only appropriate finishes as determined by the finish analysis should be used, and inappropriate modern latex finishes should be removed to prevent excess moisture.\textsuperscript{109} Latex paints prevent the substrate material from releasing moisture and typically cause the finish to fail. To best support adhesion, exterior wall surfaces should be cleaned before refinishing. Cleaning can be completed using low-pressure water, a sponge, and a natural hair bristle brush to remove built-up soiling.

\textit{Roof}

The roof appears to be new and in excellent condition. There is a concern about proper ventilation and possible pest intrusion in the attic space. However, this could not be determined due to a lack of attic access.

\textsuperscript{109} Ashburn et al., “Billiard Hall Conditions Assessment,” 4.
Recommendations

When possible, the attic space should be assessed to determine if there is adequate ventilation and a lack of pests.\footnote{Ashburn et al., “Billiard Hall Conditions Assessment,” 4.}

Pediments

The pediments are at the gable ends over the porches extending from the north and south façades. They are of wood construction with boards in the center and trims around the edges. The wooden trim is beginning to separate at the ridge on both the north and south façades. The northern pediment has two visible areas of material loss. One hole is located in the center near the ridge and is only 5cm in diameter. A hole, 12.7cm in diameter, is located at the bottom of the pediment in the center. There is significant biogrowth along the flashing and top of the cornice underneath the pediment. The metal flashing also appears to be rusting. The south façade’s pediment has an area of material loss on the eastern trim of about 7.6cm in diameter. There is significant finish loss in the center of the pediment, and the paint is peeling. It appears as though three of the boards in the eastern corner of the pediment have been cut and repaired. The metal flashing on the cornice below the pediment is rusting, and the wood underneath is rotting. Much of the wood trim of the pediment on the south façade is pulling apart at the joints.
Figure 4.13 Photo showing material loss in the wood trim and rusting flashing located on the southern pediment. Image: Samantha Staviss.

Figure 4.14 Photo showing peeling paint and separation at the ridge on the southern pediment. Image: Samantha Staviss.
Recommendations

Repairing the flashing on both pediments should be considered a high priority. The flashing is rusting, and the wood underneath shows signs of water damage. If the flashing cannot be repaired, it should be replaced. Biogrowth is often a sign of excess moisture. The existing biogrowth can be cleaned with a thorough application of D/2. The biogrowth should be monitored after the flashing has been repaired to determine if there are any other causes of excess moisture.

The pediment trim should also be repaired or replaced. The separation of the trim at the ridge is likely allowing for water intrusion into the building. Water and pest intrusion should be mitigated using an easily removable solution. It might be necessary to place a mesh or flashing over the separation in the ridge to prevent pests and water, respectively.

Larger holes in the north and south pediments should be repaired using appropriate materials. Pest intrusion should be mitigated until repairs can be completed. This can be done by placing a mesh over the hole to prevent nesting birds.

Porch Columns and Entablature

The porch columns are made of wood and coated in white latex paint. The columns on the north façade have a substantial layer of biogrowth and soiling that begins most prominently on the front at the bottom of the column and moves upward. The westernmost column on the north façade has a greater degree of soiling and biogrowth than the other three columns. The western center column
has visible evidence of pests. Black ants in particular were noted to use the column’s outer corners to access entrances in the bottom face of the frieze. There are small holes on either side of the column where the ants are swarming and can access the inside. The bottoms of the columns all show signs of water damage and are showing signs of rot and deterioration.

![Image](image.jpg)

Figure 4.15 Example from the south façade of the damage at the bottom of the columns typical across the building. Image: Samantha Staviss.

The columns on the south façade are experiencing finish loss and soiling. The paint on the south façade’s columns is missing primarily at the bottom outer face of the columns and moving upward. The columns show signs of water damage at the base where they meet the porch and are beginning to deteriorate.
The entablatures are made of wood and finished in a white latex paint layer. The exterior faces of the entablatures are in good condition and have minimal soiling. The bottom face of the north façade’s entablature shows water damage and soiling. Material loss in the bottom of the entablature has allowed pest intrusion, as mentioned earlier in this report. There is possible water damage along the bottom face, primarily on the western side. An excess of soiling or water damage is present along the entablature where there had once been additional
supports implemented and later removed. Lastly, there is cracking along the joints of the entablature’s bottom face, where the wood's expansion and contraction have caused the pieces to pull apart.

![Image of entablature showing damage]

Figure 4.17 Photo of ants swarming on the bottom of the north entablature and evidence of previous structural posts for stabilization of the north pediment and beam. Image: Samantha Staviss.

The entablature on the south façade of the Billiard Hall appears to be in good condition. There is additional soiling present where there had once been additional supports that were later removed. The joints of the wood are also pulling apart on the bottom face of the entablature and causing cracking in the corners by the columns.
Recommendations

Removing pests in the entablature and on the columns is a high priority. An expert should be contacted to examine the areas of infestation and remove the pests. The area around the pests should be examined for excess moisture and water intrusion.

A carpenter with experience in historic materials should be contacted to assess and repair the cracking and water damage in the columns and entablature. Biogrowth and soiling should be removed from the columns using purified water and a biocide such as D/2. The rot at the bottoms of the columns and the pattern of biogrowth from the bottom of the columns often occur due to their exposed location on the edge of porches. The columns might be retaining this moisture due to the use of latex paint as a finish on the columns. If finishes such as latex paint prohibit the transfer of moisture out of the building materials, excess water trapped in the building materials will begin to deteriorate the building. If the columns continue to show increasing signs of water damage, it might be necessary to install a damp-proof barrier. It is recommended to decrease the building's contact with water and use coatings that allow for the evaporation of water from the material. Existing coatings should be removed from the columns and replaced with a historically appropriate coating.

Porch Ceilings

The porch ceilings are stucco and lath construction and coated in white paint. The ceilings appear to be in fair condition. There are several areas of stucco loss on both the north and south façades. The north porch has a large patch of stucco loss where the brown coat is visible. This area is located at the center of the porch against the frieze.

Additionally, there is an area on the back face of the entablature where there is stucco loss, and the lath is exposed. Within this area of loss, rusting metal lath is visible. At least part of the north porch ceiling’s stucco has likely been repaired using metal rather than wooden lath. The stucco covering the western beam is also experiencing heavy material loss. There are large areas of at least 91cm where the lath is visible. The rest of the stucco in this area is cracking. The south porch’s ceiling has several areas of stucco loss. The most notable area is a large area where brown coat is visible in the northwestern section of the ceiling.

Figure 4.18 Photo of the areas of loss on the back of the western beam. Image: Samantha Staviss.
In addition to material loss, the ceilings of both the north and south porches are cracking in a grid-like pattern. Both ceilings have a nonoperational light fixture in the center of the ceiling. These light fixtures are beginning to oxidize and are causing rust jacking. Large cracks run north-south on either side of the light fixtures. Cracking runs east-west on each porch ceiling to either side of the light fixture.

There is also finish loss on both the north and south porch ceilings. The white latex paint is peeling in many areas of the ceilings. Much of the peeling is concentrated around the grid-like cracking mentioned above. However, there are other patches of finish loss in the center and at the edges of both ceilings.

Figure 4.19 Photo of the north porch ceiling demonstrating the defunct light fixture, cracking, and peeling paint that is present on both porches. Example of stucco loss revealing rusting metal lath that is present in several areas of the porch ceilings. Image: Samantha Staviss.
Lastly, both the north and south porch ceilings have pests. Many wasp and other bug nests are visible along the ceilings' edges. The south façade also has wasp nests hanging from the center of the ceiling in addition to the edges. The aforementioned ant problem is traveling up the column on the north façade. These ants are primarily focused on the underside of the frieze and are moving on the back surface of the frieze and toward the ceiling.

Figure 4.20 Photo of the south porch ceiling demonstrating a grid pattern of cracking, missing finish, and pests along the edges of the ceiling. Image: Samantha Staviss.
**Recommendations**

Before repairs on the porch ceilings can be completed, it is necessary to mitigate the pests around the edges of the ceiling. An expert should be contacted to assess and remove the pest intrusions. Any pests which may be a health risk, particularly those which may cause allergic reactions, should be removed to maintain safe working conditions in the building and for park visitors.

In addition to pests, any electrical fixtures and wires should be examined by an electrician. Live wires need to be assessed as they are old and disused. It is important to ensure that wiring in the building is safe to remove or work with any electrical equipment.

Once safe working conditions are ensured, the porch ceilings should be repaired and stabilized. All inappropriate materials should be removed from the porch ceiling. The addition of electrical fixtures might be affecting the porch ceilings. This should be assessed once the attic space is accessible. The ceiling should be repaired by a master plasterer, as mentioned in the exterior walls section. The ceiling should be finished using an appropriate coating. It is recommended that a trained analyst be contacted to complete an architectural finish analysis and determine the historic finish.

**Porch Flooring and Stairs**

The flooring on both porches is in good condition. The tongue and groove wood planks appear to be original. The planks are warping on both porches.

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113 Ashburn et al., “Billiard Hall Conditions Assessment,” 5.
especially on the south porch. The wood planks are broken in some areas with missing pieces.

There are two steps on the north façade of the Billiard Hall, which have been encased in Portland cement and are detached from the building. Underneath each porch, the fascia is in good to fair condition. The section of the fascia underneath the porch on the south façade has been replaced more recently and is in good condition. It is slightly warping, and the nails are rusting, but it appears structurally sound. The north façade’s fascia underneath the porch is also structurally in good condition. In addition to similar warping, it has a considerable amount of biogrowth and soiling.
Recommendations

The wooden flooring should be refinished. The boards with material loss should be replaced. Warped boards should be replaced as needed. The linoleum tile should be checked for asbestos prior to being removed so that one can use correct safety precautions. Historic photos suggest that the building did not originally have stairs and a set of removable but stable stairs should be implemented to allow access to the building.

The fascia should be cleaned in a similar manner to the foundation. Using a low-pressure sprayer with D/2 and following with annual applications is recommended.

Interior Walls

The interior walls of the Billiard Hall are constructed with plaster and lath. There are several layers of finish on the interior walls. Architraves surround all doors and windows, baseboards, and a chair rail. Additionally, there are two modern shelving units in the northwestern and southwestern corners of the room. There are areas of plaster loss on the interior walls. A large area of plaster loss on the western wall extends from the ceiling down to the chair rail above and south of the northernmost window. The lath in this area appears broken and shows signs of water damage. The plaster on the interior walls is cracking in many areas. There is a modern material on the trim underneath the northernmost window on the west wall. This panel covers the original trim. This material is only located underneath this window. Much of the interior finish is in poor condition and peeling. The
architraves have significant finish loss. Several sections of the chair rails also have significant finish loss.

![Photo of the large area of plaster loss between the two northern windows on the west interior wall. Image: Samantha Staviss.](image)

Lastly, there is the indication of a previously existing partition wall in the center of the west wall. It is unclear when this wall might have existed and been removed.

**Recommendations**

Much of the cracking and delamination could have been caused by moisture damage from the previous roofing system. The roof and attic should be fully assessed to determine if any additional water intrusion has occurred since the roof was repaired before repairing the plaster. Settling is another probable cause of
plaster deterioration. Cracking from settling tends to cause diagonal cracking in opposing directions. Issues with the foundation should also be addressed before repairing the plaster. Stress cracking created by overloading the structure of the building might be another form of cracking present in the plaster. These cracks tend to occur run diagonally and around fenestration and might be worsened by the excess weight of the interior ceiling.\textsuperscript{114}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure4.23.jpg}
\caption{Figure 4.23 Photo of evidence of a previous partition wall located in the center of the west interior wall. Peeling paint and cracking in a vertical rectangular pattern is mirrored on the east interior wall. Image: Samantha Staviss.}
\end{figure}

An expert plasterer should repair areas of loss and delamination. Hairline cracks can be filled with patching material, while larger cracks and areas of delamination will need to be removed and repaired.115

Inappropriate coatings and paints should be removed from the wall to allow the release of moisture. A trained analyst should be contacted to complete an architectural finish analysis and determine the historic finish. The appropriate finish should be applied to the repaired plaster. Limewash or oil based paints are common historic finishes and allow for moisture to evaporate from the building.

Trim and architraves should be repaired and recreated in areas of loss. The trims and architraves should then be refinished using the proper historic finish.

**Interior Ceiling**

The ceiling in the Billiard Hall is in poor condition and constructed from modern materials. Metal lath and plaster, and latex paint are visible in the ceiling. These materials are incompatible with the historic fabric. The ceiling materials do not allow for ventilation and add excess weight to the structure.

There are large areas of loss along the edges of the ceiling. Along the western wall, there is an 3.35m area of loss above the two northern windows and a 91cm area of loss above the southern central window. On the eastern side of the ceiling, there is a 1.8m area of loss between the two southern windows. These areas of loss show significant signs of water damage and have rusting metal lath around the edges. The water damage is likely from the previous roofing system.

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115 MacDonald, “Repairing Historic Flat Plaster Walls and Ceilings,” 7-8.
Attached to the ceiling, there are various non-operable electrical fixtures. In the northwestern corner, there is a hanging air conditioning unit. There are two ceiling fans along the central north-south axis. There are four hanging lights, with one light to either the west or east of each ceiling fan.

Recommendations

The incompatible ceiling materials appear to add excess weight to the structure and prevent proper interior ventilation. The inoperable electrical fixtures should be removed and repaired or replaced after an electrician confirms it is safe. The materials should be carefully removed to reveal the attic space above and any
other elements of the original ceiling. Care should be taken in removing these materials as mold and metal lath are in the ceiling. The ceiling should be finished using the historical paint determined by the architectural finish analysis.

Figure 4.25 Photo of the interior of the Billiard Hall looking south and showing three of the electrical fixtures on the ceiling. Image: Samantha Staviss.

*Interior Floor*

The interior linoleum is in poor condition and the original tongue and groove flooring is present underneath the linoleum flooring. There is a large area of loss towards the western wall underneath the northern central window. The original flooring appears to be cut, and there might have been an entrance to the crawl space. There is also a gap between the walls and the floor that goes through to the exterior.
Recommendations

The linoleum flooring should be removed to reveal the original wood flooring. The original wood flooring should be refinished after areas of loss have been repaired. An appropriate material should be added to address the gap between the floor and the walls.116

Figure 4.26 Photo showing the original tongue and groove wooden flooring beneath the existing linoleum tile. Image: Samantha Staviss.

Doors

There are two wooden doors on both the north and south façades. Above each door has a transom light. The doors and transoms are covered on the exterior with a sheet of plywood. The eastern door on the north façade is left uncovered to allow access to the interior of the building. The doors are all in working order and

appear in good condition. Pest intrusion is occurring between the western door on the south façade and the exterior plywood covering.

The transoms above the doors appear to be in fair condition. The muntins and frames are intact and in good condition. Most of the glass in the transom lights is either broken or missing. The replacement panes should match the color and texture of the existing panes.

Figure 4.27 Photo of the southwestern transom. Image: Samantha Staviss.

**Recommendations**

Pests present between the doors and exterior plywood should be assessed and removed. The doors should then be refinished using an appropriate coating. The plywood on the exterior of the building should be removed so that the doors
are operable. The transoms should be repaired and refinished. The glass should be replaced in kind where broken or missing.

Windows

The wooden, six-over-six, double-hung windows are in fair to poor condition. All windows are covered on the exterior with a sheet of plywood. Many plywood coverings have a hole cut out at the center top. The eastern window on the south façade has an interior sheet of plywood covering the bottom sash. There is significant finish loss on all windows, and much of the paint is flaking.

Figure 4.28 Example of the conditions typical of the Billiard Hall windows such as warped sashed, broken or missing glass panes, and pests between the remaining glass panes and exterior plywood coverings. Image: Samantha Staviss.
The sashes and muntins of the windows are warping and, in some cases, are no longer fitting together or within the frame. Several windows have sashes with missing muntins. The two northern windows are missing muntins in their bottom sashes on the west wall. The western window on the north wall is missing muntins in its bottom sash. All windows still possess two metal handles on their bottom sashes. The glass in the windows is in poor condition. Most of the panes are either broken or missing. Lastly, pest intrusions exist between many of the broken and intact panes of glass and the exterior plywood coverings.

Recommendations

Pests should be removed from between the windows and the plywood coverings. A historic window specialist should assess the windows. Where possible, the windows should be repaired. If repair is not feasible, windows should be replaced using appropriate materials and matching the historic construction. Missing materials such as muntins should be replaced in kind. Missing or broken panes should be replaced and match the existing color and texture. The windows should be refinished using the appropriate coating as determined by an architectural finish analysis. Metal hardware should be assessed and either replaced or cleaned of any oxidation. Once the windows are repaired, the plywood coverings should be removed.
Carriage House Building Description and Conditions

The Carriage House, circa 1830s, is a masonry building with a seven-over-one common bond. It is one large room central room covered by a wooden hip roof and front-facing gable.

The west façade of the building is the primary entrance. It has a wide masonry gable that ends on each side with an 22cm engaged column. Along the upper terminus, there is a brick header trim that protrudes from the façade. It has two 2.74m tall doors in the center of the west façade. Two niches built to look like windows are centered in the wall to either side of the doors. Above the three fenestrations is a gauged brick window and door head.

Figure 4.29 Photo of the Carriage House's west façade. Image: Samantha Staviss.
The north, south, and east façades each have four masonry, one-over-seven, common bond columns. The three columns in the middle of each façade are rectangular and 56cm by 35.5cm. The corner columns are an L-shape of two rectangles merged.

A timber wall plate runs above the columns and supports a wooden roof covered in asphalt shingles. The hip roof meets the western façade to form a front gable.

Four masonry walls form a single room in the center of the structure. The masonry walls are three bays on the north and south façades and two on the east and west façades. The roof meets these walls with rafters to either side of a wall plate at the top of the masonry walls.
*Structural Integrity*

The structure of the Carriage House is in fair condition. It appears that the overall structure has stabilized. However, this stabilization reflects a lack of activity around the building. If additional stressors begin to act on the building, it is more likely that the building could experience structural failure. These stressors could be weather events, human activity, or nearby construction. A structural engineer should be contacted to perform a full assessment for a more in-depth review of the structure.

The main structural concern is the masonry on the west façade and several of the columns supporting the roof. A loss of cohesion in the masonry exacerbates the stress on the building and diminishes structural stability.

*Safety and Site*

There is currently no signage that prohibits entry to the building or provides safety alerts. Safety signage should be considered a high priority. The building is located in a public park and is highly visible. Safety signage should be placed in around the building to inform visitors of hazards and to protect property owners from liability in the event of injury.

The interior of the building is currently being used for storage and these items prevent full access to the areas of the interior. The interior of the building
should be cleared in preparation for work as well as to prevent pests from nesting inside.

**Roof**

The roof is in fair condition and timber framed and covered with asphalt shingles. The roof is leaking and causing water intrusion into the masonry of the columns and walls. The water intrusion and excess moisture are also affecting the beam that supports the roof. Metal brackets holding the wooden beam to the masonry of the west façade are rusting. In some areas, there is biogrowth on the wall plate.

Figure 4.31 Photo of the rusting bracket holding the wall plate to the west façade. Image: Samantha Staviss.
Many sections of the roof itself are showing signs of water damage. Much of the sheathing supporting the asphalt shingles are holding excess moisture and beginning to rot. Some of the boards are broken and warped. These spots occur in several areas and can be seen underneath the roof. While the spots of excess moisture occur in many locations, they are primarily located around the roof’s edge and along its ridges. It is possible to see daylight through the roof in an area near the northeastern corner. In areas with broken boards, there is biogrowth.

Excess moisture is also occurring where the masonry walls meet the roofing structure. The wooden beam at the top of the masonry walls displays water damage and areas of rot.

![Image: Robin Smith.](image)

**Figure 4.32** Photo demonstrating the excess moisture typical throughout the underside of the Carriage House roof. Example located in the northeast corner and depicts material loss. Image: Robin Smith.

**Recommendations**
Repair of the roof should be considered a high priority. The roof’s condition allows water intrusion into the building. As a result of the leaking roof and excess moisture, the masonry is showing signs of instability, and there are significant areas of rot and biogrowth on other building elements. Damaged elements should be repaired or replaced in kind as necessary. The roof should be repaired as soon as possible. If repair is not currently possible, a temporary solution, such as the installation of tarpaulins, should be implemented to mitigate water intrusion. It should be ensured that the rest of the building remains well-ventilated to allow excess moisture to evaporate.

*Exterior Walls*

The exterior walls of the building range from fair to poor condition. The west façade of the building as well as the walls underneath the roof on the east, north, and south, are all masonry. The masonry is a one-over-seven common bond and made of a red brick. The majority of the masonry has been repointed with Portland cement and there are Portland cement patches around the building.

The west façade specifically is in poor condition. The most notable area of concern is the masonry above the central doorway. There is a substantial loss of cohesion in the masonry and a large area of mortar loss. The brick above the door is bowing out and appears extremely unstable. The Carriage House section clearly shows that the upper half of the west façade is pulling away from the rest of the structure and the degree of bowing of the middle section in the background. North
of the bowing, an anchor in the wall attaches to a cable. The cable supports wires being transferred to the building from a pole to the west.

![Image of building with cable](image)

Figure 4.33 Detail photograph of the bowing above the main entrance on the west façade. Image: Samantha Staviss.

In addition to a loss of cohesion and mortar above the door, the west façade has a significant amount of biogrowth and soiling. Much of the biogrowth begins at the upper edge of the building and travels down. There are also significant amounts of soiling at the base of the building, moving upwards and on the ledges of the faux windows. Plants are growing along the ledge of the building. Most of the plant matter is on the southern side of the west façade. See the appendix for the diagram of the west façade to see all areas of biogrowth.

The walls underneath the roof and behind the columns appear to be in fair condition. The walls show signs of excess moisture, and the brick is deteriorating. Much of the brick is chipping or cracking. There is considerable material loss
throughout the walls, and bricks are missing from the center of the walls and the upper terminus of the walls.

Figure 4.34 Photo of the biogrowth and soiling typical of the west façade. Image: Samantha Staviss.

The back of the west façade and the western side of the south wall have large areas of biogrowth. The biogrowth is located in the corner where the two walls meet and slightly to the east. The biogrowth and staining originated at the top edge of the wall, where the roof meets and travels downward.

The south wall has several large cracks. One crack is located in the corner where the south wall meets the back of the west façade. The crack is over 25mm wide and begins seven bricks from the upper ledge and one brick to the east. The crack travels down and becomes a separation of the south wall from the rear of the west façade. The second large crack is east of the westernmost column on the
south façade and begins at the top of the wall. It travels down until it intersects a large Portland cement patch in the wall.

The north wall also has a crack of over 25mm in width, where the wall meets the back of the west façade. The crack begins at the top of the east wall directly in the corner and moves eastward as it moves down to meet the ground. There are several other cracks on the north wall. These cracks are located west of the plywood covering above the metal object hanging on the wall. An additional large crack on the north wall begins to the east of the plywood covering and moves to the center of the covering.

![Photo of the large crack and biogrowth on the walls located at the intersection of the south wall and the rear of the west wall. Image: Samantha Staviss.](image-url)
In addition to Portland cement repointing throughout the building, there are large Portland cement patches on the south wall. Three large patches are located in the center of the south wall and cover the bricks completely or almost entirely.

Along the walls, there are a variety of pest nests and the primary pests are mud daubers. The nests are scattered across the south, north, and east walls but primarily are located along the upper portion of these walls.

![Photo of the large patches of Portland cement on the south wall and the existing finish present on the south, north, and east walls. Image: Samantha Staviss.](image)

No finish evidence remains on the western façade, but there is a finish on the south, east, and north walls. The finish appears to be a beige or once-white limewash. There are several areas around the walls where the limewash appears completely gone. It is unknown if some of these areas have been patched with
new brick since limewashing. Some of the areas without finish appear to be saturated with water.

**Recommendations**

Portland cement is considered an inappropriate mortar material in historic masonry restoration. The historic masonry system relies on softer, lime-based mortar to act as the sacrificial material in and remove moisture from brickwork or stonework. It is easier to replace and repoint mortar than replace bricks. Portland cement is physically stronger than soft historic bricks and leads to the bricks taking the majority of any physical impact, shifting from settling, or moisture intrusion. Additionally, Portland cement is unable to expand and contract like historic lime mortars and bricks. Inflexibility in the masonry often leads to the Portland cement pulling apart from the bricks and causing the faces of the bricks to shear off or the entire brick to break.¹¹⁷ Lastly, Portland cement is extremely difficult to remove once applied. Due to these characteristics, Portland cement should be avoided in repairing historic masonry.

Much of the brickwork has been repaired or repointed with Portland cement. The cement is negatively affecting the building and causing the bricks to decay faster. The Portland cement is also exacerbating cracking in the walls. The cracking in the corners of the north and south walls is most likely from the west façade pulling away from the structure. Portland cement patches can only be repaired by cutting out the areas of concern and replacing the areas an appropriate

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replacement brick and lime mortar. A structural engineer should fully assess the building to determine which areas could cause structural failure. Any areas of concern should be addressed by removing the brickwork and replacing it with a historically appropriate brick and lime mortar system. A master mason with experience in historic brickwork should be contacted to assess the brickwork and perform the repair. It should be considered a high priority to safeguard the area for human safety. Precautions such as signage and barriers should be placed to keep people away from the building. It might be necessary to place netting on the west façade to prevent bricks from falling and injuring visitors. Brickwork with mortar loss should be repointed using an appropriate lime mortar. An expert mason should be contacted to complete the work.

Once the structure is stabilized, the brick should be cleaned and refinished with limewash. It is important to determine the cause of water intrusion. Leaking from the roof or other areas of water intrusion should be fixed before the brick is cleaned and refinished. If the areas of water intrusion are not fixed, the walls will structurally be at risk.

Pests should be removed before work commences. An expert should be contacted to assess and remove the pest intrusions. Any pests which may be a health risk, particularly those which may cause allergic reactions, should be removed to maintain safe working conditions in the building and for park visitors.

The biogrowth can be treated using a biocide, D/2 is a recommended product. A thorough coating of D/2 applied by a low-pressure sprayer will

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immediately work to remove biogrowth and will continue to be effective for an extended time past the initial application. The biogrowth might need to be gently loosened from the wall using a soft natural or nylon bristle brush. Once the brick has been cleaned, it can be refinished using the proper historic finish. Limewash was likely the original finish on the building and can be reapplied to the building after repairs have been made.

Columns

The columns of the Carriage House are each in a different condition ranging from fair to excellent. Part of some columns and entire columns have been replaced with new brickwork. Much of the brickwork throughout the columns have been repointed with Portland cement. Newer patches and replacement brickwork was completed with Portland cement.

The historic bricks in the columns are in fair condition. There are cracks throughout many of the bricks. Almost all of the historic bricks are chipped or spalling. The condition of the newer bricks varies. Some of the modern bricks are in fair condition with cracking through them, while many are in good or excellent condition.

Several columns are in worse condition and either leaning outward or breaking apart. The second column from the east on the south façade has a large crack near its base. The crack starts on the north face of the column and moves toward the ground. It branches off and moves diagonally around the east and south faces of the column. This column appears to be newer brickwork but is degrading
due to excess stress on the column or possibly settling. The column at the northeastern corner significantly leans outward and away from the building to the east.

Figure 4.37 Photo of the severe crack in second column from the east on the south façade. Image: Samantha Staviss.
Many of the columns also have biogrowth present. As mentioned in the exterior walls section, biogrowth is often a sign of excess moisture entering the brick. The columns display different levels of biogrowth and different types of biogrowth. Biogrowth occurs in different areas (bottom, middle, top, or a combination) depending on the column. Some of the columns have a limewash finish present. The newer columns and newer patches are not coated with any visible finish. Areas with finish have considerable finish loss.

*Recommendations*

The columns should be treated similarly to the other masonry in the building. Portland cement patching might be contributing to or exacerbating the decay of the
bricks and the columns. Each column should be assessed by a structural engineer and a mason to determine their risk and structural stability.

Water intrusion should be mitigated before or in tandem with structural work. As discussed in the roof section, the roof allows water to enter the bricks from the top and causes the brick to decay faster. The structure should be appropriately waterproofed to best maintain the brickwork. Columns should be repaired as needed by removing damaged brickwork and replacing it with an appropriate brick and lime mortar. Areas of mortar loss should be repointed.

After any needed repair, the columns can be cleaned of biogrowth using D/2 solution and a low-pressure sprayer. If the biogrowth is persistent, it can be gently scrubbed using a natural hair or nylon bristle brush.

Doors

The wooden central doors on the west façade are in poor condition. Both doors are loose in the frame and the wooden boards are separating from each other. Both doors have material loss where the wood boards have broken. The door frame is also in poor condition and is experiencing material loss.

The original hardware of the door is broken, rusted, and not functional. New hardware has been installed to attach the doors to the frame but does not match the original hardware. Holes in the frame and the doors reveal where previous hardware had been placed and later removed. The opening on the north wall is covered with plywood and could not be assessed.
Recommendations

The doors and frame should be fully repaired by a skilled carpenter. Where necessary, elements should be replaced with historically appropriate materials. The doors should be refinished after completing a finish analysis. The hardware on the doors should be replaced with hardware similar to the original nonfunctional hardware. The opening on the north wall should be uncovered and properly assessed.

Interior

The interior of the Carriage House was inaccessible and therefore could not be assessed. Laser scans of the building show that the interior is being used for storage, and much of the interior is inaccessible due to the items being stored
inside. It is recommended that these items be relocated and that the interior of the building and roofing structure be fully assessed by a structural engineer and roofer experienced with historic buildings.
5. CONCLUSION

This practicum demonstrates the importance of conserving buildings and conservation management through the documentation and analysis of the Carriage House and Billiard Hall at Auburn in Natchez, Mississippi. The existing literature on site interpretation clearly demonstrates how there has been a bias in preservation that excludes the narratives of enslaved persons. Site interpretation has continued to change and adjust to recognize the contribution of enslaved persons to the sites they lived and worked on. There is a history of documenting and conserving the main houses on plantation and suburban villa sites to demonstrate the success and wealth of the planter. The shift toward a more holistic interpretation has pushed for the documentation and recognition of outbuildings as historically significant.

While there has been an acknowledgment of the bias in interpretation, this research has begun to explore how there is also a bias in documentation and conservation. There is some literature on how there is a bias in the National Register of Historic Places toward excluding places that are representative of minorities.120 This bias is widespread throughout the field of preservation.

Documenting and creating a conservation management plan for the Carriage

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House and Billiard Hall work to subvert this bias by placing importance on outbuildings present in a suburban villa landscape.

Accurate documentation through laser scanning and photography allows the outbuildings at Auburn to contribute to cultural heritage and available resources despite their decay. Further documentation of these buildings expands the archive of buildings preservationists are able to reference. This documentation aids to preserve the cultural heritage of underrepresented histories and helps to counteract the existing bias in preservation. By documenting outbuildings, histories of enslaved persons throughout the South are brought to the forefront of the narrative.

The documentation ultimately supports the conservation of the outbuildings and Auburn shows that buildings are essential to social memory and to having inclusive and equitable preservation. The conditions reports and recommendations create a pathway forward toward ensuring these buildings continue to be a part of the cultural heritage available in Natchez.

Six priorities are identified as being critical to the stabilization of the Billiard Hall. Placing safety and interpretive signage around the building should be the first step completed. Securing the site and preserving human safety are critical toward stabilizing the building. These sites are unique in that they are situated within a public park which gives visitors consistent access to the site. Placing interpretative signage around the building will begin to highlight these outbuildings as important and solidify their narratives within the larger context of the site. Interpretive signage could be temporary in nature until more permanent signage is introduced. After
placing signage, an electrician should assess the electrical wiring throughout the building and ensure the electrical wiring is safe. The interior of the building needs to be cleaned out and the stored items need to be removed. The Billiard Hall should be assessed by a structural engineer to determine if the settling of the building has stabilized or if there is any structural risk. Holes and gaps in the building that allow for water and pest intrusion should ideally be repaired or mitigated. The ceiling should be carefully removed, and any evidence of a previous ceiling should be reassessed. In all of these priorities, it is vital to maintain long and short-term ventilation throughout the building. Providing a dry and mold-free interior space is critical to the building as well as to human safety.

Four priorities are identified as critical to the stabilization of the Carriage House. Similar to the Billiard Hall, the first step in stabilizing the Carriage House should be the implementation of safety and interpretive signage around the building. The structural integrity of the building is questionable, and there is concern that a passerby might become injured. Safety measures such as netting and barricades might have to be implemented to protect human safety and the structure’s stability. In tandem with the first step, a structural engineer should be contacted to perform a full assessment of the structure of the building. After addressing the structural integrity of the building, the most important step is to prevent future water intrusion into the building by repairing the roof. Repairing the roof or implementing an easily reversible solution is critical to preventing the worsening decay of building elements from water intrusion. Items stored in the interior of the building should be removed.
The steps listed above for each building represent only phase one of the restoration process. Phase one allows for the stabilization of the building so that the historic fabric can be kept in stasis during the planning and implementation of further phases. The process of placing a building into stabilized stasis is referred to as “mothballing.”¹²¹ Mothballing is concerned with controlling long-term deterioration and preventing sudden loss of the building. This involves protecting the building from vandalism, break-ins, fire, and natural disasters. Entry points to the buildings should be sealed and property managers should consider implementing security and fire alarm and monitoring systems. The Billiard Hall currently has plywood coverings over its fenestration. This is an acceptable temporary solution as long as adequate ventilation is maintained.

The stabilization of the Billiard Hall and Carriage House mitigates the long-term effects of deterioration and aids in ensuring that these two outbuildings can continue to contribute to the narrative of enslaved persons presented at Auburn. This process allows them to remain within their original context of the property that is now Duncan Park and help visitors connect the narratives present to their context through sense of place. The conservation of the outbuildings preserves them for future generations and supports further research. It safeguards the built environment so that these interpretations are able to change and improve as more information is discovered and as social values change. The outbuildings have the capability of highlight the narratives of enslaved persons that have largely been

missing from plantation landscapes as a whole, and to promoting a narrative that considers these heritage sites as a system of nuanced relationships.

Through documentation, conditions reports, and technical illustrations of the Carriage House and Billiard Hall at Auburn, one begins to consider the historical and spatial contexts of the buildings and the possible futures and interpretations they present. These outbuildings are integral to creating a holistic and inclusive narrative of Auburn.
APPENDIX A

CONDITIONS DIAGRAMS
Figure A.2 Conditions diagram of the Billiard Hall south façade.
Figure A.3 Conditions diagram of the Billiard Hall east façade.
Figure A.4 Conditions diagram of the Billiard Hall west façade.
Figure A.5 Conditions diagram of the Billiard Hall north interior elevation.
Figure A.6 Conditions diagram of the Billiard Hall south interior elevation.
Figure A.7 Conditions diagram of the Billiard Hall east interior elevation.
Figure A.8 Conditions diagram of the Billiard Hall west interior elevation.
Figure A.9 Conditions diagram of the Billiard Hall floor plan.
Figure A.10 Conditions diagram of the Billiard Hall reflected ceiling plan.
Figure A.11 Conditions diagram of the Carriage House north elevation.
Figure A.12 Conditions diagram of the Carriage House south elevation.
Figure A.13 Conditions diagram of the Carriage House east elevation.
Figure A.14 Conditions diagram of the Carriage House west elevation.
Figure A.15: Conditions diagram of the Carriage House reflected ceiling plan.
APPENDIX B

DOCUMENTATION
Figure B.1 Billiard Hall north façade.
Figure B.3 Billiard Hall east façade.
Figure B.5 Billiard hall north interior elevation.
Figure B.7 Billiard hall east interior elevation.
Figure B.8 Billiard Hall west interior elevation.
Figure B.11 Carriage House north elevation.
Figure B.14 Carriage House west elevation.
Figure B.17 Carriage House north section.
Figure B.18 Carriage House east section.
Figure B.16 Carriage House reflected ceiling plan.
APPENDIX C

TECHNICAL ILLUSTRATIONS
Figure C.1 Billiard Hall technical illustration.
REFERENCES


